

Fuel and Emissions

Fuel and Emissions Systems

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EVAP System

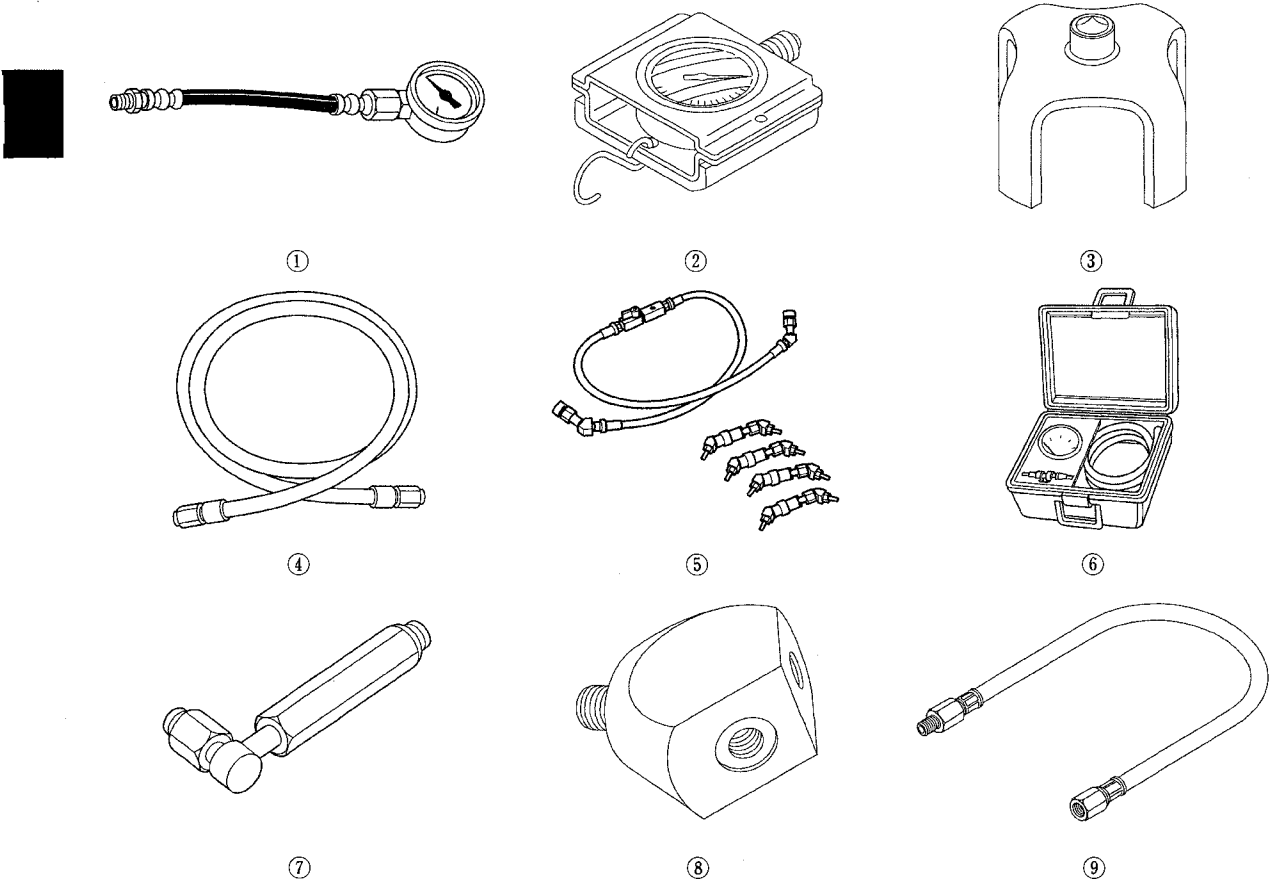
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Special Tools

Ref.No.	Tool Number	Description	Qty
①	07406-004000B	Fuel Pressure Gauge	1
②	07406-0070301	A/T Low Pressure Gauge w/Panel	1
③	07AAA-S0XA100	Fuel Sender Wrench	1
④	07AAJ-PY4A100	AT Pressure Test Hose	1
⑤	07AAJ-S6MA150	Fuel Pressure Gauge Attachment Set	1
⑥	07JAZ-001000B	Vacuum/Pressure Gauge, 0—4 In.Hg,	1
⑦	07MAJ-PY40120	A/T Pressure Adapter	1
⑧	07NAJ-P07010A	Pressure Gauge Adapter	1
⑨	07ZAJ-S5AA200	Oil Pressure Hose	1





General Troubleshooting Information

Intermittent Failures

The term intermittent failure means a system may have had a failure, but it checks OK now. If the malfunction indicator lamp (MIL) on the dash does not come on, check for poor connections or loose terminals at all connectors related to the circuit that you are troubleshooting. If the MIL was on but then went out, the original problem may have been intermittent.

Service Information

Periodically, new ECM/PCM software or new service procedures may become available. Always check online for the latest software or service information related to the DTCs or symptoms you are troubleshooting.

Opens and Shorts

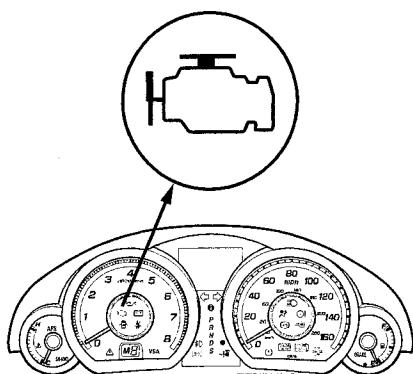
Open and short are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as ECMs or PCMs) this can sometimes mean something works, but not the way it's supposed to.

How to Use the HDS (Honda Diagnostic System)

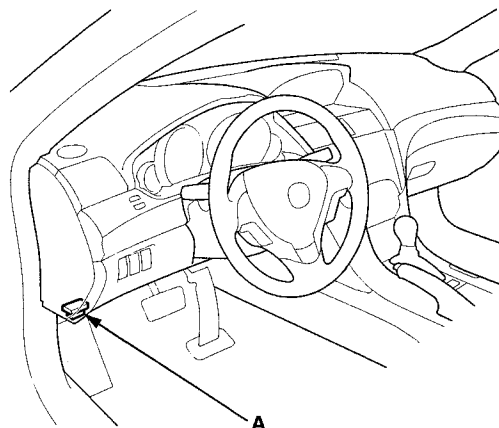
If the MIL (malfunction indicator lamp) has come on

1. Start the engine, and check the MIL (A).

NOTE: If the ignition switch is turned to ON (II), or press the engine start/stop button to select the ON mode, and the engine is not started, the MIL stays on for 15–20 seconds (see page 11-84).



2. If the MIL stays on, connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
4. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-258).
5. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data and/or on-board snapshot data, and download any data found. Then refer to the indicated DTC's troubleshooting, and begin the appropriate troubleshooting procedure.

NOTE:

- Freeze data indicates the engine conditions when the first system malfunction, misfire, or fuel trim malfunction that activated the MIL was detected.
 - The HDS can read the DTC, the freeze data, the on-board snapshot, the current data, and other engine control module (ECM) or powertrain control module (PCM) data.
 - For specific operations, refer to the user's manual that came with the HDS.
6. If no DTCs are found, go to the MIL circuit troubleshooting (see page 11-257).

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General Troubleshooting Information (cont'd)

If the MIL did not stay on

If the MIL did not stay on but there is a driveability problem, do the symptom troubleshooting.

If you can't duplicate the DTC

Some of the troubleshooting requires you to reset the ECM/PCM and try to duplicate the DTC. If the problem is intermittent and you can't duplicate the DTC, do not continue through the procedure. To do so will only result in confusion and possibly, a needlessly replaced ECM/PCM.

HDS Clear Command

The ECM/PCM stores various specific data to backup the system even if there is no electrical power such as when the battery negative terminal or the No. 19 BACK UP FI ECU (7.5 A) fuse are disconnected. Stored data based on failed parts should be cleared by using the CLEAR COMMAND of the HDS, if parts are replaced.

The HDS has three kinds of clear commands to meet this purpose. They are DTC clear, ECM/PCM reset, and CKP pattern clear. The DTC clear command erases all stored DTC codes, freeze data, on-board snapshot, and readiness codes. This must be done with the HDS after reproducing the DTC during troubleshooting.

The ECM/PCM reset command erases all stored DTCs, freeze data, on-board snapshot, readiness codes, and all specific data to correct the system except CKP pattern. If the CKP pattern data in the ECM/PCM was cleared, you must do the CKP pattern learn procedure. The CKP pattern clear command erases only CKP pattern data. This command is for repair of a misfire or the CKP sensor.

Scan Tool Clear Command

If you are using a generic scan tool to clear commands, be aware that there is only one setting for clearing the ECM/PCM, and it clears all commands at the same time (CKP pattern learn, idle learn, readiness codes, freeze data, on-board snapshot, and DTCs). After you clear all commands, you then need to do these procedures, in this order: ECM/PCM idle learn procedure (see page 11-337); CKP pattern learn procedure; test-drive to set readiness codes to complete (see page 11-84).

DTC Clear

1. Clear the DTC with the HDS while the engine is stopped.
2. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
3. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 30 seconds.
4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode, and disconnect the HDS from the DLC.

ECM/PCM Reset

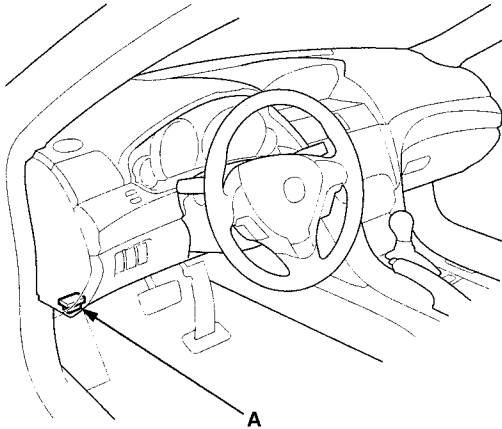
1. Reset the ECM/PCM with the HDS while the engine is stopped.
2. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
3. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 30 seconds.
4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode, and disconnect the HDS from the DLC.
5. Do the ECM/PCM idle learn procedure (see page 11-337).



CKP Pattern Clear/CKP Pattern Learn

Clear/Learn Procedure (with the HDS)

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-258).
4. Select CRANK PATTERN in the ADJUSTMENT MENU with the HDS.
5. Select CRANK PATTERN CLEAR, and clear the CKP pattern.
6. Select CRANK PATTERN LEARNING with the HDS, and follow the screen prompts.

Learn Procedure (without the HDS)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
2. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 2,500 rpm down to 1,000 rpm with the Transmission in 2nd.
3. Repeat step 2 several times.
4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 30 seconds.

How to End a Troubleshooting Session (required after any troubleshooting)

1. Reset the ECM/PCM with the HDS.
2. Do the ECM/PCM idle learn procedure (see page 11-337).
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the HDS from the DLC.

NOTE: The ECM/PCM is part of the immobilizer system. If you replace the ECM/PCM, for the engine to start, you must use the HDS to instruct the new ECM/PCM and the immobilizer-keyless control unit to recognize each other's unique serial code.

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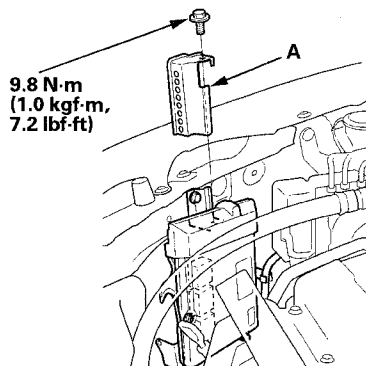
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General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the ECM/PCM Connectors

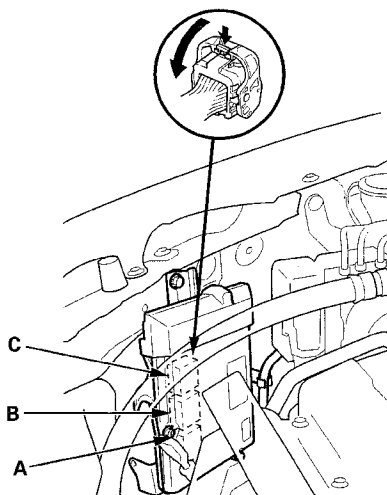
NOTE: The ECM/PCM overwrites data and monitors the EVAP system for about 40 minutes after the ignition switch is turned to LOCK (0), or the engine start/stop button is pressed to select the OFF mode. Jumping the SCS line after turning the ignition switch to LOCK (0), or pressing the engine start/stop button to select OFF mode cancels this function. Disconnecting the ECM/PCM during this function, without jumping the SCS line first, can damage the ECM/PCM.

1. Jump the SCS line with the HDS.
2. Canada model: If equipped, remove the ECM/PCM connector guard (A).

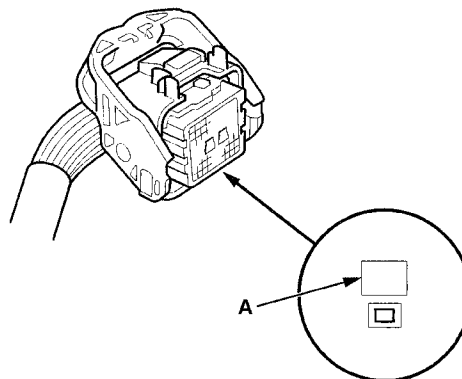


3. Disconnect ECM/PCM connectors A, B, and C.

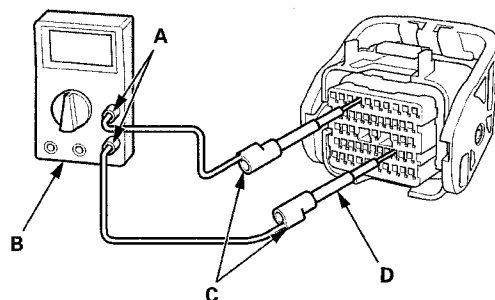
NOTE: ECM/PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.



4. When diagnosis/troubleshooting is done at the ECM/PCM connector, use the terminal test port (A) above the terminal you need to check.



5. Connect one side of the patch cord's terminals (A) to a commercially available digital multimeter (B), and connect the other side of the terminals (C) to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (D).



6. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE

- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



Substituting the ECM/PCM

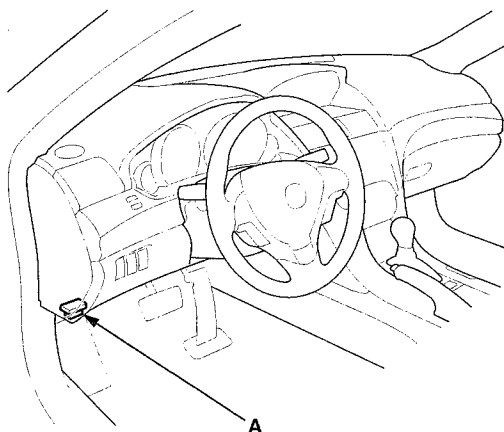
Special Tools Required

- Honda Diagnostic System (HDS) tablet tester
- Honda Interface Module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

NOTE: Use this procedure when you have to substitute a known-good ECM/PCM during the troubleshooting procedure.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



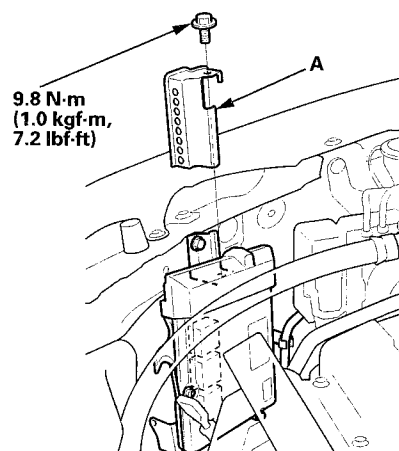
2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-258). If you are returning from DLC circuit troubleshooting, skip steps 4 and 5, then clean the throttle body after substituting the ECM/PCM (see page 11-421).

4. Select the INSPECTION MENU with the HDS.
5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

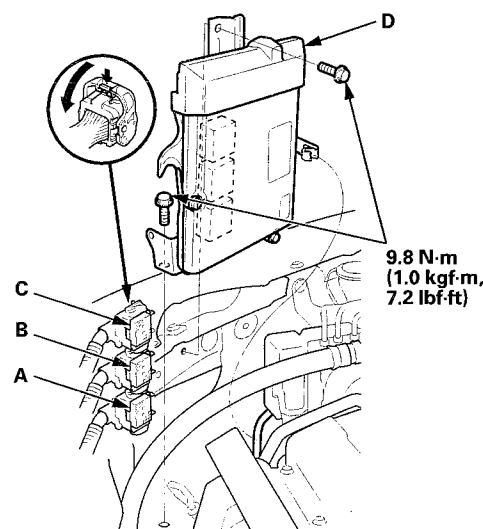
6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Jump the SCS line with the HDS.

8. Canada model: If equipped, remove the ECM/PCM connector guard (A).



9. Disconnect ECM/PCM connectors A, B, and C, then remove the ECM/PCM assembly (D).

NOTE: ECM/PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

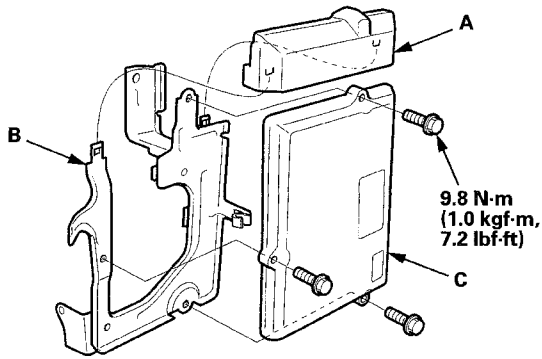


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Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

10. Remove the cover (A) and the bracket (B) from the ECM/PCM (C).



11. Install a known-good ECM/PCM in the reverse order of removal.
12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
- NOTE: DTC P0630 (VIN Not Programmed or Mismatch) may be stored because the VIN has not been programmed into the ECM/PCM; ignore it, and continue this procedure.
13. Manually input the VIN to the ECM/PCM with the HDS.
14. Select the IMMOBI system (without keyless access) or ONE PUSH START system (with keyless access) with the HDS.
15. Enter the immobilizer ECM/PCM code that you got from the iN, and use the ECM/PCM replacement procedure in the IMMOBI Menu (without keyless access) or ONE PUSH START Menu (with keyless access) of the the HDS; it allows you to start the engine.
16. Reset the ECM/PCM with the HDS.
17. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-421).
18. Update the ECM/PCM if it does not have the latest software (see page 11-281).
19. Do the ECM/PCM idle learn procedure (see page 11-337).
20. Do the CKP pattern clear/CKP pattern learn procedure.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- **PASSED:** The on board diagnosis is successfully finished.
- **FAILED:** The on board diagnosis has finished but failed.
- **EXECUTING:** The vehicle is in enable criteria conditions of the DTC, and the on board diagnosis is running.
- **NOT COMPLETED:** The on board diagnosis was running but is out of the enable conditions of the DTC.
- **OUT OF CONDITION:** The vehicle has stayed out of the enable conditions of the DTC.



DTC Troubleshooting Index

DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0101 (50)	○	Mass Air Flow (MAF) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-89)
P0102 (50)	—	Mass Air Flow (MAF) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-90)
P0103 (50)	—	Mass Air Flow (MAF) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-92)
P0107 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-94)
P0108 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-96)
P0111 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-98)
P0112 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-99)
P0113 (10)	○	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-100)
P0116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-103)
P0117 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-104)
P0118 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	DTC Troubleshooting (see page 11-105)
P0122 (7)	—	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-286)
P0123 (7)	—	Throttle Position (TP) Sensor A Circuit High Voltage	ON	DTC Troubleshooting (see page 11-288)
P0125 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response	ON	DTC Troubleshooting (see page 11-108)
P0128 (87)	○	Cooling System Malfunction	ON	DTC Troubleshooting (see page 11-109)
P0133 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Malfunction/Slow Response	ON	DTC Troubleshooting (see page 11-110)
P0134 (151)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater System Malfunction	ON	DTC Troubleshooting (see page 11-111)
P0135 (151)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction	ON	DTC Troubleshooting (see page 11-113)
P0137 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-117)
P0138 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit High Voltage	ON	DTC Troubleshooting (see page 11-119)
P0139 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Slow Response	ON	DTC Troubleshooting (see page 11-122)
P0141 (163)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Heater Circuit Malfunction	ON	DTC Troubleshooting (see page 11-123)
P0153 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Malfunction/Slow Response	ON	DTC Troubleshooting (see page 11-110)
P0154 (152)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater System Malfunction	ON	DTC Troubleshooting (see page 11-111)
P0155 (152)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction	ON	DTC Troubleshooting (see page 11-113)

NOTE: The above DTCs are indicated when the PGM-FI system is selected with the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS. Some DTCs do not cause the MIL to blink when the SCS line is jumped. The last four characters of these DTCs are shown in the gauge display.

*1: Without SH-AWD

*2: With SH-AWD

*3: M/T

*4: A/T

*5: '09 model with SH-AWD

(cont'd)

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DTC Troubleshooting Index (cont'd)

DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0157 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-117)
P0158 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit High Voltage	ON	DTC Troubleshooting (see page 11-119)
P0159 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Slow Response	ON	DTC Troubleshooting (see page 11-122)
P0161 (164)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Heater Circuit Malfunction	ON	DTC Troubleshooting (see page 11-123)
P0171 (153)	○	Rear Bank (Bank 1) Fuel System Too Lean	ON	DTC Troubleshooting (see page 11-126)
P0172 (153)	○	Rear Bank (Bank 1) Fuel System Too Rich	ON	DTC Troubleshooting (see page 11-126)
P0174 (154)	○	Front Bank (Bank 2) Fuel System Too Lean	ON	DTC Troubleshooting (see page 11-126)
P0175 (154)	○	Front Bank (Bank 2) Fuel System Too Rich	ON	DTC Troubleshooting (see page 11-126)
P0222 (7)	—	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-290)
P0223 (7)	—	Throttle Position (TP) Sensor B Circuit High Voltage	ON	DTC Troubleshooting (see page 11-292)
P0300 (77) and any combination of the following: P0301 (71) P0302 (72) P0303 (73) P0304 (74) P0305 (75) P0306 (76)	○	Random Misfire Detected	ON	DTC Troubleshooting (see page 11-128)
P0301 (71)	○	No. 1 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-131)
P0302 (72)	○	No. 2 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-131)
P0303 (73)	○	No. 3 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-131)
P0304 (74)	○	No. 4 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-131)
P0305 (75)	○	No. 5 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-131)
P0306 (76)	○	No. 6 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-131)
P0325 (23)	—	Knock Sensor Circuit Malfunction	ON	DTC Troubleshooting (see page 11-137)
P0335 (4)	—	Crankshaft Position (CKP) Sensor No Signal	ON	DTC Troubleshooting (see page 11-139)
P0339 (4)	—	Crankshaft Position (CKP) Sensor Circuit Intermittent Interruption	ON	DTC Troubleshooting (see page 11-142)
P0351 (71)	—	No. 1 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-143)
P0352 (72)	—	No. 2 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-143)

NOTE: The above DTCs are indicated when the PGM-FI system is selected with the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS. Some DTCs do not cause the MIL to blink when the SCS line is jumped. The last four characters of these DTCs are shown in the gauge display.

*1: Without SH-AWD

*2: With SH-AWD

*3: M/T

*4: A/T

*5: '09 model with SH-AWD



DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0353 (73)	—	No. 3 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-143)
P0354 (74)	—	No. 4 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-143)
P0355 (75)	—	No. 5 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-143)
P0356 (76)	—	No. 6 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-143)
P0365 (8)	—	Camshaft Position (CMP) Sensor Circuit No Signal	ON	DTC Troubleshooting (see page 11-147)
P0369 (8)	—	Camshaft Position (CMP) Sensor Circuit Intermittent Interruption	ON	DTC Troubleshooting (see page 11-149)
P0400 (80)	○	Exhaust Gas Recirculation (EGR) System Leak Detected	ON	DTC Troubleshooting (see page 11-433)
P0401 (80)	○	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	DTC Troubleshooting (see page 11-434)
P0404 (12)	○	Exhaust Gas Recirculation (EGR) Valve Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-435)
P0406 (12)	—	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-438)
P0420 (165)	○	Rear Bank Catalyst System Efficiency Below Threshold (Bank 1)	ON	DTC Troubleshooting (see page 11-427)
P0430 (166)	○	Front Bank Catalyst System Efficiency Below Threshold (Bank 2)	ON	DTC Troubleshooting (see page 11-427)
P0443 (92)	○	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	DTC Troubleshooting (see page 11-450)
P0451 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-453)
P0452 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-454)
P0453 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-457)
P0455 (90)	○	Evaporative Emission (EVAP) System Large Leak Detected	ON	DTC Troubleshooting (see page 11-460)
P0456 (90)	○	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	DTC Troubleshooting (see page 11-460)
P0457	—	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	OFF	DTC Troubleshooting (see page 11-464)
P0461	○	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem	OFF	DTC Troubleshooting (see page 11-342)
P0462**	○	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-342)
P0462*2	○	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-344)
P0463*1	○	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	DTC Troubleshooting (see page 11-347)
P0463*2	○	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	DTC Troubleshooting (see page 11-349)
P0496 (92)	○	Evaporative Emission (EVAP) System High Purge Flow Detected	ON	DTC Troubleshooting (see page 11-466)
P0497 (90)**	○	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	DTC Troubleshooting (see page 11-466)

NOTE: The above DTCs are indicated when the PGM-FI system is selected with the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS. Some DTCs do not cause the MIL to blink when the SCS line is jumped. The last four characters of these DTCs are shown in the gauge display.

*1: Without SH-AWD

*2: With SH-AWD

*3: M/T

*4: A/T

*5: '09 model with SH-AWD

(cont'd)

Fuel and Emissions Systems

DTC Troubleshooting Index (cont'd)

DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0497 (90)* ²	○	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	DTC Troubleshooting (see page 11-469)
P0498 (117)	—	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-472)
P0499 (117)	—	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit High Voltage	ON	DTC Troubleshooting (see page 11-475)
P0506 (14)	○	Idle Control System RPM Lower than Expected	ON	DTC Troubleshooting (see page 11-331)
P0507 (14)	○	Idle Control System RPM Higher than Expected	ON	DTC Troubleshooting (see page 11-332)
P050A (167)	○	Cold Start Idle Air Control System Performance Problem	ON	DTC Troubleshooting (see page 11-150)
P050B (167)	○	Cold Start Ignition Timing Control System Performance Problem	ON	DTC Troubleshooting (see page 11-152)
P0560 (34)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	ON	DTC Troubleshooting (see page 11-154)
P0562	—	Charging System Low Voltage	OFF	DTC Troubleshooting (see page 11-156)
P0563	○	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	OFF	DTC Troubleshooting (see page 11-157)
P0602 (196)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Programming Error	ON	DTC Troubleshooting (see page 11-159)
P060A (131)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Control Module Malfunction	ON	DTC Troubleshooting (see page 11-160)
P0615* ³	—	Starter Cut Relay STRLD Circuit Malfunction	OFF	DTC Troubleshooting (see page 11-160)
P0615* ⁴	—	Starter Cut Relay STRLD Circuit Malfunction	OFF	DTC Troubleshooting (see page 11-164)
P0616* ³	—	Starter Relay 2 Malfunction	OFF	DTC Troubleshooting (see page 11-168)
P0616* ⁴	—	Starter Relay 2 Malfunction	OFF	DTC Troubleshooting (see page 11-170)
P0627 (169)* ⁵	○	Fuel Pump Control Module System Malfunction	ON	DTC Troubleshooting (see page 11-352)
P062F (131)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	DTC Troubleshooting (see page 11-173)
P0630 (139)	—	VIN Not Programmed or Mismatch	ON	DTC Troubleshooting (see page 11-173)
P0641 (133)	—	Sensor Reference Voltage A Malfunction	ON	DTC Troubleshooting (see page 11-174)
P0651 (134)	—	Sensor Reference Voltage B Malfunction	ON	DTC Troubleshooting (see page 11-176)
P0685 (135)	○	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Control Circuit/Internal Circuit Malfunction	ON	DTC Troubleshooting (see page 11-179)
P0715* ³	○	Input Shaft (Mainshaft) Speed Sensor Circuit Malfunction	OFF	DTC Troubleshooting (see page 11-180)
P0720 (122)* ³	○	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	DTC Troubleshooting (see page 11-182)
P0831* ³	—	Clutch Pedal Position Switch A Circuit High Voltage	OFF	DTC Troubleshooting (see page 11-185)
P0835* ³	○	Clutch Pedal Position Switch B Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-186)

NOTE: The above DTCs are indicated when the PGM-FI system is selected with the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS. Some DTCs do not cause the MIL to blink when the SCS line is jumped. The last four characters of these DTCs are shown in the gauge display.

*1: Without SH-AWD

*2: With SH-AWD

*3: M/T

*4: A/T

*5: '09 model with SH-AWD



DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P1077 (106)	○	Intake Manifold Tuning (IMT) Valve Stuck in High RPM Position	ON	DTC Troubleshooting (see page 11-413)
P1078 (106)	○	Intake Manifold Tuning (IMT) Valve Stuck in Low RPM Position	ON	DTC Troubleshooting (see page 11-417)
P1116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-188)
P1128 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	DTC Troubleshooting (see page 11-190)
P1129 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	DTC Troubleshooting (see page 11-191)
P1172 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Out of Range High	ON	DTC Troubleshooting (see page 11-192)
P1174 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Out of Range High	ON	DTC Troubleshooting (see page 11-192)
P1297	○	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-193)
P1298	○	Electrical Load Detector (ELD) Circuit High Voltage	OFF	DTC Troubleshooting (see page 11-195)
P1454 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-475)
P145C (90)	○	Evaporative Emission (EVAP) System Purge Flow Malfunction	ON	DTC Troubleshooting (see page 11-478)
P1549	——	Charging System High Voltage	OFF	DTC Troubleshooting (see page 11-196)
P1658 (40)	——	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	DTC Troubleshooting (see page 11-294)
P1659 (40)	——	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	DTC Troubleshooting (see page 11-295)
P1683 (40)	——	Throttle Valve Default Position Spring Performance Problem	ON	DTC Troubleshooting (see page 11-298)
P1684 (40)	——	Throttle Valve Return Spring Performance Problem	ON	DTC Troubleshooting (see page 11-299)
P16BB	——	Alternator B Terminal Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-197)
P16BC	——	Alternator FR Terminal Circuit/IGP Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-198)
P16BD ^{*3}	——	Starter Cut Relay 2 Malfunction	OFF	DTC Troubleshooting (see page 11-168)
P16BD ^{*4}	——	Starter Cut Relay 2 Malfunction	OFF	DTC Troubleshooting (see page 11-170)
P16BE ^{*3}	——	Starter Cut Relay 1 Malfunction	OFF	DTC Troubleshooting (see page 11-201)
P16BE ^{*4}	——	Starter Cut Relay 1 Malfunction	OFF	DTC Troubleshooting (see page 11-203)
P16BF ^{*3}	——	Starter Cut Relay STRLY Circuit Malfunction	OFF	DTC Troubleshooting (see page 11-205)
P16BF ^{*4}	——	Starter Cut Relay STRLY Circuit Malfunction	OFF	DTC Troubleshooting (see page 11-209)
P16E1 ^{*3}	——	+B Cut Relay Circuit Malfunction	OFF	DTC Troubleshooting (see page 11-212)
P2101 (40)	——	Electronic Throttle Control System (ETCS) Malfunction	ON	DTC Troubleshooting (see page 11-300)

NOTE: The above DTCs are indicated when the PGM-FI system is selected with the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS. Some DTCs do not cause the MIL to blink when the SCS line is jumped. The last four characters of these DTCs are shown in the gauge display.

*1: Without SH-AWD

*2: With SH-AWD

*3: M/T

*4: A/T

*5: '09 model with SH-AWD

(cont'd)

Fuel and Emissions Systems

DTC Troubleshooting Index (cont'd)

DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2118 (40)	—	Throttle Actuator Current Range/Performance Problem	ON	DTC Troubleshooting (see page 11-303)
P2122 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-305)
P2123 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit High Voltage	ON	DTC Troubleshooting (see page 11-308)
P2127 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-309)
P2128 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit High Voltage	ON	DTC Troubleshooting (see page 11-312)
P2135 (7)	—	Throttle Position (TP) Sensor A/B Incorrect Voltage Correlation	ON	DTC Troubleshooting (see page 11-313)
P2138 (37)	—	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position (TP) Sensor D/E) Incorrect Voltage Correlation	ON	DTC Troubleshooting (see page 11-315)
P2176 (40)	—	Throttle Actuator Control System Idle Position Not Learned	ON	DTC Troubleshooting (see page 11-316)
P2183 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-213)
P2184 (192)	—	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-215)
P2185 (192)	—	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	DTC Troubleshooting (see page 11-216)
P2195 (155)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Signal Stuck Lean	ON	DTC Troubleshooting (see page 11-219)
P2197 (156)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Signal Stuck Lean	ON	DTC Troubleshooting (see page 11-219)
P2227 (13)	○	Barometric Pressure (BARO) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-220)
P2228 (13)	○	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-222)
P2229 (13)	○	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-222)
P2237 (155)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Circuit High Voltage	ON	DTC Troubleshooting (see page 11-223)
P2238 (155)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-225)
P2240 (156)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Circuit High Voltage	ON	DTC Troubleshooting (see page 11-223)
P2241 (156)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-225)
P2243 (155)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Circuit High Voltage	ON	DTC Troubleshooting (see page 11-227)
P2245 (155)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-229)
P2247 (156)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Circuit High Voltage	ON	DTC Troubleshooting (see page 11-227)
P2249 (156)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-229)
P2251 (155)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Circuit High Voltage	ON	DTC Troubleshooting (see page 11-231)
P2252 (155)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-233)

NOTE: The above DTCs are indicated when the PGM-FI system is selected with the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS. Some DTCs do not cause the MIL to blink when the SCS line is jumped. The last four characters of these DTCs are shown in the gauge display.

*1: Without SH-AWD

*2: With SH-AWD

*3: M/T

*4: A/T

*5: '09 model with SH-AWD



DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2254 (156)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Circuit High Voltage	ON	DTC Troubleshooting (see page 11-231)
P2255 (156)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-233)
P2279 (109)	○	Intake Air System Leak	ON	DTC Troubleshooting (see page 11-446)
P2413 (12)	○	Exhaust Gas Recirculation (EGR) System Malfunction	ON	DTC Troubleshooting (see page 11-439)
P2422 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Stuck Closed Malfunction	ON	DTC Troubleshooting (see page 11-475)
P2610 (132)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Ignition Off Internal Timer Malfunction	ON	DTC Troubleshooting (see page 11-235)
P2646 (22)	—	Rocker Arm Oil Pressure Switch Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-321)
P2647 (22)	—	Rocker Arm Oil Pressure Switch Circuit High Voltage	ON	DTC Troubleshooting (see page 11-323)
P2648 (21)	—	Rocker Arm Oil Control Solenoid Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-325)
P2649 (21)	—	Rocker Arm Oil Control Solenoid Circuit High Voltage	ON	DTC Troubleshooting (see page 11-327)
P2A00 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-235)
P2A03 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-235)
U0029 (126)	—	F-CAN Malfunction (BUS-OFF (Engine Control Module (ECM)/Powertrain Control Module (PCM)))	ON	DTC Troubleshooting (see page 11-236)
U0114 ^{*2}	—	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-SH-AWD Control Unit)	OFF	DTC Troubleshooting (see page 11-237)
U0122	—	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-VSA Modulator-Control Unit)	OFF	DTC Troubleshooting (see page 11-238)
U0131	—	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-EPS Control Unit)	OFF	DTC Troubleshooting (see page 11-240)
U0155 (126)	—	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-Gauge Control Module)	ON	DTC Troubleshooting (see page 11-241)

NOTE: The above DTCs are indicated when the PGM-FI system is selected with the HDS.

Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS. Some DTCs do not cause the MIL to blink when the SCS line is jumped. The last four characters of these DTCs are shown in the gauge display.

*1: Without SH-AWD

*2: With SH-AWD

*3: M/T

*4: A/T

*5: '09 model with SH-AWD

Fuel and Emissions Systems

Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-84). 2. Test the starter (see page 4-17). 3. Check the fuel pressure (see page 11-369). 4. '09 model without SH-AWD, '10 model: Troubleshoot the fuel pump circuit (see page 11-361).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken timing belt • Fuel contamination
Engine will not start (MIL comes on and stays on, no DTCs set)	Troubleshoot the DLC circuit (see page 11-258).	• No power to ECM/PCM • No ground to ECM/PCM
MIL comes on and stays on, or never comes on at all, no DTCs set	Troubleshoot the MIL circuit (see page 11-257).	
Engine will not start (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system: • Without keyless access system (see page 22-435). • With keyless access system (see page 22-555).	
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system: • Without keyless access system (see page 22-435). • With keyless access system (see page 22-555).	
Engine is hard to start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-84). 2. Check the fuel pressure (see page 11-369). 3. Clean the throttle body (see page 11-421).	• Low compression • Intake air leaks • Fuel contamination • Weak spark
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-337). 2. Check the idle speed (see page 11-336). 3. Clean the throttle body (see page 11-421).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-337). 2. Check the idle speed (see page 11-336). 3. Do the throttle position learning check (see page 11-420).	Intake air leaks
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-337). 2. Check the idle speed (see page 11-336). 3. Do the carbon accumulation check (see page 11-420). 4. Troubleshoot the A/C signal circuit (see page 11-333).	• Incorrect valve timing or clearance adjustment • Intake air leaks
After warming up, idle speed is below specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see page 11-334). 2. Do the carbon accumulation check (see page 11-420).	Incorrect valve adjustment
After warming up, idle speed is above specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see page 11-334). 2. Inspect the APP sensor (see page 11-318).	Intake air leaks
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see page 11-369).	• Low compression • Incorrect camshaft timing • Incorrect engine oil level • Exhaust restriction

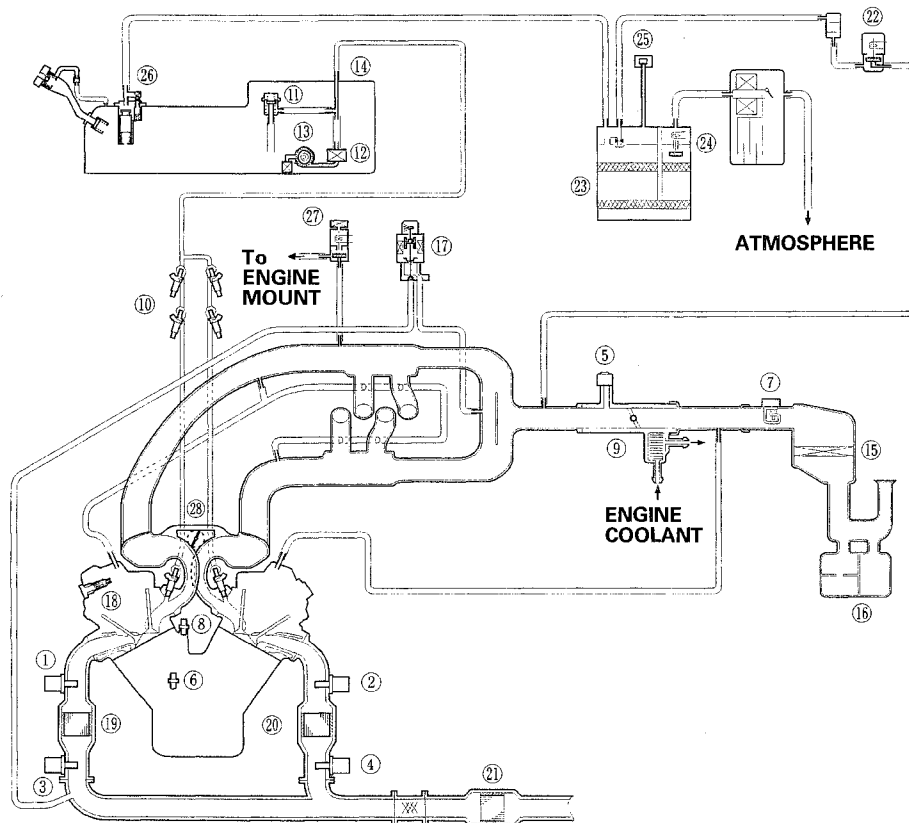


Symptom	Diagnostic procedure	Also check for
Engine stalls (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-337). 2. Check the fuel pressure (see page 11-369). 3. Check the idle speed (see page 11-336). 4. Troubleshoot the brake pedal position switch signal circuit (see page 11-335).	• Intake air leaks • Faulty harness and sensor connections
Difficult to refuel (MIL works OK, no DTCs set)	1. Check the fuel vent tube between the EVAP canister and the fuel tank. 2. Check the fuel tank vapor recirculation tube between the fuel pipe and the fuel tank. 3. Replace the fuel tank: • Without SH-AWD (see page 11-402). • With SH-AWD (see page 11-404).	Malfunctioning gas station filling nozzle
Fuel overflows during refueling (No DTCs set)	Replace the fuel tank.	Malfunctioning gas station filling nozzle
Fuel cap warning message stays on (MIL works OK, no DTCs set)	Troubleshoot the fuel cap warning message system (see page 11-478).	
HDS does not communicate with the ECM/PCM or the vehicle	Troubleshoot the DLC circuit (see page 11-258).	Correct HDS software

Fuel and Emissions Systems

System Description

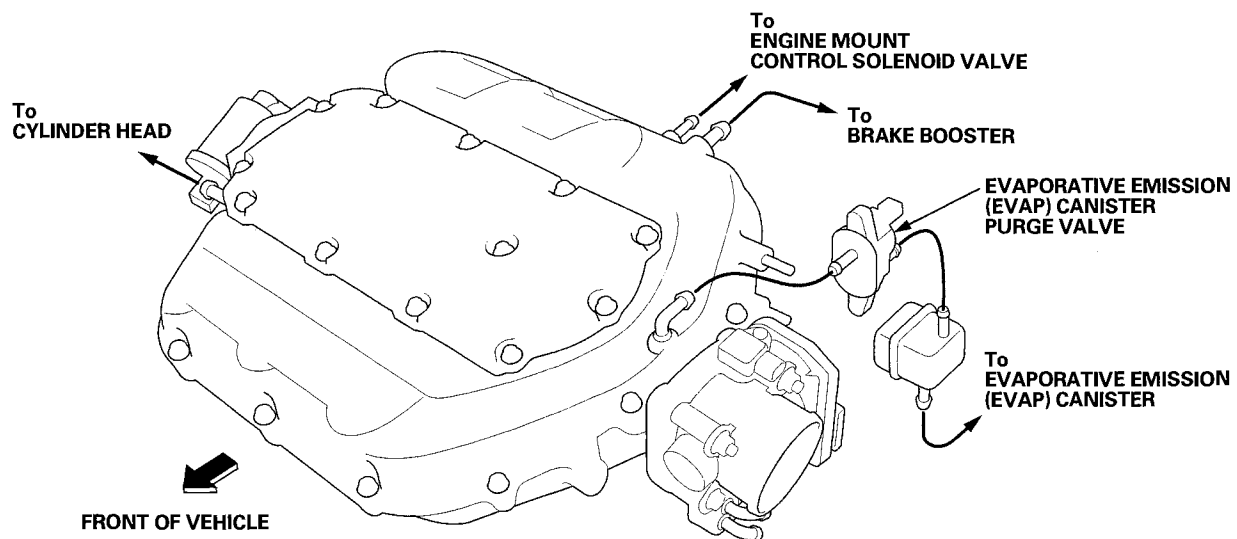
Fuel and Emissions Systems Diagram



- | | |
|---|--|
| ① FRONT AIR FUEL RATIO (A/F) SENSOR (BANK 2, SENSOR 1) | ①⑥ INTAKE AIR RESONATOR |
| ② REAR AIR FUEL RATIO (A/F) SENSOR (BANK 1, SENSOR 1) | ①⑦ EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR |
| ③ FRONT SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO ₂ S) (BANK 2, SENSOR 2) | ①⑧ POSITIVE CRANKCASE VENTILATION (PCV) VALVE |
| ④ REAR SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO ₂ S) (BANK 1, SENSOR 2) | ①⑨ FRONT WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 2) |
| ⑤ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR | ②① REAR WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 1) |
| ⑥ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 | ②② UNDER-FLOOR THREE WAY CATALYTIC CONVERTER (TWC) |
| ⑦ MASS AIR FLOW (MAF) SENSOR/ INTAKE AIR TEMPERATURE (IAT) SENSOR | ②③ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE |
| ⑧ KNOCK SENSOR | ②④ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE |
| ⑨ THROTTLE BODY | ②⑤ FUEL TANK PRESSURE (FTP) SENSOR |
| ⑩ INJECTOR | ②⑥ FUEL TANK VAPOR CONTROL VALVE |
| ⑪ FUEL PRESSURE REGULATOR | ②⑦ ENGINE MOUNT CONTROL SOLENOID VALVE |
| ⑫ FUEL FILTER | ②⑧ INTAKE MANIFOLD TUNING (IMT) VALVE |
| ⑬ FUEL PUMP | |
| ⑭ FUEL TANK | |
| ⑮ AIR CLEANER | |



Vacuum Hose Routing



Fuel and Emissions Systems

System Description (cont'd)

Electronic Control Systems

The functions of the fuel and emission control systems are managed by the engine control module (ECM) on vehicle with manual transmissions or the powertrain control module (PCM) on vehicle with automatic transmissions.

Self-diagnosis

The ECM/PCM detects the failure of a signal from a sensor or from another control unit and stores a Pending DTC or a Confirmed DTC. Depending on the failure, a Confirmed DTC is stored in either the first or the second drive cycle. When a Confirmed DTC is stored, the ECM/PCM turns on the malfunction indicator lamp (MIL) by a signal sent to the gauge via F-CAN.

- **One Drive Cycle Detection Method**

When an abnormality occurs in the signal from a sensor or from another control unit, the ECM/PCM stores a Confirmed DTC and turns on the MIL immediately.

- **Two Drive Cycle Detection Method**

When an abnormality occurs in the signal from a sensor or from another control unit in the first drive cycle, the ECM/PCM stores a Pending DTC. The MIL does not come on at this time. If the failure continues in the second drive cycle, the ECM/PCM stores a Confirmed DTC and turns on the MIL.

Fail-safe Function

When an abnormality occurs in the signal from a sensor or from another control unit, the ECM/PCM ignores that signal and substitutes a pre-programmed value for them that allows the engine to continue running. This causes a Confirmed DTC to be stored and the MIL to come on.

MIL Bulb Check and Readiness Code Condition

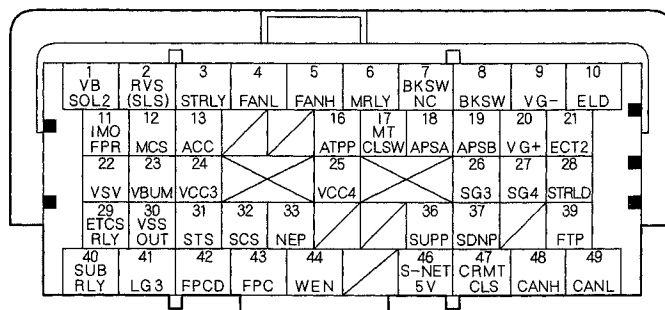
When the ignition switch is turned to ON (II), or press the engine start/stop button to select the ON mode, the ECM/PCM turns on the MIL via the F-CAN circuit for about 15 to 20 seconds to check the bulb condition. If any readiness codes are not set to complete, the MIL flashes five times. If all readiness codes are set to complete, the MIL goes off.

Self Shut Down (SSD) Mode

After the ignition switch is turned to LOCK (0), or the engine start/stop button is pressed to select the OFF mode, the ECM/PCM stays on (about 40 minutes). If the ECM/PCM connector is disconnected during this time, the ECM/PCM may be damaged. To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the HDS after the ignition switch is turned to LOCK (0), or the engine start/stop button is pressed to select the OFF mode.



ECM/PCM Inputs and Outputs at ECM/PCM Connector A () (49P)



Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
1 ^{*2}	PUR	VBSOL2 (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valve	With ignition switch ON (II)/vehicle in ON mode: battery voltage
2 ^{*1}	WHT	RVS (REVERSE LOCKOUT SOLENOID)	Drives reverse lockout solenoid	With vehicle speed below 9 mph (15 km/h): battery voltage With vehicle speed above 12 mph (20 km/h): about 0 V
2 ^{*2}	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II)/vehicle in ON mode, in P, brake pedal pressed, and accelerator pedal released: about 0 V
3	LT GRN	STRLY (STARTER RELAY)	Drives starter cut relay	With ignition switch ON (II)/vehicle in ON mode: about 0 V
4	GRN	FANL (RADIATOR FAN CONTROL)	Drives A/C condenser fan relay	With condenser fan running: about 0 V With condenser fan stopped: battery voltage
5	BRN	FANH (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running at high speed: about 0 V With radiator fan stopped or running at low speed: battery voltage
6	RED	MRLY (PGM-FI MAIN RELAY 1)	Drives PGM-FI main relay 1	With ignition switch ON (II)/vehicle in ON mode: about 0 V With ignition switch in LOCK (0)/vehicle in OFF mode: battery voltage
7	ORN	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With ignition switch ON (II)/vehicle in ON mode and brake pedal released: battery voltage With ignition switch ON (II)/vehicle in ON mode and brake pedal pressed: about 0 V
8	LT GRN	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
9	LT BLU	VG- (MASS AIR FLOW (MAF) SENSOR - SIDE)	Ground for MAF sensor signal	

*1: M/T

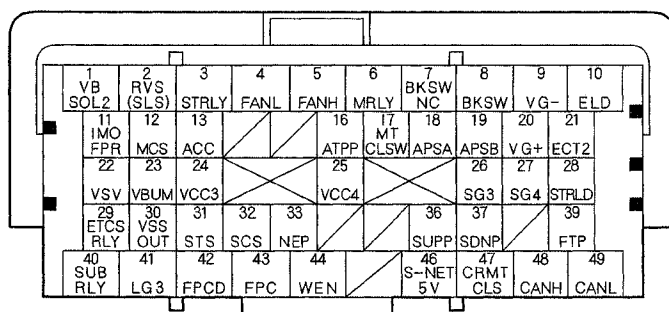
*2: A/T

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Fuel and Emissions Systems

System Description (cont'd)

ECM/PCM Inputs and Outputs at ECM/PCM Connector A () (49P)



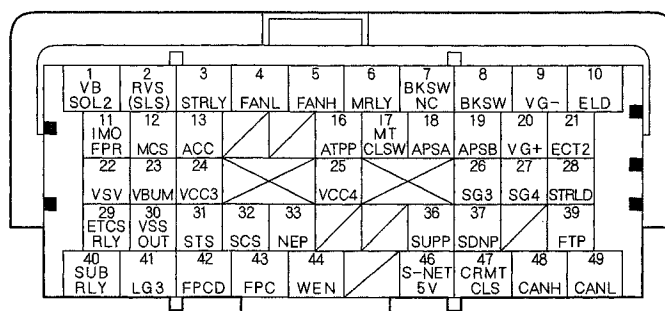
Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
10	BLU	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II)/vehicle in ON mode: about 0.1—4.8 V (depending on electrical load)
11	GRY	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II)/vehicle in ON mode, then battery voltage
12	LT BLU	MCS (ENGINE MOUNT CONTROL SOLENOID VALVE)	Drives engine mount control solenoid valve	At idle: about 0 V Above idle: battery voltage
13	GRY	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
16	RED	ATPP (TRANSMISSION RANGE SWITCH P)	Detects transmission range switch P position signal	In P: about 0 V In any position other than P: more than 5.0 V
17 ^{*1}	PNK	MTCLSW (CLUTCH PEDAL POSITION SWITCH A)	Detects clutch pedal position switch A signal	With vehicle in ON mode and clutch pedal pressed: about 0 V With vehicle in ON mode and clutch pedal released: battery voltage
18	GRN	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II)/vehicle in ON mode and accelerator pedal pressed: about 4.7 V With ignition switch ON (II)/vehicle in ON mode and accelerator pedal released: about 1.0 V
19	PNK	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II)/vehicle in ON mode and accelerator pedal pressed: about 2.3 V With ignition switch ON (II)/vehicle in ON mode and accelerator pedal released: about 0.5 V

*1: M/T



ECM/PCM Inputs and Outputs at ECM/PCM Connector A () (49P)



Terminal side of female terminals

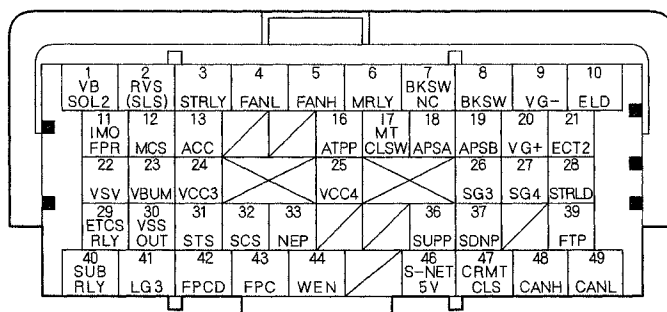
Terminal number	Wire color	Terminal name	Description	Signal
20	BRN	VG+ (MASS AIR FLOW (MAF) SENSOR +SIDE)	Detects MAF sensor signal	At idle with warmed up engine and no electrical load: about 1.1 – 1.6 V (between VG+ terminal and VG – terminal)
21	RED	ECT2 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II)/vehicle in ON mode: about 0.1 – 4.8 V (depending on engine coolant temperature)
22	RED	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II)/vehicle in ON mode: battery voltage
23	YEL	VBUM (VOLTAGE BACK UP)	Power source for ECM/PCM memory	Battery voltage at all times
24	RED	VCC3 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II)/vehicle in ON mode: about 5.0 V
25	BRN	VCC4 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II)/vehicle in ON mode: about 5.0 V
26	BLU	SG3 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
27	GRN	SG4 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
28	PNK	STRLD	Detects starter cut relay	With starter ON: battery voltage
29	WHT	ETCSRLY (ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY)	Drives electronic throttle control system (ETCS) control relay	With ignition switch ON (II)/vehicle in ON mode: about 0 V

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Fuel and Emissions Systems

System Description (cont'd)

ECM/PCM Inputs and Outputs at ECM/PCM Connector A () (49P)



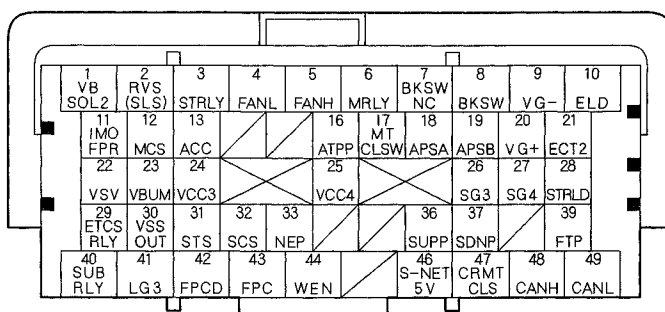
Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
30	BLU	VSSOUT (VEHICLE SPEED SIGNAL OUTPUT)	Sends vehicle speed signal	Depending on vehicle speed: pulses
31	LT GRN	STS (STARTER SWITCH SIGNAL)	Detects starter switch signal	With ignition switch in START (III)/vehicle in START mode: battery voltage With ignition switch in any position other than START (III)/vehicle in any mode other than START mode: about 0 V
32	ORN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted with the HDS: about 0 V With service check signal opened: about 5.0 V
33	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
36*2	BRN	SUPP (PADDLE SHIFTER+ (UPSHIFT SWITCH))	Detects paddle shifter+ (upshift switch) signal	With ignition switch ON (II)/vehicle in ON mode, and paddle shifter+ (upshift switch) pressed: about 0 V With ignition switch ON (II)/vehicle in ON mode, and paddle shifter+ (upshift switch) released: battery voltage
37*2	PUR	SDNP (PADDLE SHIFTER- (DOWNSHIFT SWITCH))	Detects paddle shifter- (downshift switch) signal	With ignition switch ON (II)/vehicle in ON mode, and paddle shifter- (downshift switch) pressed: about 0 V With ignition switch ON (II)/vehicle in ON mode, and paddle shifter- (downshift switch) released: battery voltage
39	LT GRN	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II)/vehicle in ON mode, and fuel fill cap removed: about 2.5 V

*2: A/T



ECM/PCM Inputs and Outputs at ECM/PCM Connector A () (49P)



Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
40	GRY	SUBRLY (PGM-FI SUBRELAY)	Drives PGM-FI subrelay	With ignition switch ON (II)/vehicle in ON mode: about 0 V
41	BRN	LG3 (LOGIC GROUND)	Ground circuit for ECM/PCM	Less than 0.2 V at all times
42 ^{*3}	LT BLU	FPCD (FUEL PUMP CONTROL MODULE DIAGNOSIS)	Detects fuel pump control module diagnosis	With ignition switch ON (II)/vehicle in ON mode: about 5.0 V At idle: about 10.0 V
43 ^{*3}	PNK	FPC (FUEL PUMP CONTROL)	Sends fuel pump control module control signal	With ignition switch ON (II)/vehicle in ON mode: pulses With ignition switch OFF/vehicle in OFF mode: about 0 V
44	RED	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II)/vehicle in ON mode: about 0 V
46	LT GRN	S-NET5V (SERIAL COMMUNICATION FOR IMMOBILIZER)	Sends serial communication signal	With ignition switch ON (II)/vehicle in ON mode: pulses (about 4.4 V) With key removed from ignition switch or vehicle in OFF mode: about 1.4 V
47 ^{*1}	BRN	CRMTCLS (CLUTCH PEDAL POSITION SWITCH B)	Detects clutch pedal position switch B signal	With vehicle in ON mode and clutch pedal pressed: battery voltage With vehicle in ON mode and clutch pedal released: about 0 V
48	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II)/vehicle in ON mode: pulses
49	BLK	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II)/vehicle in ON mode: pulses

*1: M/T

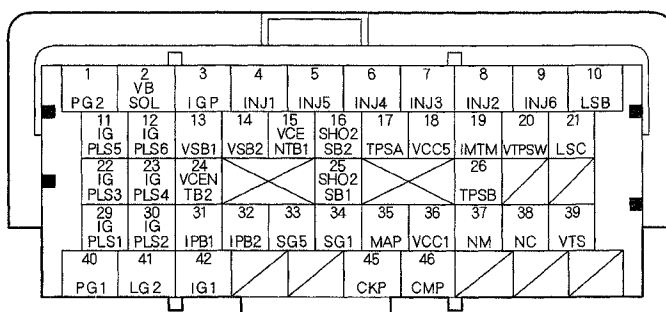
*3: '09 model with SH-AWD

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Fuel and Emissions Systems

System Description (cont'd)

ECM/PCM Inputs and Outputs at ECM/PCM Connector B (△) (49P)



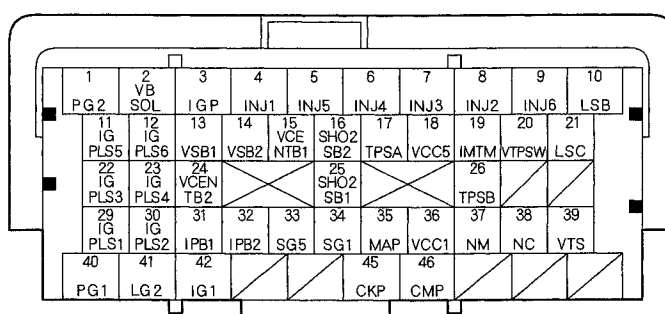
Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PG2 (POWER GROUND)	Ground circuit for ECM/PCM	Less than 0.2 V at all times
2	BLK/YEL	VBSOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valves	With ignition switch ON (II)/vehicle in ON mode: battery voltage
3	YEL/BLK	IGP (POWER SOURCE)	Power source for ECM/PCM circuit	With ignition switch ON (II)/vehicle in ON mode: battery voltage
4	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled
5	BLK/RED	INJ5 (No. 5 INJECTOR)	Drives No. 5 injector	With ignition switch ON (II)/vehicle in ON mode: battery voltage
6	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
7	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
8	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
9	WHT/BLU	INJ6 (No. 6 INJECTOR)	Drives No. 6 injector	
10*2	BRN/WHT	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II)/vehicle in ON mode: current controlled

*2: A/T



ECM/PCM Inputs and Outputs at ECM/PCM Connector B (△) (49P)



Terminal side of female terminals

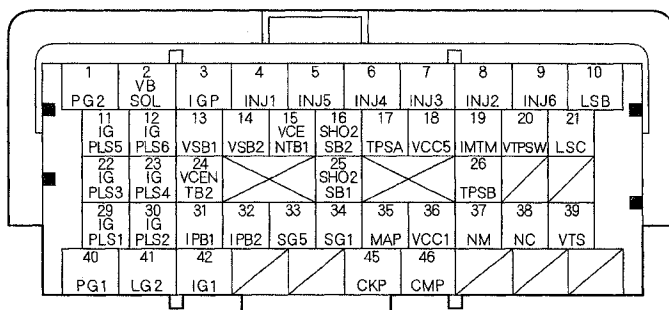
Terminal number	Wire color	Terminal name	Description	Signal
11	BLK/RED	IGPLS5 (No. 5 IGNITION COIL PULSE)	Drives No. 5 ignition coil	With ignition switch ON (II)/vehicle in ON mode: about 0 V With engine running: pulses
12	BRN/WHT	IGPLS6 (No. 6 IGNITION COIL PULSE)	Drives No. 6 ignition coil	
13	BLU	VS1 (VS CELL+ BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) VS CELL signal	With warmed up engine running: about 3.4—4.8 V
14	RED/BLU	VS2 (VS CELL+ BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) VS CELL signal	With warmed up engine running: about 3.4—4.8 V
15	RED	VCENTB1 (VIRTUAL GROUND BANK 1)	Reference voltage for rear A/F sensor (Bank 1, sensor 1)	With warmed up engine at idle: about 3.4—3.8 V
16	WHT	SHO2SB2 (FRONT SECONDARY HEATED OXYGEN SENSOR (FRONT SECONDARY HO2S) (BANK 2, SENSOR 2))	Detects front secondary HO2S (Bank 2, sensor 2) signal	With throttle fully opened from idle and warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
17	RED/BLK	TPSA (THROTTLE POSITION (TP) SENSOR A)	Detects TP sensor A signal	With throttle fully open: about 3.9 V With throttle fully closed: about 0.6 V
18	BLU	VCC5 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II)/vehicle in ON mode: about 5.0 V

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Fuel and Emissions Systems

System Description (cont'd)

ECM/PCM Inputs and Outputs at ECM/PCM Connector B (△) (49P)



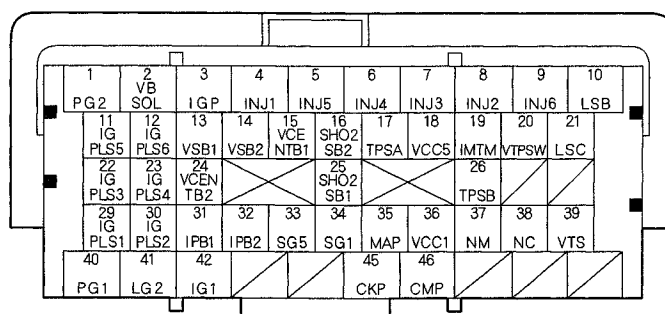
Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
19	WHT/BLK	IMTM (INTAKE MANIFOLD TUNING (IMT) VALVE MONITOR)	Detects IMT valve position	With ignition switch ON (II)/vehicle in ON mode: about 5.0 V With engine speed above 3,950 rpm (J35Z6 engine) or 4,000 rpm (J37A4 engine): about 0 V
20	BLU/BLK	VTPSW (ROCKER ARM OIL PRESSURE SWITCH)	Detects rocker arm oil pressure switch signal	At idle: about 0 V
21 ^{*2}	GRN/RED	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II)/vehicle in ON mode: current controlled
22	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	With ignition switch ON (II)/vehicle in ON mode: about 0 V
23	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	With engine running: pulses
24	RED/WHT	VCENTB2 (VIRTUAL GROUND BANK 2)	Reference voltage for front A/F sensor (Bank 2, sensor 1)	With warmed up engine at idle: about 3.4—4.8 V
25	GRN	SHO2SB1 (REAR SECONDARY HEATED OXYGEN SENSOR (REAR SECONDARY HO2S) (BANK 1, SENSOR 2))	Detects rear secondary HO2S (Bank 1, sensor 2) signal	With throttle fully opened from idle and warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V

*2: A/T



ECM/PCM Inputs and Outputs at ECM/PCM Connector B (△) (49P)



Terminal side of female terminals

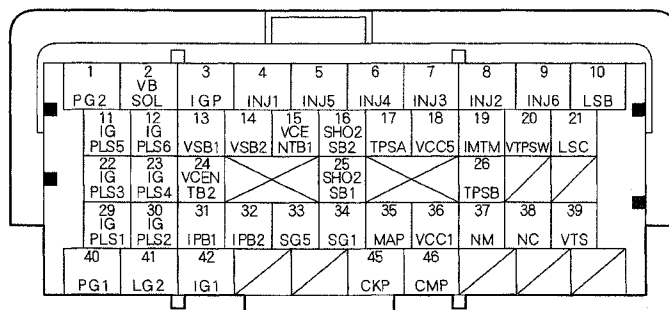
Terminal number	Wire color	Terminal name	Description	Signal
26	RED/BLU	TPSB (THROTTLE POSITION (TP) SENSOR B)	Detects TP sensor B signal	With throttle fully open: about 4.1 V With throttle fully closed: about 1.7 V
29	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	With ignition switch ON (II)/vehicle in ON mode: about 0 V With engine running: pulses
30	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
31	GRN	IPB1 (IP CELL+ BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) pump cell	With engine running: about 2.0–5.6 V
32	GRN/RED	IPB2 (IP CELL+ BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) pump cell	With engine running: about 2.0–5.6 V
33	GRN	SG5 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
34	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
35	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II)/vehicle in ON mode: about 3.0 V At idle: about 1.0 V (depending on engine speed)
36	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II)/vehicle in ON mode: about 5.0 V
37	RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signals	With ignition switch ON (II)/vehicle in ON mode: about 0 V or about 5.0 V With engine running in N: about 2.5 V

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Fuel and Emissions Systems

System Description (cont'd)

ECM/PCM Inputs and Outputs at ECM/PCM Connector B (△) (49P)

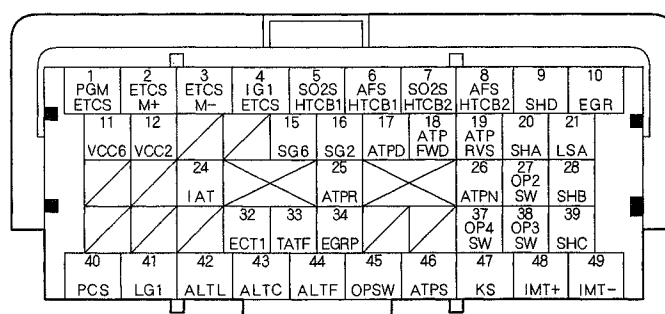


Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
38	BLU	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signal	With ignition switch ON (II)/vehicle in ON mode: about 0 V or about 5.0 V While driving: about 2.5 V (pulses)
39	GRN/YEL	VTS (ROCKER ARM OIL CONTROL SOLENOID)	Drives rocker arm oil control solenoid	At idle: about 0 V
40	BLK	PG1 (POWER GROUND)	Ground circuit for ECM/PCM	Less than 0.2 V at all times
41	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for ECM/PCM	Less than 0.2 V at all times
42	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II)/vehicle in ON mode: battery voltage
45	BLU	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
46	GRN	CMP (CAMSHAFT POSITION (CMP) SENSOR)	Detects CMP sensor signal	With engine running: pulses



ECM/PCM Inputs and Outputs at ECM/PCM Connector C (○) (49P)



Terminal side of female terminals

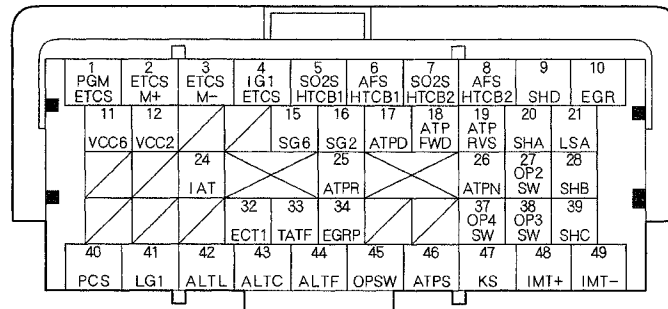
Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PGMETCS (POWER GROUND ETCS)	Ground circuit for ECM/PCM	Less than 0.2 V at all times
2	BLU	ETCSM+ (THROTTLE ACTUATOR + SIDE)	Drives throttle actuator	With ignition switch ON (II)/vehicle in ON mode: about 0 V
3	GRN	ETCSM- (THROTTLE ACTUATOR - SIDE)	Ground for throttle actuator	With ignition switch ON (II)/vehicle in ON mode: about 0 V
4	YEL/GRN	IG1ETCS (IGNITION SIGNAL ETCS)	Detects ignition signal	With ignition switch ON (II)/vehicle in ON mode: battery voltage
5	BLK/WHT	SO2SHTCB1 (REAR SECONDARY HEATED OXYGEN SENSOR (REAR SECONDARY HO2S) (BANK 1, SENSOR 2) HEATER CONTROL)	Drives rear secondary HO2S (Bank 1, sensor 2) heater	With ignition switch ON (II)/vehicle in ON mode: battery voltage With warmed up engine running: duty controlled
6	BLK/WHT	AFSHTCB1 (REAR AIR FUEL RATIO (REAR A/F) SENSOR (BANK 1, SENSOR 1) HEATER CONTROL)	Drives rear A/F sensor (Bank 1, sensor 1) heater	With ignition switch ON (II)/vehicle in ON mode: battery voltage With warmed up engine running: about 0 V or duty controlled

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Fuel and Emissions Systems

System Description (cont'd)

ECM/PCM Inputs and Outputs at ECM/PCM Connector C (○) (49P)



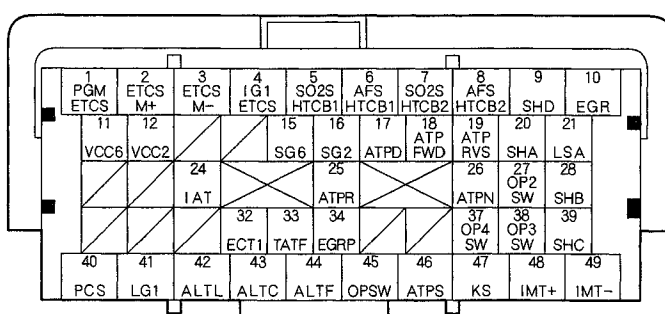
Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
7	GRN/RED	SO2SHTCB2 (FRONT SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (BANK 2, SENSOR 2) HEATER CONTROL)	Drives front secondary HO2S (Bank 2, sensor 2) heater	With ignition switch ON (II)/vehicle in ON mode: battery voltage With warmed up engine running: duty controlled
8	GRN/WHT	AFSHTCB2 (FRONT AIR FUEL RATIO (FRONT A/F) SENSOR (BANK 2, SENSOR 1) HEATER CONTROL)	Drives front A/F sensor (Bank 2, sensor 1) heater	With ignition switch ON (II)/vehicle in ON mode: battery voltage With warmed up engine running: about 0 V or duty controlled
9 ^{*2}	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in N, in D and S during no lock-up condition: about 0 V With engine running in P and R, and in D and S during lock-up condition: battery voltage
10	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
11	YEL/BLU	VCC6 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II)/vehicle in ON mode: about 5.0 V
12	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II)/vehicle in ON mode: about 5.0 V
15	GRN/RED	SG6 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
16	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times

*2: A/T



ECM/PCM Inputs and Outputs at ECM/PCM Connector C (○) (49P)



Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
17 ^{*2}	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal	In D: about 0 V In any position other than D: about 5.0 V
18 ^{*2}	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH FWD)	Detects transmission range switch FWD position signal	In D and S: about 0 V In any position other than D and S: about 5.0 V
19 ^{*2}	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH RVS)	Detects transmission range switch RVS position signal	In P, R, and N: about 0 V In any position other than P, R, and N: about 5.0 V
20 ^{*2}	BLU/YEL	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in D, S (in 2nd and 3rd gears) and R: battery voltage With engine running in P, N, and D (in 1st, 4th, and 5th gears), and S (in 1st and 4th gears): about 0 V
21 ^{*2}	RED	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II)/vehicle in ON mode: current controlled
24	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II)/vehicle in ON mode: about 0.1–4.8 V (depending on intake air temperature)
25 ^{*2}	WHT	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal	In R: about 0 V In any position other than R: more than 5.0 V

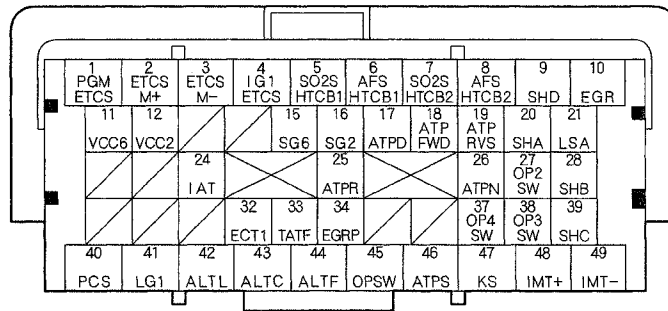
*2: A/T

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

ECM/PCM Inputs and Outputs at ECM/PCM Connector C (○) (49P)



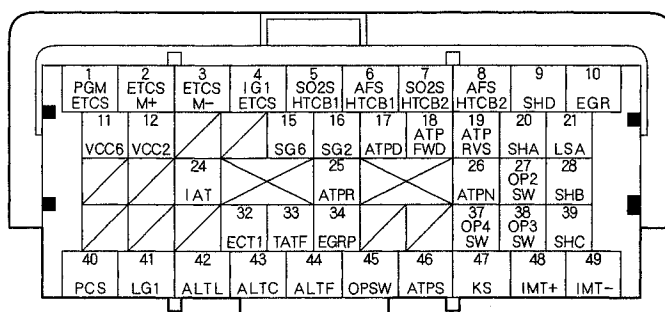
Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
26 ^{*2}	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH N)	Detects transmission range switch N position signal	In N: about 0 V In any position other than N: battery voltage
27 ^{*2}	BLU/BLK	OP2SW (TRANSMISSION FLUID PRESSURE SWITCH A (2ND CLUTCH))	Detects transmission fluid pressure switch A (2nd clutch)	With ignition switch ON (II)/vehicle in ON mode: • Without 2nd clutch pressure: battery voltage • With 2nd clutch pressure: about 0 V
28 ^{*2}	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D (in 1st, 2nd, and 5th gears), and S (1st and 2nd gears): battery voltage With engine running in D and S (in 3rd and 4th gears): about 0 V
32	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE SENSOR (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II)/vehicle in ON mode: about 0.1—4.8 V (depending on engine coolant temperature)
33 ^{*2}	BLU/YEL	TATF (ATF TEMPERATURE SENSOR)	Detects ATF temperature signal	With ignition switch ON (II)/vehicle in ON mode: about 0.2—4.0 V (about 1.8 V at operating temperature, depending on ATF temperature)

*2: A/T



ECM/PCM Inputs and Outputs at ECM/PCM Connector C (○) (49P)



Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
34	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: about 1.2–3.0 V (depending on EGR valve lift)
37 ^{*2}	BLU/YEL	OP4SW (4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 4th clutch transmission fluid pressure switch	With ignition switch ON (II)/vehicle in ON mode: • Without 4th clutch pressure: battery voltage • With 4th clutch pressure: about 0 V
38 ^{*2}	BLU/WHT	OP3SW (TRANSMISSION FLUID PRESSURE SWITCH B (3RD CLUTCH))	Detects transmission fluid pressure switch B (3rd clutch)	With ignition switch ON (II)/vehicle in ON mode: • Without 3rd clutch pressure: battery voltage • With 3rd clutch pressure: about 0 V
39 ^{*2}	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in D and S (in 1st, 3rd, and 5th gears): battery voltage With engine running in P, R, N, D, and S (in 2nd and 4th gears): about 0 V
40	RED/YEL	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 140 °F (60 °C): battery voltage With engine running, engine coolant above 140 °F (60 °C): duty controlled
41	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for ECM/PCM	Less than 0.2 V at all times

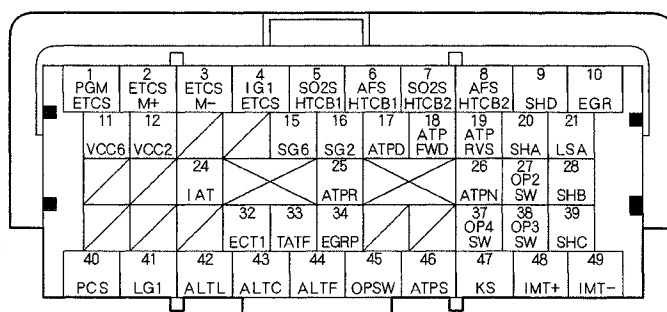
*2: A/T

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

ECM/PCM Inputs and Outputs at ECM/PCM Connector C (○) (49P)



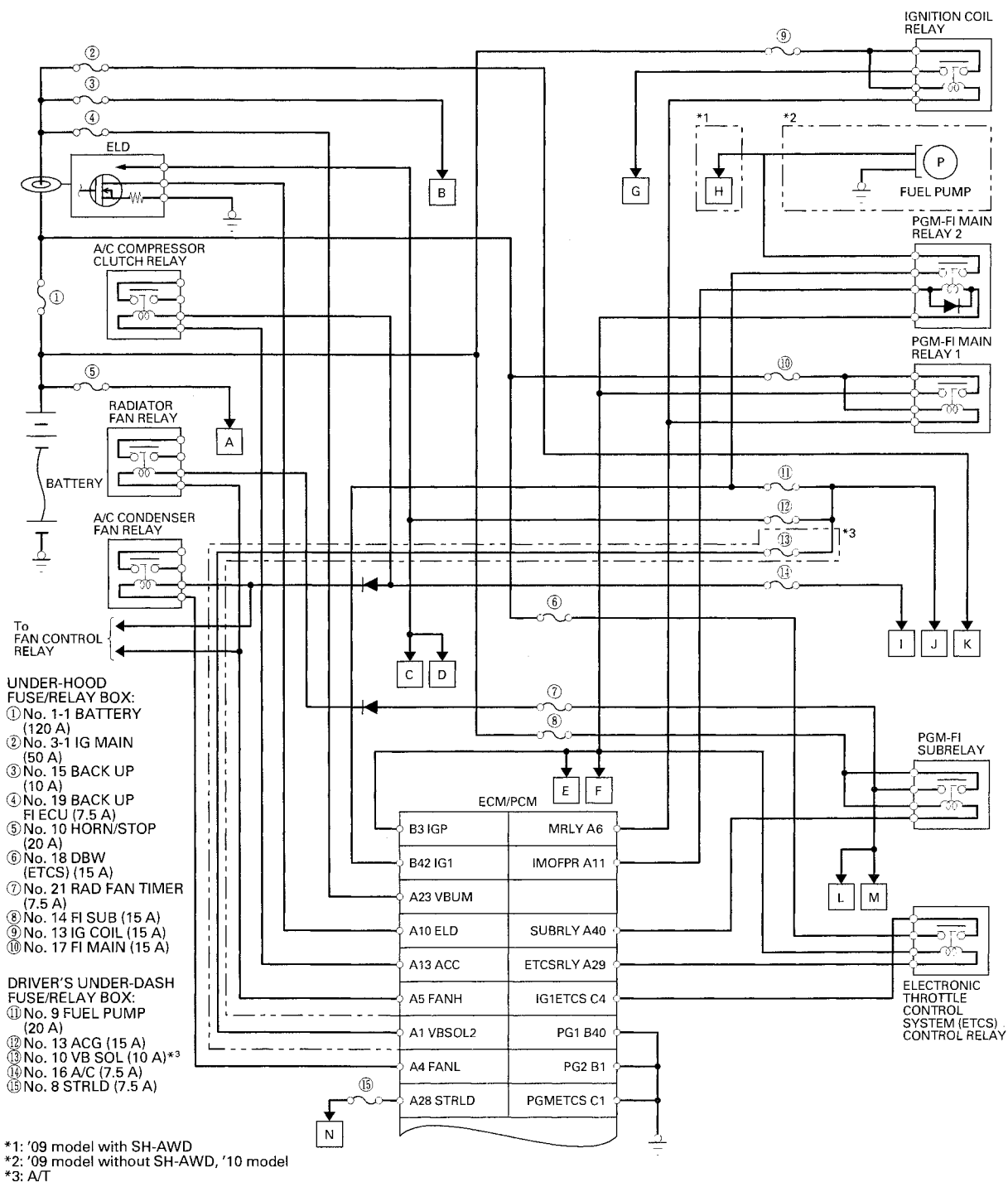
Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
42	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II)/vehicle in ON mode: about 0 V With engine running: battery voltage
43	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With warmed up engine running: about 7.5 V (depending on electrical load)
44	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 0–5.0 V (depending on electrical load)
45	BLU/YEL	OPSW (OIL PRESSURE SWITCH)	Detects engine oil pressure signal	With ignition switch ON (II)/vehicle in ON mode: battery voltage With engine running: about 0 V
46 ^{*2}	RED	ATPS (TRANSMISSION RANGE SWITCH S)	Detects transmission switch S position signal	In S: about 0 V In any position other than S: about 5.0 V
47	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
48	WHT/BLU	IMT+ (INTAKE MANIFOLD TUNING (IMT) ACTUATOR +SIDE)	Drives IMT actuator	With ignition switch ON (II)/vehicle in ON mode: about 0 V
49	WHT/RED	IMT- (INTAKE MANIFOLD TUNING (IMT) ACTUATOR -SIDE)	Drives IMT actuator	With ignition switch ON (II)/vehicle in ON mode: about 0 V

*2: A/T



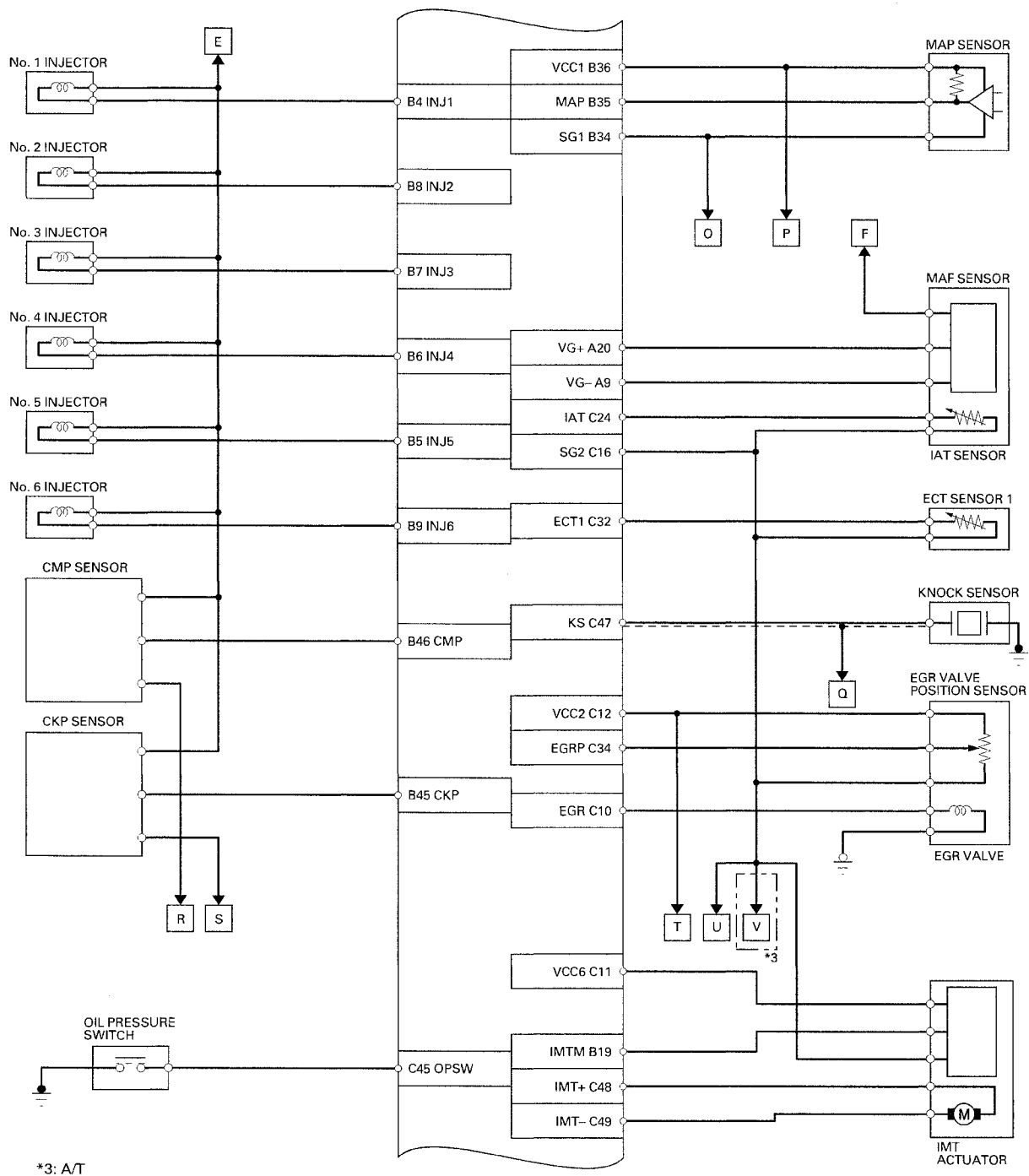
ECM/PCM Electrical Connections

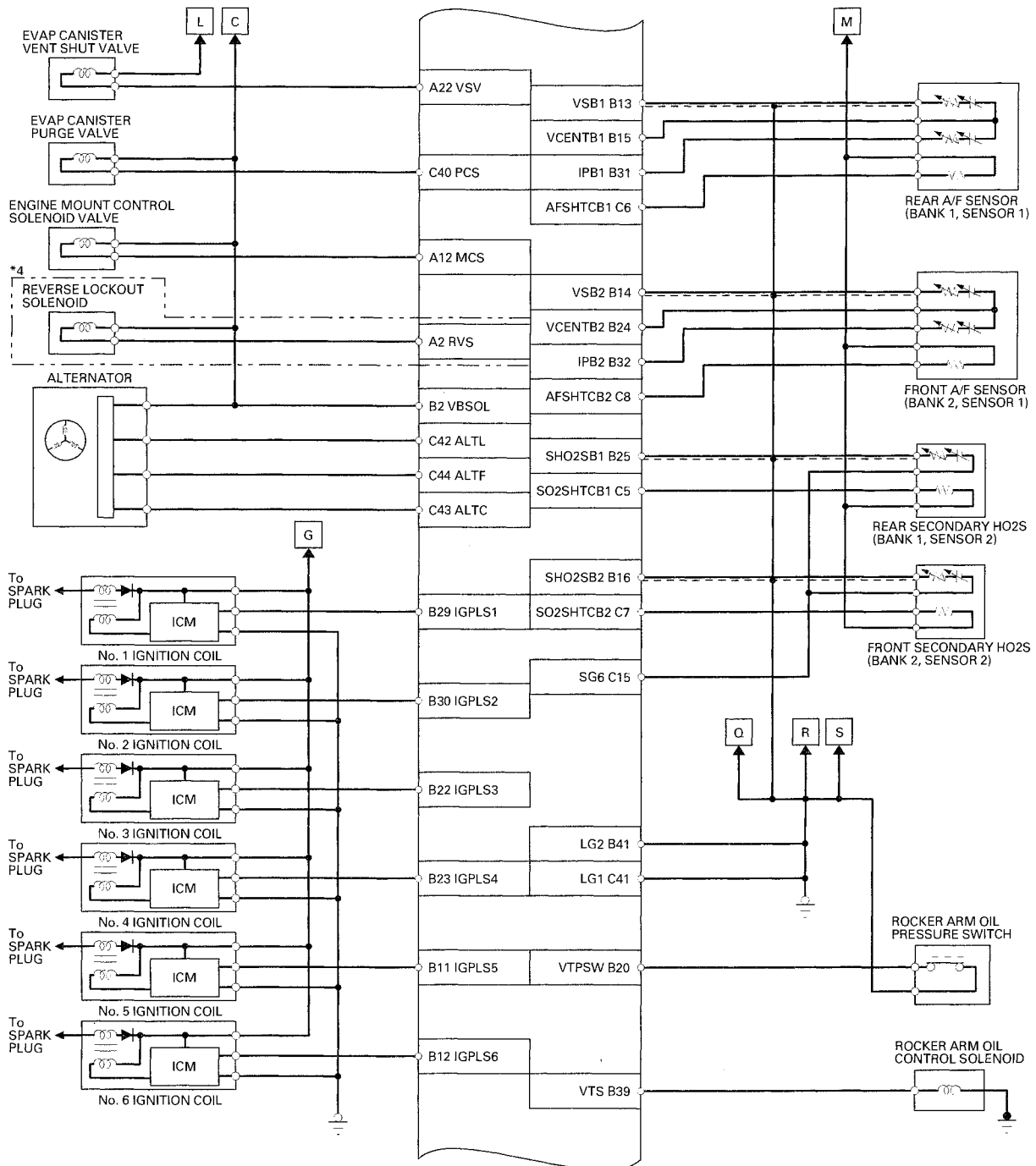


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Fuel and Emissions Systems

System Description (cont'd)

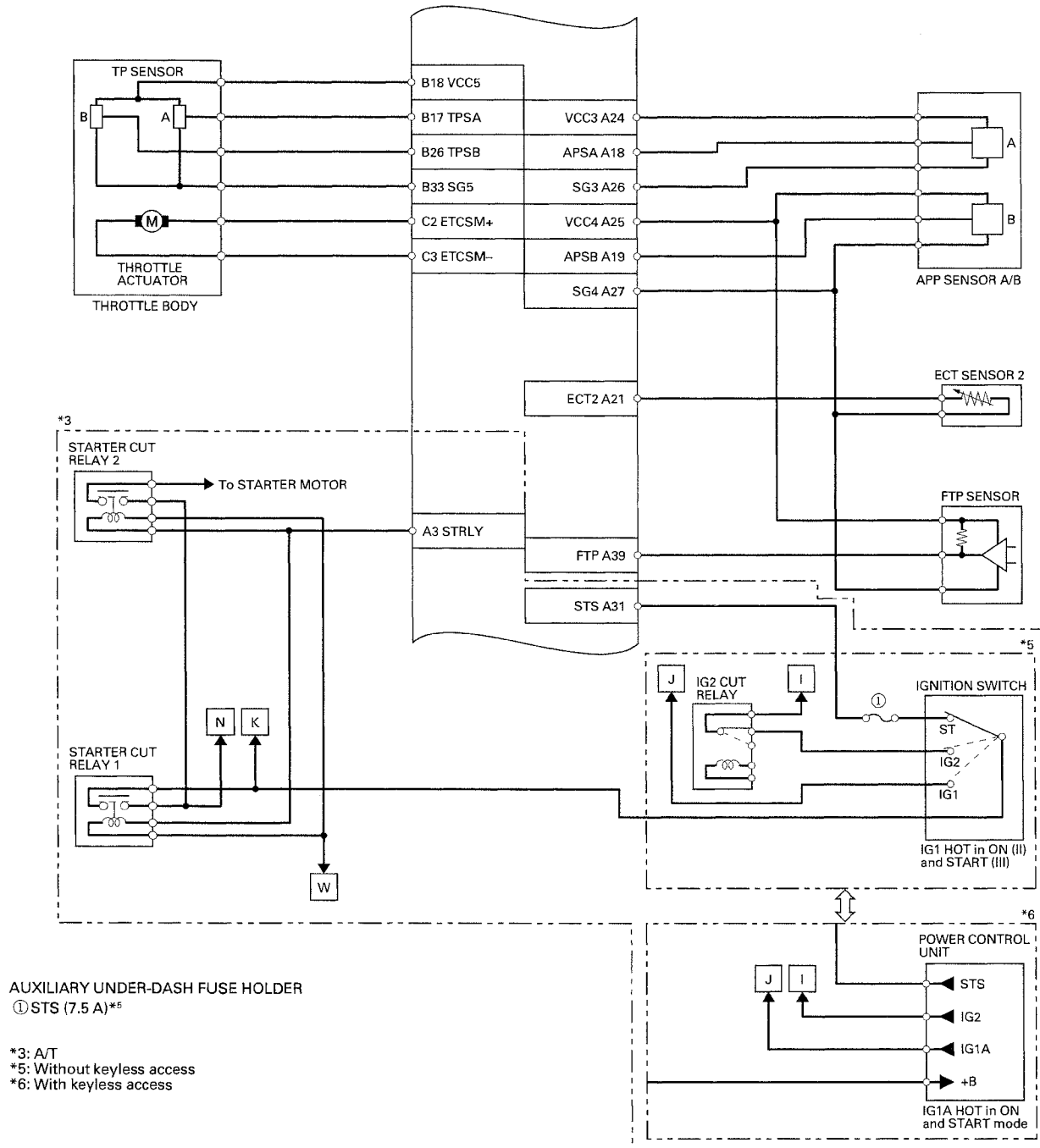


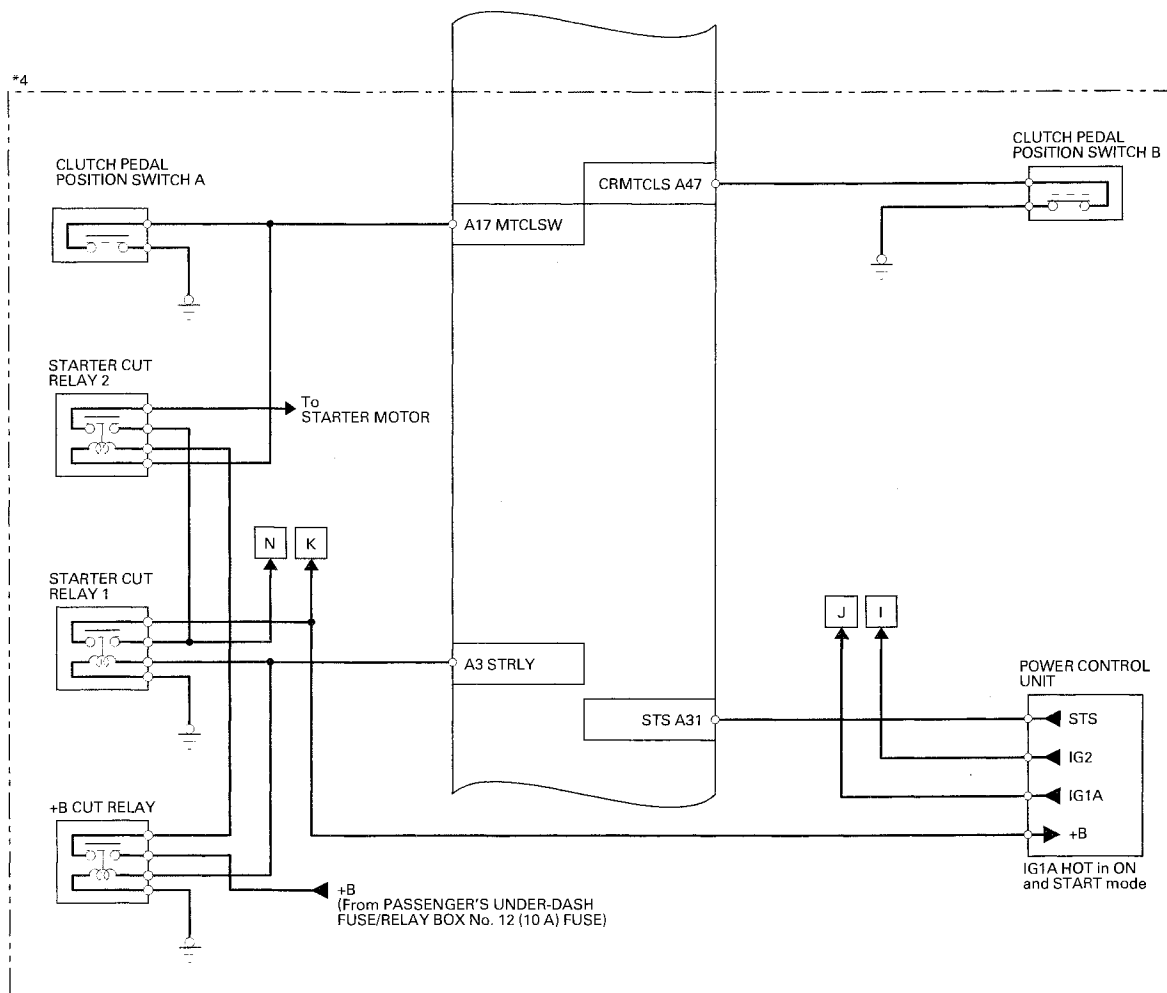


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Fuel and Emissions Systems

System Description (cont'd)



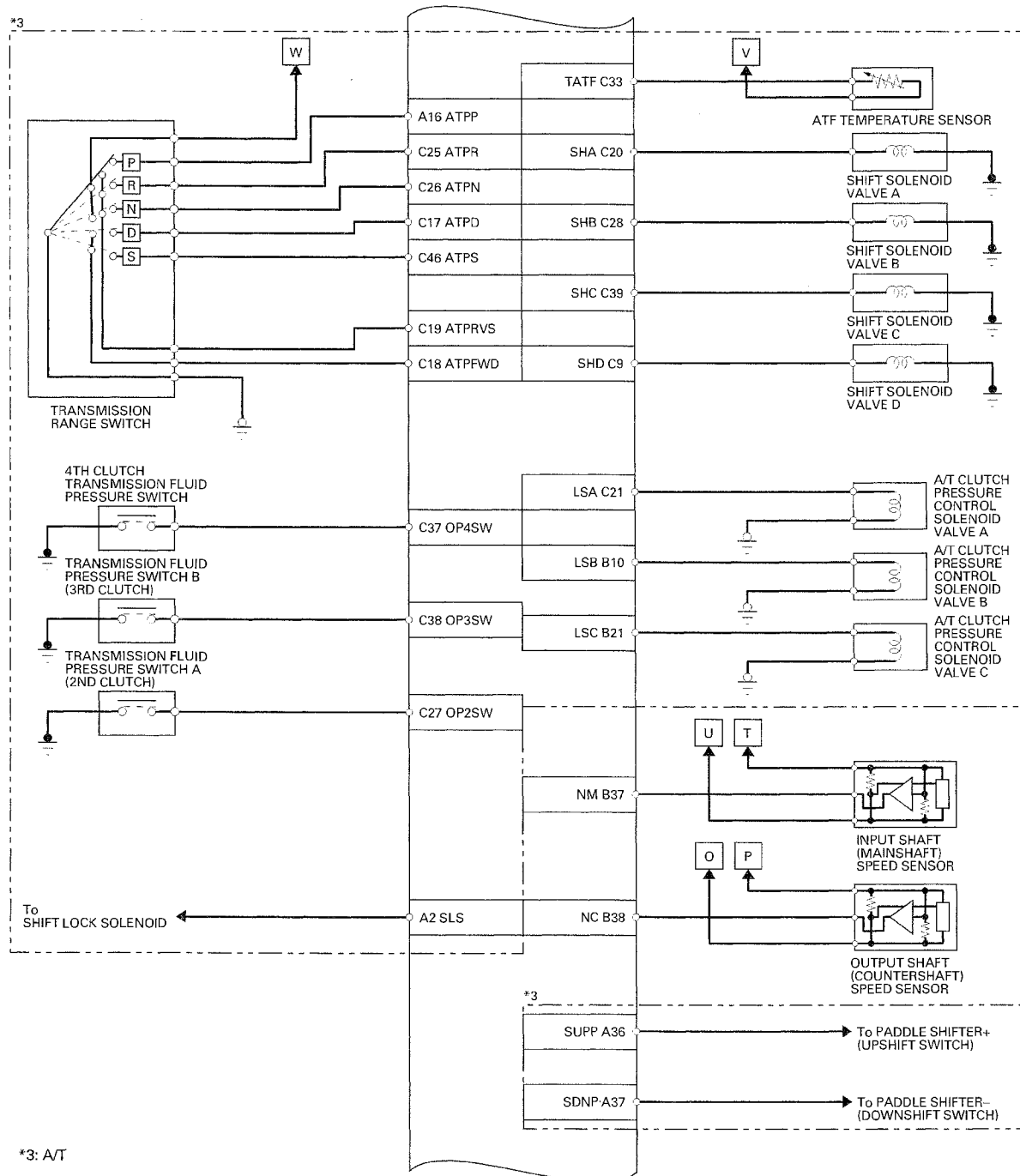


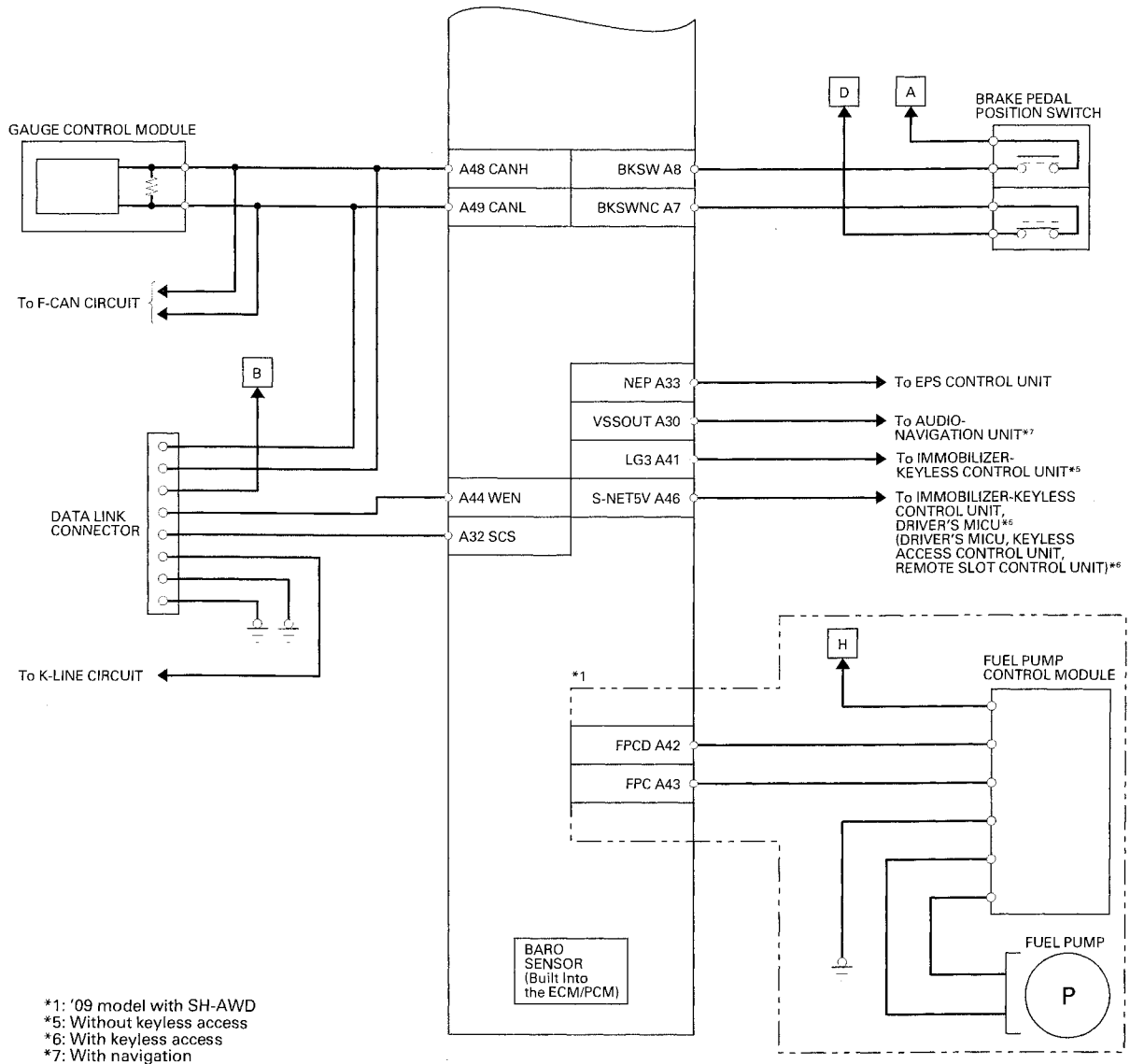
*4: M/T

(cont'd)

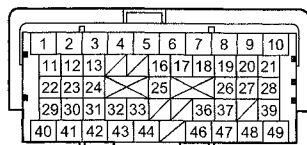
Fuel and Emissions Systems

System Description (cont'd)

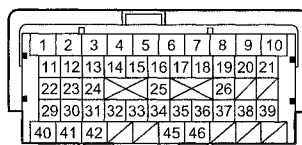




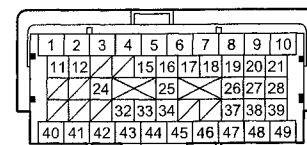
PCM A (□) (49P)



PCM B (△) (49P)



PCM C (○) (49P)



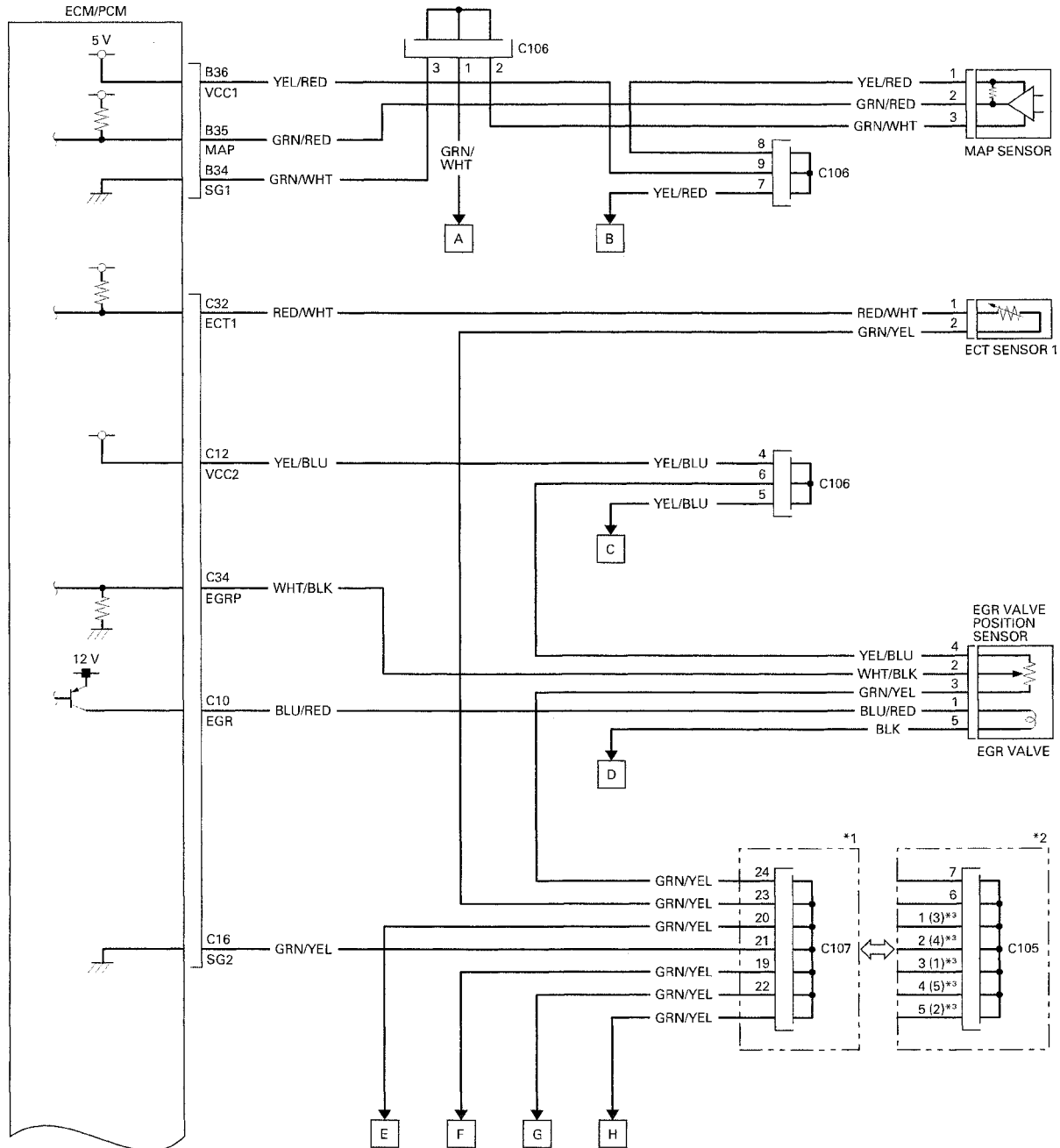
TERMINAL LOCATIONS

(cont'd)

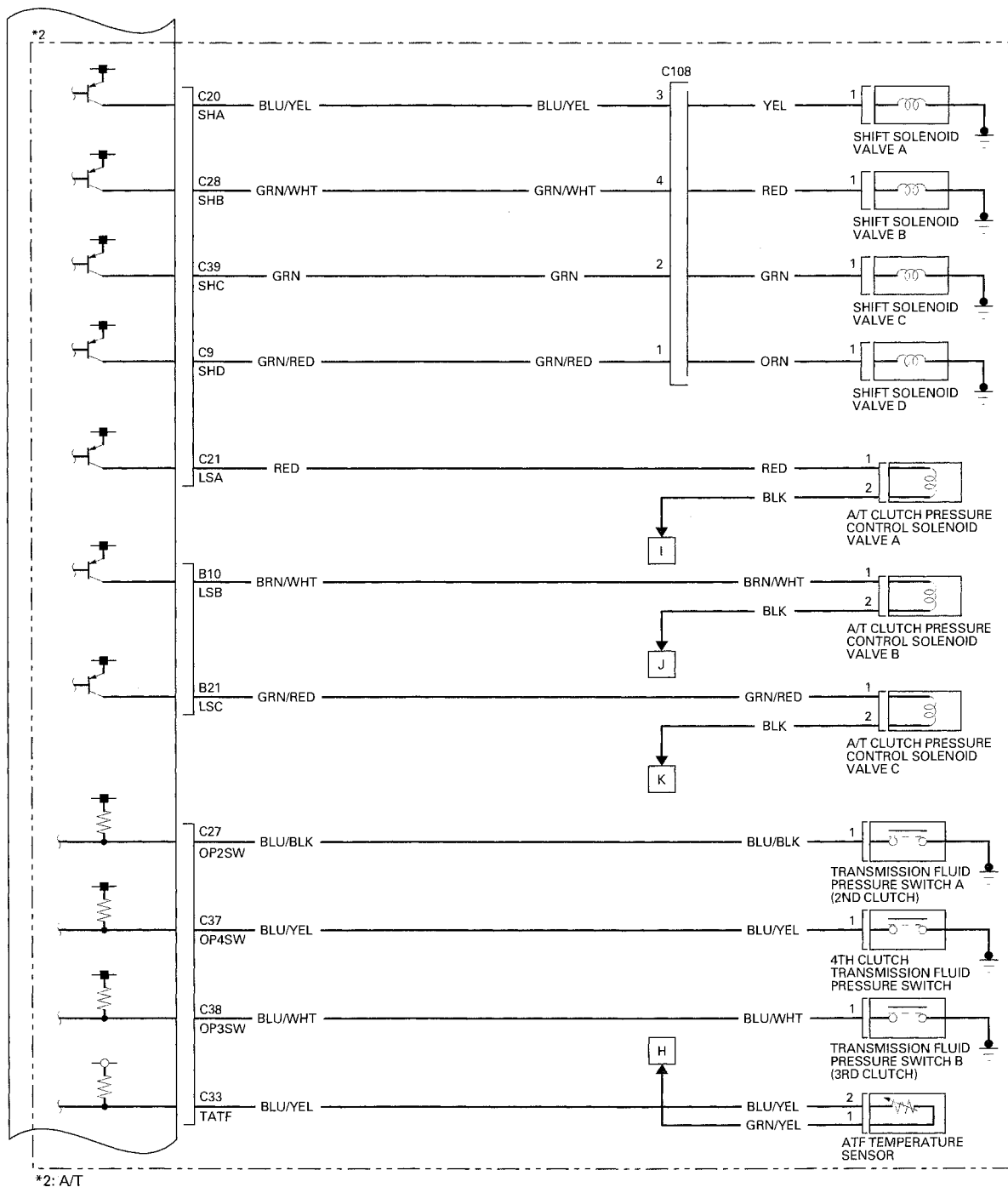
Fuel and Emissions Systems

System Description (cont'd)

ECM/PCM Circuit Diagram



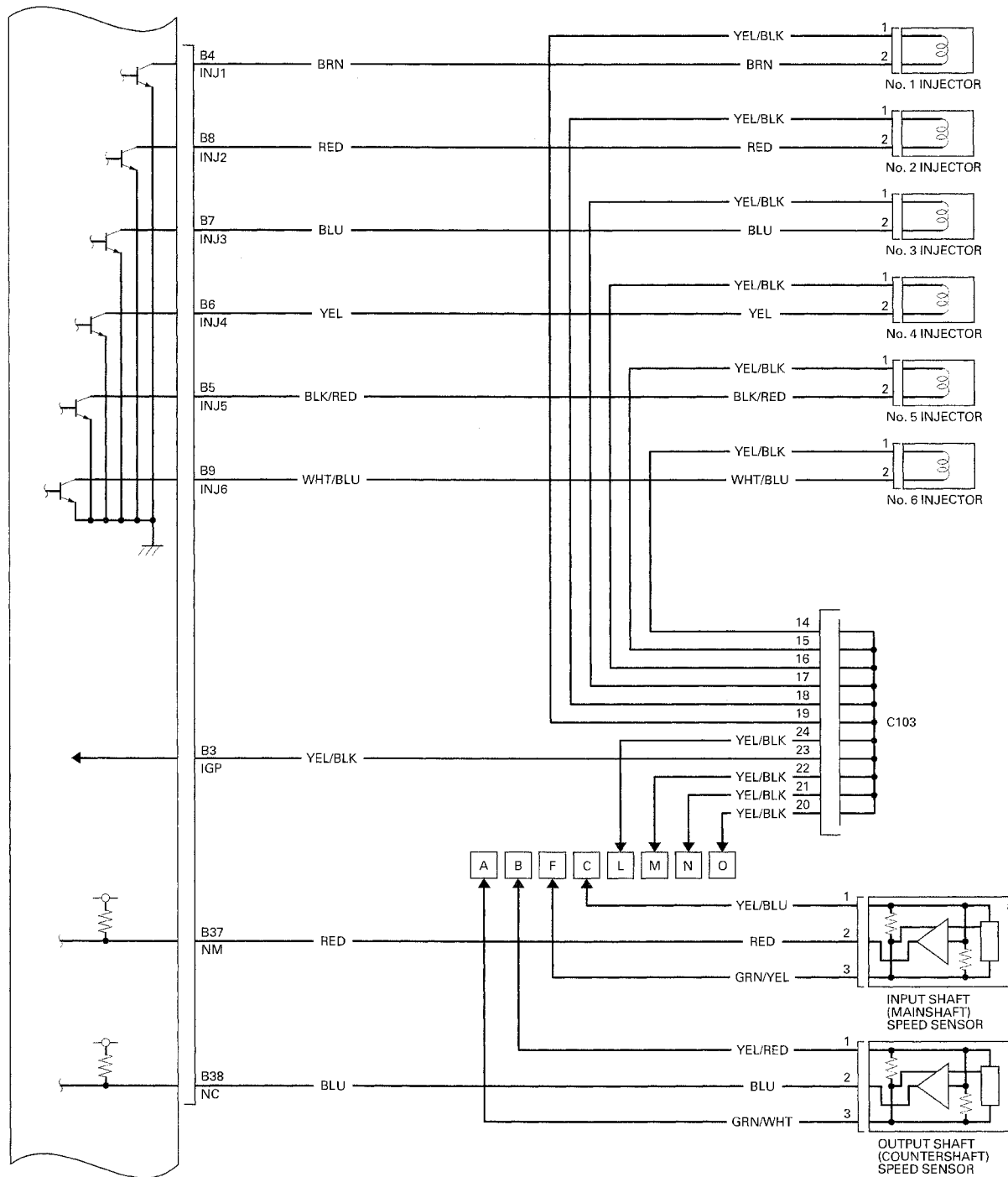
*1: M/T
*2: A/T
*3: '10 model

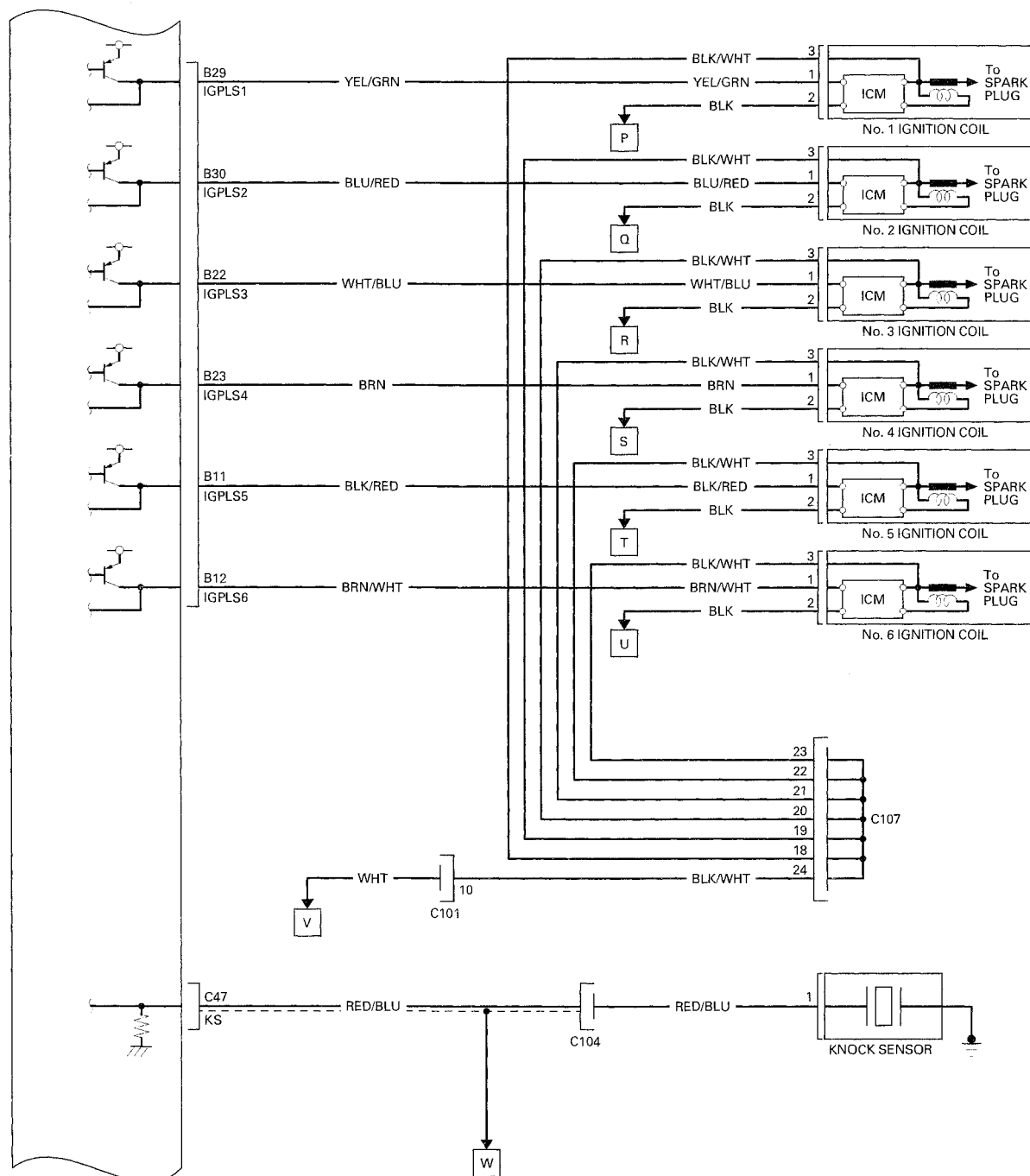


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Fuel and Emissions Systems

System Description (cont'd)

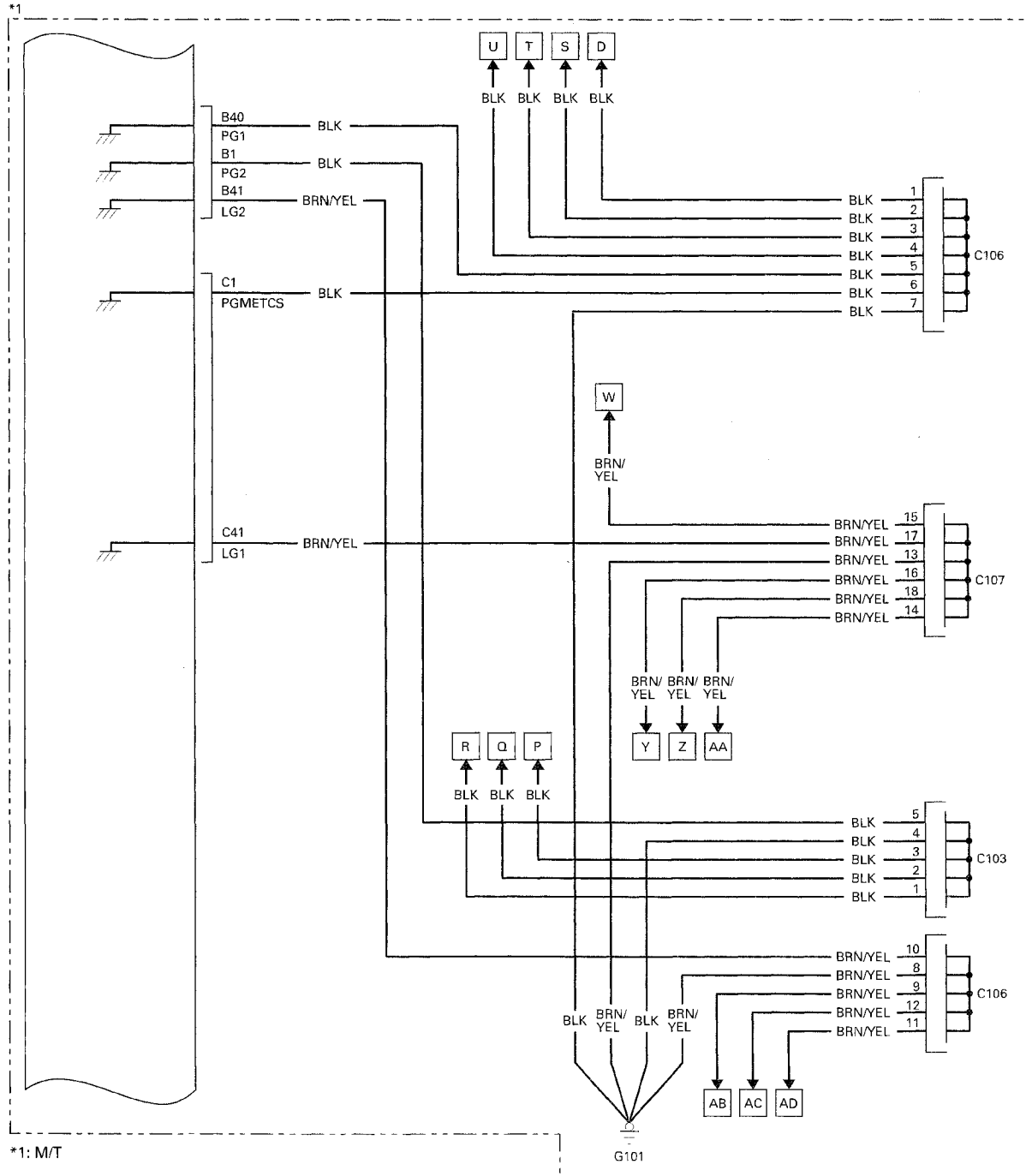


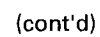


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Fuel and Emissions Systems

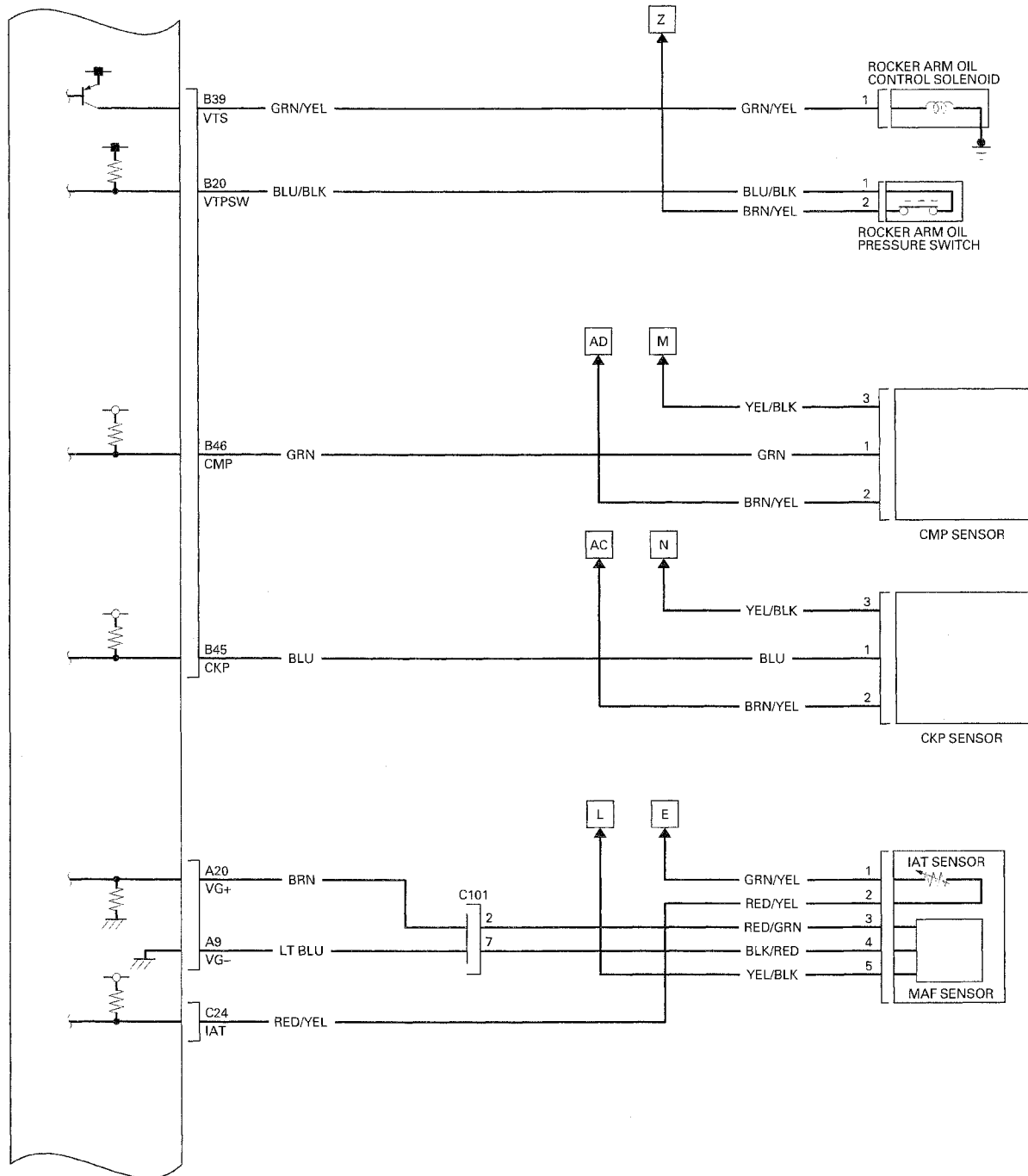
System Description (cont'd)

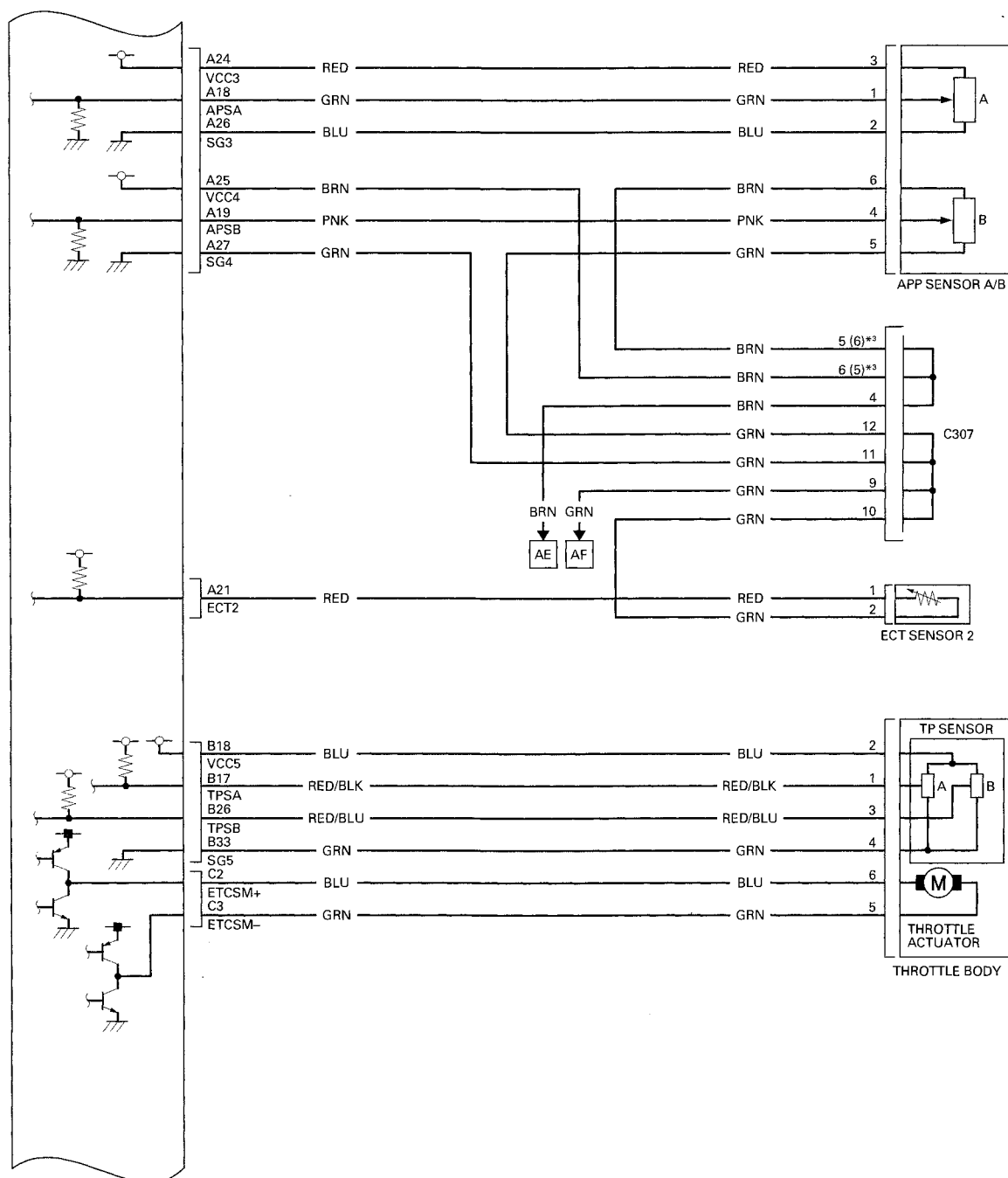




Fuel and Emissions Systems

System Description (cont'd)



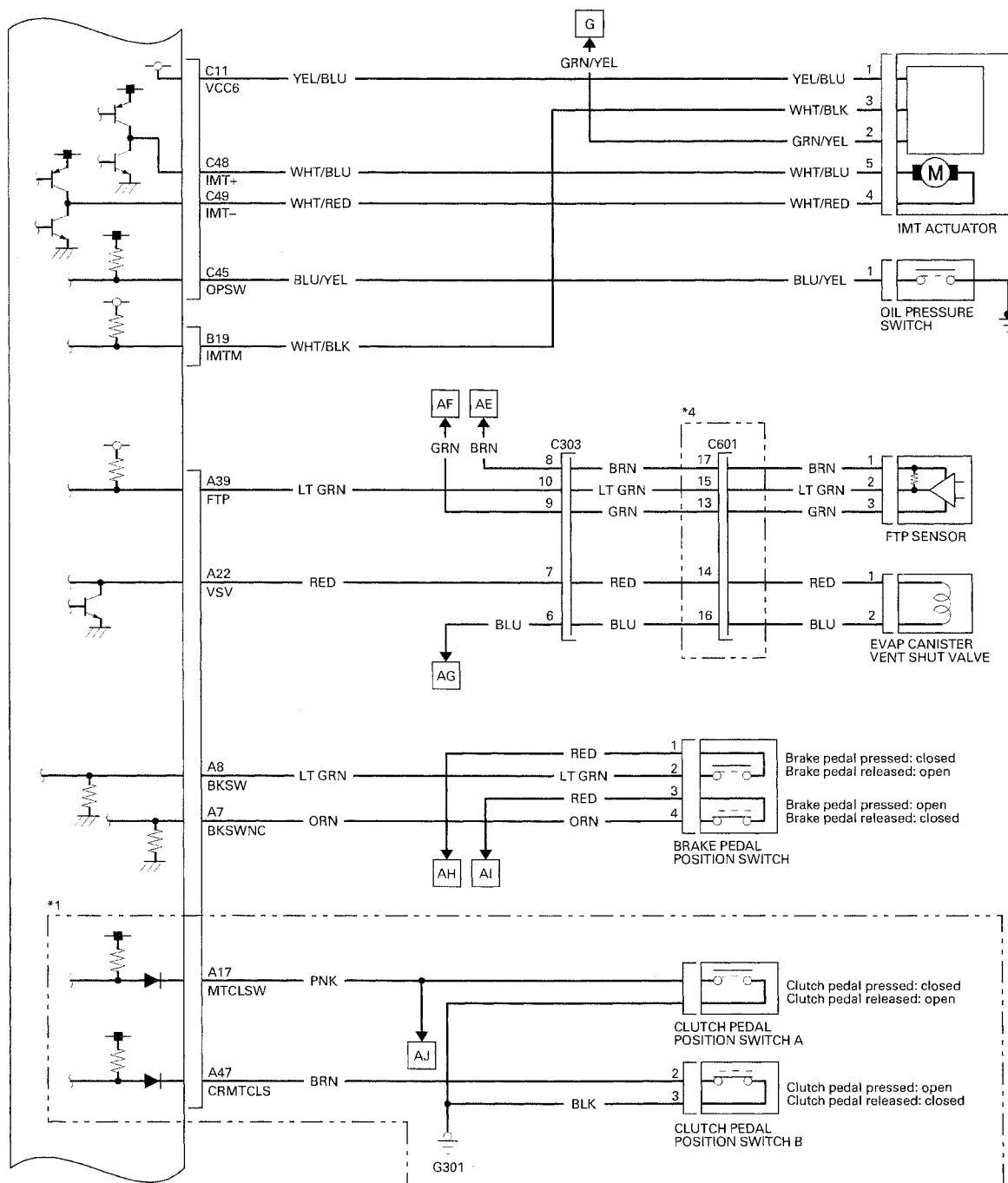


*3: '10 model

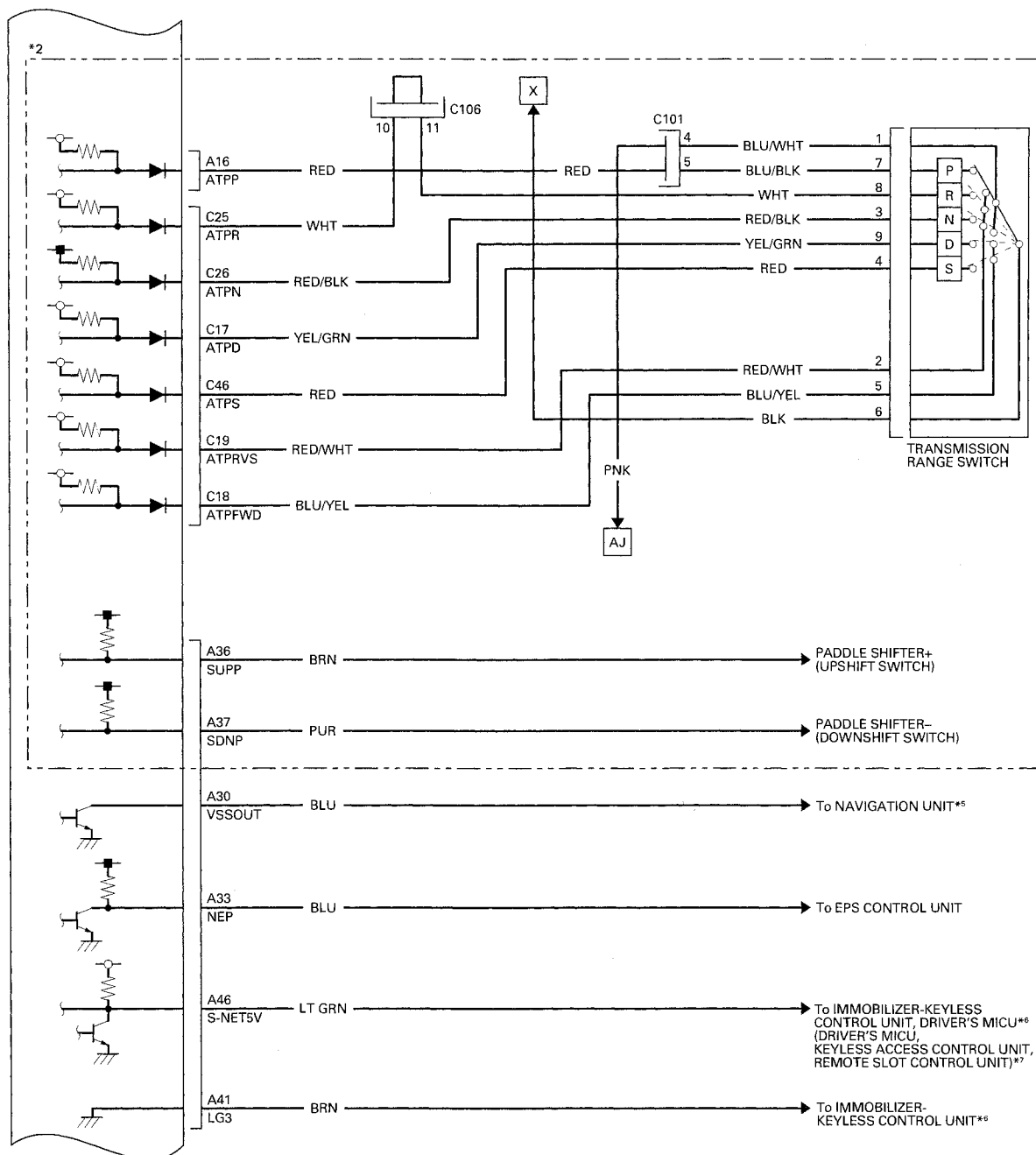
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Fuel and Emissions Systems

System Description (cont'd)



*1: M/T
*4: With SH-AWD

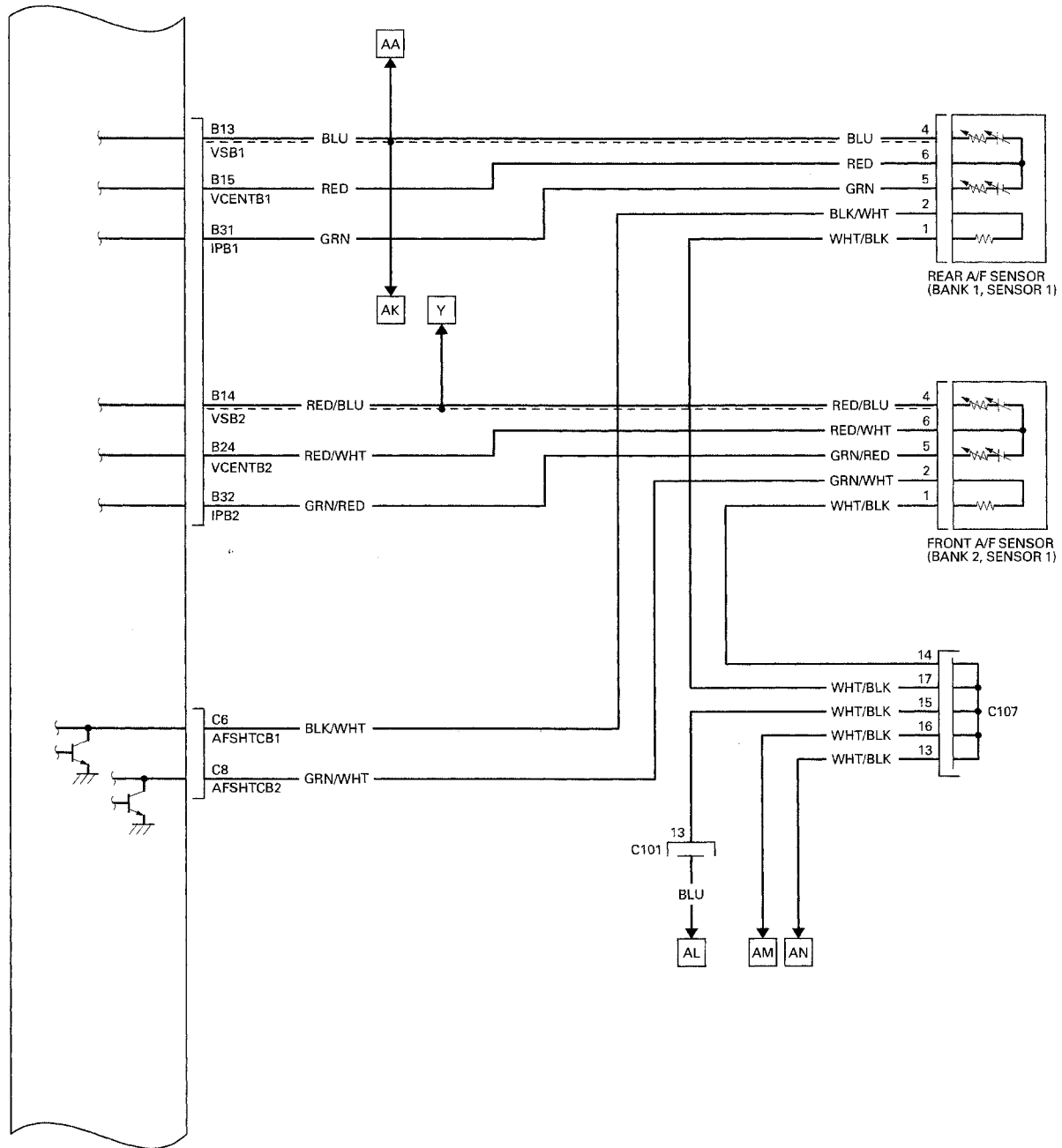


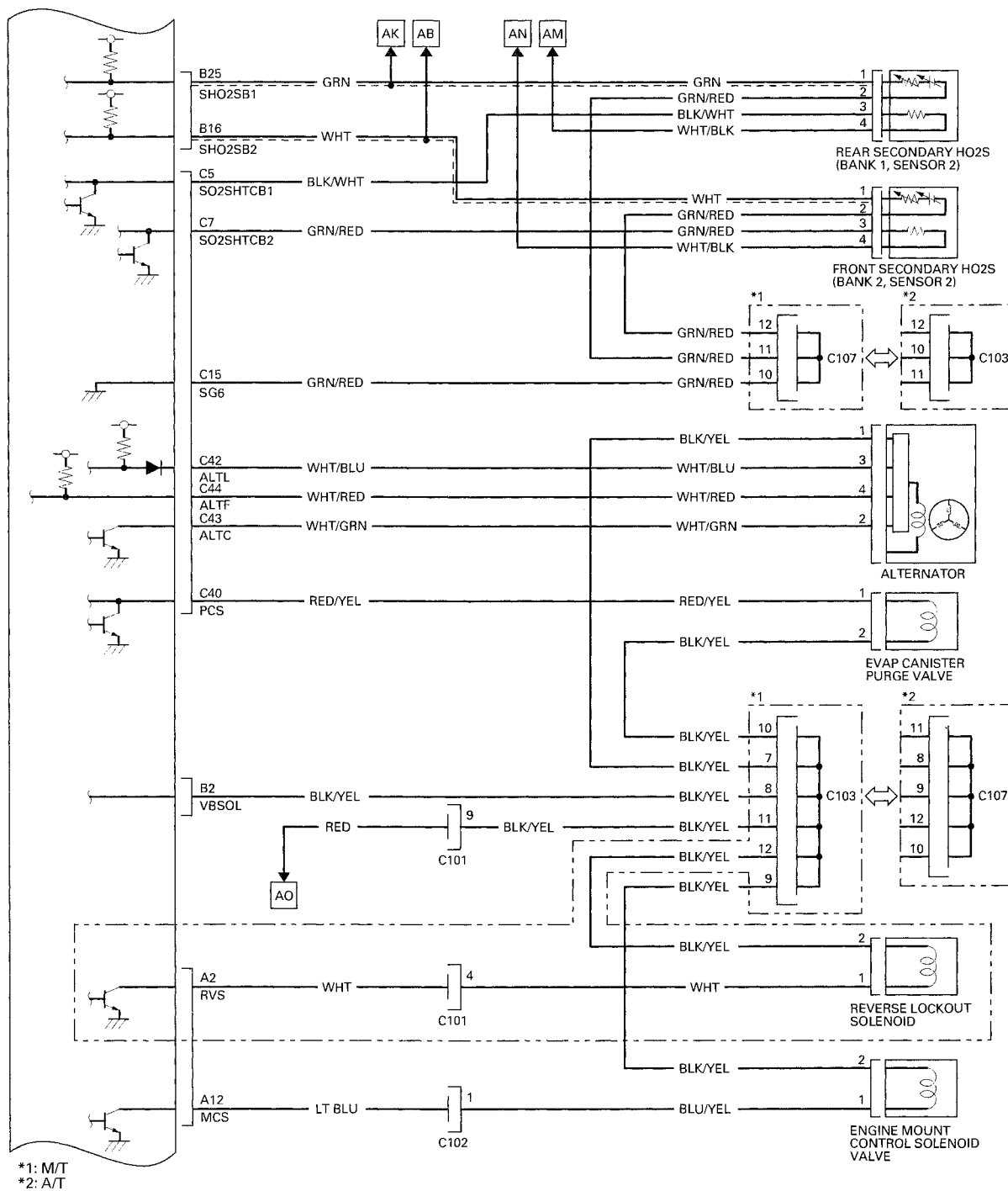
*2: A/T
 *5: With navigation
 *6: Without keyless access
 *7: With keyless access

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

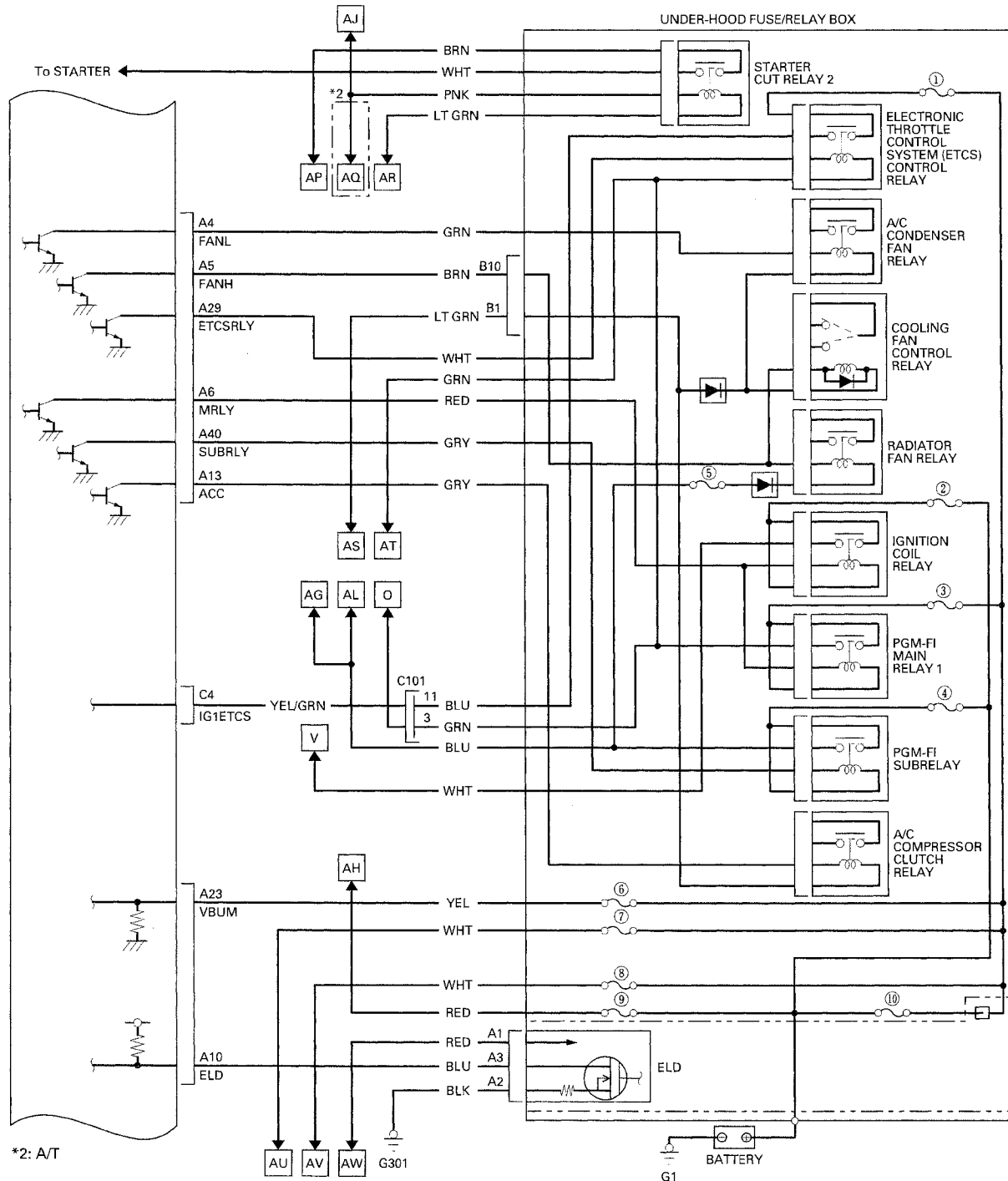


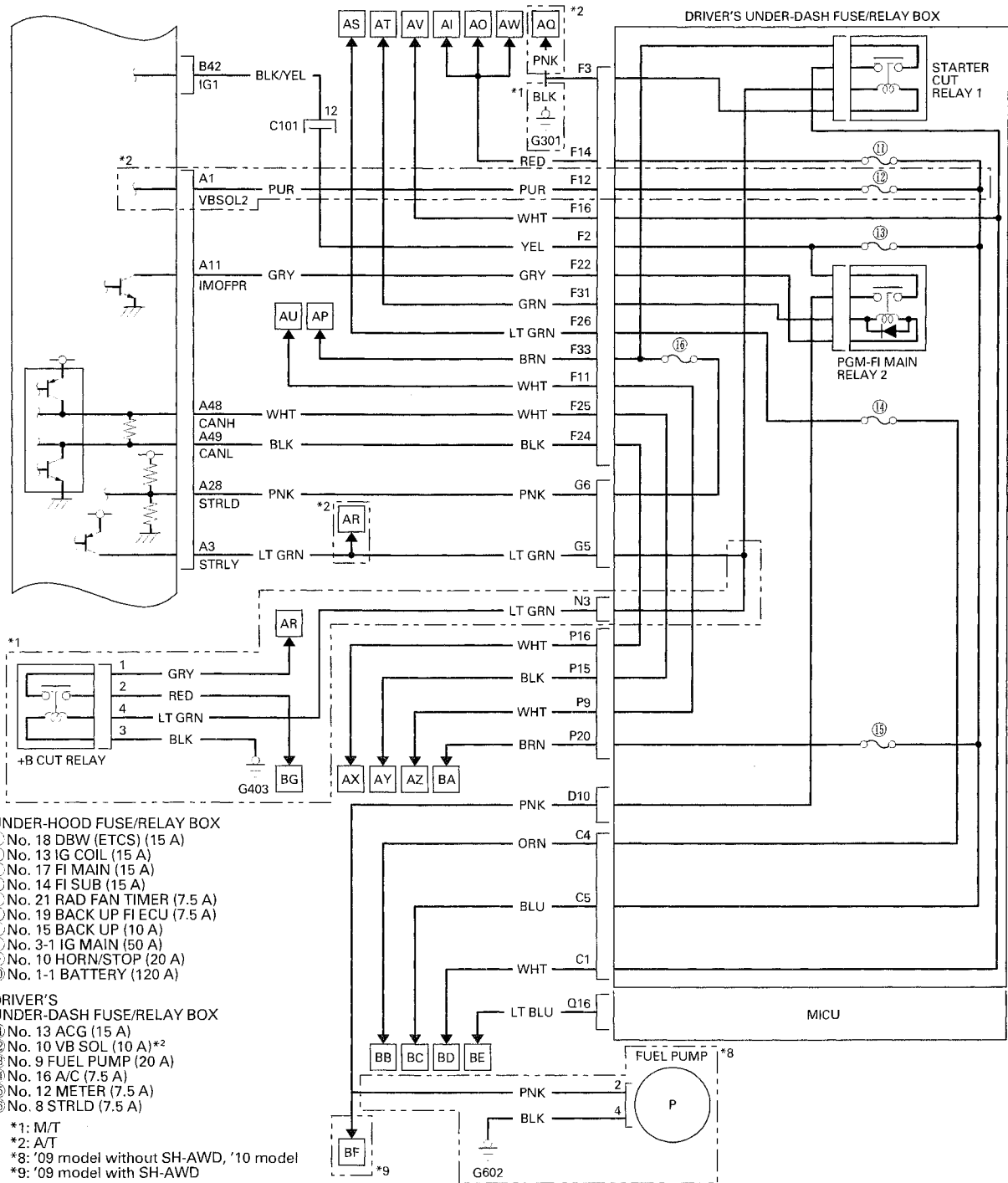


(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

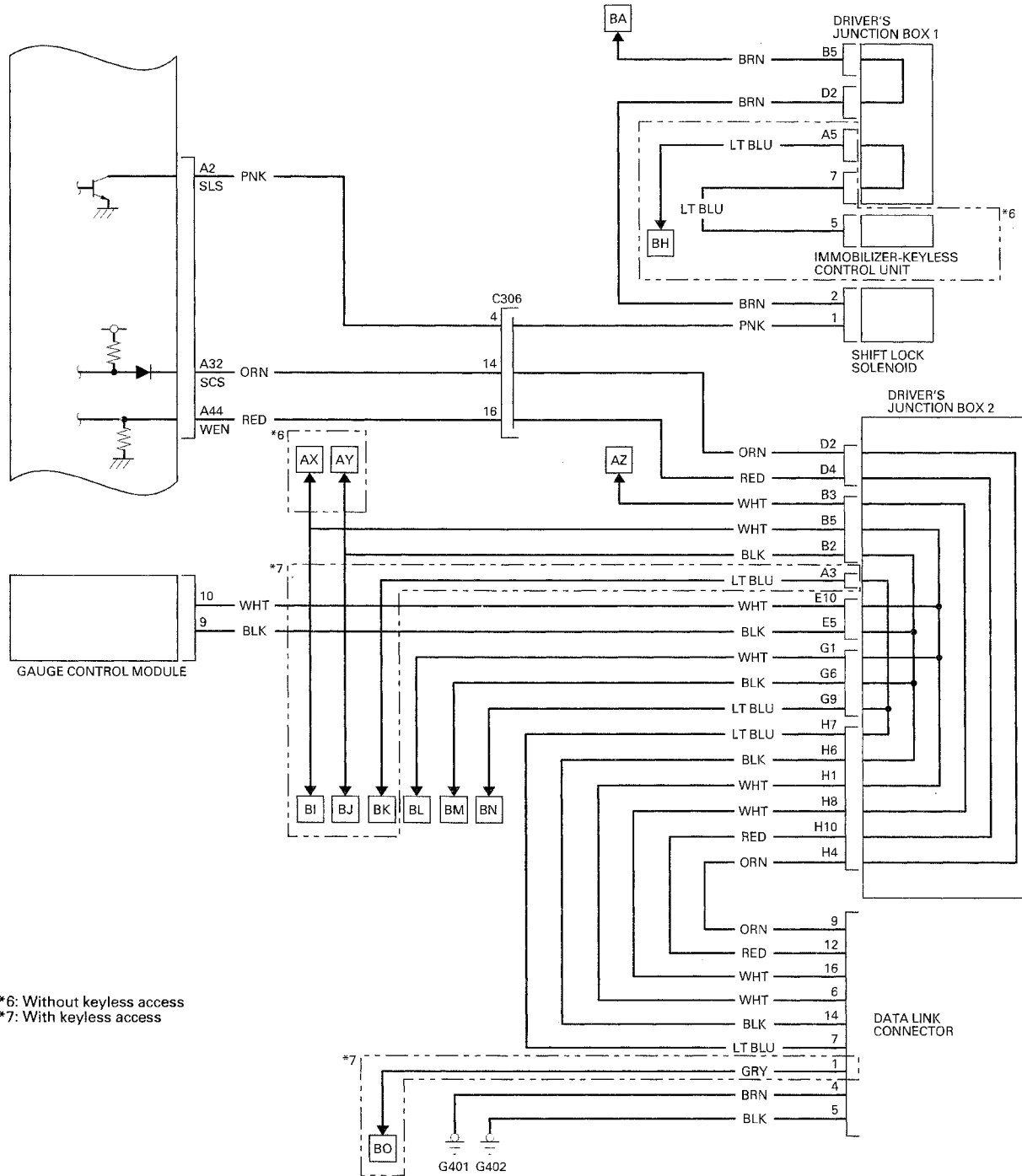


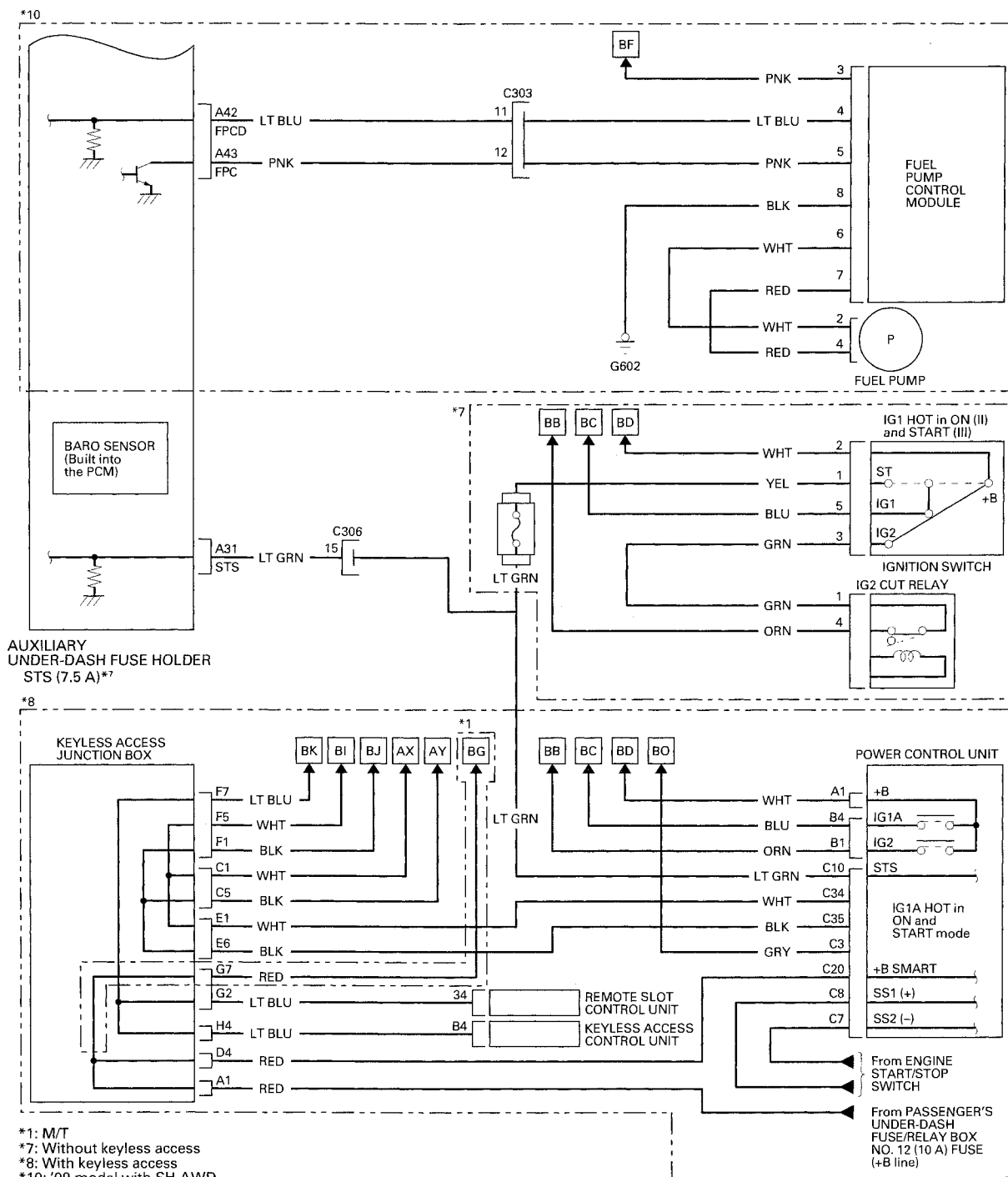


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Fuel and Emissions Systems

System Description (cont'd)

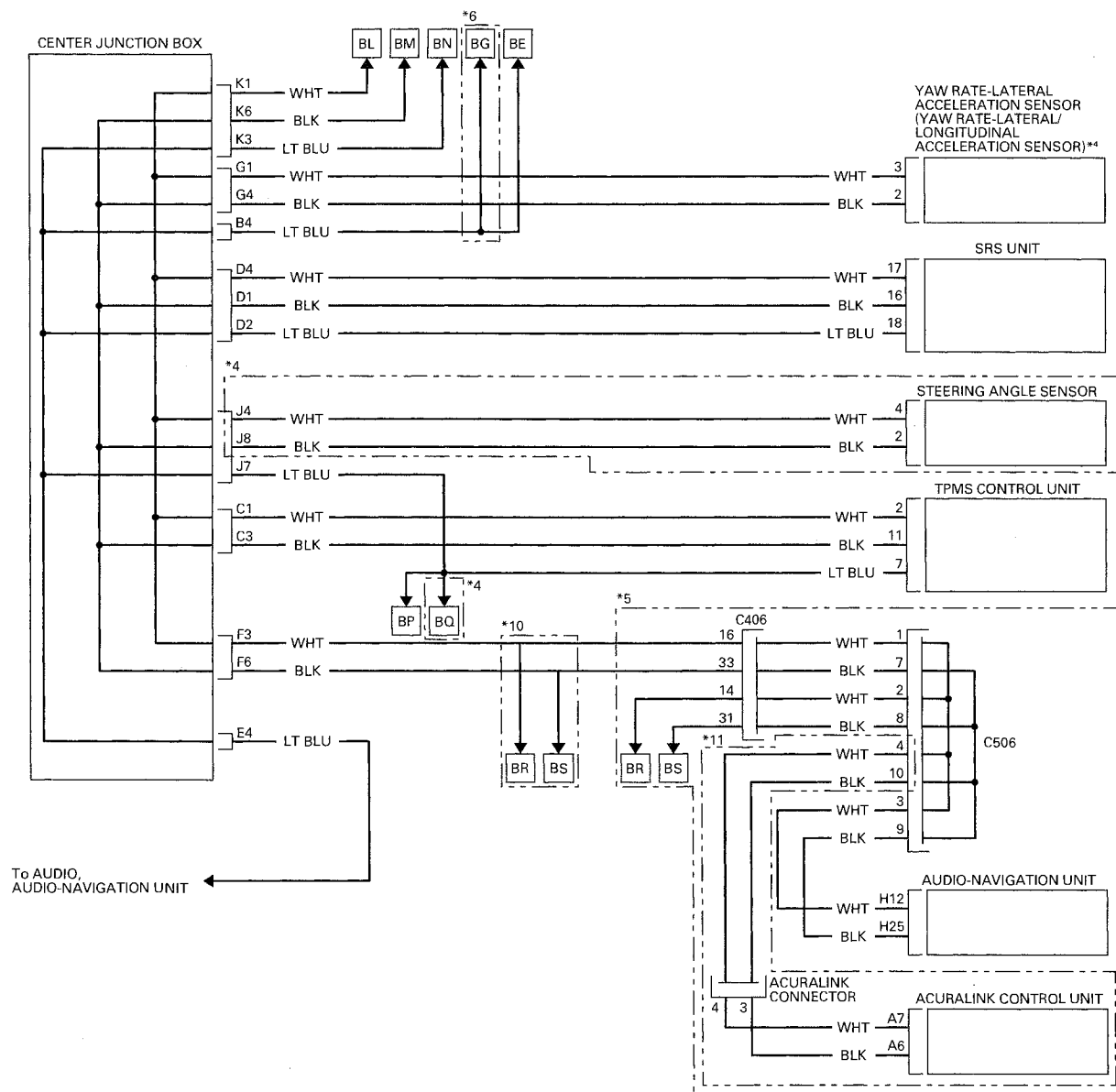




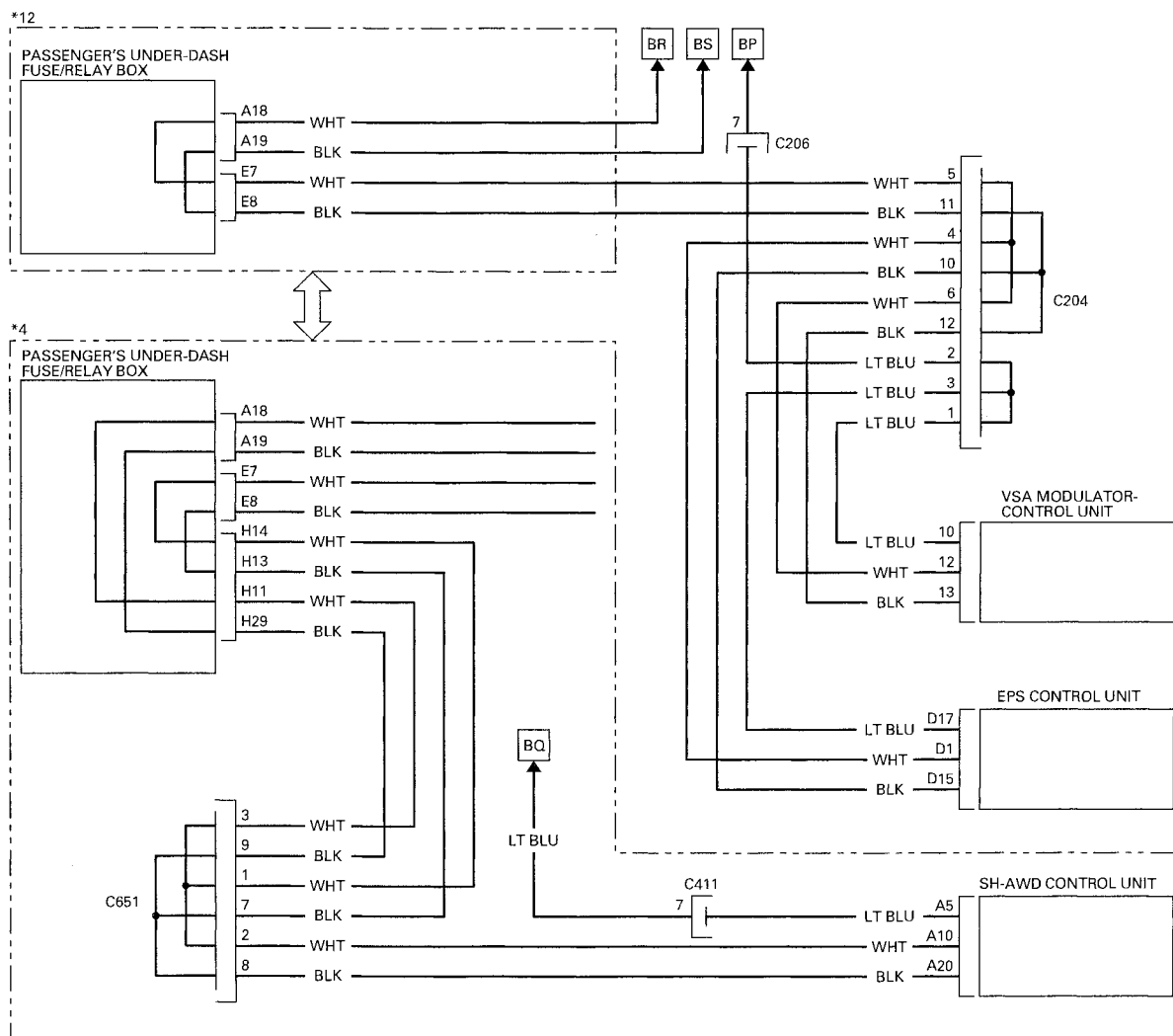
(cont'd)

Fuel and Emissions Systems

System Description (cont'd)



- *4: With SH-AWD
- *5: With navigation
- *6: Without keyless access
- *10: Without navigation
- *11: USA model



*4: With SH-AWD
*12: Without SH-AWD

Fuel and Emissions Systems

System Description (cont'd)

PGM-FI System

The programmed fuel injection (PGM-FI) system is a sequential multiport fuel injection system.

Alternator Control

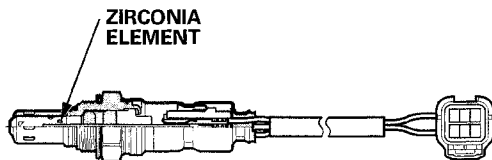
The alternator signals the ECM/PCM during charging. The ECM/PCM then controls the voltage generated at the alternator according to the electrical load determined by the electrical load detector (ELD) and the driving mode. This reduces engine load to improve fuel economy.

Air Conditioning (A/C) Compressor Clutch Relay

When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure a smooth transition to the A/C mode.

Air Fuel Ratio (A/F) Sensor

The A/F sensor operates over a wide air/fuel range. The A/F sensor is installed upstream of the warm up three way catalytic converter (WU-TWC), and it sends signals to the ECM/PCM which varies the duration of fuel injection accordingly.

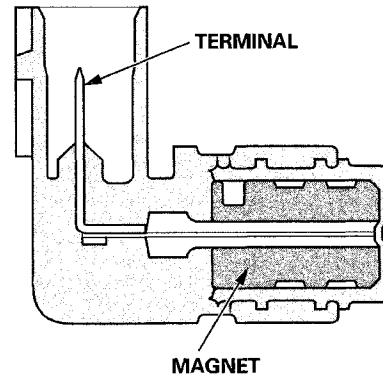


Barometric Pressure (BARO) Sensor

The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that is used by the ECM/PCM to modify the basic duration of the fuel injection discharge.

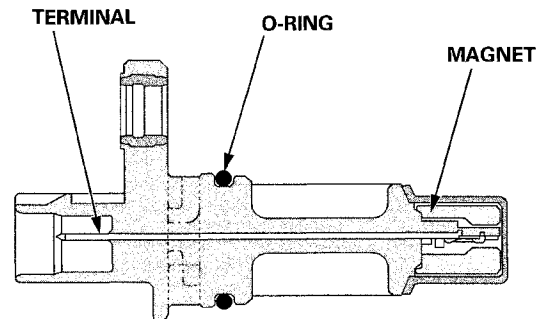
Camshaft Position (CMP) Sensor

The CMP sensor detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.



Crankshaft Position (CKP) Sensor

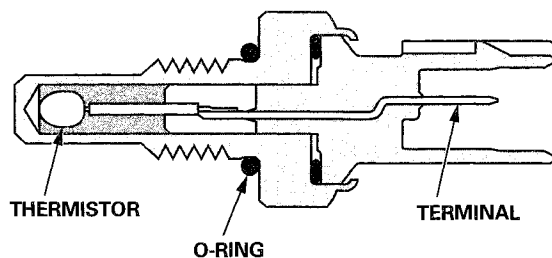
The CKP sensor detects crankshaft speed, and is used by the ECM/PCM to determine ignition timing, timing for the fuel injection of each cylinder, and engine misfire detection.





Engine Coolant Temperature (ECT) Sensors 1 and 2

ECT sensors 1 and 2 are temperature dependent resistors (thermistors). The resistance decreases as the engine coolant temperature increases.



Ignition Timing Control

The ECM/PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressures. It also adjusts the timing according to engine coolant temperature and intake air temperature.

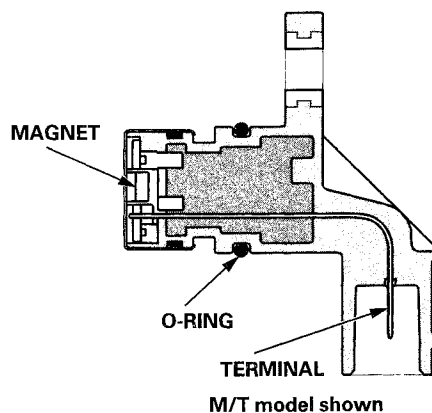
Injector Timing and Duration

The ECM/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system and sets diagnostic trouble codes (DTCs) if needed.

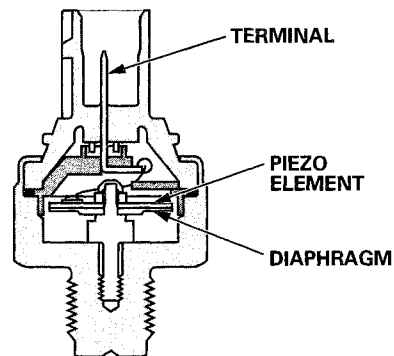
Input Shaft (Mainshaft) Speed Sensor

This sensor detects input shaft (mainshaft) speed.



Knock Sensor

The knock control system adjusts the ignition timing to minimize knock.



(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

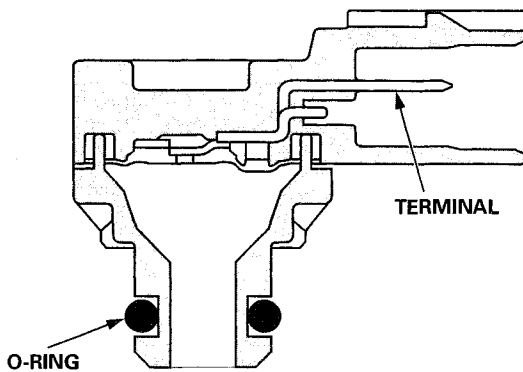
Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain readiness codes that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if DTCs have been cleared, or if the ECM/PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch to ON (II) or press the engine start/stop button to select the ON mode, but do not start the engine. The MIL will come on for 15–20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not set to complete. To set each code, drive the vehicle or run the engine as described in the procedures (see page 11-84).

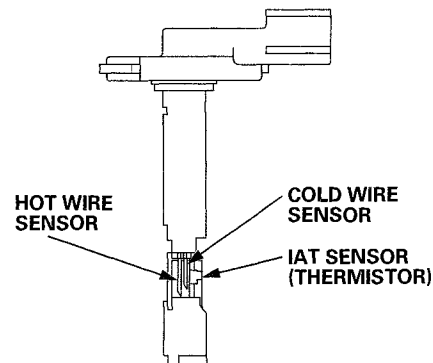
Manifold Absolute Pressure (MAP) Sensor

The MAP sensor converts manifold absolute pressure into electrical signals that are sent to the ECM/PCM.



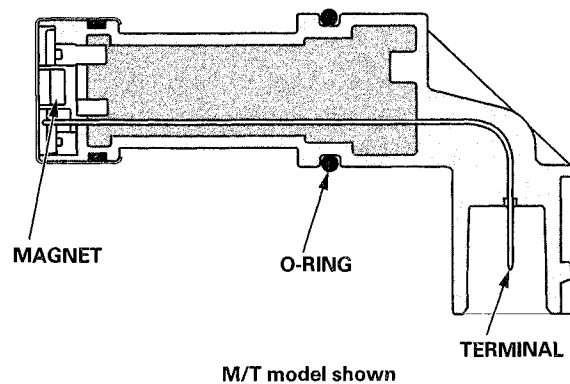
Mass Air Flow (MAF) Sensor/Intake Air Temperature (IAT) Sensor

The mass air flow (MAF) sensor/intake air temperature (IAT) sensor contains a hot wire sensor, a cold wire sensor, and a thermistor. It is located in the intake air passage. The resistance of the hot wire sensor, a cold wire sensor, and the thermistor changes due to intake air temperature and air flow. The control circuit in the MAF sensor controls the current to keep the hot wire at a set temperature. The current is converted to voltage in the control circuit, then output to the ECM/PCM.



Output Shaft (Countershaft) Speed Sensor

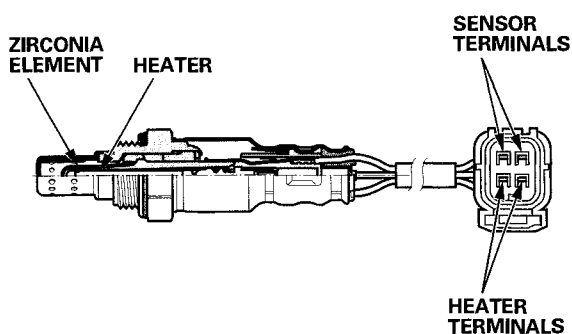
This sensor detects countershaft speed.





Secondary Heated Oxygen Sensor (Secondary HO2S)

The secondary HO2S detects the oxygen content in the exhaust gas downstream of the warm up three way catalytic converter (WU-TWC), and sends signals to the ECM/PCM. To stabilize its output, the sensor has an internal heater. The ECM/PCM compares the HO2S output with the A/F sensor output to determine catalyst efficiency. A secondary HO2S is installed in each bank downstream of the WU-TWC.



(cont'd)

Fuel and Emissions Systems

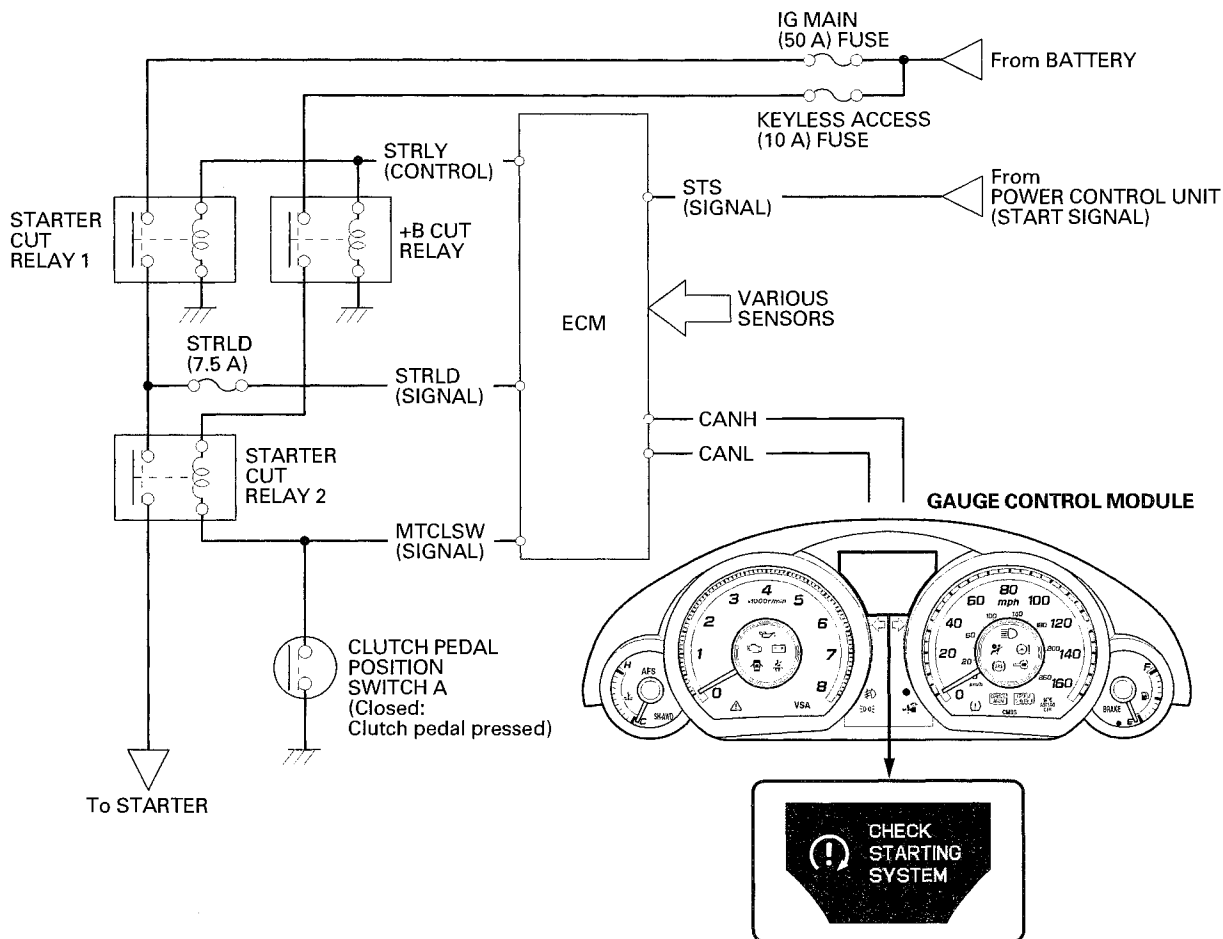
System Description (cont'd)

Starter Control System Diagram

M/T

The starter control system controls the starter motor.

- When the engine start/stop button is pressed to select the START mode, the ECM applies current to starter cut relay 1 and starter cut relay 2, and the +B cut relay is turned on. Then battery voltage is applied to the starter solenoid, and starter motor runs.
- Once the engine start/stop button is released, the ECM keeps the starter motor running until the engine starts. If the ECM detects that the engine starts, the ECM stops applying current to the relays, and the starter motor stops.
- If you press the engine start/stop button to select START mode while the engine is running, the starter motor does not operate.
- In the following cases, the ECM stops the starter motor:
 - After the starter motor operates for 10 seconds (to prevent the starter motor from overheating).
 - If the engine rpm is too high during starter motor operation.
- If there is a problem with the starter control system, a message appears on the gauge display. When the warning message is on, the engine can only be started by pressing and holding the engine start/stop button until the engine starts.

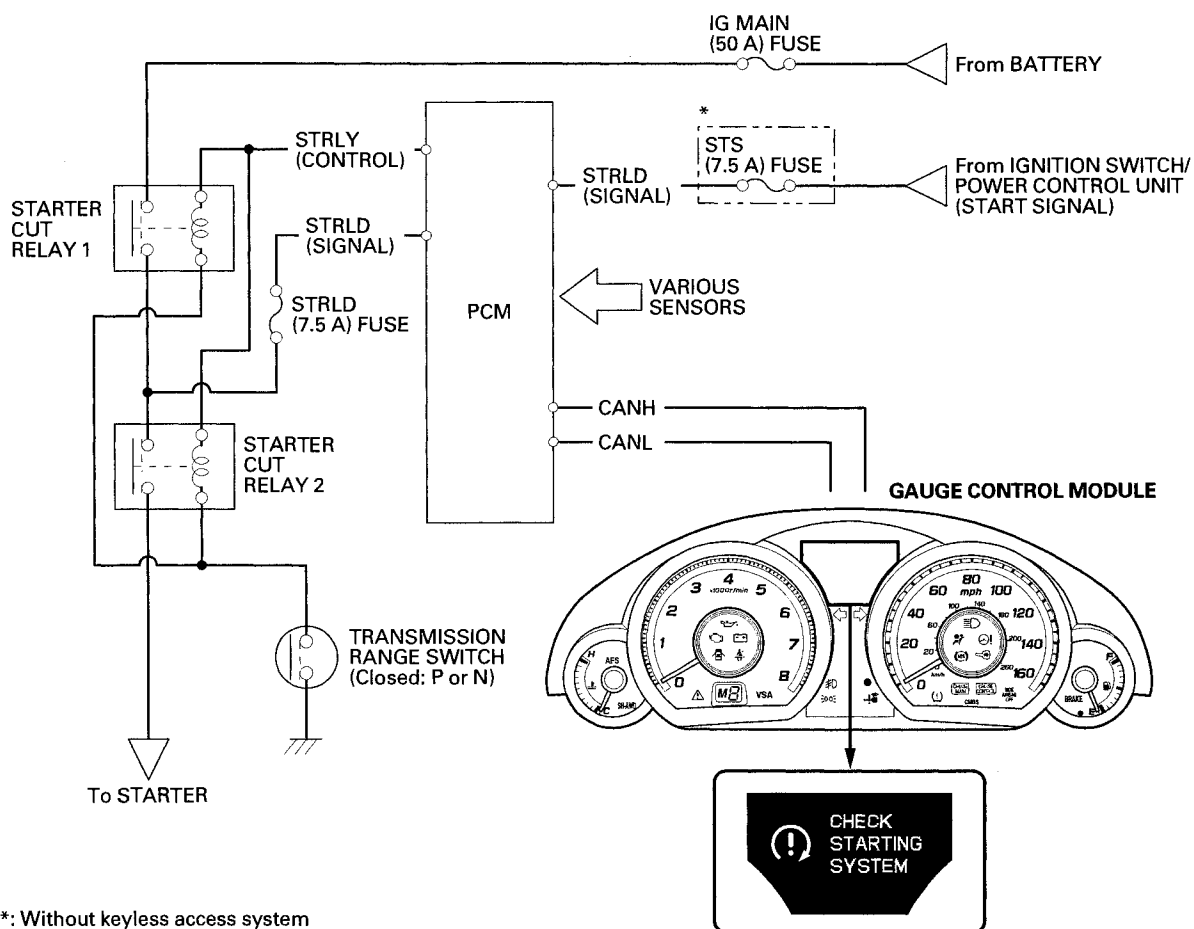




A/T

The starter control system controls the starter motor.

- When the ignition switch is turned to START (III), or the engine start/stop button pressed to select the START mode, the PCM applies current to starter cut relay 1 and starter cut relay 2, then battery voltage is applied to the starter solenoid, and starter motor runs.
- Once the ignition switch or the engine start/stop button is released, the PCM keeps the starter motor running until the engine starts. If the PCM detects that the engine starts, the PCM stops applying current to the relays, and the starter motor stops.
- If you turn the ignition switch to START (III), or press the engine start/stop button to select START mode while the engine is running, the starter motor does not operate.
- In the following cases, the PCM stops the starter motor:
 - After the starter motor operates for 10 seconds (to prevent the starter motor from overheating).
 - If the engine rpm is too high during starter motor operation.
- If there is a problem with the starter control system, a message appears on the gauge display. When the warning message is on, the engine can only be started by turning and holding the ignition switch in the start position until the engine starts, or pressing and holding the engine start/stop button until the engine starts.



Fuel and Emissions Systems

System Description (cont'd)

Electronic Throttle Control System

The throttle is electronically controlled. Refer to the system diagram to see a functional layout of the system.

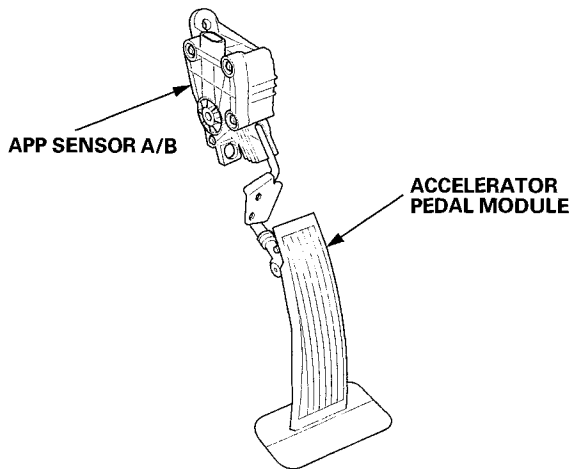
Idle control: When the engine is idling, the ECM/PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

Acceleration control: When the accelerator pedal is pressed, the ECM/PCM opens the throttle valve based on the accelerator pedal position (APP) sensor signal.

Cruise control: The ECM/PCM controls the throttle actuator to maintain the set speed when cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

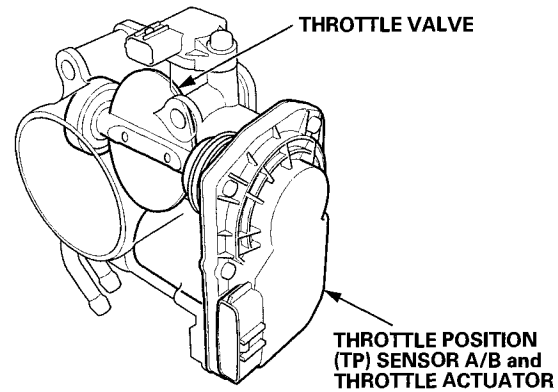
Accelerator Pedal Position (APP) Sensor

As the accelerator pedal position changes, the sensor varies the signal voltage to the ECM/PCM which then controls the throttle position.



Throttle Body

The throttle body is a single-barrel side draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head to prevent icing of the throttle plate.

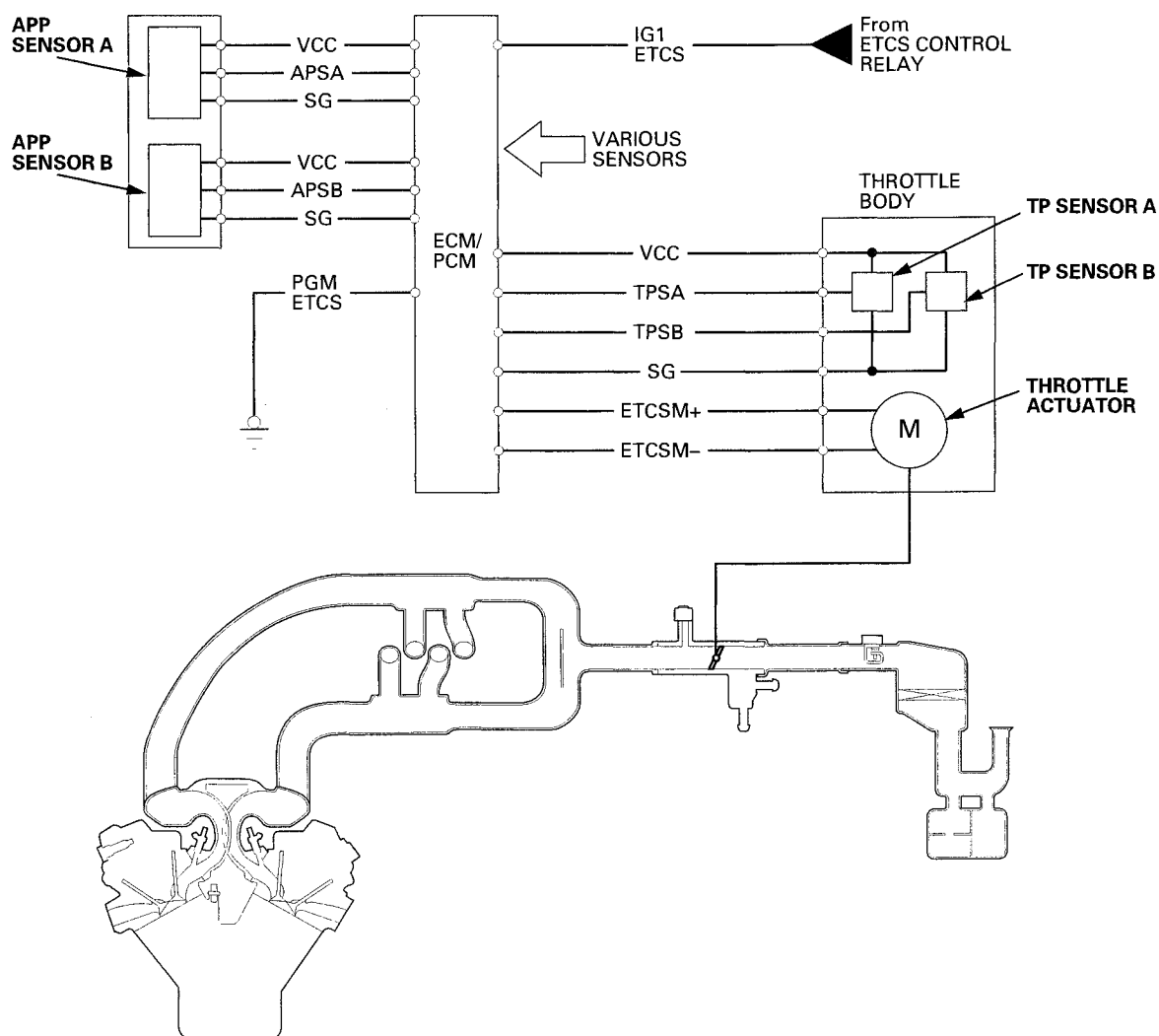


J35Z6 engine shown



Electronic Throttle Control System Diagram

The electronic throttle control system consists of the throttle actuator, throttle position (TP) sensor A/B, accelerator pedal position (APP) sensor A/B, the electronic throttle control system (ETCS) control relay, and the ECM/PCM.

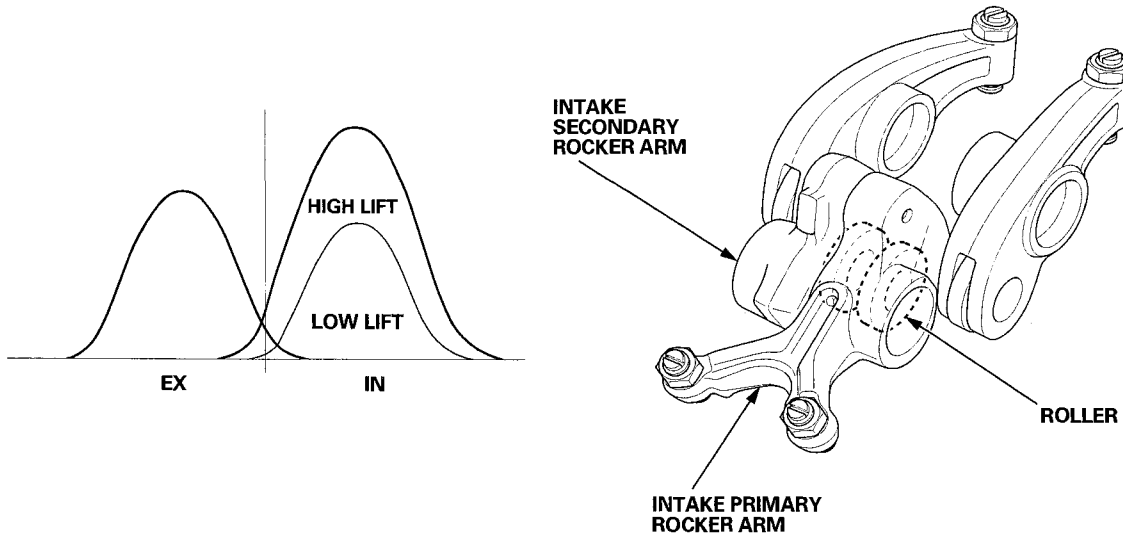


Fuel and Emissions Systems

System Description (cont'd)

VTEC System (J35Z6 engine)

- The VTEC system changes the cam profile to correspond to engine speed. It maximizes torque at low engine speed and output at high engine speed. The low lift cam is used at low engine speeds, and the high lift cam is used at high engine speeds.
- The intake valve side has primary and secondary rocker arms. These rocker arms are locked and separated to change the cam profile by switching the oil passages. Roller rockers are used to minimize mechanical friction.



- The VTEC system oil pressure is switched by the rocker arm oil control valve changing the hydraulic circuit. The rocker arm oil control valve is controlled by the rocker arm oil control solenoid. The rocker arm oil pressure switch detects VTEC system oil pressure and sends this information to the PCM.

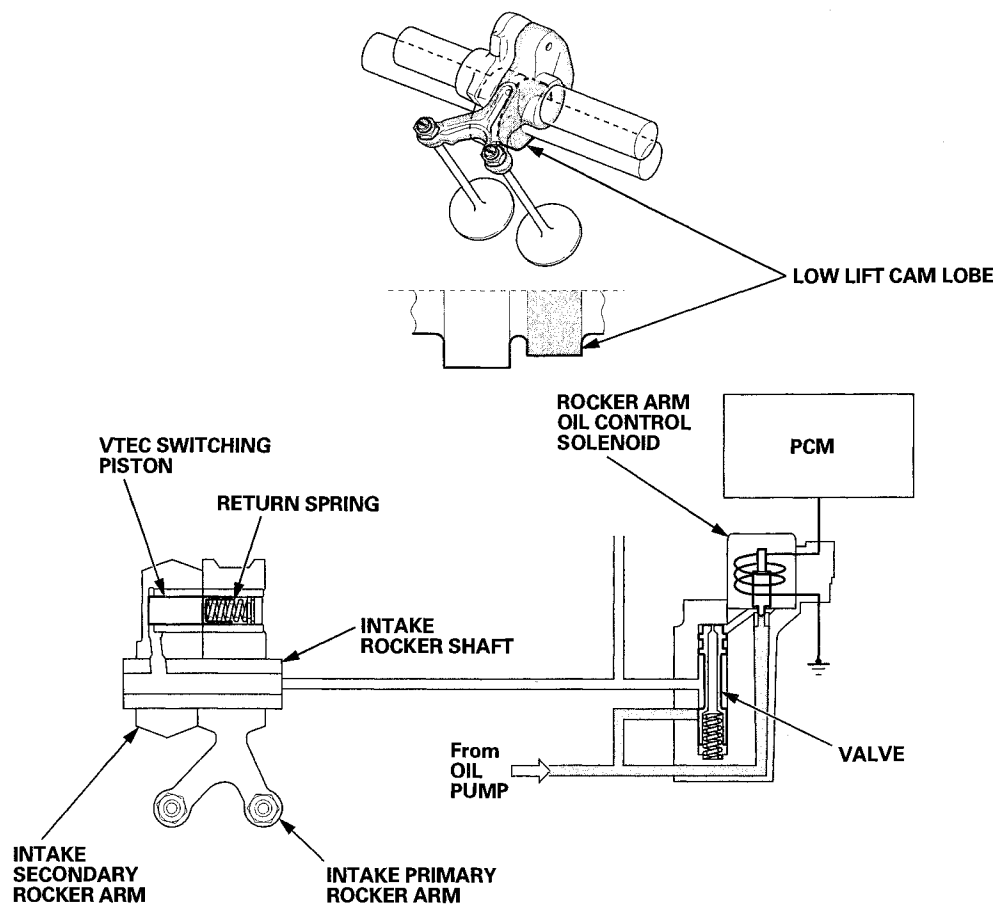
ENGINE SPEED	ROCKER ARM OIL CONTROL SOLENOID	INTAKE VALVE LIFT
LOW	OFF	LOW
HIGH	ON	HIGH



VTEC System Operation (J35Z6 engine)

At low engine speed

The rocker arm oil control solenoid is turned off by the PCM. Oil pressure from the rocker arm oil control valve does not enter the rocker shaft. The intake primary and secondary rocker arms are separated by a return spring and lifted by the low lift cam lobe.



(cont'd)

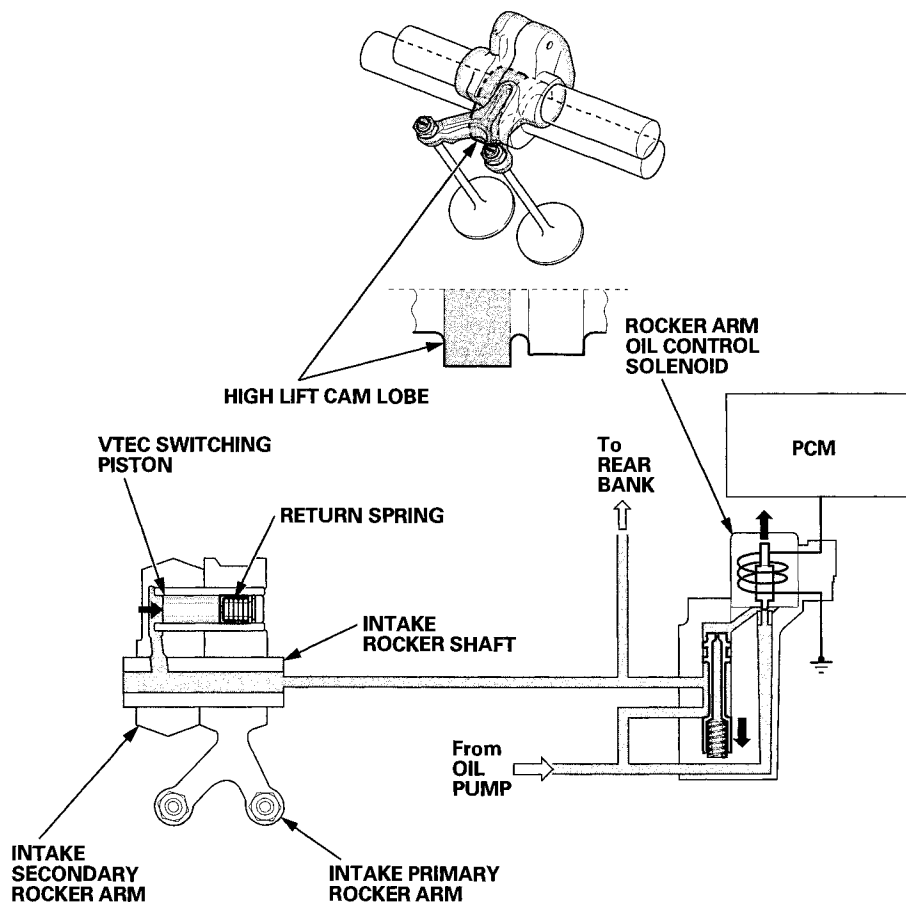
Fuel and Emissions Systems

System Description (cont'd)

VTEC System Operation (J35Z6 engine)

At high engine speed

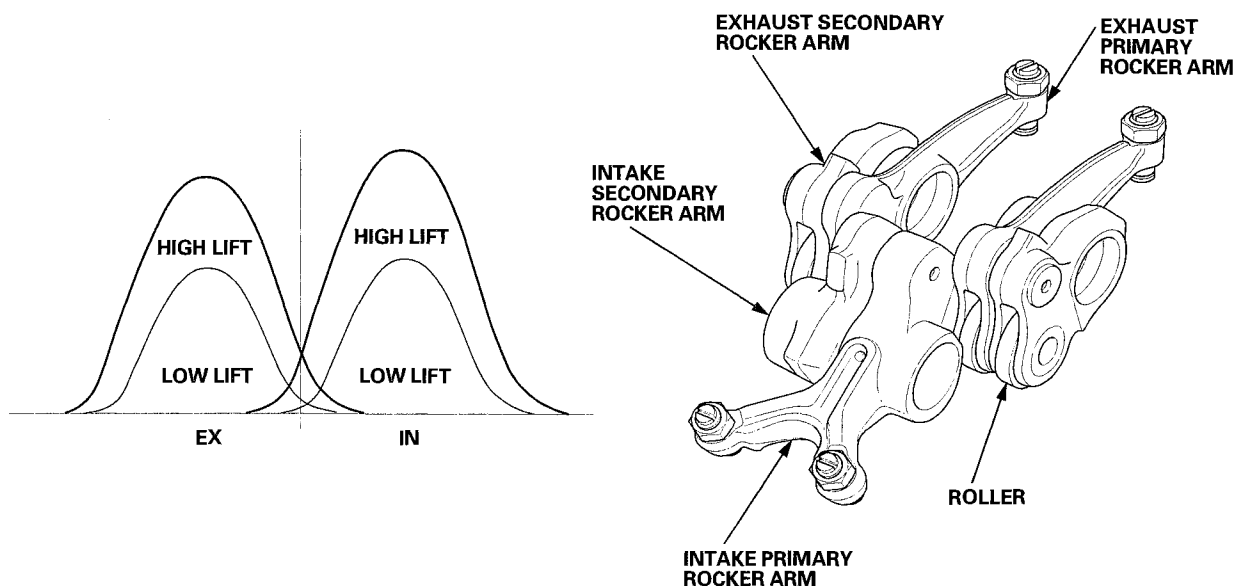
The rocker arm oil control solenoid is turned on by the PCM. Oil pressure from the rocker arm control solenoid enters into the intake secondary rocker arm via the rocker shaft, and it moves the VTEC switching piston in the intake secondary rocker arm. This causes the VTEC switching piston to slide into the primary rocker arm, locking the primary and secondary rocker arms together. Both intake rocker arms are lifted by the high lift cam lobe.





VTEC System (J37A4 engine)

- The VTEC system changes the cam profile to correspond to engine speed. It maximizes torque at low engine speed and output at high engine speed. The low lift cam is used at low engine speeds, and the high lift cam is used at high engine speeds.
- Both the intake valve side and the exhaust valve side have primary and secondary rocker arms. These rocker arms are locked and separated to change the cam profile by switching the oil passages. Roller rockers are used to minimize mechanical friction.



- The VTEC system oil pressure switched by the rocker arm oil control valve changing the hydraulic circuit. The rocker arm oil control valve is controlled by the rocker arm oil control solenoid. The rocker arm oil pressure switch detects VTEC system oil pressure and sends this information to the ECM/PCM.

ENGINE SPEED	ROCKER ARM OIL CONTROL SOLENOID	INTAKE and EXHAUST VALVE LIFT
LOW	OFF	LOW
HIGH	ON	HIGH

(cont'd)

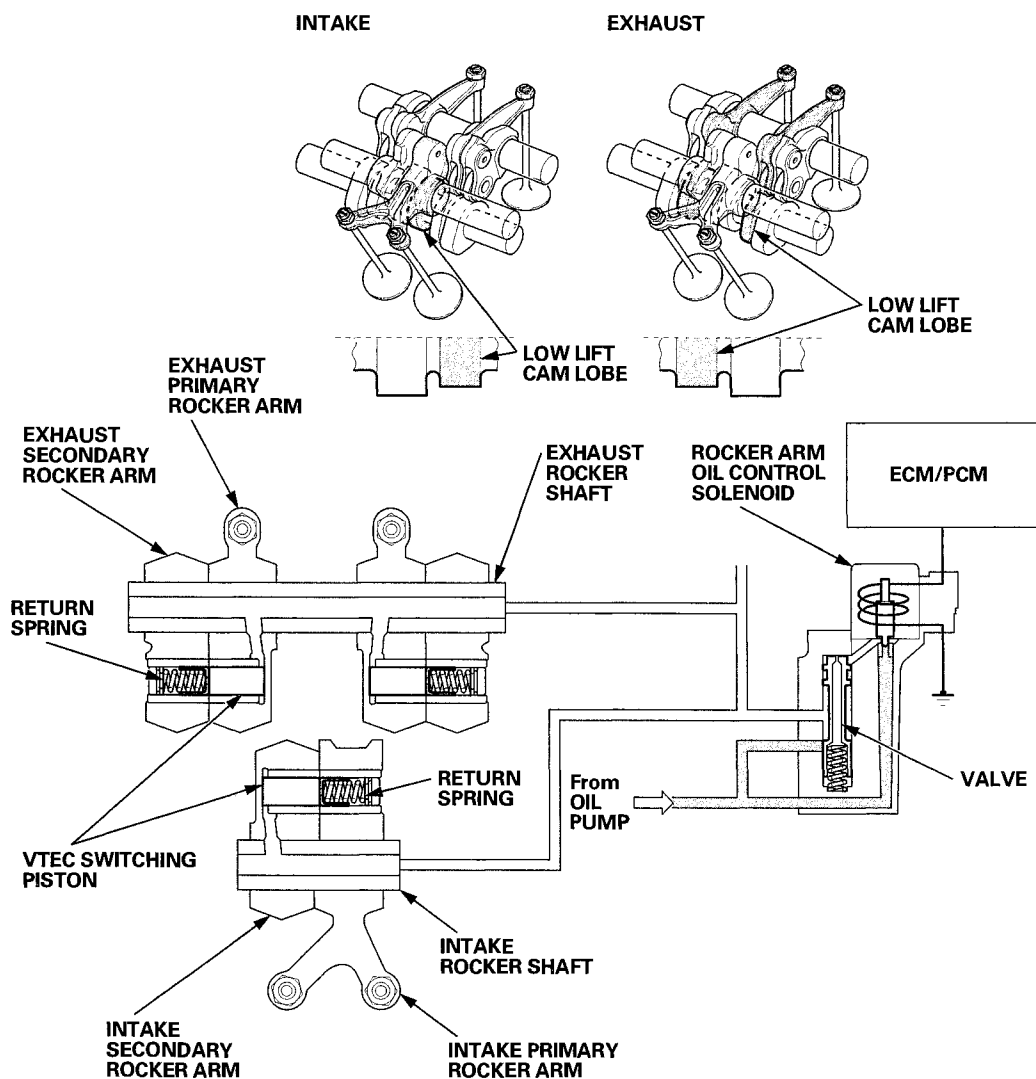
Fuel and Emissions Systems

System Description (cont'd)

VTEC System Operation (J37A4 engine)

At low engine speed

The rocker arm oil control solenoid is turned off by the ECM/PCM. Oil pressure from the rocker arm oil control valve does not enter the rocker shaft. The primary and secondary rocker arms are separated by a return spring and lifted by the low lift cam lobe.

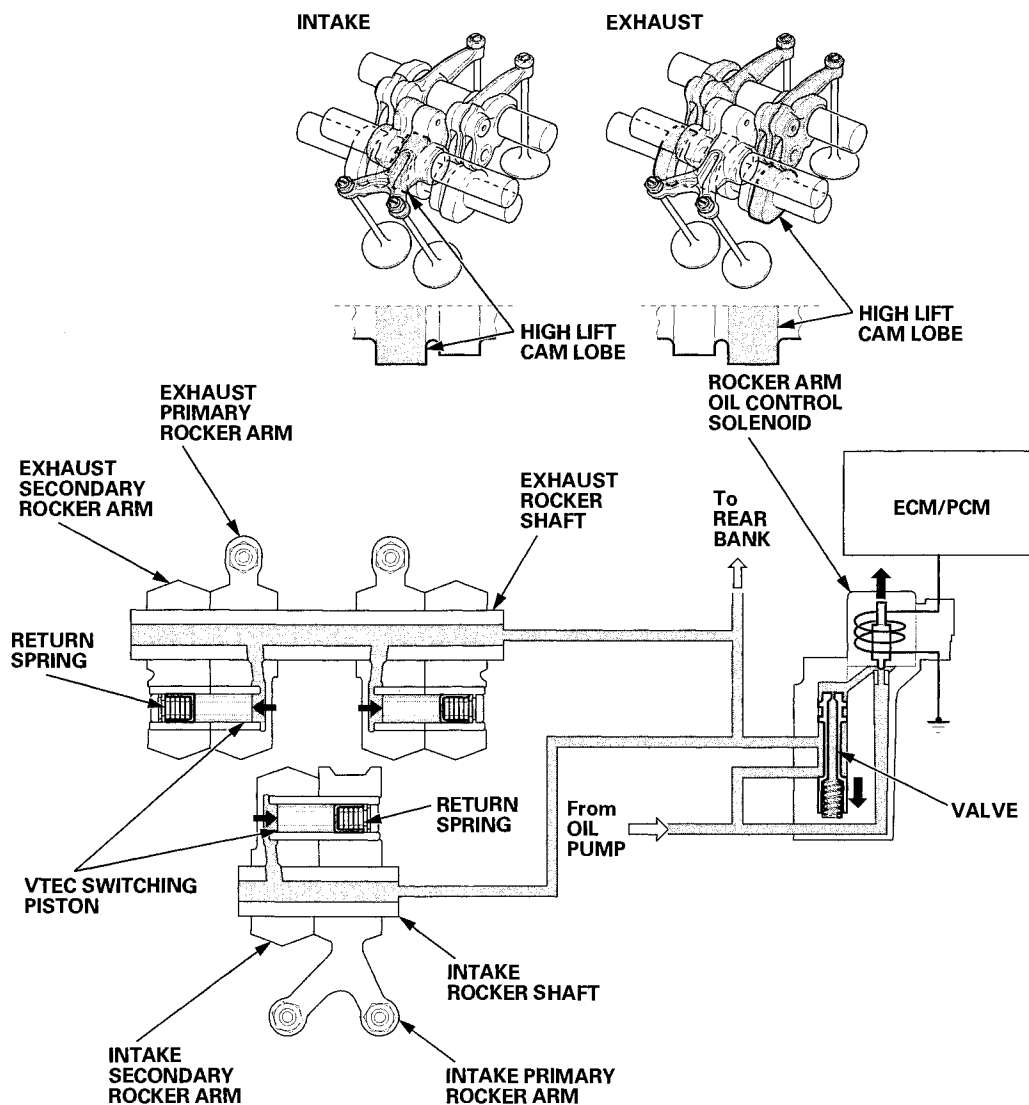




VTEC System Operation (J37A4 engine)

At high engine speed

The rocker arm oil control solenoid is turned on by the ECM/PCM. Oil pressure from the rocker arm control solenoid enters into the intake secondary rocker arm and the exhaust primary rocker arm via the rocker shaft, and it moves the VTEC switching piston into the intake secondary rocker arm and the exhaust primary rocker arm. This causes the VTEC switching pistons to lock both rocker arms (primary and secondary) together. Both rocker arms are then lifted by the high lift cam lobe.



Fuel and Emissions Systems

System Description (cont'd)

Idle Control System

When the engine is cold, if the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the alternator is charging, the ECM/PCM controls current to the throttle actuator to maintain the correct idle speed.

Brake Pedal Position Switch

The brake pedal position switch signals the ECM/PCM when the brake pedal is pressed.

Fuel Supply System

Fuel Cutoff Control

During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 850 rpm. Fuel cutoff control also occurs when the engine speed exceeds 6,900 rpm (J35Z6 engine) or 6,800 rpm (J37A4 engine), regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the PCM cuts the fuel at engine speeds over 4,000 rpm (M/T) or 5,000 rpm (A/T). On a cold engine, fuel cut occurs at a lower engine speed.

Fuel Pump Control ('09 model without SH-AWD, '10 model)

When the ignition switch is turned to ON (II) or when the engine start/stop button is in ON mode, the ECM/PCM grounds PGM-FI main relay 2 which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. When the engine starts, the ECM/PCM grounds PGM-FI main relay 2 and feeds current to the fuel pump. When the engine is not running and the ignition is ON (II) or the vehicle in ON mode, the ECM/PCM cuts ground to PGM-FI main relay 2 which cuts current to the fuel pump.

Fuel Pump Control ('09 model with SH-AWD)

When the ignition switch is turned to ON (II) or when the engine start/stop button is in ON mode, the PCM grounds PGM-FI main relay 2 which feeds current to the fuel pump control module. The PCM sends a signal to the fuel pump control module to operate the fuel pump for 2 seconds to pressurize the fuel system. When the engine starts, the fuel pump speed is controlled in four levels by the fuel pump control module. The PCM selects the fuel pump speed based on calculating the injector activation time and the engine speed, and then sends an operation command signal to the fuel pump control module. This operation decreases fuel pump noise at low engine speed.

PGM-FI Main Relays 1 and 2

PGM-FI main relay 1 is energized whenever the ignition switch is ON (II) or whenever the vehicle is in ON mode to supply battery voltage to the ECM/PCM, power to the injectors, and power for PGM-FI main relay 2. PGM-FI main relay 2 is energized to supply power to the fuel pump (fuel pump control module) for 2 seconds when the ignition switch is turned to ON (II) or when the engine start/stop button is in the ON mode, and when the engine is cranking or running.

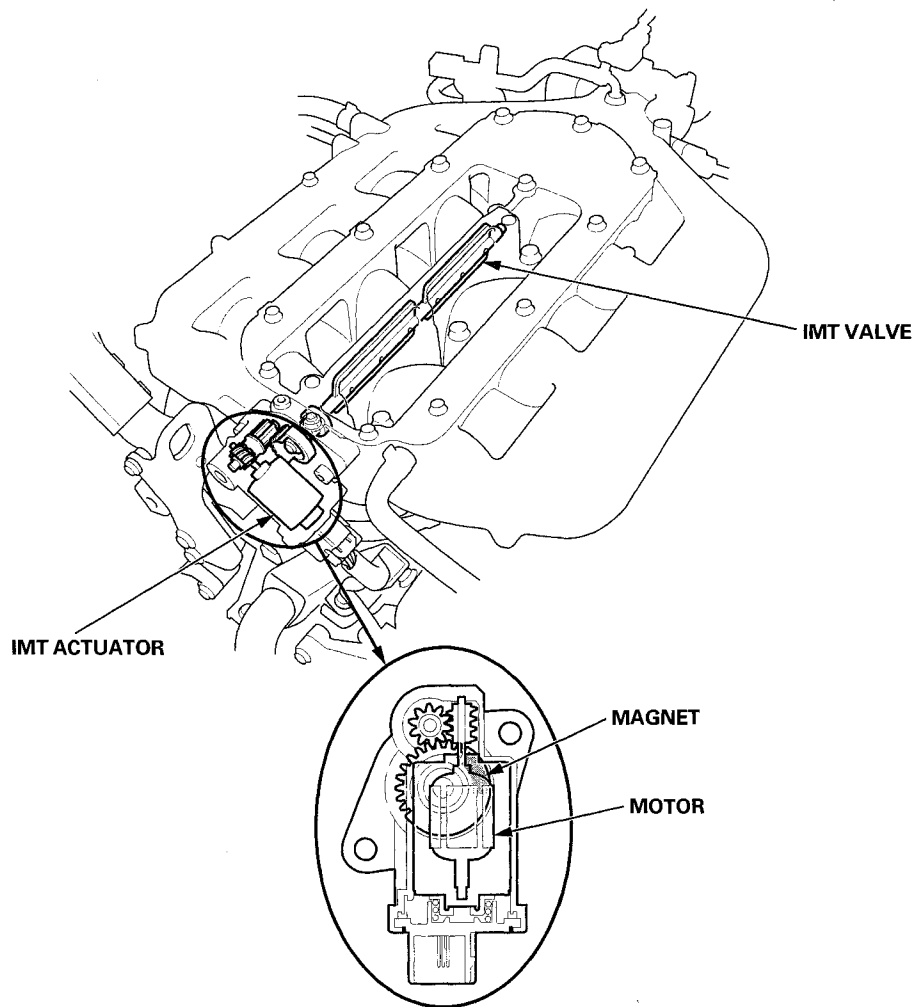


Intake Air System

Intake Manifold Tuning (IMT) Valve

Engine power is adjusted by opening and closing the intake manifold tuning (IMT) valve. When the valve is closed, there is high torque at low engine speed. When the valve is open, there is high torque at high engine speed.

The intake manifold tuning (IMT) actuator contains a sensor that detects the IMT valve position and sends it to the ECM/PCM.



Fuel and Emissions Systems

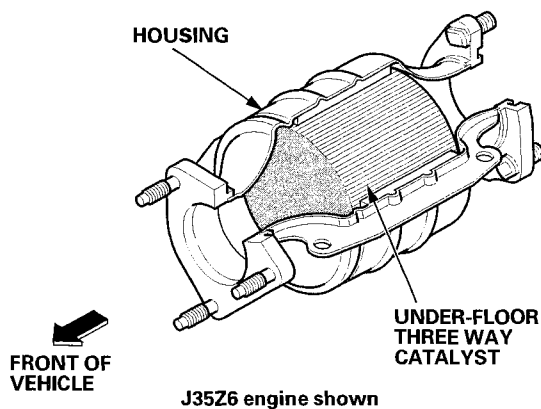
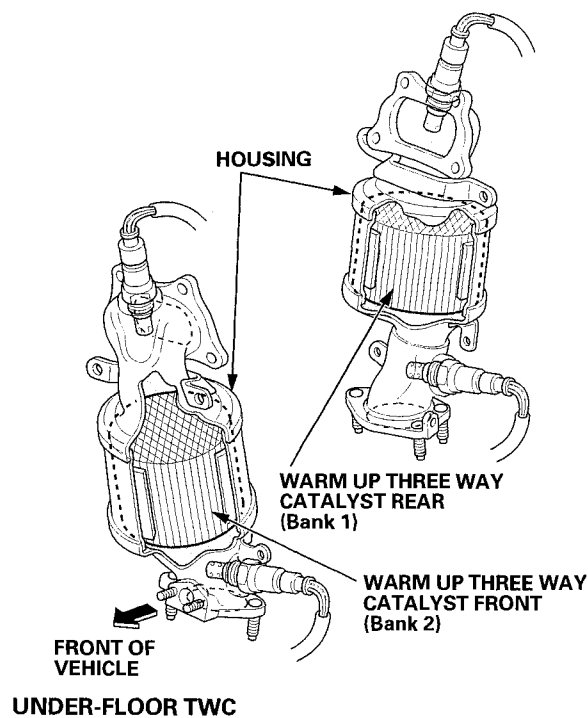
System Description (cont'd)

Catalytic Converter System

Warm Up Three Way Catalytic Converter (WU-TWC) and Under-floor Three Way Catalytic Converter (Under-floor TWC)

The WU-TWC/Under-floor TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO₂), nitrogen (N₂), and water vapor.

WU-TWC



Exhaust Gas Recirculation (EGR) System

Refer to the system diagram to see a functional layout of the system.

EGR Valve

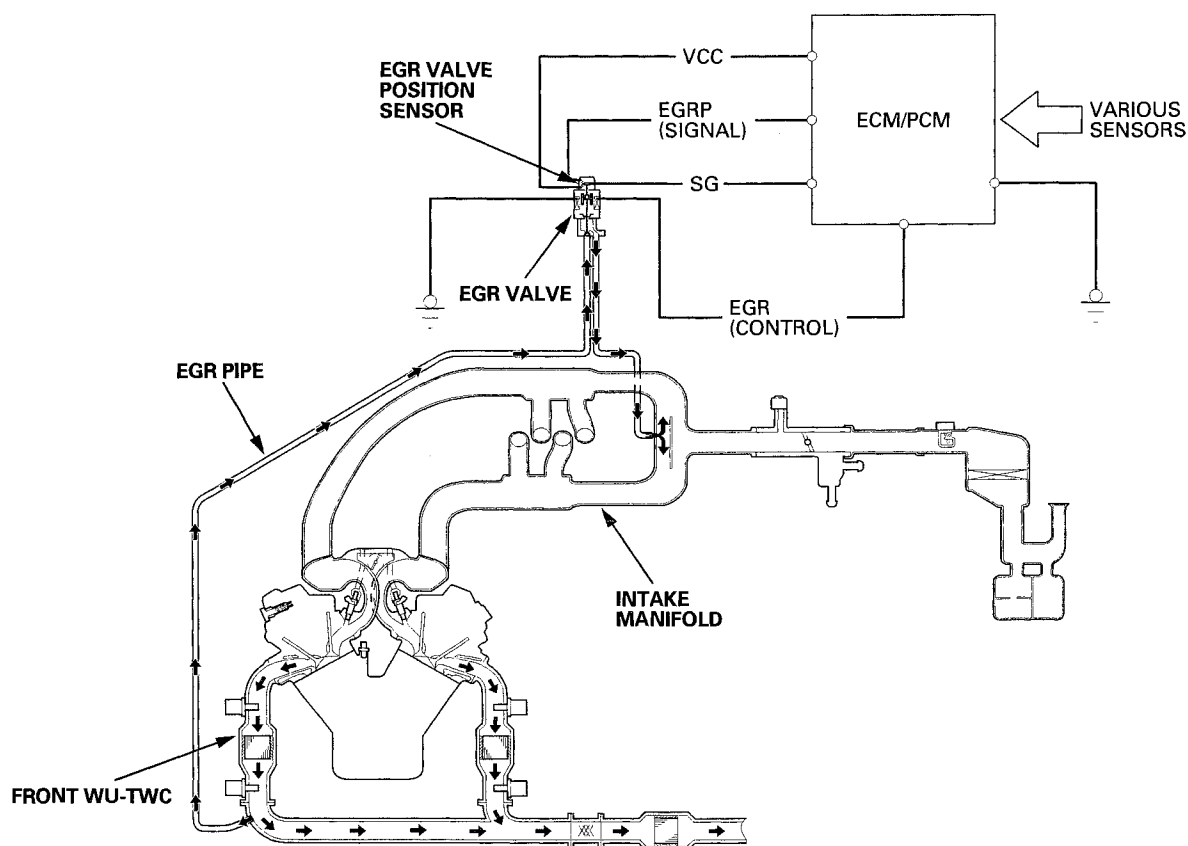
The EGR valve lowers peak combustion temperatures and reduces oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.



Exhaust Gas Recirculation (EGR) System Diagram

The EGR system reduces oxides of nitrogen (NO_x) emissions by recirculating exhaust gas through the EGR pipe to the intake manifold, and into the combustion chambers. Routing the exhaust gas through the EGR pipe helps to prevent carbon deposits from forming in the intake manifold and the throttle body. The ECM/PCM memory includes the ideal EGR valve position for varying operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift and sends it to the ECM/PCM. The ECM/PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the ECM/PCM cuts current to the EGR valve.

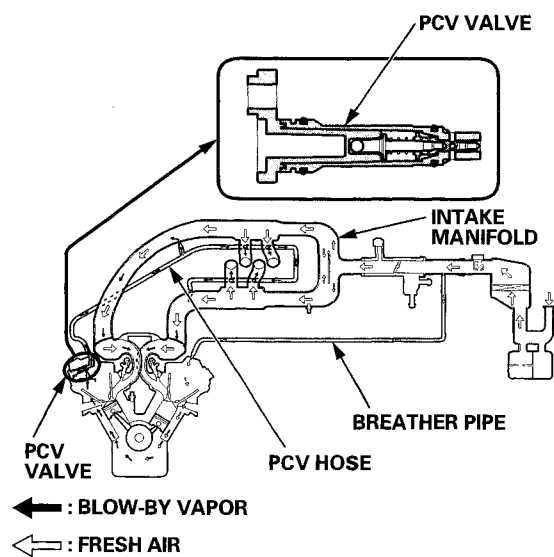


Fuel and Emissions Systems

System Description (cont'd)

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



Evaporative Emission (EVAP) Control System

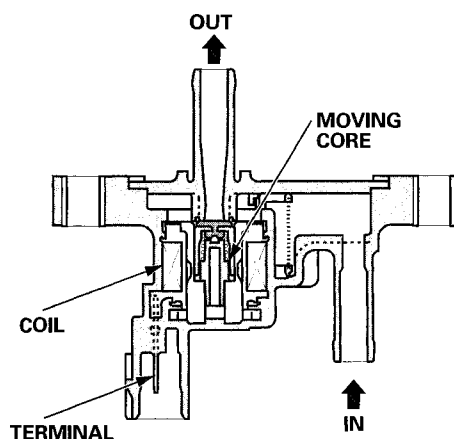
Refer to the system diagram to see a functional layout of the system.

EVAP Canister

The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged from the EVAP canister into the engine and burned.

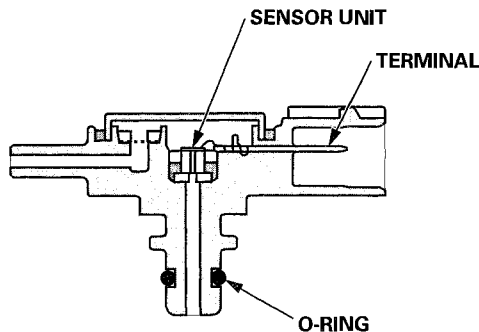
EVAP Canister Purge Valve

When the engine coolant temperature is below 140 °F (60 °C), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.



Fuel Tank Pressure (FTP) Sensor

The FTP sensor converts fuel tank absolute pressure into an electrical input to the ECM/PCM.

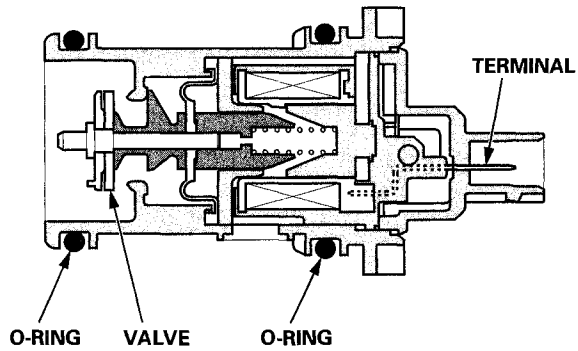




EVAP Canister Vent Shut Valve

The EVAP canister vent shut valve is on the EVAP canister.

The EVAP canister vent shut valve controls the venting of the EVAP canister.



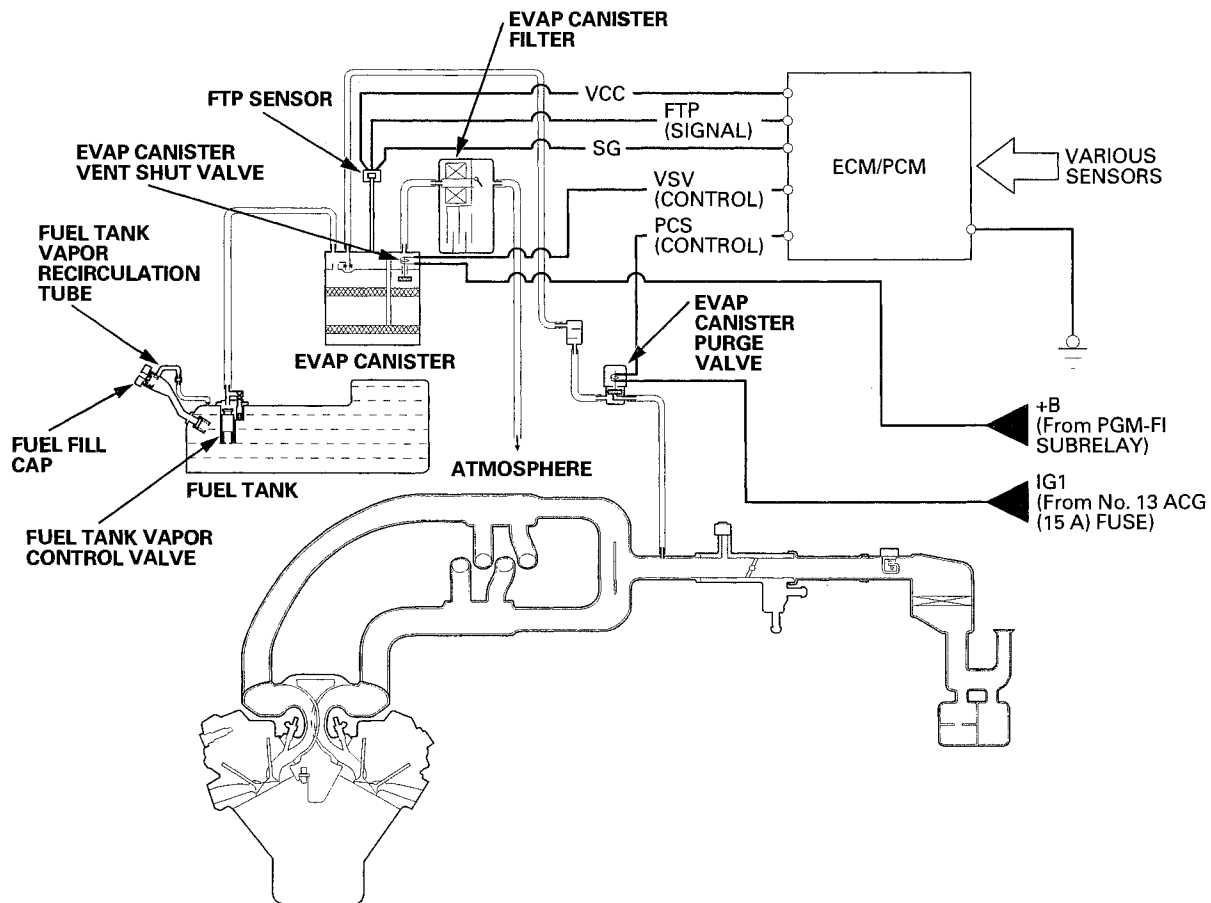
Fuel and Emissions Systems

System Description (cont'd)

Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimize the amount of fuel vapor escaping to the atmosphere. Vapor from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the canister into the engine and burned.

- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold. The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever the engine coolant temperature is above 140 °F (60 °C).
- During refueling, the fuel tank vapor control valve opens from pressure in the fuel tank and feeds the fuel vapor to the EVAP canister.

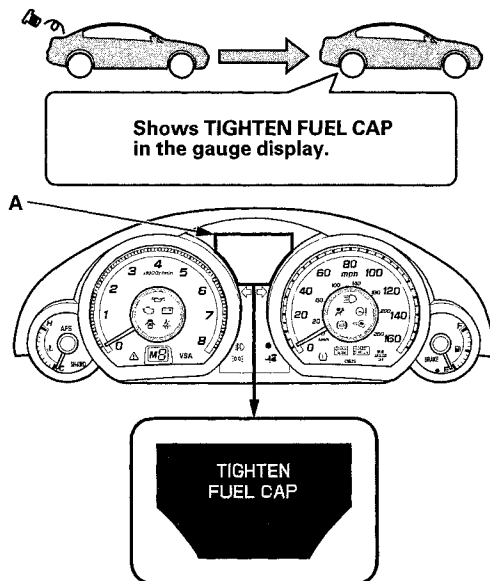




Fuel Cap Warning Message

The ECM/PCM detects a loose or missing fuel fill cap as an evaporative system leak and alerts the driver by showing a warning message in the gauge display.

The first time a leak is detected a TIGHTEN FUEL CAP message appears on the gauge display (A). To scroll to another message, press the select/reset button. The "TIGHTEN FUEL CAP" message appears each time you restart the engine until the system turns the message off. Turn the engine off, then replace or tighten the fuel fill cap until it clicks at least once.



To make the message go off (with the HDS)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Clear the Pending DTC with the HDS.
3. Verify there is no leak by doing the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

To make the message go off (without the HDS)

Procedure

1. Tighten the fuel fill cap until it clicks.
2. Start the engine, then turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
3. Repeat step 2 two more times.

Fuel and Emissions Systems

How to Set Readiness Codes

Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain readiness codes that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if DTCs have been cleared, or if the ECM/PCM has been reset, these readiness codes are reset to incomplete. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the emission test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, but do not start the engine. The MIL comes on for 15–20 seconds. If it then goes off, the readiness codes are set to complete. If it flashes five times, one or more readiness codes are not set to complete. To set readiness codes from incomplete to complete, do the procedure for the appropriate code.

To check the status of a specific DTC system, check the OBD status in the DTC MENU with the HDS (see page 11-8). This screen displays the DTC, the current data list of the enable criteria, and the status of the readiness testing.

Catalytic Converter Monitor and Readiness Code

NOTE:

- During the procedure, do not turn the ignition switch to ACC (I) or to LOCK (0), or select the ACC or the OFF mode.
- All readiness codes are cleared when the battery is disconnected, if DTCs have been cleared, or if the ECM/PCM is reset with the HDS.
- Low ambient temperatures or excessive stop-and-go traffic may increase the drive time needed to switch the readiness code from incomplete to complete.
- The readiness code will not switch to complete until all the enable criteria are met.
- If a fault in the secondary HO2S system caused the MIL to come on, the readiness code cannot be set to complete until you correct the fault.

Enable Criteria

- ECT SENSOR 1 at 158 °F (70 °C) or more.
- IAT SENSOR at 20 °F (–7 °C) or more.
- Vehicle speed above 25 mph (40 km/h).

Procedure

1. Connect the HDS to the vehicle's data link connector (DLC), and bring up the READINESS CODEs screen for Catalyst in the DTCs MENU.
2. Start the engine.
3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 5 miles (8 km), the readiness code should switch to complete.
4. If the readiness code is still not set to complete, check for a Pending DTC with the HDS. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.



Evaporative Emission (EVAP) Control System Monitor and Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Enable Criteria

- Battery voltage is more than 10.5 V.
- Engine at idle.
- ECT SENSOR 1 and 2 between 176 °F (80 °C) and 212 °F (100 °C).
- MAP sensor less than 46.6 kPa (14 in.Hg, 350 mmHg).
- Vehicle speed 0 mph (0 km/h).
- IAT SENSOR between 32 °F (0 °C) and 212 °F (100 °C).

Procedure

1. Connect the HDS to the DLC.
2. Start the engine.
3. Select the EVAP TEST in the INSPECTION MENU with the HDS, then select the FUNCTION TEST in the EVAP TEST MENU.
 - If the result is normal, readiness is complete.
 - If the result is not normal, go to the next step.
4. Check for a Pending DTC. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

Air Fuel Ratio (A/F) Sensor Monitor and Readiness Code

NOTE:

- During the procedure, do not turn the ignition switch to ACC (I) or to LOCK (0), or select the ACC or the OFF mode.
- All readiness codes are cleared when the battery is disconnected, if DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 140 °F (60 °C) or more.

Procedure

1. Start the engine.
2. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. During the drive, decelerate (with the throttle fully closed) for 5 seconds. After about 3.5 miles (5.6 km), the readiness code should switch from incomplete to complete.
3. Check the readiness codes screen for the AIR FUEL RATIO (A/F) SENSOR in the DTCs MENU with the HDS.
 - If the screen shows complete, readiness is complete.
 - If the screen shows not complete, go to the next step.
4. Check for a Pending DTC. If there is no DTC, the enable criteria was probably not met. Select the DATA LIST Menu. Check the ECT SENSOR in the ALL DATA LIST with the HDS. If the ECT is less than 140 °F (60 °C), run the engine until it is more than 140 °F (60 °C), then repeat the procedure.

(cont'd)

Fuel and Emissions Systems

How to Set Readiness Codes (cont'd)

Air Fuel Ratio (A/F) Sensor Heater Monitor Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Procedure

1. Start the engine, and let it idle for 1 minute. The readiness code should switch from incomplete to complete.
2. If the readiness code is still not set to complete, check for a Pending DTC. If there is no DTC, repeat the procedure.

Misfire Monitor and Readiness Code

- This readiness code is always set to available because misfiring is continuously monitored.
- Monitoring pauses, and the misfire counter resets, if the vehicle is driven over a rough road.
- Monitoring also pauses, and the misfire counter holds at its current value, if the throttle position changes more than a predetermined value, or if driving conditions fall outside the range of any related enable criteria.

Fuel System Monitor and Readiness Code

- This readiness code is always set to available because the fuel system is continuously monitored during closed loop operation.
- Monitoring pauses when the catalytic converter, the EVAP control system, and the A/F sensor monitors are active.
- Monitoring also pauses when any related enable criteria are not being met. Monitoring resumes when the enable criteria is again being met.

Comprehensive Component Monitor and Readiness Code

This readiness code is always set to available because the comprehensive component monitor is continuously running whenever the engine is cranking or running.

EGR Monitor and Readiness Code

NOTE:

- During the procedure, do not turn the ignition switch to ACC (I) or to LOCK (0), or select the ACC or the OFF mode.
- All readiness codes are cleared when the battery is disconnected, if DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Enable Criteria

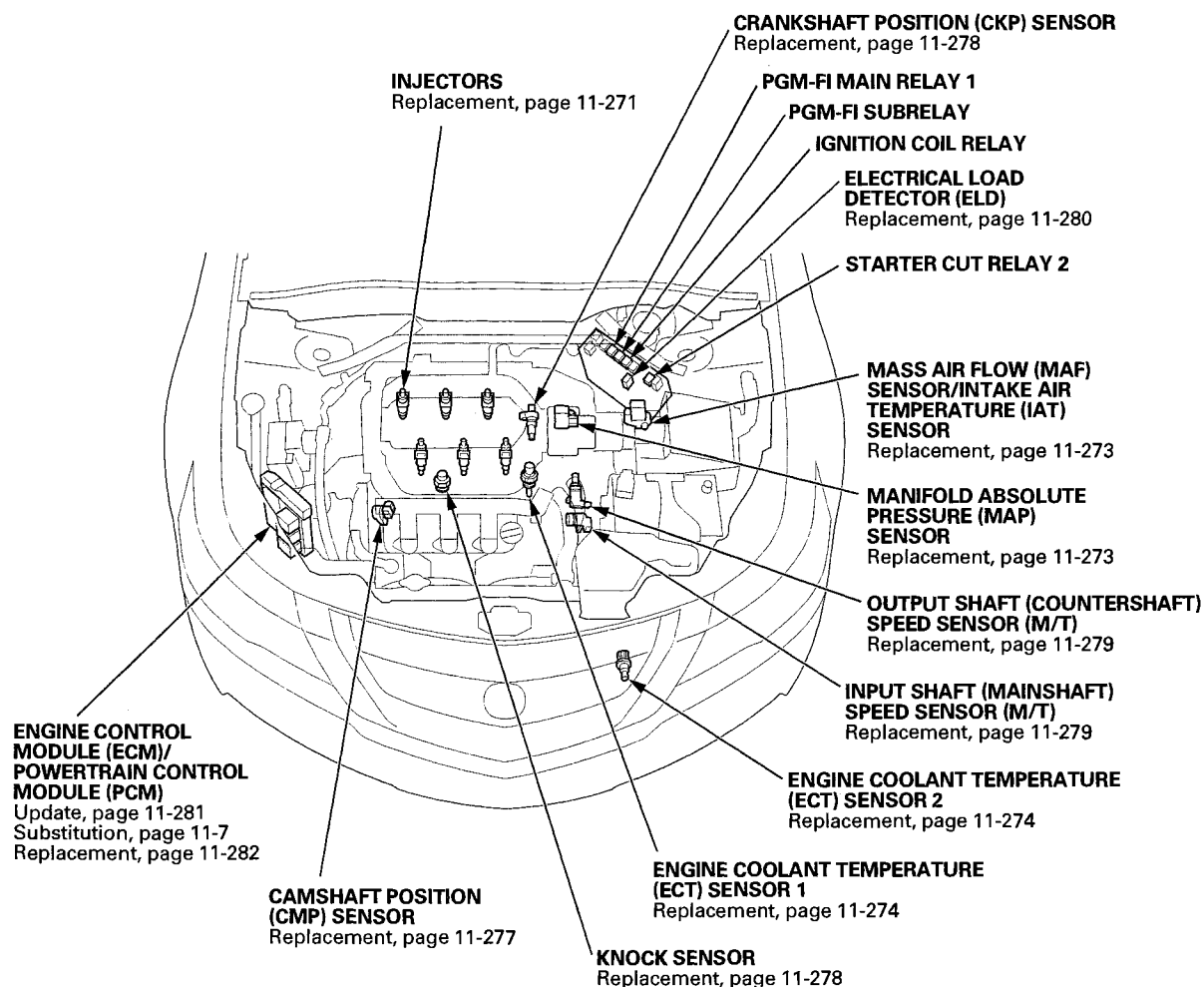
ECT SENSOR 1 at 176 °F (80 °C) or more.

Procedure

1. Connect the HDS to the DLC.
2. Start the engine.
3. Drive at a steady speed with the A/T in D, or M/T in 4th at 50–62 mph (80–100 km/h) or above for more than 10 seconds.
4. With the A/T in D or M/T in 4th, decelerate from 62 mph (100 km/h) or above by completely releasing the throttle for at least 5 seconds. If the engine is stopped during this procedure, go to step 3 and do the procedure again.
5. Check the OBD status screen for DTC P0401 in the DTC's MENU with the HDS.
 - If it is passed, readiness is complete.
 - If it is not passed, go to step 3 and retest.



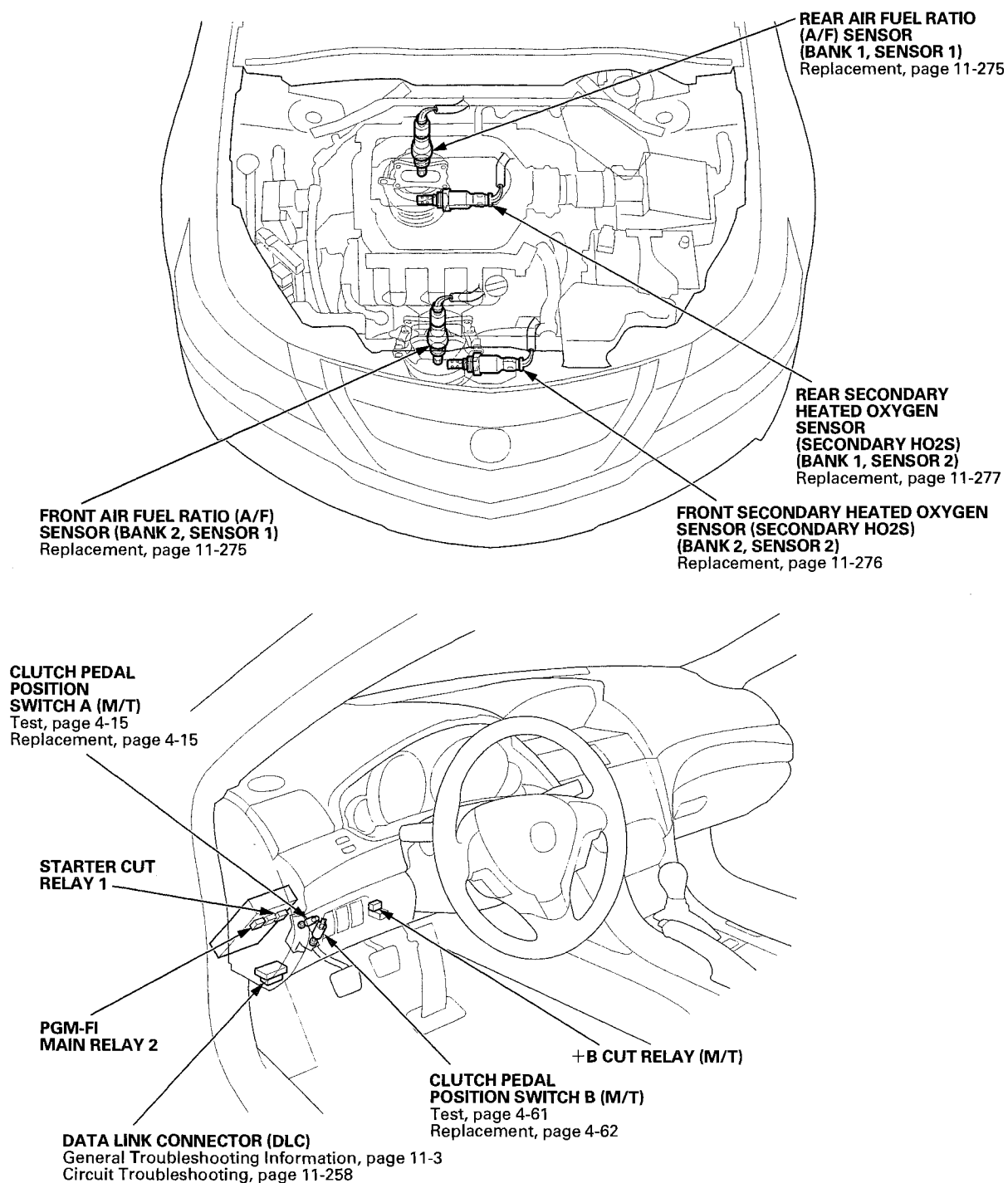
Component Location Index



(cont'd)

PGM-FI System

Component Location Index (cont'd)





DTC Troubleshooting

DTC P0101: MAF Sensor Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P1128, P1129, P2228, and/or P2229 are stored at the same time as DTC P0101, troubleshoot those DTCs first, then recheck for DTC P0101.

1. Check for poor connections or damage to these parts:

- PCV hose
- Intake air duct
- Air cleaner
- Purge (PCS) line
- Brake booster
- Brake booster hose

Are the parts OK?

YES—Go to step 2.

NO—Repair or replace the damaged part(s), then go to step 15.

2. Check for damage or looseness at the air duct in the air cleaner.

Is it OK?

YES—Go to step 3.

NO—Reconnect or replace the air duct, then go to step 15.

3. Check for a dirty air cleaner element.

Is it dirty?

YES—Replace the air cleaner element (see page 11-422), then go to step 15.

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

6. Check the MAF SENSOR in the DATA LIST with the HDS.

Is there about 0.2 gm/s or 0.5 V?

YES—Go to step 7.

NO—Go to step 13.

7. Start the engine.

8. Vary the engine speed between 2,000 and 3,000 rpm.

9. Check the MAF SENSOR in the DATA LIST with the HDS.

Does the reading change?

YES—Go to step 10.

NO—Go to step 13.

10. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

11. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- MAP SENSOR
- MAF SENSOR

12. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 13.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 11 and recheck.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
14. Replace the MAF sensor/IAT sensor (see page 11-273).
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS
 - MAP SENSOR
 - MAF SENSOR
19. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0101 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO—Go to step 20.
20. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

DTC P0102: MAF Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 2 seconds.
2. Check the MAF SENSOR in the DATA LIST with the HDS.

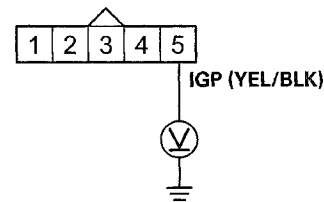
Is about 0 gm/s, or 0.1 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Measure the voltage between MAF sensor/IAT sensor 5P connector terminal No. 5 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 7.

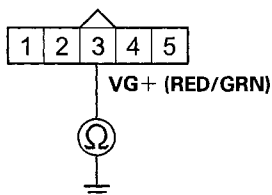
NO—Repair open in the wire between PGM-FI main relay 1 and the MAF sensor/IAT sensor, then go to step 19.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.



8. Measure the resistance between MAF sensor/IAT sensor 5P connector terminal No. 3 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

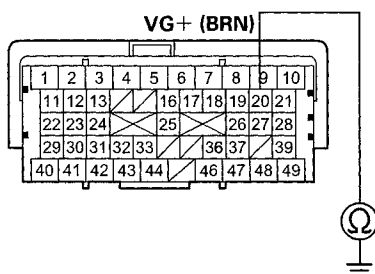
Is there 190–210 k Ω ?

YES—Go to step 13.

NO—Go to step 9.

9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector A (49P).
11. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

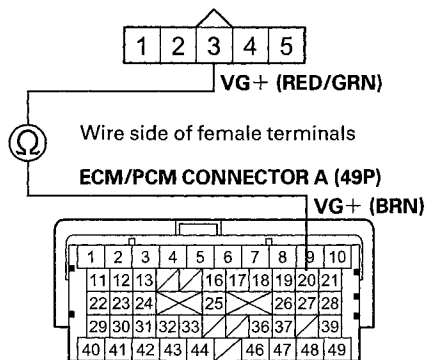
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A20) and the MAF sensor/IAT sensor, then go to step 20.

NO—Go to step 12.

12. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 3 and ECM/PCM connector terminal A20.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM/PCM (A20) and the MAF sensor/IAT sensor, then go to step 20.

13. Substitute a known-good MAF sensor/IAT sensor (see page 11-273).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Clear the DTC with the HDS.
17. Start the engine. Hold the engine speed at 2,000 rpm without load (A/T in P or N, M/T in neutral).
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0102 indicated?

YES—Reinstall the original MAF sensor/IAT sensor, then go to step 26.

NO—Replace the original MAF sensor/IAT sensor (see page 11-273), then go to step 19.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

19. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-337).
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0102 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.
26. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0102 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0103: MAF Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 2 seconds.
2. Check the MAF SENSOR in the DATA LIST with the HDS.

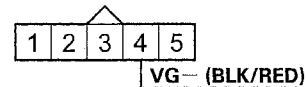
Is about 202 gm/s, or 4.89 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■

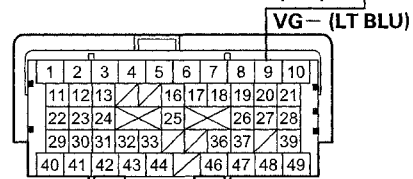
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Jump the SCS line with the HDS.
5. Disconnect the MAF sensor/IAT sensor 5P connector.
6. Disconnect ECM/PCM connector A (49P).
7. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 4 and ECM/PCM connector terminal A9.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 8.

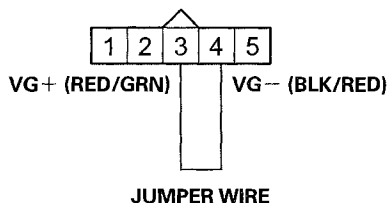
NO—Repair open in the wire between the ECM/PCM (A9) and the MAF sensor/IAT sensor, then go to step 15.

8. Reconnect ECM/PCM connector A (49P).



9. Connect MAF sensor/IAT sensor 5P connector terminals No. 3 and No. 4 with a jumper wire.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

10. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
11. Clear the DTC with the HDS.
12. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0103 indicated?

YES—Go to step 20.

NO—Go to step 13.

13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
14. Replace the MAF sensor/IAT sensor (see page 11-273).
15. Reconnect all connectors.
16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see page 11-337).
19. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0103 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

21. Reconnect all connectors.

22. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

23. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0103 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0107: MAP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check the MAP SENSOR in the DATA LIST with the HDS.

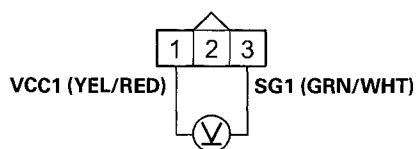
Is about 3 kPa (1.0 inHg, 26 mmHg), or 0.23 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check the MAP SENSOR in the DATA LIST with the HDS.
Is about 3 kPa (1.0 inHg, 26 mmHg), or 0.23 V or less indicated?
YES—Go to step 12.
NO—Go to step 7.
7. Measure the voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 16.

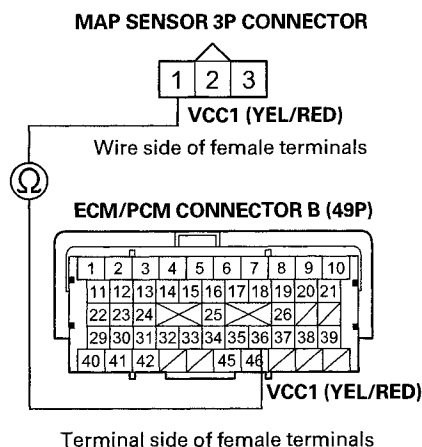
NO—Go to step 8.

8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

9. Jump the SCS line with the HDS.

10. Disconnect ECM/PCM connector B (49P).

11. Check for continuity between ECM/PCM connector terminal B36 and MAP sensor 3P connector terminal No. 1.



Is there continuity?

YES—Go to step 23.

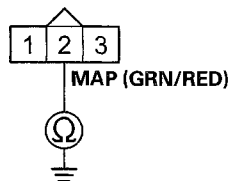
NO—Repair open in the wire between the ECM/PCM (B36) and the MAP sensor, then go to step 18.

12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (49P).



15. Check for continuity between MAP sensor 3P connector terminal No. 2 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B35) and the MAP sensor, then go to step 18.

NO—Go to step 23.

16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
17. Replace the MAP sensor (see page 11-273).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0107 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0107 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

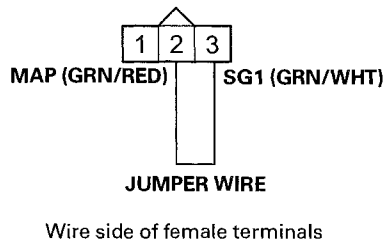
DTC Troubleshooting (cont'd)

DTC P0108: MAP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check the MAP SENSOR in the DATA LIST with the HDS.
Is about 160 kPa (47.1 inHg, 1,197 mmHg), or 4.49 V or more indicated?
YES—Go to step 3.
NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the MAP sensor 3P connector.
5. Connect MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

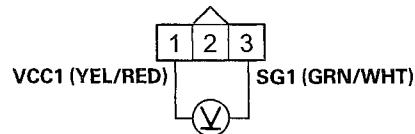
MAP SENSOR 3P CONNECTOR



6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. Check the MAP SENSOR in the DATA LIST with the HDS.
Is about 160 kPa (47.1 inHg, 1,197 mmHg), or 4.49 V or more indicated?
YES—Go to step 8.
NO—Go to step 18.
8. Remove the jumper wire from the MAP sensor 3P connector.

9. Measure the voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



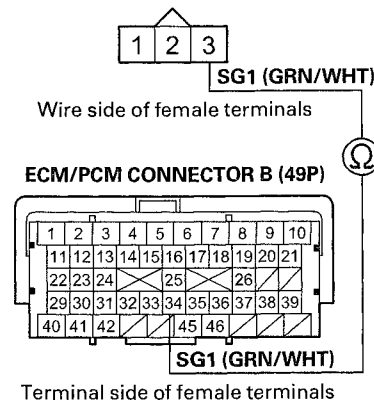
Is there about 5 V?

YES—Go to step 14.

NO—Go to step 10.

10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector B (49P).
13. Check for continuity between ECM/PCM connector terminal B34 and MAP sensor 3P connector terminal No. 3.

MAP SENSOR 3P CONNECTOR



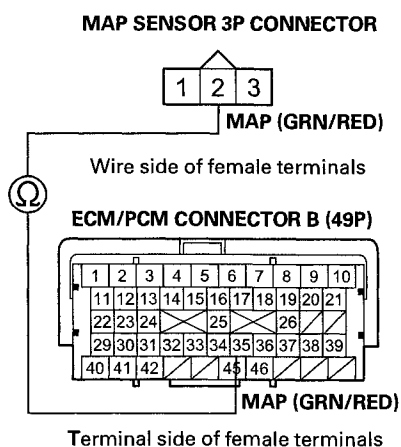
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM/PCM (B34) and the MAP sensor, then go to step 20.



14. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector B (49P).
17. Check for continuity between ECM/PCM connector terminal B35 and MAP sensor 3P connector terminal No. 2.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM/PCM (B35) and the MAP sensor, then go to step 20.

18. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
19. Replace the MAP sensor (see page 11-273).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-337).
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0108 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.

26. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0108 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0111: IAT Sensor Circuit Range/Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections or loose terminals at ECT sensors 1 and 2, and the MAF sensor/IAT sensor.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connections or terminals, then go to step 15.

2. Remove the MAF sensor/IAT sensor (see page 11-273).
3. Allow the MAF sensor/IAT sensor to cool to the ambient temperature.
4. Note the ambient temperature.
5. Connect the MAF sensor/IAT sensor to its 5P connector, but do not install it.
6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. Note the value of the IAT SENSOR quickly in the DATA LIST with the HDS.
8. Compare the value of the IAT SENSOR to the ambient temperature.
Does the value of the IAT SENSOR differ 5.4 °F (3 °C) or more from ambient temperature?
YES—Go to step 13.
NO—Go to step 9.
9. Disconnect the MAF sensor/IAT sensor from its 5P connector.

10. Using a heat gun, blow hot air on the MAF sensor/IAT sensor for a few seconds. Do not apply the heat longer than a few seconds or you will damage the sensor.

11. Connect the MAF sensor/IAT sensor to its 5P connector, but do not install it.

12. Check the IAT SENSOR in the DATA LIST with the HDS.

Does the IAT SENSOR change 68 °F (38 °C) or more?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■

NO—Go to step 13.

13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
14. Replace the MAF sensor/IAT sensor (see page 11-273).
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0111 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0112: IAT Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check the IAT SENSOR in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM.■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check the IAT SENSOR in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

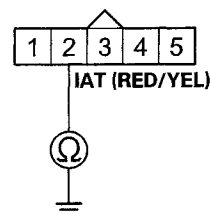
YES—Go to step 7.

NO—Go to step 11.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector C (49P).

10. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 2 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the MAF sensor/IAT sensor and the ECM/PCM (C24), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Replace the MAF sensor/IAT sensor (see page 11-273).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-337).
17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0112 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.

19. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

20. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0112 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0113: IAT Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check the IAT SENSOR in the DATA LIST with the HDS.

Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 3.

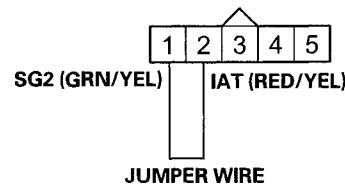
NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

4. Disconnect the MAF sensor/IAT sensor 5P connector.

5. Connect MAF sensor/IAT sensor 5P connector terminals No. 1 and No. 2 with a jumper wire.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

7. Check the IAT SENSOR in the DATA LIST with the HDS.

Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 8.

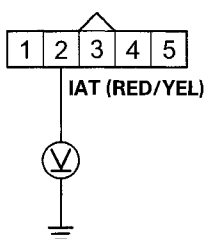
NO—Go to step 20.

8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.



9. Remove the jumper wire from the MAF sensor/IAT sensor 5P connector.
10. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
11. Measure the voltage between MAF sensor/IAT sensor 5P connector terminal No. 2 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

Is there about 5 V?

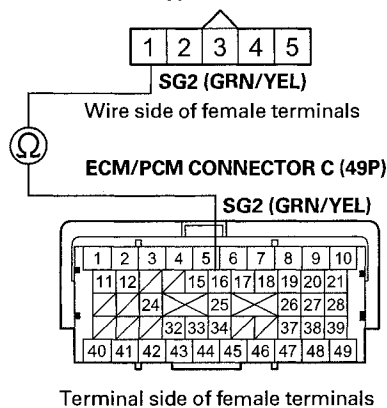
YES—Go to step 12.

NO—Go to step 16.

12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector C (49P).

15. Check for continuity between ECM/PCM connector terminal C16 and MAF sensor/IAT sensor 5P connector terminal No. 1.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (C16) and the MAF sensor/IAT sensor, then go to step 22.

16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector C (49P).

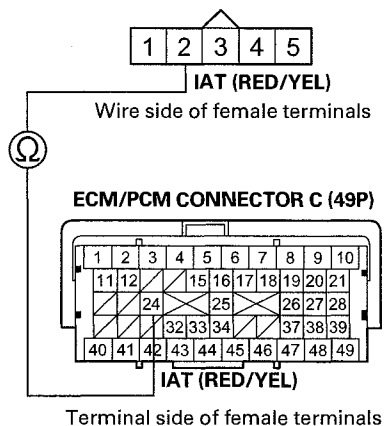
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

19. Check for continuity between ECM/PCM connector terminal C24 and MAF sensor/IAT sensor 5P connector terminal No. 2.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (C24) and the MAF sensor/IAT sensor, then go to step 22.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
21. Replace the MAF sensor/IAT sensor (see page 11-273).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-337).
26. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0113 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0113 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0116: ECT Sensor 1 Circuit Range/Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 176 °F (80 °C) or more, or 0.78 V or less indicated?

YES—Go to step 6.

NO—Go to step 3.

3. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Does ECT SENSOR 1 change 18 °F (10 °C) or more?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■

NO—Go to step 11.

6. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

8. Open the hood, and let the engine cool for 3 hours.

9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

10. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Does ECT SENSOR 1 change 18 °F (10 °C) or more?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■

NO—Go to step 11.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

12. Replace ECT sensor 1 (see page 11-274).

13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

14. Reset the ECM/PCM with the HDS.

15. Do the ECM/PCM idle learn procedure (see page 11-337).

16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0116 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0117: ECT Sensor 1 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

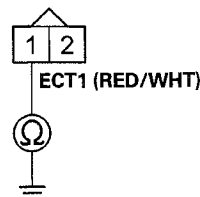
YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the ECT sensor 1 2P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check ECT SENSOR 1 in the DATA LIST with the HDS.
Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?
YES—Go to step 7.
NO—Go to step 11.
7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector C (49P).

10. Check for continuity between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between ECT sensor 1 and the ECM/PCM (C32), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Replace ECT sensor 1 (see page 11-274).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-337).
17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0117 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
20. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P0117 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0118: ECT Sensor 1 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

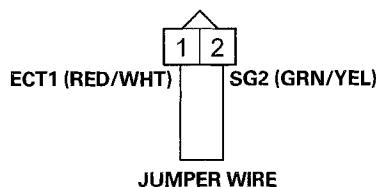
Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the ECT sensor 1 2P connector.
5. Connect ECT sensor 1 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. Check ECT SENSOR 1 in the DATA LIST with the HDS.
Is about -40°F (-40°C) or less, or 4.92 V or more indicated?
- YES**—Go to step 8.
- NO**—Go to step 20.
8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
9. Remove the jumper wire from the ECT sensor 1 2P connector.

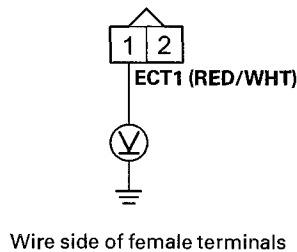
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

10. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
11. Measure the voltage between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Is there about 5 V?

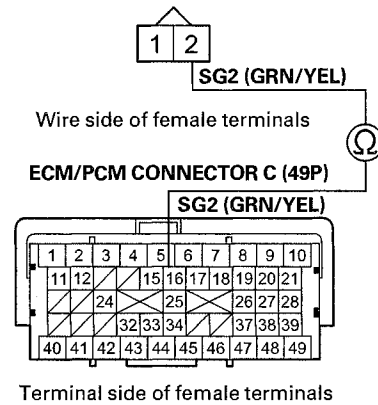
YES—Go to step 12.

NO—Go to step 16.

12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector C (49P).

15. Check for continuity between ECM/PCM connector terminal C16 and ECT sensor 1 2P connector terminal No. 2.

ECT SENSOR 1 2P CONNECTOR



Is there continuity?

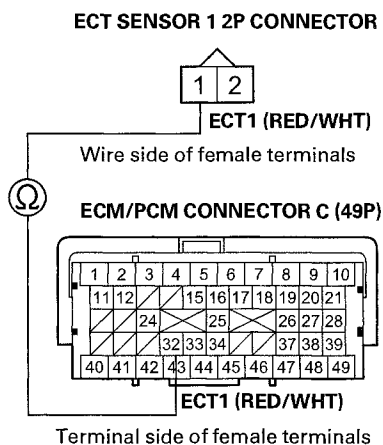
YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (C16) and ECT sensor 1, then go to step 22.

16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector C (49P).



19. Check for continuity between ECM/PCM connector terminal C32 and ECT sensor 1 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (C32) and ECT sensor 1, then go to step 22.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
21. Replace ECT sensor 1 (see page 11-274).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-337).
26. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0118 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0118 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0125: ECT Sensor 1 Malfunction/Slow Response

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle for 5 minutes or more.
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 10 °F (−12 °C) or less indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the connections and the terminals are OK, replace ECT sensor 1 (see page 11-274), then go to step 7.

NO—Go to step 3.

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Allow the engine to cool to 104 °F (40 °C) or less.
5. Start the engine, and let it idle until ECT SENSOR 1 goes up to about 158 °F (70 °C).

Does ECT SENSOR 2 also read about 158 °F (70 °C)?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■

6. Check the thermostat (see page 10-4).

Is the thermostat OK?

YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the connections and the terminals are OK, replace ECT sensor 1 (see page 11-274), then go to step 7.

NO—Replace the thermostat (see page 10-8), then go to step 7.

7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

8. Reset the ECM/PCM with the HDS.

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

10. Allow the engine to cool to 104 °F (40 °C) or less.

11. Start the engine, and let it idle until ECT SENSOR 1 goes up to about 158 °F (70 °C).

Does ECT SENSOR 2 also read about 158 °F (70 °C)?

YES—Go to step 1 and recheck.

NO—Troubleshooting is complete. ■



DTC P0128: Cooling System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Make sure the blower switch is off.
4. Check the FAN CTRL in the DATA LIST with the HDS.

Is it OFF?

YES—Go to step 5.

NO—Wait until the FAN CTRL is off, then go to step 5.

5. Check the radiator fan operation.

Does the radiator fan keep running?

YES—Check the radiator fan high speed circuit (see page 10-20), and the radiator fan relay (see page 22-88). If the circuit and the relay are OK, go to step 19.

NO—Go to step 6.

6. Let the engine cool until the coolant temperature is 104 °F (40 °C) or less.
7. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
8. Start the engine, and let it idle.
9. Let the engine idle until ECT SENSOR 1 goes up 34 °F (19 °C) or more from the recorded temperature.
10. Check ECT SENSOR 2 in the DATA LIST with the HDS.
11. Compare the recorded value of ECT SENSOR 2 and the present value of ECT SENSOR 2.

Did the temperature rise 9 °F (5 °C) or more?

YES—Test the thermostat (see page 10-4), then go to step 12.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■

12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

13. Reset the ECM/PCM with the HDS.

14. Let the engine cool until the coolant temperature is between 21 °F (−6 °C) and 104 °F (40 °C).

15. Do the ECM/PCM idle learn procedure (see page 11-337).

16. Test-drive at a steady speed between 15–75 mph (24–120 km/h) for 10 minutes.

17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0128 indicated?

YES—Check the cooling the system, then go to step 19.

NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check the cooling the system, then go to step 19. If the screen indicates NOT COMPLETED, go to step 14.

19. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

20. Let the engine cool until the coolant temperature is between 21 °F (−6 °C) and 104 °F (40 °C).

21. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

22. Test-drive at a steady speed between 15–75 mph (24–120 km/h) for 10 minutes.

23. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0128 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

24. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

DTC P0133: Rear A/F Sensor (Bank 1, Sensor 1) Malfunction/Slow Response

DTC P0153: Front A/F Sensor (Bank 2, Sensor 1) Malfunction/Slow Response

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0139 and/or P0159* is stored at the same time as DTC P0133 and/or P0153*, troubleshoot DTC P0139 and/or P0159* first, then recheck for DTC P0133 and/or P0153*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, or M/T in neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 5th
 - Engine speed between 1,250—2,100 rpm
 - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed of 35 mph (57 km/h) or more
5. Monitor the OBD STATUS for DTC P0133 and/or P0153* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Replace the A/F sensor (Sensor 1) (see page 11-275).
8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
9. Reset the ECM/PCM with the HDS.



10. Do the ECM/PCM idle learn procedure (see page 11-337).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 5th
 - Engine speed between 1,250—2,100 rpm
 - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed of 35 mph (57 km/h) or more
13. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0133 and/or P0153 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P0133 and/or P0153* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC P0134: Rear A/F Sensor (Bank 1, Sensor 1) Heater System Malfunction

DTC P0154: Front A/F Sensor (Bank 2, Sensor 1) Heater System Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2251 and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251 and/or P2254* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) for at least 1 minute.
4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0134 and/or P0154 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. ■

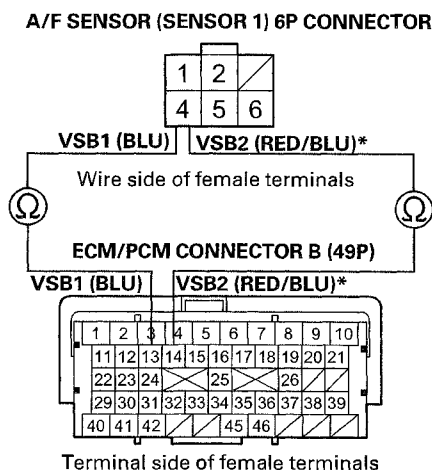
5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 6P connector.
8. Disconnect ECM/PCM connector B (49P).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

9. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 4 and ECM/PCM connector terminal B13 (B14)*.



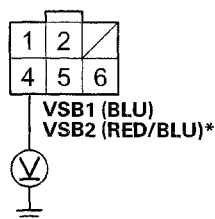
Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the ECM/PCM (B13 (B14)*) and A/F sensor (Sensor 1), then go to step 14.

10. Reconnect ECM/PCM connector B (49P).
11. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) for at least 1 minute.
12. Measure the voltage between A/F sensor (Sensor 1) 6P connector terminal No. 4 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace A/F sensor (Sensor 1) (see page 11-275).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0134 and/or P0154* indicated?

YES—Check for poor connections or loose terminals at A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P0134 and/or P0154* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
21. Reconnect all connectors.
22. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
23. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) for at least 1 minute.
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0134 and/or P0154* indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 25.



25. Monitor the OBD STATUS for DTC P0134 and/or P0154* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0135: Rear A/F Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction

DTC P0155: Front A/F Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0135 and/or P0155 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Check the No. 14 FI SUB (15 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Go to step 7.

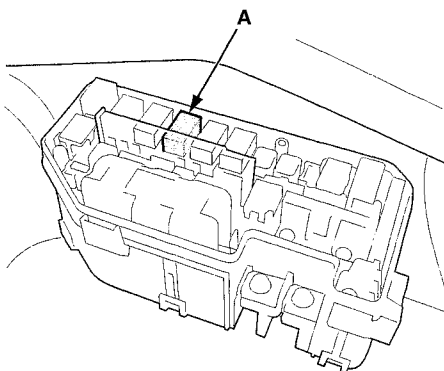
NO—Go to step 20.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

7. Remove the PGM-FI subrelay (A) from the under-hood fuse/relay box.



8. Test the PGM-FI subrelay (see page 22-88).

Is the relay OK?

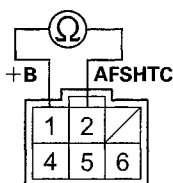
YES—Go to step 9.

NO—Replace the PGM-FI subrelay, then go to step 26.

9. Disconnect the A/F sensor (Sensor 1) 6P connector.

10. At the sensor side, measure the resistance between A/F sensor (Sensor 1) 6P connector terminals No. 1 and No. 2.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Terminal side of male terminals

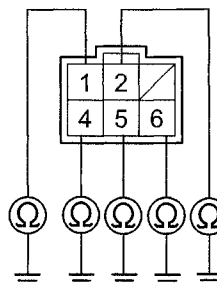
Is there 2.5—4.0 Ω at the room temperature?

YES—Go to step 11.

NO—Go to step 25.

11. At the sensor side, check for continuity between each terminal of at the A/F sensor (Sensor 1) 6P connector and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Terminal side of male terminals

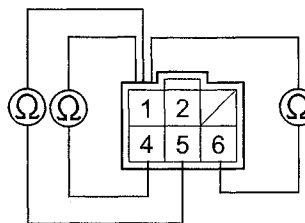
Is there continuity to ground at any of the terminals?

YES—Go to step 25.

NO—Go to step 12.

12. At the sensor side, check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 1 and each of the other terminals in the connectors individually.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 25.

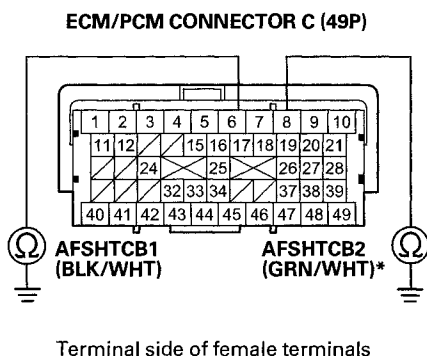
NO—Go to step 13.

13. Jump the SCS line with the HDS.

14. Disconnect ECM/PCM connector C (49P).



15. Check for continuity between ECM/PCM connector terminal C6 (C8)* and body ground.

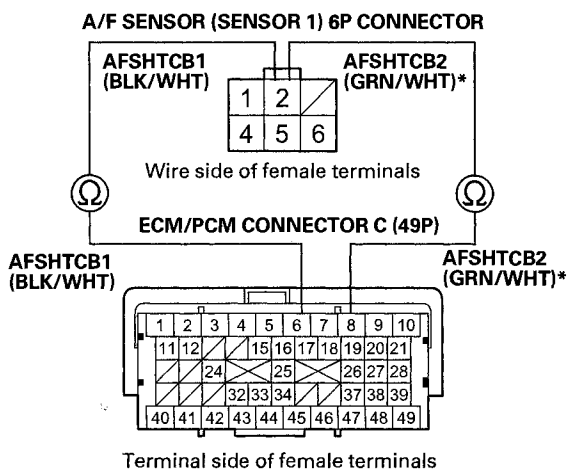


Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C6 (C8)*) and A/F sensor (Sensor 1), then go to step 26.

NO—Go to step 16.

16. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 2 and ECM/PCM connector C6 (C8)*.

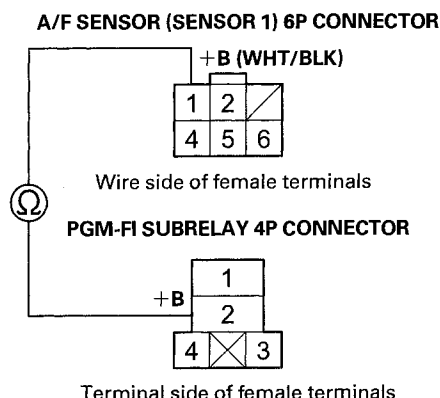


Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the ECM/PCM (C6 (C8)*) and A/F sensor (Sensor 1), then go to step 26.

17. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 1 and PGM-FI subrelay 4P connector terminal No. 2.



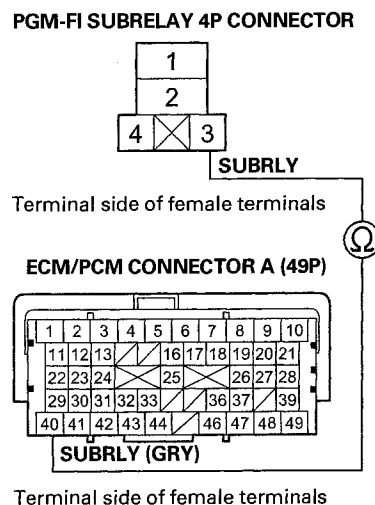
Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between A/F sensor (Sensor 1) and the PGM-FI subrelay, then go to step 26.

18. Disconnect ECM/PCM connector A (49P).

19. Check for continuity between PGM-FI subrelay 4P connector terminal No. 3 and ECM/PCM connector terminal A40.



Is there continuity?

YES—Go to step 32.

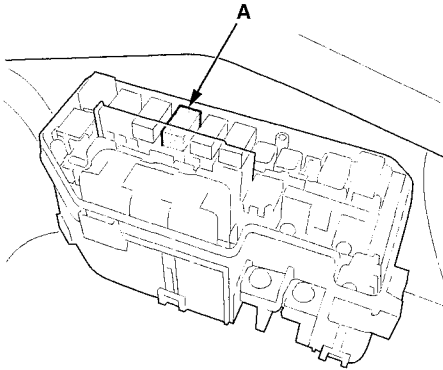
NO—Repair open in the wire between the PGM-FI subrelay, and the ECM/PCM (A40), then go to step 26.

(cont'd)

PGM-FI System

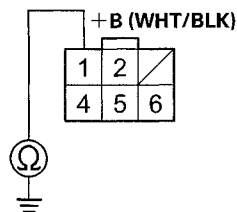
DTC Troubleshooting (cont'd)

20. Remove the PGM-FI subrelay (A) from the under-hood fuse/relay box.



21. Disconnect the front and rear A/F sensor (Sensor 1) 6P connectors.
22. Disconnect the front and rear secondary HO2S (Sensor 2) 4P connectors.
23. Disconnect the EVAP canister vent shut valve 2P connector.
24. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 1 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PGM-FI subrelay and A/F sensor (Sensor 1), then go to step 26.

NO—Check the under-hood fuse/relay box, and replace it if needed (see page 22-80). Also replace the No. 14 FI SUB (15 A) fuse, then go to step 26.

25. Replace A/F sensor (Sensor 1) (see page 11-275).
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-337).
30. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0135 and/or P0155 indicated?*

YES—Check for poor connections or loose terminals at A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1.

NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P0135 and/or P0155* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

32. Reconnect all connectors.
33. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
34. Start the engine, and let it idle.
35. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0135 and/or P0155 indicated?*

YES—Check for poor connections or loose terminals at A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 36.



36. Monitor the OBD STATUS for DTC P0135 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0137: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Low Voltage

DTC P0157: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check HO2S S2 in the DATA LIST with the HDS.

Does the voltage stay at 0.05 V or less?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Check HO2S S2 in the DATA LIST with the HDS.

Does the voltage stay at 0.05 V or less?

YES—Go to step 9.

NO—Go to step 13.

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector B (49P).

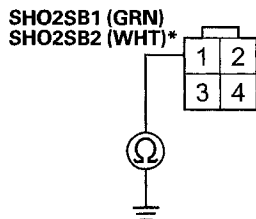
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 1 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B25 (B16)*) and secondary HO2S (Sensor 2), then go to step 15.

NO—Go to step 23.

13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
14. Replace secondary HO2S (Sensor 2) (see page 11-276).
15. Reconnect all connectors.
16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see page 11-337).
19. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
20. Test-drive under these conditions:
- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Engine speed between 1,500—3,000 rpm
 - Drive 1 minute or more
21. Check for Pending or Confirmed DTCs with the HDS.
- Is DTC P0137 and/or P0157* indicated?*
- YES**—Check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.
- NO**—Go to step 22.
22. Monitor the OBD STATUS for DTC P0137 and/or P0157* in the DTCs MENU with the HDS.
- Does the screen indicate PASSED?*
- YES**—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 19.



23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
25. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
26. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Engine speed between 1,500—3,000 rpm
 - Drive 1 minute or more

27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0137 and/or P0157 indicated?*

YES—Check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 25. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0137 and/or P0157* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 25. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 25.

DTC P0138: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit High Voltage

DTC P0158: Front Secondary HO2S (Bank 2, Sensor 2) Circuit High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check HO2S S2 in the DATA LIST with the HDS.

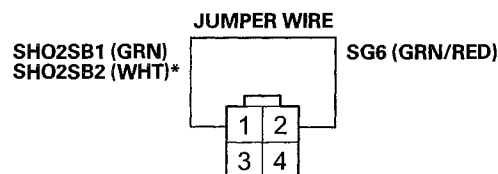
Does the voltage stay at 1.27 V or more?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Connect secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

9. Check the HO2S S2 in the DATA LIST with the HDS.

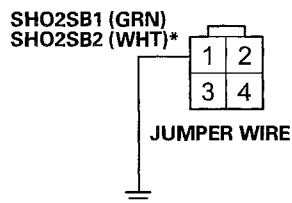
Does the voltage stay at 1.27 V or more?

YES—Go to step 10.

NO—Go to step 19.

10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
11. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
12. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 1 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR

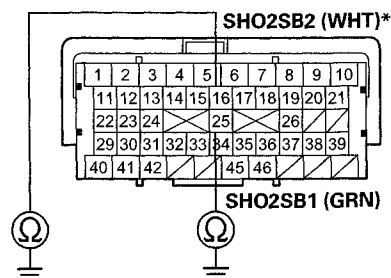


Wire side of female terminals

13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
14. Check HO2S S2 in the DATA LIST with the HDS.
- Does the voltage stay at 1.27 V or more?*
- YES**—Go to step 15.
- NO**—Repair open in the wire between the ECM/PCM (C15) and secondary HO2S (Sensor 2), then go to step 21.
15. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector B (49P).

18. Check for continuity between ECM/PCM connector terminal B25 (B16)* and body ground.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the ECM/PCM (B25 (B16)*) and secondary HO2S (Sensor 2), then go to step 21.

19. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
20. Replace the secondary HO2S (Sensor 2) (see page 11-276).
21. Reconnect all connectors.
22. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see page 11-337).
25. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
26. Test-drive under these conditions:
- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Engine speed between 1,500—3,000 rpm
 - Drive 1 minute or more
27. Check for Pending or Confirmed DTCs with the HDS.
- Is DTC P0138 and/or P0158* indicated?*
- YES**—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.
- NO**—Go to step 28.



28. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 25.

29. Reconnect all connectors.

30. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
31. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
32. Test-drive under these conditions:
- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Engine speed between 1,500—3,000 rpm
 - Drive 1 minute or more

33. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0138 and/or P0158 indicated?*

YES—Check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 31. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 34.

34. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 31. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 31.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0139: Rear Secondary HO2S (Bank 1, Sensor 2) Slow Response

DTC P0159: Front Secondary HO2S (Bank 2, Sensor 2) Slow Response

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
 - Information marked with an asterisk (*) applies to the front bank (Bank 2).
1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
 2. Clear the DTC with the HDS.
 3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
 4. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Drive at a steady speed between 55–75 mph (88–120 km/h) for 1 minute, then decelerate (with the throttle fully closed) for 10 seconds.
 5. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Replace secondary HO2S (Sensor 2) (see page 11-276).
8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-337).
11. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Drive at a steady speed between 55–75 mph (88–120 km/h) for 1 minute, then decelerate (with the throttle fully closed) for 10 seconds.

13. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0139 and/or P0159 indicated?*

YES—Check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.



DTC P0141: Rear Secondary HO2S (Bank 1, Sensor 2) Heater Circuit Malfunction

DTC P0161: Front Secondary HO2S (Bank 2, Sensor 2) Heater Circuit Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0141 and/or P0161 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the systems is OK at this time. Check for poor connections or loose terminals at secondary HO2S (Sensor 2), the PGM-FI subrelay, and the ECM/PCM.■

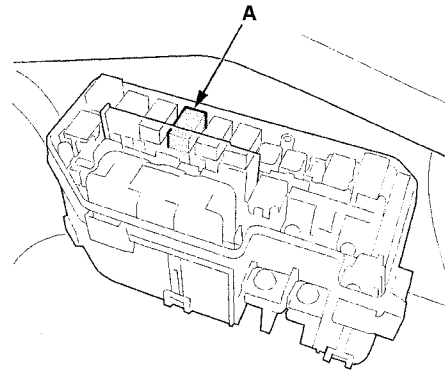
5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Check the No. 14 FI SUB (15 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Go to step 7.

NO—Go to step 19.

7. Remove the PGM-FI subrelay (A) from the under-hood fuse/relay box.



8. Test the PGM-FI subrelay (see page 22-88).

Is the relay OK?

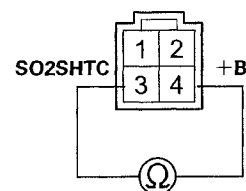
YES—Go to step 9.

NO—Replace the PGM-FI subrelay, then go to step 25.

9. Disconnect the secondary HO2S (Sensor 2) 4P connector.

10. At the sensor side, measure the resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there 5.4—7.3 Ω at room temperature?

YES—Go to step 11.

NO—Go to step 24.

(cont'd)

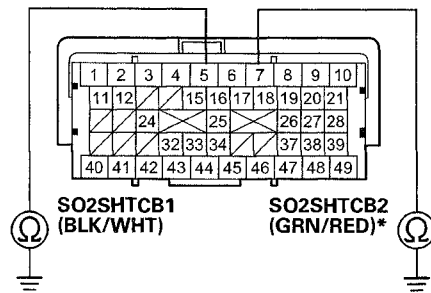
11-124

11. At the sensor side, check for continuity between body ground and secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

Is there continuity?

NO—Go to step 12.

- ### ECM/PCM CONNECTOR C (49P)



Is there continuity?

NO—Go to step 15.

-
- Diagram of the ECM/PCM Connector C (49P) showing the top and bottom views.
- Top View:**
- | | |
|---|---|
| 1 | 2 |
| 3 | 4 |
- Labels: SO2SHTCB1 (BLK/WHT) | SO2SHTCB2 (GRN/RED)*
- Wire side of female terminals
- Bottom View:**
- | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | |
- Labels: SO2SHTCB1 (BLK/WHT) | SO2SHTCB2 (GRN/RED)*

Is there continuity?

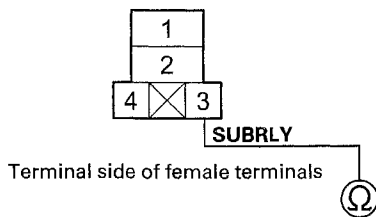
Is there continuity?

NO—Repair open in the wire between secondary HO2S (Sensor 2) and the PGM-FI subrelay, then go to step 25.

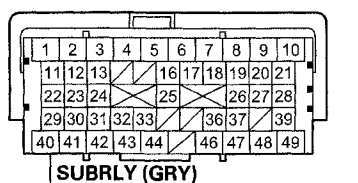


17. Disconnect ECM/PCM connector A (49P).
18. Check for continuity between PGM-FI subrelay 4P connector terminal No. 3 and ECM/PCM connector terminal A40.

PGM-FI SUBRELAY 4P CONNECTOR



ECM/PCM CONNECTOR A (49P)

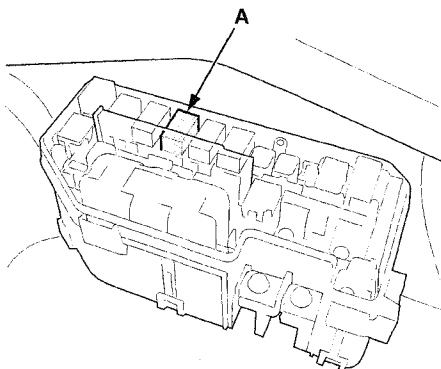


Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the PGM-FI subrelay, and the ECM/PCM (A40), then go to step 25.

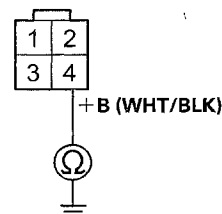
19. Remove the PGM-FI subrelay (A) from the under-hood fuse/relay box.



20. Disconnect the front and rear secondary HO2S (Sensor 2) 4P connectors.
21. Disconnect the front and rear A/F sensor (Sensor 1) 6P connectors.
22. Disconnect the EVAP canister vent shut valve 2P connector.

23. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Is there continuity?

YES—Repair short in the wire between the PGM-FI subrelay and secondary HO2S (Sensor 2), then go to step 25.

NO—Check the under-hood fuse/relay box, and replace it if needed (see page 22-80). Also replace the No. 14 FI SUB (15 A) fuse, then go to step 25.

24. Replace secondary HO2S (Sensor 2) (see page 11-276).
25. Reconnect all connectors.
26. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
27. Reset the ECM/PCM with the HDS.
28. Do the ECM/PCM idle learn procedure (see page 11-337).
29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0141 and/or P0161 indicated?

YES—Check for poor connections or loose terminals at secondary HO2S (Sensor 2), the PGM-FI subrelay, and the ECM/PCM, then go to step 1.

NO—Go to step 30.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

30. Monitor the OBD STATUS for DTC P0141 and/or P0161* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at secondary HO2S (Sensor 2), the PGM-FI subrelay, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

31. Reconnect all connectors.
32. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
33. Start the engine, and let it idle.
34. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0141 and/or P0161 indicated?*

YES—Check for poor connections or loose terminals at secondary HO2S (Sensor 2), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P0141 and/or P0161* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at secondary HO2S (Sensor 2), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0171: Rear Bank (Bank 1) Fuel System Too Lean

DTC P0172: Rear Bank (Bank 1) Fuel System Too Rich

DTC P0174: Front Bank (Bank 2) Fuel System Too Lean

DTC P0175: Front Bank (Bank 2) Fuel System Too Rich

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Poor fuel quality can also cause DTC P0171/P0174.
- If any of the DTCs listed below are stored at the same time as DTC P0171, P0172, P0174, and/or P0175, troubleshoot those DTCs first, then recheck for P0171, P0172, P0174, and/or P0175:

P0101, P0102, P0103: MAF sensor

P0107, P0108, P1128, P1129: MAP sensor

P0133, P0153, P1172, P1174, P2195, P2197, P2237, P2238, P2240, P2241, P2243, P2245, P2247, P2249, P2251, P2252, P2254, P2255, P2A00, P2A03: A/F sensor (Sensor 1)

P0134, P0135, P0154, P0155: A/F sensor (Sensor 1) heater

P0137, P0138, P0139, P0157, P0158, P0159, P2270, P2271, P2272, P2273: Secondary HO2S (Sensor 2)

P0141, P0161: Secondary HO2S (Sensor 2) heater

P2646, P2647, P2648, P2649: VTEC system

P0401, P0404, P0406, P2413: EGR system

P2279: Intake air leakage

1. Check the fuel pressure (see page 11-369).

Is the fuel pressure OK?

YES—Go to step 2.

NO—Check these items:

- If the pressure is too high, replace the fuel pressure regulator; without SH-AWD (see page 11-396), with SH-AWD (see page 11-396), then go to step 2.
- If the pressure is too low, check the fuel pump, the fuel pressure regulator, the fuel filter, and the fuel lines for restrictions, then go to step 6.



2. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

3. Check for these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- A/T in P or N, M/T in neutral
- All electrical loads off

4. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

Did the engine speed vary more than 100 rpm from 2,500 rpm?

YES—Repeat step 4.

NO—Go to step 5.

5. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

Is there about 11.0—15.5 gm/s (J35Z6 engine) or 11.8—16.6 gm/s (J37A4 engine)?

YES—Check the engine valve clearances, and adjust them if needed (see page 6-9). If the valve clearances are OK, replace the injectors (see page 11-271), then go to step 6.

NO—Replace the MAF sensor/IAT sensor (see page 11-273), then go to step 6.

6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

7. Reset the ECM/PCM with the HDS.

8. Do the ECM/PCM idle learn procedure (see page 11-337).

9. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

10. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- A/T in D, M/T in 4th
- Drive at a steady speed between 15—75 mph (24—120 km/h) for 15 minutes.

NOTE: DTC P0171, P0172, P0174, and/or P0175 may take up to 80 minutes of test driving to set. Using the HDS, monitor the long term fuel trim (LT FUEL TRIM). If the LT FUEL TRIM stays within 0.8—1.21, there is no problem at this time.

11. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0171, P0172, P0174, or P0175 indicated?

YES—Go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0300: Random Misfire and Any Combination of the Following:

DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

DTC P0305: No. 5 Cylinder Misfire Detected

DTC P0306: No. 6 Cylinder Misfire Detected

Special Tools Required

- Pressure Gauge Adapter 07NAJ-P07010A
- A/T Low Pressure Gauge w/Panel 07406-0070301
- AT Pressure Test Hose 07AAJ-PY4A100
- A/T Pressure Adapter 07MAJ-PY40120
- Oil Pressure Hose 07ZAJ-S5AA200

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the misfire is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some combination of P0301 through P0306) will be stored.
- If the misfire is frequent enough to damage the catalyst, the MIL will blink whenever the misfire occurs, and DTC P0300 (and some combination of P0301 through P0306) will be stored. When the misfire stops, the MIL will remain on.
- Troubleshoot the following DTCs first, if any of them were stored along with the random misfire DTC(s) (Because parts can sometimes fail without setting DTCs you should also do a physical inspection of the systems listed below):
 - P0101, P0102, P0103: MAF sensor
 - P0107, P0108, P1128, P1129: MAP sensor
 - P0171, P0172, P0174, P0175: Fuel system
 - P0335, P0339: CKP sensor
 - P0506, P0507: Idle control system
 - P0365, P0369: CMP sensor
 - P2646, P2647, P2648, P2649: VTEC system
 - P0401, P0404, P0406, P2413: EGR system

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, then recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS
 - REL TP SENSOR
 - CLV (calculated load value)
 - ECT SENSOR 1
 - APP SENSOR

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.



8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. ■

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

10. Check the fuel quality.

Is the quality good?

YES—Go to step 11.

NO—Drain the fuel tank, and fill it with known-good fuel, then go to step 23.

11. Inspect the spark plugs (see page 4-34). If the spark plugs are fouled or worn, replace them.

12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- ECT SENSOR 1
- APP SENSOR

13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 14.

NO—Go to step 23.

14. Check the fuel pressure (see page 11-369).

Is the fuel pressure OK?

YES—Go to step 15.

NO—

- If the pressure is too high, replace the fuel pressure regulator; without SH-AWD (see page 11-396), with SH-AWD (see page 11-396), then go to step 23.
- If the pressure is too low, check the fuel pump, the fuel feed lines, and the fuel filter. If they are OK, replace the fuel pressure regulator; without SH-AWD (see page 11-396), with SH-AWD (see page 11-396), then go to step 23.

15. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

16. Check under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
- A/T in N, M/T in neutral
- All electrical loads off

17. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

Did the engine speed vary more than 100 rpm from 2,500 rpm?

YES—Repeat step 17.

NO—Go to step 18.

18. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

Is there about 11.0–15.5 gm/s (J35Z6 engine) or 11.8–16.6 gm/s (J37A4 engine)?

YES—Go to step 19.

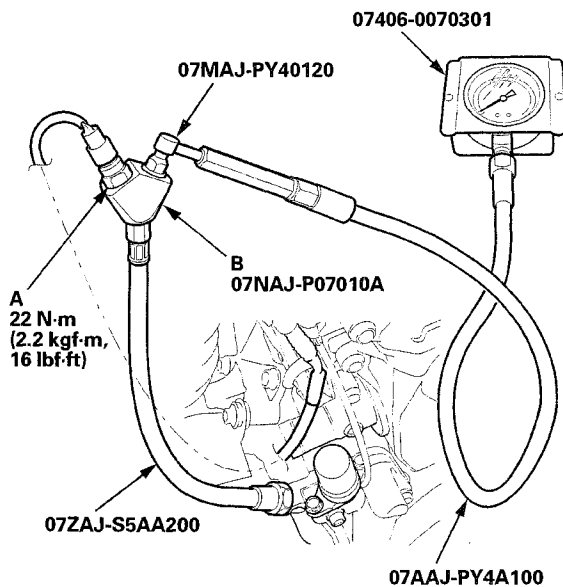
NO—Replace the MAF sensor/IAT sensor (see page 11-273), then go to step 23.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

19. Remove the rocker arm oil pressure switch (A), and attach the special tools as shown, then attach the rocker arm oil pressure switch to the pressure gauge adapter (B).



20. Reconnect the rocker arm oil pressure switch 2P connector.
21. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
22. Check the oil pressure at engine speeds of 1,000 and 2,000 rpm. Keep the measuring time as short as possible (less than 1 minute) because the engine is running without load.

Is the oil pressure below 49 kPa (0.5 kgf/cm², 7 psi)?

YES—Go to step 23.

NO—Inspect the VTEC system, then go to step 23.

23. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

24. Reset the ECM/PCM with the HDS.

25. Do the ECM/PCM idle learn procedure (see page 11-337).

26. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).

27. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- ECT SENSOR 1
- APP SENSOR

28. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0300 and any combination of DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

YES—Check for poor connections or loose terminals at the ignition coils, the injectors, and the ECM/PCM, then go to the DTC P0301, P0302, P0303, P0304, P0305, or P0306 troubleshooting (see page 11-131).

NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connection or loose terminals at the ignition coils, the injectors, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 27.



DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

DTC P0305: No. 5 Cylinder Misfire Detected

DTC P0306: No. 6 Cylinder Misfire Detected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load for 2 minutes (A/T in P or N, M/T in neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, and recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals in the fuel system and ignition system. ■

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
10. Exchange the ignition coil from the problem cylinder with one from another cylinder.
11. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS
 - REL TP SENSOR
 - CLV (calculated load value)
 - GEAR POSITION
 - ECT SENSOR 1
12. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 13.

NO—Intermittent failure due to poor contact at the ignition coil contactor (no misfire at this time). Make sure that the ignition coil connectors are secure.■
13. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the ignition coil was moved?

YES—Replace the faulty ignition coil (see page 4-33), then go to step 44.

NO—Go to step 14.

14. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
15. Exchange the spark plug from the problem cylinder with one from another cylinder.
16. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS
 - REL TP SENSOR
 - CLV (calculated load value)
 - GEAR POSITION
 - ECT SENSOR 1
17. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 18.

NO—Intermittent failure due to spark plug fouling (no misfire at this time).■
18. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the spark plug was moved?

YES—Replace the faulty spark plug, then go to step 44.

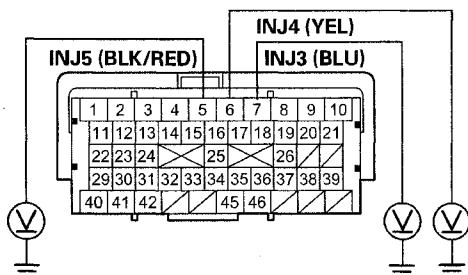
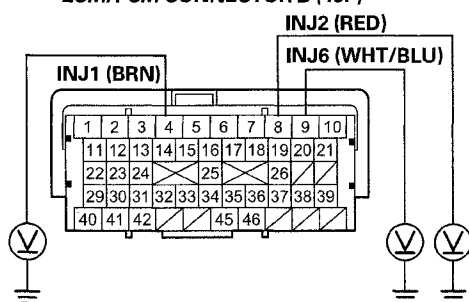
NO—Go to step 19.
19. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
20. Jump the SCS line with the HDS.
21. Disconnect ECM/PCM connector B (49P).
22. Remove the intake manifold (see page 9-4).
23. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.



24. Measure the voltage between body ground and the appropriate ECM/PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 32.

NO—Go to step 25.

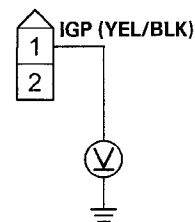
25. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

26. Disconnect the injector 2P connector from the problem cylinder.

27. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

28. Measure the voltage between injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 29.

NO—Repair open in the wire between the injector and PGM-FI main relay 1, then go to step 44.

29. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

(cont'd)

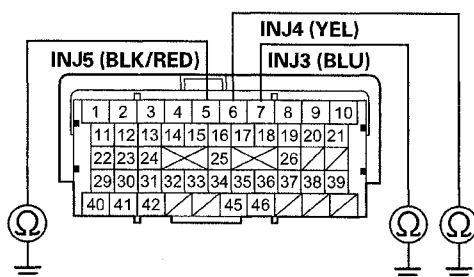
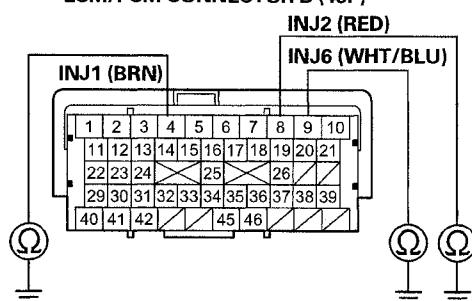
PGM-FI System

DTC Troubleshooting (cont'd)

30. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

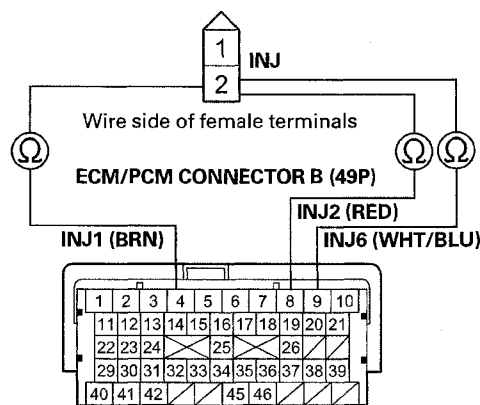
YES—Repair short in the wire between the ECM/PCM and the injector, then go to step 44.

NO—Go to step 31.

31. Check for continuity between appropriate injector 2P connector terminal No. 2 and the ECM/PCM connector terminal of the problem cylinder (see table).

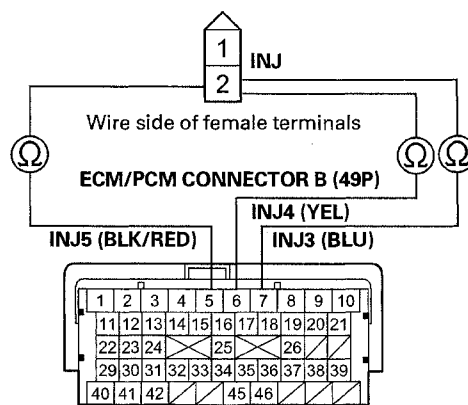
PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

INJECTOR 2P CONNECTOR



Terminal side of female terminals

INJECTOR 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

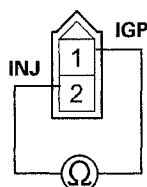
YES—Check for poor connections or loose terminals at the injector and PGM-FI main relay 1, then go to step 32.

NO—Repair open in the wire between the ECM/PCM and the injector, then go to step 44.



32. At the injector side, measure the resistance between injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Terminal side of male terminals

Is there 10—13 Ω ?

YES—Go to step 33.

NO—Replace the injector (see page 11-271), then go to step 44.

33. Exchange the injector from the problem cylinder with the one from another cylinder. Also check the injector fuel inlet screen for debris, and clean it if needed.

34. Reconnect all connectors, and install the intake manifold (see page 9-5).

35. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

36. Clear the DTCs with the HDS.

37. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) for 2 minutes.

38. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

39. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 40.

NO—Intermittent failure due to poor contact in the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector. ■

40. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the injector was moved?

YES—Replace the faulty injector (see page 11-271), then go to step 44.

NO—Go to step 41.

41. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

42. Do an engine compression and a cylinder leakdown test (see page 6-7).

Did the engine pass both tests?

YES—Go to step 43.

NO—Repair the engine, then go to step 44.

(cont'd)

DTC Troubleshooting (cont'd)

43. Do the VTEC rocker arm test (see page 6-8).

Did the engine pass the test?

YES—Go to step 51.

NO—Repair the VTEC rocker arm, then go to step 44.

44. Reconnect all connectors.

45. Reset the ECM/PCM with the HDS.

46. Do the ECM/PCM idle learn procedure (see page 11-337).

47. Do the CKP pattern learn/CKP pattern learn procedure (see page 11-5).

48. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

49. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

YES—Check for poor connections or loose terminals at the ignition coils, the injectors, and the ECM/PCM, then go to step then go to troubleshooting DTC P0300, P0301, P0302, P0303, P0304, P0305, or P306 (see page 11-128).

NO—Go to step 50.

50. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 49, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coils, the injectors, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 48.

51. Reconnect all connectors.

52. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

53. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

54. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

YES—Check for poor connections or loose terminals at the ignition coils, the injectors, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 53. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 55.

55. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 54, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coils, the injectors, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 53. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 53.



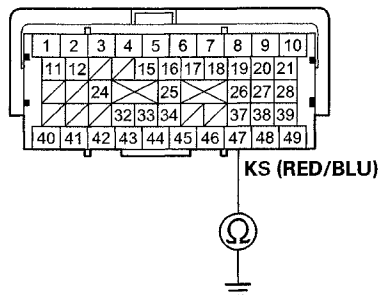
DTC P0325: Knock Sensor Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed at 3,000–4,000 rpm for at least 10 seconds.
5. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P0325 indicated?
YES—Go to step 6.
NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the knock sensor and the ECM/PCM. ■
6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor subharness 1P connector.
9. Disconnect ECM/PCM connector C (49P).

10. Check for continuity between ECM/PCM connector terminal C47 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

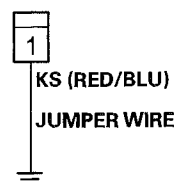
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C47) and the knock sensor subharness, then go to step 20.

NO—Go to step 11.

11. Connect the engine wire harness C104 1P connector terminal to body ground with a jumper wire.

ENGINE WIRE HARNESS C104 1P CONNECTOR



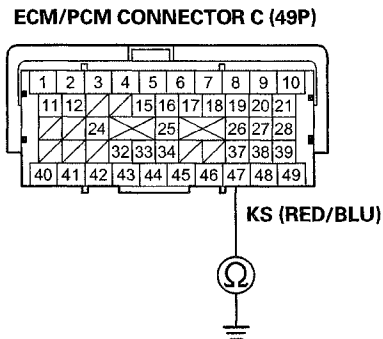
Wire side of female terminals

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Check for continuity between ECM/PCM connector terminal C47 and body ground.



Terminal side of female terminals

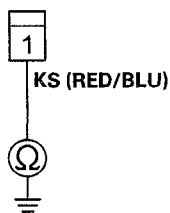
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the ECM/PCM (C47) and the engine wire harness (C104 connector), then go to step 20.

13. Remove the jumper wire from the engine wire harness.
14. Remove the intake manifold (see page 9-4), and the injector base (see page 9-7).
15. Disconnect the knock sensor 1P connector.
16. Check for continuity between the knock sensor subharness 1P connector terminal and body ground.

KNOCK SENSOR SUBHARNESS 1P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the knock sensor subharness, then go to step 19.

NO—Go to step 17.

17. Check for an open in the knock sensor subharness.

Is the harness OK?

YES—Go to step 18.

NO—Repair open in the knock sensor subharness, then go to step 19.

18. Replace the knock sensor (see page 11-278).
19. Install the injector base (see page 9-7), and the intake manifold (see page 9-5).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-337).
24. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.
25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0325 indicated?

YES—Check for poor connections or loose terminals at the knock sensor and the ECM/PCM, then go to step 27.

NO—Go to step 26.

26. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 24.



27. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
28. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
29. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.
30. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0325 indicated?

YES—Check for poor connections or loose terminals at the knock sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 28. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 28. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 28.

DTC P0335: CKP Sensor No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Pending or Confirmed DTCs with the HDS.

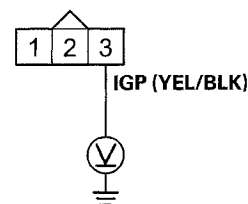
Is DTC P0335 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the CKP sensor 3P connector.
7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Measure the voltage between CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the CKP sensor and PGM-FI main relay 1, then go to step 19.

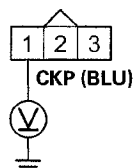
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

9. Measure the voltage between CKP sensor 3P connector terminal No. 1 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

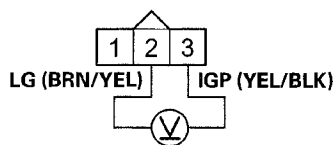
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure the voltage between CKP sensor 3P connector terminals No. 2 and No. 3.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

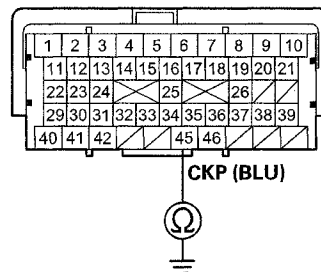
YES—Go to step 17.

NO—Repair open in the wire between the CKP sensor and G101, then go to step 19.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector B (49P).

14. Check for continuity between ECM/PCM connector terminal B45 and body ground.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

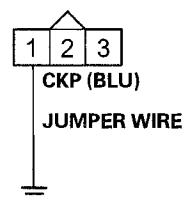
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B45) and the CKP sensor, then go to step 19.

NO—Go to step 15.

15. Connect CKP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

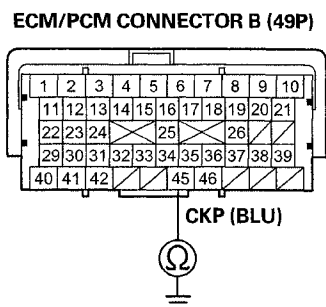
CKP SENSOR 3P CONNECTOR



Wire side of female terminals



16. Check for continuity between ECM/PCM connector terminal B45 and body ground.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM/PCM (B45) and the CKP sensor, then go to step 19.

17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
18. Replace the CKP sensor (see page 11-278).
19. Reconnect all connectors.
20. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
21. Reset the ECM/PCM with the HDS.
22. Do the ECM/PCM idle learn procedure (see page 11-337).
23. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0335 indicated?

YES—Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.

26. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0335 indicated?

YES—Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0339: CKP Sensor Circuit Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CKP NOISE in the DATA LIST with the HDS.

Are 0 counts indicated?

YES—Go to step 7.

NO—Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS

6. Check the CKP NOISE in the DATA LIST with the HDS.

Are 0 counts indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM. ■

7. Check for poor connections or loose terminals and terminals at these locations:
 - CKP sensor
 - ECM/PCM
 - Engine ground
 - Body ground

Are the connections and terminals OK?

YES—Go to step 8.

NO—Repair the connections or terminals, then go to step 11.

8. Remove the oil pan (see page 7-11), and check for damage to the CKP pulse plate.

Is the pulse plate damaged?

YES—Replace the CKP pulse plate (see page 7-29), then go to step 11.

NO—Go to step 9.

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

10. Replace the CKP sensor (see page 11-278).

11. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

12. Reset the ECM/PCM with the HDS.

13. Do the ECM/PCM idle learn procedure (see page 11-337).

14. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).

15. Start the engine, and let it idle for 10 seconds.

16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0339 indicated?

YES—Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0351: No. 1 Cylinder Ignition Coil Circuit Malfunction

DTC P0352: No. 2 Cylinder Ignition Coil Circuit Malfunction

DTC P0353: No. 3 Cylinder Ignition Coil Circuit Malfunction

DTC P0354: No. 4 Cylinder Ignition Coil Circuit Malfunction

DTC P0355: No. 5 Cylinder Ignition Coil Circuit Malfunction

DTC P0356: No. 6 Cylinder Ignition Coil Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Start the engine.

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0351, P0352, P0353, P0354, P0355, and/or P0356 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ignition coil(s) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

6. Exchange the ignition coil from the problem cylinder with one from another cylinder.

7. Start the engine.

8. Check for Pending or Confirmed DTCs with the HDS.

Is an ignition coil DTC indicated at the exchanged cylinder?

YES—Replace the faulty ignition coil (see page 4-33), then go to step 27.

NO—Go to step 9.

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

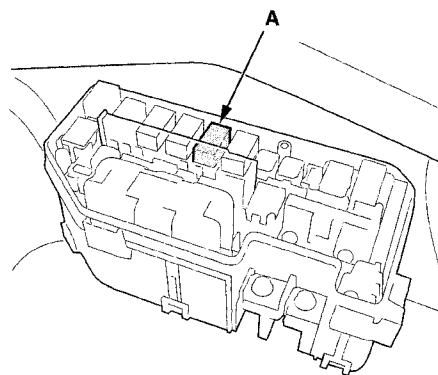
10. Check the No. 13 IG COIL (15 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Go to step 11.

NO—Go to step 13.

11. Remove the ignition coil relay (A) from the under-hood fuse/relay box.



12. Test the ignition coil relay (see page 22-88).

Is the relay OK?

YES—Go to step 16.

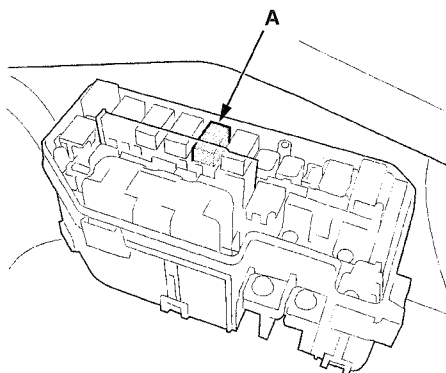
NO—Replace the ignition coil relay, then go to step 26.

(cont'd)

PGM-FI System

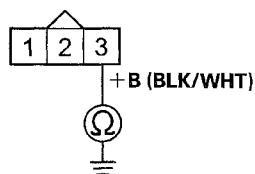
DTC Troubleshooting (cont'd)

13. Remove the ignition coil relay (A) from the under-hood fuse/relay box.



14. Disconnect all ignition coil 3P connectors.
15. Check for continuity between No. 1 ignition coil 3P connector terminal No. 3 and body ground.

No. 1 IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

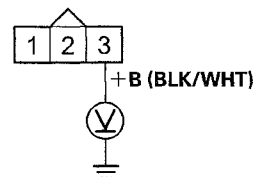
YES—Repair short in the wire between the ignition coils and the ignition coil relay. Also replace the No. 13 IG COIL (15 A) fuse, then go to step 26.

NO—Check the under-hood fuse/relay box, and replace it if needed (see page 22-80), then go to step 26.

16. Reinstall the ignition coil relay.
17. Disconnect the ignition coil 3P connector from the problem cylinder.
18. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
19. Measure the voltage between ignition coil 3P connector terminal No. 3 of the problem cylinder and body ground (see table).

PROBLEM CYLINDER	DTC
No. 1	P0351
No. 2	P0352
No. 3	P0353
No. 4	P0354
No. 5	P0355
No. 6	P0356

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 20.

NO—Repair open in the wire between the ignition coil and the ignition coil relay, then go to step 26.

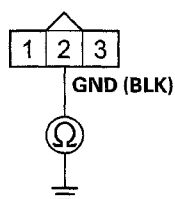
20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.



21. Check for continuity between ignition coil 3P connector terminal No. 2 of the problem cylinder and body ground (see table).

PROBLEM CYLINDER	DTC
No. 1	P0351
No. 2	P0352
No. 3	P0353
No. 4	P0354
No. 5	P0355
No. 6	P0356

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the ignition coil and G101, then go to step 26.

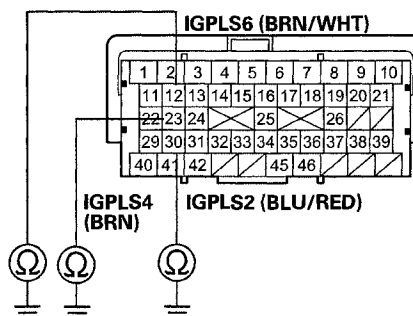
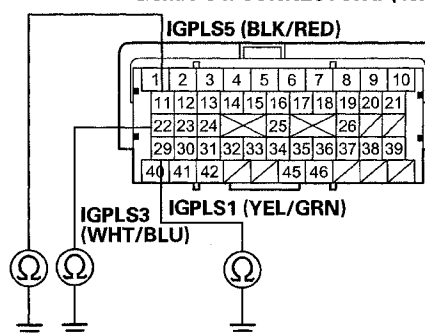
22. Jump the SCS line with the HDS.

23. Disconnect ECM/PCM connector B (49P).

24. Check for continuity between body ground and the appropriate ECM/PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0351	B29	YEL/GRN
No. 2	P0352	B30	BLU/RED
No. 3	P0353	B22	WHT/BLU
No. 4	P0354	B23	BRN
No. 5	P0355	B11	BLK/RED
No. 6	P0356	B12	BRN/WHT

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM and the ignition coil, then go to step 26.

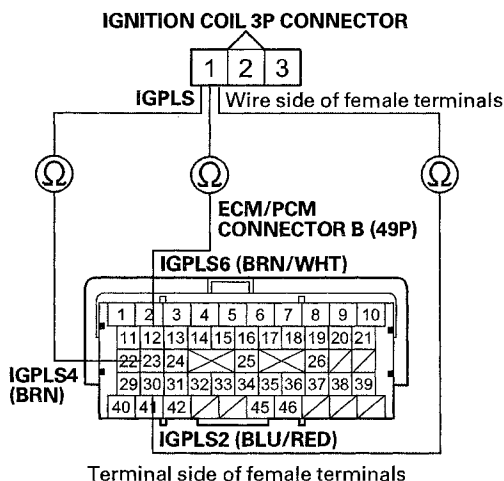
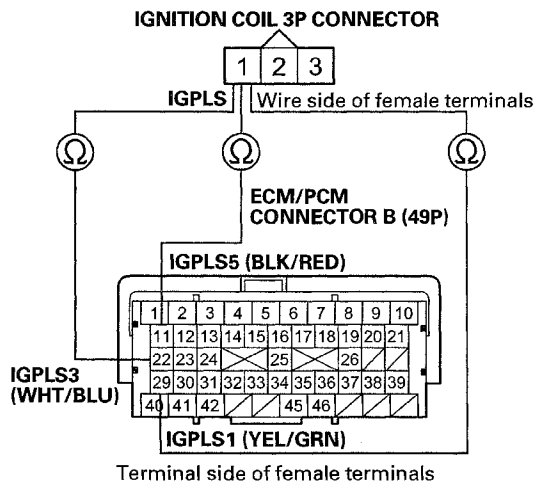
NO—Go to step 25.

(cont'd)

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25. Check for continuity between appropriate ignition coil 3P connector terminal No. 1 and the ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0351	B29	YEL/GRN
No. 2	P0352	B30	BLU/RED
No. 3	P0353	B22	WHT/BLU
No. 4	P0354	B23	BRN
No. 5	P0355	B11	BLK/RED
No. 6	P0356	B12	BRN/WHT



YES—Go to step 32.

NO—Repair open in the wire between the ECM/PCM and the ignition coil, then go to step 26.

- Is DTC P0351, P0352, P0353, P0354, P0355, and/or P0356 indicated?*

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

32. Reconnect all connectors.
33. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
34. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0351, P0352, P0353, P0354, P0355, and/or P0356 indicated?

YES—Check for poor connections or loose terminals at the ignition coil(s) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0365: CMP Sensor Circuit No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Pending or Confirmed DTCs with the HDS.

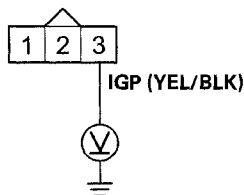
Is DTC P0365 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the CMP sensor 3P connector.
7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Measure the voltage between CMP sensor 3P connector terminal No. 3 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

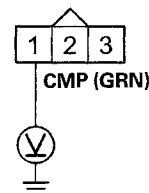
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the CMP sensor and PGM-FI main relay 1, then go to step 18.

9. Measure the voltage between CMP sensor 3P connector terminal No. 1 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

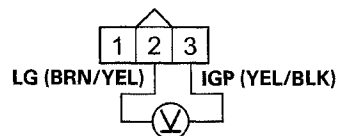
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure the voltage between CMP sensor 3P connector terminals No. 2 and No. 3.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 16.

NO—Repair open in the wire between the CMP sensor and G101, then go to step 18.

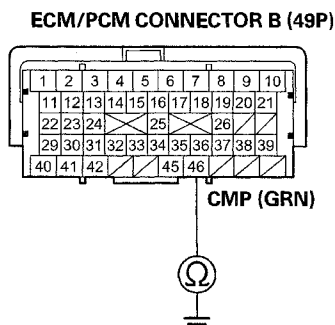
11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector B (49P).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

14. Check for continuity between ECM/PCM connector terminal B46 and body ground.

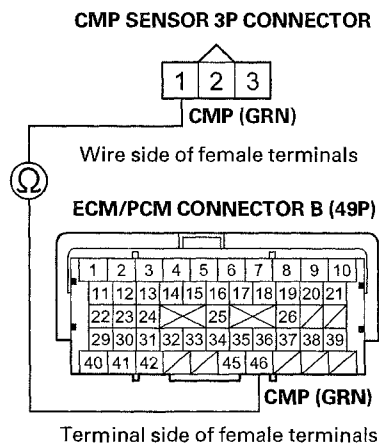


Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B46) and the CMP sensor, then go to step 18.

NO—Go to step 15.

15. Check for continuity between CMP sensor 3P connector terminal No. 1 and ECM/PCM connector terminal B46.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the ECM/PCM (B46) and the CMP sensor, then go to step 18.

16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

17. Replace the CMP sensor (see page 11-277).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-337).

22. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0365 indicated?

YES—Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0365 indicated?

YES—Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0369: CMP Sensor Circuit Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP B NOISE in the DATA LIST with the HDS.

Are 0 counts indicated?

YES—Go to step 7.

NO—Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
 - ENGINE SPEED
 - VSS

6. Check the CMP B NOISE in the DATA LIST with the HDS.

Are 0 counts indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM. ■

7. Check for poor connections or loose terminals at these locations:
 - CMP sensor
 - ECM/PCM
 - Engine ground
 - Body ground

Are the connections and terminals OK?

YES—Go to step 8.

NO—Repair the connections or the terminals, then go to step 11.

8. Check for damage to the front camshaft pulley (CMP pulse plate) (see page 11-277).

Is the pulse plate damaged?

YES—Replace the front camshaft pulley (CMP pulse plate); J35Z6 engine (see page 6-36), J37A4 engine (see page 6-99), then go to step 11.

NO—Go to step 9.

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
10. Replace the CMP sensor (see page 11-277).
11. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see page 11-337).
14. Start the engine, and let it idle for 10 seconds.
15. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0369 indicated?

YES—Check for poor connections or loose terminals at the CMP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P050A: Cold Start Idle Air Control System Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check for Pending or Confirmed DTCs with the HDS.

Are any Pending or Confirmed DTCs other than P050A indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 3.

3. Check for poor connections or a blockage at the intake air duct.

Is it OK?

YES—Go to step 4.

NO—Reconnect or repair the intake air duct, then go to step 19.

4. Check for damage at the air cleaner housing.

Is it OK?

YES—Go to step 5.

NO—Replace the air cleaner housing (see page 11-421), then go to step 19.

5. Check for dirt or debris in the air cleaner element.

Is it dirty?

YES—Replace the air cleaner element or remove the debris (see page 11-422), then go to step 19.

NO—Go to step 6.

6. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.

7. Clear the DTC with the HDS.

8. Start the engine, and let it idle for 10 seconds or more.

9. Monitor the OBD STATUS for DTC P050A in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM/PCM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

10. Do the ETCS TEST in the INSPECTION MENU with the HDS.

Is the THROTTLE ACTUATOR CONTROL VALVE normal?

YES—Go to step 11.

NO—Replace the throttle body (see page 11-425), then go to step 19.

11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

12. While holding the engine speed at 2,500 rpm for 30 seconds, check the MAF SENSOR in the DATA LIST with the HDS.

Is there about 11.0—15.5 gm/s (J35Z6 engine) or 11.8—16.6 gm/s (J37A4 engine)?

YES—Go to step 13.

NO—Replace the MAF sensor/IAT sensor (see page 11-273), then go to step 19.



13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
14. Allow the engine to cool to the ambient temperature.
15. Note the ambient temperature.
16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
17. Note the value of IAT SENSOR quickly in the DATA LIST with the HDS.
18. Compare the value of the IAT SENSOR and the ambient temperature.

Does the value of the IAT SENSOR differ 5.4 °F (3 °C) or more from ambient temperature?

YES—Replace the MAF sensor/IAT sensor (see page 11-273), then go to step 19.

NO—Check for dirt, carbon, or damage in the throttle bore. If there is dirt or carbon, clean the throttle body (see page 11-421), then go to step 19. If there is damage in the throttle bore, replace the throttle body (see page 11-425), then go to step 19.

19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.
23. Start the engine, and let it idle for 10 seconds or more.
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P050A indicated?

YES—Check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM/PCM, then go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P050A in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 22.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P050B: Cold Start Ignition Timing Control System Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check for Pending or Confirmed DTCs with the HDS.

Are any Pending or Confirmed DTCs other than P050B indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 3.

3. Check for poor connections or a blockage at the intake air duct.

Is it OK?

YES—Go to step 4.

NO—Correct the problem, then reconnect the intake air duct, and go to step 24.

4. Check for damage at the air cleaner housing.

Is it OK?

YES—Go to step 5.

NO—Replace the air cleaner housing (see page 11-421), then go to step 24.

5. Check for dirt or debris in the air cleaner element.

Is it dirty?

YES—Replace the air cleaner element or remove the debris (see page 11-422), then go to step 24.

NO—Go to step 6.

6. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.

7. Clear the DTC with the HDS.

8. Start the engine, and let it idle for 10 seconds or more.

9. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

10. Inspect the ignition timing (see page 4-32).

Is the ignition timing OK?

YES—Go to step 12.

NO—Go to step 11.

11. Check for damage at the CKP sensor (see page 11-278) and the CKP pulse plate (see page 7-29).

Is the CKP sensor and/or the CKP pulse plate damaged?

YES—Replace the CKP sensor (see page 11-278) and/or the CKP pulse plate (see page 7-29), then go to step 24.

NO—Go to step 30.

12. Do the ETCS TEST in the INSPECTION MENU with the HDS.

Is the THROTTLE ACTUATOR CONTROL VALVE normal?

YES—Go to step 13.

NO—Replace the throttle body (see page 11-425), then go to step 24.



13. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

14. While holding the engine speed at 2,500 rpm for 30 seconds, check the MAF SENSOR in the DATA LIST with the HDS.

Is there about 11.0–15.5 gm/s (J35Z6 engine) or 11.8–16.6 gm/s (J37A4 engine)?

YES—Go to step 15.

NO—Replace the MAF sensor/IAT sensor (see page 11-273), then go to step 24.

15. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

16. Drain the coolant (see page 10-6).

17. Remove ECT sensor 1 (see page 11-274), and ECT sensor 2 (see page 11-274).

18. Allow the sensors to cool to the ambient temperature.

19. Note the ambient temperature.

20. Connect ECT sensor 1 and ECT sensor 2 to their 2P connectors, but do not install them.

21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

22. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.

23. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

Does either sensor differ more than 5.4 °F (3 °C) from the ambient temperature?

YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the ambient temperature, then go to step 24.

NO—Check and repair any problems with the following items. Repair or replace them if needed, then go to step 24. If all of the items are OK, go to step 31.

- Engine compression and cylinder leakdown
- VTEC system
- Engine oil
- A/C system
- Power steering

24. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

25. Reset the ECM/PCM with the HDS.

26. Do the ECM/PCM idle learn procedure (see page 11-337).

27. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.

28. Start the engine, and let it idle for 10 seconds or more.

29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P050B indicated?

YES—Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 27.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

31. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
32. Do the ECM/PCM idle learn procedure (see page 11-337).
33. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.
34. Start the engine, and let it idle for 10 seconds or more.
35. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P050B indicated?

YES—Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 36.

36. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 33.

DTC P0560: PCM Power Source Circuit Unexpected Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle.
4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0560 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the No. 19 BACK UP FI ECU (7.5 A) fuse in the under-hood fuse relay box and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Check the No. 19 BACK UP FI ECU (7.5 A) fuse in the under-hood fuse relay box.

Is the fuse OK?

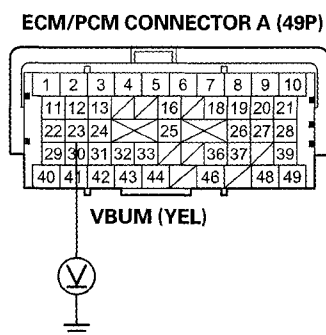
YES—Go to step 7.

NO—Go to step 10.

7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector A (49P).



9. Measure the voltage between ECM/PCM connector terminal A23 and body ground.



Terminal side of female terminals

Is there battery voltage?

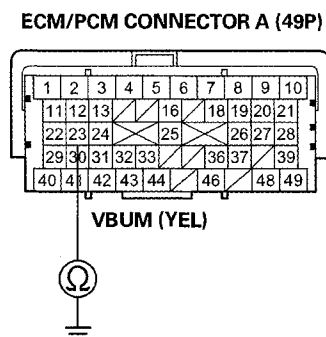
YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (A23) and the No. 19 BACK UP FI ECU (7.5 A) fuse, then go to step 13.

10. Jump the SCS line with the HDS.

11. Disconnect ECM/PCM connector A (49P).

12. Check for continuity between ECM/PCM connector terminal A23 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A23) and the No. 19 BACK UP FI ECU (7.5 A) fuse. Also replace the No. 19 BACK UP FI ECU (7.5 A) fuse, then go to step 13.

NO—Check the under-hood fuse/relay box, and replace it if needed (see page 22-80). Also replace the No. 19 BACK UP FI ECU (7.5 A) fuse, then go to step 13.

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-337).

17. Start the engine, and let it idle.

18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0560 indicated?

YES—Check for poor connections or loose terminals at the No. 19 BACK UP FI ECU (7.5 A) fuse and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

19. Reconnect all connectors.

20. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

21. Start the engine, and let it idle.

22. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0560 indicated?

YES—Check for poor connections or loose terminals at the No. 19 BACK UP FI ECU (7.5 A) fuse and the ECM/PCM. If the ECM/PCM updated, substitute a known-good ECM/PCM, then go to step 21. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0562: Charging System Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If any high current load accessories are installed, this DTC can be set.
- If DTC P16BB and/or P16BC is stored at the same time as DTC P0562, troubleshoot DTC P16BB and/or P16BC first, then recheck for DTC P0562.

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
 - A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
6. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0562 indicated?

YES—Replace the alternator (see page 4-47), then go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see page 22-84). ■

7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-337).

10. Start the engine.

11. Check under these conditions:

- A/C on
- Temperature control at maximum cool
- Blower fan at maximum speed
- Headlights on high beam

12. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

13. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0562 indicated?

YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0563: ECM/PCM Power Source Circuit Unexpected Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

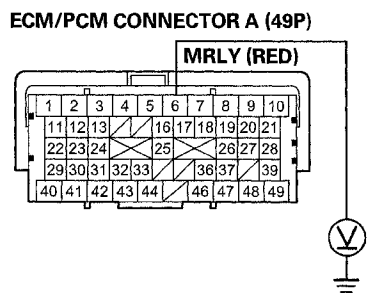
1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Wait 10 seconds.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0563 indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM. ■

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).
10. Measure the voltage between ECM/PCM connector terminal A6 and body ground.



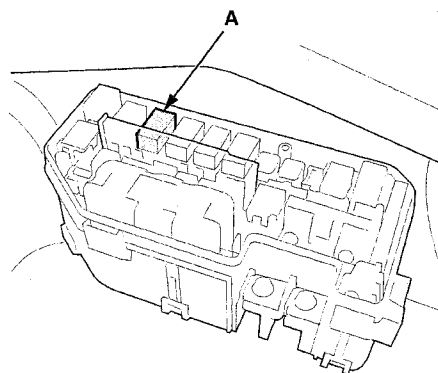
Terminal side of female terminals

Is there battery voltage?

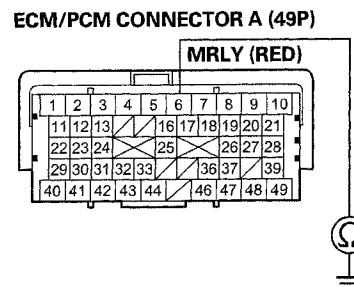
YES—Go to step 13.

NO—Go to step 11.

11. Remove PGM-FI main relay 1 (A) from the under-hood fuse/relay box.



12. Check for continuity between ECM/PCM connector terminal A6 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A6) and PGM-FI main relay 1, then go to step 19.

NO—Go to step 18.

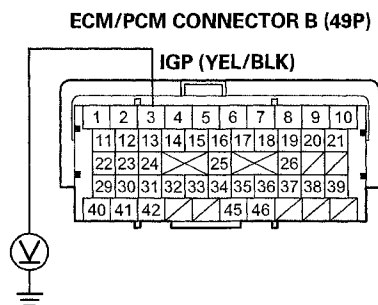
13. Reconnect ECM/PCM connector A (49P).
14. Disconnect ECM/PCM connector B (49P).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

15. Measure the voltage between ECM/PCM connector terminal B3 and body ground.



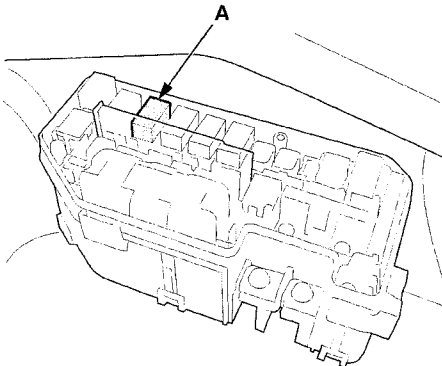
Terminal side of female terminals

Is there battery voltage?

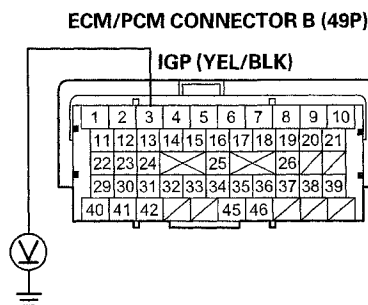
YES—Go to step 16.

NO—Go to step 26.

16. Remove PGM-FI main relay 1 (A) from the under-hood fuse/relay box.



17. Measure the voltage between ECM/PCM connector terminal B3 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the ECM/PCM (B3) and PGM-FI main relay 1, then go to step 19.

NO—Go to step 18.

18. Test PGM-FI main relay 1 (see page 22-88).

Is the relay OK?

YES—Go to step 26.

NO—Replace PGM-FI main relay 1, then go to step 19.

19. Reconnect all connectors.

20. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

21. Reset the ECM/PCM with the HDS.

22. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

23. Wait 10 seconds.

24. Do the ECM/PCM idle learn procedure (see page 11-337).

25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



26. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0602: ECM/PCM Programming Error

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is indicated when an ECM/PCM update is not completed.
- Do not turn the ignition switch to ACC (I) or LOCK (0) or do not press the engine start/stop button while updating the ECM/PCM. If you do, the ECM/PCM can be damaged.

1. Do the ECM/PCM update procedure (see page 11-281).

2. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0602 indicated?

YES—Replace the original ECM/PCM (see page 11-282). ■

NO—The update is complete. ■

DTC Troubleshooting (cont'd)

DTC P060A: ECM/PCM Internal Control Module Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P060A indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
5. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P060A indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0615: Starter Cut Relay STRLD Circuit Malfunction (M/T)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Press the engine start/stop button to select the ON mode.
2. Check for Pending or Confirmed DTCs with the HDS.

Are DTC P0616 and P0615 indicated at the same time?

YES—Go to the troubleshooting for DTC P0616 (see page 11-168).

NO—Go to step 3.

3. Clear the DTC with the HDS.
4. Press the engine start/stop button to select the START mode, for 1 second or more.
5. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0615 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, the +B cut relay, and the ECM. ■

6. Try to start engine.

Does the engine start?

YES—Go to step 7.

NO—Go to step 17.

7. Press the engine start/stop button to select the OFF mode.
8. Remove the driver's dashboard undercover (see page 20-118), then check the No. 8 STRLD (7.5 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

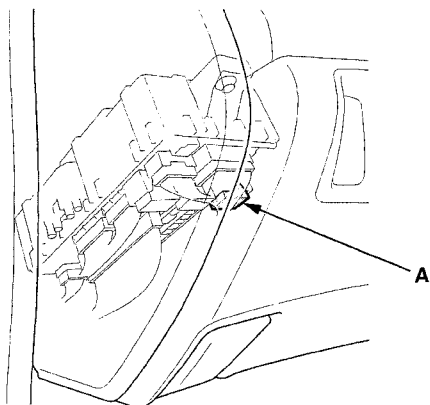
YES—Go to step 9.

NO—Replace the fuse, then go to step 26.

9. Jump the SCS line with the HDS.
10. Disconnect ECM connector A (49P).

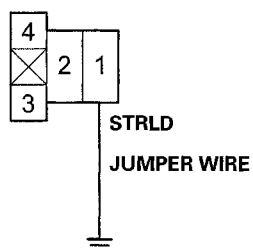


11. Remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.



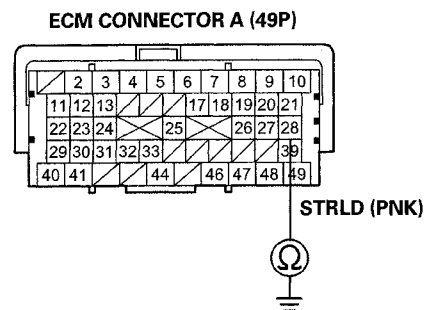
12. Connect starter cut relay 1 4P connector terminal No. 1 to body ground with a jumper wire.

STARTER CUT RELAY 1 4P CONNECTOR



Terminal side of female terminals

13. Check for continuity between ECM connector terminal A28 and body ground.



Terminal side of female terminals

Is there continuity?

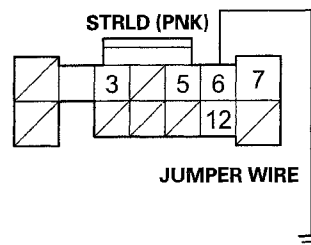
YES—Go to step 30.

NO—Go to step 14.

14. Disconnect driver's under-dash fuse/relay box connector G (13P).

15. Connect driver's under-dash fuse/relay box connector G (13P) terminal No.6 to body ground with a jumper wire.

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR G (13P)



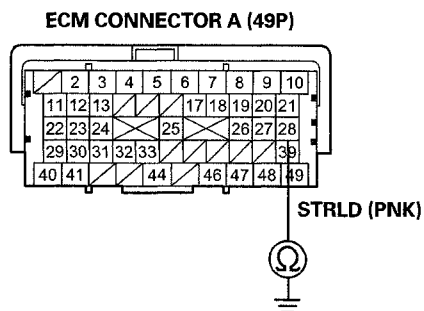
Wire side of female terminals

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

16. Check for continuity between ECM connector terminal A28 and body ground.



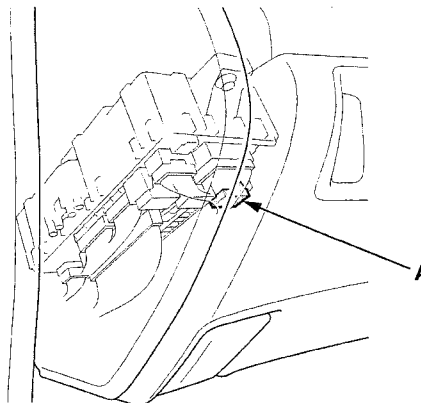
Is there continuity?

YES—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 25.

NO—Repair open in the wire between the ECM (A28) and the driver's under-dash fuse/relay box, then go to step 25.

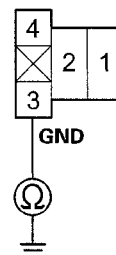
17. Press the engine start/stop button to select the OFF mode.

18. Remove the driver's dashboard undercover (see page 20-118), then remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.



19. Check for continuity between starter cut relay 1 4P connector terminal No. 3 and body ground.

STARTER CUT RELAY 1 4P CONNECTOR



Terminal side of female terminals

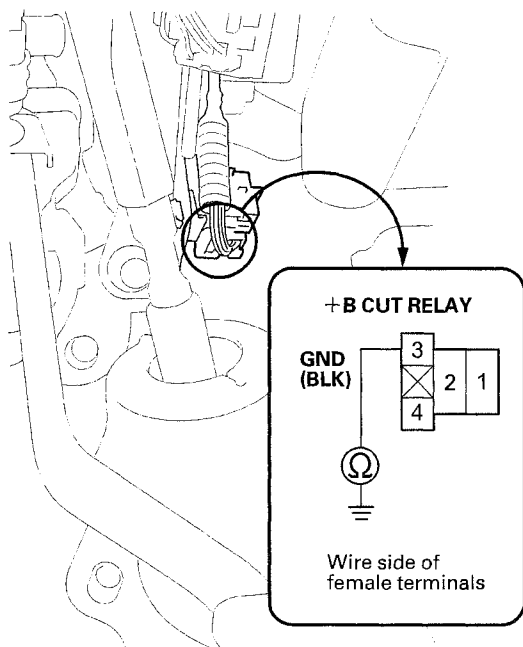
Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between starter cut relay 1 and G301 (see page 22-30), then go to step 25.



20. Check for continuity between the +B cut relay terminal No. 3 and body ground.



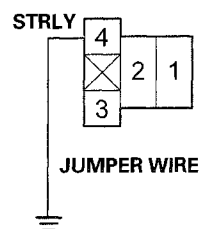
Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the +B cut relay and G403 (see page 22-42), then go to step 25.

21. Jump the SCS line with the HDS.
22. Disconnect ECM connector A (49P).
23. Connect starter cut relay 1 4P connector terminal No. 4 to body ground with a jumper wire.

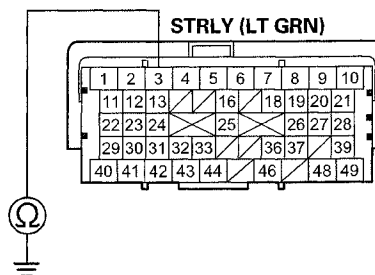
STARTER CUT RELAY 1 4P CONNECTOR



Terminal side of female terminals

24. Check for continuity between ECM connector terminal A3 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the ECM (A3) and starter cut relay 1, then go to step 25.

(cont'd)

DTC Troubleshooting (cont'd)

25. Reconnect all connectors.
26. Press the engine start/stop button to select the ON mode.
27. Reset the ECM with the HDS.
28. Do the ECM idle learn procedure (see page 11-337).
29. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P0615 indicated?
YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, the +B cut relay, and the ECM, then go to step 1.
NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■
30. Reconnect all connectors.
31. Update the ECM if it does not have the latest software (see page 11-281), or substitute a known-good ECM (see page 11-7).
32. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P0615 indicated?
YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, the +B cut relay, and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then recheck. If the ECM was substituted, go to step 1.
NO—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.

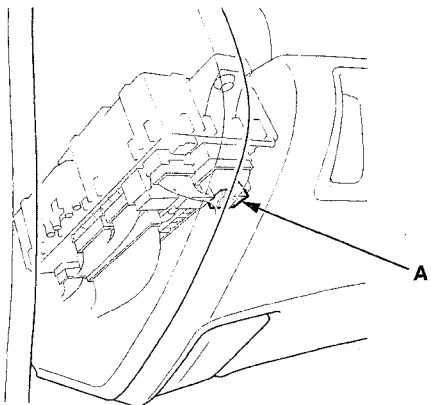
DTC P0615: Starter Cut Relay STRLD Circuit Malfunction (A/T)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check for Pending or Confirmed DTCs with the HDS.
Are DTC P0616 and P0615 indicated at the same time?
YES—Go to the troubleshooting for DTC P0616 (see page 11-170).
NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Turn the ignition switch to START (III), or press the engine start/stop button to select the START mode, for 1 second or more.
5. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P0615 indicated?
YES—Go to step 6.
NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM.■
6. Try to start engine.
Does the engine start?
YES—Go to step 7.
NO—Go to step 17.
7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Remove the driver's dashboard undercover (see page 20-118), then check the No. 8 STRLD (7.5 A) fuse in the driver's under-dash fuse/relay box.
Is the fuse OK?
YES—Go to step 9.
NO—Replace the fuse, then go to step 32.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (49P).

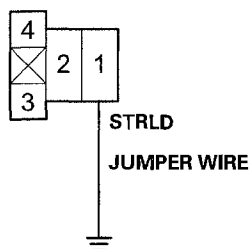


11. Remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.



12. Connect starter cut relay 1 4P connector terminal No. 1 to body ground with a jumper wire.

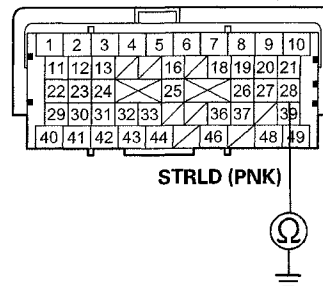
STARTER CUT RELAY 1 4P CONNECTOR



Terminal side of female terminals

13. Check for continuity between PCM connector terminal A28 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

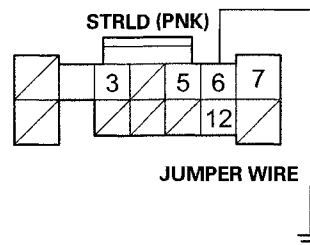
YES—Go to step 36.

NO—Go to step 14.

14. Disconnect driver's under-dash fuse/relay box connector G (13P).

15. Connect driver's under-dash fuse/relay box connector G (13P) terminal No.6 to body ground with a jumper wire.

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR G (13P)



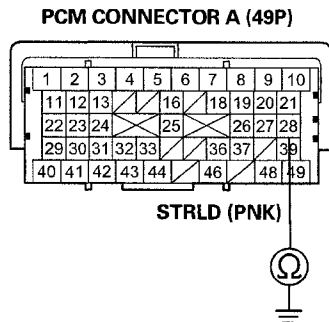
Wire side of female terminals

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

16. Check for continuity between PCM connector terminal A28 and body ground.



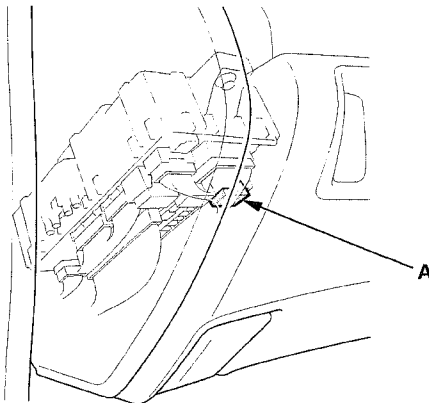
Terminal side of female terminals

Is there continuity?

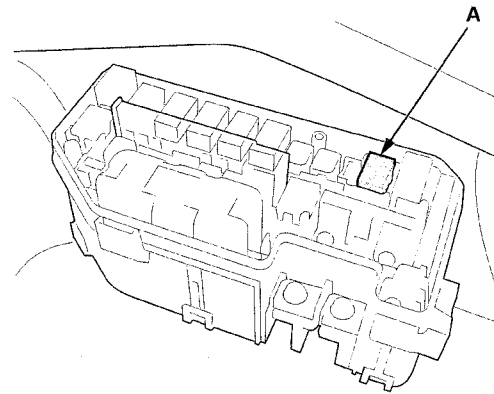
YES—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 31.

NO—Repair open in the wire between the PCM (A28) and the driver's under-dash fuse/relay box, then go to step 31.

17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
18. Remove the driver's dashboard undercover (see page 20-118), then remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.

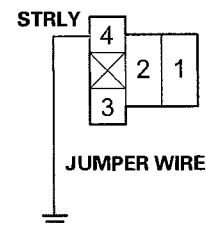


19. Remove starter cut relay 2 (A) from the under-hood fuse/relay box.



20. Connect starter cut relay 1 4P connector terminal No.4 to body ground with a jumper wire.

STARTER CUT RELAY 1 4P CONNECTOR



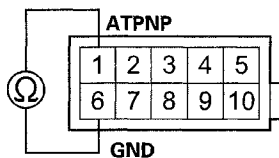
Terminal side of female terminals

21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
22. Check the STARTER RELAY CONTROL RETURN in the DATA LIST with the HDS while the ignition switch is in START (III) or when you press the engine start/stop button to select the START mode.
- Is OFF indicated?*
- YES**—Go to step 23.
- NO**—Go to step 27.
23. Remove the jumper wire from the starter cut relay 1 4P connector.
24. Turn the ignition switch to LOCK (0).
25. Disconnect the transmission range switch 10P connector (see page 14-260).



26. At the switch side, check for continuity between transmission range switch 10P connector terminals No. 1 and No. 6 with the shift lever in N, and then in P.

TRANSMISSION RANGE SWITCH 10P CONNECTOR



Terminal side of male terminals

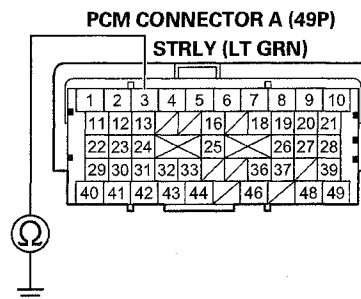
Is there continuity in each shift lever position?

YES—Repair open in the wire between the transmission range switch and starter cut relay 1, starter cut relay 2, or G101, then go to step 31.

NO—Replace the transmission range switch (see page 14-260), then go to step 31.

27. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
28. Jump the SCS line with the HDS.
29. Disconnect PCM connector A (49P).

30. Check for continuity between PCM connector terminal A3 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 36.

NO—Repair open in the wire between the PCM (A3) and the starter cut relay 1, then go to step 31.

31. Reconnect all connectors.
32. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
33. Reset the PCM with the HDS.
34. Do the PCM idle learn procedure (see page 11-337).
35. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0615 indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

36. Reconnect all connectors.

37. Update the PCM if it does not have the latest software (see page 11-281), or substitute a known-good PCM (see page 11-7).

38. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0615 indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.

DTC P0616: Starter Relay 2 Malfunction (M/T)

DTC P16BD: Starter Cut Relay 2 Malfunction (M/T)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 2.2 V or less indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at starter cut relay 1, starter cut relay 2, and the ECM. ■

4. Try to start engine.

Does the engine start?

YES—Go to step 5.

NO—Go to step 13.

5. Press the engine start/stop button to select the OFF mode.

6. Check the No. 8 STRLD (7.5 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

YES—Replace starter cut relay 2, then go to step 17.

NO—Go to step 7.

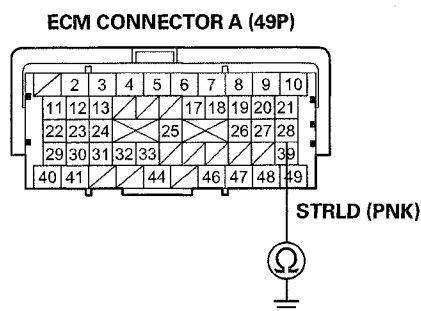
7. Remove the blown fuse the driver's under-dash fuse/relay box.

8. Jump the SCS line with the HDS.

9. Disconnect ECM connector A (49P).



10. Check for continuity between the ECM connector terminal A28 and body ground.

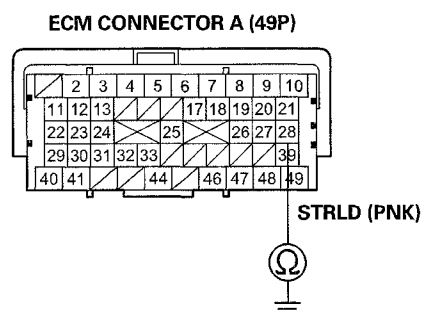


Is there continuity?

YES—Go to step 11.

NO—Replace the No. 8 STRLD (7.5 A) fuse, then go to step 22.

11. Disconnect driver's under-dash fuse/relay box connector G (13P).
12. Check for continuity between the ECM connector terminal A28 and the body ground.

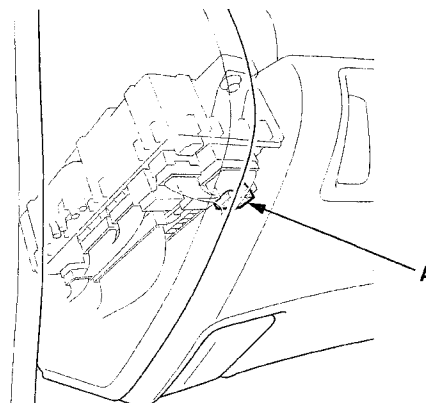


Is there continuity?

YES—Repair short in the wire between the ECM (A28) and the driver's under-dash fuse/relay box, then go to step 17.

NO—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 17.

13. Remove the driver's dashboard undercover (see page 20-118), then remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.



14. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 2.2 V or less indicated?

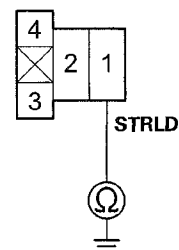
YES—Go to step 15.

NO—Replace starter cut relay 1, then go to step 17.

15. Disconnect driver's under-dash fuse/relay box connectors F (33P) and G (13P).

16. Check for continuity between starter cut relay 1 4P connector terminal No. 1 and body ground.

STARTER CUT RELAY 1 4P CONNECTOR



Is there continuity?

YES—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 17.

NO—Repair short in the wire between the driver's under-dash fuse/relay box and the under-hood fuse/relay box (starter cut relay 2), then go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

17. Reconnect all connectors.
18. Press the engine start/stop button to select the ON mode.
19. Reset the ECM with the HDS.
20. Do the ECM idle learn procedure (see page 11-337).
21. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0616 and/or P16BD indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the ECM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

22. Reconnect all connectors.
23. Update the ECM if it does not have the latest software (see page 11-281), or substitute a known-good ECM (see page 11-7).
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0616 and/or P16BD indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then recheck. If the ECM was substituted, go to step 1.

NO—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0616: Starter Relay 2 Malfunction (A/T)

DTC P16BD: Starter Cut Relay 2 Malfunction (A/T)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 2.2 V or less indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM. ■

4. Try to start engine.

Does the engine start?

YES—Go to step 5.

NO—Go to step 13.

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

6. Check the No. 8 STRLD (7.5 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

YES—Replace starter cut relay 2, then go to step 20.

NO—Go to step 7.

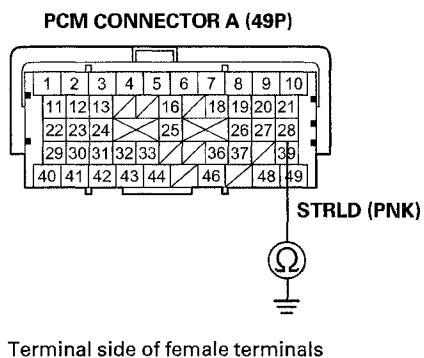
7. Remove the blown fuse from the driver's under-dash fuse/relay box.

8. Jump the SCS line with the HDS.

9. Disconnect PCM connector A (49P).



10. Check for continuity between the PCM connector terminal A28 and body ground.

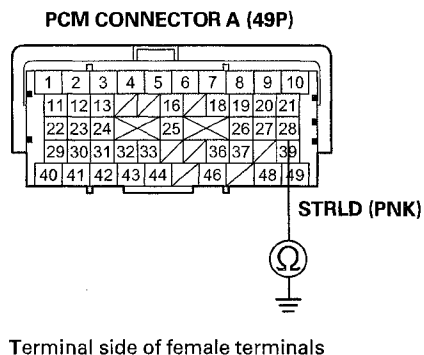


Is there continuity?

YES—Go to step 11.

NO—Replace the No. 8 STRLD (7.5 A) fuse, then go to step 25.

11. Disconnect driver's under-dash fuse/relay box connector G (13P).
12. Check for continuity between the PCM connector terminal A28 and the body ground.

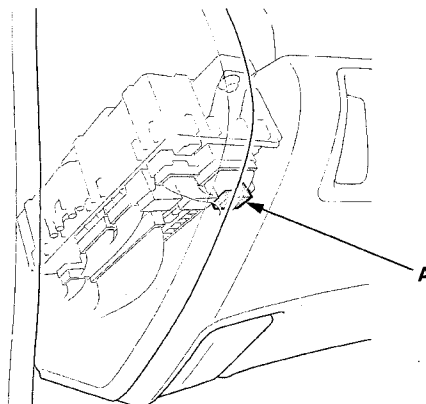


Is there continuity?

YES—Repair short in the wire between the ECM (A28) and the driver's under-dash fuse/relay box. Also replace the No. 8 STRLD (7.5 A) fuse, then go to step 20.

NO—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 20.

13. Remove the driver's dashboard undercover (see page 20-118), then remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.



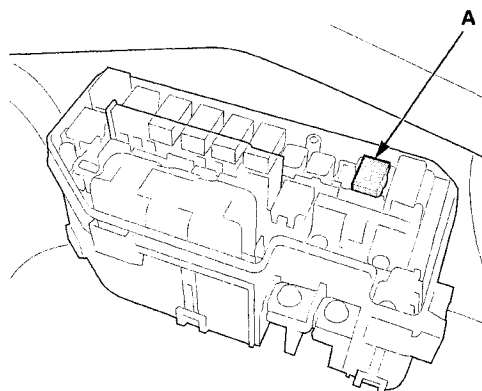
14. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 2.2 V or less indicated?

YES—Go to step 15.

NO—Replace starter cut relay 1, then go to step 20.

15. Remove the starter cut relay 2 (A) from the under-hood fuse/relay box.



16. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 2.2 V or less indicated?

YES—Go to step 17.

NO—Replace starter cut relay 2, then go to step 20.

17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

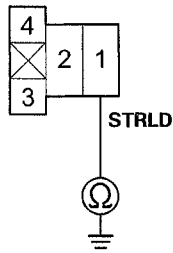
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

18. Disconnect driver's under-dash fuse/relay box connectors F (33P) and G (13P).
19. Check for continuity between starter cut relay 1 4P connector terminal No. 1 and body ground.

STARTER CUT RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 20.

NO—Repair short in the wire between the driver's under-dash fuse/relay box and the under-hood fuse/relay box (starter cut relay 2), then go to step 20.

20. Reconnect all connectors.
21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-337).
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0616 and/or P16BD indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-281), or substitute a known-good PCM (see page 11-7).
27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0616 and/or P16BD indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P062F: ECM/PCM Internal Control Module Keep Alive Memory (KAM) Error

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Check for Pending or Confirmed DTCs with the HDS.

Are any Pending or Confirmed DTCs indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

4. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

5. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0603 indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0630: VIN Not Programmed or Mismatch

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is stored only when the ECM/PCM does not have the VIN information of the vehicle. Use the HDS to input the missing VIN information.

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check the VIN with the HDS.

Does the HDS show the vehicle's VIN?

YES—Go to step 3.

NO—Go to step 3.

3. Input the VIN to the ECM/PCM with the HDS.

Does the screen show COMPLETE?

YES—Go to step 5.

NO—Go to step 4.

4. Check for DTCs with the HDS.

Is DTC P062F indicated?

YES—Go to the DTC P062F troubleshooting (see page 11-173). ■

NO—Go to step 9.

5. Clear the DTC with the HDS.

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 5 seconds.

8. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0630 indicated?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

9. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

10. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0630 indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0641: Sensor Reference Voltage A Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ECM/PCM and the connectors of these parts: ■

- Throttle body
- EGR valve
- Input shaft (mainshaft) speed sensor
- APP sensor

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

5. Disconnect the connectors of these parts:

- Throttle body
- EGR valve
- Input shaft (mainshaft) speed sensor
- APP sensor

6. Turn the ignition switch ON (II), or press the engine start/stop button to select the ON mode.

7. Clear the DTC with the HDS.

8. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0641 indicated?

YES—Go to step 10.

NO—Go to step 9.



9. Check for Pending or Confirmed DTCs with the HDS while connecting each the connectors of these parts:

- Throttle body
- EGR valve
- Input shaft (mainshaft) speed sensor
- APP sensor

Is DTC P0641 indicated?

YES—Replace the part that caused the DTC when it was reconnected, then go to step 14.

NO—Check for poor connections or loose terminals at the ECM/PCM and the connectors of these parts:

- Throttle body
- EGR valve
- Input shaft (mainshaft) speed sensor
- APP sensor

If the connections and the terminals are OK, go to step 1 and recheck.

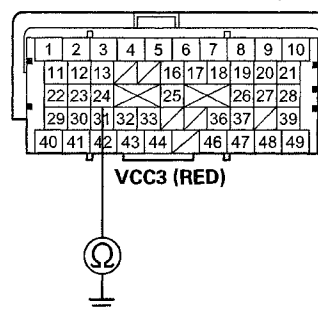
10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

11. Jump the SCS line with the HDS.

12. Disconnect ECM/PCM connectors A (49P), B (49P), and C (49P).

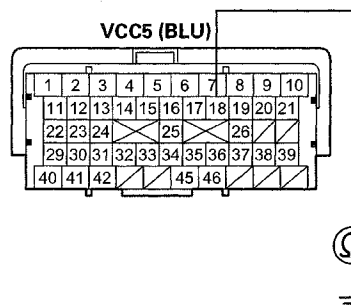
13. Check for continuity between body ground and ECM/PCM connector terminals A24, B18, and C12 individually.

ECM/PCM CONNECTOR A (49P)



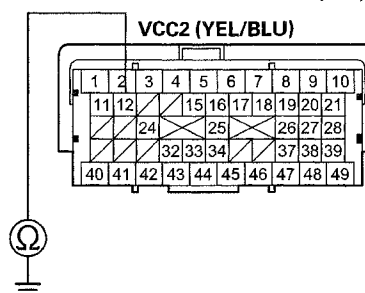
Terminal side of female terminals

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A24, B18, or C12) and each sensor, then go to step 14.

NO—Go to step 20.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
15. Reconnect all connectors.
16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see page 11-337).
19. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0641 indicated?

YES—Check for poor connections or loose terminals at the ECM/PCM and the connectors of these parts:

- Throttle body
- EGR valve
- Input shaft (mainshaft) speed sensor
- APP sensor

If the connections and the terminals are OK, go to step 1 and recheck.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Reconnect all connectors.
21. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
22. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0641 indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, check for poor connections or loose terminals at the ECM/PCM and the connectors of these parts:

- Throttle body
- EGR valve
- Input shaft (mainshaft) speed sensor
- APP sensor

If the connections and the terminals are OK, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0651: Sensor Reference Voltage B Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0651 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ECM/PCM and the connectors of these parts: ■

- MAP sensor
- Output shaft (countershaft) speed sensor
- IMT actuator
- APP sensor
- FTP sensor

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Disconnect the connectors of these parts:
 - MAP sensor
 - Output shaft (countershaft) speed sensor
 - IMT actuator
 - APP sensor
 - FTP sensor
6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. Clear the DTC with the HDS.
8. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0651 indicated?

YES—Go to step 10.

NO—Go to step 9.



9. Check for Pending or Confirmed DTCs with the HDS while connecting each the connectors of these parts:

- MAP sensor
- Output shaft (countershaft) speed sensor
- IMT actuator
- APP sensor
- FTP sensor

Is DTC P0651 indicated?

YES—Replace the part that caused the DTC when it was reconnected, then go to step 14.

NO—Check for poor connections or loose terminals at the ECM/PCM and the connectors of these parts:

- MAP sensor
- Output shaft (countershaft) speed sensor
- IMT actuator
- APP sensor
- FTP sensor

If the connections and the terminals are OK, go to step 1 and recheck.

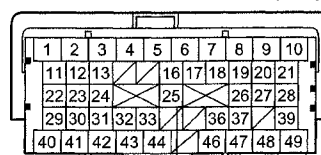
10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

11. Jump the SCS line with the HDS.

12. Disconnect ECM/PCM connectors A (49P), B (49P), and C (49P).

13. Check for continuity between body ground and ECM/PCM connector terminals A25, B36, and C11 individually.

ECM/PCM CONNECTOR A (49P)

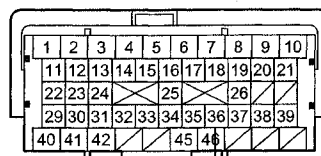


VCC4 (BRN)



Terminal side of female terminals

ECM/PCM CONNECTOR B (49P)

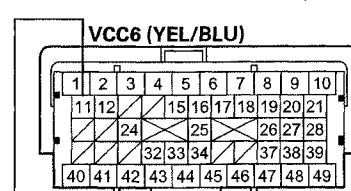


VCC1 (YEL/RED)



Terminal side of female terminals

ECM/PCM CONNECTOR C (49P)



VCC6 (YEL/BLU)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A25, B36, or C11) and each sensor, then go to step 14.

NO—Go to step 20.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
15. Reconnect all connectors.
16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see page 11-337).
19. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0651 indicated?

YES—Check for poor connections or loose terminals at the ECM/PCM and the connectors of these parts:

- MAP sensor
- Output shaft (countershaft) speed sensor
- IMT actuator
- APP sensor
- FTP sensor

If the connections and the terminals are OK, go to step 1 and recheck.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Reconnect all connectors.
21. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
22. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0651 indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, check for poor connections or loose terminals at the ECM/PCM and the connectors of these parts:

- MAP sensor
- Output shaft (countershaft) speed sensor
- IMT actuator
- APP sensor
- FTP sensor

If the connections and the terminals are OK, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0685: ECM/PCM Power Control Circuit/Internal Circuit Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
 - If the problem doesn't return after you clear the DTC, or if this DTC is stored intermittently, check for loose terminals at the IGP line connectors before replacing the ECM/PCM.
1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
 2. Clear the DTC with the HDS.
 3. Start the engine, and let it idle for 30 seconds.
 4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
 5. Start the engine, and let it idle for 30 seconds.
 6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
 7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
 8. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0685 indicated?

YES—Go to step 9.

NO—Intermittent failure, the system is OK at this time. ■

9. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
10. Start the engine, and let it idle for 30 seconds.
11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Start the engine, and let it idle for 30 seconds.
13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
15. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0685 indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 10. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0715: Input Shaft (Mainshaft) Speed Sensor Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
2. Test-drive several minutes.
3. Check the M SHAFT SPD in the DATA LIST with the HDS.

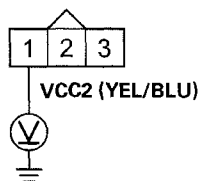
Is any vehicle speed indicated?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the ECM. ■

NO—Go to step 4.

4. Press the engine start/stop button to select the OFF mode.
5. Disconnect the input shaft (mainshaft) speed sensor 3P connector.
6. Press the engine start/stop button to select the ON mode.
7. Measure the voltage between input shaft (mainshaft) speed sensor 3P connector terminal No. 1 and body ground.

INPUT SHAFT (MAINSHAFT)
SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

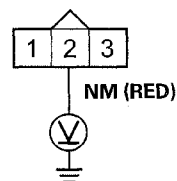
Is there about 5 V?

YES—Go to step 8.

NO—Repair open in the wire between the ECM (C12) and the input shaft (mainshaft) speed sensor, then go to step 18.

8. Measure the voltage between input shaft (mainshaft) speed sensor 3P connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT)
SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

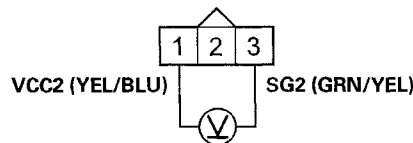
Is there about 5 V?

YES—Go to step 9.

NO—Go to step 10.

9. Measure the voltage between input shaft (mainshaft) speed sensor 3P connector terminals No. 1 and No. 3.

INPUT SHAFT (MAINSHAFT)
SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

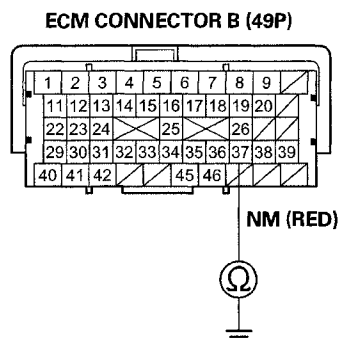
YES—Go to step 16.

NO—Repair open in the wire between the ECM (C16) and the input shaft (mainshaft) speed sensor, then go to step 18.

10. Press the engine start/stop button to select the OFF mode.
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector B (49P).



13. Check for continuity between ECM connector terminal B37 and body ground.



Terminal side of female terminals

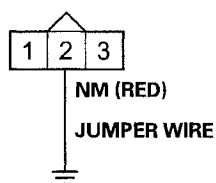
Is there continuity?

YES—Repair short in the wire between the ECM (B37) and the input shaft (mainshaft) speed sensor, then go to step 18.

NO—Go to step 14.

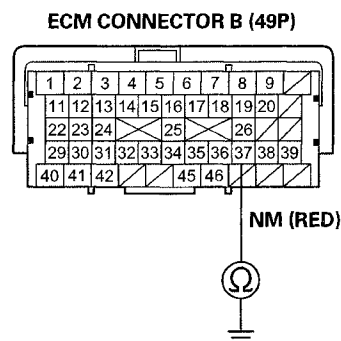
14. Connect input shaft (mainshaft) speed sensor 3P connector terminal No. 2 to body ground with a jumper wire.

**INPUT SHAFT (MAINSHAFT)
SPEED SENSOR 3P CONNECTOR**



Wire side of female terminals

15. Check for continuity between ECM connector terminal B37 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM (B37) and the input shaft (mainshaft) speed sensor, then go to step 18.

16. Press the engine start/stop button to select the OFF mode.
17. Replace the input shaft (mainshaft) speed sensor (see page 11-279).
18. Reconnect all connectors.
19. Press the engine start/stop button to select the ON mode.
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see page 11-337).
22. Test-drive under these conditions:
- Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
 - Transmission in 5th
 - Engine speed between 2,000—3,000 rpm
 - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds
23. Check for Pending or Confirmed DTCs with the HDS.
- Is DTC P0715 indicated?*
- YES**—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the ECM, then go to step 1.
- NO**—Go to step 24.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

24. Monitor the OBD STATUS for DTC P0715 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Reconnect all connectors.

26. Update the ECM if does not have the latest software (see page 11-281), or substitute a known-good ECM (see page 11-7).

27. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
- Transmission in 5th
- Engine speed between 2,000—3,000 rpm
- Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds

28. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0715 indicated?

YES—Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then go to step 27. If the ECM was substituted, go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0715 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then go to step 27. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

DTC P0720: Output Shaft (Countershaft) Speed Sensor Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
2. Test-drive several minutes.
3. Check the C SHAFT SPD in the DATA LIST with the HDS.

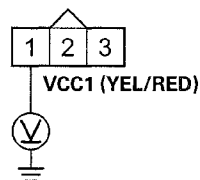
Is any vehicle speed indicated?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. ■

NO—Go to step 4.

4. Press the engine start/stop button to select the OFF mode.
5. Disconnect the output shaft (countershaft) speed sensor 3P connector.
6. Press the engine start/stop button to select the ON mode.
7. Measure the voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

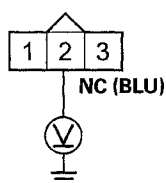
YES—Go to step 8.

NO—Repair open in the wire between the ECM (B36) and the output shaft (countershaft) speed sensor, then go to step 18.



8. Measure the voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 2 and body ground.

**OUTPUT SHAFT (COUNTERSHAFT)
SPEED SENSOR 3P CONNECTOR**



Wire side of female terminals

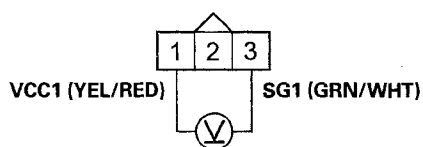
Is there about 5 V?

YES—Go to step 9.

NO—Go to step 10.

9. Measure the voltage between output shaft (countershaft) speed sensor 3P connector terminals No. 1 and No. 3.

**OUTPUT SHAFT (COUNTERSHAFT)
SPEED SENSOR 3P CONNECTOR**



Wire side of female terminals

Is there about 5 V?

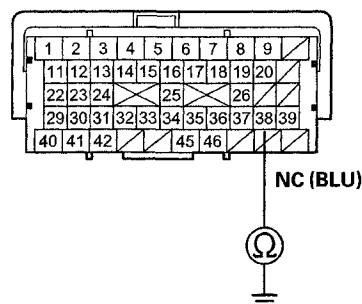
YES—Go to step 16.

NO—Repair open in the wire between the ECM (B34) and the output shaft (countershaft) speed sensor, then go to step 18.

10. Press the engine start/stop button to select the OFF mode.
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector B (49P).

13. Check for continuity between ECM connector terminal B38 and body ground.

ECM CONNECTOR B (49P)



Terminal side of female terminals

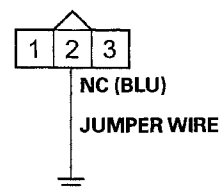
Is there continuity?

YES—Repair short in the wire between the ECM (B38) and the output shaft (countershaft) speed sensor, then go to step 18.

NO—Go to step 14.

14. Connect output shaft (countershaft) speed sensor 3P connector terminal No. 2 to body ground with a jumper wire.

**OUTPUT SHAFT (COUNTERSHAFT)
SPEED SENSOR 3P CONNECTOR**



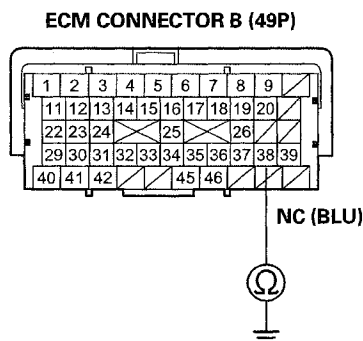
Wire side of female terminals

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

15. Check for continuity between ECM connector terminal B38 and body ground.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM (B38) and the output shaft (countershaft) speed sensor, then go to step 18.

16. Press the engine start/stop button to select the OFF mode.
17. Replace the output shaft (countershaft) speed sensor (see page 11-279).
18. Reconnect all connectors.
19. Press the engine start/stop button to select the ON mode.
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see page 11-337).
22. Test-drive under these conditions:
- Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
 - Transmission in 5th
 - Engine speed between 2,000—3,000 rpm
 - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds
23. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0720 indicated?

YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Reconnect the all connectors.
26. Update the ECM if does not have the latest software (see page 11-281), or substitute a known-good ECM (see page 11-7).
27. Test-drive under these conditions:
- Engine coolant temperature (ECT SENSOR 1) above 176 °F (80 °C)
 - Transmission in 5th
 - Engine speed between 2,000—3,000 rpm
 - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds

28. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0720 indicated?

YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then go to step 27. If the ECM was substituted, go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then go to step 27. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.



DTC P0831: Clutch Pedal Position Switch A Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check the CLUTCH PEDAL POSITION SWITCH A in the DATA LIST with the HDS.

Is CLOSE indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at clutch pedal position switch A and the ECM, and check the installation of clutch pedal position switch A. ■

4. Check clutch pedal position switch A.

Is it damaged or loose?

YES—Repair or replace clutch pedal position switch A, then go to step 11.

NO—Go to step 5.

5. Disconnect the clutch pedal position switch A 2P connector.
6. Check the CLUTCH PEDAL POSITION SWITCH A in the DATA LIST with the HDS.

Is OPEN indicated?

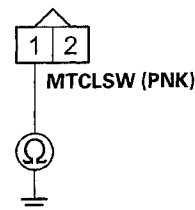
YES—Replace clutch pedal position switch A (see page 4-15), then go to step 11.

NO—Go to step 7.

7. Press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM connector A (49P).

10. Check for continuity between the clutch pedal position switch A 2P connector terminal No. 1 and body ground.

CLUTCH PEDAL POSITION SWITCH A 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between clutch pedal position switch A and the ECM (A17), then go to step 11.

NO—Go to step 16.

11. Reconnect all connectors.
12. Press the engine start/stop button to select the ON mode.
13. Reset the ECM with the HDS.
14. Do the ECM idle learn procedure (see page 11-337).
15. Check the CLUTCH PEDAL POSITION SWITCH A in the DATA LIST with the HDS.

Is CLOSE indicated?

YES—Check for poor connections or loose terminals at clutch pedal position switch A and the ECM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.
17. Update the ECM if it does not have the latest software (see page 11-281), or substitute a known-good ECM (see page 11-7).
18. Check the CLUTCH PEDAL POSITION SWITCH A in the DATA LIST with the HDS.

Is DTC CLOSE indicated?

YES—Check for poor connections or loose terminals at clutch pedal position switch A and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then recheck. If the ECM was substituted, go to step 1.

NO—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0835: Clutch Pedal Position Switch B Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snap shot, and review the general troubleshooting information (see page 11-3).

1. Press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check the CLUTCH PEDAL POSITION SWITCH B in the DATA LIST with the HDS.

Is OPEN indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at clutch pedal position switch B and the ECM, and check the installation of the clutch pedal position switch B.

4. Check clutch pedal position switch B.

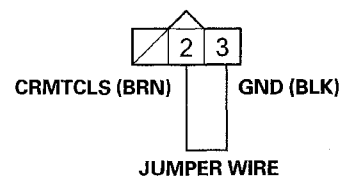
Is it damaged or loose?

YES—Repair or replace clutch pedal position switch B, then go to step 14.

NO—Go to step 5.

5. Disconnect the clutch pedal position switch B 3P connector.
6. Connect the clutch pedal position switch B 3P connector terminal No. 2 and No. 3 with a jumper wire.

CLUTCH PEDAL POSITION SWITCH B 3P CONNECTOR



Wire side of female terminals



7. Check the CLUTCH PEDAL POSITION SWITCH B in the DATA LIST with the HDS.

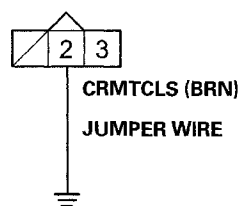
Is OPEN indicated?

YES—Go to step 8.

NO—Replace clutch pedal position switch B (see page 4-62), then go to step 14.

8. Connect the clutch pedal position switch B 3P connector terminal No. 2 to body ground with a jumper wire.

CLUTCH PEDAL POSITION SWITCH B 3P CONNECTOR



Wire side of female terminals

9. Check the CLUTCH PEDAL POSITION SWITCH B in the DATA LIST with the HDS.

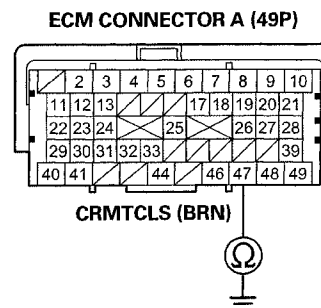
Is OPEN indicated?

YES—Go to step 10.

NO—Repair open in the wire between clutch pedal position switch B and the G301 (see page 22-30), then go to step 14.

10. Press the engine start/stop button to select the OFF mode.
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector A (49P).

13. Check for continuity between ECM connector terminal A47 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between clutch pedal position switch B and the ECM (A47), then go to step 14.

14. Reconnect all connectors.
15. Press the engine start/stop button to select the ON mode.
16. Reset the ECM with the HDS.
17. Do the ECM idle learn procedure (see page 11-337).
18. Check the CLUTCH PEDAL POSITION SWITCH B in the DATA LIST with the HDS.

Is OPEN indicated?

YES—Check for poor connections or loose terminals at clutch pedal position switch B and the ECM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

19. Reconnect all connectors.
20. Update the ECM if it does not have the latest software (see page 11-281), or substitute a known-good ECM (see page 11-7).
21. Check the CLUTCH PEDAL POSITION SWITCH B in the DATA LIST with the HDS.

Is OPEN indicated?

YES—Check for poor connections or loose terminals at clutch pedal position switch B and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then recheck. If the ECM was substituted, go to step 1.

NO—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1116: ECT Sensor 1 Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0111 is stored at the same time as DTC P1116, troubleshoot DTC P0111 first, then recheck for DTC P1116.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

Are the connections and the terminals OK?

YES—Go to step 2.

NO—Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

3. Check for Pending or Confirmed DTCs with the HDS.

Are DTC P1116 and P2183 indicated at the same time?

YES—Go to step 15.

NO—Go to step 4.

4. Start the engine, and let it idle for 10 minutes.

5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 108 °F (42 °C) or less indicated?

YES—Replace ECT sensor 1 (see page 11-274), then go to step 27.

NO—Go to step 6.



6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Drain the coolant (see page 10-6).
8. Remove ECT sensor 1 (see page 11-274).
9. Allow ECT sensor 1 to cool to the ambient temperature.
10. Note the ambient temperature.
11. Connect ECT sensor 1 to its 2P connector, but do not install it on the engine.
12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
13. Note the value of ECT SENSOR 1 quickly in the DATA LIST with the HDS.
14. Compare the value of ECT SENSOR 1 to the ambient temperature.

Does the value of ECT SENSOR 1 differ 5.4 °F (3 °C) or more from ambient temperature?

YES—Replace ECT sensor 1 (see page 11-274), then go to step 27.

NO—Intermittent failure, the system is OK at this time. Reinstall ECT sensor 1 (see page 11-274). Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM.■
15. Start the engine, and let it idle for 10 minutes.
16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 108 °F (42 °C) or less indicated?

YES—Replace ECT sensor 1 (see page 11-274), then go to step 27.

NO—Go to step 17.
17. Let the engine idle 10 minutes.
18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 108 °F (42 °C) or less indicated?

YES—Replace ECT sensor 2 (see page 11-274), then go to step 27.

NO—Go to step 19.
19. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
20. Drain the coolant (see page 10-6).
21. Remove ECT sensor 1 (see page 11-274), and ECT sensor 2 (see page 11-274).
22. Allow the sensors to cool to the ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 and ECT sensor 2 to their 2P connectors, but do not install them.
25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

Does one of the sensors differ more than 5.4 °F (3 °C) from the ambient temperature?

YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the ambient temperature. Refill the cooling system (see step 8 on page 10-7), then go to step 27.

NO—Intermittent failure, the system is OK at this time. Reinstall ECT sensor 1 (see page 11-274) and ECT sensor 2 (see page 11-274). Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM.■
27. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-337).
30. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1116 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P1128: MAP Sensor Signal Lower Than Expected

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Before starting this troubleshooting, check for poor connections or a blockage at the intake air duct.

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check the MAP SENSOR in the DATA LIST with the HDS.

Is less than 54.1 kPa (16.0 inHg, 406 mmHg) or 1.61 V held for more than 5 seconds?

YES—Go to step 7.

NO—Go to step 3.

3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - Engine speed about 1,200 rpm or more
 - A/T in D, M/T in 3rd
 - Vehicle speed about 25 mph (40 km/h) or more under half throttle
6. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Replace the MAP sensor (see page 11-273).
9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-337).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - Engine speed about 1,200 rpm or more
 - A/T in D, M/T in 3rd
 - Vehicle speed about 25 mph (40 km/h) or more under half throttle

14. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1128 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

NO—Go to step 15.

15. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.



DTC P1129: MAP Sensor Signal Higher than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for vacuum leaks at these parts:

- PCV valve
- PCV hose
- EVAP canister purge valve
- Throttle body
- Intake manifold
- Brake booster
- Brake booster hose

Are there any vacuum leaks?

YES—Repair or replace the part(s) with vacuum leaks, then go to step 9.

NO—Go to step 2.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

3. Check the MAP SENSOR in the DATA LIST with the HDS.

Is there more than 36.9 kPa (11.0 inHg, 277 mmHg), or 1.14 V held for more than 5 seconds?

YES—Go to step 7.

NO—Go to step 4.

4. Clear the DTC with the HDS.

5. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Engine speed between 1,200 and 5,900 rpm
- A/T in D, M/T in 5th
- Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds, then decelerate (with the throttle fully closed) for 5 seconds

6. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

8. Replace the MAP sensor (see page 11-273).

9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

10. Reset the ECM/PCM with the HDS.

11. Do the ECM/PCM idle learn procedure (see page 11-337).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

13. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- Engine speed between 1,200 and 5,900 rpm
- A/T in D, M/T in 5th
- Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds, then decelerate (with the throttle fully closed) for 5 seconds

14. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1129 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1.

NO—Go to step 15.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

15. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 14, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

DTC P1172: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Out of Range High

DTC P1174: Front A/F Sensor (Bank 2, Sensor 1) Circuit Out of Range High

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for P1172 and/or P1174* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.



5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Replace the A/F sensor (Sensor 1) (see page 11-275).
7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-337).
10. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
11. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P1172 and/or P1174 indicated?*
YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.
NO—Go to step 12.
12. Monitor the OBD STATUS for DTC P1172 and/or P1174* in the DTCs MENU with the HDS.
Does the screen indicate PASSED?
YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■
NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10.

DTC P1297: ELD Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check the ELD in the DATA LIST with the HDS.

Is 72 A or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM/PCM. ■

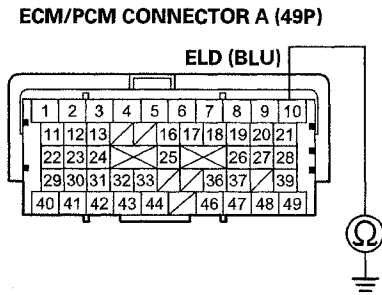
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check the ELD in the DATA LIST with the HDS.
Is 72 A or more indicated?
YES—Go to step 7.
NO—Go to step 11.
7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

10. Check for continuity between ECM/PCM connector terminal A10 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A10) and the ELD, then go to step 13.

NO—Go to step 20.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Replace the ELD (see page 11-280).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-337).
17. Start the engine.
18. Turn on the headlights.
19. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1297 indicated?

YES—Check for poor connections or loose terminals at the ELD and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Reconnect all connectors.

21. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

22. Start the engine.

23. Turn on the headlights.

24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1297 indicated?

YES—Check for poor connections or loose terminals at the ELD and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P1298: ELD Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle.
2. Check the ELD in the DATA LIST with the HDS.

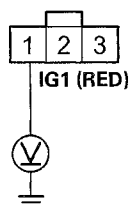
Is 0.2 A or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ELD and the ECM/PCM.

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Measure the voltage between ELD 3P connector terminal No. 1 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

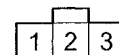
YES—Go to step 7.

NO—Repair open in the wire between the No. 13 ACG (15 A) fuse in the driver's under-dash fuse/relay box and the ELD, then go to step 13.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

10. Check for continuity between ECM/PCM connector terminal A10 and ELD 3P connector terminal No. 3.

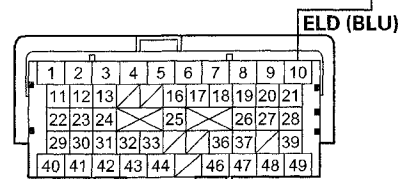
ELD 3P CONNECTOR



ELD (BLU)

Wire side of female terminals

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

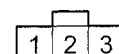
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A10) and the ELD, then go to step 13.

11. Check for continuity between ELD 3P connector terminal No. 2 and body ground.

ELD 3P CONNECTOR



GND (BLK)



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the ELD and G301 (see page 22-30), then go to step 13.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Replace the ELD (see page 11-280).
13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-337).
16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1298 indicated?

YES—Check for poor connections or loose terminals at the ELD and the ECM/PCM, then go to step 17.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

17. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1298 indicated?

YES—Check for poor connections or loose terminals at the ELD and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1549: Charging System High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If a high voltage battery (24 V, etc.) is connected to the vehicle, this DTC can be stored.

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
 - A/C off
 - Headlights off
 - Rear window defogger off
5. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) 1 minute.
6. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1549 indicated?

YES—Replace the alternator (see page 4-47), then go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box. ■



7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-337).
10. Start the engine.
11. Check under these conditions:
 - A/C off
 - Headlights off
 - Rear window defogger off
12. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) 1 minute.
13. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1549 indicated?

YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P16BB: Alternator B Terminal Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
 - A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
 - Rear window defogger on
5. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) 1 minute.
6. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BB indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, and check the battery performance (see page 22-84). ■

7. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box (+B line).

Are the connections and terminals OK?

YES—Go to step 8.

NO—Repair the connections or the terminals, then go to step 9.

8. Check for an open in the wire between the alternator and the under-hood fuse/relay box at the engine harness.

Is the harness OK?

YES—Replace the alternator (see page 4-47), then go to step 9.

NO—Repair open in the wire between the alternator and the under-hood fuse/relay box, then go to step 9.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-337).
12. Start the engine.
13. Check under these conditions:
 - A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
 - Rear window defogger on
14. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) 1 minute.
15. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BB indicated?

YES—Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P16BC: Alternator FR Terminal Circuit/IGP Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections or loose terminals at the alternator 4P connector.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connections or terminals, then go to step 18.
2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
3. Clear the DTC with the HDS.
4. Start the engine.
5. Check under these conditions:
 - A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
 - Rear window defogger on
6. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
7. Check for Pending or Confirmed DTCs with the HDS.

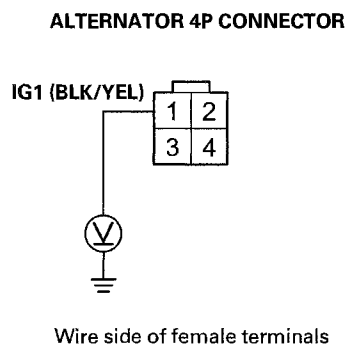
Is DTC P16BC indicated?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator. ■
8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
9. Disconnect the alternator 4P connector.
10. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.



11. Measure the voltage between alternator 4P connector terminal No. 1 and body ground.

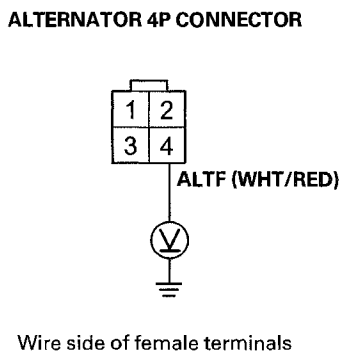


Is there battery voltage?

YES—Go to step 12.

NO—Repair open in the wire between the alternator (IG1 line) and the No. 13 ACG (15 A) fuse in the driver's under-dash fuse/relay box, then go to step 17.

12. Measure the voltage between alternator 4P connector terminal No. 4 and body ground.



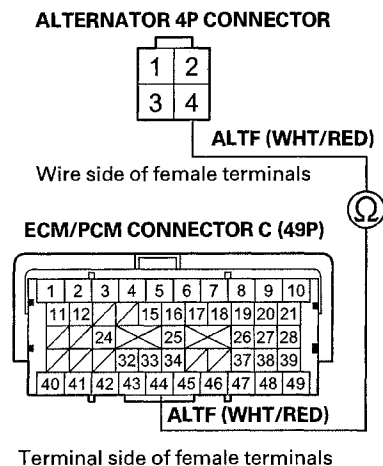
Is there about 5 V?

YES—Replace the alternator (see page 4-47), then go to step 17.

NO—Go to step 13.

13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector C (49P).

16. Check for continuity between alternator 4P connector terminal No. 4 and ECM/PCM connector terminal C44.



Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the ECM/PCM (C44) and the alternator, then go to step 18.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Start the engine.
23. Check under these conditions:
 - A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
 - Rear window defogger on
24. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BC indicated?

YES—Check for poor connections or loose terminals at the alternator and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Reconnect all connectors.
27. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
28. Start the engine.
29. Check under these conditions:
 - A/C on
 - Temperature control at maximum cool
 - Blower fan at maximum speed
 - Headlights on high beam
 - Rear window defogger on
30. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
31. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BC indicated?

YES—Check for poor connections or loose terminals at the alternator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 28. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P16BE: Starter Cut Relay 1 Malfunction (M/T)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 3.2 V or more indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the ECM. ■

4. Remove the No. 8 STRLD (7.5 A) fuse from the driver's under-dash fuse/relay box.

5. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 3.2 V or more indicated?

YES—Go to step 6.

NO—Go to step 13.

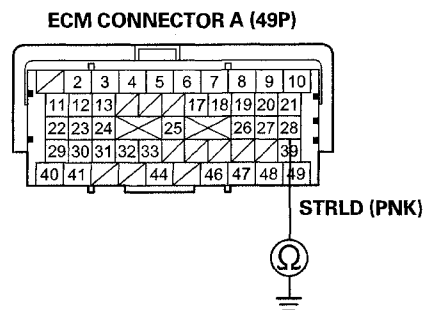
6. Press the engine start/stop button to select the OFF mode.

7. Jump the SCS line with the HDS.

8. Disconnect ECM connector A (49P).

9. Press the engine start/stop button to select the ON mode.

10. Measure the voltage between ECM connector terminal A28 and body ground.



Terminal side of female terminals

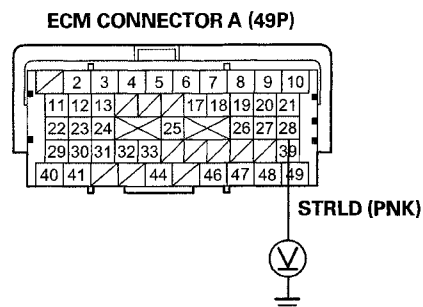
Is there 3.2 V or more?

YES—Go to step 11.

NO—Reinstall the No. 8 STRLD (7.5 A) fuse, then go to step 23.

11. Disconnect driver's under-dash fuse/relay box connector G (13P).

12. Measure the voltage between ECM connector terminal A28 and body ground.



Terminal side of female terminals

Is there 3.2 V or more?

YES—Repair short to power in the wire between the driver's under-dash fuse/relay box and the ECM (A28), then go to step 18.

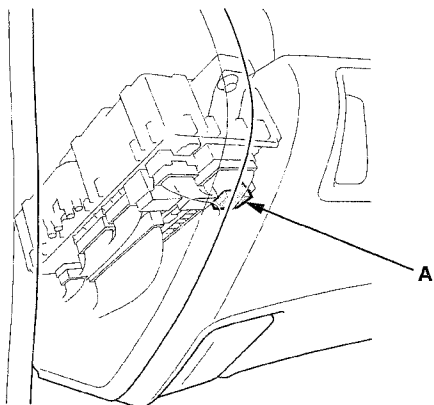
NO—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 18.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

13. Remove starter cut relay 1 from the driver's under-dash fuse/relay box.



14. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 3.2 V or more indicated?

YES—Go to step 15.

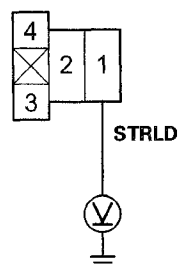
NO—Replace starter cut relay 1, then go to step 18.

15. Press the engine start/stop button to select the OFF mode.

16. Disconnect under-dash fuse/relay box connector F (33P).

17. Measure the voltage between the starter cut relay 1 terminal No. 1 and body ground.

STARTER CUT RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there 3.2 V or more?

YES—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 18.

NO—Repair short to power in the wire between the driver's under-dash fuse/relay box and the under-hood fuse/relay box (starter cut relay 2), then go to step 18.

18. Reconnect all connectors.

19. Press the engine start/stop button to select the ON mode.

20. Reset the ECM with the HDS.

21. Do the ECM idle learn procedure (see page 11-337).

22. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BE indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the ECM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



23. Reconnect all connectors.
24. Update the ECM if it does not have the latest software (see page 11-281), or substitute a known-good ECM (see page 11-7).
25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BE indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then recheck. If the ECM was substituted, go to step 1.

NO—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P16BE: Starter Cut Relay 1 Malfunction (A/T)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

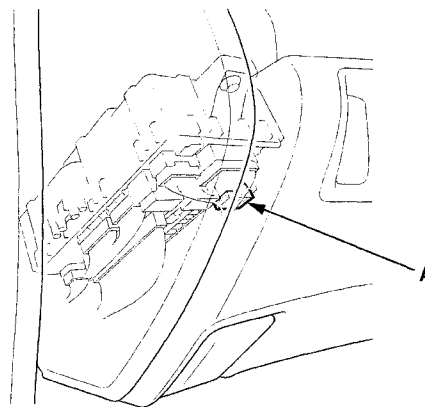
1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 3.2 V or more indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM. ■

4. Remove the driver's dashboard undercover (see page 20-118), then remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.



5. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 3.2 V or more indicated?

YES—Go to step 6.

NO—Replace starter cut relay 1, then go to step 7.

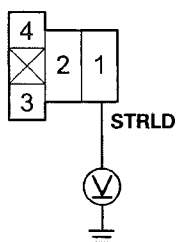
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

6. Measure the voltage between starter cut relay 1 4P connector terminal No. 1 and body ground.

STARTER CUT RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is 3.2 V or more?

YES—Repair short to power in the wire between starter cut relay 1, starter cut relay 2, and the PCM, then go to step 7.

NO—Go to step 11.

7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-337).
10. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BE indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

12. Reconnect all connectors.

13. Update the PCM if it does not have the latest software (see page 11-281), or substitute a known-good PCM (see page 11-7).

14. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BE indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P16BF: Starter Cut Relay STRLY Circuit Malfunction (M/T)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

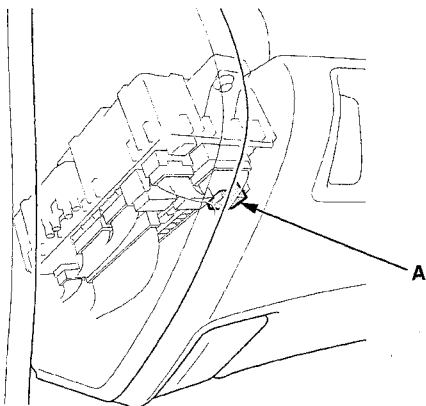
1. Press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check the STARTER RELAY CONTROL RETURN in the DATA LIST with the HDS.

Is ON indicated?

YES—Go to step 4.

NO—Go to step 21.

4. Remove the driver's dashboard undercover (see page 20-118), then remove start cut relay 1 (A) from the driver's under-dash fuse/relay box.



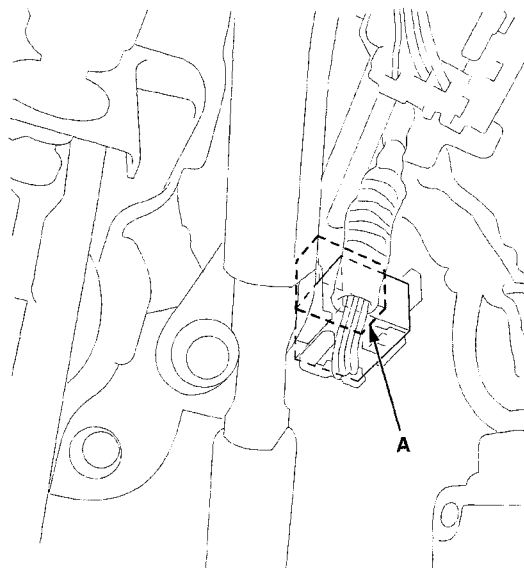
5. Check the STARTER RELAY CONTROL RETURN in the DATA LIST with the HDS.

Is ON indicated?

YES—Go to step 6.

NO—Replace starter cut relay 1, then go to step 34.

6. Remove the driver's dashboard undercover (see page 20-118), then remove the +B cut relay (A) from the relay holder.



7. Check the STARTER RELAY CONTROL RETURN in the DATA LIST with the HDS.

Is ON indicated?

YES—Go to step 8.

NO—Replace the +B cut relay, then go to step 34.

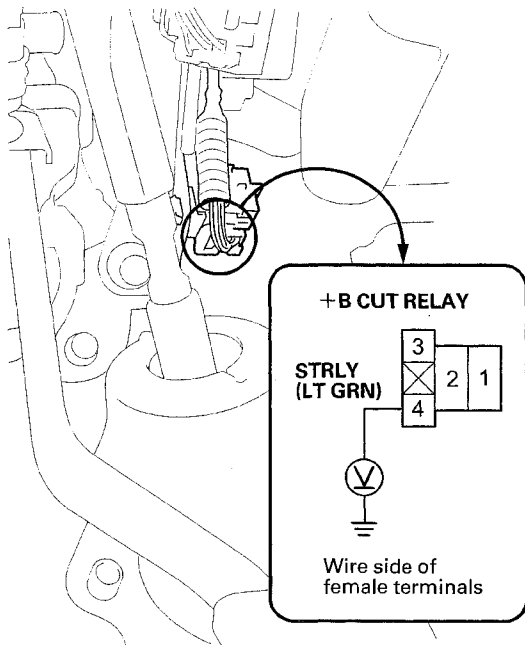
8. Press the engine start/stop button to select the OFF mode.
9. Disconnect driver's under-dash fuse/relay box connector N (16P).
10. Press the engine start/stop button to select the ON mode.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

11. Measure the voltage between the +B cut relay 4P connector terminal No. 4 and body ground.



Is there 1.0 V or more?

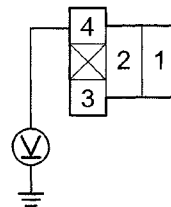
YES—Go to step 12.

NO—Repair short to power in the wire between the +B cut relay and the driver's under-dash fuse/relay box (starter cut relay 1), then go to step 34.

12. Press the engine start/stop button to select the OFF mode.
13. Disconnect driver's under-dash fuse/relay box connector G (13P).
14. Press the engine start/stop button to select the ON mode.

15. Measure the voltage between starter cut relay 1 4P connector terminal No. 4 and body ground.

STARTER CUT RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there 1.0 V or more?

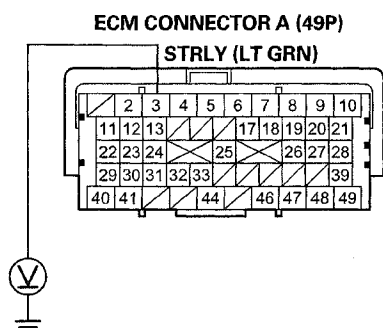
YES—Go to step 16.

NO—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 34.

16. Press the engine start/stop button to select the OFF mode.
17. Jump the SCS line with the HDS.
18. Disconnect ECM connector A (49P)
19. Press the engine start/stop button to select the ON mode.



20. Measure the voltage between ECM connector terminal A3 and body ground.



Terminal side of female terminals

Is there 1.0 V or more?

YES—Repair short to power in the between the driver's under-dash fuse/relay box and the ECM (A3), then go to step 34.

NO—Go to step 39.

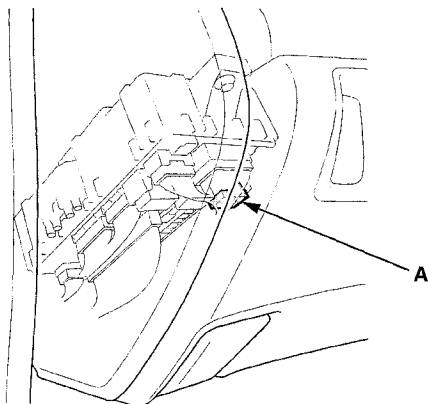
21. While pressing the engine start/stop button to select the START mode, check the STARTER RELAY CONTROL RETURN in the DATA LIST with the HDS.

Is OFF indicated?

YES—Go to step 22.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the starter cut relay 1, the +B cut relay, and the ECM.

22. Remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.



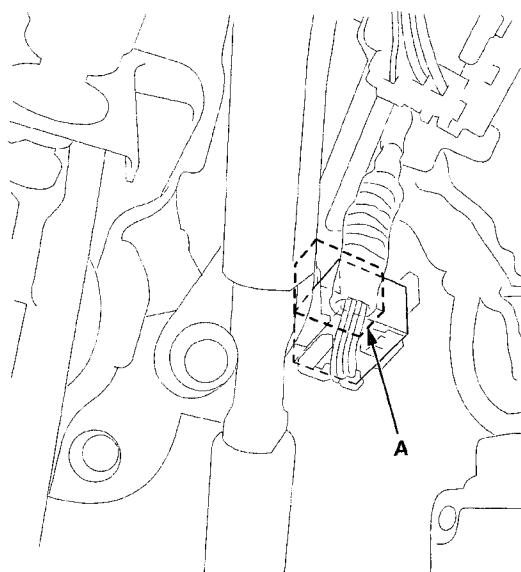
23. While pressing the engine start/stop button to select the START mode, check the RSTRLYCNT in the DATA LIST with the HDS.

Is OFF indicated?

YES—Go to step 24.

NO—Replace starter cut relay 1, then go to step 34.

24. Remove the driver's dashboard undercover (see page 20-118), then remove the +B cut relay (A) from the relay holder.



25. While pressing the engine start/stop button to select the START mode, check the STARTER RELAY CONTROL RETURN in the DATA LIST with the HDS.

Is ON indicated?

YES—Go to step 26.

NO—Replace the +B cut relay, then go to step 34.

26. Press the engine start/stop button to select the OFF mode.

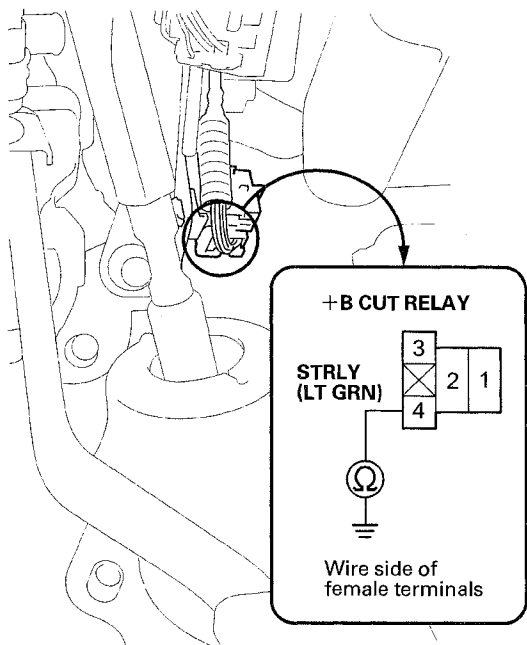
27. Disconnect driver's under-dash fuse/relay box connector N (16P).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

28. Check for continuity between +B cut relay terminal No. 4 and body ground.



Is there continuity?

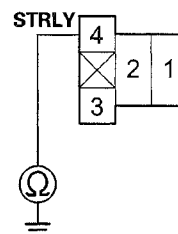
YES—Repair short in the wire between the driver's under-dash fuse/relay box and the +B cut relay, then go to step 34.

NO—Go to step 29.

29. Disconnect driver's under-dash fuse/relay box connector G (13P).

30. Check for continuity between starter cut relay 1 terminal No. 4 and body ground.

STARTER CUT RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

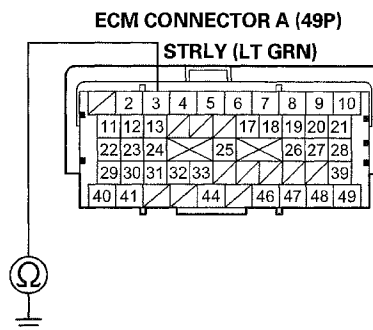
YES—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 34.

NO—Go to step 31.

31. Jump the SCS line with the HDS.

32. Disconnect ECM connector A (49P).

33. Check for continuity between ECM connector terminal A3 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the driver's under-dash fuse/relay box and the ECM (A3), then go to step 34.

NO—Go to step 39.



34. Reconnect all connectors.
35. Press the engine start/stop button to select the ON mode.
36. Reset the ECM with the HDS.
37. Do the ECM idle learn procedure. (see page 11-337)
38. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BF indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, the +B cut relay, and the ECM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

39. Reconnect all connectors.
40. Update the ECM if it does not have the latest software (see page 11-281), or substitute a known-good ECM (see page 11-7).
41. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BF indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, the +B cut relay, and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then recheck. If the ECM was substituted, go to step 1.

NO—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P16BF: Starter Cut Relay STRLY Circuit Malfunction (A/T)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check the STARTER RELAY CONTROL RETURN in the DATA LIST with the HDS.

Is OFF indicated?

YES—Go to step 4.

NO—Go to step 13.

4. Turn the ignition switch to START (III), or press the engine start/stop button to select the START mode, for 5 second or more.
5. While holding the ignition switch in START (III) or pressing the engine start/stop button to select START mode, check the STARTER RELAY CONTROL RETURN in the DATA LIST with the HDS.

Is OFF indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM. ■

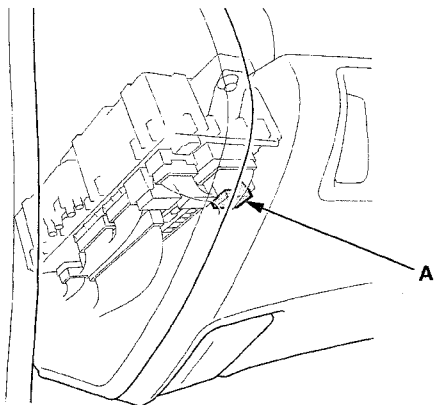
6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

(cont'd)

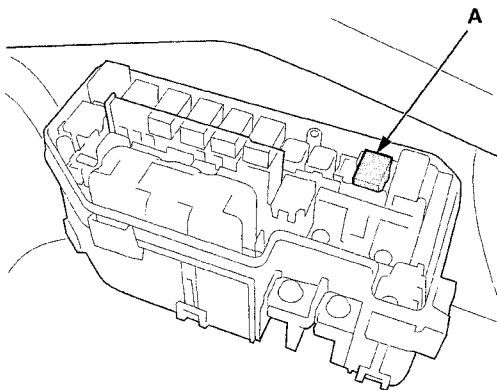
PGM-FI System

DTC Troubleshooting (cont'd)

7. Remove the driver's dashboard undercover (see page 20-118), then remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.



8. Remove starter cut relay 2 (A) from the under-hood fuse/relay box.



9. Test the starter cut relays (see page 22-88).

Are the relays OK?

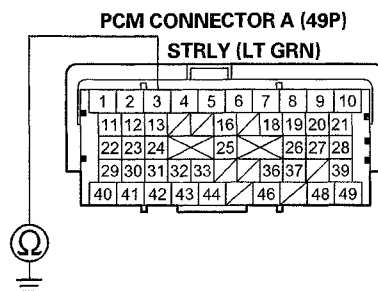
YES—Go to step 10.

NO—Replace the starter cut relay 1 and/or starter cut relay 2, then go to step 21.

10. Jump the SCS line with the HDS.

11. Disconnect PCM connector A (49P).

12. Check for continuity between PCM connector terminal A3 and body ground.



Terminal side of female terminals

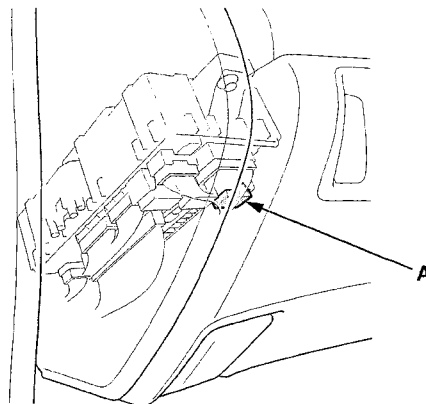
Is there continuity?

YES—Repair short in the wire between the PCM (A3) and starter cut relay 1 or starter cut relay 2, then go to step 21.

NO—Go to step 27.

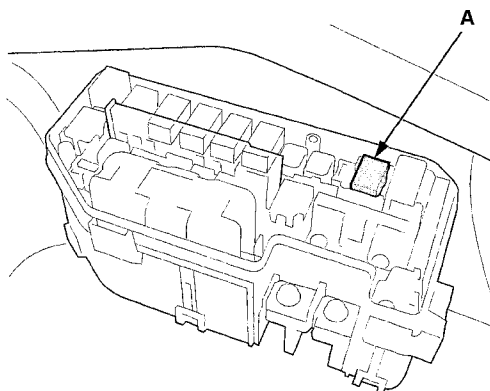
13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

14. Remove the driver's dashboard undercover (see page 20-118), then remove starter cut relay 1 (A) from the driver's under-dash fuse/relay box.





15. Remove starter cut relay 2 (A) from the under-hood fuse/relay box.



16. Test the starter cut relays (see page 22-88).

Are the relays OK?

YES—Go to step 17.

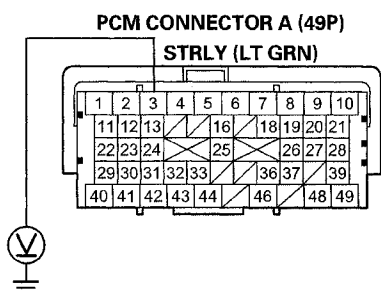
NO—Replace the starter cut relay 1 and/or starter cut relay 2, then go to step 21.

17. Jump the SCS line with the HDS.

18. Disconnect PCM connector A (49P).

19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

20. Measure the voltage between PCM connector terminal A3 and body ground.



Terminal side of female terminals

Is there 1.0 V or more?

YES—Repair short to power in the wire between starter cut relay 1, starter cut relay 2, and the PCM (A3) then go to step 21.

NO—Go to step 26.

21. Reconnect all connectors.

22. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

23. Reset the PCM with the HDS.

24. Do the PCM idle learn procedure (see page 11-337).

25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BF indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-281), or substitute a known-good PCM (see page 11-7).

29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16BF indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P16E1: + B Cut Relay Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snap shot, and review the general troubleshooting information (see page 11-3).

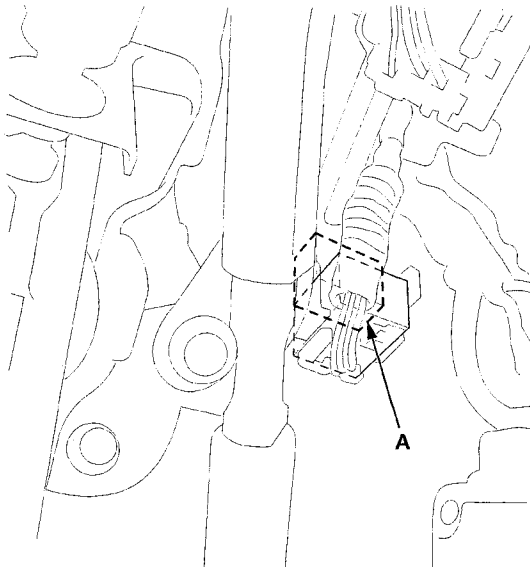
1. Press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

Is 1.74 V or less indicated when the clutch pedal is pressed?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at the + B cut relay, starter cut relay 2, and the ECM. ■

4. Remove the driver's dashboard under cover (see page 20-118), then remove the + B cut relay (A).



5. Check the STARTER CUT RELAY in the DATA LIST with the HDS.

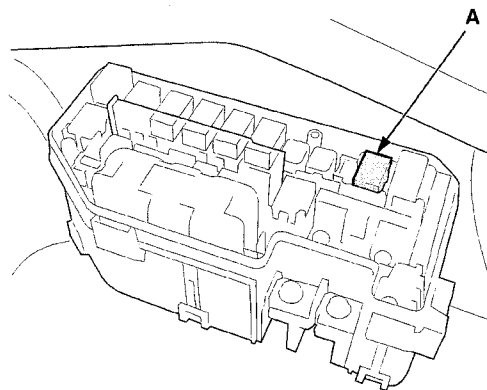
Is 1.74 V or less indicated only when clutch pedal is pressed?

YES—Go to step 6.

NO—Replace the + B cut relay, then go to step 10.

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

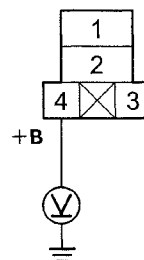
7. Remove starter cut relay 2 (A) from the under-hood fuse/relay box.



8. Press the engine start/stop button to select the ON mode.

9. Measure the voltage between starter cut relay 2 4P connector terminal No. 4 and body ground.

STARTER CUT RELAY 2 4P CONNECTOR



Terminal side of female terminals

Is there 1.0 V or less?

YES—Replace starter cut relay 2, then go to step 10.

NO—Repair short to power in the wire between the + B cut relay and the under-hood fuse/relay box (starter cut relay 2), then go to step 10.



10. Reconnect all connectors.
11. Press the engine start/stop button to select the ON mode.
12. Reset the ECM with the HDS.
13. Do the ECM idle learn procedure (see page 11-337).
14. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P16E1 indicated?

YES—Check for poor connections or loose terminals at the +B cut relay, starter cut relay 2, and the ECM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2183: ECT Sensor 2 Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0111 is stored at the same time as DTC P2183, troubleshoot DTC P0111 first, then recheck for DTC P2183.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connections or terminals, then go to step 27.

2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

3. Check for Pending or Confirmed DTCs with the HDS.

Are DTC P1116 and P2183 indicated at the same time?

YES—Go to step 15.

NO—Go to step 4.

4. Start the engine, and let it idle for 10 minutes.

5. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 120 °F (49 °C) or less indicated?

YES—Replace ECT sensor 2 (see page 11-274), then go to step 27.

NO—Go to step 6.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Drain the coolant (see page 10-6).
8. Remove ECT sensor 2 (see page 11-274).
9. Allow ECT sensor 2 to cool to the ambient temperature.
10. Note the ambient temperature.
11. Connect ECT sensor 2 to its 2P connector, but do not install it.
12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
13. Note the value of ECT SENSOR 2 quickly in the DATA LIST with the HDS.
14. Compare the value of ECT SENSOR 2 and the ambient temperature.
Does ECT SENSOR 2 differ 5.4 °F (3 °C) or more from the ambient temperature?
YES—Replace ECT sensor 2 (see page 11-274), then go to step 27.
NO—Intermittent failure, the system is OK at this time. Reinstall the ECT sensor 2 (see page 11-274). Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■
15. Start the engine, and let it idle for 10 minutes.
16. Check ECT SENSOR 1 in the DATA LIST with the HDS.
Is about 120 °F (49 °C) or less indicated?
YES—Replace ECT sensor 1 (see page 11-274), then go to step 27.
NO—Go to step 17.
17. Let the engine idle 10 minutes.
18. Check ECT SENSOR 2 in the DATA LIST with the HDS.
Is about 120 °F (49 °C) or less indicated?
YES—Replace ECT sensor 2 (see page 11-274), then go to step 27.
NO—Go to step 19.

19. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
20. Drain the coolant (see page 10-6).
21. Remove ECT sensor 1 (see page 11-274), and ECT sensor 2 (see page 11-274).
22. Allow the sensors to cool to the ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 and ECT sensor 2 to their 2P connectors, but do not install them.
25. Quickly note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.
Does one of the sensors differ more than 5.4 °F (3 °C) from the ambient temperature?
YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the ambient temperature. Refill the cooling system (see step 8 on page 10-7), then go to step 27.
NO—Intermittent failure, the system is OK at this time. Reinstall ECT sensor 1 (see page 11-274) and ECT sensor 2 (see page 11-274). Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. ■
27. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-337).
30. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P2183 indicated?
YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM, then go to step 1.
NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2184: ECT Sensor 2 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

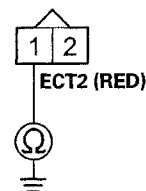
YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the ECT sensor 2 2P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check ECT SENSOR 2 in the DATA LIST with the HDS.
Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?
YES—Go to step 7.
NO—Go to step 11.
7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

10. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between ECT sensor 2 and the ECM/PCM (A21), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Replace ECT sensor 2 (see page 11-274).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-337).
17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2184 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
20. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P2184 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2185: ECT Sensor 2 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

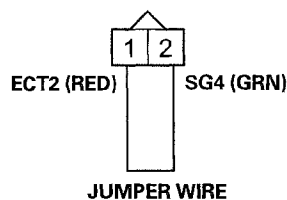
Is about -40°F (-40°C) or less, or 4.92 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the ECT sensor 2 2P connector.
5. Connect ECT sensor 2 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 2 2P CONNECTOR



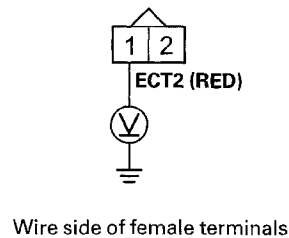
Wire side of female terminals

6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
 7. Check ECT SENSOR 2 in the DATA LIST with the HDS.
Is about -40°F (-40°C) or less, or 4.92 V or more indicated?
- YES**—Go to step 8.
- NO**—Go to step 20.
8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
 9. Remove the jumper wire from the ECT sensor 2 2P connector.



10. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
11. Measure the voltage between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Is there about 5 V?

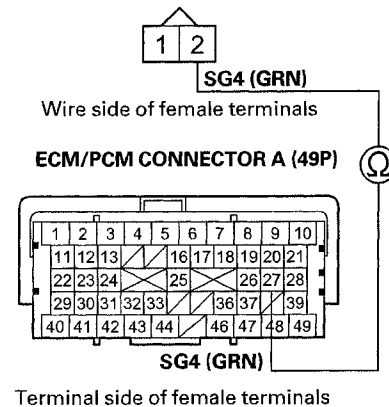
YES—Go to step 12.

NO—Go to step 16.

12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector A (49P).

15. Check for continuity between ECM/PCM connector terminal A27 and ECT sensor 2 2P connector terminal No. 2.

ECT SENSOR 2 2P CONNECTOR



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (A27) and ECT sensor 2, then go to step 22.

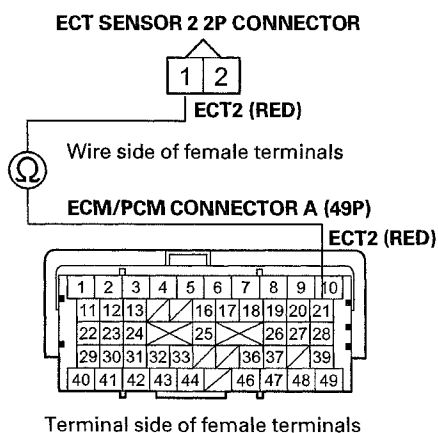
16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector A (49P).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

19. Check for continuity between ECM/PCM connector terminal A21 and ECT sensor 2 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (A21) and ECT sensor 2, then go to step 22.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
21. Replace ECT sensor 2 (see page 11-274).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-337).
26. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2185 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2185 indicated?

YES—Check for poor connections or loose terminals at ECT sensor 2 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2195: Rear A/F Sensor (Bank 1, Sensor 1) Signal Stuck Lean

DTC P2197: Front A/F Sensor (Bank 2, Sensor 1) Signal Stuck Lean

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).
- If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel, and clear the DTC with the HDS.
- If DTC P2101, P2118, P2135, P2138, P2176, or a combination of P2122 and P2127, P2122 and P2138, or P2127 and P2138 is stored at the same time as DTC P2195 (P2197)*, troubleshoot those DTCs first, then recheck for DTC P2195 (P2197)*.

1. Check for dirt or debris on the MAF sensor/IAT sensor.

Is it dirty?

YES—Remove the debris. If needed, replace the MAF sensor/IAT sensor (see page 11-273), then go to step 9.

NO—Go to step 2.

2. Check the installation of the A/F sensor (Sensor 1).

Is the A/F sensor loose or disconnected from the exhaust pipe?

YES—Go to step 7.

NO—Go to step 3.

3. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

4. Clear the DTC with the HDS.

5. Start the engine, and let it idle for 2 minutes.

6. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2195 and/or P2197 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 14.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

8. Reinstall the A/F sensor (Sensor 1) (see page 11-275).

9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

10. Reset the ECM/PCM with the HDS.

11. Do the ECM/PCM idle learn procedure (see page 11-337).

12. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2195 and/or P2197 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

NO—Go to step 13.

13. Monitor the OBD STATUS for DTC P2195 and/or P2197* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

14. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good PCM (see page 11-7).

15. Start the engine, and let it idle for 2 minutes.

16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2195 and/or P2197 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 15. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 17.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

17. Monitor the OBD STATUS for DTC P2195 and/or P2197* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 15. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2227: BARO Sensor Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0107, P0108, P1128, and/or P1129 are stored at the same time as DTC P2227, troubleshoot those DTCs first, then recheck for DTC P2227.

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 2 seconds.

2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 101 kPa (29.9 inHg, 760 mmHg), or about 2.9 V at sea level indicated?

YES—Go to step 3.

NO—Go to step 15.

3. Clear the DTC with the HDS.

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

5. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- A/T in D, M/T in 4th
- Throttle position between 16 and 31 degrees for at least 3 seconds

6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Check the intake air system for clogging or the restrictions (foreign material, dirty air cleaner element, etc).

Is the intake air system clogged or restricted?

YES—Remove the clog or restriction, then go to step 8.

NO—Go to step 15.



8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-337).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Throttle position between 16 and 31 degrees for at least 3 seconds
13. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2227 indicated?

YES—Check for poor connections or loose terminals at the ECM/PCM, then go to step 1.

NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 11.
15. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
16. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
17. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Throttle position between 16 and 31 degrees for at least 3 seconds
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2227 indicated?

YES—Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 16. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 19.
19. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 16. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 16.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2228: BARO Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 53 kPa (15.6 inHg, 397 mmHg), or 1.58 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. ■

3. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2228 indicated?

YES—Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2229: BARO Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 160 kPa (47.2 inHg, 1,200 mmHg), or 4.49 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. ■

3. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2229 indicated?

YES—Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2237: Rear A/F Sensor (Bank 1, Sensor 1) IP Circuit High Voltage

DTC P2240: Front A/F Sensor (Bank 2, Sensor 1) IP Circuit High Voltage

NOTE:

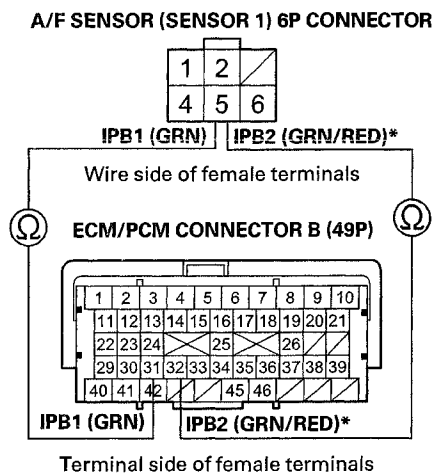
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
 - Information marked with an asterisk (*) applies to the front bank (Bank 2).
1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
 2. Clear the DTC with the HDS.
 3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.
 4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2237 and/or P2240 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. ■
 5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
 6. Jump the SCS line with the HDS.
 7. Disconnect the A/F sensor (Sensor 1) 6P connector.
 8. Disconnect ECM/PCM connector B (49P).

9. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 5 and ECM/PCM connector terminal B31 (B32)*.



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the ECM/PCM (B31 (B32)*) and the A/F sensor (Sensor 1), then go to step 14.

10. Reconnect ECM/PCM connector B (49P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.

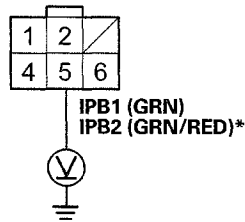
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Measure the voltage between A/F sensor (Sensor 1) 6P connector terminal No. 5 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-275).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2237 and/or P2240 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2237 and/or P2240* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

21. Reconnect all connectors.

22. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

23. Start the engine, and let it idle.

24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2237 and/or P2240 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2237 and/or P2240* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2238: Rear A/F Sensor (Bank 1, Sensor 1) IP Circuit Low Voltage

DTC P2241: Front A/F Sensor (Bank 2, Sensor 1) IP Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Pending or Confirmed DTCs with the HDS.

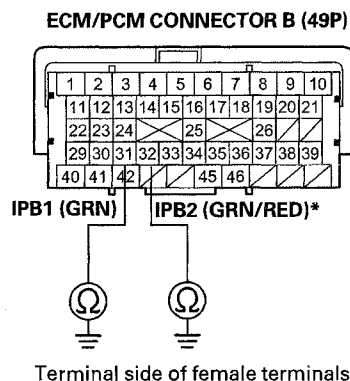
Is DTC P2238 and/or P2241 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 6P connector.
8. Disconnect ECM/PCM connector B (49P).

9. Check for continuity between ECM/PCM connector terminal B31 (B32)* and body ground.



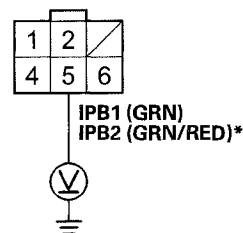
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B31 (B32)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect ECM/PCM connector B (49P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.
12. Measure the voltage between A/F sensor (Sensor 1) 6P connector terminal No. 5 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

13. Replace the A/F sensor (Sensor 1) (see page 11-275).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2238 and/or P2241 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2238 and/or P2241* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
21. Reconnect all connectors.
22. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
23. Start the engine, and let it idle.
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2238 and/or P2241 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2238 and/or P2241* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2243: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Circuit High Voltage

DTC P2247: Front A/F Sensor (Bank 2, Sensor 1) VCENT Circuit High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2243 and/or P2247 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. ■

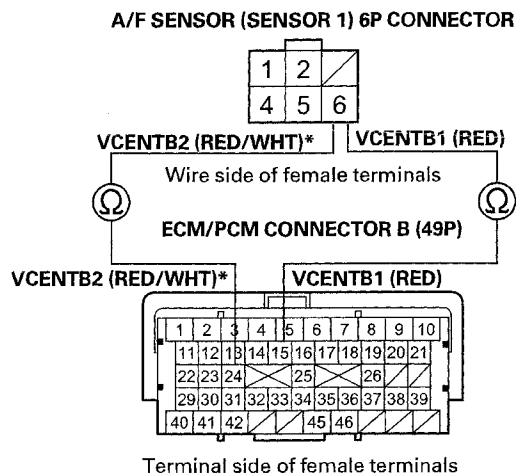
5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

6. Jump the SCS line with the HDS.

7. Disconnect the A/F sensor (Sensor 1) 6P connector.

8. Disconnect ECM/PCM connector B (49P).

9. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 6 and ECM/PCM connector terminal B15 (B24)*.



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the ECM/PCM (B15 (B24)*) and the A/F sensor (Sensor 1), then go to step 14.

10. Reconnect ECM/PCM connector B (49P).

11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.

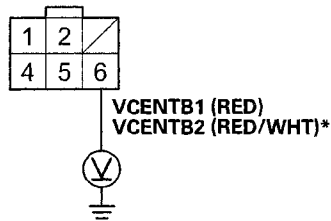
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Measure the voltage between A/F sensor (Sensor 1) 6P connector terminal No. 6 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-275).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2243 and/or P2247* indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2243 and/or P2247* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

21. Reconnect all connectors.

22. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

23. Start the engine, and let it idle.

24. Check for Pending or Confirmed DTCs with the HDS.

If DTC P2243 and/or P2247* indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2243 and/or P2247* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2245: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Circuit Low Voltage

DTC P2249: Front A/F Sensor (Bank 2, Sensor 1) VCENT Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Pending or Confirmed DTCs with the HDS.

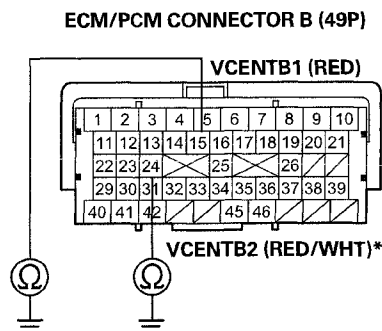
Is DTC P2245 and/or P2249 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 6P connector.
8. Disconnect ECM/PCM connector B (49P).

9. Check for continuity between ECM/PCM connector terminal B15 (B24)* and body ground.



Terminal side of female terminals

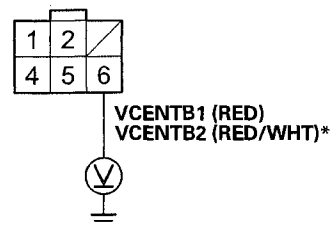
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B15 (B24)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect ECM/PCM connector B (49P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.
12. Measure the voltage between A/F sensor (Sensor 1) 6P connector terminal No. 6 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

13. Replace the A/F sensor (Sensor 1) (see page 11-275).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P2245 and/or P2249 indicated?*
YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.
NO—Go to step 19.
19. Monitor the OBD STATUS for DTC P2245 and/or P2249* in the DTCs MENU with the HDS.
Does the screen indicate PASSED?
YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■
NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.
20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
21. Reconnect all connectors.
22. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
23. Start the engine, and let it idle.
24. Check for Pending or Confirmed DTCs with the HDS.
If DTC P2245 and/or P2249 indicated?*
YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1.
NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2245 and/or P2249* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2251: Rear A/F Sensor (Bank 1, Sensor 1) VS Circuit High Voltage

DTC P2254: Front A/F Sensor (Bank 2, Sensor 1) VS Circuit High Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2251 and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251 and/or P2254* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2251 and/or P2254 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

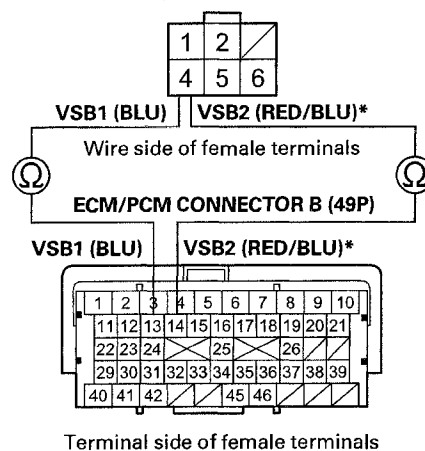
6. Jump the SCS line with the HDS.

7. Disconnect the A/F sensor (Sensor 1) 6P connector.

8. Disconnect ECM/PCM connector B (49P).

9. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 4 and ECM/PCM connector terminal B13 (B14)*.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the ECM/PCM (B13 (B14)*) and the A/F sensor (Sensor 1), then go to step 14.

10. Reconnect ECM/PCM connector B (49P).

11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.

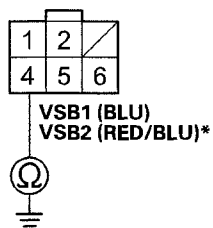
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Measure the voltage between A/F sensor (Sensor 1) 6P connector terminal No. 4 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-275).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Check for Pending or Confirmed DTCs with the HDS.
- Is DTC P2251 and/or P2254* indicated?*
- YES**—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.
- NO**—Go to step 19.
19. Monitor the OBD STATUS for DTC P2251 and/or P2254* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

21. Reconnect all connectors.

22. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

23. Start the engine, and let it idle.

24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2251 and/or P2254 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2251 and/or P2254* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2252: Rear A/F Sensor (Bank 1, Sensor 1) VS Circuit Low Voltage

DTC P2255: Front A/F Sensor (Bank 2, Sensor 1) VS Circuit Low Voltage

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.
4. Check for Pending or Confirmed DTCs with the HDS.

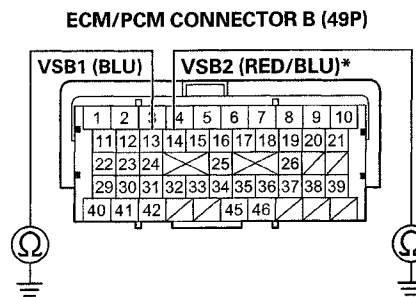
Is DTC P2252 and/or P2255 indicated?*

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 6P connector.
8. Disconnect ECM/PCM connector B (49P).

9. Check for continuity between ECM/PCM connector terminal B13 (B14)* and body ground.



Terminal side of female terminals

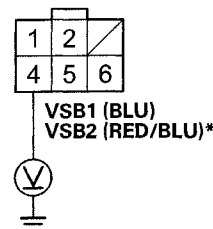
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B13 (B14)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect ECM/PCM connector B (49P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 2 minutes.
12. Measure the voltage between A/F sensor (Sensor 1) 6P connector terminal No. 4 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

13. Replace the A/F sensor (Sensor 1) (see page 11-275).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).

18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2252 and/or P2255 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2252 and/or P2255* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
21. Reconnect all connectors.
22. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
23. Start the engine, and let it idle.
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2252 and/or P2255 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P2252 and/or P2255* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P2610: ECM/PCM Ignition Off Internal Timer Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2610 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

4. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
5. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2610 indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2A00: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Range/Performance Problem

DTC P2A03: Front A/F Sensor (Bank 2, Sensor 1) Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 3rd
 - Vehicle speed between 25—55 mph (40—88 km/h) for 5 minutes
 - Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds, then decelerate (with the throttle fully closed) for 6 seconds
5. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Replace the A/F sensor (Sensor 1) (see page 11-275).
8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-337).
11. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 3rd
 - Vehicle speed between 25—55 mph (40—88 km/h) for 5 minutes
 - Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds, then decelerate (with the throttle fully closed) for 6 seconds
12. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2A00 and/or P2A03 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1.

NO—Go to step 13.
13. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

DTC U0029: F-CAN Malfunction (BUS-OFF (ECM/PCM))

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0029 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■
4. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
5. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0029 indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC U0114: F-CAN Malfunction (ECM/PCM-SH-AWD Control Unit)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check for Pending or Confirmed DTCs with the HDS.

Are DTC U0029 and U0114 indicated at the same time?

YES—Go to troubleshooting for DTC U0029 (see page 11-236). ■

NO—Go to step 3.

3. Clear the DTC with the HDS.

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0114 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the SH-AWD control unit and the ECM/PCM. ■

5. Check for communication to the SH-AWD system with the HDS.

Does the HDS communicate with the SH-AWD control unit?

YES—Go to step 6.

NO—Go to the SH-AWD symptom troubleshooting for the SH-AWD indicator does not go off, and no DTCs are stored (see page 15-65). ■

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

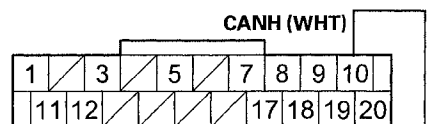
7. Jump the SCS line with the HDS.

8. Disconnect SH-AWD control unit connector A (20P).

9. Disconnect ECM/PCM connector A (49P).

10. Check for continuity between ECM/PCM connector terminals A48 and SH-AWD control unit connector A (20P) terminal No.10.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Wire side of female terminals

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A48) and the SH-AWD control unit, then go to step 12.

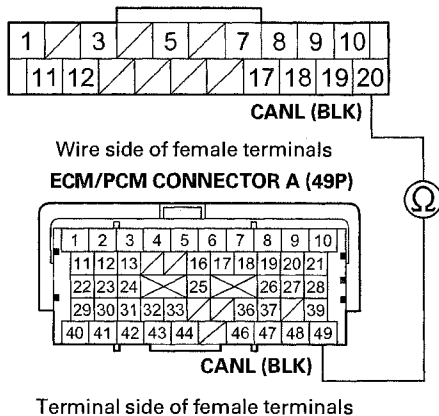
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PGM-FI System

DTC Troubleshooting (cont'd)

11. Check for continuity between ECM/PCM connector terminal A49 and SH-AWD control unit connector A (20P) terminal No. 20.

SH-AWD CONTROL UNIT CONNECTOR A (20P)



Is there continuity?

YES—Update the SH-AWD control unit if it does not have the latest software (see page 15-8), or substitute a known-good SH-AWD control unit (see page 15-70), then go to step 12 and recheck. If DTC U0114 is not indicated after substitution, replace the original SH-AWD control unit (see page 15-70), then go to step 12.

NO—Repair open in the wire between the PCM (A49) and the SH-AWD control unit, then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-337).
16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0114 indicated?

YES—Check for poor connections or loose terminals at the SH-AWD control unit and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC U0122: F-CAN Malfunction (ECM/PCM-VSA Modulator-Control Unit)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check for Pending or Confirmed DTCs with the HDS.

Are DTC U0029 and U0122 indicated at the same time?

YES—Go to the troubleshooting for DTC U0029 (see page 11-236). ■

NO—Go to step 3.

3. Clear the DTC with the HDS.

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0122 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VSA modulator-control unit and the ECM/PCM. ■

5. Check for communication to the VSA system with the HDS.

Does the HDS communicate with the VSA modulator-control unit?

YES—Go to step 6.

NO—Go to the VSA symptom troubleshooting for ABS indicator, brake system indicator, and VSA indicator do not go off (see page 19-112). ■

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

7. Jump the SCS line with the HDS.

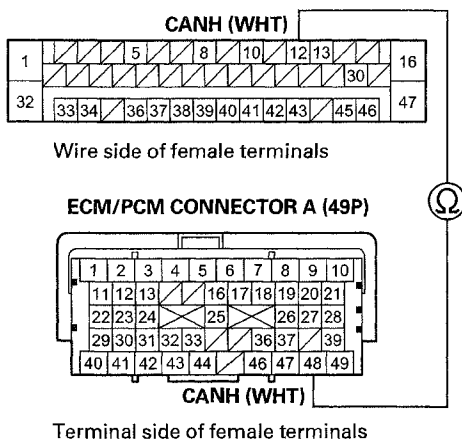
8. Disconnect the VSA modulator-control unit 47P connector.

9. Disconnect ECM/PCM connector A (49P).



10. Check for continuity between ECM/PCM connector terminal A48 and VSA modulator-control unit 47P connector terminal No. 12.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



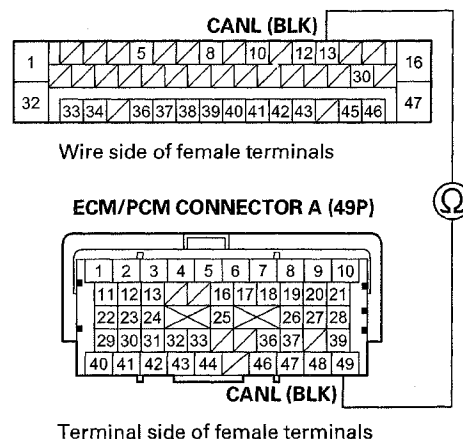
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A48) and the VSA modulator-control unit, then go to step 12.

11. Check for continuity between ECM/PCM connector terminal A49 and VSA modulator-control unit 47P connector terminal No. 13.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Is there continuity?

YES—Update the VSA modulator-control unit if it does not have the latest software (see page 19-119), or substitute a known-good VSA modulator-control unit (see page 19-120), then go to step 12 and recheck. If DTC U0122 is not indicated after substitution, replace the original VSA modulator-control unit (see page 19-120), then go to step 12.

NO—Repair open in the wire between the ECM/PCM (A49) and the VSA modulator-control unit, then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-337).
16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0122 indicated?

YES—Check for poor connections or loose terminals at the VSA modulator-control unit and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC U0131: F-CAN Malfunction (ECM/PCM-EPS Control Unit)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check for Pending or Confirmed DTCs with the HDS.

Are DTC U0029 and U0131 indicated at the same time?

YES—Go to the troubleshooting for DTC U0029 (see page 11-236). ■

NO—Go to step 3.

3. Clear the DTC with the HDS.

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0131 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EPS control unit, and the ECM/PCM. ■

5. Check for communication the EPS system with the HDS.

Does the HDS communicate with the EPS control unit?

YES—Go to step 6.

NO—Go to the EPS symptom troubleshooting for EPS indicator does not go off, and no DTCs are stored (see page 17-61). ■

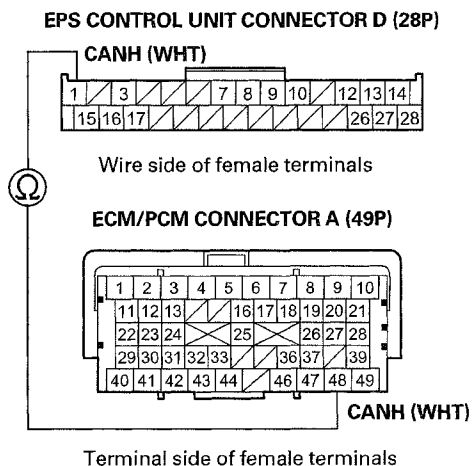
6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

7. Jump the SCS line with the HDS.

8. Disconnect EPS control unit connector D (28P).

9. Disconnect ECM/PCM connector A (49P).

10. Check for continuity between ECM/PCM connector terminal A48 and EPS control unit connector D (28P) terminal No. 1.



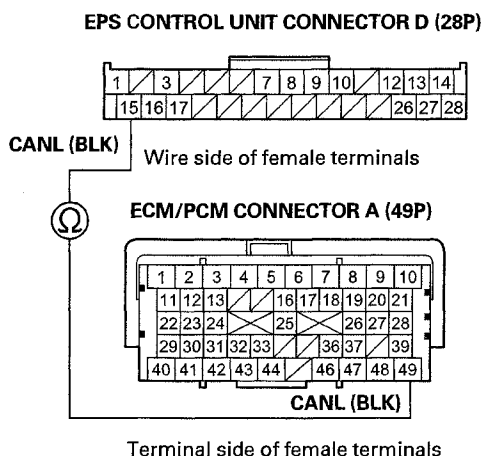
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A48) and the EPS control unit, then go to step 12.



11. Check for continuity between ECM/PCM connector terminal A49 and EPS control unit connector D (28P) terminal No. 15.



Is there continuity?

YES—Substitute a known-good EPS control unit (see page 17-83), then go to step 12 and recheck. If DTC U0131 is not indicated, replace the original EPS control unit (see page 17-83), then go to step 12.

NO—Repair open in the wire between the ECM/PCM (A49) and the EPS control unit, then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-337).
16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0131 indicated?

YES—Check for poor connections or loose terminals at the EPS control unit and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC U0155: F-CAN Malfunction (ECM/PCM-Gauge Control Module)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0155 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the ECM/PCM. ■

4. Check for body electrical DTCs in the DTCs MENU with the HDS.

Is DTC U0029 and/or U0100 indicated?

YES—Go to step 5.

NO—Do the gauge control module input test (see page 22-363). ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Jump the SCS line with the HDS.
7. Remove the gauge control module (see page 22-367).
8. Disconnect the gauge control module 32P connector.
9. Disconnect ECM/PCM connector A (49P).

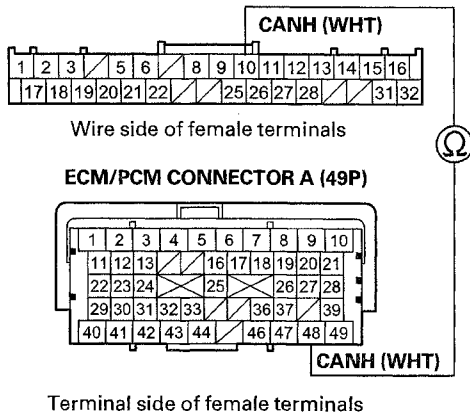
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PGM-FI System

DTC Troubleshooting (cont'd)

10. Check for continuity between ECM/PCM connector terminal A48 and gauge control module 32P connector terminal No. 10.

GAUGE CONTROL MODULE 32P CONNECTOR



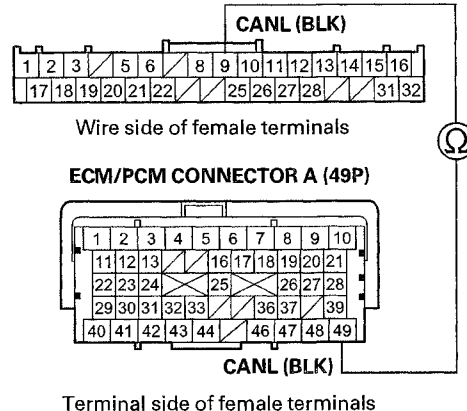
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A48) and the gauge control module, then go to step 12.

11. Check for continuity between ECM/PCM connector terminal A49 and gauge control module 32P connector terminal No. 9.

GAUGE CONTROL MODULE 32P CONNECTOR



Is there continuity?

YES—Substitute a known-good gauge control module (see page 22-367), then go to step 12 and recheck. If DTC U0155 is not indicated after substitution, replace the original gauge control module, then go to step 12.

NO—Repair open in the wire between the ECM/PCM (A49) and the gauge control module, then go to step 12.

12. Reconnect all connectors.

13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

14. Reset the ECM/PCM with the HDS.

15. Do the ECM/PCM idle learn procedure (see page 11-337).

16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC U0155 indicated?

YES—Check for poor connections or loose terminals at the gauge control module and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



F-CAN Circuit Troubleshooting

1. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
2. Jump the SCS line with the HDS.
3. Disconnect ECM/PCM connector A (49P).
4. Measure the resistance between ECM/PCM connector terminals A48 and A49, then compare your reading to the model/trim level listed below.

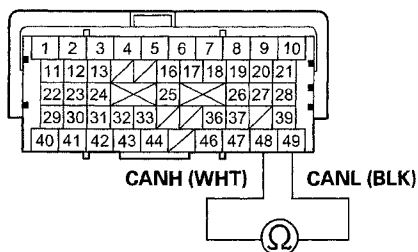
Vehicles without SH-AWD:

Other Systems	Resistance
Navigation and keyless access system (USA model)	About 79–96 Ω
Navigation and keyless access system (Canada model)	About 82–100 Ω
Keyless access system	About 85–103 Ω
Without the above systems	About 88–107 Ω

Vehicles with SH-AWD:

Other Systems	Resistance
Navigation and keyless access system (USA model)	About 74–90 Ω
Navigation and keyless access system (Canada model)	About 76–93 Ω
Without the above systems	About 88–107 Ω

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is the value of resistance OK?

YES—Go to step 27.

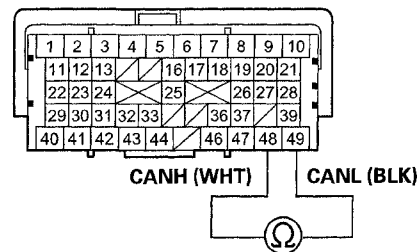
NO—Go to step 5.

5. Disconnect these connectors:

- Gauge control module 32P connector (see page 22-367).
- VSA modulator-control unit 47P connector (see page 19-120).
- EPS control unit connector D (28P) (see page 17-83).
- SH-AWD control unit connector A (20P) (with SH-AWD) (see page 15-70).
- Yaw rate-lateral acceleration sensor 5P connector (without SH-AWD) (see page 19-116).
- Yaw rate-lateral/longitudinal acceleration sensor 5P connector (with SH-AWD) (see page 19-117).
- Steering angle sensor 5P connector (with SH-AWD) (see page 19-115).
- SRS unit connector A (39P) (see page 24-174).
- TPMS control unit 20P connector (see page 18-100).
- Power control unit connector C (36P) (with keyless access) (see page 22-609).
- Audio-Navigation unit connector H (28P) (with navigation) (see page 23-287).
- AcuraLink control unit connector A (32P) (USA model with navigation) (see page 23-151).

6. Check for continuity between ECM/PCM connector terminals A48 and A49.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wires between ECM/PCM connector terminals A48 and A49. ■

NO—Go to step 7.

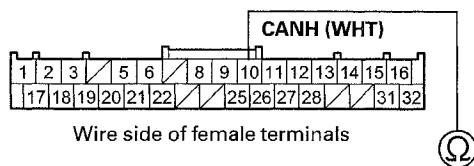
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PGM-FI System

F-CAN Circuit Troubleshooting (cont'd)

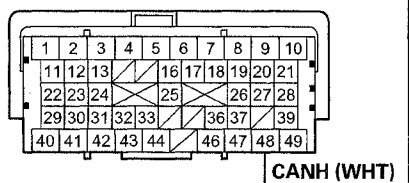
7. Check for continuity between ECM/PCM connector terminals A48 and gauge control module 32P connector terminal No. 10.

GAUGE CONTROL MODULE 32P CONNECTOR



Wire side of female terminals

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

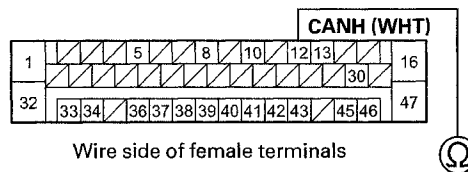
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the ECM/PCM (A48) and the gauge control module. ■

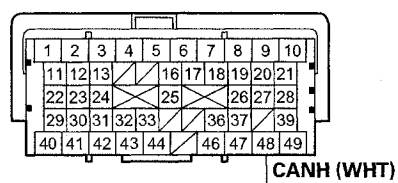
8. Check for continuity between ECM/PCM connector terminals A48 and VSA modulator-control unit 47P connector terminal No. 12.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

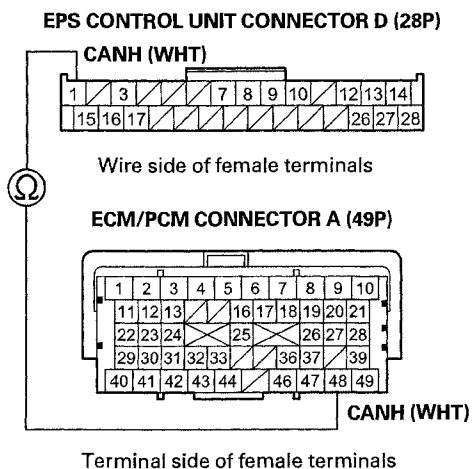
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the ECM/PCM (A48) and the VSA modulator-control unit. ■



9. Check for continuity between ECM/PCM connector terminals A48 and EPS control unit connector D (28P) terminal No. 1.



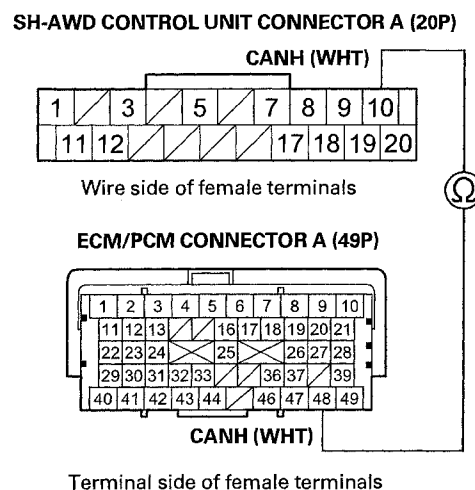
Is there continuity?

YES—

- With SH-AWD: Go to step 10.
- Without SH-AWD: Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A48) and the EPS control unit. ■

10. Check for continuity between ECM/PCM connector terminals A48 and SH-AWD control unit connector A (20P) terminal No. 10.



Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A48) and the SH-AWD control unit. ■

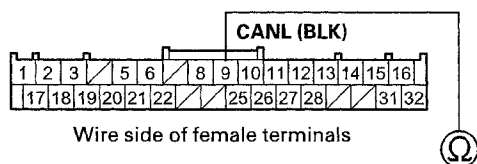
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PGM-FI System

F-CAN Circuit Troubleshooting (cont'd)

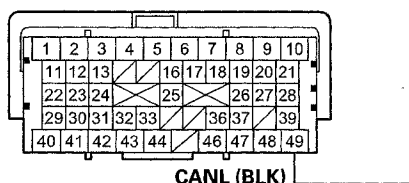
11. Check for continuity between ECM/PCM connector terminals A49 and gauge control module 32P connector terminal No. 9.

GAUGE CONTROL MODULE 32P CONNECTOR



Wire side of female terminals

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

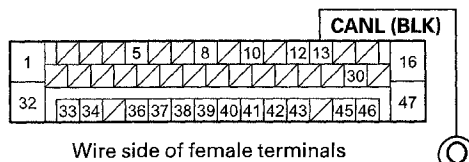
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the ECM/PCM (A49) and the gauge control module. ■

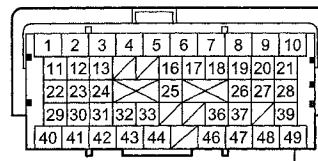
12. Check for continuity between ECM/PCM connector terminals A49 and VSA modulator-control unit 47P connector terminal No. 13.

VSA MODULATOR-CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

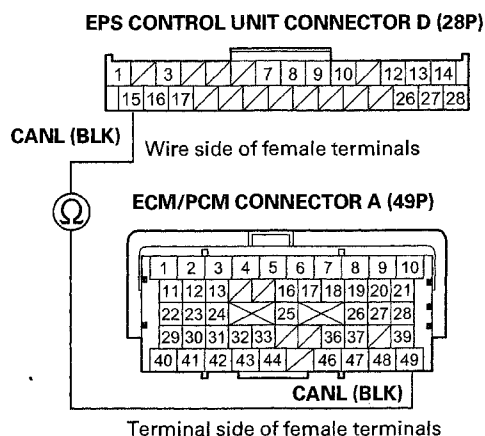
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the ECM/PCM (A49) and the VSA modulator-control unit. ■



13. Check for continuity between ECM/PCM connector terminals A49 and EPS control unit connector D (28P) terminal No. 15.



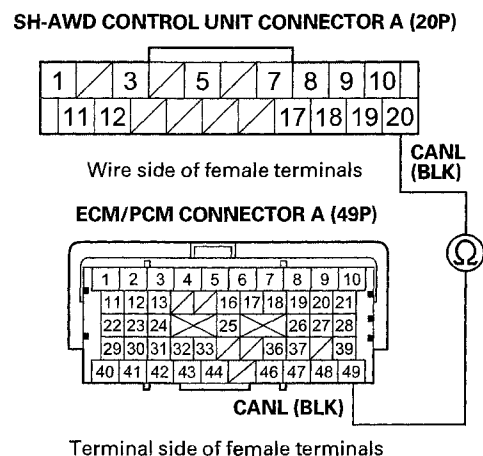
Is there continuity?

YES—

- With SH-AWD: Go to step 14.
- Without SH-AWD: Go to step 15.

NO—Repair open in the wire between the ECM/PCM (A49) and the EPS control unit. ■

14. Check for continuity between ECM/PCM connector terminals A49 and SH-AWD control unit connector A (20P) terminal No. 20.



Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the ECM/PCM (A49) and the SH-AWD control unit. ■

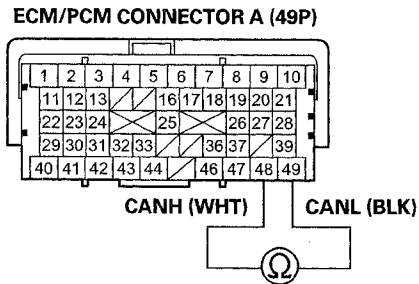
15. Reconnect the gauge control module 32P connector.

(cont'd)

PGM-FI System

F-CAN Circuit Troubleshooting (cont'd)

16. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

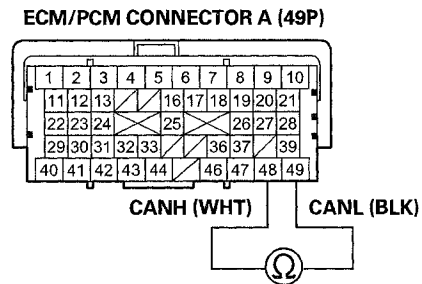
Is there about 2.34—2.86 kΩ?

YES—Go to step 17.

NO—Substitute a known-good gauge control module (see page 22-367), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original gauge control module (see page 22-367). ■

17. Disconnect the gauge control module 32P connector.
18. Reconnect the VSA modulator-control unit 47P connector.

19. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 108—132 Ω?

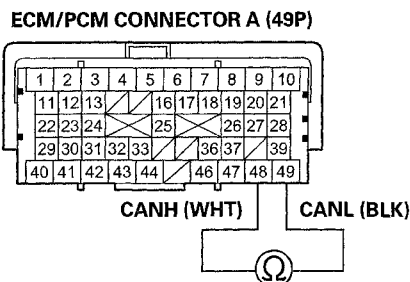
YES—Go to step 20.

NO—Substitute a known-good VSA modulator-control unit (see page 19-120), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original VSA modulator-control unit (see page 19-120). ■

20. Disconnect the VSA modulator-control unit 47P connector.
21. Reconnect EPS control unit connector D (28P).



22. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

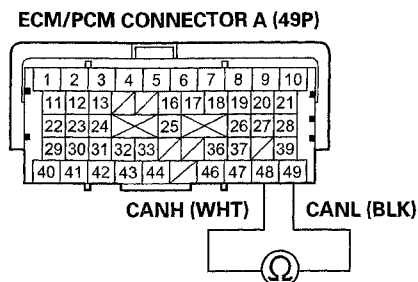
YES—

- With SH-AWD system: Go to step 23.
- Without SH-AWD system: Disconnect EPS control unit connector D (28P), then go to step 27.

NO—Substitute a known-good EPS control unit (see page 17-83), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original EPS control unit (see page 17-83). ■

23. Disconnect EPS control unit connector D (28P).
24. Reconnect SH-AWD control unit connector A (20P).

25. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

YES—Go to step 26.

NO—Substitute a known-good SH-AWD control unit (see page 15-70), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original SH-AWD control unit (see page 15-70). ■

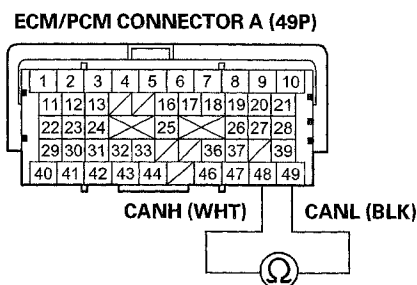
26. Reconnect SH-AWD control unit connector A (20P).
27. Reconnect the yaw rate-lateral/longitudinal acceleration sensor 5P connector (with SH-AWD) or the yaw rate-lateral acceleration sensor 5P connector (without SH-AWD).

(cont'd)

PGM-FI System

F-CAN Circuit Troubleshooting (cont'd)

28. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

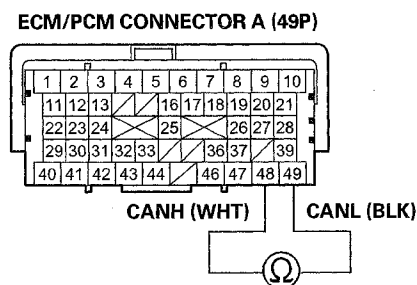
YES—

- With SH-AWD system: Go to step 29.
- Without SH-AWD system: Disconnect the yaw rate-lateral acceleration sensor, then go to step 33.

NO—Substitute a known-good yaw rate-lateral/longitudinal acceleration sensor (with SH-AWD) (see page 19-117) or yaw rate-lateral acceleration sensor (without SH-AWD) (see page 19-116), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original yaw rate-lateral/longitudinal acceleration sensor (with SH-AWD) (see page 19-117) or yaw rate-lateral acceleration sensor (without SH-AWD) (see page 19-116). ■

29. Disconnect the yaw rate-lateral/longitudinal acceleration sensor 5P connector.
30. Reconnect the steering angle sensor 5P connector.

31. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

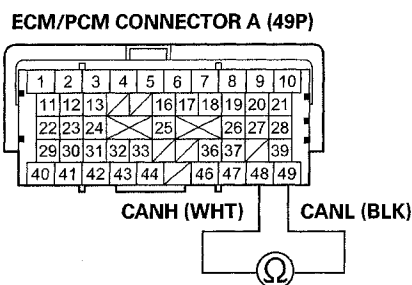
YES—Go to step 32.

NO—Substitute a known-good steering angle sensor (see page 19-115), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original steering angle sensor (see page 19-115). ■

32. Disconnect the steering angle sensor 5P connector.
33. Reconnect SRS unit connector A (39P).



34. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

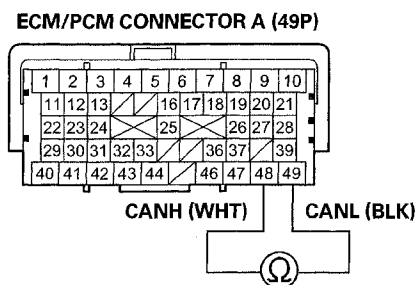
YES—Go to step 35.

NO—Substitute a known-good SRS unit (see page 24-174), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original SRS unit (see page 24-174). ■

35. Disconnect SRS unit connector A (39P).

36. Reconnect the TPMS control unit 20P connector.

37. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

YES—

- With keyless access: Go to step 38.
- Without keyless access: Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the HDS identifies the vehicle and the ECM/PCM was updated, troubleshooting is complete. If the HDS identifies the vehicle and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

NO—Substitute a known-good TPMS control unit (see page 18-100), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original TPMS control unit (see page 18-100). ■

38. Disconnect the TPMS control unit 20P connector.

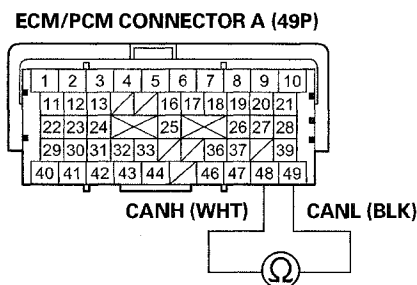
39. Reconnect power control unit connector C (36P).

(cont'd)

PGM-FI System

F-CAN Circuit Troubleshooting (cont'd)

40. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

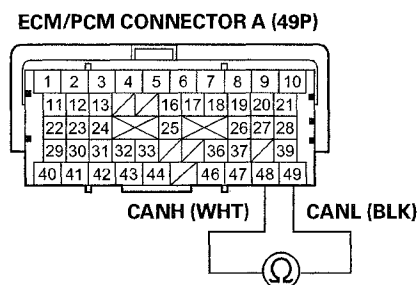
YES—

- With navigation system: Go to step 41.
- Without navigation system: Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the HDS identifies the vehicle and the ECM/PCM was updated, troubleshooting is complete. If the HDS identifies the vehicle and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282).■

NO—Substitute a known-good power control unit (see page 22-609), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original power control unit (see page 22-609).■

41. Disconnect power control unit connector C (36P).
42. Reconnect audio-navigation unit connector H (28P).

43. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

YES—

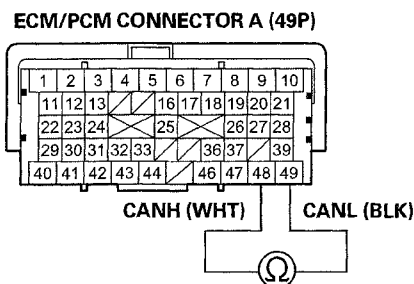
- USA model (with AcuraLink): Go to step 44.
- Canada model (without AcuraLink): Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the HDS identifies the vehicle and the ECM/PCM was updated, troubleshooting is complete. If the HDS identifies the vehicle and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282).■

NO—Substitute a known-good audio-navigation unit (see page 23-287), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original audio-navigation unit (see page 23-287).■

44. Disconnect audio-navigation unit connector H (28P).
45. Reconnect AcuraLink control unit connector A (32P).



46. Measure the resistance between ECM/PCM connector terminals A48 and A49.



Terminal side of female terminals

Is there about 2.34—2.86 k Ω ?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the HDS identifies the vehicle and the ECM/PCM was updated, troubleshooting is complete. If the HDS identifies the vehicle and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

NO—Substitute a known-good AcuraLink control unit (see page 23-151), then reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original AcuraLink control unit (see page 23-151). ■

47. Disconnect these connectors:

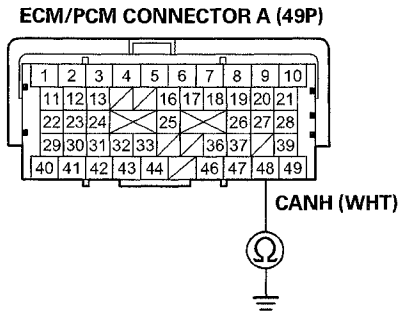
- Gauge control module 32P connector (see page 22-367).
- VSA modulator-control unit 47P connector (see page 19-120).
- EPS control unit connector D (28P) (see page 17-83).
- SH-AWD control unit connector A (20P) (with SH-AWD) (see page 15-70).
- Yaw rate-lateral acceleration sensor 5P connector (without SH-AWD) (see page 19-116).
- Yaw rate-lateral/longitudinal acceleration sensor 5P connector (with SH-AWD) (see page 19-117).
- Steering angle sensor 5P connector (with SH-AWD) (see page 19-115).
- SRS unit connector A (39P) (see page 24-174).
- TPMS control unit 20P connector (see page 18-100).
- Power control unit connector C (36P) (with keyless access) (see page 22-609).
- Audio-navigation unit connector H (28P) (with navigation) (see page 23-287).
- AcuraLink control unit connector A (32P) (USA model with navigation) (see page 23-151).

(cont'd)

PGM-FI System

F-CAN Circuit Troubleshooting (cont'd)

48. Check for continuity between ECM/PCM connector terminal A48 and body ground.



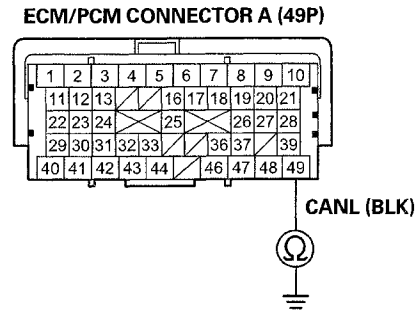
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM terminals A48 and the gauge control module, the VSA modulator-control unit, the yaw rate-lateral/longitudinal acceleration sensor (with SH-AWD), the yaw rate-lateral acceleration sensor (without SH-AWD), the EPS control unit, the SH-AWD control unit (with SH-AWD), the steering angle sensor (with SH-AWD), the SRS unit, the TPMS control unit, the audio-navigation unit (with navigation), the AcuraLink control unit (USA model with navigation), the power control unit (with keyless access), or the DLC. ■

NO—Go to step 49.

49. Check for continuity between ECM/PCM connector terminal A49 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM terminals A49 and the gauge control module, the VSA modulator-control unit, the yaw rate-lateral/longitudinal acceleration sensor (with SH-AWD), the yaw rate-lateral acceleration sensor (without SH-AWD), the EPS control unit, the SH-AWD control unit (with SH-AWD), the steering angle sensor (with SH-AWD), the SRS unit, the TPMS control unit, the audio-navigation unit (with navigation), the AcuraLink control unit (USA model with navigation), the power control unit (with keyless access), or the DLC. ■

NO—Go to step 50.

50. Reconnect all connectors.

51. Connect the HDS to the DLC (see page 11-3).

52. Disconnect the gauge control module 32P connector.

53. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the gauge control module (see page 22-367). ■

NO—Go to step 54.



54. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
55. Reconnect the gauge control module 32P connector.
56. Disconnect the VSA modulator-control unit 47P connector.
57. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the VSA modulator-control unit (see page 19-120).■

NO—Go to step 58.

58. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
59. Reconnect the VSA modulator-control unit 47P connector.
60. Disconnect EPS control unit connector D (28P).
61. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the EPS control unit (see page 17-83).■

NO—

- With SH-AWD: Go to step 62.
- Without SH-AWD: Turn the ignition switch to LOCK (0), or press the engine start/stop button to select OFF mode, then reconnect EPS control unit connector D (28P), and go to step 68.

62. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
63. Reconnect EPS control unit connector D (28P).
64. With SH-AWD: Disconnect SH-AWD control unit connector A (20P).
65. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the SH-AWD control unit (see page 15-70).■

NO—Go to step 66.

66. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
67. Reconnect SH-AWD control unit connector A (20P).
68. Disconnect the yaw rate-lateral/longitudinal acceleration sensor 5P connector (with SH-AWD) or the yaw rate-lateral acceleration sensor 5P connector (without SH-AWD).
69. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the yaw rate-lateral/longitudinal acceleration sensor (see page 19-117) or the yaw rate-lateral acceleration sensor (see page 19-116).■

NO—

- With SH-AWD: Go to step 70.
- Without SH-AWD: Turn the ignition switch to LOCK (0), or press the engine start/stop button to select OFF mode, then reconnect yaw rate-lateral acceleration sensor 5P connector, then go to step 76.

70. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
71. Reconnect the yaw rate-lateral/longitudinal acceleration sensor 5P connector.
72. Disconnect the steering angle sensor 5P connector.
73. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the steering angle sensor (see page 19-115).■

NO—Go to step 74.

74. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
75. Reconnect the steering angle sensor 5P connector.
76. Disconnect SRS unit connector A (39P).
77. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the SRS unit (see page 24-174).■

NO—Go to step 78.

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

78. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

79. Reconnect SRS unit connector A (39P).

80. Disconnect the TPMS control unit 20P connector.

81. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the TPMS control unit (see page 18-100). ■

NO—

- With keyless access: Go to step 82.
- Without keyless access: Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the HDS identifies the vehicle and the ECM/PCM was updated, troubleshooting is complete. If the HDS identifies the vehicle and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

82. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

83. Reconnect the TPMS control unit 20P connector.

84. Disconnect power control unit connector C (36P).

85. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the power control unit (see page 22-609). ■

NO—

- With navigation: Go to step 86.
- Without navigation: Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the HDS identifies the vehicle and the ECM/PCM was updated, troubleshooting is complete. If the HDS identifies the vehicle and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

86. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

87. Reconnect power control unit connector C (36P).

88. Disconnect audio-navigation unit connector H (28P).

89. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the audio-navigation unit (see page 23-287). ■

NO—

- USA model (with AcuraLink): Go to step 90.
- Canada model (without AcuraLink): Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the HDS identifies the vehicle and the ECM/PCM was updated, troubleshooting is complete. If the HDS identifies the vehicle and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

90. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

91. Reconnect audio-navigation unit connector H (28P).

92. Disconnect AcuraLink control unit connector A (32P).

93. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Replace the AcuraLink control unit (see page 23-151). ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the HDS identifies the vehicle and the ECM/PCM was updated, troubleshooting is complete. If the HDS identifies the vehicle and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■



MIL Circuit Troubleshooting

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Do the gauge self-diagnostic function (see page 22-342).

Does the MIL indicator flash?

YES—Go to step 3.

NO—Substitute a known-good gauge control module, and recheck. If the symptom/indication goes away with a known-good gauge control module, replace the original gauge control module (see page 22-367).■

3. Connect the HDS to the DLC (see page 11-3).

4. Check the SCS in the DATA LIST with the HDS.

Is a short indicated?

YES—Go to step 5.

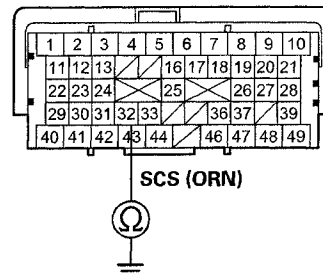
NO—Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282).■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

6. Disconnect ECM/PCM connector A (49P), then disconnect the HDS.

7. Check for continuity between ECM/PCM connector terminal A32 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A32) and the DLC.■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282).■

PGM-FI System

DLC Circuit Troubleshooting

NOTE: If you suspect the HDS or the HDS DLC cable may be the source of the communication problem, verify that they are working properly by connecting them to a known-good, like vehicle and system, and checking for communication problem.

1. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

2. Connect the HDS to the DLC (see page 11-3).

NOTE: Make sure the HDS is properly connected to the DLC.

3. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and read the HDS.

Does the HDS identify the vehicle?

YES—Go to step 4.

NO—Go to step 27.

4. Check for Pending or Confirmed DTCs in the PGM-FI system with the HDS.

Are any Pending or Confirmed DTCs indicated?

YES—Go to the indicated DTC's troubleshooting.■

NO—

- If the HDS does not communicate with the SRS, go to step 5.
- If the HDS does not communicate with the VSA system, go to step 7.
- If the HDS does not communicate with the EPS, go to step 9.
- If the HDS does not communicate with the SH-AWD system, go to step 11.
- If the HDS does not communicate with the TPMS, go to step 13.
- If the HDS does not communicate with the IMMOBI (immobilizer) system, go to step 15.
- If the HDS does not communicate with the ONE PUSH START system, go to step 17.
- If the HDS does not communicate with the BODY ELECTRICAL system, go to step 19.

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and watch the SRS indicator.

Does the SRS indicator come on and go off?

YES—Go to step 21.

NO—Go to the SRS general troubleshooting information (see page 24-23).■

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and watch the VSA indicator.

Does the VSA indicator come on and go off?

YES—Go to step 21.

NO—Go to the VSA system symptom troubleshooting for ABS indicator, brake system indicator, VSA indicator do not go off (see page 19-112).■

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

10. Start the engine, and watch the EPS indicator.

Does the EPS indicator come on and go off?

YES—Go to step 21.

NO—Go to the EPS symptom troubleshooting for EPS indicator dose not go off, and no DTCs are stored (see page 17-61).■

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and watch the SH-AWD indicator.

Does the SH-AWD indicator come on and go off?

YES—Go to step 21.

NO—Go to the SH-AWD system symptom troubleshooting for SH-AWD indicator dose not go off, and no DTCs are stored (see page 15-65).■



13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

14. Turn the ignition switch to ON (II), and watch the TPMS indicator.

Does the TPMS indicator come on and go off?

YES—Go to step 21.

NO—Go to the TPMS symptom troubleshooting for TPMS indicator dose not go off, and no DTCs are stored (see page 18-98).■

15. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and watch the immobilizer indicator.

Does the immobilizer indicator stay on or flash?

YES—Go to the immobilizer system's troubleshooting; without keyless access (see page 22-435), with keyless access (see page 22-555).■

NO—Go to step 21.

17. Press the engine start/stop button to select the OFF mode.

18. Press the engine start/stop button to select the ON mode, and watch the keyless access indicator.

Does the keyless access indicator stay on?

YES—Go to the keyless access system general troubleshooting information (see page 22-521).■

NO—Go to step 21.

19. Do the gauge self-diagnostic function (see page 22-342).

20. Check the gauge display.

Is B-CAN-----ERROR indicated?

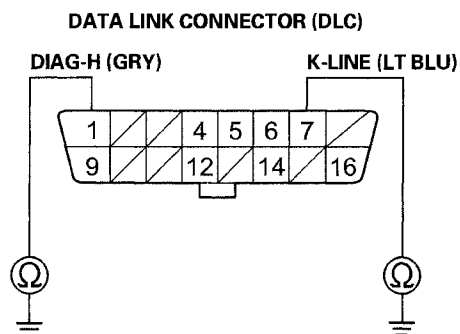
YES—Check for B-CAN system DTC's (see page 22-140).■

NO—Go to step 21.

21. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

22. Disconnect the HDS from the DLC.

23. Check for continuity between DLC terminal No. 7 and body ground (with keyless access; between body ground and DLC terminals No. 1 and No. 7 individually).



Is there continuity?

YES—Go to step 24.

NO—Go to step 25.

(cont'd)

PGM-FI System

DLC Circuit Troubleshooting (cont'd)

24. Continue to check for continuity between DLC terminal No. 7 and body ground (with keyless access; between body ground and DLC terminals No. 1 and No. 7 individually), while disconnecting these connectors, one at a time:

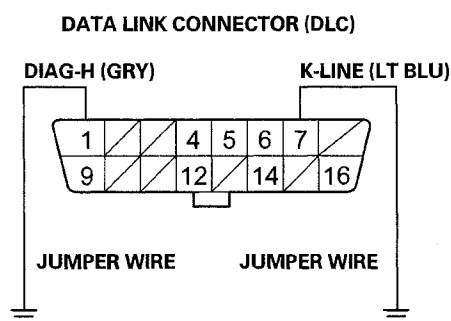
- SRS unit connector A (39P)
- VSA modulator-control unit 47P connector
- EPS control unit connector D (28P)
- SH-AWD control unit connector A (20P) (with SH-AWD)
- TPMS control unit 20P connector
- Immobilizer-keyless control unit 7P connector (without keyless access)
- Audio unit connector A (24P) (without navigation)
- Audio-navigation unit connector A (24P) (with navigation)
- Driver's under-dash fuse/relay box connector Q (20P)
- Remote slot control unit 40P connector (with keyless access)
- Keyless access control unit connector B (32P) (with keyless access)
- Power control unit connector C (36P) (with keyless access)

Does continuity go away when one of the above connectors is disconnected?

YES—Replace the part that caused continuity go away when it was disconnected.■

NO—Repair short in the wire between the DLC No. 7 (K-Line) and the VSA modulator-control unit, the EPS control unit, the SH-AWD control unit, the SRS unit, the TPMS control unit, the immobilizer-keyless control unit, the audio unit, the audio-navigation unit, the driver's under-dash fuse/relay box, the remote slot control unit, or the keyless access control unit the DLC No. 1 (Diag-H line) and the power control unit (with keyless access).■

25. Connect DLC terminal No. 7 to body ground with a jumper wire (with keyless access system; and connect DLC terminal No. 1 to body ground with a jumper wire).



26. Check for continuity between body ground and these connector terminals:

Connector	Terminal
SRS unit A (39P)	No. 18 (LT BLU)
VSA modulator-control unit 47P	No. 10 (LT BLU)
EPS control unit D (28P)	No. 17 (LT BLU)
SH-AWD control unit A (20P) (with SH-AWD)	No. 5 (LT BLU)
TPMS control unit 20P	No. 7 (LT BLU)
Immobilizer-keyless control unit 7P (without keyless access)	No. 5 (LT BLU)
Audio unit A (24P) (without navigation)	No. 3 (LT BLU)
Audio-navigation unit connector A (24P) (with navigation)	No. 3 (LT BLU)
Driver's under-dash fuse/relay box Q (20P)	No. 16 (LT BLU)
Remote slot control unit 40P (with keyless access)	No. 34 (LT BLU)
Keyless access control unit B (32P) (with keyless access)	No. 4 (LT BLU)
Power control unit C (36P) (with keyless access)	No. 3 (GRY)

Is there continuity between the body ground and each of the terminals in the chart?

YES—Replace the part that does not communicate with the HDS.■

NO—Repair open in the wire between the DLC (K-Line or Diag-H) and the appropriate connector.■



27. Check for B-CAN system DTCs without the HDS (see page 22-140).

Is DTC U0029 and/or U0100 indicated?

YES—Go to step 38.

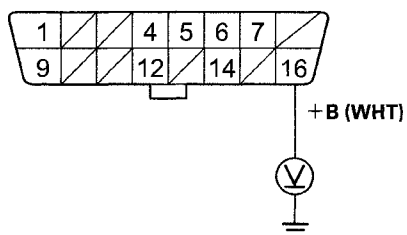
NO—Go to step 28.

28. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

29. Disconnect the HDS from the DLC.

30. Measure the voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

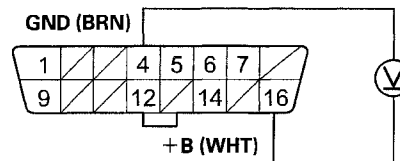
Is there battery voltage?

YES—Go to step 31.

NO—Repair open in the wire between DLC terminal No. 16 and the No. 15 BACK UP (10 A) fuse in the under-hood fuse/relay box.■

31. Measure the voltage between DLC terminals No. 4 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 32.

NO—Repair open in the wire between DLC terminal No. 4 and body ground (G401 (see page 22-38)).■

32. Connect the HDS to the DLC (see page 11-3).

33. Jump the SCS line with the HDS.

34. Disconnect ECM/PCM connector A (49P).

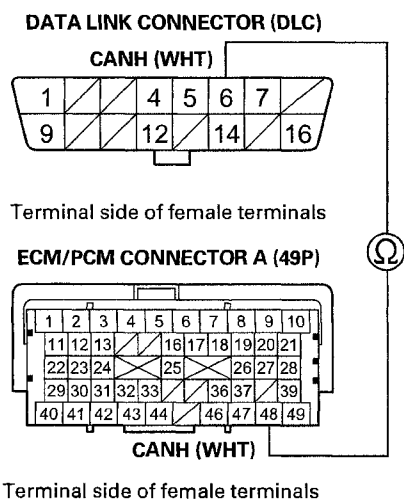
35. Disconnect the HDS from the DLC.

(cont'd)

PGM-FI System

DLC Circuit Troubleshooting (cont'd)

36. Check for continuity between ECM/PCM connector terminal A48 and DLC terminal No. 6.

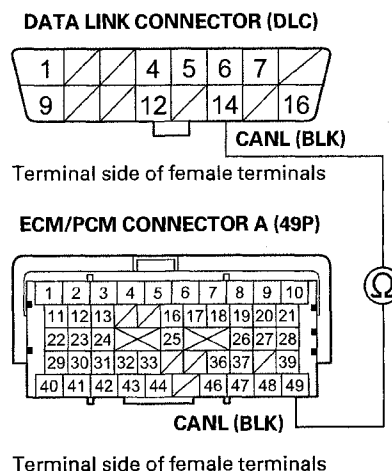


Is there continuity?

YES—Go to step 37.

NO—Repair open in the wire between the ECM/PCM (A48) and DLC terminal No. 6. ■

37. Check for continuity between ECM/PCM connector terminal A49 and DLC terminal No. 14.



Is there continuity?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

NO—Repair open in the wire between the ECM/PCM (A49) and DLC terminal No. 14. ■



38. Try to start the engine.

Does the engine start and idle?

YES—Go to the F-CAN circuit troubleshooting (see page 11-243). ■

NO—

- If the starter does not crank, go to step 39.
- If the starter cranks, turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode; and go to step 41.

39. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

40. Check the No. 3-1 IG MAIN (50 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Repair open in the wire between the No. 3-1 IG MAIN (50 A) fuse and the ignition switch or power control unit (with keyless access). If the wire is OK, go to step 41.

NO—Repair short in the wire between the No. 3-1 IG MAIN (50 A) fuse and the ignition switch or power control unit (with keyless access). Also replace the No. 3-1 IG MAIN (50 A) fuse. ■

41. Inspect the No. 17 FI MAIN (15 A) fuse in the under-hood fuse/relay box.

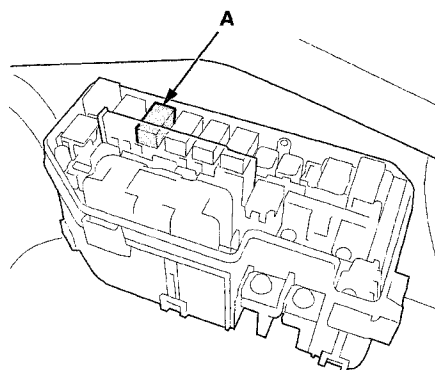
Is the fuse OK?

YES—Go to step 48.

NO—Go to step 42.

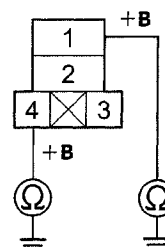
42. Remove the blown No. 17 FI MAIN (15 A) fuse from the under-hood fuse/relay box.

43. Remove PGM-FI main relay 1 (A) from the under-hood fuse/relay box.



44. Check for continuity between body ground and PGM-FI main relay 1 4P connector terminals No. 1 and No. 4 individually.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Replace the under-hood fuse/relay box (see page 22-80). Also replace the No. 17 FI MAIN (15 A) fuse. ■

NO—Go to step 45.

(cont'd)

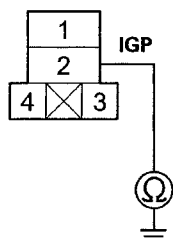
PGM-FI System

DLC Circuit Troubleshooting (cont'd)

45. While disconnecting each of the parts or connectors below, one at a time, check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground:

- PGM-FI main relay 2
- ECM/PCM connector B (49P)
- Each injector 2P connector
- CMP sensor 3P connector
- CKP sensor 3P connector
- MAF sensor/IAT sensor 5P connector
- Electronic throttle control system (ETCS) control relay

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Does continuity go away when one of the above parts or connectors is disconnected?

YES—Replace the part that made the short to body ground go away when disconnected. If the part is the ECM/PCM, update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). Also replace the No. 17 FI MAIN (15 A) fuse.■

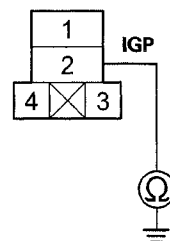
NO—Go to step 46.

46. Disconnect the connectors from these components:

- PGM-FI main relay 2
- PCM connector B (49P)
- Injectors
- CMP sensor
- CKP sensor
- MAF sensor/IAT sensor
- Electronic throttle control system (ETCS) control relay

47. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PGM-FI main relay 1 and each part. Also replace the No. 17 FI MAIN (15 A) fuse.■

NO—Replace PGM-FI main relay 1. Also replace the No. 17 FI MAIN (15 A) fuse.■



48. Inspect the No. 9 FUEL PUMP (20 A) fuse in the driver's under-dash fuse/relay box.

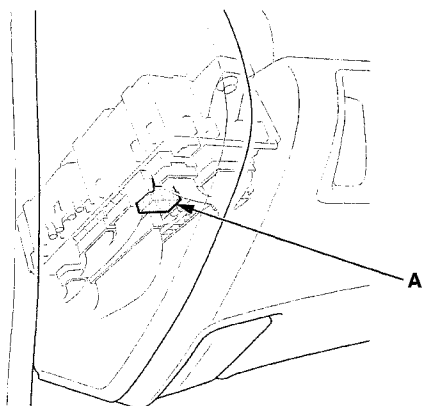
Is the fuse OK?

YES—Go to step 62.

NO—Go to step 49.

49. Remove the blown No. 9 FUEL PUMP (20 A) fuse from the driver's under-dash fuse/relay box.

50. Remove the driver's dashboard undercover (see page 20-118), then remove PGM-FI main relay 2 (A) from the driver's under-dash fuse/relay box.



51. Test PGM-FI main relay 2 (see page 22-88).

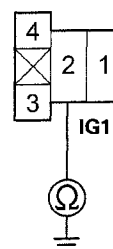
Is the relay OK?

YES—Go to step 52.

NO—Replace PGM-FI main relay 2. Also replace the No. 9 FUEL PUMP (20 A) fuse. ■

52. Check for continuity between PGM-FI main relay 2 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 53.

NO—

- '09 model without SH-AWD, '10 model: Go to step 56.
- '09 model with SH-AWD: Go to step 60.

53. Jump the SCS line with the HDS.

54. Disconnect ECM/PCM connector B (49P).

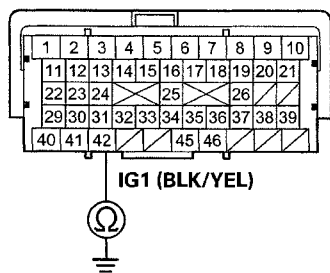
(cont'd)

PGM-FI System

DLC Circuit Troubleshooting (cont'd)

55. Check for continuity between ECM/PCM connector terminal B42 and body ground.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 9 FUEL PUMP (20 A) fuse and the ECM/PCM (B42), between the No. 9 FUEL PUMP (20 A) fuse and PGM-FI main relay 2, or between the No. 9 FUEL PUMP (20 A) fuse and the immobilizer control unit. Also replace the No. 9 FUEL PUMP (20 A) fuse. ■

NO—Replace the No. 9 FUEL PUMP (20 A) fuse, and update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

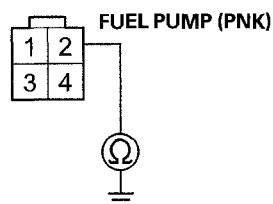
56. Remove the rear seat cushion (see page 20-156).

57. Remove the access panel from the floor (see page 11-391).

58. Disconnect the fuel pump 4P connector.

59. Check for continuity between fuel pump 4P connector terminal No. 2 and body ground.

FUEL PUMP 4P CONNECTOR



Wire side of female terminals

Is there continuity?

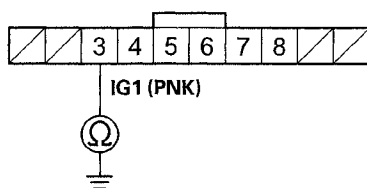
YES—Repair short in the wire between the fuel pump and PGM-FI main relay 2. Also replace the No. 9 FUEL PUMP (20 A) fuse. ■

NO—Check the fuel pump, and replace it if needed (see page 11-398). Also replace the No. 9 FUEL PUMP (20 A) fuse. ■



60. Disconnect the fuel pump control module 10P connector (see page 11-407).
61. Check for continuity between fuel pump control module 10P connector terminal No. 3 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

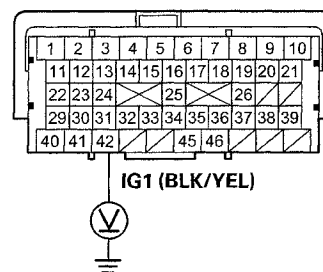
Is there continuity?

YES—Repair short in the wire between the fuel pump control module and PGM-FI main relay 2. Also replace the No. 9 FUEL PUMP (20 A) fuse. ■

NO—Replace the No. 9 FUEL PUMP (20 A) fuse, and substitute a known-good fuel pump control module (see page 11-407), then recheck. If the symptom/indication goes away with a known-good fuel pump control module, replace the fuel pump control module (see page 11-407). ■

62. Jump the SCS line with the HDS.
63. Disconnect ECM/PCM connectors A (49P) and B (49P).
64. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
65. Measure the voltage between ECM/PCM connector terminal B42 and body ground.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

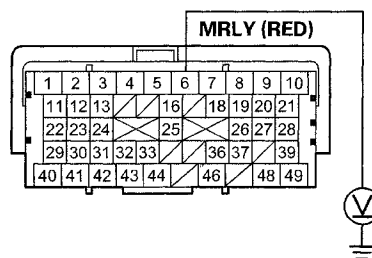
Is there battery voltage?

YES—Go to step 66.

NO—Repair open in the wire between the No. 9 FUEL PUMP (20 A) fuse and the ECM/PCM (B42). ■

66. Measure the voltage between ECM/PCM connector terminal A6 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 71.

NO—Go to step 67.

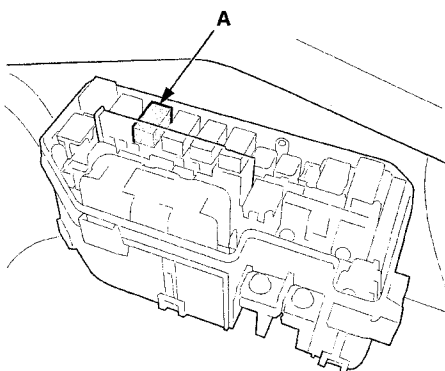
67. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

(cont'd)

PGM-FI System

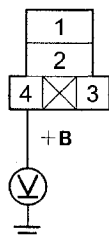
DLC Circuit Troubleshooting (cont'd)

68. Remove PGM-FI main relay 1 (A) from the under-hood fuse/relay box.



69. Measure the voltage between PGM-FI main relay 1 4P connector terminal No. 4 and body ground.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

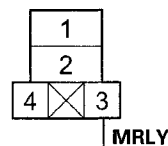
Is there battery voltage?

YES—Go to step 70.

NO—Replace the under-hood fuse/relay box (see page 22-80). ■

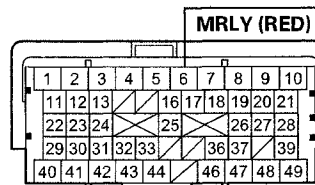
70. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 3 and ECM/PCM connector terminal A6.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

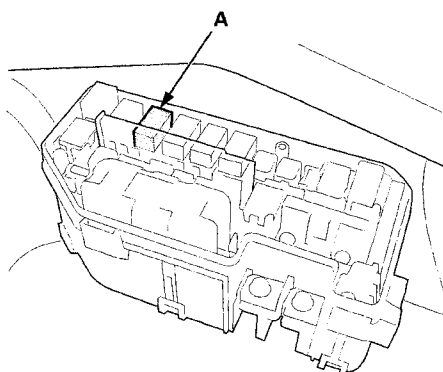
Is there continuity?

YES—Test PGM-FI main relay 1 (see page 22-88). If the relay is OK, update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

NO—Repair open in the wire between the ECM/PCM (A6) and PGM-FI main relay 1. ■

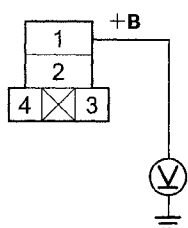


71. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
72. Remove PGM-FI main relay 1 (A) from the under-hood fuse/relay box.



73. Measure the voltage between PGM-FI main relay 1 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

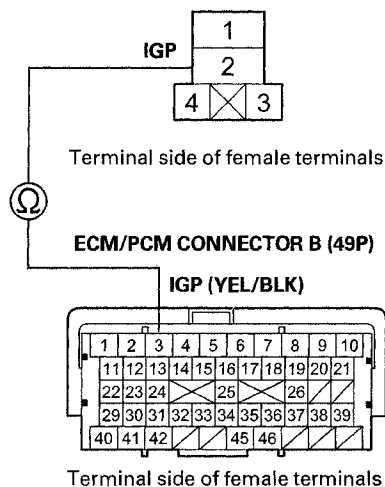
Is there battery voltage?

YES—Go to step 74.

NO—Replace the under-hood fuse/relay box (see page 22-80). ■

74. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and ECM/PCM connector terminal B3.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Is there continuity?

YES—Go to step 75.

NO—Repair open in the wire between the ECM/PCM (B3) and PGM-FI main relay 1. ■

75. Test PGM-FI main relay 1 (see page 22-88).

Is PGM-FI main relay 1 OK?

YES—Go to step 76.

NO—Replace PGM-FI main relay 1. ■

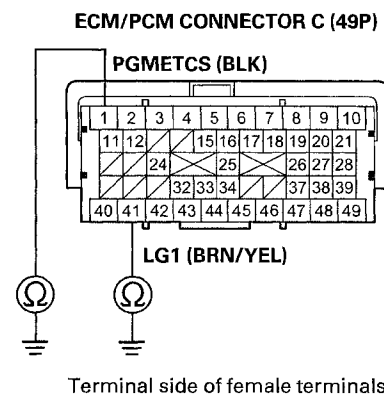
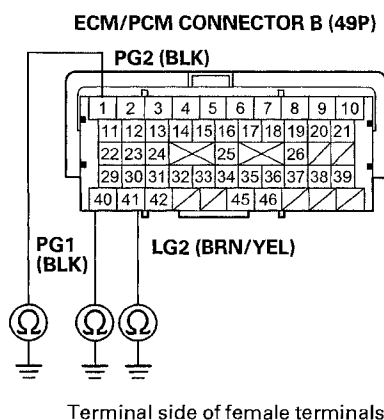
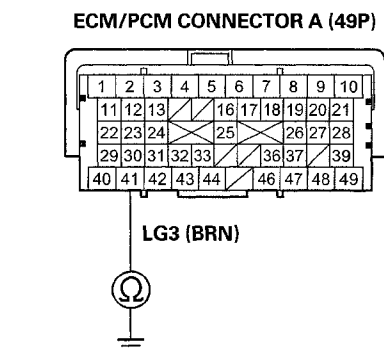
76. Disconnect ECM/PCM connectors A (49P), B (49P), and C (49P).

(cont'd)

PGM-FI System

DLC Circuit Troubleshooting (cont'd)

77. Check for continuity between body ground and ECM/PCM connector terminals A41, B1, B40, B41, C1, and C41 individually.



Is there continuity?

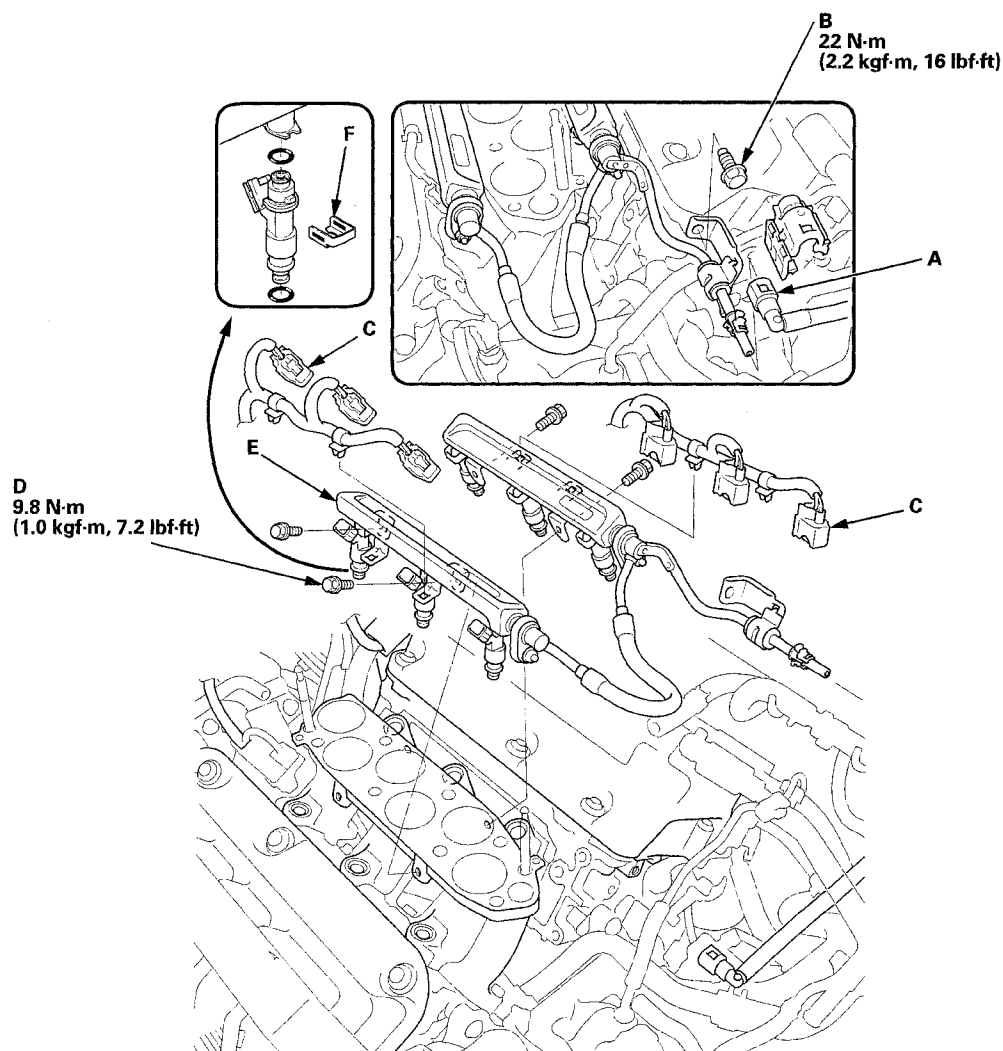
YES—Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

NO—Repair open in the wire(s) between the PCM (A41, B1, B40, B41, C1, C41) and body ground (G101). ■



Injector Replacement

1. Relieve the fuel pressure (see page 11-366).
2. Remove the intake manifold (see page 9-4).
3. Disconnect the quick-connect fitting (A).



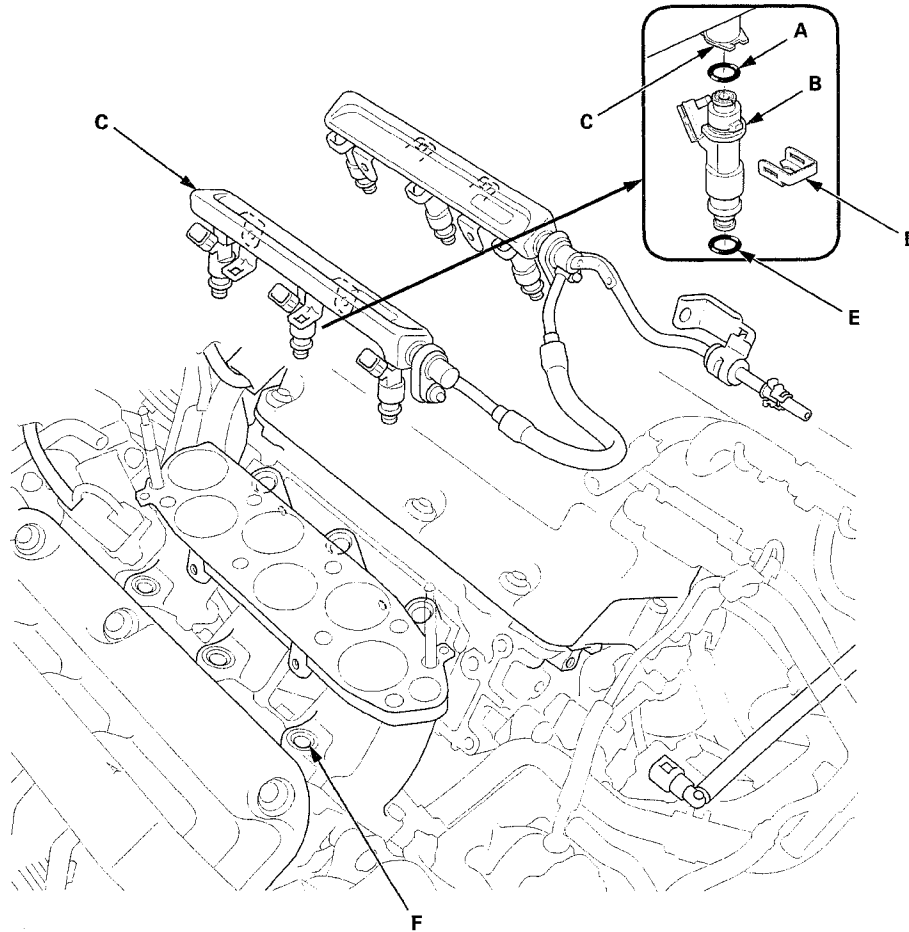
4. Remove the fuel joint hose mounting bolt (B).
5. Disconnect the connectors (C) from the injectors.
6. Remove the fuel rail mounting bolts (D) from the fuel rails (E).
7. Remove the fuel rails and the injectors from the injector base.
8. Remove the injector clips (F) from the fuel rails.
9. Remove the injectors from the fuel rails.

(cont'd)

PGM-FI System

Injector Replacement (cont'd)

10. Coat the new O-rings (black) (A) with clean engine oil, and insert the injectors (B) into the fuel rails (C).

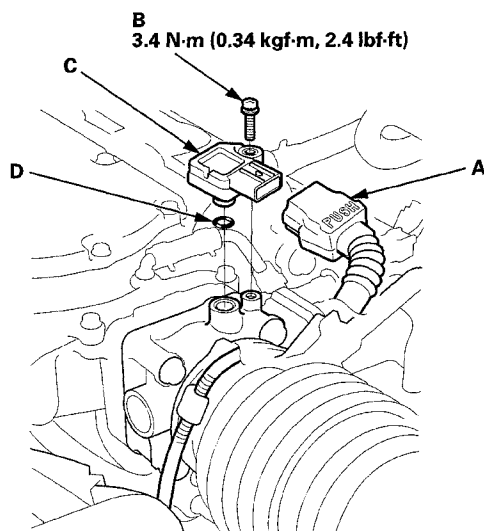


11. Install the injector clips (D).
12. Coat the new injector O-rings (green) (E) with clean engine oil.
13. Install the fuel rails and the injectors in the injector base (F).
14. Install the fuel rail mounting bolts, and connect the injector connectors.
15. Install the fuel joint hose mounting bolt.
16. Connect the quick-connect fitting; without SH-AWD (see page 11-383), with SH-AWD (see page 11-386).
17. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel rail will be pressurized. Repeat this two or three times, then make sure there are no fuel leaks.
18. Install the intake manifold with a new gasket (see page 9-5).



MAP Sensor Replacement

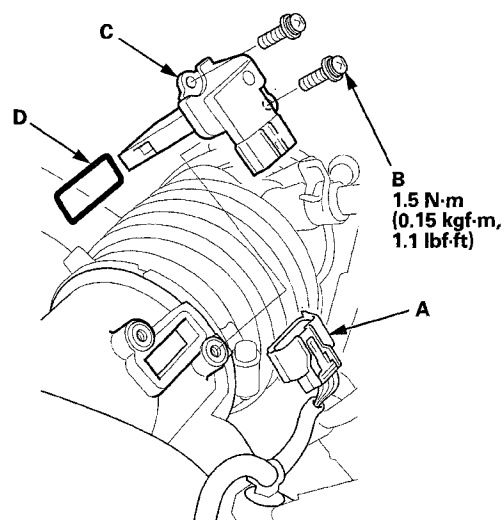
1. Disconnect the MAP sensor connector (A).



2. Remove the screw (B).
3. Remove the MAP sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

MAF Sensor/IAT Sensor Replacement

1. Disconnect the MAF sensor/IAT sensor 5P connector (A).

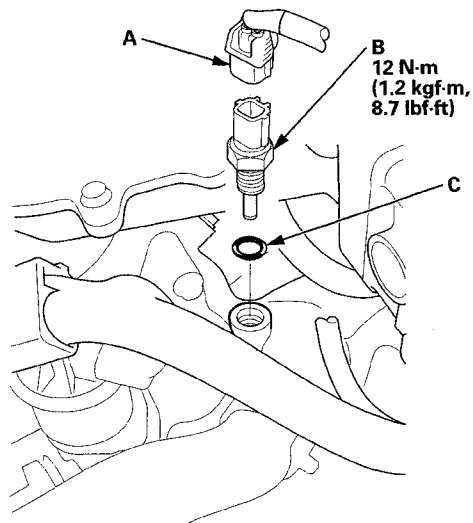


2. Remove the screws (B).
3. Remove the MAF sensor/IAT sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

PGM-FI System

ECT Sensor 1 Replacement

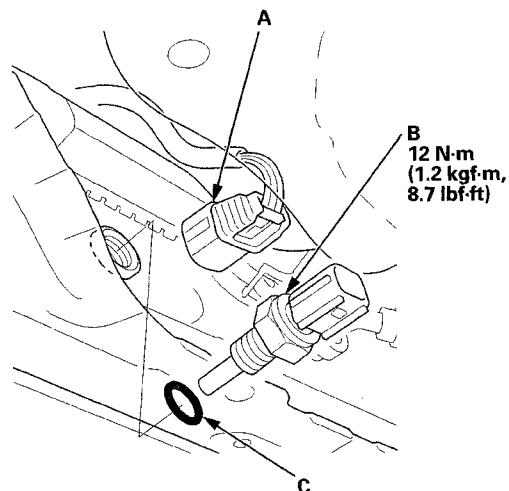
1. Drain the engine coolant (see page 10-6).
2. Disconnect the ECT sensor 1 2P connector (A).



3. Remove ECT sensor 1 (B).
4. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-6).

ECT Sensor 2 Replacement

1. Remove the splash shield.
2. Drain the engine coolant (see page 10-6).
3. Disconnect the ECT sensor 2 2P connector (A).



4. Remove ECT sensor 2 (B).
5. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-6).



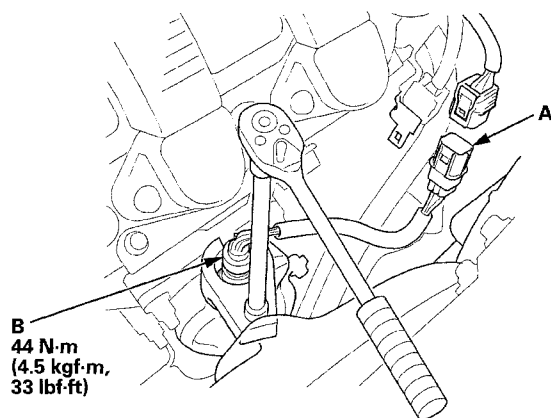
A/F Sensor Replacement

Special Tools Required

O2 Sensor Socket Wrench Snap-on SWR2 or O2 Sensor Wrench Snap-on YA8875, commercially available

Front Bank (Bank2)

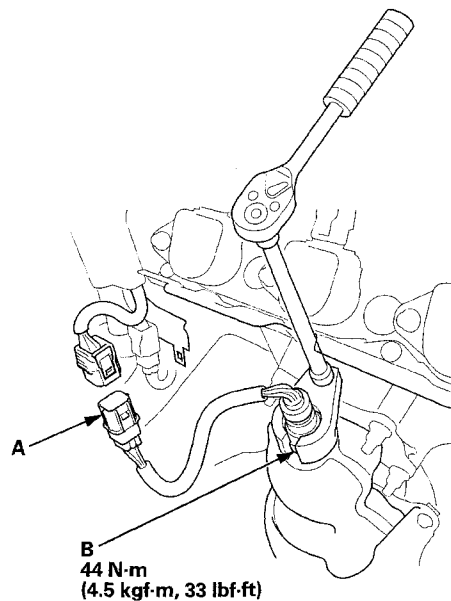
1. Disconnect the front A/F sensor 6P connector (A), then remove the A/F sensor (B).



2. Install the parts in the reverse order of removal.

Rear Bank (Bank1)

1. Disconnect the rear A/F sensor 6P connector (A), then remove the A/F sensor (B).



2. Install the parts in the reverse order of removal.

PGM-FI System

Secondary HO2S Replacement

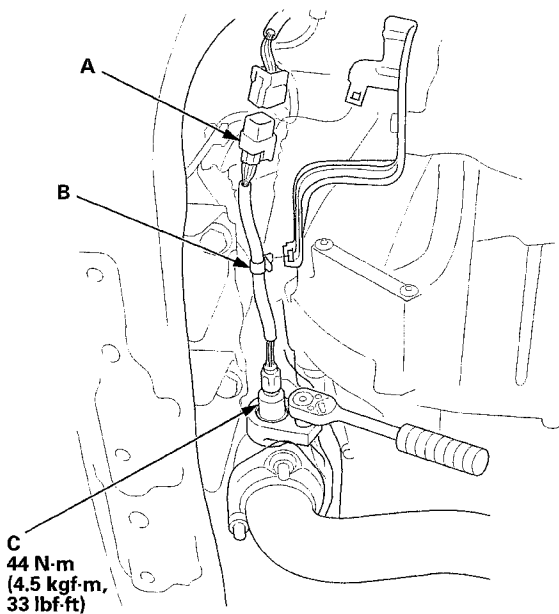
Special Tools Required

O2 Sensor Socket Wrench Snap-on SWR2 or O2 Sensor Wrench Snap-on YA8875, commercially available

Front Bank (Bank 2)

M/T

1. Raise the vehicle on a lift.
2. Disconnect the front secondary HO2S 4P connector (A), and remove the harness clamp (B).

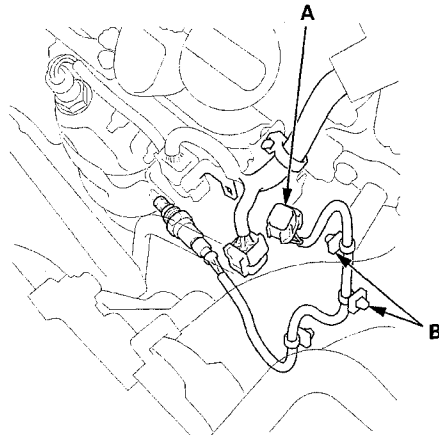


3. Remove the front secondary HO2S (C).
4. Install the parts in the reverse order of removal.

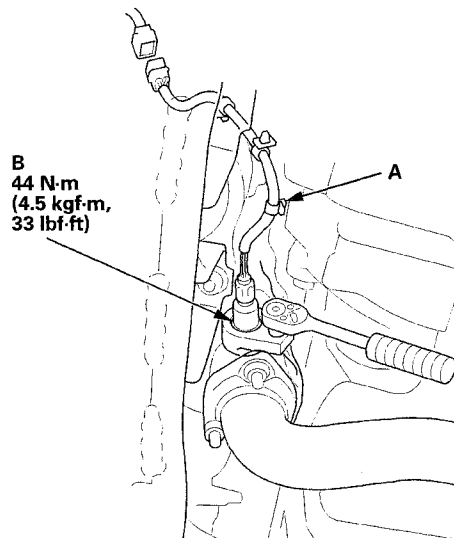
Front Bank (Bank 2)

A/T

1. Disconnect the front secondary HO2S 4P connector (A), and remove the harness clamps (B).



2. Raise the vehicle on a lift.
3. Remove the harness clamp (A), then remove the front secondary HO2S (B).



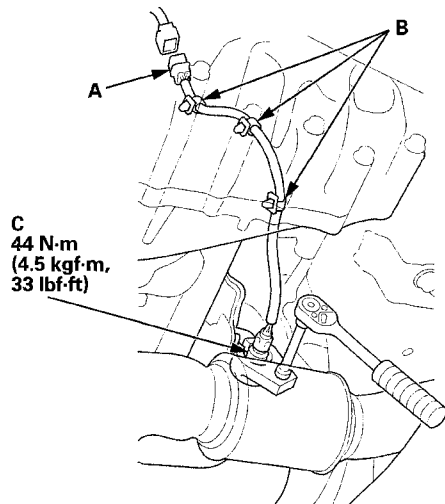
4. Install the parts in the reverse order of removal.



CMP Sensor Replacement

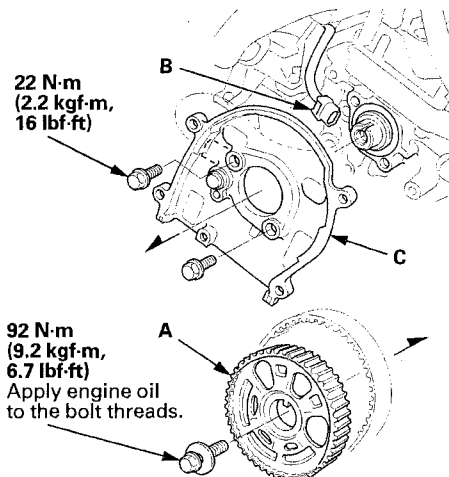
Rear Bank (Bank 1)

1. Raise the vehicle on a lift.
2. Disconnect the rear secondary HO2S 4P connector (A), and remove the harness clamps (B).

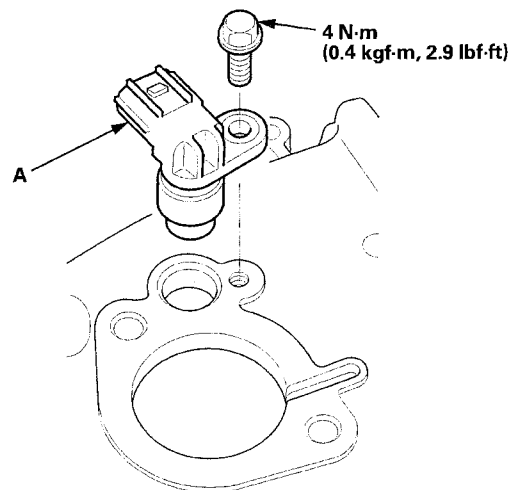


3. Remove the rear secondary HO2S (C).
4. Install the parts in the reverse order of removal.

1. Remove the timing belt (see page 6-15).
2. Remove the front camshaft pulley (CMP sensor pulse plate) (A).



3. Disconnect the CMP sensor connector (B), then remove the back cover (C).
4. Remove the CMP sensor (A) from the back cover.



5. Install the parts in the reverse order of removal. Install the timing belt (see page 6-17).
6. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).

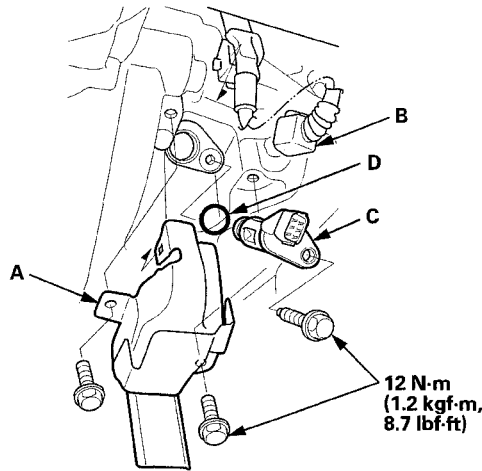
PGM-FI System

CKP Sensor Replacement

1. Raise the vehicle on a lift.

NOTE: Make the vehicle is level, because engine oil will drip out when you remove the sensor.

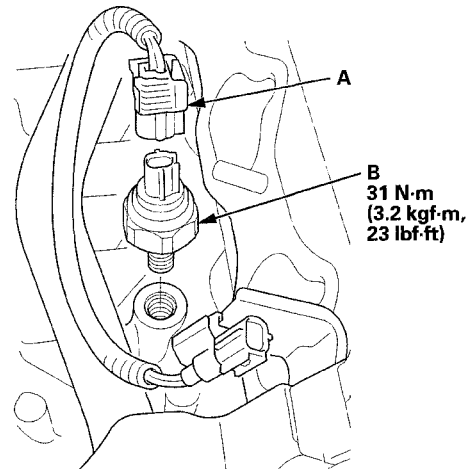
2. Remove the CKP sensor cover (A).



3. Disconnect the CKP sensor connector (B).
4. Remove the CKP sensor (C).
5. Install the parts in the reverse order of removal with a new O-ring (D).
6. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).
7. Check for engine oil level, and add more oil if needed.

Knock Sensor Replacement

1. Remove the intake manifold (see page 9-4).
2. Remove the injector base (see page 9-7).
3. Disconnect the knock sensor connector (A).



4. Remove the knock sensor (B).
5. Install the parts in the reverse order of removal.

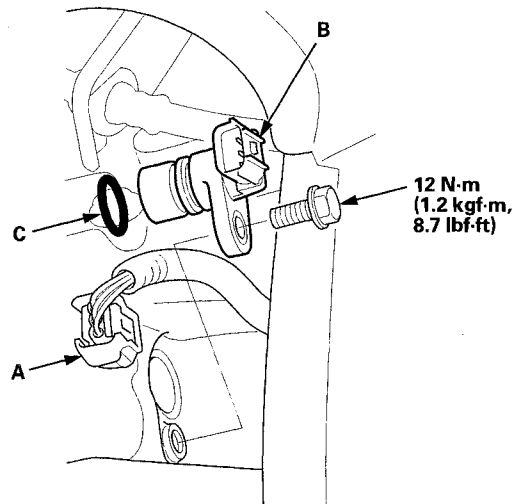


Input Shaft (Mainshaft) Speed Sensor Replacement

NOTE: For A/T models (see page 14-198).

M/T

1. Raise the vehicle on a lift.
2. Remove the splash shield.
3. Disconnect the input shaft (mainshaft) speed sensor connector (A).



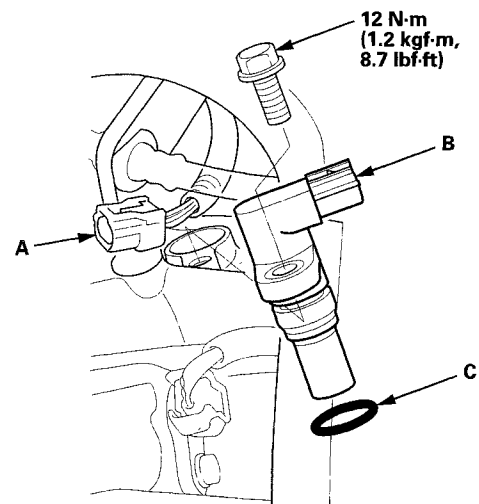
4. Remove the input shaft (mainshaft) speed sensor (B).
5. Install the parts in the reverse order of removal with a new O-ring (C).
6. If needed, refill the manual transmission fluid (see page 13-14).

Output Shaft (Countershaft) Speed Sensor Replacement

NOTE: For A/T models (see page 14-199).

M/T

1. Raise the vehicle on a lift.
2. Remove the splash shield.
3. Disconnect the output shaft (countershaft) speed sensor connector (A).

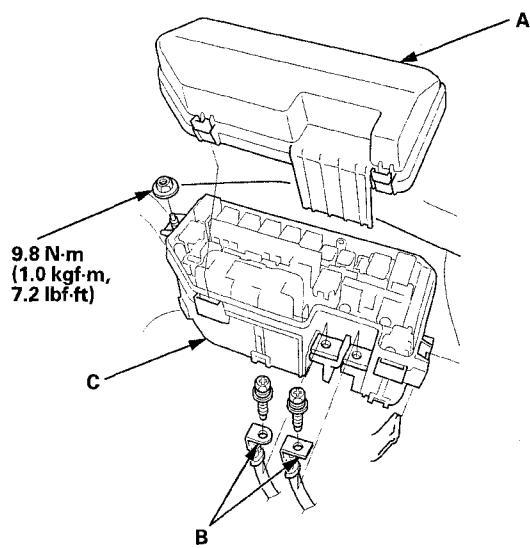


4. Remove the output shaft (countershaft) speed sensor (B).
5. Install the parts in the reverse order of removal with a new O-ring (C).

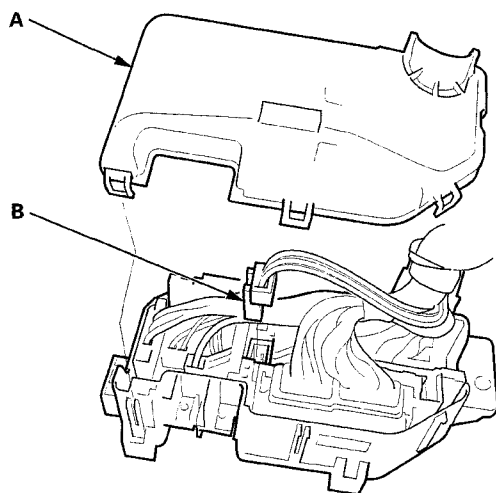
PGM-FI System

ELD Replacement

1. Do the battery terminal disconnection procedure (see page 22-86).
2. Remove the upper cover (A), then remove the two positive (+) terminals (B).

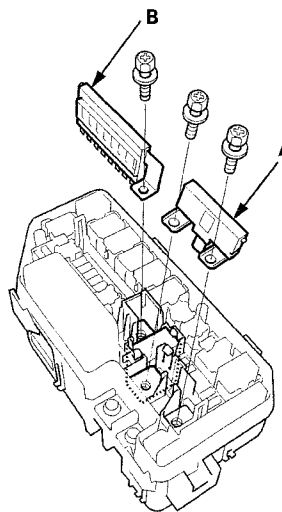


3. Remove the under-hood fuse/relay box (C) from the bracket.
4. Remove the lower cover (A).

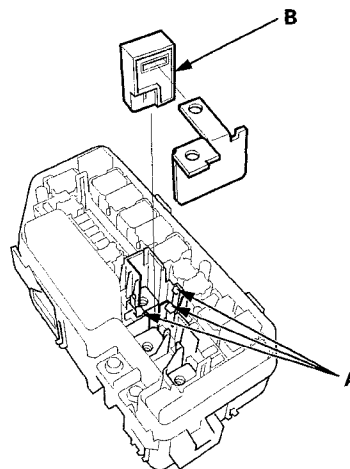


5. Disconnect the ELD 3P connector (B).

6. Remove the fuses (A) and (B).



7. Release the three lock tabs (A), then remove the ELD (B).



8. Install the parts in the reverse order of removal.
9. Do the battery terminal reconnection procedure (see page 22-86).



ECM/PCM Update

Special Tools Required

- Honda Diagnostic System (HDS) tablet tester
- Honda Interface Module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA600 and an iN workstation with the latest HDS software version

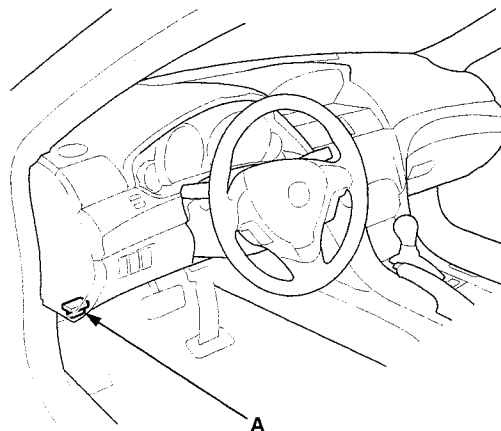
Any one of the above updating tools can be used.

NOTE:

- Make sure the HDS/iN workstation has the latest HDS software version.
- Before you update the ECM/PCM, make sure the battery in the vehicle is fully charged, and connect a jumper battery (not a battery charger) to maintain system voltage.
- Never turn the ignition switch to ACC (I) or LOCK (O) or never press the engine start/stop button to select the OFF or ACC mode during the update. If there is a problem with the update, leave the ignition switch ON (II) or vehicle in the ON mode.
- To prevent ECM/PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, moonroof, door locks, etc.) during the update.
- To ensure the latest program is installed, do a ECM/PCM update whenever the ECM/PCM is substituted or replaced.
- You cannot update a ECM/PCM with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the ECM/PCM to become too hot to run the update. If the engine has been running before this procedure, open the hood and cool the engine compartment.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in ON (II) or vehicle in the ON mode when you disconnect the HIM from the data link connector (DLC). This will prevent ECM/PCM damage.

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, but do not start the engine.

2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-258). If you are returning from the DLC circuit troubleshooting, skip steps 4 and 5, and clean the throttle body (see page 11-421) after updating the ECM/PCM.

4. Select the INSPECTION MENU with the HDS.

5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.

NOTE: If the TP POSITION CHECK indicates FAILED, continue this procedure.

6. Exit the HDS diagnostic system, then select the update mode, and follow the screen prompts to update the ECM/PCM.

(cont'd)

PGM-FI System

ECM/PCM Update (cont'd)

7. If the software in the ECM/PCM is the latest, disconnect the HDS/HIM/GNA600 from the DLC, and go back to the procedure that you were doing. If the software in the ECM/PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system, make sure you update both.

NOTE: If the ECM/PCM update system requires you to cool the ECM/PCM, follow the instructions on screen. If you run into a problem during the update procedure (programming takes over 15 minutes, status bar goes over 100 %, D or immobilizer indicator flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the ECM/PCM:

- Leave the ignition switch in ON (II) or vehicle in the ON mode.
- Connect a jumper battery (do not connect a battery charger).
- Shut down the HDS.
- Disconnect the HDS from the DLC.
- Reboot the HDS.
- Reconnect the HDS to the DLC, and try the update procedure again.

8. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-421).

9. Do the ECM/PCM idle learn procedure (see page 11-337).

10. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).

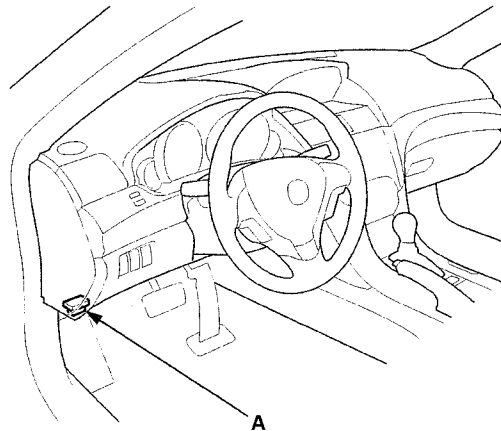
ECM/PCM Replacement

Special Tools Required

- Honda Diagnostic System (HDS) tablet tester
- Honda Interface Module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

1. Connect HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-258). If you are returning from the DLC circuit troubleshooting, skip steps 4 through 9, 18 through 23, and 26 through 28, and do this after replacing the ECM/PCM:

- Replace the engine oil (see page 8-12) and the engine oil filter (see page 8-13).
- Replace the ATF (A/T) (see page 14-203).
- Clean the throttle body (see page 11-421).



4. Select the PGM-FI system with the HDS.
5. Select the INSPECTION MENU with the HDS.
6. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

NOTE: If the TP POSITION CHECK indicates FAILED, continue with this procedure.

7. Select the REPLACE PCM MENU, then select READ DATA, and follow the screen prompts.

NOTE:

- Doing this step copies (READS) the engine oil life data from the original ECM/PCM so you can later download (WRITES) it into the new ECM/PCM.
- If READ DATA indicates FAILED, continue with this procedure.

8. A/T: Select the A/T system with the HDS.

9. A/T: Select the REPLACE TCM/PCM MENU, then select READ DATA, and follow the screen prompts.

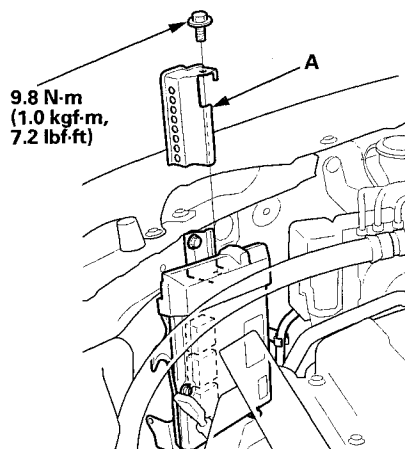
NOTE:

- Doing this step copies (READS) the ATF life data from the original PCM so you can later download (WRITES) it into the new PCM.
- If READ DATA indicates FAILED, continue with this procedure.

10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

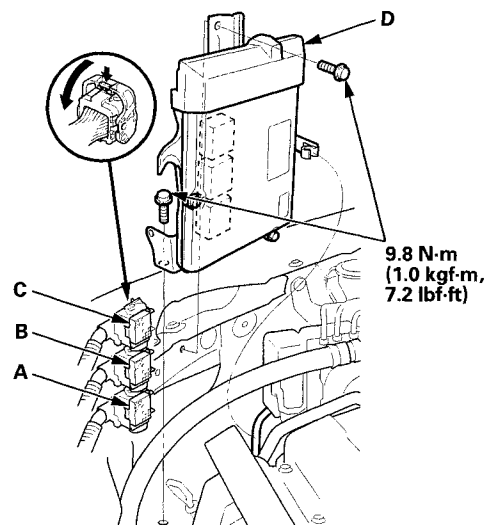
11. Jump the SCS line with the HDS.

12. Canada model: If equipped, remove the ECM/PCM connector guard (A).

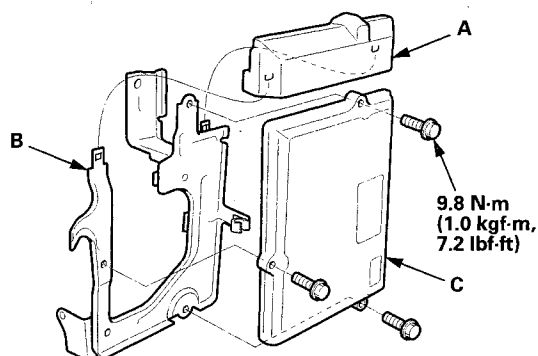


13. Disconnect ECM/PCM connectors A, B, and C, then remove the ECM/PCM assembly (D).

NOTE: ECM/PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.



14. Remove the cover (A) and the bracket (B) from the ECM/PCM (C).



(cont'd)

PGM-FI System

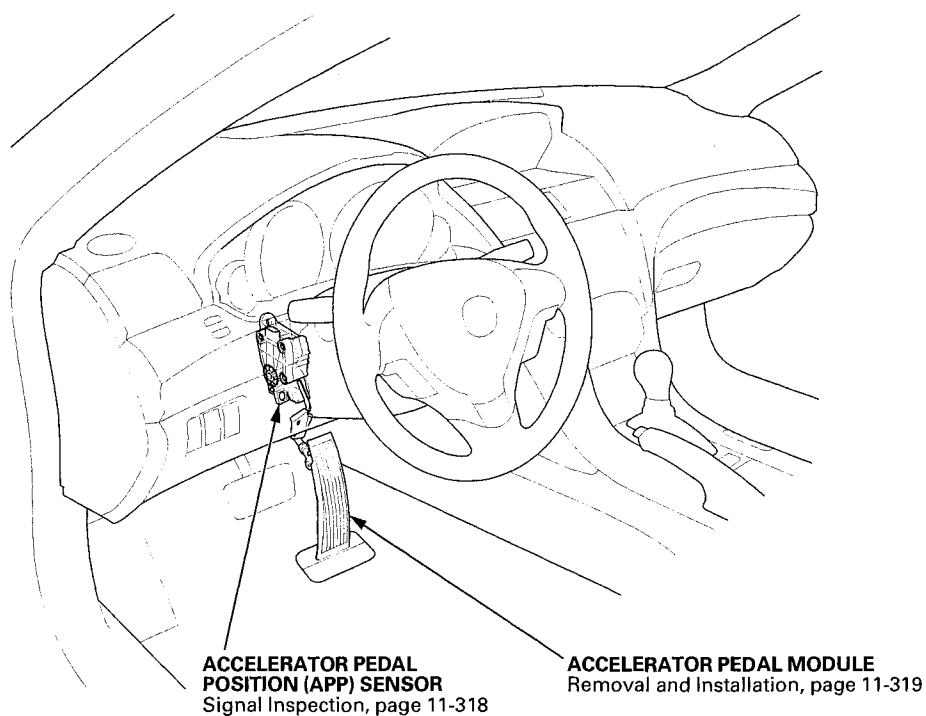
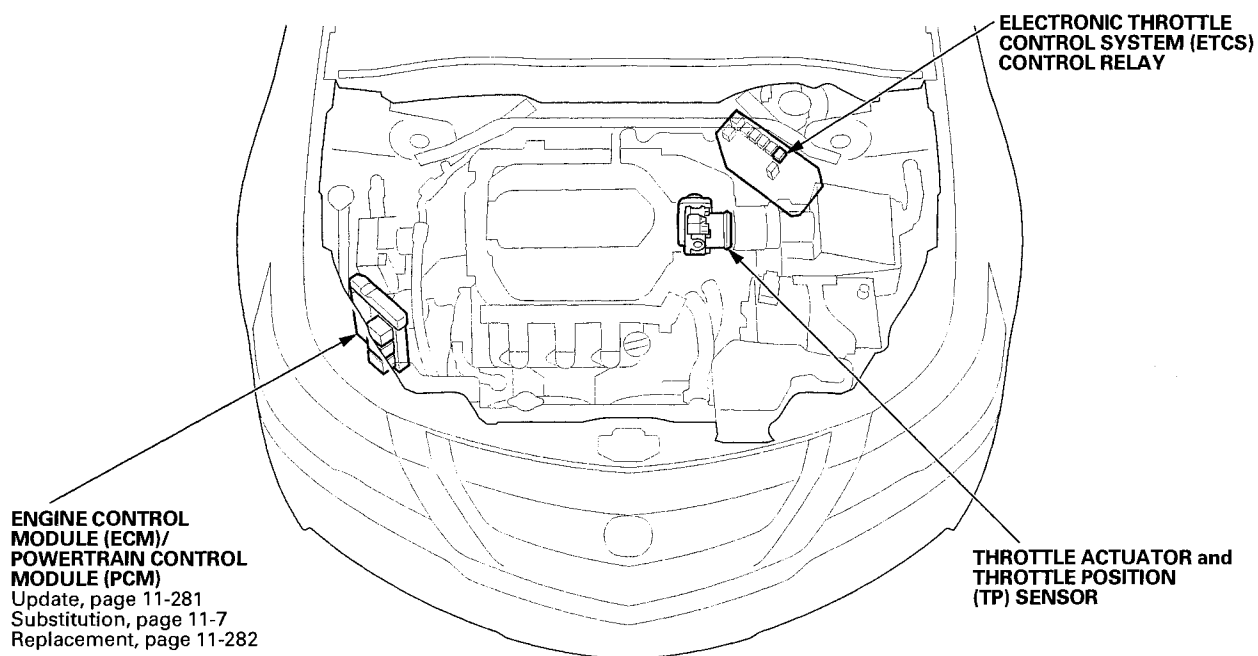
ECM/PCM Replacement (cont'd)

15. Install the ECM/PCM in the reverse order of removal.
16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
17. Manually input the VIN to the ECM/PCM with the HDS.
NOTE: DTC P0630 VIN Not Programmed or Mismatch may be stored because the VIN has not been programmed into the ECM/PCM; ignore it, and continue this procedure.
18. If the READ DATA (engine oil life) failed in step 7, go to step 21 (A/T) or step 24 (M/T). Otherwise, go to step 19.
19. Select the PGM-FI system with the HDS.
20. Select the REPLACE PCM MENU, then select WRITE DATA, and follow the screen prompts.
NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.
21. A/T: If the READ DATA (ATF life) failed in step 9, go to step 24. Otherwise go to step 22.
22. A/T: Select the A/T SYSTEM with the HDS.
23. A/T: Select the REPLACE TCM/PCM MENU, then select WRITE DATA, and follow the screen prompts.
NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.
24. Select IMMOBI system (without keyless access) or ONE PUSH START system (with keyless access) with the HDS.
25. Enter the immobilizer ECM/PCM code that you got from the iN, and use the ECM/PCM replacement procedure in the IMMOBI Menu (without keyless access) or ONE PUSH START Menu (with keyless access) of the HDS; it allows you to start the engine.
26. If the TP POSITION CHECK failed in step 6 clean the throttle body (see page 11-421), then go to step 27.
27. If the READ DATA failed in step 7 or the WRITE DATA failed in step 20, replace the engine oil (see page 8-12) and engine oil filter (see page 8-13), then go to step 28 (A/T) or step 29 (M/T).
28. If the READ DATA failed in step 9 or the WRITE DATA failed in step 23, replace the ATF (see page 14-203), then go to step 29.
29. Select PGM-FI system, and reset the ECM/PCM with the HDS.
30. Update the ECM/PCM if it does not have the latest software (see page 11-281).
31. Do the ECM/PCM idle learn procedure (see page 11-337).
32. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).

Electronic Throttle Control System



Component Location Index



Electronic Throttle Control System

DTC Troubleshooting

DTC P0122: TP Sensor A Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

Is there about 0.3 V or less?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

4. Check for Pending or Confirmed DTCs with the HDS.

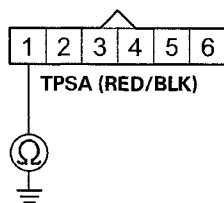
Are DTC P0122 and P0222 indicated at the same time?

YES—Go to step 10.

NO—Go to step 5.

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector B (49P).
9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

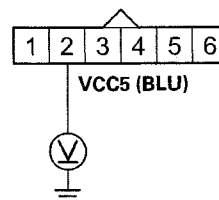
Is there continuity?

YES—Repair short in the wire between the throttle body and the ECM/PCM (B17), then go to step 18.

NO—Go to step 23.

10. Measure the voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

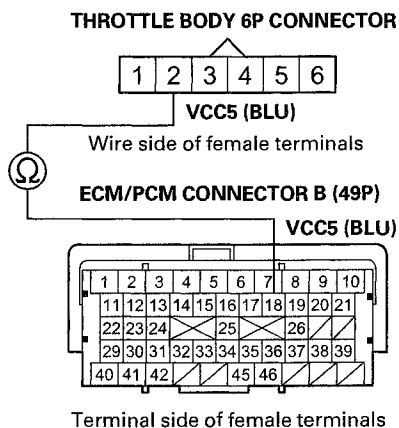
YES—Go to step 16.

NO—Go to step 11.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector B (49P).
14. Disconnect the throttle body 6P connector.



15. Check for continuity between ECM/PCM connector terminal B18 and throttle body 6P connector terminal No. 2.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the throttle body and the ECM/PCM (B18), then go to step 18.

16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
17. Replace the throttle body (see page 11-425).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0122 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0122 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P0123: TP Sensor A Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Check TP SENSOR A in the DATA LIST with the HDS.

Is there about 4.8 V or more?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

4. Check for Pending or Confirmed DTCs with the HDS.

Are DTC P0123 and P0223 indicated at the same time?

YES—Go to step 13.

NO—Go to step 5.

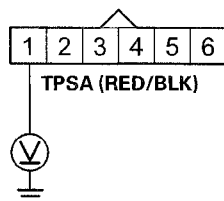
5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

6. Disconnect the throttle body 6P connector.

7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

8. Measure the voltage between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 18.

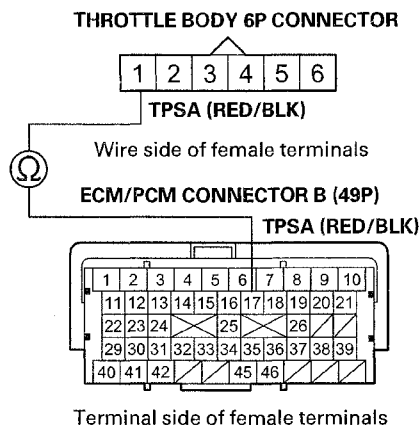
NO—Go to step 9.

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

10. Jump the SCS line with the HDS.

11. Disconnect ECM/PCM connector B (49P).

12. Check for continuity between ECM/PCM connector terminal B17 and throttle body 6P connector terminal No. 1.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the ECM/PCM (B17), then go to step 20.

13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

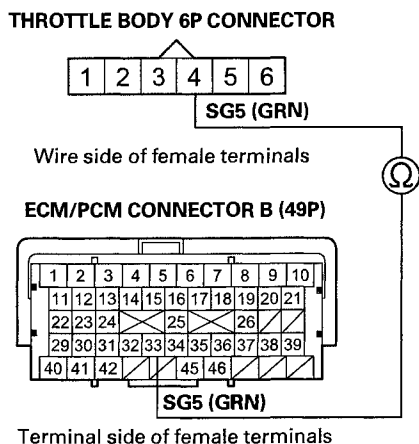
14. Disconnect the throttle body 6P connector.

15. Jump the SCS line with the HDS.

16. Disconnect ECM/PCM connector B (49P).



17. Check for continuity between ECM/PCM connector terminal B33 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the ECM/PCM (B33), then go to step 20.

18. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
19. Replace the throttle body (see page 11-425).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-337).
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0123 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.

26. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0123 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P0222: TP Sensor B Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

Is there about 0.3 V or less?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

4. Check for Pending or Confirmed DTCs with the HDS.

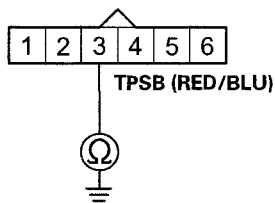
Are DTC P0122 and P0222 indicated at the same time?

YES—Go to step 10.

NO—Go to step 5.

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector B (49P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

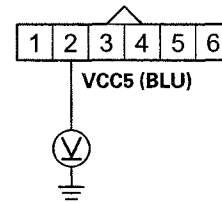
Is there continuity?

YES—Repair short in the wire between the throttle body and the ECM/PCM (B26), then go to step 18.

NO—Go to step 23.

10. Measure the voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

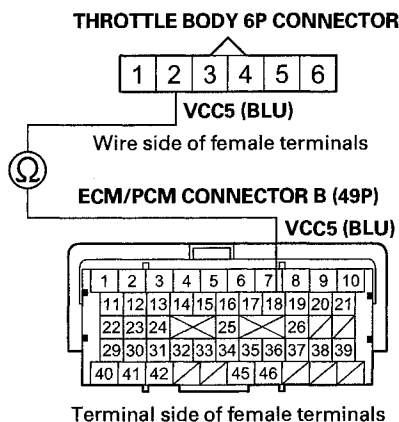
YES—Go to step 16.

NO—Go to step 11.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector B (49P).
14. Disconnect the throttle body 6P connector.



15. Check for continuity between ECM/PCM connector terminal B18 and throttle body 6P connector terminal No. 2.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the throttle body and the ECM/PCM (B18), then go to step 18.

16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
17. Replace the throttle body (see page 11-425).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0222 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

23. Reconnect all connectors.

24. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0222 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P0223: TP Sensor B Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Check TP SENSOR B in the DATA LIST with the HDS.

Is there about 4.8 V or more?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

4. Check for Pending or Confirmed DTCs with the HDS.

Are DTC P0123 and P0223 indicated at the same time?

YES—Go to step 13.

NO—Go to step 5.

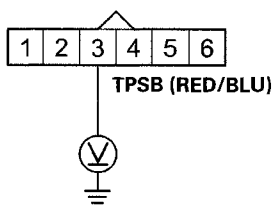
5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

6. Disconnect the throttle body 6P connector.

7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

8. Measure the voltage between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 18.

NO—Go to step 9.

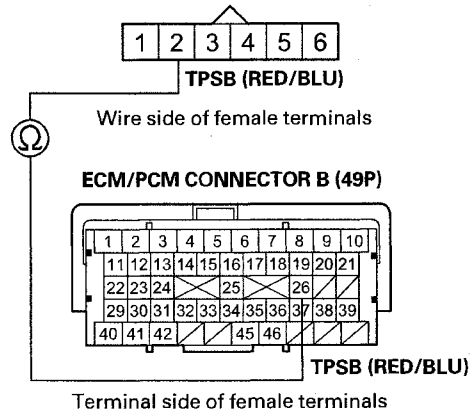
9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

10. Jump the SCS line with the HDS.

11. Disconnect ECM/PCM connector B (49P).

12. Check for continuity between ECM/PCM connector terminal B26 and throttle body 6P connector terminal No. 3.

THROTTLE BODY 6P CONNECTOR



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the ECM/PCM (B26), then go to step 20.

13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

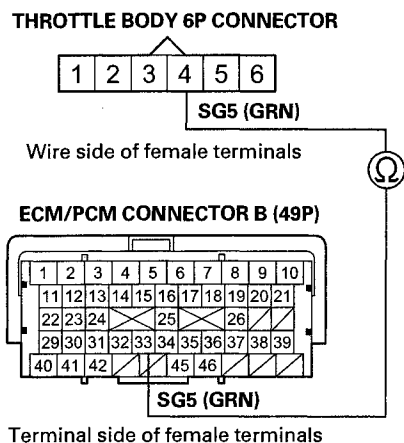
14. Disconnect the throttle body 6P connector.

15. Jump the SCS line with the HDS.

16. Disconnect ECM/PCM connector B (49P).



17. Check for continuity between ECM/PCM connector terminal B33 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the ECM/PCM (B33), then go to step 20.

18. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
19. Replace the throttle body (see page 11-425).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-337).
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0223 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.

26. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0223 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P1658: ETCS Control Relay ON Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

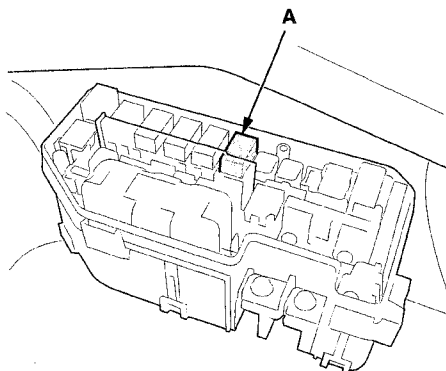
1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Do the ETCS TEST in the INSPECTION MENU with the HDS.

Is the RELAY circuit OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. ■

NO—Go to step 3.

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Remove the ETCS control relay (A) from the under-hood fuse/relay box.



5. Test the ETCS control relay (see page 22-88).

Is the ETCS control relay OK?

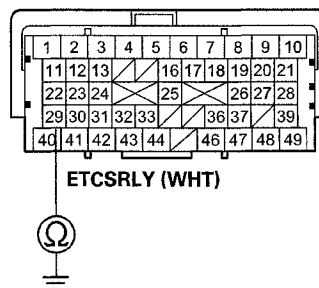
YES—Go to step 6.

NO—Replace the ETCS control relay, then go to step 13.

6. Jump the SCS line with the HDS.
7. Disconnect ECM/PCM connector A (49P).

8. Check for continuity between ECM/PCM connector terminal A29 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

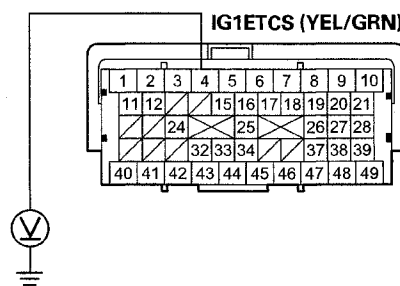
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A29) and the ETCS control relay, then go to step 13.

NO—Go to step 9.

9. Disconnect ECM/PCM connector C (49P).
10. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
11. Measure the voltage between ECM/PCM connector terminal C4 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the ECM/PCM (C4) and the ETCS control relay, then go to step 12.

NO—Go to step 18.



12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-337).
17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1658 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

18. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
21. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1658 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P1659: ETCS Control Relay OFF Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1659 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM.■

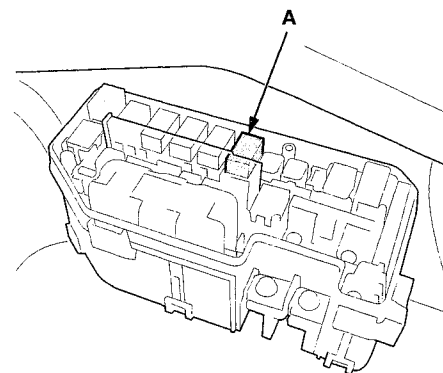
4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Check the No. 18 DBW (ETCS) (15 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Go to step 6.

NO—Go to step 17.

6. Remove the ETCS control relay (A) from the under-hood fuse/relay box.



7. Test the ETCS control relay (see page 22-88).

Is the ETCS control relay OK?

YES—Go to step 8.

NO—Replace the ETCS control relay, then go to step 23.

8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

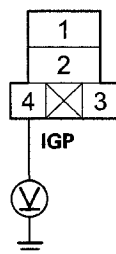
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

9. Measure the voltage between ETCS control relay 4P connector terminal No. 4 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

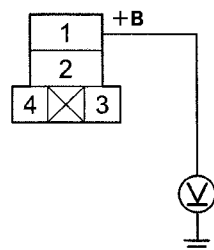
Is there battery voltage?

YES—Go to step 10.

NO—Replace the under-hood fuse/relay box (see page 22-80), then go to step 22.

10. Measure the voltage between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

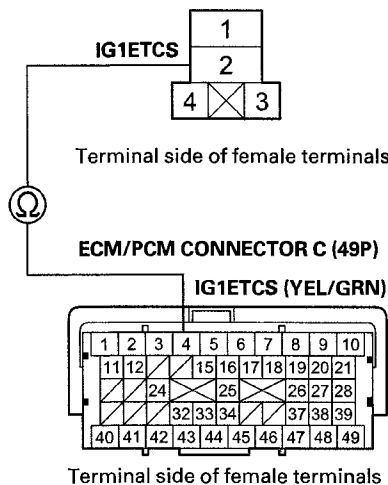
YES—Go to step 11.

NO—Replace the under-hood fuse/relay box (see page 22-80), then go to step 22.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (49P).

14. Check for continuity between ETCS control relay 4P connector terminal No. 2 and ECM/PCM connector terminal C4.

ETCS CONTROL RELAY 4P CONNECTOR



Is there continuity?

YES—Go to step 15.

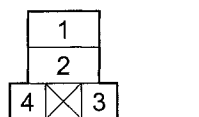
NO—Repair open in the wire between the ECM/PCM (C4) and the ETCS control relay, then go to step 23.

15. Disconnect ECM/PCM connector A (49P).



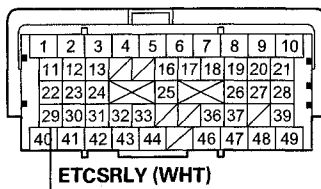
16. Check for continuity between ETCS control relay 4P connector terminal No. 3 and ECM/PCM connector terminal A29.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

ECM/PCM CONNECTOR A (49P)



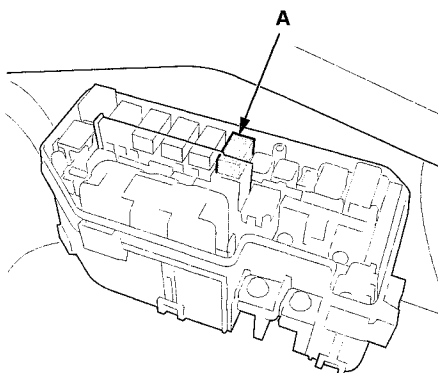
Terminal side of female terminals

Is there continuity?

YES—Go to step 28.

NO—Repair open in the wire between the ECM/PCM (A29) and the ETCS control relay, then go to step 23.

17. Remove the ETCS control relay (A) from the under-hood fuse/relay box.

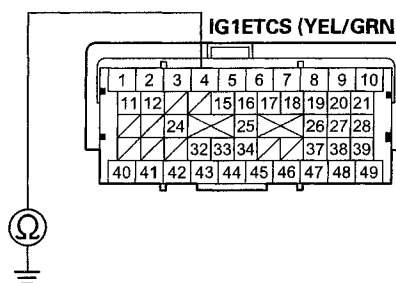


18. Jump the SCS line with the HDS.

19. Disconnect ECM/PCM connector C (49P).

20. Check for continuity between ECM/PCM connector terminal C4 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

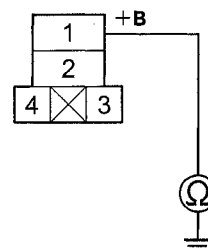
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C4) and the ETCS control relay, then go to step 23.

NO—Go to step 21.

21. Check for continuity between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Replace the under-hood fuse/relay box (see page 22-80), then go to step 23.

NO—Go to step 28.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

22. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
23. Reconnect all connectors.
24. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see page 11-337).
27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1659 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

28. Reconnect all connectors.
29. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
30. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1659 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1683: Throttle Valve Default Position Spring Performance Problem

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II)/press the engine start/stop button, or while the ignition switch is in ON (II)/vehicle in ON mode. If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode, and wait 10 seconds.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check for Pending or Confirmed DTCs with the HDS.

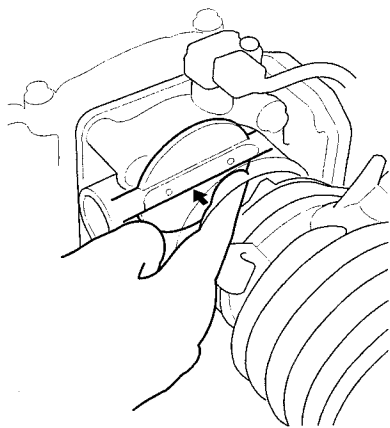
Is DTC P1683 indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Disconnect the intake air duct from the throttle body.



9. Push the throttle valve closed as shown.



10. Release the throttle valve.

Does the throttle valve return?

YES—Clean the throttle body (see page 11-421), then go to step 12 and recheck. If DTC P1683 is indicated, go to step 11.

NO—Go to step 11.

11. Replace the throttle body (see page 11-425).

12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see page 11-337).

15. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode, and wait 10 seconds.

16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1683 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P1684: Throttle Valve Return Spring Performance Problem

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II)/press the engine start/stop button, or while the ignition switch is in ON (II)/vehicle in ON mode. If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode, and wait 10 seconds.

5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

6. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1684 indicated?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

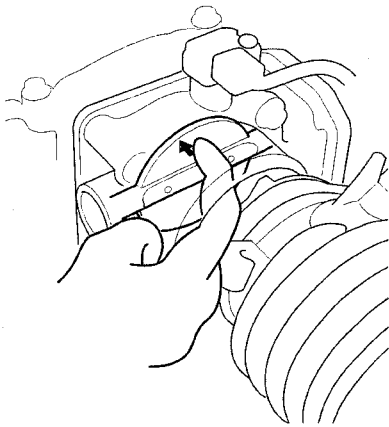
8. Disconnect the intake air duct from the throttle body.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

9. Push the throttle valve open as shown.



10. Release the throttle valve.

Does the throttle valve return?

YES—Clean the throttle body (see page 11-421), then go to step 12 and recheck. If DTC P1684 is indicated, go to step 11.

NO—Go to step 11.

11. Replace the throttle body (see page 11-425).

12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see page 11-337).

15. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode, and wait 10 seconds.

16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1684 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2101: ETCS Malfunction

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II)/press the engine start/stop button, or while the ignition switch is in ON (II)/vehicle in ON mode. If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Do the ETCS TEST in the INSPECTION MENU with the HDS.

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2101 indicated?

YES—Go to step 7.

NO—Go to step 5.

5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- APP SENSOR

6. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2101 indicated?

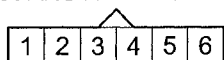
YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and at the ECM/PCM, then clean the throttle body (see page 11-421). ■



7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Disconnect the intake air duct from the throttle body.
9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.
Does the throttle valve operate smoothly?
YES—Clean the throttle body (see page 11-421), then go to step 24 and recheck. If DTC P2101 is indicated, go to step 22.
NO—Go to step 13.
13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector B (49P).
17. Check for continuity between ECM/PCM connector terminal B33 and throttle body 6P connector terminal No. 4.

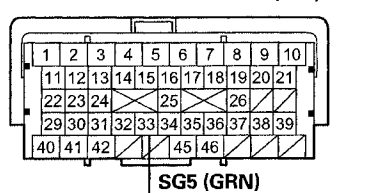
THROTTLE BODY 6P CONNECTOR



SG5 (GRN)

Wire side of female terminals

ECM/PCM CONNECTOR B (49P)



SG5 (GRN)

Terminal side of female terminals

Is there continuity?

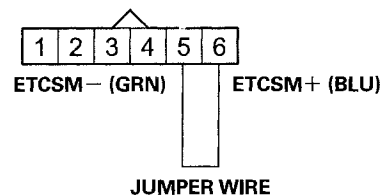
YES—Go to step 18.

NO—Repair open in the wire between the throttle body and the ECM/PCM (B33), then go to step 24.

18. Disconnect ECM/PCM connector C (49P).

19. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

THROTTLE BODY 6P CONNECTOR

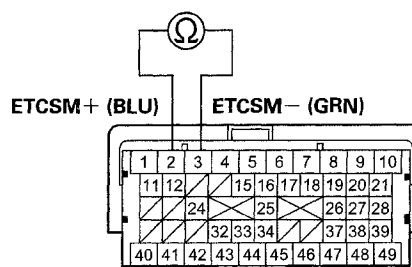


JUMPER WIRE

Wire side of female terminals

20. Check for continuity between ECM/PCM connector terminals C2 and C3.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 21.

NO—Repair open in the wires between the throttle body and the ECM/PCM (C2, C3), then go to step 24.

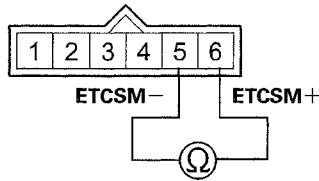
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

21. At the throttle body side, measure the resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

THROTTLE BODY 6P CONNECTOR



Terminal side of male terminals

Is there about 1.0 k Ω or more?

YES—Go to step 23.

NO—Go to step 30.

22. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
23. Replace the throttle body (see page 11-425).
24. Reconnect all connectors.
25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-337).
28. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
- ENGINE SPEED
 - VSS
 - APP SENSOR
29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2101 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see page 11-421), and go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

32. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- APP SENSOR

33. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2101 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see page 11-421). If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2118: Throttle Actuator Current Range/Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Slowly press the accelerator pedal to the floor.
4. Check for Pending or Confirmed DTCs with the HDS.

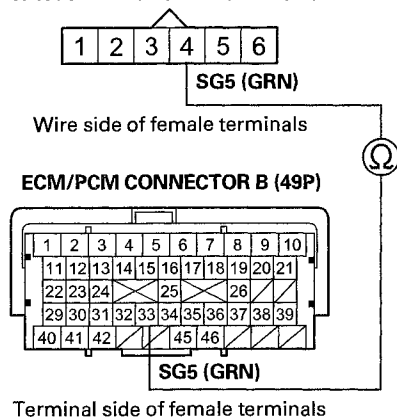
Is DTC P2118 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Jump the SCS line with the HDS.
7. Disconnect the throttle body 6P connector.
8. Disconnect ECM/PCM connector B (49P).
9. Check for continuity between ECM/PCM connector terminal B33 and throttle body 6P connector terminal No. 4.

THROTTLE BODY 6P CONNECTOR



Is there continuity?

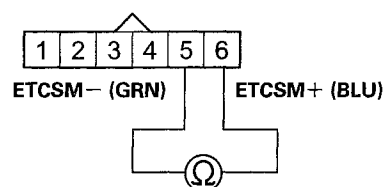
YES—Go to step 10.

NO—Repair open in the wire between the throttle body and the ECM/PCM (B33), then go to step 18.

10. Disconnect ECM/PCM connector C (49P).

11. Check for continuity between throttle body 6P connector terminals No. 5 and No. 6.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

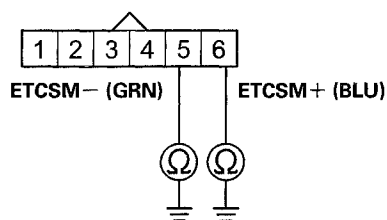
Is there continuity?

YES—Repair short in the wires between throttle body 6P connector terminal No. 5 (ETCS- line) and No. 6 (ETCS+ line), then go to step 18.

NO—Go to step 12.

12. Check for continuity between body ground and throttle body 6P connector terminals No. 5 and No. 6 individually.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the throttle body 6P connector and body ground, then go to step 18.

NO—Go to step 13.

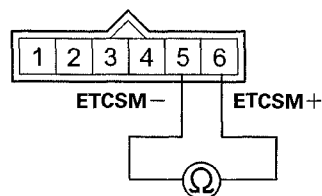
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

13. At the throttle body side, measure the resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

THROTTLE BODY 6P CONNECTOR



Terminal side of female terminals

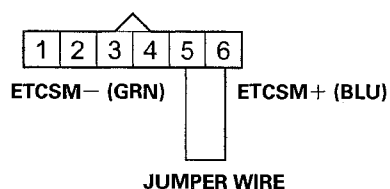
Is there about 1.0 Ω or less?

YES—Go to step 14.

NO—Go to step 17.

14. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

THROTTLE BODY 6P CONNECTOR

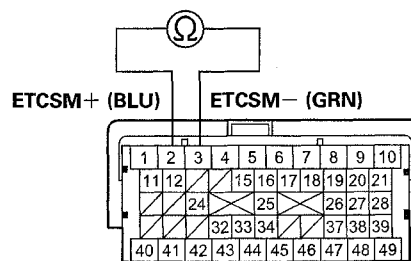


JUMPER WIRE

Wire side of female terminals

15. Check for continuity between ECM/PCM connector terminals C2 and C3.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

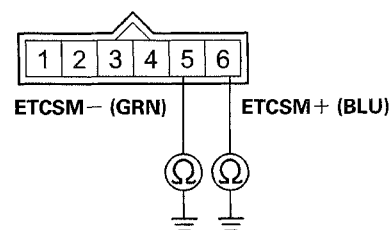
Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the throttle body and the ECM/PCM (C2, C3); then go to step 18.

16. At the throttle body side, check for continuity between body ground and throttle body 6P connector terminals No. 5 and No. 6 individually.

THROTTLE BODY 6P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 17.

NO—Go to step 26.



17. Replace the throttle body (see page 11-425).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
23. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
24. Slowly press the accelerator pedal to the floor.
25. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P2118 indicated?
YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.
NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■
26. Reconnect all connectors.
27. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
28. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
29. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
30. Slowly press the accelerator pedal to the floor.
31. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P2118 indicated?
YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 27. If the ECM/PCM was substituted, go to step 1.
NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P2122: APP Sensor A (TP Sensor D) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check APP SENSOR A in the DATA LIST with the HDS.

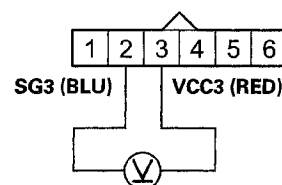
Is there about 0.2 V or less?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM.■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Measure the voltage between APP sensor 6P connector terminals No. 2 and No. 3.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 7.

NO—Go to step 17.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

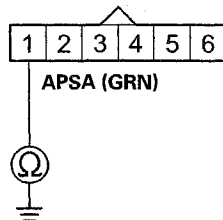
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

10. Check for continuity between APP sensor 6P connector terminal No. 1 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

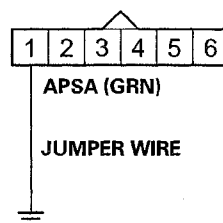
Is there continuity?

YES—Repair short in the wire between the APP sensor and the ECM/PCM (A18), then go to step 24.

NO—Go to step 11.

11. Connect APP sensor 6P connector terminal No. 1 to body ground with a jumper wire.

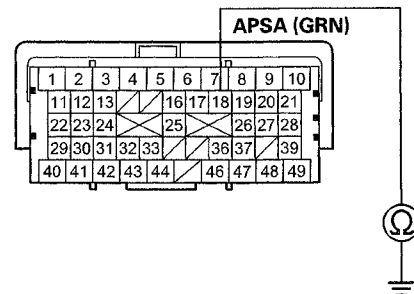
APP SENSOR 6P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A18 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

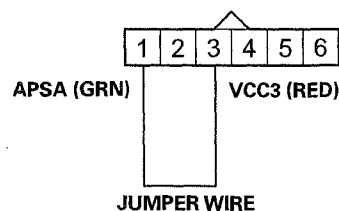
YES—Go to step 13.

NO—Repair open in the wire between the APP sensor and the ECM/PCM (A18), then go to step 24.

13. Reconnect ECM/PCM connector A (49P).

14. Connect APP sensor 6P connector terminals No. 1 and No. 3 with a jumper wire.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

16. Check APP SENSOR A in the DATA LIST with the HDS.

Is there 0.2 V or less?

YES—Go to step 29.

NO—Go to step 22.

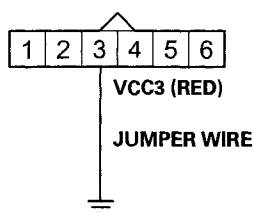
17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

18. Jump the SCS line with the HDS.



19. Disconnect ECM/PCM connector A (49P).
20. Connect APP sensor 6P connector terminal No. 3 to body ground with a jumper wire.

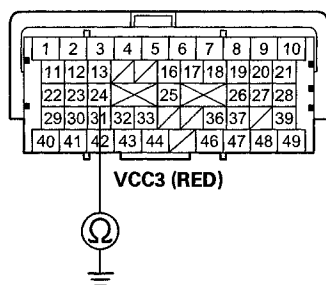
APP SENSOR 6P CONNECTOR



Wire side of female terminals

21. Check for continuity between ECM/PCM connector terminal A24 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the APP sensor and the ECM/PCM (A24), then go to step 24.

22. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
23. Replace the accelerator pedal module (see page 11-319).
24. Reconnect all connectors.
25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-337).
28. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

29. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
30. Reconnect all connectors.
31. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
32. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2123: APP Sensor A (TP Sensor D) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check APP SENSOR A in the DATA LIST with the HDS.

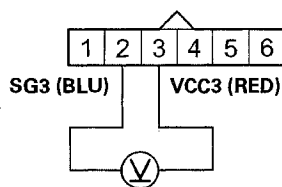
Is there about 4.9 V or more?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Measure the voltage between APP sensor 6P connector terminals No. 2 and No. 3.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

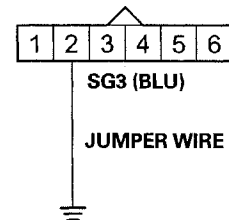
YES—Go to step 12.

NO—Go to step 7.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

10. Connect APP sensor 6P connector terminal No. 2 to body ground with a jumper wire.

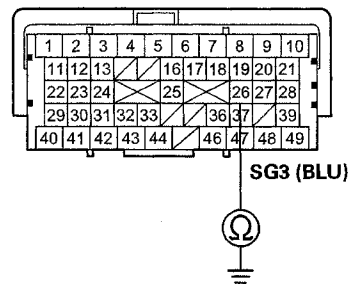
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the APP sensor and the ECM/PCM (A26), then go to step 14.



12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Replace the accelerator pedal module (see page 11-319).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2123 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
21. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2123 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2127: APP Sensor B (TP Sensor E) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check APP SENSOR B in the DATA LIST with the HDS.

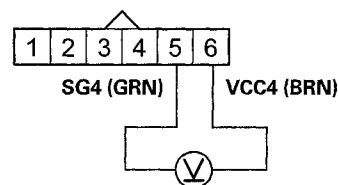
Is there about 0.2 V or less?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Measure the voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 7.

NO—Go to step 17.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

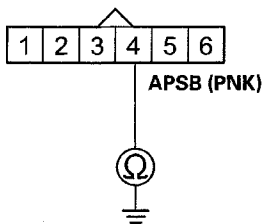
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

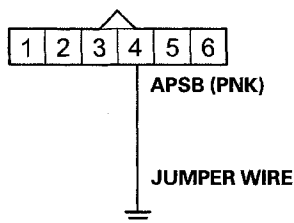
Is there continuity?

YES—Repair short in the wire between the APP sensor and the ECM/PCM (A19), then go to step 24.

NO—Go to step 11.

11. Connect APP sensor 6P connector terminal No. 4 to body ground with a jumper wire.

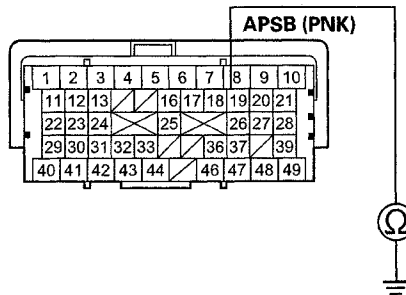
APP SENSOR 6P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A19 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

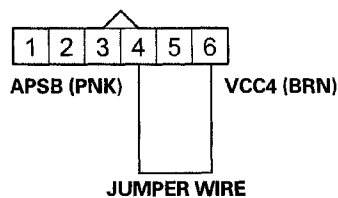
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the APP sensor and the ECM/PCM (A19), then go to step 24.

13. Reconnect ECM/PCM connector A (49P).
14. Connect APP sensor 6P connector terminals No. 4 and No. 6 with a jumper wire.

APP SENSOR 6P CONNECTOR



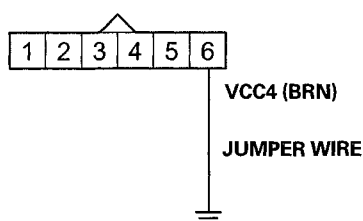
Wire side of female terminals

15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Check APP SENSOR B in the DATA LIST with the HDS.
Is there about 0.2 V or less?
YES—Go to step 29.
NO—Go to step 22.
17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
18. Jump the SCS line with the HDS.



19. Disconnect ECM/PCM connector A (49P).
20. Connect APP sensor 6P connector terminal No. 6 to body ground with a jumper wire.

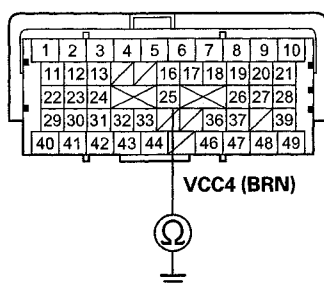
APP SENSOR 6P CONNECTOR



Wire side of female terminals

21. Check for continuity between ECM/PCM connector terminal A25 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the APP sensor and the ECM/PCM (A25), then go to step 24.

22. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
23. Replace the accelerator pedal module (see page 11-319).
24. Reconnect all connectors.
25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-337).
28. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2127 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

29. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
30. Reconnect all connectors.
31. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
32. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2127 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2128: APP Sensor B (TP Sensor E)

Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check APP SENSOR B in the DATA LIST with the HDS.

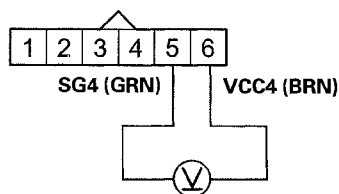
Is there about 4.0 V or more?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Measure the voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

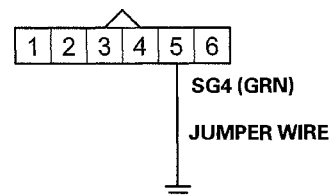
YES—Go to step 12.

NO—Go to step 7.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

10. Connect APP sensor 6P connector terminal No. 5 to body ground with a jumper wire.

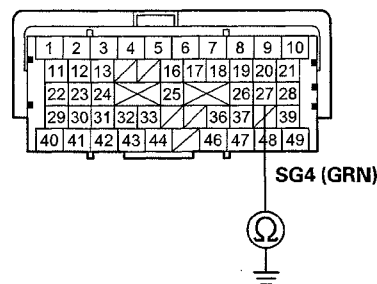
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between ECM/PCM connector terminal A27 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the APP sensor and the ECM/PCM (A27), then go to step 14.



12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Replace the accelerator pedal module (see page 11-319).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2128 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
21. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2128 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2135: TP Sensor A/B Incorrect Voltage Correlation

CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II)/press the engine start/stop button, or while the ignition switch is in ON (II)/vehicle in ON mode. If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2135 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the intake air duct from the throttle body.
7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Visually check the throttle valve operation while you clear the DTC with the HDS.

Does the valve temporarily move to its fully closed position?

YES—Go to step 15.

NO—Go to step 9.

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector B (49P).

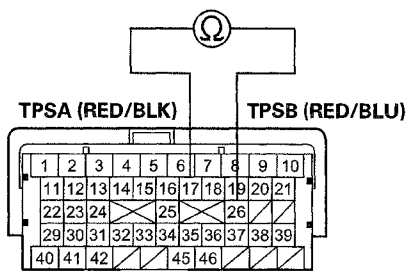
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

12. Check for continuity between ECM/PCM connector terminals B17 and B26.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

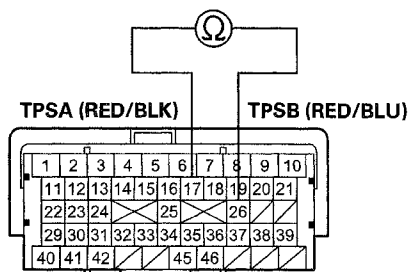
Is there continuity?

YES—Go to step 13.

NO—Go to step 22.

13. Disconnect the throttle body 6P connector.
14. Check for continuity between ECM/PCM connector terminals B17 and B26.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wires between the ECM/PCM connector terminals B17 (TPSA line) and B26 (TPSB line), then go to step 17.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
16. Replace the throttle body (see page 11-425).
17. Reconnect all connectors.
18. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see page 11-337).
21. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

22. Reconnect all connectors.
23. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
24. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2138: APP Sensor A/B (TP Sensor D/E) Incorrect Voltage Correlation

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with HDS.
3. Press the accelerator pedal to the floor.
4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2138 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■

5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

Are they the same voltage?

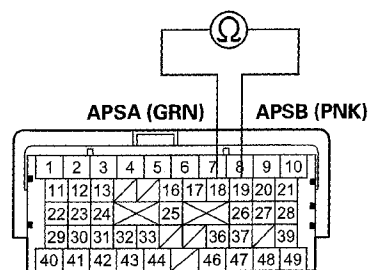
YES—Go to step 6.

NO—Go to step 12.

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector A (49P).

9. Check for continuity between ECM/PCM connector terminals A18 and A19.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

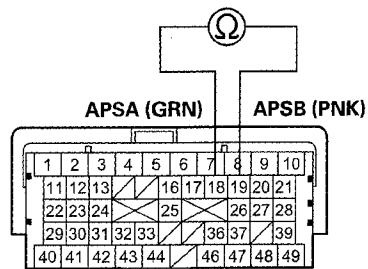
YES—Go to step 10.

NO—Go to step 22.

10. Disconnect the APP sensor 6P connector.

11. Check for continuity between ECM/PCM connector terminals A18 and A19.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wires between ECM/PCM connector terminals A18 (APSA line) and A19 (APSB line), then go to step 14.

NO—Go to step 13.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Replace the accelerator pedal module (see page 11-319).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-337).
18. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Press the accelerator pedal to the floor.
21. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2138 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

22. Reconnect all connectors.
23. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
24. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
26. Press the accelerator pedal to the floor.
27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2138 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2176: Throttle Actuator Control System Idle Position Not Learned

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II)/press the engine start/stop button, or while the ignition switch is in ON (II)/vehicle in ON mode. If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 first, then recheck for DTC P2176.

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

4. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 10 seconds.

5. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2176 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see page 11-421). ■

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Disconnect the intake air duct from the throttle body.
8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
9. Clear the DTC with the HDS.
10. Visually check the throttle valve operation while doing the ETCS TEST in the INSPECTION MENU with the HDS.

Does the throttle valve move to its fully closed position?

YES—Go to step 11.

NO—Go to step 12.



11. Check for sludge or carbon on the throttle valve.

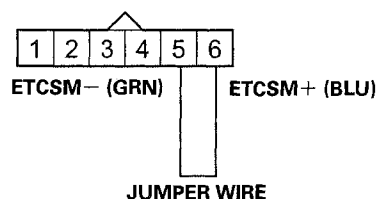
Is there sludge or carbon on the throttle valve?

YES—Clean the throttle body (see page 11-421), then go to step 21.

NO—Go to step 18.

12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector C (49P).
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

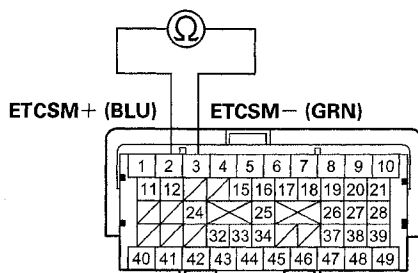
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

17. Check for continuity between ECM/PCM connector terminals C2 and C3.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 28.

NO—Repair open in the wires between the throttle body and the ECM/PCM (C2, C3), then go to step 21.

18. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
19. Replace the throttle body (see page 11-425).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-337).
24. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 10 seconds.
26. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2176 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then clean the throttle body (see page 11-421), and go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
29. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
30. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 10 seconds.
31. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2176 indicated?

YES—Check for poor connections or loose terminals at throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

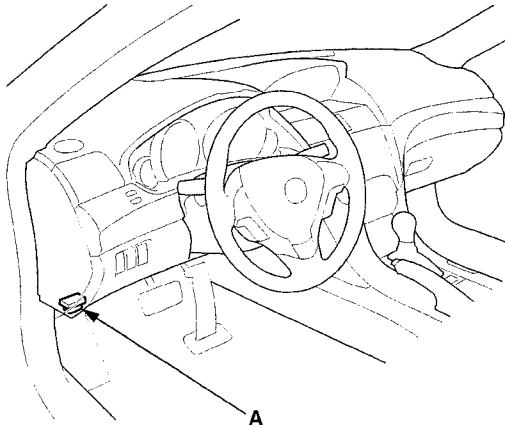
Electronic Throttle Control System

APP Sensor Signal Inspection

NOTE:

- This procedure checks the APP sensor in its fully closed position. In any other position, the APP sensor stores DTCs which are covered in other troubleshooting procedures.
- Check for Pending or Confirmed DTCs with the HDS before doing this procedure. If any DTCs are indicated, troubleshoot them first, then do this procedure.
- Press the accelerator pedal several times, to check its operation. If it does not operate smoothly, check the pedal. If you find a problem, replace the accelerator pedal module (see page 11-319).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-258).
4. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.
 - If it is 0 %, the APP sensor is OK.
 - If it is not 0 %, update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then go to step 5.

5. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

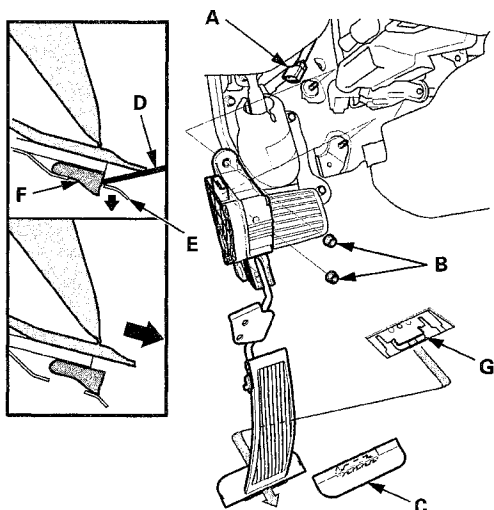
- If it is 0 %, the APP sensor is OK.
- If it is not 0 %, replace the accelerator pedal module (see page 11-319), then go to step 1.



Accelerator Pedal Module Removal and Installation

Removal

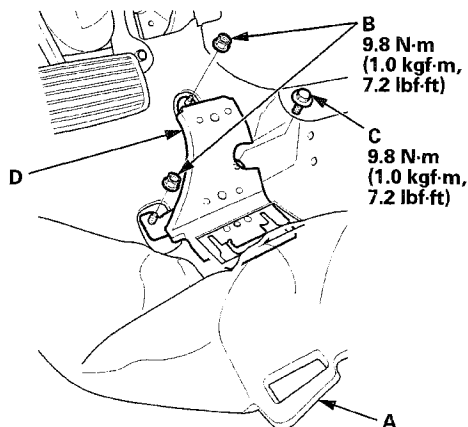
1. Remove the driver's dashboard undercover (see page 20-118).
2. Disconnect the APP sensor 6P connector (A).



3. Remove the two mounting nuts (B), then remove the clip (C). Using a flat-tip screwdriver (D), push the lock (E), then remove the accelerator pedal pad (F) from the pedal stop (G).
4. Remove the accelerator pedal module.

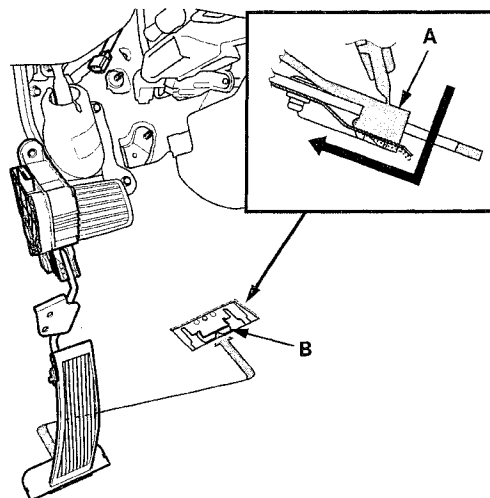
NOTE:

- The APP sensor is not available separately. Do not disassemble the accelerator pedal module.
- If the pedal stop is damaged, replace it by pulling back the carpet (A), and removing the nuts (B), the bolt (C), and the pedal stop (D).



Installation

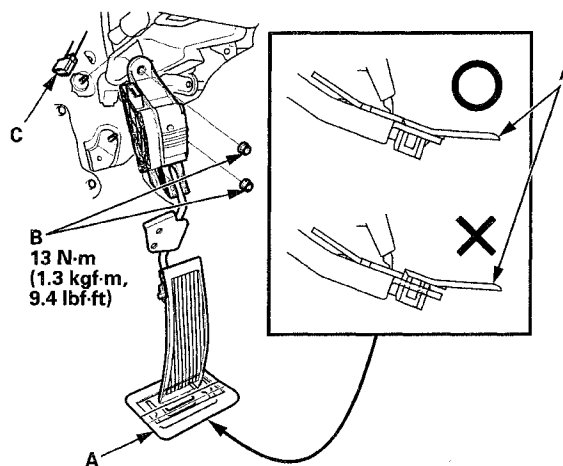
1. Install the accelerator pedal pad (A) to the pedal stop (B). Slide the pad until it locks with a clicking sound.



2. Install a new clip (A).

NOTE:

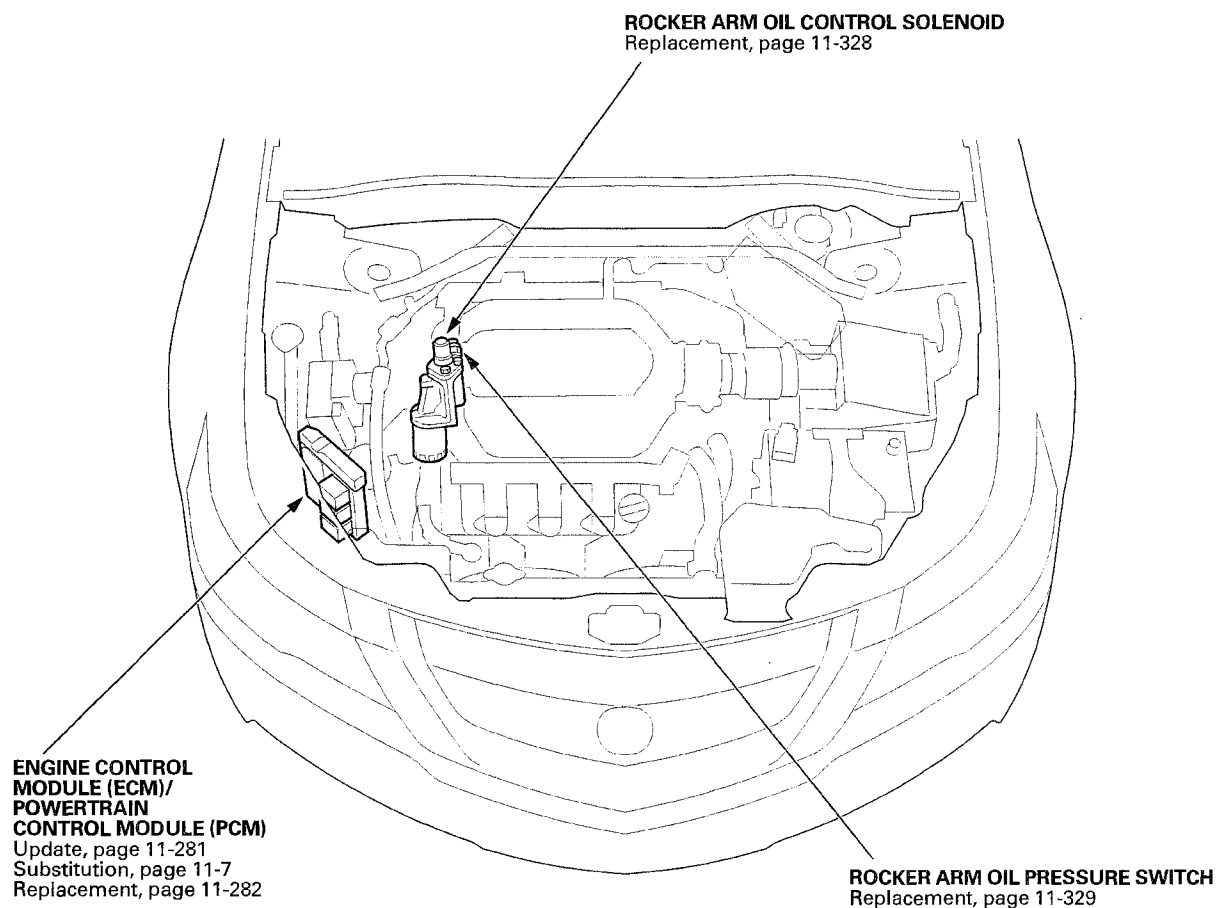
- The clip must be replaced whenever the accelerator pedal module is installed.
- Make sure that the accelerator pedal module and the clip are secure.



3. Install the nuts (B), and connect the APP sensor 6P connector (C).

VTEC

Component Location Index





DTC Troubleshooting

DTC P2646: Rocker Arm Oil Pressure Switch Circuit Low Voltage

Special Tools Required

- Pressure Gauge Adapter 07NAJ-P07010A
- A/T Low Pressure Gauge w/Panel 07406-0070301
- AT Pressure Test Hose 07AAJ-PY4A100
- A/T Pressure Adapter 07MAJ-PY40120
- Oil Pressure Hose 07ZAJ-S5AA200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

Is the engine oil level OK?

YES—Go to step 2.

NO—Adjust the engine oil to the proper level, then go to step 19.

2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM. ■

NO—Go to step 5.

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the rocker arm oil pressure switch 2P connector.
7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Check the VTEC PRES SW in the DATA LIST with the HDS.

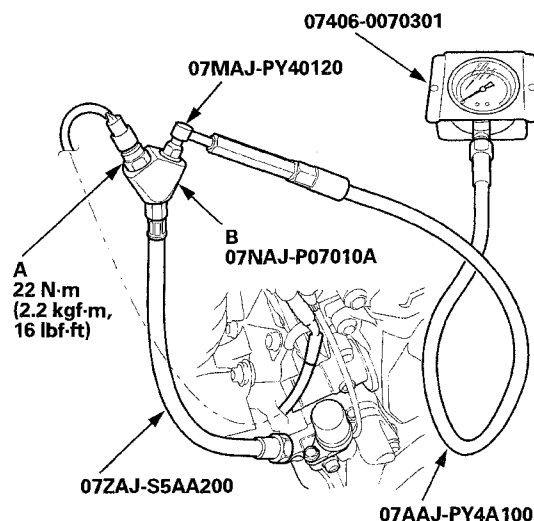
Is switch ON indicated?

YES—Go to step 14.

NO—Go to step 9.

9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

10. Remove the rocker arm oil pressure switch (A), attach the special tools as shown, then attach the rocker arm oil pressure switch to the oil pressure gauge adapter (B).



11. Start the engine.
12. Do the VTEC TEST in the INSPECTION MENU with the HDS.
13. Check the oil pressure.

Does the oil pressure increase to at least 392 kPa (4.0 kgf/cm², 56.9 psi)?

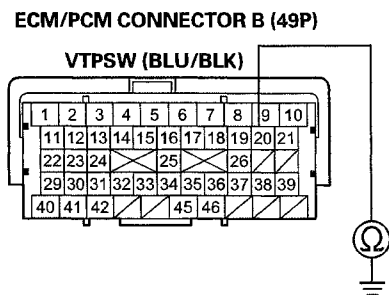
YES—Replace the rocker arm oil pressure switch (see page 11-329), then go to step 18.

NO—Inspect the VTEC system. If it is OK, replace the rocker arm oil control solenoid (see page 11-328), then go to step 18.
14. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector B (49P).

(cont'd)

DTC Troubleshooting (cont'd)

17. Check for continuity between ECM/PCM connector terminal B20 and body ground.



Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B20) and the rocker arm oil pressure switch, then go to step 18.

NO—Go to step 24.

18. Reconnect all connectors.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Do the VTEC TEST in the INSPECTION MENU with the HDS.
23. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2646 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

24. Reconnect all connectors.

25. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

26. Do the VTEC TEST in the INSPECTION MENU with the HDS.

27. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2646 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 26. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P2647: Rocker Arm Oil Pressure Switch Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check the engine oil level.

Is the engine oil level OK?

YES—Go to step 2.

NO—Adjust the engine oil level, then go to step 17.

2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

3. Clear the DTC with the HDS.

4. Check the rocker arm oil pressure switch in the DATA LIST with the HDS.

Does the screen indicate OFF?

YES—Go to step 5.

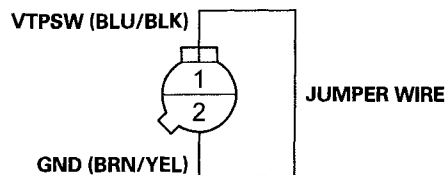
NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

6. Disconnect the rocker arm oil pressure switch 2P connector.

7. Connect rocker arm oil pressure switch 2P connector terminals No. 1 and No. 2 with a jumper wire.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

9. Check the rocker arm oil pressure switch in the DATA LIST with the HDS.

Does the screen indicate ON?

YES—Replace the rocker arm oil pressure switch (see page 11-329), then go to step 16.

NO—Go to step 10.

10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

11. Remove the jumper wire from the rocker arm oil pressure switch.

12. Jump the SCS line with the HDS.

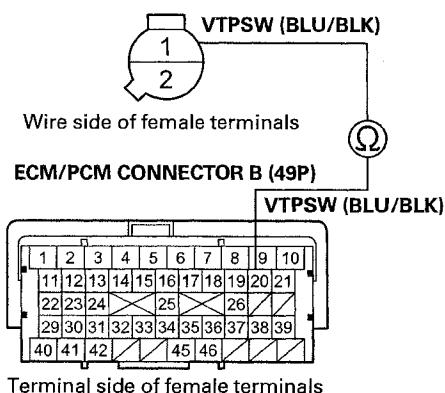
13. Disconnect ECM/PCM connector B (49P).

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for continuity between ECM/PCM connector terminal B20 and rocker arm oil pressure switch 2P connector terminal No. 1.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



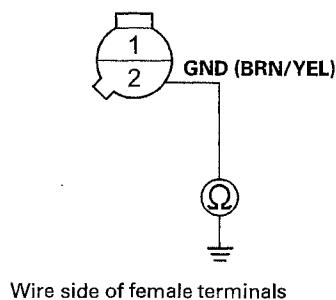
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the ECM/PCM (B20) and the rocker arm oil pressure switch, then go to step 16.

15. Check for continuity between the rocker arm oil pressure switch 2P connector terminal No. 2 and body ground.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the rocker arm oil pressure switch (see page 11-329) and G101, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

18. Reset the ECM/PCM with the HDS.

19. Do the ECM/PCM idle learn procedure (see page 11-337).

20. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM, then go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

22. Reconnect all connectors.

23. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

24. Start the engine, and let it idle.

25. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 26.



26. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2648: Rocker Arm Oil Control Solenoid Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. ■

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Disconnect the rocker arm oil control solenoid 1P connector.
6. At the solenoid side, measure the resistance between the rocker arm oil control solenoid 1P connector terminal and the solenoid valve body.

ROCKER ARM OIL CONTROL SOLENOID 1P CONNECTOR



Terminal side of male terminals

Is there 14—30 Ω at room temperature?

YES—Go to step 7.

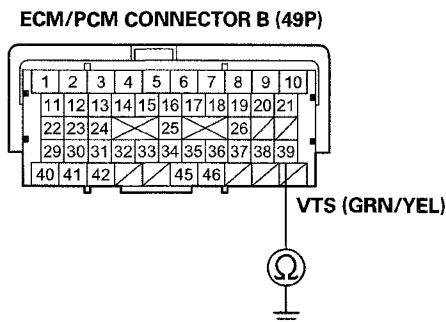
NO—Go to step 10.

7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector B (49P).

(cont'd)

DTC Troubleshooting (cont'd)

9. Check for continuity between ECM/PCM connector terminal B39 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B39) and the rocker arm oil control solenoid, then go to step 11.

NO—Go to step 18.

10. Replace the rocker arm oil control solenoid (see page 11-328).
11. Reconnect all connectors.
12. Turn the ignition switch ON (II), or press the engine start/stop button to select the ON mode.
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see page 11-337).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.
16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2648 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1.

NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
20. Do the VTEC TEST in the INSPECTION MENU with the HDS.
21. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2648 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.



DTC P2649: Rocker Arm Oil Control Solenoid Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2649 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the rocker arm oil control solenoid 1P connector.
7. At the solenoid side, measure the resistance between the rocker arm oil control solenoid 1P connector terminal and the solenoid valve body.

ROCKER ARM OIL CONTROL SOLENOID 1P CONNECTOR



Terminal side of male terminals

Is there 14–30 Ω at room temperature?

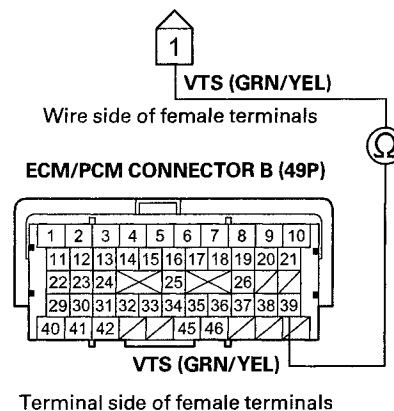
YES—Go to step 8.

NO—Go to step 11.

8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (49P).

10. Check for continuity between ECM/PCM connector terminal B39 and the rocker arm oil control solenoid 1P connector terminal.

ROCKER ARM OIL CONTROL SOLENOID 1P CONNECTOR



Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the ECM/PCM (B39) and the rocker arm oil control solenoid, then go to step 12.

11. Replace the rocker arm oil control solenoid (see page 11-328).
12. Reconnect all connectors.
13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-337).
16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2649 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1.

NO—Go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

17. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
20. Start the engine, and let it idle.
21. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2649 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

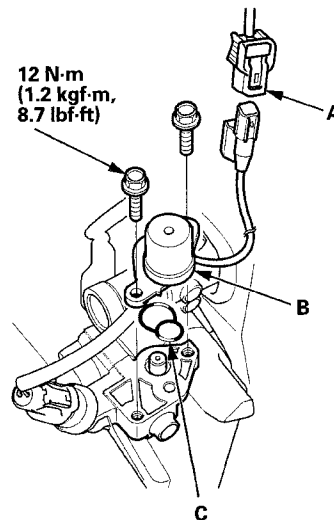
Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

Rocker Arm Oil Control Solenoid Replacement

1. Disconnect the rocker arm oil control solenoid connector (A).

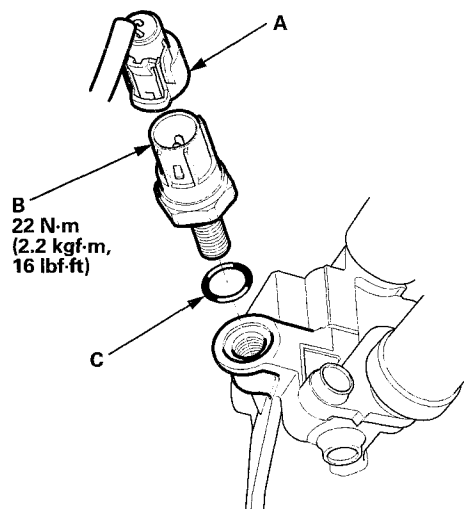


2. Remove the rocker arm oil control solenoid (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).



Rocker Arm Oil Pressure Switch Removal/Installation

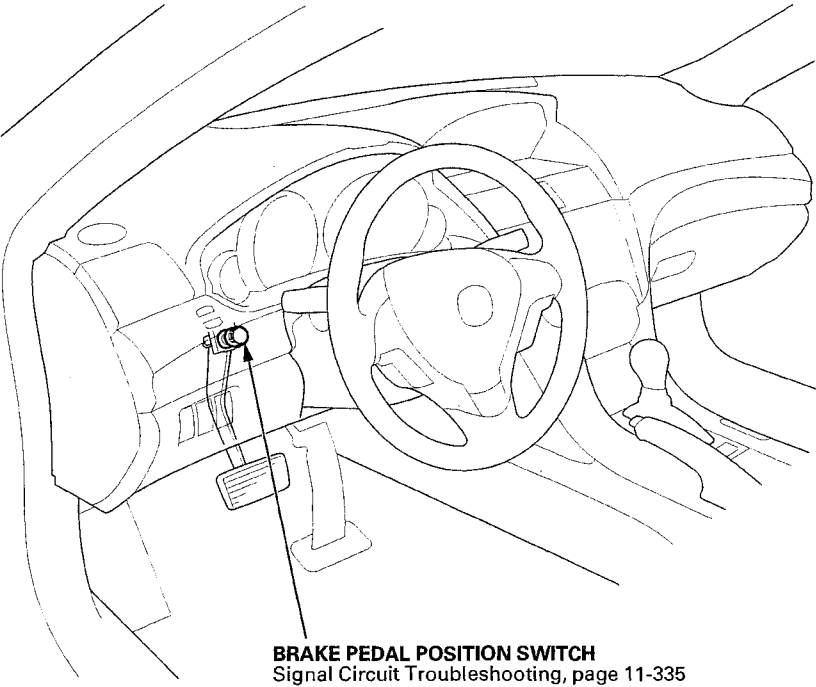
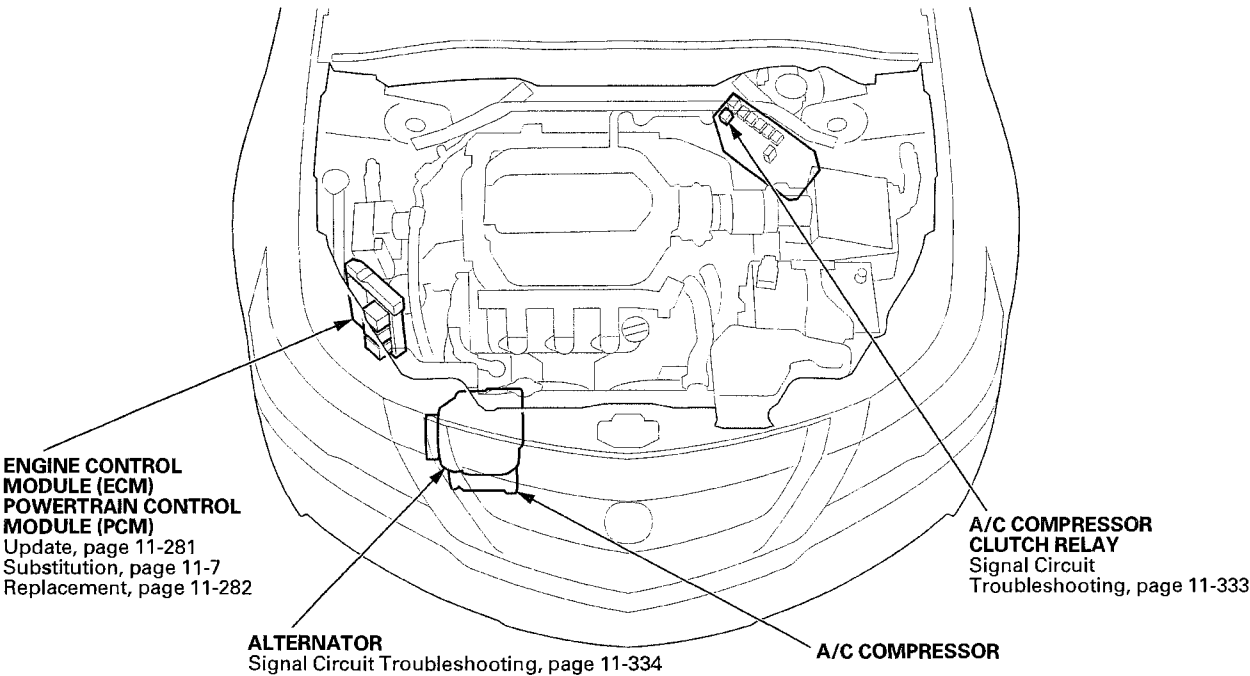
1. Disconnect the rocker arm oil pressure switch connector (A), then remove the rocker arm oil pressure switch (B).



2. Install the parts in the reverse order of removal with a new O-ring (C).

Idle Control System

Component Location Index



cardiagn.com



DTC Troubleshooting

DTC P0506: Idle Control System RPM Lower Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 20 seconds or more.
4. Check for these conditions in the DATA LIST with the HDS:
 - ECT SENSOR 1 above 158 °F (70 °C)
 - IAT SENSOR above 32 °F (0 °C)
 - VSS is 0 mph (0 km/h)
 - ST FUEL TRIM between 0.73 and 1.47
 - FSS is CLOSED
5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, go to step 15. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

6. Remove the intake air duct from the throttle body.
7. Check for dirt, carbon, or damage in the throttle bore.

Is there dirt, carbon, or damage in the throttle bore?

YES—If there is dirt or carbon, clean the throttle body (see page 11-421). Also check for damage to the air cleaner element (see page 11-422), then go to step 9. If there is damage in the throttle bore, go to step 8.

NO—Check the A/C system or the power steering system, then go to step 17.

8. Replace the throttle body (see page 11-425).

9. Reset the ECM/PCM with the HDS.

10. Do the ECM/PCM idle learn procedure (see page 11-337).

11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 20 seconds or more.

12. Check for these conditions in the DATA LIST with the HDS:

- ECT SENSOR 1 above 158 °F (70 °C)
- IAT SENSOR above 32 °F (0 °C)
- VSS is 0 mph (0 km/h)
- ST FUEL TRIM between 0.73 and 1.47
- FSS is CLOSED

13. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0506 indicated?

YES—Go to step 1 and recheck.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check the A/C system and/or the power steering system, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

15. Remove the intake air duct from the throttle body.

16. Check for dirt, carbon, or damage in the throttle bore.

Is there dirt, carbon, or damage in the throttle bore?

YES—If there is dirt or carbon, clean the throttle body (see page 11-421). Also check for damage to the air cleaner element (see page 11-422), then go to step 9. If there is damage in the throttle bore, go to step 8.

NO—Go to step 17.

(cont'd)

Idle Control System

DTC Troubleshooting (cont'd)

17. Recheck with different load conditions (turn on the headlights, blower motor, the rear window defogger and/or the A/C, change the gear position, etc.).
18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Intermittent failure, the system is OK at this time. ■

NO—If the screen indicates FAILED, check the A/C system and/or the power steering system, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

DTC P0507: Idle Control System RPM Higher Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.), then go to step 3.

5. Check for vacuum leaks at these parts:

- PCV valve
- PCV hose
- EVAP canister purge valve
- Throttle body
- Intake manifold
- Brake booster hose
- Brake booster

Are there any leaks?

YES—Repair or replace the leaking part(s), then go to step 6.

NO—Go to step 6.



A/C Signal Circuit Troubleshooting

6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see page 11-337).
9. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
10. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0507 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1.

NO—Go to step 11.

11. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (turn on the headlights, the blower motor, or the A/C; change the gear position, etc.), then go to step 9.

1. Start the engine.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C CLUTCH in the DATA LIST with the HDS.

Does it indicate ON?

YES—Go to step 5.

NO—Check the A/C system (see page 21-7).

5. Check the A/C system operation.

Does the A/C system operate?

YES—The air conditioning system circuit is OK. ■

NO—Go to step 6.

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

Is there a clicking noise from the A/C compressor clutch?

YES—Do the A/C system test (see page 21-131).

NO—Go to step 9.

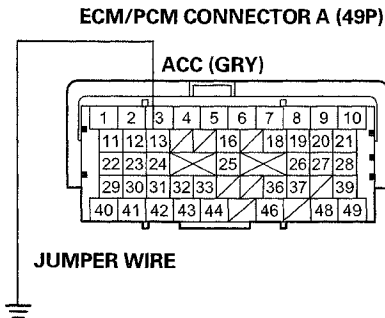
9. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (49P).
12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

(cont'd)

Idle Control System

A/C Signal Circuit Troubleshooting (cont'd)

13. Momentarily connect ECM/PCM connector terminal A13 to body ground with a jumper wire several times.



Terminal side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

NO—Check for poor connections or loose terminals at the A/C clutch relay and the ECM/PCM. If the connections are OK, check the A/C clutch relay (see page 22-88). If needed, repair open in the wire between the ECM/PCM (A13) and the A/C clutch relay, and check the other A/C system parts.

Alternator FR Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.

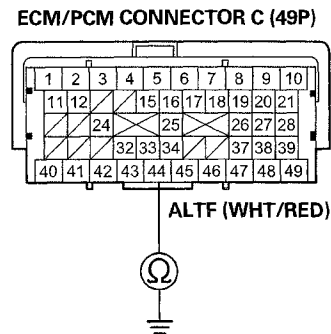
3. Check if the indicated percentage varies when the headlight switch is turned on.

Does the percentage vary?

YES—The alternator signal circuit is OK. ■

NO—Go to step 4.

4. Turn the headlight switch off, and turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect ECM/PCM connector C (49P).
8. Check for continuity between ECM/PCM connector terminal C44 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C44) and the alternator. ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■



Brake Pedal Position Switch Signal Circuit Troubleshooting

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

2. Check the BRAKE SWITCH in the DATA LIST with the HDS.

Does it indicate OFF?

YES—Go to step 3.

NO—Inspect the brake pedal position switch (see page 19-6). ■

3. Press the brake pedal, and check the BRAKE SWITCH in the DATA LIST with the HDS.

Does it change to ON?

YES—The brake pedal position switch signal circuit (BKSX line) is OK. ■

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

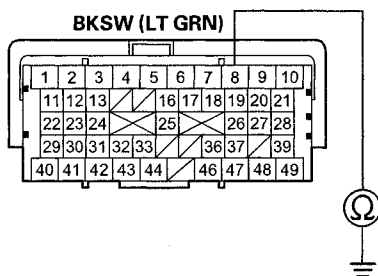
5. Jump the SCS line with the HDS.

6. Disconnect the brake pedal position switch 4P connector.

7. Disconnect ECM/PCM connector A (49P).

8. Check for continuity between ECM/PCM connector terminal A8 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

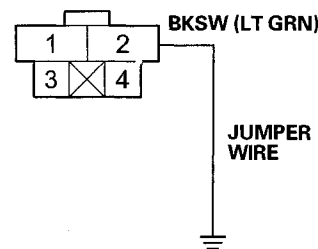
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A8) and the brake pedal position switch. Also replace the No. 10 HORN/STOP (20 A) fuse in the under-hood fuse/relay box. ■

NO—Go to step 9.

9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

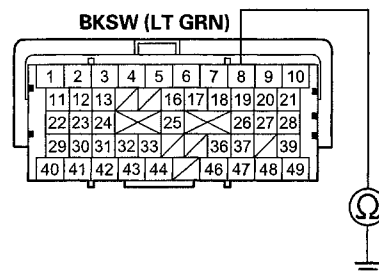
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminal A8 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the brake pedal position switch, and also replace the No. 10 HORN/STOP (20 A) fuse in the under-hood fuse/relay box. If the circuit is OK, inspect the brake pedal position switch (see page 19-6), and replace it if needed. ■

NO—Repair open in the wire between the ECM/PCM (A8) and the brake pedal position switch. ■

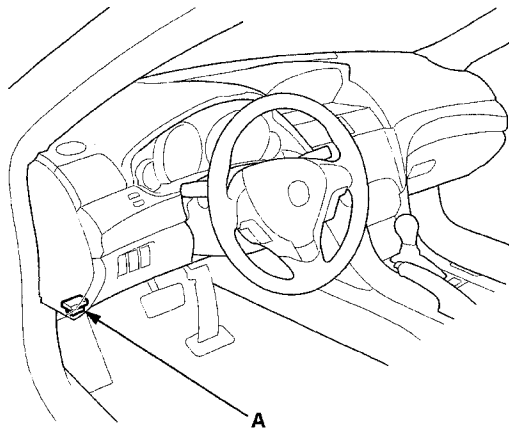
Idle Control System

Idle Speed Inspection

NOTE:

- Before checking the idle speed, check these items:
 - The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.
 - Ignition timing
 - Spark plugs
 - Air cleaner
 - PCV system
- Apply the parking brake, and make sure the headlights are off.

1. Disconnect the evaporative emission (EVAP) canister purge valve connector.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-258).

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
5. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

Idle speed should be:

J35Z6 engine	680 ± 50 rpm (in P or N)
J37A4 engine (M/T)	750 ± 50 rpm (in neutral)
J37A4 engine (A/T)	700 ± 50 rpm (in P or N)

6. Let the engine idle for 1 minute with high electric load (the A/C on, the temperature set to max cool, the blower fan on high, the headlights on high beam).

Idle speed should be:

J35Z6 engine	680 ± 50 rpm (in P or N)
J37A4 engine (M/T)	750 ± 50 rpm (in neutral)
J37A4 engine (A/T)	700 ± 50 rpm (in P or N)

NOTE: If the idle speed is not within specification, do the ECM/PCM idle learn procedure (see page 11-337). If the idle speed is still not within specification, go to the symptom troubleshooting.

7. Reconnect the EVAP canister purge valve connector.



ECM/PCM Idle Learn Procedure

The idle learn procedure must be done so the ECM/PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace the ECM/PCM.
- Reset the ECM/PCM.
- Update the ECM/PCM.
- Replace or clean the throttle body.
- Disassemble the engine or transmission.

NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

Procedure

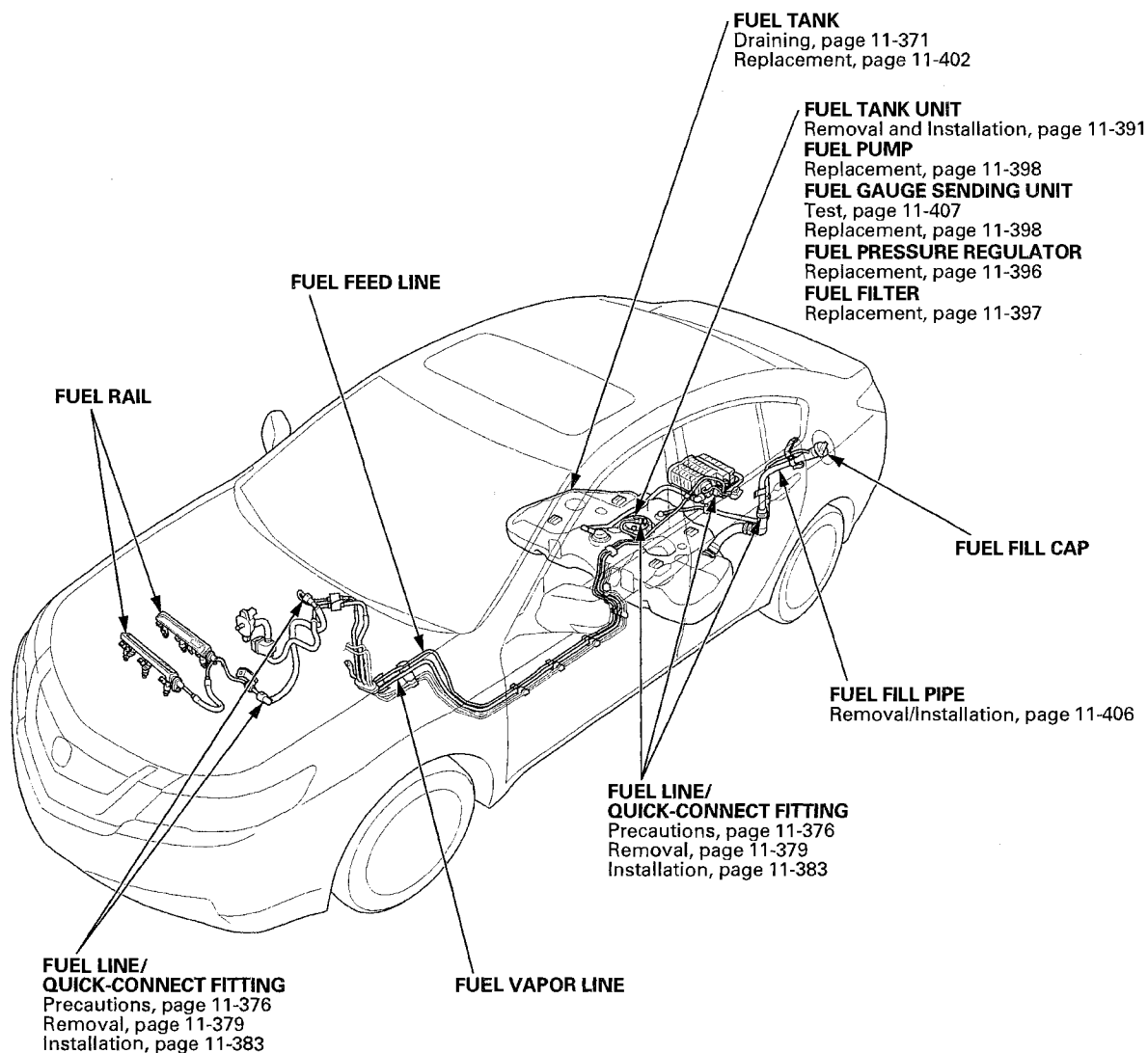
1. Make sure all electrical items (the A/C, the audio, the lights, etc.) are off.
2. Reset the ECM/PCM with the HDS.
3. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and wait 2 seconds.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194 °F (90 °C).
5. Let the engine idle for about 5 minutes with the throttle fully closed.

~~NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.~~

Fuel Supply System

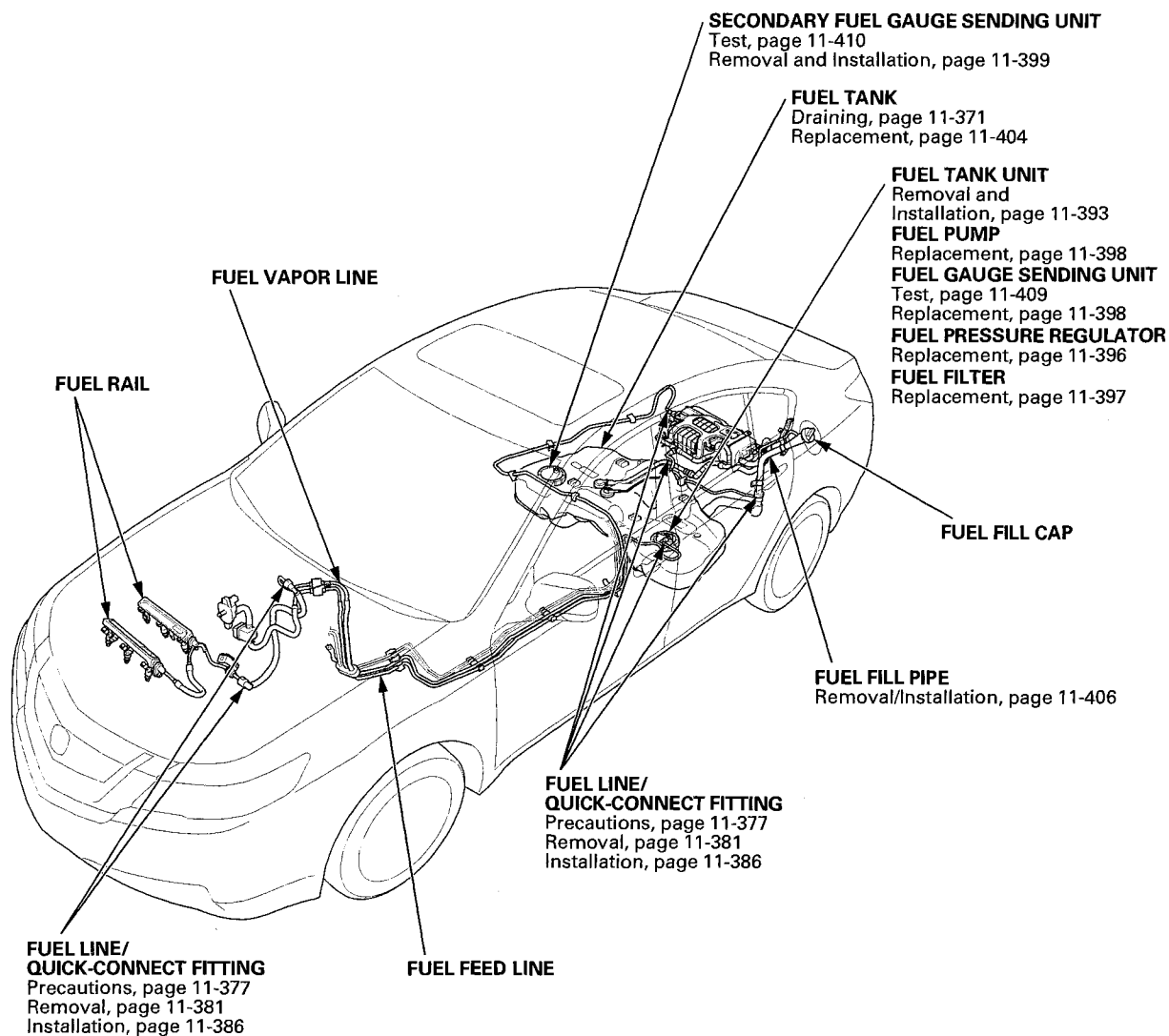
Component Location Index

Without SH-AWD





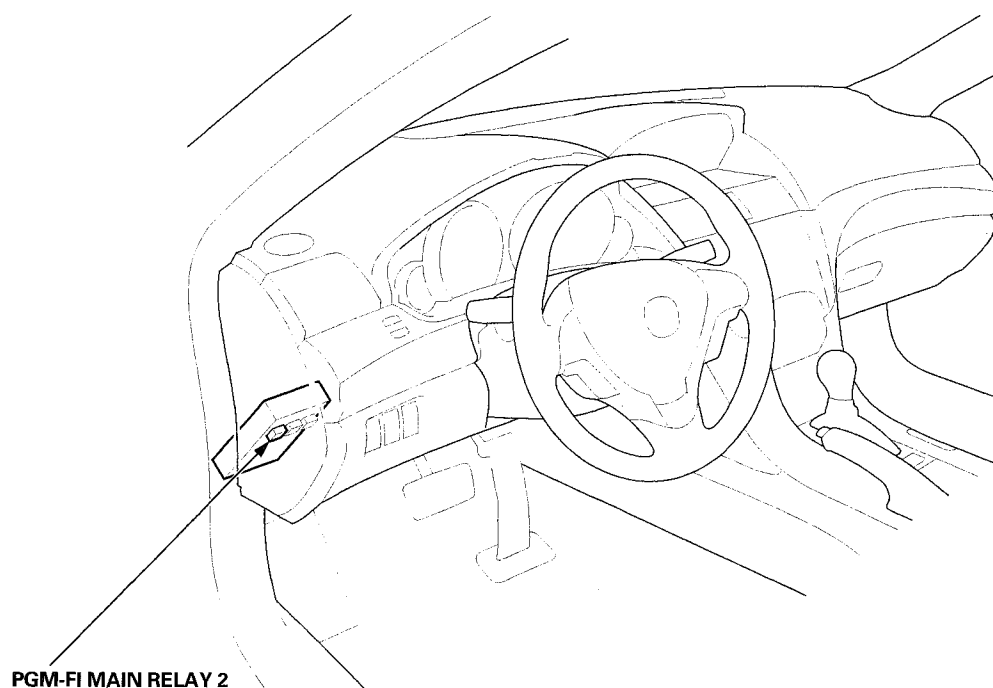
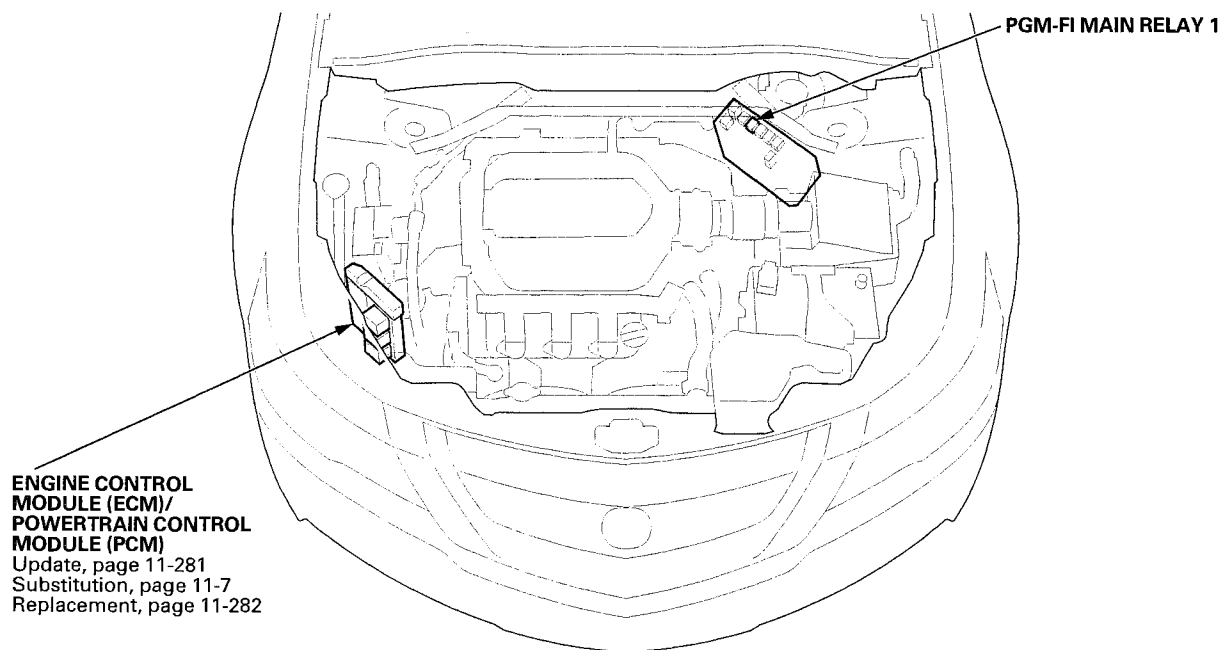
With SH-AWD



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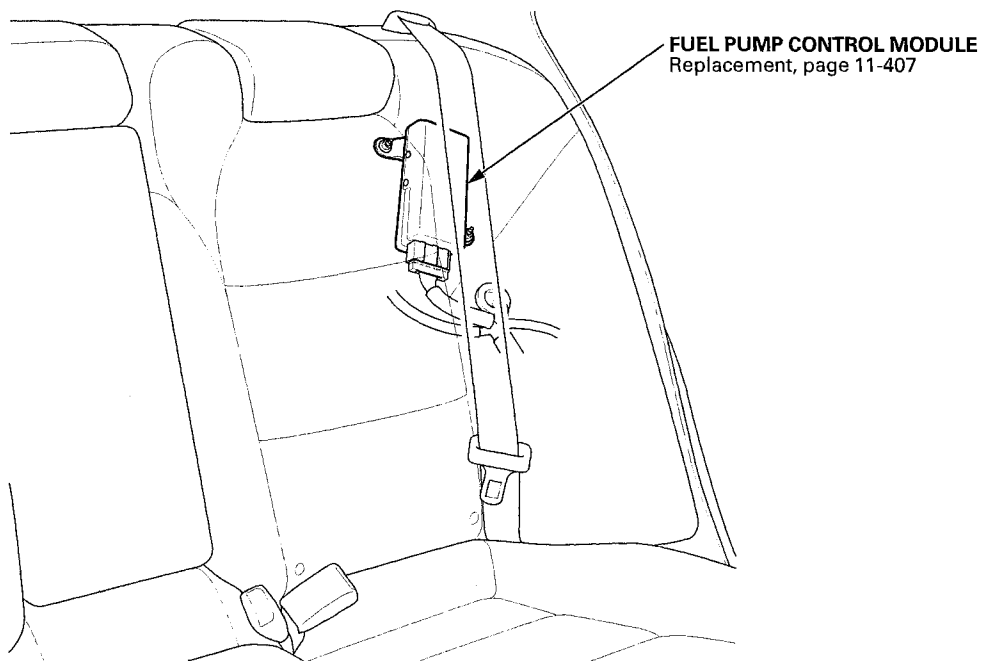
Fuel Supply System

Component Location Index (cont'd)





'09 model with SH-AWD



Fuel Supply System

DTC Troubleshooting

DTC P0461: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Because it requires 162 miles (260 km) of driving without refueling to complete this diagnosis, this DTC P0461 cannot be duplicated during this troubleshooting.

1. Test the fuel gauge sending unit; without SH-AWD (see page 11-407), with SH-AWD (see page 11-409).

Is the fuel gauge sending unit OK?

YES—Check for poor connections or loose terminals at the fuel gauge sending unit, the secondary fuel gauge sending unit (with SH-AWD), and the gauge control module. ■

NO—Replace the fuel gauge sending unit (see page 11-398) and the secondary fuel gauge sending unit (with SH-AWD) (see page 11-399), then go to step 2.

2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
3. Reset the ECM/PCM with the HDS.
4. Do the ECM/PCM idle learn procedure (see page 11-337).
5. Check for Pending or Confirmed DTCs with the HDS.

Are any Pending or Confirmed DTCs indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

DTC P0462: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage (Without SH-AWD)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0462 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. ■

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Remove the rear seat cushion (see page 20-156).
6. Remove the access panel from the floor (see page 11-391).
7. Disconnect the fuel tank unit 4P connector.
8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

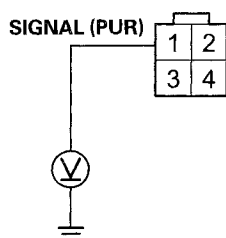
YES—Replace the fuel gauge sending unit (see page 11-398), then go to step 23.

NO—Go to step 11.



11. Measure the voltage between fuel tank unit 4P connector terminal No. 1 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

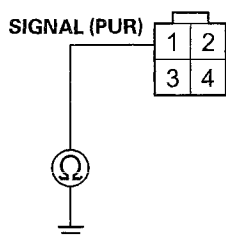
Is there battery voltage?

YES—Go to step 16.

NO—Go to step 12.

12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Remove the gauge control module (see page 22-367).
14. Disconnect the gauge control module 32P connector.
15. Check for continuity between fuel tank unit 4P connector terminal No. 1 and body ground.

FUEL TANK UNIT 4P CONNECTOR



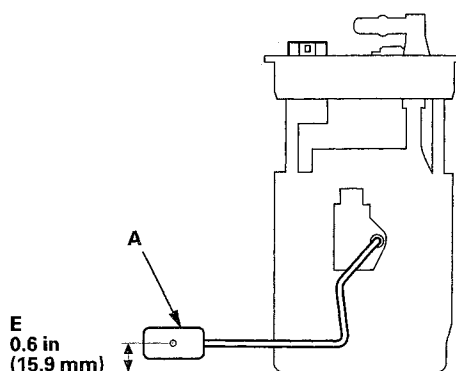
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the gauge control module (signal line) and the fuel gauge sending unit, then go to step 24.

NO—Replace the gauge control module (see page 22-367), then go to step 24.

16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
17. Remove the fuel tank unit (see page 11-391).
18. Connect the fuel tank unit 4P connector.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Clear the DTC with the HDS.
21. Set the float (A) to the E position.



22. Check the fuel gauge.

Does the fuel gauge move to the empty position?

YES—Go to step 30.

NO—Replace the gauge control module (see page 22-367), then go to step 23.

23. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
24. Reconnect all connectors.
25. Reinstall all removed parts in the reverse order of removal.
26. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
27. Reset the PCM with the HDS.
28. Do the PCM idle learn procedure (see page 11-337).
29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

30. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
31. Reinstall all removed parts in the reverse order of removal.
32. Reconnect all connectors.
33. Update the PCM if it does not have the latest software (see page 11-281), or substitute a known-good PCM (see page 11-7).
34. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module. If the PCM was updated, substitute a known-good PCM (see page 11-7), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0462: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage (With SH-AWD)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0462 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit. ■

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Remove the rear seat cushion (see page 20-156).
6. Remove the access panel from the right side of the floor (see page 11-399).
7. Disconnect the secondary fuel gauge sending unit 4P connector.
8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

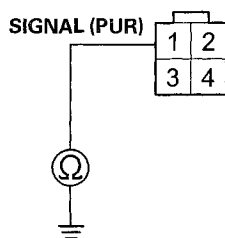
YES—Check the secondary fuel gauge sending unit (see page 11-410), then go to step 30.

NO—Go to step 11.



11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Remove the access panel from the left side of the floor (see page 11-393).
13. Disconnect the fuel tank unit 4P connector.
14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
15. Clear the DTC with the HDS, and wait 5 seconds.
16. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P0463 indicated?
YES—Go to step 20.
NO—Go to step 17.
17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
18. Remove the gauge control module (see page 22-367), then disconnect the gauge control module 32P connector.
19. Check for continuity between fuel tank unit 4P connector terminal No. 1 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there continuity?

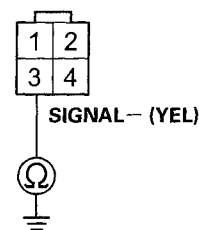
YES—Repair short in the wire between the gauge control module (signal line) and the fuel gauge sending unit, then go to step 30.

NO—Go to step 22.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

21. Check for continuity between fuel tank unit 4P connector terminal No. 3 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the fuel gauge sending unit and the secondary fuel gauge sending unit, then go to step 30.

NO—Check the fuel gauge sending unit (see page 11-407).

22. Reconnect the gauge control module 32P connector.
23. Remove the fuel tank unit (see page 11-393) and the secondary fuel gauge sending unit (see page 11-399).
24. Connect the fuel tank unit and the secondary fuel gauge sending unit 4P connectors.
25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
26. Clear the DTC with the HDS.

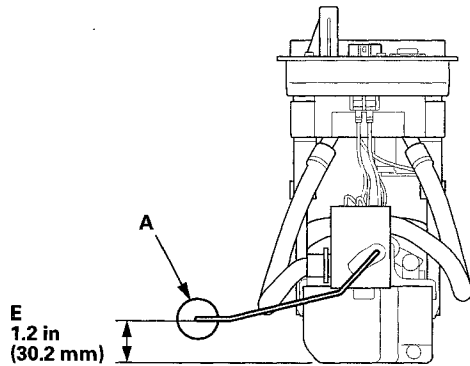
(cont'd)

Fuel Supply System

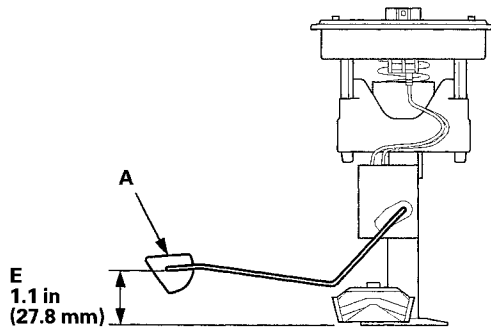
DTC Troubleshooting (cont'd)

27. Set the floats (A) to the E position.

Fuel gauge sending unit



Secondary fuel gauge sending unit



28. Check the fuel gauge.

Does the gauge move to the empty position?

YES—Go to step 36.

NO—Replace the gauge control module (see page 22-367), then go to step 29.

29. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

30. Reinstall all removed parts in the reverse order of removal.

31. Reconnect all connectors.

32. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

33. Reset the ECM/PCM with the HDS.

34. Do the ECM/PCM idle learn procedure (see page 11-337).

35. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

36. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

37. Reinstall all removed parts in the reverse order of removal.

38. Reconnect all connectors.

39. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

40. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0463: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage (Without SH-AWD)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Pending or Confirmed DTCs in the DTCs MENU with the HDS.

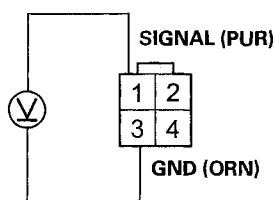
Is DTC P0463 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. ■

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Remove the rear seat cushion (see page 20-156).
6. Remove the access panel from the floor (see page 11-391).
7. Disconnect the fuel tank unit 4P connector.
8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
9. Measure the voltage between fuel tank unit 4P connector terminals No. 1 and No. 3.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

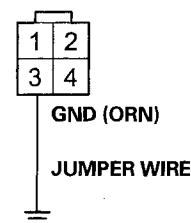
Is there battery voltage?

YES—Go to step 17.

NO—Go to step 10.

10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
11. Connect fuel tank unit 4P connector terminal No. 3 to body ground with a jumper wire.

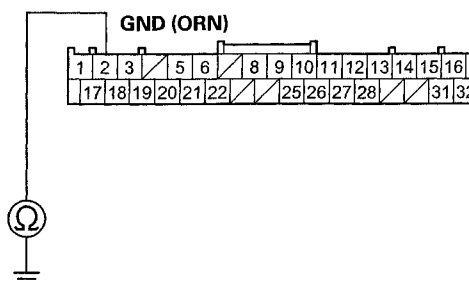
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

12. Remove the gauge control module (see page 22-367).
13. Disconnect the gauge control module 32P connector.
14. Check for continuity between gauge control module 32P connector terminal No. 2 and body ground.

GAUGE CONTROL MODULE 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the gauge control module (GND line) and the fuel gauge sending unit, then go to step 27.

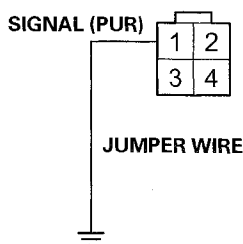
(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

15. Connect fuel tank unit 4P connector terminal No. 1 to body ground with a jumper wire.

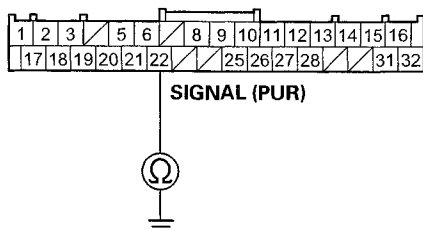
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

16. Check for continuity between gauge control module 32P connector terminal No. 22 and body ground.

GAUGE CONTROL MODULE 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the gauge control module (see page 22-367), then go to step 27.

NO—Repair open in the wire between the gauge control module (signal line) and the fuel gauge sending unit, then go to step 27.

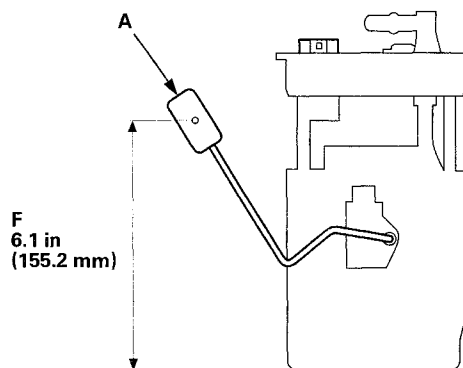
17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
18. Remove the fuel tank unit (see page 11-391).
19. Test the fuel gauge sending unit (see page 11-407).

Is the fuel gauge sending unit OK?

YES—Go to step 20.

NO—Replace the fuel gauge sending unit (see page 11-398), then go to step 26.

20. Connect the fuel tank unit 4P connector.
21. Reconnect the gauge control module 32P connector.
22. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
23. Clear the DTC with the HDS.
24. Set the float (A) to the F position.



25. Check the fuel gauge.
Does the gauge move to the full position?
YES—Go to step 33.
NO—Replace the gauge control module (see page 22-367), then go to step 26.
26. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
27. Reconnect all connectors.
28. Reinstall all removed parts in the reverse order of removal.
29. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
30. Reset the PCM with the HDS.
31. Do the PCM idle learn procedure (see page 11-337).
32. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

YES—Check for poor connections or loose terminals at the gauge control module and fuel gauge sending unit, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



33. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
34. Reinstall all parts removed in the reverse order of removal.
35. Reconnect all connectors.
36. Update the PCM if it does not have the latest software (see page 11-281), or substitute a known-good PCM (see page 11-7).
37. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

YES—Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. If the PCM was updated, substitute a known-good PCM (see page 11-7), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0463: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage (With SH-AWD)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit. ■

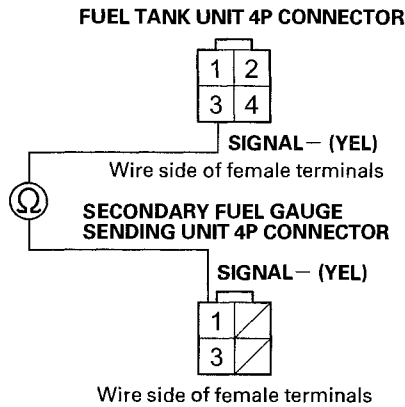
4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Remove the rear seat cushion (see page 20-156).
6. Remove the access panel from the left side of the floor (see page 11-393).
7. Disconnect the fuel tank unit 4P connector.
8. Remove the access panel from the right side of the floor (see page 11-399).
9. Disconnect the secondary fuel gauge sending unit 4P connector.

(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

10. Check for continuity between fuel tank unit 4P connector terminal No. 3 and the secondary fuel gauge sending unit 4P connector terminal No. 1.

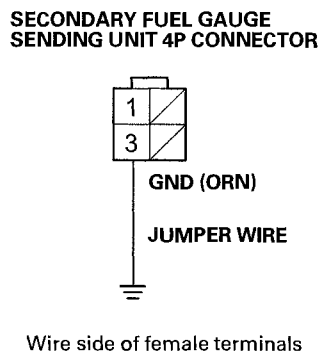


Is there continuity?

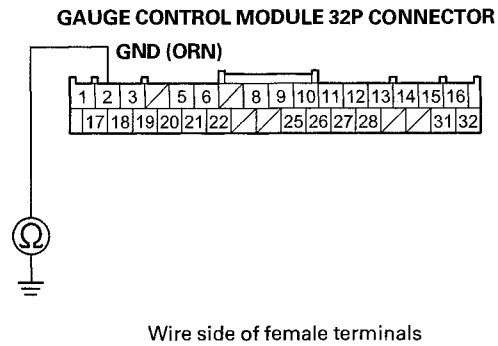
YES—Go to step 11.

NO—Repair open in the wire between the fuel gauge sending unit and the secondary fuel gauge sending unit, then go to step 26.

11. Remove the gauge control module (see page 22-367), then disconnect the gauge control module 32P connector.
12. Connect secondary fuel gauge sending unit 4P connector terminal No. 3 to body ground with a jumper wire.



13. Check for continuity between gauge control module 32P connector terminal No. 2 and body ground.

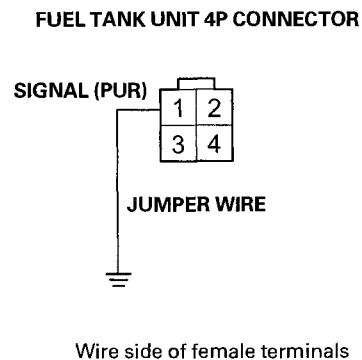


Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the gauge control module and the secondary fuel gauge sending unit, then go to step 26.

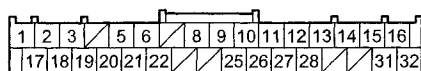
14. Connect fuel tank unit 4P connector terminal No. 1 to body ground with a jumper wire.





15. Check for continuity between gauge control module 32P connector terminal No. 22 and body ground.

GAUGE CONTROL MODULE 32P CONNECTOR



SIGNAL (PUR)



Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the gauge control module and the fuel gauge sending unit, then go to step 26.

16. Disconnect the jumper wire from the fuel gauge sending unit 4P connector.
17. Remove the fuel tank unit (see page 11-393).
18. Test the fuel gauge sending unit (see page 11-409).

Is the fuel gauge sending unit OK?

YES—Go to step 19.

NO—Replace the fuel gauge sending unit (see page 11-398), then go to step 26.

19. Remove the secondary fuel gauge sending unit (see page 11-399).
20. Test the secondary fuel gauge sending unit (see page 11-410).

Is the secondary fuel gauge sending unit OK?

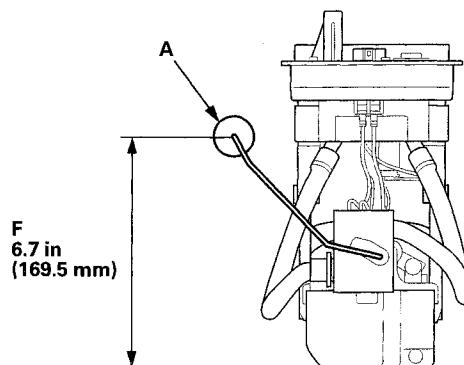
YES—Go to step 21.

NO—Replace the secondary fuel gauge sending unit (see page 11-399), then go to step 26.

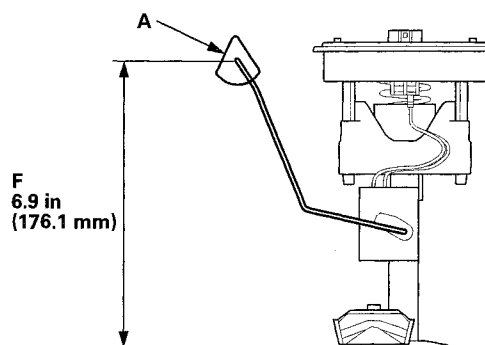
21. Reconnect the fuel tank unit 4P connector, the secondary fuel gauge sending unit 4P connector, and the gauge control module 32P connector.
22. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

23. Set the floats (A) to the F position.

Fuel gauge sending unit



Secondary fuel gauge sending unit



24. Check the fuel gauge.

Does the gauge move to the full position?

YES—Go to step 32.

NO—Replace the gauge control module (see page 22-367), then go to step 25.

(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

25. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
26. Reinstall all removed parts in the reverse order of removal.
27. Reconnect all connectors.
28. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
29. Reset the ECM/PCM with the HDS.
30. Do the ECM/PCM idle learn procedure (see page 11-337).
31. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

32. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
33. Reinstall all removed parts in the reverse order of removal.
34. Reconnect all connectors.
35. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
36. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0627: Fuel Pump Control Module System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Turn the ignition switch to START (III), or press the engine start/stop button to select the START mode.

NOTE: This vehicle has an auto control mode starting system. It keeps the starter motor running after the ignition switch or the engine start/stop button is released for 15 seconds, or until the engine starts.

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0627 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2, the fuel tank unit, and the PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Check the No. 2 FUEL PUMP (20 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 7.

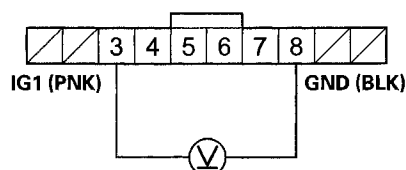
NO—Repair short in the wire between PGM-FI main relay 2 and the No. 9 FUEL PUMP (20 A) fuse. Also replace the No. 9 FUEL PUMP (20 A) fuse, then go to step 76.

7. Disconnect the fuel pump control module 10P connector (see page 11-407).



8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and measure the voltage between fuel pump control module 10P connector terminals No. 3 and No. 8 within 2 seconds.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

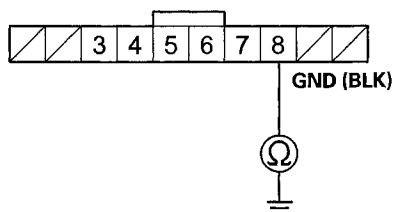
Is there battery voltage?

YES—Go to step 30.

NO—Go to step 9.

9. Check for continuity between fuel pump control module 10P connector terminal No. 8 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

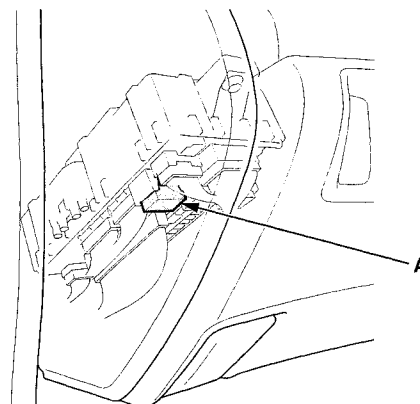
Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the fuel pump control module (GND line) and G602 (see page 22-48), then go to step 76.

10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

11. Remove the driver's dashboard undercover (see page 20-118), then remove PGM-FI main relay 2 (A) from the under-dash fuse/relay box.



12. Test PGM-FI main relay 2 (see page 22-88).

Is PGM-FI main relay 2 OK?

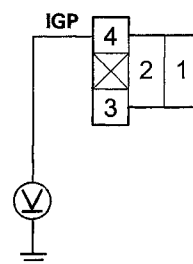
YES—Go to step 13.

NO—Replace PGM-FI main relay 2, then go to step 76.

13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

14. Measure the voltage between PGM-FI main relay 2 4P connector terminal No. 4 and body ground.

PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 21.

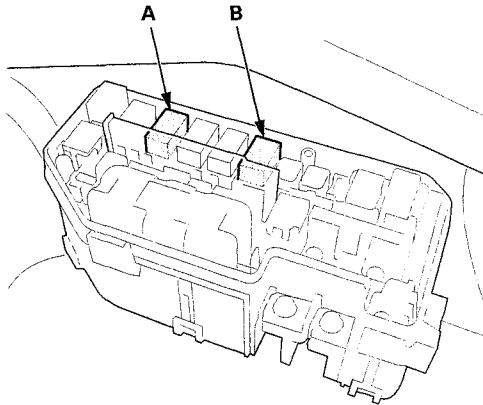
NO—Go to step 15.

(cont'd)

Fuel Supply System

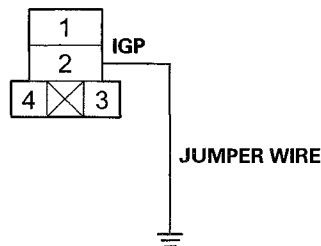
DTC Troubleshooting (cont'd)

15. Remove PGM-FI main relay 1 (A) and ETCS control relay (B) from the under-hood fuse/relay box.



16. Jump the SCS line with the HDS.
 17. Disconnect the engine wire harness 13P connector (C101).
 18. Disconnect the driver's under-dash fuse/relay box connector F (33P).
 19. Connect PGM-FI main relay 1 4P connector terminal No. 2 to body ground with a jumper wire.

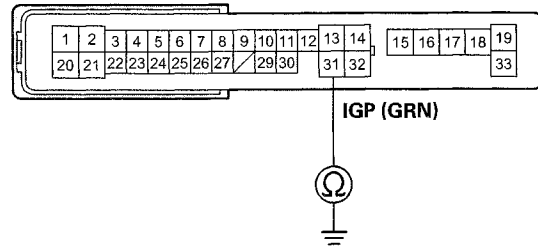
PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

20. Check for continuity between driver's under-dash fuse/relay box connector F (33P) terminal No. 31 and body ground.

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR F (33P)



Wire side of female terminals

Is there continuity?

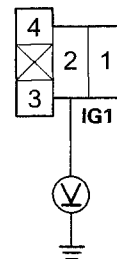
YES—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 76. ■

NO—

- Repair open in the wire between the under-hood fuse/relay box and the driver's under-dash fuse/relay box, then go to step 76. ■
- If the wire is OK, replace the under-hood fuse/relay box (see page 22-80), then go to step 76. ■

21. Measure the voltage between PGM-FI main relay 2 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

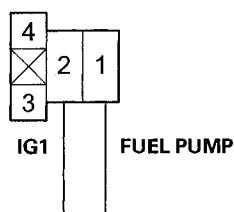
YES—Go to step 22.

NO—Replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 76. ■



22. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
23. Connect PGM-FI main relay 2 4P connector terminals No. 1 and No. 2 with a jumper wire.

PGM-FI MAIN RELAY 2 4P CONNECTOR

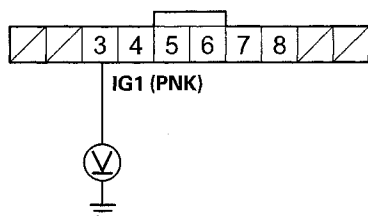


JUMPER WIRE

Terminal side of female terminals

24. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and measure the voltage between fuel pump control module 10P connector terminal No. 3 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 25.

NO—

- Repair open in the wire between the driver's under-dash fuse/relay box and the fuel pump control module, then go to step 76.
- If needed, replace the driver's under-dash fuse/relay box (see page 22-81), then go to step 76.

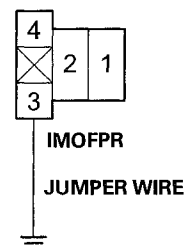
25. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

26. Jump the SCS line with the HDS.

27. Disconnect PCM connector A (49P).

28. Connect PGM-FI main relay 2 4P connector terminal No. 3 to body ground with a jumper wire.

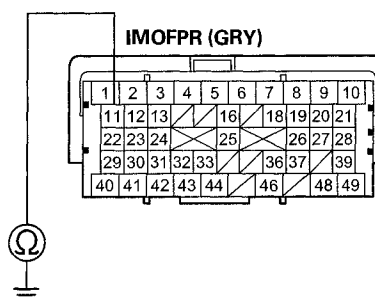
PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

29. Check for continuity between PCM connector terminal A11 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 81.

NO—Repair open in the wire between the PCM (A11) and PGM-FI main relay 2, then go to step 76.

(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

30. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
31. Reconnect the fuel pump control module 10P connector (see page 11-407).
32. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
33. Clear the DTC with the HDS.
34. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
35. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and check for sound from the fuel pump within 2 seconds.

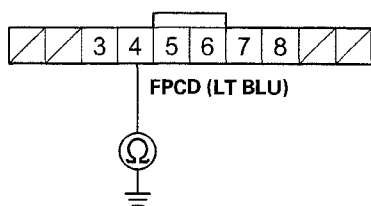
Does the fuel pump operate?

YES—Go to step 36.

NO—Go to step 56.

36. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
37. Disconnect the fuel pump control module 10P connector.
38. Check for continuity between fuel pump control module 10P connector terminal No. 4 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there continuity?

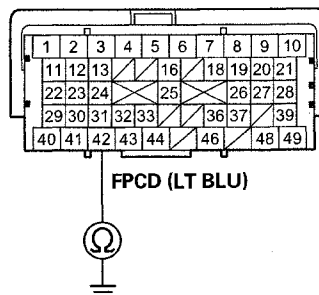
YES—Go to step 39.

NO—Go to step 42.

39. Jump the SCS line with the HDS.
40. Disconnect PCM connector A (49P).

41. Check for continuity between PCM connector terminal A42 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

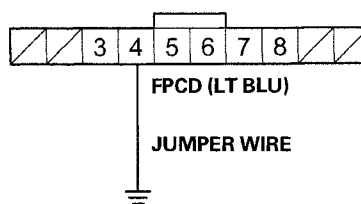
Is there continuity?

YES—Repair short in the wire between the PCM (A42) and the fuel pump control module, then go to step 76.

NO—Go to step 81.

42. Jump the SCS line with the HDS.
43. Disconnect PCM connector A (49P).
44. Connect fuel pump control module 10P connector terminal No. 4 to body ground with a jumper wire.

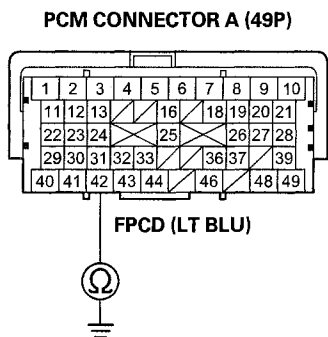
FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals



45. Check for continuity between PCM connector terminal A42 and body ground.



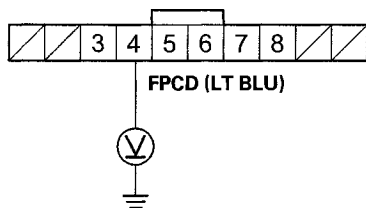
Is there continuity?

YES—Go to step 46.

NO—Repair open in the wire between the PCM (A42) and the fuel pump control module, then go to step 76.

46. Remove the jumper wire from the fuel pump control module 10P connector.
47. Reconnect the fuel pump control module 10P connector and PCM connector A (49P).
48. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
49. Measure the voltage between fuel pump control module 10P connector terminal No. 4 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



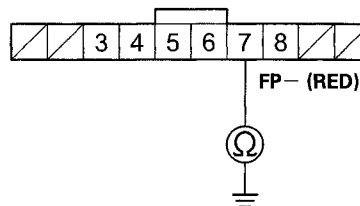
Is there about 8 V or more?

YES—Go to step 50.

NO—Replace the fuel pump control module (see page 11-407), then go to step 75.

50. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
51. Remove the rear seat cushion (see page 20-156).
52. Remove the access panel from the left side of the floor (see page 11-393).
53. Disconnect the fuel tank unit 4P connector.
54. Disconnect the fuel pump control module 10P connector.
55. Check for continuity between fuel pump control module 10P connector terminal No. 7 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Is there continuity?

YES—Repair short in the wire between the fuel pump control module (FP— line) and the fuel tank unit, then go to step 76.

NO—Substitute a known-good fuel pump control module (see page 11-407), then go to step 75 and recheck. If DTC P0627 is not indicated, replace the original fuel pump control module (see page 11-407), then go to step 76. If DTC P0627 is indicated, go to step 81.

56. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
57. Disconnect the fuel pump control module 10P connector (see page 11-407).

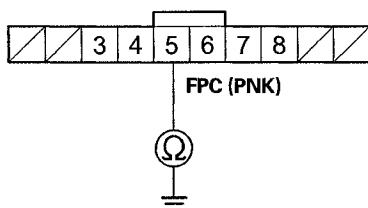
(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

58. Check for continuity between fuel pump control module 10P connector terminal No. 5 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

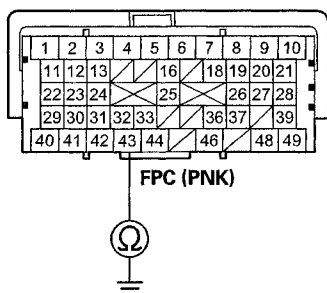
Is there continuity?

YES—Go to step 59.

NO—Go to step 62.

59. Jump the SCS line with the HDS.
60. Disconnect PCM connector A (49P).
61. Check for continuity between PCM connector terminal A43 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

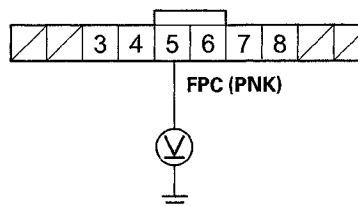
YES—Repair short in the wire between the PCM (A43) and the fuel pump control module, then go to step 76.

NO—Go to step 81.

62. Reconnect the fuel pump control module 10P connector.

63. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and measure the voltage between fuel pump control module 10P connector terminal No. 5 and body ground within 2 seconds.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

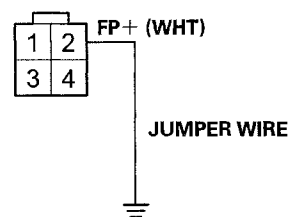
Is there battery voltage?

YES—Go to step 64.

NO—Replace the fuel pump control module (see page 11-407), then go to step 76.

64. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
65. Remove the rear seat cushion (see page 20-156).
66. Remove the access panel from left side of the floor (see page 11-393).
67. Disconnect the fuel tank unit 4P connector.
68. Disconnect the fuel pump control module 10P connector (see page 11-407).
69. Connect between fuel tank unit 4P connector terminal No. 2 to body ground with a jumper wire.

FUEL TANK UNIT 4P CONNECTOR

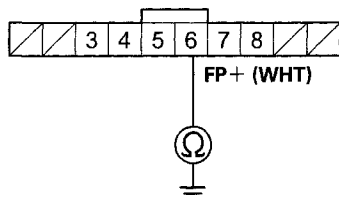


Wire side of female terminals



70. Check for continuity between fuel pump control module 10P connector terminal No. 6 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

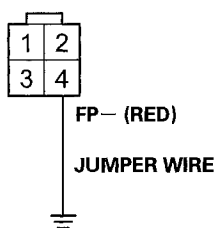
Is there continuity?

YES—Go to step 71.

NO—Repair open in the wire between the fuel pump control module (FP+ line) and the fuel tank unit, then go to step 76.

71. Connect fuel tank unit 4P connector terminal No. 4 to body ground with a jumper wire.

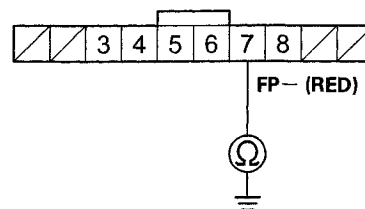
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

72. Check for continuity between fuel pump control module 10P connector terminal No. 7 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 73.

NO—Repair open in the wire between the fuel pump control module (FP- line) and the fuel tank unit, then go to step 76.

73. Remove the jumper wire from fuel tank unit 4P connector terminal No. 4, and reconnect the fuel pump control module 10P connector.

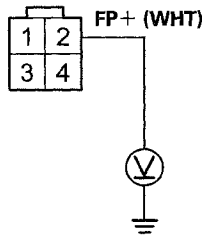
(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

74. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and measure the voltage between fuel tank unit 4P connector terminal No. 2 and body ground within 2 seconds.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the fuel pump (see page 11-398), then go to step 75.

NO—Substitute a known-good fuel pump control module (see page 11-407), then go to step 75 and recheck. If DTC P0627 is not indicated, replace the original fuel pump control module (see page 11-407), then go to step 75. If DTC P0627 is indicated, go to step 81.

75. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
76. Reconnect all connectors.
77. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
78. Reset the PCM with the HDS.
79. Do the PCM idle learn procedure (see page 11-337).
80. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0627 indicated?

YES—Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2, the fuel tank unit, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

81. Reconnect all connectors.

82. Update the PCM if it does not have the latest software (see page 11-281), or substitute a known-good PCM (see page 11-7).

83. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0627 indicated?

YES—Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2, the fuel tank unit, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

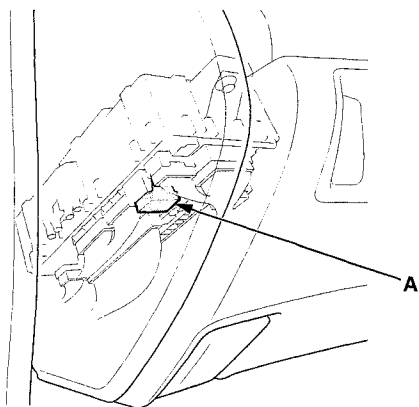


Fuel Pump Circuit Troubleshooting

If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is turned to ON (II), or press the engine start/stop button to select the ON mode. If the fuel pump does not make noise, check as follows:

'09 model without SH-AWD, 10 model

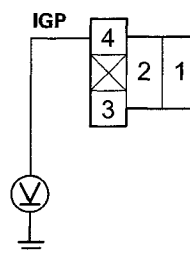
1. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
2. Remove the driver's dashboard undercover (see page 20-118).
3. Remove PGM-FI main relay 2 (A) from the driver's under-dash fuse/relay box.



4. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

5. Measure the voltage between PGM-FI main relay 2 4P connector terminal No. 4 and body ground.

PGM-FI MAIN RELAY 2 4P CONNECTOR



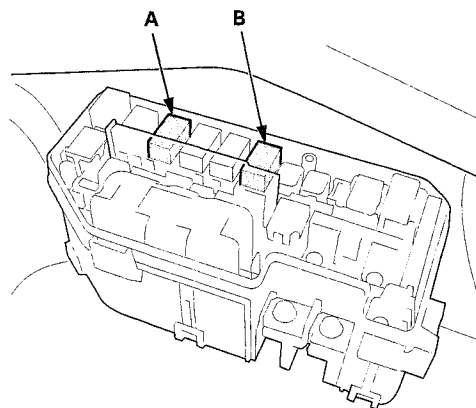
Terminal side of female terminals

Is there battery voltage?

YES—Go to step 13.

NO—Go to step 6.

6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Remove PGM-FI main relay 1 (A) and the ETCS control relay (B) from the under-hood fuse/relay box.



8. Jump the SCS line with the HDS.
9. Disconnect the engine wire harness 13P connector (C101).
10. Disconnect driver's under-dash fuse/relay box connector F (33P).

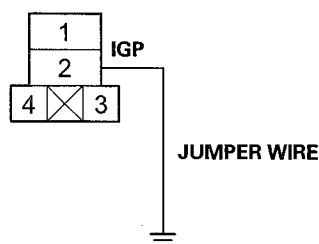
(cont'd)

Fuel Supply System

Fuel Pump Circuit Troubleshooting (cont'd)

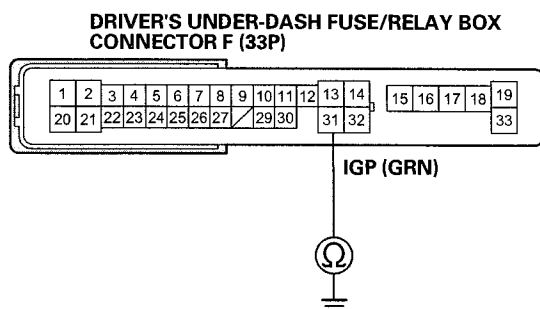
11. Connect PGM-FI main relay 1 4P connector terminal No. 2 to body ground with a jumper wire.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

12. Check for continuity between driver's under-dash fuse/relay box connector F (33P) terminal No. 31 and body ground.



Wire side of female terminals

Is there continuity?

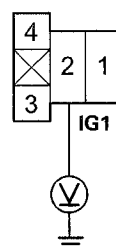
YES—Replace the driver's under-dash fuse/relay box (see page 22-81). ■

NO—

- Repair open in the wire between the under-hood fuse/relay box and the driver's under-dash fuse/relay box. ■
- If the wire is OK, replace the under-hood fuse/relay box (see page 22-80). ■

13. Measure the voltage between PGM-FI main relay 2 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

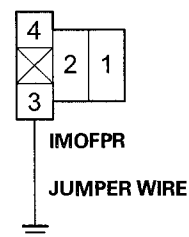
YES—Go to step 14.

NO—

- Check the No. 9 FUEL PUMP (20 A) fuse in the driver's under-dash fuse/relay box. ■
- If the fuse is OK, replace the driver's under-dash fuse/relay box (see page 22-81). ■

14. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
15. Connect PGM-FI main relay 2 4P connector terminal No. 3 to body ground with a jumper wire.

PGM-FI MAIN RELAY 2 4P CONNECTOR

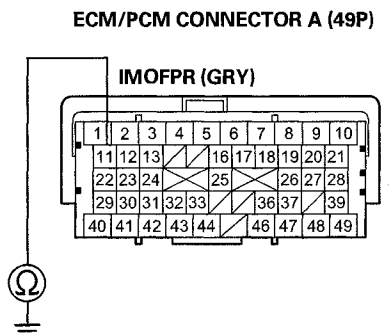


Terminal side of female terminals

16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector A (49P).



18. Check for continuity between ECM/PCM connector terminal A11 and body ground.



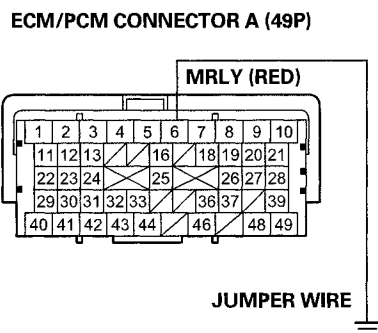
Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between PGM-FI main relay 2 and the ECM/PCM (A11). ■

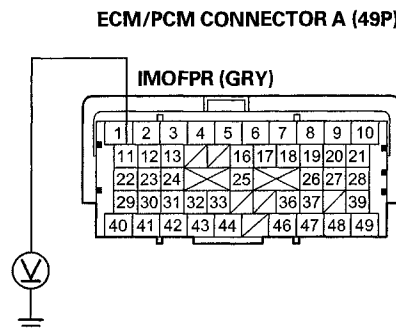
19. Reinstall PGM-FI main relay 2.
20. Connect ECM/PCM connector terminal A6 to body ground with a jumper wire.



Terminal side of female terminals

21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

22. Measure the voltage between ECM/PCM connector terminal A11 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 23.

NO—Replace PGM-FI main relay 2. ■

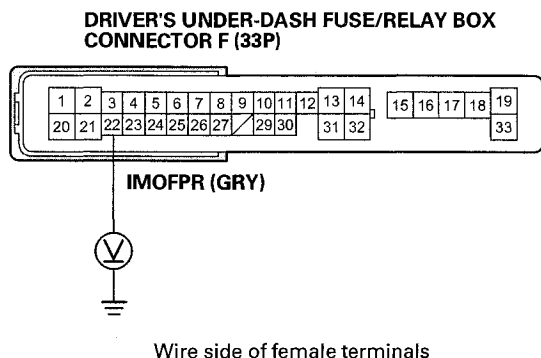
23. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
24. Reconnect ECM/PCM connector A (49P).

(cont'd)

Fuel Supply System

Fuel Pump Circuit Troubleshooting (cont'd)

25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and measure the voltage between driver's under-dash fuse/relay box connector F (33P) terminal No. 22 and body ground within 2 seconds.

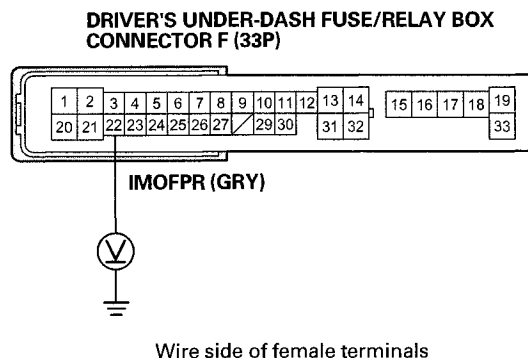


Is there battery voltage?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). ■

NO—Go to step 26.

26. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and measure the voltage between driver's under-dash fuse/relay box connector F (33P) terminal No. 22 and body ground after 2 seconds.



Is there battery voltage?

YES—Go to step 27.

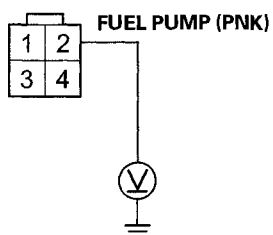
NO—Replace the driver's under-dash fuse/relay box (see page 22-81).

27. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
28. Remove the rear seat cushion (see page 20-156).
29. Remove the access panel from the floor; without SH-AWD (see page 11-391), with SH-AWD (see page 11-393).



30. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and measure the voltage between fuel tank unit 4P connector terminal No. 2 and body ground within 2 seconds.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

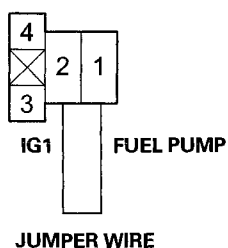
Is there battery voltage?

YES—Go to step 35.

NO—Go to step 31.

31. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
32. Remove PGM-FI main relay 2.
33. Connect PGM-FI main relay 2 4P connector terminals No. 1 and No. 2 with a jumper wire.

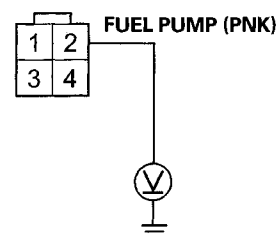
PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

34. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode, and measure the voltage between fuel tank unit 4P connector terminal No. 2 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace PGM-FI main relay 2. ■

NO—

- Repair open in the wire between the driver's under-dash fuse/relay box (D10) and the fuel tank unit 4P connector. ■
 - If the wire is OK, replace the driver's under-dash fuse/relay box (see page 22-81). ■
35. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

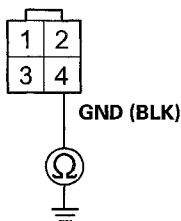
(cont'd)

Fuel Supply System

Fuel Pump Circuit Troubleshooting (cont'd)

36. Check for continuity between fuel tank unit 4P connector terminal No. 4 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the fuel pump (see page 11-398). ■

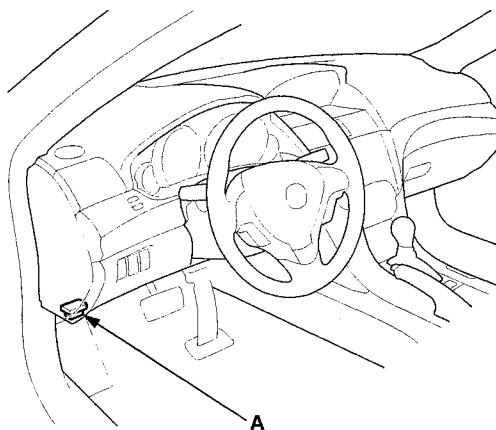
NO—Repair open in the wire between the fuel tank unit 4P connector and G602; without SH-AWD (see page 22-46), with SH-AWD (see page 22-48). ■

Fuel Pressure Relieving

Before disconnecting fuel lines or hoses, relieve pressure from the system by disabling the fuel pump and disconnecting the fuel line/quick connect fitting in the engine compartment.

With the HDS

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



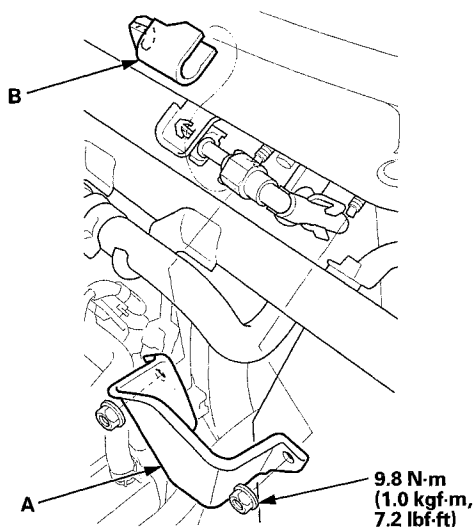
2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-258).
4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Remove the fuel fill cap to relieve the pressure in the fuel tank.
6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. From the INSPECTION MENU of the HDS, select Fuel Pump OFF, then start the engine, and let it idle until it stalls.

NOTE:

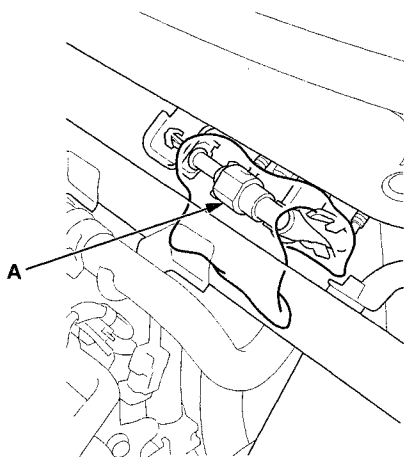
- Do not allow the engine to idle above 1,000 rpm or the ECM/PCM will continue to operate the fuel pump.
 - Pending or Confirmed DTC may be set during this procedure. Check for DTCs, and clear them as needed (see page 11-4).
8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
 9. Do the battery terminal disconnection procedure (see page 22-86).



10. Remove the cover (A) and the quick-connect fitting cover (B); without SH-AWD system (see page 11-379), with SH-AWD system (see page 11-381).



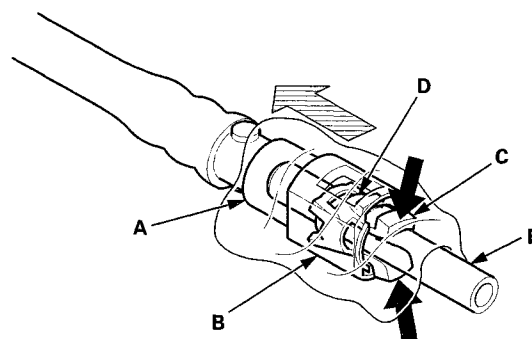
11. Check the quick-connect fitting for dirt, and clean it if needed.
12. Place a rag or a shop towel over the quick-connect fitting (A).



13. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- Be careful not to damage the line (E) or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



14. After disconnecting the quick-connect fitting, check it for dirt or damage; without SH-AWD system (see step 5 on page 11-380), with SH-AWD system (see step 5 on page 11-382).
15. Do the battery terminal reconnection procedure (see page 22-86).

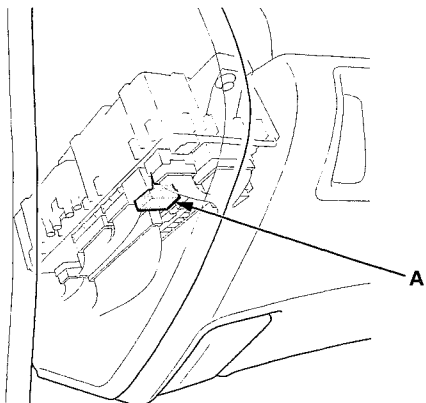
(cont'd)

Fuel Supply System

Fuel Pressure Relieving (cont'd)

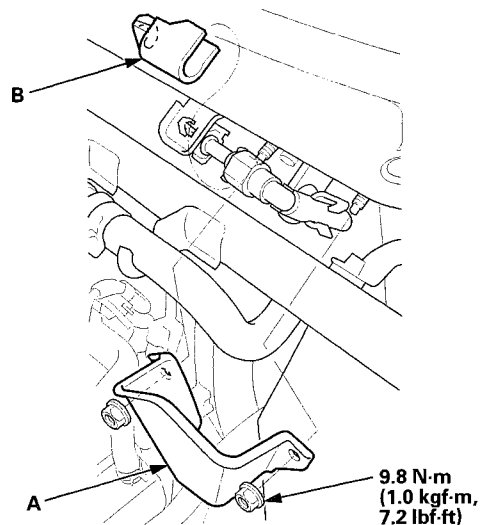
Without the HDS

1. Remove the driver's dashboard undercover (see page 20-118).
2. Remove PGM-FI main relay 2 (A) from the driver's under-dash fuse/relay box.

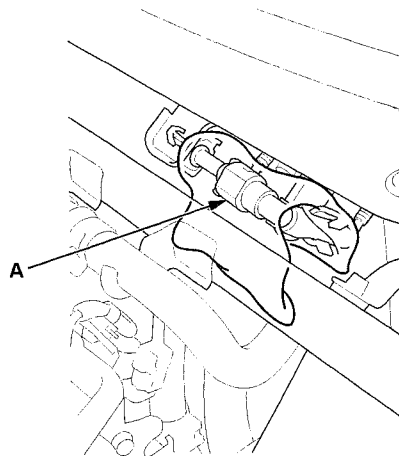


3. Start the engine, and let it idle until it stalls.
NOTE: If any DTCs are stored, clear and ignore them.
4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Remove the fuel fill cap to relieve the pressure in the fuel tank.
6. Do the battery terminal disconnection procedure (see page 22-86).

7. Remove the cover (A) and the quick-connect fitting cover (B); without SH-AWD system (see page 11-379), with SH-AWD system (see page 11-381).



8. Check the quick-connect fitting for dirt, and clean it if needed.
9. Place a rag or a shop towel over the quick-connect fitting (A).



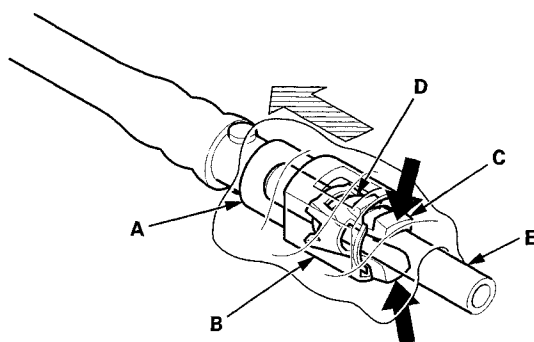


Fuel Pressure Test

10. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- Be careful not to damage the line (E) or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.

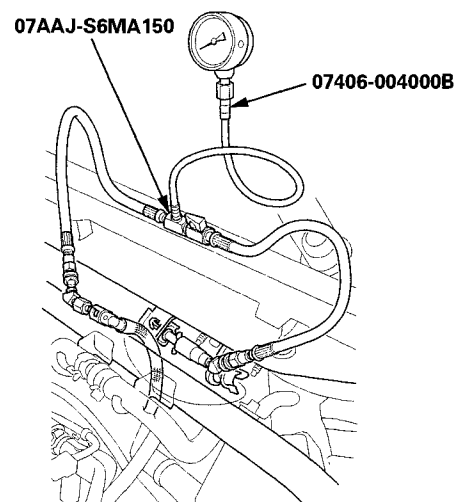


11. After disconnecting the quick-connect fitting, check it for dirt or damage; without SH-AWD system (see step 5 on page 11-380), with SH-AWD system (see step 5 on page 11-382).
12. Do the battery terminal reconnection procedure (see page 22-86).

Special Tools Required

- Fuel Pressure Gauge 07406-004000B
- Fuel Pressure Gauge Attachment Set 07AAJ-S6MA150

1. Relieve the fuel pressure (see page 11-366).
2. Attach the fuel pressure gauge set and the fuel pressure gauge.



3. Start the engine, and let it idle.
 - If the engine starts, go to step 5.
 - If the engine does not start, go to step 4.
4. Check to see if the fuel pump is running: Listen to the fuel filler port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned to ON (II) or engine start/ stop button to select the ON mode.
 - If the pump runs, go to step 5.
 - '09 model without SH-AWD, '10 model: If the pump does not run, do the fuel pump circuit troubleshooting (see page 11-361).
 - '09 model with SH-AWD: If the pump does not run, refer to the DTC troubleshooting.
5. Read the fuel pressure gauge.

Fuel pressure should be:

392—441 kPa (4.0—4.5 kgf/cm², 57—64 psi)

- If the pressure is OK, the test is complete.
- If the pressure is out of specification, replace the fuel pressure regulator; without SH-AWD (see page 11-396), with SH-AWD (see page 11-396) and the fuel filter; without SH-AWD (see page 11-397), with SH-AWD (see page 11-397), then recheck the fuel pressure.

Fuel Supply System

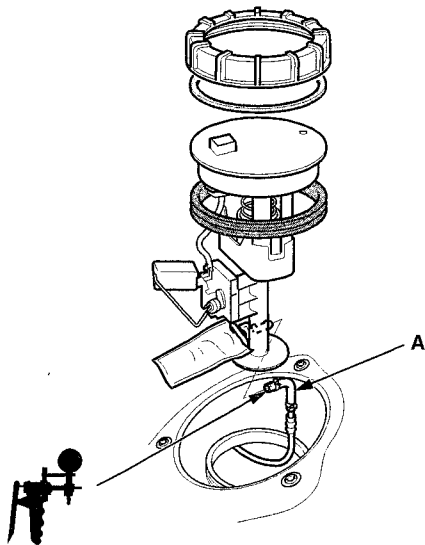
Transfer Fuel Pump Test

Special Tools Required

Vacuum Pump/Gauge, 0–30 in.Hg, Snap-on YA4000A or equivalent, commercially available

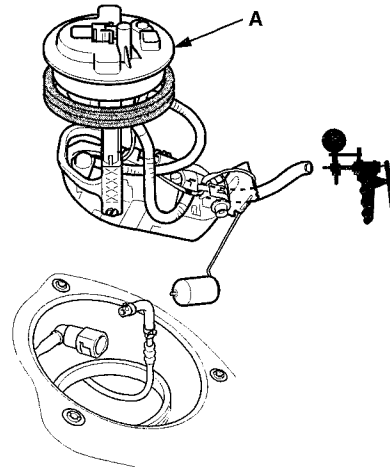
With SH-AWD

1. Remove the secondary fuel gauge sending unit (see page 11-399).
2. Connect a vacuum pump/gauge, 0–30 in.Hg, to the transfer tube (A).

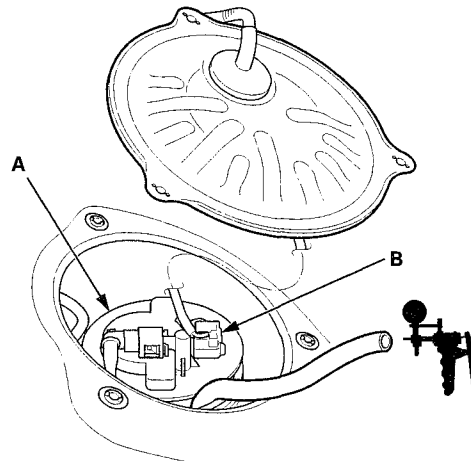


3. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
4. From the INSPECTION MENU of the HDS, select Fuel Pump ON.
5. Read the vacuum pump/gauge, 0–30 in.Hg. The vacuum should be 4.0 kPa (1.2 inHg, 30 mmHg).
 - If the vacuum is OK, the transfer fuel pump and the transfer tube is OK.
 - If the vacuum is out of specification, go to step 6.
6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Install the secondary fuel gauge sending unit (see page 11-400).
8. Remove the fuel tank unit (see page 11-393).

9. Connect the vacuum pump/gauge, 0–30 in.Hg, to the fuel tank unit (A).



10. Lower the fuel tank unit (A) into the fuel tank until the pick up screen is submerged in the fuel.



11. Connect the fuel tank unit 4P connector (B).
12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
13. From the INSPECTION MENU of the HDS, select Fuel Pump ON.
14. Read the vacuum pump/gauge, 0–30 in.Hg. The vacuum should be 4.0 kPa (1.2 inHg, 30 mmHg).
 - If the vacuum is OK, replace the transfer tube, then recheck the fuel vacuum.
 - If the vacuum is out of specification, replace the fuel tank unit (see page 11-393), then recheck the fuel vacuum.



Fuel Tank Draining

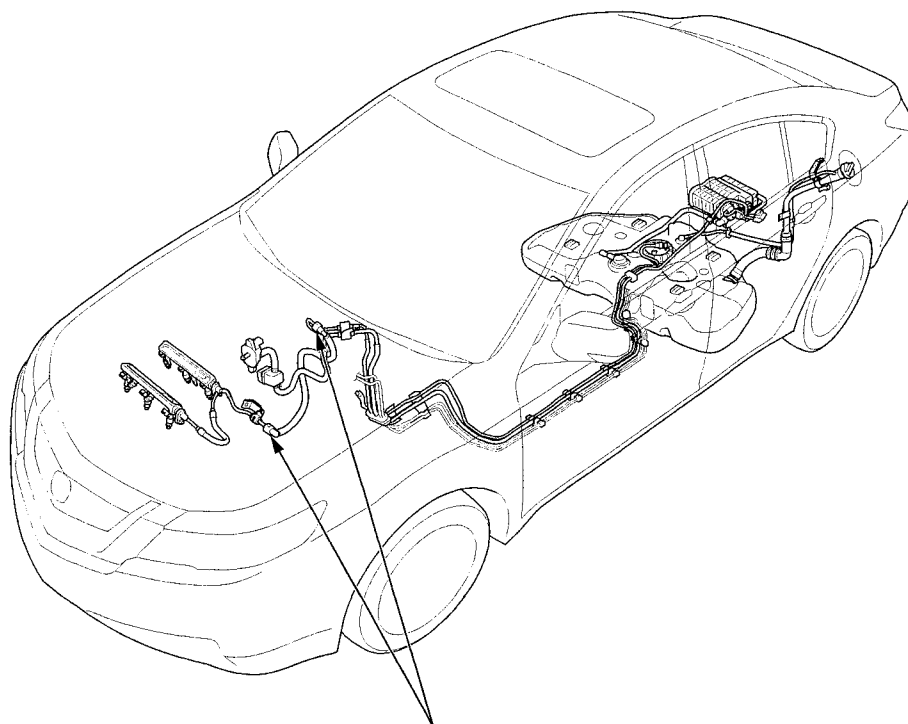
1. Remove the fuel tank unit; without SH-AWD (see page 11-391), with SH-AWD (see page 11-393).
2. With SH-AWD: Remove the secondary fuel gauge sending unit (see page 11-399).
3. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank.
4. Reinstall the fuel tank unit; without SH-AWD (see page 11-392), with SH-AWD (see page 11-394), and the secondary fuel gauge sending unit (with SH-AWD) (see page 11-400).

Fuel Supply System

Fuel Line Inspection

Check the fuel system lines and hoses for damage, leaks, and deterioration. Replace any damaged parts.

Without SH-AWD

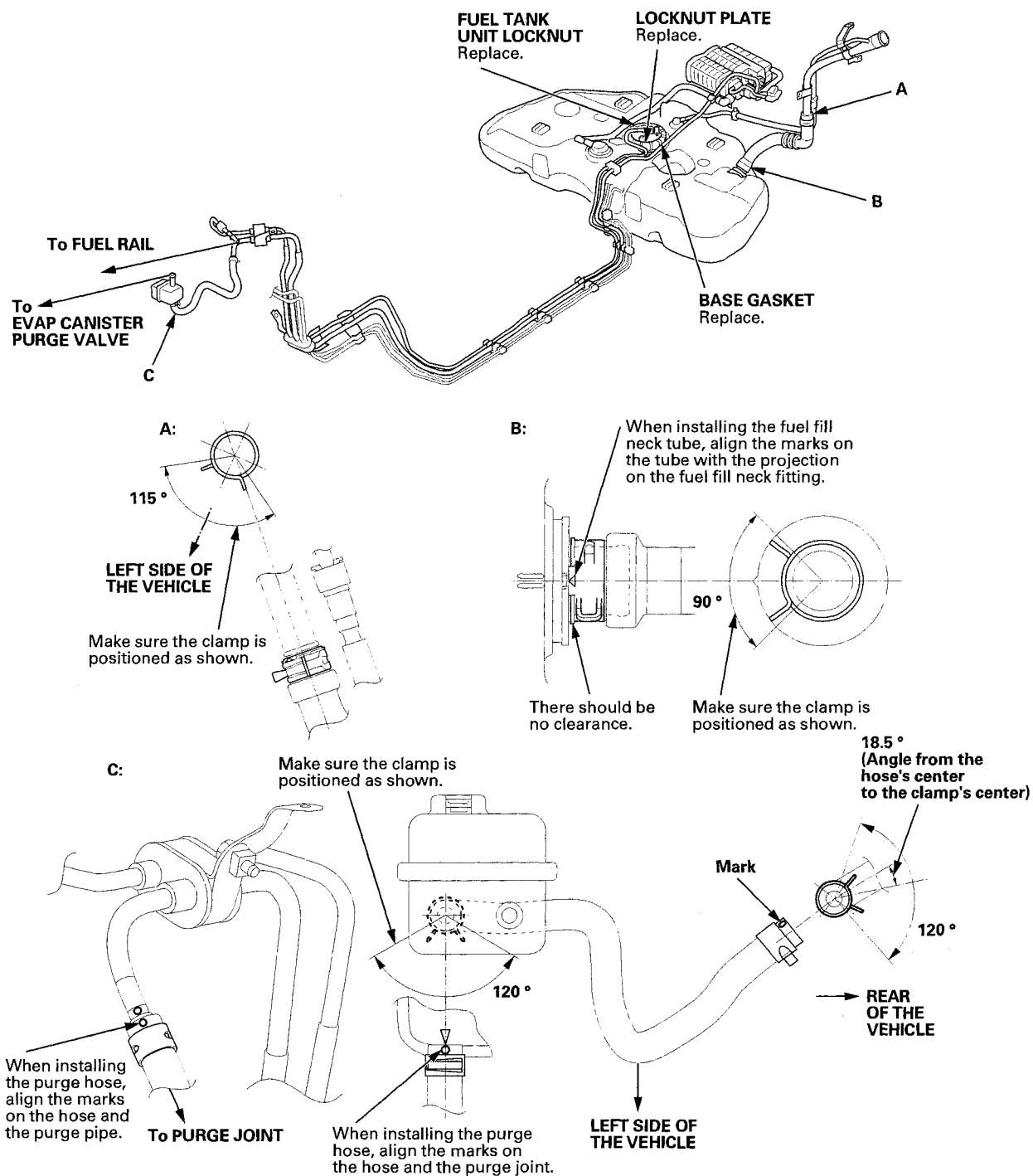


Make sure the connections are secure and the quick-connect fitting covers are firmly locked in place.



Check all clamps, and make sure they are properly positioned and tightened.

Without SH-AWD

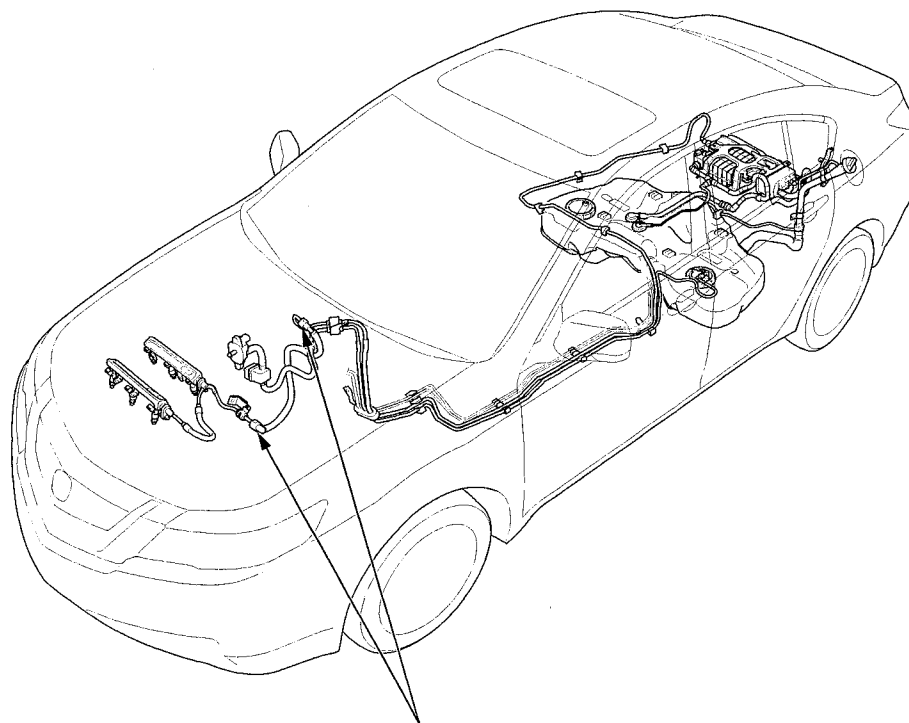


Fuel Supply System

Fuel Line Inspection (cont'd)

Check the fuel system lines and hoses for damage, leaks, and deterioration. Replace any damaged parts.

With SH-AWD

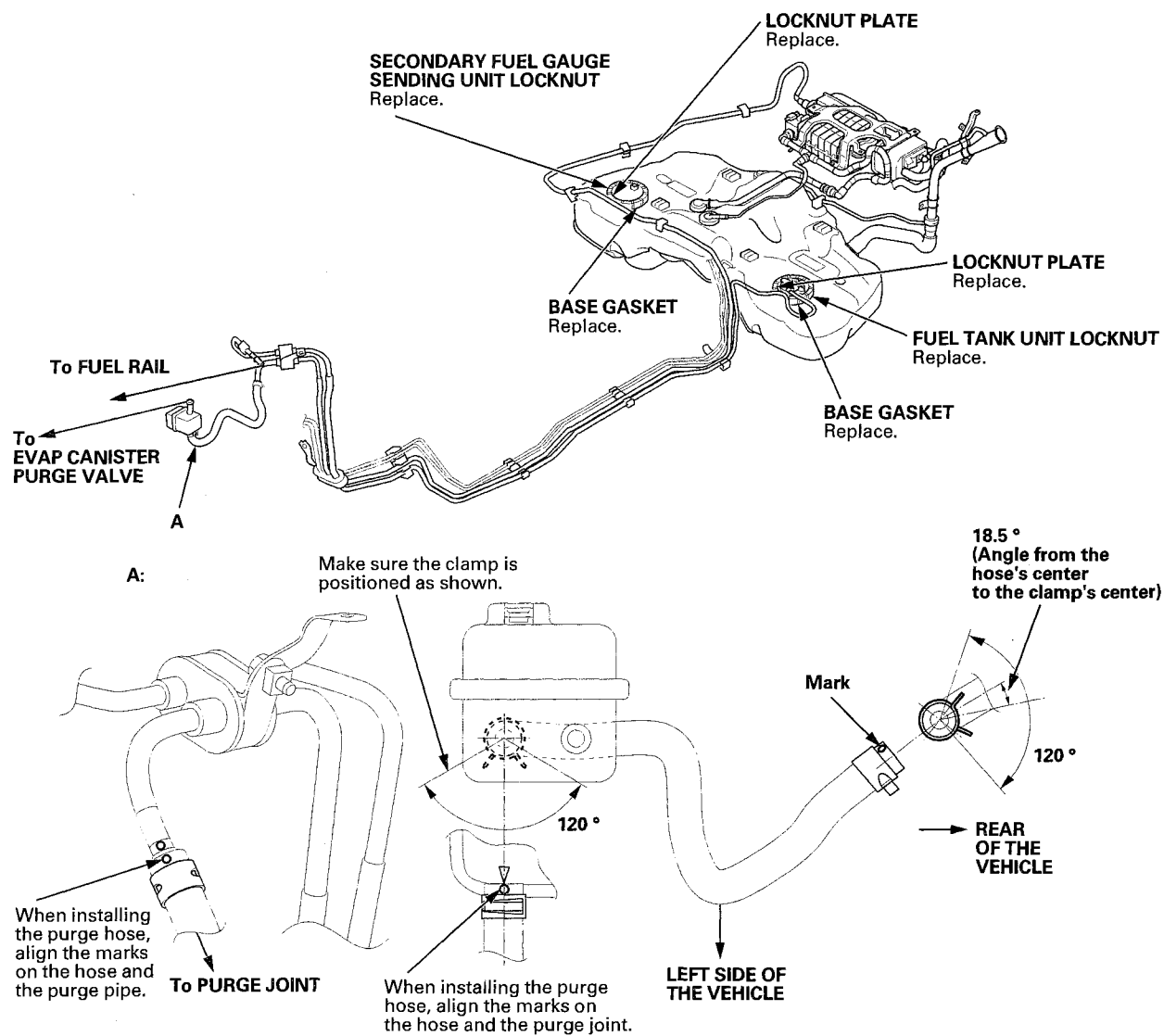


Make sure the connections are secure and the quick-connect fitting covers are firmly locked in place.



Check all clamps, and make sure they are properly positioned and tightened.

With SH-AWD



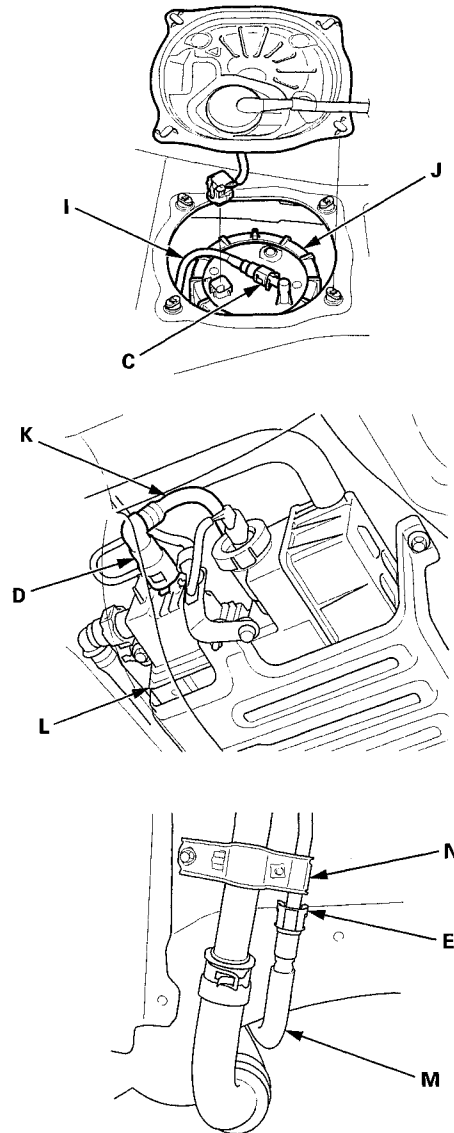
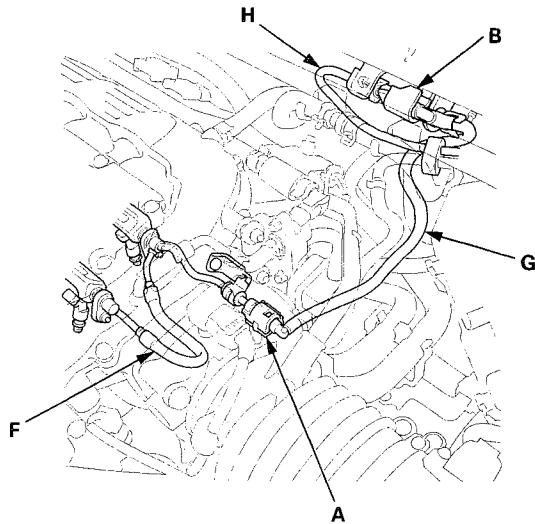
Fuel Supply System

Fuel Line/Quick-Connect Fitting Precautions

Without SH-AWD

The fuel line/quick-connect fittings (A, B, C, D, and E) connect the fuel joint hose (F) to the fuel feed hose (G), the fuel feed hose to the fuel line (H), the fuel line (I) to the fuel tank unit (J), the fuel vapor line (K) to the EVAP canister (L), and the fuel tank vapor recirculation tube (M) to the fuel fill pipe (N). When removing or installing the fuel feed hose, the fuel tank unit, or the fuel tank, or when disconnecting or connecting the quick-connect fittings, pay attention to the following:

- The fuel feed hoses, the fuel line, and the quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, the fuel line, and the quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they come in contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, the fuel line, and the quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.





A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line.

Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the EVAP canister.
- replacing the fuel fill pipe.
- replacing the fuel tank.
- it has been removed from the line.
- it is damaged.

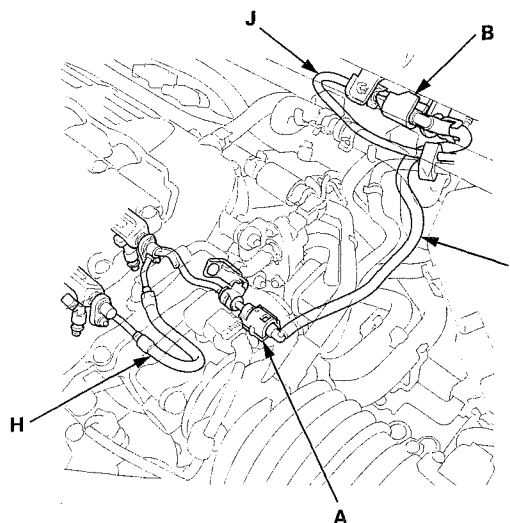
Use the same manufacturer retainer and the same size when replacing the retainer.

Location	Manufacturer	Retainer color	Line diameter
A	Tokai	Blue green	0.3 in (8 mm)
B	Tokai	Blue green	0.3 in (8 mm)
C	Tokai DTR	Orange	0.4 in (9.5 mm)
D	Tokai DTR	Natural	0.5 in (12 mm)
E	Tokai DTR	Natural	0.5 in (12 mm)

With SH-AWD

The fuel line/quick-connect fittings (A, B, C, D, E, F, and G) connect the fuel joint hose (H) to the fuel feed hose (I), the fuel feed hose to the fuel line (J), the fuel line (K) to the fuel tank unit (L), the fuel vapor line (M) to the EVAP canister (N), the fuel vent tube (O) to the fuel vent tube B (P) and the fuel tank vapor recirculation tube (Q) and fuel fill neck tube (R) to the fuel fill pipe (S). When removing or installing the fuel feed hose, the fuel tank unit, or the fuel tank, or when disconnecting or connecting the quick-connect fittings, pay attention to the following:

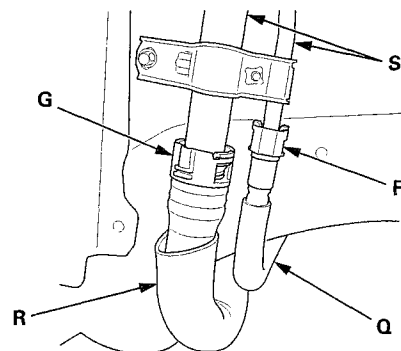
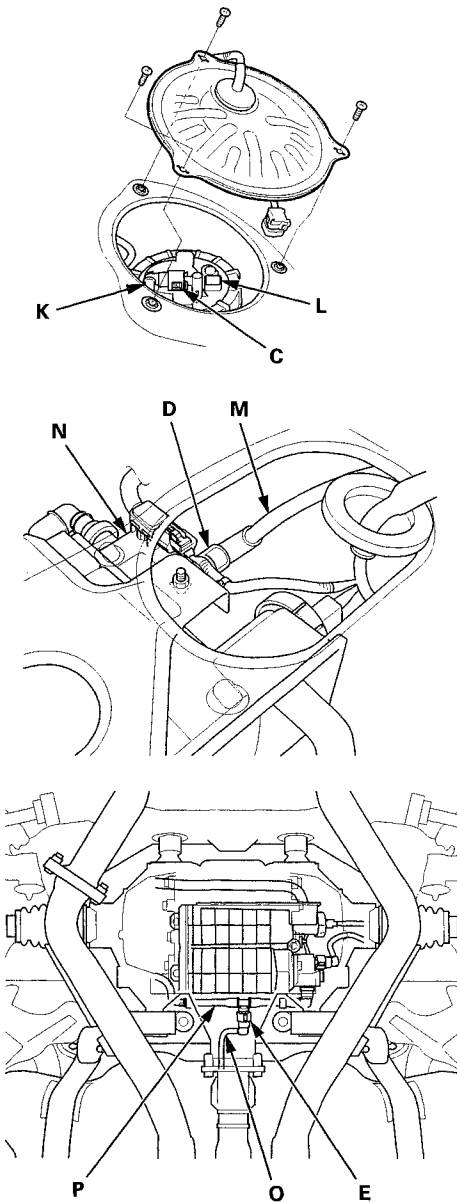
- The fuel feed hoses, the fuel line, the and quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, the fuel line, the and quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they come in contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, the fuel line, the and quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.



(cont'd)

Fuel Supply System

Fuel Line/Quick-Connect Fitting Precautions (cont'd)



A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line.

Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the EVAP canister.
- replacing the fuel fill pipe.
- replacing the fuel tank.
- it has been removed from the line.
- it is damaged.

Use the same manufacturer retainer and the same size when the replacing the retainer.

Location	Manufacturer	Retainer color	Line diameter
A	Tokai	Blue green	0.3 in (8 mm)
B	Tokai	Blue green	0.3 in (8 mm)
C	Tokai DTR	Orange	0.4 in (9.5 mm)
D	Tokai DTR	Natural	0.5 in (12 mm)
E	Toyoda gosei	White	0.3 in (8 mm)
F	Tokai DTR	Natural	0.5 in (12 mm)
G	Tokai	Green	1.1 in (28.6 mm)

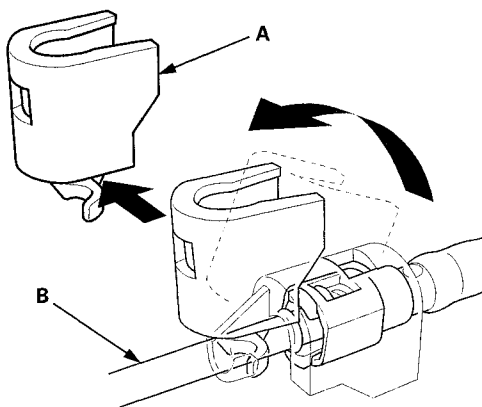


Fuel Line/Quick-Connect Fitting Removal

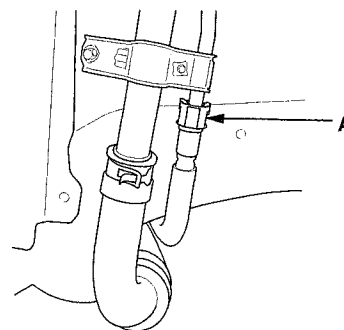
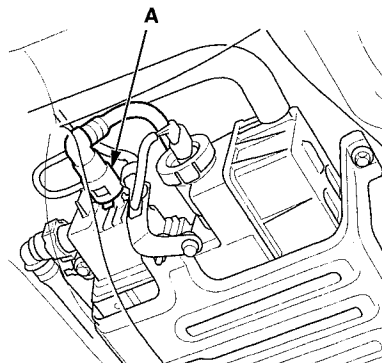
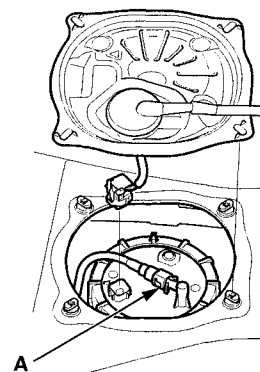
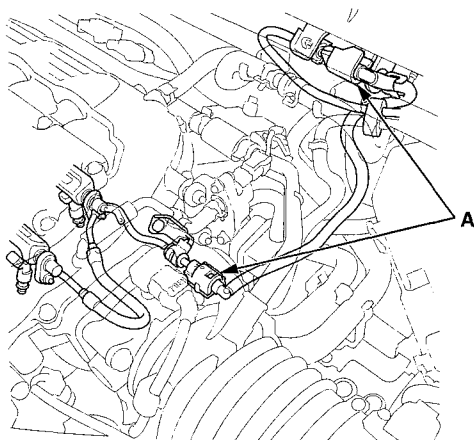
Without SH-AWD

NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-376).

1. If equipped, remove the quick-connect fitting cover from the fuel line. Raise the cover (A) from the fuel line (B), and remove it as shown.



2. Relieve the fuel pressure (see page 11-366).
3. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.



(cont'd)

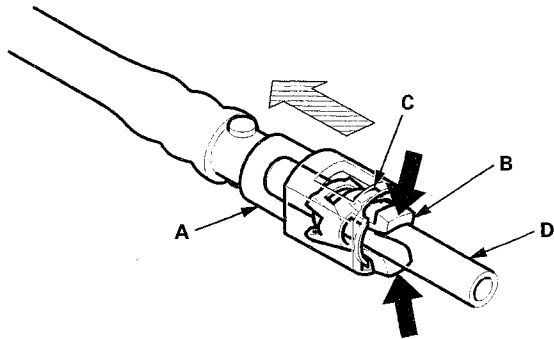
Fuel Supply System

Fuel Line/Quick-Connect Fitting Removal (cont'd)

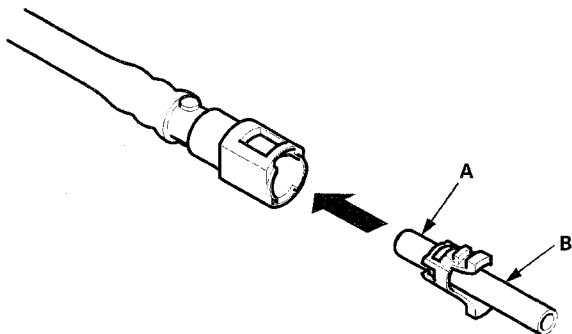
4. Place a rag or a shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

NOTE:

- Be careful not to damage the line (D) or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



5. Check the contact area (A) of the line (B) for dirt or damage.
- If it is dirty, clean the connector, and dry it with the compressed air.
 - If it is damaged, replace the fuel filter or the fuel feed line.

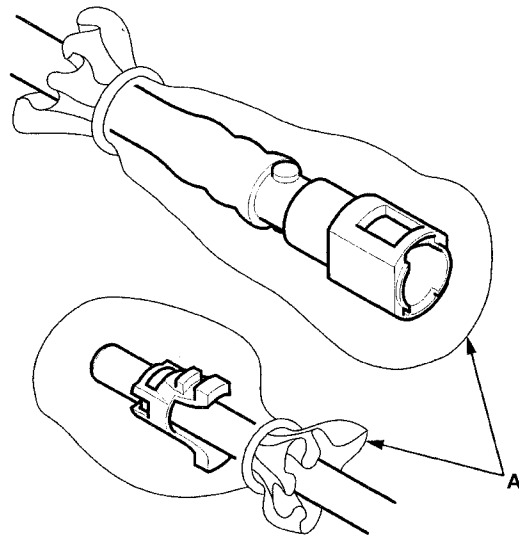


6. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

NOTE: The retainer cannot be reused once it has been removed from the line.

Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the EVAP canister.
- replacing the fuel fill pipe.
- replacing the fuel tank.
- it has been removed from the line.
- it is damaged.

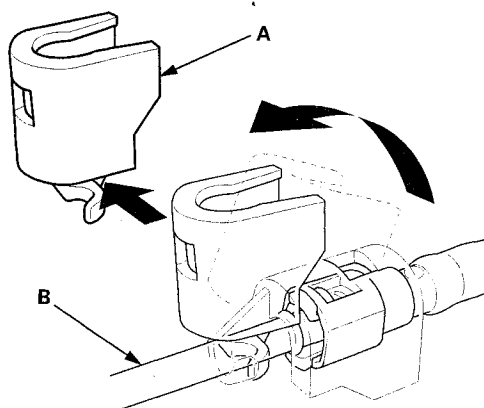




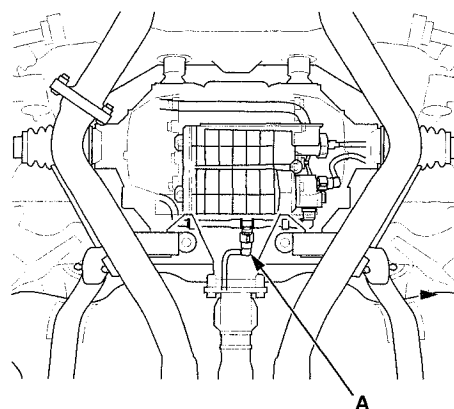
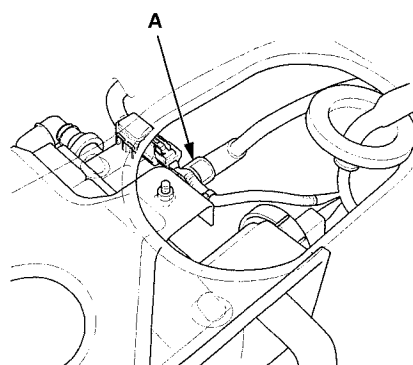
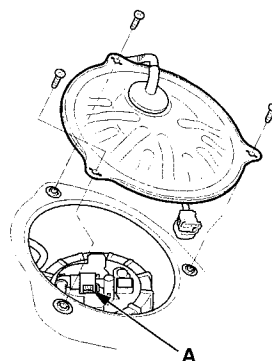
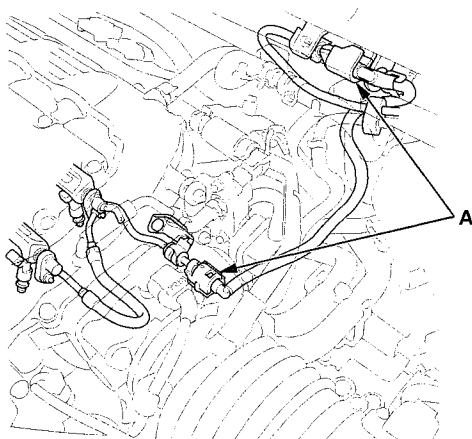
With SH-AWD

NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-377).

1. If equipped, remove the quick-connect fitting cover from the fuel line. Raise the cover (A) from the fuel line (B), and remove it as shown.



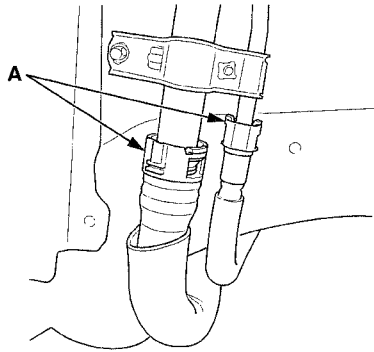
2. Relieve the fuel pressure (see page 11-366).
3. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.



(cont'd)

Fuel Supply System

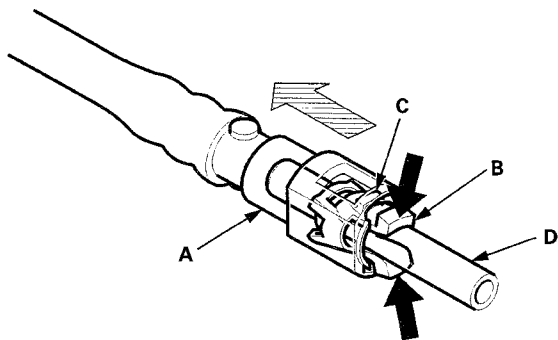
Fuel Line/Quick-Connect Fitting Removal (cont'd)



4. Place a rag or a shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

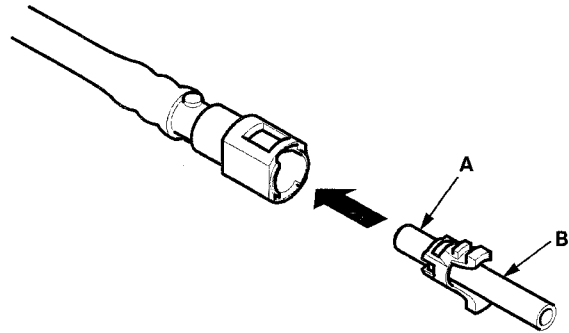
NOTE:

- Be careful not to damage the line (D) or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



5. Check the contact area (A) of the line (B) for dirt or damage.

- If it is dirty, clean the connector, and dry it with the compressed air.
- If it is damaged, replace the fuel filter or the fuel feed line.



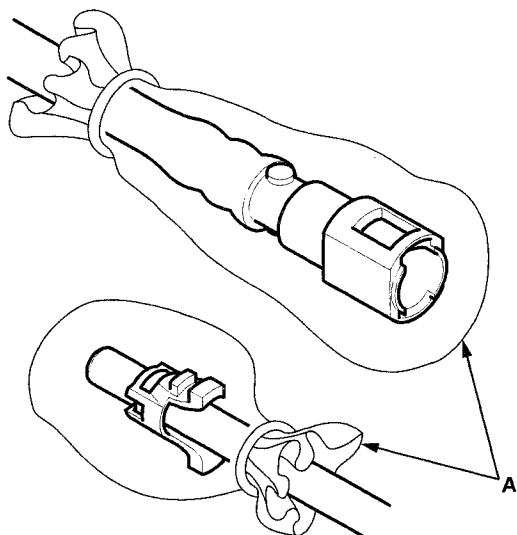


6. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

NOTE: The retainer cannot be reused once it has been removed from the line.

Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the EVAP canister.
- replacing the fuel fill pipe.
- replacing the fuel tank.
- it has been removed from the line.
- it is damaged.

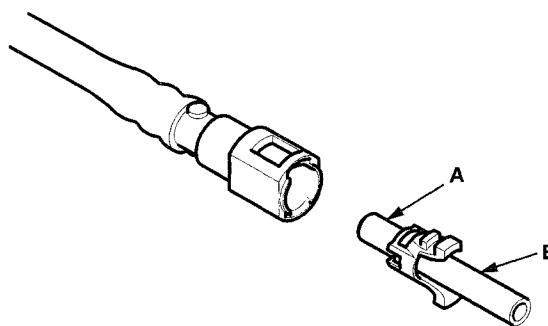


Fuel Line/Quick-Connect Fitting Installation

Without SH-AWD

NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-376).

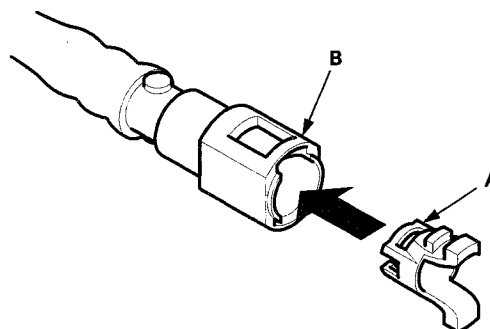
1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.



2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the EVAP canister.
- replacing the fuel fill pipe.
- replacing the fuel tank.
- removing the retainer from the line.

Use the same manufacturer retainer and the same size when replacing the retainer (see page 11-376).

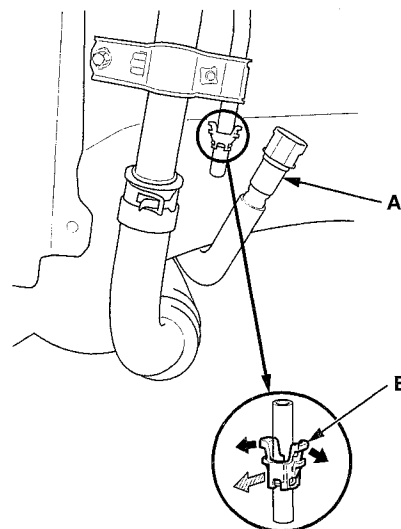
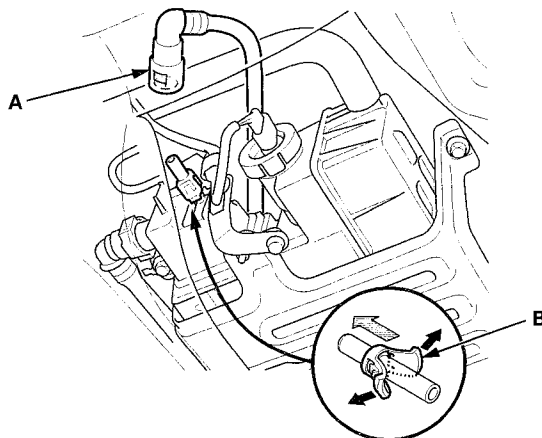
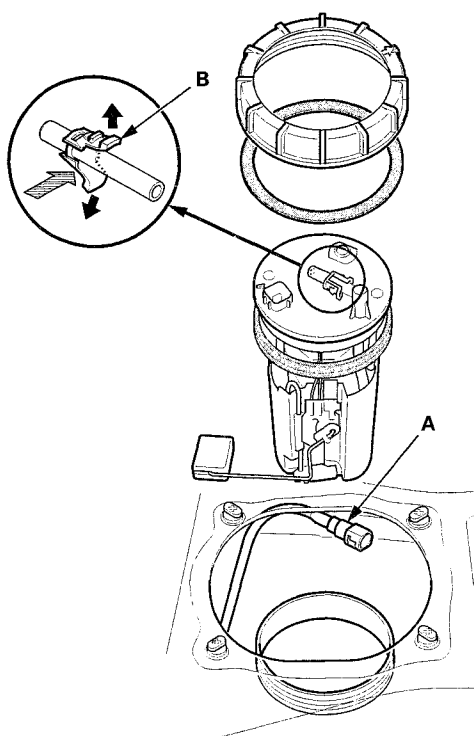
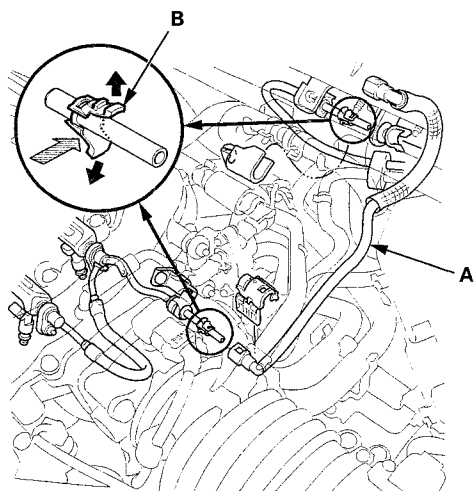


(cont'd)

Fuel Supply System

Fuel Line/Quick-Connect Fitting Installation (cont'd)

3. Before connecting a new fuel line/quick-connect fitting assembly (A), remove the old retainer (B) from the mating line.

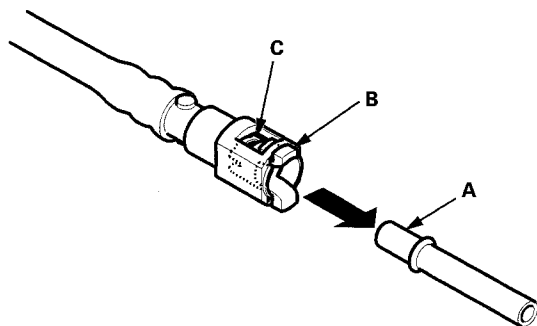




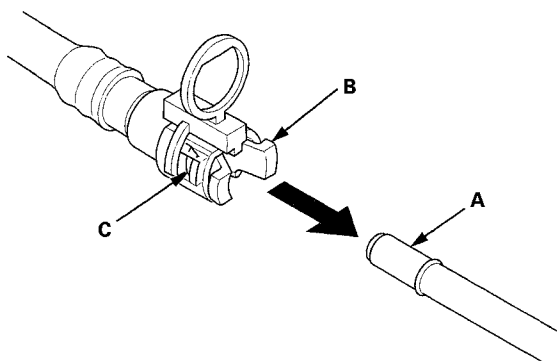
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

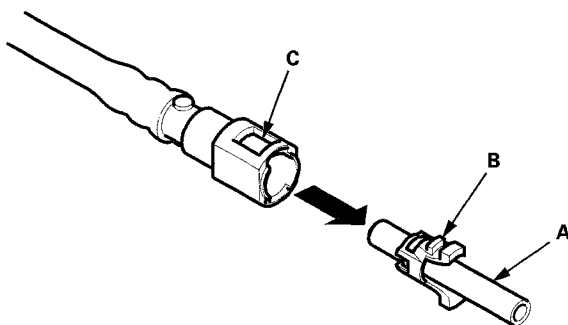
Connection with new retainer



Connection to new fuel line

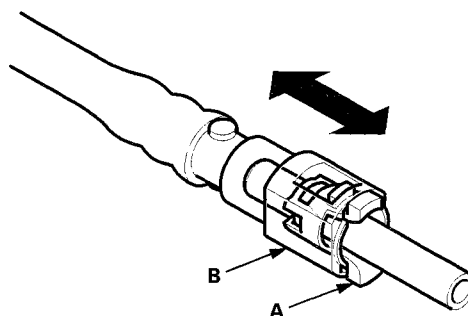


Reconnection to existing retainer

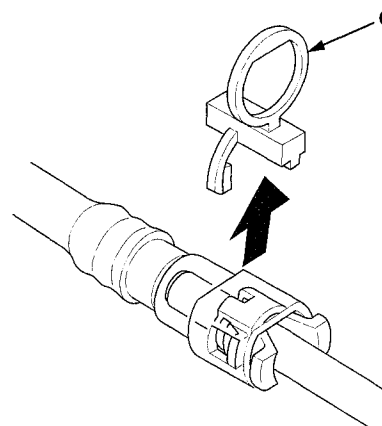


5. When you reconnect the connector with the old retainer, make sure the connection is secure and the tabs (A) are firmly locked into place; check visually and also by pulling the connector (B). When you replace the fuel line with a new one, make sure you remove the ring pull (C) upwards after you confirm the connection is secure.

NOTE: Before you remove the ring pull, make sure the fuel line connection is secure. If the connection is not secure, the ring pull could break when you try to remove it.



Connection to new fuel line



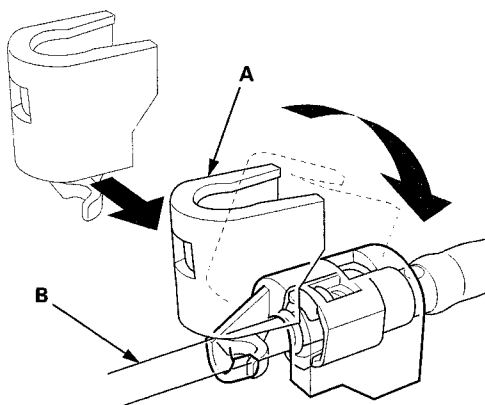
6. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode (but do not operate the starter motor). The fuel pump runs for about 2 seconds, and fuel pressure rises. Repeat this two or three times, and make sure there are no fuel leaks.

(cont'd)

Fuel Supply System

Fuel Line/Quick-Connect Fitting Installation (cont'd)

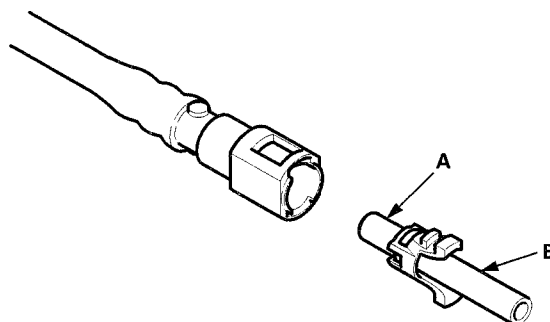
7. If equipped, install the quick-connect fitting cover. Set the groove of the cover (A) on the fuel line (B) as shown, then install it. Make sure the cover is firmly locked in place.



With SH-AWD

NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-377).

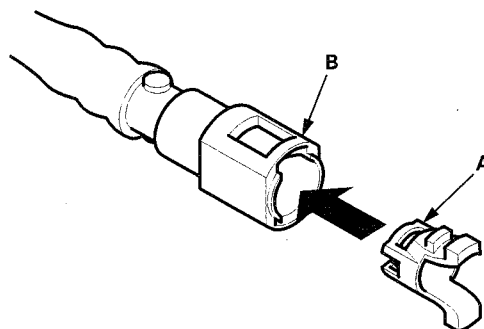
1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.



2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:

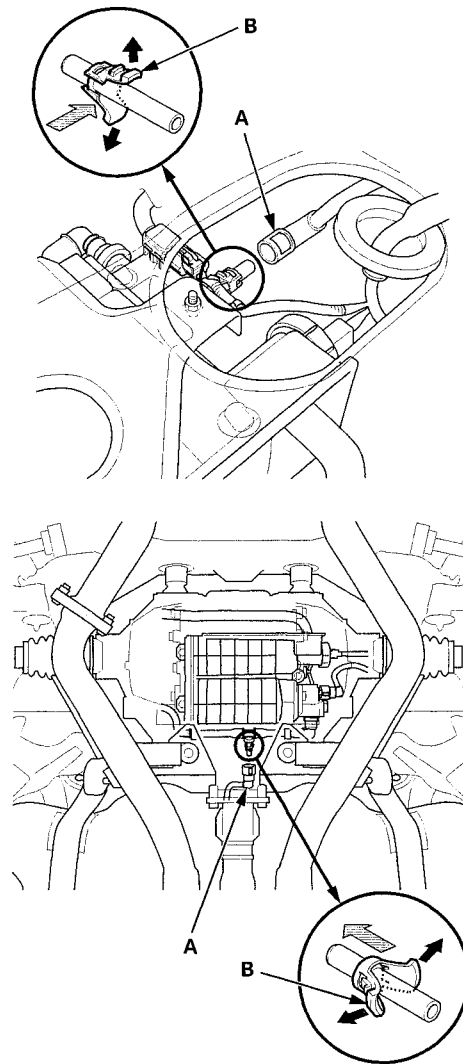
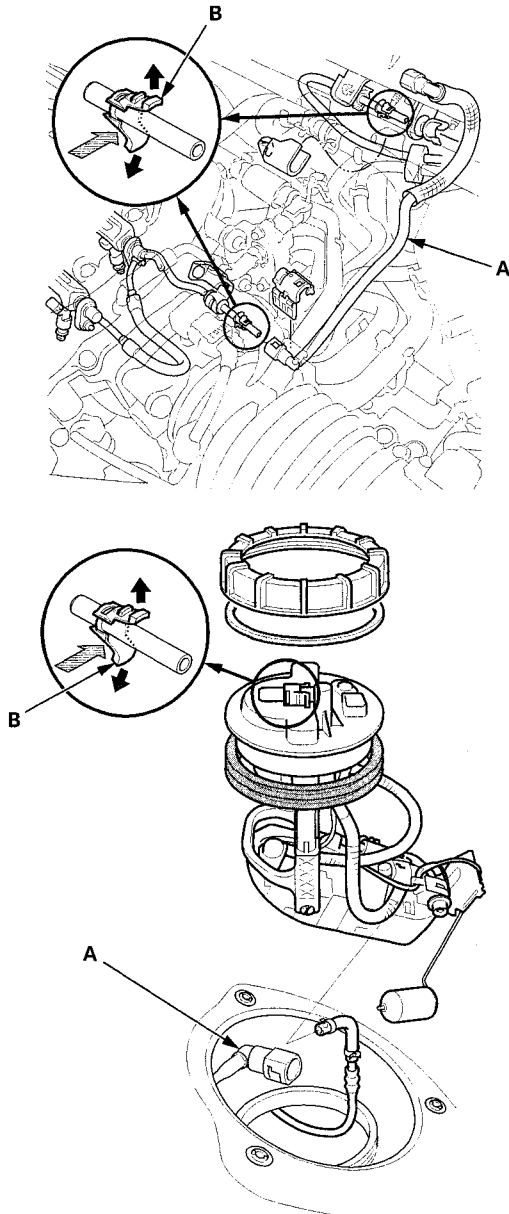
- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the EVAP canister.
- replacing the fuel fill pipe.
- replacing the fuel tank.
- removing the retainer from the line.

Use the same manufacturer retainer and the same size when replacing the retainer (see page 11-376).



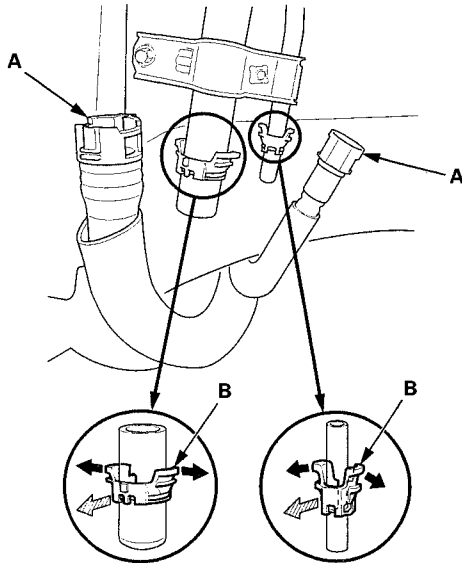


3. Before connecting a new fuel line/quick-connect fitting assembly (A), remove the old retainer (B) from the mating line.



Fuel Supply System

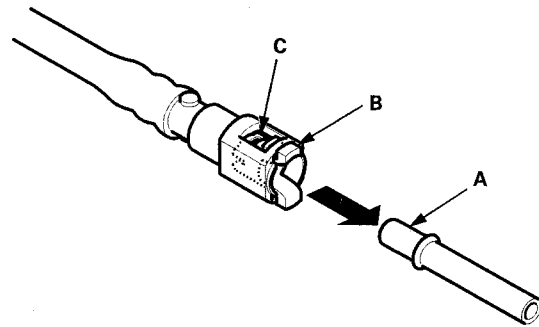
Fuel Line/Quick-Connect Fitting Installation (cont'd)



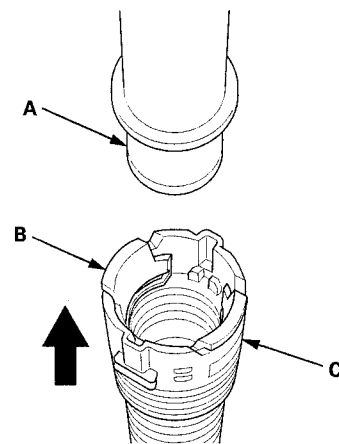
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

Connection with new retainer

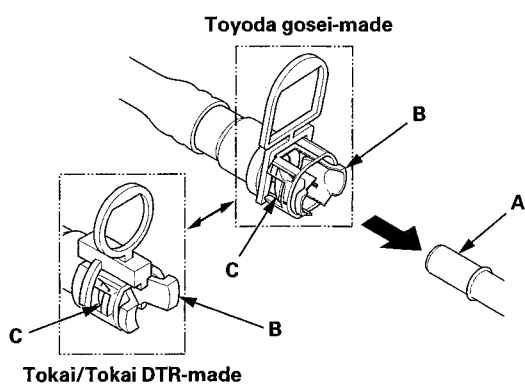


Connection with new retainer: Fuel fill neck tube

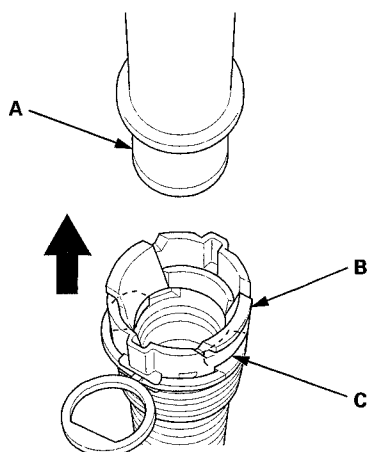




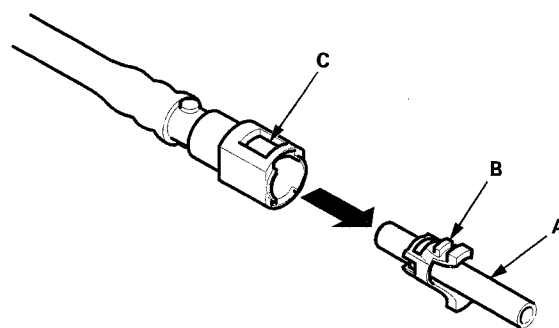
Connection to new fuel line



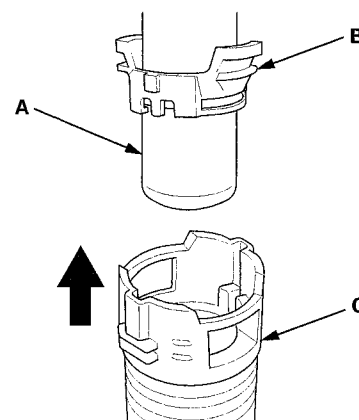
Connection to new fuel line: Fuel fill neck tube



Reconnection to existing retainer



Reconnection to existing retainer: Fuel fill neck tube



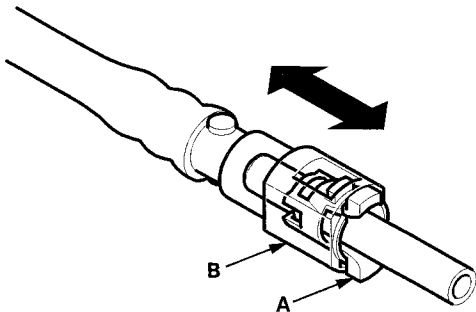
(cont'd)

Fuel Supply System

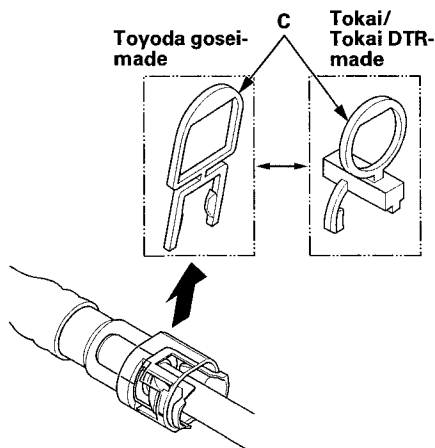
Fuel Line/Quick-Connect Fitting Installation (cont'd)

5. When you reconnect the connector with the old retainer, make sure the connection is secure and the tabs (A) are firmly locked into place; check visually and also by pulling the connector (B). When you replace the fuel line with a new one, make sure you remove the ring pull (C) upwards after you confirm the connection is secure.

NOTE: Before you remove the ring pull, make sure the fuel line connection is secure. If the connection is not secure, the ring pull could break when you try to remove it.

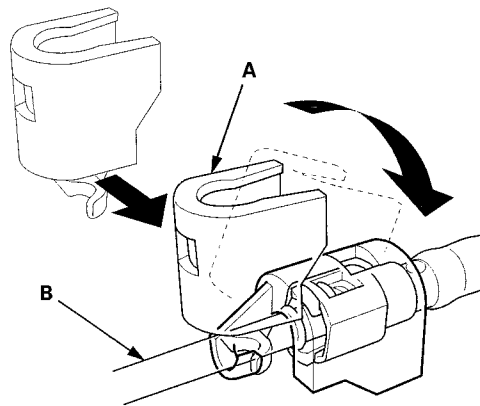


Connection to new fuel line



6. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II) or press the engine start/stop button to select the ON mode (but do not operate the starter motor). The fuel pump runs for about 2 seconds, and fuel pressure rises. Repeat this two or three times, and make sure there are no fuel leaks.

7. If equipped, install the quick-connect fitting cover. Set the groove of the cover (A) on the fuel line (B) as shown, then install it. Make sure the cover is firmly locked in place.





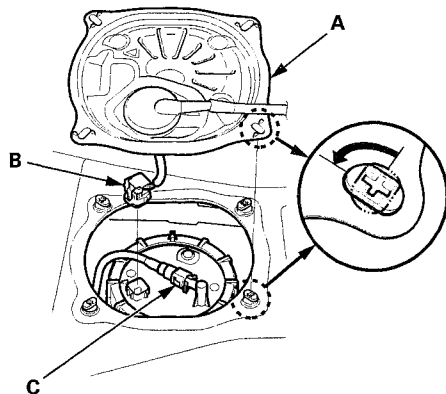
Fuel Tank Unit Removal and Installation

Special Tools Required

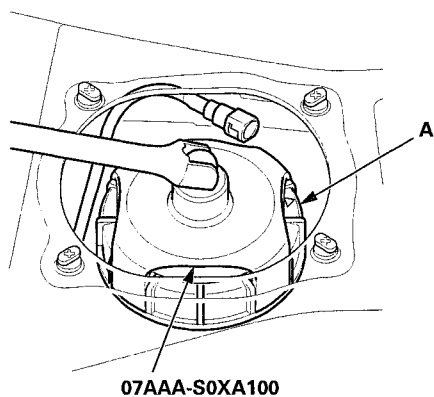
Fuel Sender Wrench 07AAA-S0XA100

Removal (without SH-AWD)

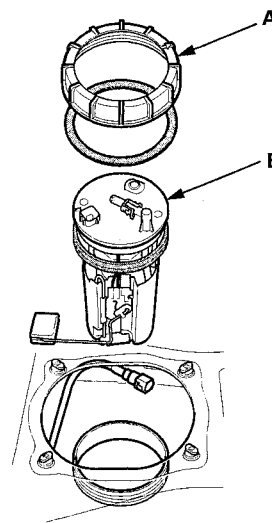
1. Relieve the fuel pressure (see page 11-366).
2. Remove the rear seat cushion (see page 20-156).
3. Remove the access panel (A) from the floor.



4. Disconnect the fuel tank unit 4P connector (B).
5. Disconnect the quick-connect fitting (C) from the fuel tank unit.
6. Using the special tool, loosen the locknut (A).



7. Remove the locknut (A) and the fuel tank unit (B).



(cont'd)

Fuel Supply System

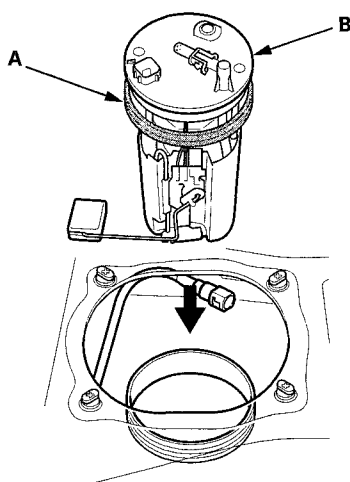
Fuel Tank Unit Removal and Installation (cont'd)

Installation (without SH-AWD)

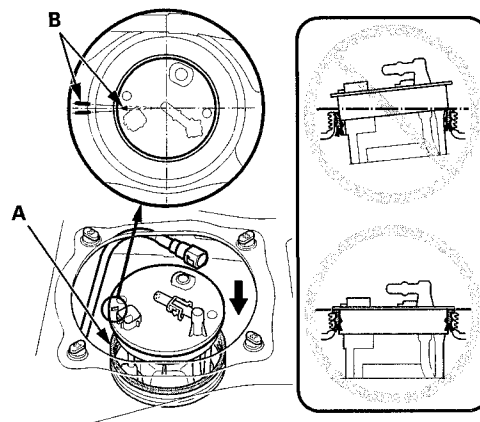
1. Temporarily attach a new base gasket (A) to the fuel tank unit (B), then insert the fuel tank unit partially into the fuel tank.

NOTE:

- Be careful not to damage the new base gasket.
- Be careful not to bend the fuel gauge sending unit.
- Do not coat the base gasket with oil.



2. Transfer the base gasket (A) from the fuel tank unit to the fuel tank.



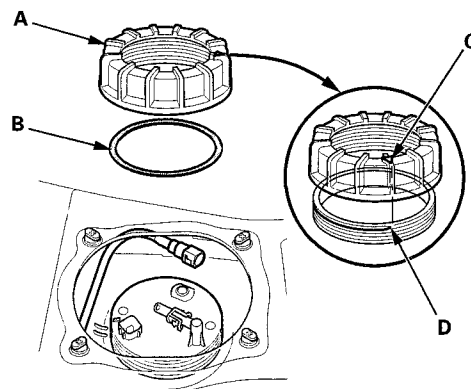
3. Align the marks (B) on the fuel tank and fuel tank unit, then insert the fuel tank unit into the fuel tank until the fuel tank unit rests on top of the base gasket.

NOTE: To avoid a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched.

4. Tighten a new locknut (A) by hand with a new locknut plate (B).

NOTE:

- Before tightening, align the mark (C) on the locknut with the start of the threads (D).

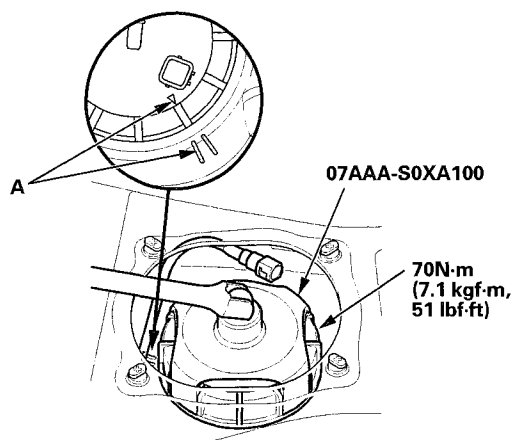




5. Using the special tool, tighten the locknut to the specified torque.

NOTE:

- After tightening, make sure the marks (A) are still aligned.
- After installation, check the base gasket, visually or by hand, to make sure it is not pinched.



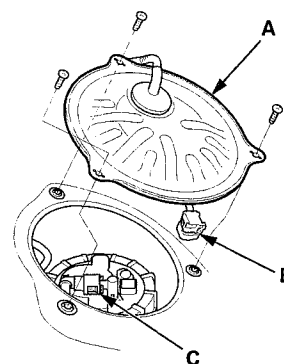
6. Connect the fuel tank unit 4P connector, then connect the quick-connect fitting.
7. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II) or press the engine start /stop button to select the ON mode (but do not operate the starter motor). The fuel pump runs for about 2 seconds, and fuel pressure rises. Repeat this two or three times, and make sure there are no fuel leaks.
8. Install the access panel.
9. Install the rear seat cushion (see page 20-156).
10. Install the fuel fill cap.

Special Tools Required

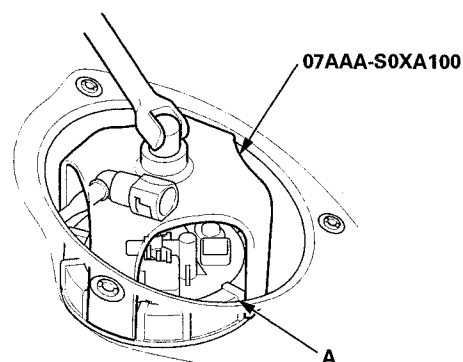
Fuel Sender Wrench 07AAA-S0XA100

Removal (with SH-AWD)

1. Relieve the fuel pressure (see page 11-366).
2. Remove the rear seat cushion (see page 20-156).
3. Remove the access panel (A) from the left side of the floor.



4. Disconnect the fuel tank unit 4P connector (B).
5. Disconnect the quick-connect fitting (C) from the fuel tank unit.
6. Using the special tool, loosen the locknut (A).

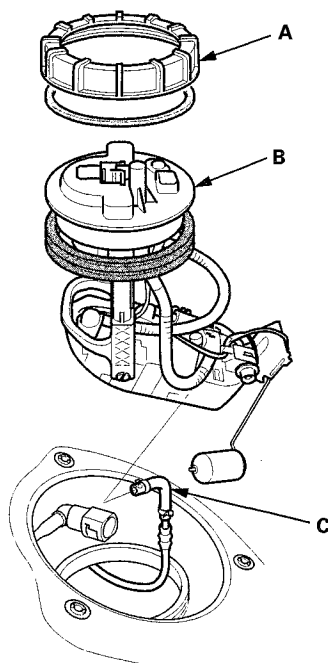


(cont'd)

Fuel Supply System

Fuel Tank Unit Removal and Installation (cont'd)

7. Remove the locknut (A), and lift up the fuel tank unit (B).



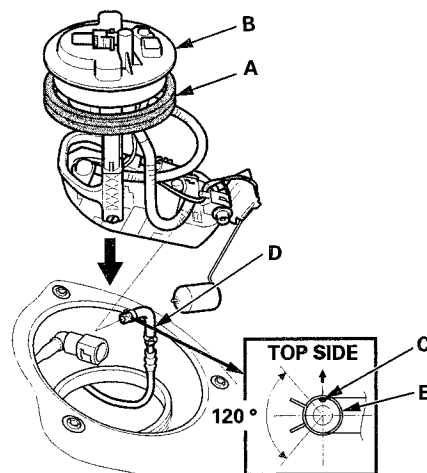
8. Disconnect the transfer tube (C), and remove the fuel tank unit.

Installation (with SH-AWD)

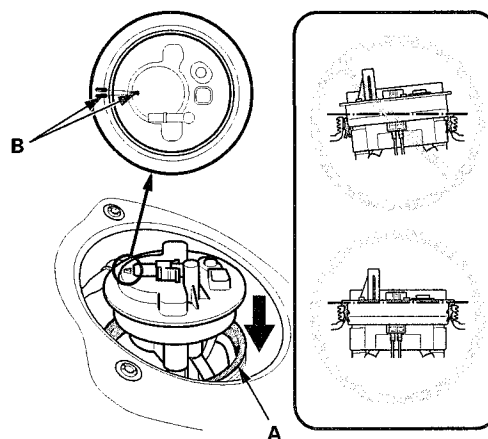
1. Temporarily attach a new base gasket (A) to the fuel tank unit (B), position the mark of the transfer tube (C) up, connect the transfer tube (D), then insert the fuel tank unit partially into the fuel tank.

NOTE:

- Be careful not to damage the new base gasket.
- Make sure the clamp (E) is positioned as shown.
- Be careful not to bend the fuel gauge sending unit.
- Do not coat the base gasket with oil.



2. Transfer the base gasket (A) from the fuel tank unit to the fuel tank.



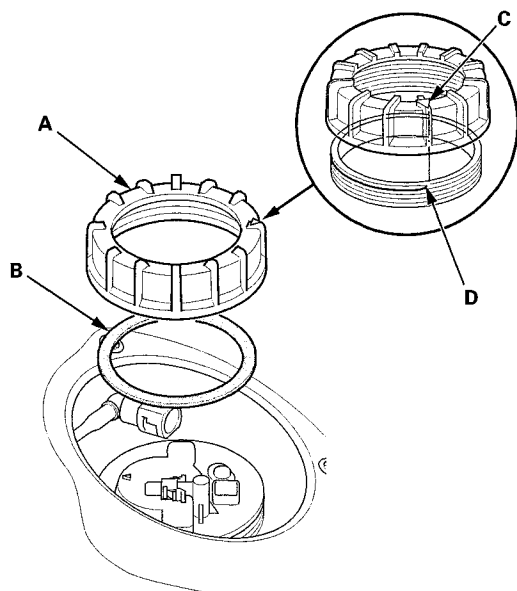
3. Align the marks (B) on the fuel tank and the fuel tank unit, then insert it straight into the fuel tank. Make sure it evenly contacts the base gasket.

NOTE: To prevent a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched.



4. Tighten a new locknut (A) by hand with a new locknut plate (B).

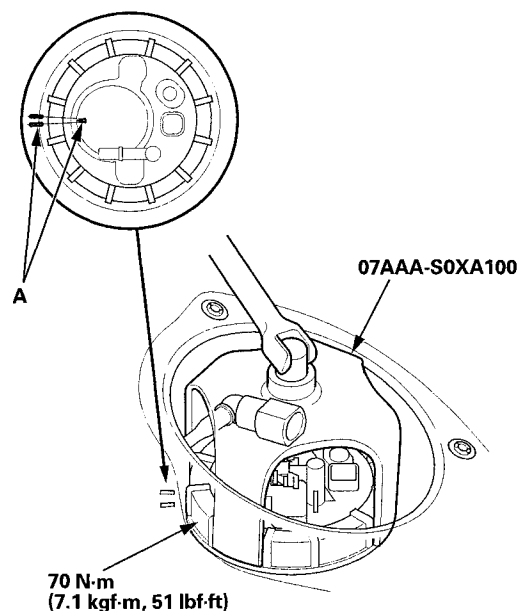
NOTE: Before tightening, align the mark (C) on the locknut with the start of the threads (D).



5. Using the special tool, tighten the locknut to the specified torque.

NOTE:

- After tightening, make sure the marks (A) are still aligned.
- After installation, check the base gasket, visually or by hand, to be sure it is not pinched.



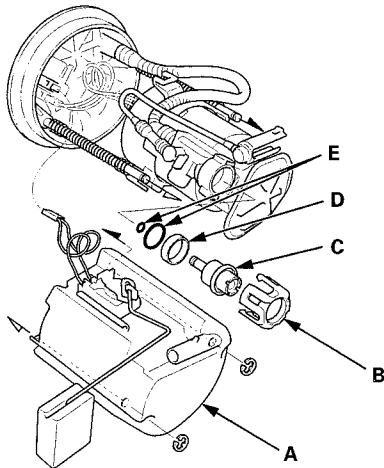
6. Connect the fuel tank unit 4P connector, then connect the quick-connect fitting.
7. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II) or press the engine start/stop button to select the ON mode (but do not operate the starter motor). The fuel pump runs for about 2 seconds, and fuel pressure rises. Repeat two or three times, and make sure there are no fuel leaks.
8. Install the access panel.
9. Install the rear seat cushion (see page 20-156).
10. Install the fuel fill cap.

Fuel Supply System

Fuel Pressure Regulator Replacement

Without SH-AWD

1. Remove the fuel tank unit (see page 11-391).
2. Remove the reservoir (A).



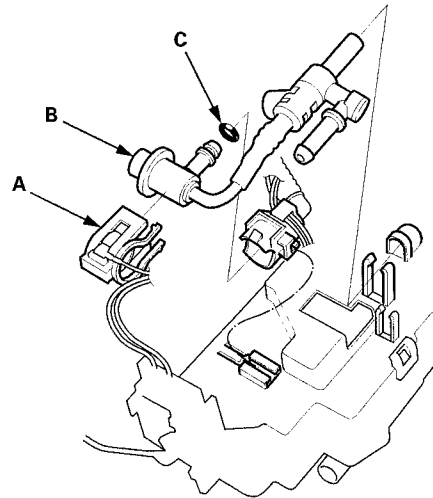
3. Remove the bracket (B).
4. Remove the fuel pressure regulator (C) and the backup ring (D).
5. Install the parts in the reverse order of removal with new O-rings (E) and a new bracket. When installing the fuel tank unit, align the marks on the fuel tank unit and the fuel tank (see page 11-392).

NOTE:

- Coat the O-rings with clean engine oil; do not use any other type oils or fluids.
- Do not pinch the O-rings during installation.
- Use all the new parts supplied in the pressure regulator replacement kit.

With SH-AWD

1. Remove the fuel tank unit (see page 11-393).
2. Remove the bracket (A).



3. Remove the pressure regulator (B).
4. Install the parts in the reverse order of removal with new O-ring (C). When installing the fuel tank unit, align the marks on the fuel tank unit and the fuel tank (see page 11-394).

NOTE:

- Coat the O-rings with clean engine oil; do not use any other oil or fluid.
- Do not pinch the O-rings during installation.
- Use all the new parts supplied in the pressure regulator replacement kit.

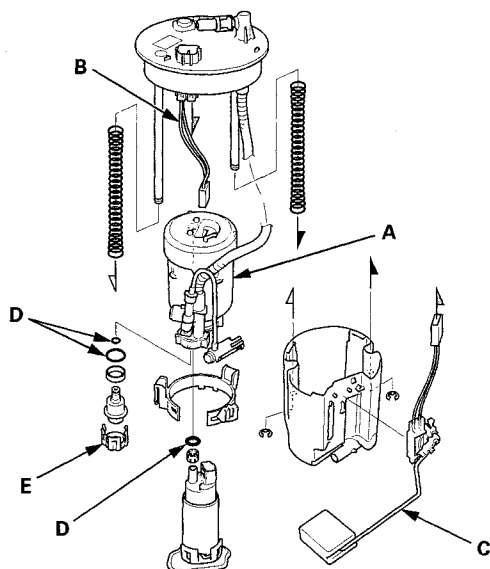


Fuel Filter Replacement

Without SH-AWD

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see page 11-369), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see page 11-391).
2. Remove the fuel filter set (A).



3. Check these items before installing the fuel tank unit:
 - When connecting the wire harness (B), make sure the connection is secure and the connectors are firmly locked into place.
 - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
4. Install the parts in the reverse order of removal with new O-rings (D) and a new bracket (E). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-394).

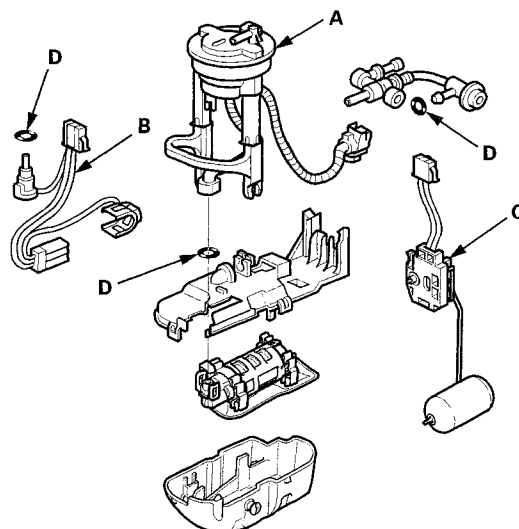
NOTE:

- Coat the O-rings with clean engine oil; do not use any other oil or fluid.
- Do not pinch the O-rings during installation.
- Use all the new parts supplied in the fuel filter replacement kit.

With SH-AWD

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see page 11-369), after making sure that the fuel pump and fuel pressure regulator are OK.

1. Remove the fuel tank unit (see page 11-393).
2. Remove the fuel filter set (A).



3. Check these items before installing the fuel tank unit:
 - When connecting the wire harness (B), make sure the connection is secure and the connectors are firmly locked into place.
 - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
4. Install the parts in the reverse order of removal with new O-rings (D). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-394).

NOTE:

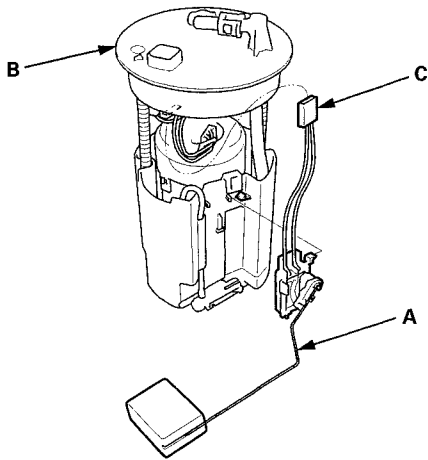
- Coat the O-rings with clean engine oil; do not use any other oil or fluid.
- Do not pinch the O-rings during installation.
- Use all the new parts supplied in the fuel filter replacement kit.

Fuel Supply System

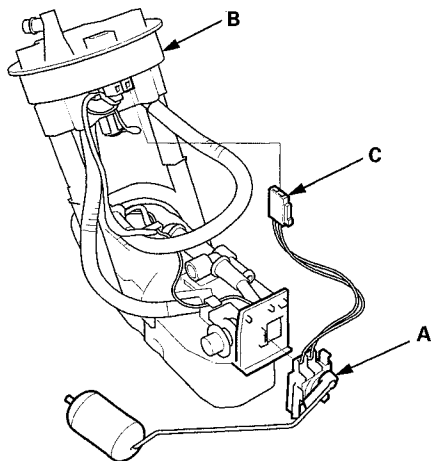
Fuel Pump/Fuel Gauge Sending Unit Replacement

1. Remove the fuel tank unit; without SH-AWD system (see page 11-391), with SH-AWD system (see page 11-393).
2. Remove the fuel level sensor (fuel gauge sending unit) (A) from the fuel tank unit (B).

Without SH-AWD



With SH-AWD



3. Check these items before installing the fuel tank unit:
 - When connecting the wire harness, make sure the connection is secure and the connector (C) is firmly locked into place.
 - When installing the fuel gauge sending unit, make sure the connection is secure. Be careful not to bend or twist it excessively.

4. Install the parts in the reverse order of removal. When installing the fuel tank unit, align the marks on the unit and the fuel tank; without SH-AWD system (see page 11-392), with SH-AWD system (see page 11-394).



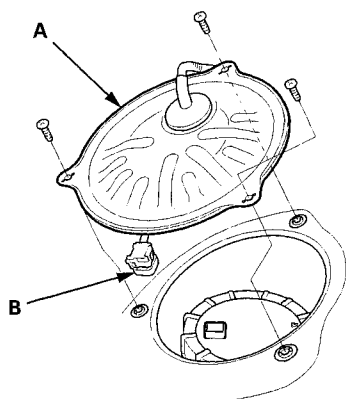
Secondary Fuel Gauge Sending Unit Removal/Installation

Special Tools Required

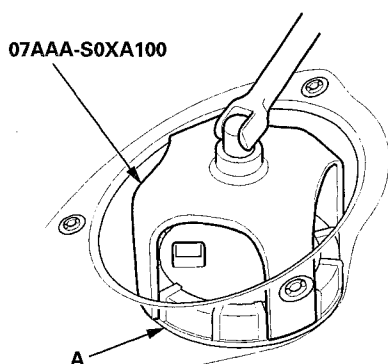
Fuel Sender Wrench 07AAA-S0XA100

Removal (with SH-AWD)

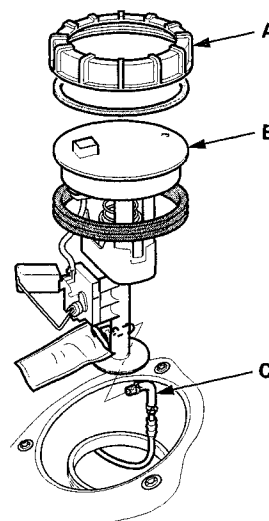
1. Relieve the fuel pressure (see page 11-366).
2. Remove the rear seat cushion (see page 20-156).
3. Remove the access panel (A) from the right side of the floor.



4. Disconnect the secondary fuel gauge sending unit 4P connector (B).
5. Using the special tool, loosen the locknut (A).



6. Remove the locknut (A), and lift up the secondary fuel gauge sending unit (B) from the fuel tank.



7. Disconnect the transfer tube (C), and remove the secondary fuel gauge sending unit.

(cont'd)

Fuel Supply System

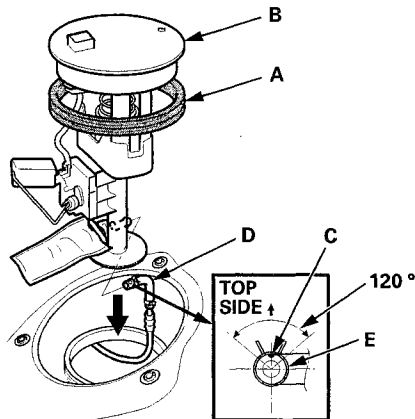
Secondary Fuel Gauge Sending Unit Removal/Installation (cont'd)

Installation (with SH-AWD)

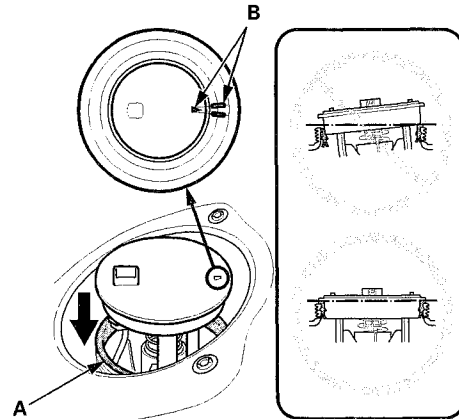
1. Temporarily attach a new base gasket (A) to the secondary fuel gauge sending unit (B), position the mark on the transfer tube (C) up, connect the transfer tube (D), then insert the secondary fuel gauge sending unit partially into the fuel tank.

NOTE:

- Be careful not to damage the new base gasket.
- Make sure the clamp (E) is positioned as shown.
- Be careful not to bend the secondary fuel gauge sending unit.
- Do not coat the base gasket with oil.



2. Transfer the base gasket (A) from the secondary fuel gauge sending unit to the fuel tank.

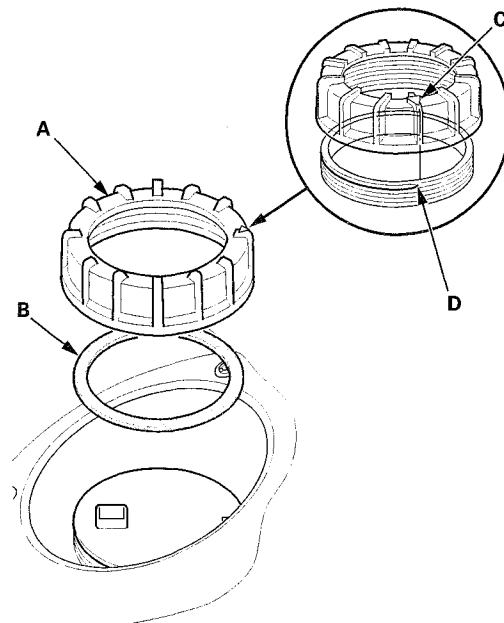


3. Align the marks (B) on the fuel tank and the secondary fuel gauge sending unit, then insert the secondary fuel gauge sending unit, straight into the fuel tank. Make sure it evenly contacts the base gasket.

NOTE: To avoid a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched.

4. Tighten a new locknut (A) by hand with a new locknut plate (B).

NOTE: Before tightening, align the mark (C) on the locknut with the start of the threads (D).

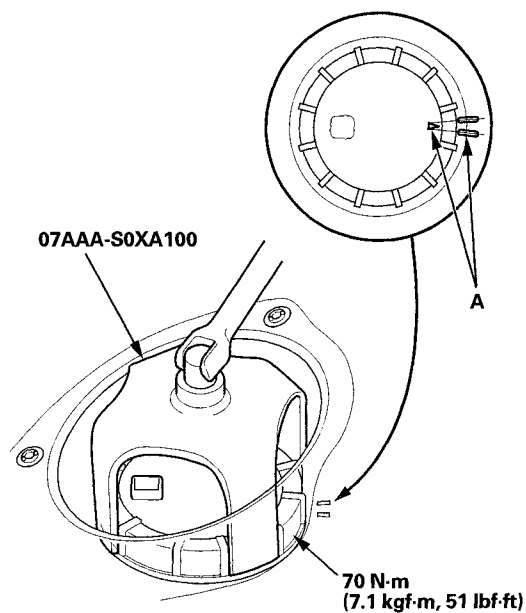




5. Using the tool, tighten the locknut to the specified torque.

NOTE:

- After tightening, make sure the marks (A) are still aligned.
- After installation, check the base gasket, visually or by hand, to be sure it is not pinched.



6. Connect the secondary fuel gauge sending unit 4P connector.

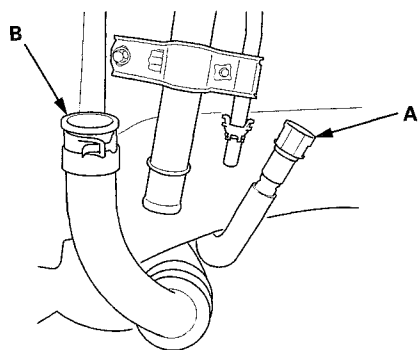
7. Install the parts in the reverse order of removal.

Fuel Supply System

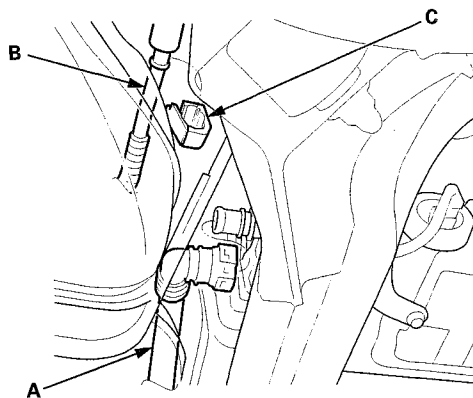
Fuel Tank Replacement

Without SH-AWD

1. Drain the fuel tank (see page 11-371).
2. Reinstall the fuel tank unit without connecting the fuel tank unit 4P connector and the quick-connect fitting (see page 11-392).
3. Remove the fuel fill pipe cover (see step 3 on page 11-406).
4. Disconnect the quick-connect fittings (A) (see page 11-379), and the fuel fill tube (B) from the fuel fill pipe. Slide back the clamps, then twist the hose as you pull to avoid damaging them.



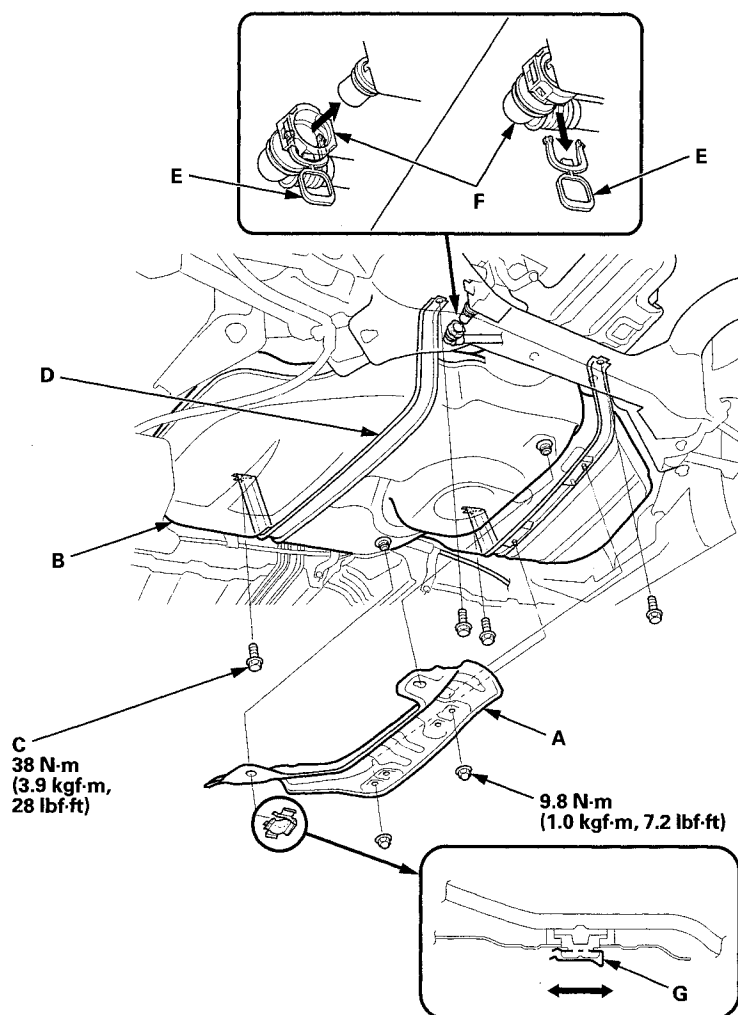
5. Raise the vehicle on a lift.
6. Disconnect the hose (A) from the EVAP canister.



7. Remove the hose (B) from the clamp (C).
- NOTE: Be careful not to damage the hose.
8. Remove the exhaust pipe (see page 9-9).
 9. Remove the middle floor undercover (see page 20-207).



10. Remove the fuel tank protector (A).



11. Remove the right parking brake cable mounting bolts (see page 19-42).

12. Place a jack or other support under the fuel tank (B).

13. Remove the strap bolts (C) and the straps (D).

14. Remove the fuel tank.

15. Install the parts in the reverse order of removal.

NOTE:

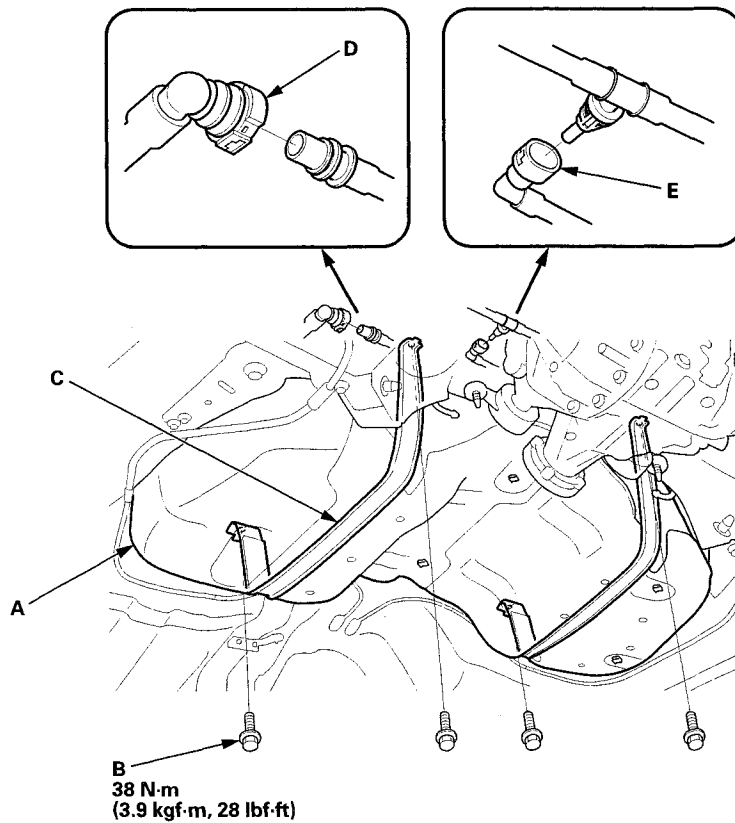
- New fuel tanks have ring pull (E) at the fuel vapor hose connector (F). When you connect the hose and confirm that the connection is secure, remove the ring pull by pulling it down.
- Before connecting the fuel fill pipe and the quick-connect fitting, check for dirt, and clean it if needed, taking care not to damage the fuel fill pipe and other parts.
- When installing the fuel tank protector, make sure to insert it into the clip (G) in the direction shown.

Fuel Supply System

Fuel Tank Replacement (cont'd)

With SH-AWD

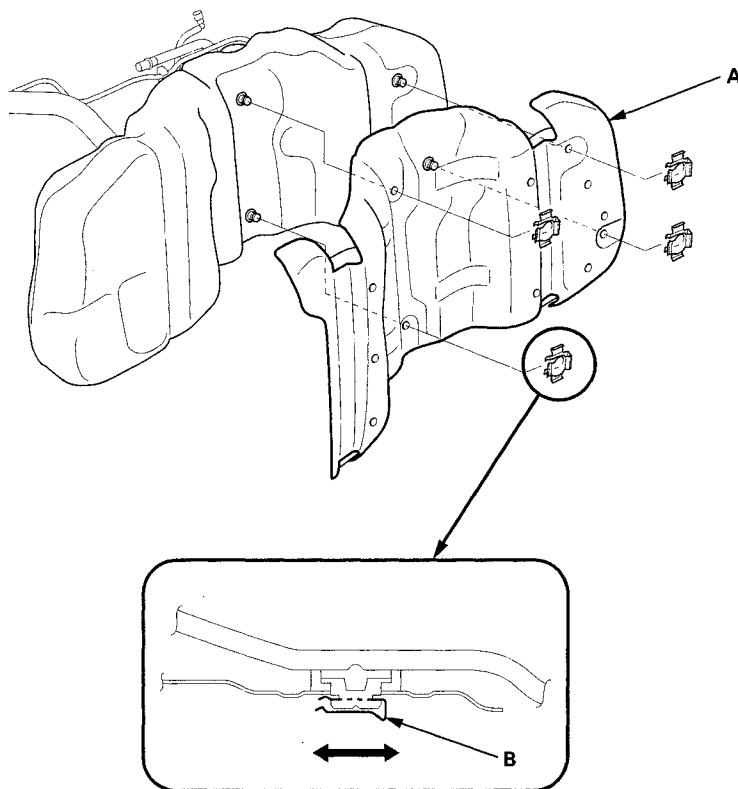
1. Drain the fuel tank (see page 11-371).
2. Reinstall the fuel tank unit without connecting the connector and the quick-connect fitting (see page 11-394), and reinstall secondary fuel gauge sending unit without connecting the connector (see page 11-400).
3. Remove the fuel fill pipe cover (see page 11-406).
4. Disconnect the quick-connect fittings from the fuel fill pipe (see step 4 on page 11-406).
5. Raise the vehicle on a lift.
6. Remove the exhaust pipe (see page 9-10).
7. Remove the propeller shaft (see page 16-50).
8. Place a jack or other support under the fuel tank (A).



9. Remove the strap bolts (B) and the straps (C).
10. Slowly lower the fuel tank, and disconnect the hose (D) and the quick-connect fitting (E).
11. Remove the fuel tank.



12. Remove the fuel tank protector (A) from the fuel tank.



13. Install the parts in the reverse order of removal.

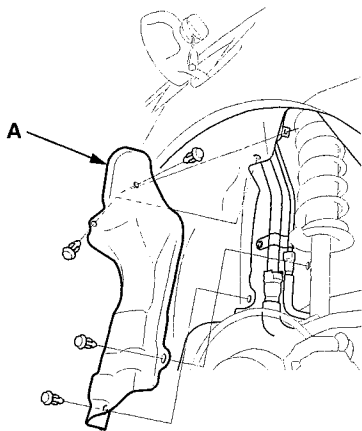
NOTE:

- When installing the fuel tank protector, make sure to insert it into the clip (B) in the direction shown.
- Before connecting the fuel fill pipe and the quick-connect fittings, check for dirt, and clean them if needed, taking care not to damage the fuel fill pipe and other parts.

Fuel Supply System

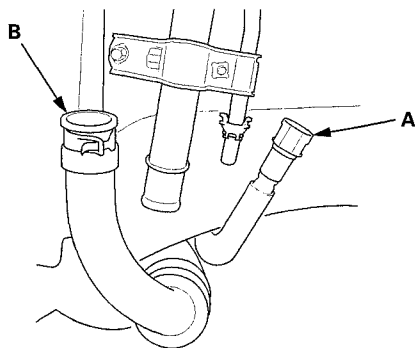
Fuel Fill Pipe Removal/Installation

1. Drain the fuel tank (see page 11-371).
2. Remove the left rear wheel.
3. Remove the fuel fill pipe cover (A).

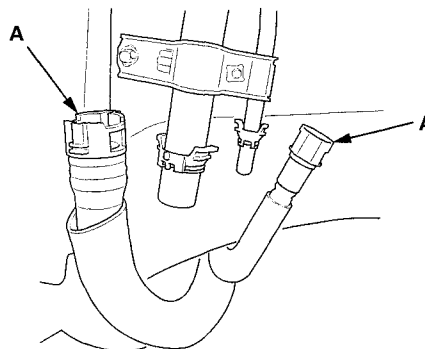


4. Disconnect the fuel fill tube:
 - Without SH-AWD: Disconnect the quick-connect fitting (A) (see page 11-379), and disconnect the fuel fill tube (B) from the fuel fill pipe by sliding back the clamp on the fuel fill tube, then twist the hose as you pull to avoid damaging the hose or pipe.
 - With SH-AWD: Disconnect the quick-connect fittings (A) (see page 11-381).

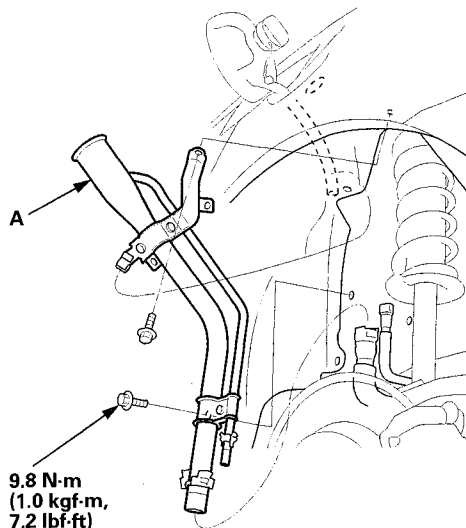
Without SH-AWD



With SH-AWD



5. Remove the fuel fill pipe (A).



6. Install the parts in the reverse order of removal.

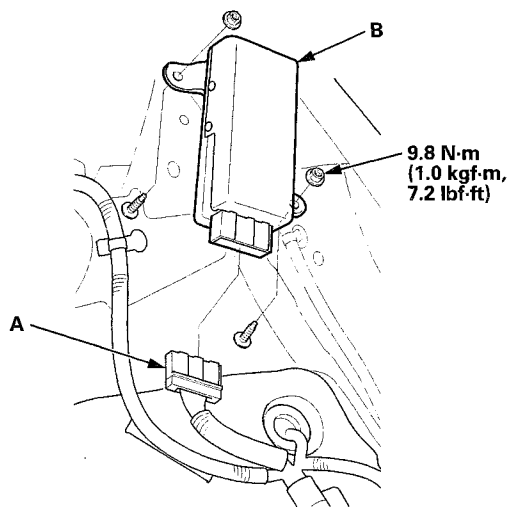
NOTE: Before connecting the fuel fill pipe and the quick-connect fitting, check for dirt, and clean it if needed, taking care not to damage the fuel fill pipe and other parts.



Fuel Pump Control Module Replacement

'09 model with SH-AWD

1. Remove the rear seat cushion and the seat-back (see page 20-156).
2. Disconnect the fuel pump control module connector (A).



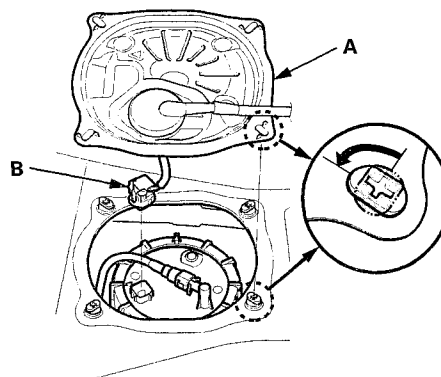
3. Remove the fuel pump control module (B).
4. Install the parts in the reverse order of removal.

Fuel Gauge Sending Unit Test

Without SH-AWD

NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-345).

1. Check the No. 12 METER (7.5 A) fuse in the driver's under-dash fuse/relay box before testing.
2. Check for body electrical system DTCs.
 - If no problem is found, go to step 3.
 - If DTC B1175 or B1176 is indicated, go to the indicated DTC's troubleshooting.
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Remove the rear seat cushion (see page 20-156).
5. Remove the access panel (A) from the floor.



6. Disconnect the fuel tank unit 4P connector (B).

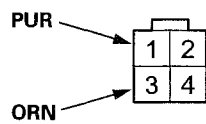
(cont'd)

Fuel Supply System

Fuel Gauge Sending Unit Test (cont'd)

7. Measure the voltage between fuel tank unit 4P connector terminals No. 1 and No. 3 with the ignition switch turned to ON (II), or press the engine start/stop button to select the ON mode. There should be battery voltage.
- If the voltage is OK, go to step 8.
 - If the voltage is not as specified, check for:
 - a short in the PUR wire to ground.
 - an open in the PUR or the ORN wire.

FUEL TANK UNIT 4P CONNECTOR



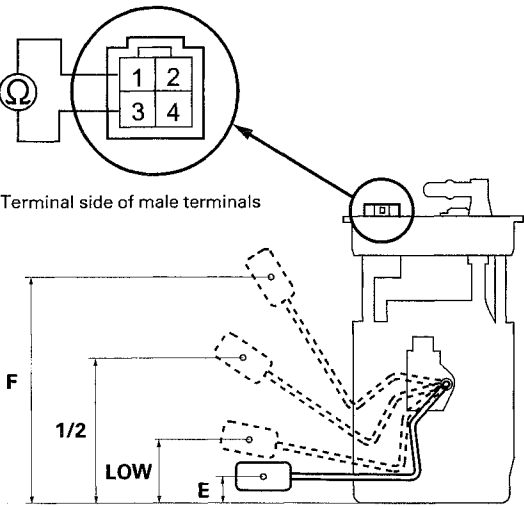
Wire side of female terminals

8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
9. Remove the fuel tank unit from the fuel tank (see page 11-393).

10. Measure the resistance between fuel tank unit 4P connector terminals No. 1 and No. 3 with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), 1/2 (HALF FULL), and F (FULL) positions.

If you do not get the following readings, replace the fuel gauge sending unit (see page 11-398).

Float Position	F 6.1 in (155.2 mm)	1/2 3.8 in (97.6 mm)	LOW 1.6 in (40.8 mm)	E 0.6 in (15.9 mm)
Resistance (Ω)	19 to 21	196.7 to 206.7	503.8 to 589.4	772 to 788





11. Reconnect the fuel tank unit 4P connector.
12. Remove the No. 15 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds, then reinstall it.
13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
14. Check that the pointer of the fuel gauge indicates F with the float at F.
 - If the pointer of the fuel gauge does not indicate F, replace the gauge control module (see page 22-367).
 - If the gauge is OK, the test is complete.

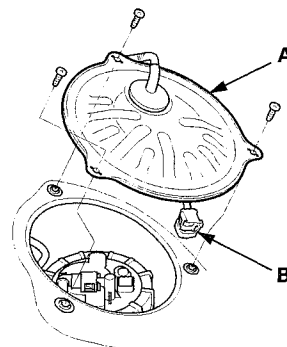
NOTE:

- The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is in ACC (I) and LOCK (0) or when the vehicle is in ACC or OFF mode, regardless of the fuel level.
- Remove the No. 15 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.

With SH-AWD

NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-345).

1. Check the No. 12 METER (7.5 A) fuse in the under-dash fuse/relay box before testing.
2. Check for body electrical system DTCs.
 - If no problem is found, go to step 3.
 - If DTC B1175 or B1176 is indicated, go to the indicated DTC's troubleshooting.
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Remove the rear seat cushion (see page 20-156).
5. Remove the access panel (A) from the left side of the floor.



6. Disconnect the fuel tank unit 4P connector (B).
7. Remove the fuel tank unit from the fuel tank (see page 11-393).

(cont'd)

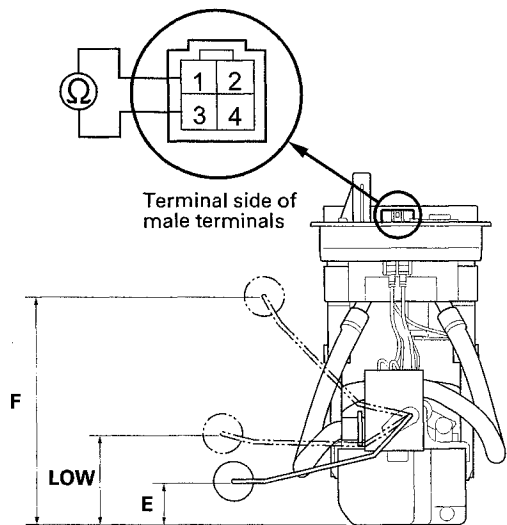
Fuel Supply System

Fuel Gauge Sending Unit Test (cont'd)

8. Measure the resistance between the No. 1 and No. 3 terminals of the fuel tank unit 4P connector with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), and F (FULL) positions.
- If you do not get the following readings, replace the fuel gauge sending unit (see page 11-398).
 - If the fuel gauge sending unit test is OK, do the secondary fuel gauge sending unit test (see page 11-410).

Float Position	F 6.7 in (169.5 mm)	LOW 2.8 in (70.7 mm)	E 1.2 in (30.2 mm)
Resistance (Ω)	9 to 11	235.8 to 280	336.8 to 343.8

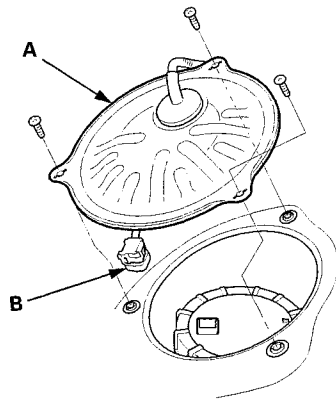
NOTE: Remove the No. 15 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 30 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.



Secondary Fuel Gauge Sending Unit Test

With SH-AWD

1. Remove the rear seat cushion (see page 20-156).
2. Remove the access panel (A) from the right side of the floor.



3. Disconnect the secondary fuel gauge sending unit 4P connector (B).
4. Remove the secondary fuel gauge sending unit from the fuel tank (see page 11-399).

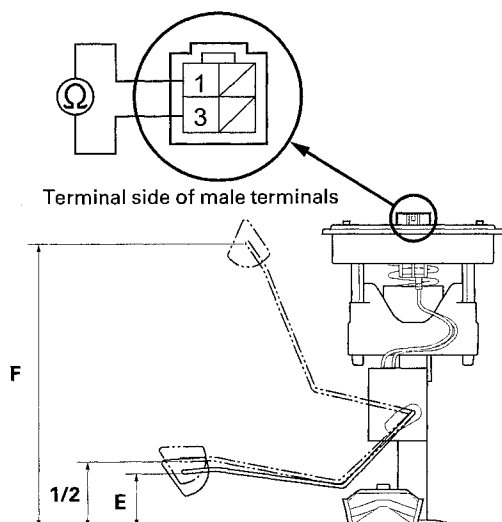


Low Fuel Indicator Test

5. Measure the resistance between the No. 1 and No. 3 terminals of the secondary fuel gauge sending unit 4P connector with the float at E (EMPTY), 1/2 (HALF FULL), and F (FULL) positions.

Float Position	F 6.9 in (176.1 mm)	1/2 1.3 in (33.3 mm)	E 1.1 in (27.8 mm)
Resistance (Ω)	9 to 11	453.2 to 444.2	453.2 to 444.2

NOTE: Remove the No. 15 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.



1. Do the gauge self-diagnostic function (see page 22-342).

- If the low fuel indicator flashes, go to step 2.
- If the low fuel indicator does not flash, replace the gauge control module (see page 22-367).

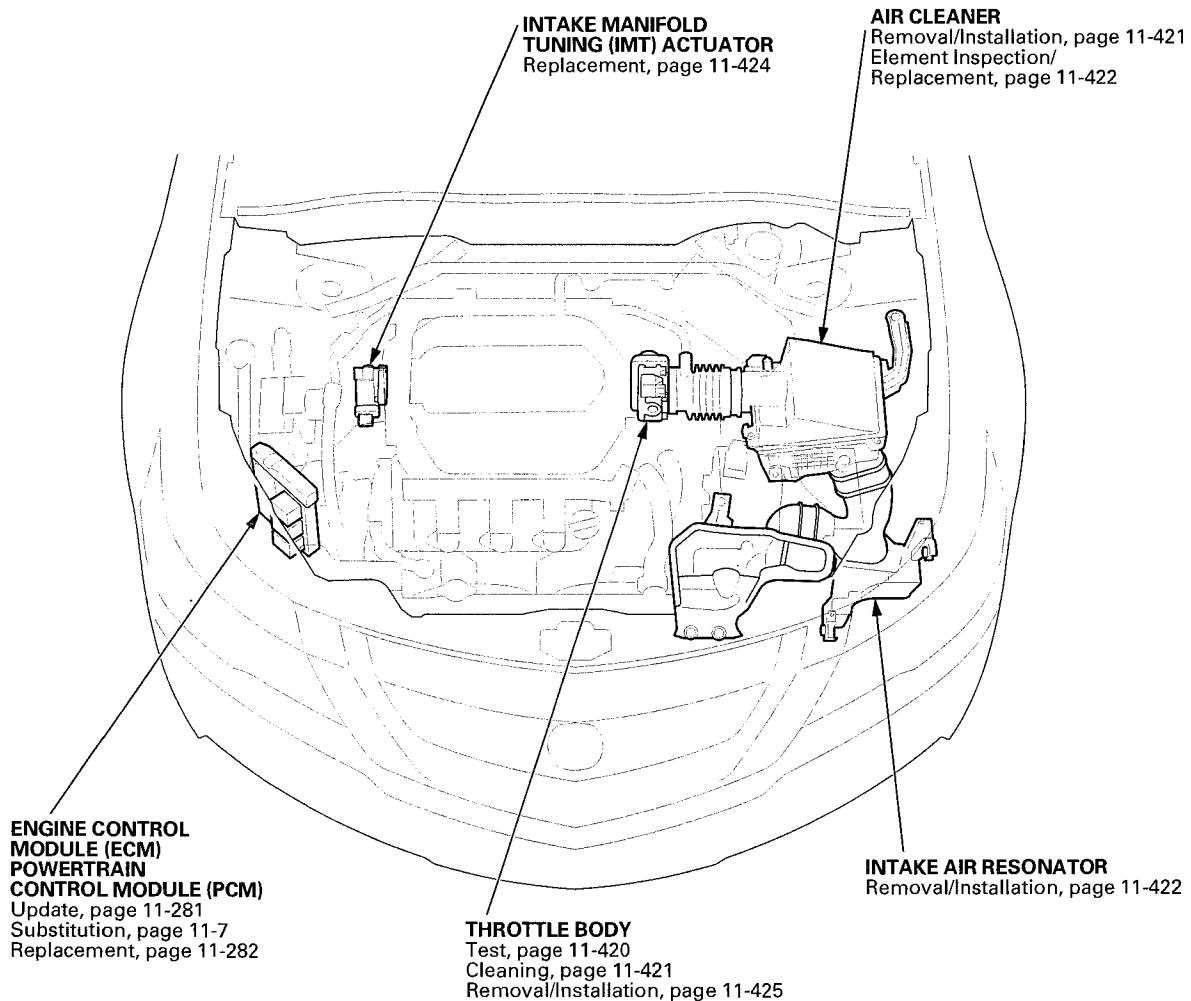
2. Check for body electrical system DTCs.

- If any DTCs are indicated, do the indicated DTC's troubleshooting.
- If no DTCs are indicated, go to step 3.

3. Do the fuel gauge sending unit test; without SH-AWD (see page 11-407), with SH-AWD (see page 11-409) (With SH-AWD system: and secondary fuel gauge sending unit test (see page 11-410)).

Intake Air System

Component Location Index





DTC Troubleshooting

DTC P1077: IMT Valve Stuck in High RPM Position

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Do the IMT TEST in the INSPECTION MENU with the HDS.

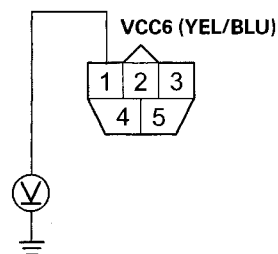
Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. ■

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Disconnect the IMT actuator 5P connector.
6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. Measure the voltage between IMT actuator 5P connector terminal No. 1 and body ground.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

Is there about 5 V?

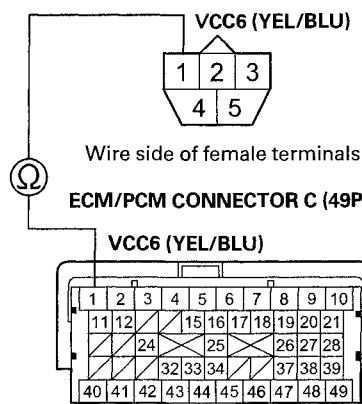
YES—Go to step 12.

NO—Go to step 8.

8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector C (49P).

11. Check for continuity between IMT actuator 5P connector terminal No. 1 and ECM/PCM connector terminal C11.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

ECM/PCM CONNECTOR C (49P)

VCC6 (YEL/BLU)

Terminal side of female terminals

Is there continuity?

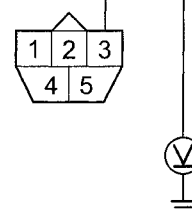
YES—Go to step 36.

NO—Repair open in the wire between the ECM/PCM (C11) and the IMT actuator, then go to step 30.

12. Measure the voltage between IMT actuator 5P connector terminal No. 3 and body ground.

IMT ACTUATOR 5P CONNECTOR

IMTM (WHT/BLK)



Wire side of female terminals

Is there about 5 V?

YES—Go to step 17.

NO—Go to step 13.

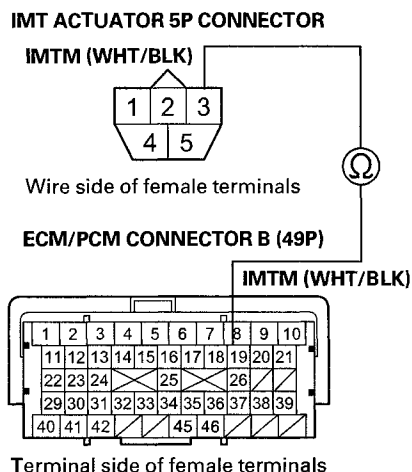
13. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector B (49P).

(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

16. Check for continuity between IMT actuator 5P connector terminal No. 3 and ECM/PCM connector terminal B19.



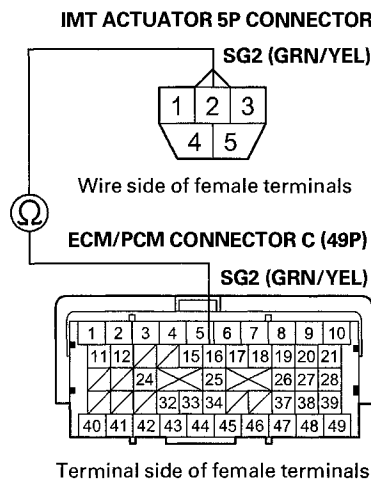
Is there continuity?

YES—Go to step 36.

NO—Repair open in the wire between the ECM/PCM (B19) and the IMT actuator, then go to step 30.

17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector C (49P).

20. Check for continuity between IMT actuator 5P connector terminal No. 2 and ECM/PCM connector terminal C16.

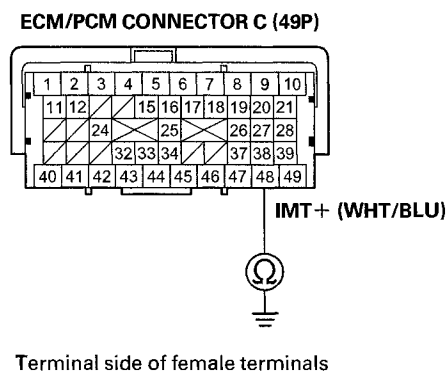


Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the ECM/PCM (C16) and the IMT actuator, then go to step 30.

21. Check for continuity between ECM/PCM connector terminal C48 and body ground.



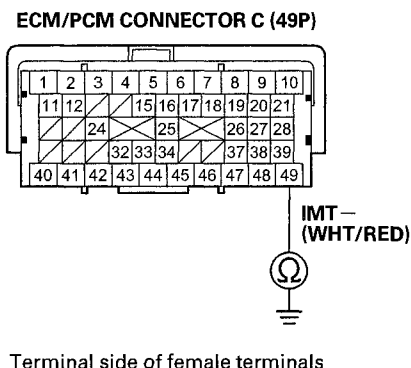
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C48) and the IMT actuator, then go to step 30.

NO—Go to step 22.



22. Check for continuity between ECM/PCM connector terminal C49 and body ground.

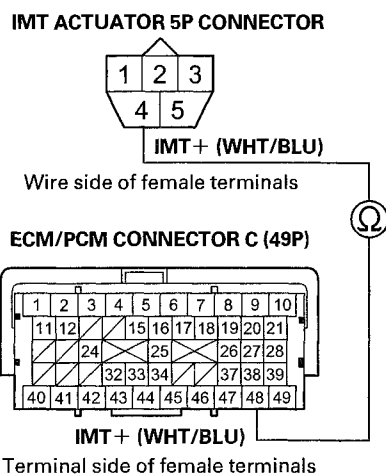


Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C49) and the IMT actuator, then go to step 30.

NO—Go to step 23.

23. Check for continuity between IMT actuator 5P connector terminal No. 5 and ECM/PCM connector terminal C48.

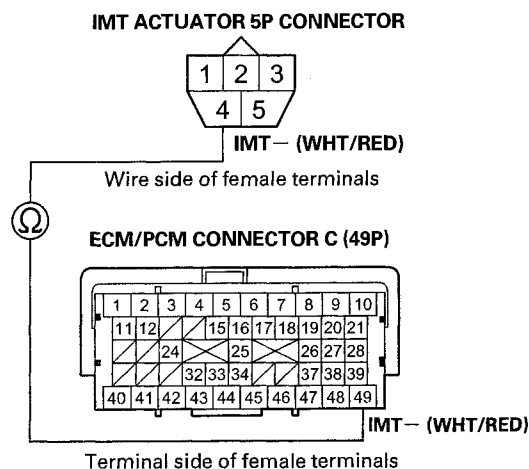


Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the ECM/PCM (C48) and the IMT actuator, then go to step 30.

24. Check for continuity between IMT actuator 5P connector terminal No. 4 and ECM/PCM connector terminal C49.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM/PCM (C49) and the IMT actuator, then go to step 30.

25. Remove the IMT actuator (see page 11-424).

26. Move the IMT valve by hand.

Does it move smoothly?

YES—Go to step 27.

NO—Remove the intake manifold upper cover (see step 5 on page 9-5), and repair the stuck valve. If needed, replace the intake manifold (see page 9-4), then go to step 30.

27. Substitute a known-good IMT actuator (see page 11-424).

28. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

29. Do the IMT TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Replace the original IMT actuator (see page 11-424), then go to step 30.

NO—Go to step 36.

(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

30. Reconnect all connectors.

31. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

32. Reset the ECM/PCM with the HDS.

33. Do the ECM/PCM idle learn procedure (see page 11-337).

34. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1077 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1.

NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

36. Reconnect all connectors.

37. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

38. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

39. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1077 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 38. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 40.

40. Monitor the OBD STATUS for DTC P1077 in the DTC's MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 39, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicated FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 38. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P1078: IMT Valve Stuck in Low RPM Position

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Do the IMT TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM.

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Disconnect the IMT actuator 5P connector.
6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. Check the IMT VALVE SW in the DATA LIST with the HDS.

Is CLOSE indicated?

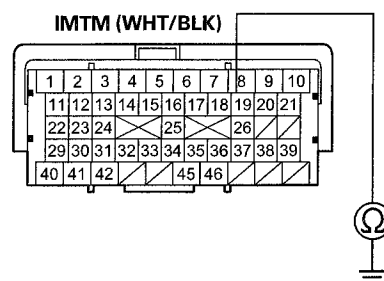
YES—Go to step 12.

NO—Go to step 8.

8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector B (49P).

11. Check for continuity between ECM/PCM connector terminal B19 and body ground.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

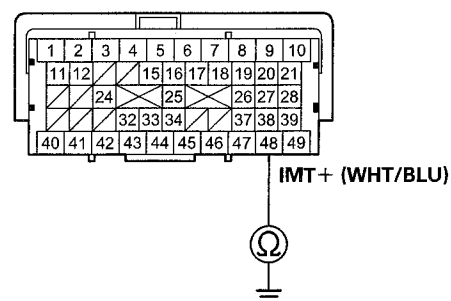
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B19) and the IMT actuator, then go to step 24.

NO—Go to step 31.

12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector C (49P).
15. Check for continuity between ECM/PCM connector terminal C48 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C48) and the IMT actuator, then go to step 24.

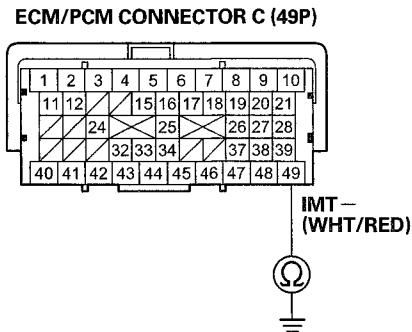
NO—Go to step 16.

(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

16. Check for continuity between ECM/PCM connector terminal C49 and body ground.

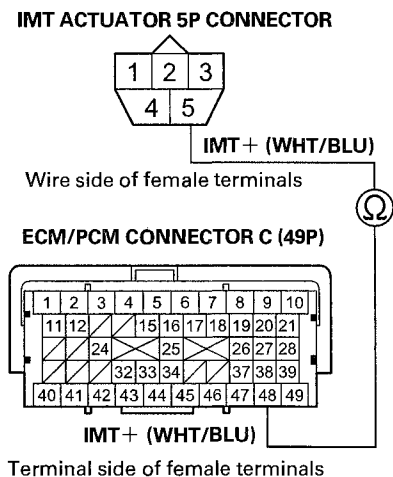


Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C49) and the IMT actuator, then go to step 24.

NO—Go to step 17.

17. Check for continuity between IMT actuator 5P connector terminal No. 5 and ECM/PCM connector terminal C48.

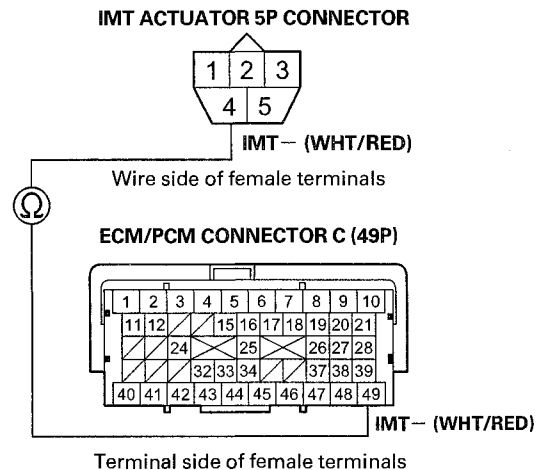


Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the ECM/PCM (C48) and the IMT actuator, then go to step 24.

18. Check for continuity between IMT actuator 5P connector terminal No. 4 and ECM/PCM connector terminal C49.



Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (C49) and the IMT actuator, then go to step 24.

19. Remove the IMT actuator (see page 11-424).

20. Move the IMT valve by hand.

Does it move smoothly?

YES—Go to step 21.

NO—Remove the intake manifold upper cover (see step 5 on page 9-5), and repair the stuck valve. If needed, replace the intake manifold (see page 9-4), then go to step 24.

21. Substitute a known-good IMT actuator (see page 11-424).
22. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
23. Do the IMT TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Replace the original IMT actuator (see page 11-424), then go to step 24.

NO—Go to step 32.



24. Reconnect all connectors.
25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-337).
28. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
29. Hold the engine speed at 4,000 rpm for 3 seconds or more, then let it idle.
30. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1078 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1.

NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P1078 in the DTCs MENU with the HDS.

Does the screen indicates PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 28.

32. Reconnect all connectors.
33. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
34. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
35. Hold the engine speed at 4,000 rpm for 3 seconds or more, then let it idle.
36. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1078 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 37.

37. Monitor the OBD STATUS for DTC P1078 in the DTC's MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 36, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicated FAILED, check for poor connections or loose terminals at the IMT actuator and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 34.

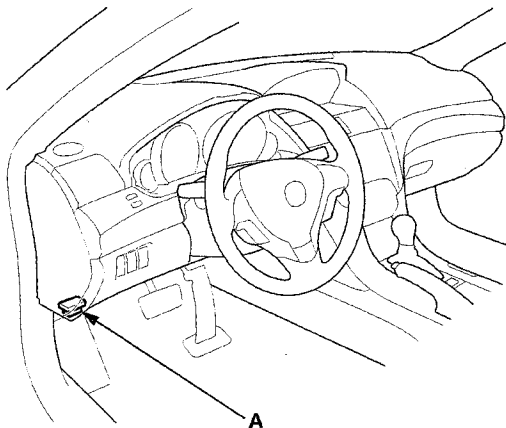
Intake Air System

Throttle Body Test

Carbon Accumulation Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

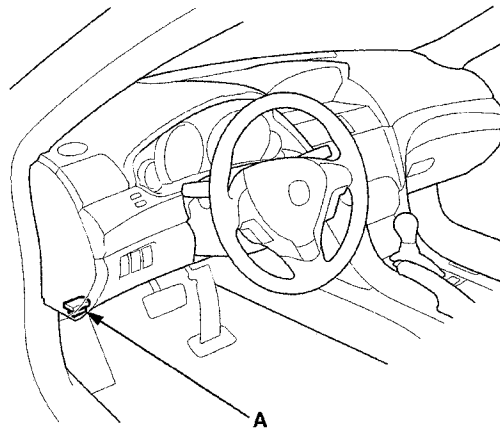


2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
3. Make sure the HDS communicates with the ECM/PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-258).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
5. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 2.46 percent. If it is not, clean the throttle body (see page 11-421).

Throttle Position Learning Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
3. Make sure the HDS communicates with the ECM/PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-258).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP LEARNING CHECK in the ETCS TEST. If needed, clean the throttle body (see page 11-421).



Throttle Body Cleaning

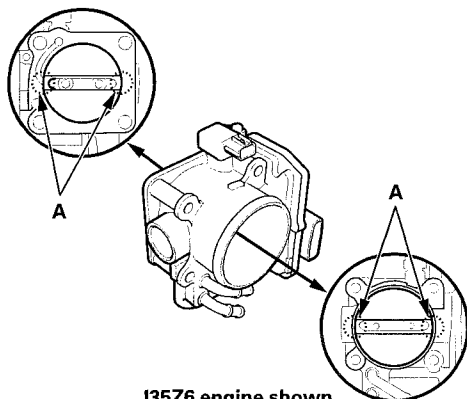
⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II)/press the engine start/stop button, or while the ignition switch is in ON (II)/vehicle in ON mode. If you do, you will seriously injure your fingers if the throttle valve is activated.

1. Check for damage to the air cleaner element. If the air cleaner element is damaged, replace it (see page 11-422).
2. Remove the throttle body (see page 11-425).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate cleaner.

NOTE:

- Remove the throttle body to clean it.
- Be careful not to pinch your fingers.
- To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).
- Do not spray throttle plate cleaner directly on the throttle body.
- Use Acura genuine throttle plate cleaner.

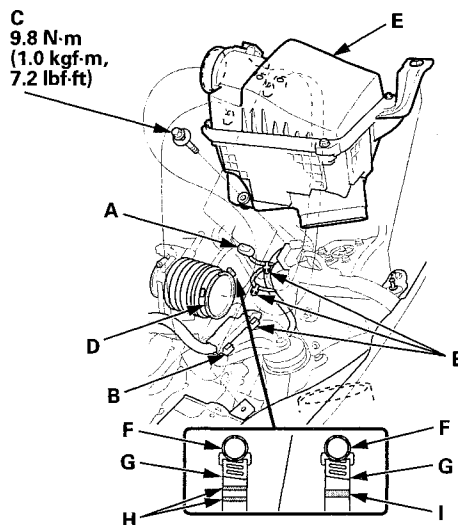


J35Z6 engine shown

4. Install the throttle body (see page 11-425).
5. Reset the ECM/PCM with the HDS (see page 11-4).
6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode and wait 2 seconds.
7. Do the ECM/PCM idle learn procedure (see page 11-337).

Air Cleaner Removal/Installation

1. Do the battery removal procedure (see page 22-87).
2. Disconnect the MAF sensor/IAT sensor 5P connector (A).



3. Remove the harness clamps (B) and the bolt (C).
4. Loosen the band (D), then remove the air cleaner housing (E).
5. Install the parts in the reverse order of removal.

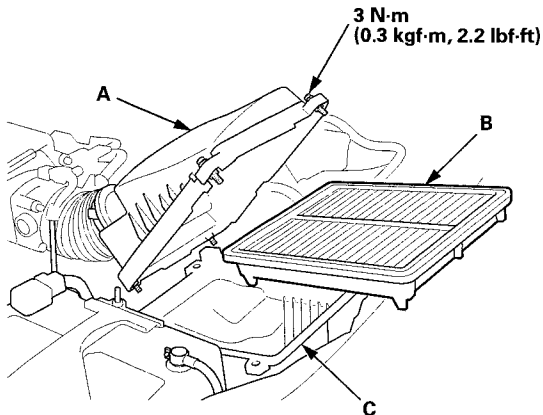
NOTE: When tightening the screw of the hose band (F), align the edge of the hose band (G) between the marks (H) (or within the mark (I)) painted on the hose band.

6. Do the battery installation procedure (see page 22-87).

Intake Air System

Air Cleaner Element Inspection/Replacement

1. Open the air cleaner housing cover (A).



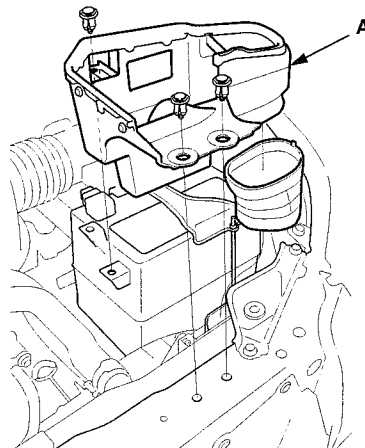
2. Remove the air cleaner element (B) from the air cleaner housing (C).
3. Check the air cleaner element for damage or clogging. If it is damaged or clogged, replace it.

NOTE: Do not use compressed air to clean the air cleaner element.

4. Clean and remove any debris from inside the air cleaner housing.
5. Install the parts in the reverse order of removal.
 - If you did not replace the air cleaner element, this procedure is complete.
 - If the maintenance minder required air cleaner element replacement, reset the maintenance minder (see page 3-8).
 - If the idle speed fluctuates, do the idle speed inspection (see page 11-337).

Intake Air Resonator Removal/Installation

1. Remove the splash separator (A).

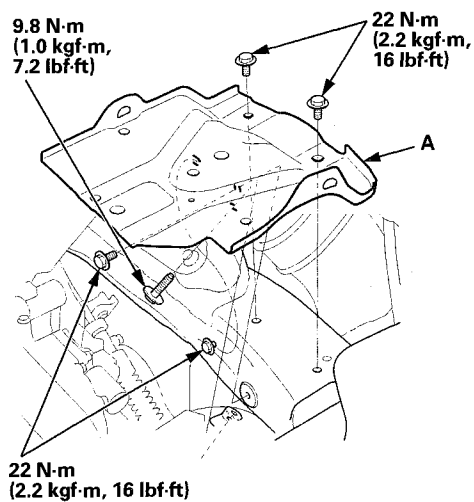


2. Do the battery removal procedure (see page 22-87).
3. Remove the air cleaner (see page 11-421).

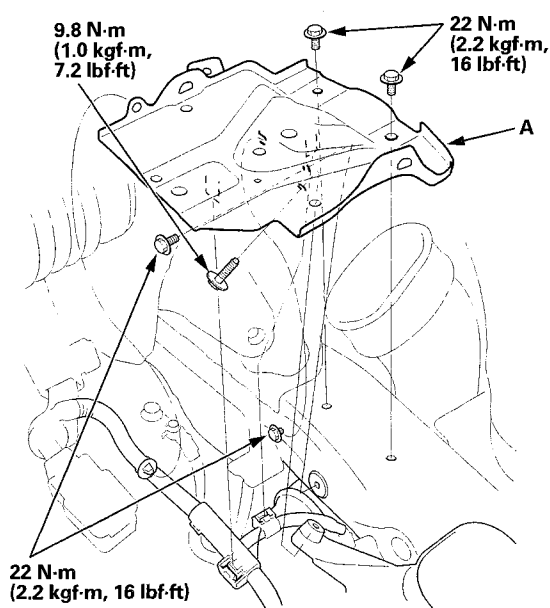


4. Remove the battery base (A).

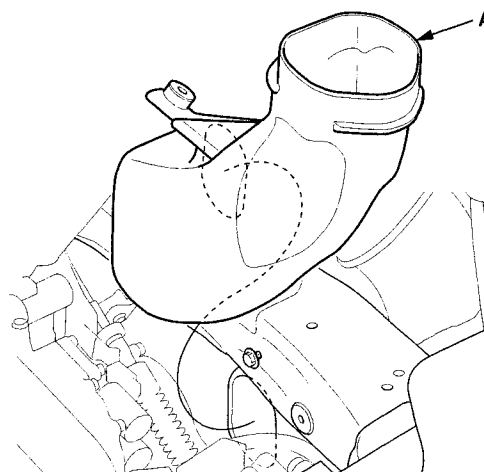
A/T



M/T

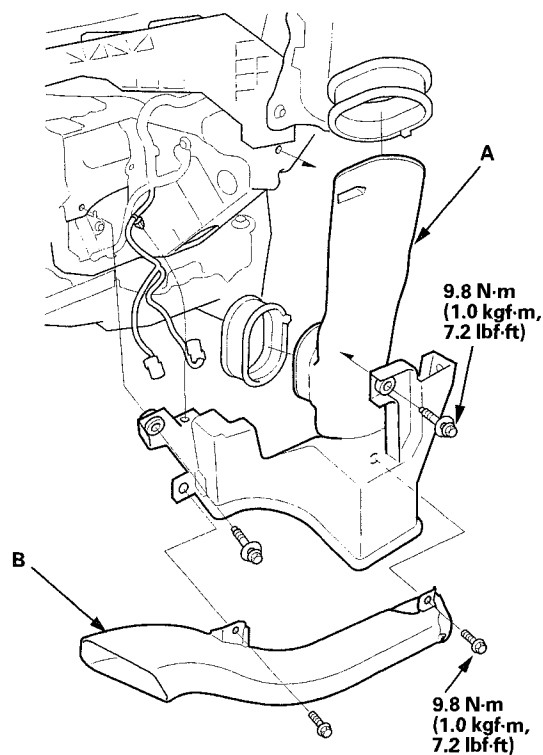


5. Remove the intake air duct (A).



6. Remove the front bumper (see page 20-164).

7. Remove the intake air resonator (A).



8. J37A4 engine: Remove the brake duct (B).

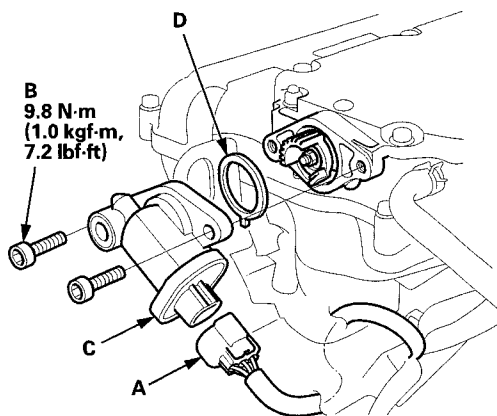
9. Install the parts in the reverse order of removal.

10. Do the battery installation procedure (see page 22-87).

Intake Air System

IMT Actuator Replacement

1. Disconnect the IMT actuator 5P connector (A).



2. Remove the bolts (B) and the IMT actuator (C).
3. Install the parts in the reverse order of removal with a new O-ring (D).



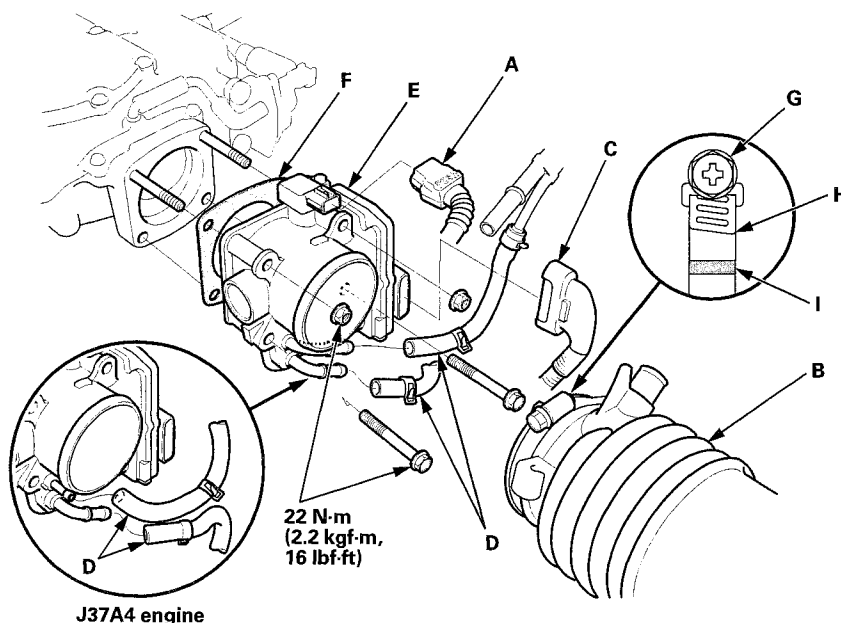
Throttle Body Removal/Installation

CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II)/press the engine start/stop button, or while the ignition switch is in ON (II)/vehicle in ON mode. If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: If you are replacing or cleaning the throttle body, begin at step 1. If you are removing the throttle body temporarily, begin at step 4.

1. Connect the HDS while the engine is stopped.
2. Select the INSPECTION MENU with the HDS.
3. Do the TP POSITION CHECK in the ETCS TEST.
4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Disconnect the MAP sensor connector (A).



J37A4 engine

6. Remove the intake air duct (B).
7. Disconnect the throttle body connector (C).
8. Disconnect and plug the water bypass hoses (D), then remove the throttle body (E).
9. Install the parts in the reverse order of removal with a new gasket (F).

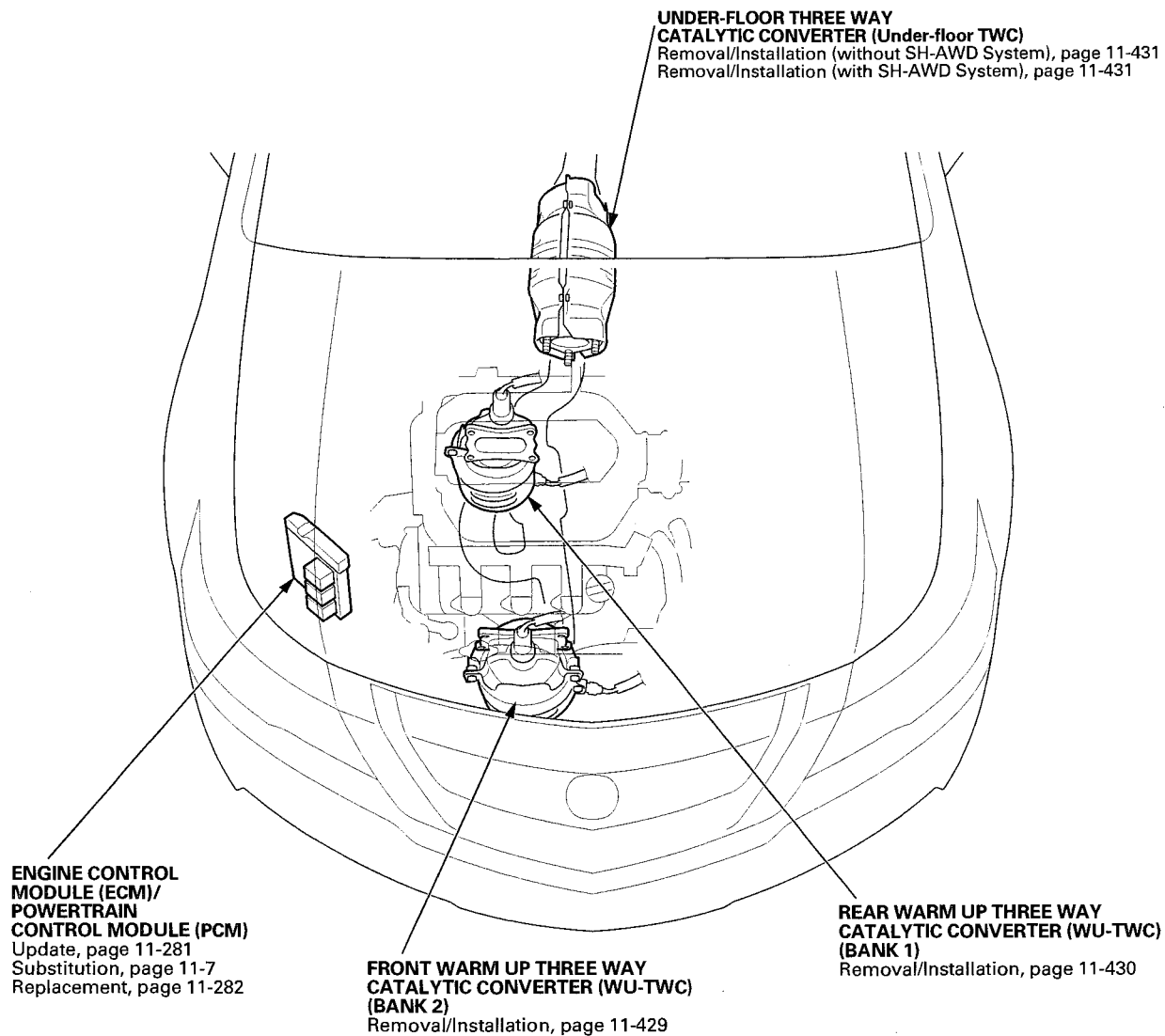
NOTE:

- When tightening the screw of the hose band (G), align the edge of the hose band (H) with the mark (I) painted on the hose band.
- After the installation, refill the radiator with engine coolant (see page 10-6).

10. Do the ECM/PCM idle learn procedure (see page 11-337).

Catalytic Converter System

Component Location Index





DTC Troubleshooting

DTC P0420: Rear Bank Catalyst System Efficiency Below Threshold (Bank 1)

DTC P0430: Front Bank Catalyst System Efficiency Below Threshold (Bank 2)

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If some of the DTCs listed below are stored at the same time as DTC P0420 and/or P0430*, troubleshoot those DTCs first, then recheck for DTC P0420 and/or P0430*.

P0137, P0138, P0157, P0158: Secondary HO2S (Sensor 2)

P0141, P0161: Secondary HO2S (Sensor 2) heater

- Poor quality fuel can cause these DTCs.
 - Information marked with an asterisk (*) applies to the front bank (Bank 2).
1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
 2. Clear the DTC with the HDS.
 3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
 4. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Vehicle speed between 45–75 mph (72–120 km/h) for 5 minutes or more with cruise control set
 - Vehicle speed between 55–75 mph (88–120 km/h) for 10 seconds, then decelerate (with throttle fully closed). Repeat this 3 times or more
 - Maintain the vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set

5. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate EXECUTING?

YES—Go to step 6.

NO—If the screen indicates OUT OF CONDITION, go to step 4 and recheck. If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates FAILED, go to step 8 and recheck.

6. Continue test driving until a result comes on.

7. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 8.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the ON mode.
9. Replace the WU-TWC:
 - For DTC P0420, replace the rear WU-TWC (Bank 1) (see page 11-430).
 - For DTC P0430, replace the front WU-TWC (Bank 2) (see page 11-429).
10. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
11. Reset the ECM/PCM with the HDS.
12. Do the ECM/PCM idle learn procedure (see page 11-337).
13. Test-drive for about 10 minutes, continually changing the vehicle speed.
14. Check the CATA MONITOR CONDITION B1 (B2)* in the DATA LIST with the HDS.

Is the condition OK?

YES—Go to step 15.

NO—Go to step 13 and recheck.

(cont'd)

Catalytic Converter System

DTC Troubleshooting (cont'd)

15. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- A/T in D, M/T in 4th
- Vehicle speed between 55—75 mph (88—120 km/h) for 10 seconds, then decelerate (with throttle fully closed). Repeat this 3 times or more
- Maintain the vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set

16. Continue test driving until a result comes on.

17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0420 and/or P0430 indicated?*

YES—Check the fuel quality, then go to step 1.

NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

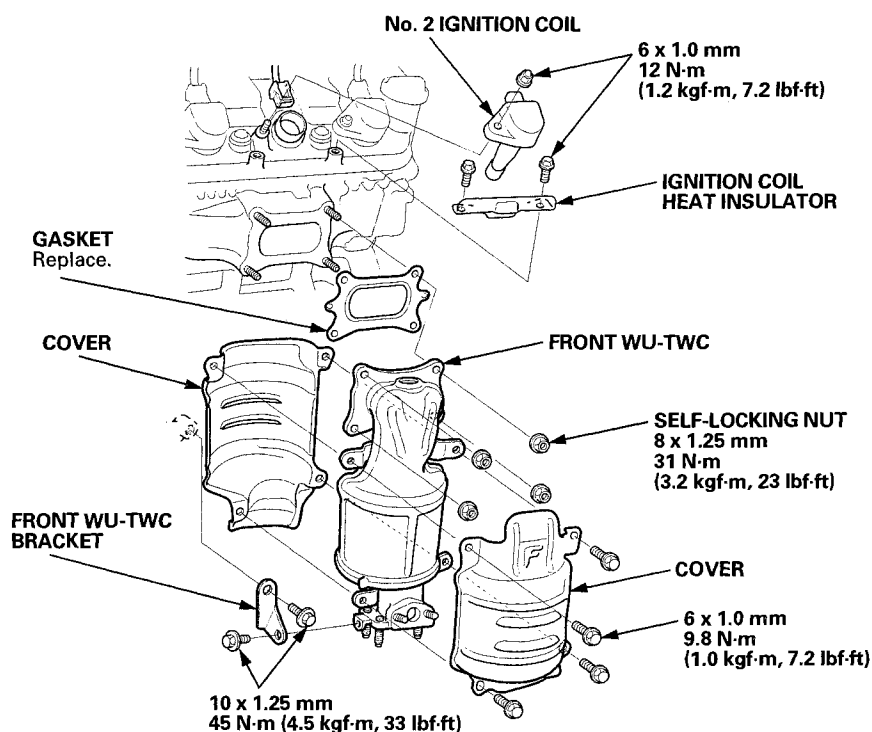
NO—If the screen indicates FAILED, check the fuel quality, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 15.



Warm Up TWC Removal/Installation

FRONT (Bank 2)

1. Remove the No. 2 the ignition coil and the ignition coil heat insulator.
2. Remove the front A/F sensor (Sensor 1) (see page 11-275) and the front secondary HO2S (Sensor 2) (see page 11-276).
3. Remove the exhaust pipe A mounting nuts (front WU-TWC side); J35Z6 engine (see page 9-9), J37A4 engine (see page 9-10).
4. Remove the EGR pipe (see page 11-444).
5. Remove the A/C condenser fan assembly (see page 10-10) and the radiator upper bracket/cushion (see page 10-10).
6. Remove the front WU-TWC bracket, then carefully remove the front WU-TWC.



7. Carefully install the front WU-TWC with a new gasket and new self-locking nuts. Tighten the nuts in a crisscross pattern in two or three steps.
8. Install the parts in the reverse order of removal.

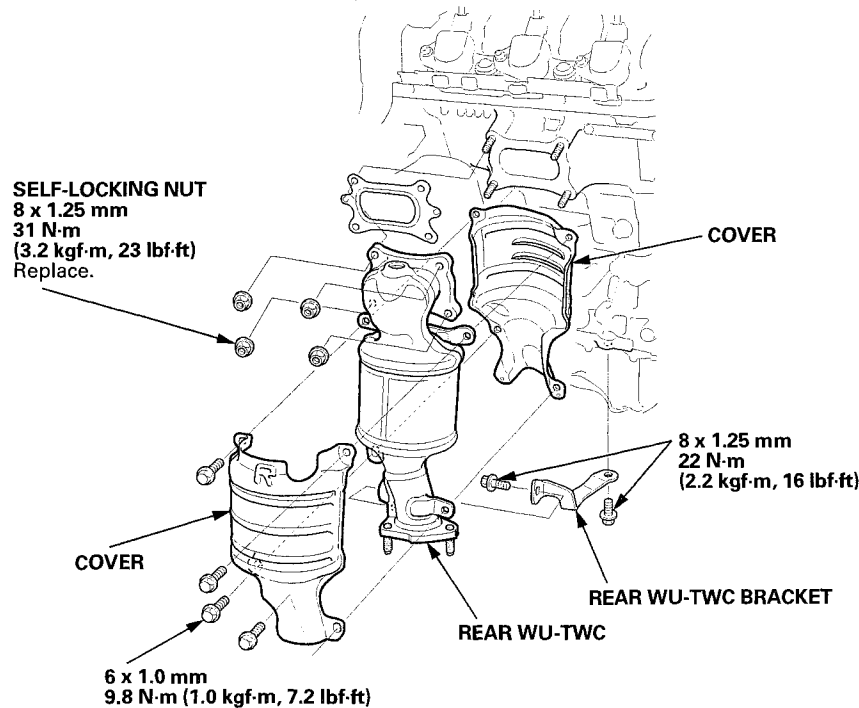
(cont'd)

Catalytic Converter System

Warm Up TWC Removal/Installation (cont'd)

REAR (Bank 1)

1. Remove the strut brace (see page 20-210).
2. Remove the rear A/F sensor (Sensor 1) (see page 11-275) and the rear secondary HO2S (Sensor 2) (see page 11-276).
3. Remove the P/S heat shield (see step 14 on page 17-64).
4. Remove exhaust pipe A; J35Z6 engine (see page 9-9), J37A4 engine (see page 9-10).
5. Remove the intermediate shaft (see page 16-23).
6. Remove the rear WU-TWC bracket, then carefully remove the rear WU-TWC.



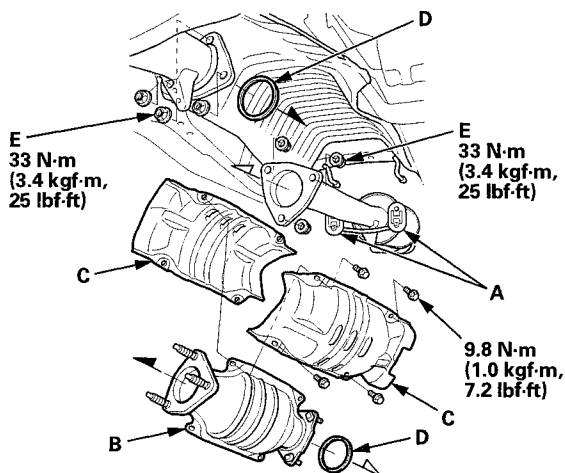
7. Carefully install the rear WU-TWC with a new gasket and new self-locking nuts. Tighten the nuts in a crisscross pattern in two or three steps.
8. Install the parts in the reverse order of removal.



Under-floor TWC Removal/Installation

Without SH-AWD

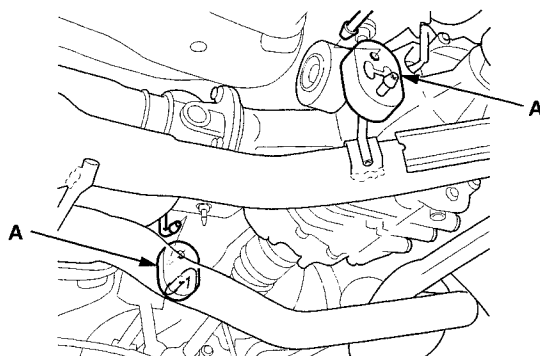
1. Raise the vehicle on a lift
2. Remove the exhaust pipe hangers (A).



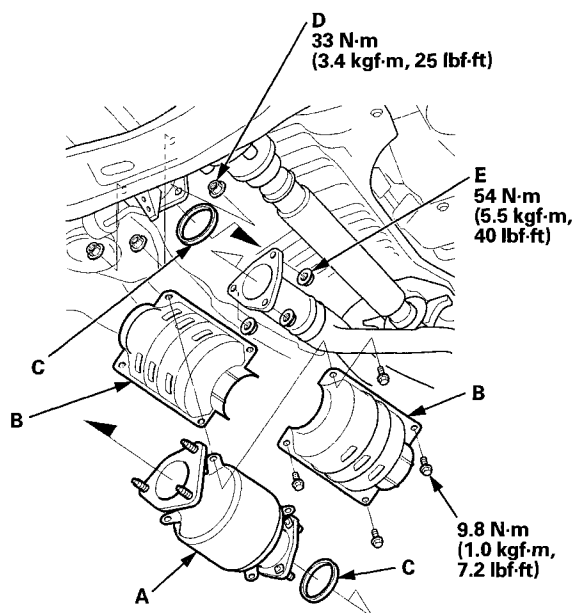
3. Remove the under-floor TWC (B).
4. Remove the converter cover (C).
5. Install the parts in the reverse order of removal with new gaskets (D) and new self-locking nuts (E).

With SH-AWD

1. Raise the vehicle on a lift.
2. Remove the exhaust pipe hangers (A).



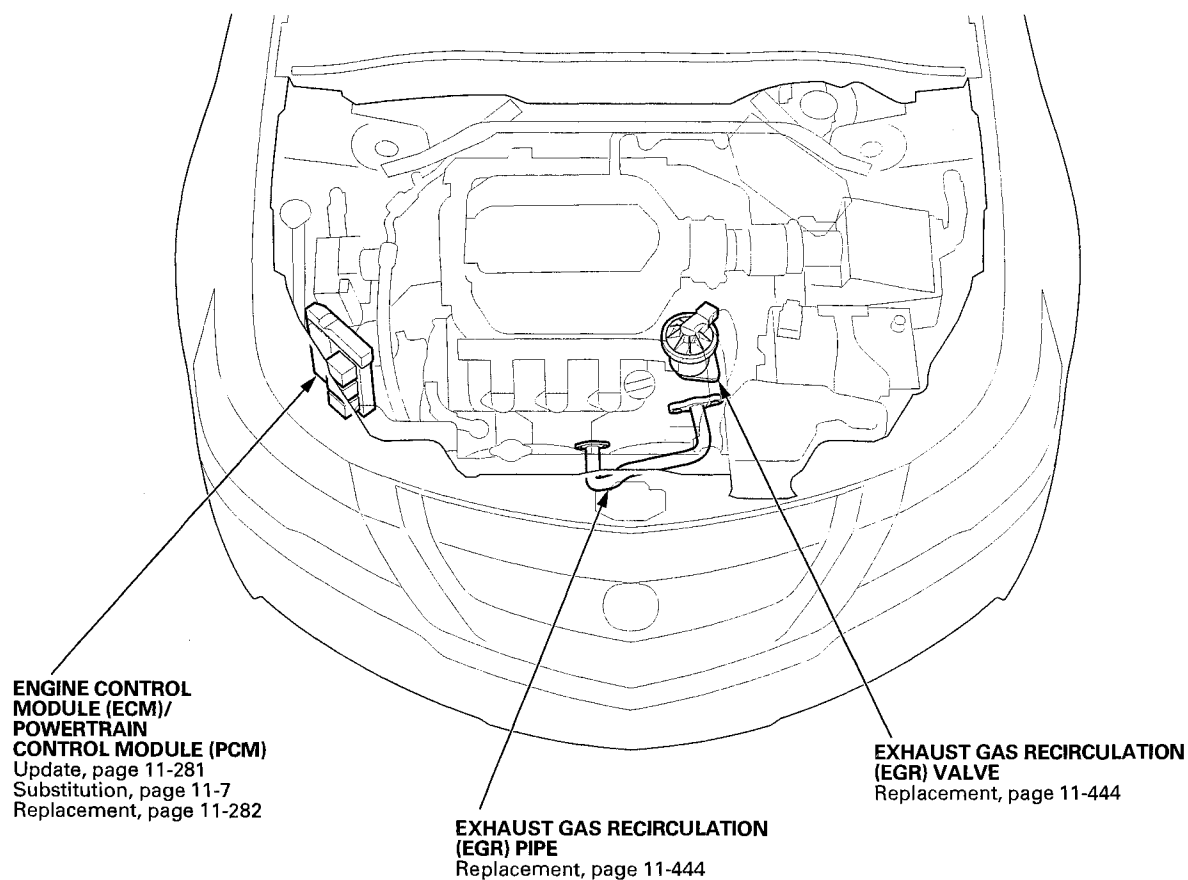
3. Remove the under-floor TWC (A).



4. Remove the converter cover (B).
5. Install the parts in the reverse order of removal with new gaskets (C) and new self-locking nuts (D) and (E).

EGR System

Component Location Index





DTC Troubleshooting

DTC P0400: EGR System Leak Detected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for a loose or damaged EGR pipe.

Is the EGR pipe OK?

YES—Go to step 2.

NO—Reconnect or replace the EGR pipe, then go to step 7.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

3. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- A/T in D, M/T in 4th
- Vehicle speed at 25 mph (40 km/h) for 5 minutes or more
- Maintain the vehicle speed at 32 mph (50 km/h) and engine speed between 1,450—3,000 rpm for 1 minute or more with cruise control set

4. Monitor the OBD STATUS for DTC P0400 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for exhaust gas leakage between the EGR pipe and the EGR valve. If the screen indicates NOT COMPLETED, go to step 3 and recheck.

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

6. Replace the EGR valve (see page 11-444).

7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-337).

10. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
- A/T in D, M/T in 4th
- Vehicle speed at 25 mph (40 km/h) for 5 minutes or more
- Maintain the vehicle speed at 32 mph (50 km/h) and engine speed between 1,450—3,000 rpm for 1 minute or more with cruise control set

11. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0400 indicated?

YES—Check for leakage between the EGR pipe and the EGR valve, then go to step 1.

NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P0400 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for leakage between the EGR pipe and the EGR valve, then go to step 1. If the screen indicates NOT COMPLETED, go to step 10.

EGR System

DTC Troubleshooting (cont'd)

DTC P0401: EGR Insufficient Flow

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 5.

NO—Go to step 7.

5. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Drive at a steady speed between 55—75 mph (88—120 km/h) for at least 10 seconds
 - During the drive, decelerate (with the throttle fully closed) for 5 seconds
6. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Clean the intake manifold EGR port and EGR pipe (see page 11-444) with throttle plate cleaner. Also, clean the passage inside the EGR valve with throttle plate cleaner, then go to step 9.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 5 and recheck.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Replace the EGR valve (see page 11-444).
9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-337).
12. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Drive at a steady speed between 55—75 mph (88—120 km/h) for at least 10 seconds
 - During the drive, decelerate (with the throttle fully closed) for 5 seconds
13. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0401 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the connections are OK, go to step 15.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.



15. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
16. Test-drive under these conditions:
 - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
 - A/T in D, M/T in 4th
 - Drive at a steady speed between 55—75 mph (88—120 km/h) for at least 10 seconds
 - During the drive, decelerate (with the throttle fully closed) for 5 seconds
17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0401 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 16. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 16. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 16.

DTC P0404: EGR Circuit Range/Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

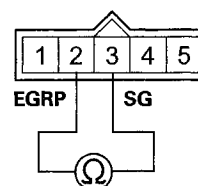
Is the result OK?

YES—Intermittent failure, the system is OK at this time. Clean any carbon build-up on the EGR valve with throttle plate cleaner. ■

NO—Go to step 5.

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Disconnect the EGR valve 5P connector.
7. At the EGR valve side, measure the resistance between EGR valve 5P connector terminals No. 2 and No. 3.

EGR VALVE 5P CONNECTOR



Terminal side of male terminals

Is there 100 kΩ or more?

YES—Go to step 25.

NO—Go to step 8.

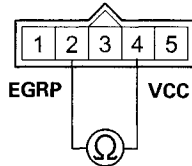
(cont'd)

EGR System

DTC Troubleshooting (cont'd)

8. At the EGR valve side, measure the resistance between EGR valve 5P connector terminals No. 2 and No. 4.

EGR VALVE 5P CONNECTOR



Terminal side of male terminals

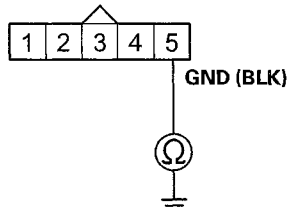
Is there 100 kΩ or more?

YES—Go to step 25.

NO—Go to step 9.

9. Check for continuity between EGR valve 5P connector terminal No. 5 and body ground.

EGR VALVE 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

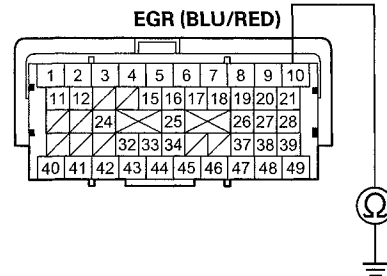
NO—Repair open in the wire between the EGR valve and G101, then go to step 26.

10. Jump the SCS line with the HDS.

11. Disconnect ECM/PCM connector C (49P).

12. Check for continuity between ECM/PCM connector terminal C10 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

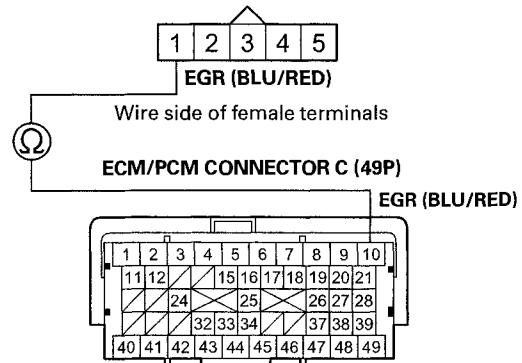
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C10) and the EGR valve, then go to step 26.

NO—Go to step 13.

13. Check for continuity between ECM/PCM connector terminal C10 and EGR valve 5P connector terminal No. 1.

EGR VALVE 5P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the ECM/PCM (C10) and the EGR valve, then go to step 26.



14. Remove the EGR valve (see page 11-444).
15. Clean any carbon build-up on the EGR valve with throttle plate cleaner.
16. Install the EGR valve (see page 11-444).
17. Reconnect the EGR valve 5P connector.
18. Reconnect ECM/PCM connector C (49P).
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
23. Do the EGR TEST in the INSPECTION MENU with the HDS.
Is the result OK?
YES—Go to step 32.
NO—Go to step 24.
24. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
25. Replace the EGR valve (see page 11-444).
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-337).
30. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
31. Do the EGR TEST in the INSPECTION MENU with the HDS.
32. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P0404 indicated?
YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1. If the connections and terminals are OK, go to step 33.
NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

33. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
34. Start the engine. Hold the engine speed at 3,000 rpm without load (in P or N) until the radiator fan comes on, then let it idle.
35. Do the EGR TEST in the INSPECTION MENU with the HDS.
36. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0404 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

EGR System

DTC Troubleshooting (cont'd)

DTC P0406: EGR Valve Position Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Check the EGR VLS in the DATA LIST with the HDS.

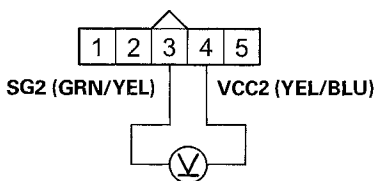
Is 4.88 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Disconnect the EGR valve 5P connector.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Measure the voltage between EGR valve 5P connector terminals No. 3 and No. 4.

EGR VALVE 5P CONNECTOR



Wire side of female terminals

Is there about 5 V?

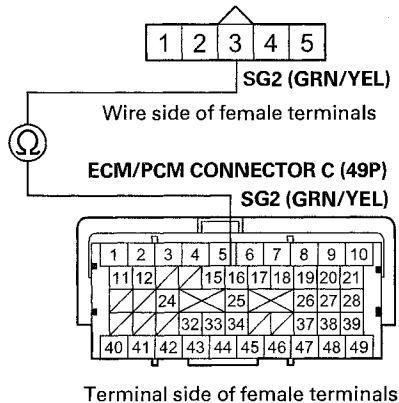
YES—Go to step 11.

NO—Go to step 7.

7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector C (49P).

10. Check for continuity between ECM/PCM connector terminal C16 and EGR valve 5P connector terminal No. 3.

EGR VALVE 5P CONNECTOR



Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the EGR valve and the ECM/PCM (C16), then go to step 13.

11. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
12. Replace the EGR valve (see page 11-444).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-337).
17. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0406 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
20. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0406 indicated?

YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2413: EGR System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. ■

NO—Go to step 5.

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. Check the EGR VLS in the DATA LIST with the HDS.

Is about 0 V indicated?

YES—Go to step 8.

NO—Go to step 21.

8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
9. Disconnect the EGR valve 5P connector.
10. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

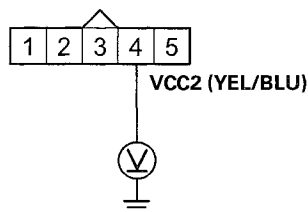
(cont'd)

EGR System

DTC Troubleshooting (cont'd)

11. Measure the voltage between EGR valve 5P connector terminal No. 4 and body ground.

EGR VALVE 5P CONNECTOR



Wire side of female terminals

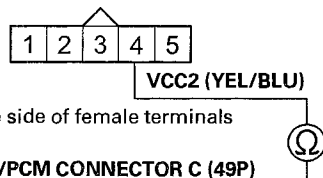
Is there about 5 V?

YES—Go to step 16.

NO—Go to step 12.

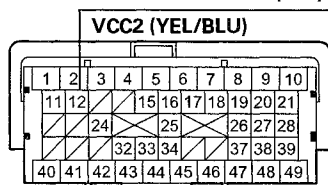
12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector C (49P).
15. Check for continuity between ECM/PCM connector terminal C12 and EGR valve 5P connector terminal No. 4.

EGR VALVE 5P CONNECTOR



Wire side of female terminals

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 50.

NO—Repair open in the wire between the EGR valve and the ECM/PCM (C12), then go to step 42.

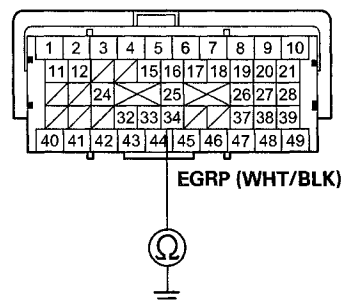
16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

17. Jump the SCS line with the HDS.

18. Disconnect ECM/PCM connector C (49P).

19. Check for continuity between ECM/PCM connector terminal C34 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

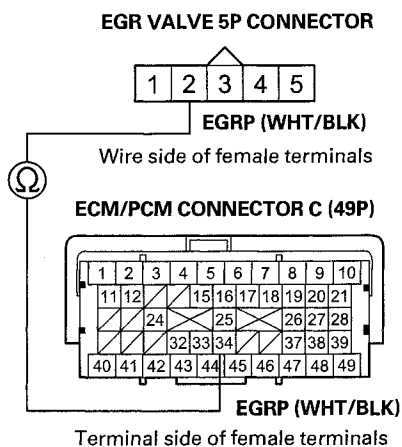
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C34) and the EGR valve, then go to step 42.

NO—Go to step 20.



20. Check for continuity between ECM/PCM connector terminal C34 and EGR valve 5P connector terminal No. 2.



Is there continuity?

YES—Go to step 21.

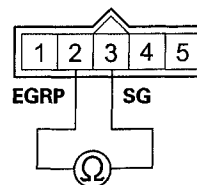
NO—Repair open in the wire between the ECM/PCM (C34) and the EGR valve, then go to step 42.

21. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

22. Disconnect the EGR valve 5P connector.

23. At the EGR valve side, measure the resistance between EGR valve 5P connector terminals No. 2 and No. 3.

EGR VALVE 5P CONNECTOR



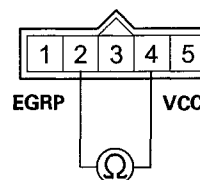
Is there 100 kΩ or more?

YES—Go to step 41.

NO—Go to step 24.

24. At the EGR valve side, measure the resistance between EGR valve 5P connector terminals No. 2 and No. 4.

EGR VALVE 5P CONNECTOR



Is there 100 kΩ or more?

YES—Go to step 41.

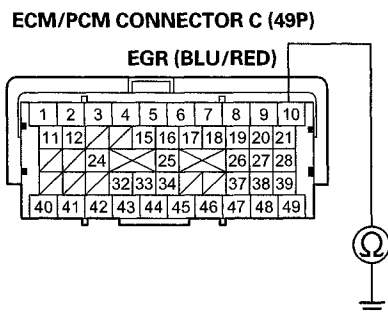
NO—Go to step 25.

(cont'd)

EGR System

DTC Troubleshooting (cont'd)

25. Check for continuity between ECM/PCM connector terminal C10 and body ground.



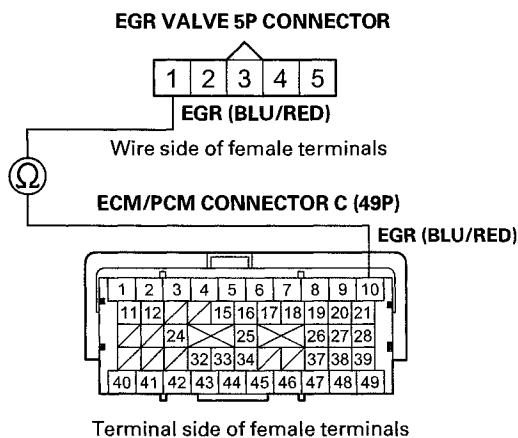
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C10) and the EGR valve, then go to step 42.

NO—Go to step 26.

26. Check for continuity between ECM/PCM connector terminal C10 and EGR valve 5P connector terminal No. 1.



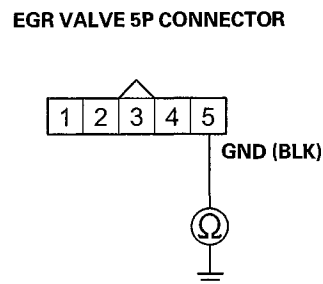
Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (C10) and the EGR valve, then go to step 42.

27. Check for continuity between EGR valve 5P connector terminal No. 5 and body ground.



Wire side of female terminals

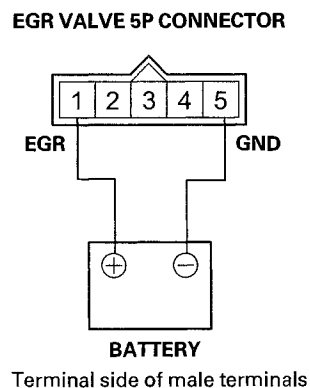
Is there continuity?

YES—Go to step 28.

NO—Repair open in the wire between the EGR valve and G101, then go to step 42.

28. Reconnect ECM/PCM connector C (49P).

29. At the EGR valve side, connect the battery positive terminal to EGR valve 5P connector terminal No. 1 with a jumper wire.



30. Start the engine, and let it idle, then connect the battery negative terminal to EGR valve 5P connector terminal No. 5 with a jumper wire.

Does the engine stall?

YES—Go to step 48.

NO—Go to step 31.



31. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
32. Remove the EGR valve (see page 11-444).
33. Clean any carbon build-up inside the EGR valve with throttle plate cleaner.
34. Install the EGR valve (see page 11-444).
35. Reconnect all connectors.
36. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
37. Reset the ECM/PCM with the HDS.
38. Do the ECM/PCM idle learn procedure (see page 11-337).
39. Do the EGR TEST in the INSPECTION MENU with the HDS.
Is the result OK?
YES—Go to step 47.
NO—Go to step 40.
40. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
41. Replace the EGR valve (see page 11-444).
42. Reconnect all connectors.
43. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
44. Reset the ECM/PCM with the HDS.
45. Do the ECM/PCM idle learn procedure (see page 11-337).
46. Do the EGR TEST in the INSPECTION MENU with the HDS.
47. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P2413 indicated?
YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM, then go to step 1.
NO—Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

48. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
49. Reconnect all connectors.
50. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
51. Do the EGR TEST in the INSPECTION MENU with the HDS.
52. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2413 indicated?

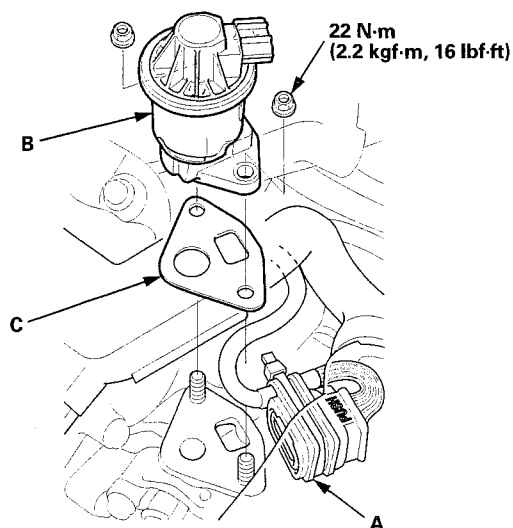
YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 51. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

EGR System

EGR Valve Replacement

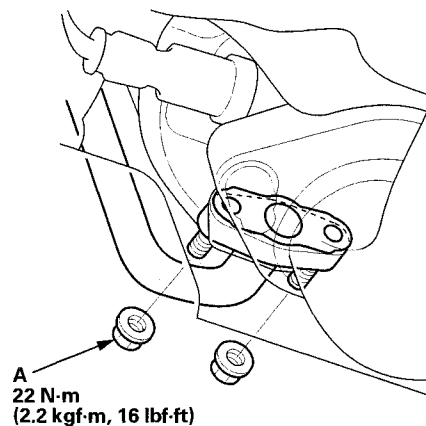
1. Disconnect the EGR valve 5P connector (A).



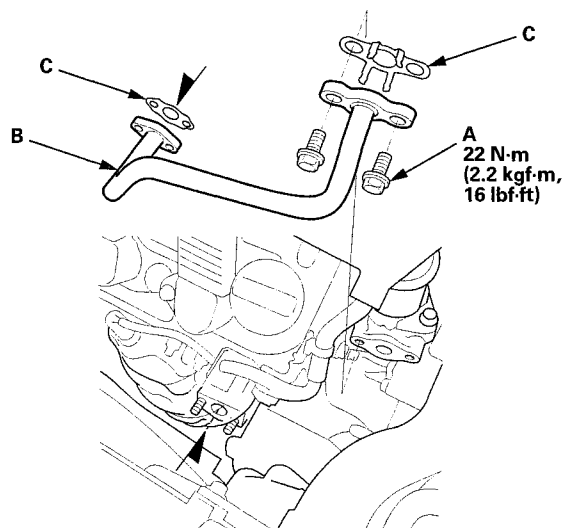
2. Remove the EGR valve (B).
3. Install the parts in the reverse order of removal with a new gasket (C).

EGR Pipe Replacement

1. Raise the vehicle on a lift.
2. Remove the splash shield (see page 20-205).
3. Remove the mounting nuts (A).



4. Lower the vehicle.
5. Remove the mounting bolts (A).

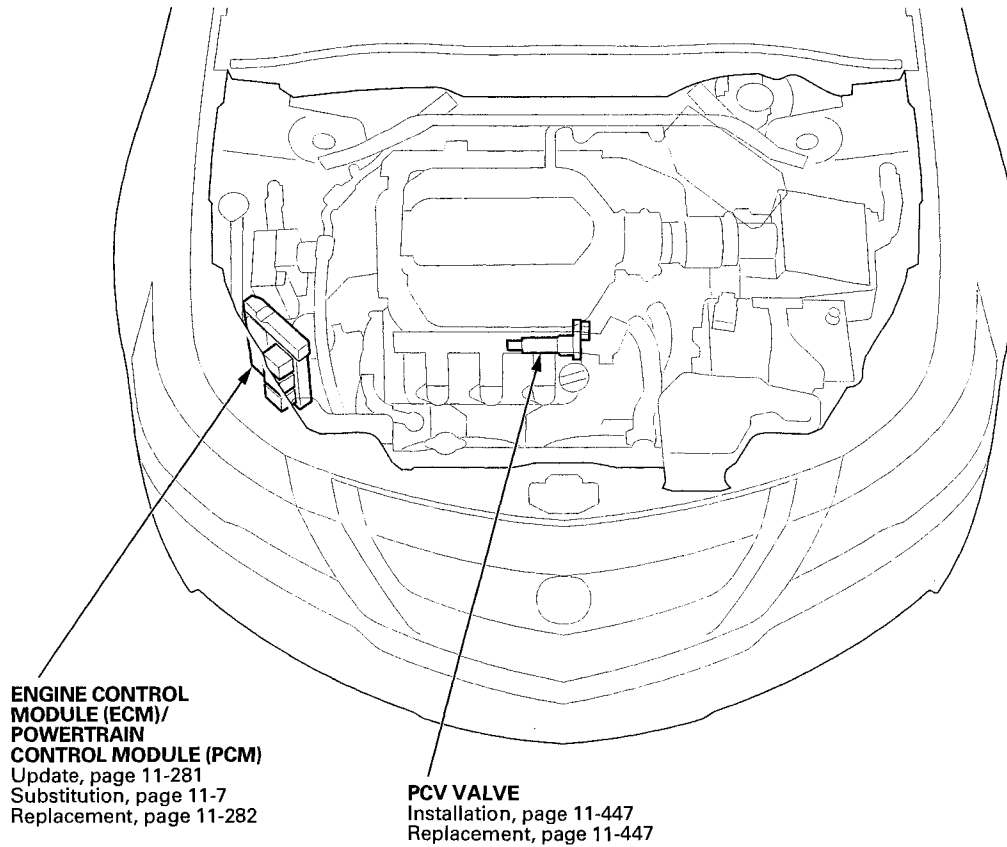


6. Remove the EGR pipe (B).
7. Install the parts in the reverse order of removal with new gaskets (C).

PCV System



Component Location Index



PCV System

DTC Troubleshooting

DTC P2279: Intake Air System Leak

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0443 is stored at the same time as DTC P2279, troubleshoot DTC P0443 first, then recheck for DTC P2279.

1. Check for vacuum leaks at these parts:

- PCV valve
- PCV hose
- Purge (PCS) line
- Throttle body
- Intake manifold
- Brake booster
- Brake booster hose
- Engine mount
- Engine mount control solenoid valve
- Vacuum hose/line of the engine mount control system

Are the parts OK?

YES—Go to step 2.

NO—Repair or replace any damaged part(s), then go to step 4.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle 1 minute.

3. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Check the camshaft timing (see page 6-17), then go to step 4.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 2 and recheck.

4. Reset the ECM/PCM with the HDS.

5. Do the ECM/PCM idle learn procedure (see page 11-337).

6. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P2279 indicated?

YES—Check for vacuum leaks at the PCV valve, the PCV hose, the purge (PCS) line, the throttle body, the intake manifold, the brake booster, the brake booster hose, and the engine mount control system, then go to step 1.

NO—Go to step 7.

7. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

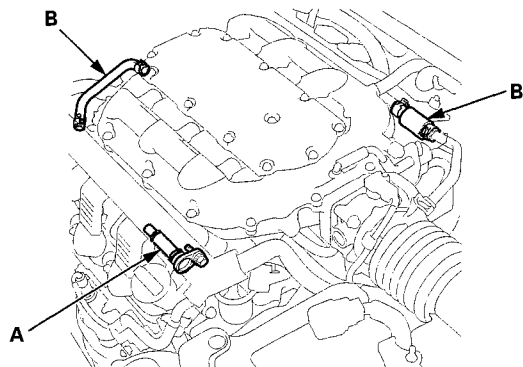
YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 6, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.



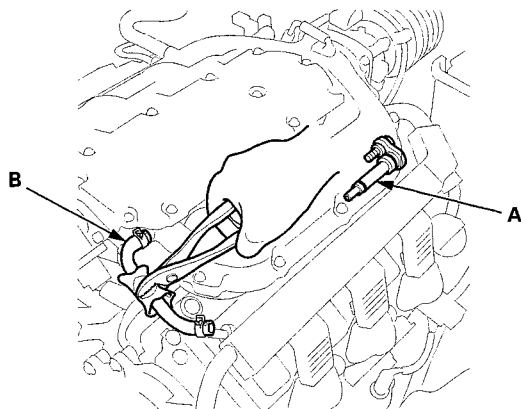
PCV Valve Inspection

1. Check the PCV valve (A), the hoses (B), and connections for leaks or restrictions.



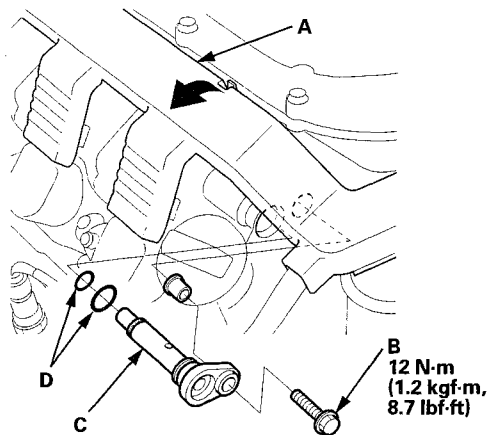
2. At idle, listen to the PCV valve (A) with a stethoscope as you lightly pinch the PCV hose (B) with your fingers or pliers several times. Each time the hose is pinched, the valve should click.

If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.



PCV Valve Replacement

1. Lift up the harness cover (A).



2. Remove the bolt (B).
3. Remove the PCV valve (C).

NOTE: Do not spill oil on the hot exhaust manifold.

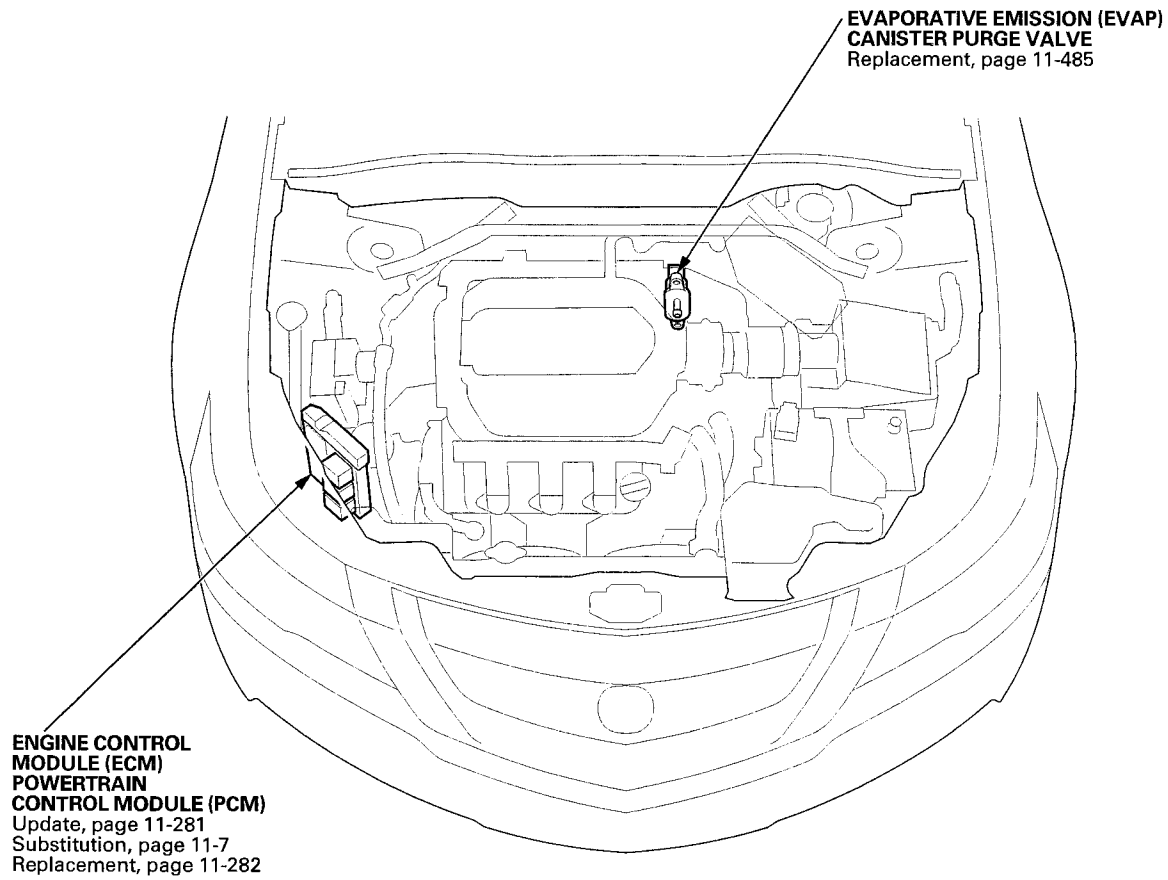
4. Install the parts in the reverse order of removal.

NOTE:

- When installing a new PCV valve, make sure the O-rings (D) are in place.
- When installing a used PCV valve, use new O-rings.

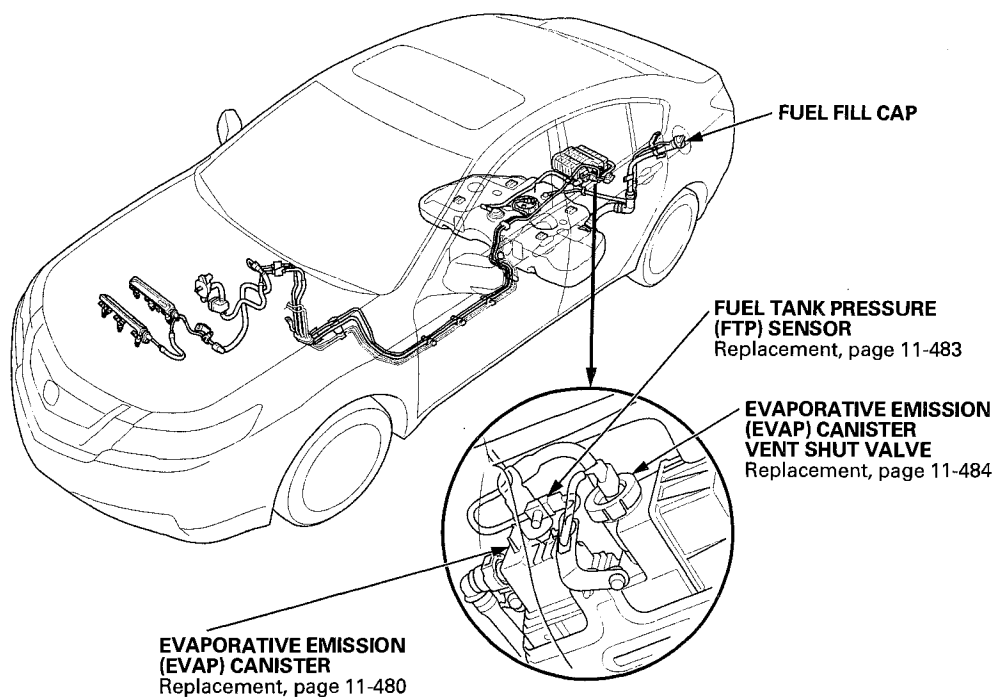
EVAP System

Component Location Index

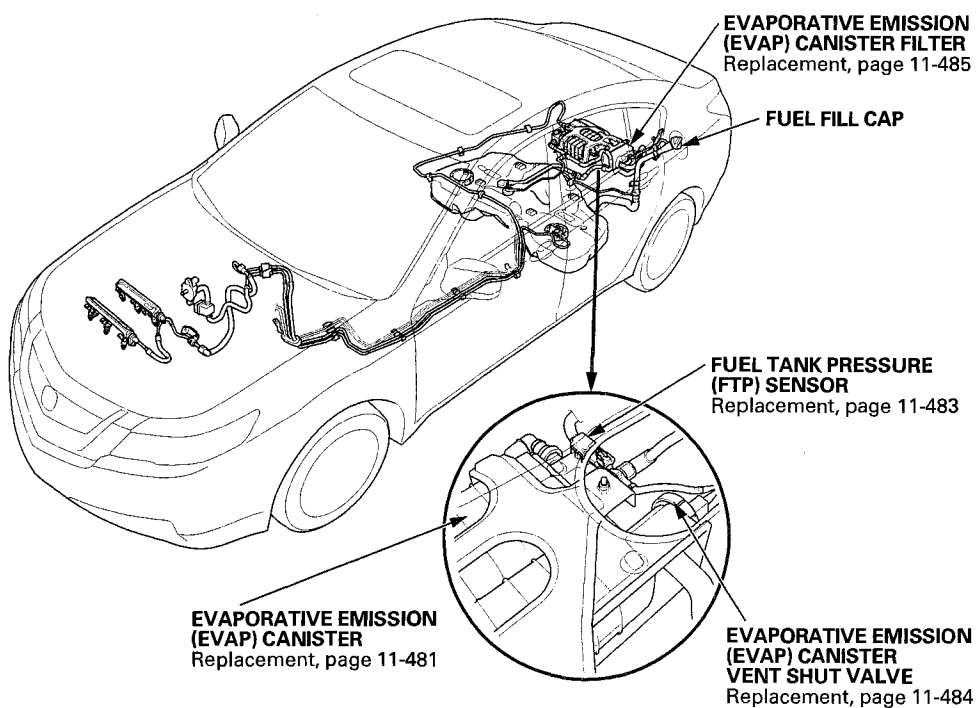




Without SH-AWD



With SH-AWD



EVAP System

DTC Troubleshooting

DTC P0443: EVAP Canister Purge Valve Circuit Malfunction

Special Tools Required

Vacuum Pump/Gauge, 0–30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check for Pending or Confirmed DTCs with the HDS.

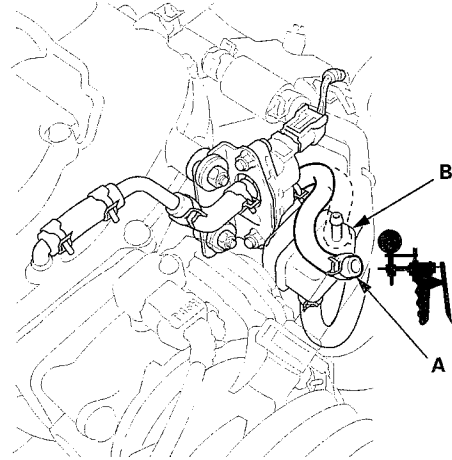
Is DTC P0443 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode and allow the engine to cool to below 140 °F (60 °C).

6. Disconnect the vacuum hose (A) from the purge joint (B) in the engine compartment, and connect a vacuum pump/gauge, 0–30 in.Hg, to the hose.



7. Start the engine, and let it idle.

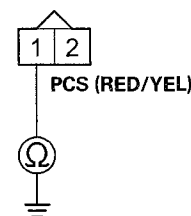
Is there vacuum?

YES—Go to step 8.

NO—Go to step 14.

8. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

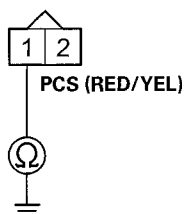
YES—Go to step 11.

NO—Go to step 23.



11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector C (49P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

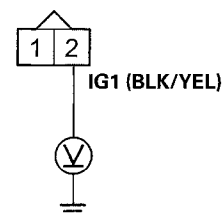
YES—Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (C40), then go to step 24.

NO—Go to step 30.

14. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

17. Measure the voltage between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 18.

NO—Repair open in the wire between the EVAP canister purge valve and the No. 13 ACG (15 A) fuse in the driver's under-dash fuse/relay box, then go to step 24.

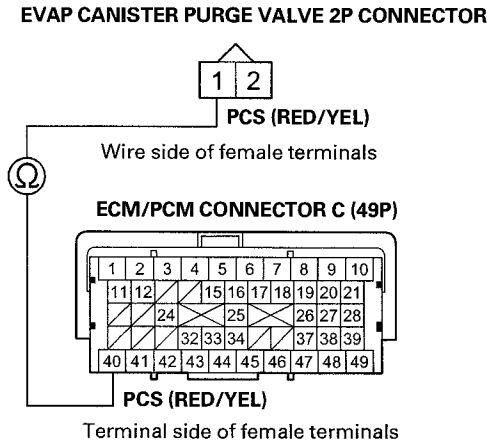
18. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
19. Jump the SCS line with the HDS.
20. Disconnect ECM/PCM connector C (49P).

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

21. Check for continuity between ECM/PCM connector terminal C40 and EVAP canister purge valve 2P connector terminal No. 1.



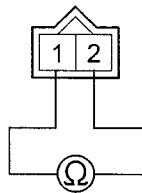
Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (C40), then go to step 24.

22. At the valve side, measure the resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 23—26 Ω at room temperature?

YES—Go to step 30.

NO—Go to step 23.

23. Replace the EVAP canister purge valve (see page 11-485).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-337).

28. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0443 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

32. Start the engine, and let it idle.

33. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0443 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 34.



34. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

DTC P0451: FTP Sensor Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2422 is stored at the same time as DTC P0451, troubleshoot DTC P2422 first, then recheck for DTC P0451.

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 1 minute.
4. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

5. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
6. Replace the FTP sensor; without SH-AWD system (see page 11-483), with SH-AWD system (see page 11-483).
7. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-337).
10. Start the engine, and let it idle for 1 minute.
11. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0451 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1.

NO—Go to step 12.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0452: FTP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Remove the fuel fill cap.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about -7.3 kPa (-2.16 inHg, -55 mmHg), or 0.3 V or less indicated?

YES—Go to step 10.

NO—Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
13. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about -7.3 kPa (-2.16 inHg, -55 mmHg), or 0.3 V or less indicated?

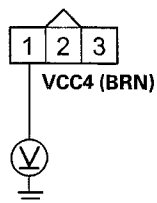
YES—Go to step 20.

NO—Go to step 14.



14. Measure the voltage between FTP sensor 3P connector terminal No. 1 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

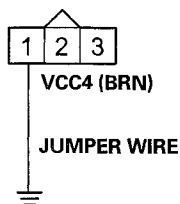
Is there about 5 V?

YES—Go to step 24.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector A (49P).
18. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

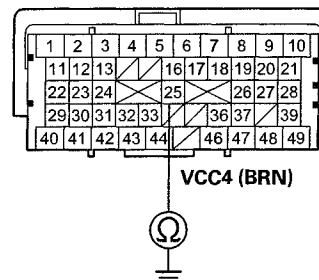
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between ECM/PCM connector terminal A25 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

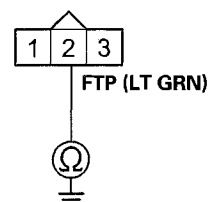
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the ECM/PCM (A25) and the FTP sensor, then go to step 26.

20. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
21. Jump the SCS line with the HDS.
22. Disconnect ECM/PCM connector A (49P).
23. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A39) and the FTP sensor, then go to step 26.

NO—Go to step 32.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

24. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
25. Replace the FTP sensor; without SH-AWD system (see page 11-483), with SH-AWD system (see page 11-483).
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-337).
30. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P0452 indicated?
YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1.
NO—Go to step 31.
31. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.
Does the screen indicate PASSED?
YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■
NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.
32. Reconnect all connectors.
33. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
34. Start the engine, and let it idle.
35. Check for Pending or Confirmed DTCs with the HDS.
Is DTC P0452 indicated?
YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1.
NO—Go to step 36.

36. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 35, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.



DTC P0453: FTP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Remove the fuel fill cap.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about 7.3 kPa (2.16 inHg, 55 mmHg), or 4.7 V or more indicated?

YES—Go to step 10.

NO—Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

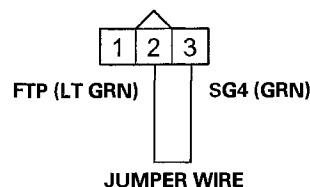
YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
11. Disconnect the FTP sensor 3P connector.

12. Connect FTP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
14. Check the FTP SENSOR in the DATA LIST with the HDS.

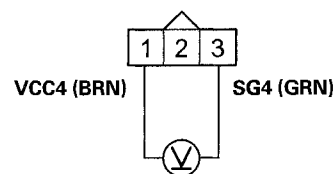
Is about 7.3 kPa (2.16 inHg, 55 mmHg), or 4.7 V or more indicated?

YES—Go to step 15.

NO—Go to step 26.

15. Measure the voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 21.

NO—Go to step 16.

16. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
17. Jump the SCS line with the HDS.

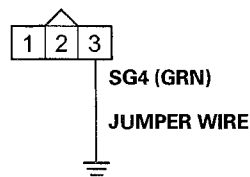
(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

18. Disconnect ECM/PCM connector A (49P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

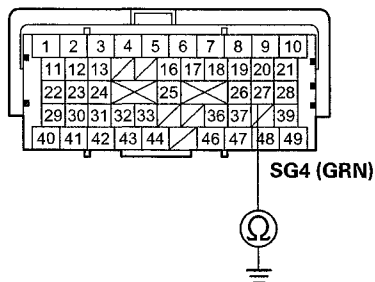
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

20. Check for continuity between ECM/PCM connector terminal A27 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

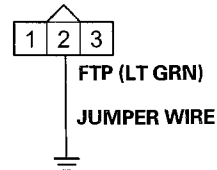
YES—Go to step 34.

NO—Repair open in the wire between the ECM/PCM (A27) and the FTP sensor, then go to step 28.

21. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
22. Jump the SCS line with the HDS.
23. Disconnect ECM/PCM connector A (49P).

24. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

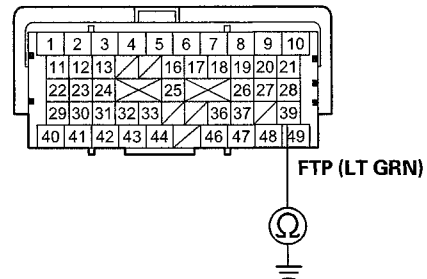
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

25. Check for continuity between ECM/PCM connector terminal A39 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the ECM/PCM (A39) and the FTP sensor, then go to step 28.

26. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
27. Replace the FTP sensor; without SH-AWD system (see page 11-483), with SH-AWD system (see page 11-483).
28. Reconnect all connectors.



29. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

30. Reset the ECM/PCM with the HDS.

31. Do the ECM/PCM idle learn procedure (see page 11-337).

32. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0453 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1.

NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

34. Reconnect all connectors.

35. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).

36. Start the engine, and let it idle.

37. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0453 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 36. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 38.

38. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 37, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 36. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

EVAP System

DTC Troubleshooting (cont'd)

DTC P0455: EVAP System Large Leak Detected

DTC P0456: EVAP System Very Small Leak Detected

NOTICE

The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.

Special Tools Required

Vacuum Pump/Gauge, 0–30 In.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Fresh fuel has a higher volatility that will create greater pressure/vacuum. The best condition for testing is less than a full tank of fresh fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank), just before starting these procedures.

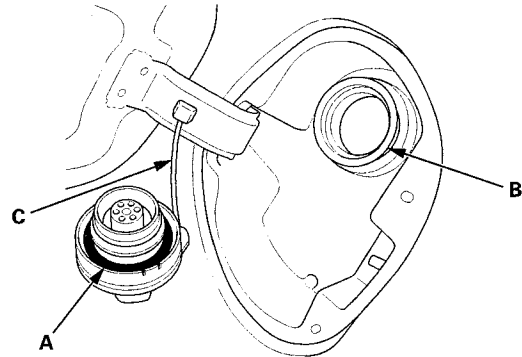
1. Check the fuel fill cap (the cap must say **TIGHTEN TO CLICK**). It should turn 1/4 turn after it's tight, then it clicks.

Is the correct fuel fill cap installed and properly tightened?

YES—Go to step 2.

NO—Replace or tighten the cap, then go to step 30.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 30.

NO—Go to step 3.

3. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve, and the ECM/PCM. ■

NO—Go to step 6.



6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

Is the tube OK?

YES—

- With SH-AWD: Go to step 8.
- Without SH-AWD: Go to step 9.

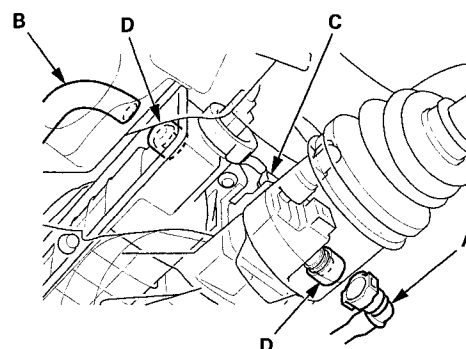
NO—

- Replace the fuel tank vapor recirculation tube, then go to step 29.
- If necessary, replace the fuel tank; with SH-AWD (see page 11-404), without SH-AWD (see page 11-402), then go to step 29.

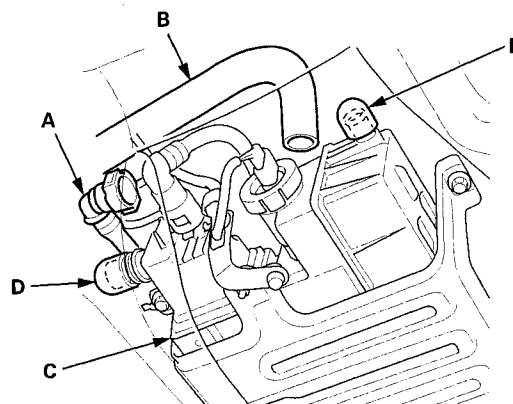
8. Remove the fuel tank (see page 11-393).

9. Disconnect the fuel tank vapor recirculation tube (A) and fresh air hose (B) from the EVAP canister (C), and plug the EVAP canister ports (D).

With SH-AWD



Without SH-AWD

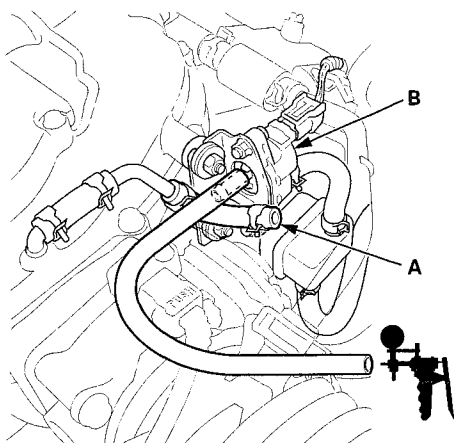


(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

10. Disconnect the vacuum hose (engine side) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect the vacuum pump/gauge, 0–30 in.Hg, to the purge valve as shown.



11. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

12. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

13. Apply vacuum to the hose until the FTP reads 1.90 V (–0.59 inHg, –15.1 mmHg).

NOTE: Be careful not to exceed the specified vacuum. If you do, the FTP sensor can be damaged.

14. Select EVAP PCS OFF in the INSPECTION MENU with the HDS, then remove the vacuum pump from the purge valve.

15. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS, and remove the vacuum pump from the purge valve.

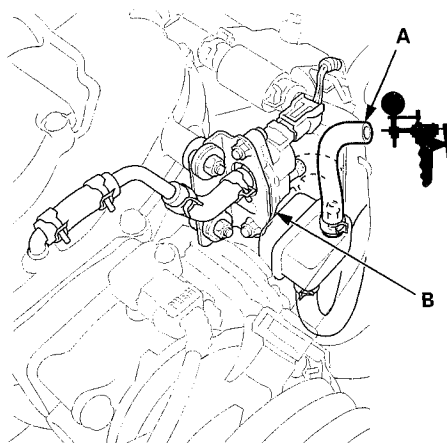
Does the voltage increase more than 0.2 V (0.1 inHg, 2.5 mmHg)?

YES—Go to step 16.

NO—Go to step 21.

16. Reconnect the vacuum hose (engine side) to the EVAP canister purge valve.

17. Disconnect the vacuum hose (EVAP canister side) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect the vacuum pump/gauge to the vacuum hose as shown.



18. Apply vacuum to the hose until the FTP reads 1.90 V (–0.59 inHg, –15.1 mmHg).

NOTE: Be careful not to exceed the specified vacuum. If you do, the FTP sensor can be damaged.

19. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 inHg, 2.5 mmHg)?

YES—Go to step 20.

NO—Replace the EVAP canister purge valve (see page 11-485), then go to step 29.

20. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve.

Is the line OK?

YES—Replace these parts, then go to step 29:

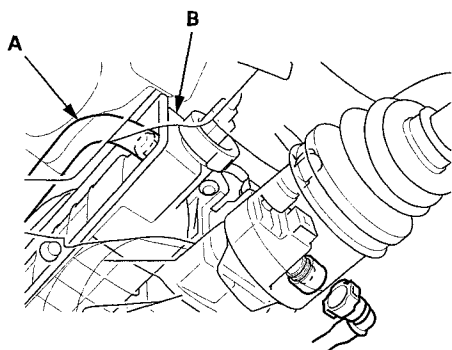
- FTP sensor O-ring
- EVAP canister vent shut valve case and O-ring
- EVAP canister

NO—Reconnect or repair the EVAP canister purge line, then go to step 29.

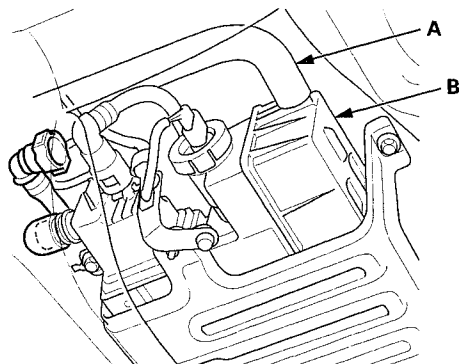


21. Reconnect the fresh air hose (A) to the EVAP canister (B).

With SH-AWD

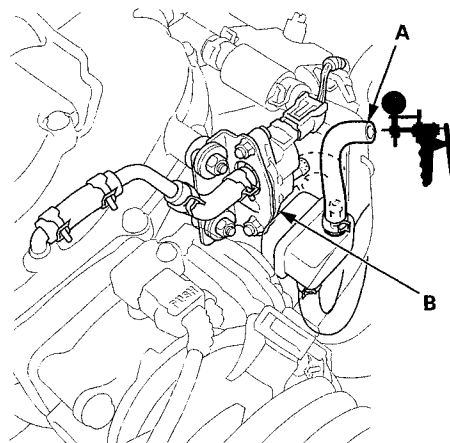


Without SH-AWD



22. Reconnect the vacuum hose (engine side) to the EVAP canister purge valve.

23. Disconnect the vacuum hose (EVAP canister side) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect the vacuum pump/gauge to the purge valve as shown.



24. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

25. Apply vacuum to the EVAP system until the FTP reads 1.90 V (−0.59 inHg, −15.1 mmHg).

NOTE: Be careful not to exceed the specified vacuum. If you do, the FTP sensor can be damaged.

26. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 inHg, 2.5 mmHg)?

YES—Replace the EVAP canister vent shut valve (see page 11-484), then go to step 29.

NO—Go to step 27.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

27. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.

28. Check these parts for looseness or damage:

- Fuel fill pipe
- Fuel vapor return pipe

Are the parts OK?

YES—

- With SH-AWD: Check the fuel tank unit base gasket (see page 11-393), the secondary fuel gauge sending unit base gasket (see page 11-399), and check the fuel tank, then go to step 31.
- Without SH-AWD: Check the fuel tank unit base gasket (see page 11-391), and check the fuel tank, then go to step 31.

NO—Repair or replace the damaged parts, then go to step 29.

29. Reconnect all hoses and connectors.

30. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

31. Reset the ECM/PCM with the HDS.

32. Do the ECM/PCM idle learn procedure (see page 11-337).

33. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC P0457: EVAP System Leak Detected/Fuel Fill Cap Loose or Missing

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

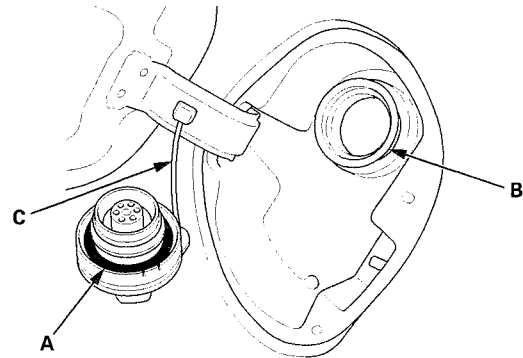
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 turn after it's tight, then it clicks.

Is the correct fuel fill cap installed and properly tightened?

YES—Go to step 2.

NO—Replace or tighten the cap, then go to step 19.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 19.

NO—Go to step 3.

3. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

4. Clear the DTC with the HDS.

5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

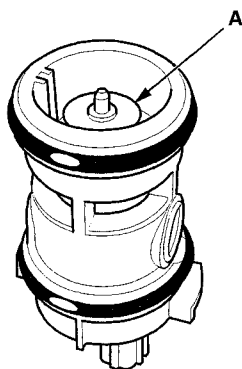
Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM. ■

NO—Go to step 6.



6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
7. Remove the EVAP canister vent shut valve from the EVAP canister; without SH-AWD system (see page 11-484), with SH-AWD system (see page 11-484).
8. Connect the 2P connector to the EVAP canister vent shut valve.
9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
10. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
11. Check the EVAP canister vent shut valve (A) operation.



Does the valve operate?

YES—Check the routing of the EVAP canister vent tube, then go to step 18.

NO—Go to step 12.

12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Replace the EVAP canister vent shut valve; without SH-AWD system (see page 11-484), with SH-AWD system (see page 11-484).
14. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-337).
17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete.■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

18. Reinstall the EVAP canister vent shut valve.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete.■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

EVAP System

DTC Troubleshooting (cont'd)

DTC P0496: EVAP System High Purge Flow Detected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM.■

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Replace the EVAP canister purge valve (see page 11-485).
6. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see page 11-337).
9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete.■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC P0497: EVAP System Low Purge Flow Detected (Without SH-AWD)

Special Tools Required

- Vacuum Pump/Gauge, 0–30 In.Hg, Snap-on YA4000A or equivalent, commercially available
- Vacuum/Pressure Gauge, 0–4 In.Hg, 07JAZ-001000B

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.

3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve, the FTP sensor, and the PCM.■

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Check for a poor connection, a blockage, or damage at the EVAP canister purge line between the throttle body and the EVAP canister.

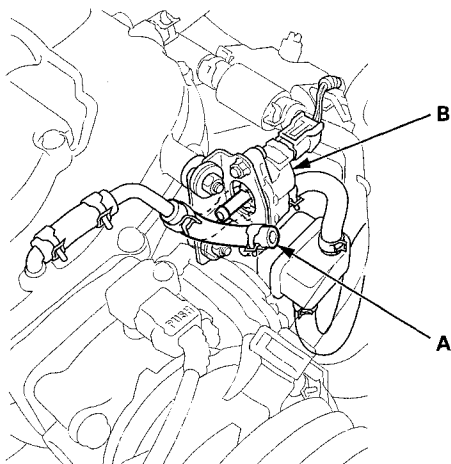
Is the line OK?

YES—Go to step 6.

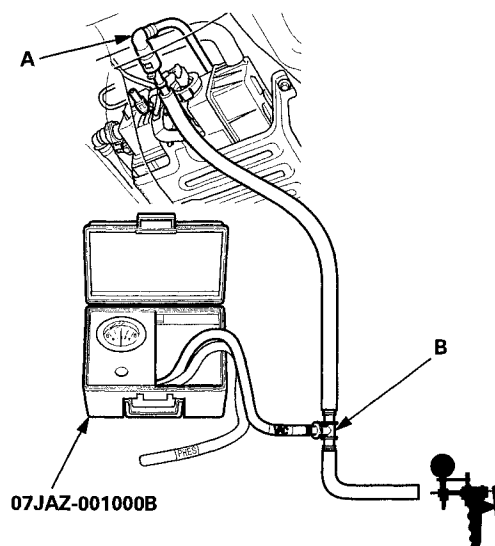
NO—Reconnect or repair the EVAP canister purge line, then go to step 24.



6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B).



7. Disconnect the vacuum hose (A) from the purge line (at the EVAP canister side), then connect a T-fitting (B) from the vacuum gauge, and connect the vacuum pump/gauge, 0–30 in.Hg, to the hose as shown.



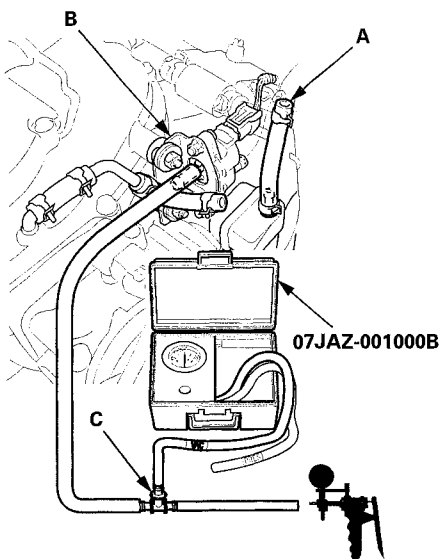
8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
9. Apply about 2 kPa (0.6 inHg, 15 mmHg) of vacuum to the hose.
10. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
- Does the vacuum release immediately?*
- YES**—Go to step 15.
- NO**—Go to step 11.
11. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

12. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B). Connect a T-fitting (C) from the vacuum gauge, and connect the vacuum pump/gauge to the EVAP canister purge valve as shown.



13. Apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the purge valve.

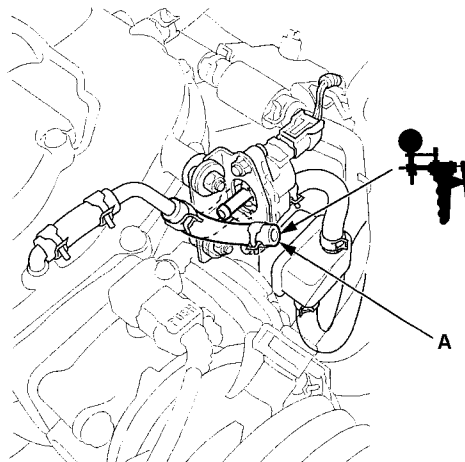
14. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

Does the vacuum release immediately?

YES—Check for a blockage in the vacuum hose between the EVAP canister purge valve and the EVAP canister, then go to step 24.

NO—Replace the EVAP canister purge valve (see page 11-485), then go to step 24.

15. Connect the vacuum pump/gauge, 0–30 in.Hg, to the vacuum hose (A) as shown.



16. Start the engine, and let it idle.

Is there vacuum?

YES—Go to step 17.

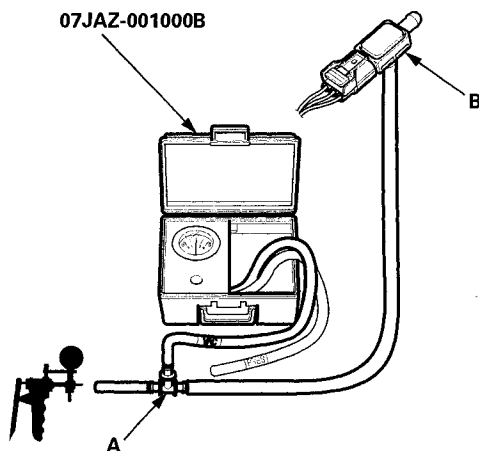
NO—Check for a blockage in the vacuum hose between the EVAP canister purge valve and the intake manifold, then go to step 24.

17. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

18. Remove the FTP sensor with its connector connected (see page 11-483).



19. Connect a T-fitting (A) from the vacuum pump/gauge, and connect the vacuum pump to the FTP sensor (B) as shown.



20. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
21. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.
22. Slowly apply about 1.3 kPa (0.4 inHg, 10 mmHg) of vacuum to the hose.
23. Check the FTP SENSOR in the DATA LIST with the HDS.
- Does the value change?*
- YES**—Check for debris or a blockage at the EVAP canister port, then go to step 24.
- NO**—Replace the FTP sensor (see page 11-483), then go to step 24.
24. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
25. Reset the PCM with the HDS.
26. Do the PCM idle learn procedure (see page 11-337).
27. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the EVAP canister purge valve, the FTP sensor, and the PCM, then go to step 1.

DTC P0497: EVAP System Low Purge Flow Detected (With SH-AWD)

Special Tools Required

- Vacuum Pump/Gauge, 0—30 In.Hg, Snap-on YA4000A or equivalent, commercially available
- Vacuum/Pressure Gauge, 0—4 In.Hg, 07JAZ-001000B

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Select EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve, the FTP sensor, and the ECM/PCM. ■

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
5. Check for a poor connection, a blockage, or damage at the EVAP canister purge line between the throttle body and the EVAP canister.

Is the line OK?

YES—Go to step 6.

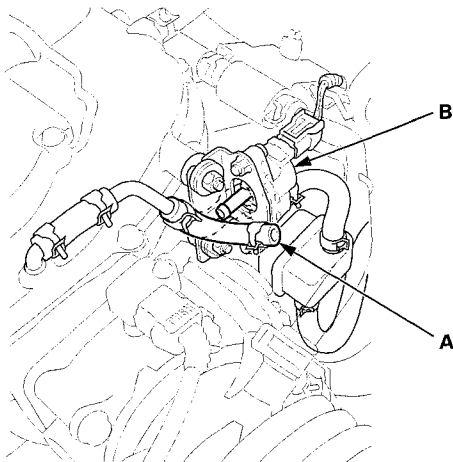
NO—Reconnect or repair the EVAP canister purge line, then go to step 25.

(cont'd)

EVAP System

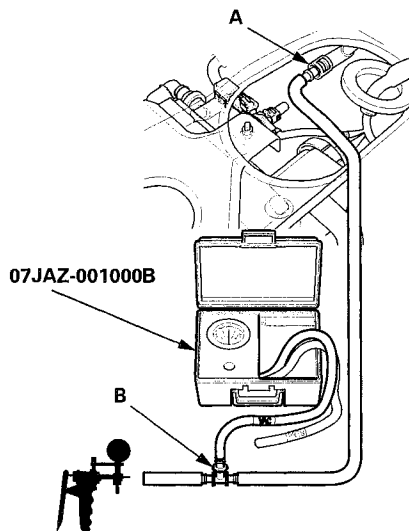
DTC Troubleshooting (cont'd)

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B).



7. Remove the trunk front trim panel (see page 20-93), then remove the access panel from the floor (see step 2 on page 11-484).

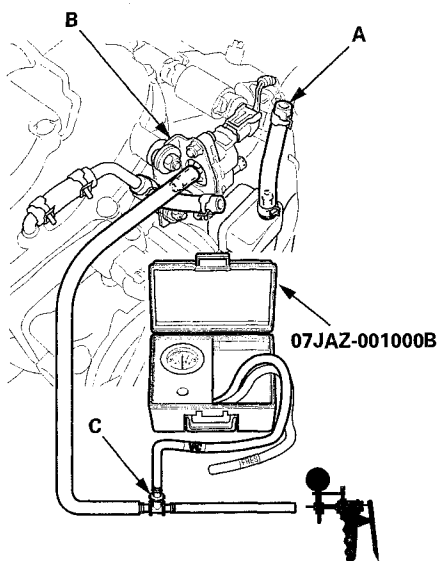
8. Disconnect the vacuum hose (A) from the purge line (at the EVAP canister side), then connect a T-fitting (B) from the vacuum gauge, and connect the vacuum pump/gauge to the hose as shown.



9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
10. Apply about 2 kPa (0.6 inHg, 15 mmHg) of vacuum to the hose.
11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
- Does the vacuum release immediately?*
- YES**—Go to step 16.
- NO**—Go to step 12.
12. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.



13. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B). Connect the T-fitting (C) from the vacuum gauge, and connect the vacuum pump/gauge to the EVAP canister purge valve as shown.



14. Apply about 2 kPa (0.6 inHg, 15 mmHg) of vacuum to the purge valve.

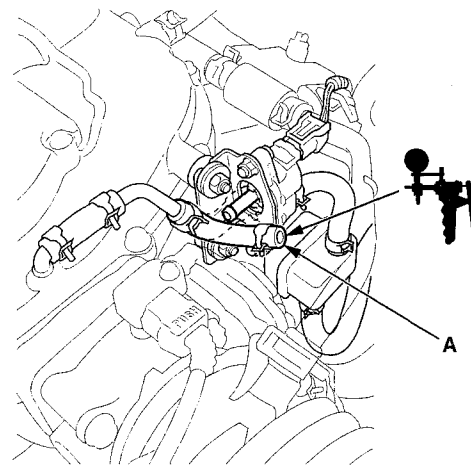
15. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

Does the vacuum release immediately?

YES—Check for a blockage in the vacuum hose between the EVAP canister purge valve and the EVAP canister, then go to step 25.

NO—Replace the EVAP canister purge valve (see page 11-485), then go to step 25.

16. Connect the vacuum pump/gauge to the vacuum hose (A) as shown.



17. Start the engine, and let it idle.

Is there vacuum?

YES—Go to step 18.

NO—Check for a blockage in the vacuum hose between the EVAP canister purge valve and the intake manifold, then go to step 25.

18. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

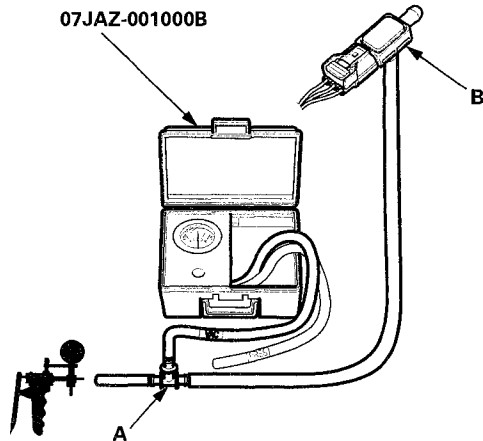
19. Remove the FTP sensor with its connector connected (see page 11-483).

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

20. Connect a T-fitting (A) from the vacuum pump/gauge, and connect the vacuum pump to the FTP sensor (B) as shown.



21. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
22. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.
23. Slowly apply about 1.3 kPa (0.4 inHg, 10 mmHg) of vacuum to the hose.
24. Check the FTP SENSOR in the DATA LIST with the HDS.
- Does the value change?*
- YES**—Check for debris or a blockage at the EVAP canister port, then go to step 25.
- NO**—Replace the FTP sensor (see page 11-483), then go to step 25.
25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-337).
28. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.
- Is the result OK?*
- YES**—Troubleshooting is complete. ■
- NO**—Check for poor connections or loose terminals at the EVAP canister purge valve, the FTP sensor, and the ECM/PCM, then go to step 1.

DTC P0498: EVAP Canister Vent Shut Valve Circuit Low Voltage

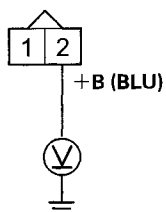
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
 2. Clear the DTC with the HDS.
 3. Check for Pending or Confirmed DTCs with the HDS.
- Is DTC P0498 indicated?*
- YES**—Go to step 6.
- NO**—Go to step 4.
4. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
 5. Check for Pending or Confirmed DTCs with the HDS.
- Is DTC P0498 indicated?*
- YES**—Go to step 6.
- NO**—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. ■
6. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
 7. Disconnect the EVAP canister vent shut valve 2P connector.
 8. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.



9. Measure the voltage between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

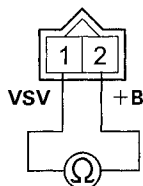
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the EVAP canister vent shut valve and the PGM-FI subrelay, then go to step 18.

10. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
11. At the valve side, measure the resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 25—30 Ω at room temperature?

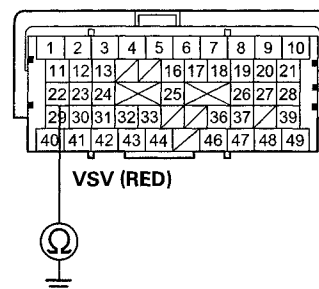
YES—Go to step 12.

NO—Go to step 17.

12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector A (49P).

14. Check for continuity between ECM/PCM connector terminal A22 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

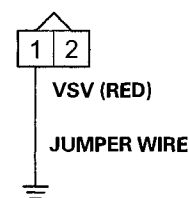
Is there continuity?

YES—Repair short in the wire between the EVAP canister vent shut valve and the ECM/PCM (A22), then go to step 18.

NO—Go to step 15.

15. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

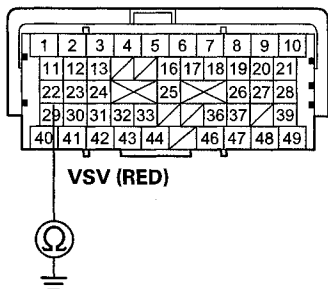
(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

16. Check for continuity between ECM/PCM connector terminal A22 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the EVAP canister vent shut valve and the ECM/PCM (A22), then go to step 18.

17. Replace the EVAP canister vent shut valve; without SH-AWD system (see page 11-484), with SH-AWD system (see page 11-484).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-337).
22. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
23. Check for Pending or Confirmed DTCs with the HDS.
- Is DTC P0498 indicated?*
- YES**—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1.
- NO**—Go to step 24.

24. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Reconnect all connectors.
26. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
27. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
28. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0498 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 27. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 27. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.



DTC P0499: EVAP Canister Vent Shut Valve Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0499 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. ■

5. Update the ECM/PCM if it does not have the latest software (see page 11-281), or substitute a known-good ECM/PCM (see page 11-7).
6. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
7. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0499 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 6. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 8.

8. Monitor the OBD STATUS for DTC P0499 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-282). If any other Pending or Confirmed DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 6. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 6.

DTC P1454: FTP Sensor Circuit Range/Performance Problem

DTC P2422: EVAP Canister Vent Shut Valve Stuck Closed Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
4. Remove the fuel fill cap, and wait 1 minute.
5. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
6. Check the FTP SENSOR in the DATA LIST with the HDS.

Is it between -0.67 and 0.67 kPa (-0.2 and 0.2 inHg, -5 and 5 mmHg), or 2.4 and 2.6 V?

YES—Go to step 7.

NO—Go to step 18.

7. Install the fuel fill cap.
8. Clear the DTC with the HDS.
9. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
10. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 11.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM. Also check for a blockage in the vent hoses and the drain joint. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

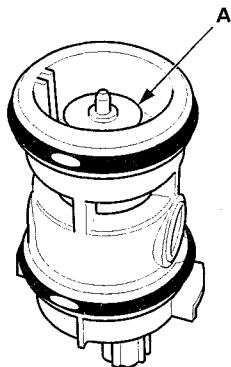
11. Clear the DTC with the HDS.
12. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
13. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-484).

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

14. Connect the 2P connector to the EVAP canister vent shut valve.
15. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
16. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
17. Check the EVAP canister vent shut valve (A) operation.



Does the valve operate?

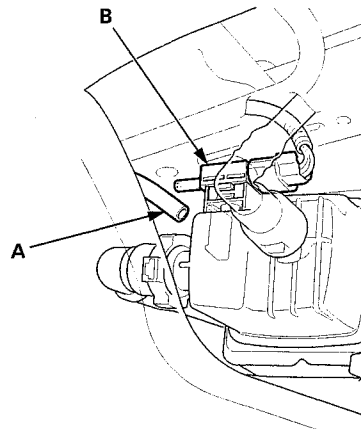
YES—Check for a blockage in the EVAP canister, vent hoses, and the drain joint, then install the EVAP canister vent shut valve, and go to step 25.

NO—Replace the EVAP canister vent shut valve (see page 11-484), then go to step 25.

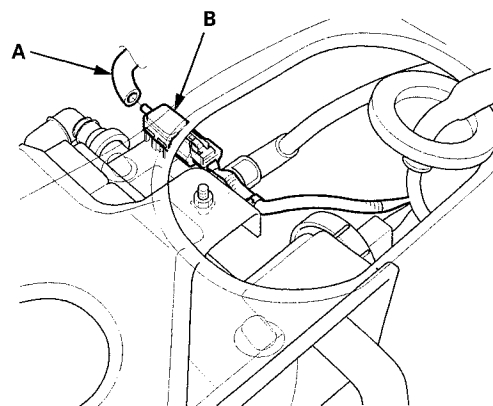
18. With SH-AWD: Remove the trunk front trim panel (see page 20-93), then remove the access panel from the floor (see step 2 on page 11-484).

19. Disconnect the air tube (A) from the FTP sensor (B).

Without SH-AWD



With SH-AWD



20. Check the FTP SENSOR in the DATA LIST with the HDS.

Is it between -0.67 and 0.67 kPa (-0.2 and 0.2 inHg, -5 and 5 mmHg), or 2.4 and 2.6 V?

YES—Check for a blockage in the FTP sensor air tube or vent, clear the blockage and reattach the air tube or vent, then go to step 25.

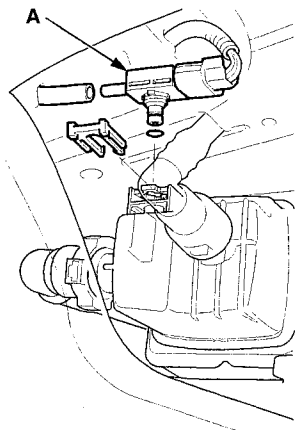
NO—Go to step 21.

21. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.

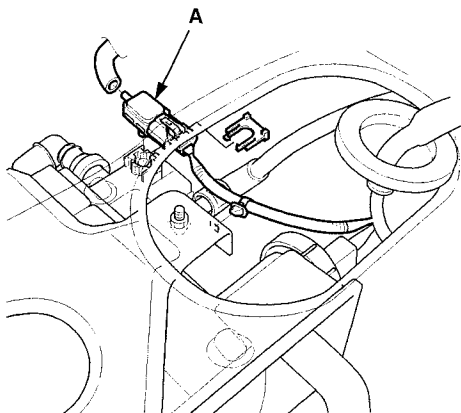


22. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see page 11-483).

Without SH-AWD



With SH-AWD



23. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

24. Check the FTP SENSOR in the DATA LIST with the HDS.

Is it between -0.67 kPa and 0.67 kPa (-0.2 and 0.2 inHg, -5 and 5 mmHg), or 2.4 and 2.6 V?

YES—Check for debris or clogging at the EVAP canister and the FTP sensor port, then go to step 25.

NO—Replace the FTP sensor (see page 11-483), then go to step 25.

25. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-337).

28. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P1454 and/or P2422 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

EVAP System

DTC Troubleshooting (cont'd)

DTC P145C: EVAP System Purge Flow Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P145C is indicated alone, do the troubleshooting for DTC P0496 and P0497 using freeze data for P145C.
- If DTC P0497 and P145C stored at the same time, check for a poor connection, a blockage, or damage at the EVAP canister purge line between the EVAP canister purge valve and the EVAP canister. Also check for a stuck closed EVAP canister purge valve.
- If any of DTCs listed below are indicated at the same time as DTC P145C, troubleshoot those DTCs first, then recheck for P145C.
P0496, P0497: EVAP system purge flow

Fuel Cap Warning Message System Troubleshooting

Special Tools Required

- Vacuum Pump/Gauge, 0–30 In.Hg, Snap-on YA4000A or equivalent, commercially available
- Vacuum/Pressure Gauge, 0–4 In.Hg, 07JAZ-001000B

Do this procedure if the fuel cap warning message comes on frequently, or if the message does not go off after the fuel fill cap is tightened and the vehicle is driven several days.

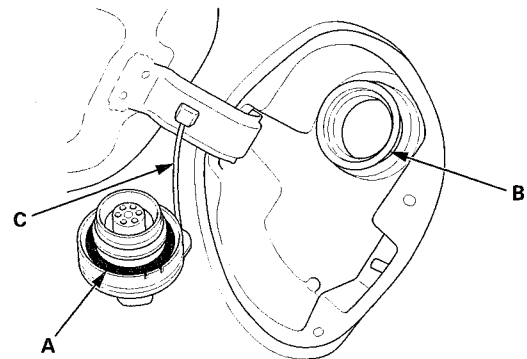
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 after it's tight, then it clicks.

Is the correct fuel fill cap installed and properly tightened?

YES—Go to step 2.

NO—Replace or tighten the cap, then go to step 13.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 13.

NO—Go to step 3.

3. Reinstall and tighten the fuel fill cap.
4. Clear the DTC with the HDS.
5. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for 1 minute.
6. Test drive at 45 mph (72 km/h) for 1 minute or more.

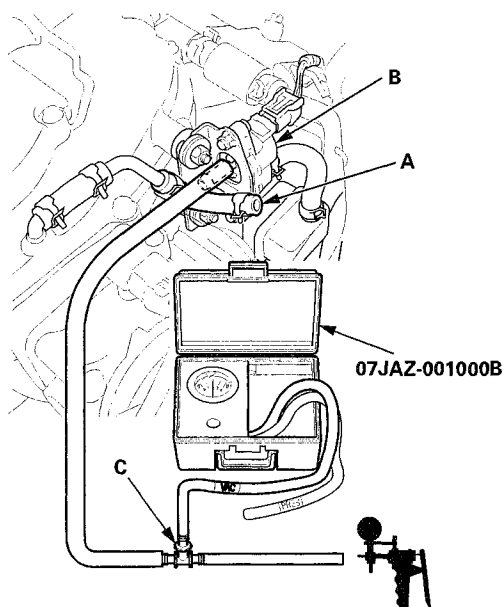
Does the fuel fill cap warning message come on?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time.



7. Turn the ignition switch to LOCK (0), or press the engine start/stop button to select the OFF mode.
8. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, then connect a T-fitting (C) from the vacuum gauge, and connect the vacuum pump/gauge 0–30 in.Hg, to the EVAP canister purge valve as shown.



9. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
10. Apply about 2 kPa (0.6 inHg, 15 mmHg) of vacuum to the hose.
11. Select the EVAP PCS ON in the INSPECTION MENU with the HDS.

Does the vacuum release immediately?

YES—Check for a blockage in the vacuum hose/line between the EVAP canister purge valve and the EVAP canister, then go to step 12.

NO—Replace the EVAP canister purge valve (see page 11-485), then go to step 12.

12. Install the parts in the reverse order of removal.
13. Turn the ignition switch to ON (II), or press the engine start/stop button to select the ON mode.
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-337).
16. Test-drive at 45 mph (72 km/h) for 1 minute or more.

Does the fuel cap warning message come on?

YES—Go to step 1 and recheck.

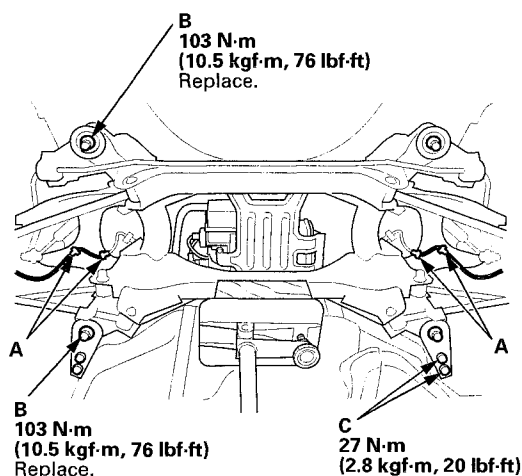
NO—Troubleshooting is complete. ■

EVAP System

EVAP Canister Replacement

Without SH-AWD

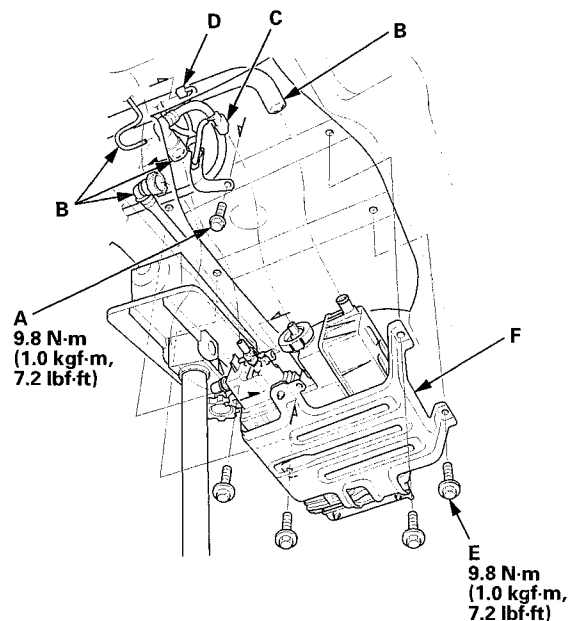
1. Raise the vehicle on a lift.
2. Remove the wheel sensor harness clamps (A)



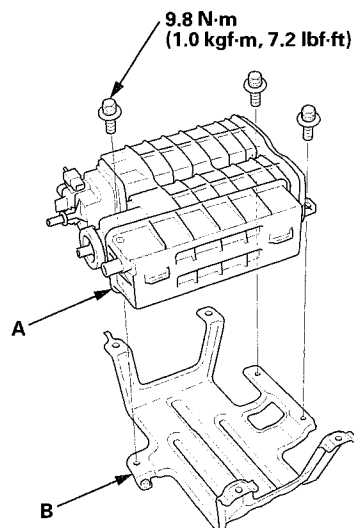
3. Support the rear subframe with a transmission jack and a wooden block as shown.
4. Remove the rear subframe mounting bolts (B) and (C).
5. Lower the transmission jack and the rear subframe about 50 mm.

NOTE: Be careful not to damage the connecting parts.

6. Remove the bolt (A), and disconnect the hoses (B), the EVAP canister vent shut valve 2P connector (C), and the FTP sensor 3P connector (D).

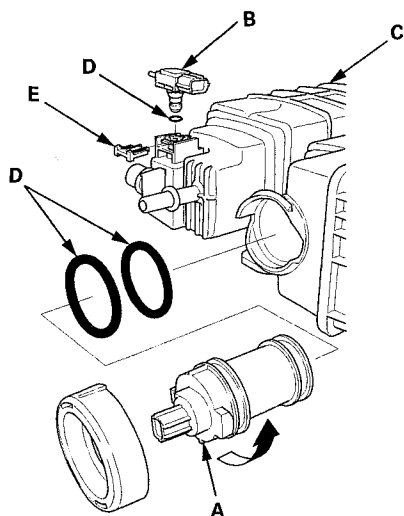


7. Remove the bolts (E), then remove the EVAP canister assembly (F).
8. Remove the EVAP canister (A) from the EVAP canister bracket (B).





9. Remove the EVAP canister vent shut valve (A) and the FTP sensor (B) from the canister (C).

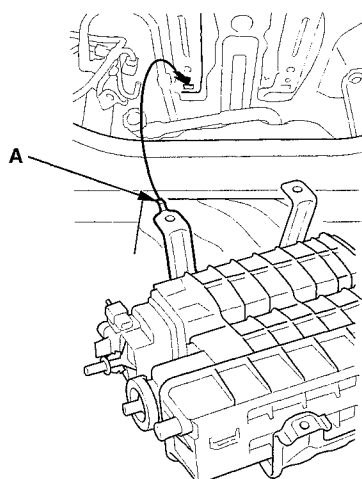


10. Reassemble the EVAP canister with new O-rings (D) and a new retainer (E), then install the EVAP canister bracket.

NOTE: Do not coat the O-rings with oil.

11. Install the EVAP canister assembly to the body.

NOTE: Attach the bracket arm (A) to the body as shown.

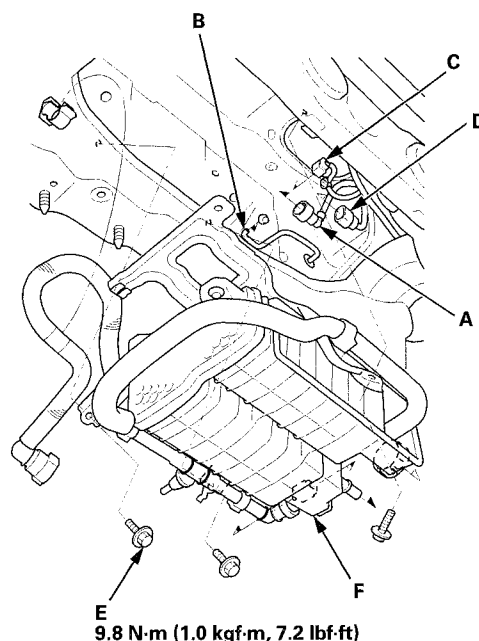


12. Install the parts in the reverse order of removal. Use new bolts when you install the rear subframe.

13. Check the wheel alignment (see page 18-5).

With SH-AWD

1. Remove the rear differential (see page 15-73).
2. Remove the fuel tank (see page 11-404).
3. Remove the EVAP canister filter (see page 11-485).
4. Disconnect the quick-connect fitting (A), the hose (B), the FTP sensor 3P connector (C), and the EVAP canister vent shut valve 2P connector (D).



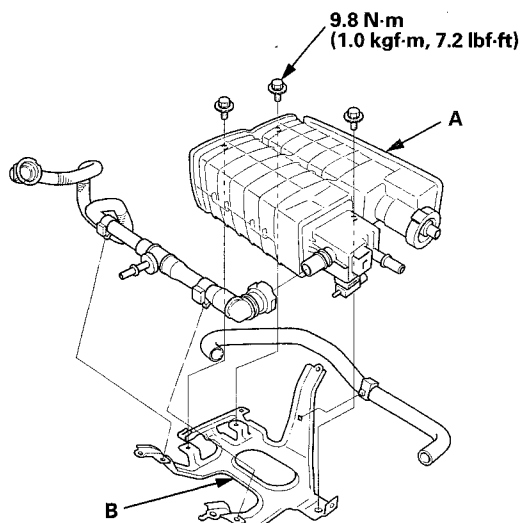
5. Remove the bolts (E) and the EVAP canister assembly (F).

(cont'd)

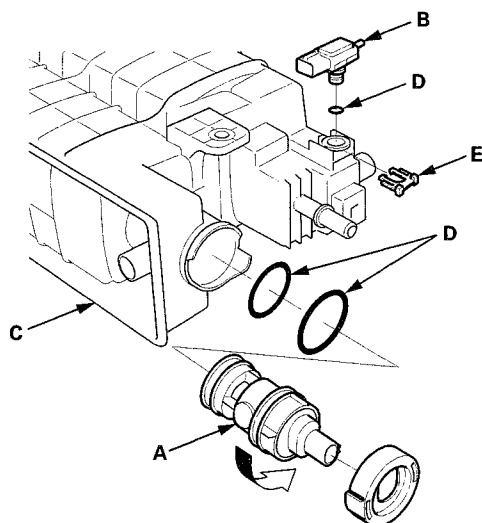
EVAP System

EVAP Canister Replacement (cont'd)

6. Remove the EVAP canister (A) from the bracket (B).



7. Remove the EVAP canister vent shut valve (A) and the FTP sensor (B) from the EVAP canister (C).

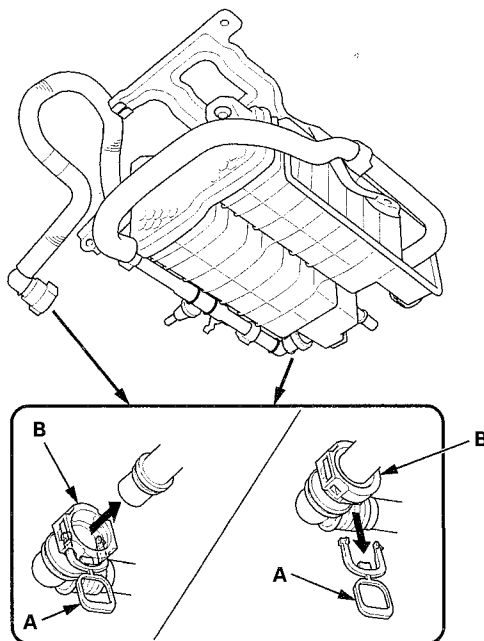


8. Reassemble the EVAP canister with new O-rings (D) and a new retainer (E), then install the EVAP canister bracket.

NOTE: Do not coat the O-rings with oil.

9. Install the parts in the reverse order of removal.

NOTE: The new fuel vapor hose has a ring pull (A) at the connector (B). When you connect the connector and confirm that the connection is secure, remove the ring pull by pulling it down.

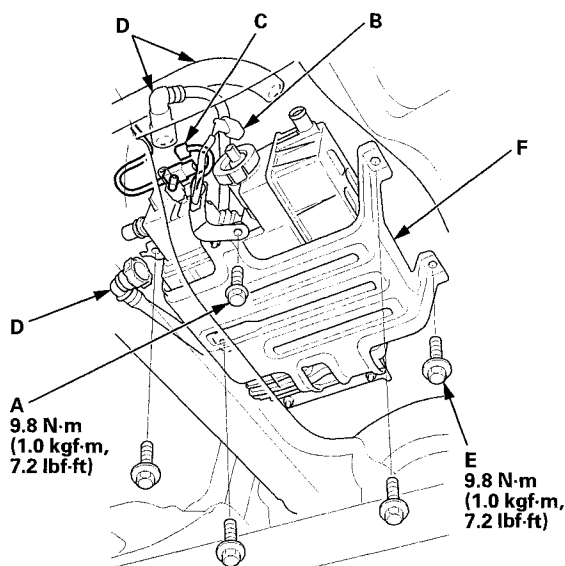




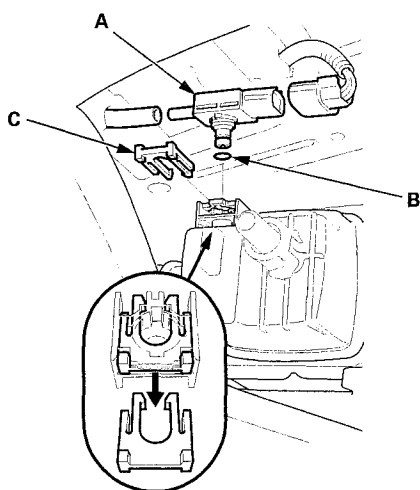
FTP Sensor Replacement

Without SH-AWD

1. Remove the bolt (A), and disconnect the EVAP canister vent shut valve 2P connector (B), the FTP sensor 3P connector (C), and the hoses (D).



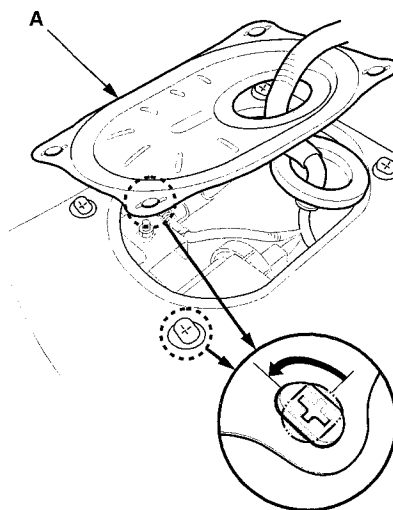
2. Remove the bolts (E), and move the EVAP canister assembly (F) to the rear.
3. Remove the FTP sensor (A).



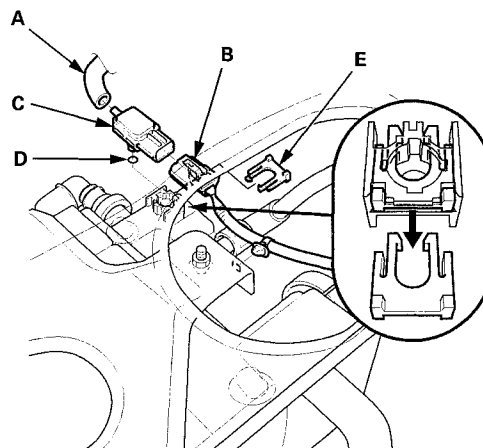
4. Install the parts in the reverse order of removal with a new O-ring (B) and a new retainer (C).

With SH-AWD

1. Remove the trunk front trim panel (see page 20-93).
2. Remove the access panel (A) from the floor.



3. Disconnect the hose (A) and the FTP sensor 3P connector (B).



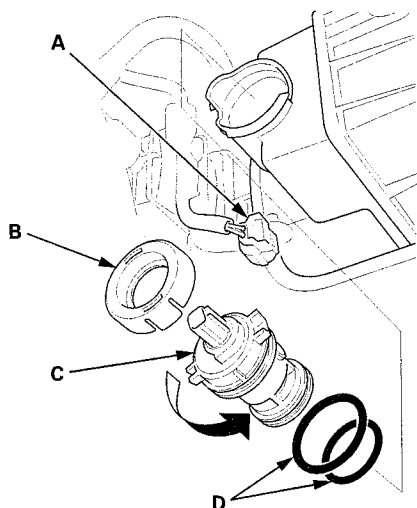
4. Remove the FTP sensor (C).
5. Install the parts in the reverse order of removal with a new O-ring (D) and a new retainer (E).

EVAP System

EVAP Canister Vent Shut Valve Replacement

Without SH-AWD

1. Disconnect the EVAP canister vent shut valve 2P connector (A).

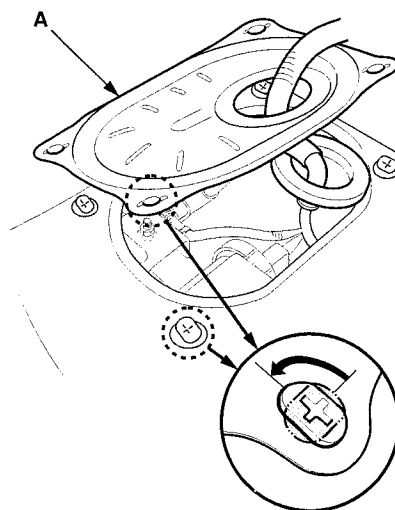


2. Remove the cap (B).
3. Remove the EVAP canister vent shut valve (C).
4. Install the parts in the reverse order of removal with new O-rings (D) and a new cap.

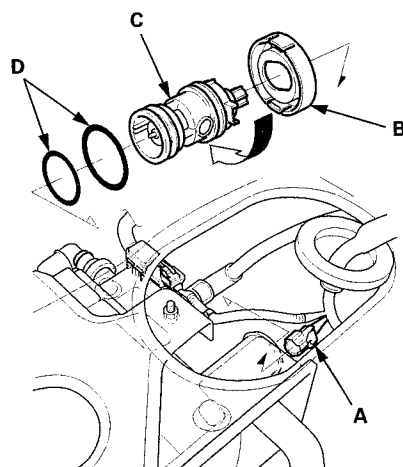
NOTE: Do not coat the O-rings with oil.

With SH-AWD

1. Remove the trunk front trim panel (see page 20-93).
2. Remove the access panel (A) from the floor.



3. Disconnect the EVAP canister vent shut valve 2P connector (A).



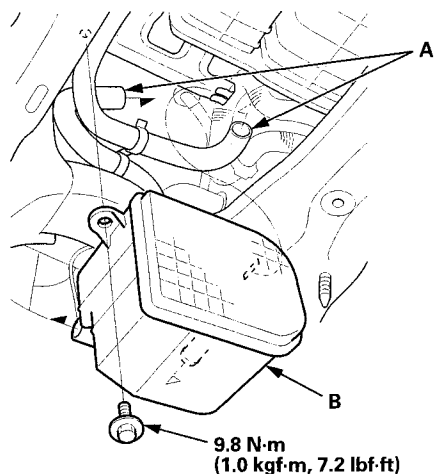
4. Remove the cap (B).
5. Remove the EVAP canister vent shut valve (C).
6. Install the parts in the reverse order of removal with new O-rings (D) and a new cap.



EVAP Canister Filter Replacement

With SH-AWD

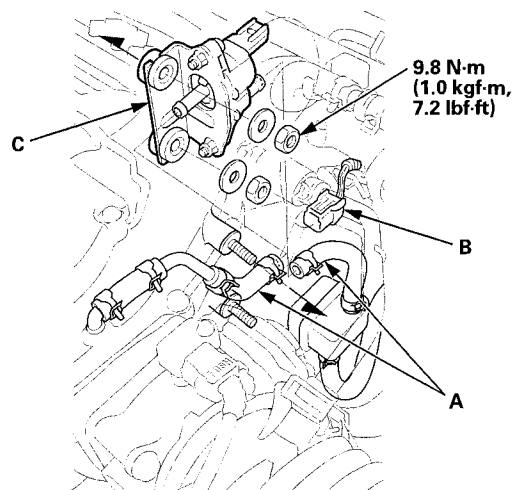
1. Remove the rear differential (see page 15-73).
2. Disconnect the hoses (A).



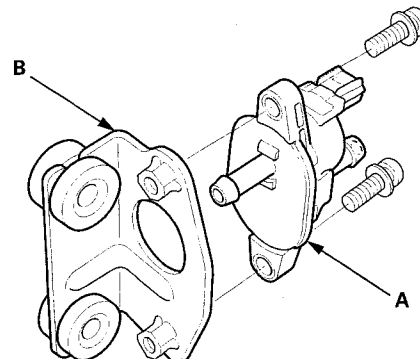
3. Remove the EVAP canister filter (B).
4. Install the parts in the reverse order of removal.

EVAP Canister Purge Valve Replacement

1. Disconnect the hoses (A) and the EVAP canister purge valve 2P connector (B).



2. Remove the EVAP canister purge valve assembly (C).
3. Remove the EVAP canister purge valve (A) from the bracket (B).



4. Install the parts in the reverse order of removal.