Navigation Tools: Click on the “Table of Contents” below, or use the Bookmarks to the left.

Fuel and Emissions

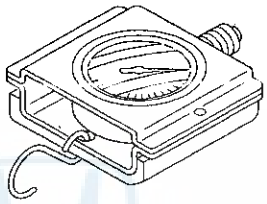
Navigation Tools: Click on the “Table of Contents” below, or use the Bookmarks to the left.

EVAP System

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

①



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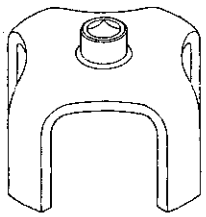

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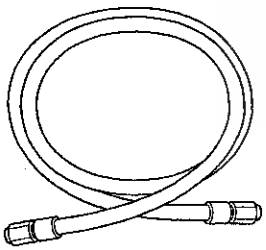

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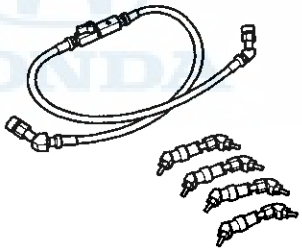

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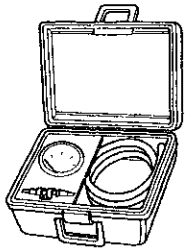

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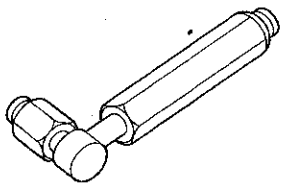

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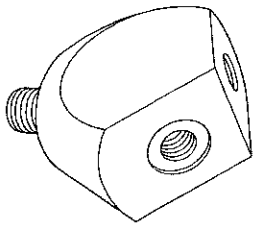

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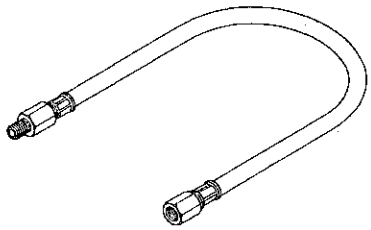


⑨

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

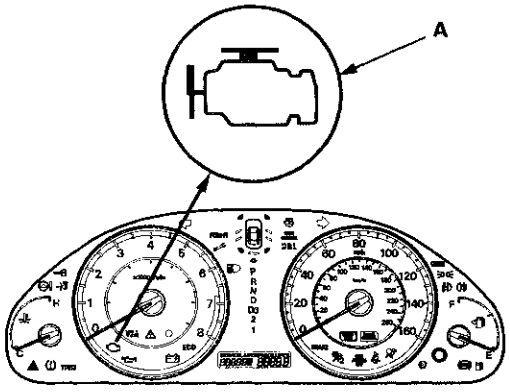
Open and short are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as ECMs or PCMs) this can sometimes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

How to Use the HDS (Honda Diagnostic System)

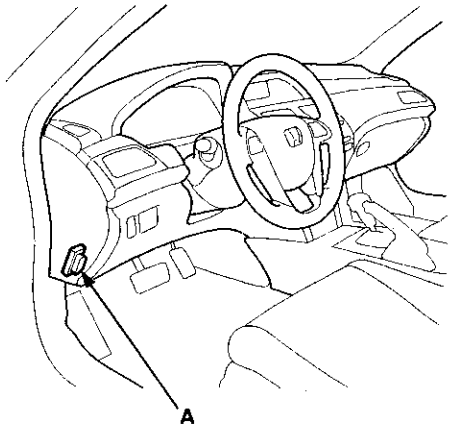
If the MIL (malfunction indicator lamp) has come on

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

   NOTE: If the ignition switch is turned to ON (II), and the engine is not started, the MIL stays on for 15—20 seconds (see page 11-65).



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).
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 11-181).
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 11-180).

(cont'd)

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 code, 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 correct the system even if there is no electrical power such as when the battery negative terminal or No. 17 FI MAIN (15 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 DTC codes, 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 11-293) CKP pattern learn procedure; test-drive to set readiness codes to complete (see page 11-65).

DTC Clear

1. Clear the DTC with the HDS while the engine is stopped.
2. Turn the ignition switch to LOCK (0).
3. Turn the ignition switch to ON (II), and wait 30 seconds.
4. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.

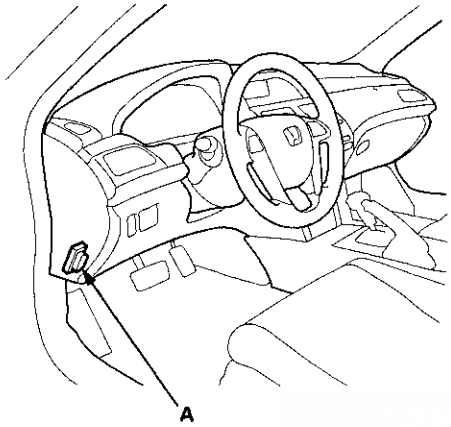
ECM/PCM Reset

1. Reset the ECM/PCM with the HDS while the engine is stopped.
2. Turn the ignition switch to LOCK (0).
3. Turn the ignition switch to ON (II), and wait 30 seconds.
4. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.
5. Do the ECM/PCM idle learn procedure (see page 11-293).

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).
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 11-181).
4. Select CRANK PATTERN in the ADJUSTMENT MENU with the HDS.
5. 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 A/T in 2, or the M/T in 2nd.
3. Repeat step 2 several times.
4. Turn the ignition switch to LOCK (0).
5. Turn the ignition switch to ON (II), 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 11-293).
3. Turn the ignition switch to LOCK (0).
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-keylwss control unit to recognize each other's unique serial code.

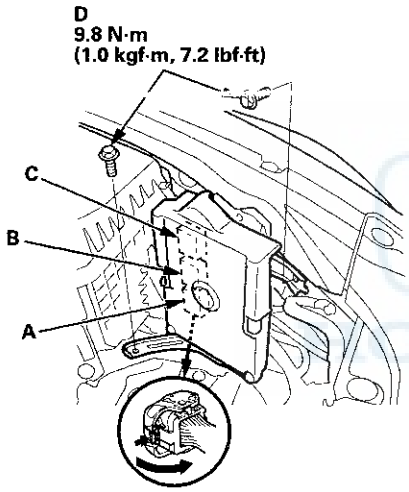
(cont'd)

General Troubleshooting Information (cont'd)

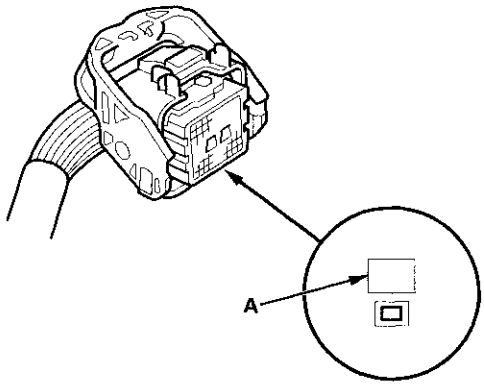
How to Troubleshoot Circuits at the ECM/PCM Connectors

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

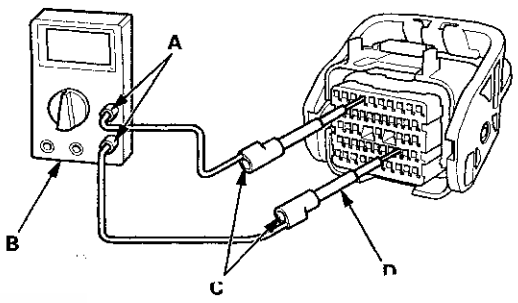
1. Jump the SCS line with the HDS.
2. Remove the bolts (D).



3. Disconnect ECM/PCM connectors A, B, and C.
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 as they can damage the terminals. 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.

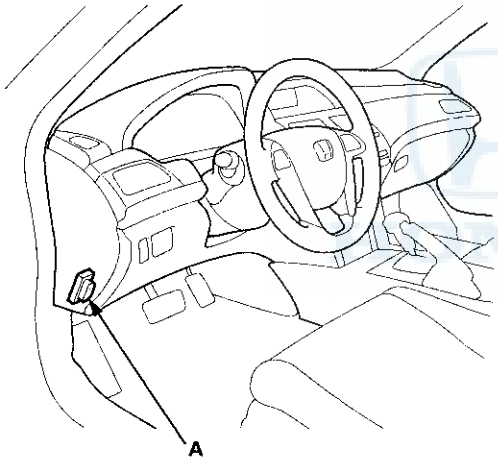
Substituting the ECM/PCM

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.

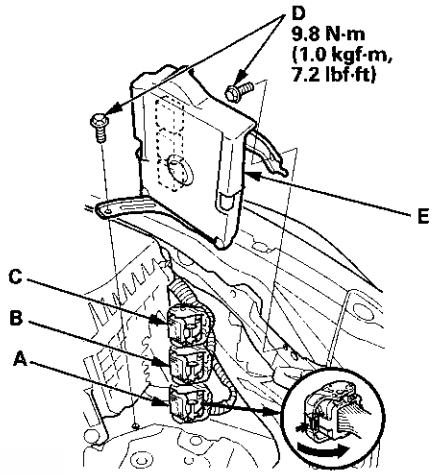
NOTE: Use this procedure when you have to substitute a known-good ECM/PCM during troubleshooting procedure.

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



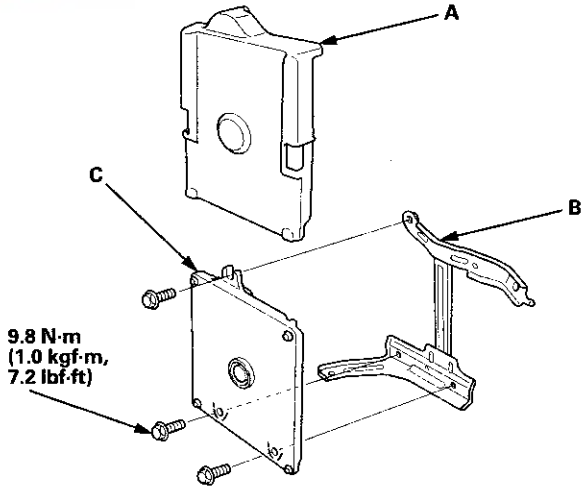
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-181). If you are returning from DLC circuit troubleshooting, skip steps 4 and 5, and the clean the throttle body after substituting the ECM/PCM (see page 11-332).
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).
7. Jump the SCS line with the HDS.
8. Do the battery removal procedure (see page 22-92).
9. Remove the bolts (D).



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

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



(cont'd)

General Troubleshooting Information (cont'd)

12. Install a known-good ECM/PCM in the reverse order of removal.
13. Do the battery installation procedure (see page 22-92).
14. Turn the ignition switch to ON (II).

    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.
15. Manually input the VIN to the ECM/PCM with the HDS.
16. Select the IMMOBI SYSTEM with the HDS.
17. Enter the immobilizer ECM/PCM code that you got from iN, and use the ECM/PCM replacement procedure in the IMMOBI MENU of the HDS; it allows you to start the engine.
18. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-332).
19. Reset the ECM/PCM with the HDS.
20. Update the ECM/PCM if it does not have the latest software (see page 11-203).
21. Do the ECM/PCM idle learn procedure (see page 11-293).
22. 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
P0010 (56)	—	Variable Valve Timing Control (VTC) Oil Control Solenoid Valve Malfunction	ON	DTC Troubleshooting (see page 11-242)
P0011 (56)	○	Variable Valve Timing Control (VTC) System Malfunction	ON	DTC Troubleshooting (see page 11-244)
P0101 (50)	○	Mass Air Flow (MAF) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-70)
P0102 (50)	—	Mass Air Flow (MAF) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-71)
P0103 (50)	—	Mass Air Flow (MAF) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-73)
P0107 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-75)
P0108 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-77)
P0111 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-79)
P0112 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-80)
P0113 (10)	○	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-82)
P0116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Range/Performance Problem	ON	DTC Troubleshooting (see page 11-84)
P0117 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-85)
P0118 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	DTC Troubleshooting (see page 11-87)
P0122 (7)	—	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-208)
P0123 (7)	—	Throttle Position (TP) Sensor A Circuit High Voltage	ON	DTC Troubleshooting (see page 11-210)
P0125 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response	ON	DTC Troubleshooting (see page 11-89)
P0128 (87)	○	Cooling System Malfunction	ON	DTC Troubleshooting (see page 11-89)
P0133 (61)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Malfunction/Slow Response	ON	DTC Troubleshooting (see page 11-91)
P0134 (41)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction	ON	DTC Troubleshooting (see page 11-92)
P0135 (41)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Circuit Malfunction	ON	DTC Troubleshooting (see page 11-93)
P0137 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-96)
P0138 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit High Voltage	ON	DTC Troubleshooting (see page 11-98)
P0139 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Slow Response	ON	DTC Troubleshooting (see page 11-101)
P0141 (65)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Heater Circuit Malfunction	ON	DTC Troubleshooting (see page 11-102)
P0171 (45)	○	Fuel System Too Lean	ON	DTC Troubleshooting (see page 11-105)
P0172 (45)	○	Fuel System Too Rich	ON	DTC Troubleshooting (see page 11-105)
P0222 (7)	—	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-212)

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: A/T
*2: M/T
*3: '08-09 models
*4: '10 model
*5: All models except PZEV
*6: PZEV model

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0223 (7)	—	Throttle Position (TP) Sensor B Circuit High Voltage	ON	DTC Troubleshooting (see page 11-214)
P0300 (75)*3(211)*4 and any combination of the following: P0301 (71) P0302 (72) P0303 (73) P0304 (74)	○	Random Misfire Detected	ON	DTC Troubleshooting (see page 11-106)
P0301 (71)	○	No. 1 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-109)
P0302 (72)	○	No. 2 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-109)
P0303 (73)	○	No. 3 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-109)
P0304 (74)	○	No. 4 Cylinder Misfire Detected	ON	DTC Troubleshooting (see page 11-109)
P0325 (23)	○	Knock Sensor Circuit Malfunction	ON	DTC Troubleshooting (see page 11-115)
P0335 (4)	—	Crankshaft Position (CKP) Sensor No Signal	ON	DTC Troubleshooting (see page 11-117)
P0339 (4)	—	Crankshaft Position (CKP) Sensor Circuit Intermittent Interruption	ON	DTC Troubleshooting (see page 11-119)
P0340 (57)	○	Camshaft Position (CMP) Sensor A No Signal	ON	DTC Troubleshooting (see page 11-245)
P0341 (57)	○	Camshaft Position (CMP) Sensor A and Crankshaft Position (CKP) Sensor Incorrect Phase Detected	ON	DTC Troubleshooting (see page 11-247)
P0344 (57)	○	Camshaft Position (CMP) Sensor A Circuit Intermittent Interruption	ON	DTC Troubleshooting (see page 11-249)
P0351 (71)	—	No. 1 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-120)
P0352 (72)	—	No. 2 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-120)
P0353 (73)	—	No. 3 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-120)
P0354 (74)	—	No. 4 Cylinder Ignition Coil Circuit Malfunction	ON	DTC Troubleshooting (see page 11-120)
P0365 (8)	—	Camshaft Position (CMP) Sensor B Circuit No Signal	ON	DTC Troubleshooting (see page 11-124)
P0369 (8)	—	Camshaft Position (CMP) Sensor B Circuit Intermittent Interruption	ON	DTC Troubleshooting (see page 11-126)
P0420 (67)	○	Catalyst System Efficiency Below Threshold	ON	DTC Troubleshooting (see page 11-338)
P0443 (92)	○	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	DTC Troubleshooting (see page 11-344)
P0451 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-347)
P0452 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-348)
P0453 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-350)
P0455 (90)	○	Evaporative Emission (EVAP) System Large Leak Detected	ON	DTC Troubleshooting (see page 11-353)

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: A/T
*2: M/T
*3: '08-09 models
*4: '10 model
*5: All models except PZEV
*6: PZEV model

DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0456 (90)	○	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	DTC Troubleshooting (see page 11-353)
P0457	—	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	OFF	DTC Troubleshooting (see page 11-357)
P0461	—	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem	OFF	DTC Troubleshooting (see page 11-296)
P0462	○	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-296)
P0463	○	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	DTC Troubleshooting (see page 11-298)
P0496 (92)	○	Evaporative Emission (EVAP) System High Purge Flow Detected	ON	DTC Troubleshooting (see page 11-358)
P0497 (90)	○	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	DTC Troubleshooting (see page 11-359)
P0498 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-362)
P0499 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit High Voltage	ON	DTC Troubleshooting (see page 11-364)
P0506 (14)	○	Idle Control System RPM Lower Than Expected	ON	DTC Troubleshooting (see page 11-279)
P0507 (14)	○	Idle Control System RPM Higher Than Expected	ON	DTC Troubleshooting (see page 11-281)
P050A (167)	○	Cold Start Idle Air Control System Performance Problem	ON	DTC Troubleshooting (see page 11-127)
P050B (167)	○	Cold Start Ignition Timing Control System Performance Problem	ON	DTC Troubleshooting (see page 11-129)
P0532*4	○	A/C Pressure Sensor Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-282)
P0533*4	○	A/C Pressure Sensor Circuit High Voltage	OFF	DTC Troubleshooting (see page 11-284)
P0562	—	Charging System Low Voltage	OFF	DTC Troubleshooting (see page 11-131)
P0563	○	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	OFF	DTC Troubleshooting (see page 11-132)
P0602 (196)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Programming Error	ON	DTC Troubleshooting (see page 11-134)
P0606 (--)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Processor Malfunction	ON	DTC Troubleshooting (see page 11-135)
P060A (131)*1	—	Powertrain Control Module (PCM) (A/T System) Internal Control Module Malfunction	ON	DTC Troubleshooting (see page 11-135)
P062F (131)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	DTC Troubleshooting (see page 11-136)
P0630 (139)	—	VIN Not Programmed or Mismatch	ON	DTC Troubleshooting (see page 11-136)
P0685 (135)	○	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Control Circuit/Internal Circuit Malfunction	ON	DTC Troubleshooting (see page 11-137)
P0720 (122)*2	○	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	DTC Troubleshooting (see page 11-138)
P1009 (56)	—	Variable Valve Timing Control (VTC) Advance Malfunction	ON	DTC Troubleshooting (see page 11-250)
P1109 (13)	○	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	DTC Troubleshooting (see page 11-140)
P1116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-141)

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: A/T
*2: M/T
*3: '08-09 models
*4: '10 model
*5: All models except PZEV
*6: PZEV model

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P1128 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	DTC Troubleshooting (see page 11-142)
P1129 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	DTC Troubleshooting (see page 11-143)
P1157 (48)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS Circuit High Voltage	ON	DTC Troubleshooting (see page 11-145)
P1172 (61)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Out of Range High	ON	DTC Troubleshooting (see page 11-146)
P1297	○	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-147)
P1298	○	Electrical Load Detector (ELD) Circuit High Voltage	OFF	DTC Troubleshooting (see page 11-148)
P1454 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-365)
P145C (90)	○	Evaporative Emission (EVAP) System Purge Flow Malfunction	ON	DTC Troubleshooting (see page 11-367)
P1549	—	Charging System High Voltage	OFF	DTC Troubleshooting (see page 11-150)
P1658 (40)	—	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	DTC Troubleshooting (see page 11-216)
P1659 (40)	—	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	DTC Troubleshooting (see page 11-217)
P1683 (40)	—	Throttle Valve Default Position Spring Performance Problem	ON	DTC Troubleshooting (see page 11-220)
P1684 (40)	—	Throttle Valve Return Spring Performance Problem	ON	DTC Troubleshooting (see page 11-221)
P16BB	—	Alternator B Terminal Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-150)
P16BC	—	Alternator FR Terminal Circuit/IGP Circuit Low Voltage	OFF	DTC Troubleshooting (see page 11-151)
P2101 (40)	—	Electronic Throttle Control System (ETCS) Malfunction	ON	DTC Troubleshooting (see page 11-222)
P2118 (40)	—	Throttle Actuator Current Range/Performance Problem	ON	DTC Troubleshooting (see page 11-224)
P2122 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-226)
P2123 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit High Voltage	ON	DTC Troubleshooting (see page 11-229)
P2127 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-230)
P2128 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit High Voltage	ON	DTC Troubleshooting (see page 11-233)
P2135 (7)	—	Throttle Position (TP) Sensor A/B Incorrect Voltage Correlation	ON	DTC Troubleshooting (see page 11-234)
P2138 (37)	—	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position (TP) Sensor D/E) Incorrect Voltage Correlation	ON	DTC Troubleshooting (see page 11-236)
P2176 (40)	—	Throttle Actuator Control System Idle Position Not Learned	ON	DTC Troubleshooting (see page 11-237)
P2183 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-154)
P2184 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-155)
P2185 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	DTC Troubleshooting (see page 11-157)

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: A/T
*2: M/T
*3: '08-09 models
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*6: PZEV model

DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2195 (48)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean	ON	DTC Troubleshooting (see page 11-159)
P2227 (13)	○	Barometric Pressure (BARO) Sensor Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-160)
P2228 (13)	○	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-162)
P2229 (13)	○	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	DTC Troubleshooting (see page 11-162)
P2238 (48)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS + Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-163)
P2252 (48)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS − Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-164)
P2422 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Stuck Closed Malfunction	ON	DTC Troubleshooting (see page 11-365)
P2610 (132)	—	Engine Control Module (ECM)/Powertrain Control Module (PCM) Ignition Off Internal Timer Malfunction	ON	DTC Troubleshooting (see page 11-166)
P2646 (22)*5	—	Rocker Arm Oil Pressure Switch Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-251)
P2646 (22)*6	—	Rocker Arm Oil Pressure Switch A Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-253)
P2647 (22)*5	—	Rocker Arm Oil Pressure Switch Circuit High Voltage	ON	DTC Troubleshooting (see page 11-256)
P2647 (22)*6	—	Rocker Arm Oil Pressure Switch A Circuit High Voltage	ON	DTC Troubleshooting (see page 11-253)
P2648 (21)*5	—	Rocker Arm Oil Control Solenoid Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-258)
P2648 (21)*6	—	Rocker Arm Oil Control Solenoid A (Intake Valve Side) Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-259)
P2649 (21)*5	—	Rocker Arm Oil Control Solenoid Circuit High Voltage	ON	DTC Troubleshooting (see page 11-261)
P2649 (21)*6	—	Rocker Arm Oil Control Solenoid A (Intake Valve Side) Circuit High Voltage	ON	DTC Troubleshooting (see page 11-263)
P2651 (52)*6	○	Rocker Arm Oil Pressure Switch B Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-265)
P2652 (52)*6	○	Rocker Arm Oil Pressure Switch B Circuit High Voltage	ON	DTC Troubleshooting (see page 11-265)
P2653 (51)*6	○	Rocker Arm Oil Control Solenoid B (Exhaust Valve Side) Circuit Low Voltage	ON	DTC Troubleshooting (see page 11-269)
P2654 (51)*6	○	Rocker Arm Oil Control Solenoid B (Exhaust Valve Side) Circuit High Voltage	ON	DTC Troubleshooting (see page 11-270)
P2A00 (61)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Range/Performance Problem	ON	DTC Troubleshooting (see page 11-166)
U0029 (126)	—	F-CAN Malfunction (BUS-OFF (Engine Control Module (ECM)/Powertrain Control Module (PCM)))	ON	DTC Troubleshooting (see page 11-167)
U0122	—	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-VSA Modulator-Control Unit)	OFF	DTC Troubleshooting (see page 11-168)
U0155 (126)	—	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-Gauge Control Module)	ON	DTC Troubleshooting (see page 11-169)
U0300 (131)*1	—	PGM-FI System and A/T System Program Version Mismatch	ON	DTC Troubleshooting (see page 11-171)

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.
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Symptom Troubleshooting Index

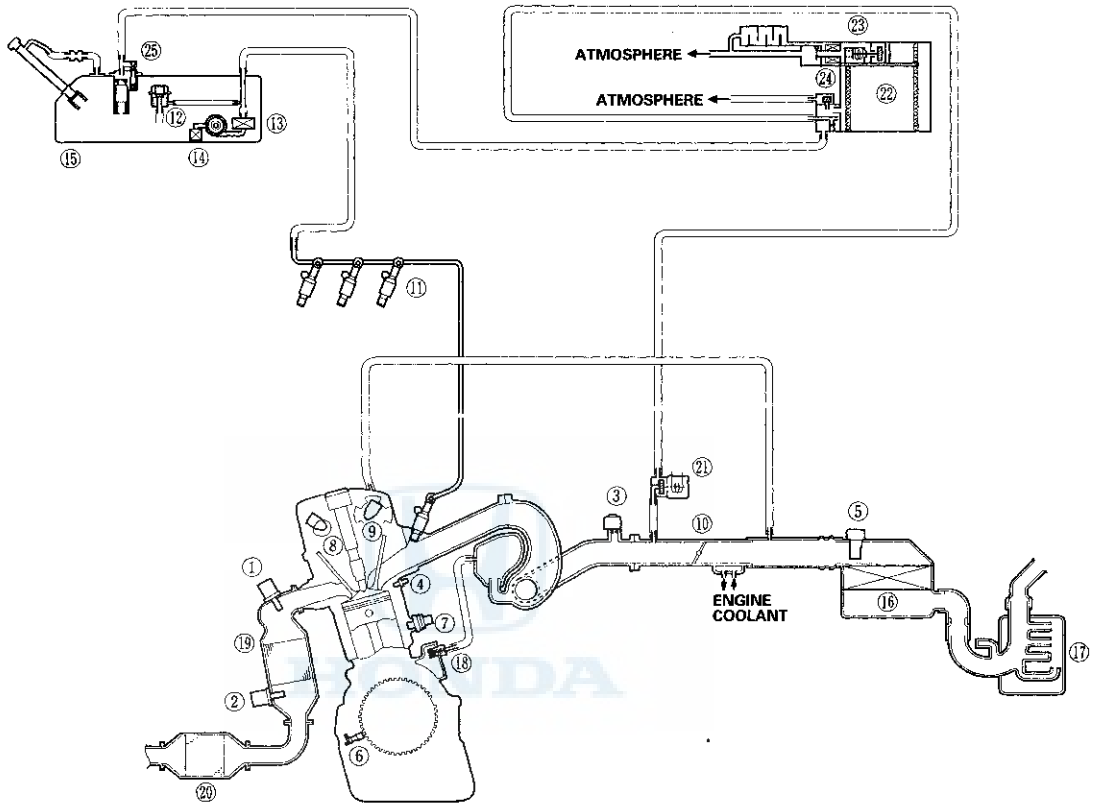
When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-90). 2. Test the starter (see page 4-10). 3. Check the fuel pressure (see page 11-308). 4. Troubleshoot the fuel pump circuit (see page 11-301).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken cam chain • Fuel contamination
Engine will not start (MIL comes on and stays on, no DTCs set)	Troubleshoot the DLC circuit (see page 11-181).	• No power to ECM/PCM • No ground to ECM/PCM • Shorted reference voltage
MIL comes on and stays on, or never comes on at all, no DTCs set	Troubleshoot the MIL circuit (see page 11-180).	
Engine will not start (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system (see page 22-429).	
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system (see page 22-429).	
Engine is hard to start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-90). 2. Check the fuel pressure (see page 11-308). 3. Clean the throttle body (see page 11-332).	• 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 11-293). 2. Check the idle speed (see page 11-292). 3. Clean the throttle body (see page 11-332).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-293). 2. Check the idle speed (see page 11-292). 3. Do the throttle position learning check (see page 11-331).	Intake air leaks
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-293). 2. Check the idle speed (see page 11-292). 3. Do the carbon accumulation check (see page 11-331). 4. Troubleshoot the A/C signal circuit (see page 11-287).	• 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 11-288). 2. Do the carbon accumulation check (see page 11-331).	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 11-288). 2. Inspect the APP sensor (see page 11-239).	Intake air leaks

Symptom	Diagnostic procedure	Also check for
After warming up, idle speed drops when steering wheel is turned (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-293). 2. Troubleshoot the PSP switch signal circuit (see page 11-288). 3. Do the carbon accumulation check (see page 11-331).	Power steering system problems
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see page 11-308).	• Low compression • Incorrect camshaft timing • Incorrect engine oil level • Exhaust restriction
Engine stalls (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-293). 2. Check the fuel pressure (see page 11-308). 3. Check the idle speed (see page 11-292). 4. Troubleshoot the brake pedal position switch signal circuit (see page 11-290).	• Intake air leaks • Faulty harness and sensor connections • Fuel contamination
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 (see page 11-325).	Malfunctioning gas station filling nozzle.
Fuel overflows during refueling (No DTCs set)	Replace the fuel tank (see page 11-325).	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 11-367).	
HDS does not communicate with the ECM/PCM or the vehicle	Troubleshoot the DLC circuit (see page 11-181).	Correct HDS software

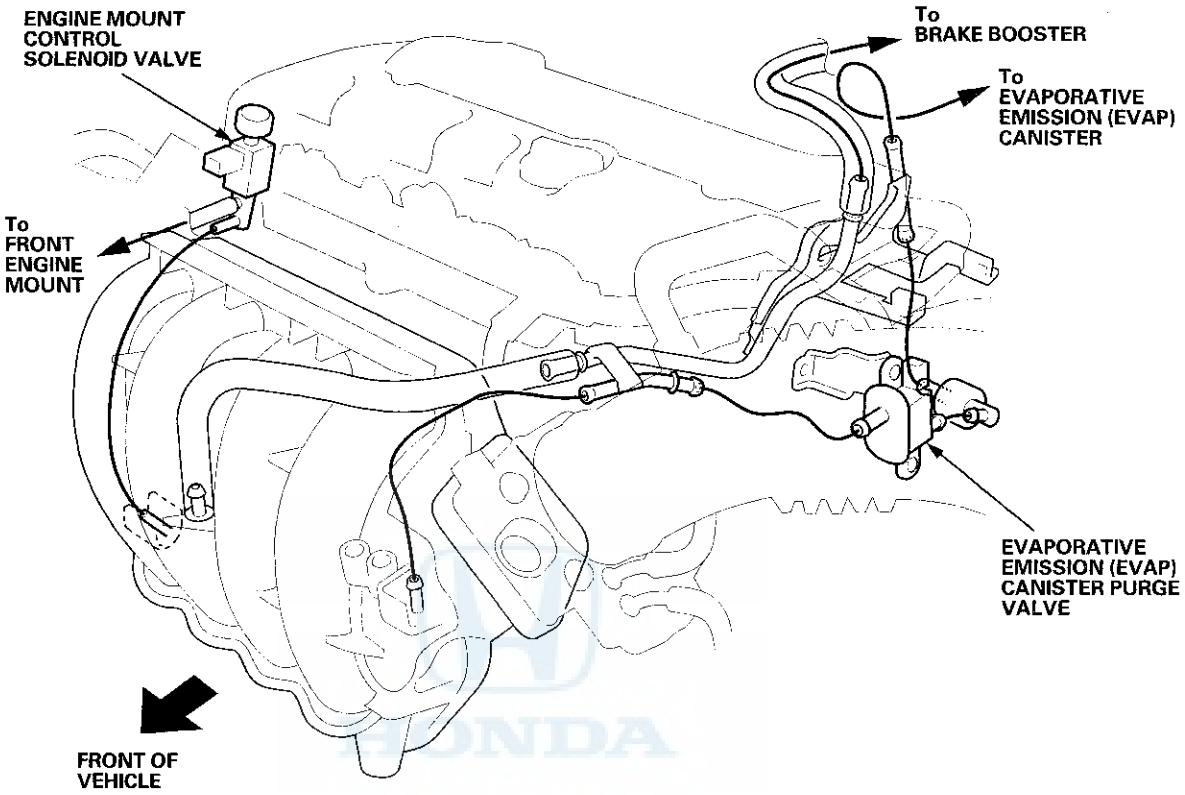
System Description

Fuel and Emissions Systems Diagram



① AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
② SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
③ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
④ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1
⑤ MASS AIR FLOW (MAF) SENSOR/ INTAKE AIR TEMPERATURE (IAT) SENSOR
⑥ CRANKSHAFT POSITION (CKP) SENSOR
⑦ KNOCK SENSOR
⑧ CAMSHAFT POSITION (CMP) SENSOR B
⑨ CAMSHAFT POSITION (CMP) SENSOR A
⑩ THROTTLE BODY
⑪ INJECTOR
⑫ FUEL PRESSURE REGULATOR
⑬ FUEL FILTER
⑭ FUEL PUMP
⑮ FUEL TANK
⑯ AIR CLEANER
⑰ INTAKE AIR RESONATOR
⑱ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
⑲ WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC)
⑳ UNDER-FLOOR THREE WAY CATALYTIC CONVERTER (TWC)
㉑ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
㉒ EVAPORATIVE EMISSION (EVAP) CANISTER
㉓ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
㉔ FUEL TANK PRESSURE (FTP) SENSOR
㉕ FUEL TANK VAPOR CONTROL VALVE

Vacuum Hose Routing



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 vehicles with manual transmissions or the powertrain control module (PCM) on vehicles 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.

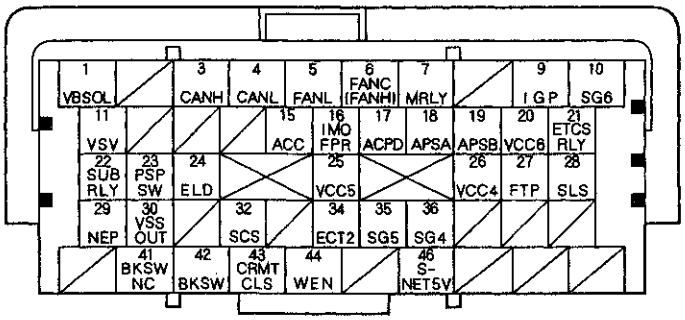
MIL Bulb Check and Readiness Code Condition

When the ignition switch is turned to ON (II), 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), 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).

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



Terminal side of female terminals

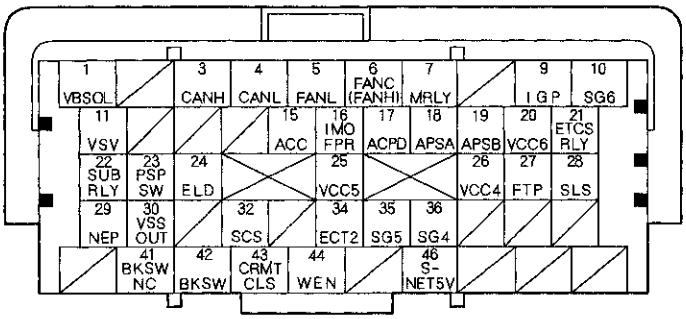
Terminal number	Wire color	Terminal name	Description	Signal
1*1	RED	VBSOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valves	With ignition switch ON (II): battery voltage
3	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): pulses (about 2.5 V)
4	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): pulses (about 2.5 V)
5*3	GRN	FANL (RADIATOR FAN CONTROL)	Drives A/C condenser fan relay	With condenser fan running: about 0 V With condensor fan stopped: battery voltage
6*2	YEL	FANC (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
6*3	YEL	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
7	RED/BLK	MRLY (PGM-FI MAIN RELAY 1)	Drives PGM-FI main relay 1 Power source for DTC memory	With ignition switch ON (II): about 0 V With ignition switch in LOCK (0): battery voltage
9	YEL/BLK	IGP (POWER SOURCE)	Power source for ECM/PCM circuit	With ignition switch ON (II): battery voltage
10	BLK	SG6 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
11	RED	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
15	PUR	ACC (A/C COMPRESSOR CLUTCH RELAY)	Drives A/C compressor clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
16	GRY	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	About 0 V for 2 seconds after turning ignition switch ON (II), then battery voltage With engine running: about 0 V

*1: A/T
*2: '08-09 models
*3: '10 model

(cont'd)

System Description (cont'd)

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

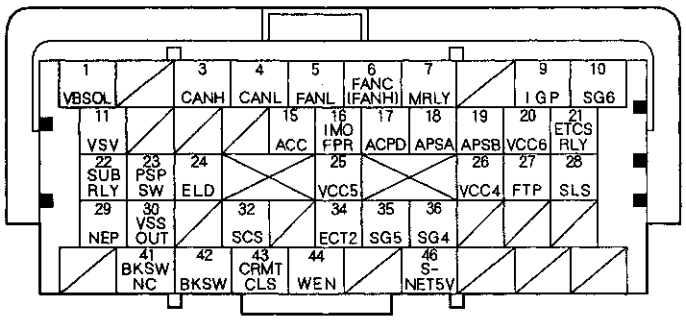


Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
17*3	BLU	ACPD (A/C PRESSURE SENSOR)	Detects A/C Pressure sensor signal	With A/C switch ON: about 1.4—4.8 V (depending on A/C pressure)
18	YEL	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.8 V With ignition switch ON (II) and accelerator pedal released: about 1.0 V
19	ORN	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.4 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
20	YEL	VCC6 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
21	WHT	ETCSRLY (ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY)	Drives electronic throttle control system (ETCS) control relay	With ignition switch ON (II): about 0 V
22	RED/YEL	SUBRLY (PGM-FI SUBRLY)	Drives PGM-FI subrelay	With ignition switch ON (II): about 0 V
23	PNK	PSPSW (POWER STEERING PRESSURE SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: battery voltage
24	BLU/BLK	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1—4.8 V (depending on electrical load)

*3: '10 model

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



Terminal side of female terminals

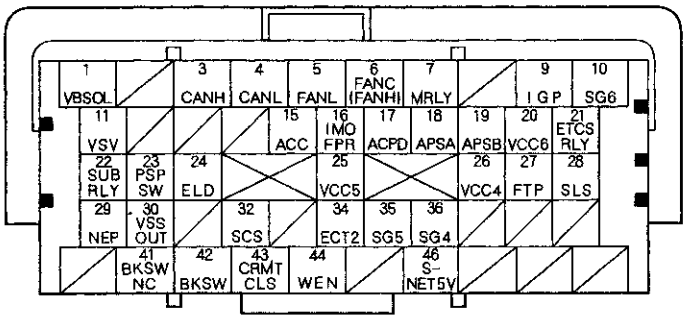
Terminal number	Wire color	Terminal name	Description	Signal
25	BRN	VCC5 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
26	RED	VCC4 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
27	LT GRN	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II) and fuel fill cap removed: about 2.5 V
28*1	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in P, brake pedal pressed, and accelerator pedal released: about 0 V
29	BLU	NEP (ENGINE SPEED SIGNAL)	Outputs engine speed signal	With engine running: pulses
30	BLU	VSSOUT (VEHICLE SPEED SIGNAL OUTPUT)	Sends vehicle speed signal	Depending on vehicle speed: pulses
32	ORN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted using the HDS: about 0 V With service check signal opened: about 5.0 V
34	YEL/RED	ECT2 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
35	GRN	SG5 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
36	BLU	SG4 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times

*1: A/T

(cont'd)

System Description (cont'd)

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

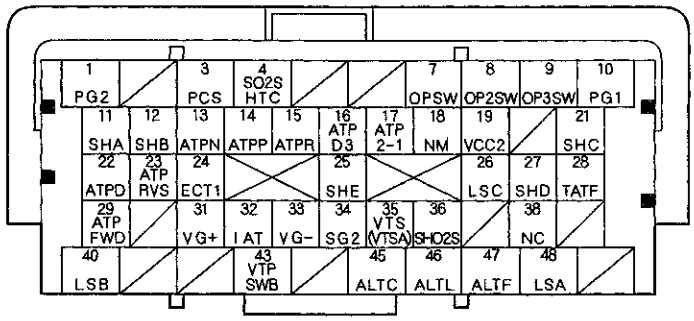


Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
41	ORN	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With ignition switch ON (II) and brake pedal released: battery voltage With ignition switch ON (II) and brake pedal pressed: about 0 V
42	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
43*4	BRN	CRMTCLS (CRUISE CLUTCH PEDAL POSITION SWITCH SIGNAL)	Detects clutch pedal position switch signal	With ignition switch ON (II) and clutch pedal released: about 0 V With ignition switch ON (II) and clutch pedal pressed: battery voltage
44	RED	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
46	LT GRN	S-NET5V (SERIAL COMMUNICATION FOR IMMOBILIZER)	Sends serial communication signal	With ignition switch ON (II): pulses With key removed from the ignition switch: about 1.4 V

*4: M/T

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



Terminal side of female terminals

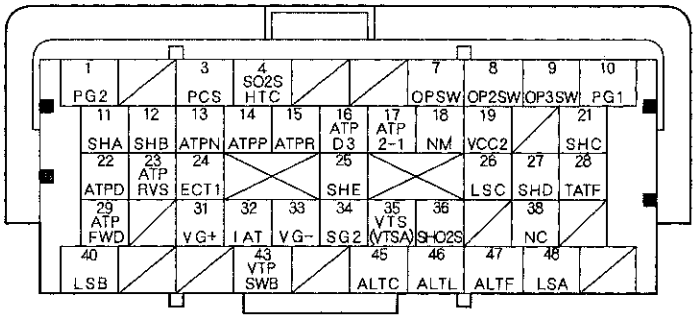
Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PG2 (POWER GROUND)	Ground circuit for ECM/PCM	Less than 0.2 V at all times
3	YEL/BLU	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 131 °F (55 °C): battery voltage With engine running, engine coolant above 131 °F (55 °C): duty controlled
4	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2) HEATER)	Drives secondary HO2S (sensor 2) heater	With ignition switch ON (II): battery voltage With warmed up engine running: duty controlled
7	YEL/RED	OPSW (OIL PRESSURE SWITCH)	Detects engine oil pressure signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
8*1	BLU/RED	OP2SW (TRANSMISSION FLUID PRESSURE SWITCH A (2ND CLUTCH))	Detects transmission fluid pressure switch A (2nd clutch) input	With ignition switch ON (II): • Without 2nd clutch pressure: about 5.0 V • With 2nd clutch pressure: about 0 V
9*1	BLU/WHT	OP3SW (TRANSMISSION FLUID PRESSURE SWITCH B (3RD CLUTCH))	Detects transmission fluid pressure switch B (3rd clutch) input	With ignition switch ON (II): • Without 3rd clutch pressure: about 5.0 V • With 3rd clutch pressure: about 0 V
10	BLK	PG1 (POWER GROUND)	Ground circuit for ECM/PCM	Less than 0.2 V at all times
11*1	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in R, D (in 1st, 4th, and 5th gears) D3 (in 1st gear), and 1: battery voltage With engine running in P, N, D, and D3 (in 2nd and 3rd gears) and 2: about 0 V
12*1	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D, and D3 (in 1st and 2nd gears), 2, and 1: battery voltage With engine running in D (in 3rd, 4th, 5th gears), D3 (in 3rd gear), 2 and 1: about 0 V
13*1	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: about 5.0 V
14*1	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH P)	Detects transmission range switch P position signal	In P: about 0 V In any position other than P: about 5.0 V
15*1	WHT	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal	In R: about 0 V In any position other than R: about 5.0 V
16*1	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3)	Detects transmission range switch D3 position signal	In D3: about 0 V In any position other than D3: battery voltage

*1: A/T

(cont'd)

System Description (cont'd)

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

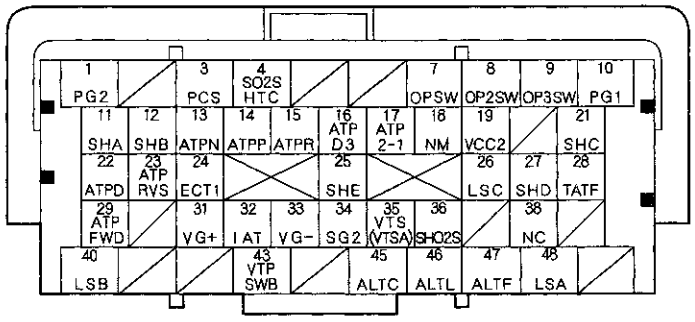


Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
17*1	GRN/RED	ATP2-1 (TRANSMISSION RANGE SWITCH 2-1)	Detects transmission range switch 2 and 1 position signals	In 2 and 1: about 0 V In any position other than 2 and 1: battery voltage
18*1	WHT/RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): about 0 V or about 5.0 V With engine idling in N position: about 2.5 V (pulses)
19*1	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
21*1	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in N, D (in 1st, 3rd, and 5th gears), D3 (in 1st and 3rd gears), and 1: battery voltage With engine running in P, R, D (in 2nd and 4th gears), D3 (in 2nd gear), and 2: about 0 V
22*1	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: battery voltage
23*1	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH RVS)	Detects transmission range switch R position signal	In R: about 0 V In any position other than R: battery voltage
24	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
25*1	YEL	SHE (SHIFT SOLENOID VALVE E)	Drives shift solenoid valve E	With engine running in P and R: battery voltage With engine running in , N, D and D3 (in 1st gear), 2, and 1: about 0 V
26*1	BLU/YEL	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): current controlled
27*1	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in D (in 2nd and 5th gears), D3 (in 2nd gear), and 2: battery voltage With engine running in P, R, N, D (in 1st, 3rd and 4th gears), D3 (in 1st and 3rd gears), and 1: about 0 V
28*1	RED/YEL	TATF (ATF TEMPERATURE SENSOR)	Detects ATF temperature sensor signal	With ignition switch ON (II): about 0.2—4.8 V (depending on ATF temperature)
29*1	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH FWD)	Detects transmission range switch D, D3, 2 positions signal	In D, D3, and 2 positions: about 0 V In any position other than D, D3, and 2: battery voltage

*1: A/T

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



Terminal side of female terminals

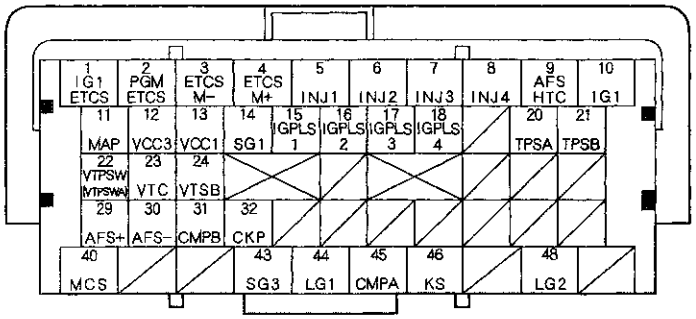
Terminal number	Wire color	Terminal name	Description	Signal
31	RED/BLK	VG+ (MASS AIR FLOW (MAF) SENSOR +SIDE)	Detects MAF sensor signal	At idle with warmed up engine and no electrical load: about 1.3 V
32	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1—4.0 V (about 1.8 V at normal operating temperature)
33	BLK/BLU	VG− (MASS AIR FLOW (MAF) SENSOR -SIDE)	Ground for MAF sensor signal	
34	GRN/BLK	SG2 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
35	GRN/YEL	VTS (VTSA)*5 (ROCKER ARM OIL CONTROL SOLENOID (A)*5)	Drives rocker arm oil control solenoid (A)*5	At idle: about 0 V
36	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) SENSOR 2)	Detects secondary HO2S (sensor 2) signal	With throttle fully opened from idle with warmed up engine: above 0.8 V While throttle quickly closed: below 0.1 V
38	BLK/WHT	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signal	With ignition switch ON (II): about 0 V or about 5.0 V While driving: about 2.5 V (pulses)
40*1	BRN	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): current controlled
43*5	BLU	VTPSWB (ROCKER ARM OIL PRESSURE SWITCH B)	Detects rocker arm oil pressure switch B signal	At idle: about 0 V
45	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With warmed up engine running: about 7.5 V (depending on electrical load)
46	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
47	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 0.5—2.7 V (depending on electrical load)
48*1	RED/BLK	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): current controlled

*1: A/T
*5: PZEV model

(cont'd)

System Description (cont'd)

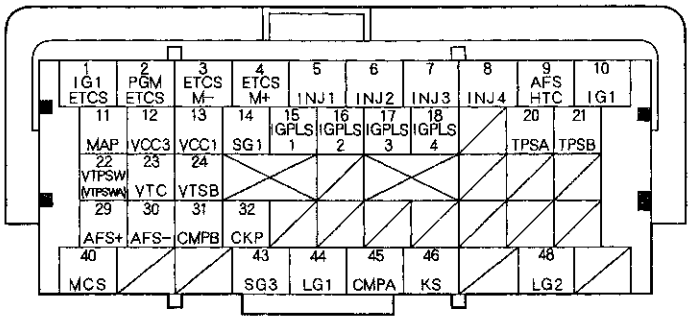
ECM/PCM Inputs and Outputs at ECM/PCM Connector C (○) (49P)



Terminal side of female terminals

Terminal number	Wire color	Terminal name	Description	Signal
1	YEL/GRN	IG1ETCS (IGNITION SIGNAL ETCS)	Detects ignition signal	With ignition switch ON (II): battery voltage
2	BLK	PGMETCS (POWER GROUND ETCS)	Ground circuit for ECM/PCM	Less than 0.2 V at all times
3	GRN/YEL	ETCSM− (THROTTLE ACTUATOR −SIDE)	Ground for throttle actuator	With ignition switch ON (II): about 0 V
4	BLU/RED	ETCSM+ (THROTTLE ACTUATOR +SIDE)	Drives throttle actuator	With ignition switch ON (II): about 0 V
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	With ignition switch ON (II): battery voltage At idle: duty controlled
6	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
7	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
8	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
9	GRN	AFSHTC (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) HEATER CONTROL)	Drives A/F sensor (sensor 1) heater	With ignition switch ON (II): battery voltage With warmed up engine running: pulses
10	BLK/RED	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage
11	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3.0 V At idle: about 1.0 V (depending on engine speed)
12	BLU	VCC3 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
13	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
14	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
15	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
16	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
17	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
18	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
20	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 0.8 V
21	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

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



Terminal side of female terminals

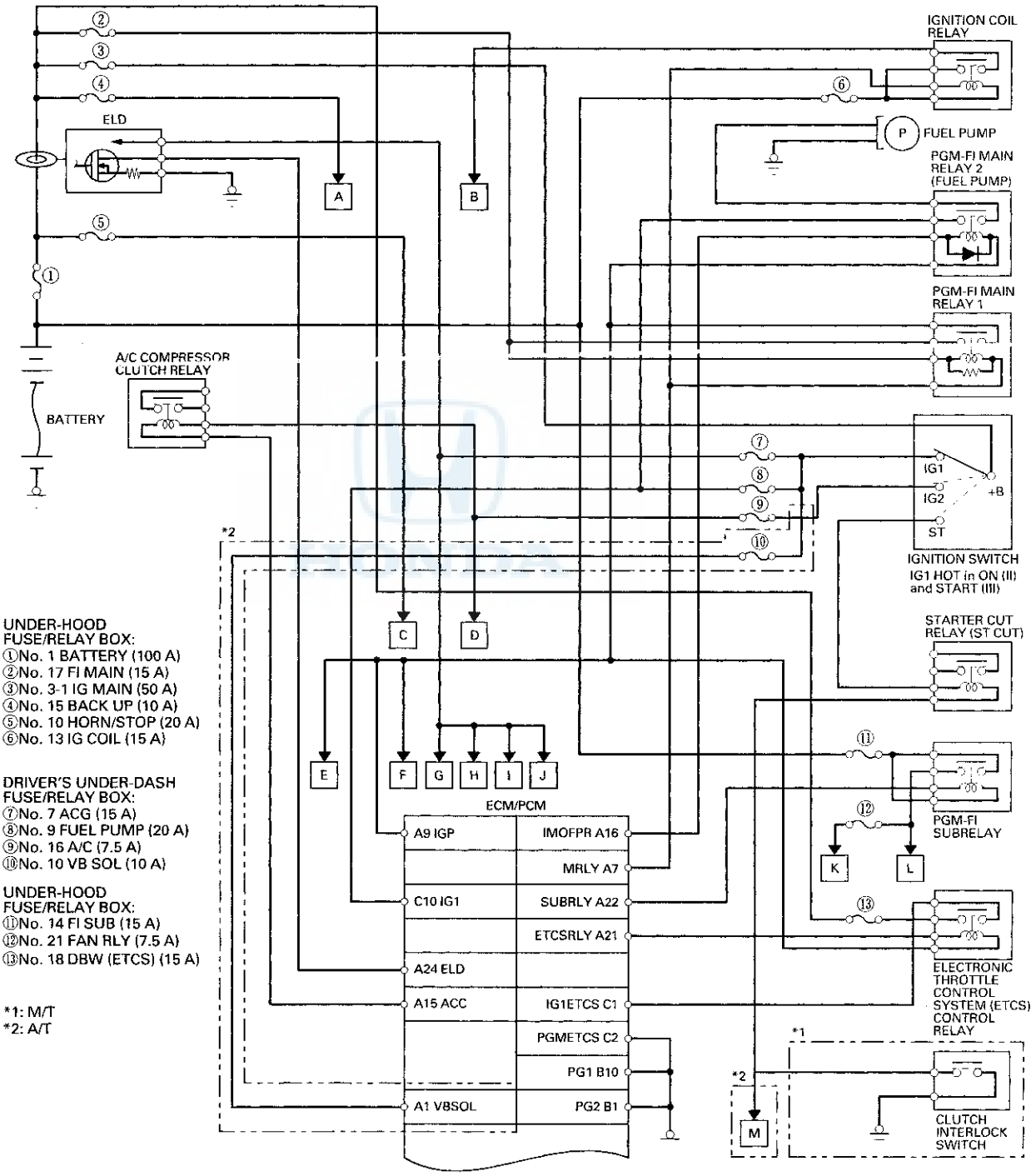
Terminal number	Wire color	Terminal name	Description	Signal
22	BLU/BLK	VTPSW (VTPSWA)*5 (ROCKER ARM OIL PRESSURE SWITCH (A)*5)	Detects rocker arm oil pressure switch (A)*5 signal	At idle: about 0 V
23	BLU/WHT	VTC (VTC OIL CONTROL SOLENOID VALVE)	Drives VTC oil control solenoid valve	With ignition switch ON (II): about 0 V
24*5	GRN/RED	VTSB (ROCKER ARM OIL CONTROL SOLENOID B)	Drives rocker arm oil control solenoid B	At idle: about 0 V
29	RED	AFS+ (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) +SIDE)	Detects A/F sensor (sensor 1) signal	At idle: about 2.2 V
30	RED/YEL	AFS− (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) −SIDE)	Detects A/F sensor (sensor 1) signal	At idle: about 1.8 V
31	GRN	CMPB (CAMSHAFT POSITION (CMP) SENSOR B)	Detects CMP sensor B signal	With engine running: pulses
32	BLU/YEL	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
40	BLU/YEL	MCS (ENGINE MOUNT CONTROL SOLENOID VALVE)	Drives engine mount control solenoid	At idle: about 0 V Above idle: battery voltage
43	GRN	SG3 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
44	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for ECM/PCM	Less than 0.2 V at all times
45	BLU/WHT	CMPA (CAMSHAFT POSITION (CMP) SENSOR A)	Detects CMP sensor A signal	With engine running: pulses
46	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
48	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for ECM/PCM	Less than 0.2 V at all times

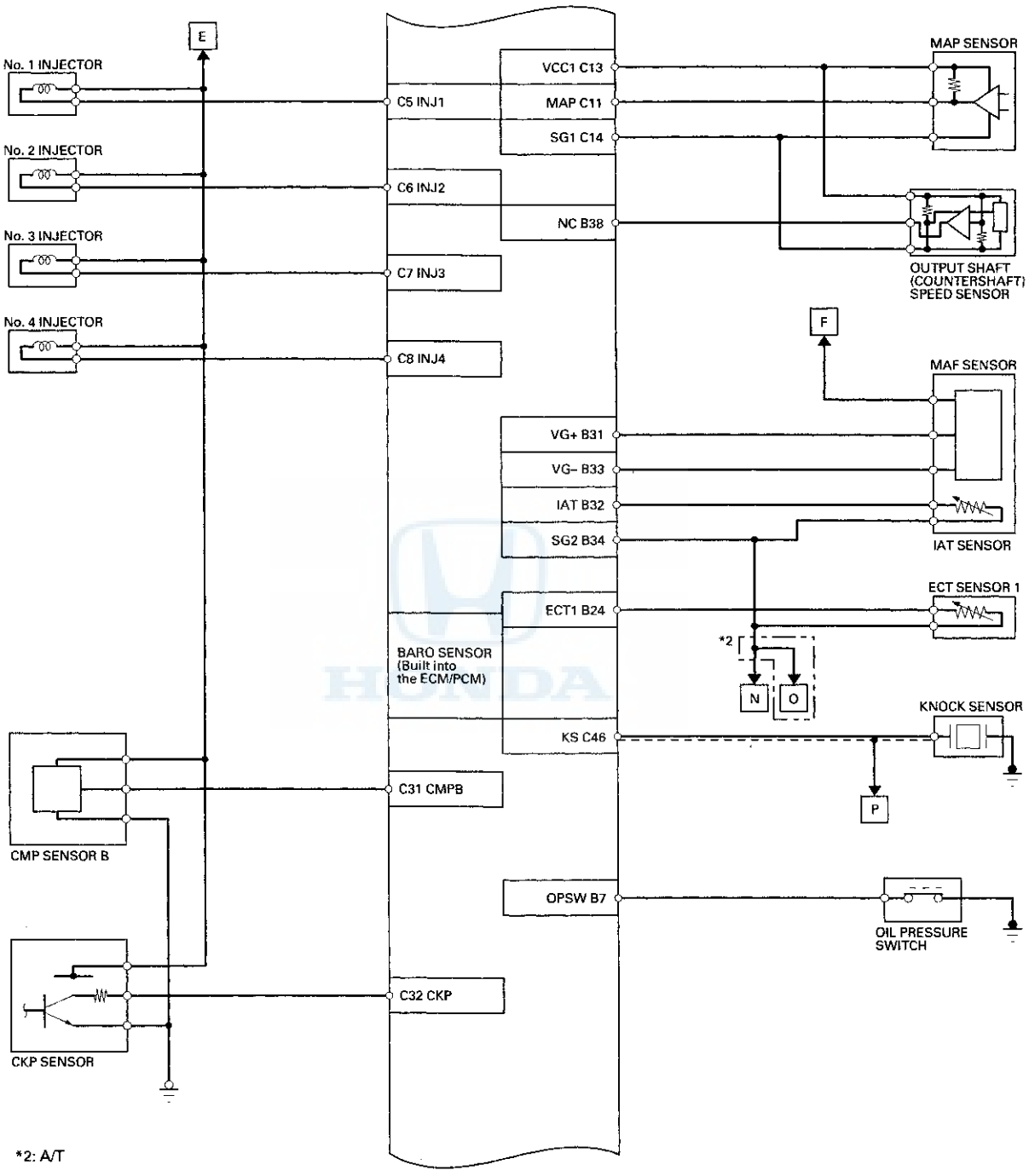
*5: PZEV model

(cont'd)

System Description (cont'd)

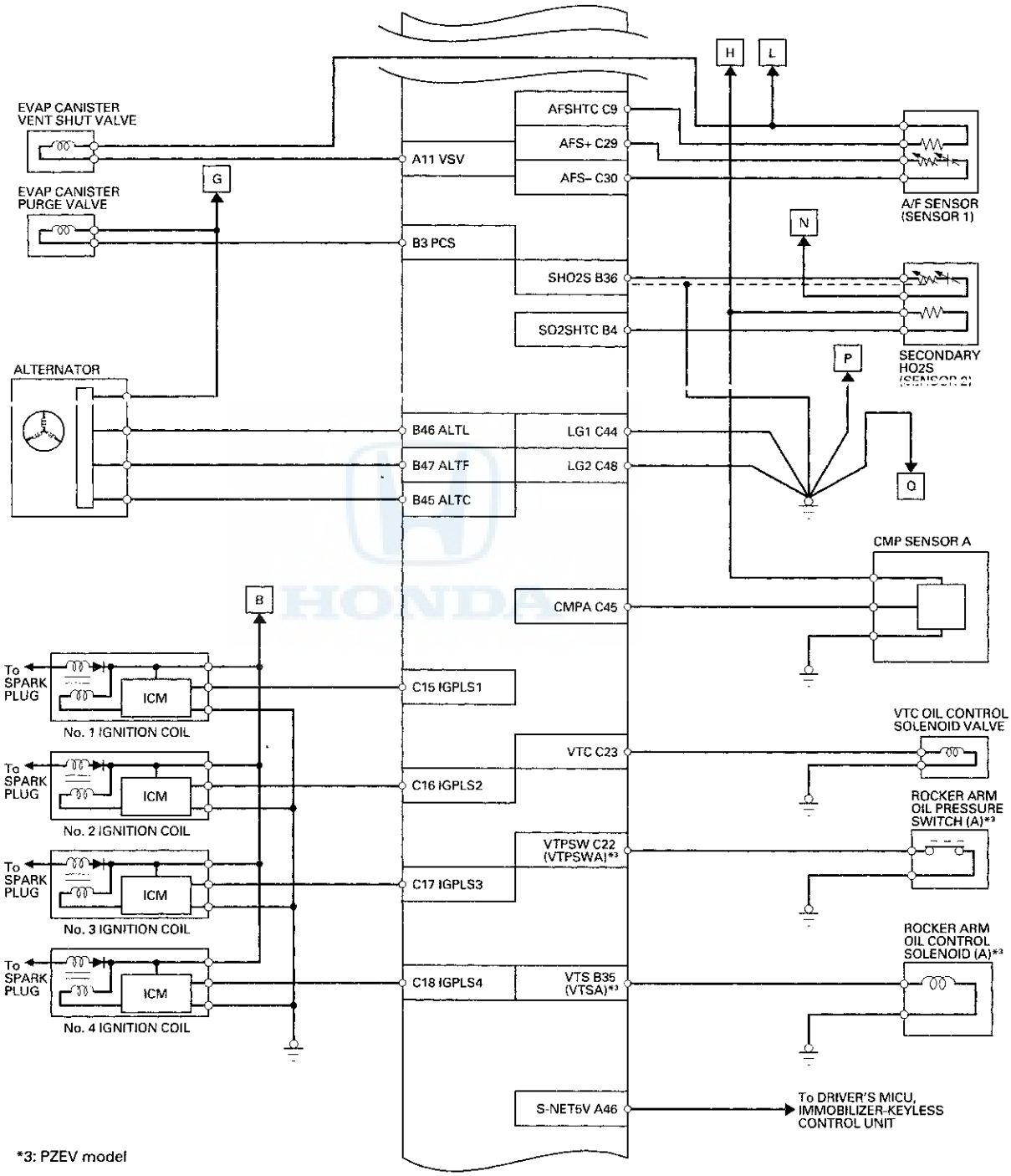
ECM/PCM Electrical Connections

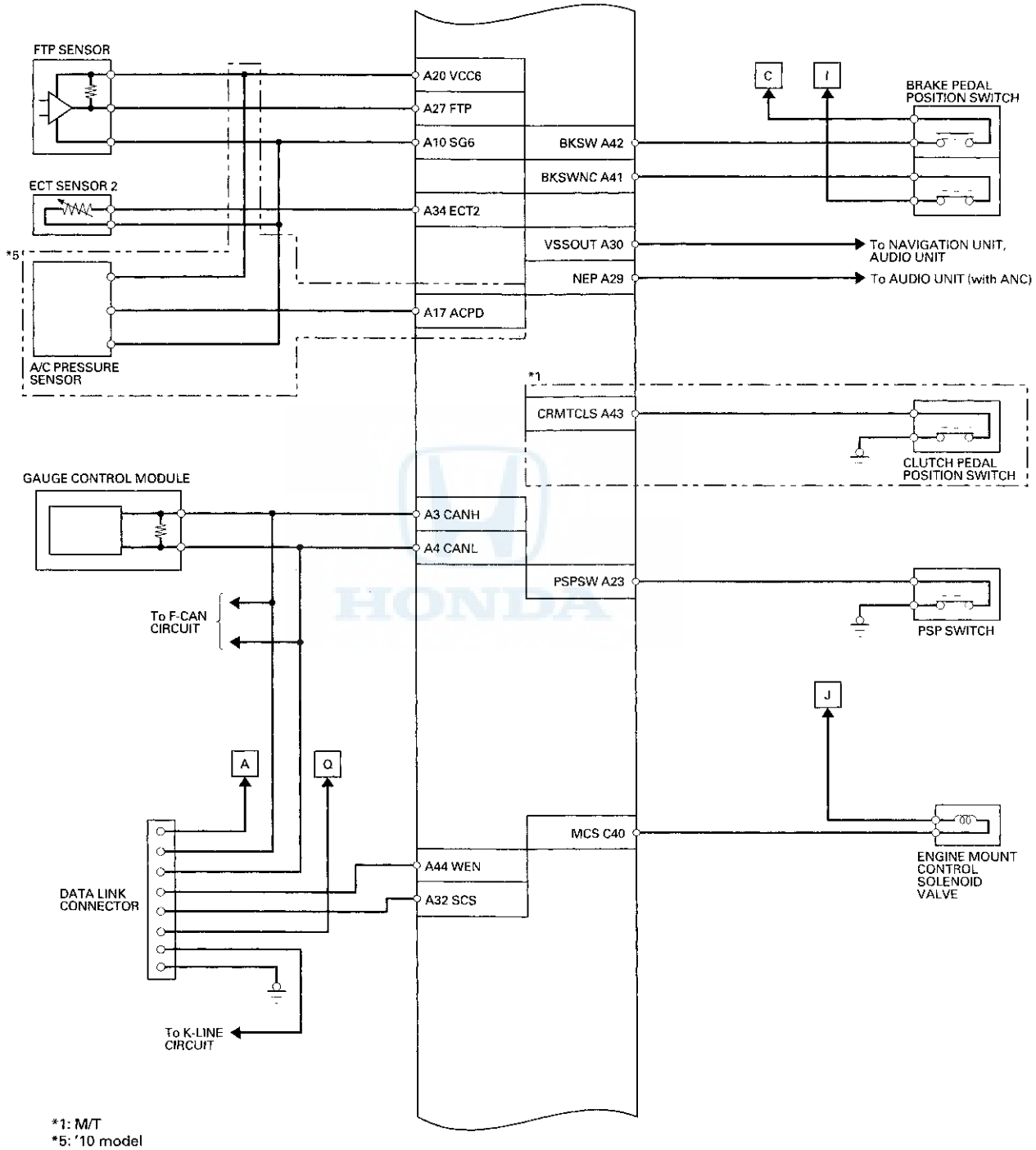



E
No. 1 INJECTOR
No. 2 INJECTOR
No. 3 INJECTOR
No. 4 INJECTOR
C5 INJ1
C6 INJ2
C7 INJ3
C8 INJ4
VCC1 C13
MAP C11
SG1 C14
NC B38
MAP SENSOR
OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR
F
MAF SENSOR
VG+ B31
VG– B33
IAT B32
SG2 B34
IAT SENSOR
ECT SENSOR 1
ECT1 B24
*2
N
O
BARO SENSOR (Built into the ECM/PCM)
KNOCK SENSOR
KS C46
P
C31 CMPB
CMP SENSOR B
OPSW B7
OIL PRESSURE SWITCH
C32 CKP
CKP SENSOR
*2: A/T

(cont'd)

System Description (cont'd)

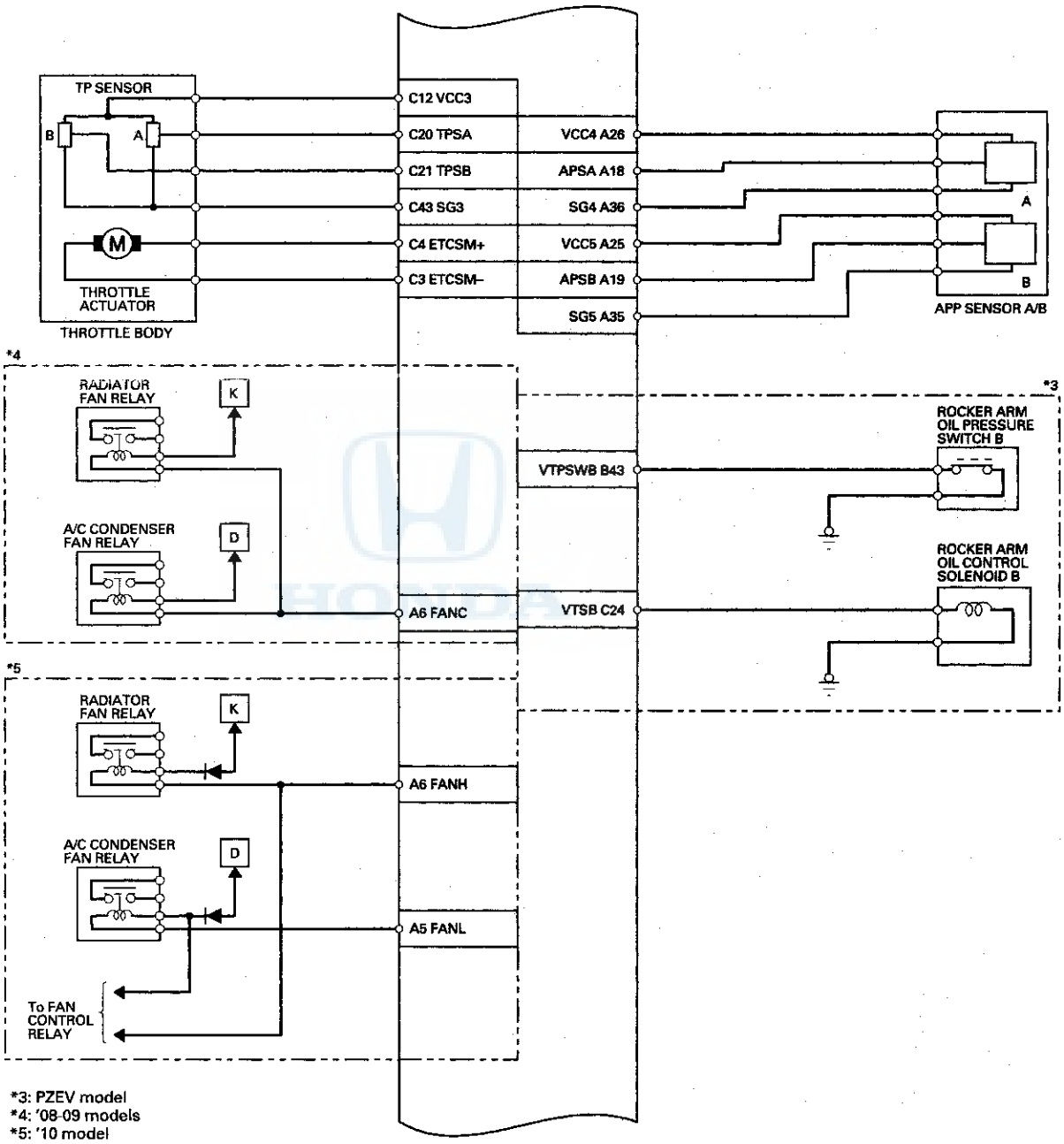




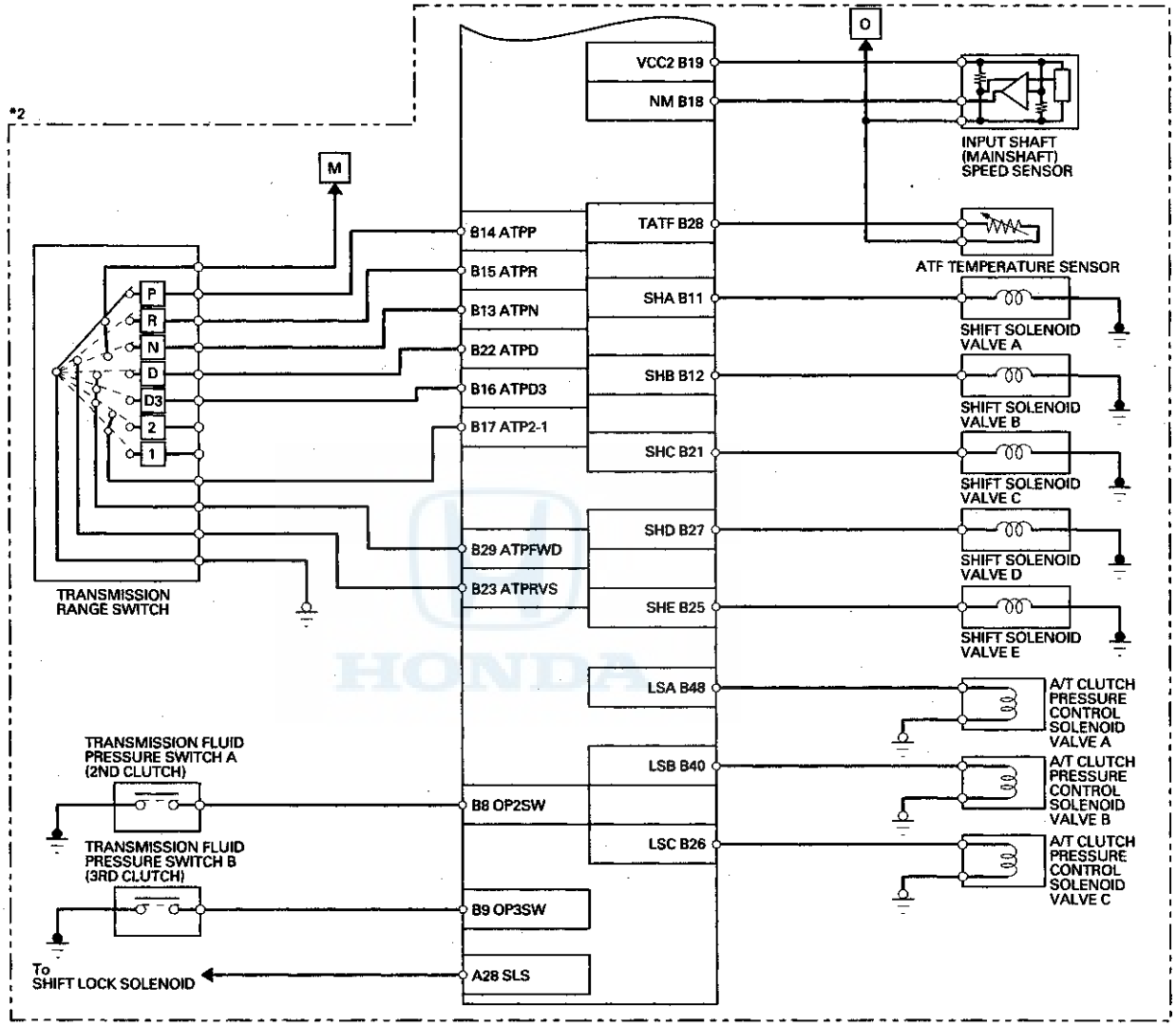
*1: M/T
*5: '10 model

(cont'd)

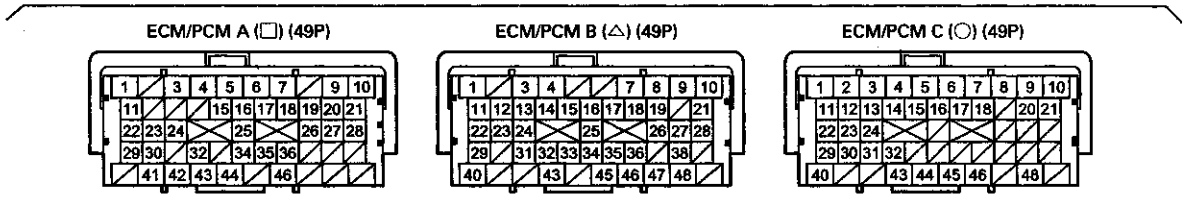
System Description (cont'd)



*3: PZEV model
*4: '08-09 models
*5: '10 model



*2: A/T

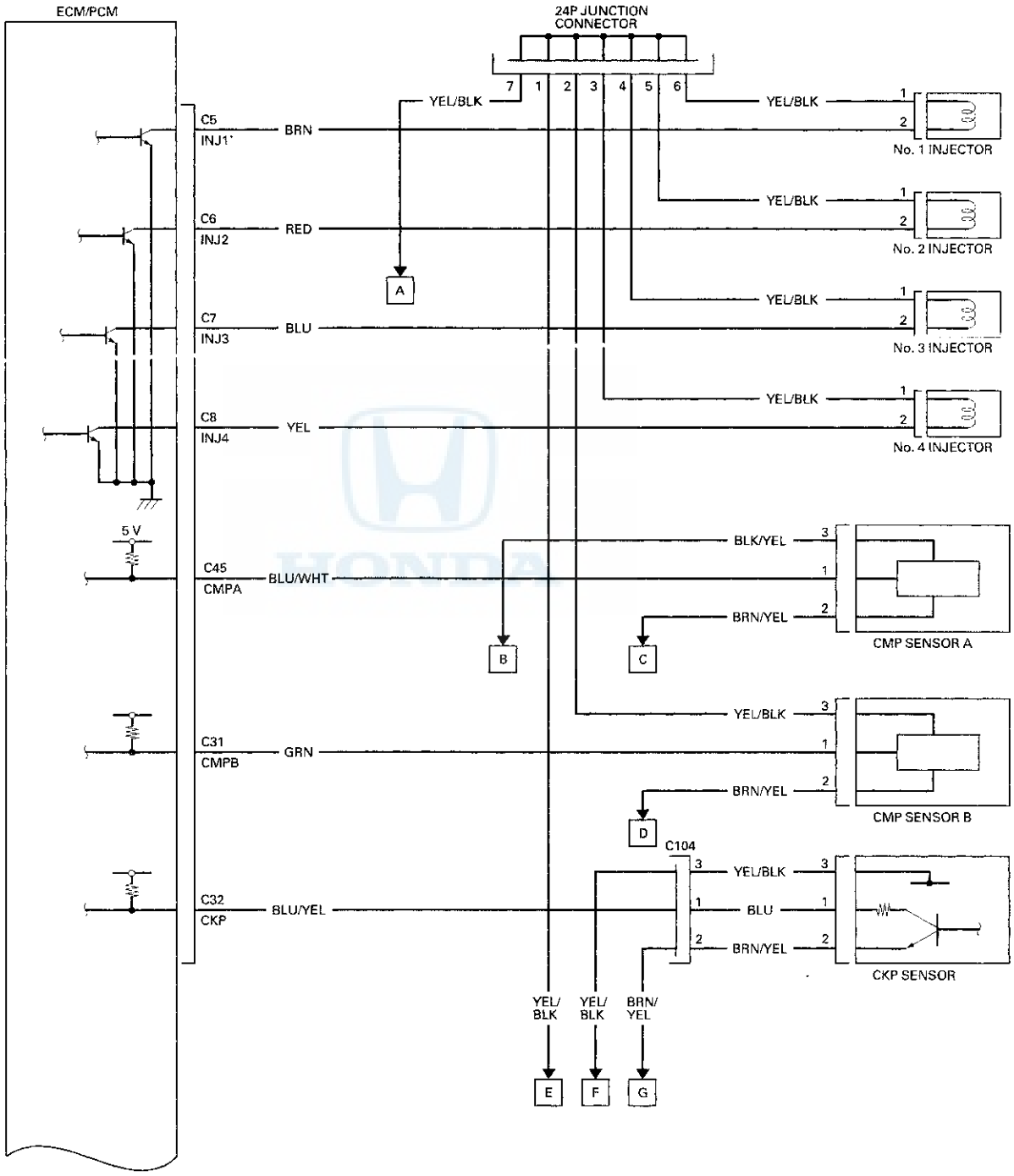


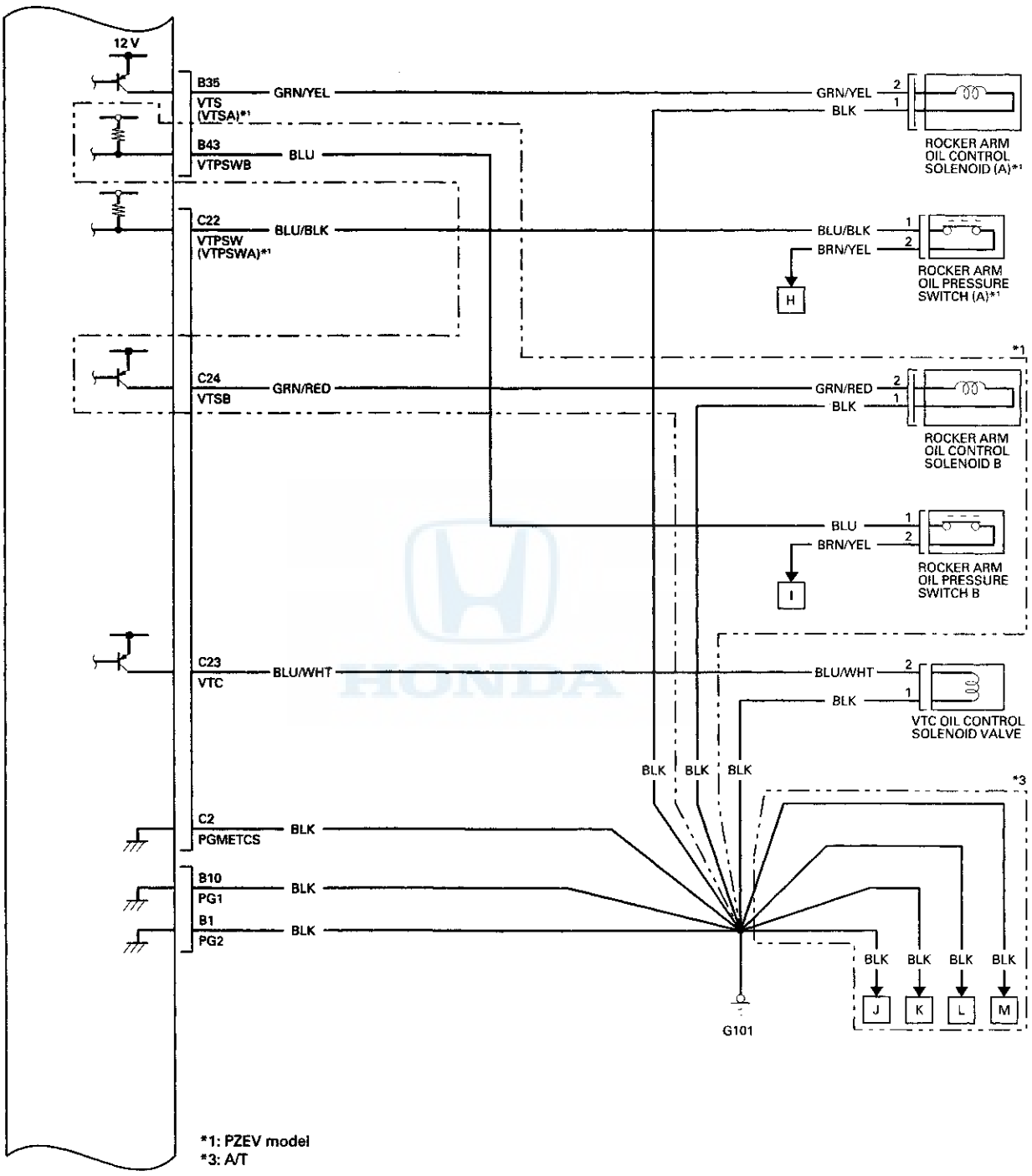
TERMINAL LOCATIONS

(cont'd)

System Description (cont'd)

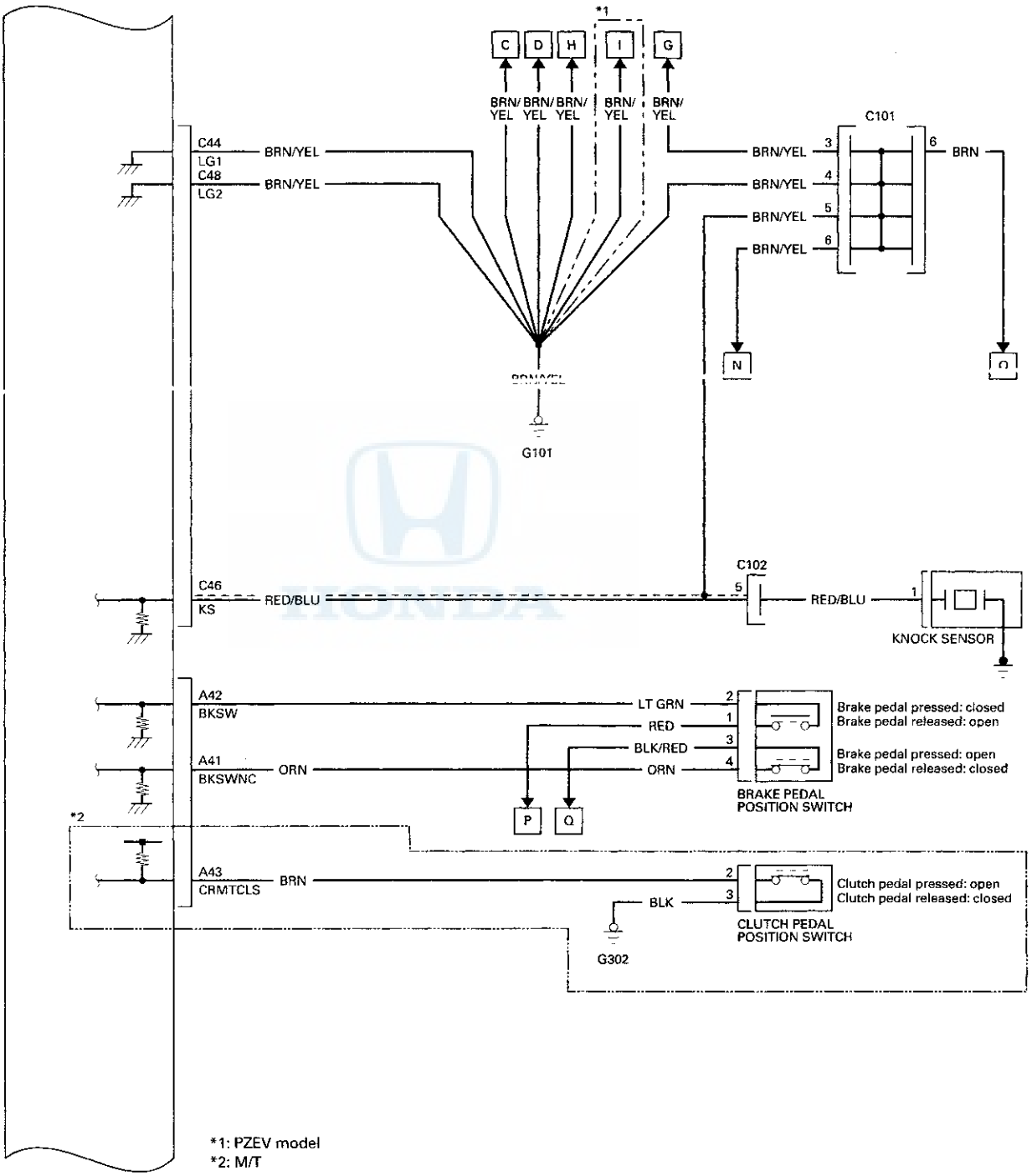
ECM/PCM Circuit Diagram

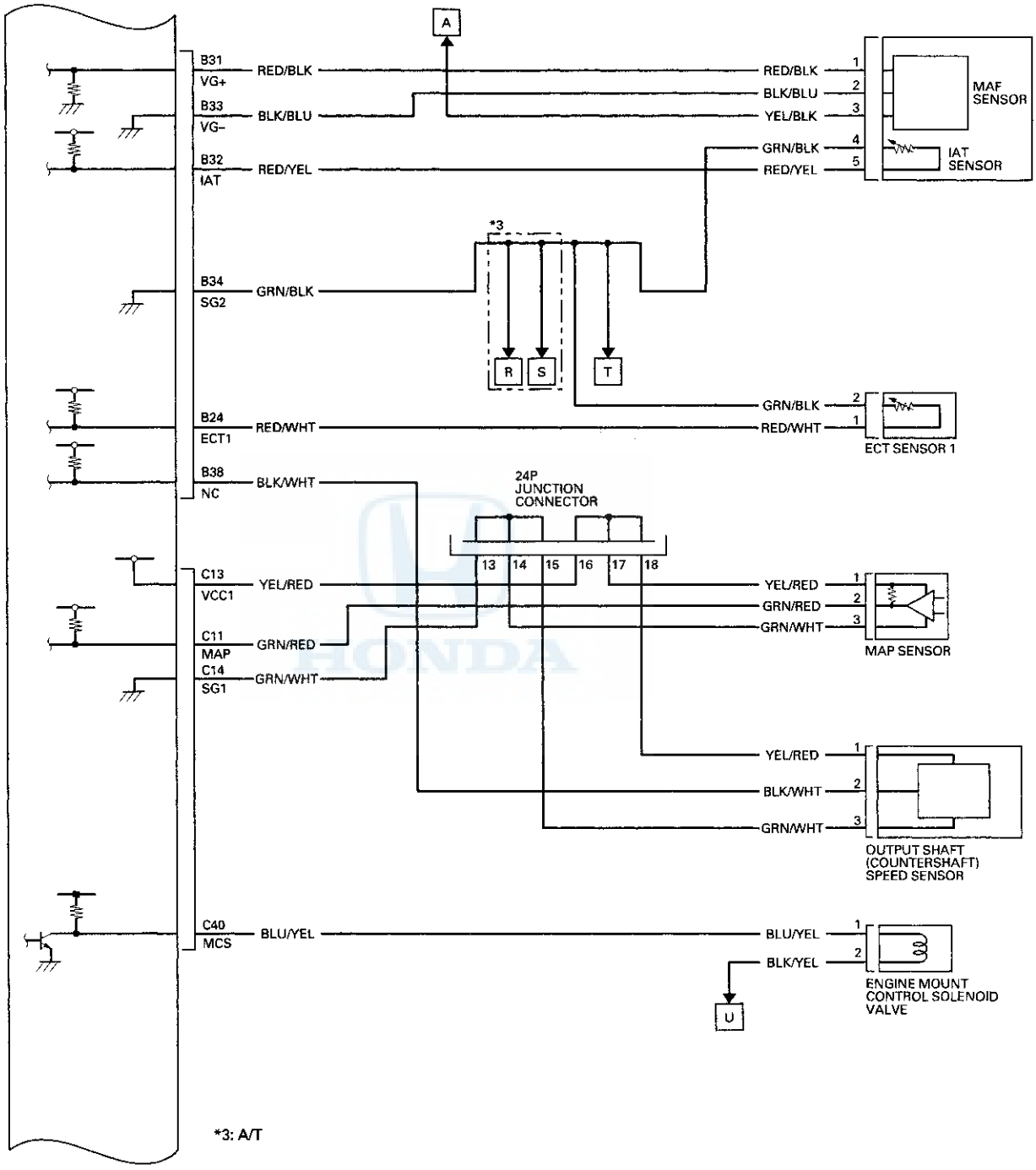



12 V
B35
VTS
(VTSA)*1
GRN/YEL
B43
VTPSWB
BLU
C22
VTPSW
(VTPSWA)*1
BLU/BLK
C24
VTSB
GRN/RED
C23
VTC
BLU/WHT
C2
PGMETCS
BLK
B10
PG1
BLK
B1
PG2
BLK
GRN/YEL
BLK
ROCKER ARM
OIL CONTROL
SOLENOID (A)*1
BLU/BLK
BRN/YEL
H
ROCKER ARM
OIL PRESSURE
SWITCH (A)*1
*1
GRN/RED
BLK
ROCKER ARM
OIL CONTROL
SOLENOID B
BLU
BRN/YEL
I
ROCKER ARM
OIL PRESSURE
SWITCH B
BLU/WHT
BLK
VTC OIL CONTROL
SOLENOID VALVE
BLK BLK BLK
*3
BLK BLK BLK BLK
J K L M
G101
*1: PZEV model
*3: A/T

(cont'd)

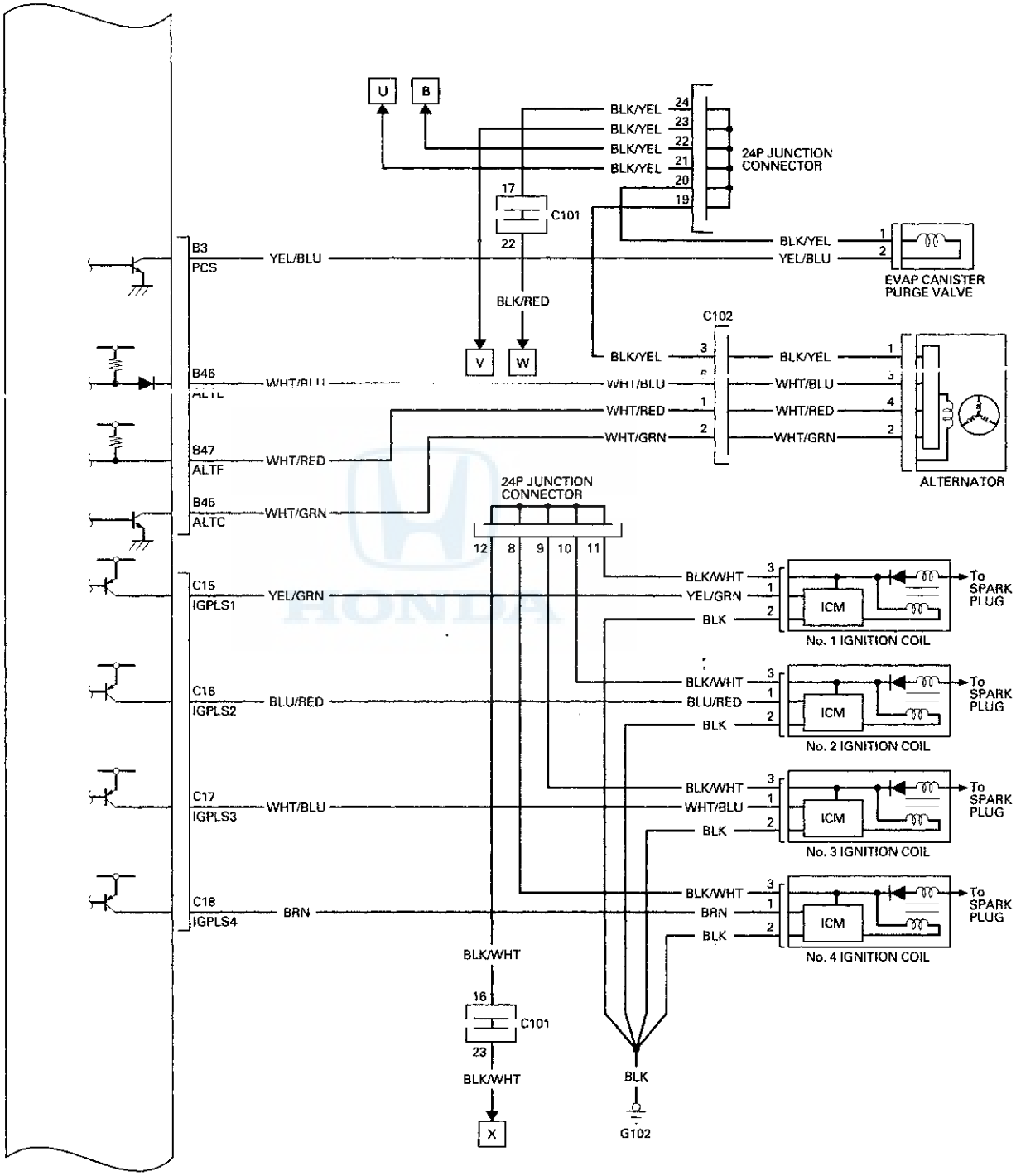
System Description (cont'd)

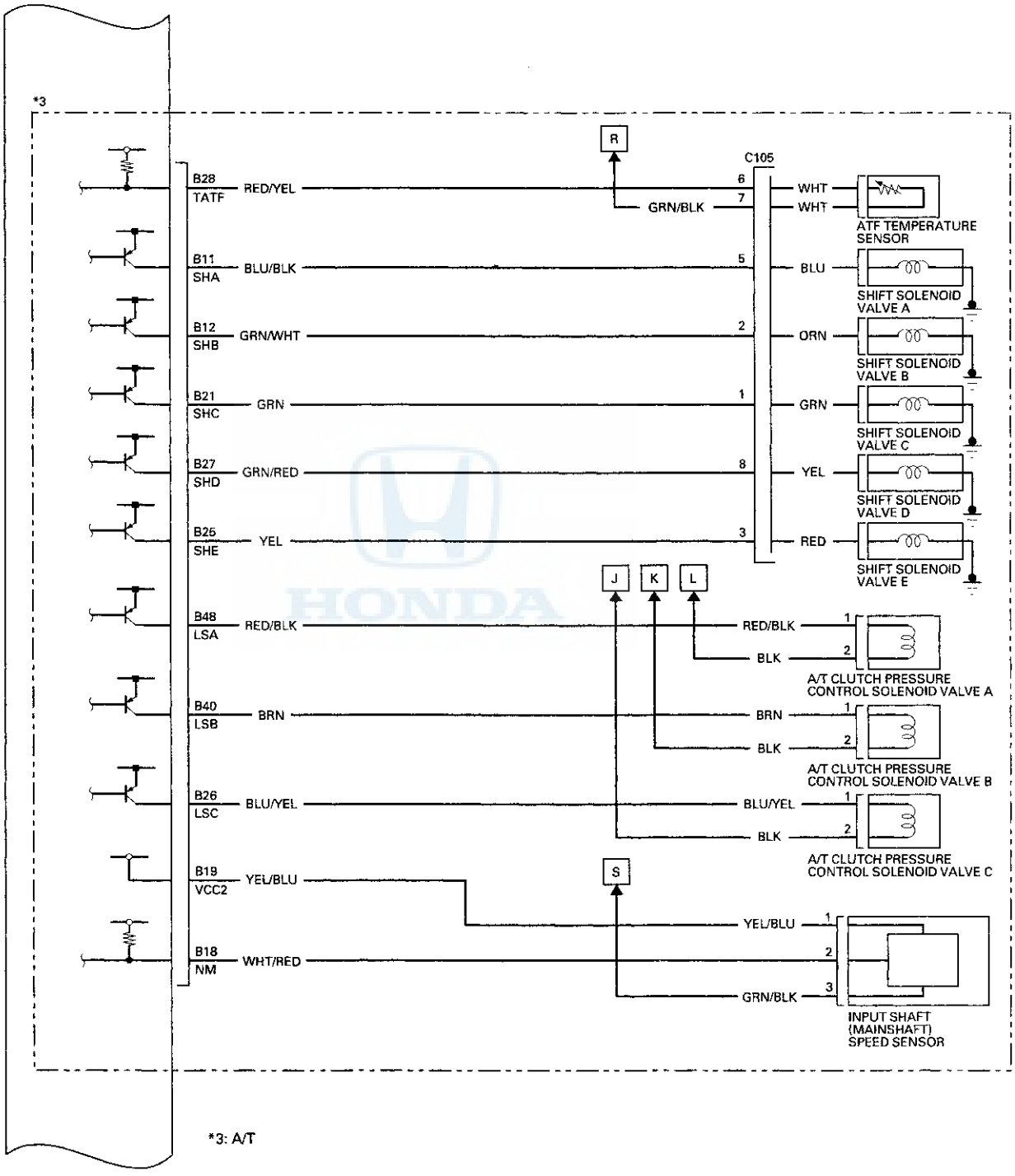



A
B31
VG+
RED/BLK
B33
VG–
BLK/BLU
B32
IAT
RED/YEL
B34
SG2
GRN/BLK
B24
ECT1
RED/WHT
B38
NC
BLK/WHT
C13
VCC1
YEL/RED
C11
MAP
GRN/RED
C14
SG1
GRN/WHT
C40
MCS
BLU/YEL
*3
R
S
T
U
24P
JUNCTION
CONNECTOR
13
14
15
16
17
18
RED/BLK
BLK/BLU
YEL/BLK
GRN/BLK
RED/YEL
MAF
SENSOR
IAT
SENSOR
GRN/BLK
RED/WHT
ECT SENSOR 1
YEL/RED
GRN/RED
GRN/WHT
MAP SENSOR
YEL/RED
BLK/WHT
GRN/WHT
OUTPUT SHAFT
(COUNTERSHAFT)
SPEED SENSOR
BLU/YEL
BLK/YEL
ENGINE MOUNT
CONTROL SOLENOID
VALVE
*3: A/T

(cont'd)

System Description (cont'd)

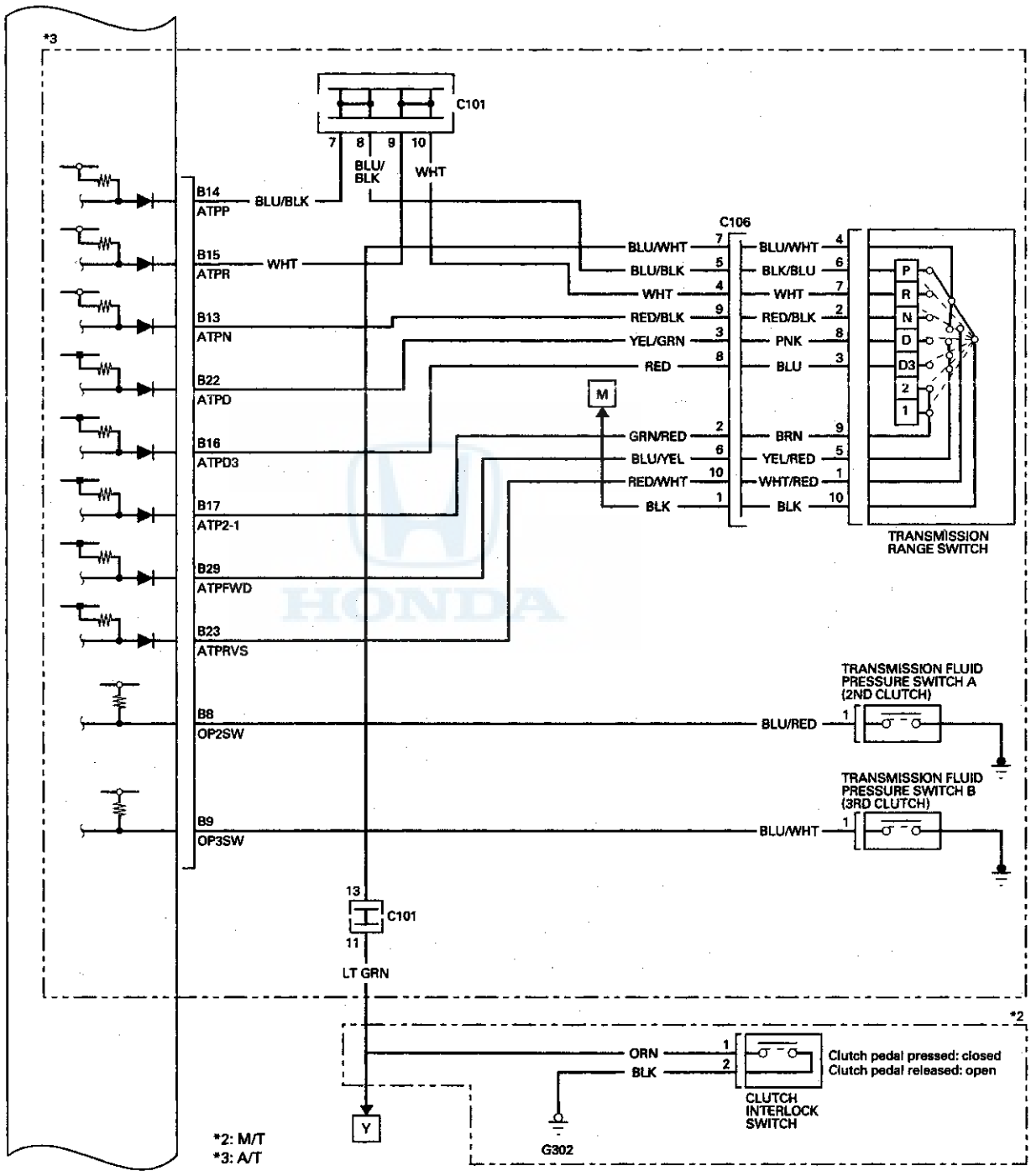


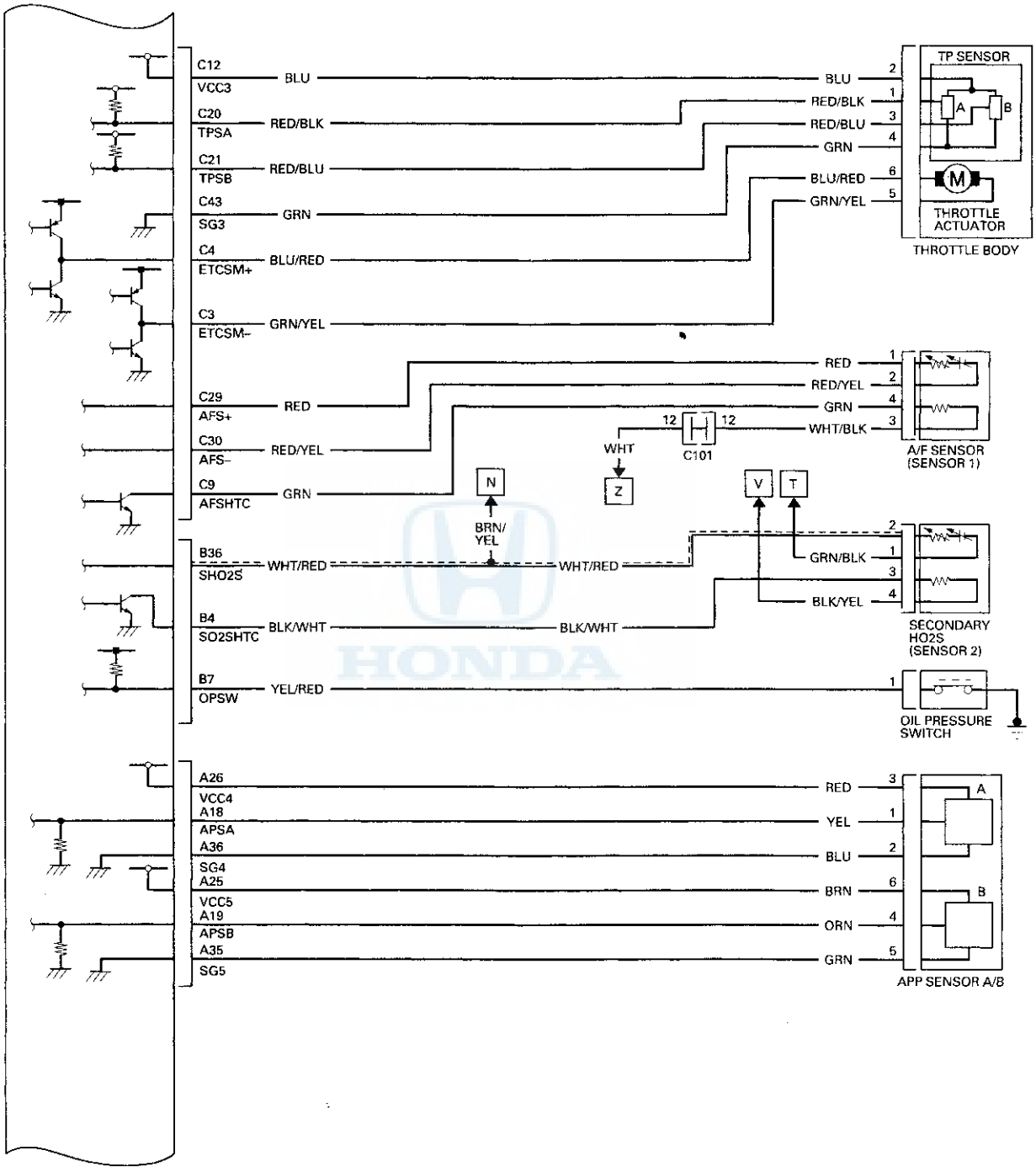

*3
R
C105
B28
TATF
RED/YEL
6
WHT
GRN/BLK
7
WHT
ATF TEMPERATURE SENSOR
B11
SHA
BLU/BLK
5
BLU
SHIFT SOLENOID VALVE A
B12
SHB
GRN/WHT
2
ORN
SHIFT SOLENOID VALVE B
B21
SHC
GRN
1
GRN
SHIFT SOLENOID VALVE C
B27
SHD
GRN/RED
8
YEL
SHIFT SOLENOID VALVE D
B25
SHE
YEL
3
RED
SHIFT SOLENOID VALVE E
J
K
L
B48
LSA
RED/BLK
RED/BLK
1
BLK
2
A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
B40
LSB
BRN
BRN
1
BLK
2
A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
B26
LSC
BLU/YEL
BLU/YEL
1
BLK
2
A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C
S
B19
VCC2
YEL/BLU
YEL/BLU
1
B18
NM
WHT/RED
2
GRN/BLK
3
INPUT SHAFT (MAINSHAFT) SPEED SENSOR

*3: A/T

(cont'd)

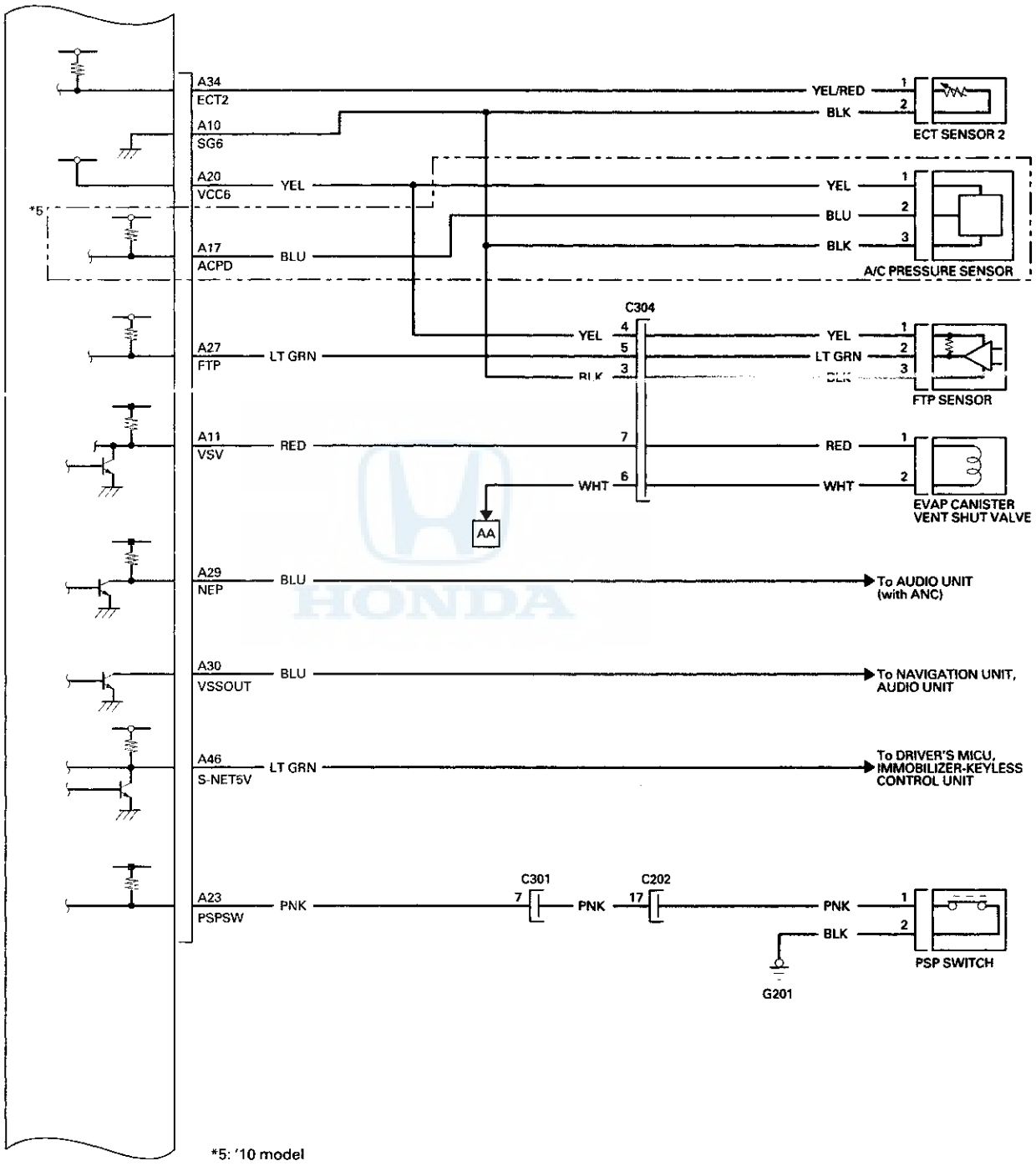
System Description (cont'd)

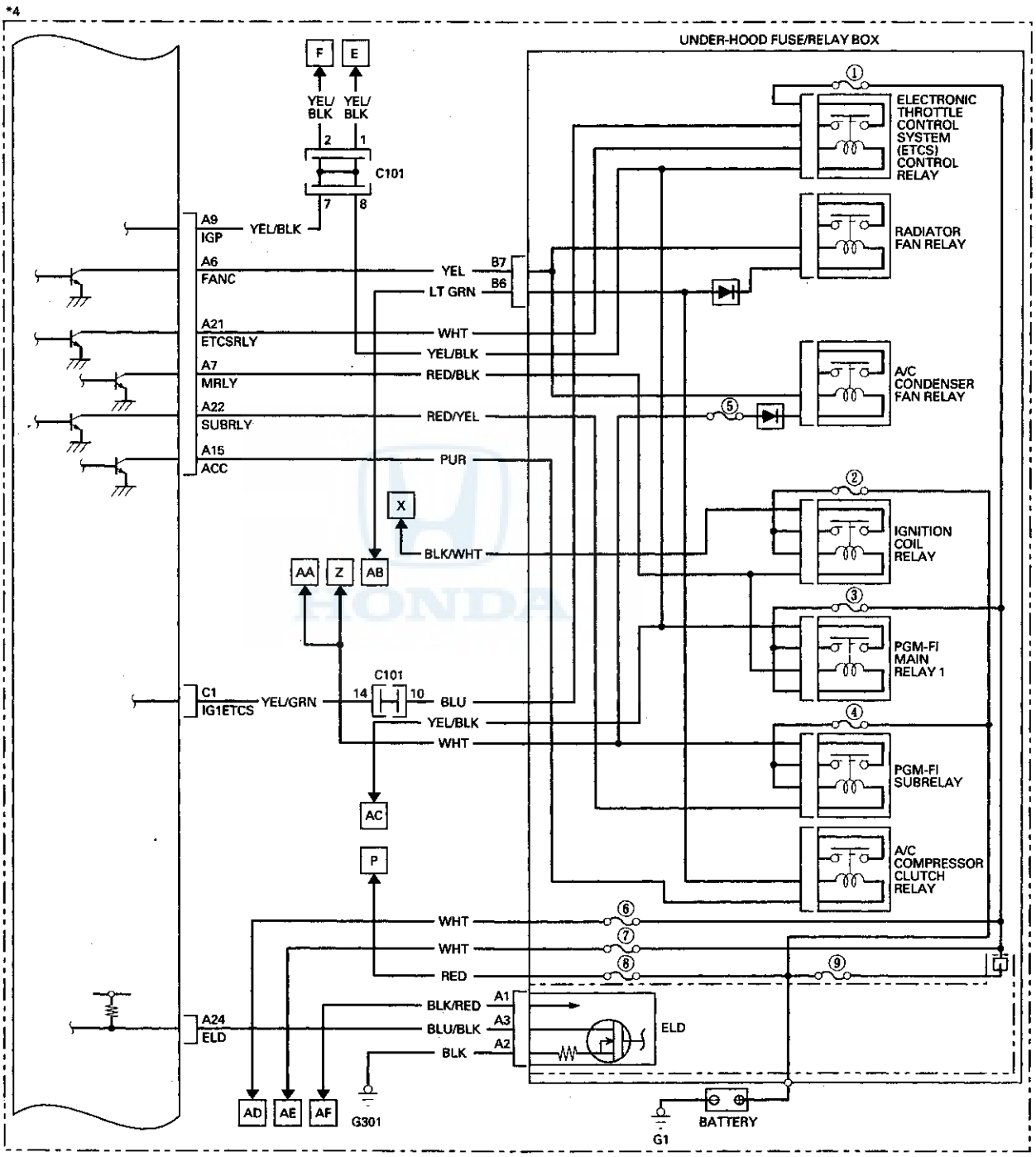



C12
VCC3
BLU
C20
TPSA
RED/BLK
C21
TPSB
RED/BLU
C43
SG3
GRN
C4
ETCSM+
BLU/RED
C3
ETCSM–
GRN/YEL
C29
AFS+
RED
C30
AFS–
RED/YEL
C9
AFSHTC
GRN
B36
SHO2S
WHT/RED
B4
SO2SHTC
BLK/WHT
B7
OPSW
YEL/RED
A26
VCC4
A18
APSA
A36
SG4
A25
VCC5
A19
APSB
A35
SG5
BLU
RED/BLK
RED/BLU
GRN
BLU/RED
GRN/YEL
TP SENSOR
A
B
M
THROTTLE ACTUATOR
THROTTLE BODY
RED
RED/YEL
GRN
WHT/BLK
A/F SENSOR (SENSOR 1)
12
12
C101
WHT
Z
N
BRN/YEL
V
T
WHT/RED
GRN/BLK
BLK/YEL
SECONDARY HO2S (SENSOR 2)
OIL PRESSURE SWITCH
RED
YEL
BLU
BRN
ORN
GRN
APP SENSOR A/B

(cont'd)

System Description (cont'd)

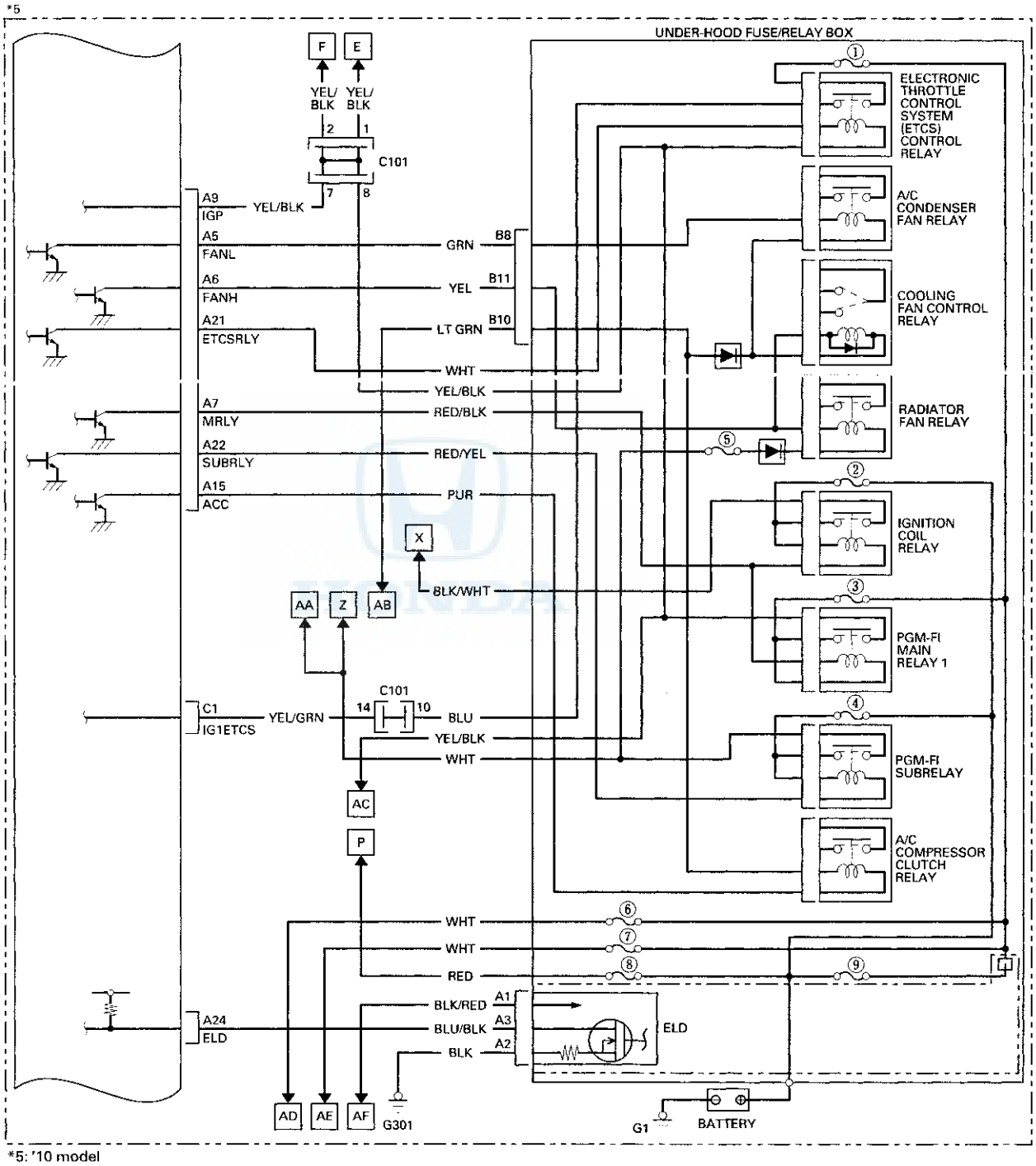




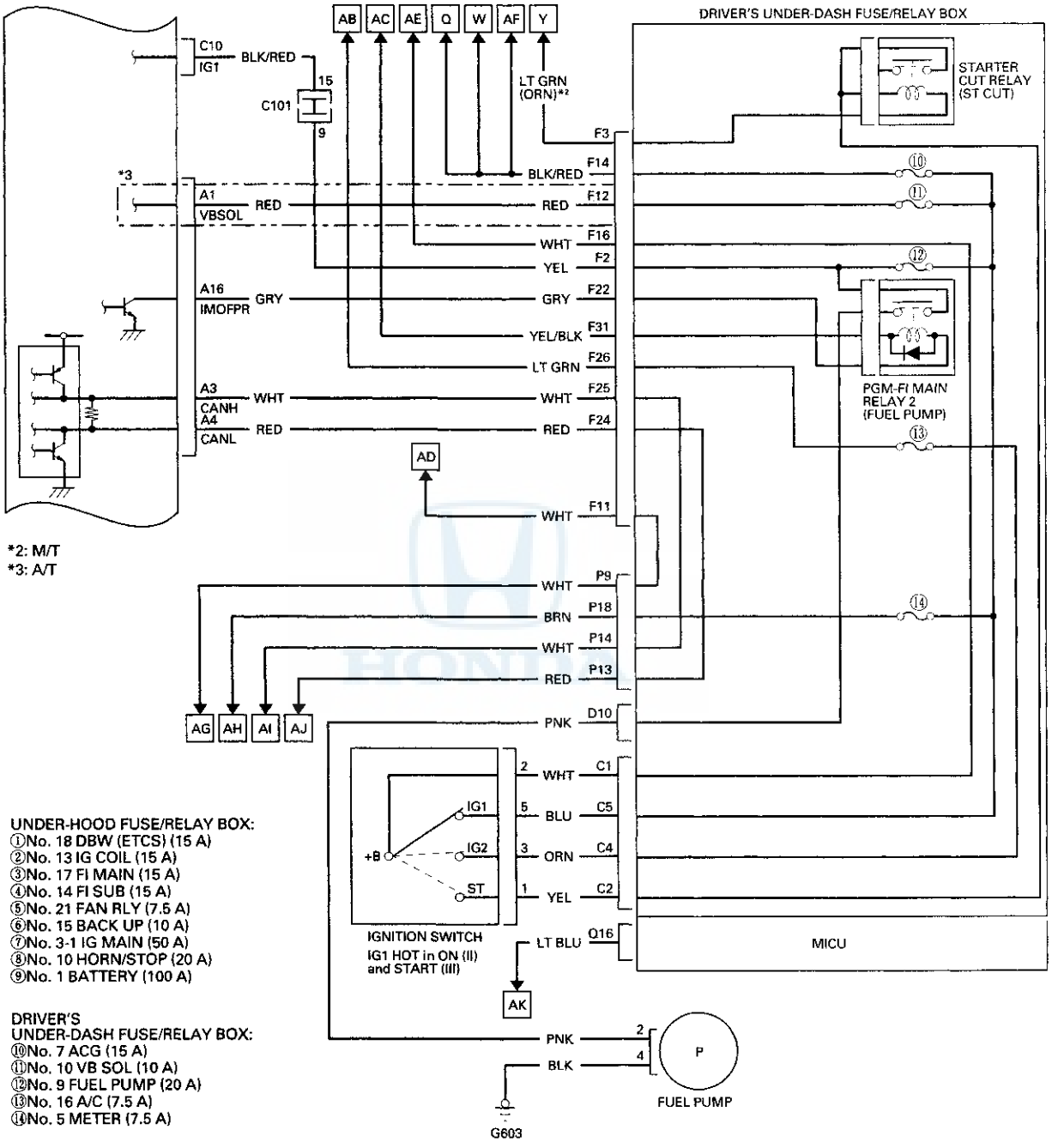
*4: '08-'09 models

(cont'd)

System Description (cont'd)

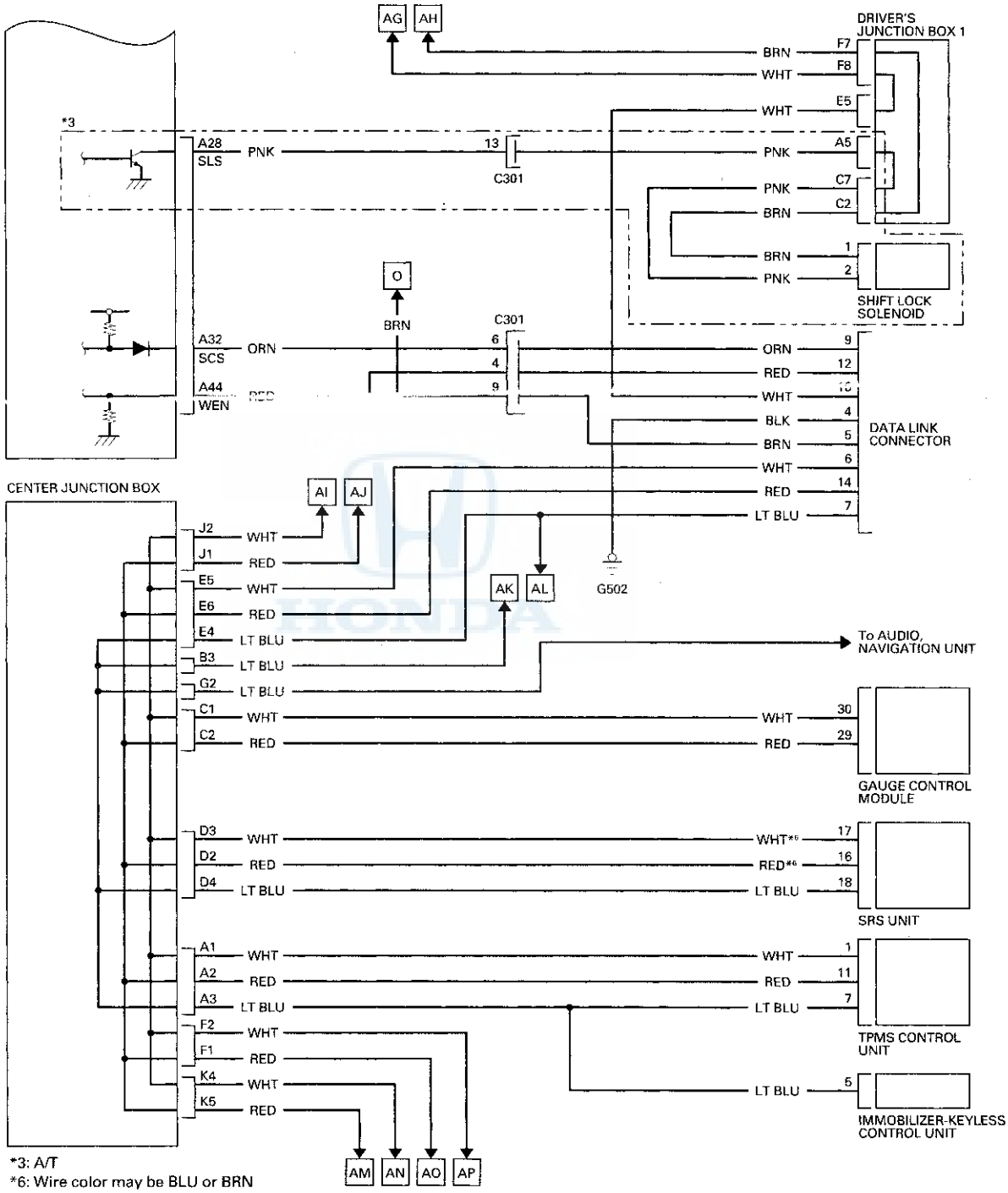


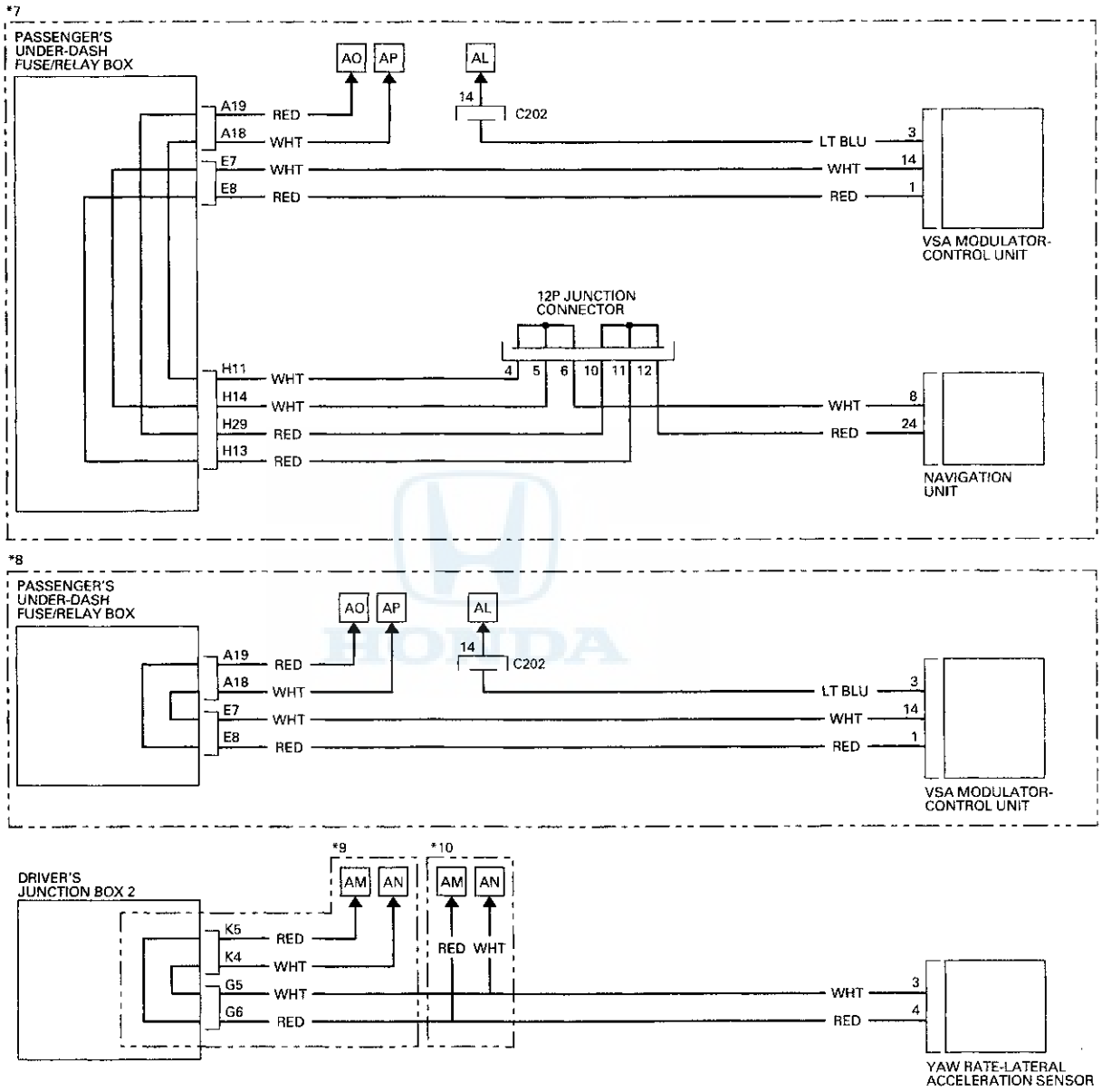
*5: '10 model


DRIVER'S UNDER-DASH FUSE/RELAY BOX
STARTER CUT RELAY (ST CUT)
PGM-FI MAIN RELAY 2 (FUEL PUMP)
MICU
C10
IG1
BLK/RED
15
C101
9
LT GRN (ORN)*2
AB
AC
AE
Q
W
AF
Y
F3
F14
BLK/RED
F12
RED
F16
WHT
F2
YEL
F22
GRY
F31
YEL/BLK
F26
LT GRN
F25
WHT
F24
RED
F11
WHT
*3
A1
VBSOL
A16
IMOFPR
GRY
A3
CANH
A4
CANL
AD
*2: M/T
*3: A/T
P9
WHT
P18
BRN
P14
WHT
P13
RED
AG
AH
AI
AJ
D10
PNK
IGNITION SWITCH
IG1 HOT in ON (II) and START (III)
+B
IG1
IG2
ST
2
WHT
C1
5
BLU
C5
3
ORN
C4
1
YEL
C2
LT BLU
Q16
AK
PNK
BLK
2
4
P
FUEL PUMP
G603
⑩
⑪
⑫
⑬
⑭
UNDER-HOOD FUSE/RELAY BOX:
①No. 18 DBW (ETCS) (15 A)
②No. 13 IG COIL (15 A)
③No. 17 FI MAIN (15 A)
④No. 14 FI SUB (15 A)
⑤No. 21 FAN RLY (7.5 A)
⑥No. 15 BACK UP (10 A)
⑦No. 3-1 IG MAIN (50 A)
⑧No. 10 HORN/STOP (20 A)
⑨No. 1 BATTERY (100 A)
DRIVER'S UNDER-DASH FUSE/RELAY BOX:
⑩No. 7 ACG (15 A)
⑪No. 10 VB SOL (10 A)
⑫No. 9 FUEL PUMP (20 A)
⑬No. 16 A/C (7.5 A)
⑭No. 5 METER (7.5 A)

(cont'd)

System Description (cont'd)





*7: With navigation
*8: Without navigation
*9: LX model
*10: All except LX model

System Description (cont'd)

PGM-FI System

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

Alternator Control

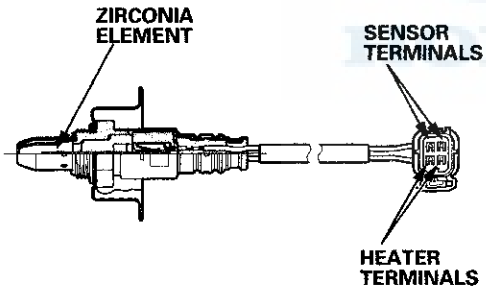
The alternator signals the ECM/PCM during charging. The ECM/PCM then controls the voltage generated at the alternator according to the electrical load determined by the electrical load detector (ELD) and the driving mode. This reduces engine load to improve fuel economy.

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 WU-TWC, and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly.

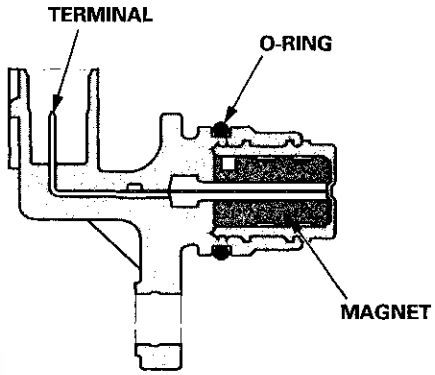


Barometric Pressure (BARO) Sensor

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.

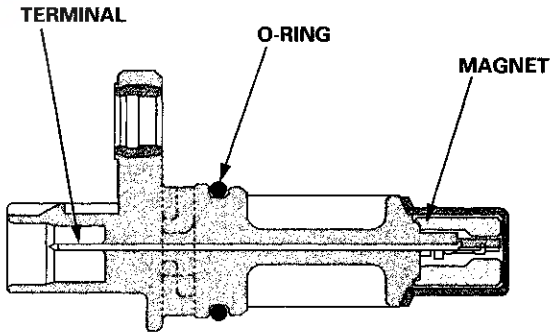
Camshaft Position Sensor B

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



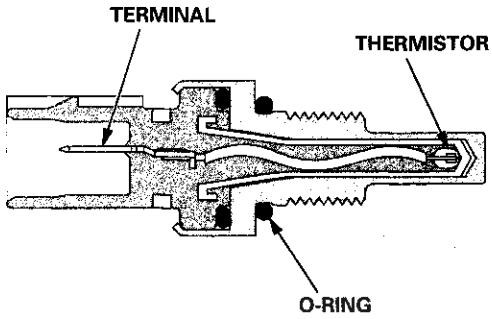
Crankshaft Position (CKP) Sensor

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

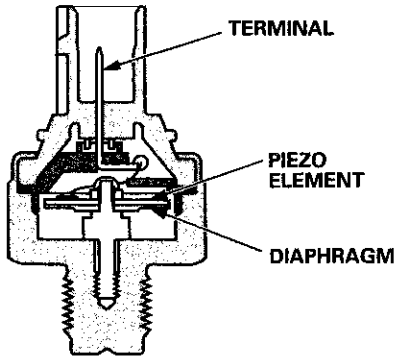
The ECM/PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressures. It also adjusts the timing according to engine coolant temperature and intake air temperature.

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.

Knock Sensor

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



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.

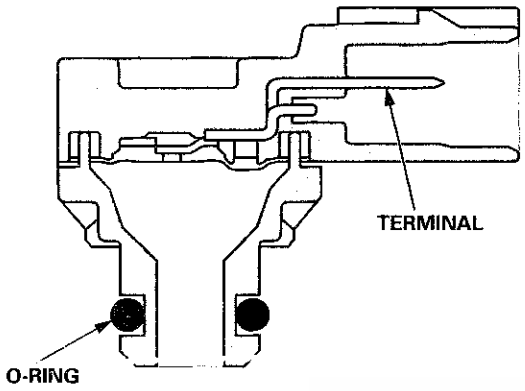
To check if the readiness codes are set to complete, turn the ignition switch to ON (II), but do not start the engine. The MIL will come on for 15—20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not complete. To set each code, drive the vehicle or run the engine as described in the procedures (see page 11-65).

(cont'd)

System Description (cont'd)

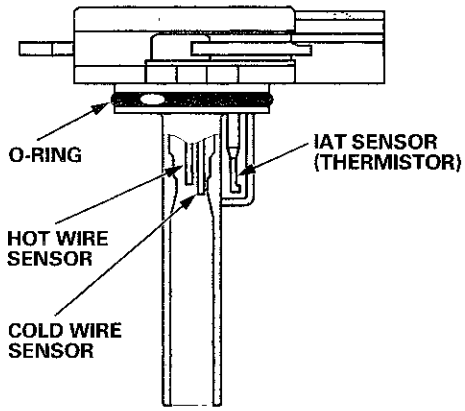
Manifold Absolute Pressure (MAP) Sensor

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



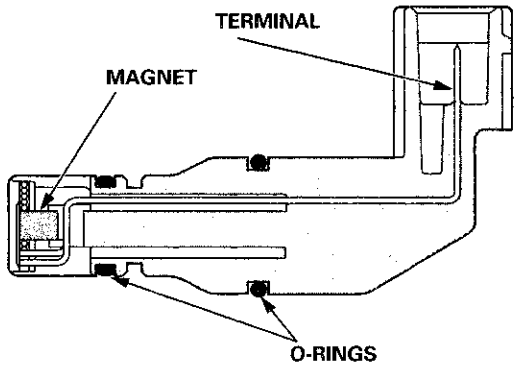
Mass Air Flow (MAF) Sensor/Intake Air Temperature (IAT) Sensor

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 in the intake air passage. The resistance of the hot wire sensor, the cold wore 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

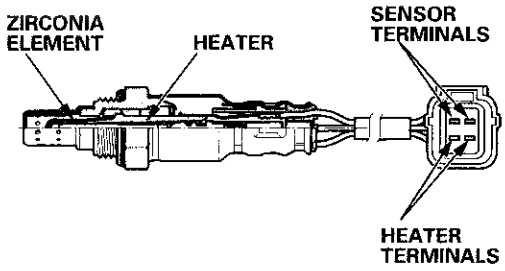
This sensor detects countershaft speed.



M/T model shown

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 downstream of the WU-TWC.



Electronic Throttle Control System

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

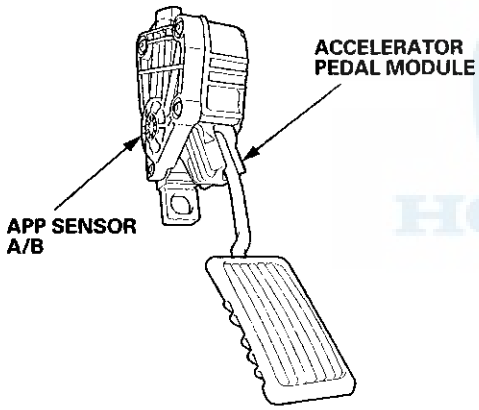
Idle control: When the engine is idling, the ECM/PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

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 the cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

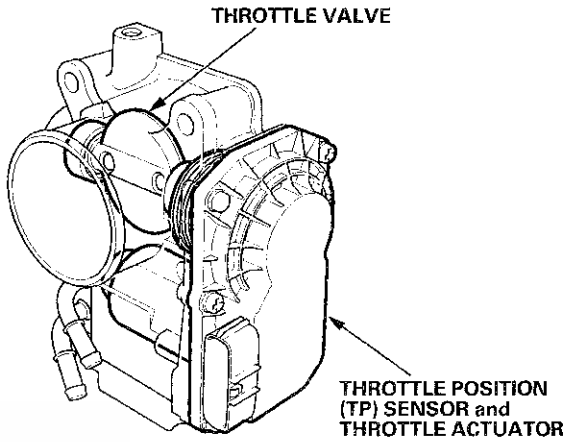
Accelerator Pedal Position (APP) Sensor

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.

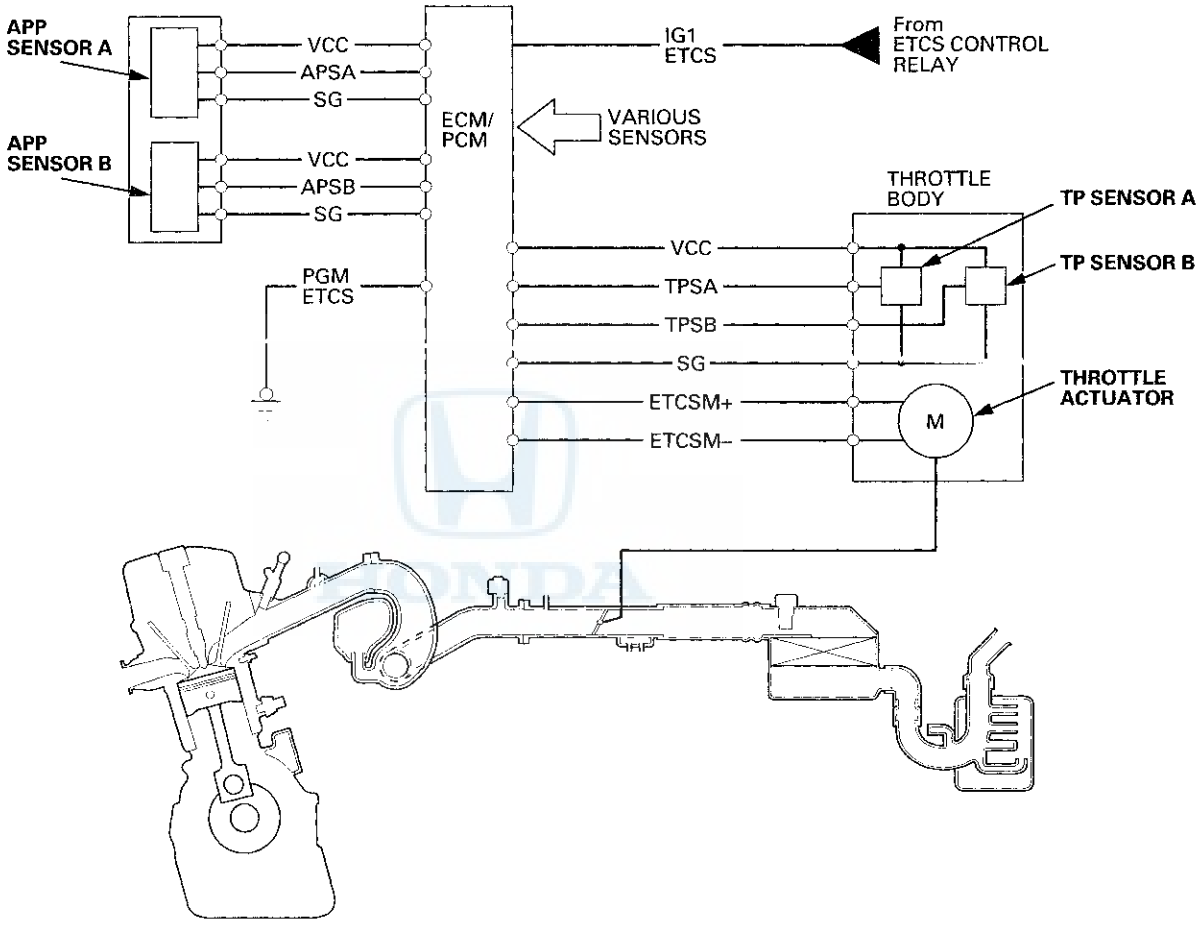


(cont'd)

System Description (cont'd)

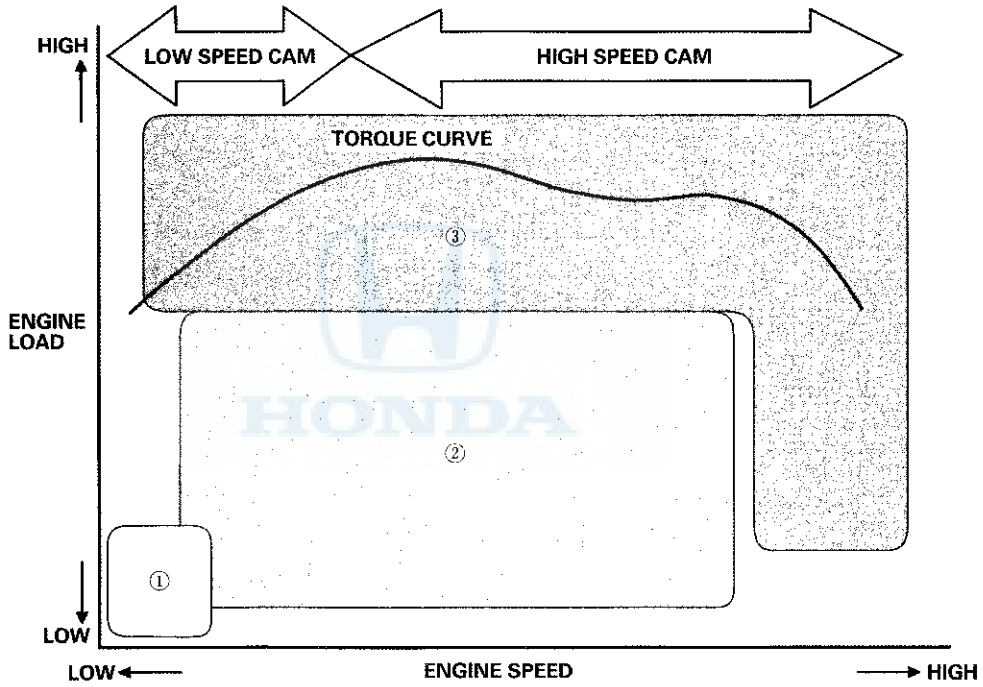
Electronic Throttle Control System Diagram

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.



VTEC/VTC

- The i-VTEC system has a variable valve timing control (VTC) mechanism on the intake camshaft in addition to the usual VTEC.
  This system improves fuel efficiency and reduces exhaust emissions at all levels of engine speed, vehicle speed, and engine load.
- The VTEC system changes the intake valve lift and timing by using more than one cam profile.
- PZEV model: The VTEC system pauses one side of the exhaust valves in addition to changing the intake valve lift and timing.
- The VTC system changes the phase of the intake camshaft via oil pressure. It changes the intake valve timing continuously.



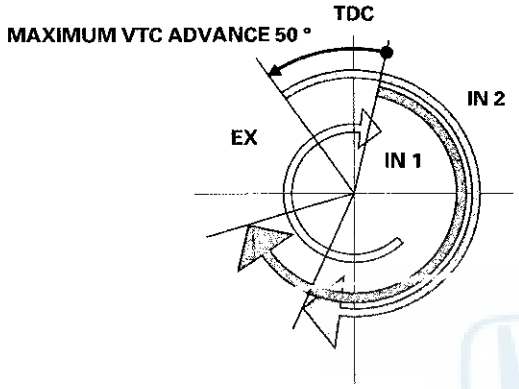
Driving Condition	VTC Control	Description
① Light-load	Base Position	For stable combustion the cam angle is retarded, and reduces the entry of exhaust gas into the cylinder.
② Medium/high-load	Advance Control	Cam phase angle is controlled to optimize valve timing, improving fuel efficiency and reducing emissions.
③ High speed	Advance-Base Position	To reduce pumping loss, the intake valve is closed quickly. This gives the air/fuel mixture a charging effect that helps to maximize engine power.

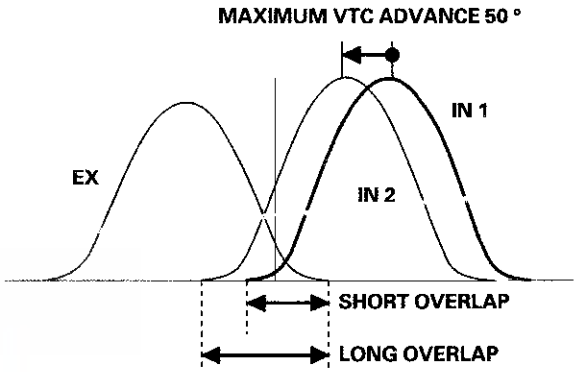
(cont'd)

System Description (cont'd)

VTC System

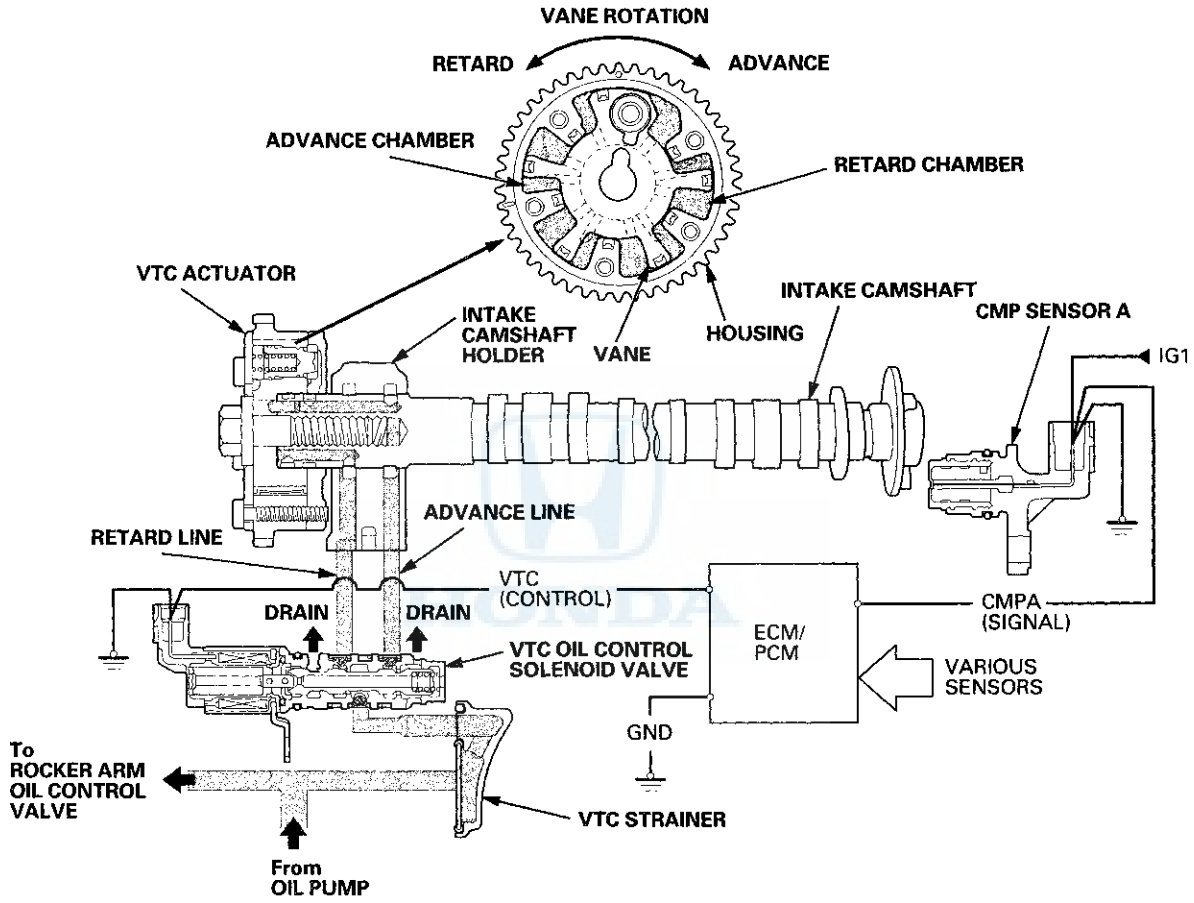
- The VTC system makes continuous intake valve timing changes based on operating conditions.
- Intake valve timing is optimized to allow the engine to produce maximum power.
- Cam angle is advanced to obtain the EGR effect and reduce pumping loss. The intake valve is closed quickly to reduce the entry of the air/fuel mixture into the intake port and improve the charging effect.
- The system reduces the cam advance at idle, stabilizes combustion, and reduces engine speed.
- If a malfunction occurs, the VTC system control is disabled and the valve timing is fixed at the fully retarded position.





VTC System Diagram

The VTC oil control solenoid valve controls oil pressure to the advance chamber/retard chamber of the VTC actuator according to a signal from the ECM/ PCM. When the VTC actuator vanes rotate to the advance or retard position, the intake camshaft timing is changed.
CMP sensor A detects the intake camshaft angle and sends the information to the ECM/PCM. The ECM/PCM controls the VTC oil control solenoid valve as the intake camshaft angle changes.



(cont'd)

System Description (cont'd)

VTEC System

Intake valve side (All models)

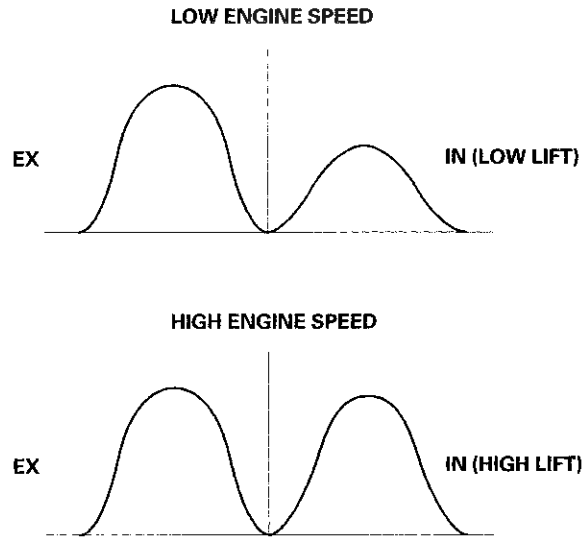
- The VTEC system changes the cam profile to correspond to engine speed. It maximizes torque at low engine speed and output at high engine speed.
- The low lift cam is used at low engine speeds, and the high lift cam is used at high engine speeds.
- The rocker arm oil control solenoid (rocker arm oil control solenoid A) switches the intake valve side of the VTEC system on and off; the solenoid is controlled by the ECM/PCM.
- The rocker arm oil pressure switch (rocker arm oil pressure switch A) detects VTEC system oil pressure (intake valve side) and sends this information to the ECM/PCM.

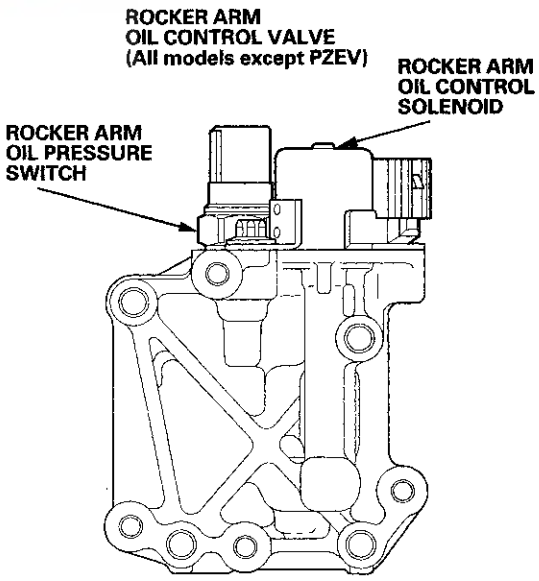
Exhaust valve side (PZEV model)

- The VTEC system switches the operation of one of the exhaust valves to pause and lift the valve.
- At idle and low engine speed, one side of the exhaust valves is paused, and the valve lifts when the engine speed goes up.
- The system reduces hydrocarbons (HC) exhaust emissions at low engine speed.
- Rocker arm oil control solenoid B switches the exhaust valve side of the VTEC system on and off; the solenoid is controlled by the PCM.
- Rocker arm oil pressure switch B detects the VTEC system oil pressure (exhaust valve side), and sends this information to the PCM.

All models except PZEV (Intake valve VTEC)

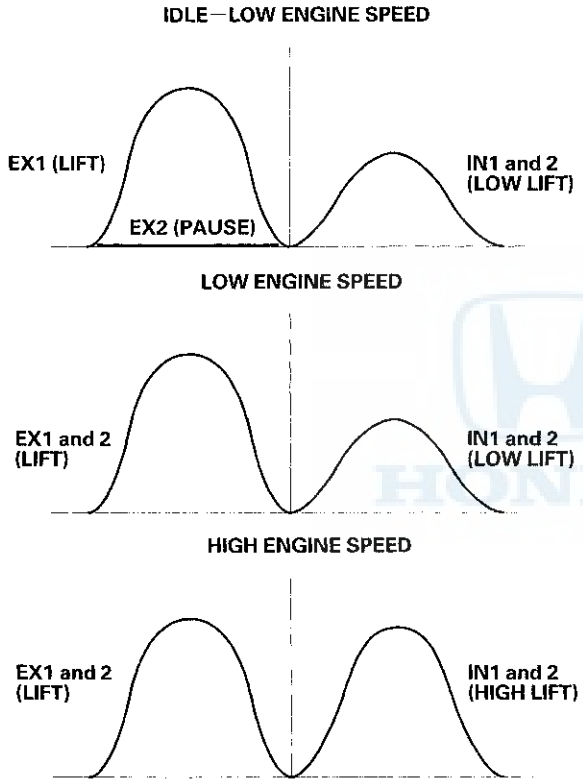
ENGINE SPEED	ROCKER ARM OIL CONTROL SOLENOID	ROCKER ARM OIL PRESSURE SWITCH	INTAKE VALVE LIFT
LOW	OFF	ON	LOW
HIGH	ON	OFF	HIGH

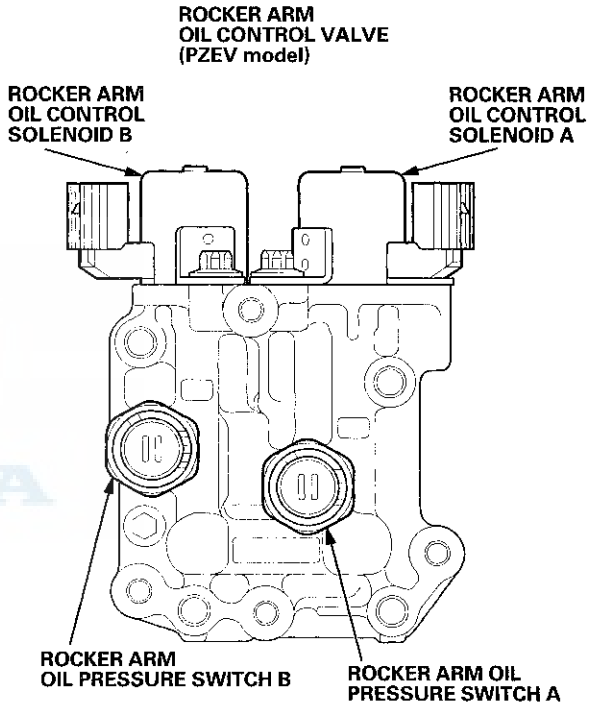




PZEV model (Intake and exhaust valve VTEC)

ENGINE SPEED	ROCKER ARM OIL CONTROL SOLENOID A	ROCKER ARM OIL PRESSURE SWITCH A	INTAKE VALVE LIFT	ROCKER ARM OIL CONTROL SOLENOID B	ROCKER ARM OIL PRESSURE SWITCH B	EXHAUST VALVE 2 OPERATION
IDLE-LOW	OFF	ON	LOW	OFF	ON	PAUSE
MID	OFF	ON	LOW	ON	OFF	LIFT
HIGH	ON	OFF	HIGH	ON	OFF	LIFT





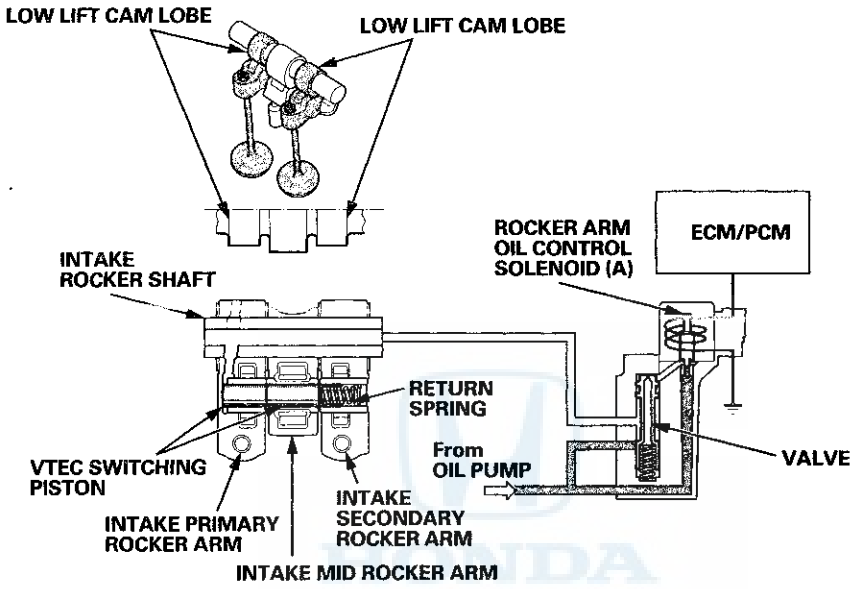
(cont'd)

System Description (cont'd)

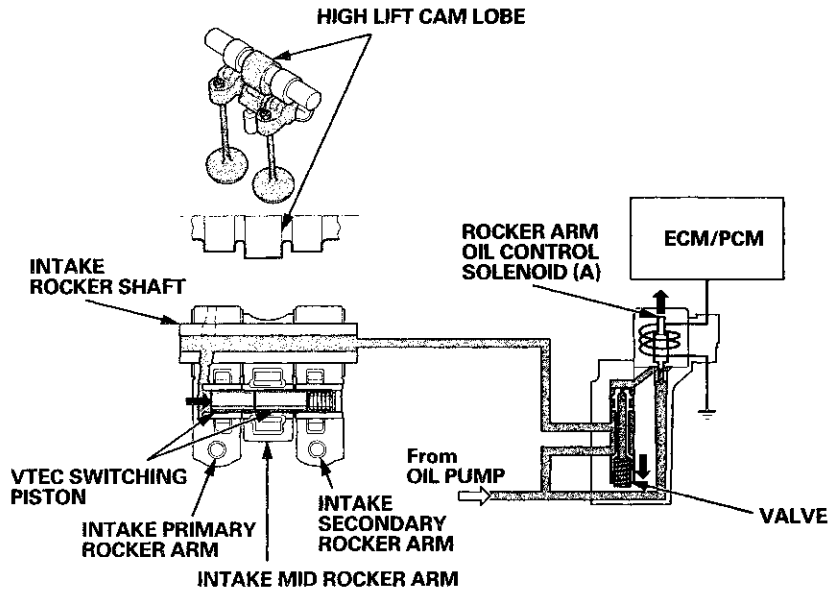
VTEC System Operation

Intake valve side

At low engine speed, the rocker arm oil control solenoid (rocker arm oil control solenoid A) is turned off by the ECM/PCM. Oil pressure from the rocker arm oil control valve does not enter the intake rocker shaft. Each intake rocker arm is separated by a return spring and lifted by each low lift cam lobe.

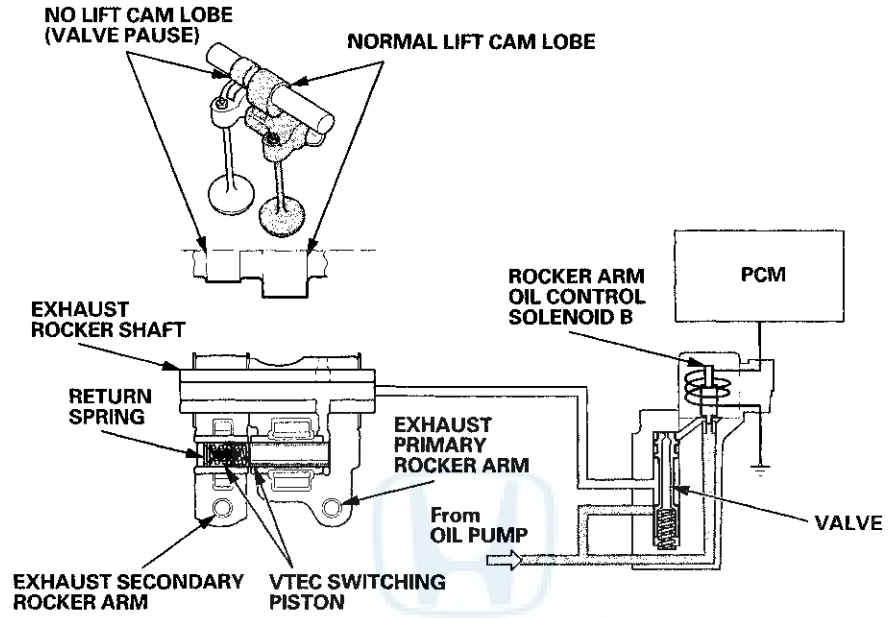


At high engine speed, the rocker arm oil control solenoid (rocker arm oil control solenoid A) is turned on by the ECM/PCM. Oil pressure from the rocker arm control solenoid enters the primary intake rocker arm via the intake rocker shaft, and it moves the VTEC switching piston in the rocker arm.
This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

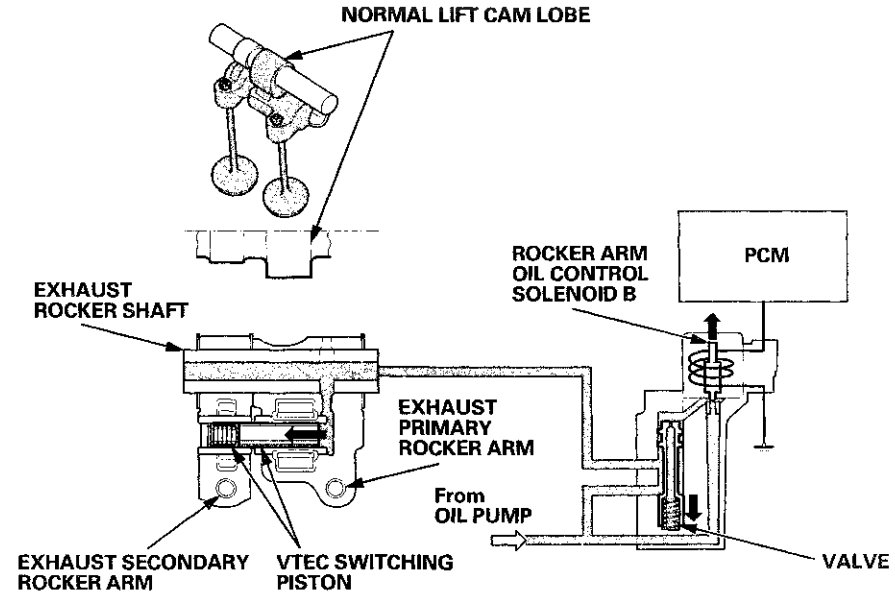


Exhaust valve side (PZEV model)

At idle and low engine speed, rocker arm oil control solenoid B is turned off by the PCM. Oil pressure from the rocker arm oil control valve does not enter the exhaust rocker shaft. Each exhaust rocker arm is separated by a return spring, and lifted by each cam lobe. The exhaust primary rocker arm is moved by the normal lift cam lobe (valve active), and the exhaust secondary rocker arm is moved by the no lift cam lobe (valve pause).



When the engine speed reaches 2,500 rpm or more, rocker arm oil control solenoid B is turned on by the PCM. Oil pressure from the rocker arm oil control solenoid enters the primary exhaust rocker arm via the exhaust rocker shaft, and it moves the VTEC switching piston in the rocker arm. This causes the VTEC switching piston to slide into the exhaust secondary rocker arm, locking the exhaust rocker arms together. Both exhaust rocker arms are moved by the normal lift cam lobe (valve active).



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.

Power Steering Pressure (PSP) Switch

The PSP switch signals the ECM/PCM when the power steering load is high.

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 (A/T) or 1,000 rpm (M/T). Fuel cutoff also occurs when the engine speed exceeds 7,000 rpm (LX) or 7,300 rpm (EX), regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the ECM/PCM cuts the fuel at engine speeds over 5,000 rpm (A/T), 7,000 rpm ('08-09 models LX M/T), or 7,100 rpm ('08-09 models EX M/T), or 4,000 rpm ('10 model M/T). The engine speed of fuel cut is lower on a cold engine.

Fuel Pump Control

When the ignition switch is turned to ON (II), the ECM/PCM grounds PGM-FI main relay 2 (FUEL PUMP) 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 (FUEL PUMP) and feeds current to the fuel pump. When the engine is not running and the ignition is ON (II), the ECM/PCM cuts ground to PGM-FI main relay 2 (FUEL PUMP) which cuts current to the fuel pump.

PGM-FI Main Relays 1 and 2

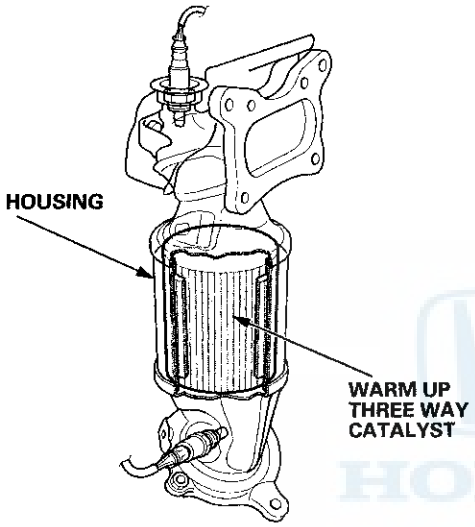
PGM-FI main relay 1 is energized whenever the ignition switch is ON (II) to supply battery voltage to the ECM/PCM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 (FUEL PUMP) is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned to ON (II), and when the engine is cranking or running.

Catalytic Converter System

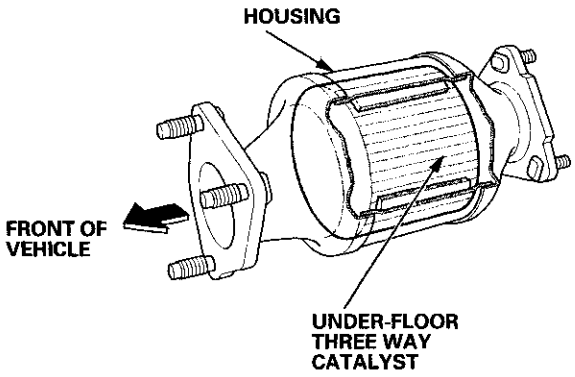
Warm Up Three Way Catalytic Converter (WU-TWC) and Under-floor Three Way Catalytic Converter (Under-floor TWC)

The WU-TWC/Under-floor TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO_2), nitrogen (N_2), and water vapor.

WU-TWC (ATTACHED TO THE CYLINDER HEAD)

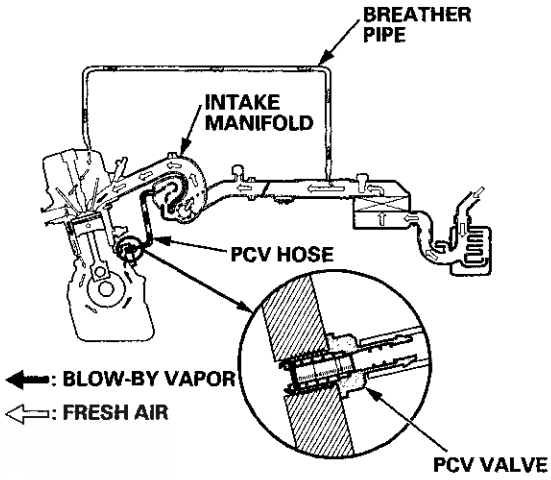


UNDER-FLOOR TWC



Positive Crankcase Ventilation (PCV) System

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



System Description (cont'd)

Evaporative Emission (EVAP) Control System

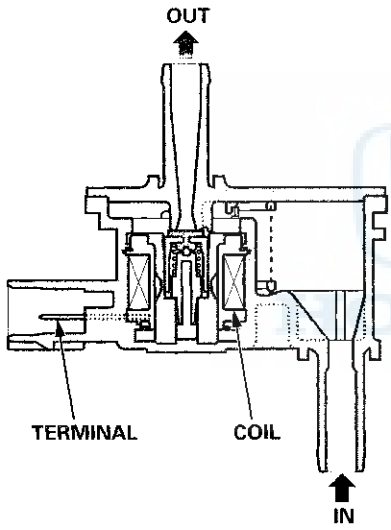
Refer to the system diagram to see a functional layout of the system.

EVAP Canister

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

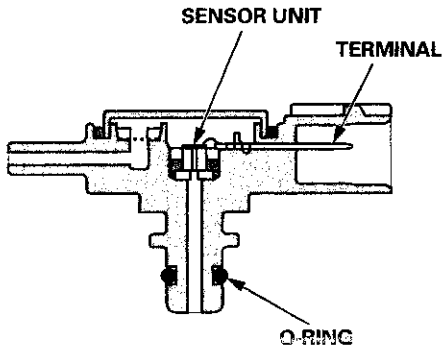
EVAP Canister Purge Valve

When the engine coolant temperature is below 131 °F (55 °C), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.



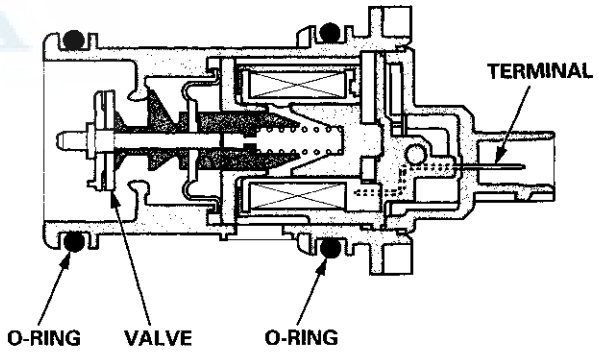
Fuel Tank Pressure (FTP) Sensor

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



EVAP Canister Vent Shut Valve

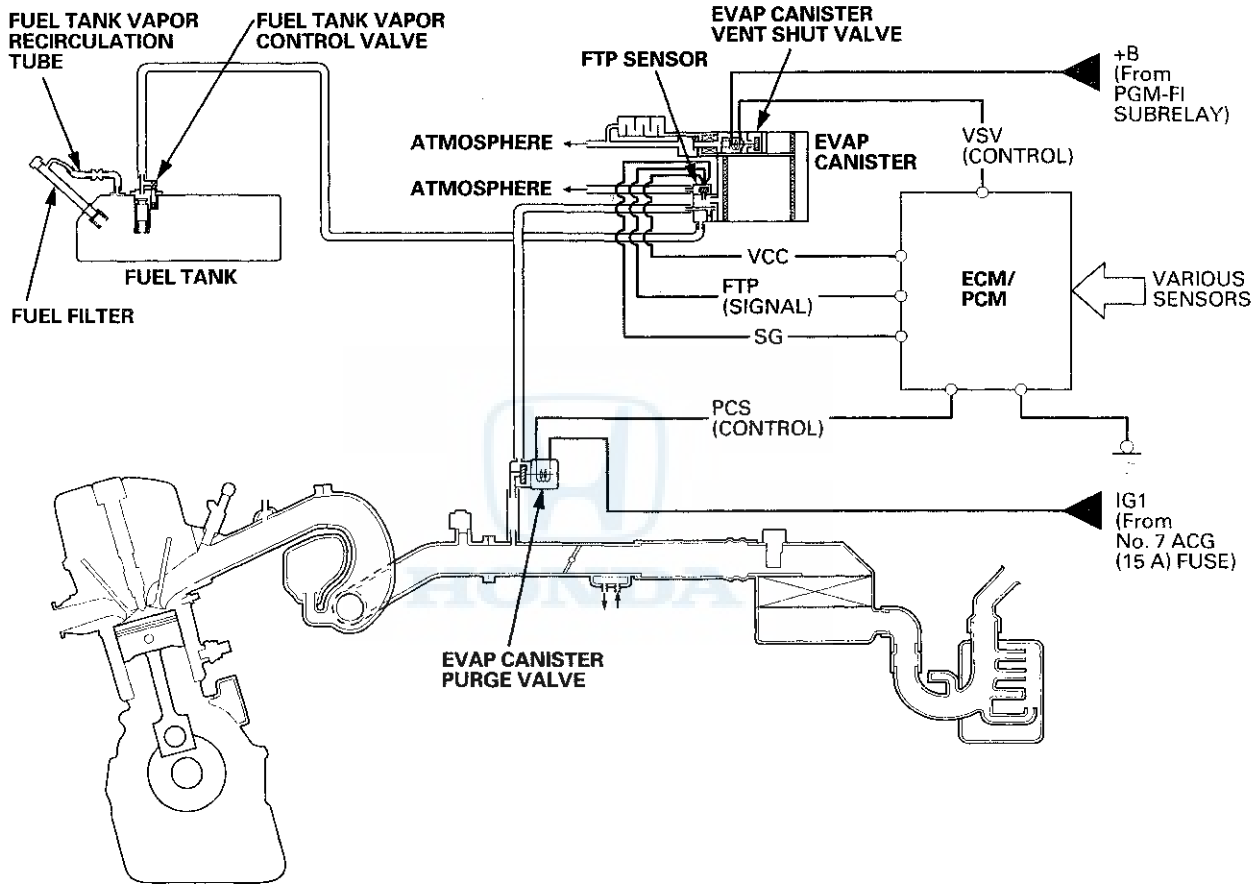
The EVAP canister vent shut valve is on the EVAP canister.
The EVAP canister vent shut valve controls the venting of the EVAP canister.



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 engine coolant temperature is above 131 °F (55 °C).



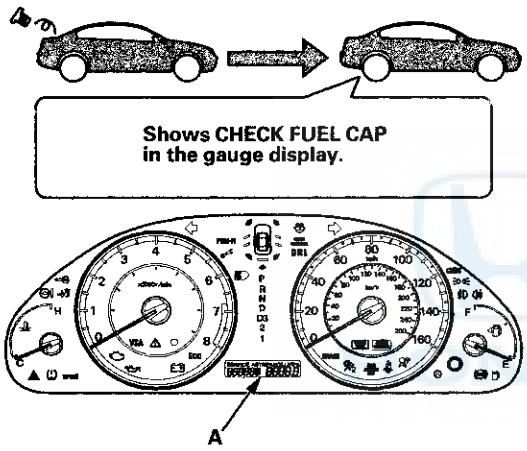
(cont'd)

System Description (cont'd)

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 CHECK FUEL CAP message appears on the gauge display (A). To scroll to another message, press the select/reset button. The CHECK 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):

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):

1. Tighten the fuel fill cap until it clicks.
2. Start the engine, then turn the ignition switch to LOCK (0).
3. Repeat step 2 two more times.

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), 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 LOCK (0).
- 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.

(cont'd)

How to Set Readiness Codes (cont'd)

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 SENSOR 2 between 176 °F (80 °C) and 212 °F (100 °C).
- MAP sensor less than 46.6 kPa (14 inHg, 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 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 LOCK (0).
- 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 1 in the ALL DATA LIST with the HDS. If the ECT SENSOR 1 is less than 140 °F (60 °C), run the engine until it is more than 140 °F (60 °C), then repeat the procedure.

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.

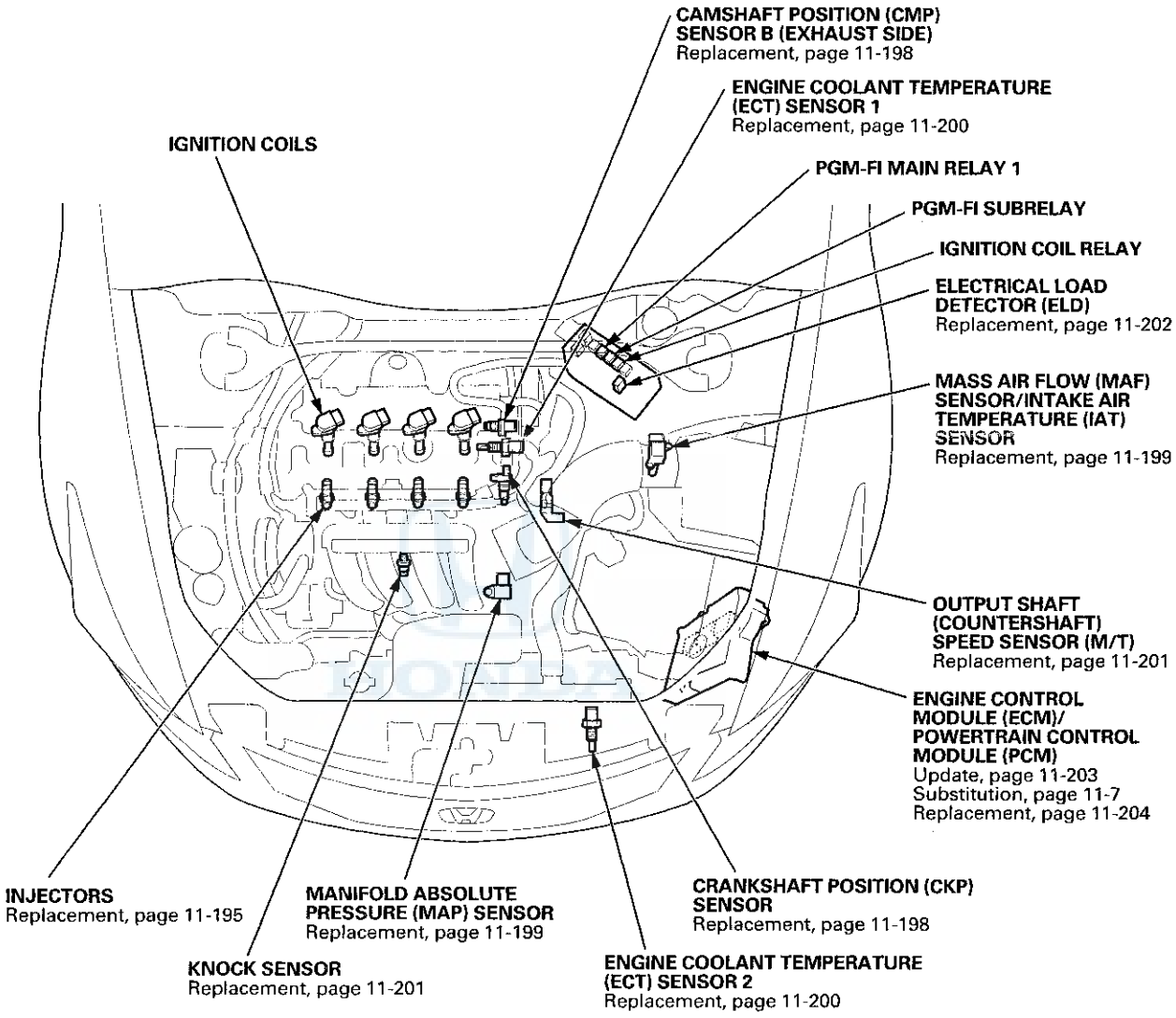
Fuel System Monitor and Readiness Code

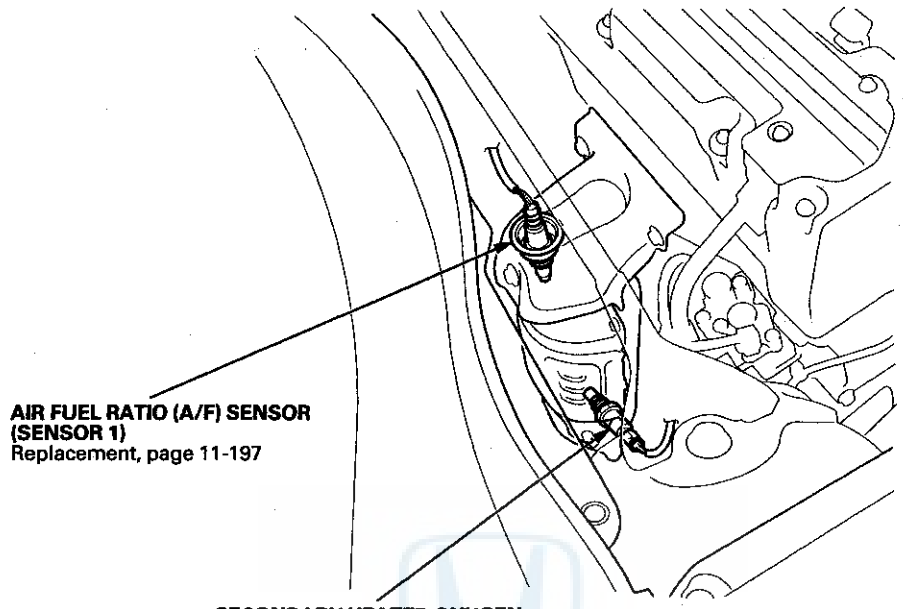
- This readiness code is always set to available because the fuel system is continuously monitored during closed loop operation.
- Monitoring pauses when the catalytic converter, EVAP control system, and A/F sensor monitors are active.
- Monitoring also pauses when any related enable criteria are not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

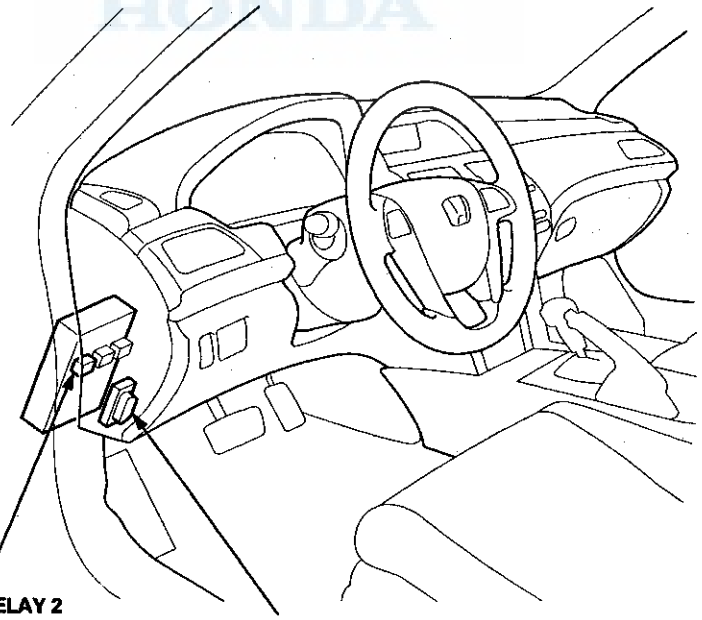
Component Location Index





AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
Replacement, page 11-197

SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
Replacement, page 11-197



PGM-FI MAIN RELAY 2 (FUEL PUMP)

DATA LINK CONNECTOR (DLC)
General Troubleshooting Information, page 11-3
Circuit Troubleshooting, page 11-181

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 in the air cleaner, then go to step 15.

3. Check for a dirty air cleaner element.

   Is it dirty?

   YES–Replace the air cleaner element (see page 11-333), then go to step 15.

   NO–Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Turn the ignition switch to ON (II).
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 rpm 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.

13. Turn the ignition switch to LOCK (0).
14. Replace the MAF sensor/IAT sensor (see page 11-199).
15. Turn the ignition switch to ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-293).
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).

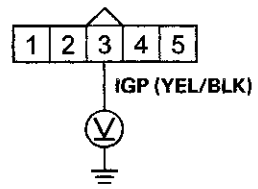
1. Turn the ignition switch to ON (II), and wait 2 seconds.
2. Check the MAF SENSOR in the DATA LIST with the HDS.

   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).
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage 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 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.

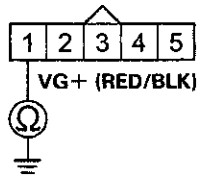
7. Turn the ignition switch to LOCK (0).

(cont'd)

DTC Troubleshooting (cont'd)

8. Measure the resistance between MAF sensor/IAT sensor 5P connector terminal No. 1 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

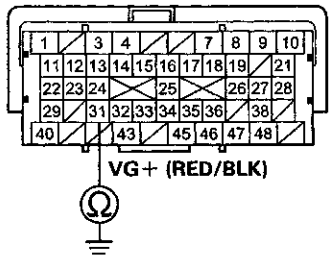
Is there 190—210 kΩ?

YES–Go to step 13.

NO–Go to step 9.

9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector B (49P).
11. Check for continuity between ECM/PCM connector terminal B31 and body ground.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

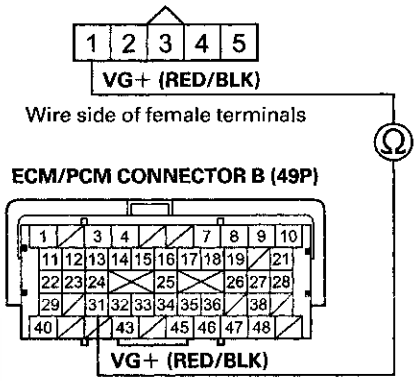
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (B31) 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. 1 and ECM/PCM connector terminal B31.

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 (B31) and the MAF sensor/IAT sensor, then go to step 20.

13. Substitute a known-good MAF sensor/IAT sensor (see page 11-199).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II).
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 11-199), then go to step 19.

19. Turn the ignition switch to LOCK (0).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-293).
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 Temporary DTCs or 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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P0103: MAF Sensor Circuit High Voltage

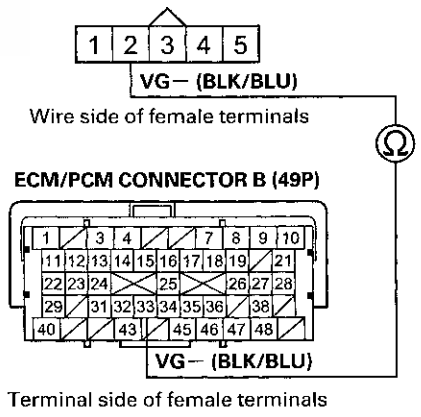
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II), 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).
4. Jump the SCS line with the HDS.
5. Disconnect the MAF sensor/IAT sensor 5P connector.
6. Disconnect ECM/PCM connector B (49P).
7. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 2 and ECM/PCM connector terminal B33.



   Is there continuity?

   YES–Go to step 8.

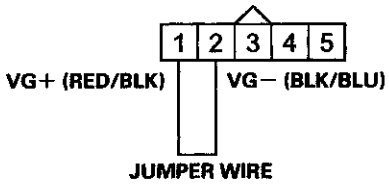
   NO–Repair open in the wire between the ECM/PCM (B33) and the MAF sensor/IAT sensor, then go to step 15.
8. Reconnect ECM/PCM connector B (49P).

(cont'd)

DTC Troubleshooting (cont'd)

9. 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

10. Turn the ignition switch to ON (II).
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).
14. Replace the MAF sensor/IAT sensor (see page 11-199).
15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see page 11-293).
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 Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■
20. Turn the ignition switch to LOCK (0).
21. Reconnect all connectors.
22. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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).
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.

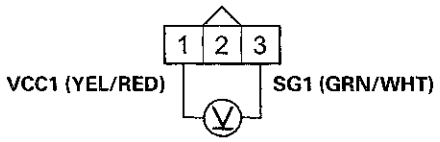
   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM.■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch to ON (II).
6. Check the MAP SENSOR in the DATA LIST 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

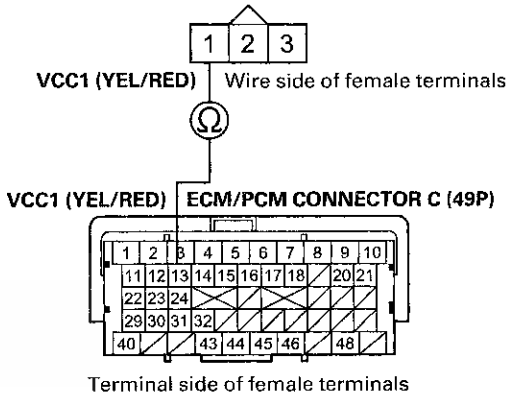
Is there about 5 V?

YES–Go to step 16.

NO–Go to step 8.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector C (49P).
11. Check for continuity between ECM/PCM connector terminal C13 and MAP sensor 3P connector terminal No. 1.

MAP SENSOR 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES–Go to step 23.

NO–Repair open in the wire between the ECM/PCM (C13) and the MAP sensor, then go to step 18.

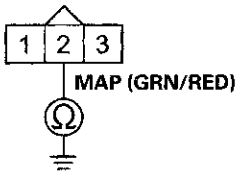
12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector C (49P).

(cont'd)

DTC Troubleshooting (cont'd)

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 (C11) and the MAP sensor, then go to step 18.

NO–Go to step 23.

16. Turn the ignition switch to LOCK (0).
17. Replace the MAP sensor (see page 11-199).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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).

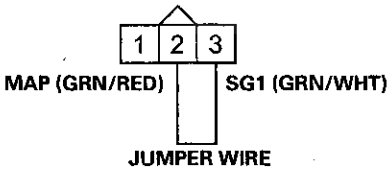
1. Turn the ignition switch to ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   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).
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



Wire side of female terminals

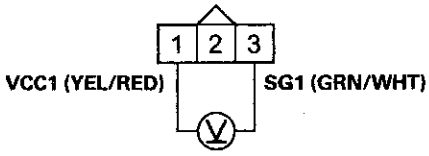
6. Turn the ignition switch to ON (II).
7. Check the MAP SENSOR in the DATA LIST with the HDS.

   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



Wire side of female terminals

Is there about 5 V?

YES–Go to step 14.

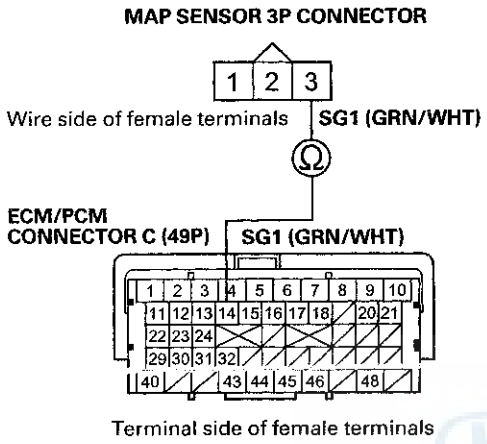
NO–Go to step 10.

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector C (49P).

(cont'd)

DTC Troubleshooting (cont'd)

13. Check for continuity between ECM/PCM connector terminal C14 and MAP sensor 3P connector terminal No. 3.

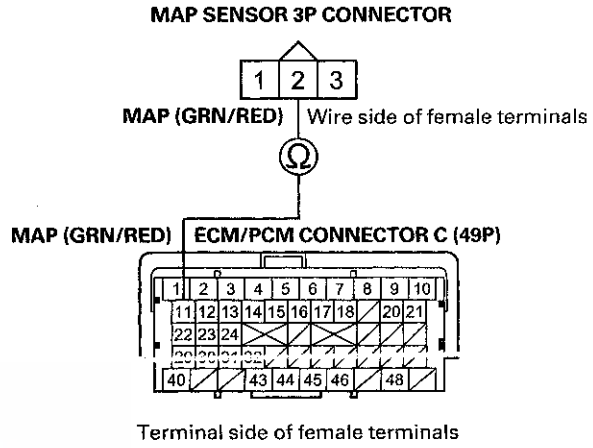


Is there continuity?

YES–Go to step 25.

NO–Repair open in the wire between the ECM/PCM (C14) and the MAP sensor, then go to step 20.

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (49P).
17. Check for continuity between ECM/PCM connector terminal C11 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 (C11) and the MAP sensor, then go to step 20.

18. Turn the ignition switch to LOCK (0).
19. Replace the MAP sensor (see page 11-199).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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 11-199).
3. Allow 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).
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 the 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 63 °F (35 °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.

(cont'd)

DTC Troubleshooting (cont'd)

13. Turn the ignition switch to LOCK (0).
14. Replace the MAF sensor/IAT sensor (see page 11-199).
15. Turn the ignition switch to ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-293).
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).
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).
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Turn the ignition switch to ON (II).
6. Check the IAT SENSOR in the DATA LIST with the HDS.

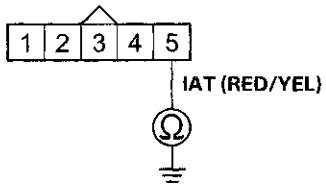
   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES–Go to step 7.

   NO–Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (49P).

10. Check for continuity 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 continuity?

YES–Repair short in the wire between the MAF sensor/IAT sensor and the ECM/PCM (B32), then go to step 13.

NO–Go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Replace the MAF sensor/IAT sensor (see page 11-199).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure. (see page 11-293)
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.■

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC Troubleshooting (cont'd)

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

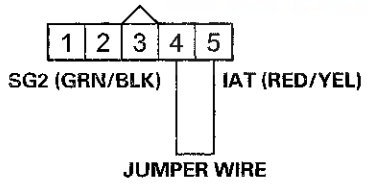
   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   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).
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Connect MAF sensor/IAT sensor 5P connector terminals No. 4 and No. 5 with a jumper wire.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch to ON (II).
7. Check the IAT SENSOR in the DATA LIST with the HDS.

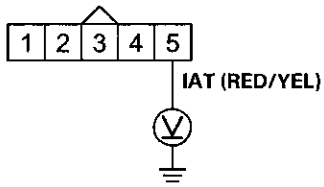
   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES–Go to step 8.

   NO–Go to step 20.

8. Turn the ignition switch to LOCK (0).
9. Remove the jumper wire from the MAF sensor/IAT sensor 5P connector.
10. Turn the ignition switch to ON (II).
11. 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 about 5 V?

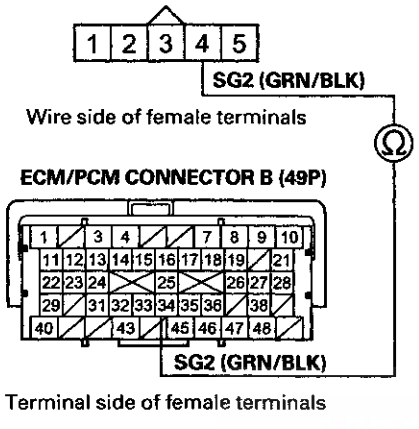
YES–Go to step 12.

NO–Go to step 16.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (49P).

15. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 4 and ECM/PCM connector terminal B34.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



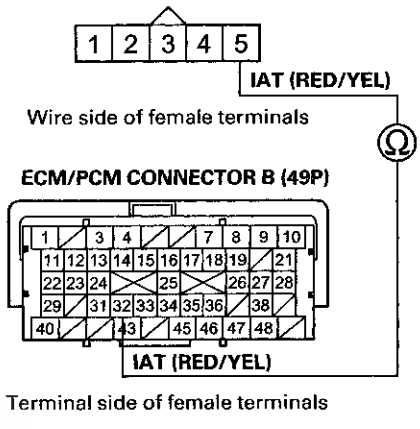
Is there continuity?

YES–Go to step 27.

NO–Repair open in the wire between the ECM/PCM (B34) and the MAF sensor/IAT sensor, then go to step 22.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector B (49P).
19. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 5 and ECM/PCM connector terminal B32.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Is there continuity?

YES–Go to step 27.

NO–Repair open in the wire between the ECM/PCM (B32) and the MAF sensor/IAT sensor, then go to step 22.

20. Turn the ignition switch to LOCK (0).
21. Replace the MAF sensor/IAT sensor (see page 11-199).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-293).
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.■

(cont'd)

DTC Troubleshooting (cont'd)

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204). 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).
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).
8. Open the hood, and let the engine cool for 3 hours.
9. Turn the ignition switch to ON (II).
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).
12. Replace ECT sensor 1 (see page 11-200).
13. Turn the ignition switch to ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-293).
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.■

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).
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).
4. Disconnect the ECT sensor 1 2P connector.
5. Turn the ignition switch to ON (II).
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.

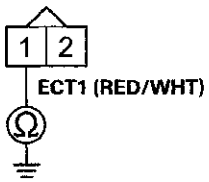
    NO–Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (49P).

(cont'd)

DTC Troubleshooting (cont'd)

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 (B24), then go to step 13.

NO–Go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Replace ECT sensor 1 (see page 11-200).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). 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).

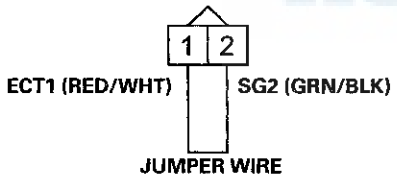
1. Turn the ignition switch to ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   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).
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

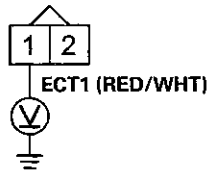
6. Turn the ignition switch to ON (II).
7. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   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).
9. Remove the jumper wire from the ECT sensor 1 2P connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

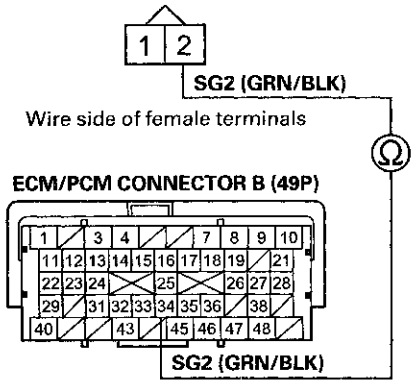
Is there about 5 V?

YES–Go to step 12.

NO–Go to step 16.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (49P).
15. Check for continuity between ECT sensor 1 2P connector terminal No. 2 and ECM/PCM connector terminal B34.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

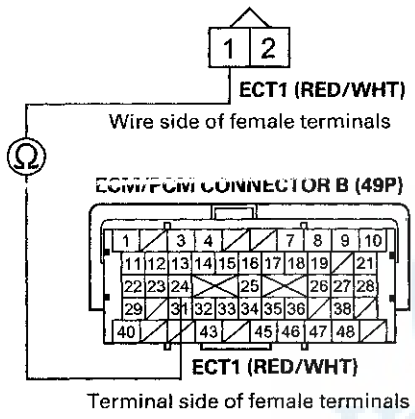
YES–Go to step 27.

NO–Repair open in the wire between the ECM/PCM (B34) and ECT sensor 1, then go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector B (49P).
19. Check for continuity between ECT sensor 1 2P connector terminal No. 1 and ECM/PCM connector terminal B24.



Is there continuity?

YES–Go to step 27.

NO–Repair open in the wire between the ECM/PCM (B24) and ECT sensor 1, then go to step 22.

20. Turn the ignition switch to LOCK (0).
21. Replace ECT sensor 1 (see page 11-200).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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 0 °F (−18 °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 terminal are OK, replace ECT sensor 1 (see page 11-200), then go to step 9.

   NO–Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Allow the engine to cool to 104 °F (40 °C) or less.
5. Start the engine, and let it idle until ECT SENSOR 1goes 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 terminal are OK, replace ECT sensor 1 (see page 11-200), 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).
8. Reset the ECM/PCM with the HDS.
9. Turn the ignition switch to LOCK (0).
10. Allow the engine to cool to 104 °F (40 °C) or less.
11. Start the engine, and let it idle until ECT SENSOR 1goes 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).
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 circuit (see page 10-26), and the radiator fan relay (see page 22-93). If the circuits 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 41 °F (23 °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 14 °F (8 °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.■

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to ON (II).
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 11-293).
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 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 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 11-203), 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.

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 11-204). 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: A/F Sensor (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. Turn the ignition switch to ON (II).
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 or 4th
   - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed about 32 mph (52 km/h) or more
5. Monitor the OBD STATUS for DTC P0133 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 or NOT COMPLETED, go to step 3 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Replace the A/F sensor (Sensor 1) (see page 11-197).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-293).
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, in 3rd or 4th
    - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed about 32 mph (52 km/h) or more
13. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0133 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 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 or NOT COMPLETED, go to step 11.

DTC Troubleshooting (cont'd)

DTC P0134: A/F Sensor (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 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 P0135 is stored at the same time as DTC P0134, troubleshoot DTC P0135 first, then recheck for DTC P0134.

1. Turn the ignition switch to ON (II).
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) until the radiator fan comes on.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0134 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).
6. Replace the A/F sensor (Sensor 1) (see page 11-197).
7. Turn the ignition switch to ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-293).
10. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0134 indicated?

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

    NO–Go to step 11.
11. Monitor the OBD STATUS for DTC P0134 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 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.

DTC P0135: A/F Sensor (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).

1. Turn the ignition switch to ON (II).
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 P0135 indicated?

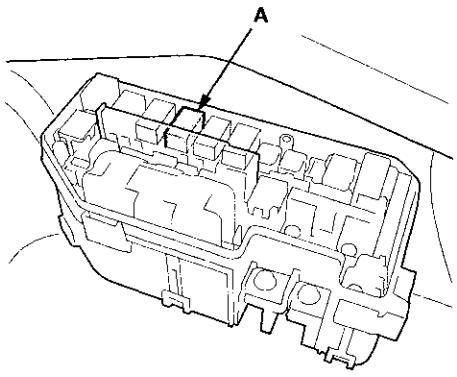
   YES–Go to step 5.

   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).
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.



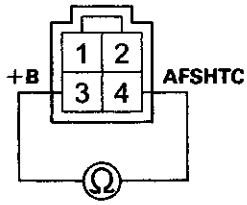
8. Test the PGM-FI subrelay (see page 22-93).

   Is the relay OK?

   YES–Go to step 9.

   NO–Replace the PGM-FI subrelay, then go to step 24.
9. Disconnect the A/F sensor (Sensor 1) 4P connector.
10. At the sensor side, measure the resistance between A/F sensor (Sensor 1) 4P connector terminals No. 3 and No. 4.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

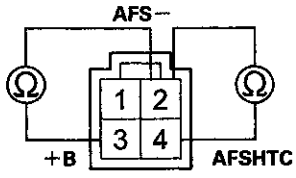
Is there 2.0—2.7 Ω at room temperature?

YES–Go to step 11.

NO–Go to step 23.

11. At the sensor side, check for continuity between A/F sensor (Sensor 1) 4P connector terminals No. 2 and No. 3, and between terminals No. 2 and No. 4 individually.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES–Go to step 23.

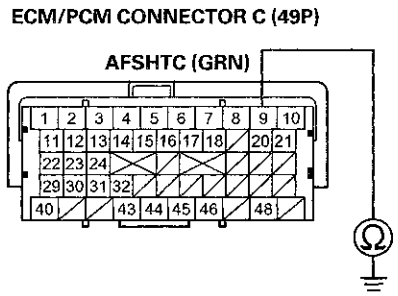
NO–Go to step 12.

12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (49P).

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for continuity between ECM/PCM connector terminal C9 and body ground.



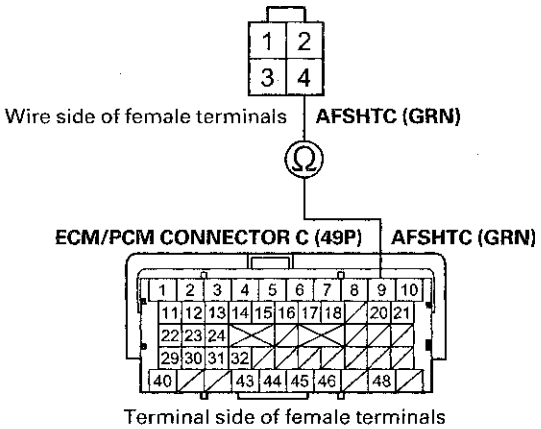
Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C9) and the A/F sensor (Sensor 1), then go to step 24.

NO–Go to step 15.

15. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 4 and ECM/PCM connector terminal C9.



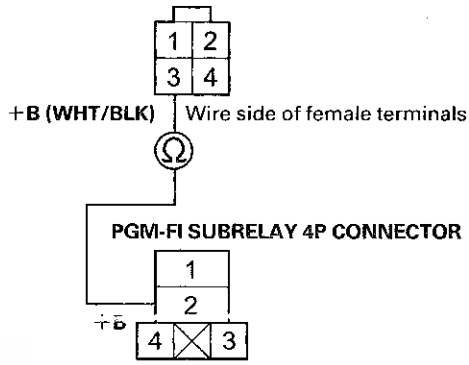
Terminal side of female terminals

Is there continuity?

YES–Go to step 16.

NO–Repair open in the wire between the ECM/PCM (C9) and the A/F sensor (Sensor 1), then go to step 24.

16. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 3 and PGM-FI subrelay 4P connector terminal No. 2.



Terminal side of female terminals

Is there continuity?

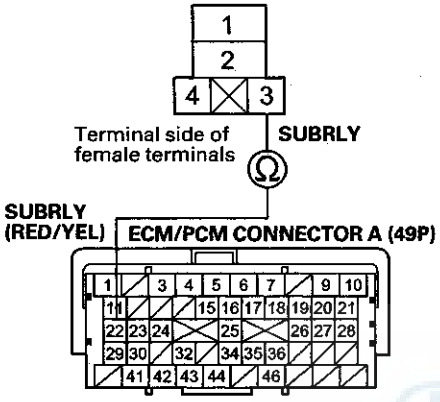
YES–Go to step 17.

NO–Repair open in the wire between the A/F sensor (Sensor 1) and the PGM-FI subrelay, then go to step 24.

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 A22.

PGM-FI SUBRELAY 4P CONNECTOR



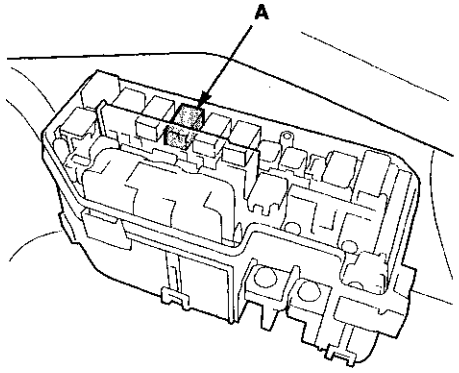
Terminal side of female terminals

Is there continuity?

YES–Go to step 30.

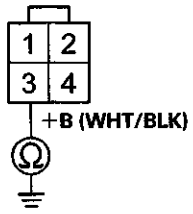
NO–Repair open in the wire between the ECM/PCM (A22) and the PGM-FI subrelay, then go to step 24.

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



20. Disconnect the A/F sensor (Sensor 1) 4P connector.
21. Disconnect the EVAP canister vent shut valve 2P connector.
22. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 3 and body ground.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair short in the wire between the PGM-FI subrelay, the A/F sensor (Sensor 1), and the EVAP canister vent shut valve. Also replace the No. 14 FI SUB (15 A) fuse, then go to step 24.

NO–Check the under-hood fuse/relay box, and replace it if needed (see page 22-85), then go to step 24.

23. Replace the A/F sensor (Sensor 1) (see page 11-197).
24. Reconnect all connectors.
25. Turn the ignition switch to ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-293).
28. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0135 indicated?

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

NO–Go to step 29.

(cont'd)

DTC Troubleshooting (cont'd)

29. Monitor the OBD STATUS for DTC P0135 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 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.

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 P0135 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 32. If the ECM/PCM was substituted, go to step 1.

    NO–Go to step 34.

34. 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 11-204). 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 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 32. 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: Secondary HO2S (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).
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).
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Turn the ignition switch to ON (II).
8. Check HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.05 V or less?

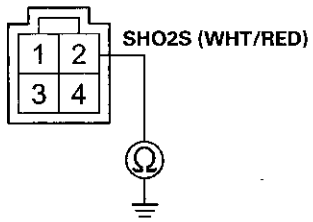
   YES–Go to step 9.

   NO–Go to step 13.

9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector B (49P).

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

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES–Repair short in the wire between the ECM/PCM (B36) and secondary HO2S (Sensor 2), then go to step 15.

NO–Go to step 23.

13. Turn the ignition switch to LOCK (0).
14. Replace secondary HO2S (Sensor 2) (see page 11-197).
15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure. (see page 11-293)
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 about 1 minute or more
21. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0137 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 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 or NOT COMPLETED, go to step 19.
23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 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.

(cont'd)

DTC Troubleshooting (cont'd)

28. Monitor the OBD STATUS for DTC P0137 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 11-204). 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 or NOT COMPLETED, go to step 25.

DTC P0138: Secondary HO2S (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).

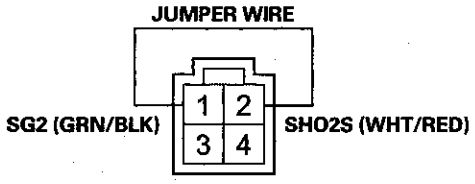
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check HO2S S2 in the DATA LIST with the HDS.

   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).
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



Terminal side of male terminals

8. Turn the ignition switch to ON (II).
9. Check HO2S S2 in the DATA LIST with the HDS.

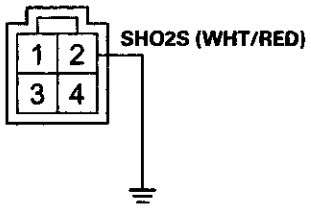
   Does the voltage stay at 1.27 V or more?

   YES–Go to step 10.

   NO–Go to step 19.
10. Turn the ignition switch to LOCK (0).

11. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
12. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 2 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

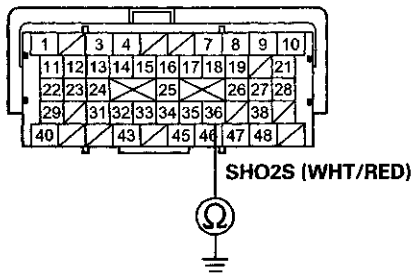
13. Turn the ignition switch to ON (II).
14. Check HO2S S2 in the DATA LIST with the HDS.

    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 (B34) and secondary HO2S (Sensor 2), then go to step 21.
15. Turn the ignition switch to LOCK (0).
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector B (49P).
18. Check for continuity between ECM/PCM connector terminal B36 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 (B36) and secondary HO2S (Sensor 2), then go to step 21.

19. Turn the ignition switch to LOCK (0).
20. Replace secondary HO2S (Sensor 2) (see page 11-197).
21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see page 11-293).
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 about 1 minute or more
27. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0138 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 28.

(cont'd)

DTC Troubleshooting (cont'd)

28. Monitor the OBD STATUS for DTC P0138 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 or NOT COMPLETED, go to step 25.

29. Reconnect all connectors.

30. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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.

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 about 1 minute or more

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

    Is DTC P0138 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 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 11-204). 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 or NOT COMPLETED, go to step 31.

DTC P0139: Secondary HO2S (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).

1. Turn the ignition switch to ON (II).
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 throttle fully closed) for 10 seconds
5. Monitor the OBD STATUS for DTC P0139 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 or NOT COMPLETED, go to step 3 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Replace secondary HO2S (Sensor 2) (see page 11-197).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-293).
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 throttle fully closed) for 10 seconds
13. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0139 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 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 or NOT COMPLETED, go to step 11.

DTC Troubleshooting (cont'd)

DTC P0141: Secondary HO2S (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).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0141 indicated?

   YES–Go to step 5.

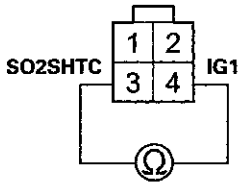
   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at secondary HO2S (Sensor 2) and the ECM/PCM.■
5. Turn the ignition switch to LOCK (0).
6. Check the No. 7 ACG (15 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES–Go to step 7.

   NO–Repair short in the wire between secondary HO2S (Sensor 2) and the No. 7 ACG (15 A) fuse. Also replace the No. 7 ACG (15 A) fuse, then go to step 23.
7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. At secondary HO2S (Sensor 2) side, measure the resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

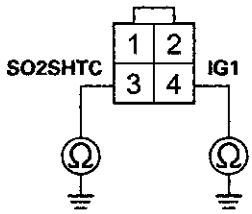
Is there 5.4—7.3 Ω at room temperature?

YES–Go to step 9.

NO–Go to step 22.

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

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

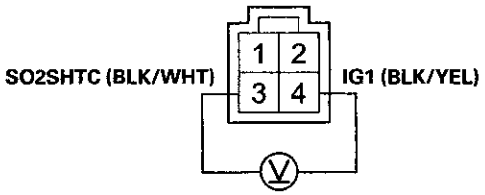
YES–Go to step 22.

NO–Go to step 10.

10. Turn the ignition switch to ON (II).

11. Measure the voltage between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR) 4P CONNECTOR



Terminal side of male terminals

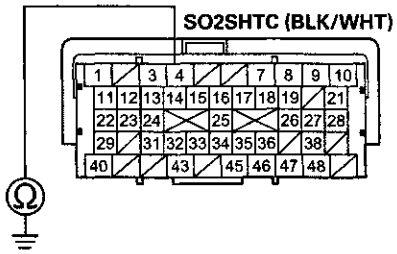
Is there battery voltage?

YES–Go to step 12.

NO–Go to step 16.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (49P).
15. Check for continuity between ECM/PCM connector terminal B4 and body ground.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

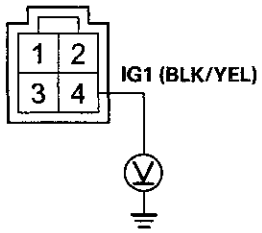
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (B4) and secondary HO2S (Sensor 2), then go to step 23.

NO–Go to step 29.

16. Measure the voltage between secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

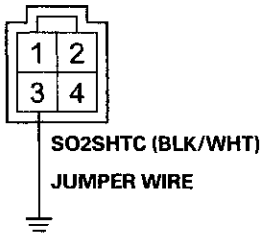
Is there battery voltage?

YES–Go to step 17.

NO–Repair open in the wire between secondary HO2S (Sensor 2) and the No. 7 ACG (15 A) fuse, then go to step 23.

17. Turn the ignition switch to LOCK (0).
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector B (49P).
20. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 3 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR

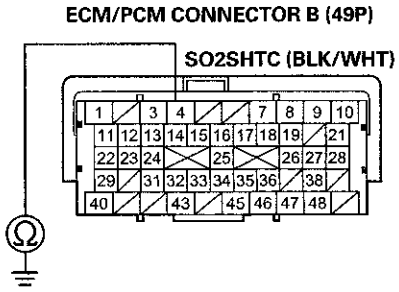


Terminal side of male terminals

(cont'd)

DTC Troubleshooting (cont'd)

21. Check for continuity between ECM/PCM connector terminal B4 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Go to step 29.

NO–Repair open in the wire between the ECM/PCM (B4) and secondary HO2S (Sensor 2), then go to step 23.

22. Replace secondary HO2S (Sensor 2) (see page 11-197).
23. Reconnect all connectors.
24. Turn the ignition switch to ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see page 11-293).
27. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0141 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 28.

28. Monitor the OBD STATUS for DTC P0141 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 NOT COMPLETED, keep idling until a result comes on.

29. Reconnect all connectors.
30. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
31. Start the engine, and let it idle.
32. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0141 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 33.

33. Monitor the OBD STATUS for DTC P0141 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 11-204). 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 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 NOT COMPLETED, keep idling until a result comes on.

DTC P0171: Fuel System Too Lean

DTC P0172: 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.
- If any of the DTCs listed below are stored at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then recheck for P0171 and/or P0172.

  P0101, P0102, P0103: MAF sensor

  P0107, P0108, P1128, P1129: MAP sensor

  P0133, P1172, P1157, P2195, P2238, P2252, P2A00: A/F sensor (Sensor 1)

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

  P0137, P0138, P0139: Secondary HO2S (Sensor 2)

  P0141: Secondary HO2S (Sensor 2) heater

  P2646, P2647, P2648, P2649: VTEC system

  P0443, P0496: EVAP canister purge valve

1. Check the fuel pressure (see page 11-308).

   Is the fuel pressure OK?

   YES–Go to step 2.

   NO–Check for these items:

   - If the pressure is too high, replace the fuel pressure regulator (see page 11-323), then go to step 7.
   - If the pressure is too low, check the fuel pump, the fuel feed pipe and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-323), then go to step 7.

2. Check for vacuum leaks at these parts:
   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster
   - Brake booster hose
   - Intake air duct

   Are the parts OK?

   YES–Go to step 3.

   NO–Repair or replace parts with leaks, then go to step 7.

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

5. 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 5.

   NO–Go to step 6.

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

   Is there about 5.6—7.8 gm/s (M/T) or 6.5—9.1 gm/s (A/T)?

   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 11-195), then go to step 7.

   NO–Replace the MAF sensor/IAT sensor (see page 11-199), then go to step 7.

(cont'd)

DTC Troubleshooting (cont'd)

7. Turn the ignition switch to ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-293).
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. 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 and/or P0172 may take up to 80 minutes of test driving to set. Using the HDS, monitor the air fuel feed back average (AF FB AVE). If the AF FB AVE stays within 0.80—1.25, there is no problem at this time.
12. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0171 or P0172 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.■

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

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 P0304) 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 P0304) will be stored. When the misfire stops, the MIL will remain on.
- If any of the DTCs listed below are indicated at the same time as the random misfire DTCs, troubleshoot those DTCs first, then recheck for random misfire DTCs:

  P0101, P0102, P0103: MAF sensor
  P0107, P0108: MAP sensor
  P0171, P0172: Fuel system
  P0335, P0339: CKP sensor
  P0365, P0369: CMP sensor B
  P0506, P0507: Idle control system
  P2646, P2647, P2648, P2649: VTEC system

1. Turn the ignition switch to ON (II).
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, or P0304 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 or NOT COMPLETED, wait for several minutes, then recheck.
5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 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)
   - APP SENSOR
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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 or NOT COMPLETED, go to step 6 and recheck.
8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 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).
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 25.
11. Inspect the spark plugs (see page 4-20). 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)
    - APP SENSOR
13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

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

    YES–Go to step 14.

    NO–Go to step 25.
14. Check the fuel pressure (see page 11-308).

    Is the fuel pressure OK?

    YES–Go to step 15.

    NO–
    - If the fuel pressure is too high, replace the fuel pressure regulator (see page 11-323), then go to step 25.
    - If the fuel pressure is too low, check the fuel pump, the fuel feed line, and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-323), then go to step 25.

(cont'd)

DTC Troubleshooting (cont'd)

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 P or 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.

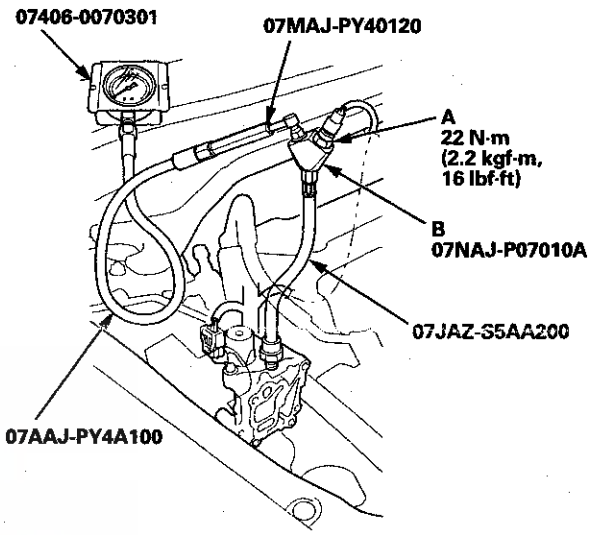
    NO–Go to step 18.
18. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 5.6—7.8 gm/s (M/T) or 6.5—9.1 gm/s (A/T)?

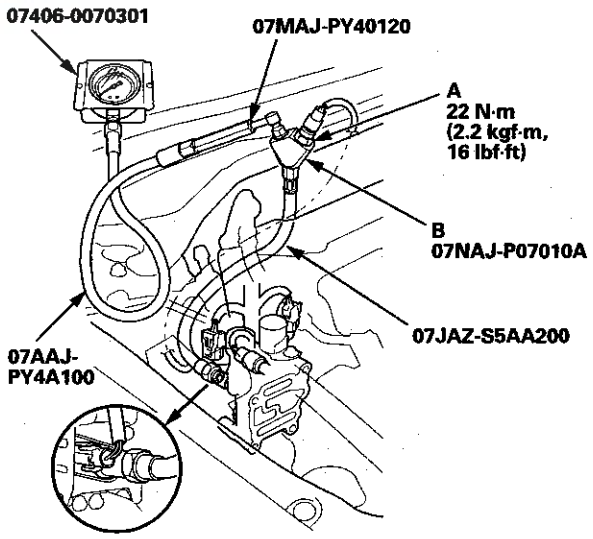
    YES–Go to step 19.

    NO–Replace the MAF sensor/IAT sensor (see page 11-199), then go to step 25.
19. Turn the ignition switch to LOCK (0).
20. Remove the rocker arm oil pressure switch (see page 11-276) (PZEV model: Remove rocker arm oil pressure switch A) (see page 11-276).
21. Attach the special tools to the rocker arm oil control valve as shown, then attach the rocker arm oil pressure switch (A) to the pressure gauge adapter (B).

    All models except PZEV



    PZEV model



22. Reconnect the rocker arm oil pressure switch (rocker arm oil pressure switch A) 2P connector.
23. 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.

24. Check the oil pressure at engine speeds of 1,000 rpm and 2,000 rpm.

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

    YES–Go to step 25.

    NO–Inspect the VTEC system, then go to step 25.

25. Turn the ignition switch to ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-293).
28. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).
29. 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)
    - APP SENSOR
30. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0300, P0301, P0302, P0303, or P0304 indicated?

    YES–Check for poor connections or loose terminals at the ignition coils, the injectors, and the ECM/PCM, then go to the troubleshooting for DTC P0301, P0302, P0303, or P0304 (see page 11-109).

    NO–Go to step 31.

31. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION or NOT COMPLETED, go to step 29.

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

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).
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, or P0304 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 or NOT COMPLETED, wait for several minutes, and recheck.

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

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

    YES–Go to step 9.

    NO–Go to step 6.

(cont'd)

DTC Troubleshooting (cont'd)

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)
   - APP SENSOR
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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 or NOT COMPLETED, go to step 6 and recheck.
8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 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 the ignition system.■
9. Turn the ignition switch to LOCK (0).
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)
    - APP SENSOR
12. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

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

    YES–Go to step 13.

    NO–Intermittent misfire due to poor contact at the ignition coil connector (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 exchanged?

    YES–Replace the faulty ignition coil (see page 4-20), then go to step 40.

    NO–Go to step 14.
14. Turn the ignition switch to LOCK (0).
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)
    - APP SENSOR
17. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

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

    YES–Go to step 18.

    NO–Intermittent misfire 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 exchanged?

    YES–Replace the faulty spark plug, then go to step 40.

    NO–Go to step 19.

19. Turn the ignition switch to LOCK (0).
20. Exchange the injector from the problem cylinder with one from the another cylinder.
21. Start the engine, and let it idle for 2 minutes.
22. 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)
    - APP SENSOR
23. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

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

    YES–Go to step 24.

    NO–Intermittent misfire due to bad contact at the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector.■
24. Determine which cylinder had the misfire.

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

    YES–Replace the faulty injector (see page 11-195), then go to step 40.

    NO–Go to step 25.
25. Do an engine compression and a cylinder leakdown test (see page 6-6).

    Did the engine pass both tests?

    YES–Go to step 26.

    NO–Repair the engine, then go to step 40.
26. Do the VTEC rocker arm test (see page 6-7).

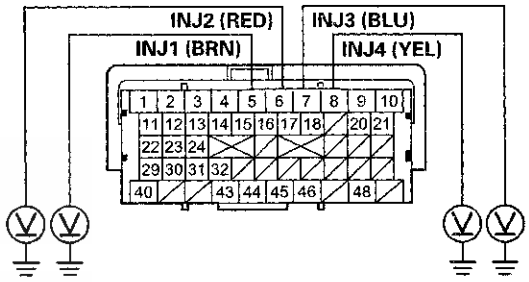
    Did the engine pass the test?

    YES–Go to step 27.

    NO–Repair the VTEC rocker arm (see page 6-34), then go to step 40.
27. Turn the ignition switch to LOCK (0).
28. Jump the SCS line with the HDS.
29. Disconnect ECM/PCM connector C (49P).
30. Turn the ignition switch to ON (II).
31. Measure the voltage between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there battery voltage?

YES–Go to step 39.

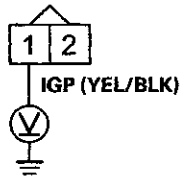
NO–Go to step 32.
32. Turn the ignition switch to LOCK (0).
33. Disconnect the injector 2P connector from the problem cylinder.
34. Turn the ignition switch to ON (II).

(cont'd)

DTC Troubleshooting (cont'd)

35. 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 36.

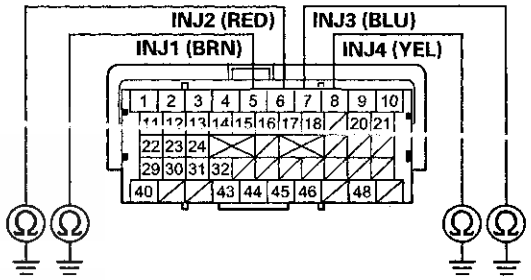
NO–Repair open in the wire between the injector and PGM-FI main relay 1, then go to step 40.

36. Turn the ignition switch to LOCK (0).

37. Check for continuity between body ground and the ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

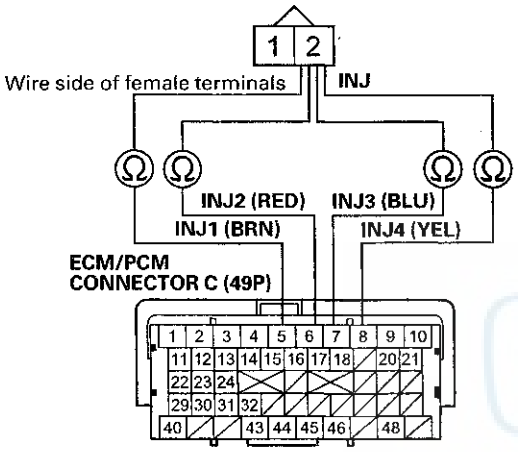
YES–Repair short in the wire between the ECM/PCM and the injector, then go to step 40.

NO–Go to step 38.

38. 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	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

INJECTOR 2P CONNECTOR



Terminal side of female terminals

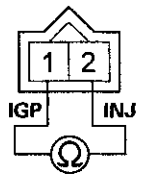
Is there continuity?

YES–Go to step 39.

NO–Repair open in the wire between the ECM/ PCM and the injector, then go to step 40.

39. 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 49.

NO–Replace the injector (see page 11-195), then go to step 40.

40. Turn the ignition switch to LOCK (0).
41. Reconnect all connectors.
42. Turn the ignition switch to ON (II).
43. Reset the ECM/PCM with the HDS.
44. Do the ECM/PCM idle learn procedure (see page 11-293).
45. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).
46. 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)
    - APP SENSOR
47. Check for Pending or Confirmed DTCs with the HDS.

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

    YES–Check for poor connections or loose terminals at the ignition coils, the injectors, and the ECM/PCM, then go to the troubleshooting for DTC P0300, P0301, P0302, P0303, or P0304 (see page 11-106).

    NO–Go to step 48.

(cont'd)

DTC Troubleshooting (cont'd)

48. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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 47, 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 or NOT COMPLETED, go to step 46.

49. Reconnect all connectors.

50. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).

51. 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)
    - APP SENSOR

52. Check for Pending or Confirmed with the HDS.

    Is DTC P0301, P0302, P0303, or P0304 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 51. If the ECM/PCM was substituted, go to step 1.

    NO–Go to step 53.

53. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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 11-204). If any other Pending or Confirmed DTCs were indicated in step 52, 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 51. 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 or NOT COMPLETED, go to step 51.

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).

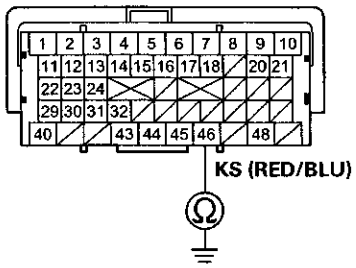
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed between 3,000—4,000 rpm for at least 10 seconds.
5. Check 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).
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor 1P connector (see page 11-201).
9. Disconnect ECM/PCM connector C (49P).
10. Check for continuity between ECM/PCM connector terminal C46 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

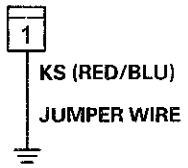
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C46) and the knock sensor, then go to step 14.

NO–Go to step 11.

11. Connect the knock sensor 1P connector terminal to body ground with a jumper wire.

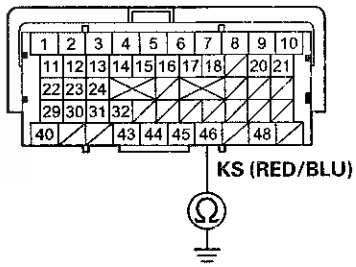
KNOCK SENSOR 1P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal C46 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES–Go to step 13.

NO–Repair open in the wire between the ECM/PCM (C46) and the knock sensor, then go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

13. Replace the knock sensor (see page 11-201).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-293).
18. Hold the engine speed between 3,000—4,000 rpm for at least 10 seconds.
19. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0325 indicated?

    YES–Go to step 21.

    NO–Go to step 20.

20. 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 19, 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 18.

21. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
22. Hold the engine speed between 3,000—4,000 rpm for at least 10 seconds.
23. 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 22. If the ECM/PCM was substituted, go to step 1.

    NO–Go to step 24.

24. 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 11-204). 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 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 22. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

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).

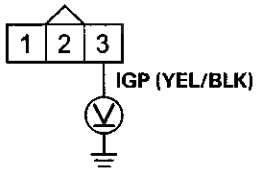
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Pending or Confirmed DTCs with the HDS.

   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).
6. Disconnect the CKP sensor 3P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

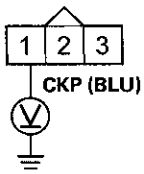
Is there battery voltage?

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.

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

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

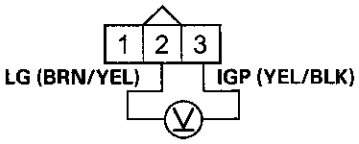
Is there about 5 V?

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; M/T (see page 22-20), A/T (see page 22-22), then go to step 19.

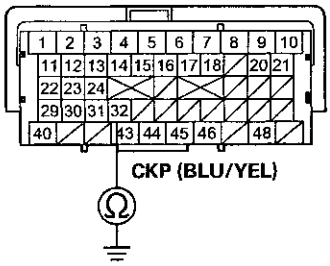
11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (49P).

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for continuity between ECM/PCM connector terminal C32 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

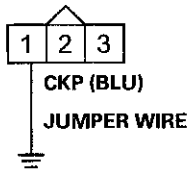
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C32) 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.

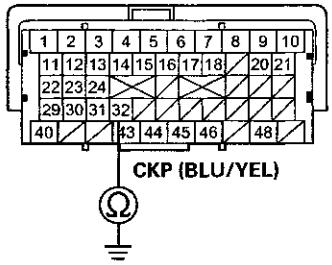
CKP SENSOR 3P CONNECTOR



Wire side of female terminals

16. Check for continuity between ECM/PCM connector terminal C32 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES–Go to step 25.

NO–Repair open in the wire between the ECM/PCM (C32) and the CKP sensor, then go to step 19.

17. Turn the ignition switch to LOCK (0).
18. Replace the CKP sensor (see page 11-198).
19. Reconnect all connectors.
20. Turn the ignition switch to ON (II).
21. Reset the ECM/PCM with the HDS.
22. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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).
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 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 cam chain case (see page 6-13), and check for damage on the CKP pulse plate.

    Is the pulse plate damaged?

    YES–Replace the CKP pulse plate (see page 7-30), then go to step 11.

    NO–Go to step 9.

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch to LOCK (0).
10. Replace the CKP sensor (see page 11-198).
11. Turn the ignition switch to ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see page 11-293).
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

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).
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, and/or P0354 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 and the ECM/PCM.■
5. Turn the ignition switch to LOCK (0).
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 4-20), then go to step 25.

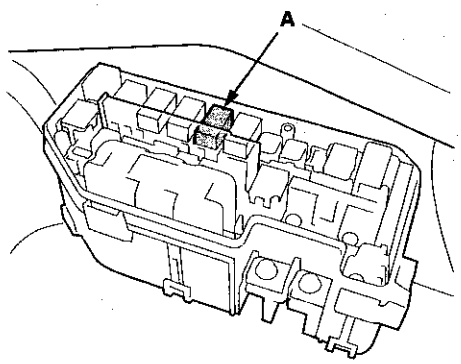
   NO–Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Check the No. 13 IG COIL (15 A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

    YES–Go to step 11.

    NO–Go to step 12.

11. Test the ignition coil relay (A) in the under-hood fuse/relay box (see page 22-93).

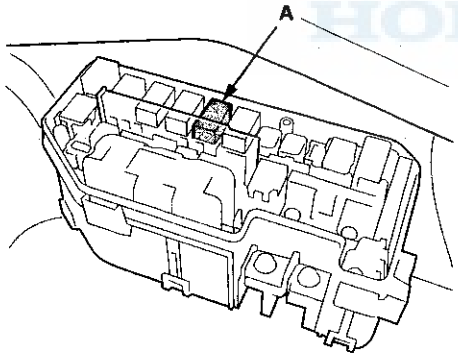


Is the ignition coil relay OK?

YES–Go to step 15.

NO–Replace the ignition coil relay, then go to step 25.

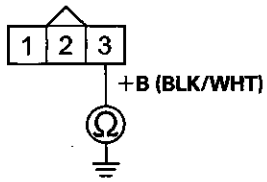
12. Remove the ignition coil relay (A) from the under-hood fuse/relay box.



13. Disconnect all ignition coil 3P connectors.

14. 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 25.

NO–Check the under-hood fuse/relay box, and replace it if needed (see page 22-85), then go to step 25.

15. Reinstall the ignition coil relay.

16. Disconnect the ignition coil 3P connector from the problem cylinder.

17. Turn the ignition switch to ON (II).

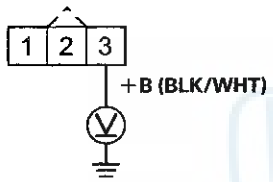
(cont'd)

DTC Troubleshooting (cont'd)

18. 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.1 IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES–Go to step 19.

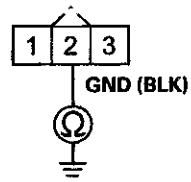
NO–Repair open in the wire between the ignition coil and the ignition coil relay, then go to step 25.

19. Turn the ignition switch to LOCK (0).

20. 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

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Go to step 21.

NO–Repair open in the wire between the ignition coil and G102; M/T (see page 22-20), A/T (see page 22-22), then go to step 25.

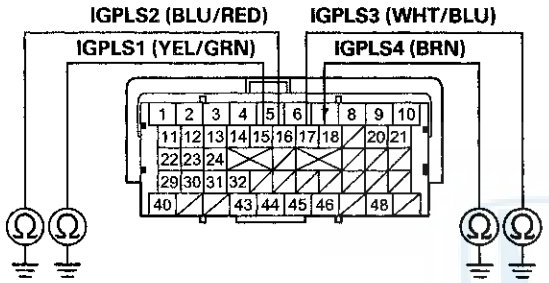
21. Jump the SCS line with the HDS.

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

23. Check for continuity between body ground and the ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0351	C15	YEL/GRN
No. 2	P0352	C16	BLU/RED
No. 3	P0353	C17	WHT/BLU
No. 4	P0354	C18	BRN

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

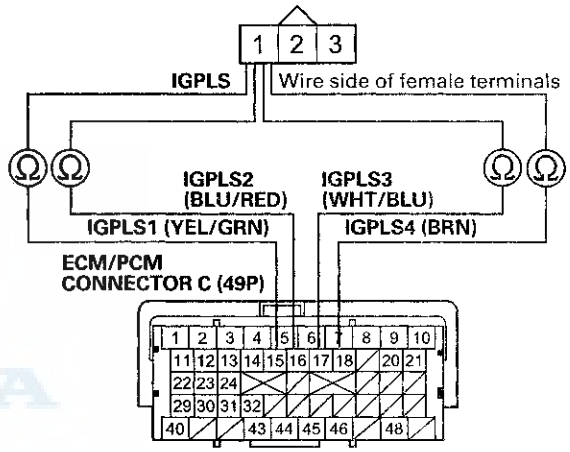
YES–Repair short in the wire between the ECM/PCM and the ignition coil, then go to step 25.

NO–Go to step 24.

24. 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	C15	YEL/GRN
No. 2	P0352	C16	BLU/RED
No. 3	P0353	C17	WHT/BLU
No. 4	P0354	C18	BRN

IGNITION COIL 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES–Go to step 31.

NO–Repair open in the wire between the ECM/PCM and the ignition coil, then go to step 25.

(cont'd)

DTC Troubleshooting (cont'd)

25. Turn the ignition switch to LOCK (0).
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-293).
30. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0351, P0352, P0353, and/or P0354 indicated?

    YES–Check for poor connections or loose terminals at the ignition coil 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.■
31. Reconnect all connectors.
32. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
33. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0351, P0352, P0353, and/or P0354 indicated?

    YES–Check for poor connections or loose terminals at the ignition coil 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P0365: CMP Sensor B 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).

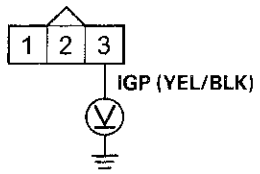
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Pending or Confirmed DTCs with the HDS.

   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 CMP sensor B and the ECM/PCM.■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the CMP sensor B 3P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between CMP sensor B 3P connector terminal No. 3 and body ground.

CMP SENSOR B 3P CONNECTOR



Wire side of female terminals

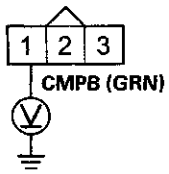
Is there battery voltage?

YES–Go to step 9.

NO–Repair open in the wire between CMP sensor B and PGM-FI main relay 1, then go to step 18.

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

CMP SENSOR B 3P CONNECTOR



Wire side of female terminals

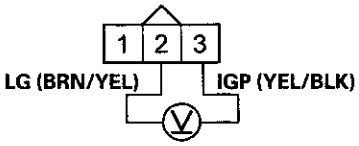
Is there about 5 V?

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 B 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES–Go to step 16.

NO–Repair open in the wire between CMP sensor B and G101; M/T (see page 22-20), A/T (see page 22-22), then go to step 18.

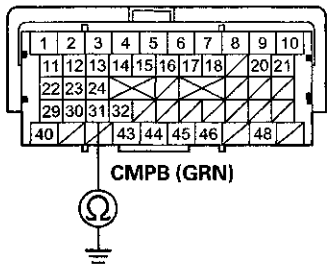
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

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

14. Check for continuity between ECM/PCM connector terminal C31 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

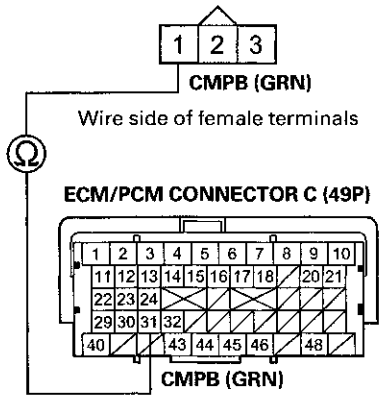
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C31) and CMP sensor B, then go to step 18.

NO–Go to step 15.

15. Check for continuity between CMP sensor B 3P connector terminal No. 1 and ECM/PCM connector terminal C31.

CMP SENSOR B 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES–Go to step 23.

NO–Repair open in the wire between the ECM/PCM (C31) and CMP sensor B, then go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Replace CMP sensor B (see page 11-198).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-293).
22. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0365 indicated?

    YES–Check for poor connections or loose terminals at CMP sensor B 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 11-203), 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 CMP sensor B 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P0369: CMP Sensor B 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).
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 CMP sensor B and the ECM/PCM.■
7. Check for poor connections or loose terminals at these locations:
   - CMP sensor B
   - ECM/PCM
   - Engine ground
   - Body ground

   Are the connections and terminals OK?

   YES–Go to step 8.

   NO–Repair the connectors or terminals, then go to step 11.
8. Check for damage on the CMP pulse plate B (see page 6-30).

   Is the pulser plate damaged?

   YES–Replace the CMP pulse plate B (see page 6-30), then go to step 11.

   NO–Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. Replace CMP sensor B (see page 11-198).
11. Turn the ignition switch to ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see page 11-293).
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 CMP sensor B 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 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).
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 11-332), 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 11-333), then go to step 19.

   NO–Go to step 6.

(cont'd)

DTC Troubleshooting (cont'd)

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 or NOT COMPLETED, 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 11-335), 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 5.6—7.8 gm/s (M/T) or 6.5—9.1 gm/s (A/T)?

    YES–Go to step 13.

    NO–Replace the MAF sensor/IAT sensor (see page 11-199), then go to step 19.
13. Turn the ignition switch to LOCK (0).
14. Allow the engine to cool to ambient temperature.
15. Note the ambient temperature.
16. Turn the ignition switch to ON (II).
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?

    YES–Replace the MAF sensor/IAT sensor (see page 11-199), 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 11-332), then go to step 19. If there is damage in the throttle bore, replace the throttle body (see page 11-335), then go to step 19.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-293).
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 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 or NOT COMPLETED, go to step 22.

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).
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–Reconnect or repair the intake air duct, then 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 11-332), 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 11-333), 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 or NOT COMPLETED, go to step 6.
10. Inspect the ignition timing (see page 4-19).

    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 11-198) and the CKP pulse plate (see page 7-30).

    Is the CKP sensor and/or the CKP pulse plate damaged?

    YES–Replace the CKP sensor (see page 11-198) and/or the CKP pulse plate (see page 7-30), then go to step 6.

    NO–Go to step 31.
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 11-335), then go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

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 5.6—7.8 gm/s (M/T) or 6.5—9.1 gm/s (A/T)?

    YES–Go to step 15.

    NO–Replace the MAF sensor/IAT sensor (see page 11-199), then go to step 24.
15. Turn the ignition switch to LOCK (0).
16. Drain the coolant (see page 10-6).
17. Remove ECT sensor 1 (see page 11-200), and ECT sensor 2 (see page 11-200).
18. Allow the sensors to cool to 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).
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).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see page 11-293).
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 or NOT COMPLETED, go to step 27.

31. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
32. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-204). 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 or NOT COMPLETED, go to step 33.

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).
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
   - Rear window defogger on
   - 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 4-32), 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 22-90).■

(cont'd)

DTC Troubleshooting (cont'd)

7. Turn the ignition switch to ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-293).
10. Start the engine.
11. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - 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

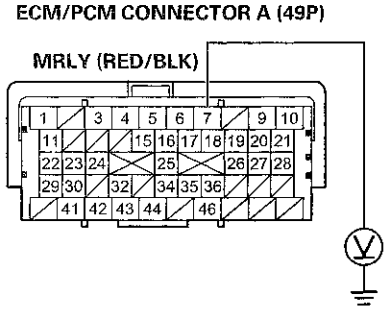
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Wait 10 seconds.
5. Turn the ignition switch to ON (II).
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).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).
10. Measure the voltage between ECM/PCM connector terminal A7 and body ground.



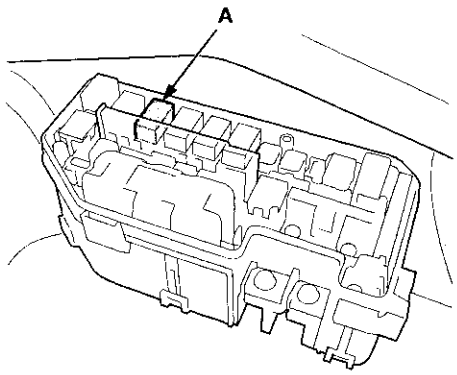
Terminal side of female terminals

Is there battery voltage?

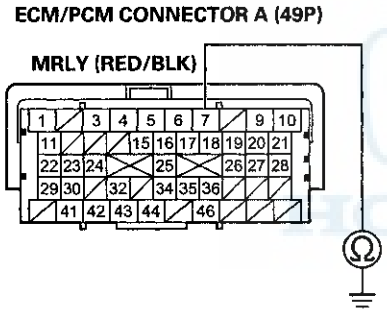
YES–Go to step 13.

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 A7 and body ground.



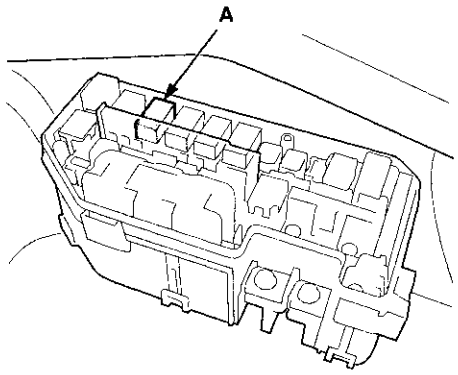
Terminal side of female terminals

Is there continuity?

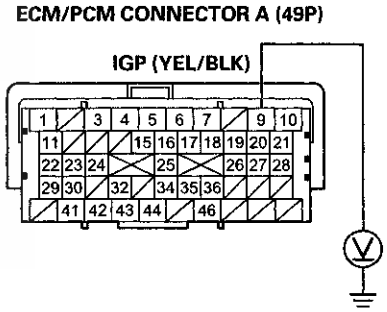
YES–Repair short in the wire between the ECM/PCM (A7) and PGM-FI main relay 1, then go to step 16.

NO–Go to step 15.

13. Remove PGM-FI main relay 1 (A) from the under-hood fuse/relay box.



14. Measure the voltage between ECM/PCM connector terminal A9 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES–Repair short to power in the wire between the ECM/PCM (A9) and PGM-FI main relay 1, then go to step 16.

NO–Go to step 15.

15. Test PGM-FI main relay 1 (see page 22-93).

Is PGM-FI main relay 1 OK?

YES–Go to step 23.

NO–Replace PGM-FI main relay 1, then go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Reset the ECM/PCM with the HDS.
19. Do the ECM/PCM idle learn procedure (see page 11-293).
20. Turn the ignition switch to LOCK (0).
21. Wait 10 seconds.
22. 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.■
23. Reconnect all connectors.
24. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
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. 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 11-204). 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) while updating the ECM/PCM. If you do, the ECM/PCM can be damaged.

1. Do the ECM/PCM update procedure (see page 11-203).
2. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0602 indicated?

   YES–Replace the original ECM/PCM (see page 11-204).■

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

DTC P0606: ECM/PCM Processor 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).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to ON (II).
5. Wait 40 seconds.
6. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0606 indicated?

   YES–Go to step 7.

   NO–Intermittent failure, the system is OK at this time.■
7. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
8. Turn the ignition switch to LOCK (0).
9. Turn the ignition switch to ON (II).
10. Wait 40 seconds.
11. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0606 indicated?

    YES–If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 8. 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P060A: PCM (A/T system) 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).
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 PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
5. Check for Pending or ConfirmedDTCs with the HDS.

   Is DTC P060A indicated?

   YES–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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC Troubleshooting (cont'd)

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).
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P062F 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 11-203), or substitute a known-good ECM/PCM (see page 11-7).
5. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P062F 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 11-204). 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).
2. Check the VIN with the HDS.

   Does the HDS show the vehicle's VIN?

   YES–Go to step 5.

   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 11-136).■

   NO–Go to step 9.
5. Clear the DTC with the HDS.
6. Turn the ignition switch to LOCK (0).
7. Turn the ignition switch to ON (II), 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.■

9. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204). 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 it 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).
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).
5. Start the engine, and let it idle for 30 seconds.
6. Turn the ignition switch to LOCK (0).
7. Turn the ignition switch to ON (II).
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 11-203), 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).
12. Start the engine, and let it idle for 30 seconds.
13. Turn the ignition switch to LOCK (0).
14. Turn the ignition switch to ON (II).
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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC Troubleshooting (cont'd)

DTC P0720: Output Shaft (Countershaft) Speed Sensor Circuit Malfunction (M/T model)

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

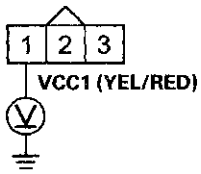
1. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle.
2. Test-drive several minutes.
3. Check the C SHAFT SPD in the DATA LIST with the HDS.

   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. Turn the ignition switch to LOCK (0).
5. Disconnect the output shaft (countershaft) speed sensor 3P connector.
6. Turn the ignition switch to ON (II).
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

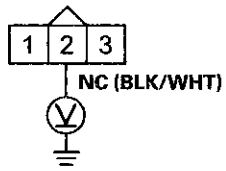
Is there about 5 V?

YES–Go to step 8.

NO–Repair open in the wire between the ECM (C13) 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

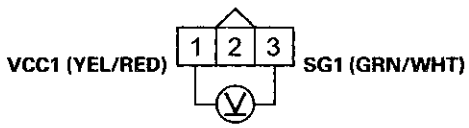
Is there about 5 V?

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?

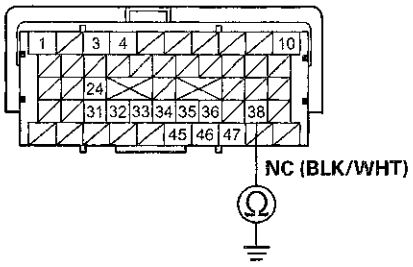
YES–Go to step 16.

NO–Repair open in the wire between the ECM (C14) and the output shaft (countershaft) speed sensor, then go to step 18.

10. Turn the ignition switch to LOCK (0).
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

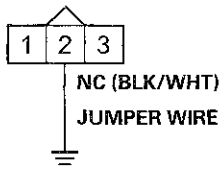
Is there continuity?

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.

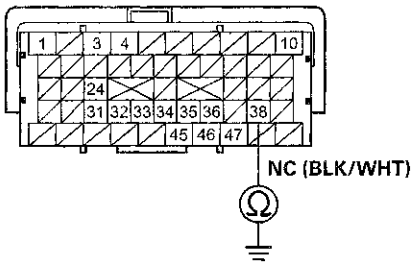
OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

15. Check for continuity between ECM connector terminal B38 and body ground.

ECM CONNECTOR B (49P)



Terminal side of female terminals

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. Turn the ignition switch to LOCK (0).
17. Replace the output shaft (countershaft) speed sensor (see page 11-201).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM with the HDS.
21. Do the ECM idle learn procedure (see page 11-293).
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.

(cont'd)

DTC Troubleshooting (cont'd)

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 all connectors.

26. Update the ECM if it does not have the latest software (see page 11-203), 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 11-204). 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 P1109: BARO Sensor 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).

1. Reset the ECM/PCM with the HDS.
2. Start the engine.
3. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P1109 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 11-203), or substitute a known-good ECM/PCM (see page 11-7).
5. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P1109 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 11-204). 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 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).
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 113 °F (45 °C) or less indicated?

   YES–Replace ECT sensor 1 (see page 11-200), then go to step 27.

   NO–Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Drain the coolant (see page 10-6).
8. Remove ECT sensor 1 (see page 11-200).
9. Allow ECT sensor 1 to cool to ambient temperature.
10. Note the ambient temperature.
11. Connect ECT sensor 1 to its 2P connector, but do not install it.
12. Turn the ignition switch to ON (II).
13. Note the value of ECT SENSOR 1 quickly in the DATA LIST with the HDS.
14. Compare the value of ECT SENSOR 1 and the ambient temperature.

    Does the value of ECT SENSOR 1 differ 5.4 °F (3 °C) or more from the ambient temperature?

    YES–Replace ECT sensor 1 (see page 11-200), then go to step 27.

    NO–Intermittent failure, the system is OK at this time. Reinstall ECT sensor 1 (see page 11-200). 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 113 °F (45 °C) or less indicated?

    YES–Replace ECT sensor 1 (see page 11-200), 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 113 °F (45 °C) or less indicated?

    YES–Replace ECT sensor 2 (see page 11-200), then go to step 27.

    NO–Go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch to LOCK (0).
20. Drain the coolant (see page 10-6).
21. Remove ECT sensor 1 (see page 11-200) and ECT sensor 2 (see page 11-200).
22. Allow the sensors to cool to 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 page 10-6), then go to step 27.

    NO–Intermittent failure, the system is OK at this time. Reinstall ECT sensor 1 (see page 11-200) and ECT sensor 2 (see page 11-200). 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).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-293).
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.■

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 you begin check for poor connections or blockage at the intake air duct.

1. Turn the ignition switch to ON (II).
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 between 1,400—5,400 rpm
   - A/T in D, M/T in 3rd
   - Vehicle speed accelerated from 16—31 mph (25— 50 km/h) 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).
8. Replace the MAP sensor (see page 11-199).
9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-293).
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 1,400—5,400 rpm
    - A/T in D, M/T in 3rd
    - Vehicle speed accelerated from 16—31 mph (25— 50 km/h) 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 in 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 parts 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 more than 36.9 kPa (11.0 inHg, 277 mmHg), or 1.1 V held for more than for 5 seconds?

    YES–Go to step 7.

    NO–Go to step 4.

(cont'd)

DTC Troubleshooting (cont'd)

4. Clear the DTC with the HDS.
5. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - A/T in D, M/T in 5th
   - Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds
   - During the drive, decelerate (with throttle fully closed) for at least 2 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).
8. Replace the MAP sensor (see page 11-199).
9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-293).
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)
    - A/T in D, M/T in 5th
    - Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds
    - During the drive, decelerate (with throttle fully closed) for at least 2 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.
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 P1157: A/F Sensor (Sensor 1) AFS Circuit High Voltage

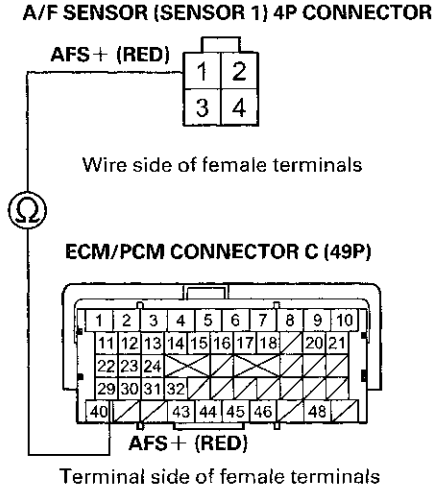
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait 1 minute.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P1157 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).
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM/PCM connector C (49P).
9. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 1 and ECM/PCM connector terminal C29.

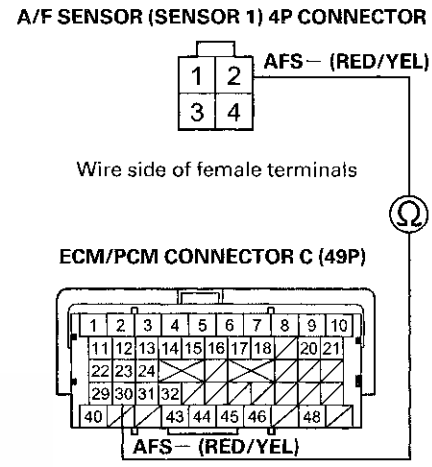


Is there continuity?

YES–Go to step 10.

NO–Repair open in the wire between the ECM/PCM (C29) and the A/F sensor (Sensor 1), then go to step 12.

10. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 2 and ECM/PCM connector terminal C30.



Is there continuity?

YES–Go to step 11.

NO–Repair open in the wire between the ECM/PCM (C30) and the A/F sensor (Sensor 1), then go to step 12.

11. Replace the A/F sensor (Sensor 1) (see page 11-197).
12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-293).
16. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1157 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. If the connector and terminal fits are OK, go to step 18.

    NO–Go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

17. Monitor the OBD STATUS for DTC P1157 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 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.

18. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).

19. Start the engine, and let it idle.

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

    Is DTC P1157 indicated?

    YES–If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 19. If the ECM/PCM was substituted, go to step 1.

    NO–Go to step 21.

21. Monitor the OBD STATUS for DTC P1157 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 11-204). 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, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 19. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P1172: A/F Sensor (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).

1. Turn the ignition switch to ON (II).
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 P1172 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 idling until a result comes on. If the screen indicates OUT OF CONDITION or NOT COMPLETED, go to step 3 and recheck.

5. Turn the ignition switch to LOCK (0).
6. Replace the A/F sensor (Sensor 1) (see page 11-197).
7. Turn the ignition switch to ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-293).
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 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 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 or NOT COMPLETED, 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).
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).
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch to ON (II).
6. Check the ELD in the DATA LIST with the HDS.

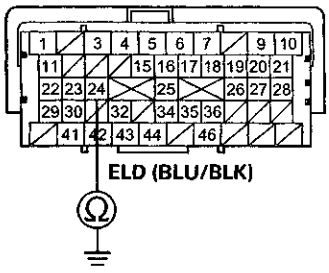
Is 72 A or more indicated?

YES–Go to step 7.

NO–Go to step 11.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).
10. 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–Repair short in the wire between the ECM/PCM (A24) and the ELD, then go to step 13.

NO–Go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

11. Turn the ignition switch to LOCK (0).
12. Replace the ELD (see page 11-202).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). 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).

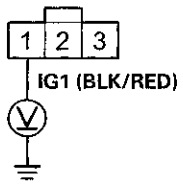
1. Turn the ignition switch to ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   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).
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage between ELD 3P connector terminal No. 1 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

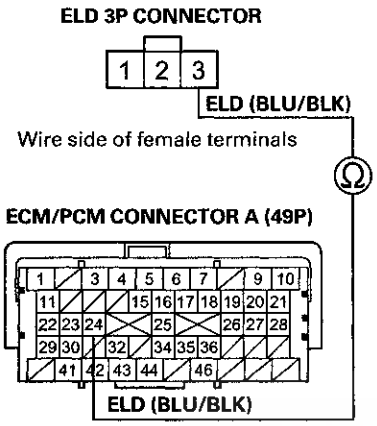
Is there battery voltage?

YES–Go to step 7.

NO–Check the No. 7 ACG (15 A) fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 7 ACG (15 A) fuse and the ELD, then go to step 13.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

10. Check for continuity between ELD 3P connector terminal No. 3 and ECM/PCM connector terminal A24.

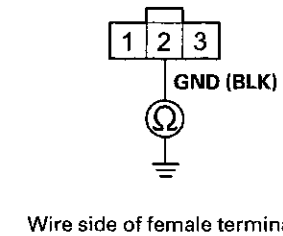


Is there continuity?

YES–Go to step 11.

NO–Repair open in the wire between the ECM/PCM (A24) and the ELD, then go to step 13.

11. Check for continuity between ELD 3P connector terminal No. 2 and body ground.



Is there continuity?

YES–Go to step 12.

NO–Repair open in the wire between the ELD and G301 (see page 22-28), then go to step 13.

12. Replace the ELD (see page 11-202).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-293).
17. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1298 indicated?

    YES–Go to step 18.

    NO–Troubleshooting is complete. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■
18. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
19. 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC Troubleshooting (cont'd)

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).
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) for 1 minute.
6. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P1549 indicated?

   YES–Replace the alternator (see page 4-32), 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).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-293).
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) for 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).
2. Clear the DTC with HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - 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 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 22-90).■
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 starter subharness.

   Is the harness OK?

   YES–Replace the alternator (see page 4-32), 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.

9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-293).
12. Start the engine.
13. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
14. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 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. Check the alternator mounting surface for corrosion.

   Is the mounting surface corroded?

   YES–Remove the alternator (see page 4-32). Clean all mounting surfaces, reinstall the alternator, then go to step 18.

   NO–Go to step 3.

3. Turn the ignition switch to ON (II).
4. Clear the DTC with the HDS.
5. Start the engine.
6. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam
7. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
8. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P16BC indicated?

   YES–Go to step 9.

   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator.■

9. Turn the ignition switch to LOCK (0).
10. Disconnect the alternator 4P connector.
11. Turn the ignition switch to ON (II).

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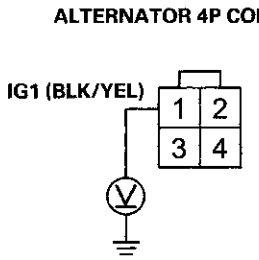
DTC Troubleshooting (cont'd)

12. Measure the voltage between alternator 4P connector terminal No. 1 and body ground.



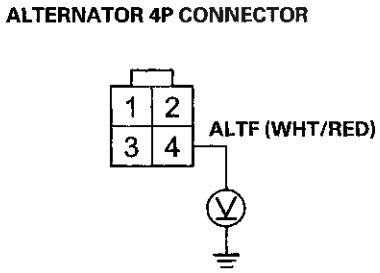
Wire side of female terminals

Is there battery voltage?

YES–Go to step 13.

NO–Repair open in the wire between the alternator (IG1 line) and the No. 7 ACG (15 A) fuse in the driver's under-dash fuse/relay box, then go to step 18.

13. Measure the voltage between alternator 4P connector terminal No. 4 and body ground.



Wire side of female terminals

Is there about 5 V?

YES–Replace the alternator (see page 4-32), then go to step 18.

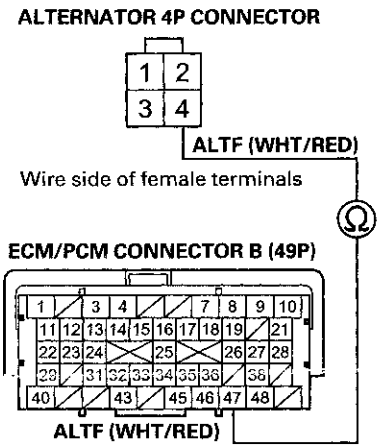
NO–Go to step 14.

14. Turn the ignition switch to LOCK (0).

15. Jump the SCS line with the HDS.

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

17. Check for continuity between alternator 4P connector terminal No. 4 and ECM/PCM connector terminal B47.



Terminal side of female terminals

Is there continuity?

YES–Go to step 27.

NO–Repair open in the wire between the ECM/PCM (B47) and the alternator, then go to step 18.

18. Turn the ignition switch to LOCK (0).
19. Reconnect all connectors.
20. Turn the ignition switch to ON (II).
21. Reset the ECM/PCM with the HDS.
22. Do the ECM/PCM idle learn procedure (see page 11-293).
23. Start the engine.
24. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
25. Hold the engine speed 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
26. 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.■
27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
29. Start the engine.
30. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
31. Hold the engine speed 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.
32. 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 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC Troubleshooting (cont'd)

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 connectors or terminals, then go to step 27.

2. Turn the ignition switch to ON (II).
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 113 °F (45 °C) indicated?

   YES–Replace ECT sensor 2 (see page 11-200), then go to step 27.

   NO–Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Drain the coolant (see page 10-6).
8. Remove ECT sensor 2 (see page 11-200).
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).
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 11-200), then go to step 27.

    NO–Intermittent failure, the system is OK at this time. Reinstall ECT sensor 2 (see page 11-200). 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 113 °F (45 °C) or less indicated?

    YES–Replace ECT sensor 1 (see page 11-200), 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 113 °F (45 °C) or less indicated?

    YES–Replace ECT sensor 2 (see page 11-200), then go to step 27.

    NO–Go to step 19.

19. Turn the ignition switch to LOCK (0).
20. Drain the coolant (see page 10-6).
21. Remove ECT sensor 1 (see page 11-200) and ECT sensor 2 (see page 11-200).
22. Allow the sensors to cool to 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 page 10-6), then go to step 27.

    NO–Intermittent failure, the system is OK at this time. Reinstall ECT sensor 1 (see page 11-200) and ECT sensor 2 (see page 11-200). 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).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-293).
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).
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).
4. Disconnect the ECT sensor 2 2P connector.
5. Turn the ignition switch to ON (II).
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.

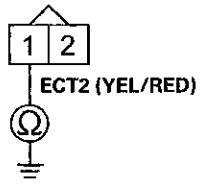
   NO–Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

(cont'd)

DTC Troubleshooting (cont'd)

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 (A34), then go to step 13.

NO–Go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Replace ECT sensor 2 (see page 11-200).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-293).
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.■

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204). 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).

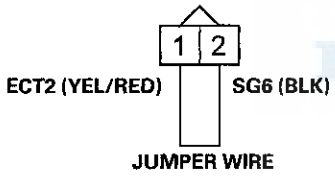
1. Turn the ignition switch to ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   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).
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

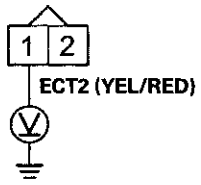
6. Turn the ignition switch to ON (II).
7. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   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).
9. Remove the jumper wire from the ECT sensor 2 2P connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

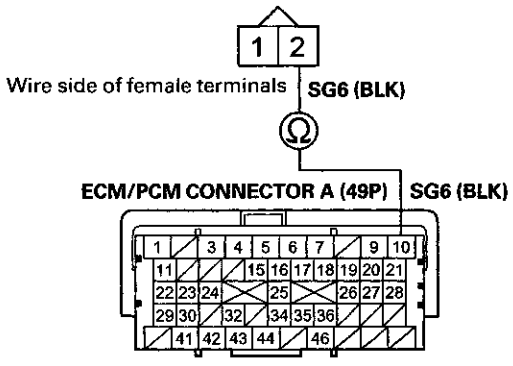
Is there about 5 V?

YES–Go to step 12.

NO–Go to step 16.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector A (49P).
15. Check for continuity between ECT sensor 2 2P connector terminal No. 2 and ECM/PCM connector terminal A10.

ECT SENSOR 2 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

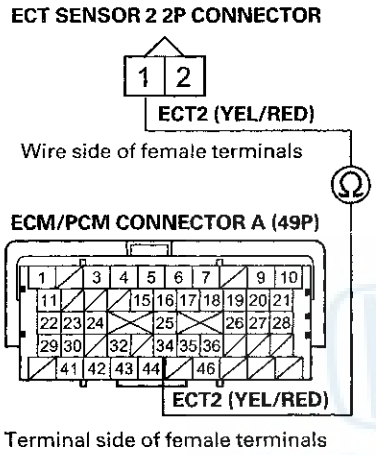
YES–Go to step 27.

NO–Repair open in the wire between the ECM/PCM (A10) and ECT sensor 2, then go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector A (49P).
19. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and ECM/PCM connector terminal A34.



Is there continuity?

YES–Go to step 27.

NO–Repair open in the wire between the ECM/PCM (A34) and ECT sensor 2, then go to step 22.

20. Turn the ignition switch to LOCK (0).
21. Replace ECT sensor 2 (see page 11-200).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P2195: A/F Sensor (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).
- 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, troubleshoot them first, then recheck for DTC P2195.

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 11-199) 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).
4. Clear the DTC with the HDS.
5. 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.
6. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P2195 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).
8. Reinstall the A/F sensor (Sensor 1) (see page 11-197).
9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-293).
12. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2195 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 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 indicated NOT COMPLETED, keep idling until a result comes on.

14. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
15. 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.
16. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2195 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)

DTC Troubleshooting (cont'd)

17. Monitor the OBD STATUS for DTC P2195 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 11-204). 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), 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 7.

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
   - REL TP SENSOR between 16 and 28 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. Check for something that may have clogged the intake air system. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Check the intake air system for clogging or 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).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure. (see page 11-293)
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
    - REL TP SENSOR between 16 and 28 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 11-203), 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
    - REL TP SENSOR between 16 and 28 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 11-204). 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.

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).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 43 kPa (12.7 inHg, 323 mmHg), or 1.3 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 11-203), 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 11-204). 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).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (47.2 inHg, 1,200 mmHg), or 4.5 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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P2238: A/F Sensor (Sensor 1) AFS+ 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).

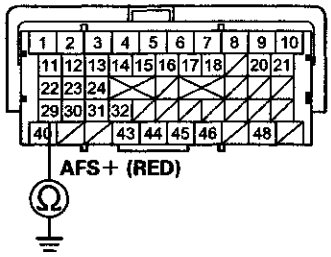
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P2238 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 A/F sensor (Sensor 1) and the ECM/PCM.■
4. Turn the ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the A/F sensor (Sensor 1) 4P connector.
7. Disconnect ECM/PCM connector C (49P).
8. Check for continuity between ECM/PCM connector terminal C29 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

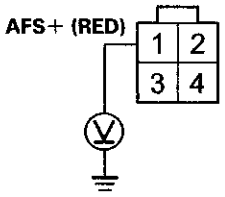
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C29) and the A/F sensor (Sensor 1), then go to step 12.

NO–Go to step 9.

9. Reconnect ECM/PCM connector C (49P).
10. Turn the ignition switch to ON (II).
11. Measure the voltage between A/F sensor (Sensor 1) 4P connector terminal No.1 and body ground.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there about 2.2 V?

YES–Replace the A/F sensor (Sensor 1) (see page 11-197), then go to step 12.

NO–Go to step 18.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-293).
16. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2238 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. If the connector and terminal fits are OK, go to step 18.

    NO–Go to step 17.
17. Monitor the OBD STATUS for DTC P2238 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 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.

(cont'd)

DTC Troubleshooting (cont'd)

18. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
19. Start the engine, and let it idle.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2238 indicated?

    YES–If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 19. If the ECM/PCM was substituted, go to step 1.

    NO–Go to step 21.
21. Monitor the OBD STATUS for DTC P2238 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 11-204). 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, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 19. 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: A/F Sensor (Sensor 1) AFS- Circuit Low Voltage

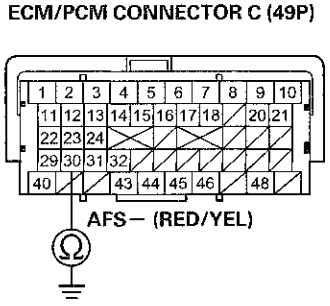
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
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.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P2252 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).
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM/PCM connector C (49P).
9. Check for continuity between ECM/PCM connector terminal C30 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C30) and the A/F sensor (Sensor 1), then go to step 11.

NO–Go to step 10.

10. Replace the A/F sensor (Sensor 1) (see page 11-197).

11. Reconnect all connectors.
12. Turn the ignition switch to ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see page 11-293).
15. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2252 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. If the connector and terminal fits are OK, go to step 17.

    NO–Go to step 16.
16. Monitor the OBD STATUS for DTC P2252 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 15, 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.
17. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
18. Start the engine, and let it idle.
19. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2252 indicated?

    YES–Go to step 1 and recheck.

    NO–Go to step 20.
20. Monitor the OBD STATUS for DTC P2252 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. If any other Pending or Confirmed DTCs was indicated in step 19, go to the indicated DTC's troubleshooting.■

    NO–If the screen indicates FAILED, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 18. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

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).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P2A00: A/F Sensor (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).
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 throttle fully closed) for 5 seconds
5. Monitor the OBD STATUS for DTC P2A00 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 or NOT COMPLETED, go to step 3 and recheck.

6. Turn the ignition switch to LOCK (0).
7. Replace the A/F sensor (Sensor 1) (see page 11-197).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-293).
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 throttle fully closed) for 5 seconds
12. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2A00 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 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 or NOT COMPLETED, 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).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC Troubleshooting (cont'd)

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).
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 11-167).■

   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?

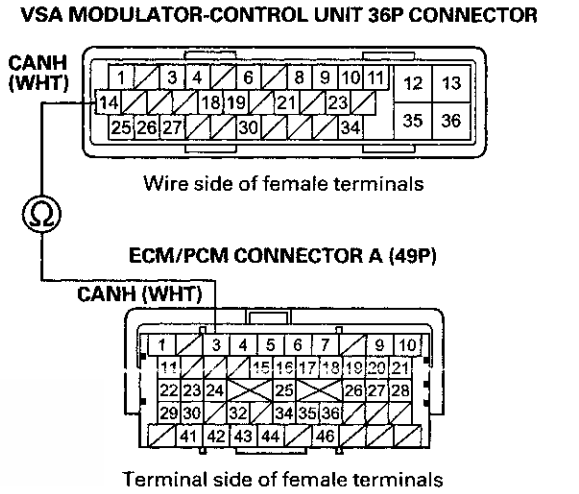
   YES–Go to step 5.

   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 system symptom troubleshooting for ABS indicator, brake system indicator, and VSA indicator do not go off (see page 19-128).■
6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect the VSA modulator-control unit 36P connector.
9. Disconnect ECM/PCM connector A (49P).
10. Check for continuity between ECM/PCM connector terminal A3 and VSA modulator-control unit 36P connector terminal No. 14.

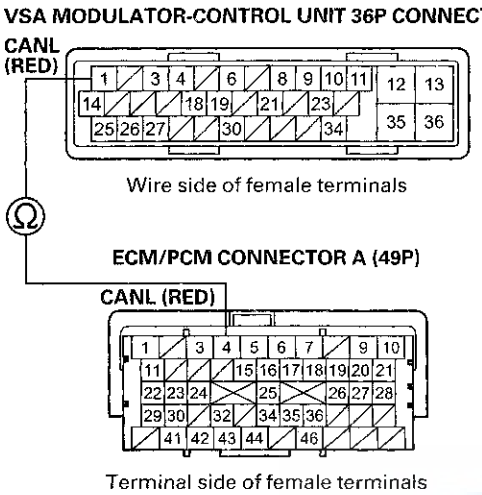


Is there continuity?

YES–Go to step 11.

NO–Repair open in the wire between the ECM/PCM (A3) and the VSA modulator-control unit, then go to step 12.

11. Check for continuity between ECM/PCM connector terminal A4 and VSA modulator-control unit 36P connector terminal No. 1.



Is there continuity?

YES–Update the VSA modulator-control unit if it does not have the latest software (see page 19-135), or substitute a known-good VSA modulator-control unit (see page 19-136), then go to step 12 and recheck. If DTC U0122 is not indicated after substitution, replace the original VSA modulator-control unit (see page 19-136), then go to step 12.

NO–Repair open in the wire between the ECM/PCM (A4) and the VSA modulator-control unit, then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-293).
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.■

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).
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.

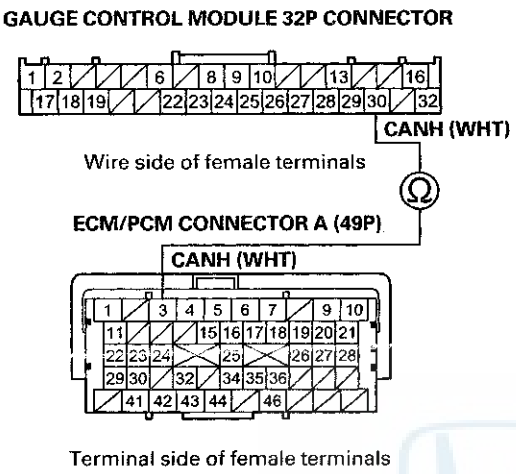
NO–Do the gauge control module input test (see page 22-347).■

5. Turn the ignition switch to LOCK (0).
6. Jump the SCS line with the HDS.
7. Remove the gauge control module (see page 22-351).
8. Disconnect the gauge control module 32P connector.
9. Disconnect ECM/PCM connector A (49P).

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between ECM/PCM connector terminal A3 and gauge control module 32P connector terminal No.30.

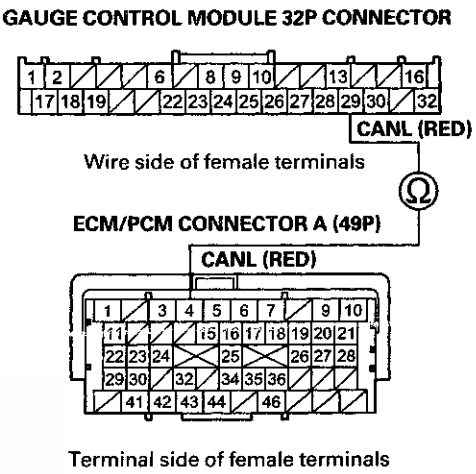


Is there continuity?

YES–Go to step 11.

NO–Repair open in the wire between the ECM/PCM (A3) and the gauge control module, then go to step 12.

11. Check for continuity between ECM/PCM connector terminal A4 and gauge control module 32P connector terminal No.29.



Is there continuity?

YES–Substitute a known-good gauge control module (see page 22-351), then go to step 12 and recheck. If DTC U0155 is not indicated after substitution, replace the original gauge control module (see page 22-351), then go to step 12.

NO–Repair open in the wire between the ECM/PCM (A4) and the gauge control module, then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-293).
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.■

DTC U0300: PGM-FI System and A/T System Program Version Mismatch (A/T model)

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Do not turn the ignition switch to ACC (I) or LOCK (0) while updating the PCM. If you do, the PCM will be damaged.

1. Do the PCM update procedure (PGM-FI system and A/T system) (see page 11-203).
2. Check for Pending or Confirmed DTCs with the HDS.

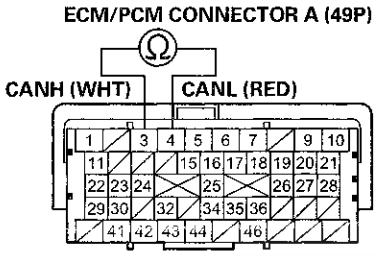
   Is DTC U0300 indicated?

   YES–Replace the original PCM (see page 11-204).■

   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).
2. Jump the SCS line with the HDS.
3. Disconnect ECM/PCM connector A (49P).
4. Measure the resistance between ECM/PCM connector terminals A3 and A4.



Terminal side of female terminals

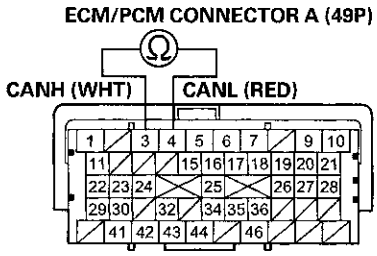
Is there about 88—111 Ω?

YES–Go to step 28.

NO–Go to step 5.

5. Disconnect these connectors:
   - Gauge control module 32P (see page 22-351).
   - VSA modulator-control unit 36P (see page 19-136).
   - Yaw rate-lateral acceleration sensor 5P (see page 19-133).
   - SRS unit A (39P) (see page 24-228).
   - TPMS control unit (20P) (see page 18-83).
   - Navigation unit B (32P) (if equipped) (see page 23-238).

6. Check for continuity between ECM/PCM connector terminals A3 and A4.



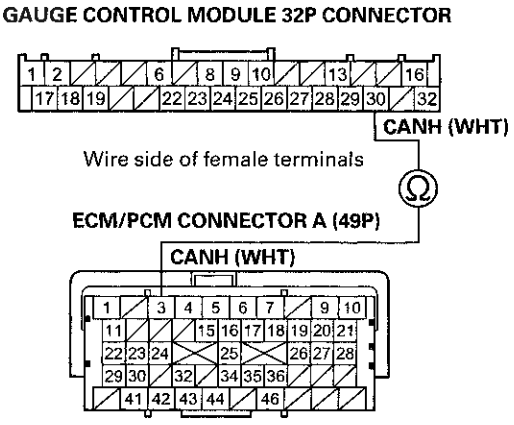
Terminal side of female terminals

Is there continuity?

YES–Repair short in the wires between ECM/PCM connector terminals A3 and A4.■

NO–Go to step 7.

7. Check for continuity between ECM/PCM connector terminal A3 and gauge control module 32P connector terminal No. 30.



Terminal side of female terminals

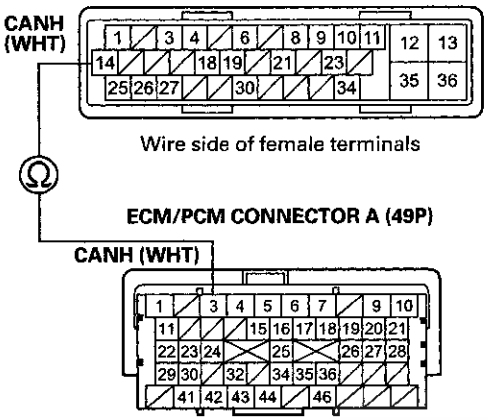
Is there continuity?

YES–Go to step 8.

NO–Repair open in the wire between the ECM/PCM (A3) and the gauge control module.■

8. Check for continuity between ECM/PCM connector terminal A3 and VSA modulator-control unit 36P connector terminal No. 14.

VSA MODULATOR-CONTROL UNIT 36P CONNECTOR



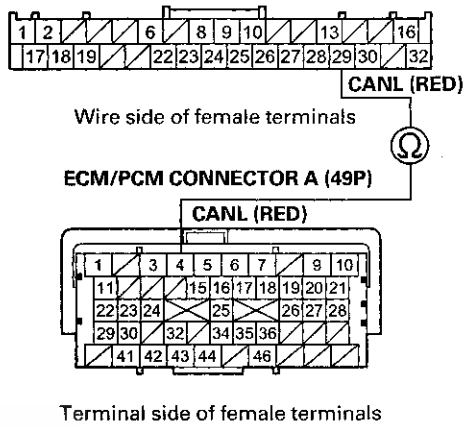
Is there continuity?

YES–Go to step 9.

NO–Repair open in the wire between the ECM/PCM (A3) and the VSA modulator-control unit.■

9. Check for continuity between ECM/PCM connector terminal A4 and gauge control module 32P connector terminal No. 29.

GAUGE CONTROL MODULE 32P CONNECTOR



Is there continuity?

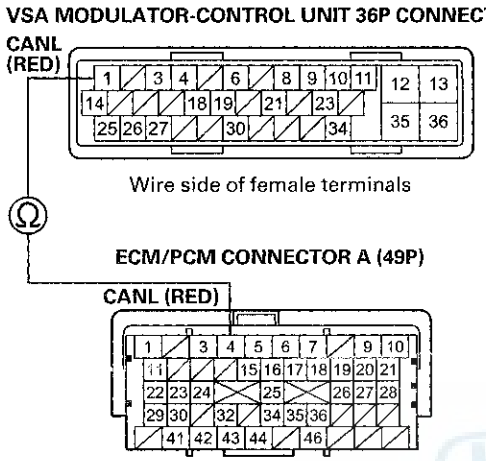
YES–Go to step 10.

NO–Repair open in the wire between the ECM/PCM (A4) and the gauge control module.■

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

10. Check for continuity between ECM/PCM connector terminal A4 and VSA modulator-control unit 36P connector terminal No. 1.



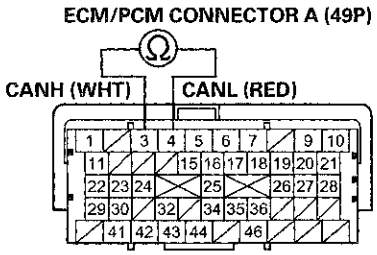
Is there continuity?

YES–Go to step 11.

NO–Repair open in the wire between the ECM/PCM (A4) and the VSA modulator-control unit.■

11. Reconnect the gauge control module 32P connector.

12. Measure the resistance between ECM/PCM connector terminals A3 and A4.



Is there about 2.34–2.86 kΩ?

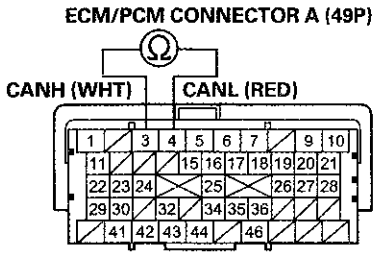
YES–Go to step 13.

NO–Substitute a known-good gauge control module (see page 22-351), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original gauge control module (see page 22-351).■

13. Disconnect the gauge control module 32P connector.

14. Reconnect the VSA modulator-control unit 36P connector.

15. Measure the resistance between ECM/PCM connector terminals A3 and A4.



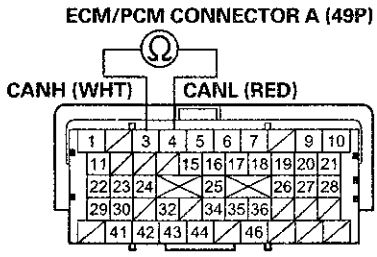
Terminal side of female terminals

Is there about 108—132 Ω?

YES–Go to step 16.

NO–Substitute a known-good VSA modulator-control unit (see page 19-136), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original VSA modulator-control unit (see page 19-136).■

16. Disconnect the VSA modulator-control unit 36P connector.
17. Reconnect the yaw rate-lateral acceleration sensor 5P connector.
18. Measure the resistance between ECM/PCM connector terminals A3 and A4.



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

YES–Go to step 19.

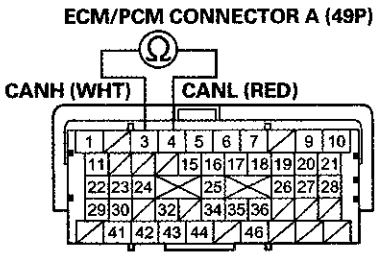
NO–Substitute a known-good yaw rate-lateral acceleration sensor (see page 19-133), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original yaw rate-lateral acceleration sensor (see page 19-133).■

19. Disconnect the yaw-rate lateral acceleration sensor 5P connector.
20. Reconnect SRS unit connector A (39P).

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

21. Measure the resistance between ECM/PCM connector terminals A3 and A4.



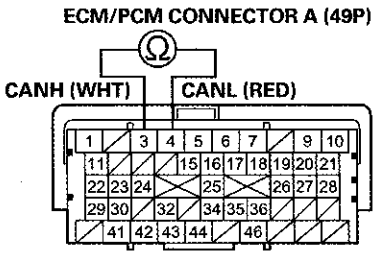
Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

YES–Go to step 22.

NO–Substitute a known-good SRS unit (see page 24-228), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original SRS unit (see page 24-228).■

22. Disconnect SRS unit connector A (39P).
23. Reconnect the TPMS control unit 20P connector.
24. Measure the resistance between ECM/PCM connector terminals A3 and A4 .



Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

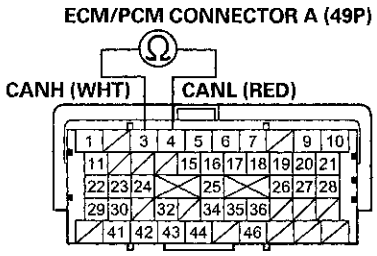
YES–

- With navigation: Go to step 25.
- Without navigation: Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

NO–Substitute a known-good TPMS control unit (see page 18-83), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original TPMS control unit (see page 18-83).■

25. Disconnect the TPMS control unit 20P connector.
26. Reconnect navigation unit connector B (32P).

27. Measure the resistance between ECM/PCM connector terminals A3 and A4.



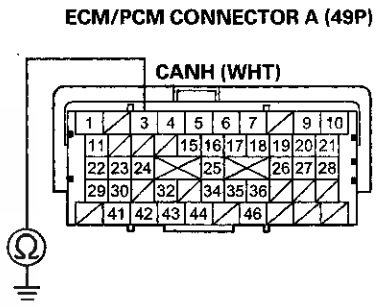
Terminal side of female terminals

Is there about 2.34—2.86 kΩ?

YES–Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

NO–Substitute a known-good navigation unit (see page 23-238), and reconnect ECM/PCM connector A (49P). If the HDS identifies the vehicle, replace the original navigation unit (see page 23-238).■

28. Disconnect these connectors:
    - Gauge control module 32P (see page 22-351).
    - VSA modulator-control unit 36P (see page 19-136).
    - Yaw rate-lateral acceleration sensor 5P (see page 19-133).
    - SRS unit A (39P) (see page 24-228).
    - TPMS control unit (20P) (see page 18-83).
    - Navigation unit B (32P) (if equipped) (see page 23-238).
29. Check for continuity between ECM/PCM connector terminal A3 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the ECM/PCM (A3) and the gauge control module, the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, the SRS unit, the TPMS control unit, the navigation unit, or the DLC.■

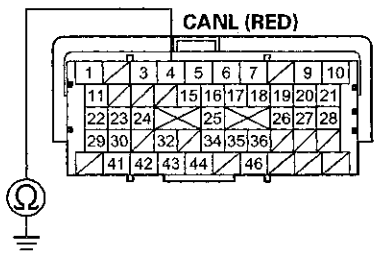
NO–Go to step 30.

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

30. Check for continuity between ECM/PCM connector terminal A4 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 (A4) and the gauge control module, the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, the SRS unit, the TPMS control unit, the navigation unit, or the DLC.■

NO–Go to step 31.

31. Reconnect all connectors.
32. Connect the HDS to the DLC (see page 11-3).
33. Disconnect the gauge control module 32P connector.
34. Turn the ignition switch to ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES–Replace the gauge control module (see page 22-351).■

NO–Go to step 35.

35. Turn the ignition switch to LOCK (0).
36. Reconnect the gauge control module 32P connector.
37. Disconnect the VSA modulator-control unit 36P connector.
38. Turn the ignition switch to ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES–Replace the VSA modulator-control unit (see page 19-136).■

NO–Go to step 39.

39. Turn the ignition switch to LOCK (0).
40. Reconnect the VSA modulator-control unit 36P connector.
41. Disconnect the yaw rate-lateral acceleration sensor 5P connector.
42. Turn the ignition switch to ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES–Replace the yaw rate-lateral acceleration sensor (see page 19-133).■

NO–Go to step 43.

43. Turn the ignition switch to LOCK (0).
44. Reconnect the yaw rate-lateral acceleration sensor 5P connector.
45. Disconnect SRS unit connector A (39P).
46. Turn the ignition switch to ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES–Replace the SRS unit (see page 24-228).■

NO–Go to step 47.

47. Turn the ignition switch to LOCK (0).
48. Reconnect SRS unit connector A (39P).
49. Disconnect the TPMS control unit 20P connector.
50. Turn the ignition switch to ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES–Replace the TPMS control unit (see page 18-83).■

NO–

- With navigation: Go to step 51.
- Without navigation: Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

51. Turn the ignition switch to LOCK (0).

52. Reconnect the TPMS control unit 20P connector.

53. Disconnect navigation unit connector B (32P).

54. Turn the ignition switch to ON (II), and read the HDS.

Does the HDS identify the vehicle?

YES–Replace the navigation unit (see page 23-238).■

NO–Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

MIL Circuit Troubleshooting

1. Turn the ignition switch to ON (II).
2. Do the gauge self-diagnostic function (see page 22-332).

   Does the MIL indicator flash?

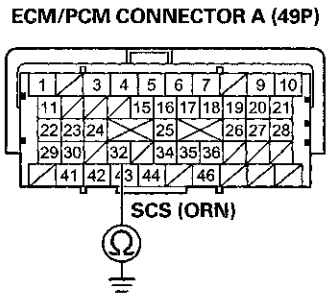
   YES–Go to step 3.

   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 22-351).■
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 11-203), 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 11-204).■
5. Turn the ignition switch to LOCK (0).
6. Disconnect ECM/PCM connector A (49P), then disconnect the HDS.
7. Check for continuity between ECM/PCM connector terminal A32 and body ground.



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 11-203), 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 11-204).■

DLC Circuit Troubleshooting

NOTE: If you suspect the HDS or the HDS DLC cable may be the source of the communication probrem, verify that they are working properly by connecting them to a known-good, like vehicle and system, and checking for a communication preblem.

1. Turn the ignition switch to LOCK (0).
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), and read the HDS.

   Does the HDS identify the vehicle?

   YES–Go to step 4.

   NO–Go to step 21.
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 TPMS, go to step 9.
   - If the HDS does not communicate with the IMMOBI (immobilizer) system, go to step 11.
   - If the HDS does not communicate with the BODY ELECTRICAL system, go to step 13.
5. Turn the ignition switch to LOCK (0).
6. Turn the ignition switch to ON (II), and watch the SRS indicator.

   Does the SRS indicator come on and go off?

   YES–Go to step 15.

   NO–Go to the SRS general troubleshooting information (see page 24-36).■
7. Turn the ignition switch to LOCK (0).
8. Turn the ignition switch to ON (II), and watch the VSA indicator.

   Does the VSA indicator come on and go off?

   YES–Go to step 15.

   NO–Go to the VSA system symptom troubleshooting for ABS indicator, brake system indicator, VSA indicator do not go off (see page 19-129).
9. Turn the ignition switch to LOCK (0).
10. 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 15.

    NO–Go to the TPMS symptom troubleshooting for TPMS indicator does not go off, and no DTCs are stored (see page 18-80).
11. Turn the ignition switch to LOCK (0).
12. Turn the ignition switch to ON (II), and watch the immobilizer indicator.

    Does the immobilizer indicator stay on or flash?

    YES–Go to the immobilizer system's troubleshooting (see page 22-429).■

    NO–Go to step 15.
13. Do the gauge self-diagnostic function (see page 22-332).
14. Check the gauge display.

    Is Error 2 indicated?

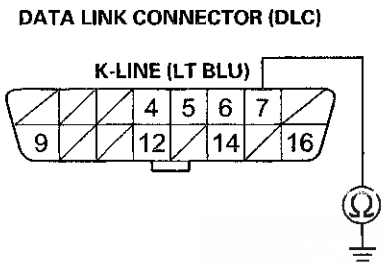
    YES–Check for B-CAN system DTCs (see page 22-109).■

    NO–Go to step 15.

(cont'd)

DLC Circuit Troubleshooting (cont'd)

15. Turn the ignition switch to LOCK (0), then do the battery terminal disconnection precedure (see page 22-91), and wait at least 3 minutes before starting work.
16. Disconnect the HDS from the DLC.
17. Check for continuity between DLC terminal No. 7 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Go to step 18.

NO–Go to step 19.

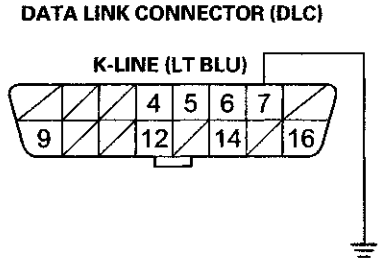
18. Continue to check for continuity between DLC terminal No. 7 and body ground while disconnecting these connectors, one at a time:
    - SRS unit connector A (39P)
    - VSA modulator-control unit 36P connector
    - TPMS control unit 20P connector
    - Immobilizer-keyless control unit 7P connector
    - Audio unit connector A (24P)
    - Driver's under-dash fuse/relay box connector Q (20P)

    Does continuity go away when one of the above connectors is disconnected?

    YES–Replace the part that caused an open when it was disconnected.■

    NO–Repair short in the wire between the DLC (K-line) and the VSA modulator-control unit, the SRS unit, the TPMS control unit, the immobilizer-keyless control unit, the audio unit, or the driver's under-dash fuse/relay box.■

19. Connect DLC terminal No. 7 to body ground with a jumper wire.



Terminal side of female terminals

20. Check for continuity between body ground and these connector terminals:

Connector	Terminal
SRS unit A (39P)	No. 18 (LT BLU)
VSA modulator-control unit 36P	No. 3 (LT BLU)
TPMS control unit 20P	No. 7 (LT BLU)
Immobilizer-keyless control unit 7P	No. 5 (LT BLU)
Audio unit A (24P)	No. 3 (LT BLU)
Driver's under-dash fuse/relay box Q (20P)	No. 16 (LT BLU)

Is there continuity between 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) and the appropriate connector.■

21. Check for B-CAN system DTCs without the HDS (see page 22-138).

    Is DTC U0029 and/or U0100 indicated?

    YES–Go to step 32.

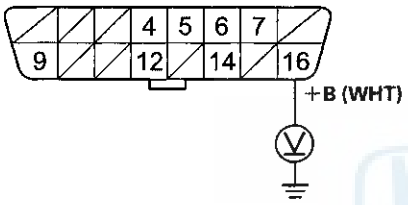
    NO–Go to step 22.

22. Turn the ignition switch to LOCK (0).

23. Disconnect the HDS from the DLC.

24. Measure the voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

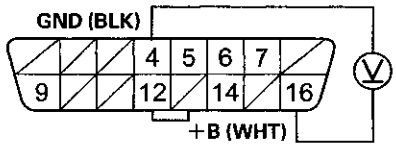
Is there battery voltage?

YES–Go to step 25.

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.■

25. 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 26.

NO–Repair open in the wire between DLC terminal No. 4 and body ground (G502) (see page 22-34).■

26. Connect the HDS to the DLC (see page 11-3).

27. Jump the SCS line with the HDS.

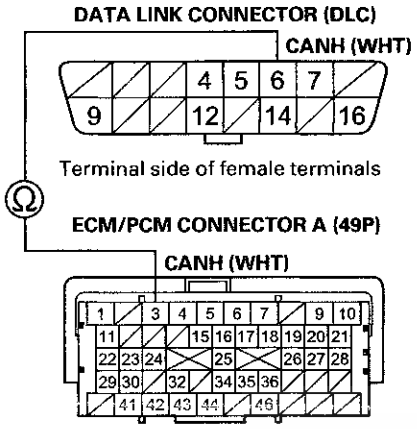
28. Disconnect ECM/PCM connector A (49P).

29. Disconnect the HDS from the DLC.

(cont'd)

DLC Circuit Troubleshooting (cont'd)

30. Check for continuity between ECM/PCM connector terminal A3 and DLC terminal No.6.

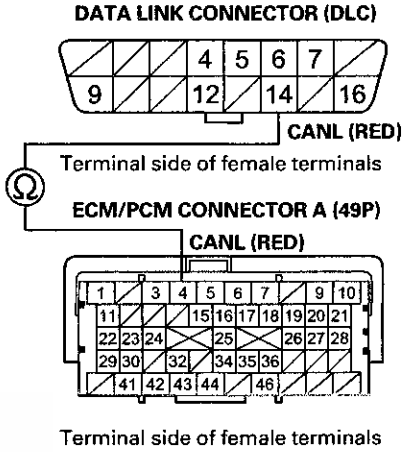


Is there continuity?

YES–Go to step 31.

NO–Repair open in the wire between the ECM/PCM (A3) and DLC terminal No. 6.■

31. Check for continuity between ECM/PCM connector terminal A4 and DLC termilal No.14.



Is there continuity?

YES–Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

NO–Repair open in the wire between the ECM/PCM (A4) and DLC terminal No. 14.■

32. Try to start the engine.

Does the engine start and idle smoothly?

YES–Go to the F-CAN circuit troubleshooting (see page 11-172).■

NO–Go to step 33.

33. Turn the ignition switch to LOCK (0).

34. 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. If the wire is OK, go to step 35.

NO–Repair short in the wire between the No. 3-1 IG MAIN (50 A) fuse and the ignition switch. Also replace the No. 3 IG MAIN (50 A) fuse.■

35. Inspect the No. 17 FI MAIN (15 A) fuse in the under-hood fuse/relay box.

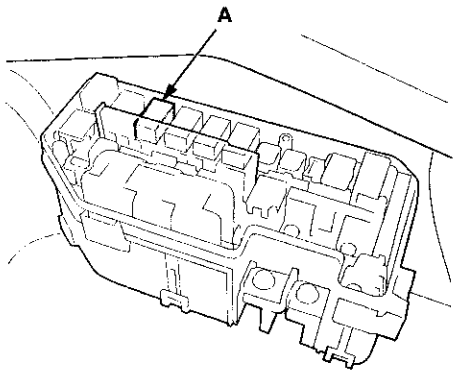
Is the fuse OK?

YES–Go to step 42.

NO–Go to step 36.

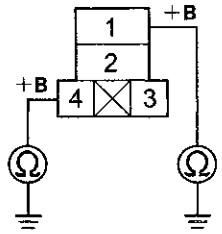
36. Remove the blown No. 17 FI MAIN (15 A) fuse from the under-hood fuse/relay box.

37. Remove PGM-FI main relay 1 (A) from the under-hood fuse/relay box.



38. 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 22-85). Also replace the No. 17 FI MAIN (15 A) fuse.■

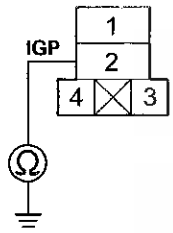
NO–Go to step 39.

(cont'd)

DLC Circuit Troubleshooting (cont'd)

39. 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 (FUEL PUMP)
    - ECM/PCM connector A (49P)
    - Each injector 2P connector
    - Camshaft position (CMP) sensor B 3P connector
    - Crankshaft position (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

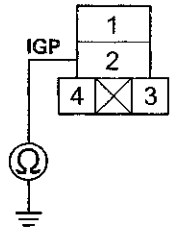
Does continuity go away when one of the above parts or connectors is disconnected?

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 11-203), 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 11-204). Also replace the No. 17 FI MAIN (15 A) fuse.■

NO–Go to step 40.

40. Disconnect the connectors from these components:
    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM/PCM connector A (49P)
    - Injectors
    - Camshaft position (CMP) sensor B
    - MAF sensor/IAT sensor
    - Crankshaft position (CKP) sensor
    - Electronic throttle control system (ETCS) control relay
41. 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.■

42. Inspect the No. 9 FUEL PUMP (20 A) fuse in the driver's under-dash fuse/relay box.

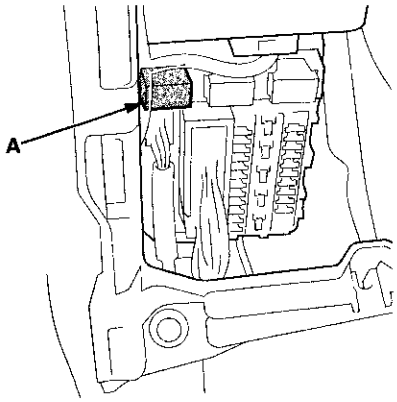
Is the fuse OK?

YES–Go to step 54.

NO–Go to step 43.

43. Remove the blown No. 9 FUEL PUMP (20 A) fuse from the driver's under-dash fuse/relay box.

44. Remove PGM-FI main relay 2 (FUEL PUMP) (A) from the driver's under-dash fuse/relay box.



45. Test PGM-FI main relay 2 (FUEL PUMP) (see page 22-93).

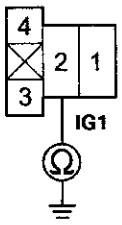
Is the relay OK?

YES–Go to step 46.

NO–Replace PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 9 FUEL PUMP (20 A) fuse.■

46. Check for continuity between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES–Go to step 47.

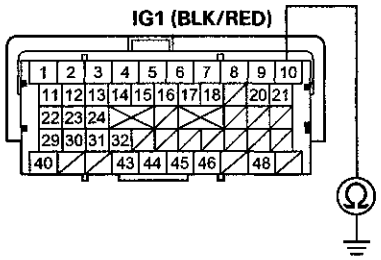
NO–Go to step 50.

47. Jump the SCS line with the HDS.

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

49. 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 No. 9 FUEL PUMP (20 A) fuse and the ECM/PCM (C10), between the No. 9 FUEL PUMP (20 A) fuse and PGM-FI main relay 2 (FUEL PUMP), 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.■

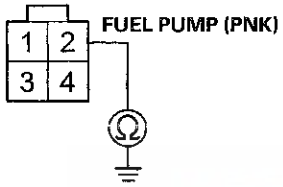
NO–Replace the No. 9 FUEL PUMP (20 A) fuse, and update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-204).■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

50. Remove the rear seat cushion (see page 20-241).
51. Remove the access panel from the floor (see page 11-320).
52. Disconnect the fuel pump 4P connector.
53. Check for continuity between fuel pump 4P connector terminal No. 2 and body ground.

FUEL PUMP 4P CONNECTOR



Wire side of female terminals

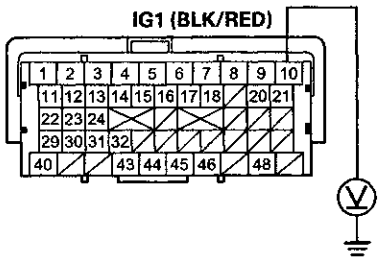
Is there continuity?

YES–Repair short in the wire between the fuel pump and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 9 FUEL PUMP (20 A) fuse.■

NO–Check the fuel pump, and replace it if necessary (see page 11-324). Also replace the No. 9 FUEL PUMP (20 A) fuse.■

54. Jump the SCS line with the HDS.
55. Disconnect ECM/PCM connectors A (49P) and C (49P).
56. Turn the ignition switch to ON (II).
57. Measure the voltage between ECM/PCM connector terminal C10 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

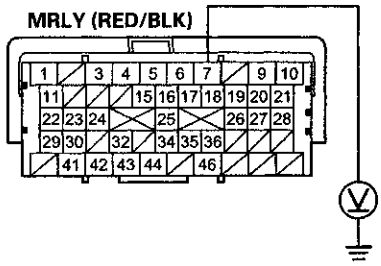
Is there battery voltage?

YES–Go to step 58.

NO–Repair open in the wire between the No. 9 FUEL PUMP (20 A) fuse and the ECM/PCM (C10).■

58. Measure the voltage between ECM/PCM connector terminal A7 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

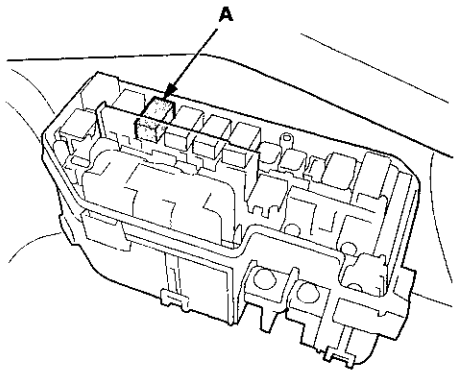
Is there battery voltage?

YES–Go to step 63.

NO–Go to step 59.

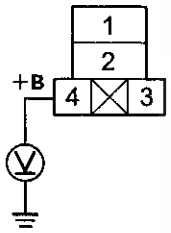
59. Turn the ignition switch to LOCK (0).

60. Remove PGM-FI main relay 1 (A) from the under-hood fuse/relay box.



61. 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

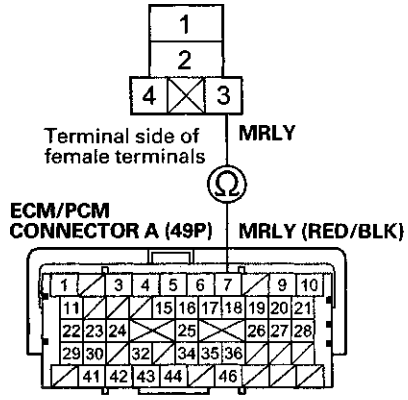
Is there battery voltage?

YES–Go to step 62.

NO–Replace the under-hood fuse/relay box (see page 22-85).■

62. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 3 and ECM/PCM connector terminal A7.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

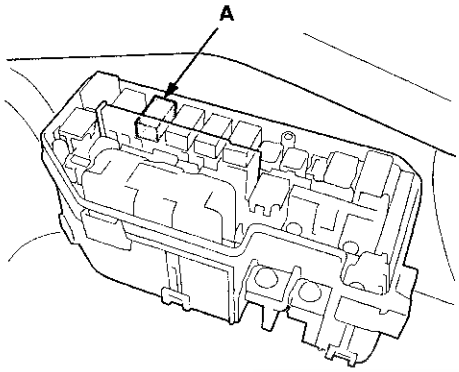
YES–Test PGM-FI main relay 1 (see page 22-93). If the relay is OK, update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away and the ECM/PCM was updated, troubleshooting is complete. If the symptom/indication goes away and the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-204).■

NO–Repair open in the wire between the ECM/PCM (A7) and PGM-FI main relay 1.■

(cont'd)

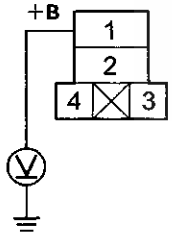
DLC Circuit Troubleshooting (cont'd)

63. Turn the ignition switch to LOCK (0).
64. Remove PGM-FI main relay 1 (A) from the under-hood fuse/relay box.



65. 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

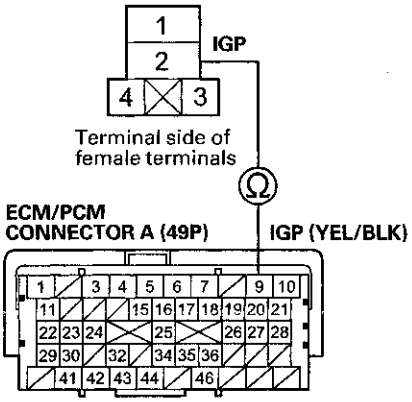
Is there battery voltage?

YES–Go to step 66.

NO–Replace the under-hood fuse/relay box (see page 22-85).■

66. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and ECM/PCM connector terminal A9.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES–Go to step 67.

NO–Repair open in the wire between the ECM/PCM (A9) and PGM-FI main relay 1.■

67. Test PGM-FI main relay 1 (see page 22-93).

Is PGM-FI main relay 1 OK?

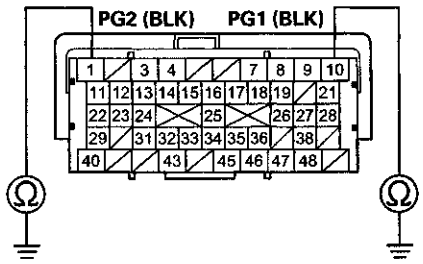
YES–Go to step 68.

NO–Replace PGM-FI main relay 1.■

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

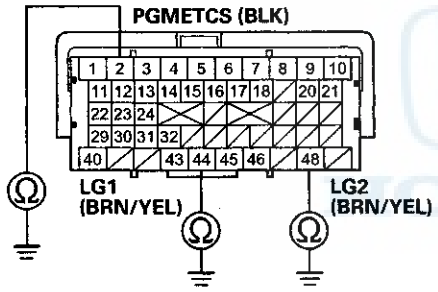
69. Check for continuity between body ground and ECM/PCM connector terminals B1, B10, C2, C44, and C48 individually.

ECM/PCM CONNECTOR B (49P)



Terminal side of female terminals

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

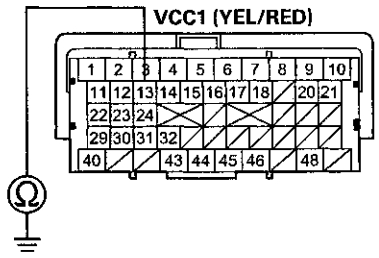
Is there continuity?

YES–Go to step 70.

NO–Repair open in the wire between the ECM/PCM (B1, B10, C2, C44, C48) and G101; M/T (see page 22-20), A/T (see page 22-22).■

70. Check for continuity between ECM/PCM connector terminal C13 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES–Go to step 71.

NO–

- A/T: Go to step 72.
- M/T: Go to step 74.

71. Continue to check for continuity between ECM/PCM connector terminal C13 and body ground, while disconnecting these connectors, one at a time:
    - MAP sensor 3P connector
    - Output shaft (countershaft) speed sensor 3P connector

Does continuity go away when one of the above connectors is disconnected?

YES–Replace the part that caused continuity to go away when it was disconnected.■

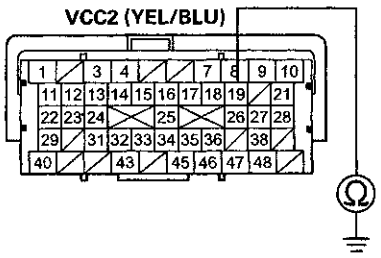
NO–Repair short in the wire between the ECM/PCM (C13) and the MAP sensor, or the output shaft (countershaft) speed sensor.■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

72. 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–Go to step 73.

NO–Go to step 74.

73. Continue to check for continuity between ECM/PCM connector terminal B19 and body ground while disconnecting the input shaft (mainshaft) speed sensor 3P connector.

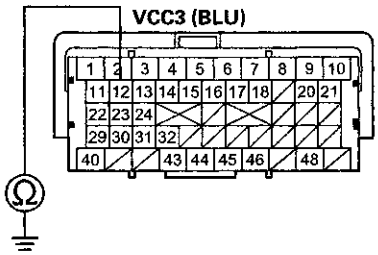
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (B19) and the input shaft (mainshaft) speed sensor.■

NO–Replace the input shaft (mainshaft) speed sensor (see page 14-187).

74. Check for continuity between ECM/PCM connector terminal C12 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES–Go to step 75.

NO–Go to step 76.

75. Continue to check for continuity between ECM/PCM connector terminal C12 and body ground while disconnecting the throttle body 6P connector.

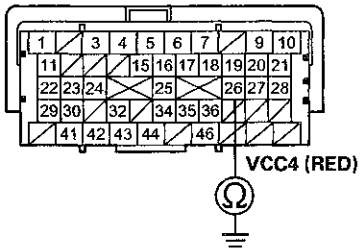
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C12) and the throttle body.■

NO–Replace the throttle body (see page 11-335).■

76. 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 77.

NO–Go to step 78.

77. Continue to check for continuity between ECM/PCM connector terminal A26 and body ground while disconnecting the APP sensor 6P connector.

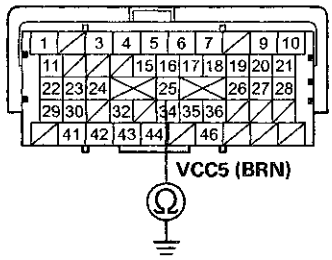
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (A26) and the APP sensor.■

NO–Replace the accelerator pedal module (see page 11-240).■

78. 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 79.

NO–Go to step 80.

79. Continue to check for continuity between ECM/PCM connector terminal A25 and body ground while disconnecting the APP sensor 6P connector.

Is there continuity?

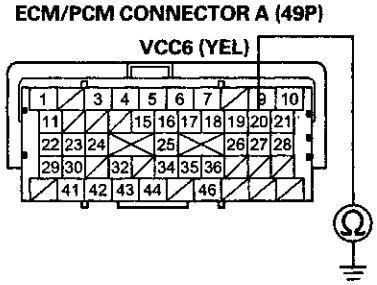
YES–Repair short in the wire between the ECM/PCM (A25) and the APP sensor.■

NO–Replace the accelerator pedal module (see page 11-240).■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

80. Check for continuity between ECM/PCM connector terminal A20 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Go to step 81.

NO–Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

81. Continue to check for continuity between ECM/PCM connector terminal A20 and body ground, while disconnecting these connectors, one at a time:
    - FTP sensor 3P connector
    - A/C pressure sensor 3P connector ('10 model)

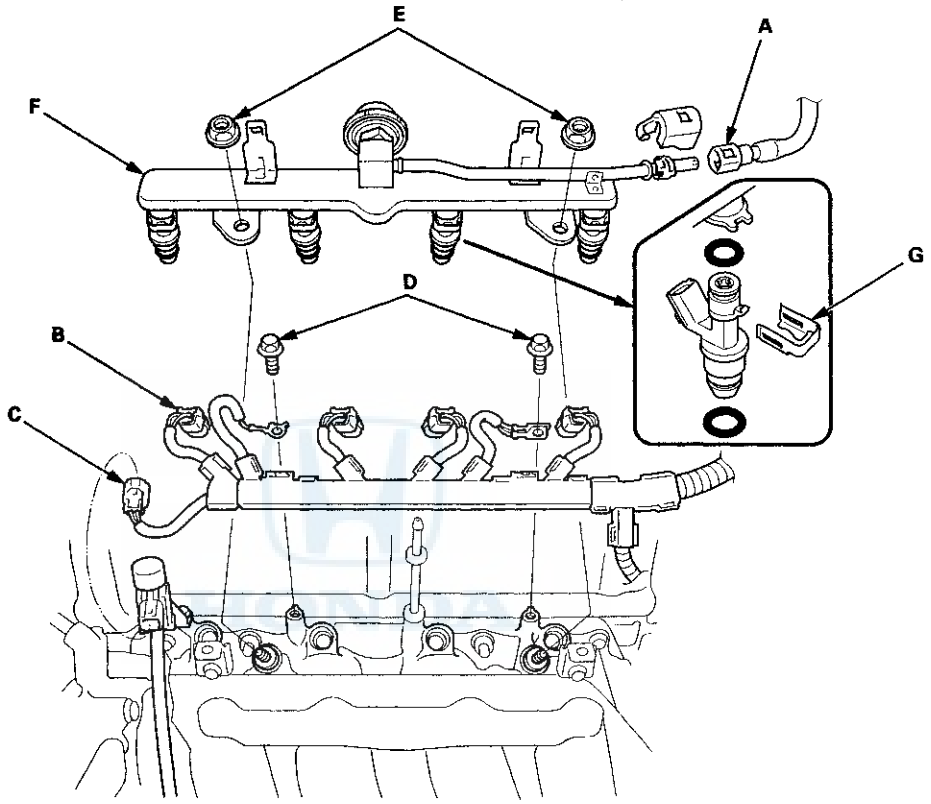
    Does continuity go away when one of the above connectors is disconnected?

    YES–Replace the part that caused continuity to go away when it disconnected.■

    NO–Repair short in the wire between the ECM/PCM (A20) and the FTP sensor, or the A/C pressure sensor ('10 model).■

Injector Replacement

1. Relieve the fuel pressure (see page 11-306).
2. Remove the engine cover.
3. Disconnect the quick-connect fitting (A).

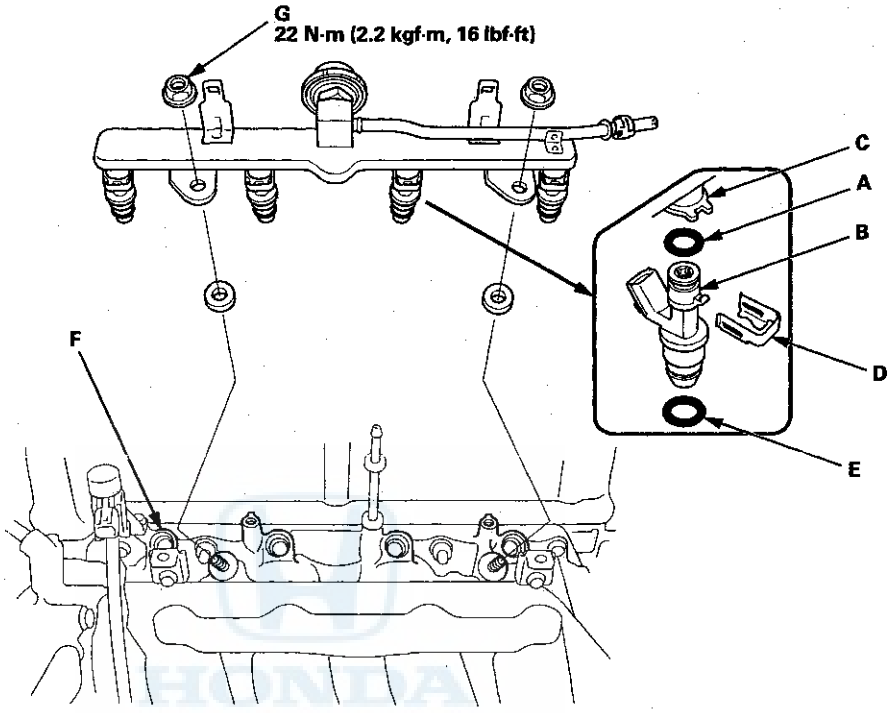


4. Disconnect the injector connectors (B) and the engine mount control solenoid valve connector (C).
5. Remove the ground cable bolts (G101 and G102) (D).
6. Remove the fuel rail mounting nuts (E) from the fuel rail (F).
7. Remove the fuel rail and the injectors from the injector base.
8. Remove the injector clips (G) from the fuel rail.
9. Remove the injectors from the fuel rail.

(cont'd)

Injector Replacement (cont'd)

10. Coat the new O-rings (black) (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).



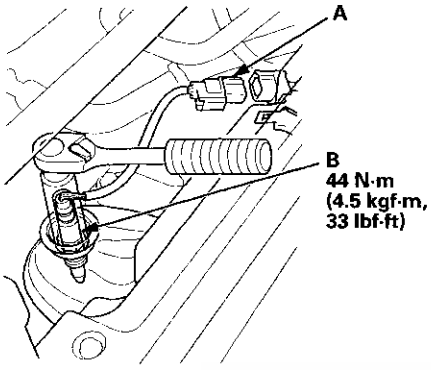
11. Install the injector clips (D).
12. Coat the new injector O-rings (brown) (E) with clean engine oil.
13. Install the fuel rail and the injectors in the injector base (F).
14. Install the fuel rail mounting nuts (G) and the ground cable bolts (G101 and G102).
15. Connect the injector connectors and the engine mount control solenoid valve connector.
16. Connect the quick-connect fitting.
17. Turn the ignition switch to ON (II), 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. Reinstall the engine cover.

A/F Sensor Replacement

Special Tools Required

O2 Sensor Wrench Snap-on S6176 or equivalent, commercially available

1. Disconnect the A/F sensor 4P connector (A), then remove the A/F sensor (B).



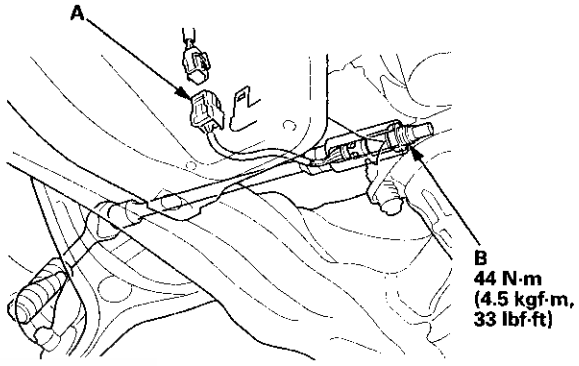
2. Install the parts in the reverse order of removal.

Secondary HO2S Replacement

Special Tools Required

O2 Sensor Wrench Snap-on S6176 or equivalent, commercially available

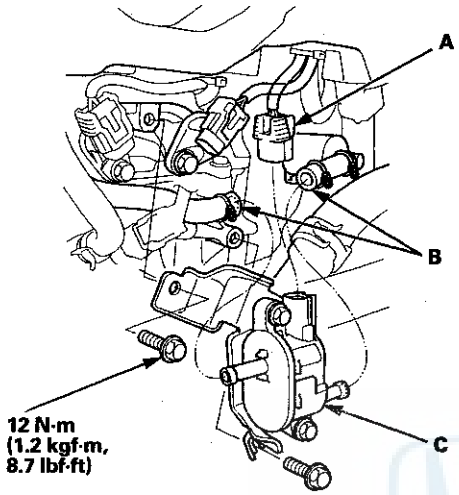
1. Disconnect the secondary HO2S 4P connector (A), then remove the secondary HO2S (B).



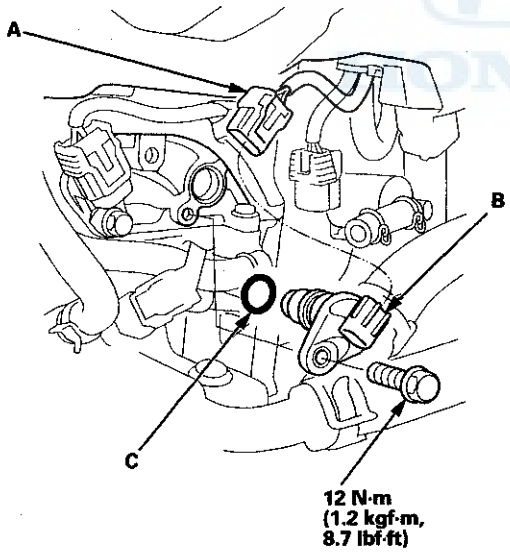
2. Install the parts in the reverse order of removal.

CMP Sensor B Replacement

1. Disconnect the connector (A) and hoses (B) from the EVAP canister purge valve (C), then remove the EVAP canister purge valve assembly.



2. Disconnect the CMP sensor B connector (A).



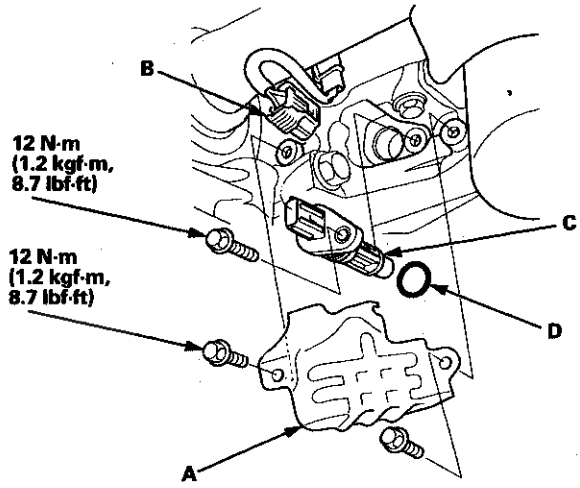
3. Remove CMP sensor B (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

CKP Sensor Replacement

1. Raise the vehicle on a lift.

   NOTE: Make sure the vehicle is level, because engine oil will drip out when you remove the sensor.

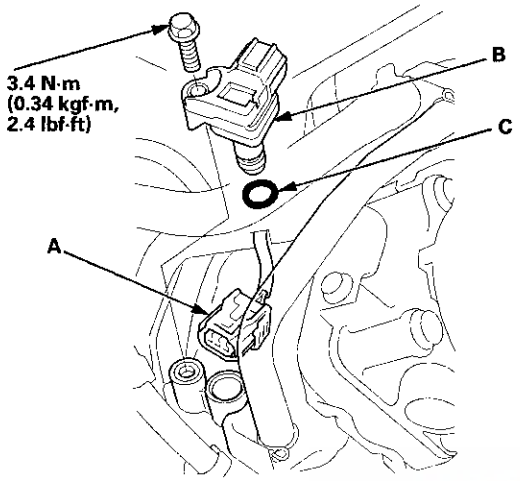
2. Remove the CKP sensor cover (A).



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 the engine oil level, and add more oil if needed.

MAP Sensor Replacement

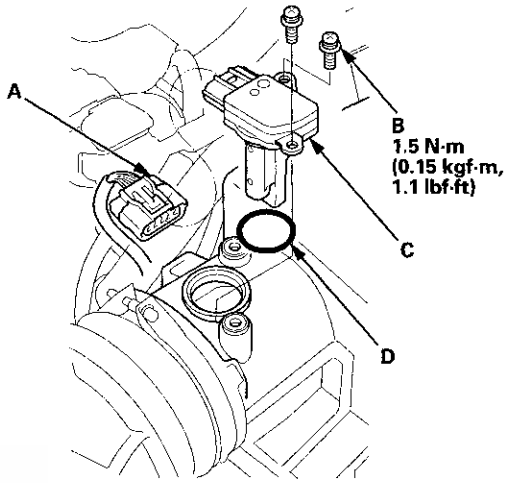
1. Disconnect the MAP sensor connector (A).



2. Remove the MAP sensor (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

MAF Sensor/IAT Sensor Replacement

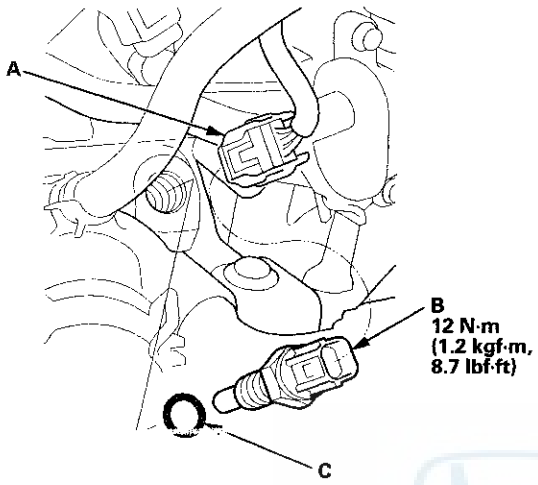
1. Disconnect the MAF sensor/IAT sensor connector (A).



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).

ECT Sensor 1 Replacement

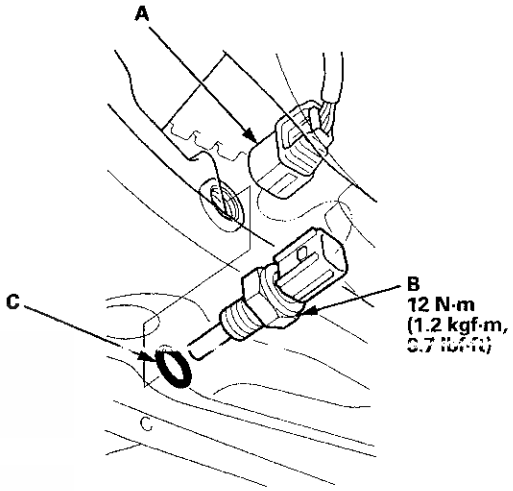
1. Drain the engine coolant (see page 10-6).
2. Disconnect the ECT sensor 1 connector (A).



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 front splash shield. (see page 20-291)
2. Drain the engine coolant (see page 10-6).
3. Disconnect the ECT sensor 2 connector (A), then remove ECT sensor 2 (B).



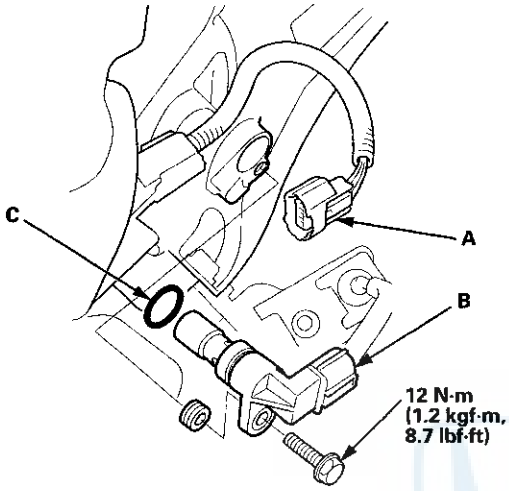
4. Install ECT sensor 2 with a new O-ring (C).
5. Install the front splash shield. (see page 20-291)
6. Refill the radiator with engine coolant (see page 10-6).

Output Shaft (Countershaft) Speed Sensor Replacement

NOTE: For A/T models (see page 14-188).

M/T

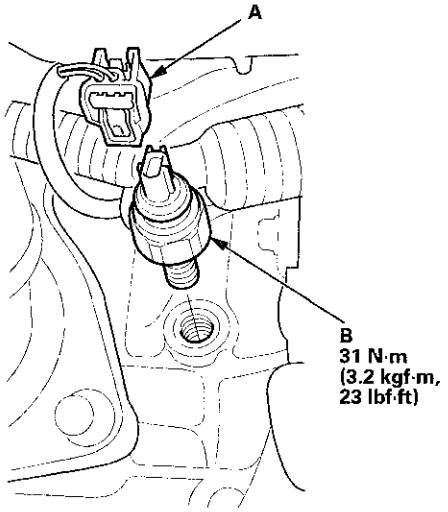
1. Disconnect the output shaft (countershaft) speed sensor 3P connector (A).



2. Remove the output shaft (countershaft) speed sensor (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

Knock Sensor Replacement

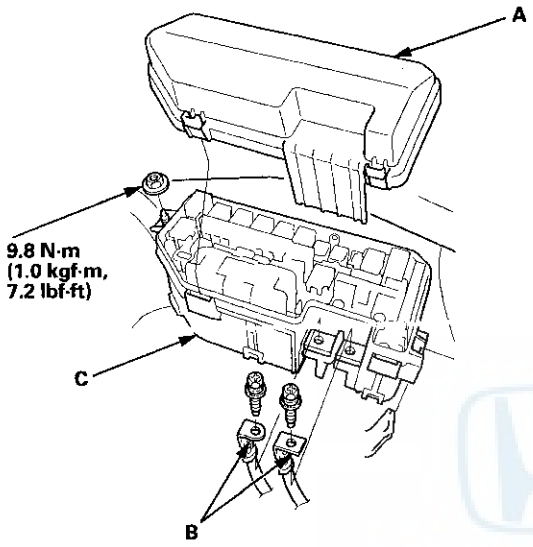
1. Remove the intake manifold (see page 9-4).
2. Disconnect the knock sensor connector (A).



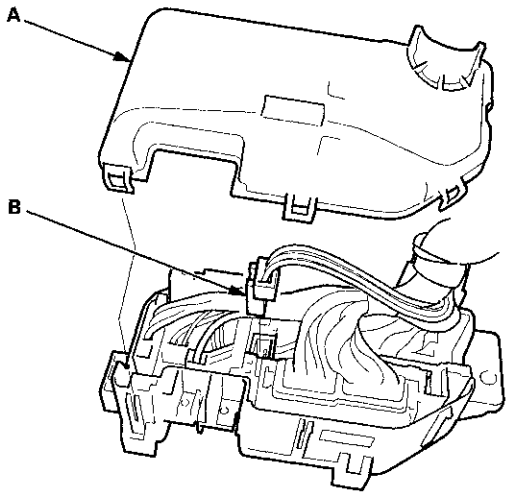
3. Remove the knock sensor (B).
4. Install the parts in the reverse order of removal.

ELD Replacement

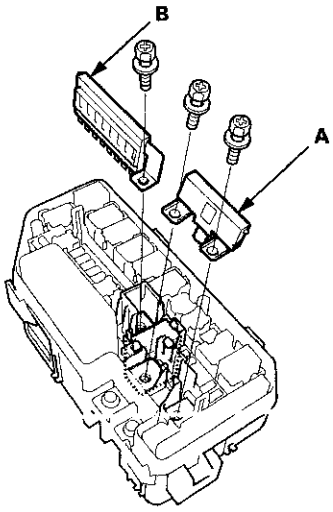
1. Do the battery terminal disconnection procedure (see page 22-91).
2. Remove the upper cover (A), then remove the two positive (+) terminals (B).



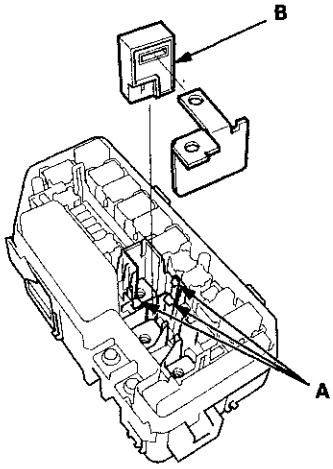
3. Remove the under-hood fuse/relay box (C) from the bracket.
4. Remove the lower cover (A).



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 22-91).

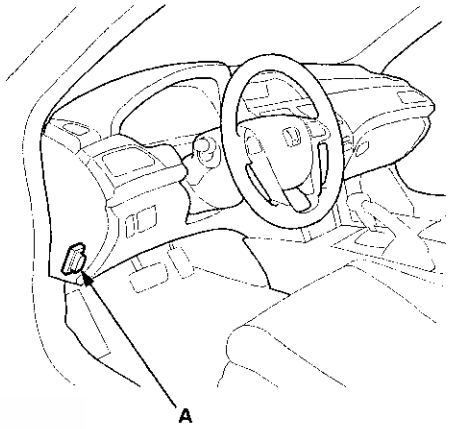
ECM/PCM Update

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 above updating tools can be used.

NOTE:
- Make sure the HDS/iN workstation has the latest 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 (0) during the update. If there is a problem with the update, leave the ignition switch in ON (II).
- To prevent ECM/PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, moonroof (if equipped), door locks, etc.) during the update.
- To ensure the latest program is installed, do an ECM/PCM update whenever the ECM/PCM is substituted or replaced.
- You cannot update an 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) 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), 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 11-181). If you are returning from the DLC circuit troubleshooting, skip steps 4 and 5, and clean the throttle body after updating the ECM/PCM (see page 11-332).
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)

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.

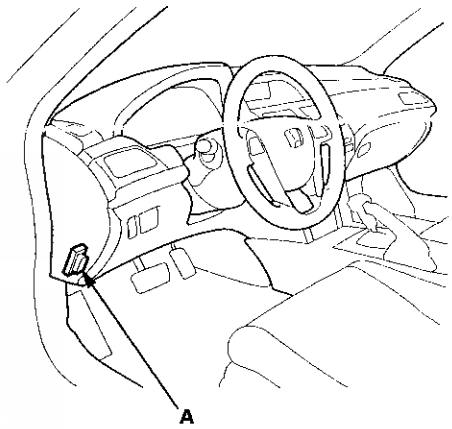
   NOTE: If the ECM/PCM update system requires you to cool the ECM/PCM, follow the instructions on screen. If you run into a problem during the update procedure (programming takes over 15 minutes, status bar goes over 100 %, D or immobilizer indicator flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the ECM/PCM:
   - Leave the ignition switch in ON (II).
   - 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 do the update procedure again.
8. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-332).
9. Do the ECM/PCM idle learn procedure (see page 11-293).
10. Do the CKP pattern clear/CKP pattern learn procedure.

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 above updating tools can be used.

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).
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 11-181). If you are returning from the DLC circuit troubleshooting, skip steps 4 through 9, 20 through 25, and 28 through 30, and do this after replacing the ECM/PCM:
   - Replace the engine oil (see page 8-10) and the engine oil filter (see page 8-12).
   - Replace the ATF (A/T model) (see page 14-192).
   - Clean the throttle body (see page 11-332).

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.

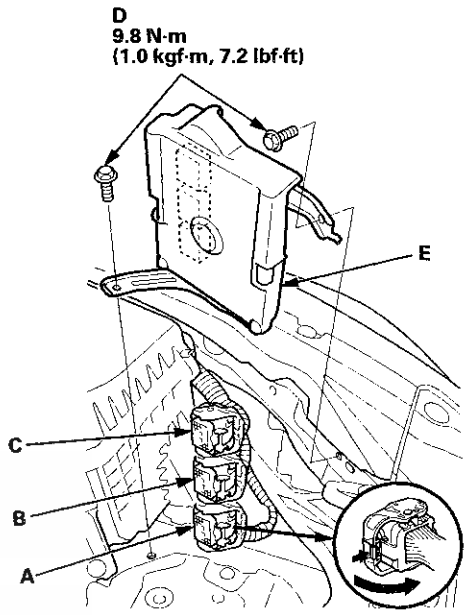
7. Select the REPLACE ECM/PCM MENU, then READ DATA, and follow the screen prompts.

   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 models: Select the A/T system with the HDS.
9. A/T models: 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).
11. Jump the SCS line with the HDS.
12. Do the battery removal procedure (see page 22-92).
13. Remove the bolts (D).



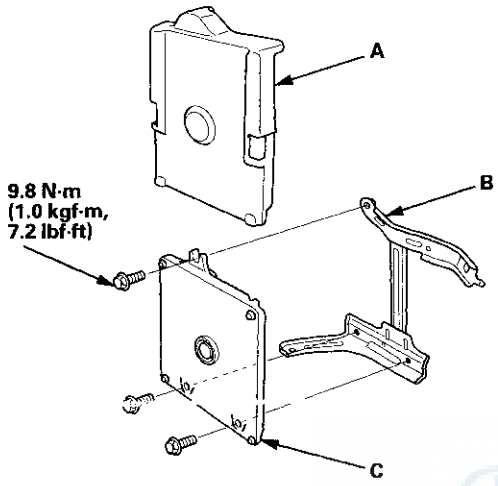
14. Disconnect ECM/PCM connectors A, B, and C, then remove the ECM/PCM assembly (E).

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

(cont'd)

ECM/PCM Replacement (cont'd)

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



16. Install the ECM/PCM in the reverse order of removal.
17. Do the battery installation procedure (see page 22-92).
18. Turn the ignition switch to ON (II).
19. 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.

20. If the READ DATA (engine oil life) failed in step 7, go to step 23 (A/T model) or step 26 (M/T model). Otherwise, go to step 21.
21. Select the PGM-FI system with the HDS.
22. Select the REPLACE ECM/PCM MENU, then select WRITE DATA, and follow the screen prompts.

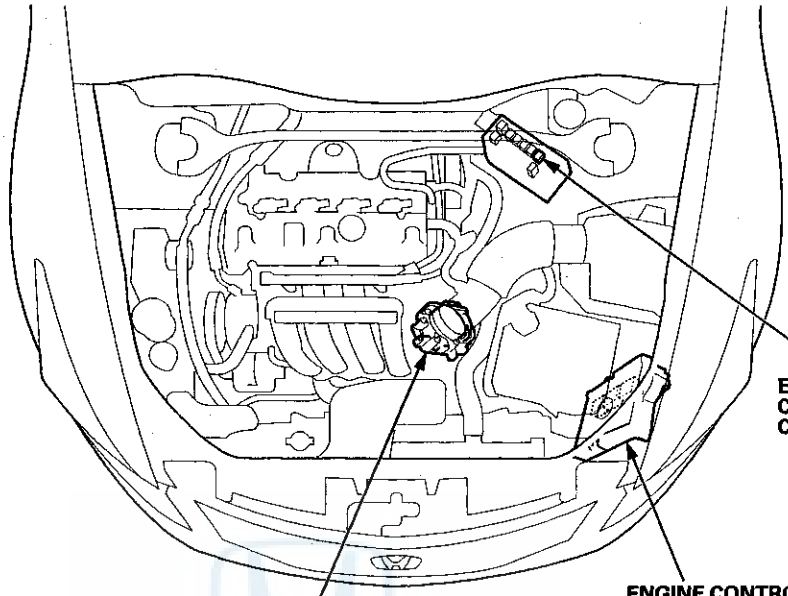
    NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.

23. A/T models: If the READ DATA (ATF life) failed in step 9, go to step 26. Otherwise go to step 24.
24. A/T models: Select the A/T SYSTEM with the HDS.
25. A/T models: 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.

26. Select IMMOBI system with the HDS.
27. Enter the immobilizer ECM/PCM code that you got from the iN, and usethe ECM/PCM replacement procedure in the IMMOBI MENU of the HDS; it allows you to start the engine.
28. If the TP POSITION CHECK failed in step 6 clean the throttle body (see page 11-332), then go to step 29.
29. If the READ DATA failed in step 7 or the WRITE DATA failed in step 22, replace the engine oil (see page 8-10) and engine oil filter (see page 8-12), then go to step 30 (A/T model) or step 31 (M/T model).
30. If the READ DATA failed in step 9 or the WRITE DATA failed in step 25, replace the ATF (see page 14-192), then go to step 31.
31. Select PGM-FI system, and reset the ECM/PCM with the HDS.
32. Update the ECM/PCM if it does not have the latest software (see page 11-203).
33. Do the ECM/PCM idle learn procedure (see page 11-293).
34. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).

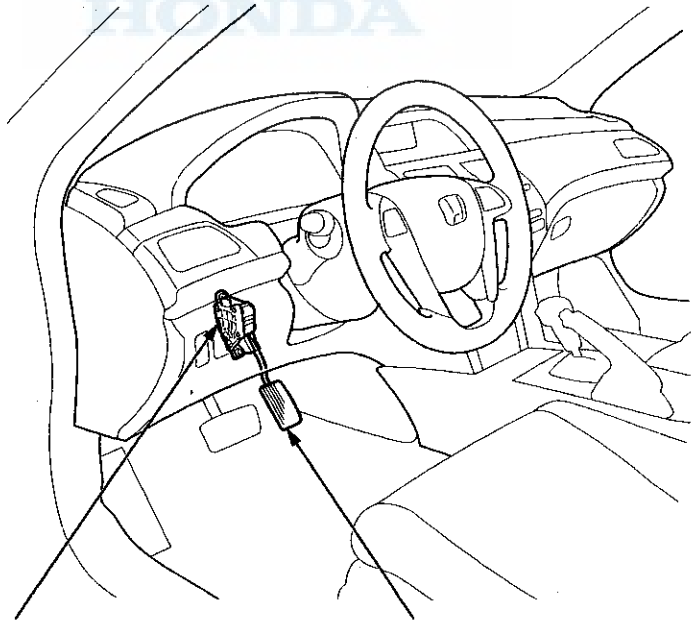
Component Location Index



ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY

THROTTLE ACTUATOR and THROTTLE POSITION (TP) SENSOR

ENGINE CONTROL MODULE (ECM)/ POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-203
Substitution, page 11-7
Replacement, page 11-204



ACCELERATOR PEDAL POSITION (APP) SENSOR
Signal Inspection, page 11-239

ACCELERATOR PEDAL MODULE
Removal/Installation, page 11-240

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).
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.

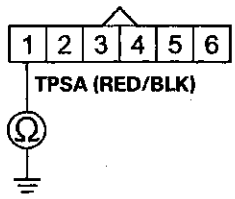
   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.■
4. Check for Pending or Confirmed DTCs with the HDS.

   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).
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (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

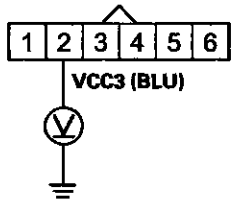
Is there continuity?

YES–Repair short in the wire between the throttle body and the ECM/PCM (C20), 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

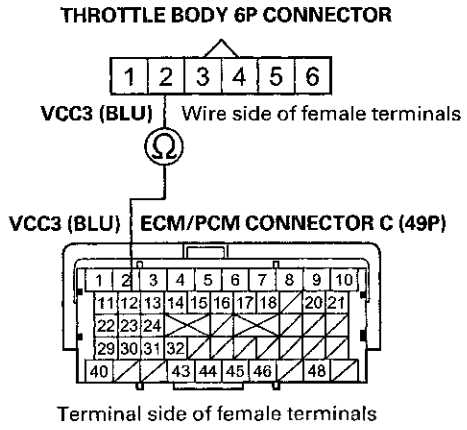
Is there about 5 V?

YES–Go to step 16.

NO–Go to step 11.

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (49P).
14. Disconnect the throttle body 6P connector.

15. Check for continuity between ECM/PCM connector terminal C12 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 (C12), then go to step 18.

16. Turn the ignition switch to LOCK (0).
17. Replace the throttle body (see page 11-335).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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).
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.

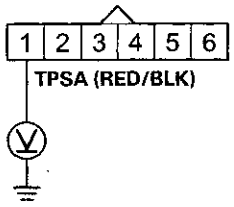
   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.■
4. Check for Pending or Confirmed DTCs with the HDS.

   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).
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

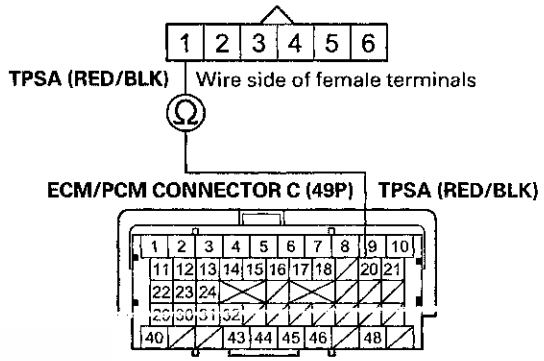
Is there about 5 V?

YES–Go to step 18.

NO–Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (49P).
12. Check for continuity between ECM/PCM connector terminal C20 and throttle body 6P connector terminal No. 1.

THROTTLE BODY 6P CONNECTOR



Terminal side of female terminals

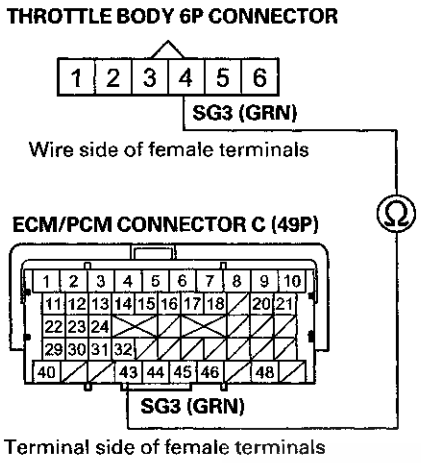
Is there continuity?

YES–Go to step 25.

NO–Repair open in the wire between the throttle body and the ECM/PCM (C20), then go to step 20.

13. Turn the ignition switch to LOCK (0).
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (49P).

17. Check for continuity between ECM/PCM connector terminal C43 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 (C43), then go to step 20.

18. Turn the ignition switch to LOCK (0).
19. Replace the throttle body (see page 11-335).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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).
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.

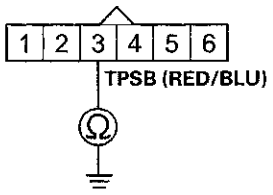
   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.■
4. Check for Pending or Confirmed DTCs with the HDS.

   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).
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (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

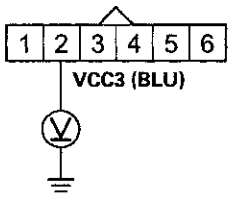
Is there continuity?

YES–Repair short in the wire between the throttle body and the ECM/PCM (C21), 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

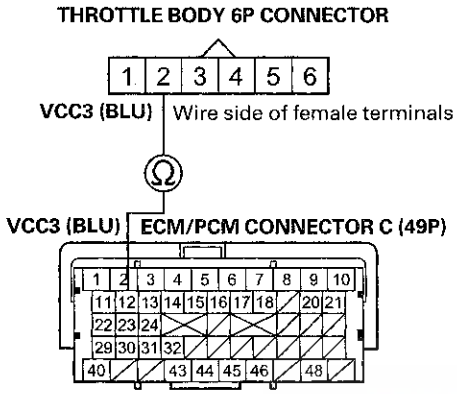
Is there about 5 V?

YES–Go to step 16.

NO–Go to step 11.

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (49P).
14. Disconnect the throttle body 6P connector.

15. Check for continuity between ECM/PCM connector terminal C12 and throttle body 6P connector terminal No. 2.



Terminal side of female terminals

Is there continuity?

YES–Go to step 23.

NO–Repair open in the wire between the throttle body and the ECM/PCM (C12), then go to step 18.

16. Turn the ignition switch to LOCK (0).
17. Replace the throttle body (see page 11-335).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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. 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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).
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.

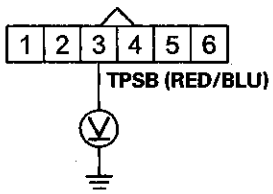
   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.■
4. Check for Pending or Confirmed DTCs with the HDS.

   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).
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



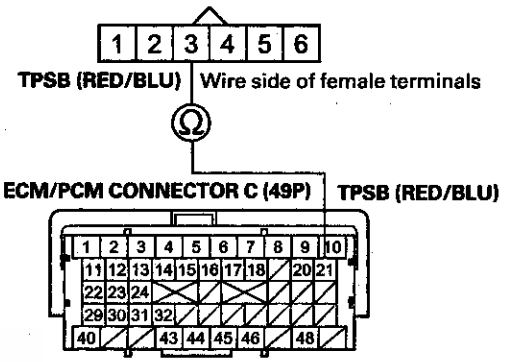
Wire side of female terminals

   Is there about 5 V?

   YES–Go to step 18.

   NO–Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (49P).
12. Check for continuity between ECM/PCM connector terminal C21 and throttle body 6P connector terminal No. 3.

THROTTLE BODY 6P CONNECTOR



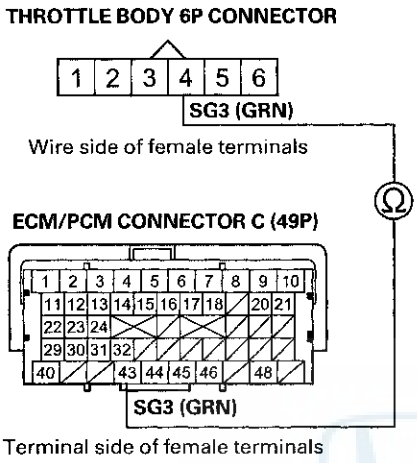
Terminal side of female terminals

   Is there continuity?

   YES–Go to step 25.

   NO–Repair open in the wire between the throttle body and the ECM/PCM (C21), then go to step 20.
13. Turn the ignition switch to LOCK (0).
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (49P).

17. Check for continuity between ECM/PCM connector terminal C43 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 (C43), then go to step 20.

18. Turn the ignition switch to LOCK (0).
19. Replace the throttle body (see page 11-335).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC Troubleshooting (cont'd)

DTC P1658: ETCS Control Relay ON Malfunction

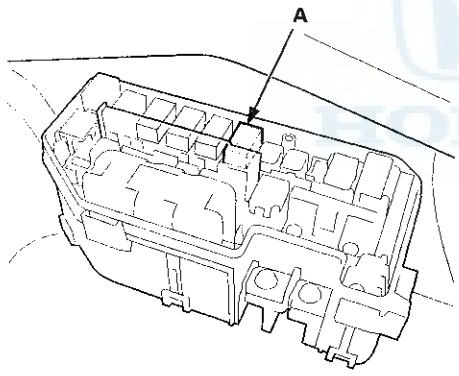
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
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).
4. Remove the ETCS control relay (A) from the under-hood fuse/relay box.

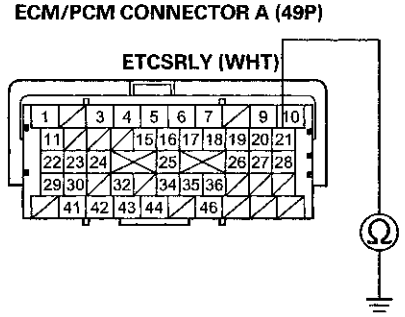


5. Test the ETCS control relay (see page 22-93).

   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 A21 and body ground.

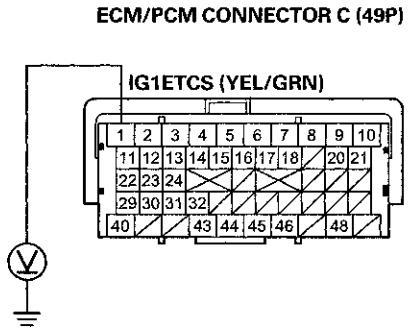


Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the ECM/PCM (A21) 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).
11. Measure the voltage between ECM/PCM connector terminal C1 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES–Repair short to power in the wire between the ECM/PCM (C1) and the ETCS control relay, then go to step 12.

NO–Go to step 18.

12. Turn the ignition switch to LOCK (0).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-293).
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).
19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204). 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).
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1659 indicated?

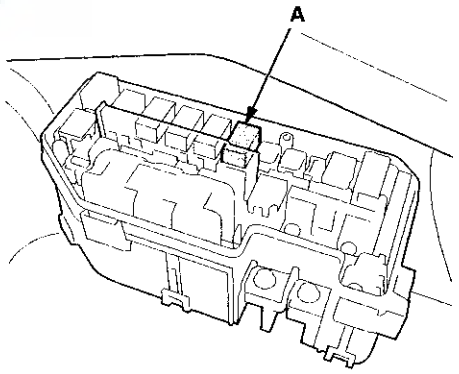
    YES–Go to step 4.

    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).
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 22-93).

    Is the ETCS control relay OK?

    YES–Go to step 8.

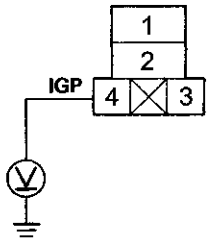
    NO–Replace the ETCS control relay, then go to step 23.
8. Turn the ignition switch to ON (II).

(cont'd)

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

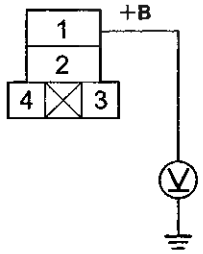
Is there battery voltage?

YES–Go to step 10.

NO–Replace the under-hood fuse/relay box (see page 22-85), 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

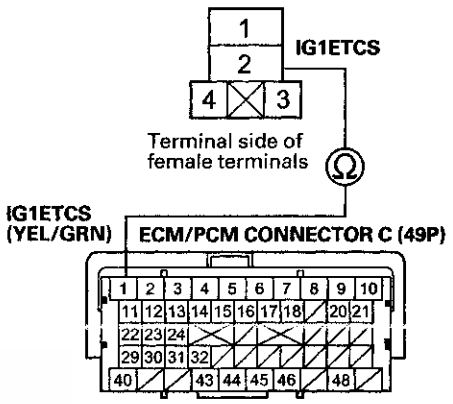
Is there battery voltage?

YES–Go to step 11.

NO–Replace the under-hood fuse/relay box (see page 22-85), then go to step 22.

11. Turn the ignition switch to LOCK (0).
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 C1.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

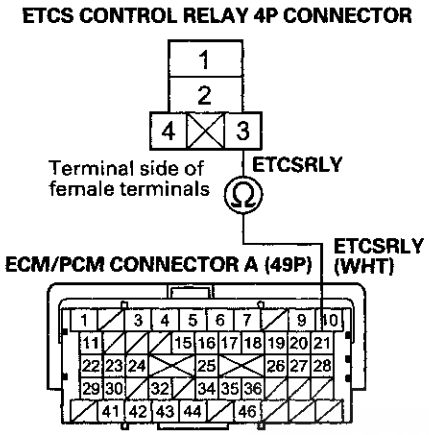
Is there continuity?

YES–Go to step 15.

NO–Repair open in the wire between the ECM/PCM (C1) 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 A21.



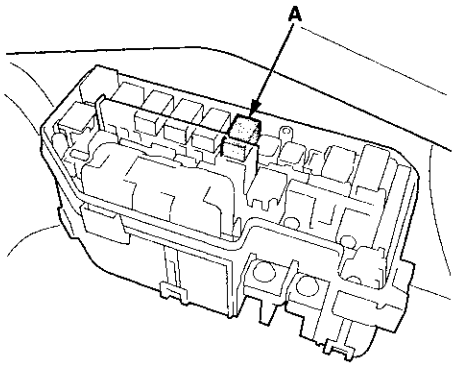
Terminal side of female terminals

Is there continuity?

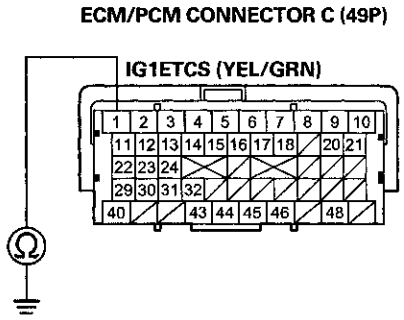
YES–Go to step 28.

NO–Repair open in the wire between the ECM/PCM (A21) 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 C1 and body ground.



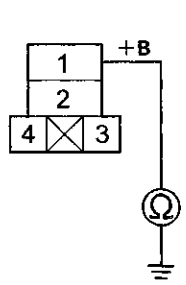
Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C1) 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.



Terminal side of female terminals

Is there continuity?

YES–Replace the under-hood fuse/relay box (see page 22-85), then go to step 23.

NO–Go to step 28.

(cont'd)

DTC Troubleshooting (cont'd)

22. Turn the ignition switch to LOCK (0).
23. Reconnect all connectors.
24. Turn the ignition switch to ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). 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) or while the ignition switch is in ON (II). 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).

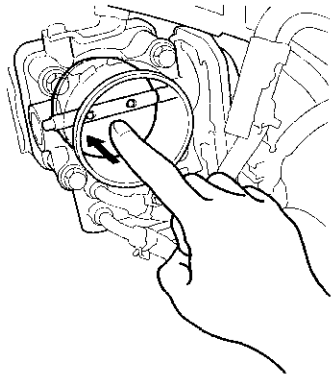
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch to LOCK (0), and wait 10 seconds.
5. Turn the ignition switch to ON (II).
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).
8. Disconnect the intake air duct from the throttle body (see page 11-335).

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 11-332), 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 11-335).
12. Turn the ignition switch to ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see page 11-293).
15. Turn the ignition switch to LOCK (0), and wait 10 seconds.
16. Turn the ignition switch to ON (II).
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) or while the ignition switch is in ON (II). 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).
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), and wait 10 seconds.
5. Turn the ignition switch to ON (II).
6. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1684 indicated?

    YES–Go to step 7.

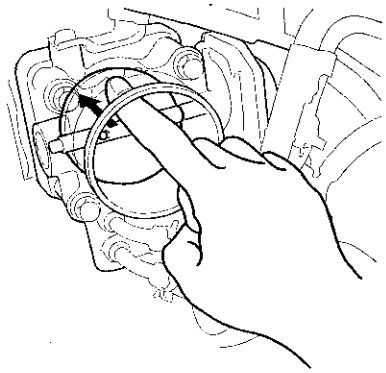
    NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.■

7. Turn the ignition switch to LOCK (0).
8. Disconnect the intake air duct from the throttle body (see page 11-335).

(cont'd)

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 11-332), 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 11-335).
12. Turn the ignition switch to ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see page 11-293).
15. Turn the ignition switch to LOCK (0), and wait 10 seconds.
16. Turn the ignition switch to ON (II).
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: Electronic Throttle Control System (ETCS) Malfunction

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is in ON (II). 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).
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 the ECM/PCM, then clean the throttle body (see page 11-332).■

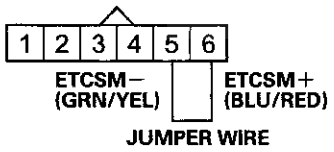
7. Turn the ignition switch to LOCK (0).
8. Disconnect the intake air duct from the throttle body (see page 11-335).
9. Turn the ignition switch to ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

    Does the throttle valve operate smoothly?

    YES–Clean the throttle body (see page 11-335), then go to step 22 and recheck. If DTC P2101 is indicated, go to step 19.

    NO–Go to step 13.
13. Turn the ignition switch to LOCK (0).
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (49P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

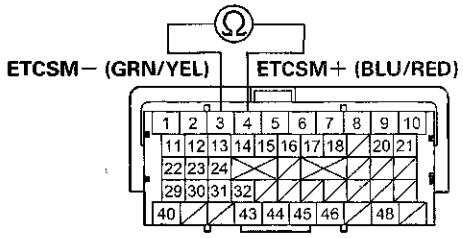
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

18. Check for continuity between ECM/PCM connector terminals C3 and C4.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES–Go to step 27.

NO–Repair open in the wires between the throttle body and the ECM/PCM (C3, C4), then go to step 21.

19. Turn the ignition switch to LOCK (0).
20. Replace the throttle body (see page 11-335).
21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see page 11-293).
25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR
26. 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 11-332), 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.■

(cont'd)

DTC Troubleshooting (cont'd)

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
29. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - APP SENSOR
30. 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. 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P2118: Throttle Actuator Current Range/Performance Problem

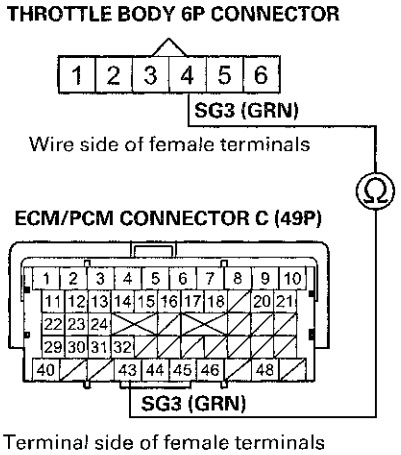
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
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).
6. Jump the SCS line with the HDS.
7. Disconnect the throttle body 6P connector.
8. Disconnect PCM connector C (49P).
9. Check for continuity between ECM/PCM connector terminal C43 and throttle body 6P connector terminal No. 4.



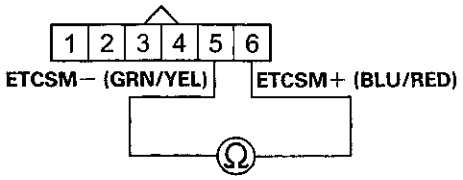
Is there continuity?

YES–Go to step 10.

NO–Repair open in the wire between the throttle body and the ECM/PCM (C43), then go to step 14.

10. Check for continuity between throttle body 6P connector terminals No. 5 and No. 6.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

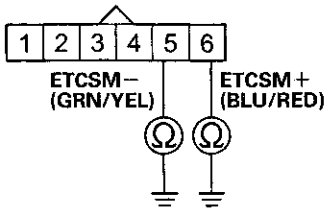
Is there continuity?

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 14.

NO–Go to step 11.

11. 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

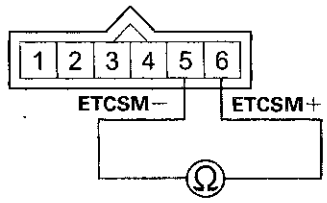
Is there continuity?

YES–Repair short in the wire between throttle body 6P connector and body ground, then go to step 14.

NO–Go to step 12.

12. 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 Ω or less?

YES–Go to step 13.

NO–Go to step 22.

13. Replace the throttle body (see page 11-335).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-293).
18. Turn the ignition switch to LOCK (0).
19. Turn the ignition switch to ON (II).
20. Slowly press the accelerator pedal to the floor.
21. 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.■

(cont'd)

DTC Troubleshooting (cont'd)

22. Reconnect all connectors.
23. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
24. Turn the ignition switch to LOCK (0).
25. Turn the ignition switch to ON (II).
26. Slowly press the accelerator pedal to the floor.
27. 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 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 11-204). 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).
2. Check APP SENSOR A in the DATA LIST with the HDS.

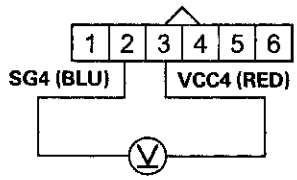
   Is there about 0.2 V or less?

   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).
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II).
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?

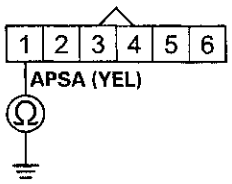
YES–Go to step 7.

NO–Go to step 17.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

10. Check for continuity between APP sensor 6P connector terminal No. 1 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

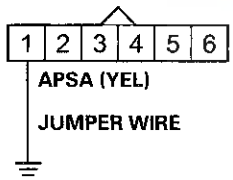
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (A18) and the APP sensor, 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.

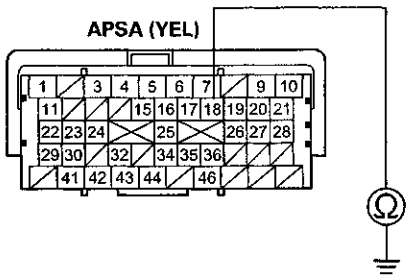
APP SENSOR 6P CONNECTOR



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?

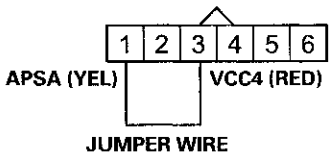
YES–Go to step 13.

NO–Repair open in the wire between the ECM/PCM (A18) and the APP sensor, 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).

16. Check APP SENSOR A 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).

18. Jump the SCS line with the HDS.

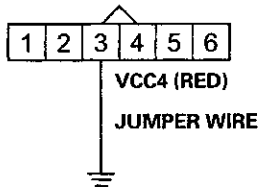
19. Disconnect ECM/PCM connector A (49P).

(cont'd)

DTC Troubleshooting (cont'd)

20. Connect APP sensor 6P connector terminal No. 3 to body ground with a jumper wire.

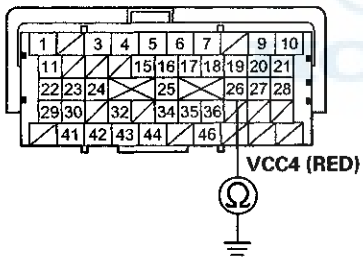
APP SENSOR 6P CONNECTOR



Wire side of female terminals

21. Check for continuity between ECM/PCM connector terminal A26 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 ECM/PCM (A26) and the APP sensor, then go to step 24.

22. Turn the ignition switch to LOCK (0).
23. Replace the accelerator pedal module (see page 11-240).
24. Reconnect all connectors.
25. Turn the ignition switch to ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-293).
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).
30. Reconnect all connectors.
31. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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).

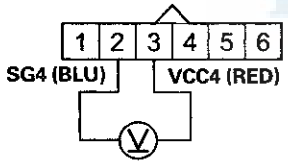
1. Turn the ignition switch to ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   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).
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage between APP sensor 6P connector terminals No. 2 and No. 3.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

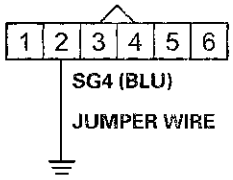
Is there about 5 V?

YES–Go to step 12.

NO–Go to step 7.

7. Turn the ignition switch to LOCK (0).
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.

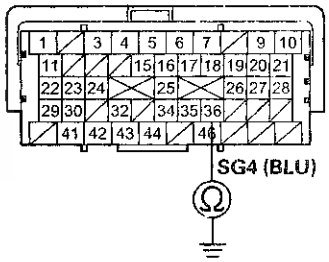
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between ECM/PCM connector terminal A36 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 ECM/PCM (A36) and the APP sensor, then go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0).
13. Replace the accelerator pedal module (see page 11-240).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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. 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 11-204). 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).

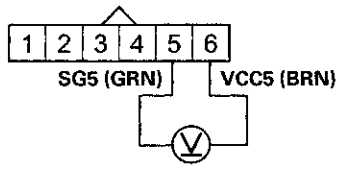
1. Turn the ignition switch to ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   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).
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II).
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?

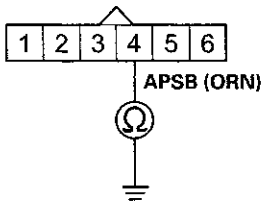
YES–Go to step 7.

NO–Go to step 17.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (49P).

10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

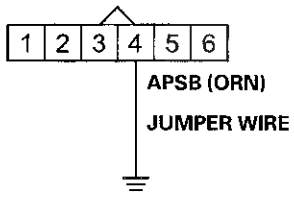
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (A19) and the APP sensor, 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.

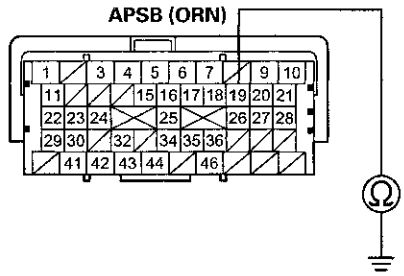
APP SENSOR 6P CONNECTOR



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?

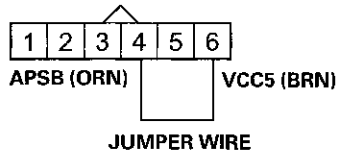
YES–Go to step 13.

NO–Repair open in the wire between the ECM/PCM (A19) and the APP sensor, 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).

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).

18. Jump the SCS line with the HDS.

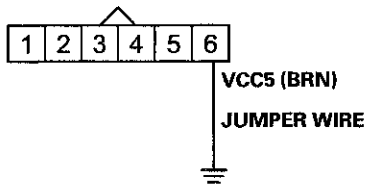
19. Disconnect ECM/PCM connector A (49P).

(cont'd)

DTC Troubleshooting (cont'd)

20. Connect APP sensor 6P connector terminal No. 6 to body ground with a jumper wire.

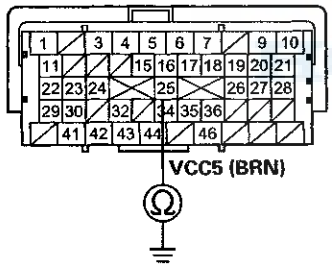
APP SENSOR 6P CONNECTOR



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 ECM/PCM (A25) and the APP sensor, then go to step 24.

22. Turn the ignition switch to LOCK (0).
23. Replace the accelerator pedal module (see page 11-240).
24. Reconnect all connectors.
25. Turn the ignition switch to ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-293).
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).
30. Reconnect all connectors.
31. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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. 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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).

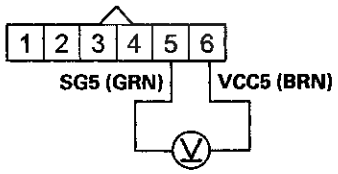
1. Turn the ignition switch to ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   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).
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

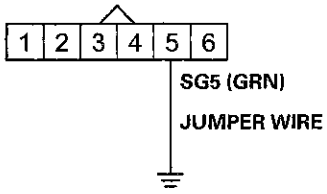
Is there about 5 V?

YES–Go to step 12.

NO–Go to step 7.

7. Turn the ignition switch to LOCK (0).
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.

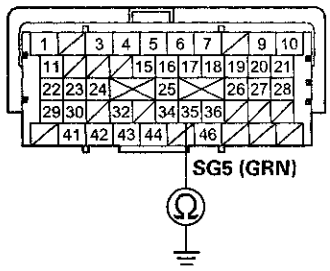
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between ECM/PCM connector terminal A35 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 ECM/PCM (A35) and the APP sensor, then go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0).
13. Replace the accelerator pedal module (see page 11-240).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). 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) or while the ignition switch is in ON (II). 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).
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.

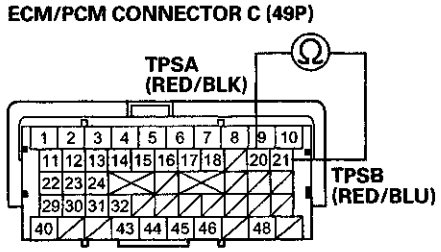
    NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM.■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the intake air duct from the throttle body (see page 11-335).
7. Turn the ignition switch to ON (II).
8. 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).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (49P).

12. Check for continuity between ECM/PCM connector terminals C20 and C21.



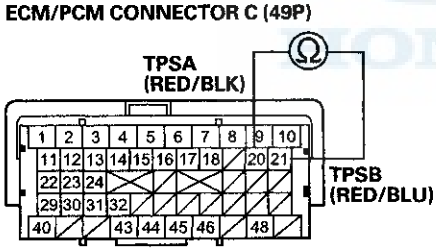
Terminal side of female terminals

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 C20 and C21.



Terminal side of female terminals

Is there continuity?

YES–Repair short in the wires between ECM/PCM connector terminal C20 (TPSA line) and the C21 (TPSB line), then go to step 17.

NO–Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Replace the throttle body (see page 11-335).
17. Reconnect all connectors.
18. Turn the ignition switch to ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC Troubleshooting (cont'd)

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).
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.■

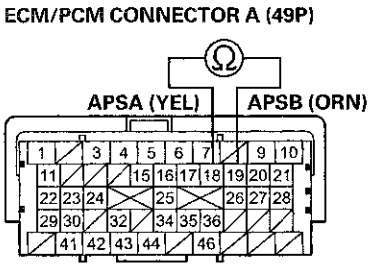
5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

   Are they the same voltage?

   YES–Go to step 6.

   NO–Go to step 12.

6. Turn the ignition switch to LOCK (0).
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.



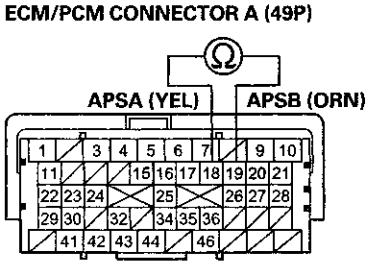
Terminal side of female terminals

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.



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.

12. Turn the ignition switch to LOCK (0).
13. Replace the accelerator pedal module (see page 11-240).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-293).
18. Turn the ignition switch to LOCK (0).
19. Turn the ignition switch to ON (II).
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 11-203), or substitute a known-good ECM/PCM (see page 11-7).
24. Turn the ignition switch to LOCK (0).
25. Turn the ignition switch to ON (II).
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 11-204). 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) or while the ignition switch is in ON (II). 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).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to ON (II), 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 11-332).■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the intake air duct from the throttle body (see page 11-335).
8. Turn the ignition switch to ON (II).
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.

(cont'd)

DTC Troubleshooting (cont'd)

11. Check for sludge or carbon on the throttle valve.

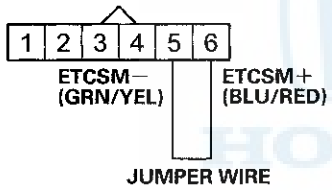
    Is there sludge or carbon on the throttle valve?

    YES–Clean the throttle body (see page 11-332), then go to step 21 and recheck.

    NO–Go to step 18.

12. Turn the ignition switch to LOCK (0).
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.

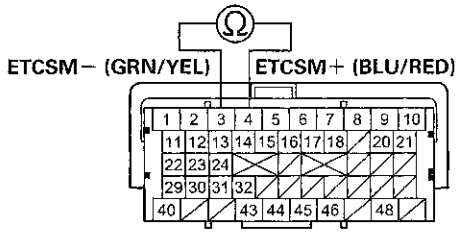
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

17. Check for continuity between ECM/PCM connector terminals C3 and C4.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES–Go to step 27.

NO–Repair open in the wires between the throttle body and the ECM/PCM (C3, C4), then go to step 20.

18. Turn the ignition switch to LOCK (0).
19. Replace the throttle body (see page 11-335).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-293).
24. Turn the ignition switch to LOCK (0).
25. Turn the ignition switch to ON (II), 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 11-332), 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 11-203), or substitute a known-good ECM/PCM (see page 11-7).
29. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2176 indicated?

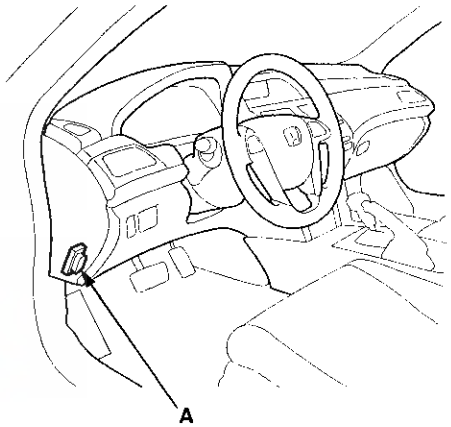
    YES–Check for poor connections or loose terminals at the throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO–If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

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 11-240).

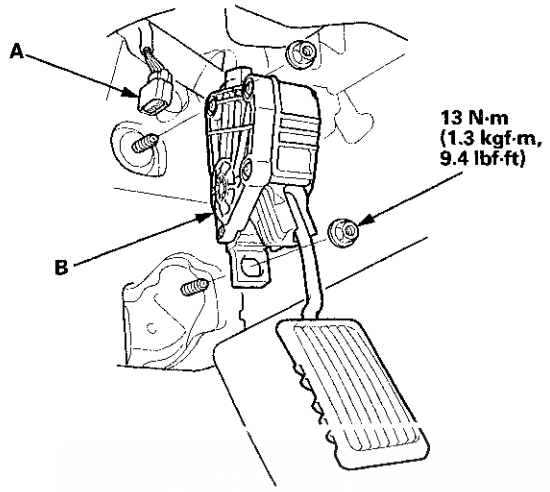
1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-181).
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 11-203), 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 11-240), then go to step 1.

Accelerator Pedal Module Removal/Installation

1. Disconnect the APP sensor connector (A).



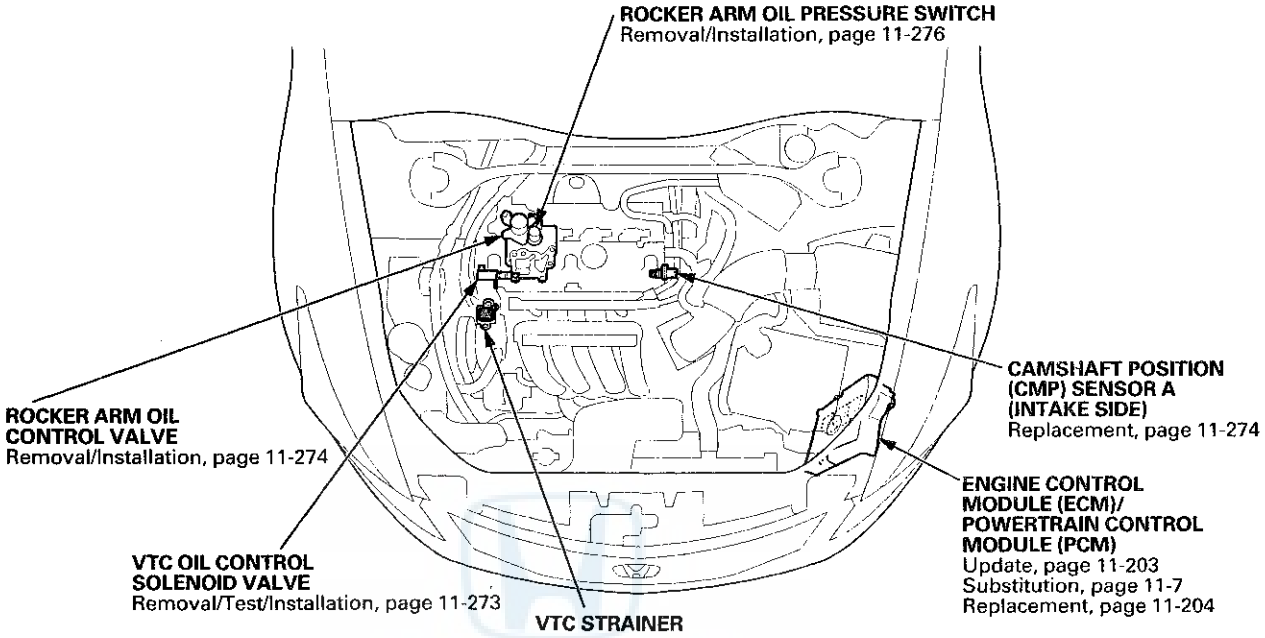
2. Remove the accelerator pedal module (B).

   NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

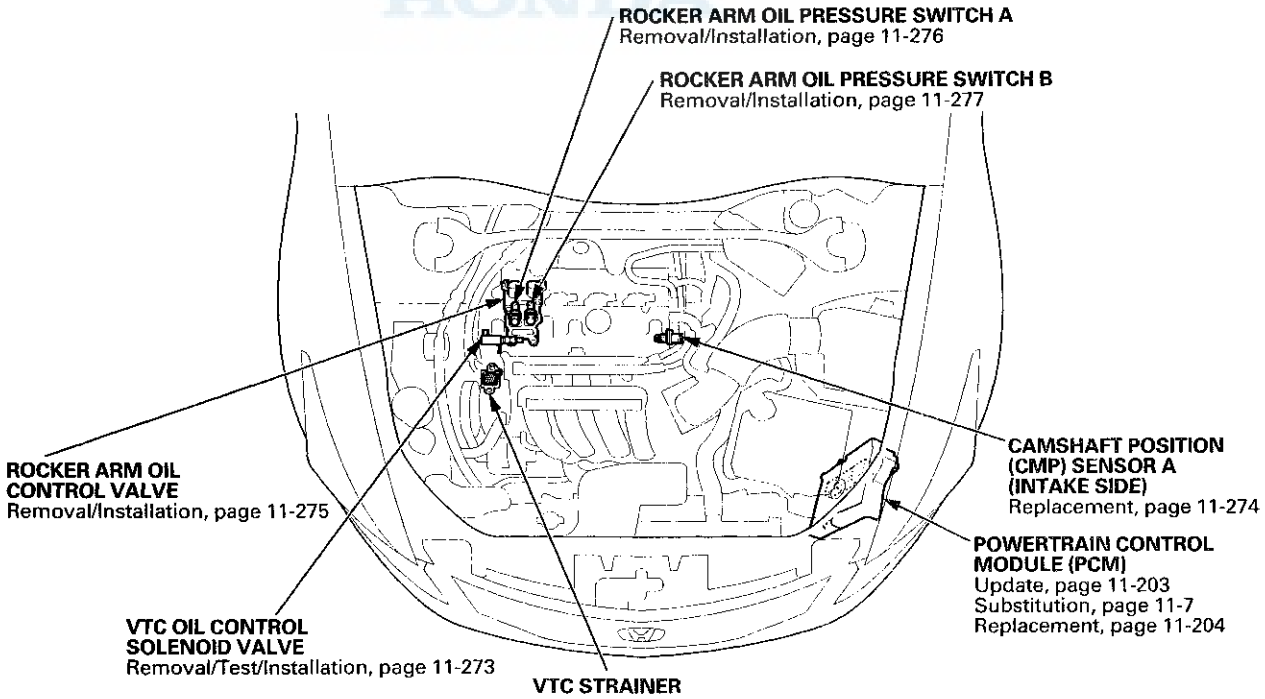
3. Install the parts in the reverse order of removal.

Component Location Index

All models except PZEV



PZEV model



DTC Troubleshooting

DTC P0010: VTC Oil Control Solenoid Valve Malfunction

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

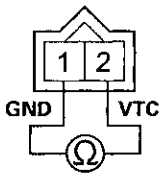
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Do the VTC TEST in the INSPECTION MENU with the HDS.
5. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0010 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 VTC oil control solenoid valve and the ECM/PCM.■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the VTC oil control solenoid valve 2P connector.
8. At the solenoid valve side, measure the resistance between VTC oil control solenoid valve 2P connector terminals No. 1 and No. 2.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Terminal side of male terminals

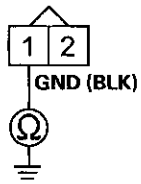
Is there 6.75—8.25 Ω at room temperature?

YES–Go to step 9.

NO–Go to step 14.

9. Check for continuity between VTC oil control solenoid valve 2P connector terminal No. 1 and body ground.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

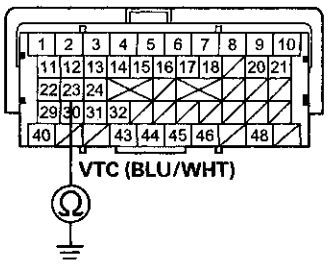
Is there continuity?

YES–Go to step 10.

NO–Repair open in the wire between the VTC oil control solenoid valve and G101; M/T (see page 22-20), A/T (see page 22-22), then go to step 15.

10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (49P).
12. Check for continuity between ECM/PCM connector terminal C23 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

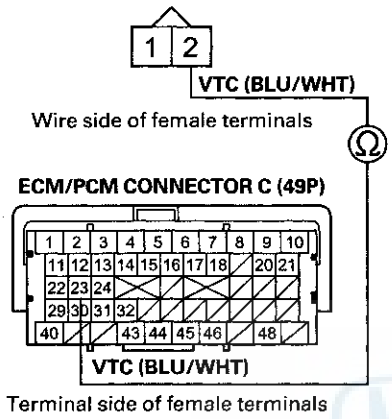
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C23) and the VTC oil control solenoid valve, then go to step 15.

NO–Go to step 13.

13. Check for continuity between VTC oil control solenoid valve 2P connector terminal No. 2 and ECM/PCM connector terminal C23.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Is there continuity?

YES–Go to step 22.

NO–Repair open in the wire between the ECM/PCM (C23) and the VTC oil control solenoid valve, then go to step 15.

14. Replace the VTC oil control solenoid valve (see page 11-273).
15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Reset the ECM/PCM with the HDS.
18. Do the ECM/PCM idle learn procedure (see page 11-293).
19. Do the VTC TEST in the INSPECTION MENU with the HDS.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0010 indicated?

    YES–Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1.

    NO–Go to step 21.

21. Monitor the OBD STATUS for DTC P0010 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 VTC oil control solenoid valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.
23. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
24. Do the VTC TEST in the INSPECTION MENU with the HDS.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0010 indicated?

    YES–Check for poor connections or loose terminals at the VTC oil control solenoid 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 24. If the ECM/PCM was substituted, go to step 1.

    NO–Go to step 26.

26. Monitor the OBD STATUS for DTC P0010 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 11-204). 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 VTC oil control solenoid 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 24. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0011: VTC 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).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Watch the low oil pressure indicator with the engine running.

   Is the low oil pressure indicator on?

   YES–Check the oil pressure (see page 8-10), then go to step 15.

   NO–Go to step 5.
5. Do the VTC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES–Go to step 6.

   NO–Go to step 9.
6. Test-drive at a steady speed between 19—38 mph (30—60 km/h) for 10 minutes.
7. Check the VTC STATUS in the DATA LIST with the HDS.

   Does it indicate ON?

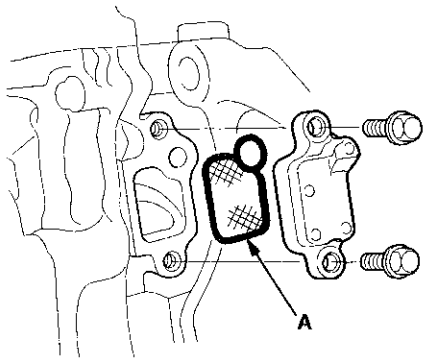
   YES–Go to step 8.

   NO–Go to step 6 and recheck.
8. Monitor the OBD STATUS for DTC P0011 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES–Go to step 9.

   NO–If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 5 and recheck.
9. Turn the ignition switch to LOCK (0).
10. Remove the auto-tensioner (see page 4-31).
11. Remove the VTC strainer (A), and check it for clogging.



   Is the strainer OK?

   YES–Go to step 12.

   NO–Clean the VTC strainer, replace the engine oil filter and the engine oil, then go to step 14.
12. Test the VTC oil control solenoid valve (see page 11-273).

   Is the VTC oil control solenoid valve OK?

   YES–Go to step 13.

   NO–Replace the VTC oil control solenoid valve (see page 11-273), then go to step 14.
13. Inspect the VTC actuator (see page 6-8).

   Is the VTC actuator OK?

   YES–Check the VTC system oil passages, then go to step 14.

   NO–Replace the VTC actuator (see page 6-30), then go to step 14.

14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-293).
17. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).
18. Do the VTC TEST in the INSPECTION MENU with the HDS.
19. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0011 indicated?

    YES–Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1.

    NO–Go to step 20.

20. Monitor the OBD STATUS for DTC P0011 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 VTC oil control solenoid valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

DTC P0340: CMP Sensor A 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).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Pending or Confirmed DTCs with the HDS.

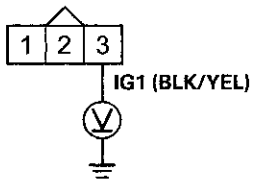
   Is DTC P0340 indicated?

   YES–Go to step 5.

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

5. Turn the ignition switch to LOCK (0).
6. Disconnect the CMP sensor A 3P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between CMP sensor A 3P connector terminal No. 3 and body ground.

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES–Go to step 9.

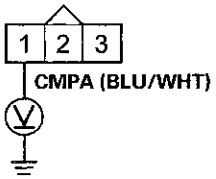
NO–Repair open in the wire between CMP sensor A and the No. 7 ACG (15 A) fuse, then go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

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

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

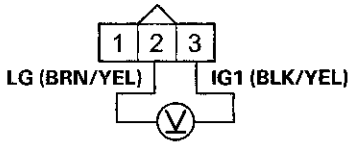
Is there about 5 V?

YES–Go to step 10.

NO–Go to step 11.

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

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

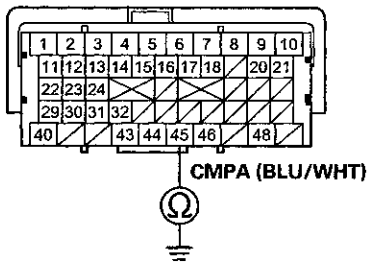
Is there battery voltage?

YES–Go to step 16.

NO–Repair open in the wire between CMP sensor A and G101; M/T (see page 22-20), A/T (see page 22-22), then go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (49P).
14. Check for continuity between ECM/PCM connector terminal C45 and body ground.

ECM/PCM CONNECTOR C (49P)



Terminal side of female terminals

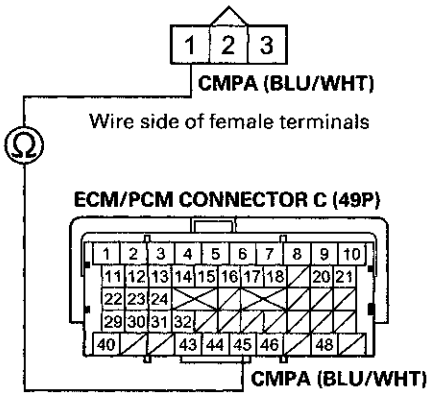
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C45) and CMP sensor A, then go to step 18.

NO–Go to step 15.

15. Check for continuity between CMP sensor A 3P connector terminal No. 1 and ECM/PCM connector terminal C45.

CMP SENSOR A 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES–Go to step 23.

NO–Repair open in the wire between the ECM/PCM (C45) and CMP sensor A, then go to step 18.

16. Turn the ignition switch to LOCK (0).
17. Replace CMP sensor A (see page 11-274).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-293).
22. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0340 indicated?

    YES–Check for poor connections or loose terminals at CMP sensor A 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 11-203), or substitute a known-good ECM/PCM (see page 11-7).
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0340 indicated?

    YES–Check for poor connections or loose terminals at CMP sensor A 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P0341: CMP Sensor A and CKP Sensor Incorrect Phase 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).
2. Clear the DTC with the HDS.
3. Test-drive at a steady speed between 19—38 mph (30—60 km/h) for 10 minutes.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0341 indicated?

   YES–Go to step 9.

   NO–Go to step 5.
5. Do the VTC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES–Go to step 6.

   NO–Go to step 9.
6. Test-drive at a steady speed between 19—38 mph (30—60 km/h) for 10 minutes.
7. Check the VTC STATUS in the DATA LIST with the HDS.

   Does it indicate ON?

   YES–Go to step 8.

   NO–Go to step 6 and recheck.
8. Monitor the OBD STATUS for DTC P0341 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES–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 VTC oil control solenoid valve and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.

(cont'd)

DTC Troubleshooting (cont'd)

9. Turn the ignition switch to LOCK (0).
10. Test the VTC oil control solenoid valve (see page 11-273).

    Is the VTC oil control solenoid valve OK?

    YES–Go to step 11.

    NO–Replace the VTC oil control solenoid valve (see page 11-273), then go to step 14.
11. Check the camshaft timing (see step 2 on page 6-9).

    Is the camshaft timing OK?

    YES–Go to step 12.

    NO–Reset the camshaft timing (see step 2 on page 6-9), then go to step 14.
12. Check for damage or stretch at the cam chain (see page 6-23).

    Is the cam chain damaged or stretched?

    YES–Replace the cam chain (see page 6-13) and the auto-tensioner (see page 6-20), then go to step 14.

    NO–Go to step 13.
13. Inspect the VTC actuator (see page 6-8).

    Is the actuator OK?

    YES–Go to step 14.

    NO–Replace the VTC actuator (see page 6-30), then go to step 14.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-293).
17. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).
18. Test-drive at a steady speed between 19—38 mph (30—60 km/h) for 10 minutes.
19. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0341 indicated?

    YES–Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1.

    NO–Go to step 20.
20. Monitor the OBD STATUS for DTC P0341 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 VTC oil control solenoid valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

DTC P0344: CMP Sensor A 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).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP A 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 A 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 CMP sensor A and the ECM/PCM.■
7. Check for poor connections or loose terminals at these locations:
   - CMP sensor A
   - 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. Check for damage on the CMP pulse plate A (see page 6-29).

   Is the pulser plate damaged?

   YES–Replace the CMP pulse plate A (see page 6-29), then go to step 11.

   NO–Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Replace CMP sensor A (see page 11-274).
11. Turn the ignition switch to ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see page 11-293).
14. Start the engine, and let it idle for 10 seconds.
15. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0344 indicated?

    YES–Check for poor connections or loose terminals at CMP sensor A 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 Troubleshooting (cont'd)

DTC P1009: VTC Advance Malfunction

NOTE:

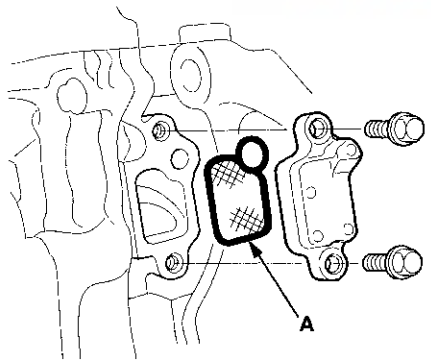
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0341 is stored at the same time as DTC P1009, troubleshoot DTC P1009 first, then recheck for DTC P0341.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P1009 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time.■
5. Turn the ignition switch to LOCK (0).
6. Remove the auto-tensioner (see page 4-31).
7. Remove the VTC strainer (A), and check it for clogging.



   Is the strainer OK?

   YES–Go to step 8.

   NO–Clean the VTC strainer, replace the engine oil filter and the engine oil, then go to step 10.
8. Test the VTC oil control solenoid valve (see page 11-273).

   Is the valve OK?

   YES–Go to step 9.

   NO–Replace the VTC oil control solenoid valve (see page 11-273), then go to step 10.
9. Inspect the VTC actuator (see page 6-8).

   Is the actuator OK?

   YES–Check the VTC system oil passages, then go to step 10.

   NO–Replace the VTC actuator (see page 6-30), then go to step 10.
10. Turn the ignition switch to ON (II).
11. Reset the ECM/PCM with the HDS.
12. Do the ECM/PCM idle learn procedure (see page 11-293).
13. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-5).
14. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1009 indicated?

    YES–Check the oil passages at the VTC system, 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 P2646: Rocker Arm Oil Pressure Switch Circuit Low Voltage (All models except PZEV)

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 DTC P2648 and/or P2649 are stored at the same time as DTC P2646, troubleshoot those DTCs first, then recheck for DTC P2646.

1. Check the engine oil level.

   Is the level OK?

   YES–Go to step 2.

   NO–Adjust the engine oil to the proper level, then go to step 20.

2. Turn the ignition switch to ON (II).
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.

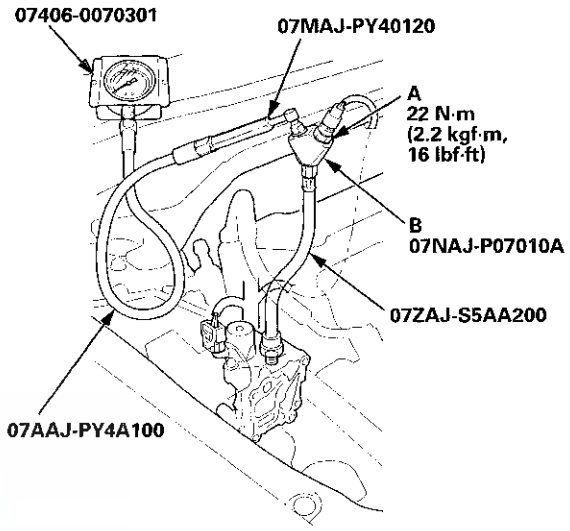
5. Turn the ignition switch to LOCK (0).
6. Disconnect the rocker arm oil pressure switch 2P connector.
7. Turn the ignition switch to ON (II).
8. Check the VTEC PRES SW in the DATA LIST with the HDS.

   Is SWITCH ON indicated?

   YES–Go to step 15.

   NO–Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. 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 oil pressure gauge adapter (B).



11. Reconnect the rocker arm oil pressure switch 2P connector.
12. Start the engine.
13. Do the VTEC TEST in the INSPECTION MENU with the HDS.
14. 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 11-276), then go to step 19.

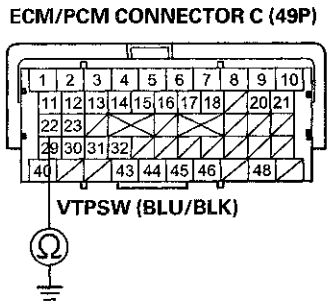
    NO–Inspect the VTEC system. If it is OK, replace the rocker arm oil control valve (see page 11-274), then go to step 19.

15. Turn the ignition switch to LOCK (0).
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector C (49P).

(cont'd)

DTC Troubleshooting (cont'd)

18. Check for continuity between ECM/PCM connector terminal C22 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the ECM/PCM (C22) and the rocker arm oil pressure switch, then go to step 19.

NO–Go to step 25.

19. Reconnect all connectors.
20. Turn the ignition switch to ON (II).
21. Reset the ECM/PCM with the HDS.
22. Do the ECM/PCM idle learn procedure (see page 11-293).
23. Do the VTEC TEST in the INSPECTION MENU with the HDS.
24. 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, the rocker arm oil control solenoid and the ECM/PCM, then go 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 11-203), or substitute a known-good ECM/PCM (see page 11-7).
27. Do the VTEC TEST in the INSPECTION MENU with the HDS.
28. 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, 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 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P2646: Rocker Arm Oil Pressure Switch A Circuit Low Voltage (PZEV model)

DTC P2647: Rocker Arm Oil Pressure Switch A Circuit High Voltage (PZEV model)

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 DTC P2648 and/or P2649 are stored at the same time as DTC P2646 and/or P2647, troubleshoot those DTCs first, then recheck for DTC P2646 and/or P2647.

1. Check the engine oil level.

   Is the level OK?

   YES–Go to step 2.

   NO–Adjust the engine oil level to the proper level, then go to step 29.

2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the VTEC TEST.

   Are VTECIN-0 and VTECEX-0 indicated?

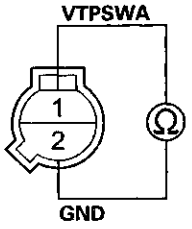
   YES–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at rocker arm oil pressure switch A, rocker arm oil control solenoid A, and the PCM.■

   NO–If the result is

   - VTECIN-1: Go to step 5.
   - VTECIN-3: Go to step 14.
   - VTECIN-3 and VTECEX-3 indicated at the same time: Check the oil passage between the engine oil pressure switch and the rocker arm oil control valve filter. If it is OK, go to step 14.
   - VTECIN-2, VTECIN-4: Inspect the intake valve side of the VTEC system. If it is OK, replace the rocker arm oil control valve (see page 11-275), then go to step 29.
   - VTECEX-1, 2, 3, 4: The exhaust valve side VTEC system is faulty. Go to the troubleshooting for P2651/P2652 (see page 11-265).

5. Turn the ignition switch to LOCK (0).
6. Disconnect the rocker arm oil pressure switch A 2P connector.
7. At rocker arm oil pressure switch A side, check for continuity between its 2P connector terminals.

ROCKER ARM OIL PRESSURE SWITCH A 2P CONNECTOR



Terminal side of male terminals

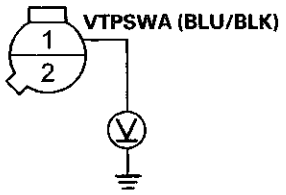
Is there continuity?

YES–Go to step 8.

NO–Replace rocker arm oil pressure switch A (see page 11-276), then go to step 29.

8. Turn the ignition switch to ON (II).
9. Measure the voltage between rocker arm oil pressure switch A 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL PRESSURE SWITCH A 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

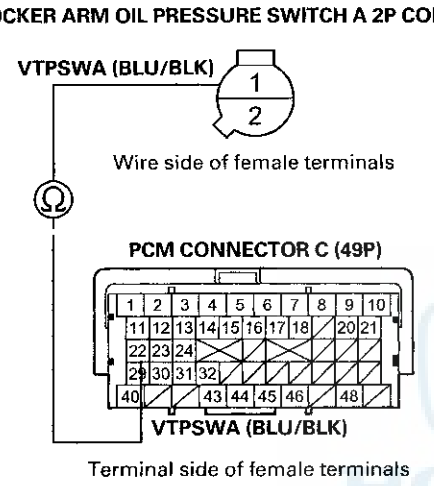
YES–Repair open in the wire between rocker arm oil pressure switch A and G101 (see page 22-22), then go to step 28.

NO–Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (49P).
13. Check for continuity between rocker arm oil pressure switch A 2P connector terminal No. 1 and PCM connector terminal C22.



Is there continuity?

YES–Check for poor connections or loose terminals at rocker arm oil pressure switch A, rocker arm oil control solenoid A, and the PCM. If the connections and terminals are OK, go to step 35.

NO–Repair open in the wire between rocker arm oil pressure switch A and the PCM (C22), then go to step 29.

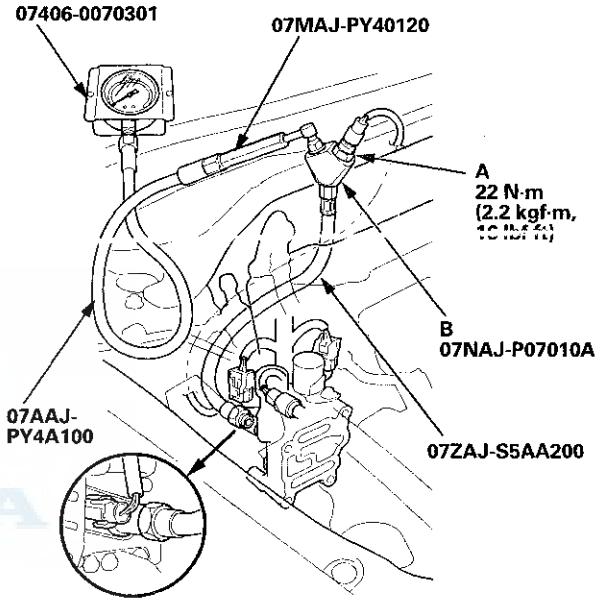
14. Turn the ignition switch to LOCK (0).
15. Disconnect the rocker arm oil pressure switch A 2P connector.
16. Turn the ignition switch to ON (II).
17. Check ROCKER ARM OIL PRESSURE SWITCH A in the DATA LIST with the HDS.

    Is SWITCH ON indicated?

    YES–Go to step 24.

    NO–Go to step 18.

18. Turn the ignition switch to LOCK (0).
19. Remove rocker arm oil pressure switch A (see page 11-276), then reinstall the rocker arm oil control valve and its filter (see page 11-275) without installing rocker arm oil pressure switch A.
20. Attach the special tools to the rocker arm oil control valve as shown, then attach rocker arm oil pressure switch A to the oil pressure gauge adapter (B).



21. Reconnect the rocker arm oil pressure switch A 2P connector.
22. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the VTEC TEST.
23. Check the oil pressure during the High V/T/LIFT (TEST STATUS 4).

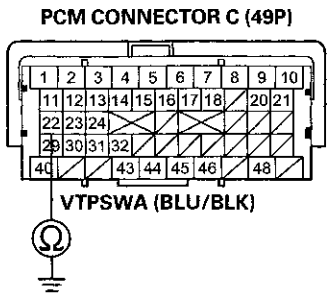
    Does the oil pressure increase to at least 191 kPa (2.0 kgf/cm ^{2}, 27.7 psi)?

    YES–Replace rocker arm oil pressure switch A (see page 11-276), then go to step 29.

    NO–Inspect the intake valve side of the VTEC system. If it is OK, replace the rocker arm oil control valve (see page 11-275), then go to step 29.

24. Turn the ignition switch to LOCK (0).
25. Jump the SCS line with the HDS.
26. Disconnect PCM connector C (49P).

27. Check for continuity between PCM connector terminal C22 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the PCM (C22) and rocker arm oil pressure switch A, then go to step 29.

NO–Check for poor connections or loose terminals at rocker arm oil pressure switch A, rocker arm oil control solenoid A, and the PCM. If the connectors and the terminals are OK, go to step 35.

28. Turn the ignition switch to LOCK (0).
29. Reconnect all connectors.
30. Turn the ignition switch to ON (II).
31. Reset the PCM with the HDS.
32. Do the PCM idle learn procedure (see page 11-293).
33. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the VTEC TEST.

    Are VTECIN-0 and VTECEX-0 indicated?

    YES–Go to step 34.

    NO–Check for poor connections or loose terminals at rocker arm oil pressure switch A, rocker arm oil control solenoid A, and the PCM, then go to step 1.

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

    Are any Pending or Confirmed DTCs indicated?

    YES–If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

    NO–Troubleshooting is complete.■

35. Reconnect all connectors.
36. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
37. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the VTEC TEST.

    Are VTECIN-0 and VTECEX-0 indicated?

    YES–Go to step 38.

    NO–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.

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

    Are any Pending or Confirmed DTCs indicated?

    YES–If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

    NO–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204).■

DTC Troubleshooting (cont'd)

DTC P2647: Rocker Arm Oil Pressure Switch Circuit High Voltage (All models except PZEV)

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 P2648 and/or P2649 are stored at the same time as DTC P2647, troubleshoot those DTCs first, then recheck for DTC P2647.

1. Check the engine oil level.

   Is the level OK?

   YES–Go to step 2.

   NO–Adjust the engine oil to the proper level, then go to step 17.

2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   NOTE: If DTC stored during VTEC TEST, check for DTCs MENU. If DTC P2647 indicated, go to step 6. If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.

   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. Check the result of step 4.
   - VTEC Switch Failure
   - VTEC Switch Open
   - VTEC Switch SIG Line Open
   - VTEC Switch GND Line Open

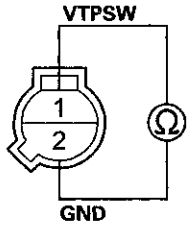
   Is the test result any of those above?

   YES–Go to step 6.

   NO–Check for poor connections or loose terminals at the rocker arm oil pressure switch. If it is OK, replace the rocker arm oil control valve (see page 11-274), then, go to step 15.

6. Turn the ignition switch to LOCK (0).
7. Disconnect the rocker arm oil pressure switch 2P connector.
8. At the rocker arm oil pressure switch side, check for continuity between its 2P connector terminals.

ROCKER ARM OIL PRESSURE SWITCH A 2P CONNECTOR



Terminal side of male terminals

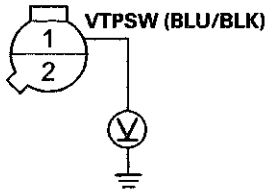
Is there continuity?

YES–Go to step 9.

NO–Replace the rocker arm oil pressure switch (see page 11-276), then go to step 16.

9. Turn the ignition switch to ON (II).
10. Measure the voltage between rocker arm oil pressure switch 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL PRESSURE SWITCH A 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

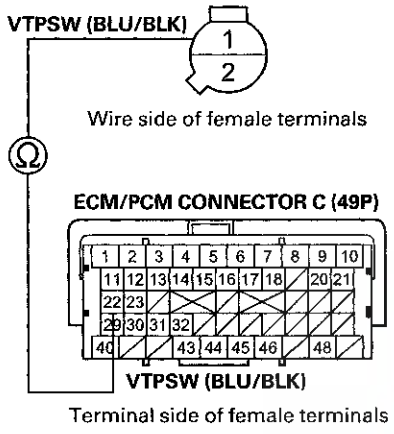
YES–Repair open in the wire between the rocker arm oil pressure switch and G101; M/T (see page 22-20), A/T (see page 22-22), then go to step 15.

NO–Go to step 11.

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (49P).

14. Check for continuity between rocker arm oil pressure switch 2P connector terminal No. 1 and ECM/PCM connector terminal C22.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



Is there continuity?

YES–Go to step 21.

NO–Repair open in the wire between the ECM/PCM (C22) and the rocker arm oil pressure switch, then go to step 16.

15. Turn the ignition switch to LOCK (0).
16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Reset the ECM/PCM with the HDS.
19. Do the ECM/PCM idle learn procedure (see page 11-293).
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, the rocker arm oil control solenoid, and the ECM/PCM, then go to step 1.

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

21. Reconnect all connectors.
22. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 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 23. 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 11-204). If any other Pending or Confirmed DTCs were indicated, go to the indicated DTC's troubleshooting.■

DTC Troubleshooting (cont'd)

DTC P2648: Rocker Arm Oil Control Solenoid Circuit Low Voltage (All models except PZEV)

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

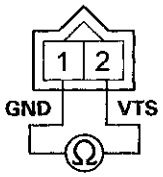
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   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).
5. Disconnect the rocker arm oil control solenoid 2P connector.
6. Measure the resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Terminal side of male terminals

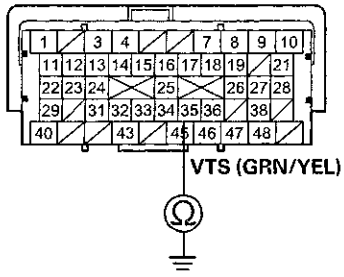
Is there 14 – 30 Ω at room temperature?

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).
9. Check for continuity between ECM/PCM connector terminal B35 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 (B35) and the rocker arm oil control solenoid, then go to step 11.

NO–Go to step 18.

10. Replace the rocker arm oil control valve (see page 11-274).
11. Reconnect all connectors.
12. Turn the ignition switch to ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). 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 P2648: Rocker Arm Oil Control Solenoid A (Intake Valve Side) Circuit Low Voltage (PZEV model)

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).

2. Clear the DTC with the HDS.

3. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the Solenoid Valve ACTIVATION of the ROCKER ARM SOLENOID A.

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

    Is DTC P2648 indicated?

    YES–Go to step 5.

    NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at rocker arm oil control solenoid A and the PCM.■

5. Turn the ignition switch to LOCK (0).

6. Disconnect the rocker arm oil control solenoid A 2P connector.

7. Measure the resistance between rocker arm oil control solenoid A 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID A 2P CONNECTOR

Terminal side of male terminals

Is there 14—30 Ω at room temperature?

YES–Go to step 8.

NO–Go to step 11.

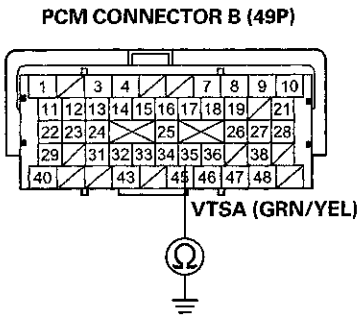
8. Jump the SCS line with the HDS.

9. Disconnect PCM connector B (49P).

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between PCM connector terminal B35 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the PCM (B35) and rocker arm oil control solenoid A, then go to step 12.

NO–Check for poor connections or loose terminals at the PCM and rocker arm oil control solenoid A, then go to step 19.

11. Replace the rocker arm oil control valve (see page 11-275).
12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-293).
16. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the Solenoid Valve ACTIVATION of the ROCKER ARM SOLENOID A.
17. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2648 indicated?

    YES–Check for poor connections or loose terminals at rocker arm oil control solenoid A and the PCM, then go to step 1.

    NO–Go to step 18.

18. 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 17, 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, go to step 16.

19. Reconnect all connectors.
20. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
21. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the Solenoid Valve ACTIVATION of the ROCKER ARM SOLENOID A.
22. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2648 indicated?

    YES–Check for poor connections or loose terminals at rocker arm oil control solenoid A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 21. If the PCM was substituted, go to step 1.

    NO–Go to step 23.

23. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 22, go to the indicated DTC's troubleshooting.■

    NO–If the screen indicates FAILED, check for poor connections or loose terminals at rocker arm oil control solenoid A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 21. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

DTC P2649: Rocker Arm Oil Control Solenoid Circuit High Voltage (All models except PZEV)

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

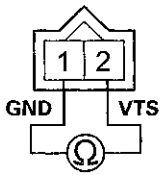
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check for Pending or Confirmed DTCs with the HDS.

   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).
6. Disconnect the rocker arm oil control solenoid 2P connector.
7. Measure the resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Terminal side of male terminals

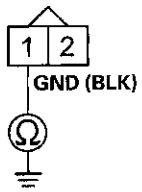
Is there 14—30 Ω at room temperature?

YES–Go to step 8.

NO–Go to step 12.

8. Check for continuity between rocker arm oil control solenoid 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Go to step 9.

NO–Repair open in the wire between the rocker arm oil control solenoid and G101; M/T (see page 22-20), A/T (see page 22-22), then go to step 13.

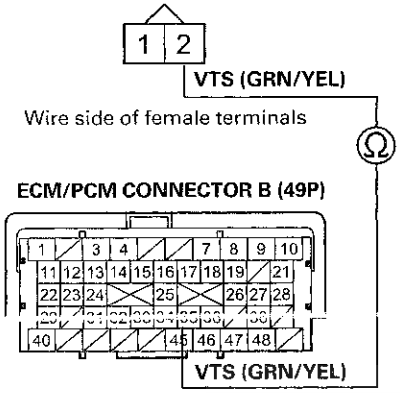
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector B (49P).

(cont'd)

DTC Troubleshooting (cont'd)

11. Check for continuity between ECM/PCM connector terminal B35 and rocker arm oil control solenoid 2P connector terminal No. 2.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Is there continuity?

YES–Go to step 19.

NO–Repair open in the wire between the ECM/PCM (B35) and the rocker arm oil control solenoid, then go to step 13.

12. Replace the rocker arm oil control valve (see page 11-274).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-293).
17. 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 18.

18. 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 17, 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, keep idling until a result comes on.

19. Reconnect all connectors.
20. Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 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 23.

23. 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 11-204). If any other Pending or Confirmed DTCs were indicated in step 22, 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.

DTC P2649: Rocker Arm Oil Control Solenoid A (Intake Valve Side) Circuit High Voltage (PZEV model)

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

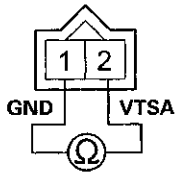
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in P or N) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   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 rocker arm oil control solenoid A and the PCM.■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the rocker arm oil control solenoid A 2P connector.
7. Measure the resistance between rocker arm oil control solenoid A 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID A 2P CONNECTOR



Terminal side of male terminals

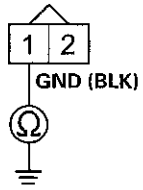
Is there 14–30 Ω at room temperature?

YES–Go to step 8.

NO–Go to step 12.

8. Check for continuity between rocker arm oil control solenoid A 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL CONTROL SOLENOID A 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Go to step 9.

NO–Repair open in the wire between the rocker arm oil control solenoid A and G101 (see page 22-22), then go to step 13.

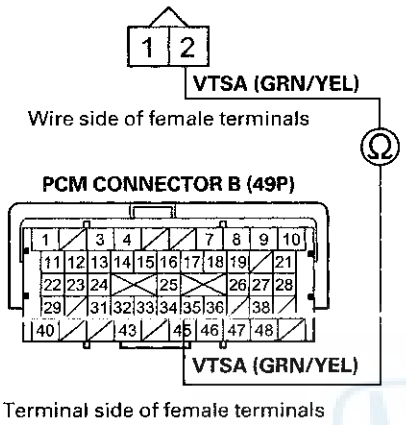
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (49P).

(cont'd)

DTC Troubleshooting (cont'd)

11. Check for continuity between PCM connector terminal B35 and rocker arm oil control solenoid A 2P connector terminal No. 2.

ROCKER ARM OIL CONTROL SOLENOID A 2P CONNECTOR



Is there continuity?

YES–Go to step 19.

NO–Repair open in the wire between the PCM (B35) and the rocker arm oil control solenoid A, then go to step 13.

12. Replace the rocker arm oil control valve (see page 11-275).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-293).
17. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2649 indicated?

    YES–Check for poor connections or loose terminals at rocker arm oil control solenoid A and the PCM, then go to step 1.

    NO–Go to step 18.

18. 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 17, 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.

19. Reconnect all connectors.
20. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good 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 P2649 indicated?

    YES–Check for poor connections or loose terminals at rocker arm oil control solenoid A 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–Go to step 23.

23. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 22, go to the indicated DTC's troubleshooting.■

    NO–If the screen indicates FAILED, check for poor connections or loose terminals at rocker arm oil control solenoid A and the PCM. If the PCM was updated, substitute a known-good PCM, then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2651: Rocker Arm Oil Pressure Switch B Circuit Low Voltage (PZEV model)

DTC P2652: Rocker Arm Oil Pressure Switch B Circuit High Voltage (PZEV model)

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 DTC P2653 and/or P2654 are stored at the same time as DTC P2651 and/or P2652, troubleshoot those DTCs first, then recheck for DTC P2651 and/or P2652.

1. Check the engine oil level.

   Is the level OK?

   YES–Go to step 2.

   NO–Adjust the engine oil level to the proper level, then go to step 29.

2. Turn the ignition switch to ON (II).
3. Clear the DTC with the HDS.
4. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the VTEC TEST.

   Are VTECEX-0 and VTECIN-0 indicated?

   YES–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at rocker arm oil pressure switch B, and rocker arm oil control solenoid B, and the PCM.■

   NO–If the result is

   - VTECEX-1: Go to step 5.
   - VTECEX-3: Go to step 14.
   - VTECEX-3 and VTECIN-3 indicated at the same time: Check the oil passage between the engine oil pressure switch and the rocker arm oil control valve filter. If it is OK, go to step 14.
   - VTECEX-2, VTECEX-4: Inspect the exhaust side of the VTEC system. If it is OK, replace the rocker arm oil control valve (see page 11-275), then go to step 29.
   - VTECIN-1, 2, 3, 4: The intake valve side VTEC system is faulty. Go to the troubleshooting for P2646/ P2647 (see page 11-253).

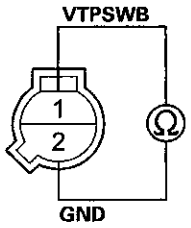
5. Turn the ignition switch to LOCK (0).
6. Disconnect the rocker arm oil pressure switch B 2P connector.

(cont'd)

DTC Troubleshooting (cont'd)

7. At the rocker arm oil pressure switch B side, check for continuity between its 2P connector terminals.

ROCKER ARM OIL PRESSURE SWITCH B 2P CONNECTOR



Terminal side of male terminals

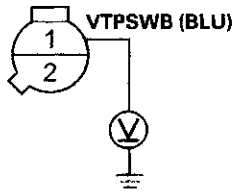
Is there continuity?

YES–Go to step 8.

NO–Replace rocker arm oil pressure switch B (see page 11-277), then go to step 29.

8. Turn the ignition switch to ON (II).
9. Measure the voltage between rocker arm oil pressure switch B 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL PRESSURE SWITCH B 2P CONNECTOR



Wire side of female terminals

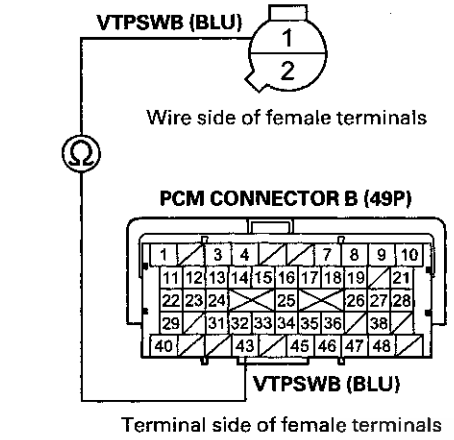
Is there battery voltage?

YES–Repair open in the wire between rocker arm oil pressure switch B and G101 (see page 22-22), then go to step 28.

NO–Go to step 10.

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (49P).

13. Check for continuity between rocker arm oil pressure switch B 2P connector terminal No. 1 and PCM connector terminal B43.



Is there continuity?

YES–Check for poor connections or loose terminals at rocker arm oil pressure switch B, rocker arm oil control solenoid B, and the PCM. If the connections and terminals are OK, go to step 35.

NO–Repair open in the wire between rocker arm oil pressure switch B and the PCM (B43), then go to step 29.

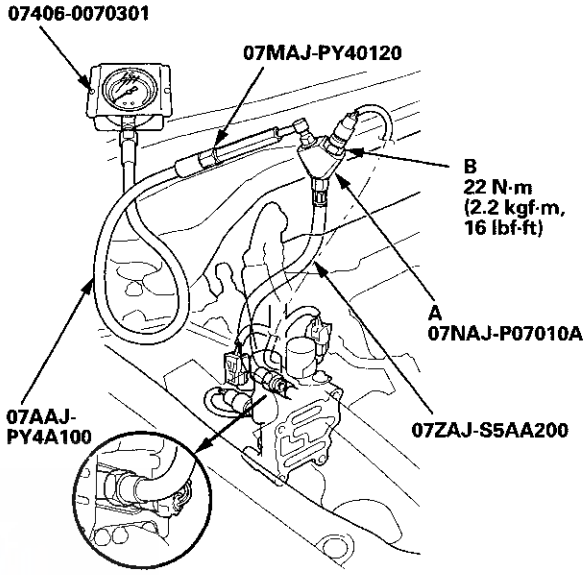
14. Turn the ignition switch to LOCK (0).
15. Disconnect the rocker arm oil pressure switch B 2P connector.
16. Turn the ignition switch to ON (II).
17. Check the ROCKER ARM OIL PRESSURE SWITCH B in the DATA LIST with the HDS.

    Is SWITCH ON indicated?

    YES–Go to step 24.

    NO–Go to step 18.

18. Turn the ignition switch to LOCK (0).
19. Remove rocker arm oil pressure switch B (see page 11-277), then reinstall the rocker arm oil control valve and its filter (see page 11-275) without installing rocker arm oil pressure switch B.
20. Attach the special tools to the rocker arm oil control valve as shown, then attach rocker arm oil pressure switch B to the oil pressure gauge adapter (A).



21. Reconnect the rocker arm oil pressure switch B 2P connector.
22. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the VTEC TEST.
23. Check the oil pressure during the Low V/T/LIFT and the High V/T/LIFT (TEST STATUS 3 and 4).

    Does the oil pressure increase to at least 191 kPa (2.0 kgf/cm², 27.7 psi)?

    YES–Replace rocker arm oil pressure switch B (see page 11-277), then go to step 29.

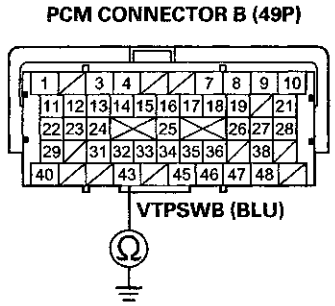
    NO–Inspect the VTEC system. If it is OK, replace the rocker arm oil control valve (see page 11-275), then go to step 29.

24. Turn the ignition switch to LOCK (0).
25. Jump the SCS line with the HDS.
26. Disconnect PCM connector B (49P).

(cont'd)

DTC Troubleshooting (cont'd)

27. Check for continuity between PCM connector terminal B43 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the PCM (B43) and rocker arm oil pressure switch B, then go to step 29.

NO–Check for poor connections or loose terminals at rocker arm oil pressure switch B, rocker arm oil control solenoid B, and the PCM. If the connections and the terminals are OK, go to step 35.

28. Turn the ignition switch to LOCK (0).
29. Reconnect all connectors.
30. Turn the ignition switch to ON (II).
31. Reset the PCM with the HDS.
32. Do the PCM idle learn procedure (see page 11-293).
33. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the VTEC TEST.

    Are VTECEX-0 and VTECIN-0 indicated?

    YES–Go to step 34.

    NO–Check for poor connections or loose terminals at rocker arm oil pressure switch B, rocker arm oil control solenoid B, and the PCM, then go to step 1.

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

    Are any Pending or Confirmed DTCs indicated?

    YES–If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

    NO–Troubleshooting is complete.■

35. Reconnect all connectors.
36. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
37. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the VTEC TEST.

    Are VTECEX-0 and VTECIN-0 indicated?

    YES–Go to step 38.

    NO–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.

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

    Are any Pending or Confirmed DTCs indicated?

    YES–If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

    NO–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204).■

DTC P2653: Rocker Arm Oil Control Solenoid B (Exhaust Valve Side) 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).

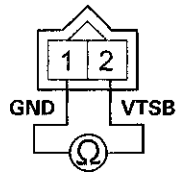
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Select the VTEC TEST in the INSPECTION MENU, and do the Solenoid Valve ACTIVATION of ROCKER ARM SOLENOID B with the HDS.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P2653 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at rocker arm oil control solenoid B and the PCM.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the rocker arm oil control solenoid B 2P connector.
7. Measure the resistance between rocker arm oil control solenoid B 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID B 2P CONNECTOR



Terminal side of male terminals

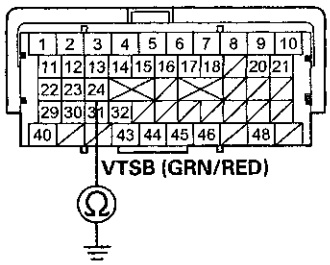
Is there 14—30 Ω at room temperature?

YES–Go to step 8.

NO–Go to step 11.

8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (49P).
10. Check for continuity between PCM connector terminal C24 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the PCM (C24) and rocker arm oil control solenoid B, then go to step 12.

NO–Check for poor connections or loose terminals at the PCM and rocker arm oil control solenoid B, then go to step 19.

11. Replace the rocker arm oil control valve (see page 11-275).
12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-293).
16. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the Solenoid Valve ACTIVATION of the ROCKER ARM SOLENOID B.
17. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2653 indicated?

    YES–Check for poor connections or loose terminals at rocker arm oil control solenoid B and the PCM, then go to step 1.

    NO–Go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

18. Monitor the OBD STATUS for DTC P2653 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, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 16.

19. Reconnect all connectors.

20. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).

21. Select the VTEC TEST in the INSPECTION MENU with the HDS, and do the Solenoid Valve ACTIVATION of the ROCKER ARM SOLENOID B.

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

    Is DTC P2653 indicated?

    YES–Check for poor connections or loose terminals at rocker arm oil control solenoid B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 21. If the PCM was substituted, go to step 1.

    NO–Go to step 23.

23. Monitor the OBD STATUS for DTC P2653 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 22, go to the indicated DTC's troubleshooting.■

    NO–If the screen indicates FAILED, check for poor connections or loose terminals at rocker arm oil control solenoid B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 21. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

DTC P2654: Rocker Arm Oil Control Solenoid B (Exhaust Valve Side) 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).
2. Clear the DTC with the HDS.
3. 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.
4. Check for Pending or Confirmed DTCs with the HDS.

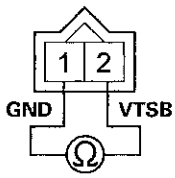
   Is DTC P2654 indicated?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at rocker arm oil control solenoid B and the PCM.■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the rocker arm oil control solenoid B 2P connector.
7. Measure the resistance between rocker arm oil control solenoid B 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID B 2P CONNECTOR



Terminal side of male terminals

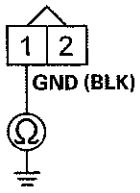
Is there 14—30 Ω at room temperature?

YES–Go to step 8.

NO–Go to step 12.

8. Check for continuity between rocker arm oil control solenoid B 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL CONTROL SOLENOID B 2P CONNECTOR



Wire side of female terminals

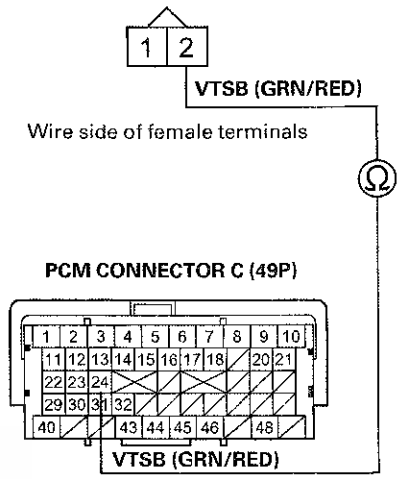
Is there continuity?

YES–Go to step 9.

NO–Repair open in the wire between the rocker arm oil control solenoid B and G101 (see page 22-22), then go to step 14.

9. Jump the SCS line with the HDS.
10. Disconnect PCM connector C (49P).
11. Check for continuity between PCM connector terminal C24 and rocker arm oil control solenoid B 2P connector terminal No. 2.

ROCKER ARM OIL CONTROL SOLENOID B 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES–Go to step 19.

NO–Repair open in the wire between the PCM (C24) and the rocker arm oil control solenoid B, then go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

12. Replace the rocker arm oil control valve (see page 11-275).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-293).
17. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P2654 indicated?

    YES–Check for poor connections or loose terminals at rocker arm oil control solenoid B and the PCM, then go to step 1.

    NO–Go to step 18.

18. Monitor the OBD STATUS for DTC P2654 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, go to step 1 and recheck. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

19. Reconnect all connectors.
20. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good 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 P2654 indicated?

    YES–Check for poor connections or loose terminals at rocker arm oil control solenoid B 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–Go to step 23.

23. Monitor the OBD STATUS for DTC P2654 in the DTCs MENU with the HDS.

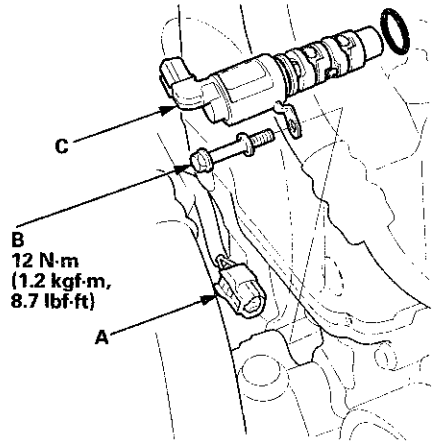
    Does the screen indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 22, go to the indicated DTC's troubleshooting.■

    NO–If the screen indicates FAILED, check for poor connections or loose terminals at rocker arm oil control solenoid B 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. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

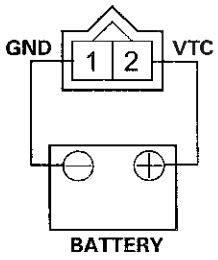
VTC Oil Control Solenoid Valve Removal/Test/Installation

1. Disconnect the VTC oil control solenoid valve 2P connector (A).



2. Remove the bolt (B) and the VTC oil control solenoid valve (C).
3. Connect VTC oil control valve 2P connector terminal No. 2 to the battery positive terminal with a jumper wire. Connect VTC oil control solenoid valve 2P connector terminal No. 1 to the battery negative terminal with a jumper wire.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR

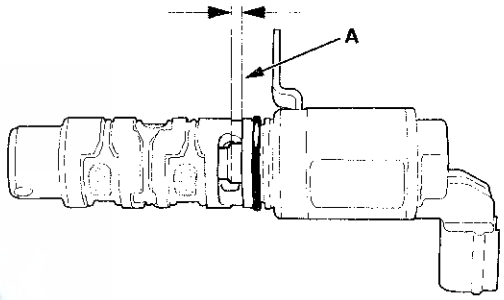


Terminal side of male terminals

4. Measure the clearance of the valve (A). The clearance should be at least 0.05 in (1.2 mm)
   - If the clearance is as specified, the valve is OK; reinstall it with a new O-eing.
   - If the clearance is not as specified, install a new valve and O-ring.

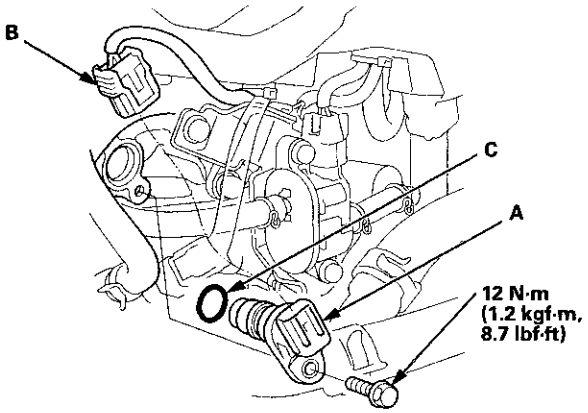
NOTE

- Before you install the valve, make sure its mating surface to the cylinder head is clean and dry.
- Coat the O-ring with engine oil before you install it.
- Do not install the valve while wearing cloth fibrous gloves. Be careful not to contaminate the cylinder head opening.



CMP Sensor A Replacement

1. Disconnect the CMP sensor A 3P connector (B).

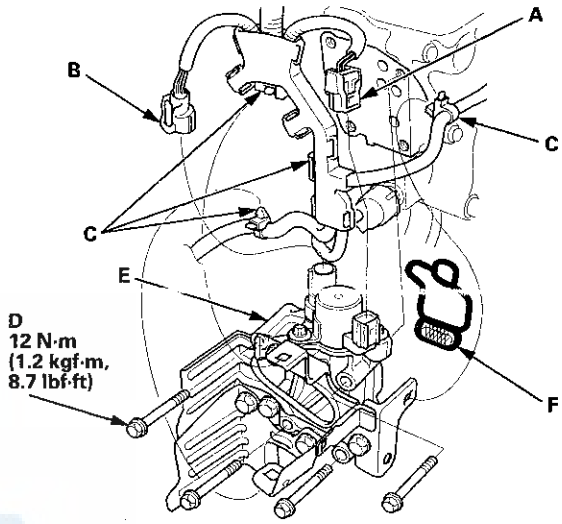


2. Remove CMP sensor A from the intake camshaft side of the cylinder head.
3. Install the parts in the reverse order of removal with a new O-ring (C).

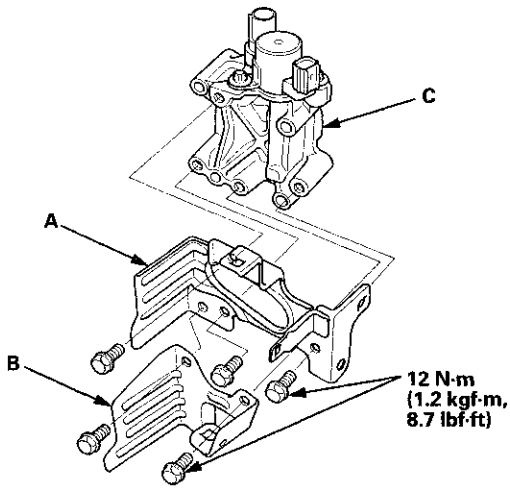
Rocker Arm Oil Control Valve Removal/Installation

All models except PZEV

1. Remove the strut brace (see page 20-306).
2. Disconnect the rocker arm oil control solenoid connector (A) and the rocker arm oil pressure switch connector (B).



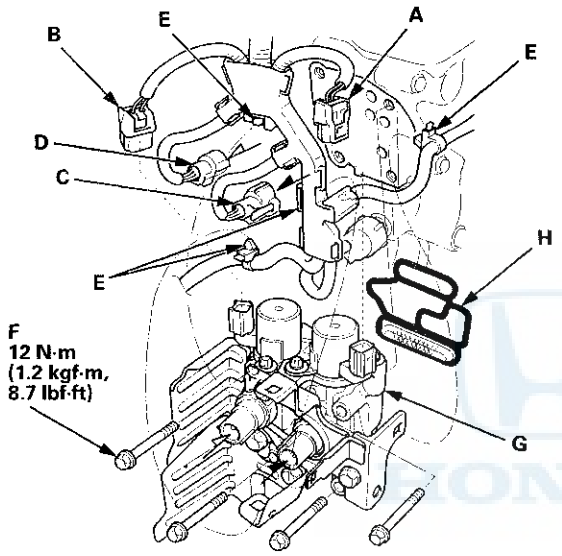
3. Remove the harness clamps (C) and the bolts (D).
4. Remove the rocker arm oil control valve assembly (E) and the rocker arm oil control valve filter (F).
5. Remove the engine wire harness bracket (A) (also (B) (if equipped)) from the rocker arm oil control valve (C).



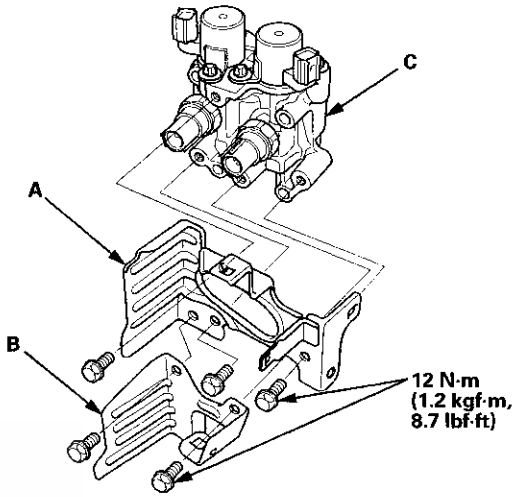
6. Install the parts in the reverse order of removal with a new rocker arm oil control valve filter.

PZEV model

1. Remove the strut brace (see page 20-306).
2. Disconnect the rocker arm oil control solenoid A connector (A), the rocker arm oil control solenoid B connector (B), the rocker arm oil pressure switch A connector (C), and the rocker arm oil pressure switch B connector (D).



3. Remove the harness clamps (E) and the bolts (F).
4. Remove the rocker arm oil control valve assembly (G) and the rocker arm oil control valve filter (H).
5. Remove the engine wire harness bracket (A) (also (B) (if equipped)) from the rocker arm oil control valve (C).

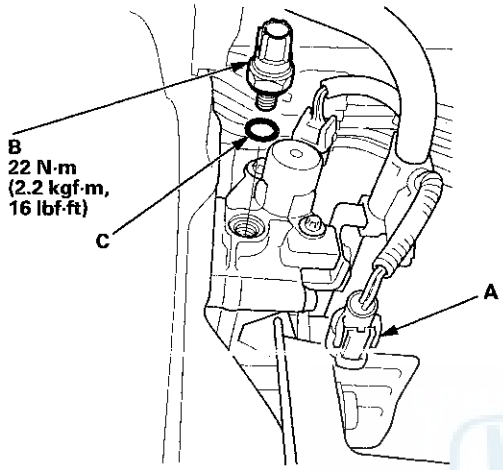


6. Install the parts in the reverse order of removal with a new rocker arm oil control valve filter.

Rocker Arm Oil Pressure Switch Removal/Installation

All models except PZEV

1. Disconnect the rocker arm oil pressure switch connector (A).

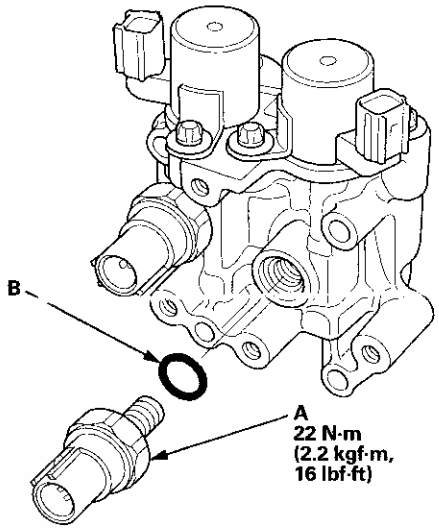


2. Remove the rocker arm oil pressure switch (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

Rocker Arm Oil Pressure Switch A Removal/Installation

PZEV model

1. Remove the rocker arm oil control valve (see page 11-275).
2. Remove rocker arm oil pressure switch A.

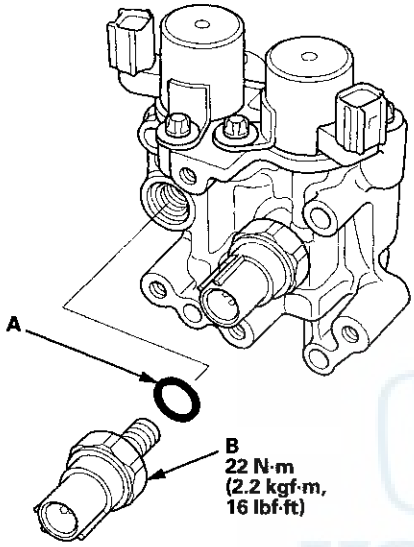


3. Install the parts in the reverse order of removal with a new O-ring (B).

Rocker Arm Oil Pressure Switch B Removal/Installation

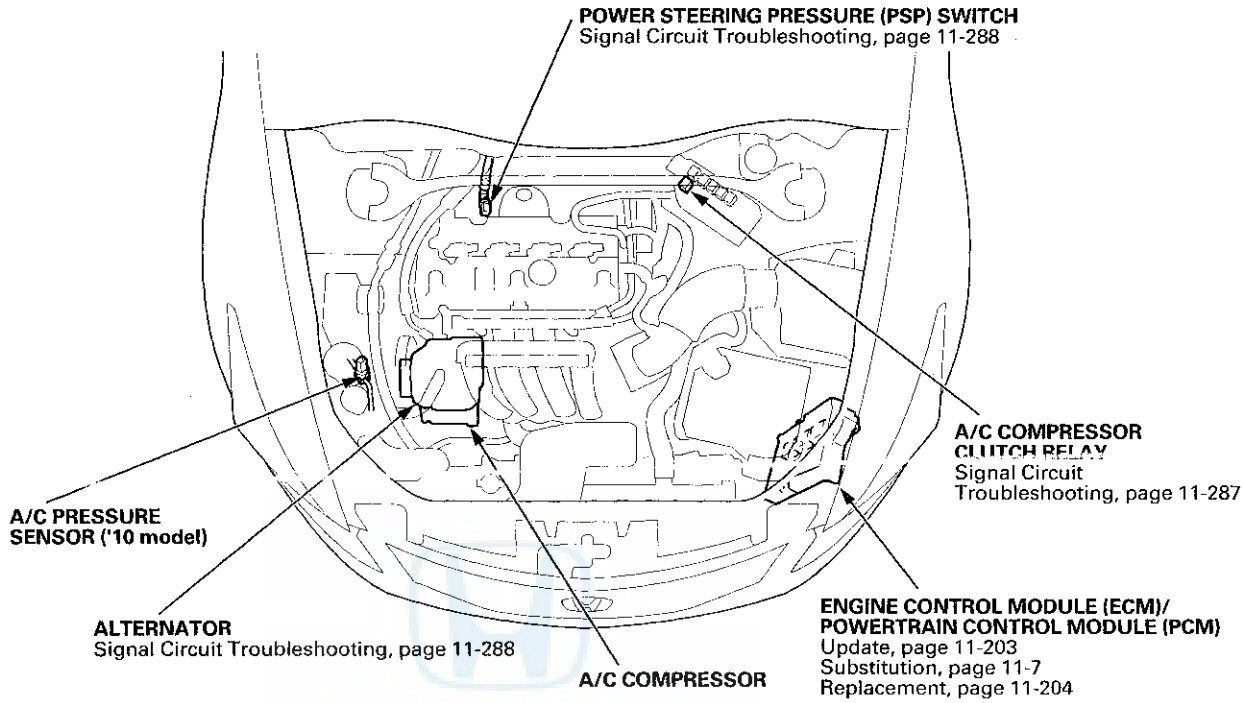
PZEV model

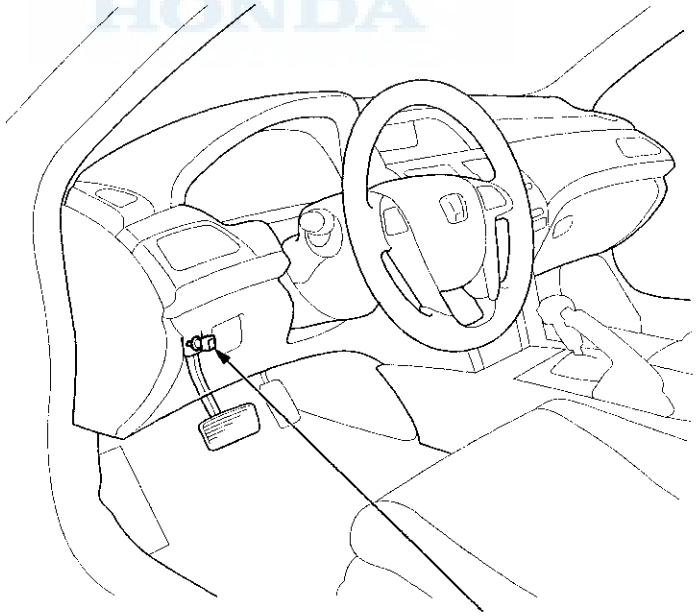
1. Remove the rocker arm oil control valve (see page 11-275).
2. Remove rocker arm oil pressure switch B.



3. Install the parts in the reverse order of removal with a new O-ring (A).

Component Location Index





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).
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 under these DATA LIST parameter conditions with the HDS:
   - ECT SENSOR 1 above 156 °F (70 °C)
   - IAT SENSOR above 32 °F (0 °C)
   - VSS is 0 mph (0 km/h)
   - ST FUEL TRIM between 0.69 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 or NOT COMPLETED, go to step 4 and recheck.
6. Remove the intake air duct from the throttle body (see page 11-335).
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 11-332). Also check for damage to the air cleaner element (see page 11-333), then go to step 9. If there is damage in the throttle bore, go to step 8.

   NO–Check the A/C system or power steering system, then go to step 9.
8. Replace the throttle body (see page 11-335).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-293).
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. Check under these DATA LIST parameter conditions with the HDS:
    - ECT SENSOR 1 above 156 °F (70 °C)
    - IAT SENSOR above 32 °F (0 °C)
    - VSS is 0 mph (0 km/h)
    - ST FUEL TRIM between 0.69 and 1.47
    - FSS is CLOSED
13. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0506 indicated?

    YES–Go to step 19.

    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, go to step 19. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION or NOT COMPLETED, go to step 11 and recheck.
15. Remove the intake air duct from the throttle body (see page 11-335).
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 11-332). Also check for damage to the air cleaner element (see page 11-333), then go to step 9. If there is damage in the throttle bore, go to step 8.

    NO–Go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

17. Recheck with different load conditions (turn on the headlights, the blower motor, the rear window defogger and/or 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 power steering system, then go to step 1 and recheck. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION or NOT COMPLETED, go to step 17.

19. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
20. 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.
21. Check under these DATA LIST parameter conditions with the HDS:
    - ECT SENSOR 1 above 156 °F (70 °C)
    - IAT SENSOR above 32 °F (0 °C)
    - VSS is 0 mph (0 km/h)
    - ST FUEL TRIM between 0.69 and 1.47
    - FSS is CLOSED
22. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0506 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 20. If the ECM/PCM was substituted, go to step 1.

    NO–Go to step 23.

23. Monitor the OBD STATUS for DTC P0506 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 11-204). If any other Pending or Confirmed DTCs were indicated in step 22, 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. 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 EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION or NOT COMPLETED, go to step 20.

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).
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 at least 20 seconds.
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 or NOT COMPLETED, 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.
6. Turn the ignition switch to ON (II).
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see page 11-293).
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 for at least 20 seconds.
10. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0507 indicated?

    YES–Go to step 12.

    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, go to step 12. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION or NOT COMPLETED, recheck with different load conditions (turn on the headlights, blower motor, or A/C; change the gear position, etc.), then go to step 9.
12. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
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 for at least 20 seconds.
14. 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. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 13. If the ECM/PCM was substituted, go to step 1.

    NO–Go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

15. Monitor the OBD STATUS for DTC P0507 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 11-204). 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 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 13. 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 or NOT COMPLETED, go to step 13.

DTC P0532: A/C Pressure 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. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.24 V or less?

   YES–Go to step 5.

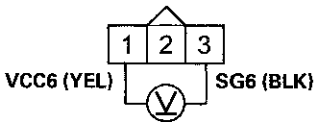
   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM.■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the A/C pressure sensor 3P connector.
7. Turn the ignition switch to ON (II).
8. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.24 V or less?

   YES–Go to step 10.

   NO–Go to step 9.
9. Measure the voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

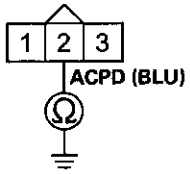
Is there about 5 V?

YES–Go to step 18.

NO–Go to step 14.

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector A (49P).
13. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and body ground.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

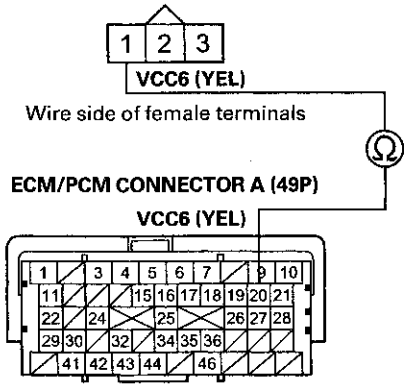
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (A17) and the A/C pressure sensor, then go to step 20.

NO–Go to step 27.

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (49P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 1 and ECM/PCM connector terminal A20.

A/C PRESSURE SENSOR 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES–Go to step 27.

NO–Repair open in the wire between the ECM/PCM (A20) and the A/C pressure sensor, then go to step 20.

18. Turn the ignition switch to LOCK (0).
19. Replace the A/C pressure sensor (see page 21-7).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-293), then let the engine idle.
24. Turn the blower switch on.
25. Turn the A/C switch on.
26. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0532 indicated?

YES–Check for poor connections or loose terminals at the A/C pressure 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)

DTC Troubleshooting (cont'd)

27. Reconnect all connectors.
28. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
29. Start the engine, and let it idle.
30. Turn the blower switch on.
31. Turn the A/C switch on.
32. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0532 indicated?

    YES–Check for poor connections or loose terminals at the A/C pressure 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 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P0533: A/C Pressure 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).

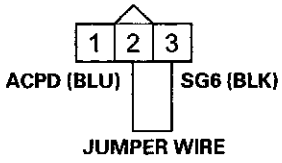
1. Start the engine, and let it idle.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 4.75 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 the A/C pressure sensor and the ECM/PCM.■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the A/C pressure sensor 3P connector.
7. Connect A/C pressure sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

8. Turn the ignition switch to ON (II).
9. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

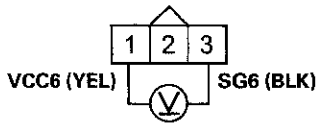
   Is there about 4.75 V or more?

   YES–Go to step 10.

   NO–Go to step 22.
10. Turn the ignition switch to LOCK (0).
11. Remove the jumper wire from the A/C pressure sensor 3P connector.

12. Turn the ignition switch to ON (II).
13. Measure the voltage between A/C pressure sensor 3P connector terminal No. 1 and No. 3.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

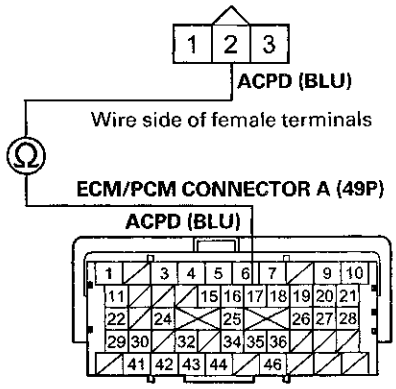
Is there about 5 V?

YES–Go to step 14.

NO–Go to step 18.

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (49P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and ECM/PCM connector terminal A17.

A/C PRESSURE SENSOR 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES–Go to step 31.

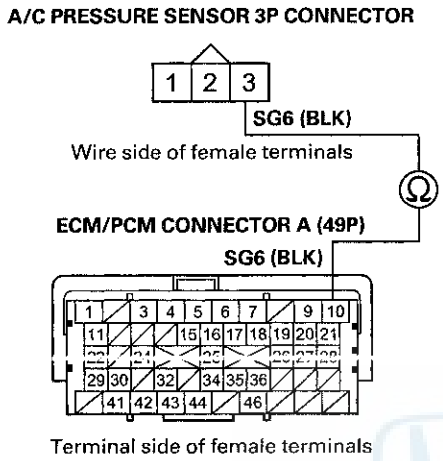
NO–Repair open in the wire between the ECM/PCM (A17) and the A/C pressure sensor, then go to step 24.

18. Turn the ignition switch to LOCK (0).
19. Jump the SCS line with the HDS.
20. Disconnect ECM/PCM connector A (49P).

(cont'd)

DTC Troubleshooting (cont'd)

21. Check for continuity between A/C pressure sensor 3P connector terminal No. 3 and ECM/PCM connector terminal A10.



Is there continuity?

YES–Go to step 31.

NO–Repair open in the wire between the ECM/PCM (A10) and the A/C pressure sensor, then go to step 24.

22. Turn the ignition switch to LOCK (0).
23. Replace the A/C pressure sensor (see page 21-7).
24. Reconnect all connectors.
25. Turn the ignition switch to ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-293), then let the engine idle.
28. Turn the blower switch on.
29. Turn the A/C switch on.
30. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0533 indicated?

    YES–Check for poor connections or loose terminals at the A/C pressure 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.■

31. Reconnect all connectors.
32. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
33. Start the engine, and let it idle.
34. Turn the blower switch on.
35. Turn the A/C switch on.
36. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0533 indicated?

    YES–Check for poor connections or loose terminals at the A/C pressure 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 33. 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 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

A/C Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
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–Do the A/C system test (see page 21-89).■
5. Check the A/C system.

   Does the A/C system operate?

   YES–The air conditioning system circuit is OK.■

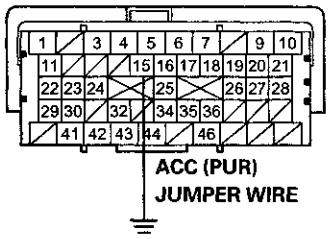
   NO–Go to step 6.
6. Turn the ignition switch to LOCK (0).
7. Turn the ignition switch to ON (II).
8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

   Is there a clicking noise from the A/C compressor clutch?

   YES–Do the A/C system test (see page 21-89).■

   NO–Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (49P).
12. Turn the ignition switch to ON (II).
13. Momentarily connect ECM/PCM connector terminal A15 to body ground with a jumper wire several times.

ECM/PCM CONNECTOR A (49P)



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 11-203), 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 11-204).■

NO–Check for poor connections or loose terminals at the A/C compressor clutch relay and the ECM/PCM. If the connections are OK, check the A/C compressor clutch relay (see page 22-93). If needed, repair open in the wire between the ECM/PCM (A15), the A/C compressor clutch relay, or other parts in the A/C systems.■

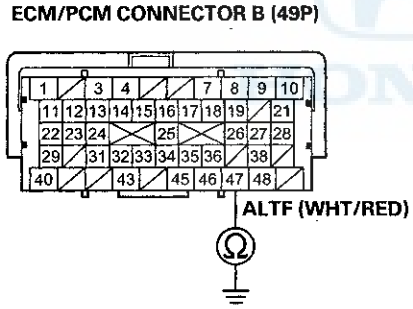
Alternator FR Signal Circuit Troubleshooting

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 ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect ECM/PCM connector B (49P).
8. Check for continuity between ECM/PCM connector terminal B47 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Repair short in the wire between the ECM/PCM (B47) and the alternator.■

NO–Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

PSP Switch Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Align the steering wheel straight ahead.
3. Check the PSP SWITCH in the DATA LIST with the HDS.

   Does it indicate ON?

   YES–Go to step 4.

   NO–Go to step 14.
4. Turn the steering wheel to the full lock position.
5. Check the PSP SWITCH in the DATA LIST with the HDS.

   Does it change to OFF?

   YES–The PSP switch signal circuit is OK.■

   NO–Go to step 6.
6. Turn the ignition switch to LOCK (0).
7. Disconnect the PSP switch 2P connector.
8. Start the engine.
9. Check the PSP SWITCH in the DATA LIST with the HDS.

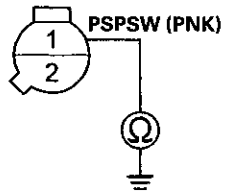
   Does it change to OFF?

   YES–Replace the PSP switch (see page 17-29).■

   NO–Go to step 10.
10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector A (49P).

13. Check for continuity between PSP switch 2P connector terminal No. 1 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

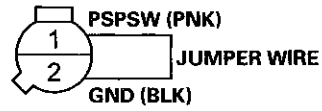
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (A23) and the PSP switch.■

NO–Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

14. Turn the ignition switch to LOCK (0).
15. Disconnect the PSP switch 2P connector.
16. Connect PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire, then start the engine.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

17. Check the PSP SWITCH in the DATA LIST with the HDS.

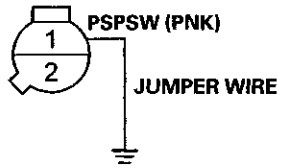
Does it change to ON?

YES–Replace the PSP switch (see page 17-29).■

NO–Go to step 18.

18. Turn the ignition switch to LOCK (0).
19. Remove the jumper wire from the PSP switch 2P connector.
20. Jump the SCS line with the HDS.
21. Disconnect ECM/PCM connector A (49P).
22. Connect PSP switch 2P connector terminal No. 1 to body ground with a jumper wire.

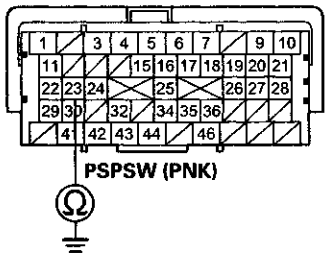
PSP SWITCH 2P CONNECTOR



Wire side of female terminals

23. Check for continuity between ECM/PCM connector terminal A23 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES–Go to step 24.

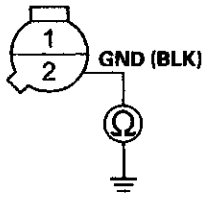
NO–Repair open in the wire between the PSP switch and the ECM/PCM (A23).■

(cont'd)

PSP Switch Signal Circuit Troubleshooting (cont'd)

24. Check for continuity between PSP switch 2P connector terminal No. 2 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

NO–Repair open in the wire between the PSP switch and G201 (see page 22-26).■

Brake Pedal Position Switch Signal Circuit Troubleshooting

1. Turn the ignition switch to ON (II).
2. Check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it indicate OFF?

   YES–Go to step 3.

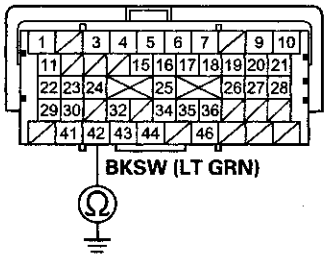
   NO–Inspect the brake pedal position switch (see page 19-6).■
3. Press the brake pedal, and check the BRAKE SWITCH in the DATA LIST with the HDS.

   Does it change to ON?

   YES–The brake pedal position switch signal circuit (BKSW line) is OK.■

   NO–Go to step 4.
4. Turn the ignition switch to LOCK (0).
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 A42 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

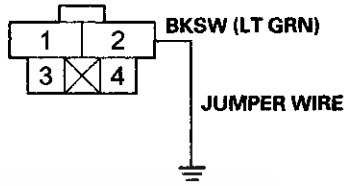
Is there continuity?

YES–Repair short in the wire between the ECM/PCM (A42) and the brake pedal position switch. Replace the No. 10 HORN/STOP (20 A) fuse.■

NO–Go to step 9.

9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

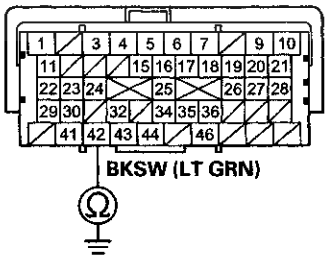
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminal A42 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 the No. 10 HORN/STOP (20 A) fuse. Inspect the brake pedal position switch (see page 19-6).■

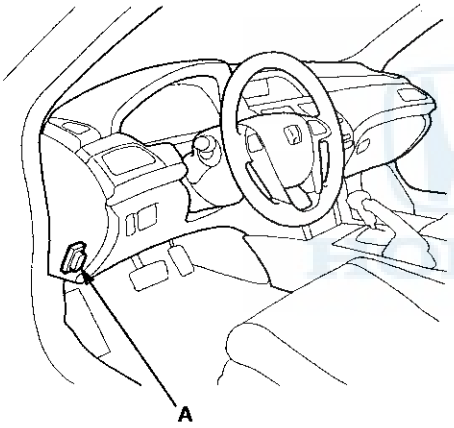
NO–Repair open in the wire between the ECM/PCM (A42) and the brake pedal position switch.■

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 11-181).
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:

M/T	**780 ± 50 rpm**
A/T	**800 ± 50 rpm (in P or N)**

6. Let the engine idle for 1 minute with high electric load (A/C on, temperature set to max cool, blower fan on high, headlights on high beam).

Idle speed should be:

M/T	**780 ± 50 rpm**
A/T	**800 ± 50 rpm (in P or N)**

NOTE: If the idle speed is not within specification, do the ECM/PCM idle learn procedure (see page 11-293). 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 ECM/PCM.
- Reset ECM/PCM.
- Update ECM/PCM.
- Replace or clean the throttle body.
- Disassemble the engine or the transmission.

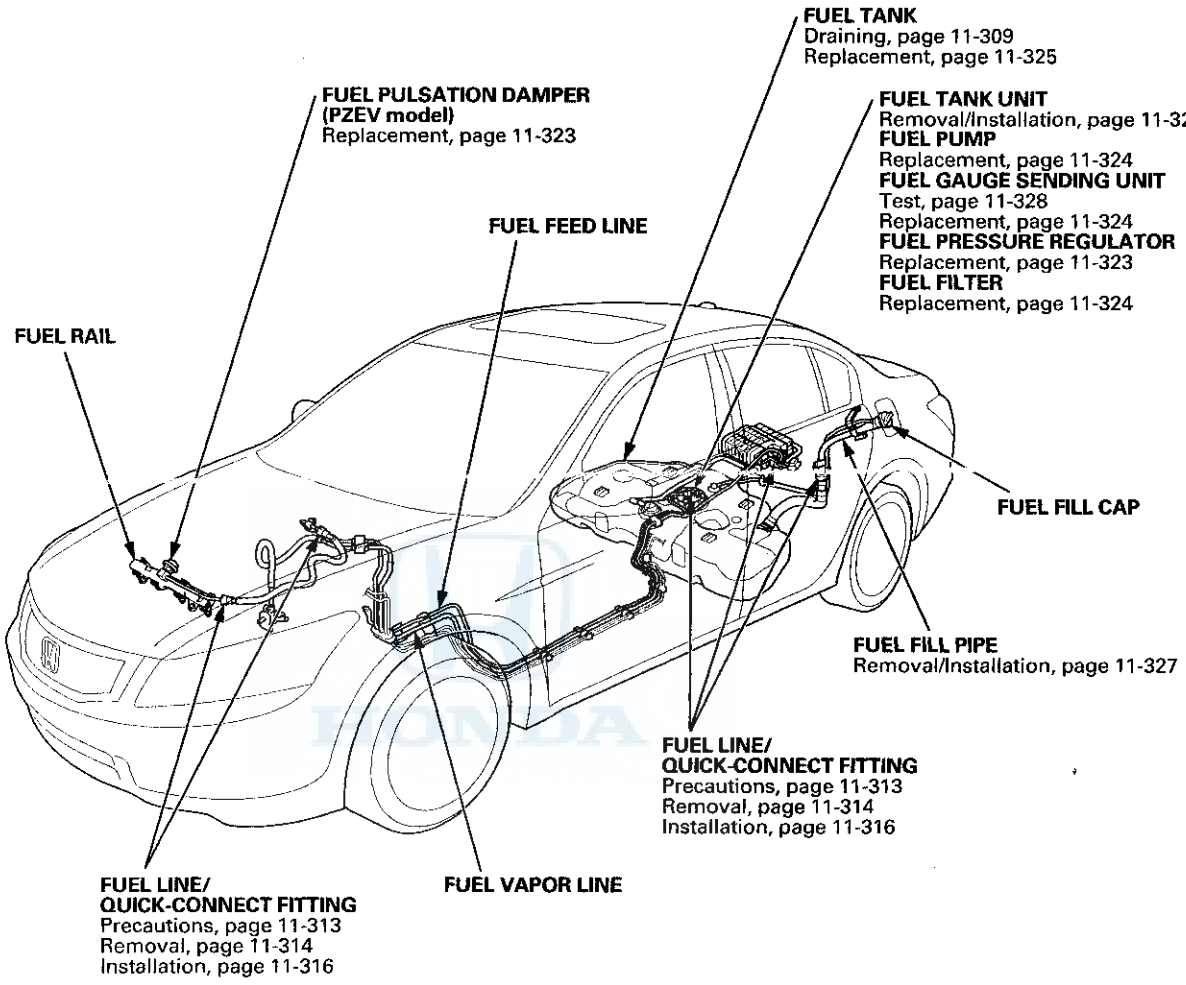
NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

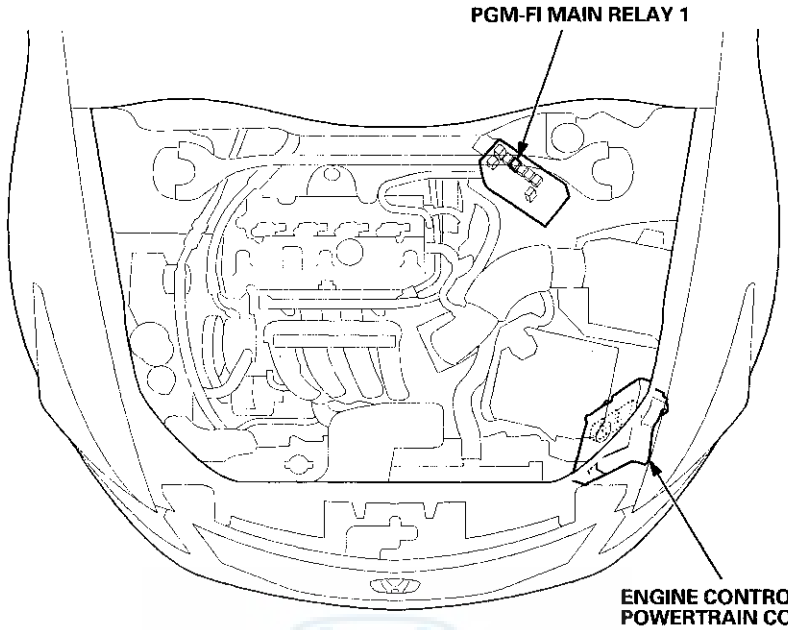
Procedure

1. Make sure all electrical items (A/C, audio, lights, etc.) are off.
2. Reset the ECM/PCM with the HDS.
3. Turn the ignition switch to ON (II), 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.

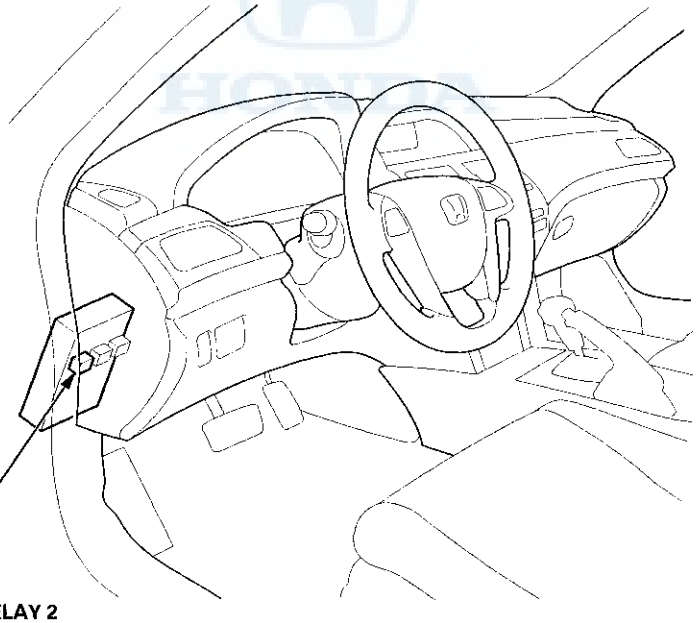
   NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.

Component Location Index





ENGINE CONTROL MODULE (ECM)/
POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-203
Substitution, page 11-7
Replacement, page 11-204



PGM-FI MAIN RELAY 2
(FUEL PUMP)

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, DTC P0461 cannot be duplicated during this troubleshooting.

1. Test the fuel gauge sending unit (see page 11-328).

   Is the fuel gauge sending unit OK?

   YES–Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module.■

   NO–Replace the fuel gauge sending unit (see page 11-324), then go to step 2.

2. Turn the ignition switch to ON (II).
3. Reset the ECM/PCM with the HDS.
4. Do the ECM/PCM idle learn procedure (see page 11-293).
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

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).
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).
5. Remove the rear seat cushion (see page 20-241).
6. Remove the access panel from the floor (see page 11-320).
7. Disconnect the fuel tank unit 4P connector.
8. Turn the ignition switch to ON (II).
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Pending or Confirmed DTCs with the HDS.

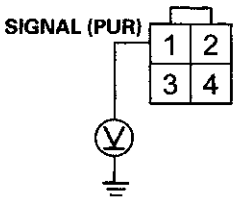
    Is DTC P0463 indicated?

    YES–Replace the fuel gauge sending unit (see page 11-324), 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

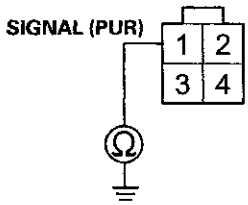
Is there battery voltage?

YES–Go to step 16.

NO–Go to step 12.

12. Turn the ignition switch to LOCK (0).
13. Remove the gauge control module (see page 22-351).
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



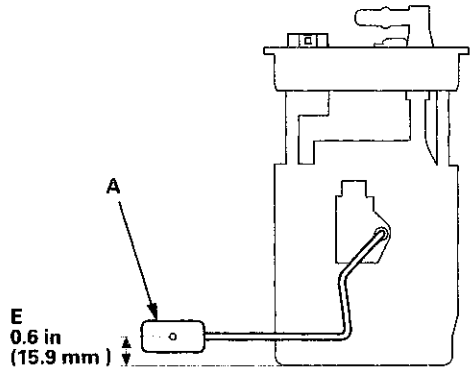
Wire side of female terminals

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 22-351), then go to step 24.

16. Turn the ignition switch to LOCK (0).
17. Remove the fuel tank unit (see page 11-320).
18. Connect the fuel tank unit 4P connector.
19. Turn the ignition switch to ON (II).
20. Clear the DTC with the HDS.
21. Set the float (A) to the E position.



22. Check the fuel gauge.

Does the gauge move to the empty position?

YES–Go to step 30.

NO–Replace the gauge control module (see page 22-351), then go to step 23.

23. Turn the ignition switch to LOCK (0).
24. Reconnect all connectors.
25. Reinstall all removed parts in the reverse order of removal.
26. Turn the ignition switch to ON (II).
27. Reset the ECM/PCM with the HDS.
28. Do the ECM/PCM idle learn procedure (see page 11-293).
29. 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 and the 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.■

(cont'd)

DTC Troubleshooting (cont'd)

30. Turn the ignition switch to LOCK (0).
31. Reinstall all removed parts in the reverse order of removal.
32. Reconnect all connectors.
33. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/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 gauge control module and the 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 11-204). 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

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

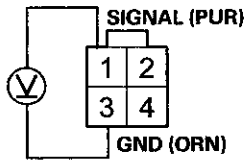
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Pending or Confirmed DTCs with the HDS.

   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 and the fuel gauge sending unit.■
4. Turn the ignition switch to LOCK (0).
5. Remove the rear seat cushion (see page 20-241).
6. Remove the access panel from the floor (see page 11-320).
7. Disconnect the fuel tank unit 4P connector.
8. Turn the ignition switch to ON (II).
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?

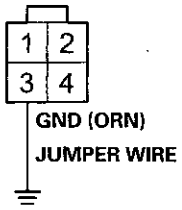
YES–Go to step 17.

NO–Go to step 10.

10. Turn the ignition switch to LOCK (0).

11. Connect fuel tank unit 4P connector terminal No. 3 to body ground with a jumper wire.

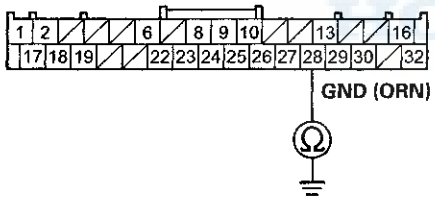
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

12. Remove the gauge control module (see page 22-351).
13. Disconnect the gauge control module 32P connector.
14. Check for continuity between gauge control module 32P connector terminal No. 28 and body ground.

GAUGE CONTROL MODULE 32P CONNECTOR



Wire side of female terminals

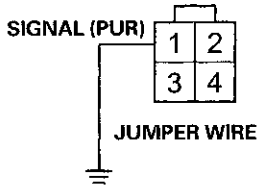
Is there continuity?

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.

15. Connect fuel tank unit 4P connector terminal No. 1 to body ground with a jumper wire.

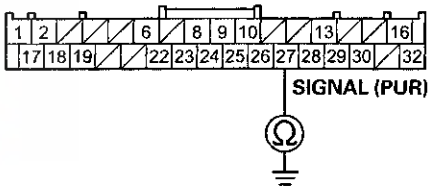
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

16. Check for continuity between gauge control module 32P connector terminal No. 27 and body ground.

GAUGE CONTROL MODULE 32P CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Replace the gauge control module (see page 22-351), 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).
18. Remove the fuel tank unit (see page 11-320).
19. Test the fuel gauge sending unit (see page 11-328).

Is the fuel gauge sending unit OK?

YES–Go to step 20.

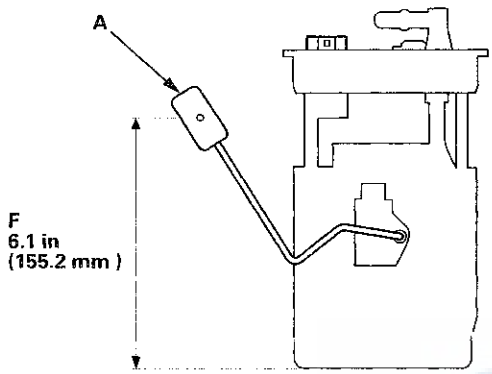
NO–Replace the fuel gauge sending unit (see page 11-324), then go to step 26.

20. Connect the fuel tank unit 4P connector.

(cont'd)

DTC Troubleshooting (cont'd)

21. Reconnect the gauge control module 32P connector.
22. Turn the ignition switch to ON (II).
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 22-351), then go to step 26.

26. Turn the ignition switch to LOCK (0).
27. Reconnect all connectors.
28. Reinstall all removed parts in the reverse order of removal.
29. Turn the ignition switch to ON (II).
30. Reset the ECM/PCM with the HDS.
31. Do the ECM/PCM idle learn procedure (see page 11-293).
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 the fuel gauge sending unit, then go to step 1.

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

33. Turn the ignition switch to LOCK (0).
34. Reinstall all removed parts in the reverse order of removal.
35. Reconnect all connectors.
36. Update the ECM/PCM if it does not have the latest software (see page 11-203), or substitute a known-good ECM/PCM (see page 11-7).
37. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0463 indicated?

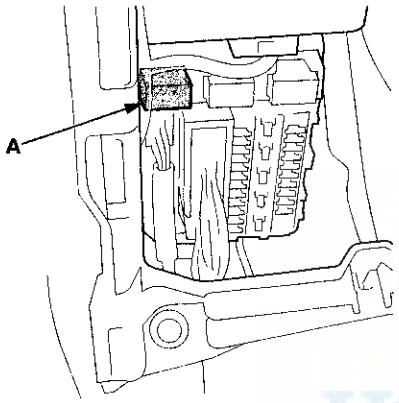
    YES–Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO–If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-204). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting.■

Fuel Pump Circuit Troubleshooting

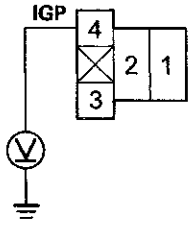
If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is turned to ON (II). If the fuel pump does not make noise, check as follows:

1. Turn the ignition switch to LOCK (0).
2. Remove the driver's dashboard lower cover (see page 20-166).
3. Remove PGM-FI main relay 2 (FUEL PUMP) (A) from the driver's under-dash fuse/relay box.



4. Turn the ignition switch to ON (II).
5. Measure the voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



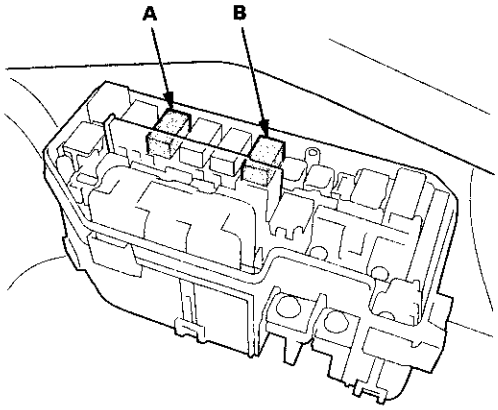
Terminal side of female terminals

Is there battery voltage?

YES–Go to step 14.

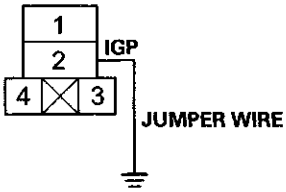
NO–Go to step 6.

6. Turn the ignition switch to LOCK (0).
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 ECM/PCM connector A (49P).
10. Disconnect engine wire harness connector C101 at the left side of the engine compartment.
11. Disconnect the driver's under-dash fuse/relay box connector F (33P).
12. 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



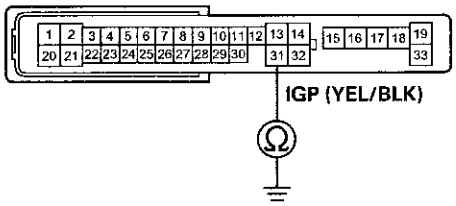
Terminal side of female terminals

(cont'd)

Fuel Pump Circuit Troubleshooting (cont'd)

13. 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?

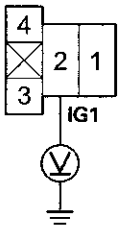
YES–Replace the driver's under-dash fuse/relay box; USA models (see page 22-86), Canafda models (see page 22-87).■

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 22-86).■

14. Measure the voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES–Go to step 15.

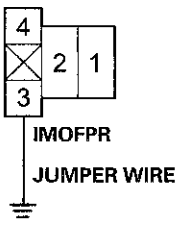
NO–

- 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; USA models (see page 22-86), Canada models (see page 22-87).■

15. Turn the ignition switch to LOCK (0).

16. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 to body ground with a jumper wire.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR

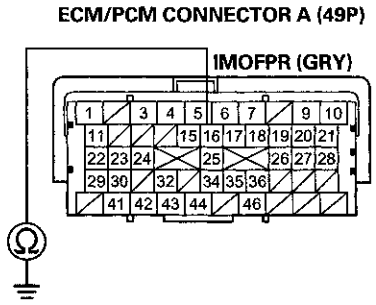


Terminal side of female terminals

17. Jump the SCS line with the HDS.

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

19. Check for continuity between body ground and ECM/PCM connector terminal A16.



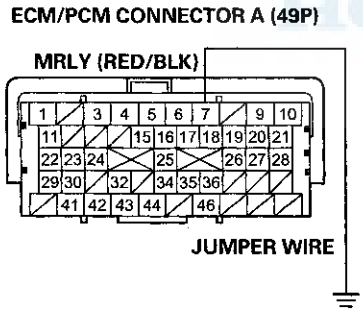
Terminal side of female terminals

Is there continuity?

YES–Go to step 20.

NO–Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the ECM/PCM (A16).■

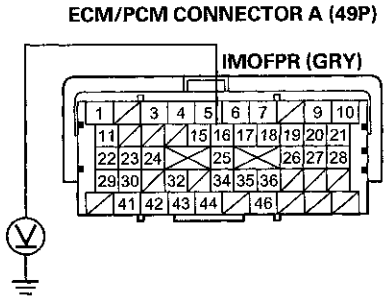
20. Reinstall PGM-FI main relay 2 (FUEL PUMP).
21. Connect ECM/PCM connector terminal A7 to body ground with a jumper wire.



Terminal side of female terminals

22. Turn the ignition switch to ON (II).

23. Measure the voltage between ECM/PCM connector terminal A16 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES–Go to step 24.

NO–Replace PGM-FI main relay 2 (FUEL PUMP).■

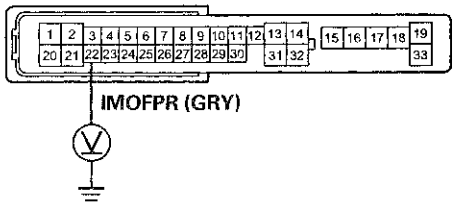
24. Turn the ignition switch to LOCK (0).
25. Reconnect ECM/PCM connector A (49P).

(cont'd)

Fuel Pump Circuit Troubleshooting (cont'd)

26. Turn the ignition switch to ON (II), and measure the voltage between driver's under-dash fuse/relay box connector F (33P) terminal No. 22 and body ground within 2 seconds.

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR F (33P)



Wire side of female terminals

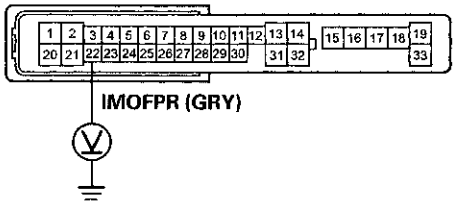
Is there battery voltage?

YES–Update the ECM/PCM if it does not have the latest software (see page 11-203), 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 11-204).■

NO–Go to step 27.

27. Turn the ignition switch to ON (II), and measure the voltage between driver's under-dash fuse/relay box connector F (33P) terminal No. 22 and body ground after 2 seconds.

DRIVER'S UNDER-DASH FUSE/RELAY BOX CONNECTOR F (33P)



Wire side of female terminals

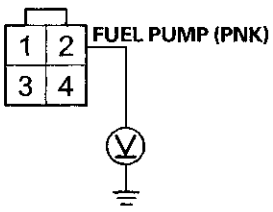
Is there battery voltage?

YES–Go to step 28.

NO–Replace the driver's under-dash fuse/relay box; USA models (see page 22-86), Canada models (see page 22-87).

28. Turn the ignition switch to LOCK (0).
29. Remove the rear seat cushion (see page 20-241).
30. Remove the access panel from the floor (see page 11-320).
31. Turn the ignition switch to ON (II), 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

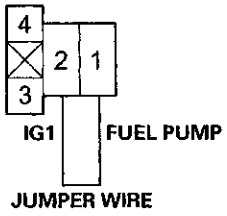
Is there battery voltage?

YES–Go to step 36.

NO–Go to step 32.

32. Turn the ignition switch to LOCK (0).
33. Remove PGM-FI main relay 2 (FUEL PUMP).
34. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminals No. 1 and No. 2 with a jumper wire.

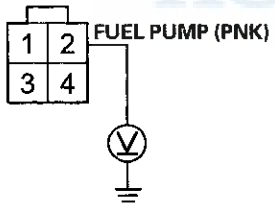
PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

35. Turn the ignition switch to ON (II), 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?

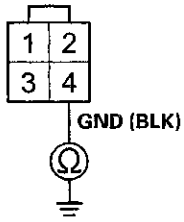
YES–Replace PGM-FI main relay 2 (FUEL PUMP).■

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 22-86).■

36. Turn the ignition switch to LOCK (0).
37. 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 11-324).■

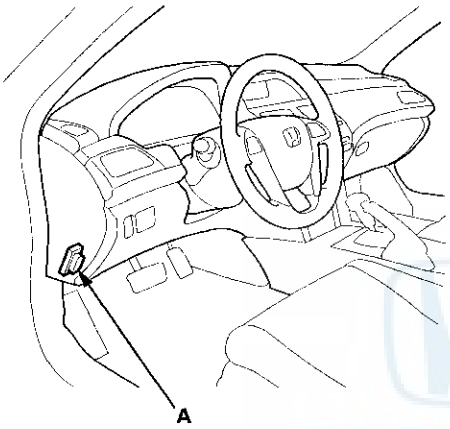
NO–Repair open in the wire between the fuel tank unit 4P connector and G603; 4-door (see page 22-50), 2-door (see page 22-52).■

Fuel Pressure Relieving

Before disconnecting fuel lines or hoses, relieve pressure from the system by disabling the fuel pump, running the engine until it stalls, then and disconnecting the fuel line/quick connect fitting in the engine compartment.

With the HDS

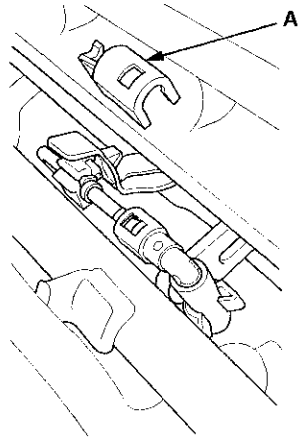
1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



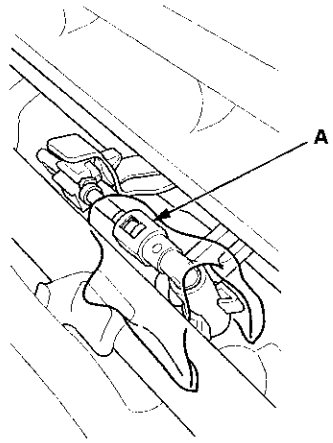
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-181).
4. Turn the ignition switch to LOCK (0).
5. Remove the fuel fill cap to relieve the pressure in the fuel tank.
6. Turn the ignition switch to ON (II).
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).
9. Do the battery terminal disconnection procedure (see page 22-91).
10. Remove the quick-connect fitting cover (A) (see page 11-314).

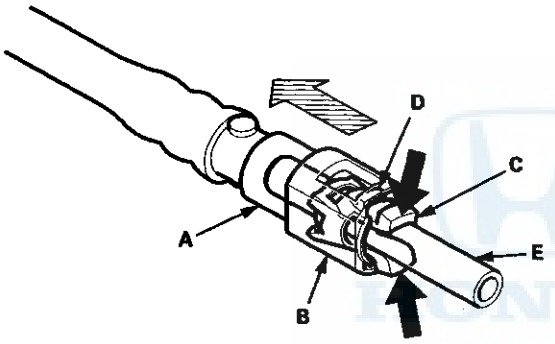


11. Check the fuel quick-connect fitting for dirt, and clean it if needed.
12. Place a rag or shop towel over the quick-connect fitting (A).



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.

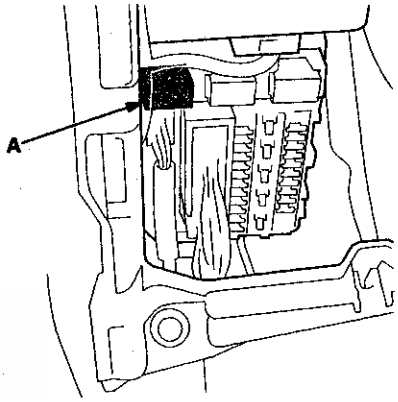
    NOTE:
    - Be careful not to damage the line (E) or other parts.
    - Do not use tools.
    - If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
    - Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



14. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 5 on page 11-315).
15. Do the battery terminal reconnection procedure (see page 22-91).

Without the HDS

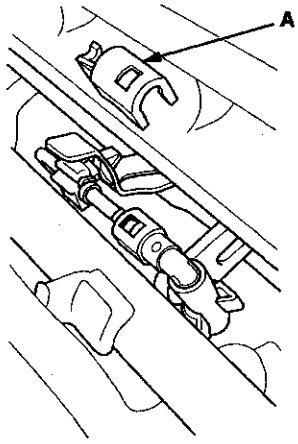
1. Remove the driver's dashboard lower cover (see page 20-166).
2. Remove PGM-FI main relay 2 (FUEL PUMP) (A) from the driver's under-dash fuse/relay box.



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).
5. Remove the fuel fill cap to relieve the pressure in the fuel tank.
6. Do the battery terminal disconnection procedure (see page 22-91).
7. Remove the quick-connect fitting cover (A) (see page 11-314).

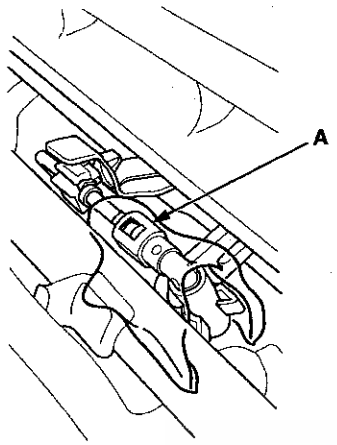


8. Check the fuel quick-connect fitting for dirt, and clean it if needed.

(cont'd)

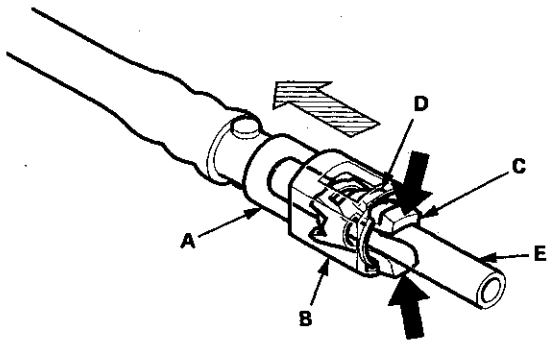
Fuel Pressure Relieving (cont'd)

9. Place a rag or shop towel over the quick-connect fitting (A).



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 (see step 5 on page 11-315).

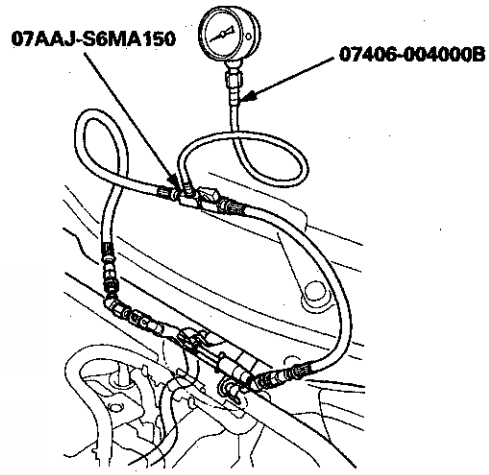
12. Do the battery terminal reconnection procedure (see page 22-91).

Fuel Pressure Test

Special Tools Required
- Fuel Pressure Gauge 07406-004000B
- Fuel Pressure Gauge Attachment Set 07AAJ-S6MA150

1. Relieve the fuel pressure (see page 11-306).

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).
   - If the pump runs, go to step 5.
   - If the pump does not run, do the fuel pump circuit troubleshooting (see page 11-301).

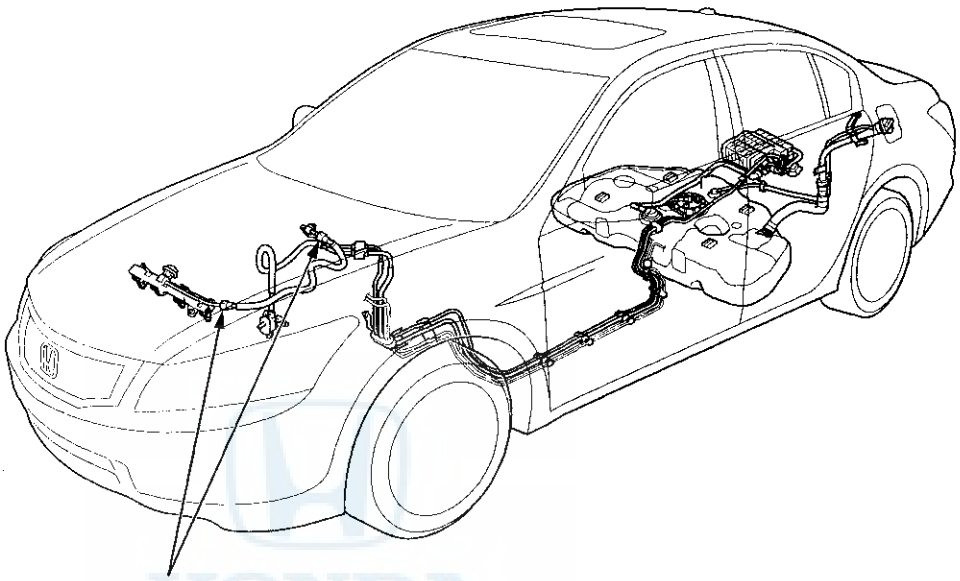
5. Read the fuel pressure gauge. The pressure should be 333—382 kPa (3.4—3.9 kgf/cm², 48—55 psi).
   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator (see page 11-323) and the fuel filter (see page 11-324), then recheck the fuel pressure.

Fuel Tank Draining

1. Remove the fuel tank unit (see page 11-320).
2. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank.
3. Reinstall the fuel tank unit (see page 11-321).

Fuel Line Inspection

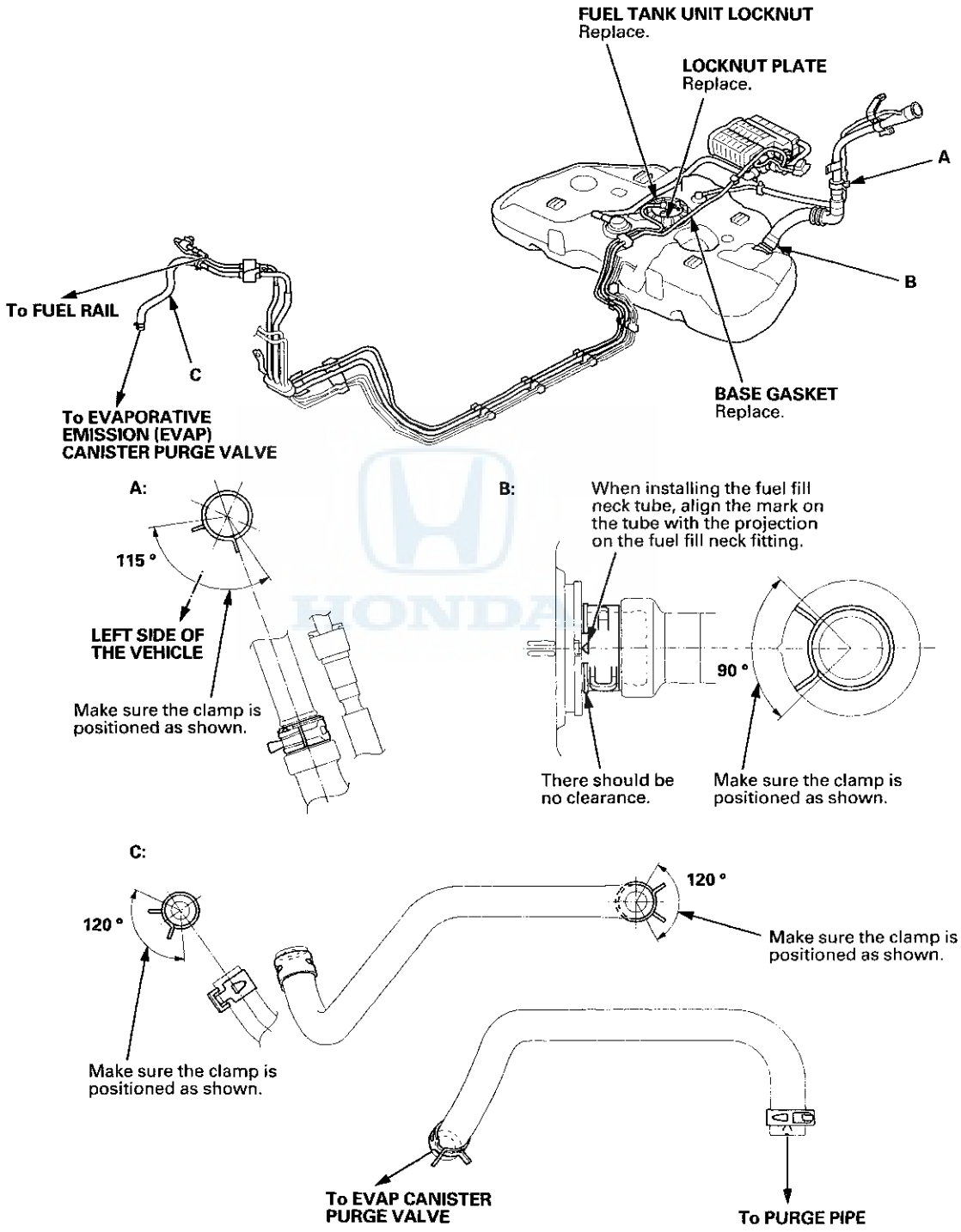
Check the fuel system lines and hoses for damage, leaks, and deterioration. Replace any damaged parts.



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.

All models except PZEV



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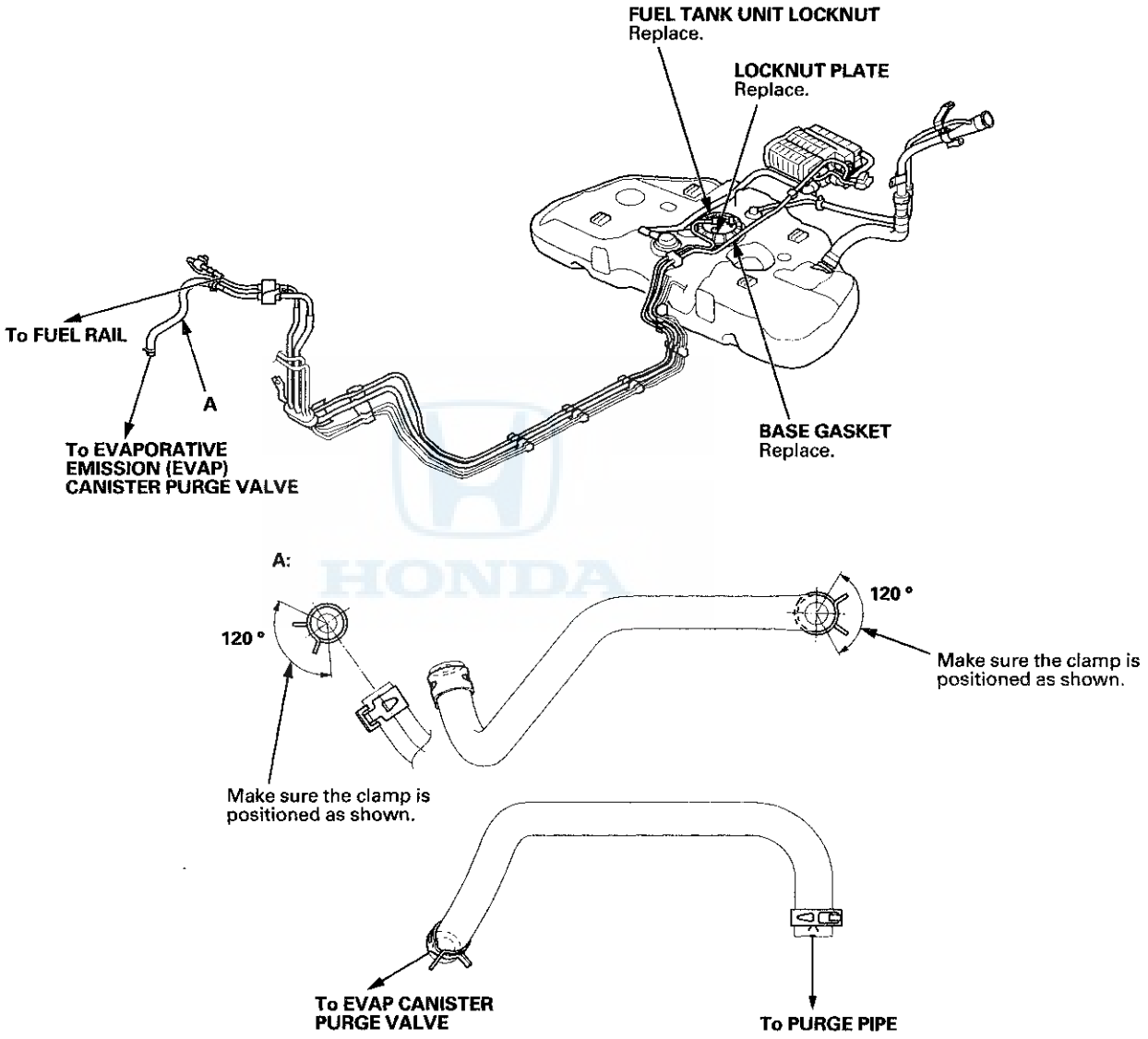
Fuel Line Inspection (cont'd)

Check all clamps, and make sure they are properly positioned and tightened.

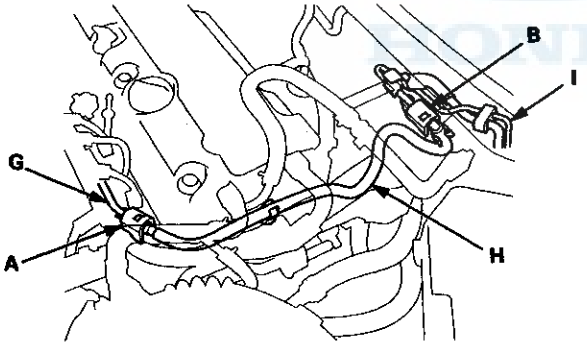
PZEV model

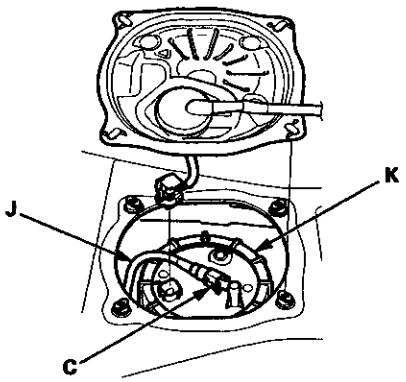


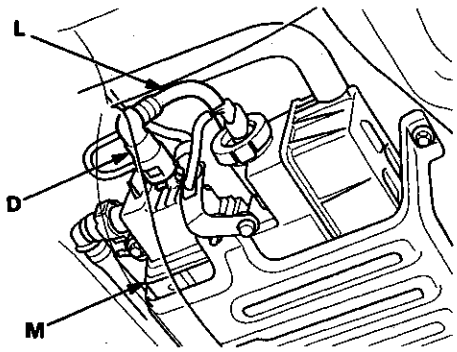
Fuel Line/Quick-Connect Fitting Precautions

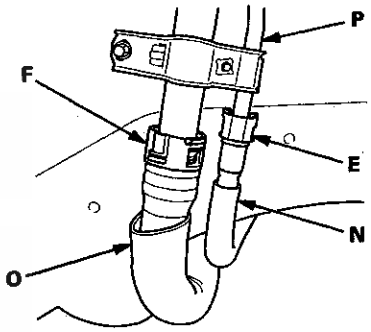
The fuel line/quick-connect fittings (A, B, C, D, E, and F) connect the fuel rail (G) to the fuel feed hose (H), the fuel feed hose to the fuel line (I), the fuel line (J) to the fuel tank unit (K), the fuel vapor line (L) to the EVAP canister (M), and the fuel tank vapor recirculation tube (N) (PZEV model, and fuel fill neck tube (O)) to the fuel fill pipe (P). When removing or installing the fuel feed hose, the fuel tank unit, or the fuel tank, when disconnecting/connecting the quick-connect fittings, pay attention to the following:

- The fuel feed hoses, fuel line, 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, fuel line, 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, fuel line, and quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.









PZEV model shown

(cont'd)

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.

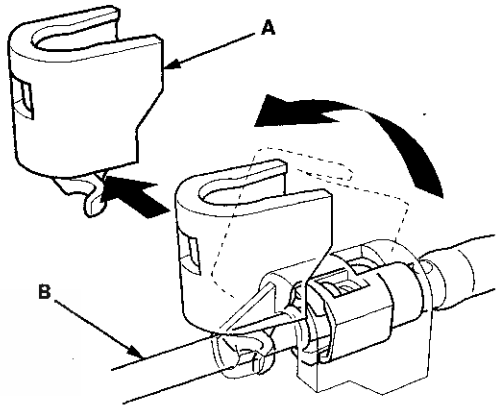
Use the same manufacturer retainer and the same size when the replacing the retainer.

Location	Manufacturer	Retainer color	Line diameter
A	Tokai	Blue green	0.3 in (8 mm)
B	Tokai	Green	0.2 in (6.3 mm)
C	Sanoh	White	0.4 in (9.5 mm)
D	Sanoh	White	0.5 in (12 mm)
E	Tokai	Natural	0.5 in (12 mm)
F (PZEV model)	Tokai	Green	1.1 in (28.6 mm)

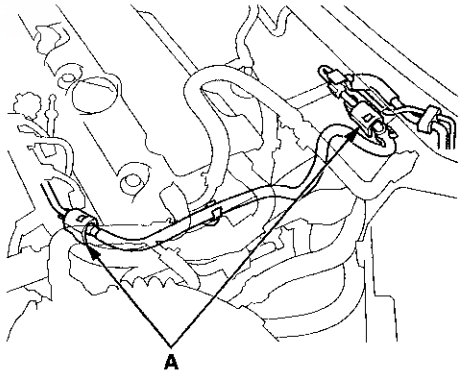
Fuel Line/Quick-Connect Fitting Removal

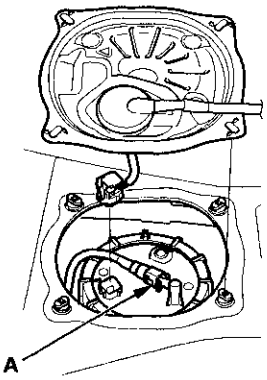
NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-313).

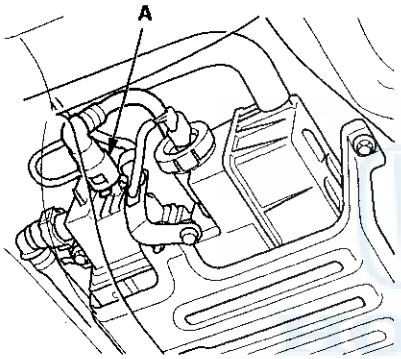
1. If equipped, remove the quick-connect fitting cover from the fuel line. Raise the cover (A) from the fuel line (B), and remove it as shown.

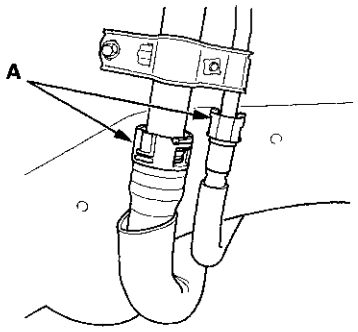


2. Relieve the fuel pressure (see page 11-306).
3. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.







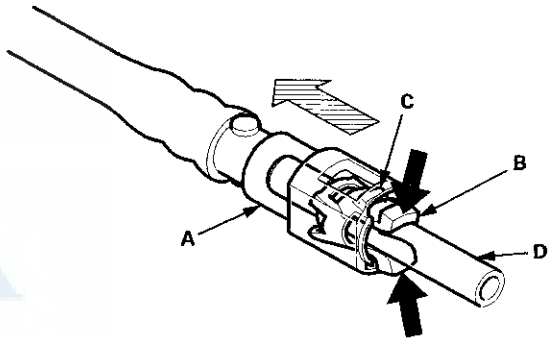


PZEV model shown

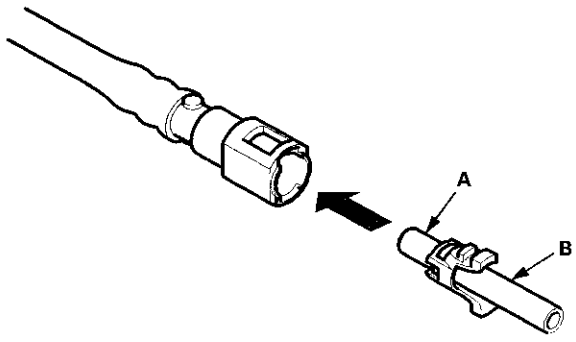
4. Place a rag or shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

   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 with a pressure washer, and dry it with the compressed air.
   - If it is damaged, replace the fuel filter or the fuel feed line.



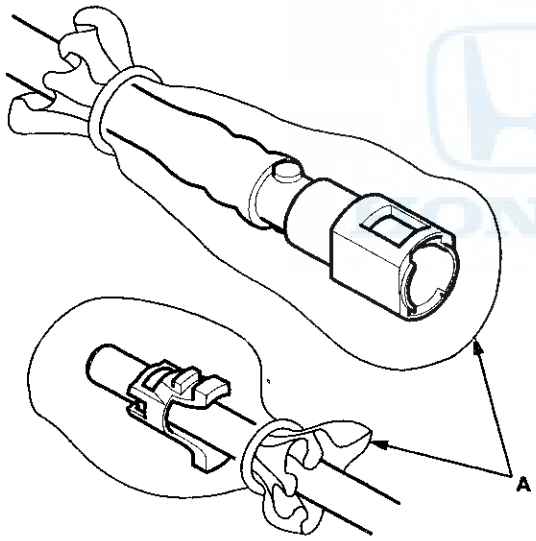
(cont'd)

Fuel Line/Quick-Connect Fitting Removal (cont'd)

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.

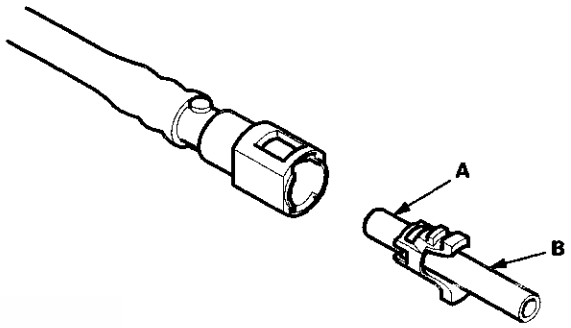
   Replace the retainer when:
   - replacing the fuel rail.
   - replacing the fuel line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the EVAP canister.
   - replacing the fuel fill pipe.
   - replacing the fuel tank.
   - it has been removed from the line.
   - it is damaged.



Fuel Line/Quick-Connect Fitting Installation

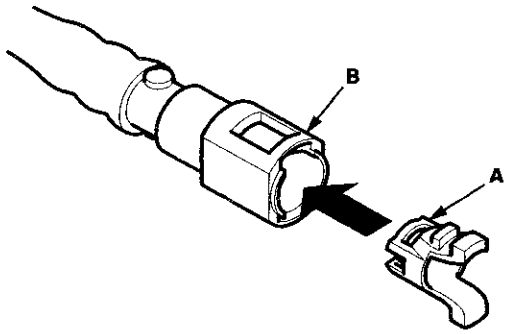
NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-313).

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.

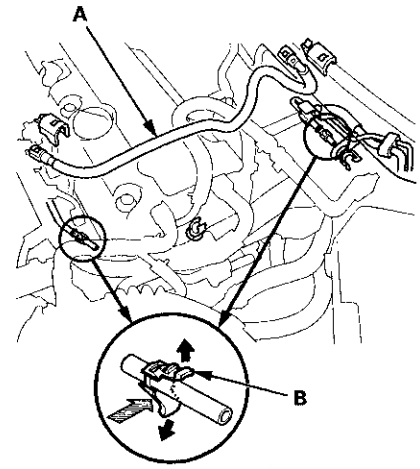


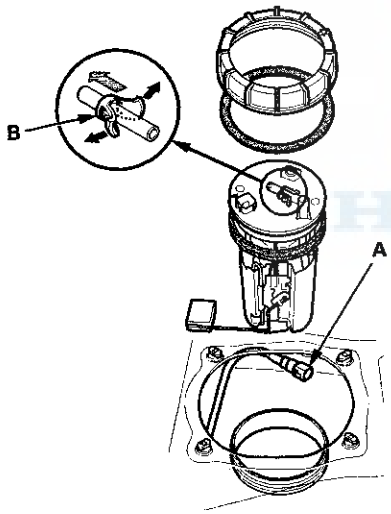
2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:
   - replacing the fuel rail.
   - replacing the fuel line.
   - replacing the fuel pump.
   - replacing the fuel filter.
   - replacing the EVAP canister.
   - replacing the fuel fill pipe.
   - replacing the fuel tank.
   - removing the retainer from the line.

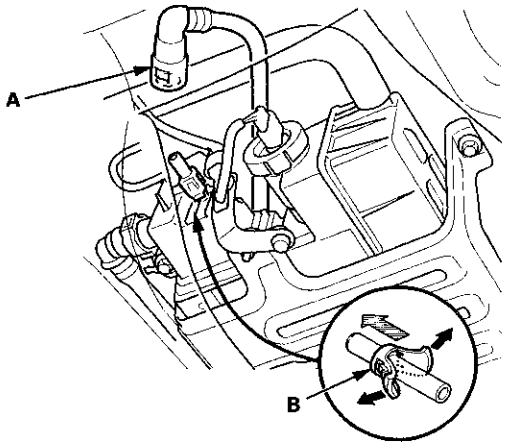
   Use the same manufacturer retainer and the same size when the replacing the retainer (see page 11-314).

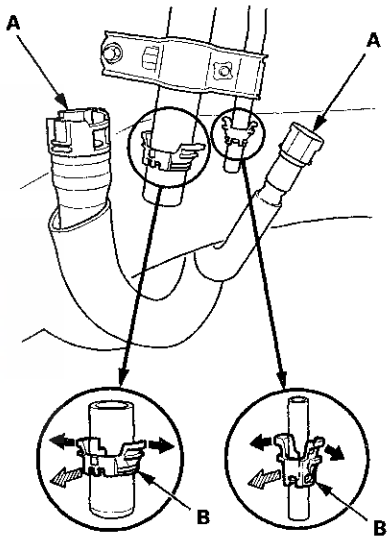


3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer (B) from the mating line.









PZEV model shown

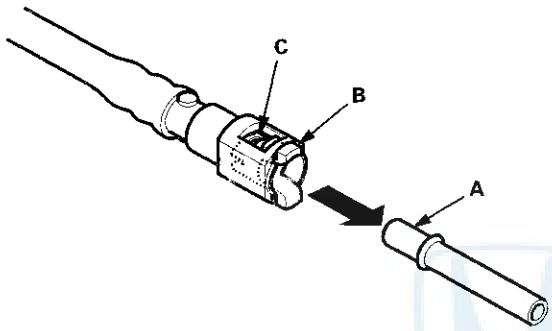
(cont'd)

Fuel Line/Quick-Connect Fitting Installation (cont'd)

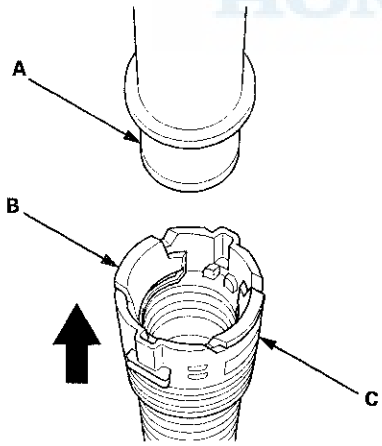
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

   NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

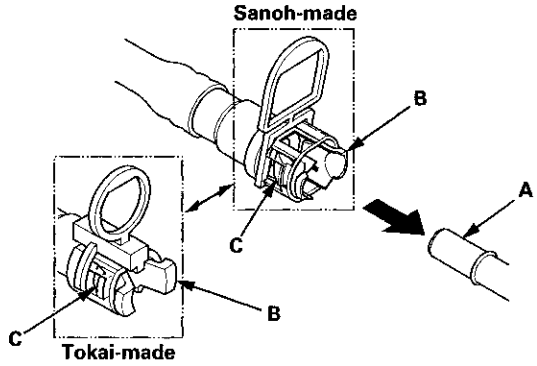
Connection with new retainer



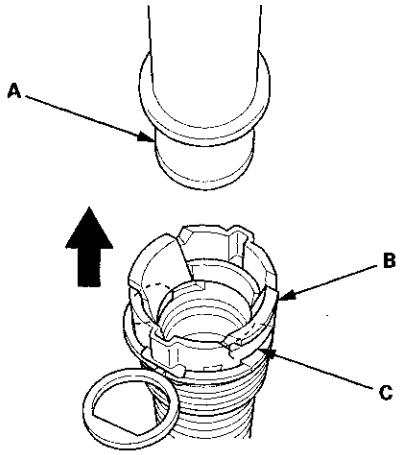
Connection with new retainer: Fuel fill neck tube (PZEV model)



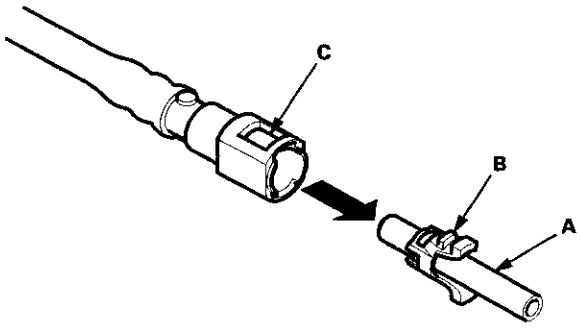
Connection to new fuel line



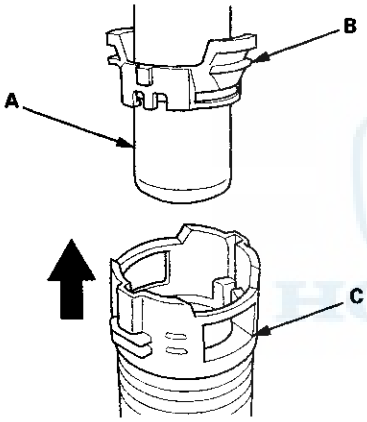
Connection to new fuel line: Fuel fill neck tube (PZEV model)



Reconnection to existing retainer

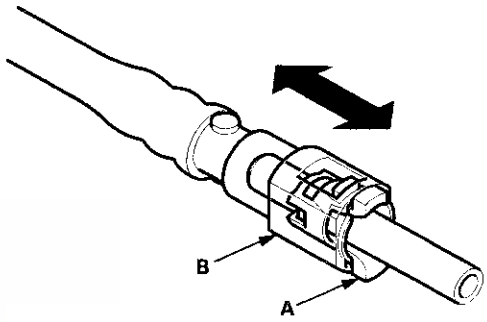


Reconnection to existing retainer: Fuel fill neck tube (PZEV model)

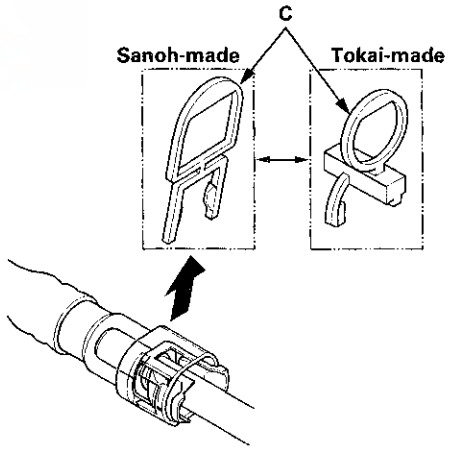


5. When you reconnect the connector with the old retainer, make sure the connection is secure and the tabs (A) are firmly locked into place; check visually and also by pulling the connector (B). When you replace the fuel line with a new one, make sure you remove the ring pull (C) upwards after you confirm 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.



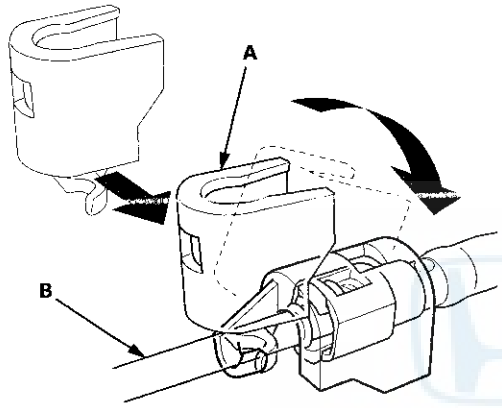
Connection to new fuel line



(cont'd)

Fuel Line/Quick-Connect Fitting Installation (cont'd)

6. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II) (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, then 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.



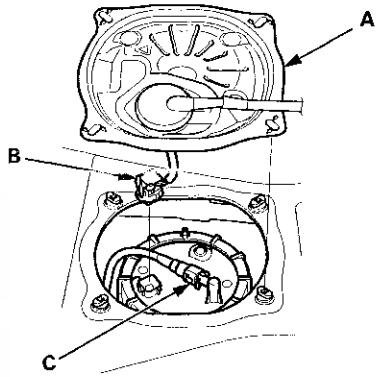
Fuel Tank Unit Removal and Installation

Special Tools Required

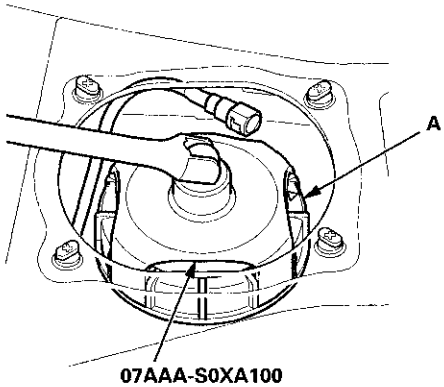
Fuel Sender Wrench 07AAA-S0XA100

Removal

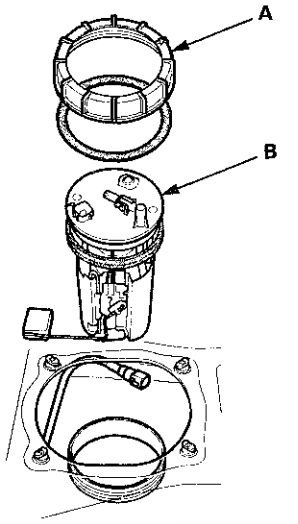
1. Relieve the fuel pressure (see page 11-306).
2. Remove the fuel fill cap.
3. Remove the rear seat cushion (see page 20-241).
4. Remove the access panel (A) from the floor.



5. Disconnect the fuel tank unit 4P connector (B).
6. Disconnect the quick-connect fitting (C) from the fuel tank unit.
7. Using the special tool, loosen the locknut (A).



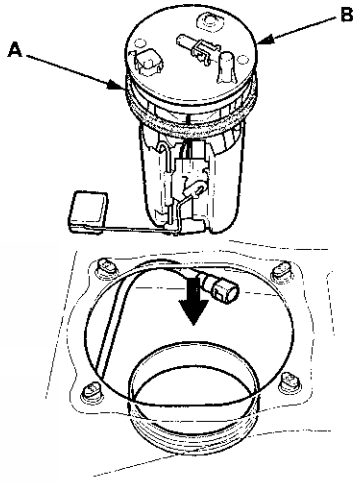
8. Remove the locknut (A) and the fuel tank unit (B).



Installation

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.



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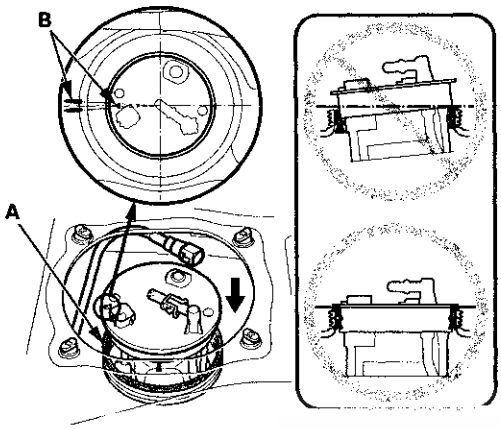
Fuel Tank Unit Removal and Installation (cont'd)

2. Transfer the base gasket (A) from the fuel tank unit to the fuel tank.

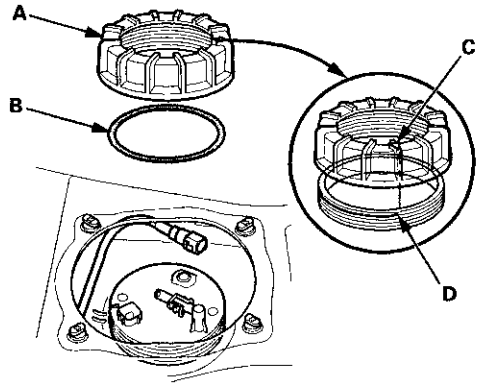


3. Align the marks (B) on the fuel tank and fuel tank unit, then insert the fuel tank unit into the fuel tank until the fuel tank unit rests on top of the base gasket.

   NOTE: To avoid a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched.

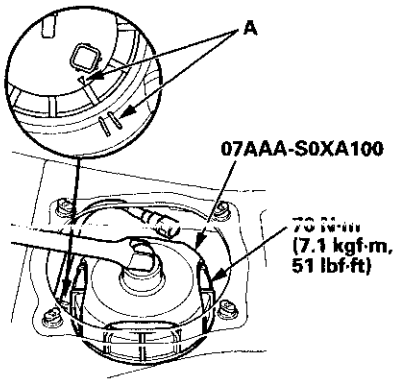
4. Tighten a new locknut (A) by hand with a new locknut plate (B).

   NOTE: Before tightening, align the mark (C) on the locknut to the start of the thread (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.

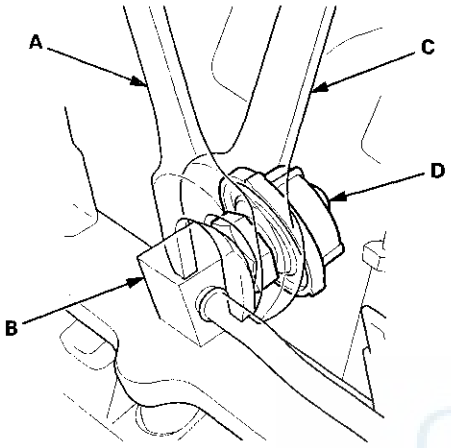


6. Connect the fuel tank unit 4P connector, then connect the quick-connect fitting.
7. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II) (but do not operate the starter motor). The fuel pump runs for about 2 seconds, and fuel pressure rises. Repeat this two or three times, then make sure there are no fuel leaks.
8. Install the access panel.
9. Install the rear seat cushion.
10. Install the fuel fill cap.

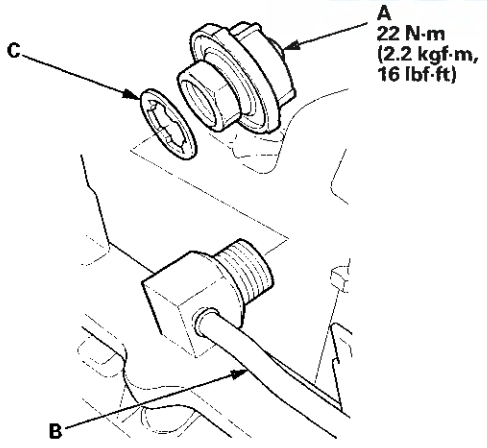
Fuel Pulsation Damper Replacement

PZEV model

1. Relieve the fuel pressure (see page 11-306).
2. Remove the engine cover.
3. Place a wrench (A) on the fuel rail (B).



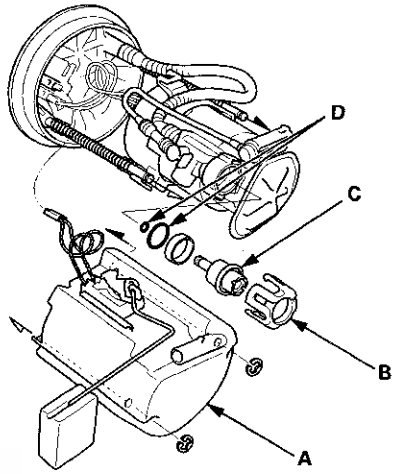
4. Place a wrench (C) on the fuel pulsation damper (D), and loosen it.
5. Remove the fuel pulsation damper (A) from the fuel rail (B).



6. Install the parts in the reverse order of removal with a new sealing washer (C).
7. Turn the ignition switch to ON (II), but do not operate the starter motor. After the fuel pump runs for about 2 seconds, and the fuel pressure rises. Repeat this two or three times, then make sure there are no fuel leaks.

Fuel Pressure Regulator Replacement

1. Remove the fuel tank unit (see page 11-320).
2. Remove the reservoir (A).



3. Remove the bracket (B).
4. Remove the fuel pressure regulator (C).
5. Install the parts in the reverse order of removal with new O-rings (D) and a new bracket. When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-321).

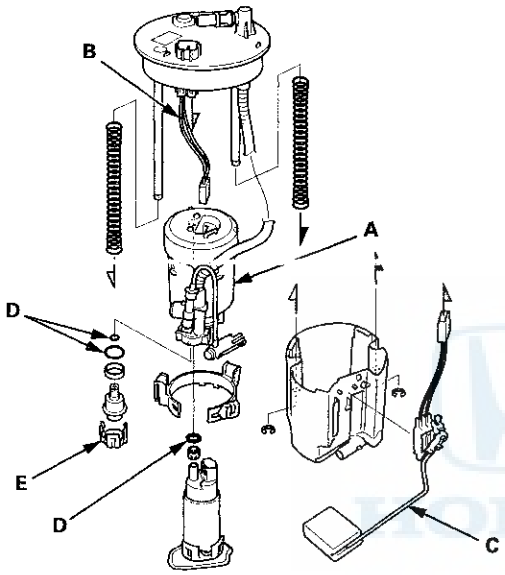
NOTE:

- Coat the O-rings with clean engine oil; do not use any other oils or fluids.
- Do not pinch the O-rings during installation.
- Use all the new parts supplied in the pressure regulator replacement kit.

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see page 11-308), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see page 11-320).
2. Remove the fuel filter set (A).

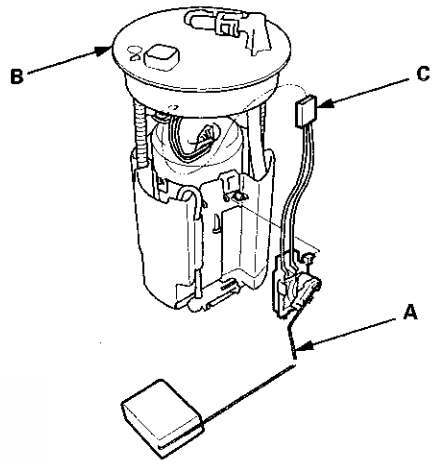


3. Check these items before installing the fuel tank unit:
   - When connecting the wire harness (B), make sure the connection is secure and the connectors are firmly locked into place.
   - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly 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 11-321).

   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 Pump/Fuel Gauge Sending Unit Replacement

1. Remove the fuel tank unit (see page 11-320).
2. Remove the fuel level sensor (fuel gauge sending unit) (A) from the fuel tank unit (B).



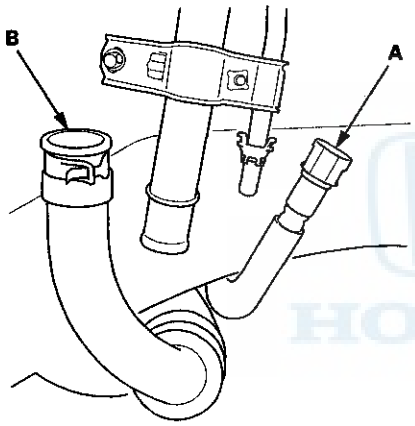
3. Check these items before installing the fuel tank unit:
   - When connecting the wire harness, make sure the connection is secure and the connector (C) is firmly locked into place.
   - When installing the fuel gauge sending unit, make sure the connection is secure. Be careful not to bend or twist 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 (see page 11-321).

Fuel Tank Replacement

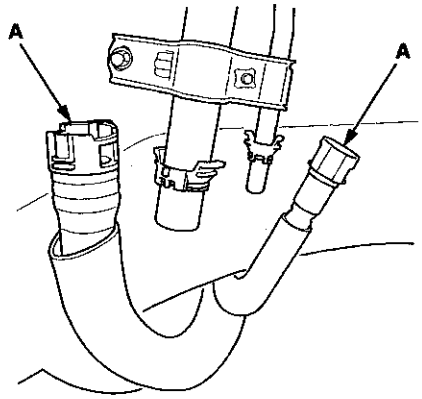
1. Drain the fuel tank (see page 11-309).
2. Reinstall the fuel tank unit without connecting the fuel tank unit 4P connector and the quick-connect fitting (see page 11-321).
3. Remove the fuel fill pipe cover (see page 11-327).
4. Disconnect the quick-connect fittings (A) (see page 11-314) (and on all models except PZEV, disconnect 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.

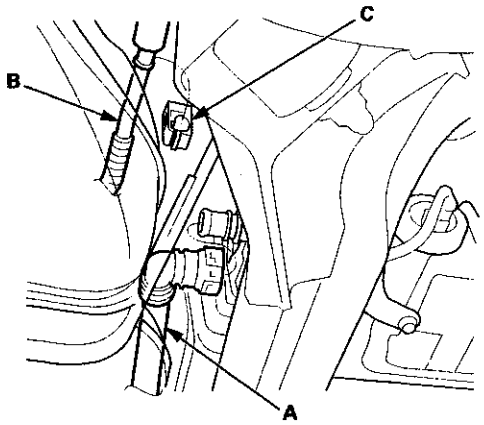
   All models except PZEV



   PZEV model



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).

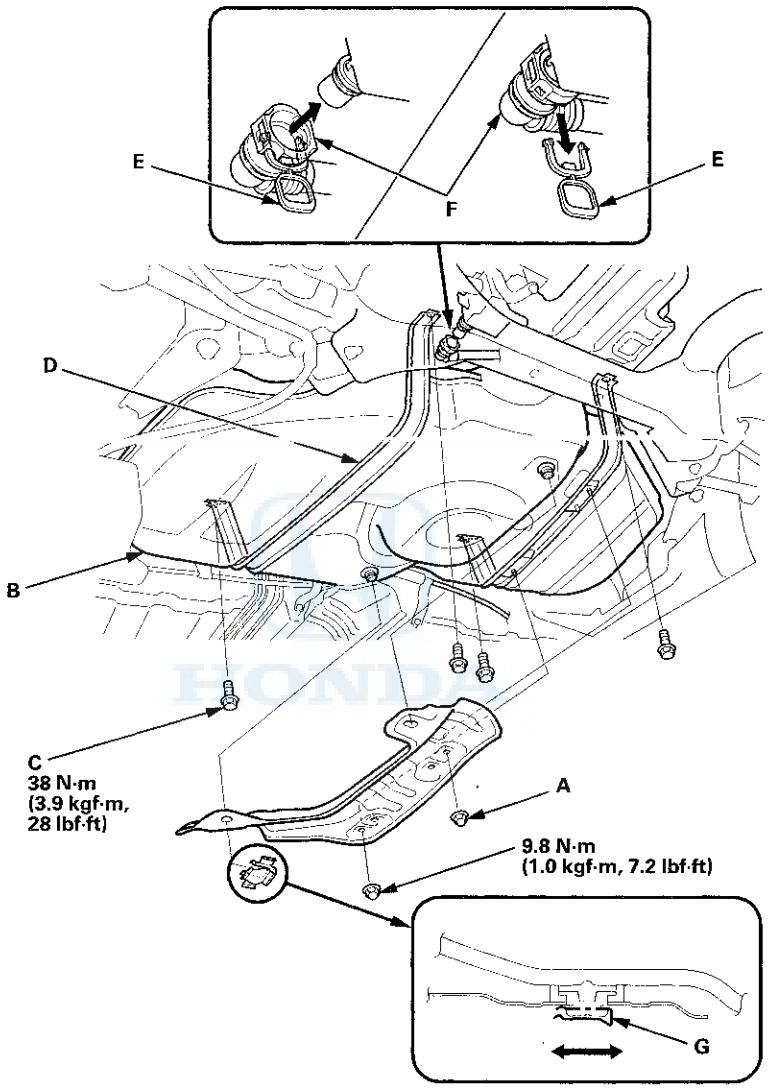
   NOTE: Be careful not to damage the hose.

8. Remove the exhaust pipe (see page 9-9).
9. Remove the right side middle floor undercover (see page 20-293).

(cont'd)

Fuel Tank Replacement (cont'd)

10. Remove the fuel tank protector (A).



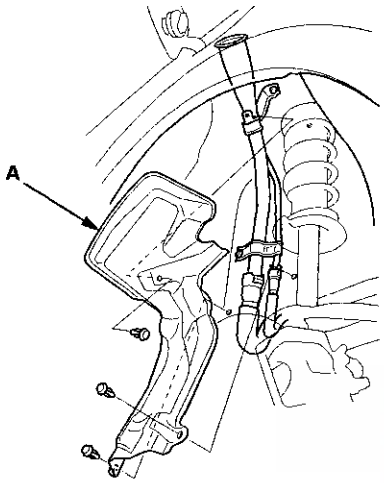
11. Remove the right parking brake cable mounting bolts (see page 19-42).
12. Place a jack or other support under the fuel tank (B).
13. Remove the strap bolts (C) and the straps (D).
14. Remove the fuel tank.
15. Install the parts in the reverse order of removal.

NOTE:

- New fuel tanks have a 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 them 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.

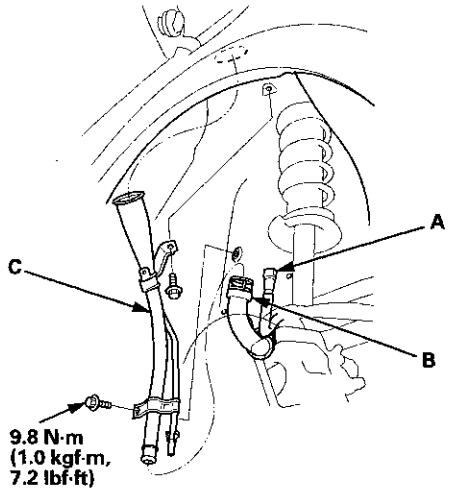
Fuel Fill Pipe Removal/Installation

1. Drain the fuel tank (see page 11-309).
2. Remove the fuel fill cap.
3. Remove the left rear wheel.
4. Remove the fuel fill pipe cover (A).

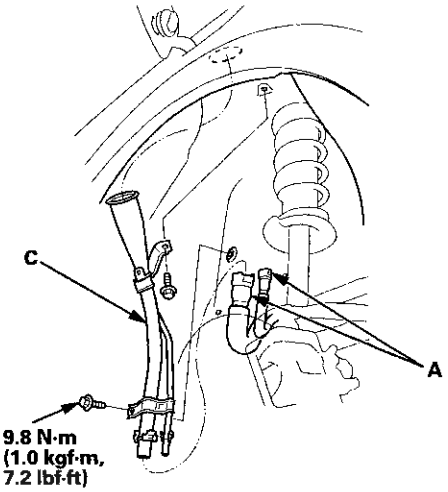


5. Disconnect the quick-connect fittings (A) (see page 11-314) (and on all models except PZEV, disconnect the fuel fill tube (B) from the fuel fill pipe. Slide back the clamp, then twist the hose as you pull to avoid damaging them).

All models except PZEV



PZEV model

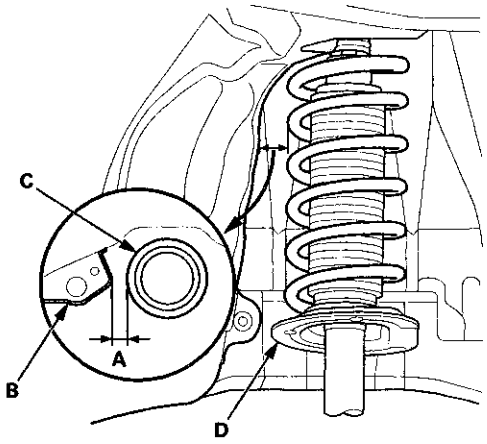


6. Remove the fuel fill pipe (C).
7. Install the parts in the reverse order of removal.

   NOTE: Before connecting the fuel fill pipe and quick-connect fitting, check for dirt, and clean it if needed, taking care not to damage the fuel fill pipe and other parts.

8. After installing the parts, measure the clearance (A) between the fuel filler pipe cover (B) and the left rear damper spring outline (C) at a point 5.9 in (150 mm) to 8.2 in (210 mm) from the left rear damper spring base (D). Make sure the clearance (A) is more than 0.81 in (20.7 mm).

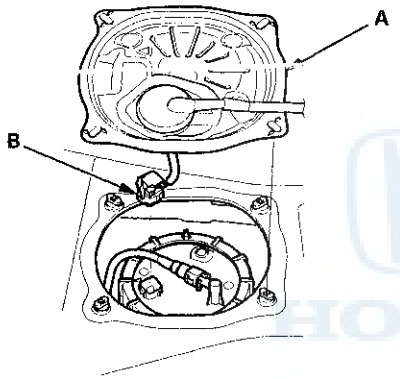
   NOTE: To measure the clearance, raise the vehicle on the lift.



Fuel Gauge Sending Unit Test

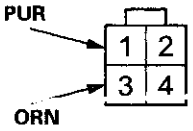
NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-336).

1. Check the No. 5 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).
4. Remove the rear seat cushion (see page 20-241).
5. Remove the access panel (A) from the floor.



6. Disconnect the fuel tank unit 4P connector (B).
7. Measure the voltage between fuel tank unit 4P connector terminals No. 1 and No. 3 with the ignition switch turned to ON (II). 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 ORN wire.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

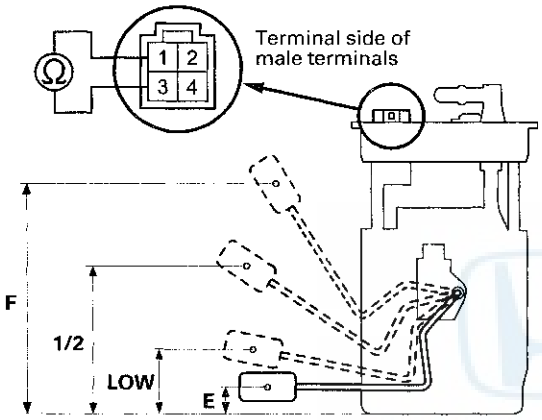
8. Turn the ignition switch to LOCK (0).
9. Remove the fuel tank unit from the fuel tank (see page 11-320).

Low Fuel Indicator Test

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 11-324).

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



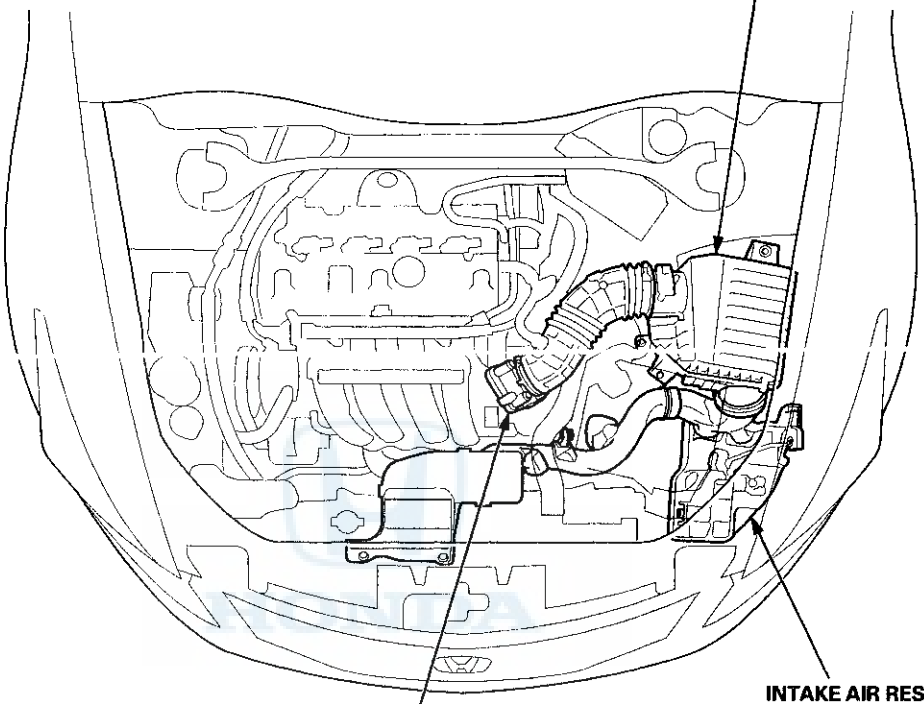
11. Reconnect the fuel tank unit 4P connector.
12. Remove the No. 15 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds, then reinstall it.
13. Turn the ignition switch to ON (II).
14. Check that the pointer of the fuel gauge indicates F with the float at F.
    - If the pointer of the fuel gauge does not indicate F, replace the gauge control module.
    - 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 turned to ACC (I) or LOCK (0), 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.

1. Do the gauge self-diagnostic test (see page 22-332).
   - 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 22-351).
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 (see page 11-328).

Intake Air System

Component Location Index



AIR CLEANER
Removal/Installation, page 11-332
Element Inspection/
Replacement, page 11-333

INTAKE AIR RESONATOR
Removal/Installation, page 11-333

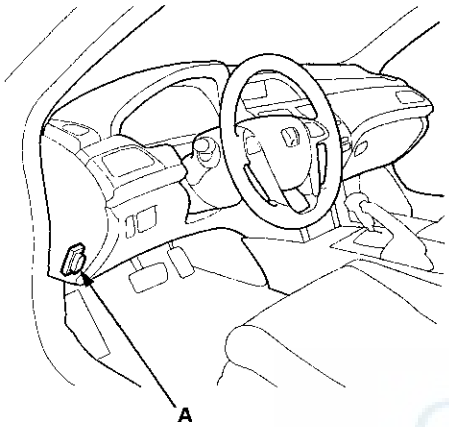
THROTTLE BODY
Test, page 11-331
Cleaning, page 11-332
Removal/Installation, page 11-335
Disassembly/Reassembly, page 11-336

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.

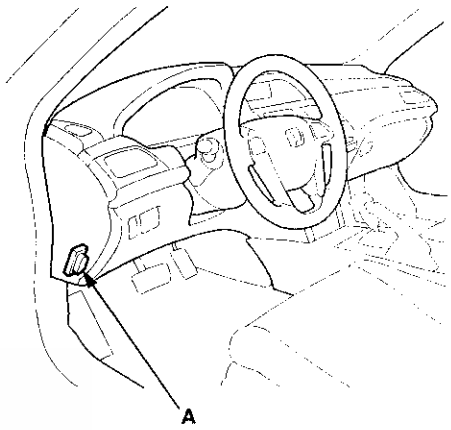


2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-181).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then 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 11-332).

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).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-181).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP POSITION CHECK in the ETCS TEST. If needed, clean the throttle body (see page 11-332).

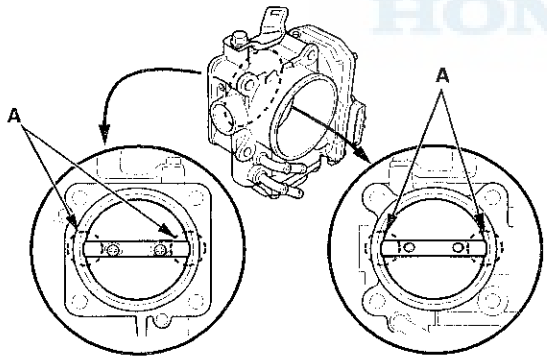
Throttle Body Cleaning

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is in ON (II). 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 11-333).
2. Remove the throttle body (see page 11-335).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate cleaner.

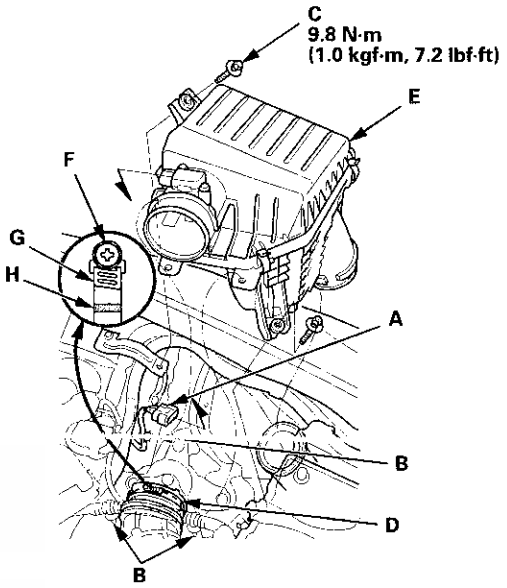
   NOTE:
   - Remove the throttle body to clean it.
   - Be careful not to pinch your fingers.
   - To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).
   - Do not spray throttle plate cleaner directly on the throttle body.
   - Use Honda genuine throttle plate cleaner.



4. Install the throttle body (see page 11-335).
5. Reset the ECM/PCM with the HDS (see page 11-4).
6. Turn the ignition switch to ON (II), and wait 2 seconds.
7. Do the ECM/PCM idle learn procedure (see page 11-293).

Air Cleaner Removal/Installation

1. Disconnect the MAF sensor/IAT sensor connector (A).

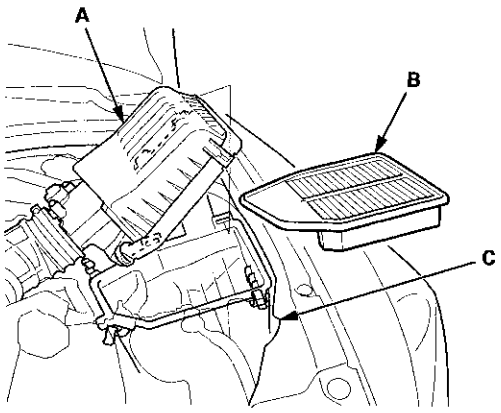


2. Remove the harness clamps (B) and the bolts (C).
3. Loosen the band (D), then remove the air cleaner housing (E).
4. Install the parts in the reverse order of removal.

   NOTE: When torqueing the screw of the hose band (F), align the edge of the hose band (G) with the mark (H) painted on the hose band.

Air Cleaner Element Inspection/Replacement

1. Open the air cleaner housing cover (A).



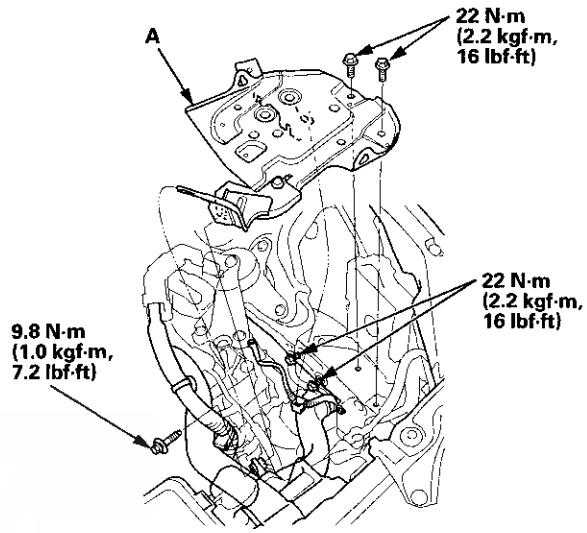
2. Remove the air cleaner element (B) from the air cleaner housing (C).
3. Check the air cleaner element for damage or clogging. If it is damaged or clogged, replace it.

   NOTE: Do not use compressed air to clean the air cleaner element.

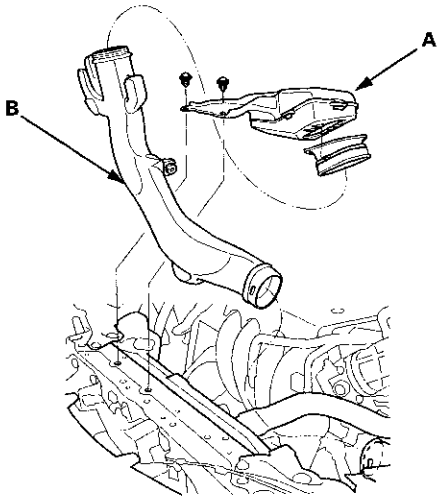
4. Clean and remove any debris from inside the air cleaner.
5. Install the parts in the reverse order of removal.
   - If you did not replace the air cleaner element, this procedure is complete.
   - If the maintenance minder required air cleaner replacement, reset the maintenance minder (see page 3-7).
   - If the idle speed fluctuates, do the idle speed inspection (see page 11-292).

Intake Air Resonator Removal/Installation

1. Do the battery removal procedure (see page 22-92).
2. Remove the air cleaner (see page 11-332).
3. Remove the battery base (A)



4. Remove the front grille cover.
   - 2-door (see page 20-274)
   - 4-door (see page 20-274)
5. Remove the water separator (A) and the intake air duct (B).

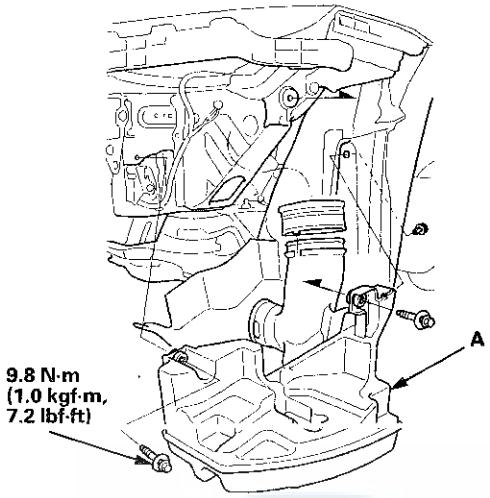


6. Remove the front bumper (see page 20-255).

(cont'd)

Intake Air Resonator Removal/Installation (cont'd)

7. Remove the intake air resonator (A).



8. Install the parts in the reverse order of removal.
9. Do the battery installation procedure (see page 22-92).

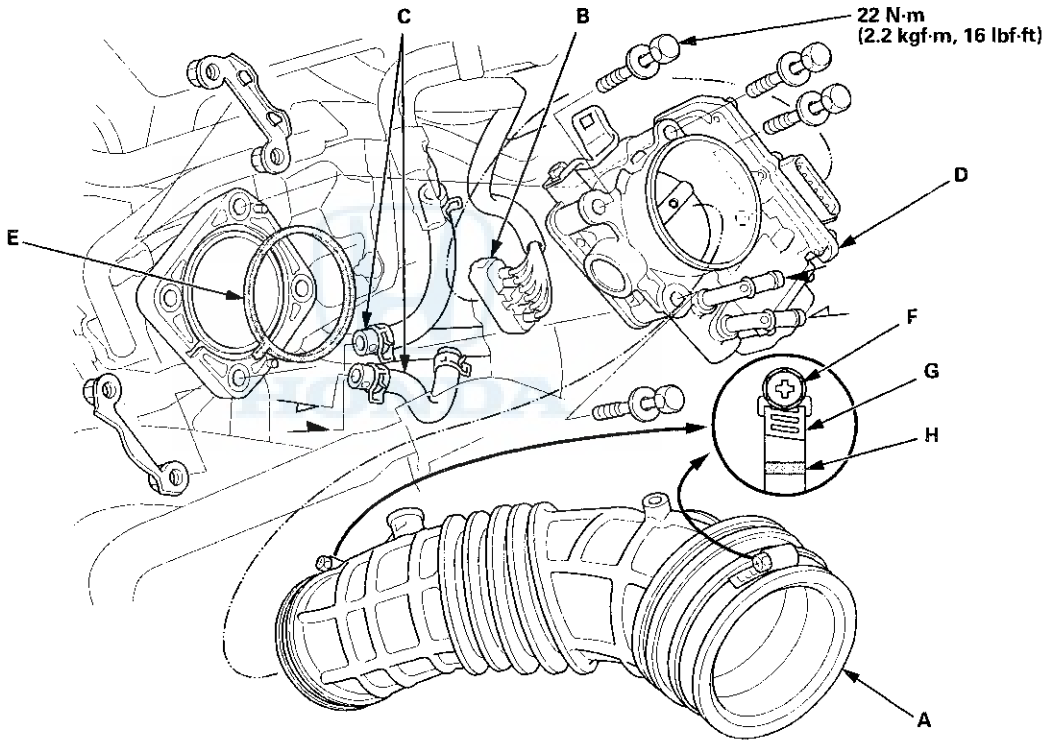
Throttle Body Removal/Installation

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is in ON (II). 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, start at step 1. If you are removing the throttle body, start at step 4.

1. Connect the HDS to the DLC while the engine is stopped.
2. Select the INSPECTION MENU on the HDS.
3. Do the TP POSITION CHECK in the ETCS TEST.
4. Turn the ignition switch to LOCK (0).
5. Remove the intake air duct (A).

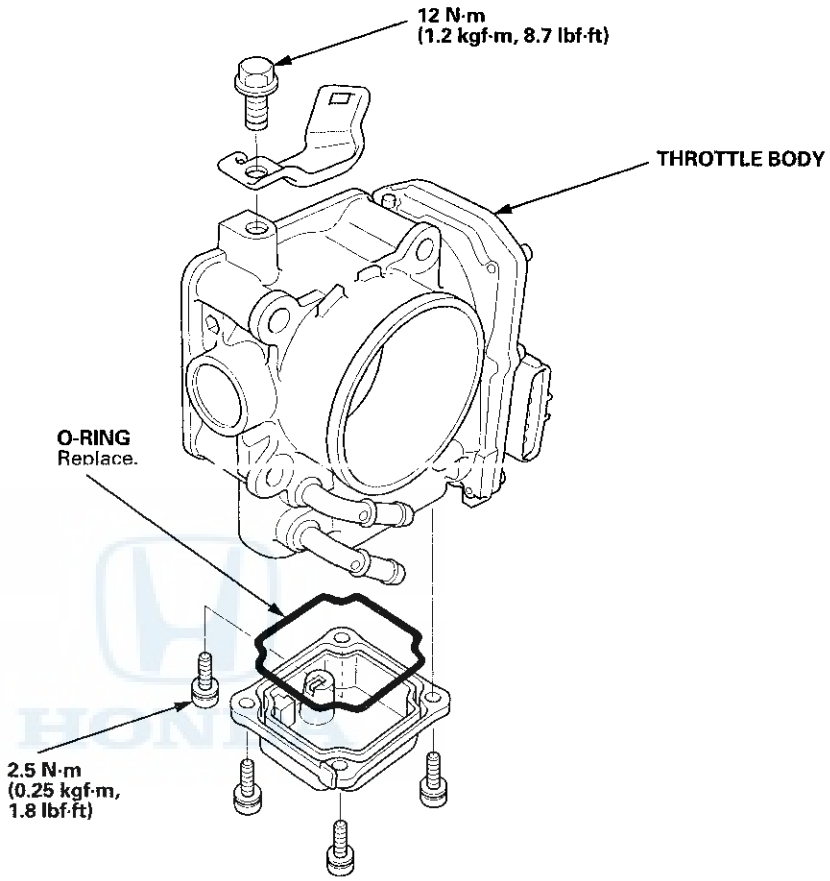


6. Disconnect the throttle body connector (B).
7. Disconnect and plug the water bypass hoses (C).
8. Remove the throttle body (D).
9. Install the parts in the reverse order of removal with a new gasket (E).

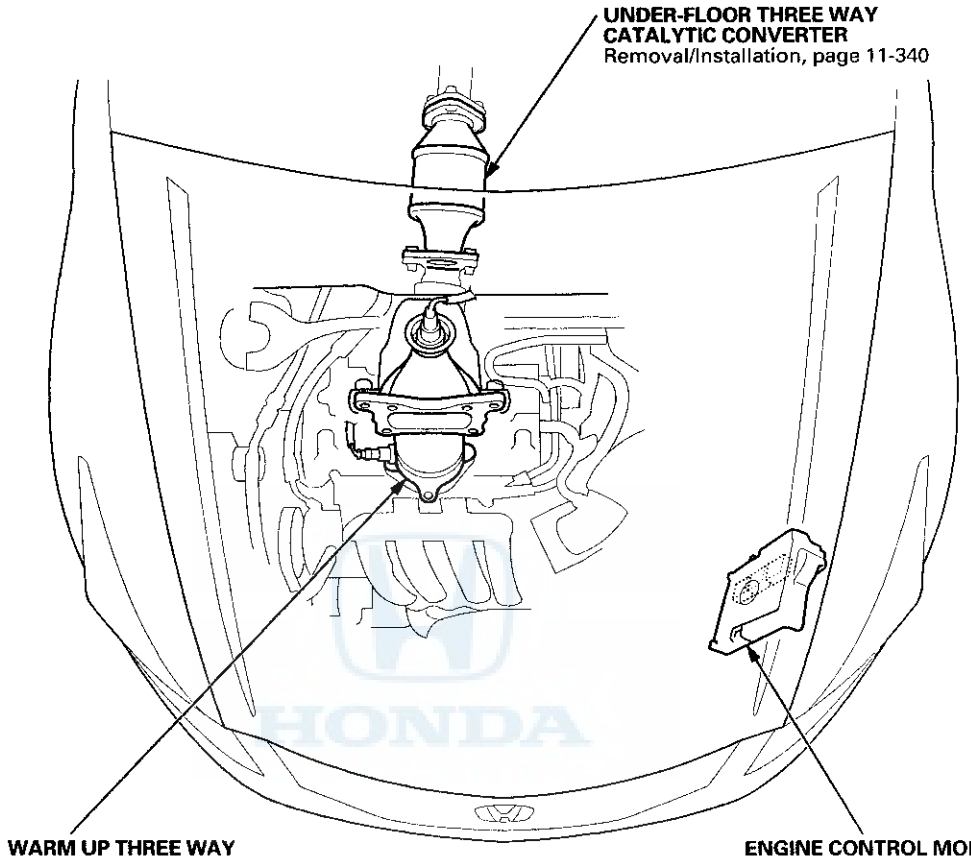
   NOTE: When torqueing the screw of the hose band (F), align the edge of the hose band (G) with the mark (H) painted on the hose band.

   After installing the throttle body, do these items:
   - Refill the radiator with engine coolant (see page 10-6).
   - Do the ECM/PCM idle learn procedure (see page 11-293).

Throttle Body Disassembly/Reassembly



Component Location Index



DTC Troubleshooting

DTC P0420: Catalyst System Efficiency Below Threshold

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, troubleshoot them first, then recheck for DTC P0420.
  P0137, P0138: Secondary HO2S (Sensor 2)
  P0141: Secondary HO2S (Sensor 2) heater
- P0300: Random misfire
  P0301—P0304: No. 1, No. 2, No. 3, or No. 4 cylinder misfire detected
- Poor quality fuel may cause this DTC.

1. Turn the ignition switch to ON (II).
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)
   - 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 the throttle fully closed). Repeat this three or more times
   - 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 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. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION or NOT COMPLETED, go to step 4 and recheck.
6. Turn the ignition switch to LOCK (0).
7. Replace the WU-TWC (see page 11-339).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-293).
11. Test-drive for about 10 minutes, varying the vehicle speed.
12. Check the CATA MONITOR CONDITION in the DATA LIST with the HDS.

    Is the condition OK?

    YES–Go to step 13.

    NO–Go to step 11 and recheck.
13. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Vehicle speed between 55—75 mph (88—120 km/h) for 10 seconds, then decelerate (with the throttle fully closed). Repeat this three or more times.
    - Maintain the vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set
14. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0420 indicated?

    YES–Check the fuel quality, then go to step 1.

    NO–Go to step 15.
15. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

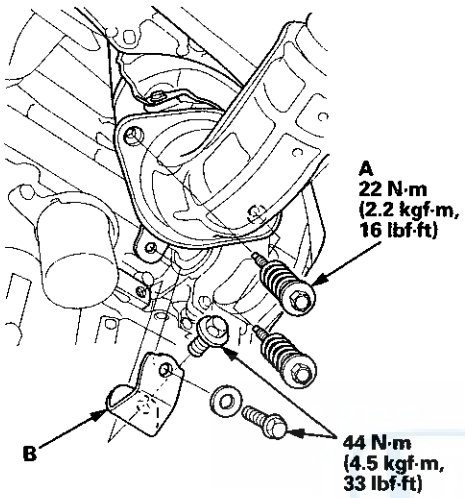
    Does the screen indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.■

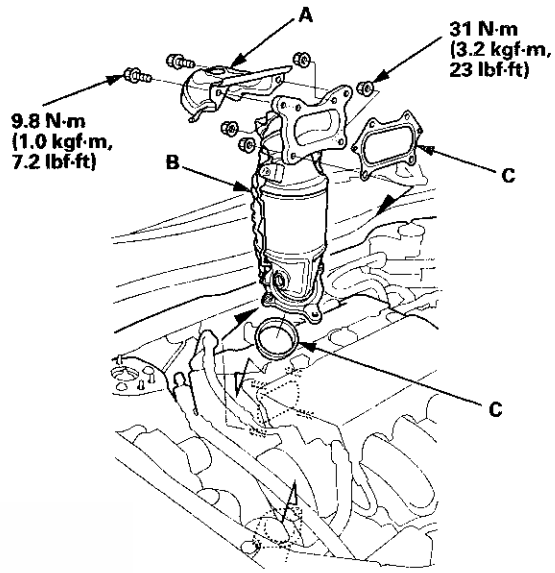
    NO–If the screen indicates FAILED, check the fuel quality, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION or NOT COMPLETED, go to step 13.

Warm Up TWC Removal/Installation

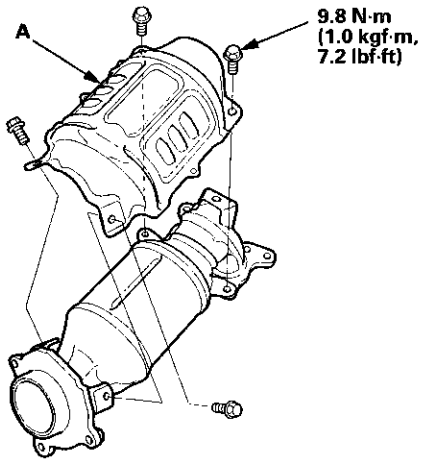
1. Raise the vehicle on a lift.
2. Remove the secondary HO2S (Sensor 2) (see page 11-197).
3. Remove the bolts (A).



4. Remove the WU-TWC bracket (B).
5. Lower the vehicle.
6. Remove the frame brace (see page 20-306).
7. Remove the A/F sensor (Sensor 1) (see page 11-197).
8. Remove the upper converter cover (A).



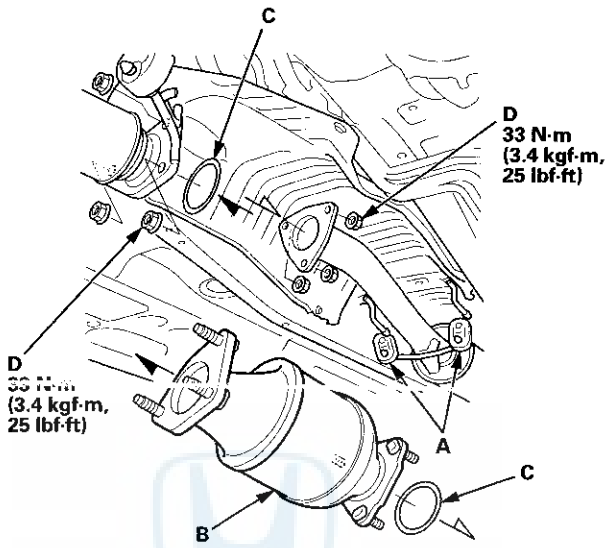
9. Remove the WU-TWC (B) and the gaskets (C).
10. Remove the converter cover (A).



11. Install the parts in the reverse order of removal with new gaskets.

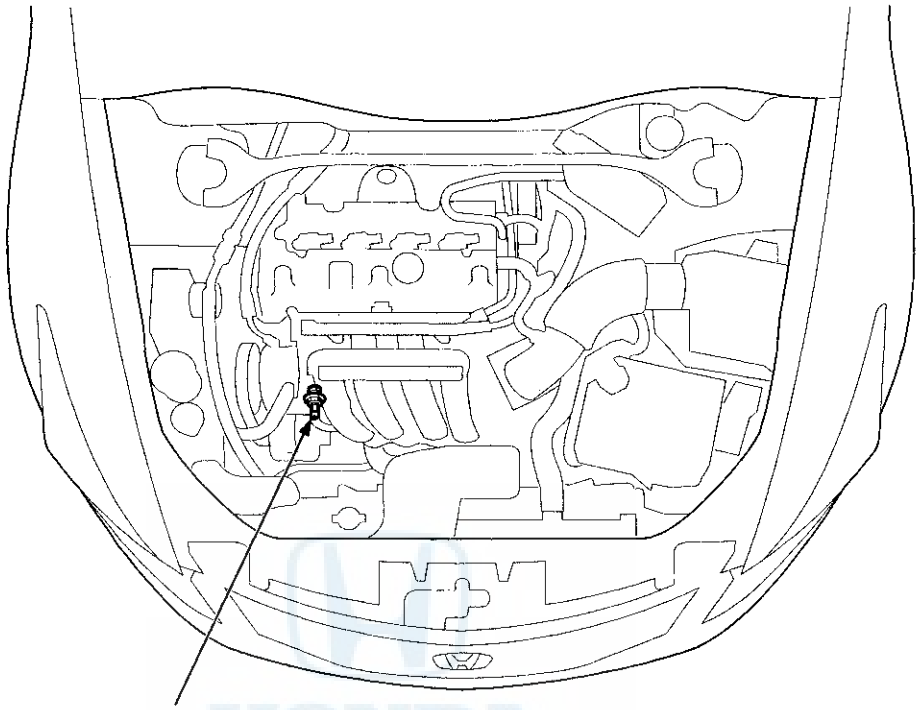
Under-floor TWC Removal/Installation

1. Raise the vehicle on a lift.
2. Remove the exhaust pipe hangers (A).



3. Remove the under-floor TWC (B).
4. Install the parts in the reverse order of removal with new gaskets (C) and new self-locking nuts (D).

Component Location Index

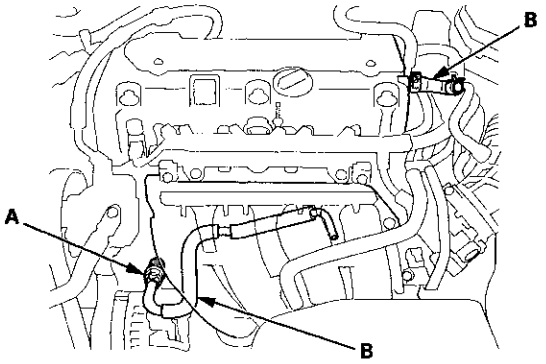


PCV VALVE
Inspection, page 11-342
Replacement, page 11-342

PCV System

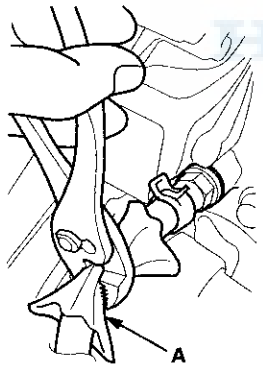
PCV Valve Inspection

1. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.



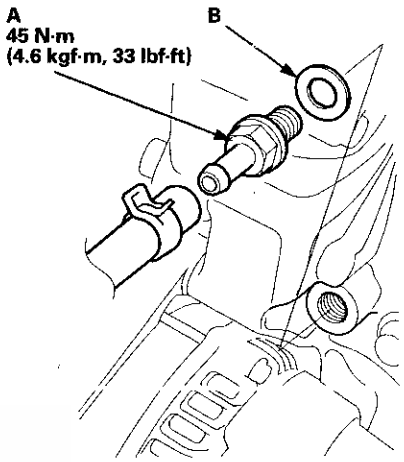
2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.

   If there is no clicking sound, check the PCV valve washer for cracks or damage. If the washer is OK, replace the PCV valve and recheck.



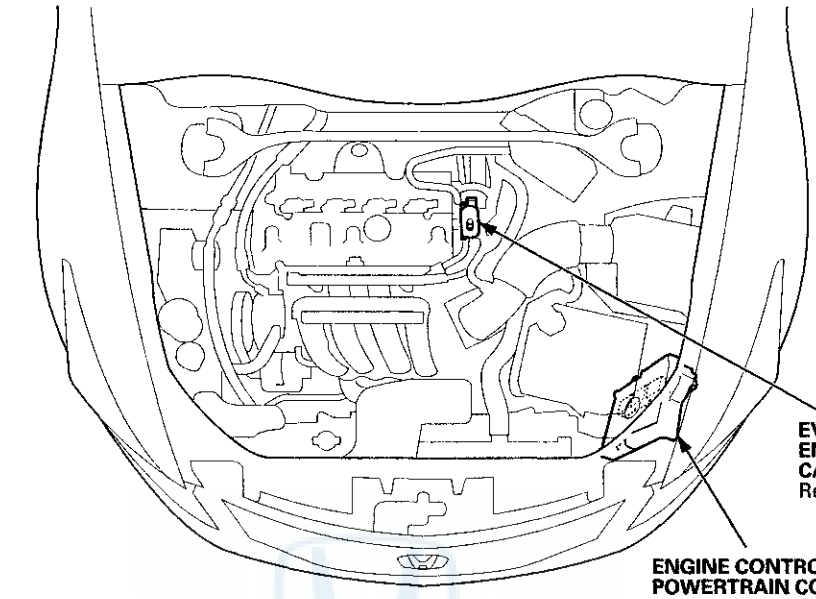
PCV Valve Replacement

1. Disconnect the PCV hose.
2. Remove the PCV valve (A).



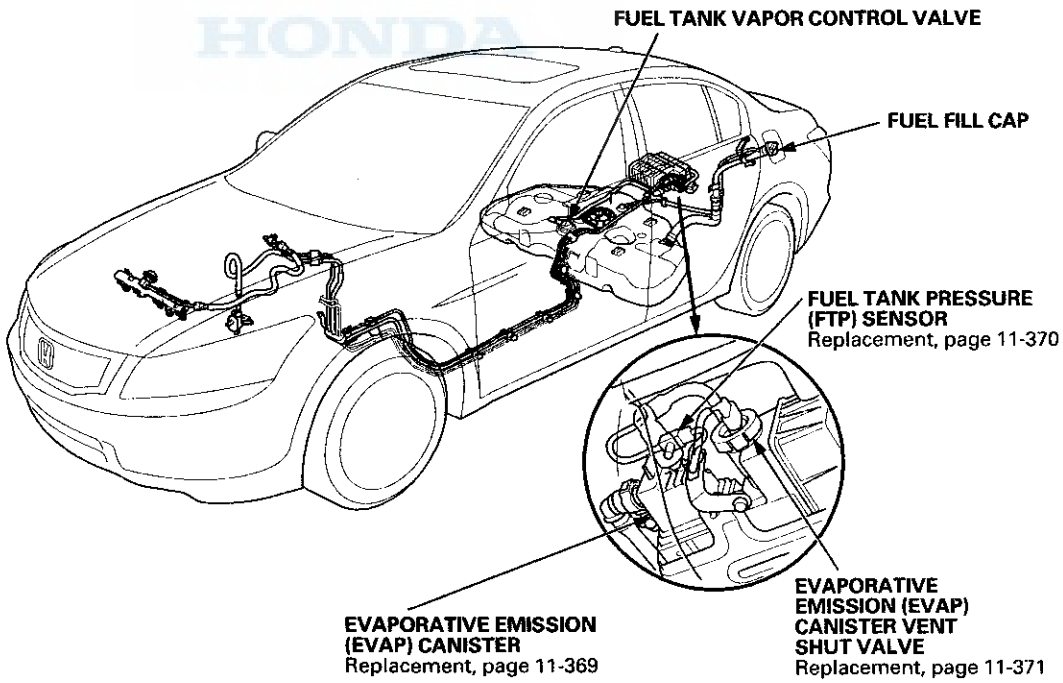
3. Install the parts in the reverse order of removal with a new washer (B).

Component Location Index



EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
Replacement, page 11-371

ENGINE CONTROL MODULE (ECM)/ POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-203
Substitution, page 11-7
Replacement, page 11-204



FUEL TANK VAPOR CONTROL VALVE

FUEL FILL CAP

FUEL TANK PRESSURE (FTP) SENSOR
Replacement, page 11-370

EVAPORATIVE EMISSION (EVAP) CANISTER
Replacement, page 11-369

EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
Replacement, page 11-371

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

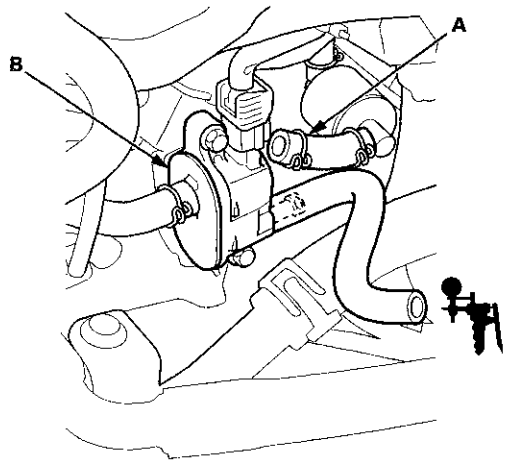
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
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), and allow the engine to cool to below 131 °F (55 °C).
6. Disconnect the vacuum hose (A) from the purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the hose.



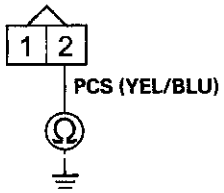
7. Start the engine, and let it idle.

   Is there vacuum?

   YES–Go to step 8.

   NO–Go to step 14.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

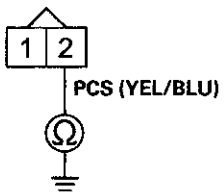
Is there continuity?

YES–Go to step 11.

NO–Go to step 23.

11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector B (49P).
13. Check for continuity 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 continuity?

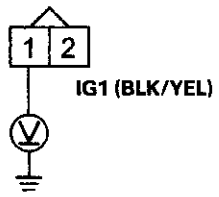
YES–Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B3), then go to step 24.

NO–Go to step 30.

14. Turn the ignition switch to LOCK (0).

15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch to ON (II).
17. Measure the voltage between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

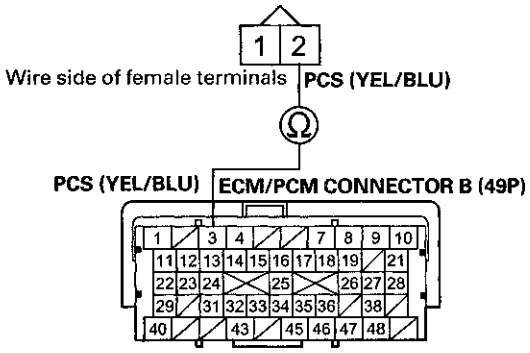
Is there battery voltage?

YES–Go to step 18.

NO–Repair open in the wire between the EVAP canister purge valve and the No. 7 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).
19. Jump the SCS line with the HDS.
20. Disconnect ECM/PCM connector B (49P).
21. Check for continuity between ECM/PCM connector terminal B3 and EVAP canister purge valve 2P connector terminal No. 2.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Terminal side of female terminals

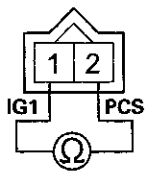
Is there continuity?

YES–Go to step 22.

NO–Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B3), 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.

(cont'd)

DTC Troubleshooting (cont'd)

23. Replace the EVAP canister purge valve (see page 11-371).
24. Reconnect all connectors.
25. Turn the ignition switch to ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-293).
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, OUT OF CONDITION, or NOT COMPLETED, 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 11-203), 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 11-204). 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, OUT OF CONDITION, or NOT COMPLETED, 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).
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).
6. Replace the FTP sensor (see page 11-370).
7. Turn the ignition switch to ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-293).
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.
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 Troubleshooting (cont'd)

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).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Remove the fuel fill cap.
5. Turn the ignition switch to ON (II).
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.

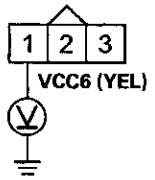
   NO–If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, keep idling until a result comes on.
10. Turn the ignition switch to LOCK (0).
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch to ON (II).
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

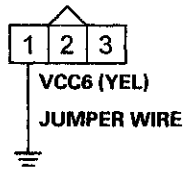
Is there about 5 V?

YES–Go to step 24.

NO–Go to step 15.

15. Turn the ignition switch to LOCK (0).
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.

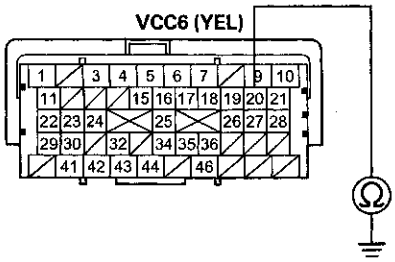
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

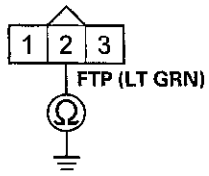
Is there continuity?

YES–Go to step 32.

NO–Repair open in the wire between the ECM/PCM (A20) and the FTP sensor, then go to step 26.

20. Turn the ignition switch to LOCK (0).
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 (A27) and the FTP sensor, then go to step 26.

NO–Go to step 32.

24. Turn the ignition switch to LOCK (0).
25. Replace the FTP sensor (see page 11-370).
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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.

(cont'd)

DTC Troubleshooting (cont'd)

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 11-204). 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).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Remove the fuel fill cap.
5. Turn the ignition switch to ON (II).
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.

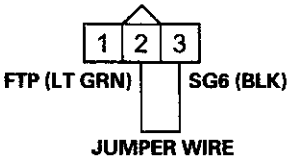
   Does the screen indicate FAILED?

   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).
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).
14. Check the FTP SENSOR in the DATA LIST with the HDS.

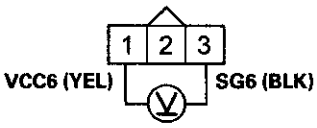
    Is about 7.3 kPa (2.16 inHg, 55 mmHg), or 4.7 V or more indicated?

    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

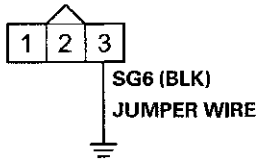
Is there about 5 V?

YES–Go to step 21.

NO–Go to step 16.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector A (49P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

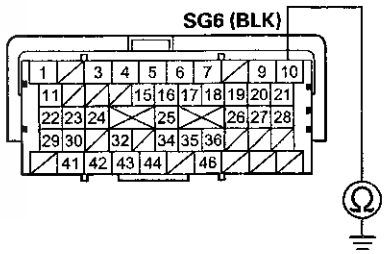
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

20. Check for continuity between ECM/PCM connector terminal A10 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 (A10) and the FTP sensor, then go to step 28.

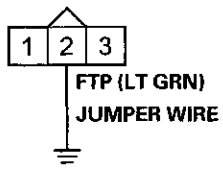
21. Turn the ignition switch to LOCK (0).
22. Jump the SCS line with the HDS.
23. Disconnect ECM/PCM connector A (49P).

(cont'd)

DTC Troubleshooting (cont'd)

24. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

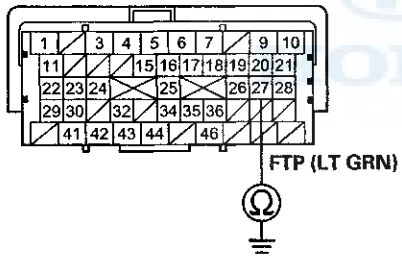
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

25. Check for continuity between ECM/PCM connector terminal 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.

26. Turn the ignition switch to LOCK (0).
27. Replace the FTP sensor (see page 11-370).
28. Reconnect all connectors.
29. Turn the ignition switch to ON (II).
30. Reset the ECM/PCM with the HDS.
31. Do the ECM/PCM idle learn procedure (see page 11-293).
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 11-203), 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 11-204). 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.

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?

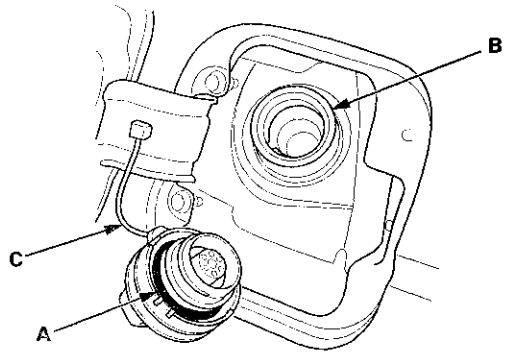
   YES–Go to step 2.

   NO–Replace or tighten the cap, then go to step 29.

(cont'd)

DTC Troubleshooting (cont'd)

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 29.

NO–Go to step 3.

3. Turn the ignition switch to ON (II).
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).
7. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

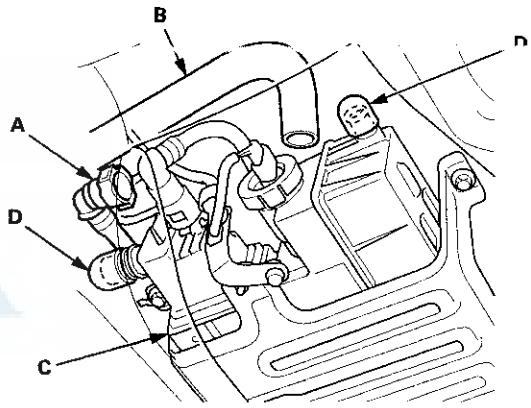
Is the tube OK?

YES–Go to step 8.

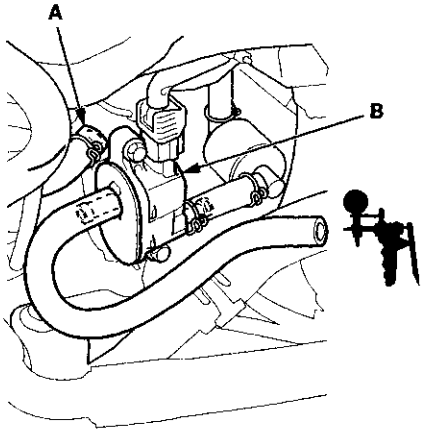
NO–

- Replace the fuel tank vapor recirculation tube, then go to step 29.
- If necessary, replace the fuel tank (see page 11-325), then go to step 29.

8. Disconnect the fuel tank vapor recirculation tube (A) and fresh air hose (B) from the EVAP canister (C), and plug the EVAP canister port (D).



9. Disconnect the vacuum hose (engine side) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the purge valve as shown.



10. Turn the ignition switch to ON (II).
11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
12. 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 vacuum. If you do, the FTP sensor can be damaged.

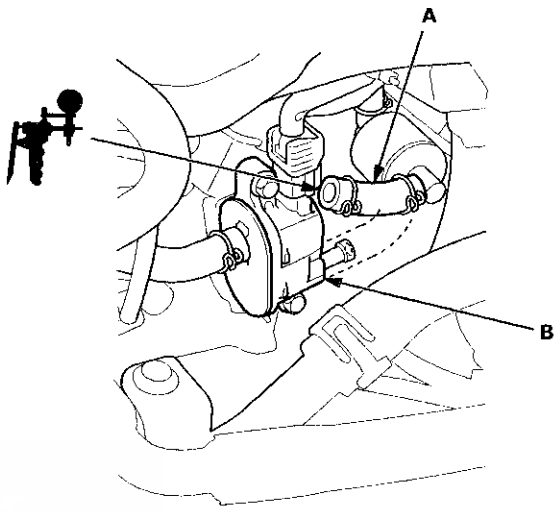
13. Select EVAP PCS OFF in the INSPECTION MENU with the HDS, and disconnect the vacuum pump/gauge.
14. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V (0.1 inHg, 2.5 mmHg)?

    YES–Go to step 15.

    NO–Go to step 20.

15. Reconnect the vacuum hose (engine side) to the EVAP canister purge valve.
16. 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.



17. 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 vacuum. If you do, the FTP sensor can be damaged.

18. 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 19.

    NO–Replace the EVAP canister purge valve (see page 11-371), then go to step 28.

19. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve, or a leaking EVAP canister.

    Are the line and the EVAP canister OK?

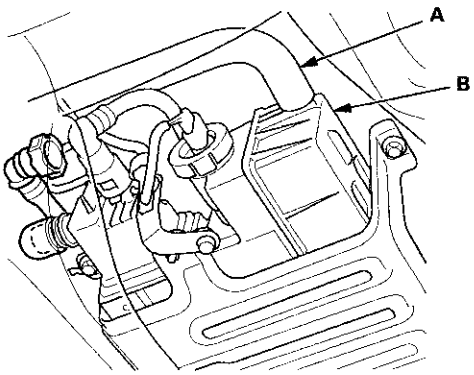
    YES–Replace these parts, then go to step 28:
    - FTP sensor O-ring
    - EVAP canister vent shut valve O-ring
    - EVAP canister

    NO–Reconnect or repair the EVAP canister purge line, then go to step 28.

(cont'd)

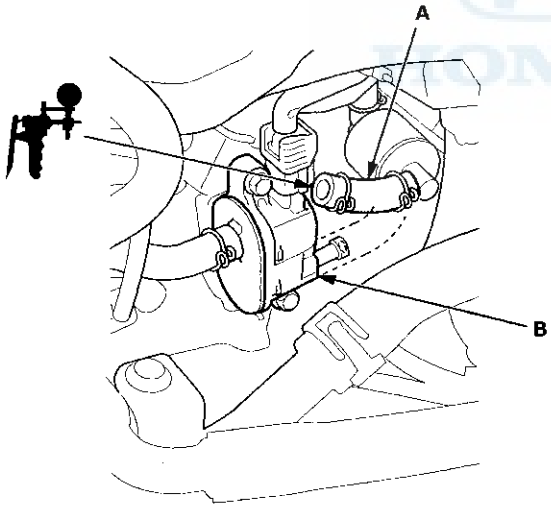
DTC Troubleshooting (cont'd)

20. Reconnect the fresh air hose (A) to the EVAP canister (B).



21. Reconnect the vacuum hose (engine side) to the EVAP canister purge valve.

22. 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.



23. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

24. 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 vacuum. If you do, the FTP sensor can be damaged.

25. 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 11-371), then go to step 28.

    NO–Go to step 26.

26. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.

27. Check these parts for looseness or damage:
    - Fuel fill pipe
    - Fuel vapor return pipe

    Are the parts OK?

    YES–Check the fuel tank unit base gasket (see page 11-321), and check the fuel tank, then go to step 28.

    NO–Repair or replace the damaged parts, then go to step 28.

28. Reconnect all hoses and connectors.

29. Turn the ignition switch to ON (II).

30. Reset the ECM/PCM with the HDS.

31. Do the ECM/PCM idle learn procedure (see page 11-293).

32. 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).

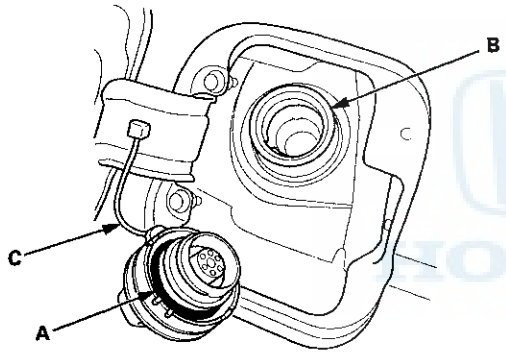
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 turn after it's tight, then it clicks.

   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.

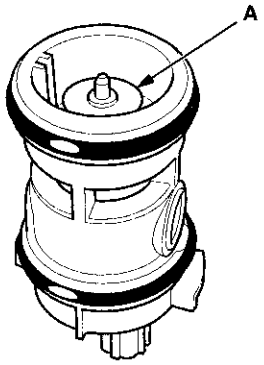
3. Turn the ignition switch to ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   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 or the EVAP canister vent shut valve and the ECM/PCM.■

   NO–Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-371).
8. Connect the 2P connector to the EVAP canister vent shut valve.
9. Turn the ignition switch to ON (II).
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.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0).
13. Replace the EVAP canister vent shut valve (see page 11-371).
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-293).
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).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-293).
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.

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).
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).
5. Replace the EVAP canister purge valve (see page 11-371).
6. Turn the ignition switch to ON (II).
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see page 11-293).
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

Special Tools Required

- Vacuum/Pressure Gauge, 0—4 In.Hg, 07JAZ-001000B
- 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).
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

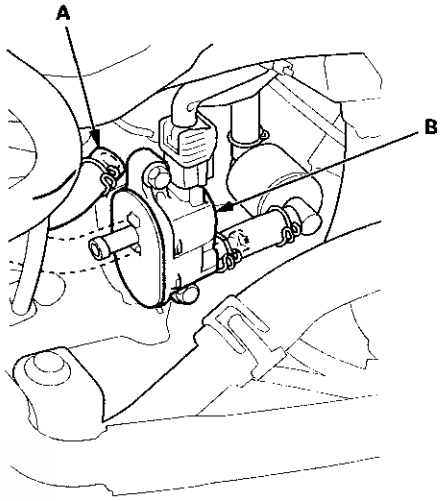
   YES–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve, the FTP sensor, and the ECM/PCM.■

   NO–Go to step 4.
4. Turn the ignition switch to LOCK (0).
5. Check for poor connections, blockage, or damage in the EVAP canister purge line between the throttle body and the EVAP canister.

   Is the line OK?

   YES–Go to step 6.

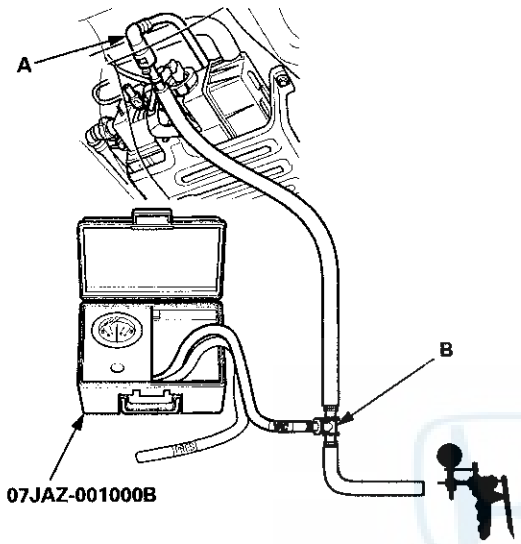
   NO–Reconnect or repair the EVAP canister purge line, then go to step 24.
6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B).



(cont'd)

DTC Troubleshooting (cont'd)

7. Disconnect the vacuum hose (A) from the purge line (at the EVAP canister side), then connect a T-fitting (B), a vacuum gauge, and a vacuum pump/gauge, 0—30 in.Hg, to the hose as shown.

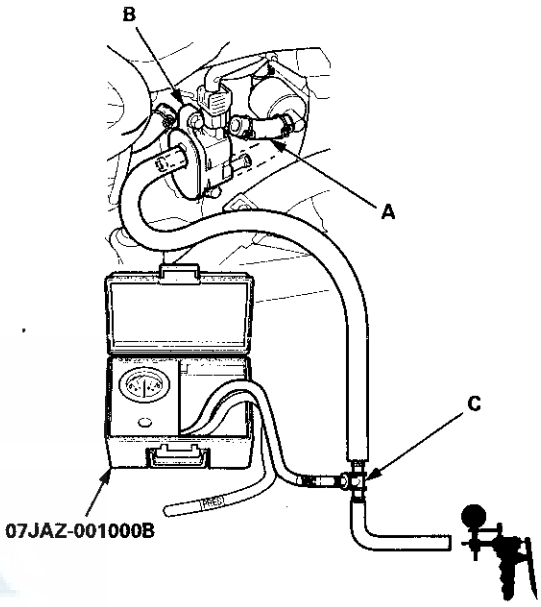


8. Turn the ignition switch to ON (II).
9. Apply about 2 kPa (0.6 inHg, 15 mmHg) of vacuum to the hose.
10. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

    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.
12. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B). Connect a T-fitting (C), the vacuum gauge, and the vacuum pump/gauge to the EVAP canister purge valve as shown.



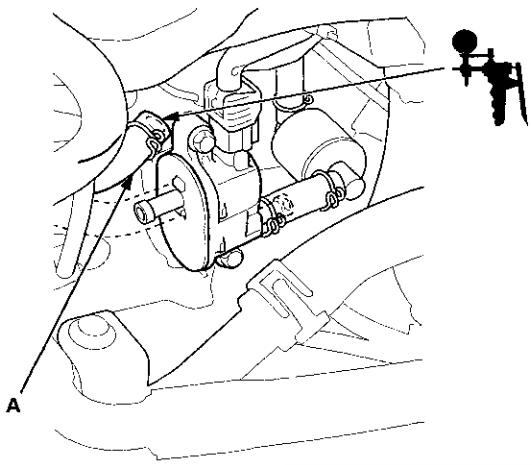
13. Apply about 2 kPa (0.6 inHg, 15 mmHg) of vacuum to the hose.
14. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

    Does the vacuum release immediately?

    YES–Check for a blockage in the EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, then go to step 24.

    NO–Replace the EVAP canister purge valve (see page 11-371), then go to step 24.

15. Connect the vacuum pump/gauge to the vacuum hose (A) as shown.



16. Start the engine, and let it idle.

    Is there vacuum?

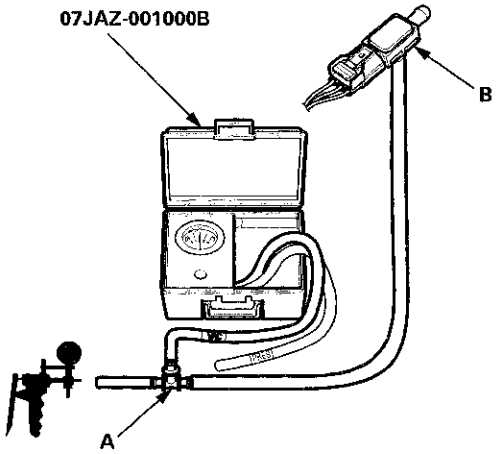
    YES–Go to step 17.

    NO–Check for a blockage at the EVAP purge line between the throttle body and the EVAP canister purge valve, then go to step 24.

17. Turn the ignition switch to LOCK (0).

18. Remove the FTP sensor with its connector connected (see page 11-370).

19. Connect a T-fitting (A) to the vacuum pump/gauge, then connect the vacuum pump to the FTP sensor (B) as shown.



20. Turn the ignition switch to ON (II).

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 blockage at the EVAP canister port, then go to step 24.

    NO–Replace the FTP sensor (see page 11-370), then go to step 24.

24. Turn the ignition switch to ON (II).

25. Reset the ECM/PCM with the HDS.

26. Do the ECM/PCM idle learn procedure (see page 11-293).

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 ECM/PCM, then go to step 1.

DTC Troubleshooting (cont'd)

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).
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.

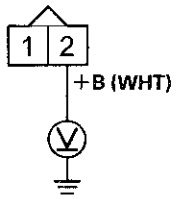
   NO–Go to step 4.
4. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Pending or Confirmed DTCs with the HDS.

   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).
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Turn the ignition switch to ON (II).
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

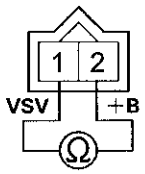
Is there battery voltage?

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).
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?

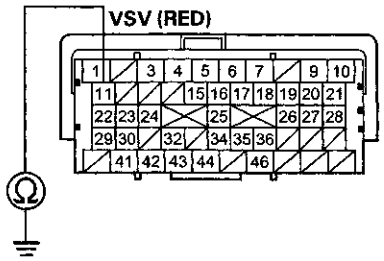
YES–Go to step 12.

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 A11 and body ground.

ECM/PCM CONNECTOR A (49P)



Terminal side of female terminals

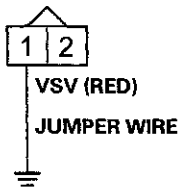
Is there continuity?

YES–Repair short in the wire between the EVAP canister vent shut valve and the ECM/PCM (A11), 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.

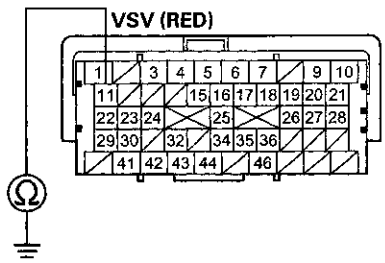
EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

16. Check for continuity between ECM/PCM connector terminal A11 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 (A11), then go to step 18.

17. Replace the EVAP canister vent shut valve (see page 11-371).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-293).

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.

(cont'd)

DTC Troubleshooting (cont'd)

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 11-203), 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 11-204). 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).
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 11-203), 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 11-204). 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 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).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Remove the fuel fill cap, and wait 1 minute.
5. Turn the ignition switch to ON (II).
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?

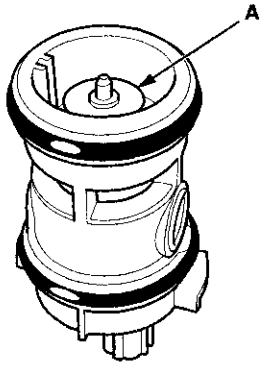
   YES–Go to step 7.

   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.

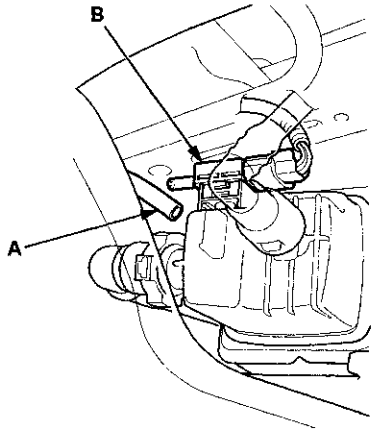
    NO–If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM. Also check for a blockage in the vent hoses and the drain joint. If the screen indicates NOT COMPLETED, keep idling until a result comes on.
11. Clear the DTC with the HDS.
12. Turn the ignition switch to LOCK (0).
13. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-371).
14. Connect the 2P connector to the EVAP canister vent shut valve.
15. Turn the ignition switch to ON (II).
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 drain joint, then reinstall the EVAP canister vent shut valve, and go to step 24.

    NO–Replace the EVAP canister vent shut valve (see page 11-371), then go to step 24.
18. Disconnect the air tube (A) from the FTP sensor (B).



19. 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?

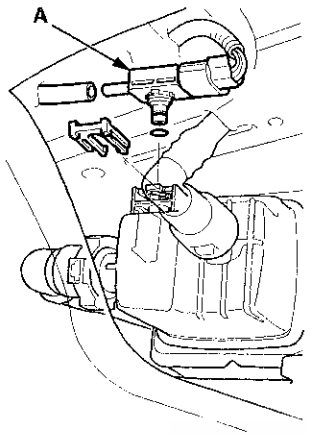
    YES–Check for a blockage in the FTP sensor air tube or vent, then go to step 24.

    NO–Go to step 20.
20. Turn the ignition switch to LOCK (0).

(cont'd)

DTC Troubleshooting (cont'd)

21. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see page 11-370).



22. Turn the ignition switch to ON (II).
23. 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 24.

    NO–Replace the FTP sensor (see page 11-370), then go to step 24.
24. Turn the ignition switch to ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see page 11-293).
27. 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 28.
28. 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 27, 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.

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 are 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 the 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.

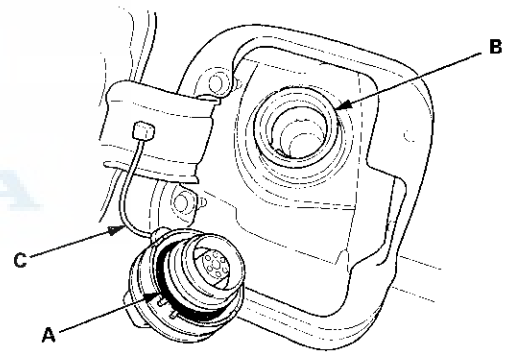
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 after it's tight, then it clicks.

   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.

(cont'd)

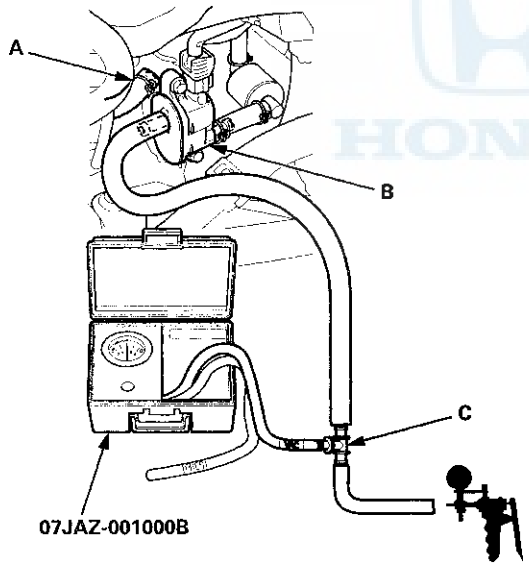
Fuel Cap Warning Message System Troubleshooting (cont'd)

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 fuel 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).
8. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, then connect a T-fitting (C), a vacuum gauge, and a vacuum pump/gauge, 0–30 in.Hg, to the EVAP canister purge valve as shown.



9. Turn the ignition switch to ON (II).
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 EVAP canister purge 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 11-371), then go to step 12.
12. Reconnect all hoses.
13. Turn the ignition switch to ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-293).
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 for 1 minute.
17. Test-drive at 45 mph (72 km/h) for 1 minute or more.

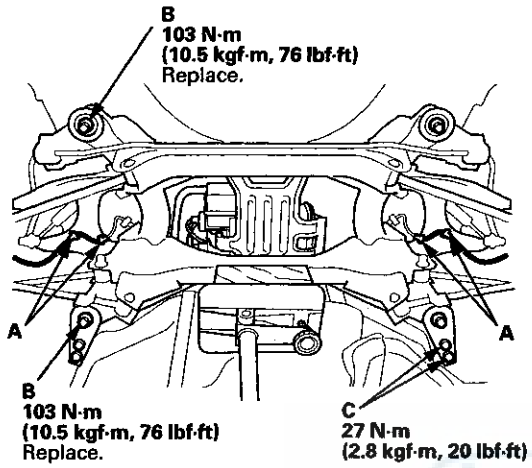
    Does the fuel cap message come on?

    YES–Go to step 1 and recheck.

    NO–Troubleshooting is complete.■

EVAP Canister Replacement

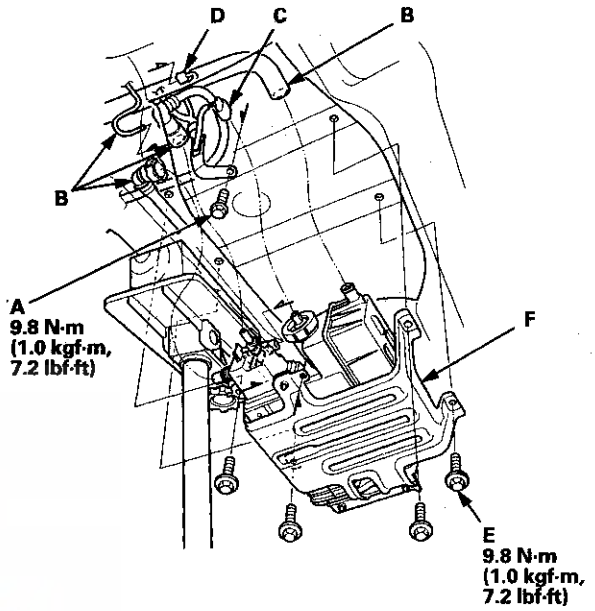
1. Raise the vehicle on a lift.
2. Remove the wheel sensor harness clamps (A)



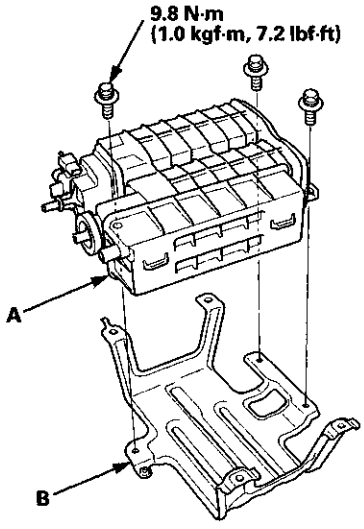
3. Support the rear subframe with a transmission jack and a wooden block as shown.
4. Remove the rear subframe mounting bolts (B) and (C).
5. Lower the transmission jack and rear subframe about 50 mm.

   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).



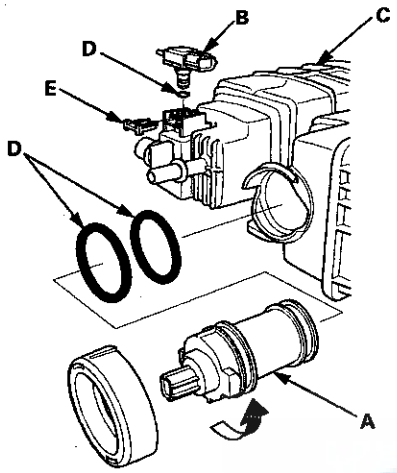
7. Remove the bolts (E), then remove the EVAP canister assembly (F).
8. Remove the EVAP canister (A) from the EVAP canister bracket (B).



(cont'd)

EVAP Canister Replacement (cont'd)

9. Remove the EVAP canister vent shut valve (A) and FTP sensor (B) from the canister (C).

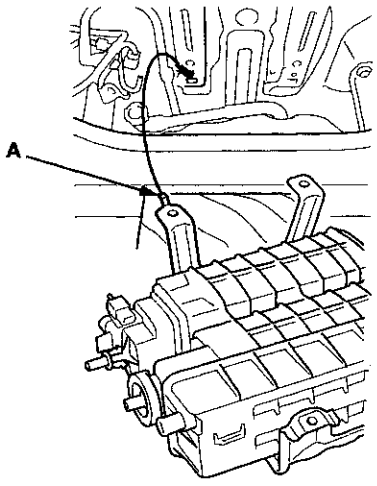


10. Reassemble the EVAP canister with new O-rings (D) and a new retainer (E), then install the EVAP canister bracket.

    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.

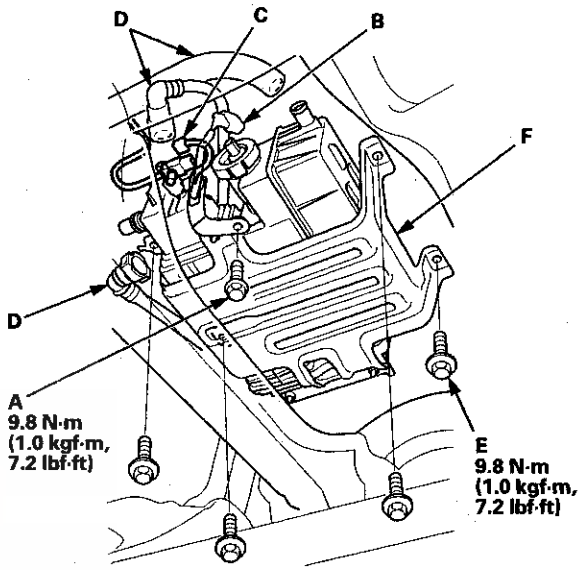


12. Install the parts in the reverse order of removal. Use new bolts when you install the rear subframe.

13. Check the wheel alignment (see page 18-5).

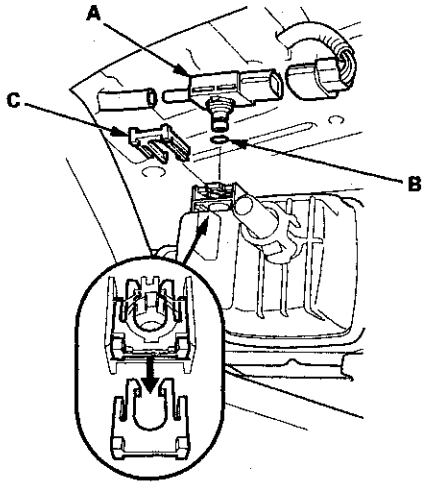
FTP Sensor Replacement

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.

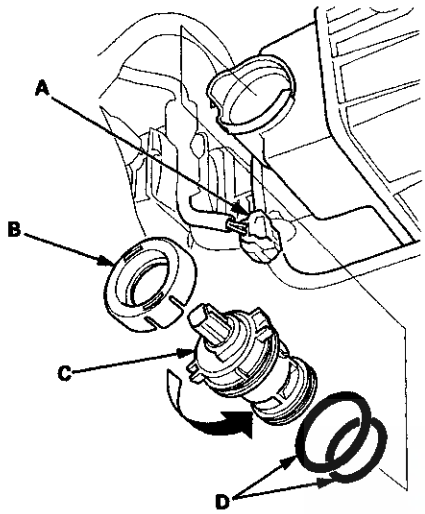
3. Remove the FTP sensor (A).



4. Install the parts in the reverse order of removal with a new O-ring (B) and a new retainer (C).

EVAP Canister Vent Shut Valve Replacement

1. Disconnect the EVAP canister vent shut valve 2P connector (A).
2. Remove the cap (B).

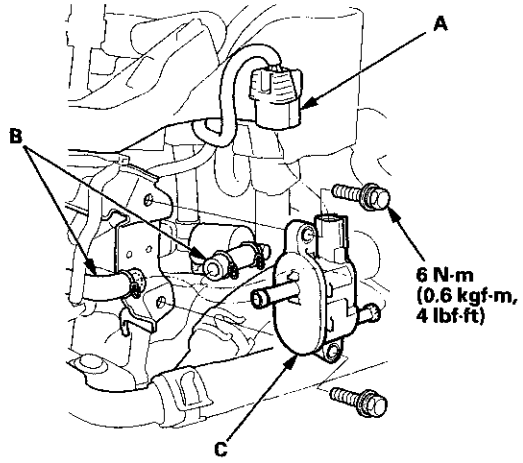


3. Remove the EVAP canister vent shut valve (C).
4. Install the parts in the reverse order of removal with new O-rings (D) and a new cap.

   NOTE: Do not coat the O-rings with oil.

EVAP Canister Purge Valve Replacement

1. Disconnect the EVAP canister purge valve 2P connector (A).



2. Disconnect the hoses (B), then remove the EVAP canister purge valve (C).
3. Install the parts in the reverse order of removal.

HONDA