

## Fuel and Emissions

### Fuel and Emissions Systems

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### EVAP System

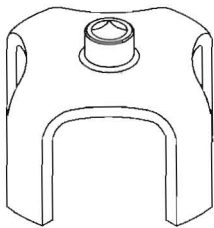
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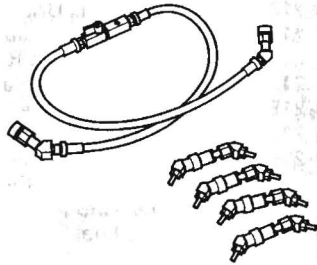
# Fuel and Emissions Systems

## Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAA-S0XA100	Fuel Sender Wrench	1
②	07AAJ-S6MA150	Fuel Pressure Gauge Attachment Set	1
③	07JAZ-001000B	Vacuum/Pressure Gauge, 0-4 in.Hg	1
④	07NAJ-P07010A	Pressure Gauge Adapter	1
⑤	07ZAJ-S5AA200	Oil Pressure Hose	1
⑥-1	07406-0020201	A/T Pressure Hose	1
⑥-2	07406-0070301	A/T Low Pressure Gauge W/Panel	1
⑥-3	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	1
⑥-4	07MAJ-PY40120	A/T Pressure Hose, Adapter	1
⑦	07406-004000B	Fuel Pressure Gauge	1



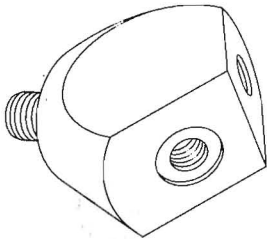
①



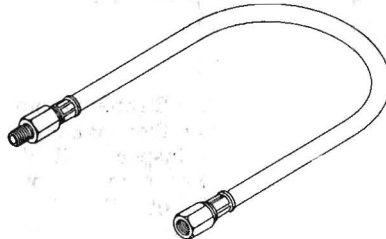
②



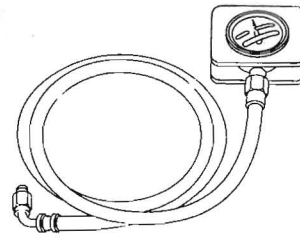
③



④



⑤



⑥-1, ⑥-2, ⑥-3, ⑥-4



⑦



## 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 pins 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.

### Opens and Shorts

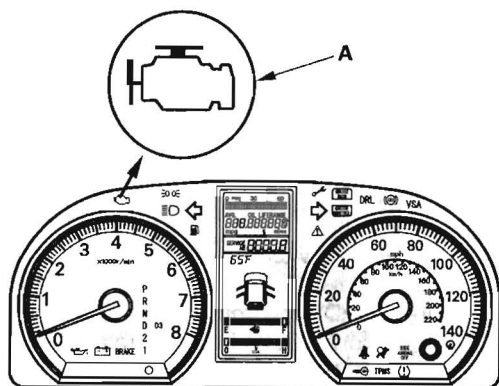
"Open" and "short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as PCMs) this can sometimes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

### How to Use the HDS (Honda Diagnostic System)

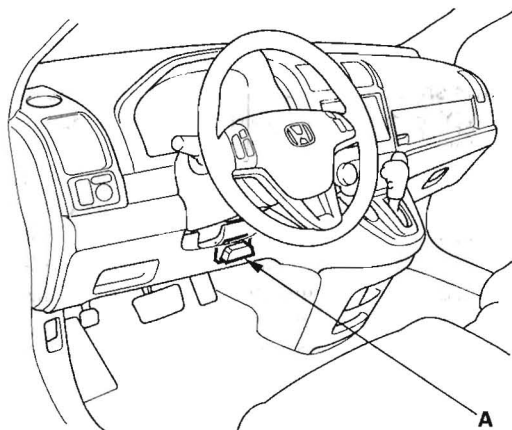
#### If the MIL (malfunction indicator lamp) has come on

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

NOTE: If the ignition switch is turned ON (II), and the engine is not started, the MIL stays on for 15–20 seconds (see page 11-57).



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 ON (II).
4. 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, freeze data, on-board snapshot, current data, and other powertrain control module (PCM) data.
- For specific operations, refer to the user's manual that came with the HDS.

5. If no DTCs are found, go to MIL troubleshooting (see page 11-196).

#### 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 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 PCM.

(cont'd)

# Fuel and Emissions Systems

## General Troubleshooting Information (cont'd)

### HDS Clear Command

The 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. 19 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, PCM reset, and crank (CKP) pattern clear. 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 PCM reset command erases all stored DTC codes, freeze data, on-board snapshot, readiness codes, and all specific data to correct the system except crank (CKP) pattern. If the crank (CKP) pattern data in the PCM was cleared, you must do the crank (CKP) pattern learn procedure. The crank (CKP) pattern clear command erases only crank (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 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: PCM idle learn procedure (see page 11-304); CKP pattern learn procedure; test-drive to set readiness codes to complete (see page 11-57).

### DTC Clear

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

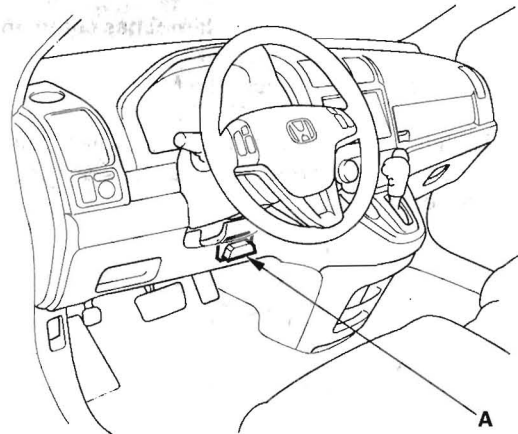
### PCM Reset

1. Reset the PCM with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the PCM idle learn procedure (see page 11-304).

### Crank (CKP) Pattern Clear/Crank (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 ON (II).
3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-197).
4. Select CRANK PATTERN in the ADJUSTMENT MENU with the HDS.
5. Select CRANK PATTERN LEARNING with the HDS, and follow the screen prompts.
6. The CKP pattern learn procedure is complete.



### Learn Procedure (without the HDS)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 2,500 rpm down to 1,000 rpm with the transmission in 2 position.
3. Repeat step 2 several times.
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II), and wait for 30 seconds. The CKP pattern learn procedure is complete.

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

1. Reset the PCM with the HDS.
2. Do the PCM idle learn procedure (see page 11-304).
3. Turn the ignition switch OFF.
4. Disconnect the HDS from the DLC.

NOTE: The PCM is part of the immobilizer system. If you replace the PCM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobilizer code with the HDS (immobilizer system section).

(cont'd)

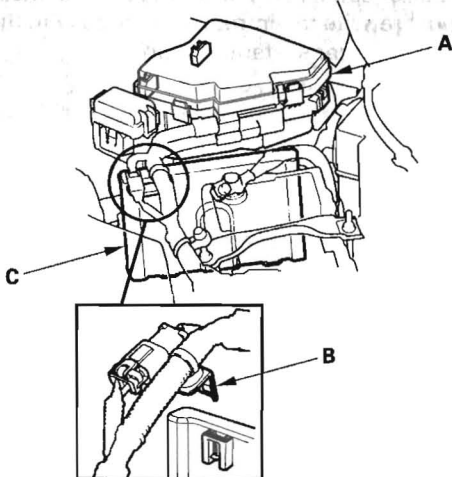
# Fuel and Emissions Systems

## General Troubleshooting Information (cont'd)

### How to Troubleshoot Circuits at the PCM Connectors

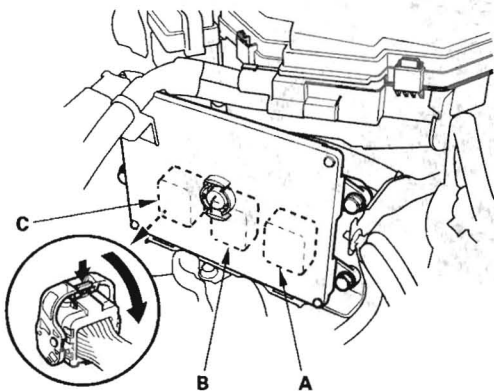
NOTE: The PCM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned OFF. Jumping the SCS line after turning the ignition switch OFF cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.

1. Jump the SCS line with the HDS.
2. Remove the under-hood fuse/relay box (A).

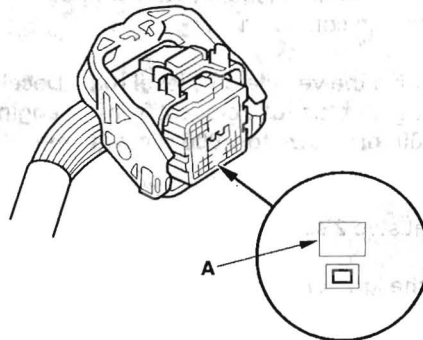


3. Disconnect the harness bracket (B).
4. Remove the PCM cover (C).
5. Disconnect the PCM connectors A, B, and C.

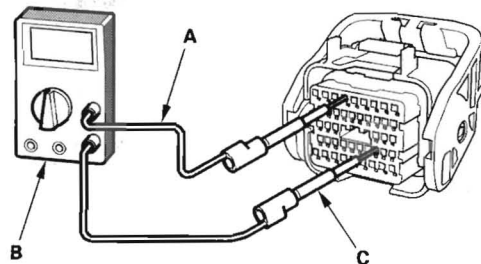
NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.



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



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



8. 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.



## Updating the PCM

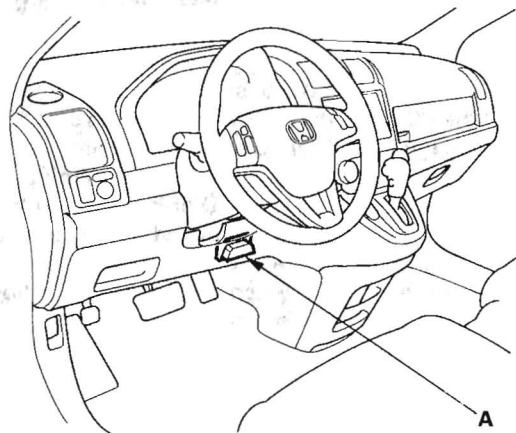
### Special Tools Required

- Honda diagnostic system (HDS)
- Honda interface module (HIM)
- HDS pocket tester

### NOTE:

- Use this procedure when you need to update the PCM during troubleshooting procedure.
- Make sure the HDS/HIM has the latest software version. Downloaded from the interactive network.
- Before you update the 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 OFF during the update. If there is a problem with the update, leave the ignition switch ON.
- To prevent 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 PCM update whenever the PCM is substituted or replaced.
- You cannot update an PCM with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the 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) lamp came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent PCM damage.

1. Turn the ignition switch 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 PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-197). If you are returning from the DLC circuit troubleshooting, skip steps 4 and 5, and clean the throttle body after updating the PCM (see page 11-338).
  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 PCM.

(cont'd)

# Fuel and Emissions Systems

## General Troubleshooting Information (cont'd)

7. If the software in the PCM is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the 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 PCM update system requires you to cool the 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 light flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the PCM:

- Leave the ignition switch in the ON (II) position.
- Connect a jumper battery (do not connect a battery charger).
- Shut down the HDS.
- Disconnect the HDS from the DLC.
- Reboot the HDS.
- Reconnect the HDS to the DLC, and try the update procedure again.

8. If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-338).
9. Do the PCM idle learn procedure (see page 11-304).
10. Do the CKP learn procedure.

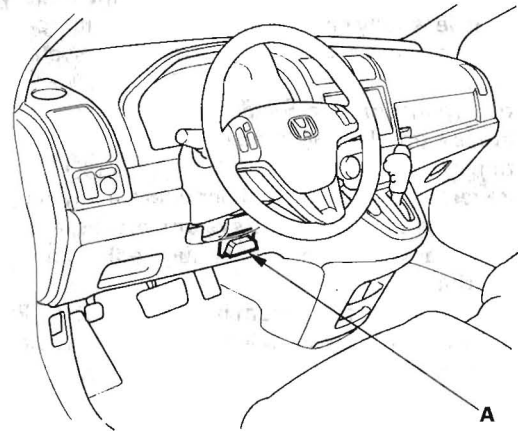
## Substituting the PCM

### Special Tools Required

- Honda diagnostic system (HDS)
- Honda interface module (HIM)
- HDS pocket tester

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

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



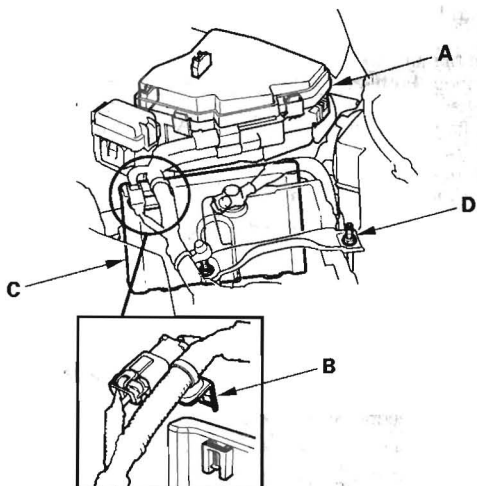
2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-197). If you are returning from DLC circuit troubleshooting, skip steps 4 and 5, and clean the throttle body after substituting the PCM (see page 11-338).
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.

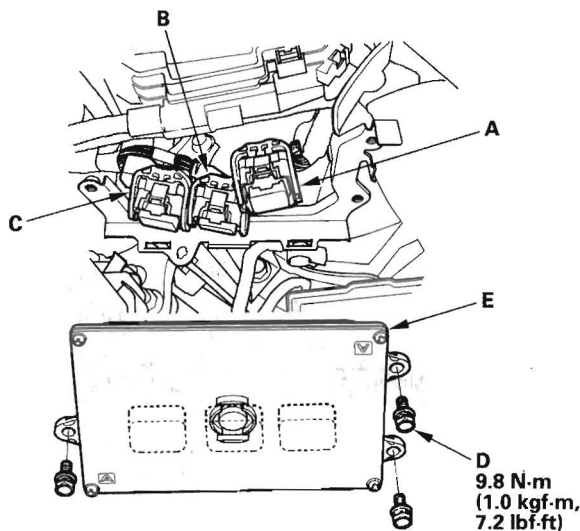




6. Remove the under-hood fuse/relay box (A).



7. Remove the harness bracket (B).
8. Loosen the battery hold down bolt (D) and re-position the battery away from the PCM.
9. Remove the PCM cover (C).
10. Remove the bolts (D), then remove the PCM (E).



11. Disconnect the PCM connectors A, B, and C.

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

12. Reinstall the parts in the reverse order of removal.

13. Turn the ignition switch ON (II).

NOTE: DTC P0630 "VIN Not Programmed or Mismatch" may be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

14. Manually input the VIN to the PCM with the HDS.
15. Update the PCM if it does not have the latest software.
16. Select the IMMOBI SYSTEM with the HDS.
17. Enter the immobilizer code using the PCM replacement procedure in the HDS; this allows you to start the engine.
18. Reset the PCM with the HDS.
19. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-338).
20. Do the PCM idle learn procedure (see page 11-304).
21. Do the 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 for 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 for the DTC.

# Fuel and Emissions Systems

## 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	(see page 11-264)
P0011 (56)	○	Variable Valve Timing Control (VTC) System Malfunction	ON	(see page 11-267)
P0101 (50)	○	Mass Air Flow (MAF) Sensor Range/Performance Problem	ON	(see page 11-62)
P0102 (50)	—	Mass Air Flow (MAF) Sensor Circuit Low Voltage	ON	(see page 11-64)
P0103 (50)	—	Mass Air Flow (MAF) Sensor Circuit High Voltage	ON	(see page 11-67)
P0107 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see page 11-69)
P0108 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see page 11-71)
P0111 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	(see page 11-74)
P0112 (10)	—	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	(see page 11-75)
P0113 (10)	—	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	(see page 11-77)
P0116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Range/Performance Problem	ON	(see page 11-80)
P0117 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	(see page 11-81)
P0118 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	(see page 11-83)
P0122 (7)	—	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	(see page 11-222)
P0123 (7)	—	Throttle Position (TP) Sensor A Circuit High Voltage	ON	(see page 11-224)
P0125 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response	ON	(see page 11-86)
P0128 (87)	○	Cooling System Malfunction	ON	(see page 11-87)
P0133 (61)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Response Malfunction/Slow Response	ON	(see page 11-89)
P0134 (41)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction	ON	(see page 11-90)
P0135 (41)	—	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Circuit Malfunction	ON	(see page 11-91)
P0137 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Low Voltage	ON	(see page 11-96)
P0138 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit High Voltage	ON	(see page 11-98)
P0139 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Slow Response	ON	(see page 11-101)
P0141 (65)	—	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-102)
P0171 (45)	○	Fuel System Too Lean	ON	(see page 11-106)
P0172 (45)	○	Fuel System Too Rich	ON	(see page 11-106)
P0222 (7)	—	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	(see page 11-227)
P0223 (7)	—	Throttle Position (TP) Sensor B Circuit High Voltage	ON	(see page 11-230)
P0300 (75) any combination of the following P0301 (71) P0302 (72) P0303 (73) P0304 (74)	○	Random Misfire Detected	ON	(see page 11-108)
P0301 (71)	○	No. 1 Cylinder Misfire Detected	ON	(see page 11-111)
P0302 (72)	○	No. 2 Cylinder Misfire Detected	ON	(see page 11-111)
P0303 (73)	○	No. 3 Cylinder Misfire Detected	ON	(see page 11-111)
P0304 (74)	○	No. 4 Cylinder Misfire Detected	ON	(see page 11-111)
P0325 (23)	—	Knock Sensor Circuit Malfunction	ON	(see page 11-120)
P0335 (4)	—	Crankshaft Position (CKP) Sensor No Signal	ON	(see page 11-122)
P0339 (4)	—	Crankshaft Position (CKP) Sensor Circuit Intermittent Interruption	ON	(see page 11-125)
P0340 (57)	—	Camshaft Position (CMP) Sensor A No Signal	ON	(see page 11-269)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in 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 the automatic transmission DTCs.

\* : These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.



DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0341 (57)	—	Camshaft Position (CMP) Sensor and Crankshaft Position (CKP) Sensor Incorrect Phase Detected	ON	(see page 11-272)
P0344 (57)	—	Camshaft Position (CMP) Sensor A Intermittent Interruption	ON	(see page 11-274)
P0365 (8)	—	Camshaft Position (CMP) Sensor B No Signal	ON	(see page 11-126)
P0369 (8)	—	Camshaft Position (CMP) Sensor B Intermittent Interruption	ON	(see page 11-129)
P0401 (80)	○	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	(see page 11-350)
P0404 (12)	○	Exhaust Gas Recirculation (EGR) Valve Circuit Range/Performance Problem	ON	(see page 11-352)
P0406 (12)	—	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	(see page 11-355)
P0420 (67)	○	Catalyst System Efficiency Below Threshold	ON	(see page 11-346)
P0443 (92)	—	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see page 11-368)
P0451 (91)	○	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	ON	(see page 11-372)
P0452 (91)	—	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	(see page 11-373)
P0453 (91)	—	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	(see page 11-376)
P0455 (90)	○	Evaporative Emission (EVAP) System Large Leak Detected	ON	(see page 11-379)
P0456 (90)	○	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	(see page 11-379)
P0457 (90)	○	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	ON	(see page 11-382)
P0461 (121)	○	Fuel Level Sensor (Fuel Gauge Sending Unit) Range/Performance Problem	OFF	(see page 11-307)
P0462 (121)	—	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	(see page 11-308)
P0463 (121)	—	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	(see page 11-310)
P0496 (92)	○	Evaporative Emission (EVAP) System High Purge Flow	ON	(see page 11-384)
P0497 (90)	○	Evaporative Emission (EVAP) System Low Purge Flow	ON	(see page 11-385)
P0498 (117)	—	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit Low Voltage	ON	(see page 11-388)
P0499 (117)	—	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit High Voltage	ON	(see page 11-391)
P0506 (14)	○	Idle Control System RPM Lower Than Expected	ON	(see page 11-288)
P0507 (14)	○	Idle Control System RPM Higher Than Expected	ON	(see page 11-290)
P0532 (191)	—	A/C Pressure Sensor Circuit Low Voltage	OFF	(see page 11-292)
P0533 (191)	—	A/C Pressure Sensor Circuit High Voltage	OFF	(see page 11-294)
P050A (167)	○	Cold Start Idle Air Control System Performance Problem	ON	(see page 11-130)
P050B (167)	○	Cold Start Ignition Timing Performance Problem	ON	(see page 11-132)
P0562 (34)	—	Charging System Low Voltage	OFF	(see page 11-135)
P0563 (34)	—	Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	OFF	(see page 11-136)
P0602 (196)	—	Powertrain Control Module (PCM) Programming Error	ON	(see page 11-139)
P0606 (0)	—	Powertrain Control Module (PCM) Processor Malfunction	ON	(see page 11-139)
P060A (131)	—	Powertrain Control Module (PCM) (A/T System) Internal Control Module Malfunction	ON	(see page 11-140)
P062F (131)	—	Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see page 11-140)
P0630 (139)	—	VIN Not Programmed or Mismatch	ON	(see page 11-141)
P0685 (135)	○	Powertrain Control Module (PCM) Power Control Circuit/Internal Circuit Malfunction	ON	(see page 11-142)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in 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 the automatic transmission DTCs.

\*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

(cont'd)

# Fuel and Emissions Systems

## DTC Troubleshooting Index (cont'd)

DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0720 (122)	—	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	(see page 11-143)
P1009 (56)	○	Variable Valve Timing Control (VTC) Advance Malfunction	ON	(see page 11-275)
P1109 (13)	—	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	(see page 11-145)
P1116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Performance Problem	ON	(see page 11-146)
P1128 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	(see page 11-148)
P1129 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	(see page 11-149)
P1157 (48)	—	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS Circuit High Voltage	ON	(see page 11-151)
P1172 (157)	—	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Out of Range High	ON	(see page 11-153)
P1297 (20)	—	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	(see page 11-154)
P1298 (20)	—	Electrical Load Detector (ELD) Circuit High Voltage	OFF	(see page 11-156)
P1454 (91)	○	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	ON	(see page 11-392)
P145C (90)	○	Evaporative Emission (EVAP) System Purge Flow (Vacuum Line)	ON	(see page 11-394)
P1549 (34)	—	Charging System High Voltage	OFF	(see page 11-158)
P1658 (40)	—	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	(see page 11-233)
P1659 (40)	—	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	(see page 11-235)
P1683 (40)	—	Throttle Valve Default Position Spring Performance Problem	ON	(see page 11-239)
P1684 (40)	—	Throttle Valve Return Spring Performance Problem	ON	(see page 11-240)
P16BB (116)	—	Alternator B Terminal Circuit Low Voltage	OFF	(see page 11-159)
P16BC (116)	—	Alternator FR Terminal Circuit/IGP Circuit Low Voltage	OFF	(see page 11-160)
P2101 (40)	—	Electronic Throttle Control System (ETCS) Malfunction	ON	(see page 11-241)
P2118 (40)	—	Throttle Actuator Current Range/Performance Problem	ON	(see page 11-243)
P2122 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit Low Voltage	ON	(see page 11-245)
P2123 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit High Voltage	ON	(see page 11-248)
P2127 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit Low Voltage	ON	(see page 11-250)
P2128 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit High Voltage	ON	(see page 11-253)
P2135 (7)	—	Throttle Position (TP) Sensor A/B Voltage Incorrect Correlation	ON	(see page 11-255)
P2138 (37)	—	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position (TP) Sensor D/E) Incorrect Voltage Correlation	ON	(see page 11-257)
P2176 (40)	—	Throttle Actuator Control System Idle Position Not Learned	ON	(see page 11-259)
P2183 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Range/Performance Problem	ON	(see page 11-163)
P2184 (192)	—	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	(see page 11-165)
P2185 (192)	—	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	(see page 11-167)
P2195 (48)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean	ON	(see page 11-170)
P2227 (13)	○	Barometric Pressure (BARO) Sensor Range/Performance Problem	ON	(see page 11-172)
P2228 (13)	—	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see page 11-173)
P2229 (13)	—	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see page 11-173)
P2238 (48)	—	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS + Line Low Voltage	ON	(see page 11-174)
P2252 (48)	—	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS - Line Low Voltage	ON	(see page 11-176)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in 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 the automatic transmission DTCs.

\* : These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.



DTC (MIL indication*)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2270 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Signal Stuck Lean	ON	(see page 11-178)
P2271 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Signal Stuck Rich	ON	(see page 11-178)
P2413 (12)	○	Exhaust Gas Recirculation (EGR) System Malfunction	ON	(see page 11-357)
P2422 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Stuck Closed Malfunction	ON	(see page 11-392)
P2610 (132)	—	Powertrain Control Module (PCM) Ignition Off Internal Timer Performance Problem	ON	(see page 11-179)
P2646 (22)	—	Rocker Arm Oil Pressure Switch Circuit Low Voltage	ON	(see page 11-276)
P2647 (22)	—	Rocker Arm Oil Pressure Switch Circuit High Voltage	ON	(see page 11-278)
P2648 (21)	—	Rocker Arm Oil Control Solenoid Circuit Low Voltage	ON	(see page 11-280)
P2649 (21)	—	Rocker Arm Oil Control Solenoid Circuit High Voltage	ON	(see page 11-282)
P2A00 (61)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Range/Performance Problem	ON	(see page 11-180)
U0028 (126)	—	F-CAN Malfunction (BUS-OFF (Powertrain Control Module (PCM)))	ON	(see page 11-181)
U0122 (126)	—	F-CAN Malfunction (Powertrain Control Module (PCM)-VSA Control Module Unit)	OFF	(see page 11-182)
U0155 (126)	—	F-CAN Malfunction (Powertrain Control Module (PCM)-Gauge Control Module)	ON	(see page 11-184)
U0300 (131)	—	PGM-FI System and A/T System Program Version Mismatch	ON	(see page 11-186)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in 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 the automatic transmission DTCs.

\*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

# Fuel and Emissions Systems

## Symptom Troubleshooting Index

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

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Test the battery (see page 22-65).</li> <li>2. Test the starter (see page 4-8).</li> <li>3. Check the fuel pressure (see page 11-319).</li> <li>4. Troubleshoot the fuel pump circuit (see page 11-313).</li> </ol>	<ul style="list-style-type: none"> <li>• Low compression</li> <li>• No ignition spark</li> <li>• Intake air leaks</li> <li>• Locked up engine</li> <li>• Broken cam chain</li> <li>• Contaminated fuel</li> </ul>
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set)	Troubleshoot the DLC circuit (see page 11-197).	<ul style="list-style-type: none"> <li>• Low compression</li> <li>• No ignition spark</li> <li>• Intake air leaks</li> <li>• Locked up engine</li> <li>• Broken cam chain</li> <li>• Contaminated fuel</li> <li>• No power to PCM</li> <li>• No ground to PCM</li> <li>• Shorted reference voltage</li> </ul>
MIL comes on and stays on, or never comes on at all, no DTCs set	Troubleshoot the MIL circuit (see page 11-196).	
Engine will not start (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine is hard to start (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Test the battery (see page 22-65).</li> <li>2. Check the fuel pressure (see page 11-319).</li> <li>3. Clean the throttle body (see page 11-338).</li> </ol>	<ul style="list-style-type: none"> <li>• Low compression</li> <li>• Intake air leaks</li> <li>• Contaminated fuel</li> <li>• Weak spark</li> </ul>
Cold fast idle too low (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Do the PCM idle learn procedure (see page 11-304).</li> <li>2. Check the idle speed (see page 11-303).</li> <li>3. Clean the throttle body (see page 11-338).</li> </ol>	
Cold fast idle too high (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Do the PCM idle learn procedure (see page 11-304).</li> <li>2. Check the idle speed (see page 11-303).</li> <li>3. Do the throttle position learning check (see page 11-338).</li> </ol>	
Idle speed fluctuates (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Do the PCM idle learn procedure (see page 11-304).</li> <li>2. Check the idle speed (see page 11-303).</li> <li>3. Do the carbon accumulation check (see page 11-338).</li> </ol>	Intake vacuum leaks



Symptom	Diagnostic procedure	Also check for
After warming up, idle speed is below specification without load (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Troubleshoot the alternator FR signal circuit (see page 11-298).</li> <li>2. Do the carbon accumulation check (see page 11-338).</li> </ol>	
After warming up, idle speed is above specification without load (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Troubleshoot the alternator FR signal circuit (see page 11-298).</li> <li>2. Inspect the APP sensor (see page 11-261).</li> </ol>	
After warming up, idle speed drops when steering wheel is turning (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Do the PCM idle learn procedure (see page 11-304).</li> <li>2. Troubleshoot the PSP switch signal circuit (see page 11-299).</li> <li>3. Do the carbon accumulation check (see page 11-338).</li> </ol>	Power steering system
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see page 11-319).	<ul style="list-style-type: none"> <li>• Low compression</li> <li>• Incorrect camshaft timing</li> <li>• Incorrect engine oil level</li> </ul>
Engine stalls (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Do the PCM idle learn procedure (see page 11-304).</li> <li>2. Check the fuel pressure (see page 11-319).</li> <li>3. Check the idle speed (see page 11-303).</li> <li>4. Troubleshoot the brake pedal position switch signal circuit (see page 11-301).</li> </ol>	<ul style="list-style-type: none"> <li>• Intake air leaks</li> <li>• Faulty harness and sensor connections</li> </ul>
Difficult to refuel (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> <li>1. Check the fuel vent tube between the EVAP canister and the fuel tank.</li> <li>2. Check the fuel tank vapor recirculation tube between the fuel pipe and the fuel tank.</li> <li>3. Replace the fuel tank (see page 11-333).</li> </ol>	Malfunctioning gas station filling nozzle.
Fuel overflows during refueling (No DTCs set)	Replace the fuel tank (see page 11-333).	Malfunctioning gas station filling nozzle.
HDS does not communicate with the PCM or the vehicle	Troubleshoot the DLC circuit (see page 11-197).	

# Fuel and Emissions Systems

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## System Description

### Electronic Control System

The functions of the fuel and emission control systems are managed by the powertrain control module (PCM).

#### Self-diagnosis

The PCM detects a failure of a signal from a sensor or from another control unit and stores a Temporary DTC or a DTC. Depending on the failure, a DTC is stored in either the first or the second drive cycle. When a DTC is stored, the 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 PCM stores a DTC for the failure 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 PCM stores a Temporary DTC. The MIL does not come on at this time. If the failure continues in the second drive cycle, the PCM stores a 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 PCM ignores that signal and substitute a pre-programmed value for them that allows the engine to continue running. This causes a DTC to be stored and the MIL to come on.

#### MIL Bulb Check and Readiness Code Condition

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

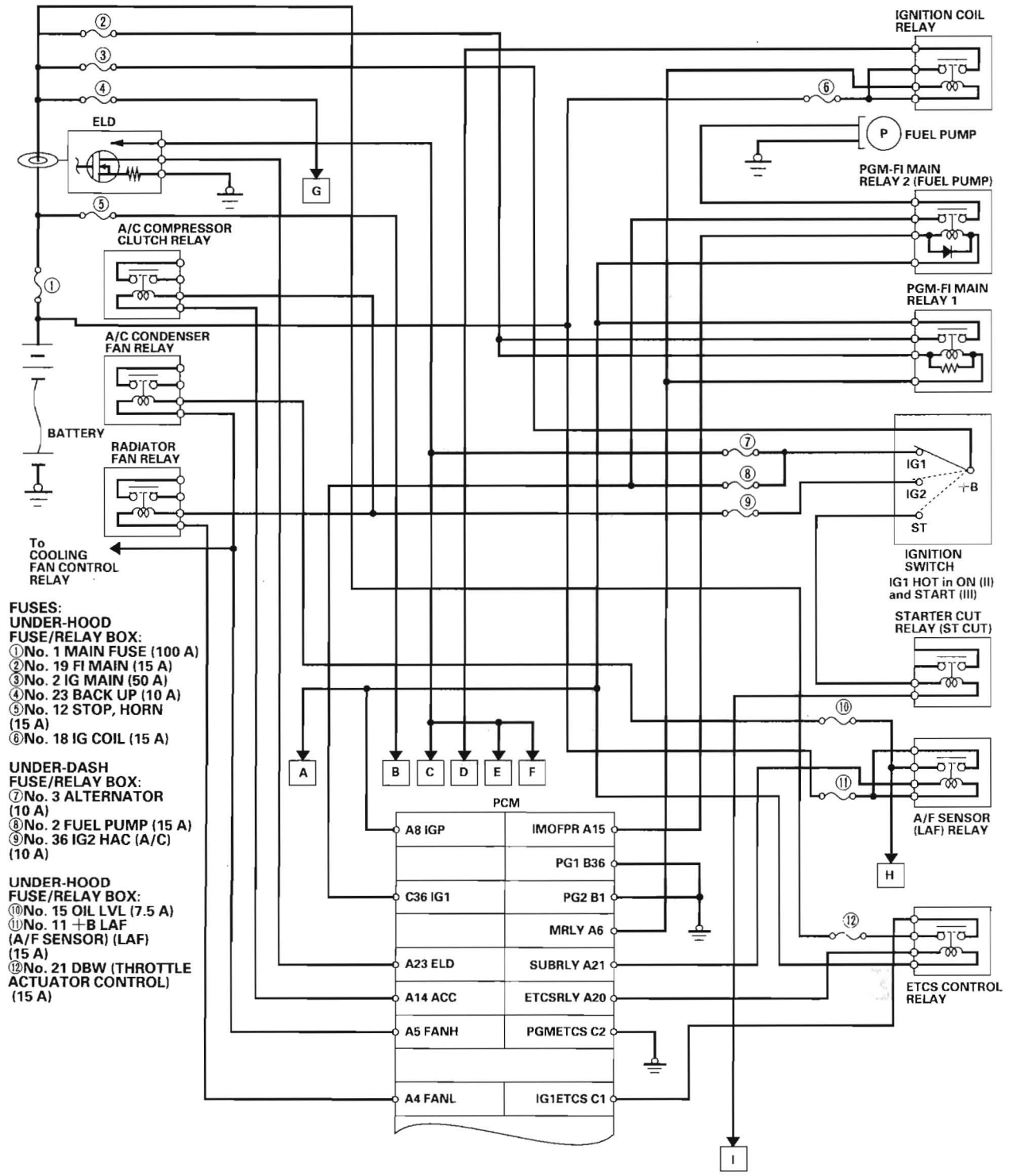
#### Self Shut Down (SSD) Mode

After the ignition switch is turned OFF, the PCM stays on (up to 15 minutes). If the PCM connector is disconnected during this time, the 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 OFF.





# PCM Electrical Connections



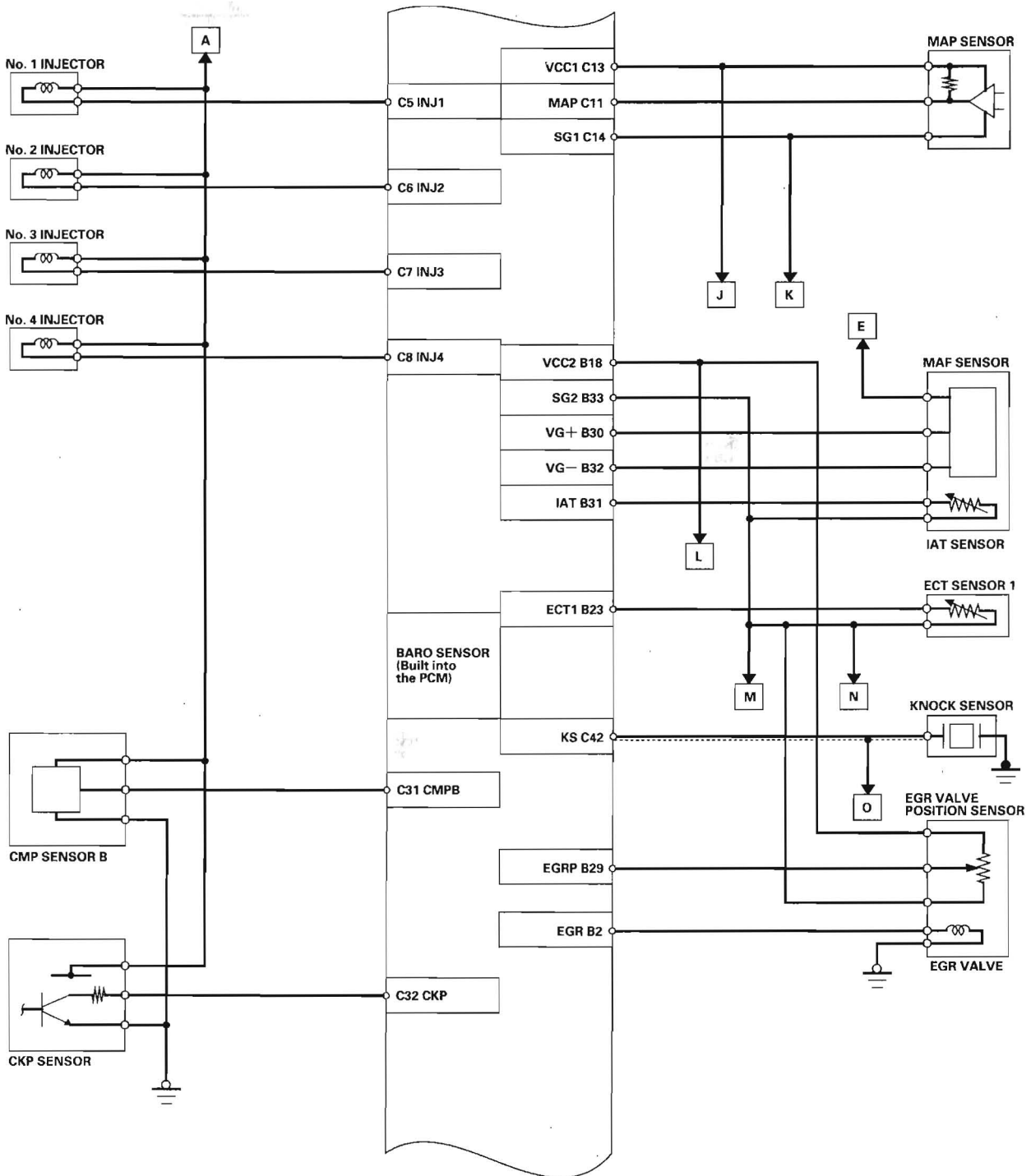
- FUSES:**
- UNDER-HOOD FUSE/RELAY BOX:**
- ① No. 1 MAIN FUSE (100 A)
  - ② No. 19 FI MAIN (15 A)
  - ③ No. 2 IG MAIN (50 A)
  - ④ No. 23 BACK UP (10 A)
  - ⑤ No. 12 STOP, HORN (15 A)
  - ⑥ No. 18 IG COIL (15 A)
- UNDER-DASH FUSE/RELAY BOX:**
- ⑦ No. 3 ALTERNATOR (10 A)
  - ⑧ No. 2 FUEL PUMP (15 A)
  - ⑨ No. 36 IG2 HAC (A/C) (10 A)
- UNDER-HOOD FUSE/RELAY BOX:**
- ⑩ No. 15 OIL LVL (7.5 A)
  - ⑪ No. 11 +B LAF (A/F SENSOR) (LAF) (15 A)
  - ⑫ No. 21 DBW (THROTTLE ACTUATOR CONTROL) (15 A)

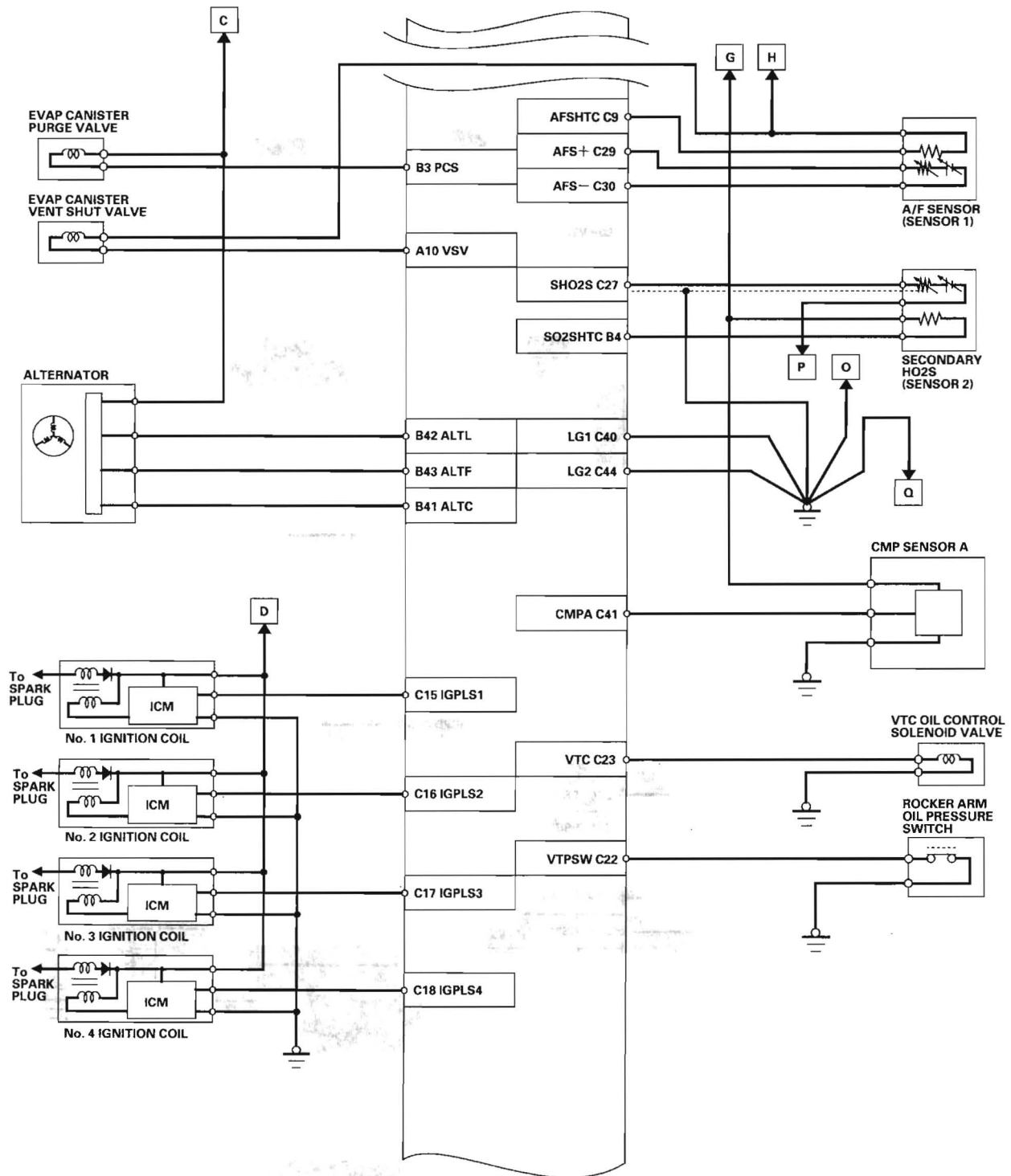
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# Fuel and Emissions Systems

## System Description (cont'd)

### PCM Electrical Connections (cont'd)





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# Fuel and Emissions Systems

## System Description (cont'd)

### PCM Electrical Connections (cont'd)

