

2007 Honda Element EX

2007-08 ENGINE PERFORMANCE Idle Control System - Element

2007-08 ENGINE PERFORMANCE

Idle Control System - Element

COMPONENT LOCATION INDEX

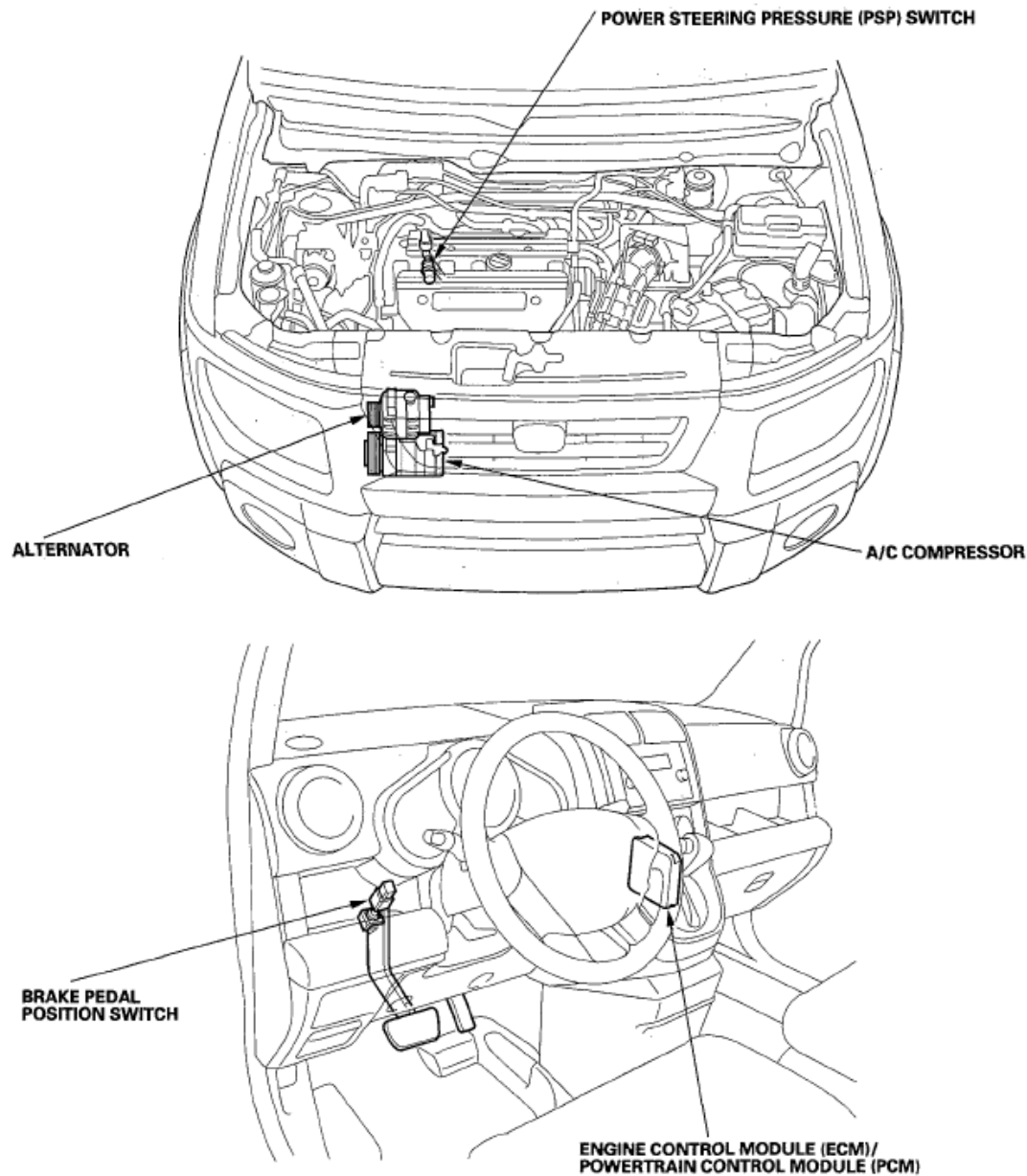


Fig. 1: Identifying Idle Control System Component Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P0506: IDLE CONTROL SYSTEM RPM LOWER THAN EXPECTED

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

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Confirm under these DATA LIST parameter conditions with the HDS:
 - ECT SENSOR 1 above 158°F (70°C)
 - IAT SENSOR above 32°F (0°C)
 - VSS is 0 mph (0 km/h)
 - ST FUEL TRIM between 0.69-1.47
 - FSS is CLOSED
5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES - Go to step 6.

NO - If the screen indicates PASSED, go to step 15. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

6. Remove the intake air duct from the throttle body (see THROTTLE BODY REMOVAL/INSTALLATION).
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 THROTTLE BODY CLEANING). Also check for damage to the air cleaner element (see AIR CLEANER ELEMENT INSPECTION/REPLACEMENT), 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 17.

8. Replace the throttle body (see THROTTLE BODY REMOVAL/INSTALLATION).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see ECM/PCM IDLE LEARN PROCEDURE).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

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12. Check under these DATA LIST parameter conditions with the HDS:

- ECT SENSOR 1 above 158°F (70°C)
- IAT SENSOR above 32°F (0°C)
- VSS is 0 mph (0 km/h)
- ST FUEL TRIM between 0.69-1.47
- FSS is CLOSED

13. Check for Temporary DTCs or 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 Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTCs troubleshooting.

NO - If the screen indicates FAILED, go to step 19. Check the A/C system and/or power steering system, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

15. Remove the intake air duct from the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).

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 **THROTTLE BODY CLEANING**). Also check for damage to the air cleaner element (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**), then go to step 9. If there is damage in the throttle bore, go to step 8.

NO - Go to step 17.

17. Recheck with different load conditions (turn on the headlights, blower motor, 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?

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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, go to step 12.

19. Update the ECM/PCM if it does not have the latest software (see **UPDATING THE ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
20. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or 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 158°F (70°C)
 - IAT SENSOR above 32°F (0°C)
 - VSS is 0 mph (0 km/h)
 - ST FUEL TRIM between 0.69-1.47
 - FSS is CLOSED
22. Check for Temporary DTCs or 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 **SUBSTITUTING THE ECM/PCM**), 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 **ECM/PCM REPLACEMENT**). If any other Temporary DTCs or DTCs were indicated in step 22, go to the indicated DTCs 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 **SUBSTITUTING THE ECM/PCM**), 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, 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 **GENERAL TROUBLESHOOTING INFORMATION**).

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1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES - Go to step 5.

NO - If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.), then go to step 3.

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

Are there any leaks?

YES - Repair or replace the leaking part(s), then go to step 6.

NO - Go to step 6.

6. Turn the ignition switch ON (II).
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
9. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
10. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0507 indicated?

YES - Go to step 12.

NO - Go to step 11.

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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 Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTCs 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, 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 **UPDATING THE ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**).
13. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
14. Check for Temporary DTCs or 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 **SUBSTITUTING THE ECM/PCM**), then go to step 13. If the ECM/PCM was substituted, go to step 1.

NO - Go to step 15.

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 **ECM/PCM REPLACEMENT**): If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTCs 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 **SUBSTITUTING THE ECM/PCM**), 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, go to step 13.

A/C SIGNAL CIRCUIT TROUBLESHOOTING

1. Start the engine.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C CLUTCH in the DATA LIST with the HDS.

Does it indicated ON?

YES - Go to step 5.

NO - Do the A/C system test (see **A/C SYSTEM TEST**).

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 OFF.
7. Turn the ignition switch ON (II).
8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

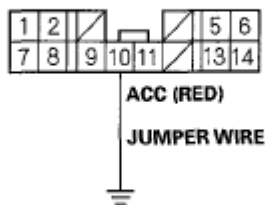
Is there a clicking noise from the A/C compressor clutch?

YES - Do the A/C system test (see **A/C SYSTEM TEST**).

NO - Go to step 9.

9. Momentarily connect under-hood fuse/relay box 14P connector terminal No. 10 to body ground with a jumper wire several times.

UNDER-HOOD FUSE/RELAY BOX 14P CONNECTOR



Wire side of female terminals

Fig. 2: Connecting Under-Hood Fuse/Relay Box 14P Connector Terminal No. 10 To Body Ground With Jumper Wire

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there a clicking noise from the A/C compressor clutch?

YES - Repair open in the wire between the ECM/PCM (E18) and the A/C clutch relay.

NO - Update the ECM/PCM if it does not have the latest software (see **UPDATING THE ECM/PCM**),

or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

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.

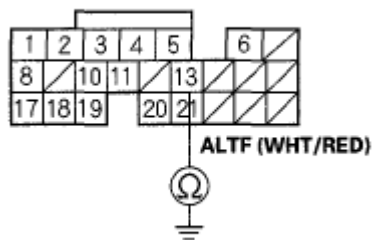
Does the percentage vary?

YES - The alternator signal circuit is OK.

NO - Go to step 4.

4. Turn the headlight switch and ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect ECM/PCM connector B (24P).
8. Check for continuity between body ground and ECM/PCM connector terminal B13.

ECM/PCM CONNECTOR B (24P)



Wire side of female terminals

Fig. 3: Checking Continuity Between Body Ground And ECM/PCM Connector Terminal B13
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (B13) and the alternator.

NO - Update the ECM/PCM if it does not have the latest software (see **UPDATING THE ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

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.

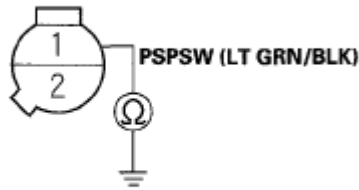
6. Turn the ignition switch OFF.
7. Disconnect the PSP switch 2P connector.
8. Start the engine.
9. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to OFF?

YES - Replace the PSP switch (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**).

NO - Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector E (31P).
13. Check for continuity between PSP switch 2P connector terminal No. 1 and body ground.

PSP SWITCH 2P CONNECTOR

Wire side of female terminals

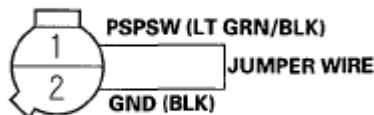
Fig. 4: Checking Continuity Between PSP Switch 2P Connector Terminal No. 1 And Body Ground
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E16) and the PSP switch.

NO - Update the ECM/PCM if it does not have the latest software (see **UPDATING THE ECM/PCM**), or substitute a known-good ECM/PCM (see **SUBSTITUTING THE ECM/PCM**), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see **ECM/PCM REPLACEMENT**).

14. Turn the ignition switch OFF.
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

Fig. 5: Connecting PSP Switch 2P Connector Terminals No. 1 And 2 With Jumper Wire
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Check the PPSW in the DATA LIST with the HDS.

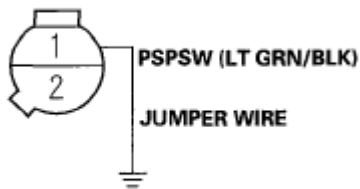
Does it change to ON?

YES - Replace the PSP switch (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**).

NO - Go to step 18.

18. Turn the ignition switch OFF.
19. Remove the jumper wire from the PSP switch 2P connector.
20. Jump the SCS line with the HDS.
21. Disconnect ECM/PCM connector E (31P).
22. Connect PSP switch 2P connector terminal No. 1 to body ground with a jumper wire.

PSP SWITCH 2P CONNECTOR

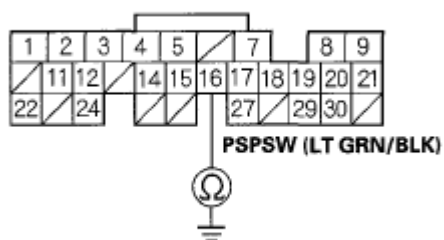


Wire side of female terminals

Fig. 6: Connecting PSP Switch 2P Connector Terminal No. 1 To Body Ground With Jumper Wire
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Check for continuity between body ground and ECM/PCM connector terminal E16.

ECM/PCM CONNECTOR E (31P)



Wire side of female terminals

Fig. 7: Checking Continuity Between Body Ground And ECM/PCM Connector Terminal E16
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

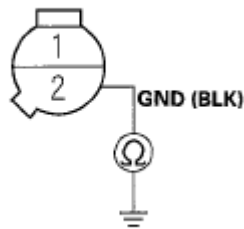
Is there continuity?

YES - Go to step 24.

NO - Repair open in the wire between the PSP switch and the ECM/PCM (E16).

24. Check for continuity between PSP switch 2P connector terminal No. 2 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

Fig. 8: Checking Continuity Between PSP Switch 2P Connector Terminal No. 2 And Body Ground
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Update the ECM/PCM if it does not have the latest software (see UPDATING THE ECM/PCM), or substitute a known-good ECM/PCM (see SUBSTITUTING THE ECM/PCM), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see ECM/PCM REPLACEMENT).

NO - Repair open in the wire between the PSP switch and G301.

BRAKE PEDAL POSITION SWITCH SIGNAL CIRCUIT TROUBLESHOOTING

1. Turn the ignition switch 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 BRAKE PEDAL POSITION SWITCH TEST).

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 (BKSU line) is OK.

NO - Go to step 4.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the brake pedal position switch 4P connector.
7. Disconnect ECM/PCM connector E (31P).

8. Check for continuity between ECM/PCM connector terminal E22 and body ground.

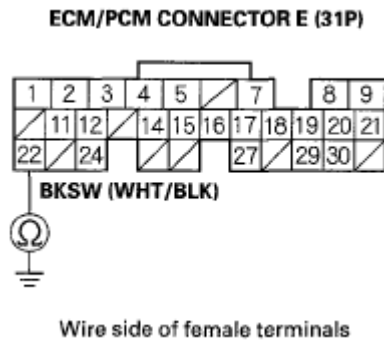


Fig. 9: Checking Continuity Between ECM/PCM Connector Terminal E22 And Body Ground
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the ECM/PCM (E22) and the No. 7 HORN, STOP (15 A) fuse. Replace the No. 7 HORN, STOP (15 A) fuse.

NO - Go to step 9.

9. Check for continuity between ECM/PCM connector terminal E22 and brake pedal position switch 4P connector terminal No. 2.

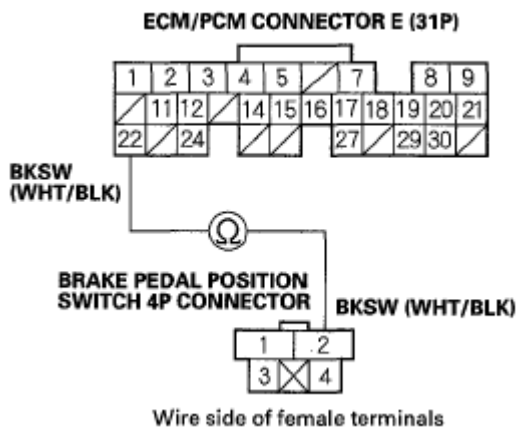


Fig. 10: Checking Continuity Between ECM/PCM Connector Terminal E22 And Brake Pedal Position Switch 4P Connector Terminal No. 2
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair open in the wire between the brake pedal position switch and the No. 7 HORN, STOP (15 A) fuse. Inspect the brake position switch (see **BRAKE PEDAL POSITION SWITCH TEST**).

NO - Repair open in the wire between the ECM/PCM (E22) 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
 - Sparkplugs
 - 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.

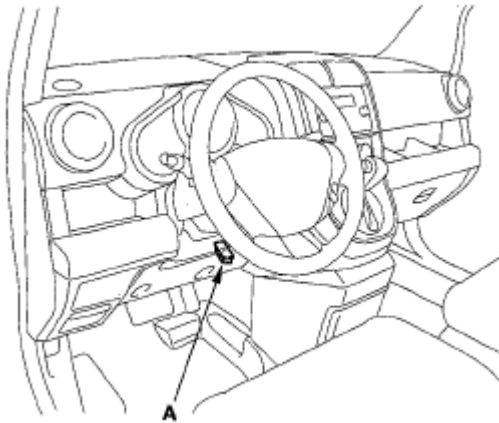


Fig. 11: Connecting HDS To Data Link Connector (DLC)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Turn the ignition switch ON (II).
4. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see **DLC CIRCUIT TROUBLESHOOTING**).
5. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
6. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

Idle speed should be:

IDLE SPEED REFERENCE

M/T	700 ± 50 rpm

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A/T | 700 ± 50 rpm (in Park or neutral)

- Let the engine idle for 1 minute with high electric load (A/C switch on, temperature set to max cool, blower fan on high, and headlights on high beam).

Idle speed should be:

IDLE SPEED REFERENCE

M/T	720 ± 50 rpm
A/T	720 ± 50 rpm (in Park or neutral)

NOTE: If the idle speed is not within specification, do the ECM/PCM idle learn procedure (see ECM/PCM IDLE LEARN PROCEDURE). If the idle speed is still not within specification, go to symptom troubleshooting.

- 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.

NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

PROCEDURE

- Make sure all electrical items (A/C, audio, lights, etc.) are off.
- Reset the ECM/PCM with the HDS.
- Turn the ignition switch ON (II), and wait 2 seconds.
- Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194°F (90°C).
- 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.