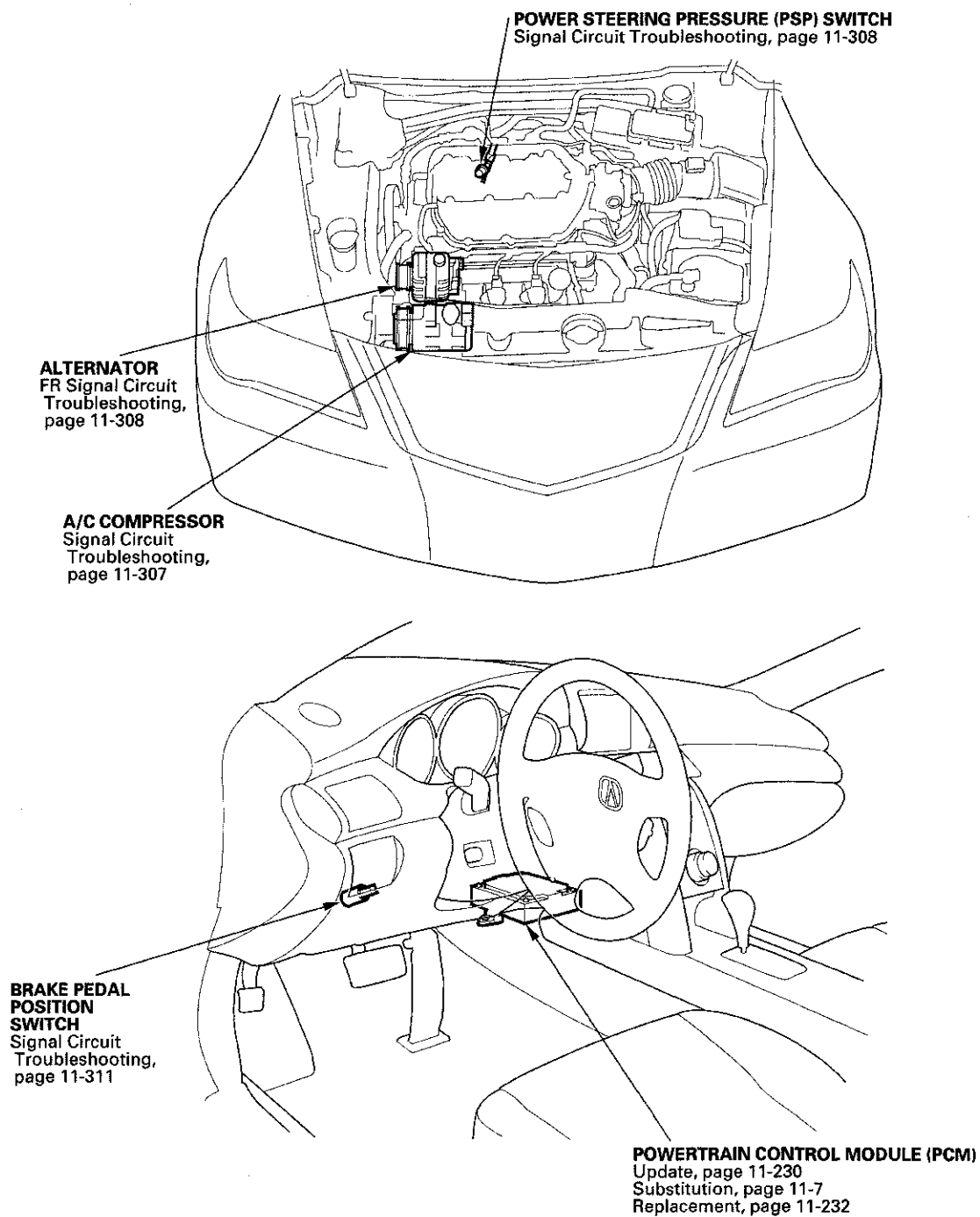


Idle Control System



Component Location Index



Idle Control System

DTC Troubleshooting

DTC P0506: Idle Control System RPM Lower Than Expected

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

1. Turn the ignition switch to ON (II).
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 for 20 seconds or more.
4. Check for these conditions in the DATA LIST with the HDS:
 - ECT SENSOR 1 above 158 °F (70 °C)
 - IAT SENSOR above 32 °F (0 °C)
 - VSS is 0 mph (0 km/h)
 - ST FUEL TRIM between 0.73 and 1.47
 - FSS is CLOSED
5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, go to step 15. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.
6. Remove the intake air duct from the throttle body (see page 11-369).

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 11-366). Also check for damage to the air cleaner element (see page 11-367), then go to step 9. If there is damage in the throttle bore, go to step 8.

NO—Check the A/C system or the power steering system, then go to step 17.

8. Replace the throttle body (see page 11-369).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-313).
11. 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 for 20 seconds or more.
12. Check for these conditions in the DATA LIST with the HDS:
 - ECT SENSOR 1 above 158 °F (70 °C)
 - IAT SENSOR above 32 °F (0 °C)
 - VSS is 0 mph (0 km/h)
 - ST FUEL TRIM between 0.73 and 1.47
 - FSS is CLOSED



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

Is DTC P0506 indicated?

YES—Go to step 1 and recheck.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

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

NO—If the screen indicates FAILED, check the A/C system and/or the power steering system, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

15. Remove the intake air duct from the throttle body (see page 11-369).

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 11-366). Also check for damage to the air cleaner element (see page 11-367), 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, the blower motor, the rear window defogger and/or the A/C, change the gear position, etc.).

18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Intermittent failure, the system is OK at this time. ■

NO—If the screen indicates FAILED, check the A/C system and/or the power steering system, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12.

Idle Control System

DTC Troubleshooting (cont'd)

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 (in P or N) 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, change the 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 PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-313).
9. 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.
10. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0507 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Go to step 11.

11. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (turn on the headlights, the blower motor, or the A/C, change the gear position, etc.), then go to step 9.



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 indicate ON?

YES—Go to step 5.

NO—Do the A/C pressure sensor circuit troubleshooting (see page 21-54). ■

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.

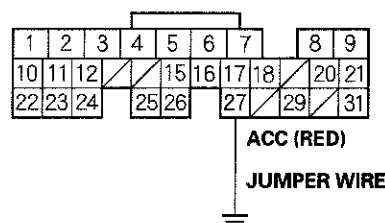
Is there a clicking noise from the A/C compressor clutch?

YES—Do the A/C system test (see page 21-109). ■

NO—Go to step 9.

9. Momentarily connect PCM connector terminal E27 to body ground with a jumper wire several times.

PCM CONNECTOR E (31P)



Wire side of female terminals

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

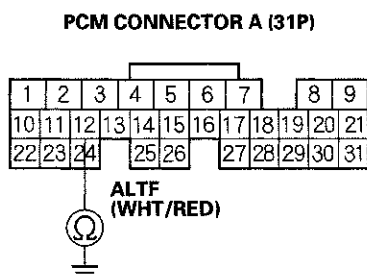
YES—Update the PCM if it does not have the latest software (see page 11-230), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-232). ■

NO—Check for poor connections or loose terminals at the A/C compressor clutch relay in the underhood fuse/relay box and the PCM. If the connections and the terminals are OK, check the A/C compressor clutch relay (see page 22-93), repair open in the wire between the PCM (E27) and the A/C compressor clutch relay. ■

Idle Control System

Alternator FR Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.
Does the percentage vary?
YES—The alternator signal circuit is OK. ■
NO—Go to step 4.
4. Turn the headlight switch off, and turn the ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect PCM connector A (31P).
8. Check for continuity between body ground and PCM connector terminal A12.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A12) and the alternator. ■

NO—Update the PCM if it does not have the latest software (see page 11-230), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-232). ■

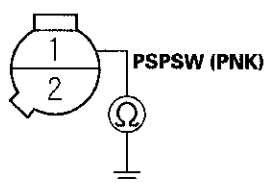
PSP Switch Signal Circuit Troubleshooting

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. ■
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 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

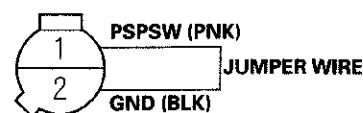
Is there continuity?

YES—Repair short in the wire between the PCM (E17) and the PSP switch. ■

NO—Update the PCM if it does not have the latest software (see page 11-230), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-232). ■

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 turn the ignition switch to ON (II).

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. ■

NO—Go to step 18.

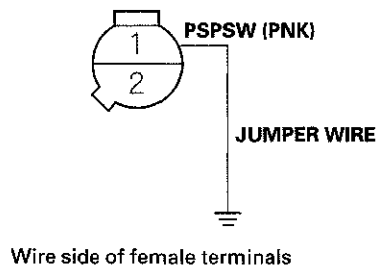
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Idle Control System

PSP Switch Signal Circuit Troubleshooting (cont'd)

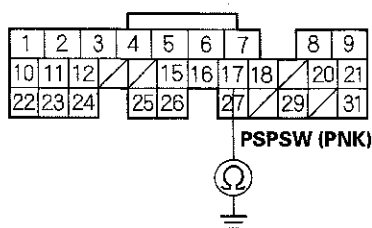
18. Turn the ignition switch to LOCK (0).
19. Remove the jumper wire from the PSP switch 2P connector.
20. Jump the SCS line with the HDS.
21. Disconnect PCM connector E (31P).
22. Connect PSP switch 2P connector terminal No. 1 to body ground with a jumper wire.

PSP SWITCH 2P CONNECTOR



23. Check for continuity between body ground and PCM connector terminal E17.

PCM CONNECTOR E (31P)



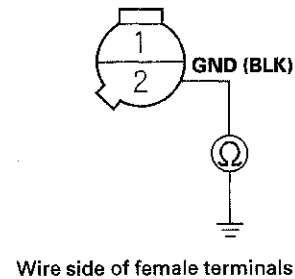
Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the PSP switch and the PCM (E17). ■

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

PSP SWITCH 2P CONNECTOR



Is there continuity?

YES—Update the PCM if it does not have the latest software (see page 11-230), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-232). ■

NO—Repair open in the wire between the PSP switch and G401. ■



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). ■

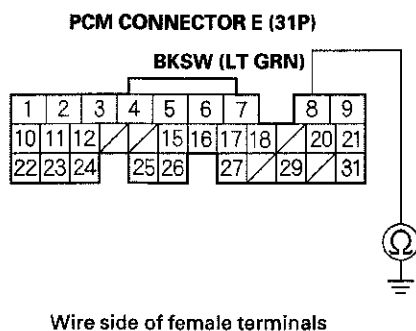
3. Press the brake pedal, and check the BRAKE SWITCH in the DATA LIST with the HDS.

Does it change to ON?

YES—The brake pedal position switch signal circuit (BKSX 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 PCM connector E (31P).
8. Check for continuity between PCM connector terminal E8 and body ground.

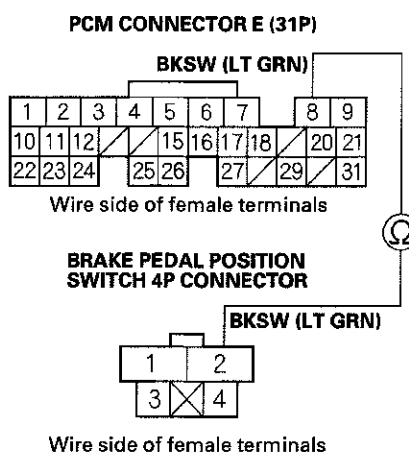


Is there continuity?

YES—Repair short in the wire between the PCM (E8) and the No. 13 HORN, STOP (15 A) fuse. Also replace the No. 13 HORN, STOP (15 A) fuse. ■

NO—Go to step 9.

9. Check for continuity between PCM connector terminal E8 and brake pedal position switch 4P connector terminal No. 2.



Is there continuity?

YES—Repair open in the wire between the brake pedal position switch, and replace the No. 13 HORN, STOP (15 A) fuse. Inspect the brake pedal position switch (see page 19-6). ■

NO—Repair open in the wire between the PCM (E8) and the brake pedal position switch. ■

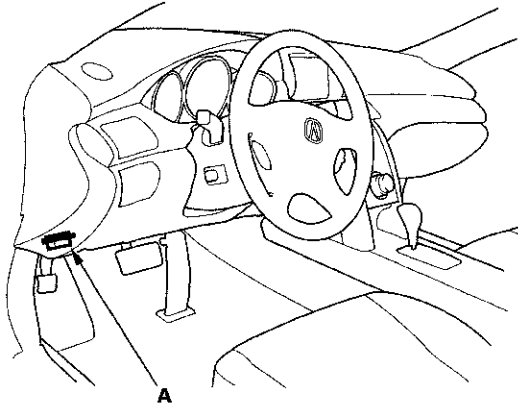
Idle Control System

Idle Speed Inspection

NOTE:

- Before checking the idle speed, check these items:
 - The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.
 - Ignition timing
 - Spark plugs
 - Air cleaner
 - PCV system
- Apply the parking brake, and make sure the headlights are off.

1. Disconnect the evaporative emission (EVAP) canister purge valve connector.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-211).

4. 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.
5. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

Idle speed should be:

680±50 rpm (in Park or neutral)

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

Idle speed should be:

680±50 rpm (in Park or neutral)

NOTE: If the idle speed is not within specification, do the PCM idle learn procedure (see page 11-313). If the idle speed is still not within specification, go to the symptom troubleshooting.

7. Reconnect the EVAP canister purge valve connector.



PCM Idle Learn Procedure

The idle learn procedure must be done so the PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace the PCM.
- Reset the PCM.
- Update the PCM.
- Replace or clean the throttle body.
- Disassemble the engine or the transmission.

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

Procedure

1. Make sure all electrical items (the A/C, the audio, the rear window defogger, the lights, etc.) are off.
2. Reset the 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 (in P or N) 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.