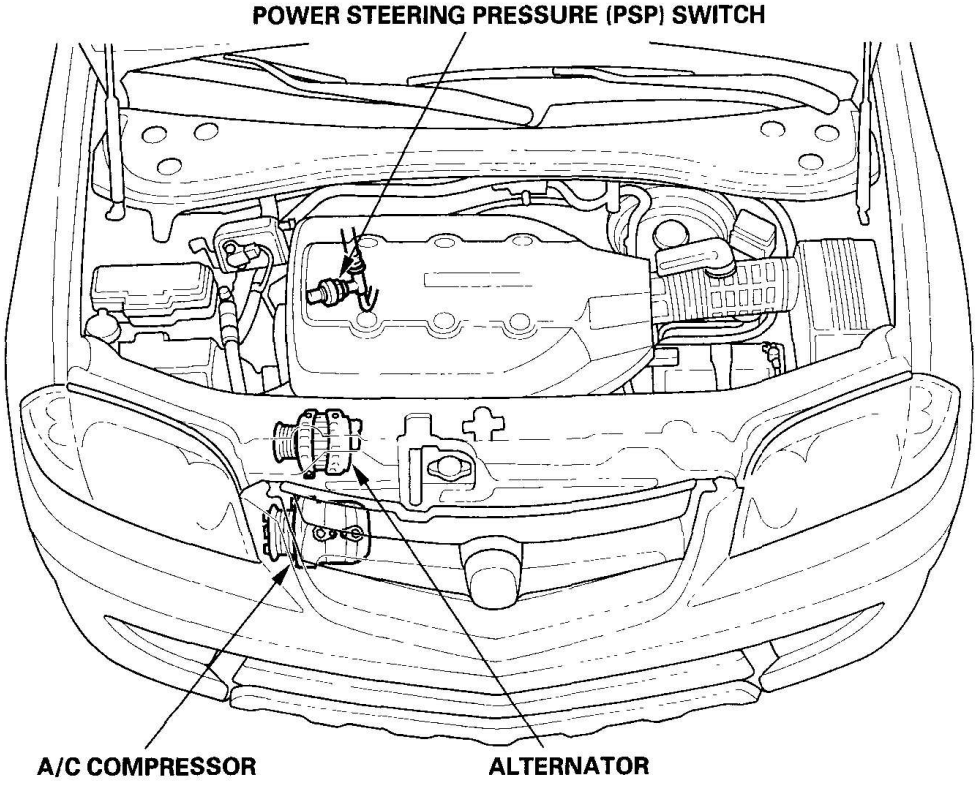
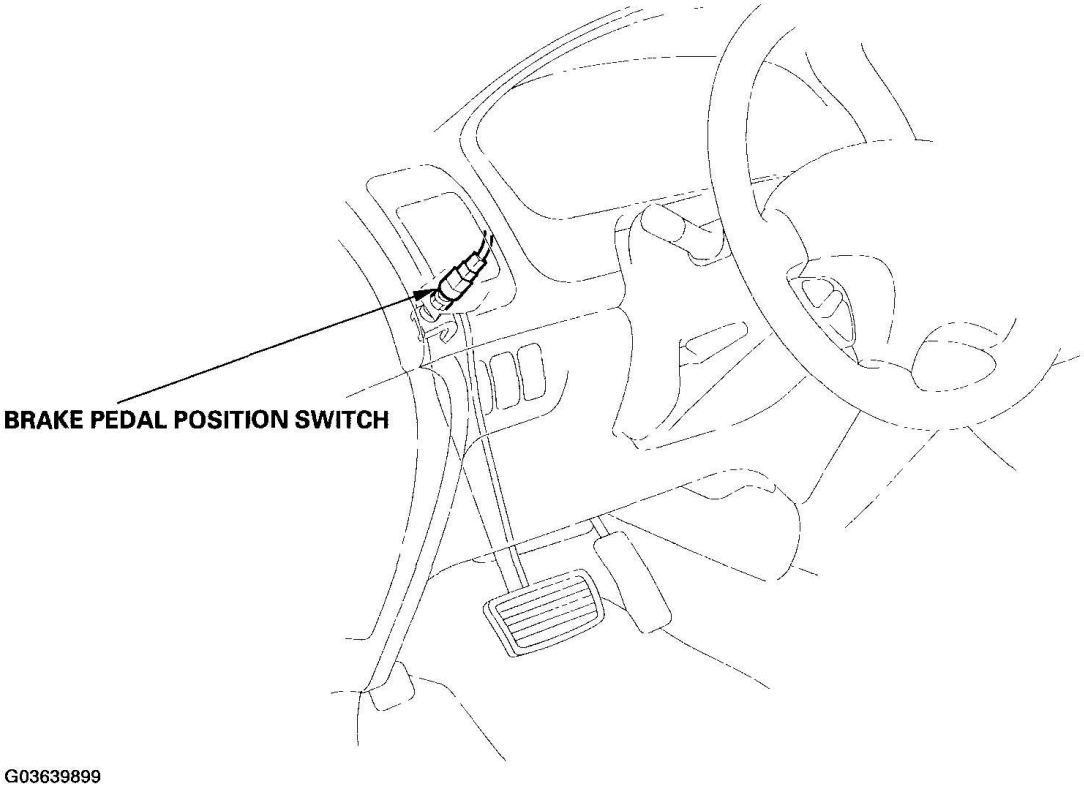
2003-06 ENGINE PERFORMANCE

Idle Control System - MDX

COMPONENT LOCATION INDEX


POWER STEERING PRESSURE (PSP) SWITCH
A/C COMPRESSOR
ALTERNATOR


BRAKE PEDAL POSITION SWITCH

G03639899

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

DTC CODES

DTC CHART

DTC	Description
DTC P0506	Idle Control System RPM Lower Than Expected
DTC P0507	Idle Control System RPM Higher Than Expected

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.
4. Check for these conditions in the DATA LIST with the HDS:
   - Engine coolant temperature above 156°F (70°C)
   - Intake air temperature above 32°F (0°C)
   - Vehicle speed is 0 mph (0 km/h)
   - 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 the condition continually until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.
6. Remove the intake air duct from the throttle body.
7. Check for dirt, carbon and damage at 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 TEST**), and also

check for damage at 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 1 and recheck.

8. Replace the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see **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.
12. Check for these conditions in the DATA LIST with the HDS:
    - Engine coolant temperature above 156°F (70°C)
    - Intake air temperature above 32°F (0°C)
    - Vehicle speed is 0 mph (0 km/h)
    - Fuel trim between 0.73 and 1.47
    - FSS is CLOSED
13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P0506 is indicated, go to step 1 and recheck. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

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.

NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep the condition continually until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12 and recheck.

15. Remove the intake air duct from the throttle body.
16. Check for dirt, carbon and damage at 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 REMOVAL/INSTALLATION**), and also check for damage at 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 condition (turn on the headlights, blower motor, rear window defogger and/or A/C, changing the shift lever position, etc.)

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

    Does the screen indicate PASSED?

    YES - Troubleshooting is complete.

    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 the condition continually until a result comes on. If the screen indicates OUT OF CONDITION, go to step 17 and recheck.

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).

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

   Does the screen indicate FAILED ?

   YES - Check for vacuum leaks at these parts, then go to step 5.
   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Brake booster hose
   - Brake booster

   NO - If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, keep the condition continually until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
5. Turn the ignition switch ON (II).
6. Reset the PCM with the HDS.
7. Do the PCM idle learn procedure (see **PCM IDLE LEARN PROCEDURE**).
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
9. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs indicated?

YES - If DTC P0507 is indicated, go to step 1 and recheck. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

NO - Go to step 10.

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

Does the screen indicate PASSED?

YES - Troubleshooting is complete.

NO - If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep the condition continually until a result comes on. If the screen indicates OUT OF CONDITION, go to step 9 and recheck.

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 - Go to the A/C pressure switch test (see **A/C PRESSURE SWITCH CIRCUIT TROUBLESHOOTING** .

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. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (56P).
12. Turn the ignition switch ON (II).

13. Momentarily connect PCM connector terminal B11 to body ground with a jumper wire several times.

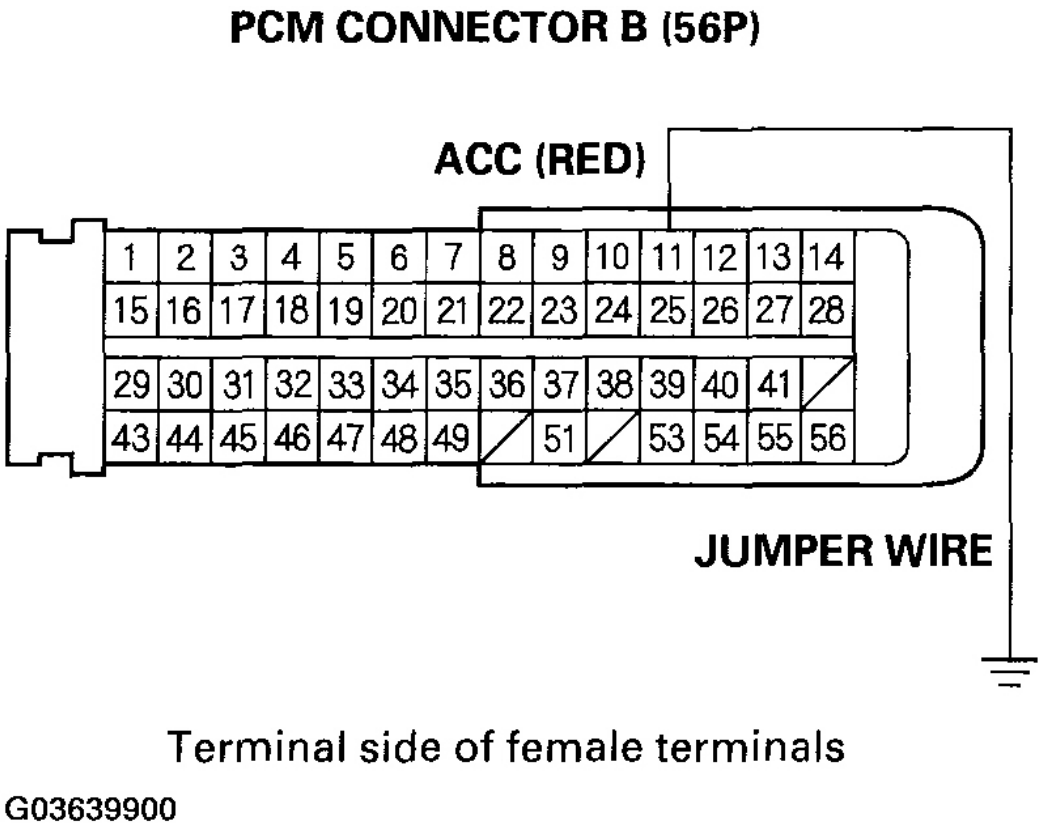


Fig. 2: Connecting PCM Connector Terminal B11 To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

YES - Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING AND SUBSTITUTION FOR TESTING**), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM (see **PCM REPLACEMENT**). The air conditioning signal OK.

NO - Check for poor connections or loose terminals at the A/C clutch relay and the PCM. If they are OK, check for the A/C clutch relay (see **POWER RELAY TEST**), and other 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 is varied when the lighting switch is ON.

   Is the percentage varied?

   YES - The alternator signal circuit is OK.
   NO - Go to step 4.
4. Turn the lighting switch and ignition switch OFF.
5. Disconnect the alternator 4P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between alternator 4P connector terminal No. 4 and body ground.

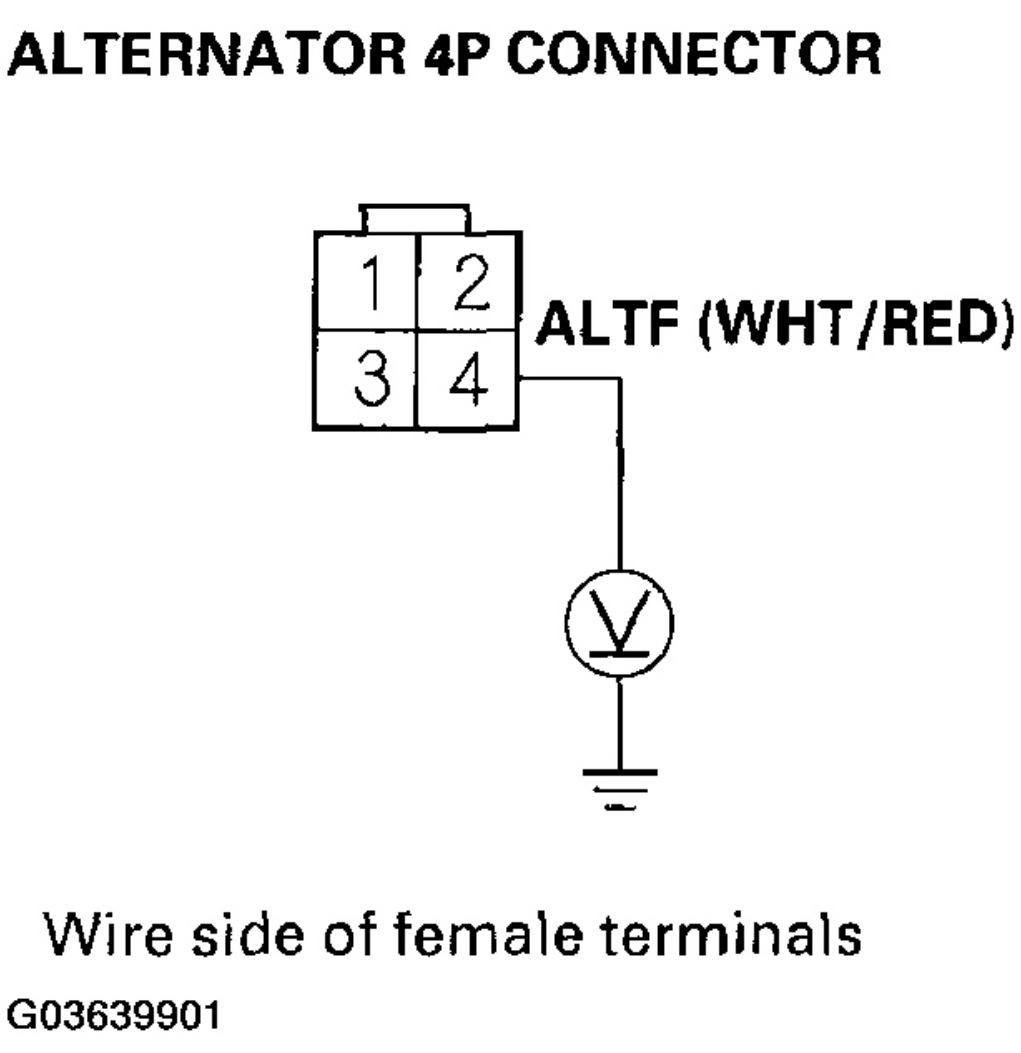


Fig. 3: Measuring Voltage Between Alternator 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Replace the alternator, then go to step 1 .

NO - Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (73P).
11. Check for continuity between alternator 4P connector terminal No. 4 and body ground.

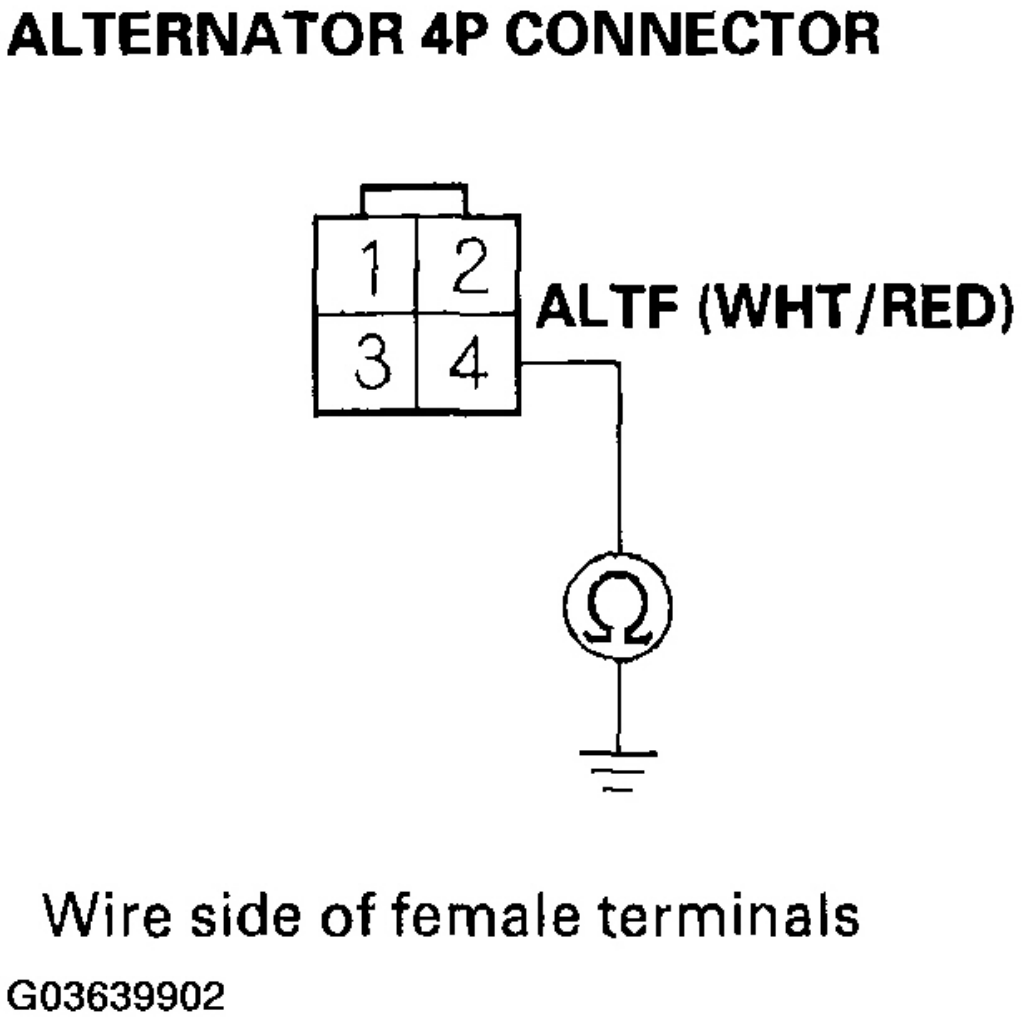


Fig. 4: Checking Continuity Between Alternator 4P Connector Terminal No. 4 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between at the alternator connector and the PCM.

NO - Go to step 12.

12. Check for continuity between alternator 4P connector terminal No. 4 and PCM connector terminal A25.

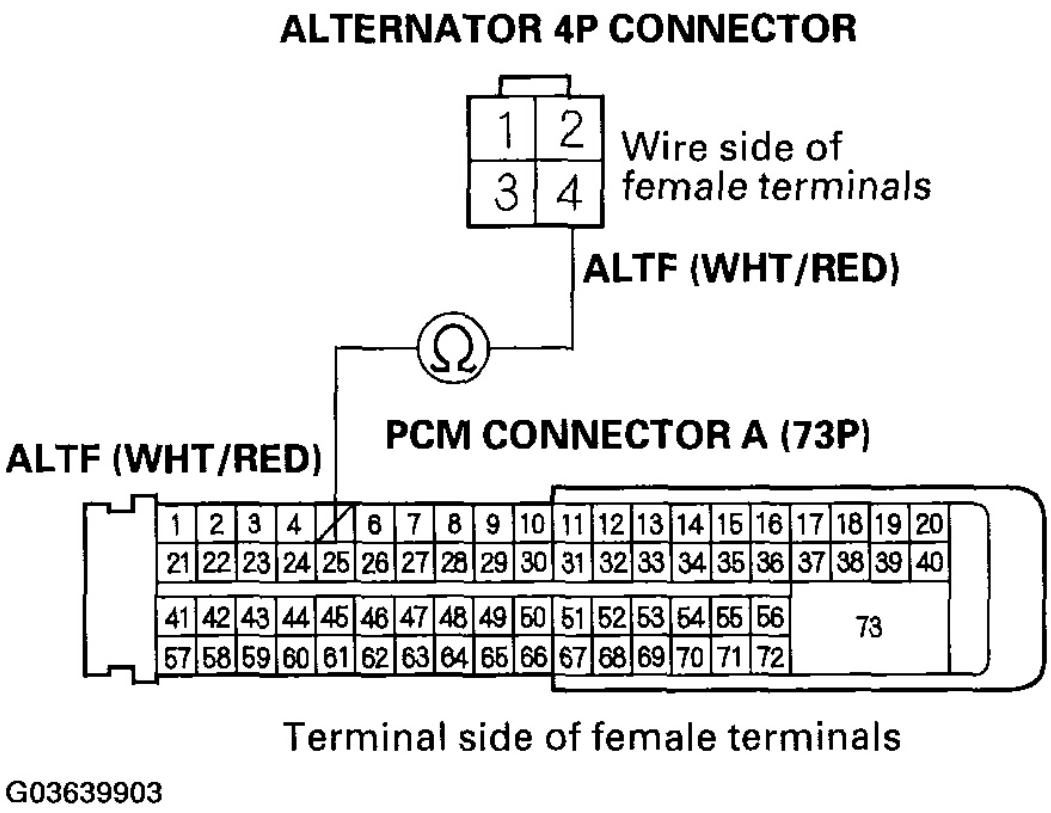


Fig. 5: Checking Continuity Between Alternator 4P Connector Terminal No. 4 And PCM Connector Terminal A25
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Repair open in the wire between the alternator connector and the PCM.

BRAKE PEDAL POSITION SWITCH SIGNAL CIRCUIT TROUBLESHOOTING

NOTE: Before troubleshooting, check the No. 47 STOP (20 A) fuse in the under-hood fuse/relay box.

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 AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

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

Is it ON?

YES - The brake pedal position switch signal circuit (BK SW line) is OK.

NO - Go to step 4.

4. Release the brake pedal.
5. Turn the cruise control main switch ON.
6. Check the CRUISE BRK SW in the DATA LIST with the HDS.

Does it indicate ON?

YES - Go to step 7.

NO - Go to step 16 .

7. Press the brake pedal, and check the CRUISE BRK SW in the DATA LIST with the HDS.

Is it OFF?

YES - Go to step 8.

NO - Go to step 26 .

8. Inspect the brake pedal position switch (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

Is it OK?

YES - Go to step 9.

NO - Replace or adjust the brake pedal position switch (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**), and recheck.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect under-hood fuse/relay box 7P connector.
12. Disconnect the taillight connectors.
13. Disconnect PCM connector B (56P).
14. Check for continuity between PCM connector terminal B39 and body ground with the brake pedal pressed.

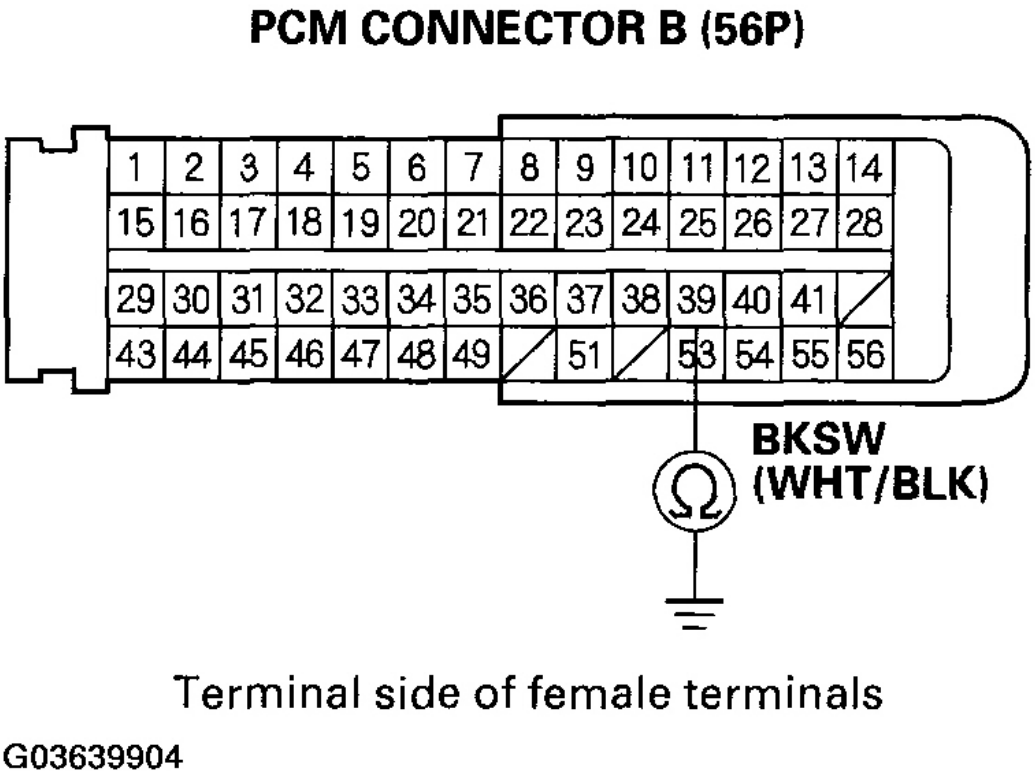


Fig. 6: Checking Continuity Between PCM Connector Terminal B39 And Body Ground With Brake Pedal Pressed
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the PCM (B39) and the under-hood fuse/relay box.

NO - Go to step 15.

15. Check for continuity between PCM connector terminal B39 and under-hood fuse/relay box 7P connector terminal No. 5 with the brake pedal pressed.

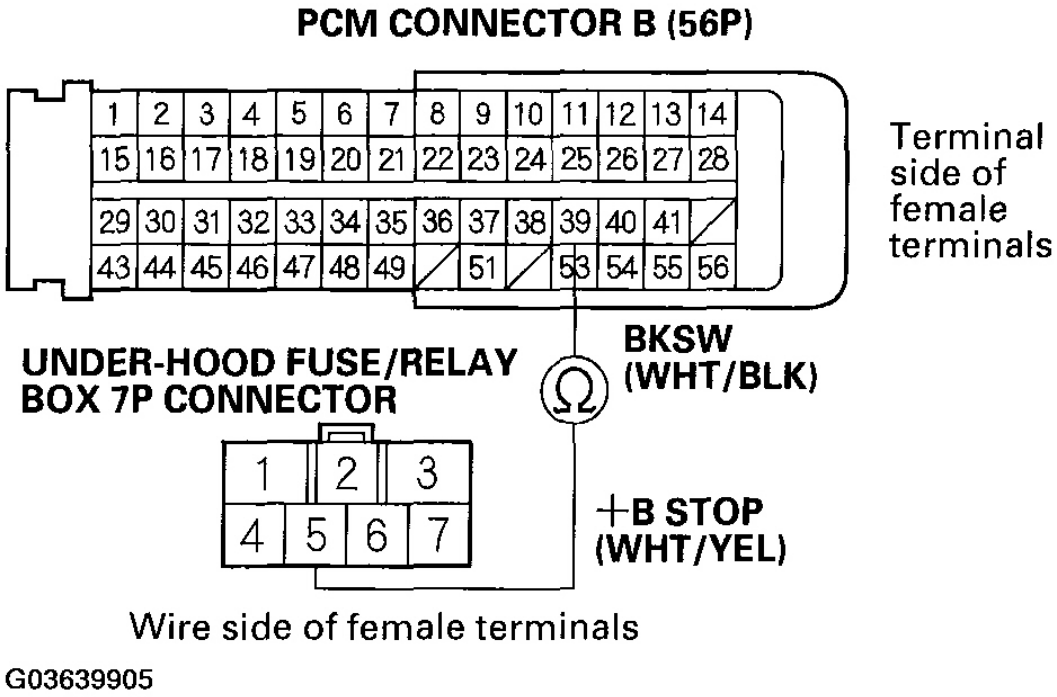


Fig. 7: Checking Continuity Between PCM Connector Terminal B39 And Under-Hood Fuse/Relay Box 7P Connector Terminal No. 5
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Repair open in the wire between the PCM (B39) and the under-hood fuse/relay box, and recheck.

16. Test the cruise control main switch (see **CRUISE CONTROL MAIN SWITCH TEST/ REPLACEMENT**).

Is it OK?

YES - Go to step 17.

NO - Replace the cruise control main switch (see **CRUISE CONTROL MAIN SWITCH TEST/ REPLACEMENT**), and recheck.

17. Turn the ignition switch OFF.
18. Jump the SCS line with the HDS.

19. Disconnect the cruise control main switch 8P connector.
20. Disconnect PCM connector B (56P).
21. Check for continuity between PCM connector terminal B38 and body ground.

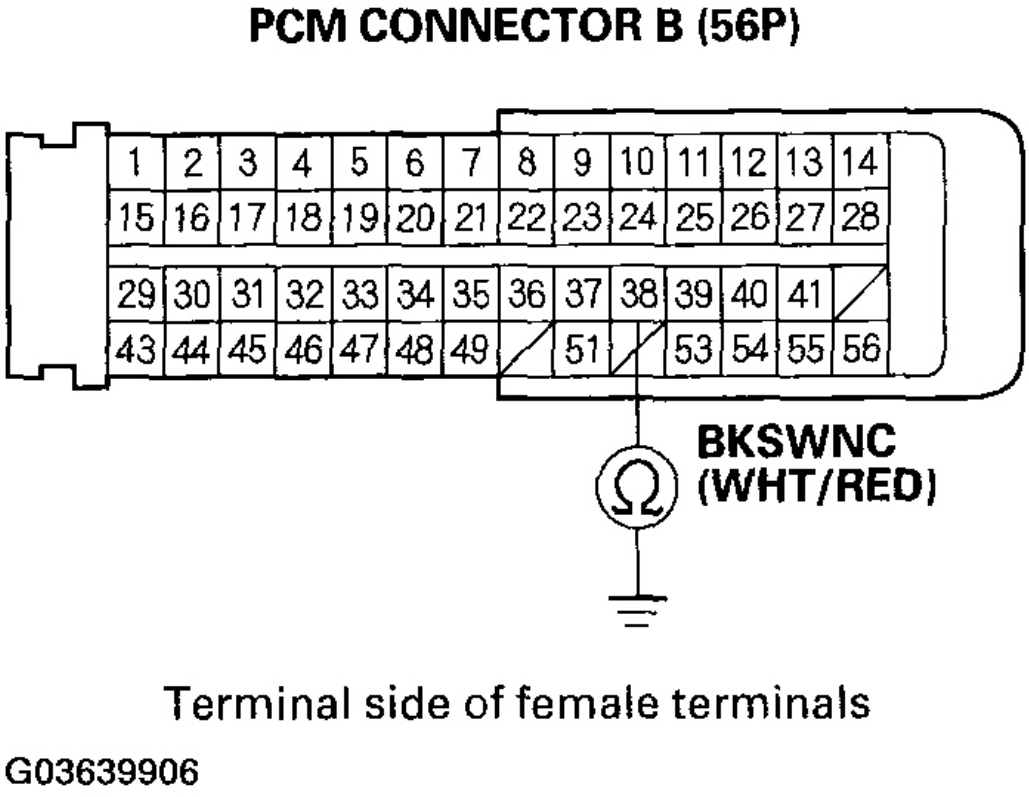


Fig. 8: Checking Continuity Between PCM Connector Terminal B38 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 24 .

NO - Go to step 22.

22. Connect cruise control main switch 8P (5P*) connector terminal No. 4 (No. 2*) to body ground with a jumper wire.

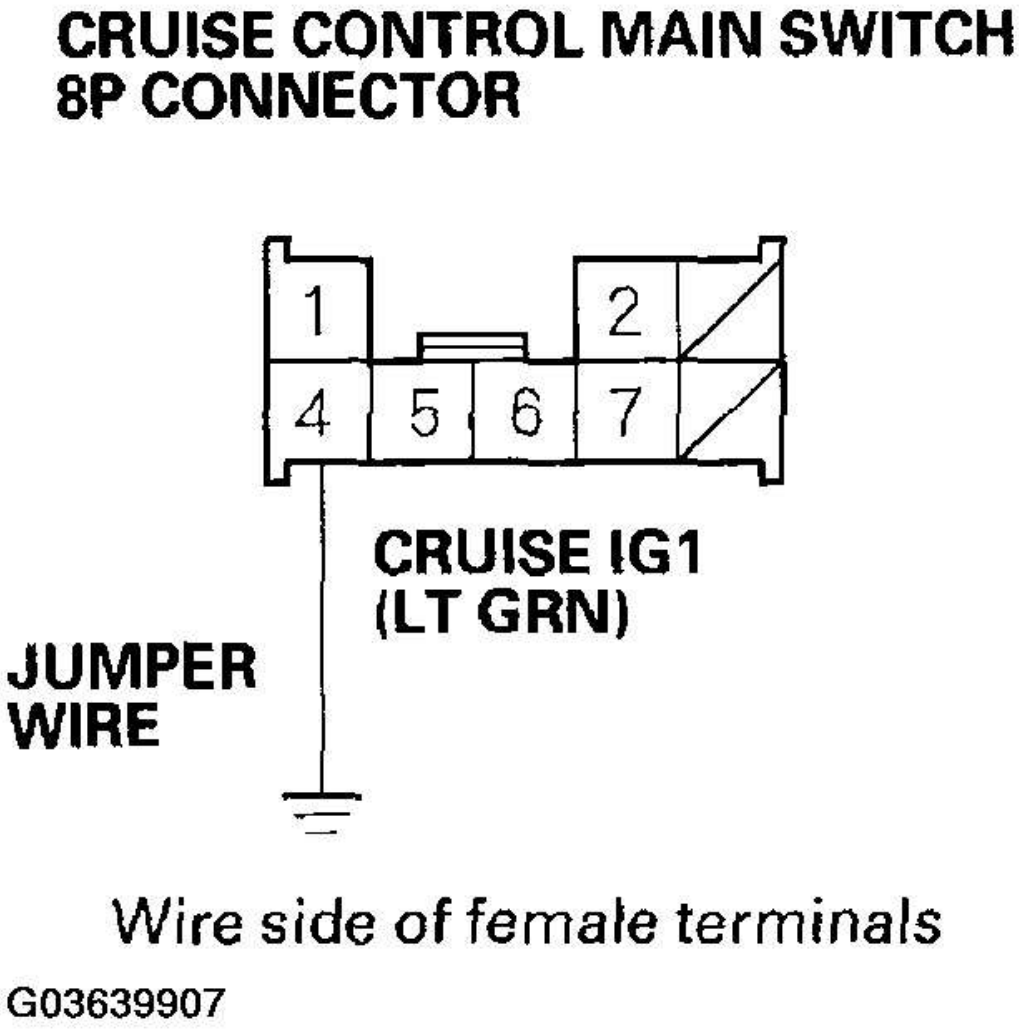


Fig. 9: Connecting Cruise Control Main Switch 8P (5P*) Connector Terminal No. 4 (No. 2*) To Body Ground With Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

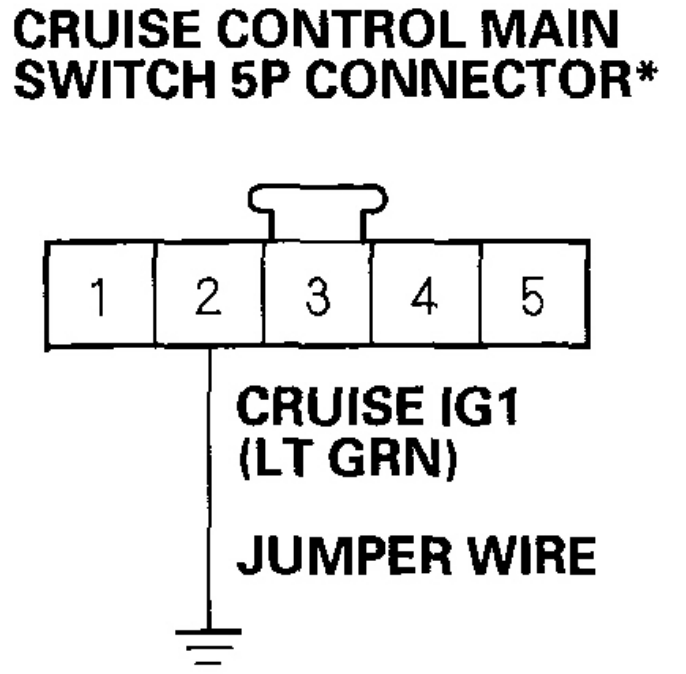


Fig. 10: Connecting Cruise Control Main Switch 8P Connector Terminal No. 4 (No. 2*) To Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Check for continuity between PCM connector terminal B38 and body ground.

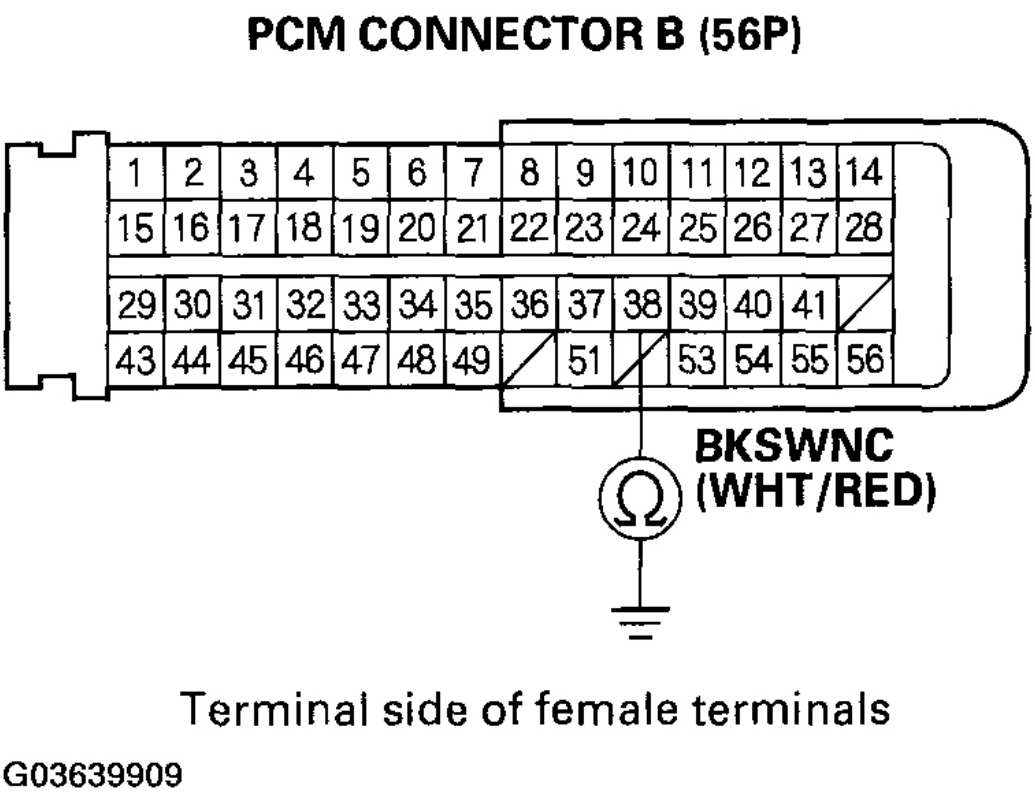


Fig. 11: Checking Continuity Between PCM Connector Terminal B38 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

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

NO - Repair open in the wire at the PCM (B38) and the cruise control main switch, and recheck.

24. Disconnect the brake pedal position switch 4P connector.
25. Check for continuity between PCM connector terminal B38 and body ground.

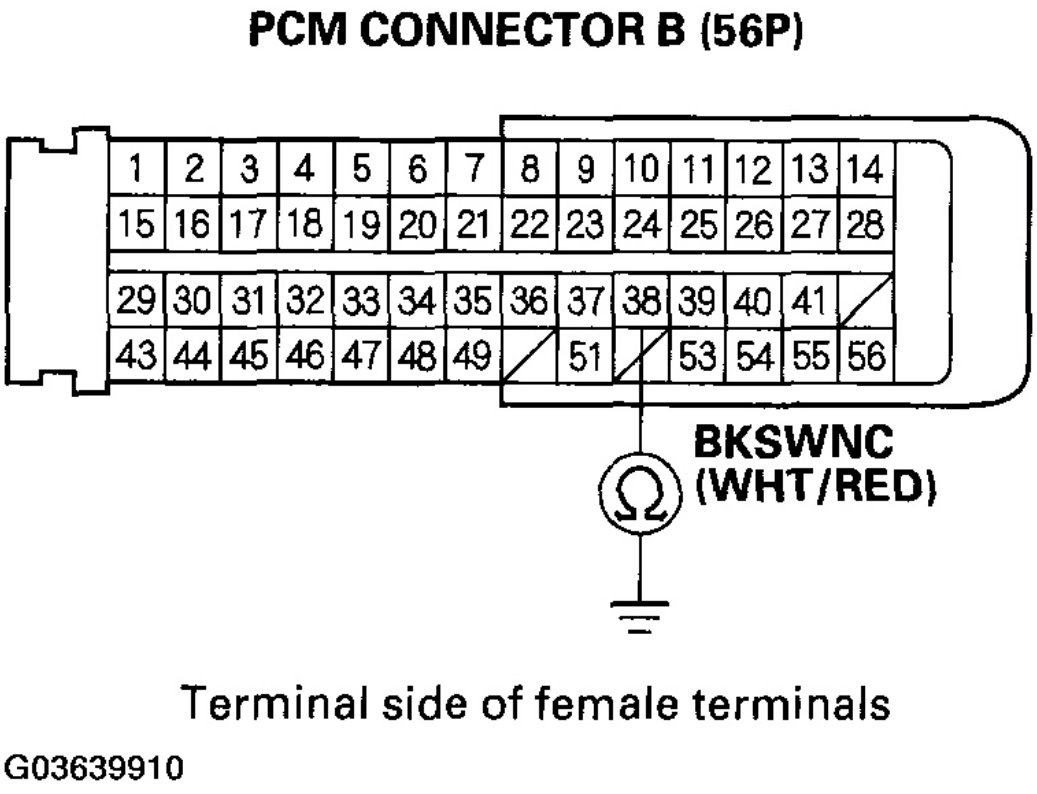


Fig. 12: Checking Continuity Between PCM Connector Terminal B38 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire (WHT/RED) between the PCM (B38) and the brake pedal position switch.

NO - Repair short in the wire (LT GRN) between the brake pedal position switch and cruise control main switch connector terminal No. 4.

26. Inspect the brake pedal position switch (see **BRAKE PEDAL AND BRAKE PEDAL POSITION SWITCH ADJUSTMENT**).

Is it OK?

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

NO - Replace or adjust the brake pedal position switch (see **BRAKE PEDAL AND BRAKE**

PEDAL POSITION SWITCH ADJUSTMENT), and recheck.

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 12 .
4. Turn the steering wheel to the full lock position.
5. Check the PSPSW 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 PSPSW 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 OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (56P).
13. Check for continuity between PSP switch 2P connector terminal No. 1 and body ground.

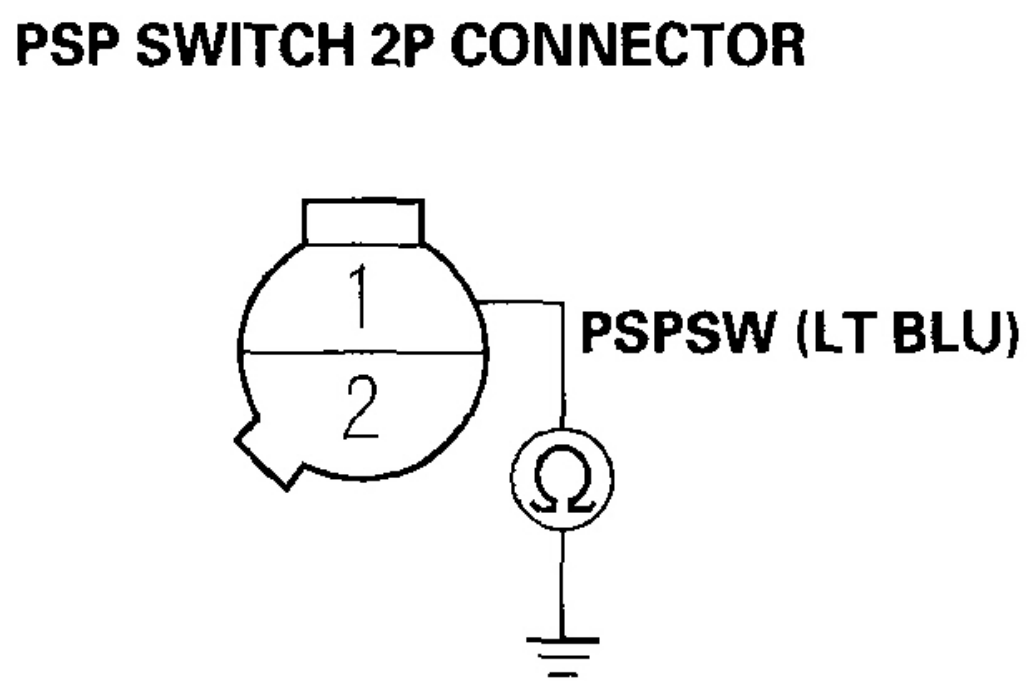


Fig. 13: Checking Continuity Between PSP Switch 2P Connector Terminal No.1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the PSP switch connector and the PCM, then recheck.

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

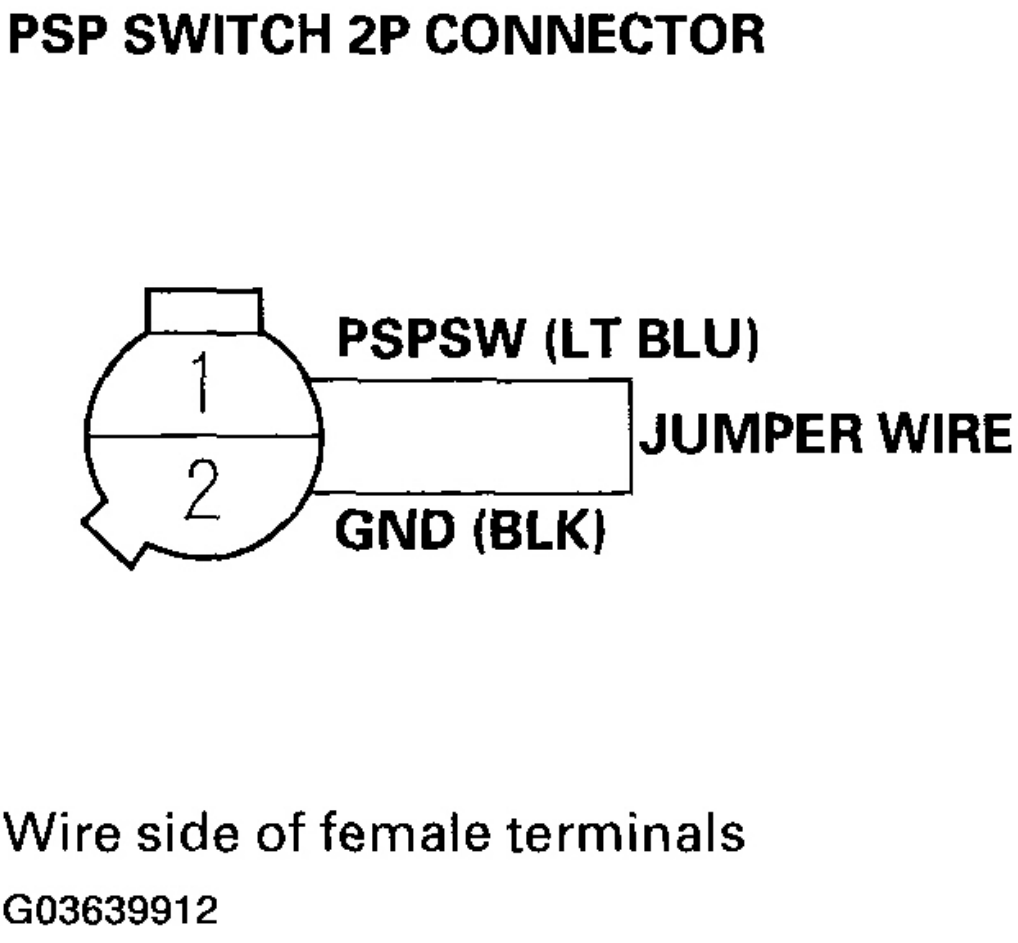


Fig. 14: Connecting PSP Switch 2P Connector Terminals No. 1 And No. 2 With A Jumper Wire
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.

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 PCM connector B (56P).
22. Check for continuity between PCM connector terminal B55 and PSP switch 2P connector terminal No. 1.

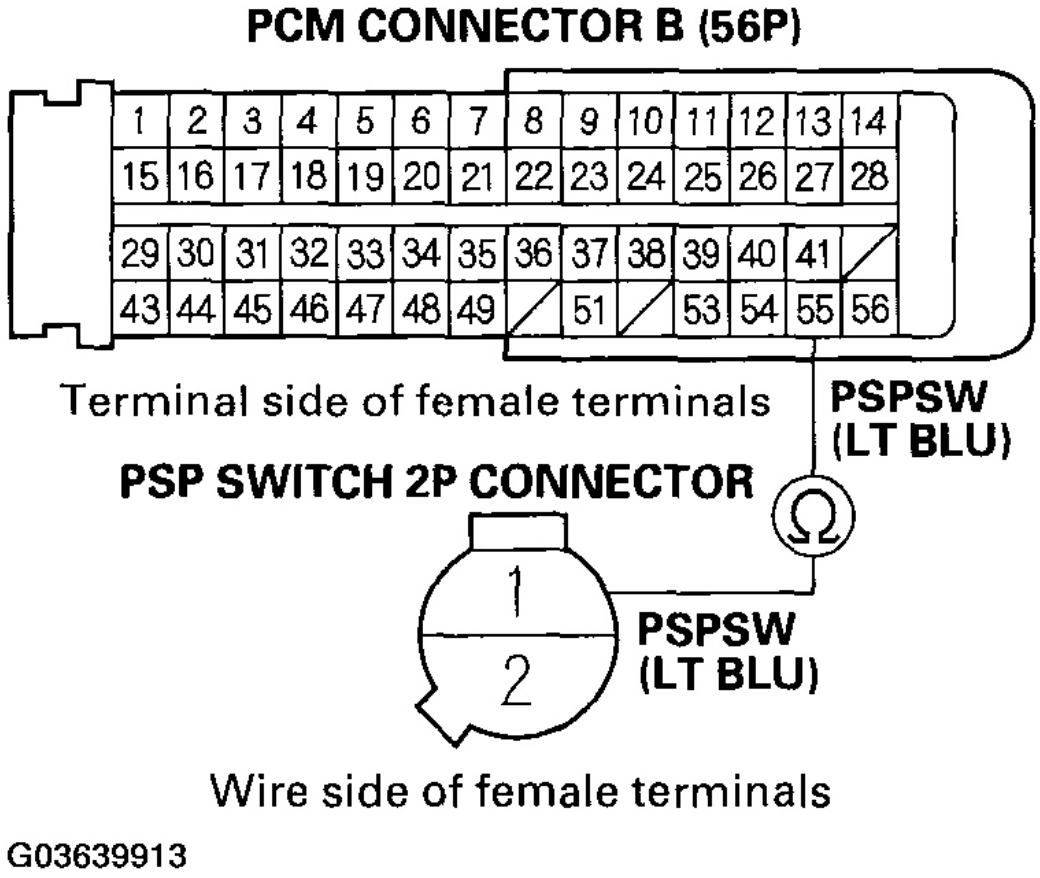


Fig. 15: Checking Continuity Between PCM Connector Terminal B55 And PSP Switch 2P Connector Terminal No. 1
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 23.

NO - Repair open in the wire between the PSP switch connector and the PCM, then recheck.

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

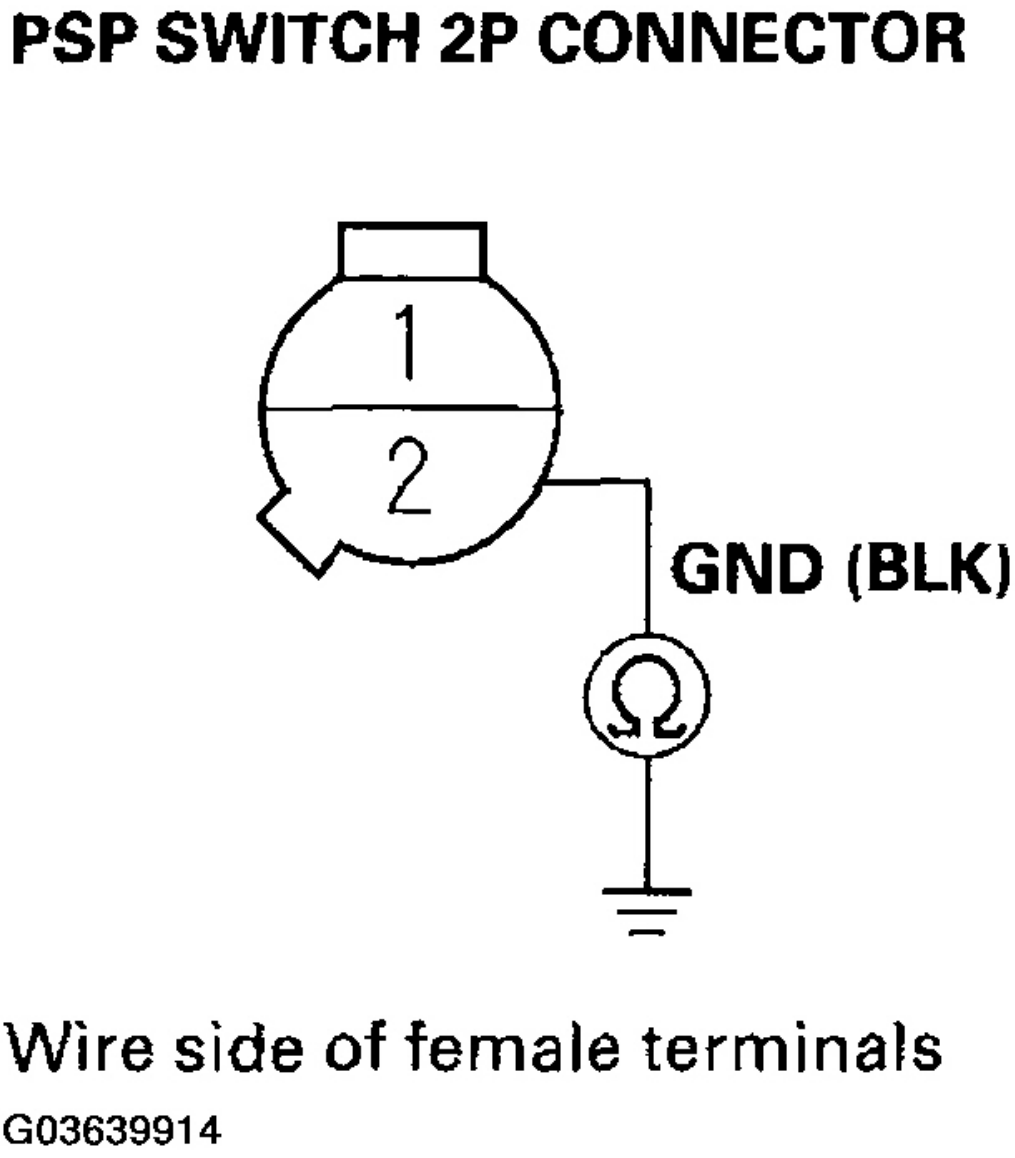


Fig. 16: Checking Continuity Between PSP Switch 2P Connector Terminal No. 2 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **PCM UPDATING AND SUBSTITUTION FOR TESTING**), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see **PCM**

REPLACEMENT).

NO - Repair open in the wire between the PSP switch connector and body ground (G503), then recheck.

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.**

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

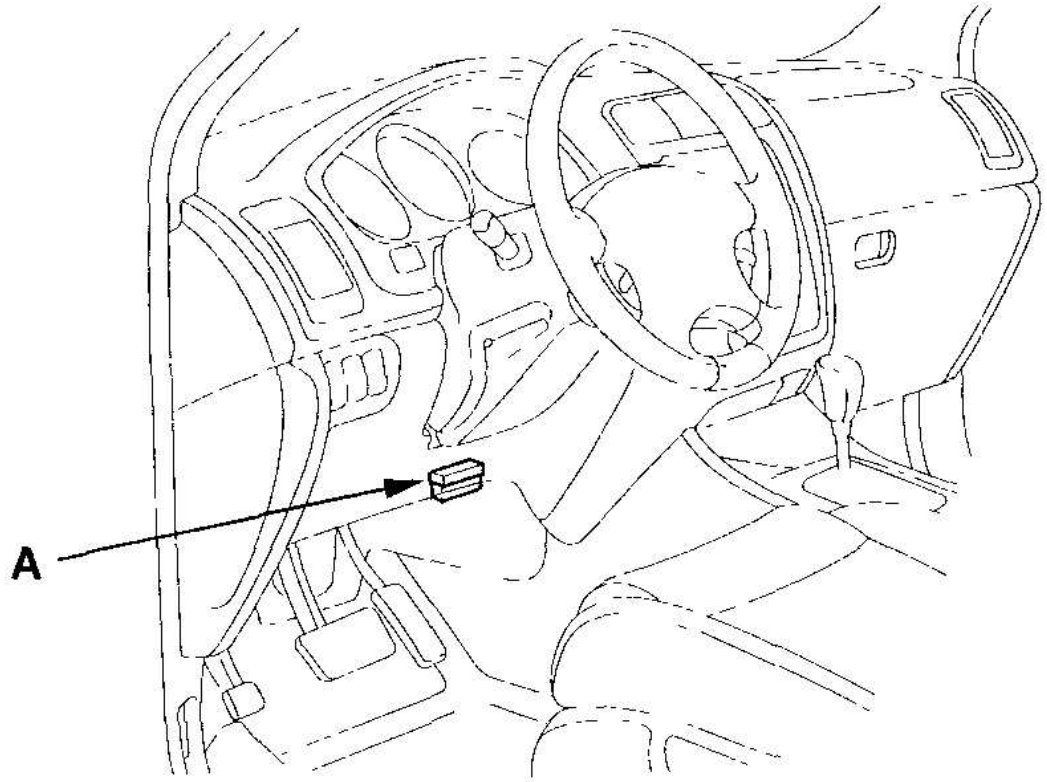


Fig. 17: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

   Idle speed should be: 730+/-50 rpm (in Park or neutral)

5. Let the engine idle for 1 minute with high electric load (A/C switch ON, temperature set to MAX Cool, blower fan on High, rear window defogger ON, and headlights on high beam).

   Idle speed should be: 730+/-50 rpm (in Park or neutral)

NOTE: If the idle speed is not within specification, do the PCM idle learn procedure (see PCM IDLE LEARN PROCEDURE). If no change in idle speed, go to the symptom troubleshooting.

6. Reconnect the EVAP canister purge valve 2P 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 PCM.
- Reset PCM.
- Update PCM.
- Replace or clean the throttle body.

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, rear window defogger, lights, etc.) are off.
2. Reset the PCM with the HDS.
3. Turn the ignition switch ON (II), and wait 2 seconds.
4. 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).
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.