2003-06 ENGINE PERFORMANCE

Intake Air System - MDX

COMPONENT LOCATION INDEX

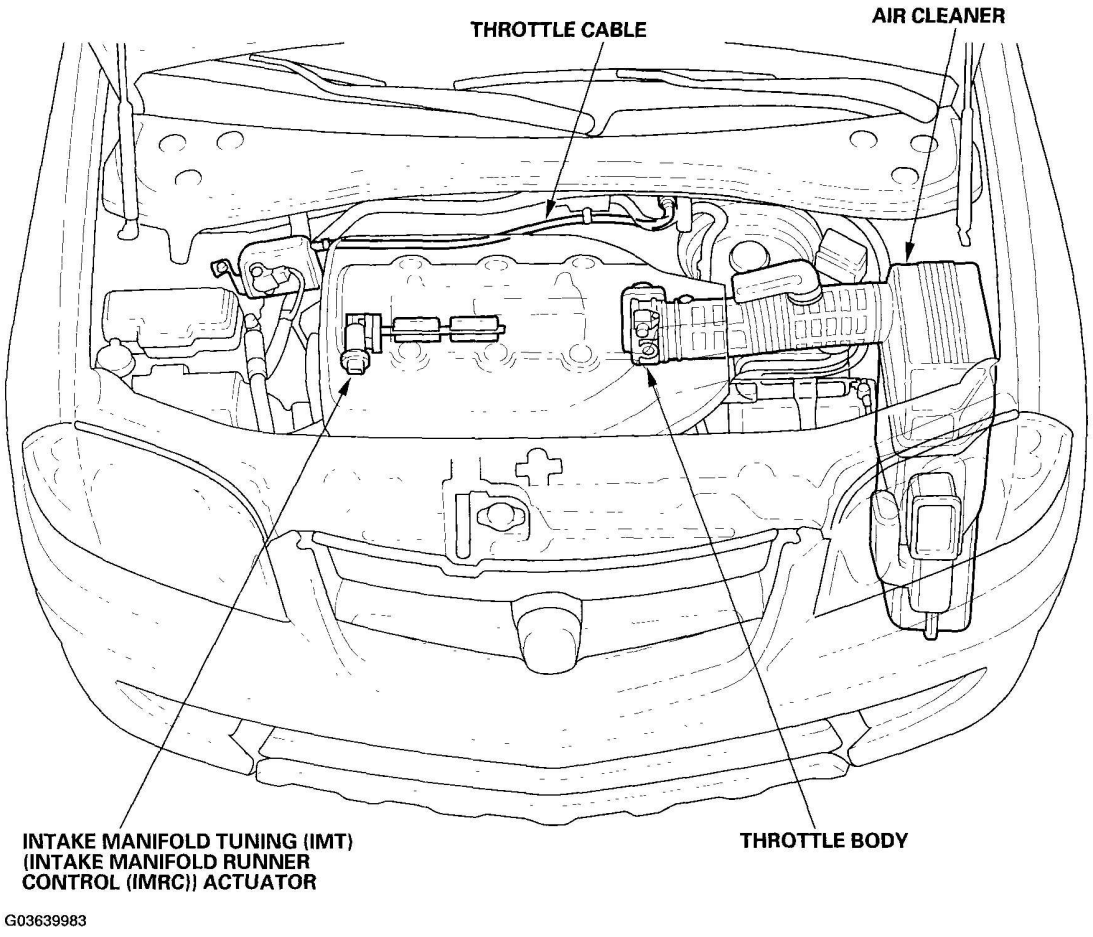

Fig. 1: Identifying Intake Air System Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P1077: IMT (IMRC) VALVE STUCK IN HIGH RPM POSITION

NOTE:

- **Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see GENERAL TROUBLESHOOTING INFORMATION).**
- **If DTC P0651 is indicated at the same time as DTC P1077, troubleshoot**

DTC P0651 first, then recheck for P1077.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle.
4. Check the IMT (IMRC) VALVE CMD in the DATA LIST with the HDS.

   Is CLOSE indicated?

   YES - Go to step 5.

   NO - Go to step 25 .
5. Check the IMT (IMRC) VALVE SW in the DATA LIST with the HDS.

   Is OPEN indicated?

   YES - Go to step 6.

   NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IMT (IMRC) actuator and the PCM.
6. Turn the ignition switch OFF.
7. Disconnect the IMT (IMRC) actuator 5P connector.
8. Turn the ignition switch ON (II).
9. Check the IMT (IMRC) VLV SW in the DATA LIST with the HDS.

   Is CLOSED indicated?

   YES - Go to step 14 .

   NO - Go to step 10.
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector A (73P).
13. Check for continuity between PCM connector terminal A41 and body ground.

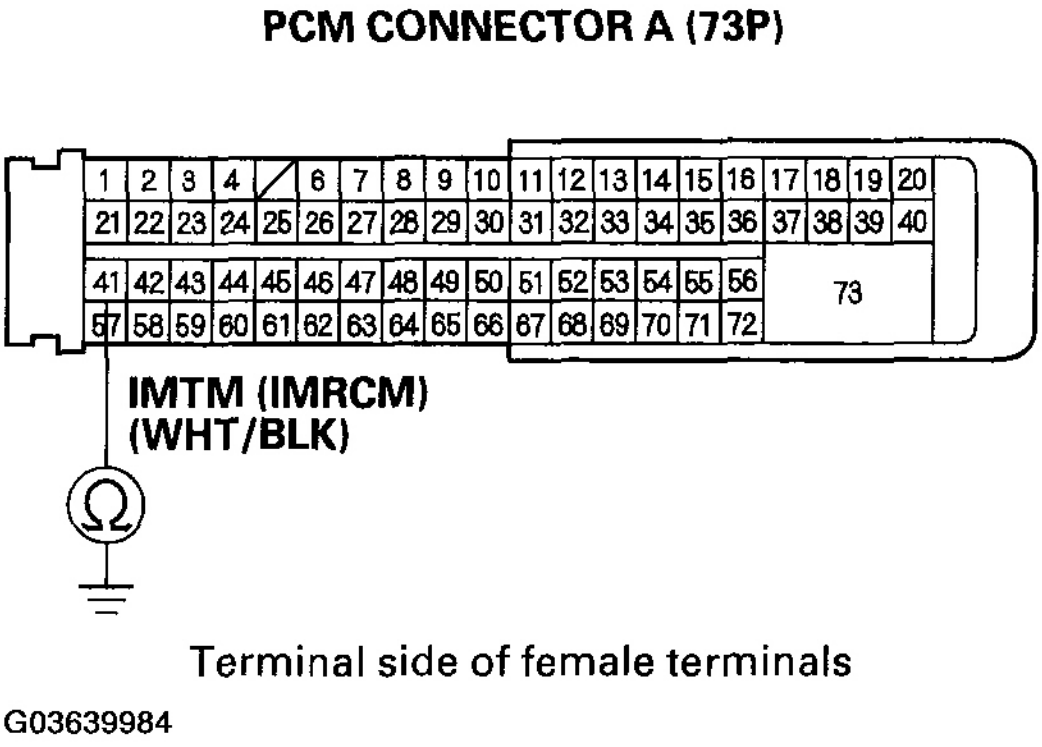

Fig. 2: Checking Continuity Between PCM Connector Terminal A41 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the PCM (A41) and the IMT (IMRC) actuator, then go to step 22 .

NO - Go to step 26 .

14. Measure voltage between IMT (IMRC) actuator 5P connector terminal No. 1 and body ground.

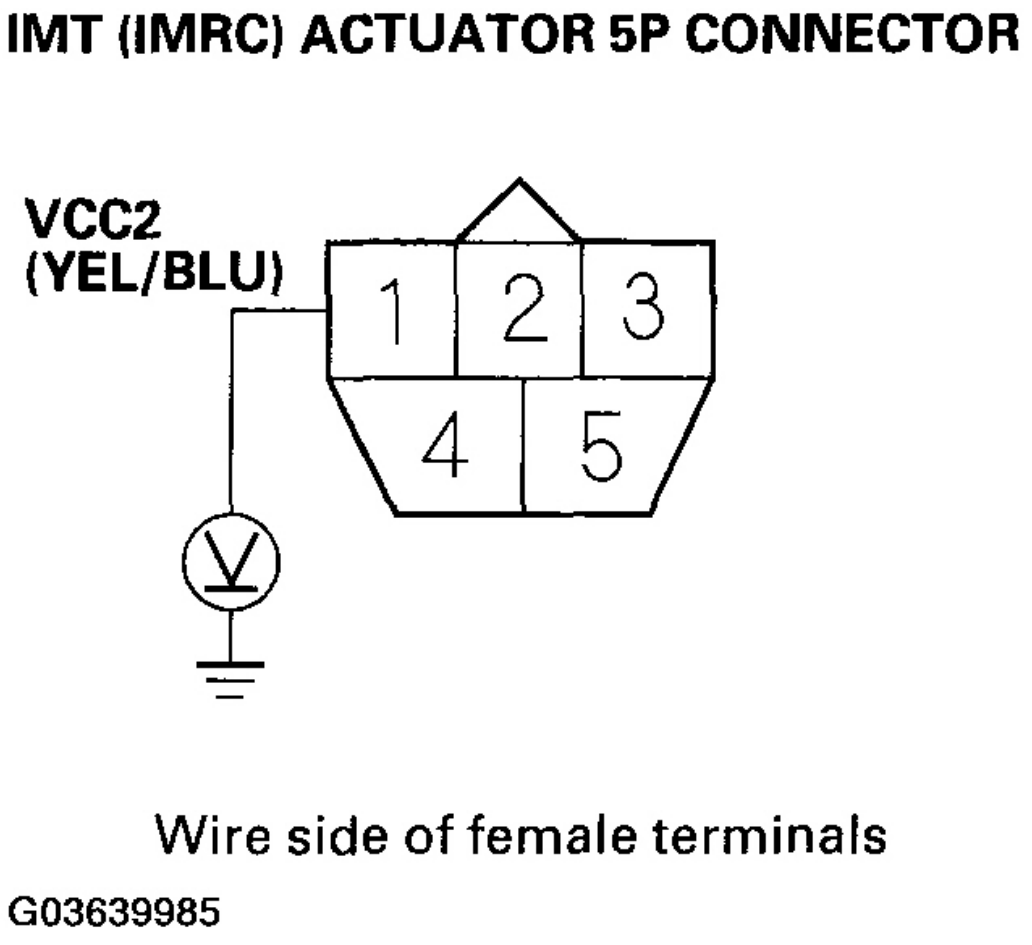

Fig. 3: Measuring Voltage Between IMT (IMRC) Actuator 5P Connector Terminal No. 1 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 15.

NO - Repair open in the wire between the PCM (A27) and the IMT (IMRC) actuator, then go to step 22 .

15. Turn the ignition switch OFF.
16. Check for continuity between PCM connector terminal A9 and IMT (IMRC) actuator 5P connector terminal No. 5.

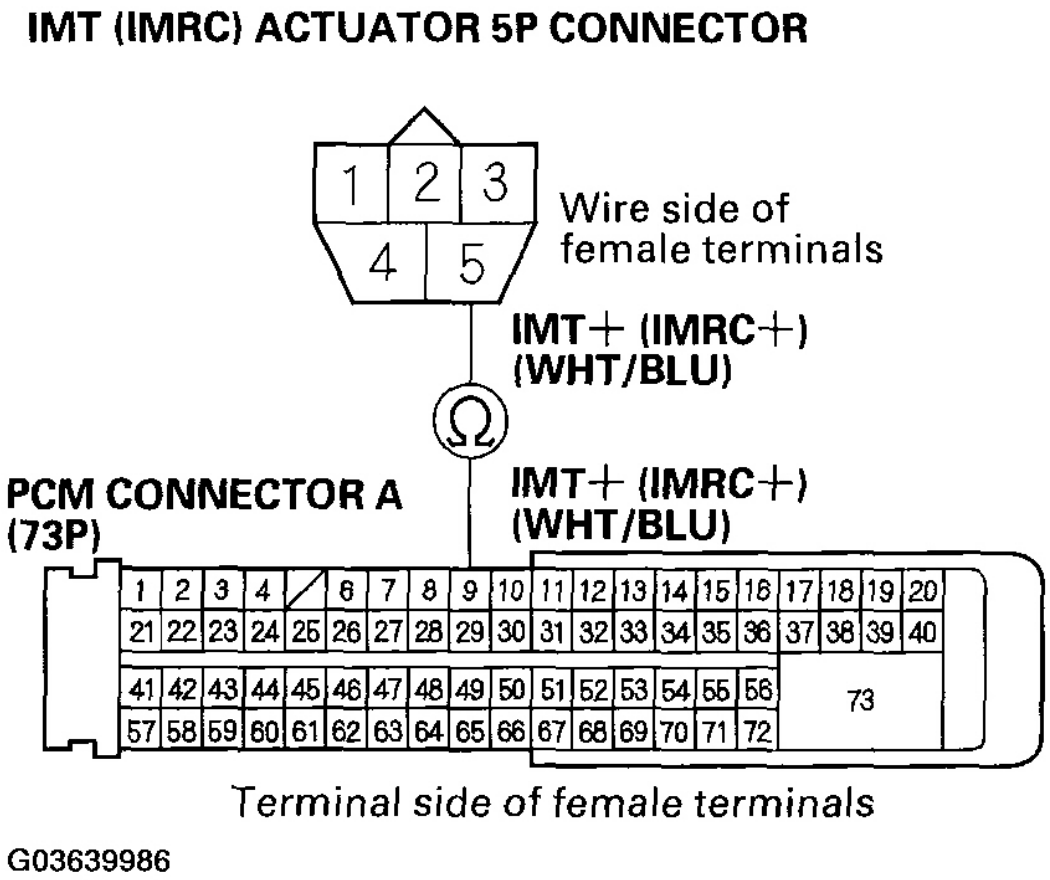

Fig. 4: Checking Continuity Between PCM Connector Terminal A9 And IMT (IMRC) Actuator 5P Connector Terminal No.5
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 17.

NO - Repair open in the wire between the PCM (A9) and the IMT (IMRC) actuator, then go to step 22 .

17. Check for continuity between PCM connector terminal A9 and body ground.

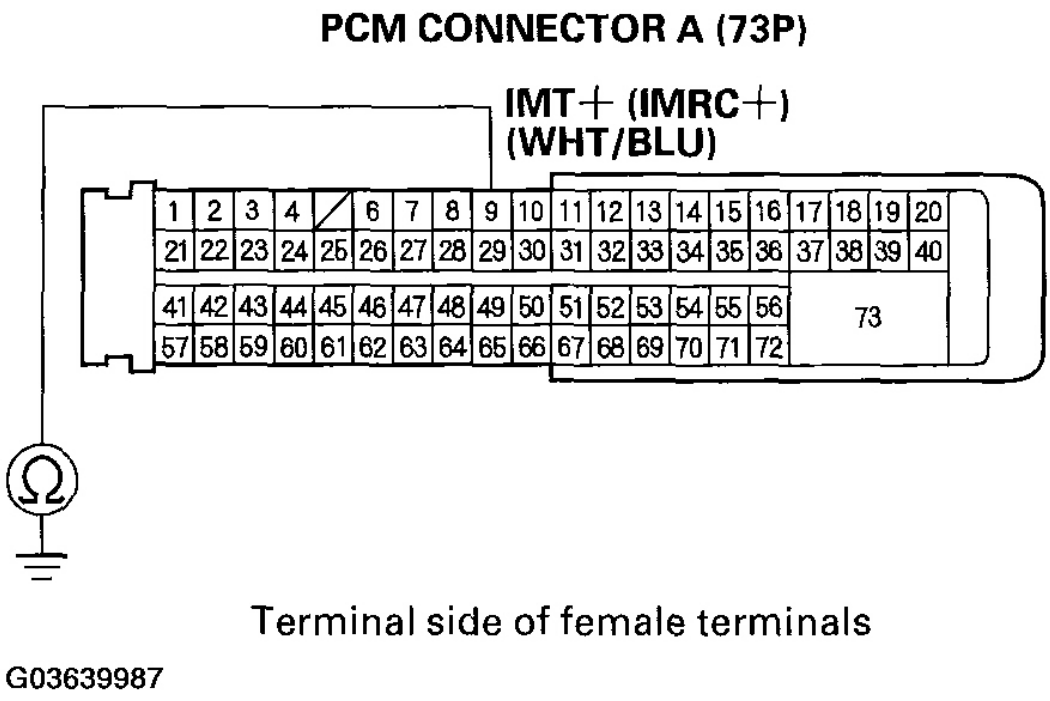

Fig. 5: Checking Continuity Between PCM Connector Terminal A9 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the PCM (A9) and the IMT (IMRC) actuator, then go to step 22 .

NO - Go to step 18.

18. Check for continuity between PCM connector terminal A10 and IMT (IMRC) actuator 5P connector terminal No. 4.

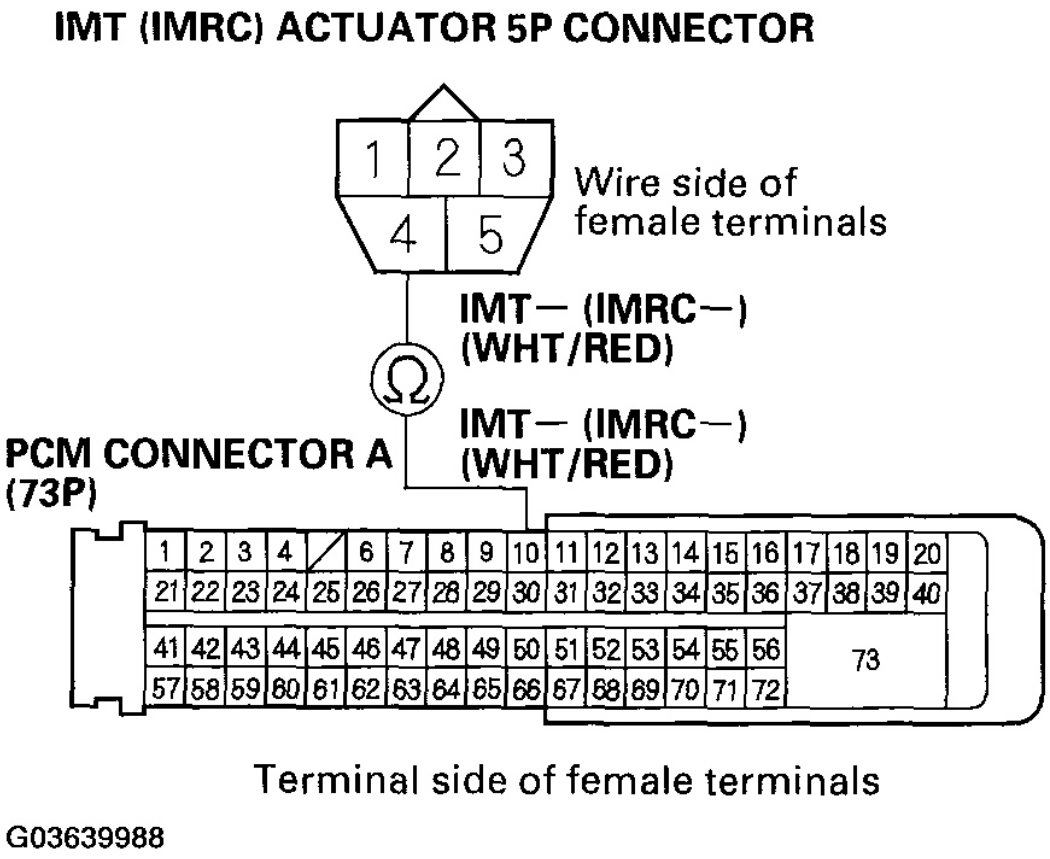

Fig. 6: Checking Continuity Between PCM Connector Terminal A10 And IMT (IMRC) Actuator 5P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the PCM (A10) and the IMT (IMRC) actuator, then go to step 22 .

19. Check for continuity between PCM connector terminal A10 and body ground.

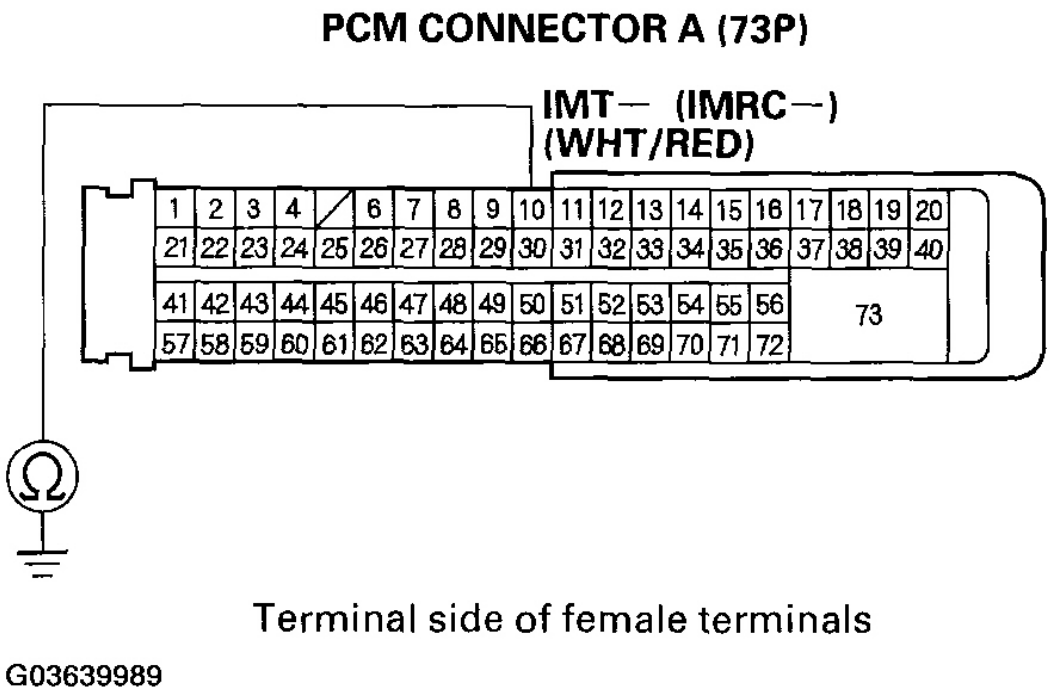

Fig. 7: Checking Continuity Between PCM Connector Terminal A10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the PCM (A10) and the IMT (IMRC) actuator, then go to step 22 .

NO - Go to step 20.

20. Remove the IMT (IMRC) actuator (see **IMT (IMRC) Actuator Replacement**).
21. Move the IMT (IMRC) valve by hand.

Does it move smoothly?

YES - Replace the IMT (IMRC) actuator, then go to step 24 .

NO - Remove the intake manifold cover (see step 1 in **COMPONENT LOCATION INDEX**), and repair the stuck valve. If necessary replace the intake manifold, then go to step 22.

22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see **PCM IDLE LEARN PROCEDURE**).
25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P1077 is indicated, check for poor connections or loose terminals at the IMT (IMRC) actuator and the PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

NO - Troubleshooting is complete.

26. Update the PCM if it does not have the latest software or substitute a known-good PCM (see **PCM UPDATING AND SUBSTITUTION FOR TESTING**).
27. Do the PCM idle learn procedure (see **PCM IDLE LEARN PROCEDURE**).
28. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES - If DTC P1077 is indicated, check for poor connections or loose terminals at the IMT (IMRC) actuator and the PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

NO - If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original the PCM (see **PCM REPLACEMENT**).

DTC P1078: IMT (IMRC) VALVE STUCK IN LOW RPM POSITION

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).

NOTE: Do not start the engine.

2. Clear the DTC with the HDS.
3. Start the engine, and hold the engine speed above 4,000 rpm.
4. Check the IMT (IMRC) VALVE CMD in the DATA LIST with the HDS.

Is OPEN indicated?

YES - Go to step 5.

NO - Go to step 28 .

5. Check the IMT (IMRC) VALVE SW in the DATA LIST with the HDS.

Is CLOSE indicated?

YES - Go to step 6.

NO - Intermittent failure, system is OK at this time. Check for poor connections or loose terminals

at the IMT (IMRC) actuator and the PCM.

6. Let the engine idle, then turn the ignition switch OFF.
7. Disconnect the IMT (IMRC) actuator 5P connector.
8. Turn the ignition switch ON (II).
9. Measure voltage between IMT (IMRC) actuator 5P connector terminal No. 3 and body ground.

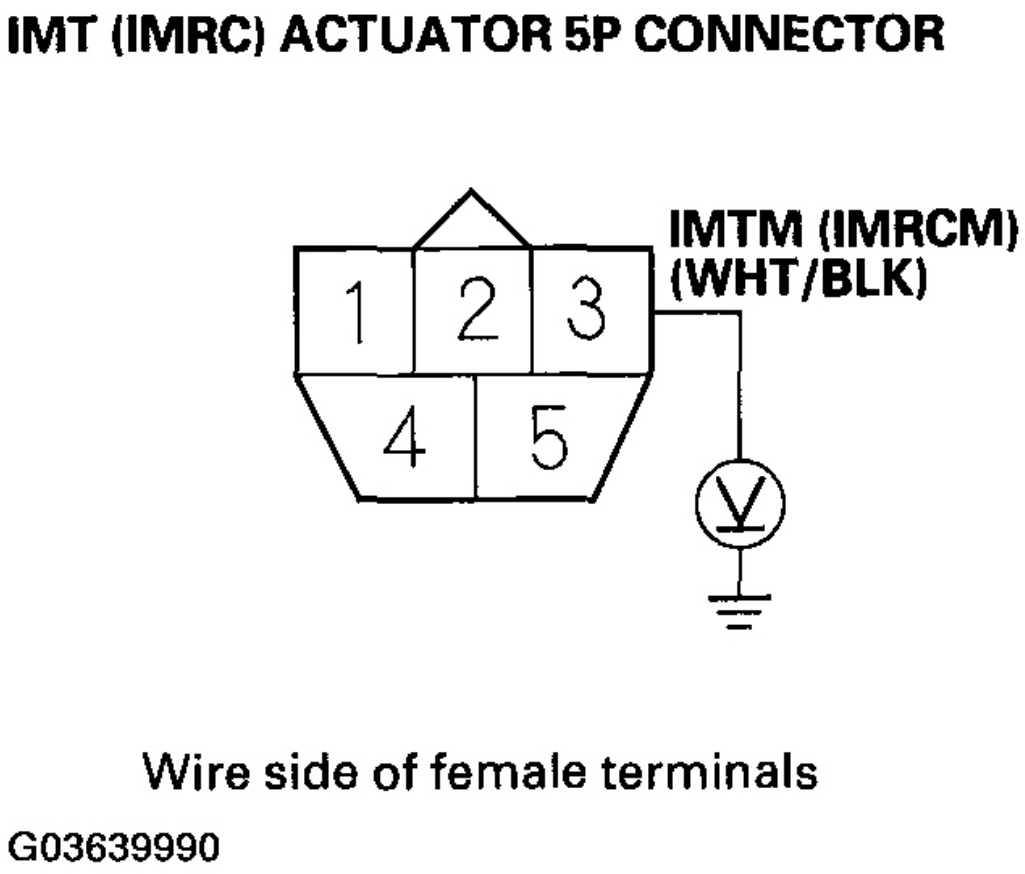

Fig. 8: Measuring Voltage Between IMT (IMRC) Actuator 5P Connector Terminal No. 3 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there about 5 V?

YES - Go to step 10.

NO - Go to step 14 .

10. Turn the ignition switch OFF.

11. Jump the SCS line with the HDS.
12. Disconnect PCM connector A (73P).
13. Check for continuity between PCM connector terminal A28 and IMT (IMRC) actuator 5P connector terminal No. 2.

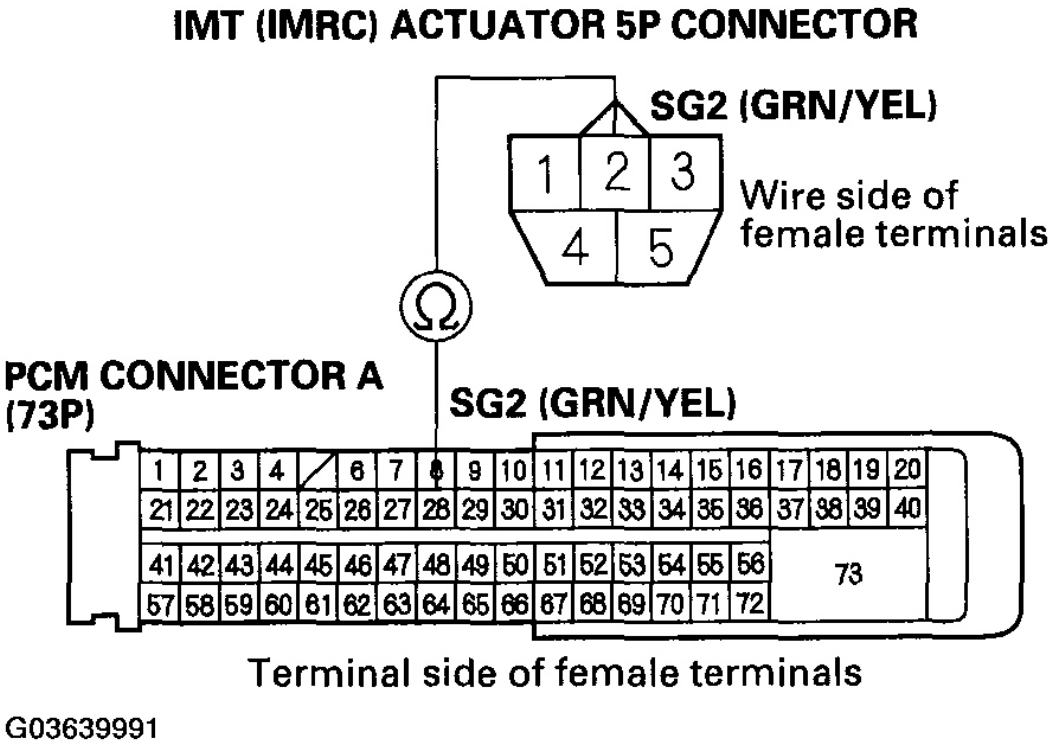

Fig. 9: Checking Continuity Between PCM Connector Terminal A28 And IMT (IMRC) Actuator 5P Connector Terminal No. 2
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 18 .

NO - Repair open in the wire between the IMT (IMRC) actuator and the PCM (A28), then go to step 24 .

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector A (73P).
17. Check for continuity between PCM connector terminal A41 and IMT (IMRC) actuator 5P connector terminal No. 3.

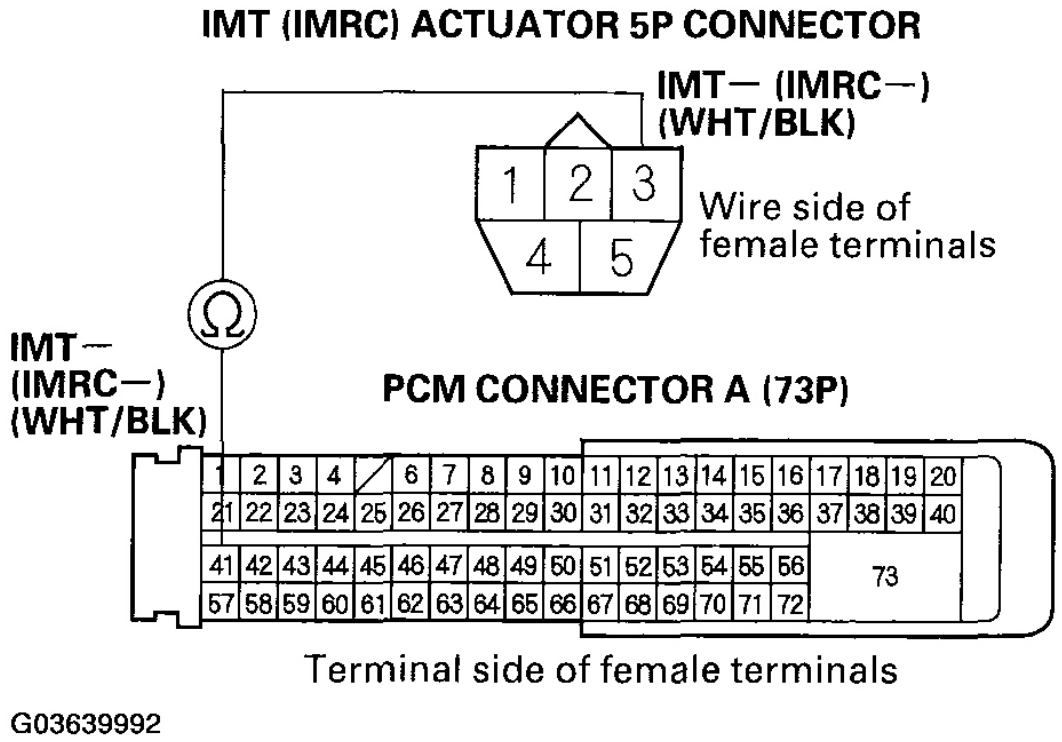

Fig. 10: Checking Continuity Between PCM Connector Terminal A41 And IMT (IMRC) Actuator 5P Connector Terminal No. 3
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 28 .

NO - Repair open in the wire between the PCM (A41) and the IMT (IMRC) actuator, then go to step 24 .

18. Check for continuity between PCM connector terminal A9 and IMT (IMRC) actuator 5P connector terminal No. 5.

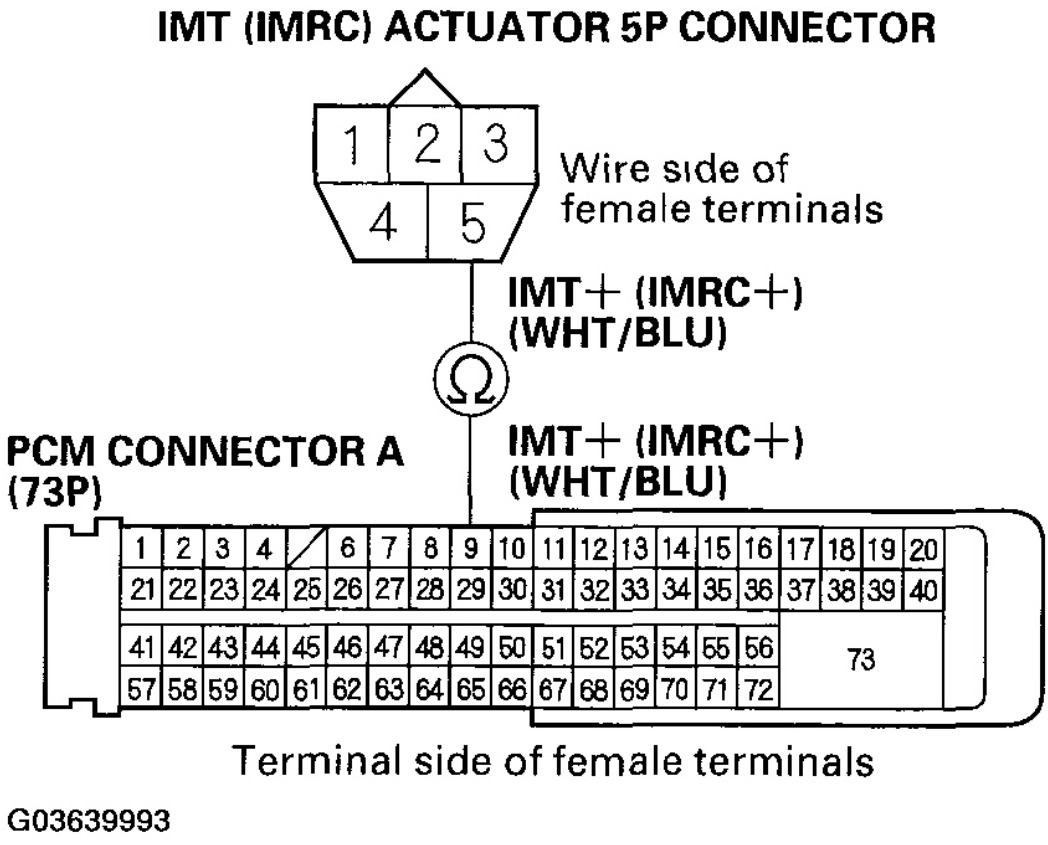

Fig. 11: Checking Continuity Between PCM Connector Terminal A9 And IMT (IMRC) Actuator 5P Connector Terminal No. 5
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 19.

NO - Repair open in the wire between the PCM (A9) and the IMT (IMRC) actuator, then go to step 24.

19. Check for continuity between PCM connector terminal A9 and body ground.

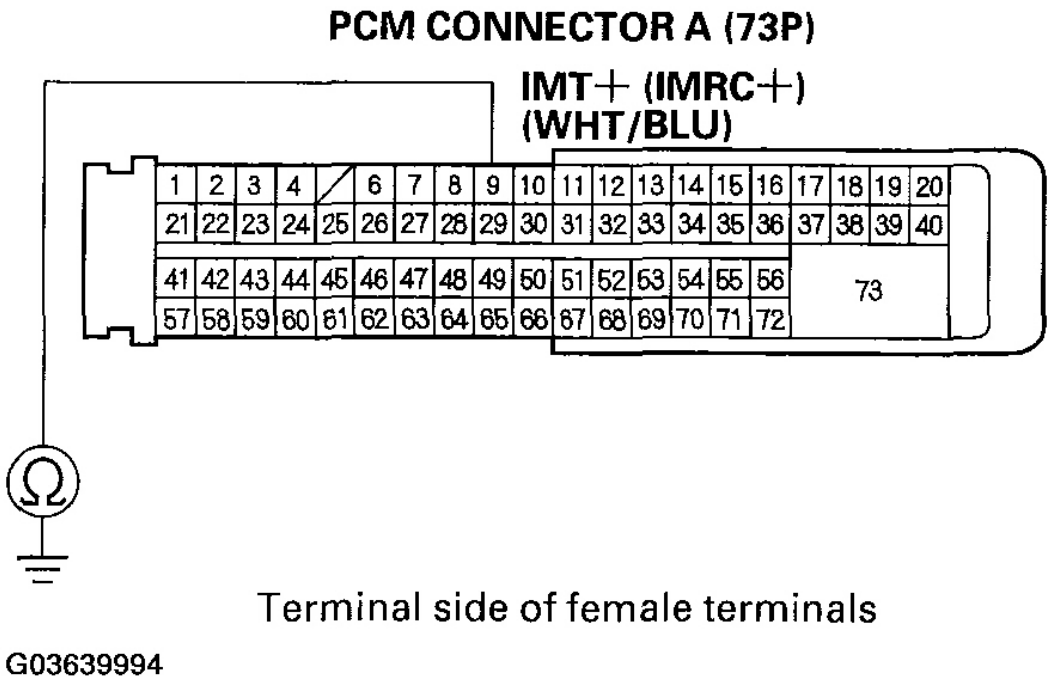

Fig. 12: Checking Continuity Between PCM Connector Terminal A9 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the PCM (A9) and the IMT (IMRC) actuator, then go to step 24 .

NO - Go to step 20.

20. Check for continuity between PCM connector terminal A10 and IMT (IMRC) actuator 5P connector terminal No. 4.

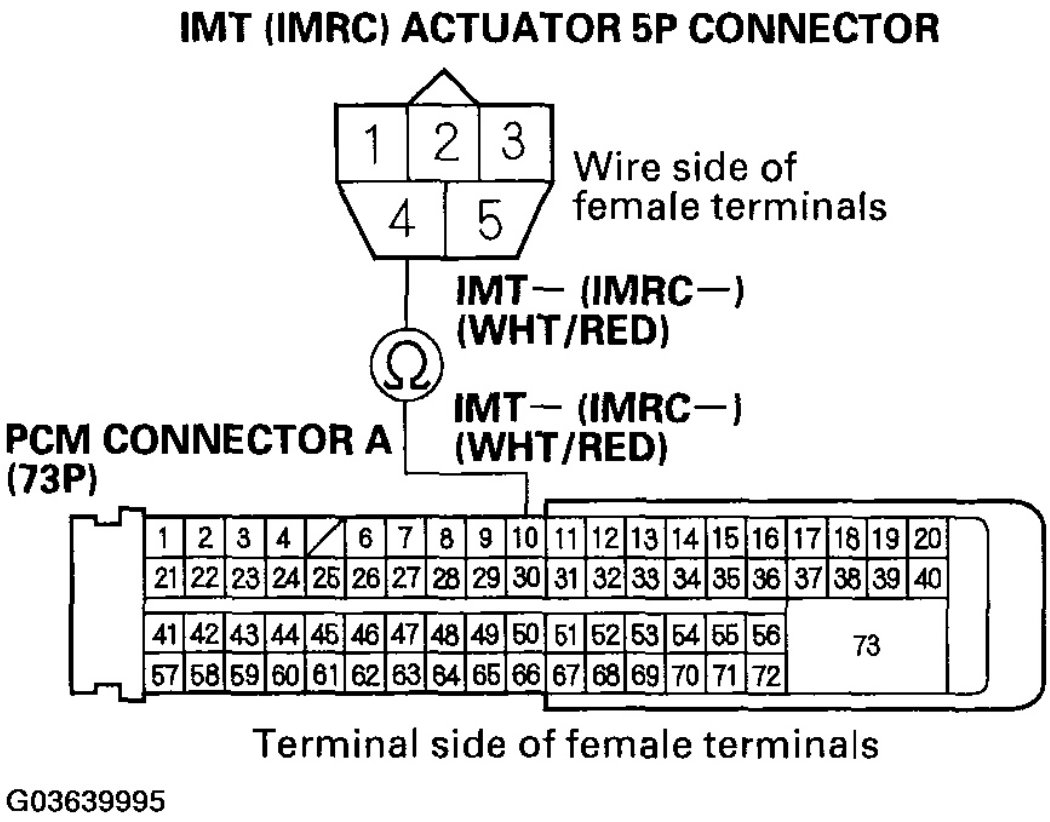

Fig. 13: Checking Continuity Between PCM Connector Terminal A10 And IMT (IMRC) Actuator 5P Connector Terminal No. 4
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Go to step 21.

NO - Repair open in the wire between the PCM (A10) and the IMT (IMRC) actuator, then go to step 24 .

21. Check for continuity between PCM connector terminal A10 and body ground.

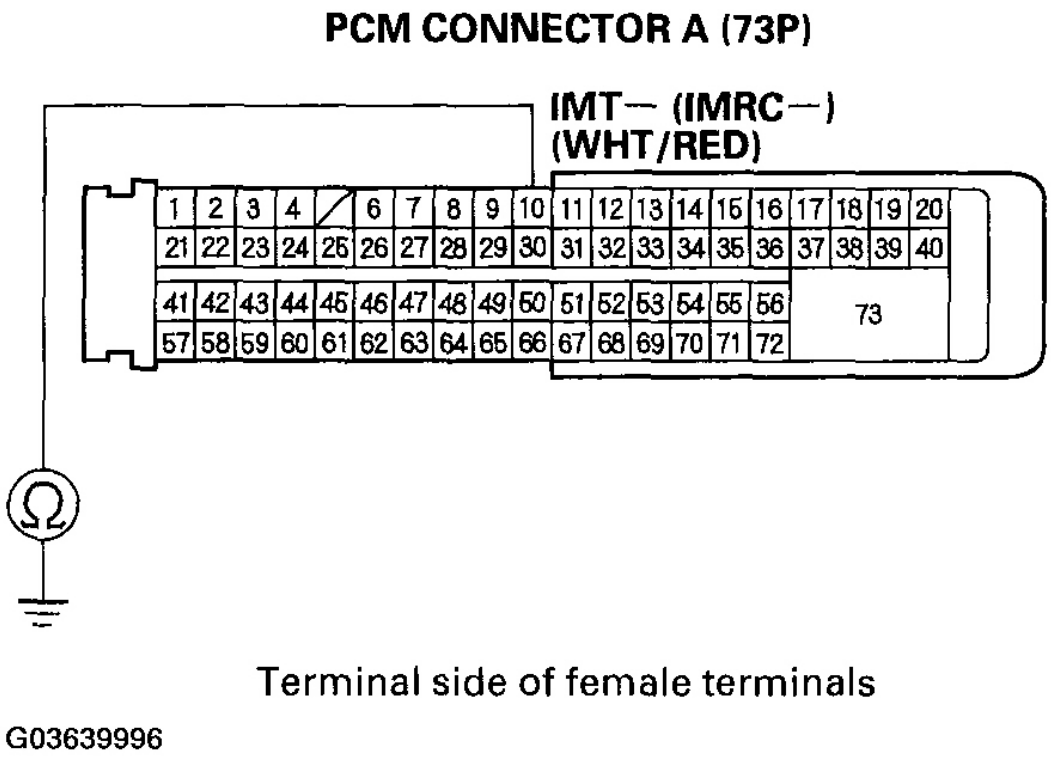

Fig. 14: Checking Continuity Between PCM Connector Terminal A10 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES - Repair short in the wire between the PCM (A10) and the IMT (IMRC) actuator, then go to step 24 .

NO - Go to step 22.

22. Remove the IMT (IMRC) actuator (see **IMT (IMRC) ACTUATOR REPLACEMENT**).
23. Move the IMT (IMRC) valve by hand.

Does it move smoothly?

YES - Replace the IMT (IMRC) actuator, then go to step 24.

NO - Remove the intake manifold cover (see step 1 in **COMPONENT LOCATION INDEX**) and repair the stuck valve. If necessary, replace the intake manifold, then go to step 24.

24. Turn the ignition switch ON (II).
25. Reset the PCM with the HDS.
26. Do the PCM idle learn procedure (see **PCM IDLE LEARN PROCEDURE**).

27. Check for Temporary DTCs or DTCs with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P1078 is indicated, check for poor connections or loose terminals at the IMT (IMRC) actuator and the PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

    NO - Troubleshooting is complete.
28. Update the PCM if it does not have the latest software or substitute a known-good PCM (see **PCM UPDATING AND SUBSTITUTION FOR TESTING**).
29. Do the PCM idle learn procedure (see **PCM IDLE LEARN PROCEDURE**).
30. Check for Temporary DTCs or DTCs with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES - If DTC P1078 is indicated, check for poor connections or loose terminals at the IMT (IMRC) actuator and the PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTCs troubleshooting.

    NO - If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see **PCM REPLACEMENT**).

THROTTLE BODY TEST

CARBON ACCUMULATION CHECK

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

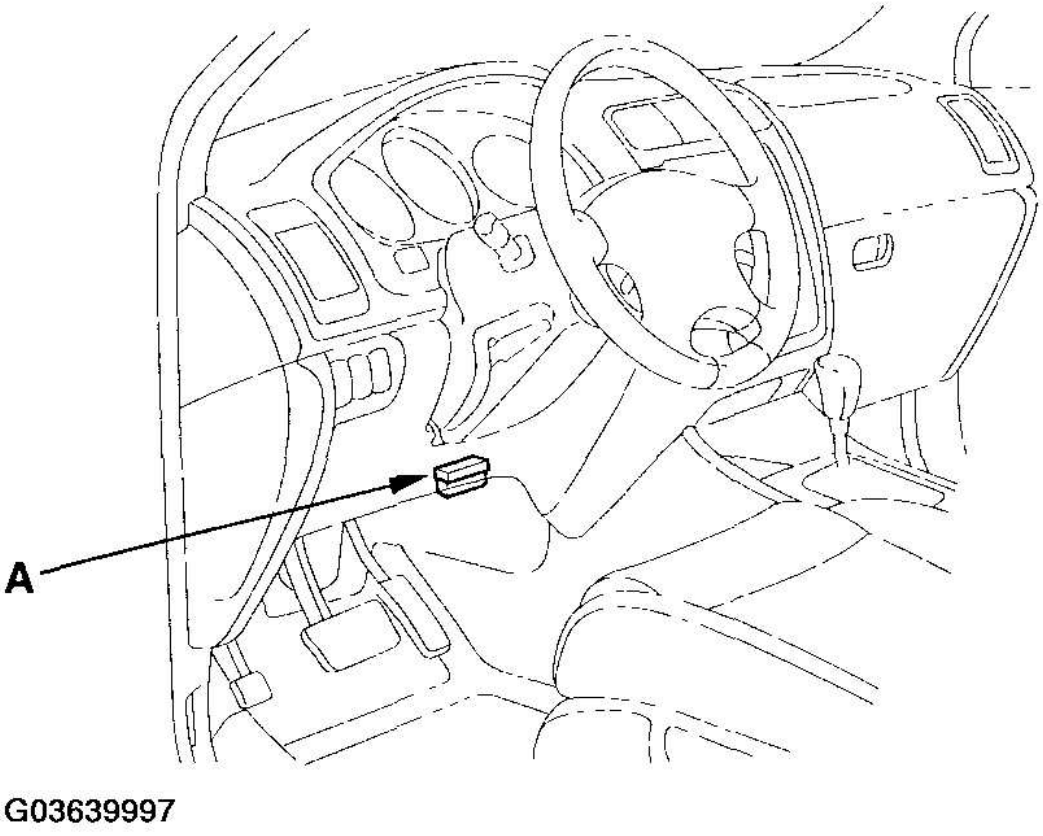

Fig. 15: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. 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.
3. Check REL TP SENSOR in the DATA LIST the HDS. The reading should be below 2.5°. If it is not, clean the throttle body (see **THROTTLE BODY CLEANING**).

THROTTLE POSITION LEARNING CHECK

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

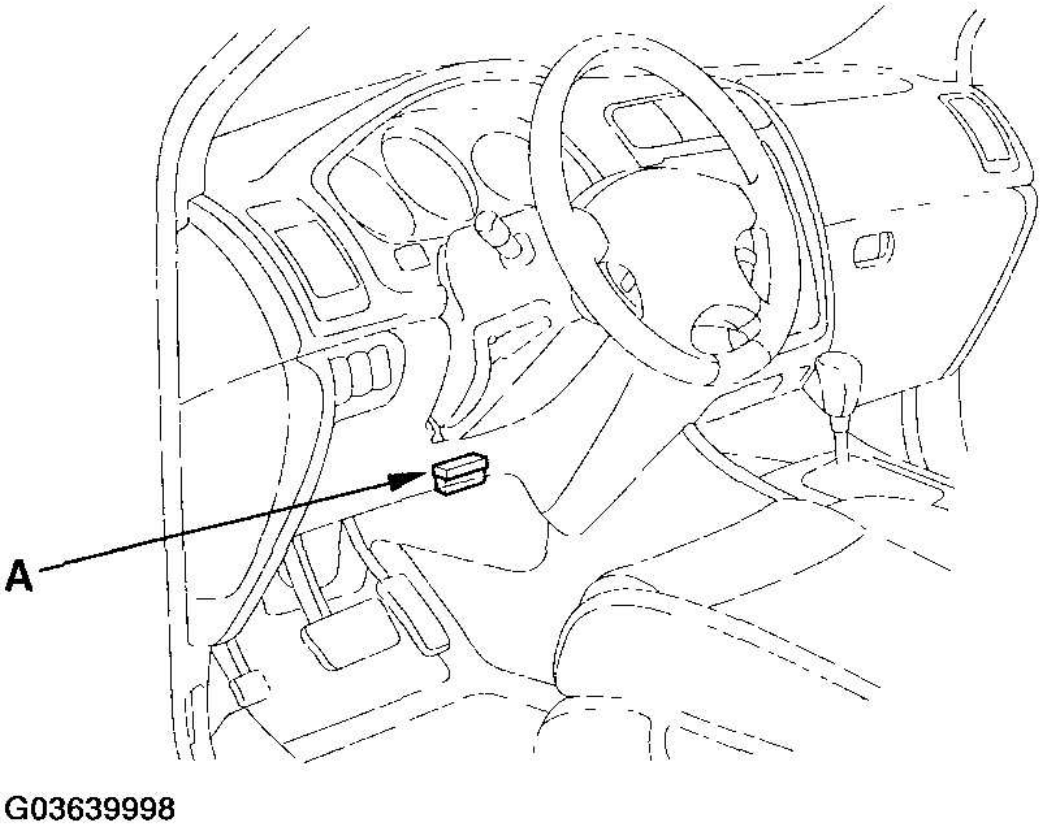

Fig. 16: Connecting HDS To DLC
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Select the INSPECTION MENU with the HDS.
3. Do the TP POSITION CHECK in the ETCS TEST. If it indicates to clean the throttle body, do the throttle body cleaning (see **THROTTLE BODY CLEANING**).

THROTTLE BODY CLEANING

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner is damaged, replace it (see **AIR CLEANER ELEMENT INSPECTION/REPLACEMENT**).
2. Remove the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel or a clean

shop towel soaked in throttle plate and induction cleaner.

NOTE:

- **Remove the throttle body to clean it.**
- **Be careful not to pinch your fingers.**
- **To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft.**
- **Do not spray carburetor cleaner directly on the throttle body.**
- **Use Acura throttle plate and induction cleaner.**

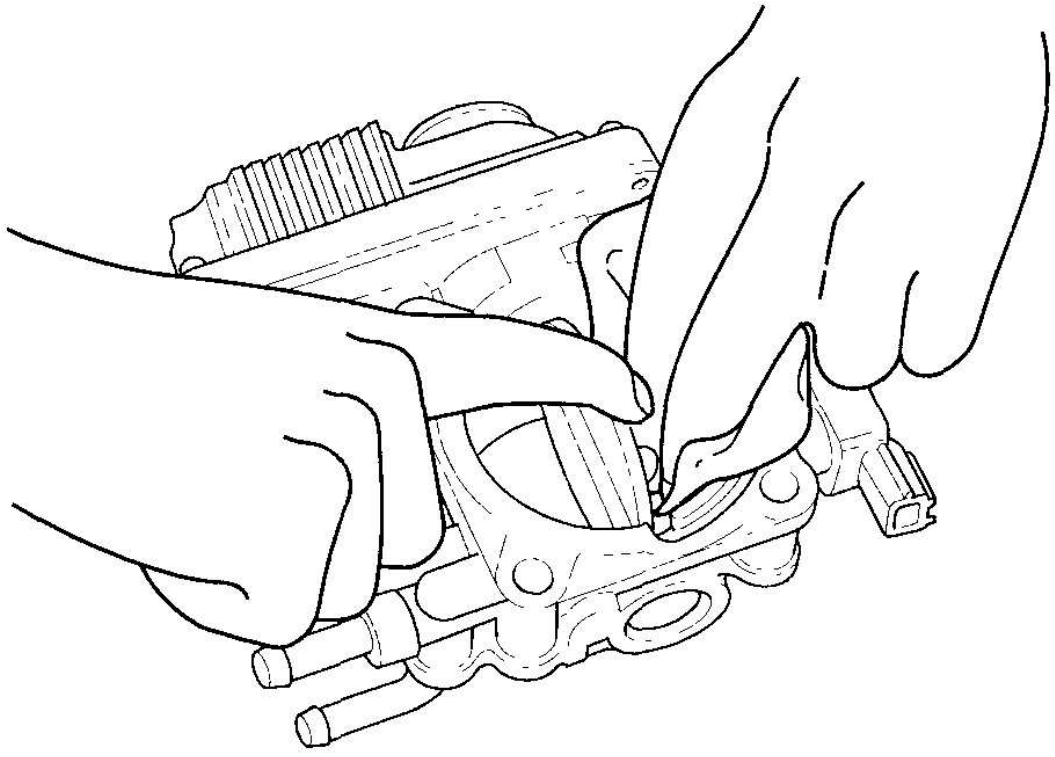

Fig. 17: Cleaning Carbon From Throttle Valve And Throttle Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the throttle body (see **THROTTLE BODY REMOVAL/INSTALLATION**).
5. Reset the PCM with the HDS.
6. Turn the ignition switch ON (II), and wait 2 seconds.
7. Do the PCM idle learn procedure (see **PCM IDLE LEARN PROCEDURE**).

AIR CLEANER ELEMENT INSPECTION/REPLACEMENT

1. Remove the bolts (A) and open the air cleaner housing cover (B).

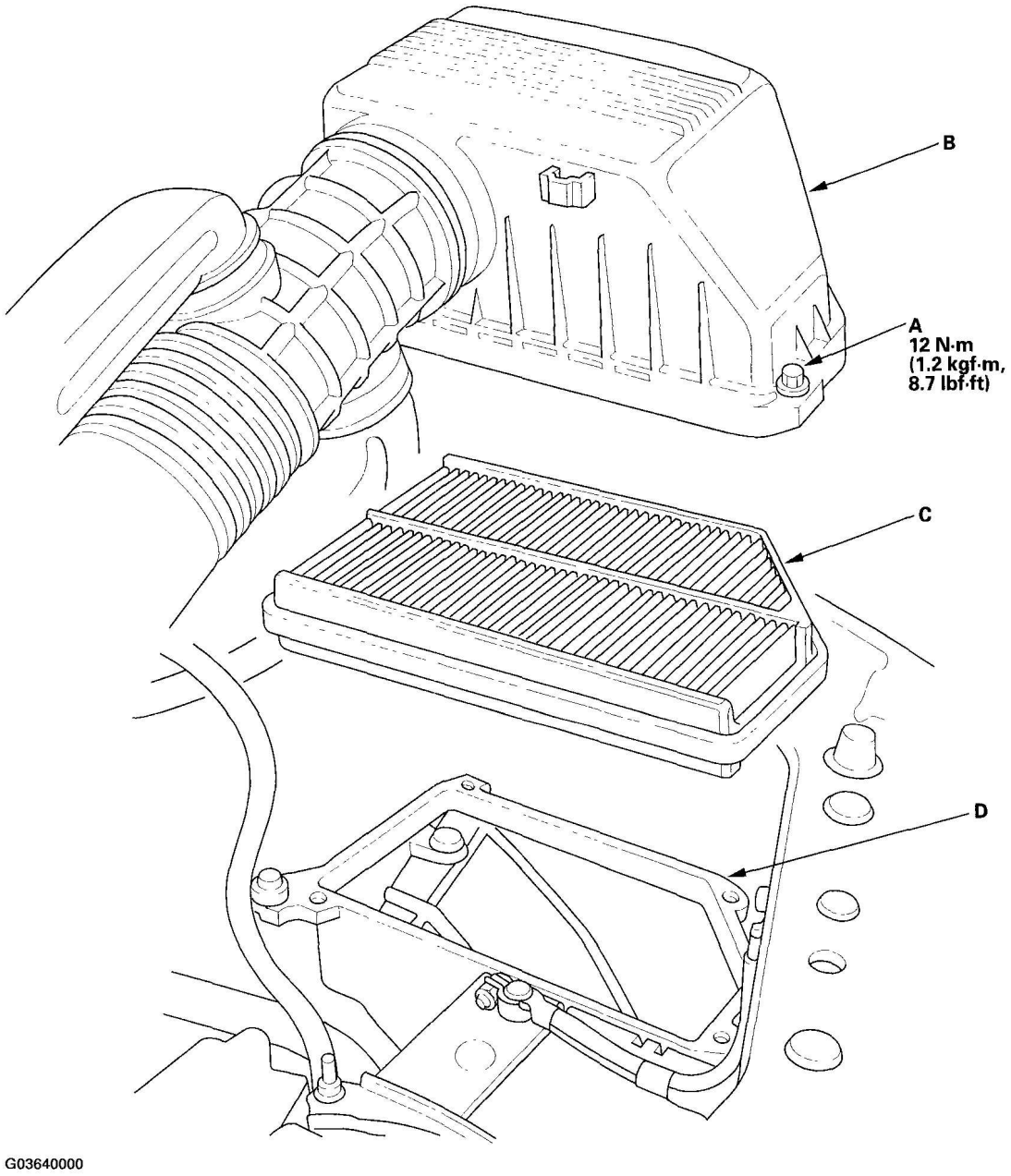

Fig. 18: Removing And Opening Air Cleaner Housing Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the air cleaner element (C) from the air cleaner housing (D).

3. Check the air cleaner element for clogging. If it is clogged, replace the air cleaner element.
4. Clean and remove any debris from inside the air cleaner housing.

NOTE: Do not clean the air cleaner element by blowing it off with compressed air.

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

IMT (IMRC) ACTUATOR REPLACEMENT

1. Remove the intake manifold cover (see step 1 in **COMPONENT LOCATION INDEX**).
2. Disconnect the IMT (IMRC) actuator 5P connector (A).

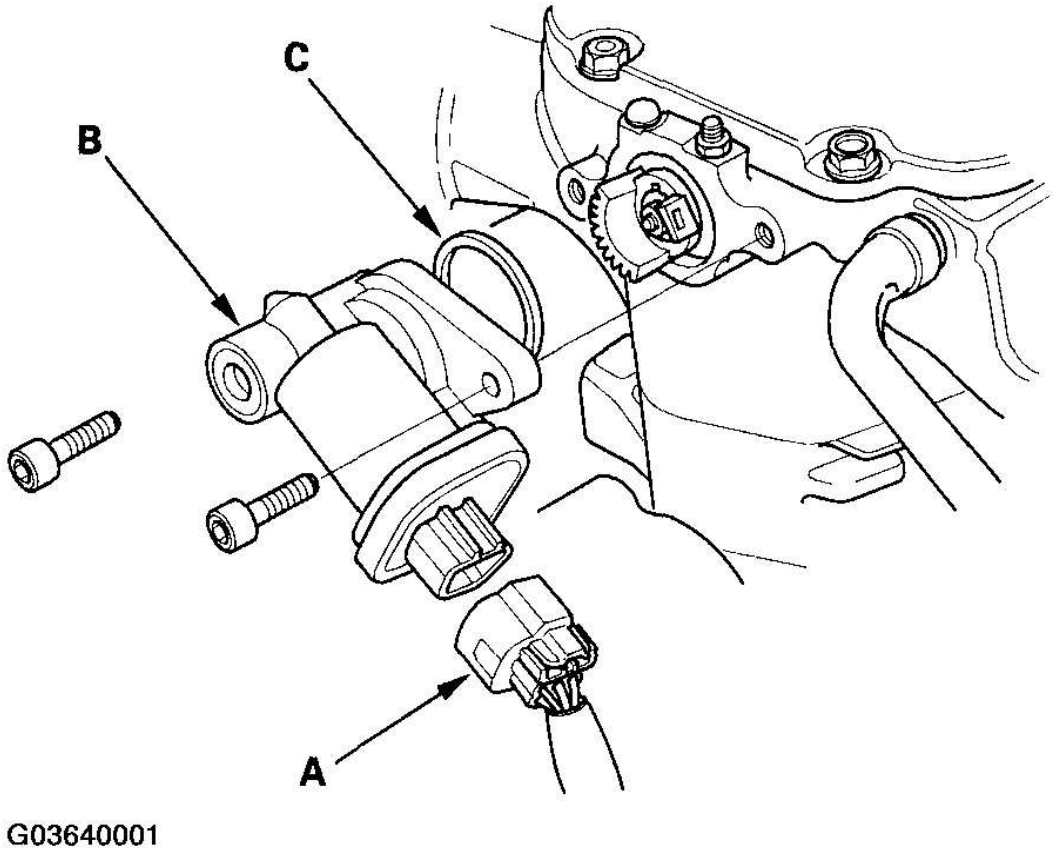

Fig. 19: Disconnecting IMT (IMRC) Actuator 5P Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolts and the IMT (IMRC) actuator (B).
4. Install the actuator in the reverse order of removal with a new O-ring (C).

THROTTLE CABLE ADJUSTMENT

1. Remove the bolts and the throttle cable cover (A).

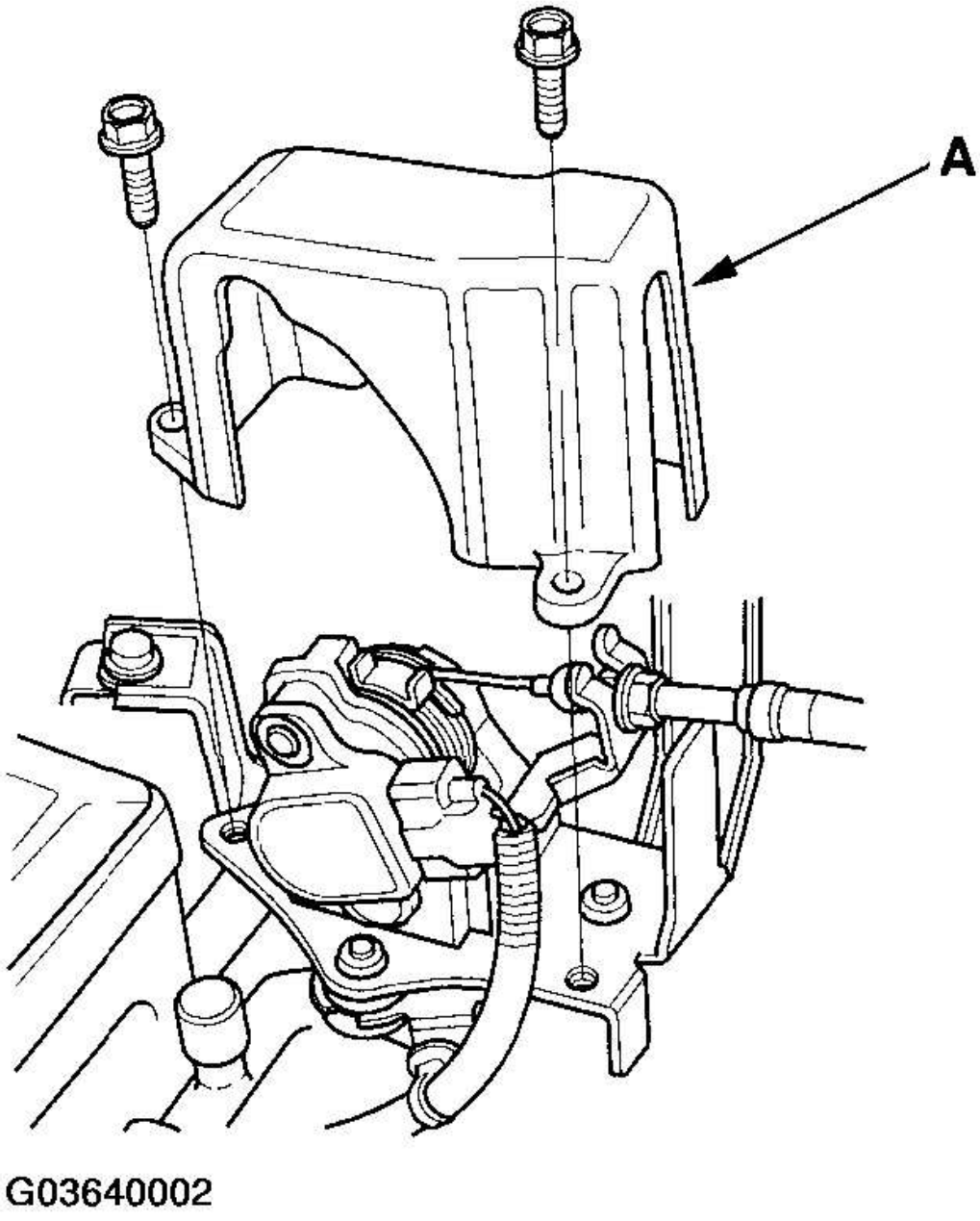

Fig. 20: Removing Throttle Cable Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check cable free play at the throttle linkage. Cable free play (A) should be 10-12 mm (3/8-1/2 in.).

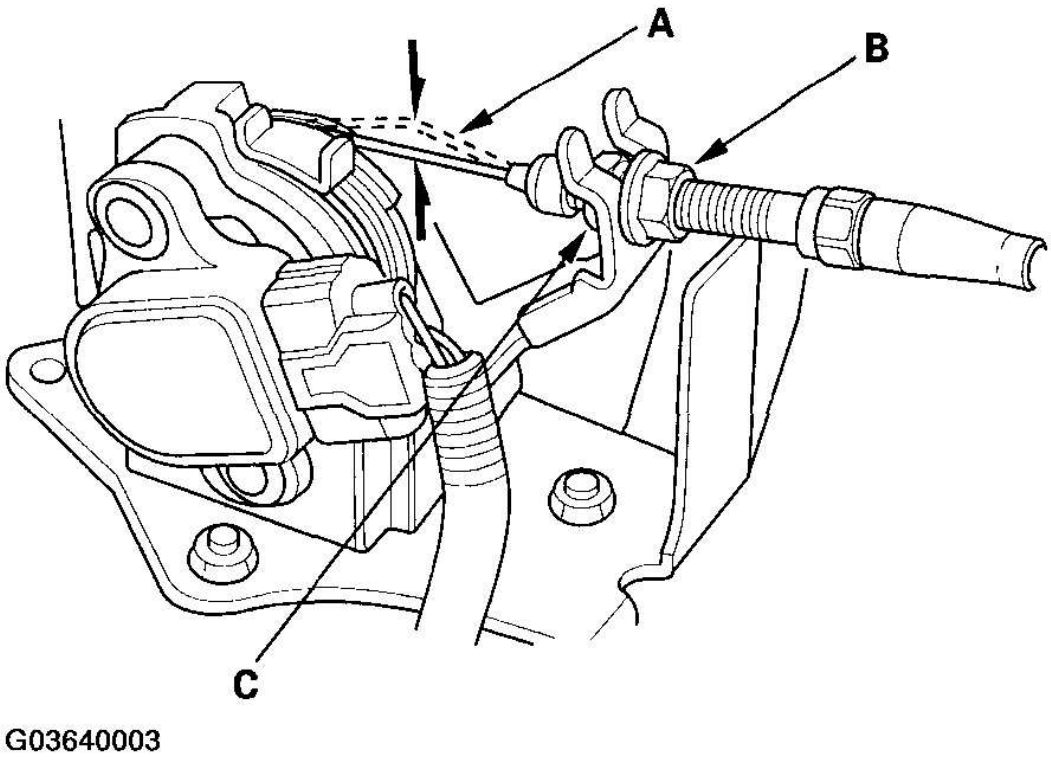

Fig. 21: Checking Cable Free Play At Throttle Linkage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the free play is not within spec (10-12 mm, 3/8-1/2 in.), loosen the locknut (B), turn the adjusting nut (C) until the deflection (A) is as specified, then retighten the locknut.
4. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

THROTTLE CABLE REMOVAL/INSTALLATION

1. Remove the throttle cable cover (see **THROTTLE CABLE ADJUSTMENT**).
2. Fully open the throttle valve, then remove the throttle cable (A) from the throttle link (B).

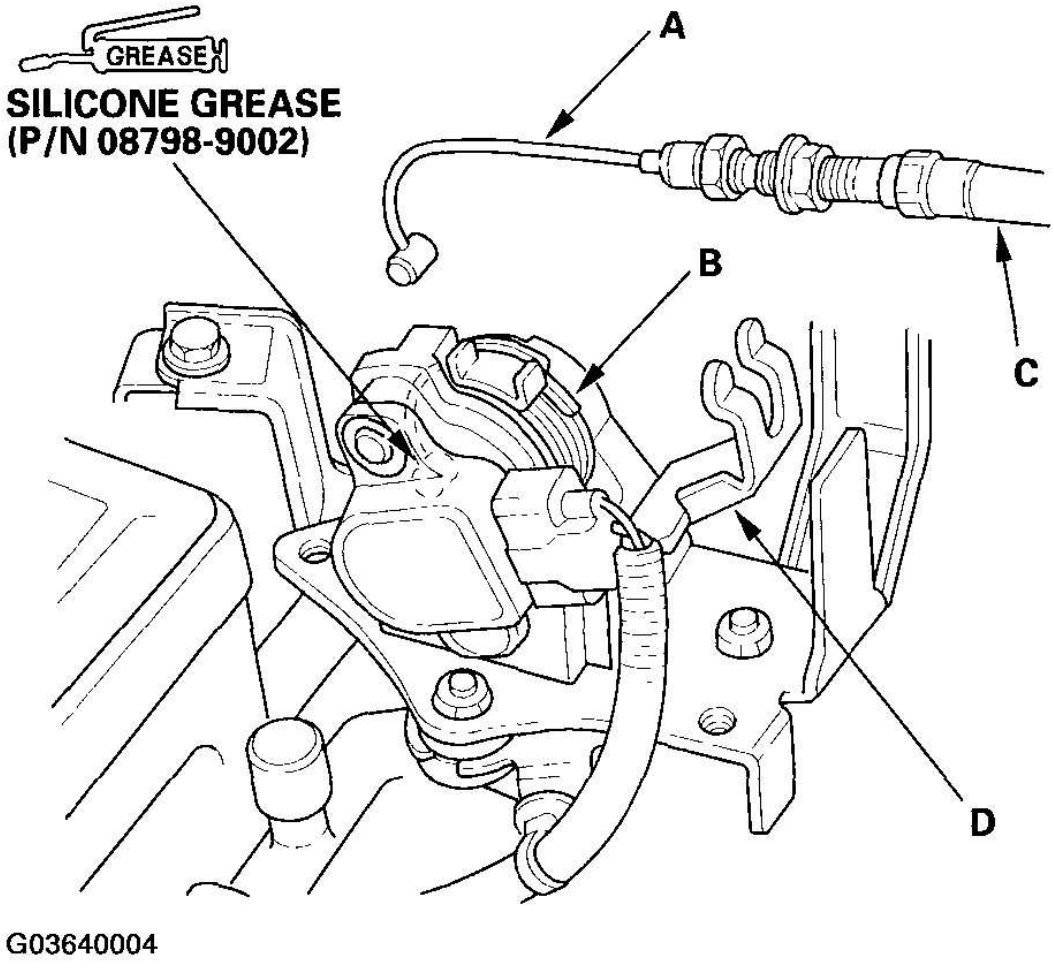

Fig. 22: Removing Throttle Cable
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the cable housing (C) from the cable bracket (D).
4. Remove the throttle cable (A) from the accelerator pedal (B).

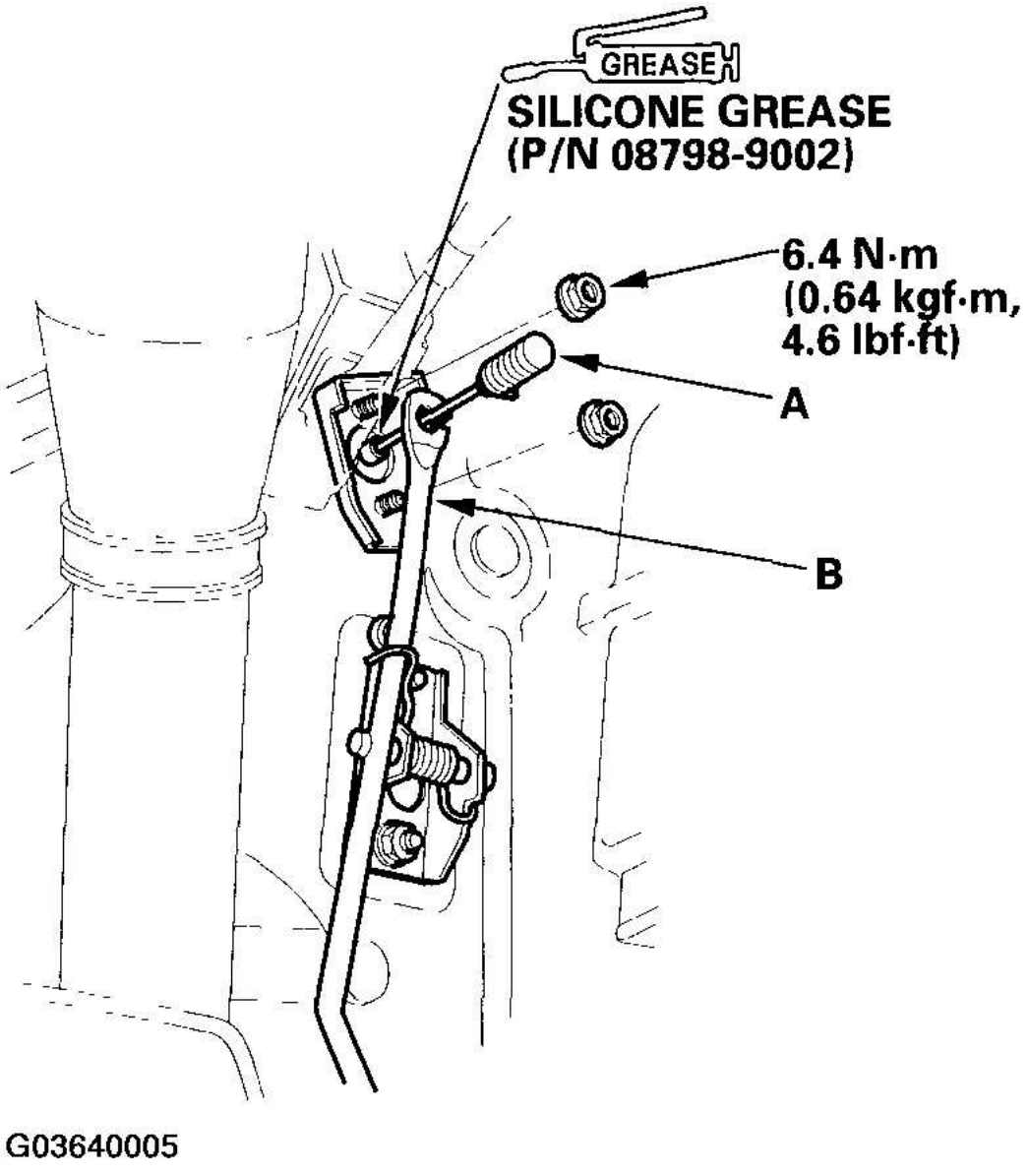

Fig. 23: Removing Throttle Cable From Accelerator Pedal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the cable in the reverse order of removal.
6. 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.
7. Hold the cable, removing all slack from it.
8. Set the locknut on the cable bracket (A).

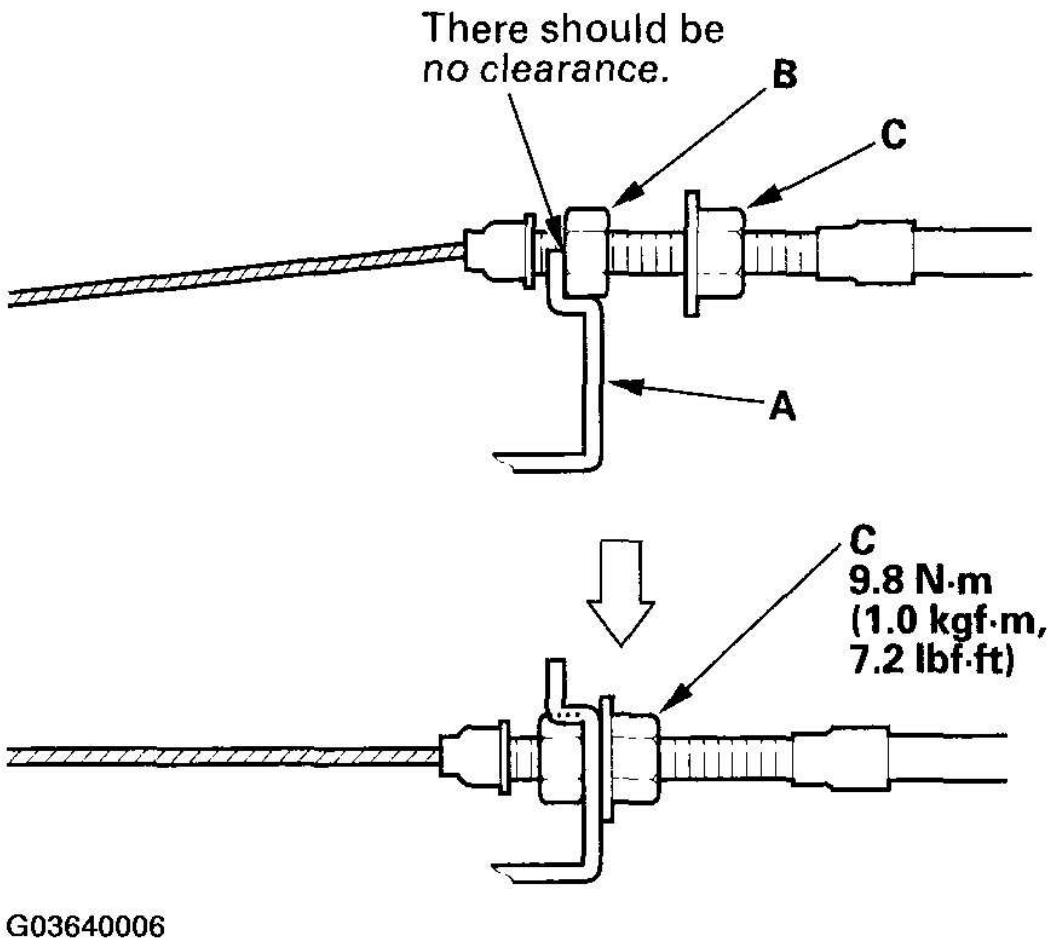

Fig. 24: Setting Locknut On Cable Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Adjust the adjusting nut (B) so that its free play is 0 mm.
10. Remove the cable from the cable bracket.
11. Reset the adjusting nut and tighten the locknut (C).
12. With the cable properly adjusted, check the throttle valve to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

THROTTLE BODY REMOVAL/INSTALLATION

CAUTION: Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your fingers if the throttle valve is activated.

NOTE: If you are replacing the throttle body, begin at step 1 . If you are removing the throttle body temporarily, begin at step 4 .

1. Connect the HDS while the engine is stopped.
2. Select the INSPECTION MENU with the HDS.
3. Do the TP POSITION CHECK in the ETCS TEST.
4. Disconnect the MAP sensor connector (A).

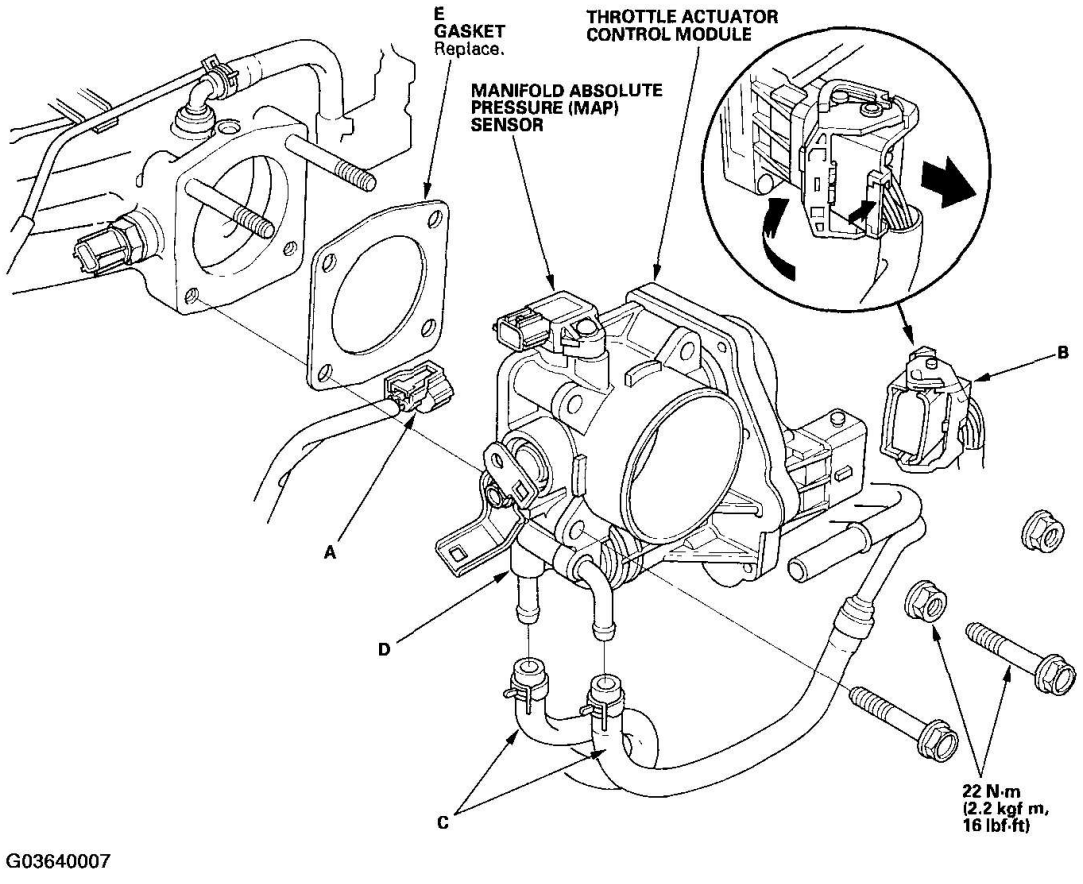

Fig. 25: Disconnecting MAP Sensor Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the intake air duct.
6. Disconnect the throttle body connector (B).
7. Disconnect the water bypass hoses (C), and plug the water bypass hoses.
8. Remove the throttle body (D).
9. Clean the throttle body and intake manifold surface.
10. Install the parts in the reverse order of removal with a new gasket (E).

NOTE:

- **Do the PCM idle learn procedure (see PCM IDLE LEARN PROCEDURE).**
- **Refill the radiator with engine coolant (see COOLANT REPLACEMENT).**

THROTTLE BODY DISASSEMBLY/REASSEMBLY

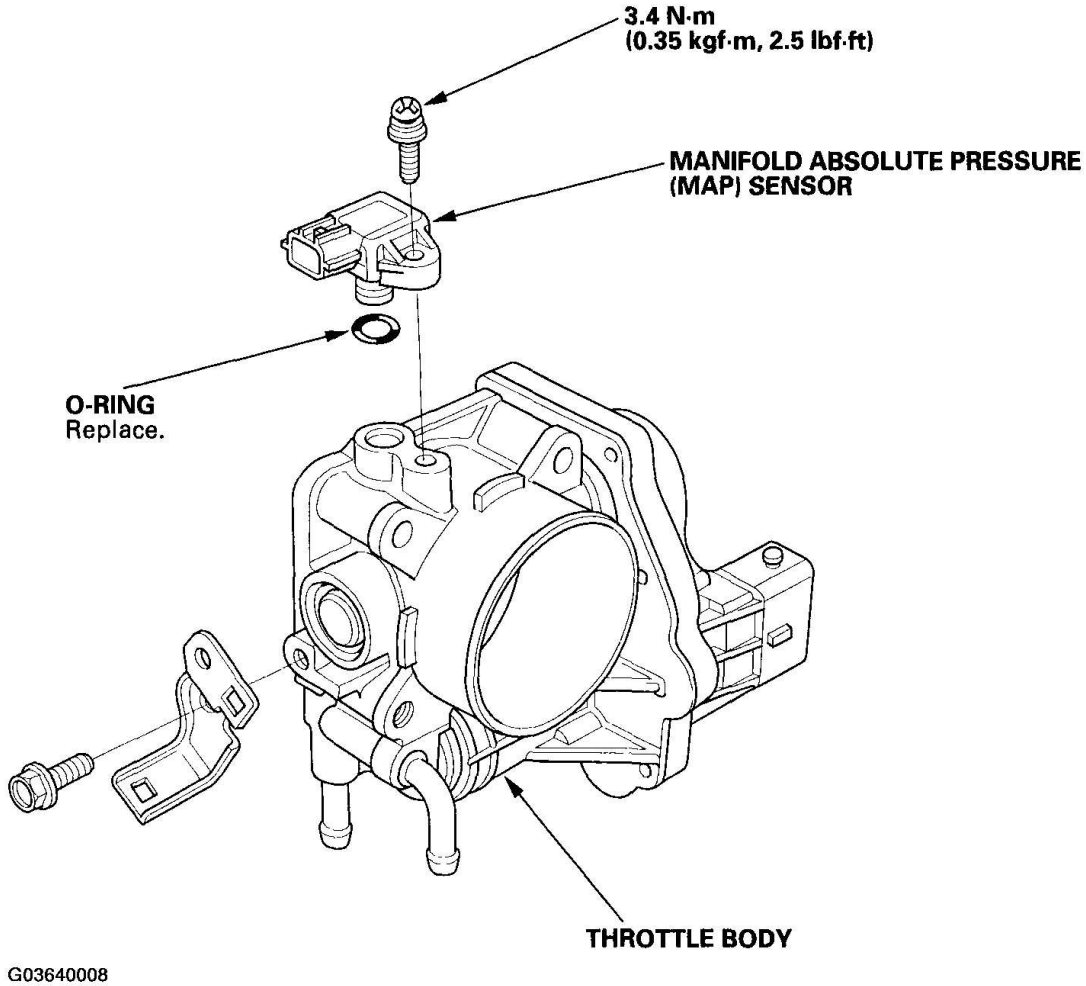

Fig. 26: Disassembly/Reassembly Of Throttle Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.