

2007-08 ENGINE PERFORMANCE

VTEC - TL

COMPONENT LOCATION INDEX

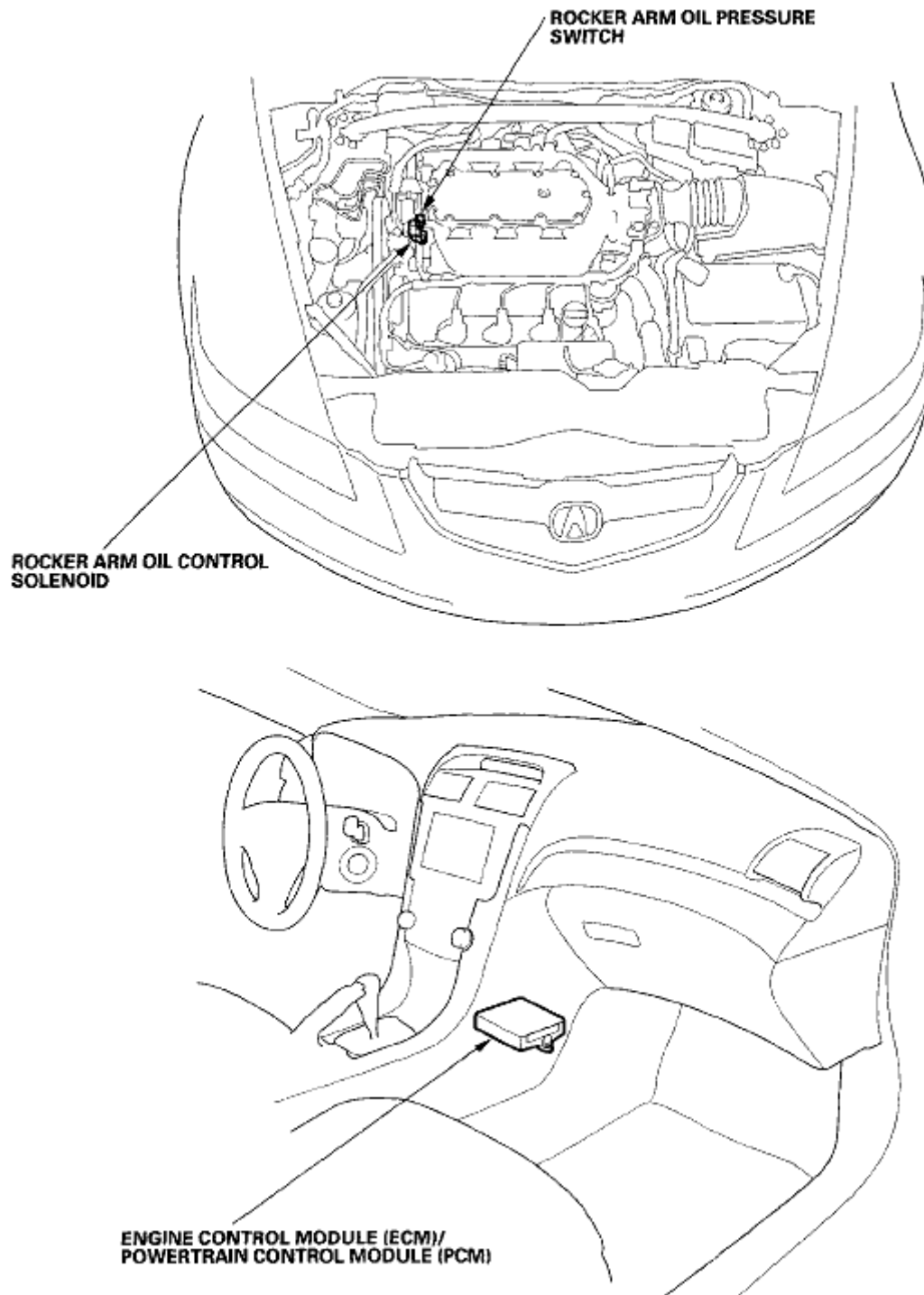


Fig. 1: VTEC Component Location Index
Courtesy of AMERICAN HONDA MOTOR CO., INC.

DTC TROUBLESHOOTING

DTC P2646: ROCKER ARM OIL PRESSURE SWITCH CIRCUIT LOW VOLTAGE

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5AA200

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

1. Check the engine oil level.

Is the engine oil level OK ?

YES -Go to step 2.

NO -Adjust the engine oil to the proper level, then go to step 19.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM.

NO -Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil pressure switch 2P connector.
7. Turn the ignition switch ON (II).
8. Check the VTEC PRES SW in the DATA LIST with the HDS.

Is switch ON indicated?

YES -Go to step 14.

NO -Go to step 9.

9. Turn the ignition switch OFF.
10. Remove the rocker arm oil pressure switch (A) and install the special tools as shown, then install the rocker arm oil pressure switch on the oil pressure gauge adapter (B).

NOTE: Install the parts in the reverse order of removal with a new O-ring.

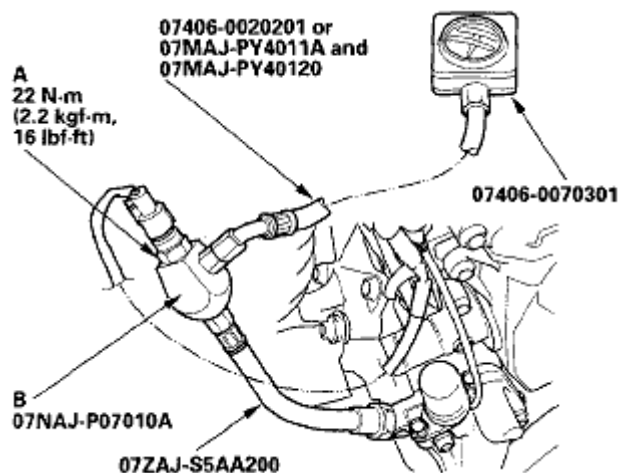


Fig. 2: Identifying Rocker Arm Oil Pressure Switch With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Start the engine.
12. Do the VTEC TEST in the INSPECTION MENU with the HDS.
13. Check the oil pressure.

Does the oil pressure increase to at least 392 kPa (56.9 psi, 4.0 kgf/cm²)?

YES -Replace the rocker arm oil pressure switch (see **ROCKER ARM OIL CONTROL SOLENOID REPLACEMENT**), then go to step 18.

NO -Inspect the VTEC system. If it is OK. Replace the rocker arm oil control solenoid (see **ROCKER ARM OIL CONTROL SOLENOID REPLACEMENT**), then go to step 18.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (31P).
17. Check for continuity between ECM/PCM connector terminal A23 and body ground.

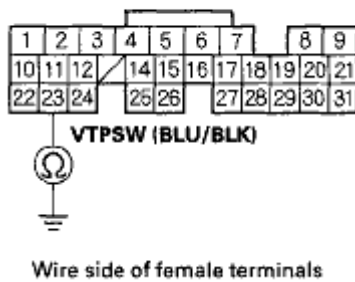
ECM/PCM CONNECTOR A (31P)

Fig. 3: Checking Continuity Between ECM/PCM Connector Terminal A23 And Body Ground
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the ECM/PCM (A23) and the rocker arm oil pressure switch, then go to step 18.

NO -Go to step 25.

18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Do the VTEC TEST in the INSPECTION MENU with the HDS.
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2646 indicated?

YES -Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM, then go to step 1.

NO -Go to step 24.

24. Monitor the OBD STATUS for DTC P2646 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 23, go to the **INDICATED DTCs TROUBLESHOOTING**.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step [22](#).

25. Reconnect all connectors.
26. 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**).

27. Do the VTEC TEST in the INSPECTION MENU with the HDS.
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2646 indicated?

YES -Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, 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 27. If the ECM/PCM was substituted, go to step 1.

NO -Go to step 29.

29. Monitor the OBD STATUS for DTC P2646 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 28, go to the **INDICATED DTCs TROUBLESHOOTING**.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, 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 27. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

DTC P2647: ROCKER ARM OIL PRESSURE SWITCH CIRCUIT HIGH VOLTAGE

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

1. Check the engine oil level.

Is the engine oil level OK?

YES -Go to step 2.

NO -Adjust the engine oil to the proper level, then go to step 14.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM.

NO -Go to step 5.

5. Check the result of step 4.
 - VTEC Switch Failure
 - VTEC Switch Open
 - VTEC Switch SIG Line Open
 - VTEC Switch GND Line Open

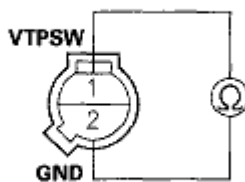
Is the test result any of the above?

YES -Go to step 6.

NO -Check for poor connections or loose terminals at the rocker arm oil pressure switch. If it is OK, replace the rocker arm oil control solenoid (see **ROCKER ARM OIL CONTROL SOLENOID REPLACEMENT**), then go to step 14.

6. Turn the ignition switch OFF.
7. Disconnect the rocker arm oil pressure switch 2P connector.
8. At the rocker arm oil pressure switch side, check for continuity between rocker arm oil pressure switch 2P connector terminals No. 1 and No. 2.

**ROCKER ARM OIL PRESSURE SWITCH
2P CONNECTOR**



Terminal side of male terminals

Fig. 4: Checking Continuity Between Rocker Arm Oil Pressure Switch 2P Connector Terminals No. 1 And 2

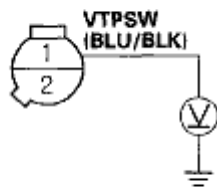
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 9.

NO -Replace the rocker arm oil pressure switch (see **ROCKER ARM OIL CONTROL SOLENOID REPLACEMENT**), then go to step 13.

9. Turn the ignition switch ON (II).
10. Measure voltage between rocker arm oil pressure switch 2P connector terminal No. 1 and body ground.

**ROCKER ARM OIL PRESSURE SWITCH
2P CONNECTOR**

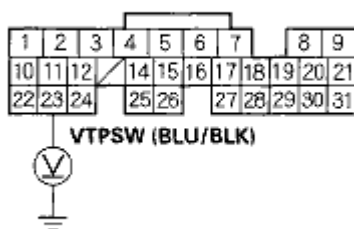
Wire side of female terminals

Fig. 5: Measuring Voltage Between Rocker Arm Oil Pressure Switch 2P Connector Terminal No. 1 And Body Ground

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there battery voltage?***YES** -Repair open in the wire between the rocker arm oil pressure switch and G101, then go to step 13.**NO** -Go to step 11.

11. Measure voltage between ECM/PCM connector terminal A23 and body ground.

ECM/PCM CONNECTOR A (31P)

Wire side of female terminals

Fig. 6: Measuring Voltage Between ECM/PCM Connector Terminal A23 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.*Is there battery voltage?***YES** -Repair open in the wire between the ECM/PCM (A23) and the rocker arm oil pressure switch, then go to step 12.**NO** -Go to step 19.

12. Turn the ignition switch OFF.
13. Reconnect the rocker arm oil pressure switch 2P connector.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).

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

Is DTC P2647 indicated?

YES -Check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM, then go to step 1.

NO -Go to step 18.

18. Monitor the OBD STATUS for DTC P2647 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 17, go to the **INDICATED DTCS TROUBLESHOOTING**.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

19. Turn the ignition switch OFF.
20. Reconnect all connectors.
21. 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**).
22. Start the engine, and let it idle.
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES -Check for poor connections or loose terminals at the rocker arm oil pressure switch 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 22. If the ECM/PCM was substituted, go to step 1.

NO -Go to step 24.

24. Monitor the OBD STATUS for DTC P2647 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 23, go to the **INDICATED DTCS TROUBLESHOOTING**.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch 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 22. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2648: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT LOW VOLTAGE

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. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM.

NO -Go to step 4.

4. Turn the ignition switch OFF.
5. Disconnect the rocker arm oil control solenoid 1P connector.
6. At the solenoid side, measure resistance between the rocker arm oil control solenoid 1P connector terminal and the solenoid valve body.

**ROCKER ARM OIL CONTROL SOLENOID
1P CONNECTOR**



Terminal side of male terminals

Fig. 7: Measuring Resistance Between Rocker Arm Oil Control Solenoid 1P Connector Terminal And Solenoid Valve Body

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there 14-30 ohms at room temperature?

YES -Go to step 7.

NO -Go to step 10.

7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector A (31P).
9. Check for continuity between ECM/PCM connector terminal A22 and body ground.

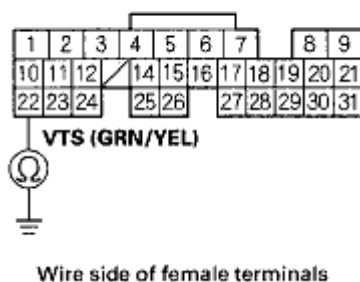
ECM/PCM CONNECTOR A (31P)

Fig. 8: Checking Continuity Between ECM/PCM Connector Terminal A22 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Repair short in the wire between the ECM/PCM (A22) and the rocker arm oil control solenoid, then go to step 11.

NO -Go to step 18.

10. Replace the rocker arm oil control solenoid (see **ROCKER ARM OIL CONTROL SOLENOID REPLACEMENT**).
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.
16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2648 indicated?

YES -Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1.

NO -Go to step 17.

17. Monitor the OBD STATUS for DTC P2648 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 16, go to the **INDICATED DTCs TROUBLESHOOTING**.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.

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. Do the VTEC TEST in the INSPECTION MENU with the HDS.
21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2648 indicated?

YES -Check for poor connections or loose terminals at the rocker arm oil control solenoid 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 22.

22. Monitor the OBD STATUS for DTC P2648 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 21, go to the **INDICATED DTCS TROUBLESHOOTING**.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid 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 NOT COMPLETED, go to step 20.

DTC P2649: ROCKER ARM OIL CONTROL SOLENOID CIRCUIT HIGH VOLTAGE

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. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES -Go to step 5.

NO -Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM.

5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil control solenoid 1P connector.

7. At the solenoid side, measure resistance between the rocker arm oil control solenoid 1P connector terminal and the solenoid valve body.

**ROCKER ARM OIL CONTROL SOLENOID
1P CONNECTOR**



Terminal side of male terminals

Fig. 9: Measuring Resistance Between Rocker Arm Oil Control Solenoid 1P Connector Terminal And Solenoid Valve Body

Courtesy of AMERICAN HONDA MOTOR CO., INC.

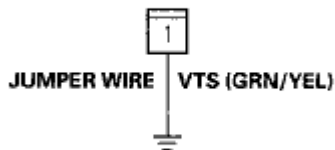
Is there 14-30 ohms?

YES -Go to step 8.

NO -Go to step 12.

8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (31P).
10. Connect the rocker arm oil control solenoid 1P connector terminal to body ground with a jumper wire.

**ROCKER ARM OIL CONTROL SOLENOID
1P CONNECTOR**

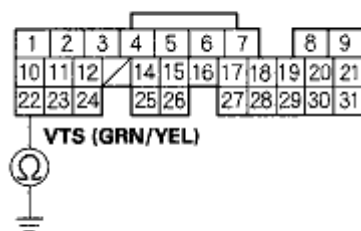


Wire side of female terminals

Fig. 10: Connecting Rocker Arm Oil Control Solenoid 1P Connector Terminal To Body Ground With Jumper Wire

Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Check for continuity between ECM/PCM connector terminal A22 and body ground.

ECM/PCM CONNECTOR A (31P)

Wire side of female terminals

Fig. 11: Checking Continuity Between ECM/PCM Connector Terminal A22 And Body Ground
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Is there continuity?

YES -Go to step 20.

NO -Repair open in the wire between the ECM/PCM (A22) and the rocker arm oil control solenoid, then go to step 13.

12. Replace the rocker arm oil control solenoid (see **ROCKER ARM OIL CONTROL SOLENOID REPLACEMENT**).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. 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.
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES -Check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1.

NO -Go to step 19.

19. Monitor the OBD STATUS for DTC P2649 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 18, go to the **INDICATED DTCs TROUBLESHOOTING**.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Reconnect all connectors.

21. 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**).
22. Start the engine, and let it idle.
23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES -Check for poor connections or loose terminals at the rocker arm oil control solenoid 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 22. If the ECM/PCM was substituted, go to step 1.

NO -Go to step 24.

24. Monitor the OBD STATUS for DTC P2649 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 23, go to the **INDICATED DTCs TROUBLESHOOTING**.

NO -If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid 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 22. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

ROCKER ARM OIL CONTROL SOLENOID REPLACEMENT

1. Disconnect the rocker arm oil control solenoid 1P connector (A).

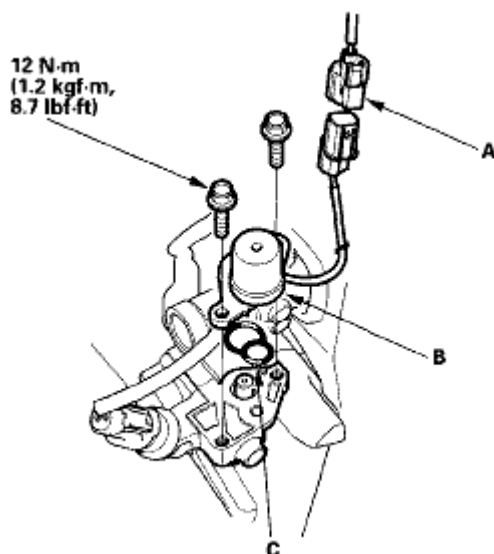


Fig. 12: Identifying Rocker Arm Oil Control Solenoid 1P Connector With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the rocker arm oil control solenoid (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

ROCKER ARM OIL PRESSURE SWITCH REMOVAL/INSTALLATION

1. Disconnect the rocker arm oil pressure switch 2P connector (A), then remove the rocker arm oil pressure switch (B).

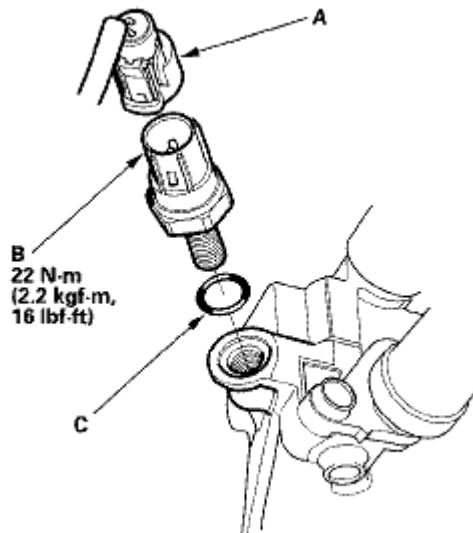


Fig. 13: Identifying Rocker Arm Oil Pressure Switch With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the parts in the reverse order of removal with a new O-ring (C).