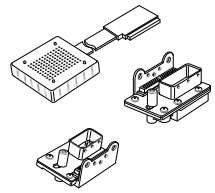
POWERTRAIN CONTROL MODULE (PCM) - STARTER RELAY - D - CONTROL CIRCUIT LOW

P2AF8-STARTER RELAY -D- CONTROL CIRCUIT LOW

Special Tools

	10436 - Adapter, GPEC Diagnostic Originally Shipped In Kit Number(s) *10436*.

For a complete STARTING SYSTEM wiring diagram, **(refer to the Wiring Information)** .

When Monitored and Set Conditions

When Monitored: This diagnostic runs when the following conditions are met:

- With the ignition on.
- The PCR Control Relay commanded off.

Set Conditions:

- The Powertrain Control Module (PCM) detects a short to ground on the PCR Control Relay Control circuit.

Default Actions:

- The MIL light will illuminate.

Possible Causes
PCR CONTROL RELAY CONTROL CIRCUIT SHORTED TO GROUND
PCR CONTROL RELAY
POWER DISTRIBUTION CENTER (PDC)
POWERTRAIN CONTROL MODULE (PCM)

Always perform the PRE-DIAGNOSTIC TROUBLESHOOTING PROCEDURE before proceeding. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

Diagnostic Test

1. CHECK FOR AN ACTIVE DTC

1. Turn the ignition on.
2. With the scan tool, read DTCs and record on the repair order.

Is the DTC active or pending?

Yes
- Go To 2

No
- Perform the INTERMITTENT CONDITION diagnostic procedure. (Refer to 28 - DTC-Based Diagnostics/ MODULE, Powertrain Control (PCM) - Standard Procedure).

2. CHECK FOR OTHER DTCS

NOTE: **The Battery supply for the PCR Control Relay coil is supplied by the Stop/Start Relay output.**

1. Refer to the recorded DTCs.

Are there any Stop/Start Relay Control circuit DTCs present in the BCM?

Yes
- Perform the applicable diagnostic procedure(s). (Refer to 28 - DTC-Based Diagnostics/MODULE, Body Control (BCM) /Diagnosis and Testing).

No
- Go To 3

3. CHECK THE BATTERY SUPPLY VOLTAGE AT THE STOP/START RELAY

1. Turn the ignition off.
2. Remove the Stop/Start Relay from the relay connector in the Power Distribution Center (PDC).

3. Turn the ignition on.
4. Measure the voltage at terminal 30 at the Stop/Start Relay connector.

Is the voltage equal to Battery voltage?

Yes
- Go To 4

No
- Check the fuse in the PDC. If the fuse is open, check all of the related output circuits for a short to ground and repair as necessary. Replace the fuse and retest for the DTC or issue. If no problems are found with the fuse, check the Battery supply to the PDC and the operation of the Run/Start Relay. If no problems are found replace the PDC in accordance with the Service Information.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

4. CHECK THE PCR CONTROL RELAY COIL AND PDC FOR AN OPEN/HIGH RESISTANCE

1. Connect a fused jumper between terminal 30 and terminal 87 at the Stop/Start Relay connector.
2. Using a load test tool connected to ground, probe the Battery supply voltage coming from the (T762) PCR Control Relay Control circuit at the PDC C3 harness connector with the jumper in place.

Is the load test tool bulb illuminated and bright?

Yes
- Go To 5

No
- Replace the PDC in accordance with the Service Information. (Refer to 08 - Electrical/8W - Power Distribution/ CENTER, Power Distribution (PDC) /Removal and Installation).
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

5. CHECK THE PCR CONTROL RELAY FOR PROPER OPERATION

1. Remove the load test tool.

2. Using a 12-volt test light connected to ground, back probe the PCR Control Relay (T762) Control circuit at the PDC C4 harness connector.

NOTE: **The relay should make an audible click when closing. Another way to verify that the relay closed is to back probe and check for voltage on the Power Control Relay (T760) Control circuit.**

Did the relay close when connecting the PCR Control Relay (T762) Control circuit to ground through the test light?

Yes

- Go To 6

No

- Replace the PDC in accordance with the service information.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

6. CHECK THE (T762) PCR CONTROL RELAY CONTROL CIRCUIT FOR A SHORT TO GROUND

1. Turn the ignition off.
2. Disconnect the PDC C4 harness connector.
3. Disconnect the PCM C2 harness connector.
4. Check for continuity between ground and the (T762) PCR Control Relay Control circuit at the PDC C4 harness connector.

Is there continuity between ground and the (T762) PCR Control Relay Control circuit?

Yes

- Repair the (T762) PCR Control Relay Control circuit for a short to ground.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To 7

7. CHECK THE (T762) PCR CONTROL RELAY CONTROL CIRCUIT FOR AN OPEN/HIGH RESISTANCE

CAUTION: **Do not probe the PCM harness connectors. Probing the PCM harness connectors will damage the PCM terminals resulting in poor terminal to pin connection. Install the GPEC Diagnostic Adaptor to perform the diagnosis.**

1. Connect the Adapter, GPEC Diagnostic 10436 to the appropriate PCM connector.
2. Measure the resistance of the (T762) PCR Control Relay Control circuit between the PDC C4 harness connector and the GPEC Adaptor.

Is there continuity between ground and the (T762) PCR Control Relay Control circuit?

Yes

- Repair the (T762) PCR Control Relay Control circuit for a short to ground.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To 8

8. CHECK RELATED PCM AND COMPONENT CONNECTIONS

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1. Perform any Service Bulletins that apply.
2. Disconnect all PCM harness connectors.
3. Disconnect all related in-line harness connections (if equipped).
4. Disconnect the related component harness connectors.
5. Inspect harness connectors, component connectors, and all male and female terminals for the following conditions:
   - Proper connector installation.
   - Damaged connector locks.
   - Corrosion.
   - Other signs of water intrusion.
   - Weather seal damage (if equipped).
   - Bent terminals.
   - Overheating due to a poor connection (terminal may be discolored due to excessive current draw).
   - Terminals that have been pushed back into the connector cavity.
   - Check for spread terminals and verify proper terminal tension.

   Repair any conditions that are found.
6. Reconnect all PCM harness connectors. Be certain that all harness connectors are fully seated and the

connector locks are fully engaged.

7. Reconnect all in-line harness connectors (if equipped). Be certain that all connectors are fully seated and the connector locks are fully engaged.
8. Reconnect all related component harness connectors. Be certain that all connectors are fully seated and the connector locks are fully engaged.
9. With the scan tool, erase DTCs.
10. Test drive or operate the vehicle in accordance with the when monitored and set conditions.
11. With the scan tool, read DTCs.

Did the DTC return?

Yes

- Replace and program the Powertrain Control Module (PCM) in accordance with the Service Information. (Refer to 08 - Electrical/8E - Electronic Control Modules/MODULE, Powertrain Control/Removal and Installation) .
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- The wiring or poor connection problem has been repaired.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).