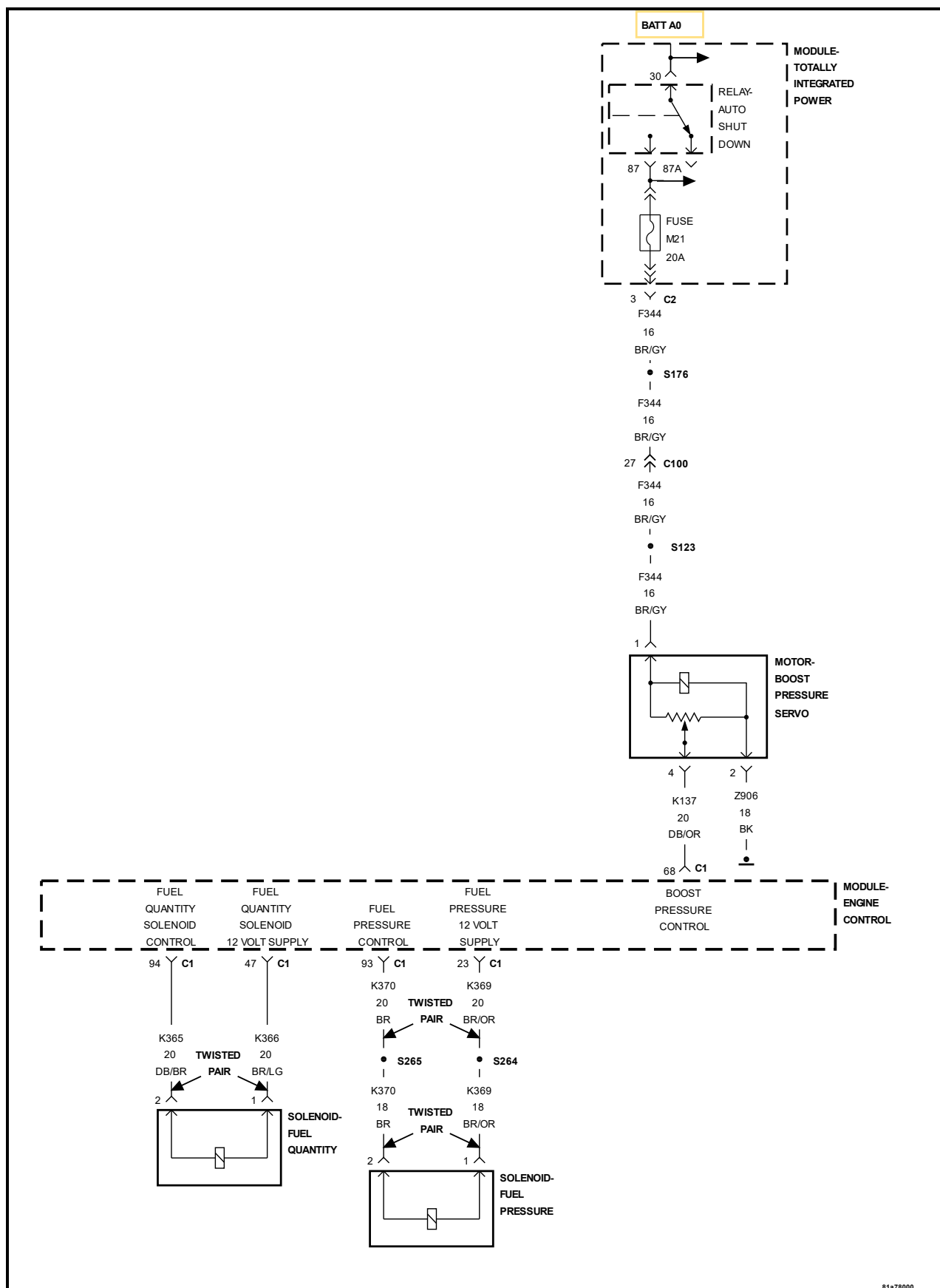


28 - DTC-Based Diagnostics / MODULE, Engine Control (ECM) / Diagnosis and Testing

**P0046-TURBOCHARGER BOOST CONTROL
CIRCUIT/EXCESSIVE CURRENT**

For a complete wiring diagram **Refer to the Wiring Information**

Theory of Operation

The Boost Pressure Servo Motor is a electrically operated DC motor designed to regulate the boost pressure output of the turbocharger. The BPSM is mounted to the side of the turbocharger assembly. The BPSM receives 12-volt power, ground and a duty-cycle ground signal from the ECM.

- **When Monitored:**

With the ignition on and the Boost Pressure Servo Motor command off.

- **Set Condition:**

The Boost Pressure Servo Motor reports an internal error to the ECM.

Possible Causes

TURBOCHARGER MECHANICAL PROBLEM

(Z906) GROUND CIRCUIT OPEN OR HIGH RESISTANCE

(F344) FUSED ASD RELAY OUTPUT CIRCUIT OPEN OR HIGH RESISTANCE

BOOST PRESSURE SERVO MOTOR

(K137) BOOST PRESSURE SERVO MOTOR CONTROL CIRCUIT SHORTED TO GROUND

(K137) BOOST PRESSURE SERVO MOTOR CONTROL CIRCUIT OPEN OR HIGH RESISTANCE

(K137) BOOST PRESSURE SERVO MOTOR CONTROL CIRCUIT SHORTED TO VOLTAGE

TURBOCHARGER, REA AND BOOST PRESSURE SERVO LINKAGE

ENGINE CONTROL MODULE (ECM)

Always perform the Pre-Diagnostic Troubleshooting procedure before proceeding. ([Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control \(ECM\) - Standard Procedure](#))

1.(F344) FUSED ASD RELAY OUTPUT CIRCUIT OPEN OR HIGH RESISTANCE

1. Turn the ignition off.
2. Disconnect the Boost Pressure Servo Motor harness connector.
3. Turn the ignition on.
4. Using a 12 volt test light connected to ground, check the (F344) Fused ASD Relay Output circuit in the Boost Pressure Servo Motor harness connector.

NOTE: The test light should be illuminated and bright. Compare the brightness to that of a direct connection to the battery.

Is the test light illuminated and bright?

Yes

- Go to [2](#)

No

- Repair the (F344) Fused ASD Relay Output circuit for an open circuit or high resistance.
- Perform the ECM VERIFICATION TEST. ([Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control \(ECM\) - Standard Procedure](#))

2.(Z906) GROUND CIRCUIT OPEN OR HIGH RESISTANCE

1. Turn the ignition off.
2. Using a 12 volt test light connected to 12 volts, check the (Z906) Ground circuit in the Boost Pressure Servo Motor harness connector.

NOTE: The test light should be illuminated and bright. Compare the brightness to that of a direct connection to the battery.

Is the test light illuminated and bright?**Yes**

- Go to [4](#)

No

- Repair the (Z906) Ground circuit for an open circuit or high resistance.
- Perform the ECM VERIFICATION TEST. ([Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control \(ECM\) - Standard Procedure](#))

3.(K137) BOOST PRESSURE SERVO MOTOR CONTROL CIRCUIT SHORTED TO VOLTAGE

1. Remove the ASD Relay from the TIPM.
2. Connect a jumper wire between cavity 30 and cavity 87 of the ASD Relay Connector.
3. Turn the ignition on.
4. Measure the voltage of the (K137) Boost Pressure Servo Motor Control circuit in the Boost Pressure Servo Motor harness connector.

Is there any voltage present?**Yes**

- Repair the (K137) Boost Pressure Servo Motor Control circuit for a short to voltage.
- Perform the ECM VERIFICATION TEST. ([Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control \(ECM\) - Standard Procedure](#))

No

- Go to [4](#)

4.(K137) BOOST PRESSURE SERVO MOTOR CONTROL CIRCUIT SHORTED TO GROUND

1. Disconnect the Engine Control Module (ECM) harness connector.
2. Measure the resistance between ground and the (K137) Boost Pressure Servo Motor Control circuit in the Boost Pressure Servo Motor harness connector.

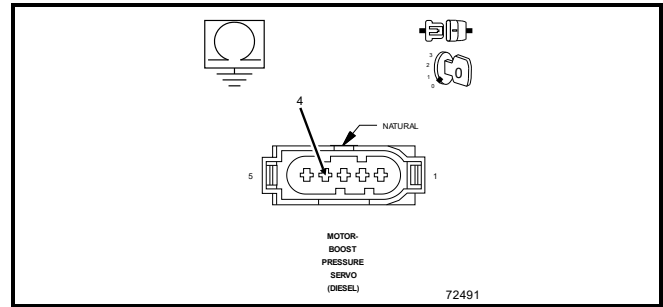
Is the resistance above 1000 ohms?

Yes

- Go to [5](#)

No

- Repair the (K137) Boost Pressure Servo Motor Control circuit for a short to ground.
- Perform the ECM VERIFICATION TEST. ([Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control \(ECM\) - Standard Procedure](#))



5.(K137) BOOST PRESSURE SERVO MOTOR CONTROL CIRCUIT OPEN OR HIGH RESISTANCE

1. Measure the resistance of the (K137) Boost Pressure Servo Motor Control circuit between the Boost Pressure Servo Motor harness connector and the Engine Control Module (ECM) harness connector.

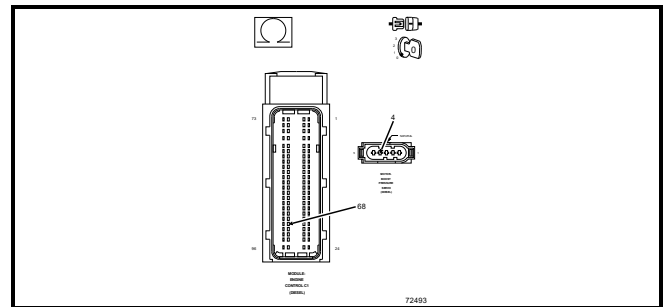
Is the resistance below 10.0 ohms?

Yes

- Go to [6](#)

No

- Repair the (K137) Boost Pressure Servo Motor Control circuit for an open circuit or high resistance.
- Perform the ECM VERIFICATION TEST. ([Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control \(ECM\) - Standard Procedure](#))



6.TURBOCHARGER, REA AND BOOST PRESSURE SERVO LINKAGE

1. Ensure the ignition is off and the engine is cold.
2. Inspect the Turbocharger, REA and Boost Pressure Servo Motor linkage for damage, debris and other problems that could effect Turbocharger vane movement.
3. Start Engine and listen for abnormal Turbo noises.

Were any problems found?

Yes

- Repair or replace as necessary in accordance with the Service Information.
- Perform the ECM VERIFICATION TEST. ([Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control \(ECM\) - Standard Procedure](#))

No

Go to [7](#)

7. ENGINE CONTROL MODULE (ECM)

1. Using the wiring diagram/schematic as a guide, inspect the wiring and connectors between the Boost Pressure Servo Motor and the Engine Control Module (ECM).
2. Look for any chafed, pierced, pinched, or partially broken wires.
3. Look for broken, bent, pushed out or corroded terminals.
4. Refer to any Technical Service Bulletins that may apply.

Were any problems found?

Yes

- Replace the Engine Control Module (ECM) in accordance with the Service Information.
- Perform the ECM VERIFICATION TEST. ([Refer to 28 - DTC-Based Diagnostics/MODULE, Engine Control \(ECM\) - Standard Procedure](#))

No

Test Complete