POWERTRAIN CONTROL MODULE (PCM) - TURBOCHARGER BOOST CONTROL MODULE "A" PERFORMANCE (3.0L DIESEL NAFTA)

P00AF-00-TURBOCHARGER BOOST CONTROL MODULE "A" PERFORMANCE

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

Theory of Operation

The Variable Geometry Turbocharger (VGT) is electronically actuated by the Turbo actuator. The Turbo Actuator is a smart device that receives the commanded vane position from the Powertrain Control Module (PCM) via a PWM signal. The Turbo actuator sends a feedback vane position to the PCM using the Private CAN BUS. If the delta between the commanded Turbo position and feedback turbo position is greater than a calibrated delta for a calibrated amount of time a fault will set.

When Monitored and Set Conditions

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

- With the ignition on.
- Closed loop boost control is active.
- Engine speed is greater than a calibrated value.
- Injected fuel quantity is greater than a calibrated value.

Set Conditions:

- The Powertrain Control Module (PCM) detects that Turbocharger Boost Actuator desired and measured positions are outside of a calibrated threshold for a calibrated amount of time.

Default Actions:

- The MIL will illuminate.
- ETC light will illuminate.

Possible Causes
PHYSICAL OBSTRUCTION AND/OR BINDING OF THE TURBOCHARGER BOOST ACTUATOR LINKAGE
TURBO BOOST ACTUATOR SUPPLY CIRCUIT OPEN/HIGH RESISTANCE
TURBO BOOST ACTUATOR GROUND CIRCUIT OPEN/HIGH RESISTANCE
TURBOCHARGER BOOST ACTUATOR

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 ANY SERVICE BULLETINS OR PCM SOFTWARE UPDATES**

---

1. Check for any applicable Service Bulletins or Flash updates related to the DTC.

Are there any applicable Service Bulletins or Flash updates?

Yes

- Perform the applicable repair.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Go To **2**

2. **READ AND RECORD DTCS AND ENVIRONMENTAL DATA - ERASE DTCS AND CHECK FOR THE DTC TO RETURN**

---

1. With the scan tool, read DTCs in all Electronic Control Units (ECUs) and record on the repair order.
2. For future reference, with the scan tool, run and save a vehicle Scan Report and all related recorded data.
3. With the scan tool, erase all DTCs.
4. Turn the ignition off for a minimum of 10.0 seconds.
5. Turn the ignition on.
6. Using the When Monitored and Set Conditions above and recorded data, operate the vehicle in the conditions that set the DTC.
7. With the scan tool, read DTCs.

Did the DTC return?

Yes

- Go To **3**

No

- Perform the INTERMITTENT CONDITION diagnostic procedure. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

3. **CHECK FOR OTHER DTCS**

---

1. Refer to the recorded DTCs.

Are there any Fused ASD, power supply or other Motor Boost Pressure Servo DTCs active or pending?

Yes

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

No

- Go To **4**

4. **CHECK THE TURBOCHARGER ACTUATOR LINKAGE FOR BINDING OR PHYSICAL OBSTRUCTION**

Are there any physical issues with the Turbocharger Actuator Linkage?

Yes

- Replace the Turbocharge Actuator in accordance with the Service Information..
- Perform the applicable diagnostic procedure(s). (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) /Diagnosis and Testing).

No

- Go To **5**

5. **CHECK THE ASD SUPPLY (F343) CIRCUIT FOR OPEN/HIGH RESISTANCE BY LOAD TESTING THE CIRCUIT**

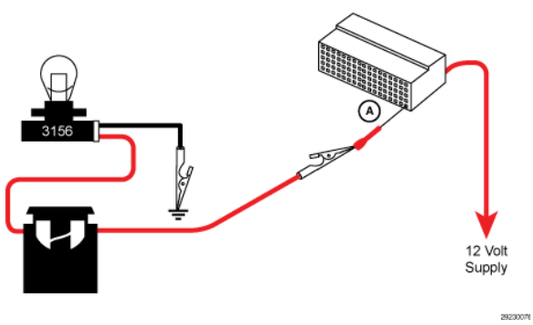
NOTE: **Read the CIRCUIT LOAD TESTING PROCEDURE for information on building a simple load test tool and for additional load testing information and alternative methods of load testing or voltage drop testing a circuit. (Refer to 29 - Non-DTC Diagnostics/Circuit Testing Procedures/Standard Procedure) .**

1. Turn the ignition off.
2. Disconnect the ASD C3 Supply harness connector.
3. Disconnect the Turbo Boost Actuator harness connector.

CAUTION: **Do not load test any circuits with components still connected to the circuit.**

4. Turn the ignition on.
5. Load test the ASD Supply (F343) circuit at the Turbo Boost Actuator harness connector. **Note:** refer to the example illustration.

NOTE: **The bulb on the load test tool should be illuminated and bright if there is no resistance in the circuitry. Compare the brightness of the bulb in the load test tool to that of a direct connection across Battery.**



<u>Is the load test bulb illuminated and bright?</u>

Yes

- Go To **6**

No

- Repair the ASD Supply (F343) circuit for an open or high resistance. If the fuse is found to be open, check the circuit for a short to ground.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

6. **ISOLATE AND CHECK THE (Z908) GROUND CIRCUIT FOR AN OPEN/HIGH RESISTANCE**

---

1. The ignition must be off when checking the continuity of a circuit.
2. Isolate the circuit by disconnecting the PDC C3 harness connector and the Motor Boost Pressure Servo harness connector. **Note:** Use the wiring diagram as a guide to follow the path of the circuit.

3. Before measuring the resistance of any circuit, first measure the resistance between the two leads of the DVOM.
   Note: The meter leads can add resistance to the measurement value.
4. Connect one lead of the DVOM to the circuit being tested at the Motor Boost Pressure Servo harness connector.
5. Connect the other lead to the PDC C3 harness connector and measure the resistance of the circuit.

Is the resistance below 3.0 Ohms?

Yes

- Replace the Turbocharge Actuator in accordance with the Service Information..
- Perform the PCM VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No

- Repair the (Z908) Ground circuit for an open/high resistance.
- Perform the POWERTRAIN VERIFICATION TEST. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).