

U010C-LOST COMMUNICATION WITH TURBOCHARGER/ SUPERCHARGER CONTROL MODULE

For a complete wiring diagram, refer to the **Wiring Information**.

Theory of Operation

The Variable Geometry Turbocharger (VGT) is electronically activated by the Turbo Actuator. The Turbo Actuator is a smart device that receives information via the J1939 Datalink from the Powertrain Control Module (PCM). The Turbo Actuator performs its own diagnostics and reports failures back to the PCM over the J1939 Datalink.

- **When Monitored:**

Ignition on.

- **Set Condition:**

The Powertrain Control Module (PCM) does not receive a message from the Turbo Actuator in a calibrated amount of time.

Possible Causes

POWER SUPPLY TO TURBO ACTUATOR OPEN
POWER SUPPLY TO TURBO ACTUATOR SHORTED TO GROUND
SIGNAL CIRCUIT FROM TURBO ACTUATOR OPEN
J1939 DATALINK (+) CIRCUIT OPEN
J1939 DATALINK (-) CIRCUIT OPEN
J1939 DATALINK (+) CIRCUIT SHORTED TO GROUND
J1939 DATALINK (-) CIRCUIT SHORTED TO GROUND
J1939 DATALINK (+) CIRCUIT SHORTED TO ANOTHER CIRCUIT
J1939 DATALINK (-) CIRCUIT SHORTED TO ANOTHER CIRCUIT
J1939 DATALINK COMPONENT INTERNALLY SHORTED
TURBOCHARGER
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).

1. U010C ACTIVE

Is DTC U010C Active?

Yes • Go To 2

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

2. OTHER DTCS

NOTE: Repair any Voltage Low DTCs before proceeding with this test procedure.

NOTE: The J1939 Datalink is a BUS circuit which the PCM uses to communicate with the Turbo Actuator and O2 Sensor Module. If the J1939 Datalink is shorted or one of these components is internally shorted, communication will be lost and DTCs will set against BOTH of these components.

Are there lost communication DTCs present against BOTH of the components listed in the note above?

Yes • Go To **5**

No • Go To **3**

3. CHECK THE POWER SUPPLY TO VGT ACTUATOR FOR AN OPEN

1. Turn the ignition off.
2. Disconnect the Turbo Actuator harness connector.

NOTE: Check connectors - Clean/repair as necessary.

3. Ignition on, engine not running.
4. Measure the voltage between the Turbo Actuator Power Supply circuit and the Turbo Actuator Return circuit at the Turbo Actuator harness connector.

NOTE: Check the voltage at key-on and while cranking the engine.

Is the voltage above 11.0 Volts?

Yes • Go To **4**

- No** • Repair/Replace the Smart Power Relay harness.
- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

4. CHECK THE J1939 DATALINK FOR AN OPEN/HIGH RESISTANCE

1. Turn the ignition off.
2. Disconnect the PCM C2 harness connector

NOTE: Check connectors - Clean/repair as necessary.

3. Measure the resistance of the J1939 Datalink (+) circuit between the Turbo Actuator harness connector and the PCM C2 harness connector.
4. Measure the resistance of the J1939 Datalink (-) circuit between the Turbo Actuator harness connector and the PCM C2 harness connector.

Is the resistance below 5.0 Ohms for both measurements?

Yes • Replace the Turbocharger Assembly in accordance with the service information.

- Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

- No**
- Repair the J1939 circuit that measured above 5.0 Ohms for an open or high resistance.
 - Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

5. CHECK THE COMPONENTS ON THE J1939 DATALINK

NOTE: Disconnect only one component at a time during this next step. If the DTCs for the component that is STILL CONNECTED changes from active to stored, the component that was disconnected is faulty. If all of the DTCs remain active, then the disconnected component is not the problem. Reconnect each component before going on to the next one so that only one component is disconnected at a time.

1. Turn the ignition off.
2. Disconnect the Smart O2 Sensor Module harness connector. Cycle the ignition key on and off three times ending with the ignition on. Leave the ignition in the off position for 75 seconds each time.

NOTE: Monitor the status of the DTCs for the remaining connected components with the scan tool.

3. Turn the ignition off and reconnect the Turbo Actuator harness connector.
4. Disconnect the Turbo Actuator harness connector. Cycle the ignition key on and off three times ending with the ignition on. Leave the ignition in the off position for 75 seconds each time.

NOTE: Monitor the status of the DTCs for the remaining connected components with the scan tool.

Did the status of the DTCs change to stored for the component STILL CONNECTED when disconnecting any one of the components listed above?

- Yes**
- Replace the component that caused the DTC change from active to stored in accordance with the service information.
 - Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

- No**
- Go To 6

6. CHECK THE J1939 DATALINK FOR A SHORT TO GROUND

1. Turn the ignition off.
2. Disconnect the Turbo Actuator, Smart O2 Sensor Module and the PCM C2 harness connectors.
3. Measure the resistance between ground and the J1939 Datalink (+) circuit at the PCM C2 harness connector.
4. Measure the resistance between ground and the J1939 Datalink (-) circuit at the PCM C2 harness connector.

Is the resistance above 10k Ohms for both circuits?

- Yes**
- Go To 7

- No**
- Repair the J1939 circuit for a short to ground.
 - Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

7. CHECK THE J1939 DATALINK FOR A SHORT

1. Measure the resistance between the J1939 Datalink (+) circuit at the PCM C2 harness connector and all other circuits in the PCM C2 harness connector.
2. Measure the resistance between the J1939 Datalink (-) circuit at the PCM C2 harness connector and all other circuits in the PCM C2 harness connector.

NOTE: Disregard any resistance between 50 and 70 Ohms between the J1939 (+) and the J1939 Datalink (-) pins.

Is the resistance above 10k Ohms?

Yes • Go To 8

No • Repair the J1939 circuit for a short circuit.
• Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

8. CHECK THE J1939 DATALINK CIRCUITS FOR AN OPEN/HIGH RESISTANCE

1. Measure the resistance of the J1939 Datalink (+) circuit between the Turbo Actuator harness connector and the PCM C2 harness connector.
2. Measure the resistance of the J1939 Datalink (-) circuit between the Turbo Actuator harness connector and the PCM C2 harness connector.

Is the resistance below 5.0 Ohms for both circuits?

Yes • Replace the Powertrain Control Module in accordance with the service information. (Refer to 08 - Electrical/8E - Electronic Control Modules/MODULE, Powertrain Control - Removal).
• Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).

No • Repair the J1939 circuit for an open or high resistance.
• Perform the POWERTRAIN VERIFICATION TEST - 6.7L. (Refer to 28 - DTC-Based Diagnostics/MODULE, Powertrain Control (PCM) - Standard Procedure).