Service Information


DTC P144B, P144C, P144E, P144F, P24A0, or P24A1

Diagnostic Instructions

- Perform the Diagnostic System Check - Vehicle prior to using this diagnostic procedure.
- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DTC Descriptors

DTC P144B

Closed Loop Diesel Particulate Filter (DPF) Regeneration Control At Limit - Stage 1 Temperature Too Low

DTC P144C

Closed Loop Diesel Particulate Filter (DPF) Regeneration Control At Limit - Stage 1 Temperature Too High

DTC P144E

Closed Loop Diesel Particulate Filter (DPF) Regeneration Control At Limit - Stage 2 Temperature Too Low

DTC P144F

Closed Loop Diesel Particulate Filter (DPF) Regeneration Control At Limit - Stage 2 Temperature Too High

DTC P24A0

Closed Loop Diesel Particulate Filter (DPF) Regeneration Control At Limit - Temperature Too Low

DTC P24A1
Closed Loop Diesel Particulate Filter (DPF) Regeneration Control At Limit - Temperature Too High

Circuit/System Description

The particulates in the exhaust gases are collected by the diesel particulate filter (DPF). When the filter becomes saturated with particulates, they are oxidized by a regeneration process. The regeneration process increases the exhaust gas temperature, heating the diesel oxidation catalyst (DOC), and the DPF. The accumulated particulate matter in the DPF will then be safely converted to harmless gases and the DPF will then be clean and ready to filter additional particulate matter.

The engine control module (ECM) monitors the system with inputs from the exhaust gas temperature (EGT) sensors and a differential pressure sensor. This diesel particulate filter diagnostic provides a means for monitoring the exhaust particulate filter efficiency. The resistive exhaust flow is monitored to determine if a DPF substrate is missing or a defined DPF failure has occurred. The resistive exhaust flow is calculated from mass air flow and DPF differential pressure. This diagnostic will run after a successful regeneration event has completed. This includes a successful service regeneration event.

Conditions for Running the DTC

P144B or P144C

- The engine run time is greater than 10 s.
- The engine speed is greater than 600 RPM.
- The ignition voltage is greater than 11 V.
- The ECM is commanding a DPF regeneration.
- The vehicle speed is between 0–200 km/h (0–124 mph).
- The exhaust temperature sensor 1 is between 100–650°C (212–1,200°F).
- The exhaust temperature sensor 1 and 4 is less than 650°C (1,200°F).
- The DTCs run continuously once the above conditions are met for 10 minutes.

P144E or P144F

- The engine run time is greater than 10 s.
- The engine speed is greater than 600 RPM.
- The ignition voltage is greater than 11 V.
- The ECM is commanding a DPF regeneration.
- The vehicle speed is between 24–200 km/h (15–124 mph).
- The exhaust temperature sensor 1 and 4 is greater than 230°C (446°F).
- The exhaust temperature sensor 1 and 4 is less than 750°C (1,382°F).
- The DTCs run continuously once the above conditions are met for 10 minutes.

P24A0 or P24A1

- The engine run time is greater than 10 s.
• The engine speed is greater than 600 RPM.
• The ECM is commanding a DPF regeneration.
• The vehicle speed is between 24–200 km/h (15–124 mph).
• The exhaust temperature sensor 1 and 4 is greater than 230°C (446°F).
• The exhaust temperature sensor 1 and 4 is less than 750°C (1,382°F).
• The DTCs run continuously once the above conditions are met for 10 minutes.

**Conditions for Setting the DTC**

The exhaust gas temperature is less than or greater than the calibrated desired temperature.

**Action Taken When the DTC Sets**

DTCs P144B, P144C, P144E, P144F, P24A0, and P24A1 are Type B DTCs.

The ECM inhibits diesel particulate filter (DPF) regeneration when DTC P144E or P144F is set.

**Conditions for Clearing the DTC**

DTCs P144B, P144C, P144E, P144F, P24A0, and P24A1 are Type B DTCs.

**Diagnostic Aids**

• If the engine has sat overnight, both EGT sensors and the ECT sensor values should display within 3°C (5°F).
• After starting a cold engine, the EGT sensor temperatures should rise steadily, then stabilize.
• An EGT sensor circuit with high resistance could set a DTC.

**Reference Information**

Schematic Reference

[Engine Controls Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation Reference

[Exhaust Aftertreatment System Description](#)

Electrical Information Reference
• **Circuit Testing**
• **Connector Repairs**
• **Testing for Intermittent Conditions and Poor Connections**
• **Wiring Repairs**

DTC Type Reference

**Powertrain Diagnostic Trouble Code (DTC) Type Definitions**

Scan Tool Reference

**Control Module References** for scan tool information

**Circuit/System Verification**

1. Ignition On, observe the DTC information with a scan tool. Verify no other DTCs are set.
   - If any other DTCs are set, refer to **Diagnostic Trouble Code (DTC) List - Vehicle** for further diagnosis.
2. Measure and record the resistance of the B131 exhaust gas temperature sensor 1 and 2. Compare the measurements to the **Temperature Versus Resistance** table. The resistance values should be within the specified range indicated in the table.
   - If not within the specified range, replace the appropriate exhaust gas temperature sensor.
3. Inspect for the following conditions:
   - Intake system for leaks or restrictions. Perform the Induction System Smoke Test in **Charge Air Cooler Diagnosis**.
   - Exhaust system for leaks or restrictions—Refer to **Symptoms - Engine Exhaust**.
   - Fuel system for leaks or restrictions
   - Q57 Indirect fuel injector leaking or restricted—Refer to **Exhaust Aftertreatment Fuel Injector Diagnosis**
   - Excessive water in fuel—Refer to **Contaminants-in-Fuel Diagnosis**.
   - EGR for normal operation
   - Plugged fuel filter
   - Restricted air filter
   - Turbocharger for normal operation
   - An engine mechanical condition
   - If a condition is found, repair as necessary.
4. If all components test normal, replace the diesel oxidation catalyst.
5. Operate the vehicle within the Conditions for Running the DTC to verify the DTC does not reset. You may also operate the vehicle within the conditions that you observed from the Freeze Frame/Failure Records data.

**Repair Instructions**
Repair Verification

1. Install any components or connectors that have been removed or replaced during diagnosis.
2. Perform any adjustment, programming, or setup procedures that are required when a component or module is removed or replaced.
3. Clear the DTCs.
4. Ignition OFF, all vehicle systems OFF, this may take up to 2 minutes.
5. Disconnect the indirect fuel injector - DTC P144E or P144F only.
6. Perform the scan tool Diesel Particulate Filter (DPF) Regeneration Enable.
7. Engine idling at operating temperature. Accelerate at part throttle to 48 km/h (30 mph) with this speed maintained until all Conditions for Running the DTC are met. The DTCs should not set.

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