SPN 174

Suspect Parameter Number (SPN) and Failure Mode Indicator (FMI) Description

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<td>Signal High</td>
<td>• Short to voltage in signal circuit</td>
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<td>Signal Low</td>
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<td></td>
<td>• Open/high resistance in 5 V reference circuit</td>
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Circuit Description

The fuel rail pressure/temperature sensor is a combination sensor that supplies the engine control module (ECM) both pressure and temperature signals. The ECM supplies 5 V to the sensor on the 5-volt reference circuit. The ECM provides ground on the low reference circuit. The sensor provides separate pressure and temperature signals to the ECM on the signal circuits which are relative to the fuel pressure/temperature at the fuel rail.

Conditions to Run SPN

The SPN runs continuously while the ignition is ON.
Conditions to Set SPN

SPN 174–3 Fuel Rail Temperature Sensor Signal High

The ECM detects the fuel rail temperature sensor signal circuit is greater than 5.0 V for greater than 240 ms.

SPN 174–4 Fuel Rail Temperature Sensor Signal Low

The ECM detects the fuel rail temperature sensor signal circuit is 0.0 V for greater than 240 ms.

Action Taken When SPN Sets

SPN 174–3 Fuel Rail Temperature Sensor Signal High

- The ECM will turn ON the malfunction indicator light (MIL)
- 174-3 is a Type B SPN

SPN 174–4 Fuel Rail Temperature Sensor Signal Low

- The ECM will turn ON the malfunction indicator light (MIL)
- 174-4 is a Type B SPN

Diagnostic Reference

- Review Strategy Based Diagnosis for an overview of the diagnostic approach.
- Diagnostic Procedure Instructions provides an overview of each diagnostic category.
- Perform the Diagnostic System Check prior to using this diagnostic.
- Test for intermittent or poor connections.
- Review Schematics and Connector End Views to locate test points.
- Review the SPN Type, Indicator Lamp Definitions, and Conditions to Clear the SPN/Indicator Lamp.
Diagnostic Tips

- If a condition exists in either the 5 volt reference or low reference circuit, both temperature and pressure SPNs may set.
- Test for intermittent connections.

Required Tools

- Terminal Test Probe Kit
- Fused Jumper
- Digital Multi-meter
- High Impedance Test Lamp
- Electronic Service Tool

Circuit Diagnostics

WARNING! To prevent bodily injury or death, stay away from hot engine surfaces and rotating engine components.

1. Ignition OFF, disconnect the fuel rail pressure/temperature sensor harness connector, test for less than 10 Ω between the low reference circuit terminal 1 and ground.

   ➢ If greater than 10 Ω, disconnect the ECM harness connector J1-B, test for less than 5 Ω between the fuel rail pressure/temperature sensor low reference circuit terminal 1 and the ECM harness connector J1-B terminal D3.

   ✔ If 5 Ω or greater, repair the open or high resistance in the circuit.
   ✔ If less than 5 Ω, replace the ECM.

   ✓ If 10 Ω or less, go to Step 2

2. Ignition ON, test for 4.8-5.2 V between the 5 V reference circuit terminal 4 and ground.

   ➢ If less than 4.8V, ignition OFF, disconnect the ECM harness connector J1-C. Test for infinite resistance between the 5 V reference circuit terminal 1 and ground.
If not infinite resistance, repair the short to ground in the circuit.
If infinite resistance, test for less than 5 Ω between the fuel rail pressure/temperature sensor connector terminal 4 and the ECM connector J1-C terminal D4.

- If greater than 5 Ω, repair the open or high resistance in the circuit.
- If 5 Ω or less, replace the ECM.

➢ If greater than 5.2 V, ignition OFF, disconnect the ECM harness connector J1-C, ignition ON, verify less than 1 V between the 5 V reference circuit terminal 4 and ground.

- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 1 V, replace the ECM.

➢ If between 4.8-5.2 V, go to Step 3

3. Verify the Electronic Service Tool Fuel Temp parameter is less than -38°F (-39°C).

➢ If the Fuel Temp parameter is -38°F (-39°C) or greater, ignition OFF, disconnect the ECM harness connector J1-C, ignition ON, verify less than 1 V between the signal circuit terminal 3 and ground.

- If 1 V or greater, repair the short to voltage on the circuit.
- If less than 1 V, replace the ECM.

➢ If the Fuel Temp parameter is less than -38°F (-39°C), go to Step 4

4. Ignition OFF, install a 3 A fused jumper between the signal circuit terminal 3 and the 5 V reference circuit terminal 4, ignition ON, verify the Fuel Temp parameter is greater than 408°F (209°C).

➢ If the Fuel Temp parameter is less than 408°F (209°C), ignition OFF, remove fused jumper, disconnect the ECM harness connector J1-B. Test for infinite resistance between the signal circuit terminal 3 and ground.

- If not infinite resistance, repair the short to ground in the circuit.
- If infinite resistance, test for less than 5 Ω between the fuel rail pressure/temperature sensor connector terminal 3 and the ECM harness connector J1-B terminal B4.
• If greater than 5 Ω, repair the open or high resistance in the circuit.
• If 5 Ω or less, replace the ECM.

➢ If the Fuel Temp parameter is greater than 408°F (209°C), replace the Fuel Rail Pressure/Temperature sensor.