Additions, Revisions, or Updates

<table>
<thead>
<tr>
<th>Publication Number / Title</th>
<th>Platform</th>
<th>Section Title</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>DDC-SVC-MAN-0200</td>
<td>DD8 MD</td>
<td>SPN 3216/FMI 16 - GHG17</td>
<td>Step 3 and Step 4 has been updated</td>
</tr>
<tr>
<td>DDC-SVC-MAN-0193</td>
<td>DD5 MD</td>
<td>SPN 3216/FMI 16 - GHG17</td>
<td></td>
</tr>
</tbody>
</table>

DiagnosticLink users: Please update the troubleshooting guides in DiagnosticLink with this newest version. To update the tool troubleshooting guide, open DiagnosticLink and from the Help – Troubleshooting Guides menu, select the appropriate troubleshooting manual, then click Update.
2 SPN 3216/FMI 16 - GHG17

Engine Out NOx Sensor Drifted Low

Table 1.

<table>
<thead>
<tr>
<th>SPN 3216/FMI 16</th>
</tr>
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<tbody>
<tr>
<td>Description</td>
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<tr>
<td>Monitored Parameter</td>
</tr>
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</table>

**Typical Enabling Conditions**

**General Enabling Condition:** Engine is Not in Regeneration and Operating at High Speed and Loads

**Specific Enabling Conditions: (see below):**

<table>
<thead>
<tr>
<th>Engine Parameter</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine Speed (rpm)</td>
<td>1350</td>
<td>1600</td>
</tr>
<tr>
<td>Torque (N·m)</td>
<td>1100</td>
<td>1500</td>
</tr>
<tr>
<td>Battery Voltage (Volts)</td>
<td>11.08</td>
<td></td>
</tr>
<tr>
<td>Engine Coolant Outlet Temperature</td>
<td>70°C (158°F)</td>
<td></td>
</tr>
<tr>
<td>Ambient Temperature</td>
<td>-8°C (17.6°F)</td>
<td></td>
</tr>
<tr>
<td>Barometric Pressure (mbar)</td>
<td>755 mbar (11 psi)</td>
<td></td>
</tr>
<tr>
<td>Time Since DPF Regen (Min.)</td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>Beginning of Injection (BOI) - Degrees of Crankshaft Rotation</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>EGR Mass (Kg/min)</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

Monitor Sequence: None

Execution Frequency: Continuous When Enabling Conditions Met

Typical Duration: 150 seconds (Two-Cycle)

Dash Lamps: MIL

Engine Reaction: None

Verification: Parked SCR Efficiency Test

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**WARNING: PERSONAL INJURY**

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

- Always start and operate an engine in a well ventilated area.
- If operating an engine in an enclosed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system or emission control system.

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**WARNING: PERSONAL INJURY**

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

---

**WARNING: ENGINE EXHAUST**

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.
Check as follows:
1. Connect DiagnosticLink ®.
2. Are any other faults also present?
   a. Yes; repair those fault codes first.
   b. No; Go to step 3.

**NOTICE:** Do not attempt to operate engine with the DEF lines disconnected. DEF pump runs and circulates DEF through the system at a limited rate (default) to aid in system cooling.

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**WARNING: HOT EXHAUST**
During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

3. Start the engine; using DiagnosticLink start the NOx Sensor Verification test located in the drop down menu under Actions / Aftertreatment.
4. Did the NOx Sensor Verification test pass?
   a. Yes; Go to step 5.
   b. No; replace the selective catalyst reduction inlet NOx sensor. Refer to section "Removal of the Selective Catalytic Reduction Inlet NOx Sensor". Verify repairs.

5. Shut OFF the engine.

6. Reconnect the DEF doser electrical connector.

7. Perform Charge Air Cooler (CAC) inspection and leak test. Refer to OEM literature for procedure. Is there any damage found?
   a. Yes; repair as necessary. Go to step 16.
   b. No; Go to step 8.

8. Visually inspect the entire Exhaust Gas Recirculation (EGR) and exhaust system (turbine housing, exhaust manifold, etc.) for evidence of external leakage (e.g. soot, coolant deposits at joints). Is there evidence of external leakage?
   a. Yes; repair as necessary. Go to step 16.
   b. No; Go to step 9.

9. Compare Inlet Manifold Pressure (IMP) value with the barometric pressure value. Are the values within 10.3 kPa (1.5 psi) of each other?
   a. Yes; Go to step 12.
   b. No; Go to step 10.

10. Disconnect the intake pressure/temperature sensor.

11. Inspect the intake pressure/temperature sensor and wiring connector for signs of damaged, bent, spread, corroded or unseated (pushed out) pins and signs of moisture in the connector or wire damage near the connector. Is there any sign of damage present?
    a. Yes; repair as necessary. Go to step 16.
    b. No; replace intake pressure/temperature sensor. Refer to section "Removal of the Intake Pressure/Temperature Sensor". Go to step 16.

12. Remove EGR cooler hot pipe, EGR crossover pipe and delivery pipe and inspect for excessive build-up or blockage. Is there excessive build-up or blockage?
    a. Yes; clean piping and replace EGR cooler. Refer to section "Removal of the Exhaust Gas Recirculation Cooler". Go to step 16.
    b. No; Go to step 13.
13. Inspect the EGR valve for physical damage (broken butterfly, etc.). Refer to section "Inspection of the Exhaust Gas Recirculation Valve". Is the EGR valve damaged?
   a. Yes; replace the EGR valve. Refer to section "Removal of the Exhaust Gas Recirculation Valve". Go to step 16.
   b. No; Go to step 14.

14. Disconnect the inlet NOx sensor harness connector.

15. Inspect the inlet NOx sensor and wiring connector for signs of damaged, bent, spread, corroded, or unseated (pushed out) pins and signs of moisture in the connector or wire damage near the connector. Is any pin damage found?
   a. Yes; repair as necessary. Go to step 16.
   b. No; replace the SCR inlet NOx sensor. Refer to section "Removal of the Selective Catalytic Reduction Inlet NOx Sensor". Go to step 16.

16. Verify repairs by performing a Parked SCR Efficiency Test. Refer to section "Perform Parked SCR Efficiency Test". Refer to *section "GHG17 Perform Parked SCR Efficiency Test"."
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