Service Information Bulletin

<table>
<thead>
<tr>
<th>SUBJECT</th>
<th>DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPN 3480 (MCM) (EPA07;EPA10;GHG14)</td>
<td>December 2016</td>
</tr>
</tbody>
</table>

Additions, Revisions, or Updates

<table>
<thead>
<tr>
<th>Publication Number / Title</th>
<th>Platform</th>
<th>Section Title</th>
<th>Change</th>
</tr>
</thead>
</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.

13400 Outer Drive, West, Detroit, Michigan 48239-4001
Telephone: 313-592-5000
www.demanddetroit.com
2  SPN 3480/FMI 1 - EPA07 - EPA10 - GHG14

Hydrocarbon Doser Fuel Supply Pressure Abnormal

Table 1.

<table>
<thead>
<tr>
<th>SPN 3480/FMI 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
</tr>
<tr>
<td><strong>Monitored Parameter</strong></td>
</tr>
<tr>
<td><strong>Typical Enabling Conditions</strong></td>
</tr>
<tr>
<td><strong>Monitor Sequence</strong></td>
</tr>
<tr>
<td><strong>Execution Frequency</strong></td>
</tr>
<tr>
<td><strong>Typical Duration</strong></td>
</tr>
<tr>
<td><strong>Dash Lamps</strong></td>
</tr>
<tr>
<td><strong>Engine Reaction</strong></td>
</tr>
<tr>
<td><strong>Verification</strong></td>
</tr>
</tbody>
</table>

**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.

**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.
Table 2.

<table>
<thead>
<tr>
<th>Tool Number</th>
<th>Tool Description</th>
<th>Tool Graphic</th>
</tr>
</thead>
<tbody>
<tr>
<td>J-48708-1</td>
<td>Fuel Flow Tool</td>
<td></td>
</tr>
<tr>
<td>J-48876</td>
<td>Priming Port Fuel Pressure Test Gauge</td>
<td></td>
</tr>
</tbody>
</table>

Check as follows:

1. Connect DiagnosticLink®.
2. Turn the ignition ON (key ON, engine OFF).

**NOTE:** Faults are listed in diagnostic priority from top to bottom.

3. Are any of the following faults present?
   - SPN 3480/FMI 3 or 4
   - SPN 3480/FMI 14
   - SPN 94/FMI 3 or 4
   - SPN 94/FMI 2
     - a. Yes; repair fault with the highest priority listed above. Verify repair.
     - b. No; Go to step 4.

**NOTE:** One drop of fuel can cause a failure.

**WARNING: FIRE**

To avoid injury from fire, contain and eliminate leaks of flammable fluids as they occur. Failure to eliminate leaks could result in fire.

4. Visually inspect the HC doser block for external fuel leaks. Are any external fuel leaks present?
   - a. Yes; repair the external fuel leaks as necessary. Verify repair.
   - b. No; Go to step 5.

5. Is the vehicle equipped with a three-filter fuel system?
   - a. Yes; Go to step 6.
   - b. No; Go to step 22.
6. Connect tool J-48876 Priming Port Fuel Pressure Test Gauge to the priming port valve.

**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.

**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.

7. Start the engine.
8. Monitor the fuel pressure at 600 rpm and at 1800 rpm. Is the fuel pressure between 482 kPa (70 psi) to 620 kPa (90 psi) at 600 rpm and between 689 kPa (100 psi) to 965 kPa (140 psi) at 1800 rpm?
   a. Yes; Go to step 13.
   b. No; Go to step 9.
9. Check fuel level in all tanks. Is fuel level greater than 25%?
   a. Yes; Go to step 10.
   b. No; add fuel and retest.
10. Check pre-filter for debris. Is debris found?
    a. Yes; replace fuel filters and retest. If debris is metallic, Refer to section "Metal in the Fuel System – Two-Filter Fuel System"
       Refer to section "Metal in the Fuel System – Three-Filter Fuel System"
    b. Go to step 11.

**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.

11. Using J-48708-1 Fuel Flow Tool, bypass the fuel supply lines and retest. Is priming port pressure within spec?
    a. Yes; repair fuel supply lines as necessary. Verify repair.
    b. No; reinstall fuel supply lines and Go to step 12.
12. Replace the pressure relief valve.
    Refer to section "Removal of the Pressure Relief Valve - Two-Filter System"
    Refer to section "Removal of the Pressure Relief Valve - Three-Filter System"
    Perform a parked regen. Did the code come active?
    a. Yes; replace the low pressure fuel pump.
       Refer to section "Removal of the Low Pressure Fuel Pump - Two-Filter System"
       Refer to section "Removal of the Low Pressure Fuel Pump - Three-Filter System"
       Verify repair.
    b. No; release vehicle.
13. Shut off the engine.

**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.

**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.

15. Start the engine.  
16. Using DiagnosticLink, perform the "Purge Hydrocarbon Doser" service routine.  
17. Review the log file for the "Purge Hydrocarbon Doser" service routine.  
18. Monitor the fuel compensation pressure when the fuel cut off valve is commanded to 100 percent. Is the fuel compensation pressure greater than 68 kPa (10 psi)?  
   a. Yes; Go to step 19.  
   b. No; replace the fuel compensation pressure sensor. Go to step 20.

**NOTE:** HC doser fuel supply pressure control valve inspection procedures are the same for two- and three-filter systems.

19. Remove and inspect the HC doser fuel supply pressure control valve. Refer to section "Inspection of the HC Doser Fuel Supply Pressure Control Valve – Two-Filter System". Does the inspection lead to replacing the HC doser fuel supply pressure control valve?  
   a. Yes; replace the HC doser fuel supply pressure control valve.  
      Refer to section "Removal of the HC Doser Fuel Supply Pressure Control Valve – Two Filter System"  
      Refer to section "Removal of the HC Doser Fuel Supply Pressure Control Valve - Three-Filter System"  
      Verify repairs.  
   b. No; replace the high pressure fuel flange.  
      Refer to section "Removal of the High Pressure Fuel Flange - Two-Filter System"  
      Refer to section "Removal of the High Pressure Fuel Flange - Three-Filter System"  
      Go to step 20.

20. Using DiagnosticLink, perform the "Purge Hydrocarbon Doser" service routine.  
21. Review the log file for the "Purge Hydrocarbon Doser" service routine.

**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.

22. Monitor the fuel compensation pressure when the fuel cut off valve is commanded to 100 percent. Is the fuel pressure greater than 448 kPa (65 psi)?  
   a. Yes; perform a parked regeneration. Verify repair.
b. No; replace the hydrocarbon doser block. Refer to section "Removal of the Hydrocarbon Doser Block". Go to step 23.

23. Perform the "Purge Hydrocarbon Doser" service routine again.
24. Review the log file for the "Purge Hydrocarbon Doser" service routine.

**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.

25. Monitor the fuel compensation pressure when the fuel cut off valve is commanded to 100 percent. Is the fuel pressure greater than 448 kPa (65 psi)?
   a. Yes; perform a parked regeneration. Verify repair.
   b. No; replace the needle return line. Refer to section "Removal of the Needle, Amplifier, and Pressure Limiting Valve Return Lines - Three-Filter System". Verify repair.

26. Determine if the vehicle is equipped with a KM 59 Gen 1 or KM63 Gen 2 fuel system.

**NOTE:** KM59 GEN1 fuel filter module return lines are secured to the module with banjo bolts.

**NOTE:** KM63 GEN2 fuel filter module return lines are secured to the module with a mounting plate attached to the PLV return line.

27. Turn the ignition OFF.
28. Connect tool J-48876 Priming Port Fuel Pressure Test Gauge to the priming port fitting.

**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.

**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.

29. Start the engine.
30. Monitor the fuel pressure at the priming port at 600 rpm and at 1800 rpm. Is the fuel pressure between 482 kPa (70psi) to 620 kPa (90psi) at 600 rpm and between 689 kPa (100psi) to 965 kPa (140 psi) at 1800 rpm?
   a. Yes; Go to step 32.
   b. No; Go to step 31.
<table>
<thead>
<tr>
<th>Table 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Note: For KM59 GEN1 the pressure relief valve (1) is incorporated on the low pressure fuel pump. The illustration shown below is a KM59 GEN1.</td>
</tr>
</tbody>
</table>

![Image of fuel pump](image-url)
Table 4.

Note: For KM63 GEN2 the pressure relief valve (1) is incorporated into the fuel filter module. The illustration shown below is a KM63 GEN2.

31. Inspect the pressure relief valve. Refer to section "Inspection of the Pressure Relief Valve - Two-Filter System". Was damage found with the low pressure relief valve?
   a. Yes; replace the pressure relief valve. Refer to section "Inspection of the Pressure Relief Valve - Two-Filter System". Verify Repairs.
   b. No; check for a restriction in the fuel supply. Verify repair.
32. Shut the engine OFF.
33. Remove tool J-48876.

**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.

**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.
34. Start the engine.
35. Using DiagnosticLink, perform the "Purge Hydrocarbon Doser" service routine.
36. Review the log file for the "Purge Hydrocarbon Doser" service routine.
37. Monitor the fuel compensation pressure when the fuel cut off valve was commanded to 100 percent. Is the fuel compensation pressure greater than 68 kPa (10 psi)?
   a. Yes; Go to step 38.
   b. No;
      For Gen 1, replace the fuel compensation pressure sensor. Refer to section "Removal of the Fuel Compensation Pressure Sensor". Verify repair.
      For Gen 2, replace the hydrocarbon doser block. Refer to section "Removal of the Hydrocarbon Doser Block". Verify repair.
38. Is the unit a KM59 GEN1?
   a. Yes; Go to step 39.
   b. No; replace the high pressure fuel flange.
      For Two-Filter Fuel System, Refer to section "Removal of the High Pressure Fuel Flange - Two-Filter System". Go to step 40.
39. Remove and inspect the HC doser fuel supply pressure control valve. Refer to section "Inspection of the HC Doser Fuel Supply Pressure Control Valve – Two-Filter System". Does the inspection lead to replacing the HC doser fuel supply pressure control valve?
   a. Yes; replace the HC doser fuel supply pressure control valve. Refer to section "Removal of the HC Doser Fuel Supply Pressure Control Valve – Two Filter System". Verify repairs.
   b. No; replace the high pressure fuel flange. Refer to section "Removal of the High Pressure Fuel Flange - Two-Filter System". Go to step 40.
40. Perform the "Purge Hydrocarbon Doser" service routine again.
41. Review the log file for the "Purge Hydrocarbon Doser" service routine.

WARNING: ENGINE EXHAUST
To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

42. Monitor the fuel compensation pressure when the fuel cut off valve is commanded to 100 percent. Is the fuel pressure greater than 448 kPa (65 psi)?
   a. Yes; perform a parked regeneration. Verify repair.
   b. No; replace the hydrocarbon doser block. Refer to section "Removal of the Hydrocarbon Doser Block". Verify repair.

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.