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Service Information Bulletin

SUBJECT	DATE
SPN 157 (MCM) GHG17	March 2017

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0193	DD Platform - Med Duty	SPN 157/FMI 16 - GHG17	New Diagnostic

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 157/FMI 16 - GHG17

Fuel Rail Pressure Too Low

Table 1.

SPN 157/FMI 16	
Description	Fuel Rail Pressure Too Low
Monitored Parameter	Rail Pressure
Typical Enabling Conditions	|Fuel Rail Pressure desired - Fuel Rail Pressure Actual| greater than 200 bar (2900 PSI)
Monitor Sequence	None
Execution Frequency	Continuous When Enabling Conditions Met
Typical Duration	Five Seconds
Dash Lamps	MIL, CEL
Engine Reaction	Derate 25%
Verification	Engine Idle (One Minute)

WARNING: ENGINE EXHAUST

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

The fault can occur due to the conditions listed below:

- External fuel leakage between the high pressure pump and fuel injectors
- Pressure Control Valve malfunction
- Fuel filter integrity (loose caps, plugged filters)
- Fuel supply issues (fuel level, fuel aeration, leaking fuel lines, fuel restrictions)
- Fuel injector leakage
- Fuel contamination
- Rail pressure sensor
- Motor Control Module (MCM)

Table 2.

Service Tools Used in the Procedure	
Tool Number	Description
DiagnosticLink® 8.04 or higher	

NOTE: It is important to obtain information from the customer on when the Check Engine Lamp (CEL) occurs and if there were any performance concerns or exhaust smoke.

Check as follows:

1. Did SPN 157/FMI 16 appear after the fuel system was repaired or fuel filter maintenance was performed?
    a. Yes; the code may be set due to air in the fuel system. Clear codes and road test to verify complaint. If code does not set, release the vehicle. If code sets, Go to step 2.
    b. No; Go to step 2.
2. Turn the ignition ON (key ON, engine OFF).
3. Check and record fuel level using parameter AS044 Fuel Tank Level. Is the fuel level under ¼ tank (25%)?

a. Yes; add fuel and road test vehicle. If code does not become active during road test, release the truck. If the code becomes active during the road test with over ¼ tank (25%) of fuel, Go to step 5.
b. No; Go to step 4.

4. Check fuel tank level in extended fault code data. Was fuel tank level over ¼ tank (25%) when the code logged?
   a. Yes; Go to step 5.
   b. No; fuel sloshing in the tank may have caused aerated fuel and set this code. Road test vehicle. If code does not come active during road test, release the truck. If code does come active, Go to step 5.
5. Check for fuel contamination, including Diesel Exhaust Fluid (DEF), water, gasoline, kerosene, or coolant. Is any contamination found?
   a. Yes; refer to section "Contaminated Fluids".
      Refer to section "Checking Diesel Exhaust Fluid Quality".
      Refer to section "Fuel in Coolant/Coolant in Fuel".
      Refer to section "Coolant in Oil".
      Refer to section "Oil in Coolant".
   b. No; Go to step 6.
6. Visually inspect for external fuel leaks on the engine and on the chassis. Are any leaks found?
   a. Yes; repair leak. Verify repairs.
   b. No; Go to step 7.
7. Using DiagnosticLink 8.04 or higher, check for other active codes. Are any of the following codes active?
   a. Yes; perform the associated diagnostics first:
      - SPN 94/FMI 15 or 16 Fuel Filter Plugged
      - SPN 157/FMI 1 Rail Pressure too High
      - SPN 164/FMI (All) Rail Pressure Sensor Faults
      - SPN 174/FMI 0 Fuel Temperature too High
      - SPN 1077/FMI 5 or 6 Quantity Control Valve Current
      - SPN 1077/FMI 14 High Pressure Leakage Too High
      - SPN 520251/FMI (All) PCV High Side Error
      - SPN 520252/FMI (All) PCV Low Side Error
      - SPN 5571/FMI (All) PCV Current Deviation
   b. No; if only SPN 157/FMI 16 is present, Go to step 8.

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.

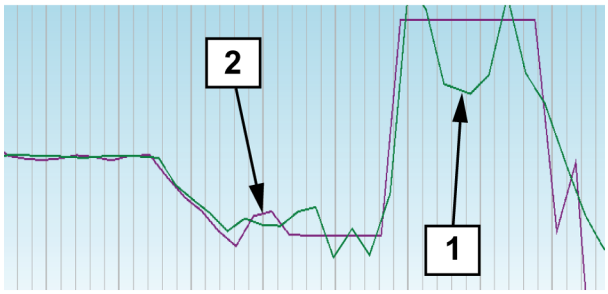
WARNING: ENGINE EXHAUST

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

8. Perform Automatic Fuel System Integrity Check (FSIC) routine using DL 8.04SP2 or higher. With the ignition ON (key ON, engine OFF) start the Automatic FSIC. The software/tool will ask to start the engine when required. Once the engine is running, the software will have the engine enter and exit several engine operating conditions. Once the

engine shuts down, leave the key on for five minutes. Disconnect DiagnosticLink and open the log file. The next steps of the troubleshooting will require reviewing the FSIC log file. Go to step 9.

9. Did the FSIC detect a high pressure leak?
    a. Yes; Refer to *section "High Pressure Fuel System - Leak Test".
    b. No; Go to step 10.
10. At 800 rpm, is ASL003 Fuel Compensation Pressure between 620 kPa (90 psi) and 758 kPa (110 psi)?
    a. Yes; Go to step 12.
    b. No; Go to step 11.
11. Monitor AS124 LPPO sensor. Is the pressure between 620 kPa (90 psi) and 758 kPa (110 psi) at 800 rpm and 724 kPa (105 psi) to 862 kPa (125 psi) at 1800 rpm?
    a. Yes; Go to step 16.
    b. No; repair cause of incorrect fuel pressure.
12. Monitor AS124 LPPO at all engine speeds; are pressures stable with no oscillations? Unstable pressures will have oscillations greater than 10 kPa (1.5 psi) at stable engine speed.
    a. Yes; Go to step 17.
    b. No; Refer to section "Aerated Fuel Test".
13. Check the Idle Speed Balance (ISB) values. Refer to section "Idle Speed Balance Test". Are there any cylinders at 100% or -100%?
    a. Yes; follow repair procedures in "Idle Speed Balance (ISB) Test" and verify repairs.
    b. No; Go to step 18.
14. Is ASL001 Rail Pressure erratic or does it have a saw-tooth pattern?



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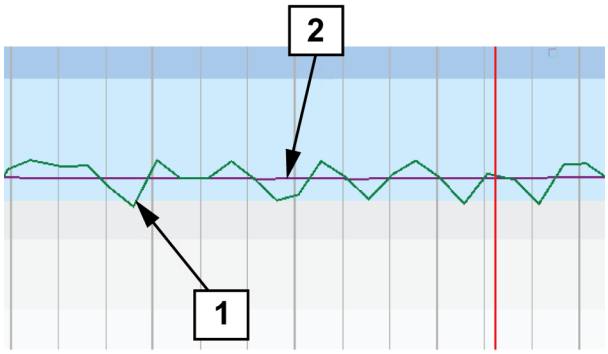

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a. Yes; Go to step 16.

NOTE: See examples of erratic pressure showing (1) ASL001 Rail pressure and (2) AS098 Desired rail pressure.

b. No; Go to step 17.

15. Check the fuel system for aerated fuel. Was fuel aerated?
    a. Yes; repair cause of aerated fuel.
    b. No; replace the Quantity Control Valve.
       For DD5: Refer to section "Removal of the Quantity Control Valve".
       For DD8: Refer to section "Removal of the Quantity Control Valve".
16. Inspect the low pressure fuel system for leaks. Refer to section "FIS Low Pressure Leak Test". Are leaks present?
    a. Yes; repair as necessary. Refer to section "FIS Low Pressure Leak Test".

NOTICE: Prime fuel system prior to going to next step. Refer to section "Priming the Fuel System".

b. No; Go to step 17.

17. Perform the PCV Flow test. Refer to section "PCV Flow Test". Did the PCV Flow test fail?
    a. Yes; replace the Fuel Rail.
       For DD5: Refer to section "Removal of the Fuel Rail".
       For DD8: Refer to section "Removal of the Fuel Rail".
    b. No; Go to step 18.
18. Road test the truck under load. Does the code set?
    a. Yes; Go to step 19.
    b. No; replace fuel filters and release unit to customer.
19. Remove the MCM 120-pin connector. Inspect for damage including fuel, water corrosion or bent terminals. Is damage found?
    a. Yes; repair as needed.
    b. No; Go to step 20.
20. Install a test MCM using the extension harness and test drive the truck. Does the code come active?
    a. Yes; install original MCM. Go to step 21.
    b. No; replace MCM and verify repair.
21. Inspect chassis fuel system for restrictions or debris. Refer to OEM procedures. Is there a chassis fuel system issue?
    a. Yes; identify source of issue and repair as necessary.
    b. No; replace fuel filters and release to customer.

