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Service Information Bulletin

SUBJECT	DATE
SPN 520268 (MCM) (GHG17)	February 2016

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0191	DD Platform - GHG17	SPN 520268 / FMI 16 - GHG17	SPN 520268 / FMI 16 - GHG17

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2 SPN 520268/FMI 16 - GHG17

Fuel Rail Pressure too Low, Similar Condition

Table 1.

SPN 520268/FMI 16	
Description	Fuel Rail Pressure Low
Monitored Parameter	Fuel Rail Pressure
Typical Enabling Conditions	Closed Loop & Actual Rail pressure 200 bar (2900 psi) Lower Than Desired Rail Pressure
Monitor Sequence	None
Execution Frequency	Continuous When Enabling Conditions Met
Typical Duration	Eight Seconds
Dash Lamps	MIL
Engine Reaction	None
Verification	Steady Engine rpm 1400 to 1500 (Two Minutes)

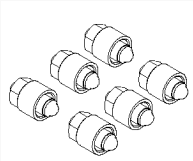
The Motor Control Module (MCM) sets this fault code when fuel rail pressure deviation is greater than 200 Bar (2900 psi) while under a load (low speed).

NOTE: SPN 157/16 may also set as a result of this fault code.

This fault can occur due to the conditions listed below:

- External Fuel Leakage Between the High Pressure Pump and Fuel Injectors
- Pressure Limiting Valve (PLV) Leakage (Internal)
- Fuel Filter Integrity (Loose Caps, Plugged Filters)
- Fuel Supply Issues (Fuel Level, Fuel Aeration, Leaking Fuel Lines, Fuel Restrictions)
- Intermittent Loss of Engine Speed Signal
- High Pressure Pump Internal Failure
- Fuel Injector (Amplifier or Needle) Leakage
- Fuel Contamination
- Rail Pressure Sensor Failure
- MCM Failure

Table 2.

Service Tools Used in the Procedure		
Tool Number	**Tool Description**	**Tool Graphic**
J-48876	Test Gauge, Primer Port, HDE	 d580033
J-48704	Caps, HP Fuel Rail, HDE	 d580002
DiagnosticLink ® Standard		

Check as follows:

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.

NOTE: It is important to obtain information from the customer about check engine lamp occurance and any performance concerns.

1. Did SPN 157/FMI 16 or SPN 520268/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, coolant, etc. Is any contamination found?
   a. Yes; refer to Contaminated Fluids in this manual.
   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 DL 8.03 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 Fuel Filter Plugged
      - SPN 94/FMI 16 Fuel Filter Plugged
      - SPN 97/FMI 15 Water in the Fuel
      - 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 679/FMI 7 PLV Stuck Open
      - SPN 723/FMI (all) Cam Sensor Codes
      - SPN 636/FMI (all) Crank Sensor Codes
      - SPN 1077/FMI 5, 6 or 14
   b. No; only SPN 1077/7, 157/16 or 1077/31 is present. Go to step 8

NOTE: Do not reset this counter unless the PLV is being replaced.

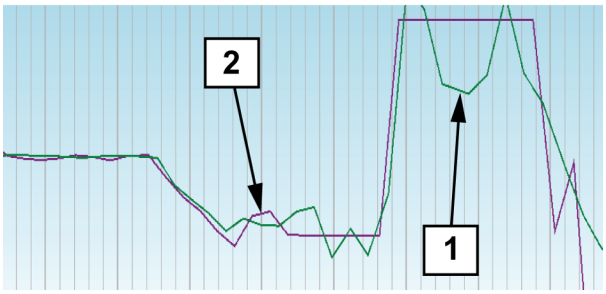
8. Using DL 8.03 or higher, check the value of Pressure Limiting Valve (PLV) openings. With key ON, engine OFF, select the Actions tab in the top tool bar. Select Fuel System, then Pressure Limiting Valve (PLV) Change or view (RPG_CTR_PLV_OPEN) under "Extended Data Record #5" list. View and record the PLV open counts. Is the counter greater than 50?
   a. Yes; replace the PLV. Refer to section "Removal of the Pressure Limiting Valve - Two-Filter System". Verify repairs.
   b. No; Go to step 9.

NOTE: Engines not equipped with a Low Pressure Pump Outlet (LPPO) sensor should utilize J-48706 Fuel Diagnostic Gauge Set to monitor LPPO.

9. Perform Automatic Fuel System Integrity check (FSIC) routine using DL 8.03 or higher. With 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 10.
10. Monitor rail pressure bleed-off time. Is bleed off time below 35 seconds?
    a. Yes; Refer to section "High Pressure Fuel System - Leak Test - Two-Filter System ".
    b. No; Go to step 11.
11. In the previous step, was bleed off time greater than two minutes and 30 seconds?
    a. Yes; Refer to section "Idle Speed Balance Test".
    b. No; Go to step 12.
12. Does Kw/Nw show/stay "ON / Enabled / True" while the engine is running during the Automatic FSIC routine?
    a. Yes; Go to step 13.
    b. No; refer to troubleshooting for SPN 723/FMI 10.
13. Was the fuel temperature rise greater than 10 degrees?
    a. Yes; Go to step 15.
    b. No; Go to step 14.
14. At 600 rpm, is ASL003 Fuel Compensation Pressure between 586 kPa (85 psi) and 689 kPa (100 psi)?
    a. Yes; Go to step 16.
    b. No; Go to step 15.
15. Monitor AS124 LPPO sensor (if equipped) or use manual gauge J-48706. Is the pressure between 496 kPa (72 psi) and 551 kPa (80 psi) at 600 rpm and 689 kPa (100 psi) to 869 kPa (126 psi) at 1800 rpm?
    a. Yes; Go to step 16.
    b. No; repair cause of incorrect fuel pressure.
16. Monitor AS124 LPPO (if equipped) and ASL003 Fuel Compensation Pressure at all engine speeds. Are pressures stable with no oscillations? Unstable pressures will have oscillations greater than 1.5 psi at stable engine speed.

a. Yes; Go to step 17.
b. No; Refer to section "Aerated Fuel Test – Two-Filter Fuel System".

17. Check the Idle Speed Balance (ISB) Values. Refer to section "Idle Speed Balance Test". Are there any cylinders above 70% or below -70%?
    a. Yes; follow repair procedures in "Idle speed balance (ISB) test" and verify repairs.
    b. No; Go to step 18.
18. Is ASL001 Rail Pressure erratic or does it have a saw-tooth pattern?



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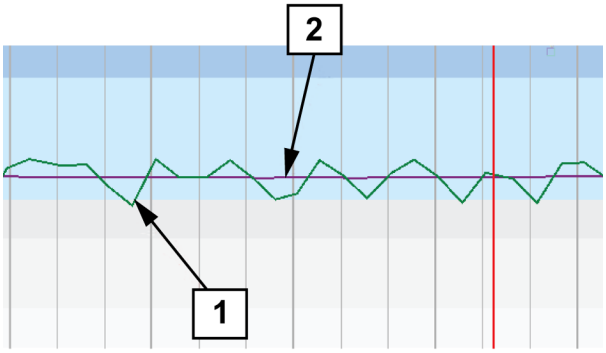

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a. Yes; Go to step 19.

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

b. No; Go to step 20.

19. Perform the aerated fuel test. Refer to section "Aerated Fuel Test – Two-Filter Fuel System". Was fuel aerated?
    a. Yes; repair cause of aerated fuel. Refer to section "Aerated Fuel Test – Two-Filter Fuel System".
    b. No; replace the Quantity Control Valve. Refer to section "Removal of the Quantity Control Valve - Two-Filter System".

20. Perform Pressure Limiting Valve flow test. Refer to section "Pressure Limiting Valve Flow Test – Two-Filter Fuel System". Did the PLV flow test pass?
    a. Yes; Go to step 21.
    b. No; replace the PLV. Refer to section "Removal of the Pressure Limiting Valve - Two-Filter System".
21. Inspect the low pressure fuel system for leaks. Refer to section "FIS Low Pressure Leak Test". Did the Low Pressure leak test pass?
    a. Yes; Go to step 22.

NOTICE: Prime fuel system prior to going to next step. Refer to section "Priming the Fuel System - KM63 GEN2 - Two-Filter System".

    b. No; repair as necessary. Refer to section "FIS Low Pressure Leak Test".
22. Cap the rail at all six injector feed connections using J-48704 injector rail caps and crank the engine for 10 seconds. Does the ASL001 rail pressure reach AS098 desired rail pressure?
    a. Yes; Go to step 23.
    b. No; replace high pressure pump. Refer to section "Removal of the High Pressure Fuel Pump - Two-Filter System".
23. With the injectors still capped after cranking engine for 10 seconds, does the rail pressure bleed down under 100 bar in less than five minutes?
    a. Yes; replace the high pressure fuel pump.
    b. No; Go to step 24.
24. Using DL 8.03 or higher, navigate to Service Routines and Fuel System Integrity Check test and select Manual FSIC. Road test the truck. Does the code set?
    a. Yes; Go to step 25.
    b. No; replace fuel filters and release unit to customer.
25. 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 26.
26. 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 27.
    b. No; replace MCM and verify repair.
27. 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.

