

# DETROIT DIESEL



## DDEC® VI Troubleshooting

**NUMBER:** 08 DDEC VI-47 REV **S.M. REF.:** 17.2 **ENGINE:** DD15 **DATE:** October 2008

**SUBJECT:** SPN 1077

**PUBLICATION:** DDC-SVC-MAN-0029

SPN 1077/FMI 7 has been revised from “The MCM monitors the rail pressure and when rail pressure deviation is greater than 50 bar for 5 seconds” to “The MCM monitors the rail pressure and when rail pressure deviation is greater than 200 bar for eight seconds.”

### SPN 1077/FMI 7

The fault condition is typically related to an internal or external leakage of the high pressure fuel system. The MCM monitors the rail pressure and when rail pressure deviation is greater than 200 bar for eight seconds, the MCM sets the code. This fault can occur due to the conditions listed below:

- External fuel leakage between the high pressure pump and injectors
- High pressure pump (pumping elements)
- Injector (amplifier or needle) leakage
- Pressure limiting valve leakage (internal)
- Fuel filter integrity (loose caps, plugged filters)
- Fuel supply issues (fuel level, fuel aeration)
- Intermittent loss of engine speed signal

Check as follows:

1. Did 1077/7 code appear after the fuel system was repaired or filter maintenance was performed?
  - [a] If YES, the code may be set due to air in the fuel system. Clear code and refer to the “Fuel System Priming” section in the *DD15 Fuel System Technician's Guide* (DDC-SVC-MAN-0037).
  - [b] If NO, go to next step.
2. Turn the ignition ON (key ON, engine OFF).
3. Check fuel level.
  - [a] If fuel level is low, correct and road test vehicle.
  - [b] If no leakage was found, go to next step.
4. Using DDDL 7.0, check for multiple codes.

- [a] If additional fault codes (with the exception of DPF codes) are present along with 1077/7, service the additional fault codes first.
  - [b] If only 1077/7 is present, go to next step.
5. Using DDDL 7.X check the value of Pressure Limiting Valve (PLV) openings (E2P\_RPG\_CTR\_PLV\_OPEN) under “Extended Data Record Number 5th” list.
- [a] If counter is greater than 50, replace PLV and road test vehicle. Refer to PLV repair procedure.
  - [b] If counter is less than 50, go to next step.
6. Using DDDL 7.X monitor engine speed and KW/NW validity signal in chart form ranging from idle to 1800 RPM.
- [a] If engine speed and signal are stable and accurate, go to step 8.
  - [b] If engine speed and signal are instable or erratic, go to the next step.
7. Check the following conditions:
- [a] Check for external damage to Crankshaft Position Sensor. Repair if necessary.
  - [b] Check for bent or spread pins on the Crankshaft Position Sensor. Repair if necessary.
  - [c] Remove Crankshaft Position Sensor and inspect sensor for damage or rubbing. Repair if necessary.
  - [d] Check flywheel teeth for debris or damage. Repair if necessary.
  - [e] Check the cam timing. Repair if necessary.
  - [f] If no repairs are necessary, go to the next step.
8. Perform Low Pressure Fuel System Pressure Test. Refer to “Monitoring Low Pressure Fuel System Pressures” section.
9. Inspect fuel system for leaks. Refer to “External and Internal Low Pressure Fuel Leaks” section.
- [a] If leaks were found, repair as necessary.
  - [b] If no leaks were found, go to next step.
10. Perform diagnosis on pumping elements. Refer to “Pumping Element Concerns” section.
11. Perform Fuel Aeration Test. Refer to “Fuel Aeration” section.

12. Perform the Rail Pressure Bleed Off (RPBO) test using DDDL. Refer to “RPBO Test using DDDL” section.
  - [a] If the RPBO Test failed; go to next step.
  - [b] If the RPBO Test passed, fault condition may be intermittent. Go to “Verify Repairs.”
13. Perform PLV Leakage Test. Refer to “Pressure Limiting Valve Leakage” section.
  - [a] If the PLV Leakage Test passed; go to next step.
  - [b] If the PLV Leakage Test failed; replace pressure limiting valve. Go to “Verify Repairs.”
14. Perform Amplifier/Needle Return Flow Test and measurements. Refer to “High Amplifier/Needle Return Flow” section.
  - [a] If the Amplifier/Needle Return Flow Test passes, clear the code and run the engine. If the code reappears, call the Detroit Diesel Customer Support Center at 313-592-5800.
  - [b] If the Amplifier/Needle Return Flow Test fails, fix as necessary. Go to “Verify Repairs.”

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## **ADDITIONAL SERVICE INFORMATION**

Additional service information is available in one of the DDEC VI troubleshooting guides.

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