

DETROIT DIESEL



DDEC[®] VI Troubleshooting

NUMBER: 08 DDEC VI-60 **S.M. REF.:** 16.5 **ENGINE:** DD15 **DATE:** October 2008

SUBJECT: HIGH PRESSURE FUEL SYSTEM LEAK TEST

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High pressure fuel system leak test has been added.

16.5 HIGH PRESSURE FUEL SYSTEM LEAK TEST

High pressure fuel system leaks can cause a variety of problems including difficulty starting, fuel in oil, rough running, low power, and several other issues. If there is a suspected leak in the high pressure fuel system, follow these steps to find the leak.



WARNING: FIRE

To avoid injury from fire caused by heated diesel-fuel vapors:

- Keep those people who are not directly involved in servicing away from the engine.**
- Stop the engine immediately if a fuel leak is detected.**
- Do not smoke or allow open flames when working on an operating engine.**
- Wear adequate protective clothing (face shield, insulated gloves and apron, etc.).**
- To prevent a buildup of potentially volatile vapors, keep the engine area well ventilated during operation.**

1. Steam clean the entire fuel system prior to inspecting for leaks. If there are obvious external leaks, repair the leak(s) before going to the next step.
2. Start engine and allow it to reach operating temperature 140°F (60°C).
3. Perform a RPBO Test. Refer to section 16.8 "Rail Pressure Bleed Off Test."
 - [a] PASS, no problem found.
 - [b] FAIL, go to next step.
4. Inspect the high pressure pump to rail feed fittings at the rail and the pump for leakage. Are any leaks found; are the line fittings loose?
 - [a] Yes, torque the line fittings, start the engine and recheck. If leaks are still found, replace the lines.
 - [b] No, go to next step.
5. Inspect injector fuel line rail connections for external leaks. Are leaks found or are there any loose lines?
 - [a] Yes, torque the fuel line rail connections, start the engine and recheck. If leaks are still found, replace the lines.

- [b] No, go to next step.
- 6. Inspect the Fuel Rail Pressure Sensor for leakage. Is the sensor leaking or is it loose?
 - [a] Yes, torque the Fuel Rail Pressure Sensor, start the engine and recheck. If leaks are still found, replace the Fuel Rail Pressure Sensor.
 - [b] No, go to next step.
- 7. Inspect PLV for leakage. Is the PLV leaking externally or is it loose?
 - [a] Yes, , torque the PLV, start the engine and recheck. If leaks are still found, replace the PLV.
 - [b] No, go to next step.
- 8. Inspect the high pressure fuel pump for external leaks. Are there any leaks coming from the high pressure pump?
 - [a] Yes, replace the high pressure pump.
 - [b] No, go to next step.
- 9. Install fuel test bottle kit (J-48708); fill one container with ultra-low sulfur diesel fuel and add fuel dye to the fuel in the bottle. Connect the hoses to the fitting on the top of the cap. This will isolate the engine from the chassis fuel system.
- 10. Prime the fuel system using the hand primer until there is no air coming out of the return fuel line.
- 11. Remove the rocker cover and install tool (W470589009800) onto the rear of the cam frame to cover the cam gears.

NOTE:

It will take a few minutes for the dye in the test bottle to make its way into the high pressure system and up to the injectors.

- 12. Start engine and allow it to reach operating temperature 140°F (60°C). To perform the test run the engine at 900 rpm. Using the black light, inspect the injectors and fuel lines for signs of leakage. Are there any leaks coming from any of the injectors or lines?
 - [a] Yes, replace any leaking injector(s) or replace any leaking fuel line(s).
 - [b] No, go to next step.
- 13. Using the black light, inspect the entire high pressure system for leaks. Repair as necessary.

ADDITIONAL SERVICE INFORMATION

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

DETROIT DIESEL
CORPORATION



13400 Outer Drive, West / Detroit, Michigan 48239-4001
Telephone: 313-592-5000
www.detroitdiesel.com