Technical Bulletin

FLIGHT DIESEL

Flight Diesel TB 09/30 R1

SUBJECT: Navistar DT466/570 Tech. Bulletin – Common Issues PG.1
September 30, 2017

This Technical Bulletin addresses common issues encountered when installing HEUI G2.9 Injectors for the Navistar/International DT466/570 application.

Common Issues:

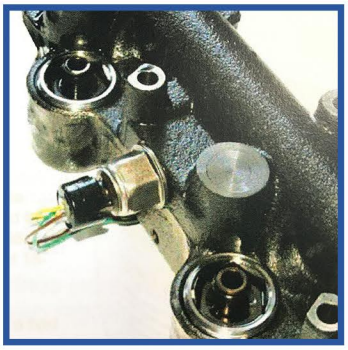
- Engine runs poorly or rough when hot, runs fine cold
- Engine has a "Hard Start" or "No Start"
- Engine has misfires regardless of temperature (cold or hot)
- Engine has misfires under a load

Probable Causes:

- ***Engine runs poorly or rough when hot, runs fine cold:***
  - Most likely causes are a High pressure oil leak or bad IPR Valve
  - HP pump supply aeration
  - Failing high pressure pump
  - ICP sensor or circuit fault

Bad oil rail seal

The first thing the technician should check is ICP or Injection Control Pressure. ICP Actual and ICP Desired should be monitored on a scan tool when the engine is cold and at operating temperature. The ICP Actual and ICP Desired should be the same at idle when the engine is cold and at operating temperature. If the ICP Actual starts to drop when the engine temperature increases, this is telling you there is a loss of high pressure oil somewhere in the system. Another way to determine this is to monitor or graph IPR Command (Injection Pressure Regulator) in your scan data while the engine warms up. If the IPR climbs while idling, this indicates a high pressure oil leak. Oil loses viscosity as temperature increases, causing high pressure leaks to intensify, and IPR command to increase as the control module attempts to maintain desired ICP. IPR readings in scan data should be 12-20% at a hot idle.



ICP Sensor Location

- ***Engine has a "Hard Start" or "No Start":***
  - ICP Sensor – High failure rate
  - Severe High Pressure Oil Leak – Low ICP
  - Stuck or defective IPR
  - Bad Injectors – Usually has codes on scan data, bad buzz test
  - Bad Valve Cover Gasket – integrated harness

This issue is commonly a bad ICP Sensor. A vehicle with a bad ICP sensor will start with the sensor unplugged, and will not start with the sensor plugged in. The ICP sensor connector is the second connector from the rear of the valve cover gasket, hidden behind the crankcase vent. Severe high pressure oil leaks could be caused by damaged oil rail seals. These seals ***MUST*** be replaced every time injectors are removed and re-installed. Oil Rail Seal Kit FD P/N: ***FS01804*** A torn seal can cause a misfire on one cylinder. Multiple bad seals can cause a No Start or Stalling issue.

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September 30, 2017

- ***Engine has misfires regardless of temperature (cold or hot):***
  - Poor cylinder compression
  - Valves are not adjusted properly
  - Insufficient fuel supply pressure
  - Injector issue – debris related/oil quality/pinched wires

In engines with good compression, this type of failure is commonly caused by insufficient fuel supply pressure or debris entering the injector during the installation process. These injectors are highly susceptible to failure from debris, because there are no filter screens in the fuel inlet of the injector (Figure 1). Warranty analysis commonly reveals dirt and/or metal debris in the fuel side or oil side of the injector (Figure 2). Contamination from metal debris is common in cases where injectors were installed during an engine overhaul. Incorrect maintenance intervals/procedures of the fuel and oil systems can also allow debris to enter the injector and cause failures. Coil wires can be pinched during installation, also causing misfires (Figure 3).

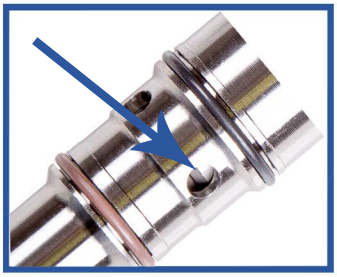

Figure 1

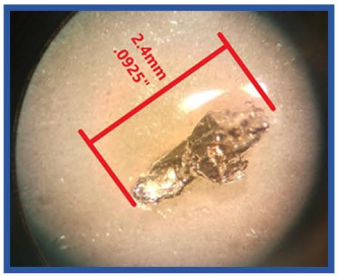

Figure 2

- ***Engine has misfires under a load:***
  - Injector Harness Connection
  - Insufficient fuel supply pressure
  - Insufficient oil pressure - high side

Injector harness failures are common in early applications. The valve cover gasket has integrated circuits for injectors and ICP sensor, and failures from "Oil Wicking" are common (Figure 4). Injector circuit codes and misfires under load are commonly caused by poor connections at the valve cover gasket. Use the latest design with improved electrical locks to avoid this issue. The harness connector in the early applications does not have a secondary lock, allowing it to lose continuity when the engine is torqued up in the chassis. Double check all connectors are secured. There is a TSI letter on an updated lock used on the later engines. TSI Number: 05-12-10 TSI Date: February 2005.

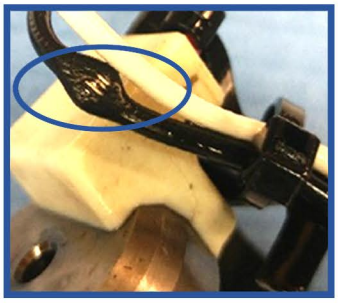

Figure 3

Preventative Maintenance Schedule:
Replace Oil (30 Quarts) and Oil Filter
- Up to 15,000 miles (24,140 km) or 550 hrs. (depending on duty cycle)

Replace Fuel Filters
- 30,000 miles (48,280 km) or 1,000 hrs.

Replace Antifreeze
- 300,000 miles (482,800 km) or 11,000 hrs.

Installation Information: Injector Inlet Seals ***MUST*** be replaced on the oil rail/manifold when installing G2.9 Injectors. Oil Rail Seal Kit FD P/N: ***FS01804***

Figure 4

Torque Specifications
- Injector hold down clamp – 120 lbf-in (13 Nm)
- Injector harness shield cap screws – 60 lbf-in (6.8 Nm)
- High pressure oil rail/manifold screws – 20 lbf-ft (27 Nm)
- Injection control pressure (ICP) sensor – 19 lbf-ft (26 Nm)
- Engine oil and coolant temp sensors – 10 lbf-ft (13.6 Nm)