DIAGNOSTICS - HEAT & OBSERVATIONS

2008 Dodge R4500 6.7L Cummins
Mileage 230,000
Customer Complaint – No Power, Check Engine Light on and Diagnostic Trouble Codes:

P1011 – Fuel Pump Delivery Pressure Too Low

P000F – Fuel System over Pressure Relief Valve Activated

Overhead Display flashing – Need Service – See Dealer

The Truck's Maximum speed is set to 76 MPH and this truck is used to pull heavy loads.

Driving the truck with No Load and holding the Accelerator Pedal in the Wide Open Position and the truck maintaining a steady 76 mph. Within 30 seconds the Check Engine Light would come on and the DTC Trouble Codes came back. Any speed under 76 MPH the truck ran normal.

Fuel System Diagnostics Results:

In Tank Supply Pump test results – Flowed 560 MLS in 10 seconds

Injector Return Flow test results – Fuel Pressure Override Test - 180 MLS in 30 seconds

High Pressure Pump Return Flow test results – 600 MLS in 60 seconds

Ran the High Pressure Fuel System Test and the results - Test Number 13 failed.

A failed Fuel Test Number 13 directs you to test the Pressure Limiting Valve.

Pressure Liming Valve Flow test results – 14 drips in 10 seconds during the Fuel Pressure Override test. OEM Specification is 1 drop per second or 8 MLS in 30 seconds during the Fuel Pressure Override Test.

Before we run a Performance Diagnostic we do a visual inspection under the hood and we also look at the overall condition of the truck. The two observations from the visual inspection, I considered in this diagnostic was the tires and the gooseneck ball. The tires were worn smooth and flat and the gooseneck ball was polished and had no rust. This led me to believe that this truck spends most of its life on the freeway and with a heavy gooseneck trailer attached. This also confirmed the statement from the customer; this truck is used to pull heavy loads.

This Diagnostics and Repair was based on the Heat Load the engine is placing on the Bosch Common Rail Fuel System.

The repair consisted of replacing the In Tank Fuel Supply Pump, Fuel Filter, Injectors, Injector Connectors/Links and the High Pressure Fuel Rail.

Reasoning

In Tank Fuel Supply Pump - This engine pulls a heavy load and this will increase the fuel temperature and fuel demand. Talking to your customer and looking at the condition of the truck. You can make a decision if you want to release the truck with the In Tank Fuel Pump flowing at the minimum specifications. In our shop we want the In Tank Fuel Pump flowing above the minimum specifications. This will help with the engine performance and fuel system longevity.

Injectors – The decision to replace the injectors was based on Injector Return Flow, Engine Load and the excepted Heat Load the fuel system is going to experience. As the fuel temperature increases the fuel will thin out and the Injector Fuel Return Flow will increase. After installing a set of M&D Remanufactured Injectors I know the Injector Fuel Return Flow will decrease significantly. Decreasing the Injector Fuel Return Flow will lower the fuel temperatures and lessen the strain on the High Pressure Fuel Pump.

Fuel Rail/Pressure Limiting Valve – The Fuel Pressure Limiting Valve had failed. In our shop we install a complete Fuel Rail Assembly when a component of the Fuel Rail fails or when fuel contamination is suspected. This insures that we have an uncontaminated and functioning Fuel Rail.

Fuel Filter – No explanation needed. Replace the fuel filter when performing fuel system repairs.

Injector Connectors/Links – Replacing the Connectors is a must when replacing an injector. Located inside of the connector there are three sharp edge filters and these sharp edge filters will wear out over time. The sealing connection at the Injector Body and Connector is a metal to metal seal and is prone to leak and cause high Injector Return Flow. Not replacing the Connectors may cause; High Injector Fuel Return Flow, Black Smoke, Low Fuel Rail Pressure, Miss – Fire, Hard start, No Start, Low Power, Damaged Injectors, High Fuel Temperatures, Shorten Injector Life and a **Disappointed Customer.**

Thank you
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