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Coding Information

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Title: Electric Fuel Pump and Low Pressure Fuel System Diagnostics EPA 2010 MaxxForce® DT, 9 and 10

Applies To: 2010 Emissions Model Year MaxxForce® DT, 9 and 10

Description

A revised procedure is available to diagnose the electric fuel pump and low pressure fuel system on the EPA 2010 MaxxForce® DT, 9 and 10 engines. This is a suppliment to the EGES-455-1 Diagnostic/Troubleshooting Manual, Chapter 5 "Hard Start and No Start Diagnostics".

The electric fuel pump may turn ON-OFF-ON when testing the fuel system while dead heading the fuel system. The pressure gauge will move between a high and low fuel pressure every few seconds. That is a normal response during the tests. The peak pressure is used in certain diagnostic steps.

Note: The fuel return fitting to the fuel tank is a dry-break connector. Disconnecting the fuel return fitting at the fuel header blocks the fuel return line and dead heads the fuel pump.

Note: The mechanical ZTSE4681 Fuel Pressure Gauge and ZTSE4526 Fuel/Oil Test Coupler are necessary to accurately measure the fuel pressure and flow volume in this procedure. ServiceMaxx should not be used to measure fuel pressure.

Symptoms

Low Fuel Pressure
High Fuel Pressure

Possible Diagnostic Trouble Codes

SPN	FMI	Description
94	0	Fuel Delivery Pressure above maximum
94	1	Fuel Delivery Pressure below minimum
3471	1	Fuel Pressure 1 below desired (Low system pressure)

Fuel Pump Prefilter (Strainer) Kit Availability

The prefilter is available with the O-ring seals in a service kit.

1899335C91	KIT,FUEL PUMP STRAINER W/ADPTR	
PART NUMBER	PART DESCRIPTION	QTY
1894302C1	SCREW, PUMP COVER	3
1884085C1	RING, O PUMP COVER & HOUSING	1
1899336C91	KIT, PUMP ADAPTER	1

Diagnostic Procedure

The low pressure fuel system and fuel pump are diagnosed with a fuel pressure gauge to pinpoint issues. Fuel pressure and flow volume are measured at the port on the fuel filter housing. The dry-break fuel return connector may be disconnected to dead head or pressure test the fuel pump to isolate fuel pump and fuel pressure regulator concerns.

The fuel pump may cycle ON-OFF-ON when the pump is dead headed, so the PEAK fuel pressure is the value that is used in the diagnostic procedures. This is a normal condition, not a sign of a defective pump. The PEAK fuel pressure is used to diagnose the fuel pump and regulator when the fuel pump cycles ON-OFF-ON.

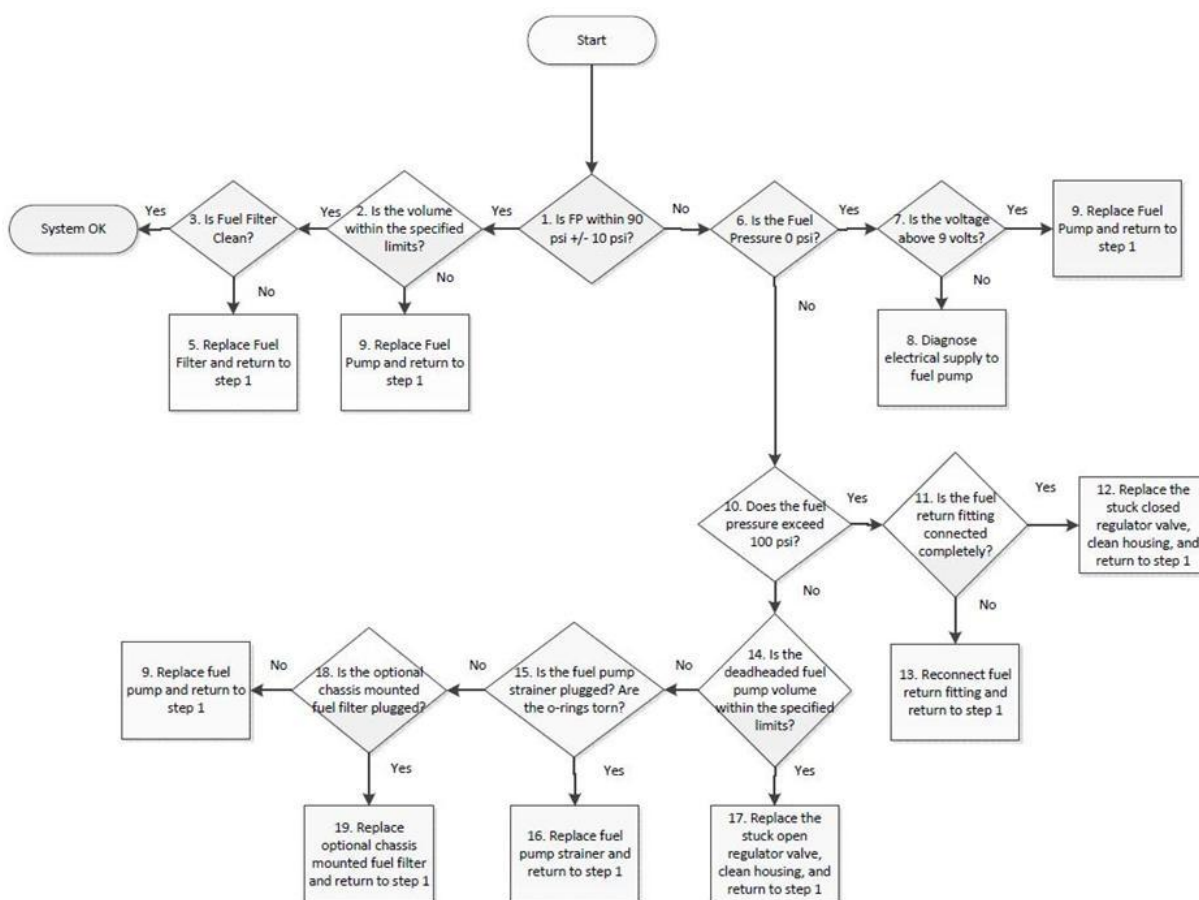
Step	Action	Values	Yes	No
1	Measure Fuel Pressure Connect Fuel Pressure Gauge to the fuel filter test port (CompuCheck) and measure fuel pressure with the engine off. ZTSE4681 – Fuel Pressure Gauge ZTSE4526 – Fuel/Oil Pressure Test Coupler Is the fuel pressure within limits?	80-100 psi	Step 2	Step 6

	Note: The fuel pump only operates for 10-20 seconds after Key-ON Engine-OFF. The ignition switch must be turned off for 30 seconds to reset the ECM			
2	Measure Fuel Pump Volume Route the clear hose from the Fuel Pressure Gauge to an approved diesel fuel container to measure fuel volume. Open the Fuel Pressure Gauge shutoff valve to flow fuel through the clear hose. Measure ECT in the Service Tool. Look up the volume specification for fuel pump volume based on ECT in Table 1. Cycle the fuel pump 4 times and measure the fuel pump volume. Is the fuel volume within the limits in Table 1?	See Table 1	Step 3	Step 9
3	Visually inspect the primary fuel filter on the engine. Is the fuel filter clean?		System OK	Step 5
4	Intentionally left blank		-	-
5	Replace fuel filter and retest		Step 1	-
6	Measure Fuel Pressure Is the fuel pressure 0 psi?	0 psi	Step 7	Step 10
7	Measure Voltage and Ground to fuel pump Connect EFP Breakout harness ZTSE6023 to the fuel pump. Measure voltage between pins 1 and 4 with the fuel pump energized. Measure voltage between pins 1 and 6 with the fuel pump energized. Is the voltage above the specification with the fuel pump energized?	9 volts	Step 9	Step 8
8	Diagnose the electrical supply to the fuel pump. Go to the EFP section in "Electronic Control System Diagnostics" in the Diagnostic Manual		-	-
9	Replace fuel pump and retest.		Step 1	-
10	Measure Fuel Pressure Does the fuel pressure exceed the specification? Note: The fuel pump may turn ON-OFF-ON if the electric motor is overloaded when the pressure is too high. PEAK pressure is used in this step, if the fuel pressure bounces between low and high pressures.	100 psi	Step 11	Step 14
11	Check Fuel Return Connection Is the fuel return line connected completely? Note: The dry-break fuel return connection dead heads the fuel pump and may cause the fuel pump to cycle ON-OFF-ON.		Step 12	Step 13
12	Replace stuck closed fuel pressure regulator Clean the fuel filter housing and retest		Step 1	-
13	Reconnect or repair the fuel return connection and retest.		Step 1	-
14	Measure Fuel Pump Volume with Fuel Return Connection disconnected to isolate the fuel pressure regulator. Disconnect the dry-break fuel return connection to the tank at the fuel filter housing. Route the clear hose from the Fuel Pressure Gauge to an approved diesel fuel container to measure fuel volume. Open the Fuel Pressure Gauge shutoff valve to flow fuel through the clear hose. Measure ECT in the Service Tool. Look up the volume specification for fuel pump volume based on ECT in Table 1.	See Table 1	Step 17	Step 15

	Cycle the fuel pump 4 times and measure the fuel pump volume.			
	Is the fuel volume within the limits in Table 1?			
15	Inspect the fuel pump strainer and O-rings on the fuel pump.		Step 16	Step 18
	Is the strainer plugged or are the O-rings damaged?			
16	Replace the fuel pump strainer and O-rings and retest		Step 1	-
17	Replace stuck open fuel pressure regulator		Step 1	-
	Clean the fuel filter housing and retest			
18	Inspect the optional chassis-mounted fuel filter		Step 19	Step 9
	Is the optional chassis-mounted fuel filter plugged?			
19	Replace optional chassis-mounted fuel filter		Step 1	-

Table 1: Minimum Fuel Pump Volume Specification

Key Cycles	4	4	4	4	4
ECT Deg F	32	50	68	86	104
ECT Deg C	0	10	20	30	40
Fuel Pump Run Time (seconds)	20	18	18	15	10
Min Fuel Pump Volume (gallons)	0.76	0.68	0.68	0.57	0.38



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