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Title: MaxxForce DT, 9 & 10 electric fuel pump & fuel system tips

Applies To: EPA 2010 and later MaxxForce DT, 9 & 10

CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

8/25/2014 - Updated non OEM fuel filter caution and added risks of incorrect O-ring placement.
9/15/14- Added risks of CARQUEST and Wix fuel filters.
12/3/2014 - Re-write to update diagnostic information.

Step-based diagnostics for electric fuel pump

Step-based diagnostics for electric fuel pump available in.
2010 MaxxForce ® DT, 9, and 10 Engine Diagnostic Manual

Navistar® N9 & N10 Diagnostic Manual

DESCRIPTION

- EPA 2010 and later DT, 9 & 10 engines use a fuel module that incorporates many features, including an electric fuel pump, fuel heater and fuel strainer.

- The fuel strainer can be seen when the pump is removed from the filter module. The strainer should be cleaned at the filter replacement interval (30K miles / 43K Km / or 12 months). The strainer P/N is 1899335C91 (see images below)

- Low fuel pressure and Hard Start or No Start conditions can be caused by at least two manufacturers of non OEM fuel filters. See differences in the fuel filter seals here and fuel filter recall G-Letter here.

Navistar has received complaints that NAPA fuel filter FIL3994 can cause low fuel pressure. CARQUEST and WIX 86994 appear to be made by the same mfg. as the NAPA filter.

Navistar's OEM fuel filter was developed specifically to work with features that are designed into the fuel filter housing. These features remove air from the fuel system and produce the required fuel pressure, giving the engine optimum performance.

- Calibration updates have been made due to low fuel pressure DTC's 94-1, 94-17 & 94-18 being set erroneously. Do not perform diagnostics for these faults unless there is a starting or performance complaints.

- Update the engine calibration (see calibration scorecard)

- If the vehicle has this code(s) and has a performance complaint then update the engine calibration AND follow step-based diagnostics (shown at beginning of this article)

- Low fuel pressure complaints can be caused by the wrong O-ring being installed on the fuel pump

Be sure only brown O-rings are used.

SYMPTOM(s)

Diagnostic Trouble Code(s)

DTC	Description	Pressure Range to Set	Time Before Fault Occurs	Entry Conditions
SPN 94 FMI 1	Fuel Delivery Pressure below Critical	10 PSI or less	1 Second	> 600 RPM 10 Seconds after starting
SPN 94 FMI 17	Fuel Delivery Pressure below Minimum	45 PSI or less	45 Seconds	> 600 RPM 10 Seconds after starting
SPN 94 FMI 18	Fuel Delivery Pressure below minimum during cranking	45 PSI or less	8 Seconds	< 600 RPM

SPECIAL TOOL(s) / SOFTWARE

-ServiceMaxx or Pocketmaxx
-Multimeter / DVOM
-ZTSE6023 fuel pump break-out tee
-3 test leads with male banana ends (part of ZTSE4435c)
-Battery charger or 12 volt auto/truck battery (charger must not be a smart-charger)
-15 amp circuit breaker

SERVICE PARTS INFORMATION

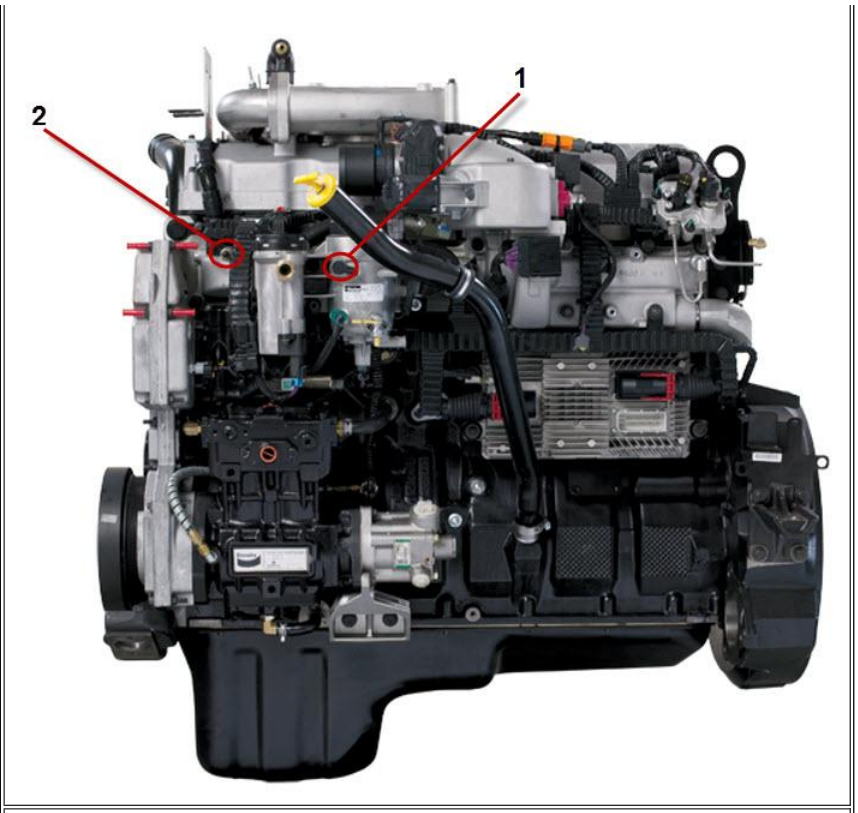
Kit Description	Part Number		Notes

		Quantity Required	
2013 HD-OBD Fuel Pressure Sensor	3016259C91	1	**HD-OBD Only**
2010 Fuel Pressure Sensor	1846481C92	1	**2010 Only**
2007 Fuel Pressure Regulator	1886152C91	1	**2007 Only**
2010 & Newer Fuel Pressure Regulator	1893801C92	1	**2010 & Newer Only**
Electric Fuel Pump Strainer & O-ring kit	1899335C91	1	**2010 & Newer Only**

Fuel System Tips

Note a dirty or plugged strainer should be replaced.
Do not replace the fuel pump for a dirty or damaged strainer.

Fuel Pressure Sensors.
2010 & 2013 HD-OBD Fuel Pressure Sensors Are Not Interchangable.



There are two fuel pressure test ports on the engine.

1. The first port is a Compuchek and is located on the front of the filter module (unfiltered fuel pressure)

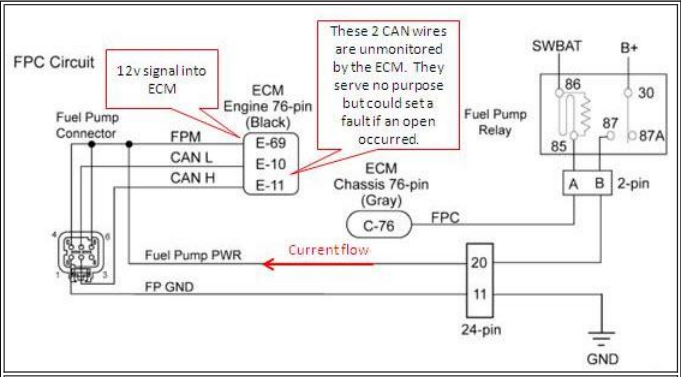
2. The second port is a Schrader™ valve located on the front of the intake manifold (filtered fuel pressure).

The Schrader port can also be used to bleed air out of the system.

Note- Double check any below spec. pressure reading from this port as a poor connection can cause a low pressure reading (but fuel rail pressure could be ok). Use ZTSE4681 and adapter ZTSE4657.

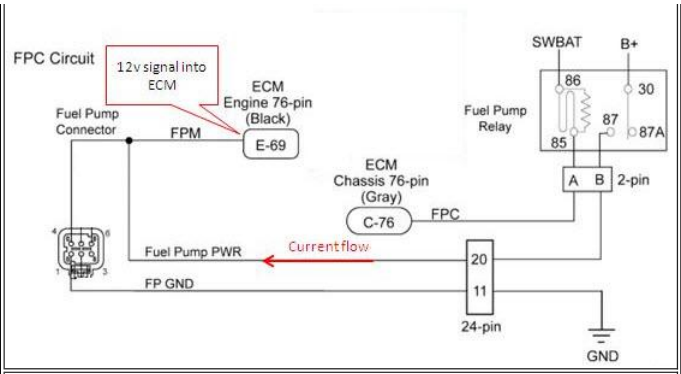
Fuel Pump Types

There are currently 2 types of fuel pump available, see details below:



The 6 pin style, the electrical connector on the fuel pump will have 6 pins, the engine harness may be equipped with 5 wires or 3 wires.

This Style of pump has internal overload protection that turns the pump off under overload (high current draw situations).



The 2 pin style, the electrical connector on the fuel pump will have 2 pins, the engine harness may be equipped with 5 wires, 3 wires or 2 wires.

This Style of pump does not have internal overload protection (if high current draw occurs fuse will open).

WARRANTY INFORMATION

Warranty Claim Coding:

Group:	12000 Engine
Noun:	791 Engine Mechanical or Electric Fuel Lift Pump / T - Inoperative

- Link to the Coding Manual: Click Here

Standard Repair Time(s):

Description	Chassis	SRT	Hours
Step Based Diagnostics & Pump Replacement	All	KL12-2048T	.7
Step Based Diagnostics & Pump Replacement	RE Bus	I12-2048T	1.6

- Link to the Standard Repair Time Manual: Click Here

OTHER RESOURCES

Master Service Information Site

2010 MaxxForce ® DT, 9, and 10 Engines

Navistar® N9 & N10 Diagnostic Manual

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