



Countries: CANADA, UNITED STATES **Document ID:** IK1201139
Availability: ISIS, Bus ISIS, FleetISIS **Revision:** 0
Major System: ENGINES **Created:** 6/11/2014
Current Language: English **Last Modified:** 7/2/2014
Other Languages: NONE **Author:** Mark Ehlers
Viewed: 362

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Coding Information

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Title: SPN 94-18 Low Fuel Pressure While Cranking

Applies To: EPA 2013 MaxxForce DT, 9, 10 OBD

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

new article- this article will be retired when engine diagnostic manual is updated

Note: Check engine calibration scorecard to ensure calibration is current. If it is current then diagnose 94-18 as explained below. If the calibration is not current, update the calibration and see if 94-18 returns

DESCRIPTION:

- New fault SPN 94-18 (low fuel pressure during cranking)

Note: this fault is only present on EPA 2013 OBD product and not EPA 2010 (Non-OBD)

SYMPTOM(s):

- Engine cranks but will not start
- Engine starts and stalls

SPECIAL TOOL(s) or SOFTWARE:

- PocketMaxx or ServiceMaxx
- Multimeter / DVOM
- ZTSE6023 fuel pump breakout harness

OVERVIEW & POSSIBLE CAUSES:

- 1) Recent fuel system service that required priming
- 2) Diesel fuel waxing or icing in cold temperatures
- 3) Low fuel level in either fuel tank
- 4) Vehicle unused for long period of time
- 5) Unseated fuel filter that causes fuel to drain back to tank
- 6) Completely stuck open fuel pressure regulator
- 7) Damaged fuel filter (not end of life)
- 8) Completely plugged strainer
- 9) Power and ground circuits
- 10) Fuel pump
- 11) Loss of prime

NOT Possible Causes of (94, 18) but are possible causes of (94, 1) and (94, 17)

- 1) Restricted primary (suction side) on-vehicle fuel filter
- 2) Partially restricted strainer
- 3) Secondary (pressure) on-engine fuel filter end of useful life
- 4) Biased or partially open fuel pressure regulator
- 5) Restricted fuel supply and return lines
- 6) Fuel pickup tube cavitation

7) Fuel pump cavitation

DIAGNOSTIC PROCEDURE:

Step	Action	Decision
1	Investigate Vehicle History	Yes: Correct Problems
	1) Recent fuel system service that required priming 2) Diesel fuel waxing or icing in cold temperatures 3) Low fuel level in either fuel tank 4) Vehicle unused for long period of time 5) Unseated fuel filter that causes fuel to drain back to tank Problems Found?	No: Go to step 2.

Step	Action	Decision
2	Use Servicemaxx to command fuel pump ON, Output State Test High. Measure FDP in ServiceMaxx.	Yes: Go to step 8
	Is FDP > 45 psi?	No: Go to step 3.

Step	Action	Decision
3	Prime the fuel system. Use ServiceMaxx to command the fuel pump ON, Output State Test High.	Yes: Go to step 8
	Operate the fuel pump for 2 minutes to fully prime the system.	No: Go to step 4.
	Is FDP > 45 psi after priming?	

Step	Action	Decision
4	Disconnect the fuel return line to dead head the fuel pump. Use ServiceMaxx to command fuel pump ON, Output State Test High. Measure FDP in ServiceMaxx.	Yes: Go to step 5
	<i>Note that the fuel pump may cycle ON-OFF-ON, so PEAK fuel pressure is used for this test.</i>	No: Go to step 6
	Is the PEAK FDP > 45 psi?	

Step	Action	Decision
5	Inspect the secondary (on-engine) fuel filter	Yes: Replace fuel pressure regulator and spring (jammed full open)
	Is the fuel filter seated properly and undamaged? (unseated fuel filter drains fuel back to tank, causing low pressure issues)	No: Replace damaged fuel filter

Step	Action	Decision
6	Install ZTSE 6023 EFP breakout harness and connect fuel pump. Command fuel pump on with ServiceMaxx using the Output State Test High.	Yes: Go to step 7
	Measure the voltage between pins (1 and 4) and (1 and 6). Is the voltage > 9 volts?	No: Troubleshoot power and ground circuits for the fuel pump. • Fuse • Wiring • Relay (control and switched)

Step	Action	Decision
7	Inspect the fuel pump strainer on the fuel pump. Is the fuel pump strainer completely plugged?	Yes: Replace fuel strainer
		No: Replace fuel pump

Step	Action	Decision
8	Start engine (check for more sensitive FDP fault codes). Did the engine start?	Yes: Step 9
		No: Refer to Hard Start / No Start (HSNS) procedure (not fuel related)

Step	Action	Decision
9	Operate the engine (warm engine, raise engine speed). Did the (94-1) or (94-17) fault codes set on a running engine after 2 minutes?	Yes: Diagnose the fault codes
		No: System OK. No repairs needed

PARTS INFORMATION:

Description	Part Number	Quantity Required	Ordering Instructions
Fuel pressure regulator	1893801C94	1	Order from Navistar
Fuel strainer	1899335C91	1	Order from Navistar
Fuel pump	1891305C93	1	Order from Navistar

WARRANTY INFORMATION:**Warranty Claim Coding:**

Note: Plugged fuel filters or fuel strainers are not warranty

Group:	12000 - ENGINE
Noun:	791 - electric fuel pump

Group:	12000 - ENGINE
Noun:	900 - fuel pressure regulator

12 - FUEL PRESSURE REGULATOR , REPLACE					
Hours	Code	Model	Engine	Qualifier 1	Qualifier 2
0.7	E12-7928T		HC Bus	MAXXFORCE DT/9/10	With 2010 Emissions
0.7	GY12-7928T		CE / BE	MAXXFORCE DT/9/10	With 2010 Emissions
0.7	KL12-7928T		4300, 4400	MAXXFORCE DT/9/10	With 2010 Emission
1.6	I12-5900T		RE	MAXXFORCE DT/9/10	With 2010 Emission
0.8	M12-5900T		7300, 7400, 7500	MAXXFORCE DT/9/10	With 2010 Emission

12 - ELECTRIC FUEL PUMP, DIAGNOSE AND REPLACEMENT				
Hours	Code	Model	Engine	Qualifier 1
0.7	M12-2048T		MAXXFORCE DT/9/10	

		7300, 7400, 7500		Pump Serial # N12C
0.7	GY12-2048T	CE / BE	MAXXFORCE DT/9/10	Pump Serial # N12C
0.7	KL12-2048T	4300, 4400	MAXXFORCE DT/9/10	Pump Serial # N1
1.6	I12-2048T	RE	MAXXFORCE DT/9/10	Pump Serial # N1

OTHER RESOURCES:

Additional information on this fuel system and 94-1 & 94-17 is in [IK1201004](#)

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