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Title: SPN 3055 FMI 1 No start due to low rail fuel pressure Troubleshooting

Applies To: EPA 2010 MaxxForce 11 / 13

SPN 3055 FMI 1 - Low Fuel Pressure at Start

Condition / Description	Setting Criteria	Enable Conditions / Values	Time Required
Fuel Rail Pressure below minimum pressure.	FRP less than 1,450 psi (10,000 kpa)	Engine Speed > 70 rpm Ambient Pressure > 12 psi (83 kPa) Ambient Temp > 19 F (-7.04 C) Battery Voltage (before crank) > 11 Volts	0.5 seconds

Fault Overview

Fault code sets when the Engine Control Module (ECM) detects Fuel Rail Pressure (FRP) does not build within a predetermined time while the engine is cranking.

Malfunction Indicator Lamp (MIL) Reaction

MIL will illuminate when this fault is detected during two consecutive drive cycles.

Associated Faults

SPN 94 FMI 0 (FDP); SPN 157 FMI 3, 4, 20, and 21 (FRP); and SPN 633 FMI 3, 4, and 5 (FPCV)

Drive Cycle to Determine Fault Status

Drive Cycle 2 in 2013 HD-OBD Diagnostic Reference Manual.

Possible Causes

• Fuel Rail Pressure (FRP) sensor or circuit fault

• Low fuel level

• Fuel leaks

• Restricted engine mounted secondary fuel filter

• Aerated fuel delivery

• Restricted fuel supply

• Internal leak in high-pressure fuel system

• Leaking FRP relief valve

• Leaking KUEV valve

• Failed High-pressure fuel pump

LOW PRESSURE FUEL SYSTEM TESTING

Step	Action	Decision
1	Check fuel level. Read fuel level using the vehicle instrument panel gauge and perform a visual inspection of fluid level in the fuel tank. Is sufficient fuel in the fuel tank and Not leaking?	Yes: Go to step 2. No: Add fuel or repair leaks, and prime engine.

Step	Action	Decision
2	Using Electronic Service Tool (EST) with ServiceMaxx™ software, check Diagnostic Trouble Code (DTC) list for SPN 94 FMI 0 (FDP); SPN 157 FMI 3, 4, 20, and 21 (FRP); and SPN 633 FMI 3, 4, and 5 (FPCV). Is EST DTC list free of SPN 94 FMI 0; SPN 157 FMI 3, 4, 20, and 21; and SPN 633 FMI 3, 4, and 5?	Yes: Go to step 3. No: Repair SPN 94 FMI 0; SPN 157 FMI 3, 4, 20, and 21; and SPN 633 FMI 3, 4, and 5. See health report for link to diagnostics.

Step	Action	Decision
3	Check that the engine cranks at a minimum of 130 RPM. Does the engine crank at a minimum of 130 RPM?	Yes: Go to step 4. No: Repair low cranking speed.

Step	Action	Decision
4	Verify the engine starts. Crank engine for maximum of 20 seconds. If engine does not start, wait 2 minutes and try again. Does engine start and maintain idle?	Yes: Go to SPN 3055 FMI 15 (IKnow 1201063). No: Go to step 5.

Step	Action	Decision
5	Check for low FDP. With Fuel Pressure Gauge ZTSE4681 connected at inlet to secondary fuel filter, monitor FDP while cranking. Does FDP measure > 30 PSI?	Yes: Go to step 9. No: Got to step 6.

Step	Action	Decision
6	Check for low FDP. Perform Fuel Delivery Pressure (FDP) Test (page 125). Is FDP > 30 PSI gauge or 20 PSI in ServiceMaxx?	Yes: Repair restriction in fuel supply to Low-Pressure Fuel Pump. No: Go to step 7

Step	Action	Decision
7	Check for failed low-pressure fuel pump. Perform Fuel Dead Head Test (page 126). Is pressure > 65 psi?	Yes: Go to step 8. No: Replace high pressure pump.

Step	Action	Decision
8	Check for a restricted engine fuel filter. Perform High-pressure Pump Inlet Pressure Test. Does the fuel pressure gauge read > 30 PSI?	Yes: Go to step 9. No: Replace Engine Fuel Filter.

Step	Action	Decision
9	Check for aeration in low pressure fuel system. Perform Fuel Aeration Test (page 127). Is fuel system free from aeration?	Yes: Go to step 10. No: Repair aeration in low pressure fuel system (according to Fuel Aeration Test).

Step	Action	Decision
10	Check for restriction in low pressure fuel system. Perform Fuel Restriction Test (page 130). Is fuel system free of restriction?	Yes: Go to step 11. No: Repair restriction in low pressure fuel system (according to Fuel Restriction Test).

HIGH PRESSURE FUEL SYSTEM TESTING

Step	Action	Decision
11	Check for fuel return. Perform Fuel Rail Pressure (FRP) Return Flow Test part 1. Disconnect fuel drain tube assembly at rear of cylinder head. Connect High Pressure Return Line Tester ZTSE4887 to cylinder head and route other end to diesel fuel container. Crank engine for 20 seconds while monitoring fuel return from High Pressure Return Line Tester ZTSE4887. Is the line free of return fuel from cylinder head and rail?	Yes: Go to step 12. No: Go to step 14.

Step	Action	Decision
12	Check for a failed fuel pressure relief valve. Perform Fuel Rail Pressure (FRP) Return Flow Test part 2. Restore all fuel line connections. Disconnect fuel rail return line at fuel rail. Connect High Pressure Return Line Tester ZTSE4887 to fuel rail return port and route other end to diesel fuel container. Crank engine and monitor fuel return from High Pressure Return Line Tester ZTSE4887. Is the line free of return fuel from fuel rail?	Yes: Go to step 13. No: Replace fuel rail.

Step	Action	Decision
13	Check for a failed KUEV Valve. Complete the HP Pump Return Flow Test (page 135). Is fuel line free of fuel from the high-pressure pump return port?	Yes: Replace HP Pump then go to step 15. No: Replace KUEV valve.

Step	Action	Decision
14	Check for an internal leak in the high-pressure fuel system. Perform Fuel Rail Pressure (FRP) Leak Isolation (page 173). Is engine free of leaking injector?	Yes: Retest for SPN 3055 FMI 1 and if it remains notify supervisor. No: Replace the last capped injector and all HP lines removed during this test.

Step	Action	Decision
15	Run HP Pump Fuel Return Pressure Test (page 174). Is pressure < 13 psi?	Yes: Retest for SPN 3055 FMI 1. No: Repair restriction in fuel return line between high-pressure fuel pump and fuel tank.

NOTE: After performing all diagnostic steps, if SPN 3055 FMI 1 remains, verify each step was completed correctly and the proper decision was made. Notify supervisor for further action.

Qty	Part Description	Part Number	Step	SRT Description	SRT link	(hr)	Group	Noun
1	High pressure fuel rail	3006765C91	12	High pressure fuel rail, Replace	R12-7452U	3.8	12000-Engine	452
1	High pressure fuel pump kit	3007641C93	13	High Pressure Fuel Pump & Drive Gear, Replace	R12-7454U-20	3.0	12000-Engine	454
1	KUEV	3015878C91	13	KUEV, Replace	A12-T1	0.3	12000-Engine	454

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