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Countries:

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Coding Information

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Title: SPN 3055 FMI 15 FRP Below Minimum Troubleshooting

Applies To: EPA 2010 MaxxForce 11 / 13 /15

CHANGE LOG

2015/07/07 - Author updated for feedback purposes, fixed SRT hyperlink, modified step 6 to follow WPL2800115 for Approval of HPP replacement.

2015/06/25 - Updated coding to include New Zealand, Russia

2015/06/23 - Modified step 6 to instruct to open a Tech Services case file for Approval of HPP replacement. Added reference to WPL in step 11. Removed references to N13 because it is covered by the ECAP. Created or revised links to specific fuel tests and

DESCRIPTION

This document contains the steps to be taken to diagnose and correct a SPN 3055 FMI 15 FRP Below Minimum with Maximum Command. This fault code sets when the Engine Control Module (ECM) detects Fuel Rail Pressure (FRP) is below minimum when the maximum is commanded.

SYMPTOMS

Diagnostic Trouble Codes & Dashboard Indicator Lights:

DTC/Light	Description
SPN 3055 FMI 15	FRP Below Minimum with Maximum Command

Fault Code Entry Conditions:

Condition / Description	Setting Criteria	Enable Conditions / Values	Time Required
FRP Governor deviation above maximum limit	Rail pressure governor error > 725 PSI at 600-750 RPM	- Key ON - Metering unit flow > function engine speed (41500-55000 mm3/s) - Engine mode normal - Engine speed > 0 rpm OR Fuel Rail Pressure > 90000 kpa for more than 20 engine revolutions - Metering unit flow < 327670 mm3/sec	10 seconds

Malfunction Indicator Lamp (MIL) Reaction

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

Possible Causes

- Restricted fuel supply
- Restricted engine mounted secondary fuel filter
- Failed High-pressure fuel pump
- Fuel Rail Pressure (FRP) sensor or circuit fault
- Aerated fuel delivery
- Fuel leaks
- Low fuel level
- Internal leak in high-pressure fuel system
- Leaking FRP relief valve
- Stuck or sticking FPCV (not likely)

SPECIAL TOOLS

Tool Description	Tool Number	Comments	Instructions
Fuel Priming Tool	12-922-01		
Clean Fuel Source Tool	15-637-01	Only if necessary	
Compucheck Fitting	ZTSE4526	For fuel restriction or fuel return pressure test, if necessary	
Pressure Test Kit	ZTSE4409	For fuel restriction test, if necessary	
Fuel Pressure Gauge	ZTSE4681	For fuel return pressure test, if necessary	
Fuel Inlet Restriction/Aeration Tool	ZTSE4886	For fuel restriction test, aeration test, or fuel return pressure test, if necessary	
Fuel Block Off Tool	ZTSE4905	For fuel restriction test and aeration test, if necessary	
Fuel Line Coupler	ZTSE4906		
Fuel Line Disconnect Tool	ZTSE4773		

Link to [Tools Resource Center](#)

SERVICE PARTS INFORMATION

Kit Description	Part Number	Qty	Notes
High pressure fuel pump Kit 11L/13L/N13	3007641C95	1	If required
High pressure fuel pump Kit 15L	3014489C91	1	If required
Kit, Fuel Filter 11L/13L Secondary engine mounted	3004473C93	1	If required
Kit, Fuel Filter 13L primary	See Parts Catalog	1	If required, Restriction Test Point
Kit, Fuel Primer Pump and Strainer 13L	3004477C92	1	If required, Restriction Test Point or Aeration Test
Rail Assm, Fuel	3006765C91		If required
Injector	See Parts Catalog		If required, FRP return flow test part 1
Return Line HPFP to fuel tank	3005913C1	1	If required, Fuel Return Pressure test

DIAGNOSTIC STEPS

Step	Action	Decision
1	Perform Fuel Level and Quality System Inspection Is fuel present, fuel tanks leak free and fuel quality acceptable?	Yes. Go to Step 2.

		No: Repair fuel leaks and add fuel. Prime fuel system. Perform procedure. After repairs are complete retest for SPN 3055 FMI 15.
Step	Action	Decision
2	Check for associated faults. Using Electronic Service Tool (EST) with ServiceMaxx™ software, check Diagnostic Trouble Code (DTC) list for SPN 157 FMI 3, 4, 20, and 21 (FRP) or SPN 633 FMI 3, 4, and 5 (FPCV). Is the EST DTC list free of SPN 157 FMI 3, 4, 20, and 21, and SPN 633 FMI 3, 4, and 5?	Yes. Go to Step 3 .
		No. Repair other fault codes, first. See health report for link to diagnostics. If the code is still present, go to Step 3.
Step	Action	Decision
3	Check engine cranking speed. Crank engine for maximum of 15 seconds. Does the engine crank at a minimum of 130 RPM?	Yes. Go to Step 4 .
		No: Perform Engine Cranks Fast, Slow, or Does Not Crank. After repairs are complete, retest for SPN 3055 FMI 15.
Step	Action	Decision
4	Verify engine starts and maintains idle. Crank engine for maximum of 15 seconds. If engine does not start, wait 2 minutes and try again. Does engine start and maintain idle?	Yes. Go to Step 5 .
		No. Go to SPN 3055 FMI 1 (IKnow 1201062)
Step	Action	Decision
5	Perform High-pressure Pump Inlet Pressure Test. Does the fuel pressure gauge read > 30 PSI?	Yes. Go to Step 7 .
		No. Go to Step 6 .
Step	Action	Decision
6	Check for restricted secondary (engine-mounted) fuel filter. Remove and inspect secondary engine-mounted fuel filter. Is filter plugged?	Yes. Replace Secondary engine-mounted Fuel Filter and retest for 3055-15 code.
		No. Replace the high pressure fuel pump. Note: Please follow WPL2800115 for iApproval requirements to replace the pump. Reference this IKNOW and step 1-6 findings. Make sure to use fuel priming tool (12-922-01) after pump replacement. Go to Step 13.
Step	Action	Decision
7	Check for aeration in low pressure fuel system. Perform Fuel Aeration Test. Was aeration present?	Yes. Repair source of aeration. Recheck for Fault Codes.
		No. Go to Step 8 .
Step	Action	Decision
8		

	Check for restriction in low pressure fuel system. Perform Fuel Restriction Test .	Yes. Repair source of restriction. Recheck for Fault Codes. No. Go to Step 9 .
	Is fuel system restricted?	
Step	Action	Decision
9	Check for excessive 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. Start engine and monitor fuel return from High Pressure Return Line Tester ZTSE4887 for 60 seconds at low idle. Is the fuel volume < 60 ml?	Yes. Go to Step 10 .
		No. Go to Step 12 .
Step	Action	Decision
10	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. Start engine and monitor fuel return from High Pressure Return Line Tester ZTSE4887 for 60 seconds at high idle. Note. If the FPRV has failed, a noticeable spray or mist will be present. Minor fuel return is normal due to seepage past the test tool threads. Is the line free of return fuel from fuel rail?	Yes. Zero or minor amount of fuel is present. Go to Step 11 .
		No. Replace fuel rail. Recheck for Fault Codes.
Step	Action	Decision
11	Run the High Pressure Fuel Pump test using ServiceMaxx and Cylinder Performance Analyzer. See WPL 15-006G Warranty iApproval Requirements for criteria when the CPA test is not required. See HPFP CPA test Did the CPA issue a Warranty Authorization Code, indicating the high pressure pump needs to be replaced?	Yes. Replace the High Pressure Fuel Pump if a WAC was generated by the CPA tool. Make sure to use fuel priming tool (12-922-01). Go to Step 13 .
		No. Open a Tech Service Case File and attach CPA file, if available.
Step	Action	Decision
12	Check for an internal leak in the high pressure fuel system. Perform Fuel Rail Pressure (FRP) Leak Isolation . Is engine free of leaking injector?	Yes. End diagnostics. Retest for 3055-15.
		No. Replace the last capped injector and all HP lines removed during this test. Recheck for Fault Code 3055-15.
Step	Action	Decision
13	Check for restricted fuel return line. Perform HP Pump Fuel Return Pressure Test . Is the fuel return pressure 13 psi or less?	Yes. End diagnostics. Retest for 3055-15..
		No. Repair restriction in fuel return line between high-pressure fuel pump and fuel tank. Recheck for Fault Code 3055-15.

NOTE:

After performing all tests, if no problem is found, verify if each step was completed correctly and the proper decision was made. Return to SPN 3055 FMI 15 fault code diagnostics.

WARRANTY INFORMATION

Claim Requirements/Approvals:

In April or May 2015, the Warranty Center will be requiring WAC or case file for High Pressure Fuel Pump replacements. This will be announced in a future Warranty Policy Letter.

Warranty Claim Coding:

Group:	12000 - Engine
Noun:	454 - High Pressure Fuel Pump

Hrs	Code	Model	Engine	Description
0.5	A12-2158U	All	EPA10 MAXXFORCE 11/13	Cylinder Performance Analyzer Tool Diagnostics HP Fuel Pump
0.3	R12-2174U	ProStar	EPA10 MAXXFORCE 11/13	Electronic Engine Performance, Diagnose Step 4 EST Connection and Data Recording
3.0	R12-7454U-20	"	"	High Pressure Fuel Pump & Drive Gear, Replace, if required
0.7	R15-4167U-20	"	"	Fuel Filter, replace if required, includes fuel system priming
3.1	R12-7452U	"	"	High Pressure Fuel Rail, replace if required
0.3	R12-2192U	"	"	HP Pump Fuel Return Pressure Test, if required
0.3	T12-2063U	PayStar	EPA10 MAXXFORCE 11/13	Electronic Engine Performance, Diagnose Step 4 EST Connection and Data Recording
3.0	T12-7454U-20	"	"	High Pressure Fuel Pump & Drive Gear, Replace, if required
3.1	T12-7452U	"	"	High Pressure Fuel Rail, replace if required
0.3	T12-2081U	"	"	HP Pump Fuel Return Pressure Test, if required
3.0	S12-7454U-20	LoneStar	EPA10 MAXXFORCE 11/13	High Pressure Fuel Pump & Drive Gear, Replace, if required
0.6	S15-4167U-20	"	"	Fuel Filter, replace if required, includes fuel system priming
0.3	S12-2030U	"	"	HP Pump Fuel Return Pressure Test, if required
0.3	Q12-2174U	TranStar	EPA10 MAXXFORCE 11/13	Electronic Engine Performance, Diagnose Step 4 EST Connection and Data Recording
3.0	Q12-7454U-20	"	"	High Pressure Fuel Pump & Drive Gear, Replace, if required
0.6	Q15-4167U-20	"	"	Fuel Filter, replace if required, includes fuel system priming
3.1	Q12-7452U	"	"	High Pressure Fuel Rail, replace if required
0.3	Q12-2192U	"	"	HP Pump Fuel Return Pressure Test, if required
0.3	N12-2174U	WorkStar	EPA10 MAXXFORCE 11/13	Electronic Engine Performance, Diagnose Step 4 EST Connection and Data Recording
3.0	N12-7454U-20	"	"	High Pressure Fuel Pump & Drive Gear, Replace, if required
0.7	N15-4167U-20	"	"	Fuel Filter, replace if required, includes fuel system priming
3.1	N12-7452U	"	"	High Pressure Fuel Rail, replace if required
0.3	N12-2192U	"	"	HP Pump Fuel Return Pressure Test, if required

[SRT Manual](#)

OTHER RESOURCES

[Master Service Information Site](#)

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Feedback Information

Viewed: 8861

Helpful: 18

Not Helpful: 4

Staff ID	Client ID	Comments	Created Date
	DY48754		

You received the following feedback From: dy48754 - Chask Holley Email Address: holleyc@rushenterprises.com Job Classification: SE008, Service Technician Dealer: RUSH TRK CTR OF GA Feedback: When describing fuel restriction test in articles please have restrictions specs in material to keep us from having to search for the specifications.	7/18/2015 1:30:57 PM
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