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Coding Information

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Title: MaxxForce 13L High Pressure Fuel Pump CPA Test

Applies To: EPA 2010 & later MaxxForce 13 and N13

CHANGE LOG

3/27/2015 - Updated Article Coding
 3/25/2015 - Initial Article Release

DESCRIPTION

Prior to using this article, refer to IK1201061 for 3055-0 and/or IK1201063 for 3055-15.

This document describes the how to run the 13L high pressure fuel pump (HPFP) test in the Cylinder Performance Analyzer (CPA). The Cylinder Performance Analyzer (12-999-01) assists in diagnosing mechanical defects by monitoring electrical signals from the engine sensors.

For this tests the CPA Tool is connected to the:

- Camshaft position sensor (CMP)
- Crankshaft position sensor (CKP)
- Fuel rail pressure sensor (FRP)
- Fuel Pressure Control Valve (FPCV)

If the CPA detects a failed HPFP it will issue a WAC for the HPFP

If the CPA confirms that the HPFP is ok, proceed with other diagnostics and/or open a case file for further instruction. Its recommended to print the CPA HPFP test set-up instructions (that are also displayed in the software)

WARNING- When testing a MaxxForce 13, the CPA Tool must only be connected when the vehicle is parked and the parking brake is set. NEVER DRIVE the vehicle with the CPA Tool (or its cables) connected to the engine on the engine. The engine could stall without warning.

SPECIAL TOOLS

Tool Description	Tool Number	Comments	Instructions
			IK2900030

EZ-Tech w/ServiceMaxx and CPA software v6 or higher		Download from the EZ-Tech Download Center	
RP1210 communication device			
CPA Tool	OE-11178 or 12-999-01-01 (with blue rubber sides)		TL2900079
CPA Extension Harness	12-999-01-05	4 required	
Banana Jack breakout (short)	12-999-01-06	2 required	
Banana Jack breakout (long)	12-999-01-08	2 recommended	TL2900113
Banana test leads	in kit ZTSE4435C	can be used in conjunction with 12-999-01-06 if 12-999-01-08 is not available	
180-pin Breakout Box	00-00956-08		
E1 and E2 Harness Overlay (Breakout box overlay)	16-00530-00		
2010 MaxxForce 11 & 13 Harness (E1/E2)	00-01468-00		SFN1064

[Tools Resource Center](#)

WARNING: To prevent personal injury and / or death, read all safety instructions in the “Safety Information” section of the *Engine Service Manual* or *Engine Diagnostic Manual*.

•

Park vehicle on a hard, flat surface, turn engine off, set parking brake, and install wheel chocks to prevent vehicle from moving in either direction.

- Always wear safe eye protection when performing vehicle maintenance.

CAUTION: To prevent property damage, the Cylinder Performance Analyzer (CPA) is a sensitive and sophisticated piece of equipment and should be handled with care. Exterior damage may adversely affect the functionality of the tool, causing flawed test results.

When testing a MaxxForce® 13 engine, connect the CPA tool only if the vehicle is parked and the parking brake is set. Never drive the vehicle with the CPA tool (or cables) connected to the engine because it may stall without warning.

CPA HARDWARE INSTALLATION INSTRUCTIONS

CAUTION: Secure the CPA tool and related wiring away from hot and moving engine parts with cable ties while performing tests.

To print out the instructions included in the CPA software, click [13L HPFP CPA instructions](#). These instructions include a photo of the breakout box and cable hookups.

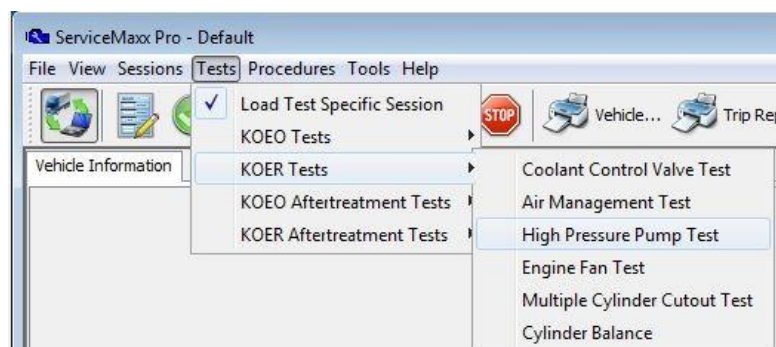
1. Connect cable between port on CPA Tool to USB port on EZ Tech® or other Electronic Service Tool (EST) with CPA and ServiceMaxx installed.
2. Connect RP1210 communication device (ie Nexiq) to the vehicle J1939 datalink connector and the other to the EZtech.

3. Disconnect two connectors (E2 must be removed prior to removing E1) on ECM.
 4. Connect the E1 breakout harness connector to the E1 ECM 96 pin connector. Reconnect the second connector (E2) back to the ECM.
 5. Connect E1 breakout harness 00-01648-00 connector to the E1 engine harness connector that was removed from the ECM.
 6. Connect X connector of engine harness 00-01648-00 to X connector of 180 pin breakout box 00-00956-08. (Z connector of engine harness 00-01648-00 is not used).
 7. Connect "cam sensor" channel (CMP) on CPA box to ECM breakout box E17 black & E41 red, using 12-999-01-05 and banana jack 12-999-01-06.
 8. Connect "crank sensor" channel (FPCV) on CPA box to ECM breakout box E73 black & E25 red, using 12-999-01-05 and banana jack 12-999-01-06.
 9. Connect "sensor 3" channel (FRP) on CPA box to ECM breakout box E21 black & E34 red, using 12-999-01-05 and banana jack 12-999-01-08 (or substitute 12-999-01-06 and banana lead from ZTSE4435C).
 10. Connect "sensor 4" channel (FDP) on CPA box to ECM breakout box E22 black & E35 red, , using 12-999-01-05 and banana jack 12-999-01-08 (or substitute 12-999-01-06 and banana lead from ZTSE4435C).
- NOTE: The two signal adjustment knobs should be turned as far clockwise as possible. Newer CPA tool versions are not equipped with these knobs.

CPA TEST INSTRUCTIONS

Prior to using this article, refer to IK1201061 for 3055-0 and/or IK1201063 for 3055-15.

Preliminary Test & CPA Software Requirements



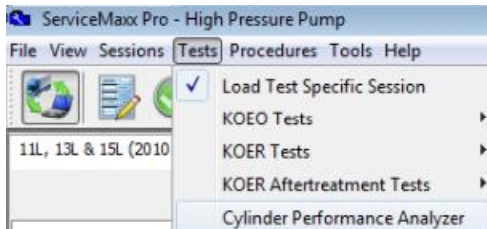
1. Confirm that the engine runs well enough to complete a ServiceMaxx "High Pressure Fuel Pump Test". Do not proceed until this is confirmed.
2. If the test does not run, refer to [TROUBLESHOOTING- HPFP WILL NOT RUN IN SERVICEMAXX](#) near the end of this article.
3. Verify CPA software is downloaded--check for "Engine Cylinder Performance Analyzer" software in Start menu. If the software is NOT listed, it must be installed prior to continuing.
4. Verify CPA software is updated to version 6.XXX or higher

Refer to [TL2900030 Dealer EZ-Tech and Diagnostic Software Support Resource Center](#) for support to obtain or upgrade software.

Service Maxx/ CPA Software Instructions

To print out the instructions included in the CPA software, click [13L HPFP CPA instructions](#)

1. Key On Engine Off
2. Launch ServiceMaxx.



3. In Service Maxx, Select "Tests" "Cylinder Performance Analyzer"

Base Engine Class	i783(BB 11& 13)
Engine Type	MaxxForce 11/13 (2010 - 2012)
Software Identification	OEEAASMA
Engine Family Rating Code	
VIN	1HSDJSJRXCJ553140
Engine Serial Number	125HM2Y4111504
Transmission Type	Manual
Rated Horsepower	450.0 hp
Total Miles	333,610.1 miles
Total Fuel Used	48,220.4 gal
Total Engine Hours	
Time/Date	3:11 PM, 3/16/2015
Dealer Name & Location	Mark Ehlers, Service Engineering, Canfixit, Indiana (000000-C)
Operator	MSE
Customer Complaints	test

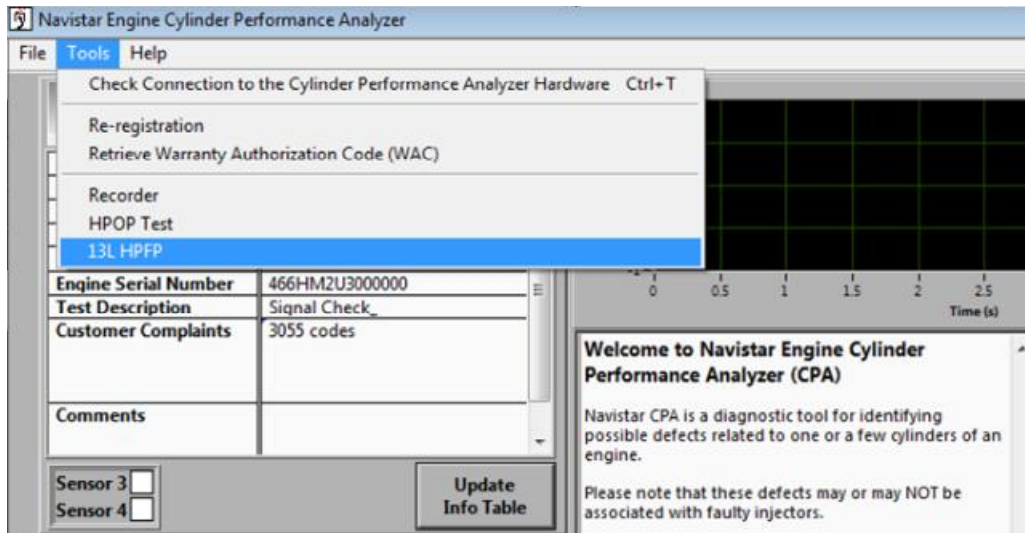
General User User Group

Please fill in the information table and then press "Proceed" or "Quit" button.
To Proceed, all **bold** fields must be filled in.

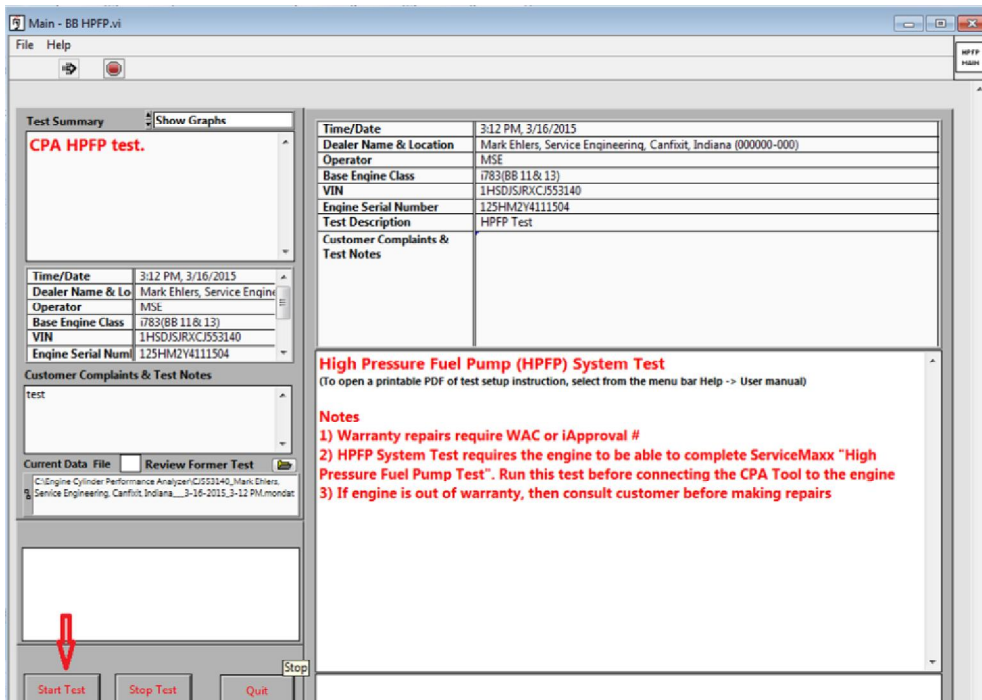
☐ Show "Help" Tipstrip

Proceed (F5) **Quit**

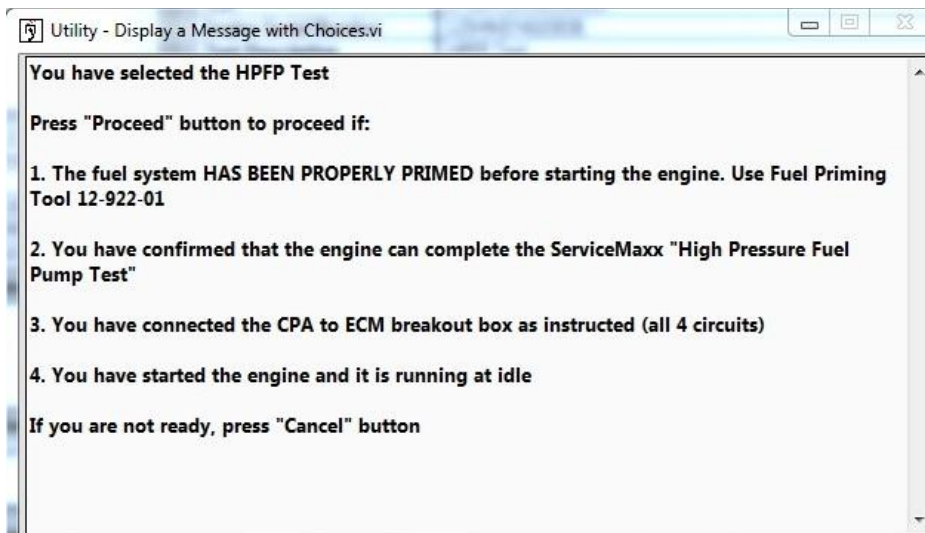
4. In the CPA window, the CPA Log-In window appears and populates vehicle information. Manually enter operator and customer complaints, and click PROCEED (or F5)



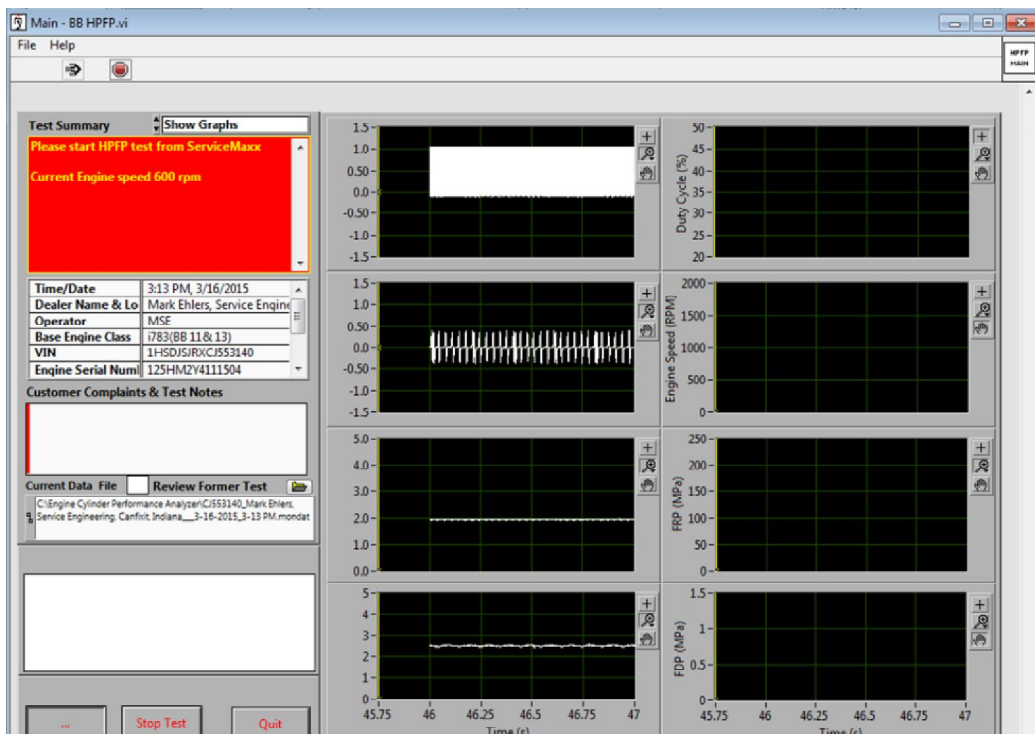
5. In CPA window, select "Tools" "13L HPFP"
6. Start the vehicle and make sure engine coolant temperature is 100 degrees F or greater.



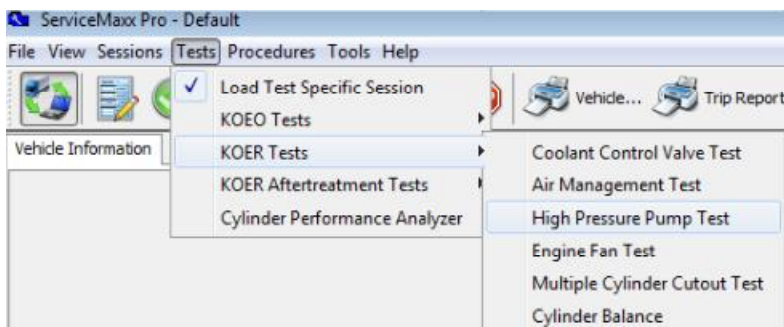
7. In CPA window, the CPA HPFP test window will open. Select "Start Test"



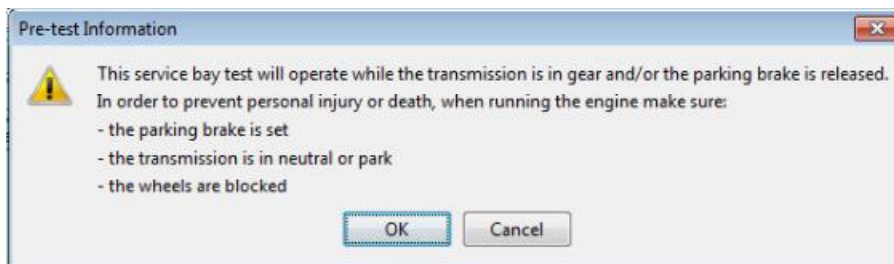
8. "You have selected HPFP test" window will appear. Select "Proceed" (not shown below)



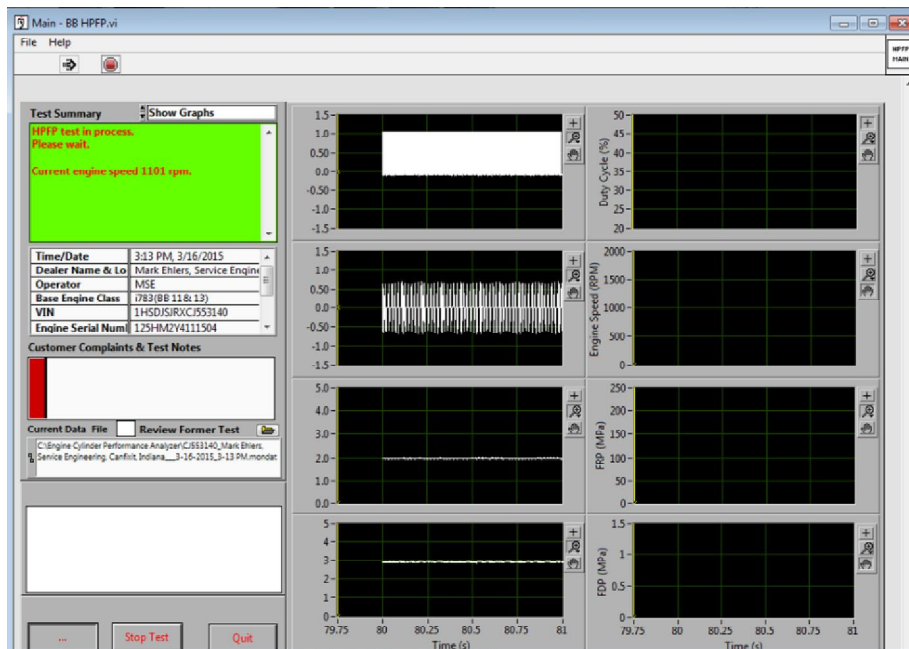
9. In CPA, "Please start test from ServiceMaxx" window will appear.



10. Toggle to the ServiceMaxx window. In ServiceMaxx, Select "Tests" "KOER Tests" "High Pressure Pump Test"



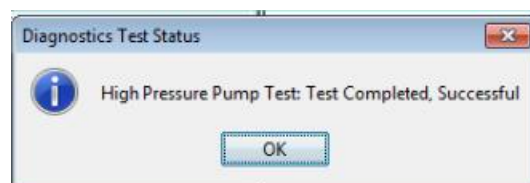
11. When the pretest Information window appears in ServiceMaxx, select "OK"



12. Toggle to the CPA window. In CPA, the HPFP test in process window will appear.



The above CPA screen shows that the HPFP has failed and should be replaced. A WAC code is generated.



14. In Service Maxx, the test completed screen will appear.

15. Turn off the vehicle. Close CPA and ServiceMaxx programs as necessary. Disconnect all CPA test hardware and reassemble harness connections.

16. CPA test complete--proceed with repairs or return to iKNow diagnostics.

CPA File Attachment to Case Files Instructions

1. Open the case file in the International® Service Portalsm.

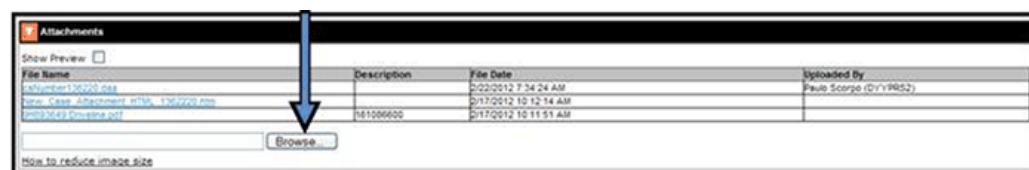


Figure 3

2. From the case file home page, select the BROWSE button.

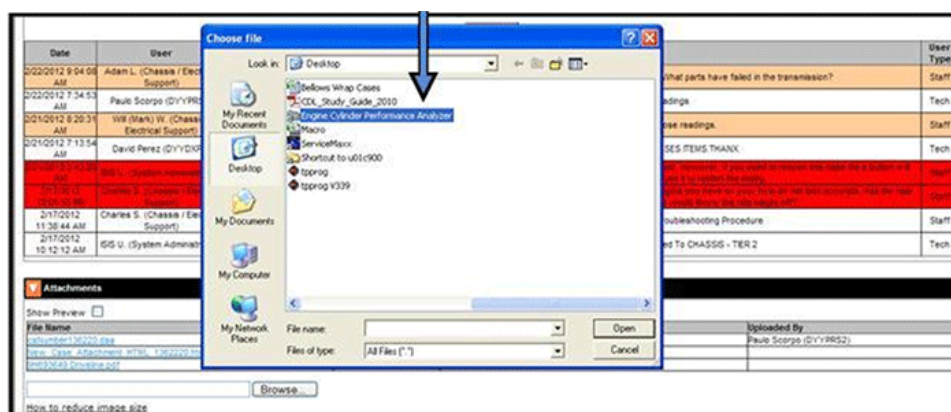


Figure 4

4. Select Engine Cylinder Performance Analyzer folder.

5. Select the Mondat file from the appropriate test recording(s)

6. Verify the Mondat file is under the Attachments section of the case file home screen.

TROUBLESHOOTING- HPFP will not run in ServiceMaxx

TEST ENTRY CONDITIONS

The section is to help troubleshoot when the HPFP test will not run in ServiceMaxx. The following items can be addressed in ServiceMaxx High Pressure Pump session.

High Pressure Pump ☒ Lock

Entry Conditions:

- Parameter: 77532 Maximum Standstill Engine Speed (Set 1650 RPM or above)
- Parameter: 82032 High Idle Engine Speed (Set 1650 RPM or above)
- N13 SCR Only: AFT Regen Inhibit - Engine Not Warmed up (Not Inhibited)
- N13 SCR Only: AFT DPF Regen Stage (Not in SCR Warm up)
- N13 SCR Only: SCR Intake Temperature (Above 450 F)
- Engine Coolant Temperature 1 (Above 100 F)
- Engine Speed (before test starts, below 750 RPM)
- 11L Only: AFT Regen Status (Not Active)
- Accelerator Pedal Position (0%)
- Brake Switch (Released)
- Parking Brake (Set)

1. In the first tab, review the entry conditions which must be met for the HPFP test to run.

11L, 13L & 15L (2010 -)			
Entry Conditon signals			
Parameters			
Y	Name	Value	Units
	AFT DPF Regen Stage	REGEN_STAGE_NONE	
	AFT Regen Inhibit - Engine Not Warmed Up	Not inhibited	
	Accelerator Pedal Position 1	0.0	%
	Brake Switch	Released	
	DPF Soot Load	23	%
	Engine Coolant Temperature 1	180	F
	Engine Speed	598.5	RPM
	Parking Brake Switch	Set	
	SCR Intake Temperature	459.7	F

2. In the "Entry Condition signals" tab, review the current signals and compare to above requirements.

11L, 13L & 15L (2010 -)			
Entry Conditon signals			
Parameters			
Undo All Changes...		Program Engine...	☒ Only Show Watched
Y	ID	Name	Value
	77532	Maximum Standstill Engine speed	1,650
	82022	Low Idle Engine Speed	600
	82032	High Idle Engine Speed	1,650

3. In the "Parameters" tab, change any parameters as needed.
4. Perform HPFP test.

WARRANTY INFORMATION

Special Requirements:

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:

For all Warranty Coding, see the appropriate iKNow article.

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

Standard Repair Times:

Hrs	Code	Model	Engine	Description
0.5	A12-2158U	All	EPA10 MAXXFORCE 11/13	Cylinder Performance Analyzer Tool Diagnostics HP Fuel Pump
0.5	A12-2158US	All	N13	Cylinder Performance Analyzer Tool Diagnostics HP Fuel Pump

[SRT Manual](#)

OTHER RESOURCES

[Master Service Information Site](#)

 Hide Details		Feedback Information	
		Viewed:	472
		Helpful:	6
		Not Helpful:	0
Staff ID	Client ID	Comments	Created Date
	DY02266	You received the following feedback From: dy02266 - Greg Bursey Email Address: greg_bursey@live.com Job Classification: SE008, Service Technician Dealer: C22-HARVEY & COMPANY LTD Feedback: step #8 says "Connect "crank sensor" channel (FPCV) on CPA box to ECM breakout box " and i think the abbreviation should be (CKP) instead of (FPCV).	3/28/2015 8:42:26 AM

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