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Availability:	ISIS, FleetISIS	**Revision:**	6
Major System:	ENGINES	**Created:**	1/7/2015
Current Language:	English	**Last Modified:**	2/24/2016
Other Languages:	NONE	**Author:**	Mujtaba Aidroos
Viewed:	5174		

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Title: Big Bore High Pressure Fuel Pump CPA Test Procedure

Applies To: EPA 2010 & later MaxxForce 11, 13L and N13 Engines

CHANGE LOG

2/24/2016- corrected CAM polarity error in instructions
7/06/2015 - Author updated for feedback purposes.
06/25/2015 - Updated coding to include New Zealand, Australia, Russia
04/27/2015 - Added information about WAC policy letter
03/27/2015 - Updated Article Coding
03/25/2015 - 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)
- Duel Delivery Pressure sensor (FDP)
- 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. The engine could stall without warning.

SPECIAL TOOLS

Tool Description	Tool Number	Comments	Instructions
EZ-Tech w/ServiceMaxx and CPA software v6 or higher		Download from the EZ-Tech Download Center	IK2900030
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 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 red & E41 black, 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

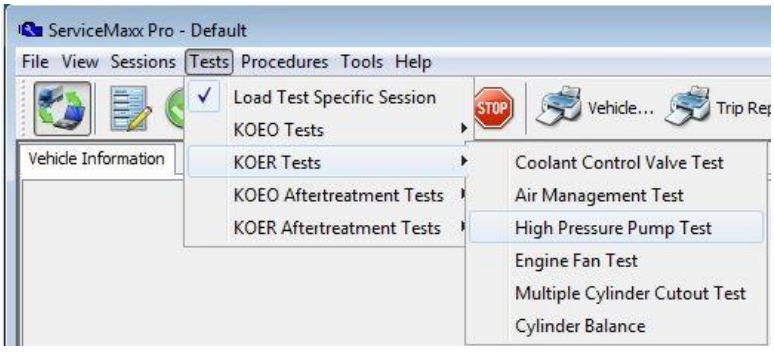
E22 black & E35 red, , using 12-999-01-05 and banana jack 12-999-01-08 (or substitute 12-999-01-06 and banana lead from ZTSE4435C).

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.

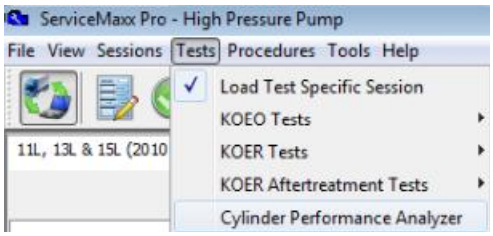
4. Verify CPA software is updated to version 6.XXX or higher

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

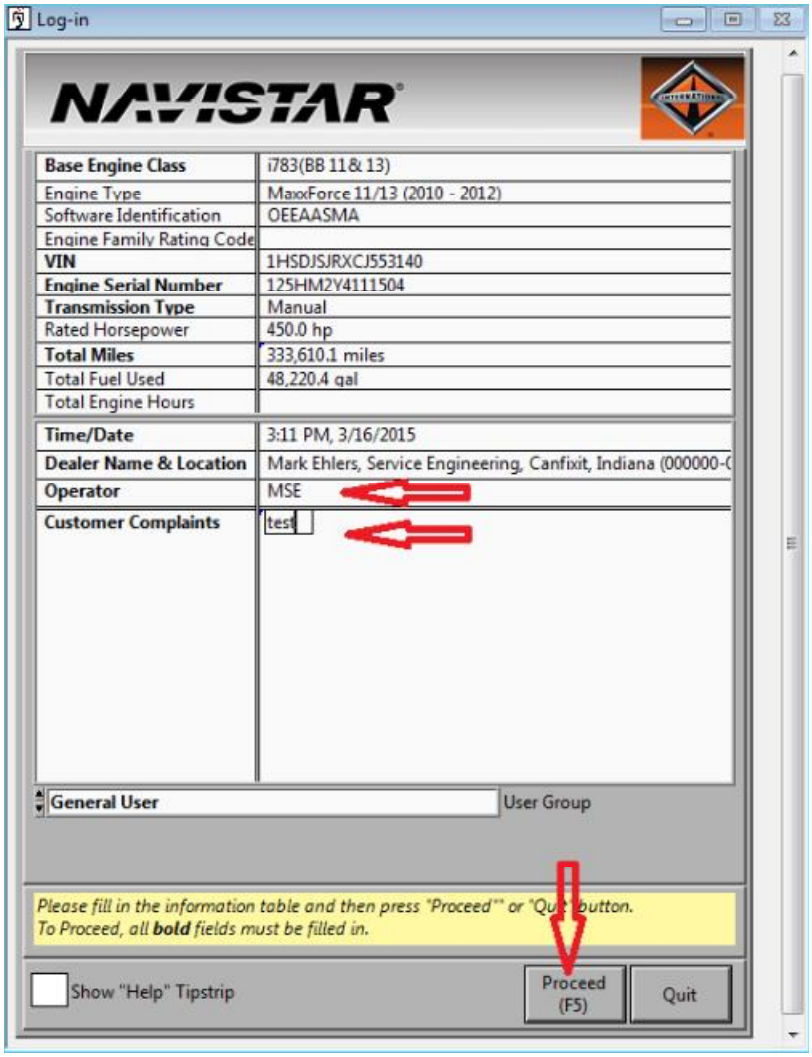
Service Maxx/ CPA Software Instructions

To print out the instructions included in the CPA software, click13L HPFP CPA instructions

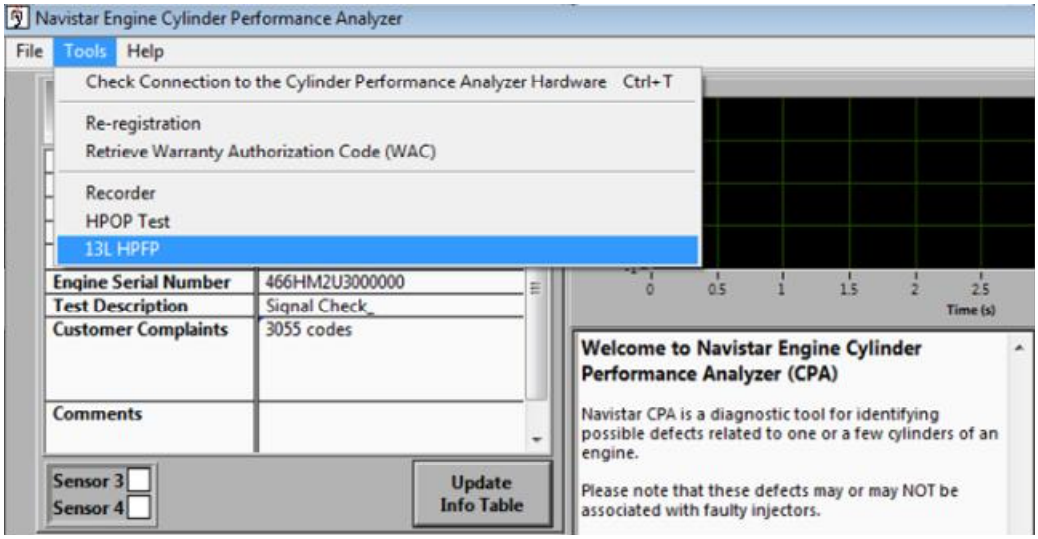
1. Key On Engine Off
2. Launch ServiceMaxx.



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

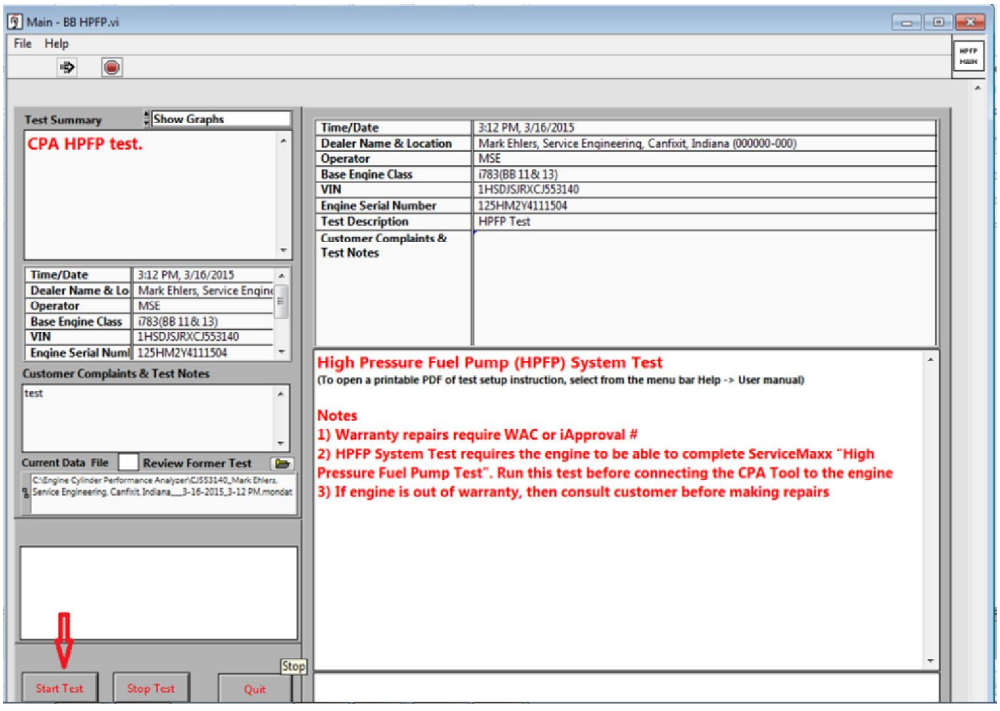


4. In the CPA window, the CPA Log-In window appears and populates vehicle information. Manually enter operator and customer complaints, and click PROCEED (or F5)

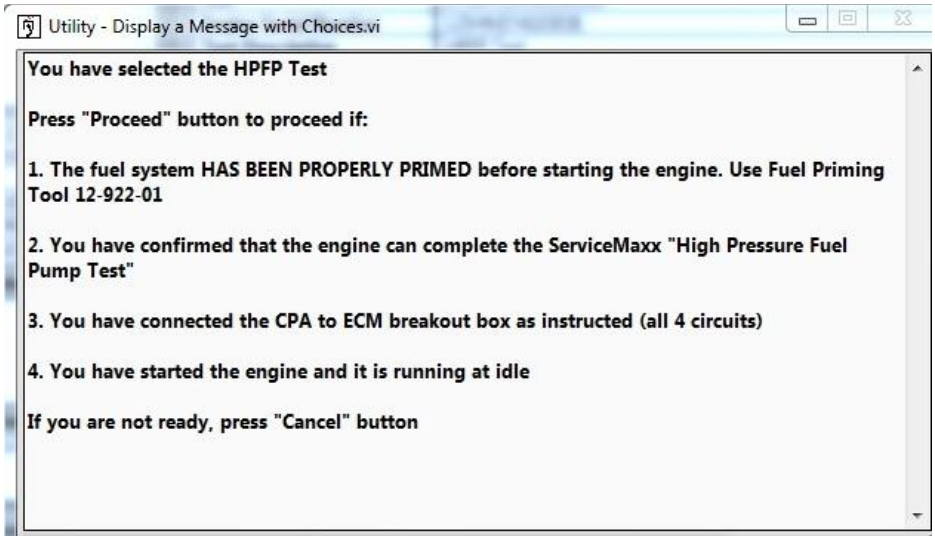


5. In CPA window, select "Tools" "13L HPFP"

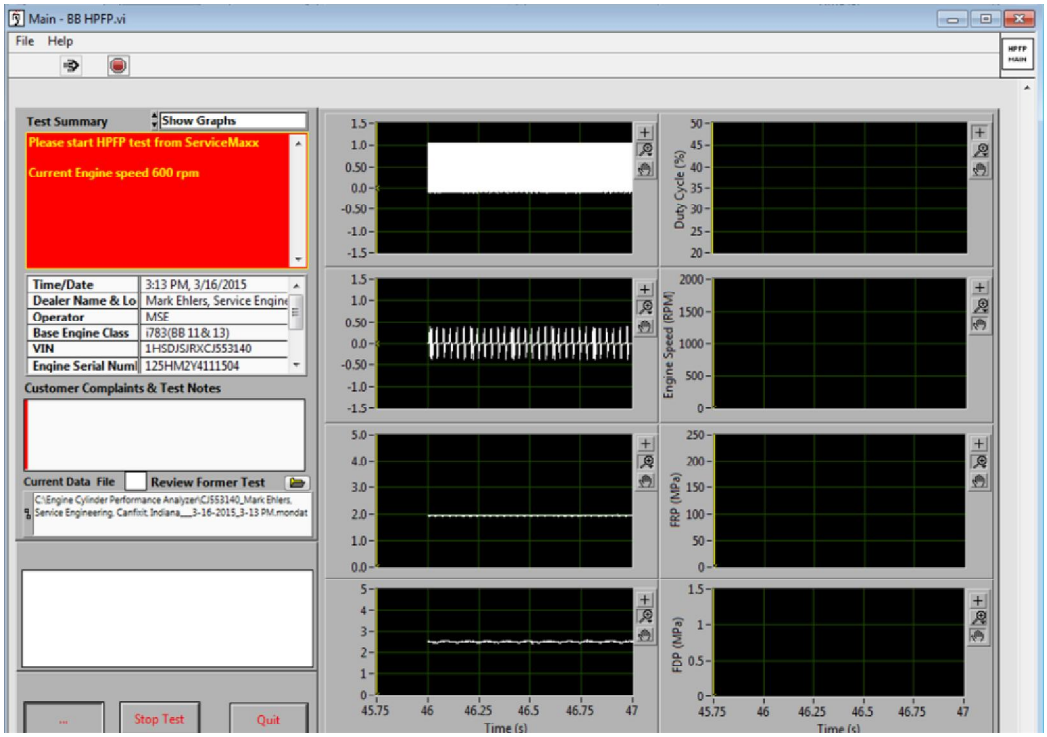
6. Start the vehicle and make sure engine coolant temperature is 100 degrees F or greater.



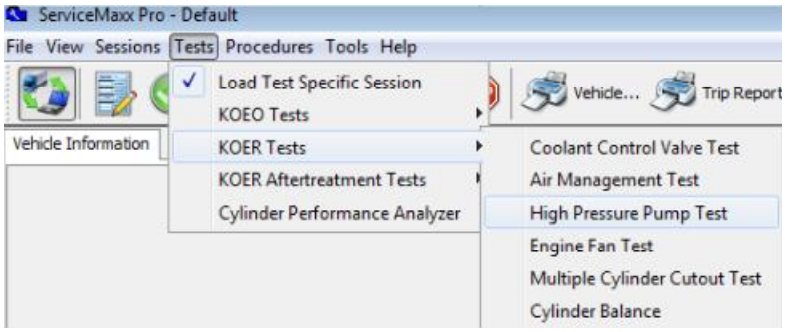
7. In CPA window, the CPA HPFP test window will open. Select "Start Test"



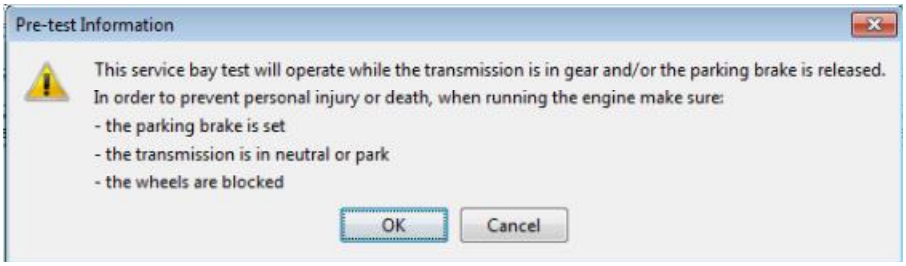
8. "You have selected HPFP test" window will appear. Select "Proceed" (not shown below)



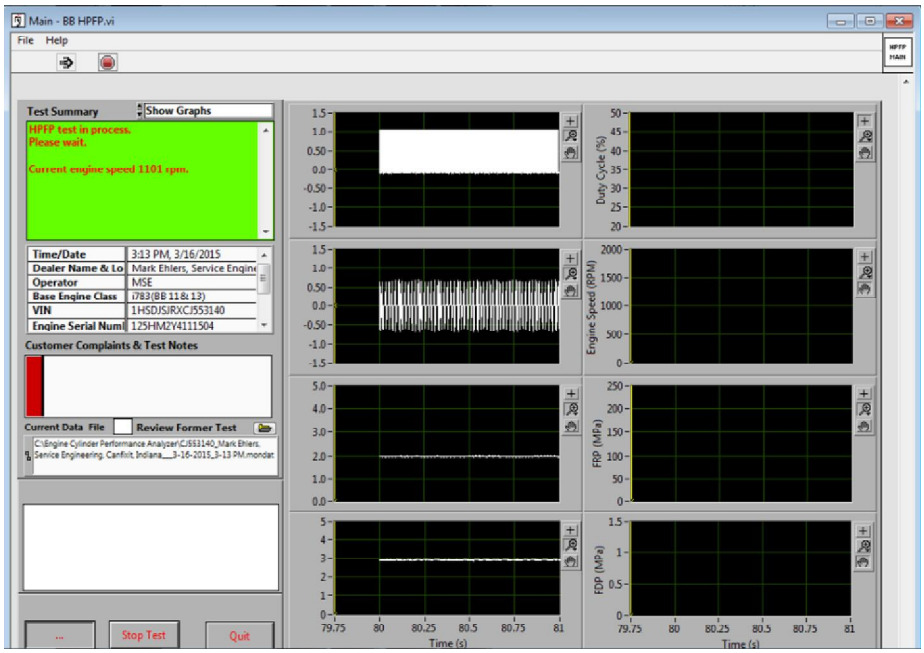
9. In CPA, "Please start test from ServiceMaxx" window will appear.



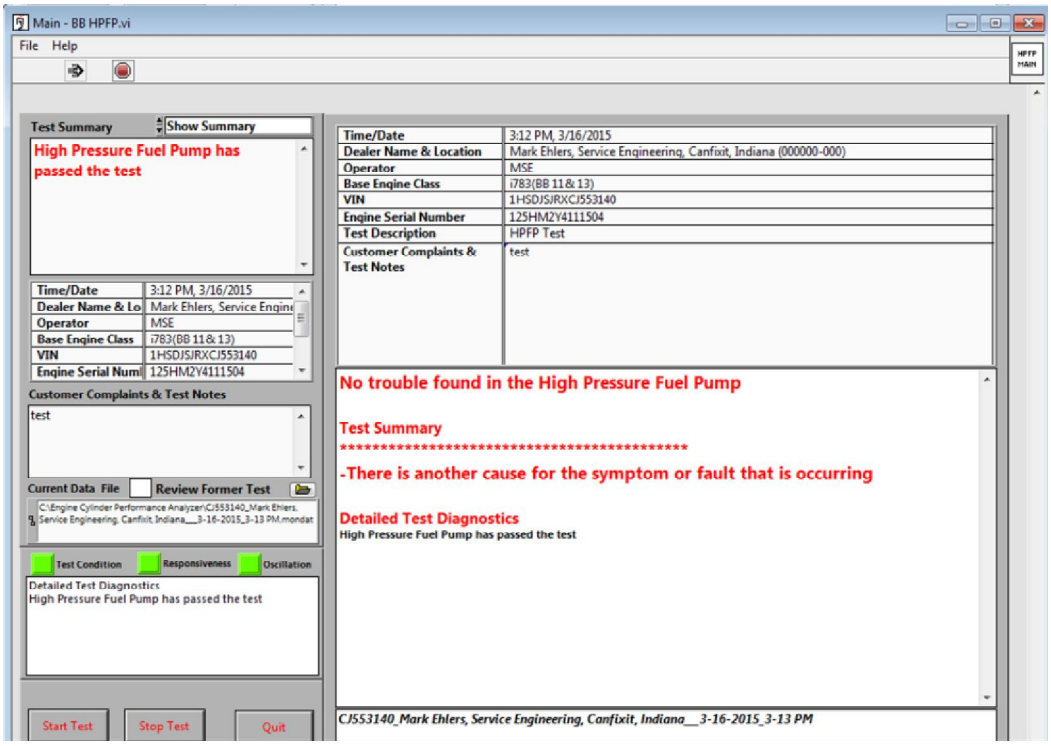
10. Toggle to the ServiceMaxx window. In ServiceMaxx, Select "Tests" "KOER Tests" "High Pressure Pump Test"



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



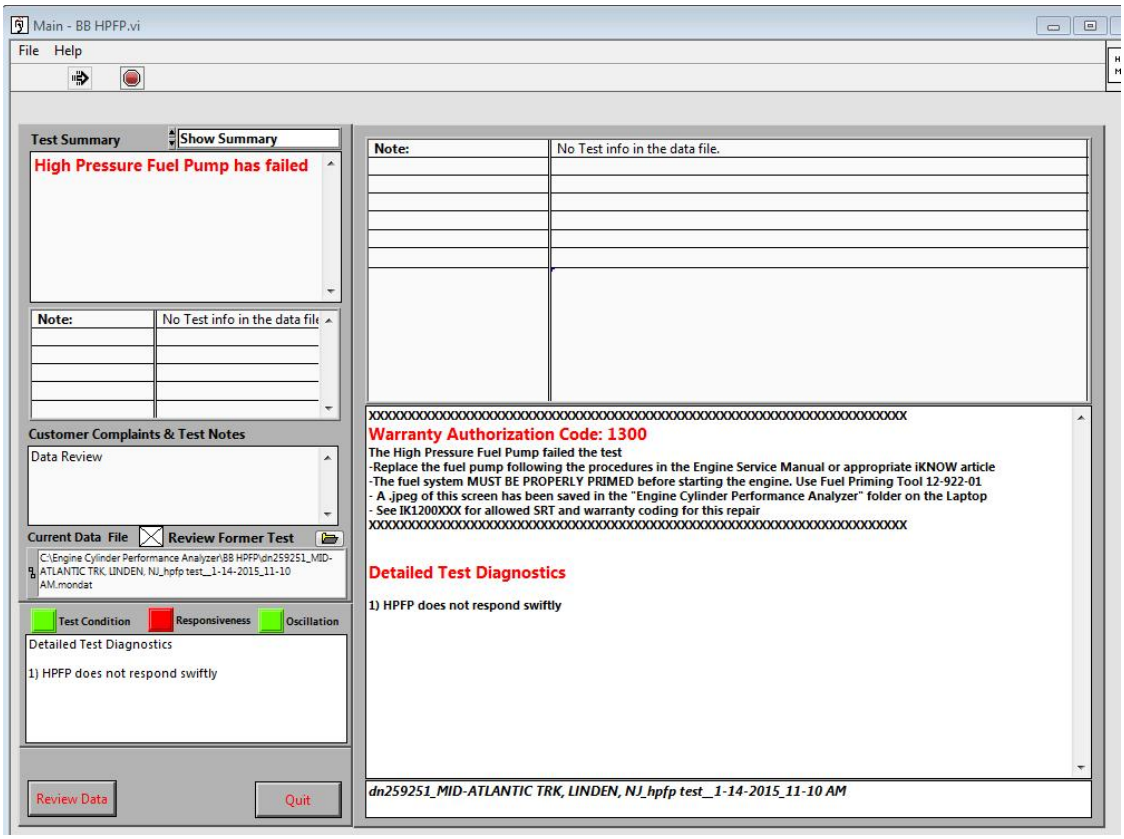
12. Toggle to the CPA window. In CPA, the HPFP test in process window will appear.



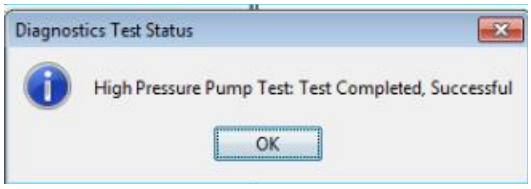
13. In CPA, when the test has completed, a results screen will appear.

If the CPA tool generates a WAC code, replace the High Pressure Fuel Pump.
If the CPA tool shows that the HPFP has passed, continue with further diagnostics or open a Tech Services case file.

The above CPA screen shows the HPFP has passed the test and further diagnostics are needed.



The above CPA screen shows that the HPFP has failed and should be replaced. A WAC code is generated. Refer to WPL2800115 WPL15-006G Warranty iApproval Requirements



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.

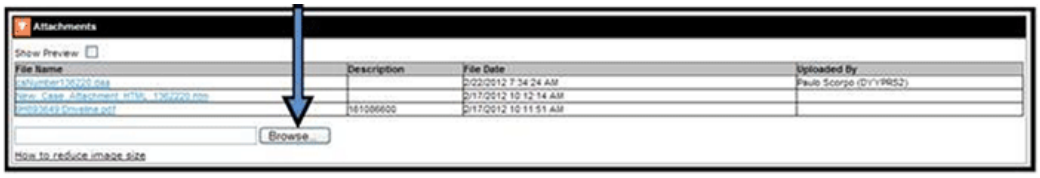


Figure 3

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

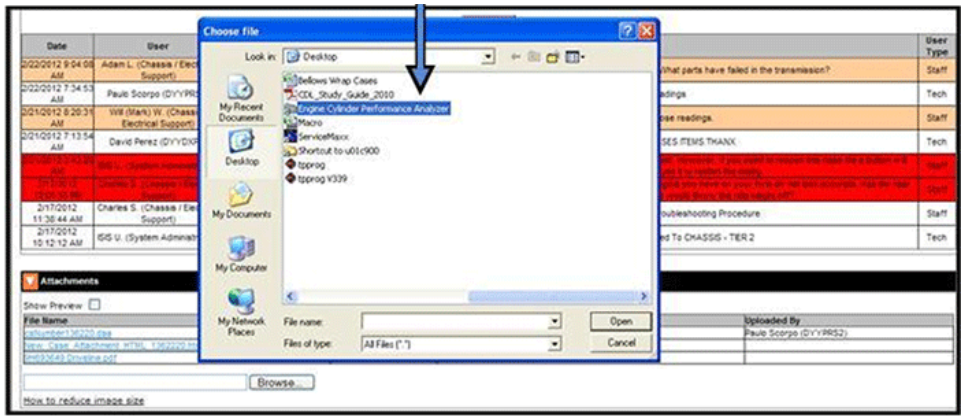


Figure 4

4. Select Engine Cylinder Performance Analyzer folder.

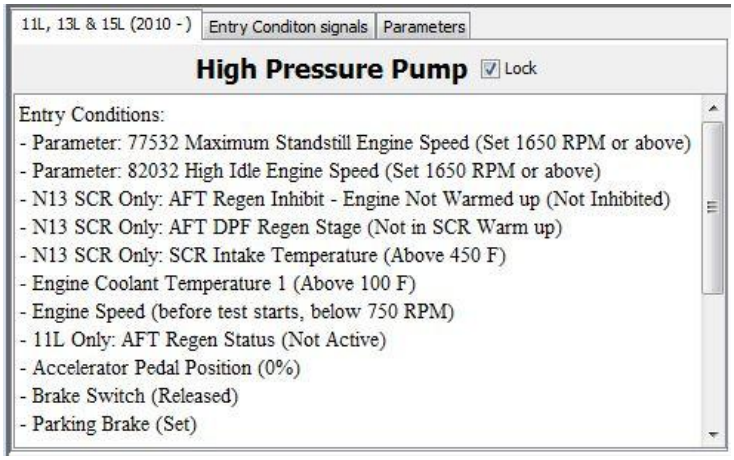
5. Select the Mondat file from the appropriate test recording(s)

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

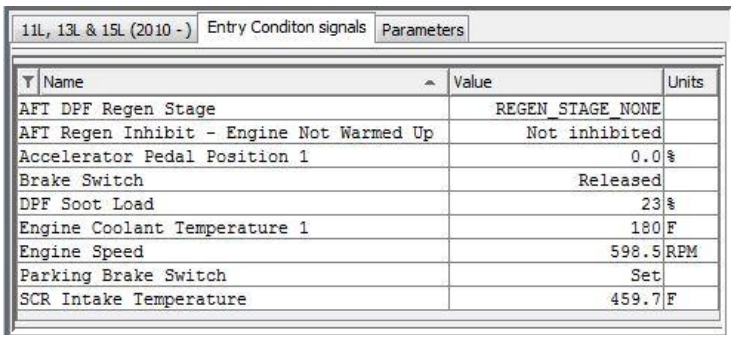
TROUBLESHOOTING- HPFP will not run in ServiceMaxx

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.

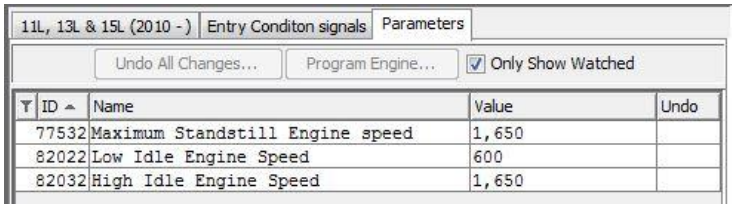


1. In the first tab, review the entry conditions which must be met for the HPFP test to run.



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.



ID	Name	Value	Undo
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:

The Warranty Center will be requiring WAC or case file for High Pressure Fuel Pump replacements. Refer to WPL2800115 WPL15-006G Warranty iApproval Requirements

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

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