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Viewed:	20229		

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Title: Diagnosing Hard Start / No Start complaints or ICP pressure concerns with the CPA Tool

Applies To: EPA 2007, EPA 2010, HD OBD (2013) MaxxForce DT, 9 & 10 engines

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Vehicle Symptoms:

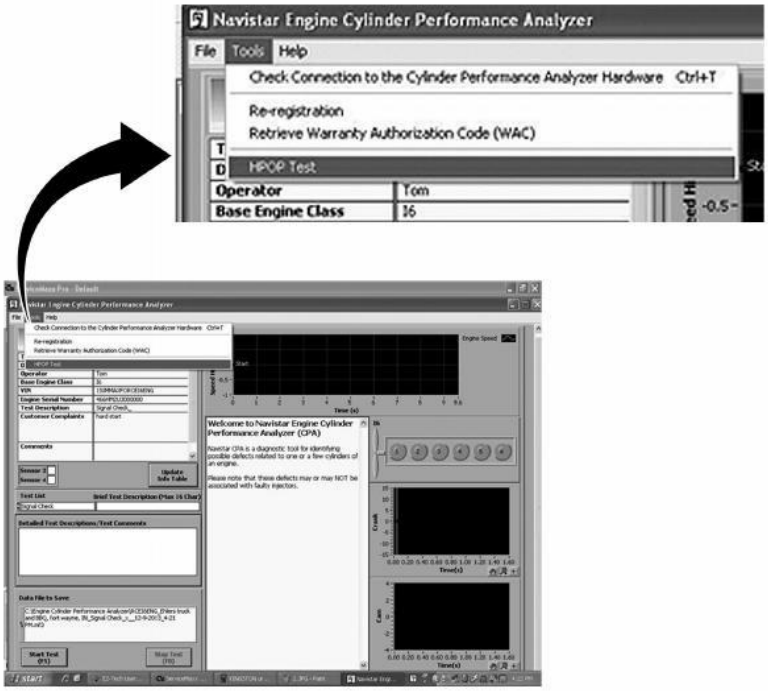
- **Extended cranking / Hard Start**
- **Low ICP pressure**
- **Fault codes / DTCs:**
  - DTC 2335 or SPN 164 FMI 1 (ICP Unable to Build During Engine Cranking)
  - DTC 3374 or SPN 164 FMI 17 (ICP Unable to build during test)
  - SPN 164 FMI 18 (ICP below desired level)
  - SPN 164 FMI 13 (ICP adaptation in-range fault)
  - DTC 3334 or SPN 8492 FMI 1 (ICP below desired level)
  - DTC 2242 or SPN 1443 FMI 2 (ICP adaptation in range fault)

Step-Based diagnostics with CPA Tool: >>here<<

Description:

This article describes how to use the CPA Tool to assist in diagnosing Hard Start / No Start conditions, low ICP pressure faults, and high pressure oil pump (HPOP) failures.

The name of this CPA Tool test is **"CPA HPOP Test"** (select from top left of CPA screen).



For these tests the CPA Tool is connected to the engine oil pressure sensor (EOP), injection control pressure sensor (ICP) and the camshaft position sensor (CMP). The CPA Tool connects to these circuits through special breakout cables designed for use with the CPA Tool.

Tools Needed

- CPA Tool OE-11178 or 12-999-01-01
- EZ-Tech with CPA software version 4.0.0.8 or higher
- Approved RP1210 communication device (Nexiq USB link or other)
- CPA CMP harness (yellow) OE11178-2
- CPA HPOP harness 12-999-01-04
- CPA extension harness (2) 12-999-01-05
- IPR valve breakout tee ZTSE4484 or 12-800-02 breakout harness (later IPR valves)
- IPR valve socket 12-800-01
- IPR Plug Tester ZTSE4816
- High Pressure Pump "dead head" adapter ZTSE4816, ZTSE4655 or ZTSE4927 (depending on hose size)
- Test ICP sensor P/N 1875784C93

CPA Related Links:

- CPA HPOP test instructions (here) (Note: this PDF is also inside the CPA software under "Help" menu)
- CPA software installation (upgrade) IK2700062

  Note: CPA Tool software must be updated to version 4.0.0.8 or higher in order to perform HPOP test

- CPA Update kit 12-999-01-E1 (TL2900079)
- New CPA LMS Training Course. "Cylinder Performance Analyzer Tool Instruction Update"
  - Course Catalog > Service > Engine
- HPOP Oil Inlet Screen
- If SPN 164 FMI 16 or FMI 15 set after a HPOP replacement, please refer to article IK1201043 (ICP Adaptation)

Warranty information relating to CPA

- WPL14-006G - Warranty iApproval Requirements (HPOP test issues a WAC (warranty authorization code) for high pressure pump
- a CPA HPOP WAC is required on warranty claims for high pressure oil pumps or the iApprove process must be followed.
- WIL2800061 CPA WAC explanation
- The CPA HPOP WAC has a 5th digit (1,2,3, or 4). The SRT's are synchronized to the WAC. If the WAC ends in "2" for example, then the proper SRT is the Qualifier 2 (H.P. Oil Pump Diag Steps 1-2). If the WAC ends in "4", then the proper SRT is the Qualifier 2 (H.P. Oil Pump Diag Steps 1-4).
- CPA HPOP test SRT's related to high pressure pump diagnostics were released on 01/06/14.
- Examples

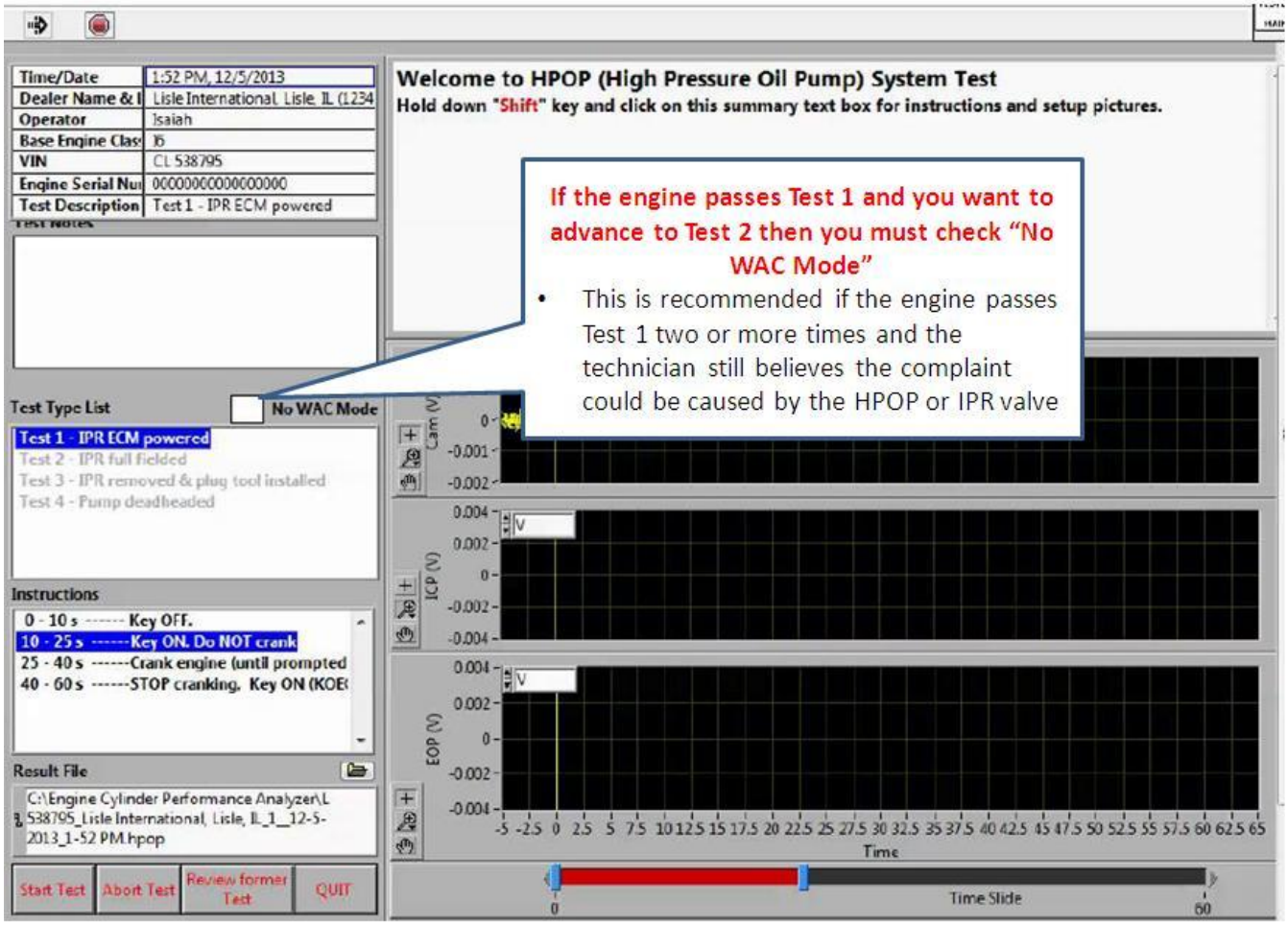
12 - CYLINDER PERFORMANCE ANALYZER (CPA) TOOL, DIAGNOSIS

Hours	Code	Model	Engine	Qualifier 1	Qualifier 2
0.5	A12-2158T-20	All Models	|MAXXFORCE DT/9/10 2010 Emissions|	IPR ECM Powered	H.P. Oil Pump Diag Step 1
0.6	A12-2158T-21	All Models	|MAXXFORCE DT/9/10 2010 Emissions|	IPR Control Test	H.P. Oil Pump Diag Steps 1-2
0.9	A12-2158T-22	All Models	|MAXXFORCE DT/9/10 2010 Emissions|	IPR Block-Off Test	H.P. Oil Pump Diag Steps 1-3
1.1	A12-2158T-23	All Models	|MAXXFORCE DT/9/10 2010 Emissions|	Dead-Head HPOP Test	H.P. Oil Pump Diag Steps 1-4

- Link to SRT Manual (to look up high pressure oil pump (HPOP) R&R

CPA HPOP Tips:

- Perform CPA HPOP test with the engine at the same temperature as the complaint or symptom is occurring.
- If the CPA issues a "`Engine oil pressure(EOP)too low during cranking`" message **do not ignore this**. Broken piston cooling nozzles have been found after diagnosing this fault. **Do not** use a mechanical gauge as a substitute for the electronic tool.
- If you replace a HPOP (which includes a new IPR valve) or if you replace just the IPR valve it is important to run the engine (preferably a road test) before repeating a CPA HPOP Test 1 or 2 as IPR valve break-in is important.
- If the engines passes test 1 you should advance to test 2. See below.



How to attach CPA HPOP test results to a Case File:

Refer to IK1200812 (near the bottom)

The CPA software records every completed HPOP test and automatically creates a .zip file that contains every test that was completed on a VIN. This zip file resides in a folder on the EZ-Tech titled "Engine Cylinder Performance Analyzer"

Do not attach .hpop files to Case Files. Tech Services can only access CPA .zip files

Warranty Coding:
12000 / 454 PUMP, OIL/FUEL (HI PSI INJECTION SYSTEM) / T- Inoperative

Contact Information:
If you would like to order additional Tools, have questions, concerns, feedback, or need replacement parts, please contacts the Navistar Service Tool Support Center.

Phone: 1-800-365-0088 (Toll Free) or 630-985-4171 **OR** Submit a Service Tool IKNow Case

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Feedback Information

Viewed: 20228
Helpful: 197
Not Helpful: 30

Staff ID	Client ID	Comments	Created Date
U026164		You received the following feedback From: u026164 - Oronde Davis Email Address: SMTP:{Oronde.Davis@Navistar.com} Oronde.Davis@Navistar.com Feedback: In the CPA HPOP Tips section, the caption for the no wac mode needs to be removed or changed. The instruction states if the tech should use the wac if he/she believes the complaint is cause by the HPOP or IPR. The tech should also proceed if there is a possible leak on the rail because test 3 decay time shows if there is a leak.	7/18/2014 1:35:56 PM
	DY08955	You received the following feedback From: dy08955 - David Gabrielle Email Address: gabe396@aol.com Job Classification: SE008, Service Technician Dealer: TRUCK KING INTL IDEALEAS Feedback: In HPOP Tips it states "IPR valve break-in is important" . Please give more details about this term.	10/7/2014 5:52:10 AM

	DYYDWC9	You received the following feedback From: dyydwc9 - Dale Crawford Email Address: crawfordd@rushenterprises.com Job Classification: SE003, Service Manager Dealer: RUSH TRK CTR OF IL Feedback: Description: low power multiple icp codes Steps Taken: am running cpa tool getting no results on my inj control pressure under pressures i am showing no pressure only a red error did not know if this was meanning my sensor was bias or not also says it is showing risidual pressure in the oil rail when i run my HPOPtests could this be sensor telling ecm that there is still pressure in rail DTCS: Engine MaxxForce I6 2332 ICP(FRP) above KOEO Spec 13 Engine MaxxForce I6 2335 ICP(FRP) Unable to Build During Engine Cranking 1 Engine MaxxForce I6 1125 ICP(FRP) signal Out of Range HIGH 3 Engine MaxxForce I6 1125 ICP(FRP) signal Out of Range HIGH 3 Engine MaxxForce I6 3333 ICP(FRP) above desired level 0	10/23/2014 5:03:16 PM