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Coding Information

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Title: CPA HPOP Tests

Applies To: EPA 2007-2009 MaxxForce DT/ 9/ 10-- EPA 2010-2013 HD OBD MaxxForce DT/ 9/ 10-- EPA 2014-2017 N9/ N10

CHANGE LOG

2017/04/21-Updated to a structured layout

2017/04/19 - Updated diagnostic software to Navistar Engine Diagnostics™.

2016/03/09 - Removed 2010 MaxxForce DT/9/10 and N9/N10 because information is covered in the diagnostic manuals.

2015/10/22 - Added link to ICP sensor replacement warranty policy (below change log).

2015/10/05 - Fixed hyperlinks and updated SRT section

2015/06/03 - Added CPA Signal

DESCRIPTION:

This document describes the process for utilizing the CPA HPOP Tests.

CPA HPOP Tests Apply To:

Emission Year	Engine Model
2007- 2009	MaxxForce DT/ 9/ 10
2010-2013	MaxxForce DT/ 9/ 10
2014-2017	MaxxForce N9/ N10

Software Release:

Software Version	Description	Release Date
5.0.10.5	HPOP Test V5 Update: Under Valve Cover (UVC) Repair Strategy	12/18/2014
3.0.0.16	HPOP Tests Launch	1/15/2014

Note: Software must always be current. Refer to the [CPA Resource Article](#)

SYMPTOMS/ FAULT CODE(S):

DTC	Description
SPN 164 FMI 1 (DTC 2335)	ICP Unable to Build During Engine Cranking
SPN 164 FMI 13	ICP adaptation in-range fault
SPN 164 FMI 17 (DTC 3374)	ICP Unable to build during test
SPN 164 FMI 18	ICP below desired level

SPN 1443 FMI 2 (DTC 2242)	ICP adaptation in-range fault
SPN 8492 FMI 1 (DTC 3334)	ICP Below desired

SYMPTOMS
Hard Start: Cold/ Hot
Extended Crank
Rough Idle
Low Power

SPECIAL TOOL(S):

- Tools required for component removal: Refer to appropriate engine service manual
- To perform CPA HPOP Tests properly the following tools are required:

Tool Description		Tool Number	Comments
EZ-Tech or Computer			Navistar Engine Diagnostics™ and CPA software must be installed
RP1210 Communication Device			NavCom or Nexiq
CPA Module		OE-11178/ 12-999-01-01	
Engine Oil Temperature (EOT) Breakout Harness		ZTSE4602	
CPA CAM harness (Yellow)		OE11178-2/ 12-999-01-02	
CPA HPOP Harness		12-999-01-04	
CPA Extension Harness		12-999-01-05	4 required
CPA Banana Jack Breakout Harness		12-999-01-06	1 required

			
IPR Blockoff Adapter w/ Integrated ICP Sensor Kit		12-999-01-07	
IPR Block-Off Harness (Green)		12-999-01-07A	Included in 12-999-01-07 Kit
IPR Block-Off Complete Adapter		12-999-01-07B	Included in 12-999-01-07 Kit
O-ring Face Seal Plug (EPA 2010)		12-999-01-07C	Included in 12-999-01-07 Kit
O-ring Face Seal Plug (EPA 2007)		12-999-01-07D	Included in 12-999-01-07 Kit
Replacement O-ring Kit		12-999-01-07E	Included in 12-999-01-07 Kit

[Tools Resource Center](#)

CPA HPOP Descriptions:

Learning Management System (LMS):

Instruction Course is available on Navistar Service Portal

Dealer	Warranty	Support	Chassis / VIN Number
Administration	Diamond Edge Dashboard	Service Development	
Dealer Search	Diamond Edge Dashboard	DPF Cleaning Support	
Update Your Service Information	Service Marketing	Service Development Tools	
Update Dealer Locator	Preventive Maintenance	Parts and Service Expo	
Service Level Authorization	Customer Solutions US/Can	Accelerated Service	
Service Level Authorization LA/Carrib	Customer Solutions LA/Carrib	TMC Resource Center	
Training	Print Materials	Repair Management	
Learning Management System	US Dealer PrintPortal	Repair Advocate Portal	
Dealer Education	Canadian Dealer PrintPortal	Contact Information	
Project Confirmation 3.0	Dealer PrintPortal FAQs	Technician Recruitment	
	Decal Order Form	OnCommand Connection	

Training Videos:

Training Video Coming Soon to this article but available to download through the CPA software:

- Review *Instructions and Diagnostics* document through the CPA HPOP module for instructions
- Click: [CPA Video Download](#)

Test Descriptions:

CPA HPOP Test	Detailed Analysis
Test 1- ECM Powered	• Measures minimum oil pressures • Measures ECM command to IPR Circuit

Test 2- IPR Full-Fielded	- Measures maximum oil pressures - Measures IPR valve's maximum output capacity - Measures internal bobbin integrity
Test 3- ICP Block-Off Adaptor Installed	- Compares maximum oil pressures - ICP sensor integrity - Seal integrity of HPOP and UVC components
Test 4- Pump Deadheaded	Isolates the HPOP and compares maximum oil pressure output

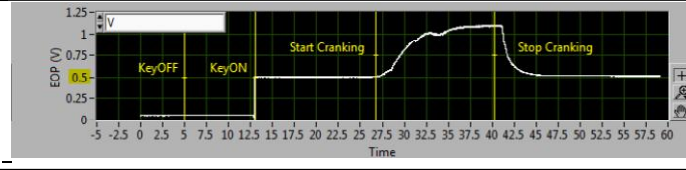
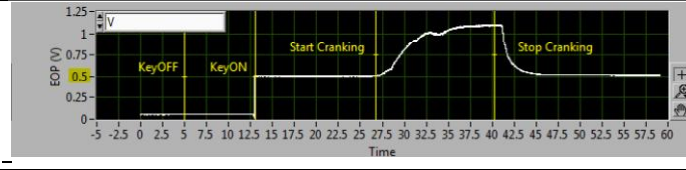
Signal Descriptions:

The following tables demonstrate good signals along with pass/fail thresholds for each individual test.

Available within the *Instructions and Diagnostics* document:

- Test description details
- Test thresholds
- Signal Diagnostics

Description	CAM Signal Representation	Comments			
Bad CAM Signal		At Key Off- Negative voltage indicates connection issue			
Good CAM Signal					
ICP Signal	ICP Signal Representation (Passing Signal Example)	Key Off	Key On	Cranking	Stop Cranking
Test 1		0v	0.25v (+/- 0.1v)	Min: 0.65v (650psi)	N/A
Test 2		0v	0.25v (+/- 0.1v)	Min 4.65v (4600psi)	Exponential Decay
Test 3		0v	0.25v (+/- 0.1v)	Min 4.65v (4600psi)	Exponential Decay
Test 4		0v	0.25v (+/- 0.1v)	Min 4.65v (4600psi)	Exponential Decay

EOP Signal	EOP Signal Representation (Passing Signal Example)	Key Off	Key On	Cranking	Stop Cranking
Test 1		0v	0.5v (+/- 0.1v)	Min: 0.6v (15psi)	N/A
Test 2		0v	0.5v (+/- 0.1v)	Min 0.6v (15psi)	N/A

SERVICE PARTS INFORMATION:

- For all repair procedures and instructions: Refer to the appropriate engine service manual.
- Table contains components that can be issued warranty authorization code for replacement.
- Always refer to software Test Results for proper repair instruction.

Kit Description	Part Number	Quantity
High pressure pump (EPA 2010)	5010755R92 or subsequent	1
High pressure pump (EPA 2007)	1879747C2 or subsequent	1
ICP sensor	1875784C93 or subsequent	1
Oil Inlet Adaptor(puck)	1841923C98 or subsequent	6
Fuel Injector		6
Retrofit Kit	2514453C91 or subsequent	1

Link to [Parts Catalog](#)

WARRANTY INFORMATION:

CPA Module	WAC can be issued for components listed	Navistar Engine Model	Example WAC	Related Articles
I6 High Pressure Oil Pump (HPOP) Module	- High Pressure Oil Pump (HPOP) 6 Fuel Injectors w/ 6 Oil Inlet Adapters (Puck) - Injection Control Pressure (ICP) Sensor Note: WAC containing a combination of above components may be issued	2007-2017 MF DT/9/10/ N9/ N10	XXXX_XX	ICP Sensor Policy: WPL1200001

All Component Replacement Requirements are covered under policy letter: [WPL2800126](#)

Warranty Claim Coding:

Refer to the [Warranty Coding Manual](#) for Group and Noun Codes.

Group:	12000
Noun:	454 PUMP, OIL/FUEL (HI PSI INJECTION SYSTEM)

Group:	12000
Noun:	168 Sender, ICP/FRP

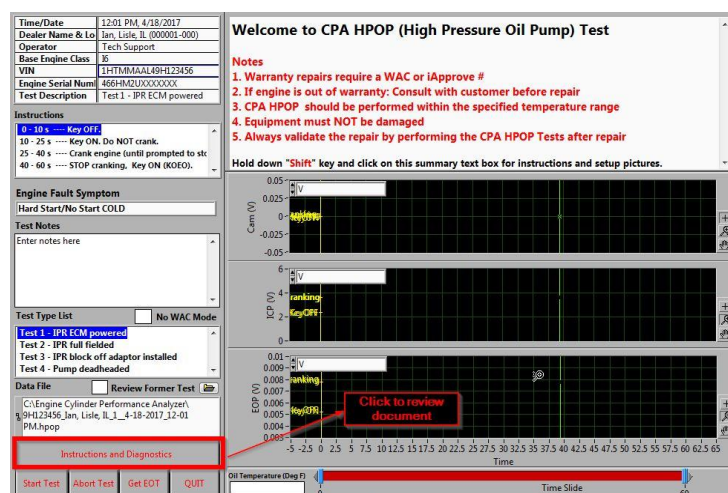
Group:	12000
Noun:	563 Injector Unit (Electrical)

Standard Repair Time(s):

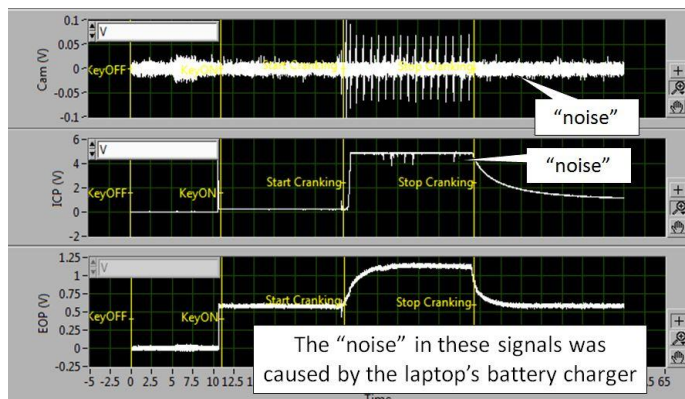
Description	SRT Link
12 - CYLINDER PERFORMANCE ANALYZER (CPA) TOOL, DIAGNOSIS	CPA Diagnostics

OTHER RESOURCES:

- *Instructions and Diagnostics available within the software (Picture below)*



- **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.**
- **Laptop power supply's, chargers, inverters, and battery chargers can backfeed voltage to the CPA tool. See below:**

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