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 Major System: ENGINES Created: 3/23/2017  
 Current Language: English Last Modified: 5/16/2017  
 Other Languages: NONE Author: Marcelo Sahagun  
 Viewed: 181

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Coding Information

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Title: CPA Injector Misfire Detection

Applies To: EPA 2004-2006 DT 466/570-- EPA 2007-2009 MF DT/9/10-- EPA 2010-2013 MF DT/9/10-- EPA 2014-2017 N9/ N10

## CHANGE LOG

Please refer to the change log text box below for recent changes to this article:

05/16/2017 - Initial Article Release

## DESCRIPTION:

This document describes the process for utilizing the CPA Injector Misfire Detection

### CPA Injector Misfire Detection Apply To:

Emission Year	Emission Model	Description
2004-2006	DT 466/ 570	
2007-2009	MF DT/ 9/ 10	
2010-2013	MF DT/ 9/ 10	2013 HD OBD engines must have calibration level EER5 or later in order to perform Full Load to Highway Speed Test. Ignore 637-10 code if found in engine after CPA used
2014-2017	N9/ N10	

**Note: ALL previous MaxxForce 7 injector diagnostic tests should follow the Base Engine Analysis Module (BEAM) IDLE Test**

### Software Release:

Version	Change Description	Release Date
2.0.0.148	Warranty Authorization Code (WAC) for 2 injectors in Injector Misfire Detection	09/25/2013
1.0.0.329	MED Duty Injector Misfire Detection Launch	03/20/2012

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




## SYMPTOMS/ FAULT CODE(s)

Follow the FCAP/ Fault Code Diagnostics/ Symptom Based Diagnostics from the appropriate Engine Diagnostic Manual.

DTC/Light	Description
SPN and FMI dependent on Engine Model	Description dependent on Engine Model
Symptom	Description
Engine Misfire	
Rough Idle	
Low Power	

**SPECIAL TOOL(s):**

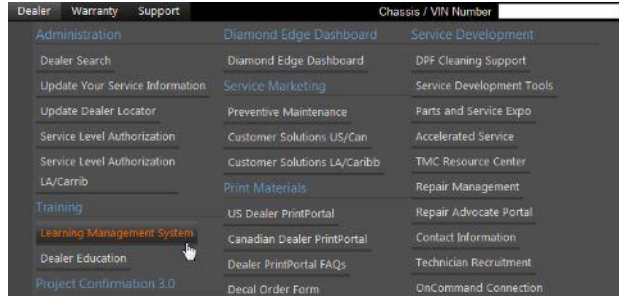
- Tools required for component removal: Refer to appropriate engine service manual
- To perform CPA Injector Misfire Detection Tests properly, the following tools are required

Tool Description		Tool Number	Comments
EZ-Tech or Computer			ServiceMaxx/ NED and CPA software must be installed
RP1210			NavCom or Nexiq
CPA Module		OE-1178/ 12-999-01-01	
CPA CAM harness (Yellow)		OE11178-2/ 12-999-01-02	
CPA CRANK harness (Black)		12-999-01-03	
CPA Extension Harness			2 required for Cam and Crank harnesses

[Tools Resource Center](#)

**CPA Injector Misfire Detection Descriptions:****Learning Management System (LMS):**

Instruction Course is available on Navistar Service Portal



**Training Videos:**

Training Video Coming Soon to this article but available to download through the CPA software:  
 Click: [CPA Video Download](#)

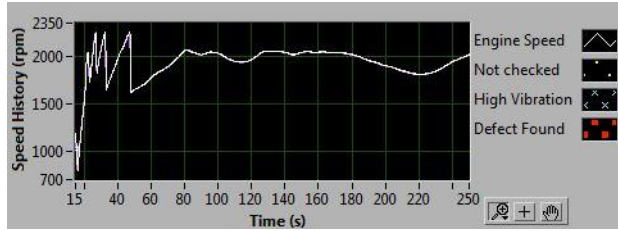
**Test Descriptions:**

CPA Injector Misfire Detection Test	Detailed Analysis
Signal Check	<ul style="list-style-type: none"> <li>Ensures engine can safely reach 2200rpm</li> <li>WAC is not issued</li> </ul>
Cold Idle	<ul style="list-style-type: none"> <li>60 second test</li> <li>Measures engine rpm oscillations</li> </ul>
Hot Idle	<ul style="list-style-type: none"> <li>60 second test</li> <li>Perform test at engine operating temperature</li> <li>Measures engine rpm oscillations</li> </ul>
Full Load to Highway Speed	<ul style="list-style-type: none"> <li>Signal Check test must be performed prior</li> <li>Measures engine rpm oscillations at various gear shifts</li> <li>Note: 2013 disclaimer</li> </ul>
User Defined	<ul style="list-style-type: none"> <li>Open 5min test</li> <li>No conclusions given</li> </ul>

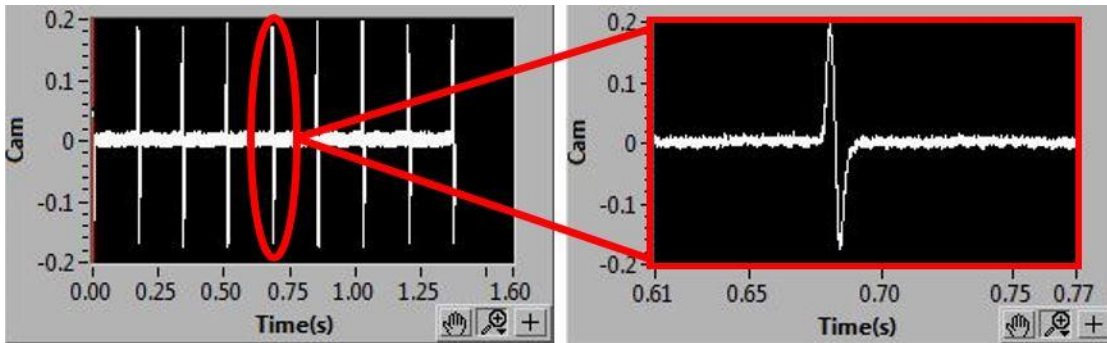
**Signal Descriptions:**



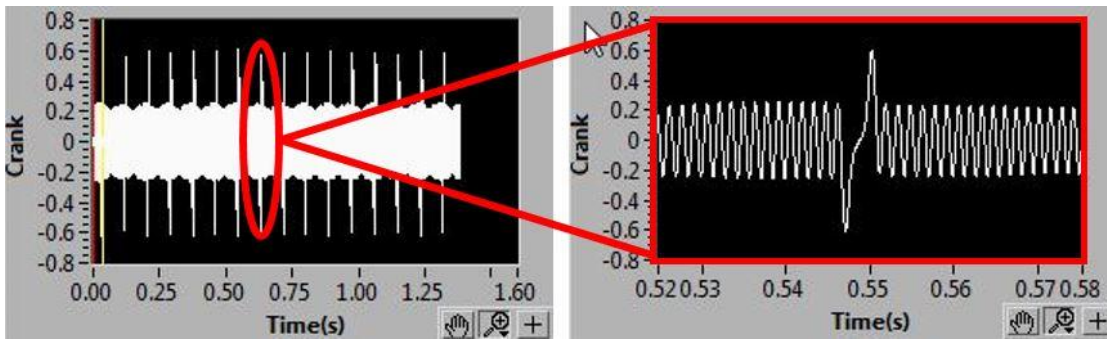
Result	Description
High Vibration	<ul style="list-style-type: none"> <li>High engine oscillation not associated to an injector misfire</li> <li>BLUE X indicator</li> <li>Possible ICP adaptation/ ECM calibration error</li> <li>Possible under valve cover (UVC) leak</li> </ul>
Defect Found	<ul style="list-style-type: none"> <li>Engine oscillation associated to an injector misfire</li> <li>RED indicator</li> </ul>
No Defect	<ul style="list-style-type: none"> <li>No abnormal engine oscillation detected</li> </ul>



Speed History Graph: For most accurate results, ensure CPA captures engine speed throughout all gear shifts






CAM Signal: Sample of good CAM signal



CRANK Signal: Sample of good CRANK signal

**CAM Signal Diagnostics:**

Step	Action: <u>Turn Key On Engine Off</u>	Decision
1	Ensure connection between CPA Extension cable and CPA Module is secured 	If connection is tight then proceed to step 2
Step	Action: <u>Turn Key On Engine Off</u>	Decision
2	1. Disconnect CPA Extension cable from CPA Module CAM Sensor Port 2. With a DMM measure resistance at the CPA Extension center terminal and outer grounding shell  <p>Does the DMM read between 300 - 400 Ohms?</p>	Yes: Inspect the CPA Module for possible defect or loose connection  No: Proceed to step 3
Step	Action: <u>Turn Key On Engine Off</u>	Decision
3	1. Disconnect CPA Extension cable from CAM Sensor Breakout Harness 2. With a DMM measure resistance at the 2-pin connection  <p>Does the DMM read between 300- 400 Ohms?</p>	Yes: Possible defect in CPA Extension cable. Replace and Retest as needed  No: Proceed to CAM circuit and synchronization diagnostics in the appropriate engine diagnostic manual 28

**Additional Diagnostics:**

[Air Gap Specifications](#)

**WARRANTY INFORMATION:**

CPA Module	WAC can be issued for components listed	Navistar Engine Model	Example WAC	Related Articles
Injector Misfire Detection	1 or 2 Fuel Injectors	<ul style="list-style-type: none"> <li>EPA 2004-2006 DT 466/570</li> <li>EPA 2007-2009 MF DT/ 9/10</li> <li>EPA 2010-2013 MF DT/ 9/10</li> <li>EPA 2014-2017 N9/ N10</li> </ul>	XXXX	

- All Component Replacement Requirements are covered under policy letter: [WPL2800126](#)
- Reference the Warranty Resource Center for the most recent iApproval/ Warranty Authorization Code (WAC) requirements letter
- Refer to the [Warranty Coding Manual](#) for Group and Noun Codes.

**Standard Repair Time(s):**

Description	SRT Link
12 - CYLINDER PERFORMANCE ANALYZER (CPA) TOOL, DIAGNOSIS	<a href="#">CPA Diagnostics</a>

**OTHER RESOURCES**

[Master Service Information Site](#)

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