



Solution

Title (customer effect) Fuel Injector Offset Learning Diagnostic Trouble Codes (DTC) / Fault Codes Logged In Engine Control Module (EMS); Possible Rough / Uneven Idle - OBD15 Chassis

Cause OBD15 chassis may set codes for injector offset learning minimum and maximum values. The codes may be accompanied by rough idle, with no other performance complaints or symptoms of injector failure.

Solution

Overview

Cylinder balancing is only active at idle speeds, between 500 and 750 RPM. The balancing monitor does not run outside of this speed range, which means the codes do not set under high idle or driving conditions. Offset codes generated with no other injector-related codes and no symptoms aside from a possible rough idle may not indicate a physical injector problem, and diagnosing the codes will in many cases lead to no fault found. It has been determined that software may contribute to the problem. Software improvements have been implemented to better control cylinder balancing logic.

Relevant DTCs

The list of all applicable DTCs for this issue is included in the Fault Codes section below.

Repair

If any of the fault codes in the section below are set on an OBD15 engine:

A. Check the EMS Main Software (MSW) part number.

- **If the EMS MSW part number is lower than 23167877.P01:**

1. Update the EMS software
2. Reset Cylinder Balance from Premium Tech Tool (PTT) Operation [2387-08-03-01 Cylinder Balancing](#), located in the Test tab.
3. Run a Cylinder Balance test from the same screen following the reset. Start the test at minimum temperature (140 °F, 60 °C) and monitor balancing until coolant temperature reaches approximately 177 °F (81 °C). This will allow observation of performance during multiple engine modes that are entered during warm-up.
4. If the Cylinder Balance test still shows an issue and/or there are one or more Learning Offset codes that return following the update, follow Guided Diagnostics for the applicable code or codes.

- **If the EMS MSW is part number 23167877.P01 or newer**, proceed with Guided Diagnostics for the applicable code or codes.

Solution visibility	Dealer distribution
---------------------	---------------------

Function(s)/component(s) affected

Function affected	injectors , regulation (cruise control/engine speed) , 1 1 0 EMS
-------------------	--

Function Group

Function Group	23 fuel system, excluding gas propulsion , 284 control system, fuel supply
----------------	--

Customer effect

Main customer effect	calibration/programming/pairing/missing operation , efficiency/abnormal behavior , fault code/display
----------------------	---

Fluid implicated	fuel
------------------	------

Fault code(s)

OBD 2013 Diagnostic Trouble Codes	P02CC00 , P02CD00 , P02CE00 , P02CF00 , P02D000 , P02D100 , P02D200 , P02D300 , P02D400 , P02D500 , P02D600 , P02D700 , P101200 , P101400 , P102300 , P102500 , P102700 , P102900
-----------------------------------	---

Conditions

Vehicle operating mode	when stationary
------------------------	-----------------

Frequency of occurrence of problem	random
------------------------------------	--------

Engine speed	500 - 1000 rpm
--------------	----------------

Administration

Author	UT0455H
--------	---------

Dealer ID	UT0455H
-----------	---------

Last modified by	RU4469V
------------------	---------

Creation date	29-01-2018 19:01
---------------	------------------

Date of last update	20-02-2018 21:02
---------------------	------------------

Review date	10-12-2018 00:12
-------------	------------------

Status	Published
--------	-----------

NA_Reviewer	UT0455H
-------------	---------

NA_Author_Group	GTT
-----------------	-----

NA_MACK_Vehicle_Range

NA_MACK_Vehicle_Range	Cabover , Conventional
-----------------------	------------------------

NA_VOLVO_Vehicle_Range

NA_VOLVO_Vehicle_Range	Conventional
------------------------	--------------

Engine family

Engine family

Volvo , Mack

Emission Standard

Emission Standard

US15
