The purpose of this article is to prevent unnecessary component replacement. **ALL OTHER DIAGNOSTIC TESTS AND CHECKS MUST BE PERFORMED** when diagnosing one of the codes above if the tests below do not immediately reveal an issue.

If an eService case must be submitted, **ALL INFORMATION** specified in Step Five MUST be included at the time the case is opened. Cases missing required information will be Refused.

**Overview**

Guided Diagnostics for SCR efficiency or NOx sensor fault codes will often result in No Fault Found. This often leads to replacement of one or both sensors despite no indication from diagnostic steps to do so. NOx sensor function is a possible cause, and is listed as such for the code description in the DTC description in Premium Tech Tool (PTT). However although the sensors themselves are a possibility, **NOx sensor codes are most often a symptom, not a cause of emissions issues.** NOx sensors should be confirmed to be reading incorrectly or functioning erratically before they are replaced.
Fault Codes

A complete list of DTCs related to this Solution can be found in the Fault Codes section below.

Procedure

- **Review the Detailed Status Information for the relevant code on the DTC Readout.**

![DTC Readout Screenshot]

- If Confirmed DTC is **TRUE**: Proceed with diagnostics
- If Confirmed DTC is **FALSE**: Disregard and focus on other symptoms or DTCs relevant to the complaint.

- **A NOx Conversion should be run to check NOx sensor signal and function for any of the above codes.**

**NOTE:** A NOx conversion test only checks NOx sensor function. The test compares the readings of the two sensors as the engine cycles through multiple conditions to confirm they are in agreement. The results of the NOx Conversion test do not indicate anything about the condition of the SCR itself.

1. In PTT, run Operation 2549-08-03-03 NOx Conversion, located under the Test tab.

2. Take screenshots of the graph and sensor values approximately 2-3 minutes prior to engine shutdown. A guide to taking screenshots can be found in THIS solution.

   - Inlet and Outlet NOx values should be within 40 parts per million (ppm) of one another just before the engine shuts down. Shown below is an example of how a graph
3. If no issues are found with the sensor readings from the NOx Conversion review, the sensors are not the source of the conditions causing the codes to log. Further diagnostic steps of other components will need to be performed to determine the cause of the faults.

4. If this solution is being reviewed for P20EE, P207F, P225E or P103C, the DEF Dosing Valve Solution for the same DTCs should be reviewed for further information.

5. If diagnostic steps do not locate a root cause for the code(s), open an eService case with Dealer Technical Support
   - The screenshot(s) taken of the NOx conversion screen prior to engine shutdown (as shown in the screenshot above) should be attached to the case.
   - A complete summary of all tests performed along with numeric measurements, a DTC Readout, and any information concerning previous visits and parts replaced must be included when the case is opened.
     • "Ok", "Good" and "Followed GD" are not acceptable descriptions of tests performed and test results.
   - Add the solution numbers for all CBR articles followed.

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Internal comments (BO)  NOTE TO DTS: If the offset between sensor readings observed in the NOx Conversion is greater than 40ppm, contact Nataraj Bhat for quick evaluation of the NOx conversion test. (we have rarely seen this until now).

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Solution visibility  Dealer distribution

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Function(s)/component(s) affected

<table>
<thead>
<tr>
<th>Function affected</th>
<th>DEF Dosing, SCR, 110 EMS, 210 ACM, Diagnostic tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Function Group</td>
<td>254 catalytic converter; exhaust emission control equipment, 258 emissions after-treatment</td>
</tr>
<tr>
<td>Customer effect</td>
<td>regeneration, diagnostics/methodology, efficiency/abnormal behavior, fault code display</td>
</tr>
</tbody>
</table>
Fluid implicated: AdBlue

Lights/Messages on information display: 🚸

Driver's information warning pictogram

### Fault code(s)

OBD 2013 Diagnostic Trouble Codes:
P221A, P103C, P207F, P20EE, P2201, P225C, P225E

### Conditions

Vehicle operating mode: when driving, when stationary

Frequency of occurrence of problem: random

### Administration

Author: UT0031H

Dealer ID: UT0031H

Last modified by: RU4469V

Creation date: 09-04-2018 19:04

Date of last update: 25-04-2018 15:04

Review date: 01-11-2019 00:11

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NA_Reviewer: Nataraj Bhat

NA_Author_Group: GTT