

**\*\* SOLUTION \*\***

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Title Diagnostic Trouble Code (DTC) P20EE - SCR NOx Catalyst Efficiency Below Threshold (Bank 1) - **US17+OBD2019 Emissions, Model Year 2020 ONLY**

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**Mack Models**

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**Mack Model** AN - Anthem , CHU - Pinnacle, Axle back , CXU - Pinnacle, Axle front , GR - Granite , GU - Granite , PI - Pinnacle

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**Volvo Models**

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**Volvo Model** VN , VNL , VNR , VNX , VAH , VHD

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**Emission Standard**

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Emission Standard US17+OBD19

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**Engine family**

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Engine family 11L Engine , 13L Engine , MP7 , MP8

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**\*\* SOLUTION \*\***

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**Cause** Trucks built for emissions level US17+OBD19 (Model year 2020) and equipped with a one-box exhaust aftertreatment system (DPF, DOC and SCR are contained in one unit) have shown a higher than normal occurrence of fault code P20EE logged in the field.

Affected vehicles have been observed having large urea crystal buildup starting from the DEF dosing valve. When applicable SCR mufflers are evaluated following removal of the DEF crystals, the SCR functions as good as a new component.

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**Solution****Return Visit**

**If the vehicle has been in for this issue previously** an eService case should be started for further assistance **AFTER** verifying that the same problem exists.

**The eService case MUST INCLUDE:**

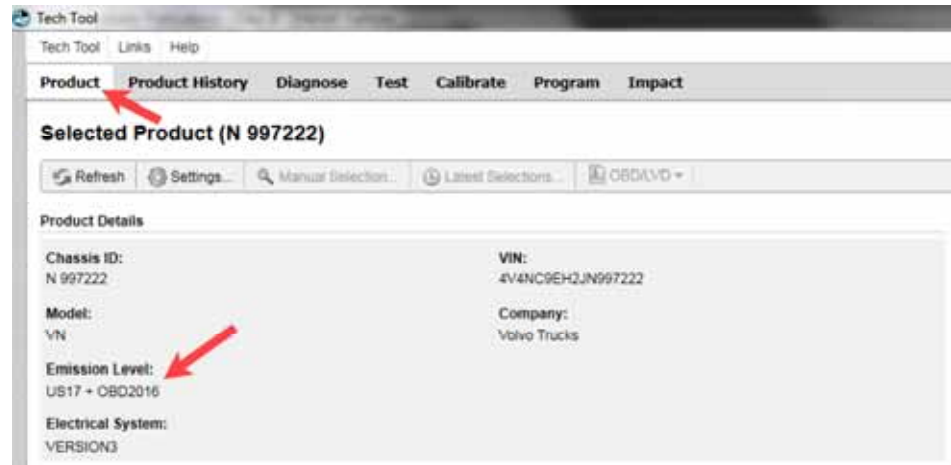
- The CBR Diagnostic Session number or this Solution number.
- A thorough description of the problem.
- The vehicles previous history and what was done to resolve the issue on previous visits (This solution MUST have been performed previously if a case is being opened!).
- A complete DTC readout from the time of the vehicle's arrival.

**First Visit**

1. Verify the chassis emissions level and ensure that the vehicle is within the applicable

range for this solution.

Details can be found in the Product Details box on the Product tab in PTT as seen below:



## 2. Remove the DEF dosing valve and inspect for crystal buildup.

An example of expected crystal buildup can be seen below:



2.1. If crystal buildup is similar to that shown in the picture above: Continue to Step 3.

**2.2 If there are no crystals present, or the crystal accumulation is light with small crystals:** Proceed to and complete solution [K65527708](#).

**3. Remove the DPF (Tear Drop) cover and clean the crystal accumulation out of the pipes.**

**3.1. With a damp cloth, wipe off the DEF dosing valve and mixing vanes.**

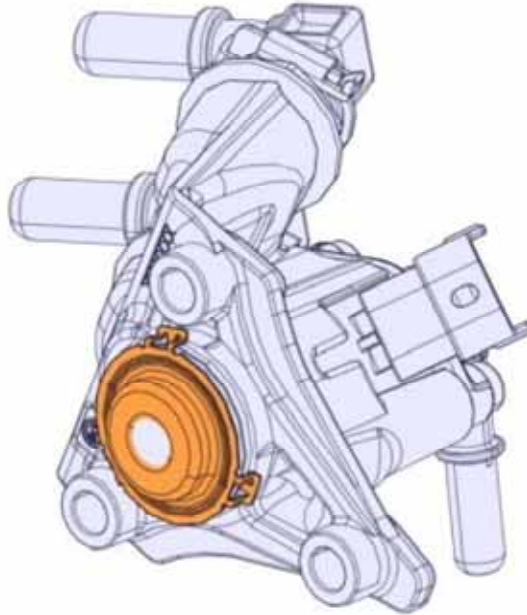
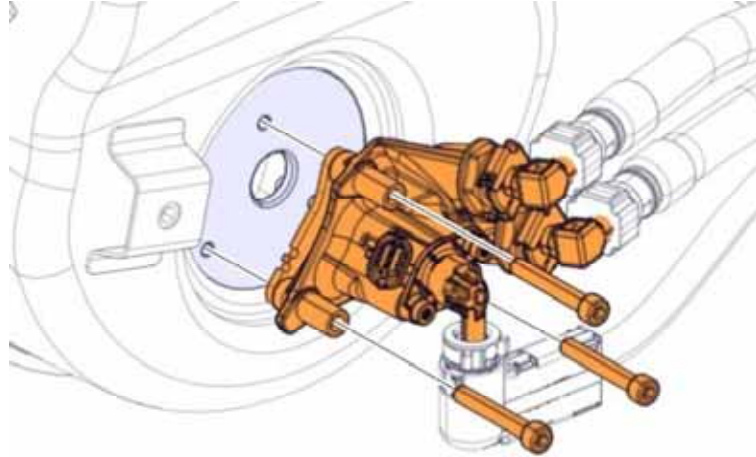
**4. Once the inside of the muffler is clean,** Install new gaskets and V-clamps clamps for the tear drop cover.

**5. Re-install the cover.**

**6. Remove and discard the insulator (gasket) from the dosing valve.** The part is highlighted in the picture below.



**7. Re-install the DEF dosing valve WITHOUT a new insulator.** Make sure to use a new sealing plate and new mounting screws (one time use parts).



**8. Clear fault codes.**

**9. Perform a Sulfur Regeneration.** This will complete the cleaning of the SCR.

**10. Release the vehicle.**

This is a temporary containment for this issue. This solution will be updated when more information is available.

Internal comments (FO)	This is a containment. If a truck has P20EE without urea crystals or if a truck returns with crystallization even after containment please contact Nataraj Bhat/ John Whelan for additional analysis.
Temporary solution	Temporary solution
Solution visibility	Dealer distribution

## Function(s)/component(s) affected

Function affected SCR , DEF Dosing

## Function Group

Function Group 254 catalytic converter; exhaust emission control equipment , 2584 Dosage Valve;  
Injector

## Customer effect

Main customer effect regeneration , fault code/display

Fluid implicated Diesel Exhaust Fluid (DEF)

## Fault Codes And Error Codes

OBDDII Diagnostic Trouble Codes (P, U, B Format) P0422-00 , P103C-00 , P20EE-00 , P225C-00

## Administration

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