



Solution K03573329

Thursday, May 28, 2020 1:32:56 PM CEST

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

Title Diagnostic Trouble Codes ( DTC ) P2080, P2084, P242B Lighting The Malfunction Indicator Lamp ( MIL ) - US14+OBD16, US17+OBD16, And US17+OBD18 Emissions, Model Years 2017 To 2019

**Mack Models**

**Mack Model** LR , MRU - TerraPro , AN - Anthem , CHU - Pinnacle, Axle back , CXU - Pinnacle, Axle front , GU - Granite

**Volvo Models**

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

**Emission Standard**

Emission Standard US14+OBD16 , US17+OBD16 , US17+OBD18

**Engine family**

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

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

**Cause** Diagnostic Trouble Codes ( DTC ) P2080, P2084, and/or P242B may set after key off. It has been found that this may be due to incorrect calculation of the "soak" time of ambient temperature.

**Vehicles may exhibit the MIL and one or any combination of the above fault codes from the Engine Control Module (EMS), as well as one or more of the symptoms below:**

- **No Diesel Exhaust Fluid ( DEF ) Dosing**

- DEF will not be injected with these faults active.

- **Unable To Complete A Parked Regeneration**

- Aftertreatment Hydrocarbon Injector ( AHI ) injection will not take place with these faults active.

- **Parked Regeneration Runs Too Long, And Does Not Complete**

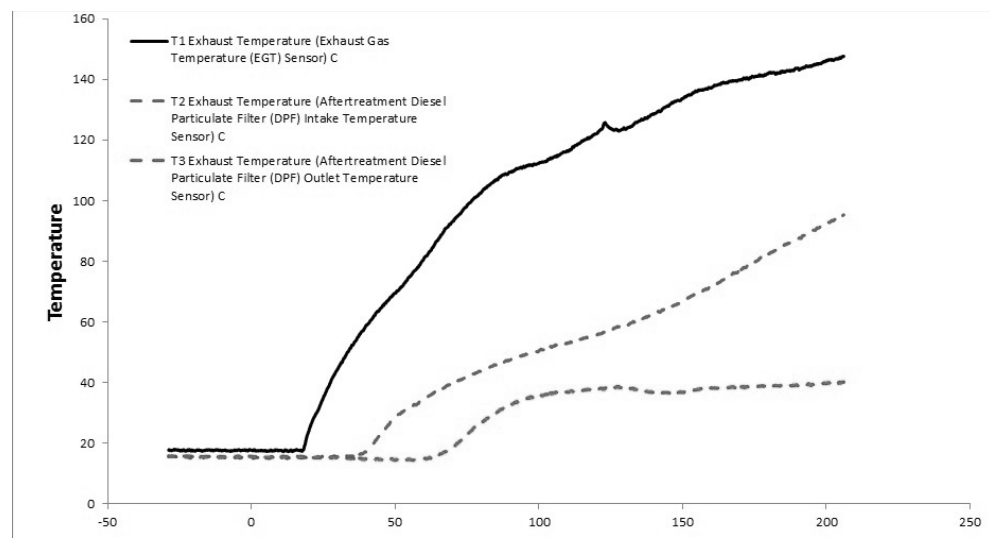
**Solution****IMPORTANT**

**No parts should be replaced for these fault codes unless a definite sensor failure is found.**

**Fault Tracing Procedure:**

1. Allow the vehicle to sit until the engine and exhaust have reached ambient (air) temperature.
2. Turn the ignition to ON, engine OFF.
2. Using Premium Tech Tool (PTT), run either of the operations below:
  - 2545-08-03-02 Exhaust Aftertreatment Diagnostics, option A
    - This will provide a numerical view of exhaust temperatures.
  - 2589-08-03-02 Exhaust Aftertreatment System, Service Regeneration
    - This will provide a graphical view of exhaust temperatures.
3. Ensure that the sensor readings are within 10 °C (18 °F) of one another before starting the engine.
4. Start the engine.
5. Monitor exhaust temperatures on PTT:
  - The sensor temperatures should rise in the order of 1, 2, 3 as shown below after starting the engine.
6. Evaluate results:
  - **If the sensor readings are equal at ambient temperature and rise in the correct order when the engine is running: No further fault tracing should be performed.** Clear the DTCs and return the vehicle to service.
  - **If one or more sensors are displaying a different reading from the others or are spiking instead of smoothly increasing with the engine running:** The sensor(s) should be suspected to be faulty.
  - **If the temperature sensor values rise out of order:** The sensors should be checked to ensure they are installed in the correct positions.

An example of proper temperature sensor function can be found below:



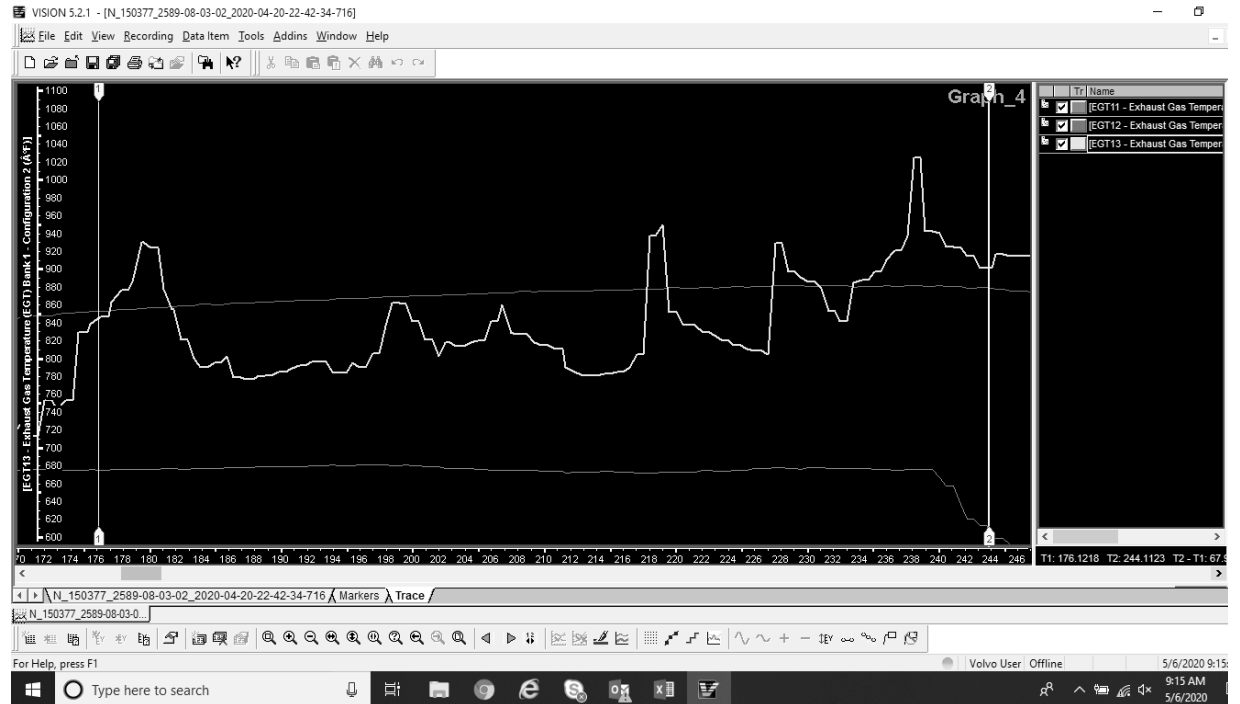
**This CBR will be updated when new information is available.**

Internal  
comments  
(BO)

Following is an example of temperature noise during regeneration or steady engine operation which is considered un-acceptable.

This example shows T3 having noise in temperature reading while T1, T2 are steady. Typically T1 is expected to have most noise in exhaust temperature, followed by T2, followed by T3 as there is thermal inertia between T1, T2 and T3. Only during AHI injection (Egs: Regeneration), T2 and T3 can increase faster than T1. All other times T1 always leads, T2, T3, T4.

Even for T1 sudden increase of temperature of ~50F and sudden drop of ~50F within seconds is unrealistic. In this example T3 increasing and dropping +-100F is a clear sign of sensor/harness/ACM issue.



Solution visibility

Dealer distribution

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

Function affected

1 1 0 EMS , DEF Dosing , DOC , DPF

### Function Group

Function Group

254 catalytic converter; exhaust emission control equipment , 258 emissions after-treatment

### Customer effect

Main customer effect

regeneration , temperature , fault code/display

### Fault Codes And Error Codes

OBDII Diagnostic

Trouble Codes (P, U, B  
Format)

P2080-64 , P2084-64 , P242B-64

### Conditions

Vehicle operating  
mode

on start-up , when stationary

### Administration

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Author	UT0389H
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### 2549-08-03-03 NOx Conversion

Simulation

### Test

Select an operation and click Start

- 1 - Service and maintenance
- 2 - Engine, Engine mounting and equipment
  - 20 - General
  - 21 - Engine
  - 22 - Lubrication and Oil System
  - 23 - Fuel system
  - 25 - Inlet and exhaust system
- 2500-08-03-02 Boost Pressure, Test Drive
- 2500-08-03-03 Response, Test Drive
- 2500-08-03-05 Intake and Exhaust Systems, Checks
- 2530-08-03-02 Engine Brake Function
- 2530-08-03-03 Warm Hold Function
- 2545-08-03-02 Exhaust/Aftertreatment Diagnostics
- 2589-08-03-02 Exhaust Aftertreatment System, Service Regeneration

### 2545-08-03-02 Exhaust Aftertreatment Diagnostics

Run the operation in simulation mode

#### Purpose

Check the function of the exhaust aftertreatment system (DPE)

Ash and soot level reset

#### Description

This operation allows monitoring of system conditions, activation of components and reset of system values

### 2549-08-03-03 NOx Conversion

Simulation

### 2545-08-03-02 Exhaust Aftertreatment Diagnostics

Simulation

Information >> Conditions >> Execution

#### Purpose

Check the function of the exhaust aftertreatment system (DPE)

Ash and soot level reset

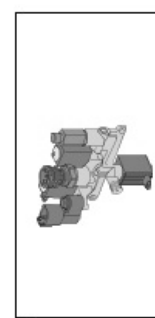
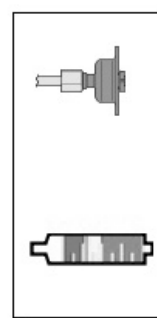
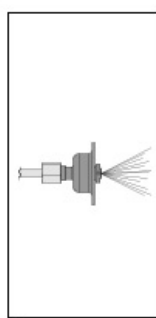
#### Description

This operation allows monitoring of system conditions, activation of components and reset of system values

#### Selections

Select the illustration corresponding to the method or test to be performed

A



A

B

C

D

### 2549-08-03-03 NOx Conversion

Simulation

### 2545-08-03-02 Exhaust Aftertreatment Diagnostics

Simulation

Information >> Conditions >> Execution

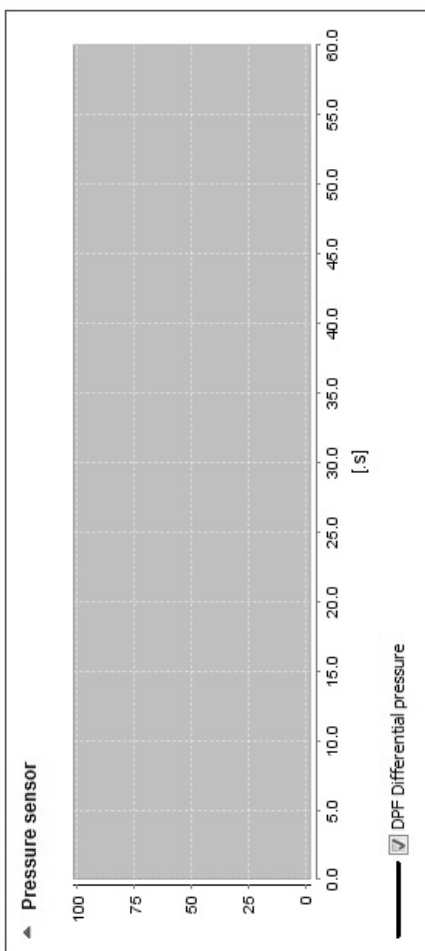
Service information can be found at the following link(s):

[Intake and exhaust system, Function description](#)

#### Action

- Ignition Key ON and Engine OFF
- Read out the status of the operating conditions
- Start the engine
- Check that all signals and values are stable and without abnormal deviations
- Check that all signals are displaying realistic values according to the actual conditions

Note: Additional information may be available when the cursor is positioned over the objects or text in the view



Exhaust gas temperature sensor

Other sensors

- Perform a service regeneration (DPF)
- Perform a service regeneration (SCR Catalyst)
- Check that the regeneration functions properly
- Prepare particulate filter for ash cleaning

Operations:

- 2545-08-03-03 Diesel Particulate Filter Service Regeneration
- 2589-08-03-15 Aftertreatment Selective Catalytic Reduction (SCR), Regeneration

Test

Select an operation and click Start

Sort by function

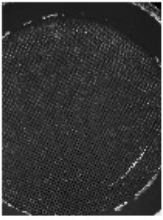
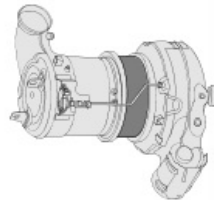
- 2545-08-03-02 Exhaust Aftertreatment Diagnostics
- 2589-08-03-02 Exhaust Aftertreatment System, Service Regeneration
- 2545-08-03-04 Exhaust Aftertreatment System Logged Data
- 2549-08-03-03 NOx Conversion
- 2551-08-03-02 Variable Geometry Turbo Function
- 2584-08-03-01 SCR System, forced heating
- 2589-08-03-05 Aftertreatment selective catalytic reduction (SCR) system
- 2589-08-03-06 SCR System Drain
- 2589-08-03-18 Exhaust Aftertreatment System Analysis
- 26 - Cooling System
- 27 - Engine controls
- 28 - Ignition and control system
- 29 - Miscellaneous
- 3 - Electrical system and instruments



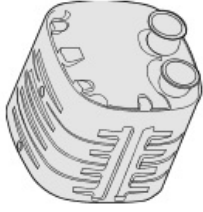
### 2549-08-03-03 NOx Conversion

Simulation

## A DPF 20 - 60 minute(s)



## B SCR 30 - 90 minute(s)



## 2589-08-03-02 Exhaust Aftertreatment System, Service Regeneration

Simulation

Information >> Conditions >> Execution

### Purpose

- Perform a service regeneration (DPF)
- Perform a service regeneration (SCR Catalyst)
- Check that the regeneration functions properly
- Prepare particulate filter for ash cleaning

### Selections

Select the illustration corresponding to the method or test to be performed

#### A - 2545-08-03-03 Diesel Particulate Filter Service Regeneration

- This operation is used to perform a "service regeneration" of the diesel particulate filter (DPF)
- During engine operation, the DPF becomes loaded with soot. Regeneration of the DPF takes place during engine operation in order to remove the soot.
- If the soot level becomes greater than what can be removed by the normal...occurring regeneration process

2549-08-03-03 NOx Conversion

Simulation

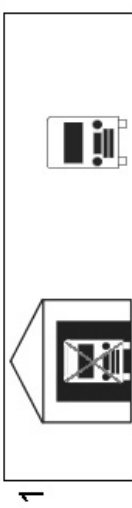
2589-08-03-02 Exhaust Aftertreatment System, Service Regeneration

Simulation

Information >> Conditions >> Execution

Manual conditions

- 1  Vehicle outdoors in a suitable area
- Confirmed



### 2549-08-03-03 NOx Conversion

Simulation



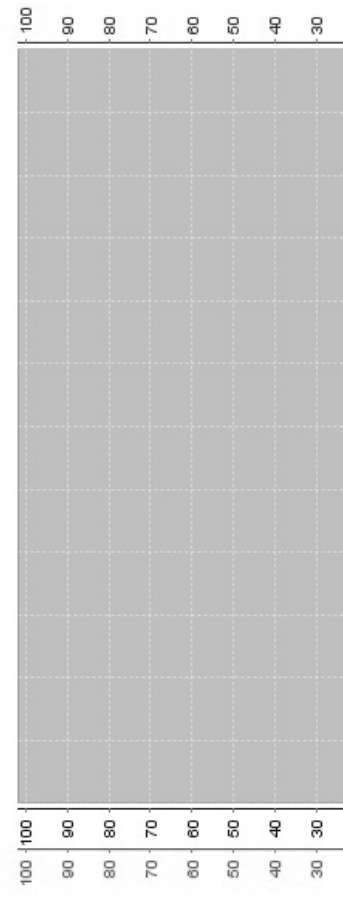
Regeneration activation



Percentage completed (0 - 100 %)

0%

Exhaust gas temperatures



### 2589-08-03-02 Exhaust Aftertreatment System, Service Regeneration

Simulation

Information >> Conditions >> Execution

Information

#### Action

Note: The process can be stopped at any point by selecting the stop button

Start the regeneration by pressing the play button

Allow the operation to continue until it is complete. When the process is complete the engine speed will return to normal idle speed. At this point, the engine should be allowed to run until the system has cooled down 2 - 3 minute(s).

The progress bar may not start immediately when the engine speed increases; it can take several minutes due to the exhaust aftertreatment system is not hot enough

