

# Mack Chassis - Vehicles Equipped With A Vertical Selective Catalytic Reduction (SCR) System - Diagnostic Trouble Codes ( DTC ) P1031 With Possible P24DA Lighting The Malfunction Indicator Lamp ( MIL ) - US17+OBD16 (GHG17, Common Rail Fuel System) Emi

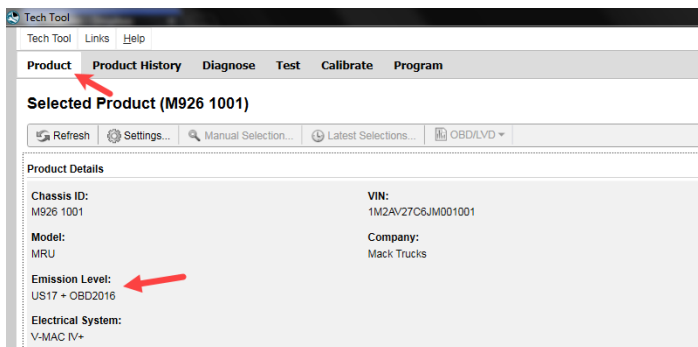


> Internal Content

**DO NOT Replace the PM sensor for P1031 and/or P24DA on vehicles configured as described above prior to performing the steps below.**

## Verify the chassis emissions level

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



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

DTC List (2 Items)

Control Unit	DTC	Status
Brake ECU (MID 136)	SID 69: Axel load sensor, FMI 2: Data erratic, intermittent, or incorrect	Active
Engine Control Module (EMS)	P229F64: NOx Sensor Gas Outlet Removed, Signal Plausibility Failure	Active

NOx Sensor Gas Outlet Removed

Detailed status information

Title	Value
Confirmed DTC	True
Pending DTC	False
Test failed	True
Test failed since last clear	True
Test failed this operation cycle	True
Test not completed since last clear	False
Test not completed this operation cycle	False
Warning indicator requested	False

**Once the chassis is confirmed to be US17+OBD16 or US17+OBD18:**

Software improvements have been made that address this DTC.

Live UI are two documents that should be reviewed:

**1. Product Improvement [PI0883 Engine Control Module \(ECM\) and Aftertreatment Control Module \(ACM\), Software Updates](#)** was released July 2018. This product improvement should appear under the Campaigns section of the Product screen of Premium Tech Tool (PTT) when first connecting to the vehicle.  
**Applicability to this campaign should be checked first.**

- The Service Program document can be found on the dealer Mack Trucks eMedia.

- **Note:** There will be a prompt to sign in to the Trucks Dealer Portal site if necessary.

- Searching for PI0883 will return a link to the bulletin.

- **If the PI applies to the product it is not necessary to proceed to the Field Service Bulletin below.**

**2. Field Service Bulletin FSB 284-067 [Engine Control Module \(ECM\) and Aftertreatment Control Module \(ACM\), Reprogramming](#)** has been released and should be reviewed if the Product Improvement does not apply to the vehicle.

- The FSB document can be found on Mack Trucks eMedia or under the Service tab in Impact.

- Searching for 284-067 will return a link to the document in either application.

**3.** If either of the above documents applied and there are no other issues present, the vehicle should be released when software updates have been completed.

**If software is current according to the bulletin,** refer to CBR Solution CBR-193 for more information.

**If other symptoms or related codes are present,** normal diagnostics will need to be performed to determine the cause.

 Tags

- [k00527512](#)
- [p1031](#)
- [p1031-00](#)
- [p24da-00](#)
- [p103100](#)
- [p24da00](#)

**Related links and attachments**

No links or attachments available

 **Feedback**

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## **Mack Chassis - Particulate Matter (PM) Sensor Diagnostic Trouble Codes (DTC) Illuminating The Malfunction Indicator Lamp (MIL); Tech Tip TT-014-2016 - US14+OBD16, US17+OBD16 And Newer Emissions, Common Model Year 2017 And Newer - To Be Used For EVERY**



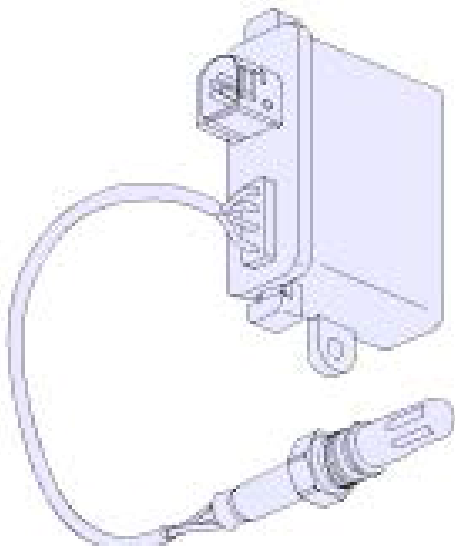
> Internal Content

**This Solution is relevant regardless of previous visits and sensor replacements. At this time, multiple sensor failures are not uncommon, regardless of how new the sensor is. The same procedure should be followed for every instance.**

**PLEASE NOTE: Instructions have been updated as of 20 June 2019. If diagnostics indicate that sensor replacement is required, please follow FSB 284 - 068 Exhaust Particulate Sensor, Repair ( 2016 ) or FSB 284 - 069 ( 2017 ) Exhaust Particulate Sensor, Repair. An eService case is not required**

### **Precautions**

1. The PM sensor is a smart sensor (12V supply and CAN lines) **with an orientation tab as seen below:**



**Nm +/- 5 Nm**

**Installation torque of 50**

Live UI

**2. PM sensors need to be handled carefully.** Dropping them most likely results in permanent damage to the sensor. Keep cap on the sensor until ready to install the sensor to avoid any contamination.

**3. NEVER (DO NOT) apply anti-seize to install the PM sensor.** *If for some reason someone applied it before this repair, thoroughly clean the threads and sealing surfaces while replacing the sensor.*

**4.** A removed PM sensor should be capped immediately (cap from replacement sensor) and packaged carefully, if returning to warranty or investigation purposes.

## Repair

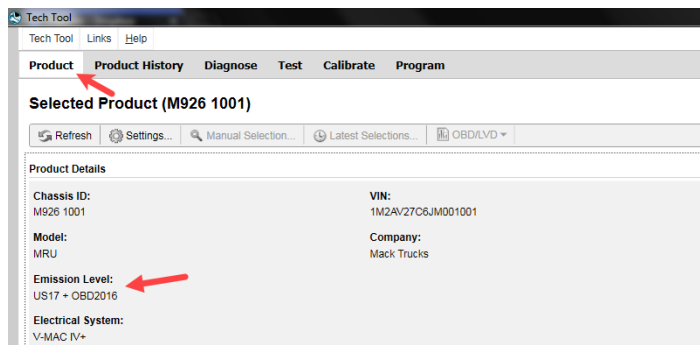
### IMPORTANT:

- If a chassis arrives with a derate warning active, the PM sensor is not the source of the derate and there is a separate existing issue.


- **Prior to installing a new sensor for any of the steps below, gently shake the sensor and ensure it does not rattle. If noise is heard, another sensor should be used.**

### 1. Verify the chassis emissions level

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



- **For US17+OBD16 (Common Rail Fuel System) Chassis setting DTCs P24DA or P1031 ONLY:**

Software improvements have been released to address this code.  
 Live UI or to CBR Solution CBR-274.

- **For US17+OBD16 Chassis setting any other codes for the PM Sensor,** Proceed with instructions below.

- **For US14+OBD16 (Commonly 2017 model year):** Proceed with instructions below.

## 2. Check the DTC Status

**Only troubleshoot PM sensor faults if the fault is *Active* or *Confirmed* as shown below.**

Detailed status information	
Title ▲	Value
Confirmed DTC	True
Pending DTC	False

## 3. Follow the set of instructions for the relevant DTC(s):

- **P1033, P1034, P24D0 or U02A3 fault codes (*Confirmed* or *Active*)**

- These PM sensor fault codes require connections and wiring harness checks for power supply and CAN communications. Repair can be verified with just KEY ON as diagnostics run immediately.

**- If wiring harness and connections check isolates the problem to the sensor:**

1. Remove the sensor from the exhaust.
2. Obtain a new sensor. Gently shake the new sensor to ensure it does not rattle.
  - NOTE:** A sensor that rattles should **not** be installed.
3. Install the new sensor.
4. Clear the DTCs and release the vehicle.

1. Replace the PM sensor with the latest part. Gently shake the new sensor to ensure it does not rattle.
  - NOTE:** A sensor that rattles should **not** be installed.
2. Update the Engine Control Module (EMS) software and clear all codes.
3. Release the vehicle.

**- If the PM sensor is the current part number:**

 Live UI . Verify that the EMS software is current.

2. Remove the sensor from the exhaust.
3. Obtain a new sensor. Gently shake the new sensor to ensure it does not rattle.
  - NOTE:** A sensor that rattles should **not** be installed.
4. Install the new sensor.
5. Clear the DTCs and release the vehicle.

• **All other PM sensor fault codes (*Confirmed or Active*)**

**P24B3, P24AF, P2AB0, P24B1, P24B0, P24DA, P24B7, P24B5, P24D1, P24FC, P24AE, P24B4, and P1032.** (Highlighted are common faults).

1. Verify that the EMS software is current.
2. Remove the sensor from the exhaust.
3. Obtain a new sensor. Gently shake the new sensor to ensure it does not rattle.
  - NOTE:** A sensor that rattles should **not** be installed.
4. Install the new sensor.
5. Clear the DTCs and release the vehicle.

 Tags

<a href="#">k59554255</a>	<a href="#">p1031</a>	<a href="#">p1032-00</a>	<a href="#">p1033-00</a>
<a href="#">p1034-00</a>	<a href="#">p249c-00</a>	<a href="#">p24ae-13</a>	<a href="#">p24af-00</a>
<a href="#">p24b0-00</a>	<a href="#">p24b1-00</a>	<a href="#">p24b3-13</a>	<a href="#">p24b4-92</a>
<a href="#">p24b5-00</a>	<a href="#">p24b7-00</a>	<a href="#">p24d0-00</a>	<a href="#">p24d1-00</a>
<a href="#">p24da-00</a>	<a href="#">p24fc-00</a>	<a href="#">p2ab0-47</a>	<a href="#">p103200</a>
<a href="#">p103300</a>	<a href="#">p103400</a>	<a href="#">p249c00</a>	<a href="#">p24ae13</a>

 Live UI

<a href="#">p24af00</a>	<a href="#">p24b000</a>	<a href="#">p24b100</a>	<a href="#">p24b313</a>
<a href="#">p24b492</a>	<a href="#">p24b500</a>	<a href="#">p24b700</a>	<a href="#">p24d000</a>
<a href="#">p24d100</a>	<a href="#">p24da00</a>	<a href="#">p24fc00</a>	<a href="#">p2ab047</a>

### Related links and attachments

No links or attachments available



### Feedback

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(June 2018)

## Information

Software updates with enhancements are available for the engine control module (ECM) and aftertreatment control module (ACM) for VOLVO D11, D13 and D16 engines on OBD2017 and OBD2018 vehicles built from January 1, 2017 to March 01, 2018.

Follow the reprogramming procedure in the following order as outlined in this document:

- ECM reprogramming
- ACM reprogramming

The software updates address the following Diagnostic Trouble Codes (DTCs):

- P0420 – Catalyst System Efficiency Below Threshold
- P02FA – Diesel Intake Air Flow Position Sensor Minimum / Maximum
- P24DA – Particulate Matter Sensor Exhaust Sample Error Bank 1
- P009E – Fuel Pressure Relief Control Performance / Stuck Off
- P0471 – Engine Exhaust Back Pressure Circuit Range/Performance
- P1031 – Particulate Matter Sensor Clogged Tip

Check the current main software for ECM and ACM to determine the action required as shown in the table below.

Action Required		
ECM	Main Software	Action Required
D11 / D13	Equal or Less Than 23080716	Update to Latest Software
D16	Equal or Less Than 22825014	Update to Latest Software
ACM	Main Software	Action Required
D11 / D13 / D16	Equal or Less Than 23004689 (D11) 22883002 (D13) 22825000 (D16)	Update to Latest Software

## Required Tools

Premium Tech Tool (PTT) version 2.06.35 or higher

VOCOM Diagnostic Connector 88890304

Communication Interface 88890300

Note: Using other interfaces may affect programming speed.

Note: Check Premium Tech Tool version by clicking on Help tab and then click on “About Tech Tool”.

## Software Update Procedure

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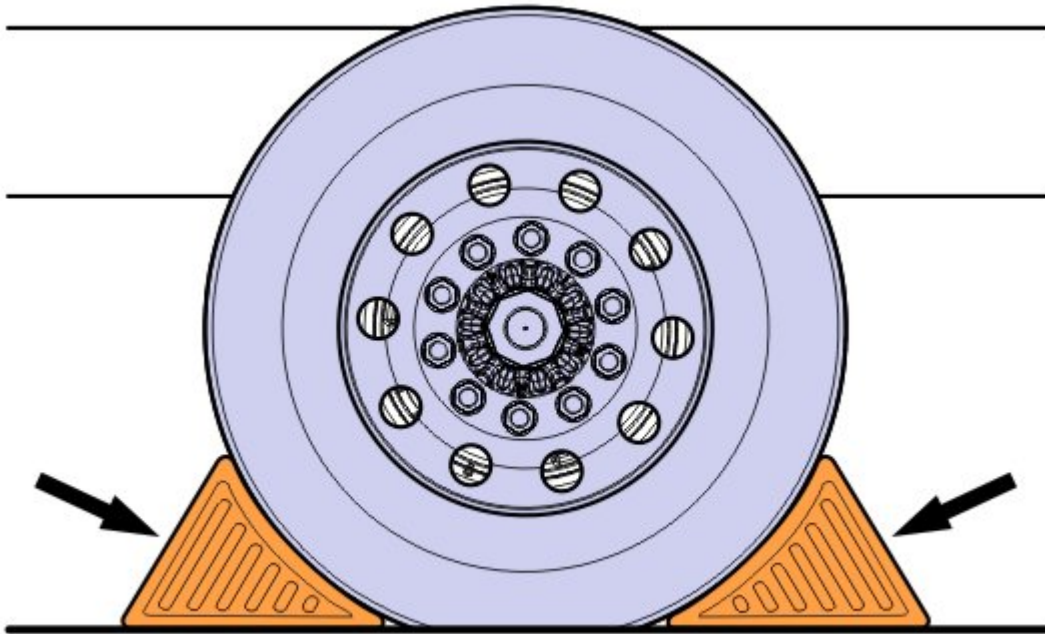
You must read and understand the precautions and guidelines in Service Information, group 20, "General Safety Practices, Engines" before performing this procedure. If you are not properly trained and certified in this procedure, ask your supervisor for training before you perform it.

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### Danger

Do not attempt to repair or service this vehicle without having sufficient training, the correct service literature and the proper tools. Failure to follow this could make the vehicle unsafe and lead to serious personal injury or death.

1. Park the vehicle on a level surface.
2. Apply the parking brake.
3. Place the transmission in neutral or park.
4. Install the wheel chocks.



5. Connect Premium Tech Tool (PTT) to the vehicle diagnostics connector using the 16 pin OBD cable 88890304 and Communication Interface 88890300. Connect the PC to a functional LAN or modem connection and a 120 Volt AC source.
6. Turn the ignition switch "ON".
7. Log in to PTT and Identify Vehicle is displayed.
8. Once the vehicle has been identified, enter the Work Order Number information, then click Start Work.

Work Order Number

Enter a work order number or select a recently used work order number in the list.

Enter work order number:

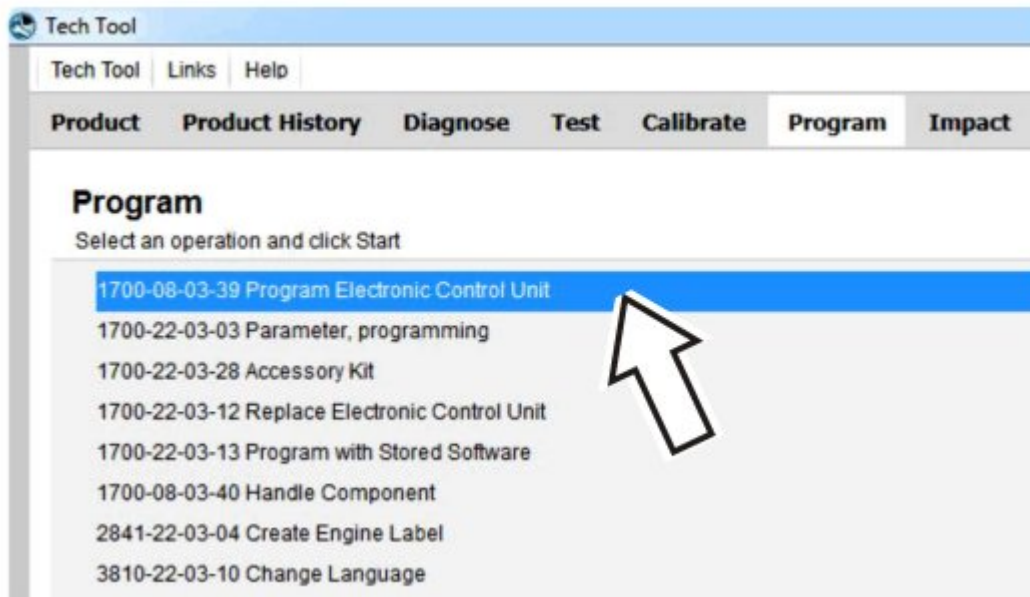
Select a recently used work order:

Work Order No	User ID	Date
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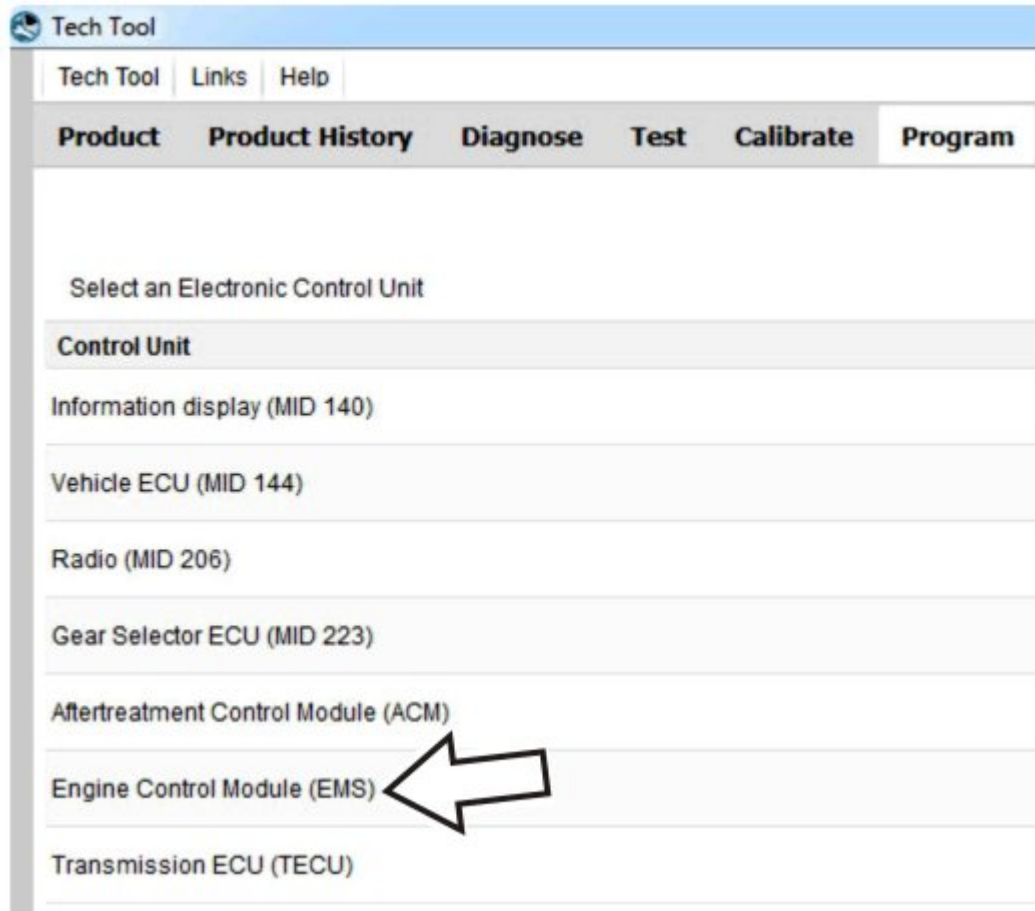
Enter Notes:

Start Work Cancel

9. From the Main Menu select Program and then Program Electronic Control Unit 1700-08-03-39. Then click Start.

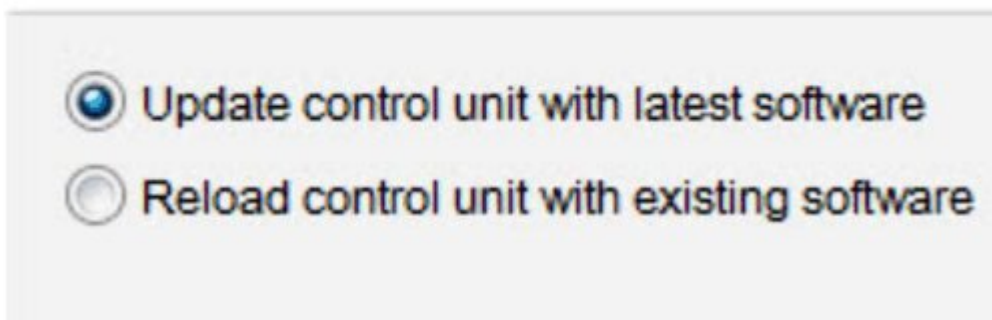


10. Select Engine Control Module (EMS).












11. Select Program to update the ECM with the latest software.

## Programming options



12. Certain conditions must be met to continue with programming: battery voltage above 10v, parking brake applied, and ignition key in ON position with engine not running. When all conditions have been met, click Continue to proceed with programming.

1	 > 10 V	12.7 V	
2	 		
3	 rpm = 0 rpm	 0 rpm	

### 1700-08-03-39 Program control unit - Update software

#### Automatically checked conditions

- 1 Battery voltage above 10 V
- 2 Parking brake applied
- 3 Ignition key in **ON** position. Engine not running

13. Select "I accept" to agree to the terms and press continue to proceed.

Note: In the United States and Canada, the programing is NOT chargeable. An invoice will not be generated.

### 1700-08-03-39 Program control unit - Update software

The following control units will be programmed

**Engine Control Module (EMS)**

#### Chargeable programming

The software you are about to program is chargeable. If programming is performed using the software, an invoice will be generated.

Programming will be charged once even if multiple retries are needed.

The software has commercial part number

**85136079** : Engine Control Module

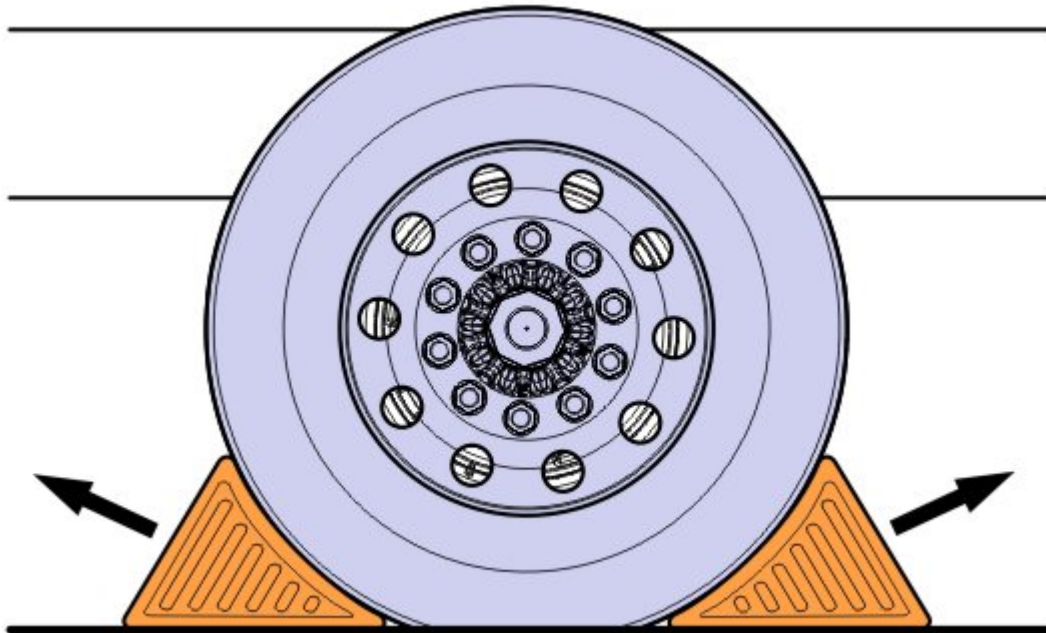
The number can be used for price lookup in your local system and will be specified on the invoice.

I accept



Select I accept to agree to the terms Press Continue to proceed

14. When programming is complete, click Exit to return to Main Menu to program the ACM.
15. When all programing is complete, clear any diagnostic trouble codes (DTC) and Finish Work.
16. Remove the wheel chocks.



Reimbursement

This repair may be eligible for reimbursement if a product failure was experienced within time and mileage limits of the applicable Warranty coverage. Reimbursement is obtained via the normal claim handling process.	UCHP Reimbursement
Claim Type (used only when uploading from the Dealer Bus. Sys.)	W
Labor Code	
Primary Labor Code (Engine Control Module (ECM) and Aftertreatment Control Module (ACM), Reprogramming)	2841-22-09-19 0.4 hrs.
Causal Part	3092091

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