Engine Control Module (EMS) Software (MSW) Information - November 2019; Improvement List (Change Log) And Explanations For Issues And Diagnostic Trouble Codes (DTC, Fault Codes) US17+OBD2016 And US17+OBD18 Emissions, Model Years 2018 And 2019

Internal Content

Vehicles equipped with Variable Geometry Turbocharger will be referred to as VGT.

Vehicles equipped with Turbo Compound will be referred to as TC.

Software Release Table (Latest information at top)

Date Available Via PTT	VGT MSW Part #	TC MSW Part #
November 2019 (Current)	**23766686**	**23766691**
May 2019	23470183	23470187
June 2018	23398790	23399381
February 2018	23242993	23242996

EMS software improvements with MSW Part Number 23766686/23766691. Available from November 2019.

All Vehicles

• Bug fix to prevent repeated or incomplete evaluations. Reduction in occurrences of the following faults.

Live UI

- **P0420-00** Catalyst System Efficiency Below Threshold

- **P0422-00** Catalyst 2 Efficiency Below Threshold (Bank 1)

• Exhaust Aftertreatment System analysis tool now active in Tech tool (Health Check). 2589-08-03-18 Exhaust Aftertreatment System Analysis is added with this EECU SW (TT 2.7.75 is needed with this EECU SW)

- **2103-08-03-02 Cylinder Compression** is unavailable.
- **2589-08-03-18 Exhaust After-treatment System Analysis** will replace 2549-08-03-03 NOx Conversion.
- **2589-08-03-17 Aftertreatment Particulate Sensor, Diagnostic Monitor does not work.**

EMS software improvements with MSW Part Number 23470183/23470187. Available from May 2019.

All Vehicles

• Smart Revert (DEF draining process) was added to prevent urea doser clogging. Reduces occurrences of clogged urea dosage valve. Smart Revert requires EMS and ACM software for functionality.

- **P208E-00** - Aftertreatment Reagent Dosing Valve Clogged
- **P103B-00** - Reagent Dosing Valve Inducement

• Reduction in occurrences of oil temperature plausibility fault.

- **P0196-64** - Oil Temperature

• Reduction in the following Exhaust Aftertreatment faults.

- **P0420-00** - Catalyst System Efficiency Below Threshold
- **P0422-00** - Catalyst 2 Efficiency Below Threshold (Bank 1)
- **P2698-00** - Exhaust Aftertreatment Fuel Injector "A" Performance

Live UI

• Improved robustness for EATS Temperature Sensor faults

- P2080-64 - Exhaust Gas Temperature Sensor Circuit Range/Performance (Bank 1 Sensor 1)
- P2084-64 - Exhaust Gas Temperature Sensor Circuit Range/Performance (Bank 1 Sensor 2)
- P242B-64 - Exhaust Gas Temperature Sensor Circuit Range/Performance (Bank 1 Sensor 3)

TC Only

• Improved robustness for Fuel Injection fault.

- P026C-00 - Fuel Injection Quantity Lower Than Expected

EMS software improvements with MSW Part Number 23398790 / 23399381. Available from June 2018.

All Vehicles

• Reduces occurences of **P04DB** Crankcase Ventilation System Disconnected (P04DB00, P04DB-00).
• Reduces occurrences of Intermittent engine speed signal loss, sudden change in vehicle speed, for short period of time (Hiccup or Surge).
• Reduces the potential for Intake Throttle Icing in Cold Weather. Any of the fault codes below are possible with this issue:

- **P24A4** Diesel Particulate Filter Restriction - Soot Accumulation Too High (Bank 1) (P24A400, P24A4-00)
- **P10FE** Particulate Filter Restriction - Soot Accumulation Moderately High Bank 1 (P10FE00, P10FE-00)
- **P02EC** Diesel Intake Air Flow Control System - High Air Flow Detected (P02EC00, P02EC-00)
- **P02ED** Diesel Intake Air Flow Control System - Low Air

Flow Detected (P02ED00, P02ED-00)

• Improvement in detection of Sweet spot, valid only when performance bonus feature is turned ON.
• Allows operation of DEF Dosing Test, PTT Operation 2589-08-03-05 Aftertreatment selective catalytic reduction (SCR) system Part 4, below 32° F (0° C).

Turbo Compound Only

• Reduces occurrences of **P0471** Engine Exhaust Back Pressure Circuit Range/Performance (P047164, P0471-64).

EMS software improvements with MSW Part Number 23242993 / 23242996. Available from February 2018.

All Vehicles

• Reduces occurrences of **P02FA** Diesel Intake Air Flow Position Sensor Minimum/Maximum Stop Performance (P02FA97, P02FA-97).
• Reduces occurrences of **P24DA** Particulate Matter Sensor Exhaust Sample Error Bank 1 (P24DA00, P24DA-00).
• Reduces the potential for Intake Throttle Icing in Cold Weather. Any of the fault codes below are possible with this issue:

- **P24A4** Diesel Particulate Filter Restriction - Soot Accumulation Too High (Bank 1) (P24A400, P24A4-00)
- **P10FE** Particulate Filter Restriction - Soot Accumulation Moderately High Bank 1 (P10FE00, P10FE-00)
- **P02EC** Diesel Intake Air Flow Control System - High Air Flow Detected (P02EC00, P02EC-00)
- **P02ED** Diesel Intake Air Flow Control System - Low Air Flow Detected (P02ED00, P02ED-00)

• Improvements in the aftermarket routine for the PM ensor, PTT Operation 2589-08-03-17 Aftertreatment Particulate Sensor, Diagnostic Monitor.

Vehices With 2-Box Exhaust Aftertreatment System (EATS) Only

• Reduces occurrences of **P0420** Catalyst System Efficiency Below Threshold (P042000, (P0420-00).

Tags

k22114901 p009e-73 p0196-64 p026c-00
p02fa p0420-00 p0422-00 p0471-64
p04db-00 p1031 p103b-00 p10fe-00
p2080-64 p2084-64 p208e-00 p242b-64
p24a4-00 p24da-00 ems software
p208e00 p242b64 p24a400 p24da00
p026c00 p009e73 p019664 p042000
p042200 p047164 p04db00 p103b00
p10fe00 p208064 p208464 volvo mack

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ed links and attachments

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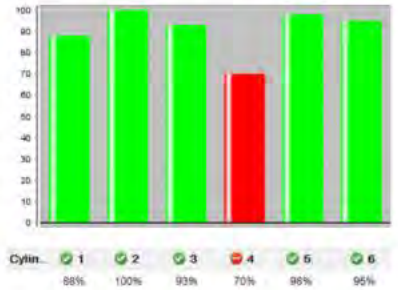
Product **Product History** **Diagnose** **Test** **Calibrate** **Program** **Impact**



Caution

Not supported

The Cylinder Compression Test has been temporarily removed from this ECM software

If Compression test is needed consider using the manual test

Refer to service information in Impact

2103-06-02-01 Cylinder Compression, Checking

Close

2103-08-03-02 Cylinder Compression

Simulation

Information >> Conditions >> Execution >> Result

Purpose

Check cylinder compression

Description

This test indicates if there is any deviation in compression in any cylinder in relation to the other cylinders

Note: During the test sequence the fuel injection is inhibited to prevent the engine from starting

Cancel

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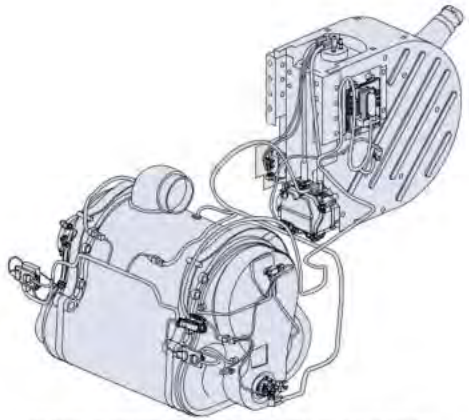

Illustrations are used for reference only, may differ slightly from the actual vehicle

2589-08-03-05 Aftertreatment selective catalytic reduction (SCR) system

Simulation

Information >> Conditions >> Execution

WARNING

This test includes handling of DEF. Make sure that all connectors are connected and protected from splash of DEF and from DEF that is dosed out of the dosing valve.

CAUTION

Do not spill Aftertreatment DEF onto exposed connectors when you disconnect hoses and components. If you spill DEF on an unprotected connector, you must replace the connector immediately. DEF is highly corrosive to metal, particularly copper and aluminum. Do not try to clean DEF off of the connectors with water or compressed air. They are ineffective because DEF quickly oxidizes metal and creeps into the wiring.

WARNING

To prevent serious damage of the catalytic converter the dosing valve must be removed before starting the dosing test. Failure to do so will result in that a significant quantity of DEF (Diesel Exhaust Fluid) is dosed into the exhaust gas tube and this will harm the catalytic converter at the next engine start.

☐ I have read and understand the above advisory

Cancel

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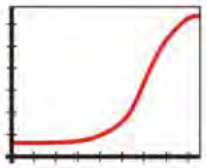
A



B

C

Exit inducement mode

D

SCR efficiency test values

2589-08-03-05 Aftertreatment selective catalytic reduction (SCR) system

Simulation

Information >> Conditions >> Execution

Purpose

Check that a newly installed, repaired, overhauled or replaced SCR system works correctly

Selections

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

A - System pressure build up

Check function/leakage of pump and hoses

B - Dosing test

- Check function/leakage of dosing valve
- Perform the Dosing test after the dosing valve has been replaced in order to exit inducement and clear DTC **P208E** or **P103B**

C - Exit inducement mode

- This should only be performed to exit inducement mode in order to find the root cause of DTC **P207F** or **P103C**
- Reset SCR system inducement timers

D - SCR efficiency test values

The following diagnostic trouble codes (DTCs) are concerned: **P207F** or **P20EE**

Continue > Cancel

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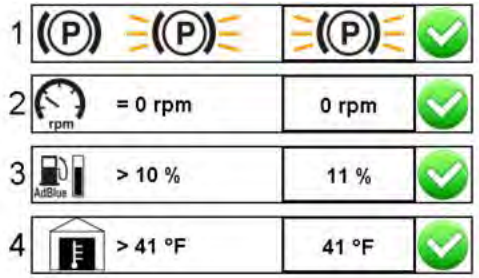

2589-08-03-05 Aftertreatment selective catalytic reduction (SCR) system

Simulation

Information >> **Conditions** >> Execution

Automatically checked conditions

1 Parking brake applied
2 Engine not running
3 DEF tank level above 10 %
4 Ambient temperature above 41 °F

Continue > Cancel

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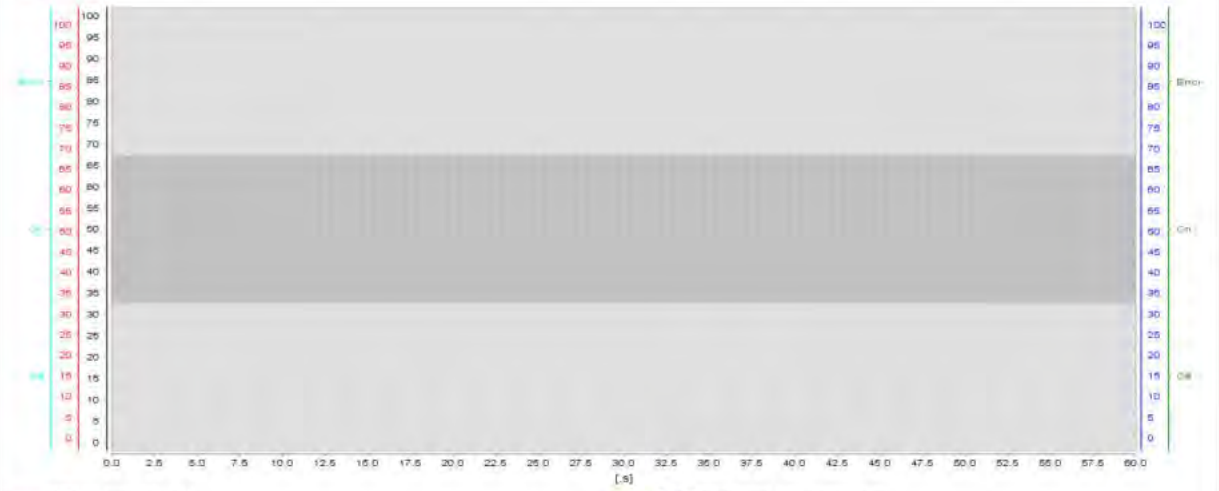
SCR Start-up Test (Pressure build up)

DEF System Status:
Waiting for start

Graph



2589-08-03-05 Aftertreatment selective catalytic reduction (SCR) system

Simulation

Information >> Conditions >> **Execution**

Information

This test gives the possibility to start up / build up the pressure without starting the engine

The test can be used to check that the repaired, serviced or replaced dosing system is working correctly

Action

- Before starting the test, monitor the signals and make sure the DEF pressure is near **0 kPa (0 psi)** without a large deviation
- Start the test

Note: The SCR Start-up test should be run for several minutes to verify that the system can hold pressure over time

Parameter values

14.5038 psi	DEF pressure
0 %	DEF pump rate in percent
0	Aftertreatment DEF dosing valve
	DEF tank heating valve
	DEF direction valve
60 %	DEF concentration

Evaluation

The pressure should build up to approximately **900 kPa (130 psi)**

Test result

Select one of the following alternatives

- OK
- Not OK

Restart the operation

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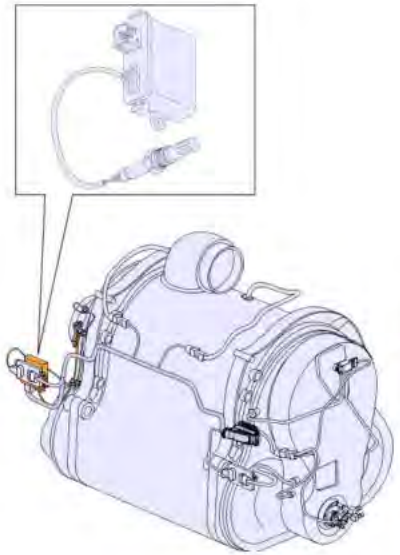
Product Product History Diagnose Test Calibrate Program Impact

B310: Aftertreatment particulate sensor



2589-08-03-17 Aftertreatment Particulate Sensor, Diagnostic Monitor

Simulation

Information >> Conditions >> Execution

Purpose

Check that the aftertreatment particulate sensor functions properly

Components to be tested are:

Aftertreatment particulate sensor

Note: This operation should only be used in the following circumstances

- Reference from diagnostic/service information or Technical support
- Relevant DTCs: **P2002**

Description

- This test is used to heat the exhaust aftertreatment system in order to activate the particulate sensor
- During the heating phase, the aftertreatment fuel dosing is increased together with engine speed
- Once the target temperature is reached, the sensor begins a self-test
- After several minutes, the sensor is evaluated by the test

Note: Operation may take approximately 30 minute(s) to complete

Caution

Test not supported

The test routine in this operation is not supported in this ECM software version, a replacement test will be released in a future ECM software update

Select the Cancel button to exit the operation

Close

Cancel

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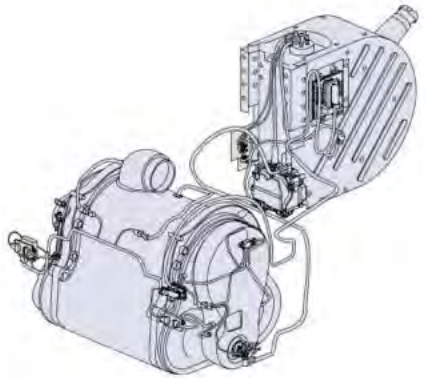

2589-08-03-18 Exhaust Aftertreatment System Analysis

Simulation

Information >> Conditions >> Execution >> Result

Purpose

Comprehensive check of Exhaust Aftertreatment System (EATS)

Note: This operation should only be used in the following circumstances

- Reference from diagnostic/service information or Technical support
- Relevant DTCs: **P103C, P20EE, P225E, P225C, P229F, P2201, P0422**

Description

- The ECM routine will perform a self-evaluating system test on the Exhaust Aftertreatment System (EATS)
- All tests can be performed in sequential order, or specific sub-tests can be individually selected

Available sub-tests that can be performed individually

1 NOx sensors
2 DEF dosing system
3 SCR efficiency

Operation may take approximately 15 - 45 minute(s) to complete

Continue > Cancel

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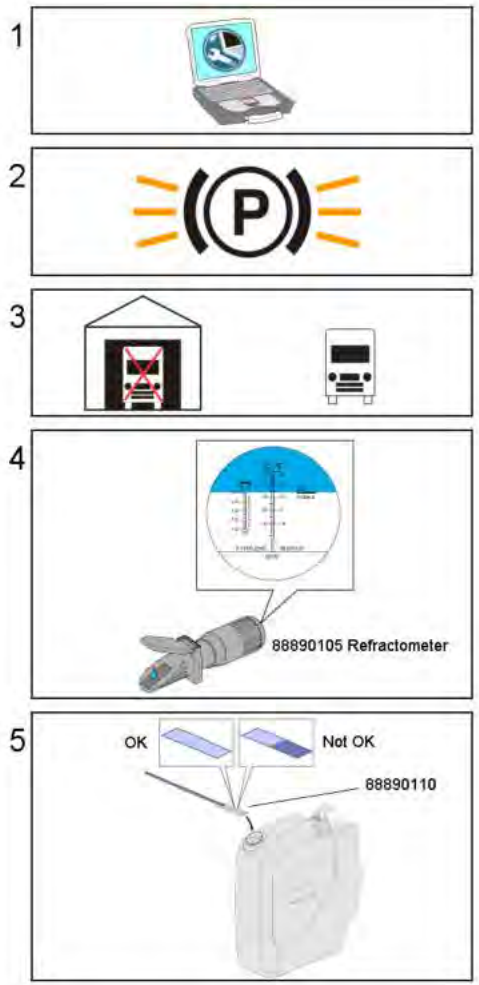

2589-08-03-18 Exhaust Aftertreatment System Analysis

Simulation

Information >> **Conditions** >> Execution >> Result

Manual conditions

1. Reference from diagnostic/service information or Technical support (DTCs: **P103C, P20EE, P225E, P225C, P229F, P2201, P0422**)
2. Parking brake applied
3. Vehicle outdoors in a suitable area
4. DEF concentration within specifications
5. DEF free from contamination

☐ Confirmed

Cancel

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Product Product History Diagnose Test Calibrate Program Impact

Start

DEF System Status:
Waiting for start

Percentage completed (0 - 100%)

0%

Primary Parameters

Secondary Parameters

2589-08-03-18 Exhaust Aftertreatment System Analysis

Simulation

Information >> Conditions >> **Execution** >> Result

Information

Action

It is highly recommended to run all the subtests at the same time in order to achieve an optimal system evaluation. However, each subtest can be selected individually on recommendation from diagnostic/service information or Technical Support.

Note: All subtests are enabled by default

Deselect which subtests not to run

- [x] NOx sensors
- [x] DEF dosing system
- [x] SCR efficiency

Ignition Key ON and Engine OFF

1. Read out the status of the operating conditions
2. Check that all signals and values are stable and without abnormal deviations
3. Check that all signals are displaying realistic values according to the actual conditions

Start the engine and let it idle

1. Start the test
2. Wait until test has completed
3. Continue to the Result step

Primary Parameters

Secondary Parameters

Static parameters, initial readout

Continue >

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Product Product History Diagnose Test Calibrate Program Impact

Test result

NOx inlet response

NOx outlet response

DEF dosing system

SCR efficiency

Reference

Icon	Description
	Test Completed, no errors detected
	Test Completed, error detected
	Test not completed
	Not tested
	Sensor signal out of expected range

2589-08-03-18 Exhaust Aftertreatment System Analysis

Simulation

Information >> Conditions >> Execution >> **Result**

Result

- **Recommended actions**
  - **NOx inlet response**
    - Not tested
  - **NOx outlet response**
    - Not tested
  - **DEF dosing system**
    - Not tested
  - **SCR efficiency**
    - Not tested

Detailed information

- **NOx sensor values**
- **DEF dosing system values**
- **SCR efficiency test values**

Continue >

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