



Engine Control Module (EMS) Software (MSW) Information - Improvement List, November 2021 - US21+OBD2020 Emissions



Vehicles equipped with Variable Geometry Turbocharger will be referred as VGT. Vehicles equipped with Turbo Compound will be referred as TC.

Software Release Table (Latest information at top)

Date Available Via PTT	VGT MSW Part #	TC MSW Part #
November 2021 (Current)	23958948	23958968
August 2020	23783118	23783119
January 2020	23820138	23841271

EMS software improvements with MSW Part Number 23958948/23958968.

Available from November 2021.

All Vehicles

VGT and TC EMS Software

The diagnostic for small fuel system leak (P009400) will not cause Malfunction Indicator lamp (MIL) after this update.

- P009400 – Fuel System Leak Detected – Small Leak

Reduction of false faults on the following NOx Sensor faults:

- P225C00 - NOx Sensor Performance - Signal Stuck High Bank 1 Sensor 1
- P225E00 - NOx Sensor Performance - Signal Stuck High Bank 1 Sensor 2



Live UI **ved diagnostic function routines for EGR System**
Checks

- Test, 2939-08-03-01 – Exhaust Gas Recirculation Function has been replaced with 2939-08-03-03 – Exhaust Gas Recirculation System Analysis.
- New test, 2939-08-03-03 is more capable in detecting issues with EGR system.
- Use TT2.8.51 or newer and update product information to run this operation with new engine ECU software.

Improved diagnostic function routines for Exhaust Aftertreatment System Checks

- 2589-08-03-18 Exhaust Aftertreatment System Analysis (only NOx sensor and DEF dosing valve tests are available now), replaces 2549-08-03-03 NOx Conversion.
- 2589-08-03-05 Aftertreatment selective catalytic reduction (SCR) system, Test B, Option 4 is improved to run as expected. This test when runs heals P103B fault codes, after the repair.

Reduction of intake throttle ice formation in extreme cold weather (less than 20 degrees Celsius Ambient) and extended idling.

Reduction of faults

- P040100 - Engine Exhaust Gas Recirculation 1 Valve Position Flow Insufficient Detected

New fault code has been added to detect EGR temperature pin fretting.

- P040B00 – Exhaust Gas Recirculation Temperature Sensor “A” Circuit Range/Performance

Reduction of false faults

- P026B00 - Injection Timing Performance
- P042000 - Catalyst System Efficiency Below Threshold
- P260900 - Intake Air Heater System Performance
- P220DC00 - Exhaust Aftertreatment Fuel Supply Control Stuck
- P008400 - Low Pressure Fuel System Pressure - Too Low

- P009400 - Low Pressure Fuel System Pressure - Too Low
- P20D000 - Exhaust Aftertreatment Fuel Injector "A" Stuck Closed
- P20CF7A - Exhaust Aftertreatment Fuel Injector "A" Stuck Open
- P20DE00 - Exhaust Aftertreatment Fuel Pressure Sensor Circuit Range/Performance

Reduction of faults in cold ambient temperatures

- P050C00 - Cold Start Engine Coolant Temperature Performance

EMS software improvements with MSW Part Number 23783113/23783119.

Available from August 2020.

All Vehicles

VGT and TC EMS Software

Add Dedicated Fuel Filter Pressure Sensor. Re-introducing dedicated fuel pressure sensor and improved diagnostic to allow for early dash cluster warning of fuel filter clogging.

Two Non-MIL fault codes added for pressure sensor electrical faults.

- P253913 – Low Pressure Fuel System Circuit
- P254200 – Low Pressure Fuel System Sensor Circuit High

Performance Bonus Broadcasting Fix

- Driver gets a road speed limit increase upon meeting idle speed and fuel efficiency targets. Function corrected so that trophy indicator, fuel efficiency, and sweet spot are properly displayed on the instrument cluster. Requires cluster software to complete corrections.

The diagnostic for small fuel system leak (P009400) will not cause Malfunction Indicator lamp (MIL) after this update.

- P009400 – Fuel System Leak Detected – Small Leak

 Tags

- [p253913](#)
- [p254200](#)
- [p009400](#)
- [p0401-00](#)
- [intake throttle ice](#)
- [volvo](#)
- [mack](#)
- [ems software](#)
- [p0094-00](#)
- [p225c-00](#)
- [p225e-00](#)
- [p0420-00](#)
- [p2609-00](#)
- [p008a-00](#)
- [p20cf-7a](#)

Related links and attachments

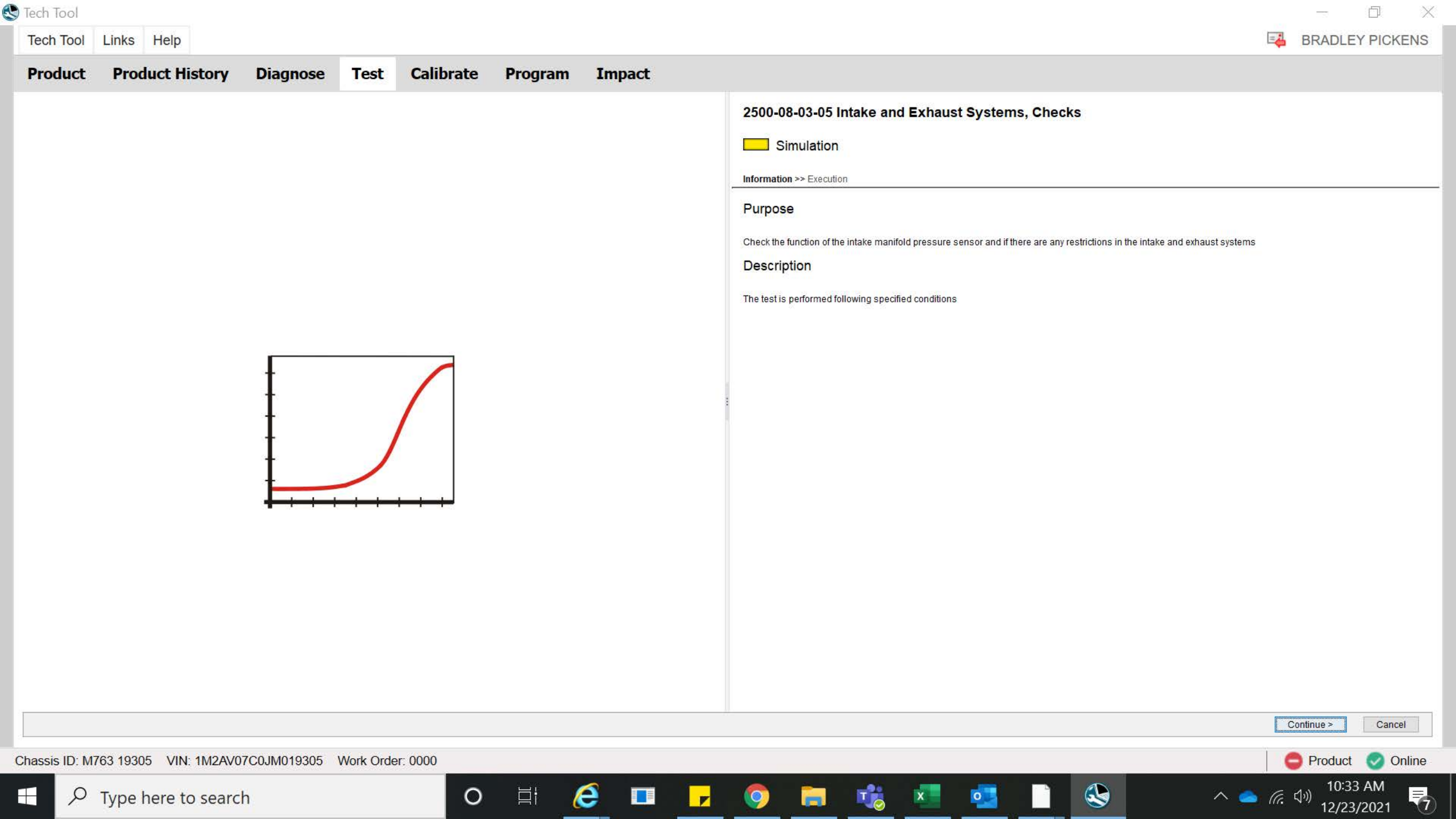
No links or attachments available



Feedback

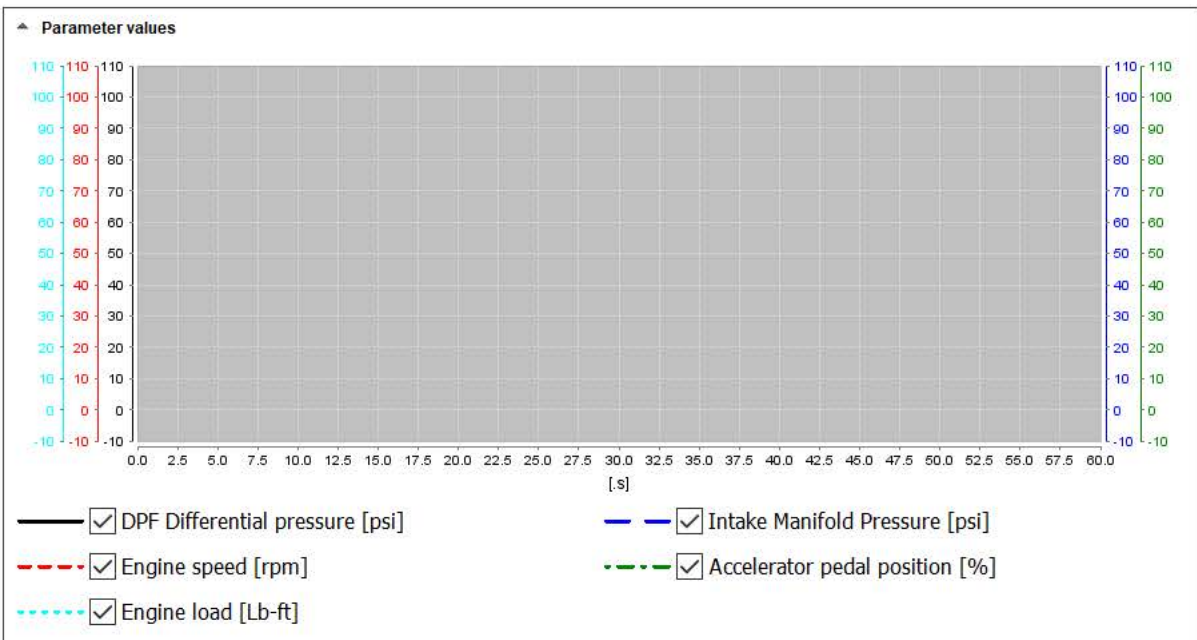
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Product Product History Diagnose Test Calibrate Program Impact

Intake Manifold Pressure, Engine speed, Accelerator pedal position vs Time



2500-08-03-05 Intake and Exhaust Systems, Checks

Simulation

Information >> Execution

Action

- Start the engine
- Check that the clogged air filter icon is not displayed in the instrument cluster. If the icon is shown, exit the test and perform necessary actions.
- Start the test



- Increase and maintain engine speed at high level for approximately 10 seconds, note the intake manifold pressure when the readout value is stabilized. Repeat the test three times and note the highest value

Note: For more accurate test results the engine should be at operating temperature

Evaluation

Parameter values	
15 psi	Intake Manifold Pressure
600 rpm	Engine speed
75 %	Accelerator pedal position
15 psi	DPF Differential pressure
516 Lb-ft	Engine load

The test should show an increase of the intake manifold pressure after which it should decrease slightly and stabilize during the free acceleration If the test does

Continue >

Tech Tool

Tech ToolLinksHelp

BRADLEY PICKENS

ProductProduct HistoryDiagnoseTestCalibrateProgramImpact

2589-08-03-18 Exhaust Aftertreatment System Analysis

Simulation

Information >> Conditions >> Execution >> Result

!WARNING

Ensure that the vehicle is in a suitable place outdoors. The exhaust outlet must not be directed towards anything that could be damaged by high temperature. If the exhaust is directed towards the ground it is recommended to soak the ground below with water to prevent damage to the surface, or if possible position the vehicle on gravel surface. Ensure that the exhaust is not near flammable material.

A fire-extinguisher should be accessible in case of fire.

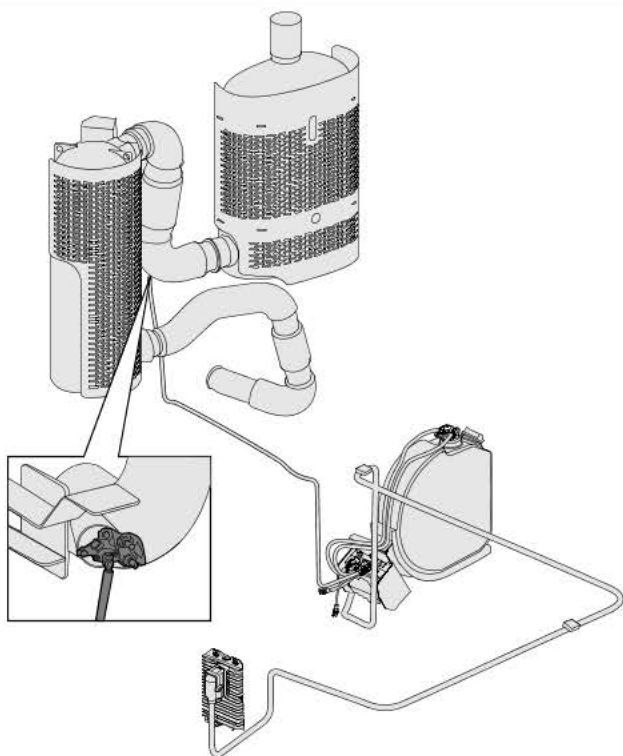
☒ I have read and understand the above advisory

Continue >Cancel

Chassis ID: M763 19305VIN: 1M2AV07C0JM019305Work Order: 0000

ProductOnline

10:26 AM12/23/20217



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

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

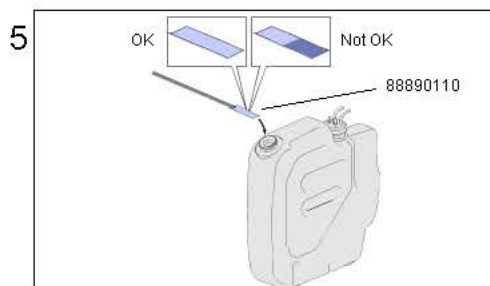
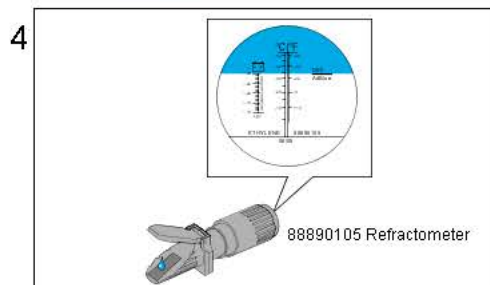
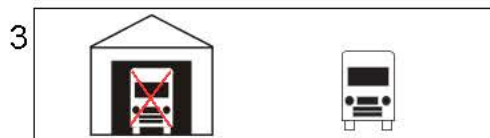
Available sub-tests that can be performed individually

- NOx sensors
- DEF dosing system
- SCR efficiency

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

Continue >

Cancel



 Simulation

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

- 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

Continue >

Product Online



Percentage completed (0 - 100%)

0%

▼ Primary Parameters

▼ Secondary Parameters

 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 are not to run

☒ NOx sensors

☒ DEF dosing system

☒ 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

Continue >

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

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-

NOx sensor values

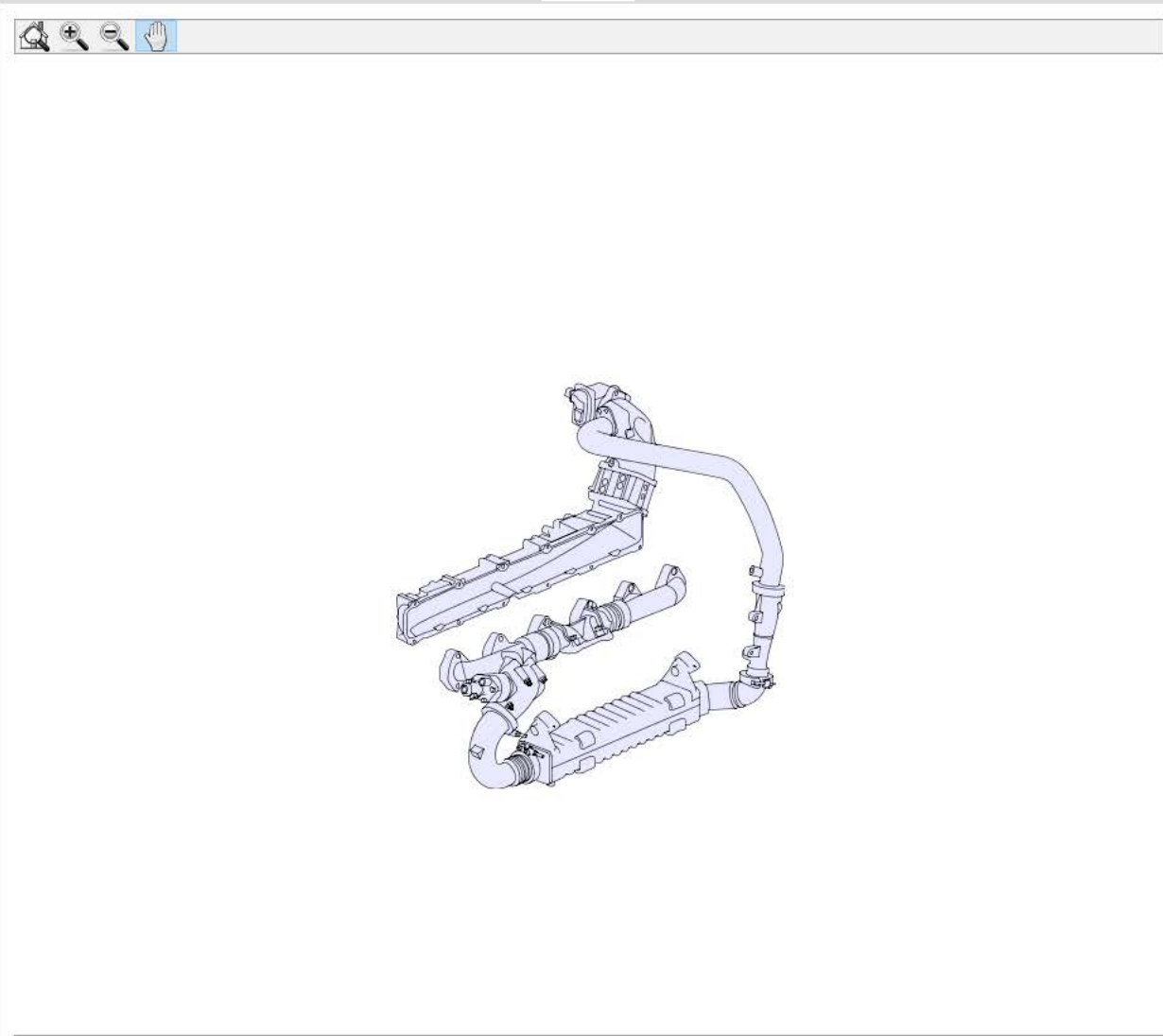
DEF dosing system values

SCR efficiency test values

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Continue >



2939-08-03-01 Exhaust Gas Recirculation Function

Simulation

Information >> Conditions >> Execution

Purpose

Check the function of the EGR Valve

Description

- The purpose of this operation is to monitor the conditions which control the EGR valve. The EGR Valve can be activated in order to check its function.
- The EGR valve is actuated by engine oil pressure so the engine must be running in order to check the function



1



2939-08-03-01 Exhaust Gas Recirculation Function

Simulation

Information >> **Conditions** >> Execution

Manual conditions

1

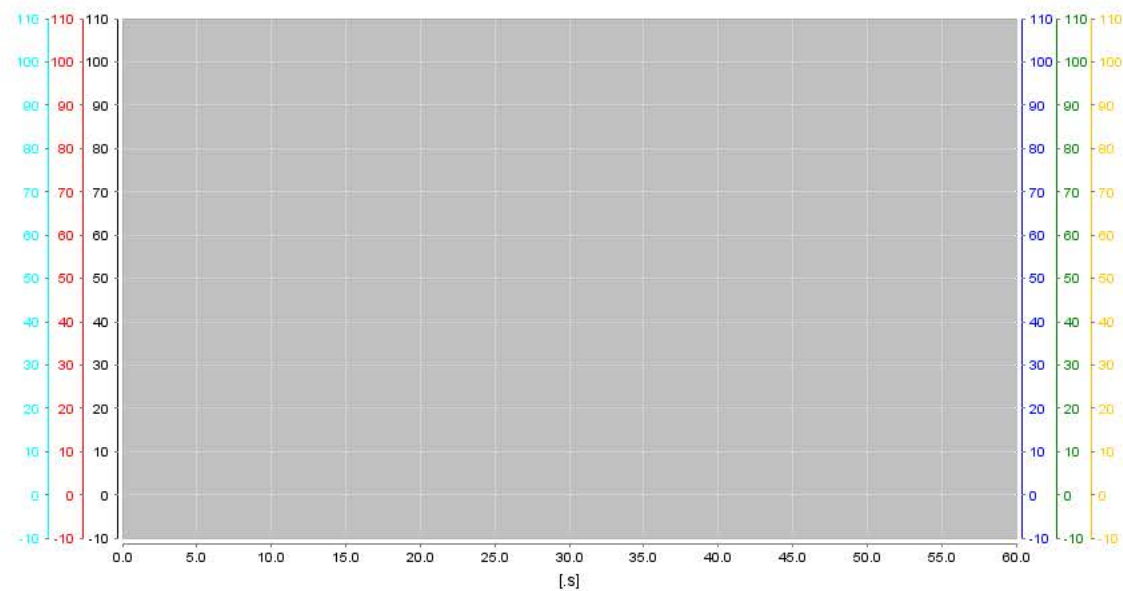
 Parking brake applied

☒ Confirmed

EGR Valve Activation



Primary Parameters



2939-08-03-01 Exhaust Gas Recirculation Function

Simulation

Information >> Conditions >> Execution

Information

Action

1 - Ignition Key ON and Engine OFF

- Read out the status of the operating conditions
- 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

2 - Start the engine

- For best test results the engine coolant temperature should be below 68°C (155°F) and engine speed 750 - 900 rpm
- Activate the function
- Check that the EGR values change when the EGR valve is activated

The EGR valve position should be approximately 90 - 100% during manual activation. Once the engine warms up or reaches normal operating temperature the valve position should open to the requested position from the ECM.

If activation does not work on second attempt, it may be necessary to shut the engine off and cycle the ignition key off for a few seconds before next attempt

Evaluation

Primary Parameters

Secondary Parameters

The values on some of the readouts will vary more than others based on the valve activation

Test result

Does the valve open and close correctly when activated?

Continue >