



Turbo Compound 2nd Generation - EGR And/Or DPF Diagnostic Trouble Codes (DTC), Diagnostic And Repair Information



Internal Content

Results – Back Office Info ONLY

Egr dp > 0.5 psi – **Suspect failed EGR valve**

(Combination of two conditions) Exhaust back pressure > 50 psi , Turbo speed > 80,000 , and gauge boost pressure > 15 psi– **Suspect failed turbo**

Repair

Depending on engine test results send the following instructions via the eService case:

1. Remove the turbo and EGR valve to inspect the EGR valve for damage.

- **If damage is found to the EGR valve plates:**

- 1.1. Attempt to find any missing pieces in the EGR cooler inlet, hot pipe or exhaust manifold.

- 1.2. Replace the EGR Valve.

2. Evaluate the turbo.

- **If exhaust back pressure was greater than 50 psi during the engine test:**

- 2.1. Replace the turbo.

- **If exhaust backpressure was less than 50 psi during the engine test:**

- 2.2. Visually inspect the turbo turbine (outlet) and vane ring.

- A borescope is needed for the vane ring inspection and turbine wheel.



2.3. If damage is found: Replace the turbo.

3. Evaluate the EGR cooler.

- **If P0401 is logged close to the failure date:**

3.1. Replace the EGR cooler.

- **If P0401 is not logged close to the failure date:**

3.2. Visually inspect the EGR cooler inlet for debris and ensure the tubes and fins are not damaged.

3.3. **If damage is found:** Replace the cooler as necessary.

4. Provide photos of debris, damage, or cooler plugging found during inspections in the eService case.

5. Inspect and clean exhaust back pressure piping;

6. Perform a sulfur regen to clean soot accumulation from EATS system.

- **If smoke is observed or code P2002 is set:**

6.1. Inspect the EATS for damage.

Repair Verification

1. Repeat the test from the Diagnosis section and attach the new results to the eService case.

Target results - **BACK OFFICE ONLY**

- EGR dp < 0.3 psi
- Exhaust back pressure < 40 psi
- Turbo speed < 80,000 rpm
- Gauge boost pressure < 15 psi

2. Road test to confirm no fault codes, performance issues, or other drivability concerns.

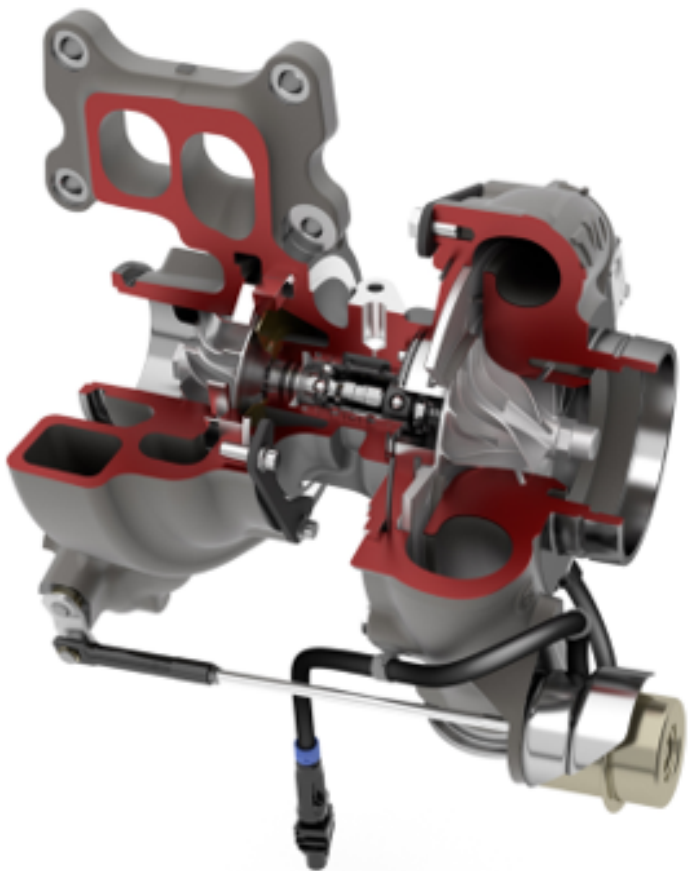


Vehicles equipped with a second generation turbo compound engine may experience a combination of diagnostic trouble codes related to the EGR system and/or issues with regeneration.

This solution should be reviewed and followed prior to performing other diagnostics.

Product Identification

Vehicles equipped with a 2nd Generation Turbo-compound unit will have a turbocharger equipped with a wastegate as seen below.



Symptoms and Diagnostic Trouble Codes

Important: Affected vehicles will display a combination of **two or more** of the DTCs and/or symptoms listed below. Singular codes or symptoms should be investigated via normal diagnostic procedures.

<input type="checkbox"/> Live UI	TC DPF DTC	Exhaust Backpressure	Symptom
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Inability to perform a

P040100 P10FE00 P047164

inability to perform a
regeneration

P040200 P10E100

P240F00 P245364

P023400 P246300

P029900 P24A400

Diagnosis

1. Electrically disconnect EGR valve and AVU.
2. Using Tech Tool, run operation [2589-08-03-02 Exhaust Aftertreatment System, Service Regeneration](#) for data monitoring and collection.
3. Start engine and increase engine speed to 2000 RPM for 3-5 minutes.
4. Finish work in PTT.
5. Start an eService case if there is not an existing one for this shop visit.
6. In the summary provide:
 - A detailed summary of symptoms and DTCs
 - Any relevant history
 - This solution number
7. Retrieve and attach the .csv data file to the eService case.

Repair

- Instructions for how to proceed will be provided by Dealer Technical Support via the eService case.
- The eService case should be updated with findings based on the instructions provided.

 Tags Live UI[p246300](#)[p24a400](#)[p047164](#)

[p040100](#) [p040200](#) [p240f00](#) [p023400](#)
[p029900](#) [p10fe00](#) [p10e100](#) [p245364](#)
[turbo compound](#) [regen failure](#) [volvo](#)

Related links and attachments

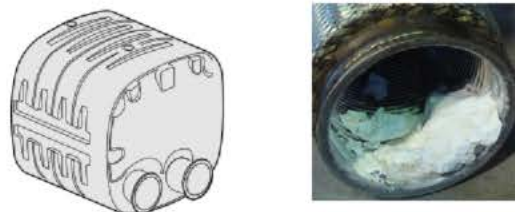
No links or attachments available



Feedback

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to help improve the content of this article

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 DEF crystal sublimation
- 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 normally-occurring regeneration process, service regeneration may be needed. Service regeneration may also be needed to prepare the filter for ash cleaning.





B - 2585-11-03-03 SCR, Diesel Exhaust Fluid, Crystal Sublimation

- Under certain circumstances, the SCR catalyst may become loaded with DEF crystals. These deposits develop when the DEF is injected in cold duty cycles in which the SCR catalyst does not reach the proper temperature needed for chemical reaction. If the crystallization level becomes greater than that which can be removed by normal engine operation, manual regeneration may be needed.
- In this process the solid crystals are converted to a gaseous state. This conversion is performed by heating the SCR unit to a temperature that causes the conversion of the crystals to occur, thereby removing them from the system.
- Heating of the **SCR** catalyst is accomplished by heating of the diesel particulate filter (DPF), similar to the DPF regeneration except that the temperatures are higher and it can take longer time.


Continue >

Cancel



- 1 
- 2  = Released
- 3  > 600rpm
- 4 

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

 Simulation

Information >> **Conditions** >> Execution

Manual conditions

- 1 Parking brake applied
- 2 Accelerator pedal (AP) released
- 3 Engine running
- 4 Vehicle outdoors in a suitable area

Confirmed

Continue > Cancel

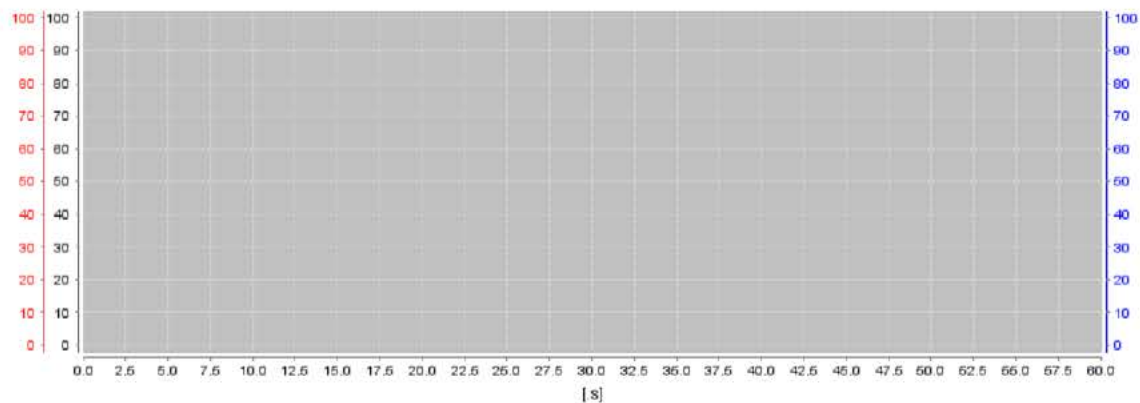
DPF Regeneration activation (Soot)



Percentage completed (0 - 100 %)

0%

Exhaust gas temperatures



T1 - EGT [°F]

T2 - EGT [°F]

T3 - EGT [°F]

Exhaust Aftertreatment - Group 1

Exhaust Aftertreatment - Group 2

Exhaust Aftertreatment - Group 3

Engine - Group 1

Engine - Group 2

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



Exhaust gas temperatures

Exhaust Aftertreatment - Group 1

Exhaust Aftertreatment - Group 2

Exhaust Aftertreatment - Group 3

Engine - Group 1

Engine - Group 2

Engine - Group 3

Engine - Group 4



Restart the operation

Continue >