

# Driver's Handbook

Exhaust Aftertreatment System  
B13R

**VOLVO**

# Foreword

This manual contains information concerning the operation and function of the Exhaust Aftertreatment System. The information in this manual applies to vehicles built January 2009 and later. Please keep this manual in the vehicle at all times.

**Note:** Illustrations in this manual are used for reference only and may differ slightly from the actual vehicle. However, key components addressed in this document are represented as accurately as possible.

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Göteborg, Sweden

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# Safety Information

**IMPORTANT:** Before driving this vehicle, be certain that you have read and that you fully understand each and every step of the driving and handling information in this manual. Be certain that you fully understand and follow all safety warnings.

IT IS IMPORTANT THAT THE FOLLOWING INFORMATION BE READ, UNDERSTOOD AND ALWAYS FOLLOWED.

The following types of advisories are used throughout this manual:



## DANGER

Danger indicates an unsafe practice that could result in serious personal injury or death. A danger advisory banner is in **white** type on a **black** background with a **black** border.



## WARNING

Warning indicates an unsafe practice that could result in personal injury. A warning advisory banner is in **black** type on a **gray** background with a **black** border.



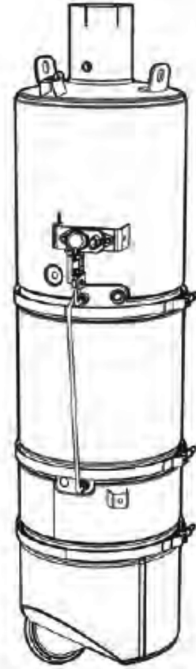
## CAUTION

Caution indicates an unsafe practice that could result in damage to the product. A caution advisory is in **black** type on a **white** background with a **black** border.

**Note:** Note indicates a procedure, practice, or condition that must be followed in order for the vehicle or component to function in the manner intended.

## General Description

The exhaust aftertreatment system virtually eliminates exhaust smoke. Exhaust vapor (water condensation) may be visible during a cold start. If exhaust smoke is visible during engine operation, this indicates a problem with the exhaust aftertreatment system. Take the vehicle to an authorized Volvo workshop (or for Prevest supported vehicles, in Prevest service center / provider) immediately. Vehicles equipped with 2007 emission compliant engines have an exhaust aftertreatment system that includes a Diesel Particulate Filter (DPF). The DPF reduces soot and particulate emissions into the atmosphere. The DPF takes the place of the standard muffler. Soot and other particulate matter are collected by a filter, where it is eventually oxidized using a regeneration process. Vehicles equipped with a DPF require the use of EO-O Premium Plus (or VDS-4) specification high performance diesel engine oil and Ultra Low Sulfur Diesel (ULSD) fuel.



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### CAUTION

The use of Diesel fuel other than ULSD and engine oils other than EO-O Premium Plus (or VDS-4), will adversely affect performance, efficiency and durability of the DPF system and the engine, to the point where the engine may not run at all. Manufacturer's warranties can also be rendered void due to usage of improper fuel. None approved fuel additives (including engine oil) are NOT permitted. Blends of No. 1D and No. 2D grades of ULSD are recommended and allowable for cold weather operations.

## 2 Exhaust Aftertreatment System

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### Safety Information

The exhaust aftertreatment system utilizes technology that oxidizes trapped particles of unburned hydrocarbons thereby reducing emissions. This oxidation occurs during the regeneration process. While regeneration is occurring, very high exhaust gas temperatures will occur when the vehicle is stationary.



#### **WARNING**

Always ensure that the vehicle is in a safe and suitable location to withstand the high temperatures that occur during the regeneration process. Equipment damage or personal injury may occur if combustibles are too close to the exhaust pipe or outlet.



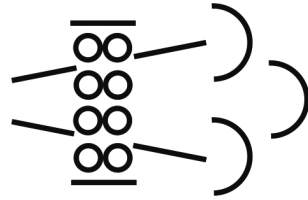
#### **WARNING**

The temperature of the exhaust system components during the regeneration process can exceed 500 degrees C (1000 degrees F). Various factors including ambient temperature and duration of the regeneration process, determine when these components will return to normal operating temperature after regeneration has completed. Be extremely careful around these hot components. Contact with these components can result in personal injury.

## Instrument Cluster Icons

Aftertreatment icons are displayed on the instrument cluster. There are two aftertreatment icons.

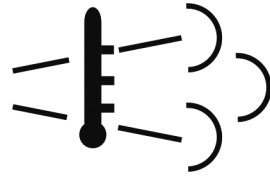
- DPF Regeneration Required
- High Exhaust System Temperature (HEST)



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The DPF Regeneration Required icon illuminates when the diesel particulate filter is becoming full and regeneration is needed. The icon flashes when the filter is full or overfull.

The high Exhaust System Temperature icon illuminates when a parked regeneration is initiated. It also indicates high exhaust gas temperatures during an at-speed regeneration. When the HEST icon is illuminated, do not park or operate the vehicle near people or any flammable materials, vapors and structures.



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### Operation

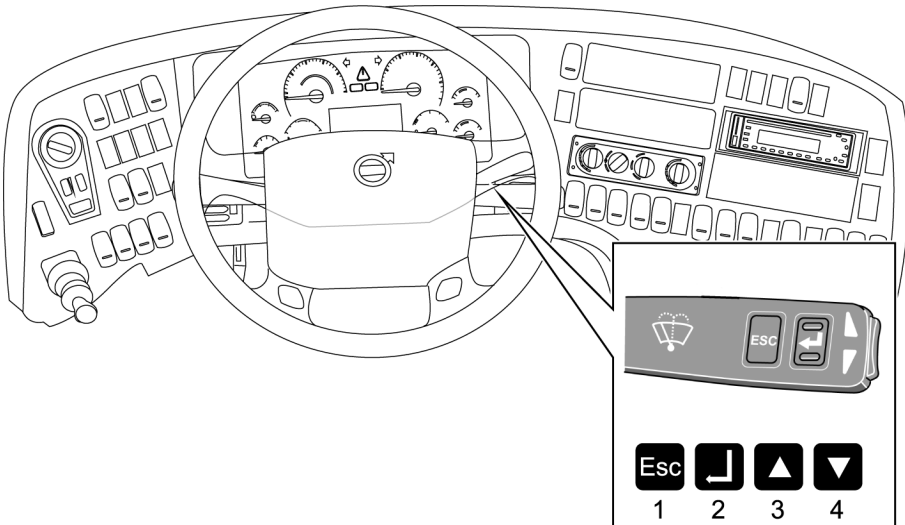
The stalk switch control lever is used to interact with the Driver Information Display (DID) in the center of the instrument cluster. The lever is located on the right-hand side of the steering wheel.

1 Esc or Escape button is used to return to the previous menu or display

2 ↵ or Enter button is used to display a list of menus, open a menu or select the highlighted area.

3 Up arrow button is used to scroll up through a menu

4 Down arrow button is used to scroll down through a menu.

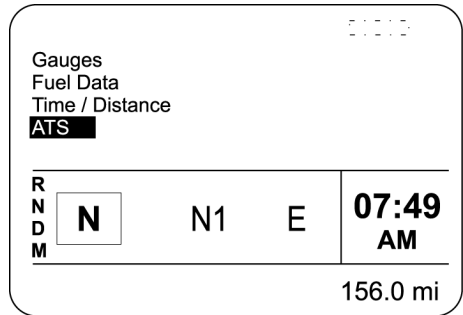


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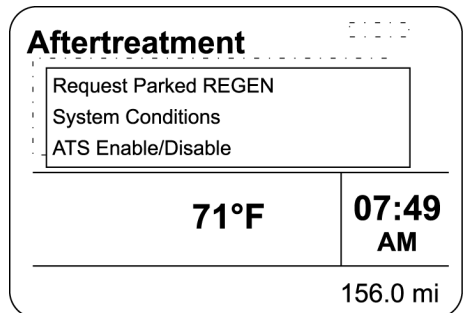
## Aftertreatment Menu

- 1 The aftertreatment system menu is in the DID.
- 2 Use the up and down buttons on the stalk switch to scroll to the Aftertreatment menu.
- 3 Press the ↵ button to select the Aftertreatment menu



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The aftertreatment menu has three submenus: request parked DPF regeneration, check aftertreatment status and cancel DPF regeneration.



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### Regeneration



#### WARNING

Always ensure that the vehicle is in a safe and suitable location to withstand the high temperatures that occur during the generation process. Equipment damage or personal injury may occur if combustibles are too close to the exhaust pipe or outlet.

**Note:** If the vehicle is in a location that may be hazardous when regeneration begins, the regeneration should be stopped. If the regeneration is stopped by vehicle operator, it should be initiated at a later time when the vehicle is in a safer location. Regenerations that are stopped and never restarted at a later time however, will require that the vehicle be taken to an authorized Volvo workshop (or for Prevest supported vehicles, a Prevest service center/provider) to have the regeneration manually started.

**Note:** If regeneration occurs during vehicle operation, idle speed may increase when the vehicle is stopped at a traffic light to maintain proper regeneration conditions.

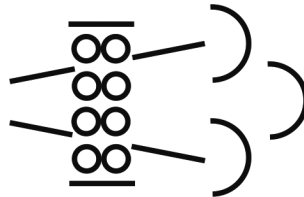
There are two types of regeneration:

- At-speed automatic

and

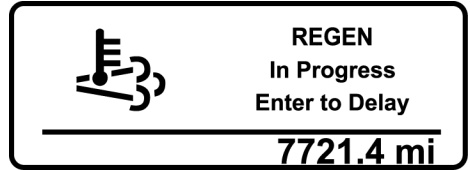
- Parked

Automatic regeneration only occurs when the vehicle is moving at uninterrupted highway speed. Parked regeneration is manually initiated when the vehicle is stationary. This is the standard configuration. Other configurations are available.



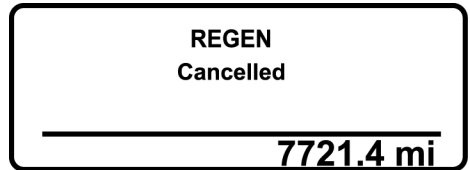
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The aftertreatment system is self-monitoring. When the diesel particulate filter is becoming full and regeneration is needed, the DPF Regeneration Required icon on the instrument cluster illuminates and the message “REGEN In Process, Enter to Delay” is displayed. Maintain uninterrupted highway speed for an automatic regeneration. If it is necessary to delay the regeneration process, press the  $\downarrow$  button on the stalk switch. Initiate a parked regeneration at the next stop.



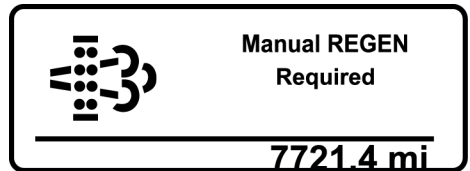
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If the regeneration process is delayed, the message “REGEN Cancelled” is displayed for a short time.



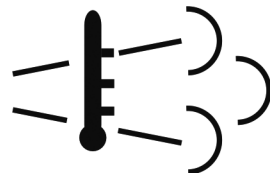
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The DPF Regeneration Required icon will remain illuminated and the message “Manual REGEN Required” is displayed. To return to main menu, press the Esc button on the stalk switch.



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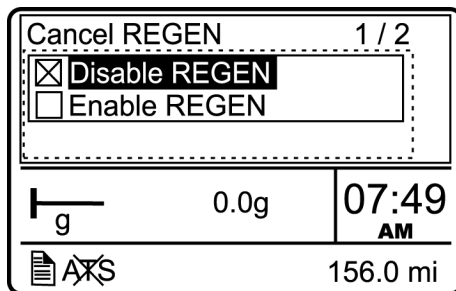
If the regeneration process is not delayed, the regeneration process starts. The DPF Regeneration Required icon turns off and the High Exhaust System Temperature (HEST) icon may illuminate.



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To temporarily disable automatic regeneration, scroll to the Aftertreatment menu in the DID, select “Cancel REGEN”. When automatic regeneration is disabled, the letters ATS with X through them will be displayed in the DID. Enable regeneration by scrolling to the Aftertreatment menu, selecting “Cancel REGEN” and selecting “Enable REGEN”.



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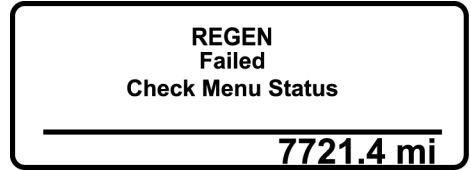
**Note:** It is important to enable regeneration as soon as possible to avoid engine problems. Long-term engine operation with regeneration disabled will result in a loss of engine performance including horsepower, torque and speed derates. Also, the DPF filter will become overloaded with soot and require service.

The regeneration process can be stopped at any time by turning the ignition key to OFF, scrolling to the Aftertreatment menu in the Driver Information Display (DID) and selecting “Cancel REGEN”, or by pressing the  $\downarrow$  button on the stalk switch.

Regeneration cannot be initiated if it is not required. The following conditions must be met to perform a parked regeneration:

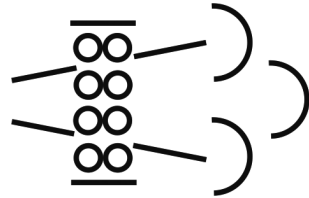
- Parking brake on and transmission in neutral
- Minimum 10 volts battery charge
- Engine running
- Accelerator and clutch pedal released
- PTO not active

If a request for parked regeneration fails, “REGEN Failed Check Menu Status” is displayed. Scroll to the Aftertreatment menu in the Driver Information Display (DID) and select “ATS Status” to determine why the regeneration failed.



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If the DPF Regeneration icon is flashing, the diesel particulate filter is full. Maintain uninterrupted highway speed for an automatic regeneration or move the vehicle to a safe location and initiate a parked regeneration.



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If the Regeneration Required icon is flashing and the CHECK light illuminates, the diesel particulate filter is overfull. Engine performance will be limited. To avoid further engine derate, immediately move the vehicle to a safe location and initiate a parked regeneration, or take the vehicle to an authorized Volvo workshop (or for Prevost support vehicles, to a Prevost service center/provider).



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If the DPF Regeneration Required icon is flashing and the STOP light illuminates, a serious engine problem has occurred. The diesel particulate filter may be over its maximum capacity and the engine may shut down. The vehicle must be taken immediately to an authorized Volvo workshop (or for Prevost supported vehicles, to a Prevost service center/provider) for service.





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## Exhaust Aftertreatment System Information

Exhaust Aftertreatment System (ATS) Information				
Instrument cluster indicators		Instrument Cluster Vehicle Text Message(s)	ATS Condition	Action To be taken
 <b>(Solid)</b> <small>T0015421</small>	Level 1	Regeneration Needed	Diesel Particulate filter is becoming full	Maintain uninterrupted highway speeds for an Automatic Regeneration or perform a Parked Regeneration at next stop in order to prevent from entering Level 2.
 <b>(Flashing)</b> <small>T0015422</small>	Level 2	Regeneration Required		Maintain uninterrupted highway speeds for an Automatic Regeneration or perform a Parked Regeneration at next stop in order to prevent from entering Level 3.

<b>Exhaust Aftertreatment System (ATS) Information</b>					
 <small>T0015423</small>	Level 3	1	ATS Service Required. Engine Derate Active	Diesel Particulate filter is full	Engine performance LIMITED. Perform a Parked Regeneration IMMEDIATELY to avoid further engine derate and to prevent from entering Level 4.
		2	Soot Level High		
 <small>T0015424</small>	Level 4	1	ATS Service Required. Engine Derate Active	A serious engine problem has occurred . The Diesel particulate filter may be over its maximum capacity.	Parked Regeneration is no longer possible by the operator. Engine may shutdown. Seek Service IMMEDIATELY.
		2	Soot Level Critically High		

## Aftertreatment System Maintenance

The vehicle must be taken to an authorized Volvo workshop (or for Prevost supported vehicles, to a Prevost service center/provider) to remove the ash from the diesel particulate filter and clean the aftertreatment fuel injector.

- The ash cleaning interval is 400 000 km (250,000 miles) or 4,500 hours, which ever occurs first.
- The aftertreatment fuel injector cleaning interval is 240 000 km (150,000 miles) or 4500 hours, which ever occurs first.

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## Aftertreatment System Status

When ATS Status is selected, the following submenus are available:

Exhaust Temp	OK	▲
Vehicle Speed Below	OK	
Inhibit Switch	OK	▼

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**7721.4 mi**

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Temporary Lockout	OK	▲
Permanent Lockout	OK	
Engine Temp	OK	▼

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**7721.4 mi**

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Park Brake	OK	▲
System Fault	OK	
System Timeout	OK	▼

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**7721.4 mi**

T0015431

Acc Pedal	OK	▲
Neutral	OK	
Vehicle Speed Above	OK	▼

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**7721.4 mi**

T0015430

Clutch	OK	▲
Service Brake	OK	
PTO Status	OK	▼

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**7721.4 mi**

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