Diesel Particulate Filter
Installation Instructions

Introduction

This manual describes the installation procedures for the Cummins Emission Solutions™ diesel particulate filter for retrofit installation on vehicles with pre-2007 certified engines.

A diesel particulate filter reduces the amount of particulates, carbon monoxide, and hydrocarbons from the diesel exhaust. Read this manual before operating or servicing a vehicle equipped with Cummins Emission Solutions™ diesel particulate filter.

Ultra low sulfur diesel fuel (less than 30 ppm sulfur) is required to operate vehicles equipped with diesel particulate filters. As of 1 October 2006, the Untied States and Canada require that ultra low sulfur diesel fuel (15 ppm) must be available for on-highway use.

The diesel particulate filter installed emission reduction system is designed to operate passively.

System Overview

General Information
The diesel particulate filter is an Environmental Protection Agency (EPA) verified diesel retrofit technology. Removal of these devices without prior approval from the EPA may constitute tampering in accordance with the Clean Air Act.

The diesel particulate filter replaces the exhaust muffler.

The installed diesel particulate filters reduce the amount of particulates, carbon monoxide, and hydrocarbons from the diesel exhaust.

The diesel particulate filter meets the requirements for sound attenuation and exhaust gas temperature isolation.

A diesel particulate filter comes fully assembled and consists of the following components:

- Inlet section
- Outlet section
- V-band clamps
- Filter section
- Catalyst section
- Gaskets.
This diesel particulate filter muffler assembly is a passive system where solid particulates are deposited inside the filter section, as indicated in the illustration.

The illustration shows the filter section of the diesel particulate filter muffler assembly with honey comb structure to filter particulate matter.

The diesel particulate filter muffler meets the requirements for sound attenuation and exhaust gas temperature isolation.

⚠️ WARNING ⚠️

Do not touch the surface of the diesel particulate filter muffler during or up to 30 minutes after operation. All surfaces are hot and can cause personal injury or damage to the v-band clamps.

⚠️ CAUTION ⚠️

Handle the diesel particulate filter muffler with care. Do not hammer or drop the diesel particulate filter muffler or filter section. Do not weld or drill holes in the body of the diesel particulate filter muffler without prior approval of Cummins® or its distributors.

**Monitoring System**

Each diesel particulate filter muffler is supplied with an emissions control system monitoring system. The monitor is required by the EPA/CARB and helps to indicate plugging, detect uncontrolled regeneration, warn of possible catalyst poisoning/deactivation, etc.

This monitoring system is equipped with a two level alarm system: service (yellow light) and warning (red light and optional vehicle derate).

The monitoring system consists of the following elements:

- Electronic module
- Pressure sensor
- Temperature sensor
- Harness
- Torque Limiting Device (TLD) connection
- Fault light bracket.

To operate and service the monitoring system, follow the instructions contained in the appropriate electronic monitor users manual.
Owner’s Responsibilities

1. The owner is responsible for fueling the vehicle with ultra low sulfur fuel only, as specified in this manual.
2. The owner is responsible for keeping the diesel particulate filter system on the vehicle. The removal of the unit may cause a violation of the Clean Air Act.
3. The owner is responsible for periodic inspection of the system, in accordance with these and other operational instructions.
4. The owner is responsible for keeping the electronic monitor installed and operational on the vehicle. Removing or disconnecting the monitor of the diesel particulate filter muffler is a violation of the Clean Air Act.
5. In case of an alarm signal, the owner is responsible for taking the vehicle out of service and performing the operations specified in this manual.
6. The owner is responsible for maintaining the operation of the engine in a way that will not adversely affect the diesel particulate filter system. Any oil, fuel leak, or debris in the exhaust system must be recorded in the vehicle’s service record.
7. The owner is responsible for maintaining complete oil consumption and service records, as well as software files, where applicable, and to make them available to a requesting Cummins® authorized repair location for troubleshooting purposes.

Installation Instructions

General Information

⚠️ CAUTION ⚠️
Handle the diesel particulate filter with care. Do not hammer or drop the diesel particulate filter muffler or filter section. Do not weld or drill holes in the body of the diesel particulate filter muffler without prior approval of Cummins Inc. or its distributors.

Read the Installation and Application Guidelines – Diesel Particulate Filter, prior to starting this installation.

Preparatory Steps

⚠️ WARNING ⚠️
Do not touch the surface of the existing muffler during or up to 30 minutes after operation. All surfaces are hot and can cause personal injury.

Prepare the vehicle/application for diesel particulate filter installation.

- Disconnect the vehicle batteries.
- Remove the tail pipe from the muffler.
- Loosen the clamp between the inlet pipe and the muffler inlet connection.
- Remove and discard the muffler mounting clamps.
- Remove the muffler.
- Remove the muffler mounting brackets.

Note: For horizontally installed mufflers, do not remove the exhaust pipe hangers unless they will interfere with the installation of the diesel particulate filter.
Installation

⚠️ WARNING ⚠️

The diesel particulate filter weighs more than 23kg (50 lb). To reduce the possibility of personal injury, use a hoist or get assistance to lift the assembly.

⚠️ CAUTION ⚠️

The existing exhaust pipe muffler hangers cannot hold the weight a diesel particulate filter. Install the diesel particulate filter mounting brackets provided in the kit.

Weld or bolt the diesel particulate filter mounting bracket to the vehicle frame.

Mount the diesel particulate filter onto the mounting clamps. Tighten the mounting clamps enough to hold the diesel particulate filter in place and allow movement to connect the inlet and outlet exhaust pipes.

Connect the inlet and outlet pipes using the new clamps provided in the diesel particulate filter kit.

Tighten the nuts.

**Torque Value:** 20 N•m [180 in-lb]

Tighten the diesel particulate filter mounting clamp nuts.

**Torque Value:** 20 N•m [180 in-lb]

**Finishing Steps**

Complete the diesel particulate filter installation.

- Install the electronic monitor. Refer to the electronic monitor manufacturer’s instructions.

**Exhaust Back Pressure Measurement Instructions**

This procedure **must** be performed at the time of installation of the diesel particulate filter muffler, after every filter section cleaning, any assembly, and periodically using the schedule provided by the manufacturer throughout the life of the filter.

Use a High Performance Digital Multimeter Kit, Cummins® Part Number 3164489, and Pressure Adapter, Cummins® Part Number 3164491, or equivalent, to measure back pressure.

Disconnect the pressure hose from the electronic monitor pressure sensing connection to the diesel particulate filter or pressure sensor.

Blow air through the pressure hose to clear the line.

Connect the pressure adapter to the hose outlet.

Connect the pressure adapter to the multimeter.

Set the multimeter scale to DC mV.

Set the adapter to display in-Hg and turn the Multimeter to the “ON” position.

Confirm that the reading is zero. Zero the gauge, if necessary.

Start the engine.

Record the multimeter reading at stall or loaded conditions.

Disconnect the pressure adapter and connect the pressure hose.
**Bill of Materials**

**General Information**
The following table illustrates a typical diesel particulate filter bill of materials.

<table>
<thead>
<tr>
<th>Item Number</th>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Diesel Particulate Filter Muffler Assembly</td>
</tr>
<tr>
<td>1a</td>
<td></td>
<td>Inlet Section</td>
</tr>
<tr>
<td>1b</td>
<td></td>
<td>Catalyst Section</td>
</tr>
<tr>
<td>1c</td>
<td></td>
<td>Filter Section</td>
</tr>
<tr>
<td>1d</td>
<td></td>
<td>Outlet Section</td>
</tr>
<tr>
<td>1e</td>
<td></td>
<td>Graphite Gasket</td>
</tr>
<tr>
<td>1f</td>
<td></td>
<td>V-band Clamp</td>
</tr>
</tbody>
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