

## EPA 2007 COMPLIANT ENGINES

## 1. AFTERTREATMENT SYSTEMS

## NOTE

EPA 2007-compliant engines have an aftertreatment system that replaces the muffler to meet strict new guidelines for reduced emissions. Aftertreatment systems vary depending on the type of engine installed.

Refer to your engine operation manual. Read maintenance and operation instructions for the aftertreatment system for the engine.

Ultra-low sulfur diesel fuel is required to prevent damage to the aftertreatment system and meet EPA emissions regulations.

**1.1 Diesel Particulate Filter.** The filter is a ceramic filter. It captures soot and ash from the exhaust. Over time the soot from the engine exhaust builds up in the filter and must be removed in a process called regeneration.

Regeneration heats the soot build-up to temperatures up to 800°C (1500°F). The regeneration process leaves behind a small amount of ash in the filter and must eventually be cleaned out. Ash build-up is removed from the filter by scheduled cleaning in a special cleaning machine.

## NOTE

The Diesel Particulate Filter requires occasional cleaning to remove the accumulated ash. Cleaning intervals are based upon duty cycle, climate and operating conditions.

Refer to the engine manufacturer's operation and maintenance manual for Diesel Particulate Filter cleaning intervals and warranty requirements.

Diesel Particulate Filter cleaning must be performed by a service technician authorized by the engine manufacturer.

**1.2 Indicator lamps.** A vehicle with aftertreatment has two additional lamps on the dash to alert the operator of the status of the aftertreatment system.

- **High Exhaust Temp.** - It warns the operator to take special care to keep hot exhaust from harming nearby people, trees or other things during the regeneration process. This lamp does not indicate that service is needed.

When the high exhaust temperature lamp is ON, make sure the engine exhaust pipe is not

directed at any person, or at any surface or material that will melt, burn or explode.

Make sure exhaust pipe is at least 5 feet away from any trees, people, or other objects and surfaces.

 CAUTION

During regeneration, exhaust temperature can reach 800°C (1500°F) and exhaust system surface temperature can exceed 700°C (1300°F). Exhaust is hot enough to burn or melt common materials and burn people.

- **Regen Needed** - This lamp tells the driver that the Diesel Particulate Filter needs to be regenerated at the next possible opportunity. When this lamp is ON, the operator should:
  - a. Change to a more challenging duty cycle, such as highway driving for at least 20 minutes, OR
  - b. Perform a stationary regeneration (See section 2.0.1).

Two lamps tie into the Diesel Particulate Filter/Regeneration System.

- **Check Engine** - Lamp comes ON when the engine needs service at the first available opportunity.
- **Stop Engine** - When lamp comes ON, you **must** stop the engine as soon as it can be safely done. The engine **must** remain shut down until it can be repaired.

## 2. REGENERATION

## 2.0.1 Automatic and Stationary Regeneration.

 CAUTION

Automatic regeneration can take place any time the truck is moving faster than 5 MPH. The exhaust can stay hot after the truck has stopped moving.

**Nothing should be within 5 Ft. of the exhaust outlet while the truck is running. Keep anything that can burn, melt or explode at least 5 Ft. from the exhaust outlet while it is running.**

**In an emergency, turn OFF engine to stop the flow of exhaust.**

- **Automatic Regeneration** - This occurs while driving. **You do not have to do anything to start automatic regeneration.** If the truck is

operated at a full load or driving at high speeds, the exhaust is hot enough to turn the soot to carbon dioxide. The High Exhaust Temperature lamp can come ON to warn the operator that the exhaust is unusually hot.

- **Stationary Regeneration** - If the truck stops frequently or operates at low engine speeds, automatic regeneration is not possible. If this occurs a stationary regeneration **must** be performed. The Regen Needed indicator lamp illuminates to tell the operator a stationary regeneration needs to be performed.

**NOTE: If a Stationary Regeneration is necessary, contact your local Cummins or Caterpillar service center.**

**3. CRANKCASE FILTER.**

**3.1 CUMMINS Crankcase Breather Filter.** The filter for the Crankcase Breather is mounted on the fuel pump side of the engine. See Figure 1.

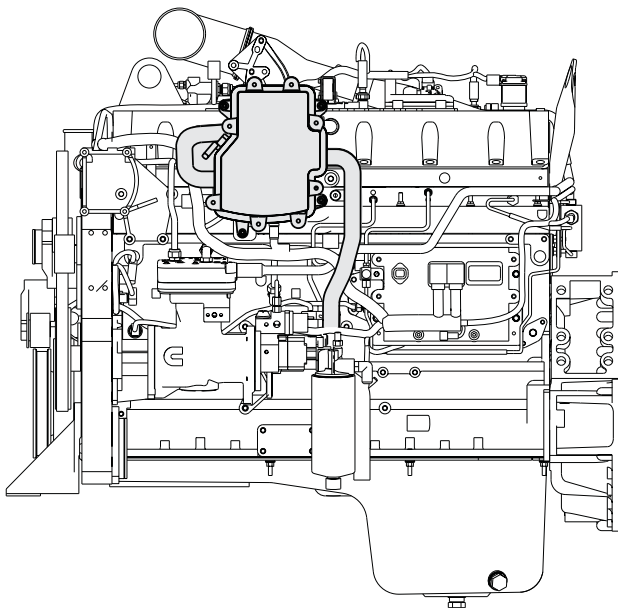


Figure 1. Location of Crankcase Breather Filter.

**3.1.1 Replacement.** Replace the crankcase breather filter every 200,000 mi (320,000 km) or 4,500 Hours. The crankcase breather filter intervals can be adjusted based on engine blowby. See the Crankcase Breather Filter Change Intervals table below.

**Engine Blowby Table**

Crankcase Breather Filter Change Intervals	
Engine Blowby	Interval
Less than 305mm H <sub>2</sub> O [12 in H <sub>2</sub> O]	240,00 km [150,000 mi], or 4,000 hrs
Greater than or equal to 305 mm H <sub>2</sub> O [12 in H <sub>2</sub> O]	160,000 km [100,000mi], or 3,000 hrs

See your Cummins Operation Manual for more information on replacing the Crankcase Breather Filter.

**3.2 CATERPILLAR Open Crankcase Ventilation (OCV) Filter.** The filter for the OCV system is mounted on the fuel pump side of the engine. See Figure 2.

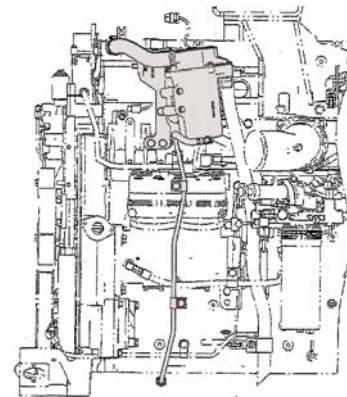


Figure 2. Location of Open Crankcase Ventilation Filter

**3.2.1 Replacement.**

OCV Filter Replacement Interval	
90,000 miles (144,800 km)	or 1,500 service hours

Remove the filter with a 12.7mm (0.5 inch) allen wrench. A used filter may contain a small amount of oil. Never reuse the filter. Dispose of the filter. Place a new filter inside the filter housing. Tighten the filter to the correct torque with a 12.7mm (0.5 inch) allen wrench. The torque specification is located on the top of the filter.

See your Caterpillar Operation and Maintenance manual for more information on replacing the OCV filter.