

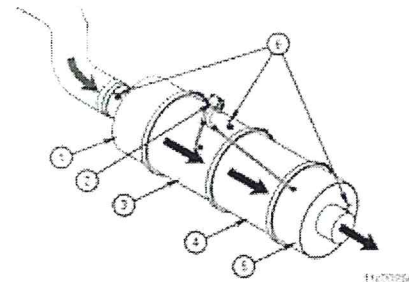


101-047 Unique Operating Characteristics of an Engine with Aftertreatment Diesel Particulate Filter

General Information

The aftertreatment system is used to reduce particulate emissions and is composed of six main components:

1. Aftertreatment inlet
2. Aftertreatment diesel particulate filter differential pressure sensor
3. Aftertreatment diesel oxidation catalyst
4. Aftertreatment diesel particulate filter
5. Aftertreatment outlet
6. Aftertreatment exhaust gas temperature sensors.



The components of the aftertreatment system perform the following functions:

The aftertreatment inlet and outlet adapt the vehicle exhaust piping to the aftertreatment system, and also provide a mounting location for the aftertreatment gas temperature sensors.

The aftertreatment diesel particulate filter differential pressure sensor measures the restriction across the aftertreatment diesel particulate filter.

The aftertreatment diesel particulate filter captures the soot and ash from the engine exhaust.

The aftertreatment diesel oxidation catalyst is used to oxidize fuel in the exhaust in order to create heat for the regeneration process.

The aftertreatment exhaust gas temperature sensors are used to measure the exhaust gas temperatures at various points in the aftertreatment system.

Soot is composed of the partially burned particles of fuel that occur during normal engine operation (black smoke).

Ash is composed of the partially burned particles of engine oil that occur during normal engine operation.

Over time, both soot and ash accumulate in the aftertreatment diesel particulate filter and **must** be removed. Soot is removed by a process called regeneration. Ash is removed by removing the aftertreatment diesel particulate filter and cleaning it at specified intervals.

Equipment with an aftertreatment system has three additional indicator lamps on the dashboard. Two of the additional lamps, along with the check engine lamp, alert the operator of the status of the aftertreatment diesel particulate filter. The third additional indicator lamp indicates the position of the regeneration permit switch.

NOTE: Use the following procedure for additional information about the engine indicator lamps. Refer to Procedure 101-048 in Section 1.

Ultra low sulfur diesel fuel is required for an engine equipped with an aftertreatment diesel particulate filter. If ultra low sulfur diesel is **not** used, the aftertreatment diesel particulate filter or aftertreatment diesel oxidation catalyst can be damaged.

NOTE: Use the following procedure for additional information about the fuel recommendations and specifications required for use in the engine being serviced. Refer to Procedure 018-002 in Section V.

To maximize the maintenance intervals of the aftertreatment diesel particulate filter, Cummins Inc. requires the use of a lubricating engine oil meeting Cummins® Engineering Standard 20081. The use of oil meeting CES 20081 also requires the use of ultra low sulfur diesel fuel to maintain the specified oil drain interval without risk of engine damage.

NOTE: Use the following procedure for additional information about the lubricating oil recommendations and specifications recommended for use in the engine being serviced. Refer to Procedure 018-003 in Section V.

NOTE: Use the following procedure for information on the Maintenance Schedule, which provides the aftertreatment diesel particulate filter cleaning intervals for the engine being serviced. Refer to Procedure 102-002 in Section 2.

Aftertreatment Warm Up

The aftertreatment warm up function is used to help prevent the buildup of water condensation in the aftertreatment system during extended idle operation.

After approximately four hours of engine idle operation, the engine speed will increase to 1000 to 1100 RPM, and remain at this speed for 10 minutes. During this time, the aftertreatment system is warmed up enough to evaporate any water that has condensed in the system.

The aftertreatment warm up function can be stopped by depressing the throttle, clutch, or brake pedal. If the engine continues to idle, the aftertreatment warm up function will try again to raise the idle speed until the aftertreatment temperatures are suitable.

Last Modified: 06-Sep-2012

Copyright © 2000-2010 Cummins Inc. All rights reserved.