

## Maintenance Guidelines - Overview

### General Information

Cummins Inc. recommends that the system be maintained according to the Maintenance Schedule in this section.

If the system is operating in ambient temperatures below  $-18^{\circ}\text{C}$  [ $0^{\circ}\text{F}$ ] or above  $38^{\circ}\text{C}$  [ $100^{\circ}\text{F}$ ], perform maintenance at shorter intervals. Shorter maintenance intervals are also required if the system is operated in a dusty environment or if frequent stops are made. For gas fueled generator sets, shorter maintenance intervals are also required, if operating at loads below 70% for prolonged periods. Contact your local Cummins® Authorized Repair Location for recommended maintenance intervals.

Some of these maintenance procedures require special tools or must be completed by qualified personnel. Contact your local Cummins® Authorized Repair Location for detailed information.

If your system is equipped with a component or accessory not manufactured or supplied by Cummins Inc., refer to the component manufacturer's maintenance recommendations.

OEM supplied equipment and components can impact on the performance and reliability of the engine if they are not correctly maintained.

Use the chart provided in this section as a convenient way to record maintenance performed.

## Tool Requirements

### General Information

Most of the maintenance operations described in this manual can be performed with common hand tools (metric and S.A.E. wrenches, sockets, and screwdrivers).

The following is a list of special service tools required for some maintenance operations:

Tool Part Number	Description	Use or Additional Description
ST-1273	Pressure gauge	Measure Intake Manifold Pressure
3400158	Filter wrench	Oil and Fuel Filters
3824591	Barring tool	Rotate the engine
CC-2800	Refractometer	Check antifreeze concentration and battery specific gravity
3164488	Digital multimeter	Measure Voltage on electrical equipment
3822525	Belt tensioner gauge (click type)	Check belt tension (6 to 12 v-ribbed belts)
3164795	Torque wrench	Dial type 3/8 drive 0-28 Nm [0-250 In-lb]
3164794	Torque wrench	Micro-adjust 3/8 drive 14-136 Nm [10-100 ft-lb]
3164797	Torque wrench	Micro-adjust 1/2 drive 68-339 Nm [50-250 ft-lb]

Contact your nearest Cummins® Authorized Repair Location for the required service tools.

## Maintenance Schedule

### General Information

For your convenience, listed below are the section numbers that contain specific instructions for performing the maintenance checks.

Perform maintenance at whichever interval occurs first. At each scheduled maintenance interval, perform all previous maintenance checks that are due for scheduled maintenance.

#### Maintenance Procedures at Daily Interval<sup>3</sup> .....Section 3

- Air Intake Piping - Check
- Engine Lubricating Oil Level - Check
- Air Tanks and Reservoirs - Drain
- Crankcase Breather Tube - Inspect
- Engine Coolant Level - Check
- Fuel-Water Separator - Drain

#### Maintenance Procedures at 250 Hours or 3 Months<sup>3</sup> .....Section 4

- Air Cleaner Restriction - Check<sup>5</sup>
- Air Compressor Mounting Hardware - Check
- Charge-Air Cooler - Check
- Charge-Air Piping - Check
- Radiator Hoses - Check
- Air Intake Piping - Inspect
- Fan, Cooling - Check
- Coolant Level - Check
- Drive Belts - Check

#### Maintenance Procedures at 500 Hours or 6 Months<sup>1, 2, 3</sup>Section 5 .....Section 5

- Engine Coolant - Antifreeze Check
- Fuel Filter (Spin-On Type) - Change
- Lubricating Oil and Filters - Change
- Radiator Pressure Cap - Check

#### Maintenance Procedures at 1000 Hours or 1 Year<sup>3</sup> .....Section 6

- Cooling Fan Belt Tensioner - Check
- Fan Hub, Belt-Driven - Check

#### Maintenance Procedures at 2000 Hours or 2 Years<sup>2, 3</sup> .....Section 7

- Air Compressor Discharge Line - Check
- Cooling System - Flush<sup>4</sup>
- Vibration Damper, Rubber - Check
- Vibration Damper, Viscous - Check

#### Maintenance Procedures at 5000 Hours or 4 Years<sup>3</sup> .....Section 8

- Overhead Set - Adjust

1 The lubricating oil and lubricating oil filter interval is determined by the sulfur content of the fuel used, the lubricating oil type used, and the engine rating. See the Oil Drain Intervals in this section.

2 Antifreeze check interval is every oil change or 500 hours or 6 months, whichever occurs first. The operator must use a heavy-duty year-round antifreeze that meets the chemical composition of ASTM D6210. The antifreeze change interval is 2 years or 2000 hours, whichever occurs first. Antifreeze is essential for freeze, overheat, and corrosion protection.

- 3 Follow the manufacturer's recommended maintenance procedures for the starter, alternator, generator, batteries, electrical components, exhaust brake, charge-air cooler, radiator, air compressor, air cleaner, refrigerant compressor, and fan clutch.
- 4 This cooling system requirement to Flush at this scheduled maintenance includes: Drain, Flush, and Fill.
- 5 If a separate air filter is used for the air compressor air supply, please reference the original equipment manufacturer (OEM) Manual for Maintenance Guidelines and Schedule.

### Oil Drain Intervals

See table 1 to determine the maximum recommended oil change and filter change interval in hours or months, whichever comes first.

Table 1: Recommended Oil Change and Filter Change Intervals				
American Petroleum Institute Classification (API)	European Classification (ACEA)	Fuel Sulfur Content	Engine Rating is 261 Hp [195 kW] or greater	Engine Rating is 260 Hp [194 kW] or less
CJ-4 (CES 20081)	ACEA E9	< 500 ppm	250 hours or 6 months	500 hours or 6 months
	JAMA DH-2	500 to 5000 ppm	200 hours* or 6 months	400 hours* or 6 months
CI-4 (CES 20078)	ACEA E7	up to 5000 ppm	250 hours or 6 months	500 hours or 6 months
API CH-4/SJ (CES 20071, 20076, or 20077)	ACEA E5 JAMA DH-1	up to 5000 ppm	250 hours or 3 months	500 hours or 6 months
API CF-4/SG (CES 20075)	ACEA E3 ACEA E2	up to 5000 ppm	125 hours or 6 weeks	250 hours or 3 months
API CD API CE API CG-4/SH	ACEA E1	up to 5000 ppm	Obsolete. Do not Use	Obsolete. Do Not Use

\* The oil drain interval must be reduced by 20 percent if American Petroleum Institute (API) CJ-4 (Cummins® Engineering Standard 20081) lubricating oil is used with diesel fuel containing 0.05 to 0.5 mass percent [500 to 5000 ppm] sulfur content.

