



## 102-002 Maintenance Schedule

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### General Information

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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

- Air Cleaner Restriction - check
- Air Intake Piping - check
- Air Tanks and Reservoirs - drain
- Coolant Level - check
- Charge-Air Piping - check
- Crankcase Breather Tube - check
- Drive Belts - Check
- Fan, Cooling - inspect
- Fuel-Water Separator - drain
- Lubricating Oil Level - check
- Aftertreatment Exhaust Piping - check
- Diesel Exhaust Fluid (DEF) Level - check

#### Maintenance Procedures at 40,000 Kilometers [25,000 Miles], 400 Hours, or 6 Months <sup>(1)</sup> <sup>(3)</sup>

- Lubricating Oil and Filters - change
- Supplemental Coolant Additive (SCA) and Antifreeze Concentration - check
- Radiator Pressure Cap - test
- Charge-Air Cooler - check
- Air Shutoff Valve - test, if equipped

#### Maintenance Procedures at 48,000 Kilometers [30,000 Miles], 1000 Hours, or 6 Months <sup>(7)</sup>

- Pressure Fuel Filter - change
- Fuel Filter, Suction - change

#### Maintenance Procedures at 80,000 Kilometers [50,000 Miles], 1500 Hours, or 1 Year <sup>(2)</sup>

- Air Compressor Discharge Lines - check
- Air Compressor Air Cleaner Element - check

- Air Leaks, Air Intake and Exhaust Systems - check
- Belt Tensioner, Refrigerant Compressor, Automatic - check
- Cooling Fan Belt Tensioner - check
- Coolant Filter - change (The use of coolant filter is optional when using coolant meeting Cummins® coolant requirements.)
- Engine Wiring Harness - check

### **Maintenance Procedures at 200,000 Kilometers [125,000 Miles], 3000 Hours, or 2 Years**

- Radiator Hoses - check
- Cold Starting Aid - check
- Radiator Shutter Assembly - check
- Engine Mounting Bolts - check
- Engine Steam Cleaning - clean

### **Maintenance Procedures at 240,000 Kilometers [150,000 Miles] or 4000 Hours <sup>(4)</sup>**

- Crankcase Breather Element - change

### **Maintenance Procedures at 320,000 Kilometers [200,000 Miles] or 4500 Hours <sup>(5)</sup>**

- Aftertreatment Diesel Particulate Filter - replace or clean

### **Maintenance Procedures at 400,000 Kilometers [250,000 Miles], 6000 Hours, or 2 Years <sup>(6)</sup>**

- Cooling System - flush
- Vibration Damper, Viscous - inspect
- Engine Brake - adjust
- Overhead Set - adjust

### **Maintenance Procedures at 480,000 Kilometers [300,000 Miles] or 6750 Hours**

- Aftertreatment DEF Dosing Unit Filter - change

### **Maintenance Procedures at 800,000 Kilometers [500,000 Miles], 10,000 Hours, or 5 Years**

- Fan Hub, Belt Driven - check
- Air Shutoff Valve - replace, if equipped

1. The lubricating oil and lubricating oil filter intervals are based on Cummins® Engineering Standard 20,081 and a normal duty cycle. Oil change intervals can be adjusted based on fuel consumption and whether or **not** the oil meets Cummins® Engineering Standard 20,081. See the Oil Drain and Fuel Filter Change Intervals Table for Severe Duty and Light Duty drain intervals in this section.
2. Follow the manufacturer's recommended maintenance procedures for the starter, alternator, generator, batteries, electrical components, engine brakes, exhaust brake, charge-air cooler, air compressor, air conditioner compressor, and fan clutch.
3. Test the SCA concentration level every 6 months unless the concentration is over three units; then check at every oil drain interval until the concentration is below three units. Use the following procedure for coolant condemnation limits. [Refer to Procedure 018-004 in Section V.](#)

4. The crankcase breather element intervals can be adjusted based on engine blowby. See the Crankcase Breather Element Change Intervals table below.
5. The aftertreatment diesel particulate filter (DPF) intervals can be adjusted, based on the type of engine oil that is used. See the Aftertreatment Cleaning Intervals Table for cleaning intervals. While air cleaning is allowed, the Cummins Inc. preferred method would be to exchange the DPF at the recommended maintenance interval.
6. The components of the engine brake that are subjected to wear during normal operation of the engine are available as a kit through Cummins® Distributors/Dealers. It is recommended to do this maintenance at 400,000 km [250,000 mi], 6,000 hours, or 2 years.
7. The fuel filter change intervals are based on a normal duty cycle. Fuel filter change intervals can be adjusted based on the fuel consumption. See Oil Drain and Fuel Filter Change Intervals Table in this section for Severe Duty and Light Duty drain intervals.

All low emission EPA 07, EPA 10, EPA13, and EPA Tier 4 Interim/European Union Stage IIIB 2011(174 -751 hp) engine systems equipped with exhaust aftertreatment **must** operate on ultra-low sulfur diesel (ULSD) with a maximum sulfur content of 15 ppm in the United States and 10 ppm in the European Union. Failure to do so can permanently damage engine and aftertreatment systems within a short period of time. This damage could cause the engine to become inoperable and affect the warranty coverage on the engine system.

Aftertreatment Cleaning Intervals		
Oil Classification	Kilometers/miles	Hours
CES20081	320,000 [200,000]	4500
CES20078	241,000 [150,000]	4500

Crankcase Breather Element Change Intervals	
Engine Blowby	Interval
Less than 305 mm-H <sub>2</sub> O [12 in-H <sub>2</sub> O]	240,000 kilometers [150,000 miles] or 4000 hours
Greater than or equal to 305 mm-H <sub>2</sub> O [12 in-H <sub>2</sub> O]	160,000 kilometers [100,000 miles] or 3000 hours

## Oil Drain and Fuel Filter Change Intervals

Select the oil drain and fuel filter change interval based on oil classification for Recreational Vehicle, Refuse, Mixer, Dump, Delivery, Logging, Fire Truck, or Crane vehicle applications. See Table 1.

Table 1				
Intervals by Application Type	Kilometers	Miles	Hours	Months
Fuel Filter Change	48,000	30,000	1000	6

Intervals by Application Type	Kilometers	Miles	Hours	Months
Oil Drain - CES 20081 (1) (2)	24,000	15,000	400	6
Oil Drain - CES 20078 (1) (2)	32,000	20,000	500	6

If the application is **not** one of the above, select the oil drain and fuel filter change interval Extreme Severe Duty, Severe Duty, Normal Duty, or Light Duty, based on how you use the engine. See Oil Drain Intervals by severity km [mi] located in Table 2.

- Follow oil drain interval Extreme Severe Duty if the vehicle operates under either of the conditions listed in interval Extreme Severe Duty.
- Follow oil drain interval Severe Duty if the vehicle operates under either of the conditions listed in interval Severe Duty.
- Follow oil drain interval Normal Duty if the vehicle operates under either of the conditions listed in interval Normal Duty and does **not** meet any of the conditions listed in interval Severe Duty.
- Follow oil drain interval Light Duty if the vehicle operates under both of the conditions listed in interval Light Duty and does **not** meet any of the conditions listed in interval Severe Duty or interval Normal Duty.

Intervals	Extreme Severe Duty	Severe Duty	Normal Duty	Light Duty
	Less than 1.3 km/liter [3 mpg]	Less than 2.6 km/liter [6.0 mpg]	2.6 to 3.0 km/liter [6.0 to 7.0 mpg]	Greater than 3.0 km/liter [7.0 mpg]
Fuel Filter Change	40,000 km [25,000 mi]	48,000 km [30,000 mi]	48,000 km [30,000 mi]	56,000 km [35,000 mi]
Oil Drain - CES 20081 (1) (2) (3)	15,000 km [9,500 mi]	24,000 km [15,000 mi]	32,000 km [25,000 mi]	56,000 km [35,000 mi]
Oil Drain - CES 20078 (1) (2)	18,000 km [11,000 mi]	32,000 km [20,000 mi]	48,000 km [30,000 mi]	64,000 km [40,000 mi]

1. The use of Centinel™ or any type of oil blending is prohibited. The use of a high quality filter is mandatory.
2. Engines **must** be operated on ultra-low sulfur diesel (15 ppm sulfur) fuel.
3. For Normal and Light duty cycles **only** (outlined in the above table): If Valvoline Premium Blue™ or Valvoline Premium Blue Extreme™ is being used; the oil drain intervals listed in the above chart can be increased by 8050 km [5000 miles]. All other oil brands **must** follow the oil drain intervals listed above.

**NOTE: Extending the oil and filter change interval beyond the recommendation will decrease engine life, due to factors such as corrosion, deposits, and wear.**

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