Truck Maintenance and Operation
X15

Quick Reference Guide

For ease of identification, important characteristics of this engine are:
-Single camshaft
-XPI fuel system
-Single Module DPF and SCR aftertreatment system
-ECM 2350 (this control module incorporates DEF dosing control)
-Variable Geometry Turbocharger (VGT)
-Exhaust Gas Recirculation system (EGR)

Maintenance Intervals

Duty Cycle (mpg)	Severe (3-4.9)	Short Haul (5-5.9)	Normal (6-6.9)	Light (7+)
	Miles / Hours / Months			
Oil Drain Intervals (ODI)*:	25,000 / 500 / 12	40,000 / 500 / 12	50,000 / 500 / 12	60,000 / 500 / 12
With Oil Guard Program				Up to 80,000
Fuel Filter(s):	25,000 / 500 / 12	40,000 / 500 / 12	50,000 / 500 / 12	60,000 / 500 / 12
Check SCA levels:	30,000 / 1,000 / 6			
Diesel Particulate Filter[1]:	250,000-400,000	400,000-600,000	600,000-800,000	
Coolant Filter (if equipped):	250,000 / 6,000 / 48			
Coolant System Flush:**	250,000 / 6,000 / 48			
DEF Filter:	300,000 / 6,750 / NA			
Engine Brake Assembly:	500,000 / 10,000 / 60			
Overhead Adjustment:	500,000 / 10,000 / 60			

*Add 5,000 miles to Severe, Short Haul and Normal ODI when using Valvoline Premium Blue
Add 10,000 miles to Light duty when using Vavoline Premium Blue
**Interval can be extended with long-life coolant. Follow supplier recommendations

Maintenance Information

Caution

- Never crack a high pressure fuel line with the engine running. With the engine stopped, relieve pressure only at the fuel pump inlet line fitting on the side of the rail.
- When changing the engine mounted fuel filter, never pre-fill by pouring fuel in the center hole (clean side).
- Recommended procedure is to install filter dry and cycle the key switch on 3-4 times and allow the priming pump to fill the filter.
- If you have to pre-fill the filter, use the smaller outside holes (dirty side) and let the fuel flow through the filter media to provide clean, filtered fuel to the clean side.
- Synthetic or Semi-Synthetic oils may be beneficial for extreme arctic or extreme heat conditions but DO NOT EXTEND Oil Drain Intervals with synthetic or semi-synthetic oils.
- 10W-30 and 15W-40 oils meeting Cummins specifications may be used in these engines.

Check the oil pressure indicators, temperature indicators, warning lights, and other gauges daily to make sure they are operational.

Check the oil pressure, coolant temperatures, DEF level, and other engine parameters daily via the OEM instrument panel or gauge cluster to make sure they are operational. Check the instrument panel regularly for any alarm messages. Take appropriate action to rectify the alarm condition or contact your nearest Cummins Distributor.

Electronic Features

For best fuel economy and performance, take advantage of the following electronic engine features. Set the parameters to meet your needs:

- ADEPT for X15 Efficiency Series paired with Automated Manual Transmissions (AMT)
- Predictive Cruise Control
- Road Speed Governor and Cruise Control
- Idle Control
- Load-Based Speed Control
- Gear Down Protection

For guidance in parameter settings:
https://www.cummins.com/support/digital-products-and-services-support/powerspec-support

[1]DPF Cleaning or Change Intervals

X15 engines incorporate an ash load monitor that the customers can rely on to determine when the DPF cleaning is due. The driver will be notified by the Check Engine Lamp or Amber Warning Lamp, which will flash for 30 seconds after the key switch is set to ON.

If the aftertreatment DPF has been removed for cleaning and is considered reusable (according to the Aftertreatment Diesel Oxidation Catalyst and Aftertreatment Diesel Particulate Filter Reuse Guidelines, Bulletin 4021600), the aftertreatment DPF should be returned to Cummins Inc. to be exchanged.

Cummins Inc. does not endorse localized air cleaning machines for ash removal. All DPFs requiring ash cleaning should be returned to a Cummins Inc. Authorized Repair Location in exchange for a New/Recon DPF.

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Lubricating Oil and Cooling Systems

Specifications

Preferred Oil Filter
Fleetguard Part Number LF14000NN

Oil Pressure

At Idle (min at operating temperature)	103 kPa [15 psi]
At No-Load Governed Speed	241 to 276 kPa [35 to 40 psi]

Oil Pan Drain Fitting Size

M27x2 STOR	41 lb-ft Torque

Oil Change Capacity (Pan and Filter)

Stamped Steel	43.4 liters [11.5 gal]
Aluminum (wedge type cast)	45.4 liters [12 gal]
Aluminum (rear center sump)	41.6 liters [11 gal]

Cooling System

Specifications

Coolant Capacity (Engine Only)
26.5 liters [28qt]

Normal Coolant Temperature

Greater than	180°F [82.2°C]
Fan on at	210°F [99.0°C]
High Temp Alert	225°F [107.2°C]

Minimum Recommended Pressure Cap Range
90 kPa [13 psi]

Fuel System

Specifications

Spin-On Pressure Fuel Filter
Fleetguard Part Number FF5825NN

Spin-On Suction Fuel Filter
Consult Owner's Manual for OEM Filter Housing

Maximum Pressure Drop across Fuel Filter
69 kPa [10 psi]

Maximum Fuel Drain Line Pressure

High Idle	102 mm-Hg [4 in-Hg]
Loaded Condition	203 mm-Hg [8 in-Hg]

Cooling System Information

Cummins Inc. recommends using either a 50/50 mixture of good quality water and fully formulated antifreeze, or fully formulated coolant when filling the cooling system. The fully formulated antifreeze or coolant must meet Cummins Engineering Standard (CES)14603 specifications.

Most coolants which meet American Society of Testing and Materials (ASTM) D6210 also meet CES14603.

However, some OAT coolants such as Shell™ Rotell ELC, Chevron™, Texaco™, and Delo ELC and their private label counterparts meet ASTM D6210, but do not meet the elastomer compatibility test of CES14603. These coolants are acceptable for use, assuming the OEM added silicate at initial fill. Refer to Bulletin 3666132, Cummins® Coolant Requirements and Maintenance, Section 3, Extended Service Interval, for more details.

Good-quality water is important for cooling system performance. Excessive levels of calcium and magnesium contribute to scaling problems, and excessive levels of chlorides and sulfates cause cooling system corrosion.

Diesel Exhaust Fluid

It is unlawful to tamper with or remove any component of the aftertreatment system. It is also unlawful to use a Diesel Exhaust Fluid (DEF) that does not meet the specifications provided or to operate the vehicle/equipment with no DEF. Cummins Inc. is not responsible for failures or damage resulting from what Cummins Inc. determines to be abuse or neglect.

In compliance with the regulatory agencies (EPA and CARB), the Cummins engine system incorporates on board diagnostics and electronic controls to monitor and ensure that tail pipe emissions requirements are met. A DEF lamp will notify the driver when the DEF tank level is running low and/or the quality of the DEF in the tank is not meeting specifications. Failure to promptly refill or replace DEF in the tank will trigger an inducement sequence, limiting engine torque and, eventually, vehicle speed to 5 mph.

For further details and discussion of DEF for Cummins engines, refer to Diesel Exhaust Fluid Specifications for Cummins Selective Catalytic Reduction Systems, Service Bulletin Number 4021566.

For engines using SCR operating in the United States and Canada, it is also strongly recommended that the DEF used be certified by the American Petroleum Institute (API). This would be indicated by a symbol on the container/dispensing system.

To ensure the correct DEF is used, Cummins Inc. recommends the use of Fleetguard® Diesel Exhaust Fluid. Fleetguard® carries different quantity options from small to bulk containers.

For complete maintenance recommendations and guidelines, refer to EPA 2017 X15 CM2350 Owner's Manual, Bulletin 5411183 and EPA 2017 X15 CM2350 Operation and Maintenance Manual, Bulletin 5411182.

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