QUICK REFERENCE GUIDE

Truck maintenance and operation

X15 (EPA 2024)

Efficiency, productivity and performance

For ease of identification, important characteristics of this engine are:

- Single camshaft
- XPI fuel system
- Single module DPF and SCR aftertreatment system
- ECM 2450 (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+)
Oil drain intervals (ODI)*	25,000 miles / 12 months	50,000 miles / 12 months	60,000 miles / 12 months	75,000 miles / 12 months**
	20,000 miles / 12 months / 500 hours for vocational applications			
with Maintenance Monitor* **	Significant extensions possible for most duty cycles****			
Fuel filter(s)	25,000 miles	50,000 miles	60,000 miles	75,000 miles
with FF5971NN	Up to 100,000 miles			
Diesel particulate filter[1]	250,000–400,000 |	400,000–600,000 |	600,000–800,000	
Coolant system flush	Follow OEM coolant recommendations			
DEF filter	300,000 miles / 6,750 hours			
Engine brake assembly	500,000 miles / 10,000 hours / 60 months			
Overhead adjustment	500,000 miles / 10,000 hours / 60 months			

* The extreme severe duty cycle (<3 mpg) has an oil drain interval of 4,500 miles (7,000 kilometers), 500 hours or 12 months—whichever occurs first.
* Add 5,000 miles to severe, short-haul, normal and light-duty ODI when using Valvoline Premium Blue.
* If combined percent idle time plus power takeoff (PTO) time is greater than 40% for Short-Haul, Normal, or Light intervals, use the next lower drain interval.
** For oil drain intervals exceeding 60,000 miles, the use of LF14001NN lube oil filter is recommended.
*** OilGuard support is still available to customers.
**** Severe duty cycles from a mpg and idle percentage standpoint may result in guidance that reduces the ODI interval below those stated above.

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.
- 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:

- EX ratings for enhanced powertrain features like on-ramp boost and predictive braking
- Predictive cruise control
- Road speed governor and cruise control
- Idle control
- Load-based speed control
- Gear down protection

Guidance is available for parameter settings: https://www.cummins.com/support/digital-products-and-services-support/powerspec-support.

Diesel particulate filter[1] (DPF) cleaning

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.

Cummins options are available for the care of your aftertreatment diesel particulate filter (DPF). Care and maintenance of your DPF typically involves ash cleaning, more detailed information can be found within TSB220085. How ash accumulates in an aftertreatment DPF influences the effectiveness of different types of ash cleaning processes, acceptable methods include Air-only cleaning and Liquid cleaning (most effective). Aftertreatment DPF filter cleaning must be completed only by appropriately trained personal. Each customer needs to evaluate the best option to maintain it's aftertreatment DPF given the condition of the DPF and individual business needs. Link to TSB220085.

Lubricating oil and cooling systems

SPECIFICATIONS

Preferred oil filter
Fleetguard oil filter — LF14001NN

Oil pressure
At idle (min at operating temperature) — 68 kPa (10 psi)
At no-load governed speed — 241 to 324 kPa (35 to 47 psi)

Oil pan drain fitting size
M27x2 STOR — 35 lb-ft Torque

Typical oil change capacity (pan and filter)
Low — 36.3 liters (9.6 gal)
Max — 43.8 liters (11.6 gal)

Cooling system

SPECIFICATIONS

Coolant capacity (engine only) — 26.5 liters (28 qt)

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)

Pressure cap pressure
Minimum recommended — 103 kPa (15 psi)

Fuel system

SPECIFICATIONS

Preferred spin-on pressure fuel filter
Fleetguard part number — FF5825NN
-OR-
Extended life fuel filter (up to 75,000 miles) — FF5971NN

Spin-on suction fuel filter
Consult owner's manual for OEM filter housing

Maximum pressure drop across fuel filter — 600 kPa (87 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 requires the use of a coolant meeting either Cummins Engineering Standard (CES) 14603 or CES 14439 specifications. Coolant mixtures must contain 40 to 60 percent glycol by volume.

Refer to 5411406, Fluids for Cummins® Products Service Manual, section V for more complete details on coolant selection and maintenance.

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 is not responsible for failures or damage resulting from what Cummins 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, bulletin 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 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 the X15 CM2450 X124B Owner's Manual, bulletin 5504581 or X15 CM2450 X124B Operation and Maintenance manual, bulletin 5504582.

Cummins Inc.
Box 3005
Columbus, IN 47202-3005
U.S.A.

cummins.com

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