

# Truck Maintenance and Operation X15 (EPA 2017)



## Quick Reference Guide

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

- Single camshaft
- High Pressure Common Rail (HPCR) 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

	Severe Duty (<5.5 mpg)	Normal Duty (5.5-6.5 mpg)	Light Duty (>6.5 mpg)
	Miles / Hours / Months	Miles / Hours / Months	Miles / Hours / Months
Oil Drain Interval:	25,000 / 500 / 6	35,000 / 500 / 6	50,000 / 500 / 6
Oil Drain with OilGuard™:			Up to 80,000 mi
Fuel Filter:	25,000 miles	35,000 miles	50,000 miles
Check SCA levels:	30,000 / 1,000 / 6		
Coolant filter <sup>1</sup> :	50,000 / 1,500 / 12		
Particulate Filter <sup>2</sup> :	250,000 – 400,000 miles	400,000 – 600,000 miles	600,000 – 800,000 miles
DEF Filter:	250,000 miles	280,000 miles	300,000 miles
Overhead Adjustment:	500,000 / 10,000 / 60		
<sup>1</sup> if equipped			

## 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, setting 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:  
<http://cumminsengines.com/powerspec>

### <sup>2</sup>DPF Cleaning

X15 engines incorporate an ash load monitor that the customer 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.

For engines operating within normal and light duty cycles (FE above 5.5 mpg), reduced oil consumption provided by power cylinder improvements and the ash load monitor enable adoption of a variable DPF cleaning interval or a fixed DPF cleaning interval of between 400,000-800,000 miles. Additionally, the increased ash hold capacity of the Single Module aftertreatment system for the X15 Efficiency and Performance Series engines contributes to the extended DPF cleaning interval.

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#### Lubricating Oil System

##### Specifications

###### Oil Pressure

At Idle (minimum allowable at 93°C [200°F] oil temperature)  
103 kPa [15 psi]  
At No-Load Governed Speed 241 to 276 kPa  
[35 to 40 psi]

###### Oil Pressure Range

Cold Engine Up to 1034 kPa [150 psi]  
Warm Engine 241 to 276 kPa [35 to 40 psi]

###### Normal Oil Temperature

200 to 245°F

###### Normal Coolant Temperature

180 to 200°F

###### Normal Coolant Temp when Fan Kicks on

210°F

###### Normal Coolant Temp

###### Engine Intake Manifold Temp when Fan Kicks on

200°F

###### Recommended Low Idle

600 RPM

###### Pressure Drop Across Oil Filter

Maximum Allowable (with 15W-40 and 10W-30 oil at operating temperature) 172 kPa [25 psi]

###### Oil Filter Capacity of Standard Engine

Combination Full-Flow/Bypass Filter 2.2 liters [0.58 gal]  
(Recommended oil filter is FleetGuard LF14000 NN or equivalent)

###### Oil Pan Drain

Fitting Size M27x2 STOR

###### Oil Pan Capacity- Stamped Steel (Standard)

High 41.6 liters [11 gal]  
Low 34.1 liters [9 gal]

###### Oil Pan Capacity- Aluminum (Optional)

High 47.3 liters [12.5 gal]  
Low 43.5 liters [11.5 gal]

###### Oil Change Capacity (oil pan and filter filled to capacity)

Stamped Steel fill 43.5 liters [11.5 gal]  
Aluminum (wedge type cast) fill 45.4 liters [12 gal]  
Aluminum (rear center sump) fill 41.6 liters [11 gal]

###### Total Lubricating Oil System Capacity Including Filter and Residual

Stamped Steel 49.2 liters [13 gal]  
Aluminum 43.5 liters [11.5 gal]

#### Cooling System Information

##### General Information

Cummins Inc. recommends the use of fully-formulated antifreeze or coolant containing a precharge of supplemental coolant additive (SCA) for the X15 Efficiency and Performance Series engines. The antifreeze or coolant **must** meet the specifications outlined in the Technology and Maintenance Council (TMC) Recommended Practice (RP) 329 (ethylene glycol) or Recommended Practice (RP) 330 (propylene glycol). The use of fully-formulated antifreeze or coolant significantly simplifies cooling system maintenance.

Fully-formulated antifreeze contains balanced amounts of antifreeze, SCA, and buffering compounds, but does **not** contain 50 percent water. Fully-formulated coolant contains balanced amounts of antifreeze, SCA, and buffering compounds already premixed 50/50 with deionized water. Alternative maintenance practices for cooling systems can be found in Cummins Coolant Requirements and Maintenance, Bulletin 3666132.

#### Diesel Exhaust Fluid Information

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 EPA2017 X15 CM2350 Owners Manual, Bulletin 5411183 and EPA2017 X15 CM2350 Operation and Maintenance Manual, Bulletin 5411182 or 5411187.



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