

Truck Maintenance and Operation

ISX15 (EPA 2007)



Quick Reference Guide

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

- Two camshafts
- High Pressure Injection (HPI) fuel system
- DPF only
- ECM871
- Exhaust Gas Recirculation system (EGR)

Maintenance Intervals

	<u>X15 Severe Duty</u> <5.5 mpg 15,000 mile interval	<u>X15 Normal Duty</u> 5.5 to 6.5 mpg 25,000 mile interval	<u>X15 Light Duty</u> >6.5 mpg 35,000 mile interval
	<u>Miles / Hours / Months</u>	<u>Miles / Hours / Months</u>	<u>Miles / Hours / Months</u>
Oil and filter:	15,000 / 500 / 6	25,000 / 800 / 6	35,000 / 800 / 6
Fuel filter:	25,000 / 800 / 6	25,000 / 800 / 6	25,000 / 800 / 6
Check DCA levels:	25,000 / 800 / 6	25,000 / 800 / 6	25,000 / 800 / 6
Coolant filter:	50,000 / 1,500 / 12	50,000 / 1,500 / 6	50,000 / 1,500 / 6
Crankcase filter:	125,000 / 3,000 / 12	125,000 / 3,000 / 12	125,000 / 3,000 / 12
HC Dosing Injector*:	150,000 / 4,500 / 12	150,000 / 4,500 / 12	150,000 / 4,500 / 12
Particulate filter:	300,000 / 6,750 / 24	300,000 / 6,750 / 24	300,000 / 6,750 / 24
Valve adjustment:	500,000 / 10,000 / 60	500,000 / 10,000 / 60	500,000 / 10,000 / 60
Radiator cap:	Check for 15 lbs. psi at EVERY service interval		
Compatible with Extended Life Coolant:	Yes	Yes	Yes

Maintenance Information

Caution

- 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 oils are NOT recommended for these engines.

DPF Maintenance

- The engine must be operated with ultra low sulfur diesel fuel and the use of additives that contain sulfur or mineral composites should be avoided to preserve the integrity of the system.
- It is important to use lubricating oils with low ash content (API grade CI-4).
- Prolonged idling does not provide the necessary temperatures for the filter to regenerate passively (by itself).
- An illuminated DPF lamp will indicate a regeneration is needed, which can be accomplished by either of the following:
 1. Increase engine power demand by bringing the vehicle to highway speeds for at least 20 minutes to increase exhaust temperatures.
 2. Perform a parked regeneration.

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, 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.

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

- Road Speed Governor and Cruise Control
- Idle Control
- Load-Based Speed Control
- Gear Down Protection

For guidance in parameter settings:
<http://cumminsengines.com/powerspec>

*In 2013, Cummins introduced a new maintenance-free hydrocarbon dosing injector compatible with EPA 2007 engines (P/N: 4309454)

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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 (automotive and industrial only)
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 220°F

Normal Coolant Temp when Fan Kicks on

210°F (EGR Equipped)

Normal Coolant Temp

Engine Intake Manifold Temp when Fan Kicks on

200°F (EGR Equipped)

Recommended Low Idle

600 RPM

Pressure Drop Across Oil Filter

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

Oil Filter Capacity of Standard Engine

Combination Full-Flow/Bypass Filter 3.8 liters [1 gal]

Oil Pan Drain

Fitting Size M27x2 STOR

Oil Pan Capacity- Stamped Steel (Standard)

High 45.4 liters [12 gal]
Low 37.8 liters [10 gal]

Oil Pan Capacity- Aluminum (Optional)

High 47.3 liters [12.5 gal] Wedge type cast
Low 43.5 liters [11.5 gal] Wedge type cast
High 43.5 liters [11.5 gal] Rear center sump
Low 35.96 liters [9.5 gal] Rear center sump

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 and Aluminum 49.2 liters [13 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 ISX15 CM871. 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.

For complete maintenance recommendations and guidelines, refer to EPA 2007 X15 CM871 Owners Manual, Bulletin 4960314 and EPA 2007 X15 CM871 Operation and Maintenance Manual, Bulletin 3666251.



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