

# Motorhome Maintenance and Operation X15, ISX15, and ISX Engines (550-605 hp)



## Quick Reference Guide

| Maintenance Intervals*       | ISX<br>Built 1998-2006 |         | ISX15<br>Built 2007-2009 |         | ISX15<br>Built 2010-2016 |         | X15<br>Built 2017-2020 |         | X15<br>Built 2021+ |         |
|------------------------------|------------------------|---------|--------------------------|---------|--------------------------|---------|------------------------|---------|--------------------|---------|
|                              | time (mo.)             | miles   | time (mo.)               | miles   | time (mo.)               | miles   | time (mo.)             | miles   | time (mo.)         | miles   |
| Check Fluid Levels           | daily                  | n/a     | daily                    | n/a     | daily                    | n/a     | daily                  | n/a     | daily              | n/a     |
| Coolant Testing              | 6                      | 20,000  | 6                        | 25,000  | 6                        | 30,000  | 6                      | 30,000  | 6                  | 30,000  |
| Oil and Oil Filter           | 6                      | 20,000  | 6                        | 25,000  | 6                        | 20,000  | 12                     | 20,000  | 12                 | 20,000  |
| Fuel Filters                 | 6                      | 20,000  | 6                        | 25,000  | 6                        | 20,000  | 12                     | 25,000  | 12                 | 60,000  |
| Coolant Filter (If Equipped) | 12                     | 50,000  | 12                       | 50,000  | 12                       | 50,000  | 24                     | 250,000 | n/a                | n/a     |
| Crankcase Breather Filter    | n/a                    | n/a     | 48                       | 125,000 | n/a                      | 125,000 | n/a                    | n/a     | n/a                | n/a     |
| Valve Lash Check             | 60                     | 500,000 | 60                       | 500,000 | 60                       | 500,000 | 60                     | 500,000 | 60                 | 500,000 |
| Diesel Particulate Filter    | n/a                    | n/a     | n/a                      | 300,000 | n/a                      | 200,000 | n/a                    | 600,000 | n/a                | 600,000 |
| DEF Filter                   | n/a                    | n/a     | n/a                      | n/a     | n/a                      | 300,000 | n/a                    | 300,000 | n/a                | 300,000 |

\* Intervals reflect whichever occurs first in months or miles

| Filter Part Numbers    | ISX<br>Built 1998-2006 | ISX15<br>Built 2007-2009 | ISX15<br>Built 2010-2016      | X15<br>Built 2017+       |
|------------------------|------------------------|--------------------------|-------------------------------|--------------------------|
| Lubricating Oil Filter | LF9070 or LF9080       | LF9070 or LF14000NN      | LF9080 or LF14000NN           | LF14000NN                |
| Fuel Filter (Pressure) | n/a                    | FF2200                   | FF5776 or FF5825NN            | FF5825NN                 |
| Fuel Water Separator   | OEM                    | OEM                      | OEM                           | OEM                      |
| Coolant Filter*        | WF2127                 | WF2127                   | WF2127                        | n/a                      |
| Crankcase Breather**   | CV50031                | CV50031                  | CV50031                       | n/a                      |
| DEF Dosing Filter      | n/a                    | n/a                      | UF101 (10-12) / UF106 (13-16) | UF106                    |
| Oil Recommendation     | 15W40<br>CJ-4 or newer | 15W40<br>CJ-4 or newer   | 10W30, 15W40<br>CK-4 or newer | CK-4 10W30<br>CK-4 15W40 |

\* Coolant filters are optional equipment. The no chemical filter part number is WF2127.

\*\* Engines with a filter element can use the maintenance free breather CV50031.

## Customer Support

- The most up to date and complete information for your engine can be found on QSOL at [quickserve.cummins.com](http://quickserve.cummins.com).
- To find your nearest Cummins authorized location, go to [locator.cummins.com](http://locator.cummins.com) or call 1-800-CUMMINS (1-800-286-6467).
- Having the Engine Serial Number available ensures correct information. The Engine Serial Number can be found near the top of the engine.

## Storage

- Store with a full tank of fuel from a high volume fuel retailer to prevent condensation and microbial growth in fuel tank.
- Completing annual maintenance prior to storage will remove corrosive elements in the engine oil and potential microbes in the fuel filter.
- Monthly exercise prolongs engine life. A 30-40 minute drive is best. If driving is not possible, operate the engine until coolant reaches 150°F to recharge system batteries and lubricate internal components. In park, turn cruise control on, and use cruise set switch to enable fast idle.

## Operation

- Engine warm up - operate with light throttle for 3-5 minutes.
- Engine cool down - allow 3-5 minutes before shutting the engine off after full load operation.
- The ISX15 and X15 compression brake can produce up to 600 braking horsepower. Use caution if using compression braking in slippery conditions.
- Amber "check engine" light indicates the need to check the vehicle before continuing to operate (leaks, gauges, fluids).
- Red "stop engine" lights indicate the need to pull over as soon as it is safely possible. If the lamp is flashing, the engine will shut down within 30 seconds.
- A complete guide to dash lamps related to the engine is contained in Cummins Bulletin 4971518 which can be found on [cummins.com/brochures](http://cummins.com/brochures).
- Fuel economy can be improved by using cruise control, reducing vehicle speed, keeping tires properly inflated, reducing weight, keeping air conditioning system charged and keeping the radiator clean.

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### Cooling System

Check cooling system level before each trip.

- All coolant should be tested for freeze protection and dilution at least twice per year. A refractometer (e.g. Fleetguard CC2806) is much more accurate than floating ball hydrometers.
- Coolant must be maintained according the chassis manufacturer's recommendation. Most recommend changing coolant at 5 years of service.
- When having your motorhome serviced, insist on using the coolant that was originally used by the chassis manufacturer or equivalent.
- There are many formulations of coolant. It is ideal to use the coolant formulation that the motorhome was originally filled with.
- Mixing coolant formulations can result in loss of protection of the engine and other components in the cooling system.
- All coolants used in the ISX15 or X15 must meet Cummins 14603 or 14439 specification.
- Engine Coolant Formulations include:
  - Older traditional Heavy Duty Coolants are typically green in color. These coolants require testing twice per year for proper additive (SCA) concentration. 3 way test strips are available from Fleetguard in 4-packs (CC2602A). Coolant filters may have chemical additives. Buying "blank" non-chemical filters and using liquid additives, if needed, is recommended.
  - Fill for Life Coolants (example: Fleetcharge) are typically pink in color. These coolants require testing for proper additive concentration.
  - Organic Additive Technology Coolants (example: Fleetguard Compleat ES OAT, Peak Final Charge, Shell Rotella ELC) can vary in color and may require addition of a chemical extender before the change interval is reached.

### Fuel System

- Purchase fuel from high volume fuel retailers to avoid issues with water or microbe contamination.
- Engines built since 2002 can use up to B20 biodiesel. Pre 2002 engines can use B5.
- It is best to avoid storing your motorhome with biodiesel.
- Cummins engines are designed to run on commercially available diesel fuel without the need for additives.
- A biocide can help when fuels are prone to contamination (black slime).
- Cummins Bulletin 3379001 on QSOL contains a comprehensive explanation of Fuel Recommendations.

### Air System

- Not maintaining your air system is the most expensive mistake you can make.
- Change air filter based on chassis manufacturer time recommendation or more frequently if operating in dusty conditions.
- The air restriction indicator should not be solely relied upon for air filter replacement.
- Loose or broken clamps, hoses, or piping can lead to dirt entry into the engine requiring engine overhaul.

### Oil System

Check oil level before each trip.

- The X15 requires 1-2 gallons of oil to move the level on the dipstick from add to full.
- For normal engine operation, Cummins recommends the use of a high quality 15W40 or 10W30 heavy duty engine oil that meets the requirements of Cummins® 20086 specification (API classification CK-4).
- API classification FA-4 engine oils are NOT recommended for motorhomes.
- The use of synthetic oils is allowed but does NOT justify the extension of the oil drain interval.
- Break in period oil changes are not required on Cummins engines.
- Cummins engines are designed to run on commercially available oils without the need for supplemental additives. Cummins does NOT recommend or require supplemental oil additives.
- Oil analysis can be helpful in detecting contaminants, but does NOT justify extension of the oil drain interval.

### Diesel Exhaust Fluid (DEF)

- Cummins engines built since 2010 require the use of DEF. DEF equipped engines achieve greater fuel economy.
- DEF is non-toxic, non-polluting, and non-flammable.
- DEF fluid must meet ISO 22241-1 specification.
- For maximum shelf life (18 months) store DEF in a sealed container at temperatures below 78F (26C).
- DEF will freeze at 11F (-12C) but will not degrade when frozen.
- DEF tanks and lines are designed to accommodate freezing.



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