



# **Cummins WMABC AGM Maintenance**

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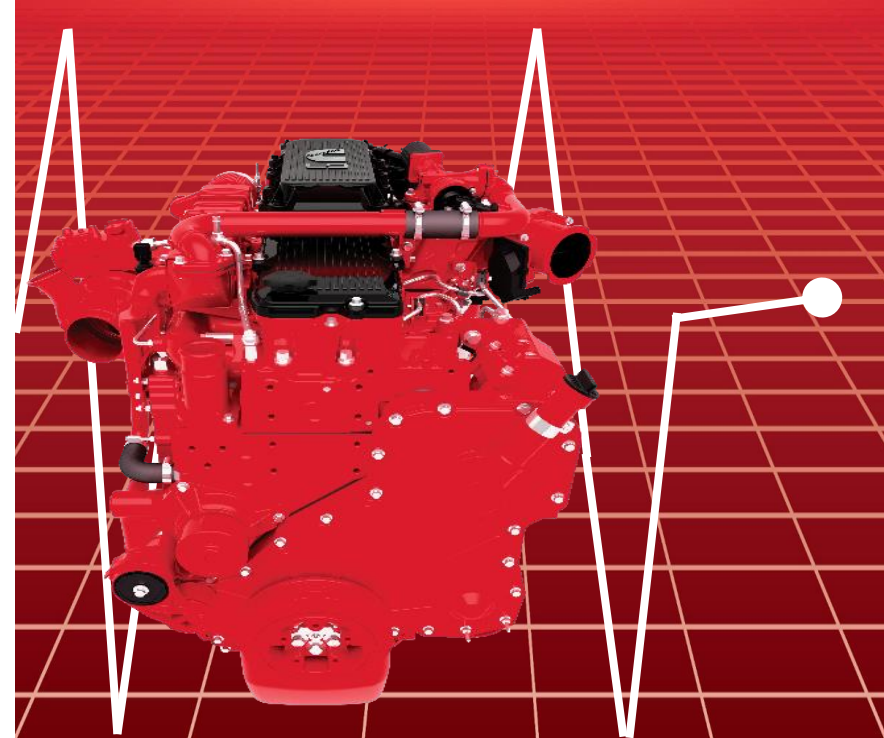
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27/02/2020

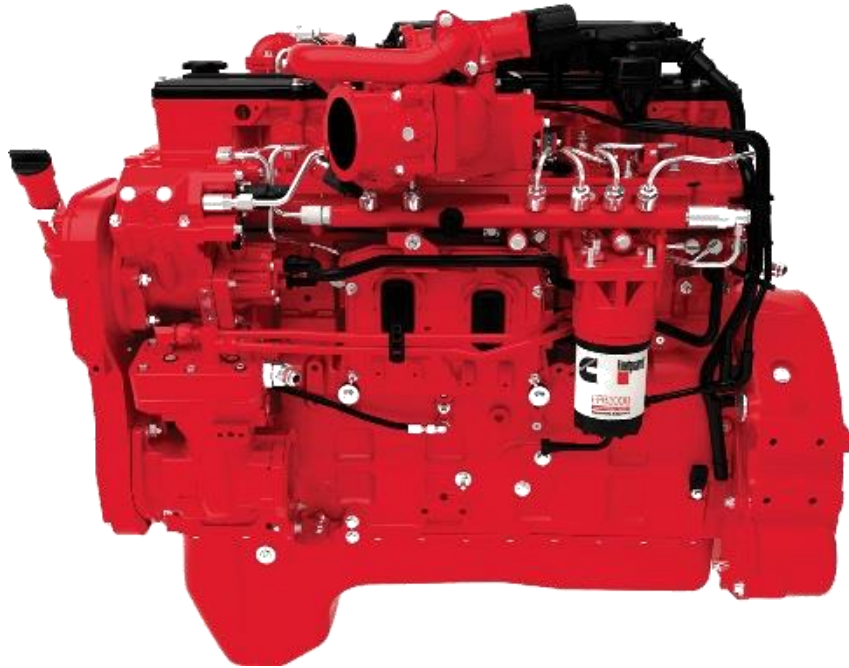
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# Agenda

- ① **L9 Characteristics, Maintenance**
- ① **Cummins Westport, Joint Venture**
- ① **Key Differences, Diesel & Natural Gas**
- ① **L9N / ISX12N Maintenance Guidelines**



# L9™ Characteristics



- Single Camshaft
- XPI Fuel System
- Single Module DPF and SCR Aftertreatment System
- Variable Geometry Turbocharger (VGT)
- Exhaust Gas Recirculation System (EGR)



# Maintenance Intervals

| Maintenance Item            | Miles  | Kilometers | Hours |
|-----------------------------|--|------------|-------|
| Oil and Filter              | 15,000   | 24,000     | 500   |
| Fuel Filter                 | 15,000   | 24,000     | 500   |
| Coolant Filter              | 15,000   | 24,000     | 500   |
| Standard Coolant            | 60,000   | 96,000     | 2,000 |
| Overhead Adjustment         | 150,000  | 240,000    | 5,000 |
| Coalescing Filter           | Every 3 <sup>rd</sup> to 4 <sup>th</sup> Oil Change Interval |            |       |
| DEF Filter                  | 200,000  | 320,000    | 6,500 |
| Particulate Filter Cleaning | 200,000  | 320,000    | 6,500 |

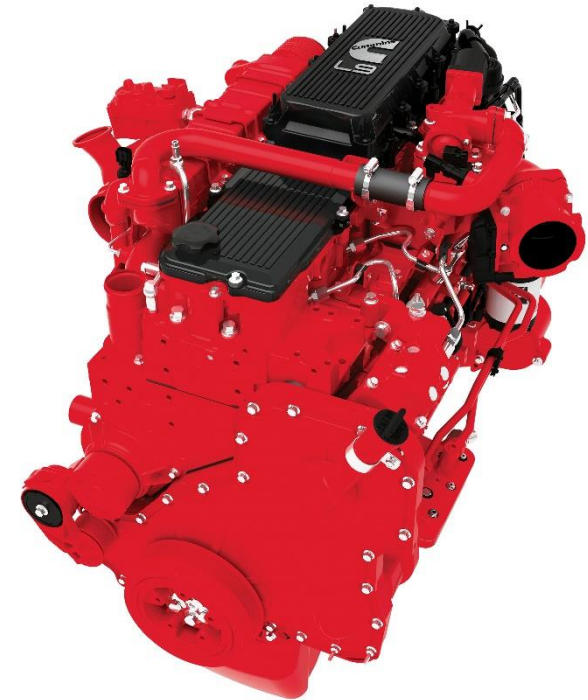
Consult your Operation and Maintenance Manual for more information.

# L9<sup>TM</sup> Best Practices

Oils complying with CES 20086 or CES 20081 must be used, 10W30 or 15W40 is recommended. For areas with cooler ambient temperatures, please consult the owner's manual for additional information

**Drain water from the fuel filter daily. Follow procedure 006-075**  
when the Water-In-Fuel (WIF) sensor is activated.

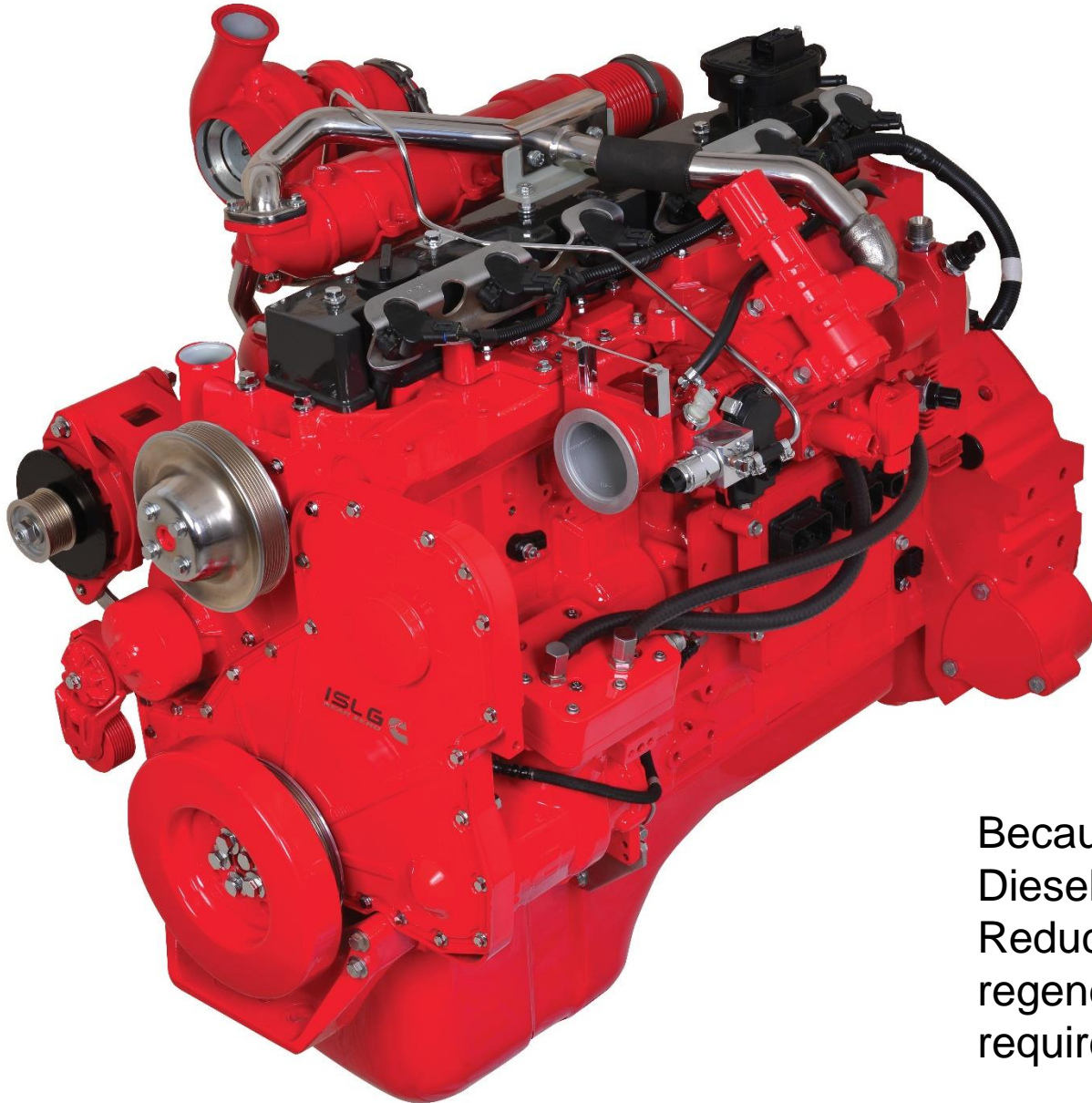
When changing the engine mounted fuel filter, never pre-fill by pouring fuel in the center hole (clean side). Recommended procedure is to install filter dry and turn the key switch on and off 3-4 times and allow the priming pump to fill the filter.



# Intro to Cummins Westport Natural Gas Engines

- Joint Venture, Westport (Gaseous Fuels Technology) and Cummins
- 80% Common Components, Diesel
- Shared Assembly Lines
- Similar Ratings / Torque Curves, Diesel
- Parts / Service Supported by Cummins





# Natural Gas Maintenance Differences

- Spark Ignited, Spark Plug Interval
- Ignition Coil Extension
- Oil Type, Oil Drain Interval
- Fuel Filter Interval
- Overhead (Valve) adjustment

Because Cummins Westport engines do not require a Diesel Particulate Filter (DPF) or Selective Catalytic Reduction (SCR) systems, drivers do not need to perform regenerations, and Diesel Exhaust Fluid (DEF) is not required.

| <b>ISL G &amp; L9N Maintenance Intervals</b> |              |
|--|--------------|
|  | <b>Hours</b> |
| <b>Oil &amp; Filter* - CES20085</b>          | 500          |
| <b>Coolant Filter</b>                        | 500          |
| <b>Oil &amp; Filter* - CES20092</b>          | 1,000        |
| <b>Fuel Filter</b>                           | 1,000        |
| <b>Valve Adjustment **</b>                   | 1,000        |
| <b>Spark Plugs</b>                           | 1,500        |
| <b>Crankcase Breather Filter - L9N</b>       | 2,000        |
| <b>Standard Coolant</b>                      | 2,000        |
| <b>Ignition Coil Extension</b>               | 10,000       |

\*\* Initial Adjustment at 1000 hours. Subsequent adjustments at 2000 hour intervals

| <b><u>ISL G &amp; L9N Maintenance Part Numbers</u></b> |                              |                                 |
|--|------------------------------|---------------------------------|
| <b><u>Component</u></b>                                | <b><u>Cummins Part #</u></b> | <b><u>Fleetguard Part #</u></b> |
| Oil Filter   | 3401544                      | LF9009                          |
| Fuel Filter  | 3607140                      | NG5900                          |
| Crankcase Filter*                                      | 5288839                      | CV52055                         |
| Spark Plug Kit**                                       | 5473009                      |                                 |
| Ign Coil Extension                                     | 5265337                      |                                 |
| * L9N & ISL G NZ                                       |                              |                                 |
| ** Kit includes spark plug and pregreased boot         |                              |                                 |
| <b><u>Tools</u></b>                                    |                              |                                 |
| Spark Plug Socket                                      | 3824876                      |                                 |
| Alcohol Prep Pads                                      |                              |                                 |

**NOTE:** Oil drain interval depends on oil type used



| <b>ISX12 G // ISX12N Maintenance Intervals</b> |              |
|--|--------------|
|  | <b>Hours</b> |
| <b>Oil &amp; Filter* - CES20085</b>            | 500          |
| <b>Oil &amp; Filter* - CES20092</b>            | 1,000        |
| <b>Fuel Filter<br/>- PSI side ISX12 G</b>      | 1,000        |
| <b>Spark Plugs</b>                             | 1,000        |
| <b>Coolant Filter</b>                          | 1,500        |
| <b>Standard Coolant</b>                        | 6,000        |
| <b>Valve Adjustment</b>                        | 1,000/3,000  |
| <b>Ignition Coil Extension</b>                 | 10,000       |
| <b>Crankcase Breather<br/>Filter - ISX12N</b>  | 10,000       |

| <b>ISX12 G &amp; ISX12N Maintenance Part Numbers</b>         |                       |                          |
|--|-----------------------|--------------------------|
| <u>Component</u>   | <u>Cummins Part #</u> | <u>Fleetguard Part #</u> |
| Oil Filter   | 4367100               | LF14000NN                |
| Fuel Filter*   | 3607140               | NG5900                   |
| Crankcase Filter**   | 4389517               | A054T283                 |
| Spark Plug Kit***  | 4309391               |                          |
| Ign Coil Extension   | 4389407               |                          |
| * Optional on ISX12N, if higher pressure filter is 10 micron |                       |                          |
| ** ISX12N ONLY   |                       |                          |
| *** Kit includes spark plug and pregreased boot              |                       |                          |
| <u>Tools</u>   |                       |                          |
| Spark Plug Socket  | 3824876               |                          |
| Alcohol Prep Pads  |                       |                          |

**NOTE:** Oil drain interval depends on oil type used

\*\* Initial Adjustment at 1000 hours. Subsequent adjustments at 3000 hour intervals

# Important Checks & Procedures

Make sure to visually check the following items daily and take any necessary actions as outlined in your Operation and Maintenance Manual:

- Air Cleaner Restriction Indicator / Gauge
- Coolant Recovery Tank Level (fill when cold)
- Oil Level
- Air Intake Piping, Clamps and Air System Connections
- Radiator Hose for Leaks
- Fuel Filter
  - The fuel filter has a valve that must be opened daily to drain any collected water or oil. Open the drain valve by hand. There will usually be some fuel in the filter under pressure. If there is any water or oil in the filter, it will come out first. Retighten the valve by hand. (Note: The low pressure coalescing fuel filter is optional for the ISX12N.)

For complete maintenance interval details, refer to Cummins Westport maintenance intervals and procedures outlined in your Operation and Maintenance Manual or on QuickServe® Online (QSOL).



# Natural Gas Engine Oil Specifications

## CES 20085\*

Sulfated Ash Level 0.7-0.9%

Calcium 1,800 – 2,300 ppm

Phosphorous 700 – 900 ppm

Zinc 800-1,000 ppm

## CES 20092\*\*

Sulfated Ash Level 0.7-0.9%

Calcium 1,200 maximum ppm

Phosphorous 800 maximum ppm

No specification for Zinc\*\*

Cummins recommends using CES 20092 oil



Updated list of CES20092 suppliers available on QuickServe Online > Oil Registration List

# Operation & Maintenance Manuals

The image shows a screenshot of the Cummins QuickServe Online website. The top navigation bar includes 'Parts', 'Service', 'Warranty', 'Searches', 'Settings', 'Products', 'Promotions', and 'News'. The main content area is titled 'Engine Service Information' and features a search bar for 'Engine Symptoms' and 'Engine Fault Code Search'. A sidebar on the left provides navigation for 'Engine Content' and 'Generator/Alternator Content'. A browser window is overlaid on the right, displaying the 'Operation and Maintenance Manual' for ISL G CM2180. The manual's table of contents is visible, listing sections from 'Introduction' to 'Maintenance Procedures at 1000 Hours'.

More info can be found in your Operations & Maintenance Manuals at <https://quickserve.cummins.com>

Q+A

