

August Edition of Renewable Natural Gas Engine Tech Talk

Updated Service Bulletin Now Available on QuickServe Online

L9N & ISX12N Oil Carryover: Cummins Spark Ignited Engineering group has updated [Service Bulletin 5659915](#) with more detailed pictures of acceptable levels from CCV oil carryover guidelines.



Service Bulletin

Service Bulletin Number: 5659915

Released Date: 28-oct-2020

Closed Crankcase Ventilation System Engine Lubricating Oil Carryover and Associated Turbocharger Lubricating Oil Leak

General Information

This service bulletin applies to all engines equipped with closed crankcase ventilation system.

Closed Crankcase Ventilation System Overview

Crankcase vapors, or blowby gases, are gases that escape past the piston rings during engine cycling. These gases accumulate in the crankcase, and in an open system, vent to the atmosphere. Closed crankcase ventilation system incorporates a filter and pressure regulator system. Blowby gases evacuate from the crankcase through a hose and travel toward a closed crankcase ventilation unit. The unit then uses a pressure regulator to control crankcase pressure and a coalescing filter to remove the oil from the crankcase vapors. The filtered gases return through the intake air side of the turbocharger, while the filtered oil returns to the oil pan via drain tubes. In an event where the system malfunctions it can cause excessive engine lubricating oil to flow into the turbocharger compressor housing and charge air cooler. This does **not** indicate a malfunctioning turbocharger.

Symptom

- Engine lubricating oil leaks from the turbocharger compressor housing or charge air cooler plumbing.
- Turbocharger compressor lubricating oil staining, oil pooling in the bottom of the turbocharger compressor housing, or lubricating oil found in the air intake piping downstream from the turbocharger.

Root Cause:

- An under-performing or restricted closed crankcase ventilation system can pass engine lubricating oil from the oil pan or crankcase into the turbocharger compressor housing and the charge air cooler.
 - Potential Causes:
 - Obstructed closed crankcase ventilation system oil drain tube
 - Malfunctioning closed crankcase ventilation system oil drain tube check valve
 - Clogged closed crankcase ventilation system filter element
 - Malfunctioning closed crankcase ventilation motor (if equipped)

Resolution

- Do **not** replace the turbocharger if the **only** symptom is engine lubricating oil found in the turbocharger housing or in the intake or exhaust piping. Engine lubricating oil leaks from the turbocharger compressor (cold side) or turbine (hot side) do not indicate a malfunction of the turbocharger.
- If excessive engine lubricating oil is found in the turbocharger or charge air cooler plumbing, inspect the closed crankcase ventilation system and drain tubes. See corresponding Service Manual. Reference Procedure 003-024 in Section 3. Clean the turbocharger, charge air cooler plumbing and / or charge air cooler.
- The turbocharger compressor wheel and closed crankcase ventilation system can be coated with engine lubricating oil. A light deposit of engine lubricating oil will cause no harm to the engine or turbocharger.
- If troubleshooting is completed and root cause of the malfunction is not identified, contact Cummins® Care at 1-800-CUMMINS™ for troubleshooting direction.

Cummins QuickServe Online

Cummins QSOL is a great technical resource available that provides information specific to your Cummins Engine, including: your Owners Manual, the Parts Catalog for your Engine Serial Number, and engine dataplate information for your engine and much more.

Click [here](#) to register. A limited version of QSOL is available to you free of charge

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Engine Misfire Warning Lamp and Engine Power Derate Cause Found

Engineering has recently investigated several customer reports of engine misfire fault lamps events. After lengthy investigations, the aftermarket replacement sensor installed has been determined to be the root cause for this unscheduled service event. Faulty sensors will lead to misfire fault codes that result in a catalyst protection event or engine power reduction mode even though the engine was otherwise running fine. Please be advised, using non Cummins components replacement parts can and often do result in poor engine performance and efficiency.

Solution: **Genuine Cummins PN 4928594** is used on B6.7N, L9N, and ISX12N with Zibbix and Dorman aftermarket sensors. Non-genuine EMP sensor leading to erroneous misfire detection score increments. This can cause misfire catalyst protection derate even though the engine is otherwise running fine resulting in low power and CEL complaints.

It is recommended that aftermarket replacement parts are not used on natural gas applications. These items include spark plugs, sensors, etc.



Why doesn't my ISX12N have the dual fuel filter like the ISX12G?

The dual fuel filter is not required on the ISX12N. However, filtering of the fuel is required. This is typically covered by a high-pressure filter that is in the CNG fuel system, however if no other upstream filter is installed, then the dual filter set up that is on the ISX12G can be used. This highlights one of the benefits of the new ISX12N, the engine fuel system is not sensitive to oil in the fuel. There is no Gas Mass Flow sensor or Fuel Control Valve to contaminate with compressor oil.

Specific details from the Cummins Application Engineering Bulletin:

Req 25362.00: If using an ISX12N the OEM fuel system supplier or body builder must install a fuel filter upstream of the engine with a 98.7 % efficiency at 10 micron or smaller particle rating.

Note: Failure to install a compliant filter may result in engine or component damage.

The 2018 ISX12N engine requires a fuel filter with 98.7% efficiency at 10 micron or smaller particle rating to prevent any damage to the fuel system or engine. This can be achieved by the use of Cummins supplied options on the low pressure side, or with hardware installed by the

fuel system supplier, OEM, or bodybuilder on the high or low pressure sides of the system. If the fuel system hardware already meets this requirement, no further filtration is needed. Consult with your fuel system supplier to determine if they meet this requirement.

New Renewable Natural Gas Engine Resource Webpage:

Cummins has released a new Renewable Natural Gas Engine webpage featuring engine specifications, emission calculator, customer testimonial videos, engine and fuel technical documents, maintenance guidelines by engine. **Click [here](#) to access the website.**

Technical Resources:

Cummins QuickServe Online

Maintenance and Operation Quick Reference Guides:

[B6.7N](#)

[L9N](#)

[ISX12N](#)

Jason Bauer's Maintenance Tip Videos – Click Links Below

[Maintenance Intervals](#)

[Natural Gas Engine Oil](#)

[Ignition Coil Maintenance](#)

[Fuel Filter Maintenance](#)

[Spark Plug Maintenance](#)

[Tips for Success](#)

Minimum methane number requirement for Cummins Natural Gas Engines:

C Gas Plus, B Gas Plus, and L Gas Plus	65
ISL G, ISX12 G, ISB6.7 G, and all 2018 engines	75

[GHG Emissions Calculator](#)

[Fuel Quality Calculator](#)

NOx Calculators

<https://www.logisticsmiddleeast.com/supply-chain/31526-agility-carbon-measurement-tool-certified-by-the-carbon-trust>

<https://afleet-web.es.anl.gov/hdv-emissions-calculator/>

Recommended Maximum GVW for Best Performance & Efficiency:

B6.7N	33,000lbs
L9N	66,000lbs
ISX12N	80,000lbs

CES 20092 Oil Provider Recommendations

For the latest list of recommended oil providers click [here](#).