



Doosan Infracore

COMPRESSOR TRAINING

12/150



Specifications

COMPRESSOR		ENGINE	
FAD	14.9m ³ /min	Type	Ingersoll Rand
Discharge pressure	12 bar	No. Cylinders	6 inline
Maximum allowable pressure	12.7 bar	Oil capacity	16.7 litres
Safety valve setting	15 bar	Speed @ full load	2000 revs/min
Maximum pressure ratio	13 : 1	Speed @ idle	1300 revs/min
Operating ambient temp	- 10 to + 46°C	Electrical system	24V negative earth
Maximum discharge temp	120°C	Power @ 2000 rpm	164Kw
Cooling system	Oil injection	Fuel tank capacity	310 litres
Oil capacity	53 litres	Coolant capacity	10 litres
Max oil system temp	120°C		
Max oil system pressure	12.7 bar		

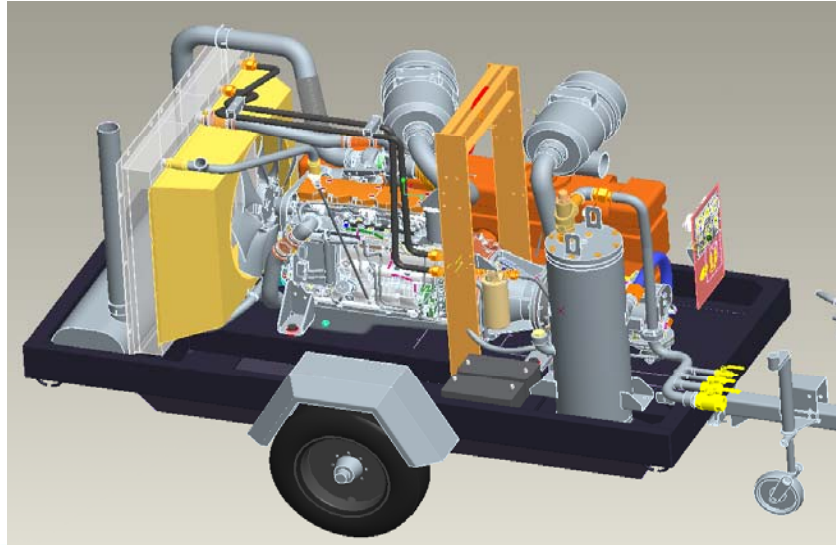
Fixed Height Running Gear		Variable Height RG	
Shipping weight	2840 kg	Shipping weight	2900 kg
Maximum weight	2940 kg	Maximum weight	3000 kg
Max horizontal towing force	3100 kg	Max horizontal towing force	2690 kg
Max vertical coupling load	150 kgf	Max vertical coupling load	150 kgf

Wheels & Tires		Sound Data	
No. Off wheels	2	Rated load	83dB(A)
Tire size	205/75 R17.5	Sound power level	99dB(A)
Tire pressure	6.5 bar	Avg sound level	71dB(A)



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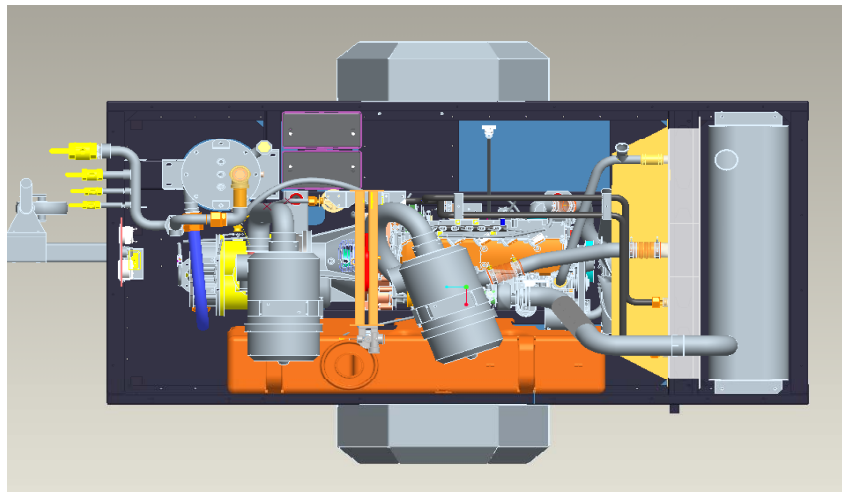
Layout



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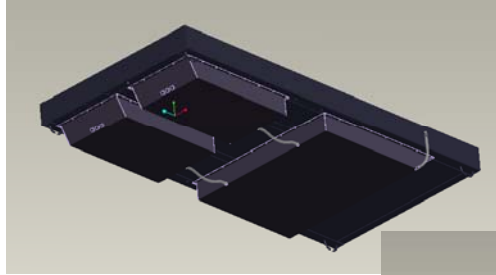
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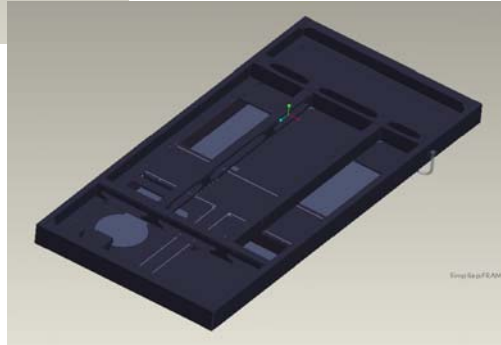
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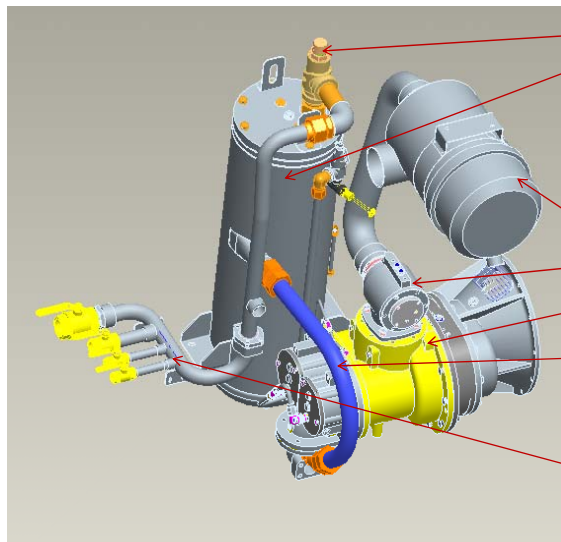
Layout – Bunded Base Frame



The bunded base frame does not allow any fluid spills .
The entire amount of fluids present in the machine (coolant-fuel-oil) , will in case of a leak be contained in the base frame.



Layout – Compressor System



Minimum Pressure Valve
Separator Vessel

Intake Filter

Unloader

Airend

Airend out to separator

Outlet Valves



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ENGINE Tier 3 (12/150)

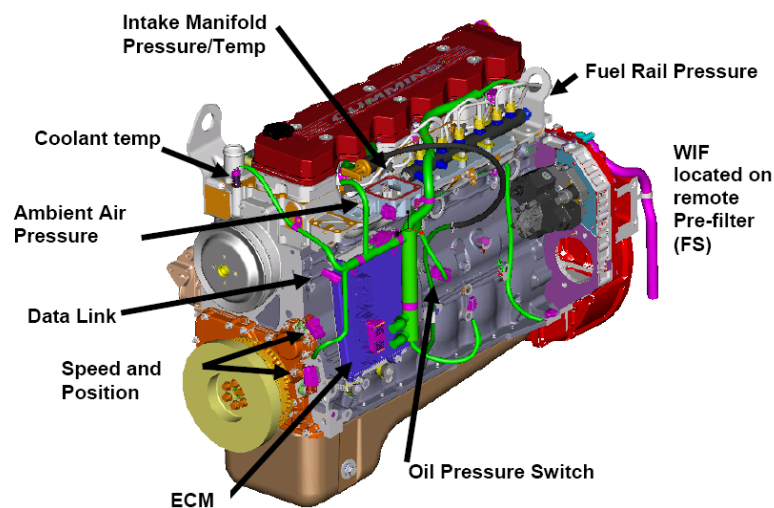
- 6IRF8AE – Cummins QSB 6.7
- 6 cylinders
- 6.7L displacement
- 220hp(164Kw)@2000 rpm
- Bosch HPCR – 1600bar
- Turbocharged
- Emission Tier III certified
- 24 Volt Electrics



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ENGINE Tier 3 (12/150)

QSB6 Harness Connections and their Locations



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ENGINE QSB 6.7 – safety system

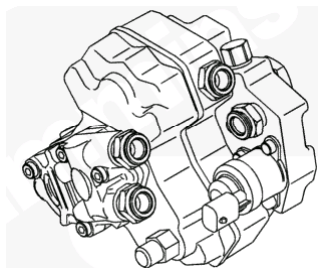
The electronic system includes the following sensors to monitor the engine system parameters:

- Fuel pressure, located in the high pressure rail.
- Intake manifold pressure/temperature, located in the intake manifold cover.
- Coolant temperature located at the front exhaust side of the cylinder head.
- Crankshaft speed sensor located on front of engine.
- Camshaft speed sensor located on front gear cover.
- Ambient air pressure sensor - located near the top of ECM, as part of wiring harness.
- Water in fuel sensor - located in bottom of spin on fuel filter.
- Oil pressure switch is used.



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QSB6.7 – Fuel system



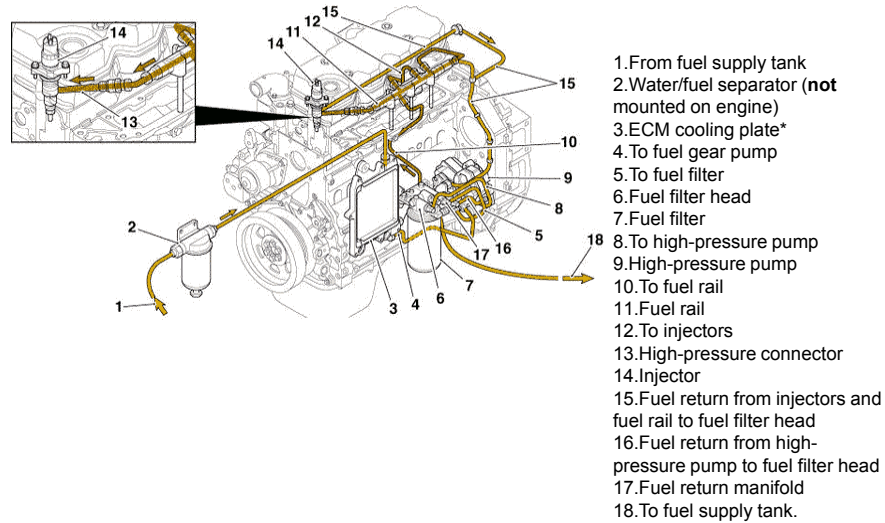
WARNING

The fuel pump, high-pressure fuel lines, and fuel rail contain very high-pressure fuel. Do not loosen any fittings while the engine is running. Personal injury and property damage can result. Wait at least 10 minutes after shutting down the engine before loosening any fittings in the high-pressure fuel system to allow pressure to decrease to a lower level.



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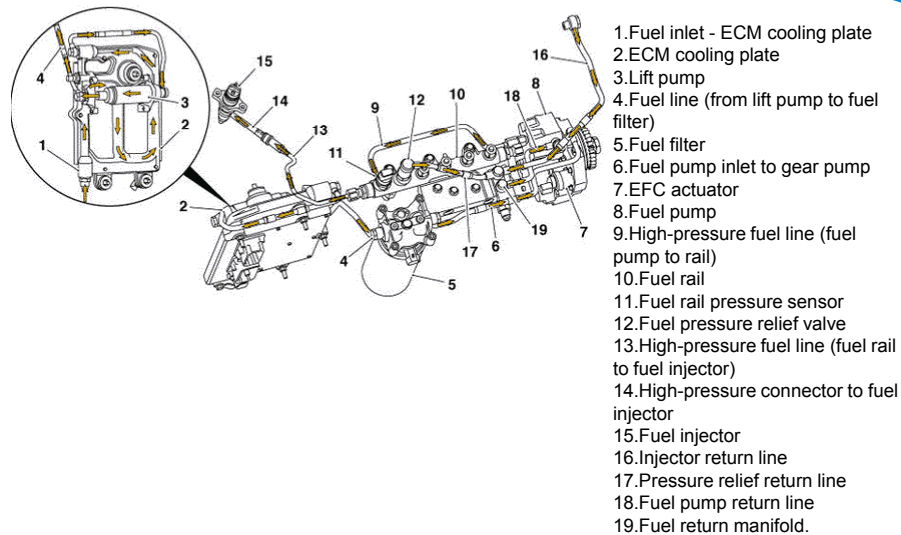
QSB6.7 – Fuel system



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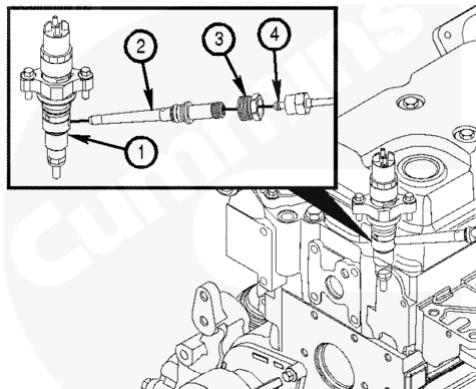
QSB6.7 – Fuel system



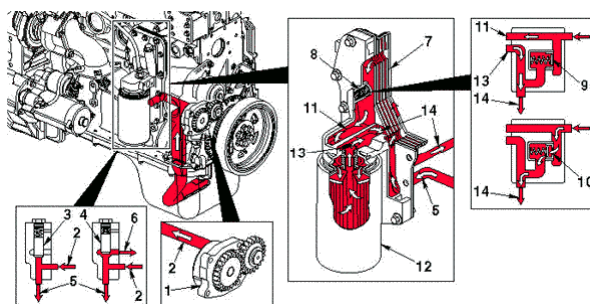
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QSB6.7 – Fuel system

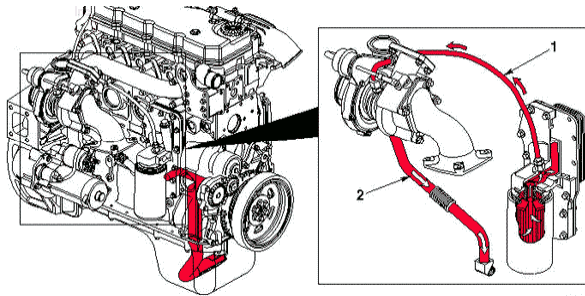


QSB6.7 – Lubricating system



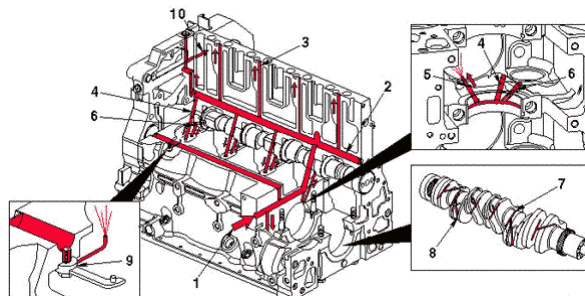
1. Gerotor lubricating oil pump
2. From lubricating oil pump
3. Pressure regulating valve closed
4. Pressure regulating valve open
5. To lubricating oil cooler
6. To lubricating oil pump supply
7. Lubricating oil cooler
8. Filter bypass valve
9. Filter bypass valve closed
10. Filter bypass valve open
11. To lubricating oil filter
12. Full-flow lubricating oil filter
13. From lubricating oil filter
14. Main lubricating oil line.

QSB6.7 – Lubricating system



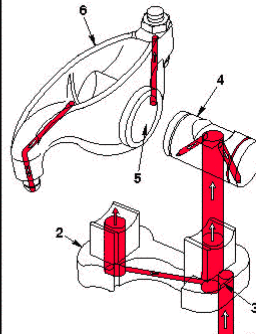
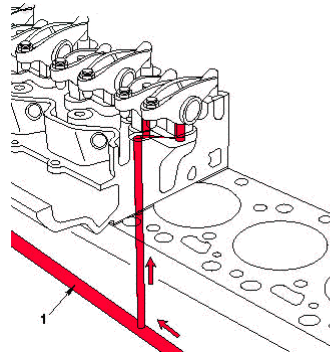
- 1.Turbocharger lubricating oil supply
- 2.Turbocharger lubricating oil drain.

QSB6.7 – Lubricating system



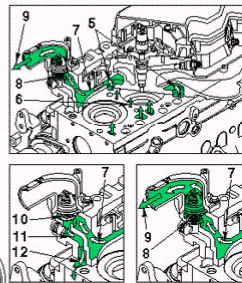
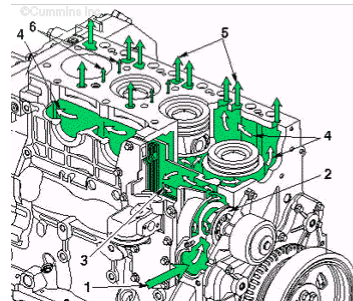
- 1.From lubricating oil cooler
- 2.Main lubricating oil rifle
- 3.To valve train
- 4.From main lubricating oil rifle
- 5.To piston-cooling nozzle
- 6.To camshaft
- 7.Crankshaft main journal
- 8.Oil supply to rod bearings
- 9Directed piston-cooling nozzle
- 10.To internal lubrication of air compressor.

QSB6.7 – Lubricating system



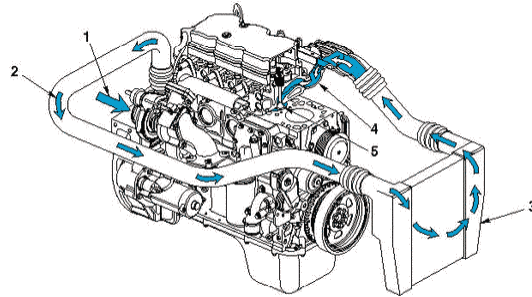
- 1.Main lubricating oil rifle
- 2.Rocker lever support
- 3.Transfer slot
- 4.Rocker lever shaft
- 5.Rocker lever bore
- 6.Rocker lever.

QSB6.7 – Cooling system

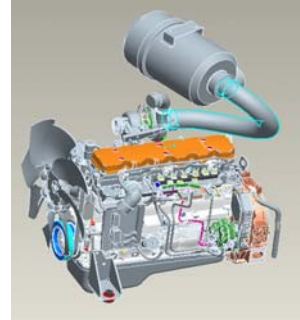


- 1.Coolant inlet
- 2.Pump impeller
- 3.Coolant flow past lubricating oil cooler
- 4.Coolant flow past cylinders
- 5.Coolant flow from cylinder block to cylinder head
- 6.Coolant flow between cylinders (engines **without** EGR only)
- 7.Coolant flow to thermostat housing
- 8.Coolant bypass passage
- 9.Coolant flow back to radiator
- 10.Bypass open
- 11.Coolant bypass in cylinder head
- 12.Coolant flow to water pump inlet.

QSB6.7 – Air Intake system

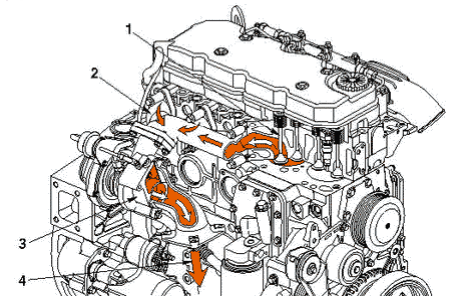


- 1.Intake air inlet to turbocharger
- 2.Turbocharger air to charge air cooler
- 3.Charge air cooler
- 4.Intake manifold (integral part of the cylinder head)
- 5.Intake valve.

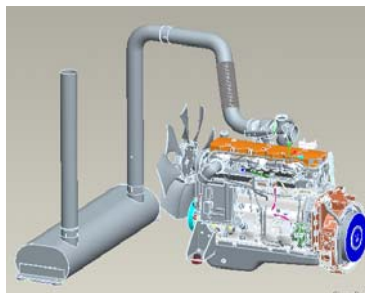


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QSB6.7 – Exhaust system



- 1.Exhaust valve
- 2.Exhaust manifold
- 3.Turbocharger
- 4.Turbocharger exhaust outlet.



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Maintenance – Engine specific

Maintenance Procedures at Daily Interval

•Air Intake Piping -	Check
•Engine Lubricating Oil Level -	Check
•Air Tank and Reservoirs -	Drain
•Crankcase Breather Tube -	Inspect
•Engine Coolant Level -	Check
•Fuel-Water Separator -	Drain



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Maintenance – Engine specific

Maintenance Procedures at 250 Hours or 3 Months

Air Cleaner Restriction -	Check
Air Compressor Mounting Hardware -	Check
Charge-Air Cooler -	Check
Charge-Air Piping -	Check
Radiator Hoses -	Check
Air Intake Piping -	Inspect
Fan, Cooling -	Check
Coolant Level -	Check
Drive Belts -	Check



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Maintenance – Engine specific

Maintenance Procedures at 500 Hours or 6 Months

Engine Coolant -	Antifreeze Check
Fuel Filter (Spin-On Type) -	Replace
Lubricating Oil and Filters -	Change
Radiator Pressure Cap -	Check



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Maintenance – Engine specific

Maintenance Procedures at 1000 Hours or 1 Year

Cooling Fan Belt Tensioner -	Check
Fan Hub, Belt-Driven -	Check



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Maintenance – Engine specific

Maintenance Procedures at 2000 Hours or 2 Years

Air Compressor Discharge Line -	Check
Cooling System -	Drain
Vibration Damper, Rubber -	Check
Vibration Damper, Viscous -	Check



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Maintenance – Engine specific

Maintenance Procedures at 5000 Hours or 4 Years

Overhead Set -	Adjust
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Maintenance – Engine Fuel Recommendation

Cummins Inc. recommends the use of ASTM number 2D fuel. The use of number 2D diesel fuel will result in optimum engine performance.

At operating temperatures below 0°C [32°F], acceptable performance can be obtained by using blends of number 2D and number 1D.

The following chart lists acceptable substitute fuels for this engine.

Acceptable Substitute Fuels									
Number 1D Diesel ⁽¹⁾ (2) (3)	Number 2D Diesel (3)	Number 1K Kerosene	Jet-A	Jet-A1	JP-5	JP-8	Jet-B	JP-4	CITE
A	OK	Not OK	A	A	A	A	Not OK	Not OK	Not OK
An "A" means OK only if fuel lubricity is adequate. This means the BOCLE number is 3100 or greater as measured by ASTM specification D6078, Scuffing Load Ball On Cylinder Evaluator (SLBOCLE). Lubricity can also be measured by ASTM, specification D6079, ISO 12150, High Frequency Reciprocating Rig (HFRR) in which the fuel must have a wear scar diameter of 0.45 mm [0.02 in] or less.									
Any adjustment to compensate for reduced performance with a fuel system using alternate fuel is not warrantable.									
Winter blend fuels, such as found at commercial fuel-dispensing outlets, are combinations of number 1D and 2D diesel fuels and are acceptable.									



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Maintenance – Engine Oil Recommendation

Cummins Inc. recommends the use of a high-quality SAE 15W-40 heavy-duty engine oil, such as Valvoline Premium Blue™, which meets or exceeds the American Petroleum Institute (API) performance classification CH-4/SJ or CI-4/SK and the Association des Constructeurs Européen d'Automobiles (A.C.E.A.) performance classification E5 or E7.

Cummins® Engine Standard Classifications (CES)	American Petroleum Institute Classification (API)	European Classification (ACEA)	Comments
	API CD API CE	ACEA E-1, ACEA E-2	OBSOLETE. DO NOT USE.
CES-20075	API CF-4/SG, API CG-4/SH	ACEA E-3	Minimum acceptable oil classification for Midrange engines. ⁽¹⁾
CES-20071, CES-20072, CES-20076, CES-20077	API CH-4/SJ	ACEA E-5, E-7	Good oil classification for Midrange engines without EGR.
CES-20078	API CI-4/SK		Excellent oil for Midrange engines.
1. CG-4/SH and E-3 oils can be used in areas where none of the recommended oils are available, but the oil drain interval must be reduced by one half of the interval given in the maintenance schedule. See the oil drain interval information in Section 2.			



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Maintenance – Engine Coolant Recommendation

Fully formulated antifreeze **must** be mixed with good-quality water at a 50/50 ratio (40- to 60-percent working range).

A 50/50 mixture of antifreeze and water gives a -36°C [-33°F] freezing point and a 108°C [226°F] boiling point, which is adequate for locations in North America. The actual lowest freezing point of ethylene glycol antifreeze is at 68 percent. Using higher concentrations of antifreeze will raise the freezing point of the solution and increase the possibility of a silica gel problem.

Typically, antifreeze/coolants meeting ASTM4985 (GM6038M specification) or ASTM D6210 criteria are acceptable antifreeze/coolants for QSB6.7.

Water Quality	
Calcium Magnesium (hardness)	Maximum 170 ppm as (CaCO ₃ + MgCO ₃)
Chloride	40 ppm as (Cl)
Sulfur	100 ppm as (SO ₄)



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Maintenance - Compressor

ecn	Qty.	Description	ecn	Qty.	Description
1-4	46550523	KIT - 500 HOUR	1-7	46550524	KIT - 1000 HOUR
1	23190200	1 Element, oil filter (engine)	1	23190200	1 Element, oil filter (engine)
2	36897346	1 Element, oil filter (air/rend)	2	36897346	1 Element, oil filter (air/rend)
3	23190192	1 Element, fuel filter (primary)	3	23190192	1 Element, fuel filter (primary)
4	23190184	1 Element, fuel filter (secondary)	4	23190184	1 Element, fuel filter (secondary)
			5	23126311	2 Element, air filter
			6	23126329	2 Element, air filter (safety)
			7	22111975	1 Element, oil separator



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Maintenance - Compressor

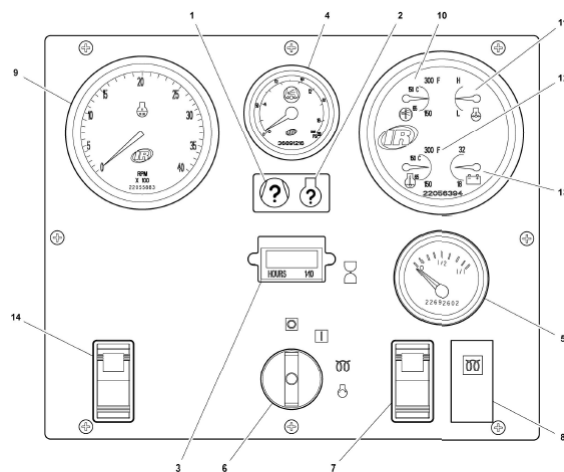
	Initial 500 miles /850 km	Daily	Weekly	Monthly	3 Monthly, 250 hrs.	6 Monthly, 500 hrs	12 Monthly, 1000 hrs	18 Monthly, 1500 hrs
*Fuel/Water Separator Element						R		
Compressor Oil Filter Element						R		
Compressor Oil						R		
Engine Oil Change						R		
Engine Oil Filter						R		
*Water Pump Grease.							R	
*Wheels (Bearings, Seals, etc.)						C		
*Engine Coolant						C	R	
Fuel Filter Element						R		
*Injection Nozzle Check								C
Shutdown Switch Settings							T	
Scavenger Orifice & Related Parts							C	
Oil Separator Element							R	
*Feed Pump Strainer Cleaning.							C	
Coolant Replacement							R	

Maintenance intervals are on **time or hours**, whichever comes first!!



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Electronics – Control Panel



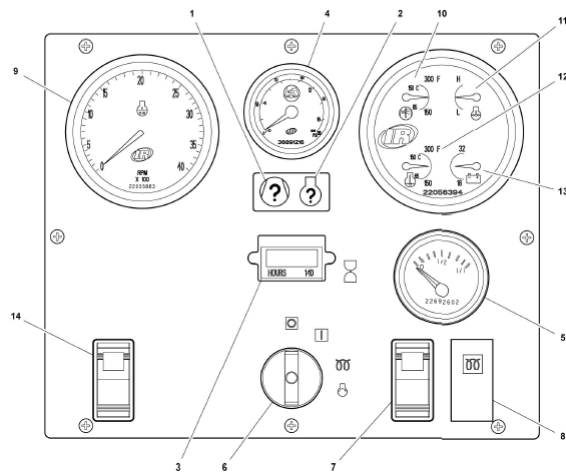
DIAGNOSTIC/AUTO SHUTDOWN (STANDARD)

- 1. Compressor fault** – Needs attention. See Wedge diagnostic panel for more detail.
- 2. Engine Fault** – Needs attention. See Wedge diagnostic panel for more detail.
- 3. Hourmeter** – Records running time for maintenance.
- 4. Compressor Discharge Pressure Gauge** – Indicates pressure in receiver tank, psi (kPa).
- 5. Fuel Level Gauge** – Indicates amount of fuel in tank.



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Electronics – Control Panel



CONTROLS (STANDARD)

6. Power Switch – Flip .ON. to activate systems prior to Starting. Flip .OFF. to stop engine.

7. Service Air Switch – After warm-up, PUSH. Provides full air pressure at the service outlet.

8. Wait To Start Lamp.

9. Engine Speed Gauge – Indicates engine speed.

10. Discharge Air Temp. Gauge – Indicates in F and C. Normal operating range: 185F/85C to 248F /120C.

11. Engine Oil Pressure Gauge – Indicates engine oil pressure (psi (kPa)).

12. Engine Water Temp Gauge – Indicates coolant temperature, with normal operating range from 180F/82C to 210F /99C.

13. Voltmeter – Indicates battery condition.

OPTIONAL CONTROLS

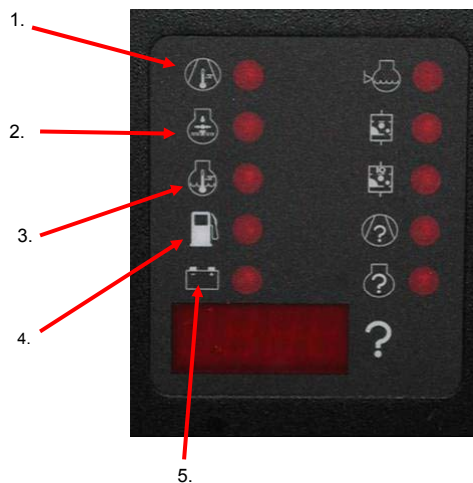
14. Dual Pressure Switch



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INSTRUMENT/CONTROL PANEL

1. HIGH COMPRESSOR TEMP.
Indicates shutdown due to high comp. Temp.
2. LOW ENGINE OIL PRESSURE.
Indicates shutdown due to low oil P.
3. HIGH ENGINE COOLANT TEMP.
Indicates shutdown due to high water Temp.
4. LOW FUEL LEVEL.
Indicates shutdown due to low fuel level.
5. LOW BATTERY VOLTS.
Indicates battery/charging system needs service.



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INSTRUMENT/CONTROL PANEL



1. LOW ENGINE COOLANT LEVEL.
Alarm indicator lamp. Indicates coolant needs service.
2. RESTRICTED AIR FILTER.
Alarm indicator. Indicates eng/comp air filter need service.
3. RESTRICTED IQ FILTERS.
Shutdown indicator (If equipped)
4. COMPRESSOR MALFUNCTION.
Indicates shutdown due to compressor system fault. Refer to fault code list.
5. ENGINE MALFUNCTION.
Engine fault. Refer to engine fault codes.
6. FAULT CODE & DIAGNOSTICS DISPLAY.
Refer to fault code and parameters lists.



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Warranty – Cummins QSB 6.7

Base Warranty.

QSB engines come with a full 2-year/2,000-hour warranty that covers all Cummins branded components, including electrics such as starters and alternators.

Major components coverage continues into the third year, up to 10,000 hours of operation from the time your QSB engine goes in service.

Three simple steps explain everything you need to know:

Step One: Full coverage on all Cummins industrial engines and branded components with unlimited hours during the first year of operation. This includes Cummins branded electrics such as alternators, starters, etc.

Step Two: Full coverage is extended for the second year, up to 2,000 hours of operation. Total hours are cumulative from the time the engine goes in service.

Step Three: Major components coverage including block, crankshaft, camshaft and rods on all products for the third year or up to 10,000 hours of operation. Total hours are cumulative from the time the engine goes in service.



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