

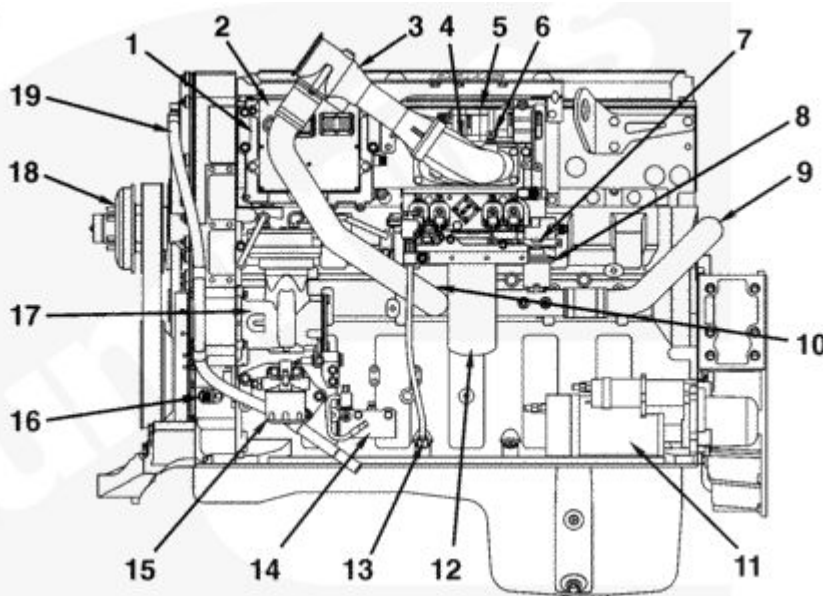
100-002 Engine Diagrams

Engine Views

The following illustrations show the location of the major external engine components, filters, and other service and maintenance points. Some external components will be at different locations for different engine models.

Automotive with CM870

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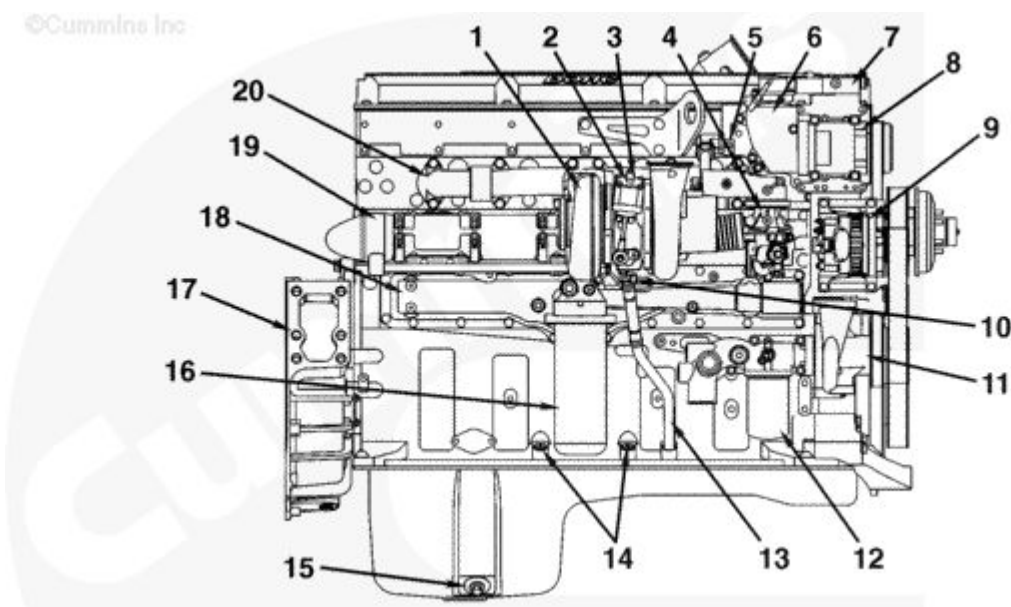


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ISX Automotive with CM870 - Left Side View

1. ECM cooling plate
2. ECM
3. EGR mixer
4. Intake manifold air temperature sensor
5. Fuel pump
6. Intake manifold pressure sensor
7. EGR differential pressure sensor mounting location
8. Fuel lift pump
9. EGR connection tube
10. Recirculated exhaust gas temperature sensor (**not** shown)
11. Starter
12. Fuel filter

13. Lubricating oil dipstick
14. Centinel™ oil control valve
15. Turbocharger control shutoff valve filter
16. Engine speed sensor
17. Air compressor
18. Fan hub
19. Crankcase breather tube.

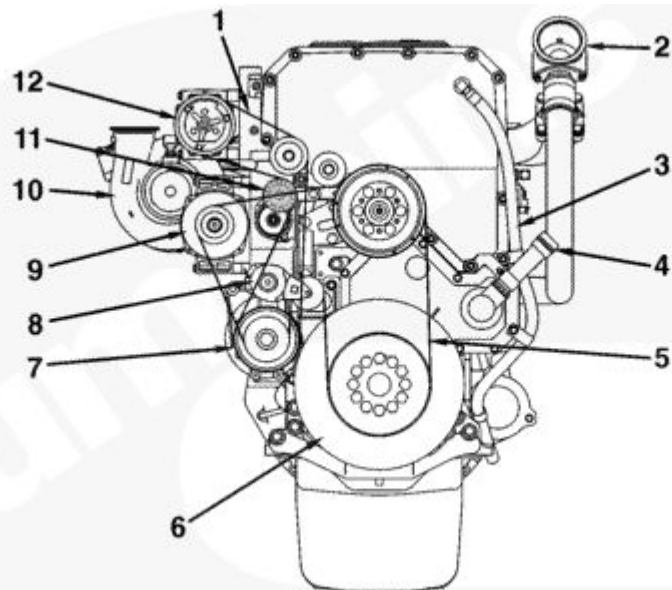


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ISX Automotive with CM870 - Right Side View

1. Variable geometry turbocharger
2. Variable geometry actuator
3. Turbocharger speed sensor (**not** shown)
4. EGR valve
5. Exhaust gas pressure sensor mounting location
6. Thermostat housing
7. Turbocharger control valve
8. Refrigerant compressor
9. Alternator
10. Turbocharger oil supply
11. Water pump
12. Coolant filter
13. Turbocharger oil drain
14. Optional dipstick locations
15. Lubricating oil drain
16. Combination full-flow/bypass lubricating oil filter
17. Flywheel housing
18. Lubricating oil cooler assembly
19. EGR cooler
20. Exhaust manifold.

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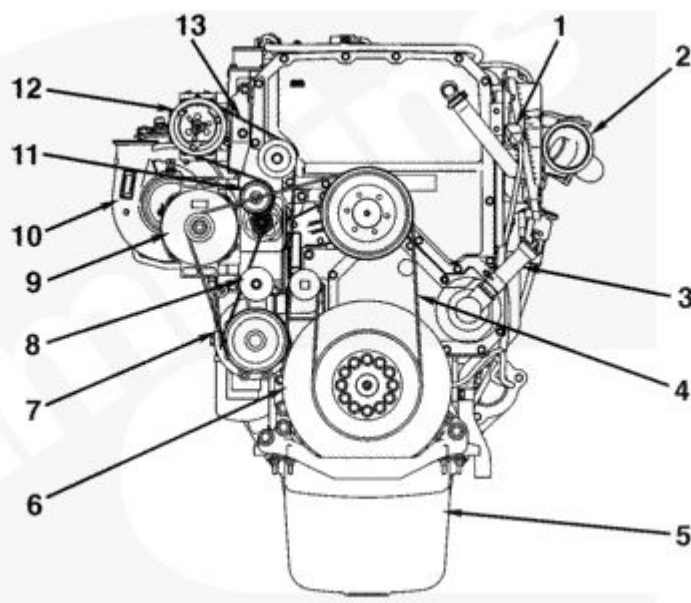
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ISX Automotive with CM870 - Front View

1. Refrigerant drive belt
2. EGR mixer
3. Crankcase breather tube
4. Oil fill
5. Water pump drive belt
6. Vibration damper
7. Water pump
8. Belt tensioner, water pump
9. Alternator
10. Variable geometry turbocharger
11. Belt tensioner, refrigerant compressor
12. Refrigerant compressor.

Automotive With CM871

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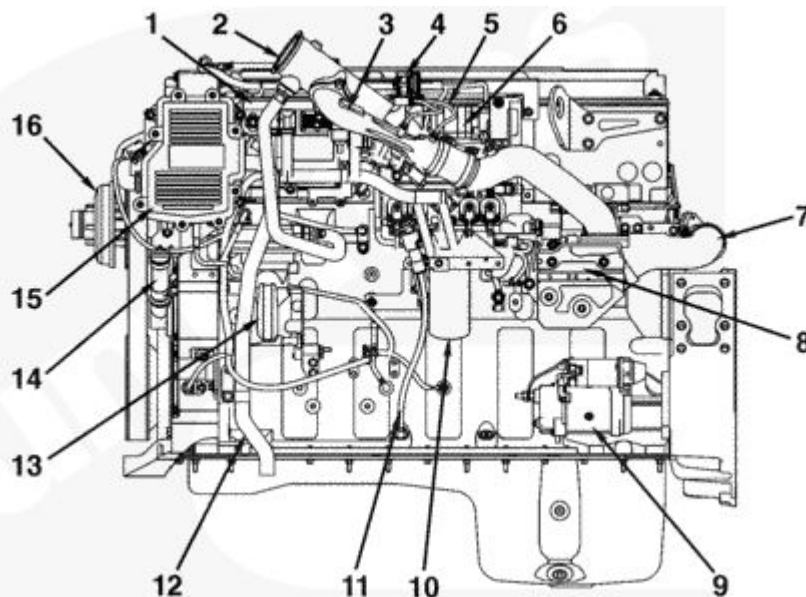


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ISX Automotive with CM871 - Front View

1. Crankcase breather pressure sensor
2. Intake manifold connection
3. Oil fill tube
4. Water pump drive belt
5. Oil pan
6. Vibration damper
7. Dual outlet water pump
8. Belt tensioner, water pump
9. Alternator
10. Variable geometry turbocharger
11. Belt tensioner, refrigerant compressor
12. Refrigerant compressor
13. Refrigerant compressor drive belt.

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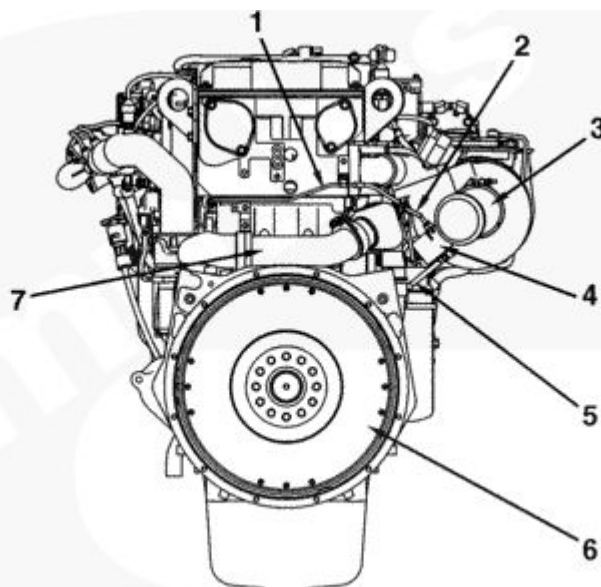


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ISX Automotive with CM871 - Left Side View

1. ECM
2. Air intake connection
3. Front EGR connection tube
4. EGR differential pressure sensor
5. EGR differential pressure sensor tubes
6. Fuel pump
7. EGR valve mounting bracket
8. EGR valve
9. Starter
10. Fuel filter
11. Lubricating oil dipstick
12. Crankcase breather vent tube
13. Air compressor
14. Lubricating oil fill tube
15. Open crankcase ventilation filter housing
16. Fan hub.

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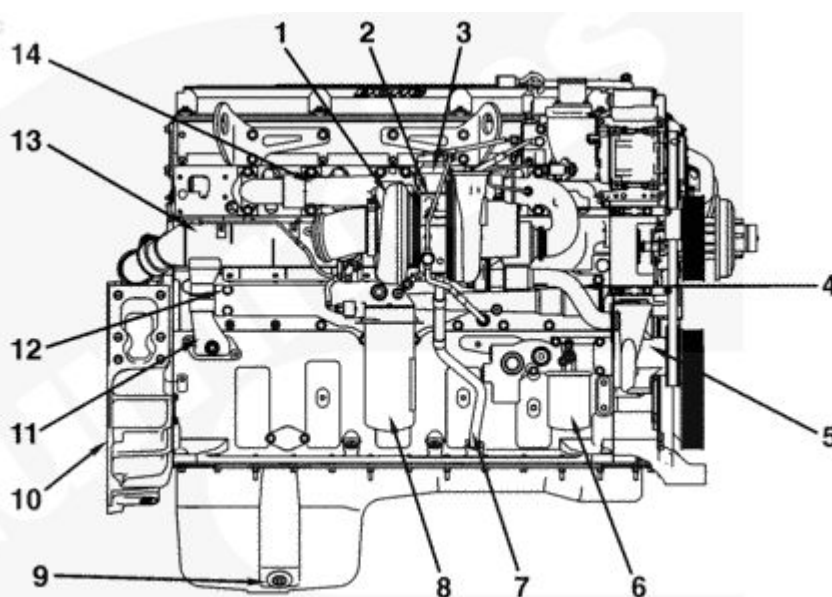


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ISX Automotive with CM871 — Rear View

1. Aftertreatment injector fuel supply line
2. Aftertreatment injector coolant supply line
3. Aftertreatment injector adapter tube
4. Aftertreatment injector assembly
5. Aftertreatment injector coolant return line
6. Flywheel
7. Rear EGR connection tube.

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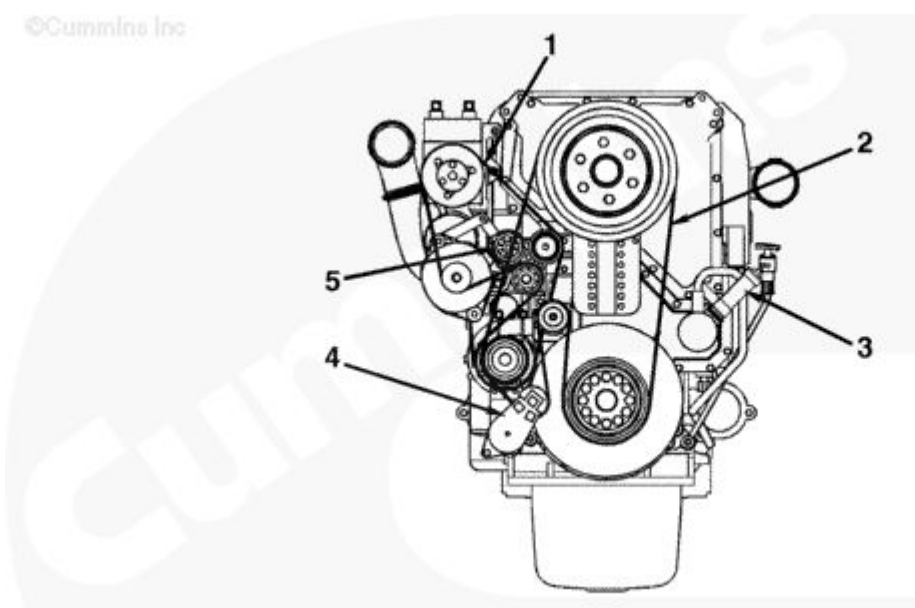


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ISX Automotive with CM871 - Right Side View

1. Variable geometry turbocharger
2. Turbocharger speed sensor
3. Variable geometry actuator
4. EGR cooler coolant inlet tube
5. Dual outlet water pump
6. Coolant filter
7. Turbocharger oil drain tube
8. Lubricating oil filter
9. Lubricating oil drain plug
10. Flywheel housing
11. EGR cooler coolant return tube
12. Lubricating oil cooler
13. EGR cooler
14. Exhaust manifold.

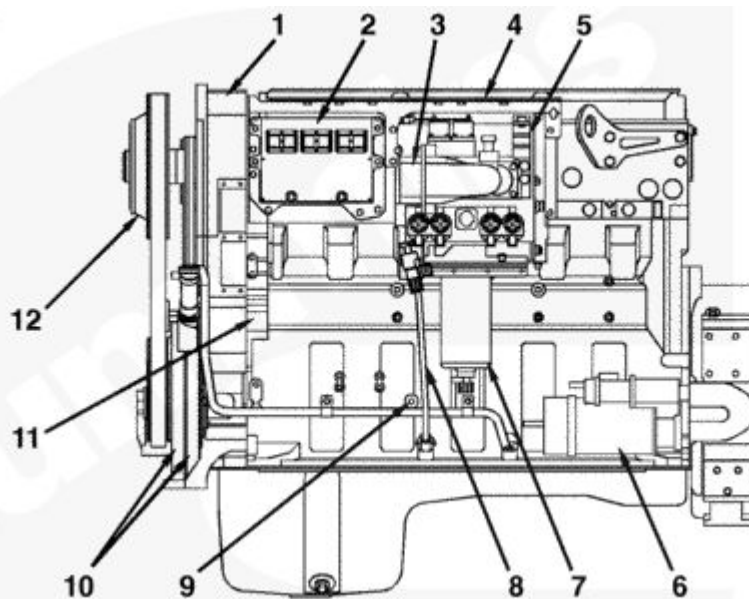
Industrial CM570 and Power Generation without CM570



QSX15 Industrial with CM570 - Front View

1. Accessory drive belt
2. Water pump/fan drive belt
3. Lubricating oil fill
4. Water pump/fan drive belt tensioner
5. Accessory drive belt tensioner.

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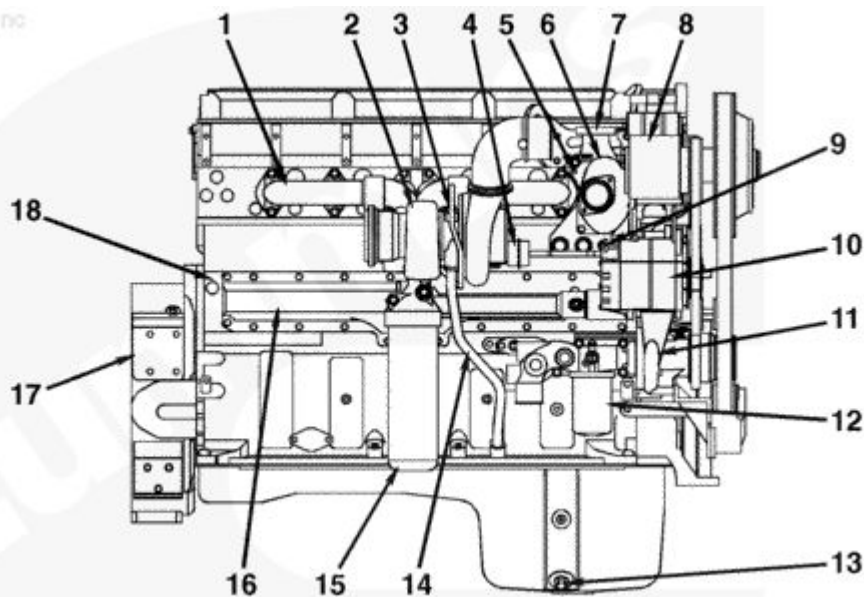


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QSX15 Industrial with CM570 - Left Side View

1. Gear housing
2. ECM
3. Air intake
4. Engine dataplate
5. Fuel pump
6. Starter
7. Fuel filter
8. Lubricating oil dipstick
9. Crankshaft timing pin port
10. Vibration dampers
11. Barring device/air compressor
12. Fan hub.

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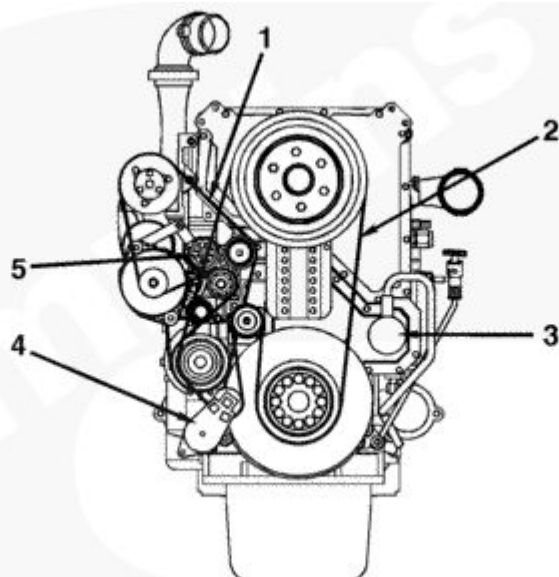


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QSX15 Industrial with CM570 - Right Side View

1. Exhaust manifold
2. Turbocharger
3. Oil inlet to turbocharger
4. Wastegate actuator
5. Thermostat housing vent
6. Thermostat housing
7. Engine coolant outlet (to radiator)
8. Freon compressor
9. Coolant temperature sensor
10. Alternator
11. Water pump
12. Coolant filter
13. Lubricating oil drain
14. Turbocharger oil drain
15. Combination full-flow/bypass lubricating oil filter
16. Lubricating oil cooler assembly
17. Flywheel housing
18. Engine serial number.

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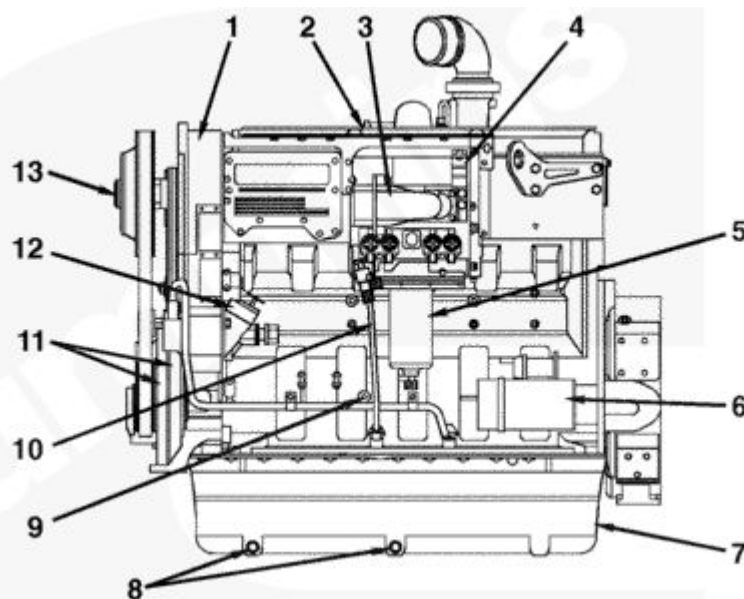


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QSX15 Power Generation without CM570 - Front View

1. Accessory drive belt
2. Water pump/fan drive belt
3. Oil fill/crankcase breather
4. Water pump/fan drive belt tensioner
5. Accessory drive belt tensioner.

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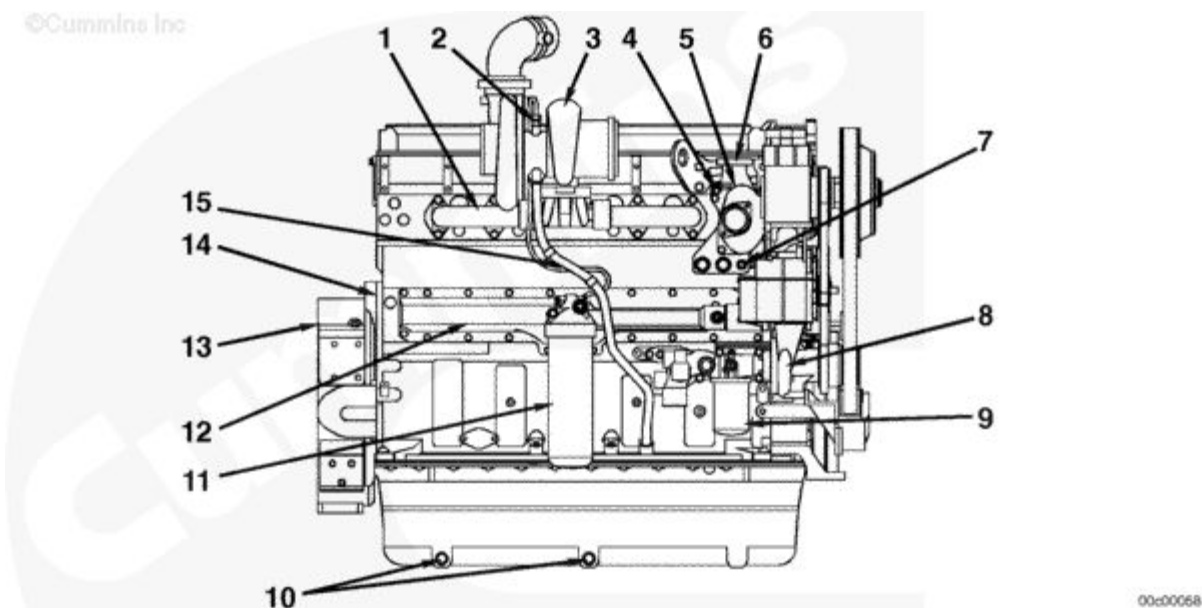


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QSX15 Power Generation without CM570 - Left Side View

1. Gear cover
2. Engine dataplate

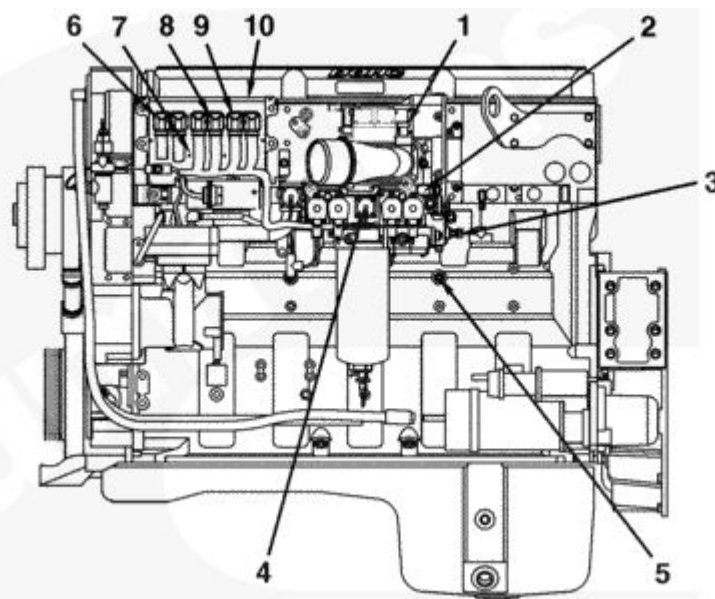
3. Air intake
4. Fuel pump
5. Fuel filter
6. Starter
7. Lubricating oil pan
8. Lubricating oil drains
9. Crankshaft timing pin port
10. Lubricating oil dipstick
11. Vibration dampers
12. Lubricating oil fill/barring device
13. Fan hub.



QSX15 Power Generation without CM570 - Right Side View

1. Exhaust manifold
2. Lubricating oil Inlet to turbocharger
3. Turbocharger
4. Thermostat housing vent
5. Thermostat housing
6. Engine coolant outlet (to radiator)
7. Coolant temperature sensor
8. Water pump
9. Coolant filter
10. Lubricating oil drains
11. Combination full-flow/bypass lubricating oil filter
12. Lubricating oil cooler assembly
13. Flywheel housing
14. Engine serial number
15. Turbocharger lubricating oil drain.

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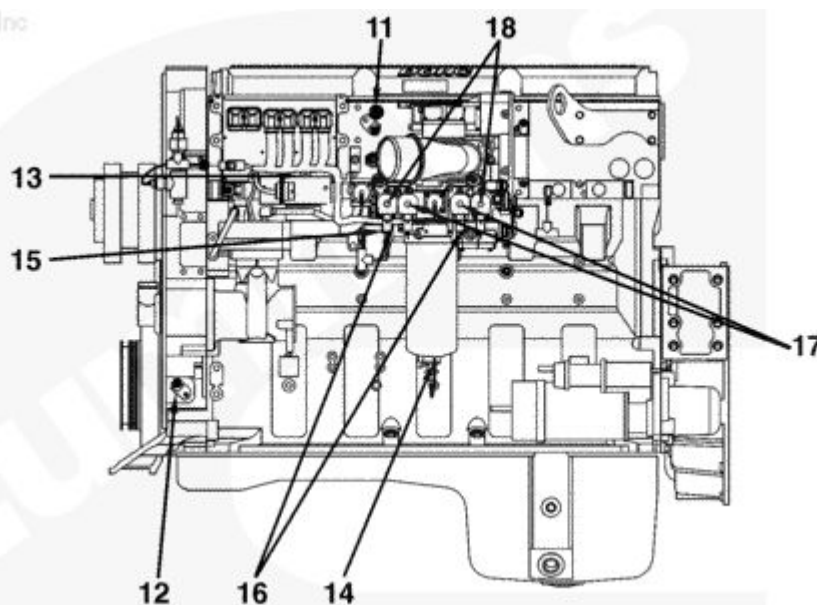


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Fuel System - Left Side View

1. Intake manifold pressure/temperature sensor
2. Fuel outlet
3. Fuel inlet
4. Fuel shutoff valve
5. Oil pressure/temperature sensor
6. ECM/engine harness port (OEM)
7. ECM
8. ECM/engine harness port (actuator)
9. ECM/sensor port
10. Cooling plate (behind ECM).

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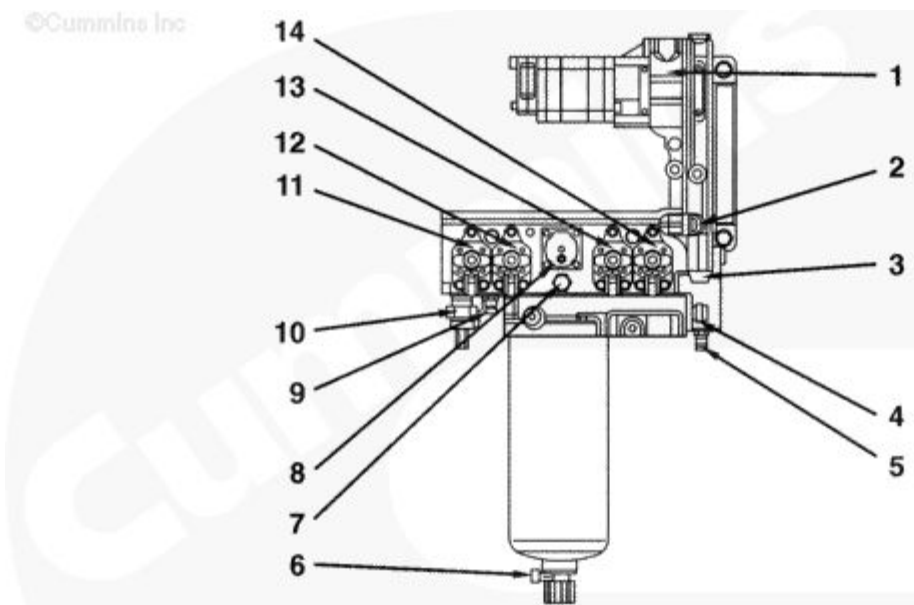


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Fuel System - Left Side View (continued)

11. Camshaft position sensor
12. Crankshaft position sensor
13. Ambient air pressure sensor
14. Water-in-Fuel sensor
15. Fuel pressure sensor
16. Front and rear rail sensors*
17. Timing actuators
18. Fueling actuators.

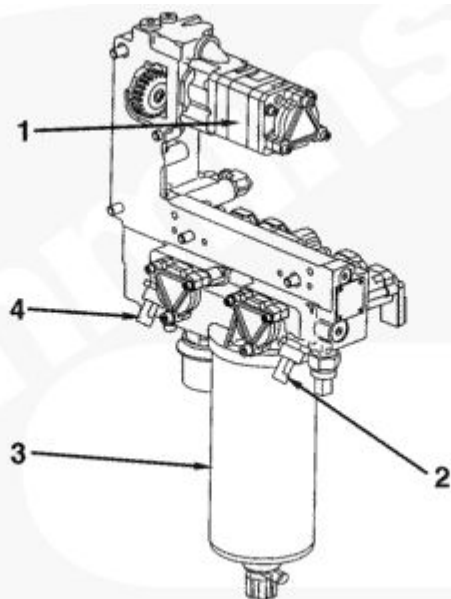
* Eliminated on most engines



Fuel Delivery Housing - Front View

1. Priming bypass valve (internal)
2. 320 psi pressure regulator
3. 36-micron filter screen
4. Fuel inlet
5. Quick disconnect pressure tap - suction side
6. Water-In-Fuel sensor
7. 250 psi pressure regulator
8. Fuel shutoff valve
9. Quick disconnect pressure tap - pressure side
10. Fuel pressure sensor
11. Front rail actuator
12. Front timing actuator
13. Rear timing actuator
14. Rear rail actuator.

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QSX15 with CM570 Fuel Delivery Housing - Rear View

1. Fuel pump assembly
2. Front rail pressure sensor*
3. Fuel filter
4. Rear rail pressure sensor*.

* Eliminated on most engines.

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