Engine Views

The following illustrations contain information about engine components, filter locations, drain points, and access locations for instrumentation and engine controls. The information and configuration of components shown in these illustrations are of a general nature. Some component locations will vary, depending on applications and installations.

Automotive with CM570

Left View - CM570

1. ECM cooling plate
2. ECM
3. Compressor air inlet
4. Blowby measurement
5. Ambient air pressure sensor
6. Fuel return to tank
7. Engine dataplate
8. Engine serial number
9. Starter
10. Flywheel ring gear sensor
11. Side oil drain
12. Centinel™ (optional)
13. Fuel inlet to pump
14. Fuel filter
15. Rail pressure
16. Power steering pump mounting location
17. Oil pressure and temperature sensor
18. Engine position sensor
19. Refrigerant compressor mounting location.

1. Ether hookup
2. Before charge air cooler
3. Boost temperature sensor
4. Intake manifold pressure sensor
5. After charge air cooler (intake manifold)
6. Shutter stat
7. Engine coolant vent
8. Shutter stat port
9. Fan sensor
10. Coolant temperature sensor
11. Heater return
12. Coolant inlet pressure
13. Makeup line from radiator
14. Water pump pressure
15. Coolant inlet
16. Oil drain
17. Oil pan sump heater
18. Filter outlet pressure
19. Engine brake oil supply
20. Filter inlet pressure port
21. Block coolant pressure port
22. Coolant heater port
23. Heater supply port
24. Coolant temperature pickup port
25. Wastegate controller.

With CM870

1. Engine coolant outlet
2. Refrigerant compressor or alternator mounting location
3. Accessory drive belt
4. Accessory drive belt tensioner
5. Accessory drive pulley
6. Alternator drive belt
7. Fan hub
8. Vibration damper
9. Fan belt tensioner
10. Alternator.
1. ECM dataplate
2. ECM
3. Blowby tube
4. Engine dataplate
5. Fuel control module dataplate
6. Engine serial number
7. Fuel control module cooling plate
8. Engine oil temperature sensor (behind fuel control module cooling plate)
9. Starter
10. Fuel control module
11. Centinel™ valve (optional)
12. Fuel filter
13. Fuel shutoff valve
14. Fuel pump
15. Air compressor
16. Air supply to air compressor
17. Engine oil pressure sensor
18. Air compressor coolant supply
19. Engine position sensor (not visible)
20. Air compressor coolant return.
1. Flywheel housing
2. Lubricating oil drain
3. Lubricating oil pan.

1. Variable geometry turbocharger coolant return line
2. Water manifold
3. Cylinder head vent line (not visible)
4. Water manifold return tube
5. Thermostat housing
6. Coolant temperature sensor (not visible)
7. Water pump
8. Water pump pressure
9. Coolant inlet pressure
10. Makeup line from radiator
11. Coolant inlet
12. Lubricating oil pump (not visible)
13. Heater return
14. Variable geometry turbocharger coolant supply line
15. Turbocharger oil drain tube
16. Turbocharger oil supply line
17. Lubricating oil filter out pressure
18. Lubricating oil filter
19. Lubricating oil fill/dipstick
20. Engine brake oil supply line
21. Coolant filter
22. Block coolant pressure
23. Coolant heater
24. Lubricating oil filter in pressure (lubricating pump out pressure)
25. Heater supply
26. Coolant temperature pick-up
27. Lubricating oil cooler
28. Exhaust manifold
29. Air compressor air inlet tube.

Top - ISM CM870 Automotive

1. Intake manifold pressure sensor
2. EGR differential pressure sensor
3. Exhaust gas pressure sensor
4. Intake manifold air temperature sensor
5. EGR temperature sensor.

1. Air intake connection
2. EGR differential pressure sensor tubes
3. EGR mixer
4. Exhaust gas pressure sensor tube
5. EGR valve coolant return tube
6. EGR valve
7. EGR valve coolant supply tube
8. EGR cooler coolant supply tube
9. EGR cooler coolant vent tubes
10. EGR cooler coolant return tube
11. EGR cooler
12. EGR cooler connection tube.
ISM CM870 Automotive - Variable Geometry Turbocharger Control System

1. Compressed air from OEM air tank
2. Turbocharger control shutoff valve filter head
3. Turbocharger control shutoff valve
4. Compressed air from turbocharger control shutoff valve filter head
5. Turbocharger control valve
6. Compressed air from turbocharger control valve
7. Turbocharger compressor inlet air temperature sensor
8. Turbocharger actuator
9. Turbocharger speed sensor
10. Turbocharger control shutoff valve air filter.

Automotive with CM876
1. Refrigerant compressor
2. Accessory drive belt tensioner
3. Accessory drive pulley
4. Alternator / fan drive belt
5. Fan hub
6. Vibration damper
7. Fan belt tensioner
8. Alternator
9. Variable geometry turbocharger actuator
10. Engine coolant outlet.
Left - ISM CM876 Automotive

1. Open crankcase ventilation filter
2. Blowby tube
3. ECM
4. Flywheel housing
5. Fuel filter
6. Fuel shutoff valve
7. Fuel pump
8. Air compressor
9. Oil pressure sensor
10. Engine position sensors.

Rear - ISM CM876

1. EGR valve
2. Variable geometry turbocharger electronic actuator
3. Variable geometry turbocharger
4. Aftertreatment injector assembly
5. Aftertreatment injector manifold
6. Aftertreatment fuel pressure sensor
7. Aftertreatment fuel shutoff valve
8. Open crankcase ventilation filter.
1. EGR valve
2. Aftertreatment fuel injector adapter
3. Differential pressure sensor tube
4. EGR cooler
5. Air intake / EGR mixer
6. Turbocharger coolant return tube
7. Water manifold coolant return tube
8. Water pump
9. EGR cooler coolant supply tube
10. Lubricating oil filter
11. Lubricating oil cooler
12. Lubricating oil dipstick
13. Coolant filter
14. Variable geometry turbocharger
15. Exhaust manifold.

**Industrial and Generator Drive**
1. ECM cooling plate
2. ECM
3. Compressor air inlet
4. Blowby measurement
5. Ambient air pressure sensor
6. Fuel return to tank
7. Engine dataplate
8. Engine serial number
9. Starter
10. Flywheel ring gear speed sensor
11. Side oil drain
12. Centinel™ (optional)
13. Fuel inlet to pump
14. Fuel filter
15. Rail pressure
16. Power steering pump mounting location
17. Oil pressure and temperature sensor
18. Engine position sensor
19. Freon compressor mounting location.
20. Compressor air discharge (not visible).
1. Ether hookup
2. Before charge air cooler
3. Boost temperature sensor
4. Intake manifold pressure sensor
5. After charge air cooler (intake manifold)
6. Shutter stat
7. Engine vent coolant
8. Shutter stat
9. Fan sensor
10. Coolant temperature sensor
11. Heater return
12. Coolant inlet pressure
13. Makeup line from radiator
14. Water pump pressure
15. Coolant inlet
16. Oil drain
17. Oil pan pump heater
18. Filter outlet pressure
19. Engine brake oil supply
20. Filter inlet pressure
21. Block coolant pressure
22. Coolant heater
23. Heater supply
24. Coolant temperature pickup
25. Wastegate controller.

Marine Applications
Front - QSM11 Marine

1. Zinc plugs
2. Air crossover
3. Coolant filter
4. Fuel Filter
5. Crankcase breather
6. Alternator
7. Vibration damper
8. Front engine mounts
9. Aftercooler-to-heat-exchanger pipe
Left (Port) - QSM11 Marine - Components

1. Crankcase breather
2. ECM
3. Exhaust elbow
4. Zinc anode
5. Gear cooler drain plug
6. Starter
7. Oil pan
8. Zinc anode (fuel cooler)
9. Fuel cooler drain plug
10. Fuel cooler
11. Sea water pump
12. Fuel pump
13. Sea-water-pump-to-aftercooler pipe
14. Oil fill.

Left (Port) - QSM 11 Marine - Sensors

1. Ambient air pressure sensor
2. Oil pressure/temperature sensor (behind fuel pump)
3. Engine position sensor (behind fuel pump).
1. Turbocharger
2. Air cleaner
3. Flywheel
4. Flywheel housing
5. Alternator.

1. Gear oil cooler
2. Zinc anode (gear cooler)
3. Heat exchanger
4. Expansion tank
5. Aftercooler
6. Thermostat housing
7. Zinc anode
8. Engine lifting bracket
9. Zinc anode
10. Vibration damper
11. Oil pan drain plug
12. Coolant drain
13. Water pump
14. Oil dipstick
15. Oil fill
16. Engine oil cooler
17. Zinc anode
18. Gear oil cooler drain plug.

Right (Starboard) - QSM11 Marine - Sensors

1. Intake manifold temperature sensor
2. Intake manifold pressure sensor
3. Coolant temperature sensor
4. Coolant level sensor.
Right (Starboard) - QSM11 Marine - Heat Exchanger

1. Turbocharger with water cooled turbine housing
2. Coolant flow from heat exchanger
3. Aftercooler sea water outlet
4. Heat exchanger
5. Coolant flow to heat exchanger
6. Expansion tank
7. Water pump
8. Aftercooler
9. Aftercooler sea water inlet
10. Water cooled exhaust manifold.
Right (Starboard) - QSM11 Marine - Keel Cooled

1. Turbocharger with water cooled turbine housing
2. Coolant inlet (aftercooler)
3. Coolant in from Keel Cooler
4. LTA thermostat housing
5. Coolant out to Keel Cooler
6. Water pump
7. Coolant to water pump
8. Aftercooler
9. Coolant outlet (aftercooler) to water pump
10. Gear oil cooler (optional)
11. Water cooled exhaust manifold
12. Coolant out from turbocharger.

Top - QSM11 Marine

1. Alternator
2. Oil fill (alternate)
3. Intake manifold temperature sensor
4. Intake manifold pressure sensor
5. Coolant fill
6. Air cleaner
7. Turbocharger
8. Exhaust elbow.

Last Modified: 06-Feb-2009