

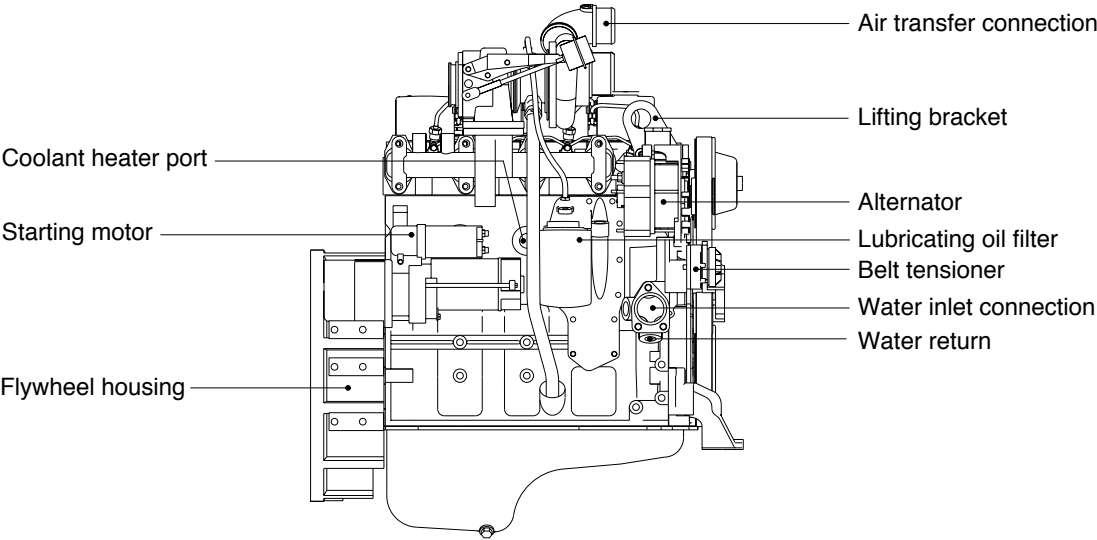
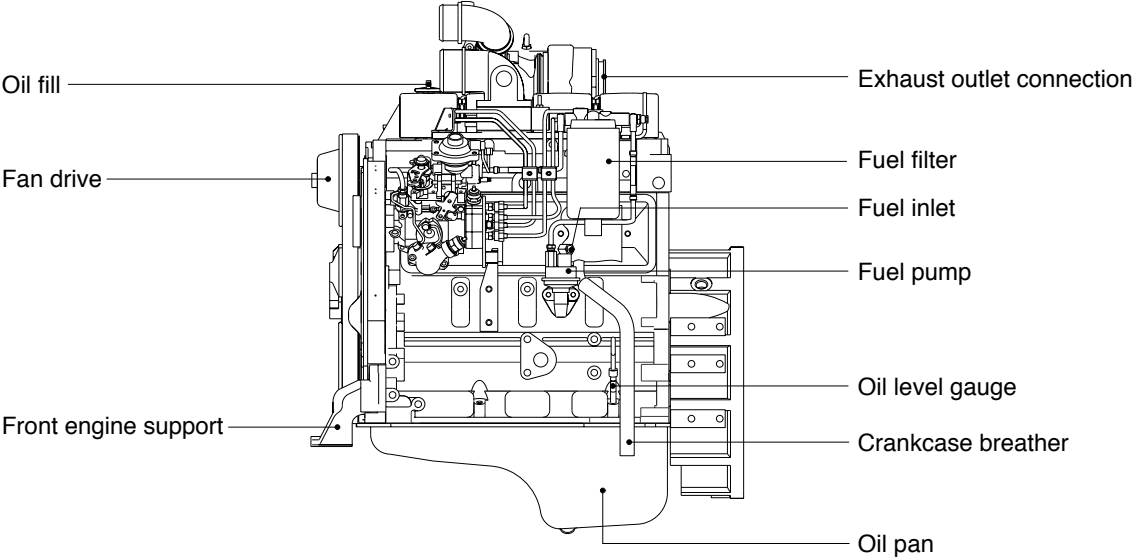
SECTION 2 ENGINE

Group 1 Structure and Function ----- 2-1

SECTION 2 ENGINE

GROUP 1 STRUCTURE AND FUNCTION

1. STRUCTURE



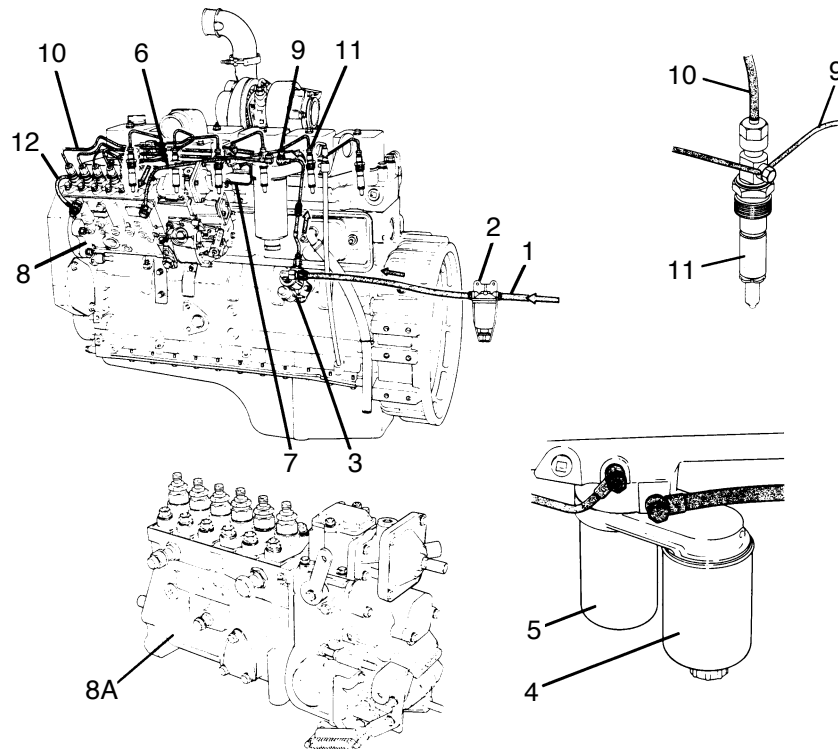
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- Direct 4-stroke, 6-cylinders, water-cooling and charge air cooled diesel engine in installed, cylinder block and cylinder head are made of case iron and turbocharger is attached.

2. SYSTEM DIAGRAMS

The following drawings show the flow through the engine systems.

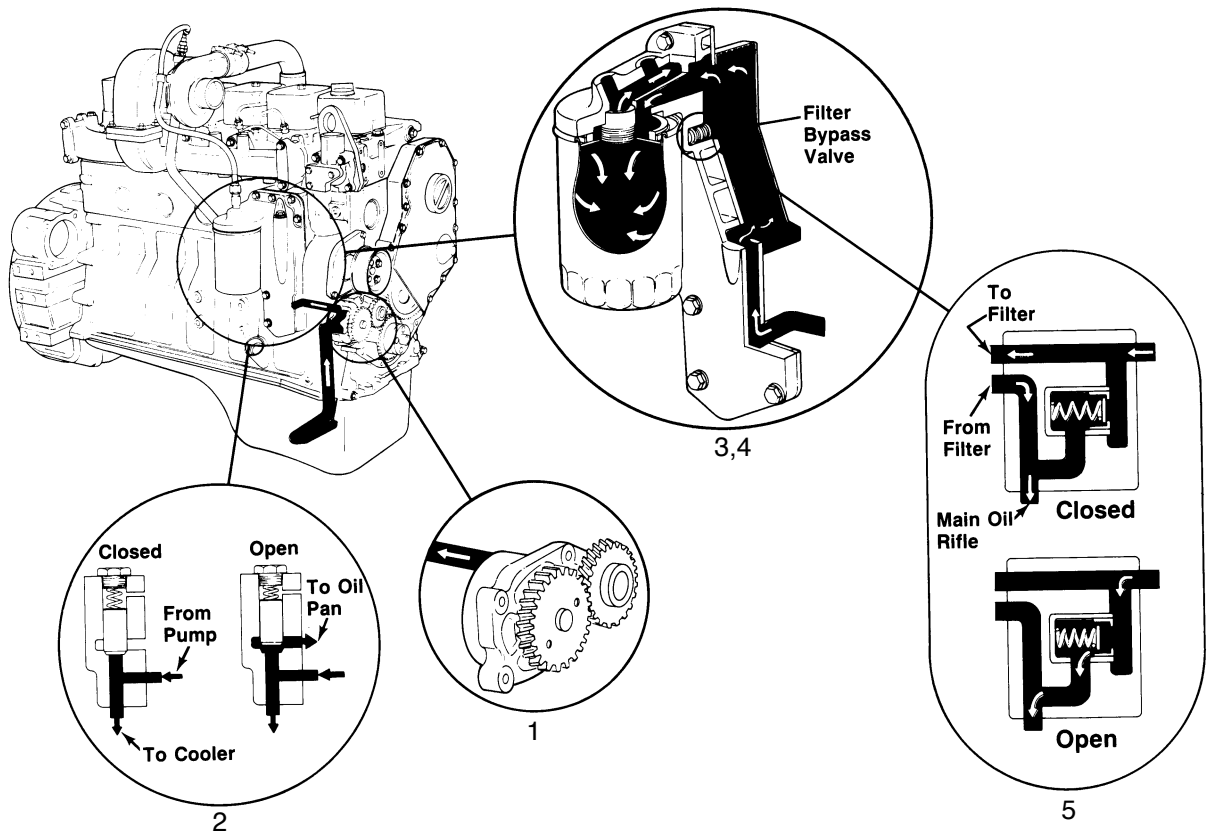
1) FUEL SYSTEM



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- | | | | |
|---|--------------------------|----|-----------------------------|
| 1 | Fuel from supply tank | 8 | Injection pump(Bosch) |
| 2 | Pre-filter | 8A | Injection pump(Nippondenso) |
| 3 | Lift pump | 9 | Fuel drain manifold |
| 4 | Fuel/Water separator | 10 | High pressure manifold |
| 5 | Fuel filter | 11 | Injectors |
| 6 | Low pressure supply line | 12 | Fuel return to supply tank |
| 7 | Turbo boost control line | | |

2) LUBRICATING OIL SYSTEM

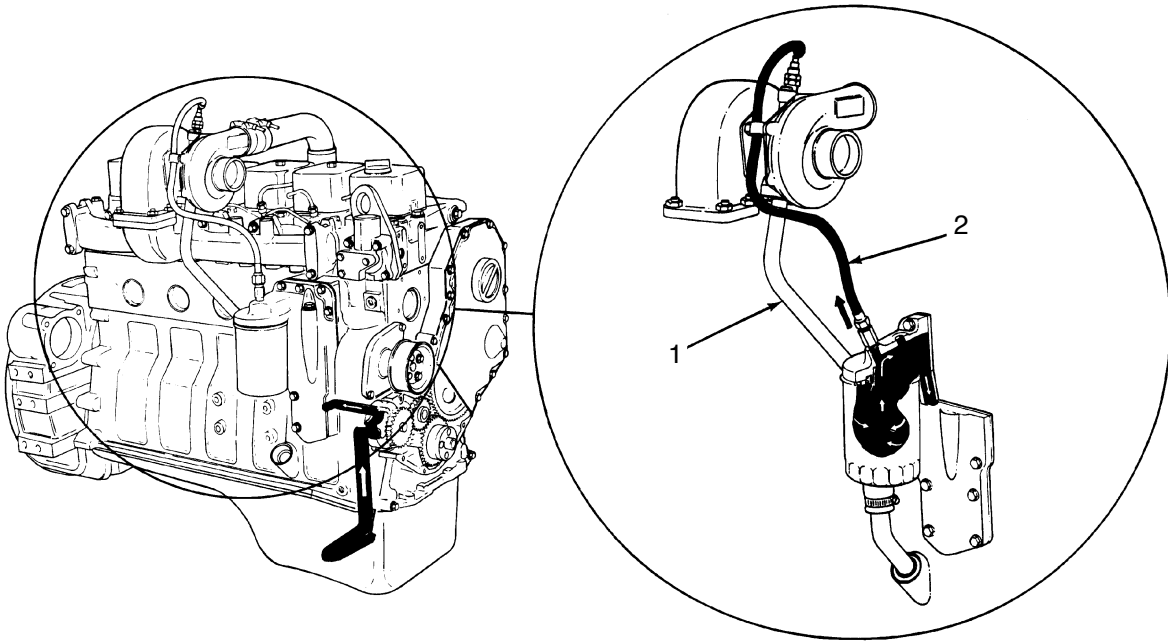


- 1 Gerotor lubricating oil pump
- 2 Pressure regulating valve
- 3 Lubricating oil cooler

- 4 Full flow filter
- 5 Filter bypass valve

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3) LUBRICATION FOR THE TURBOCHARGER

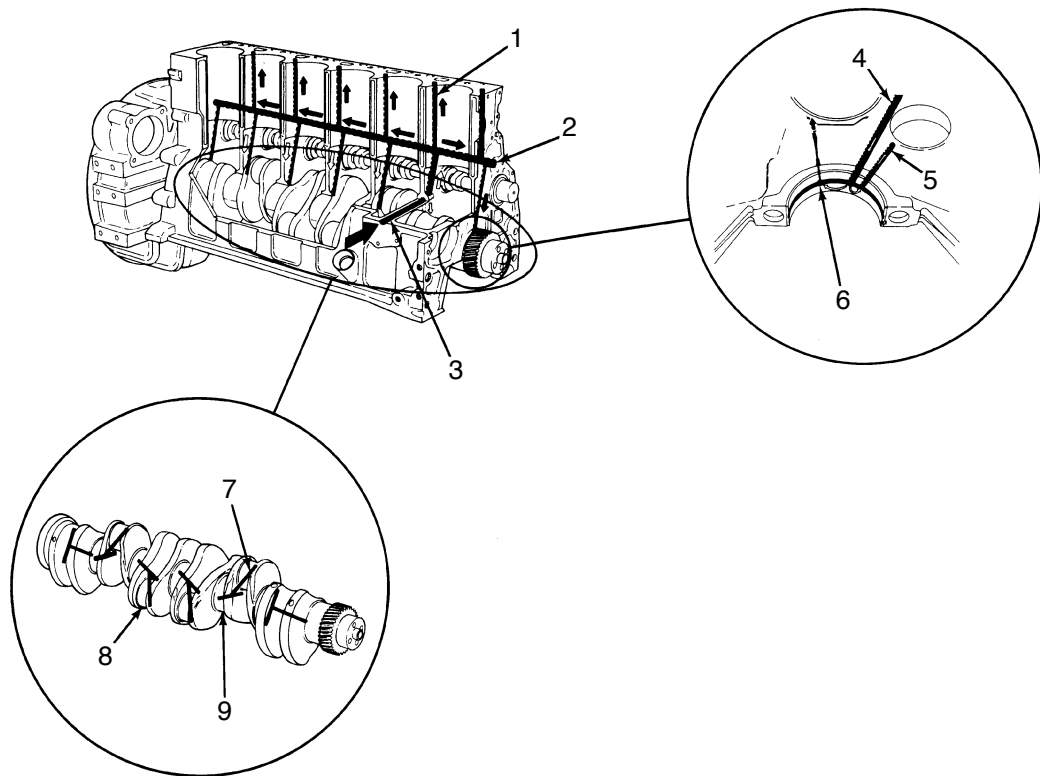


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1 Oil drain

2 Oil supply

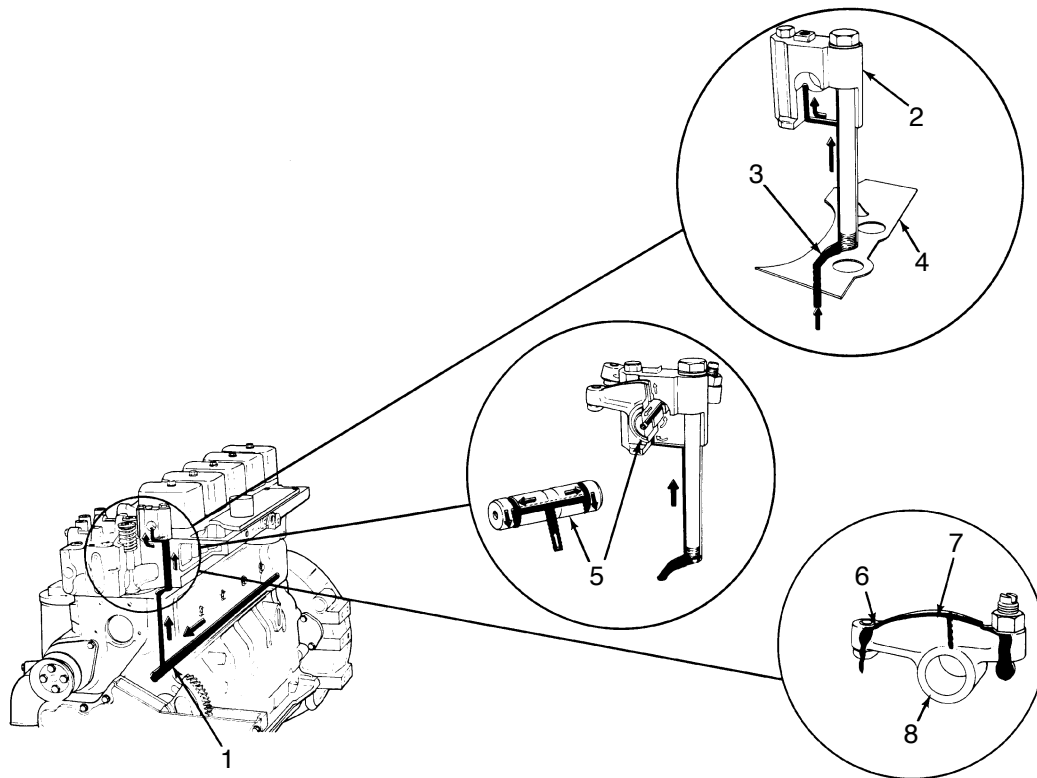
4) LUBRICATION FOR THE POWER COMPONENTS



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- | | | | |
|---|---------------------|---|--------------------------|
| 1 | To valve train | 6 | To piston cooling nozzle |
| 2 | Main oil rifle | 7 | To rod bearing |
| 3 | From oil cooler | 8 | Rod journal |
| 4 | From main oil rifle | 9 | Crankshaft main journal |
| 5 | To camshaft | | |

5) LUBRICATION FOR THE OVERHEAD



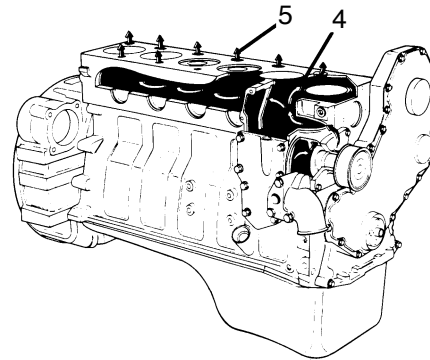
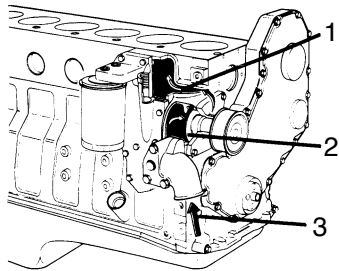
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- 1 Main oil rifle
- 2 Rocker lever support
- 3 Transfer slot
- 4 Head gasket

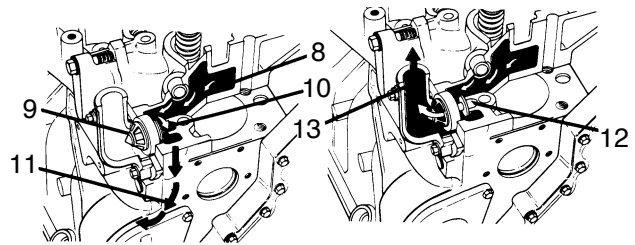
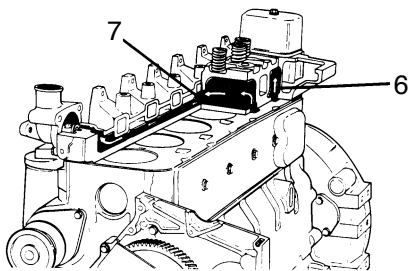
- 5 Rocker lever shaft
- 6 Rocker lever
- 7 Trough
- 8 Rocker lever bore

6) COOLANT SYSTEM

Cylinder block



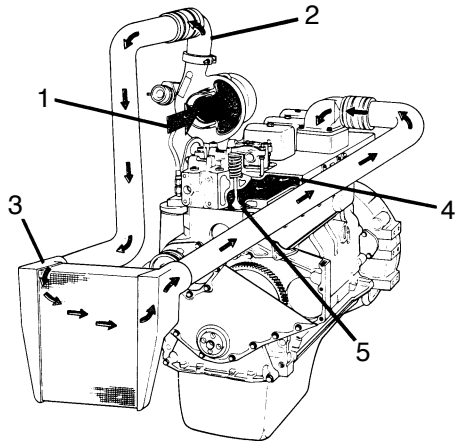
Cylinder head



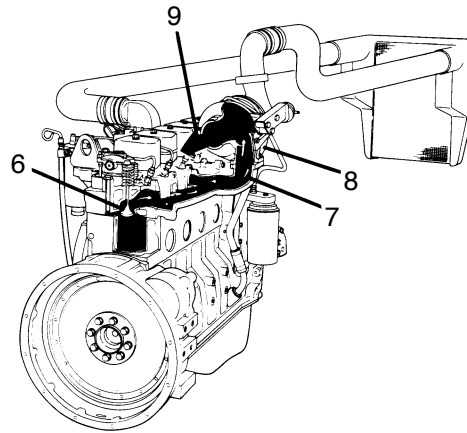
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- | | | | |
|---|----------------------------------|----|-------------------------------|
| 1 | Coolant inlet | 8 | Coolant flow past injector |
| 2 | Pump impeller | 9 | Thermostat |
| 3 | Coolant flow past oil cooler | 10 | Coolant by-pass passage |
| 4 | Coolant flow past cylinders | 11 | Coolant flow to pump inlet |
| 5 | Coolant to cylinder head | 12 | By-pass closed |
| 6 | Coolant flow from cylinder block | 13 | Coolant flow back to radiator |
| 7 | Coolant to thermostat housing | | |

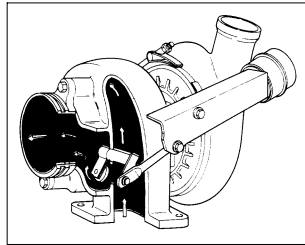
7) AIR SYSTEM



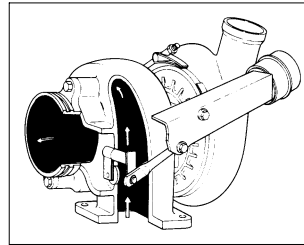
Intake system



Exhaust system



Wastegate open



Wastegate closed

- | | | | |
|---|-------------------------------------------------|---|------------------------------|
| 1 | Intake air inlet to turbocharger | 6 | Exhaust valve |
| 2 | Turbocharger air to charge air cooler | 7 | Exhaust manifold(Pulse type) |
| 3 | Charge air cooler | 8 | Duel entry turbocharger |
| 4 | Intake manifold(Integral part of cylinder head) | 9 | Turbocharger exhaust outlet |
| 5 | Intake valve | | |

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