

# SECTION 2 ENGINE

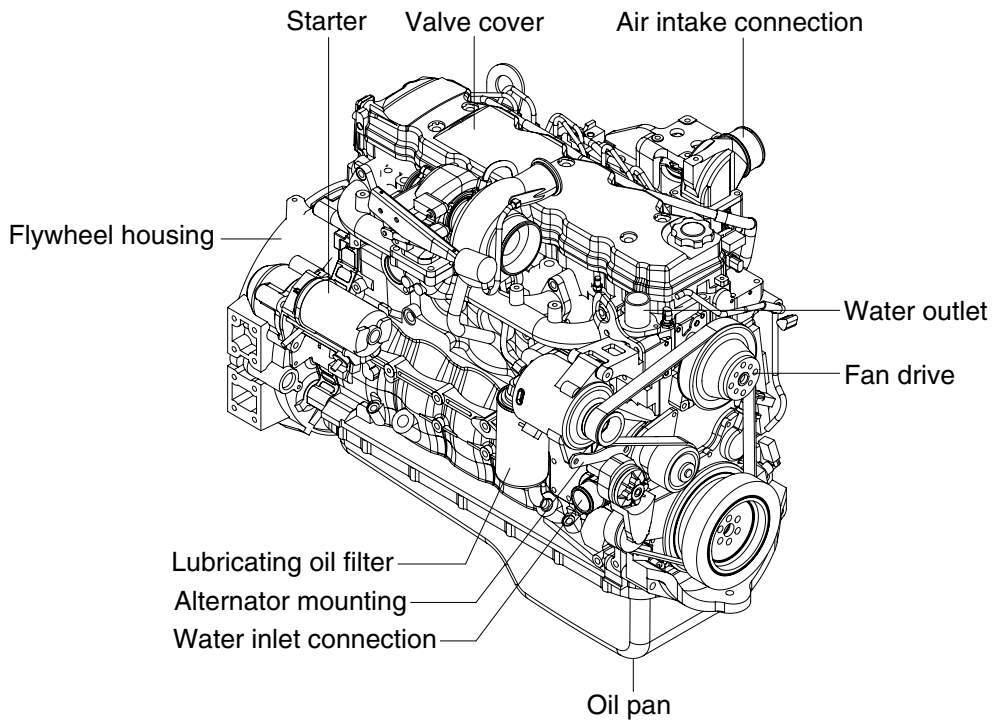
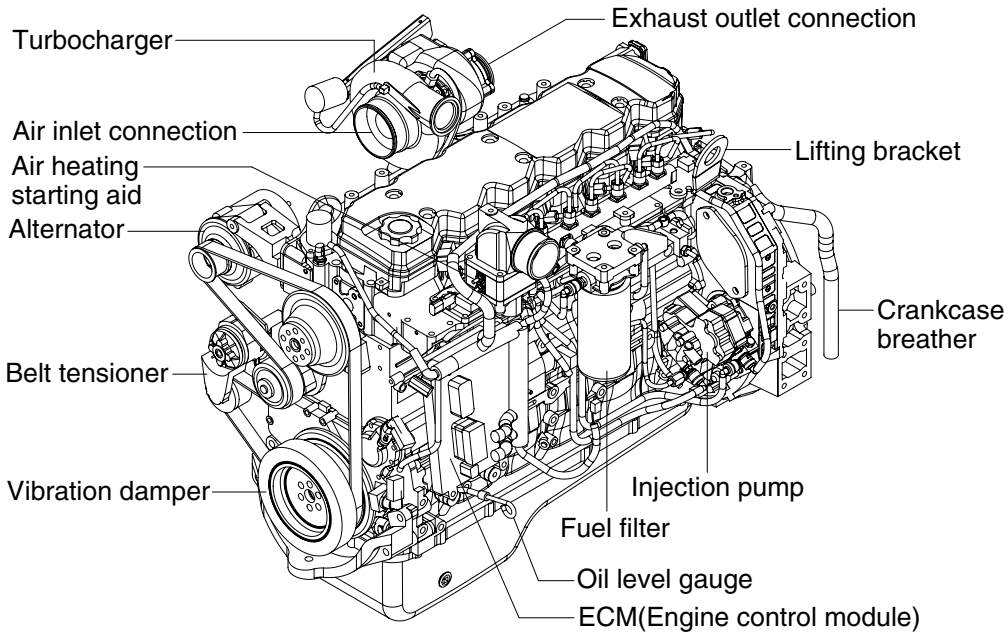


- Group 1 Structure and Function ..... 2-1
- Group 2 Fuel warmer system ..... 2-7
- Group 3 Engine speed and Stall rpm ..... 2-8

# SECTION 2 ENGINE

## GROUP 1 STRUCTURE AND FUNCTION

### 1. STRUCTURE



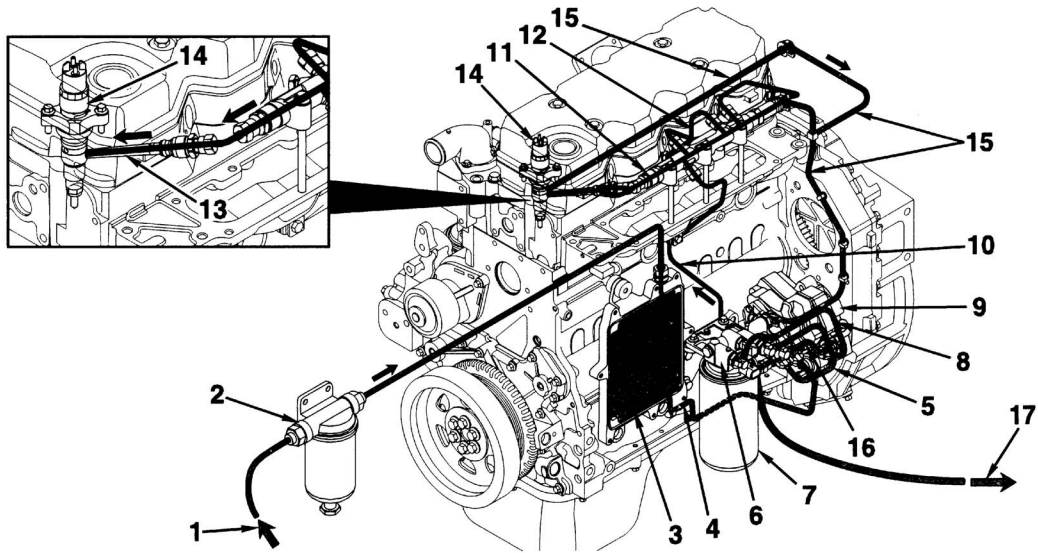
7577AEG01

- 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.

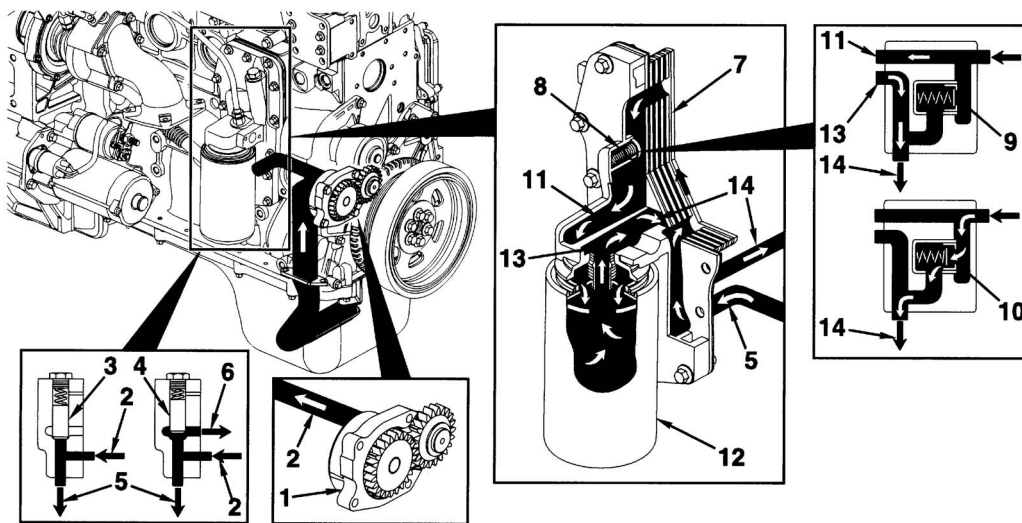
### 1) FUEL SYSTEM



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- |    |   |    |  |
|----|---|----|--|
| 1  | From fuel tank                              | 11 | Fuel rail  |
| 2  | Water/fuel separator(not mounted on engine) | 12 | To injectors   |
| 3  | ECM cooling plate                           | 13 | High-pressure connector                                      |
| 4  | To fuel gear pump                           | 14 | Injector   |
| 5  | To fuel filter                              | 15 | Fuel return from injectors and fuel rail to fuel filter head |
| 6  | Fuel filter head                            | 16 | Fuel return from high-pressure pump to fuel filter head      |
| 7  | Fuel filter                                 | 17 | To fuel tank   |
| 8  | To high-pressure pump                       |    |  |
| 9  | High-pressure pump                          |    |  |
| 10 | To fuel rail                                |    |  |

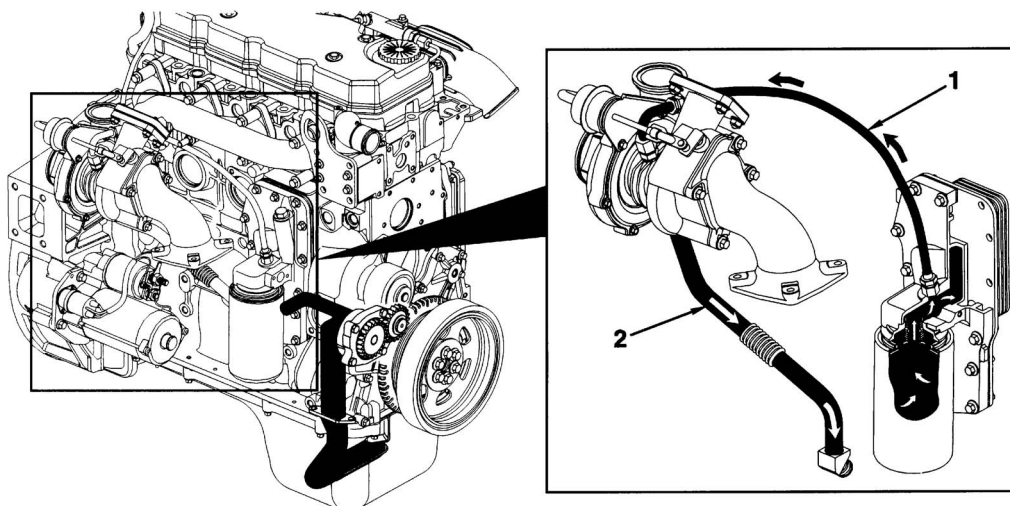
## 2) LUBRICATING OIL SYSTEM



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

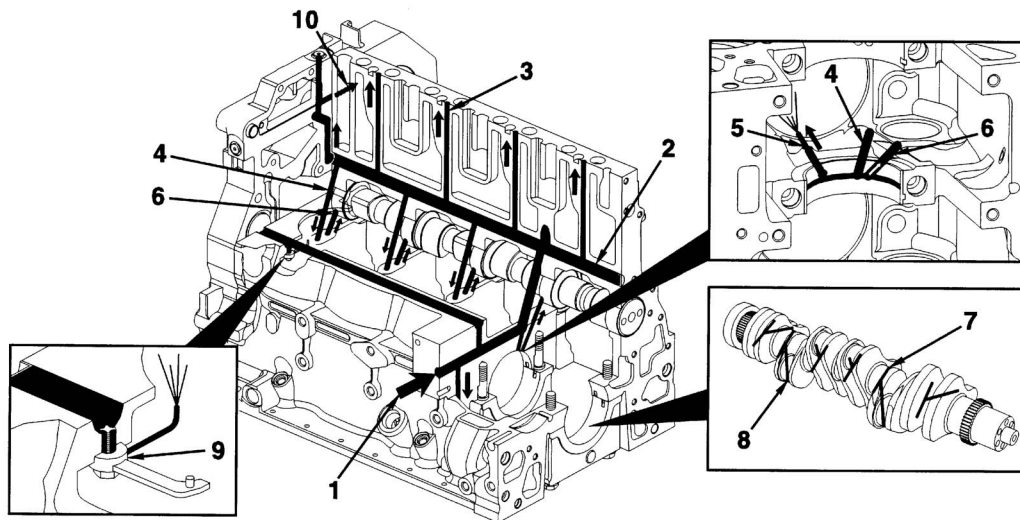
### (1) Lubrication for the turbocharger



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

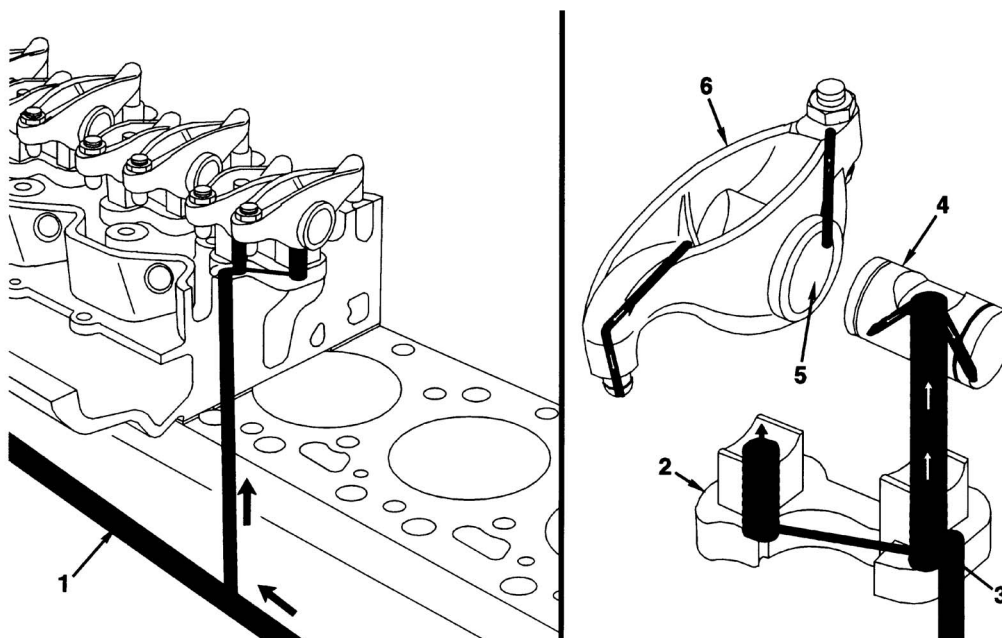
## (2) Lubrication for the power components



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

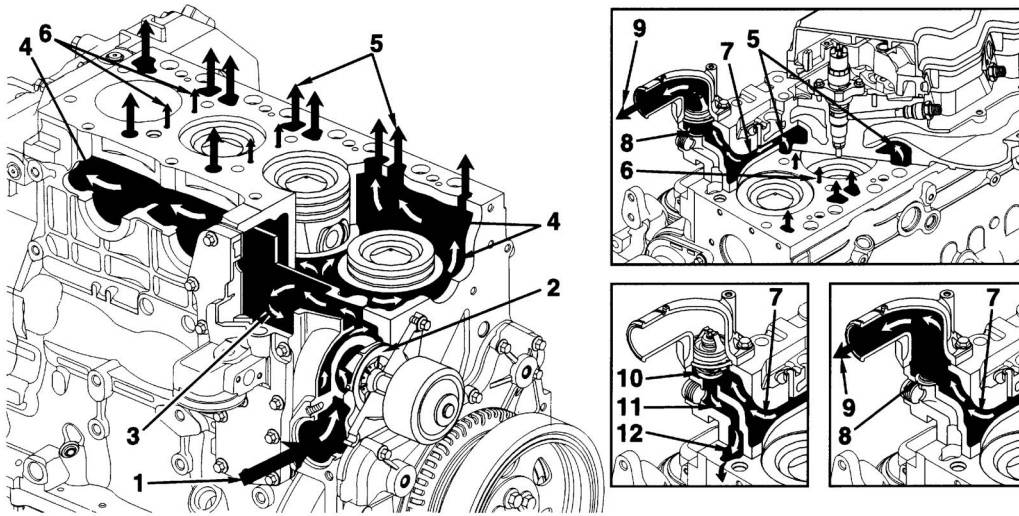
## (3) Lubrication for the overhead



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

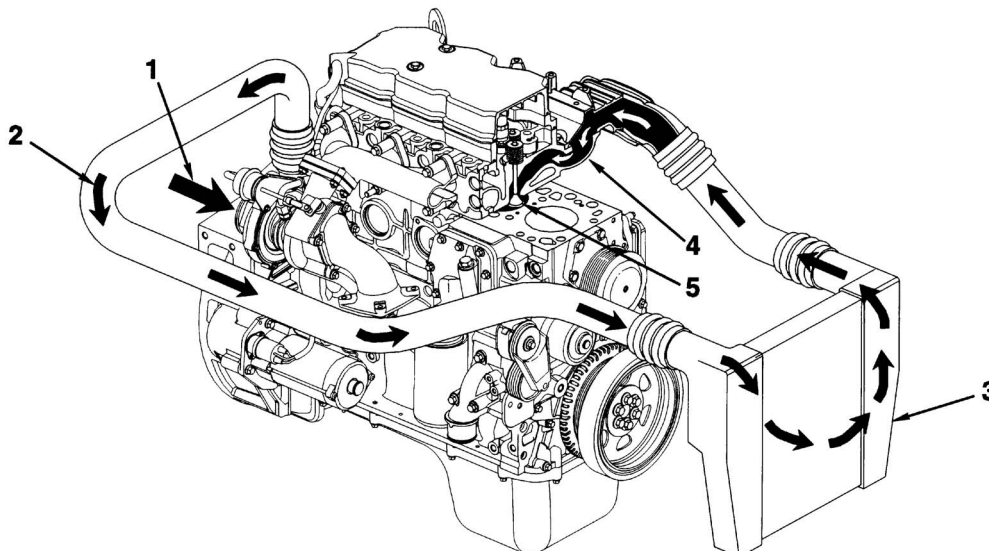
### 3) COOLING SYSTEM



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- |   |   |    |                                    |
|---|---|----|------------------------------------|
| 1 | Coolant inlet                                     | 7  | Coolant flow to thermostat housing |
| 2 | Pump Impeller                                     | 8  | Coolant bypass passage             |
| 3 | Coolant flow past lubricating oil cooler          | 9  | Coolant flow back to radiator      |
| 4 | Coolant flow past cylinders                       | 10 | Bypass closed                      |
| 5 | Coolant flow from cylinder block to cylinder head | 11 | Coolant bypass in cylinder head    |
| 6 | Coolant flow between cylinders                    | 12 | Coolant flow to water pump inlet   |

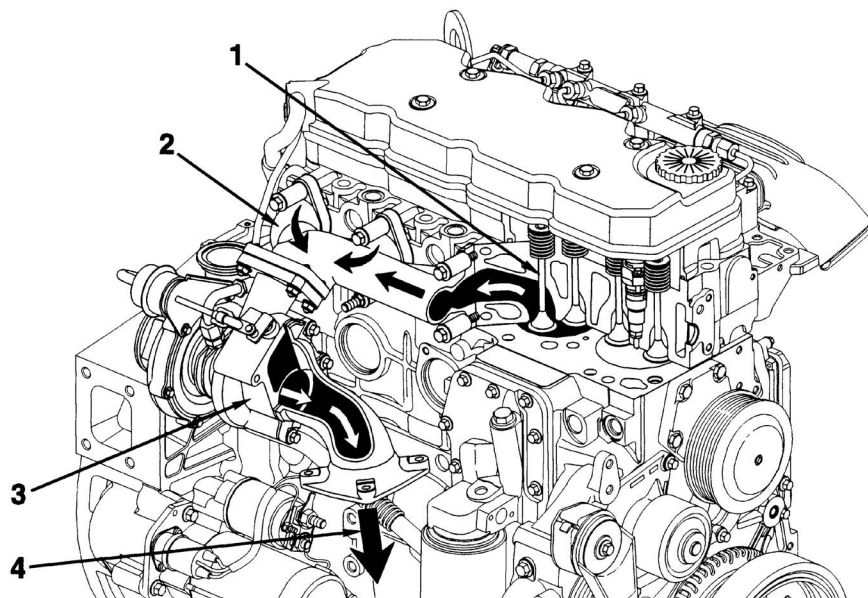
### 4) AIR INTAKE SYSTEM



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- |   |                                       |   |   |
|---|---------------------------------------|---|---|
| 1 | Intake air inlet to turbocharger      | 4 | Intake manifold<br>(Integral part of cylinder head) |
| 2 | Turbocharger air to charge air cooler | 5 | Intake valve  |
| 3 | Charge air cooler                     |   |   |

## 5) EXHAUST SYSTEM



7607AEG09

1 Exhaust valve

2 Exhaust manifold

3 Turbocharger

4 Turbocharger exhaust outlet