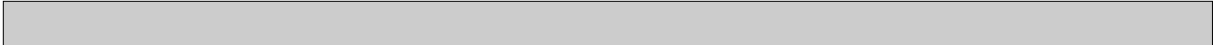


**SECTION 2 ENGINE**

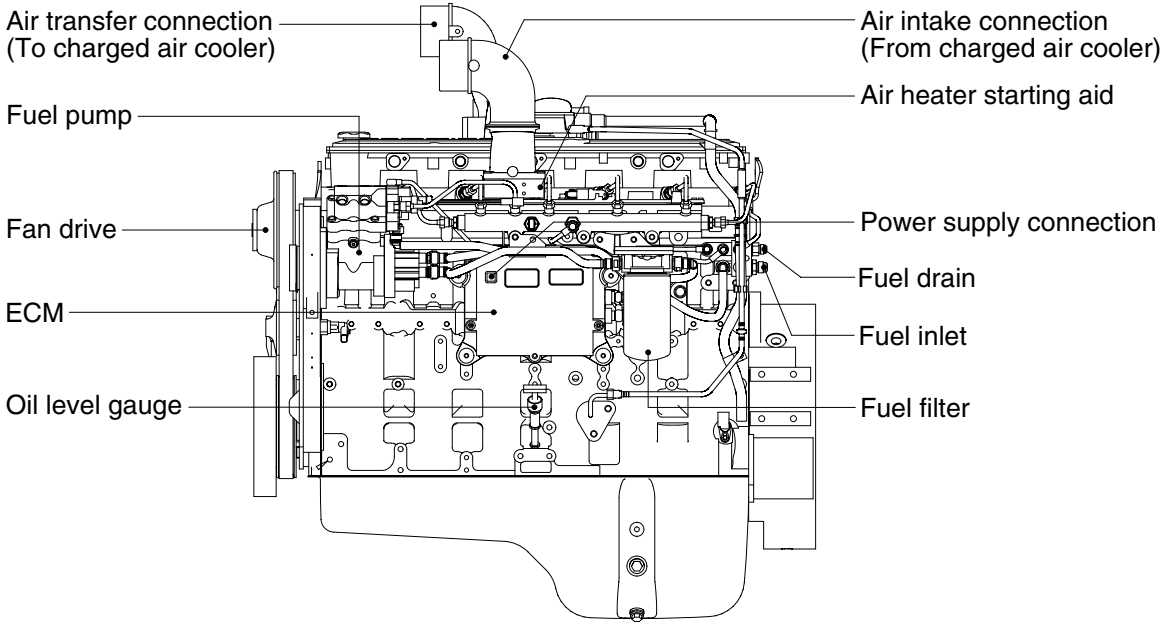
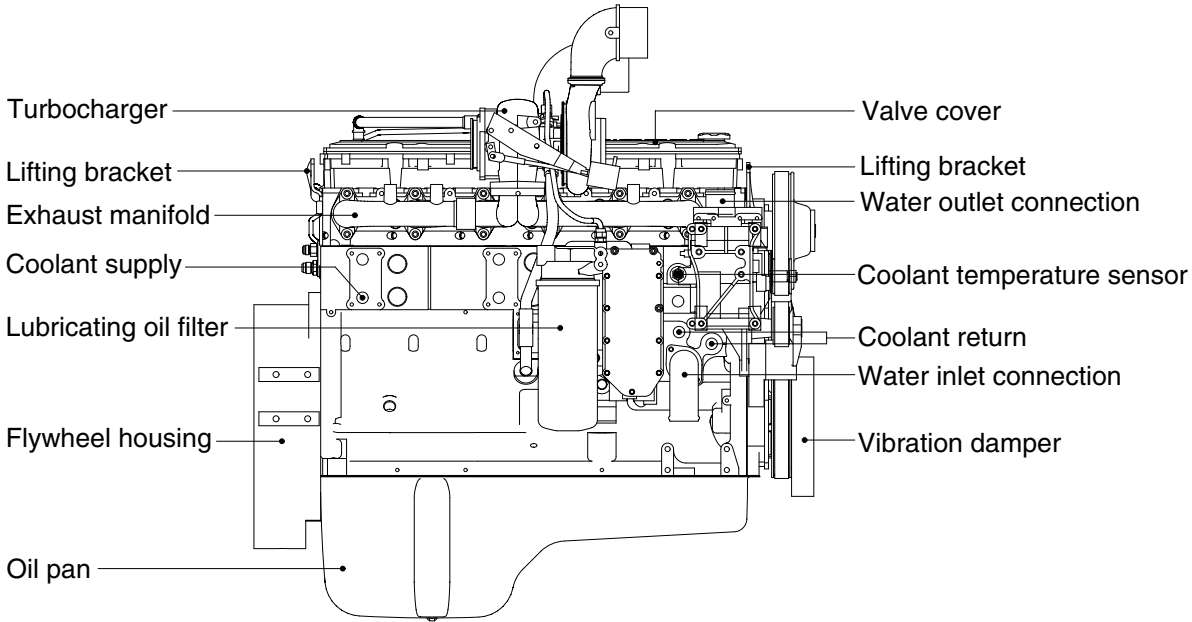


Group 1 Structure and Function ..... 2-1

# SECTION 2 ENGINE

## GROUP 1 STRUCTURE AND FUNCTION

### 1. STRUCTURE



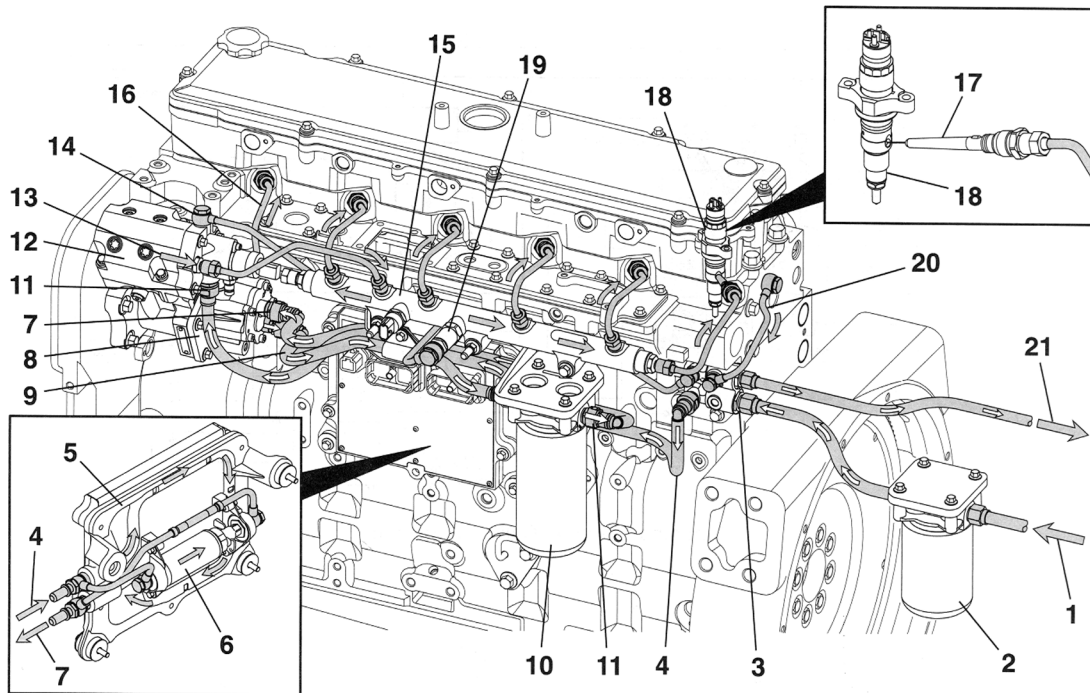
7707AEG01

- 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.

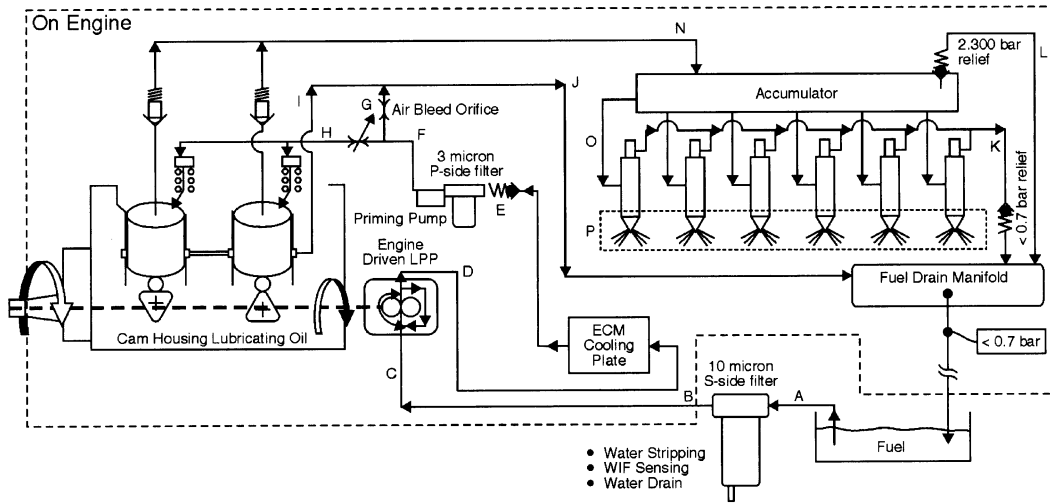
### 1) FUEL SYSTEM(Common rail fuel system)



7707AEG02

- |    |   |    |  |
|----|---|----|--|
| 1  | Fuel from fuel tank                         | 12 | High-pressure fuel pump                  |
| 2  | Fuel filter and water separator             | 13 | Fuel outlet from high-pressure pump      |
| 3  | Fuel supply connection                      | 14 | High-pressure pump drain flow connection |
| 4  | Fuel supply to ECM mounted fuel lift pump   | 15 | Fuel rail                                |
| 5  | ECM cooling plate                           | 16 | High-pressure injector supply lines      |
| 6  | ECM mounted fuel lift pump                  | 17 | High-pressure fuel connector             |
| 7  | Fuel outlet from ECM mounted fuel lift pump | 18 | Fuel injector                            |
| 8  | Fuel gear pump                              | 19 | Fuel pressure relief valve               |
| 9  | Fuel from gear pump to fuel filter          | 20 | Fuel injector drain flow line            |
| 10 | Primary fuel filter                         | 21 | Fuel return to fuel tank                 |
| 11 | Fuel inlet to fuel pump actuator            |    |  |

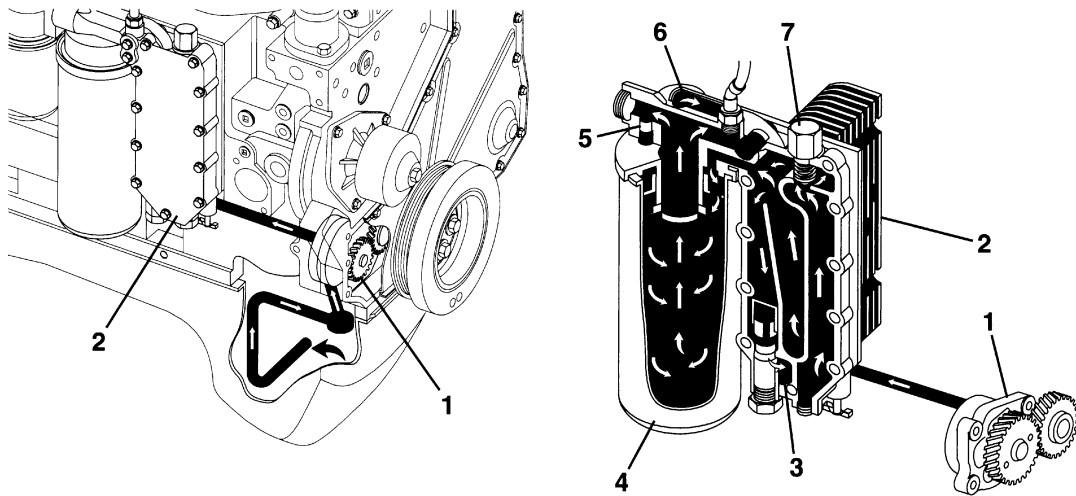
(1) Flow diagram



7707AEG02-1

2) LUBRICATING OIL SYSTEM

(1) Lubricating oil cooler flow

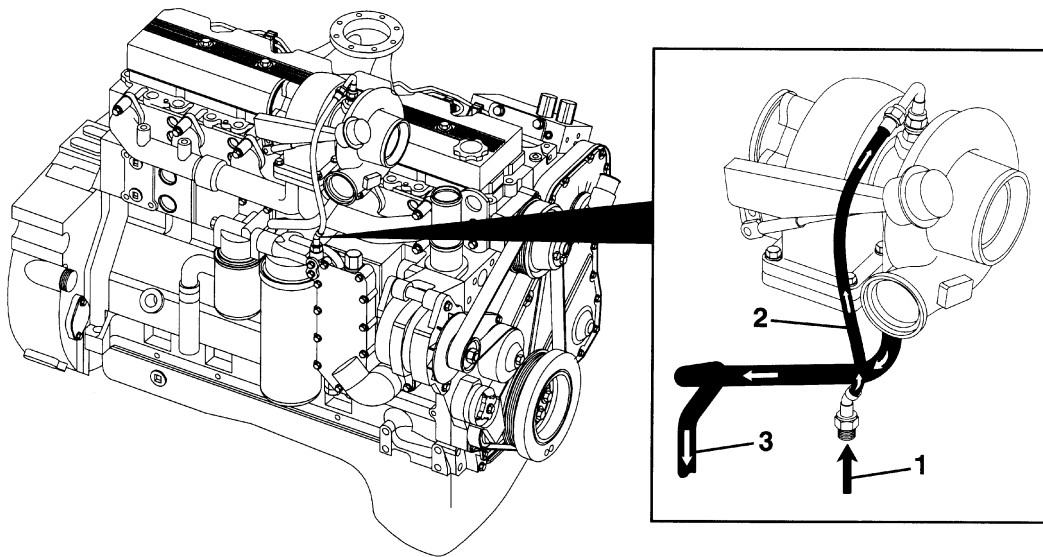


7707AEG03

- 1 Gerotor lubricating oil pump
- 2 Lubricating oil cooler
- 3 To lubricating oil pan

- 4 Full flow lubricating oil filter
- 5 Filter bypass valve
- 6 From lubricating oil filter

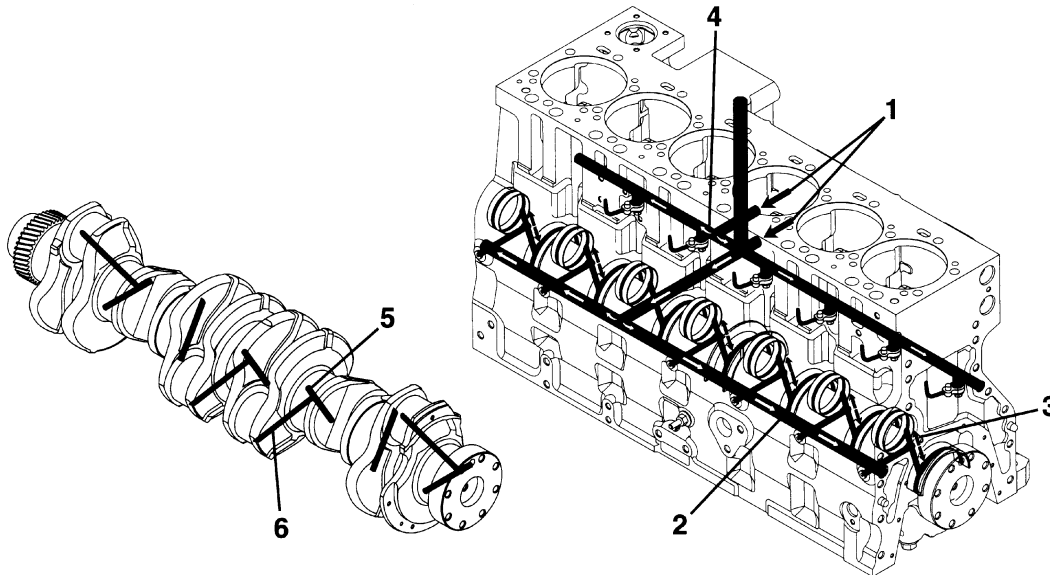
**(2) Lubrication for the turbocharger**



7707AEG04

- |   |                                     |   |                                    |
|---|-------------------------------------|---|------------------------------------|
| 1 | Lubricating oil supply from filter  | 3 | Turbocharger lubricating oil drain |
| 2 | Turbocharger lubricating oil supply |   |                                    |

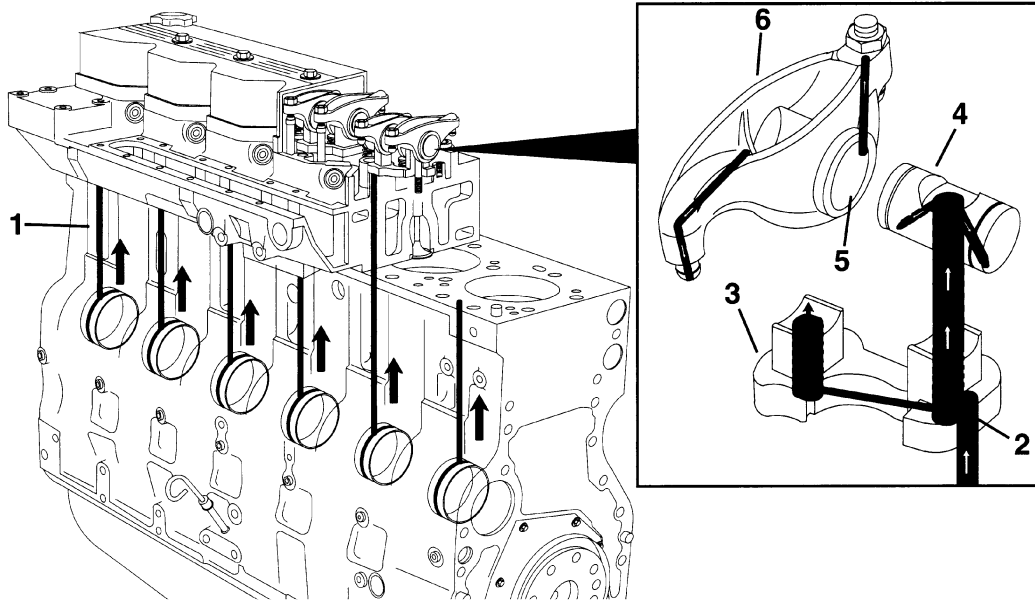
**(3) Lubrication for the power components**



7707AEG05

- |   |                             |   |                                 |
|---|-----------------------------|---|---------------------------------|
| 1 | From lubricating oil cooler | 4 | To piston cooling nozzle        |
| 2 | Main lubricating oil rifle  | 5 | From main lubricating oil rifle |
| 3 | To camshaft                 | 6 | To connecting rod bearing       |

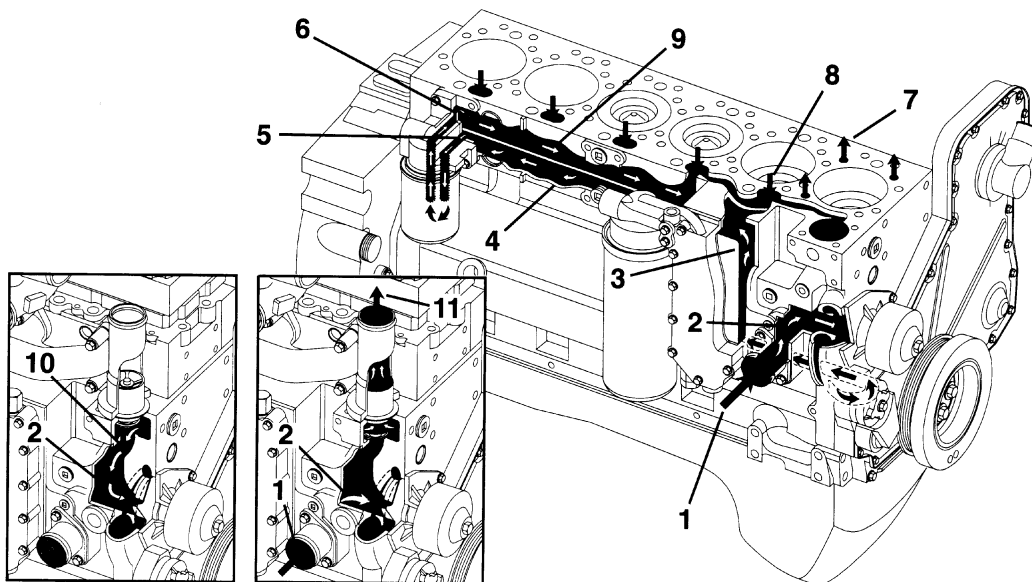
#### (4) Lubrication for the overhead



7707AEG06

- |                        |                      |
|------------------------|----------------------|
| 1 From cam bushings    | 4 Rocker lever shaft |
| 2 Transfer slot        | 5 Rocker lever bore  |
| 3 Rocker lever support | 6 Rocker lever       |

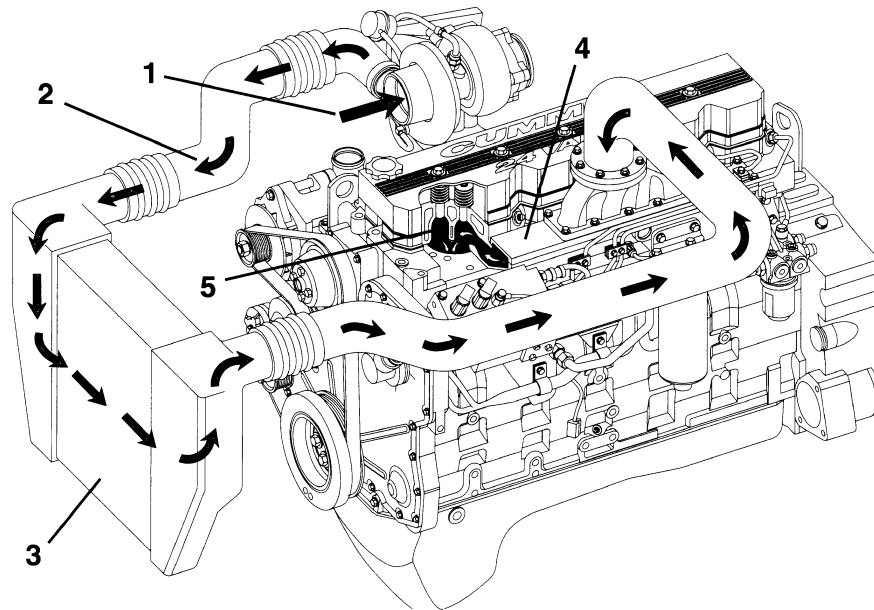
#### 3) COOLING SYSTEM



7707AEG07

- |   |                                     |
|---|-------------------------------------|
| 1 Coolant inlet from radiator                 | 7 Coolant supply to cylinder head   |
| 2 Water pump suction                          | 8 Coolant return from cylinder head |
| 3 Coolant flow through lubricating oil cooler | 9 Block upper water manifold        |
| 4 Block lower water manifold(to cylinders)    | 10 Thermostat bypass                |
| 5 Coolant filter inlet                        | 11 Coolant return to radiator       |
| 6 Coolant filter outlet                       |                                     |

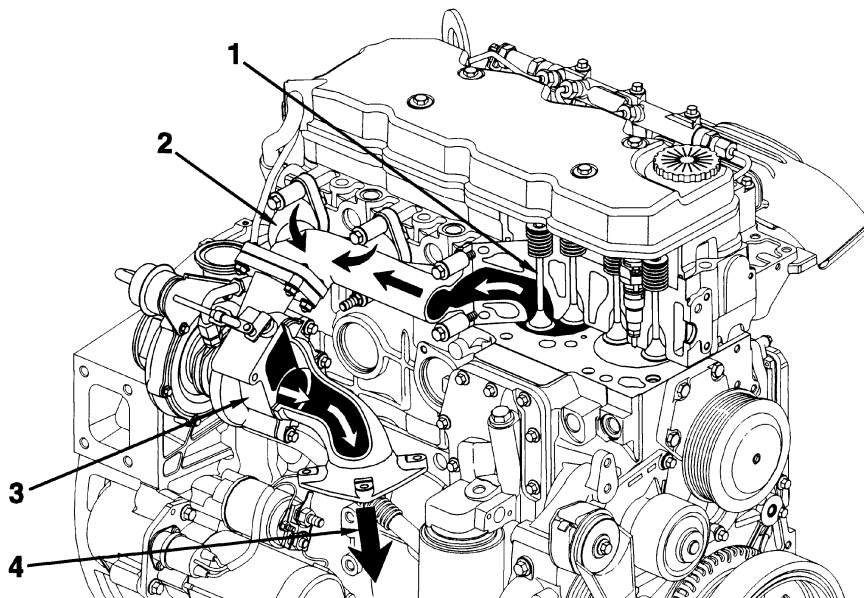
#### 4) AIR INTAKE SYSTEM



7707AEG08

- |   |                                       |   |   |
|---|---------------------------------------|---|---|
| 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



7707AEG09

- |   |                              |   |                             |
|---|------------------------------|---|-----------------------------|
| 1 | Exhaust valve                | 3 | Dual-entry turbocharger     |
| 2 | Exhaust manifold(pulse type) | 4 | Turbocharger exhaust outlet |