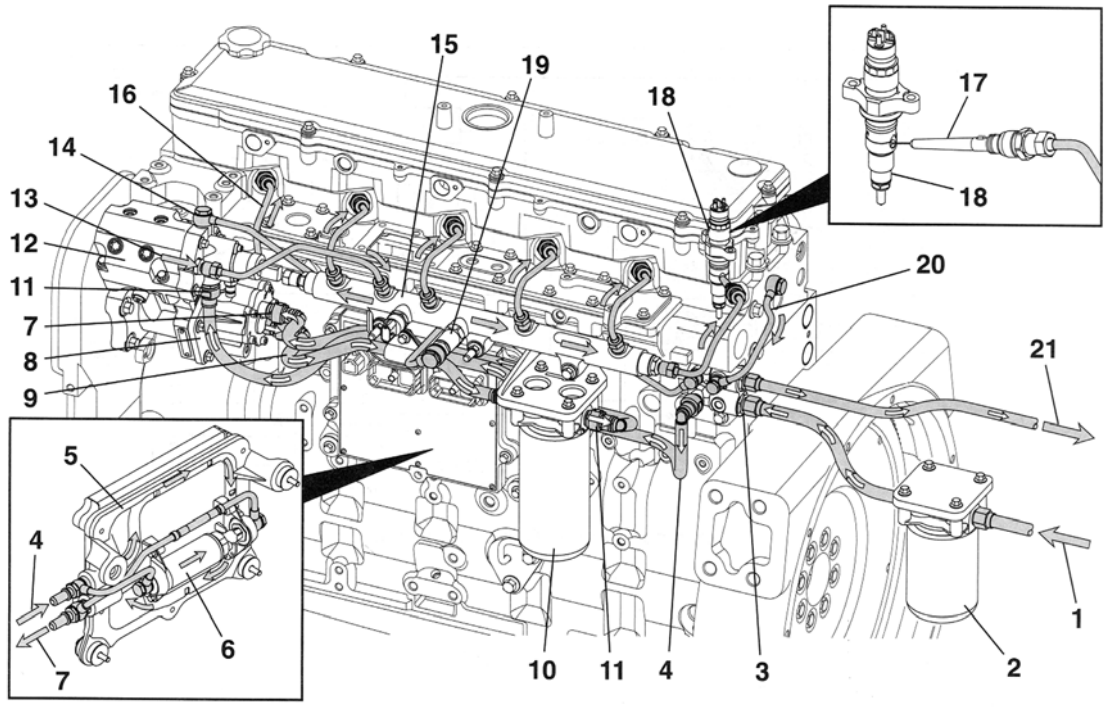
SECTION 2 ENGINE

GROUP 1 STRUCTURE AND FUNCTION

1. SYSTEM DIAGRAMS

The following drawings show the flow through the engine systems.

1) FUEL SYSTEM

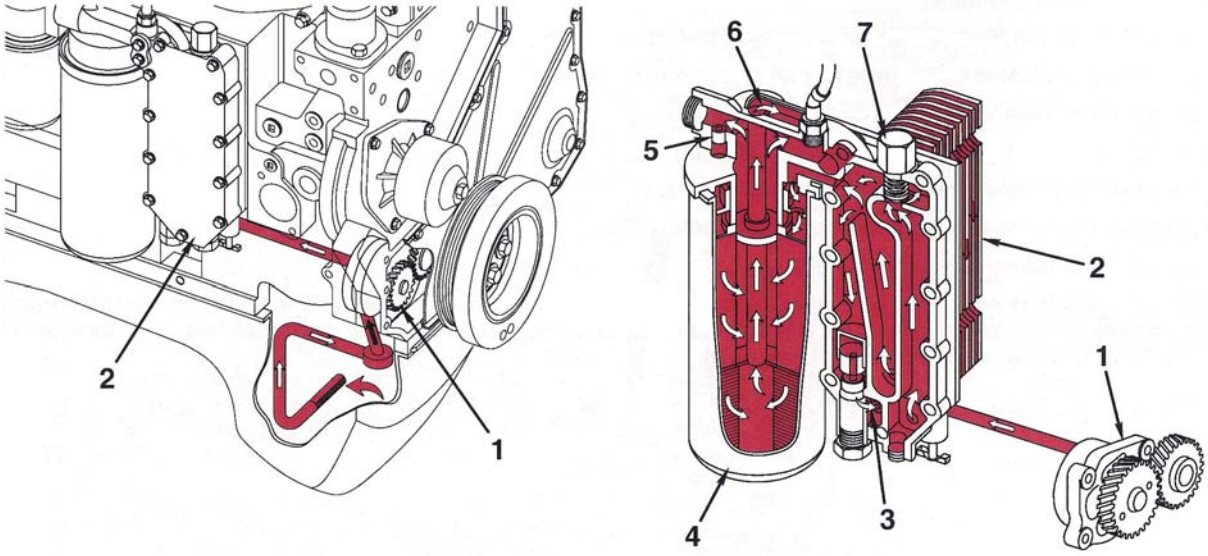


7707AEG02

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

2) LUBRICATING OIL SYSTEM

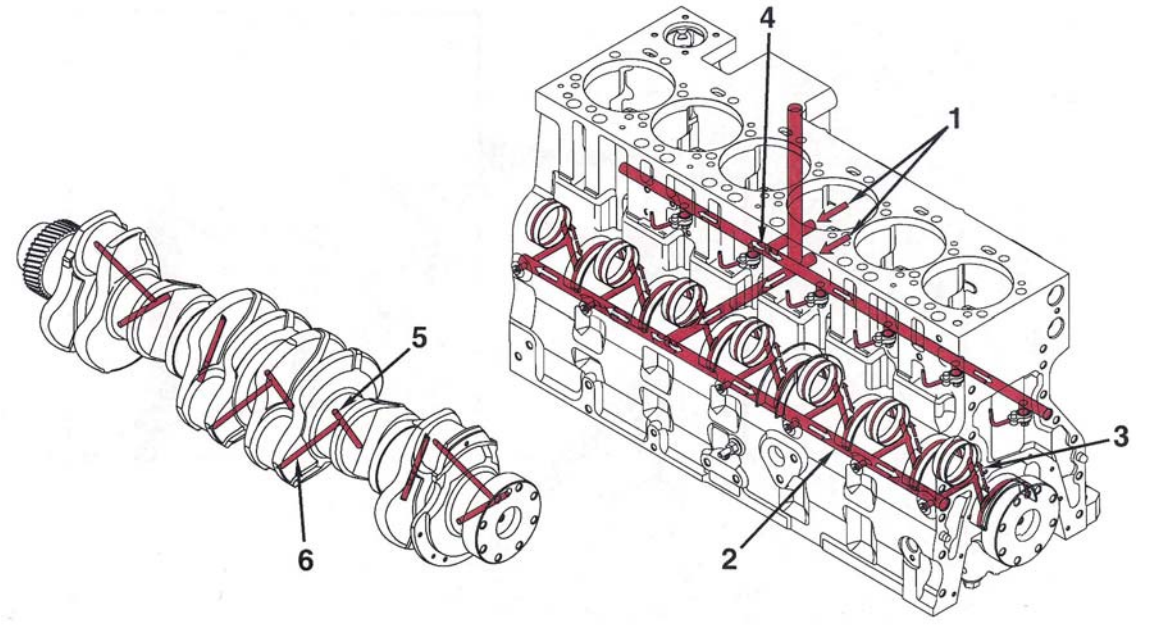
(1) Lubricating oil cooler flow



7709A2EG03

1 Gerotor lubricating oil pump
2 Lubricating oil cooler
3 Bypass oil to lubricating oil pan
4 Full flow lubricating oil filter
5 Filter bypass valve
6 From lubricating oil filter to main oil rifle
7 Oil thermostat

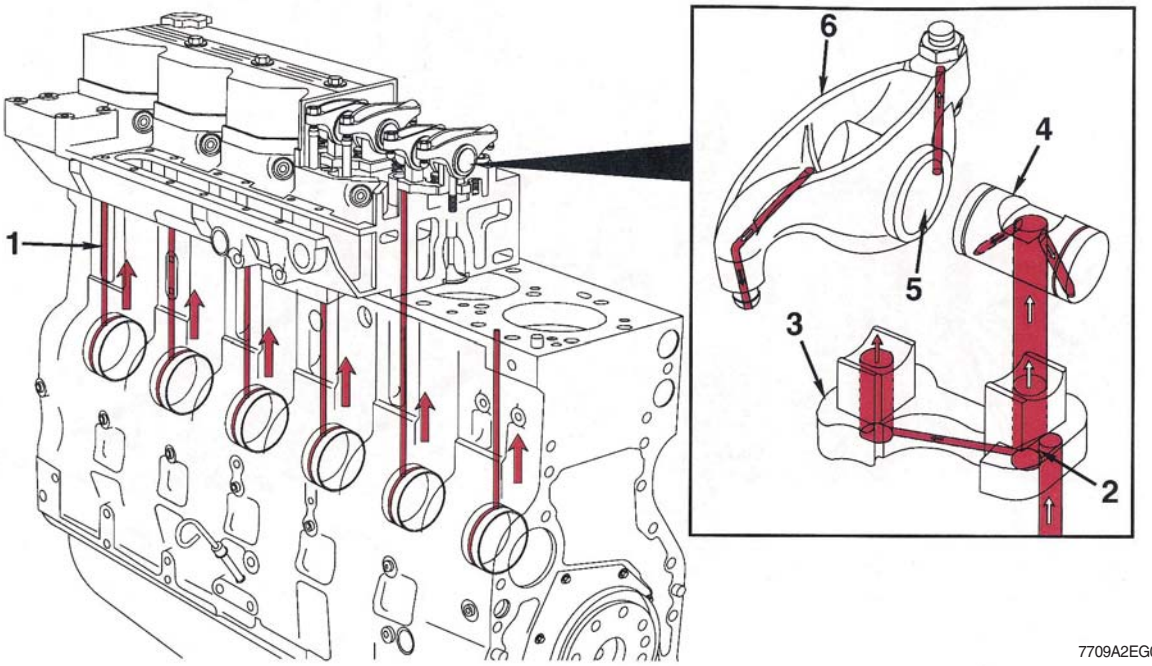
(2) Lubrication for power components



7709A2EG04

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

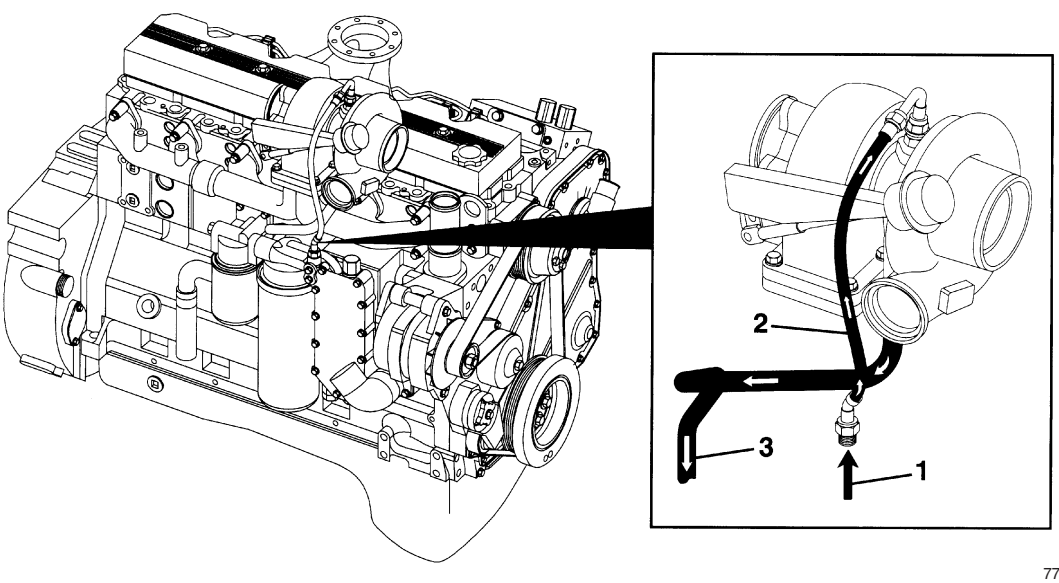
(3) Lubrication for the overhead



7709A2EG05

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

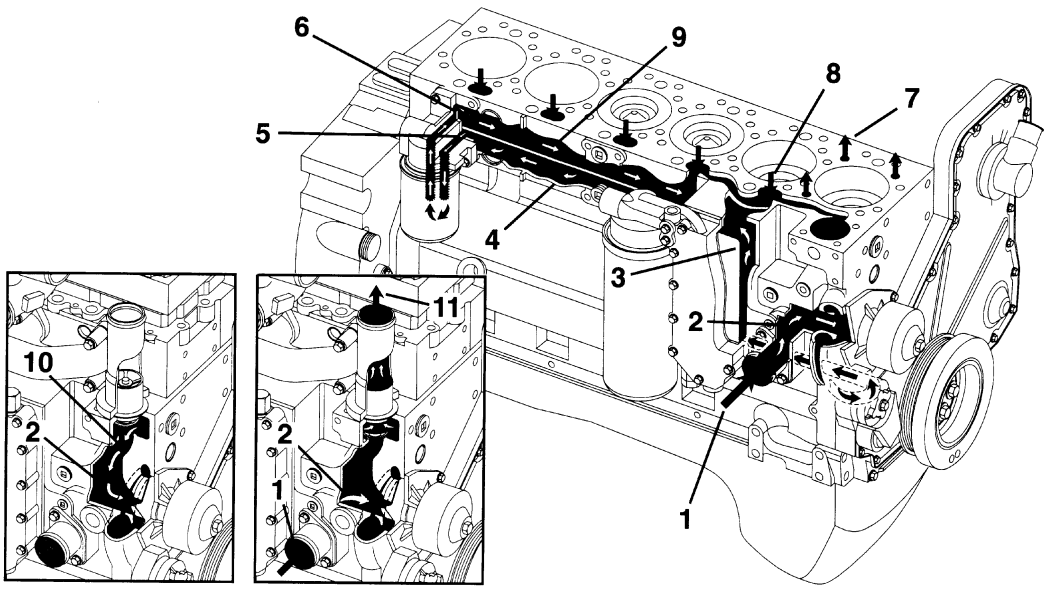
(4) Lubrication for the turbocharger



7707AEG04

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

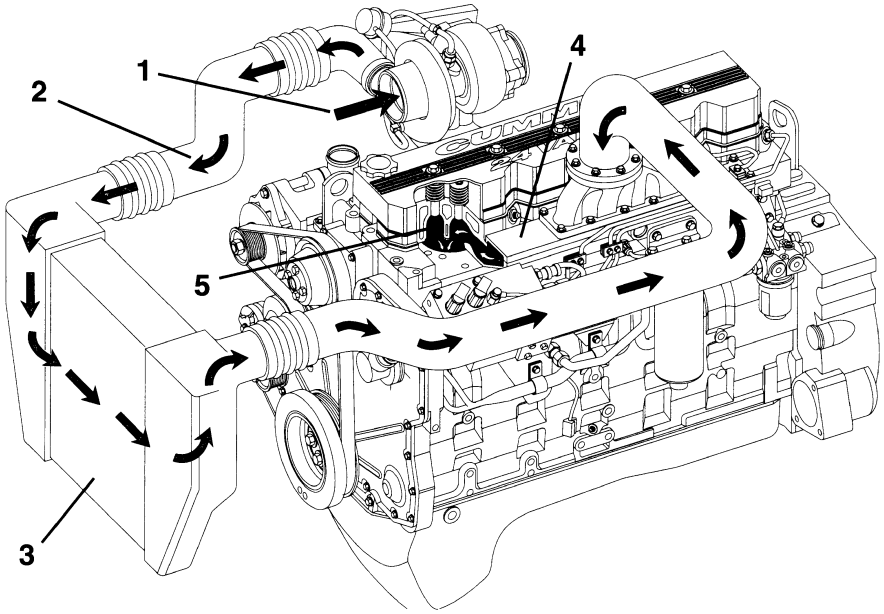
3) COOLING SYSTEM



7707AEG07

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

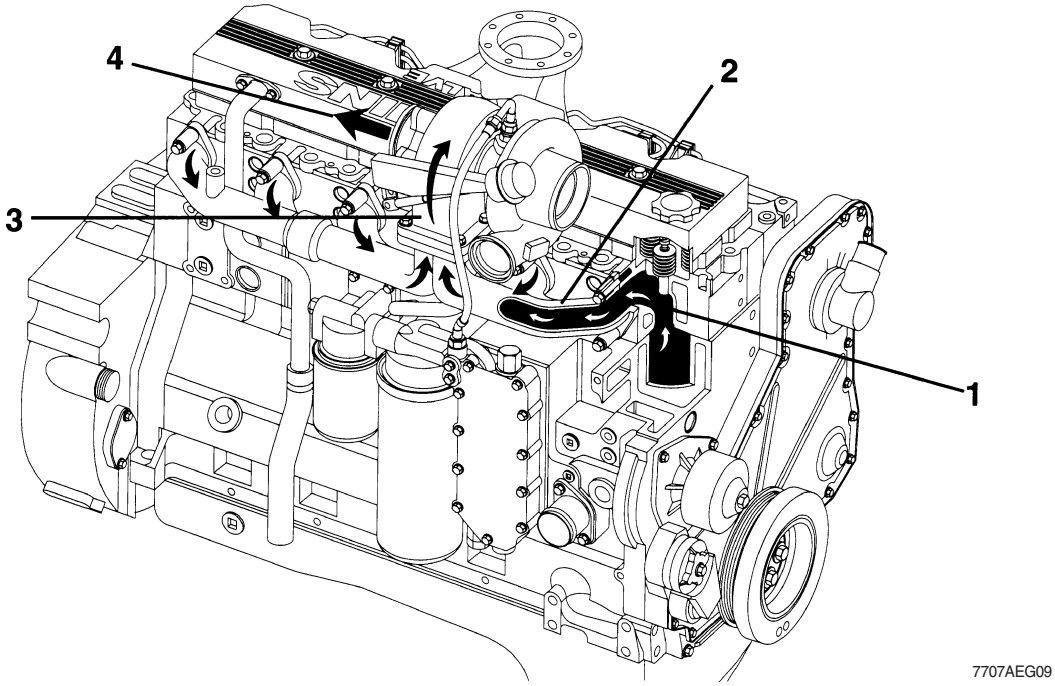
4) AIR INTAKE SYSTEM



7707AEG08

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

5) EXHAUST SYSTEM



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

GROUP 2 ENGINE SPEED & STALL RPM

1. TEST CONDITION

1) Normal temperature of the whole system
   - Coolant : Approx 80˚C (176˚F)
   - Hydraulic oil : 45 ± 5˚C (113 ± 10˚F)
   - Transmission oil : 75 ± 5˚C (167 ± 10˚F)
2) Normal operating pressure : See page 6-57.

2. SPECIFICATION

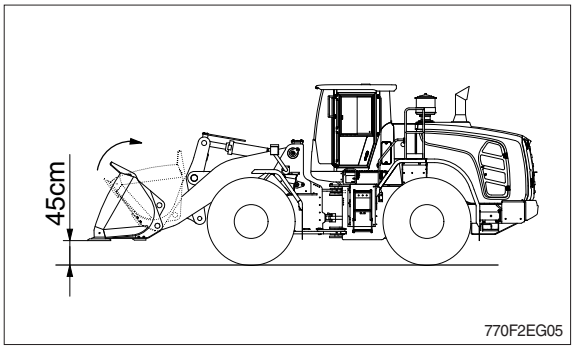
Engine speed, rpm (P mode)						Remark
Low idle	High idle	Pump stall	Converter stall	Full stall	Fan motor	
900±25	2050±50	2050±70	1800±70	1770±100	950±50	

3. ENGINE RPM CHECK

Remark : If the checked data is not normal, it indicates that the related system is not working properly. Therefore, it is required to check the related system pressure : See page 6-51.

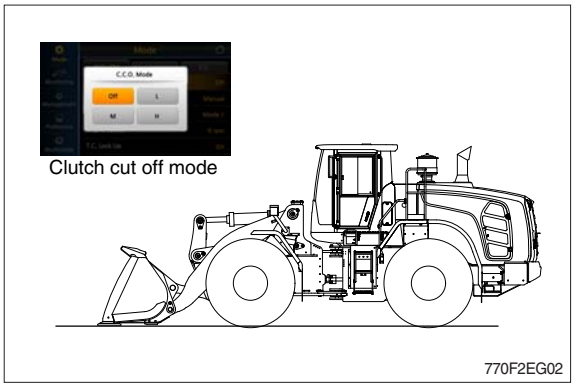
1) Pump stall rpm

- Start the engine and raise the bucket approx 45 ㎝ (1.5 ft) as the figure.
- Press the accelerator pedal fully and operate the bucket control lever to the retract position fully.
- Check the engine rpm at the above condition.



2) Convertor stall rpm

- Start the engine and lower the bucket on the ground as the figure.
- Set the clutch cut off mode at the OFF position.
- Press the brake pedal and accelerator pedal fully.
- Shift the transmission lever to the 4th forward position.
- Check the engine rpm at the above condition.



3) Full stall rpm

- Start the engine and raise the bucket approx 45 ㎝ (1.5 ft) as the figure.
- Set the clutch cut off mode at the OFF position.
- Press the brake pedal and accelerator pedal fully .
- Shift the transmission lever to the 4th forward position and operate the bucket lever to the retract position fully.
- Check the engine rpm at the above condition.