

LUBE OIL SYSTEM OF GM LOCOMOTIVE

1-Main lubricating system,

2- piston cooling system

3-scavenging oil system.

4- Turbo lube system.

(soak back system)

Each system has its own oil pump.

PUMP DISCHARGES

MAIN: 867 LPM(7-8 KG AT 8TH NOTCH)

PISTON COOLING: 413 LPM

(5-6 KG AT 8TH NOTCH)

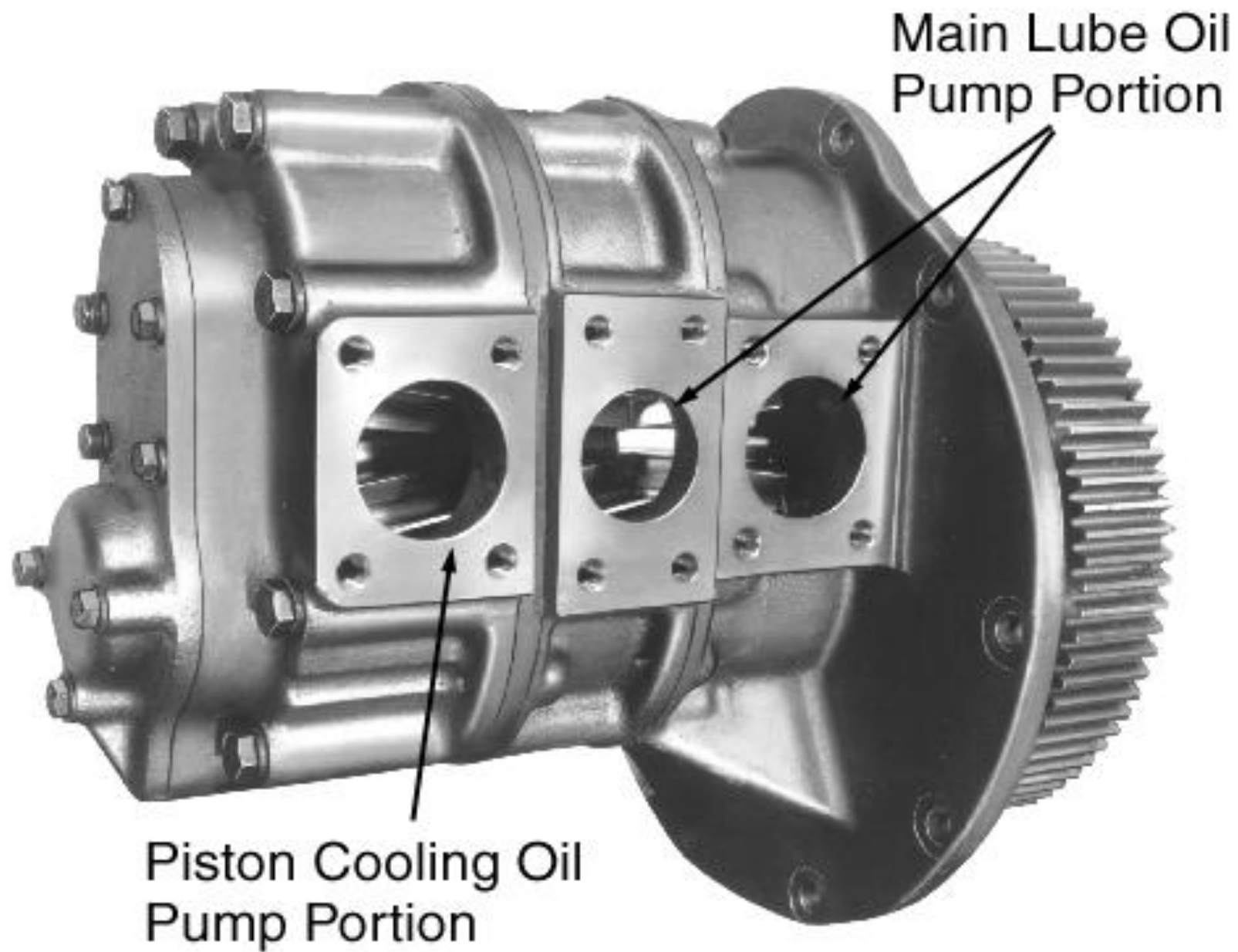
SCAVENGING-1703 LPM

SOAK BACK-11 LPM

Main lube oil pump
and
piston cooling oil pump

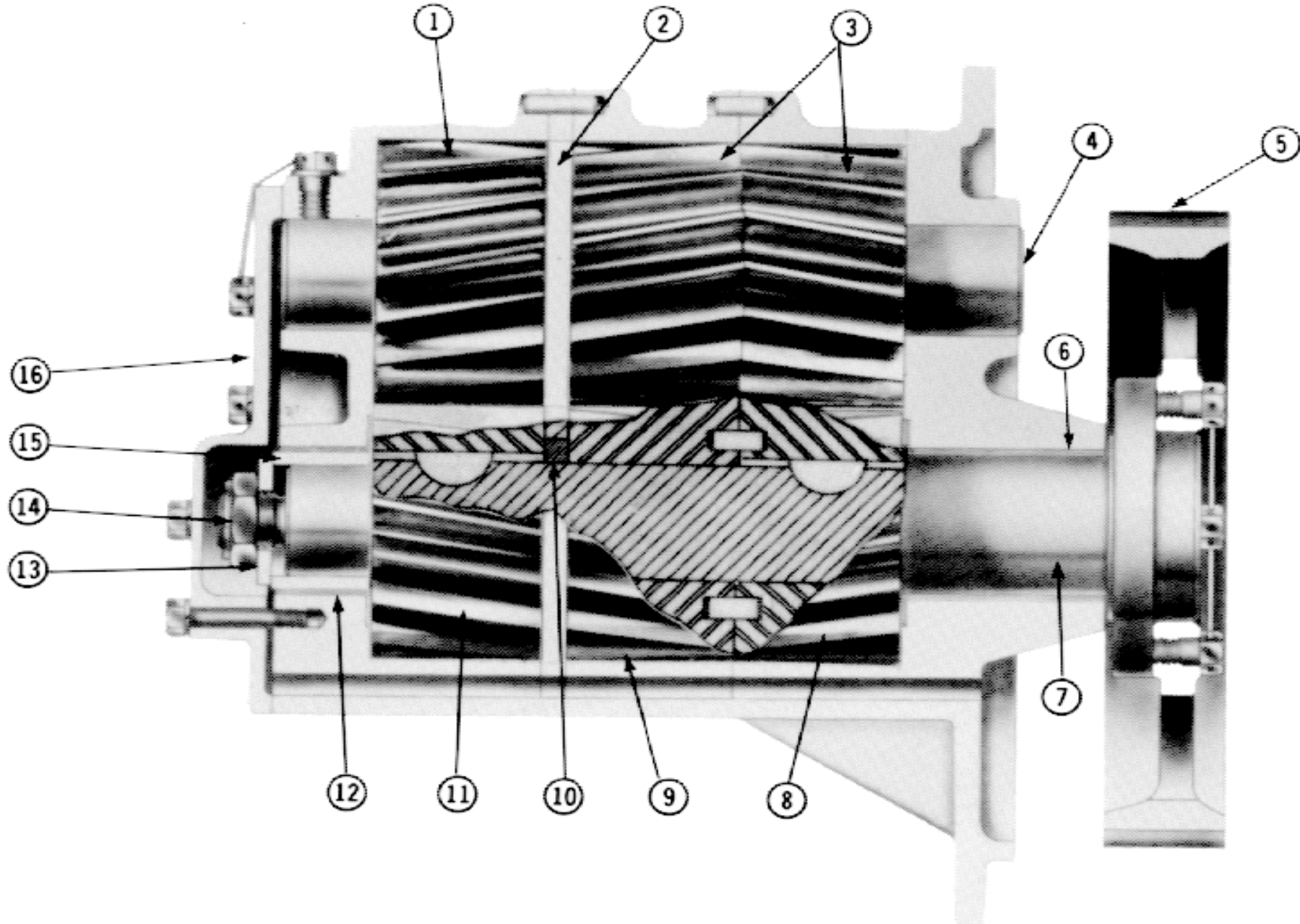
The main lube oil pump and piston cooling oil pump, although individual pumps, are both contained in one housing and driven from a common drive shaft.

These pumps take oil from the strainer housing at the right front of the engine.



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Main Lube Oil and Piston Cooling Oil Pump, Cross-Section

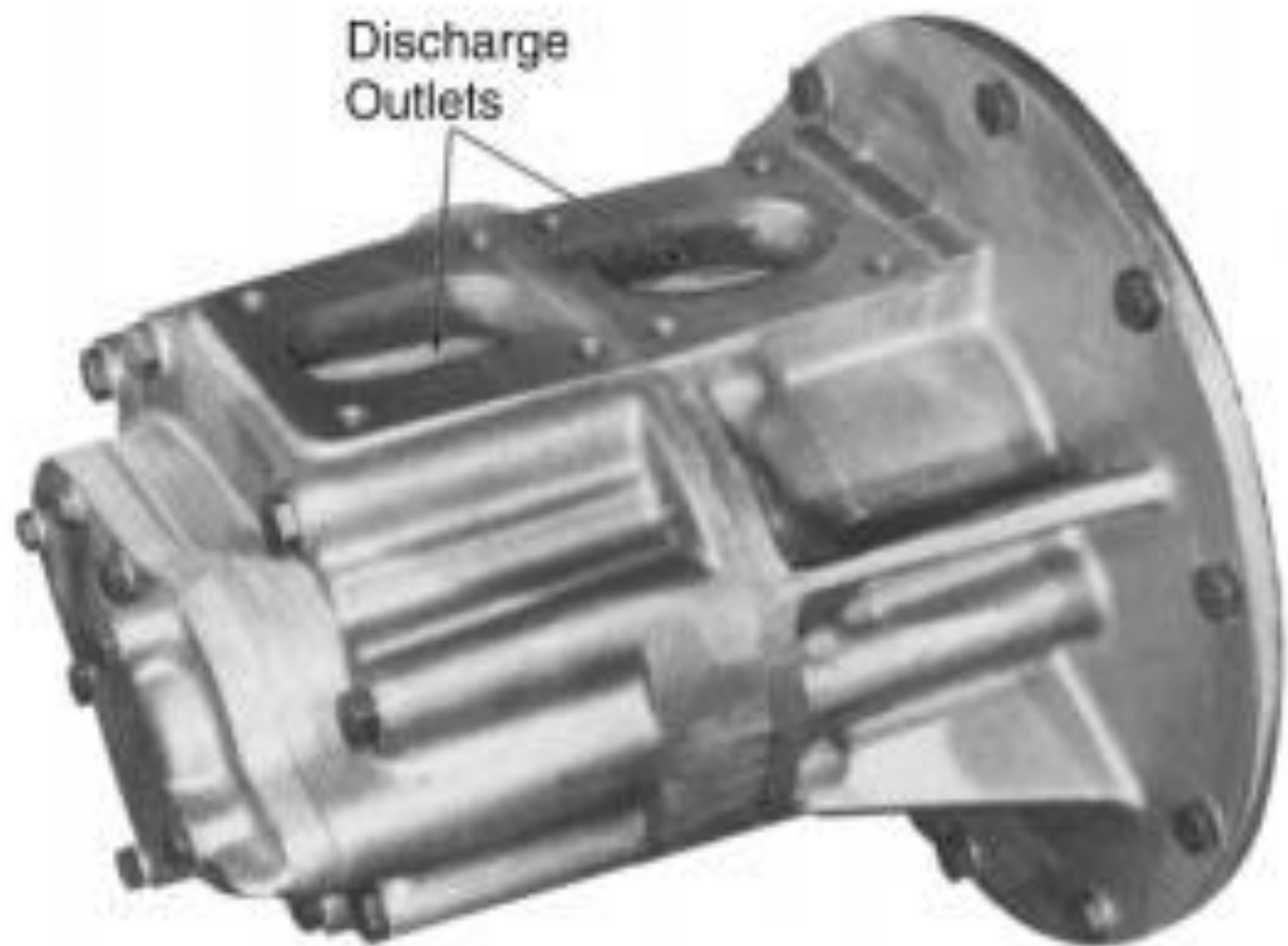


1. Piston Cooling Driven Gear
2. Spacer Plate
3. Lube Oil Pump Driven Gears
4. Idler Shaft
5. Drive Gear
6. Inner Bushing
7. Drive Shaft
8. Lube Oil Pump Drive Gear
9. Lube Oil Pump Drive Gear Assy.
10. Collar
11. Piston Cooling Drive Gear
12. Front Bushing
13. Washer
14. Shaft Nut
15. Shaft Sleeve
16. Cover

Scavenging oil pump

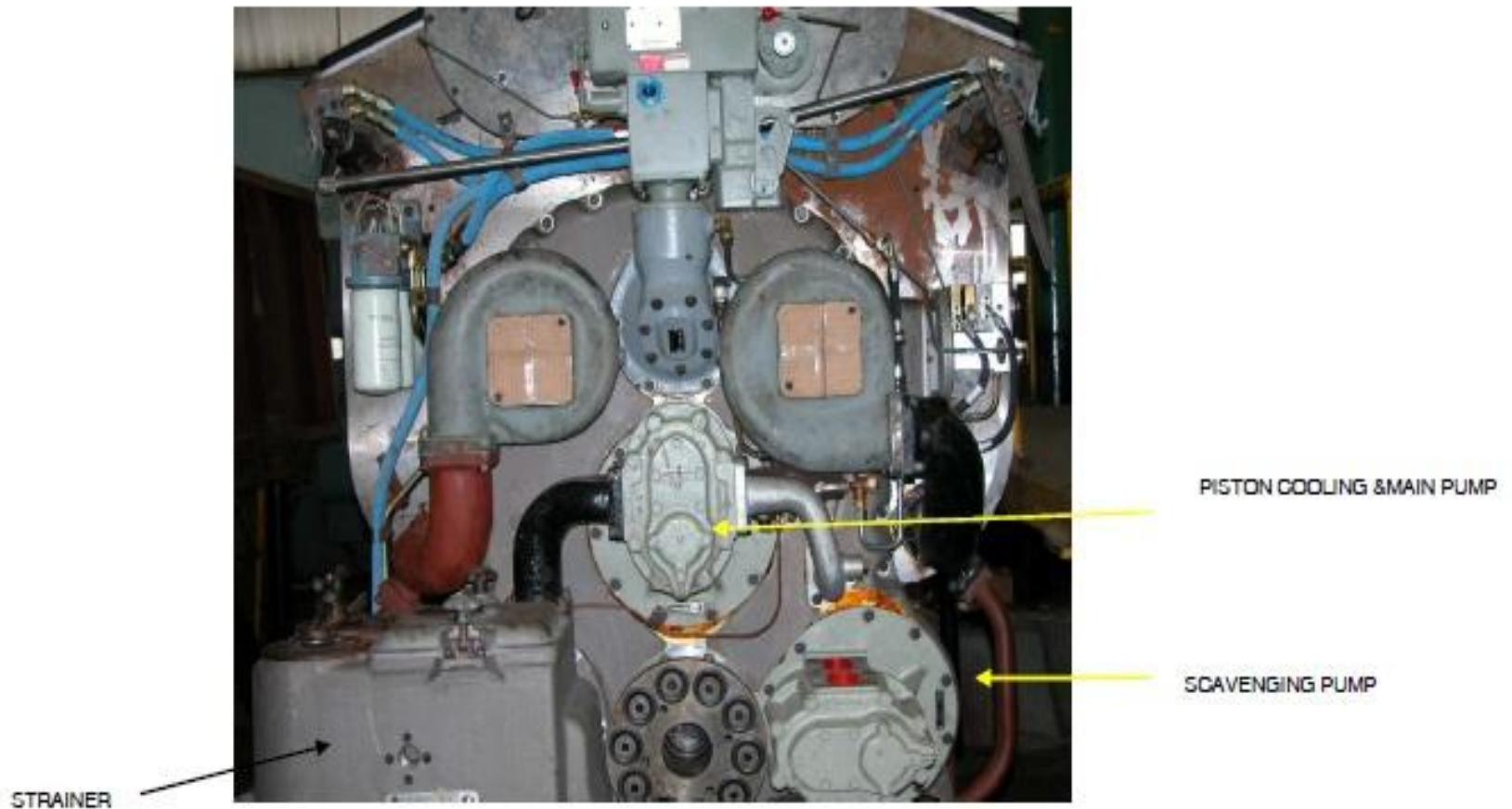
The scavenging oil pump is a separate pump which takes oil from the engine oil pan sump and pumps it through the off-engine lube oil filter and cooler assemblies before returning to supply the strainer housing. All the pumps are driven from the accessory gear train at the front of the engine.

Discharge
Outlets

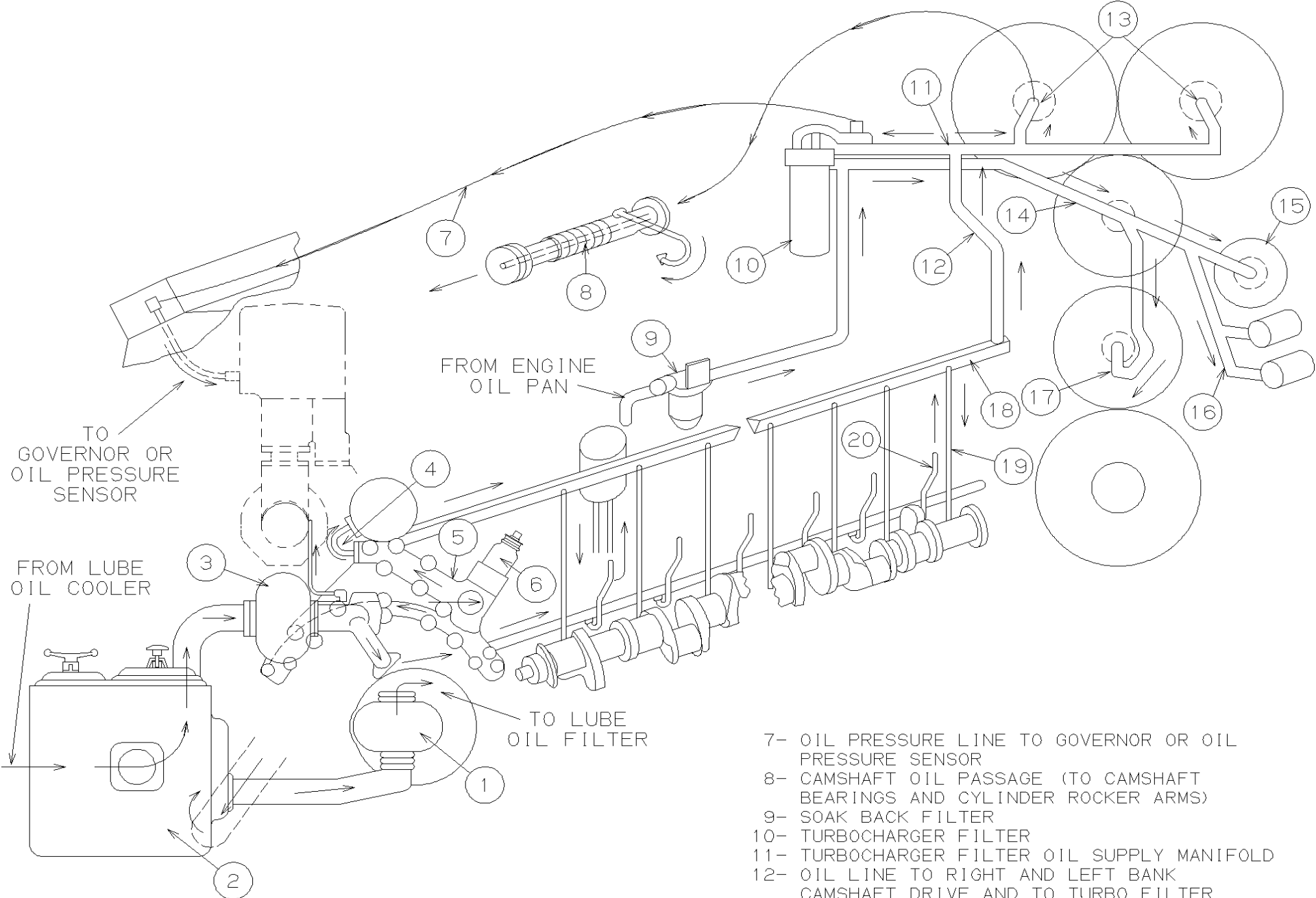


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ACCESSORY VIEW



MAIN LUBRICATING OIL SYSTEM



FROM ENGINE OIL PAN

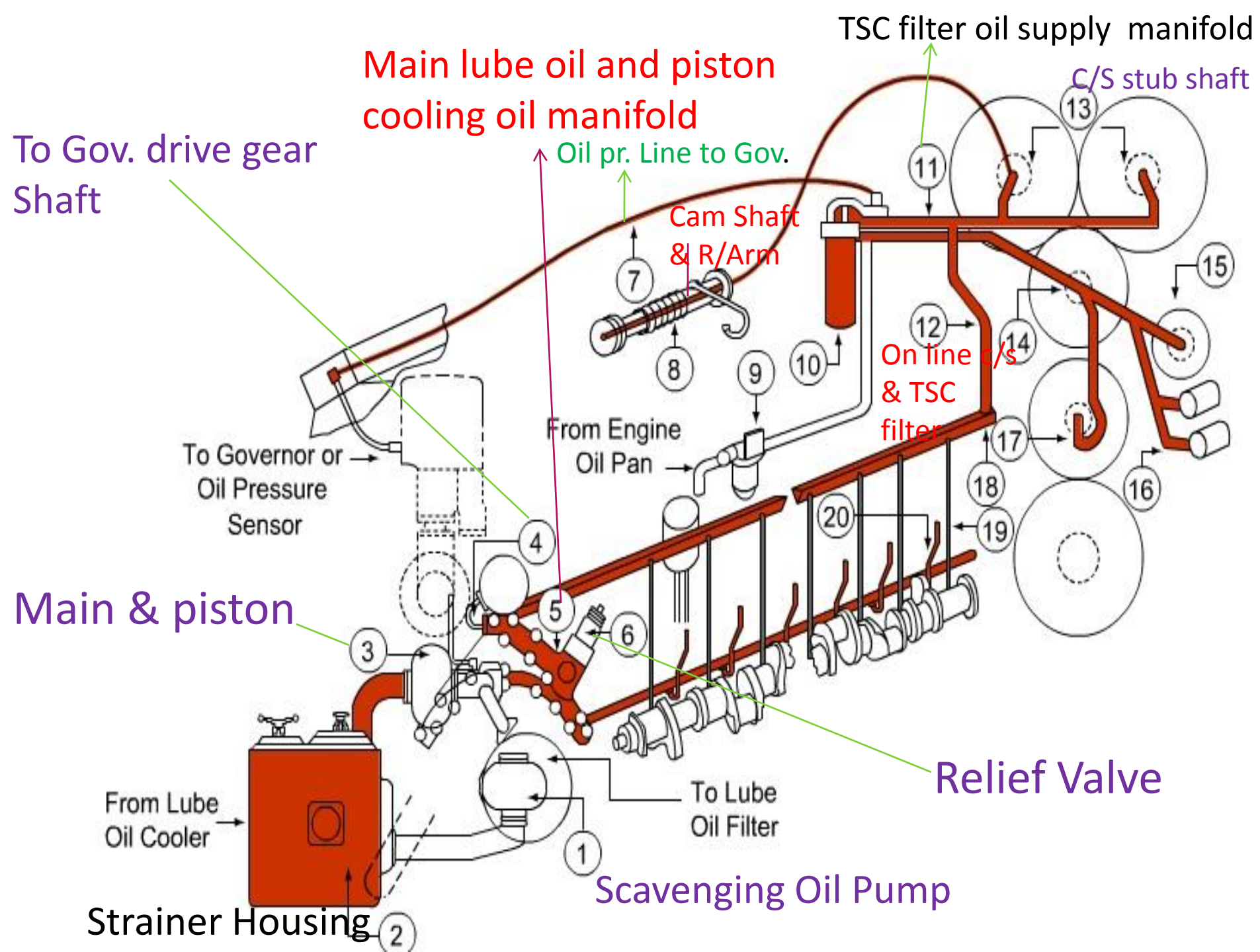
TO GOVERNOR OR OIL PRESSURE SENSOR

FROM LUBE OIL COOLER

TO LUBE OIL FILTER

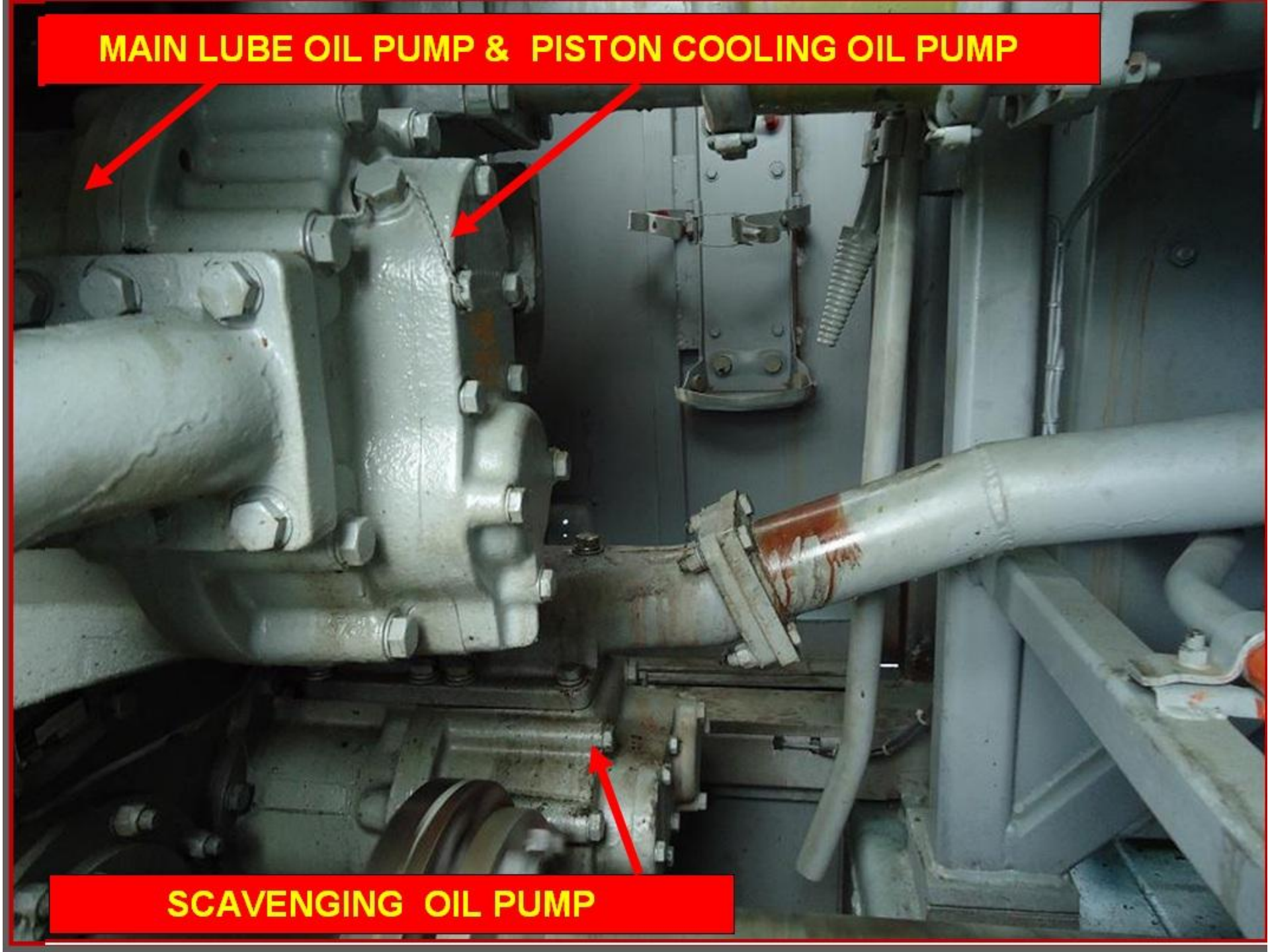
1- SCAVENGING OIL PUMP
2- OIL STRAINER HOUSING

- 7- OIL PRESSURE LINE TO GOVERNOR OR OIL PRESSURE SENSOR
- 8- CAMSHAFT OIL PASSAGE (TO CAMSHAFT BEARINGS AND CYLINDER ROCKER ARMS)
- 9- SOAK BACK FILTER
- 10- TURBOCHARGER FILTER
- 11- TURBOCHARGER FILTER OIL SUPPLY MANIFOLD
- 12- OIL LINE TO RIGHT AND LEFT BANK CAMSHAFT DRIVE AND TO TURBO FILTER
- 13- OIL LINES TO CAMSHAFT STUBSHAFTS
- 14- OIL LINE TO NO. 2 IDLER GEAR STUBSHAFT
- 15- TURBOCHARGER GEAR TRAIN
- 16- TURBOCHARGER BEARING OIL SUPPLY LINES
- 17- OIL LINE TO NO. 1 IDLER GEAR STUBSHAFT
- 18- OIL LINE TO TURBOCHARGER BEARING
- 19- OIL LINE TO TURBOCHARGER BEARING
- 20- OIL LINE TO TURBOCHARGER BEARING



MAIN LUBE OIL PUMP & PISTON COOLING OIL PUMP

SCAVENGING OIL PUMP





LUBE OIL STRAINER (COARSE & FINE)

LUBE OIL FILTER DRAIN PIPE

The main lubricating oil system supplies oil under pressure to most of the moving parts of the engine.

Oil is pumped into the main oil manifold which is located above the crankshaft, and extends the length of the engine.

Maximum oil pressure is limited by a relief valve in the passage between the pump and the main oil manifold.



MAIN LUBE OIL PUMP (DISCHARGE)

PISTON COOLING OIL PUMP (DISCHARGE)

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Upon starting and idling the engine, it should be noted that the oil pressure builds up almost immediately. In the event of cold oil, the pressure may rise to the relief valve setting of approximately 125 psi.



LUBE OIL RELIEF VALVE

The minimum oil pressure is approximately 8-12 psi at idle and 25-29 psi at full speed. In the event of insufficient oil pressure, either a shutdown built into the governor or an EMDEC sensor will automatically protect the engine by shutting it down. Maximum pressure is determined by the relief valve setting.

Oil tubes at the center of each main bearing frame conduct oil from the main manifold to the upper half of the crankshaft bearings.

Drilled passages in the crankshaft supply oil to the connecting rod bearings, damper, and accessory drive gear at the front of the crankshaft. Leak-off oil from the adjacent main bearings lubricates the crankshaft thrust bearings.

Oil from the main lube oil manifold enters the gear train at the rear of the engine, at the idler gear stubshaft bracket.

Oil passages in the stubshaft bracket distribute the oil. One passage conducts oil to both the right and left bank camshaft drive gear stubshaft brackets and to a manifold connected to the turbocharger oil filter.

After passing through the filter, the oil enters the return line in the manifold and flows back to the idler gear stub shaft.

A passage in the idler gear stub shaft bracket directs lube oil to the upper and lower stub shaft bearings. Filtered oil enters the turbocharger oil system from the upper idler gear stub shaft.

An oil passage in the turbocharger filter head, parallel to the filter output line, is connected to a passage in the turbocharger oil manifold.

On governor controlled engines, an oil pressure line is connected between the manifold passage and the low oil pressure device in the governor.

On EMDEC controlled engines, a sensor is used to detect low oil pressure directly at the manifold passage or connected to it by an oil pressure line.

Oil enters the hollow bore camshafts from the camshaft drive stub shafts.

Radial holes in the camshaft conduct oil to each camshaft bearing. An oil line from one camshaft bearing at each cylinder supplies oil to the rocker arm shaft, rocker arm cam follower assemblies, hydraulic lash adjusters, and the injector rocker arm button. Leak-off oil returns to the oil pan through passages between the top deck and the oil pan.

Passages in the turbocharger conduct oil to the turbocharger bearings, idler gear, planet gear assembly, and auxiliary drive bore.