

Lubricating and cooling oil system

System oil is the common designation of a lubricating oil used for different purposes in systems in and on the engine. The system oil is used as:

1. Circulating oil

- Lubrication of crosshead bearings, crankshaft bearings, main and thrust bearings
- Cooling of pistons
- Turbochargers
- Axial vibration damper

2. Hydraulic oil

- Hydraulic power supply unit (HPS)
- Exhaust valves
- Hydraulic cylinder unit (HCU)
- Moment compensator (if installed)
- Torsional vibration damper (if installed)

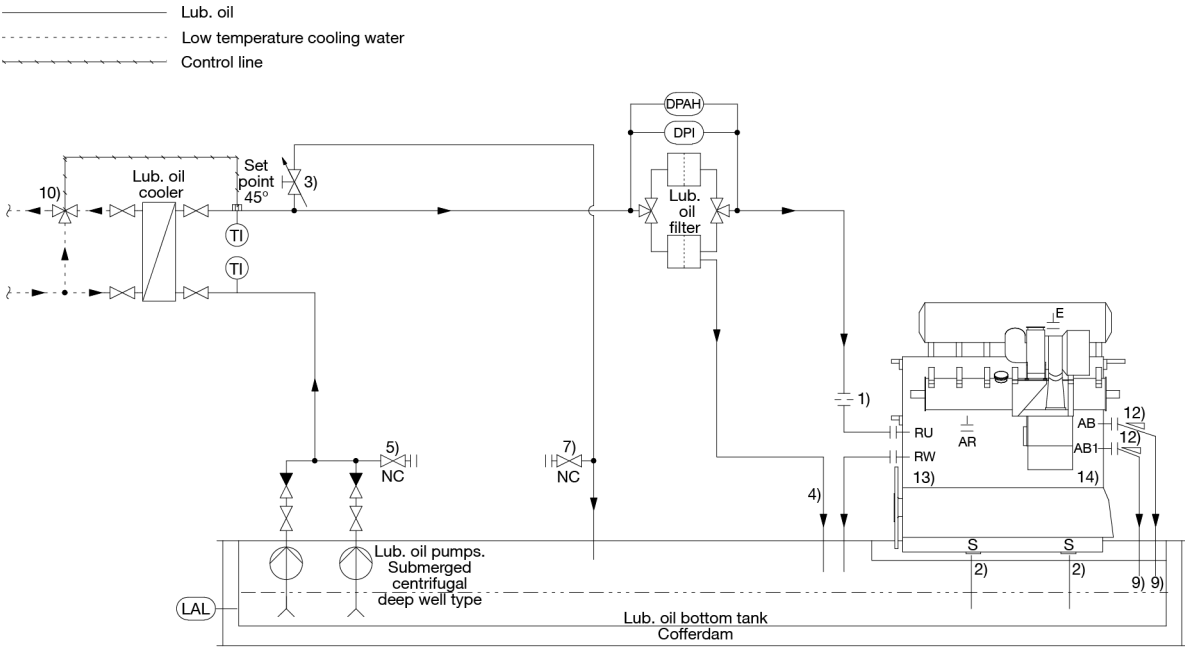
3. Control oil

- Activates (control) valves, etc.

4. Sealing oil in dual-fuel engines

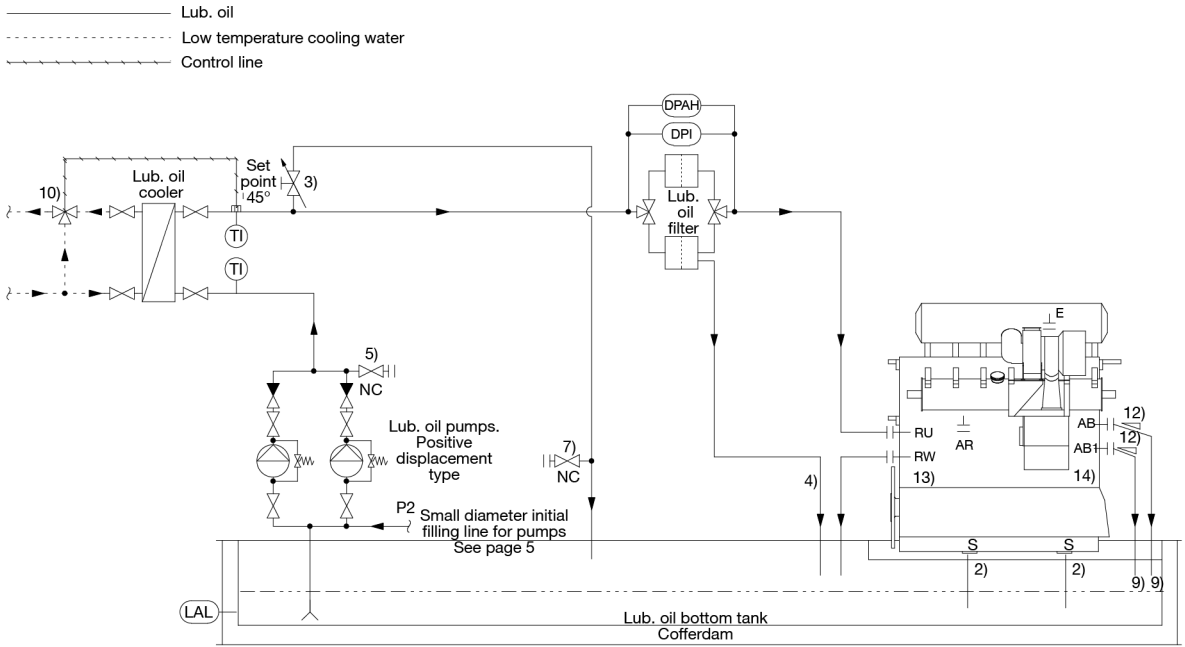
- Confines low-flashpoint (LF) fuel in LF-systems (various systems and types).

Two different lubricating and cooling oil system arrangements are available, depending on whether the lubricating oil pump is a submerged centrifugal deep-well pump (Fig. 8.01.01), or a positive displacement pump (Fig. 8.01.02).



576 88 00-0.12.0

Fig. 8.01.01: Lubricating and cooling oil system arrangement with a sub-merged centrifugal deep-well lubricating oil pump and cofferdam below the lubricating oil bottom tank

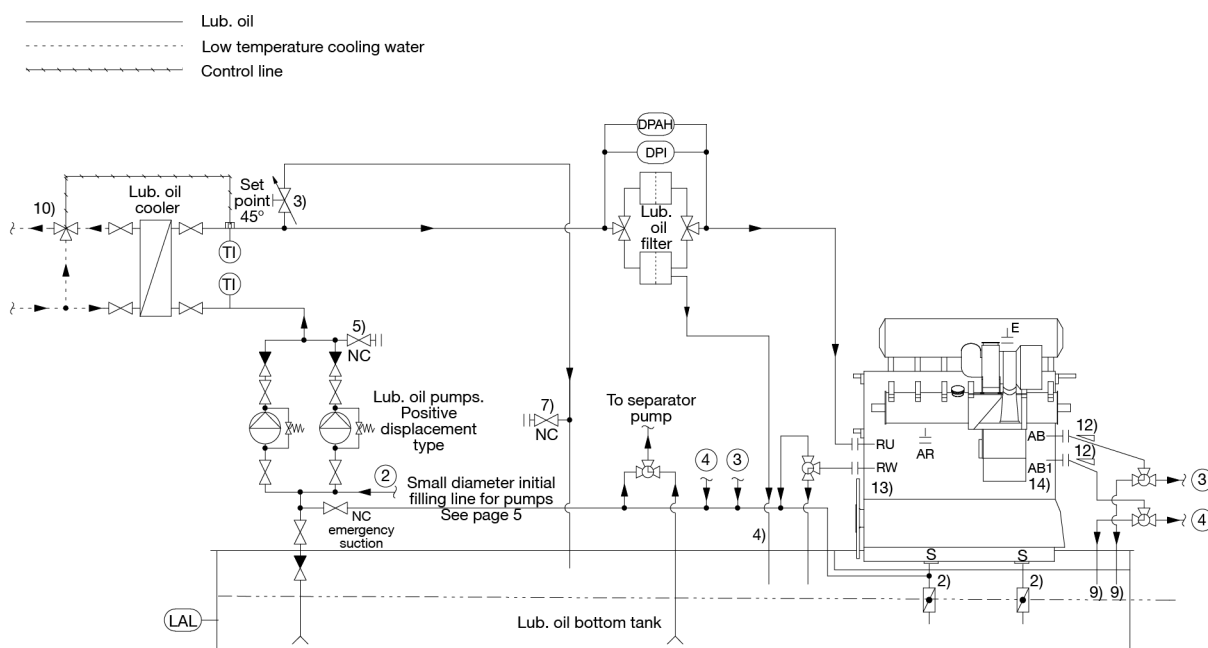


576 88 00-0.12.0b

Fig. 8.01.02: Lubricating and cooling oil system arrangement with a positive displacement lubricating oil pump and cofferdam below the lubricating oil bot-tom tank

The main lubricating oil pump pumps lubricating oil from a bottom tank to the lubricating oil cooler, through a full-flow filter, to engine inlet 'RU', see Figs. 8.01.01–8.01.02. From the engine, the oil collects in the oil pan from where it is drained off to the lubricating oil bottom tank through engine outlet 'S'. For the design of the lubricating oil bottom tank, see Chapter 8.06.

If there is limited space below the engine, and the necessary space for a cofferdam is not available (subject to classification approval), the arrangement in Fig. 8.01.03 must be used.



576 88 00-0.12.0c

Fig. 8.01.03: Lubricating and cooling oil system arrangement with a positive displacement lubricating oil pump but no cofferdam below the lubricating oil bottom tank

If the lubricating oil tank gets damaged, the arrangement in Fig. 8.01.03 enables emergency suction for both the lubricating oil pump and the separator pump from the lubricating oil bottom tank.

Fig. 8.07.01 shows vent arrangement for engine crankcase, turbochargers, and lubricating oil bottom tank.

For external pipe connections, we prescribe a maximum oil velocity of 1.8 m/s.

Notes on Figs. 8.01.01 – 8.01.03 are described in the following.

Orifice (Note 1 on Fig. 8.01.01)

An orifice should be installed if the inlet pressure to the engine exceeds the figure for "Normal service high" given in the "Guidance Values for Automation". Size, refer to document No.: 5774354-8 "Orifice sizes".

Lubricating oil outlet (Note 2 on Figs. 8.01.01, 8.01.02 and 8.01.03)

Refer to a separate document for the specific engine design specification.

Manual deaerating valve (Note 3 on Figs. 8.01.01, 8.01.02 and 8.01.03)

A manual venting arrangement with a small diameter should be installed at the highest point. The location can be after or before the lubricating oil cooler.

Backflushing drain (Note 4 on Figs. 8.01.01, 8.01.02 and 8.01.03)

The backflushing line must terminate in the lubricating oil bottom tank close to the separator pump suction line.

**Lubricating oil sample connection
(Note 5 on Figs. 8.01.01, 8.01.02 and 8.01.03)**

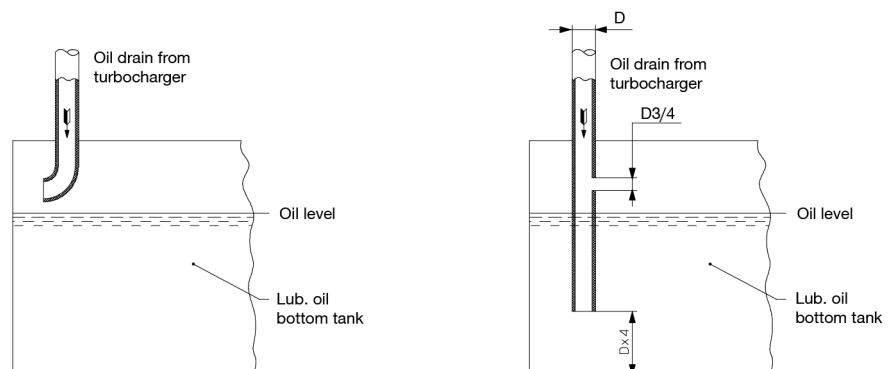
DN25 valve connection for oil sample purposes during flushing/flow cleaning of the lubricating oil system at the shipyard and during normal operation.

**Lubricating oil sample connection
(Note 7 on Figs. 8.01.01, 8.01.02 and 8.01.03)**

DN10 valve connection for oil sample purposes.

**Drain from turbocharger
(Note 9 on Figs. 8.01.01, 8.01.02 and 8.01.03)**

As return oil is pressurised by sealing air from the turbocharger, the outlet in the lubricating oil bottom tank must release the air above the oil level as shown in one of the examples in Fig. 8.01.04.



576 88 00-0.12.0d

Fig. 8.01.04: Oil drain from turbocharger

Thermostatic valve location (Note 10 on Figs. 8.01.01, 8.01.02 and 8.01.03)

If the lubricating oil cooler is seawater cooled, the valve must be located on the lubricating oil side.

**Venting pipe routing, inclination
(Note 12 on Fig. 8.01.01, 8.01.02 and 8.01.03)**

Refer to Project Guide Section 8.07.

RW connection (Note 13 on Figs. 8.01.01, 8.01.02 and 8.01.03)

The connection is only used when either Alfa Laval or Hydac type hydraulic control oil (HCO) filter is installed at the engine.

AB1 connection (Note 14 on Figs. 8.01.01, 8.01.02 and 8.01.03)

Connection only used when Everlence exhaust gas recirculation (EGR) blowers are installed for EGR engines.