

Main Engine Lubricating Oil Outlet diaphragm

In 2007, the Swedish Club published a Member alert, The "Forgotten" Rubber membrane, where we reported about a number of main engine claims caused by water contaminated lubricants. The incidents caused by failure of the lubricating oil outlet diaphragm connecting the main engine crankcase and sump tank.

We have recently seen an increasing number of incidents regarding these "forgotten" parts of the machinery, hence the need to address this topic again.

The engine configurations concerned are all 2-stroke main engines from Wärtsilä and MAN Diesel A/S.

Consequences

In all cases excessive quantities of water on the tank top have entered the main engine sump tank via the defective diaphragm and subsequently contaminated the main engine lubricating oil system, resulting in severe damage to the main engine bearings and journals.

The repair cost for the engine damage can easily reach millions of dollars. This obviously does not take into account loss of time, towage, transshipment of cargo and other commercial embarrassment caused by the casualty.

Manufacturers' recommendations

The design of both Wärtsilä and MAN Diesel A/S lubricating oil outlet diaphragms are quite similar. Wärtsilä has recommended maintenance as follows:

- Inspection/replace at 40,000 running hours or at dry dock.

MAN Diesel A/S, Denmark, has released a Service letter SL08-492/JVG, March 2008. In order to avoid water entering the main engine sump tank through a defect in the crankcase oil outlet, it is recommended to:

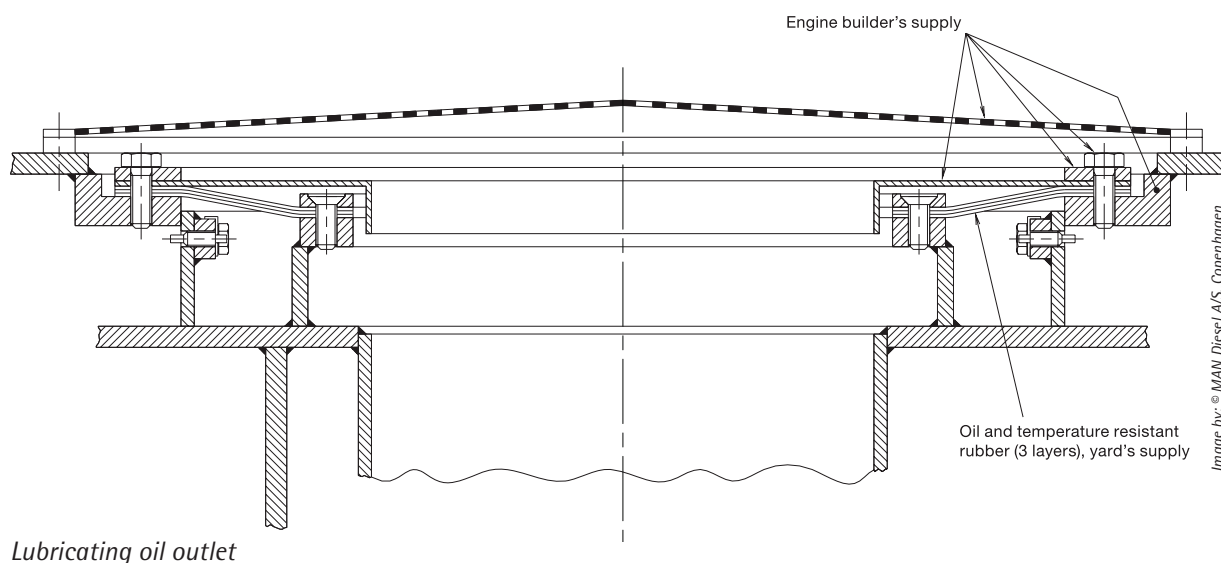
- Inspect the diaphragm sealing in the crankcase oil outlet every 32,000 hours of operation, and replace the diaphragm if indicated by the inspection.



Failed diaphragm



Deteriorated diaphragm



It should be stated that during construction of the ship, the parts in question are supplied by the yard, and not by the engine manufacturers.

Loss Prevention

All situations with excessive water on the tank top in connection with defective diaphragms are critical. During a dry-docking it is, for various reasons, more common to have water on the tank top than during normal operations.

In line with the recommendation issued by MAN Diesel A/S, Copenhagen, we recommend that all diaphragms are replaced in connection with every relevant scheduled inspection of the ship.

If heavy contamination of water is present in the system: (1) the lube oil in the sump tank must be transferred to a settling tank, (2) the sump tank and crank case should be cleaned, and (3) fresh oil filled to the level recommended by the engine maker.

Observations

Obviously all situations with excessive water on the tank top in connection with defective diaphragms are critical. During a dry-docking it is, for various reasons, more common to have water on the tank top than during normal operations.

In the recent incidents we have noted that none of the vessels had enough lubrication oil onboard to completely replenish the system.

The cost of inspection/replacement is minimal compared to the consequences if it's left unattended.

We would recommend to owners that spare diaphragms are kept onboard at all times.

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