Frank Mohn Services AS **No. 12 - 1994**

Service Bulletin

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Air Venting in Hydraulic System

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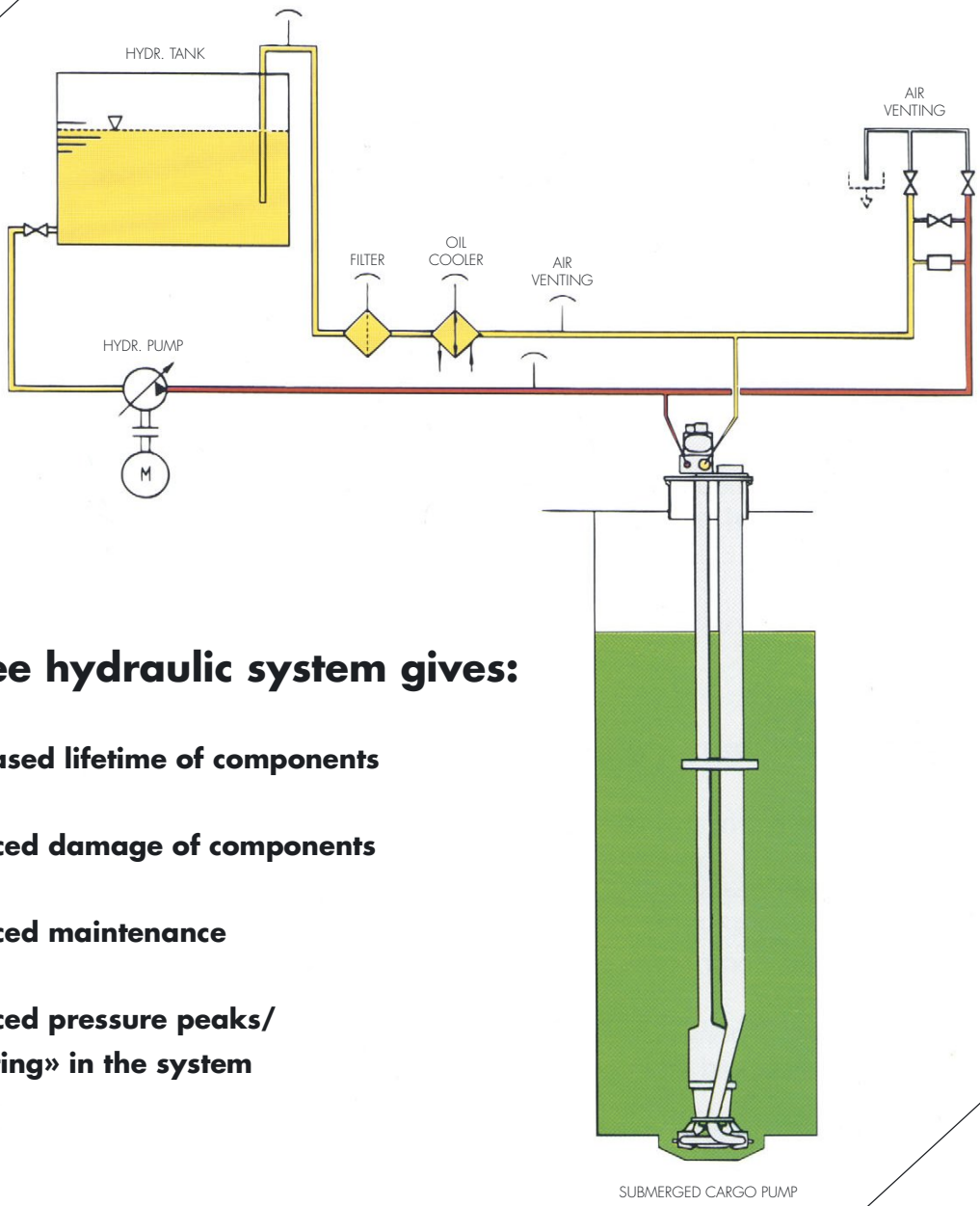


Air free hydraulic system gives:

- ✔ **Increased lifetime of components**
- ✔ **Reduced damage of components**
- ✔ **Reduced maintenance**
- ✔ **Reduced pressure peaks/ «hunting» in the system**

GENERAL

In this Service Bulletin we would like to highlight the importance of keeping your Hydraulic System **"air free"**, to avoid failure and in the worst case break-down of components.

Air in a hydraulic system is a contamination and is critical to the performance and lifetime.

Design practice of the hydraulic system foresees neither air in the oil nor air as free pockets in the piping system.

During commissioning at the shipyard, after oil filling and flushing, air venting is an important part of the "start-up procedure".

Air venting must be a part of your Periodical Maintenance Program,
and is important after every service.

Any air in the system will accumulate to "high points" in the system where vent cocks shall be installed.

Necessary time for air venting after service/repair must be included in the total scope of work, even if time schedule is limited.

HOW TO PREVENT AIR ENTERING INTO THE SYSTEM

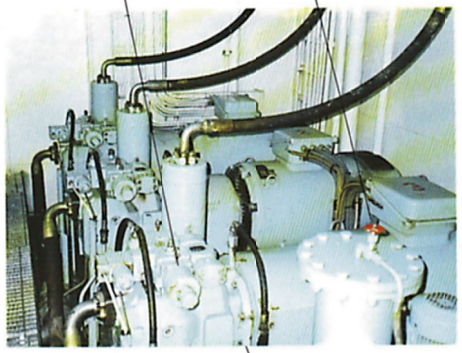
- Do not open a hydraulic system unless service/repair is required.

- After service/repair the air shall be vented as close to the actual component as possible to avoid any "locked-in" air pocket(s) to be mixed into the oil after start-up.
  - Air vent the component prior to opening service valves(s).

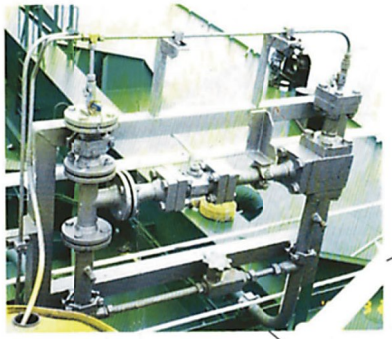
- Check that all connections, o-rings, gaskets, shaft seals and threads are tight.
  - Air can be sucked in from any opening to atmosphere.

Air venting on the variable pump

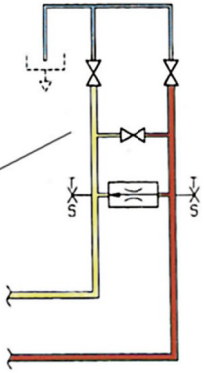
Vent. valve on filterbox



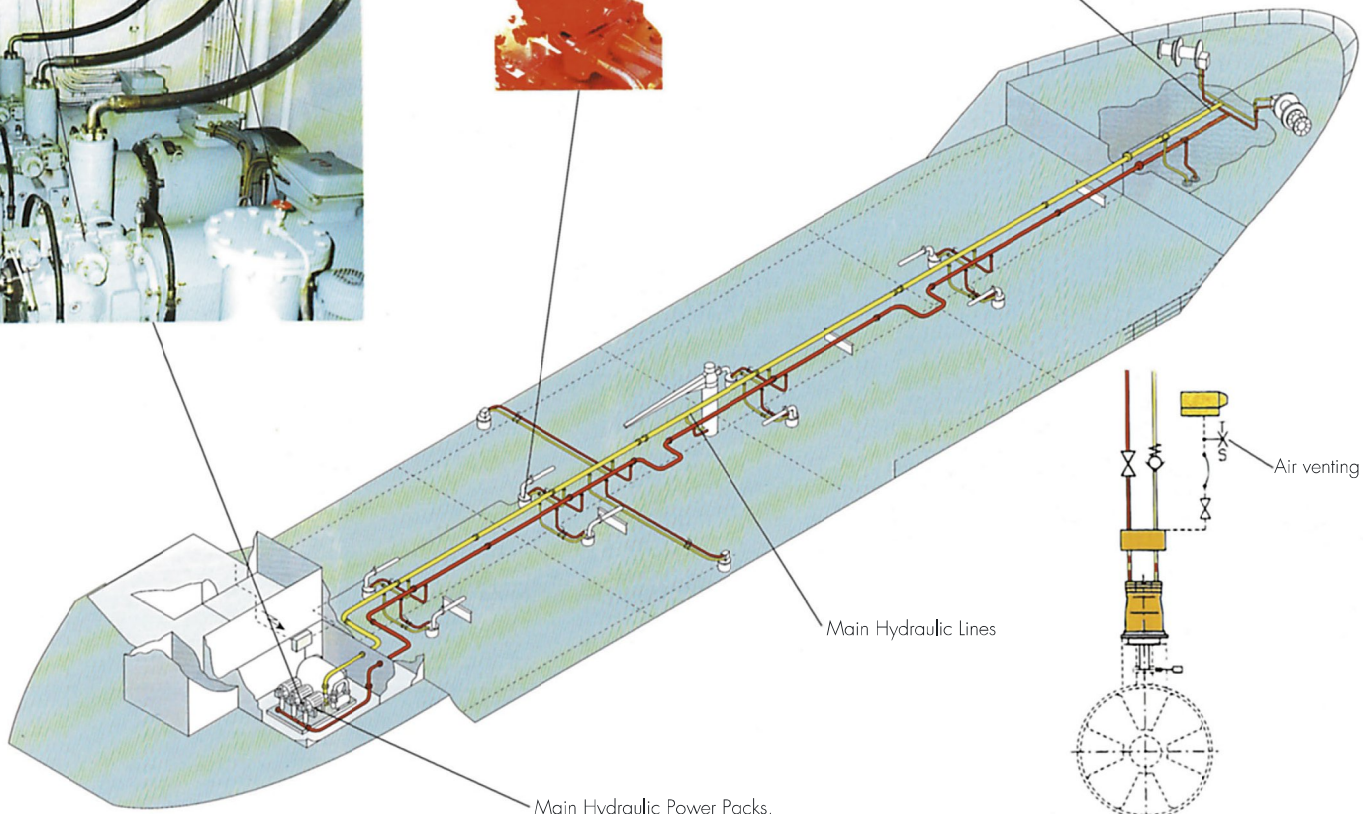
Air venting on
Flow Control (FCV)
valve for submerged
cargo pump



«High point» vent.
valves at the end
of hydraulic
main lines



Vent on the return line
after service on cargo pump.
Note: Include time for venting

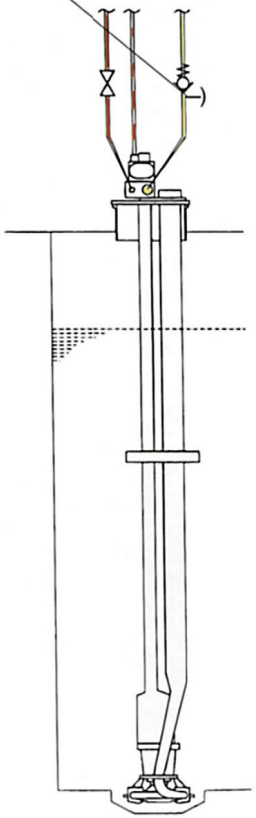


Main Hydraulic Lines

Main Hydraulic Power Packs,
Tank, Cooler, Filter, etc.

Air venting on remote-control lines

BOW THRUSTER



SUBMERGED CARGO PUMP

HOW TO DETECT AIR IN THE SYSTEM

	Remark
• Cargo Pump will not start from remote.	Possible
• Level variations in the hydraulic oil tank at different system pressure.	Yes
• Backflow to hydraulic oil tank during stand still.	Yes
• Foaming in the hydraulic oil tank.	Yes
• Oil sample “milky”/white, or air bubbles mixed into the oil.	Yes
• Abnormal noise from hydraulic pumps or motors.	Possible
• Uncontrolled pressure variations (hunting) during operation.	Possible
• Pressure peaks/shock in the system during start/stop of consumers.	Possible

HOW TO AIR VENT THE SYSTEM

Use vent cocks installed in the piping system and on components.
- Take the necessary time for air venting.

- In a closed loop system with feed pumps or pilot pumps, air venting shall be done while these are running.

- Even if air venting after service of component has been carried out, repeat the air venting when the hydraulic oil temperature has reached 50 - 55 °C.

Oil filling is critical for mixing air into the system.

For a system delivered today we include a combined/compact Filling Unit with filter to ensure correct oil filling. This unit is permanently hooked-up to the vessel's storage tank.

From our program today we can offer a Filling Unit as above for easy installation on board an old model hydraulic system.

FRAMO

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