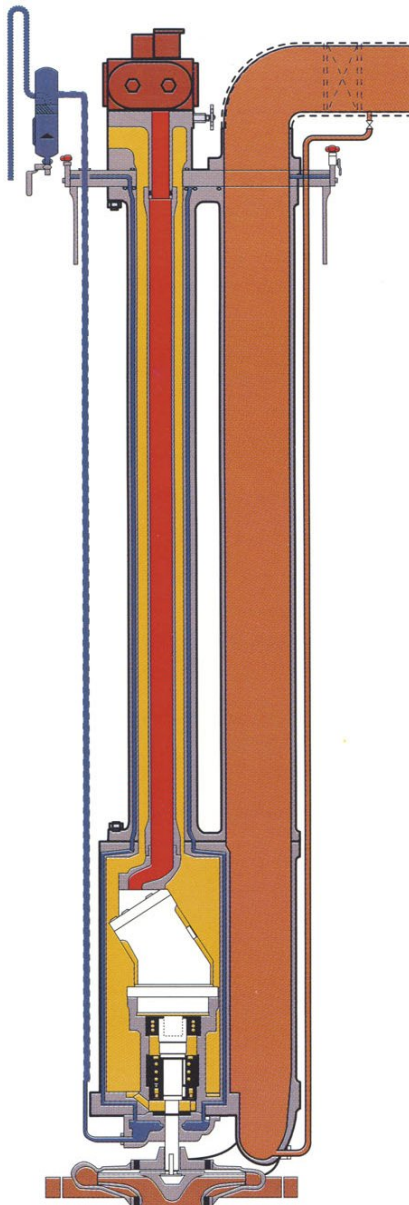


Service Bulletin

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Framo Submerged Cargo Pump Pressure Testing Routine



Routine when servicing the pump

USE OF STANDARD TESTING FLANGES

- ✓ Prior to dismantling of the cargo pump pressure test the cofferdam to identify any leak.
- ✓ Use soapy water for better leak detection.
- ✓ If leakage is difficult to identify, split the pump in major parts and pressure test separately.
- ✓ Use of Framo standard test flanges will ensure an efficient service job.
- ✓ After assembling of the cargo pump pressure test to confirm that the leakage is corrected.



BEFORE STARTING DISMANTLING OF THE CARGO PUMP

If the purging routine has detected a cargo leakage (more than 2 l / day *), and the evaluation indicates that action must be taken, first thing you have to do is to identify the leakage. The best way is to pressure test the pump's cofferdam.

Never start any dismantling of the cargo pump before you know: if, what, and where you have a problem.

PRESSURE TEST OF THE CARGO PUMP'S COFFERDAM

CARGO LEAKAGE

If a cargo leakage is detected the complete cargo pump's cofferdam has to be pressure tested to identify the leak. We have learned from Framo on board training that the crew on some ships start to automatically change the pump's cargo seal as soon as there is a cargo leakage - although the leak may be somewhere else. This is waste of time and money. So always identify where you have a leak first!

The cofferdam can be pressure tested by blinding off the purging medium relief valve by means of a rubber gasket. Dismantle the cofferdam's riser pipe flange on the top cover plate and install a test flange with pressure gauge (see figure 1). Connect the purging medium to the test flange and increase the pressure to 3 bar.

After approximately 5 minutes check all flanges around the cargo seal, riser pipe and all other connections for possible leakages. Use soapy water for better detecting of the possible leakage.

Note: If the cargo leakage is not possible to identify and the 3 bar pressure is stabilized for a long period of time during the pressure testing, it is still possible that the cargo seal in the pump is worn out and have to be changed. The reason could be that the 3 bar pressure in the cofferdam is pressing the upper lip (facing the cofferdam) around the pump shaft. Dismantle the cargo seal for control.

If this is not the case and the cargo leakage is not possible to detect, you have to split the cargo pump and pressure test the main components separately.

* See Service Bulletin no. 13



HYDRAULIC OIL LEAK

If the cargo pump has a hydraulic oil leak you normally have to split the pump to identify the leak. A hydraulic oil leak is very rare under normal conditions, but if a hydraulic oil leak does occur, there could be three reasons:

- a) Hydraulic oil seal - the life time is normally very high (>10.000 running hours).
- b) Crack in pipe stack - can occur if the cargo pump is vibrating heavily for some abnormal reasons.
- c) Corrosion attack in the seal ring grooves can occur after long service.

LEAKAGE TEST OF PUMP HEAD, PIPE STACK AND RISER PIPE

For each type of Framo Submerged Cargo Pump there is a complete pressure testing kit (flanges - bolts - pressure gauge) available, delivered in a small tool box.



Framo Pressure Testing Kit

Unfortunately on many ships equipped with Framo Cargo Pumps the pressure testing tools are missing. If they are missing on board your ship, we strongly recommend to order the pressure testing kit at the nearest Framo office.



PRESSURE TESTING ROUTINES - FRAMO CARGO PUMP

Figure 1
Testing of complete cofferdam

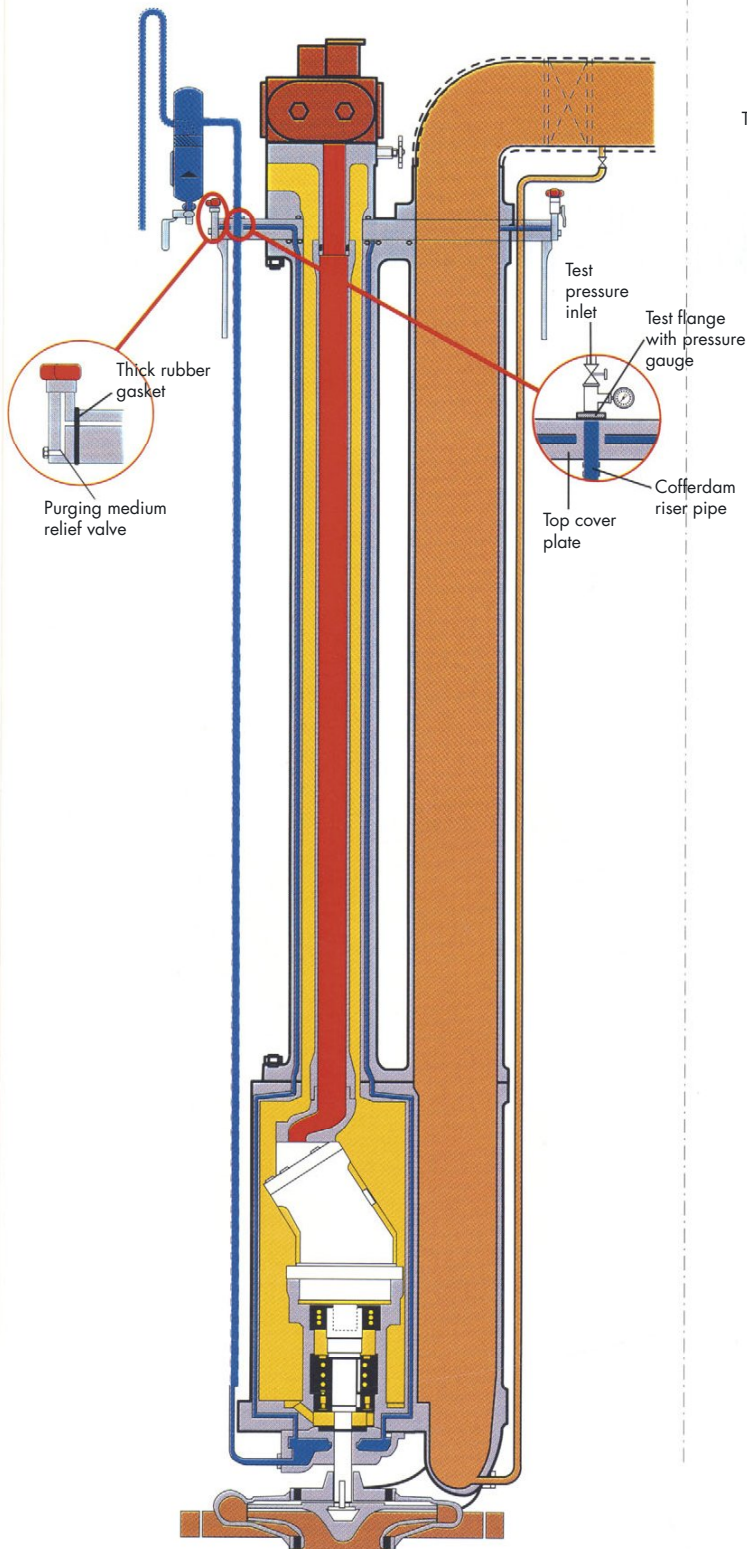
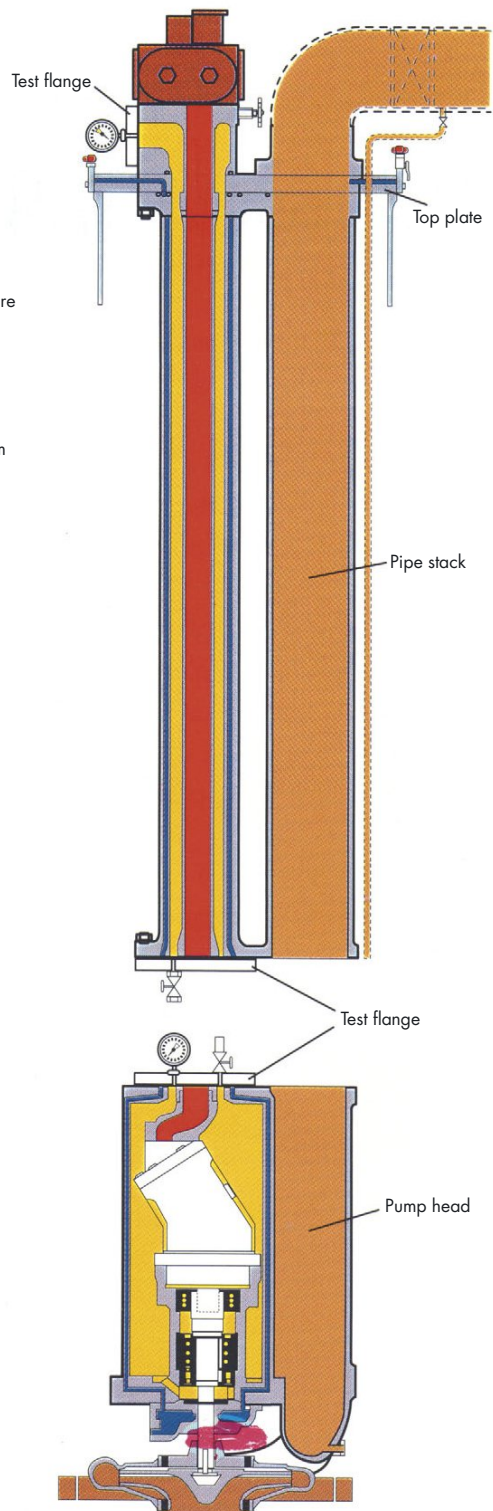


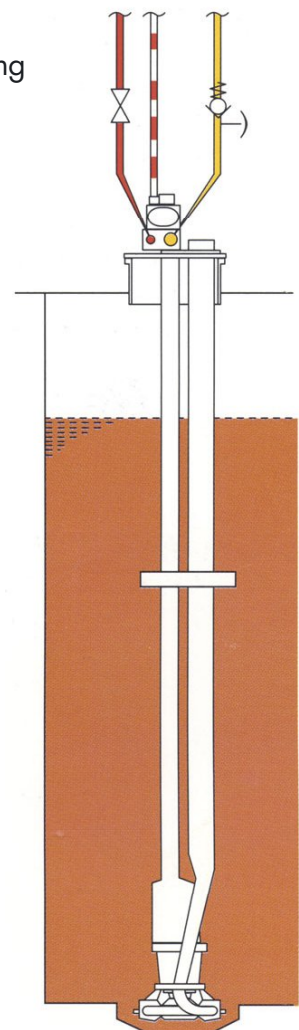
Figure 2
Hydraulic leak detection



PRECAUTIONS TO BE TAKEN BEFORE THE SERVICE JOB IS FINISHED

- After the leakage has been identified and repaired and the repaired part has been pressure tested, the cargo pump can be reassembled. Remember, cleanliness is absolutely necessary.
- When the mounting is completed, pressure test the complete cofferdam with maximum 3 bar pressure as described earlier.
- After minimum 5 minutes: check all flanges, cargo seal and other critical points with soapy water for possible leakage.
- Leave the 3 bar pressure in the pump's cofferdam for at least 30 minutes, and check that the pressure is stable.
- Necessary time for control must be included in the total scope of work, even if time schedule is limited.
- Fill the pumphead and pipe stack with hydraulic oil by opening the ball valve on the pressure line on deck.
- Open the venting plug on the non return valve on the return pipe on deck.
- Keep the venting plug open and start the cargo pump carefully for test running.
- Close the venting plug when clean airfree oil is coming out.

For more information please contact our Framo Services offices in Norway, Rotterdam, Houston or Singapore.



SUBMERGED CARGO PUMP



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