

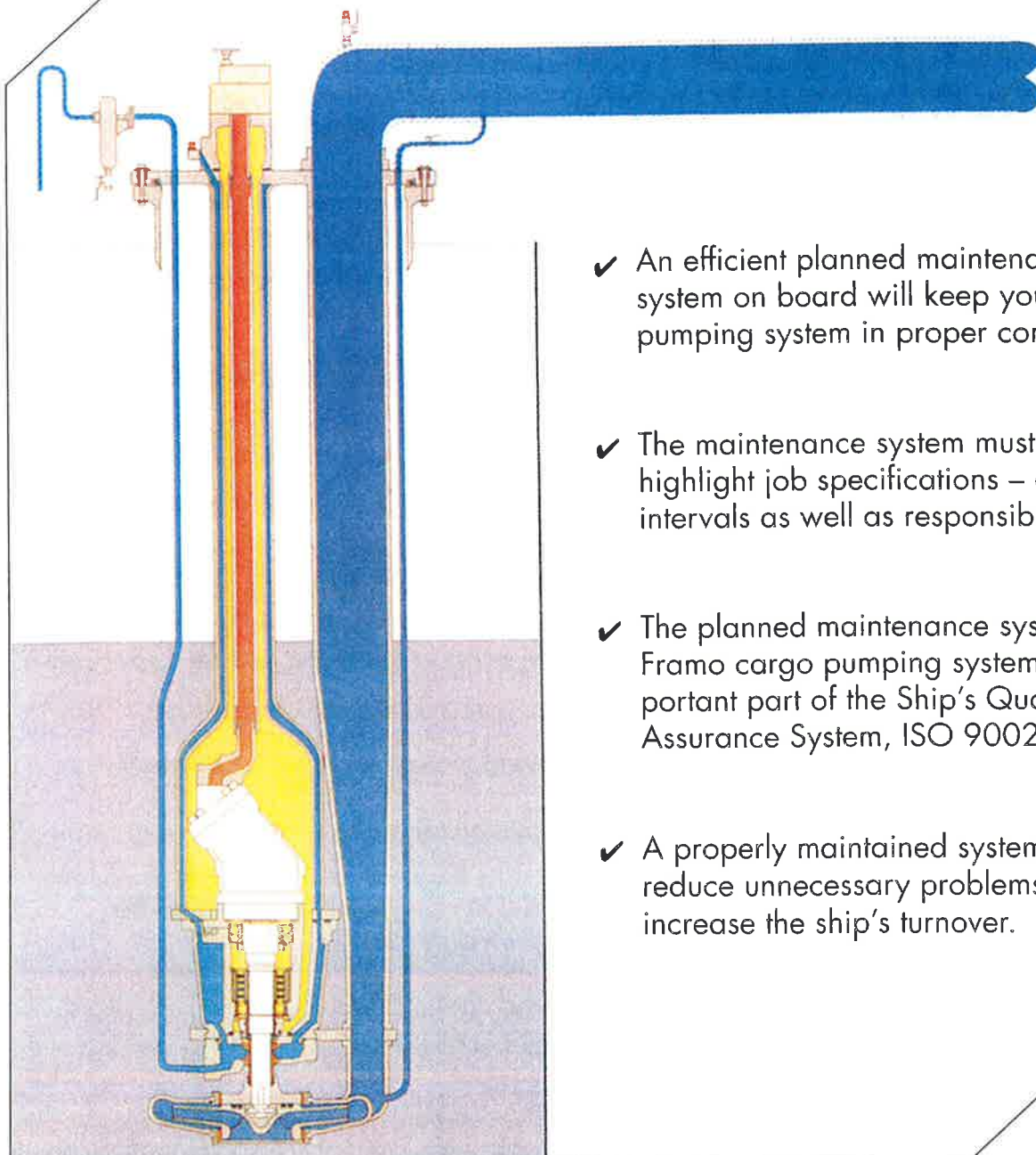
Service Bulletin

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Framo Submerged Cargo Pump



Planned Maintenance System



- ✓ An efficient planned maintenance system on board will keep your cargo pumping system in proper condition.
- ✓ The maintenance system must clearly highlight job specifications – and define intervals as well as responsibilities.
- ✓ The planned maintenance system for Framo cargo pumping system is an important part of the Ship's Quality Assurance System, ISO 9002.
- ✓ A properly maintained system will reduce unnecessary problems and increase the ship's turnover.



General

For all ships trading world-wide, it will in the near future be required to have an approved **Quality Assurance System – ISO 9002** on board.

An important part of your ship's QA System will be a Planned Maintenance System for all the equipment on board, i.e. job specifications, carried out by, approved by, inspection intervals as well as a separate record book for logging of results.

There is no doubt that a properly maintained system will reduce operation costs and obtain a safe and sound ship.

Planned Maintenance System for Framo Cargo Pumping System

Approximately 1.200 ships are today equipped with Framo Cargo Pumping System. Some of them have already an approved Quality Assurance System on board, but the majority will have to develop and implement a QA System in the near future.

To give these «Framo Ships» some guidance, we have in this Service Bulletin proposed a basic Planned Maintenance System on the next pages. The equipment on board, as well as the type of ship and trade may differ from ship to ship – our proposal is therefore to be understood as guidance only.

Explanation to the following basic Planned Maintenance System

- | | |
|-------------------------------|---|
| «Equipment»: | is the main components in your specific Framo Cargo Pumping System. |
| «Job Specifications»: | specifies the various activities.
Note! A visual inspection of the cargo pump's top plate means visual control of local control valve, purging valve, ball valve, pressure gauge, et cetera. Repair when necessary. |
| «Drawing No.»: | refer to the drawing in the Framo Service Manual. |
| «Maintenance instruction»: | refer to Framo Service Manual. |
| «Carried out by/Approved by»: | can vary from ship to ship, but it is a <i>must</i> that the responsibilities are clearly defined. |
| «Inspection intervals»: | can vary according to type of ship and trade and your own experience. |

Proposed Planned Maintenance System for Framo Cargo Pumping System

Ref. Ship's QA-System, ISO 9002

Equipment		Submerged Cargo Pump			Portable Pump	Hydraulic Power Pack				Hydr. Oil Tank			Hydr. Oil Filters		Hydr. Control Valves/Panels			Hydr. Oil Cooler		Hydr. System
Job Specifications		Purging of cofferdam	Visual inspection of Cargo Pump's top plate	Wear ring/ cap. control	Function, Capacity, Drill test	Noise vibration leakage control	Mechanical magnetic chip detector	El. motor/ P.T.O. gear bearings – clutch control	Diesel engine	Hydr. oil tank level	Hydr. oil	Hydr. oil tank bottom drain	ΔP indicator, Main system filter box	ΔP indicator Auxiliary filters	Main relief valve	Pressure control valves	Alarm check, switches, safety loop	Water tubes	Oil cooler anodes	Air vent points: 1: on end of ring line 2: on filter box 3: on Cargo Pump 4: on hydr. tank
Drawing No.																				
Maintenance instruction No.		Purging routine 1000-010-4					643-4-5				1400-068 643-4-678									
Carried out by		Pump man	Pump man	Pump man	Pump man	Eng.	Eng.	Eng.		Pump man	Eng.	Eng.	Pump man	Pump man	Eng.	Eng.	Eng.	Eng.	Eng.	Pump man
Approved by		Chief Officer	Chief Officer	Chief Officer	Chief Officer	Chief Eng.	Chief Eng.	Chief Eng.		Chief Eng.	Chief Eng.	Chief Eng.	Chief Eng.	Chief Eng.	Chief Eng.	Chief Eng.	Chief Eng.	Chief Eng.	Chief Eng.	Chief Officer
Date	Inspection intervals	See purging routine		Recommended clearance less than 1 mm					Refer to manufacturers manual											When needed
	when operated	X				X				X				X						X
	Running hours based							X												
	Every 3 rd month		X				X				X	X								
	Annually				X			X			X		X		X	X	X	X	X	
	Condition based			X									X							X

NB! The above Maintenance System is for guidance only. The equipment on each «Framo ship» may be different from ship to ship. Framo can, however, be consulted to work out a specific maintenance plan for your ship – or you have to use the information in your Framo Service Manual together with your experience. Please don't forget auxiliary equipment such as: Ballast Pumps, Tank Washing Pumps, Bow Thruster Motor, etc.



Ten Rules to remember...

1. Purge the cargo pump's cofferdam before and after discharge. Log and evaluate the purging result. Take necessary action.
2. Never start any dismantling of the cargo pump before you have identified the problem. Always pressure test the cargo pumps cofferdam to identify any leak. Always remember to use the correct tools from the Framo tool box.
3. Use only genuine Framo parts.
4. If you have any problems with capacity, stripping or parallel pumping, check the cargo pump's condition against the performance curve.
5. During discharge: Regulate the hydraulic system pressure to approx. 15 bar above the highest consumer – regulate cargo pump capacity by hydraulic pressure, not by throttling of cargo valve.
6. Avoid air in the hydraulic system. Deairate the system on a regular basis.
7. Keep the hydraulic system clean. Cleanliness is absolutely necessary.
8. Take a hydraulic oil sample, every 3rd month for particle counting (ISO 4406). Every 12th month full analyze according to Framo standard 1400.063.
9. Never mix the hydraulic oil with lub. oil.
10. Implement a planned maintenance system for the complete cargo pumping system.

**For further information please contact our
Framo Service Offices worldwide.**