

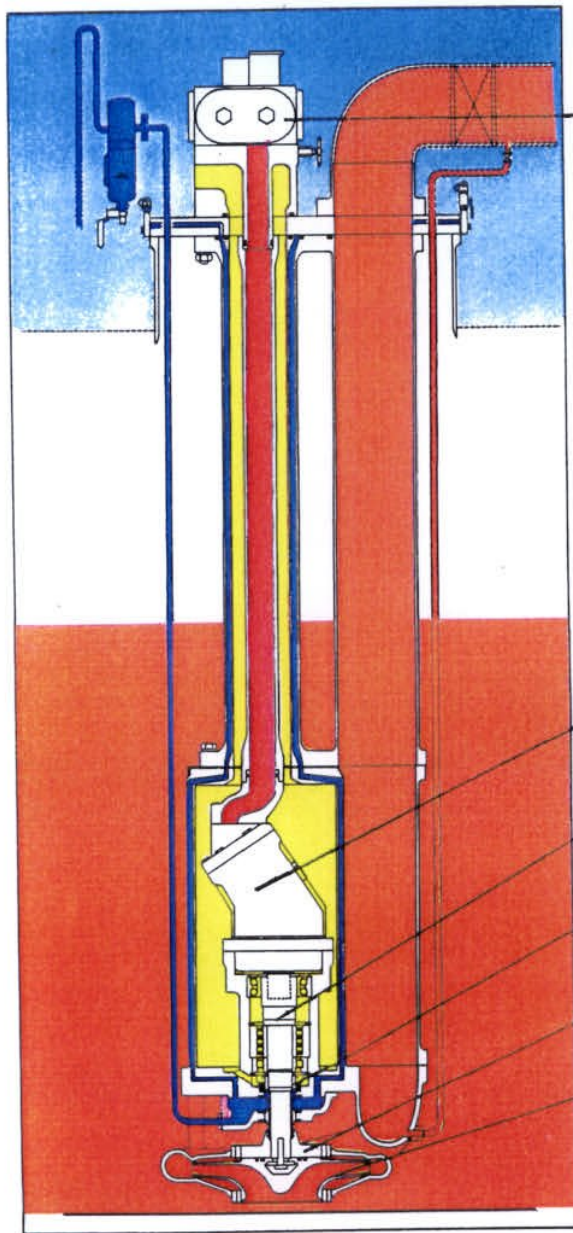


Service Bulletin

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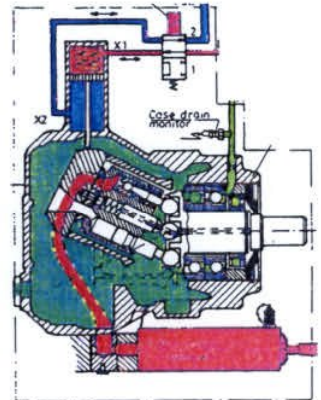
Recondition of components in FRAMO Cargo Pumping System

We especially highlight:



Flow Control Valves

Hydr. Pumps



Hydr. motors

Shafts

Mechanical Seals

Impeller flanges

Impellers



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DEAR FRAMO - CUSTOMER

We are in this Service Bulletin drawing your attention to the possibilities for reconditioning various components. The reason for highlighting this possibility is that we do feel it is in our mutual interest to keep maintenance costs down on the FRAMO system on board your ships.

In today's environmental-conscious society we do also wish to contribute to re-using instead of throwing away used components.

Generally speaking all components over a certain value must be considered for reconditioning before being scrapped. We would especially highlight:

Impellers

Impeller flanges

Shafts

Mechanical Seals

Flow Control Valves

Hydraulic Pumps

Hydraulic Motors

Even ceramic sleeves should not be scrapped immediately. Often what looks like scratches can be polished away and the sleeve re-used.

If in doubt whether a ceramic sleeve can be re-used, please keep it on board until you are in a FRAMO-harbour (Rotterdam - Houston - Singapore) and our representative will inspect and advise free of charge.

All other damaged parts should be returned to one of the FRAMO offices, we will then quote you for reconditioning. Depending upon the extent of the damage, cost for reconditioning can be down to 1/4 - 1/3 - 1/2 price of new components.



By bigger damages it may be necessary that the cylinder and distributor plate have to be lapped, the driveshaft and housing must by some occasions be built up and the pistons and the cylinder ports must be inspected for scratches and be reconditioned or renewed. Before re-assembling in the housing the building in tolerances of the rotating group must be measured and corrected within the recommended tolerance.

In such cases the cost of repair must be weighed against the price of a complete new pump.

The above mentioned procedures must be followed in order to get the best result and long life operation.

Yours faithfully
pr. Frank Mohn Services AS


Arvid Aadland



**Damaged hydr.
pump parts.**





1). RECONDITIONING OF FRAMO IMPELLERS, IMPELLER FLANGES AND PUMP SHAFTS FOR FRAMO PUMPS.

We strongly advise you to send the above mentioned pump parts for all types of FRAMO pumps to us for overhaul.

As mentioned in our Service Bulletin No. 6 FRAMO is able to supply oversized wear rings and shrink-on rings for reconditioning work to be carried out on board or at our offices abroad or in Helldal.

However, in case of severe damage and the fact that the impeller has to be balanced, we advise you to send the parts to FRAMO for reconditioning. The impeller and impeller flanges will be inspected a shrink-on ring will be fitted, welded, machined and checked according to the FRAMO tolerances before being returned. The impellers will be balanced.

The shafts will be inspected according to almost the same procedure, checking of tolerances, built up and machined according to our drawings.

These procedures are of a great importance for the result of the repair and to assure the correct quality.

2) RECONDITIONING OF FRAMO MECHANICAL SEALS AND CERAMIC SLEEVES.

We strongly recommend you to carefully store exchanged mechanical seals and sleeves after repair work on the FRAMO cargo and standard pumps. In most cases the seals and sleeves could be reconditioning and fitted again. The items should be packed in the boxes of the new items and returned to FRAMO for inspection and price offer.

During the last 20 years, FRAMO has constantly developed and tested mechanical seals in order to find the best and most suitable seals for our pumps. We are today sure that we have come very far in finding the correct seals for our pumps with the optimal lifetime.

This fact is also taken into consideration during the reconditioning of the mechanical seals. The seals are carefully measured, stationary and rotary part are being lapped or exchanged, o-rings exchanged and measures and tolerances are checked before return to the customer.



Reconditioned mech. seal inspected and checked before return to customer.

Damaged mech. seal



The face materials of the rotary and stationary parts consists of a variety of different materials like carbon, metals, teflons and carbides. There are also quite a few different grades in each materials, as well.

The importance of using the correct face materials and o-rings when reconditioning mechanical seals should be obvious. When returning mechanical seals to FRAMO you are guaranteed that original specification will be met.

FRAMO will guarantee the quality of any mechanical seal being returned to us for repair.

In addition we are pleased to inform that our stock of spare parts for mechanical seals will be rapidly built up in order to reduce the time of delivery to a minimum.

3). RECONDITIONING OF FRAMO FLOW CONTROL VALVES AND EXCHANGE FLOW CONTROL VALVES.

All flow control valves exchanged on board the vessels should be returned to FRAMO for inspection and adjustment.

In the nearest future, we will improve our stock of exchange flow control valves. The customer will then only have to order a flow control valve for a certain cargo pump (inform us about the no. of the tank or l./min. if known).

In order to obtain the exchange price, you will have to return 1 flow control valve in exchange. If the returned flow control valve can be repaired and adjusted, you will only have to pay for the exchanged spares, work and transport.

In case the flow control valve is beyond repair a special exchange price will be invoiced.

The above mentioned service will reduce the time of delivery and improve our service to the customer.

4). RECONDITIONING OF HYDRAULIC PUMPS AND HYDR. MOTORS



**Reconditioned
hydr. powerpack
pump for return
after inspection**

At all our offices abroad and in Norway, we have a good stock of selected parts for overhaul of all hydr. pumps and motors fitted on the FRAMO hydr. cargo pumps system. This goes for the old type hydr. pumps/motors, as well as the new type replacement designs (ref. Service Bulletin No. 2).

We strongly advice that overhaul of these items are carried out in our workshop. This due to the very fine tolerances in these units.

If a deteriorating pump is stopped early enough (i.e. by use of magnetic chip detectors) it is usually sufficient to renew bearings and seals and cap sealface. This is a rather low-cost repair.