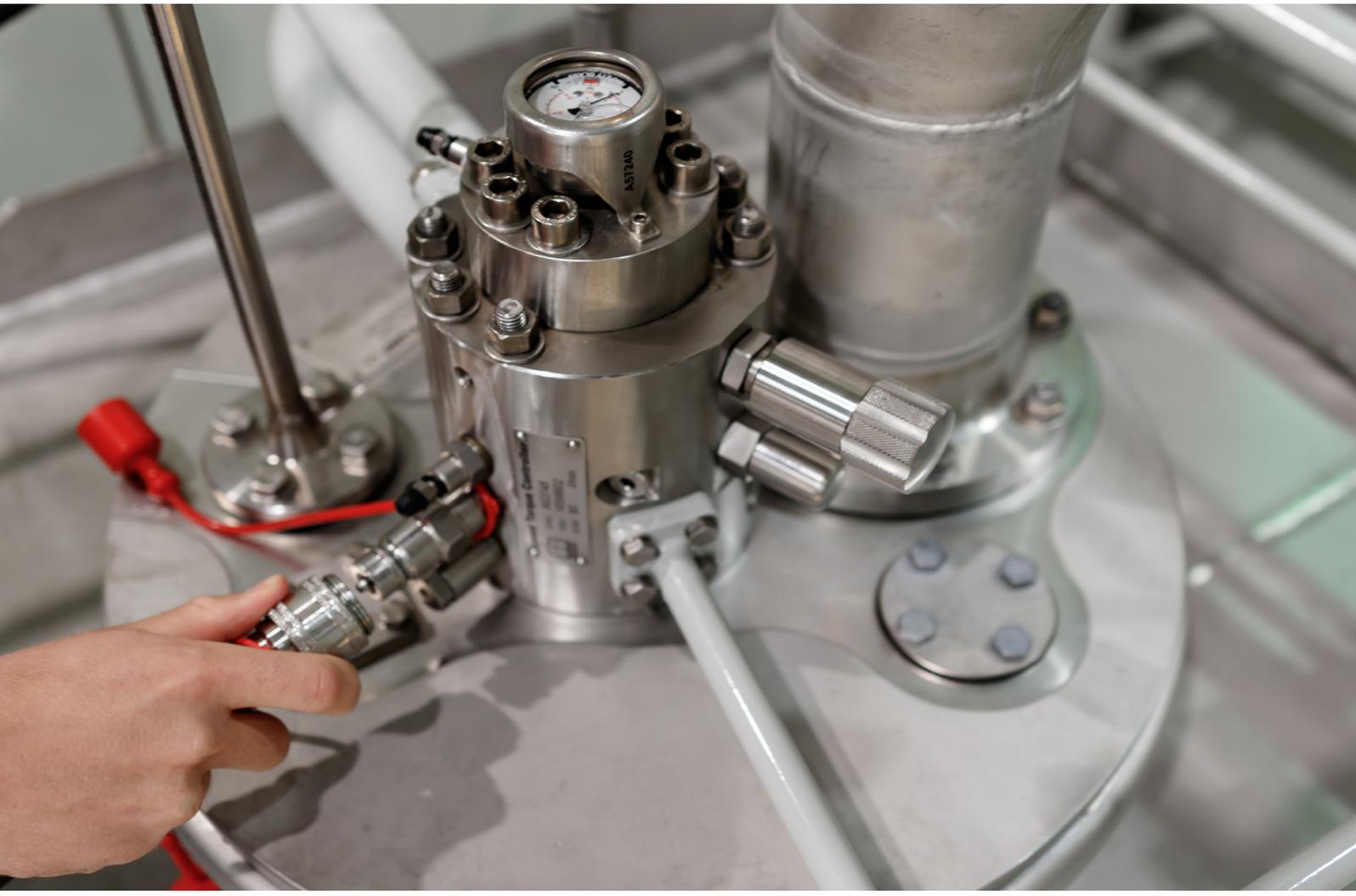


PURGING ROUTINE FOR FRAMO CARGO PUMPING SYSTEM

SERVICE BULLETIN #47



**Use Framo Purging Form and submit the result to
autopurging@framo.no**

Purging Routine

- Purge the cargo pump cofferdam regularly.
- Log and evaluate the purging results.
- Remember: A clean and open cofferdam gives trouble free cargo pumping.
- The ship crew have the primary responsibility for purging and necessary action to be taken, knowing the actual operation and running conditions.

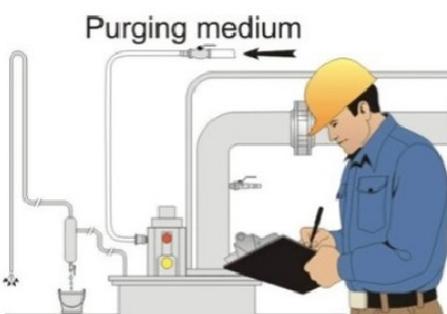
- If in doubt, please contact Framo Services AS for advice.
- Send the purging form to Framo for control and filing.

General

Purging of the cofferdam is one of the most important preventive maintenance routines when operating a Framo submerged cargo pump. This is a unique way to check the pumps seals and thus the condition of the pumps, without entering the cargo tanks. Any leakage over the seals will collect in the cofferdam, and through regular purging the leakage rates can be determined and action (if necessary) can then be planned which will ensure safe and trouble-free operation of the cargo pump.

Purging

Purge cofferdam according to operation manual for cargo pumps.
Record the purging results in the Framo purging form.





Purging routine on board

The cargo pump cofferdam must be purged regularly in accordance with Framo Purging Instruction, doc. no. 1000-0010-4 found in the Service Manual for your ship.

The primary responsibility for purging, logging of results and any action thereafter lie with the ship's crew, as they know the actual running conditions on board and are entrusted with correct operation and maintenance of the equipment on a daily basis.

If the purging results indicates that maintenance is required—the necessary steps must be taken without delay by the ship's crew. If needed, Framo can of course be contacted to assist in any way.

New routine for purging forms

Every month, Framo handles thousands of incoming purging forms via the purging@framo.no service. These forms are submitted in many different formats, such as Word documents, Excel spreadsheets, handwritten and scanned PDF files, image formats and compressed files, all of which takes time to check and assess one by one.

Until now this work has been performed manually and due to available resources, the feedback on purging results has been limited to those ships where action is required, such as in cases with blocked cofferdams, large cargo leakage, hydraulic oil leakage, etc. In order to handle the increasing number of purging forms submitted and to provide our customers with an improved service, Framo has developed a new system for handling the purging forms.

As well as the new handling system, a new purging form has been developed based on a Microsoft Excel spreadsheet. Only this new purging form is to be used and submitted to Framo, other formats will be rejected as the file will not be readable by the system.

If you have not yet obtained this new purging form, please send a request to autopurging@framo.no where you will receive a mail in return with the new form.

The spreadsheet also contains the following:

- Instructions for recording results in the purging form
- Examples of a completed purging form

- Unit conversion table to metric system
- Description of various purging results which can be a helpful tool for the ship's crew for analyzing results on board.

Purging forms are to be submitted after each voyage is finished and the discharge completed, when all cofferdams have been purged. Volumes are only to be entered in litres (use supplied conversion table if necessary).

It is also important that the purging form is as complete as possible in order for Framo to analyze the data and give a meaningful response to possible leakages. Make sure that purging results for each stage of the cargo operations are filled into the corresponding column of the purging form.

Tip: Use the "Remark" column to fill in information which can be useful for yourself and for Framo upon evaluation of the purging forms. E.g. if there is a high leakage and you know the reason and have planned to replace cargo seals at next docking, enter this information in the remark column.

Upon submission of the purging form to Framo, you will get one of the four following automatic responses from the system:

Evaluation complete - The purging form has been evaluated by the system, found satisfactory and archived in the Framo purging database as part of our service record for the ship. No further actions or comments needed.

Manual Evaluation - The purging form has been evaluated by the system and manual evaluation by Framo service personnel is required. You will receive further assistance and additional information (e.g. troubleshooting and leakage test procedures) soon after.

Purging form rejected - The purging form has been received but could not be analyzed due to missing information in the file. The submitter of the purging form will receive an e-mail in return with description of what information was missing. Please check, amend and re-submit the purging form accordingly.

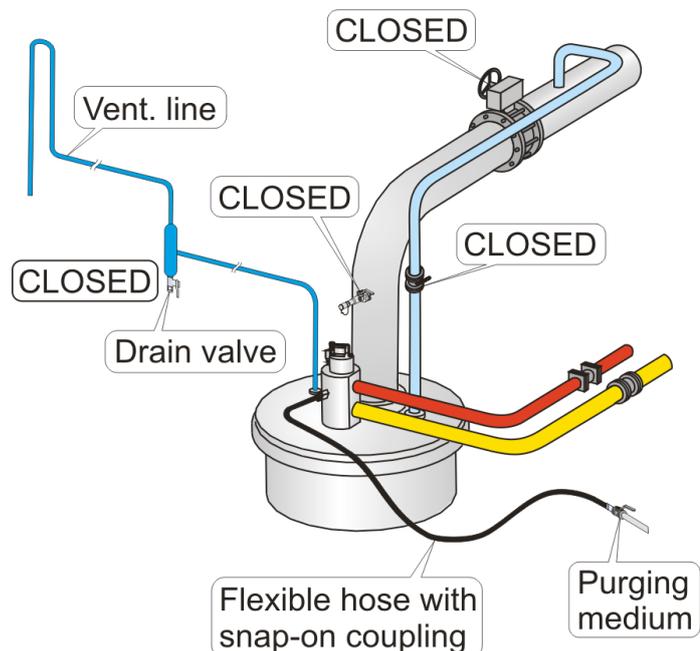
Wrong file/enclosure - The purging form received by the system has been rejected

due to incorrect file format or the file was missing. The correct purging form template together with instructions and an example is attached for your information.

Multiple purging forms can be submitted as multiple attachments in one e-mail. The system will handle each purging form separately and individual e-mails will be sent in return for each submitted purging form.

Please do note that in such cases you may receive an email first for e.g. voyage 22 where action is required and for e.g. voyage 24 all is OK and no action is needed because crew have already taken action. In such cases, Framo will evaluate the purging forms in successive order.

Note: For ballast pumps with liquid filled cofferdams, there is a separate sheet containing the "log form for liquid filled cofferdam". Fill in ship data (ship name, IMO no. and voyage no.) on sheet no. 1 before submitting.



PURGING ROUTINE FOR FRAMO SUBMERGED CARGO PUMPS

SHIP NAME: MT FRAMO

IMO no.: 1234567

VOYAGE NO.: 1607

NOTE:

Type of Liquid: TOL
 C = cargo
 H = hydr. oil
 L = Liquid filled cofferdam
 M = mix of liquid
 W = water condensate
 In "Open cofferdam" column:
 Yes = air or liquid coming through
 No = Blocked cofferdam

Responsible for purging: Name

Electronic copy:
autopurging@framo.no
 Ship owner: Electronic/Paper copy
 for other questions, send mail to:
service@framo.no

For long voyages with
 "no leakage at A2"
 purge at least every 14 days

State action taken,
 new parts installed, etc.

Cargo leakage

Cargo leakage above the limit

hydr. Oil leak

Mixed liquid

Empty tanks MUST be purged

Liquid Filled Cofferdam - OIL

Liquid Filled Cofferdam - Cargo

Liquid Filled Cofferdam

Blocked Cofferdam

PURGING INTERVALS

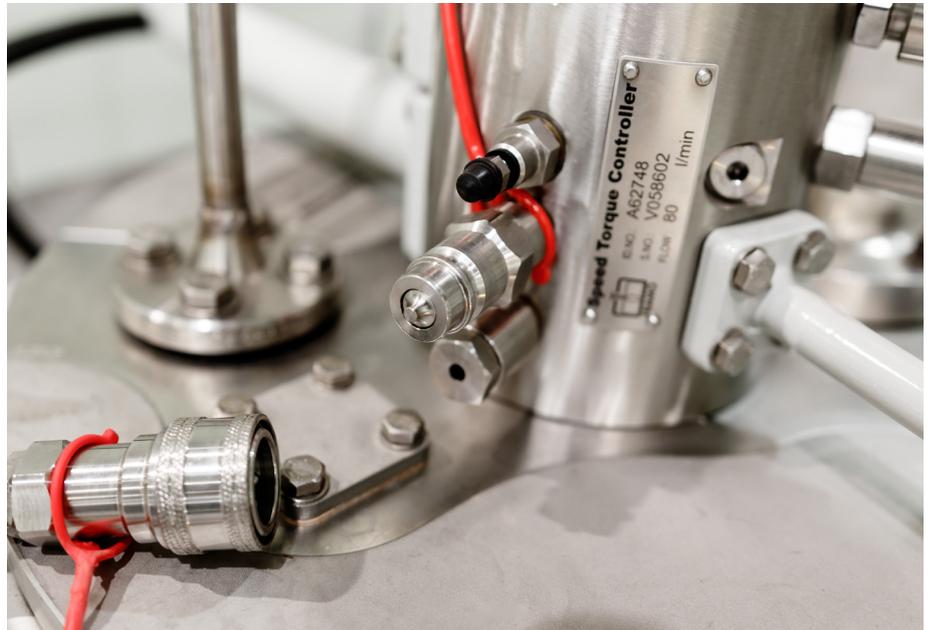
| Tank No. | Type of Cargo If tank is empty, write EMPTY | A1 | | | A2 | | | B | | | C | | | D | | | | | | | | |
|----------|--|----------|------------------|-----------------|----------|------------------|-----------------|-----------|----------|------------------------|------|------------------|-----------------|----------|------------------|-----------------|------|----------|-------|---|-----|-------------------|
| | | Date | Result in litres | Open coffer-dam | Date | Result in litres | Open coffer-dam | From Date | To Date | Average result per day | Date | Result in litres | Open coffer-dam | Date | Result in litres | Open coffer-dam | | | | | | |
| 1P | ULSD | 01.01.16 | 0,00 | YES | 02.01.16 | 0,50 | C | YES | | | | 09.01.16 | 2,00 | C | YES | 10.01.16 | 1,00 | C | YES | | | |
| 1S | Naphtha | 01.01.16 | 0,00 | YES | 02.01.16 | 3,00 | C | YES | 03.01.16 | 08.01.16 | 4,00 | C | YES | 09.01.16 | 4,00 | C | YES | 10.01.16 | 10,00 | C | YES | |
| 2P | ULSD | 01.01.16 | 2,00 | H | 02.01.16 | 2,00 | H | YES | 03.01.16 | 10.01.16 | 0,75 | H | YES | 12.01.16 | 1,50 | H | YES | 13.01.16 | 1,00 | H | YES | |
| 2S | Fuel Oil | 01.01.16 | 0,00 | YES | 02.01.16 | 0,50 | M | YES | | | | 09.01.16 | 2,00 | M | YES | 10.01.16 | 1,00 | M | YES | | | |
| 3P | EMPTY | 01.01.16 | 0,00 | H | | | | | | | | | | | | | | 15.01.16 | 0,50 | H | YES | |
| 3S | TDI | 01.01.16 | 5,00 | L | YES | | | | | | | | | | | | | 10.01.16 | 6,00 | H | YES | |
| 4P | MDI | 01.01.16 | 5,00 | L | YES | | | | | | | | | | | | | 10.01.16 | 7,00 | C | YES | |
| 4S | MDI | 01.01.16 | 5,00 | L | YES | | | | | | | | | | | | | 10.01.16 | 5,00 | L | YES | |
| 5P | Palm Oil | 01.01.16 | | NO | 02.01.16 | | | NO | | | | 09.01.16 | | | NO | 10.01.16 | | | | | NO | Blocked Cofferdam |

Service Bulletin #47

Purging Routine for Framo Cargo Pumping System

Summarized the new routine for purging forms has several benefits:

- Standardized purging form for your whole fleet
- In general, faster response time from Framo and a reply and confirmation for every submission
- Automated filing for all submitted purging forms
- New purging form gives instant feedback if all required fields have been filled in before submittal



Submit purging forms to:

autopurging@framo.no

In case the ship's crew need information/advice from Framo, they can contact us by e-mail: service@framo.no, and the ship will receive a quick answer from Framo Services AS.

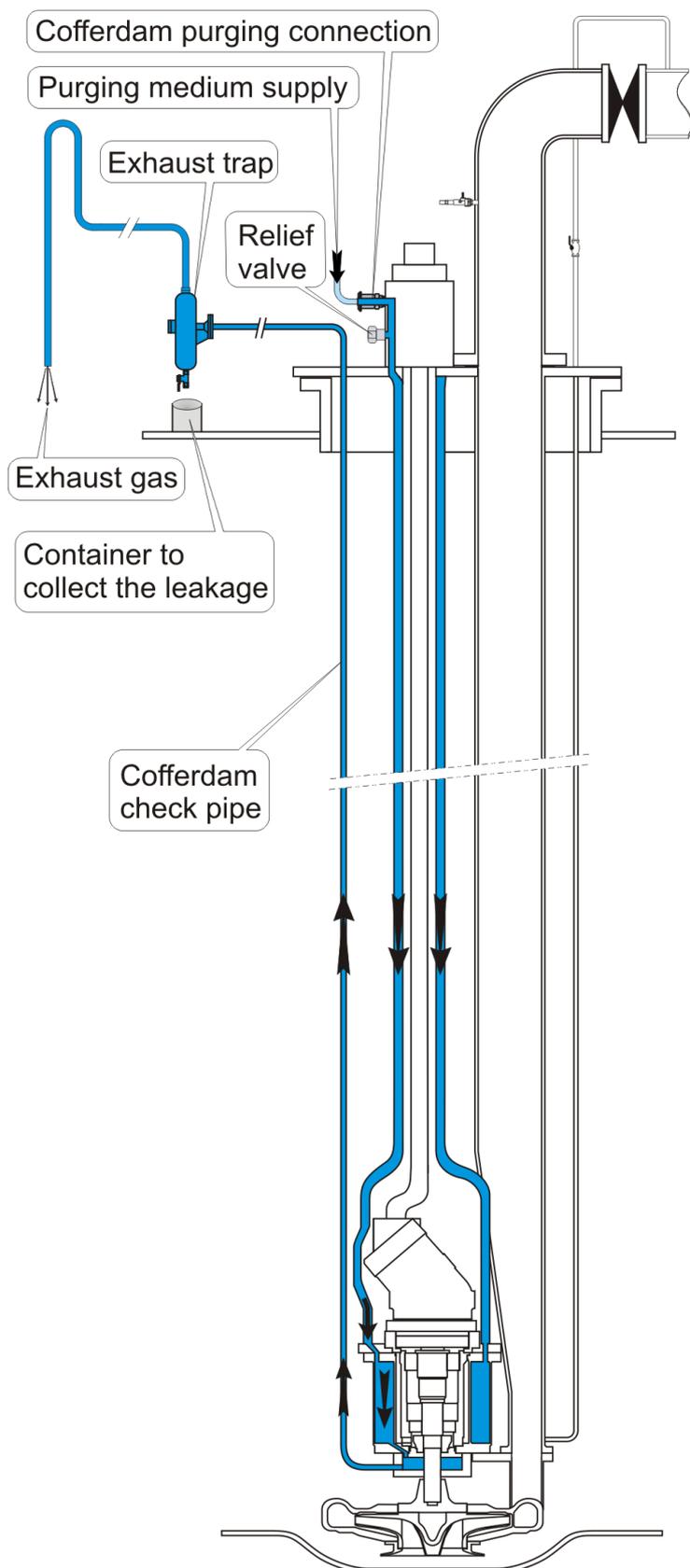
Alternatively in more urgent matters call +47 55 99 92 00

or after office hours +47 90 99 00 06

or contact your nearest Framo service station, contact details on the back of this service bulletin and www.framo.com

So finally – good luck with your Framo Cargo Pumping System.

Do the purging regularly and send the purging form to Framo for control and filing.



Remember

- **Safety first: Exhaust gas and liquid may be hazardous. Wear safety gear and avoid contact with drain from exhaust trap and venting line**
- **Purge the cargo pump cofferdam regularly**
- **Purging medium can be air or inert gas**
- **Makes sure the cargo pump's cofferdam is open and that purging medium is coming out of the exhaust trap**
- **If air is used as purging medium, drain airline regularly for possible water condensation**
- **Makes sure the drain hole from the pump's cofferdam never is blocked**
- **Clean and open cofferdam gives trouble free cargo pumping**

**FRAMO Services AS**

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