BUUS ICE MACHINE TYPE V-VD SERVICE ON SEAL ARR.

Hands on manual

26. MARTS 2015

BUUS ICE A/S

V and VD service on shaft seal arrangement

This detail manual is a supplementary to the main manual supplied with the machine.
More details and drawing can be found in the main manual.

The manual is covering machines version MK.4, from serial no. 3050.

Index

1. Preparing the machine for service

Rear view

Front view

Cover plates, knives and accessories are removed from the machine.

Removing the watertank of the machine

Emptying the bearing housing for oil.
This is done with either pressure setting the system or by vacuum.

The picture shows use of vacuum pump.

The vent nipples is used for this, red line connected as shown.

Special tool set, either bought or rented from BUUS Ice A/S.

Additional parts for service is ordered separately, NOT a part of the special tool set.

2. Fixing the drum in correct position

The small support bolts are used for positioning the drum before dismantling the suction connection piece.

3. Removing inlet pipe from the suction connection piece

The inlet pipe is removed as shown pos 4.5

4. Removing suction connection piece.

The suction connection piece is removed, 2 persons are normally needed for this operation.

5. Removing the liquid pipe.

The liquid pipe and the oil pipe is removed. Pos 4.12 and 4.7

6. Removing the journal

The journal is protected before dismantling, pos. 4.23

Circlip is re moved, pos. 4.16

Removal of bearinghousing pos 4.10



The journal is re moved and the O-ring can be replaced pos 4.23 and 4.20
After mounting of the O-ring and the gasket the journal can be mounted again, **see section 12**

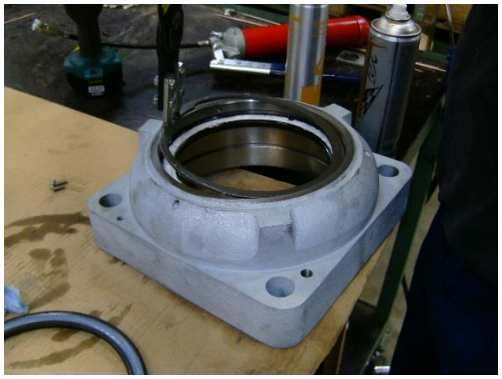
7. Mounting of bearing and sealrings







The bearinghousing is prepare with new seals as shown on thepictures above.



Grease is added between the 2 pcs. of sealring

8. Dismantling bushing and O-ring for liquid pipe, mounting of journal

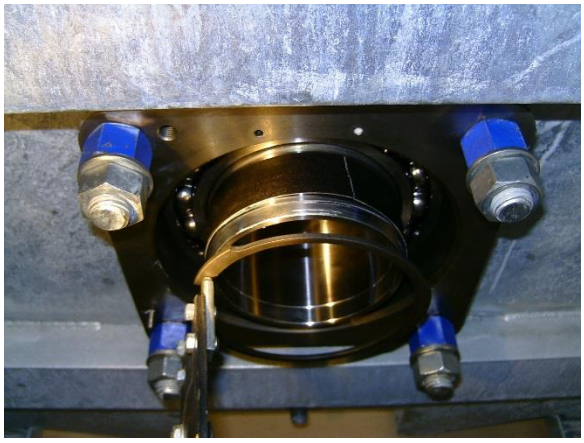
The circlip pos 4.15 is removed. The puller is used to remove bushing pos 4.14

After change of O-ring pos 4.29 the bushing is mounted again

The journal is mounted on the drum, jack is used, bolts pos 4.30 and 4.31, 35Nm

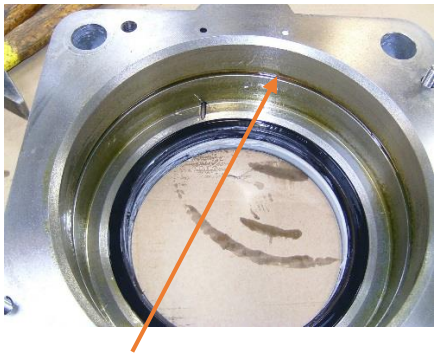
9. Mounting of bearinghousing and alignment of journal

The jack is used to mount the bearinghousing in the correct position pos. 4.10



Circlip pos 4.16 is mounted.

Extra circlip for aligmnet of journal I mounted inside the bearing housing.



Circlip mountde in this drill.
Pos 10.6 drawing TO17071 see section 10

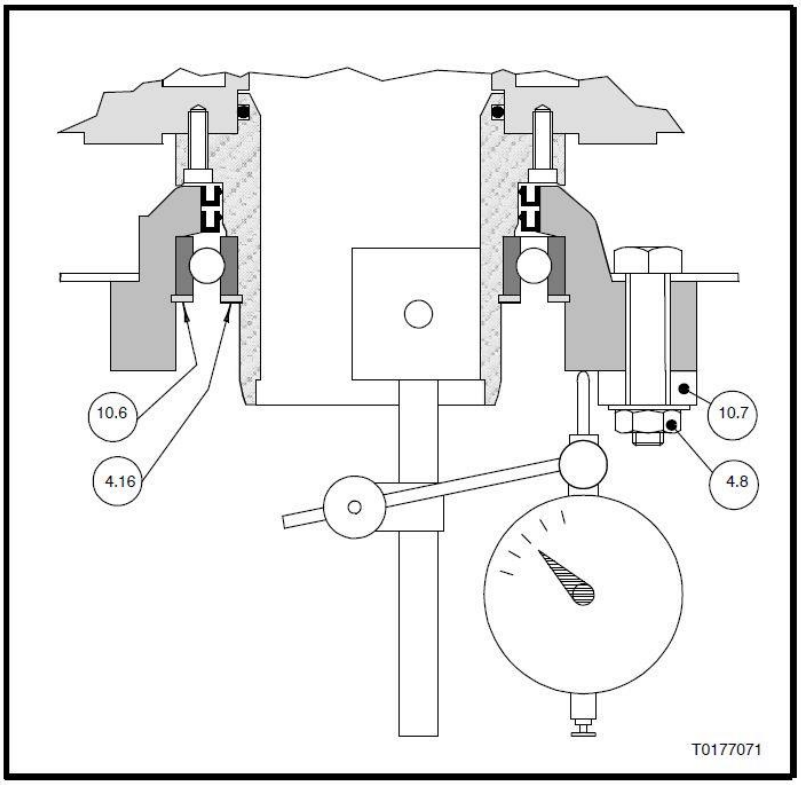
Those bolts are tightened hard

This circlip is to fix the drum during alignment of journal.

Journal is supported by the jack, the drum is then lifted by the jack so the boolts under the drum can be removed

Bolts are removed during alignment of journal.
After removal of the bolts, the jack is lowered and removed.

10. Alignment of journal and bearing housing



Please also refer to drawing no. T0177071.

- Mount a magnetic clamp inside the shaft journal.
- Place the micrometer gauge so that it can slip past the nuts. If the sealing surface of the bearing housing is not perpendicular to the drum axis, the gauge will show varying readings when the drum is rotated. Rotate the drum through 360° and note the readings in order to find the corners that must be lined up.

Loosen the nuts (4.8) so that the bearing housing drops a couple of millimetres. Insert the required liner plate (10.8) between the bearing housing and the frame. Then tighten the nuts.

Check that the gauge reading does not vary more than max. 0.10 mm on a 360° rotation of the drum. Poor alignment of the bearing housing can reduce the lifetime of the ball bearings (4.2) and all the seals in the stuffing box.

Support the drum soundly - as described earlier. Unload the pressure of the ball-bearings against the locking rings (10.6) and then remove them. Continue, mounting the suction connection piece as described in section 8.5 Fitting stuffing box and lower bearing, from the paragraph which begins:
Mounting the lifting fitting (10.3) on page 54.

Sims for alignments, mounted so the gauge reading does not vary more than max. 0.10 mm on a 360° rotation of the drum.

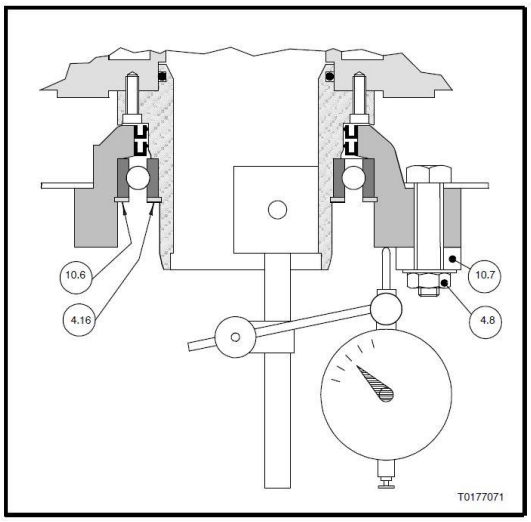
Check journal alignment.

Same procedure is done to control the journal alignment.
The micrometer gauge is now placed on the bearing housing, measuring the journal.
The gauge reading does not vary more than max. 0.03 mm on a 360°

If the measure is not below this range the journal must be removed, cleaned and mounted again.
See section 8.
After mounting the same procedure is done, if still problems new journal has to be ordered
The journal is controlled from the factory, so normally slack of alignment is due to dirt between journal and drum surface.

Lifting and supporting the drum for further mounting.

Lifting drum



Circlip pos 10.6 is removed and drum is placed on the support bolts, se below.

Mounting of support bolts.

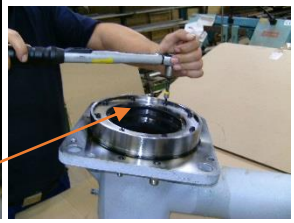
11. Replacing old seals, O-rings on suction connection piece





The ring pos 4.25 is removed so the seals can be replaced.
Seals and intermidiate ring pos 4.24 is replaced



The O-rings, seals and the ring pos 4.25 is placed again. Bolts tightened with 15 Nm
Important that ring pos 4.25 is fixed correctly.

12. Making liquid pipe and oil pipe ready for mounting, change of seals and O-ring

The O-rings pos 4.18 is changed

Seal pos 4.13 is replaced, important is positioning af this item

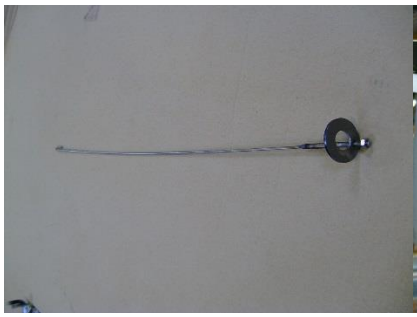
Seal pos 4.21 and O-ring pos 4.36 is replaced, Liquid pipe and oil pipe is cleaned

and lubricated

13. Mounting liquid pipe and oil pipe

The liquid pipe is fixed by the special tool as shown.
Please notice the direction of the liquid pipe signal pipe has to face opposite direction of where you will like the suction connection piece to face.
Meaning if the suction line is connected to the right of the machine this piece must face left direction

14. Fixing of oil pipe for further mounting



Pic 2

Pic 3

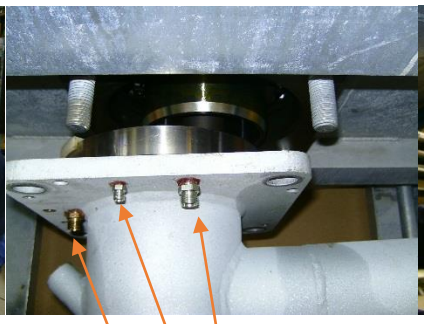
The special tool is used for the fixing and positioning of the liquid pipe is mounted.
The tool pic 2 is mounted as shown, turned 90° to fetch.
For mounting this tool the liquid pipe is fixed temperarly with tool shown at pic. 3.

When tool, pic 2 is mounted, the tool pic 3 is removed.

15. Preparing the journal and suction connection piece for further mounting


The surfaces are lubricated as shown.

16. Mounting the suction connection piece

The suction connection piece ispleced under the liquid pipe and lifted in right position.
Boltes are tightened.

Description of nipples:

1. Oil
2. Ventalation
3. Grease

Special tool for liquid tube is removed.

Drum is placed in correct position, the bolt are removed.

17. Preparing and muonting intermidiate piece and liquidinlet pipe

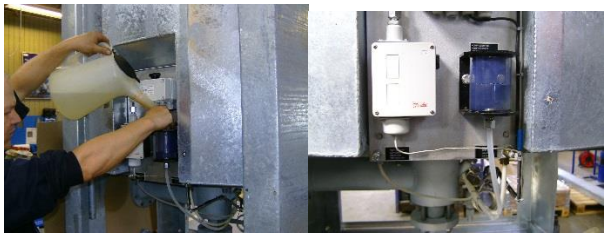
The parts are lubricated
The intermediate pæiece pos 4.6 is mounted together with the flange/liquid inlet pipe pos 4.5

18. Mounting of oil drain valve and accessories, depending upon model

Oil drain valve and plate for accessories are mounted.
(only if removed during dismantling)
The shown model is for lievel control

Mounting hoses for lubricating oil

Greasing the nipples



Filling oil to the oil pot
See section 1.

Mounting of bolt for knife.

19. Knife mounting and adjustment

The drum is never perfectly round, so before adjusting the knife, find the drum position where the clearance between knife and drum is least by letting the drum rotate. The position can be found by mounting a dial meter on the knife beam. Measurements should be taken near the bottom of the drum, in the middle of the drum, and near the top of the drum.

At normal room temperatures, the minimum clearance between knife and drum must be at least 0.3 mm.

- The knife is adjusted as follows:
- Loosen the bolts (5.3) that fasten the fixing flange at the top of the knife beam (5.2.).
- Adjust the beam by using the upper and lower nuts (5.1) on the stay bolts (5.7) until the clearance is 0.3 mm.
- Re-check the clearance after the fixing by means of a feeler gauge.