

OD-box RR4 potential internal interference between valves and housing

1. Background

It has been detected and reported a possible interference issue in some installations which are equipped with an oil distribution box OD-box double pipe system. The pitch locking valves installed in the guiding bush (rotor) of OD-box type might collide with the welded insert inside of the housing while rotating. Due to the OD-box production tolerances the interference is not consistent.

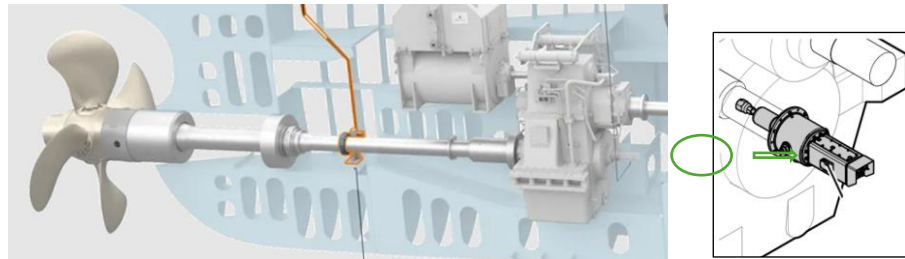


Fig.1 OD-Box type RR4, it's located in front of the reduction gearbox, at free end of output shaft.

1.1 Locking valve's location

Every guiding bush (rotor) has installed 4 locking valves, 2 in each direction (see fig.2) the purpose is to keep/ hold the pitch in position. The existing locking valves are two types: 4-port (long type) and 3-port (short type). The short valves (3 port) are standard type, long valves (4 port) are normally used in installation with a high ice-class.

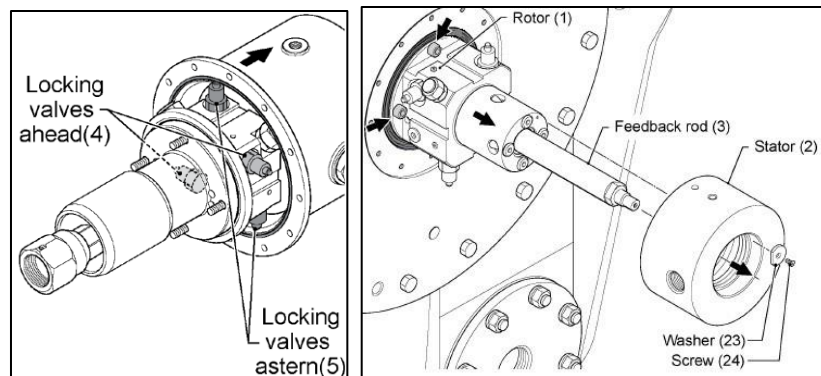


Fig.2 Pitch locking valves installed in the guiding bush (rotor)

1.2 Identification of the risk

- The short locking valves (3-port) has no risk of interference.
- There is a potential risk that the long pitch locking valves might collide with the socket welding inserts in the housing and as consequence the locking valve could get damaged.

There are three possible scenarios for the long valves.

1.2.1 Clearance.

In the best-case scenario, there is a clearance between the locking valves and the welding inserts, in this case no actions are needed since the system is working as designed / desire.

1.2.2 Light interference.

The locking valves are slightly touching the welding inserts in the housing. If this occurs, only a small amount of dust particles is detected from the grinding “nose” of the locking valve. See fig.3



Fig.3 Locking valve with contact marks “grinding nose”

1.2.3 Heavy interference (Failure).

The locking valves are heavily colliding the welding inserts inside of the housing. If this occurs, in the worst-case scenario this might cause:

- The propeller pitch goes uncontrolled to full astern after valves are broken off.
- System is severely contaminated and therefore, expensive flushing and cleaning of the whole hydraulic circuit is required.
- Major operational disturbance for the customer.



Fig.4 Locking valve severely destroyed and welding insert with heavy contact marks

2. Action overview

Due to the possibility of the worst-case scenario special attention is recommended for how to handle the locking valves in stock on board.

2.1 How the two valve types can be identified:

- Spare Part Number (SPN). Note that the same SPN is used for short and long type valves.
- Material numbers (MN). Unique numbers.
- Locking valve hard stamp coding. Unique nomenclature.
- Dimensional sketch from SUN catalogue.



Table: 1

	Locking valve 4-port (long type)	Locking valve 3-port (short type)
SPN	0000000	0000000
MN	xxxxxx	xxxxxx
Code	SUN-CWGG-LFN	SUN-CBGH-LKN
Drawing		
Picture		
ACTION	Do not use	Safe to use