

STEERING GEAR SERVICE NEWS

DATE : 2021/8/3

No.: E8-21-003

SUBJECT : Regular maintenance and inspection for the roller bearing

Our electro-hydraulic steering gear transmits the ram thrust to the rudder through the ram pin, roller bearing and hardened steel plate. Please refer to the item No.1120 in Fig. 1 for the locations of used. The roller bearing receives constant force from the ram and rudder plate, in addition they are in constant sliding contact with the hardened steel plate and ram pin. If the oilless bearing, which corresponds to the inner diameter of the roller bearing, wears out due to sliding, and the clearance between the oilless bearing and the ram pin becomes larger, some steering malfunctions such as abnormal noise, vibration and instability of the rudder plate are likely to occur. Therefore, we recommend to check the clearance between the oilless bearing and the ram pin every three months and at regular docking. Depends on the result of the inspection, we recommend to replace these parts to new ones.

1. Recommended replacement clearance of the roller bearing and the ram pin

Recommended replacement clearance : 0.5mm

2. Inspection procedure

Remove the stop ring, item No.1123 which fixing the upper side roller bearing. Measure the clearance between the oilless bearing and the ram pin with a feeler gauge. The measurements should be taken along the circumference and check maximum clearance. Note that only the upper roller bearing should be measured because the lower roller bearing will fall out when the stop ring is removed.

Caution) Do not widen the stop ring more than 1% of the ram diameter. It may be deformed.

3. In case of the clearance exceeds allowable (recommended) value.

We recommend to replace the roller bearing to new one. However, it can't replace the Oilless bearing only, because it is pressed into roller bearing. Therefore, it needs to be replaced roller bearing, including the oilless bearing, if you want to replace the roller bearing or the oilless bearing.

If wear is also observed on the ram pin side, it must also be replaced. Refer to the replacement procedure in the instruction manual. By the way, after replace the roller bearing or early stage of operation, some excess coating material which applied to the inner surface of the oilless bearings may be discharged as wear powder, but this is not abnormal. In addition, due to the characteristics of oilless bearing, there is no need to lubricate between the ram pin and the roller bearing.

KAWASAKI HEAVY INDUSTRIES, LTD.
PRECISION MACHINERY BUSINESS DEVISION
CUSTOMER SERVICE DEPARTMENT

ITEM NO. 符 号	NAME OF PART	名 称
1001	TILLER	舵 柄
1003	HARDENED STEEL PLATE	焼入鋼板
1004	SOCKET BOLT	六角穴付ボルト
1005	SOCKET BOLT	六角穴付ボルト
1010	KEY	キ ー
1101	RAM	ラ ム
1120	RAM PIN	ラムピン
1121	ROLLER BEARING	ローラベアリング
1122	SPACER RING	スペーサーリング
1123	STOP RING	ストップリング
1124	SET SCREW	止めネジ
1125	GUIDE BRACKET	案内金具
1126	SLIDE PLATE	当て板
1127	HEXAGON HEAD BOLT	六角ボルト
1129	SPRING WASHER	バネ座金
1130	OILLESS BEARING	オイルレスベアリング

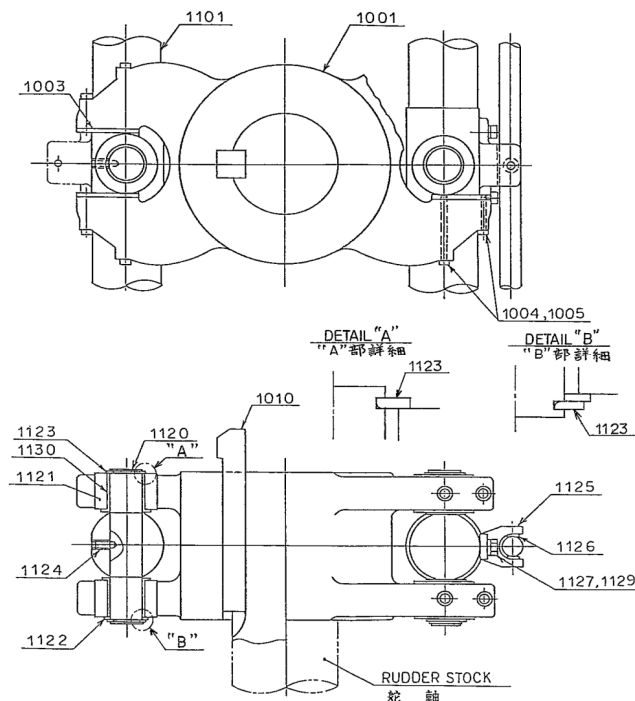


Figure1 Rudder and Ram

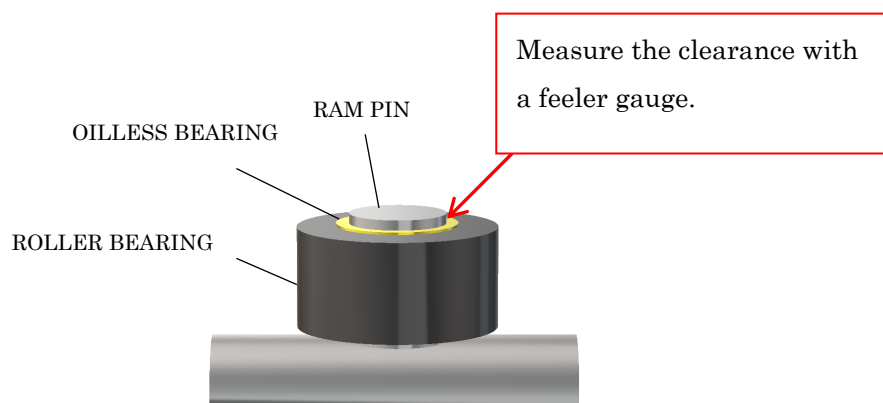


Figure 2 Measurement point