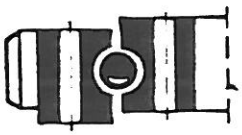
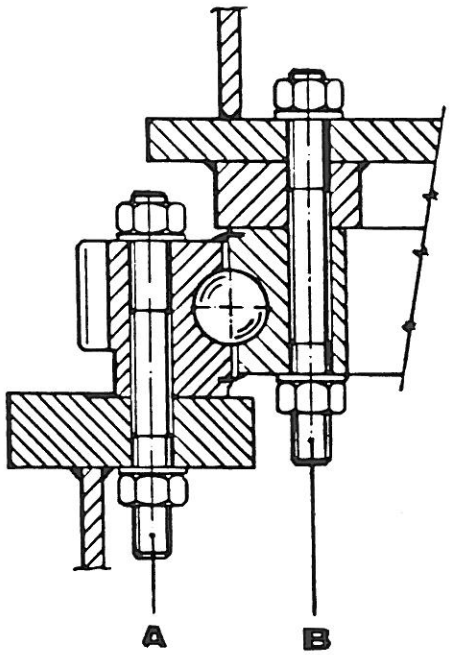
KRØJEKRANS
DREHKRANZ
SLEWING RING



K80L
K160

37-37277



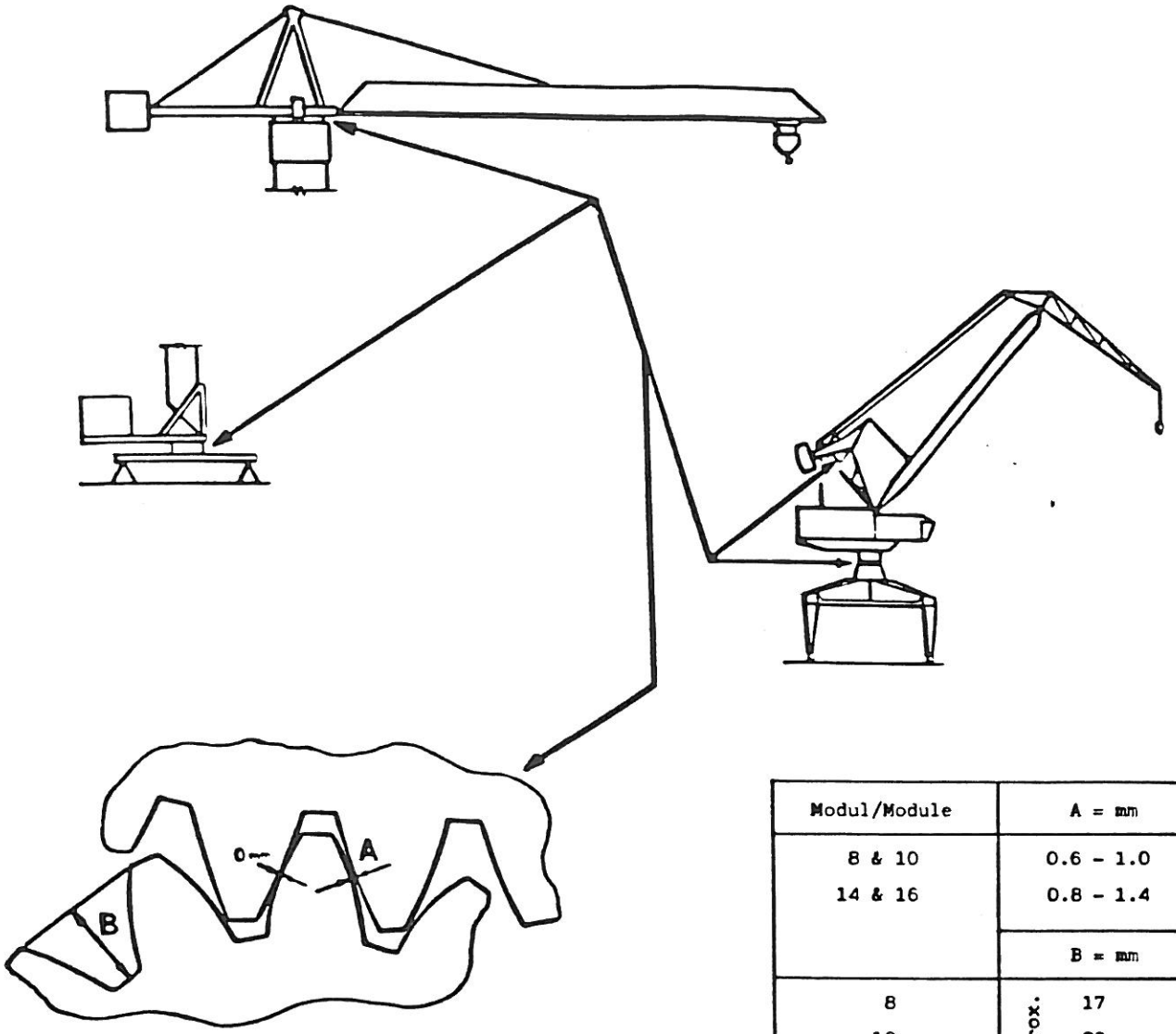
A		10.9 M27 L	
	B		
48		L=250	42-34815
	48		
96		DIN 6916/M27	
96		DIN 934 M27	

INF. REF.
5083-00 &
2267-00

37

600 kg

□ = X



Modul/Module	A = mm
8 & 10	0.6 - 1.0
14 & 16	0.8 - 1.4
	B = mm
8	ca./approx. 17
10	22
14	29
16	34

DANSK

TANDSPILLERUM FOR KRØJEKRANSE

De angivne tandspillerum gælder KUN for nye krøjekranse/tandsegmenter og drev. I andre tilfælde skal der justeres efter centerafstand mellem krøjekrans/tandsegment og drev. Kontakt venligst KRØLL KRANER A/S.

DEUTSCH

ZAHNFLANKENSPIEL FÜR DREHVERBINDUNGEN

Die Zahnflankenspielangaben gelten NUR für neue Drehverbindungen/Zahnsegmente und Antriebsritzel. Sonst ist der Abstand von Mitte Drehverbindung/Zahnsegment bis Mitte Antriebsritzel für die Justierung massgebend. Auskunft is bei KRØLL KRANER A/S erhältlich.

ENGLISH

TOOTH CLEARANCE FOR SLEWING BEARING RINGS

The tooth clearances given on this sheet ONLY apply to new slewing rings/rack segments and pinions. In all other cases, adjustment should be based on the distance from centre line slewing ring/segment to centre line pinion. Please consult KRØLL CRANES A/S, for info.

DANSK

TANDSPILLERUM FOR KRØJEKRANSE

Ved montage/udskiftning af krøjekranse og -gear skal tandspillerummet måles på det sted på krøjekransen, der er mærket med grønt. Hvis spillerummet er korrekt på dette sted, vil tandindgrebet være korrekt på hele omkredsen. Er mærket forsvundet, skal tandspillerummet måles mindst 4 steder på krøjekransens omkreds med 90° afstand. For tandsegmenter gælder, at tandspillerummet skal måles 3 steder, dvs. på midten samt 0,5 m fra hver ende. De anførte spillerum er minimum.

Krøjekransen skal først monteres på kranens svingning/overvogn, og tandspillerummet skal kontrolleres for hvert krøjegear, inden boltene tilspændes.

OBS: - Boltene skal krydsspændes først med 20%, dernæst med 60% og endelig med 100% af det max. tilspændingsmoment.

Vedr. montage/udskiftning af krøjekranse, se info-blad 2059.

DEUTSCH

ZAHNFLANKENSPIEL FÜR DREHVERBINDUNGEN

Bei Einbau/Austausch von Drehverbindungen und Drehwerksgetrieben ist das Zahnflankenspiel an der grün markierten Stelle zu prüfen. Wenn das Spiel an dieser Stelle korrekt ist, dann ist der Zahneingriff am ganzen Umfang in Ordnung. Ist die Kennzeichnung verschwunden, so ist das Spiel an mindestens 4 Stellen - um 90° versetzt - am Umfang des Drehkranzes zu messen. Bei Zahnsegmenten ist das Zahnflankenspiel an 3 Stellen zu messen, d.h. an der Mitte sowie 0,5 m von den beiden Enden. Das angegebene Spiel ist der Minimumswert.

Der Drehkranz ist zuerst auf die Drehbühne/den Oberwagen zu montieren, und danach ist bei jedem Drehwerksgetriebe das Zahnflankenspiel zu kontrollieren, bevor die Befestigungsschrauben angezogen werden.

NB: - Die Schrauben sind kreuzweise gleichmässig anzuziehen und zwar zuerst mit 20%, dann mit 60% und schliesslich mit 100% des max. Anzugsmoment.

Betr. Einbau/Austausch von Drehverbindungen, siehe Info.-Blatt 2059.

ENGLISH

TOOTH CLEARANCE FOR SLEWING BEARING RINGS

When mounting/exchanging slewing bearing rings and gear units on the slewing assembly, the clearance in tooth mesh should be measured at the point on the slewing ring which is marked with a green spot. If the clearance at this point is correct, the tooth mesh will be correct over the full diameter. If the mark cannot be found, at least 4 checks at equidistant points should be taken. The tooth clearance for rack segments should be checked at 3 points, i.e. at the centre plus 0.5 m (20") from both ends. The tolerance given is the minimum.

First, fit the slewing bearing ring on the slewing table/undercarriage of the crane, then check the tooth clearance for each slewing gear unit and, finally, tighten the slewing bolts.

Tighten the bolts crosswise, first with 20%, then with 60% and finally with 100% of the max. torque.

For mounting/exchange of slewing bearing rings, see info sheet 2059.

CHECKING WEAR OF THE SLEWING RACE IN BALL/ROLLER BEARING SLEWING RINGS

It is recommended to check the slewing race for wear once a year using the following procedure:

1 - The amount of wear is determined by measuring the distance "X" using a suitable instrument (dial indicator, vernier caliper or similar).

2 - First, check distance "X" at the max. backward moment, i.e. with no load on the hook and the trolley parked in the inner position at the mast.

3 - Then, check distance "X" at the max. forward moment, i.e. with the permissible tip load suspended on the hook and the trolley parked at the jib tip.

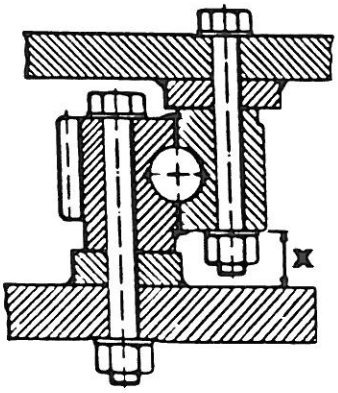
NOTE: - The jib must remain in the same position during both measurements.

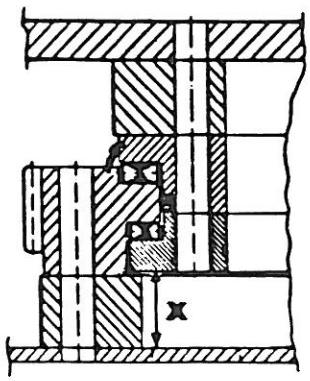
4 - Slew the jib 90 deg. and repeat the procedure.

5 - If the difference in the values between the measurements is as stated in the table on sheet 2 (or over), please consult KGC A/S.

The measured values in the fitted condition are commensurate with the axial movement made up of the play in the bearing and the elastic deformation of the supporting structure. The values given are based on experience gained from a number of measurements. For single-row ball bearing slewing rings in the fitted condition and depending on the design of the supporting structure values up to 2,5 times as big may be found. For two-row ball bearing slewing rings values up to 1.5 times and for roller bearing slewing rings values up to twice as big may be found.

To obtain accurate values it is advisable to make basic figure measurements before a new ball/roller bearing slewing ring is put into operation so that the amount of elastic deformation of the supporting structure is known. The play in the fitted bearing on delivery of the crane is given in the Rothe Erde test certificate.





CRANE TYPE	DRWG. No.	BEARING TYPE	BALL/ROLLER DIA.	PERMISSIBLE PLAY ON DELIVERY	AXIAL MOVEMENT IN FITTED CONDITION	PERM. WEAR	MAX. AXIAL MOVEMENT EXCHANGE BEARING
K-154/160/175 K-80L	061.50.1390.201.29.1503	Balls	50	0,8 mm	2,0 mm	2,6 mm	4,6 mm
	061.50.1390.202.49.1503	Balls	50	0,8 mm	2,0 mm	2,6 mm	4,6 mm
K-200 D(S)	061.50.1700.001.41.1503	Balls	50	0,8 mm	2,0 mm	2,7 mm	4,7 mm
K-250 D(S)	061.50.1700.000.41.1503	Balls	50	up to 1972 0,51 mm	1,275 mm	2,7 mm	3,975 mm
K-400 D(S)	061.50.2140.001.19.1503	Balls	50	0,54 mm	1,35 mm	2,9 mm	4,25 mm
	061.50.2140.002.49.1503	Balls	50	0,54 mm	1,35 mm	2,9 mm	4,25 mm
	061.50.2140.001.19.1503	Balls	50	0,96 mm	2,4 mm	2,9 mm	5,3 mm
	061.50.2140.000.11.1503	Balls	50	0,54 mm	1,35 mm	2,9 mm	4,25 mm
K-400 D(S)	011.50.2134.00049.1502	Two-row balls	50	0,50 mm	0,75 mm	3,8 mm	4,55 mm
K-550	191.25.2000.700.41.1502	Rollers	25	0,08 mm	0,16 mm	0,64 mm	0,8 mm
K-800/1000	061.60.2950.000.11.1504	Balls	60	0,65 mm	1,625 mm	3,2 mm	4,825 mm
K-800	011.50.2947.000.49.1502	Two-row balls	50	0,5 mm	0,75 mm	4,1 mm	4,85 mm
K-1000/1800	191.32.2800.210.41.1502	Rollers	32	0,12 mm	0,24 mm	0,88 mm	1,12 mm
	191.32.2800.200.21.1502	Rollers	32	0,12 mm	0,24 mm	0,88 mm	1,12 mm
K-1800 /1400	191.40.2808.000.41.1501	Rollers	40	0,12 mm	0,24 mm	0,93 mm	1,17 mm
K-2500/300(L)	191.32.4007.000.11.1502	Rollers	32	0,2 mm	0,4 mm	1,05 mm	1,45 mm
	191.32.4007.001.41.1502	Rollers	32	0,2 mm	0,4 mm	1,05 mm	1,45 mm
	191.32.4007.002.41.1502	Rollers	32	0,2 mm	0,4 mm	1,05 mm	1,45 mm
K-10000	191.40.4408.002.41.1501	Rollers	40	0,20 mm	0,56 mm	1,13 mm	1,69 mm
	191.40.4408.001.41.1501	Rollers	40	0,28 mm	0,56 mm	1,13 mm	1,69 mm
	191.40.4408.000.31.1501.	Rollers	40	0,2 mm	0,4 mm	1,13 mm	1,53 mm

DATA SHEET FOR MEASURING
THE AMOUNT OF PLAY IN BALL/ROLLER BEARING SLEWING RINGS

DATE	SLEWING OPERAT. HRS.	JIB POSITION								NOTES
		0°		90°		180°		270°		BASIC FIGURE MEASUREMENT
		1.1	2.2	3.1	4.2	2.1	1.2	4.1	3.2	

SLEWING RING TYPE: _____

CRANE TYPE: K- 160 SERIAL No. _____

INF. REF.
2277-02

TILSPÆNDINGSMOMENTER FOR KRØJEKRANSBOLTE

DANSK

Bolte og møtriker leveres sorte med let olierede gevind. Før montagen påføres gevindet på møtrikerne et tyndt lag Molykote pasta 1000.

ANZIEHDREHMOMENTE FÜR BEFESTIGUNGSSCHRAUBEN ZU DREHVERBINDUNGEN

DEUTSCH

Die Befestigungsschrauben und Muttern werden mit geschwärzter Oberfläche und leicht geöltem Gewinde geliefert. Vor dem Einbau ist das Gewinde der Muttern mit einer dünnen Schicht Molykote Pasta 1000 zu versehen.

TORQUES FOR SLEWING BEARING RING BOLTS

ENGLISH

The bolts and nuts are supplied with a black finish and lightly oiled thread. A thin coat of Molykote Paste 1000 should be applied to the thread of the nuts before fitting.

Krantype Krantyp Crane Type	Gevind Gewinde Thread	Kvalitet Qualität Grade	Tilsp. moment/Anziehmoment/Torque kpm	 ft.lbs.
K-68	M20	10.9	54	390
K-154/160 K-200D K-300 K-400D	M27	10.9	140	1010
K-550 K-600 K-800	M30	10.9	185	1340
K-1800 K-2500 K-3000	M36	10.9	330	2390
K-10000	M60	10.9	1450	10465

Gælder for serie-nr. 1234 samt fra og med serie-nr. 1243 --->
Endvidere alle krøjekranse leveret som reservedel.

Gilt für Fabrik-Nr. 1234 sowie ab Fabrik-Nr. 1243 --->
Ferner alle Drehverbindungen geliefert als Ersatzteil.

Applies to serial No. 1234 plus from and incl. serial No. 1243 --->
Further, all slewing bearing rings supplied as a spare part.

INF. REF.
2266-01

CHECKING SLEWING BEARING RING BOLTS (Combination Cranes)

Bolt Tightening

All the fixing bolts should be tightened to the same torque to avoid non-uniform load distribution which might result in overloading of some of the bolts and hence a risk of fatique fracture.

After an initial operating period of 2 to 4 weeks it is necessary to check the pre-loading of the bolts as settlement of the slewing ring contact face following erection cannot be avoided. The procedure is as follows:

- Balance the crane by suspending a load on the hook.
- Use a properly adjusted torque spanner/tool set.
- Each bolt should be retightened to the correct torque. Be sure that only one bolt at a time is completely loosened or removed.
- Always check all the inner and outer ring bolts.
- Bolt torques - see information sheet 2266.

Check Intervals

1	2 to 4 weeks after the crane has been put into operation.	Retighten all the bolts to the given torque.
2	After every re-erection of the crane or once a year or every 2000 operating hours.	Retighten all bolts to the given torque. If it appears that some of the bolts are tightened to less that 80% of the given torque, replace the loose bolt (-s) plus the adjacent bolt on either side. If 20% of the total number of bolts are tightened to less than 80% of the given torque, replace all the bolts.
3	When replacing the slewing bearing ring or every 7 years or every 14000 operating hours.	Replace all bolts.
4	After test/shock loading.	See point 2.

WHEN ANY BOLT IS REPLACED, THE CORRECT TYPE OF WASHER SHOULD BE FITTED BOTH UNDER THE BOLT HEAD AND NUT.

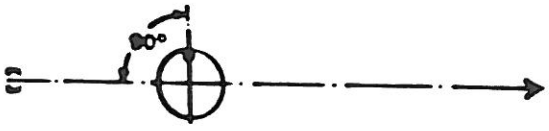
BOLTS AND NUTS ARE SUPPLIED WITH A BLACK FINISH AND LIGHTLY OILED THREAD. A THIN COAT OF MOLYKOTE PASTE 1000 SHOULD BE APPLIED TO THE THREAD OF THE NUTS BEFORE FITTING.

BOLT HEADS ARE MARKED "10.9 HV", NUTS "10 HV" AND WASHERS "HV". THESE ARE THE ONLY TYPES TO BE USED.

FITTING/EXCHANGE OF SLEWING BEARING RINGS

SERVICE

1. Machined contact faces for slewing bearing rings on mast head and slewing frame must be cleaned. The surface should be smooth, even and plain. Remove rust, paint, burrs at bolt holes, etc., using a steel brush, emery cloth or similar.
2. The contact faces should be lightly oiled after cleaning.
3. Remove paint, rust, burrs, etc., from the supporting surfaces of the bolt head and nut. Note that the bolt heads/nuts must abut the supporting surfaces.
4. Do not fit used bolts. Only special bolts and lightly oiled nuts are to be used. Apply a thin coat of Molykote Paste 1000 to the thread of the nuts before fitting.
5. Remove the protective coating (red or blue) from the contact faces of the slewing ring using a solvent. Be careful when cleaning to prevent the solvent from entering the bearing.
6. Fit two eye bolts equally spaced on the inner ring bolt circle, lift the slewing ring and carefully lower it onto the machined contact face of the mast head. Fit the bolts with loose nuts. NOTE: - Each bolt is to be fitted with a washer both under the head and also under the nut.
7. The contact faces of the mast head and slewing bearing ring must be checked for out-of-flatness by inserting a feeler gauge between the mating surfaces both from outside and inside. The permissible out-of-flatness depends on the length of any unevenness: up to 200 mm length = 0.1 mm max., up to 500 mm length = 0.2 mm max. If the deviation exceeds these values, the supporting surface must be machined to prevent distortion of the bearing when the bolts are tightened. If machining is not possible, then an air-hardening plastic grout should be used, see special information sheet.
8. Suspend the slewing frame on the hook so that it is vertical when lifted. Lift the slewing frame and carefully lower it onto the slewing bearing inner ring. The filler plug for the balls (which is located on the inner ring) should be positioned approx. 90 deg. from the jib centre line. Turn the slewing frame, until the teeth marked in green of the bearing are in mesh with the slewing pinion of one of the gearboxes. Fit the bolts with loose nuts. NOTE: - Each bolt is to be fitted with washers both under the head and also under the nut.



9. Check out-of-flatness between slewing frame and slewing bearing ring as described in para. 7.
10. Check tooth clearance at the point marked in green, see sheet 2011.
11. Tighten all nuts lightly.
12. Tighten all inner and outer ring bolts crosswise with the torque tool set (which must be well-adjusted). For torques, see sheet 2266.
13. Grease the slewing bearing ring in accordance with sheet 2014.

On the first erection of a crane fitted with a new slewing bearing ring a test run with no load on the hook should be carried out by slewing the jib to the right/left for approx. 2 hrs. and checking the motors for uniform current consumption. Then, the crane should be test loaded followed by re-tightening of all bolts.

The crane is now operational.

KRØLL CRANES

INF. REF.
2059-01