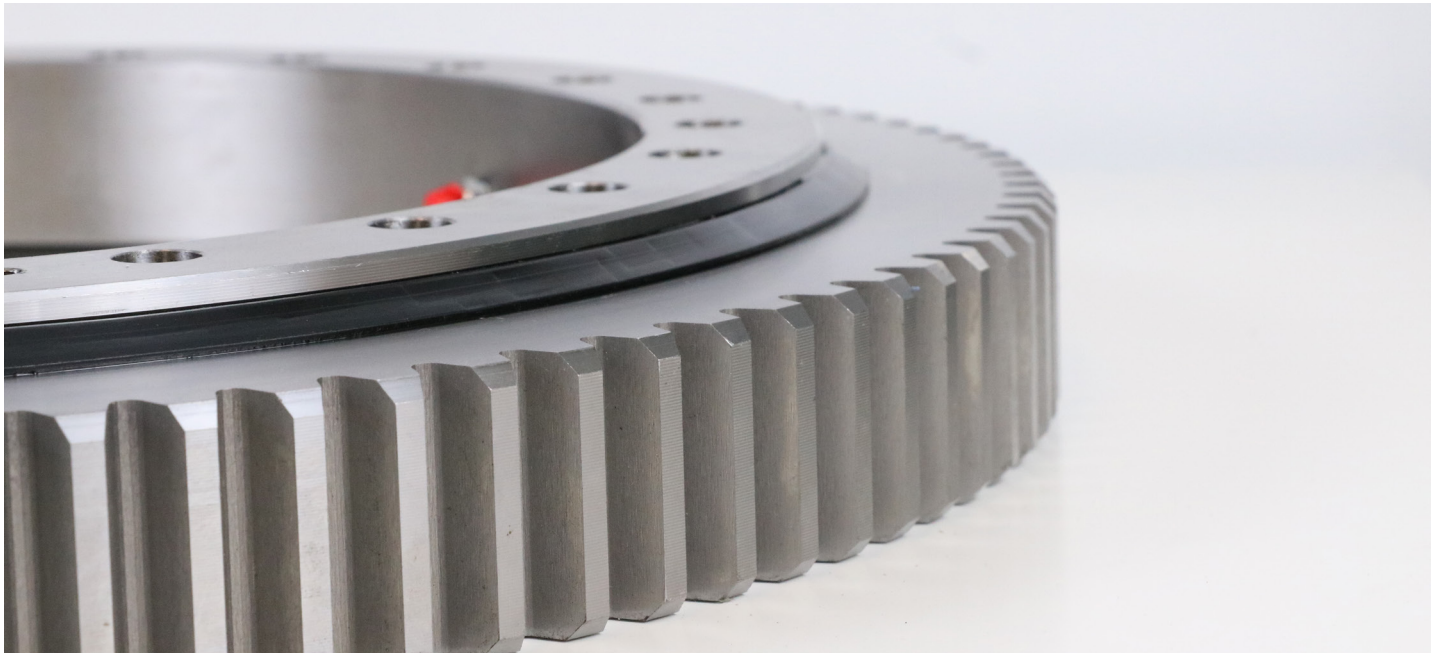
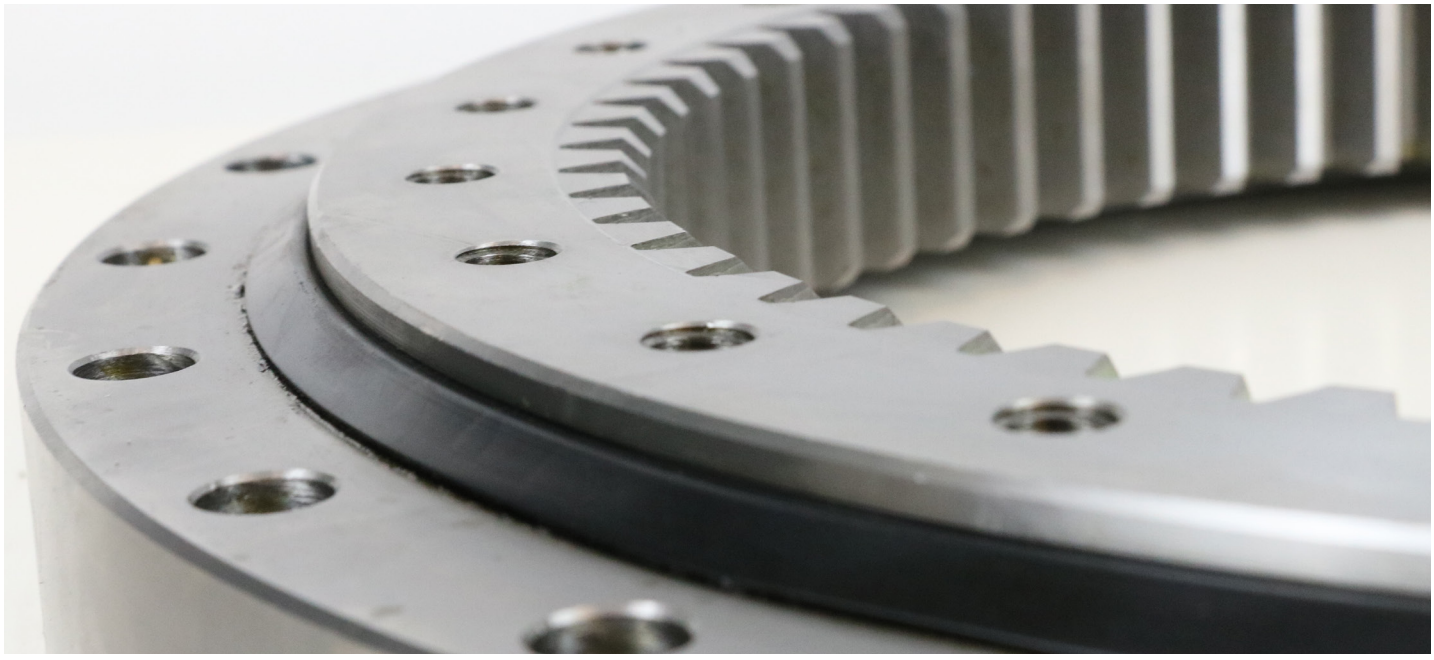
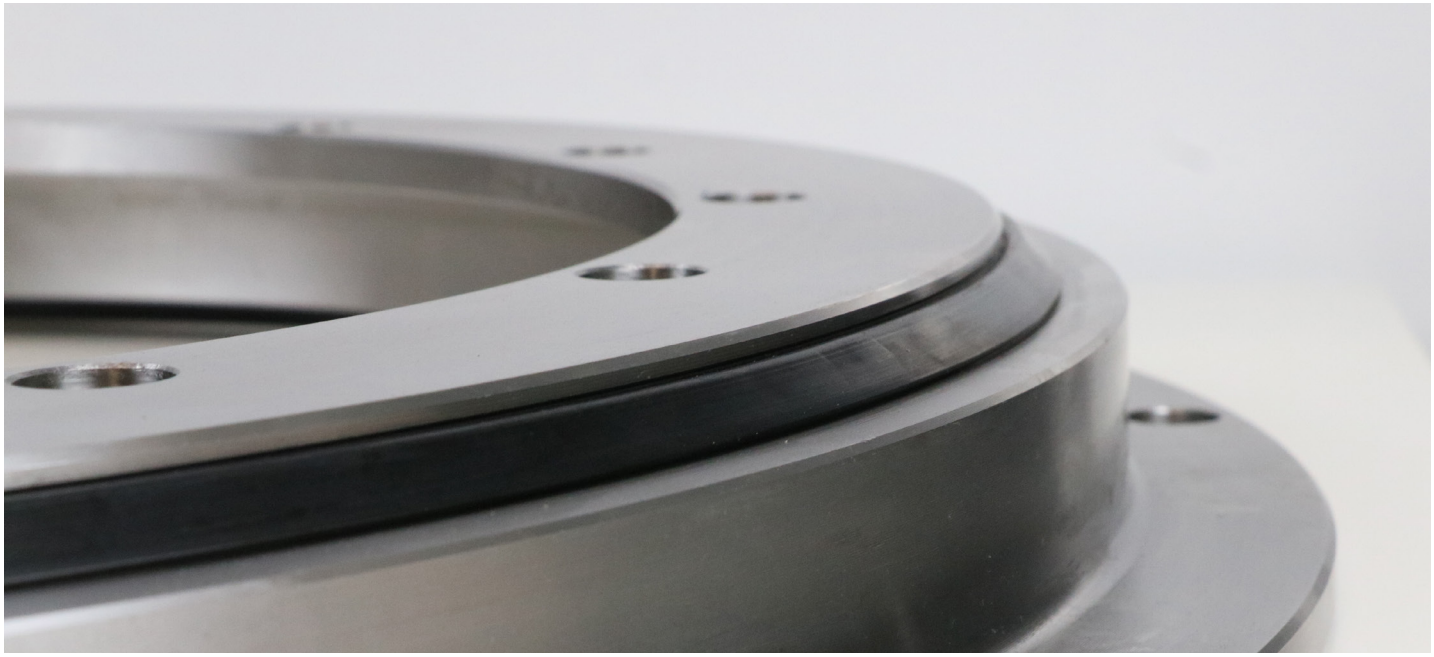
Manual

BÖNNEKAMP

2026-02







Slewing Rings

Installation must be carried out with great care and by a professionally trained person. Improper installation negatively affects performance and safety.

Cleaning

Remove external corrosion protection with standard cold solvents (e.g. naphtha etc.). Avoid contact with seals and raceway.

Mounting

The mounting surface must be flat and free of contaminants (e.g. paint, weld spatter etc.).
The inner and outer rings of the slewing ring must lie flat and across the entire width of the connecting structure.

Table 1 – Permissible flatness and angular deviation of surfaces

Diameter Raceway (mm)		250	500	750	1000	1250	1500	2000
Flatness deviation including angular deviation of each mounting surface (mm)	Ball (4-points contact)	0,08	0,10	0,13	0,15	0,18	0,19	0,22
	Cross roller	0,06	0,08	0,09	0,10	0,11	0,13	0,15

The deviations may only be reached once per sector of 180°. The angle deviation relates to a flange width of 100 mm and may only amount to half of the table value.
In case of deviation from the flange width of 100 mm, the value can be calculated proportionally.

Setup for assembly

Verify that the slewing ring is completely supported by the structure. Position the slewing ring on the mounting surface. For optimum functioning, both rings of the slewing ring are marked with different markings. The hardening gap marked with an “S” (always fill plug position) must be outside the load zone on the slewing ring with point load, i.e. the marking must be positioned at 90° perpendicular to the load direction of the engaging load.

On geared slewing rings, the point with the highest eccentricity of the gearing is marked with green paint. The tooth clearance is adjusted at this point using a feeler gauge or plumb line. To avoid unacceptable pressure on the tooth flanks, the minimum value of the flank clearance between the pinion and the gear ring should be approx. 0.03 - 0.04 x module.

After tightening the bolts, the tooth clearance must be checked again around the entire circumference.

Fastening bolts

The safe functioning and service life of the slewing ring are influenced by the bolt connection. It is therefore necessary to adhere to the specified number, quality, and size of the bolts.

The support surface of the threaded part of the bolt and of the nut must not have any chamfered corners. A chamfered corner causes an additional alternating bending load, which has a negative effect on the service life of the bolt
In addition, the mounting holes of the bearing rings and the connecting structure must match, otherwise this will cause stress in the bearing.

When using bolts with a higher quality class than 8.8, hardened washers in accordance with DIN 6916 are required under the bolt head and nut. Due to the high clamping force of the bolts, this otherwise leads to material yielding and thus to a reduction in bolt tension and the resulting loosening of the bolts. Only with hardened slewing rings the hardened washers can be omitted.

Assembly and fastening

The thread of the bolts must be greased. For geared slewing rings, the non-geared ring must generally be fastened first.
Lightly tighten the bolts and then turn the ring that is not yet fastened several times without jerking. After this, the bolts must be tightened crosswise according to the table value. The loose ring must be rotated approx. 15° during tightening, which ensures correct running of the slewing ring during operation. Bolts > M30 must always be tightened using a hydraulic tensioning device. The ring that is not yet attached must be bolted to the connecting structure as described above.
The actual tightening torques for the bolts may differ from the table values due to factors that cannot be influenced, such as more or less heavily greased threads.

Locking and spring washers must not be used under any circumstances! The bolts are secured by the preload of the bolts. Due to material stresses, welding work on the slewing ring is not permitted.

Clearance

In order to determine the rejection value, the initial play must be measured immediately after assembly and recorded.

Wear limits for increased axial (tilt) play:

Ball diameter	Increased clearance
14 mm	initial + 1.1 mm
16 mm	initial +1.2 mm
20 mm	initial +1.3 mm
22 mm	initial +1.4 mm
25 mm	initial +1.5 mm
32 mm	initial +1.7 mm
40 mm	initial +2.0 mm

Table 2
A tightening torque table for bolts up to M30 based on VDI 2230 μK = 0,14 ; μG = 0,125

Bolt Size	Tightening torque (Nm) for bolt grade	
	8.8	10.9
M10	45	63
M12	78	117
M14	126	184
M16	193	279
M20	387	558
M24	666	954
M27	990	1395
M30	1260	1800

Inspection bolts

Approximately 100 operating hours after initial installation, the bolts must be checked for the required tightening torque due to settling. Thereafter, every 700 operating hours, but at least twice a year. The bolts must be tightened when the slewing ring is completely unloaded, i.e., free of radial force and without overhanging torque.
The inspection interval may be changed due to special use and specifications from purchasing organizations.

Permissible circumferential speed

For four-point contact slewing rings, the permissible circumferential speed is 1 m/s. If the slewingring need to be used at a higher speed, please consult us. Special measures are required for this.

Lubrication

Water-repellent lithium soap grease in accordance with DIN 51825 TI of NLGI class 2 DIN 51818 should be used for the raceway.

Lubricating oils Typ B in accordance with DIN 51513 should be used for the gearing.

The lubrication intervals depend largely on environmental influences and operating conditions (bearing load, speed) of the slewing ring.

Under normal use, the lubrication interval should not be less than 100 hours. However, if the number of operating hours per week exceeds 70 hours, the lubrication interval must be limited to 50 hours.

In aggressive and highly contaminated environments, lubrication should also be carried out every 50 hours. Enough grease should be pressed into the lubrication points one after the other to squeeze out the old grease. A new circle with fresh lubricating grease should then form around the entire seal. Lubrication should be carried out while slowly rotating the slewing ring.

The slewing rings must not be exposed to “the elements” and must be installed as soon as possible.

If the expected storage time exceeds twelve months, it is recommended that surfaces that are not normally treated should also be treated. On request, it is possible to treat the surfaces with a protective oil that can be washed off with naphtha or degreaser.

The running surfaces are generally supplied with a type of lubricant specified in the lubrication instructions. The gearing, on the other hand, are not lubricated.

The slewing rings are generally packaged on pallets or in boxes and wrapped in foil.

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