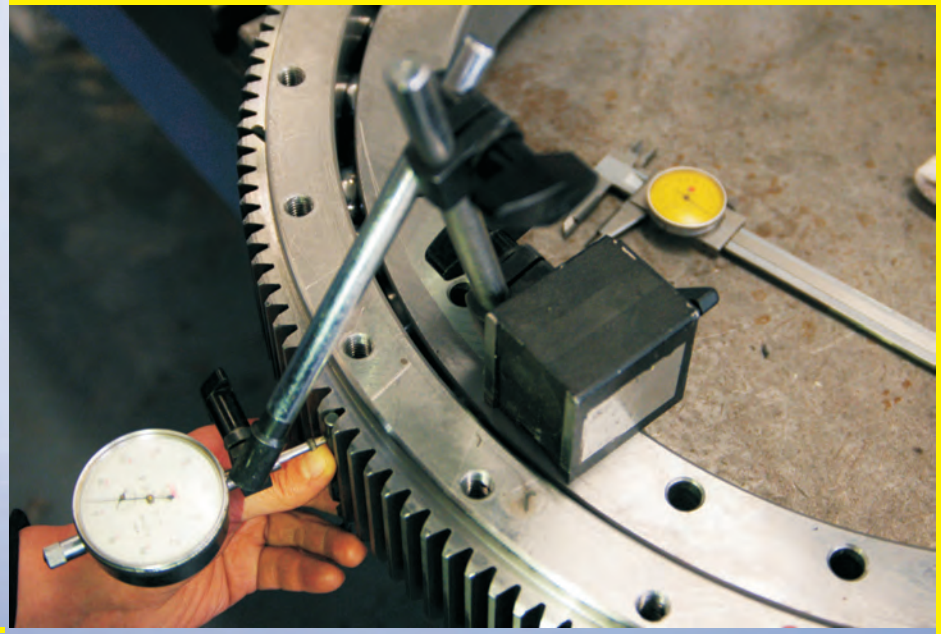
SOCARE® SLEW RINGS

SOCARE®
SLEW RING MANUAL

Please Read all Instructions and Manuals
Carefully Before Installation



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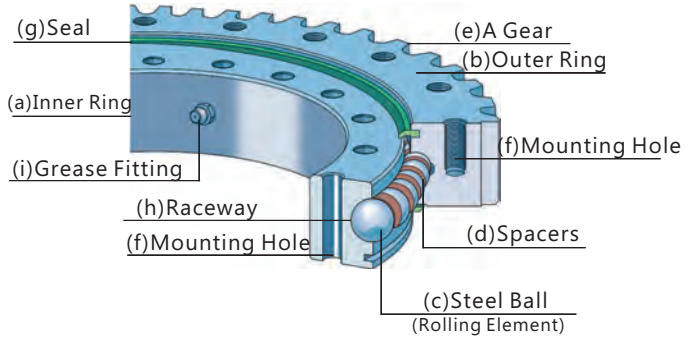
Generally, slewing bearings are large-size rolling bearings that can accommodate axial, radial and moment loads acting either singly or in combination and in any direction. They can perform both slewing (oscillating) movements as well as rotational movements. Basically, a slewing bearing (fig. 1) consists of an inner ring (a), an outer ring (b) and rolling elements - balls (c) or cylindrical rollers -- that are separated by polyamide spacers (d). The rings, one of which usually incorporates a gear (e), are provided with holes (f) to accommodate attachment bolts. The holes may be threaded. Generally, only the raceways in the rings (h) are hardened and precision-ground. Integral seal ring (g) made of acrylonitrile-butadiene rubber (NBR) keep the lubricant in, and contaminants out of the bearing. Slewing bearings are relubricated through grease fittings (i) to reduce maintenance and operating costs.

The Structure Sketch of Slew Ring



Compared to traditional pivot arrangements, slewing bearing arrangements provide many design and performance advantages. The compactness and large inner diameter simplify the design of the bearing arrangement and its associated components. The low sectional height of these bearings means that the pinion lever can be kept short. In most cases only flat surfaces on the associated components are needed.

Slewing bearings were originally designed to be mounted only on horizontal support structures, but can now be used successfully in vertical bearing arrangements.

Slewing bearings perform extremely well in a variety of applications such as:

*Access platform
*Bucket wheel excavators
*Antennas and Radar
*Equipment
*Harbour and shipyard cranes
*Mobile Cranes
*Offshore technology
*Machine tools
*Packaging and filling machine
*Rail vehicles
*Stackers and reclaimers
*Steelmill equipments
*Tower cranes
*Antennas and radar
*Wind and solar energy plants
*Water treatment equipment
*Communication systems
*Robots
*Tunnel boring machine

General:

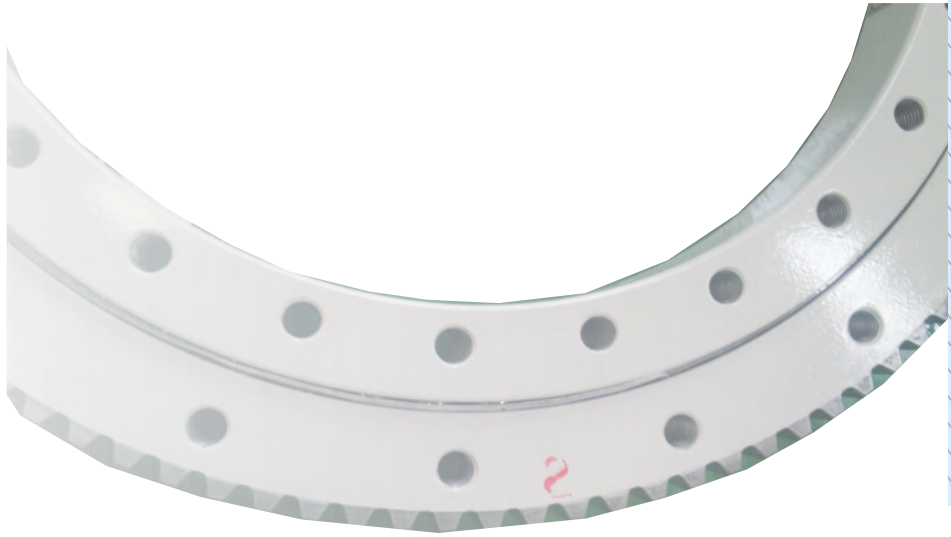
© The purchaser is responsible for protective measures and installation of all the equipment.

© Please read the manual carefully before installation, By complying with the manual can the working characteristic be ensured.

© The following instructions provide the information needed for correct installation and maintenance of the Slew Ring.

© All steps listed below are to be executed by qualified personnel.

© Please do not hesitate to contact our technical department for any further assistance.



SOCARE®

Correct installation is the key.
Regular maintenance is necessary.

Longer service life means lower cost of use!

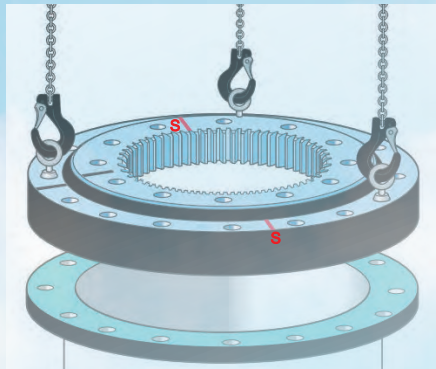


fig. 2

Service Contact:

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Slew Ring Installation and Maintainence Manual

1. Support Structures

1.1 Design of the Support Structure

The Slew Ring has a limited axial stiffness: the diameter is large compared to the cross section. It must be mounted on a machined supporting base, ensuring sufficient stiffness with regard to loads to be transferred.

This makes it possible to ensure an even distribution of stresses and to avoid any deformation during operation which would be harmful to the operation of the bearing.

Therefore ,it is necessary to use supporting bases with a minimum thickness not less the values indicated in the Table 1 below.

The width of the supporting surfaces is to be at the least equal to that of the ring.

Table 1

Raceway average (mm)	500	750	1000	1250	1500	2000	2500	3000	4000	5000	6000
Minimum thickness(mm)	25	30	35	40	50	60	70	80	90	120	150

We strongly advise not to use structural reinforcement ribs on the support structure.
For better loading distribution, thick circular flanges are preferred(fig3).

The best distribution of forces can be achieved when roller is in line with tubular support structure.

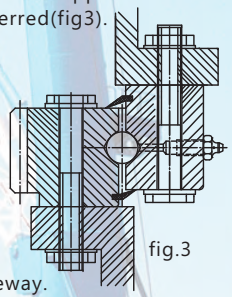


fig.3

1.2 Support Structure Tolerances

Shape defects of the supports lead to deformation of the raceway.
This can cause tight spots or possible deformation and will reduce the bearing service life.

1.3 Allowable Flatness vs Raceway Diameter

The maximum flatness defects must not exceed the values of the following Table 2.
Conceptual explanation SLOPE "P": SLOPE "P" means machined contact surfaces of supporting structure

Tolerated out-of-flatness including slope "P" of the machined contact surfaces for SOCARE® bearings. The maximum admissible flatness deviations are listed in Table2 as reference values:

Table 2

Track diameter in mm (DL)	Out-of-flatness including slope per support surface "P" in mm		
	Double row ball Slew Ring Axial ball bearing	Single row ball Slew Ring 4 point contact bearing	Roller Slew Ring Combination Bearing
To 500	0.15	0.10	0.07
To 1000	0.20	0.15	0.10
To 1500	0.25	0.19	0.12
To 2000	0.30	0.22	0.15
To 2500	0.35	0.25	0.17
To 4000	0.40	0.30	0.20
To 6000	0.50	0.40	0.30
To 8000	0.60	0.50	0.40

*Regarding the slope of the machined surfaces, the figures shown in Table 2 refer to a support width of 100mm.
*Another important factor is to ensure that the maximum value is reached only once per 180° sector.
*To avoid larger deviations and the occurrence of peaks in smaller sectors, any deviations in the range of 0° - 90°- 180° must only rise or fall gradually.

1.4 Allowable Deflection vs Raceway Diameter

As in the case of out-of-flatness, any deflections in the supporting structure must not be allowed to lead to localized buckling which might cause tight spots in the raceways.

This could easily lead to local overloads. For this reason, the same conditions as for the out-of-flatness apply.

For the maximum permissible deflections given in Table 3, the permissible slope may be twice the value given in Table 3. (Reference width 100mm).

The maximum permissible axial deflections shown in Table 3 apply to all slewing ring types and are indicated as a function of the track diameter of the slewing ring.

Table 3	
Maximum permissible axial deflections for contact surfaces at a maximum operating load	
Track-diameter in mm (DL)	Maximum axial deflections in mm
To 1000	0.6
To 1500	0.8
To 2000	1.0
To 2500	1.3
To 3000	1.6
To 3500	2
To 4000	2.5
To 4500	3
To 5000	3.6
To 5500	4.2
To 6000	4.8
To 7000	5.8
To 8000	7.0

***Radial Slewing Ring Deflections**

In addition to considering the permissible initial out-of-flatness and maximum deflections of the slewing ring support structure under load, it is also essential that radial deflections of the slewing ring structure are observed and controlled.

Due to the influence of a wide variety of parameters, it is not possible to publish actual permissible limit values for radial deflection for every style of slewing ring and application. In general, however, to assure uniform load distribution around the slewing ring, the relative radial displacement of the inner and outer slewing ring rings should not exceed the radial clearance built into the slewing ring.

1.5 Epoxy Resins

If the above tolerances could not be met, then Epoxy-type resins can be used instead of finishing-machining of the surfaces.

Several products are possible depending on the dimensions and the amount of out of flatness to be compensated. More information is available from our technical department.

2. Transport Handling and Markings

2.1 Bearing handling

To reduce the risk of injury, wear gloves when mounting slewing bearings. Also, use carrying and lifting tools that are specially suited for mounting such bearings.

Slewing bearings should be transported and stored flat on a surface that extends over the whole side face of the bearing .When the bearing is to be moved or held in position, appropriate lifting tackle should be used. Eyebolts, for example, should only be subjected to a load in the direction of the shank axis. Also, keep in mind when using eyebolts that the hole size is limited and only designed to accommodate the weight of the bearing. The bearing should never be weighted down with tools or associated components. Slewing bearings should never be suspended from a single point using a sling or one bolt, because the rings are relatively thin-walled and the weight of the bearing could deform the rings.

Like other rolling bearings, slewing bearings should remain in their original, unopened package until immediately before mounting so that they will not be exposed to contaminants like dirt unnecessarily. The preservative coating applied to a new bearing from the factory should be removed from side faces that will be in contact with the support surface.

2.2 Bearing markings

To facilitate correct installation, the inner and outer rings of SOCARE® slewing bearings are marked on one side face according to (fig. 2)in page 6.

The letter “S” indicate a small unhardened area in the raceway -the soft zone on the raceway between the beginning and end of induction hardening. Whenever possible, this area coincides with the position of the hole that is needed for ball or roller loading and is closed with a plug.

To facilitate backlash adjustment, a blue or green marking on the geared ring which is the maximum teeth jump point (green/blue painting often be marked at top or root of teeth) locates the smallest gap between two teeth (fig. 3).

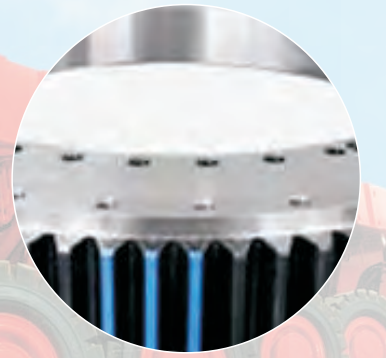


fig.3

3 Storage

Slewing bearings can be stored in their original package for approximately 6-8 months, provided that the relative humidity in the storeroom does not exceed 60% and there is no vibration and no great fluctuation in temperature .

The protection of the bearing enables storage at about 20°C at a maximum relative humidity of 75%.

Slewing bearings should only be stored lying flat on a surface where the entire side face is supported . If stored in the upright position, the weight of the rings and rolling elements can result in permanent deformation.

For additional information about storage, contact the SOCARE® application engineering service.

****Reminder**

A. After a long storage period the large antifriction bearing could incur high rotational resistance during start up and running through suction of the seal ring. Careful lifting with a blunt article around the entire circumference and repeated rotation of the large antifriction bearing over 360 ° right and left this reduces the torque to normal values.

B. The wrapped rings have a greased/oiled surface allowing limited storage in a covered and temperature controlled area.
C. A suitable protection must be applied for longer storage.
D. It is necessary to re-grease before installing the bearing for operation.

4 Unwrapping and Degreasing

4.1 When unwrapping the bearing

*Take care not to cut the protective seals when removing the packing paper.
*Cut this paper , preferably on the external diameter , and not on the upper or lower faces.

4.2 When degreasing the bearing

*Use a standard commercially available solvent. Chlorine containing solvents are prohibited.
*Take care not to introduce any solvent under the seals or in the raceways.
*Before fitting the grease nipples or junction pipes, remove the caps or screws from the greasing holes.

5.Installation

5.1 General

The slewing ring support surface must be absolutely flat. (See table 2.) The upper and lower ring must make perfect contact and this must be checked using a leveling instrument or a feeler gauge.

The contact surfaces require machining. Welding beads, burrs, excessive paint residues and other irregularities must be removed.

Non-machined contact surfaces can be provided with cast resin grouting, but only if use of grout was considered and approved by SOCARE® at the design stage.

The protective coating should be removed from the upper and lower mounting surfaces of the slewing ring as well as from the gear. No solvent should be allowed to come into contact with the seals and raceways. Gears already greased should not be cleaned.

All grease nipples must be easily accessible. Where necessary, grease pipes should be provided to allow relubrication through all grease holes.

*Correct mounting of a slewing bearing depends on the design of the application and the type of slewing bearing. The following information is quite general, but provides basic information proven in the field. For additional information, contact the SOCARE ® application engineering service.

5.2 Preparations for mounting

Before mounting, all necessary parts, tools, equipment and data need to be on hand. SOCARE® also recommends checking all drawings and instructions to determine that each component is assembled in the correct order

5.3 Supporting Structure

*Make sure that supporting structures comply with specifications.
*Check for chips,weld seam particles,corrosion signs or any other dirt etc.
*Check for good fitment of the rings on the supports.

5.4 Centering Ring

When loads along the radial axis are important, especially when the bearing is placed vertically ,it is then mandatory to use the centering ring to fix the bearing in position.

The structural adhesive type LOCTITE 586 provides a good means to limit the relative displacements between Slewing Bearing and supports.

5.5 Positioning (Hardness Gap)

The unhardened zone between the beginning and end of the hardened region of the raceway is identified by a stamped letter "S" near the nameplate or filler plug at the inner or outer diameter of each slewing ring ring. On a geared ring, the hardness gap is marked on the axial surface. On a point loaded ring, the hardness gap "S" should be positioned outside the main area of load, where possible.(must be placed at 90 deg to the main load axis or to the arm supporting the load.) (fig.4)

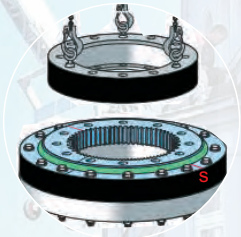


fig.4

5.6 Installation Steps

*1. Adjust the bearing so that the bolt holes in the ring coincide with those of the support structure. Check that the bearing is level over the entire seat surface with feeler gauge .

*2. Coat the bolt threads with a thin layer of light oil.

*3. Fit the bolts, washers and nuts and manually tighten them .
(see 5.7 Fastening Bolts in page 14 & 15)

*4. In a first round, tighten the bolts or nuts to between 40 and 50 % of the prescribed value, following the tightening pattern In a second round, fully tighten the bolts or nuts to the prescribed preload , following the tightening pattern.(fig.5)

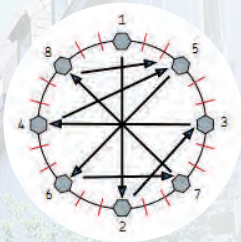


fig.5
Bolt tightening pattern

* 5. Check for correct installation by turning the "free" ring . The torque, which might be high due to preload, grease and friction of the seals, should not show any excessive variation or "tight spots" during rotation. If the torque varies excessively, then check the flatness of the mating surfaces as detailed in Table 2 on page 7.

* 6. Position the second support structure with its support surface on the free bearing ring. The marking S on this ring must be at 180° from the marking S of the mounted ring (fig.4)

*7. Adjust the position of the support structure so that the bolt holes coincide with those of the bearing ring.

* 8. Coat the bolt threads with a thin layer of light oil.

*9. Fit the bolts, washers and nuts and tighten them, following steps 3 and 4.

*10. Check the installation by rotating the assembled bearing arrangement. The torque should not show any excessive variation or tight spots during rotation .

* 11.Measure the tilting clearance with the the aid of a dial gauge by applying a defined tilting moment .Check 180° from the measuring point to be sure that the radial clearance is virtually zero.

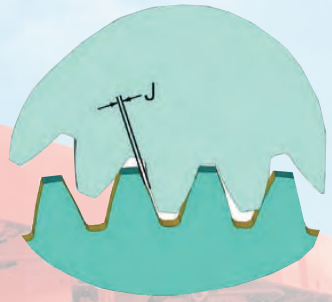
*12.For geared slewing bearings, check the backlash, using a feeler gauge, after positioning the pinion .The measurement has to be made at the blue/green mark on the bearing gear, which indicates the point where the backlash is smallest.(fig.3) Required values for backlash are listed in Table 4. If these values are not attained, correct the backlash by adjusting the distance between the centres of the gear wheels.

*13. Supply grease to the raceway via the grease fittings provided in one of the bearing rings If applicable, rotate the bearing during the greasing operation. If a centralized lubricating system will be used, connect the lubricating tubes to the bearing.

*14. Lubricate the gear.

Gear Pitch Dia. (in.)	Minimum Backlash J (in.)		Maximum Backlash (in.)			
			Diameter Pitch (Pd)			
		1.5	1.75	2	2.5	3,4,5
20	0.014	0.029	0.027	0.025	0.023	0.022
30	0.015	0.030	0.028	0.026	0.024	0.023
40	0.016	0.031	0.029	0.027	0.025	0.024
60	0.018	0.033	0.031	0.029	0.027	0.026
80	0.020	0.035	0.033	0.031	0.029	0.028
100	0.022	0.037	0.035	0.033	0.031	0.030
120	0.024	0.039	0.037	0.035	0.033	0.032

Table 4



Gear Assembly Backlash

5.7 Pinion

fig.6

At the point of maximum deviation of the pitch circle, three teeth are usually marked in green. This allows the satisfactory adjustment of the backlash. The backlash at the narrowest point should be at least 0.03/DP,(fig.6).

After the final tightening of the bolts of the slewing ring the backlash should be checked around the entire circumference.

It must be verified that all the bolt holes in the slewing ring line up with the holes in the companion structure! Otherwise, the slewing ring may become distorted.

Key points

*The pinion should be located approximately at 90° of the major loading axis.
*Adjust the driving pinion to be maximum eccentric point of the ring gear,marked by a green line.
*At this stage,the backlash must be within the limits of the calculated values or minimum at 0.03*DP
*When several pinions are used,each one must be adjusted to the same conditions.
*During tests,make sure that good alignment of the pinion and of the Slew Ring axes permits a satisfactory contact across all the gear width.
*Before running,lubricate the teeth of the Slew Ring gear and of the pinion.

5.7 Fastening Bolts

The standard is ISO grade 10.9, ASTM490, or SAE J429/Grade 8. Bolts must be carefully preloaded crosswise to specified values (See Table 5 on page 15 for bolt tightening torque levels.)

The surface pressure under the bolt head or nut must not exceed the permissible maximum value . Use hardened washers, if necessary. The minimum bolt length must be assured.

The determination of the tightening torques will not only depend on the bolt grade, but also on the friction in the thread and the contact surface of the bolt head and nut.

The tightening torques given in Table 5 on page 15 are recommended values based on lightly oiled threads and contact surfaces.

Dry threads will require higher torques while heavily oiled threads will require lower tightening torques. The values may, therefore, vary considerably. This applies in particular to threads M 30 or 1-1/4", and larger. For bolts of this size and larger we recommend the use of hydraulic tensioning devices.

Table 5 Clamping Forces and Tightening Torques

Bolt size	Tensile Area (sq.in.)	ASTM A-490/Grade 8 (130,000 psi yield) Clamp Load at 90% Yield (lbs.)	Clamp Load at 70% Yield (lbs.)	Torque Ref. At 70% Yield (ft-lbs)	Nominal Ref. Mtg.Torque (ft-lbs)
1/4-20 UNC	0.0318		2,894	11	10
5/16-18 UNC	0.0524		4,768	24	22
3/8-16 UNC	0.0775		7,053	42	38
7/16-14 UNC	0.1063		9,673	67	60
1/2-13 UNC	0.1419	16,602	12,913	102	92
9/16-12 UNC	0.182	21,294	16,562	147	132
5/8-11 UNC	0.226	26,442	20,566	204	184
3/4-10 UNC	0.334	39,078	30,394	361	325
7/8-9 UNC	0.462	54,054	42,042	582	524
1-8 UNC	0.606	70,902	55,146	873	786
1 1/8-7 UNC	0.763	89,271	69,433	1,237	1,113
1 1/4-7 UNC	0.969	113,373	88,179	1,745	1,571
1 3/8-6 UNC	1.155	135,135	105,105		
1 1/2-6 UNC	1.405	164,385	127,855		
1 3/4-5 UNC	1.90	222,300	172,900		
2-4.5 UNC	2.50	292,500	227,500		
2 1/4-4.5 UNC	3.25	380,250	295,750		
2 1/2-4 UNC	4.00	468,000	364,000		
Bolt size	Bolt size	DIN 10.9 (136.335 psi yield) fasteners Clamp Load at 90% Yield (lbs.)	Clamp Load at 70% Yield (lbs.)	Torque Ref. At 70% Yield (ft-lbs)	Nominal Ref. Mtg.Torque (ft-lbs)
M5x0.8	0.0220		2,101	6.6	5.9
M6x1	0.0312		2,973	11.4	10.3
M8x1.25	0.0567		5,414	27	25
M10x1.5	0.0899		8,580	55	50
M12x1.75	0.1307	16,033	12,470	96	86
M14x2	0.178	21,872	17,011	151	136
M16x2	0.243	29,860	23,224	229	206
M18x2.5	0.298	36,516	28,401	317	285
M20x2.5	0.380	46,596	36,241	457	412
M22x2.5	0.470	57,627	44,821	612	551
M24x3	0.547	67,136	52,217	782	704
M27x3	0.711	87,296	67,897	1,143	1,029
M30x3.5	0.870	106,696	82,986	1,549	1,394
M33x3.5	1.076	131,991	102,659		
M36x4	1.266	155,384	120,854		
M39x4	1.513	185,624	144,374		
M42x4.5	1.74	213,011	165,675		
M45x4.5	2.02	247,245	192,302		
M48x5	2.28	279,577	217,449		
M52x5	2.73	334,732	260,347		
M56x5.5	3.15	386,082	300,286		
M60x5.5	3.66	448,845	349,101		

6.Inspection

6.1 General

As with all important machine components, slewing bearings should be cleaned and inspected regularly. Maintenance intervals depend entirely on the operating conditions. In applications where there are heavy loads and/or high levels of contamination, decrease the time between inspections.

To avoid accidents or injuries during the inspection process, be sure that the moving part of the slewing bearing arrangement is balanced and that no tilting moments or radial loads are present.

6.2 Inspecting axial tilting clearance

To determine and record wear in slewing bearings, SOCARE® recommends checking the axial tilting clearance after 500 operating hours, or at least once half a year. Since there is a definite relationship between raceway wear and increased axial clearance, measure the axial clearance prior to operation. This is normally done during the bearing installation process The results of the first and any subsequent measurements should be noted and recorded as a graph.

6.3 Inspecting bolt joints

Special attention must be paid to the bolt joints. Depending on the application, all bolts need to be retightened between third week and 12th week of operation. Before start-up after an extended period of machine downtime, after 500 operating hours or at least once 3-5 months, all attachment bolts of a slewing bearing arrangement should be retightened . In cases where:

* a bolt has lost 20% or more of the prescribed preload, then the actual bolt(s) as well as the two adjacent ones, must be replaced

* at least 20% of the bolts of a single ring are found to have less than 80% of the prescribed preload, then all the bolts must be replaced.

Never loosen or exchange more than one bolt at a time. Use the same tightening method, the same tools and the same type of bolts employed originally.

**Reminder
The first inspection of bolt pre-tension torque should be carried out after 100 operating hours,For each subsequent inspection,the intervals should be 500 operating hours.
The bolt connection has to keep a sufficient pre-tension during the whole bearing life.

Note: The instructions for inspecting bolt joints should not be considered as a substitute for standards that may apply in countries where the slewing bearings are operated.
When replacing a slewing bearing, always replace the bolts too.

6.4.Seal inspection

The seals or sealing arrangements should be inspected at least every six months during normal maintenance. If necessary, clean the seals and if there are signs of damage, replace the seal to prevent any contaminants from entering the bearing.

Furthermore, check that there is always a sufficient amount of grease around the entire circumference of the sealing lip.

7. Lubrication and Maintenance

7.1 Main properties required for multipurpose grease

As being a significant component of the bearing, grease will improve the bearing capacities and lifetime.

Recommendations for bearing lubricant:
*Lithium-base soap.
*Grade NLGI 2.
*Anti-wear and extreme pressure additives.
*Service temperature:-30 C to + 120 C.
*4 Ball test:weld load:ASTM D2596 (NT24)>300
*Maximum NDM: for balls=60,000 for rollers=30,000

7.2 Grease Holes

Radial or facially located ,depending on design.

Remove these plugs before fitting the Slew Ring with grease nipples or linked to a centralized lubrication system.

Caution:
The filler plug for the rolling elements has a blind tapped hole which is not a greasing hole.

7.3 Re-greasing Methods

Whenever the application allows it, greasing must be carried out during rotation at slow speed on two revolutions minimum ,through all the greasing holes.

7.4 Grease Frequency

Raceway and gear

The greasing frequency varies according to utilization and environment.

We recommend re-greasing every 50 hours when the conditions of application are severe or if the environment is dusty or wet.

SOCARE® bearings come with pre-lube.
Greasing is required, before and after a long idle period.
Re-grease every 6 months, while rotating, during prolonged idle periods,

7.5 Grease Quantity

Raceway

The grease quantity is defined by the Engineering Department whenever a detailed bearing calculation is provided.

Approximate practical formula to determine the minimum necessary quantity "Q" in cm^3:

Q=0.005/3 * D*H with:
D=raceway mean of the bearing in mm
H= overall height of the ring in mm

In all cases, a light extrusion of new grease must appear at the protection seal lips.

Gear

The grease must entirely cover the flanks of the pinion and of the ring gear whether applying by brush or spraying.

7.6 Grease Table

According to our experience ,the grease mentioned in the below table are compatible with each other and with the components of the bearings.

It is possible to use other lubricants provided that you are sure of their compatibility with the standard recommendation beforehand.

Greases containing molybdenum disulphide MoS2 are strictly forbidden.

BEARING	GREASE MAKER	GEAR
Energrease LS-EP2	BP	Energrease lc 2
Mobilux EP2	Mobil	Mobilgear OGL 461
Alvania EPLF2	SHELL	Malleus OGH
Rhus L 474/2	MOTUL/BECHEM	Berulit GA400
BEACON EP2	ESSO	Multi-Purpose Grease (Moly)
Multis EP2-Lical EP2	TOTAL FINA ELF	Ceran AD
Epexa 2 / Epexelf 2	ELF	Cardrexa DC1
Spheerol EPL 2	ELF	Castrol LMX
Aralub HLP 2	ARAL	Aralub MKA-Z 1

Subject to change in accordance with the manufacturer recommendations and product development.

8. Preventive Maintenance

8.1 Protection Survey

A visual examination makes it possible to ensure the integrity of the protective seals.

*Absence of excessive stretch or rips
*Correct positioning
*Wear of the friction lip

If necessary,replace the seal.

After re-greasing,remove residue of old grease and check for pollutants such as sand,coal,metallic particles,etc.

8.2 Fastener Survey

It is particularly important to check that the required preload level of the bolts is still maintained as the fasteners of the Slew Rings are essentially working in fatigue.

We recommend retightenning the fasteners after the first two to four months of utilization and then processding to a systematic yearly check.

If any bolt is found loose,a further in deep examination is essential. The necessary preservative measures must then be exercised. Some regulations impose the replacement of fasteners every 5 years or every 10,000 working hours.

In any case,refer to local rules and regulations enforced in connection with the application.

8.3 Orientation Survey

During cleaning prior to re-greasing of the gear:

* Check carefully for any foreign body at the tooth root,ring and pinion.
* Check the even load distribution of the pinion on the entire width of the ring gear and correct the alignment of the axes if needed.
* Check the backlash value.

8.4 Checking the clearance under load (for bearings with preload)

When bearing with a preload ensuring proper functioning and optimum safety.

During the product life,the preload decreases resulting in a noticeable increase of clearance under load.

The bearing must be replaced when the clearance becomes incompatible with the proper functioning of the machine and with the required safety conditions for the type of material used.

8.5 Rotation Survey

To quantify the wear factor,it is necessary to know the clearance under load.

* In new condition:J0
* At time of survey:J1

These measurements are made under the same initial conditions after having checked the tightening of fasteners, it is most advisable to register the measured values in the maintenance logbook specific of the machine.

Wear is the difference :u=J1-J0

*The bearing must be placed under survey when :u J0
*Its replacement must be considered when : u 1.5J0. and it is required when :u 2J0

In any case, refer to laws and regulations applicable in the country where your equipment will be used.

General Note

This manual is only giving general technical information regarding the application of Slew Rings. The equipment designer remains responsible for determining the right bearing for his application.

Upon request we can give assistance in determining the correct service factor and calculate the suitable bearing for your application. We do not accept any liability without being consultant and having explicit added our approval.