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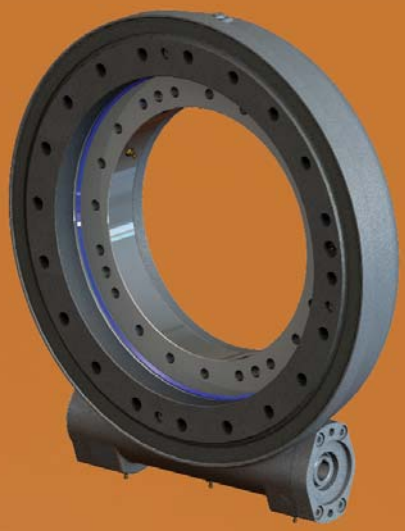
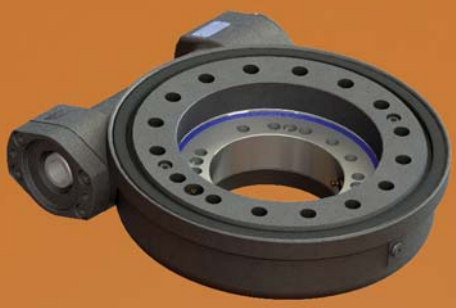
SLEW DRIVES INDUSTRIAL





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we move

Your movement solutions

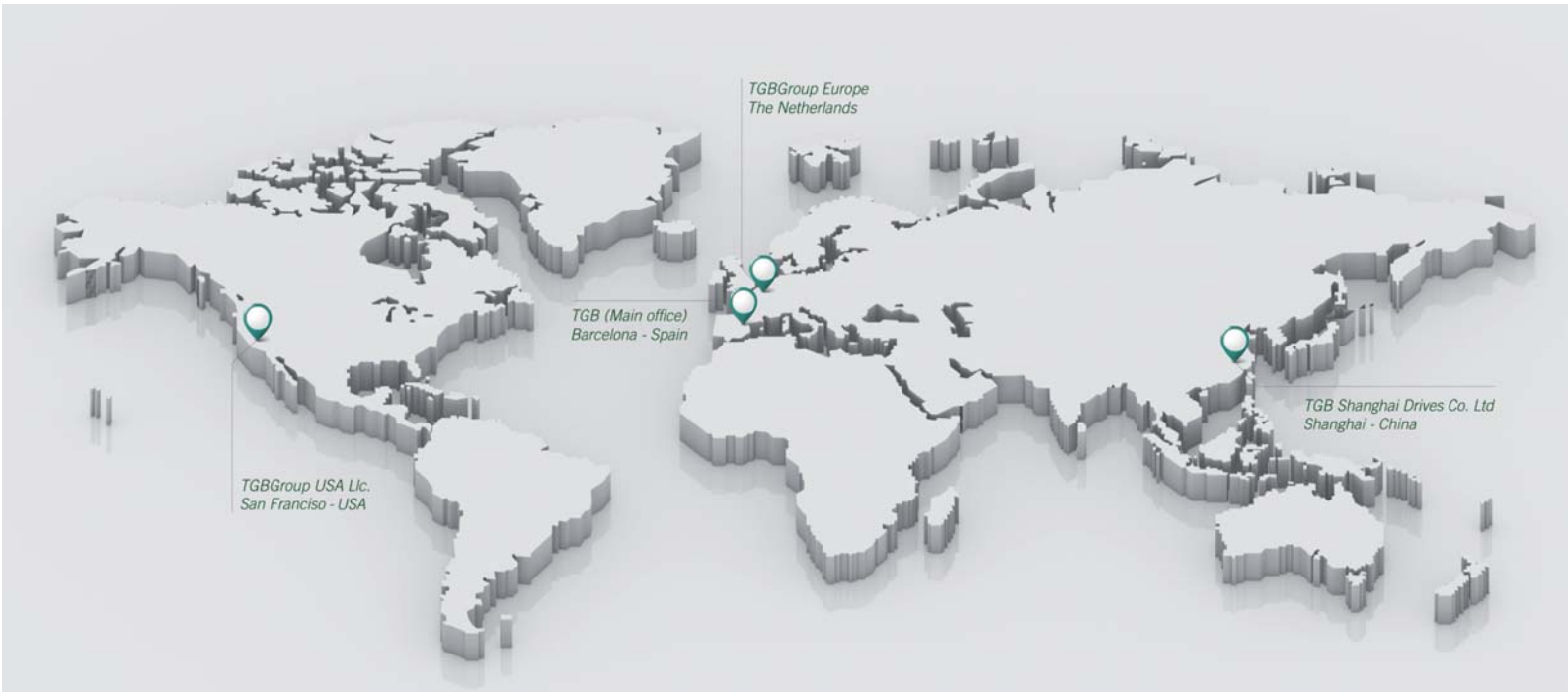
TGB Group

With over 20 years of experience in bearings, gears and power transmission, the TGB Group has become a global leader in the development and production of movement solutions for the industrial and renewable energy markets. The TGB Group has manufacturing facilities on different continents which enables us to provide competitive solutions and customise projects while being able to retain a flexible manufacturing system and offer worldwide deliveries!

Our aim is to forge long lasting relationships with our customers by demonstrating our commitment throughout the engineering process, by exceeding customer expectations, by providing excellent service and by offering the best value for money.

Our knowledge and experience will enable you to make the right choice!

TGB Group S.L.



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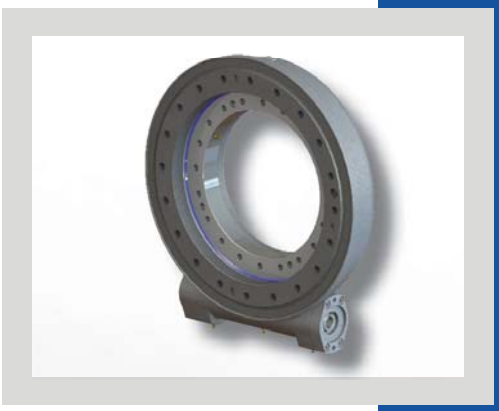
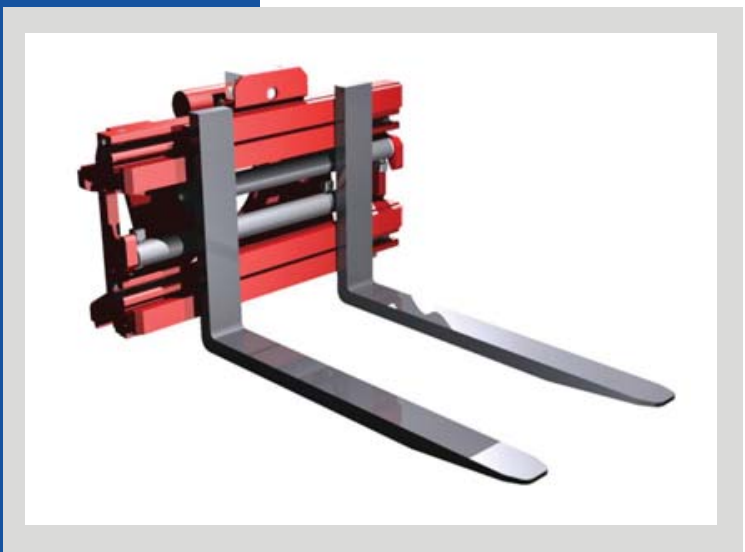
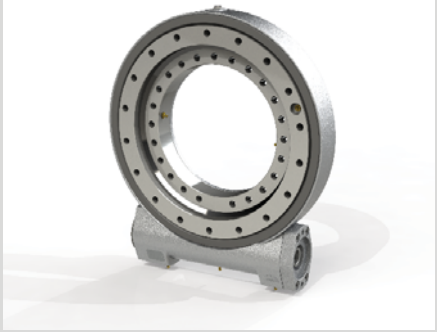
Ed. 2 (MAY-15)

Application Examples





Application Examples



1.Slewing drives characteristics

Slewing drives present some characteristics that should be taken into account to choose the proper series for each application. The main points to consider are the ones following:

- The maximum output speed must be less than 1rpm.

- The standard temperature working range of a slewing drive is established between -20 and 70ºC.

- The slewing drives can be used both in horizontal and in vertical position. In case installing it in vertical position please consult the TGBgroup Technical department.

- The load diagrams for each drive show its limit static load with a safety factor of 1. TGBgroup recommends adding an application factor to the loads according to the following table. To assure the drive chosen is the right one, the load case of the application must be below the limit curve.

Application	Application criteria	Application factor
Casting	Extreme application	1.5
Machines for building / cranes	Extreme application	1.25
Vehicles and mounting on vehicles	Extreme application	1.25
Forklifts / Bulldozers	Light shocks	1.1
Treatment plants	Vibrations	1.25
Wind turbines	Danger of streaking	2.0
Robots	Rigidity	1.25
Antennas	Precision	1.5
Machines-tool	Precision	1.5
Measurement technique	Smooth operation	2.0

The load diagrams are also limited by the bolts. They are only valid if all the bolts of the slewing drive are used to fix it to the structure. The quality of the bolts is considered grade 10.9, the threaded length should be at least 1.5 times the bolt diameter and the recommended flange thickness 2 times the bolt diameter. If the bolt curve does not appear in the chart, this means that this curve is above the slewing ring chart.

In case you have questions regarding the application for breach of any point of the ones mentioned above or various load cases are applied, we recommend contacting TGBgroup Technical Department. In case the slewing drive chosen does not adapt to your application we recommend consulting the slewing ring catalogue, as there exist a major variety of products and features.

2.Transport, handling and storage

Transport only in horizontal position avoiding possible impacts. The vertical series should be transported and stored in vertical position. The slewing drive should be manipulatedcarefully and wearing working gloves all the time. The threaded holes can be used to fix bolts to handle the slewing drive in a safety way with a hoisting device. Store always in horizontal position and in closed rooms.

3.Installation

Previous to the installation, a cleaning of the slewing drive and the structure where is going to be mounted must be done. It is not allowed the use of steam high pressure systems. It should be checked that the slewing drive is fully supported by the structure. The supporting surface must accomplish some requirements considering a maximum flatness deviation. The slewing drive must be mounted without any external loads. It is convenient to perform working tests in the structure before the loads are applied. The bolts used must be from the dimension, quantity and quality indicated.

4.Lubrication

For all applications a proper lubrication is necessary for a smooth operation of the slewing drive. There are three parts that need to be lubricated: the slewing ring raceway, the screw worm and the bearings. The quantity of grease required is around 60cc for the screw worm, 10cc for each tapered roller bearing and 10cc each 250mm of diameter for the slewing ring raceway. The procedure to regrease consists in injecting grease into all grease nipples one after the other while rotating the slewing drive. The slewing drives must be regreased after each cleaning and also before and after large periods of inactivity.

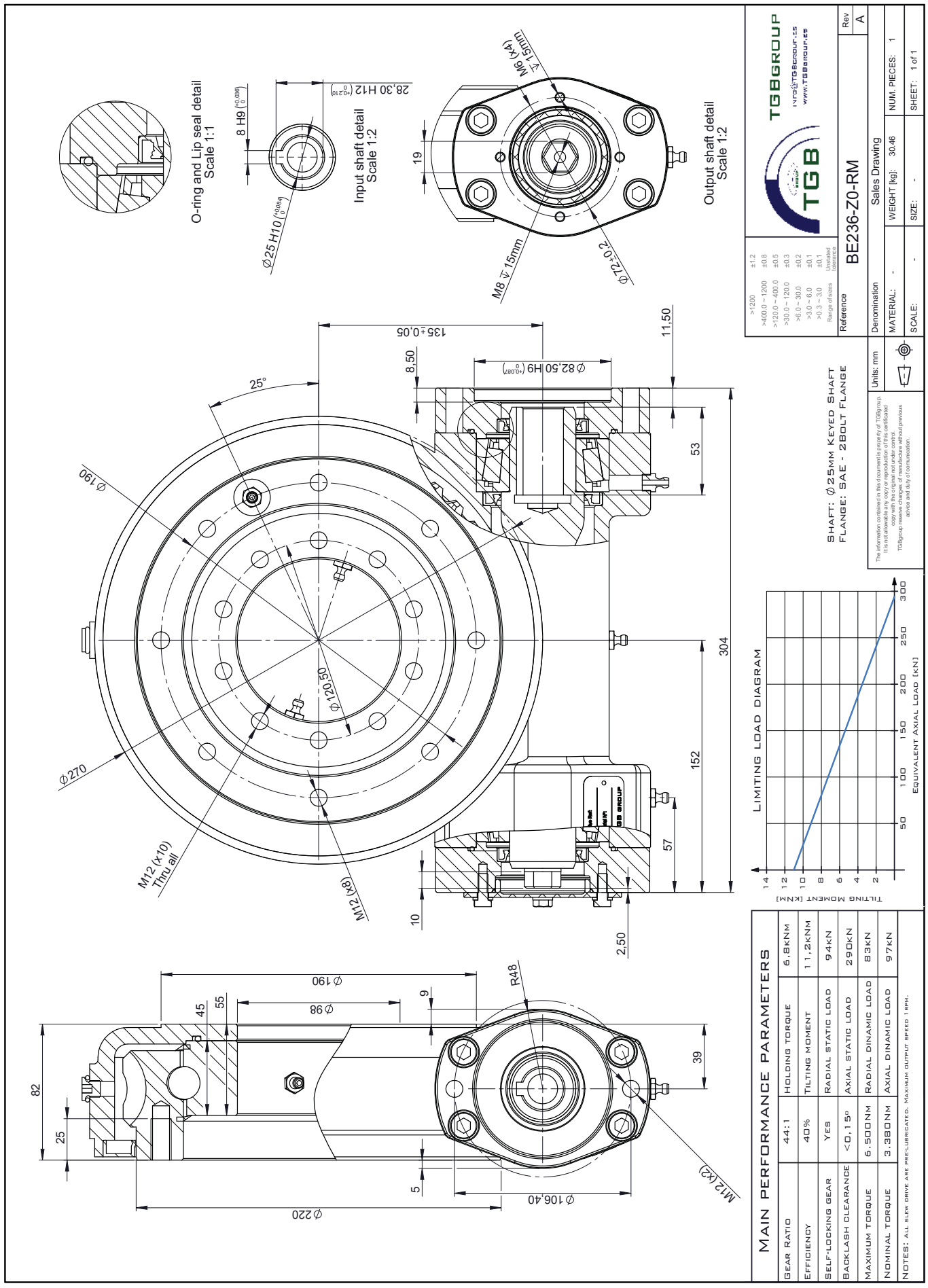
Re-lubrication is needed to assure a minimum quality on the grease inside the drive. In case no comparative results are available, the following table can be used as a reference.

Working conditions	Slewing Ring and Screw Worm Re-lubrication intervals
Rotational speeds <0,5rpm Non extreme environmental conditions (solar trackers)	Every 400 hours of operation or once every 12 months
Rotational speeds >0,5rpm Non extreme environmental conditions (man lift, industrial applications)	Every 200 hours of operation or once every 6 months
Extreme climatic conditions (sea / desert / Arctic climate / very dirty surrounding) (tunnelling machines/steel mills)	Every 100 hours of operation or once every 3 months
Bearing re-lubrication intervals	
All working conditions	Every 400 hours or every 12months

To choose the proper type of grease for each application, please contact TGBgroup technical department.

5.Maintenance / Security controls

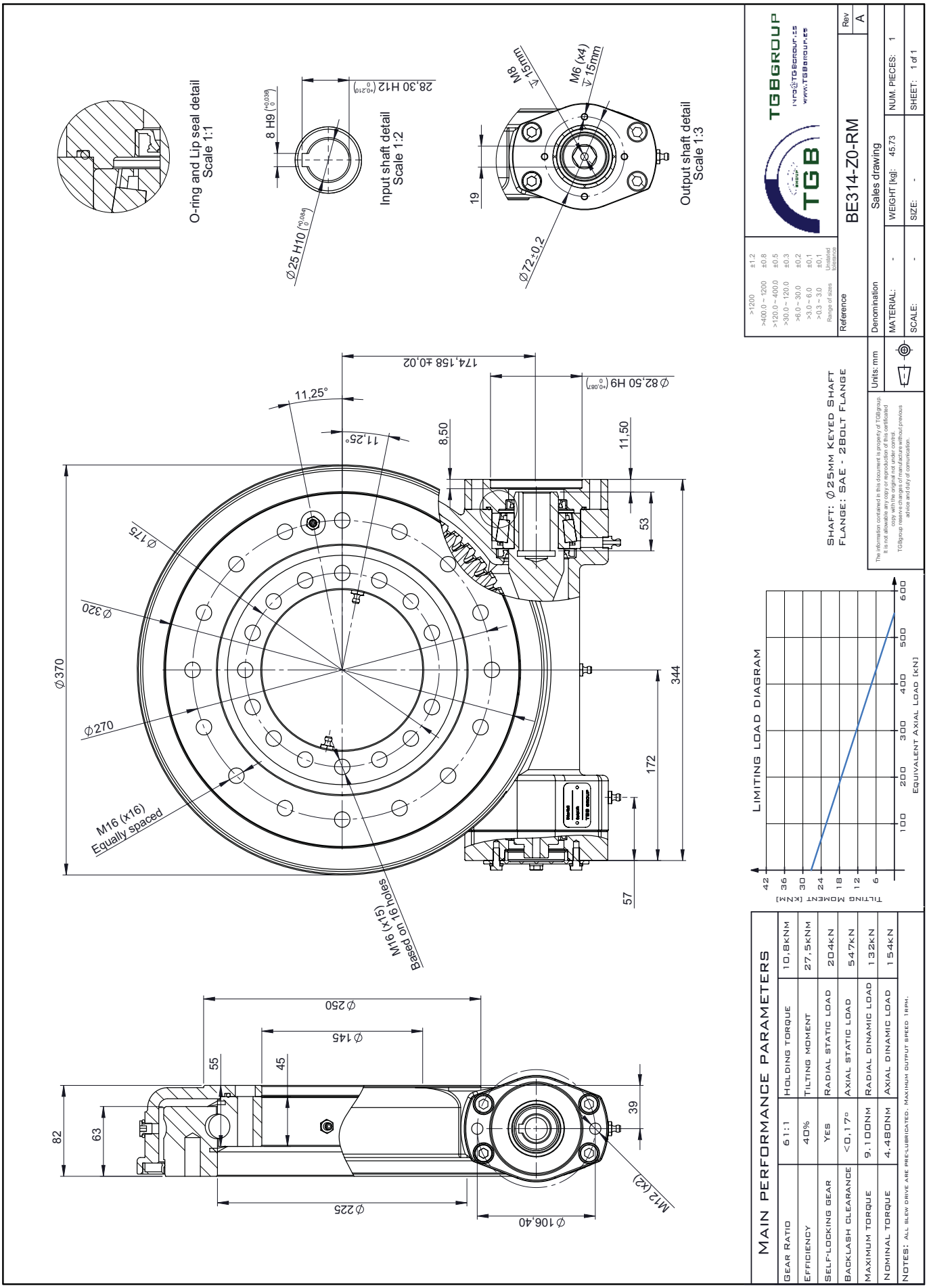
TGBgroup recommends retightening the bolts to the prescribed torque after no more than 100 working hours to compensate the possible settling. This should be done without external loads applied on the bolts union. This inspection should be repeated from then on every 3 months of working. The frequency of the inspection must be reduced under special working conditions.



MAIN PERFORMANCE PARAMETERS

GEAR RATIO	44:1	HOLDING TORQUE	6.8KNM
EFFICIENCY	40%	TILTING MOMENT	11.2KNM
SELF-LOCKING GEAR	YES	RADIAL STATIC LOAD	94KN
BACKLASH CLEARANCE	<0.15º	AXIAL STATIC LOAD	290KN
MAXIMUM TORQUE	6.500NM	RADIAL DINAMIC LOAD	83KN
NOMINAL TORQUE	3.380NM	AXIAL DINAMIC LOAD	97KN

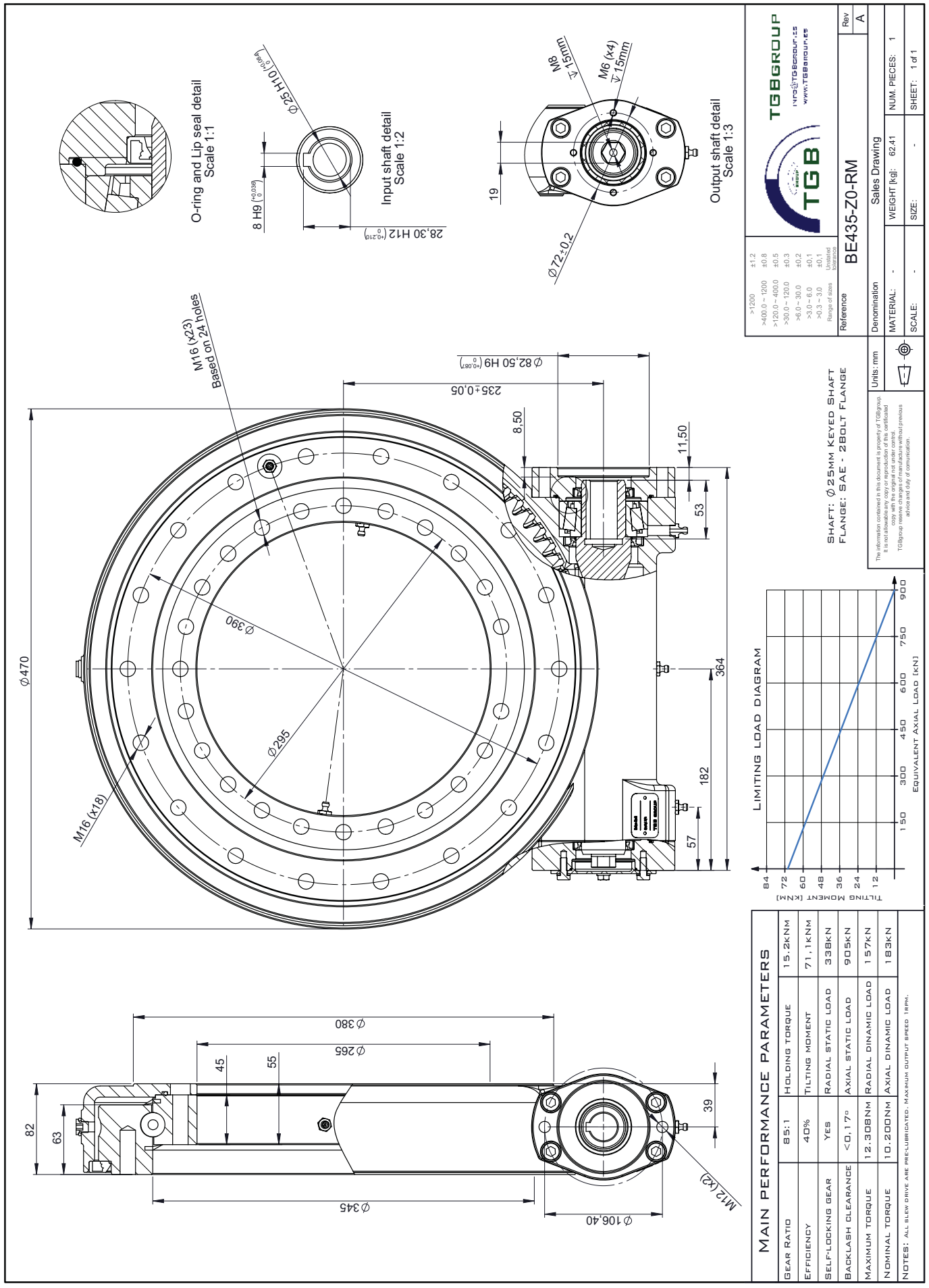
NOTES: ALL SLEW DRIVE ARE PRE-LUBRICATED. MAXIMUM OUTPUT SPEED 1RPM.



MAIN PERFORMANCE PARAMETERS

GEAR RATIO	61:1	HOLDING TORQUE	10.8KNM
EFFICIENCY	40%	TILTING MOMENT	27.5KNM
SELF-LOCKING GEAR	YES	RADIAL STATIC LOAD	204KN
BACKLASH CLEARANCE	<0,17°	AXIAL STATIC LOAD	547KN
MAXIMUM TORQUE	9.100NM	RADIAL DINAMIC LOAD	132KN
NOMINAL TORQUE	4.480NM	AXIAL DINAMIC LOAD	154KN

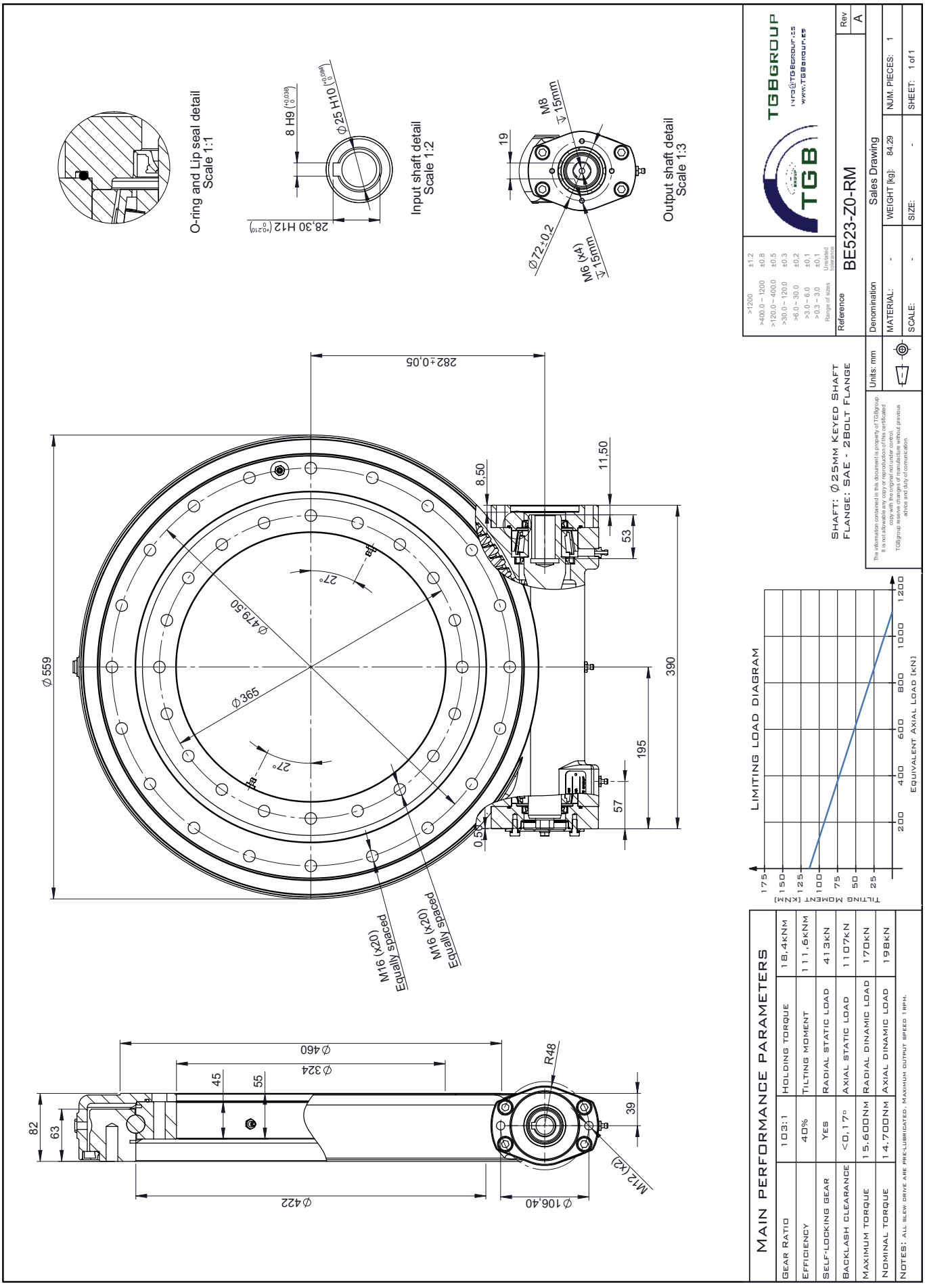
NOTES: ALL SLEW DRIVE ARE PRE-LUBRICATED. MAXIMUM OUTPUT SPEED 1RPM.



MAIN PERFORMANCE PARAMETERS

Gear Ratio	85:1	Holding torque	15.2kNm
Efficiency	40%	Tilting moment	71,1kNm
Self-locking gear	Yes	Radial static load	338kN
Backlash clearance	<0,17º	Axial static load	905kN
Maximum torque	12.308Nm	Radial dinamic load	157kN
Nominal torque	10.200Nm	Axial dinamic load	183kN

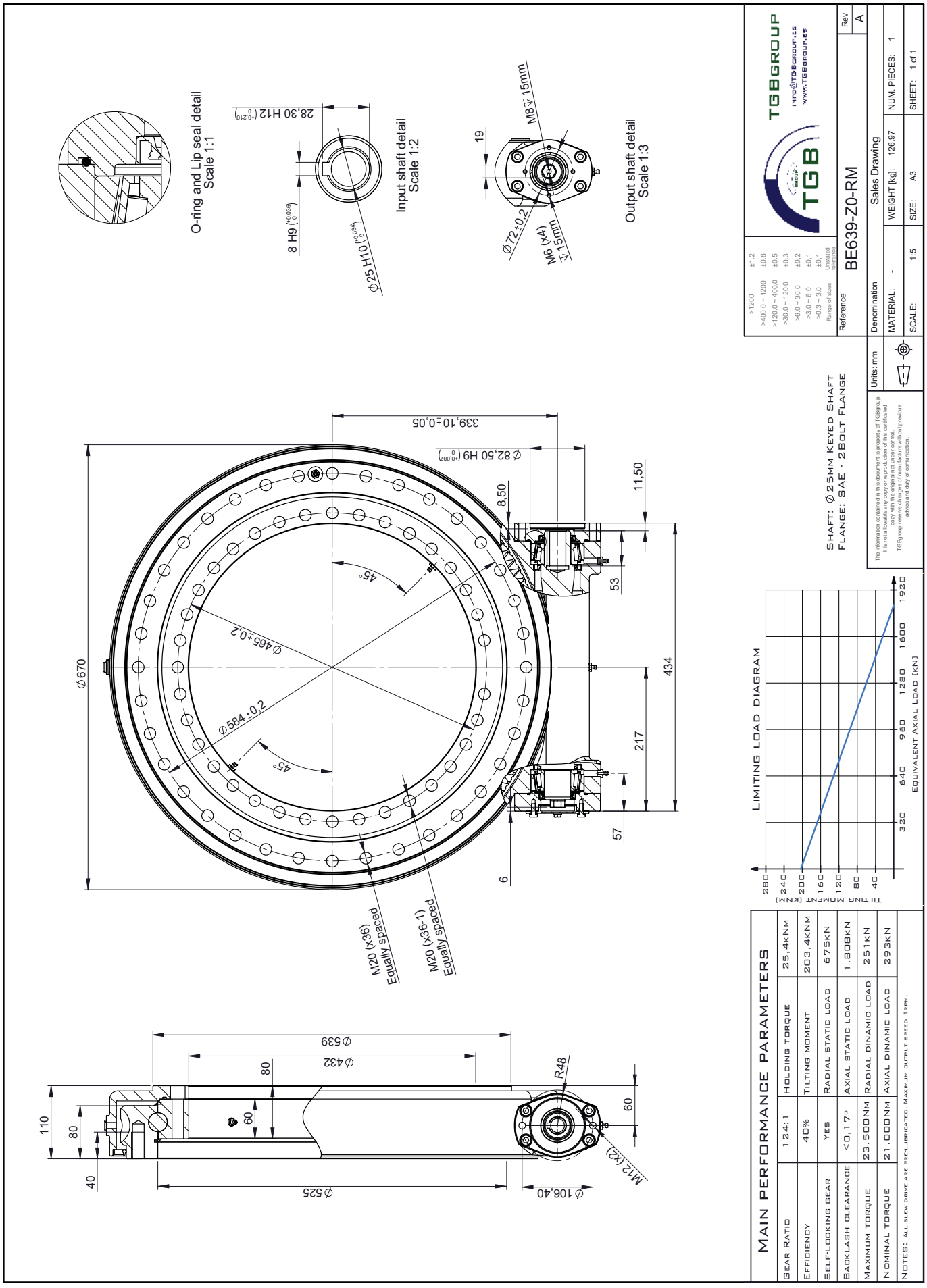
Notes: All slew drive are pre-lubricated. Maximum output speed 1rpm.



MAIN PERFORMANCE PARAMETERS

GEAR RATIO	103:1	HOLDING TORQUE	18,4KNM
EFFICIENCY	40%	TILTING MOMENT	111,6KNM
SELF-LOCKING GEAR	YES	RADIAL STATIC LOAD	413KN
BACKLASH CLEARANCE	<0,17°	AXIAL STATIC LOAD	1107KN
MAXIMUM TORQUE	15.600NM	RADIAL DINAMIC LOAD	170KN
NOMINAL TORQUE	14.700NM	AXIAL DINAMIC LOAD	198KN

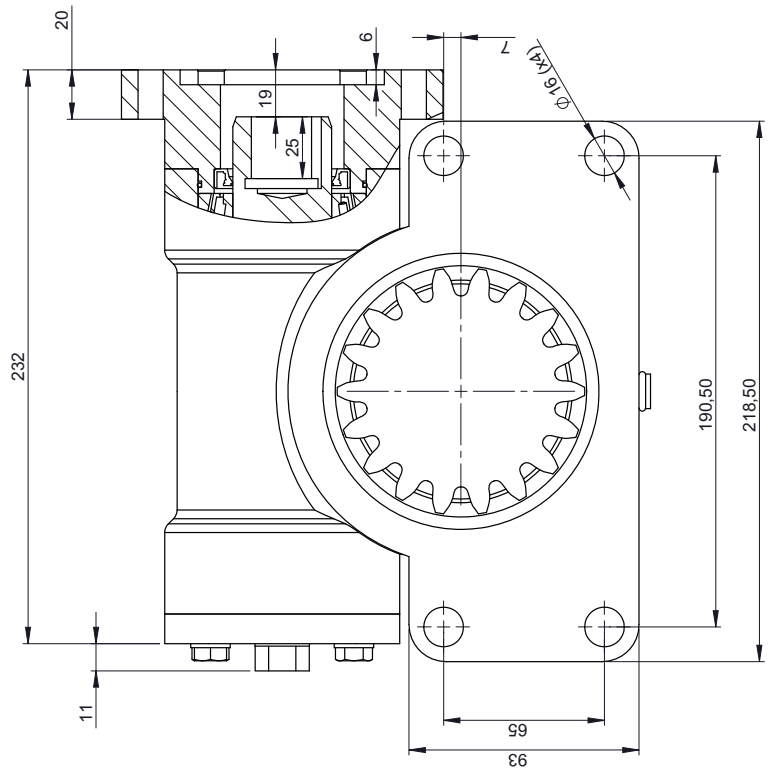
NOTES: ALL BLEW DRIVE ARE PRE-LUBRICATED. MAXIMUM OUTPUT SPEED 1RPM.

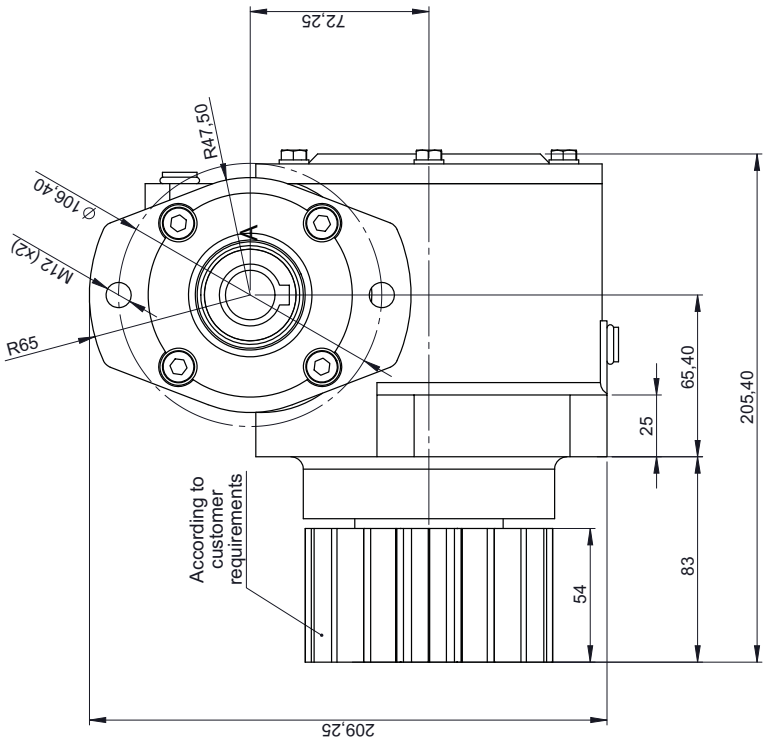


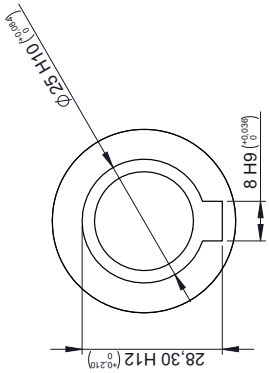
MAIN PERFORMANCE PARAMETERS

GEAR RATIO	124:1	HOLDING TORQUE	25.4KNM
EFFICIENCY	40%	TILTING MOMENT	203.4KNM
SELF-LOCKING GEAR	YES	RADIAL STATIC LOAD	675KN
BACKLASH CLEARANCE	<0,17°	AXIAL STATIC LOAD	1.808KN
MAXIMUM TORQUE	23.500NM	RADIAL DINAMIC LOAD	251KN
NOMINAL TORQUE	21.000NM	AXIAL DINAMIC LOAD	293KN

NOTES: ALL SLEW DRIVE ARE PRE-LUBRICATED. MAXIMUM OUTPUT SPEED 1RPM.







DETAIL A
SCALE 1 : 1

SHAFT: Ø 25MM KEYED SHAFT

Range of sizes	Unmarked tolerance
>1200	±1.2
>400.0 – 1200	±0.8
>120.0 – 400.0	±0.5
>30.0 – 120.0	±0.3
>6.0 – 30.0	±0.2
>3.0 – 6.0	±0.1
>0.3 – 3.0	±0.1

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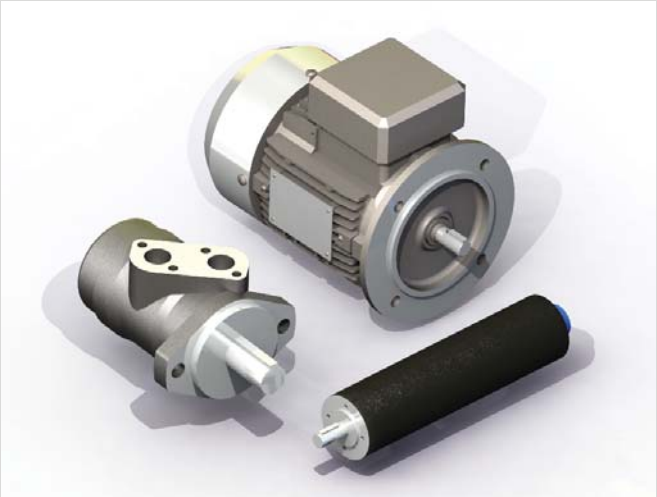
Reference: TRP30-Z0-RM
Denomination: Sales Drawing
MATERIAL: - | WEIGHT [kg]: 21.37 | NUM. PIECES: -
SCALE: - | SIZE: - | SHEET: 1 of 1
Units: mm

MAIN PERFORMANCE PARAMETERS

GEAR RATIO	30:1	NOMINAL TORQUE	900NM
PINION	CUSTOMER REQUIREMENTS	EFFICIENCY	40%

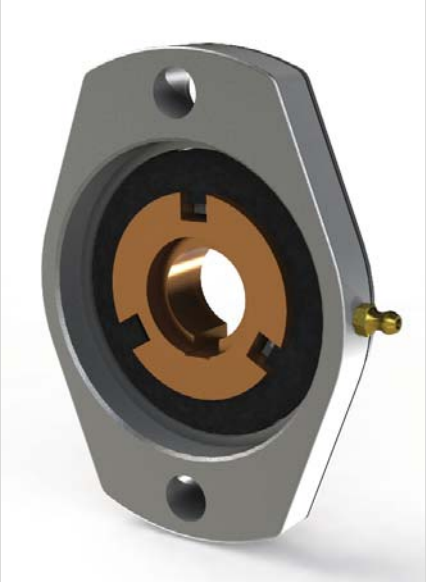
NOTES: ALL SLEW DRIVE ARE PRE-LUBRICATED.

Ac / DC / Hydraulic Motors



Worm Gearboxes

Brake



TGBgroup is able to provide complete solutions for different applications by supplying the drives with customized motorization or with brake.

INQUIRY FORM

Comercial	Date	Client

Target slew ring	Ref. E ☐ I ☐ SD ☐
Target slew drive	

Working position	Horizontal ☐ Vertical ☐

Output torque	Nominal		[kNm]
	Maximum		[kNm]
	Holding		[kNm]

Output speed	Nominal (continous)		[rpm]
	Maximum (intermittent)		[rpm]

Combined nominal loads	Axial		[kN]
	Radial		[kN]
	Tilting moment		[kNm]
Combined maximum loads	Axial		[kN]
	Radial		[kN]
	Tilting moment		[kNm]

Desired lifetime [hours]	

Working conditions	Minimum temperature		[ºC]
	Maximum temperature		[ºC]
	Site / Location		

Load case 1	Load	[kN o kNm]	Time working or rotated degrees	Standby time between cycles	Number of cycles per hour
	Output torque				
	Axial				
	Radial				
	Tilting moment				
Load case 2 (if necessary)	Load	[kN o kNm]	Time working or rotated degrees	Standby time between cycles	Number of cycles per hour
	Output torque				
	Axial				
	Radial				
	Tilting moment				
Load case 3 (if necessary)	Load	[kN o kNm]	Time working or rotated degrees	Standby time between cycles	Number of cycles per hour
	Output torque				
	Axial				
	Radial				
	Tilting moment				

Motorization	AC ☐ DC ☐ Hydraulic ☐ Comments:
Pinion	

	Width	Length	Height
Limit dimensions			

Comments

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