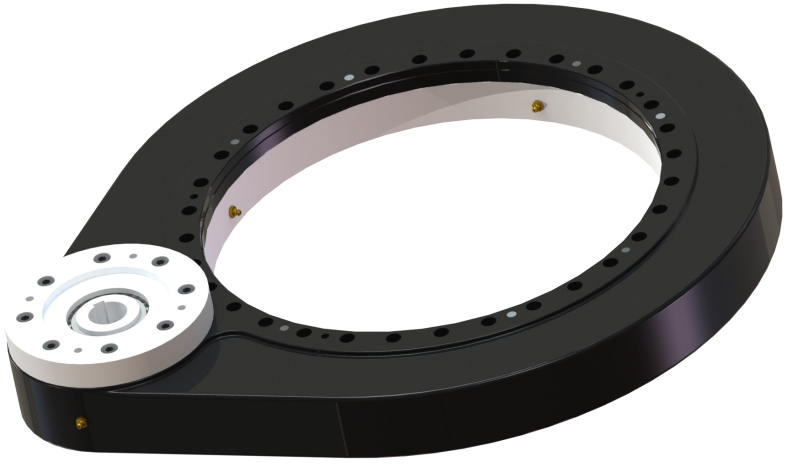
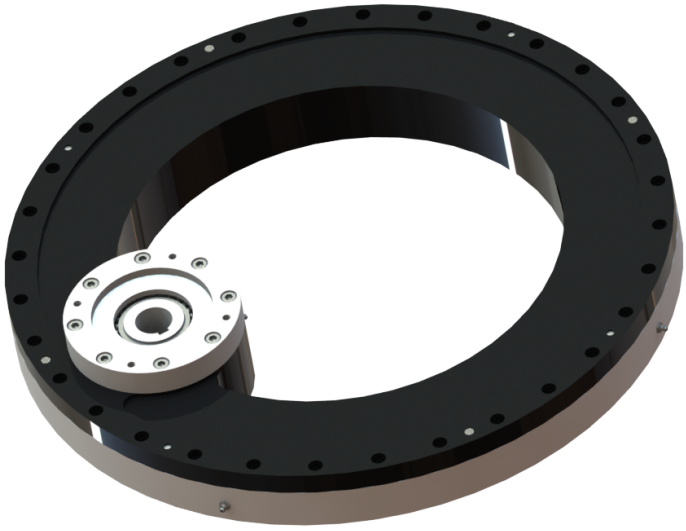
NATECH DRIVE

SLEWING DRIVE
INSTALLATION MANUAL





NATECH DRIVE

- Please read this manual carefully before installing the slewing drive.
- This manual contains the necessary information for correct installation and maintenance of the slewing drive.
- All the work steps listed below are to be executed by suitably qualified personnel.
- Please do not hesitate to contact our technical department for any further assistance.

Contact:

PIVEXIN TECHNOLOGY Sp. z o. o. ul. Wyrobiskowa 4,

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PIVEXIN TECHNOLOGY

1. Transport, Handling & Storage Provisions

1.1 Transport & Handling

Please keep the packing boxes placed in the specified direction to avoid collision when transporting the slewing drives. Please wear work gloves and take it carefully when handling the slewing drives. Slewing drives generally have threaded holes on the outer ring and must be handled safely using 3 or more lifting rings and lifting devices.

1.2. Storage

Store only in a prescribed position and in ventilated and dry places, the surface corrosion protection holds for approx. 6 months in closed packaging, longer period storage requires special protective measures.

2. Installation & maintenance

2.1. Preparation

Check the slewing drive for physical damage. Clean the slewing drive and the mounting structure. Remove extraneous materials(e.g. iron filings, burrs, paint, welding slag, etc.) from supporting surfaces.

2.2. Cleaning

Clean the exterior of the mounting surfaces using cold solvent (e.g. diesel oil) that will not damage the rubber seals.

Applicable provisions for cleaning media are observed (e.g. manufacturer provisions, protection of workers, environment protection).

2.3. Mounting Bolt Selection

We do not recommend or supply assembly bolts, the following terms are for reference only:

a. Please select the correct bolt specifications, models and performance levels.
b. Bolt grade not less than grade 8.8.
c. The bolt length screwed into the screw hole is generally 2 times the bolt nominal diameter.
d. Do not allow the bolts to be screwed out of the screw holes, otherwise this may cause interference and damage to the machine parts.
e. Use flat washers of appropriate size and high strength so that the permissible interfacial pressure is not exceeded.

2.4. Bolt Tightening Torques

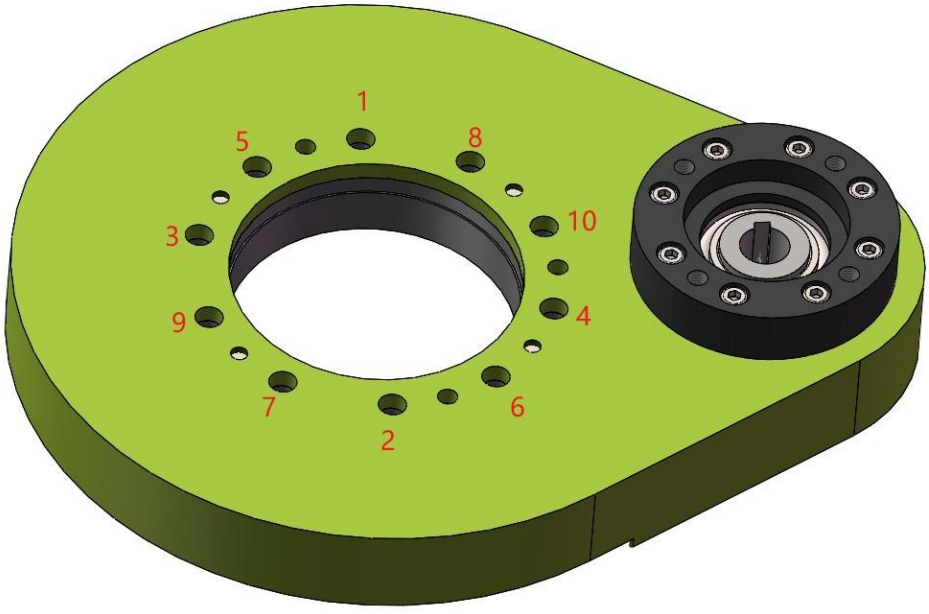
*The following table is for reference only.

Mounting Bolt Dimension	Tightening Torque (N.M)			Mounting Bolt Dimension	Tightening Torque (N.M)		
	8.8	10.9	12.9		8.8	10.9	12.9
M4	2.25	3.31	3.87	M16	168.00	246.00	288.00
M5	4.16	6.77	7.92	M18	229.00	336.00	394.00
M6	7.80	11.50	13.40	M20	327.00	481.00	562.00
M8	19.10	28.00	32.80	M22	450.00	661.00	773.00
M10	38.00	55.80	65.30	M24	565.00	830.00	972.00
M12	66.50	97.70	114.00	M27	837.00	1230.00	1439.00
M14	107.00	156.00	183.00	M30	1131.00	1661.00	1944.00

2.5. Installation Of Slewing Drive

The following procedure shall be followed in order to avoid deviations between bolt tightening forces.

a. Apply thread lock liquid to threads.
b. Preload the bolts including washers, if required, crosswise. See the general pattern in sketch below of how bolts get torqued in crosswise sequence. Start with either inner ring or outer ring. The crosswise torque of all bolts to 30% of tightening torque is first applied. Then repeat crosswise torque to 50% of tightening torque. Finally crosswise torque to 100% of the tightening torque.
c. The mounting bolts must be fully installed and without missing. In case of structural limitations can not install all bolts, the bolt holes must be sealed, such as stuffing full of silicone, otherwise it will leak water and dust into the slewing drive.
d. Mounting bolts should be considered thread engagement length, should not be too long, otherwise affect the slewing ring rotation or cause interference.
e. Once the screw is tightened, please make a permanent mark on the position of the screw head to that of the stationary structure. This will be used later during inspection to be sure the screw head has not unwound.



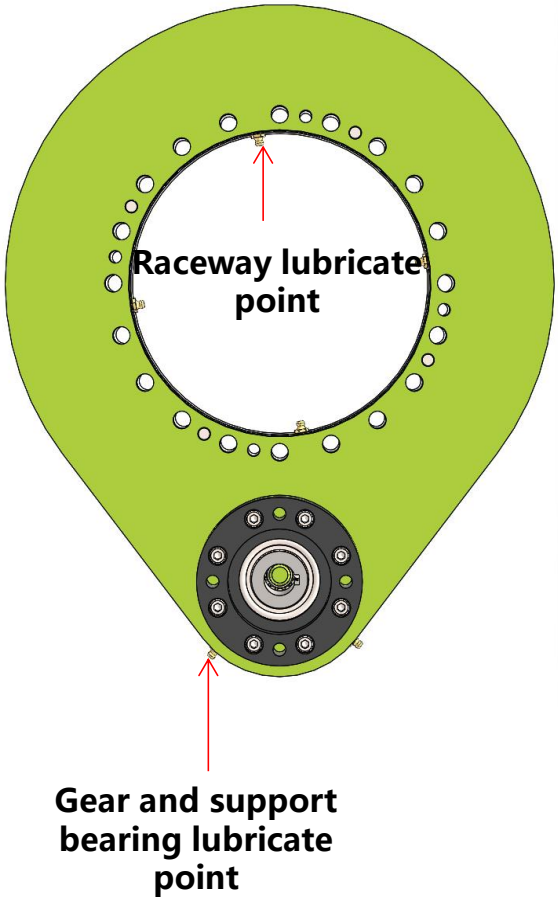
2.6. Slewing Drive Lubrication

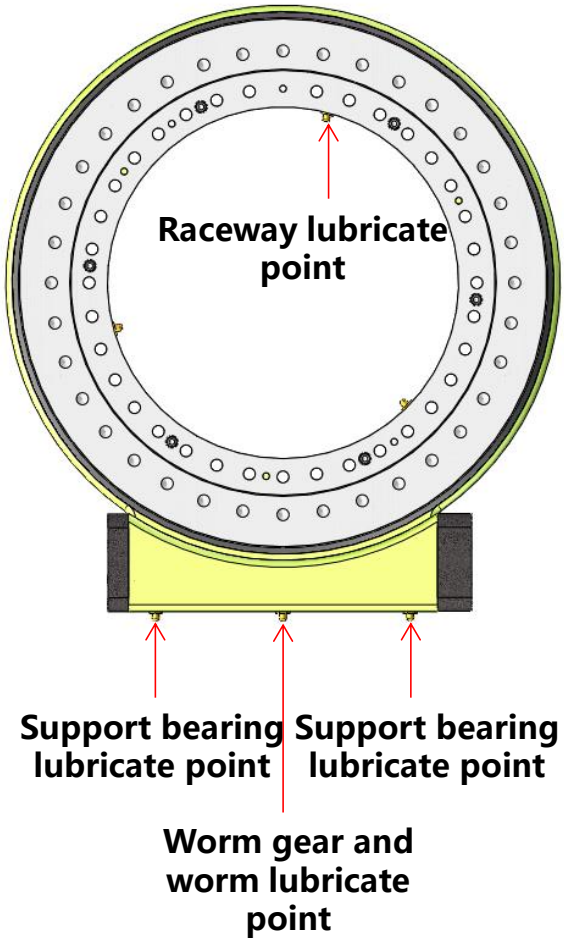
Our products have been lubricated on the important parts before leaving factory, normal filling of **Mobil EP2** grease, we recommend that when installing products, according to the actual situation to decide whether or not to add lubricating grease again.

a. The slewing ring raceway has been lubricated before leaving factory.

b. The meshing areas between gear and slewing ring have been lubricated before leaving factory.

c. The bearings that support gears have been lubricated before leaving factory.





2.7. Relubrication Intervals

Relubrication intervals mainly depend on the current operating and environmental conditions.

Precise relubrication intervals can only be determined by testing under actual operating conditions.

In the absence of references, please refer to the table below.

Work conditions	Grease-filled slewing drive lubrication intervals
Workshop, industrial positioners (turntables/robots, etc.)	Once every year
Difficult conditions in open grounds (crane/ bulldozer, etc.) wind turbine, solar, man-lift	Once every year
Aggressive climatic conditions sea/desert/arctic climate/very dirty surrounding/more than 70 continuous operating hours per week	Once every 6 months
Extreme conditions (tunneling machines, steel mills, oil field)	Once every 2 months

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