

## 4. Maintenance and Service Life

MarMotion high-precision rotary stroke bearings require virtually no maintenance. They are treated with anticorrosive agent before dispatch. After delivery, this agent must be removed, preferably with a cleansing agent containing oil. The rotary stroke bearing is then ready for operation.

### 4.1 Lubrication

In principle, the same rules apply here as for ball bearings. A thin film of lubricant will last for long-term operation, depending on the type of loads acting. Commercial "rolling bearing lubricants" - only this type of lubricant may be used - possess all the properties required to ensure the trouble-free operation of rotary stroke bearings.

Rolling bearing lubricants offer good consistency, are chemically neutral, non-resinating and are free from abrasive particles. Lubricant additives must be selected in accordance with the given application conditions (temperature, pressure, rpm, corrosion behavior, etc.). In principle, greases and oils are equally well suited. Greases should be used very sparingly, however, in order to avoid overheating.

Greases for lifetime lubrication are preferred. Rotary stroke bearings can naturally also be lubricated by central lubrication systems.

Solid lubricants are unsuitable for rotary stroke bearings.

### 4.2 Dry running

There are some applications where lubrication is not possible, e.g. in the food and textile industries or in high vacuums.

Assuming the load is low, the MarMotion high-precision rotary stroke bearing is also suitable for dry running thanks to the high standard of manufacturing quality.

In such cases, designs in stainless rolling bearing steel 1.4112 (special design) offer distinct advantages.

### 4.3 Wear

Assuming the maintenance instructions are observed, the wear suffered by rotary stroke bearings is so slight that it can be ignored.

If signs of wear do appear, however, e.g. in the form of clearly visible running traces on the rolling surfaces, these may be attributable to one of the following causes:

- The guide is soiled with grinding or abrasive particles.
- Corrosion due to condensation water occurs in the places where the balls touch the shaft and bush.
- A strong moment has led to partial overloading.

With a high number of linear strokes or rotations, the causes mentioned above can lead to rapid spoiling of the rolling faces. Wherever wear marks are perceived, the cause of the problem must be thoroughly eliminated.

### 4.4 Regularity of maintenance checks

Open or only partially protected rotary stroke bearings are best serviced through regular cleaning and lubrication performed within the scope of general maintenance work. This improves the working properties and service life of the rotary stroke bearings.

### 4.5 Service life

MarMotion high-precision rotary stroke bearings are preloaded rolling bearings and therefore are subject, in essence, to the same laws as apply to ball bearings.

#### Service life of rolling bearings

The service life of a rolling bearing is defined as the minimum number of hours in service reached by 90% of a large number of the same bearings under the same operating conditions, even though some of them may last considerably longer, while the other 10% may become worn out beforehand. Accordingly, the service life rating is a probability factor.

#### Service life of MarMotion high-precision rotary stroke bearings

The loading capacity  $C_{10}$  given in the catalogue were computed based on the premise of a high-precision guide and thus do not necessarily represent the maximum loading capacity. Assuming absolute cleanliness and proper lubrication the service life of the rotary stroke bearing can be regarded as virtually unlimited. The ball zone carrying the heaviest load should not to be loaded with more than  $P_{10} \leq C_{10}$ .

Reliability increases the more the loading capacity  $C_{10}$  of the selected rotary stroke bearing exceeds the force  $P_{10}$  on the most heavily loaded ball zone.