

Bearings

Notes on storage, construction, mounting, transport, operation, control, and maintenance

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1 Storage

ASK ball bearings and roller bearings are provided with a corrosion protection agent and can be stored in the original packaging at temperatures between 10°C and 40°C and a relative humidity of less than 60% for several years. During storage, it must be ensured that the cartons are not exposed to direct sunlight, as otherwise the storage temperatures may be exceeded.

2 Construction

Rolling bearings must always be mounted in a housing bore with axial securing.
Determine forces and direction of force (axial/radial) during standstill and operation.
Determine special forces and direction of force (axial/radial) in case of overload, blockade, and transport of the machine.
Determine ambient conditions (temperature, dust, vibrations.....).
Determine the type of bearing fixed or floating bearing.
Determine type of lubrication. Lifetime lubrication for -ZZ and -2RS design, oil, or grease lubrication for open or semi-open design.
Determine bearing clearance, shaft and bore tolerance (take operating temperature into account).
Select safety factors depending on the worst case of damage.
Calculate the strength of the housing wall and the static load rating for the bearing.
Carry out a service life calculation and determine the maximum speed.
Determine preload forces for bearing.
Take the direction of force (radial/axial) into account in all calculations and ensure that the permissible axial/radial ratio is not exceeded and that the forces are not too high in absolute terms.

Attention:

Covers -ZZ or -Z are only intended to prevent large parts from entering the bearing and are not suitable as seals. Seals -2RS or -RS are not suitable as medium seals. They are suitable for operation in normal dust and contamination-free environments.

If there are special requirements for the seal or for sealing media, a seal separate from the bearing must be used.

3 Mounting

3.1 Before mounting

In individual cases, the corrosion protection oil may dry out in open bearings. Then the bearing must be cleaned beforehand with a suitable washing solution (petroleum).

Shaft or pin and bore must be free of burrs.

All parts must be clean and dust-free.

Do not touch bare metal surfaces with bare hands, risk of corrosion.

3.2 Mounting

Press in / press out shaft or bolt only with even pressure on the inner ring.

Press in / press out the bearing outer ring only with uniform pressure on the outer ring.

Lubricate bearing if necessary.

If necessary, follow the instructions of the machine designer for preloading / adjusting the bearings.

Caution: Never transmit installation forces via rolling elements (e.g., when pressing the bearing into the bore, press on the inner ring). Never install or remove by hammering or hammering.

3.3 Testing after mounting

Check the mobility of the shaft. If necessary, check the loose fit.

Bearings with covers -ZZ or seal -2RS may leak a small amount of grease during commissioning. This grease should be removed.

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4 Transport

If the bearings have been installed in a machine/plant and then transport to the place of use is to take place, suitable transport securing must be provided. Due to the dead weight of the shaft and the rotor, considerable forces can act on the stationary bearing in case of vibrations and impacts, which can lead to the destruction of the rolling elements and raceways. The transport lock must prevent the vibrations during transport from damaging the stationary bearing.

5 Operation

The temperature of the bearings must be between -15°C and 100°C during operation.

5.1 Control

The following points should be checked:

Heating, running noise and vibrations of the bearing during operation.
Increase in bearing air, excessive wear,
Seat of the fastening screws
Loose or tight fit of the shaft
damage to the bore in which the bearing is installed
Seat of the covers and seals

5.2 Lubrication

5.2.1 Closed bearings -ZZ or -2RS

Rolling bearings closed with a cover or seal are provided with a one-time grease filling ex works. Relubrication is not possible with these types.

5.2.2 Open bearings and one-sided open bearings

Open bearings are without grease filling.

One-sided open bearings -Z or -RS may be filled with grease, depending on the agreed delivery condition. In this case, lubrication with oil is not possible.

5.2.2.1 Relubrication for grease filling

Regreasing must be done with a suitable grease gun. Grease must be pressed in until a small amount of grease escapes from the seal.

Caution: In the case of central lubrication systems, the pressure may have to be reduced before the grease enters the bearing, otherwise the cover or the seal may be damaged.

It is advisable to lubricate the bearing before longer standstills.

After lubrication, run the bearing briefly and remove any grease that escapes.

Greases:

For the lubrication of rolling bearings, corrosion-protective pressure-resistant greases based on lithium or lithium complex metal soap greases have proven their worth. When selecting the grease, please also consider the operating temperature range of the bearings. The grease manufacturers can advise you in individual cases.

5.2.2.2 Relubrication intervals

It is not possible to make a general statement about the inspection and relubrication intervals, as they depend on many influencing factors such as ambient conditions, dust, dirt, direction of rotation, load, temperature, etc., but also on the damage that can be caused by a failure. If no empirical values are available, the check should be carried out daily and before each start-up after a standstill.

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5.2.3 Oil lubrication

If lubrication is to take place with oil, constructive measures must be taken to ensure that the bearing is supplied with sufficient but not too much oil.

Suitable lubricating oil types can be named by the lubricating oil manufacturer.

For further questions, we recommend our knowledgebase at www.askubal.de