Spherical plain bearings Motorsport maintenance required

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

1 Storage

ASKUBAL rod ends and spherical plain 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, care must be taken to ensure that the cartons are not exposed to direct sunlight, otherwise the storage temperatures may be exceeded.

2 Konstruktion

Spherical plain bearings must always be mounted in a housing bore with axial securing.
Determine forces and direction of force (axial/radial) during standstill and operation, take max. tilt angle into account.
Determine special forces and direction of force (axial/radial) during overload, blocking and transport of the machine.
Determine ambient conditions (temperature, dust, vibrations.....).
Determine bearing clearance, shaft tolerance (consider operating temperature)
Select safety factors depending on the worst case of damage.
Calculate strength and static load rating for the rod end.
Carry out a service life calculation and determine the maximum speed.
For all calculations, consider the direction of force (radial/axial) and ensure that the permissible axial/radial ratio is not exceeded and that the forces are not too high in absolute terms.

3 Mounting

3.1 Before mounting

Shaft or bolt 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.
Lubricate sliding surfaces of the bearing before installation.

3.2 Mounting

For spherical plain bearings with a lubrication hole on the outer ring or inner ring, align the bearing so that the lubrication holes overlap with the housing hole or shaft or pin.
Press in / press out the shaft or pin 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 the bearing if necessary.

Attention:
Never transmit installation forces via the sliding surface (e.g. do not press on the inner ring when pressing the bearing into the housing bore.)
Never install or remove by hammering or knocking.
When pressing the spherical plain bearings into the housing bore, make sure that the outer ring face of the spherical plain bearings is placed exactly on the housing bore and cannot become misaligned.

3.3 Testing after mounting

Check the mobility of the inner ring. If necessary, check the definition of the bearing clearance and the housing tolerance.

Attention:
Spherical bearings are not lubricated ex works and must be lubricated in any case before commissioning. Therefore check the function of the lubrication after assembly by pressing in grease until grease emerges between the inner and outer ring.

4 Operation

The temperature of the spherical plain bearings must be between -10°C and 80°C during operation.

4.1 Control

The following points should be checked:

- Noise and vibration of the bearing during operation.
- Increase in bearing air, excessive wear,
- Damage to the inner or outer ring

4.2 Relubrication

Regular lubrication is decisive for the service life of all metallic sliding couples. For this purpose, corrosion-protective pressure-resistant greases based on lithium or lithium complex metal soap greases have proven to be effective. When selecting the grease, please also consider the operating temperature range of the bearings. The grease manufacturers can advise you in individual cases.

4.3 Relubrication

Relubrication must be carried out with a suitable grease gun. In order to achieve an even distribution of lubricant, both relubrication and initial lubrication should be carried out on the unloaded spherical plain bearing.

4.4 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.

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