



**Mounting of rolling bearings**  
**Mounting of toroidal roller bearings**

# Mounting of special types

**Features** Selection of the suitable mounting method is based not only on the bearing type but also on the adjacent construction and the relevant dimensions. In the case of some rolling bearing types, attention must be paid during mounting to particular features or a particular procedure must be applied, which is discussed in detail below. Further details are given in the product-specific catalogues and brochures. The decisive factor for correct mounting is, however, the mounting manual relating to the application.

**Mounting of toroidal roller bearings** For toroidal roller bearings, the procedure is fundamentally the same as for other standard bearings. Further details are given below on recommendations for mounting and dismounting.

**Measurement of radial internal clearance** The tight, tapered fit of a ring is often determined by the change in the radial internal clearance. Before and after mounting of the bearing, the radial internal clearance of the bearing must be determined by means of feeler gauges. It must be ensured in this case that the two bearing rings are concentrically aligned to each other. The operating clearance required is generally set by means of the axial displacement of the two rings relative to each other.

**Free space on end faces and mounting dimensions** In the axial location of FAG toroidal roller bearings, the degrees of freedom in relation to axial displacement and tilting must be taken into consideration. Any possible contact with retainers or the bearing environment must be avoided. On the one hand, the requisite value for the depth of the free space  $C_{a \text{ req}}$  must be maintained, which ensures axial displacement of the shaft in the housing, *Figure 1, page 3*.

$$C_{a \text{ req}} = C_a + 0,5 \cdot (\delta_{ax} + s_\varphi)$$

$C_{a \text{ req}}$  mm

Requisite value for the depth of the free space

$C_a$  mm

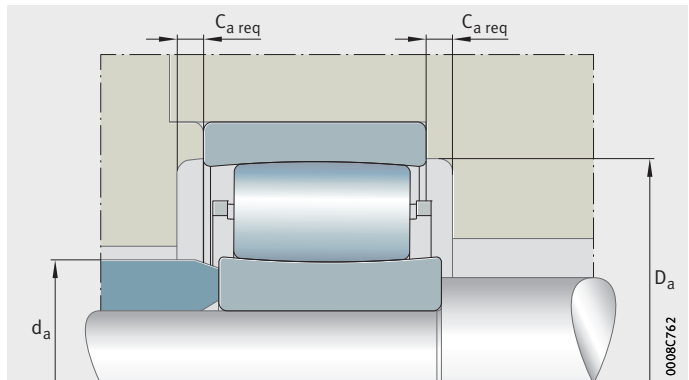
Minimum value for depth of free space in the case of bearing rings without offset, see TPI 232, Toroidal Roller Bearings TORB

$\delta_{ax}$  mm

Change in shaft length due to temperature

$s_\varphi$  mm

Reduction in axial displacement facility as a result of tilting.



*Figure 1*  
Free spaces in the housing

On the other hand, the appropriate mounting dimensions  $D_a$  and  $d_a$  must be observed. In those cases where the axial retainers or mounting nuts on the outside diameter do not match the specified mounting dimensions, the use of spacer nuts is necessary.

#### **Axial positioning of the bearing**

Toroidal roller bearings are normally mounted with the inner and outer ring centred relative to each other, where these are used to set the required internal clearance. Since the radial internal clearance in the bearing is reduced by axial displacement of the rings relative to each other, the required radial clearance can be achieved by offset of the rings. More detailed information on calculation of the reduction in radial internal clearance is given in TPI 232, Toroidal Roller Bearings TORB. Larger axial displacements, which are caused by large temperature fluctuations or other influences, must be counteracted by positioning of the rings relative to each other during mounting. In the case of oscillating bearing arrangement systems, it must be ensured that the axial displacement caused by the oscillation always occurs on the same side relative to the centre of the bearing. Crossing the centre of the bearing is only permissible when starting up an application.

#### **Guidelines for mounting**

During mounting, it must be ensured that the two bearing rings are not offset relative to each other. Horizontal mounting is recommended in all cases. If vertical mounting is absolutely necessary, appropriate devices must be used that hold the two bearing rings concentric to each other.

If the bearing is mounted both on a shaft and in a housing at the same time, the mounting pressure must be applied via both the bearing inner ring and the bearing outer ring, in order to prevent tilting.

#### **Further information**

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Issued: 2017, September

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