Integral tapered roller bearings
Series JK0S
Technical Product Information
Integral tapered roller bearings JK0S

Features

FAG integral tapered roller bearings JK0S are ready-to-fit, easily mounted units.

The single row bearings are sealed on one side and lubricated for life with a high quality grease. The self-retaining bearings are installed in pairs to give a bearing arrangement that is sealed on both sides.

Due to their large support base, the bearing arrangement can support all load combinations comprising radial forces, axial forces and tilting forces. The support base is significantly larger than in double row cylindrical roller bearings.

In designs with very high loads and not particularly high speeds, such as pulleys, crane wheels, cable rollers, integral tapered roller bearings can be used to achieve particularly economical bearing arrangements.

Advantages

- **Easy mounting**: ready-to-fit unit (self-retaining) comprising inner ring, outer ring, cage with roller set and seal
- **No setting of internal clearance**: when fitted in pairs in an O arrangement, the correct clearance is achieved automatically
- **Maintenance-free bearing arrangement**: lifetime greasing of bearings; double lip seals with low friction on both sides of the bearing pair

Operating temperature

Integral tapered roller bearings can be used at operating temperatures from -30 °C to +110 °C, limited by the grease and the seal material.

Cage

When the bearing is assembled with an annular ring, the profiled plastic cage snaps into a slot in the extended outer ring and holds the bearing ring and the roller and cage assembly together.

After the bearing is fitted, there is no longer any contact between the cage and outer ring, so there is no wear of the cage during operation.

Suffixes

- A Modified internal construction
- J14 Greasing to higher degree of filling, variant available by agreement for JK0S040

Integral tapered roller bearings fitted in pair in O arrangement. The correct axial clearance is achieved when the inner rings are located, for example by means of a shaft end cover.
In order to calculate the equivalent bearing load, the internal axial force must be determined. The axial force is calculated using the formulae in the adjacent table. The following preconditions apply:

- The radial forces act at the central pressure points and are positive.
- Bearing A is subjected to a radial load $F_{rA}$, bearing B to $F_{rB}$.
- $F$ is an external axial force acting on bearing A.

If no formula is given, the axial force is not taken into consideration.

In the calculation of integral tapered roller bearings arranged in pairs, each individual bearing is considered individually. Accordingly, the dimension table gives the basic load ratings ($C_r$, $C_0r$), the $e$ value and the axial factors ($Y$, $Y_0$) for the individual bearing.

**Equivalent dynamic load for the individual bearing**

- $P = F_r$ for $F_a \leq e$
- $P = 0.4 \cdot F_r + Y \cdot F_a$ for $F_a > e$

**Equivalent static load for the individual bearing**

- $P_0 = F_{0r}$ for $F_{0a} = \frac{1}{2 \cdot Y_0}$
- $P_0 = 0.5 \cdot F_{0r} + Y_0 \cdot F_{0a}$ for $F_{0a} = \frac{1}{2 \cdot Y_0}$

**Minimum radial load**

In continuous operation, a minimum radial load of $P/C_r > 0.02$ is necessary.

**Speeds**

The limiting speeds $n_G$ given in the dimension table must not be exceeded. The actual speed can reach the values given if the less favourable thermal balance of the bearing pair is taken into consideration in the operating conditions.
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### Dimension table - Dimensions in mm

<table>
<thead>
<tr>
<th>Designation</th>
<th>Mass</th>
<th>Dimensions</th>
<th>Bearing</th>
<th>Snap ring</th>
<th>m $^1$</th>
<th>Bearing $d$</th>
<th>D</th>
<th>B</th>
<th>C</th>
<th>$r_1,r_2$</th>
<th>$D_1$</th>
<th>$m/2$</th>
<th>a</th>
<th>u</th>
<th>$D_u$</th>
<th>$d_1$</th>
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</table>

$^1$ Ungreased
$^2$ For abutment with sharp edge
$^3$ Also available with 95 % grease filling; designation: JK05040-J14

### Ordering note

FAG integral tapered roller bearings are interchangeable with each other.
When ordering, please always state the number of individual bearings, not the number of bearing pairs.
The snap ring must be ordered separately, for example
2 tapered roller bearings       JK05080-A
1 snap ring                    BR125
### Mounting dimensions

<table>
<thead>
<tr>
<th>Shaft dimension</th>
<th>Basic load ratings</th>
<th>Calculation factors</th>
<th>Fatigue limit load</th>
<th>Limiting speed</th>
<th>Load carrying capacity of snap ring connection</th>
<th>Max. axial clamping force Bearing pair</th>
</tr>
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<tbody>
<tr>
<td>da</td>
<td>db</td>
<td>ra</td>
<td>Dn</td>
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<td>max.</td>
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<td>Deviation</td>
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<td>211 000</td>
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</tbody>
</table>

Other sizes and variants are also available; please ask us for details.
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Fitting

When integral tapered roller bearings are fitted in pairs in an O arrangement, the correct axial internal clearance is set automatically. It is sufficient if the following fits are observed:
• with circumferential load for inner rings: shaft tolerance m6, housing tolerance H7
• with circumferential load for outer rings: shaft tolerance g6, housing tolerance M7.

The inner rings are axially clamped together, for example using a shaft nut or shaft end cover. The maximum clamping force for the bearing pair is given in the dimension table.

The outer rings are axially located in the housing using a snap ring (for the load carrying capacity of the snap ring connection, see the dimension table).

If several bearing pairs are arranged adjacent to each other on one shaft, different speeds of the outer rings are nevertheless possible since the inner rings of integral tapered roller bearings are wider than the outer rings. This is particularly advantageous in the case of cable rollers.

Dismantling

With loose fit outer rings, dismantling the bearings does not generally present any difficulties. After withdrawal of the shaft, the complete bearings can be dismantled. Even with a tight outer ring fit, dismantling is still possible. After dismantling of the shaft, a sufficiently large gap is created between the inner rings that the inner rings can be pressed out using a flat tool. The elastic annular ring of the cage snaps out of the slot in the outer ring and pushes the seal outwards. During fitting and transport, the annular ring holds the inner ring and outer ring together.

After the inner rings have been dismantled, a snap ring is inserted as an aid into the inner recesses of the outer rings. This snap ring forms the abutment surface for the extraction tool, see figure.

Accuracy

The bore and outside diameter of integral tapered roller bearings JK0S match those of tapered roller bearings of series 320. The dimensional and geometrical tolerances correspond to tolerance class PN in accordance with DIN 620-2. For table values, see Catalogue HR 1, Rolling Bearings.

Axial internal clearance

When fitting integral tapered roller bearings in an O arrangement, no adjustment is necessary. The overhang of the inner ring compared to the outer ring is maintained so precisely that the correct axial internal clearance is achieved when the two inner rings are located.
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Application examples

Agricultural machinery: e.g. wheel bearings

Fork lift trucks: support rollers in the lift mast profile

Cranes: cable sheaves or return pulleys

Cable cars: cable sheaves or return pulleys
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