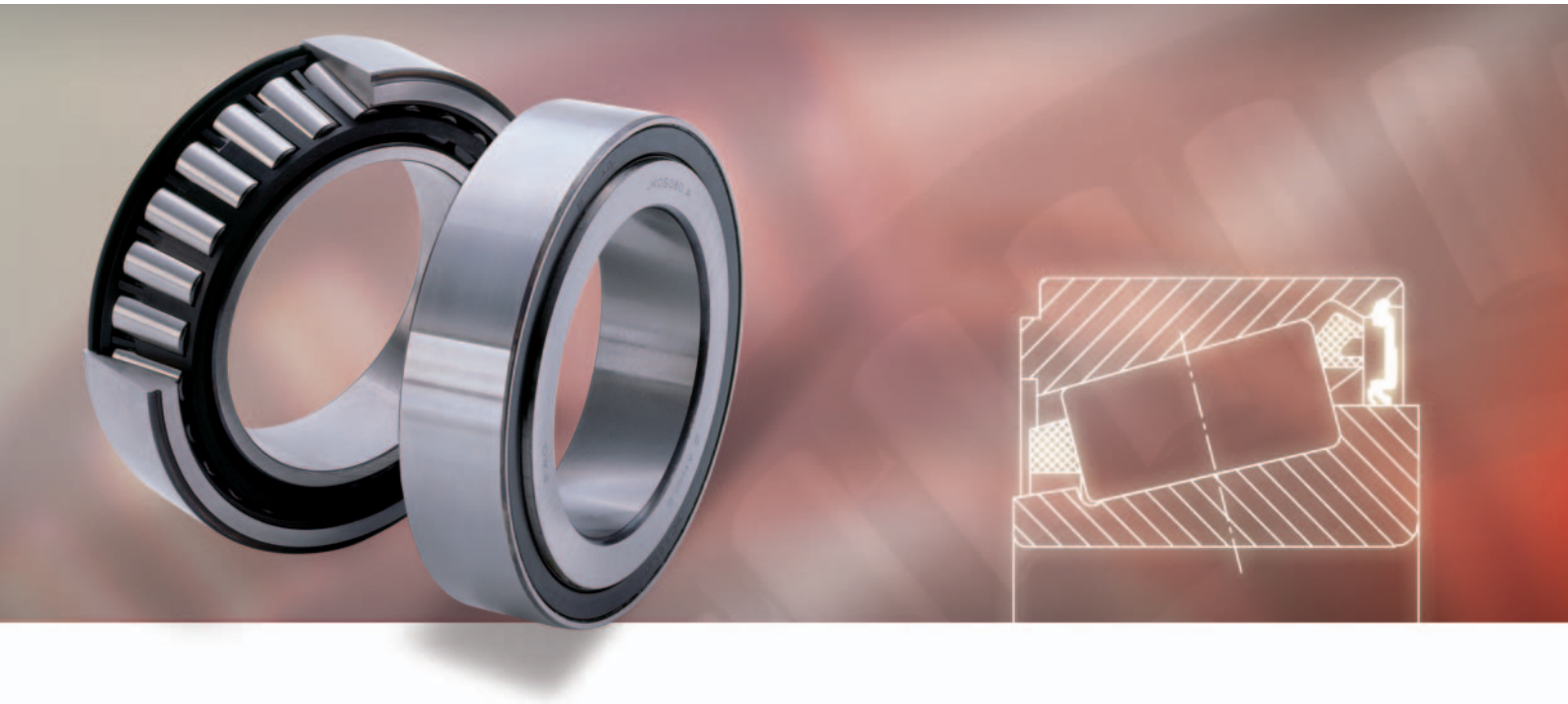
FAG



Integral tapered roller bearings
Series JK0S

Technical Product Information

SCHAEFFLER GROUP
INDUSTRIAL

Integral tapered roller bearings JK0S

Features

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

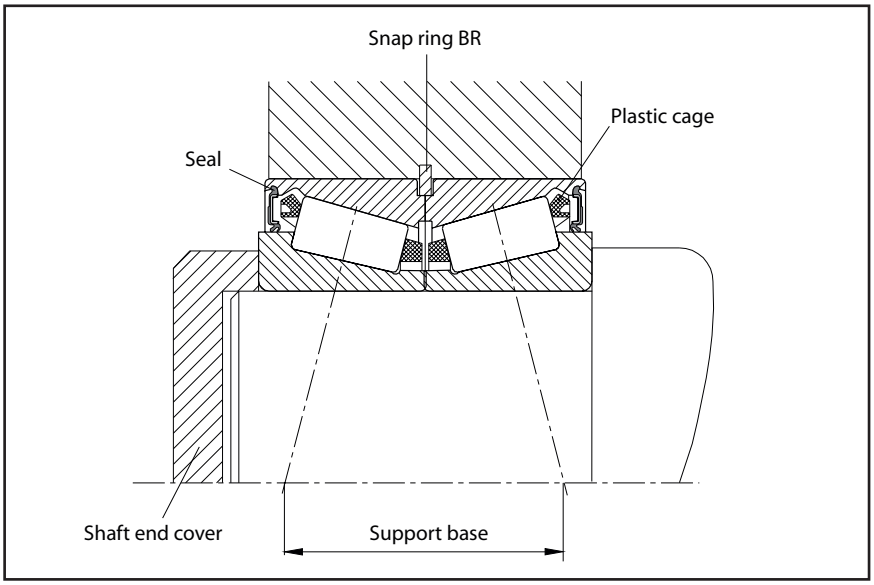
Integral tapered roller bearings can be used at operating temperatures from -30 °C to +110 °C, limited by the grease and the seal material.

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.

Integral tapered roller bearings JK0S

Design and safety guidelines

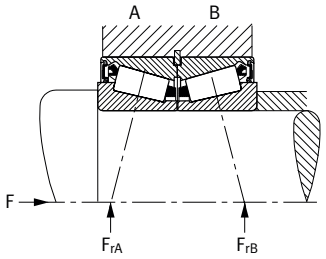
Design and safety guidelines

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.



Load conditions	Axial force F_a, to be used in calculation of the equivalent dynamic load	
$Y=Y_A=Y_B$	Bearing A	Bearing B
$F_{rA} \leqq F_{rB}$	$F_a=F+0{,}5 \cdot \frac{F_{rB}}{Y}$	–
$F_{rA} > F_{rB}$ $F > 0{,}5 \cdot \left(\frac{F_{rA}-F_{rB}}{Y}\right)$	$F_a=F+0{,}5 \cdot \frac{F_{rB}}{Y}$	–
$F_{rA} > F_{rB}$ $F \leqq 0{,}5 \cdot \left(\frac{F_{rA}-F_{rB}}{Y}\right)$	–	$F_a=0{,}5 \cdot \frac{F_{rA}}{Y} - F$

Equivalent dynamic load for the individual bearing

$P=F_r$ for $\frac{F_a}{F_r} \leqq e$

$P=0{,}4 \cdot F_r + Y \cdot F_a$ for $\frac{F_a}{F_r} > e$

P	N	Equivalent dynamic bearing load for combined load
F_a	N	Axial dynamic bearing load
F_r	N	Radial dynamic bearing load
e, Y	–	Factors from dimension tables

Equivalent static load for the individual bearing

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

$P_0=0{,}5 \cdot F_{0r} + Y_0 \cdot F_{0a}$ for $\frac{F_{0a}}{F_{0r}} . \frac{1}{2 \cdot Y_0}$

P_0	N	Equivalent static bearing load for combined load
F_{0a}	N	Axial static bearing load
F_{0r}	N	Radial static bearing load
Y_0	–	Factors from dimension tables

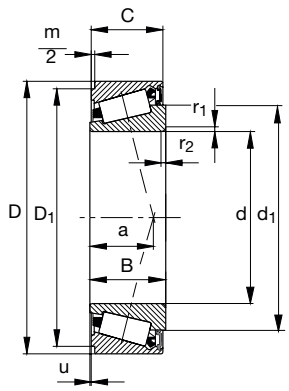
Minimum radial load

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.

Integral tapered roller bearings JK0S



Dimension table · Dimensions in mm

Designation		Mass	Dimensions										
Bearing	Snap ring	$m^{1)}$ Bearing	d	D	B	C	r_1,r_2	D_1	$\frac{m}{2}$	a	u	D_u Deviation	d_1
		kg					min.			-			-
JK0S030	**BR55**	0,19	**30**	55	19	18,5	1	51,4	0,75	14,9	0,02	+0,05	43,6
JK0S040[3)]	**BR68**	0,3	**40**	68	21	20,5	1	64,4	0,75	15,9	0,03	+0,05	53,8
JK0S050	**BR80**	0,41	**50**	80	22	21,5	1	75,7	1	18,8	0,02	+0,05	66,4
JK0S060	**BR95**	0,67	**60**	95	26	25	1,5	89,3	1,25	22,9	0,03	+0,05	79,5
JK0S070-A	**BR110**	0,93	**70**	110	27	26,5	1,5	104,8	1,25	25,1	0,03	+0,05	91,5
JK0S080-A	**BR125**	1,32	**80**	125	30	29,5	1,5	119,8	1,25	28,3	0,03	+0,05	104,2

[1)] Ungreased

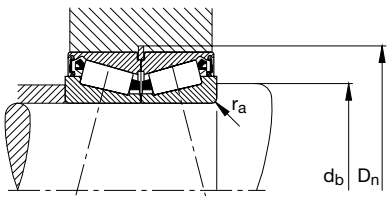
[2)] For abutment with sharp edge

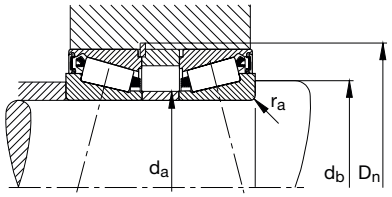
[3)] Also available with 95 % grease filling; designation: JK0S040-J14

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	JK0S080-A
1 snap ring	BR125





Mounting dimensions					Basic load ratings		Calculation factors			Fatigue limit load	Limiting speed	Load carrying capacity of snap ring connection	Max. axial clamping force
Shaft			Slot										
d_a	d_b	r_a	D_n	D_{Dn}	dyn.	stat.	e	Y	Y_0	C_{ur}	n_G grease	F_{BR} [2]	Bearing pair
			Nominal	Deviation		C_r	C_{0r}						
max.	min.	max.	dimension		N	N				N	min^{-1}	N	N
35	36	1	56,5	+0,19	38 500	46 500	0,43	1,4	0,77	5 300	5 600	15 700	7 700
46	46	1	69,5	+0,19	53 000	71 000	0,37	1,6	0,88	8 300	4 500	12 900	10 600
56	56	1	81,8	+0,22	64 000	93 000	0,42	1,43	0,79	11 200	3 600	31 400	12 800
67	67	1,5	97	+0,22	82 000	123 000	0,43	1,4	0,77	15 200	3 000	59 300	16 400
78	77	1,5	112,3	+0,22	104 000	159 000	0,43	1,38	0,76	20 100	2 600	49 000	20 800
89	87	1,5	127,3	+0,25	137 000	211 000	0,42	1,42	0,78	26 000	2 200	40 200	27 400

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

Integral tapered roller bearings JK0S

Fitting · Dismantling · Accuracy

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).

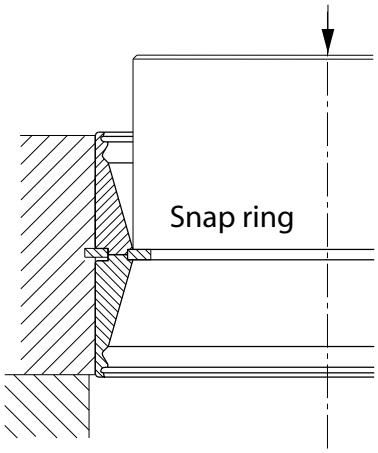
If several bearing pairs are arranged adjacent to each other on one shaft, different speeds of the outer rings are nevertheless possible since the inner rings of integral tapered roller bearings are wider than the outer rings. This is particularly advantageous in the case of cable rollers.

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.

Integral tapered roller bearings JK0S

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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