

table 1 - Fits for solid steel shafts

Radial bearings with cylindrical bore <sup>1)</sup>						
Conditions	Examples	Shaft diameter [mm]				Tolerance class <sup>2)</sup>
		Ball bearings <sup>3)</sup>	Cylindrical roller bearings	Tapered roller bearings	CARB and spherical roller bearings	
<b>Rotating inner ring load or direction of load indeterminate</b>						
Light and variable loads ( $P \leq 0,05 C$ )	Conveyors, lightly loaded gearbox bearings	$\leq 17$	–	–	–	js5 (h5) <sup>4)</sup>
		> 17 to 100	$\leq 25$	$\leq 25$	–	j6 (j5) <sup>4)</sup>
		> 100 to 140	> 25 to 60	> 25 to 60	–	k6
		–	> 60 to 140	> 60 to 140	–	m6
Normal and heavy loads ( $P > 0,05 C$ )	General bearing applications, electric motors, turbines, pumps, gearing, wood-working machines	$\leq 10$	–	–	–	js5
		> 10 to 17	–	–	–	j5 (js5) <sup>4)</sup>
		> 17 to 100	–	–	< 25	k5 <sup>5)</sup>
		–	$\leq 30$	$\leq 40$	–	k6
		> 100 to 140	> 30 to 50	–	25 to 40	m5
		> 140 to 200	–	> 40 to 65	–	m6
		–	> 50 to 65	–	> 40 to 60	n5 <sup>6)</sup>
		> 200 to 500	> 65 to 100	> 65 to 200	> 60 to 100	n6 <sup>6)</sup>
		–	> 100 to 280	> 200 to 360	> 100 to 200	p6 <sup>7)</sup>
		> 500	–	–	–	p7 <sup>6)</sup>
		–	> 280 to 500	> 360 to 500	> 200 to 500	r6 <sup>6)</sup>
–	> 500	> 500	> 500	r7 <sup>6)</sup>		
Heavy to very heavy loads and shock loads under difficult operating conditions ( $P > 0,1 C$ )	Axleboxes for heavy railway vehicles, traction motors, rolling mills, wind turbines	–	> 50 to 65	–	> 50 to 70	n5 <sup>6)</sup>
		–	> 65 to 85	> 50 to 110	–	n6 <sup>6)</sup>
		–	> 85 to 140	> 110 to 200	> 70 to 140	p6 <sup>8)</sup>
		–	> 140 to 300	> 200 to 500	> 140 to 280	r6 <sup>9)</sup>
		–	> 300 to 500	–	> 280 to 400	s6 <sub>min</sub> ± IT6/2 <sup>8)</sup>
		–	> 500	> 500	> 400	s7 <sub>min</sub> ± IT7/2 <sup>8)</sup>
High demands on running accuracy	Machine tools (precision class bearings)	8 to 240	–	–	–	js4
		–	25 to 40	25 to 40	–	js4 (j5) <sup>10)</sup>
		–	> 40 to 140	> 40 to 140	–	k4 (k5) <sup>10)</sup>
		–	> 140 to 200	> 140 to 200	–	m5
		–	> 200 to 500	> 200 to 500	–	n5

Stationary inner ring load						
Easy axial displacement of inner ring on shaft desirable	Wheels on non-rotating axles					g6 <sup>12)</sup>
Easy axial displacement of inner ring on shaft unnecessary	Tension pulleys, rope sheaves					h6
Axial loads only						
	Bearing applications of all kinds	≤ 250	–	≤ 250	≤ 250	j6
		> 250	–	> 250	> 250	js6

**1) For needle roller bearings:**

- Needle roller bearings and cage assemblies - Tolerances
- Drawn cup needle roller bearings - Tolerances
- Needle roller bearings with machined rings - Tolerances
- Alignment needle roller bearings - Tolerances
- Needle roller bearings in the IR series - Tolerances
- Needle roller bearings in the LR series - Tolerances
- Needle rollers - Tolerances
- Combined needle roller bearings / angular contact ball bearings - Tolerances
- Combined needle roller bearings / thrust ball bearings - Tolerances
- Combined needle roller bearings / cylindrical roller bearings - Tolerances

For Y-bearings:

- Y-bearings - Tolerances

**2)** All ISO tolerance classes are valid with the envelope requirement (such as H7<sup>Ⓔ</sup>) in accordance with ISO 14405-1:2010.

**3)** Ball bearings under normal to heavy loads ( $P > 0,05 C$ ) often require radial internal clearance greater than Normal when the shaft tolerance classes listed above are used. If radial clearance is greater than Normal, but the operating conditions require tighter fits to prevent the inner ring from creeping, use the following tolerance classes:

- k4<sup>Ⓔ</sup> for shaft diameters 10 to 17 mm
- k5<sup>Ⓔ</sup> for shaft diameters > 17 to 25 mm
- m5<sup>Ⓔ</sup> for shaft diameters > 25 to 140 mm
- n6<sup>Ⓔ</sup> for shaft diameters > 140 to 300 mm
- p6<sup>Ⓔ</sup> for shaft diameters > 300 to 500 mm

For additional information, contact the SKF application engineering service.

Do not use tighter fits for stainless steel bearings.

**4)** The tolerance in brackets applies to stainless steel bearings.

**5)** For stainless steel bearings within the diameter range 17 to 30 mm, tolerance class j5<sup>Ⓔ</sup> applies.

**6)** Bearings with radial internal clearance greater than Normal may be necessary.


**7)** Bearings with radial internal clearance greater than Normal are recommended for  $d \leq 150$  mm. When  $d > 150$  mm, bearings with radial internal clearance greater than Normal may be necessary.

**8)** Bearings with radial internal clearance greater than Normal are recommended.

**9)** Bearings with radial internal clearance greater than Normal may be necessary. For cylindrical roller bearings, radial internal clearance greater than Normal is recommended.

**10)** The tolerance class in brackets applies to tapered roller bearings. For lightly loaded tapered roller bearings adjusted via the inner ring, tolerance class js5<sup>Ⓔ</sup> or js6<sup>Ⓔ</sup> should be used.

**11)** For a high degree of running accuracy, bearings with higher precision than Normal are required. The tolerances for the bore and outside diameter are tighter, which has an influence on the probable fits. To obtain relevant values, contact the SKF application engineering service.

12) Tolerance class f6  can be selected for large bearings to facilitate axial displacement on the shaft.

---