



Maintenance-free rod ends

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Maintenance-free rod ends

SKF manufactures maintenance-free rod ends with three different sliding contact surface combinations in different series:

- Steel/PTFE sintered bronze (→ **fig. 1**):
 - SI(L) .. C series
 - SA(L) .. C series
- Steel/PTFE fabric (→ **fig. 2**):
 - SI(L) .. TXE-2LS series
 - SI(L)A .. TXE-2LS series
 - SA(L) .. TXE-2LS series
 - SA(L)A .. TXE-2LS series
- Steel/PTFE FRP (→ **fig. 3**):
 - SI(L)KB .. F series
 - SA(L)KB .. F series

Rod ends with either a steel/PTFE sintered bronze or steel/PTFE fabric sliding contact surface combination contain a bearing from the standard assortment. The outer ring is staked in place in the housing.

Rod ends with a steel/PTFE FRP sliding contact surface combination consist of a rod end housing and a spherical plain bearing inner ring. Between the housing and the inner ring, a sliding layer of fibre reinforced polymer, containing PTFE, is moulded to the housing.

SKF supplies maintenance-free rod ends with a threaded shank with a right-hand thread as standard. With the exception of rod ends with the designation suffix VZ019, all rod ends are also available with a left-hand thread. They are identified by the designation prefix L.

Dimensions

The dimensions of SKF maintenance-free rod ends are in accordance with ISO 12240-4:1998.

Male and female threads of SKF rod ends are in accordance with ISO 965-1:1998, except for rod ends with female thread having the designation suffix /VZ019, which is in accordance with ISO 8139:2009.

Fig. 1

Maintenance-free rod end, steel/PTFE sintered bronze

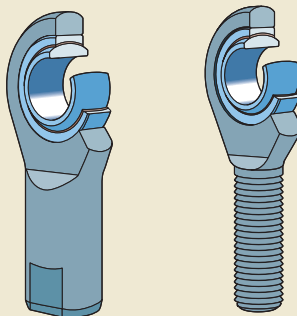


Fig. 2

Maintenance-free rod end, steel/PTFE fabric

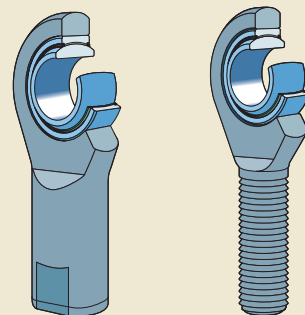
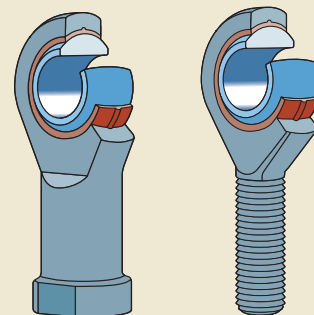


Fig. 3

Maintenance-free rod end, steel/PTFE FRP



Tolerances

SKF rod end inner ring dimensional tolerances are in accordance with ISO 12240-1:1998. The tolerances are listed in **table 1**.

The symbols used in **table 1** are explained in the following:

- d nominal bore diameter
- Δ_{dmp} deviation of the mean bore diameter from the nominal
- Δ_{Bs} deviation of the single inner ring width from the nominal

Radial internal clearance, preload

Depending on their design, SKF maintenance-free rod ends may have a radial internal clearance or a light preload. **Table 2** lists maximum values for the radial internal clearance as well as for the frictional moment in the circumferential direction caused by preload.

Table 2

Radial internal clearance and frictional moment for maintenance-free rod ends

Bore diameter d		Radial internal clearance	Frictional moment
over	incl.	max	max
mm		μm	Nm

Sliding surface steel/PTFE sintered bronze (designation suffix C)

–	12	28	0,15
12	20	35	0,25
20	30	44	0,40

Sliding surface steel/PTFE fabric (designation suffix TXE-2LS)

35	80	50	–
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Sliding surface steel/PTFE FRP (designation suffix F)

5		50	0,20
6		50	0,25
8		50	0,30
10		75	0,40
12		75	0,50
14		75	0,60
16		75	0,70
18		85	0,80
20		100	1
22		100	1,2

Table 1

Inner ring dimensional tolerances for maintenance-free rod ends

Bore diameter d		SA(A) and SI(A) series				SAKB and SIKB series			
over	incl.	Δ_{dmp}		Δ_{Bs}		Δ_{dmp}		Δ_{Bs}	
		high	low	high	low	high	low	high	low
mm		μm		μm		μm		μm	
–	6	0	–8	0	–120	12	0	0	–120
6	10	0	–8	0	–120	15	0	0	–120
10	18	0	–8	0	–120	18	0	0	–120
18	30	0	–10	0	–120	21	0	0	–120
30	50	0	–12	0	–120	–	–	–	–
50	80	0	–15	0	–150	–	–	–	–

Maintenance-free rod ends

Materials

SKF rod end housings for maintenance-free bearings are made of materials as listed in **table 3**.

Details of the materials used for the maintenance-free radial spherical plain bearings incorporated in the rod ends are listed in **table 3** on **pages 128 to 129**.

The inner ring of rod ends with a steel/PTFE FRP sliding contact surface combination is made of bearing steel. The ring is through-hardened and ground. The sliding contact surface of the inner ring is hard chromium plated. The sliding layer consists of a fibre reinforced polymer, containing PTFE.

Permissible operating temperature range

The permissible operating temperature range for SKF maintenance-free rod ends depends on the rod end housing, the incorporated bearing and the bearing seals. The values for the permissible operating temperature range are listed in **table 4**.

The load carrying capacity of the rod end is reduced at temperatures above 100 °C. For temperatures below 0 °C, check to be sure that the fracture toughness of the rod end housing is adequate for the intended application.

Fatigue strength

In all applications where a rod end is subjected to alternating loads, loads that vary in magnitude or where failure of a rod end is dangerous, make sure that the selected rod end has sufficient fatigue strength.

Table 3

Housing materials for maintenance-free rod ends

Series	Size	Material	Material No.
SA(A) SI(A)	6 to 80	Heat treatable steel C45V, zinc coated and chromitized	1.0503
SAKB SIKB	5 to 12	Free-machining steel, zinc coated and chromitized	1.0718
	14 to 22	Heat treatable steel C35N, zinc coated and chromitized	1.0501

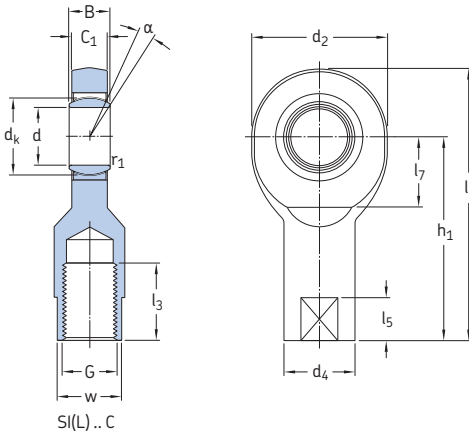
Table 4

Permissible operating temperature range for maintenance-free rod ends

Rod end sliding contact surface combination	Permissible operating temperature range ¹⁾		Reduced load carrying capacity
	from	incl.	
	°C		°C
Steel/PTFE sintered bronze	-50	+150	+80
Steel/PTFE fabric	-40	+110	+65
Steel/PTFE FRP	-40	+75	+50

¹⁾ For temperatures below 0 °C, make sure that the fracture toughness of the rod end housing is adequate for the intended application.

Maintenance-free rod ends with a female thread, steel/PTFE sintered bronze
d 6 – 30 mm

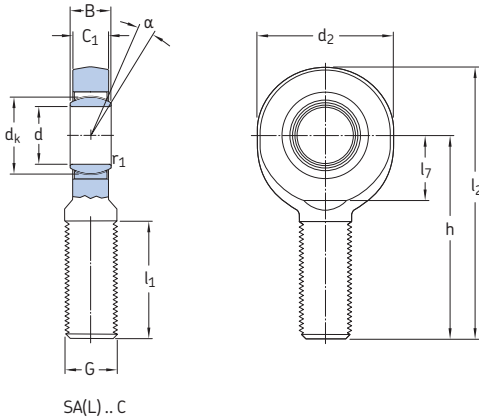


Principal dimensions						Angle of tilt α	Basic load ratings		Mass	Designations	
d	d ₂ max	G 6H	B	C ₁ max	h ₁		dynamic	static		Rod end with right-hand thread	left-hand thread
mm						degrees	kN		kg	–	
6	22	M 6	6	4,5	30	13	3,6	8,15	0,023	SI 6 C	SIL 6 C
8	25	M 8	8	6,5	36	15	5,8	12,9	0,036	SI 8 C	SIL 8 C
10	30	M 10	9	7,5	43	12	8,65	19	0,065	SI 10 C	SIL 10 C
12	35	M 12	10	8,5	50	10	11,4	25,5	0,11	SI 12 C	SIL 12 C
15	41	M 14	12	10,5	61	8	18	37,5	0,18	SI 15 C	SIL 15 C
17	47	M 16	14	11,5	67	10	22,4	46,5	0,25	SI 17 C	SIL 17 C
20	54	M 20x1,5	16	13,5	77	9	31,5	57	0,35	SI 20 C	SIL 20 C
25	65	M 24x2	20	18	94	7	51	90	0,65	SI 25 C	SIL 25 C
30	75	M 30x2	22	20	110	6	65,5	118	1,05	SI 30 C	SIL 30 C

Dimensions

d	d _k	d ₄ ≈	l ₃ min	l ₄ max	l ₅ ≈	l ₇ min	r ₁ min	w h14
6	10	11	11	43	8	10	0,3	9
8	13	13	15	50	9	11	0,3	11
10	16	16	15	60	11	13	0,3	14
12	18	19	18	69	12	17	0,3	17
15	22	22	21	83	14	19	0,3	19
17	25	25	24	92	15	22	0,3	22
20	29	28	30	106	16	24	0,3	24
25	35,5	35	36	128	18	30	0,6	30
30	40,7	42	45	149	19	34	0,6	36

Maintenance-free rod ends with a male thread, steel/PTFE sintered bronze
d 6 – 30 mm



Principal dimensions						Angle of tilt	Basic load ratings		Mass	Designations	
d	d ₂ max	G 6g	B	C ₁ max	h	α	C	C ₀		Rod end with right-hand thread	left-hand thread
mm						degrees	kN		kg	–	
6	22	M 6	6	4,5	36	13	3,6	8,15	0,017	SA 6 C	SAL 6 C
8	25	M 8	8	6,5	42	15	5,85	12,9	0,030	SA 8 C	SAL 8 C
10	30	M 10	9	7,5	48	12	8,65	18,3	0,053	SA 10 C	SAL 10 C
12	35	M 12	10	8,5	54	10	11,4	24,5	0,078	SA 12 C	SAL 12 C
15	41	M 14	12	10,5	63	8	18	34,5	0,13	SA 15 C	SAL 15 C
17	47	M 16	14	11,5	69	10	22,4	42,5	0,19	SA 17 C	SAL 17 C
20	54	M 20×1,5	16	13,5	78	9	31,5	51	0,32	SA 20 C	SAL 20 C
25	65	M 24×2	20	18	94	7	51	78	0,57	SA 25 C	SAL 25 C
30	75	M 30×2	22	20	110	6	65,5	104	0,90	SA 30 C	SAL 30 C

Dimensions

d	d _k	l ₁ min	l ₂ max	l ₇ min	r ₁ min
<hr/>					
mm					
6	10	16	49	10	0,3
8	13	21	56	11	0,3
10	16	26	65	13	0,3
12	18	28	73	17	0,3
15	22	34	85	19	0,3
17	25	36	94	22	0,3
20	29	43	107	24	0,3
25	35,5	53	128	30	0,6
30	40,7	65	149	34	0,6