



# 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

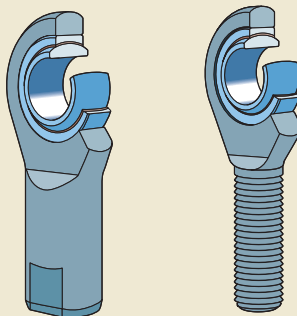


Fig. 2

Maintenance-free rod end, steel/PTFE fabric

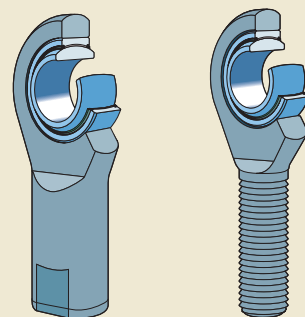
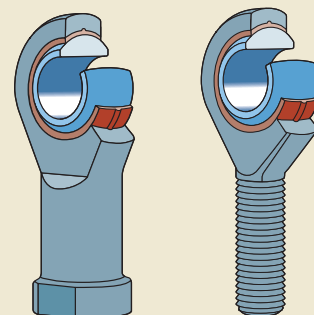


Fig. 3

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
- $\Delta_{dmp}$  deviation of the mean bore diameter from the nominal
- $\Delta_{Bs}$  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		$\mu\text{m}$	Nm

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

–	<b>12</b>	28	0,15
<b>12</b>	<b>20</b>	35	0,25
<b>20</b>	<b>30</b>	44	0,40

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

<b>35</b>	<b>80</b>	50	–
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### Sliding surface steel/PTFE FRP (designation suffix F)

<b>5</b>		50	0,20
<b>6</b>		50	0,25
<b>8</b>		50	0,30
<b>10</b>		75	0,40
<b>12</b>		75	0,50
<b>14</b>		75	0,60
<b>16</b>		75	0,70
<b>18</b>		85	0,80
<b>20</b>		100	1
<b>22</b>		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.	$\Delta_{dmp}$		$\Delta_{Bs}$		$\Delta_{dmp}$		$\Delta_{Bs}$	
		high	low	high	low	high	low	high	low
mm		$\mu\text{m}$		$\mu\text{m}$		$\mu\text{m}$		$\mu\text{m}$	
–	<b>6</b>	0	–8	0	–120	12	0	0	–120
<b>6</b>	<b>10</b>	0	–8	0	–120	15	0	0	–120
<b>10</b>	<b>18</b>	0	–8	0	–120	18	0	0	–120
<b>18</b>	<b>30</b>	0	–10	0	–120	21	0	0	–120
<b>30</b>	<b>50</b>	0	–12	0	–120	–	–	–	–
<b>50</b>	<b>80</b>	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

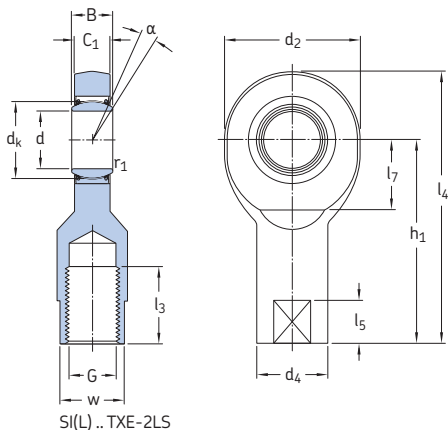
Table 4

#### Permissible operating temperature range for maintenance-free rod ends

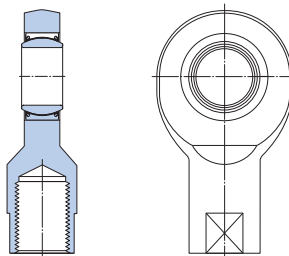
Rod end sliding contact surface combination	Permissible operating temperature range <sup>1)</sup>		Reduced load carrying capacity
	from	incl.	
	°C		°C
Steel/PTFE sintered bronze	-50	+150	+80
Steel/PTFE fabric	-40	+110	+65
Steel/PTFE FRP	-40	+75	+50

<sup>1)</sup> 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 fabric**  
**d 35 – 80 mm**



SI(L)..TXE-2LS



SI(L)A..TXE-2LS

**Principal dimensions**

d	d <sub>2</sub> max	G 6H	B	C <sub>1</sub> max	h <sub>1</sub>	Angle of tilt $\alpha$	Basic load ratings <sup>1)</sup>		Mass	Designations Rod end with right-hand thread	left-hand thread
							C	C <sub>0</sub>			
mm						degrees	kN		kg	-	
35	84	M 36×3	25	22	130	6	224	134	1,40	SIA 35 TXE-2LS	SIL 35 TXE-2LS
40	94	M 39×3	28	24	142	7	280	166	2,20	SIA 40 TXE-2LS	SILA 40 TXE-2LS
45	104	M 42×3	32	28	145	7	360	224	2,90	SIA 45 TXE-2LS	SILA 45 TXE-2LS
50	114	M 45×3	35	31	160	6	440	270	4,10	SIA 50 TXE-2LS	SILA 50 TXE-2LS
60	137	M 52×3	44	39	175	6	695	400	6,30	SIA 60 TXE-2LS	SILA 60 TXE-2LS
70	162	M 72×4	49	43	265	6	880	530	10,5	SIA 70 TXE-2LS	SIL 70 TXE-2LS

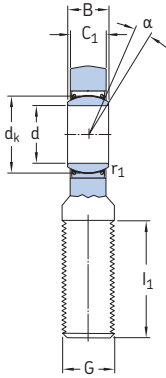
<sup>1)</sup> Dynamic load rating of the bearing to be used for basic rating life calculation only. Check suitability of the rod end against its static load rating in all cases. The dynamic load applied on the rod end must not exceed its static load rating.

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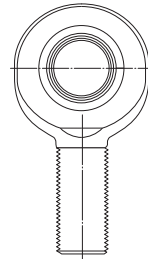
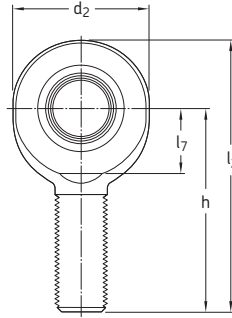
**Dimensions**

d	d <sub>k</sub>	d <sub>4</sub> ≈	l <sub>3</sub> min	l <sub>4</sub> max	l <sub>5</sub> ≈	l <sub>7</sub> min	r <sub>1</sub> min	w h14
35	47	49	60	174	25	40	0,6	41
40	53 53	58 58	65 65	191 194	25 25	46 46	0,6 0,6	50 50
45	60 60	65 65	65 65	199 219	30 30	50 50	0,6 0,6	55 55
50	66 66	70 70	68 68	219 254	30 30	58 58	0,6 0,6	60 60
60	80 80	82 82	70 70	246 296	35 35	73 73	1 1	70 70
70	92	92	80	349	40	85	1	80
80	105	105	85	389	40	98	1	90

**Maintenance-free rod ends with a male thread, steel/PTFE fabric**  
**d 35 – 80 mm**



SA(L) .. TXE-2LS



SA(L)A .. TXE-2LS

Principal dimensions						Angle of tilt	Basic load ratings <sup>1)</sup>		Mass	Designations	
d	d <sub>2</sub> max	G 6g	B	C <sub>1</sub> max	h	α	C	C <sub>0</sub>		Rod end with right-hand thread	left-hand thread
mm						degrees	kN		kg	–	
35	84	M 36×3	25	22	130	6	224	110	1,30	SA 35 TXE-2LS	SAL 35 TXE-2LS
40	94	M 39×3	28	24	150	6	280	140	1,85	SAA 40 TXE-2LS	SALA 40 TXE-2LS
	94	M 42×3	28	24	145	6	280	140	1,90	SA 40 TXE-2LS	SAL 40 TXE-2LS
45	104	M 42×3	32	28	163	7	360	200	2,45	SAA 45 TXE-2LS	SALA 45 TXE-2LS
	104	M 45×3	32	28	165	7	360	200	2,55	SA 45 TXE-2LS	SAL 45 TXE-2LS
50	114	M 45×3	35	31	185	6	440	245	3,30	SAA 50 TXE-2LS	SALA 50 TXE-2LS
	114	M 52×3	35	31	195	6	440	245	3,90	SA 50 TXE-2LS	SAL 50 TXE-2LS
60	137	M 52×3	44	39	210	6	695	360	5,70	SAA 60 TXE-2LS	SALA 60 TXE-2LS
	137	M 60×4	44	39	225	6	695	360	6,25	SA 60 TXE-2LS	SAL 60 TXE-2LS
70	162	M 72×4	49	43	265	6	880	490	10,0	SA 70 TXE-2LS	SAL 70 TXE-2LS
80	182	M 80×4	55	48	295	5	1140	585	14,5	SA 80 TXE-2LS	SAL 80 TXE-2LS

<sup>1)</sup> Dynamic load rating of the bearing to be used for basic rating life calculation only. Check suitability of the rod end against its static load rating in all cases. The dynamic load applied on the rod end must not exceed its static load rating.



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**Dimensions**

d	d <sub>k</sub>	l <sub>1</sub> min	l <sub>2</sub> max	l <sub>7</sub> min	r <sub>1</sub> min
<hr/>					
mm					
<hr/>					
35	47	82	174	40	0,6
40	53	86	199	46	0,6
	53	90	194	46	0,6
45	60	92	217	50	0,6
	60	95	219	50	0,6
50	66	104	244	58	0,6
	66	110	254	58	0,6
60	80	115	281	73	1
	80	120	296	73	1
70	92	132	349	85	1
80	105	147	389	98	1