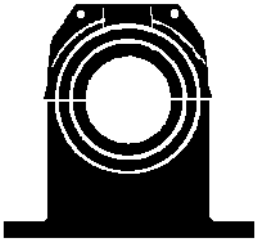
Slide Bearings Type SC
For Shaft Diameter Range 200-560 mm
Main Application Field
Electric Machines

Pedestal Bearings Type SC



RENK series SC are the product of a most recent development based on the modular component principle. These modular components can be put together in alternative ways to suit the specific requirements of each bearing application.

They have been specially designed to carry radial loads only. However, small transient axial loads can be accommodated.

The SC slide bearing series are pedestal bearings covering a shaft-diameter range from 140 to 1400 mm. This leaflet only deals with SC bearings with shaft diameters up to 560 mm. The main application field for this type of bearing is the electric machines.

The SC series can be used together with the well-known RENK E type, e.g. the shaft height and the bore configuration of the pedestal have been adapted from the E version.

Technical Information

This publication contains all the relevant information that is needed when considering the use of slide bearings type SC (shaft range 200 to 560 mm diameter) for electric machine application.

Bearing Housing

The housing of the SC bearing is smooth and made from a high quality cast iron. Alternative materials, such as nodular cast iron, can also be supplied in special cases.

Tapped holes are provided on both sides of the housing for shell and oil sump thermometers and for the oil suction and delivery connections for an oil circulating pump. There are two drain plugs, one at each end of the housing.

If required, one side of the housing can also be provided with connecting bores for water cooling coils.

Tapped holes (2 at 45°) can also be provided in the top half housing for the installation of vibration detectors.

Bearing Shells

The shells are manufactured from steel (C10 / C15) and have a spherical seating. They are lined with RENK metal therm 89 / V6. The shell is optimised to carry radial loads on its standard plain cylindrical bore.

This standard shell (type Q) can not accommodate axial loads. However, a shell (type B) can be provided to take any small transient axial loads.

Seals

For normal application, the SC bearings (up to size 32) are supplied fitted with a floating labyrinth seal (type 10). The seals are made of RENKplastic therm P50, which is a high quality, fibre-reinforced synthetic material. The seal material is not subject to wear. Type 10 seals correspond to the protection grade IP 44. As the modular component principle is used in the SC bearing design, it is easy to incorporate seals to satisfy a higher grade of protection, when specified.

SC bearings with fixed oil ring lubrication are supplied fitted with rigid seals (type 20). These seals correspond at least to the protection grade IP 44.

Oil Supply

For linear shaft speeds of up to 20 m/s, self lubrication is maintained by two loose oil rings delivering oil direct to the shaft journal. The loose oil rings can operate as a safety back-up for speeds up to 26 m/s, when they are used in conjunction with an external lubrication system.

Alternatively, a fixed oil ring and oil scraper arrangement can be used to transfer oil from the sump to the working faces of the shell. In such cases the maximum peripheral speed of the fixed oil ring should be taken as 17,5 m/s. If the fixed oil ring is used as a safety back-up in conjunction with an external lubrication system, this maximum speed may be increased to 20 m/s.

Electrical Insulation

To prevent problems from electrical eddy currents, the SC bearings can be electrically insulated, internally. In such cases the seating of the shell and the seal (type 20) are coated with a layer of insulating material.

Heat Dissipation

Heat generated by the bearing is usually dissipated solely by radiation and convection.

Water cooling can also be used through two seawater resistant coolers submerged in the oil sump. Integrated oil guide plates improve the efficiency of these coolers.

Temperature Monitoring

For standard temperature monitoring, two commercially available thermosensors (working independently) can be used. We recommend the use of RENK resistance thermometers or RENK angle thermometers with a digital display.

Oil Selection

Generally, any recognised brand of good quality plain mineral oil can be used as a lubricant. Please refer to our publication RH 2005, entitled „Lubricants for Slide Bearings-Recommendation“.

The necessary viscosity for each operating condition will be determined by the EDP calculations. These calculations are always carried out at the design stage. A printout of the results can be provided upon request.

① **Type**
SC smooth pedestal bearing

② **Heat dissipation**
N natural cooling
Z lubrication by oil circulation from an external oil supply
W water cooling (finned tube cooler in oil sump)
U circulating pump and natural cooling
T circulating pump and water cooling (finned tube cooler in oil sump)

③ **Shape of bore and type of lubrication**
C plain cylindrical bore, without oil ring
L plain cylindrical bore with loose oil ring
F plain cylindrical bore with fixed oil ring

④ **Thrust parts**
B plane sliding surfaces (locating bearing)
Q without thrust parts (non-locating bearing)

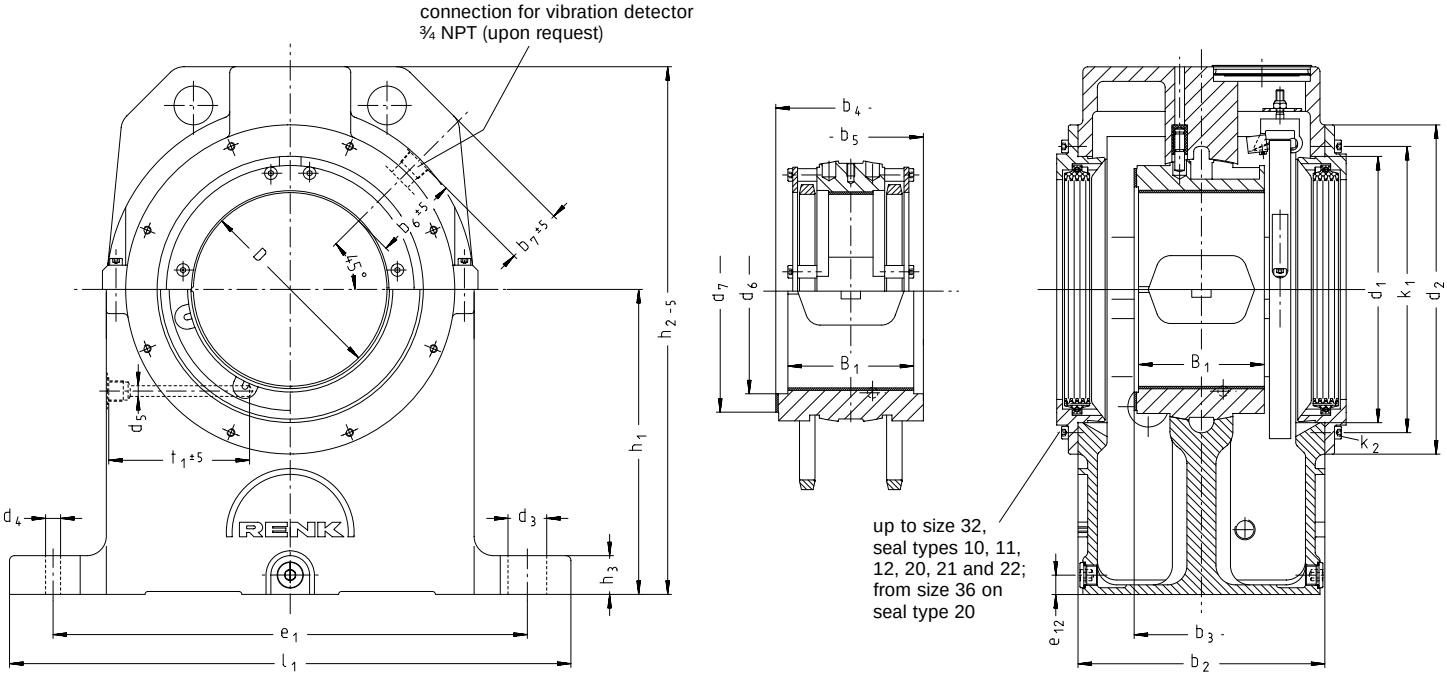
Example

① ② ③ ④
SC W L Q 25 - 250

for quoting a smooth pedestal bearing, type SC, water cooling, plain-cylindrical bore with lubrication by loose oil ring, as non-locating bearing, bearing size 25, shaft diameter 250.

Dimensions of the Bearing

SC..B **SC..Q** **SC.LB / LQ** **SC.FB / FQ**

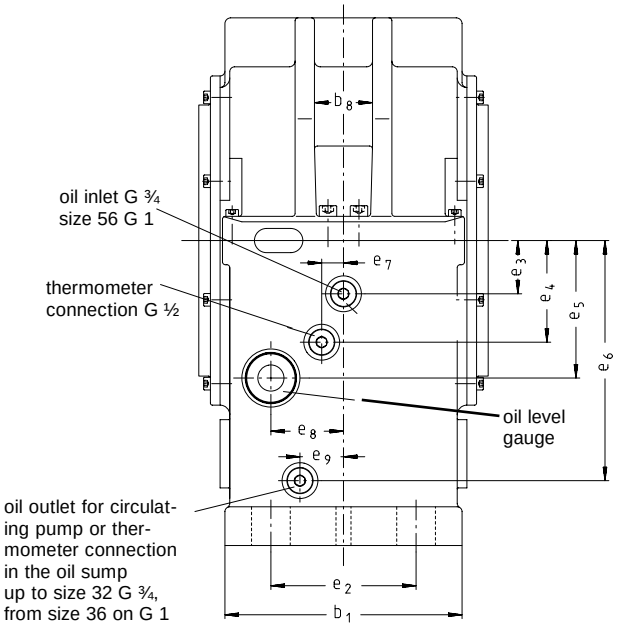


Dimensions in mm

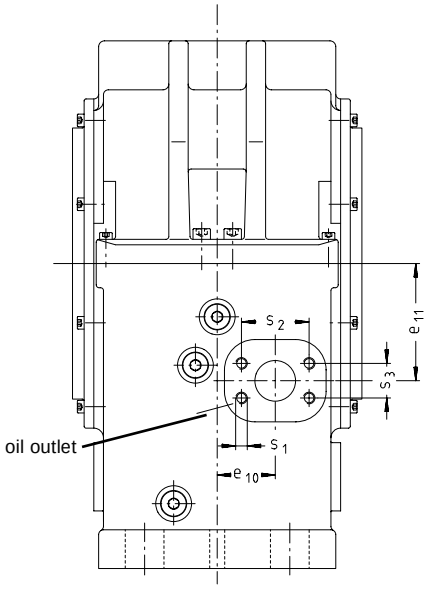
Size[1]	Shaft Ø D	B_1[3]	b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8	d_1	d_2	d_3	d_4	d_5	d_6	d_7	e_1	e_2	e_3	e_4	e_5	e_6	e_7	e_8
	200							118					46			214	265								
25	225	150	310	320	165	180	175	105,5	51	66	340	400	for	15,5	15	239	290	670	200	55	115	190[2]	290	28	75[2]
	250				-0,22	-0,22		93					M 36			264	305					178			75
	250							148					55			266	325								
28	265	170	370	380	185	205	200	140,5	61	75	440	525	for	20,5	15	281	330	800	250	55	135	232,5[2]	364	30	75[2]
	280				-0,24	-0,24		133					M 42			296	335					209			75
	280							138					55			296	355								
32	300	192	370	380	205	225	220	128	54	96	440	525	for	20,5	15	316	375	800	250	65	155	245[2]	364	37,5	75[2]
	315				-0,24	-0,24		120,5					M 42			331	385					224			75
	315							130,5					45			335	400								
36	335	215	390	400	230	250	245	120,5	52	106	430	520	for	20,5	15	355	410	690	290	70	170	250[2]	430	42,5	76[2]
	355				-0,24	-0,24		110,5					M 36			375	420					237,5			76
	355							125,5					45			375	450								
40	375	220	445	410	235	265	260	115,5	42,5	105	470	550	for	20,5	15	395	450	740	330	70	185	250[2]	430	46	76[2]
	400				-0,24	-0,24		103					M 36			420	460					256			76
	400							143					55			425	505								
45	425	248	430	440	265	295	290	130,5	59	120	520	610	for	20,5	15	450	510	830	310	80	210	292,5[2]	470	52,5	110[2]
	450		-		-0,24	-0,24		118					M 42			475	510					282			110
	450							153					55			475	555								
50	475	275	505	470	290	325	320	140,5	48	145	570	650	for	20,5	15	500	560	920	390	80	230	325[2]	465	62,5	140[2]
	500				-0,26	-0,26		128					M 42			525	560					322,5			140
	500							218					62			525	605								
56	530	308	520	520	325	360	355	203	87	165	685	775	for	25,5	15	560	610	1090	380	100	260	410[2]	520	70	140[2]
	560				-0,26	-0,26		188					M 48			590	630					385			140

[1] Size 17 (D = 140, 155, 170) and size 20 (D = 170, 185, 200) upon request. [2] Type L [3] For type C up to b_5 ^ B_1 =

SC...



SCZ..

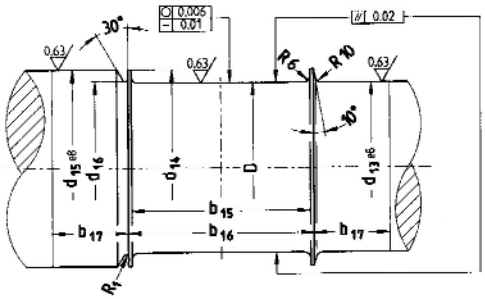


e_9	e_{10}	e_{11}	e_{12}	h_1	h_2	h_3	k_1 Threads k_2	l_1	s_1	s_2	s_3	t_1	Connection for oil outlet accord. to SAE	Oil outlet quantity l/min at te = 40°C[4] ISO VG 32 u. 46	ISO VG 68 u. 100	Oil quantity [l]	Weight [kg]
50	75[2] 75	167[2] 163	25	375	640	45	380 8 x M 8	800	M 12	77,8	42,9	140,5	2“	15[2] 11	13[2] 9	17[2] 18	260
56	95[2] 95	200[2] 189	25	450	755	50	500 8 x M 8	950	M 12	88,9	50,8	198	2 ½“	28[2] 19	25[2] 16	33[2] 36	380
56	95[2] 95	220[2] 204	25	450	770	50	500 8 x M 8	950	M 12	88,9	50,8	197	2 ½“	25[2] 19	22[2] 16	33[2] 36	415
80	100[2] 100	225[2] 217,5	28	530	870	50	470 12 x M 8	790	M 12	88,9	50,8	195,5	2 ½“	25[2] 20	22[2] 17	56[2] 58	465
81	105[2] 105	235[2] 240	28	530	875	50	510 12 x M 8	850	M 12 M 16	88,9 106,4	50,8 61,9	183,5	2 ½“ 3“	16[2] / 17 20[2] / 21	14[2] / 15 17[2] / 18	53[2] 51	515
95	110[2] 110	270[2] 266	30	600	980	65	560 12 x M 8	950	M 12 M 16	88,9 106,4	50,8 61,9	218,5	2 ½“ 3“	22[2] / 18 28[2] / 22	19[2] / 15 25[2] / 19	75[2] 77	720
98	125[2] 125	302,5[2] 300	31	600	1020	80	610 12 x M 8	1035	M 16	106,4	61,9	240	3“	28[2] 28	25[2] 25	75[2] 77	900
105	140[2] 140	370[2] 353,5	35	670	1160	90	735 12 x M 10	1220	M 16 M 16	106,4 130	61,9 77,8	321,5	3“ 4“	42[2] / 38 60[2] / 48	39[2] / 35 55[2] / 45	90[2] 95	1300

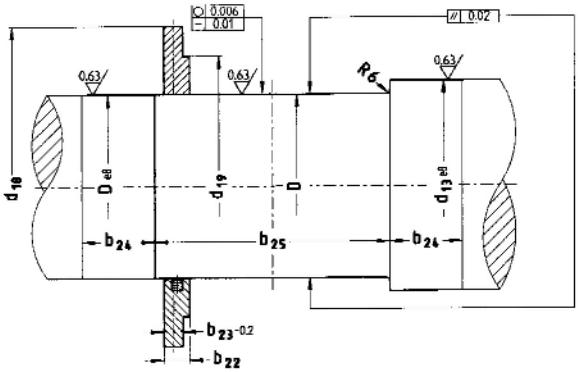
[4] Larger oil quantities and special oil outlets upon request.

Dimensions of the Shaft

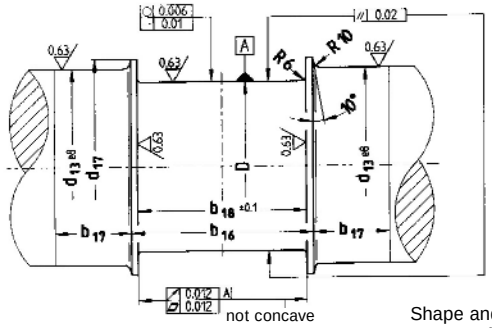
Non-locating bearing SC.LQ
SC.CQ



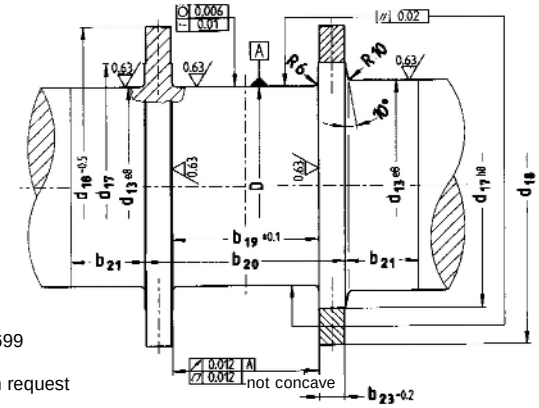
Non-locating bearing SC.FQ



Locating bearing SC.LB
SC.CB



Locating bearing SC.FB



Shape and bearing tolerance DIN 31699
Degree of accuracy B 10 (radial)
Degree of accuracy B 20 (axial); upon request
General tolerance ISO 2768 - mK - E.

Dimensions in mm

Size Ø	Shaft D[1]	b_{15}	b_{16}	b_{17} Seal type 10	b_{17} Seal type 20	b_{18}[2]	b_{19}[2]	b_{20}	b_{21} Seal type 10	b_{21} Seal type 20	b_{22}	b_{23}	b_{24} Seal type 10	b_{24} Seal type 20	b_{25}	d_{13}	d_{14}	d_{15} / d_{16}[3]	d_{17}	d_{18}	d_{19}	R_1
	200																225		265			
25	225	200	220	80	115	180,4	165,4	215	85	120	36	22	55	90	275	200/225/250/280	250	200/– 225/200 250/225 280/250	290	384	312	4
	250																280		305			
	250																280		325			
28	265	230	250	95	130	205,4	185,4	245	100	135	38	28	70	105	300	250/265/280/315	315	250/– 265/250 280/265 315/280	330	450	334	6
	280																315		335			
	280																315		355			
32	300	250	270	85	120	225,4	205,4	265	90	125	38	28	65	100	310	280/315/355	315	280/– 300/280 315/300 355/315	375	480	390	6
	315																355		385			
	315																335		400			
36	335	280	300		100	250,4	230,4	290		105	38	28		85	330	315/335/355/375	355	315/– 335/315 355/335 375/355	410	520	450	6
	355																375		420			
	355																375		450			
40	375	290	310		100	265,4	235,4	295		110	38	28		85	340	355/375/400/425	400	355/– 375/355 400/375 425/400	450	544	470	6
	400																425		460			
	400																425		505			
45	425	320	340		100	295,4	265,4	325		110	43	28		85	375	400/425/450/475	450	400/– 425/400 450/425 475/450	510	605	530	6
	450																475		510			
	450																475		555			
50	475	350	370		100	325,4	290,4	350		110	43	28		85	400	450/475/500/530	500	450/– 475/450 500/475 530/500	560	680	620	6
	500																530		560			
	500																530		605			
56	530	390	415		105	360,4	325,4	395		110	48	33		90	450	500/530/560/600	560	500/– 530/500 560/530 600/560	610	830	730	6
	560																600		630			

1) For bearing clearances also consult „RENK Manual for the Use of the Slide Bearings“.

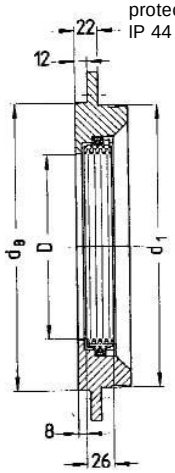
2) The normal clearances for the locating bearing is about 0,5 mm. In the case where the locating bearing is used only for trial runs, the values „b_{18}“ and „b_{19}“ can be increased by 3 - 6 mm, depending on the bearing size.

3) The groove „d_{16}“ can be omitted, if „d_{16}“ = D (shaft diameter) or if d_{16} < „D“.
If the shaft ends in the bearing, the length of the journal corresponds to „b_{15}“.

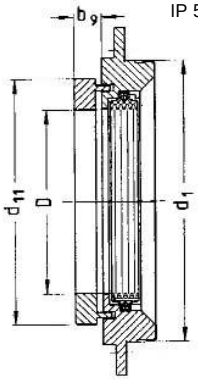
Dimensions of the Seals

max. axial clearance
of the labyrinth ring
± 5 mm

Type 10
floating labyrinth seal
protection grade
IP 44

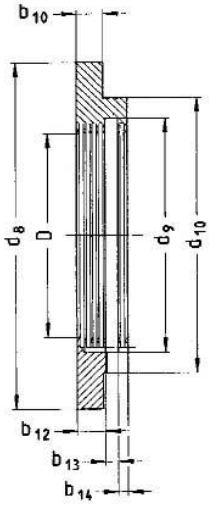


Type 11
floating labyrinth seal
with dust flinger
protection grade
IP 54

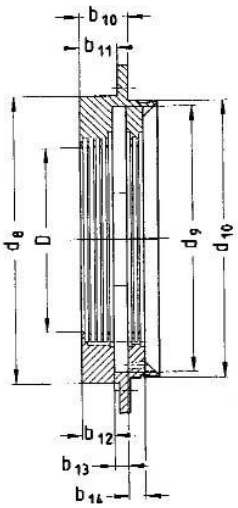


Type 20
rigid seal with two
insulated labyrinth
systems
dimension
b_{10} + 3 mm
protection grade IP 44

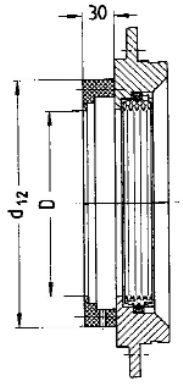
Type 21
rigid seal with two
labyrinth systems and
dust flinger
+ dimension b_9
protection grade IP 54



Type 22
rigid seal with two
labyrinth systems and
baffle + 30 mm
protection grade IP 55



Type 12
floating labyrinth seal
with baffle
protection grade IP 55



Dimensions in mm

Size	D	b_9	b_{10}	b_{11}	b_{12}	b_{13}	b_{14}	d_1	d_8	d_9	d_{10}	d_{11}	d_{12}
25	200	26	49	39	27	24	8	340	340	316	338	280	270
	225	26										280	280
	250	33										340	320
	280	33										340	340
28	250	33	53	43	28	27	8	440	410	390	438	340	320
	280	33										340	340
	315	33										410	385
	355	33										410	410
32	250	33	53	43	28	27	8	440	410	390	438	340	320
	280	33										340	340
	315	33										410	385
	355	33										410	410
36	315		25		27	12	9		520	345	425		
	335									365			
	355									385			
	375									405			
40	355		25		27	12	9		550	385	465		
	375									405			
	400									430			
	425									451			
45	400		25		27	12	9		610	430	515		
	425									455			
	450									480			
	475									501			
50	450		25		27	12	9		650	480	565		
	475									505			
	500									530			
	530									551			
56	500		25		27	12	9		775	530	680		
	530									560			
	560									590			
	600									630			

We reserve the right to changes made in the interests of technical improvement.

RENK AKTIENGESELLSCHAFT
Werk Hannover
Weltausstellungsallee 21
D-30539 Hannover
Telephone: (5 11) 86 01-0
Telefax: (5 11) 86 01-288
e-mail: renk_hannover@renk.de

RH-1149 (5.01) Printed in Germany