

Deep groove ball bearings

319-6410
318-5450

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SKF single row deep groove ball bearings have deep, uninterrupted raceways and a high degree of conformity between balls and raceways. This enables them to carry axial loads in both directions in addition to radial loads even at high speeds. Single row deep groove ball bearings are suitable for a wide variety of applications and are therefore produced in a large number of sizes and designs.

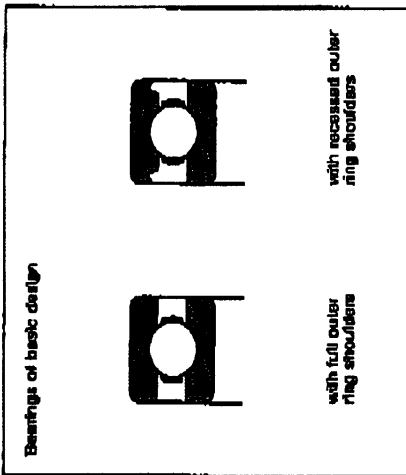
SKF double row deep groove ball bearings are similar in design to the single row bearings. They are without filling slots and can therefore accommodate axial loads in both directions.

Single row bearings, basic design

Single row deep groove ball bearings of the basic design, i.e. open at both sides, are produced by SKF in several series and in a very wide range of diameters. Those bearings of the basic design which are also produced as shielded or sealed bearings may, for manufacturing reasons, have recessed outer ring shoulders to take the shields or seals; see adjacent figure.

Shielded and sealed bearings

The most popular sizes of single row deep groove ball bearings are also produced by SKF as standard with shields (non-rubbing seals) and seals (low-friction and rubbing seals) on one or both sides.



Bearings with shields or seals at both sides are supplied as standard filled with a lithium base grease which has good rust inhibiting properties and which is suitable for operating temperatures between -30 and +110 °C. The bearings are lubricated for life and maintenance-free. They should not be heated prior to mounting and must on no account be washed. For maintenance-free operation over long periods, the sealed bearings of the wide series 622, 623 and 630 are particularly suitable.

To special order, the bearings with shields or seals can be supplied with other greases, e.g. for a temperature range of -40 to +150 °C. The actual quantity of grease is appropriate to the size of bearing and normally fills between 25 and 35 % of the free space in the bearing.

Bearings with shields

Depending on size, there are two designs of bearing with shield(s), suffix Z or 2Z, for series 60, 62 and 63. Bearings with an outside diameter up to and including 110 mm have sheet steel shields which form a long sealing gap with the land of the inner ring shoulder (1). The shields for the larger bearings do not have the cylindrical section in the shield bore (2).

Bearings fitted with Z shields are primarily intended for applications where the bearing inner ring rotates. If the outer ring rotates there is a danger that grease may be lost from the bearing at high speeds.

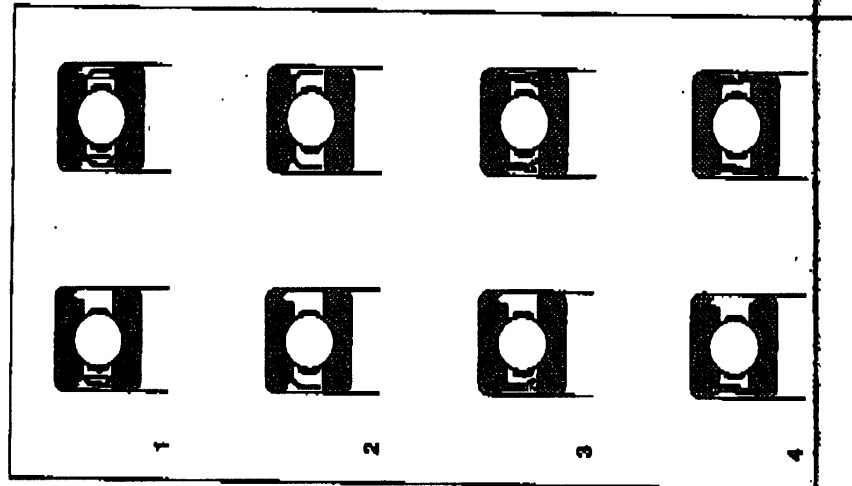
Bearings with low-friction seals

Bearings of series 618 and 619 as well as some small sizes of series 60 and 62 are equipped with RZ seals (3). These are a new SKF development to meet requirements for positive sealing coupled with a minimum of friction. The lips of the seals form a very narrow gap with the land of the inner ring shoulder, so that the seals are essentially non-rubbing. Because of the low friction, the seals permit operation at the same speeds as bearings fitted with Z shields. Their sealing performance is superior to that of the Z shields.

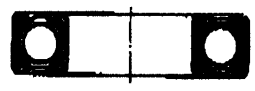
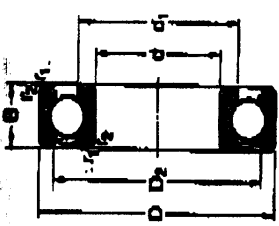
The RZ seals are made of oil and wear-resistant synthetic rubber and have a sheet steel reinforcement. They can withstand operating temperatures in the range of -40 to +120 °C.

Bearings with seals

Bearings fitted with seal(s) of the rubbing type are identified by the suffix RS1 or 2RS1. The seal lips seal against recesses in the inner ring shoulders (4). The seals are made of oil and wear-resistant synthetic rubber with a sheet steel reinforcement and are suitable for operating temperatures between -40 and +120 °C. The outside diameter of the seal is re-

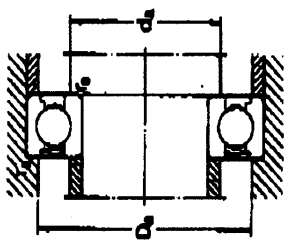


single row, with shield(s)
d 3-20 mm



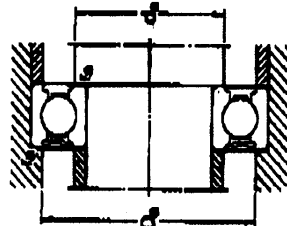
With two Z shields

Principal dimensions		Basic load ratings		Fatigue limit P_0	Speed ratings	Mass	Designations
		dynamic	static		Lubrication grease oil		
d	D	C	C ₀	N	r/min	kg	Bearings with one shield two shields
3	10	486	146	6	60 000	0,0015	623-Z 633-3Z
4	13	875	305	14	48 000	0,0081	634-Z 634-3Z
5	16	1 110	380	16	43 000	0,0054	635-Z 635-3Z
6	19	1 460	480	19	38 000	0,0039	636-Z 636-3Z
7	22	1 720	560	22	34 000	0,0029	637-Z 637-3Z
8	25	2 000	650	25	30 000	0,0022	638-Z 638-3Z
9	28	2 300	750	28	27 000	0,0017	639-Z 639-3Z
10	30	2 600	850	30	24 000	0,0013	640-Z 640-3Z
12	36	3 200	1 000	36	20 000	0,0009	641-Z 641-3Z
15	42	3 900	1 200	42	17 000	0,0006	642-Z 642-3Z
17	47	4 500	1 400	47	15 000	0,0004	643-Z 643-3Z
20	52	5 200	1 600	52	13 000	0,0003	644-Z 644-3Z
22	58	5 900	1 800	58	11 000	0,0002	645-Z 645-3Z
25	63	6 600	2 000	63	10 000	0,0001	646-Z 646-3Z
28	70	7 500	2 300	70	9 000	0,0001	647-Z 647-3Z
30	75	8 200	2 500	75	8 000	0,0001	648-Z 648-3Z
32	78	8 700	2 700	78	7 500	0,0001	649-Z 649-3Z
35	83	9 300	2 900	83	7 000	0,0001	650-Z 650-3Z
36	86	9 700	3 100	86	6 500	0,0001	651-Z 651-3Z
38	90	10 200	3 300	89	6 000	0,0001	652-Z 652-3Z
40	95	10 700	3 500	92	5 600	0,0001	653-Z 653-3Z
42	100	11 200	3 700	95	5 200	0,0001	654-Z 654-3Z
45	105	11 700	3 900	98	4 800	0,0001	655-Z 655-3Z
48	110	12 200	4 100	101	4 400	0,0001	656-Z 656-3Z
50	115	12 700	4 300	104	4 000	0,0001	657-Z 657-3Z
52	120	13 200	4 500	107	3 600	0,0001	658-Z 658-3Z
55	125	13 700	4 700	110	3 200	0,0001	659-Z 659-3Z
58	130	14 200	4 900	113	2 800	0,0001	660-Z 660-3Z
60	135	14 700	5 100	116	2 600	0,0001	661-Z 661-3Z
63	140	15 200	5 300	119	2 400	0,0001	662-Z 662-3Z
65	145	15 700	5 500	122	2 200	0,0001	663-Z 663-3Z
68	150	16 200	5 700	125	2 000	0,0001	664-Z 664-3Z
70	155	16 700	5 900	128	1 800	0,0001	665-Z 665-3Z
72	160	17 200	6 100	131	1 600	0,0001	666-Z 666-3Z
75	165	17 700	6 300	134	1 400	0,0001	667-Z 667-3Z
78	170	18 200	6 500	137	1 200	0,0001	668-Z 668-3Z
80	175	18 700	6 700	140	1 100	0,0001	669-Z 669-3Z
85	180	19 200	6 900	143	1 000	0,0001	670-Z 670-3Z
90	185	19 700	7 100	146	900	0,0001	671-Z 671-3Z
95	190	20 200	7 300	149	800	0,0001	672-Z 672-3Z
100	195	20 700	7 500	152	750	0,0001	673-Z 673-3Z
105	200	21 200	7 700	155	700	0,0001	674-Z 674-3Z
110	205	21 700	7 900	158	650	0,0001	675-Z 675-3Z
115	210	22 200	8 100	161	600	0,0001	676-Z 676-3Z
120	215	22 700	8 300	164	550	0,0001	677-Z 677-3Z
125	220	23 200	8 500	167	500	0,0001	678-Z 678-3Z
130	225	23 700	8 700	170	450	0,0001	679-Z 679-3Z
135	230	24 200	8 900	173	400	0,0001	680-Z 680-3Z
140	235	24 700	9 100	176	350	0,0001	681-Z 681-3Z
145	240	25 200	9 300	179	300	0,0001	682-Z 682-3Z
150	245	25 700	9 500	182	250	0,0001	683-Z 683-3Z
155	250	26 200	9 700	185	200	0,0001	684-Z 684-3Z
160	255	26 700	9 900	188	180	0,0001	685-Z 685-3Z
165	260	27 200	10 100	191	160	0,0001	686-Z 686-3Z
170	265	27 700	10 300	194	140	0,0001	687-Z 687-3Z
175	270	28 200	10 500	197	120	0,0001	688-Z 688-3Z
180	275	28 700	10 700	200	100	0,0001	689-Z 689-3Z
185	280	29 200	10 900	203	90	0,0001	690-Z 690-3Z
190	285	29 700	11 100	206	80	0,0001	691-Z 691-3Z
195	290	30 200	11 300	209	70	0,0001	692-Z 692-3Z
200	295	30 700	11 500	212	60	0,0001	693-Z 693-3Z
205	300	31 200	11 700	215	50	0,0001	694-Z 694-3Z
210	305	31 700	11 900	218	40	0,0001	695-Z 695-3Z
215	310	32 200	12 100	221	30	0,0001	696-Z 696-3Z
220	315	32 700	12 300	224	20	0,0001	697-Z 697-3Z
225	320	33 200	12 500	227	15	0,0001	698-Z 698-3Z
230	325	33 700	12 700	230	10	0,0001	699-Z 699-3Z
235	330	34 200	12 900	233	5	0,0001	700-Z 700-3Z



With one Z shield

Dimensions		Basic load ratings		Fatigue limit P_0	Speed ratings	Mass	Designations
		dynamic	static		Lubrication grease oil		
d	D	C	C ₀	N	r/min	kg	Bearings with one shield two shields
3	10	486	146	6	60 000	0,0015	623-Z 633-3Z
4	13	875	305	14	48 000	0,0081	634-Z 634-3Z
5	16	1 110	380	16	43 000	0,0054	635-Z 635-3Z
6	19	1 460	480	19	38 000	0,0039	636-Z 636-3Z
7	22	1 720	560	22	34 000	0,0029	637-Z 637-3Z
8	25	2 000	650	25	30 000	0,0022	638-Z 638-3Z
9	28	2 300	750	28	27 000	0,0017	639-Z 639-3Z
10	30	2 600	850	30	24 000	0,0013	640-Z 640-3Z
12	36	3 200	1 000	36	20 000	0,0009	641-Z 641-3Z
15	42	3 900	1 200	42	17 000	0,0006	642-Z 642-3Z
17	47	4 500	1 400	47	15 000	0,0004	643-Z 643-3Z
20	52	5 200	1 600	52	13 000	0,0003	644-Z 644-3Z
22	58	5 900	1 800	58	11 000	0,0002	645-Z 645-3Z
25	63	6 600	2 000	63	10 000	0,0001	646-Z 646-3Z
28	70	7 500	2 300	70	9 000	0,0001	647-Z 647-3Z
30	75	8 200	2 500	75	8 000	0,0001	648-Z 648-3Z
32	78	8 700	2 700	78	7 500	0,0001	649-Z 649-3Z
35	83	9 300	2 900	83	7 000	0,0001	650-Z 650-3Z
36	86	9 700	3 100	86	6 500	0,0001	651-Z 651-3Z
38	90	10 200	3 300	89	6 000	0,0001	652-Z 652-3Z
40	95	10 700	3 500	92	5 600	0,0001	653-Z 653-3Z
42	100	11 200	3 700	95	5 200	0,0001	654-Z 654-3Z
45	105	11 700	3 900	98	4 800	0,0001	655-Z 655-3Z
48	110	12 200	4 100	101	4 400	0,0001	656-Z 656-3Z
50	115	12 700	4 300	104	4 000	0,0001	657-Z 657-3Z
52	120	13 200	4 500	107	3 600	0,0001	658-Z 658-3Z
55	125	13 700	4 700	110	3 200	0,0001	659-Z 659-3Z
58	130	14 200	4 900	113	2 800	0,0001	660-Z 660-3Z
60	135	14 700	5 100	116	2 600	0,0001	661-Z 661-3Z
63	140	15 200	5 300	119	2 400	0,0001	662-Z 662-3Z
65	145	15 700	5 500	122	2 200	0,0001	663-Z 663-3Z
68	150	16 200	5 700	125	2 000	0,0001	664-Z 664-3Z
70	155	16 700	5 900	128	1 800	0,0001	665-Z 665-3Z
72	160	17 200	6 100	131	1 600	0,0001	666-Z 666-3Z
75	165	17 700	6 300	134	1 400	0,0001	667-Z 667-3Z
78	170	18 200	6 500	137	1 200	0,0001	668-Z 668-3Z
80	175	18 700	6 700	140	1 100	0,0001	669-Z 669-3Z
85	180	19 200	6 900	143	1 000	0,0001	670-Z 670-3Z
90	185	19 700	7 100	146	900	0,0001	671-Z 671-3Z
95	190	20 200	7 300	149	800	0,0001	672-Z 672-3Z
100	195	20 700	7 500	152	750	0,0001	673-Z 673-3Z
105	200	21 200	7 700	155	700	0,0001	674-Z 674-3Z
110	205	21 700	7 900	158	650	0,0001	675-Z 675-3Z
115	210	22 200	8 100	161	600	0,0001	676-Z 676-3Z
120	215	22 700	8 300	164	550	0,0001	677-Z 677-3Z
125	220	23 200	8 500	167	500	0,0001	678-Z 678-3Z
130	225	23 700	8 700	170	450	0,0001	679-Z 679-3Z
135	230	24 200	8 900	173	400	0,0001	680-Z 680-3Z
140	235	24 700	9 100	176	350	0,0001	681-Z 681-3Z
145	240	25 200	9 300	179	300	0,0001	682-Z 682-3Z
150	245	25 700	9 500	182	250	0,0001	683-Z 683-3Z
155	250	26 200	9 700	185	200	0,0001	684-Z 684-3Z
160	255	26 700	9 900	188	180	0,0001	685-Z 685-3Z
165	260	27 200	10 100	191	160	0,0001	686-Z 686-3Z
170	265	27 700	10 300	194	140	0,0001	687-Z 687-3Z
175	270	28 200	10 500	197	120	0,0001	688-Z 688-3Z
180	275	28 700	10 700	200	100	0,0001	689-Z 689-3Z
185	280	29 200	10 900	203	90	0,0001	690-Z 690-3Z
190	285	29 700	11 100	206	80	0,0001	691-Z 691-3Z
195	290	30 200	11 300	209	70	0,0001	692-Z 692-3Z
200	295	30 700	11 500	212	60	0,0001	693-Z 693-3Z
205	300	31 200	11 700	215	50	0,0001	694-Z 694-3Z
210	305	31 700	11 900	218	40	0,0001	695-Z 695-3Z
215	310	32 200	12 100	221	30	0,0001	696-Z 696-3Z
220	315	32 700	12 300	224	20	0,0001	697-Z 697-3



Principal dimensions			Basic load ratings		Fatigue load limit P_u	Speed rating r/min	Mass kg	Designations Bearings with oil seal	Two seals
d	D	B	C	C_0					
6	18	6	1 720	850	26	22 800	0.0064	6204-2RS1	6204-2RS1
7	19	6	1 720	850	26	22 000	0.0075	6205-2RS1	6205-2RS1
7	22	7	3 200	1 370	57	20 000	0.012	627-2RS1	627-2RS1
8	22	7	3 250	1 370	57	20 000	0.012	6204-2RS1	6204-2RS1
8	22	11	3 260	1 378	57	20 000	0.016	-	6208-2RS1
9	24	7	3 710	1 660	71	19 000	0.014	6208-2RS1	6208-2RS1
9	26	8	4 020	1 840	63	18 000	0.020	6208-2RS1	6208-2RS1
10	19	5	1 360	585	25	20 000	0.0055	61900-2RS1	61900-2RS1
10	22	6	1 800	790	32	19 000	0.010	61900-2RS1	61900-2RS1
10	26	8	4 820	1 960	63	19 000	0.018	6200-2RS1	6200-2RS1
10	26	12	4 820	1 960	63	19 000	0.025	6200-2RS1	6200-2RS1
10	30	9	5 070	2 386	160	17 000	0.032	6200-2RS1	6200-2RS1
10	30	14	6 070	2 386	160	17 000	0.048	-	6200-2RS1
10	35	11	8 080	3 400	143	15 000	0.073	6200-2RS1	6200-2RS1
10	35	17	8 080	3 400	143	15 000	0.099	6200-2RS1	6200-2RS1
12	21	5	1 430	670	26	19 000	0.0063	61901-2RS1	61901-2RS1
12	24	6	2 250	910	73	18 000	0.011	61901-2RS1	61901-2RS1
12	28	8	5 670	2 330	109	17 000	0.022	6201-2RS1	6201-2RS1
12	32	10	5 070	2 350	109	17 000	0.029	6201-2RS1	6201-2RS1
12	32	16	5 070	2 350	132	15 000	0.037	6201-2RS1	6201-2RS1
12	37	12	8 160	3 100	132	16 000	0.046	-	6201-2RS1
12	37	17	9 760	4 150	176	14 000	0.080	6201-2RS1	6201-2RS1
15	24	5	1 560	800	34	17 000	0.0074	61902-2RS1	61902-2RS1
15	26	6	4 650	2 040	85	16 000	0.016	61902-2RS1	61902-2RS1
15	32	9	5 690	2 850	120	14 000	0.030	6202-2RS1	6202-2RS1
15	32	13	5 690	2 850	120	14 000	0.039	6202-2RS1	6202-2RS1
15	35	11	7 800	3 760	160	13 000	0.045	6202-2RS1	6202-2RS1
15	35	14	7 800	3 750	160	13 000	0.054	-	6202-2RS1
15	42	13	11 400	5 400	226	12 000	0.082	6202-2RS1	6202-2RS1
15	42	17	11 400	5 400	226	12 000	0.11	-	6202-2RS1