

# Four-row Cylindrical Roller Bearings For Rolling Mills



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Cylindrical roller bearings with four rows of rollers are used almost exclusively for rolling mills. They have lower friction than other roller bearings and can be successfully used where high speed operation is called for. The low cross-sectional height of cylindrical roller bearings means that the roll necks can have a large diameter in relation to the roll itself.

In four-row cylindrical roller bearings, the rollers are guided between integral or non-integral flanges on the outer ring. The inner ring is without flanges; axial displacement of the shaft with respect to the housing can therefore be accommodated by the bearing within certain limits.

Depending on the application, four-row cylindrical roller bearings can be supplied with a cylindrical bore or a tapered bore. The inner and outer rings may be in one piece or in more than one piece.

### **Dimensions**

The dimensions of the bearings with series designations listed in the tables conform to ISO15-1981.

### **Misalignment**

Four-row cylindrical roller bearings are not designed to accommodate any misalignment.

### **Tolerances**

Excluding particular request of customers the four row cylindrical roller bearings with cylindrical bore or tapered bore have a dimensional accuracy corresponding to tolerance class P6 and a running accuracy to tolerance class P5.

### **Radial internal clearance**

Four row cylindrical roller bearings with cylindrical and tapered bore, are produced with C3 or C4 radial internal clearance. One customer's requests are available bearings with different radial internal clearances. All cylindrical roller bearings that presented helical groove on the inner ring bore are made with C2 radial internal clearance.

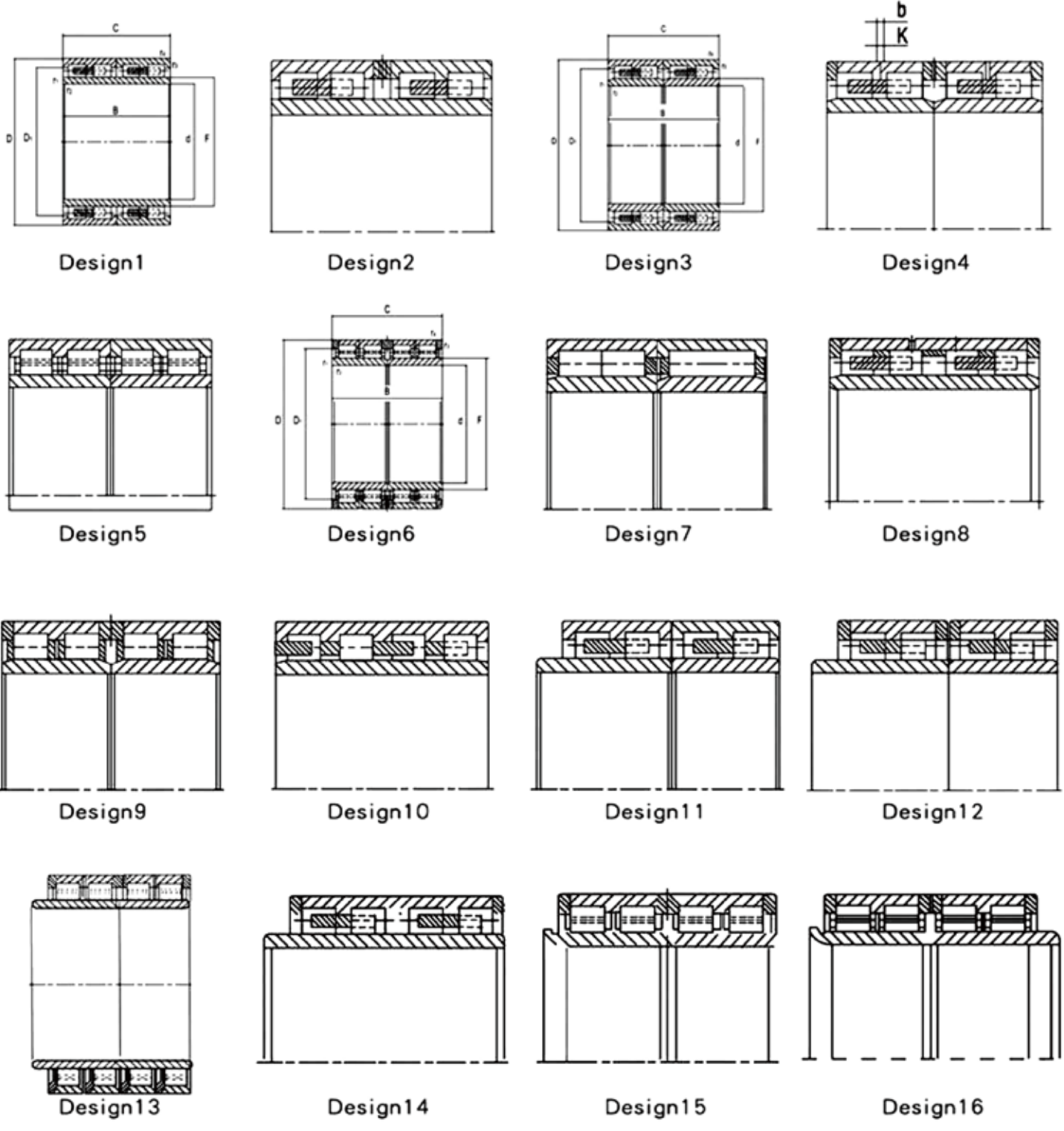
### **Cages**

In relation to the execution four row cylindrical roller bearings are fitted with either two double-pronged machined roller guided cages of brass or steel, pin-type cages of steel (with pierced roller) or machined cages of brass with vent-hole. Some execution are supplied with steel pressed sheet.

### **Heat treatment**

With some special exceptions four row cylindrical roller bearings undergo special stabilizing treatment S0 which makes them suitable for operating temperatures up to +150°C. On customer's request it's possible to have other stabilizing treatment as: S1 (use up to +200°C) S2 (use up to +250°C)

# DESIGNS OF CYLINDRICAL BORE





Dimensions (mm)						Weight	Load ratings		SKF Code	Design No.
d	D	B	C	F	D1		dyn	stat.		
						Kg	Cr	Cor		
							KN	KN		
115	165	107,5	90	132,5	151	8,5	402	765	BC4B 319738 A	11
127	174,625	150,812	150,812	139,5	159	10,5	627	1,320	315643/VJ202	3
139,700	215	195	187	156,285	188	25	1,010	2,280	BC4B 466971 B	14
	215	195	187	159,285	188	24	1,210	2,550	BC4B 459696	14
145	210	155	155	166	190	18	792	1,560	314625	1
	225	156	156	169	197	23	897	1,660	313924 A	1
150	230	156	156	174	202	24	897	1,660	313891 A	1
160	230	130	130	180	210	17	781	1,340	314190	1
	230	168	168	179	204	23,5	897	2,200	315189 A	1
	233	180	180	178,515	206	26,5	1,140	2,800	BC4B 457627 VCA	8
165,100	225,425	168,275	168,275	181	205	20	1,010	2,240	315642/VJ202	3
170	230	130	130	188,5	211	15	671	1,400	313673	2
	230	160	160	185,5	212	19	1,100	2,360	BC2B 322340/HB1VJ202	3
	240	130	130	190	218	19	913	1,830	BC4B 635122	1
	260	225	225	196	230	43,5	1,650	3,350	313587 B	1
180	260	168	168	202	233	29,5	1,280	2,500	313812	1
190	260	168	168	212	237	27	1,140	2,600	313651	1
	270	200	200	212	242	37,5	1,510	3,350	314199 B	1
	280	200	200	214	251	41,5	1,720	3,350	314049 A	1
200	270	170	170	222	349	28,5	1,170	2,700	314553	1
	280	170	170	222	252	33,5	1,380	3,000	314385	1
	280	170	170	222	253	35	1,450	3,200	BC4B 319659	7
	280	180	170	222	252	35	1,380	3,000	319019	11
	280	200	200	222	252	39	1,510	3,350	313893	1
	285	200	200	222,5	236	44	1,470	3,900	BC4B 457628	8
	290	192	192	226	260	42,5	1,540	3,200	313811	1
	290	192	192	226	260	42,5	1,540	3,200	313811 A	1
210	310	230	230	229	273	63	2,010	3,750	313639/VJ202	3
	290	192	192	236	264	41	1,450	3,400	313646	1
220	300	200	200	240	276	41	1.790	3.900	BC2B322341 /HB1VJ202	3
	310	192	192	246	280	46	1.680	3.650	313839	1
	310	225	225	244	278	54,5	1.940	4.300	313894 B	1
	330	230	230	249	294	68,5	2.050	4.000	314889/VJ202	3
230	330	206	206	260	297	58	1.870	4.000	313824	1
	365	250	250	266	321	100	2.640	4.900	313581 A	4
240	330	180	180	265	299	49,5	1.720	3.800	635194	7
	330	220	220	270	300	58	1.720	4.300	313921	1
	330	240	220	270	300	60	1.720	4.300	BC4B 320415	10
	360	290	290	270	327	130	3.300	6.550	BC4B 322292 A/HB3	4
250	340	230	230	310	276	65	1.870	5.000	BC4B 457629 VCA	8
260	360	204	204	287	326	64,5	1.980	4.400	314997 / VJ202	3
	360	230	230	292	326	73,5	1.980	4.650	BC4B320956	1
	370	220	220	292	332	77,5	2.160	4.650	313823	1
	370	240	220	292	332	78,5	2.160	4.605	BC4B 319464 /HA3	11
	400	290	290	296	352	135	3.520	7.100	313427 B	4
265	370	234	234	300	336	80,5	2.240	5.400	313922	1
270	380	295	275	300	345	100	3.080	7.200	315605	12

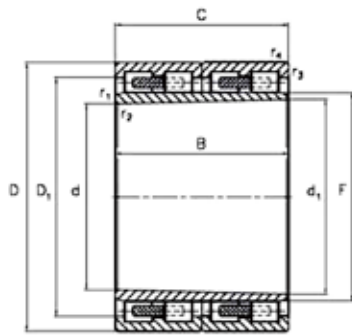


d	Dimensions (mm)					Weight	Load ratings		SKF Code	Design No.
	D	B	C	F	D1		dyn	stat.		
						Kg	Cr	Cor		
							KN	KN		
280	380	290	290	308,5	352	75	2.750	6.950	BC4-0001	4
	390	220	220	312	352	82,5	2.240	5.000	313822	1
	390	250	220	312	352	84,5	2.240	5.000	319259	11
	390	275	275	308	353	100	3.080	7.200	314719 C	4
	400	285	285	316	360	120	3.140	7.350	314070 /VJ202	3
	410	300	300	313	368	130	3.520	7.500	314897 /VJ202	3
	420	300	300	319	372	150	3.470	7.350	313487	4
290	390	190	190	316	356	67	2.050	4.550	635195	7
300	420	300	300	332	379	130	3.740	8.800	314484 D	4
	420	320	300	332	379	135	3.740	8.800	319129	12
	420	330	300	332	379	140	3.740	8.800	BC4-0003	12
320	460	240	240	364	425	140	2.920	7.200	BC4B 322216/VJ202	7
	480	350	350	364	426	220	4.950	10.800	314274 B	6
330	460	340	340	365	415	175	4.180	10.200	313445 C	4
340	480	350	350	378	431	205	4.570	11.000	314485 A	4
	480	350	350	378	431	205	4.570	11.000	314485 C	4
	480	370	350	378	431	200	4.570	11.000	319040 A	12
	500	370	370	385	452	260	5.230	11.800	BC4B 322261/HB1	6
	560	380	380	396	486	350	6.820	12.900	313404 A	6
350	500	380	380	389	450	240	4.950	11.400	314563/VJ202	3
	500	410	410	388	455	285	5.830	13.700	BC4B 322777/HB1	6
	520	300	300	401	468	220	4.290	9.000	BC2B 319878/VJ202	3
	520	300	300	401	468	220	4.290	9.000	BC4B 326909/HA3	1
	520	320	300	401	468	240	4.290	9.000	BC4B 326858/HB3	11
360	500	250	250	394	462	145	3.580	7.350	BC2B 320075/VJ202	3
	500	250	250	394	463	140	3.470	8.500	BC2B 322217/VJ202	7
	510	400	380	399	460	260	5.230	12.200	316890 B	13
370	520	380	380	409	468	255	5.500	13.200	314486 A	4
380	520	280	280	426	471	185	2.860	7.200	NNU 4976 B/DRW33	3
	540	260	260	428	495	205	3.410	8.650	BC2B 326131/HB1VJ202	7
	540	300	300	421	490	220	5.010	11.000	313030 A	6
	540	400	380	422	493	300	6.050	14.000	BC4B 320989/HA3	12
	540	400	380	424	488	295	5.720	13.700	315606	13
	540	400	400	422	489	295	5.830	14.000	BC4B 313511 B	4
	540	400	400	422	489	305	6.160	15.000	BC4B 326366/HB1	
	560	300	300	424	488	260	4.950	9.650	BC4B 322189	6
	560	325	325	428	508	265	5.230	10.600	BC4B 322264/HB1	1
390	540	320	320	431	500	230	5.280	12.200	BC4B 322498	6
	550	310	310	430	499	240	5.120	11.200	313190 A	6
399,930	590	440	440	450	534	420	8.580	20.400	313038 A	6
400	560	410	410	445	509	315	6.270	15.600	313015 DC	6
	590	440	440	450	530	415	7.370	16.600	315802/VJ202	3
	560	400	400	450	515	290	6.440	16.000	316689	6
410	560	400	400	450	515	295	5.500	16.000	BC4B 322038/HA2	6
	560	420	400	450	515	275	5.940	14.600	BC4B 320612	12
	600	440	440	460	540	425	7.650	17.300	313877 B	6
	580	260	260	468	536	210	3.740	9.650	BC2B 320074 A/VJ202	3
420	580	260	260	460	531	215	4.020	10.600	BC2B 326137/HB2VJ202	7
	580	320	320	463	525	250	4.680	10.800	313555 B/VJ202	3

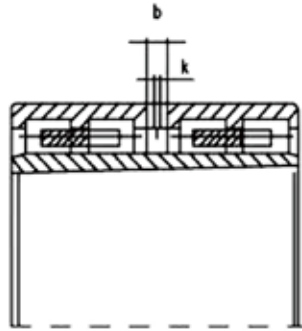
Dimensions (mm)						Weight	Load ratings		SKF Code	Design No.
d	D	B	C	F	D1		dyn	stat.		
						Kg	Cr	Cor		
							KN	KN		
420	580	320	320	463	525	250	4.680	10.800	313555 C/VJ202	3
	600	440	440	470	540	400	7.210	17.600	313513	4
	620	400	400	473	550	430	6.930	15.600	314391/VJ202	5
431,500	571,5	300	300	465	533	210	4.460	10.200	BC4B 326361/HA1	9
440	620	450	450	487	557	440	7.810	19.600	314554 B	6
	620	470	450	487	557	420	7.210	17.600	BC4B 320608	12
	650	355	355	494	584	420	6.710	14.000	316899 A	6
	660	340	340	492	580	430	6.710	13.700	635043	
447,295	635,2	464	464	495	575	460	8.250	20.000	314792 A	6
450	590	300	300	490	528	245	3.910	12.000	315811 E	8
459,950	760	600	600	535	655	1.16	14.000	30.500	312980 D	6
460	650	355	355	510	584	380	6.270	14.600	313031 A	6
	650	424	424	510	594	450	7.810	18.300	315196 A	6
	650	460	424	510	594	490	7.810	18.300	BC4B 322993 A/HA7	6
	650	470	470	509	584	510	8.800	22.400	314560	6
	650	470	470	509	584	510	8.800	22.400	319155	6
	680	400	400	518	618	640	8.090	17.300	BC4B 322374	10
	474,650	600	368	368	504	563	235	5.500	14.600	BC4-8000/HA1
475	600	368	368	504	563	235	5.500	14.600	BC4B 326261/HA1	9
480	650	450	450	525	597	440	8.250	21.200	316690 B	6
480	680	420	420	528	616	515	8.420	19.300	319320	6
	680	500	500	528	612	605	9.130	22.000	316624	6
	680	500	500	532	612	585	9.520	24.000	313516 D	6
	487,980	637,045	350	350	605,7	541	300	5.120	15.300	BC2B 326196/HA1VJ202
500	650	260	260	542	600	225	4.020	10.200	319254/VJ202	3
	670	450	450	540	612	460	8.250	22.000	316083 A	6
	670	479	450	540	612	485	8.250	22.000	BC4-8010/HA4	15
	670	480	450	540	612	485	8.250	22.000	BC4B 322039/HA1	15
	670	517	450	540	612	475	8.250	22.000	BC4-8011/HA4	14
	680	450	450	550	622	500	8.250	22.000	BC4B 316515	6
	710	480	480	558	642	610	8.800	21.600	316968 A	4
	720	400	400	558	656	530	7.920	17.600	BC4B 322066	4
	720	530	530	568	651	730	10.800	28.500	314441 B	6
	738	500	500	556	671	735	10.800	23.200	BC4B 326853/HB1	6
510	680	500	500	560	627	522	8.970	26.000	BC4B 319411	6
	730	520	520	569	665	750	9.520	22.000	BC4-8009/HB1	3
	760	550	550	570	688	950	12.100	26.500	BC4-8007/HB1	6
529,910	870	670	670	615	751	1.66	15.700	33.500	312844/VJ202	5
530	760	520	520	587	683	775	11.700	28.500	314886 A	6
	780	500	500	591	690	805	9.350	20.400	315040/VJ202	3
	780	570	570	601	697	960	12.800	32.500	314517 A	6
536,176	762,03	558,8	558,8	598	686	830	11.400	29.000	313535 B	6
	762,03	558,8	558,8	598	691	840	11.400	29.000	313535 D	6
	762,03	558,8	558,8	600	686	820	11.200	30.000	BC4B 322142/HB1	6
549,850	740	510	510	600	680	615	10.100	27.000	BC4B 326897	6
550	740	510	510	600	680	615	10.100	27.000	316691 B	6
	800	520	520	612	721	895	11.700	26.500	316115/VJ202	6
	800	560	560	610	725	930	12.100	28.000	BC4B 322719/HB1	1
559,840	920	710	710	652,5	796	2	20.100	45.500	313189 A	6
560	820	600	600	625	743	1.08	14.200	34.000	BC4B 322930/HA4	6

Dimensions (mm)						Weight	Load ratings		SKF Code	Design No.
d	D	B	C	F	D1		dyn	stat.		
						Kg	Cr	Cor		
							KN	KN		
<b>571,100</b>	813	594	594	636	729	1	13.400	33.500	313499 B	6
	813	594	594	636	729	1	13.400	33.500	313499 DA	6
<b>580</b>	780	520	486	634	717	700	9.900	27.000	BC4-8012/HA4	15
	780	521	486	634	717	700	9.900	27.000	BC4B 326140/HA4	15
	780	558	486	634	717	715	9.900	27.000	BC4-8013/HA4	16
<b>600</b>	820	575	575	660	745	910	13.000	36.000	315175 A	6
	820	575	575	660	745	935	13.000	36.000	315175 C	6
	870	540	540	672	780	1.1	13.200	31.500	315068 A	6
	870	578	540	672	790	1.15	13.200	31.500	BC4B 322497/HA4	16
	870	640	640	682	781	1.3	15.100	40.000	314317 A	6
	870	640	640	672	781	1.34	15.700	40.000	315513	6
<b>610</b>	820	430	430	665	758	650	9.350	23.600	315257 A	6
<b>628</b>	922	600	600	702	830	1.42	16.500	39.000	315071 A	6
<b>630</b>	850	436	436	690	770	720	7.480	23.600	BC2-8012/HB1VJ202	7
<b>634,500</b>	902	674	674	705	809	1.4	16.800	45.000	313705 B	6
	900	650	650	704	833	1.26	17.200	41.500	BC4-8002/HA6	6
<b>650</b>	920	670	670	723	827	1.45	17.200	46.500	313007 C	6
	1.075	650	650	766	942	2.49	20.500	43.000	BC4B 320525	6
<b>658</b>	820	440	440	702	766	530	7.480	22.800	239509 FA	3
	880	450	450	727	806	785	7.210	23.600	313477/VJ202	3
<b>680</b>	980	640	640	760	880	1.59	17.200	44.000	313154 C	6
<b>690</b>	980	715	715	768	884	1.78	19.800	54.000	313008 A	6
<b>700</b>	930	620	620	763	859	1.18	15.100	43.000	316967	6
<b>710</b>	1	715	715	788	904	1.86	20.100	56.000	313403 C	6
<b>730</b>	960	620	620	790	886	1.22	15.400	45.000	315982	6
	1.03	750	750	809	929	2.04	20.900	58.500	314518 B	6
<b>748</b>	1.135	690	690	851	1.011	2.635	22.000	51.000	BC4B 420625	6
<b>750</b>	1	500	500	816	916	1.15	12.300	33.500	314420/VJ202	5
<b>750</b>	1	670	670	813	921	1.48	17.600	50.000	315973	6
<b>759</b>	1.21	740	740	885	1.054	3.48	27.000	63.000	313685 A	6
	1.21	740	740	885	1.054	3.48	25.500	85.000	313685 B	6
<b>760</b>	1.08	790	790	846	974	2.44	23.800	65.500	312979 D	6
	1.079,60 2	787,4	787,4	846	974	2.4	23.800	65.500	312967 E	6
<b>761,425</b>	1.079,60 2	787,4	787,4	849	974	2.41	23.300	65.500	BC4B 322143/HB3	6
<b>780</b>	1.07	780	780	853	988	2.3	22.400	61.000	BC4-8015/HB1	6
<b>799</b>	1.08	700	700	878	985	1.955	19.800	58.500	BC4B 326892	6
<b>800</b>	1.08	700	700	878	985	1.95	19.800	58.500	315599 A	6

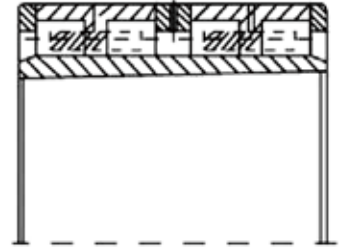
# DESIGNS OF TAPERED BORE



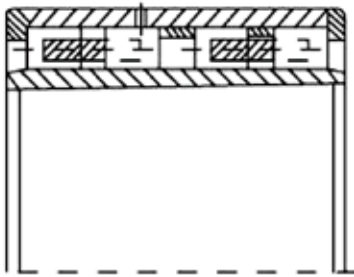
Design1



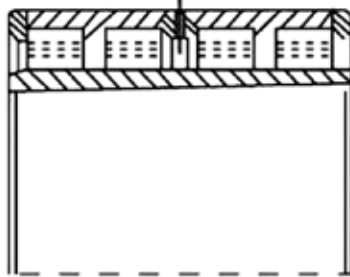
Design2



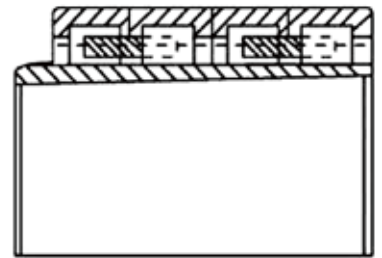
Design3



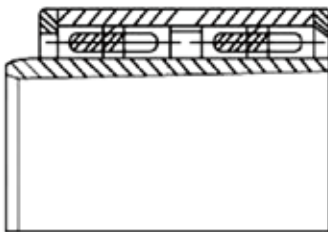
Design4



Design5



Design6



Design7



# Tapered Bore series

Dimensions (mm)							Weight Kg	Load ratings		Reference code SKF	Design
d	D	B	C	F	d1	D1		dyn	stat.		
								C	C0		
								KN	KN		
125	180	100	90	147	128,333	165	7,9	429	880	BC4B 319768 K302	T6
140	210	155	155	166	152,917	190	17	809	1.56	313900 B	T1
151,500	230	168	168	179	165,5	204	24	1.05	2.2	314024 C	T1
	230	168	168	178,81	165,5	201	23	1.08	2.28	BC4B 467334 C	T4
160	240	175	175	189	174,583	216	24	1.19	2.55	313436	T1
160,690	260	178,7	166	195,85	175,582	226	34	1.1	2.55	BC4B 466949	T7
162	230	130	130	188,5	172,833	211	16	671	1.4	312863	T2
170	260	160	160	200	183,33	230	29,5	1.1	2.16	313423 A	T1
175	260	180	180	204	190	231	32	1.21	3.15	BC4B 457919 VCA	T4
181	260	180	180	209	196	234	29,5	1.14	2.65	314874 A	T1
	260	180	180	209	196	231	28	968	2.6	BC4B 452683 A	T4
181,500	260	168	168	209	195,5	234	27,5	1.12	2.55	314023 A	T1
	260	168	168	209	195,5	231	27	968	2.6	BC4B 467333 B	T4
182	260	168	183	212	196	237	28	1.14	2.6	312942	T5
183,330	280	200	200	216,8	200	247	43	1.38	3.45	BC4B 457920 VCA	T4
190	280	200	200	222	206,667	252	40	1.51	3.35	313583	T1
	290	180	180	223	205	257	41	1.45	2.85	313422	T1
192	270	170	170	222	206,167	248	28,5	1.17	2.7	313153	T1
200,833	310	230	230	238,3	220	272	62,5	1.87	4.75	BC4B 457922 VAB	T4
202	290	192	192	236	218	264	39,5	1.45	3.4	313152	T1
	290	207	192	236	219,25	264	42,5	1.45	3.4	312858	T6
	290	202,23	192	223,5	218,85	258	49	1.3	3.6	BC4B 467419	T7
205	310	225	225	244	223,75	278	58	1.94	4.3	313584 K	T
228,330	325	200	200	265	245	295	48,5	1.61	4.55	BC4B 461839	T4
230	330	220	220	266	248,333	300	57,5	2.01	4.65	313438 A	T1
231	330	235	220	270	249,333	300	59	1.72	4.3	312943 C	T6
246,670	380	280	280	292,5	270	334	115	2.64	7.1	BC4B 457927	T4
255	370	249	234	300	274,5	336	82	2.24	5.4	312860	T6
260	400	250	250	310	280,833	357	110	2.75	5.85	313439	T1
	400	285	285	316	283,75	360	125	3.14	7.35	313532 A	T1
266,250	400	285	285	312,4	290	354	120	2.55	6.8	BC4B 457929 VCA	T4
320	480	350	350	378	349,167	431	215	4.57	11	BC4B 316345 A	T3
340	520	300	300	401	365	469	215	4.29	9	315767 K	T1
356,670	550	400	400	423,7	390	483	335	5.28	15	BC4B 457939 VAA	T4
365	540	300	300	421	390	490	230	5.01	11	313041 C	T5
382,500	590	450	450	452,8	420	524	425	6.93	16.3	319352	T5
412,335	650	488	480	494,5	453,002	569	565	7.48	21.2	BC4B 467373 VCA	T7
	650	488	488	494,5	453,002	581	575	8.42	19	314964	T1
412,500	630	450	450	487,8	450	554	490	6.6	19	BC4B 457945 VCA	T4
440	650	355	355	509,5	469,583	585	400	6.27	14.6	313032	T5
485	740	540	540	572,3	530	659	830	11	28.5	315523	T5
511,584	780	580	580	602,7	559,917	690	915	11.9	34.7	BC4B 457956 VCE	T4
551,667	830	580	580	647,6	600	734	1.07	12.3	32.5	BC4B 457960 VCA	T4
571,627	870	640	640	670	621,96	780	1.335	13.4	40.5	BC4B 319446	T5
571,667	870	640	640	673,2	625	768	1.17	17.9	50	BC4B 457962 VCA	T4
606,667	920	640	640	715,8	660	818	1.525	16.5	45	315526	T5
633,334	960	680	680	745,73	690	845	1.675	14.5	45	BC4B 457969	T4