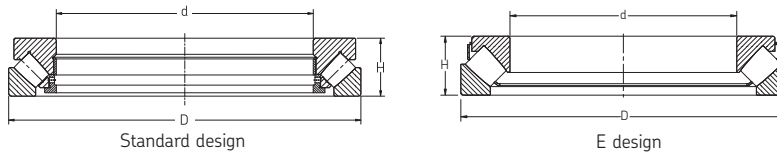


Spherical roller thrust bearings
Standard
Series: 29230 E — 292/1180 EF
Size: 150 mm — 1180 mm
5.9055 in — 46.4567 in



Designation	Principal dimensions						Basic load ratings				Minimum load factor A	Speed rating		Mass	
	Bore d		Outside diameter D		Height H		Dynamic C		Static C ₀			Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf		r/min	r/min		
29230 E	150	5.9055	215	8.4646	39	1.5354	408 000	91 700	1 600 000	359 700	240	1 800	2 800	4.30	9.50
29236 E	180	7.0866	250	9.8425	42	1.6535	495 000	111 300	2 040 000	458 600	400	1 600	2 600	5.80	12.80
29240 E	200	7.8740	280	11.0236	48	1.8898	656 000	147 500	2 650 000	595 700	670	1 400	2 200	9.30	20.50
29244 E	220	8.6614	300	11.8110	48	1.8898	690 000	155 100	3 000 000	674 400	860	1 300	2 200	10.00	22.00
29248	240	9.4488	340	13.3858	60	2.3622	799 000	179 600	3 450 000	775 600	1 100	1 100	1 800	16.50	36.40
29252	260	10.2362	360	14.1732	60	2.3622	817 000	183 700	3 650 000	820 500	1 300	1 100	1 700	18.50	40.80
29256	280	11.0236	380	14.9606	60	2.3622	863 000	194 000	4 000 000	900 000	1 500	1 000	1 700	19.50	43.00
29260	300	11.8110	420	16.5354	73	2.8740	1 070 000	240 500	4 800 000	1 080 000	2 200	900	1 400	30.50	67.20
29264	320	12.5984	440	17.3228	73	2.8740	1 110 000	249 500	5 100 000	1 147 000	2 500	850	1 400	33.00	72.80
29268	340	13.3858	460	18.1102	73	2.8740	1 130 000	254 000	5 400 000	1 214 000	2 800	850	1 300	33.50	73.90
29272	360	14.1732	500	19.6850	85	3.3465	1 460 000	328 200	6 800 000	1 529 000	4 400	750	1 200	52.00	114.60
29276	380	14.9606	520	20.4724	85	3.3465	1 580 000	355 200	7 650 000	1 720 000	5 600	700	1 100	53.00	116.80
29280	400	15.7480	540	21.2598	85	3.3465	1 610 000	361 900	8 000 000	1 799 000	6 100	700	1 100	55.50	122.40
29284	420	16.5354	580	22.8346	95	3.7402	1 990 000	447 400	9 800 000	2 204 000	9 100	630	1 000	75.50	166.40
29288	440	17.3228	600	23.6220	95	3.7402	2 070 000	465 300	10 400 000	2 338 000	10 000	630	1 000	78.00	172.00
29292	460	18.1102	620	24.4094	95	3.7402	2 070 000	465 300	10 600 000	2 383 000	11 000	600	950	81.00	178.60
29296	480	18.8976	650	25.5906	103	4.0551	2 350 000	528 300	11 800 000	2 653 000	13 000	560	900	98.00	216.10
292/500	500	19.6850	670	26.3780	103	4.0551	2 390 000	537 300	12 500 000	2 810 000	15 000	560	900	100.00	230.00
292/560 EM	560	22.0472	750	29.5276	115	4.5276	2 990 000	672 200	16 000 000	3 597 000	24 000	480	800	140.00	310.00
292/600 EM	600	23.6220	800	31.4961	122	4.8031	3 740 000	840 800	18 600 000	4 182 000	33 000	450	700	170.00	380.00
292/630 EM	630	24.8031	850	33.4646	132	5.1969	4 770 000	1 072 300	23 600 000	5 306 000	53 000	400	670	210.00	470.00
292/670	670	26.3780	900	35.4331	140	5.5118	4 200 000	944 200	22 800 000	5 126 000	49 000	380	630	255.00	570.00
292/750 EM	750	29.5276	1 000	39.3701	150	5.9055	6 100 000	1 371 300	31 000 000	6 969 000	91 000	340	560	325.00	720.00
292/800 EM	800	31.4961	1 060	41.7323	155	6.1024	6 560 000	1 474 700	34 500 000	7 756 000	110 000	320	530	380.00	840.00
292/850 EM	850	33.4646	1 120	44.0945	160	6.2992	6 730 000	1 513 000	36 000 000	8 093 000	120 000	300	500	425.00	940.00
292/950 EM	950	37.4016	1 250	49.2126	180	7.0866	8 280 000	1 861 400	45 500 000	10 229 000	200 000	260	430	600.00	1320.00
292/1060 EF	1 060	41.7323	1 400	55.1181	206	8.1102	10 500 000	2 361 000	58 500 000	13 151 000	330 000	220	360	860.00	1900.00
292/1180 EF	1 180	46.4567	1 520	59.8425	206	8.1102	10 900 000	2 451 000	64 000 000	14 388 000	390 000	220	340	950.00	2100.00

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Thrust bearings

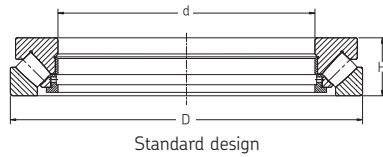
Spherical roller thrust bearings

Standard and *SKF Explorer*

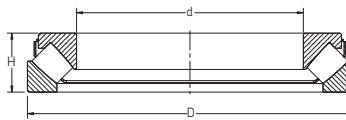
Series: 29317 E — 293/530

Size: 85 mm — 530 mm

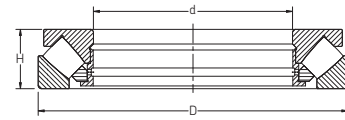
3.3465 in — 20.8661 in



Standard design



E design



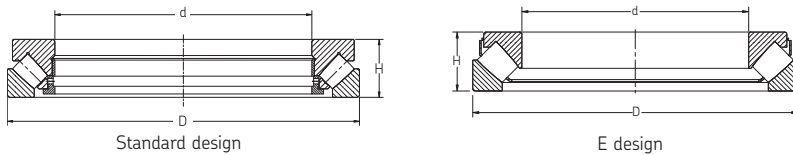
EM design

Designation	Principal dimensions						Basic load ratings				Minimum load factor A	Speed rating		Mass	
	Bore d		Outside diameter D		Height H		Dynamic C		Static C ₀			Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf		r/min	r/min		
29317 E	85	3.3465	150	5.9055	39	1.5354	380 000	85 500	1 060 000	238 300	110	2 400	4 000	2.75	6.10
29318 E	90	3.5433	155	6.1024	39	1.5354	400 000	90 000	1 080 000	242 800	110	2 400	4 000	2.85	6.30
29320 E	100	3.9370	170	6.6929	42	1.6535	465 000	104 600	1 290 000	290 000	160	2 200	3 600	3.65	8.00
29322 E	110	4.3307	190	7.4803	48	1.8898	610 000	137 200	1 730 000	389 000	280	1 900	3 200	5.30	11.70
29324 E	120	4.7244	210	8.2677	54	2.1260	765 000	172 000	2 120 000	476 600	430	1 700	2 800	7.35	16.20
29326 E	130	5.1181	225	8.8583	58	2.2835	865 000	194 500	2 500 000	562 000	590	1 600	2 600	9.00	19.80
29328 E	140	5.5118	240	9.4488	60	2.3622	980 000	220 400	2 850 000	640 700	770	1 500	2 600	10.50	23.10
29330 E	150	5.9055	250	9.8425	60	2.3622	1 000 000	224 800	2 850 000	640 700	770	1 500	2 400	11.00	24.30
29332 E	160	6.2992	270	10.6299	67	2.6378	1 180 000	265 300	3 450 000	775 600	110	1 300	2 200	14.50	32.00
29334 E	170	6.6929	280	11.0236	67	2.6378	1 200 000	269 800	3 550 000	798 100	1 200	1 300	2 200	15.00	33.10
29336 E	180	7.0866	300	11.8110	73	2.8740	1 430 000	321 500	4 300 000	966 700	1 800	1 200	2 000	19.50	43.00
29338 E	190	7.4803	320	12.5984	78	3.0709	1 630 000	366 500	4 750 000	1 067 800	2 100	1 100	1 900	23.50	51.80
29340 E	200	7.8740	340	13.3858	85	3.3465	1 860 000	418 200	5 500 000	1 236 400	2 900	1 000	1 700	29.50	65.00
29344 E	220	8.6614	360	14.1732	85	3.3465	2 000 000	449 600	6 300 000	1 416 300	3 800	1 000	1 700	33.50	73.90
29348 E	240	9.4488	380	14.9606	85	3.3465	2 040 000	458 600	6 550 000	1 472 500	4 100	1 000	1 600	35.50	78.30
29352 E	260	10.2362	420	16.5354	95	3.7402	2 550 000	573 300	8 300 000	1 865 900	6 500	850	1 400	49.00	108.00
29356 E	280	11.0236	440	17.3228	95	3.7402	2 550 000	573 300	8 650 000	1 944 600	7 100	850	1 400	53.00	116.80
29360 E	300	11.8110	480	18.8976	109	4.2913	3 100 000	696 900	10 600 000	2 382 900	11 000	750	1 200	75.00	165.30
29364 E	320	12.5984	500	19.6850	109	4.2913	3 350 000	753 100	11 200 000	2 517 800	12 000	750	1 200	78.00	172.00
29368	340	13.3858	540	21.2598	122	4.8031	2 710 000	609 300	11 000 000	2 472 800	11 000	600	1 100	105.00	240.00
29372	360	14.1732	560	22.0472	122	4.8031	2 760 000	620 500	11 600 000	2 607 700	13 000	600	1 100	110.00	250.00
29376	380	14.9606	600	23.6220	132	5.1969	3 340 000	750 900	14 000 000	3 148 000	19 000	530	1 000	140.00	310.00
29380	400	15.7480	620	24.4094	132	5.1969	3 450 000	775 600	14 600 000	3 283 000	20 000	530	950	150.00	340.00
29384	420	16.5354	650	25.5906	140	5.5118	3 740 000	840 800	16 000 000	3 597 000	24 000	500	900	170.00	380.00
29388 EM	440	17.3228	680	26.7717	145	5.7087	4 490 000	1 009 400	19 300 000	4 339 000	35 000	480	850	180.00	400.00
29392	460	18.1102	710	27.9528	150	5.9055	4 310 000	968 900	19 000 000	4 272 000	34 000	450	800	215.00	480.00
29396	480	18.8976	730	28.7402	150	5.9055	4 370 000	982 400	19 600 000	4 407 000	36 000	450	800	220.00	490.00
293/500	500	19.6850	750	29.5276	150	5.9055	4 490 000	1 009 400	20 400 000	4 586 000	40 000	430	800	235.00	520.00
293/530	530	20.8661	800	31.4961	160	6.2992	5 230 000	1 175 800	23 600 000	5 306 000	53 000	400	750	270.00	600.00

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Spherical roller thrust bearings
Standard and **SKF Explorer**
Series: 293/630 EM — 293/1250 EF
Size: 630 mm — 1250 mm
24.8031 in — 49.2126 in

Series: 29412 E — 29452 E
Size: 60 mm — 260 mm
2.3622 in — 10.2362 in

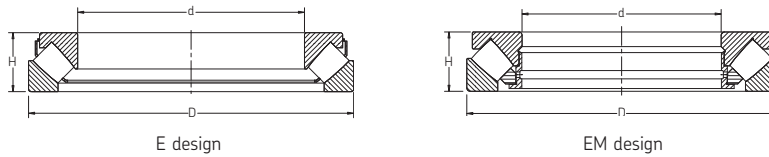


Designation	Principal dimensions						Basic load ratings				Minimum load factor A	Speed rating		Mass	
	Bore d		Outside diameter D		Height H		Dynamic C		Static C ₀			Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf		r/min	r/min		
293/630 EM	630	24.8031	950	37.4016	190	7.4803	8 450 000	1 899 600	38 000 000	8 543 000	140 000	320	600	485.00	1070.00
293/710 EM	710	27.9528	1 060	41.7323	212	8.3465	9 950 000	2 236 800	45 500 000	10 229 000	200 000	280	500	660.00	1460.00
293/750	750	29.5276	1 120	44.0945	224	8.8189	9 370 000	2 106 400	45 000 000	10 116 000	190 000	260	480	770.00	1700.00
293/800	800	31.4961	1 180	46.4567	230	9.0551	9 950 000	2 236 800	49 000 000	11 016 000	230 000	240	450	865.00	1910.00
293/1250 EF	1 250	49.2126	1 800	70.8661	330	12.9921	24 800 000	5 575 100	129 000 000	29 000 000	1 600 000	130	240	2770.00	6110.00
29412 E	60	2.3622	130	5.1181	42	1.6535	390 000	87 700	915 000	205 700	80	2 800	5 000	2.60	5.70
29413 E	65	2.5591	140	5.5118	45	1.7717	455 000	102 300	1 080 000	242 800	110	2 600	4 800	3.20	7.10
29414 E	70	2.7559	150	5.9055	48	1.8898	520 000	116 900	1 250 000	281 000	15 000	2 400	4 300	3.90	8.60
29415 E	75	2.9528	160	6.2992	51	2.0079	600 000	134 900	1 430 000	321 500	190	2 400	4 000	4.70	10.40
29416 E	80	3.1496	170	6.6929	54	2.1260	670 000	150 700	1 630 000	366 500	250	2 200	3 800	5.60	12.30
29417 E	85	3.3465	180	7.0866	58	2.2835	735 000	165 300	1 800 000	404 700	310	2 000	3 600	6.75	14.90
29418 E	90	3.5433	190	7.4803	60	2.3622	815 000	183 300	2 000 000	449 600	380	1 900	3 400	7.75	17.10
29420 E	100	3.9370	210	8.2677	67	2.6378	980 000	220 400	2 500 000	562 000	590	1 700	3 000	10.50	23.10
29422 E	110	4.3307	230	9.0551	73	2.8740	1 180 000	265 300	3 000 000	674 400	860	1 600	2 800	13.50	29.80
29424 E	120	4.7244	250	9.8425	78	3.0709	1 370 000	308 000	3 450 000	775 600	1 100	1 500	2 600	17.50	38.60
29426 E	130	5.1181	270	10.6299	85	3.3465	1 560 000	350 700	4 050 000	910 500	1 600	1 300	2 400	22.00	48.50
29428 E	140	5.5118	280	11.0236	85	3.3465	1 630 000	366 500	4 300 000	966 700	1 800	1 300	2 400	23.00	50.70
29430 E	150	5.9055	300	11.8110	90	3.5433	1 860 000	418 200	5 100 000	1 146 500	2 500	1 200	2 200	28.00	61.70
29432 E	160	6.2992	320	12.5984	95	3.7402	2 080 000	467 600	5 600 000	1 258 900	3 000	1 100	2 000	33.50	73.90
29434 E	170	6.6929	340	13.3858	103	4.0551	2 360 000	530 600	6 550 000	1 472 500	4 100	1 100	1 900	44.50	98.10
29436 E	180	7.0866	360	14.1732	109	4.2913	2 600 000	584 500	7 350 000	1 652 300	5 100	1 000	1 800	52.50	115.70
29438 E	190	7.4803	380	14.9606	115	4.5276	2 850 000	640 700	8 000 000	1 798 400	6 100	950	1 700	60.50	133.40
29440 E	200	7.8740	400	15.7480	122	4.8031	3 200 000	719 400	9 000 000	2 023 200	7 700	850	1 600	72.00	158.70
29444 E	220	8.6614	420	16.5354	122	4.8031	3 350 000	753 100	9 650 000	2 169 400	8 800	850	1 500	75.00	165.30
29448 E	240	9.4488	440	17.3228	122	4.8031	3 400 000	764 400	10 200 000	2 293 000	9 900	850	1 500	80.00	176.40
29452 E	260	10.2362	480	18.8976	132	5.1969	4 050 000	910 500	12 900 000	2 900 000	16 000	750	1 300	105.00	240.00

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

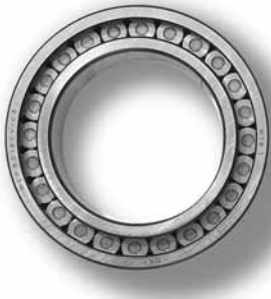
Thrust bearings

Spherical roller thrust bearings
 Standard and **SKF Explorer**
 Series: 29456 E — 294/1060 EF
 Size: 280 mm — 1060 mm
 11.0236 in — 41.7322 in

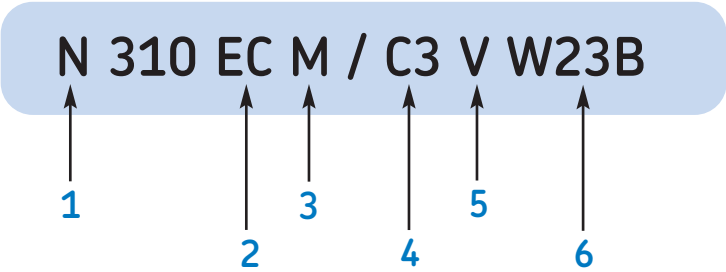


Designation	Principal dimensions						Basic load ratings				Minimum load factor	Speed rating		Mass	
	Bore d		Outside diameter D		Height H		Dynamic C		Static C ₀			Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf	A	r/min	r/min		
29456 E	280	11.0236	520	20.4724	145	5.7087	4 900 000	1 102 000	15 300 000	3 440 000	22 000	670	1 200	135.00	300.00
29460 E	300	11.8110	540	21.2598	145	5.7087	4 310 000	969 000	16 600 000	3 732 000	26 000	600	1 200	140.00	310.00
29464 E	320	12.5984	580	22.8346	155	6.1024	4 950 000	1 113 000	19 000 000	4 272 000	34 000	560	1 100	175.00	390.00
29468 E	340	13.3858	620	24.4094	170	6.6929	5 750 000	1 293 000	22 400 000	5 036 000	48 000	500	1 000	220.00	490.00
29472 EM	360	14.1732	640	25.1969	170	6.6929	5 350 000	1 203 000	21 200 000	4 766 000	43 000	500	950	230.00	510.00
29476 EM	380	14.9606	670	26.3780	175	6.8898	5 870 000	1 320 000	24 000 000	5 396 000	55 000	480	900	260.00	580.00
29480 EM	400	15.7480	710	27.9528	185	7.2835	6 560 000	1 475 000	26 500 000	5 958 000	67 000	450	850	310.00	690.00
29484 EM	420	16.5354	730	28.7402	185	7.2835	6 730 000	1 513 000	27 500 000	6 182 000	72 000	430	850	325.00	720.00
29488 EM	440	17.3228	780	30.7087	206	8.1102	7 820 000	1 758 000	32 000 000	7 194 000	87 000	380	750	410.00	910.00
29492 EM	460	18.1102	800	31.4961	206	8.1102	7 990 000	1 797 000	33 500 000	7 531 000	110 000	380	750	425.00	940.00
29496 EM	480	18.8976	850	33.4646	224	8.8189	9 550 000	2 147 000	39 000 000	8 768 000	140 000	340	670	550.00	1220.00
294/500 EM	500	19.6850	870	34.2520	224	8.8189	9 370 000	2 107 000	40 000 000	8 992 000	150 000	340	670	560.00	1240.00
294/530 EM	530	20.8661	920	36.2205	236	9.2913	10 500 000	2 361 000	44 000 000	9 892 000	180 000	320	630	650.00	1440.00
294/560 EM	560	22.0472	980	38.5827	250	9.8425	12 000 000	2 698 000	51 000 000	11 465 000	250 000	300	560	810.00	1790.00
294/600 EM	600	23.6220	1 030	40.5512	258	10.1575	13 100 000	2 945 000	56 000 000	12 589 000	300 000	280	530	845.00	1870.00
294/630 EM	630	24.8031	1 090	42.9134	280	11.0236	14 400 000	3 238 000	62 000 000	13 938 000	370 000	260	500	1040.00	2300.00
294/670 EF	670	26.3780	1 150	45.2756	290	11.4173	15 400 000	3 462 000	68 000 000	15 287 000	440 000	240	450	1210.00	2670.00
294/710 EF	710	27.9528	1 220	48.0315	308	12.1260	17 600 000	3 957 000	76 500 000	17 198 000	560 000	220	430	1500.00	3310.00
294/750 EF	750	29.5276	1 280	50.3937	315	12.4016	18 700 000	4 204 000	85 000 000	19 108 000	690 000	200	400	1650.00	3640.00
294/800 EF	800	31.4961	1 360	53.5433	335	13.1890	20 200 000	4 541 000	93 000 000	20 907 000	820 000	190	360	2025.00	4470.00
294/900 EF	900	35.4330	1520	59.8424	372	14.6456	26 700 000	6 003 000	122 000 000	27 430 000	1 400 000	160	300	2650.00	5850.00
294/950 EF	950	37.4015	1600	62.9920	390	15.3543	28 200 000	6 340 000	132 000 000	29 700 000	1 700 000	140	280	3065.00	6760.00
294/1060 EF	1060	41.7322	1770	69.6849	426	16.77162	33 400 000	7 510 000	156 000 000	35 100 000	2 300 000	120	240	4280.00	9440.00

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Cylindrical roller bearings



1. Basic design:

N	Two integral flanges on inner ring, flangeless outer ring
NU	Two integral flanges on outer ring, flangeless inner ring
NJ	One flange on inner ring, two flanges on outer ring
NUP	Two integral flanges on outer ring, one integral flange on inner ring and one loose flange on inner ring
NCF	Full complement, two flanges on inner ring, one flange on outer ring, with snap ring
NJG	Full complement with one flange on inner ring, and two flanges on outer ring
NNCF	Two-row, full complement, three flanges on inner ring, one flange on outer ring, with snap ring
NNF	Two-row, full complement
NNCL	Double row CRB with no outer ring integral flanges, only one centrally located snap ring
NNC	Double row CRB with one outer ring integral flange and one flange ring

2. Internal design:

EC	Increased capacity plus improved roller end to flange contact
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3. Cage designs:

M	Two piece machined brass cage, rolling element guided
MA	Two piece machined brass cage, outer ring flange guided
MB	Machined brass cage, inner ring flange guided
ML/MP	One piece window-type brass cage, inner or outer ring centered
M2	Solid brass drilled cage, roller guided for traction motor bearings
J	Pressed steel cage, rolling element guided
P	Molded glass fiber reinforced polyamide 6.6 cage, roller centered
PHA	Injection molded cage of polyetheretherketone (PEEK), outer ring centered

4. Radial internal clearance:

C1	Clearance < C2
C2	Clearance < Normal
(C0)*	Normal internal clearance
C3	Clearance > Normal
C4	Clearance > C3

* Not marked on bearing or package

5. Variations:

V	Full complement bearing without cage
BV	V + surface treated rollers
2LS	Two land riding contact seals

6. Special features:

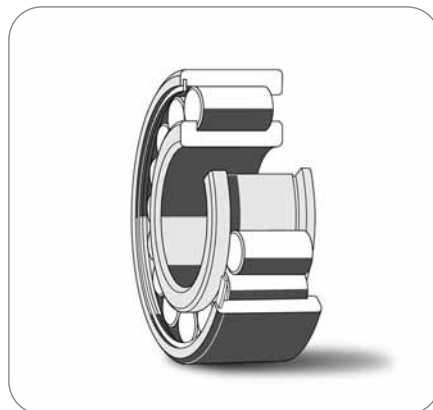
W23B	Special features for traction motor bearings
VA301	Special bearing specifications for traction motors
VL0241	INSOCOAT® coating on inner ring for electrical insulation

Technical features

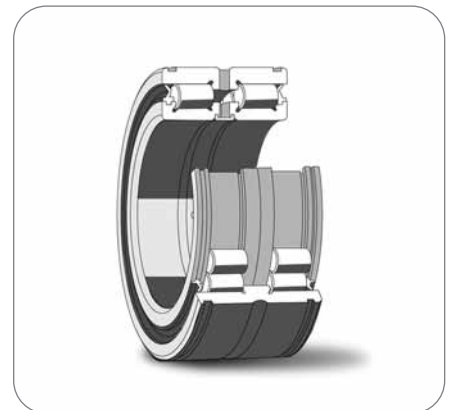
Boundary dimensions	In accordance with ISO 15-1998
Tolerances	ABMA RBEC 3, ISO P6 running accuracy ABMA RBEC 1, ISO Normal dimensional
Heat stabilization	302° F (150° C)
Misalignment	4 minutes of arc for series N200, 300, 400, 1000 and 1800 3 minutes of arc for series N2200, 2300, 2900 and 3000
Cage material	
Standard	Molded glass fiber reinforced polyamide (P)
Optional	Machined brass (M) and pressed steel (J)
Axial load – max	Contact SKF Applications Engineering
Seals	2LS seals on NNF series only



Single row cylindrical roller bearing (data tables on page 122)



Full complement, single row cylindrical roller bearing (data tables on page 130)



Full complement, double row cylindrical roller bearing (data tables on page 134)

Introduction

SKF manufactures many types and sizes of cylindrical roller bearings, the majority being single row bearings with a cage, but also single or double row bearings with a full complement of rollers.

All SKF cylindrical roller bearings represent the latest state of the art. The contact geometry between roller and raceway has been much improved by the introduction of the "logarithmic" profile that provides for optimum stress distribution in the bearing. Optimized surface finishes favor lubricant film formation and the correct rolling motion of the cylindrical rollers. These improvements have considerably increased the performance of SKF cylindrical roller bearings as well as their operational reliability in comparison with conventional bearings, and have made them less sensitive to misalignment.

Full complement cylindrical roller bearings incorporate the maximum number of rollers and, as a rule, have a low sectional height in relation to their width. This produces an extremely high load carrying capacity and permits space-saving designs to be achieved. Full complement cylindrical roller bearings are suitable for very heavy radial loads; however, the different kinematic conditions in the bearing mean that they cannot operate at the same high speeds as cylindrical roller bearings of the conventional caged type.

SKF produces single and double row full complement cylindrical roller bearings as part of the standard product range. The bearings shown in the tables are standard range bearings but represent only part of the actual manufactured range.

Basic design

Single row cylindrical roller bearings

The rollers of single row cylindrical roller bearings with cages are guided between integral flanges on one of the bearing rings. The ring

with integral flanges and the roller and cage assembly can be withdrawn from the other ring. This facilitates mounting and dismantling particularly where both rings need to have interference fits because of the load conditions.

SKF single row cylindrical roller bearings have high radial load carrying capacity and also high speed capability. They are produced in different designs that differ in the configuration of the flanges (**Figure 1**).

The most popular of these bearings is the NU type which has two integral flanges on the outer ring and an inner ring without flanges (**Figure 1a**). The N type has two integral flanges on the inner ring and an outer ring without flanges (**Figure 1b**).

Axial displacement of the shaft with respect to the housing is permitted in both directions within certain limits (**Table 3a**, page 119 for dimension code "s"). For example, changes in length because of thermal expansion can be accommodated, and the bearings are therefore suitable as non-locating bearings.

Cylindrical roller bearings of the NJ type have two integral flanges on the outer ring and one integral flange on the inner ring, so that axial location can be provided for the shaft in one direction (**Figure 1c**).

Type NUP cylindrical roller bearings have two integral flanges on the outer ring and the inner ring has one integral and one loose flange, enabling the bearings to locate a shaft axially in both directions (**Figure 1d**).

SKF Explorer class bearings

SKF Explorer cylindrical roller bearings retain the designation of earlier standard bearings, e.g. NU 216 ECP. However, each bearing and its box are marked with the name "SKF Explorer", to avoid confusion. In the product tables, the SKF Explorer bearing designations are **printed in blue**. Additional details on the SKF Explorer performance class bearings can be found on page 23.

Product highlights

Logarithmically crowned rollers... sets SKF apart

SKF cylindrical roller bearings feature logarithmically "crowned" rollers. This roller profile reduces stresses under high load conditions, while simultaneously providing excellent performance under misaligned conditions.

High speed performance

Extended benefits of the logarithmic profile roller are the cooler running conditions and reliable performance which allow for high speed running conditions.

Precision-honed rolling contact surfaces

SKF cylindrical roller bearings also feature precision-honed inner and outer rings, raceways and rollers. The SKF honing process results in optimum bearing performance and improved lubricant effectiveness... and quieter, cooler, more reliable performance.

Large product assortment

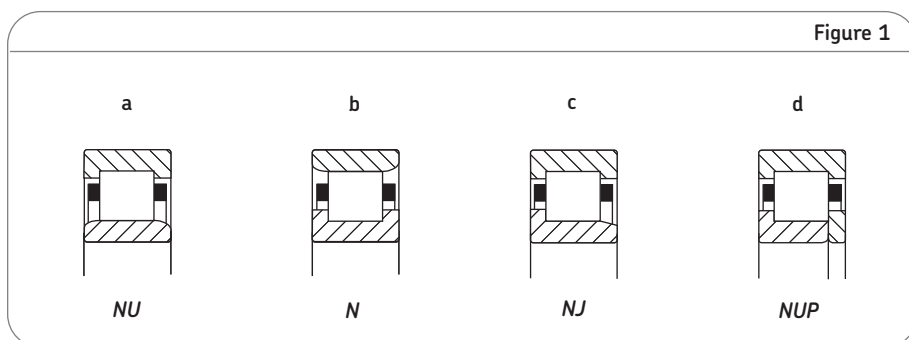
SKF manufactures cylindrical roller bearings in single, double and multiple row designs which differ in the arrangement, design and construction of the flanges. While caged bearings are most common, several series with a full complement of rollers are also available. Size range includes 25 to 1,000 mm inside diameter.

Application flexibility

The large variety of sizes and types of cylindrical roller bearings available from SKF provides a wide degree of application flexibility. Typical applications include compressors, industrial gearboxes, transmissions, and final drives in both on-road and off-road vehicles.

Customized solutions

Special cages are available from SKF for special application conditions such as ammonia compressors and railroad applications.



Introduction

EC–design bearings

The EC design contains improvements in the guiding surfaces of the flanges and of the roller ends which means that the EC bearings have a high axial load carrying capacity. The favorable contact conditions also contribute to better lubrication of the roller end/flange contact zone and to lower operating temperatures. These characteristics make SKF cylindrical roller bearings of the EC design particularly useful. They represent the standard design for the most popular sizes of bearing series 10, 2, 22, 3 and 23.

Single row full complement cylindrical roller bearings

SKF full complement cylindrical roller bearings are produced as standard in the single row NCF and NJG designs. (Figure 2).

Bearings of the NCF design are the most popular and have two integral flanges on the inner ring and one integral flange in the outer ring and can thus locate the shaft in one direction (Figure 2a). A retaining ring at the flangeless side of the outer ring holds the bearing together. The axial internal clearance in the bearing is designed to permit small axial displacements of the shaft in relation to the housing to be accommodated within the bearing (Table 3b, page 120).

Bearings of the NJG design all belong to the heavy dimension series 23 and are intended for very heavily loaded, slow-speed applications (Figure 2b). In contrast to the other full complement bearings, the NJG bearings have a self-retaining roller complement. The outer ring with its two integral flanges, together with the roller complement, can be withdrawn from the inner ring and there is no need to provide any extra retention for the rollers. Mounting and dismounting of these bearings are therefore simple operations. NJG design bearings can support axial loads acting in one direction and can consequently locate the shaft in one direction.

Double row full complement cylindrical roller bearings

There are several designs of SKF double row full complement cylindrical roller bearings, all of which have an annular groove and lubrication holes in the outer ring. This feature facilitates the provision of efficient lubrication.

Double row full complement cylindrical roller bearings of the NNC, NNCL, and NNCF designs differ only in the number of flanges on the outer ring. The inner ring with its three integral flanges between which the two rows of rollers are accurately guided is common to all three designs. Outer ring flanges or retaining rings inserted in the outer ring bore prevent the bearing from falling apart.

Bearings of the NNCL design (Figure 2c) have no integral flanges on the outer ring. Axial displacements of the shaft relative to the housing are thus permitted, within certain limits.

Bearings of the NNCF and NNC designs (Figure 2d and 2e) have one integral flange and a retaining ring in the outer ring. They can accommodate axial loads in one direction and can locate the shaft in one direction. Axial displacements of the shaft relative to the housing are permitted.

The rollers of bearings of the NNF design (series NNF 50) are guided between the integral flanges of the two-part inner ring, which is held together by a retaining ring. The outer ring has a central integral flange. The bearings can be used as locating bearings as they can accommodate axial loads acting in both directions. Because of the large distance between the roller rows, they are also suitable for the accommodation of tilting moments.

The outer ring of the bearing is 1 mm narrower than the inner ring and has two snap ring grooves in the outside diameter. It is thus possible to dispense with spacer rings between the inner ring and adjacent components without affecting outer ring rotation; for example in pulleys, or the housing (or hub) can be made narrower than the bearing and axial space saved.

Bearings of the NNF design (Figure 2f) are produced as standard with rubbing seals at both sides. They are supplied filled with rust inhibiting lithium grease having a diester oil base, which is suitable for operation at temperatures between -58° and $+230^{\circ}$ F (-50° and $+110^{\circ}$ C). However, the permissible operating temperature for these bearings is limited to -40° to $+176^{\circ}$ F (-40° to $+80^{\circ}$ C) by the material used for the seals.

Under certain conditions, the sealed NNF bearings are maintenance-free. However, where they operate in the presence of moisture or contaminants, or where speeds are moderate or high, they must be relubricated. This can be achieved via both bearing rings. If bearings are required without one or both seals, they may be removed quite simply, for example, using a screwdriver.

For applications where oil lubrication is to be employed, the bearings can be delivered without seals and grease if economic quantities are involved. Otherwise the seals should be removed and the bearings washed before use. If oil lubrication is adopted, the speed ratings can be increased by approximately 30%.

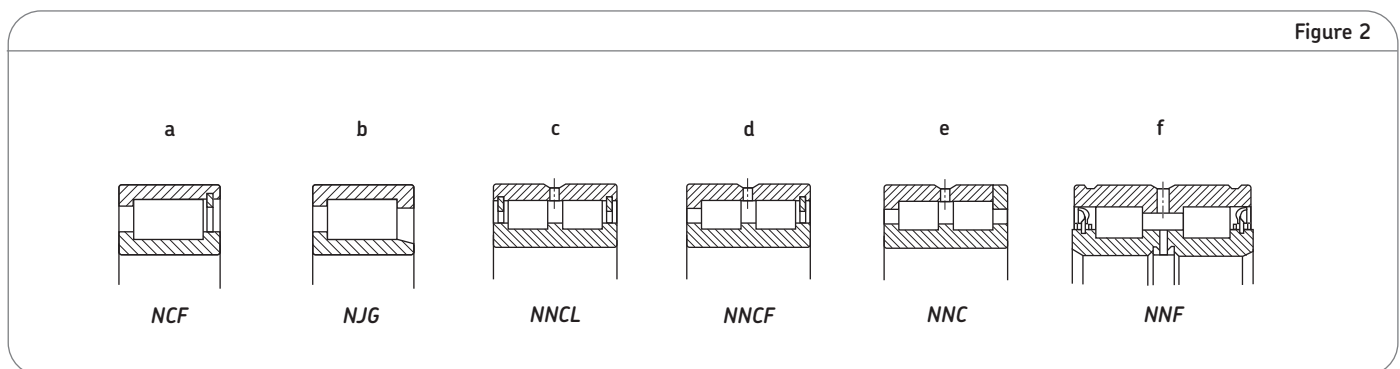


Figure 2

Internal clearance

Radial internal clearance

SKF single row cylindrical roller bearings are produced with Normal radial internal clearance as standard; the majority of the bearings are also available with C3 radial internal clearance and some with the appreciably greater C4 clearance.

The values for the clearance correspond to DIN 620, Part 4 for the size range covered by this standard and are given in **Table 1**. The values apply to bearings before mounting and under zero measuring load.

SKF full complement cylindrical roller bearings are manufactured with Normal or C3 radial internal clearance as standard. The values for the clearance limits correspond to ISO and are shown in **Table 1**.

Axial internal clearance

Cylindrical roller bearings of the NUP type can serve to locate shafts in both directions, and are manufactured by SKF with axial internal clearance according to **Table 2**.

The values given in **Table 2** for axial internal clearance should be considered as guideline values. Because of roller tilting during measurement of the axial internal clearance, increases in the clearance are possible. These correspond:

- For bearings of series 10, 2, 3 and 4 to approximately the radial internal clearance, and
- For bearings of series 22 and 23 to approximately 2/3 of the radial internal clearance

Special solutions using cylindrical roller bearings

SKF also manufactures:

- Precision single and double row cylindrical roller bearings for machine tool applications
- Double and multi-row cylindrical roller bearings for rolling mill and other heavy engineering applications
- Special traction roller bearings for railroad applications

Details on these special solution products are available in other SKF publications, which can be supplied upon request

Table 1

Radial internal clearance of cylindrical roller bearings

Bore diameter d		Radial internal clearance															
		C2				Normal				C3				C4			
over	incl.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
mm		µm		in		µm		in		µm		in		µm		in	
-	24	0	25	0.0000	0.0010	20	45	0.0008	0.0018	35	60	0.0014	0.0024	50	75	0.0020	0.0030
24	30	0	25	0.0000	0.0010	20	45	0.0008	0.0018	35	60	0.0014	0.0024	50	75	0.0020	0.0030
30	40	5	30	0.0002	0.0012	25	50	0.0010	0.0020	45	70	0.0018	0.0028	60	85	0.0024	0.0033
40	50	5	35	0.0002	0.0014	30	60	0.0012	0.0024	50	80	0.0020	0.0031	70	100	0.0028	0.0039
50	65	10	40	0.0004	0.0016	40	70	0.0016	0.0028	60	90	0.0024	0.0035	80	110	0.0031	0.0043
65	80	10	45	0.0004	0.0018	40	75	0.0016	0.0030	65	100	0.0026	0.0039	90	125	0.0035	0.0049
80	100	15	50	0.0006	0.0020	50	85	0.0020	0.0033	75	110	0.0030	0.0043	105	140	0.0041	0.0055
100	120	15	55	0.0006	0.0022	50	90	0.0020	0.0035	85	125	0.0033	0.0049	125	165	0.0049	0.0065
120	140	15	60	0.0006	0.0024	60	105	0.0024	0.0041	100	145	0.0039	0.0057	145	190	0.0057	0.0075
140	160	20	70	0.0008	0.0028	70	120	0.0028	0.0047	115	165	0.0045	0.0065	165	215	0.0065	0.0085
160	180	25	75	0.0010	0.0030	75	125	0.0003	0.0049	120	170	0.0047	0.0067	170	220	0.0067	0.0087
180	200	35	90	0.0014	0.0035	90	145	0.0035	0.0057	140	195	0.0055	0.0077	195	250	0.0077	0.0098
200	225	45	105	0.0018	0.0041	105	165	0.0041	0.0065	160	220	0.0063	0.0087	220	280	0.0087	0.0110
225	250	45	110	0.0018	0.0043	110	175	0.0043	0.0069	170	235	0.0067	0.0093	235	300	0.0093	0.0118
250	280	55	125	0.0022	0.0049	125	195	0.0049	0.0077	190	260	0.0075	0.0102	260	330	0.0102	0.0130
280	315	55	130	0.0022	0.0051	130	205	0.0051	0.0081	200	275	0.0079	0.0108	275	350	0.0108	0.0138
315	355	65	145	0.0026	0.0057	145	225	0.0057	0.0089	225	305	0.0089	0.0120	305	385	0.0120	0.0152
355	400	100	190	0.0039	0.0075	190	280	0.0075	0.0110	280	370	0.0110	0.0146	370	460	0.0146	0.0181
400	450	110	210	0.0043	0.0083	210	310	0.0083	0.0122	310	410	0.0122	0.0161	410	510	0.0161	0.0201
450	500	110	220	0.0043	0.0087	220	330	0.0087	0.0130	330	440	0.0130	0.0173	440	550	0.0173	0.0217
500	560	120	240	0.0047	0.0094	240	360	0.0094	0.0142	360	480	0.0142	0.0189	480	600	0.0189	0.0236
560	630	140	260	0.0055	0.0102	260	380	0.0102	0.0150	380	500	0.0150	0.0197	500	620	0.0197	0.0244
630	710	145	285	0.0057	0.0112	285	425	0.0112	0.0167	425	565	0.0167	0.0222	565	705	0.0222	0.0278
710	800	150	310	0.0059	0.0122	310	470	0.0122	0.0185	470	630	0.0185	0.0248	630	790	0.0248	0.0311

Introduction

Loads

Equivalent dynamic bearing load for single row cylindrical roller bearings

When cylindrical roller bearings are used as non-locating bearings and are only subjected to radial loads, the equivalent dynamic bearing load is

$$P = F_r$$

If cylindrical roller bearings with flanges on inner and outer rings are used to axially locate the shaft in one or both directions, as is frequently the case, the equivalent dynamic bearing load should be calculated using

$$P = F_r \text{ when } F_a / F_r \leq e$$

$$P = 0.92 F_r + Y F_a \text{ when } F_a / F_r > e$$

where

e = calculation factor

= 0.2 for bearings of series 10, 2, 3 and 4

= 0.3 for bearings of series 22 and 23

Y = axial load factor

= 0.6 for bearings of series 10, 2, 3 and 4

= 0.4 for bearings of series 22 and 23

Since axially loaded cylindrical roller bearings will only operate satisfactorily when they are subjected to a simultaneously acting radial load, the ratio F_a / F_r should not exceed 0.5 for EC design bearings and 0.4 for the other bearings.

Equivalent dynamic bearing load for full complement cylindrical roller bearings

When cylindrical roller bearings are used as non-locating bearings and are only subjected to radial loads, the equivalent dynamic bearing load

$$P = F_r$$

If cylindrical roller bearings with flanges on inner and outer rings are used to axially locate the shaft in one or both directions, as is frequently the case, the equivalent dynamic bearing load should be calculated using

Table 2

Axial internal clearance of single row cylindrical roller bearings

Bore diameter d	Axial internal clearance																			
	NUP 2				NUP 3				NUP 4				NUP 22			NUP 23				
	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
mm	µm		in		µm		in		µm		in		µm		in		µm		in	
15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
17	37	140	0.0015	0.0055	37	140	0.0015	0.0055	-	-	-	-	37	140	0.0015	0.0055	47	155	0.0019	0.0061
20	37	140	0.0015	0.0000	37	140	0.0015	0.0055	-	-	-	-	47	155	0.0019	0.0061	47	155	0.0019	0.0061
25	37	140	0.0015	0.0055	47	155	0.0019	0.0061	-	-	-	-	47	155	0.0019	0.0061	47	155	0.0019	0.0061
30	37	140	0.0015	0.0055	47	155	0.0019	0.0061	-	-	-	-	47	155	0.0019	0.0061	47	155	0.0019	0.0061
35	47	155	0.0019	0.0061	47	155	0.0019	0.0061	55	155	0.0022	0.0061	47	155	0.0019	0.0061	62	180	0.0024	0.0071
40	47	155	0.0019	0.0061	47	155	0.0019	0.0061	55	155	0.0022	0.0061	47	155	0.0019	0.0061	62	180	0.0024	0.0071
45	47	155	0.0019	0.0061	47	155	0.0019	0.0061	55	155	0.0022	0.0061	47	155	0.0019	0.0061	62	180	0.0024	0.0071
50	47	155	0.0019	0.0061	47	155	0.0019	0.0061	70	185	0.0028	0.0073	47	155	0.0019	0.0061	62	180	0.0024	0.0071
55	47	155	0.0019	0.0061	47	155	0.0019	0.0061	70	185	0.0028	0.0073	47	155	0.0019	0.0061	62	180	0.0024	0.0071
60	47	155	0.0019	0.0061	62	180	0.0024	0.0071	70	185	0.0028	0.0073	62	180	0.0024	0.0071	87	230	0.0034	0.0091
65	47	155	0.0019	0.0061	62	180	0.0024	0.0071	70	185	0.0028	0.0073	62	180	0.0024	0.0071	87	230	0.0034	0.0091
70	47	155	0.0019	0.0061	62	180	0.0024	0.0071	70	185	0.0028	0.0073	62	180	0.0024	0.0071	87	230	0.0034	0.0091
75	47	155	0.0019	0.0061	62	180	0.0024	0.0071	70	185	0.0028	0.0073	62	180	0.0024	0.0071	87	230	0.0034	0.0091
80	47	155	0.0019	0.0061	62	180	0.0024	0.0071	-	-	-	-	62	180	0.0024	0.0071	87	230	0.0034	0.0091
85	62	180	0.0024	0.0071	62	180	0.0024	0.0071	-	-	-	-	62	180	0.0024	0.0071	87	230	0.0034	0.0091
90	62	180	0.0024	0.0071	62	180	0.0024	0.0071	-	-	-	-	62	180	0.0024	0.0071	87	230	0.0034	0.0091
95	62	180	0.0024	0.0071	62	180	0.0024	0.0071	-	-	-	-	62	180	0.0024	0.0071	87	230	0.0034	0.0091
100	62	180	0.0024	0.0071	87	230	0.0034	0.0091	-	-	-	-	87	230	0.0034	0.0091	120	315	0.0047	0.0124
105	62	180	0.0024	0.0071	-	-	-	-	-	-	-	-	87	230	0.0034	0.0091	120	315	0.0047	0.0124
110	62	180	0.0024	0.0071	87	230	0.0034	0.0091	-	-	-	-	87	230	0.0034	0.0091	120	315	0.0047	0.0124
120	62	180	0.0024	0.0071	87	230	0.0034	0.0091	-	-	-	-	87	230	0.0034	0.0091	120	315	0.0047	0.0124
130	62	180	0.0024	0.0071	87	230	0.0034	0.0091	-	-	-	-	87	230	0.0034	0.0091	120	315	0.0047	0.0124
140	62	180	0.0024	0.0071	87	230	0.0034	0.0091	-	-	-	-	87	230	0.0034	0.0091	120	315	0.0047	0.0124
150	62	180	0.0024	0.0071	87	230	0.0034	0.0091	-	-	-	-	87	230	0.0034	0.0091	120	315	0.0047	0.0124
160	87	230	0.0034	0.0091	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
170	87	230	0.0034	0.0091	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
180	87	230	0.0034	0.0091	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
190	87	230	0.0034	0.0091	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	87	230	0.0034	0.0091	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
220	95	230	0.0037	0.0091	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

$$P = F_r \text{ when } F_a / F_r \leq e$$

$$P = 0.92 F_r + YF_a \text{ when } F_a / F_r > e$$

where

e = calculation factor
 = 0.15 for double row bearings
 = 0.2 for bearings of series 18
 = 0.3 for all other single row bearings

Y = axial load factor
 = 0.6 for bearings of series 18
 = 0.53 for double row bearings
 = 0.4 for all other single row bearings

Since axially loaded full complement cylindrical roller bearings will only operate satisfactorily when they are subjected to a simultaneously acting radial load, the ratio F_a / F_r should not exceed 0.5 for single row bearings or 0.25 for double row bearings.

Table 3a

Axial displacement(s) of NU, NJ and N bearing ring relative to opposite ring

Designation	Axial displacement s		Designation	Axial displacement s		Designation	Axial displacement s		Designation	Axial displacement s	
	mm	in		mm	in		mm	in		mm	in
1005	2	0.079	208 EC	1.4	0.055	2222 EC	3.7	0.146	302 EC	1	0.039
1006	2.1	0.083	209 EC	1.2	0.047	2224 EC	3.8	0.150	303 EC	1	0.039
1007 EC	1	0.039	210 EC	1.5	0.059	2226 EC	4.3	0.169	304 EC	0.9	0.035
1008	2.4	0.094	211 EC	1	0.039	2228 EC	4.4	0.173	305 EC	1.3	0.051
1009 EC	0.9	0.035	212 EC	1.4	0.055	2230 EC	4.9	0.193	306 EC	1.4	0.055
1010	2.5	0.098	213 EC	1.4	0.055	2232 EC	4.5	0.177	307 EC	1.2	0.047
1011 EC	0.5	0.020	214 EC	1.2	0.047	2234 EC	4.2	0.165	308 EC	1.4	0.055
1012	2.9	0.114	215 EC	1.2	0.047	2236 EC	4.2	0.165	309 EC	1.7	0.067
1013	2.9	0.114	216 EC	1.4	0.055	2238 EC	5	0.197	310 EC	1.9	0.075
1014	3	0.118	217 EC	1.5	0.059	2240 EC	5.1	0.201	311 EC	2	0.079
1015	3	0.118	218 EC	1.8	0.071	2244 EC	7.9	0.311	312 EC	2.1	0.083
1016	3.3	0.130	219 EC	1.7	0.067	2248	4.3	0.169	313 EC	2.2	0.087
1017	3.3	0.130	220 EC	1.7	0.067	2252	4.3	0.169	314 EC	1.8	0.071
1018	3.5	0.138	221 EC	2	0.079	2256 EC	10.2	0.402	315 EC	1.8	0.071
1019	3.5	0.138	222 EC	2.1	0.083	2260	5.6	0.220	316 EC	2.1	0.083
1020	3.5	0.138	224 EC	1.9	0.075	2264	5.9	0.232	317 EC	2.3	0.091
1021	3.8	0.150	226 EC	2.1	0.083	2268	8	0.315	318 EC	2.5	0.098
1022	3.8	0.150	228 EC	2.4	0.094	2272	16.7	0.657	319 EC	2.9	0.114
1024	3.8	0.150	N 228	2.5	0.098	2276	8.3	0.327	320 EC	2.9	0.114
1026	4.7	0.185	230 EC	2.5	0.098				321 EC	3.4	0.134
1028	4.4	0.173	232 EC	2.7	0.106				322 EC	3	0.118
1030	4.9	0.193	234 EC	2.9	0.114	2304 EC	1.9	0.075	324 EC	3.7	0.146
1032	5.2	0.205	236 EC	2.9	0.114	2305 EC	2.3	0.091	326 EC	3.7	0.146
1034	5.8	0.228	238 EC	3	0.118	2306 EC	2.4	0.094	328 EC	3.7	0.146
1038	6.1	0.240	240 EC	2.6	0.102	2307 EC	2.7	0.106	N 328	4.2	0.165
1040	7	0.276	244	2.3	0.091	2308 EC	2.9	0.114	330 EC	4	0.157
1044	7.5	0.295	248	3.4	0.134	2309 EC	3.2	0.126	332 EC	4	0.157
1048	7.5	0.295	252	3.4	0.134	2310 EC	3.4	0.134	334	4.6	0.181
1052	8.8	0.346	256	3.8	0.150	2311 EC	3.5	0.138	336	4.4	0.173
1056	8.8	0.346	260	4.8	0.189	2312 EC	3.6	0.142	338 EC	4.3	0.169
1060	6	0.382	264	5.3	0.209	2313 EC	4.7	0.185	340	4	0.157
1064	13.5	0.382				2314 EC	4.8	0.189	344	5.2	0.205
1068	6.5	0.425				2315 EC	4.8	0.189	348	5.6	0.220
1072	6.5	0.425	2203 EC	1.5	0.059	2316 EC	5.1	0.201			
1076	6.5	0.425	2204 EC	2	0.079	2317 EC	5.8	0.228			
1080	7	0.551	2205 EC	1.8	0.071	2318 EC	6	0.382	406	1.6	0.063
1084	11	0.551	2206 EC	1.8	0.071	2319 EC	6.9	0.272	407	1.7	0.067
1088	7	0.579	2207 EC	2.8	0.110	2320 EC	5.9	0.232	408	2.5	0.098
1092	7.8	0.626	2208 EC	1.9	0.075	2322 EC	7.5	0.295	409	2.5	0.098
1096	7.8	0.626	2209 EC	1.7	0.067	2324 EC	7.2	0.283	410	2.6	0.102
10/500	11.2	0.441	2210 EC	1.5	0.059	2326 EC	8.7	0.343	411	2.6	0.102
10/530	10.4	0.409	2211 EC	1.5	0.059	2328 EC	9.7	0.382	412	2.5	0.098
10/560	10	0.484	2212 EC	1.4	0.055	2330 EC	10.5	0.413	413	2.6	0.102
10/600	8.5	0.547	2213 EC	1.9	0.075	2332 EC	11	0.433	414	3.5	0.138
10/710 EC	8	0.673	2214 EC	1.7	0.067	2334	5.2	0.205	415	3.8	0.150
			2215 EC	1.7	0.067	2336	5.1	0.201	416	3.7	0.146
			2216 EC	1.4	0.055	2338 EC	9.5	0.374	417	3.8	0.150
			2217 EC	2	0.079	2340 EC	9.4	0.370	418	4.9	0.193
202 EC	1	0.039	2218 EC	2.6	0.102	2344 EC	10.4	0.409	419	5	0.197
203 EC	1	0.039	2219 EC	3	0.118	2348	6.4	0.252	420	4.9	0.193
204 EC	1	0.039	2220 EC	2.5	0.098	2356	6.6	0.260	421	4.9	0.193
205 EC	1.3	0.051							422	4.8	0.189
206 EC	1.3	0.051							424	6.3	0.248
207 EC	1.3	0.051									

Minimum load

In order to provide the satisfactory operation of all ball and roller bearings they must always be subjected to a given minimum load. This is also true of cylindrical roller bearings, particularly if they run at high speeds where the inertia forces of the rollers and cage, and the friction in the lubricant can have a detrimental influence on the rolling conditions in the bearing and may cause damaging sliding movements to occur between the rollers and the raceways.

The requisite minimum radial load to be applied in such cases can be determined by using the Interactive Engineering Catalog on the SKF website www.skf.com or by contacting SKF Applications Engineering.

However, the weight of the components supported by the bearing, together with the external forces, often exceeds the requisite minimum load. If this is not the case, an additional radial load **must** be applied to the bearing, for example, by increasing belt tension or similar means.

Table 3b

Axial displacement(s) of full complement NCF and NJG bearing ring relative to opposite ring

Designation	Axial displacement s		Designation	Axial displacement s		Designation	Axial displacement s		Designation	Axial displacement s	
	mm	in		mm	in		mm	in		mm	in
1830 V	1.5	0.059	2305 VH	1.7	0.067	2944 V	2.5	0.098	3020 V	2	0.079
1832 V	1.5	0.059	2306 VH	1.8	0.071	2948 V	2.5	0.098	3022 V	3	0.118
1834 V	1.5	0.059	2307 VH	2	0.079	2952 V	5	0.197	3024 V	3.5	0.138
1836 V	1.5	0.059	2308 VH	2.4	0.094	2956 V	4	0.157	3026 V	3.5	0.138
1838 V	1.8	0.071	2309 VH	2.4	0.094	2960 V	5	0.197	3028 V	3.5	0.138
1840 V	1.8	0.071	2310 VH	2.6	0.102	2964 V	5	0.197	3030 V	3.5	0.138
1844 V	1.8	0.071	2311 VH	2.6	0.102	2968 V	5	0.197	3032 V	4	0.157
1848 V	1.8	0.071	2313 VH	3	0.118	2972 V	5	0.197	3034 V	7	0.276
1852 V	1.8	0.071	2314 VH	3	0.118	2976 V	5	0.197	3036 V	5	0.197
1856 V	2.5	0.098	2315 VH	3	0.118	2980 V	5	0.197	3038 V	6	0.236
1860 V	3	0.118	2316 VH	4	0.157	2984 V	5	0.197	3040 V	6.5	0.256
1864 V	3	0.118	2317 VH	4	0.157	2988 V	6	0.236	3044 V	7	0.276
1868 V	3	0.118	2318 VH	4	0.157	2992 V	6	0.236	3048 V	7	0.276
1872 V	3	0.118	2320 VH	4.5	0.177	2996 V	7	0.276	3052 V	8	0.315
1876 V	3.5	0.138	2322 VH	5	0.197	29/500 V	7	0.276	3056 V	9	0.354
1880 V	3.5	0.138	2324 VH	5.5	0.217	29/530 V	7	0.276	3060 V	10	0.394
1884 V	3.5	0.138	2326 VH	6	0.236	29/560 V	7	0.276	3064 V	12	0.472
1888 V	3.5	0.138	2328 VH	6.5	0.256	29/600 V	7	0.276	3068 V	12	0.472
1892 V	5	0.197	2330 VH	6.5	0.256				3072 V	12	0.472
1896 V	5	0.197				3004 V	0.5	0.020	3076 V	12	0.472
18/500 V	5	0.197				3005 V	0.5	0.020	3080 V	14	0.551
18/530 V	5	0.197	2912 V	0.5	0.020	3006 V	0.8	0.031			
18/560 V	5	0.197	2914 V	0.75	0.030	3007 V	1	0.039			
18/600 V	7	0.276	2916 V	0.75	0.030	3008 V	1	0.039			
18/630 V	8	0.315	2918 V	0.75	0.030	3009 V	1	0.039			
18/670 V	8	0.315	2920 V	0.75	0.030	3010 V	1	0.039			
18/710 V	8	0.315	2922 V	0.75	0.030	3011 V	1.2	0.047			
18/750 V	8	0.315	2924 V	0.75	0.030	3012 V	1.2	0.047			
			2926 V	0.75	0.030	3013 V	1.2	0.047			
			2928 V	0.75	0.030	3014 V	1.5	0.059			
2207 V	1	0.039	2930 V	0.8	0.031	3015 V	1.5	0.059			
2209 V	1	0.039	2932 V	0.8	0.031	3016 V	1.8	0.071			
2210 V	1	0.039	2934 V	0.8	0.031	3017 V	1.8	0.071			
2218 V	2.5	0.098	2936 V	1	0.039	3018 V	2	0.079			
2220 V	2.5	0.098	2938 V	1	0.039						
2224 V	4	0.157	2940 V	3	0.118						

Frequency vibration data

Frequency vibration data is available on the SKF website www.skf.com in the Interactive Engineering Catalog or by contacting SKF Applications Engineering.

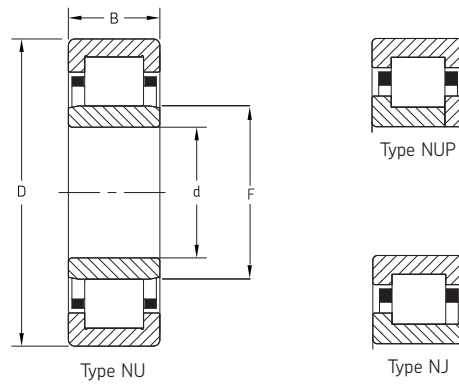
Table 3c

Axial displacement (s) of full complement NNC, NNCF and NNCL bearing ring relative to opposite ring

Designation	Axial displacement s		Designation	Axial displacement s		Designation	Axial displacement s		Designation	Axial displacement s	
	mm	in		mm	in		mm	in		mm	in
4830 V	1.1	0.043	4912 V	1	0.039	4940 V	2.1	0.083	5013 V	1.1	0.043
4832 V	1.1	0.043	4914 V	1	0.039	4944 V	2.1	0.083	5015 V	1.1	0.043
4834 V	1.1	0.043	4916 V	1	0.039	4948 V	2.1	0.083	5017 V	1.1	0.043
4836 V	1.1	0.043	4918 V	1.1	0.043	4952 V	2.1	0.083	5024 V	2	0.079
4838 V	1.5	0.059	4920 V	1.1	0.043	4956 V	2.1	0.083	5056 V	4	0.157
4840 V	1.5	0.059	4922 V	1.1	0.043	4960 V	3	0.118			
4844 V	1.5	0.059	4924 V	1.1	0.043	4964 V	3	0.118			
4848 V	2	0.079	4926 V	1.5	0.059	4968 V	3	0.118			
4852 V	2	0.079	4926 V	1.5	0.059	4972 V	3	0.118			
4856 V	2	0.079	4928 V	1.5	0.059	4976 V	4	0.157			
4860 V	2.1	0.083	4930 V	2	0.079	4980 V	4	0.157			
4864 V	2.1	0.083	4932 V	2	0.079	4984 V	4	0.157			
4872 V	2.1	0.083	4934 V	2	0.079	4988 V	4	0.157			
4876 V	2.1	0.083	4936 V	2	0.079	4992 V	4	0.157			
			4938 V	2	0.079	4996 V	5	0.197			
						49/500 V	5	0.197			

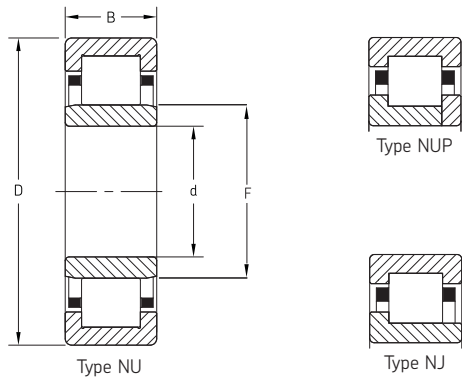
Cylindrical roller bearings

Single row
Standard
Series: 1005 — 1052
Size: 25 mm — 260 mm
0.9843 in — 10.2362 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Under roller F	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
1005	25	0.9843	47	1.8504	12	0.4724	14 200	3 190	13 200	2 970	18 000	18 000	0.08	0.18	31	1.201
1006	30	1.1811	55	2.1654	13	0.5118	17 900	4 020	17 300	3 890	15 000	15 000	0.12	0.26	37	1.437
1007 EC	35	1.3780	62	2.4409	14	0.5512	35 800	8 050	38 000	8 540	12 000	13 000	0.16	0.35	42	1.654
1008 ML	40	1.5748	68	2.6772	15	0.5906	25 100	5 640	26 000	5 840	12 000	18 000	0.22	0.49	47	1.850
1009 EC	45	1.7717	75	2.9528	16	0.6299	44 600	10 000	52 000	11 700	9 500	11 000	0.27	0.60	53	2.067
1010	50	1.9685	80	3.1496	16	0.6299	46 800	10 500	56 000	12 600	9 000	9 500	0.35	0.77	58	2.264
1011 EC	55	2.1654	90	3.5433	18	0.7087	57 200	12 900	69 500	15 600	8 000	8 500	0.42	0.90	65	2.539
1012 ML	60	2.3622	95	3.7402	18	0.7087	37 400	8 400	44 000	9 900	8 000	13 000	0.48	1.10	70	2.736
1013	65	2.5591	100	3.9370	18	0.7087	62 700	14 100	81 500	18 300	7 000	7 500	0.45	1.00	75	2.933
1014	70	2.7559	110	4.3307	20	0.7874	76 500	17 200	93 000	20 900	6 300	7 000	0.62	1.40	80	3.150
1015 ML	75	2.9528	115	4.5276	20	0.7874	58 300	13 100	71 000	16 000	6 700	10 000	0.74	1.60	85	3.346
1016	80	3.1496	125	4.9213	22	0.8661	66 000	14 800	81 400	18 300	6 300	6 300	1.00	2.20	92	3.602
1017	85	3.3465	130	5.1181	22	0.8661	68 200	15 300	86 500	19 400	6 000	6 000	1.05	2.30	97	3.799
1018 ML	90	3.5433	140	5.5118	24	0.9449	80 900	18 200	104 000	23 400	5 600	8 500	1.35	3.00	103	4.055
1019 ML	95	3.7402	145	5.7087	24	0.9449	84 200	18 900	110 000	24 700	5 300	8 000	1.40	3.10	108	4.252
1020	100	3.9370	150	5.9055	24	0.9449	85 800	19 300	114 000	25 600	5 000	5 000	1.45	3.20	113	4.449
1021 ML	105	4.1339	160	6.2992	26	1.0236	101 000	22 700	137 000	30 800	4 800	7 500	1.85	4.10	120	4.705
1022	110	4.3307	170	6.6929	28	1.1024	128 000	28 800	166 000	37 300	4 500	4 500	2.30	5.10	125	4.921
1024	120	4.7244	180	7.0866	28	1.1024	134 000	30 100	183 000	41 100	4 000	4 000	2.45	5.40	135	5.315
1026	130	5.1181	200	7.8740	33	1.2992	165 000	37 100	224 000	50 400	3 800	3 800	3.80	8.40	148	5.827
1028	140	5.5118	210	8.2677	33	1.2992	172 000	38 700	245 000	55 100	3 600	3 600	4.05	8.90	158	6.220
1030	150	5.9055	225	8.8583	35	1.3780	194 000	43 600	275 000	61 800	3 200	3 200	4.85	10.70	170	6.673
1032	160	6.2992	240	9.4488	38	1.4961	229 000	51 500	325 000	73 100	3 000	3 000	5.95	13.10	180	7.087
1034	170	6.6929	260	10.2362	42	1.6535	275 000	61 800	400 000	89 900	2 800	2 800	8.00	17.60	193	7.598
1036	180	7.0866	280	11.0236	46	1.8110	336 000	75 500	475 000	106 800	2 600	2 600	10.50	23.10	205	8.071
1038 ML	190	7.4803	290	11.4173	46	1.8110	347 000	78 000	500 000	112 400	2 600	3 800	11.00	24.30	215	8.465
1040	200	7.8740	310	12.2047	51	2.0079	380 000	85 400	570 000	128 100	2 400	2 400	14.50	32.00	229	9.016
1044	220	8.6614	340	13.3858	56	2.2047	495 000	111 300	735 000	165 200	2 200	2 200	18.50	40.80	250	9.843
1048 MA	240	9.4488	360	14.1732	56	2.2047	523 000	117 600	800 000	179 800	2 000	2 600	20.00	44.10	270	10.630
1052	260	10.2362	400	15.7480	65	2.5591	627 000	140 900	965 000	216 900	1 800	1 800	29.50	65.00	296	11.654

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



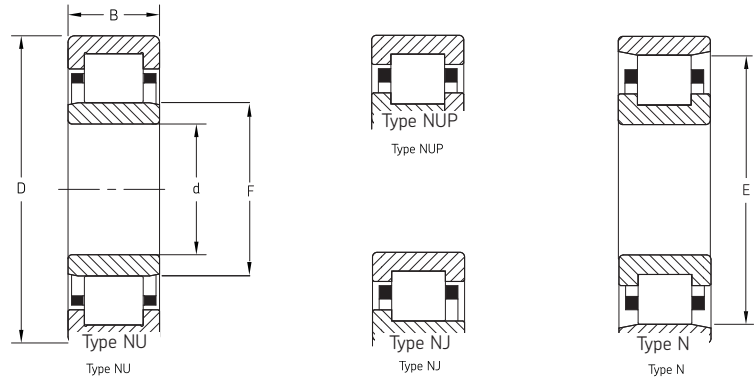
Single row
Standard
Series: 1056 MA — 10/710 ECN2MA
Size: 280 mm — 710 mm
11.0236 in — 27.9528 in

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Under roller F	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
1056 MA	280	11.0236	420	16.5354	65	2.5591	660 000	148 400	1 060 000	238 300	1 700	2 200	31.50	69.40	316	12.441
1060 MA	300	11.8110	460	18.1102	74	2.9134	858 000	192 900	1 370 000	308 000	1 500	2 000	46.50	102.50	340	13.386
1064 MA	320	12.5984	480	18.8976	74	2.9134	880 000	197 800	1 430 000	321 500	1 400	1 400	49.00	108.00	360	14.173
1064 MP	320	12.5984	480	18.8976	74	2.9134	880 000	197 800	1 430 000	321 500	1 400	2 200	48.50	106.90	360	14.173
1068 MA	340	13.3858	520	20.4724	82	3.2283	1 080 000	242 800	1 760 000	395 600	1 300	1 700	68.00	149.90	385	15.157
1072 MA	360	14.1732	540	21.2598	82	3.2283	1 100 000	247 300	1 830 000	411 400	1 300	1 600	67.50	148.80	405	15.945
1072 MP	360	14.1732	540	21.2598	82	3.2283	1 100 000	247 300	1 830 000	411 400	1 300	1 900	67.50	148.80	405	15.945
1076 MA	380	14.9606	560	22.0472	82	3.2283	1 140 000	256 300	1 930 000	433 900	1 200	1 600	73.00	160.90	425	16.732
1080 MA	400	15.7480	600	23.6220	90	3.5433	1 380 000	310 200	2 320 000	521 500	1 100	1 500	92.50	203.90	450	17.717
1084 MA	420	16.5354	620	24.4094	90	3.5433	1 420 000	319 200	2 450 000	550 800	1 100	1 400	96.00	211.60	470	18.504
1088 MA	440	17.3228	650	25.5906	94	3.7008	1 510 000	339 400	2 650 000	595 700	1 000	1 300	105.00	231.50	493	19.409
1092 MA	460	18.1102	680	26.7717	100	3.9370	1 650 000	370 900	2 850 000	640 700	950	1 200	115.00	253.50	516	20.315
1096 MA	480	18.8976	700	27.5591	100	3.9370	1 680 000	377 700	3 000 000	674 400	900	1 200	130.00	286.60	536	21.102
10/500 MA	500	19.6850	720	28.3465	100	3.9370	1 720 000	386 700	3 100 000	696 900	900	1 100	135.00	297.60	556	21.890
10/530 MA	530	20.8661	780	30.7087	112	4.4094	2 290 000	514 800	4 050 000	910 400	800	1 000	190.00	418.90	593	23.346
10/560 MA	560	22.0472	820	32.2835	115	4.5276	2 330 000	523 800	4 250 000	955 400	750	1 000	210.00	463.00	625	24.606
10/600 MA	600	23.6220	870	34.2520	118	4.6457	2 750 000	618 200	5 100 000	1 146 500	700	900	245.00	540.10	667	26.260
10/710 ECN2MA	710	27.9528	1 030	40.5512	140	5.5118	4 680 000	1 052 100	8 500 000	1 910 800	560	750	415.00	914.90	778	30.630

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

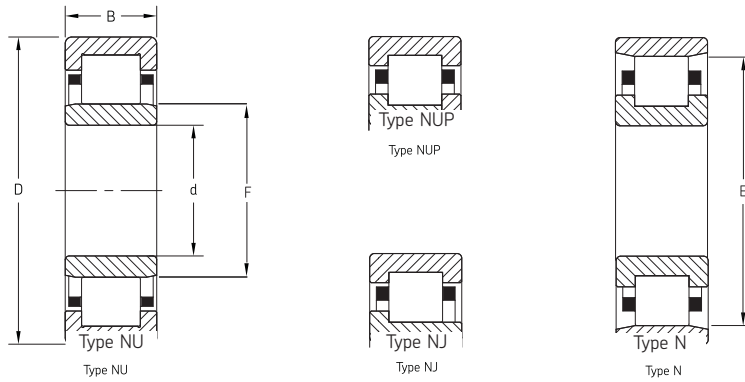
Cylindrical roller bearings

Single row
Standard and SKF Explorer
Series: 202 EC — 240 EC
Size: 15 mm — 200 mm
0.5906 in — 7.8740 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter			
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Under roller F		Over roller E	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in	mm	in
202 EC	15	0.5906	35	1.3780	11	0.4331	12 500	2 800	10 200	2 300	22 000	26 000	0.05	0.10	19.30	0.76	30	1.181
203 EC	17	0.6693	40	1.5748	12	0.4724	17 200	3 900	14 300	3 200	19 000	22 000	0.07	0.10	22.10	0.87	35	1.382
204 EC	20	0.7874	47	1.8504	14	0.5512	25 100	5 600	22 000	4 900	16 000	19 000	0.11	0.20	26.50	1.04	42	1.634
205 EC	25	0.9843	52	2.0472	15	0.5906	28 600	6 400	27 000	6 100	14 000	16 000	0.13	0.30	31.50	1.24	47	1.831
206 EC	30	1.1811	62	2.4409	16	0.6299	44 000	9 900	36 500	8 200	13 000	14 000	0.20	0.40	37.50	1.48	56	2.185
207 EC	35	1.3780	72	2.8346	17	0.6693	56 000	12 600	48 000	10 800	11 000	12 000	0.33	0.70	44.00	1.73	64	2.520
208 EC	40	1.5748	80	3.1496	18	0.7087	62 000	13 900	53 000	11 900	9 500	11 000	0.37	0.80	49.50	1.95	72	2.815
209 EC	45	1.7717	85	3.3465	19	0.7480	69 500	15 600	64 000	14 400	9 000	9 500	0.43	0.90	54.50	2.15	77	3.012
210 EC	50	1.9685	90	3.5433	20	0.7874	73 500	16 500	69 500	15 600	8 500	9 000	0.48	1.10	59.50	2.34	82	3.209
211 EC	55	2.1654	100	3.9370	21	0.8268	96 500	21 700	95 000	21 400	7 500	8 000	0.66	1.50	66.00	2.60	90	3.543
212 EC	60	2.3622	110	4.3307	22	0.8661	108 000	24 300	102 000	22 900	6 700	7 500	0.81	1.80	72.00	2.84	100	3.937
213 EC	65	2.5591	120	4.7244	23	0.9055	122 000	27 400	118 000	26 500	6 300	6 700	1.05	2.30	78.50	3.09	109	4.272
214 EC	70	2.7559	125	4.9213	24	0.9449	137 000	30 800	137 000	30 800	6 000	6 300	1.15	2.50	83.50	3.29	114	4.469
215 EC	75	2.9528	130	5.1181	25	0.9843	150 000	33 700	156 000	35 100	5 600	6 000	1.25	2.80	88.50	3.48	119	4.665
216 EC	80	3.1496	140	5.5118	26	1.0236	160 000	36 000	166 000	37 300	5 300	5 600	1.50	3.30	95.30	3.75	127	5.012
217 EC	85	3.3465	150	5.9055	28	1.1024	190 000	42 700	200 000	45 000	4 800	5 300	1.90	4.20	100.50	3.96	137	5.374
218 EC	90	3.5433	160	6.2992	30	1.1811	208 000	46 800	220 000	49 500	4 500	5 000	2.35	5.20	107.00	4.21	145	5.709
219 EC	95	3.7402	170	6.6929	32	1.2598	255 000	57 300	265 000	59 600	4 300	4 800	2.85	6.30	112.50	4.43	155	6.083
220 EC	100	3.9370	180	7.0866	34	1.3386	285 000	64 100	305 000	68 600	4 000	4 500	3.45	7.60	119.00	4.69	163	6.417
221 EC	105	4.1339	190	7.4803	36	1.4173	300 000	67 400	315 000	70 800	3 800	4 300	3.95	8.70	125.00	4.92	173	6.811
222 EC	110	4.3307	200	7.8740	38	1.4961	335 000	75 300	365 000	82 100	3 600	4 000	5.40	11.90	132.50	5.22	181	7.106
224 EC	120	4.7244	215	8.4646	40	1.5748	390 000	87 700	430 000	96 700	3 400	3 600	6.60	14.60	143.50	5.65	196	7.697
226 EC	130	5.1181	230	9.0551	40	1.5748	415 000	93 300	455 000	102 300	3 200	3 400	6.30	13.90	153.50	6.04	210	8.248
228 EC	140	5.5118	250	9.8425	42	1.6535	450 000	101 200	510 000	114 600	2 800	3 200	8.75	19.30	169.00	6.65	221	8.701
230 EC	150	5.9055	270	10.6299	45	1.7717	510 000	114 600	600 000	134 900	2 600	2 800	10.80	23.80	182.00	7.17	242	9.528
232 EC	160	6.2992	290	11.4173	48	1.8898	585 000	131 500	680 000	152 900	2 400	2 600	14.30	31.50	195.00	7.68	259	10.197
234 EC	170	6.6929	310	12.2047	52	2.0472	695 000	156 200	815 000	183 200	2 400	2 400	18.70	41.20	207.00	8.15	279	10.984
236 ECMA	180	7.0866	320	12.5984	52	2.0472	720 000	161 900	850 000	191 100	2 200	3 200	19.30	42.50	217.00	8.54	289	11.378
238 EC	190	7.4803	340	13.3858	55	2.1654	800 000	179 800	965 000	216 900	2 000	2 200	24.50	54.00	230.00	9.06	306	12.047
240 EC	200	7.8740	360	14.1732	58	2.2835	850 000	191 100	1 020 000	229 300	1 900	2 200	29.00	63.90	243.00	9.57	323	12.717

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Single row
 Standard and **SKF Explorer**
 Series: 244 EC — 264 MA
 Size: 220 mm — 320 mm
 8.6614 in — 12.5984 in

Standard and **SKF Explorer**
 Series: 2203 EC — 2226 EC
 Size: 17 mm — 130 mm
 0.6693 in — 5.1181 in

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter			
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed			Under roller F		Over roller E	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	mm	in	mm	in
244 EC	220	8.6614	400	15.7480	65	2.5591	1 060 000	238 300	1 290 000	290 000	1 600	1 900	39.00	86.00	270.00	10.63	358	14.094
248 MA	240	9.4488	440	17.3228	72	2.8346	952 000	214 000	1 370 000	308 000	1 600	2 200	52.50	115.70	295.00	11.61	385	15.157
252 MA	260	10.2362	480	18.8976	80	3.1496	1 170 000	263 000	1 700 000	382 200	1 400	2 000	70.00	154.30	320.00	12.60	420	16.535
256 MA	280	11.0236	500	19.6850	80	3.1496	1 140 000	256 300	1 700 000	382 200	1 400	1 900	73.00	160.90	340.00	13.39	440	17.323
260 M	300	11.8110	540	21.2598	85	3.3465	1 420 000	319 200	2 120 000	476 600	1 300	1 400	89.50	197.30	364.00	14.33	476	18.740
264 MA	320	12.5984	580	22.8346	92	3.6220	1 610 000	361 900	2 450 000	550 800	1 200	1 600	115.00	253.50	390.00	15.35	510	20.079
2203 EC	17	0.6693	40	1.5748	16	0.6299	23 800	5 400	21 600	4 900	19 000	22 000	0.10	0.20	22.10	0.87	35	1.378
2204 EC	20	0.7874	47	1.8504	18	0.7087	29 700	6 700	27 500	6 200	16 000	19 000	0.14	0.30	26.50	1.04	42	1.654
2205 EC	25	0.9843	52	2.0472	18	0.7087	34 100	7 700	34 000	7 600	14 000	16 000	0.18	0.40	31.50	1.24	47	1.850
2206 EC	30	1.1811	62	2.4409	20	0.7874	55 000	12 400	49 000	11 000	13 000	14 000	0.27	0.60	37.50	1.48	56	2.185
2207 EC	35	1.3780	72	2.8346	23	0.9055	69 500	15 600	63 000	14 200	11 000	12 000	0.40	0.90	44.00	1.73	64	2.520
2208 EC	40	1.5748	80	3.1496	23	0.9055	81 500	18 300	75 000	16 900	9 500	11 000	0.55	1.20	49.50	1.95	72	2.815
2209 EC	45	1.7717	85	3.3465	23	0.9055	85 000	19 100	81 500	18 300	9 000	9 500	0.55	1.20	54.50	2.15	77	3.012
2210 EC	50	1.9685	90	3.5433	23	0.9055	90 000	20 200	88 000	19 800	8 500	9 000	0.61	1.30	59.50	2.34	82	3.228
2211 EC	55	2.1654	100	3.9370	25	0.9843	114 000	25 600	118 000	26 500	7 500	8 000	0.81	1.80	66.00	2.60	90	3.543
2212 EC	60	2.3622	110	4.3307	28	1.1024	146 000	32 800	153 000	34 400	6 700	7 500	1.15	2.50	72.00	2.84	100	3.937
2213 EC	65	2.5591	120	4.7244	31	1.2205	170 000	38 200	180 000	40 500	6 300	6 700	1.45	3.20	78.50	3.09	109	4.272
2214 EC	70	2.7559	125	4.9213	31	1.2205	180 000	40 500	193 000	43 400	6 000	6 300	1.70	3.70	83.50	3.29	114	4.488
2215 EC	75	2.9528	130	5.1181	31	1.2205	186 000	41 800	208 000	46 800	5 600	9 500	1.60	3.50	88.50	3.48	119	4.685
2216 EC	80	3.1496	140	5.5118	33	1.2992	212 000	47 700	245 000	55 100	5 300	5 600	2.05	4.50	95.30	3.75	127	5.000
2217 EC	85	3.3465	150	5.9055	36	1.4173	250 000	56 200	280 000	62 900	4 800	5 300	2.55	5.60	100.50	3.96	137	5.394
2218 EC	90	3.5433	160	6.2992	40	1.5748	280 000	62 900	315 000	70 800	4 500	5 000	3.50	7.70	107.00	4.21	145	5.709
2219 EC	95	3.7402	170	6.6929	43	1.6929	325 000	73 100	375 000	84 300	4 300	4 800	3.95	8.70	112.50	4.43	155	6.083
2220 EC	100	3.9370	180	7.0866	46	1.8110	380 000	85 400	450 000	101 200	4 000	4 500	5.20	11.50	119.00	4.69	163	6.417
2222 EC	110	4.3307	200	7.8740	53	2.0866	440 000	98 900	520 000	116 900	3 600	4 000	7.15	15.80	132.50	5.22	181	7.126
2224 EC	120	4.7244	215	8.4646	58	2.2835	520 000	116 900	630 000	141 600	3 400	3 600	8.85	19.50	143.50	5.65	196	7.717
2226 EC	130	5.1181	230	9.0551	64	2.5197	610 000	137 100	735 000	165 200	3 200	3 400	12.20	26.90	153.50	6.04	210	8.268

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
 Consult SKF USA Inc. prior to design change or order placement.

Cylindrical roller bearings

Single row

Standard and **SKF Explorer**

Series: 2228 ECML — 2292 MA

Size: 140 mm — 460 mm

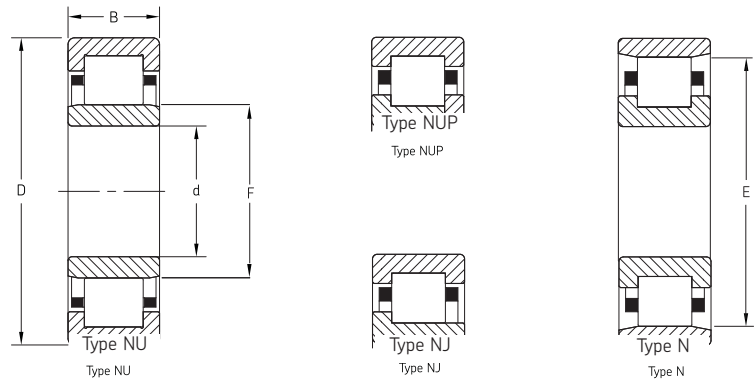
5.5118 in — 18.1102 in

Standard and **SKF Explorer**

Series: 303 EC — 314 EC

Size: 17 mm — 70 mm

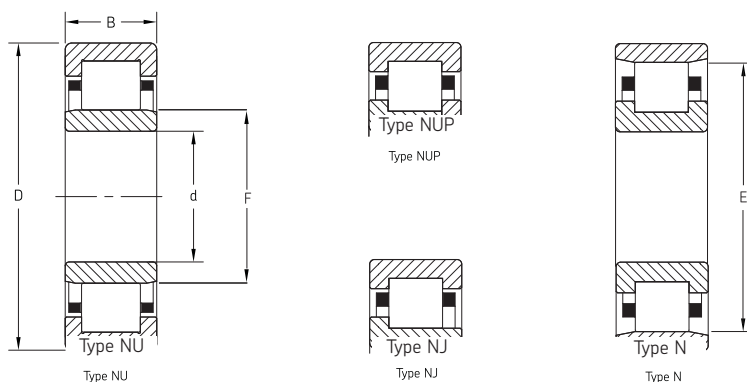
0.6693 in — 2.7559 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter			
	Bore		Outside diameter		Width		Dynamic		Static		Reference	Limiting	kg	lb	Under roller		Over roller	
	d	D	B	C	C ₀	speed	speed	F	E									
mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	mm	in	mm	in			
2228 ECML	140	5.5118	250	9.8425	68	2.6772	655 000	147 200	830 000	186 600	2 800	4 800	15.30	33.70	169.00	6.65	225	8.858
2230 EC	150	5.9055	270	10.6299	73	2.8740	735 000	165 200	930 000	209 100	2 600	2 800	18.70	41.20	182.00	7.17	242	9.528
2232 ECMA	160	6.2992	290	11.4173	80	3.1496	930 000	209 100	1 200 000	269 800	2 400	3 400	24.70	54.50	193.00	7.60	261	10.276
2234 ECMA	170	6.6929	310	12.2047	86	3.3858	1 060 000	238 300	1 430 000	321 500	2 400	3 200	30.00	66.10	205.00	8.07	281	11.063
2236 EC	180	7.0866	320	12.5984	86	3.3858	1 100 000	247 300	1 430 000	321 500	2 200	2 400	32.00	70.50	215.00	8.47	291	11.457
2238 ECMA	190	7.4803	340	13.3858	92	3.6220	1 220 000	274 300	1 600 000	359 700	2 000	3 000	39.00	86.00	228.00	8.98	323	12.717
2240 ECMA	200	7.8740	360	14.1732	98	3.8583	1 370 000	308 000	1 800 000	404 600	1 900	2 800	46.00	101.40	241.00	9.49	325	12.795
2248 MA	240	9.4488	440	17.3228	120	4.7244	1 450 000	326 000	2 360 000	530 500	1 500	2 200	85.00	187.40	295.00	11.61	385	15.157
2252 MA	260	10.2362	480	18.8976	130	5.1181	1 790 000	402 400	3 000 000	674 400	1 300	2 000	112.00	246.90	320.00	12.60	420	16.535
2256 ECMA	280	11.0236	500	19.6850	130	5.1181	2 200 000	494 600	3 250 000	730 600	1 200	1 900	115.00	253.50	327.00	12.87	455	17.913
2260 MA	300	11.8110	540	21.2598	140	5.5118	2 090 000	469 800	3 450 000	775 600	1 200	1 800	145.00	319.70	364.00	14.33	476	18.740
2264 ECMA	320	12.5984	580	22.8346	150	5.9055	3 190 000	717 100	5 000 000	1 124 000	1 000	1 600	190.00	418.90	390.00	15.35	530	20.866
2268 MA	340	13.3858	620	24.4094	165	6.4961	2 640 000	593 500	4 500 000	1 011 600	1 000	1 500	220.00	485.00	416.00	16.38	544	21.417
2272 MA	360	14.1732	650	25.5906	170	6.6929	2 920 000	656 400	4 900 000	1 101 500	950	1 400	250.00	551.20	437.00	17.21	573	22.559
2276 ECMA	380	14.9606	680	26.7717	175	6.8898	3 140 000	705 900	5 500 000	1 236 400	900	1 400	275.00	606.30	451.00	17.76	621	24.449
2292 MA	460	18.1102	830	32.6772	212	8.3465	5 120 000	1 151 000	8 650 000	1 944 500	700	1 100	530.00	1168.40	554.00	21.81	744	29.291
303 EC	17	0.6693	47	1.8504	14	0.5512	24 600	5 500	20 400	4 600	15 000	20 000	0.12	0.30	24.20	0.95	40	1.583
304 EC	20	0.7874	52	2.0472	15	0.5906	35 500	8 000	26 000	5 800	15 000	18 000	0.15	0.30	27.50	1.08	46	1.791
305 EC	25	0.9843	62	2.4409	17	0.6693	46 500	10 500	36 500	8 200	12 000	15 000	0.24	0.50	34.00	1.34	54	2.126
306 EC	30	1.1811	72	2.8346	19	0.7480	58 500	13 200	48 000	10 800	11 000	12 000	0.36	0.80	40.50	1.60	63	2.461
307 EC	35	1.3780	80	3.1496	21	0.8268	75 000	16 900	63 000	14 200	9 500	11 000	0.55	1.20	46.20	1.82	70	2.764
308 EC	40	1.5748	90	3.5433	23	0.9055	93 000	20 900	78 000	17 500	8 000	9 500	0.64	1.40	52.00	2.05	80	3.150
309 EC	45	1.7717	100	3.9370	25	0.9843	112 000	25 200	100 000	22 500	7 500	8 500	0.88	1.90	58.50	2.30	89	3.484
310 EC	50	1.9685	110	4.3307	27	1.0630	127 000	28 500	112 000	25 200	6 700	8 000	1.15	2.50	65.00	2.56	97	3.819
311 EC	55	2.1654	120	4.7244	29	1.1417	156 000	35 100	143 000	32 100	6 000	7 000	1.57	3.50	70.50	2.78	107	4.193
312 EC	60	2.3622	130	5.1181	31	1.2205	173 000	38 900	160 000	36 000	5 600	6 700	1.80	4.00	77.00	3.03	115	4.528
313 EC	65	2.5591	140	5.5118	33	1.2992	212 000	47 700	196 000	44 100	5 300	6 000	2.25	5.00	82.50	3.25	125	4.902
314 EC	70	2.7559	150	5.9055	35	1.3780	236 000	53 100	228 000	51 300	4 800	5 600	2.75	6.10	89.00	3.50	133	5.236

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
 Standard and **SKF Explorer**
 Series: 315 EC — 352 ECMA
 Size: 75 mm — 260 mm
 2.9528 in — 10.2362 in

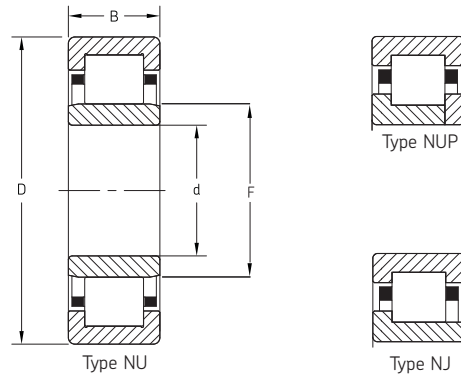


Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter			
	Bore		Outside diameter		Width		Dynamic		Static		Reference	Limiting	kg	lb	Under roller		Over roller	
	d	D	D	B	C	C ₀	speed	speed	F	E								
mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	mm	in	mm	in			
315 EC	75	2.9528	160	6.2992	37	1.4567	280 000	62 900	265 000	59 600	4 500	5 300	3.30	7.30	95.00	3.74	143	5.630
316 EC	80	3.1496	170	6.6929	39	1.5354	300 000	67 400	290 000	65 200	4 300	5 000	3.90	8.60	101.00	3.98	151	5.945
317 EC	85	3.3465	180	7.0866	41	1.6142	340 000	76 400	335 000	75 300	4 000	4 800	5.10	11.20	108.00	4.25	160	6.299
318 EC	90	3.5433	190	7.4803	43	1.6929	365 000	82 100	360 000	80 900	3 800	4 500	5.85	12.90	113.50	4.47	170	6.673
319 EC	95	3.7402	200	7.8740	45	1.7717	390 000	87 700	390 000	87 700	3 600	4 300	6.25	13.80	121.50	4.78	178	6.988
320 EC	100	3.9370	215	8.4646	47	1.8504	450 000	101 200	440 000	98 900	3 200	3 800	8.85	19.50	127.50	5.02	192	7.539
321 EC	105	4.1339	225	8.8583	49	1.9291	500 000	112 400	500 000	112 400	3 200	3 800	8.65	19.10	133.00	5.24	201	7.913
322 EC	110	4.3307	240	9.4488	50	1.9685	530 000	119 100	540 000	121 400	3 000	3 400	11.70	25.80	143.00	5.63	211	8.307
324 EC	120	4.7244	260	10.2362	55	2.1654	610 000	137 100	620 000	139 400	2 800	3 200	15.00	33.10	154.00	6.06	230	9.055
326 EC	130	5.1181	280	11.0236	58	2.2835	720 000	161 900	750 000	168 600	2 400	3 000	19.50	43.00	167.00	6.58	247	9.724
328 EC	140	5.5118	300	11.8110	62	2.4409	780 000	175 300	830 000	186 600	2 400	2 800	23.00	50.70	180.00	7.09	264	10.394
330 EC	150	5.9055	320	12.5984	65	2.5591	900 000	202 300	965 000	216 900	2 200	3 400	27.70	61.10	193.00	7.60	283	11.142
332 EC	160	6.2992	340	13.3858	68	2.6772	1 000 000	224 800	1 080 000	242 800	2 000	2 400	32.20	71.00	204.00	8.03	300	11.811
334 EC	170	6.6929	360	14.1732	72	2.8346	952 000	214 000	1 180 000	265 300	1 700	2 200	38.50	84.90	220.00	8.66	318	12.520
336 EC	180	7.0866	380	14.9606	75	2.9528	1 020 000	229 300	1 290 000	290 000	1 600	2 200	45.00	99.20	232.00	9.13	335	13.189
338 EC	190	7.4803	400	15.7480	78	3.0709	1 140 000	256 300	1 500 000	337 200	1 500	200	50.00	110.20	245.00	9.65	353	13.898
340 ECMA	200	7.8740	420	16.5354	80	3.1496	1 230 000	276 500	1 630 000	366 400	1 400	2 400	56.00	123.50	260.00	10.24	370	14.567
340 MA	200	7.8740	420	16.5354	80	3.1496	990 000	222 600	1 320 000	296 700	1 600	2 400	56.00	123.50	260.00	10.24	370	14.567
344 M	220	8.6614	460	18.1102	88	3.4646	1 210 000	272 000	1 630 000	366 400	1 500	1 700	73.50	162.00	284.00	11.18	396	15.591
348 M	240	9.4488	500	19.6850	95	3.7402	1 450 000	326 000	2 000 000	449 600	1 300	1 600	94.50	208.30	310.00	12.21	430	16.929
352 ECMA	260	10.2362	540	21.2598	102	4.0157	1 940 000	436 100	2 700 000	607 000	1 100	1 800	125.00	275.60	337.00	13.26	477	18.780

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
 Consult SKF USA Inc. prior to design change or order placement.

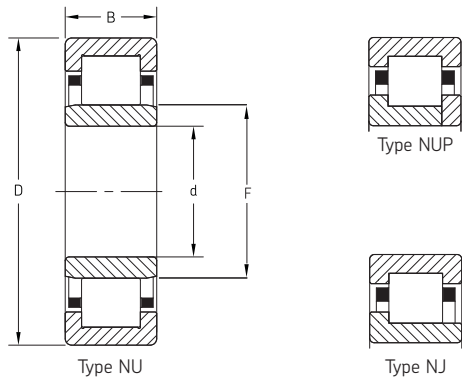
Cylindrical roller bearings

Single row
Standard and **SKF Explorer**
Series: 2304 EC — 2356 MA
Size: 20 mm — 280 mm
0.7874 in — 11.0236 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Under roller F	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
2304 EC	20	0.7874	52	2.0472	21	0.8268	47 500	10 700	38 000	8 500	15 000	18 000	0.22	0.50	28	1.083
2305 EC	25	0.9843	62	2.4409	24	0.9449	64 000	14 400	55 000	12 400	12 000	15 000	0.39	0.90	34	1.339
2306 EC	30	1.1811	72	2.8346	27	1.0630	83 000	18 700	75 000	16 900	11 000	12 000	0.54	1.20	41	1.594
2307 EC	35	1.3780	80	3.1496	31	1.2205	106 000	23 800	98 000	22 000	9 500	11 000	0.73	1.60	46	1.819
2308 EC	40	1.5748	90	3.5433	33	1.2992	129 000	29 000	120 000	27 000	8 000	9 500	0.96	2.10	52	2.047
2309 EC	45	1.7717	100	3.9370	36	1.4173	160 000	36 000	153 000	34 400	7 500	8 500	1.35	3.00	59	2.303
2310 EC	50	1.9685	110	4.3307	40	1.5748	186 000	41 800	186 000	41 800	6 700	8 000	1.75	3.90	65	2.559
2311 EC	55	2.1654	120	4.7244	43	1.6929	232 000	52 200	232 000	52 200	6 000	7 000	2.30	5.10	71	2.776
2312 EC	60	2.3622	130	5.1181	46	1.8110	260 000	58 400	265 000	59 600	5 600	6 700	2.80	6.20	77	3.031
2313 EC	65	2.5591	140	5.5118	48	1.8898	285 000	64 100	290 000	65 200	5 300	6 000	3.35	7.40	83	3.248
2314 EC	70	2.7559	150	5.9055	51	2.0079	315 000	70 800	325 000	73 100	4 800	5 600	4.05	8.90	89	3.504
2315 EC	75	2.9528	160	6.2992	55	2.1654	380 000	85 400	400 000	89 900	4 500	5 300	5.00	11.00	95	3.740
2316 EC	80	3.1496	170	6.6929	58	2.2835	415 000	93 300	440 000	98 900	4 300	5 000	6.00	13.20	101	3.976
2317 EC	85	3.3465	180	7.0866	60	2.3622	455 000	102 300	490 000	110 200	4 000	4 800	7.00	15.40	108	4.252
2318 EC	90	3.5433	190	7.4803	64	2.5197	500 000	112 400	540 000	121 400	3 800	4 500	8.15	18.00	114	4.469
2319 EC	95	3.7402	200	7.8740	67	2.6378	530 000	119 100	585 000	131 500	3 600	4 300	10.70	23.60	122	4.783
2320 EC	100	3.9370	215	8.4646	73	2.8740	670 000	150 600	735 000	165 200	3 200	3 800	13.20	29.10	128	5.020
2322 EC	110	4.3307	240	9.4488	80	3.1496	780 000	175 300	900 000	202 300	3 000	3 400	18.90	41.70	143	5.630
2324 EC	120	4.7244	260	10.2362	86	3.3858	915 000	205 700	1 040 000	233 800	2 800	3 200	24.30	53.60	154	6.063
2326 ECMA	130	5.1181	280	11.0236	93	3.6614	1 060 000	238 300	1 250 000	281 000	2 400	3 800	31.00	68.30	167	6.575
2328 ECMA	140	5.5118	300	11.8110	102	4.0157	1 200 000	269 800	1 430 000	321 500	2 400	3 600	37.50	82.70	180	7.087
2330 EC	150	5.9055	320	12.5984	108	4.2520	1 370 000	308 000	1 630 000	366 400	2 200	3 400	45.50	100.30	193	7.598
2332 ECMA	160	6.2992	340	13.3858	114	4.4882	1 250 000	281 000	1 730 000	388 900	2 000	3 200	53.50	117.90	204	8.031
2334 ECMA	170	6.6929	360	14.1732	120	4.7244	1 450 000	326 000	2 040 000	458 600	1 700	3 000	63.00	138.90	220	8.661
2336 ECMA	180	7.0866	380	14.9606	126	4.9606	1 570 000	352 900	2 280 000	512 500	1 600	2 800	73.00	160.90	232	9.134
2338 ECMA	190	7.4803	400	15.7480	132	5.1969	1 830 000	411 400	2 550 000	573 200	1 500	2 600	82.50	181.90	240	9.449
2340 ECMA	200	7.8740	420	16.5354	138	5.4331	1 980 000	445 100	2 800 000	629 400	1 400	2 400	97.00	213.80	247	9.724
2340 ECMA	200	7.8740	420	16.5354	138	5.4331	1 980 000	445 100	2 800 000	629 400	1 400	2 400	97.00	213.80	247	9.724
2344 ECMA	220	8.6614	460	18.1102	145	5.7087	2 380 000	535 000	3 450 000	775 600	1 300	2 200	120.00	264.60	275	10.827
2344 ECMP	220	8.6614	460	18.1102	145	5.7087	2 380 000	535 000	3 450 000	775 600	1 300	2 800	120.00	264.60	275	10.827
2348 ECMA	240	9.4488	500	19.6850	155	6.1024	2 600 000	584 500	3 650 000	820 500	1 200	2 000	155.00	341.70	310	12.205
2356 MA	280	11.0236	580	22.8346	175	6.8898	2 700 000	607 000	4 300 000	966 600	1 000	1 700	230.00	507.10	362	14.252

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Single row
Standard
Series: 406 — 424
Size: 30 mm — 120 mm
1.1811 in — 4.7244 in

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Under roller F	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
406	30	1.1811	90	3.5433	23	0.9055	60 500	13 600	53 000	11 900	9 000	11 000	0.77	1.70	45	1.772
407	35	1.3780	100	3.9370	25	0.9843	76 500	17 200	69 500	15 600	8 000	9 500	1.05	2.30	53	2.087
408	40	1.5748	110	4.3307	27	1.0630	96 800	21 800	90 000	20 200	7 000	11 000	1.40	3.10	58	2.283
409	45	1.7717	120	4.7244	29	1.1417	106 000	23 800	102 000	22 900	6 700	7 500	1.70	3.70	65	2.539
410	50	1.9685	130	5.1181	31	1.2205	130 000	29 200	127 000	28 500	6 000	7 000	2.05	4.50	71	2.787
411	55	2.1654	140	5.5118	33	1.2992	142 000	31 900	140 000	31 500	5 600	6 300	2.55	5.60	77	3.039
412	60	2.3622	150	5.9055	35	1.3780	168 000	37 800	173 000	38 900	5 000	6 000	3.10	6.80	83	3.268
413	65	2.5591	160	6.2992	37	1.4567	183 000	41 100	190 000	42 700	4 800	5 600	3.95	8.70	89	3.516
414	70	2.7559	180	7.0866	42	1.6535	229 000	51 500	240 000	54 000	4 300	5 000	5.35	11.80	100	3.937
415	75	2.9528	190	7.4803	45	1.7717	264 000	59 300	280 000	62 900	4 000	4 800	6.90	15.20	105	4.114
416	80	3.1496	200	7.8740	48	1.8898	303 000	68 100	320 000	71 900	3 800	4 500	8.05	17.70	110	4.331
417	85	3.3465	210	8.2677	52	2.0472	319 000	71 700	335 000	75 300	3 600	4 300	9.70	21.40	113	4.449
418	90	3.5433	225	8.8583	54	2.1260	380 000	85 400	415 000	93 300	3 400	4 000	11.50	25.40	124	4.862
419	95	3.7402	240	9.4488	55	2.1654	413 000	92 800	455 000	102 300	3 200	3 600	13.50	29.80	134	5.256
420	100	3.9370	250	9.8425	58	2.2835	429 000	96 400	475 000	106 800	3 000	3 600	14.00	30.90	139	5.472
421	105	4.1339	260	10.2362	60	2.3622	501 000	112 600	570 000	128 100	2 800	3 400	19.00	41.90	145	5.689
422	110	4.3307	280	11.0236	65	2.5591	532 000	119 600	585 000	131 500	2 600	3 200	24.00	52.90	155	6.102
424	120	4.7244	310	12.2047	72	2.8346	644 000	144 800	735 000	165 200	2 400	2 800	30.40	67.00	170	6.693

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Cylindrical roller bearings

Full complement

Single row

Standard

Series: NCF 1856 V — NCF 18/1000 V

Size: 280 mm — 1000 mm

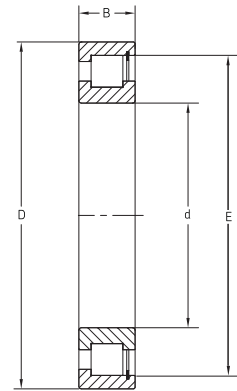
11.0236 in — 39.3701 in

Standard

Series: NCF 2224 V

Size: 120 mm

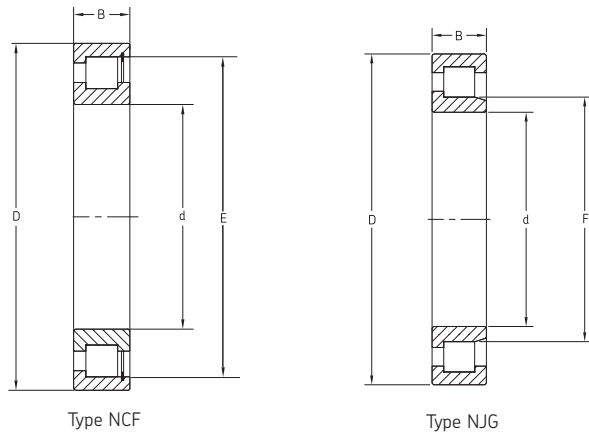
4.7244 in



Type NCF

Designation	Bearings with surface treated rollers	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter	
		Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Over roller E	
		mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
NCF 1856 V	NCF 1856 CV	280	11.0236	350	13.7795	33	1.2992	341 000	76 700	695 000	156 200	750	950	7.10	15.70	334	13.150
NCF 1864 V	NCF 1864 CV	320	12.5984	400	15.7480	38	1.4961	440 000	98 900	900 000	202 300	630	800	10.50	23.10	383	15.079
NCF 1868 V	NCF 1868 CV	340	13.3858	420	16.5354	38	1.4961	446 000	100 300	950 000	213 600	600	750	11.00	24.30	403	15.866
NCF 1876 V	NCF 1876 CV	380	14.9606	480	18.8976	46	1.8110	627 000	140 900	1 290 000	290 000	530	670	19.50	43.00	458	18.031
NCF 1880 V	NCF 1880 CV	400	15.7480	500	19.6850	46	1.8110	627 000	140 900	1 340 000	301 200	500	630	20.50	45.20	475	18.701
NCF 1884 V	NCF 1884 CV	420	16.5354	520	20.4724	46	1.8110	660 000	148 400	1 430 000	321 500	480	600	21.00	46.30	499	19.646
NCF 1888 V	NCF 1888 CV	440	17.3228	540	21.2598	46	1.8110	671 000	150 800	1 460 000	328 200	450	560	22.00	48.50	516	20.315
NCF 1892 V	NCF 1892 CV	460	18.1102	580	22.8346	56	2.2047	913 000	205 200	1 960 000	440 600	430	530	34.00	75.00	553	21.772
NCF 1896 V	NCF 1896 CV	480	18.8976	600	23.6220	56	2.2047	935 000	210 200	2 040 000	458 600	400	500	35.50	78.30	574	22.579
NCF 18/500 V	NCF 18/500 CV	500	19.6850	620	24.4094	56	2.2047	952 000	214 000	2 120 000	476 600	380	480	36.50	80.50	594	23.386
NCF 18/530 V	NCF 18/530 CV	530	20.8661	650	25.5906	56	2.2047	990 000	222 600	2 240 000	503 600	360	450	38.50	84.90	625	24.587
NCF 18/560 V	NCF 18/560 CV	560	22.0472	680	26.7717	56	2.2047	1 020 000	229 300	2 360 000	530 500	340	430	40.50	89.30	655	25.787
NCF 18/600 V	NCF 18/600 CV	600	23.6220	730	28.7402	60	2.3622	1 050 000	236 000	2 550 000	573 200	320	400	51.50	113.50	696	27.402
NCF 18/630 V	NCF 18/630 CV	630	24.8031	780	30.7087	69	2.7165	1 250 000	281 000	2 900 000	651 900	300	360	72.50	159.80	739	29.094
NCF 18/670 V	NCF 18/670 CV	670	26.3780	820	32.2835	69	2.7165	1 300 000	292 200	3 150 000	708 100	280	340	76.50	168.70	783	30.827
NCF 18/710 V	NCF 18/710 CV	710	27.9528	870	34.2520	74	2.9134	1 540 000	346 200	3 750 000	843 000	260	320	92.50	203.90	831	32.717
NCF 18/750 V	—	750	29.5276	920	36.2205	78	3.0709	1 870 000	420 400	4 500 000	1 011 600	240	300	110.00	242.50	880	34.646
NCF 18/800 V	—	800	31.4961	980	38.5827	82	3.2283	1 940 000	436 100	4 800 000	1 079 000	220	280	130.00	286.60	936	36.850
NCF 18/850 V	—	850	33.4646	1 030	40.5512	82	3.2283	2 010 000	451 800	5 100 000	1 146 500	200	260	135.00	297.60	986	38.819
NCF 18/1000 V	—	1 000	39.3701	1 220	48.0315	100	3.9370	2 920 000	656 400	7 500 000	1 686 000	160	200	230.00	507.10	1 165	45.866
NCF 2224 V	NCF 2224 CV	120	4.7244	215	8.4646	58	2.2835	512 000	115 100	735 000	165 200	1 400	1 700	9.05	20.00	192	7.572

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Full complement
Single row
Standard
Series: NJG 2305 VH — NJG 2330 VH
Size: 25 mm — 150 mm
0.9843 in — 5.9055 in

Standard
Series: NCF 2888 V — NCF 28/710 V
Size: 440 mm — 710 mm
17.3228 in — 27.9528 in

Designation	Bearings with with surface treated rollers	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter	
		Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Over roller E	
		mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
NJG 2305 VH	—	25	0.9843	62	2.4409	24	0.9449	68 200	15 300	68 000	15 300	4 500	5 600	0.38	0.80	32	1.248
NJG 2307 VH	—	35	1.3780	80	3.1496	31	1.2205	108 000	24 300	114 000	25 600	3 400	4 300	0.75	1.70	45	1.764
NJG 2308 VH	—	40	1.5748	90	3.5433	33	1.2992	145 000	32 600	156 000	35 100	3 000	3 600	1.00	2.20	51	2.016
NJG 2309 VH	—	45	1.7717	100	3.9370	36	1.4173	172 000	38 700	196 000	44 100	2 800	3 400	1.45	3.20	56	2.209
NJG 2311 VH	—	55	2.1654	120	4.7244	43	1.6929	233 000	52 400	260 000	58 400	2 200	2 800	2.30	5.10	67	2.642
NJG 2313 VH	—	65	2.5591	140	5.5118	48	1.8898	303 000	68 100	360 000	80 900	1 900	2 400	3.55	7.80	81	3.177
NJG 2315 VH	NJG 2315 CVH	75	2.9528	160	6.2992	55	2.1654	396 000	89 000	480 000	107 900	1 600	2 000	5.35	11.80	91	3.591
NJG 2316 VH	NJG 2316 CVH	80	3.1496	170	6.6929	58	2.2835	457 000	102 700	570 000	128 100	1 500	1 900	6.40	14.10	98	3.870
NJG 2318 VH	NJG 2318 CVH	90	3.5433	190	7.4803	64	2.5197	528 000	118 700	670 000	150 600	1 400	1 800	8.75	19.30	109	4.283
NJG 2320 VH	NJG 2320 CVH	100	3.9370	215	8.4646	73	2.8740	704 000	158 300	900 000	202 300	1 200	1 500	13.00	28.70	123	4.835
NJG 2322 VH	NJG 2322 CVH	110	4.3307	240	9.4488	80	3.1496	858 000	192 900	1 060 000	238 300	1 100	1 300	17.50	38.60	134	5.287
NJG 2324 VH	NJG 2324 CVH	120	4.7244	260	10.2362	86	3.3858	952 000	214 000	1 250 000	281 000	1 000	1 200	22.50	49.60	147	5.803
NJG 2326 VH	NJG 2326 CVH	130	5.1181	280	11.0236	93	3.6614	1 080 000	242 800	1 430 000	321 500	950	1 200	28.00	61.70	158	6.217
NJG 2330 VH	NJG 2330 CVH	150	5.9055	320	12.5984	108	4.2520	1 450 000	326 000	1 930 000	433 900	800	1 000	42.50	93.70	183	7.185
NCF 2888 V	—	440	17.3228	540	21.2598	60	2.3622	1 060 000	238 300	2 700 000	607 000	450	560	29.00	63.90	516	20.315
NCF 2892 V	—	460	18.1102	580	22.8346	72	2.8346	1 300 000	292 200	3 050 000	685 600	430	530	44.00	97.00	553	21.772
NCF 28/670 V	—	670	26.3780	820	32.2835	88	3.4646	1 940 000	436 100	5 300 000	1 191 400	280	340	97.50	214.90	783	30.827
NCF 28/710 V	—	710	27.9528	870	34.2520	95	3.7402	2 330 000	523 800	6 300 000	1 416 200	260	320	115.00	253.50	831	32.717

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Cylindrical roller bearings

Full complement

Single row

Standard

Series: NCF 2888 V — NCF 28/710 V

Size: 440 mm — 710 mm

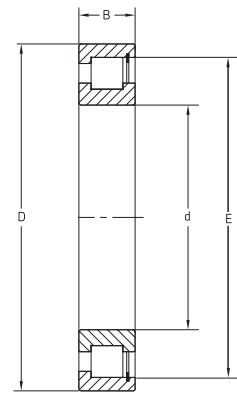
17.3228 in — 27.9528 in

Standard

Series: NCF 2912 V — NCF 2964 V

Size: 60 mm — 320 mm

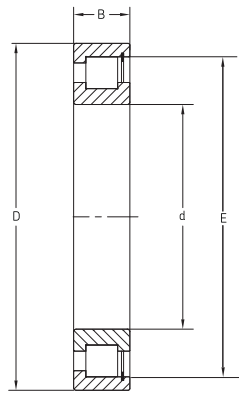
2.3622 in — 12.5984 in



Type NCF

Designation	Bearings with surface treated rollers	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter	
		Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Over roller E	
		mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
NCF 2888 V	—	440	17.3228	540	21.2598	60	2.3622	1 060 000	238 300	2 700 000	607 000	450	560	29.00	63.90	516	20.315
NCF 2892 V	—	460	18.1102	580	22.8346	72	2.8346	1 300 000	292 200	3 050 000	685 600	430	530	44.00	97.00	553	21.772
NCF 28/670 V	—	670	26.3780	820	32.2835	88	3.4646	1 940 000	436 100	5 300 000	1 191 400	280	340	97.50	214.90	783	30.827
NCF 28/710 V	—	710	27.9528	870	34.2520	95	3.7402	2 330 000	523 800	6 300 000	1 416 200	260	320	115.00	253.50	831	32.717
NCF 2912 V	—	60	2.3622	85	3.3465	16	0.6299	55 000	12 400	80 000	18 000	3 600	4 500	0.29	0.60	80	3.122
NCF 2914 V	NCF 2914 CV	70	2.7559	100	3.9370	19	0.7480	76 500	17 200	116 000	26 100	3 000	3 800	0.49	1.10	93	3.642
NCF 2916 V	NCF 2916 CV	80	3.1496	110	4.3307	19	0.7480	80 900	18 200	132 000	29 700	2 600	3 400	0.55	1.20	103	4.043
NCF 2918 V	NCF 2918 CV	90	3.5433	125	4.9213	22	0.8661	105 000	23 600	176 000	39 600	2 400	3 000	0.84	1.90	116	4.551
NCF 2920 V	NCF 2920 CV	100	3.9370	140	5.5118	24	0.9449	128 000	28 800	200 000	45 000	2 200	2 600	1.14	2.50	129	5.079
NCF 2922 V	NCF 2922 CV	110	4.3307	150	5.9055	24	0.9449	134 000	30 100	220 000	49 500	1 900	2 400	1.23	2.70	141	5.563
NCF 2924 V	NCF 2924 CV	120	4.7244	165	6.4961	27	1.0630	172 000	38 700	290 000	65 200	1 800	2 200	1.73	3.80	154	6.075
NCF 2926 V	NCF 2926 CV	130	5.1181	180	7.0866	30	1.1811	205 000	46 100	360 000	80 900	1 600	2 000	2.33	5.10	167	6.579
NCF 2928 V	NCF 2928 CV	140	5.5118	190	7.4803	30	1.1811	220 000	49 500	390 000	87 700	1 500	1 900	2.42	5.30	180	7.087
NCF 2930 V	NCF 2930 CV	150	5.9055	210	8.2677	36	1.4173	292 000	65 600	490 000	110 200	1 400	1 700	3.77	8.30	196	7.697
NCF 2932 V	NCF 2932 CV	160	6.2992	220	8.6614	36	1.4173	303 000	68 100	530 000	119 100	1 300	1 600	4.00	8.80	206	8.098
NCF 2934 V	NCF 2934 CV	170	6.6929	230	9.0551	36	1.4173	314 000	70 600	560 000	125 900	1 200	1 500	4.30	9.50	216	8.504
NCF 2936 V	NCF 2936 CV	180	7.0866	250	9.8425	42	1.6535	391 000	87 900	695 000	156 200	1 100	1 400	6.20	13.70	232	9.134
NCF 2938 V	NCF 2938 CV	190	7.4803	260	10.2362	42	1.6535	440 000	98 900	780 000	175 300	1 100	1 400	6.50	14.30	244	9.606
NCF 2940 V	NCF 2940 CV	200	7.8740	280	11.0236	48	1.8898	528 000	118 700	965 000	216 900	1 000	1 300	9.10	20.10	262	10.315
NCF 2944 V	NCF 2944 CV	220	8.6614	300	11.8110	48	1.8898	550 000	123 600	1 060 000	238 300	950	1 200	9.90	21.80	283	11.142
NCF 2948 V	NCF 2948 CV	240	9.4488	320	12.5984	48	1.8898	583 000	131 100	1 140 000	256 300	850	1 100	10.60	23.40	303	11.929
NCF 2952 V	NCF 2952 CV	260	10.2362	360	14.1732	60	2.3622	737 000	165 700	1 430 000	321 500	750	950	18.50	40.80	334	13.138
NCF 2956 V	NCF 2956 CV	280	11.0236	380	14.9606	60	2.3622	880 000	197 800	1 730 000	388 900	700	900	19.70	43.40	363	14.280
NCF 2960 V	NCF 2960 CV	300	11.8110	420	16.5354	72	2.8346	1 120 000	251 800	2 200 000	494 600	670	800	31.20	68.80	391	15.374
NCF 2964 V	NCF 2964 CV	320	12.5984	440	17.3228	72	2.8346	1 140 000	256 300	2 360 000	530 500	600	750	32.90	72.50	411	16.181

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Type NCF

Full complement
Single row
Standard
Series: NCF 2968 V — NCF 3080 V
Size: 340 mm — 400 mm
13.3858 in — 15.7480 in

Designation	Bearings with surface treated rollers	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter	
		Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Over roller E	
		mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
NCF 2968 V	NCF 2968 CV	340	13.3858	460	18.1102	72	2.8346	1 190 000	267 500	2 500 000	562 000	560	700	35.00	77.20	431	16.969
NCF 2972 V	NCF 2972 CV	360	14.1732	480	18.8976	72	2.8346	1 230 000	276 500	2 600 000	584 500	530	670	36.50	80.50	452	17.776
NCF 2976 V	NCF 2976 CV	380	14.9606	520	20.4724	82	3.2283	1 570 000	352 900	3 250 000	730 600	500	630	52.50	115.70	488	19.213
NCF 2980 V	NCF 2980 CV	400	15.7480	540	21.2598	82	3.2283	1 650 000	370 900	3 450 000	775 600	480	600	54.50	120.20	511	20.118
NCF 2984 V	NCF 2984 CV	420	16.5354	560	22.0472	82	3.2283	1 650 000	370 900	3 600 000	809 300	450	560	57.00	125.70	524	20.630
NCF 2988 V	NCF 2988 CV	440	17.3228	600	23.6220	95	3.7402	2 010 000	451 800	4 400 000	989 100	430	530	80.50	177.50	566	22.264
NCF 2996 V	NCF 2996 CV	480	18.8976	650	25.5906	100	3.9370	2 290 000	514 800	4 900 000	1 101 500	380	480	98.00	216.10	606	23.858
NCF 29/500 V	NCF 29/500 CV	500	19.6850	670	26.3780	100	3.9370	2 330 000	523 800	5 000 000	1 124 000	380	450	100.00	220.50	635	24.980
NCF 29/530 V	NCF 29/530 CV	530	20.8661	710	27.9528	106	4.1732	2 640 000	593 500	6 100 000	1 371 300	340	430	120.00	264.60	673	26.496
NCF 29/560 V	NCF 29/560 CV	560	22.0472	750	29.5276	112	4.4094	3 080 000	692 400	6 700 000	1 506 200	320	400	140.00	308.60	709	27.913
NCF 29/670 V	NCF 29/670 V	670	26.3780	900	35.4331	136	5.3543	3 910 000	879 000	9 000 000	2 023 200	260	320	245.00	540.10	846	33.307
NCF 3004 CV	NCF 3004 CV	20	0.7874	42	1.6535	16	0.6299	28 100	6 300	28 500	6 400	8 500	10 000	0.11	0.20	37	1.457
NCF 3006 CV	NCF 3006 CV	30	1.1811	55	2.1654	19	0.7480	39 600	8 900	44 000	9 900	6 000	7 500	0.20	0.40	50	1.961
NCF 3008 CV	NCF 3008 CV	40	1.5748	68	2.6772	21	0.8268	57 200	12 900	69 500	15 600	4 800	6 000	0.31	0.70	62	2.437
NCF 3011 CV	NCF 3011 CV	55	2.1654	90	3.5433	26	1.0236	105 000	23 600	140 000	31 500	3 400	4 300	0.64	1.40	84	3.295
NCF 3012 V	NCF 3012 CV	60	2.3622	95	3.7402	26	1.0236	106 000	23 800	146 000	32 800	3 400	4 000	0.69	1.50	87	3.421
NCF 3013 CV	NCF 3013 CV	65	2.5591	100	3.9370	26	1.0236	112 000	25 200	163 000	36 600	3 000	3 800	0.73	1.60	93	3.673
NCF 3014 V	NCF 3014 CV	70	2.7559	110	4.3307	30	1.1811	128 000	28 800	173 000	38 900	2 800	3 600	1.02	2.20	102	4.020
NCF 3016 V	NCF 3016 CV	80	3.1496	125	4.9213	34	1.3386	165 000	37 100	228 000	51 300	2 400	3 000	1.43	3.20	117	4.614
NCF 3018 V	NCF 3018 CV	90	3.5433	140	5.5118	37	1.4567	198 000	44 500	280 000	62 900	2 200	2 800	1.97	4.30	130	5.130
NCF 3020 V	NCF 3020 CV	100	3.9370	150	5.9055	37	1.4567	209 000	47 000	310 000	69 700	2 000	2 600	2.15	4.70	140	5.508
NCF 3024 V	NCF 3024 CV	120	4.7244	180	7.0866	46	1.8110	292 000	65 600	440 000	98 900	1 700	2 000	3.80	8.40	168	6.610
NCF 3030 V	NCF 3030 CV	150	5.9055	225	8.8583	56	2.2047	457 000	102 700	710 000	159 600	1 300	1 600	7.50	16.50	212	8.335
NCF 3038 V	NCF 3038 CV	190	7.4803	290	11.4173	75	2.9528	792 000	178 000	1 290 000	290 000	1 000	1 300	17.00	37.50	270	10.630
NCF 3064 V	NCF 3064 CV	320	12.5984	480	18.8976	121	4.7638	1 980 000	445 100	3 450 000	775 600	560	700	74.50	164.20	447	17.610
NCF 3068 V	NCF 3068 CV	340	13.3858	520	20.4724	133	5.2362	2 380 000	535 000	4 150 000	932 900	530	670	100.00	220.50	486	19.134
NCF 3072 V	NCF 3072 CV	360	14.1732	540	21.2598	134	5.2756	2 420 000	544 000	4 300 000	966 600	500	630	105.00	231.50	503	19.811
NCF 3080 V	NCF 3080 CV	400	15.7480	600	23.6220	148	5.8268	2 970 000	667 700	5 500 000	1 236 400	450	560	145.00	319.70	559	22.012

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Cylindrical roller bearings

Full complement

Double row

Standard

Series: NNC 4840 V — NNCF 4840 V

Size: 200 mm — 200 mm

7.8740 in — 7.8740 in

Standard

Series: NNCF 4918 V — NNCL 4972 V

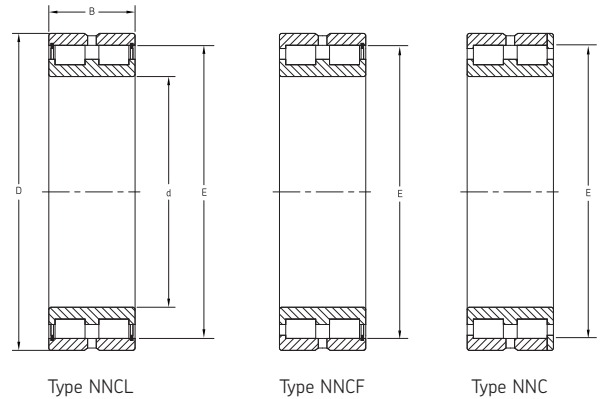
Size: 90 mm — 360 mm

3.5433 in — 14.1732 in

Standard

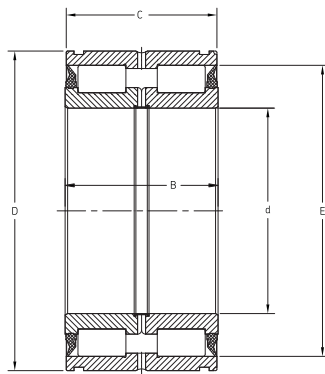
Series: NNCF 5024 V

Size: 120 mm (4.7244 in)



Designation	Bearings with surface treated rollers	Principal dimensions						Basic load ratings				Speed rating		Mass		Diameter	
		Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	Over roller E	
		mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
NNC 4840 V	NNC 4840 CV	200	7.8740	250	9.8425	50	1.9685	336 000	75 500	800 000	179 800	1 100	1 400	5.90	13.00	236	9.287
NNC 4832 V	NNC 4832 CV	160	6.2992	200	7.8740	40	1.5748	260 000	58 400	610 000	137 100	1 400	1 700	3.10	6.80	190	7.484
NNCF 4834 V	NNCF 4834 CV	170	6.6929	215	8.4646	45	1.7717	286 000	64 300	655 000	147 200	1 300	1 600	3.90	8.60	202	7.941
NNC 4834 V	NNC 4834 CV	170	6.6929	215	8.4646	45	1.7717	286 000	64 300	655 000	147 200	1 300	1 600	4.10	9.00	202	7.941
NNCF 4840 V	NNCF 4840 CV	200	7.8740	250	9.8425	50	1.9685	336 000	75 500	800 000	179 800	1 100	1 400	5.50	12.10	236	9.287
NNCF 4918 V	NNCF 4918 CV	90	3.5433	125	4.9213	35	1.3780	161 000	36 200	300 000	67 400	2 400	3 000	1.35	3.00	116	4.547
NNC 4918 V	NNC 4918 CV	90	3.5433	125	4.9213	35	1.3780	161 000	36 200	300 000	67 400	2 400	3 000	1.35	3.00	116	4.547
NNC 4922 V	NNC 4922 CV	110	4.3307	150	5.9055	40	1.5748	220 000	49 500	430 000	96 700	1 900	2 400	2.15	4.70	139	5.457
NNCL 4930 V	NNCL 4930 CV	150	5.9055	210	8.2677	60	2.3622	429 000	96 400	830 000	186 600	1 400	1 700	6.65	14.70	192	7.559
NNCL 4960 V	NNCL 4960 CV	300	11.811	420	16.5354	118	4.6457	1 680 000	377 700	3 750 000	843 000	670	800	53.00	116.80	390	15.362
NNCL 4964 V	NNCL 4964 CV	320	12.5984	440	17.3228	118	4.6457	1 760 000	395 600	4 050 000	910 400	600	750	56.00	123.50	409	16.102
NNCF 4972 V	NNCF 4972 CV	360	14.1732	480	18.8976	118	4.6457	1 830 000	411 400	4 500 000	1 011 600	530	670	62.10	136.90	446	17.559
NNCL 4972 V	NNCL 4972 CV	360	14.1732	480	18.8976	118	4.6457	1 830 000	411 400	4 500 000	1 011 600	530	670	60.80	134.00	446	17.559
NNCF 5024 V	NNCF 5024 CV	120	4.7244	180	7.0866	80	3.1496	539 000	121 200	880 000	197 800	1 700	2 000	6.77	14.90	168	6.614

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Type NNF

Full complement
 Double row
 Sealed
 Standard
 Series: NNF 5004 ADB-2LSV — NNF 5040 ADA-2LSV
 Size: 20 mm — 200 mm
 0.7874 in — 7.8740 in

Designation	Principal dimensions								Basic load ratings				Speed rating	Mass		Diameter	
	Bore d		Outside diameter D		Width B		C		Dynamic C		Static C ₀		Limiting speed r/min	kg	lb	Over roller E	
	mm	in	mm	in	mm	in	mm	in	N	lbf	N	lbf				mm	in
NNF 5004 ADB-2LSV	20	0.7874	42	1.6535	30	1.1811	29	1.1417	45 700	10 273	55 000	12 364	3 400	0.20	0.44	36	1.402
NNF 5005 ADB-2LSV	25	0.9843	47	1.8504	30	1.1811	29	1.1417	50 100	11 263	65 500	14 725	3 000	0.24	0.53	40	1.591
NNF 5006 ADB-2LSV	30	1.1811	55	2.1654	34	1.3386	33	1.2992	57 200	12 859	75 000	16 900	2 600	0.37	0.82	48	1.886
NNF 5007 ADB-2LSV	35	1.3780	62	2.4409	36	1.4173	35	1.3780	70 400	15 827	91 500	20 600	2 200	0.48	1.06	55	2.146
NNF 5008 ADB-2LSV	40	1.5748	68	2.6772	38	1.4961	37	1.4567	85 800	19 289	116 000	26 100	2 000	0.56	1.23	61	2.402
NNF 5009 ADB-2LSV	45	1.7717	75	2.9528	40	1.5748	39	1.5354	102 000	22 931	146 000	32 800	1 800	0.70	1.54	68	2.665
NNF 5010 ADB-2LSV	50	1.9685	80	3.1496	40	1.5748	39	1.5354	108 000	24 279	160 000	36 000	1 700	0.76	1.68	73	2.854
NNF 5011 ADB-2LSV	55	2.1654	90	3.5433	46	1.8110	45	1.7717	128 000	28 776	193 000	43 400	1 500	1.18	2.60	80	3.150
NNF 5012 ADB-2LSV	60	2.3622	95	3.7402	46	1.8110	45	1.7717	134 000	30 124	208 000	46 800	1 400	1.26	2.78	85	3.346
NNF 5013 ADB-2LSV	65	2.5591	100	3.9370	46	1.8110	45	1.7717	138 000	31 024	224 000	50 400	1 300	1.33	2.93	90	3.543
NNF 5014 ADB-2LSV	70	2.7559	110	4.3307	54	2.1260	53	2.0866	187 000	42 039	285 000	64 071	1 200	1.87	4.12	100	3.937
NNF 5015 ADB-2LSV	75	2.9528	115	4.5276	54	2.1260	53	2.0866	205 000	46 086	310 000	69 691	1 100	1.96	4.32	106	4.173
NNF 5016 ADB-2LSV	80	3.1496	125	4.9213	60	2.3622	59	2.3228	216 000	48 559	335 000	75 311	1 000	2.71	5.97	114	4.469
NNF 5017 ADB-2LSV	85	3.3465	130	5.1181	60	2.3622	59	2.3228	224 000	50 357	365 000	82 055	1 000	2.83	6.24	120	4.705
NNF 5018 ADB-2LSV	90	3.5433	140	5.5118	67	2.6378	66	2.5984	319 000	71 714	550 000	123 600	900	3.71	8.18	128	5.020
NNF 5019 ADB-2LSV	95	3.7402	145	5.7087	67	2.6378	66	2.5984	330 000	74 187	570 000	128 100	900	3.88	8.55	131	5.157
NNF 5020 ADB-2LSV	100	3.9370	150	5.9055	67	2.6378	66	2.5984	347 000	78 009	570 000	128 100	850	3.95	8.71	138	5.433
NNF 5022 ADA-2LSV	110	4.3307	170	6.6929	80	3.1496	79	3.1102	380 000	85 400	695 000	156 200	750	6.45	14.20	155	6.083
NNF 5024 ADA-2LSV	120	4.7244	180	7.0866	80	3.1496	79	3.1102	402 000	90 400	750 000	168 600	700	6.90	15.20	164	6.457
NNF 5026 ADA-2LSV	130	5.1181	200	7.8740	95	3.7402	94	3.7008	572 000	128 600	1 040 000	233 800	630	10.50	23.10	184	7.224
NNF 5028 ADA-2LSV	140	5.5118	210	8.2677	95	3.7402	94	3.7008	594 000	133 500	1 120 000	251 800	600	11.00	24.30	196	7.697
NNF 5030 ADA-2LSV	150	5.9055	225	8.8583	100	3.9370	99	3.8976	693 000	155 800	1 290 000	290 000	560	13.50	29.80	209	8.236
NNF 5032 ADA-2LSV	160	6.2992	240	9.4488	109	4.2913	108	4.2520	721 000	162 100	1 400 000	314 700	500	16.50	36.40	223	8.764
NNF 5034 ADA-2LSV	170	6.6929	260	10.2362	122	4.8031	121	4.7638	935 000	210 200	1 800 000	404 600	480	22.50	49.60	239	9.409
NNF 5036 ADA-2LSV	180	7.0866	280	11.0236	136	5.3543	135	5.3150	1 080 000	242 800	2 120 000	476 600	450	30.00	66.10	259	10.197
NNF 5038 ADA-2LSV	190	7.4803	290	11.4173	136	5.3543	135	5.3150	1 100 000	247 300	2 200 000	494 600	430	31.50	69.40	267	10.524
NNF 5040 ADA-2LSV	200	7.8740	310	12.2047	150	5.9055	149	5.8661	1 340 000	301 200	2 900 000	651 900	400	42.00	92.60	284	11.181

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
 Consult SKF USA Inc. prior to design change or order placement.

Notes



Spherical roller bearings

ECB 22240 CCK JA / C3 W33

1

2 3

4

5

6

1. Prefix:

- ECB** Air melt carburized steel, inner ring only
- BS2** Two row spherical roller bearing, special dimensions

2. Internal design:

- CA** Integral side flanges, inner ring guided one-piece machined brass cage
- CAC** Same as CA designed spherical roller bearing with improved roller guidance
- CAFA** Bearing with symmetrical rollers, retaining flanges on the inner ring. Guide ring centered on the inner ring, one-piece machined steel cage of the double pronged type centered in the outer ring
- CAMA** As CAFA, but with a machined brass double pronged cage
- CC** Flangeless inners, symmetrical rollers, floating guide ring, pressed steel cage
- E** Improved internal design, W33 feature is standard

3. Bore type:

- Cylindrical bore
- K** Bearing with 1 to 12 tapered bore
- K30** Bearing with 1 to 30 tapered bore

4. Cage designs / seals:

- J** Pressed steel cage
- JA** Hardened steel cage, ring guided
- M2** Machined brass roller guided cage, no guide ring
- MA** Machine brass cage, ring guided
- 2CS** Sheet steel reinforced contact seal of acrylonitrile butadiene rubber (NBR) on both sides of the bearing. Annular groove and three lubrication holes in the outer ring covered with a polymer band. Lubricated with a medium temperature grease.
- 2CS2** Sheet steel reinforced contact seal of fluoro rubber (FPM) on both sides of the bearing. Annular groove and three lubrication holes in the outer ring; covered with a polymer band. Lubricated with a high temperature grease.
- 2CS5** Sheet steel reinforced contact seal of hydrogenated acrylonitrile butadiene (HNBR) on both sides of the bearing. Otherwise same as 2CS2.
- F** Machine steel cage, ring guided
- Y** Pressed brass cage, ring guided

5. Clearance / tolerance:

- C1** Clearance < C2
- C2** Clearance < Normal
- (C0)*** Normal clearance
- C3** Clearance > Normal
- C4** Clearance > C3
- C08** RBEC 5 running accuracy, inner and outer rings

6. Features:

- W** Without relubrication feature (W33) on E style bearings only
- W4** High point of eccentricity marked on inner ring or sleeve
- W22** Special reduced outside diameter tolerance for outer ring
- W26** Six lubrication holes in inner ring
- W31** Bearing inspected to special quality requirement
- W33** Three oil holes and circumferential groove in outside diameter
- W33X** Lubrication groove and six holes in outer ring
- W502** Combination of W22 & W33
- W507** Combination of W4, W31 & W33
- W509** Combination of W26, W31 & W33
- HA1** Case hardened outer and inner rings
- HA3** Case hardened inner rings (equal to ECB)
- VA405** Vibrating screen specification
- VA751-VA759** Printing/coater roller specification
- VT143** SKF grease LGEP2 supplied in sealed spherical roller bearings

*Not marked on bearing or package

Technical features

Boundary dimensions	In accordance with ISO 15-1998	
Tolerances	SKF spherical roller bearings are manufactured as Standard to Normal (RBEC 1, ISO P7) tolerances. SKF Explorer bearings up to 315 mm bore diameter are produced to higher precision than Normal tolerances. The width tolerance is considerably tighter*. The running accuracy is to tolerance class P5 as Standard. For larger bearings P5 tolerances are also available with the suffix C08 or closer tolerances are available with suffix VQ424. Vibratory bearings are manufactured to bore P6 and O.D. P5.	
Heat stabilization	392° F (200° C)	
Misalignment	Series 21300 - 1 degree Series 22300 - 2 degrees Series 23100 - 1.5 degrees Series 23900 - 1.5 degrees Series 24100 - 2.5 degrees	Series 22200 - 1.5 degrees Series 23000 - 1.5 degrees Series 23200 - 2.5 degrees Series 24000 - 2 degrees
Cage material		
Standard	Steel	
Optional	Machined brass (CA) larger bearings only	
Axial load – max	For adapter mounts $F_{ap} = 3 \times B \times d$ where B = bearing width (mm) F_{ap} = axial load in Newtons For cylindrical mounts contact SKF	
Seals	2CS – 2 nitrile seals with med. temp. grease 2CS2 – 2 vitron seals with high temp. grease 2CS5 – 2 nitrile seals with high temp. grease	

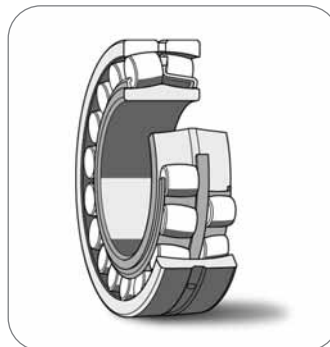
* See width tolerances in SKF General Catalog (publication #6000 EN)



Standard spherical roller bearing
(data tables on page 146)



Sealed spherical roller bearing
(data tables on page 163)



Shaker screen spherical roller bearing
(data tables on page 164)



Printing press spherical roller bearing
(data tables on page 166)

Introduction

Spherical roller bearings have two rows of rollers with a common sphered raceway in the outer ring. The two inner ring raceways are inclined at an angle to the bearing axis. The bearings are self-aligning and consequently insensitive to errors of alignment of the shaft relative to the housing, and to shaft bending. In addition to radial loads, the bearings can also accommodate axial loads acting in both directions.

SKF spherical roller bearings have a large number of long, symmetrical rollers of large diameter and consequently have very high load carrying capacity. Their internal design differs slightly depending on series and size, but has been continually improved over the years. The special form and optimized surface finish of the raceways provide that the bearings, especially those of the SKF Explorer, CC, CAC and E designs, have a minimum of friction. These bearings have lower operating temperatures or can accommodate heavier axial loads, or can be operated at higher speeds than conventional spherical roller bearings.

The E design constitutes the newer SKF standard design for spherical roller bearings. There have been many developments and improvements in design over the years and they have been put together to produce an even better bearing—the SKF Explorer. This represents a new class of performance. Explorer bearings give more performance for the same size: they can carry more load for longer, or they can carry the same load as before even more reliably for much, much longer.

SKF spherical roller bearings are available with cylindrical bore and tapered bore. The tapered bore of bearings in series 240 and 241 have a taper of 1:30 (designation suffix K30) whereas the taper of all other bearings is 1:12 (suffix K).

Basic design

SKF spherical roller bearings are made to one of the designs described in the following paragraphs, depending on size and series.

CC and EC designs (Figure 1a)

These bearings have symmetrical rollers, a flangeless inner ring and a pressed steel cage for each roller row. The guide ring is centered on the inner ring between the two rows of rollers. EC design bearings incorporate reinforced roller sets for increased load carrying capacity. The surface finish of the rollers and raceways of bearings of the CC design has been optimized to promote roller guidance and reduce friction.

CAC, ECAC, CA and ECA designs (Figure 1b)

These designs are used for the larger sizes of SKF spherical roller bearings. The rollers are symmetrical and the inner ring has retaining flanges. The guide ring is centered on the inner ring between the two rows of rollers and the cage is a one-piece, double pronged machined brass cage. The CAC and ECAC designs incorporate the surface finish refinements of the CC design and the ECAC and ECA designs have reinforced roller complements for increased load carrying capacity.

E design (Figure 1c)

These bearings have symmetrical rollers, a flangeless inner ring and a sintered guide ring between the two rows of rollers, which is positioned towards the outer ring and centered on the two pressed steel window-type cages used for each row of rollers.

The E design bearings incorporate all the advantages of the well-proven SKF CC bearings as well as additional refinements. The pressed steel cages have been newly developed and permit the inclusion of a greater number and/or larger diameter rollers of increased length,

imparting even higher load carrying capacity to the bearings.

The positioning of the guide ring towards the outer ring enables lubrication at the roller end guide ring contact to be improved. The guide ring contributes to the reduced friction in the bearing as it helps to guide the rollers in the unloaded zone and assists their entry into the loaded zone.

Product highlights

Self-aligning, robust design

Allows misalignment between shaft and housing without increasing friction or reducing bearing life. Also insensitive to misalignment caused by shaft or housing deflection due to heavy load.

Very high load carrying capacity

Optimum internal design provides maximum radial and axial load carrying capacity.

Reduced friction and minimum heat generation

Self-guiding roller—an SKF patent—means reduced friction and minimum heat generation.

Excellent performance at high temperatures

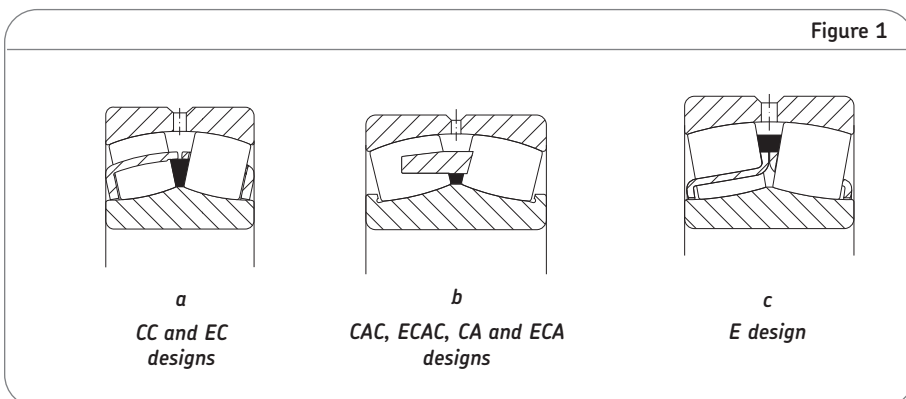
High-strength, dimensionally stable bearing rings minimize the risk of ring breakage and also allow good performance at high temperatures.

Seals integration

Under normal operating conditions, sealed SKF spherical roller bearings are greased for life and make external seals unnecessary—simplifying bearing arrangements and requiring minimum maintenance.

Special bearing series available for demanding applications

High precision printing press bearings and bearings for vibrating screen applications.



Introduction

SKF Explorer class bearings

Availability

The popular small and medium size spherical roller bearings in the series 213, 222, 223, 230, 231, 232 and a few sizes in the 239, 240 and 241 are available as SKF Explorer bearings. The range is being extended in these bearings series as well as in other series.

In the product tables, the SKF Explorer bearing designations are [printed in blue](#).

Product designations

The SKF Explorer bearings retain the designations of the earlier standard bearings, e.g. 22218 E or 23032 CC/W33. However, each bearing and its box is marked with the name SKF Explorer so that there can be no confusion.

Additional details on Explorer performance class bearings can be found on page 23.

Variations

Their robust design and high reliability make SKF standard and Explorer spherical roller bearings suitable for most applications. However, extraordinary demands call for bearings with extraordinary features. Some applications can be enhanced with the following:

- Sealed bearings
- Annular groove and lubrication holes
- Bearings for vibrating applications
- Printing press bearings

Sealed bearings

Sealed SKF spherical roller bearings (**Figure 2**) are cost effective solutions for highly contaminated environments. Sealed bearings are available in either the E or CC design. CC design bearings generally have the same boundary dimensions as the open (unsealed) version. E design bearings may be slightly wider. (BS2 prefix)

There are two contact seals developed specially for self-aligning bearings: one seal (2CS) is for normal temperatures -22° to $+230^{\circ}$ F (-30° to $+110^{\circ}$ C) and the other (2CS2) for operating temperatures between -22° to $+302^{\circ}$ F (-30° to $+150^{\circ}$ C). Both variants efficiently prevent contaminants from penetrating to the rolling contact area. This is true not only in operation, but also before and during mounting.

Two high-quality greases are also used: SKF grease LGEP 2 for normal temperatures and a special high-temperature grease to match the high-temperature seals. In the bearing tables, all bearings which are available in a sealed version are listed on page 163.

SKF sealed spherical roller bearings permit misalignments of up to 0.5° of the inner ring with respect to the outer ring in applications where the inner ring rotates. Under many operating conditions, sealed spherical roller bearings may not require relubrication. However, where loads are heavy or the bearings operate at high speeds, or at temperatures above 158° F ($+70^{\circ}$ C), they should be relubricated. This may be achieved via the annular groove and lubrication holes in the outer ring. Details regarding sealed spherical roller bearings can be supplied on request.

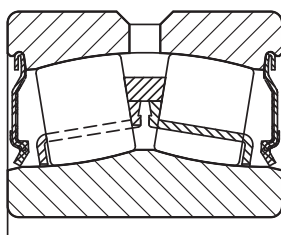
Warning:

SKF sealed roller bearings that are fitted with fluoro rubber (elastomer) seals (2CS2) can cause serious bodily injury if used improperly. The seals are suitable for operation up to 392° F (200° C). A fluoroelastomer base will resist ignition under any conditions outside special furnace condition, but if exposure to heat (due to fire or any other conditions) is extreme, e.g. over 572° F (300° C) for more than a brief time, degradation will occur. Fluoro rubber emits dangerous fumes at temperatures of 572° F (300° C) and above. This may occur if the seals are subjected to extreme heat during dismounting, for example. Once it has been overheated, fluoro rubber will remain dangerous to handle, even when it has cooled down. This degraded product is a major health and safety danger due to the evolution of hydrofluoric acid (HF). It is necessary to handle overheated fluoro rubber seals carefully: always observe safety instructions and wear goggles and protective gloves. Under no circumstances should material (hot or cold) be allowed to contact skin. If hands or eyes have come into contact with the material or fumes, they should be washed or rinsed in plenty of water. A doctor should always be consulted, especially if the fumes have been inhaled.

Decontamination can be carried out using limewater (calcium hydroxide solution); use of P.V.C. gloves is essential. After neutralization, the degraded seal can be disposed of in a similar manner to an un-degraded one.

The user is responsible for the correct handling of the seals during bearing life and for the proper disposal of used seals. Seals of fluoro rubber and bearings incorporating them are not dangerous to handle provided they have never been overheated.

Figure 2



Sealed bearing

Annular groove and lubrication holes (W33)

To facilitate efficient bearing lubrication, all SKF spherical roller bearings are provided with an annular groove and three lubrication holes in the outer ring as standard except those of series 213 CC, and CC design bearings having an outside diameter smaller than 150 or 180 mm (depending on series).

Designation suffix W33 is used to identify this feature on bearings of the CC, C, EC, ECC, CAC, ECAC, CA and ECA designs. The suffix is not used with the E design bearings as the lubrication groove and three holes feature is an integral part of the new standard E design. If E design bearings are required without this feature, then suffix W must be added to the bearing designation; for example, 22312 EW or 22312 EKW.

Bearings for vibrating applications

Continuing research into the operating characteristics of roller bearings in extreme environments, such as those encountered by screen bearings, has been an ongoing and integral part of the SKF search to optimize the value received by our customers.

Laboratory and field testing over prolonged periods have proven the durability we have sought to engineer into these bearings. Series 4523 and 4533 CACM2 as well as Series 223 / 233 and VA405 / VA406 screen bearings are the proven result of years of intensive and innovative applications research.

Series 22300 / VA405 bearings with special clearance are modified to cope with shaft deflection encountered in vibrating applications. They are characterized by a hardened floating guide ring centered in the outer ring which guides the highly wear resistant, surface hardened window-type steel cages. To prevent fretting corrosion at the non-locating bearing position, a special version with PTFE-coated cylindrical bore is available (VA406). Contact SKF Applications Engineering for further details.

Printing press bearings

Preloaded spherical roller bearings have been made in many sizes for use on various cylinders in printing presses. These bearings, in addition to being extensively used by the printing industry, are also used on embossing, coating and slitting machines.

Special design features, which have contributed to their outstanding performance, are as followed:

- Highest precision O.D. tolerance maintains a controlled housing fit
- Torque tested bearings are "run in" at the factory
- Interchangeability within one size against a properly made spacer resulting in the desired preload
- Special precision roller grouping.
- Special inner ring runout closer than normal
- High point of eccentricity (both magnitude and location) marked on inner ring
- All bearings are marked with a serial number and the individual bearing drive up required to achieve a specific internal preload
- Special unmounted radial internal clearance

Accessories for optimum performance

Any system is only as strong as its weakest member. Therefore, SKF offers not only a wide range of spherical roller bearings, but also a full line of quality bearing accessories to go with them.

Adapter and withdrawal sleeves

Adapter and withdrawal sleeves are used to locate bearings with a tapered bore on cylindrical or shouldered shafts. They facilitate bearing mounting and dismantling and in many cases simplify bearing arrangement design. Consequently, several series of quality sleeves are included in the SKF product range. More detailed information on the sleeves can be found in the Accessories Section of the "Split Pillow Block – Inch" and "Split Pillow Block – Metric" chapters in this catalog.

Lock nuts

To lock bearings in position on a shaft, SKF supplies a variety of lock or shaft nuts. Lock nuts N, KM(L) and HM use a locking washer or a locking clip to engage a groove on the shaft. KMF, KMK, KMT and KMTA locknuts are locked on the shaft with either grub screws or locking pins.

Bearing housings

Bearing housings must be suited to the demands placed on the bearings that they house, e.g. load, accuracy, type of lubrication and lubricant, sealing, etc. Therefore, SKF offers a comprehensive range of high-quality standard and special housings. These, together with the appropriate SKF spherical roller bearings, form economic and interchangeable bearing units, which meet all the performance demands of a bearing application.

Introduction

Special solutions

SKF supplies different types of spherical roller bearings in addition to those shown in this catalog, including:

- Spherical roller bearings for heavy engineering applications
- Split spherical roller bearings
- Triple ring spherical roller bearings
- Rolling mill bearings

Details on these special solution products are available in other SKF publications, which can be supplied upon request.

Internal clearance

Internal radial clearance

SKF spherical roller bearings are manufactured as standard with Normal radial internal clearance. Nearly all the bearings are also available with the larger C3 clearance and some can be supplied with the even larger C4 clearance. Some sizes can be delivered with C2 clearance which is smaller than Normal. The availability of bearings with radial internal clearances other than Normal (including C5) should be checked before design change or order placement.

The limits for the various clearances can be found in **Table 1**, for cylindrical bores and **Table 2**, for tapered (K) bores and are in accordance with ISO 5753-1991 (ABMA standard 20), where $d \leq 1,000$ mm (39.3701"). They are valid for zero measuring load and before mounting.

Masses

The masses given in the bearing tables are for bearings with cylindrical bore; the masses of bearings with tapered bore are somewhat less. For a specific value, contact SKF Applications Engineering.

Table 1

Radial internal clearance of spherical roller bearings with cylindrical bore

Bore diameter d		Radial internal clearance																					
		C2				Normal				C3				C4				C5					
over	incl.	over	incl.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
mm		in		µm		in		µm		in		µm		in		µm		in		µm		in	
18	24	0.7087	0.9449	10	20	0.0004	0.0008	20	35	0.0008	0.0014	35	45	0.0014	0.0018	45	60	0.0018	0.0024	60	75	0.0024	0.0030
24	30	0.9449	1.1811	15	25	0.0006	0.0010	25	40	0.0010	0.0016	40	55	0.0016	0.0022	55	75	0.0022	0.0030	75	95	0.0030	0.0037
30	40	1.1811	1.5748	15	30	0.0006	0.0012	30	45	0.0012	0.0018	45	60	0.0018	0.0024	60	80	0.0024	0.0031	80	100	0.0031	0.0039
40	50	1.5748	1.9685	20	35	0.0008	0.0014	35	55	0.0014	0.0022	55	75	0.0022	0.0030	75	100	0.0030	0.0039	100	125	0.0039	0.0049
50	65	1.9685	2.5591	20	40	0.0008	0.0016	40	65	0.0016	0.0026	65	90	0.0026	0.0035	90	120	0.0035	0.0047	120	150	0.0047	0.0059
65	80	2.5591	3.1496	30	50	0.0012	0.0020	50	80	0.0020	0.0031	80	110	0.0031	0.0043	110	145	0.0043	0.0057	145	180	0.0057	0.0071
80	100	3.1496	3.9370	35	60	0.0014	0.0024	60	100	0.0024	0.0039	100	135	0.0039	0.0053	135	180	0.0053	0.0071	180	225	0.0071	0.0089
100	120	3.9370	4.7244	40	75	0.0016	0.0030	75	120	0.0030	0.0047	120	160	0.0047	0.0063	160	210	0.0063	0.0083	210	260	0.0083	0.0102
120	140	4.7244	5.5118	50	95	0.0020	0.0037	95	145	0.0037	0.0057	145	190	0.0057	0.0075	190	240	0.0075	0.0094	240	300	0.0094	0.0118
140	160	5.5118	6.2992	60	110	0.0024	0.0043	110	170	0.0043	0.0067	170	220	0.0067	0.0087	220	280	0.0087	0.0110	280	350	0.0110	0.0138
160	180	6.2992	7.0866	65	120	0.0026	0.0047	120	180	0.0047	0.0071	180	240	0.0071	0.0094	240	310	0.0094	0.0122	310	390	0.0122	0.0154
180	200	7.0866	7.8740	70	130	0.0028	0.0051	130	200	0.0051	0.0079	200	260	0.0079	0.0102	260	340	0.0102	0.0134	340	430	0.0134	0.0169
200	225	7.8740	8.8583	80	140	0.0031	0.0055	140	220	0.0055	0.0087	220	290	0.0087	0.0114	290	380	0.0114	0.0150	380	470	0.0150	0.0185
225	250	8.8583	9.8425	90	150	0.0035	0.0059	150	240	0.0059	0.0094	240	320	0.0094	0.0126	320	420	0.0126	0.0165	420	520	0.0165	0.0205
250	280	9.8425	11.0236	100	170	0.0039	0.0067	170	260	0.0067	0.0102	260	350	0.0102	0.0138	350	460	0.0138	0.0181	460	570	0.0181	0.0224
280	315	11.0236	12.4016	110	190	0.0043	0.0075	190	280	0.0075	0.0110	280	370	0.0110	0.0146	370	500	0.0146	0.0197	500	630	0.0197	0.0248
315	355	12.4016	13.9764	120	200	0.0047	0.0079	200	310	0.0079	0.0122	310	410	0.0122	0.0161	410	550	0.0161	0.0217	550	690	0.0217	0.0272
355	400	13.9764	15.7480	130	220	0.0051	0.0087	220	340	0.0087	0.0134	340	450	0.0134	0.0177	450	600	0.0177	0.0236	600	750	0.0236	0.0295
400	450	15.7480	17.7165	140	240	0.0055	0.0094	240	370	0.0094	0.0146	370	500	0.0146	0.0197	500	660	0.0197	0.0260	660	820	0.0260	0.0323
450	500	17.7165	19.6850	140	260	0.0055	0.0102	260	410	0.0102	0.0161	410	550	0.0161	0.0217	550	720	0.0217	0.0283	720	900	0.0283	0.0354
500	560	19.6850	22.0472	150	280	0.0059	0.0110	280	440	0.0110	0.0173	440	600	0.0173	0.0236	600	780	0.0236	0.0307	780	1000	0.0307	0.0394
560	630	22.0472	24.8031	170	310	0.0067	0.0122	310	480	0.0122	0.0189	480	650	0.0189	0.0256	650	850	0.0256	0.0335	850	1100	0.0335	0.0433
630	710	24.8031	27.9528	190	350	0.0075	0.0138	350	530	0.0138	0.0209	530	700	0.0209	0.0276	700	920	0.0276	0.0362	920	1190	0.0362	0.0469
710	800	27.9528	31.4961	210	390	0.0083	0.0154	390	580	0.0154	0.0228	580	770	0.0228	0.0303	770	1010	0.0303	0.0398	1010	1300	0.0398	0.0512
800	900	31.4961	35.4331	230	430	0.0091	0.0169	430	650	0.0169	0.0256	650	860	0.0256	0.0339	860	1120	0.0339	0.0441	1120	1440	0.0441	0.0567
900	1000	35.4331	39.3701	260	480	0.0102	0.0189	480	710	0.0189	0.0280	710	930	0.0280	0.0366	930	1220	0.0366	0.0480	1220	1570	0.0480	0.0618
1000	1120	39.3701	44.0945	290	530	0.0114	0.0209	530	780	0.0209	0.0307	780	1020	0.0307	0.0402	1020	1330	0.0402	0.0524	1330	1720	0.0524	0.0677
1120	1250	44.0945	49.2126	320	580	0.0126	0.0228	580	860	0.0228	0.0339	860	1120	0.0339	0.0441	1120	1460	0.0441	0.0575	1460	1870	0.0575	0.0736

Loads

Axial load carrying capacity of bearings mounted on adapter sleeves

If spherical roller bearings with adapter sleeves are mounted on smooth shafts with no fixed abutment, the magnitude of the axial load that can be supported is determined by the friction between the shaft and sleeve. Provided the bearings are mounted correctly, the permissible axial load can be calculated from:

$$F_{ap} = 3 B d$$

where

F_{ap} = maximum permissible axial load, N

B = bearing width, mm

d = bearing bore diameter, mm

Equivalent dynamic bearing load — standard spherical roller bearings

The equivalent dynamic bearing load for spherical roller bearings can be obtained from:

$$P = F_r + Y_1 F_a \text{ when } F_a / F_r \leq e$$

$$P = 0.67 F_r + Y_2 F_a \text{ when } F_a / F_r > e$$

where

P = equivalent dynamic bearing load, N

F_r = actual radial bearing load, N

F_a = actual axial bearing load, N

Y_1, Y_2 = axial load factors for the bearings

e = calculation factor

Appropriate values of the factors e, Y_1 and Y_2 will be found in the bearing tables for each individual bearing.

Equivalent dynamic bearing load — vibrating screen bearings

For the normal configuration of a shaft supported by a bearing at each end, the equivalent dynamic bearing load is mostly a function of the centrifugal force and is calculated from:

$$P = \frac{.5f_d WRn^2}{91,100} \text{ for N \& mm}$$

$$P = \frac{.5f_d WRn^2}{35,200} \text{ for lb \& in}$$

where

W = mass of eccentric part of shaft kg (lb mass)

R = eccentric radius, mm (in)

n = rev / m

f_d = vibrating application factor = 1.2

P = equivalent Load, N (lb force)

Table 2

Radial internal clearance of spherical roller bearings with tapered bore

Bore diameter d	Radial internal clearance																												
					C2				Normal				C3				C4				C5								
	over	incl.	over	incl.	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max			
mm		in		µm		in		µm		in		µm		in		µm		in		µm		in		µm		in			
24	30	0.9449	1.1811	20	30	0.0008	0.0012	30	40	0.0012	0.0016	40	55	0.0016	0.0022	55	75	0.0022	0.0030	-	-	-	-	-	-	-	-	-	-
30	40	1.1811	1.5748	25	35	0.0010	0.0014	35	50	0.0014	0.0020	50	65	0.0020	0.0026	65	85	0.0026	0.0033	85	105	0.0033	0.0041	100	130	0.0039	0.0051		
40	50	1.5748	1.9685	30	45	0.0012	0.0018	45	60	0.0018	0.0024	60	80	0.0024	0.0031	80	100	0.0031	0.0039										
50	65	1.9685	2.5591	40	55	0.0016	0.0022	55	75	0.0022	0.0030	75	95	0.0030	0.0037	95	120	0.0037	0.0047	120	160	0.0047	0.0063	150	200	0.0059	0.0079		
65	80	2.5591	3.1496	50	70	0.0020	0.0028	70	95	0.0028	0.0037	95	120	0.0037	0.0047	120	150	0.0047	0.0059	150	200	0.0059	0.0079						
80	100	3.1496	3.9370	55	80	0.0022	0.0031	80	110	0.0031	0.0043	110	140	0.0043	0.0055	140	180	0.0055	0.0071	180	230	0.0071	0.0091						
100	120	3.9370	4.7244	65	100	0.0026	0.0039	100	135	0.0039	0.0053	135	170	0.0053	0.0067	170	220	0.0067	0.0087	220	280	0.0087	0.0110						
120	140	4.7244	5.5118	80	120	0.0031	0.0047	120	160	0.0047	0.0063	160	200	0.0063	0.0079	200	260	0.0079	0.0102	260	330	0.0102	0.0130						
140	160	5.5118	6.2992	90	130	0.0035	0.0051	130	180	0.0051	0.0071	180	230	0.0071	0.0091	230	300	0.0091	0.0118	300	380	0.0118	0.0150						
160	180	6.2992	7.0866	100	140	0.0039	0.0055	140	200	0.0055	0.0079	200	260	0.0079	0.0102	260	340	0.0102	0.0134	340	430	0.0134	0.0169						
180	200	7.0866	7.8740	110	160	0.0043	0.0063	160	220	0.0063	0.0087	220	290	0.0087	0.0114	290	370	0.0114	0.0146	370	470	0.0146	0.0185						
200	225	7.8740	8.8583	120	180	0.0047	0.0071	180	250	0.0071	0.0098	250	320	0.0098	0.0126	320	410	0.0126	0.0161	410	520	0.0161	0.0205						
225	250	8.8583	9.8425	140	200	0.0055	0.0079	200	270	0.0079	0.0106	270	350	0.0106	0.0138	350	450	0.0138	0.0177	450	570	0.0177	0.0224						
250	280	9.8425	11.0236	150	220	0.0059	0.0087	220	300	0.0087	0.0118	300	390	0.0118	0.0154	390	490	0.0154	0.0193	490	620	0.0193	0.0244						
280	315	11.0236	12.4016	170	240	0.0067	0.0094	240	330	0.0094	0.0130	330	430	0.0130	0.0169	430	540	0.0169	0.0213	540	680	0.0213	0.0268						
315	355	12.4016	13.9764	190	270	0.0075	0.0106	270	360	0.0106	0.0142	360	470	0.0142	0.0185	470	590	0.0185	0.0232	590	740	0.0232	0.0291						
355	400	13.9764	15.7480	210	300	0.0083	0.0118	300	400	0.0118	0.0157	400	520	0.0157	0.0205	520	650	0.0205	0.0256	650	820	0.0256	0.0323						
400	450	15.7480	17.7165	230	330	0.0091	0.0130	330	440	0.0130	0.0173	440	570	0.0173	0.0224	570	720	0.0224	0.0283	720	910	0.0283	0.0358						
450	500	17.7165	19.6850	260	370	0.0102	0.0146	370	490	0.0146	0.0193	490	630	0.0193	0.0248	630	790	0.0248	0.0311	790	1000	0.0311	0.0394						
500	560	19.6850	22.0472	290	410	0.0114	0.0161	410	540	0.0161	0.0213	540	680	0.0213	0.0268	680	870	0.0268	0.0343	870	1100	0.0343	0.0433						
560	630	22.0472	24.8031	320	460	0.0126	0.0181	460	600	0.0181	0.0236	600	760	0.0236	0.0299	760	980	0.0299	0.0386	980	1230	0.0386	0.0484						
630	710	24.8031	27.9528	350	510	0.0138	0.0201	510	670	0.0201	0.0264	670	850	0.0264	0.0335	850	1090	0.0335	0.0429	1090	1360	0.0429	0.0535						
710	800	27.9528	31.4961	390	570	0.0154	0.0224	570	750	0.0224	0.0295	750	960	0.0295	0.0378	960	1220	0.0378	0.0480	1220	1500	0.0480	0.0591						
800	900	31.4961	35.4331	440	640	0.0173	0.0252	640	840	0.0252	0.0331	840	1070	0.0331	0.0421	1070	1370	0.0421	0.0539	1370	1690	0.0539	0.0665						
900	1000	35.4331	39.3701	490	710	0.0193	0.0280	710	930	0.0280	0.0366	930	1190	0.0366	0.0469	1190	1520	0.0469	0.0598	1520	1860	0.0598	0.0732						
1000	1120	39.3701	44.0945	530	770	0.0209	0.0303	770	1030	0.0303	0.0406	1030	1300	0.0406	0.0512	1300	1670	0.0512	0.0657	1670	2050	0.0657	0.0807						
1120	1250	44.0945	49.2126	570	830	0.0224	0.0327	830	1120	0.0327	0.0441	1120	1420	0.0441	0.0559	1420	1830	0.0559	0.0720	1830	2250	0.0720	0.0886						

Introduction

Minimum load

In order to provide satisfactory operation of all ball and roller bearings, they must always be subjected to a given minimum load. This is also true of spherical roller bearings, particularly if they run at high speeds where the inertia forces of the rollers and cage, and the friction in the lubricant can have a detrimental influence on the rolling conditions in the bearing and may cause damaging sliding movements to occur between the rollers and the raceways.

The requisite minimum radial load to be applied in such cases can be determined by using the SKF Interactive Engineering Catalog on the SKF website www.skf.com or by contacting SKF Applications Engineering. However, the weight of the components supported by the bearing, together with the external forces, often exceeds the requisite minimum load. If this is not the case, an additional radial load **must** be applied to the bearing, for example, by increasing belt tension or similar means.

Frequency vibration data

Frequency vibration data is available on the SKF website www.skf.com in the Interactive Engineering Catalog or by contacting SKF Applications Engineering.

Misalignment

The design of spherical roller bearings is such that they are inherently self-aligning, i.e. angular misalignment between the outer and inner rings can be accommodated without any effect on bearing performance. Under Normal loads and operating conditions ($C/P > 10$), and when misalignment is constant in position with respect to the outer ring, the guideline values for permissible misalignment given in **Table 3** apply. Whether these values can be fully exploited or not depends on the design of the bearing arrangement, the type of seals used, etc.

Additional sliding is caused in the bearing under certain operating conditions when the position of the misalignment is not constant with respect to the bearing outer ring, for example:

- Vibrating screens with rotating imbalance and therefore rotating deflection of the shaft (**Figure 3**), or
- Deflection-compensating rolls of paper machines where the stationary shaft is bent,

Therefore, with reference to bearing friction and associated heat generation, it is recommended that misalignment of the inner ring with respect to the outer ring should not exceed a few tenths of a degree.

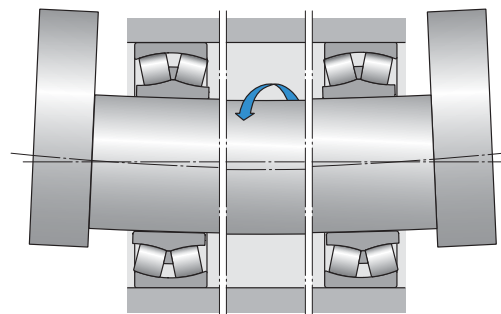
Sealed bearings can accommodate angular misalignments of the shaft with respect to the housing of up to approximately 0.5° . Provided the guideline value is not exceeded, there will be no detrimental effect on the efficiency of the seals.

Table 3

Permissible angular misalignment	
Bearing series sizes ¹⁾	Permissible angular misalignment
degrees	
Series 213	2.0
Series 222 sizes < 52 sizes ≥ 52	2.0 1.5
Series 223	3.0
Series 230 sizes < 56 sizes ≥ 56	2.0 2.5
Series 231 sizes < 60 sizes ≥ 60	2.0 3.0
Series 232 sizes < 52 sizes ≥ 52	2.5 3.5
Series 238	1.5
Series 239	1.5
Series 240	2.0
Series 241 sizes < 64 sizes ≥ 64	2.5 3.5
Series 248	1.5
Series 249	2.5

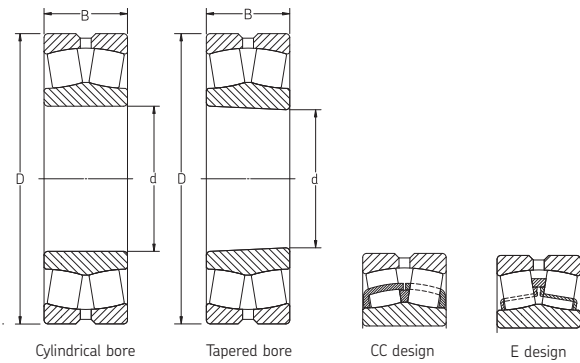
¹⁾ Last two figures of bearing designation

Figure 3



Spherical roller bearings

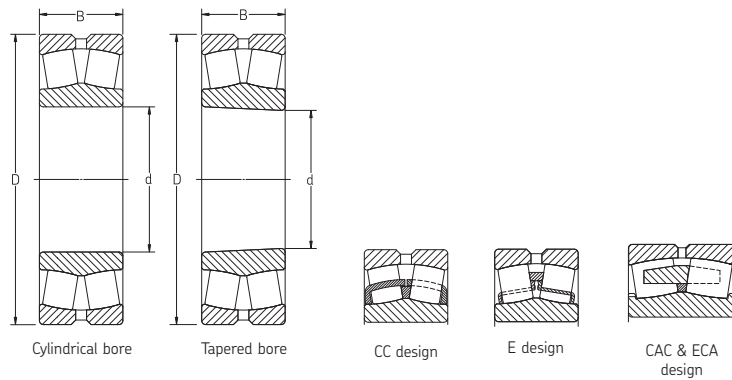
Standard and **SKF Explorer**
 Series: 21304 CC — 21320 E
 Size: 20 mm — 100 mm
 0.7874 in — 3.9370 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
21305 CC	25	0.9843	62	2.4409	17	0.6692	41 400	9 310	41 500	9 300	8 500	12 000	0.28	0.62	0.30	2.3	3.4
21306 CC	30	1.1811	72	2.8346	19	0.7480	55 200	12 400	61 000	13 700	7 500	10 000	0.41	0.90	0.27	2.5	3.7
21307 CC	35	1.3780	80	3.1500	21	0.8268	65 600	14 700	72 000	16 000	6 700	9 500	0.55	1.20	0.28	2.4	3.6
21308 E	40	1.5748	90	3.5433	23	0.9055	104 000	23 400	108 000	24 000	7 000	9 500	0.75	1.70	0.26	2.8	4.2
21309 E	45	1.7717	100	3.9370	25	0.9843	125 000	28 100	127 000	29 000	6 300	8 500	0.99	2.20	0.26	2.8	4.2
21310 E	50	1.9685	110	3.9370	27	1.0630	156 000	35 100	166 000	37 000	5 600	7 500	1.35	3.00	0.25	2.8	4.2
21311 E	55	2.1654	120	4.7244	29	1.1417	156 000	35 100	166 000	37 000	5 600	7 500	1.70	3.70	0.25	2.7	4.0
21312 E	60	2.3622	130	5.1181	31	1.2205	212 000	47 700	240 000	54 000	4 800	6 300	2.10	4.60	0.24	3.0	4.6
21313 E	65	2.5591	140	5.5118	33	1.2992	236 000	53 100	270 000	61 000	4 300	6 000	2.55	5.60	0.24	3.0	4.6
21314 E	70	2.7559	150	5.9055	35	1.3780	285 000	64 100	325 000	73 000	4 000	5 600	3.10	6.80	0.24	3.0	4.6
21315 E	75	2.9528	160	6.2992	37	1.4567	285 000	64 100	325 000	73 000	4 000	5 600	3.75	8.30	0.23	3.0	4.6
21316 E	80	3.1496	170	6.6929	39	1.5354	325 000	73 100	375 000	84 000	3 800	5 300	4.45	9.80	0.23	2.8	4.2
21317 E	85	3.3465	180	7.0866	41	1.6142	325 000	73 100	375 000	84 000	3 800	5 300	5.20	11.50	0.23	2.8	4.2
21318 E	90	3.5433	190	7.4803	43	1.6929	380 000	85 400	450 000	101 000	3 600	4 800	6.10	13.40	0.23	2.8	4.2
21319 E	95	3.7402	200	7.8740	45	1.7717	425 000	95 500	490 000	110 000	3 400	4 500	7.05	15.50	0.23	2.8	4.2
21320 E	100	3.9370	215	8.4646	47	1.8504	425 000	95 500	490 000	110 000	3 400	4 500	8.60	19.00	0.22	2.8	4.2

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Notes



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
22205 E	25	0.9843	52	2.0472	18	0.7087	49 000	11 000	44 000	10 000	13 000	17 000	0.26	0.60	0.35	1.9	2.9
22206 E	30	1.1811	62	2.4409	20	0.7874	64 000	14 400	60 000	13 000	10 000	14 000	0.29	0.60	0.33	2.2	3.3
22207 E	35	1.3780	72	2.8346	23	0.9055	86 500	19 400	85 000	19 000	9 000	12 000	0.45	1.00	0.31	2.2	3.3
22208 E	40	1.5748	80	3.1500	23	0.9055	96 500	21 700	90 000	20 000	8 000	11 000	0.53	1.20	0.28	2.4	3.6
22209 E	45	1.7717	85	3.3465	23	0.9055	102 000	22 900	98 000	22 000	7 500	10 000	0.58	1.30	0.26	2.6	3.9
22210 E	50	1.9685	90	3.5433	23	0.9055	104 000	23 400	108 000	24 000	7 000	9 500	0.63	1.40	0.24	2.8	4.2
22211 E	55	2.1654	100	3.9370	25	0.9843	125 000	28 100	127 000	29 000	6 300	8 500	0.84	1.90	0.24	2.8	4.2
22212 E	60	2.3622	110	4.3307	28	1.1024	156 000	35 100	166 000	37 000	5 600	7 500	1.15	2.50	0.24	2.8	4.2
22213 E	65	2.5591	120	4.7244	31	1.2205	193 000	43 400	216 000	49 000	5 000	7 000	1.55	3.40	0.25	2.8	4.2
22214 E	70	2.7559	125	4.9213	31	1.2205	208 000	46 800	228 000	51 000	5 000	6 700	1.55	3.40	0.23	2.9	4.4
22215 E	75	2.9528	130	5.1181	31	1.2205	212 000	47 700	240 000	54 000	4 800	6 300	1.70	3.70	0.22	3.0	4.6
22216 E	80	3.1496	140	5.5118	33	1.2992	236 000	53 100	270 000	61 000	4 300	6 000	2.10	4.60	0.22	3.0	4.6
22217 E	85	3.3465	150	5.9055	36.0	1.4173	245 000	55 100	275 000	62 000	3 800	5 600	2.55	5.60	0.22	3.0	4.6
22218 E	90	3.5433	160	6.2992	40.0	1.5748	290 000	65 200	340 000	76 000	3 400	5 300	3.25	7.20	0.23	2.9	4.4
22219 E	95	3.7402	170	6.6929	43.0	1.6929	320 000	71 900	375 000	84 000	3 200	5 000	4.00	8.80	0.24	2.8	4.2
22220 E	100	3.9370	180	7.0866	46.0	1.8110	360 000	80 900	415 000	93 000	3 000	4 500	4.90	10.80	0.24	2.8	4.2
22222 E	110	4.3307	200	7.8740	53.0	2.0866	465 000	104 500	560 000	126 000	2 800	4 300	7.00	15.40	0.25	2.7	4.0
22224 E	120	4.7244	215	8.4646	58.0	2.2835	540 000	121 400	670 000	151 000	2 600	3 800	8.86	19.50	0.25	2.7	4.0
22226 E	130	5.1181	230	9.0551	64	2.5197	630 000	141 600	800 000	180 000	2 400	3 600	11.00	24.30	0.26	2.6	3.9
22228 E	140	5.5118	250	9.8425	68	2.6772	710 000	159 600	900 000	202 000	2 400	3 200	14.00	30.90	0.26	2.6	3.9
22230 CC/W33	150	5.9055	270	10.6299	73	2.8740	850 000	192 000	1 080 000	243 000	2 200	3 000	18.00	39.70	0.26	2.6	3.9
22232 CC/W33	160	6.2992	290	11.4173	80	3.1496	1 000 000	225 000	1 290 000	290 000	2 000	2 800	22.50	49.60	0.26	2.6	3.9
22234 CC/W33	170	6.6929	310	12.2047	86	3.3858	1 120 000	252 000	1 460 000	328 000	1 900	2 600	28.50	62.80	0.27	2.5	3.7
22236 CC/W33	180	7.0866	320	12.5984	86	3.3858	1 180 000	266 000	1 560 000	351 000	1 800	2 600	29.50	65.00	0.26	2.6	3.9
22238 CC/W33	190	7.4803	340	13.3858	92	3.6220	1 270 000	286 000	1 700 000	382 000	1 700	2 400	36.50	80.50	0.26	2.6	3.9
22240 CC/W33	200	7.8740	360	14.1732	98	3.8583	1 460 000	329 000	1 930 000	434 000	1 600	2 200	43.50	95.90	0.26	2.6	3.9
22244 CC/W33	220	8.6614	400	15.7480	108	4.2520	1 760 000	396 000	2 360 000	531 000	1 500	2 000	60.50	133.40	0.27	2.5	3.7
22248 CC/W33	240	9.4488	440	17.3228	120	4.7244	2 200 000	495 000	3 000 000	674 000	1 300	1 800	83.00	183.00	0.27	2.5	3.7
22252 CAC/W33	260	10.2362	480	18.8976	130	5.1181	2 650 000	596 000	3 550 000	798 000	1 200	1 600	110.00	242.50	0.27	2.5	3.7
22256 CC/W33	280	11.0236	500	19.6850	130	5.1181	2 700 000	607 000	3 750 000	843 000	1 100	1 500	115.00	253.50	0.26	2.6	3.9

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

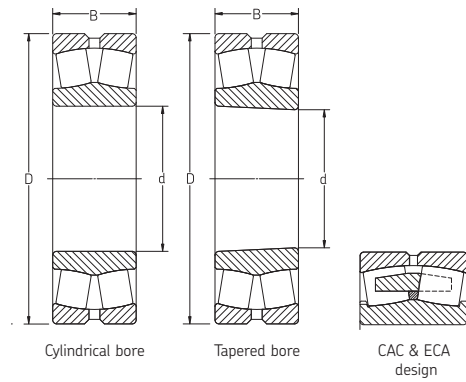
Spherical roller bearings

SKF Explorer

Series: 22260 CC/W33 — 22272 CA/W33

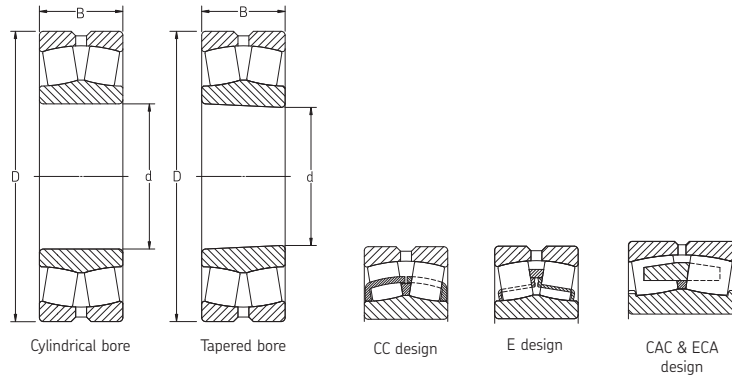
Size: 280 mm — 360 mm

11.0236 in — 14.1732 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
22260 CC/W33	280	11.0236	540	21.2598	140	5.5118	3 150 000	709 000	4 250 000	955 000	1 000	1 400	145.00	319.70	0.26	2.6	3.9
22264 CC/W33	320	12.5984	580	22.8346	150	5.9055	3 600 000	810 000	4 900 000	1 102 000	950	1 300	175.00	385.80	0.26	2.6	3.9
22272 CA/W33	360	14.1732	650	25.5906	170	6.6929	4 300 000	967 000	6 200 000	1 394 000	630	850	255.00	562.20	0.26	2.6	3.9

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore		Outside diameter		Width		Dynamic		Static		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
22308 E	40	1.5748	90	3.5433	33	1.2992	150 000	33 700	140 000	31 000	6 000	8 000	1.05	2.30	0.37	1.8	2.7
22309 E	45	1.7717	100	3.9370	36	1.1473	183 000	41 100	183 000	41 000	5 300	7 000	1.40	3.10	0.37	1.8	2.7
22310 E	50	1.9685	110	3.9370	40	1.5748	220 000	49 500	224 000	50 000	4 800	6 300	1.90	4.20	0.37	1.8	2.7
22311 E	55	2.1654	120	4.7244	43	1.6929	270 000	60 700	280 000	63 000	4 300	5 600	2.45	5.40	0.35	1.9	2.9
22312 E	60	2.3622	130	5.1181	46	1.8110	310 000	69 700	335 000	75 000	4 000	5 300	3.10	6.80	0.35	1.9	2.9
22313 E	65	2.5591	140	5.5118	48	1.8898	340 000	76 400	360 000	81 000	3 800	5 000	3.75	8.30	0.35	1.9	2.9
22314 E	70	2.7559	150	5.9055	51	2.0079	355 000	79 800	380 000	85 000	3 200	4 500	4.30	9.50	0.35	1.9	2.9
22315 E	75	2.9528	160	6.2992	55	2.1654	400 000	89 900	430 000	97 000	3 000	4 300	5.25	11.60	0.35	1.9	2.9
22316 E	80	3.1496	170	6.6929	58	2.2835	430 000	96 700	455 000	102 000	2 800	4 000	6.20	13.70	0.35	1.9	2.9
22317 E	85	3.3465	180	7.0866	60.0	2.3622	480 000	107 900	520 000	117 000	2 600	3 800	7.25	16.00	0.33	2.0	3.0
22318 E	90	3.5433	190	7.4803	64.0	2.5197	550 000	123 600	610 000	137 000	2 400	3 600	8.60	19.00	0.35	1.9	2.9
22319 E	95	3.7402	200	7.8740	67.0	2.6378	600 000	134 900	670 000	151 000	2 400	3 400	10.00	22.00	0.35	1.9	2.9
22320 E	100	3.9370	215	8.4646	73.0	2.8740	720 000	161 900	800 000	180 000	2 200	3 200	13.00	28.70	0.35	1.9	2.9
22322 E	110	4.3307	240	9.4488	80.0	3.1496	830 000	186 600	965 000	217 000	2 000	2 800	18.00	39.70	0.35	1.9	2.9
22324 CC/W33	120	4.7244	260	10.2362	86.0	3.3858	965 000	216 900	1 120 000	252 000	2 000	2 600	23.00	50.70	0.35	1.9	2.9
22326 CC/W33	130	5.1181	280	11.0236	93	3.6614	1 120 000	252 000	1 320 000	297 000	1 800	2 400	29.00	63.90	0.35	1.9	2.9
22328 CC/W33	140	5.5118	300	11.8110	102	4.0157	1 290 000	290 000	1 560 000	351 000	1 700	2 200	36.50	80.50	0.35	1.9	2.9
22330 CC/W33	150	5.9055	320	12.5984	108	4.2520	1 460 000	329 000	1 760 000	396 000	1 600	2 000	43.50	95.90	0.35	1.9	2.9
22332 CC/W33	160	6.2992	340	13.3858	114	4.4882	1 600 000	360 000	1 960 000	441 000	1 500	1 900	52.00	114.60	0.35	1.9	2.9
22334 CC/W33	170	6.6929	360	14.1732	120	4.7244	1 760 000	396 000	2 160 000	486 000	1 400	1 800	61.00	134.50	0.33	2.0	3.0
22336 CC/W33	180	7.0866	380	14.9606	126	4.9606	2 000 000	450 000	2 450 000	551 000	1 300	1 700	71.50	157.60	0.35	1.9	2.9
22338 CC/W33	190	7.4803	400	15.7480	132	5.1969	2 120 000	477 000	2 650 000	596 000	1 200	1 600	82.50	181.90	0.35	1.9	2.9
22340 CC/W33	200	7.8740	420	16.5354	138	5.4331	2 320 000	522 000	2 900 000	652 000	1 200	1 500	95.00	209.40	0.33	2.0	3.0
22344 CC/W33	220	8.6614	460	18.1102	145	5.7087	2 700 000	607 000	3 450 000	780 000	1 000	1 400	120.00	264.60	0.31	2.2	3.3
22348 CC/W33	240	9.4488	500	19.6850	155	6.1024	3 100 000	697 000	4 000 000	900 000	950	1 300	155.00	341.70	0.31	2.2	3.3
22352 CC/W33	260	10.2362	540	21.2598	165	6.4961	3 550 000	799 000	4 550 000	1 030 000	850	1 100	190.00	418.90	0.31	2.2	3.3
22356 CC/W33	280	11.0236	580	22.8346	175	6.8898	4 000 000	900 000	5 200 000	1 170 000	800	1 100	235.00	518.10	0.30	2.3	3.4
22380 CA/W33	400	15.7480	820	32.2835	243	9.5669	7 500 000	1 686 000	10 400 000	2 340 000	430	750	650.00	1433.00	0.30	2.3	3.4

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

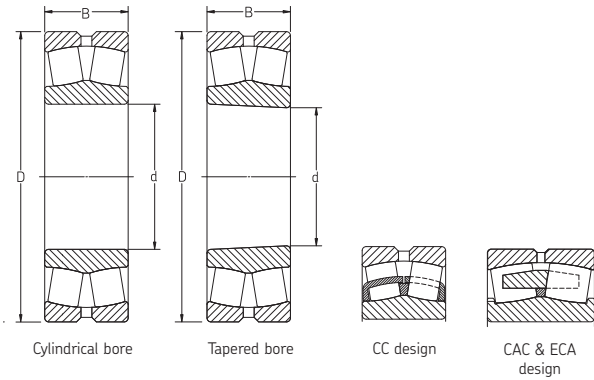
Spherical roller bearings

Standard and SKF Explorer

Series: 23022 CC/W33 — 230/670 CA/W33

Size: 110 mm — 670 mm

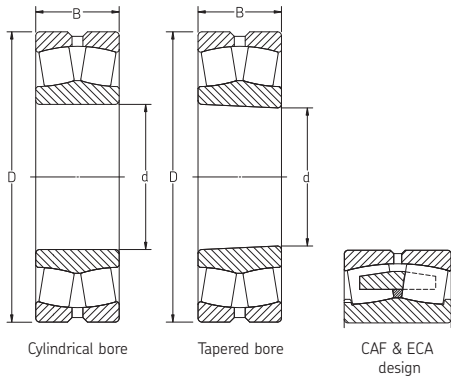
4.3307 in — 26.3780 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
23022 CC/W33	110	4.3307	170	6.6929	45	1.7717	310 000	70 000	440 000	100 000	3 400	4 300	3.80	8.40	0.23	2.9	4.4
23024 CC/W33	120	4.7244	180	7.0866	46	1.8110	355 000	80 000	510 000	120 000	3 200	4 000	4.20	9.30	0.22	3.0	4.6
23026 CC/W33	130	5.1181	200	7.8740	52	2.0472	430 000	97 000	610 000	140 000	2 800	3 600	6.00	13.20	0.23	2.9	4.4
23028 CC/W33	140	5.5118	210	8.2677	53	2.0866	465 000	105 000	680 000	160 000	2 600	3 400	6.55	14.40	0.22	3.0	4.6
23030 CC/W33	150	5.9055	225	8.8583	56	2.2047	510 000	115 000	750 000	170 000	2 400	3 200	7.95	17.50	0.22	3.0	4.6
23032 CC/W33	160	6.2992	240	9.4488	60	2.3622	585 000	132 000	880 000	200 000	2 400	3 000	9.70	21.40	0.22	3.0	4.6
23034 CC/W33	170	6.6929	260	10.2362	67	2.6378	710 000	160 000	1 060 000	240 000	2 200	2 800	13.00	28.70	0.23	2.9	4.4
23036 CC/W33	180	7.0866	280	11.0236	74	2.9134	830 000	187 000	1 250 000	290 000	2 000	2 600	17.00	37.50	0.24	2.8	4.2
23038 CC/W33	190	7.4803	290	11.4173	75	2.9528	865 000	195 000	1 340 000	310 000	1 900	2 400	18.00	39.70	0.23	2.9	4.4
23040 CC/W33	200	7.8740	310	12.2047	82	3.2283	1 000 000	225 000	1 530 000	350 000	1 800	2 200	23.30	51.40	0.24	2.8	4.2
23044 CC/W33	220	8.6614	340	13.3858	90	3.5433	1 220 000	275 000	1 860 000	420 000	1 600	2 000	30.50	67.20	0.24	2.8	4.2
23048 CC/W33	240	9.4488	360	14.1732	92	3.6220	1 290 000	290 000	2 080 000	470 000	1 500	1 900	33.50	73.90	0.23	2.9	4.4
23052 CC/W33	260	10.2362	400	15.7480	104	4.0945	1 600 000	360 000	2 550 000	580 000	1 300	1 700	48.50	106.90	0.23	2.9	4.4
23056 CAC/W33	280	11.0236	420	16.5354	106	4.1732	1 730 000	389 000	2 850 000	650 000	1 300	1 600	52.50	115.70	0.23	2.9	4.4
23060 CAC/W33	300	11.8110	460	18.1102	118	4.6457	2 120 000	477 000	3 450 000	780 000	1 200	1 500	71.50	157.60	0.23	2.9	4.4
23064 CC/W33	320	12.5984	480	18.8976	121	4.7638	2 240 000	504 000	3 800 000	860 000	1 100	1 400	78.00	172.00	0.23	2.9	4.4
23068 CAC/W33	340	13.3858	520	20.4724	133	5.2362	2 700 000	607 000	4 550 000	1 030 000	1 000	1 300	105.00	231.50	0.24	2.8	4.2
23072 CAC/W33	360	14.1732	540	21.2598	134	5.2756	2 750 000	619 000	4 800 000	1 080 000	950	1 200	110.00	242.50	0.23	2.9	4.4
23076 CAC/W33	380	14.9606	560	22.0472	135	5.3150	2 900 000	652 000	5 000 000	1 130 000	900	1 200	115.00	253.50	0.22	3.0	4.6
23080 CAC/W33	400	15.7480	600	23.6220	148	5.8268	3 250 000	731 000	5 700 000	1 290 000	750	1 100	144.50	318.60	0.23	2.9	4.4
23084 CA/W33	420	16.5354	620	24.4094	150	5.9055	3 400 000	765 000	6 000 000	1 350 000	600	1 100	155.00	341.70	0.22	3.0	4.6
23088 CA/W33	440	17.3228	650	25.5906	157	6.1811	3 650 000	821 000	6 550 000	1 480 000	560	1 000	180.00	396.80	0.22	3.0	4.6
23092 CA/W33	460	18.1102	680	26.7717	163	6.4173	3 900 000	877 000	6 950 000	1 570 000	560	950	205.00	451.90	0.22	3.0	4.6
23096 CA/W33	480	18.8976	700	27.5591	165	6.4961	3 900 000	877 000	6 800 000	1 530 000	530	950	215.00	474.00	0.21	3.2	4.8
230/500 CA/W33	500	19.6850	720	28.3465	167	6.5748	4 150 000	933 000	7 800 000	1 760 000	500	900	225.00	496.00	0.21	3.2	4.8
230/530 CA/W33	530	20.8661	780	30.7087	185	7.2835	5 100 000	1 147 000	9 300 000	2 100 000	450	800	310.00	683.40	0.22	3.0	4.6
230/560 CA/W33	560	22.0472	820	32.2835	195	7.6772	5 600 000	1 259 000	10 200 000	2 300 000	430	750	355.00	782.60	0.22	3.0	4.6
230/600 CA/W33	600	23.6220	870	34.2520	200	7.8740	6 000 000	1 349 000	11 400 000	2 570 000	400	700	405.00	892.90	0.22	3.0	4.6
230/630 CA/W33	630	24.8031	920	36.2205	212	8.3465	6 700 000	1 507 000	12 500 000	2 810 000	380	670	485.00	1069.20	0.22	3.2	4.8
230/670 CA/W33	670	26.3780	980	38.5827	230	9.0551	7 650 000	1 720 000	14 600 000	3 290 000	340	600	600.00	1322.80	0.21	3.2	4.8

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Standard and **SKF Explorer**
 Series: 230/710 CA/W33 — 230/1250 CAF/W33
 Size: 710 mm — 1250 mm
 27.9528 in — 49.2126 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore		Outside diameter		Width		Dynamic		Static		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
230/710 CA/W33	710	27.9528	1 030	40.5512	236	9.2913	8 300 000	1 866 000	16 300 000	3 670 000	320	560	670.00	1477.10	0.21	3.2	4.8
230/750 CA/W33	750	29.5276	1 090	42.9134	250	9.8425	9 650 000	2 170 000	18 600 000	4 190 000	300	530	795.00	1752.70	0.21	3.2	4.8
230/800 CA/W33	800	31.4961	1 150	45.2756	258	10.1575	10 000 000	2 248 000	20 000 000	4 500 000	280	480	895.00	1973.10	0.21	3.4	5.0
230/850 CA/W33	850	33.4646	1 220	48.0315	272	10.7087	9 370 000	2 107 000	21 600 000	4 860 000	240	450	1050.00	2314.80	0.20	3.4	5.0
230/900 CA/W33	900	35.4331	1 280	50.3937	280	11.0236	10 100 000	2 271 000	23 200 000	5 220 000	220	400	1200.00	2645.50	0.20	3.4	5.0
230/950 CA/W33	950	37.4016	1 360	53.5433	300	11.8110	12 000 000	2 698 000	28 500 000	6 410 000	200	380	1450.00	3196.70	0.20	3.4	5.0
230/1000 CA/W33	1 000	39.3701	1 420	55.9055	308	12.1260	12 700 000	2 855 000	30 500 000	6 860 000	180	360	1600.00	3527.40	0.19	3.6	5.3
230/1060 CAF/W33	1 060	41.7323	1 500	59.0551	325	12.7953	13 800 000	3 103 000	34 000 000	7 650 000	170	320	2250.00	4960.40	0.19	3.6	5.3
230/1250 CAF/W33	1 250	49.2126	1 750	68.8976	375	14.7638	17 900 000	4 024 000	45 000 000	10 120 000	130	240	2840.00	6261.10	0.19	3.6	5.3

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

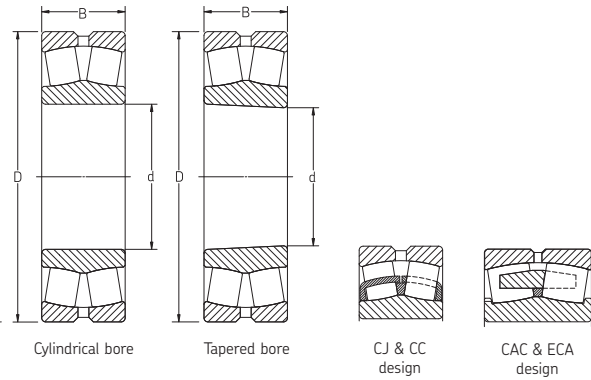
Spherical roller bearings

Standard and SKF Explorer

Series: 23120 CC/W33 — 231/630 CA/W33

Size: 100 mm — 630 mm

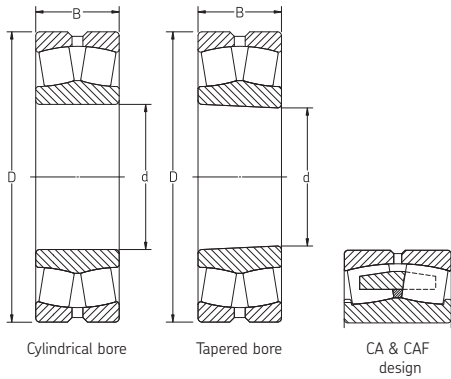
3.9370 in — 24.8031 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
23120 CC/W33	100	3.9370	165	6.4961	52	2.0472	365 000	82 100	490 000	111 000	3 000	4 000	4.55	10.00	0.30	2.3	3.4
23122 CC/W33	110	4.3307	180	7.0866	56	2.2047	430 000	96 700	585 000	132 000	2 800	3 600	5.75	12.70	0.30	2.3	3.4
23124 CC/W33	120	4.7244	200	7.8740	62	2.4409	510 000	114 600	695 000	157 000	2 600	3 400	8.00	17.60	0.28	2.4	3.6
23126 CC/W33	130	5.1181	210	8.2677	64	2.5197	560 000	125 900	780 000	176 000	2 400	3 200	8.80	19.40	0.28	2.4	3.6
23128 CC/W33	140	5.5118	225	8.8583	68	2.6772	630 000	141 600	900 000	203 000	2 200	2 800	10.50	23.10	0.28	2.4	3.6
23130 CC/W33	150	5.9055	250	9.8425	80	3.1496	830 000	186 600	1 200 000	270 000	2 000	2 600	16.00	35.30	0.30	2.3	3.4
23132 CC/W33	160	6.2992	270	10.6299	86	3.3858	980 000	220 300	1 370 000	308 000	1 900	2 400	20.50	45.20	0.30	2.3	3.4
23134 CC/W33	170	6.6929	280	11.0236	88	3.4646	1 040 000	233 800	1 500 000	338 000	1 800	2 400	22.00	48.50	0.30	2.3	3.4
23136 CC/W33	180	7.0866	300	11.8110	96	3.7795	1 200 000	269 800	1 760 000	396 000	1 700	2 200	28.00	61.70	0.30	2.3	3.4
23138 CC/W33	190	7.4803	320	12.5984	104	4.0945	1 370 000	308 000	2 080 000	468 000	1 500	2 000	35.00	77.20	0.31	2.2	3.3
23140 CC/W33	200	7.8740	340	13.3858	112	4.4094	1 600 000	359 700	2 360 000	531 000	1 500	1 900	43.00	94.80	0.31	2.2	3.3
23144 CC/W33	220	8.6614	370	14.5669	120	4.7244	1 800 000	404 600	2 750 000	619 000	1 300	1 700	53.50	117.90	0.30	2.3	3.4
23148 CC/W33	240	9.4488	400	15.7480	128	5.0394	2 080 000	467 600	3 200 000	720 000	1 200	1 600	66.50	146.60	0.30	2.3	3.4
23152 CC/W33	260	10.2362	440	17.3228	144	5.6693	2 550 000	573 200	3 900 000	877 000	1 100	1 400	90.50	199.50	0.31	2.2	3.3
23156 CAC/W33	280	11.0236	460	18.1102	146	5.7480	2 650 000	595 700	4 250 000	956 000	1 000	1 300	97.00	213.80	0.30	2.3	3.4
23160 CC/W33	300	11.8110	500	19.6850	160	6.2992	3 200 000	719 400	5 100 000	1 147 000	950	1 200	125.00	275.60	0.30	2.3	3.4
23164 CC/W33	320	12.5984	540	21.2598	176	6.9291	3 750 000	843 000	6 000 000	1 349 000	850	1 100	165.00	363.80	0.31	2.2	3.3
23168 CC/W33	340	13.3858	580	22.8346	190	7.4803	4 250 000	955 400	6 800 000	1 529 000	800	1 000	210.00	463.00	0.31	2.2	3.3
23172 CC/W33	360	14.1732	600	23.6220	192	7.5591	4 300 000	966 600	6 950 000	1 563 000	700	1 000	216.20	476.60	0.30	2.3	3.4
23176 CA/W33	380	14.9606	620	24.4094	194	7.6378	4 400 000	989 100	7 100 000	1 597 000	560	1 000	230.00	507.10	0.30	2.3	3.4
23180 CA/W33	400	15.7480	650	25.5906	200	7.8740	4 650 000	1 045 300	7 650 000	1 720 000	530	950	265.00	584.20	0.28	2.4	3.6
23184 CJ/W33	420	16.5354	700	27.5591	224	8.8189	5 600 000	1 258 900	9 300 000	2 091 000	480	900	350.00	771.60	0.30	2.3	3.4
23188 CA/W33	440	17.3228	720	28.3465	226	8.8976	6 000 000	1 348 800	10 000 000	2 248 000	450	850	360.00	793.70	0.30	2.3	3.4
23192 CA/W33	460	18.1102	760	29.9213	240	9.4488	6 400 000	1 438 700	10 800 000	2 428 000	430	800	440.00	970.00	0.30	2.3	3.4
23196 CA/W33	480	18.8976	790	31.1024	248	9.7638	6 950 000	1 562 400	12 000 000	2 698 000	400	750	485.00	1069.20	0.30	2.3	3.4
231/500 CA/W33	500	19.6850	830	32.6772	264	10.3937	7 650 000	1 719 700	12 900 000	2 900 000	380	700	580.00	1278.70	0.30	2.3	3.4
231/530 CA/W33	530	20.8661	870	34.2520	272	10.7087	8 150 000	1 832 100	14 000 000	3 148 000	360	670	645.00	1422.00	0.30	2.3	3.4
231/560 CA/W33	560	22.0472	920	36.2205	280	11.0236	9 150 000	2 056 900	16 000 000	3 597 000	340	630	740.00	1631.40	0.30	2.3	3.4
231/600 CA/W33	600	23.6220	980	38.5827	300	11.8110	10 200 000	2 293 000	18 000 000	4 047 000	320	560	895.00	1973.10	0.30	2.3	3.4
231/630 CA/W33	630	24.8031	1 030	40.5512	315	12.4016	10 500 000	2 360 000	20 800 000	4 676 000	260	530	1050.00	2314.80	0.30	2.3	3.4

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Standard
 Series: 231/670 CA/W33 — 231/1000 CAF/W33
 Size: 670 mm — 1000 mm
 26.3780 in — 39.3701 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
231/670 CA/W33	670	26.3780	1 090	42.9134	336	13.2283	10 900 000	2 450 000	22 400 000	5 040 000	240	500	1250.00	2755.80	0.30	2.3	3.4
231/710 CA/W33	710	27.9528	1 150	45.2756	345	13.5827	12 200 000	2 743 000	26 000 000	5 845 000	240	450	1450.00	3196.70	0.28	2.4	3.6
231/750 CA/W33	750	29.5276	1 220	48.0315	365	14.3701	13 800 000	3 102 000	29 000 000	6 520 000	220	430	1700.00	3747.80	0.28	2.4	3.6
231/800 CA/W33	800	31.4961	1 280	50.3937	375	14.7638	14 800 000	3 327 000	31 500 000	7 082 000	200	400	1920.00	4232.80	0.28	2.4	3.6
231/850 CA/W33	850	33.4646	1 360	53.5433	400	15.7480	16 100 000	3 619 000	34 500 000	7 756 000	180	360	2200.00	4850.10	0.28	2.4	3.6
231/1000 CAF/W33	1 000	39.3701	1 580	62.2047	462	18.1890	21 400 000	4 811 000	48 000 000	10 790 000	140	280	3500.00	7716.10	0.28	2.4	3.6

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

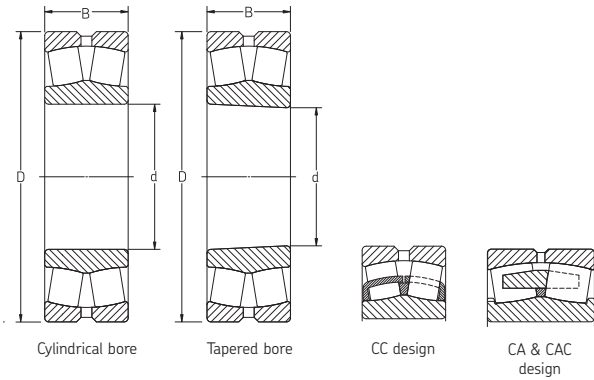
Spherical roller bearings

Standard and SKF Explorer

Series: 23218 CC/W33 — 232/600 CA/W33

Size: 90 mm — 600 mm

3.5433 in — 23.6220 in

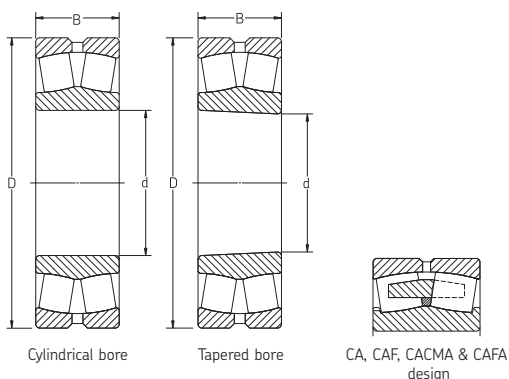


Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
23218 CC/W33	90	3.5433	160	6.2992	52.4	2.0630	355 000	80 000	440 000	99 000	2 800	3 800	4.65	10.30	0.31	2.2	3.3
23220 CC/W33	100	3.9370	180	7.0866	60.3	2.3740	475 000	107 000	600 000	135 000	2 400	3 400	6.85	15.10	0.33	2.0	3.0
23222 CC/W33	110	4.3307	200	7.8740	69.8	2.7480	600 000	135 000	765 000	172 000	2 200	3 200	9.85	21.70	0.33	2.0	3.0
23224 CC/W33	120	4.7244	215	8.4646	76	2.9921	695 000	156 000	930 000	210 000	2 000	2 800	12.00	26.50	0.35	1.9	2.9
23226 CC/W33	130	5.1181	230	9.0551	80	3.1496	780 000	175 000	1 060 000	239 000	1 900	2 600	14.50	32.00	0.33	2.0	3.0
23228 CC/W33	140	5.5118	250	9.8425	88	3.4646	915 000	206 000	1 250 000	281 000	1 700	2 400	19.00	41.90	0.33	2.0	3.0
23230 CC/W33	150	5.9055	270	10.6299	96	3.7795	1 080 000	243 000	1 460 000	329 000	1 600	2 200	24.50	54.00	0.35	1.9	2.9
23232 CC/W33	160	6.2992	290	11.4173	104	4.0945	1 220 000	274 000	1 660 000	374 000	1 500	2 200	31.00	68.30	0.35	1.9	2.9
23234 CC/W33	170	6.6929	310	12.2047	110	4.3307	1 400 000	315 000	1 930 000	434 000	1 400	2 000	37.50	82.70	0.35	1.9	2.9
23236 CC/W33	180	7.0866	320	12.5984	112	4.4094	1 500 000	337 000	2 120 000	477 000	1 300	1 900	39.50	87.10	0.35	1.9	2.9
23238 CC/W33	190	7.4803	340	13.3858	120	4.7244	1 660 000	373 000	2 400 000	540 000	1 300	1 800	48.00	105.80	0.35	1.9	2.9
23240 CC/W33	200	7.8740	360	14.1732	128	5.0394	1 860 000	418 000	2 700 000	607 000	1 200	1 700	58.00	127.90	0.35	1.9	2.9
23244 CC/W33	220	8.6614	400	15.7480	144	5.6693	2 360 000	531 000	3 450 000	776 000	1 100	1 500	81.50	179.70	0.35	1.9	2.9
23248 CC/W33	240	9.4488	440	17.3228	160	6.2992	2 900 000	652 000	4 300 000	967 000	950	1 300	110.00	242.50	0.35	1.9	2.9
23252 CAC/W33	260	10.2362	480	18.8976	174	6.8504	2 820 000	634 000	4 750 000	1 068 000	800	1 200	140.00	308.60	0.35	1.9	2.9
23256 CAC/W33	280	11.0236	500	19.6850	176	6.9291	2 820 000	634 000	4 900 000	1 102 000	750	1 100	150.00	330.70	0.35	1.9	2.9
23260 CAC/W33	300	11.8110	540	21.2598	192	7.5591	3 340 000	751 000	5 850 000	1 316 000	670	1 000	190.00	418.90	0.35	1.9	2.9
23264 CAC/W33	320	12.5984	580	22.8346	208	8.1890	3 850 000	865 000	6 700 000	1 507 000	630	950	240.00	529.10	0.35	1.9	2.9
23268 CA/W33	340	13.3858	620	24.4094	224	8.8189	5 100 000	1 146 000	7 800 000	1 754 000	560	800	295.00	650.40	0.35	1.9	2.9
23272 CA/W33	360	14.1732	650	25.5906	232	9.1339	5 400 000	1 214 000	8 300 000	1 866 000	530	750	335.00	738.50	0.35	1.9	2.9
23276 CA/W33	380	14.9606	680	26.7717	240	9.4488	5 850 000	1 315 000	9 150 000	2 057 000	500	750	375.00	826.70	0.35	1.9	2.9
23280 CA/W33	400	15.7480	720	28.3465	256	10.0787	6 550 000	1 472 000	10 400 000	2 338 000	480	670	450.00	992.10	0.35	1.9	2.9
23284 CA/W33	420	16.5354	760	29.9213	272	10.7087	7 350 000	1 652 000	11 600 000	2 608 000	450	630	535.00	1179.50	0.35	1.9	2.9
23288 CA/W33	440	17.3228	790	31.1024	280	11.0236	7 800 000	1 753 000	12 500 000	2 810 000	430	600	590.00	1300.70	0.35	1.9	2.9
23292 CA/W33	460	18.1102	830	32.6772	296	11.6535	8 500 000	1 911 000	13 700 000	3 080 000	400	560	695.00	1532.20	0.35	1.9	2.9
23296 CA/W33	480	18.8976	870	34.2520	310	12.2047	9 300 000	2 091 000	15 000 000	3 372 000	380	530	800.00	1763.70	0.35	1.9	2.9
232/500 CA/W33	500	19.6850	920	36.2205	336	13.2283	10 600 000	2 383 000	17 300 000	3 890 000	360	500	985.00	2171.50	0.35	1.9	2.9
232/530 CA/W33	530	20.8661	980	38.5827	355	13.9764	11 100 000	2 495 000	20 400 000	4 586 000	300	480	1200.00	2645.50	0.35	1.9	2.9
232/560 CA/W33	560	22.0472	1 030	40.5512	365	14.3701	11 500 000	2 585 000	22 000 000	4 946 000	280	430	1350.00	2976.20	0.35	1.9	2.9
232/600 CA/W33	600	23.6220	1 090	42.9134	388	15.2756	13 100 000	2 945 000	25 500 000	5 733 000	260	400	1600.00	3527.40	0.35	1.9	2.9

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Standard
 Series: 232/670 CA/W33 — 232/750 CAF/W33
 Size: 670 mm — 750 mm
 26.3780 in — 29.5276 in

Series: 238/500 CAMA/W20 — 238/1180 CAFA/W20
 Size: 500 mm — 1180 mm
 19.6850 in — 46.4567 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
232/670 CA/W33	670	26.3780	1 220	48.0315	438	17.2441	15 400 000	3 462 000	30 500 000	6 857 000	220	360	2270.00	5004.40	0.35	1.9	2.9
232/710 CA/W33	710	27.9528	1 280	50.3937	450	17.7165	17 600 000	3 956 000	34 500 000	7 756 000	200	320	2610.00	5754.00	0.35	1.9	2.9
232/750 CAF/W33	750	29.5276	1360	53.5433	475	18.7008	18 700 000	4 204 000	36 500 000	8 206 000	190	300	3050.00	6724.00	0.35	1.9	2.9
238/500 CAMA/W20	500	19.6850	620	24.4094	90	3.5433	1 480 000	333 000	4 000 000	900 000	530	1 000	62.00	136.70	0.12	5.6	8.4
238/630 CAMA/W20	630	24.8031	780	30.7087	112	4.4094	2 190 000	492 000	6 100 000	1 370 000	400	750	120.00	264.60	0.12	5.6	8.4
238/670 CAMA/W20	670	26.3780	820	32.2835	112	4.4094	2 250 000	506 000	6 400 000	1 440 000	360	700	130.00	286.60	0.11	6.1	9.1
238/710 CAMA/W20	710	27.9528	870	34.2520	118	4.6457	2 580 000	580 000	7 500 000	1 690 000	340	670	153.00	337.30	0.11	6.1	9.1
238/750 CAMA/W20	750	29.5276	920	36.2205	128	5.0394	2 930 000	659 000	8 500 000	1 910 000	320	600	180.00	396.80	0.11	6.1	9.1
238/850 CAMA/W20	850	33.4646	1 030	40.5512	136	5.3543	3 340 000	751 000	10 000 000	2 250 000	260	530	240.00	529.10	0.11	6.1	9.1
238/1000 CAMA/W20	1 000	39.3701	1 220	48.0315	165	6.4961	4 660 000	1 048 000	14 300 000	3 210 000	220	400	410.00	903.90	0.12	5.6	8.4
238/1060 CAMA/W20	1 060	41.7323	1 280	50.3937	165	6.4961	4 770 000	1 072 000	15 000 000	3 370 000	200	380	435.00	959.00	0.11	6.1	9.1
238/1180 CAFA/W20	1 180	46.4567	1 420	55.9055	180	7.0866	5 870 000	1 320 000	18 600 000	4 180 000	170	320	575.00	1267.60	0.11	6.1	9.1

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

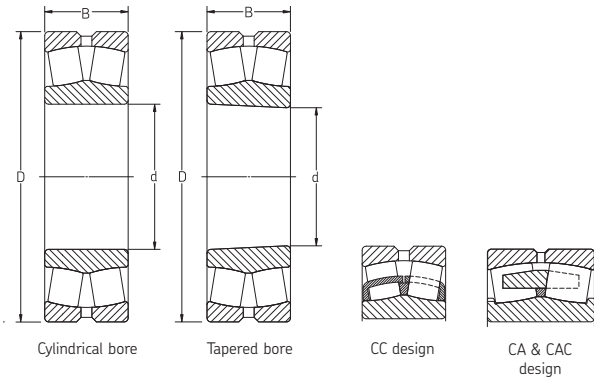
Spherical roller bearings

Standard and SKF Explorer

Series: 23926 CAM2/W33 — 239/900 CA/W33

Size: 130 mm — 900 mm

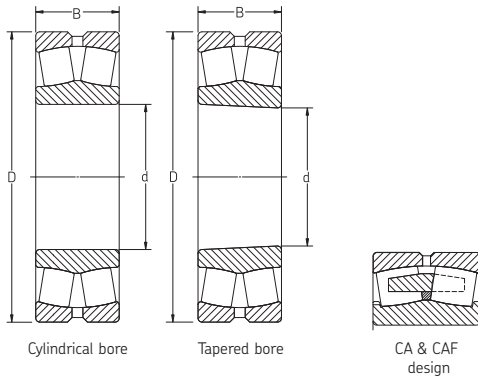
5.1181 in — 35.4331 in



Designation	Principal dimensions						Basic load ratings					Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-	
23926 CAM2/W33	130	5.1181	180	7.0866	37	1.4567	202 000	45 000	360 000	80 000	3 200	4 000	2.95	6.50	0.18	3.8	5.6	
23932 CAM2/W33	160	6.2992	220	8.6614	45	1.7717	299 000	67 000	570 000	130 000	2 600	3 300	5.20	11.50	0.17	4.0	5.9	
23936 CC/W33	180	7.0866	250	9.8425	52	2.0472	431 000	97 000	830 000	190 000	2 200	2 800	7.90	17.40	0.18	3.8	5.6	
23938 CC/W33	190	7.4803	260	10.2362	52	2.0472	414 000	93 000	800 000	180 000	2 200	2 600	8.30	18.30	0.16	4.2	6.3	
23940 CC/W33	200	7.8740	280	11.0236	60	2.3622	546 000	123 000	1 040 000	230 000	2 000	2 400	11.50	25.40	0.19	3.6	5.3	
23944 CC/W33	220	8.6614	300	11.8110	60	2.3622	546 000	123 000	1 080 000	240 000	1 900	2 200	12.50	27.60	0.16	4.2	6.3	
23948 CC/W33	240	9.4488	320	12.5984	60	2.3622	564 000	127 000	1 160 000	260 000	1 700	2 000	13.50	29.80	0.15	4.5	6.7	
23952 CC/W33	260	10.2362	360	14.1732	75	2.9528	880 000	198 000	1 800 000	400 000	1 500	1 900	23.50	51.80	0.18	3.8	5.6	
23956 CC/W33	280	11.0236	380	14.9606	75	2.9528	845 000	190 000	1 760 000	400 000	1 400	1 700	25.00	55.10	0.16	4.2	6.3	
23960 CC/W33	280	11.0236	420	16.5354	90	3.5433	1 200 000	270 000	2 500 000	560 000	1 300	1 600	39.50	87.10	0.19	3.6	5.3	
23964 CC/W33	320	12.5984	440	17.3228	90	3.5433	1 430 000	321 000	2 700 000	610 000	1 400	1 500	42.00	92.60	0.18	4.0	5.9	
23968 CC/W33	340	13.3858	460	18.1102	90	3.5433	1 460 000	328 000	2 800 000	630 000	1 300	1 400	45.50	100.30	0.17	4.0	5.9	
23972 CC/W33	360	14.1732	480	18.8976	90	3.5433	1 400 000	315 000	2 750 000	620 000	1 200	1 300	46.00	101.40	0.16	4.5	6.7	
23976 CC/W33	380	14.9606	520	20.4724	106	4.1732	1 960 000	441 000	3 800 000	850 000	1 100	1 200	69.00	152.10	0.17	4.0	5.9	
23980 CC/W33	400	15.7480	540	21.2598	106	4.1732	2 000 000	450 000	3 900 000	880 000	1 100	1 200	71.00	156.50	0.17	4.2	6.3	
23984 CC/W33	420	16.5354	560	22.0472	106	4.1732	2 040 000	459 000	4 150 000	930 000	1 000	1 100	74.50	164.20	0.16	4.2	6.3	
23988 CC/W33	440	17.3228	600	23.6220	118	4.6457	2 450 000	551 000	4 900 000	1 100 000	950	1 000	99.50	219.40	0.17	4.2	6.3	
23992 CA/W33	460	18.1102	620	24.4094	118	4.6457	2 500 000	562 000	5 000 000	1 120 000	600	1 000	105.00	231.50	0.16	4.2	6.3	
23996 CA/W33	480	18.8976	650	25.5906	128	5.0394	2 900 000	652 000	5 700 000	1 280 000	560	1 000	125.00	275.60	0.18	3.8	5.6	
239/500 CA/W33	500	19.6850	670	26.3780	128	5.0394	2 900 000	652 000	6 000 000	1 350 000	530	950	130.00	286.60	0.17	4.0	5.9	
239/530 CA/W33	530	20.8661	710	27.9528	136	5.3543	3 200 000	719 000	6 700 000	1 510 000	500	900	155.00	341.70	0.17	4.0	5.9	
239/560 CA/W33	560	22.0472	750	29.5276	140	5.5118	3 450 000	776 000	7 200 000	1 620 000	450	850	175.00	385.80	0.16	4.2	6.3	
239/600 CA/W33	600	23.6220	800	31.4961	150	5.9055	3 900 000	877 000	8 300 000	1 870 000	430	750	220.00	485.00	0.17	4.0	5.9	
239/630 CA/W33	630	24.8031	850	33.4646	165	6.4961	4 650 000	1 045 000	9 800 000	2 200 000	400	700	280.00	617.30	0.17	4.0	5.9	
239/670 CA/W33	670	26.3780	900	35.4331	170	6.6929	5 000 000	1 124 000	10 800 000	2 430 000	360	670	315.00	694.40	0.17	4.0	5.9	
239/710 CA/W33	710	27.9528	950	37.4016	180	7.0866	5 600 000	1 259 000	12 000 000	2 700 000	340	600	365.00	804.70	0.17	4.0	5.9	
239/750 CA/W33	750	29.5276	1 000	39.3701	185	7.2835	6 000 000	1 349 000	13 200 000	2 970 000	320	560	420.00	925.90	0.16	4.2	6.3	
239/800 CA/W33	800	31.4961	1 060	41.7323	195	7.6772	6 400 000	1 439 000	14 300 000	3 210 000	300	530	470.00	1036.20	0.16	4.2	6.3	
239/850 CA/W33	850	33.4646	1 120	44.0945	200	7.8740	5 980 000	1 344 000	15 600 000	3 510 000	260	480	560.00	1234.60	0.16	4.2	6.3	
239/900 CA/W33	900	35.4331	1 180	46.4567	206	8.1102	6 440 000	1 448 000	17 000 000	3 820 000	240	450	605.00	1333.80	0.15	4.5	6.7	

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Standard
 Series: 239/950 CA/W33 — 239/1180 CAF/W33
 Size: 950 mm — 1180 mm
 37.4016 in — 46.4567 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
239/950 CA/W33	950	37.4016	1 250	49.2126	224	8.8189	7 250 000	1 630 000	19 600 000	4 410 000	220	430	755.00	1664.50	0.15	4.5	6.7
239/1060 CAF/W33	1 060	41.7323	1 400	55.1181	250	9.8425	9 550 000	2 147 000	26 000 000	5 840 000	180	360	1100.00	2425.10	0.16	4.2	6.3
239/1180 CAF/W33	1 180	46.4567	1 540	60.6299	272	10.7087	11 100 000	2 495 000	31 000 000	6 970 000	150	300	1400.00	3086.40	0.16	4.2	6.3

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

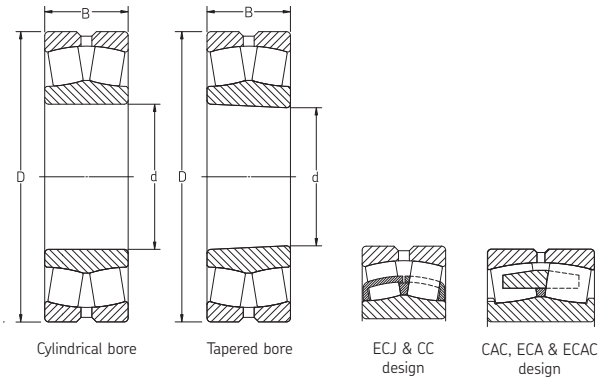
Spherical roller bearings

Standard and SKF Explorer

Series: 24015 CC/W33 — 240/630 ECJ/W33

Size: 75 mm — 630 mm

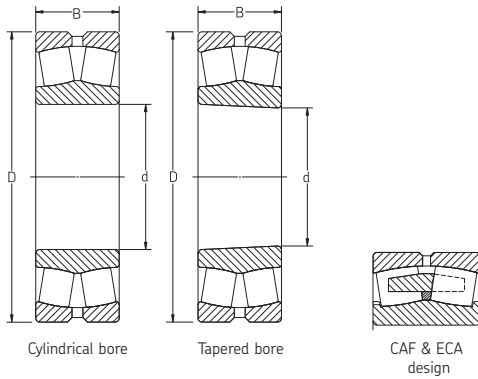
2.9528 in — 24.8031 in



Designation	Principal dimensions						Basic load ratings					Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-	
24015 CC/W33	75	2.9528	115	4.5276	40	1.5748	173 000	38 900	232 000	50 000	3 800	5 300	1.55	3.40	0.28	2.4	3.6	
24020 CDC/W33	100	3.9370	150	5.9055	50	1.9685	248 000	55 800	415 000	90 000	2 600	4 000	2.94	6.50	0.28	2.4	3.6	
24024 CC/W33	120	4.7244	180	7.0866	60	2.3622	430 000	96 700	670 000	150 000	2 400	3 400	5.45	12.00	0.30	2.3	3.4	
24026 CC/W33	130	5.1181	200	7.8740	69	2.7165	540 000	121 400	815 000	180 000	2 000	3 000	8.05	17.70	0.31	2.2	3.3	
24028 CC/W33	140	5.5118	210	8.2677	69	2.7165	570 000	128 100	900 000	200 000	2 000	2 800	8.55	18.80	0.30	2.3	3.4	
24030 CC/W33	150	5.9055	225	8.8583	75	2.9528	655 000	147 200	1 040 000	230 000	1 800	2 600	10.50	23.10	0.30	2.3	3.4	
24032 CC/W33	160	6.2992	240	9.4488	80	3.1496	750 000	168 600	1 200 000	270 000	1 700	2 400	13.00	28.70	0.30	2.3	3.4	
24034 CC/W33	170	6.6929	260	10.2362	90	3.5433	930 000	209 000	1 460 000	330 000	1 600	2 400	17.50	38.60	0.33	2.0	3.0	
24036 CC/W33	180	7.0866	280	11.0236	100	3.9370	1 080 000	243 000	1 730 000	390 000	1 300	2 200	23.00	50.70	0.33	2.0	3.0	
24038 CC/W33	190	7.4803	290	11.4173	100	3.9370	1 120 000	252 000	1 800 000	400 000	1 400	2 000	24.50	54.00	0.31	2.2	3.3	
24040 CC/W33	200	7.8740	310	12.2047	109	4.2913	1 290 000	290 000	2 120 000	480 000	1 300	1 900	31.00	68.30	0.33	2.0	3.0	
24044 CC/W33	220	8.6614	340	13.3858	118	4.6457	1 560 000	351 000	2 600 000	580 000	1 200	1 700	40.00	88.20	0.33	2.0	3.0	
24048 CC/W33	240	9.4488	360	14.1732	118	4.6457	1 600 000	360 000	2 700 000	610 000	1 100	1 600	43.00	94.80	0.30	2.3	3.4	
24052 CC/W33	260	10.2362	400	15.7480	140	5.5118	2 040 000	459 000	3 450 000	780 000	1 000	1 400	65.50	144.40	0.33	2.0	3.0	
24056 CC/W33	280	11.0236	420	16.5354	140	5.5118	2 160 000	486 000	3 800 000	850 000	950	1 400	69.50	153.20	0.31	2.2	3.3	
24060 CC/W33	280	11.0236	460	18.1102	160	6.2992	2 700 000	607 000	4 750 000	1 070 000	850	1 200	97.00	213.80	0.33	2.0	3.0	
24064 CC/W33	320	12.5984	480	18.8976	160	6.2992	2 850 000	641 000	5 100 000	1 150 000	800	1 200	100.00	220.50	0.31	2.2	3.3	
24068 CC/W33	340	13.3858	520	20.4724	180	7.0866	3 450 000	776 000	6 200 000	1 390 000	750	1 100	140.00	308.60	0.33	2.0	3.0	
24072 CC/W33	360	14.1732	540	21.2598	180	7.0866	3 550 000	798 000	6 550 000	1 470 000	700	1 000	145.00	319.70	0.31	2.2	3.3	
24076 CC/W33	380	14.9606	560	22.0472	180	7.0866	3 600 000	809 000	6 800 000	1 530 000	670	950	150.00	330.70	0.30	2.3	3.4	
24080 ECAC/W33	400	15.7480	600	23.6220	200	7.8740	3 740 000	841 000	8 000 000	1 800 000	560	780	205.00	451.90	0.30	2.3	3.4	
24084 ECA/W33	420	16.5354	620	24.4094	200	7.8740	4 400 000	989 000	8 300 000	1 870 000	530	900	210.00	463.00	0.30	2.3	3.4	
24088 ECA/W33	440	17.3228	650	25.5906	212	8.3465	4 800 000	1 079 000	9 150 000	2 060 000	500	850	245.00	540.10	0.30	2.3	3.4	
24092 ECA/W33	460	18.1102	680	26.7717	218	8.5827	5 200 000	1 169 000	10 000 000	2 250 000	480	800	275.00	606.30	0.28	2.4	3.6	
24096 ECA/W33	480	18.8976	700	27.5591	218	8.5827	5 300 000	1 191 000	10 400 000	2 340 000	450	750	285.00	628.30	0.28	2.4	3.6	
240/500 ECA/W33	500	19.6850	720	28.3465	218	8.5827	5 500 000	1 236 000	11 000 000	2 470 000	430	700	295.00	650.40	0.26	2.6	3.9	
240/530 ECA/W33	530	20.8661	780	30.7087	250	9.8425	6 700 000	1 506 000	13 200 000	2 970 000	400	670	410.00	903.90	0.28	2.4	3.6	
240/560 ECA/W33	560	22.0472	820	32.2835	258	10.1575	7 350 000	1 652 000	14 600 000	3 280 000	380	630	465.00	1025.10	0.28	2.4	3.6	
240/600 ECA/W33	600	23.6220	870	34.2520	272	10.7087	8 150 000	1 832 000	17 000 000	3 820 000	340	560	520.00	1146.40	0.30	2.3	3.4	
240/630 ECJ/W33	630	24.8031	920	36.2205	290	11.4173	8 800 000	1 978 000	18 000 000	4 050 000	320	530	645.00	1422.00	0.28	2.4	3.6	

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Standard and **SKF Explorer**
 Series: 240/670 ECA/W33 — 240/1120 CAF/W33
 Size: 670 mm — 1120 mm
 26.3780 in — 44.0945 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
240/670 ECA/W33	670	26.3780	980	38.5827	308	12.1260	10 000 000	2 248 000	20 400 000	4 590 000	300	500	790.00	1741.60	0.28	2.4	3.6
240/710 ECA/W33	710	27.9528	1 030	40.5512	315	12.4016	9 370 000	2 106 000	22 800 000	5 130 000	260	450	895.00	1973.10	0.27	2.5	3.7
240/750 ECA/W33	750	29.5276	1 090	42.9134	335	13.1890	10 100 000	2 270 000	25 000 000	5 620 000	240	430	1065.00	2347.90	0.28	2.4	3.6
240/800 ECA/W33	800	31.4961	1 150	45.2756	345	13.5827	11 100 000	2 495 000	28 500 000	6 410 000	220	400	1200.00	2645.50	0.27	2.5	3.7
240/850 ECA/W33	850	33.4646	1 220	48.0315	365	14.3701	12 700 000	2 855 000	31 500 000	7 080 000	200	360	1410.00	3108.50	0.27	2.5	3.7
240/900 ECA/W33	900	35.4331	1 280	50.3937	375	14.7638	13 600 000	3 057 000	34 500 000	7 760 000	190	340	1570.00	3461.20	0.26	2.6	3.9
240/950 CAF/W33	950	37.4016	1 360	53.5433	412	16.2205	14 800 000	3 327 000	39 000 000	8 770 000	170	300	1990.00	4387.20	0.27	2.5	3.7
240/1000 CAF/W33	1 000	39.3701	1 420	55.9055	412	16.2205	15 400 000	3 462 000	40 500 000	9 100 000	160	280	2140.00	4717.80	0.26	2.6	3.9
240/1060 CAF/W33	1 060	41.7323	1 500	59.0551	438	17.2441	17 300 000	3 889 000	45 500 000	10 230 000	150	260	2515.00	5544.60	0.26	2.6	3.9
240/1120 CAF/W33	1 120	44.0945	1 580	62.2047	462	18.1890	18 700 000	4 204 000	50 000 000	11 240 000	130	240	2925.00	6448.50	0.26	2.6	3.9

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

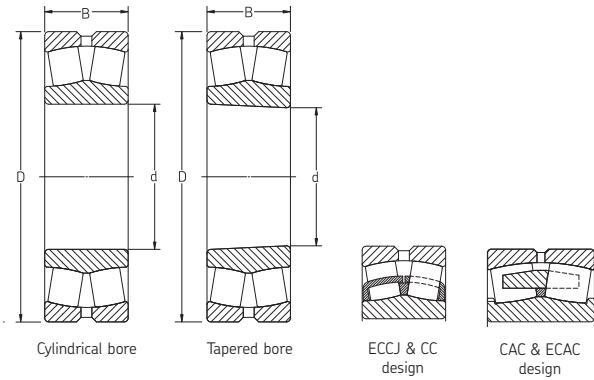
Spherical roller bearings

Standard and SKF Explorer

Series: 24120 CC/W33 — 241/630 ECA/W33

Size: 100 mm — 630 mm

3.9370 in — 24.8031 in



Designation	Principal dimensions						Basic load ratings					Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-	
24120 CC/W33	100	3.9370	165	6.4961	65	2.5591	455 000	102 000	640 000	140 000	2 400	3 200	5.65	12.50	0.37	1.8	2.7	
24122 CC/W33	110	4.3307	180	7.0866	69	2.7165	520 000	117 000	750 000	170 000	2 200	3 000	7.10	15.70	0.37	1.8	2.7	
24124 CC/W33	120	4.7244	200	7.8740	80	3.1496	655 000	147 000	950 000	210 000	1 900	2 600	10.30	22.70	0.37	1.8	2.7	
24126 CC/W33	130	5.1181	210	8.2677	80	3.1496	680 000	153 000	1 000 000	220 000	1 800	2 400	11.00	24.30	0.35	1.9	2.9	
24128 CC/W33	140	5.5118	225	8.8583	85	3.3465	765 000	172 000	1 160 000	260 000	1 700	2 400	13.50	29.80	0.35	1.9	2.9	
24130 CC/W33	150	5.9055	250	9.8425	100	3.9370	1 020 000	229 000	1 530 000	340 000	1 500	2 200	20.00	44.10	0.37	1.8	2.7	
24132 CC/W33	160	6.2992	270	10.6299	109	4.2913	1 180 000	265 000	1 760 000	400 000	1 400	1 900	25.00	55.10	0.40	1.7	2.5	
24134 CC/W33	170	6.6929	280	11.0236	109	4.2913	1 220 000	274 000	1 860 000	420 000	1 300	1 900	27.50	60.60	0.37	1.8	2.7	
24136 CC/W33	180	7.0866	300	11.8110	118	4.6457	1 400 000	315 000	2 160 000	490 000	1 300	1 700	34.50	76.10	0.37	1.8	2.7	
24138 CC/W33	190	7.4803	320	12.5984	128	5.0394	1 600 000	360 000	2 500 000	560 000	1 200	1 600	43.00	94.80	0.40	1.7	2.5	
24140 CC/W33	200	7.8740	340	13.3858	140	5.5118	1 800 000	405 000	2 800 000	630 000	1 100	1 500	53.50	117.90	0.40	1.7	2.5	
24144 CC/W33	220	8.6614	370	14.5669	150	5.9055	2 120 000	477 000	3 350 000	750 000	1 000	1 400	67.00	147.70	0.40	1.7	2.5	
24148 CC/W33	240	9.4488	400	15.7480	160	6.2992	2 400 000	540 000	3 900 000	880 000	900	1 300	83.00	183.00	0.40	1.7	2.5	
24152 CC/W33	260	10.2362	440	17.3228	180	7.0866	3 000 000	674 000	4 800 000	1 080 000	850	1 200	110.00	242.50	0.40	1.7	2.5	
24156 CC/W33	280	11.0236	460	18.1102	180	7.0866	3 100 000	697 000	5 100 000	1 150 000	800	1 100	120.00	264.60	0.40	1.7	2.5	
24160 CC/W33	280	11.0236	500	19.6850	200	7.8740	3 750 000	843 000	6 300 000	1 420 000	700	1 000	160.00	352.70	0.40	1.7	2.5	
24164 CC/W33	320	12.5984	540	21.2598	218	8.5827	4 250 000	955 000	7 100 000	1 600 000	670	900	210.00	463.00	0.49	1.7	2.5	
24168 ECAC/W33	340	13.3858	580	22.8346	243	9.5669	4 660 000	1 048 000	8 650 000	1 940 000	560	850	280.00	617.30	0.40	1.7	2.5	
24172 ECCJ/W33	360	14.1732	600	23.6220	243	9.5669	5 600 000	1 259 000	9 300 000	2 090 000	560	800	280.00	617.30	0.37	1.7	2.5	
24176 ECA/W33	380	14.9606	620	24.4094	243	9.5669	5 700 000	1 281 000	9 800 000	2 200 000	480	850	300.00	661.40	0.37	1.8	2.7	
24180 ECA/W33	400	15.7480	650	25.5906	250	9.8425	6 200 000	1 394 000	10 600 000	2 380 000	430	800	340.00	749.60	0.37	1.8	2.7	
24184 ECA/W33	420	16.5354	700	27.5591	280	11.0236	7 350 000	1 652 000	12 600 000	2 830 000	400	700	445.00	981.00	0.37	1.7	2.5	
24188 ECA/W33	440	17.3228	720	28.3465	280	11.0236	7 500 000	1 686 000	13 200 000	2 970 000	400	700	460.00	1014.10	0.37	1.8	2.7	
24192 ECA/W33	460	18.1102	760	29.9213	300	11.8110	8 300 000	1 866 000	14 600 000	3 280 000	360	670	560.00	1234.60	0.37	1.8	2.7	
24196 ECA/W33	480	18.8976	790	31.1024	308	12.1260	9 000 000	2 023 000	15 600 000	3 510 000	340	630	605.00	1333.80	0.37	1.8	2.7	
241/500 ECA/W33	500	19.6850	830	32.6772	325	12.7953	9 800 000	2 203 000	17 000 000	3 820 000	320	600	700.00	1543.20	0.37	1.8	2.7	
241/530 ECA/W33	530	20.8661	870	34.2520	335	13.1890	10 600 000	2 383 000	19 000 000	4 270 000	300	560	830.00	1829.80	0.37	1.8	2.7	
241/560 ECJ/W33	560	22.0472	920	36.2205	355	13.9764	12 000 000	2 698 000	21 600 000	4 860 000	280	500	985.00	2171.50	0.35	1.9	2.9	
241/600 ECA/W33	600	23.6220	980	38.5827	375	14.7638	11 500 000	2 585 000	23 600 000	5 310 000	240	480	1200.00	2645.50	0.35	1.8	2.7	
241/630 ECA/W33	630	24.8031	1 030	40.5512	400	15.7480	12 700 000	2 855 000	27 000 000	6 070 000	220	450	1400.00	3086.40	0.37	1.8	2.7	

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Standard

Series: 241/670 ECA/W33 — 241/1000 ECAF/W33

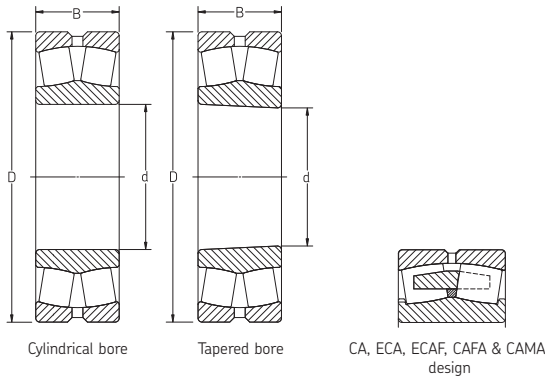
Size: 670 mm — 1000 mm

26.3780 in — 39.3701 in

Series: 24892 CAMA/W20 — 248/1800 CAFA/W20

Size: 460 mm — 1800 mm

18.1102 in — 70.8661 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
241/670 ECA/W33	670	26.3780	1 090	42.9134	412	16.2205	13 800 000	3 102 000	29 000 000	6 520 000	200	400	1600.00	3527.40	0.37	1.8	2.7
241/710 ECA/W33	710	27.9528	1 150	45.2756	438	17.2441	15 200 000	3 417 000	32 500 000	7 310 000	190	380	1900.00	4188.70	0.35	1.8	2.7
241/750 ECA/W33	750	29.5276	1 220	48.0315	475	18.7008	17 300 000	3 889 000	37 500 000	8 430 000	180	360	2100.00	4629.70	0.37	1.8	2.7
241/800 ECA/W33	800	31.4961	1 280	50.3937	475	18.7008	18 400 000	4 136 000	40 500 000	9 100 000	170	320	2300.00	5070.60	0.35	1.9	2.9
241/850 ECA/W33	850	33.4646	1 360	53.5433	400	15.7480	20 200 000	4 541 000	45 000 000	10 120 000	150	300	2710.00	5974.50	0.35	1.9	2.9
241/900 ECAF/W33	900	35.4331	1 420	55.9055	515	20.2756	21 400 000	4 811 000	49 000 000	11 020 000	140	280	3350.00	7385.40	0.35	1.9	2.9
241/950 ECAF/W33	950	37.4016	1 500	59.0551	545	21.4567	23 900 000	5 373 000	55 000 000	12 360 000	130	260	3535.00	7793.30	0.35	1.9	2.9
241/1000 ECAF/W33	1 000	39.3701	1 580	62.2047	580	22.8346	26 700 000	6 002 000	62 000 000	13 940 000	120	240	4300.00	9479.80	0.35	1.9	2.9
24892 CAMA/W20	460	18.1102	580	22.8346	118	4.6457	1 790 000	402 000	4 900 000	1 100 000	560	1 100	75.50	166.40	0.17	4.0	5.9
248/530 CAMA/W20	530	20.8661	650	25.5906	118	4.6457	1 840 000	414 000	5 300 000	1 190 000	480	950	86.00	189.60	0.15	4.5	6.7
248/670 CAMA/W20	670	26.3780	820	32.2835	150	5.9055	3 110 000	699 000	9 500 000	2 140 000	360	700	172.00	379.20	0.16	4.2	6.3
248/800 CAMA/W20	800	31.4961	980	38.5827	180	7.0866	4 140 000	931 000	12 900 000	2 900 000	300	560	300.00	661.40	0.15	4.5	6.7
248/900 CAMA/W20	900	35.4331	1 090	42.9134	190	7.4803	4 660 000	1 048 000	15 300 000	3 440 000	240	480	370.00	815.70	0.14	4.8	7.2
248/1060 CAMA/W20	1 060	41.7323	1 280	50.3937	218	8.5827	6 100 000	1 371 000	20 000 000	4 500 000	200	380	570.00	1256.60	0.14	4.8	7.2
248/1120 CAFA/W20	1 120	44.0945	1 360	53.5433	243	9.5669	7 250 000	1 630 000	24 000 000	5 400 000	180	340	735.00	1620.40	0.15	4.5	6.7
248/1180 CAFA/W20	1 180	46.4567	1 420	55.9055	243	9.5669	7 710 000	1 733 000	27 000 000	6 070 000	170	320	770.00	1697.50	0.14	4.8	7.2
248/1320 CAFA/W20	1 320	51.9685	1 600	62.9921	280	11.0236	9 780 000	2 199 000	33 500 000	7 530 000	140	260	1160.00	2557.30	0.15	4.5	6.7
248/1500 CAFA/W20	1 500	59.0551	1 820	71.6535	315	12.4016	12 700 000	2 855 000	45 000 000	10 120 000	110	200	1710.00	3769.90	0.15	4.5	6.7
248/1800 CAFA/W20	1 800	70.8661	2 180	85.8268	375	14.7638	17 600 000	3 956 000	63 000 000	14 160 000	75	130	2900.00	6393.30	0.15	4.5	6.7

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Spherical roller bearings

Standard and **SKF Explorer**

Series: 249/710 CA/W33 — 249/1500 CAFB/W33

Size: 710 mm — 1500 mm

27.9528 in — 59.0551 in

Series: ECB 23956 CAC/W33 — ECB 23968 CC/W33

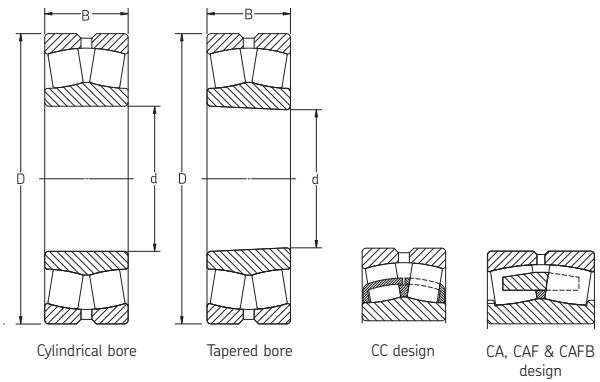
Size: 280 mm — 340 mm

11.0236 in — 13.3858 in

Series: ECB 24036 CC/W33 — ECB 24048 CC/W33

Size: 180 mm — 240 mm

7.0866 in — 9.4488 in

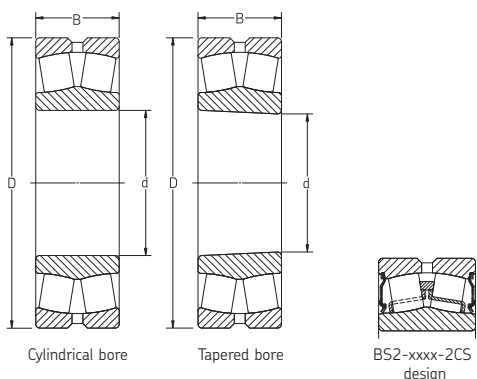


Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
249/710 CA/W33	710	27.9528	950	37.4016	243	9.5669	6 800 000	1 529 000	15 600 000	3 510 000	300	500	495.00	1091.30	0.22	3.0	4.6
249/750 CA/W33	750	29.5276	1 000	39.3701	250	9.8425	7 650 000	1 720 000	18 000 000	4 050 000	280	480	560.00	1234.60	0.22	3.0	4.6
249/800 CA/W33	800	31.4961	1 060	41.7323	258	10.1575	8 000 000	1 798 000	19 300 000	4 340 000	260	430	640.00	1410.90	0.21	3.2	4.8
249/850 CA/W33	850	33.4646	1 120	44.0945	272	10.7087	8 170 000	1 837 000	22 800 000	5 130 000	220	400	740.00	1631.40	0.22	3.0	4.6
249/950 CA/W33	950	37.4016	1 250	49.2126	300	11.8110	9 200 000	2 068 000	26 000 000	5 840 000	180	340	1015.00	2237.70	0.21	3.2	4.8
249/1000 CA/W33	1 000	39.3701	1 320	51.9685	315	12.4016	10 400 000	2 338 000	29 000 000	6 520 000	170	320	1200.00	2645.50	0.21	3.2	4.8
249/1060 CAF/W33	1 060	41.7323	1 400	55.1181	335	13.1890	11 500 000	2 585 000	32 500 000	7 310 000	160	280	1400.00	3086.40	0.21	3.2	4.8
249/1120 CAF/W33	1 120	44.0945	1 460	57.4803	335	13.1890	11 700 000	2 630 000	34 500 000	7 760 000	140	260	1500.00	3306.90	0.20	3.4	5.0
249/1180 CAF/W33	1 180	46.4567	1 540	60.6299	355	13.9764	13 600 000	3 057 000	40 500 000	9 100 000	130	240	1800.00	3968.30	0.20	3.4	5.0
249/1320 CAF/W33	1 320	51.9685	1 720	67.7165	400	15.7480	16 100 000	3 619 000	49 000 000	11 020 000	110	200	2500.00	5511.50	0.21	3.2	4.8
249/1500 CAFB/W33	1 500	59.0551	1 950	76.7717	450	17.7165	20 700 000	4 653 000	63 000 000	14 160 000	85	150	3550.00	7826.30	0.20	3.4	5.0
ECB 23956 CAC/W33	280	11.0236	380	14.9606	75	2.9528	845 000	190 000	1 760 000	396 000	1 400	1 700	57.00	125.70	0.16	4.2	6.3
ECB 23960 CC/W33	300	11.8110	420	16.5354	90	3.5433	1 200 000	270 000	2 500 000	562 000	1 300	1 600	39.50	87.10	0.19	3.6	5.3
ECB 23968 CC/W33	340	13.3858	460	18.1102	90	3.5433	1 460 000	328 000	2 800 000	629 000	1 300	1 400	45.50	100.30	0.17	4.0	5.9
ECB 24036 CC/W33	180	7.0866	280	11.0236	100	3.9370	1 080 000	243 000	1 730 000	389 000	1 300	2 200	23.00	50.70	0.33	2.0	3.0
ECB 24040 CC/W33	200	7.8740	310	12.2047	109	4.2913	1 290 000	290 000	2 120 000	477 000	1 300	1 900	31.00	68.30	0.33	2.0	3.0
ECB 24048 CC/W33	240	9.4488	360	14.1732	118	4.6457	1 600 000	360 000	2 700 000	607 000	1 100	1 600	43.00	94.80	0.30	2.3	3.4

Warning: The new reference and limiting speeds **are not to be used** as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Series: BS2-2208-2CS — BS2-2220-2CS5
Size: 40 mm — 100 mm
1.5748 in — 3.9370 in

Series: 24020-2CS2 — 24034-2CS2/VT143
Size: 100 mm — 170 mm
3.9370 in — 6.6929 in



Designation		Principal dimensions						Basic load ratings				Speed rating	Mass		Calculation factors		
Cylindrical	Tapered	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Limiting speed r/min	kg	lb	e	Y ₁	Y ₂
		mm	in	mm	in	mm	in	N	lbf	N	lbf						
BS2-2208-2CS	BS2-2208-2CSK	40	1.5748	80	3.1496	28.0	1.1024	96 500	21 700	90 000	20 300	2 200	0.57	1.30	0.28	2.4	3.6
BS2-2209-2CS	BS2-2209-2CSK	45	1.7717	85	3.3465	28.0	1.1024	102 000	23 000	98 000	22 100	2 000	0.66	1.50	0.26	2.6	3.9
BS2-2210-2CS	BS2-2210-2CSK	50	1.9685	90	3.5433	28.0	1.1024	104 000	23 400	108 000	24 300	1 900	0.70	1.50	0.24	2.8	4.2
BS2-2211-2CS	BS2-2211-2CSK	55	2.1654	100	3.9370	31.0	1.2205	125 000	28 100	127 000	28 600	1 700	1.00	2.20	0.24	2.8	4.2
BS2-2212-2CS	BS2-2212-2CSK	60	2.3622	110	4.3307	34.0	1.3386	156 000	35 100	166 000	37 400	1 600	1.30	2.90	0.24	2.8	4.2
24013-2CS5	-	65	2.5591	100	3.9370	35.0	1.3780	132 000	29 700	173 000	38 900	130	0.95	2.10	0.27	2.5	3.7
BS2-2213-2CS	BS2-2213-2CSK	65	2.5591	120	4.7244	38.0	1.4961	193 000	43 400	216 000	48 600	1 500	1.60	3.50	0.24	2.8	4.2
BS2-2214-2CS	BS2-2214-2CSK	70	2.7559	125	4.9213	38.0	1.4961	208 000	46 800	228 000	51 300	1 400	1.80	4.00	0.23	2.9	4.4
24015-2CS2	-	75	2.9528	115	4.5276	40.0	1.5748	173 000	38 900	232 000	52 200	130	1.55	3.40	0.28	2.4	3.6
BS2-2215-2CS	BS2-2215-2CSK	75	2.9528	130	5.1181	38.0	1.4961	212 000	47 700	240 000	54 000	1 300	2.10	4.60	0.22	3.0	4.6
BS2-2216-2CS	BS2-2216-2CSK	80	3.1496	140	5.5118	40.0	1.5748	236 000	53 100	270 000	60 700	1 200	2.40	5.30	0.22	3.0	4.6
BS2-2217-2CS	BS2-2217-2CSK	85	3.3465	150	5.9055	44.0	1.7323	285 000	64 100	325 000	73 100	1 100	3.00	6.60	0.22	3.0	4.6
BS2-2218-2CS	BS2-2218-2CSK	90	3.5433	160	6.2992	48.0	1.8898	325 000	73 100	375 000	84 300	1 000	3.70	8.20	0.24	2.8	4.2
BS2-2220-2CS5	-	100	3.9370	180	7.0866	55.0	2.1654	425 000	95 600	490 000	110 200	110	5.50	12.10	0.24	2.8	4.2
24020-2CS2	-	100	3.9370	150	5.9055	50.0	1.9685	285 000	64 100	415 000	93 300	95	3.20	7.10	0.28	2.4	3.6
23120-2CS2	-	100	3.9370	165	6.4961	52.0	2.0472	365 000	82 100	490 000	110 200	100	4.40	9.70	0.27	2.5	3.7
23220-2CS	-	100	3.9370	180	7.0866	60.3	2.3740	475 000	106 800	600 000	135 000	700	6.70	14.80	0.30	2.3	3.4
23024-2CS2	-	120	4.7244	180	7.0866	46.0	1.8110	355 000	79 900	510 000	115 000	100	4.20	9.30	0.20	3.4	5.0
24024-2CS2	-	120	4.7244	180	7.0866	60.0	2.3622	430 000	96 700	670 000	151 000	80	5.45	12.00	0.28	2.4	3.6
23026-2CS2	-	130	5.1181	200	7.8740	52.0	2.0472	430 000	96 700	610 000	137 000	95	6.00	13.20	0.21	3.2	4.8
24126-2CS2	-	130	5.1181	210	8.2677	80.0	3.1496	680 000	152 900	1 000 000	225 000	67	11.00	24.30	0.33	2.0	3.0
24028-2CS2	-	140	5.5118	210	8.2677	69.0	2.7165	570 000	128 200	900 000	202 000	55	8.55	18.80	0.28	2.4	3.6
24128-2CS2	-	140	5.5118	225	8.8583	85.0	3.3465	765 000	172 000	1 160 000	261 000	55	13.50	29.80	0.35	1.9	2.9
24030-2CS2	-	150	5.9055	225	8.8583	75.0	2.9528	655 000	147 300	1 040 000	234 000	67	10.50	23.10	0.28	2.4	3.6
24032-2CS2/VT143	-	160	6.2992	240	9.4488	80.0	3.1496	750 000	168 600	1 200 000	270 000	450	13.00	28.70	0.28	2.4	3.6
24034-2CS2/VT143	-	170	6.6929	260	10.2362	90.0	3.5433	930 000	209 100	1 460 000	328 000	400	17.50	38.60	0.33	2.0	3.0

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Spherical roller bearings

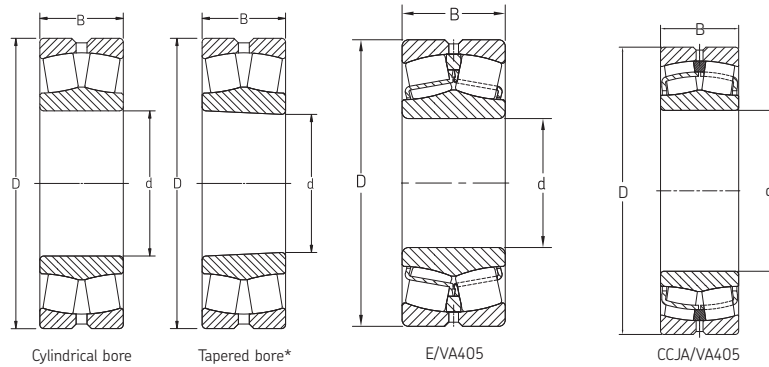
Shaker screen

SKF Explorer

Series: 22308 E/VA405 — 22340 CCJA/VA405

Size: 40 mm — 200 mm

1.5748 in — 7.8740 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
22308 E/VA405	40	1.5748	90	3.5433	33	1.2992	150 000	33 700	140 000	31 500	6 000	8 000	1.05	2.30	0.37	1.80	2.70
22309 E/VA405	45	1.7717	100	3.9370	36	1.4173	183 000	41 100	183 000	41 100	5 300	7 000	1.40	3.10	0.37	1.80	2.70
22310 E/VA405	50	1.9685	110	4.3307	40	1.5748	220 000	49 500	224 000	50 400	4 800	6 300	1.90	4.20	0.37	1.80	2.70
22311 E/VA405	55	2.1654	120	4.7244	43	1.6929	270 000	60 700	280 000	62 900	4 300	5 600	2.45	5.40	0.35	1.90	2.90
22312 E/VA405	60	2.3622	130	5.1181	46	1.8110	310 000	69 700	335 000	75 300	4 000	5 300	3.10	6.80	0.35	1.90	2.90
22313 E/VA405	65	2.5591	140	5.5118	48	1.8898	340 000	76 400	360 000	80 900	3 800	5 000	3.75	8.30	0.35	1.90	2.90
22314 E/VA405	70	2.7559	150	5.9055	51	2.0079	400 000	89 900	430 000	96 700	3 400	4 500	4.55	10.00	0.33	2.00	3.00
22315 EJA/VA405	75	2.9528	160	6.2992	55	2.1654	440 000	98 900	475 000	106 800	3 200	4 300	5.55	12.20	0.35	1.90	2.90
22316 EJA/VA405	80	3.1496	170	6.6929	58	2.2835	490 000	110 200	540 000	121 400	3 000	4 000	6.60	14.60	0.35	1.90	2.90
22317 EJA/VA405	85	3.3465	180	7.0866	60	2.3622	550 000	123 600	620 000	139 400	2 800	3 800	7.65	16.90	0.33	2.00	3.00
22318 EJA/VA405	90	3.5433	190	7.4803	64	2.5197	610 000	137 100	695 000	156 200	2 600	3 600	9.05	20.00	0.33	2.00	3.00
22319 EJA/VA405	95	3.7402	200	7.8740	67	2.6378	670 000	150 600	765 000	172 000	2 600	3 400	10.50	23.10	0.33	2.00	3.00
22320 EJA/VA405	100	3.9370	215	8.4646	73	2.8740	815 000	183 200	950 000	213 600	2 400	3 000	13.50	29.80	0.33	2.00	3.00
22322 EJA/VA405	110	4.3307	240	9.4488	80	3.1496	950 000	213 600	1 120 000	251 800	2 000	2 800	18.40	40.60	0.33	2.00	3.00
22324 CCJA/VA405	120	4.7244	260	10.2362	86	3.3858	965 000	216 900	1 120 000	251 800	2 000	2 600	23.00	50.70	0.35	1.90	2.90
22326 CCJA/VA405	130	5.1181	280	11.0236	93	3.6614	1 120 000	251 800	1 320 000	296 700	1 800	2 400	29.00	63.90	0.35	1.90	2.90
22328 CCJA/VA405	140	5.5118	300	11.8110	102	4.0157	1 290 000	290 000	1 560 000	350 700	1 700	2 200	36.50	80.50	0.35	1.90	2.90
22330 CCJA/VA405	150	5.9055	320	12.5984	108	4.2520	1 460 000	328 200	1 760 000	395 600	1 600	2 000	43.50	95.90	0.35	1.90	2.90
22332 CCJA/VA405	160	6.2292	340	13.3858	114	4.4882	1 600 000	359 700	1 960 000	440 600	1 500	1 900	52.00	114.60	0.35	1.90	2.90
22334 CCJA/VA405	170	6.6929	360	14.1732	120	4.7244	1 760 000	395 600	2 160 000	485 600	1 400	1 800	61.00	134.50	0.33	2.00	3.00
22336 CCJA/VA405	180	7.0866	380	14.9606	126	4.9606	2 000 000	449 600	2 450 000	550 800	1 300	1 700	71.50	157.60	0.35	1.90	2.90
22338 CCJA/VA405	190	7.4803	400	15.7480	132	5.1968	2 120 000	476 600	2 650 000	595 700	1 200	1 600	82.50	181.90	0.35	1.90	2.90
22340 CCJA/VA405	200	7.8740	420	16.5354	138	5.4331	2 320 000	521 500	2 900 000	651 900	1 200	1 500	95.00	209.40	0.33	2.00	3.00

* Tapered (K) bore available on limited sizes.

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Shaker screen

Series: 452308 M2/W502 — 452340 M2/W502

Size: 40 mm — 200 mm

1.5748 in — 7.8740 in

Series: 453322 M2/W502 — 453332 M2/W502

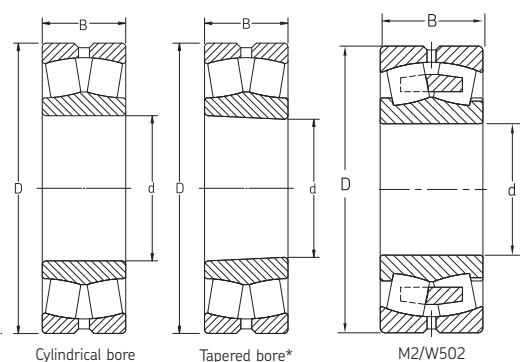
Size: 110 mm — 160 mm

4.3307 in — 6.2992 in

Series: 453322 EJA/VA405 — 453332 CCJA/VA405

Size: 110 mm — 160 mm

4.3307 in — 6.2992 in



Cylindrical bore

Tapered bore*

M2/W502

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
452308 M2/W502	40	1.5748	90	3.5433	33	1.2992	107 000	24 100	112 000	25 200	5 600	8 000	1.00	2.20	0.37	1.80	2.70
452309 M2/W502	45	1.7717	100	3.9370	36	1.4173	133 000	29 900	150 000	33 700	4 800	7 000	1.35	3.00	0.37	1.80	2.70
452310 M2/W502	50	1.9685	110	4.3307	40	1.5748	168 000	37 800	186 000	41 800	4 300	6 300	1.85	4.10	0.37	1.80	2.70
452311 M2/W502	55	2.1654	120	4.7244	43	1.6929	199 000	44 700	232 000	52 200	4 000	6 000	2.35	5.20	0.35	1.90	2.90
452312 M2/W502	60	2.3622	130	5.1181	46	1.8110	235 000	52 800	280 000	62 900	3 800	5 300	2.95	6.50	0.35	1.90	2.90
452313 M2/W502	65	2.5591	140	5.5118	48	1.8898	258 000	58 000	305 000	68 600	3 400	5 000	3.55	7.80	0.35	1.90	2.90
452314 M2/W502	70	2.7559	150	5.9055	51	2.0079	299 000	67 200	360 000	80 900	3 200	4 500	4.30	9.50	0.35	1.90	2.90
452316 M2/W502	80	3.1496	170	6.6929	58	2.2835	374 000	84 100	465 000	104 500	2 800	4 000	6.10	13.40	0.35	1.90	2.90
452317 M2/W502	85	3.3465	180	7.0866	60	2.3622	408 000	91 700	490 000	110 200	2 600	3 800	7.25	16.00	0.33	2.00	3.00
452318 M2/W502	90	3.5433	190	7.4803	64	2.5197	460 000	103 400	570 000	128 100	2 400	3 600	8.60	19.00	0.35	1.90	2.90
452319 M2/W502	95	3.7402	200	7.8740	67	2.6378	518 000	116 400	670 000	150 600	2 400	3 400	10.00	22.00	0.35	1.90	2.90
452320 M2/W502	100	3.9370	215	8.4646	73	2.8740	610 000	137 100	800 000	179 800	2 200	3 200	13.00	28.70	0.35	1.90	2.90
452322 M2/W502	110	4.3307	240	9.4488	80	3.1496	725 000	163 000	965 000	216 900	2 000	2 800	18.00	39.70	0.35	1.90	2.90
452324 M2/W502	120	4.7244	260	10.2362	86	3.3858	845 000	190 000	1 140 000	256 300	1 800	2 600	22.00	48.50	0.35	1.90	2.90
452326 M2/W502	130	5.1181	280	11.0236	93	3.6614	978 000	219 900	1 320 000	296 700	1 700	2 400	28.50	62.80	0.35	1.90	2.90
452328 M2/W502	140	5.5118	300	11.8110	102	4.0157	1 130 000	254 000	1 560 000	350 700	1 500	2 200	34.50	76.10	0.35	1.90	2.90
452330 M2/W502	150	5.9055	320	12.5984	108	4.2520	1 290 000	290 000	1 800 000	404 600	1 400	2 000	41.50	91.50	0.35	1.90	2.90
452332 M2/W502	160	6.2992	340	13.3858	114	4.4882	1 400 000	314 700	1 960 000	440 600	1 300	1 900	50.00	110.20	0.35	1.90	2.90
452340 M2/W502	200	7.8740	420	16.5354	138	5.4331	1 020 000	229 300	2 900 000	651 900	1 100	1 500	93.00	205.00	0.33	2.00	3.00
453322 M2/W502	110	4.3307	240	9.4488	92.1	3.6260	817 000	183 700	1 100 000	247 300	1 900	2 800	20.50	45.20	0.40	1.70	2.50
453324 M2/W502	120	4.7244	260	10.2362	106	4.1732	978 000	219 900	1 340 000	301 200	1 700	2 600	27.00	59.50	0.43	1.60	2.30
453328 M2/W502	140	5.5118	300	11.8110	118	4.6457	1 240 000	278 800	1 730 000	388 900	1 500	2 200	40.90	90.20	0.40	1.70	2.50
453332 M2/W502	160	6.2992	340	13.3858	136	5.3543	1 640 000	368 700	2 400 000	539 500	1 300	1 900	60.20	132.70	0.40	1.70	2.50
453322 EJA/VA405	110	4.3307	240	9.4488	92.1	3.6260	950 000	213 600	1 120 000	251 800	2 000	2 800	20.50	45.20	0.33	2.00	3.00
453324 CCJA/VA405	120	4.7244	260	10.2362	106	4.1732	965 000	216 900	1 120 000	251 800	2 000	2 600	27.00	59.50	0.35	1.90	2.90
453326 CCJA/VA405	130	5.1181	280	11.0236	112	4.4094	1 120 000	251 800	1 320 000	296 700	1 800	2 400	35.50	78.30	0.35	1.90	2.90
453328 CCJA/VA405	140	5.5118	300	11.8110	118	4.6457	1 290 000	290 000	1 560 000	350 700	1 700	2 200	40.90	90.20	0.35	1.90	2.90
453330 CCJA/VA405	150	5.9055	320	12.5984	128	5.0394	1 460 000	328 200	1 760 000	395 600	1 600	2 000	47.50	104.70	0.35	1.90	2.90
453332 CCJA/VA405	160	6.2992	340	13.3858	136	5.3543	1 600 000	359 700	1 960 000	440 600	1 500	1 900	60.20	132.70	0.35	1.90	2.90

* Tapered (K) bore available on limited sizes.

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

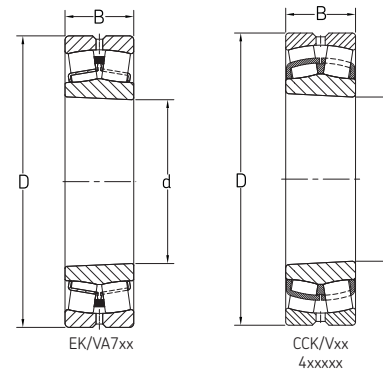
Spherical roller bearings

Printing press

Series: 22209 CCK/VA759 — 23226 VAD

Size: 45.000 mm — 130.000 mm

1.7717 in — 5.1181 in



Please contact SKF Applications Engineering for tapered journal (X drawings) details.

Designation		Principal dimensions						Basic load ratings				Mass		Calculation factors		
Current	Basic/ replaced design	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		kg	lb	e	Y ₁	Y ₂
		mm	in	mm	in	mm	in	N	lbf	N	lbf					
22209 CCK/VA759	22209 CCK/W33	45.000	1.7717	85	3.3465	23.0	0.9055	138 000	31 000	160 000	31 100	1.35	3.00	0.26	2.6	3.9
22211 EK/VA751	22211 VAE	55.000	2.1654	100	3.9370	25.0	0.9843	99 500	22 400	118 000	26 500	0.82	1.80	0.24	2.8	4.2
22212 EK/VA751	22212 VAD	60.000	2.3622	110	4.3307	28.0	1.1024	122 000	27 000	146 000	32 800	1.10	2.45	0.24	2.8	4.2
22212 EK/VA7582 [‡]	22212 EK/VA751	60.000	2.3622	110	4.3307	28.0	1.1024	122 000	27 000	146 000	32 800	1.10	2.45	0.24	2.8	4.2
22220 VAE	22220 CCK/W33	100.000	3.9370	180	7.0866	46.0	1.8110	311 000	70 000	415 000	93 300	4.85	10.50	0.24	2.8	4.2
22220 EK/VA751	22220 EK/VA751	100.000	3.9370	180	7.0866	46.0	1.8110	425 000	95 500	490 000	110 200	4.80	10.60	0.24	2.8	4.2
22230 VAB	22230 CCK/W33	150.000	5.9055	270	10.6299	73.0	2.8740	736 000	166 000	1 080 000	243 000	18.00	39.50	0.26	2.6	3.9
22309 EK/VA751	450918	45.000	1.7717	100	3.9370	36.0	1.4173	138 000	31 000	160 000	31 100	1.35	3.00	0.37	1.8	2.7
22310 EK/VA751	467964	50.000	1.9685	110	4.3307	40.0	1.5748	176 000	39 600	200 000	45 000	1.85	4.10	0.37	1.8	2.7
22311 EK/VA751	22311 VAE	55.000	2.1654	120	4.7244	43.0	1.6929	199 000	44 800	232 000	52 200	2.35	5.20	0.35	1.9	2.9
22312 EK/VA751	467000	60.000	2.3622	130	5.1181	46.0	1.8110	235 000	52 900	280 000	63 000	2.95	6.50	0.35	1.9	2.9
22312 EK/VA7582 [‡]	22312 EK/VA7583 [‡]	60.000	2.3622	130	5.1181	46.0	1.8110	235 000	52 900	280 000	63 000	2.95	6.50	0.35	1.9	2.9
22312 EK/VA7583 [‡]	22312 EK/VA751	60.000	2.3622	130	5.1181	46.0	1.8110	235 000	52 900	280 000	63 000	2.95	6.50	0.35	1.9	2.9
22315 CCK/VA755	22315 CCK/W33	75.000	2.9528	160	6.2992	55.0	2.1654	345 000	77 600	430 000	96 700	5.25	11.50	0.35	1.9	2.9
22315 VAE [‡]	466915	75.000	2.9528	160	6.2992	55.0	2.1654	345 000	77 600	430 000	96 700	5.25	11.50	0.35	1.9	2.9
22315 VAH [‡]	22315 VAE [‡]	75.000	2.9528	160	6.2992	55.0	2.1654	345 000	77 600	430 000	96 700	5.25	11.50	0.35	1.9	2.9
22319 VAC	22319 CCK/W33	95.000	3.7402	200	7.8740	67.0	2.6378	518 000	117 000	670 000	151 000	10.00	22.00	0.35	1.9	2.9
23122 VAF	23122 CCK/W33	110.000	4.3307	180	7.0866	56.0	2.2047	374 000	84 000	585 000	132 000	5.45	12.00	0.30	2.3	3.4
23124 VAA	23124 CCK/W33	120.000	4.7244	200	7.7840	62.0	2.4409	437 000	98 300	695 000	156 000	7.80	17.00	0.28	2.4	3.6
23130 VAA**	23130 CCK/W33	151.333	5.9579	250	9.8425	80.0	3.1496	725 000	163 000	1 200 000	270 000	16.00	35.50	0.30	2.3	3.4
23220 VAA	23220 CCK/W33	100.000	3.9370	180	7.0866	60.3	2.3470	414 000	93 200	600 000	135 000	6.70	15.00	0.33	2.0	3.0
ECB 23220 VAA	EVV 23220 VAA	100.000	3.9370	180	7.0866	60.3	2.3470	414 000	93 200	600 000	135 000	6.70	15.00	0.33	2.0	3.0
23222 CCK/VA756	23222 CCK/W33	110.000	4.3307	200	7.8740	69.8	2.7480	518 000	117 000	765 000	172 000	9.70	21.50	0.33	2.0	3.0
23226 VAD	23226 CCK/W33	130.000	5.1181	230	9.0551	80.0	3.1496	690 000	155 000	1 060 000	238 000	14.00	31.00	0.33	2.0	3.0

* Special bore size

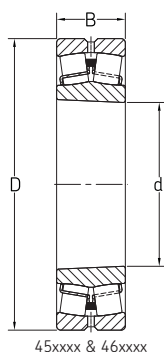
** Controlled inner ring width

‡ Coater roll bearing w/ .000050 runout max

‡‡ Coater roll bearing w/ .000075 runout max.

Warning: The new reference and limiting speeds **are not to be used** as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Printing press
 Series: 453538 — 468603
 Size: 50.000 mm — 110.000 mm
 1.9685 in — 4.3307 in



Please contact SKF Applications Engineering for tapered journal (X drawings) details.

Designation		Principal dimensions						Basic load ratings				Mass		Calculation factors		
Current	Basic/ replaced design	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		kg	lb	e	Y ₁	Y ₂
		mm	in	mm	in	mm	in	N	lbf	N	lbf					
453538	22210 CCK/W33	50.000	1.9685	90	3.5433	23.0	.9055	84 500	19 000	100 000	22 500	0.60	1.30	0.24	2.8	4.2
454548	23126 CCK/W33	130.000	5.1181	210	8.2677	64.0	2.5197	489 000	110 000	780 000	175 000	8.55	19.00	0.28	2.4	3.6
458681	22217 CCK/W33	85.000	3.3465	150	5.9055	36.0	1.4173	210 000	47 200	270 000	60 700	2.55	5.60	0.22	3.0	4.6
465123	22216 CCK/W33	80.000	3.1496	140	5.5118	33.0	1.2992	176 000	39 600	228 000	51 300	2.05	4.50	0.22	3.0	4.6
466144	23122 CCK/W33	110.000	4.3307	180	7.0866	56.0	2.2047	374 000	84 000	585 000	132 000	5.45	12.00	0.30	2.3	3.4
466144 A**	23122 CCK/W33	110.000	4.3307	180	7.0866	56.0	2.2047	374 000	84 000	585 000	132 000	5.45	12.00	0.30	2.3	3.4
466713	23230 CCK/W33	150.000	5.9055	270	10.6299	96.0	3.7795	937 000	211 000	1 460 000	328 000	24.00	53.00	0.35	1.9	2.9
466816	23226 CCK/W33	130.000	5.1181	230	9.0551	80.0	3.1496	690 000	155 000	1 060 000	238 000	14.00	31.00	0.33	2.0	3.0
466817	23228 CCK/W33	140.000	5.5118	250	9.8425	88.0	3.4646	799 000	180 000	1 250 000	281 000	18.50	41.00	0.33	2.0	3.0
466915	22315 CCK/W33	75.000	2.9528	160	6.2992	55.0	2.1654	345 000	77 600	430 000	96 700	5.25	11.50	0.35	1.9	2.9
467304	22314 CCK/W33	70.000	2.7559	150	5.9055	51.0	2.0079	311 000	70 000	380 000	85 400	4.30	9.50	0.35	1.9	2.9
467311	22316 CCK/W33	80.000	3.1496	170	6.6929	58.0	2.2835	374 000	84 200	455 000	102 000	6.20	13.50	0.35	1.9	2.9
467315	22317 CCK/W33	85.000	3.3465	180	7.0866	60.0	2.3622	420 000	94 500	520 000	117 000	7.25	16.00	0.33	2.0	3.0
467418	22218 CCK/W33	90.000	3.5433	160	6.2992	40.0	1.5748	253 000	56 900	340 000	76 400	3.25	7.15	0.23	2.9	4.4
468043	23222 CCK/W33	110.000	4.3307	200	7.8740	69.8	2.7480	518 000	117 000	765 000	172 000	9.70	21.50	0.33	2.0	3.0
468603	22222 CCK/W33	110.000	4.3307	200	7.8740	53.0	2.0866	408 000	91 800	560 000	126 000	7.00	15.50	0.25	2.7	4.0

* Special bore size

** Controlled inner ring width

Warning: The new reference and limiting speeds **are not to be used** as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
 Consult SKF USA Inc. prior to design change or order placement.

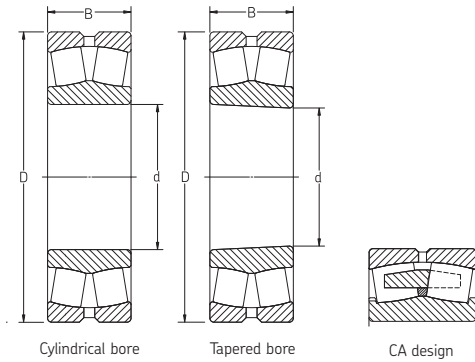
Spherical roller bearings

Special bearings

Series: I-26310 CAM2/W33 — ECBI-112630 CAC/W33

Size: 200 mm — 350 mm

7.8740 in — 13.7795 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			-	-	-
I-26310 CAM2/W33*	200	7.8740	380	14.9606	126	4.9606	1 730 000	390 000	2 700 000	610 000	750	950	68.00	150.00	0.33	2.0	3.0
I-26311 CAM2/W33*	220	8.6614	420	16.5354	138	5.4331	2 070 000	465 000	3 200 000	720 000	670	850	90.50	200.00	0.33	2.0	3.0
I-28809 CAM2/W33*	190	7.4803	280	11.0236	67	2.6378	644 000	145 000	1 140 000	256 000	1 700	2 200	15.00	33.00	0.21	3.2	4.8
I-28814 CAM2/W33*	240	9.4488	350	13.7795	83	3.2677	978 000	220 000	1 830 000	411 000	850	1 100	27.50	60.50	0.21	3.2	4.8
I-28821 CACM2/W33*	310	12.2047	455	17.9134	109	4.2913	1 680 000	378 000	3 250 000	730 000	630	800	66.00	145.00	0.21	3.2	4.8
I-37611 CAM2/W33**	220	8.6614	420	16.5354	138	5.4331	2 070 000	465 000	3 200 000	720 000	670	850	90.50	200.00	0.33	2.0	3.0
I-37617 CA/W33**	340	13.3858	640	25.1969	190	7.4803	4 080 000	920 000	6 550 000	1 500 000	480	600	150.00	640.00	0.30	2.3	3.4
I-112618 CA/W33**	250	9.8425	410	16.1417	128	5.0394	1 760 000	400 000	3 100 000	700 000	630	800	68.00	150.00	0.30	2.3	3.4
ECBI-112630 CAC/W33**	350	13.7795	590	23.2283	192	7.5591	3 740 000	840 500	6 800 000	1 530 000	430	530	220.00	485.00	0.30	2.3	3.4

* Cylindrical bore

** Tapered bore

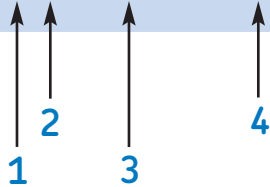
Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



CARB[®]

Toroidal roller bearings

C2222 KV TN9 / C3



1. Variations:

- K** Bearing with 1 to 12 tapered bore
- K30** Bearing with 1 to 30 tapered bore

2. Internal design:

- V** Full complement bearing (without cage)

3. Cage designs:

- TN9** Nylon cage, rolling element guided
- M** Machined brass cage (large bore > 500 mm only)
- No cage suffix indicates window-type sheet steel cage

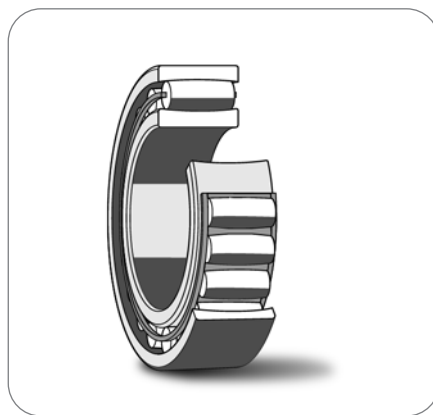
4. Clearance & features:

- C2** Radial internal clearance < Normal
- (C0)*** Normal radial internal clearance
- C3** Radial internal clearance > Normal
- C4** Radial internal clearance > C3
- C08** RBEC class 5 (ISO class P5) running accuracy
- HA3** Case hardened inner ring
- HA4** Case hardened inner and outer rings and rollers
- VE240** Bearing modified for greater axial displacement
- 2CS5** Two synthetic rubber seals with Kluber grease

*Not marked on bearing or package

Technical features

Boundary dimensions	In accordance with ISO 15-1998
Tolerances	In accordance with ISO 492-2002 SKF CARB® bearings up to 315 mm bore diameter are produced to higher precision than ISO Normal tolerances; the width tolerance is considerably less than the ISO Normal tolerance. The running accuracy is to tolerance class P5 as standard. For larger bearings, P5 tolerances are also available with the suffix C08 or closer tolerances are available with the suffix VQ 424.
Heat stabilization	392° F (200° C)
Misalignment	0.5 degrees between the inner and outer rings
Cage material	
Standard	Steel
Optional	Nylon (TN9) Brass (M)
Axial load – max	None
Seals	2CS5 - 2 synthetic rubber (NRB) seals with high temperature (70 - 100%) fill grease



*CARB bearing
(data tables on page 176)*

Introduction

The CARB toroidal roller bearing can support very heavy radial loads. It is intended exclusively as a non-locating or floating bearing and as such is ideal with its combination of self-aligning and axial alignment properties, opening up completely new opportunities to save space, weight and arrangement costs. By deliberately displacing the rings axially with respect to each other, it is possible to accurately set the internal radial clearance in the bearing.

These bearings permit smaller and lighter bearing arrangement designs offering the same or heightened performance in a particularly impressive manner; for example, in planetary gearboxes. They also simplify the bearing arrangement design for long shafts, which are subjected to temperature variations and also reduce vibrations; for example, in papermaking machines or ship propulsion arrangements. CARB does not pass axial vibrations in the shaft to the housing. The list of applications where CARB is appropriate is long. SKF Applications Engineering can supply additional information and special publications on request.

Basic design

The CARB toroidal roller bearing is a single row bearing with long, slightly crowned rollers. The raceways of both inner and outer rings are concave and symmetrical about a line through the bearing center. The optimum combination of raceway profiles guarantees a favorable load distribution in the bearings as well as low friction.

The rollers of the CARB are self-guiding, i.e. they will always adopt the position where the load is evenly distributed over the roller length—irrespective of whether the inner ring is axially displaced and/or misaligned with respect to the outer ring.

The load carrying capacity of the CARB is very high even when it has to compensate for angular misalignments or axial displacements. This results in operationally reliable bearing arrangements with long service life. The load carrying capacity of the full complement CARB is appreciably higher than that of the caged bearing.

The CARB is produced in a caged design (**Figure 1**) as well as a full complement version (**Figure 2**) and is available with a cylindrical or with a tapered bore. Depending on bearing width, the tapered bore has a taper of either 1:12 (designation suffix K) which is the most popular or 1:30 (suffix K30) which is limited to only a few sizes.

SKF Explorer class bearings

All CARB bearings are manufactured to the SKF Explorer performance class. In the product tables, the SKF Explorer bearing designations are [printed in blue](#).

Product highlights

A breakthrough in bearing technology

The CARB (Compact Aligning Roller Bearing) toroidal roller bearing is a major breakthrough in bearing technology. This is the first new bearing type in over 50 years.

Three-in-one bearing

The CARB toroidal roller bearing is space-saving like a needle roller bearing, self-aligning like a spherical roller bearing, and axially free like a cylindrical bearing—combining the application and performance advantages of all three bearings.

Longer service life, increased uptime, reduced costs

A toroidal roller bearing adapts to both angular misalignment and axial displacement simultaneously. Because the CARB tolerates more than any other bearing, it can help extend service life, increase machine uptime, and reduce maintenance costs where conventional bearings now experience premature failure.

Large product assortment

CARB is available with a cage or in a full complement design without a cage, with a choice of cylindrical or tapered bore.

Application flexibility

The low minimum load requirement makes the CARB a good candidate for fans while the higher running accuracy makes it suitable for precision equipment.

Figure 1

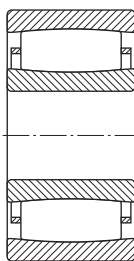
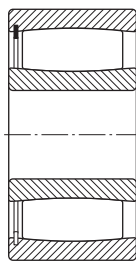


Figure 2



Introduction

Variations

Bearings on adapter or withdrawal sleeve

A CARB with tapered bore can be mounted on an adapter sleeve with a low profile locknut (KML) (Figure 3) or a withdrawal sleeve (Figure 4) in the same way as a self-aligning ball bearing or a spherical roller bearing on smooth or stepped shafts in an easy and rapid manner. If large axial displacements are expected, care should be taken to see that they take place towards the same side of the arrangement as the sleeve locknut (Figure 5).

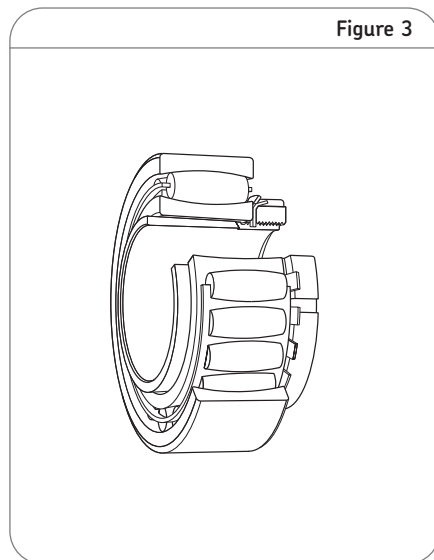


Figure 3

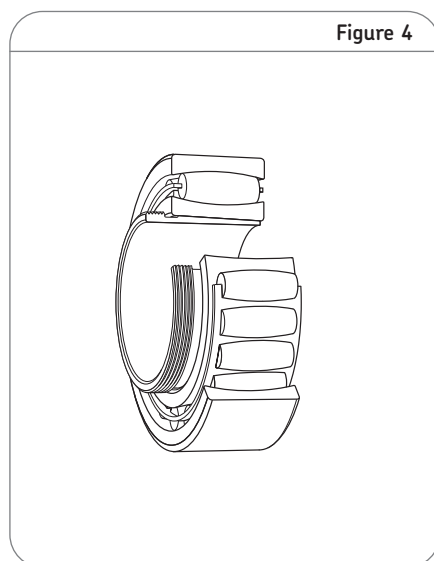


Figure 4

Bearings on adapter sleeve

The use of an adapter sleeve is the most popular means of securing a bearing with a tapered bore on a cylindrical seating. Adapter sleeves can be used both with smooth and stepped shafts. They are simple to mount and require no additional fixation on the shaft.

On smooth shafts CARB can be mounted at any position. Where stepped shafts are used together with a support ring, the bearing position can be accurately defined and dismounting of the bearing is also simplified.

Where appropriate, adapter sleeves of the E and L variants are available, e.g. H 310 E. Adapter sleeves of the E type are supplied with a spacer ring which should be arranged between the bearing and the locking washer to prevent the washer from contacting the cage when axial displacement occurs. Where adapter sleeves of the L type are concerned, the standard locking arrangement (KM + MB) has been replaced by the lower section nut KML with MBL locking washer. Any contacting of the cage by the sleeve locking device is thus prevented.

Mounting and dismounting of bearings on adapter sleeves can be greatly facilitated by the use of a hydraulic nut (Figure 6) or adapter sleeves for oil injection mounting. For details, please reference the SKF Bearing Installation and Maintenance Guide (140-710).

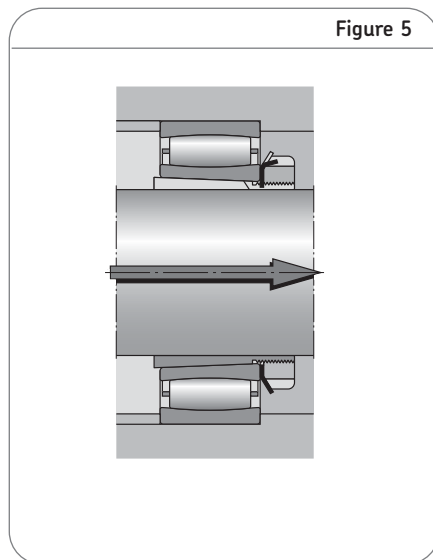


Figure 5

Appropriate housings

Any CARB toroidal roller bearing belonging to C22xx, C23xx can be mounted in almost any SKF standard bearing housing, irrespective of whether the bearing is mounted on a cylindrical stepped shaft or on an adapter sleeve on a smooth shaft. Figure 7 shows a CARB C 2220 in a SNL plummer block housing.

The extensive range of SKF housings can be found in other SKF publications that can be supplied on request.

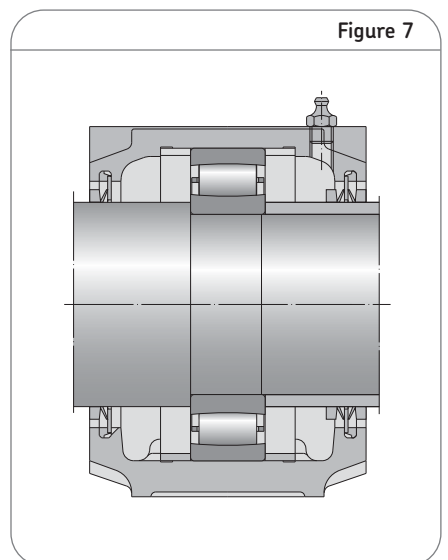


Figure 7

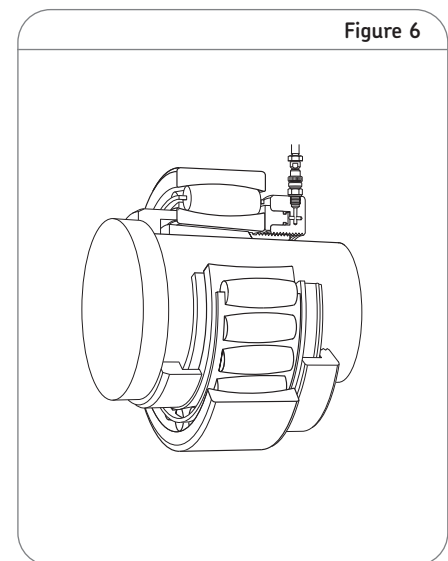


Figure 6

Internal clearance

Radial internal clearance

The CARB is produced as standard with Normal radial internal clearance. Many of the bearings are also available with C3 clearance and some with the smaller C2 or the much larger C4 clearance. The availability of bearings with clearance other than Normal should be checked prior to design change or order placement.

The radial internal clearance limits for bearings with cylindrical bore are given in **Table 1** and for bearings with tapered bore in **Table 2**. They are valid for bearings before mounting and under zero measuring load.

Axial displacement of the one ring in relation to the other will reduce the clearance in a CARB. This is also the reason why the clearance is larger than a comparable size of spherical roller bearing having the same clearance class.

Axial displacement

The permissible axial displacement of the inner ring of a CARB with respect to the outer ring depends on the radial internal clearance. The relationship between the radial internal clearance and the permissible axial displacement from the central position is shown in **Diagram 1**, page 175. In fact, the bearing rings can be further displaced with respect to each other, even into the grey region, without any effect on bearing life. Bearing friction, however, will be increased by up to 50% as a result.

The guideline values given for s in the product tables represent the theoretically possible axial displacement of one ring in relation to the other from the central position under zero misalignment where the rollers

- of bearings with a cage will not protrude from the bearing rings, and
- of full complement bearings will not contact the retaining ring in the outer ring raceway.

A rough estimate of the permissible axial displacement for bearings having Normal radial internal clearance, one ring mounted with an interference fit, and an operating temperature of approximately 158° F (70° C), is 0.5 s . If the bearing has C3 radial internal clearance, the corresponding estimate is 0.65 s .

Table 1

Radial internal clearance of CARB bearings with cylindrical bore

Bore diameter		Radial internal clearance									
d	incl.	C2		Normal		C3		C4		C5	
over		min	max	max	min	max	min	max	min	max	min
mm		µm		µm		µm		µm		µm	
18	24	15	27	27	39	39	51	51	65	65	81
24	30	18	32	32	46	46	60	60	76	76	94
30	40	21	39	39	55	55	73	73	93	93	117
40	50	25	45	45	65	65	85	85	109	109	137
50	65	33	54	54	79	79	104	104	139	139	174
65	80	40	66	66	96	96	124	124	164	164	208
80	100	52	82	82	120	120	158	158	206	206	258
100	120	64	100	100	144	144	186	186	244	244	306
120	140	76	119	119	166	166	215	215	280	280	349
140	160	87	138	87	195	195	252	252	321	321	398
160	180	97	152	97	217	217	280	280	361	361	448
180	200	108	171	108	238	238	307	307	394	394	495
200	225	118	187	118	262	118	337	118	434	118	545
225	250	128	202	128	282	128	368	128	478	128	602
250	280	137	221	137	307	137	407	137	519	137	655
280	315	152	236	152	330	152	434	152	570	152	714
315	355	164	259	164	360	164	483	164	620	164	789
355	400	175	280	175	395	175	528	175	675	175	850
400	450	191	307	191	435	191	577	191	745	191	929
450	500	205	335	205	475	205	633	205	811	205	1015
500	560	220	360	220	518	220	688	220	890	220	1110
560	630	245	395	245	567	245	751	245	975	245	1215
630	710	267	435	267	617	267	831	267	1075	267	1335
710	800	300	494	300	680	300	920	300	1200	300	1480
800	900	329	535	329	755	329	1015	329	1325	329	1655
900	1000	370	594	370	830	370	1120	370	1460	370	1830
1000	1120	410	660	410	930	410	1260	410	1640	410	2040
1120	1250	450	720	450	1020	450	1380	450	1800	450	2240

The permissible axial displacement is limited in operation by the operating clearance in the bearing and the actual angular misalignment. The influence of the operating clearance is shown in **Diagram 1**, page 175.

If the axial movement exceeds 50% of the permissible axial displaceability "s", it should be checked, whether the residual radial internal clearance is sufficiently large.

If the axial movement exceeds 50% of the axial displaceability "s", and the misalignment attains approximately 0.5°, the actual axial displacement of the rollers is to also be checked.

For additional information, please contact SKF Applications Engineering.

Table 2

Radial internal clearance of CARB bearings with tapered bore

Bore diameter		Radial internal clearance										
d		C2		Normal		C3		C4		C5		
over	incl.	min	max	max	min	max	min	max	min	max	min	
mm		µm		µm		µm		µm		µm		
18	24	19	31	31	43	43	55	55	69	69	85	
24	30	23	37	37	51	51	65	65	81	81	99	
30	40	28	46	46	62	62	80	80	100	100	124	
40	50	33	53	53	73	73	93	93	117	117	145	
50	65	42	63	63	88	88	113	113	148	148	183	
65	80	52	78	78	108	108	136	136	176	176	220	
80	100	64	96	96	132	132	172	172	218	218	272	
100	120	75	115	115	155	155	201	201	255	255	321	
120	140	90	135	135	180	180	231	231	294	294	365	
140	160	104	155	155	212	212	269	269	338	338	415	
160	180	118	173	173	238	238	301	301	382	382	469	
180	200	130	193	193	260	260	329	329	416	416	517	
200	225	144	213	213	288	288	363	363	460	460	571	
225	250	161	235	235	315	315	401	401	511	511	635	
250	280	174	258	258	344	344	444	444	556	556	692	
280	315	199	283	283	377	377	481	481	617	617	761	
315	355	233	318	318	419	419	542	542	679	679	848	
355	400	251	350	350	471	471	598	598	751	751	920	
400	450	281	383	383	525	525	653	653	835	835	1005	
450	500	305	435	435	575	575	733	733	911	911	1115	
500	560	335	475	475	633	633	803	803	1005	1005	1225	
560	630	380	530	530	702	702	886	886	1100	1100	1350	
630	710	422	590	590	772	772	986	986	1230	1230	1490	
710	800	480	674	674	860	860	1100	1100	1380	1380	1660	
800	900	529	735	735	955	955	1215	1215	1525	1525	1855	
900	1000	580	814	814	1040	1040	1340	1340	1670	1670	2050	
1000	1120	645	895	895	1165	1165	1495	1495	1875	1875	2275	
1120	1250	705	975	975	1275	1275	1635	1635	2055	2055	2495	

Loads

Minimum load

In order to provide satisfactory operation, the CARB, like all ball and roller bearings, must always be subjected to a given minimum load, particularly if it is to operate at high speeds or is subjected to high accelerations or rapid changes in the direction of load. Under such conditions the inertia forces of the rollers and cage, and the friction in the lubricant, can have a detrimental effect on the rolling conditions in the bearing arrangement and may cause damaging sliding movements to occur between the rollers and the raceways.

The requisite minimum radial load to be applied in such cases can be determined by using the Interactive Engineering Catalog on the SKF website www.skf.com or by contacting SKF Applications Engineering.

However, the weight of the components supported by the bearing, together with the external forces, often exceeds the requisite minimum load. If this is not the case, an additional radial load **must** be applied to the bearing, for example, by increasing belt tension or similar means.

Equivalent bearing loads

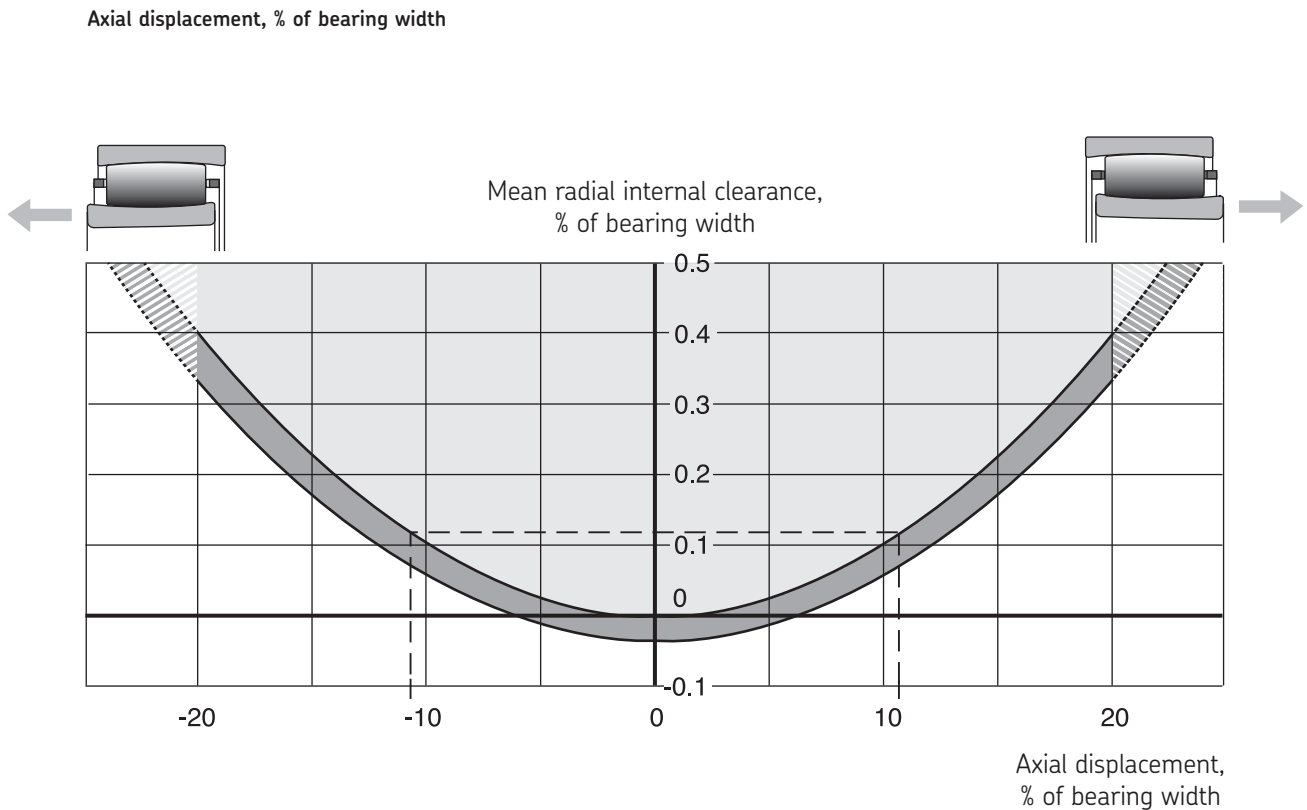
As the CARB can only accept radial loads

$$P = F_r$$

Frequency vibration data

Frequency vibration data is available on the SKF website www.skf.com in the Interactive Engineering Catalog or by contacting SKF Applications Engineering.

Diagram 1



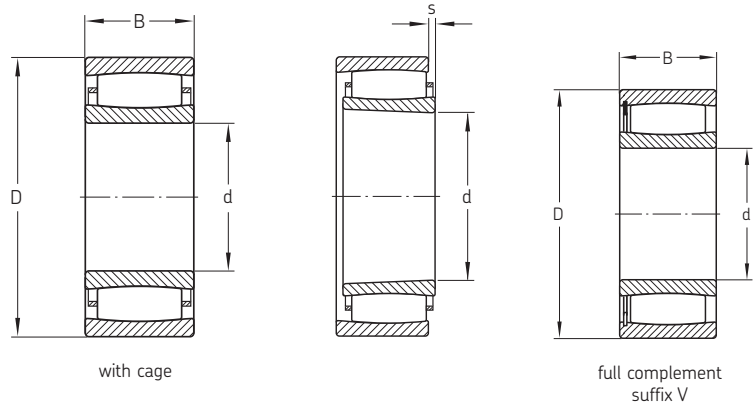
Single row

SKF Explorer

Series: C 2205 TN9 — C 2219

Size: 25 mm — 95 mm

0.9843 in — 3.7402 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial displacement	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	+/- s ¹⁾	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
C 2205 TN9	25	0.9843	52	2.0472	18	0.7087	44 000	9 900	40 000	9 000	13 000	18 000	0.17	0.40	5.80	0.228
C 2205 V	25	0.9843	52	2.0472	18	0.7087	50 000	11 200	48 000	10 800	-	7 000	0.18	0.40	2.80	0.110
C 2206 TN9	30	1.1811	62	2.4409	20	0.7874	69 500	15 600	62 000	13 900	11 000	15 000	0.27	0.60	4.50	0.177
C 2206 V	30	1.1811	62	2.4409	20	0.7874	76 500	17 200	71 000	16 000	-	6 000	0.29	0.64	1.50	0.059
C 2207 TN9	35	1.3780	72	2.8346	23	0.9055	83 000	18 700	80 000	18 000	9 500	13 000	0.43	0.95	5.70	0.224
C 2207 V	35	1.3780	72	2.8346	23	0.9055	95 000	21 400	96 000	21 600	-	5 000	0.45	0.99	2.70	0.106
C 2208 TN9	40	1.5748	80	3.1496	23	0.9055	90 000	20 200	86 500	19 400	8 000	11 000	0.50	1.10	7.10	0.280
C 2208 V	40	1.5748	80	3.1496	23	0.9055	102 000	22 900	104 000	23 400	-	4 500	0.53	1.17	4.10	0.161
C 2209 TN9	45	1.7717	85	3.3465	23	0.9055	93 000	20 900	93 000	20 900	8 000	11 000	0.55	1.21	7.10	0.280
C 2209 V	45	1.7717	85	3.3465	23	0.9055	106 000	23 800	110 000	24 700	-	4 300	0.58	1.28	4.10	0.161
C 2210 TN9	50	1.9685	90	3.5433	23	0.9055	98 000	22 000	100 000	22 500	7 000	9 500	0.59	1.30	7.10	0.280
C 2210 V	50	1.9685	90	3.5433	23	0.9055	114 000	25 600	122 000	27 400	-	3 800	0.62	1.37	3.90	0.154
C 2211 TN9	55	2.1654	100	3.9370	25	0.9843	116 000	26 100	114 000	25 600	6 700	9 000	0.79	1.74	8.60	0.339
C 2211 V	55	2.1654	100	3.9370	25	0.9843	132 000	29 700	134 000	30 100	-	3 400	0.81	1.79	5.40	0.213
C 2212 TN9	60	2.3622	110	4.3307	28	1.1024	143 000	32 100	156 000	35 100	5 600	7 500	1.10	2.40	8.50	0.335
C 2212 V	60	2.3622	110	4.3307	28	1.1024	166 000	37 300	190 000	42 700	-	2 800	1.15	2.50	5.30	0.209
C 2213 TN9	65	2.5591	120	4.7244	31	1.2205	180 000	40 500	180 000	40 500	5 300	7 500	1.40	3.10	9.60	0.378
C 2213 V	65	2.5591	120	4.7244	31	1.2205	204 000	45 900	216 000	48 600	-	2 400	1.47	3.20	5.30	0.209
C 2214 TN9	70	2.7559	125	4.9213	31	1.2205	186 000	41 800	196 000	44 100	5 000	7 000	1.45	3.20	9.60	0.378
C 2214 V	70	2.7559	125	4.9213	31	1.2205	212 000	47 700	228 000	51 300	-	2 400	1.50	3.30	5.30	0.209
C 2215	75	2.9528	130	5.1181	31	1.2205	196 000	44 100	208 000	46 800	4 800	6 700	1.60	3.50	9.60	0.378
C 2215 V	75	2.9528	130	5.1181	31	1.2205	220 000	49 500	240 000	54 000	-	2 200	1.65	3.60	5.30	0.209
C 2216	80	3.1496	140	5.5118	33	1.2992	220 000	49 500	250 000	56 200	4 500	6 000	2.00	4.40	9.10	0.358
C 2216 V	80	3.1496	140	5.5118	33	1.2992	255 000	57 300	305 000	68 600	-	2 000	2.10	4.60	4.80	0.189
C 2217	85	3.3465	150	5.9055	36	1.4173	275 000	61 800	320 000	71 900	4 300	5 600	2.60	5.70	7.10	0.280
C 2217 V	85	3.3465	150	5.9055	36	1.4173	315 000	70 800	390 000	87 700	-	1 800	2.80	6.20	1.70	0.067
C 2218	90	3.5433	160	6.2992	40	1.5748	325 000	73 100	380 000	85 400	3 800	5 300	3.30	7.30	9.50	0.374
C 2218 V	90	3.5433	160	6.2992	40	1.5748	365 000	82 100	440 000	98 900	-	1 500	3.40	7.50	5.40	0.213
BSC-2039 V	90	3.5433	150	5.9055	72	2.8346	455 000	102 300	670 000	150 600	-	1 500	5.10	11.20	19.70	0.776
C 2219	95	3.7402	170	6.6929	43	1.6929	360 000	80 900	400 000	89 900	3 800	5 000	4.00	8.80	10.50	0.413

1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

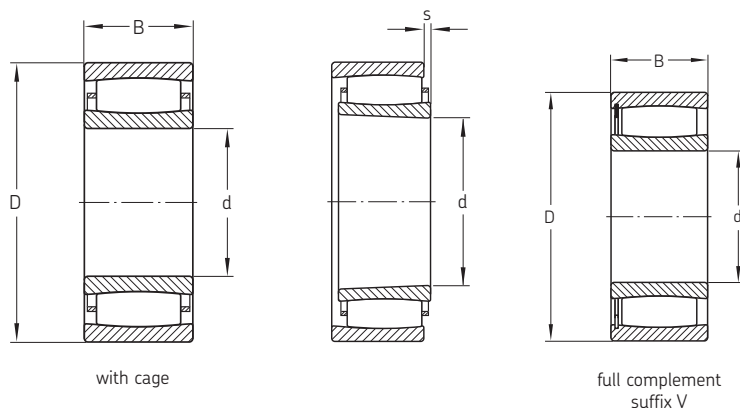
Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
SKF Explorer

Series: C 2220 — C 2244
Size: 100 mm — 220 mm
3.9370 in — 8.6614 in

Series: C 2314 — C 2320
Size: 70 mm — 100 mm
2.7559 in — 3.9370 in

Series: C 3022 — C 3030 MB
Size: 110 mm — 150 mm
4.3307 in — 5.9055 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial displacement	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	+/- s ¹⁾	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
C 2220	100	3.9370	180	7.0866	46	1.8110	415 000	93 300	465 000	104 500	3 600	4 800	4.85	10.70	10.10	0.398
BSC-2034 V	100	3.9370	170	6.6929	65	2.5591	475 000	106 800	655 000	147 200	-	1 300	5.95	13.10	17.70	0.697
C 2222	110	4.3307	200	7.8740	53	2.0866	530 000	119 100	620 000	139 400	3 200	4 300	6.90	15.20	11.10	0.437
C 2224	120	4.7244	215	8.4646	58	2.2835	610 000	137 100	710 000	159 600	3 000	4 000	8.60	19.00	13.00	0.512
C 2226	130	5.1181	230	9.0551	64	2.5197	735 000	165 200	930 000	209 100	2 800	3 800	11.00	24.30	9.60	0.378
C 2228	140	5.5118	250	9.8425	68	2.6772	830 000	186 600	1 060 000	238 300	2 400	3 400	13.80	30.40	13.70	0.539
C 2230	150	5.9055	270	10.6299	73	2.8740	980 000	220 300	1 220 000	274 300	2 400	3 200	17.50	38.60	11.20	0.441
C 2234	170	6.6929	310	12.2047	86	3.3858	1 270 000	285 500	1 630 000	366 400	2 000	2 600	28.00	61.70	16.40	0.646
C 2238	190	7.4803	340	13.3858	92	3.6220	1 370 000	308 000	1 730 000	388 900	1 800	2 400	34.00	75.00	22.50	0.886
C 2244	220	8.6614	400	15.7480	108	4.2520	2 000 000	449 600	2 500 000	562 000	1 500	2 000	56.50	124.60	20.50	0.807
C 2314	70	2.7559	150	5.9055	51	2.0079	405 000	91 000	430 000	96 700	3 800	5 000	4.25	9.40	9.10	0.358
C 2315	75	2.9528	160	6.2992	55	2.1654	425 000	95 500	465 000	104 500	3 600	4 800	5.20	11.50	13.10	0.516
C 2316	80	3.1496	170	6.6929	58	2.2835	510 000	114 600	550 000	123 600	3 400	4 500	6.20	13.70	10.10	0.398
C 2317	85	3.3465	180	7.0866	60	2.3622	540 000	121 400	600 000	134 900	3 200	4 300	7.30	16.10	12.10	0.476
C 2318	90	3.5433	190	7.4803	64	2.5197	610 000	137 100	695 000	156 200	2 800	4 000	8.50	18.70	9.60	0.378
C 2319	95	3.7402	200	7.8740	67	2.6378	610 000	137 100	695 000	156 200	2 800	4 000	10.00	22.00	12.60	0.496
C 2320	100	3.9370	215	8.4646	73	2.8740	800 000	179 800	880 000	197 800	2 600	3 600	12.50	27.60	11.20	0.441
C 3022	110	4.3307	170	6.6929	45	1.7717	355 000	79 800	480 000	107 900	3 200	4 500	3.50	7.70	9.50	0.374
C 3024	120	4.7244	180	7.0866	46	1.8110	375 000	84 300	530 000	119 100	3 000	4 000	3.90	8.60	10.60	0.417
C 3024 V	120	4.7244	180	7.0866	46	1.8110	430 000	96 700	640 000	143 900	-	1 400	4.05	8.90	3.80	0.150
C 3026	130	5.1181	200	7.8740	52	2.0472	390 000	87 700	585 000	131 500	2 800	3 800	5.90	13.00	16.50	0.650
C 3028	140	5.5118	210	8.2677	53	2.0866	490 000	110 200	735 000	165 200	2 600	3 400	6.30	13.90	11.00	0.433
C 3030 MB	150	5.9055	225	8.8583	56	2.2047	540 000	121 400	850 000	191 100	2 400	3 200	8.30	18.30	2.80	0.110

1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

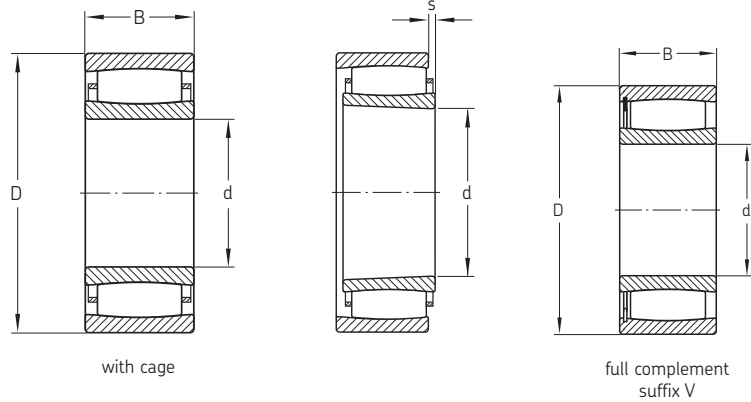
Single row

SKF Explorer

Series: C 3032 — C 30/900 M

Size: 160 mm — 900 mm

6.2992 in — 35.4330 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial displacement	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	+/- s ¹⁾	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
C 3032	160	6.2992	240	9.4488	60	2.3622	600 000	134 900	980 000	220 300	2 200	3 000	9.60	21.20	15.00	0.591
C 3034	170	6.6929	260	10.2362	67	2.6378	750 000	168 600	1 160 000	260 800	2 000	2 800	12.50	27.60	12.50	0.492
C 3036	180	7.0866	280	11.0236	74	2.9134	880 000	197 800	1 340 000	301 200	1 900	2 600	16.50	36.40	15.10	0.594
C 3038	190	7.4803	290	11.4173	75	2.9528	930 000	209 100	1 460 000	328 200	1 800	2 400	17.50	38.60	16.10	0.634
C 3040	200	7.8740	310	12.2047	82	3.2283	1 120 000	251 800	1 730 000	388 900	1 700	2 400	22.00	48.50	15.20	0.598
C 3044	220	8.6614	340	13.3858	90	3.5433	1 320 000	296 700	2 040 000	458 600	1 600	2 200	29.00	63.90	17.20	0.677
C 3048	240	9.4488	360	14.1732	92	3.6220	1 340 000	301 200	2 160 000	485 600	1 400	2 000	31.50	69.40	19.20	0.756
C 3052	260	10.2362	400	15.7480	104	4.0945	1 760 000	395 600	2 850 000	640 700	1 300	1 800	46.00	101.40	19.30	0.760
C 3056	280	11.0236	420	16.5354	106	4.1732	1 860 000	418 100	3 100 000	696 900	1 200	1 600	50.00	110.20	21.30	0.839
C 3060 M	300	11.8110	460	18.1102	118	4.6457	2 160 000	485 600	3 750 000	843 000	1 100	1 500	71.00	156.50	20.00	0.787
C 3064 M	320	12.5984	480	18.8976	121	4.7638	2 280 000	512 500	4 000 000	899 200	1 000	1 400	76.50	168.70	23.30	0.917
C 3068 M	340	13.3858	520	20.4724	133	5.2362	2 900 000	651 900	5 000 000	1 124 000	950	1 300	100.00	220.50	25.40	1.000
C 3072 M	360	14.1732	540	21.2598	134	5.2756	2 900 000	651 900	5 000 000	1 124 000	900	1 200	105.00	231.50	26.40	1.039
C 3076 M	380	14.9606	560	22.0472	135	5.3150	3 000 000	674 400	5 200 000	1 169 000	900	1 200	110.00	242.50	27.00	1.063
C 3080 M	400	15.7480	600	23.6220	148	5.8268	3 650 000	820 500	6 200 000	1 393 800	800	1 100	140.00	308.60	30.60	1.205
C 3084 M	420	16.5354	620	24.4094	150	5.9055	3 800 000	854 200	6 400 000	1 438 700	800	1 100	150.00	330.70	32.60	1.283
C 3088 MB	440	17.3228	650	25.5906	157	6.1811	3 750 000	843 000	6 400 000	1 438 700	750	1 000	185.00	407.90	19.70	0.776
C 3092 M	460	18.1102	680	26.7717	163	6.4173	4 000 000	899 200	7 500 000	1 686 000	700	950	200.00	440.90	33.50	1.319
C 3096 M	480	18.8976	700	27.5591	165	6.4961	4 050 000	910 400	7 800 000	1 753 400	670	900	210.00	463.00	35.50	1.398
C 30/500 M	500	19.6850	720	28.3465	167	6.5748	4 250 000	955 400	8 300 000	1 865 800	630	900	225.00	496.00	37.50	1.476
C 30/530 M	530	20.8661	780	30.7087	185	7.2835	5 100 000	1 146 500	9 500 000	2 135 600	600	800	295.00	650.40	35.70	1.406
C 30/560 M	560	22.0472	820	32.2835	195	7.6772	5 600 000	1 258 900	11 000 000	2 472 800	530	750	345.00	760.60	45.70	1.799
C 30/600 M	600	23.6220	870	34.2520	200	7.8740	6 300 000	1 416 200	12 200 000	2 742 600	500	700	390.00	859.80	35.90	1.413
C 30/630 M	630	24.8031	920	36.2204	212	8.3464	6 800 000	1 528 600	12 900 000	2 899 900	480	670	465.00	1025.10	48.10	1.894
C 30/670 M	670	26.3780	980	38.5827	230	9.0551	8 150 000	1 832 100	16 300 000	3 664 200	430	600	580.00	1278.70	41.10	1.618
C 30/710 M	710	27.9527	1030	40.5511	236	9.2913	8 800 000	1 978 200	17 300 000	3 889 000	400	560	645.00	1422.00	47.30	1.862
C 30/750 MB	750	29.5275	1090	42.9133	250	9.8425	9 000 000	2 023 200	18 000 000	4 046 400	380	530	770.00	1697.50	25.00	0.984
C 30/800 MB	800	31.4960	1150	45.2755	258	10.1575	9 150 000	2 056 900	18 600 000	4 181 300	360	480	860.00	1896.00	25.00	0.984
C 30/850 MB	850	33.4645	1220	48.0314	272	10.7086	11 200 000	2 517 800	24 000 000	5 395 200	320	430	1050.00	2314.80	27.00	1.063
C 30/900 M	900	35.4330	1280	50.3936	280	11.0236	12 700 000	2 855 000	26 500 000	5 957 200	300	400	1150.00	2535.30	45.80	1.803

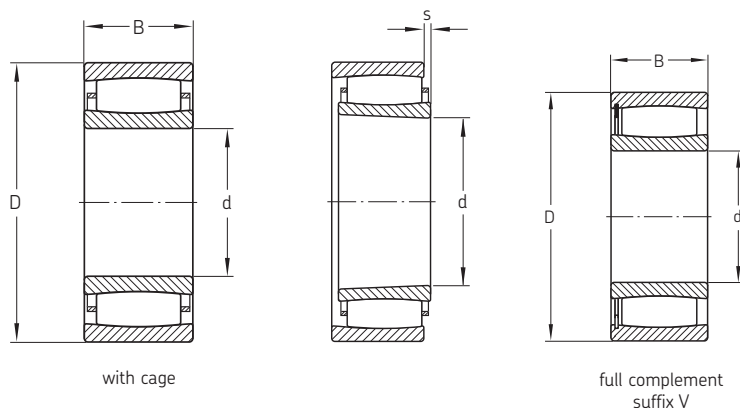
1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
SKF Explorer

Series: C 30/950 MB — C 30/1250 MB
Size: 950 mm — 1250 mm
37.4015 in — 49.2125 in

Series: C 3120 — C 31/530 M
Size: 100 mm — 530 mm
3.9370 in — 20.8661 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial displacement	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	+/- s ¹⁾	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
C 30/950 MB	950	37.4015	1360	53.5432	300	11.8110	12 900 000	2 899 900	27 500 000	6 182 000	280	380	1410.00	3108.50	30.00	1.181
C 30/1000 MB	1000	39.3700	1420	55.9054	308	12.1260	13 400 000	3 012 300	29 000 000	6 519 200	260	340	1570.00	3461.20	30.00	1.181
C 30/1250 MB	1250	49.2125	1750	68.8975	375	14.7638	20 400 000	4 585 900	45 000 000	10 116 000	180	240	2740.00	6040.60	37.00	1.457
C 3120	100	3.9370	165	6.4961	52	2.0472	415 000	93 300	540 000	121 400	3 200	4 300	4.40	9.70	10.00	0.394
C 3120 V	100	3.9370	165	6.4961	52	2.0472	475 000	106 800	655 000	147 200	-	1 300	4.40	9.70	4.70	0.185
C 3130	150	5.9055	250	9.8425	80	3.1496	880 000	197 800	1 290 000	290 000	2 000	2 800	15.00	33.10	13.90	0.547
C 3132	160	6.2992	270	10.6299	86	3.3858	1 000 000	224 800	1 400 000	314 700	2 000	2 600	20.00	44.10	19.00	0.748
C 3134	170	6.6929	280	11.0236	88	3.4646	1 040 000	233 800	1 460 000	328 200	1 900	2 600	21.00	46.30	21.00	0.827
C 3136	180	7.0866	300	11.8110	96	3.7795	1 250 000	281 000	1 730 000	388 900	1 800	2 400	26.00	57.30	23.20	0.913
C 3138	190	7.4803	320	12.5984	104	4.0945	1 530 000	343 900	2 200 000	494 600	1 600	2 200	33.50	73.90	19.00	0.748
C 3140	200	7.8740	340	13.3858	112	4.4094	1 560 000	350 700	2 320 000	521 500	1 500	2 000	40.00	88.20	27.30	1.075
C 3144	220	8.6614	370	14.5669	120	4.7244	1 900 000	427 100	2 900 000	651 900	1 400	1 900	51.00	112.40	22.30	0.878
C 3148	240	9.4488	400	15.7480	128	5.0394	2 320 000	521 500	3 450 000	775 600	1 300	1 700	63.00	138.90	20.40	0.803
C 3152	260	10.2362	440	17.3228	144	5.6693	2 650 000	595 700	4 050 000	910 400	1 100	1 500	87.00	191.80	26.40	1.039
C 3156	280	11.0236	460	18.1102	146	5.7480	2 850 000	640 700	4 500 000	1 011 600	1 100	1 400	93.00	205.00	28.40	1.118
C 3160	300	11.8110	500	19.6850	160	6.2992	3 250 000	730 600	5 200 000	1 169 000	1 000	1 300	120.00	264.60	30.50	1.201
C 3164 M	320	12.5984	540	21.2598	176	6.9291	4 150 000	932 900	6 300 000	1 416 200	950	1 300	160.00	352.70	26.70	1.051
C 3168 M	340	13.3858	580	22.8346	190	7.4803	4 900 000	1 101 500	7 500 000	1 686 000	850	1 200	205.00	451.90	25.90	1.020
C 3172 M	360	14.1732	600	23.6220	192	7.5590	5 000 000	1 124 000	8 000 000	1 798 400	800	1 100	215.00	474.00	27.90	1.098
C 3176 MB	380	14.9606	620	24.4094	194	7.6378	4 550 000	1 022 800	7 500 000	1 686 000	750	1 000	230.00	507.10	19.00	0.748
C 3180 MB	400	15.7480	650	25.5905	200	7.8740	5 000 000	1 124 000	8 650 000	1 944 500	700	950	275.00	606.30	10.10	0.398
C 3184 M	420	16.5354	700	27.5591	224	8.8189	6 000 000	1 348 800	10 400 000	2 337 900	670	900	340.00	749.60	34.80	1.370
C 3188 MB	440	17.3228	720	28.3464	226	8.8976	5 700 000	1 281 400	9 300 000	2 090 600	670	900	360.00	793.70	22.00	0.866
C 3192 M	460	18.1102	760	29.9212	240	9.4488	6 800 000	1 528 600	12 000 000	2 697 600	600	800	430.00	948.00	51.00	2.008
C 3196 MB	480	18.8976	790	31.1023	248	9.7638	6 950 000	1 562 400	12 500 000	2 810 000	560	750	490.00	1080.30	24.00	0.945
C 31/500 M	500	19.6850	830	32.6771	264	10.3937	7 500 000	1 686 000	12 700 000	2 855 000	530	750	550.00	1212.50	75.30	2.965
C 31/530 M	530	20.8661	870	34.2520	272	10.7087	8 800 000	1 978 200	15 600 000	3 506 900	500	670	630.00	1388.90	44.40	1.748

1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

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Consult SKF USA Inc. prior to design change or order placement.

Single row

SKF Explorer

Series: C 31/560 MB — C 31/1000 MB

Size: 560 mm — 1000 mm

22.0472 in — 39.3700 in

Series: C 3224 — C 3236

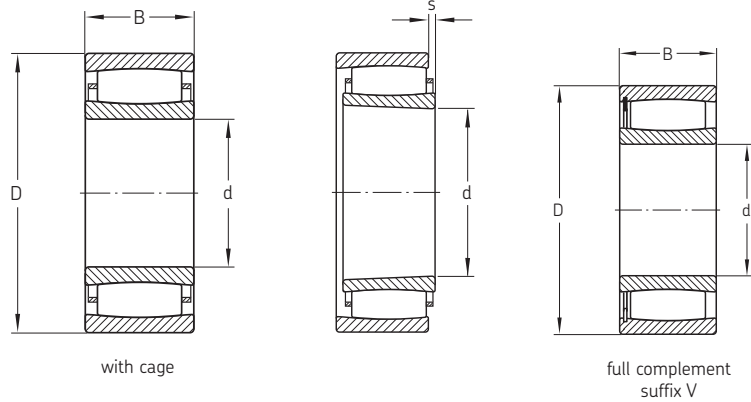
Size: 120 mm — 180 mm

4.7244 in — 7.0866 in

Series: C 3972 M — C 39/630 M

Size: 360 mm — 630 mm

14.1732 in — 24.8031 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial displacement	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	+/- s ¹⁾	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
C 31/560 MB	560	22.0472	920	36.2204	280	11.0236	9 500 000	2 135 600	17 000 000	3 821 600	480	670	750.00	1653.50	28.00	1.102
C 31/600 MB	600	23.6220	980	38.5826	300	11.8110	10 200 000	2 293 000	18 000 000	4 046 400	430	600	870.00	1918.00	30.00	1.181
C 31/630 MB	630	24.8031	1030	40.5511	315	12.4016	12 200 000	2 742 600	22 000 000	4 945 600	400	560	1040.00	2292.80	31.00	1.220
C 31/670 MB	670	26.3779	1090	42.9133	336	13.2283	12 000 000	2 697 600	22 000 000	4 945 600	380	530	1230.00	2711.70	33.00	1.299
C 31/710 MB	710	27.9527	1150	45.2755	345	13.5827	12 700 000	2 855 000	24 000 000	5 395 200	360	480	1410.00	3108.50	34.00	1.339
C 31/750 MB	750	29.5275	1220	48.0314	365	14.3701	16 000 000	3 596 800	30 500 000	6 856 400	320	450	1700.00	3747.80	36.00	1.417
C 31/800 MB	800	31.4960	1280	50.3936	375	14.7638	15 600 000	3 506 900	30 500 000	6 856 400	300	400	1870.00	4122.60	37.00	1.457
C 31/850 MB	850	33.4645	1360	53.5432	400	15.7480	16 000 000	3 596 800	32 000 000	7 193 600	280	380	2260.00	4982.40	40.00	1.575
C 31/1000 MB	1000	39.3700	1580	62.2046	462	18.1889	22 800 000	5 125 400	45 500 000	10 228 400	220	300	3470.00	7650.00	46.00	1.811
C 3224	120	4.7244	215	8.4646	76	2.9921	750 000	168 600	980 000	220 300	2 400	3 200	11.50	25.40	17.10	0.673
C 3232	160	6.2992	290	11.4173	104	4.0945	1 370 000	308 000	1 830 000	411 400	1 700	2 400	28.50	62.80	19.30	0.760
C 3236	180	7.0866	320	12.5984	112	4.4094	1 530 000	343 900	2 200 000	494 600	1 500	2 000	37.00	81.60	27.30	1.075
C 3972 M	360	14.1732	480	18.8976	90	3.5433	1 760 000	395 600	3 250 000	730 600	1 000	1 400	44.00	97.00	17.20	0.677
C 3976 MB	380	14.9606	520	20.4724	106	4.1732	2 120 000	476 600	4 000 000	899 200	950	1 300	65.50	144.40	10.00	0.394
C 3980 MB	400	15.7480	540	21.2598	106	4.1732	2 160 000	485 600	4 150 000	932 900	900	1 300	69.00	152.10	10.00	0.394
C 3984 M	420	16.5354	560	22.0472	106	4.1732	2 160 000	485 600	4 250 000	955 400	850	1 200	71.00	156.50	21.30	0.839
C 3988 MB	440	17.3228	600	23.6220	118	4.6457	2 750 000	618 200	5 300 000	1 191 400	800	1 100	98.00	216.10	11.00	0.433
C 3992 MB	460	18.1102	620	24.4094	118	4.6457	2 700 000	607 000	5 300 000	1 191 400	800	1 100	100.00	220.50	11.00	0.433
C 3996 M	480	18.8976	650	25.5905	128	5.0394	3 100 000	696 900	6 100 000	1 371 300	750	1 000	120.00	264.60	20.40	0.803
C 39/500 M	500	19.6850	670	26.3780	128	5.0394	3 150 000	708 100	6 300 000	1 416 200	700	950	125.00	275.60	20.40	0.803
C 39/530 M	530	20.8661	710	27.9527	136	5.3543	3 550 000	798 000	7 100 000	1 596 100	670	900	150.00	330.70	28.40	1.118
C 39/560 M	560	22.0472	750	29.5275	140	5.5118	3 600 000	809 300	7 350 000	1 652 300	600	850	170.00	374.80	32.40	1.276
C 39/600 M	600	23.6220	800	31.4960	150	5.9055	4 000 000	899 200	8 800 000	1 978 200	560	750	210.00	463.00	32.40	1.276
C 39/630 M	630	24.8031	850	33.4646	165	6.4961	4 650 000	1 045 300	10 000 000	2 248 000	530	700	270.00	595.20	35.50	1.398

1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

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Single row

SKF Explorer

Series: C 39/670 M — C 39/1180 M

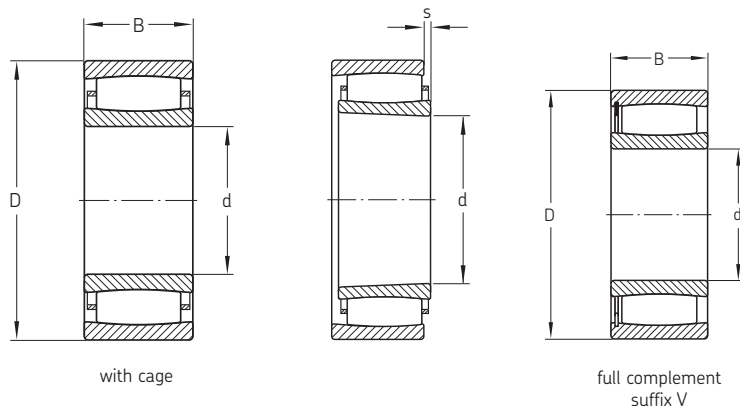
Size: 670 mm — 1180 mm

26.3780 in — 46.4566 in

Series: C 4010 TN9 — C 4040 V

Size: 50 mm — 200 mm

1.9685 in — 7.8740 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial displacement	
	Shaft dia. d ₁		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	+/- s ¹⁾	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
C 39/670 M	670	26.3780	900	35.4331	170	6.6929	4 900 000	1 101 500	11 200 000	2 517 800	480	630	310.00	683.40	40.50	1.594
C 39/710 M	710	27.9528	950	37.4016	180	7.0866	6 000 000	1 348 800	12 500 000	2 810 000	450	630	355.00	782.60	30.70	1.209
C 39/750 M	750	29.5276	1 000	39.3701	185	7.2835	6 100 000	1 371 300	13 400 000	3 012 300	430	560	405.00	892.90	35.70	1.406
C 39/800 M	800	31.4960	1060	41.7322	195	7.6772	6 400 000	1 438 700	14 600 000	3 282 100	380	530	470.00	1036.20	45.70	1.799
C 39/850 M	850	33.4646	1 120	44.0945	200	7.8740	7 350 000	1 652 300	16 300 000	3 664 200	360	480	530.00	1168.40	35.90	1.413
C 39/900 MB	900	35.4330	1180	46.4566	206	8.1102	8 150 000	1 832 100	18 000 000	4 046 400	340	450	580.00	1278.70	20.00	0.787
C 39/950 M	950	37.4015	1250	49.2125	224	8.8189	9 300 000	2 090 600	22 000 000	4 945 600	300	430	745.00	1642.40	35.00	1.378
C 39/1060 MB	1060	41.7322	1400	55.1180	250	9.8425	12 500 000	2 810 000	29 000 000	6 519 200	260	340	1040.00	2292.80	25.00	0.984
C 39/1180 M	1180	46.4566	1540	60.6298	272	10.7086	12 900 000	2 899 900	31 500 000	7 081 200	220	300	1340.00	2954.20	44.40	1.748
C 4010 TN9	50	1.9685	80	3.1496	30	1.1811	116 000	26 100	140 000	31 500	5 000	7 500	0.55	1.20	6.00	0.236
C 4010 V	50	1.9685	80	3.1496	30	1.1811	137 000	30 800	176 000	39 600	-	3 000	0.59	1.30	3.00	0.118
C 4013 V	65	2.5591	100	3.9370	35	1.3780	196 000	44 100	275 000	61 800	-	2 400	1.00	2.20	2.80	0.110
C 4015 V	75	2.9528	115	4.5276	40	1.5748	236 000	53 100	345 000	77 600	-	2 000	1.50	3.30	5.10	0.201
C 4020 V	100	3.9370	150	5.9055	50	1.9685	355 000	79 800	530 000	119 100	-	1 400	3.05	6.70	9.70	0.382
C 4022 V	110	4.3307	170	6.6929	60	2.3622	500 000	112 400	800 000	179 800	-	1 200	5.15	11.40	6.60	0.260
C 4024 V	120	4.7244	180	7.0866	60	2.3622	530 000	119 100	880 000	197 800	-	1 100	5.50	12.10	5.20	0.205
C 4024 V/VE240	120	4.7244	180	7.0866	60	2.3622	430 000	96 700	640 000	143 900	-	1 000	5.70	12.60	6.00	0.236
C 4026	130	5.1181	200	7.8740	69	2.7165	620 000	139 400	930 000	209 100	1 900	2 800	7.84	17.30	11.40	0.449
C 4026 V	130	5.1181	200	7.8740	69	2.7165	720 000	161 900	1 120 000	251 800	-	850	8.05	17.70	4.60	0.181
C 4028 V	140	5.5118	210	8.2677	69	2.7165	750 000	168 600	1 220 000	274 300	-	800	8.55	18.80	5.90	0.232
C 4030 V	150	5.9055	225	8.8583	75	2.9528	780 000	175 300	1 320 000	296 700	-	750	10.50	23.10	10.60	0.417
C 4032	160	6.2992	240	9.4488	80	3.1496	795 000	178 700	1 160 000	260 800	1 600	2 400	12.80	28.20	18.10	0.713
C 4032 V	160	6.2992	240	9.4488	80	3.1496	915 000	205 700	1 460 000	328 200	-	600	12.60	27.80	8.20	0.323
C 4034 V	170	6.6929	260	10.2362	90	3.5433	1 140 000	256 300	1 860 000	418 100	-	480	17.50	38.60	7.20	0.283
C 4036 V	180	7.0866	280	11.0236	100	3.9370	1 320 000	296 700	2 120 000	476 600	-	430	23.00	50.70	10.20	0.402
C 4038 V	190	7.4803	290	11.4173	100	3.9370	1 370 000	308 000	2 320 000	521 500	-	380	24.50	54.00	10.10	0.398
C 4040 V	200	7.8740	310	12.2047	109	4.2913	1 630 000	366 400	2 650 000	595 700	-	260	30.50	67.20	11.10	0.437

1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row

SKF Explorer

Series: C 4044 V — C 40/710 M

Size: 220 mm — 710 mm

8.6614 in — 27.9527 in

Series: C 4120 V/VE240 — C 41/500 MB

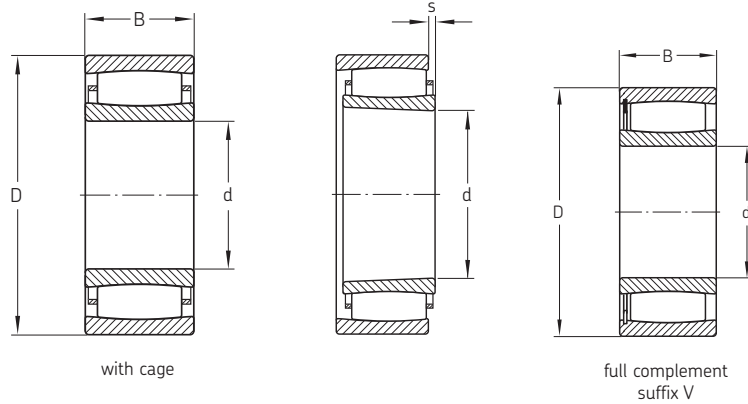
Size: 100 mm — 500 mm

3.9370 in — 19.6850 in

Series: C 4908 V — C 4916 V

Size: 40 mm — 80 mm

1.5748 in — 3.1496 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial displacement	
	Shaft dia. d_1		Outside diameter D		Width B		Dynamic C		Static C_0		Reference speed	Limiting speed	kg	lb	+/- s^1	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
C 4044 V	220	8.6614	340	13.3858	118	4.6457	1 930 000	433 900	3 250 000	730 600	-	200	40.00	88.20	10.10	0.398
C 4060 M	300	11.8110	460	18.1102	160	6.2992	2 900 000	651 900	4 900 000	1 101 500	850	1 200	95.00	209.40	30.40	1.197
C 40/710 M	710	27.9527	1030	40.5511	315	12.4016	10 600 000	2 382 900	21 600 000	4 855 700	320	430	860.00	1896.00	51.20	2.016
C 4120 V/VE240	100	3.9370	165	6.4961	65	2.5591	475 000	106 800	655 000	147 200	-	1 300	5.25	11.60	17.70	0.697
C 4122 V	110	4.3307	180	7.0866	69	2.7165	670 000	150 600	1 000 000	224 800	-	900	7.05	15.50	4.60	0.181
C 4124 V	120	4.7244	200	7.8740	80	3.1496	780 000	175 300	1 120 000	251 800	-	750	10.50	23.10	11.20	0.441
C 4128 V	140	5.5118	225	8.8583	85	3.3465	1 000 000	224 800	1 600 000	359 700	-	630	14.20	31.30	5.20	0.205
C 4130 V	150	5.9055	250	9.8425	100	3.9370	1 220 000	274 300	1 860 000	418 100	-	450	20.50	45.20	10.10	0.398
C 4132 V	160	6.2992	270	10.6299	109	4.2913	1 460 000	328 200	2 160 000	485 600	-	300	26.00	57.30	11.10	0.437
C 4134 V	170	6.6929	280	11.0236	109	4.2913	1 530 000	343 900	2 280 000	512 500	-	280	27.00	59.50	11.10	0.437
C 4136 V	180	7.0866	300	11.8110	118	4.6457	1 760 000	395 600	2 700 000	607 000	-	220	34.50	76.10	10.10	0.398
C 4138 V	190	7.4803	320	12.5984	128	5.0394	2 040 000	458 600	3 150 000	708 100	-	130	43.00	94.80	10.10	0.398
C 4140 V	200	7.8740	340	13.3858	140	5.5118	2 360 000	530 500	3 650 000	820 500	-	80	54.00	119.00	12.10	0.476
C 4192 M	460	18.1102	760	29.9212	300	11.8110	8 300 000	1 865 800	14 300 000	3 214 600	480	630	535.00	1179.50	46.20	1.819
C 41/500 MB	500	19.6850	830	32.6771	325	12.7953	9 800 000	2 203 000	17 600 000	3 956 500	400	560	720.00	1587.30	16.30	0.642
C 4908 V	40	1.5748	62	2.4409	22	0.8661	76 500	17 200	100 000	22 500	-	4 300	0.25	0.60	1.70	0.067
C 4909 V	45	1.7717	68	2.6772	22	0.8661	81 500	18 300	112 000	25 200	-	3 800	0.30	0.70	1.70	0.067
C 4910 V	50	1.9685	72	2.8346	22	0.8661	86 500	19 400	125 000	28 100	-	3 600	0.29	0.60	1.70	0.067
C 4911 V	55	2.1654	80	3.1496	25	0.9843	106 000	23 800	153 000	34 400	-	3 200	0.43	0.90	2.50	0.098
C 4912 V	60	2.3622	85	3.3465	25	0.9843	112 000	25 200	170 000	38 200	-	3 000	0.46	1.00	2.30	0.091
C 4913 V	65	2.5591	90	3.5433	25	0.9843	116 000	26 100	180 000	40 500	-	2 800	0.50	1.10	2.30	0.091
C 4914 V	70	2.7559	100	3.9370	30	1.1811	163 000	36 600	240 000	54 000	-	2 600	0.78	1.70	2.80	0.110
C 4915 V	75	2.9528	105	4.1339	30	1.1811	166 000	37 300	255 000	57 300	-	2 400	0.82	1.80	2.80	0.110
C 4916 V	80	3.1496	110	4.3307	30	1.1811	173 000	38 900	275 000	61 800	-	2 200	0.87	1.90	1.70	0.067

1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row

SKF Explorer

Series: C 4917 V — C 4920 V

Size: 85 mm — 100 mm 3.3465 in — 3.9370 in

Series: C 5020 V Size: 100 mm 3.9370 in

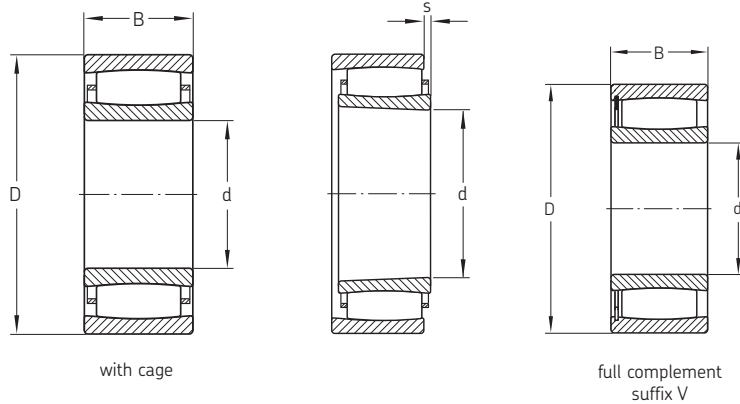
Series: C 5908 V — C 5920 V

Size: 40 mm — 100 mm 1.5748 in — 3.9370 in

Series: C 6006 V Size: 30 mm 1.1811 in

Series: C 6908 V — C 6914 V

Size: 40 mm — 70 mm 1.5748 in — 2.7559 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial displacement	
	Shaft dia. d_1		Outside diameter D		Width B		Dynamic C		Static C_0		Reference speed	Limiting speed	kg	lb	$\pm s^1$	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
C 4917 V	85	3.3465	120	4.7244	35	1.3780	224 000	50 400	355 000	79 800	-	2 000	1.30	2.90	1.70	0.067
C 4918 V	90	3.5433	125	4.9213	35	1.3780	186 000	41 800	315 000	70 800	-	2 000	1.30	2.90	6.70	0.264
C 4920 V	100	3.9370	140	5.5118	40	1.5748	275 000	61 800	450 000	101 200	-	1 700	1.90	4.20	5.10	0.201
C 5020 V	100	3.9370	150	5.9055	67	2.6378	510 000	114 600	865 000	194 500	-	1 100	4.30	9.50	5.00	0.197
C 5908 V	40	1.5748	62	2.4409	30	1.1811	104 000	23 400	143 000	32 100	-	3 400	0.35	0.80	2.00	0.079
C 5909 V	45	1.7717	68	2.6772	30	1.1811	110 000	24 700	163 000	36 600	-	3 200	0.41	0.90	2.00	0.079
C 5910 V	50	1.9685	72	2.8346	30	1.1811	118 000	26 500	180 000	40 500	-	2 800	0.42	0.90	2.00	0.079
C 5911 V	55	2.1654	80	3.1496	34	1.3386	143 000	32 100	224 000	50 400	-	2 600	0.60	1.30	3.00	0.118
C 5912 V	60	2.3622	85	3.3465	34	1.3386	150 000	33 700	240 000	54 000	-	2 400	0.64	1.40	2.80	0.110
C 5913 V	65	2.5591	90	3.5433	34	1.3386	156 000	35 100	260 000	58 400	-	2 200	0.70	1.50	2.80	0.110
C 5914 V	70	2.7559	100	3.9370	40	1.5748	196 000	44 100	310 000	69 700	-	2 000	1.00	2.20	6.20	0.244
C 5915 V	75	2.9528	105	4.1339	40	1.5748	204 000	45 900	325 000	73 100	-	1 900	1.10	2.40	6.20	0.244
C 5916 V	80	3.1496	110	4.3307	40	1.5748	208 000	46 800	345 000	77 600	-	1 800	1.20	2.60	5.10	0.201
C 5917 V	85	3.3465	120	4.7244	46	1.8110	275 000	61 800	465 000	104 500	-	1 700	1.70	3.70	4.60	0.181
C 5918 V	90	3.5433	125	4.9213	46	1.8110	224 000	50 400	400 000	89 900	-	1 600	1.75	3.90	11.10	0.437
C 5920 V	100	3.9370	140	5.5118	54	2.1260	375 000	84 300	640 000	143 900	-	1 400	2.70	6.00	4.70	0.185
C 6006 V	30	1.1811	55	2.1654	45	1.7717	134 000	30 100	180 000	40 500	-	3 000	0.50	1.10	4.90	0.193
C 6908 V	40	1.5748	62	2.4409	40	1.5748	122 000	27 400	180 000	40 500	-	2 800	0.47	1.00	6.40	0.252
C 6909 V	45	1.7717	68	2.6772	40	1.5748	132 000	29 700	200 000	45 000	-	2 600	0.55	1.20	6.40	0.252
C 6910 V	50	1.9685	72	2.8346	40	1.5748	140 000	31 500	224 000	50 400	-	2 200	0.54	1.20	6.40	0.252
C 6911 V	55	2.1654	80	3.1496	45	1.7717	180 000	40 500	300 000	67 400	-	2 000	0.81	1.80	4.90	0.193
C 6912 V	60	2.3622	85	3.3465	45	1.7717	190 000	42 700	335 000	75 300	-	1 900	0.84	1.90	4.70	0.185
C 6913 V	65	2.5591	90	3.5433	45	1.7717	196 000	44 100	355 000	79 800	-	1 800	0.93	2.10	4.70	0.185
C 6914 V	70	2.7559	100	3.9370	54	2.1260	265 000	59 600	455 000	102 300	-	1 700	1.40	3.10	5.80	0.228

1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

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Single row

SKF Explorer

Sealed

Series: C 4013-2CS5V — C 4040-2CS5V

Size: 65 mm — 200 mm

2.5591 in — 7.8740.9055

Series: C 4120-2CS5V — C 4140-2CS5V

Size: 100 mm — 200 mm

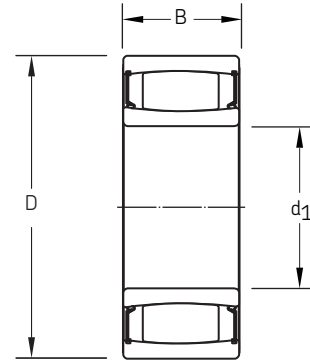
3.9370 in — 7.8740 in

Series: C 5918-2CS5V Size: 90 mm 3.5433 in

Series: C 6910-2CS5V — C 6915-2CS5V

Size: 50 mm — 75 mm

1.9685 in — 2.9528 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial displacement	
	Shaft dia. d ₁		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	+/- s ¹⁾	
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min			mm	in
C 4013-2CS5V	65	2.5591	100	3.9370	35	1.3780	102 000	22 900	173 000	38 900	-	150	1.10	2.40	5.90	0.232
C 4015-2CS5V	75	2.9528	115	4.5276	40	1.5748	143 000	32 100	193 000	43 400	-	130	1.40	3.10	7.30	0.287
C 4020-2CS5V	100	3.9370	150	5.9055	50	1.9685	310 000	69 700	450 000	101 200	-	95	2.90	6.40	6.20	0.244
C 4022-2CS5V	110	4.3307	170	6.6929	60	2.3622	415 000	93 300	585 000	131 500	-	85	4.60	10.10	7.90	0.311
C 4024-2CS5V	120	4.7244	180	7.0866	60	2.3622	430 000	96 700	640 000	143 900	-	80	5.10	11.20	7.50	0.295
C 4026-2CS5V	130	5.1181	200	7.8740	69	2.7165	550 000	123 600	830 000	186 600	-	70	7.50	16.50	8.20	0.323
C 4028-2CS5V	140	5.5118	210	8.2677	69	2.7165	570 000	128 100	900 000	202 300	-	67	7.90	17.40	8.70	0.343
C 4030-2CS5V	150	5.9055	225	8.8583	75	2.9528	585 000	131 500	965 000	216 900	-	63	10.00	22.00	10.80	0.425
C 4032-2CS5V	160	6.2992	240	9.4488	80	3.1496	655 000	147 200	1 100 000	247 300	-	60	12.00	26.50	11.40	0.449
C 4034-2CS5V	170	6.6929	260	10.2362	90	3.5433	965 000	216 900	1 630 000	366 400	-	53	17.00	37.50	9.00	0.354
C 4036-2CS5V	180	7.0866	280	11.0236	100	3.9370	1 320 000	296 700	2 120 000	476 600	-	53	23.50	51.80	6.40	0.252
C 4038-2CS5V	190	7.4803	290	11.4173	100	3.9370	1 370 000	308 000	2 320 000	521 500	-	48	24.50	54.00	6.40	0.252
C 4040-2CS5V	200	7.8740	310	12.2047	109	4.2913	1 630 000	366 400	2 650 000	595 700	-	45	31.00	68.30	6.70	0.264
C 4120-2CS5V	100	3.9370	165	6.4961	65	2.5591	475 000	106 800	655 000	147 200	-	90	5.20	11.50	7.30	0.287
C 4122-2CS5V	110	4.3307	180	7.0866	69	2.7165	500 000	112 400	710 000	159 600	-	85	6.60	14.60	8.20	0.323
C 4124-2CS5V	120	4.7244	200	7.8740	80	3.1496	710 000	159 600	1 000 000	224 800	-	75	9.70	21.40	8.20	0.323
C 4126-2CS5V	130	5.1181	210	8.2677	80	3.1496	750 000	168 600	1 100 000	247 300	-	70	10.50	23.10	7.50	0.295
C 4128-2CS5V	140	5.5118	225	8.8583	85	3.3465	780 000	175 300	1 200 000	269 800	-	63	12.50	27.60	8.90	0.350
C 4130-2CS5V	150	5.9055	250	9.8425	100	3.9370	1 220 000	274 300	1 860 000	418 100	-	60	20.50	45.20	6.40	0.252
C 4132-2CS5V	160	6.2992	270	10.6299	109	4.2913	1 460 000	328 200	2 160 000	485 600	-	53	26.00	57.30	6.70	0.264
C 4134-2CS5V	170	6.6929	280	11.0236	109	4.2913	1 530 000	343 900	2 280 000	512 500	-	53	27.00	59.50	6.70	0.264
C 4136-2CS5V	180	7.0866	300	11.8110	118	4.6457	1 760 000	395 600	2 700 000	607 000	-	48	35.00	77.20	6.40	0.252
C 4138-2CS5V	190	7.4803	320	12.5984	128	5.0394	2 040 000	458 600	3 150 000	708 100	-	45	43.50	95.90	6.40	0.252
C 4140-2CS5V	200	7.8740	340	13.3858	140	5.5118	2 360 000	530 500	3 650 000	820 500	-	43	54.50	120.20	7.00	0.276
C 5918-2CS5V	90	3.5433	125	4.9213	46	1.8110	224 000	50 400	400 000	89 900	-	110	1.75	3.90	4.50	0.177
C 6910-2CS5V	50	1.9685	72	2.8346	40	1.5748	140 000	31 500	224 000	50 400	-	200	0.56	1.20	2.80	0.110
C 6912-2CS5V	60	2.3622	85	3.3465	45	1.7717	150 000	33 700	240 000	54 000	-	170	0.83	1.80	5.40	0.213
C 6912-2NSV	60	2.3622	85	3.3465	45	1.7717	190 000	42 700	335 000	75 300	-	-	0.85	1.90	0.50	0.020
C 6915-2CS5V	75	2.9528	105	4.1339	54	2.1260	204 000	45 900	325 000	73 100	-	140	1.40	3.10	7.10	0.280

1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Needle roller bearings

RNA 4900 2RS M V C3

1

2

3

4

5

1. Basic design:

HK	Drawn cup needle roller with open ends
NA	Bearing with flanges and inner ring
NK	Bearing with flanges without inner ring
NKI	Bearing with flanges and inner rings
NKIS	Bearing with flanges and inner rings
NKS	Bearing with flanges without inner ring
RNA	Bearing without inner ring

2. Seals, shields and snap rings:

RS	Seal of plate and synthetic rubber on one side
2RS	Seal of plate and synthetic rubber on both sides

3. Cage designs:

TN	Nylon cage, rolling element guided
M	Machined brass cage, rolling element guided
IS1	One lubrication hole in the inner ring

4. Features:

V	Full complement bearing without cage
H...	Reduced tolerance for the inside diameter of the roller and cage assembly; the figures following the letter H indicate the tolerance limits in mm

5. Clearance and tolerance:

(C0)*	Normal radial internal clearance
C3	Radial internal clearance > normal
C4	Radial internal clearance > C3
CNR	Reduced normal radial clearance corresponding to earlier standard (ISO 5753-1981)
P5	Dimensional and running accuracy to ISO tolerance class 5 specifications (better than P6)
P6	Dimensional and running accuracy to ISO tolerance class 6 specifications (better than normal)

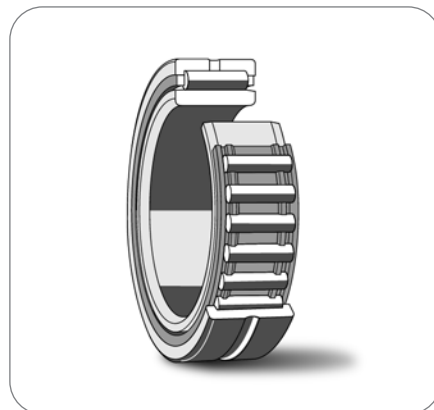
* Not marked on bearing or package

Technical features

Boundary dimensions	In accordance with ISO 3245-1974 (ABMA std 18.1)
Tolerances	Normal
Heat stabilization	302° F (150° C)
Misalignment	None to very minor (contact SKF for further details)
Cage Material	
Standard	Steel
Optional	Polyamide (TN)
Axial load – max	None
Seals	2RS1 - 2 synthetic rubber (NBR) seals only available on RNA 49 and NA 49 series



Drawn cup needle roller bearing with open ends (data tables on page 190)



Needle roller bearing with inner ring (data tables on page 192)



Needle roller bearing without inner ring (data tables on page 196)

Introduction

Needle roller bearings are roller bearings with cylindrical rollers, which are thin and long in relation to their diameter. They are referred to as needle rollers. In spite of their low cross section, the bearings have a high load carrying capacity and are thus eminently suitable for bearing arrangements where radial space is limited.

The needle rollers have a profile, which is slightly relieved towards the roller ends. The resultant modified line contact between needle rollers and raceways means that damaging edge stresses are minimized.

SKF supplies many different types of needle roller bearings, including drawn cup needle roller bearings with open ends and with closed ends, and needle roller bearings with and without inner rings.

Basic design

Needle roller bearings with carbon chromium steel rings have a low sectional height and very high load carrying capacity. Depending on the application, they may be used with or without an inner ring.

Needle roller bearings without inner ring are the better alternative where it is possible to harden and grind the necessary raceways on the shaft. As the inner ring is not needed the shaft can have a larger diameter and will therefore be stiffer. The amount by which the shaft can be axially displaced relative to the housing is also only limited by the width of the raceway on the shaft. By machining the shaft raceways to appropriate accuracies of dimension and form, it is possible to achieve bearing arrangements having enhanced running accuracy.

Needle roller bearings with inner ring are used for arrangements where it is impossible, or uneconomical, to harden and grind the shaft. Bearings with inner ring only permit axial displacements of the shaft relative to the housing within the limits quoted in the bearing tables. If greater displacements have to be accommodated, extended inner rings can be used instead of the standard inner rings. For details on these extended rings, please consult SKF Applications Engineering.

Drawn cup needle roller bearings

Drawn cup needle roller bearings are needle roller bearings with thin, deep drawn outer rings. Their principal characteristics are their very low cross section and their high load carrying capacity. They are mainly used where particularly compact and economic bearing arrangements are desired but where the housing bore cannot serve as a raceway for a needle roller and cage assembly. The bearings must be mounted with an interference fit in the housing. If axial location by means of shoulders, snap rings, etc. is dispensed with, the housing bores can be produced simply and economically.

Drawn cup needle roller bearings are available with open ends (**Figure 1a**), or with one closed end (**Figure 1b**) for mounting on shaft ends. The profiled base (end) of the closed drawn cup enables minor axial guiding forces to be accommodated.

Drawn cup needle roller bearings are generally used without an inner ring. For applications where it is not possible to harden and grind the shaft seating, the inner rings listed in the tables can be used.

The outer ring of hardened sheet steel and the needle roller and cage assembly of drawn cup needle roller bearings form a non-separable unit. The free space available for lubricant means that long relubrication intervals can be applied. The bearings are generally of the single row design with the exception of the relatively wide sizes 1522, 1622, 2030, 2538 and 3038, which incorporate two needle roller and cage assemblies and have a lubrication hole in the outer ring.

Product highlights

Suitable for limited radial space

Low sectional height makes needle roller bearings suitable for applications when heavy radial loads and a limited radial space exist. Depending on the application, they may be used with or without an inner ring, with a roller cage assembly running directly on the shaft.

Drawn cup series — the popular choice

The popular drawn cup series have an extremely thin-walled outer ring and are intended to operate directly on the shaft without use of an inner ring.

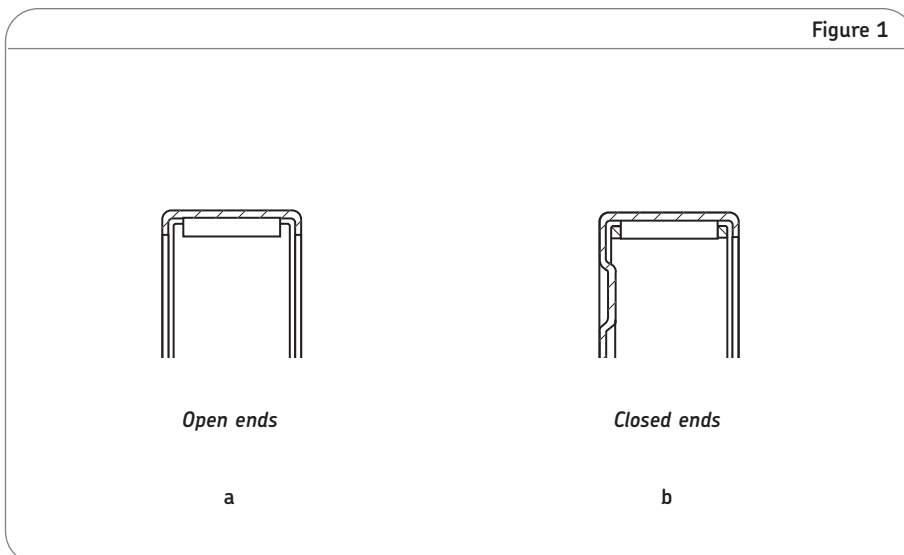
Large product assortment

A wide variety of designs include combined bearings for radial and axial loads allowing for compact and economical bearing arrangements. Size range includes 3 to 360 mm inside diameter.

Seals integration

SKF needle roller bearings are also available with seals on one or two sides making external seals unnecessary. The seals are made of synthetic rubber and provide efficient protection to the bearings against contaminants.

Figure 1



Introduction

Variations

Sealed drawn cup needle roller bearings

For applications where an adequate seal is not available or cannot be provided for space reasons, sealed drawn cup needle roller bearings with open and closed ends (c,d,e) can be supplied. These incorporate rubbing seals of synthetic rubber and are filled with a lithium base grease having good rust inhibiting properties. The bearings are suitable for operating temperatures in the range -4° to $+212^{\circ}$ F (-20° to $+100^{\circ}$ C). For further information on sealed drawn cup needle roller bearings, please consult SKF Applications Engineering.

The basic design of SKF needle roller bearings in the size range up to and including 19 mm outside diameter has an outer ring with either integral or inserted flanges (**Figure 2a**). The larger bearings have integral flanges and an annular groove and lubrication hole in the outer ring (**Figure 2b**). Needle roller bearings with flanged outer rings are mainly produced as single row bearings. The exceptions are bearings of series RNA 69 and NA 69 having outside diameters of 55 mm and above where two needle roller and cage assemblies are guided between integral flanges on the outer ring (**Figure 2c**). The outer ring, needle rollers and cage of all bearings form a non-separable unit.

Sealed bearings

Single row needle roller bearings of series RNA 49 and NA 49 are also available with rubbing seals at one side, RS design (**Figure 2d**), or at both sides, 2RS design (**Figure 2e**). The seals are made of synthetic rubber and provide efficient protection to the bearings against contaminants. All bearings are supplied as standard filled with a lithium base grease having good rust inhibiting properties. The bearings are suitable for operating temperatures in the range of -4° to $+212^{\circ}$ F (-20° to $+100^{\circ}$ C).

The inner rings of the sealed bearings are 1 mm wider than the outer rings. This will allow the seals to provide adequate protection against contaminants even where the shaft is slightly displaced axially relative to the housing. The inner rings also have a lubrication hole so that, depending on the arrangement, it is possible to relubricate the bearings via the outer or inner rings.

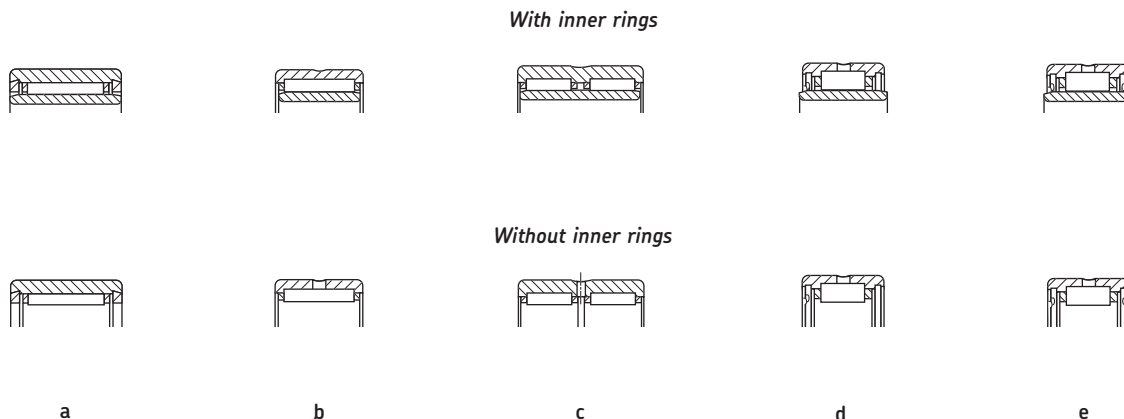
Special solutions using needle roller bearings

SKF supplies many different types of needle roller bearings in addition to those shown in this catalog, including:

- Needle roller and cage assemblies
- Needle roller bearings without flanges
- Alignment needle roller bearings
- Combined needle roller / ball bearings
- Combined needle roller / thrust ball bearings
- Combined needle roller / cylindrical roller thrust bearings

Details on these special solution products are available in other SKF publications, which can be supplied upon request.

Figure 2



Internal Clearance

Radial internal clearance

SKF needle roller bearings with inner ring are supplied with Normal radial internal clearance as standard. Bearings with greater or smaller clearance may be available but this should be checked before ordering.

The clearance values correspond to ISO 5753:1991 and are shown in **Table 1**.

Loads

Equivalent dynamic bearing load

Needle roller bearings and standard needle roller bearing assemblies can **only** accommodate radial loads. Therefore

$$P = F_r$$

Minimum Load

In order to provide satisfactory operation of all ball and roller bearings, they must always be subjected to a given minimum load.

This is also true of needle roller bearings, particularly if they run at high speeds where the inertia forces of the rollers and cage, and the friction in the lubricant can have a detrimental influence on the rolling conditions in the bearing. It may also cause damaging sliding movements to occur between the rollers and the raceways.

The requisite minimum radial load to be applied in such cases can be determined by using the Interactive Engineering Catalog on the SKF website www.skf.com or by contacting SKF Applications Engineering.

However, the weight of the components supported by the bearing, together with the external forces, often exceeds the requisite minimum load. If this is not the case, an additional radial load **must** be applied to the bearing, for example, by increasing belt tension or similar means.

Frequency Vibration Data

Frequency vibration data is available on the SKF website www.skf.com in the Interactive Engineering Catalog or by contacting SKF Applications Engineering.

Table 1

Radial internal clearance of needle roller bearings

Bore diameter d			Radial internal clearance																	
over mm	incl. in		C2				Normal				C3				C4					
			min μm	max in	min μm	max in	min μm	max in	min μm	max in	min μm	max in	min μm	max in	min μm	max in				
-	24	0	0.9449	1.1811	0	25	0.0000	0.0010	20	45	0.0008	0.0018	35	60	0.0014	0.0024	50	75	0.0020	0.0030
24	30	0.9449	1.1811	0	25	0.0000	0.0010	20	45	0.0008	0.0018	35	60	0.0014	0.0024	50	75	0.0020	0.0030	
30	40	1.1811	1.5748	5	30	0.0002	0.0012	25	50	0.0010	0.0020	45	70	0.0018	0.0028	60	85	0.0024	0.0033	
40	50	1.5748	1.9685	5	35	0.0002	0.0014	30	60	0.0012	0.0024	50	80	0.0020	0.0031	70	100	0.0028	0.0039	
50	65	1.9685	2.5591	10	40	0.0004	0.0016	40	70	0.0016	0.0028	60	90	0.0024	0.0035	80	110	0.0031	0.0043	
65	80	2.5591	3.1496	10	45	0.0004	0.0018	40	75	0.0016	0.0030	65	100	0.0026	0.0039	90	125	0.0035	0.0049	
80	100	3.1496	3.9370	15	50	0.0006	0.0020	50	85	0.0020	0.0033	75	110	0.0030	0.0043	105	140	0.0041	0.0055	
100	120	3.9370	4.7244	15	55	0.0006	0.0022	50	90	0.0020	0.0035	85	125	0.0033	0.0049	125	165	0.0049	0.0065	
120	140	4.7244	5.5118	15	60	0.0006	0.0024	60	105	0.0024	0.0041	100	145	0.0039	0.0057	145	190	0.0057	0.0075	
140	160	5.5118	6.2992	20	70	0.0008	0.0028	70	120	0.0028	0.0047	115	165	0.0045	0.0065	165	215	0.0065	0.0085	
160	180	6.2992	7.0866	25	75	0.0010	0.0030	75	125	0.0030	0.0049	120	170	0.0047	0.0067	170	220	0.0067	0.0087	
180	200	7.0866	7.8740	35	90	0.0014	0.0035	90	145	0.0035	0.0057	140	195	0.0055	0.0077	195	250	0.0077	0.0098	
200	225	7.8740	8.8583	45	105	0.0018	0.0041	105	165	0.0041	0.0065	160	220	0.0063	0.0087	220	280	0.0087	0.0110	
225	250	8.8583	9.8425	45	110	0.0018	0.0043	110	175	0.0043	0.0069	170	235	0.0067	0.0093	235	300	0.0093	0.0118	
250	280	9.8425	11.0236	55	125	0.0022	0.0049	125	195	0.0049	0.0077	190	260	0.0075	0.0102	260	330	0.0102	0.0130	
280	315	11.0236	12.4016	55	130	0.0022	0.0051	130	205	0.0051	0.0081	200	275	0.0079	0.0108	275	350	0.0108	0.0138	
315	355	12.4016	13.9764	65	145	0.0026	0.0057	145	225	0.0057	0.0089	225	305	0.0089	0.0120	305	385	0.0120	0.0152	
355	400	13.9764	15.7480	100	190	0.0039	0.0075	190	280	0.0075	0.0110	280	370	0.0110	0.0146	370	460	0.0146	0.0181	

Needle roller bearings

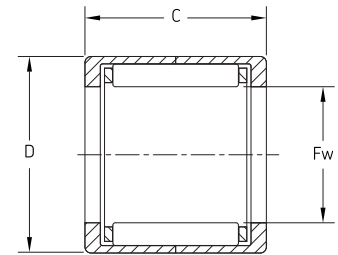
Single row

Drawn cup and open end

Series: HK 0306 TN — HK 2030

Size: 3 mm — 20 mm

0.1181 in — 0.7874 in



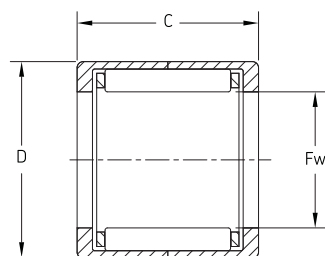
Series HK

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass			
	Diameter		Outside diameter		Width		Dynamic		Static		Reference speed	Limiting speed	Open end		Closed end	
	Under rollers F _w		D		C		C	C ₀	C ₀	r/min			r/min	g	oz	g
mm	in	mm	in	mm	in	N	lbf	N	lbf							
HK 0306 TN	3	0.1181	7	0.2559	6	0.2362	1 230	277	880	198	30 000	43 000	1.00	0.04	1.00	0.04
HK 0408 TN	4	0.1575	8	0.3150	8	0.3150	1 720	387	1 320	297	26 000	38 000	1.60	0.06	1.80	0.06
HK 0509	5	0.1969	9	0.3543	9	0.3543	2 380	535	2 080	468	22 000	34 000	2.00	0.07	2.10	0.07
HK 0608	6	0.2362	10	0.3937	8	0.3150	2 010	452	1 730	389	20 000	32 000	2.10	0.07	-	-
HK 0609	6	0.2362	10	0.3937	9	0.3543	2 810	632	2 700	607	20 000	32 000	2.50	0.09	2.60	0.09
HK 0709	7	0.2756	11	0.4331	9	0.3543	3 030	681	3 050	686	18 000	28 000	2.60	0.09	2.90	0.10
HK 0808	8	0.3150	12	0.4724	8	0.3150	2 700	607	2 750	618	17 000	26 000	2.70	0.10	3.00	0.11
HK 0810	8	0.3150	12	0.4724	10	0.3937	3 690	830	4 050	910	17 000	26 000	3.00	0.11	3.40	0.11
HK 0908	9	0.3543	13	0.5118	8	0.3150	3 800	854	4 300	967	16 000	24 000	3.00	0.11	-	-
HK 0910	9	0.3543	13	0.5118	10	0.3937	4 130	928	4 800	1 080	16 000	24 000	4.00	0.14	4.30	0.15
HK 0912	9	0.3543	13	0.5118	12	0.4724	5 120	1 150	6 400	1 440	16 000	24 000	4.60	0.16	4.90	0.17
HK 1010	10	0.3937	14	0.5512	10	0.3937	4 290	964	5 300	1 190	16 000	24 000	4.10	0.14	4.30	0.15
HK 1012	10	0.3937	14	0.5512	12	0.4724	5 390	1 210	6 950	1 560	16 000	24 000	4.80	0.17	5.00	0.18
HK 1015	10	0.3937	14	0.5512	15	0.5906	6 600	1 480	9 000	2 020	16 000	24 000	6.00	0.21	6.20	0.22
HK 1210	12	0.4724	16	0.6299	10	0.3937	4 840	1 090	6 400	1 440	14 000	20 000	4.60	0.16	5.20	0.18
HK 1212	12	0.4724	18	0.7087	12	0.4724	6 270	1 410	7 350	1 650	14 000	20 000	9.10	0.32	10.50	0.37
HK 1312	13	0.5118	19	0.7480	12	0.4724	6 600	1 480	8 000	1 800	13 000	19 000	9.50	0.33	11.00	0.39
HK 1412	14	0.5512	20	0.7874	12	0.4724	6 820	1 530	8 650	1 950	12 000	18 000	10.50	0.37	12.00	0.42
HK 1512	15	0.5906	21	0.8268	12	0.4724	7 650	1 720	9 500	2 140	11 000	17 000	11.00	0.39	13.00	0.46
HK 1516	15	0.5906	21	0.8268	16	0.6299	10 100	2 270	14 600	3 280	11 000	17 000	15.00	0.53	17.00	0.60
HK 1522 ¹⁾	15	0.5906	21	0.8268	22	0.8661	13 000	2 920	20 000	4 500	11 000	17 000	20.00	0.70	22.00	0.77
HK 1612	16	0.6299	22	0.8661	12	0.4724	7 370	1 660	9 800	2 200	10 000	16 000	12.00	0.42	14.00	0.49
HK 1616	16	0.6299	22	0.8661	16	0.6299	10 500	2 360	15 600	3 510	10 000	16 000	16.00	0.56	18.00	0.63
HK 1622 ¹⁾	16	0.6299	22	0.8661	22	0.8661	12 800	2 880	19 600	4 410	10 000	16 000	22.00	0.77	24.00	0.84
HK 1712	17	0.6693	23	0.9055	12	0.4724	7 650	1 720	10 600	2 380	10 000	16 000	12.00	0.42	15.00	0.53
HK 1812	18	0.7087	24	0.9449	12	0.4724	7 920	1 780	11 200	2 520	9 500	15 000	13.00	0.46	15.00	0.53
HK 1816	18	0.7087	24	0.9449	16	0.6299	11 200	2 520	17 600	3 960	9 500	15 000	18.00	0.63	20.00	0.70
HK 2010	20	0.7874	26	1.0236	10	0.3937	6 160	1 390	8 500	1 910	9 000	14 000	12.00	0.42	-	-
HK 2012	20	0.7874	26	1.0236	12	0.4724	8 420	1 890	12 500	2 810	9 000	14 000	14.00	0.49	17.00	0.60
HK 2016	20	0.7874	26	1.0236	16	0.6299	12 300	2 770	20 400	4 590	9 000	14 000	19.00	0.67	22.00	0.77
HK 2020	20	0.7874	26	1.0236	20	0.7874	15 100	3 400	26 500	5 960	9 000	14 000	24.00	0.84	27.00	0.95
HK 2030 ¹⁾	20	0.7874	26	1.0236	30	1.1811	20 900	4 700	40 500	9 110	9 000	14 000	35.00	1.20	38.00	1.30

1) Double row

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
 Drawn cup and open end
 Series: HK 2210 — HK 6032
 Size: 22 mm — 60 mm
 0.8661 in — 2.3622 in



Series HK

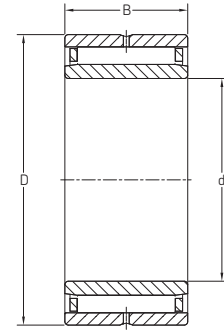
Designation	Principal dimensions						Basic load ratings				Speed rating		Mass			
	Diameter						Dynamic		Static		Reference speed	Limiting speed	Open end		Closed end	
	Under rollers		Outside diameter		Width		C		C ₀				r/min	r/min	g	oz
	Fw	D	Fw	D	C	C	C	C ₀								
mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	g	oz	g	oz	
HK 2210	22	0.8661	28	1.1024	10	0.3937	7 210	1 620	10 600	2 380	8 000	12 000	12	0.42	-	-
HK 2212	22	0.8661	28	1.1024	12	0.4724	8 800	1 980	13 700	3 080	8 000	12 000	15	0.53	18	0.63
HK 2216	22	0.8661	28	1.1024	16	0.6299	13 000	2 920	22 400	5 040	8 000	12 000	21	0.74	24	0.84
HK 2220	22	0.8661	28	1.1024	20	0.7874	15 700	3 530	29 000	6 520	8 000	12 000	26	0.91	30	1.05
HK 2512	25	0.9843	32	1.2598	12	0.4724	10 500	2 360	15 300	3 440	7 500	11 000	21	0.74	24	0.84
HK 2516	25	0.9843	32	1.2598	16	0.6299	15 100	3 400	24 000	5 400	7 500	11 000	27	0.95	31	1.10
HK 2520	25	0.9843	32	1.2598	20	0.7874	19 000	4 270	32 500	7 310	7 500	11 000	34	1.20	39	1.35
HK 2526	25	0.9843	32	1.2598	26	1.0236	24 200	5 440	45 000	10 100	7 500	11 000	45	1.55	49	1.70
HK 2538 ¹⁾	25	0.9843	32	1.2598	38	1.4961	33 000	7 420	65 500	14 700	7 500	11 000	65	2.25	69	2.40
HK 2816	28	1.1024	35	1.3780	16	0.6299	15 700	3 530	26 500	5 960	6 700	9 500	30	1.05	34	1.20
HK 2820	28	1.1024	35	1.3780	20	0.7874	20 100	4 520	36 500	8 210	6 700	9 500	38	1.30	43	1.50
HK 3012	30	1.1811	37	1.4567	12	0.4724	11 700	2 630	18 300	4 110	6 300	9 000	24	0.84	28	0.98
HK 3016	30	1.1811	37	1.4567	16	0.6299	16 500	3 710	29 000	6 520	6 300	9 000	32	1.10	37	1.30
HK 3020	30	1.1811	37	1.4567	20	0.7874	20 900	4 700	40 000	8 990	6 300	9 000	40	1.40	47	1.65
HK 3026	30	1.1811	37	1.4567	26	1.0236	27 000	6 070	54 000	12 100	6 300	9 000	53	1.85	59	2.05
HK 3038 ¹⁾	30	1.1811	37	1.4567	38	1.4961	35 800	8 050	80 000	18 000	6 300	9 000	76	2.65	83	2.90
HK 3512	35	1.3780	42	1.6535	12	0.4724	12 500	2 810	21 600	4 860	5 600	8 000	28	0.98	33	1.15
HK 3516	35	1.3780	42	1.6535	16	0.6299	17 900	4 020	34 000	7 640	5 600	8 000	37	1.30	44	1.55
HK 3520	35	1.3780	42	1.6535	20	0.7874	22 900	5 150	46 500	10 500	5 600	8 000	46	1.60	55	1.90
HK 4012	40	1.5748	47	1.8504	12	0.4724	13 400	3 010	24 500	5 510	5 000	7 000	31	1.10	38	1.30
HK 4016	40	1.5748	47	1.8504	16	0.6299	19 000	4 270	39 000	8 770	5 000	7 000	42	1.45	51	1.80
HK 4020	40	1.5748	47	1.8504	20	0.7874	24 200	5 440	53 000	11 900	5 000	7 000	52	1.80	62	2.15
HK 4512	45	1.7717	52	2.0472	12	0.4724	14 200	3 190	27 500	6 180	4 500	6 300	35	1.20	-	-
HK 4516	45	1.7717	52	2.0472	16	0.6299	20 500	4 610	43 000	9 670	4 500	6 300	46	1.60	56	1.95
HK 4520	45	1.7717	52	2.0472	20	0.7874	26 000	5 850	60 000	13 500	4 500	6 300	58	2.00	71	2.50
HK 5020	50	1.9685	58	2.2835	20	0.7874	29 200	6 560	63 000	14 200	4 000	5 600	72	2.50	87	3.05
HK 5025	50	1.9685	58	2.2835	25	0.9843	36 900	8 300	85 000	19 100	4 000	5 600	90	3.15	109	3.80
HK 5520	55	2.1654	63	2.4803	20	0.7874	30 300	6 810	67 000	15 100	3 600	5 000	78	2.70	94	3.30
HK 5528	55	2.1654	63	2.4803	28	1.1024	41 800	9 400	104 000	23 400	3 600	5 000	110	3.85	130	4.55
HK 6012	60	2.3622	68	2.6772	12	0.4724	17 600	3 960	32 000	7 190	3 400	4 800	49	1.70	77	2.70
HK 6020	60	2.3622	68	2.6772	20	0.7874	31 900	7 170	75 000	16 900	3 400	4 800	85	2.95	105	3.65
HK 6032	60	2.3622	68	2.6772	32	1.2598	51 200	11 500	137 000	30 800	3 400	4 800	135	4.70	165	5.75

1) Double row

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
 Consult SKF USA Inc. prior to design change or order placement.

Needle roller bearings

Single row
with inner ring
Series: NA 4822 — NA 4876
Size: 110 mm — 380 mm
4.3307 in — 14.9606 in

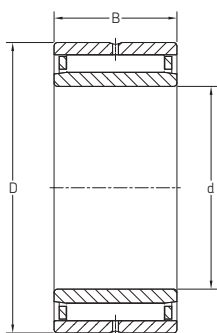


Series NA 48

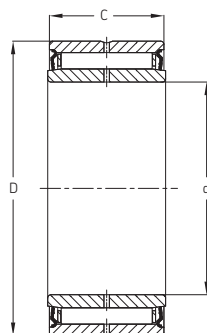
Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min		
NA 4822	110	4.3307	140	5.5118	30	1.1811	93 500	21 100	232 000	52 200	3 400	3 800	1.10	2.40
NA 4824	120	4.7244	150	5.9055	30	1.1811	99 000	22 300	255 000	57 400	3 200	3 600	1.15	2.50
NA 4826	130	5.1181	165	6.4961	35	1.3780	119 000	26 800	325 000	73 100	2 800	3 200	1.80	4.00
NA 4828	140	5.5118	175	6.8898	35	1.3780	121 000	27 300	345 000	77 600	2 600	3 000	1.90	4.20
NA 4830	150	5.9055	190	7.4803	40	1.5748	147 000	33 100	415 000	93 300	2 400	2 800	2.70	6.00
NA 4832	160	6.2992	200	7.8740	40	1.5748	157 000	35 300	450 000	52 200	2 200	2 600	2.90	6.40
NA 4834	170	6.6929	215	8.4646	45	1.7717	179 000	40 300	520 000	116 900	2 200	2 400	3.95	8.70
NA 4836	180	7.0866	225	8.8583	45	1.7717	190 000	42 800	570 000	128 200	2 000	2 400	4.20	9.30
NA 4838	190	7.4803	240	9.4488	50	1.9685	220 000	49 500	710 000	159 700	1 900	2 200	5.60	12.30
NA 4840	200	7.8740	250	9.8425	50	1.9685	224 000	50 400	735 000	165 300	1 800	2 000	5.85	12.90
NA 4844	220	8.6614	270	10.6299	50	1.9685	238 000	53 600	815 000	183 300	1 700	1 900	6.40	14.10
NA 4848	240	9.4488	300	11.8110	60	2.3622	347 000	78 100	1 120 000	251 800	1 500	1 700	10.00	22.00
NA 4852	260	10.2362	320	12.5984	60	2.3622	358 000	80 500	1 200 000	269 800	1 400	1 500	10.50	23.10
NA 4856	280	11.0236	350	13.7795	69	2.7165	429 000	96 500	1 320 000	296 800	1 300	1 400	15.50	34.20
NA 4860	300	11.8110	380	14.9606	80	3.1496	594 000	133 600	1 800 000	404 700	1 100	1 300	22.00	48.50
NA 4864	320	12.5984	400	15.7480	80	3.1496	605 000	136 100	1 900 000	427 200	1 100	1 200	23.00	50.70
NA 4868	340	13.3858	420	16.5354	80	3.1496	616 000	138 500	1 960 000	440 700	1 000	1 200	24.00	52.90
NA 4872	360	14.1732	440	17.3228	80	3.1496	627 000	141 000	2 040 000	458 600	950	1 100	25.50	56.20
NA 4876	380	14.9606	480	18.8976	100	3.9370	968 000	217 700	3 000 000	674 400	900	1 000	42.50	93.70

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
with inner ring
Open and sealed
Series: NA 4900 — NA 4915
Size: 10 mm — 75 mm
0.3937 in — 2.9528 in



Series NA 49



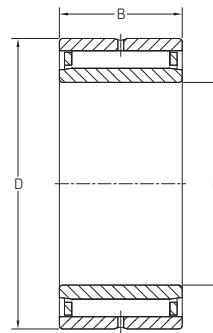
Series NA 2RS

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min		
NA 4900	10	0.3937	22	0.8661	13	0.5118	8 800	2 000	10 400	2 400	24 000	28 000	0.02	0.05
NA 4900 2RS	10	0.3937	22	0.8661	13	0.5118	7 370	1 700	8 150	1 900	–	12 000	0.03	0.06
NA 4901	12	0.4724	24	0.9449	13	0.5118	9 900	2 300	12 200	2 800	22 000	26 000	0.03	0.06
NA 4901 2RS	12	0.4724	24	0.9449	13	0.5118	8 090	1 900	9 650	2 200	–	11 000	0.03	0.06
NA 4902	15	0.5906	28	1.1024	13	0.5118	11 200	2 600	15 300	3 500	19 000	22 000	0.03	0.07
NA 4902 2RS	15	0.5906	28	1.1024	13	0.5118	9 130	2 100	12 000	2 700	–	9 500	0.04	0.08
NA 4903	17	0.6693	30	1.1811	13	0.5118	11 400	2 600	16 300	3 700	18 000	20 000	0.04	0.08
NA 4903 2RS	17	0.6693	30	1.1811	13	0.5118	9 520	2 200	12 900	2 900	–	9 000	0.04	0.09
NA 4904	20	0.7874	37	1.4567	17	0.6693	21 600	4 900	28 000	6 300	15 000	17 000	0.08	0.20
NA 4904 2RS	20	0.7874	37	1.4567	17	0.6693	19 400	4 400	22 400	5 100	–	7 500	0.08	0.20
NA 49/22	22	0.8661	39	1.5354	17	0.6693	23 300	5 300	32 000	7 200	14 000	15 000	0.08	0.20
NA 4905	25	0.9843	42	1.6535	17	0.6693	24 200	5 500	34 500	7 800	13 000	15 000	0.09	0.20
NA 4905 2RS	25	0.9843	42	1.6535	17	0.6693	21 600	4 900	27 500	6 200	–	6 300	0.09	0.20
NA 49/28	28	1.1024	45	1.7717	17	0.6693	25 100	5 700	36 500	8 300	12 000	14 000	0.10	0.20
NA 4906	30	1.1811	47	1.8504	17	0.6693	25 500	5 800	39 000	8 800	11 000	13 000	0.10	0.20
NA 4906 2RS	30	1.1811	47	1.8504	17	0.6693	23 300	5 300	32 000	7 200	–	5 600	0.10	0.20
NA 49/32	32	1.2598	52	2.0472	20	0.7874	30 800	7 000	51 000	11 500	10 000	11 000	0.16	0.40
NA 4907	35	1.3780	55	2.1654	20	0.7874	31 900	7 200	54 000	12 200	9 500	11 000	0.17	0.40
NA 4907 2RS	35	1.3780	55	2.1654	20	0.7874	27 000	6 100	43 000	9 700	–	5 400	0.18	0.40
NA 4908	40	1.5748	62	2.4409	22	0.8661	42 900	9 700	71 000	16 000	8 000	9 500	0.23	0.50
NA 4908 2RS	40	1.5748	62	2.4409	22	0.8661	36 900	8 300	58 500	13 200	–	4 000	0.25	0.60
NA 4909	45	1.7717	68	2.6772	22	0.8661	45 700	10 300	78 000	17 600	7 500	8 500	0.27	0.60
NA 4909 2RS	45	1.7717	68	2.6772	22	0.8661	39 100	8 800	64 000	14 400	–	3 800	0.29	0.60
NA 4910	50	1.9685	72	2.8346	22	0.8661	47 300	10 700	85 000	19 200	7 000	8 000	0.27	0.60
NA 4910 2RS	50	1.9685	72	2.8346	22	0.8661	40 200	9 100	69 500	15 700	–	3 400	0.30	0.70
NA 4911	55	2.1654	80	3.1496	25	0.9843	57 200	12 900	106 000	23 900	6 300	7 000	0.39	0.90
NA 4912	60	2.3622	85	3.3465	25	0.9843	60 500	13 700	114 000	25 700	6 000	6 700	0.43	0.95
NA 4913	65	2.5591	90	3.5433	25	0.9843	61 600	13 900	120 000	27 000	5 600	6 300	0.46	1.00
NA 4914	70	2.7559	100	3.9370	30	1.1811	84 200	19 000	163 000	36 700	5 000	5 600	0.73	1.60
NA 4915	75	2.9528	105	4.1339	30	1.1811	84 200	19 000	170 000	38 300	4 800	5 300	0.78	1.70

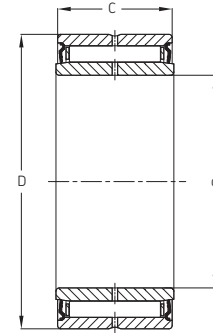
Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Needle roller bearings

Single row
with inner ring
Open and sealed
Series: NA 4916 — NA 4928
Size: 80 mm — 140 mm
3.1496 in — 5.5118 in



Series NA 49

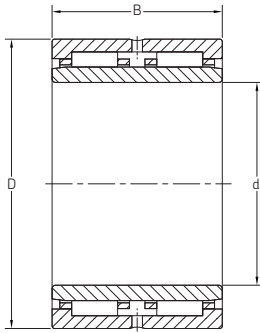


Series NA 2RS

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min		
NA 4916	80	3.1496	110	4.3307	30	1.1811	88 000	19 800	183 000	41 200	4 500	5 000	0.88	1.90
NA 4917	85	3.3465	120	4.7244	35	1.3780	108 000	24 300	250 000	56 200	4 000	4 500	1.25	2.80
NA 4918	90	3.5433	125	4.9213	35	1.3780	112 000	25 200	265 000	59 600	3 800	4 300	1.30	2.90
NA 4919	95	3.7402	130	5.1181	35	1.3780	114 000	25 700	270 000	60 700	3 600	4 000	1.35	3.00
NA 4920	100	3.9370	140	5.5118	40	1.5748	125 000	28 100	280 000	63 000	3 400	4 000	1.90	4.20
NA 4922	110	4.3307	150	5.9055	40	1.5748	130 000	29 300	300 000	67 500	3 200	3 600	2.05	4.50
NA 4924	120	4.7244	165	6.4961	45	1.7717	176 000	39 600	405 000	91 100	3 000	3 400	2.85	6.30
NA 4926	130	5.1181	180	7.0866	50	1.9685	198 000	44 600	480 000	108 000	2 600	3 000	3.90	8.60
NA 4928	140	5.5118	190	7.4803	50	1.9685	205 000	46 100	510 000	114 700	2 400	2 800	4.15	9.10

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Double row
with inner ring
Series: NA 6901 — NA 6919
Size: 12 mm — 95 mm
0.4724 in — 3.7402 in



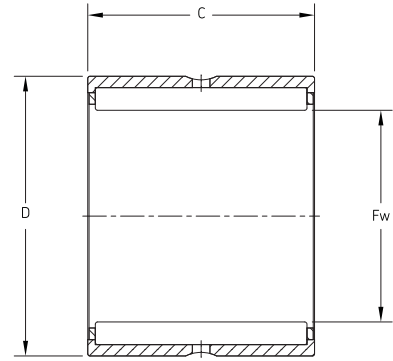
Series NA 69

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min		
NA 6901	12	0.4724	24	0.9449	22	0.8661	16 100	3 700	23 200	5 300	22 000	26 000	0.05	0.10
NA 6902	15	0.5906	28	1.1024	23	0.9055	17 200	3 900	27 000	6 100	19 000	22 000	0.06	0.10
NA 6903	17	0.6693	30	1.1811	23	0.9055	18 700	4 300	30 500	6 900	18 000	20 000	0.07	0.20
NA 6904	20	0.7874	37	1.4567	30	1.1811	35 200	8 000	53 000	12 000	15 000	17 000	0.14	0.30
NA 69/22	22	0.8661	39	1.5354	30	1.1811	36 900	8 300	57 000	12 900	14 000	15 000	0.15	0.30
NA 6905	25	0.9843	42	1.6535	30	1.1811	38 000	8 600	62 000	14 000	13 000	15 000	0.16	0.40
NA 69/28	28	1.1024	45	1.7717	30	1.1811	39 600	9 000	65 500	14 800	12 000	14 000	0.18	0.40
NA 6906	30	1.1811	47	1.8504	30	1.1811	42 900	9 700	75 000	16 900	11 000	13 000	0.19	0.40
NA 69/32	32	1.2598	52	2.0472	36	1.4173	47 300	10 700	90 000	20 300	10 000	11 000	0.29	0.60
NA 6907	35	1.3780	55	2.1654	36	1.4173	48 400	10 900	93 000	21 000	9 500	11 000	0.31	0.70
NA 6908	40	1.5748	62	2.4409	40	1.5748	67 100	15 100	125 000	28 100	8 000	9 500	0.43	0.95
NA 6909	45	1.7717	68	2.6772	40	1.5748	70 400	15 900	137 000	30 800	7 500	8 500	0.50	1.10
NA 6910	50	1.9685	72	2.8346	40	1.5748	73 700	16 600	150 000	33 800	7 000	8 000	0.52	1.10
NA 6911	55	2.1654	80	3.1496	45	1.7717	89 700	20 200	190 000	42 800	6 300	7 000	0.78	1.80
NA 6912	60	2.3622	85	3.3465	45	1.7717	93 500	21 100	204 000	45 900	6 000	6 700	0.81	1.80
NA 6913	65	2.5591	90	3.5433	45	1.7717	95 200	21 500	212 000	47 700	5 600	6 300	0.83	1.80
NA 6914	70	2.7559	100	3.9370	54	2.1260	128 000	28 800	285 000	64 100	5 000	5 600	1.35	3.00
NA 6915	75	2.9528	105	4.1339	54	2.1260	130 000	29 300	290 000	65 200	4 800	5 300	1.45	3.20
NA 6916	80	3.1496	110	4.3307	54	2.1260	134 000	30 200	315 000	70 900	4 500	5 000	1.50	3.30
NA 6917	85	3.3465	120	4.7244	63	2.4803	165 000	37 100	425 000	95 600	4 000	4 500	2.20	4.90
NA 6918	90	3.5433	125	4.9213	63	2.4803	172 000	38 700	450 000	101 200	3 800	4 300	2.30	5.10
NA 6919	95	3.7402	130	5.1181	63	2.4803	172 000	38 700	465 000	104 600	3 600	4 000	2.50	5.50

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Needle roller bearings

Single row
without inner ring
Series: NK 5/12 TN — NK 22/16
Size: 5 mm — 22 mm
0.1969 in — 0.8661 in

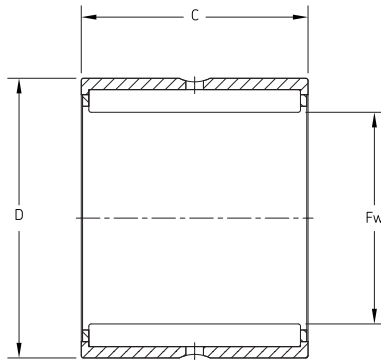


Series NK

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Diameter		Outside diameter D		Width C		Dynamic C		Static C ₀		Reference speed	Limiting speed		
	Under rollers F _w													
mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	
NK 5/12 TN	5	0.1969	10	0.3937	10	0.3937	2 920	700	2 700	700	36 000	40 000	0.01	0.01
NK 6/10 TN	6	0.2362	12	0.4724	10	0.3937	2 550	600	2 360	600	34 000	38 000	0.01	0.01
NK 6/12 TN	6	0.2362	12	0.4724	12	0.4724	3 300	800	3 200	800	34 000	38 000	0.01	0.01
NK 7/10 TN	7	0.2756	14	0.5512	10	0.3937	2 810	700	2 750	700	32 000	36 000	0.01	0.02
NK 7/12 TN	7	0.2756	14	0.5512	12	0.4724	3 580	900	3 750	900	32 000	36 000	0.01	0.02
NK 8/12 TN	8	0.3150	15	0.5906	12	0.4724	3 800	900	4 250	1 000	32 000	36 000	0.01	0.02
NK 8/16 TN	8	0.3150	15	0.5906	16	0.6299	5 010	1 200	5 850	1 400	32 000	36 000	0.01	0.03
NK 9/12 TN	9	0.3543	16	0.6299	12	0.4724	4 400	1 000	5 200	1 200	30 000	34 000	0.01	0.02
NK 9/16 TN	9	0.3543	16	0.6299	16	0.6299	5 720	1 300	7 200	1 700	30 000	34 000	0.01	0.03
NK 10/12 TN	10	0.3937	17	0.6693	12	0.4724	4 400	1 000	5 400	1 300	28 000	32 000	0.01	0.02
NK 10/16 TN	10	0.3937	17	0.6693	16	0.6299	5 940	1 400	8 000	1 800	28 000	32 000	0.01	0.03
NK 12/12	12	0.4724	19	0.7480	12	0.4724	6 710	1 600	8 150	1 900	26 000	30 000	0.01	0.03
NK 12/16	12	0.4724	19	0.7480	16	0.6299	9 130	2 100	12 000	2 700	26 000	30 000	0.02	0.04
NK 14/16	14	0.5512	22	0.8661	16	0.6299	10 200	2 300	12 500	2 900	24 000	28 000	0.02	0.05
NK 14/20	14	0.5512	22	0.8661	20	0.7874	12 800	2 900	16 600	3 800	24 000	28 000	0.03	0.06
NK 15/16	15	0.5906	23	0.9055	16	0.6299	11 000	2 500	14 000	3 200	24 000	26 000	0.02	0.05
NK 15/20	15	0.5906	23	0.9055	20	0.7874	13 800	3 200	18 300	4 200	24 000	26 000	0.03	0.06
NK 16/16	16	0.6299	24	0.9449	16	0.6299	11 700	2 700	15 300	3 500	22 000	26 000	0.02	0.05
NK 16/20	16	0.6299	24	0.9449	20	0.7874	14 500	3 300	20 000	4 500	22 000	26 000	0.03	0.06
NK 17/16	17	0.6693	25	0.9843	16	0.6299	12 100	2 800	16 600	3 800	22 000	26 000	0.02	0.05
NK 17/20	17	0.6693	25	0.9843	20	0.7874	15 100	3 400	22 000	5 000	22 000	26 000	0.03	0.07
NK 18/16	18	0.7087	26	1.0236	16	0.6299	12 800	2 900	17 600	4 000	22 000	24 000	0.03	0.06
NK 18/20	18	0.7087	26	1.0236	20	0.7874	16 100	3 700	23 600	5 400	22 000	24 000	0.03	0.07
NK 19/16	19	0.7480	27	1.0630	16	0.6299	13 400	3 100	19 000	4 300	20 000	24 000	0.03	0.06
NK 19/20	19	0.7480	27	1.0630	20	0.7874	16 500	3 800	25 500	5 800	20 000	24 000	0.03	0.07
NK 20/16	20	0.7874	28	1.1024	16	0.6299	13 200	3 000	19 300	4 400	19 000	22 000	0.03	0.06
NK 20/20	20	0.7874	28	1.1024	20	0.7874	16 500	3 800	25 500	5 800	19 000	22 000	0.03	0.07
NK 21/16	21	0.8268	29	1.1417	16	0.6299	13 800	3 200	20 400	4 600	19 000	22 000	0.03	0.06
NK 21/20	21	0.8268	29	1.1417	20	0.7874	17 200	3 900	27 000	6 100	19 000	22 000	0.04	0.08
NK 22/16	22	0.8661	30	1.1811	16	0.6299	14 200	3 200	21 600	4 900	18 000	20 000	0.03	0.07

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
without inner ring
Series: NK 22/20 — NK 47/20
Size: 22 mm — 47 mm
0.8661 in — 1.8504 in



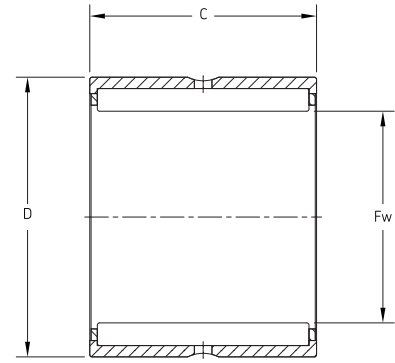
Series NK

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Diameter		Outside diameter D	Width C		Dynamic C		Static C ₀		Reference speed r/min	Limiting speed r/min	kg	lb	
	Under rollers F _w			mm	in	N	lbf	N	lbf					
NK 22/20	22	0.8661	30	1.1811	20	0.7874	17 900	4 100	29 000	6 600	18 000	20 000	0.04	0.08
NK 24/16	24	0.9449	32	1.2598	16	0.6299	15 400	3 500	24 500	5 600	16 000	19 000	0.03	0.07
NK 24/20	24	0.9449	32	1.2598	20	0.7874	19 000	4 300	32 500	7 400	16 000	19 000	0.04	0.09
NK 25/16	25	0.9843	33	1.2992	16	0.6299	15 100	3 400	24 500	5 600	16 000	18 000	0.03	0.07
NK 25/20	25	0.9843	33	1.2992	20	0.7874	19 000	4 300	32 500	7 400	16 000	18 000	0.04	0.09
NK 26/16	26	1.0236	34	1.3386	16	0.6299	15 700	3 600	26 000	5 900	15 000	17 000	0.03	0.07
NK 26/20	26	1.0236	34	1.3386	20	0.7874	19 400	4 400	34 500	7 800	15 000	17 000	0.04	0.09
NK 28/20	28	1.1024	37	1.4567	20	0.7874	22 000	5 000	36 500	8 300	14 000	16 000	0.05	0.10
NK 28/30	28	1.1024	37	1.4567	30	1.1811	31 900	7 200	60 000	13 500	14 000	16 000	0.08	0.20
NK 29/20	29	1.1417	38	1.4961	20	0.7874	22 000	5 000	36 500	8 300	14 000	15 000	0.05	0.10
NK 29/30	29	1.1417	38	1.4961	30	1.1811	31 900	7 200	60 000	13 500	14 000	15 000	0.08	0.20
NK 30/20	30	1.1811	40	1.5748	20	0.7874	22 900	5 200	38 000	8 600	13 000	15 000	0.07	0.10
NK 30/30	30	1.1811	40	1.5748	30	1.1811	33 000	7 500	63 000	14 200	13 000	15 000	0.10	0.20
NK 32/20	32	1.2598	42	1.6535	20	0.7874	23 300	5 300	40 500	9 200	12 000	14 000	0.07	0.10
NK 32/30	32	1.2598	42	1.6535	30	1.1811	34 100	7 700	65 500	14 800	12 000	14 000	0.10	0.20
NK 35/20	35	1.3780	45	1.7717	20	0.7874	24 600	5 600	45 000	10 200	11 000	13 000	0.07	0.20
NK 35/30	35	1.3780	45	1.7717	30	1.1811	35 800	8 100	72 000	16 200	11 000	13 000	0.11	0.20
NK 37/20	37	1.4567	47	1.8504	20	0.7874	25 100	5 700	46 500	10 500	11 000	12 000	0.08	0.20
NK 37/30	37	1.4567	47	1.8504	30	1.1811	36 900	8 300	76 500	17 200	11 000	12 000	0.11	0.20
NK 38/20	38	1.4961	48	1.8898	20	0.7874	25 500	5 800	49 000	11 100	11 000	12 000	0.08	0.20
NK 38/30	38	1.4961	48	1.8898	30	1.1811	37 400	8 500	80 000	18 000	11 000	12 000	0.12	0.30
NK 40/20	40	1.5748	50	1.9685	20	0.7874	26 400	6 000	51 000	11 500	10 000	11 000	0.08	0.20
NK 40/30	40	1.5748	50	1.9685	30	1.1811	38 000	8 600	83 000	18 700	10 000	11 000	0.13	0.30
NK 42/20	42	1.6535	52	2.0472	20	0.7874	27 000	6 100	53 000	12 000	9 500	11 000	0.09	0.20
NK 42/30	42	1.6535	52	2.0472	30	1.1811	39 100	8 800	86 500	19 500	9 500	11 000	0.13	0.30
NK 43/20	43	1.6929	53	2.0866	20	0.7874	27 500	6 200	55 000	12 400	9 500	11 000	0.09	0.20
NK 43/30	43	1.6929	53	2.0866	30	1.1811	40 200	9 100	90 000	20 300	9 500	11 000	0.13	0.30
NK 45/20	43	1.6929	55	2.1654	20	0.7874	27 500	6 200	57 000	12 900	9 000	10 000	0.09	0.20
NK 45/30	43	1.6929	55	2.1654	30	1.1811	40 200	9 100	93 000	21 000	9 000	10 000	0.14	0.30
NK 47/20	47	1.8504	57	2.2441	20	0.7874	29 200	6 600	61 000	13 800	8 500	10 000	0.10	0.20

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Needle roller bearings

Single row
without inner ring
Series: NK 47/30 — NK 110/40
Size: 47 mm — 110 mm
1.8504 in — 4.3307 in

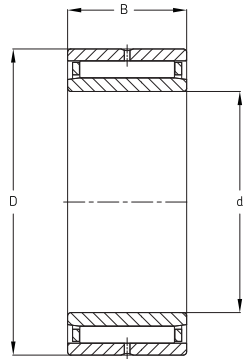


Series NK

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Diameter		Outside diameter D		Width C		Dynamic C		Static C ₀		Reference speed	Limiting speed		
	Under rollers F _w													
mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	
NK 47/30	47	1.8504	57	2.2441	30	1.1811	41 800	9 400	98 000	22 100	8 500	10 000	0.14	0.30
NK 50/25	50	1.9685	62	2.4409	25	0.9843	38 000	8 600	78 000	17 600	8 000	9 000	0.16	0.40
NK 50/35	50	1.9685	62	2.4409	35	1.3780	49 500	11 200	110 000	24 800	8 000	9 000	0.22	0.50
NK 55/25	55	2.1654	68	2.6772	25	0.9843	40 200	9 100	88 000	19 800	7 500	8 500	0.18	0.40
NK 55/35	55	2.1654	68	2.6772	35	1.3780	52 300	11 800	122 000	27 500	7 500	8 500	0.25	0.60
NK 60/25	60	2.3622	72	2.8346	25	0.9843	41 800	9 400	96 500	21 700	6 700	7 500	0.19	0.40
NK 60/35	60	2.3622	72	2.8346	35	1.3780	55 000	12 400	134 000	30 200	6 700	7 500	0.26	0.60
NK 65/25	65	2.5591	78	3.0709	25	0.9843	44 000	9 900	104 000	23 400	6 300	7 000	0.22	0.50
NK 65/35	65	2.5591	78	3.0709	35	1.3780	58 300	13 200	146 000	32 900	6 300	7 000	0.31	0.70
NK 68/25	68	2.6772	82	3.2283	25	0.9843	44 000	9 900	95 000	21 400	6 000	6 700	0.24	0.50
NK 68/35	68	2.6772	82	3.2283	35	1.3780	60 500	13 700	146 000	32 900	6 000	6 700	0.34	0.70
NK 70/25	70	2.7559	85	3.3465	25	0.9843	44 600	10 100	98 000	22 100	6 000	6 700	0.26	0.60
NK 70/35	70	2.7559	85	3.3465	35	1.3780	61 600	13 900	150 000	33 800	6 000	6 700	0.37	0.80
NK 73/25	73	2.8740	90	3.5433	25	0.9843	52 800	11 900	106 000	23 900	5 600	6 300	0.30	0.70
NK 73/35	73	2.8740	90	3.5433	35	1.3780	73 700	16 600	163 000	36 700	5 600	6 300	0.43	0.90
NK 75/25	75	2.9528	92	3.6220	25	0.9843	53 900	12 200	110 000	24 800	5 300	6 000	0.32	0.70
NK 75/35	75	2.9528	92	3.6220	35	1.3780	74 800	16 900	170 000	38 300	5 300	6 000	0.45	1.00
NK 80/25	80	3.1496	95	3.7402	25	0.9843	56 100	12 700	127 000	28 600	5 000	5 600	0.30	0.70
NK 80/35	80	3.1496	95	3.7402	35	1.3780	76 500	17 200	190 000	42 800	5 000	5 600	0.43	0.90
NK 85/25	85	3.3465	105	4.1339	25	0.9843	69 300	15 600	132 000	29 700	4 800	5 300	0.43	0.90
NK 85/35	85	3.3465	105	4.1339	35	1.3780	96 800	21 800	200 000	45 000	4 800	5 300	0.60	1.30
NK 90/25	90	3.5433	110	4.3307	25	0.9843	72 100	16 300	140 000	31 500	4 500	5 000	0.45	1.00
NK 90/35	90	3.5433	110	4.3307	35	1.3780	101 000	22 800	216 000	48 600	4 500	5 000	0.63	1.40
NK 95/26	95	3.7402	115	4.5276	26	1.0236	73 700	16 600	146 000	32 900	4 300	4 800	0.49	1.10
NK 95/36	95	3.7402	115	4.5276	36	1.4173	105 000	23 700	232 000	52 200	4 300	4 800	0.68	1.50
NK 100/26	100	3.9370	120	4.7244	26	1.0236	76 500	17 200	156 000	35 100	4 000	4 500	0.52	1.10
NK 100/36	100	3.9370	120	4.7244	36	1.4173	108 000	24 300	250 000	56 200	4 000	4 500	0.72	1.60
NK 105/26	105	4.1339	125	4.9213	26	1.0236	78 100	17 600	166 000	37 400	3 800	4 300	0.54	1.20
NK 105/36	105	4.1339	125	4.9213	36	1.4173	112 000	25 200	265 000	59 600	3 800	4 300	0.71	1.60
NK 110/30	110	4.3307	130	5.1181	30	1.1811	96 800	21 800	220 000	49 500	3 600	4 000	0.65	1.40
NK 110/40	110	4.3307	130	5.1181	40	1.5748	123 000	27 700	305 000	68 600	3 600	4 000	0.83	1.80

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
with inner ring
Series: NKI 5/12 TN — NKI 35/30
Size: 5 mm — 35 mm
0.1969 in — 1.3780 in



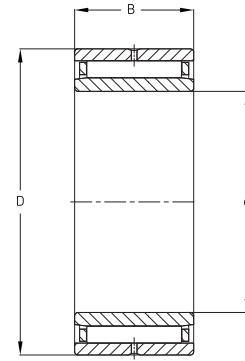
Series NKI

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min		
NKI 5/12 TN	5	0.1969	15	0.5906	12	0.4724	3 800	900	4 250	1 000	32 000	36 000	0.01	0.03
NKI 5/16 TN	5	0.1969	15	0.5906	16	0.6299	5 010	1 200	5 850	1 400	32 000	36 000	0.02	0.03
NKI 6/12 TN	6	0.2362	16	0.6299	12	0.4724	4 400	1 000	5 200	1 200	30 000	34 000	0.01	0.03
NKI 6/16 TN	6	0.2362	16	0.6299	16	0.6299	5 720	1 300	7 200	1 700	30 000	34 000	0.02	0.04
NKI 7/12 TN	7	0.2756	17	0.6693	12	0.4724	4 570	1 100	5 700	1 300	28 000	32 000	0.01	0.03
NKI 7/16 TN	7	0.2756	17	0.6693	16	0.6299	5 940	1 400	8 000	1 800	28 000	32 000	0.02	0.04
NKI 9/12	9	0.3543	19	0.7480	12	0.4724	6 710	1 600	8 150	1 900	26 000	30 000	0.02	0.04
NKI 9/16	9	0.3543	19	0.7480	16	0.6299	9 130	2 100	12 000	2 700	26 000	30 000	0.02	0.05
NKI 10/16	10	0.3937	22	0.8661	16	0.6299	10 200	2 300	12 500	2 900	24 000	28 000	0.03	0.06
NKI 10/20	10	0.3937	22	0.8661	20	0.7874	12 800	2 900	16 600	3 800	24 000	28 000	0.04	0.08
NKI 12/16	12	0.4724	24	0.9449	16	0.6299	11 700	2 700	15 300	3 500	22 000	26 000	0.03	0.07
NKI 12/20	12	0.4724	24	0.9449	20	0.7874	14 500	3 300	20 000	4 500	22 000	26 000	0.04	0.09
NKI 15/16	15	0.5906	27	1.0630	16	0.6299	13 400	3 100	19 000	4 300	20 000	24 000	0.04	0.09
NKI 15/20	15	0.5906	27	1.0630	20	0.7874	16 500	3 800	25 500	5 800	20 000	24 000	0.05	0.10
NKI 17/16	17	0.6693	29	1.1417	16	0.6299	13 800	3 200	20 400	4 600	19 000	22 000	0.04	0.09
NKI 17/20	17	0.6693	29	1.1417	20	0.7874	17 200	3 900	27 000	6 100	19 000	22 000	0.05	0.10
NKI 20/16	20	0.7874	32	1.2598	16	0.6299	15 400	3 500	24 500	5 600	16 000	19 000	0.05	0.10
NKI 20/20	20	0.7874	32	1.2598	20	0.7874	19 000	4 300	32 500	7 400	16 000	19 000	0.06	0.10
NKI 22/16	22	0.8661	34	1.3386	16	0.6299	15 700	3 600	26 000	5 900	15 000	17 000	0.05	0.10
NKI 22/20	22	0.8661	34	1.3386	20	0.7874	19 400	4 400	34 500	7 800	15 000	17 000	0.07	0.10
NKI 25/20	25	0.9843	38	1.4961	20	0.7874	22 000	5 000	36 500	8 300	14 000	15 000	0.08	0.20
NKI 25/30	25	0.9843	38	1.4961	30	1.1811	31 900	7 200	60 000	13 500	14 000	15 000	0.12	0.30
NKI 28/20	28	1.1024	42	1.6535	20	0.7874	23 300	5 300	40 500	9 200	12 000	14 000	0.10	0.20
NKI 28/30	28	1.1024	42	1.6535	30	1.1811	34 100	7 700	65 500	14 800	12 000	14 000	0.15	0.30
NKI 30/20	30	1.1811	45	1.7717	20	0.7874	24 600	5 600	45 000	10 200	11 000	13 000	0.11	0.20
NKI 30/30	30	1.1811	45	1.7717	30	1.1811	35 800	8 100	72 000	16 200	11 000	13 000	0.17	0.40
NKI 32/20	32	1.2598	47	1.8504	20	0.7874	25 100	5 700	46 500	10 500	11 000	12 000	0.12	0.30
NKI 32/30	32	1.2598	47	1.8504	30	1.1811	36 900	8 300	76 500	17 200	11 000	12 000	0.18	0.40
NKI 35/20	35	1.3780	50	1.9685	20	0.7874	26 400	6 000	51 000	11 500	10 000	11 000	0.13	0.30
NKI 35/30	35	1.3780	50	1.9685	30	1.1811	38 000	8 600	83 000	18 700	10 000	11 000	0.19	0.40

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Needle roller bearings

Single row
with inner ring
Series: NKI 38/20 — NKI 100/40
Size: 38 mm — 100 mm
1.4961 in — 3.9370 in

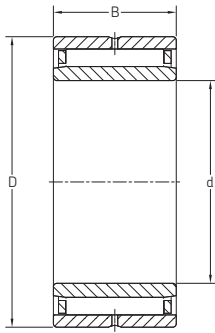


Series NKI

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min		
NKI 38/20	38	1.4961	53	2.0866	20	0.7874	27 500	6 200	55 000	12 400	9 500	11 000	0.14	0.30
NKI 38/30	38	1.4961	53	2.0866	30	1.1811	40 200	9 100	90 000	20 300	9 500	11 000	0.21	0.50
NKI 40/20	40	1.5748	55	2.1654	20	0.7874	27 500	6 200	57 000	12 900	9 000	10 000	0.14	0.30
NKI 40/30	40	1.5748	55	2.1654	30	1.1811	40 200	9 100	93 000	21 000	9 000	10 000	0.22	0.50
NKI 42/20	42	1.6535	57	2.2441	20	0.7874	29 200	6 600	61 000	13 800	8 500	10 000	0.15	0.30
NKI 42/30	42	1.6535	57	2.2441	30	1.1811	41 800	9 400	98 000	22 100	8 500	10 000	0.22	0.50
NKI 45/25	45	1.7717	62	2.4409	25	0.9843	38 000	8 600	78 000	17 600	8 000	9 000	0.23	0.50
NKI 45/35	45	1.7717	62	2.4409	35	1.3780	49 500	11 200	110 000	24 800	8 000	9 000	0.32	0.70
NKI 50/25	50	1.9685	68	2.6772	25	0.9843	40 200	9 100	88 000	19 800	7 500	8 500	0.27	0.60
NKI 50/35	50	1.9685	68	2.6772	35	1.3780	52 300	11 800	122 000	27 500	7 500	8 500	0.38	0.80
NKI 55/25	55	2.1654	72	2.8346	25	0.9843	41 800	9 400	96 500	21 700	6 700	7 500	0.27	0.60
NKI 55/35	55	2.1654	72	2.8346	35	1.3780	55 000	12 400	134 000	30 200	6 700	7 500	0.38	0.80
NKI 60/25	60	2.3622	82	3.2283	25	0.9843	44 000	9 900	95 000	21 400	6 000	6 700	0.39	0.90
NKI 60/35	60	2.3622	82	3.2283	35	1.3780	60 500	13 700	146 000	32 900	6 000	6 700	0.55	1.20
NKI 65/25	65	2.5591	90	3.5433	25	0.9843	52 800	11 900	106 000	23 900	5 600	6 300	0.47	1.00
NKI 65/35	65	2.5591	90	3.5433	35	1.3780	73 700	16 600	163 000	36 700	5 600	6 300	0.66	1.50
NKI 70/25	70	2.7559	95	3.7402	25	0.9843	56 100	12 700	127 000	28 600	5 000	5 600	0.52	1.10
NKI 70/35	70	2.7559	95	3.7402	35	1.3780	76 500	17 200	190 000	42 800	5 000	5 600	0.74	1.60
NKI 75/25	75	2.9528	105	4.1339	25	0.9843	69 300	15 600	132 000	29 700	4 800	5 300	0.64	1.40
NKI 75/35	75	2.9528	105	4.1339	35	1.3780	96 800	21 800	200 000	45 000	4 800	5 300	0.91	2.00
NKI 80/25	80	3.1496	110	4.3307	25	0.9843	72 100	16 300	140 000	31 500	4 500	5 000	0.68	1.50
NKI 80/35	80	3.1496	110	4.3307	35	1.3780	101 000	22 800	216 000	48 600	4 500	5 000	0.96	2.10
NKI 85/26	85	3.3465	115	4.5276	26	1.0236	73 700	16 600	146 000	32 900	4 300	4 800	0.74	1.60
NKI 85/36	85	3.3465	115	4.5276	36	1.4173	105 000	23 700	232 000	52 200	4 300	4 800	1.05	2.30
NKI 90/26	90	3.5433	120	4.7244	26	1.0236	76 500	17 200	156 000	35 100	4 000	4 500	0.78	1.70
NKI 90/36	90	3.5433	120	4.7244	36	1.4173	108 000	24 300	250 000	56 200	4 000	4 500	1.10	2.40
NKI 95/26	95	3.7402	125	4.9213	26	1.0236	78 100	17 600	166 000	37 400	3 800	4 300	0.82	1.80
NKI 95/36	95	3.7402	125	4.9213	36	1.4173	112 000	25 200	265 000	59 600	3 800	4 300	1.15	2.50
NKI 100/30	100	3.9370	130	5.1181	30	1.1811	96 800	21 800	220 000	49 500	3 600	4 000	0.99	2.20
NKI 100/40	100	3.9370	130	5.1181	40	1.5748	123 000	27 700	305 000	68 600	3 600	4 000	1.35	3.00

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
with inner ring
Series: NKIS 17 — NKIS 100
Size: 17 mm — 100 mm
0.6693 in — 3.9370 in



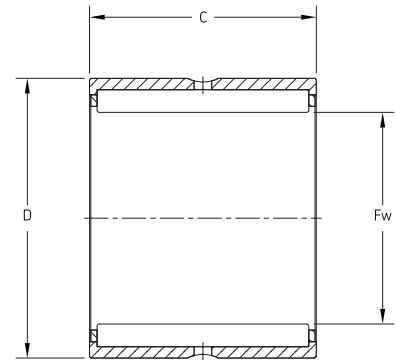
Series NKIS

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min		
NKIS 17	17	0.6693	37	1.4567	20	0.7874	26 000	5 900	33 500	7 600	15 000	17 000	0.10	0.20
NKIS 20	20	0.7874	42	1.6535	20	0.7874	28 600	6 500	39 000	8 800	13 000	15 000	0.13	0.30
NKIS 25	25	0.9843	47	1.8504	22	0.8661	34 100	7 700	46 500	10 500	12 000	13 000	0.16	0.40
NKIS 30	30	1.1811	52	2.0472	22	0.8661	36 000	8 100	54 000	12 200	10 000	12 000	0.18	0.40
NKIS 35	35	1.3780	58	2.2835	22	0.8661	39 100	8 800	61 000	13 800	9 000	10 000	0.22	0.50
NKIS 40	40	1.5748	65	2.5591	22	0.8661	42 900	9 700	72 000	16 200	8 000	9 000	0.28	0.60
NKIS 45	45	1.7717	72	2.8346	22	0.8661	44 600	10 100	78 000	17 600	7 000	8 000	0.34	0.70
NKIS 50	50	1.9685	80	3.1496	28	1.1024	62 700	14 100	104 000	23 400	6 300	7 500	0.52	1.10
NKIS 55	55	2.1654	85	3.3465	28	1.1024	66 000	14 900	114 000	25 700	6 000	6 700	0.56	1.20
NKIS 60	60	2.3622	90	3.5433	28	1.1024	68 200	15 400	120 000	27 000	5 600	6 300	0.56	1.20
NKIS 65	65	2.5591	95	3.7402	28	1.1024	70 400	15 900	132 000	29 700	5 300	6 000	0.64	1.40
NKIS 70	70	2.7559	100	3.9370	28	1.1024	74 800	16 900	140 000	31 500	5 000	5 600	0.68	1.50
NKIS 100	100	3.9370	135	5.3150	32	1.2598	91 300	20 600	220 000	49 500	3 600	4 000	1.34	3.00

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Needle roller bearings

Single row
without inner ring
Series: NKS 20 — NKS 80
Size: 20 mm — 80 mm
0.7874 in — 3.1496 in

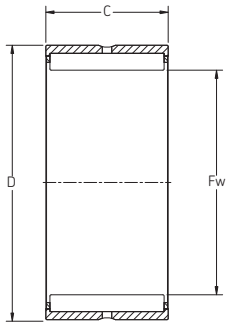


Series NKS

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Diameter		Outside diameter D		Width C		Dynamic C		Static C ₀		Reference speed	Limiting speed		
	Under rollers F _w													
mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	
NKS 20	20	0.7874	32	1.2598	20	0.7874	23 300	5 300	27 000	6 100	18 000	20 000	0.05	0.10
NKS 24	24	0.9449	37	1.4567	20	0.7874	26 000	5 900	33 500	7 600	15 000	17 000	0.07	0.10
NKS 25	25	0.9843	38	1.4961	20	0.7874	27 500	6 200	36 000	8 100	15 000	17 000	0.07	0.10
NKS 28	28	1.1024	42	1.6535	20	0.7874	28 600	6 500	39 000	8 800	13 000	15 000	0.08	0.20
NKS 30	30	1.1811	45	1.7717	22	0.8661	31 900	7 200	43 000	9 700	12 000	14 000	0.10	0.20
NKS 32	32	1.2598	47	1.8504	22	0.8661	34 100	7 700	46 500	10 500	12 000	14 000	0.11	0.20
NKS 35	35	1.3780	50	1.9685	22	0.8661	35 200	8 000	50 000	11 300	11 000	12 000	0.12	0.30
NKS 37	37	1.4567	52	2.0472	22	0.8661	36 900	8 300	54 000	12 200	10 000	12 000	0.12	0.30
NKS 40	40	1.5478	55	2.1654	22	0.8661	38 000	8 600	57 000	12 900	9 500	11 000	0.13	0.30
NKS 43	43	1.6929	58	2.2835	22	0.8661	39 100	8 800	61 000	13 800	9 000	10 000	0.14	0.30
NKS 45	43	1.6929	60	2.3622	22	0.8661	40 200	9 100	64 000	14 400	8 500	10 000	0.15	0.30
NKS 50	50	1.9685	65	2.5591	22	0.8661	42 900	9 700	72 000	16 200	8 000	9 000	0.16	0.40
NKS 55	55	2.1654	72	2.8346	22	0.8661	44 600	10 100	78 000	17 600	7 000	8 000	0.22	0.50
NKS 60	60	2.3622	80	3.1496	28	1.1024	62 700	14 100	104 000	23 400	6 300	7 500	0.34	0.70
NKS 65	65	2.5591	85	3.3465	28	1.1024	66 000	14 900	114 000	25 700	6 000	6 700	0.36	0.80
NKS 70	70	2.7559	90	3.5433	28	1.1024	68 200	15 400	120 000	27 000	5 600	6 300	0.38	0.80
NKS 75	75	2.9528	95	3.7402	28	1.1024	70 400	15 900	132 000	29 700	5 300	6 000	0.40	0.90
NKS 80	80	3.1496	100	3.9370	28	1.1024	74 800	16 900	140 000	31 500	5 000	5 600	0.40	0.90

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
without inner ring
Series: RNA 4822 — RNA 4860
Size: 120 mm — 330 mm
4.7244 in — 12.9921 in



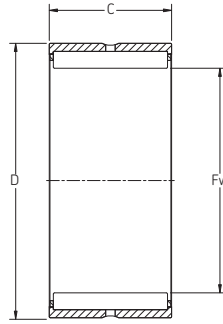
Series RNA 48

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Diameter						Dynamic		Static		Reference speed	Limiting speed		
	Under rollers		Outside diameter		Width		C		C ₀					
	F _w		D		C		N	lbf	N	lbf	r/min	r/min	kg	lb
mm	in	mm	in	mm	in									
RNA 4822	120	4.7244	140	5.5118	30	1.1811	93 500	21 100	232 000	52 200	3 400	3 800	0.67	1.50
RNA 4824	130	5.1181	150	5.9055	30	1.1811	99 000	22 300	255 000	57 400	3 200	3 600	0.73	1.60
RNA 4826	145	5.7087	165	6.4961	35	1.3780	119 000	26 800	325 000	73 100	2 800	3 200	0.99	2.20
RNA 4828	155	6.1024	175	6.8898	35	1.3780	121 000	27 300	345 000	77 600	2 600	3 000	1.05	2.30
RNA 4830	165	6.4961	190	7.4803	40	1.5748	147 000	33 100	415 000	93 300	2 400	2 800	1.60	3.50
RNA 4832	175	6.8898	200	7.8740	40	1.5748	157 000	35 300	450 000	101 200	2 200	2 600	1.70	3.70
RNA 4834	185	7.2835	215	8.4646	45	1.7717	179 000	40 300	520 000	116 900	2 200	2 400	2.55	5.60
RNA 4836	195	7.6772	225	8.8583	45	1.7717	190 000	42 800	570 000	128 200	2 000	2 400	2.70	6.00
RNA 4838	210	8.2677	240	9.4488	50	1.9685	220 000	49 500	710 000	159 700	1 900	2 200	3.20	7.10
RNA 4840	220	8.6614	250	9.8425	50	1.9685	224 000	50 400	735 000	165 300	1 800	2 000	3.35	7.40
RNA 4844	240	9.4488	270	10.6299	50	1.9685	238 000	53 600	815 000	183 300	1 700	1 900	3.60	7.90
RNA 4848	265	10.4430	300	11.8110	60	2.3622	347 000	78 100	1 120 000	251 800	1 500	1 700	5.40	11.90
RNA 4852	285	11.2205	320	12.5984	60	2.3622	358 000	80 500	1 200 000	269 800	1 400	1 500	5.80	12.80
RNA 4856	305	12.0079	350	13.7795	69	2.7165	429 000	96 500	1 320 000	296 800	1 300	1 400	9.30	20.50
RNA 4860	330	12.9921	380	14.9606	80	3.1496	594 000	133 600	1 800 000	404 700	1 100	1 300	12.50	27.60

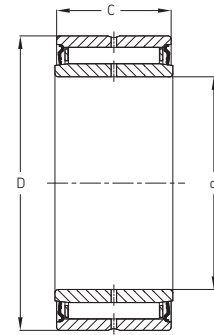
Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Needle roller bearings

Single row
without inner ring
Open and sealed
Series: RNA 4900 — RNA 4915
Size: 14 mm — 85 mm
0.5512 in — 3.3465 in



Series RNA 49

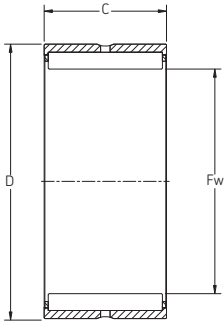


Series RNA 2RS

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Diameter		Outside diameter D		Width C		Dynamic C		Static C ₀		Reference speed	Limiting speed		
	Under rollers F _w													
mm	in	mm	in	mm	in	N	lbf	N	lbf					
RNA 4900	14	0.5512	22	0.8661	13	0.5118	8 800	2 000	10 400	2 400	26 000	30 000	0.02	0.04
RNA 4900 2RS	14	0.5512	22	0.8661	13	0.5118	7 370	1 700	8 150	1 900	–	12 000	0.02	0.04
RNA 4901	16	0.6299	24	0.9449	13	0.5118	9 900	2 300	12 200	2 800	22 000	26 000	0.02	0.04
RNA 4901 2RS	16	0.6299	24	0.9449	13	0.5118	8 090	1 900	9 650	2 200	–	11 000	0.02	0.04
RNA 4902	20	0.7874	28	1.1024	13	0.5118	11 200	2 600	15 300	3 500	19 000	22 000	0.02	0.05
RNA 4902 2RS	20	0.7874	28	1.1024	13	0.5118	9 130	2 100	12 000	2 700	–	9 500	0.02	0.05
RNA 4903	22	0.8661	30	1.1811	13	0.5118	11 400	2 600	16 300	3 700	18 000	20 000	0.02	0.05
RNA 4903 2RS	22	0.8661	30	1.1811	13	0.5118	9 520	2 200	12 900	2 900	–	9 000	0.02	0.05
RNA 4904	25	0.9843	37	1.4567	17	0.6693	21 600	4 900	28 000	6 300	15 000	17 000	0.05	0.10
RNA 4904 2RS	25	0.9843	37	1.4567	17	0.6693	19 400	4 400	22 400	5 100	–	7 500	0.06	0.10
RNA 49/22	28	1.1024	39	1.5354	17	0.6693	23 300	5 300	32 000	7 200	14 000	15 000	0.05	0.10
RNA 4905	30	1.1811	42	1.6535	17	0.6693	24 200	5 500	34 500	7 800	13 000	15 000	0.06	0.10
RNA 4905 2RS	30	1.1811	42	1.6535	17	0.6693	21 600	4 900	27 500	6 200	–	6 300	0.06	0.10
RNA 49/28	32	1.2598	45	1.7717	17	0.6693	25 100	5 700	36 500	8 300	12 000	14 000	0.07	0.20
RNA 4906	35	1.3780	47	1.8504	17	0.6693	25 500	5 800	39 000	8 800	11 000	13 000	0.07	0.20
RNA 4906 2RS	35	1.3780	47	1.8504	17	0.6693	23 300	5 300	32 000	7 200	–	5 600	0.07	0.20
RNA 49/32	40	1.5748	52	2.0472	20	0.7874	30 800	7 000	51 000	11 500	10 000	11 000	0.09	0.20
RNA 4907	42	1.6535	55	2.1654	20	0.7874	31 900	7 200	54 000	12 200	9 500	11 000	0.11	0.20
RNA 4907 2RS	42	1.6535	55	2.1654	20	0.7874	27 000	6 100	43 000	9 700	–	4 800	0.11	0.20
RNA 4908	48	1.8898	62	2.4409	22	0.8661	42 900	9 700	71 000	16 000	8 000	9 500	0.14	0.30
RNA 4908 2RS	48	1.8898	62	2.4409	22	0.8661	36 900	8 300	58 500	13 200	–	4 000	0.15	0.30
RNA 4909	52	2.0472	68	2.6772	22	0.8661	45 700	10 300	78 000	17 600	7 500	8 500	0.18	0.40
RNA 4909 2RS	52	2.0472	68	2.6772	22	0.8661	39 100	8 800	64 000	14 400	–	3 800	0.16	0.40
RNA 4910	58	2.2835	72	2.8346	22	0.8661	47 300	10 700	85 000	19 200	7 000	8 000	0.16	0.40
RNA 4910 2RS	58	2.2835	72	2.8346	22	0.8661	40 200	9 100	69 500	15 700	–	3 400	0.16	0.40
RNA 4911	63	2.4803	80	3.1496	25	0.9843	57 200	12 900	106 000	23 900	6 300	7 000	0.26	0.60
RNA 4912	68	2.6772	85	3.3465	25	0.9843	60 500	13 700	114 000	25 700	6 000	6 700	0.28	0.60
RNA 4913	72	2.8346	90	3.5433	25	0.9843	61 600	13 900	120 000	27 000	5 600	6 300	0.31	0.70
RNA 4914	80	3.1496	100	3.9370	30	1.1811	84 200	19 000	163 000	36 700	5 000	5 600	0.46	1.00
RNA 4915	85	3.3465	105	4.1339	30	1.1811	84 200	19 000	170 000	38 300	4 800	5 300	0.49	1.10

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Single row
without inner ring
Series: RNA 4916 — RNA 4926
Size: 90 mm — 150 mm
3.5433 in — 5.9055 in



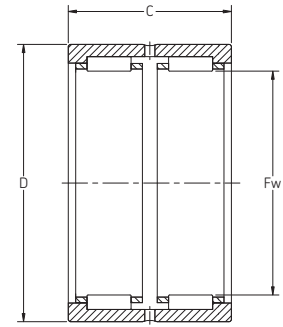
Series RNA 49

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Diameter		Outside diameter D		Width C		Dynamic C		Static C ₀		Reference speed	Limiting speed		
	Under rollers F _w													
mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	
RNA 4916	90	3.5433	110	4.3307	30	1.1811	88 000	19 800	183 000	41 200	4 500	5 000	0.52	1.10
RNA 4917	100	3.9370	120	4.7244	35	1.3780	108 000	24 300	250 000	56 200	4 000	4 500	0.66	1.50
RNA 4918	105	4.1339	125	4.9213	35	1.3780	112 000	25 200	265 000	59 600	3 800	4 300	0.75	1.70
RNA 4919	110	4.3307	130	5.1181	35	1.3780	114 000	25 700	270 000	60 700	3 600	4 000	0.72	1.60
RNA 4920	115	4.5276	140	5.5118	40	1.5748	125 000	28 100	280 000	63 000	3 400	4 000	1.15	2.50
RNA 4924	135	5.3150	165	6.4961	45	1.7717	176 000	39 600	405 000	91 100	3 000	3 400	1.85	4.10
RNA 4926	150	5.9055	180	7.0866	50	1.9685	198 000	44 600	480 000	108 000	2 600	3 000	2.20	4.90

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Needle roller bearings

Double row
without inner ring
Series: RNA 6901 — RNA 6919
Size: 16 mm — 110 mm
0.6299 in — 4.3307 in



Series RNA 69

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass	
	Diameter		Outside diameter D		Width C		Dynamic C		Static C ₀		Reference speed	Limiting speed		
	Under rollers F _w													
mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	
RNA 6901	16	0.6299	24	0.9449	22	0.8661	16 100	3 600	23 200	5 200	22 000	26 000	0.03	0.07
RNA 6902	20	0.7874	28	1.1024	23	0.9055	17 200	3 900	27 000	6 100	19 000	22 000	0.04	0.09
RNA 6903	22	0.8661	30	1.1811	23	0.9055	18 700	4 200	30 500	6 900	18 000	20 000	0.04	0.09
RNA 6904	25	0.9843	37	1.4567	30	1.1811	35 200	7 900	53 000	11 900	15 000	17 000	0.10	0.20
RNA 69/22	28	1.1024	39	1.5354	30	1.1811	36 900	8 300	57 000	12 800	14 000	15 000	0.10	0.20
RNA 6905	30	1.1811	42	1.6535	30	1.1811	38 000	8 500	62 000	13 900	13 000	15 000	0.11	0.20
RNA 69/28	32	1.2598	45	1.7717	30	1.1811	39 600	8 900	65 500	14 700	12 000	14 000	0.14	0.30
RNA 6906	35	1.3780	47	1.8504	30	1.1811	42 900	9 600	75 000	16 900	11 000	13 000	0.13	0.30
RNA 69/32	40	1.5478	52	2.0472	36	1.4173	47 300	10 600	90 000	20 200	10 000	11 000	0.16	0.40
RNA 6907	42	1.6535	55	2.1654	36	1.4173	48 400	10 900	93 000	20 900	9 500	11 000	0.19	0.40
RNA 6908	48	1.8898	62	2.4409	40	1.5748	67 100	15 100	125 000	28 100	8 000	9 500	0.26	0.60
RNA 6909	52	2.0472	68	2.6772	40	1.5748	70 400	15 800	137 000	30 800	7 500	8 500	0.34	0.70
RNA 6910	58	2.2835	72	2.8346	40	1.5748	73 700	16 600	150 000	33 700	7 000	8 000	0.31	0.70
RNA 6911	63	2.4803	80	3.1496	45	1.7717	89 700	20 200	190 000	42 700	6 300	7 000	0.47	1.00
RNA 6912	68	2.6772	85	3.3465	45	1.7717	93 500	21 000	204 000	45 900	6 000	6 700	0.49	1.10
RNA 6913	72	2.8346	90	3.5433	45	1.7717	95 200	21 400	212 000	47 700	5 600	6 300	0.58	1.30
RNA 6914	80	3.1496	100	3.9370	54	2.1260	128 000	28 800	285 000	64 100	5 000	5 600	0.86	1.90
RNA 6915	85	3.3465	105	4.1339	54	2.1260	130 000	29 200	290 000	65 200	4 800	5 300	0.94	2.10
RNA 6916	90	3.5433	110	4.3307	54	2.1260	134 000	30 100	315 000	70 800	4 500	5 000	0.99	2.20
RNA 6917	100	3.9370	120	4.7244	63	2.4803	165 000	37 100	425 000	95 500	4 000	4 500	1.20	2.60
RNA 6918	105	4.1339	125	4.9213	63	2.4803	172 000	38 700	450 000	101 200	3 800	4 300	1.35	3.00
RNA 6919	110	4.3307	130	5.1181	63	2.4803	172 000	38 700	465 000	104 500	3 600	4 000	1.45	3.20

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Taper roller bearings (metric series)

32302 B J2 / Q CL7C

1

2

3

4

1. Contact angle:

B Larger contact angle than standard

3. Features:

Q Improved friction torque characteristics and raceway geometry

2. Internal design:

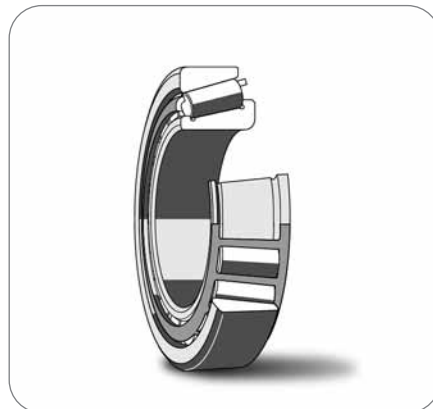
- J2** Pressed steel cage rolling element guided
- X** Boundary dimensions changed to conform to ISO standards
- DF** Duplex (2) bearings, face-to-face arrangement including 1 outer ring and 1 inner ring spacer
- DB** Duplex (2) bearings, back-to-back face arrangement including 1 outer and 1 inner ring spacer
- DT** Duplex (2) bearings arranged in tandem with 1 outer ring and 1 inner ring spacer

4. Quality:

CL7C Special SKF quality for pinion bearings

Technical features

Boundary dimensions	In accordance with ISO 355-1977
Tolerances	ISO-Normal
Heat stabilization	302° F (150° C)
Misalignment (under heavy load conditions)	2-4 minutes of arc (logarithmic profile rollers)
Cage Material	
Standard	Steel
Optional	None
Axial load – max	Contact SKF Applications Engineering
Seals	Not available



*Single row
Taper roller bearing
(data tables on page 216)*



*Paired single row
Taper roller bearing
(data tables on page 226)*

Introduction

Taper roller bearings have tapered inner and outer ring raceways between which tapered rollers are arranged. If extended, the tapered surfaces converge towards a single point on the bearing axis. This means that rolling conditions are at an optimum.

Their design makes taper roller bearings particularly suitable for the accommodation of combined (radial and axial) loads. The axial load carrying capacity of the bearings is largely determined by the contact angle α , which corresponds to the angle of the outer ring raceway. The larger this angle, the larger the axial load carrying capacity. Taper roller bearings are generally of separable design; for example, the inner ring with roller and cage assembly forms a unit which can be mounted separately from the outer ring.

Single row taper roller bearings are able to accommodate axial loads acting in one direction only. Under radial loads, an axial force is produced in the bearing which must be counteracted. Therefore, it is customary for the single row taper roller bearings to be adjusted against a second taper roller bearing.

SKF manufactures single and double row taper roller bearings with metric dimensions. The single row bearings listed in the following product tables are the most prevalent. Double row taper roller bearings are also included in this catalog.

Basic design

Single row taper roller bearings

Continuous improvements made to SKF taper roller bearings resulted in the latest state of the art design known as the TQ-line (suffix Q). The sliding surfaces of the inner ring guide flange and the roller ends have been redesigned to enable lubricant feed to the roller end / flange contacts to be enhanced and lubricant film formation in the contacts to be considerably improved. The contact geometry between rollers and raceways has also been markedly improved by the "logarithmic" profile, which provides for optimum stress distribution in the bearing. Optimized raceway surfaces promote lubricant film formation and correct motion of the rollers. These improvements have considerably enhanced the performance of SKF taper roller bearings.

Metric bearings

When the current international standard (ISO 355-1977) was prepared, new designations were devised for the Dimension series, and consequently, for the bearings.

However, since changes in bearing designations cause difficulties, and if introduced would necessitate the alteration of drawings, part lists, etc., both by producer and user, it was decided that the SKF designations for those bearings, which were in accordance with the earlier ISO/R 355 as well as the new standard, would be retained. New designations comprising the three symbols of the series designation to ISO, prefixed by the letter T and followed by a three-figure identification of the bore diameter in mm were adopted only for the bearing sizes, which were new to the ISO 355-1977 standard; for example, T2ED 045.

SKF Explorer class bearings

High performance taper roller bearings in the SKF Explorer performance class are **printed in blue** in the product tables. The higher performance of SKF Explorer bearings retain the designation of the earlier standard bearings, e.g. 32010 X/Q. However, each bearing and its box are marked with the name "SKF Explorer". Additional details on SKF Explorer performance class bearings can be found on page 23.

Product highlights

Suitable for heavy loads

Taper roller bearings are designed for heavy combined axial and radial loads.

Offer longer life and higher reliability

SKF's latest state-of-the-art taper roller bearing design is less sensitive to misalignment (up to two minutes of arc) and offers long life, high reliability and low operating temperatures.

CL7C design offers high running accuracy and low friction torque

These taper roller bearings operate under full load without any running-in risk or temperature peaks.

Large product assortment

Available in a wide range of sizes including 15 to 320 mm inside diameter.

Quiet running

The outstanding running and dimensional accuracy allows for extremely silent running conditions.

Application flexibility

Depending on application needs, SKF has the possibility to provide either case-carburized or thru-hardened in some sizes. Typical applications are gearboxes, construction equipment, wheel hubs, and mining bulk conveyors.

Introduction

Paired single row taper roller bearings

For bearing arrangements where the load carrying capacity of a single bearing is inadequate or where the shaft has to be located in both directions with a given axial play, SKF can supply single row taper roller bearings as ready-to-mount matched pairs.

Matched pairs of single row taper roller bearings enable economic designs of bearing arrangement to be made and can be supplied by SKF in the arrangements shown in **(Figure 1)**. However, the use of the paired bearings in face-to-face arrangements shown in the product tables on pages 226-228, which represent the range currently produced, is recommended. Other sets of bearings arranged face-to-face as well as bearing sets arranged back-to-back or in tandem can be supplied to order if the quantities required are economic.

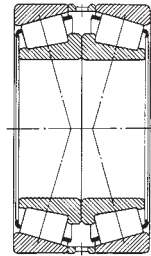
Where only a few sets are required it is recommended that they be matched by the user, following the instructions given in SKF General Catalog 6000EN.

Matched pairs of bearings arranged face-to-face are simple in design and easily produced as they consist of two bearings with an intermediate ring between the two outer rings. The load lines of bearings arranged face-to-face converge towards the bearing axis. Axial loads can be accommodated in both directions, although only by one bearing at a time.

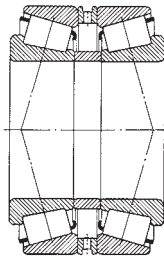
Where the bearing set has a back-to-back arrangement, two intermediate rings are needed: one between the outer rings and one between the inner rings. Such sets are therefore more expensive to produce. In a back-to-back arrangement, the load lines of the bearings diverge towards the bearing axis, so that such bearing arrangements are relatively stiff and can accommodate tilting moments. Axial loads can again be accommodated in both directions as for the face-to-face arrangement.

Sets of bearings arranged in tandem also call for the use of two intermediate rings (one between the inner and one between the outer rings) but such sets are seldom required. The load lines of bearings arranged in tandem are parallel to each other so that radial and axial loads are equally distributed over the bearing pair. Axial loads can only be taken up in one direction and the pair is usually adjusted against a third bearing, which can take axial loads acting in the opposite direction.

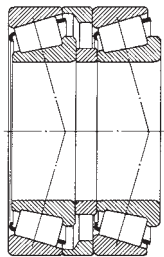
Figure 1



Face-to-face arrangement
(Suffix DF)



Back-to-back arrangement
(Suffix DB)



Tandem arrangement
(Suffix DT)

Variations

CL7C design

Bearings to the CL7C specifications require no running-in and a hydrodynamic lubricant film is able to form in the roller end / flange so that their friction torque almost from the start of operation is as low as that of normal bearings after running-in. The bearings can be adjusted using the preload force / preload path procedures as well as the friction torque, as described in the SKF General Catalog (publication #6000 EN).

Further information on CL7C design bearings can be supplied on request.

Four-row tapered roller bearings

Four-row tapered roller bearings are used in extremely heavy applications. Consult SKF Applications Engineering for further details.

Metric bearing tolerances

SKF single row metric taper roller bearings are manufactured to Normal tolerances as standard. Some bearings are also available with higher accuracy — in particular those of series 320 X, T4CB and T4DB. Consult SKF Applications Engineering for further details.

Inch series

SKF manufactures a limited assortment of these bearings. Consult SKF USA Inc. prior to design or ordering.

Radial and side face runouts of bearings to CL7C specifications

d, D*		incl.		K _{ia}	K _{ea}		S _{ia} S _{ea}		
over				max	max		max		
mm		inches		μm	in	μm	in	μm	in
10	18	0.3937	0.7087	7	0.0003	-	-	38	0.0015
18	30	0.7087	1.1811	8	0.0003	9	0.0004	38	0.0015
30	50	1.1811	1.9685	10	0.0004	10	0.0004	38	0.0015
50	80	1.9685	3.1496	10	0.0004	13	0.0005	38	0.0015
80	120	3.1496	4.7244	13	0.0005	18	0.0007	38	0.0015
120	150	4.7244	5.9055	-	-	20	0.0008	38	0.0015
150	180	5.9055	7.0866	-	-	23	0.0009	38	0.0015

*Use "d" for K_{ia} values, use "D" for K_{ea} values.

Symbols

d	Nominal bore diameter
D	Nominal outside diameter
K _{ia}	Radial runout of assembled bearing inner ring
K _{ea}	Radial runout of assembled bearing outer ring
S _{ia}	Side face runout with reference to raceway of assembled bearing inner ring
S _{ea}	Side face runout with reference to raceway of assembled bearing outer ring

Internal clearance

Axial internal clearance — single row

The internal clearance of single row taper roller bearings can only be obtained after mounting and is determined by adjustment of the bearing against a second bearing which provides location in the opposite direction. Further details will be found in SKF General Catalog (6000 EN).

Axial internal clearance — paired tapered roller bearings

The axial internal clearance of paired single row taper roller bearings is determined by the intermediate rings between the two bearings of the matched pair. The bearing pairs shown in the bearing tables are produced with the standard bearing clearance shown in **Table 1**. The values apply to bearings before they are mounted and under measuring loads of

- 100 N for bearings with an outside diameter $D \leq 90$ mm
- 300 N for bearings with an outside diameter $90 < D \leq 240$ mm
- 500 N for bearings with an outside diameter $D > 240$ mm

Matched bearing sets having a clearance other than the standard value are identified by the designation suffix C followed by a two- or three-figure number, which gives the mean axial clearance in μm. The range of the special clearance is, however, the same as for the standard clearance; for example, for the bearing set designated 32048 X / DFC205, having a mean axial clearance of 205 μm, the clearance limits are 175 and 235 μm since the range from the table below for a 320X series bearing with 240 mm bore is $500 - 440 = 60$ μm.

Loads

Equivalent dynamic bearing load for single row taper roller bearings

$$P = F_r \text{ where } F_a / F_r \leq e$$

$$P = 0.4 F_r + Y F_a \text{ where } F_a / F_r > e$$

The values of factors e and Y will be found in the bearing tables for each individual bearing.

Because the raceways are at an angle to the bearing axis, when taper roller bearings are subjected to a radial load, an axial force is induced within the bearing. This must be considered when calculating the equivalent dynamic bearing load. All the requisite equations for the various bearing arrangements and load cases are given on the following page. These are only valid if the bearings are adjusted against each other to give zero clearance in operation, but are without preload. Values for the axial load factor Y for bearings can be found in the bearing tables.

Equivalent dynamic bearing load for two bearings arranged face-to-face in a matched set

$$P = F_r + Y F_a \text{ where } F_a / F_r \leq e$$

$$P = 0.67 F_r + Y_2 F_a \text{ where } F_a / F_r > e$$

F_r and F_a are the forces acting on the bearing pair. Values of the factors e, Y_1 and Y_2 are given for each bearing pair in the bearing tables; they apply to the bearing pair.

Information regarding the calculation of the equivalent load for sets of bearings arranged back-to-back or in tandem will be found in SKF General Catalog 6000EN.

Introduction

Table 1

Total width tolerances of matched single row metric taper roller bearings

Bore diameter		Total width tolerance Δ_{TSD} of matched bearings of series											
		329		320 X		330		331, 302, 322, 332		303, 323		313 (X)	
d	incl.	high	low	high	low	high	low	high	low	high	low	high	low
mm		μm											
-	30	-	-	+550	+100	-	-	+550	+100	+600	+150	+500	+50
30	40	-	-	+550	+100	-	-	+600	+150	+600	+150	+550	+50
40	50	-	-	+600	+150	-	-	+600	+200	+600	+200	+550	+50
50	65	-	-	+600	+150	-	-	+600	+200	+650	+200	+550	+100
65	80	-	-	+600	+200	-	-	+650	+200	+700	+200	+600	+100
80	100	+750	-150	+650	-250	+800	-50	+700	-200	+700	-100	+600	-300
100	120	+750	-150	+700	-200	+800	-100	+700	-200	+750	-150	+600	-300
120	140	+1 100	-200	+1 000	-300	+1 100	-200	+1 000	-300	+1 100	-200	+950	-350
140	160	+1 150	-150	+1 050	-250	+1 100	-200	+1 050	-250	+1 150	-150	+950	-350
160	180	+1 150	-150	+1 100	-200	-	-	+1 100	-200	+1 150	-150	-	-
180	190	+1 150	-150	+1 100	-200	-	-	+1 100	-200	+1 200	-100	-	-
190	200	+1 150	-150	+1 100	-200	-	-	+1 100	-200	+1 200	-100	-	-
200	225	+1 200	-100	+1 150	-150	-	-	+1 150	-150	+1 250	-50	-	-
225	250	+1 200	-100	+1 200	-100	-	-	+1 200	-100	+1 300	0	-	-
250	280	+1 300	0	+1 250	-50	-	-	+1 250	-50	-	-	-	-
280	300	+1 400	+100	+1 300	0	-	-	+1 300	0	-	-	-	-
300	315	+1 400	+100	+1 350	+50	-	-	+1 350	+50	-	-	-	-
315	340	+1 500	-200	+1 450	-250	-	-	+1 450	+200	-	-	-	-

Axial internal clearance of matched single row metric taper roller bearings

Bore diameter		Axial internal clearance of matched bearings of series											
		329		320 X		330		331, 302, 322, 332		303, 323		313 (X)	
d	incl.	min	max	min	max	min	max	min	max	min	max	min	max
mm		μm											
-	30	-	-	80	120	-	-	100	140	130	170	60	100
30	40	-	-	100	140	-	-	120	160	140	180	70	110
40	50	-	-	120	160	180	220	140	180	160	200	80	120
50	65	-	-	140	180	200	240	160	200	180	220	100	140
65	80	-	-	160	200	250	290	180	220	200	260	110	170
80	100	270	310	190	230	350	390	210	270	240	300	110	170
100	120	270	330	220	280	340	400	220	280	280	340	130	190
120	140	310	370	240	300	340	400	240	300	330	390	160	220
140	160	370	430	270	330	340	400	270	330	370	430	180	240
160	180	370	430	310	370	-	-	310	370	390	450	-	-
180	190	370	430	340	400	-	-	340	400	440	500	-	-
190	200	390	450	340	400	-	-	340	400	440	500	-	-
200	225	440	500	390	450	-	-	390	450	490	550	-	-
225	250	440	500	440	500	-	-	440	500	540	600	-	-
250	280	540	600	490	550	-	-	490	550	-	-	-	-
280	300	640	700	540	600	-	-	540	600	-	-	-	-
300	340	640	700	590	650	-	-	590	650	-	-	-	-

Note: To convert values to inches, multiply " μm " x .000039.

Minimum load

In order to guarantee the satisfactory operation of all ball and roller bearings, they must always be subjected to a given minimum load. This is also true of taper roller bearings, particularly if they run at high speeds where the inertia forces of the rollers and cage, and the friction in the lubricant can have a detrimental influence on the rolling conditions in the bearing and may cause damaging sliding movements to occur between the rollers and the raceways.

The requisite minimum radial load to be applied in such cases can be determined by using the Interactive Engineering Catalog on the SKF website www.skf.com or by contacting SKF Applications Engineering. However, the weight of the components supported by the bearing, together with the external forces, often exceeds the requisite minimum load. If this is not the case, an additional radial load must be applied to the bearing by increasing belt tension or similar means.

Frequency vibration data

Frequency vibration data is available on the SKF website www.skf.com in the Interactive Engineering Catalog or by contacting SKF Applications Engineering.

Design of bearing arrangements

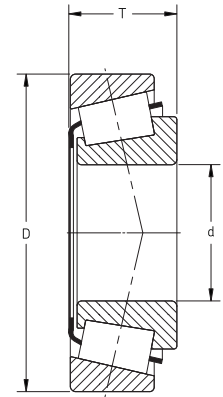
When designing bearing arrangements incorporating single row taper roller bearings, it is necessary to consider the special characteristics of these bearings. Because of their internal design, they cannot be used singly and a second bearing is required, or alternatively a paired set (**Figure 1**, page 212) may be used.

Where the arrangement comprises two single row taper roller bearings, they must be adjusted against each other until the desired operational clearance or requisite preload is achieved.

A correctly dimensioned operational clearance or preload is vital to the correct performance of single row taper roller bearings and also to the operational reliability of the bearing arrangement. If the operational clearance is too great, then the full load carrying capacity of the bearing will not be exploited and if the preload is too large then frictional losses will be greater, the operating temperature higher and the life shorter.

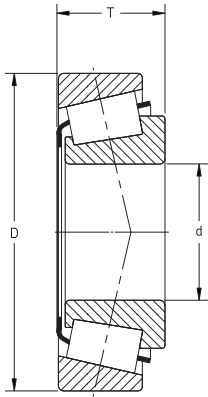
Taper roller bearings

Single row
Standard and **SKF Explorer**
Series: 30203 — 30248
Size: 17 mm — 240 mm
0.6693 in — 9.4488 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
30203	17	0.6693	40	1.5748	13.25	0.5217	19 000	4 270	18 600	4 200	13 000	18 000	0.075	0.17	0.35	1.70
30204	20	0.7874	47	1.8504	15.25	0.6004	27 500	6 180	28 000	6 300	11 000	15 000	0.12	0.30	0.35	1.70
30205	25	0.9843	52	2.0472	16.25	0.6398	30 800	6 920	33 500	7 600	10 000	13 000	0.15	0.40	0.37	1.60
30206	30	1.1811	62	2.4409	17.25	0.6791	40 200	9 040	44 000	9 900	8 500	11 000	0.23	0.60	0.37	1.60
30207	35	1.3780	72	2.8346	18.25	0.7185	51 200	11 510	56 000	12 600	7 000	9 500	0.32	0.80	0.37	1.60
30208	40	1.5748	80	3.1496	19.75	0.7776	61 600	13 850	68 000	15 300	6 300	8 500	0.42	1.00	0.37	1.60
30209	45	1.7717	85	3.3465	20.75	0.8169	66 000	14 840	76 500	17 200	6 000	8 000	0.48	1.10	0.40	1.50
30210	50	1.9685	90	3.5433	21.75	0.8563	76 500	17 200	91 500	20 600	5 600	7 500	0.54	1.20	0.43	1.40
30211	55	1.9685	100	3.937	22.75	0.8957	104 000	23 370	106 000	23 900	5 300	6 700	0.70	1.60	0.40	1.50
30212	60	2.3622	110	4.3307	23.75	0.9350	112 000	25 170	114 000	25 700	5 000	6 000	0.88	2.00	0.40	1.50
30213	65	2.5591	120	4.7244	24.75	0.9744	132 000	29 670	134 000	30 200	4 500	5 600	1.15	2.60	0.40	1.50
30214	70	2.7559	125	4.9213	26.25	1.0335	125 000	28 100	156 000	35 100	4 000	5 300	1.25	2.80	0.43	1.40
30215	75	2.9528	130	5.1181	27.25	1.0728	140 000	31 470	176 000	39 600	3 800	5 000	1.40	3.10	0.43	1.40
30216	80	3.1496	140	5.5118	28.25	1.1122	151 000	33 940	183 000	41 200	3 400	4 800	1.60	3.60	0.43	1.40
30217	85	3.3465	150	5.9055	30.50	1.2008	176 000	39 560	220 000	49 500	3 200	4 300	2.05	4.60	0.43	1.40
30218	90	3.5433	160	6.2992	32.50	1.2795	194 000	43 610	245 000	55 100	3 000	4 000	2.55	5.70	0.43	1.40
30219	95	3.7402	170	6.6929	34.50	1.3583	216 000	48 550	275 000	61 900	2 800	3 800	3.00	6.70	0.43	1.40
30220	100	3.9370	180	7.0866	37.00	1.4567	246 000	55 300	320 000	72 000	2 800	3 600	3.65	8.10	0.43	1.40
30221	105	4.1339	190	7.4803	39.00	1.5354	270 000	60 690	355 000	79 900	2 600	3 400	4.25	9.40	0.43	1.40
30222	110	4.3307	200	7.8740	41.00	1.6142	308 000	69 230	405 000	91 100	2 400	3 200	5.10	11.30	0.43	1.40
30224	120	4.7244	215	8.4646	43.50	1.7126	341 000	76 650	465 000	104 600	2 200	3 000	6.15	13.60	0.43	1.40
30226	130	5.1181	230	9.0551	43.75	1.7224	369 000	82 950	490 000	110 200	2 000	2 800	7.60	16.80	0.43	1.40
30228	140	5.5118	250	9.8425	45.75	1.8012	418 000	93 960	570 000	128 200	1 900	2 600	8.65	19.10	0.43	1.40
30230	150	5.9055	270	10.6299	49.00	1.9291	429 000	96 430	560 000	125 900	1 800	2 400	11.00	24.30	0.43	1.40
30232	160	6.2992	290	11.4173	52.00	2.0472	528 000	118 700	735 000	165 300	1 600	2 200	13.00	28.70	0.43	1.40
30234	170	6.6929	310	12.2047	57.00	2.2441	616 000	138 500	865 000	194 500	1 500	2 000	19.00	41.90	0.43	1.40
30236	180	7.0866	320	12.5984	57.00	2.2441	583 000	131 100	815 000	183 300	1 500	2 000	20.00	44.10	0.46	1.30
30238	190	7.4803	340	13.3858	60.00	2.3622	721 000	162 080	1 000 000	224 800	1 400	1 800	24.00	53.00	0.43	1.40
30240	200	7.8740	360	14.1732	64.00	2.5197	792 000	178 040	1 120 000	251 800	1 300	1 700	25.00	55.20	0.43	1.40
30244	220	8.6614	400	15.7480	72.00	2.8346	990 000	222 550	1 400 000	314 800	1 200	1 600	40.00	88.20	0.43	1.40
30248	240	9.4488	440	17.3228	79.00	3.1102	1 210 000	272 000	1 760 000	395 700	1 000	1 400	46.76	103.10	0.43	1.40

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



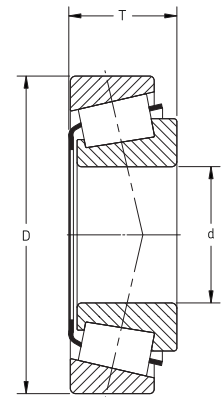
Single row
 Standard and **SKF Explorer**
 Series: 30302 — 30352
 Size: 15 mm — 260 mm
 0.5906 in — 10.2362 in

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
30302	15	0.5906	42	1.6535	14.25	0.5610	22 400	5 030	20 000	4 500	13 000	18 000	0.10	0.30	0.28	2.10
30303	17	0.6693	47	1.8504	15.25	0.6004	28 100	6 310	25 000	5 700	12 000	16 000	0.13	0.30	0.28	2.10
30304	20	0.7874	52	2.0472	16.25	0.6398	34 100	7 670	32 500	7 400	11 000	14 000	0.17	0.40	0.30	2.00
30305	25	0.9843	62	2.4409	18.25	0.7185	44 600	10 020	43 000	9 700	9 000	12 000	0.26	0.60	0.30	2.00
30306	30	1.1811	72	2.8346	20.75	0.8169	56 100	12 610	56 000	12 600	7 500	10 000	0.39	0.90	0.31	1.90
30307	35	1.3780	80	3.1496	22.75	0.8957	72 100	16 210	73 500	16 600	6 700	9 000	0.52	1.20	0.31	1.90
30308	40	1.5748	90	3.5433	25.25	0.9941	85 800	19 290	95 000	21 400	6 000	8 000	0.72	1.60	0.35	1.70
30309	45	1.7717	100	3.9370	27.25	1.0728	108 000	24 280	120 000	27 000	5 300	7 000	0.97	2.20	0.35	1.70
30310	50	1.9685	110	4.3307	29.25	1.1516	143 000	32 140	140 000	31 500	5 300	6 300	1.25	2.80	0.83	0.72
30311	55	2.1654	120	4.7244	31.50	1.2402	166 000	37 310	163 000	36 700	4 800	5 600	1.55	3.50	0.88	0.68
30312	60	2.3622	130	5.1181	33.50	1.3189	168 000	37 760	196 000	44 100	4 000	5 300	1.95	4.30	0.83	0.72
30313	65	2.5591	140	5.5118	36.00	1.4173	194 000	43 610	228 000	51 300	3 600	4 800	2.40	5.30	0.35	1.70
30314	70	2.7559	150	5.9055	38.00	1.4961	220 000	49 450	260 000	58 500	3 400	4 500	2.90	6.40	0.35	1.70
30315	75	2.9528	160	6.2992	40.00	1.5748	246 000	55 300	290 000	65 200	3 200	4 300	3.45	7.70	0.35	1.70
30316	80	3.1496	170	6.6929	42.50	1.6732	270 000	60 690	320 000	72 000	3 000	4 300	4.10	9.10	0.35	1.70
30317	85	3.3465	180	7.0866	44.50	1.7520	303 000	68 110	365 000	82 100	2 800	4 000	4.85	10.70	0.35	1.70
30318	90	3.5433	190	7.4803	46.50	1.8307	330 000	74 180	400 000	90 000	2 600	4 000	5.65	12.50	0.35	1.70
30319	95	3.7402	200	7.8740	49.50	1.9488	330 000	74 180	390 000	87 700	2 600	3 400	6.70	14.80	0.35	1.70
30320	100	3.9370	215	8.4646	51.50	2.0276	402 000	90 360	490 000	110 200	2 400	3 200	8.05	17.80	0.35	1.70
30322	110	4.3307	240	9.4488	54.50	2.1457	473 000	106 330	585 000	131 600	2 200	2 800	11.00	24.30	0.35	1.70
30324	120	4.7244	260	10.2362	59.50	2.3425	561 000	126 110	710 000	159 700	2 000	2 600	14.00	30.90	0.35	1.70
30326	130	5.1181	280	11.0236	63.75	2.5098	627 000	140 940	800 000	179 900	1 800	2 400	17.00	37.50	0.35	1.70
30332	160	6.2992	340	13.3858	75.00	2.9528	913 000	205 240	1 180 000	265 300	1 500	2 000	29.00	64.00	0.35	1.70
30334	170	6.6929	360	14.1732	80.00	3.1496	1 020 000	229 000	1 340 000	301 000	1 400	1 800	35.00	77.20	0.35	1.70
30352	260	10.2362	540	21.2598	113.00	4.4488	2 120 000	476 570	3 050 000	685 700	850	1 200	110.00	242.60	0.35	1.70

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

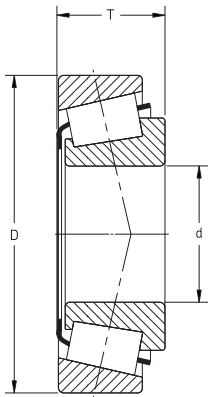
Taper roller bearings

Single row
Standard and **SKF Explorer**
Series: 31305 — 31330 X
Size: 25 mm — 150 mm
0.9843 in — 5.9055 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
31305	25	0.9843	62	2.4409	18.25	0.7185	38 000	8 540	40 000	9 000	7 500	11 000	0.26	0.60	0.83	0.72
31306	30	1.1811	72	2.8346	20.75	0.8169	47 300	10 630	50 000	11 300	6 700	9 500	0.39	0.90	0.83	0.72
31307	35	1.3780	80	3.1496	22.75	0.8957	61 600	13 850	67 000	15 100	6 000	8 500	0.52	1.20	0.83	0.72
31308	40	1.5748	90	3.5433	25.25	0.9941	85 000	19 100	81 500	18 400	5 600	7 500	0.72	1.60	0.83	0.72
31309	45	1.7717	100	3.9370	27.25	1.0728	106 000	23 820	102 000	23 000	5 000	6 700	0.95	2.10	0.83	0.72
31310	50	1.9685	110	4.3307	29.25	1.1516	122 000	27 420	120 000	27 000	4 500	6 000	1.20	2.70	0.35	1.70
31311	55	2.1654	120	4.7244	31.50	1.2402	121 000	27 200	137 000	30 800	3 800	5 600	1.55	3.50	0.35	1.70
31312	60	2.3622	130	5.1181	33.50	1.3189	145 000	32 600	166 000	37 400	3 600	5 300	1.90	4.20	0.35	1.70
31313	65	2.5591	140	5.5118	36.00	1.4173	165 000	37 090	193 000	43 400	3 200	4 800	2.35	5.20	0.83	0.72
31314	70	2.7559	150	5.9055	38.00	1.4961	187 000	42 040	220 000	49 500	3 000	4 500	2.95	6.60	0.83	0.72
31315	75	2.9528	160	6.2992	40.00	1.5748	209 000	46 980	245 000	55 100	2 800	4 300	3.50	7.80	0.83	0.72
31316	80	3.1496	170	6.6929	42.50	1.6732	224 000	50 360	265 000	59 600	2 800	4 000	4.05	9.00	0.83	0.72
31317	85	3.3465	180	7.0866	44.50	1.7520	242 000	54 400	285 000	64 100	2 600	3 800	4.60	10.20	0.83	0.72
31318	90	3.5433	190	7.4803	46.50	1.8307	264 000	59 340	315 000	70 900	2 400	3 400	5.90	13.10	0.83	0.72
31319	95	3.7402	200	7.8740	49.50	1.9488	292 000	65 640	355 000	79 900	2 400	3 400	6.95	15.40	0.83	0.72
31320 X	100	3.9370	215	8.4646	56.50	2.2244	374 000	84 080	465 000	104 600	2 200	3 000	8.60	19.00	0.83	0.72
31322 X	110	4.3307	240	9.4488	63.00	2.4803	457 000	102 700	585 000	131 600	1 900	2 800	12.00	26.50	0.83	0.72
31324 X	120	4.7244	260	10.2362	68.00	2.6772	539 000	121 200	695 000	156 300	1 700	2 400	15.50	34.20	0.83	0.72
31326 X	130	5.1181	280	11.0236	72.00	2.8346	605 000	136 000	780 000	175 400	1 600	2 400	18.50	40.80	0.83	0.72
31328 X	140	5.5118	300	11.8110	77.00	3.0315	693 000	155 800	900 000	202 400	1 500	2 200	24.50	54.10	0.83	0.72
31330 X	150	5.9055	320	12.5984	82.00	3.2283	781 000	175 600	1 020 000	229 300	1 400	2 000	29.50	65.10	0.83	0.72

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Single row
 Standard and **SKF Explorer**
 Series: 32004 X — 32040 X
 Size: 20 mm — 200 mm
 0.7874 in — 7.8740 in

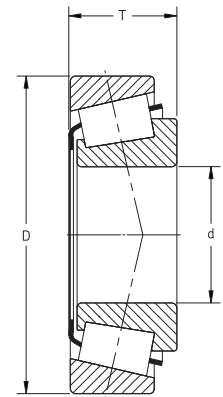
Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
32004 X	20	0.7874	42	1.6535	15	0.5906	24 200	5 440	27 000	6 100	12 000	16 000	0.10	0.30	0.37	1.60
32005 X	25	0.9843	47	1.8504	15	0.5906	27 000	6 070	32 500	7 400	11 000	14 000	0.11	0.30	0.43	1.40
320/28 X	28	1.1024	52	2.0472	16	0.6299	36 500	8 200	38 000	8 600	10 000	13 000	0.15	0.40	0.43	1.40
32006 X	30	1.1811	55	2.1654	17	0.6693	35 800	8 050	44 000	9 900	9 000	12 000	0.17	0.40	0.43	1.40
320/32 X	32	1.2598	58	2.2835	17	0.6693	36 900	8 300	46 500	10 500	8 500	11 000	0.19	0.50	0.46	1.30
32007 X	35	1.3780	62	2.4409	18	0.7087	49 000	11 010	54 000	12 200	8 500	11 000	0.22	0.50	0.46	1.30
32008 X	40	1.5748	68	2.6772	19	0.7480	52 800	11 870	71 000	16 000	7 000	9 500	0.27	0.60	0.37	1.60
32009 X	45	1.7717	75	2.9528	20	0.7874	58 300	13 110	80 000	18 000	6 300	8 500	0.34	0.80	0.40	1.50
32010 X	50	1.9685	80	3.1496	20	0.7874	60 500	13 600	88 000	19 800	6 000	8 000	0.37	0.90	0.43	1.40
32011 X	50	1.9685	90	3.5433	23	0.9055	80 900	18 190	116 000	26 100	5 300	7 000	0.55	1.30	0.31	1.90
32012 X	60	2.3622	95	3.7402	23	0.9055	95 000	21 350	122 000	27 500	5 300	6 700	0.59	1.40	0.43	1.40
32013 X	65	2.5591	100	3.9370	23	0.9055	96 500	21 690	127 000	28 600	5 000	6 000	0.63	1.40	0.46	1.30
32014 X	70	2.7559	110	4.3307	25	0.9843	101 000	22 700	153 000	34 400	4 300	5 600	0.84	1.90	0.43	1.40
32015 X	75	2.9528	115	4.5276	25	0.9843	106 000	23 830	163 000	36 700	4 000	5 300	0.90	2.00	0.46	1.30
32016 X	80	3.1496	125	4.9213	29	1.1417	138 000	31 020	216 000	48 600	3 600	5 000	1.30	2.90	0.43	1.40
32017 X	85	3.3465	130	5.1181	29	1.1417	140 000	31 470	224 000	50 400	3 400	4 800	1.35	3.00	0.44	1.35
32018 X	90	3.5433	140	5.5118	32	1.2598	168 000	37 760	270 000	60 700	3 200	4 300	1.75	3.90	0.43	1.40
32019 X	95	3.7402	145	5.7087	32	1.2598	168 000	37 760	270 000	60 700	3 200	4 300	1.80	4.00	0.44	1.35
32020 X	100	3.9370	150	5.9055	32	1.2598	172 000	38 660	280 000	63 000	3 000	4 000	1.90	4.20	0.46	1.30
32021 X	105	4.1339	160	6.2992	35	1.3780	201 000	45 180	335 000	75 400	2 800	3 800	2.40	5.30	0.44	1.35
32022 X	110	4.3307	170	6.6929	38	1.4961	233 000	52 370	390 000	87 700	2 600	3 600	3.05	6.80	0.43	1.40
32024 X	120	4.7244	180	7.0866	38	1.4961	242 000	54 400	415 000	93 300	2 400	3 400	3.25	7.20	0.46	1.30
32026 X	130	5.1181	200	7.8740	45	1.7717	314 000	70 580	540 000	121 400	2 200	3 000	4.95	11.00	0.43	1.40
32028 X	140	5.5118	210	8.2677	45	1.7717	330 000	74 180	585 000	131 600	2 200	2 800	5.25	11.60	0.46	1.30
32030 X	150	5.9055	225	8.8583	48	1.8898	369 000	82 950	655 000	147 300	2 000	2 600	6.35	14.00	0.46	1.30
32032 X	160	6.2992	240	9.4488	51	2.0079	429 000	96 430	780 000	175 400	1 800	2 400	7.75	17.10	0.46	1.30
32034 X	170	6.6929	260	10.2362	57	2.2441	512 000	115 100	915 000	205 700	1 700	2 200	10.50	23.20	0.44	1.35
32036 X	180	7.0866	280	11.0236	64	2.5197	644 000	144 800	1 160 000	260 800	1 600	2 200	14.50	32.00	0.43	1.40
32038 X	190	7.4803	290	11.4173	64	2.5197	660 000	148 400	1 200 000	269 800	1 500	2 000	15.00	33.10	0.44	1.35
32040 X	200	7.8740	310	12.2047	70	2.7559	748 000	168 200	1 370 000	308 000	1 400	1 900	19.50	43.00	0.43	1.40

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
 Consult SKF USA Inc. prior to design change or order placement.

Taper roller bearings

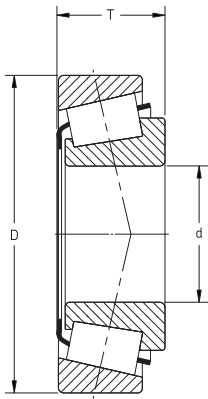
Single row
Standard and **SKF Explorer**
Series: 32044 X — 32064 X
Size: 220 mm — 320 mm
8.6614 in — 12.5984 in

Series: 32205 B — 32230
Size: 25 mm — 150 mm
0.9843 in — 5.9055 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
32044 X	220	8.6614	340	13.3858	76.00	2.9921	897 000	201 600	1 660 000	373 200	1 300	1 700	25.50	56.30	0.43	1.40
32048 X	240	9.4488	360	14.1732	76.00	2.9921	935 000	210 100	1 800 000	404 700	1 200	1 600	27.50	60.70	0.46	1.30
32052 X	260	10.2362	400	15.7480	87.00	3.4252	1 170 000	263 000	2 200 000	494 600	1 100	1 400	40.00	88.20	0.43	1.40
32056 X	280	11.0236	420	16.5354	87.00	3.4252	1 210 000	272 000	2 360 000	530 600	1 000	1 300	40.50	89.30	0.46	1.30
32064 X	320	12.5984	480	18.8976	100.00	3.9370	1 540 000	346 200	3 100 000	696 900	850	1 100	64.00	141.10	0.46	1.30
32205 B	25	0.9843	52	2.0472	19.25	0.7579	35 800	8 100	44 000	9 900	9 500	13 000	0.19	0.50	0.57	1.05
322/28 B	28	1.1024	58	2.2835	20.25	0.7972	41 800	9 400	50 000	11 300	8 500	12 000	0.25	0.60	0.57	1.05
32206	30	1.1811	62	2.4409	21.25	0.8366	50 100	11 300	57 000	12 900	8 500	11 000	0.28	0.70	0.37	1.60
32206 B	30	1.1811	62	2.4409	21.25	0.8366	49 500	11 100	58 500	13 200	8 000	11 000	0.30	0.70	0.57	1.05
32207	35	1.3780	72	2.8346	24.25	0.9547	66 000	14 800	78 000	17 600	7 000	9 500	0.43	1.00	0.37	1.60
32207 B	35	1.3780	72	2.8346	24.25	0.9547	60 500	13 600	75 000	16 900	7 000	9 500	0.44	1.00	0.57	1.05
32208	40	1.5748	80	3.1496	24.75	0.9744	78 800	17 700	86 500	19 500	6 300	8 500	0.53	1.20	0.37	1.60
32209	45	1.7717	85	3.3465	24.75	0.9744	91 500	20 600	98 000	22 100	6 300	8 000	0.58	1.30	0.40	1.50
32210	50	1.9685	90	3.5433	24.75	0.9744	82 500	18 500	100 000	22 500	5 600	7 500	0.61	1.40	0.43	1.40
32211	50	1.9685	100	3.9370	26.75	1.0531	106 000	23 800	129 000	29 000	5 000	6 700	0.83	1.85	0.57	1.05
32212	60	2.3622	110	4.3307	29.75	1.1713	125 000	28 100	160 000	36 000	4 500	6 000	1.15	2.60	0.40	1.50
32213	65	2.5591	120	4.7244	32.75	1.2894	151 000	33 900	193 000	43 400	4 000	5 600	1.50	3.40	0.40	1.50
32214	70	2.7559	125	4.9213	33.25	1.3091	157 000	35 200	208 000	46 800	3 800	5 300	1.60	3.60	0.43	1.40
32215	75	2.9528	130	5.1181	33.25	1.3091	161 000	36 100	212 000	47 700	3 600	5 000	1.70	3.80	0.43	1.40
32216	80	3.1496	140	5.5118	35.25	1.3878	187 000	42 000	245 000	55 100	3 400	4 500	2.05	4.60	0.43	1.40
32217	85	3.3465	150	5.9055	38.50	1.5157	212 000	47 600	285 000	64 100	3 200	4 300	2.60	5.80	0.43	1.40
32218	90	3.5433	160	6.2992	42.50	1.6732	251 000	56 400	340 000	76 500	3 000	4 000	3.35	7.40	0.43	1.40
32219	95	3.7402	170	6.6929	45.50	1.7913	281 000	63 100	390 000	87 700	2 800	3 800	4.05	9.00	0.43	1.40
32220	100	3.9370	180	7.0866	49.00	1.9291	319 000	71 700	440 000	99 000	2 600	3 600	4.90	10.90	0.43	1.40
32221	105	4.1339	190	7.4803	53.00	2.0866	358 000	80 400	510 000	114 700	2 600	3 400	6.00	13.30	0.43	1.40
32222	110	4.3307	200	7.8740	56.00	2.2047	402 000	90 300	570 000	128 200	2 400	3 200	7.10	15.70	0.43	1.40
32224	120	4.7244	215	8.4646	61.50	2.4213	468 000	105 200	695 000	156 300	2 200	3 000	9.15	20.17	0.43	1.40
32226	130	5.1181	230	9.0551	67.75	2.6673	550 000	123 600	830 000	186 600	2 000	2 800	11.50	25.40	0.43	1.40
32228	140	5.5118	250	9.8425	71.75	2.8248	644 000	144 700	1 000 000	224 800	1 900	2 600	14.50	32.00	0.43	1.40
32230	150	5.9055	270	10.6299	77.00	3.0315	737 000	165 600	1 140 000	256 300	1 700	2 400	17.50	38.60	0.43	1.40

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Single row
Standard and **SKF Explorer**
Series: 32232 — 32260
Size: 160 mm — 300 mm
6.2992 in — 11.8110 in

Series: 32303 — 32316 B
Size: 17 mm — 80 mm
0.6693 in — 3.1496 in

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
32232	160	6.2992	290	11.4173	84.00	3.3071	880 000	197 800	1 400 000	314 800	1 600	2 200	25.50	56.30	0.43	1.40
32234	170	6.6929	310	12.2047	91.00	3.5827	1 010 000	227 000	1 630 000	366 500	1 500	2 000	28.50	62.90	0.43	1.40
32236	180	7.0866	320	12.5984	91.00	3.5827	1 010 000	227 000	1 630 000	366 500	1 400	1 900	29.50	65.10	0.46	1.30
32240	200	7.8740	360	14.1732	104.00	4.0945	1 210 000	272 000	2 000 000	449 600	1 300	1 700	42.50	93.70	0.40	1.50
32244	220	8.6614	400	15.7480	114.00	4.4882	1 610 000	361 900	2 700 000	607 000	1 100	1 500	60.00	132.30	0.43	1.40
32248	240	9.4488	440	17.3228	127.00	5.0000	1 940 000	436 100	3 350 000	753 100	1 000	1 400	81.50	179.70	0.43	1.40
32252	260	10.2362	480	18.8976	137.00	5.3937	2 200 000	494 500	3 650 000	820 600	900	1 200	105.00	231.50	0.43	1.40
32260	300	11.8110	540	21.2599	149.00	5.8661	2 750 000	618 200	4 750 000	1 067 800	800	1 100	140.00	308.70	0.43	1.40
32303	17	0.6693	47	1.8504	20.25	0.7972	34 700	7 800	33 500	7 600	11 000	16 000	0.17	0.40	0.28	2.10
32304	20	0.7874	52	2.0472	22.25	0.8760	44 000	9 890	45 500	10 300	10 000	14 000	0.23	0.60	0.30	2.00
32305	25	0.9843	62	2.4409	25.25	0.9941	60 500	13 600	63 000	14 200	8 000	12 000	0.36	0.80	0.30	2.00
32306	30	1.1811	72	2.8346	28.75	1.1319	76 500	17 200	85 000	19 200	7 000	10 000	0.55	1.30	0.31	1.90
32307	35	1.3780	80	3.1496	32.75	1.2894	95 200	21 400	106 000	23 900	6 700	9 000	0.73	1.70	0.31	1.90
32307 B	35	1.3780	80	3.1496	32.75	1.2894	93 500	21 000	114 000	25 700	6 300	8 500	0.80	1.80	0.54	1.10
32308	40	1.5748	90	3.5433	35.25	1.3878	117 000	26 300	140 000	31 500	5 300	8 000	1.00	2.30	0.35	1.70
32309	45	1.7717	100	3.9370	38.25	1.5059	140 000	31 400	170 000	38 300	4 800	7 000	1.35	3.00	0.35	1.70
32309 B	45	1.7717	100	3.9370	38.25	1.5059	134 000	30 100	176 000	39 600	4 800	6 700	1.45	3.20	0.54	1.10
32310	50	1.9685	110	4.3307	42.25	1.6634	172 000	38 600	212 000	47 700	4 300	6 300	1.80	4.00	0.35	1.70
32310 B	50	1.9685	110	4.3307	42.25	1.6634	183 000	41 100	216 000	48 600	4 500	6 000	1.85	4.10	0.54	1.10
32311	55	2.1654	120	4.7244	45.50	1.7913	198 000	44 500	250 000	56 200	4 000	5 600	2.30	5.10	0.83	0.72
32311 B	55	2.1654	120	4.7244	45.50	1.7913	216 000	48 500	260 000	58 500	4 300	5 600	2.50	5.60	0.35	1.70
32312	60	2.3622	130	5.1181	48.50	1.9094	229 000	51 400	290 000	65 200	3 600	5 300	2.85	6.30	0.83	0.72
32312 B	60	2.3622	130	5.1181	48.50	1.9094	220 000	49 500	305 000	68 600	3 600	5 000	2.80	6.20	0.35	1.70
32313	65	2.5591	140	5.5118	51.00	2.0079	264 000	59 300	335 000	75 400	3 400	4 800	3.45	7.70	0.35	1.70
32313 B	65	2.5591	140	5.5118	51.00	2.0079	246 000	55 300	345 000	77 600	3 200	4 800	3.35	7.40	0.54	1.10
32314	70	2.7559	150	5.9055	54.00	2.1260	297 000	66 700	380 000	85 500	3 200	4 500	4.30	9.50	0.35	1.70
32314 B	70	2.7559	150	5.9055	54.00	2.1260	281 000	63 200	400 000	90 000	3 000	4 300	4.25	9.40	0.54	1.10
32315	75	2.9528	160	6.2992	58.00	2.2835	336 000	75 500	440 000	99 000	3 000	4 300	5.20	11.50	0.35	1.70
32315 B	75	2.9528	160	6.2992	58.00	2.2835	336 000	75 500	475 000	106 800	2 800	4 000	5.55	12.30	0.54	1.10
32316	80	3.1496	170	6.6929	61.50	2.4213	380 000	85 400	500 000	112 400	3 000	4 300	6.20	13.70	0.35	1.70
32316 B	80	3.1496	170	6.6929	61.50	2.4213	358 000	80 500	520 000	116 900	2 800	4 300	5.70	12.60	0.54	1.10

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Taper roller bearings

Single row

Standard

Series: 32317 — 32324

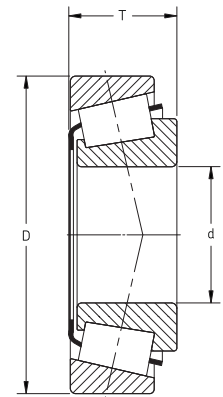
Size: 85 mm — 120 mm

3.3465 in — 4.7244 in

Series: 32915 — 32960

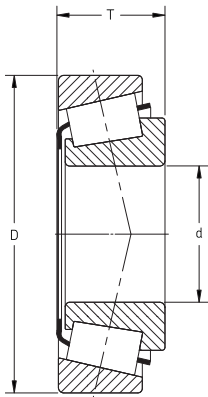
Size: 75 mm — 300 mm

2.9528 in — 11.8110 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
32317	85	3.3465	180	7.0866	63.50	2.5000	402 000	90 300	530 000	119 200	2 800	4 000	6.85	15.20	0.35	1.70
32317 B	85	3.3465	180	7.0866	63.50	2.5000	391 000	87 800	560 000	125 900	2 800	4 000	7.50	16.60	0.54	1.10
32318	90	3.5433	190	7.4803	67.50	2.6575	457 000	102 700	610 000	137 200	2 600	4 000	8.40	18.60	0.35	1.70
32319	95	3.7402	200	7.8740	71.50	2.8150	501 000	112 600	670 000	150 700	2 400	3 400	11.00	24.30	0.35	1.70
32320	100	3.9370	215	8.4646	77.50	3.0512	572 000	128 500	780 000	175 400	2 200	3 000	12.50	27.60	0.35	1.70
32321	105	4.1339	225	8.8583	81.50	3.2087	605 000	136 000	815 000	183 300	2 000	3 000	14.50	32.00	0.35	1.70
32322	110	4.3307	240	9.4488	84.50	3.3268	627 000	140 900	830 000	186 600	1 900	2 800	17.00	37.50	0.35	1.70
32324	120	4.7244	260	10.2362	90.50	3.5630	792 000	178 000	1 120 000	251 800	1 800	2 600	21.50	47.40	0.35	1.70
32915	75	2.9528	105	4.1339	20.00	0.7874	70 400	15 800	116 000	26 100	4 300	6 300	0.52	1.20	0.33	1.80
32920	100	3.9370	140	5.5118	25.00	0.9843	119 000	26 700	204 000	45 900	3 200	4 800	1.15	2.60	0.33	1.80
32924	120	4.7244	165	6.4961	29.00	1.1417	165 000	37 000	305 000	68 600	2 600	3 800	1.80	4.00	0.35	1.70
32926	130	5.1181	180	7.0866	32.00	1.2598	198 000	44 500	365 000	82 100	2 400	3 600	2.40	5.30	0.33	1.80
32928	140	5.5118	190	7.4803	32.00	1.2598	205 000	46 000	390 000	87 700	2 200	3 400	2.55	5.70	0.35	1.70
32934	170	6.6929	230	9.0551	38.00	1.4961	286 000	64 200	585 000	131 600	1 900	2 800	4.50	10.00	0.37	1.60
32936	180	7.0866	250	9.8425	45.00	1.7717	352 000	79 100	735 000	165 300	1 700	2 600	6.65	14.70	0.48	1.25
32938	190	7.4803	260	10.2362	45.00	1.7717	358 000	80 400	765 000	172 000	1 600	2 400	7.00	15.50	0.48	1.25
32940	200	7.8740	280	11.0236	51.00	2.0079	473 000	106 300	950 000	213 600	1 500	2 200	9.50	21.00	0.40	1.50
32948	240	9.4488	320	12.5984	51.00	2.0079	512 000	115 000	1 080 000	242 800	1 300	1 900	11.00	24.50	0.46	1.30
32956	280	11.0236	380	14.9606	63.50	2.5000	765 000	171 900	1 660 000	373 200	1 100	1 600	20.00	44.10	0.43	1.40
32960	300	11.8110	420	16.5354	76.00	2.9921	1 050 000	236 000	2 240 000	503 600	950	1 400	32.00	70.60	0.40	1.50

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Single row
Standard and **SKF Explorer**
Series: 33010 — 33030
Size: 50 mm — 150 mm
1.9685 in — 5.9055 in

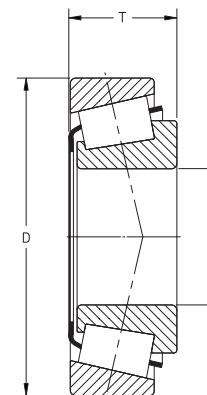
Series: 33108 — 33122
Size: 40 mm — 110 mm
1.5748 in — 4.3307 in

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
33010	50	1.9685	80	3.1496	22	0.9449	69 300	15 600	102 000	23 000	6 000	8 000	0.45	1.00	0.31	0.72
33011	50	1.9685	90	3.5433	27	1.0630	104 000	23 300	137 000	30 800	5 600	7 000	0.67	1.50	0.37	1.60
33012	60	2.3622	95	3.7402	27	1.0630	106 000	23 800	143 000	32 200	5 300	6 700	0.71	1.60	0.40	1.50
33013	65	2.5591	100	3.9370	27	1.0630	110 000	24 700	153 000	34 400	5 000	6 300	0.78	1.80	0.46	1.30
33014	70	2.7559	110	4.3307	31	1.2205	130 000	29 200	196 000	44 100	4 300	5 600	1.10	2.50	0.28	2.10
33015	75	2.9528	115	4.5276	31	1.2205	134 000	30 100	228 000	51 300	4 000	5 300	1.15	2.60	0.30	2.00
33016	80	3.1496	125	4.9213	36	1.4173	168 000	37 700	285 000	64 100	3 600	5 000	1.65	3.70	0.28	2.10
33017	85	3.3465	130	5.1181	36	1.4173	183 000	41 100	310 000	69 700	3 600	4 800	1.75	3.90	0.30	2.00
33018	90	3.5433	140	5.5118	39	1.5354	216 000	48 500	355 000	79 900	3 200	4 500	2.20	4.90	0.27	2.20
33019	95	3.7402	145	5.7087	39	1.5354	220 000	49 400	375 000	84 300	3 200	4 300	2.30	5.10	0.28	2.10
33020	100	3.9370	150	5.9055	39	1.5354	224 000	50 300	390 000	87 700	3 000	4 000	2.40	5.30	0.28	2.10
33021	105	4.1339	160	6.2992	43	1.6929	246 000	55 300	430 000	96 700	2 800	3 800	3.05	6.80	0.28	2.10
33022	110	4.3307	170	6.6929	47	1.8504	281 000	63 100	500 000	112 400	2 600	3 600	3.85	8.50	0.28	2.10
33024	120	4.7244	180	7.0866	48	1.8898	292 000	65 600	540 000	121 400	2 600	3 400	4.20	9.30	0.30	2.00
33030	150	5.9055	225	8.8583	59	2.3228	457 000	102 700	865 000	194 500	2 000	2 600	8.15	18.00	0.37	1.60
33108	40	1.5748	75	2.9528	26	1.0236	79 200	17 800	104 000	23 400	6 000	9 000	0.51	1.20	0.35	1.70
33109	45	1.7717	80	3.1496	26	1.0236	96 500	21 600	114 000	25 700	6 700	8 000	0.56	1.30	0.37	1.60
33110	50	1.9685	85	3.3465	26	1.0236	85 800	19 300	122 000	27 500	5 600	7 500	0.59	1.40	0.40	1.50
33111	50	1.9685	95	3.7402	30	1.1811	110 000	24 700	156 000	35 100	5 000	6 700	0.86	1.90	0.40	1.50
33112	60	2.3622	100	3.9370	30	1.1811	117 000	26 300	170 000	38 300	4 800	6 300	0.92	2.10	0.33	1.80
33113	65	2.5591	110	4.3307	34	1.3386	142 000	31 900	208 000	46 800	4 300	5 600	1.30	2.90	0.40	1.50
33114	70	2.7559	120	4.7244	37	1.4567	172 000	38 600	250 000	56 200	4 000	5 300	1.70	3.80	0.37	1.60
33115	75	2.9528	125	4.9213	37	1.4567	176 000	39 500	265 000	59 600	3 800	5 000	1.80	4.00	0.40	1.50
33116	80	3.1496	130	5.1181	37	1.4567	179 000	40 200	280 000	63 000	3 600	4 800	1.90	4.20	0.43	1.40
33117	85	3.3465	140	5.5118	41	1.6142	220 000	49 400	340 000	76 500	3 400	4 500	2.45	5.50	0.40	1.50
33118	90	3.5433	150	5.9055	45	1.7717	251 000	56 400	390 000	87 700	3 000	4 300	3.10	6.90	0.40	1.50
33122	110	4.3307	180	7.0866	56	2.2047	369 000	82 900	630 000	141 700	2 600	3 400	5.55	12.30	0.43	1.40

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

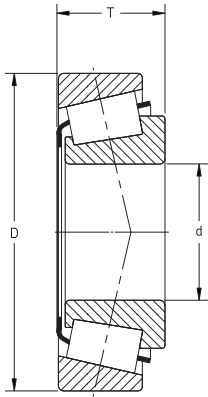
Taper roller bearings

Single row
Standard and **SKF Explorer**
Series: 33205 — 33220
Size: 25 mm — 100 mm
0.9843 in — 3.9370 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
33205	25	0.9843	52	2.0472	22	0.8661	54 000	12 100	56 000	12 600	10 000	13 000	0.23	0.60	0.35	1.70
33206	30	1.1811	62	2.4409	25	0.9843	64 400	14 500	76 500	17 200	7 500	11 000	0.37	0.90	0.35	1.70
33207	35	1.3780	72	2.8346	28	1.1024	84 200	18 900	106 000	23 900	6 300	9 500	0.56	1.30	0.35	1.70
33208	40	1.5748	80	3.1496	32	1.2598	105 000	23 600	132 000	29 700	5 600	8 500	0.77	1.70	0.35	1.70
33209	45	1.7717	85	3.3465	32	1.2598	108 000	24 200	143 000	32 200	5 300	7 500	0.85	1.90	0.40	1.50
33210	50	1.9685	90	3.5433	32	1.2598	114 000	25 600	160 000	36 000	5 000	7 000	0.90	2.00	0.40	1.50
33211	55	2.1654	100	3.9370	35	1.3780	138 000	31 000	190 000	42 800	4 500	6 300	1.20	2.70	0.40	1.50
33212	60	2.3622	110	4.3307	38	1.4961	168 000	37 700	236 000	53 100	4 000	6 000	1.60	3.60	0.40	1.50
33213	65	2.5591	120	4.7244	41	1.6142	194 000	43 600	270 000	60 700	3 800	5 300	2.05	4.60	0.40	1.50
33214	70	2.7559	125	4.9213	41	1.6142	201 000	45 100	285 000	64 100	3 600	5 000	2.10	4.70	0.40	1.50
33215	75	2.9528	130	5.1181	41	1.6142	209 000	46 900	300 000	67 500	3 400	4 800	2.25	5.00	0.43	1.40
33216	80	3.1496	140	5.5118	46	1.8110	251 000	56 400	375 000	84 300	3 200	4 500	2.90	6.40	0.43	1.40
33217	85	3.3465	150	5.9055	49	1.9291	286 000	64 200	430 000	96 700	3 000	4 300	3.70	8.20	0.43	1.40
33220	100	3.9370	180	7.0866	63	2.4803	429 000	96 400	655 000	147 300	2 400	3 600	6.95	15.40	0.40	1.50

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.



Single row
Standard
Series: T2ED 045 — T2EE 240
Size: 45 mm — 240 mm
1.7717 in — 9.4488 in

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors	
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min				
T2ED 045	45	1.7717	95	3.7402	36	1.4173	147 000	33 000	186 000	41 900	5 300	8 000	1.20	2.70	0.33	1.80
T7FC 045	45	1.7717	95	3.7402	29	1.1417	89 700	20 200	112 000	25 200	4 800	7 000	0.92	2.10	0.88	0.68
T2ED 050	50	1.9685	100	3.9370	36	1.4173	154 000	34 600	200 000	45 000	5 000	7 500	1.30	2.90	0.35	1.70
T7FC 050	50	1.9685	105	4.1339	32	1.2598	108 000	24 300	137 000	30 800	4 300	6 300	1.20	2.70	0.88	0.68
T2ED 055	55	2.1654	110	4.3307	39	1.5354	179 000	40 200	232 000	52 200	4 500	6 700	1.70	3.80	0.40	1.50
T7FC 055	55	2.1654	115	4.5276	34	1.3386	125 000	28 100	163 000	36 700	4 000	5 600	1.60	3.60	0.35	1.07
T2EE 060	60	2.3622	115	4.5276	40	1.5748	194 000	43 600	260 000	58 500	4 300	6 300	1.85	4.10	0.54	1.10
T7FC 060	60	2.3622	125	4.9213	37	1.4567	154 000	34 600	204 000	45 900	3 600	5 300	2.05	4.60	0.33	1.80
T7FC 065	65	2.5591	130	5.1181	37	1.4567	157 000	35 300	216 000	48 600	3 400	5 000	2.20	4.90	0.88	0.68
T2ED 070	70	2.7559	130	5.1181	43	1.6929	233 000	52 300	325 000	73 100	3 800	5 600	2.45	5.50	0.33	1.80
T7FC 070	70	2.7559	140	5.5118	39	1.5354	176 000	39 600	240 000	54 000	3 200	4 500	2.65	5.90	0.88	0.68
T7FC 075	75	2.9528	150	5.9055	42	1.6535	201 000	45 200	280 000	63 000	3 000	4 300	3.25	7.20	0.88	0.68
T7FC 080	80	3.1496	160	6.2992	45	1.7717	229 000	51 500	315 000	70 900	2 800	4 000	3.95	8.80	0.88	0.68
T4CB 100	100	3.9370	145	5.7087	24	0.9449	125 000	28 100	190 000	42 800	3 200	4 500	1.15	2.60	0.48	1.25
T2EE 100	100	3.9370	165	6.4961	47	1.8504	314 000	70 500	480 000	108 000	2 800	4 300	3.90	8.60	0.31	1.90
T4CB 120	120	4.7244	170	6.6929	27	1.0630	157 000	35 200	250 000	56 200	2 600	3 800	1.70	3.80	0.48	1.25
T4CB 140	140	5.5118	195	7.6772	29	1.1417	194 000	43 600	325 000	73 100	2 200	3 200	2.40	5.30	0.50	1.20
T4DB 150	150	5.9055	210	8.2677	32	1.2598	233 000	52 300	390 000	87 700	2 000	3 000	3.05	6.80	0.46	1.30
T4DB 160	160	6.2992	220	8.6614	32	1.2598	242 000	54 400	415 000	93 300	2 000	2 800	3.25	7.20	0.48	1.25
T4DB 170	170	6.6929	230	9.0511	32	1.2598	251 000	56 400	440 000	99 000	1 900	2 800	3.45	7.70	0.46	1.30
T4DB 200	200	7.8740	270	10.6299	37	1.4567	330 000	74 100	600 000	134 900	1 600	2 400	5.45	12.10	0.48	1.25
T2DC 220	220	8.6614	285	11.2205	41	1.6142	396 000	89 000	830 000	186 600	1 500	2 200	6.45	14.30	0.31	1.90
T4EB 240	240	9.4488	320	12.5984	42	1.6535	429 000	96 400	815 000	183 300	1 300	1 900	8.45	18.70	0.46	1.30
T2EE 240	240	9.4488	320	12.5984	57	2.2440	616 000	138 400	1 320 000	296 800	1 300	1 900	12.50	27.60	0.35	1.70

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details.
Consult SKF USA Inc. prior to design change or order placement.

Taper roller bearings

Paired single row

Standard

Series: 30218/DF — 30230/DF

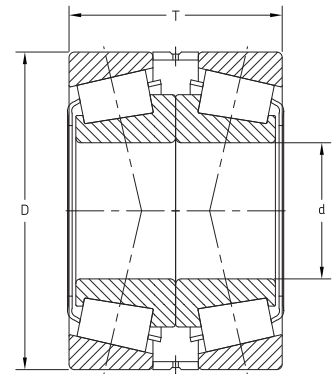
Size: 90 mm — 150 mm

3.5433 in — 5.9055 in

Series: 31305/DF — 31330 X/DF

Size: 25 mm — 150 mm

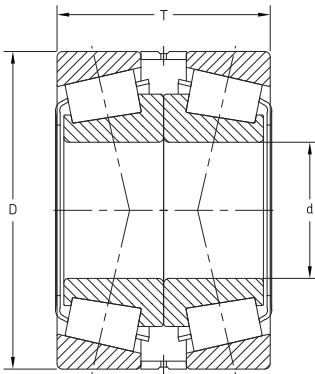
0.9843 in — 5.9055 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min					
30218/DF	90	3.5433	160	6.2992	65	2.5591	336 000	75 500	490 000	110 200	2 400	4 000	5.15	11.40	0.43	1.6	2.30
30220/DF	100	3.9370	180	7.0866	74	2.9134	418 000	94 000	640 000	143 900	2 200	3 600	7.60	16.80	0.43	1.6	2.30
30222/DF	110	4.3307	200	7.8740	82	3.2284	523 000	117 600	800 000	179 800	2 000	3 200	10.50	23.10	0.43	1.6	2.30
30224/DF	120	4.7244	215	8.4646	87	3.4252	583 000	131 100	915 000	205 700	1 800	3 000	13.00	28.70	0.43	1.6	2.30
30226/DF	130	5.1181	230	9.0551	47.5	1.8701	627 000	140 900	980 000	220 300	1 700	2 800	14.50	32.00	0.43	1.6	2.30
30228/DF	140	5.5118	250	9.8425	91.5	3.6024	721 000	162 100	1 140 000	256 300	1 500	2 600	18.00	39.70	0.43	1.6	2.30
30230/DF	150	5.9055	270	10.6299	98	3.8583	737 000	165 700	1 120 000	251 800	1 400	2 400	22.50	49.60	0.43	1.6	2.30
31305/DF	25	0.9843	62	2.4409	36.5	1.4370	64 400	14 500	80 000	18 000	6 000	11 000	0.55	1.20	0.83	0.81	1.20
31306/DF	30	1.1811	72	2.8346	41.5	1.6339	80 900	18 200	100 000	22 500	5 300	9 500	0.85	1.90	0.83	0.81	1.02
31307/DF	35	1.3780	80	3.1496	45.5	1.7913	105 000	23 600	134 000	30 100	4 500	8 500	1.10	2.40	0.83	0.81	1.20
31308/DF	40	1.5748	90	3.5433	50.5	1.9882	146 000	32 800	163 000	36 600	4 500	7 500	1.50	3.30	0.83	0.81	1.20
31309/DF	45	1.7717	100	3.9370	54.5	2.1457	180 000	40 500	204 000	45 900	4 000	6 700	2.00	4.40	0.83	0.81	1.20
31310/DF	50	1.9685	110	4.3307	58.5	2.3031	208 000	46 800	240 000	54 000	3 600	6 000	2.60	5.70	0.83	0.81	1.20
31311/DF	55	2.1654	120	4.7244	63	2.4803	209 000	47 000	275 000	61 800	3 000	5 600	3.30	7.30	0.83	0.81	1.20
31312/DF	60	2.3622	130	5.1181	67	2.6378	246 000	55 300	335 000	75 300	2 800	5 300	4.10	9.00	0.83	0.81	1.20
31313/DF	65	2.5591	140	5.5118	72	2.8346	281 000	63 200	380 000	85 400	2 600	4 800	5.05	11.10	0.83	0.81	1.20
31314/DF	70	2.7559	150	5.9055	76	2.9921	319 000	71 700	440 000	98 900	2 400	4 500	6.15	13.60	0.83	0.81	1.20
31315/DF	75	2.9528	160	6.2992	80	3.1496	358 000	80 500	490 000	110 200	2 200	4 300	7.25	16.00	0.83	0.81	1.20
31316/DF	80	3.1496	170	6.6929	85	3.3465	380 000	85 400	530 000	119 100	2 200	4 000	8.75	19.30	0.83	0.81	1.20
31317/DF	85	3.3465	180	7.0866	89	3.5039	413 000	92 800	570 000	128 100	2 000	3 800	10.00	22.00	0.83	0.81	1.20
31318/DF	90	3.5433	190	7.4803	93	3.6614	457 000	102 700	630 000	141 600	1 900	3 400	11.50	25.40	0.83	0.81	1.20
31319/DF	95	3.7402	200	7.8740	99	3.8976	501 000	112 600	710 000	159 600	1 800	3 400	13.00	28.70	0.83	0.81	1.20
31320 X/DF	100	3.9370	215	8.4646	113	4.4488	644 000	144 800	930 000	209 100	1 700	3 000	18.00	39.70	0.83	0.81	1.20
31322 X/DF	110	4.3307	240	9.4488	126	4.9606	781 000	175 600	1 160 000	260 800	1 500	2 800	26.00	57.30	0.83	0.81	1.20
31324 X/DF	120	4.7244	260	10.2362	136	5.3543	935 000	210 200	1 400 000	314 700	1 400	2 400	38.50	84.90	0.83	0.81	1.20
31326 X/DF	130	5.1181	280	11.0236	144	5.6693	1 050 000	236 000	1 560 000	350 700	1 300	2 400	40.00	88.20	0.83	0.81	1.20
31328 X/DF	140	5.5118	300	11.8110	154	6.0630	1 190 000	267 500	1 800 000	404 600	1 200	2 200	52.50	115.70	0.83	0.81	1.20
31330 X/DF	150	5.9055	320	12.5984	164	6.4567	1 340 000	301 200	2 040 000	458 600	1 100	2 000	58.50	129.00	0.83	0.81	1.20

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Paired single row
 Standard and SKF Explorer
 Series: 32014 X/DF — 32064 X/DF
 Size: 70 mm — 320 mm
 2.7559 in — 12.5984 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min					
32014 X/DF	70	2.7559	110	4.3307	50	1.9685	200 000	45 000	305 000	68 600	3 800	5 600	1.80	4.00	0.43	1.60	2.30
32017 X/DF	85	3.3465	130	5.1181	58	2.2835	238 000	53 500	450 000	101 200	2 800	4 800	2.80	6.20	0.44	1.50	2.30
32018 X/DF	90	3.5433	140	5.5118	64	2.5197	292 000	65 600	540 000	121 400	2 600	4 300	3.65	8.00	0.43	1.60	2.30
32020 X/DF	100	3.9370	150	5.9055	64	2.5197	292 000	65 600	560 000	125 900	2 400	4 000	3.95	8.70	0.46	1.50	2.20
32022 X/DF	110	4.3307	170	6.6929	76	2.9921	402 000	90 400	780 000	175 300	2 200	3 600	6.30	13.90	0.43	1.60	2.30
32024 X/DF	120	4.7244	180	7.0866	76	2.9921	418 000	94 000	830 000	186 600	2 000	3 400	6.75	14.90	0.46	1.50	2.20
32026 X/DF	130	5.1181	200	7.8740	90	3.5433	539 000	121 200	1 080 000	242 800	1 800	3 000	10.00	22.00	0.43	1.60	2.30
32028 X/DF	140	5.5118	210	8.2677	90	3.5433	561 000	126 100	1 160 000	260 800	1 700	2 800	11.00	24.30	0.46	1.50	2.20
32030 X/DF	150	5.9055	225	8.8583	96	3.7795	644 000	144 800	1 320 000	296 700	1 600	2 600	13.50	29.80	0.46	1.50	2.20
32032 X/DF	160	6.2992	240	9.4488	102	4.0157	737 000	165 700	1 560 000	350 700	1 500	2 400	16.00	35.30	0.46	1.50	2.20
32034 X/DF	170	6.6929	260	10.2362	114	4.4882	880 000	197 800	1 830 000	411 400	1 400	2 200	22.00	48.50	0.44	1.50	2.30
32036 X/DF	180	7.0866	280	8.6614	128	5.0394	1 100 000	247 300	2 320 000	521 500	1 300	2 000	29.50	65.00	0.43	1.60	2.30
32038 X/DF	190	7.4803	290	11.4173	128	5.0394	1 120 000	251 800	2 400 000	539 500	1 200	2 000	30.50	67.20	0.44	1.50	2.30
32040 X/DF	200	7.8740	310	12.2047	140	5.5118	1 280 000	287 700	2 750 000	618 200	1 100	1 900	39.00	86.00	0.43	1.60	2.30
32044 X/DF	220	8.6614	340	13.3858	152	5.9843	1 540 000	346 200	3 350 000	753 100	1 000	1 700	51.00	112.40	0.43	1.60	2.30
32048 X/DF	240	9.4488	360	14.1732	152	5.9843	1 570 000	352 900	3 550 000	798 000	950	1 600	54.50	120.20	0.46	1.50	2.20
32056 X/DF	280	11.0236	420	16.5354	174	6.8504	2 050 000	460 800	4 750 000	1 067 800	800	1 300	84.50	186.30	0.46	1.50	2.20
32064 X/DF	320	12.5984	480	18.8976	200	7.8740	2 640 000	593 500	6 200 000	1 393 800	700	1 100	125.00	275.60	0.46	1.50	2.20

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.

Taper roller bearings

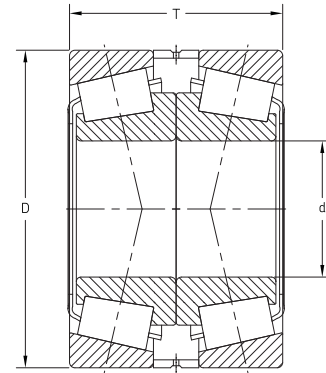
Paired single row

Standard

Series: 32216/DF — 32252/DF

Size: 80 mm — 260 mm

3.1496 in — 10.2362 in



Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Calculation factors		
	Bore d		Outside diameter D		Width T		Dynamic C		Static C ₀		Reference speed	Limiting speed	kg	lb	e	Y ₁	Y ₂
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min					
32216/DF	80	3.1496	140	5.5118	70.5	2.7756	319 000	71 700	490 000	110 200	2 800	4 500	4.25	9.40	0.43	1.60	2.30
32217/DF	85	3.3465	150	5.9055	77	3.0315	369 000	83 000	570 000	128 100	2 600	4 300	5.45	12.00	0.43	1.60	2.30
32218/DF	90	3.5433	160	6.2992	85	3.3465	429 000	96 400	680 000	152 900	2 400	4 000	6.90	15.20	0.43	1.60	2.30
32219/DF	95	3.7402	170	6.6929	91	3.5827	484 000	108 800	780 000	175 300	2 200	3 800	8.45	18.60	0.43	1.60	2.30
32220/DF	100	3.9370	180	7.0866	98	3.8583	539 000	121 200	880 000	197 800	2 200	3 600	10.00	22.00	0.43	1.60	2.30
32222/DF	110	4.3307	200	7.8740	112	4.4094	682 000	153 300	1 140 000	256 300	1 900	3 200	14.50	32.00	0.43	1.60	2.30
32224/DF	120	4.7244	215	8.4646	123	4.8425	792 000	178 000	1 400 000	314 700	1 800	3 000	18.50	40.80	0.43	1.60	2.30
32226/DF	130	5.1181	230	9.0551	135.5	5.3346	952 000	214 000	1 660 000	373 200	1 600	2 800	23.00	50.70	0.43	1.60	2.30
32228/DF	140	5.5118	250	9.8425	143.5	5.6496	1 100 000	247 300	2 000 000	449 600	1 500	2 600	29.50	65.00	0.43	1.60	2.30
32230/DF	150	5.9055	270	10.6299	154	6.0630	1 250 000	281 000	2 280 000	512 500	1 400	2 400	37.00	81.60	0.43	1.60	2.30
32232/DF	160	6.2992	290	11.4173	168	6.6142	1 510 000	339 400	2 800 000	629 400	1 300	2 200	48.00	105.80	0.43	1.60	2.30
32234/DF	170	6.6929	310	12.2047	182	7.1654	1 720 000	386 700	3 250 000	730 600	1 200	2 000	59.00	130.10	0.43	1.60	2.30
32236/DF	180	7.0866	320	12.5984	182	7.1654	1 720 000	386 700	3 250 000	730 600	1 100	1 900	61.00	134.50	0.46	1.50	2.20
32244/DF	220	8.6614	400	15.7480	228	8.9764	2 750 000	618 200	5 400 000	1 214 000	900	1 600	120.00	264.60	0.43	1.60	2.30
32248/DF	240	9.4488	440	17.3228	254	10.0000	3 300 000	741 800	6 550 000	1 472 400	800	1 500	159.20	351.00	0.43	1.60	2.30
32252/DF	260	10.2362	480	18.8976	274	10.7874	3 740 000	840 800	7 350 000	1 652 300	750	1 300	221.90	489.20	0.43	1.60	2.30

Warning: The new reference and limiting speeds are not to be used as a direct substitution for the previous oil and grease speed ratings. See page 7 for details. Consult SKF USA Inc. prior to design change or order placement.