CARB®
Toroidal roller bearings

C2222 KV TN9 / C3

1 2 3 4

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

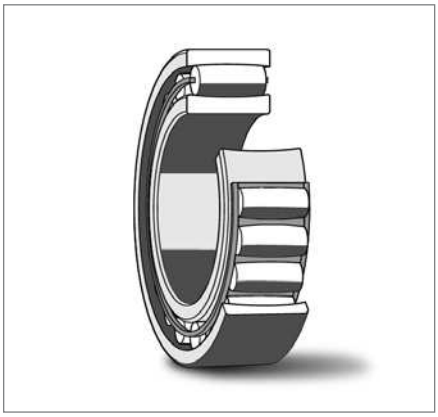
4. Clearance & features:

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
VE240	Bearing modified for greater axial displacement
2CS5	Two synthetic rubber seals with Kluber grease
VG114	Hardened steel cage
VQ424	Closer tolerances than C08
GEM9	70% - 100% fill of SKF grease LGHB 2

*Not marked on bearing or package

Technical features

Boundary dimensions	In accordance with ISO 15
Tolerances	In accordance with ISO 492 SKF CARB® bearings up to 300 mm bore diameter are produced to higher precision than ISO Normal tolerances; the width tolerance is 50% better than the ISO Normal tolerance. The running accuracy is to tolerance class P5 as standard. For larger bearings (>300mm), P5 tolerances are also available with the suffix C08 or even closer tolerances are available with the suffix VQ424.
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, MB, MBI)
Axial load – max	None
Seals	2CS5 – 2 synthetic rubber (HNBR) seals with SKF high temperature grease (70-100% fill) LGHB 2 (GEM9)



CARB bearing
(data tables on page 192)

Introduction

The CARB toroidal roller bearing can support very heavy radial loads. It is intended exclusively as a non-locating bearing and as such is ideal with its combination of self-aligning and axial alignment properties, to open 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 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

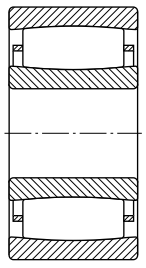
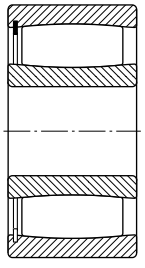


Figure 2



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 straight 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**).

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 straight and stepped shafts. They are simple to mount and require no additional fixation on the shaft.

On straight 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 (**Figure 6**).

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 nut to prevent the nut 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 an hydraulic nut (**Figure 6**) or adapter sleeves for oil injection mounting. For details, please reference the SKF Bearing Installation and Maintenance Guide (140-710).

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 straight 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 3

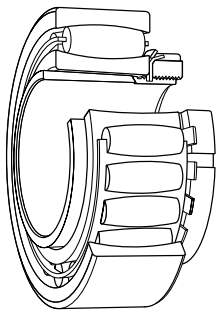


Figure 7

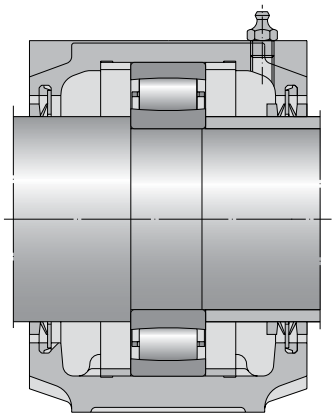


Figure 4

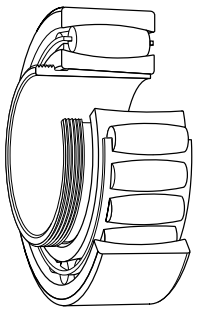


Figure 5

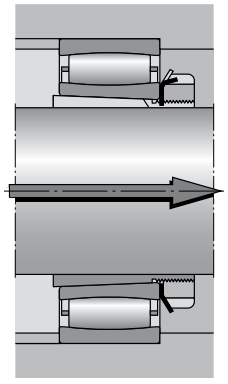
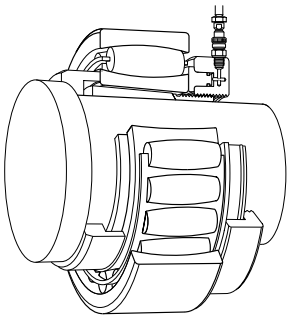


Figure 6



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 why the clearance for a CARB is larger than a comparably sized spherical roller bearing having the same clearance class.

Axial displacement

The permissible axial displacement of the CARB inner ring 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 191. In fact, the bearing rings can be further displaced with respect to each other, even into the gray region, without any effect on bearing life. Bearing friction, however, will be increased by up to 50% as a result.

The axial displacement, "s", guideline values given 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		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**	15	30	25	40	35	55	50	65	65	85
24	**30**	15	35	30	50	45	60	60	80	75	95
30	**40**	20	40	35	55	55	75	70	95	90	120
40	**50**	25	45	45	65	65	85	85	110	105	140
50	**65**	30	55	50	80	75	105	100	140	135	175
65	**80**	40	70	65	100	95	125	120	165	160	210
80	**100**	50	85	80	120	120	160	155	210	205	260
100	**120**	60	100	100	145	140	190	185	245	240	310
120	**140**	75	120	115	170	165	215	215	280	280	350
140	**160**	85	140	135	195	195	250	250	325	320	400
160	**180**	95	155	150	220	215	280	280	365	360	450
180	**200**	105	175	170	240	235	310	305	395	390	495
200	**225**	115	190	185	265	260	340	335	435	430	545
225	**250**	125	205	200	285	280	370	365	480	475	605
250	**280**	135	225	220	310	305	410	405	520	515	655
280	**315**	150	240	235	330	330	435	430	570	570	715
315	**355**	160	260	255	360	360	485	480	620	620	790
355	**400**	175	280	280	395	395	530	525	675	675	850
400	**450**	190	310	305	435	435	580	575	745	745	930
450	**500**	205	335	335	475	475	635	630	815	810	1 015
500	**560**	220	360	360	520	510	690	680	890	890	1 110
560	**630**	240	400	390	570	560	760	750	980	970	1 220
630	**710**	260	440	430	620	610	840	830	1 080	1 070	1 340
710	**800**	300	500	490	680	680	920	920	1 200	1 200	1 480
800	**900**	320	540	530	760	750	1 020	1 010	1 330	1 320	1 660
900	**1 000**	370	600	590	830	830	1 120	1 120	1 460	1 460	1 830
1 000	**1 120**	410	660	660	930	930	1 260	1 260	1 640	1 640	2 040
1 120	**1 250**	450	720	720	1 020	1 020	1 380	1 380	1 800	1 800	2 240
1 250	**1 400**	490	800	800	1 130	1 130	1 510	1 510	1 970	1 970	2 460
1 400	**1 600**	570	890	890	1 250	1 250	1 680	1 680	2 200	2 200	2 740
1 600	**1 800**	650	1 010	1 010	1 390	1 390	1 870	1 870	2 430	2 430	3 000

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 191.

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 visit the SKF website www.skf.com in the Interactive Engineering Catalog, or contact SKF Applications Engineering.

Table 2

Radial internal clearance of CARB bearings with tapered bore

Bore diameter d		Radial internal clearance									
		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**	15	35	30	45	40	55	55	70	65	85
24	**30**	20	40	35	55	50	65	65	85	80	100
30	**40**	25	50	45	65	60	80	80	100	100	125
40	**50**	30	55	50	75	70	95	90	120	115	145
50	**65**	40	65	60	90	85	115	110	150	145	185
65	**80**	50	80	75	110	105	140	135	180	175	220
80	**100**	60	100	95	135	130	175	170	220	215	275
100	**120**	75	115	115	155	155	205	200	255	255	325
120	**140**	90	135	135	180	180	235	230	295	290	365
140	**160**	100	155	155	215	210	270	265	340	335	415
160	**180**	115	175	170	240	235	305	300	385	380	470
180	**200**	130	195	190	260	260	330	325	420	415	520
200	**225**	140	215	210	290	285	365	360	460	460	575
225	**250**	160	235	235	315	315	405	400	515	510	635
250	**280**	170	260	255	345	340	445	440	560	555	695
280	**315**	195	285	280	380	375	485	480	620	615	765
315	**355**	220	320	315	420	415	545	540	680	675	850
355	**400**	250	350	350	475	470	600	595	755	755	920
400	**450**	280	385	380	525	525	655	650	835	835	1 005
450	**500**	305	435	435	575	575	735	730	915	910	1 115
500	**560**	330	480	470	640	630	810	800	1 010	1 000	1 230
560	**630**	380	530	530	710	700	890	880	1 110	1 110	1 350
630	**710**	420	590	590	780	770	990	980	1 230	1 230	1 490
710	**800**	480	680	670	860	860	1 100	1 100	1 380	1 380	1 660
800	**900**	520	740	730	960	950	1 220	1 210	1 530	1 520	1 860
900	**1 000**	580	820	810	1 040	1 040	1 340	1 340	1 670	1 670	2 050
1 000	**1 120**	640	900	890	1 170	1 160	1 500	1 490	1 880	1 870	2 280
1 120	**1 250**	700	980	970	1 280	1 270	1 640	1 630	2 060	2 050	2 500
1 250	**1 400**	770	1 080	1 080	1 410	1 410	1 790	1 780	2 250	2 250	2 740
1 400	**1 600**	870	1 200	1 200	1 550	1 550	1 990	1 990	2 500	2 500	3 050
1 600	**1 800**	950	1 320	1 320	1 690	1 690	2 180	2 180	2 730	2 730	3 310

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 Bearing Calculator 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

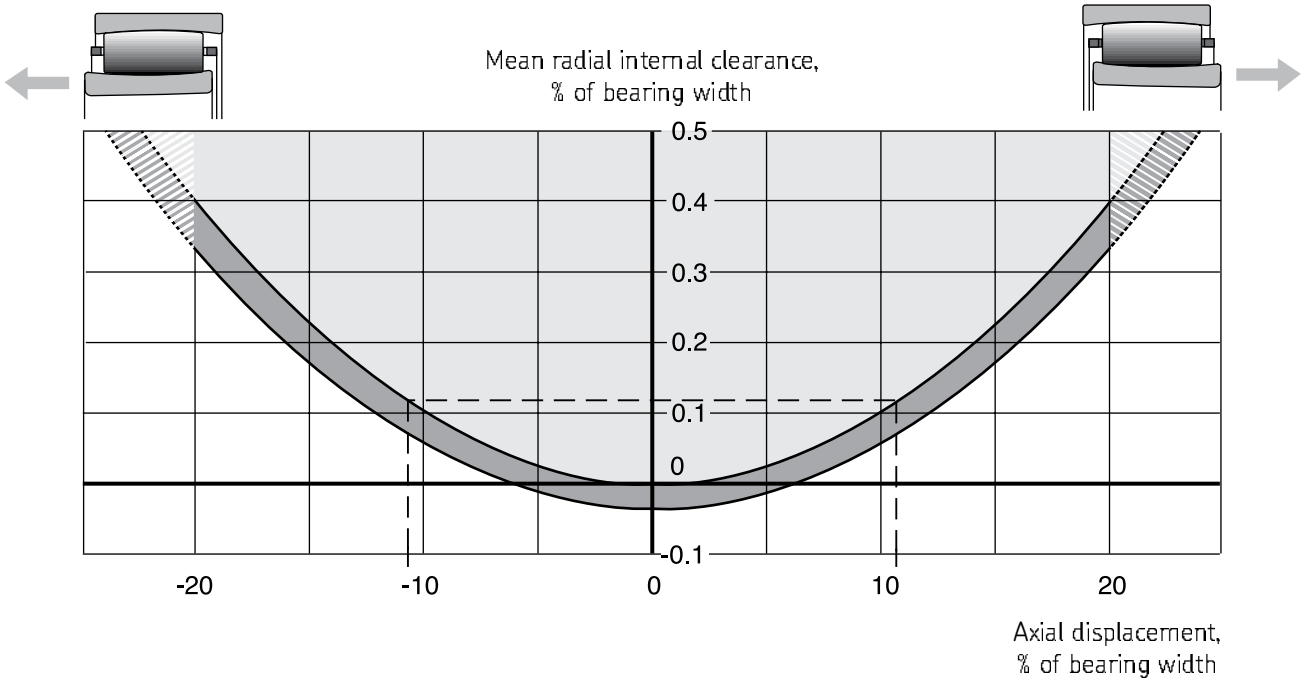
As the CARB can only accept radial loads

$P = F_r$

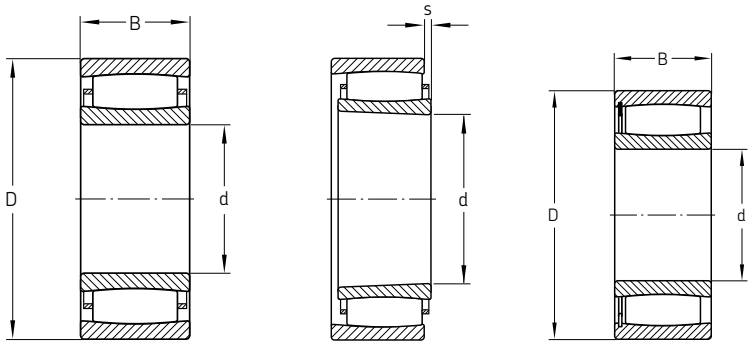
Frequency vibration data

Frequency vibration data is available on the SKF website, www.skf.com under Knowledge Centre/ Engineering tools and CAD, or by contacting SKF Applications Engineering.

Diagram 1



Single row
SKF Explorer
Series: C 2206 TN9 – C 2215 V
Size: 30 mm – 75 mm
1.181 in – 2.953 in



with cage

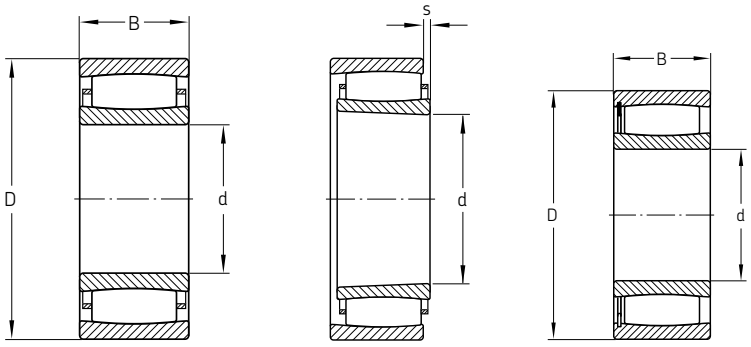
full complement
suffix V

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial Displacement +/- s[1]	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C_0		Reference speed	Limiting speed				
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	mm	in
C 2206 TN9	30	1.1811	62	2.4409	20	0.7874	69 500	15 620	62 000	13 930	11 000	15 000	0.28	0.62	4.5	0.177
C 2206 V	30	1.1811	62	2.4409	20	0.7874	76 500	17 190	71 000	15 960		6 000	0.29	0.64	4.5	0.177
C 2207 TN9	35	1.3780	72	2.8346	23	0.9055	83 000	18 650	80 000	17 980	9 500	13 000	0.44	0.97	5.7	0.224
C 2207 V	35	1.3780	72	2.8346	23	0.9055	95 000	21 350	96 000	21 570		5 300	0.46	1.01	5.7	0.224
C 2208 TN9	40	1.5748	80	3.1496	23	0.9055	90 000	20 220	86 500	19 440	8 000	11 000	0.51	1.12	7.1	0.280
C 2208 V	40	1.5748	80	3.1496	23	0.9055	102 000	22 920	104 000	23 370		4 500	0.53	1.17	7.1	0.280
C 2209 TN9	45	1.7717	85	3.3465	23	0.9055	93 000	20 900	93 000	20 900	7 500	11 000	0.56	1.23	7.1	0.280
C 2209 V	45	1.7717	85	3.3465	23	0.9055	106 000	23 820	110 000	24 720		4 300	0.58	1.28	7.1	0.280
C 2210 TN9	50	1.9685	90	3.5433	23	0.9055	98 000	22 020	100 000	22 470	7 000	9 500	0.60	1.32	7.1	0.280
C 2210 V	50	1.9685	90	3.5433	23	0.9055	114 000	25 620	122 000	27 420		3 800	0.63	1.39	7.1	0.280
C 2211 TN9	55	2.1654	100	3.9370	25	0.9843	116 000	26 070	114 000	25 620	6 300	9 000	0.80	1.76	8.6	0.339
C 2211 V	55	2.1654	100	3.9370	25	0.9843	132 000	29 660	134 000	30 110		3 400	0.82	1.81	8.6	0.339
C 2212 TN9	60	2.3622	110	4.3307	28	1.1024	143 000	32 130	156 000	35 060	5 600	7 500	1.10	2.43	8.5	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	2.54	8.5	0.335
C 2213 TN9	65	2.5591	120	4.7244	31	1.2205	180 000	40 450	180 000	40 450	5 300	7 500	1.45	3.20	9.6	0.378
C 2213 V	65	2.5591	120	4.7244	31	1.2205	204 000	45 840	216 000	48 540		2 400	1.50	3.31	9.6	0.378
C 2214 TN9	70	2.7559	125	4.9213	31	1.2205	186 000	41 800	196 000	44 040	5 000	7 000	1.50	3.31	9.6	0.378
C 2214 V	70	2.7559	125	4.9213	31	1.2205	212 000	47 640	228 000	51 200		2 400	1.55	3.42	9.6	0.378
C 2215	75	2.9528	130	5.1181	31	1.2205	196 000	44 040	208 000	46 740	4 800	6 700	1.60	3.53	9.6	0.378
C 2215 V	75	2.9528	130	5.1181	31	1.2205	220 000	49 440	240 000	53 900		2 200	1.65	3.64	9.6	0.378

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

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

Single row
SKF Explorer
Series: C 2216 – C 2320
Size: 80 mm – 100 mm
3.150 in – 3.937 in



with cage

full complement
suffix V

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial Displacement +/- s[1]	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C_0		Reference speed	Limiting speed				
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	mm	in
C 2216	80	3.1496	140	5.5118	33	1.2992	220 000	49 440	250 000	56 200	4 300	6 000	2.05	4.52	9.1	0.358
C 2216 V	80	3.1496	140	5.5118	33	1.2992	255 000	57 300	305 000	68 500		2 000	2.15	4.74	9.1	0.358
C 2217	85	3.3465	150	5.9055	36	1.4173	275 000	61 800	320 000	71 900	4 000	5 600	2.65	5.84	7.1	0.280
C 2218	90	3.5433	160	6.2992	40	1.5748	325 000	73 000	380 000	85 400	3 800	5 300	3.30	7.28	9.5	0.374
C 2220	100	3.9370	180	7.0866	46	1.8110	415 000	93 300	465 000	104 500	3 600	4 800	4.95	10.91	10.1	0.398
C 2222	110	4.3307	200	7.8740	53	2.0866	530 000	119 100	620 000	139 300	3 200	4 300	7.00	15.44	11.1	0.437
C 2226	130	5.1181	230	9.0551	64	2.5197	735 000	165 200	930 000	209 000	2 800	3 800	11.50	25.36	9.6	0.378
C 2228	140	5.5118	250	9.8425	68	2.6772	830 000	186 500	1 060 000	238 200	2 400	3 200	14.00	30.87	13.7	0.539
C 2230	150	5.9055	270	10.6299	73	2.8740	980 000	220 200	1 220 000	274 200	2 400	3 200	18.00	39.69	11.2	0.441
C 2234	170	6.6929	310	12.2047	86	3.3858	1 270 000	285 400	1 630 000	366 300	1 900	2 600	28.00	61.74	16.4	0.646
C 2238	190	7.4803	340	13.3858	92	3.6220	1 370 000	307 900	1 730 000	388 800	1 800	2 400	34.50	76.07	22.5	0.886
C 2244	220	8.6614	400	15.7480	108	4.2520	2 000 000	449 400	2 500 000	561 800	1 500	2 000	57.50	126.79	20.5	0.807
C 2314	70	2.7559	150	5.9055	51	2.0079	405 000	91 000	430 000	96 600	3 800	5 000	4.30	9.48	9.1	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	5.30	11.69	13.1	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	6.30	13.89	10.1	0.398
C 2317	85	3.3465	180	7.0866	60	2.3622	540 000	121 300	600 000	134 800	3 200	4 300	7.40	16.32	12.1	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	8.65	19.07	9.6	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	22.05	12.6	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	27.56	11.0	0.433

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

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

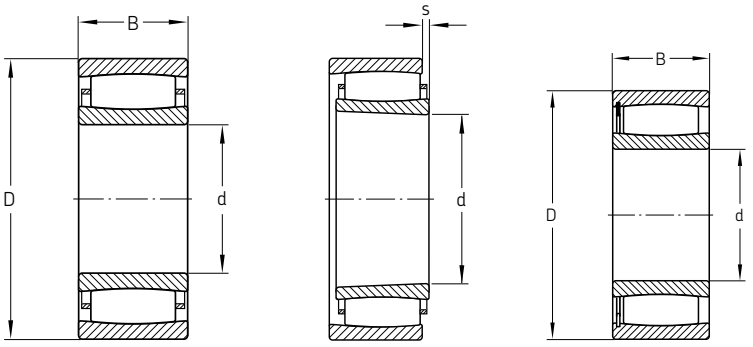
Single row

SKF Explorer

Series: C 3024 V – C 30/1000 MB

Size: 120 mm – 1000 mm

4.724 in – 39.370 in



with cage

full complement suffix V

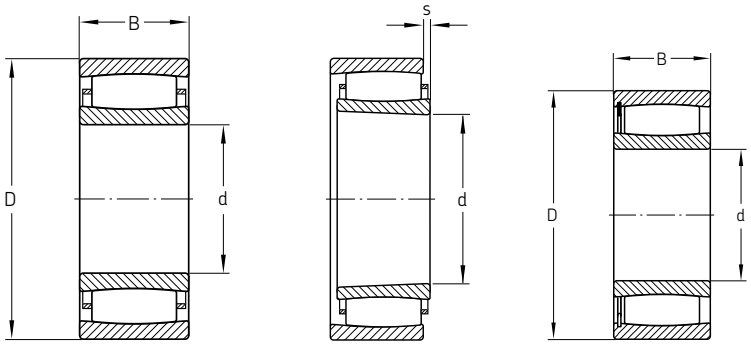
Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial Displacement +/- s[1]	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C_0		Reference speed	Limiting speed				
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	mm	in
C 3024 V	120	4.7244	180	7.0866	46	1.8110	430 000	96 600	640 000	143 800	–	1 400	4.10	9.04	10.6	0.417
C 3030 MB	150	5.9055	225	8.8583	56	2.2047	540 000	121 300	850 000	191 000	2 400	3 200	8.45	18.63	8.7	0.343
C 3030 V	150	5.9055	225	8.8583	56	2.2047	585 000	131 500	960 000	215 700	–	1 000	8.00	17.64	14.1	0.555
C 3034 M	170	6.6929	260	10.2362	67	2.6378	750 000	168 500	1 080 000	242 700	2 200	2 800	12.40	27.34	19.0	0.748
C 3036	180	7.0866	280	11.0236	74	2.9134	880 000	197 800	1 340 000	301 100	2 000	2 600	17.00	37.49	15.1	0.594
C 3038	190	7.4803	290	11.4173	75	2.9528	930 000	209 000	1 460 000	328 100	1 800	2 400	17.50	38.59	16.1	0.634
C 3040	200	7.8740	310	12.2047	82	3.2283	1 120 000	251 700	1 730 000	388 800	1 700	2 400	22.50	49.61	15.2	0.598
C 3044	220	8.6614	340	13.3858	90	3.5433	1 320 000	296 600	2 040 000	458 400	1 600	2 200	29.50	65.05	17.2	0.677
C 3048	240	9.4488	360	14.1732	92	3.6220	1 340 000	301 100	2 160 000	485 400	1 500	2 000	32.00	70.56	19.2	0.756
C 3052	260	10.2362	400	15.7480	104	4.0945	1 760 000	395 500	2 850 000	640 400	1 300	1 800	47.00	103.64	19.3	0.760
C 3056	280	11.0236	420	16.5354	106	4.1732	1 860 000	418 000	3 100 000	696 600	1 200	1 600	50.50	111.35	21.3	0.839
C 3060 M	300	11.8110	460	18.1102	118	4.6457	2 160 000	485 400	3 750 000	842 700	1 100	1 500	72.00	158.76	20.0	0.787
C 3064 M	320	12.5984	480	18.8976	121	4.7638	2 280 000	512 400	4 000 000	898 900	1 000	1 400	78.00	171.99	23.3	0.917
C 3068 M	340	13.3858	520	20.4724	133	5.2362	2 900 000	651 700	5 000 000	1 123 600	950	1 300	100.00	220.50	25.0	0.984
C 3072 M	360	14.1732	540	21.2598	134	5.2756	2 900 000	651 700	5 000 000	1 123 600	900	1 300	106.00	233.73	26.4	1.039
C 3076 M	380	14.9606	560	22.0472	135	5.3150	3 000 000	674 200	5 200 000	1 168 500	900	1 200	110.00	242.55	27.0	1.063
C 3080 M	400	15.7480	600	23.6220	148	5.8268	3 650 000	820 200	6 200 000	1 393 300	800	1 100	145.00	319.73	30.6	1.205
C 3084 M	420	16.5354	620	24.4094	150	5.9055	3 800 000	853 900	6 400 000	1 438 200	800	1 100	150.00	330.75	32.6	1.283
C 3088 MB	440	17.3228	650	25.5906	157	6.1811	3 750 000	842 700	6 400 000	1 438 200	750	1 000	190.00	418.95	24.6	0.969
C 3092 M	460	18.1102	680	26.7717	163	6.4173	4 000 000	898 900	7 500 000	1 685 400	700	950	205.00	452.03	33.5	1.319
C 3096 M	480	18.8976	700	27.5591	165	6.4961	4 050 000	910 100	7 800 000	1 752 800	670	900	215.00	474.08	35.5	1.398
C 30/500 M	500	19.6850	720	28.3465	167	6.5748	4 250 000	955 100	8 300 000	1 865 200	630	900	225.00	496.13	37.5	1.476
C 30/530 M	530	20.8661	780	30.7087	185	7.2835	5 100 000	1 146 100	9 500 000	2 134 800	600	800	300.00	661.50	35.7	1.406
C 30/560 M	560	22.0472	820	32.2835	195	7.6772	5 600 000	1 258 400	11 000 000	2 471 900	530	750	350.00	771.75	45.7	1.799
C 30/600 M	600	23.6220	870	34.2520	200	7.8740	6 300 000	1 415 700	12 200 000	2 741 600	500	700	395.00	870.98	35.9	1.413
C 30/630 M	630	24.8031	920	36.2205	212	8.3465	6 800 000	1 528 100	12 900 000	2 898 900	480	670	470.00	1036.35	48.1	1.894
C 30/670 M	670	26.3780	980	38.5827	230	9.0551	8 150 000	1 831 500	16 300 000	3 662 900	430	600	590.00	1300.95	41.1	1.618
C 30/710 M	710	27.9528	1 030	40.5512	236	9.2913	8 800 000	1 977 500	17 300 000	3 887 600	400	560	655.00	1444.28	47.3	1.862
C 30/750 MB	750	29.5276	1 090	42.9134	250	9.8425	9 500 000	2 134 800	19 300 000	4 337 100	380	530	838.00	1847.79	28.6	1.126
C 30/800 MB	800	31.4961	1 150	45.2756	258	10.1575	9 300 000	2 089 900	19 300 000	4 337 100	360	480	941.00	2074.91	45.9	1.807
C 30/850 MB	850	33.4646	1 220	48.0315	272	10.7087	11 600 000	2 606 700	24 500 000	5 505 600	320	450	1 105	2436.53	24.0	0.945
C 30/900 MB	900	35.4331	1 280	50.3937	280	11.0236	12 700 000	2 853 900	26 500 000	5 955 100	300	400	1 200	2646.00	24.8	0.976
C 30/950 MB	950	37.4016	1 360	53.5433	300	11.8110	13 200 000	2 966 300	28 500 000	6 404 500	280	380	1 475	3252.38	37.8	1.488
C 30/1000 MB	1 000	39.3701	1 420	55.9055	308	12.1260	13 700 000	3 078 700	30 500 000	6 853 900	260	360	1 680	3704.40	44.9	1.768

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

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

Single row
SKF Explorer
Series: C 3120 V – C 30/1000 MB
Size: 100 mm – 1000 mm
3.937 in – 39.370 in

Series: C 3224 – C 3236
Size: 120 mm – 180 mm
4.724 in – 7.087 in



with cage

full complement
suffix V

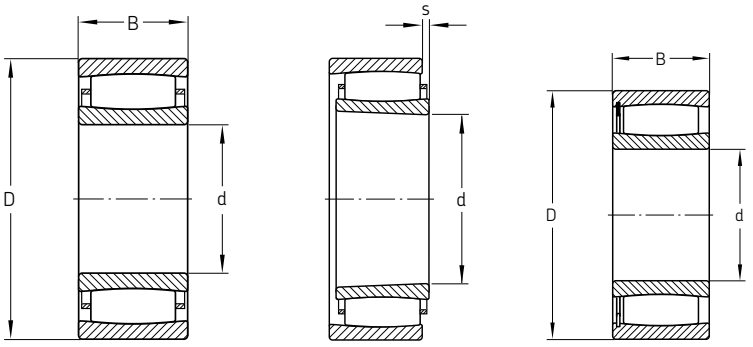
Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial Displacement +/- s[1]	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C_0		Reference speed	Limiting speed				
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	mm	in
C 3120 V	100	3.9370	165	6.4961	52	2.0472	475 000	106 700	655 000	147 200	–	1 300	4.50	9.81	10.1	0.398
C 3130	150	5.9055	250	9.8425	80	3.1496	880 000	197 800	1 290 000	289 900	2 000	2 800	15.50	34.18	13.9	0.547
C 3132	160	6.2992	270	10.6299	86	3.3858	1 000 000	224 700	1 400 000	314 600	1 900	2 600	21.50	47.41	10.3	0.406
C 3136	180	7.0866	300	11.8110	96	3.7795	1 250 000	280 900	1 730 000	388 800	1 700	2 400	26.50	58.43	23.2	0.913
C 3138 V	190	7.4803	320	12.5984	104	4.0945	1 700 000	382 000	2 550 000	573 000	–	190	34.00	74.97	19.0	0.748
C 3140	200	7.8740	340	13.3858	112	4.4094	1 600 000	359 600	2 320 000	521 300	1 500	2 000	41.00	90.41	27.3	1.075
C 3144	220	8.6614	370	14.5669	120	4.7244	1 900 000	427 000	2 900 000	651 700	1 400	1 800	52.00	114.66	22.3	0.878
C 3148	240	9.4488	400	15.7480	128	5.0394	2 320 000	521 300	3 450 000	775 300	1 300	1 700	64.00	141.12	20.4	0.803
C 3152	260	10.2362	440	17.3228	144	5.6693	2 650 000	595 500	4 050 000	910 100	1 100	1 500	88.00	194.04	26.4	1.039
C 3156	280	11.0236	460	18.1102	146	5.7480	2 850 000	640 400	4 500 000	1 011 200	1 100	1 400	94.50	208.37	28.4	1.118
C 3160	300	11.8110	500	19.6850	160	6.2992	3 250 000	730 300	5 200 000	1 168 500	950	1 300	125.00	275.63	30.5	1.201
C 3164 M	320	12.5984	540	21.2598	176	6.9291	4 150 000	932 600	6 300 000	1 415 700	900	1 300	164.00	361.62	26.7	1.051
C 3168 M	340	13.3858	580	22.8346	190	7.4803	4 900 000	1 101 100	7 500 000	1 685 400	850	1 100	205.00	452.03	25.9	1.020
C 3172 M	360	14.1732	600	23.6220	192	7.5591	5 000 000	1 123 600	8 000 000	1 797 800	800	1 100	220.00	485.10	27.9	1.098
C 3176 MB	380	14.9606	620	24.4094	194	7.6378	4 400 000	988 800	7 200 000	1 618 000	750	1 000	243.00	535.82	25.4	1.000
C 3180 M	400	15.7480	650	25.5906	200	7.8740	4 800 000	1 078 700	8 300 000	1 865 200	700	950	258.00	568.89	50.7	1.996
C 3184 M	420	16.5354	700	27.5591	224	8.8189	6 000 000	1 348 300	10 400 000	2 337 100	670	900	355.00	782.78	34.8	1.370
C 3188 MB	440	17.3228	720	28.3465	226	8.8976	6 700 000	1 505 600	11 400 000	2 561 800	630	850	385.00	848.93	16.0	0.630
C 3192 M	460	18.1102	760	29.9213	240	9.4488	6 800 000	1 528 100	12 000 000	2 696 600	600	800	435.00	959.18	51.0	2.008
C 3196 MB	480	18.8976	790	31.1024	248	9.7638	6 950 000	1 561 800	12 500 000	2 809 000	560	750	523.00	1153.22	35.1	1.382
C 31/500 M	500	19.6850	830	32.6772	264	10.3937	7 500 000	1 685 400	12 700 000	2 853 900	530	750	560.00	1234.80	75.3	2.965
C 31/530 M	530	20.8661	870	34.2520	272	10.7087	8 800 000	1 977 500	15 600 000	3 505 600	500	670	636.00	1402.38	44.4	1.748
C 31/600 MB	600	23.6220	980	38.5827	300	11.8110	10 200 000	2 292 100	18 000 000	4 044 900	430	600	929.00	2048.45	26.1	1.028
C 31/630 MB	630	24.8031	1 030	40.5512	315	12.4016	11 800 000	2 651 700	20 800 000	4 674 200	400	560	1 089	2401.25	23.8	0.937
C 31/670 MB	670	26.3780	1 090	42.9134	336	13.2283	11 800 000	2 651 700	21 200 000	4 764 000	380	500	1 300	2866.50	41.0	1.614
C 31/710 MB	710	27.9528	1 150	45.2756	345	13.5827	13 400 000	3 011 200	25 500 000	5 730 300	340	480	1 470	3241.35	47.8	1.882
C 31/750 MB	750	29.5276	1 220	48.0315	365	14.3701	16 000 000	3 595 500	30 500 000	6 853 900	320	450	1 802	3973.41	33.0	1.299
C 31/1000 MB	1 000	39.3701	1 580	62.2047	462	18.1890	20 400 000	4 584 300	45 500 000	10 224 700	220	300	3 800	8379.00	70.1	2.760
C 3224	120	4.7244	215	8.4646	76	2.9921	750 000	168 500	980 000	220 200	2 400	3 200	12.00	26.46	17.1	0.673
C 3232	160	6.2992	290	11.4173	104	4.0945	1 370 000	307 900	1 830 000	411 200	1 800	2 400	29.50	65.05	19.3	0.760
C 3236	180	7.0866	320	12.5984	112	4.4094	1 530 000	343 800	2 200 000	494 400	1 500	2 000	38.00	83.79	27.3	1.075

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

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

Single row
SKF Explorer
Series: C 3972 M – C 39/1700 MB
Size: 360 mm – 1700 mm
14.173 in – 66.929 in

Series: C 4010 TN9 – C 40/710 M
Size: 50 mm – 710 mm
1.969 in – 27.953 in



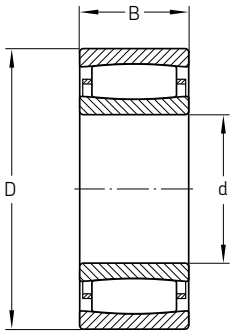
with cage

full complement
suffix V

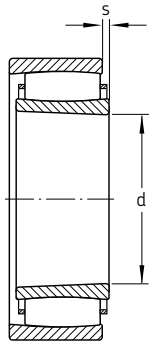
Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial Displacement +/- s[1]	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C_0		Reference speed	Limiting speed				
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	mm	in
C 3972 M	360	14.1732	480	18.8976	90	3.5433	1 760 000	395 500	3 250 000	730 300	1 000	1 400	45.00	99.23	17.2	0.677
C 3984 M	420	16.5354	560	22.0472	106	4.1732	2 160 000	485 400	4 250 000	955 100	850	1 200	72.00	158.76	21.3	0.839
C 3996 M	480	18.8976	650	25.5906	128	5.0394	3 100 000	696 600	6 100 000	1 370 800	750	1 000	120.00	264.6	20.4	0.803
C 39/500 M	500	19.6850	670	26.3780	128	5.0394	3 150 000	707 900	6 300 000	1 415 700	700	950	125.00	275.63	20.4	0.803
C 39/560 M	560	22.0472	750	29.5276	140	5.5118	3 600 000	809 000	7 350 000	1 651 700	600	850	175.00	385.88	32.4	1.276
C 39/630 M	630	24.8031	850	33.4646	165	6.4961	4 650 000	1 044 900	10 000 000	2 247 200	530	700	275.00	606.38	35.5	1.398
C 39/710 M	710	27.9528	950	37.4016	180	7.0866	6 000 000	1 348 300	12 500 000	2 809 000	450	630	360.00	793.8	30.7	1.209
C 39/750 M	750	29.5276	1 000	39.3701	185	7.2835	6 100 000	1 370 800	13 400 000	3 011 200	430	560	410.00	904.05	35.7	1.406
C 39/800 M	800	31.4961	1 060	41.7323	195	7.6772	6 400 000	1 438 200	14 600 000	3 280 900	380	530	480.00	1058.4	45.7	1.799
C 39/850 M	850	33.4646	1 120	44.0945	200	7.8740	7 350 000	1 651 700	16 300 000	3 662 900	360	480	540.00	1190.7	35.9	1.413
C 39/1060 MB	1 060	41.7323	1 400	55.1181	250	9.8425	11 000 000	2 471 900	26 000 000	5 842 700	260	360	1 119	2467.4	38.4	1.512
C 39/1180 MB	1 180	46.4567	1 540	60.6299	272	10.7087	13 400 000	3 011 200	33 500 000	7 528 100	220	300	1 400	3 087	19.6	0.772
C 39/1500 MB	1 500	59.0551	1 950	76.7717	335	13.1890	19 600 000	4 404 500	48 000 000	10 786 500	140	200	2 710	5975.55	35.0	1.378
C 39/1700 MB	1 700	66.9291	2 180	85.8268	355	13.9764	24 000 000	5 393 300	62 000 000	13 932 600	110	150	3 510	7739.55	40.6	1.598
C 4010 TN9	50	1.9685	80	3.1496	30	1.1811	116 000	26 070	140 000	31 460	5 600	7 500	0.55	1.21	6.0	0.236
C 4010 V	50	1.9685	80	3.1496	30	1.1811	137 000	30 790	176 000	39 550		3 000	0.58	1.28	6.0	0.236
C 4015 V	75	2.9528	115	4.5276	40	1.5748	208 000	46 740	345 000	77 500		2 000	1.60	3.53	9.4	0.370
C 4020 V	100	3.9370	150	5.9055	50	1.9685	355 000	79 800	530 000	119 100		1 400	3.05	6.73	14.0	0.551
C 4022 MB	110	4.3307	170	6.6929	60	2.3622	430 000	96 600	655 000	147 200	2 600	3 400	5.30	11.69	4.8	0.189
C 4022 V	110	4.3307	170	6.6929	60	2.3622	500 000	112 400	800 000	179 800		1 200	5.20	11.47	12.0	0.472
C 4024 V	120	4.7244	180	7.0866	60	2.3622	530 000	119 100	880 000	197 800		1 100	5.55	12.24	12.0	0.472
C 4024 V/VE240	120	4.7244	180	7.0866	60	2.3622	430 000	96 600	640 000	143 800		1 400	5.05	11.14	17.8	0.701
C 4026	130	5.1181	200	7.8740	69	2.7165	620 000	139 300	930 000	209 000	2 200	2 800	7.85	17.31	11.4	0.449
C 4026 V	130	5.1181	200	7.8740	69	2.7165	720 000	161 800	1 120 000	251 700		850	8.15	17.97	11.4	0.449
C 4028 V	140	5.5118	210	8.2677	69	2.7165	750 000	168 500	1 220 000	274 200		800	8.60	18.96	11.4	0.449
C 4030 V	150	5.9055	225	8.8583	75	2.9528	780 000	175 300	1 320 000	296 600		750	10.50	23.15	17.4	0.685
C 4032	160	6.2992	240	9.4488	80	3.1496	765 000	171 900	1 160 000	260 700	1 700	2 400	12.50	27.56	18.1	0.713
C 4032 V	160	6.2992	240	9.4488	80	3.1496	915 000	205 600	1 460 000	328 100		600	13.00	28.67	18.1	0.713
C 4034 V	170	6.6929	260	10.2362	90	3.5433	1 140 000	256 200	1 860 000	418 000		500	17.50	38.59	17.1	0.673
C 4036 V	180	7.0866	280	11.0236	100	3.9370	1 320 000	296 600	2 120 000	476 400		430	23.50	51.82	20.1	0.791
C 4040 V	200	7.8740	310	12.2047	109	4.2913	1 630 000	366 300	2 650 000	595 500		260	30.50	67.25	21.0	0.827
C 4044 V	220	8.6614	340	13.3858	118	4.6457	1 930 000	433 700	3 250 000	730 300		200	40.00	88.20	20.0	0.787
C 4060 M	300	11.8110	460	18.1102	160	6.2992	2 900 000	651 700	4 900 000	1 101 100	900	1 200	95.50	210.58	30.4	1.197
C 40/710 M	710	27.9528	1 030	40.5512	315	12.4016	10 600 000	2 382 000	21 600 000	4 853 900	320	430	865.00	1907.33	51.2	2.016

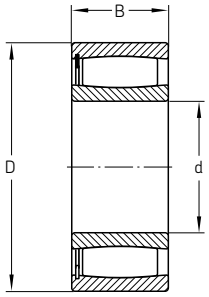
1) Permissible axial displacement from Normal position of one bearing ring in relation to the other.

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



with cage





full complement
suffix V

Single row
SKF Explorer
Series: C 4120 V/VE240 – C 41/670 MB
Size: 100 mm – 670 mm
3.937 in – 26.378 in

Series: C 4908 V – C 49/1120 MB1
Size: 40 mm – 1120 mm
1.575 in – 44.094 in

Series: C 5915 V – C 5918 V
Size: 75 mm – 90 mm
2.953 in – 3.543 in

Series: C 6909 V – C 6915 V/VE240
Size: 45 mm – 75 mm
1.772 in – 2.953 in

Designation	Principal dimensions						Basic load ratings				Speed rating		Mass		Axial Displacement +/- s[1]	
	Bore d		Outside diameter D		Width B		Dynamic C		Static C_0		Reference speed	Limiting speed				
	mm	in	mm	in	mm	in	N	lbf	N	lbf	r/min	r/min	kg	lb	mm	in
C 4120 V/VE240	100	3.9370	165	6.4961	65	2.5591	475 000	106 700	655 000	147 200		1 300	5.30	11.69	17.7	0.697
C 4122 V	110	4.3307	180	7.0866	69	2.7165	670 000	150 600	1 000 000	224 700		900	7.10	15.66	11.4	0.449
C 4124 V	120	4.7244	200	7.8740	80	3.1496	780 000	175 300	1 120 000	251 700		750	10.00	22.05	18.0	0.709
C 4128 V/VE240	140	5.5118	225	8.8583	85	3.3465	780 000	175 300	1 200 000	269 700		800	12.50	27.56	9.7	0.382
C 4130 V	150	5.9055	250	9.8425	100	3.9370	1 220 000	274 200	1 860 000	418 000		450	20.0	44.10	20.0	0.787
C 4136 V	180	7.0866	300	11.8110	118	4.6457	1 760 000	395 500	2 700 000	606 700		220	34.50	76.07	20.0	0.787
C 4188 MB	440	17.3228	720	28.3465	280	11.0236	7 500 000	1 685 400	12 900 000	2 898 900	500	670	471	1038.56	27.8	1.094
C 4192 MB	460	18.1102	760	29.9213	300	11.8110	8 650 000	1 943 800	15 000 000	3 370 800	480	630	571	1259.06	23.3	0.917
C 41/500 M	500	19.6850	830	32.6772	325	12.7953	9 800 000	2 202 200	17 600 000	3 955 100	430	560	710	1565.55	46.3	1.823
C 41/600 MB	600	23.6220	980	38.5827	375	14.7638	12 900 000	2 898 900	23 200 000	5 213 500	340	450	1 150	2535.75	24.6	0.969
C 41/670 MB	670	26.3780	1 090	42.9134	412	16.2205	16 000 000	3 595 500	29 000 000	6 516 900	300	400	1 570	3461.85	37.2	1.465
C 4908 V	40	1.5748	62	2.4409	22	0.8661	76 500	17 190	100 000	22 470		4 300	0.25	0.55	4.7	0.185
C 4910 V	50	1.9685	72	2.8346	22	0.8661	86 500	19 440	125 000	28 090		3 600	0.29	0.64	4.7	0.185
C 49/1120 MB1	1 120	44.0945	1 460	57.4803	335	13.1890	13 200 000	2 966 300	31 500 000	7 078 700	200	260	1 628	3589.74	76.1	2.996
C 5020 V	100	3.9370	150	5.9055	67	2.6378	510 000	114 600	865 000	194 400		1 100	4.30	9.48	9.3	0.366
C 5915 V	75	2.9528	105	4.1339	40	1.5748	204 000	45 840	325 000	73 000		1 900	1.10	2.43	9.4	0.370
C 5918 MB	90	3.5433	125	4.9213	46	1.8110	193 000	43 370	325 000	73 000	2 600	4 000	1.75	3.86	2.9	0.114
C 5918 V	90	3.5433	125	4.9213	46	1.8110	224 000	50 300	400 000	89 900		1 600	1.75	3.86	15.4	0.606
C 6006 V	30	1.1811	55	2.1654	45	1.7717	134 000	30 110	180 000	40 450		3 200	0.49	1.08	7.9	0.311
C 6909 V	45	1.7717	68	2.6772	40	1.5748	132 000	29 660	200 000	44 940		2 600	0.53	1.17	9.4	0.370
C 6910 V	50	1.9685	72	2.8346	40	1.5748	140 000	31 460	224 000	50 300		2 400	0.54	1.19	9.4	0.370
C 6911 V	55	2.1654	80	3.1496	45	1.7717	180 000	40 450	300 000	67 400		2 200	0.78	1.72	7.9	0.311
C 6912 V	60	2.3622	85	3.3465	45	1.7717	190 000	42 700	335 000	75 300		1 900	0.83	1.83	7.9	0.311
C 6915 V/VE240	75	2.9528	105	4.1339	54	2.1260	204 000	45 840	325 000	73 000		1 900	1.40	3.09	9.2	0.362

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

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Notes