

## Spherical Roller Bearing

Spherical roller bearings have two rows of rollers. The outer raceway is a spherical surface, and the inner ring has two raceways inclining to an angle to the bearing axis. The bearing is capable of self-alignment, therefore, is not easy to be affected by the misalignment of shaft and housing, or the deflection of the shaft. Spherical roller bearing can not only take very high radial load, but also can take double axial direction load.

Applications of Spherical roller bearings: paper manufacturing machinery, reduction gears, railway locomotive axle, rolling mill gearbox, rolling mill rollers, crushers, vibration screens, printing machinery, woodworking machinery and various reducers.

The spherical roller bearings of C&U are equipped with symmetrical large diameter spherical balls (reinforced type), which can take extremely heavy load. Internal designs are varied with dimensions. C&U can provide C structure and CA structure spherical roller bearings.

The internal bores of spherical roller bearings include cylindrical bore and tapered bore. Tapered bore's tapering is 1:12 (suffix code is K), or 1:30 (suffix code is K30). C&U can provide spherical roller bearings whose inner diameter surfaces have cylindrical bore or tapered bore, and most of series of C&U spherical roller bearings have tapered bores with taper 1:12 (suffix code is K). Only the tapering of the spherical roller bearings of 24000 series and 24100 series is 1:30 (Suffix code is K30).

For the convenience of effective lubrication, the outer ring of spherical roller bearing has lubricating groove and oil hole. C&U can provide spherical roller bearings whose outer ring has lubricating groove and oil hole. The specification table does not include the dimensions and data of bearings with lubricating groove and oil hole. Please consult the technical center of C&U Group if necessary.

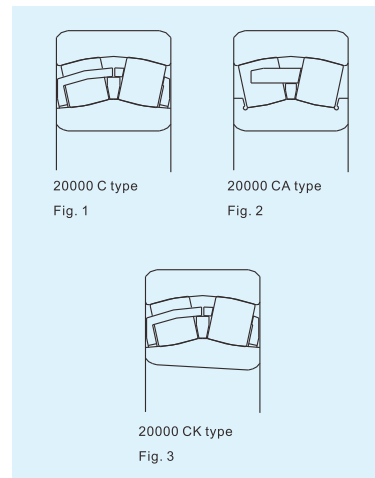
C&U can also provide spherical roller bearings with seals. There are various seal structures according to working conditions and the internal structures of spherical roller bearings. Please consult the technical center of C&U Group if necessary.

### 1. Structure

1. 20000 C (Fig. 1): inner ring without rib on both sides, movable spacer, symmetrical spherical rollers, 2 pressed cages, cylindrical bore surface;

2. 20000 CA (Fig. 2): inner ring with rib on both sides, symmetrical spherical rollers, 1 brass solid cage, cylindrical bore surface;

3. 20000 CK (Fig. 3): inner ring without rib on both sides, movable spacer, symmetrical spherical rollers, 2 pressed cages, inner bore with tapering, which is 1:12 (Suffix code is K);



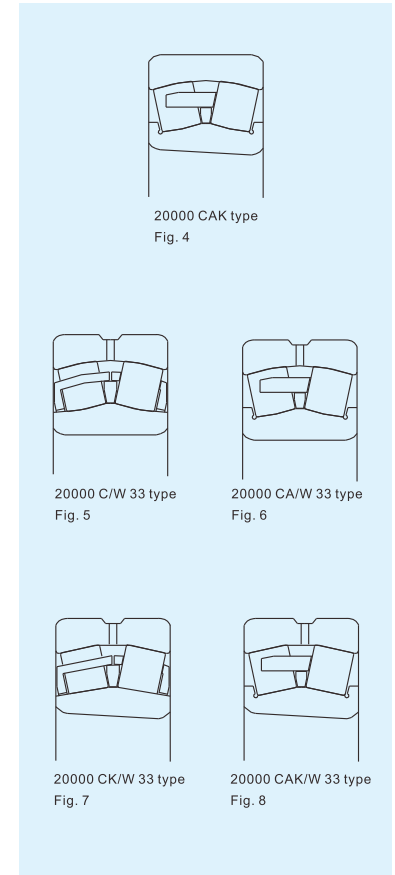
4. 20000 CAK (Fig. 4): inner ring without rib on both sides, movable spacer, symmetrical spherical rollers, one brass solid cage, inner bore with tapering, which is 1:12 (Suffix code is K) or 1:0 (Suffix code is K30);

5. 20000 C/W 33 (Fig. 5): inner ring without rib on both sides, movable spacer, symmetrical spherical rollers, two pressed cages, outer ring with lubricating groove and oil hole, cylindrical bore surface;

6. 20000 CA/W 33 (Fig. 6): inner ring with rib on both sides, symmetrical spherical rollers, one brass solid cage, outer ring with lubricating groove and oil hole, inner bore surface with tapering, which is 1:12 (Suffix code is K), or 1:30 (Suffix code is K30);

7. 20000 CK/W 33 (Fig. 7): inner ring without rib on both sides, movable spacer, symmetrical spherical rollers, 2 pressed cages, outer ring with lubricating groove and oil hole, inner bore surface with tapering, which is 1:12 (Suffix code is K);

8. 20000 CAK/W 33 (Fig. 8): inner ring with rib on both sides, symmetrical spherical rollers, a brass solid cage, outer ring with lubricating groove and oil hole, inner bore surface with tapering, which is 1:12 (Suffix code is K), or 1:30 (Suffix code is K30).



### 2. Dimensional accuracy & running accuracy

The tolerance of spherical roller bearings of C&U is standard and the dimension and running accuracy listed in Table 5.3 of Page 34 shall meet the customers needs, if different tolerance (including P<sub>0</sub>) required.

### 3. Radial clearance

C&U standard spherical roller bearings adopt normal clearance. To meet the requirements of difference working environments and mountings, C&U also provide large clearance, or C2 clearance which is smaller than normal clearance.

See the technical specification of Table 6.14 Page 64 for the radial clearance values of spherical roller bearings with cylindrical bores. See the technical specification of Table 6.15 Page 64 for the radial clearance values of spherical roller bearings with tapered bores. These data are the clearance value without load before the bearing mounted.

### 4. Cage

C type structure spherical roller bearings adopt pressed steel sheet cage. CA type structure spherical roller bearings adopt brass solid cage.

### 5. Allowable misalignment angle

The internal structure design of spherical roller bearings enable them the self-aligning function, which can make the bearings correct the angle misalignment between the inner and outer rings by themselves. In normal load and working conditions, the misalignment angle values given in Table 1 are permitted when the inner ring is running. Whether this given value can be reached also depends on the design of the bearing arrangement and seal type, etc.

Table 1

Bearing series	Allowable misalignment angle value
21300 Series	1°
22200 Series	1.5°
22300 Series	2°
23000 Series	1.5°
23100 Series	1.5°
23200 Series	2.5°
24000 Series	2°
24100 Series	2.5°

### 6. Dynamic equivalent load

When  $F_r/F_t \leq e$   $P = F_r + Y_1 F_a$

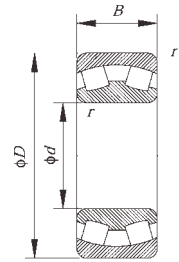
When  $F_r/F_t > e$   $P = 0.67F_r + Y_2 F_a$

The relevant calculating coefficient  $e$ ,  $Y_1$  and  $Y_2$  for each bearing can be found in the specification table.

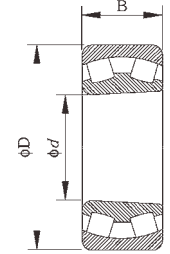
### 7. Static equivalent load

$P_0 = F_r + Y_0 F_a$

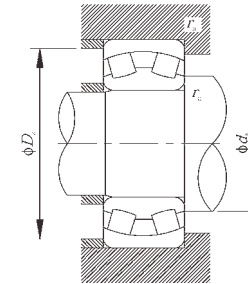
The coefficient value  $Y_0$  for each bearing has been given in the specification table.



Cylindrical bore 20000 types

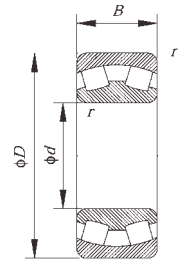


Tapered bore (1:12) 20000 K type

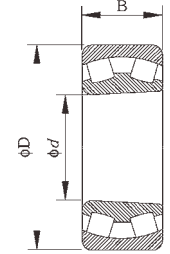


d 25~65 mm

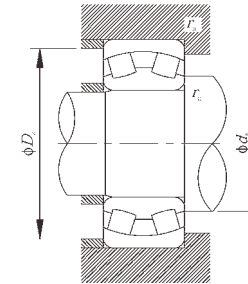
d	Boundary dimensions (mm)			Basic load ratings (kN)		Limiting speeds (r/min)		Nominal numbers		Nominal numbers (old)		Mounting dimensions (mm)			Reference mass (kg)	Calculating coefficient			
	D	B	r Min	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil	Cylindrical bore	Tapered bore	Cylindrical bore	Tapered bore	d <sub>s</sub> Min	D <sub>s</sub> Max	r <sub>s</sub> Max		e	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>
25	52	18	1.0	35.7	35.7	8,500	11,000	22205C	22205CK	53505	153505	31	46	1.0	0.18	0.35	1.9	2.9	1.8
30	62	20	1.0	48.9	52.0	7,500	9,500	22206C	22206CK	53506	153506	36	56	1.0	0.29	0.33	2	3	2
35	72	23	1.1	67.3	73.5	6,300	8,000	22207C	22207CK	53507	153507	42	65	1.0	0.43	0.31	2.2	3.3	2.2
40	80	23	1.1	73.6	81.5	6,000	7,500	22208C	22208CK	53508	153508	47	73	1.0	0.55	0.28	2.4	3.6	2.5
	90	23	1.5	82.8	98.0	4,500	5,600	21308CA	21308CAK	53308H	153308H	49	81	1.5	0.71	0.26	2.6	3.9	2.5
	90	33	1.5	115.0	122.0	4,500	5,600	22308C	22308CK	53608	153608	49	81	1.5	1.10	0.37	1.8	2.7	1.8
	90	33	1.5	115.0	122.0	4,500	5,600	22308CA	22308CAK	53608H	153608H	49	81	1.5	1.10	0.37	1.8	2.7	1.8
45	85	23	1.1	77.1	88.0	5,300	6,700	22209C	22209CK	53509	153509	52	78	1.0	0.59	0.26	2.6	3.9	2.5
	100	25	1.5	101.0	114.0	4,300	5,300	21309CA	21309CAK	53309H	153309H	54	91	1.5	0.95	0.26	2.6	3.9	2.5
	100	36	1.5	138.0	160.0	3,800	4,800	22309C	22309CK	53609	153609	54	91	1.5	1.40	0.37	1.8	2.7	1.8
	100	36	1.5	138.0	160.0	3,800	4,800	22309CA	22309CAK	53609H	153609H	54	91	1.5	1.40	0.37	1.8	2.7	1.8
50	90	23	1.1	84.5	100.0	5,000	6,300	22210C	22210CK	53510	153510	57	83	1.0	0.87	0.24	2.8	4.2	2.8
	110	27	2.0	120.0	140.0	3,600	4,800	21310CA	21310CAK	53310H	153310H	60	100	2.0	1.20	0.25	2.7	4	2.5
	110	40	2.0	176.0	200.0	3,400	4,300	22310C	22310CK	53610	153610	60	100	2.0	1.90	0.37	1.8	2.7	1.8
	110	40	2.0	176.0	200.0	3,400	4,300	22310CA	22310CAK	53610H	153610H	60	100	2.0	1.90	0.37	1.8	2.7	1.8
55	100	25	1.5	99.5	118.0	4,500	5,600	22211C	22211CK	53511	153511	64	91	1.5	0.88	0.24	2.8	4.2	2.8
	120	29	2.0	138.0	163.0	3,400	4,300	21311CA	21311CAK	53311H	153311H	65	110	2.0	1.60	0.25	2.7	4	2.5
	120	43	2.0	199.0	232.0	3,200	4,000	22311C	22311CK	53611	153611	65	110	2.0	2.40	0.35	1.9	2.9	1.8
	120	43	2.0	199.0	232.0	3,200	4,000	22311CA	22311CAK	53611H	153611H	65	110	2.0	2.40	0.35	1.9	2.9	1.8
60	110	28	1.5	122.0	146.0	4,000	5,000	22212C	22212CK	53512	153512	69	101	1.5	1.22	0.24	2.8	4.2	2.8
	130	31	2.1	161.0	200.0	3,000	3,800	21312CA	21312CAK	53312H	153312H	72	118	2.0	1.95	0.24	2.8	4.2	2.8
	130	46	2.1	235.0	280.0	3,000	3,800	22312C	22312CK	53612	153612	72	118	2.0	3.00	0.35	1.9	2.9	1.8
	130	46	2.1	235.0	280.0	3,000	3,800	22312CA	22312CAK	53612H	153612H	72	118	2.0	3.00	0.35	1.9	2.9	1.8
65	120	31	1.5	148.0	183.0	3,800	4,800	22213C	22213CK	53513	153513	74	111	1.5	1.63	0.24	2.8	4.2	2.8
	140	33	2.1	184.0	240.0	2,800	3,600	21313CA	21313CAK	53313H	153313H	77	128	2.0	2.45	0.24	2.8	4.2	2.8



Cylindrical bore 20000 types

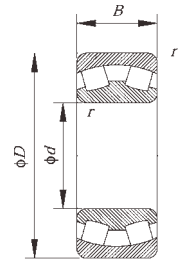


Tapered bore (1:12) 20000 K type

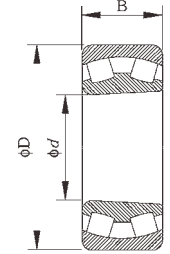


**d 65~95 mm**

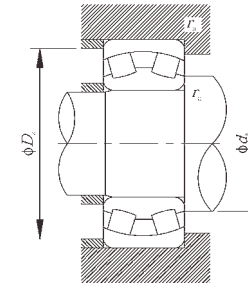
d	Boundary dimensions (mm)			Basic load ratings (kN)		Limiting speeds (r/min)		Nominal numbers		Nominal numbers (old)		Mounting dimensions (mm)			Reference mass (kg)	Calculating coefficient			
	D	B	r Min	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil	Cylindrical bore	Tapered bore	Cylindrical bore	Tapered bore	d <sub>s</sub> Min	D <sub>s</sub> Max	r <sub>s</sub> Max		e	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>
65	140	48	2.1	253.0	300.0	2,600	3,400	22313C	22313CK	53613	153613	77	128	2.0	3.60	0.35	1.9	2.9	1.8
	140	48	2.1	253.0	300.0	2,600	3,400	22313CA	22313CAK	53613H	153613H	77	128	2.0	3.60	0.35	1.9	2.9	1.8
70	125	31	1.5	148.0	186.0	3,600	4,500	22214C	22214CK	53514	153514	79	116	1.5	1.66	0.23	2.9	4.4	2.8
	150	35	2.1	207.0	260.0	2,600	3,400	21314CA	21314CAK	53314H	153314H	82	138	2.0	3.00	0.24	2.8	4.2	2.8
	150	51	2.1	311.0	380.0	2,400	3,200	22314C	22314CK	53614	153614	82	138	2.0	4.40	0.35	1.9	2.9	1.8
	150	51	2.1	311.0	380.0	2,400	3,200	22314CA	22314CAK	53614H	153614H	82	138	2.0	4.40	0.35	1.9	2.9	1.8
75	130	31	1.5	158.0	208.0	3,400	4,300	22215C	22215CK	53515	153515	84	121	1.5	1.75	0.22	3	4.6	2.8
	160	37	2.1	235.0	300.0	2,400	3,200	21315CA	21315CAK	53315H	153315H	87	148	2.0	3.55	0.23	2.9	4.4	2.8
	160	55	2.1	345.0	430.0	2,200	3,000	22315C	22315CK	53615	153615	87	148	2.0	5.40	0.35	1.9	2.9	1.8
	160	55	2.1	345.0	430.0	2,200	3,000	22315CA	22315CAK	53615H	153615H	87	148	2.0	5.40	0.35	1.9	2.9	1.8
80	140	33	2.0	176.0	228.0	3,200	4,000	22216C	22216CK	53516	153516	90	130	2.0	2.20	0.22	3	4.6	2.8
	170	39	2.1	258.0	335.0	2,200	3,000	21316CA	21316CAK	53316H	153316H	92	158	2.0	4.20	0.23	2.9	4.4	2.8
	170	58	2.1	374.0	455.0	2,000	2,800	22316C	22316CK	53616	153616	92	158	2.0	6.40	0.35	1.9	2.9	1.8
	170	58	2.1	374.0	455.0	2,000	2,800	22316CA	22316CAK	53616H	153616H	92	158	2.0	6.40	0.35	1.9	2.9	1.8
85	150	36	2.0	210.0	270.0	3,000	3,800	22217C	22217CK	53517	15317	95	140	2.0	2.80	0.22	3	4.6	2.8
	180	41	3.0	293.0	375.0	2,000	2,800	21317CA	21317CAK	53317H	153317H	99	166	2.5	5.00	0.23	2.9	4.4	2.8
	180	60	3.0	420.0	520.0	1,900	2,600	22317C	22317CK	53617	153617	99	166	2.5	7.40	0.33	2	3	2
	180	60	3.0	420.0	520.0	1,900	2,600	22317CA	22317CAK	53617H	153617H	99	166	2.5	7.40	0.33	2	3	2
90	160	40	2.0	253.0	340.0	2,600	3,400	22218C	22218CK	53518	153518	100	150	2.0	4.00	0.23	2.9	4.4	2.8
	160	52.4	2.0	311.0	440.0	1,900	2,600	23218C	23218CK	3053218	3153218	100	150	2.0	4.60	0.31	2.2	3.3	2.2
	190	43	3.0	322.0	425.0	1,900	2,600	21318CA	21318CAK	53318H	153318H	104	176	2.5	5.80	0.23	2.9	4.4	2.8
	190	64	3.0	477.0	610.0	1,800	2,400	22318C	22318CK	53618	153618	104	176	2.5	8.80	0.35	1.9	2.9	1.8
190	64	3.0	477.0	610.0	1,800	2,400	22318CA	22318CAK	53618H	153618H	104	176	2.5	8.80	0.35	1.9	2.9	1.8	
95	170	43	2.1	282.0	375.0	2,400	3,200	22219C	22219CK	53519	153519	107	158	2.0	4.20	0.24	2.8	4.2	2.8
	200	45	3.0	351.0	480.0	1,800	2,400	21319CA	21319CAK	53319H	153319H	109	186	2.5	7.15	0.23	2.9	4.4	2.8
	200	67	3.0	518.0	670.0	1,800	2,400	22319C	22319CK	53619	153619	109	186	2.5	10.30	0.35	1.9	2.9	1.8
	200	67	3.0	518.0	670.0	1,800	2,400	22319CA	22319CAK	53619H	153619H	109	186	2.5	10.30	0.35	1.9	2.9	1.8



Cylindrical bore 20000 types

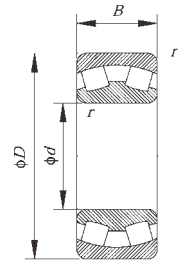


Tapered bore (1:12) 20000 K type

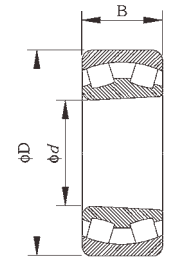


**d** 100~140 mm

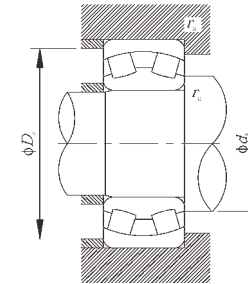
d	Boundary dimensions (mm)			Basic load ratings (kN)		Limiting speeds (r/min)		Nominal numbers		Nominal numbers (old)		Mounting dimensions (mm)			Reference mass (kg)	Calculating coefficient			
	D	B	r <sub>Min</sub>	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil	Cylindrical bore	Tapered bore	Cylindrical bore	Tapered bore	d <sub>s</sub> Min	D <sub>s</sub> Max	r <sub>s</sub> Max		e	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>
<b>100</b>	165	52	2.0	322.0	490.0	2,000	2,800	23120CA	23120CAK	3053720H	3153720H	110	155	2.0	4.40	0.30	2.3	3.4	2.2
	180	46	2.1	311.0	415.0	2,200	3,000	22220CA	22220CAK	53520H	153520H	112	168	2.0	5.00	0.24	2.8	4.2	2.8
	180	60.3	2.1	414.0	600.0	1,700	2,200	23220CA	23220CAK	3053220H	3153220H	112	168	2.0	6.70	0.33	2	3	2
	215	47	3.0	385.0	530.0	1,700	2,200	21320CA	21320CAK	53320H	153320H	114	201	2.5	8.80	0.22	3	4.6	2.8
	215	73	3.0	610.0	800.0	1,700	2,200	22320CA	22320CAK	53620H	153620H	114	201	2.5	13.0	0.35	1.9	2.9	1.8
<b>110</b>	170	45	2.0	267.0	440.0	2,200	3,000	23022CA	23022CAK	3053122H	3153122H	120	160	2.0	3.75	0.23	2.9	4.4	2.8
	180	56	2.0	374.0	585.0	1,900	2,600	23122CA	23122CAK	3053722H	3153722H	120	170	2.0	5.55	0.30	2.3	3.4	2.2
	180	69	2.0	460.0	750.0	1,000	1,400	24122CA	24122CAK30	4053722H	4453722H	120	170	2.0	6.85	0.37	1.8	2.7	1.8
	200	53	2.1	408.0	560.0	2,000	2,800	22222CA	22222CAK	53522H	153522H	122	188	2.0	7.40	0.25	2.7	4	2.5
	200	69.8	2.1	518.0	765.0	1,600	2,000	23222CA	23222CAK	3053222H	3153222H	122	188	2.0	9.70	0.33	2	3	2
	240	50	3.0	460.0	630.0	1,600	2,000	21322CA	21322CAK	53322H	153322H	124	226	2.5	12.00	0.21	3.2	4.8	3.2
	240	80	3.0	725.0	965.0	1,600	2,000	22322CA	22322CAK	53622H	153622H	124	226	2.5	18.10	0.35	1.9	2.9	1.8
<b>120</b>	180	46	2.0	305.0	510.0	2,000	2,800	23024CA	23024CAK	3053124H	3153124H	130	170	2.0	4.30	0.22	3	4.6	2.8
	180	60	2.0	374.0	670.0	1,600	2,000	24024CA	24024CAK30	4053124H	4453124H	130	170	2.0	5.40	0.30	2.3	3.4	2.2
	200	62	2.0	449.0	695.0	1,800	2,400	23124CA	23124CAK	3053724H	3153724H	130	190	2.0	7.80	0.28	2.4	3.6	2.5
	200	80	2.0	575.0	950.0	900	1,200	24124CA	24124CAK30	4053724H	4453724H	130	190	2.0	10.00	0.37	1.8	2.7	1.8
	215	58	2.1	466.0	670.0	1,900	2,600	22224CA	22224CAK	53524H	153524H	132	203	2.0	9.20	0.25	2.7	4	2.5
	215	76	2.1	610.0	930.0	1,500	1,900	23224CA	23224CAK	3053224H	3153224H	132	203	2.0	12.00	0.35	1.9	2.9	1.8
	260	86	3.0	845.0	1120.0	1,400	1,800	22324CA	22324CAK	53624H	153624H	134	246	2.5	22.00	0.35	1.9	2.9	1.8
<b>130</b>	200	52	2.0	374.0	610.0	1,900	2,600	23026CA	23026CAK	3053126H	3153126H	140	190	2.0	6.20	0.23	2.9	4.4	2.8
	200	69	2.0	477.0	815.0	1,500	1,900	24026CA	24026CAK30	4053126H	4453126H	140	190	2.0	7.95	0.31	2.2	3.3	2.2
	210	64	2.0	489.0	780.0	1,700	2,200	23126CA	23126CAK	3053726H	3153726H	140	200	2.0	8.55	0.28	2.4	3.6	2.5
	210	80	2.0	587.0	1000.0	900	1,200	24126CA	24126CAK	4053726H	4453726H	140	200	2.0	11.00	0.35	1.9	2.9	1.8
	230	64	3.0	546.0	800.0	1,800	2,400	22226CA	22226CAK30	53526H	153526H	144	216	2.5	11.20	0.26	2.6	3.9	2.5
	230	80	3.0	690.0	1060.0	1,300	1,700	23226CA	23226CAK	3053226H	3153226H	144	216	2.5	14.00	0.33	2	3	2
	280	93	4.0	978.0	1320.0	1,300	1,700	22326CA	22326CAK	53626H	153626H	148	262	3.0	29.00	0.35	1.9	2.9	1.8
<b>140</b>	210	53	2.0	397.0	680.0	1,800	2,400	23028CA	23028CAK	3053128H	3153128H	150	200	2.0	6.70	0.22	3	4.6	2.8



Cylindrical bore 20000 types

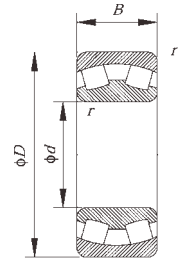


Tapered bore (1:12) 20000 K type

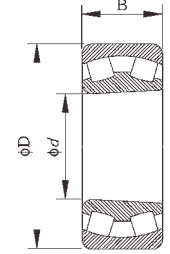


d 140~170 mm

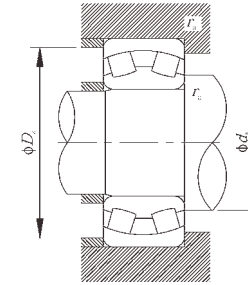
d	Boundary dimensions (mm)			Basic load ratings (kN)		Limiting speeds (r/min)		Nominal numbers		Nominal numbers (old)		Mounting dimensions (mm)			Reference mass (kg)	Calculating coefficient			
	D	B	r <sub>Min</sub>	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil	Cylindrical bore	Tapered bore	Cylindrical bore	Tapered bore	d <sub>s</sub> Min	D <sub>s</sub> Max	r <sub>s</sub> Max		e	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>
140	210	69	2.0	495.0	900.0	1,400	1,800	24028CA	24028CAK30	4053128H	4453128H	150	200	2.0	8.45	0.30	2.3	3.4	2.2
	225	68	2.1	546.0	900.0	1,600	2,000	23128CA	23128CAK	3053728H	3153728H	152	213	2.0	10.50	0.28	2.4	3.6	2.5
	225	85	2.1	673.0	1160.0	850	1,100	24128CA	24128CAK30	4053728H	4453728H	152	213	2.0	13.00	0.35	1.9	2.9	1.8
	250	68	3.0	610.0	900.0	1,700	2,200	22228CA	22228CAK	53528H	153528H	154	236	2.5	14.50	0.26	2.6	3.9	2.5
	250	88	3.0	799.0	1250.0	1,200	1,600	23228CA	23228CAK	3053228H	3153226H	154	236	2.5	18.50	0.33	2	3	2
	300	102	4.0	1130.0	1560.0	1,100	1,500	22328CA	22328CAK	53628H	153628H	158	282	3.0	36.00	0.35	1.9	2.9	1.8
	250	102	4.0	1130.0	1560.0	1,100	1,500	22328CA	22328CAK	53628H	153628H	158	282	3.0	36.00	0.35	1.9	2.9	1.8
150	225	56	2.1	437.0	750.0	1,700	2,200	23030CA	23030CAK	3053130H	3153130H	162	213	2.0	8.14	0.22	3	4.6	2.8
	225	75	2.1	564.0	1040.0	1,300	1,700	24030CA	24030CAK30	4053130H	4453130H	162	213	2.0	10.50	0.30	2.3	3.4	2.2
	250	80	2.1	725.0	1200.0	1,400	1,800	23130CA	23130CAK	3053730H	3153730H	162	238	2.0	16.00	0.30	2.3	3.4	2.2
	250	100	2.1	897.0	1530.0	800	1,000	24130CA	24130CAK30	4053730H	4453730H	162	238	2.0	19.50	0.37	1.8	2.7	1.8
	270	73	3.0	736.0	1080.0	1,600	2,000	22230CA	22230CAK	53530H	153530H	164	256	2.5	18.50	0.26	2.6	3.9	2.5
	270	96	3.0	937.0	1460.0	1,100	1,500	23230CA	23230CAK	3053230H	3153230H	164	256	2.5	24.00	0.35	1.9	2.9	1.8
	320	108	4.0	1270.0	1760.0	1,000	1,400	22330CA	22330CAK	53630H	153630H	168	302	3.0	43.00	0.35	1.9	2.9	1.8
160	240	60	2.1	506.0	880.0	1,700	2,200	23032CA	23032CAK	3053132H	3153132H	172	228	2.0	9.74	0.22	3	4.6	2.8
	240	80	2.1	656.0	1200.0	1,100	1,500	24032CA	24032CAK30	4053132H	4453132H	172	228	2.0	13.00	0.30	2.3	3.4	2.2
	270	86	2.1	845.0	1370.0	1,300	1,700	23132CA	23132CAK	3053732H	3153732H	172	258	2.0	20.50	0.30	2.3	3.4	2.2
	270	109	2.1	1040.0	1760.0	700	900	24132CA	24132CAK30	4053132H	4453132H	172	258	2.0	25.00	0.40	1.7	2.5	1.6
	290	80	3.0	863.0	1290.0	1,500	1,900	22232CA	22232CAK	53532H	153532H	174	276	2.5	22.20	0.26	2.6	3.9	2.5
	290	104	3.0	1070.0	1660.0	1,000	1,400	23232CA	23232CAK	3053232H	3153232H	174	276	2.5	30.00	0.35	1.9	2.9	1.8
	340	114	4.0	1380.0	1960.0	950	1,300	22332CA	22332CAK	53632H	153632H	178	322	3.0	51.00	0.35	1.9	2.9	1.8
170	260	67	2.1	621.0	1060.0	1,600	2,000	23034CA	23034CAK	3053134H	3153134H	182	248	2.0	13.10	0.23	2.9	4.4	2.8
	260	90	2.1	799.0	1460.0	1,000	1,400	24034CA	24034CAK30	4053134H	4453134H	182	248	2.0	17.50	0.33	2	3	2
	280	88	2.1	897.0	1500.0	1,200	1,600	23134CA	23134CAK	3053734H	3153734H	182	268	2.0	21.50	0.30	2.3	3.4	2.2
	280	109	2.1	1070.0	1860.0	670	850	24134CA	24134CAK30	4053734H	4453734H	182	268	2.0	26.5	0.37	1.8	2.7	1.8
	310	86	4.0	978.0	1460.0	1,300	1,700	22234CA	22234CAK	53534H	153534H	188	292	3.0	29.00	0.27	2.5	3.7	2.5
	310	110	4.0	1220.0	1930.0	950	1,300	23234CA	23234CAK	3053234H	3153234H	188	292	3.0	36.50	0.35	1.9	2.9	1.8
	360	120	4.0	1540.0	2160.0	950	1,300	22334CA	22334CAK	53634H	153634H	188	342	3.0	60.00	0.33	2	3	2



Cylindrical bore 20000 types



Tapered bore (1:12) 20000 K type



**d** 180~200 mm

d	Boundary dimensions (mm)			Basic load ratings (kN)		Limiting speeds (r/min)		Nominal numbers		Nominal numbers (old)		Mounting dimensions (mm)			Reference mass (kg)	Calculating coefficient			
	D	B	r Min	C <sub>r</sub>	C <sub>0r</sub>	Grease	Oil	Cylindrical bore	Tapered bore	Cylindrical bore	Tapered bore	d <sub>s</sub> Min	D <sub>s</sub> Max	r <sub>s</sub> Max		e	Y <sub>1</sub>	Y <sub>2</sub>	Y <sub>0</sub>
<b>180</b>	280	74	2.1	725.0	1250.0	1,400	1,800	<b>23036CA</b>	<b>23036CAK</b>	<b>3053136H</b>	<b>3153136H</b>	192	268	2.0	17.40	0.24	2.8	4.2	2.8
	280	100	2.1	937.0	1730.0	950	1,300	<b>24036CA</b>	<b>24036CAK30</b>	<b>4053136H</b>	<b>4453136H</b>	192	268	2.0	23.00	0.33	2	3	2
	300	96	3.0	1050.0	1760.0	1,100	1,500	<b>23136CA</b>	<b>23136CAK</b>	<b>3053736H</b>	<b>3153736H</b>	194	286	2.5	27.50	0.30	2.3	3.4	2.2
	300	118	3.0	1220.0	2160.0	630	800	<b>24136CA</b>	<b>24136CAK30</b>	<b>4053736H</b>	<b>4453736H</b>	194	286	2.5	33.50	0.37	1.8	2.7	1.8
	320	86	4.0	1010.0	1560.0	1,300	1,700	<b>22236CA</b>	<b>22236CAK</b>	<b>53536H</b>	<b>153536H</b>	198	302	3.0	30.00	0.26	2.6	3.9	2.5
	320	112	4.0	1290.0	2120.0	900	1,200	<b>23236CA</b>	<b>23236CAK</b>	<b>3053236H</b>	<b>3153236H</b>	198	302	3.0	39.00	0.35	1.9	2.9	1.8
	380	126	4.0	1730.0	2450.0	900	1,200	<b>22336CA</b>	<b>22336CAK</b>	<b>536H36H</b>	<b>1536H36H</b>	198	362	3.0	70.00	0.35	1.9	2.9	1.8
<b>190</b>	290	75	2.1	753.0	1340.0	1,300	1,700	<b>23038CA</b>	<b>23038CAK</b>	<b>3053138H</b>	<b>3153138H</b>	202	278	2.0	18.40	0.23	2.9	4.4	2.8
	290	100	2.1	978.0	1800.0	950	1,300	<b>24038CA</b>	<b>24038CAK30</b>	<b>4053138H</b>	<b>4453138H</b>	202	278	2.0	24.00	0.31	2.2	3.3	2.2
	320	104	3.0	1200.0	2080.0	1,000	1,400	<b>23138CA</b>	<b>23138CAK</b>	<b>3053738H</b>	<b>3153738H</b>	204	306	2.5	34.50	0.31	2.2	3.3	2.2
	320	128	3.0	1400.0	2500.0	600	750	<b>24138CA</b>	<b>24138CAK30</b>	<b>4053738H</b>	<b>4453738H</b>	204	306	2.5	42.00	0.40	1.7	2.5	1.6
	340	92	4.0	1110.0	1700.0	1,200	1,600	<b>22238CA</b>	<b>22238CAK</b>	<b>53538H</b>	<b>153538H</b>	208	322	3.0	35.30	0.19	3.6	5.3	3.6
	340	120	4.0	1460.0	2400.0	850	1,100	<b>23238CA</b>	<b>23238CAK</b>	<b>3053238H</b>	<b>3153238H</b>	208	322	3.0	47.50	0.35	1.9	2.9	1.8
	400	132	5.0	1870.0	2650.0	850	1,100	<b>22338CA</b>	<b>22338CAK</b>	<b>53638H</b>	<b>153638H</b>	212	378	4.0	81.00	0.35	1.9	2.9	1.8
<b>200</b>	310	82	2.1	880.0	1530.0	1,200	1,600	<b>23040CA</b>	<b>23040CAK</b>	<b>3053140H</b>	<b>3153140H</b>	212	298	2.0	23.40	0.24	2.8	4.2	2.8
	310	109	2.1	1130.0	2120.0	900	1,200	<b>24040CA</b>	<b>24040CAK30</b>	<b>4053140H</b>	<b>4453140H</b>	212	298	2.0	30.50	0.33	2	3	2
	340	112	3.0	1380.0	2360.0	950	1,300	<b>23140CA</b>	<b>23140CAK</b>	<b>3053740H</b>	<b>3153740H</b>	214	326	2.5	42.50	0.31	2.2	3.3	2.2
	340	140	3.0	1580.0	2800.0	560	700	<b>24140CA</b>	<b>24140CAK30</b>	<b>4053740H</b>	<b>4453740H</b>	214	326	2.5	52.00	0.40	1.7	2.5	1.6
	360	98	4.0	1270.0	1930.0	1,100	1,500	<b>22240CA</b>	<b>22240CAK</b>	<b>53540H</b>	<b>153540H</b>	218	342	3.0	47.70	0.26	2.6	3.9	2.5
	360	128	4.0	1610.0	2700.0	850	1,100	<b>23240CA</b>	<b>23240CAK</b>	<b>3053240H</b>	<b>3153240H</b>	218	342	3.0	57.00	0.35	1.9	2.9	1.8
	420	138	5.0	2020.0	2900.0	850	1,100	<b>22340CA</b>	<b>22340CAK</b>	<b>53640H</b>	<b>153640H</b>	222	398	4.0	94.00	0.33	2	3	2