

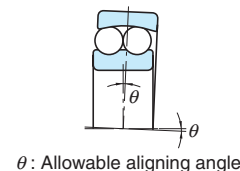


Self-aligning ball bearings

Self-aligning ball bearings have a spherical outer ring raceway, the center of whose curvature meets that of the bearing itself, so that the inner ring, balls and cage continue to rotate, aligning themselves if they have become misaligned within design limits.

This type of bearing is suitable when the displacement of the centers around which the shaft and housing rotate and shaft deflection are likely to occur.

Bearings with a tapered bore can easily be fit to the shaft with an adapter assembly.



θ: Allowable aligning angle

Self-aligning ball bearings



Cylindrical bore



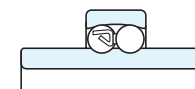
Tapered bore

Bore diameter **10 – 90 mm**



Sealed type

Bore diameter **10 – 55 mm**



Extended inner ring type

Bore diameter **20 – 60 mm**

Adapter assemblies



Bore diameter **17 – 80 mm**

Boundary dimensions	The dimensions of standard series are as specified in JIS B 1512.
Tolerances	As specified in JIS B 1514-1, class 0. (refer to Table 7-3 on pp. A 60 – A 63.)
Radial internal clearance	As specified in JIS B 1520. (refer to Table 10-6 on p. A 105.)
Recommended fits	Refer to Table 9-4 on pp. A 91, 92.
Standard cages	• Staggered type pressed steel cage (application : all dimensional range of 12, 13, 112, 113, 22...2RS and 23...2RS series) • Snap type pressed steel cage (application : all dimensional range of 22 series and those of No. 2300 thru 2316.)
Allowable aligning angle	• 12 and 22 series.....0.044 rad (2.5°) • 13 and 23 series.....0.052 rad (3°) • 22...2RS and 23...2RS series.....0.026 rad (1.5°)

Dynamic equivalent radial load

$$P_r = XF_r + YF_a$$

$F_a/F_r \leq e$		$F_a/F_r > e$	
X	Y	X	Y
1	Y_1	0.65	Y_2

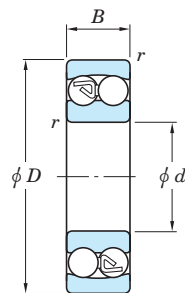
Static equivalent radial load

$$P_{0r} = F_r + Y_0 F_a$$

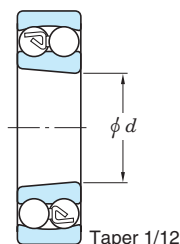
Refer to the bearing specification table for values of e , Y_1 , Y_2 and Y_0 .

Self-aligning ball bearings open type

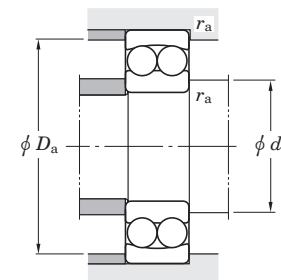
d 10 ~ (35) mm



Cylindrical bore



Tapered bore

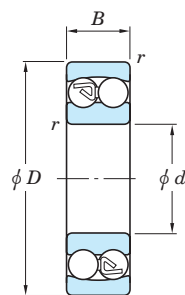


Boundary dimensions (mm)				Basic load ratings (kN)		Fatigue load limit (kN) C_u	Limiting speeds (min^{-1})		Bearing No.			Mounting dimensions (mm)			Con- stant e	Axial load factors			(Refer.) Mass (kg)	
d	D	B	$r_{\text{min.}}$	C_r	C_{0r}		Grease lub.	Oil lub.	Cylindrical bore	Tapered bore		d_a min.	D_a max.	r_a max.		Y_1	Y_2	Y_0	Cylindrical bore	Tapered bore
10	30	9	0.6	6.85	1.20	0.08	23 000	28 000	1200	—		14	26	0.6	0.33	1.92	2.97	2.01	0.034	—
	30	14	0.6	9.20	1.60	0.10	23 000	29 000	2200	—		14	26	0.6	0.59	1.07	1.65	1.12	0.047	—
12	32	10	0.6	7.00	1.25	0.08	21 000	26 000	1201	—		16	28	0.6	0.33	1.89	2.93	1.98	0.040	—
	32	14	0.6	9.55	1.75	0.11	21 000	26 000	2201	—		16	28	0.6	0.53	1.18	1.83	1.24	0.053	—
15	35	11	0.6	9.35	1.75	0.11	18 000	22 000	1202	—		19	31	0.6	0.33	1.90	2.95	2.00	0.049	—
	35	14	0.6	9.60	1.85	0.12	18 000	22 000	2202	—		19	31	0.6	0.50	1.27	1.97	1.33	0.060	—
	42	13	1	12.0	2.30	0.14	16 000	20 000	1302	—		20	37	1	0.34	1.86	2.88	1.95	0.094	—
	42	17	1	15.1	2.90	0.18	14 000	20 000	2302	—		20	37	1	0.50	1.27	1.96	1.33	0.114	—
17	40	12	0.6	9.85	2.05	0.13	16 000	20 000	1203	—		21	36	0.6	0.31	2.03	3.14	2.12	0.073	—
	40	16	0.6	12.3	2.40	0.15	16 000	20 000	2203	—		21	36	0.6	0.50	1.27	1.96	1.33	0.088	—
	47	14	1	15.7	3.20	0.20	14 000	17 000	1303	—		22	42	1	0.33	1.92	2.97	2.01	0.130	—
	47	19	1	18.1	3.60	0.23	13 000	18 000	2303	—		22	42	1	0.49	1.28	1.98	1.34	0.158	—
20	47	14	1	12.4	2.65	0.16	14 000	17 000	1204	1204K		25	42	1	0.29	2.16	3.35	2.27	0.120	0.118
	47	18	1	15.8	3.25	0.21	14 000	17 000	2204	2204K		25	42	1	0.48	1.31	2.02	1.37	0.140	0.136
	52	15	1.1	15.5	3.35	0.21	13 000	15 000	1304	1304K		26.5	45.5	1	0.30	2.12	3.28	2.22	0.163	0.161
	52	21	1.1	22.5	4.65	0.30	11 000	15 000	2304	2304K		26.5	45.5	1	0.49	1.29	2.00	1.35	0.209	0.205
25	52	15	1	15.1	3.30	0.21	12 000	14 000	1205	1205K		30	47	1	0.28	2.28	3.52	2.39	0.141	0.138
	52	18	1	15.7	3.50	0.22	12 000	15 000	2205	2205K		30	47	1	0.40	1.58	2.45	1.66	0.163	0.158
	62	17	1.1	22.5	5.05	0.32	9 900	12 000	1305	1305K		31.5	55.5	1	0.27	2.31	3.57	2.42	0.257	0.252
	62	24	1.1	30.6	6.55	0.42	9 400	13 000	2305	2305K		31.5	55.5	1	0.46	1.36	2.10	1.42	0.335	0.327
30	62	16	1	19.6	4.70	0.29	9 900	12 000	1206	1206K		35	57	1	0.25	2.55	3.94	2.67	0.220	0.216
	62	20	1	19.3	4.65	0.29	10 000	12 000	2206	2206K		35	57	1	0.35	1.79	2.77	1.87	0.260	0.254
	72	19	1.1	26.6	6.30	0.40	8 700	11 000	1306	1306K		36.5	65.5	1	0.26	2.40	3.72	2.52	0.387	0.381
	72	27	1.1	39.3	8.70	0.55	8 000	11 000	2306	2306K		36.5	65.5	1	0.44	1.44	2.23	1.51	0.500	0.489
35	72	17	1.1	19.7	5.15	0.32	8 500	10 000	1207	1207K		41.5	65.5	1	0.23	2.71	4.20	2.84	0.323	0.317

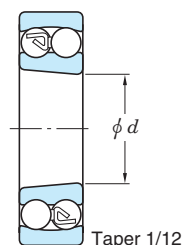
[Remark] Standard cage types used for the above bearings are described earlier in this section.

Self-aligning ball bearings open type

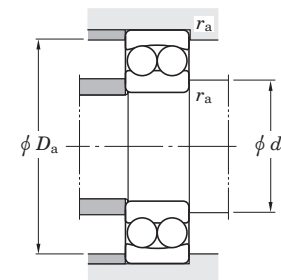
d (35) ~ 65 mm



Cylindrical bore



Tapered bore

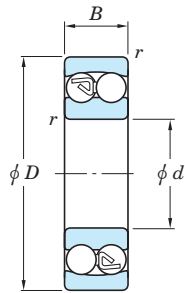


Boundary dimensions (mm)				Basic load ratings (kN)		Fatigue load limit (kN) C_u	Limiting speeds (min ⁻¹)		Bearing No.		Mounting dimensions (mm)			Con- stant e	Axial load factors			(Refer.) Mass (kg)	
d	D	B	$r_{min.}$	C_r	C_{0r}		Grease lub.	Oil lub.	Cylindrical bore	Tapered bore	d_a min.	D_a max.	r_a max.		Y_1	Y_2	Y_0	Cylindrical bore	Tapered bore
35	72	23	1.1	27.1	6.65	0.42	8 500	10 000	2207	2207K	41.5	65.5	1	0.37	1.71	2.65	1.79	0.403	0.396
	80	21	1.5	31.4	7.95	0.49	7 600	9 300	1307	1307K	43	72	1.5	0.25	2.48	3.84	2.60	0.510	0.502
	80	31	1.5	49.4	11.1	0.71	7 100	9 800	2307	2307K	43	72	1.5	0.45	1.39	2.15	1.46	0.675	0.657
40	80	18	1.1	24.1	6.50	0.41	7 500	9 200	1208	1208K	46.5	73.5	1	0.22	2.83	4.38	2.97	0.417	0.411
	80	23	1.1	28.0	7.35	0.46	7 600	9 300	2208	2208K	46.5	73.5	1	0.33	1.92	2.96	2.01	0.505	0.494
	90	23	1.5	36.9	9.80	0.61	6 900	8 400	1308	1308K	48	82	1.5	0.25	2.57	3.98	2.69	0.715	0.704
	90	33	1.5	56.1	13.4	0.85	6 200	8 600	2308	2308K	48	82	1.5	0.43	1.47	2.27	1.54	0.925	0.903
45	85	19	1.1	27.2	7.35	0.46	7 000	8 500	1209	1209K	51.5	78.5	1	0.21	2.94	4.56	3.09	0.465	0.459
	85	23	1.1	29.1	8.15	0.51	7 000	8 500	2209	2209K	51.5	78.5	1	0.30	2.09	3.23	2.19	0.545	0.533
	100	25	1.5	47.6	12.9	0.80	6 100	7 500	1309	1309K	53	92	1.5	0.25	2.56	3.95	2.68	0.957	0.942
	100	36	1.5	68.0	16.6	1.05	5 600	7 700	2309	2309K	53	92	1.5	0.42	1.51	2.33	1.58	1.23	1.20
50	90	20	1.1	28.4	8.10	0.51	6 500	7 900	1210	1210K	56.5	83.5	1	0.21	3.07	4.76	3.22	0.525	0.515
	90	23	1.1	29.2	8.50	0.53	6 500	7 900	2210	2210K	56.5	83.5	1	0.27	2.33	3.61	2.45	0.590	0.577
	110	27	2	54.3	14.2	0.89	5 600	6 800	1310	1310K	59	101	2	0.23	2.70	4.17	2.83	1.21	1.19
	110	40	2	80.7	20.1	1.25	5 100	7 000	2310	2310K	59	101	2	0.40	1.56	2.41	1.63	1.64	1.60
55	100	21	1.5	33.5	10.0	0.63	5 800	7 100	1211	1211K	63	92	1.5	0.20	3.19	4.94	3.34	0.705	0.693
	100	25	1.5	33.2	9.95	0.62	5 800	7 100	2211	2211K	63	92	1.5	0.27	2.35	3.64	2.47	0.810	0.792
	120	29	2	64.2	18.1	1.10	5 000	6 200	1311	1311K	64	111	2	0.23	2.70	4.18	2.83	1.58	1.56
	120	43	2	94.2	23.8	1.50	4 600	6 400	2311	2311K	64	111	2	0.41	1.53	2.37	1.60	2.10	2.05
60	110	22	1.5	37.7	11.6	0.73	5 200	6 400	1212	1212K	68	102	1.5	0.19	3.37	5.22	3.53	0.900	0.885
	110	28	1.5	42.7	12.5	0.80	5 300	6 500	2212	2212K	68	102	1.5	0.28	2.26	3.49	2.36	1.09	1.07
	130	31	2.1	71.4	20.8	1.30	4 500	5 500	1312	1312K	71	119	2	0.22	2.91	4.50	3.05	1.96	1.93
	130	46	2.1	109	28.1	1.80	4 200	5 800	2312	2312K	71	119	2	0.39	1.62	2.51	1.70	2.60	2.53
65	120	23	1.5	38.7	12.4	0.79	4 800	5 800	1213	1213K	73	112	1.5	0.17	3.67	5.68	3.84	1.15	1.13
	120	31	1.5	54.5	16.4	1.05	4 900	5 900	2213	2213K	73	112	1.5	0.28	2.24	3.47	2.35	1.46	1.43
	140	33	2.1	77.2	22.9	1.40	4 300	5 200	1313	1313K	76	129	2	0.23	2.73	4.23	2.86	2.45	2.41

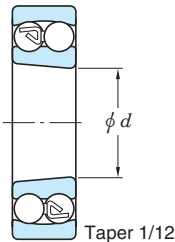
[Remark] Standard cage types used for the above bearings are described earlier in this section.

Self-aligning ball bearings
open type

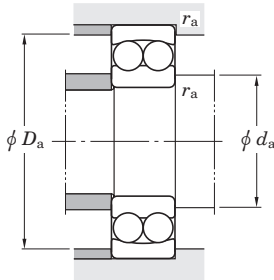
d 70 ~ 90 mm



Cylindrical bore



Tapered bore

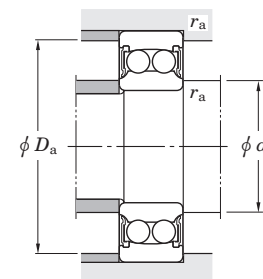
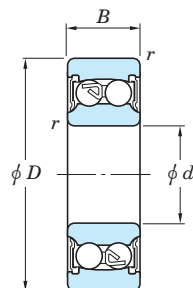


Boundary dimensions (mm)				Basic load ratings (kN)		Fatigue load limit (kN) C _u	Limiting speeds (min ⁻¹)		Bearing No.			Mounting dimensions (mm)			Con- stant e	Axial load factors			(Refer.) Mass (kg)	
d	D	B	r _{min.}	C _r	C _{0r}		Grease lub.	Oil lub.	Cylindrical bore	Tapered bore		d _a min.	D _a max.	r _a max.		Y ₁	Y ₂	Y ₀	Cylindrical bore	Tapered bore
70	125	24	1.5	43.3	13.7	0.87	4 600	5 700	1214	—		78	117	1.5	0.18	3.48	5.38	3.64	1.26	—
	150	35	2.1	92.5	27.6	1.65	4 000	4 900	1314	—		81	139	2	0.22	2.84	4.40	2.98	2.99	—
75	130	25	1.5	48.5	15.5	0.97	4 300	5 300	1215	1215K		83	122	1.5	0.17	3.60	5.58	3.77	1.36	1.34
	160	37	2.1	98.6	29.9	1.70	4 000	4 900	1315	1315K		86	149	2	0.23	2.80	4.33	2.93	3.56	3.51
80	140	26	2	49.6	16.9	1.00	4 000	4 900	1216	1216K		89	131	2	0.16	3.90	6.03	4.08	1.67	1.64
	170	39	2.1	110	32.9	1.85	3 500	4 300	1316	1316K		91	159	2	0.22	2.90	4.49	3.04	4.18	4.12
85	150	28	2	61.5	20.5	1.20	3 800	4 600	1217	1217K		94	141	2	0.17	3.61	5.59	3.78	2.07	2.04
	180	41	3	122	37.8	2.05	3 300	4 000	1317	1317K		98	167	2.5	0.22	2.93	4.53	3.07	4.98	4.91
90	160	30	2	71.0	23.4	1.30	3 500	4 300	1218	1218K		99	151	2	0.17	3.69	5.70	3.86	2.52	2.48
	190	43	3	145	44.7	2.35	3 100	3 800	1318	1318K		103	177	2.5	0.22	2.81	4.35	2.94	5.80	5.71

[Remark] Standard cage types used for the above bearings are described earlier in this section.

Self-aligning ball bearings sealed type

d 10 ~ 55 mm

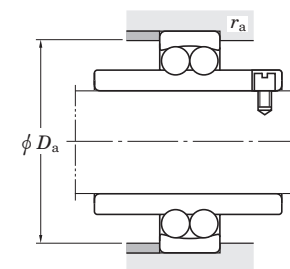
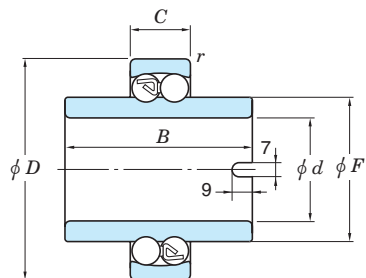


Boundary dimensions (mm)				Basic load ratings (kN)		Fatigue load limit (kN) C_u	Limiting speed (min ⁻¹) Grease lub.	Bearing No.	Mounting dimensions (mm)				Con- stant e	Axial load factors			(Refer.) Mass (kg)
d	D	B	$r_{min.}$	C_r	C_{0r}				d_a min.	d_a max.	D_a max.	r_a max.		Y_1	Y_2	Y_0	
10	30	14	0.6	6.85	1.20	0.08	15 000	2200 2RS	13.7	13.7	25	0.6	0.33	1.92	2.97	2.01	0.047
12	32	14	0.6	7.00	1.25	0.08	14 000	2201 2RS	15.2	15.2	27	0.6	0.33	1.89	2.93	1.98	0.053
15	35	14	0.6	9.35	1.75	0.11	12 000	2202 2RS	18.0	18.0	30	0.6	0.33	1.90	2.95	2.00	0.060
	42	17	1	12.0	2.30	0.14	11 000	2302 2RS	20.0	20.0	36	1	0.34	1.86	2.88	1.95	0.114
17	40	16	0.6	9.85	2.05	0.13	11 000	2203 2RS	20.2	20.2	35	0.6	0.31	2.03	3.14	2.12	0.088
	47	19	1	15.7	3.20	0.20	9 400	2303 2RS	22.1	22.1	41	1	0.33	1.92	2.97	2.01	0.158
20	47	18	1	12.4	2.65	0.16	9 100	2204 2RS	24.1	24.1	41	1	0.29	2.16	3.35	2.27	0.140
	52	21	1.1	15.5	3.35	0.21	8 300	2304 2RS	26.2	26.2	45	1	0.30	2.12	3.28	2.22	0.209
25	52	18	1	15.1	3.30	0.21	7 900	2205 2RS	29.4	29.4	46	1	0.28	2.28	3.52	2.39	0.163
	62	24	1.1	22.5	5.05	0.32	6 600	2305 2RS	32	33.9	55	1	0.27	2.31	3.57	2.42	0.335
30	62	20	1	19.6	4.70	0.29	6 600	2206 2RS	35.5	35.5	56	1	0.25	2.55	3.94	2.67	0.260
	72	27	1.1	26.6	6.30	0.40	5 800	2306 2RS	37	37.8	65	1	0.26	2.40	3.72	2.52	0.500
35	72	23	1.1	19.7	5.15	0.32	5 700	2207 2RS	40.9	40.9	65	1	0.23	2.71	4.20	2.84	0.403
	80	31	1.5	31.4	7.95	0.49	5 100	2307 2RS	43.5	45.0	71.5	1.5	0.25	2.48	3.84	2.60	0.675
40	80	23	1.1	24.1	6.50	0.41	5 000	2208 2RS	47	48.1	73	1	0.22	2.83	4.38	2.97	0.505
	90	33	1.5	36.9	9.80	0.61	4 600	2308 2RS	48.5	49.6	81.5	1.5	0.25	2.57	3.98	2.69	0.925
45	85	23	1.1	27.2	7.35	0.46	4 600	2209 2RS	52	52.4	78	1	0.21	2.94	4.56	3.09	0.545
	100	36	1.5	47.6	12.9	0.80	4 100	2309 2RS	53.5	56.6	91.5	1.5	0.25	2.56	3.95	2.68	1.23
50	90	23	1.1	28.4	8.10	0.51	4 300	2210 2RS	56.5	56.5	83	1	0.21	3.07	4.76	3.22	0.590
	110	40	2	54.3	14.2	0.89	3 700	2310 2RS	60	62.5	100	2	0.23	2.70	4.17	2.83	1.64
55	100	25	1.5	33.5	10.0	0.63	3 900	2211 2RS	63.5	63.5	91.5	1.5	0.20	3.19	4.94	3.34	0.810

[Remark] Standard cage types used for the above bearings are described earlier in this section.

Self-aligning ball bearings extended inner ring type

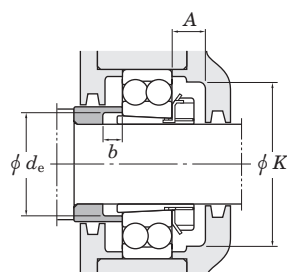
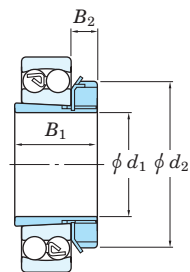
d 20 ~ 60 mm



Boundary dimensions (mm)						Basic load ratings (kN)		Fatigue load limit (kN) C_u	Limiting speeds (min^{-1})		Bearing No.	Mounting dimensions (mm)		Con- stant e	Axial load factors			(Refer.) Mass (kg)
d	D	B	C	F	$r_{\text{min.}}$	C_r	C_{0r}		Grease lub.	Oil lub.		D_a max.	r_a max.		Y_1	Y_2	Y_0	
20	47	40	14	29.2	1	12.4	2.65	0.16	14 000	17 000	11204 11304	42	1	0.29	2.16	3.35	2.27	0.191
	52	44	15	31.5	1.1	15.5	3.35	0.21	13 000	15 000		45.5	1	0.30	2.12	3.28	2.22	0.266
25	52	44	15	33.3	1	15.1	3.30	0.21	12 000	14 000	11205 11305	47	1	0.28	2.28	3.52	2.39	0.226
	62	48	17	38	1.1	22.5	5.05	0.32	9 900	12 000		55.5	1	0.27	2.31	3.57	2.42	0.445
30	62	48	16	40.1	1	19.6	4.70	0.29	9 900	12 000	11206 11306	57	1	0.25	2.55	3.94	2.67	0.360
	72	52	19	45	1.1	26.6	6.30	0.40	8 700	11 000		65.5	1	0.26	2.40	3.72	2.52	0.614
35	72	52	17	47.7	1.1	19.7	5.15	0.32	8 500	10 000	11207 11307	65.5	1	0.23	2.71	4.20	2.84	0.556
	80	56	21	51.7	1.5	31.4	7.95	0.49	7 600	9 300		72	1.5	0.25	2.48	3.84	2.60	0.821
40	80	56	18	54	1.1	24.1	6.50	0.41	7 500	9 200	11208 11308	73.5	1	0.22	2.83	4.38	2.97	0.733
	90	58	23	57.7	1.5	36.9	9.80	0.61	6 900	8 400		82	1.5	0.25	2.57	3.98	2.69	1.09
45	85	58	19	57.7	1.1	27.2	7.35	0.46	7 000	8 500	11209 11309	78.5	1	0.21	2.94	4.56	3.09	0.793
	100	60	25	63.9	1.5	47.6	12.9	0.80	6 100	7 500		92	1.5	0.25	2.56	3.95	2.68	1.40
50	90	58	20	62.7	1.1	28.4	8.10	0.51	6 500	7 900	11210 11310	83.5	1	0.21	3.07	4.76	3.22	0.875
	110	62	27	70.3	2	54.3	14.2	0.89	5 600	6 800		102	2	0.23	2.70	4.17	2.83	1.74
55	100	60	21	70.3	1.5	33.5	10.0	0.63	5 800	7 100	11211	93.5	1.5	0.20	3.19	4.94	3.34	1.16
60	110	62	22	78	1.5	37.7	11.6	0.73	5 200	6 400	11212	103.5	1.5	0.19	3.37	5.22	3.53	1.52

Adapter assemblies for self-aligning ball bearings

d_1 17 ~ (45) mm



d_1 (45) ~ 80 mm

Boundary dimensions (mm)				Brg. bore d (mm)	Designations Bearing + adapter ass'y	Mounting dimensions (mm)				Mass Brg.+adapter ass'y (kg)	(Refer.)	
d_1	B_1	d_2	B_2			A min.	K min.	d_e min.	b min.		Adapter sleeve No.	Locknut No.
17	24	32	7	20	1204K+H204X	—	—	23	5	0.162	A204X	AN04
	28	32	7	20	2204K+H304X	—	—	24	5	0.185	A304X	AN04
	28	32	7	20	1304K+H304X	—	—	24	8	0.210	A304X	AN04
	31	32	7	20	2304K+H2304X	—	—	24	5	0.257	A2304X	AN04
20	26	38	8	25	1205K+H205X	15	45	28	5	0.218	A205X	AN05
	29	38	8	25	2205K+H305X	15	45	29	5	0.243	A305X	AN05
	29	38	8	25	1305K+H305X	15	45	29	6	0.337	A305X	AN05
	35	38	8	25	2305K+H2305X	15	45	29	5	0.424	A2305X	AN05
25	27	45	8	30	1206K+H206X	15	50	33	5	0.320	A206X	AN06
	31	45	8	30	2206K+H306X	15	50	34	5	0.368	A306X	AN06
	31	45	8	30	1306K+H306X	15	50	34	6	0.495	A306X	AN06
	38	45	8	30	2306K+H2306X	15	50	35	5	0.620	A2306X	AN06
30	29	52	9	35	1207K+H207X	17	58	38	5	0.462	A207X	AN07
	35	52	9	35	2207K+H307X	17	58	39	5	0.557	A307X	AN07
	35	52	9	35	1307K+H307X	17	58	39	7	0.663	A307X	AN07
	43	52	9	35	2307K+H2307X	17	58	40	5	0.843	A2307X	AN07
35	31	58	10	40	1208K+H208X	17	65	44	5	0.597	A208X	AN08
	36	58	10	40	2208K+H308X	17	65	44	5	0.696	A308X	AN08
	36	58	10	40	1308K+H308X	17	65	44	5	0.906	A308X	AN08
	46	58	10	40	2308K+H2308X	17	65	45	5	1.14	A2308X	AN08
40	33	65	11	45	1209K+H209X	17	72	49	5	0.701	A209X	AN09
	39	65	11	45	2209K+H309X	17	72	49	8	0.798	A309X	AN09
	39	65	11	45	1309K+H309X	17	72	49	5	1.21	A309X	AN09
	50	65	11	45	2309K+H2309X	17	72	50	5	1.51	A2309X	AN09
45	35	70	12	50	1210K+H210X	19	76	53	5	0.804	A210X	AN10
	42	70	12	50	2210K+H310X	19	76	54	10	0.896	A310X	AN10

Boundary dimensions (mm)				Brg. bore d (mm)	Designations Bearing + adapter ass'y	Mounting dimensions (mm)				Mass Brg.+adapter ass'y (kg)	(Refer.)	
d_1	B_1	d_2	B_2			A min.	K min.	d_e min.	b min.		Adapter sleeve No.	Locknut No.
45	42	70	12	50	1310K+H310X	19	76	54	5	1.51	A310X	AN10
	55	70	12	50	2310K+H2310X	19	76	56	5	1.98	A2310X	AN10
50	37	75	12	55	1211K+H211X	19	85	60	6	1.02	A211X	AN11
	45	75	12	55	2211K+H311X	19	85	60	11	1.16	A311X	AN11
	45	75	12	55	1311K+H311X	19	85	60	6	1.93	A311X	AN11
	59	75	12	55	2311K+H2311X	19	85	61	6	2.50	A2311X	AN11
55	38	80	13	60	1212K+H212X	20	90	61	5	1.25	A212X	AN12
	47	80	13	60	2212K+H312X	20	90	65	9	1.49	A312X	AN12
	47	80	13	60	1312K+H312X	20	90	65	5	2.35	A312X	AN12
	62	80	13	60	2312K+H2312X	20	90	66	5	3.04	A2312X	AN12
60	40	85	14	65	1213K+H213X	21	96	70	5	1.56	A213X	AN13
	50	85	14	65	2213K+H313X	21	96	70	8	1.92	A313X	AN13
	50	85	14	65	1313K+H313X	21	96	70	5	2.90	A313X	AN13
65	43	98	15	75	1215K+H215X	23	110	80	5	2.09	A215X	AN15
	55	98	15	75	1315K+H315X	23	110	80	5	4.40	A315X	AN15
70	46	105	17	80	1216K+H216X	25	120	85	5	2.57	A216X	AN16
	59	105	17	80	1316K+H316X	25	120	86	5	5.21	A316X	AN16
75	50	110	18	85	1217K+H217X	27	128	90	6	3.11	A217X	AN17
	63	110	18	85	1317K+H317X	27	128	91	6	6.15	A317X	AN17
80	52	120	18	90	1218K+H218X	28	139	95	6	3.75	A218X	AN18
	65	120	18	90	1318K+H318X	28	139	96	6	7.16	A318X	AN18

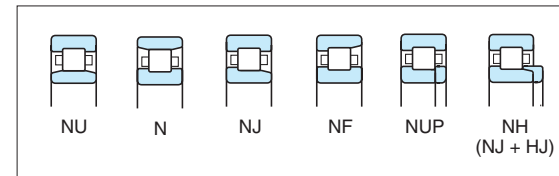
Cylindrical roller bearings

Cylindrical roller bearings feature high radial load capacity because the rollers and raceway are in linear contact. These bearings are suitable for applications that involve heavy radial and impact loading.

They are also appropriate for high-speed applications in that they can be machined very accurately due to their structure.

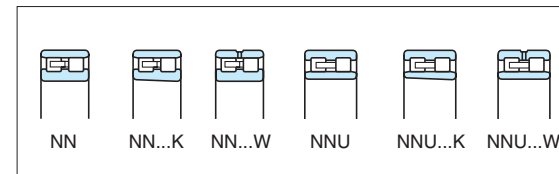
Having a separable inner ring or outer ring, these bearings can be mounted and dismantled easily.

Single-row cylindrical roller bearings



- The NU and N types exhibit their best performance when used as free side bearings since they adjust to the shaft's axial movement, to a certain extent, relative to the housing position.
- The NJ and NF types carry axial load in one direction, while the NUP and NH types can carry a certain degree of axial load in both directions.
- Type R cylindrical roller bearings feature enhanced load rating compared with standard series, though both have equal dimensions. This is because type R bearings have different internal design. They are identified by supplementary code "R".

Double-row cylindrical roller bearings



- Double-row cylindrical roller bearings come in two types : with a cylindrical bore, and with a tapered bore. As for those with a tapered bore, the specified amount of clearance can be obtained by adjusting the press-in distance. Some bearings have lubrication holes and lubrication grooves on the outer ring. They are identified by supplementary code "W".
- These bearings can accommodate high radial loads, and are often used on machine tool spindles.

Single-row cylindrical roller bearings



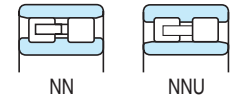
Bore diameter **20 – 460 mm**



Thrust collar

Bore diameter **20 – 320 mm**

Double-row cylindrical roller bearings



Bore diameter **25 – 480 mm**

