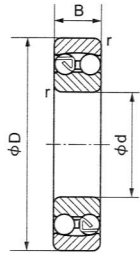


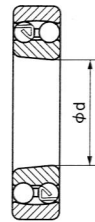
Self-aligning Ball Bearings

Self-aligning ball bearing has two raceways in inner ring and a common spherical raceway in outer ring. The bearing is consequently self-aligning and insensitive to angular misalignment of the shaft relative to the housing. It's designed for applications where considerable shaft misalignment is resulted by incorrect manufacturing or mounting process.

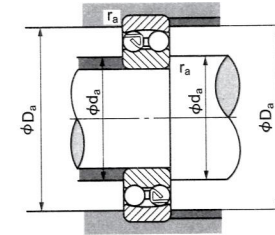
Bore diameter d: 10~60mm



Cylindrical bore



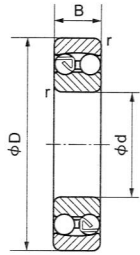
Taper bore (Taper: 1/12)



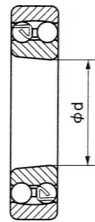
Principal dimensions				r (mm)	Designation		Basic load rating	
d	D	B	B ₁		Cylindrical bore	Tapered bore	Dynamic Cr (N)	Static Cor (N)
10	30	9		0.6	1200		5500	1200
	30	14		0.6	2200		7400	1600
	32	10		0.6	1201		5600	1250
12	32	14		0.6	2201		7650	1750
	37	12		1	1301		9400	2150
	37	17		1	2301		9700	2300
15	35	11		0.6	1202		7450	1750
	35	14		0.6	2202		7700	1850
	42	13		1	1302		9550	2300
	42	17		1	2302		12100	2900
17	40	12		0.6	1203		7900	2000
	40	16		0.6	2203		9800	2400
	47	14		1	1303		12500	3200
	47	19		1	2303		14500	3600
20	47	14		1	1204	1204K	9900	2600
	47	18		1	2204	2204K	12600	3300
	52	15		1.1	1304	1304K	12400	3300
	52	21		1.1	2304	2304K	18000	4700
25	52	15		1	1205	1205K	12100	3300
	52	18		1	2205	2205K	12600	3300
	62	17		1.1	1305	1305K	18000	5000
	62	24		1.1	2305	2305K	24400	6600
30	62	16		1	1206	1206K	15600	4650
	62	20		1	2206	2206K	15600	4650
	72	19		1.1	1306	1306K	21300	6300
	72	27		1.1	2306	2306K	31400	8750
35	72	17		1.1	1207	1207K	15800	5100
	72	23		1.1	2207	2207K	21600	6600
	80	21		1.5	1307	1307K	25100	7850
	80	31		1.5	2307	2307K	39400	11300
40	80	18		1.1	1208	1208K	19200	6500
	80	23		1.1	2208	2208K	22400	7400
	90	23		1.5	1308	1308K	29500	9700
	90	33		1.5	2308	2308K	44900	13500
45	85	19		1.1	1209	1209K	21800	7350
	85	23		1.1	2209	2209K	23300	8150
	100	25		1.5	1309	1309K	38100	12700
	100	36		1.5	2309	2309K	54400	16700
50	90	20		1.1	1210	1210K	22700	8100
	90	23		1.1	2210	2210K	23300	8500
	110	27		2	1310	1310K	43400	14100
	110	40		2	2310	2310K	64600	20300
55	100	21		1.5	1211	1211K	26800	10000
	100	25		1.5	2211	2211K	26800	10000
	120	29		2	1311	1311K	51300	17900
	120	43		2	2311	2311K	75300	24000
60	110	22		1.5	1212	1212K	30200	11500
	110	28		1.5	2212	2212K	34100	12600
	130	31		2.1	1312	1312K	57200	20800
	130	46		2.1	2312	2312K	87200	28300

Limiting speed		Axial load coefficient			Coefficient e	Abutment and fillet Dimensions, mm			Ref. Weight kg
Grease	Oil	Y1	Y2	Y3		D _a (mix)	D _a (mix)	r _a (max)	
23000	28000	1.92	2.97	2.01	0.33	14	26	0.6	0.034
23000	28000	1.07	1.65	1.12	0.59	14	26	0.6	0.047
21000	26000	1.89	2.93	1.98	0.33	16	28	0.6	0.040
21000	26000	1.18	1.83	1.24	0.53	16	28	0.6	0.053
19000	23000	1.77	2.74	1.86	0.36	17	32	1.0	0.067
17000	21000	1.17	1.81	1.23	0.54	17	32	1.0	0.095
18000	22000	1.90	2.95	2.00	0.33	19	31	0.6	0.049
18000	22000	1.27	1.97	1.33	0.50	19	31	0.6	0.060
16000	20000	1.86	2.88	1.95	0.34	20	37	1.0	0.094
14000	18000	1.27	1.96	1.33	0.50	20	37	1.0	0.114
16000	20000	2.03	3.14	2.12	0.31	21	36	0.6	0.073
16000	20000	1.27	1.96	1.33	0.50	21	36	0.6	0.088
14000	17000	1.92	2.97	2.01	0.33	22	42	1.0	0.130
12000	16000	1.28	1.98	1.34	0.49	22	42	1.0	0.158
13000	17000	2.16	3.35	2.27	0.29	25	42	1.0	0.120
13000	17000	1.31	2.05	1.37	0.48	25	42	1.0	0.140
12000	15000	2.12	3.28	2.22	0.30	26.5	45.5	1.0	0.163
11000	14000	1.29	2.00	1.35	0.49	26.5	45.5	1.0	0.209
12000	14000	2.28	3.52	2.39	0.28	30	47	1.0	0.141
12000	14000	1.58	2.45	1.66	0.40	30	47	1.0	0.163
10000	13000	2.31	3.57	2.41	0.27	31.5	55.5	1.0	0.257
10000	13000	1.36	2.10	1.42	0.46	31.5	55.5	1.0	0.335
10000	12000	2.55	3.94	1.67	0.25	35	47	1.0	0.220
10000	12000	2.55	3.94	2.67	0.25	35	47	1.0	0.260
9000	11000	2.40	3.72	2.52	0.26	36.5	65.5	1.0	0.387
8000	10000	1.44	2.23	1.51	0.44	36.5	65.5	1.0	0.500
8600	10000	2.71	4.20	2.84	0.23	41.5	65.6	1.0	0.323
8600	10000	1.71	2.65	1.79	0.37	41.5	65.5	1.0	0.403
7900	9700	2.48	3.84	2.60	0.25	43	75	1.0	0.510
7000	8800	1.39	2.15	1.46	0.45	43	75	1.5	0.675
7600	9300	2.83	4.38	2.97	0.22	46.5	73.5	1.0	0.417
7600	9300	1.92	2.96	2.01	0.33	46.5	73.5	1.0	0.505
7000	8500	2.57	3.98	2.69	0.25	48	82	1.5	0.715
6200	7800	1.47	2.27	1.54	0.43	48	82	1.5	0.925
7000	8500	2.94	4.56	3.09	0.21	51.5	78.5	1.0	0.465
7000	8500	2.09	3.23	2.19	0.30	51.5	78.5	1.0	0.545
6200	7600	2.56	3.95	2.68	0.25	53	92	1.5	0.957
5500	6900	1.51	2.33	1.58	0.42	53	92	1.5	1.230
6500	7900	3.07	4.76	3.22	0.21	56.5	83.5	1.0	0.525
6500	7900	2.33	3.61	2.45	0.27	56.5	83.5	1.0	0.590
5600	6900	2.70	4.17	2.86	0.23	59	101	2.0	1.210
5000	6200	1.56	2.41	1.63	0.40	59	101	2.0	1.640
5800	7100	3.19	4.94	3.34	0.20	66	92	1.5	0.705
5800	7100	3.19	4.94	3.34	0.20	66	92	1.5	0.810
5100	6200	2.70	4.18	2.86	0.23	64	111	2.0	1.580
4500	5700	1.53	2.37	1.60	0.41	64	111	2.0	2.100
5300	6400	3.37	5.22	3.53	0.19	68	102	1.5	0.900
5300	6400	2.26	3.49	2.36	0.28	68	102	1.5	1.090
4700	5700	2.91	4.50	3.05	0.22	71	119	2.0	1.960
4100	5200	1.62	2.51	1.70	0.39	71	119	2.0	2.600

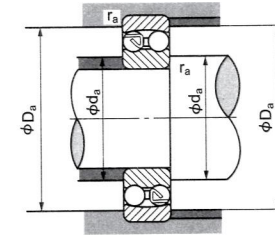
Bore diameter d: 65~110mm



Cylindrical bore



Taper bore (Taper: 1/12)



d	Principal dimensions			r (mm)	Designation		Basic load rating	
	D	B	B ₁		Cylindrical bore	Tapered bore	Dynamic Cr (N)	Static Cor (N)
65	120	23		1.5	1213	1213K	31000	12500
	120	31		1.5	2213	2213K	43500	16400
	140	33		2.1	1313	1313K	62000	22800
70	140	48		2.1	2313	2313K	96000	32500
	125	24		1.5	1214		34600	13800
	125	31		1.5	2214		44000	17100
	150	35		2.1	1314		74500	27700
	150	51		2.1	2314		107000	37500
75	130	25		1.5	1215	1215K	39000	15700
	130	31		1.5	2215	2215K	44000	17800
	160	37		2.1	1315	1315K	79000	30000
	160	55		2.1	2315	2315K	121000	43000
80	140	26		2	1216	1216K	39500	17000
	140	33		2	2216	2216K	49000	19900
	170	39		2.1	1316	1316K	88500	33000
	170	58		2.1	2316	2316K	126000	45500
85	150	28		2	1217	1217K	49000	20700
	150	36		2	2217	2217K	58000	23500
	180	41		3	1317	1317K	97500	38000
	180	60		3	2317	2317K	140000	51000
90	160	30		2	1218	1218K	57000	23400
	160	40		2	2218	2218K	70000	28600
	190	43	45	3	1318	1318K	116000	44500
	190	64		3	2318	2318K	152000	57500
95	170	32		2.1	1219	1219K	64000	27100
	170	43		2.1	2219	2219K	83500	34500
	200	45	48	3	1319	1319K	132000	50500
	200	67		3	2319	2319K	164000	64000
100	180	34		2.1	1220	1220K	69000	29700
	180	46		2.1	2220	2220K	94000	38500
	215	47	52	3	1320	1320K	143000	57000
	215	73		3	2320	2320K	192000	79000
105	190	36		2.1	1221		74500	32500
	190	50		2.1	2221		109000	44500
	225	49	54	3	1321		156000	64500
	225	77		3	2321		205000	88500
110	200	38		2.1	1222	1222K	88500	38500
	200	53		2.1	2222	2222K	125000	52000
	240	50	55	3	1322	1322K	165000	72000
	240	80		3	2322	2322K	217000	94500

Notes: 1) Tapered bore bearing with suffix 'K'. Taper 1:12;
2) B1: The width of ball assembly which exceed the width range of rings.

Limiting speed		Axial load coefficient			Coefficient e	Abutment and fillet Dimensions, mm			Ref. Weight kg
Grease	Oil	Y1	Y2	Y3		D _a (mix)	D _a (mix)	r _a (max)	
4800	5900	3.7	5.7	3.8	0.17	74	111	1.5	1.15
4800	5900	2.3	3.5	2.4	0.28	74	111	1.5	1.46
4300	5300	2.8	4.3	2.9	0.23	77	128	2	2.45
3800	4800	1.5	2.4	1.7	0.38	77	128	2	3.23
4500	5600	3.5	5.3	3.6	0.18	79	116	1.5	1.26
4500	5600	2.4	3.7	2.5	0.27	79	116	1.5	1.52
4000	4900	2.8	4.4	3.0	0.22	82	138	2	2.99
3500	4400	1.5	2.4	1.6	0.41	82	138	2	4.25
4300	5300	3.5	5.5	3.7	0.18	84	121	1.5	1.36
4300	5300	2.5	3.9	2.6	0.25	84	121	1.5	1.62
3700	4500	2.8	4.3	2.9	0.23	87	148	2	3.56
3300	4100	1.5	2.4	1.6	0.41	87	148	2	5.17
4000	4900	3.9	6.0	4.1	0.16	90	130	2	1.67
4000	4900	2.5	3.9	2.6	0.25	90	130	2	2.04
3500	4200	2.9	4.6	3.1	0.21	92	158	2	4.18
3100	3900	1.6	2.4	1.6	0.40	92	158	2	6.12
3700	4500	3.6	5.6	3.8	0.17	95	140	2	2.07
3700	4500	2.5	3.9	2.6	0.25	95	140	2	2.52
3200	4000	2.9	4.5	3.1	0.22	99	100	2.5	4.98
2900	3600	1.7	2.7	1.8	0.37	99	166	2.5	7.17
3500	4200	3.8	5.8	3.9	0.17	100	150	2	2.52
3500	4200	2.4	3.7	2.4	0.27	100	150	2	3.43
3100	3700	2.8	4.3	2.9	0.23	104	176	2.5	5.80
2700	3400	1.7	2.6	1.8	0.37	104	176	2.5	8.48
3200	4000	3.7	5.7	3.8	0.17	107	158	2	8.10
3200	4000	2.3	3.6	2.4	0.27	107	158	2	4.18
2900	3500	2.8	4.3	2.9	0.23	109	186	2.5	6.69
2600	3200	1.7	2.7	1.8	0.37	109	186	2.5	9.80
3100	3700	3.6	5.6	3.8	0.17	112	68	2	3.70
3100	3700	2.3	3.6	2.4	0.27	112	168	2	4.98
2700	3300	2.7	4.1	2.8	0.27	114	201	2.5	8.30
2400	3000	1.7	2.6	1.8	0.37	114	178	2.5	12.5
2900	3500	3.5	5.5	3.7	0.18	117	178	2	4.37
2900	3500	2.3	3.5	2.4	0.28	117	178	2	6.06
2500	3100	2.7	4.2	2.9	0.23	119	211	2.5	10.0
2300	2800	1.7	2.6	1.7	0.38	119	211	2.5	14.3
2700	3300	3.4	5.3	3.6	0.18	122	188	2	5.15
2700	3300	2.2	3.4	2.3	0.29	122	188	2	7.20
2400	2900	2.8	4.3	2.9	0.23	124	226	2.5	11.8
2100	2600	1.7	2.7	1.8	0.37	124	226	2.5	17.2