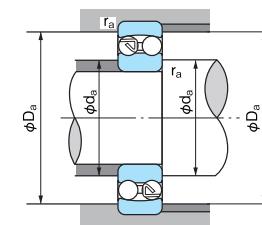
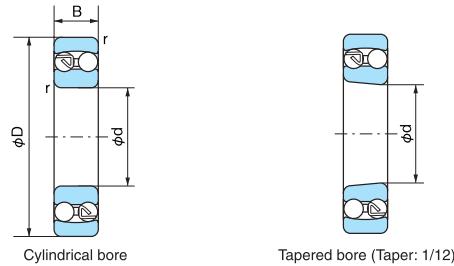


■ Self-aligning Ball Bearings

Bore Diameter: 45~80mm



■ Dynamic equivalent radial load

$$Pr = XFr + YFa$$

$\frac{Fa}{Fr} \leq e$		$\frac{Fa}{Fr} > e$	
X	Y	X	Y
1	Y_1	0.65	Y_2

■ Static equivalent radial load

$$P_{eq} = Fr + YoFa$$

Values of e , Y_1 , Y_2 and Y_0 from table.

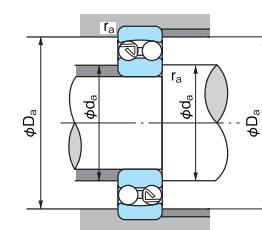
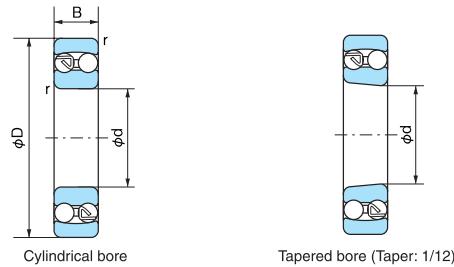
Boundary dimensions (mm)					Bearing No.		Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)		Limiting speed (min⁻¹)		Axial load factor			Constant e	Abutment and fillet dimensions (mm)			Mass (kg) (Reference) Cylindrical bore	Bearing No.
d	D	B	B ₁	r (mm)	Cylindrical bore	Tapered bore				Grease lubrication	Oil lubrication	Y ₁	Y ₂	Y ₀		da (mm)	D _a (max)	r _a (max)		
45	85	19	—	1.1	1209	1209K	21800	7350		7000	8500	2.94	4.56	3.09	0.21	51.5	78.5	1.0	0.465	1209
	85	23	—	1.1	2209	2209K	23300	8150		7000	8500	2.09	3.23	2.19	0.30	51.5	78.5	1.0	0.545	2209
	100	25	—	1.5	1309	1309K	38100	12700		6100	7500	2.56	3.95	2.68	0.25	53	92	1.5	0.957	1309
	100	36	—	1.5	2309	2309K	54400	16700		5600	7700	1.51	2.33	1.58	0.42	53	92	1.5	1.23	2309
50	90	20	—	1.1	1210	1210K	22700	8100		6500	7900	3.07	4.76	3.22	0.21	56.5	83.5	1.0	0.525	1210
	90	23	—	1.1	2210	2210K	23300	8500		6500	7900	2.33	3.61	2.45	0.27	56.5	83.5	1.0	0.590	2210
	110	27	—	2	1310	1310K	43400	14100		5600	6800	2.70	4.17	2.83	0.23	59	101	2.0	1.21	1310
	110	40	—	2	2310	2310K	64600	20300		5100	7000	1.56	2.41	1.63	0.40	59	101	2.0	1.64	2310
55	100	21	—	1.5	1211	1211K	26800	10000		5800	7100	3.19	4.94	3.34	0.20	63	92	1.5	0.705	1211
	100	25	—	1.5	2211	2211K	26800	10000		5800	7100	2.35	3.64	2.47	0.27	63	92	1.5	0.810	2211
	120	29	—	2	1311	1311K	51300	17900		5000	6200	2.70	4.18	2.83	0.23	64	111	2.0	1.58	1311
	120	43	—	2	2311	2311K	75300	24000		4600	6400	1.53	2.37	1.60	0.41	64	111	2.0	2.10	2311
60	110	22	—	1.5	1212	1212K	30200	11500		5200	6400	3.37	5.22	3.53	0.19	68	102	1.5	0.900	1212
	110	28	—	1.5	2212	2212K	34100	12600		5300	6500	2.26	3.49	2.36	0.28	68	102	1.5	1.09	2212
	130	31	—	2.1	1312	1312K	57200	20800		4500	5500	2.91	4.50	3.05	0.22	71	119	2.0	1.96	1312
	130	46	—	2.1	2312	2312K	87200	28300		4200	5800	1.62	2.51	1.70	0.39	71	119	2.0	2.60	2312
65	120	23	—	1.5	1213	1213K	31000	12500		4800	5800	3.67	5.68	3.84	0.17	73	112	1.5	1.15	1213
	120	31	—	1.5	2213	2213K	43500	16400		4900	5900	2.24	3.47	2.35	0.28	73	112	1.5	1.46	2213
	140	33	—	2.1	1313	1313K	61700	22900		4300	5200	2.73	4.23	2.86	0.23	76	129	2.0	2.45	1313
	140	48	—	2.1	2313	2313K	95800	32500		3800	5300	1.66	2.58	1.74	0.38	76	129	2.0	3.23	2313
70	125	24	—	1.5	1214	—	34600	13800		4600	5700	3.48	5.38	3.64	0.18	78	117	1.5	1.26	1214
	125	31	—	1.5	2214	—	43900	17100		4600	5600	2.42	3.74	2.53	0.26	78	117	1.5	1.52	2214
	150	35	—	2.1	1314	—	74000	27700		4000	4900	2.84	4.40	2.98	0.22	81	139	2.0	2.99	1314
	150	51	—	2.1	2314	—	89600	31700		3600	4900	1.82	2.82	1.91	0.35	81	139	2.0	4.23	2314
75	130	25	—	1.5	1215	1215K	38800	15700		4300	5300	3.60	5.58	3.77	0.17	83	122	1.5	1.36	1215
	130	31	—	1.5	2215	2215K	44200	17800		4300	5300	2.49	3.85	2.61	0.25	83	122	1.5	1.62	2215
	160	37	—	2.1	1315	1315K	78900	29900		4000	4900	2.80	4.33	2.93	0.23	86	149	2.0	3.56	1315
	160	55	—	2.1	2315	2315K	103000	36800		3400	4600	1.86	2.88	1.95	0.34	86	149	2.0	5.13	2315
80	140	26	—	2	1216	1216K	39800	17000		4000	4900	3.90	6.03	4.08	0.16	89	131	2.0	1.67	1216
	140	33	—	2	2216	2216K	49000	19900		4100	5000	2.42	3.75	2.54	0.26	89	131	2.0	2.01	2216
	170	39	—	2.1	1316	1316K	88100	33100		3500	4300	2.90	4.49	3.04	0.22	91	159	2.0	4.18	1316
	170	58	—	2.1	2316	2316K	129000	45700		3100	4300	1.87	2.90	1.96	0.34	91	159	2.0	6.10	2316

Remarks: 1. Suffix K means with a tapered bore (1/12)

2. Dimension B₁ is the width of the ball assembly extends beyond the ring width dimension.

■ Self-aligning Ball Bearings

Bore Diameter: 85~110mm



■ Dynamic equivalent radial load
 $P_r = XFr + YFa$

$\frac{Fa}{Fr} \leq e$		$\frac{Fa}{Fr} > e$	
X	Y	X	Y
1	Y_1	0.65	Y_2

■ Static equivalent radial load
 $P_o = Fr + YoFa$

Values of e , Y_1 , Y_2 and Y_0 from table.

Boundary dimensions (mm)					Bearing No.		Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)		Limiting speed (min⁻¹)		Axial load factor			Constant e	Abutment and fillet dimensions (mm)			Mass (kg) (Reference) Cylindrical bore	Bearing No.
d	D	B	B ₁	r (min)	Cylindrical bore	Tapered bore				Grease lubrication	Oil lubrication	Y ₁	Y ₂	Y ₀		da (min)	Da (max)	r _a (max)		
85	150	28	—	2	1217	1217K	49200	20800		3800	4600	3.61	5.59	3.78	0.17	94	141	2	2.07	1217
	150	36	—	2	2217	2217K	58300	23600		3800	4600	2.49	3.85	2.61	0.25	94	141	2	2.52	2217
	180	41	—	3	1317	1317K	97300	37800		3300	4000	2.93	4.53	3.07	0.22	98	167	2.5	4.98	1317
	180	60	—	3	2317	2317K	141000	51500		3000	4100	1.82	2.82	1.91	0.35	98	167	2.5	7.05	2317
90	160	30	—	2	1218	1218K	56800	23400		3500	4300	3.69	5.70	3.86	0.17	99	151	2	2.52	1218
	160	40	—	2	2218	2218K	67700	27200		3500	4300	2.39	3.71	2.51	0.26	99	151	2	3.40	2218
	190	43	—	3	1318	1318K	116000	44400		3100	3800	2.81	4.35	2.94	0.22	103	177	2.5	5.80	1318
	190	64	—	3	2318	2318K	153000	57900		2800	3900	1.84	2.85	1.93	0.34	103	177	2.5	8.44	2318
95	170	32	—	2.1	1219	1219K	57000	24300		3300	4000	3.63	5.62	3.80	0.17	106	159	2	3.10	1219
	170	43	—	2.1	2219	2219K	82700	34300		3300	4000	2.43	3.76	2.55	0.26	106	159	2	4.10	2219
	200	45	48.2	3	1319	1319K	132000	50800		2900	3600	2.73	4.23	2.86	0.23	108	187	2.5	6.69	1319
	200	67	—	3	2319	2319K	166000	64800		2700	3700	1.82	2.82	1.91	0.35	108	187	2.5	9.79	2319
100	180	34	—	2.1	1220	1220K	69000	29700		3100	3800	3.62	5.60	3.79	0.17	111	169	2	3.70	1220
	180	46	—	2.1	2220	2220K	80900	34000		3100	3800	2.57	3.98	2.70	0.24	111	169	2	4.98	2220
	215	47	52	3	1320	1320K	143000	57300		2800	3400	2.66	4.11	2.78	0.24	113	202	2.5	8.30	1320
	215	73	—	3	2320	2320K	183000	73400		2400	3400	1.84	2.85	1.93	0.34	113	202	2.5	12.4	2320
105	190	36	—	2.1	1221	—	77000	34000		2900	3600	3.56	5.51	3.73	0.18	116	179	2	4.37	1221
	190	50	—	2.1	2221	—	94900	40100		3000	3600	2.43	3.76	2.55	0.26	116	179	2	6.07	2221
	225	49	54	3	1321	—	149000	60200		2600	3200	2.73	4.22	2.86	0.23	118	212	2.5	10.0	1321
	225	77	—	3	2321	—	187000	78000		2300	3200	1.75	2.71	1.83	0.36	118	212	2.5	14.3	2321
110	200	38	—	2.1	1222	1222K	80200	35200		2800	3400	3.64	5.63	3.81	0.17	121	189	2	5.15	1222
	200	53	—	2.1	2222	2222K	120000	48900		2800	3400	2.41	3.73	2.53	0.26	121	189	2	7.10	2222
	240	50	55.2	3	1322	1322K	150000	63200		2400	3000	2.82	4.37	2.96	0.22	123	227	2.5	11.8	1322
	240	80	—	3	2322	2322K	200000	85700		2200	3000	1.82	2.82	1.91	0.35	123	227	2.5	17.3	2322

Remarks: 1. Suffix K means with a tapered bore (1/12)

2. Dimension B₁ is the width of the ball assembly extends beyond the ring width dimension.