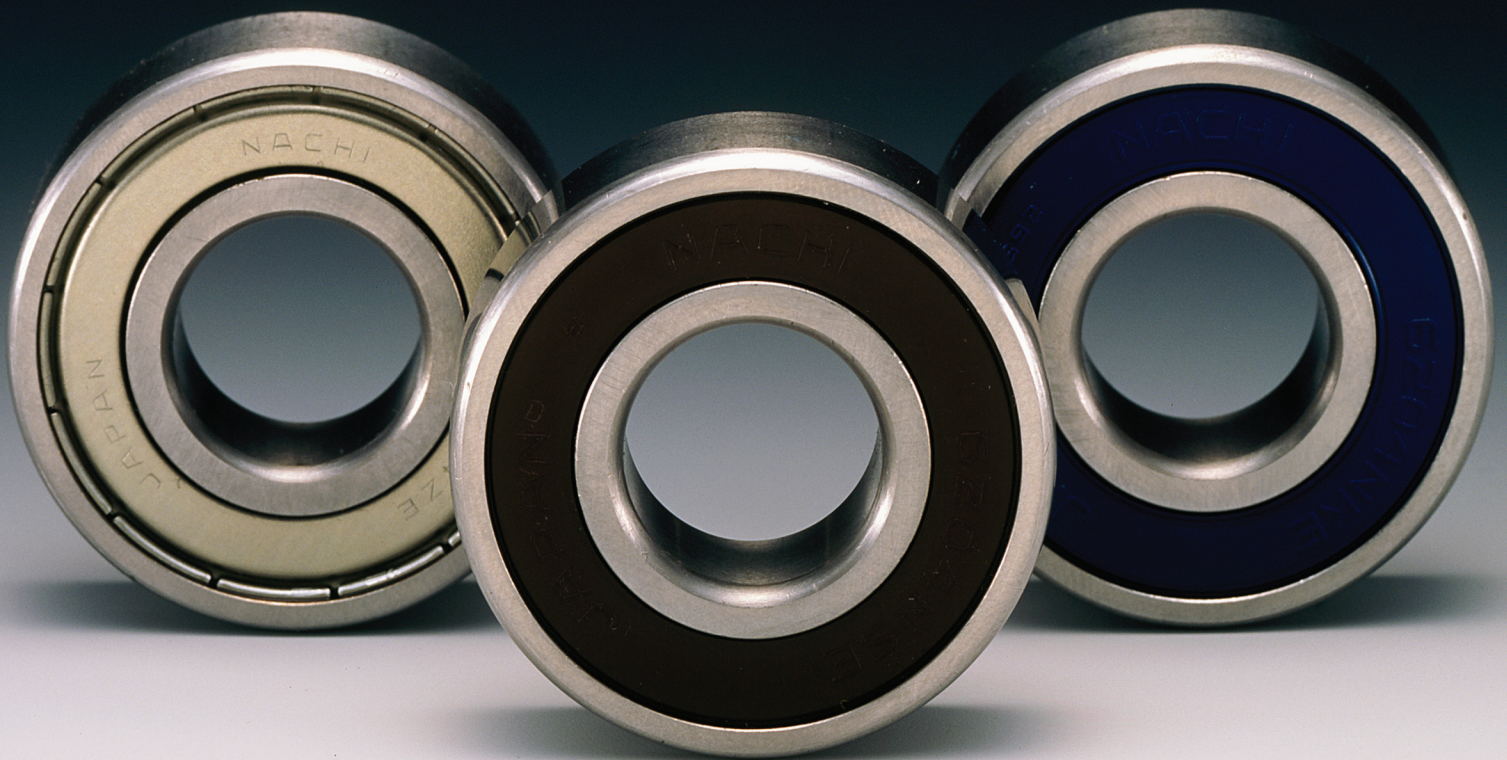
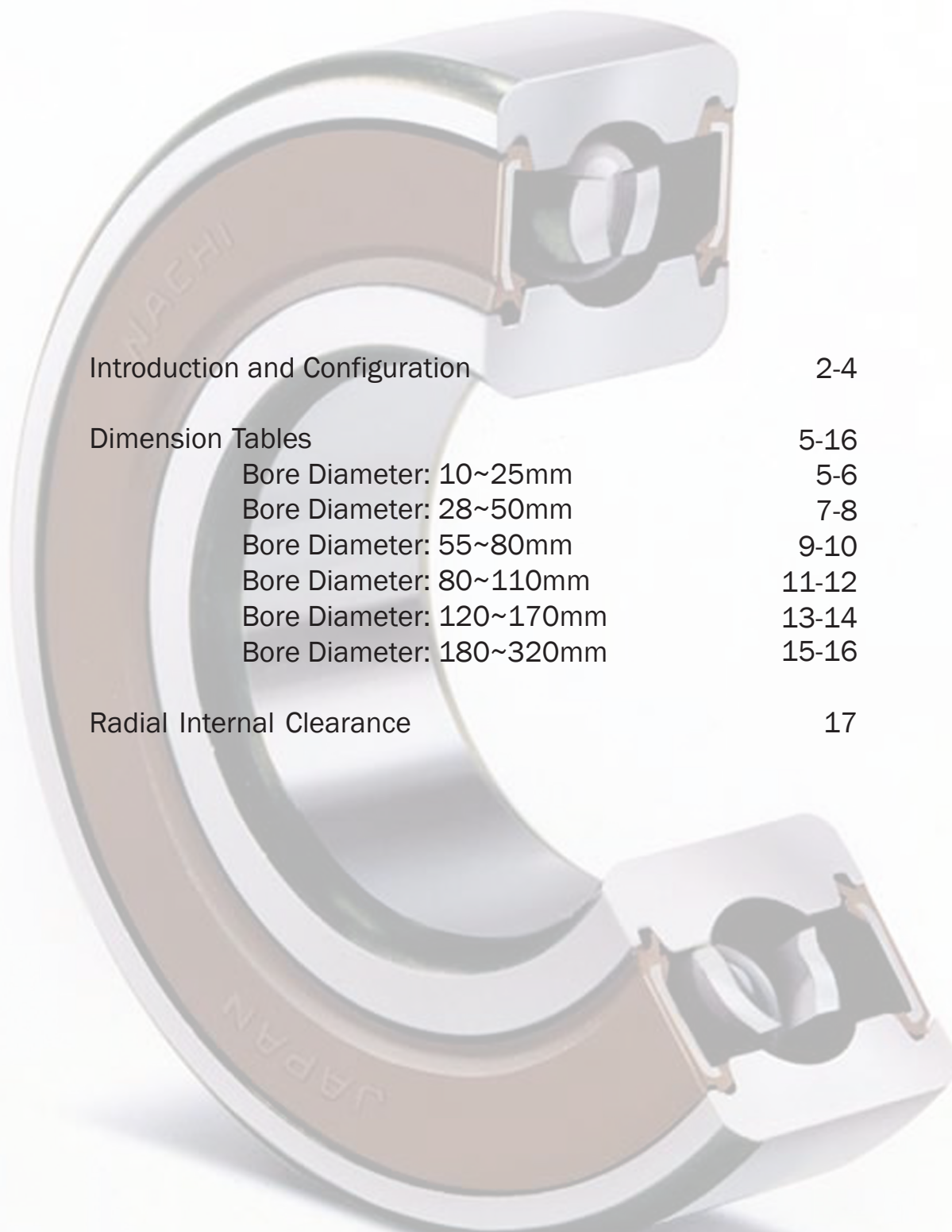


**NACHI**

# **DEEP GROOVE BALL BEARINGS**



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## Deep Groove Ball Bearings

Because of their versatility, Single-row, Deep Groove Ball Bearings are the most popular of all ball bearing types.

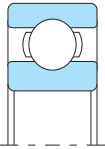
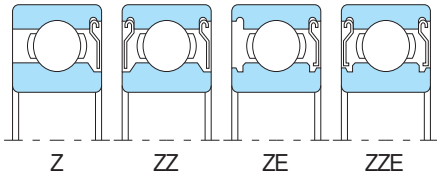
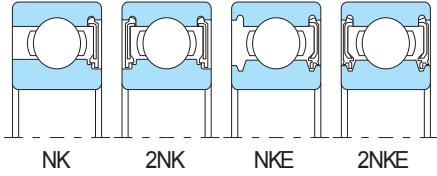
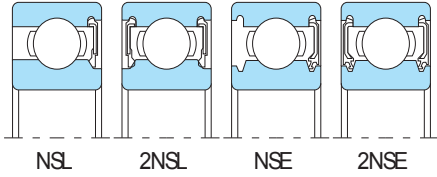
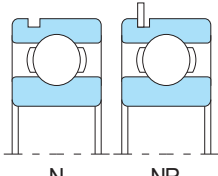
NACHI Deep-groove Ball Bearings are available in a wide range of series defined by the JIS(ISO) standard dimension plan and are also made to meet specialized dimension and configuration requirements. NACHI Deep Groove Ball Bearings are manufactured in both standard precision

grade (ISO Grade 0 - ABEC Grade 1) as well as in high-precision grades.

Table 1 shows common, standard configurations of Single-row Deep Groove Ball Bearings.

Table 2 next page shows a comparison of general characteristics of seal and shield designs for Single-row, Deep Groove Ball bearings.

**Table 1. Standard Configuration of Single-row, Deep Groove Ball Bearings**

Configuration*		Design	Cross section
Open (no seals, shields)		Consists of inner and outer rings, balls, and cage.	 Open
Sealed or shielded Bearings	Shield	One or two steel shields provide labyrinth clearance	 Z      ZZ      ZE      ZZE
	Non-contact Rubber Seal	One or two non-contact rubber seals provide labyrinth clearance	 NK      2NK      NKE      2NKE
	Contact Rubber Seal	One or two contact rubber seals in contact with inner ring	 NSL      2NSL      NSE      2NSE
Snap-ring Groove in Outer Ring	N: with snap-ring groove in outer ring. NR: with groove and snap ring in outer ring. (Use of snap ring allows easy mounting and simplified housing design.) Bearings may also be sealed or shielded.		 N      NR

Note : One seal or shield type bearings may have a seal groove on the other side.

## Deep Groove Ball Bearings

Table 2. Comparison of Seal and Shield Characteristics

Characteristics	Shield (Z, ZE)	Non-contact Rubber Seal (NK, NKE)	Contact Rubber Seal (NSL, NSE)
Friction torque	Low	Low	Higher than NK,NKE, Z and ZE
High speed	Excellent	Excellent	Good (There is some limitation)
Grease sealing	Good	Better than Z,ZE	<ul style="list-style-type: none"> <li>• Excellent at low speed</li> <li>• The grease may leak from the bearing at high speeds and high temperature.</li> <li>• The grease may leak in case of outer ring rotation.</li> </ul>
Dust proofing	Good	Better than Z,ZE	Excellent (Can be used in severe dust environments)
Water proofing	unsuitable	unsuitable	Excellent
Recommended operation temperature range for standard filled grease	-25~120°	-25~120°	-25~100°

## Attention

(1) Deep-groove Ball Bearings can sustain radial, axial or composite loads.

However when excessive axial load is applied, please consult with NACHI.

(2) Because sealed or shielded bearings are designed for inner ring rotating applications, the filled grease may leak when they are used with a high speed outer ring rotating condition.

In such a case, please contact NACHI.

(3) When bearings with contact rubber seals are used in a severe operating condition such as high speed or high temperature, the filled grease may leak.

In such a case, a design change or another kind of grease is required.

(4) When a bearing is mounted on a shaft (into a housing), force should only be applied to the side face of the inner (outer) ring.

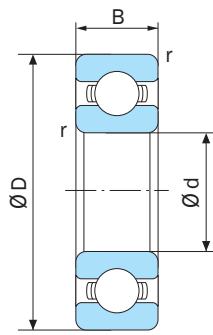
(5) The sealed or shielded bearings should not be washed or heated before mounting.

(6) It should be noted that mounting errors such as misalignment of the bearing rings cause an appreciable increase in noise level.

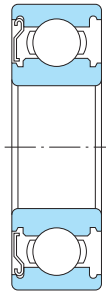
(7) The bearings must always be subjected to a minimum load to prevent sliding movements occurring between the balls and the raceways.

## Deep Groove Ball Bearings

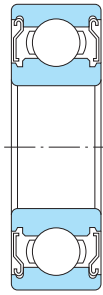
Bore Diameter: 10~25mm



Open



One shield (ZE)



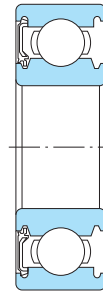
Two shields (ZZE)



One contact seal (NSE)



Two contact seals (2NSE)

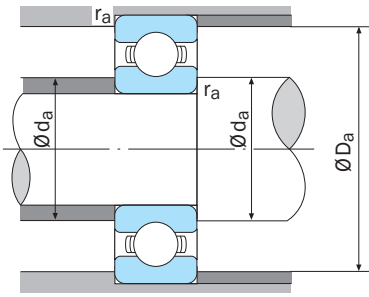


One non-contact seal (NKE)



Two non-contact seals (2NKE)

Boundary dimensions (mm)				Bearing No.							
d	D	B	r (min)	Open type	Shield type		Contact seal type		Non-contact seal type		
10	19	5	0.3	6800	6800Z	6800ZZ	—	—	—	—	
	22	6	0.3	6900	6900ZE	6900ZZE	6900NSE	6900-2NSE	6900NKE	6900-2NKE	
	26	8	0.3	6000	6000ZE	6000ZZE	6000NSE	6000-2NSE	6000NKE	6000-2NKE	
	30	9	0.6	6200	6200ZE	6200ZZE	6200NSE	6200-2NSE	6200NKE	6200-2NKE	
	35	11	0.6	6300	6300ZE	6300ZZE	6300NSE	6300-2NSE	6300NKE	6300-2NKE	
12	21	5	0.3	6801	6801ZE	6801ZZE	6801NSE	6801-2NSE	6801NKE	6801-2NKE	
	24	6	0.3	6901	6901ZE	6901ZZE	6901NSE	6901-2NSE	6901NKE	6901-2NKE	
	28	8	0.3	6001	6001ZE	6001ZZE	6001NSE	6001-2NSE	6001NKE	6001-2NKE	
	32	10	0.6	6201	6201ZE	6201ZZE	6201NSE	6201-2NSE	6201NKE	6201-2NKE	
	37	12	1	6301	6301ZE	6301ZZE	6301NSE	6301-2NSE	6301NKE	6301-2NKE	
15	24	5	0.3	6802	6802ZE	6802ZZE	6802NSE	6802-2NSE	6802NKE	6802-2NKE	
	28	7	0.3	6902	6902ZE	6902ZZE	6902NSE	6902-2NSE	6902NKE	6902-2NKE	
	32	8	0.3	16002	—	—	—	—	—	—	
	32	9	0.3	6002	6002ZE	6002ZZE	6002NSE	6002-2NSE	6002NKE	6002-2NKE	
	35	11	0.6	6202	6202ZE	6202ZZE	6202NSE	6202-2NSE	6202NKE	6202-2NKE	
	42	13	1	6302	6302ZE	6302ZZE	6302NSE	6302-2NSE	6302NKE	6302-2NKE	
	26	5	0.3	6803	6803ZE	6803ZZE	6803NSE	6803-2NSE	6803NKE	6803-2NKE	
17	30	7	0.3	6903	6903ZE	6903ZZE	6903NSE	6903-2NSE	6903NKE	6903-2NKE	
	35	8	0.3	16003	—	—	—	—	—	—	
	35	10	0.3	6003	6003ZE	6003ZZE	6003NSE	6003-2NSE	6003NKE	6003-2NKE	
	40	12	0.6	6203	6203ZE	6203ZZE	6203NSE	6203-2NSE	6203NKE	6203-2NKE	
	47	14	1	6303	6303ZE	6303ZZE	6303NSE	6303-2NSE	6303NKE	6303-2NKE	
	32	7	0.3	6804	6804ZE	6804ZZE	6804NSE	6804-2NSE	6804NKE	6804-2NKE	
20	37	9	0.3	6904	6904ZE	6904ZZE	6904NSE	6904-2NSE	6904NKE	6904-2NKE	
	42	8	0.3	16004	—	—	—	—	—	—	
	42	12	0.6	6004	6004ZE	6004ZZE	6004NSE	6004-2NSE	6004NKE	6004-2NKE	
	47	14	1	6204	6204ZE	6204ZZE	6204NSE	6204-2NSE	6204NKE	6204-2NKE	
	52	15	1.1	6304	6304ZE	6304ZZE	6304NSE	6304-2NSE	6304NKE	6304-2NKE	
	50	14	1	62/22	62/22ZE	62/22ZZE	62/22NSE	62/22-2NSE	62/22NKE	62/22-2NKE	
22	56	16	1.1	63/22	63/22ZE	63/22ZZE	63/22NSE	63/22-2NSE	63/22NKE	63/22-2NKE	
	37	7	0.3	6805	6805ZE	6805ZZE	6805NSE	6805-2NSE	6805NKE	6805-2NKE	
	42	9	0.3	6905	6905ZE	6905ZZE	6905NSE	6905-2NSE	6905NKE	6905-2NKE	
	47	8	0.3	16005	—	—	—	—	—	—	
	47	12	0.6	6005	6005ZE	6005ZZE	6005NSE	6005-2NSE	6005NKE	6005-2NKE	
	52	15	1	6205	6205ZE	6205ZZE	6205NSE	6205-2NSE	6205NKE	6205-2NKE	
25	62	17	1.1	6305	6305ZE	6305ZZE	6305NSE	6305-2NSE	6305NKE	6305-2NKE	



- Dynamic equivalent radial load  
 $P_r = XFr + YFa$
- Static equivalent radial load  
 Larger value of following to be used:  
 $P_{or} = 0.6Fr + 0.5Fa$   
 $P_{or} = Fr$

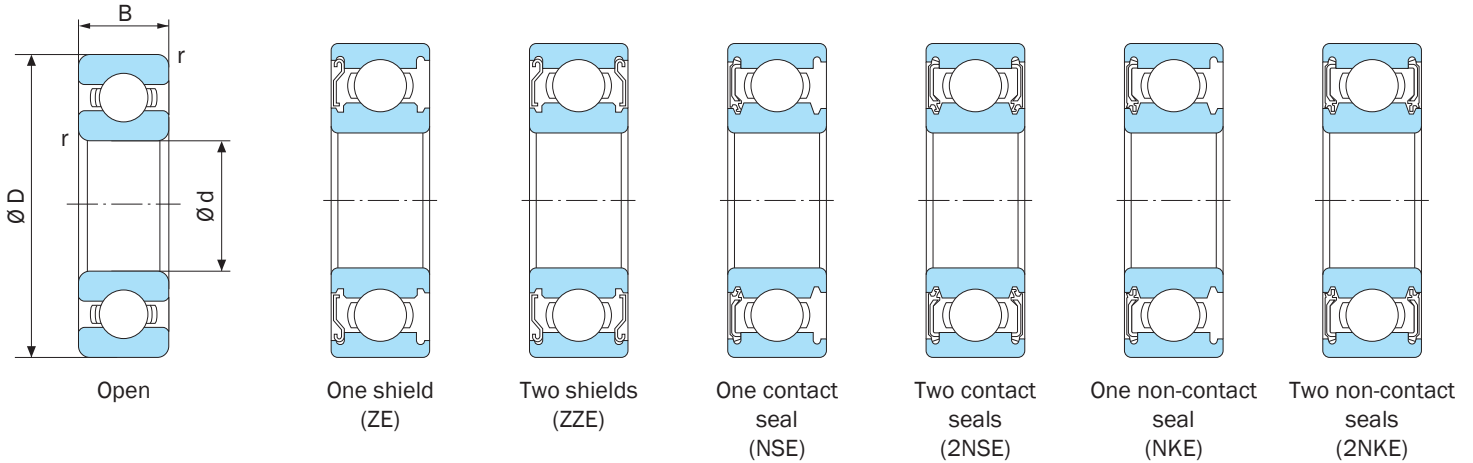
$\frac{f_0 Fa}{Cor}$	e	$\frac{Fa}{Fr} \leq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.172	0.19				2.30
0.345	0.22	1	0	0.56	1.99
0.689	0.26				1.71
1.03	0.28				1.55
1.38	0.30	1	0	0.56	1.45
2.07	0.34				1.31
3.45	0.38				1.15
5.17	0.42	1	0	0.56	1.04
6.89	0.44				1.00

1N=0.102kgf

Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Factor fo	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
			Grease lubrication		Oil lubrication	da (min)	Da (max)	ra (max)		
			Open type,ZE, ZZE,NKE,2NKE	NSE,2NSE	Open type,ZE					
2120	985	14.2	37000	24000	44000	12	17	0.3	0.005	6800
2490	1130	14.0	33000	22000	38000	12	20	0.3	0.009	6900
4550	1970	12.4	30000	22000	36000	12	24	0.3	0.019	6000
5100	2390	13.2	25000	18000	30000	15	25	0.6	0.032	6200
8100	3450	11.3	23000	17000	27000	15	30	0.6	0.053	6300
1920	1040	15.3	32000	20000	39000	14	19	0.3	0.006	6801
2700	1320	14.5	30000	20000	36000	14	22	0.3	0.011	6901
5100	2390	13.2	28000	18000	32000	14	26	0.3	0.023	6001
6800	3050	12.3	22000	17000	28000	17	27	0.6	0.037	6201
9750	4250	11.2	20000	16000	24000	18	31	1.0	0.060	6301
2080	1260	15.8	28000	17000	34000	17	22	0.3	0.007	6802
4300	2250	14.3	26000	17000	31000	17	26	0.3	0.016	6902
5600	2840	13.9	24000	—	28000	20	27	0.3	0.025	16002
5600	2840	13.9	24000	15000	28000	17	30	0.3	0.032	6002
7650	3700	13.1	20000	15000	24000	20	30	0.6	0.045	6202
11400	5400	12.3	17000	13000	21000	21	36	1.0	0.082	6302
2630	1570	16.1	26000	15000	30000	19	24	0.3	0.008	6803
4600	2550	14.7	24000	15000	29000	19	28	0.3	0.018	6903
6000	3250	14.3	22000	—	26000	22	30	0.3	0.032	16003
6000	3250	14.3	22000	14000	26000	19	33	0.3	0.039	6003
9550	4800	13.1	18000	12000	21000	22	35	0.6	0.065	6203
13600	6550	12.3	16000	11000	19000	23	41	1.0	0.115	6303
4000	2640	15.5	22000	13000	26000	22	30	0.3	0.019	6804
6350	3700	14.8	19000	12000	23000	22	35	0.3	0.036	6904
7900	4500	14.5	18000	—	21000	25	37	0.3	0.050	16004
9400	5000	13.9	18000	11000	21000	24	38	0.6	0.070	6004
12800	6600	13.1	16000	11000	18000	26	41	1.0	0.106	6204
15900	7900	12.4	14000	10000	17000	27	45	1.1	0.144	6304
13900	6950	13.1	14000	9700	17000	28	44	1.0	0.120	62/22
18400	9250	12.4	13000	9500	16000	29	49	1.0	0.176	63/22
4300	2940	16.0	18000	10000	22000	27	35	0.3	0.022	6805
7000	4500	15.3	16000	10000	20000	27	40	0.3	0.042	6905
6950	4600	15.6	15000	—	18000	30	42	0.3	0.060	16005
10100	5850	14.5	15000	9500	18000	29	43	0.6	0.079	6005
14000	7900	13.9	13000	9000	16000	31	46	1.0	0.128	6205
23600	12100	12.2	12000	8100	14000	32	55	1.0	0.232	6305

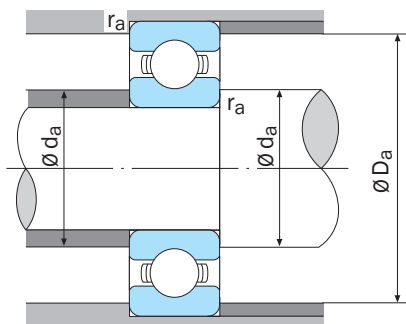
## Deep Groove Ball Bearings

Bore Diameter: 28~50mm



Boundary dimensions (mm)				Bearing No.						
d	D	B	r (min)	Open type	Shield type		Contact seal type		Non-contact seal type	
28	58	16	1	62/28	62/28ZE	62/28ZZE	62/28NSE	62/28-2NSE	62/28NKE	62/28-2NKE
	68	18	1.1	63/28	63/28ZE	63/28ZZE	63/28NSE	63/28-2NSE	63/28NKE	63/28-2NKE
30	42	7	0.3	6806	6806ZE	6806ZZE	6806NSE	6806-2NSE	6806NKE	6806-2NKE
	47	9	0.3	6906	6906ZE	6906ZZE	6906NSE	6906-2NSE	6906NKE	6906-2NKE
	55	9	0.3	16006	—	—	—	—	—	—
	55	13	1	6006	6006ZE	6006ZZE	6006NSE	6006-2NSE	6006NKE	6006-2NKE
	62	16	1	6206	6206ZE	6206ZZE	6206NSE	6206-2NSE	6206NKE	6206-2NKE
	72	19	1.1	6306	6306ZE	6306ZZE	6306NSE	6306-2NSE	6306NKE	6306-2NKE
32	65	17	1	62/32	62/32ZE	62/32ZZE	62/32NSE	62/32-2NSE	62/32NKE	62/32-2NKE
	75	20	1.1	63/32	63/32ZE	63/32ZZE	63/32NSE	63/32-2NSE	63/32NKE	63/32-2NKE
35	47	7	0.3	6807	6807ZE	6807ZZE	6807NSE	6807-2NSE	6807NKE	6807-2NKE
	55	10	0.6	6907	6907ZE	6907ZZE	6907NSE	6907-2NSE	6907NKE	6907-2NKE
	62	9	0.3	16007	—	—	—	—	—	—
	62	14	1	6007	6007ZE	6007ZZE	6007NSE	6007-2NSE	6007NKE	6007-2NKE
	72	17	1.1	6207	6207ZE	6207ZZE	6207NSE	6207-2NSE	6207NKE	6207-2NKE
	80	21	1.5	6307	6307ZE	6307ZZE	6307NSE	6307-2NSE	6307NKE	6307-2NKE
40	52	7	0.3	6808	6808ZE	6808ZZE	6808NSE	6808-2NSE	6808NKE	6808-2NKE
	62	12	0.6	6908	6908ZE	6908ZZE	6908NSE	6908-2NSE	6908NKE	6908-2NKE
	68	9	0.3	16008	—	—	—	—	—	—
	68	15	1	6008	6008ZE	6008ZZE	6008NSE	6008-2NSE	6008NKE	6008-2NKE
	80	18	1.1	6208	6208ZE	6208ZZE	6208NSE	6208-2NSE	6208NKE	6208-2NKE
	90	23	1.5	6308	6308ZE	6308ZZE	6308NSE	6308-2NSE	6308NKE	6308-2NKE
45	58	7	0.3	6809	6809ZE	6809ZZE	6809NSE	6809-2NSE	6809NKE	6809-2NKE
	68	12	0.6	6909	6909ZE	6909ZZE	6909NSE	6909-2NSE	6909NKE	6909-2NKE
	75	10	0.6	16009	—	—	—	—	—	—
	75	16	1	6009	6009ZE	6009ZZE	6009NSE	6009-2NSE	6009NKE	6009-2NKE
	85	19	1.1	6209	6209ZE	6209ZZE	6209NSE	6209-2NSE	6209NKE	6209-2NKE
	100	25	1.5	6309	6309ZE	6309ZZE	6309NSE	6309-2NSE	6309NKE	6309-2NKE
50	65	7	0.3	6810	6810ZE	6810ZZE	6810NSE	6810-2NSE	6810NKE	6810-2NKE
	72	12	0.6	6910	6910ZE	6910ZZE	6910NSE	6910-2NSE	6910NKE	6910-2NKE
	80	10	0.6	16010	—	—	—	—	—	—
	80	16	1	6010	6010ZE	6010ZZE	6010NSE	6010-2NSE	6010NKE	6010-2NKE
	90	20	1.1	6210	6210ZE	6210ZZE	6210NSE	6210-2NSE	6210NKE	6210-2NKE
	110	27	2	6310	6310ZE	6310ZZE	6310NSE	6310-2NSE	6310NKE	6310-2NKE





• **Dynamic equivalent radial load**

$$Pr = XFr + YFa$$

• **Static equivalent radial load**

Larger value of following to be used:

$$Por = 0.6Fr + 0.5Fa$$

$$Por = Fr$$

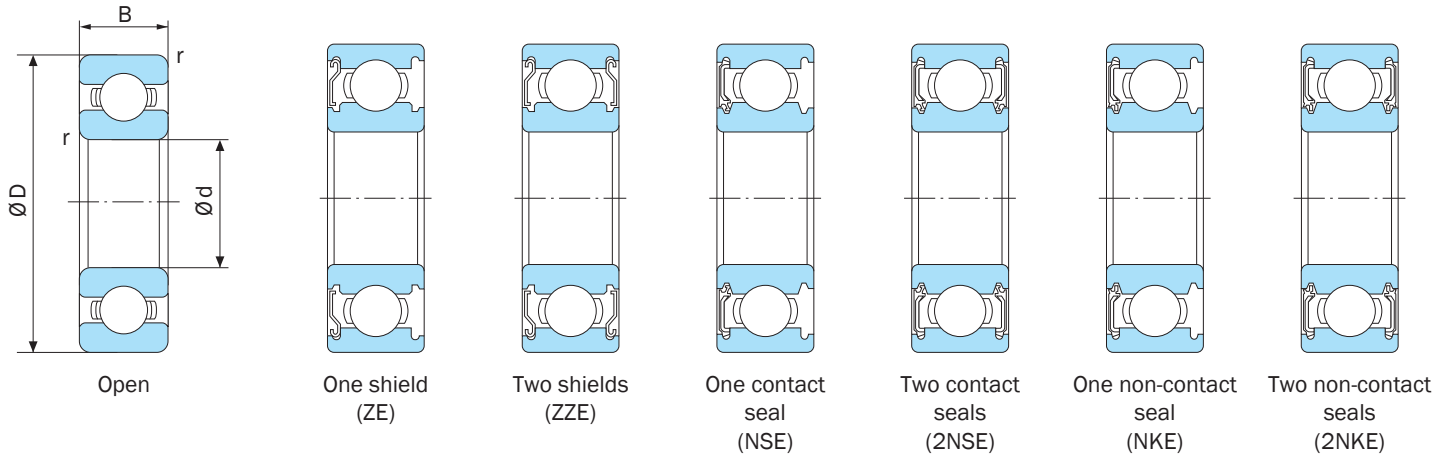
$\frac{foFa}{Cor}$	e	$\frac{Fa}{Fr} \leq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.172	0.19				2.30
0.345	0.22	1	0	0.56	1.99
0.689	0.26				1.71
1.03	0.28				1.55
1.38	0.30	1	0	0.56	1.45
2.07	0.34				1.31
3.45	0.38				1.15
5.17	0.42	1	0	0.56	1.04
6.89	0.44				1.00

1N=0.102kgf

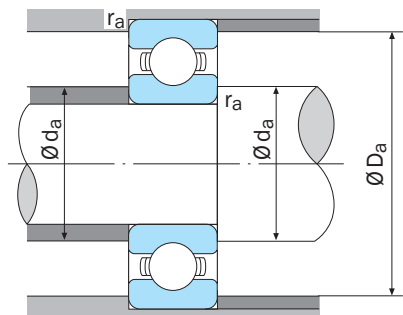
Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Factor fo	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
			Grease lubrication		Oil lubrication	da (min)	Da (max)	ra (max)		
			Open type,ZE, ZZE,NKE,2NKE	NSE,2NSE NSL,2NSL	Open type,ZE					
17900	9750	13.1	12000	8200	14000	34	52	1.0	0.175	62/28
26800	14000	12.4	11000	7500	13000	35	61	1.0	0.287	63/28
5350	3800	16.4	15000	9000	18000	32	40	0.3	0.026	6806
7250	5000	15.8	14000	8500	17000	32	45	0.3	0.045	6906
9950	6550	15.4	13000	—	15000	35	50	0.3	0.085	16006
13200	8300	14.8	13000	8000	15000	35	50	1.0	0.117	6006
19500	11300	13.9	11000	7500	13000	36	56	1.0	0.199	6206
26700	15000	13.2	10000	6700	12000	37	65	1.0	0.346	6306
22400	13100	13.6	11000	7100	12000	38	59	1.0	0.230	62/32
30000	16200	12.7	9500	6500	11000	39	68	1.0	0.382	63/32
4750	3800	16.4	14000	7600	16000	37	45	0.3	0.029	6807
10400	7150	15.6	12000	7500	15000	39	51	0.6	0.073	6907
11700	8150	15.6	12000	—	14000	40	57	0.3	0.110	16007
16000	10300	14.8	12000	6800	14000	40	57	1.0	0.156	6007
25700	15300	13.8	9800	6300	11000	42	65	1.0	0.288	6207
33500	19200	13.2	8800	6000	10000	44	71	1.5	0.457	6307
5950	4900	16.2	12000	6700	14000	42	50	0.3	0.033	6808
13700	9950	15.8	11000	6300	13000	44	58	0.6	0.108	6908
11100	8550	16.1	10000	—	12000	45	63	0.3	0.125	16008
16800	11500	15.3	10000	6100	12000	45	63	1.0	0.194	6008
29100	17900	14.0	8700	5600	10000	47	73	1.0	0.366	6208
40500	24100	13.2	7800	5300	9200	49	81	1.5	0.633	6308
5350	4900	16.1	11000	6000	13000	47	56	0.3	0.040	6809
14100	10900	16.1	10000	5600	12000	49	64	0.6	0.122	6909
12900	10500	16.2	9200	—	11000	52	68	0.6	0.170	16009
20900	15200	15.3	9200	5400	11000	50	70	1.0	0.246	6009
32500	20500	14.1	7800	5300	9300	52	78	1.0	0.407	6209
53000	32000	13.1	7000	4800	8200	54	91	1.5	0.833	6309
6400	5800	16.1	10000	5300	12000	52	63	0.3	0.052	6810
14500	11700	16.1	9500	5300	11000	54	68	0.6	0.125	6910
16100	13100	16.1	8500	—	10000	57	73	0.6	0.180	16010
21800	16600	15.6	8500	5000	10000	55	75	1.0	0.264	6010
35000	23200	14.4	7100	4800	8600	57	83	1.0	0.463	6210
62000	38000	13.1	6400	4300	7500	60	100	2.0	1.07	6310

## Deep Groove Ball Bearings

Bore Diameter: 55~80mm



Boundary dimensions (mm)				Bearing No.						
d	D	B	r (min)	Open type	Shield type		Contact seal type		Non-contact seal type	
55	72	9	0.3	6811	6811Z	6811ZZ	—	—	—	—
	80	13	1	6911	6911Z	6911ZZ	—	—	—	—
	90	11	0.6	16011	—	—	—	—	—	—
	90	18	1.1	6011	6011ZE	6011ZZE	6011NSE	6011-2NSE	6011NKE	6011-2NKE
	100	21	1.5	6211	6211ZE	6211ZZE	6211NSE	6211-2NSE	6211NKE	6211-2NKE
	120	29	2	6311	6311ZE	6311ZZE	6311NSE	6311-2NSE	6311NKE	6311-2NKE
60	78	10	0.3	6812	6812Z	6812ZZ	—	—	—	—
	85	13	1	6912	6912Z	6912ZZ	—	—	—	—
	95	11	0.6	16012	—	—	—	—	—	—
	95	18	1.1	6012	6012ZE	6012ZZE	6012NSE	6012-2NSE	6012NKE	6012-2NKE
	110	22	1.5	6212	6212ZE	6212ZZE	6212NSE	6212-2NSE	6212NKE	6212-2NKE
	130	31	2.1	6312	6312ZE	6312ZZE	6312NSE	6312-2NSE	6312NKE	6312-2NKE
65	85	10	0.6	6813	6813Z	6813ZZ	—	—	—	—
	90	13	1	6913	6913Z	6913ZZ	—	—	—	—
	100	11	0.6	16013	—	—	—	—	—	—
	100	18	1.1	6013	6013ZE	6013ZZE	6013NSE	6013-2NSE	6013NKE	6013-2NKE
	120	23	1.5	6213	6213ZE	6213ZZE	6213NSE	6213-2NSE	6213NKE	6213-2NKE
	140	33	2.1	6313	6313ZE	6313ZZE	6313NSE	6313-2NSE	6313NKE	6313-2NKE
70	90	10	0.6	6814	6814Z	6814ZZ	—	—	—	—
	100	16	1	6914	6914Z	6914ZZ	—	—	—	—
	110	13	0.6	16014	—	—	—	—	—	—
	110	20	1.1	6014	6014ZE	6014ZZE	6014NSE	6014-2NSE	6014NKE	6014-2NKE
	125	24	1.5	6214	6214ZE	6214ZZE	6214NSE	6214-2NSE	6214NKE	6214-2NKE
	150	35	2.1	6314	6314ZE	6314ZZE	6314NSE	6314-2NSE	6314NKE	6314-2NKE
75	95	10	0.6	6815	6815Z	6815ZZ	—	—	—	—
	105	16	1	6915	6915Z	6915ZZ	—	—	—	—
	115	13	0.6	16015	—	—	—	—	—	—
	115	20	1.1	6015	6015ZE	6015ZZE	6015NSE	6015-2NSE	6015NKE	6015-2NKE
	130	25	1.5	6215	6215ZE	6215ZZE	6215NSE	6215-2NSE	6215NKE	6215-2NKE
	160	37	2.1	6315	6315ZE	6315ZZE	6315NSE	6315-2NSE	6315NKE	6315-2NKE
80	100	10	0.6	6816	6816Z	6816ZZ	—	—	—	—
	110	16	1	6916	6916Z	6916ZZ	—	—	—	—
	125	14	0.6	16016	—	—	—	—	—	—
	125	22	1.1	6016	6016Z	6016ZZ	—	—	—	—
	140	26	2	6216	6216Z	6216ZZ	6216NSL	6216-2NSL	6216NK	6216-2NK
	170	39	2.1	6316	6316Z	6316ZZ	6316NSL	6316-2NSL	6316NK	6316-2NK



• Dynamic equivalent radial load

$$Pr = XFr + YFa$$

• Static equivalent radial load

Larger value of following to be used:

$$Por = 0.6Fr + 0.5Fa$$

$$Por = Fr$$

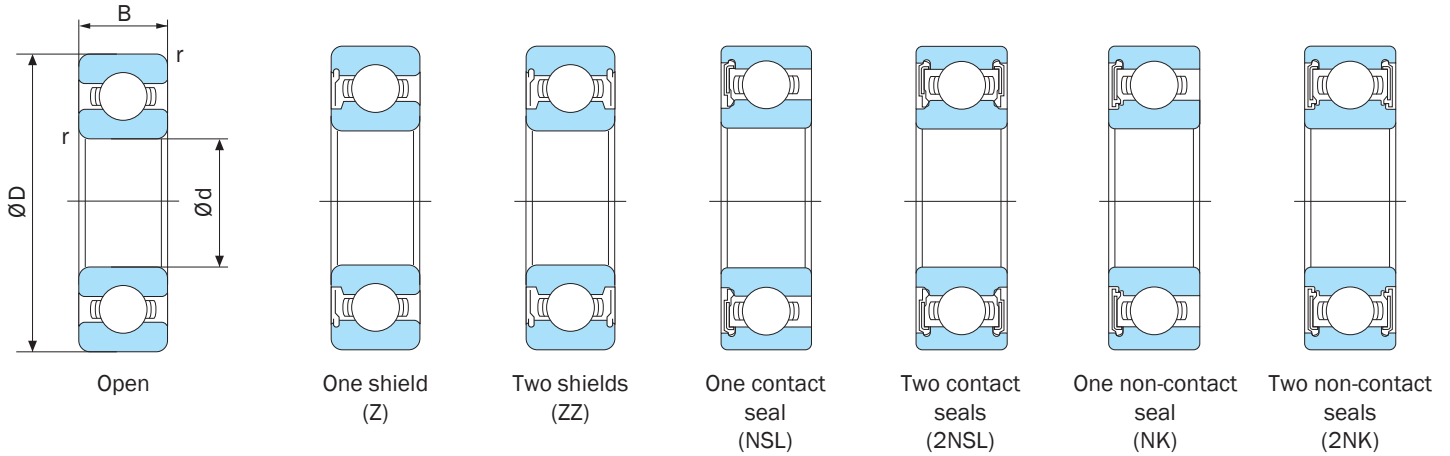
foFa Cor	e	Fa ≤ eFr		Fa > eFr	
		X	Y	X	Y
0.172	0.19				2.30
0.345	0.22	1	0	0.56	1.99
0.689	0.26				1.71
1.03	0.28				1.55
1.38	0.30	1	0	0.56	1.45
2.07	0.34				1.31
3.45	0.38				1.15
5.17	0.42	1	0	0.56	1.04
6.89	0.44				1.00

1N=0.102kgf

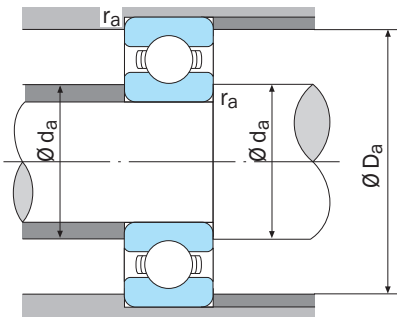
Basic dynamic load rating Cr (N)	Basic static load rating Cr (N)	Factor fo	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
			Grease lubrication		Oil lubrication	da (min)	Da (max)	ra (max)		
			Open type,ZE, ZZE,NKE,2NKE	NSE,2NSE, NSL,2NSL	Open type,ZE					
8800	8100	16.2	8700	—	10000	57	70	0.3	0.083	6811
16000	13200	16.2	8200	—	9600	60	75	1.0	0.177	6911
15200	13500	16.5	7700	—	9000	62	83	0.6	0.260	16011
28300	21300	15.4	7700	4500	9000	61	84	1.0	0.384	6011
43500	29300	14.4	6400	4300	7700	64	91	1.5	0.607	6211
71500	44500	13.1	5800	4000	6800	65	110	2.0	1.37	6311
11500	10600	16.3	8000	—	9500	62	76	0.3	0.106	6812
15200	13500	16.5	7600	—	9000	65	80	1.0	0.191	6912
16200	14300	16.5	7100	—	8500	67	88	0.6	0.280	16012
29400	23200	15.5	7100	4100	8500	66	89	1.0	0.418	6012
52500	36000	14.3	6000	3800	7100	69	101	1.5	0.783	6212
82000	52000	13.2	5400	3600	6300	72	118	2.0	1.70	6312
11900	11500	16.2	7500	—	8700	69	81	0.6	0.125	6813
17400	16000	16.5	7100	—	8500	70	85	1.0	0.200	6913
20500	18600	16.4	6700	—	8000	72	93	0.6	0.300	16013
30500	25200	15.7	6700	4000	8000	71	94	1.0	0.438	6013
57000	40000	14.4	5500	3600	6500	74	111	1.5	0.990	6213
92500	59500	13.2	4900	3400	6000	77	128	2.0	2.08	6313
12100	11900	16.1	7000	—	8100	74	86	0.6	0.135	6814
23700	21100	16.3	6500	—	7700	75	95	1.0	0.327	6914
26800	23600	16.2	6100	—	7100	77	103	0.6	0.433	16014
38000	31000	15.6	6100	3600	7100	76	104	1.0	0.607	6014
62000	44000	14.4	5100	3400	6300	79	116	1.5	1.07	6214
104000	68000	13.2	4600	3200	5400	82	138	2.0	2.52	6314
12500	12800	16.0	6500	—	7600	79	91	0.6	0.145	6815
20800	19700	16.5	6200	—	7200	80	100	1.0	0.345	6915
27600	25300	16.4	5700	—	6700	82	108	0.6	0.457	16015
39500	33500	15.7	5700	3400	6700	81	109	1.0	0.645	6015
66000	49500	14.7	4800	3200	5600	84	121	1.5	1.18	6215
113000	77000	13.2	4300	2900	5000	87	148	2.0	3.02	6315
12700	13300	15.9	6000	—	7100	84	96	0.6	0.155	6816
27600	25300	16.4	5700	—	6700	85	105	1.0	0.363	6916
32000	29600	16.4	5300	—	6300	87	118	0.6	0.597	16016
47500	39500	15.6	5300	—	6300	86	119	1.0	0.855	6016
72500	53000	14.6	4500	3000	5300	90	130	2.0	1.40	6216
123000	86500	13.2	4000	2800	4800	92	158	2.0	3.59	6316

## Deep Groove Ball Bearings

Bore Diameter: 80~110mm



Boundary dimensions (mm)				Bearing No.							
d	D	B	r (min)	Open type	Shield type		Contact seal type		Non-contact seal type		
85	110	13	1	6817	6817Z	6817ZZ	—	—	—	—	
	120	18	1.1	6917	6917Z	6917ZZ	—	—	—	—	
	130	14	0.6	16017	—	—	—	—	—	—	
	130	22	1.1	6017	6017Z	6017ZZ	—	—	—	—	
	150	28	2	6217	6217Z	6217ZZ	6217NSL	6217-2NSL	6217NK	6217-2NK	
	180	41	3	6317	6317Z	6317ZZ	6317NSL	6317-2NSL	6317NK	6317-2NK	
90	115	13	1	6818	6818Z	6818ZZ	—	—	—	—	
	125	18	1.1	6918	6918Z	6918ZZ	—	—	—	—	
	140	16	1	16018	—	—	—	—	—	—	
	140	24	1.5	6018	6018Z	6018ZZ	—	—	—	—	
	160	30	2	6218	6218Z	6218ZZ	6218NSL	6218-2NSL	6218NK	6218-2NK	
	190	43	3	6318	6318Z	6318ZZ	6318NSL	6318-2NSL	6318NK	6318-2NK	
95	120	13	1	6819	6819Z	6819ZZ	—	—	—	—	
	130	18	1.1	6919	6919Z	6919ZZ	—	—	—	—	
	145	16	1	16019	—	—	—	—	—	—	
	145	24	1.5	6019	6019Z	6019ZZ	—	—	—	—	
	170	32	2.1	6219	6219Z	6219ZZ	6219NSL	6219-2NSL	6219NK	6219-2NK	
	200	45	3	6319	6319Z	6319ZZ	6319NSL	6319-2NSL	6319NK	6319-2NK	
100	125	13	1	6820	6820Z	6820ZZ	—	—	—	—	
	140	20	1.1	6920	6920Z	6920ZZ	—	—	—	—	
	150	16	1	16020	—	—	—	—	—	—	
	150	24	1.5	6020	6020Z	6020ZZ	—	—	—	—	
	180	34	2.1	6220	6220Z	6220ZZ	6220NSL	6220-2NSL	6220NK	6220-2NK	
	215	47	3	6320	6320Z	6320ZZ	6320NSL	6320-2NSL	6320NK	6320-2NK	
105	130	13	1	6821	—	—	—	—	—	—	
	145	20	1.1	6921	—	—	—	—	—	—	
	160	18	1	16021	—	—	—	—	—	—	
	160	26	2	6021	6021Z	6021ZZ	—	—	—	—	
	190	36	2.1	6221	6221Z	6221ZZ	—	—	—	—	
	225	49	3	6321	6321Z	6321ZZ	—	—	—	—	
110	140	16	1	6822	—	—	—	—	—	—	
	150	20	1.1	6922	—	—	—	—	—	—	
	170	19	1	16022	—	—	—	—	—	—	
	170	28	2	6022	6022Z	6022ZZ	—	—	—	—	
	200	38	2.1	6222	6222Z	6222ZZ	—	—	—	—	
	240	50	3	6322	6322Z	6322ZZ	—	—	—	—	



1N=0.102kgf

• **Dynamic equivalent radial load**

$$Pr = XFr + YFa$$

• **Static equivalent radial load**

Larger value of following to be used:

$$Por = 0.6Fr + 0.5Fa$$

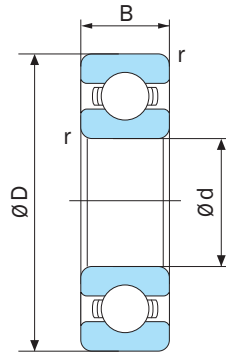
$$Por = Fr$$

foFa Cor	e	Fa/Fr ≤ e		Fa/Fr > e	
		X	Y	X	Y
0.172	0.19				2.30
0.345	0.22	1	0	0.56	1.99
0.689	0.26				1.71
1.03	0.28				1.55
1.38	0.30	1	0	0.56	1.45
2.07	0.34				1.31
3.45	0.38				1.15
5.17	0.42	1	0	0.56	1.04
6.89	0.44				1.00

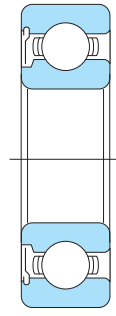
Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Factor fo	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
			Grease lubrication		Oil lubrication	da (min)	Da (max)	ra (max)		
			Open type,Z, ZZ,NK,2NK	NSL,2NSL	Open type,Z					
18700	19000	16.2	5700	—	6700	90	105	1.0	0.265	6817
32000	29600	16.4	5400	—	6300	91	113	1.0	0.517	6917
31500	29800	16.4	5000	—	6000	92	123	0.6	0.626	16017
49500	43000	15.7	5000	—	6000	91	124	1.1	0.895	6017
84000	62000	14.5	4300	2800	5000	95	140	2.0	1.79	6217
133000	96500	13.3	3800	2600	4500	99	166	2.5	4.23	6317
19000	19700	16.1	5400	—	6300	95	110	1.0	0.280	6818
33000	31500	16.4	5100	—	6000	96	119	1.0	0.540	6918
41500	39500	16.3	4800	—	5600	99	131	1.0	0.848	16018
58000	49500	15.6	4800	—	5600	97	133	1.5	1.17	6018
96000	71500	14.5	4000	2600	4800	100	150	2.0	2.15	6218
143000	107000	13.3	3600	2400	4300	104	176	2.5	4.91	6318
19300	20500	16.0	5000	—	6000	100	115	1.0	0.298	6819
33500	33500	16.5	4800	—	5700	101	124	1.0	0.567	6919
41000	39500	16.4	4600	—	5300	104	136	1.0	0.885	16019
60500	54000	15.8	4500	—	5300	102	138	1.5	1.22	6019
109000	81500	14.4	3800	2600	4500	107	158	2.0	2.62	6219
153000	118000	13.3	3300	2400	3900	109	186	2.5	5.67	6319
19600	21200	16.0	4800	—	5600	105	120	1.0	0.311	6820
37000	36500	16.5	4500	—	5300	106	134	1.0	0.771	6920
37500	39500	16.4	4300	—	5300	109	141	1.0	0.910	16020
60000	54000	15.9	4300	—	5300	107	143	1.5	1.26	6020
122000	93000	14.4	3600	2400	4300	112	168	2.0	3.14	6220
173000	141000	13.2	3200	2200	3700	114	201	2.5	7.00	6320
19900	21900	15.9	4800	—	5600	110	125	1.0	0.325	6821
42500	42000	16.4	4300	—	5300	111	139	1.0	0.793	6921
37500	50500	16.4	4000	—	4800	114	151	1.0	1.20	16021
72500	65500	15.8	4000	—	4800	113	152	2.0	1.60	6021
133000	104000	14.3	3400	—	4000	117	178	2.0	3.76	6221
184000	153000	13.2	3000	—	3600	119	211	2.5	8.05	6321
27300	29400	16.9	4300	—	5300	115	135	1.0	0.510	6822
38000	38500	16.4	4300	—	5000	116	144	1.0	0.830	6922
44000	45000	16.5	3800	—	4500	119	161	1.0	1.46	16022
84500	73000	15.5	3800	—	4500	118	162	2.0	1.97	6022
144000	117000	14.3	3200	—	3800	122	188	2.0	4.36	6222
205000	179000	13.1	2900	—	3400	124	226	2.5	9.54	6322

## Deep Groove Ball Bearings

Bore Diameter: 120~170mm



Open

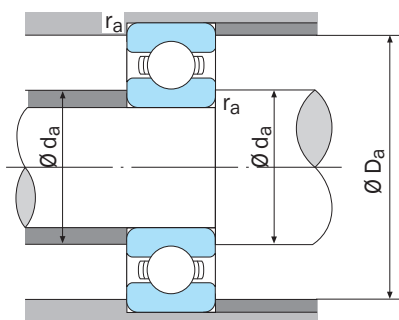


One shield  
(Z)



Two shields  
(ZZ)

Boundary dimensions (mm)				Bearing No.							
d	D	B	r (min)	Open type	Shield type		Contact seal type		Non-contact seal type		
120	150	16	1	6824	—	—	—	—	—	—	
	165	22	1.1	6924	—	—	—	—	—	—	
	180	19	1	16024	—	—	—	—	—	—	
	180	28	2	6024	6024Z	6024ZZ	—	—	—	—	
	215	40	2.1	6224	6224Z	6224ZZ	—	—	—	—	
	260	55	3	6324	6324Z	6324ZZ	—	—	—	—	
130	165	18	1.1	6826	—	—	—	—	—	—	
	180	24	1.5	6926	—	—	—	—	—	—	
	200	22	1.1	16026	—	—	—	—	—	—	
	200	33	2	6026	6026Z	6026ZZ	—	—	—	—	
	230	40	3	6226	6226Z	6226ZZ	—	—	—	—	
	280	58	4	6326	6326Z	6326ZZ	—	—	—	—	
140	175	18	1.1	6828	—	—	—	—	—	—	
	190	24	1.5	6928	—	—	—	—	—	—	
	210	22	1.1	16028	—	—	—	—	—	—	
	210	33	2	6028	6028Z	6028ZZ	—	—	—	—	
	250	42	3	6228	6228Z	6228ZZ	—	—	—	—	
	300	62	4	6328	6328Z	6328ZZ	—	—	—	—	
150	190	20	1.1	6830	—	—	—	—	—	—	
	210	28	2	6930	—	—	—	—	—	—	
	225	24	1.1	16030	—	—	—	—	—	—	
	225	35	2.1	6030	6030Z	6030ZZ	—	—	—	—	
	270	45	3	6230	6230Z	6230ZZ	—	—	—	—	
	320	65	4	6330	—	—	—	—	—	—	
160	200	20	1.1	6832	—	—	—	—	—	—	
	220	28	2	6932	—	—	—	—	—	—	
	240	38	2.1	6032	—	—	—	—	—	—	
	290	48	3	6232	6232Z	6232ZZ	—	—	—	—	
	340	68	4	6332	—	—	—	—	—	—	
170	215	22	1.1	6834	—	—	—	—	—	—	
	230	28	2	6934	—	—	—	—	—	—	
	260	42	2.1	6034	—	—	—	—	—	—	
	310	52	4	6234	—	—	—	—	—	—	
	360	72	4	6334	—	—	—	—	—	—	



• **Dynamic equivalent radial load**

$$Pr = XFr + YFa$$

• **Static equivalent radial load**

Larger value of following to be used:

$$Por = 0.6Fr + 0.5Fa$$

$$Por = Fr$$

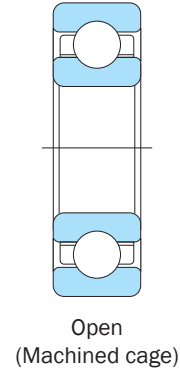
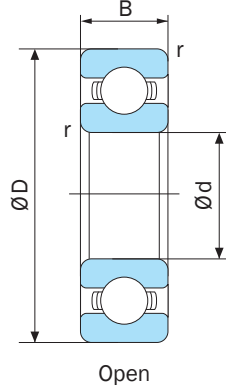
$\frac{Fa}{Cor}$	e	$\frac{Fa}{Fr} \leq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.172	0.19				2.30
0.345	0.22	1	0	0.56	1.99
0.689	0.26				1.71
1.03	0.28				1.55
1.38	0.30	1	0	0.56	1.45
2.07	0.34				1.31
3.45	0.38				1.15
5.17	0.42	1	0	0.56	1.04
6.89	0.44				1.00

1N=0.102kgf

	Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Factor fo	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
				Grease lubrication		Oil lubrication	da (min)	Da (max)	ra (max)		
				Open type,Z, ZZ,NK,2NK	NSL,2NSL	Open type,Z					
	28300	31500	16.0	4000	—	4800	125	145	1.0	0.549	6824
	53000	54000	16.5	3800	—	4600	126	159	1.0	1.13	6924
	48000	50000	16.4	3600	—	4300	129	171	1.0	1.80	16024
	88000	79500	15.7	3600	—	4300	128	172	2.0	2.67	6024
	145000	118000	14.4	2900	—	3400	132	203	2.0	5.15	6224
	207000	185000	13.6	2600	—	3100	134	246	2.5	14.6	6324
	37000	41000	16.1	3700	—	4400	136	158	1.0	0.790	6826
	65000	67000	16.4	3500	—	4200	137	173	1.5	1.78	6926
	55000	59500	16.3	3200	—	3800	144	186	1.0	2.69	16026
	106000	101000	15.7	3200	—	3800	138	192	2.0	3.92	6026
	167000	146000	14.5	2700	—	3200	144	216	2.5	5.82	6226
	229000	214000	13.6	2400	—	2800	148	262	3.0	18.2	6326
	38000	44500	16.0	3400	—	4000	146	169	1.0	0.840	6828
	66500	71000	16.5	3200	—	3800	147	183	1.5	1.90	6928
	56000	62000	16.2	3000	—	3500	154	196	1.0	2.86	16028
	110000	109000	15.9	3000	—	3600	148	202	2.0	4.15	6028
	166000	150000	14.8	2500	—	2900	154	236	2.5	7.47	6228
	253000	246000	13.6	2200	—	2600	158	282	3.0	21.8	6328
	47500	54500	16.1	3200	—	3800	156	184	1.0	1.20	6830
	85500	87000	16.4	3000	—	3500	158	202	2.0	2.64	6930
	76500	82500	16.5	2800	—	3200	164	211	1.0	3.58	16030
	126000	126000	15.9	2800	—	3200	159	216	2.0	4.48	6030
	176000	168000	15.2	2300	—	2700	164	256	2.5	9.41	6230
	274000	284000	13.9	2100	—	2400	168	302	3.0	26.2	6330
	48500	56500	16.0	2900	—	3400	166	194	1.0	1.30	6832
	87500	95500	16.5	2800	—	3300	168	212	2.0	3.01	6932
	137000	135000	15.9	2600	—	3000	169	231	2.0	5.89	6032
	185000	186000	15.4	2100	—	2500	174	276	2.5	14.3	6232
	278000	287000	13.9	1900	—	2300	178	322	3.0	28.6	6332
	60000	70500	16.1	2700	—	3200	177	208	1.0	1.85	6834
	86000	95000	16.4	2600	—	3100	178	222	2.0	3.17	6934
	161000	160000	15.7	2400	—	2800	179	251	2.0	7.92	6034
	212000	224000	15.3	2000	—	2400	188	292	3.0	17.5	6234
	325000	355000	13.6	1800	—	2100	188	342	3.0	34.0	6334

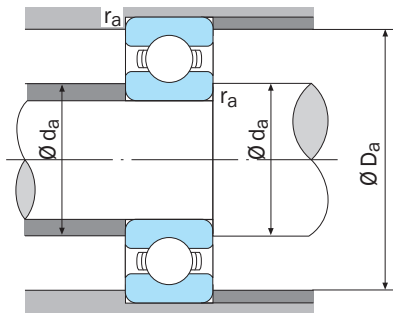
## Deep Groove Ball Bearings

Bore Diameter: 180~320mm



Boundary dimensions (mm)				Bearing No.							
d	D	B	r (min)	Open type	Shield type		Contact seal type		Non-contact seal type		
180	225	22	1.1	6836	—	—	—	—	—	—	
	250	33	2	6936	—	—	—	—	—	—	
	280	46	2.1	6036	—	—	—	—	—	—	
	320	52	4	6236	—	—	—	—	—	—	
	380	75	4	6336	—	—	—	—	—	—	
190	240	24	1.5	6838	—	—	—	—	—	—	
	260	33	2	6938	—	—	—	—	—	—	
	290	46	2.1	6038	—	—	—	—	—	—	
	340	55	4	6238	—	—	—	—	—	—	
	400	78	5	6338	—	—	—	—	—	—	
200	250	24	1.5	6840	—	—	—	—	—	—	
	280	38	2.1	6940	—	—	—	—	—	—	
	310	51	2.1	6040	—	—	—	—	—	—	
	360	58	4	6240	—	—	—	—	—	—	
	420	80	5	6340	—	—	—	—	—	—	
220	270	24	1.5	6844	—	—	—	—	—	—	
	300	38	2.1	6944	—	—	—	—	—	—	
	340	56	3	6044	—	—	—	—	—	—	
	400	65	4	6244	—	—	—	—	—	—	
240	300	28	2	6848	—	—	—	—	—	—	
	320	38	2.1	6948	—	—	—	—	—	—	
	360	56	3	6048	—	—	—	—	—	—	
	440	72	4	6248	—	—	—	—	—	—	
260	320	28	2	6852	—	—	—	—	—	—	
	360	46	2.1	6952	—	—	—	—	—	—	
	400	65	4	6052	—	—	—	—	—	—	
	480	80	5	6252	—	—	—	—	—	—	
280	350	33	2	6856	—	—	—	—	—	—	
	380	46	2.1	6956	—	—	—	—	—	—	
	420	65	4	6056	—	—	—	—	—	—	
	500	80	5	6256	—	—	—	—	—	—	
300	380	38	2.1	6860	—	—	—	—	—	—	
	420	56	3	6960	—	—	—	—	—	—	
	460	74	4	6060	—	—	—	—	—	—	
	540	85	5	6260	—	—	—	—	—	—	
320	400	38	2.1	6864	—	—	—	—	—	—	
	440	56	3	6964	—	—	—	—	—	—	
	480	74	4	6064	—	—	—	—	—	—	





1N=0.102kgf

• **Dynamic equivalent radial load**

$$Pr = XFr + YFa$$

• **Static equivalent radial load**

Larger value of following to be used:

$$Por = 0.6Fr + 0.5Fa$$

$$Por = Fr$$

foFa Cor	e	Fa/Fr ≤ e		Fa/Fr > e	
		X	Y	X	Y
0.172	0.19				2.30
0.345	0.22	1	0	0.56	1.99
0.689	0.26				1.71
1.03	0.28				1.55
1.38	0.30	1	0	0.56	1.45
2.07	0.34				1.31
3.45	0.38				1.15
5.17	0.42	1	0	0.56	1.04
6.89	0.44				1.00

	Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Factor fo	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
				Grease lubrication		Oil lubrication	da (min)	Da (max)	ra (max)		
				Open type,Z, ZZ,NK,2NK	NSL,2NSL	Open type,Z					
	60500	73000	16.0	2600	—	3000	187	218	1.0	2.02	6836
	106000	117000	16.5	2400	—	2900	188	242	2.0	4.68	6936
	174000	180000	15.8	2300	—	2700	189	271	2.0	10.3	6036
	227000	242000	15.1	1900	—	2200	198	302	3.0	18.3	6236
	325000	360000	13.9	1700	—	2000	198	362	3.0	41.9	6336
	73000	88000	16.1	2400	—	2900	198	232	1.5	2.60	6838
	108000	123000	16.4	2300	—	2700	198	252	2.0	4.90	6938
	188000	200000	15.7	2100	—	2500	199	281	2.0	10.8	6038
	255000	282000	15.1	1800	—	2100	208	322	3.0	23.0	6238
	355000	415000	14.1	1600	—	1900	212	378	4.0	48.2	6338
	74000	91000	15.9	2300	—	2700	208	242	1.5	2.70	6840
	130000	146000	16.5	2200	—	2600	209	271	2.0	6.88	6940
	202000	222000	15.8	2000	—	2400	209	301	2.0	13.9	6040
	268000	310000	15.2	1700	—	2000	218	342	3.0	28.2	6240
	380000	445000	13.9	1500	—	1800	222	398	4.0	54.6	6340
	76500	98000	15.9	2100	—	2400	228	262	1.5	2.98	6844
	132000	154000	16.4	2000	—	2300	229	291	2.0	7.45	6944
	214000	248000	15.9	1800	—	2200	230	330	2.5	18.4	6044
	310000	375000	15.1	1500	—	1800	238	382	3.0	37.0	6244
	98500	127000	15.9	1900	—	2200	250	291	2.0	4.60	6848
	154000	186000	16.3	1800	—	2100	249	311	2.0	8.02	6948
	222000	268000	16.1	1700	—	2000	250	350	2.5	19.6	6048
	340000	430000	15.2	1200	—	1500	258	322	3.0	49.9	6248
	101000	136000	15.8	1700	—	2000	269	311	2.0	4.95	6852
	204000	254000	16.4	1600	—	1900	269	351	2.0	13.4	6952
	252000	320000	16.1	1500	—	1800	272	388	3.0	29.3	6052
	400000	540000	15.1	1100	—	1400	282	458	4.0	67.5	6252
	133000	177000	16.1	1600	—	1900	290	341	2.0	7.35	6856
	209000	270000	16.3	1500	—	1800	289	371	2.0	14.3	6956
	266000	350000	16.1	1400	—	1600	293	405	3.0	31.0	6056
	400000	550000	15.3	1000	—	1300	302	478	4.0	71.0	6256
	166000	219000	16.0	1500	—	1700	311	369	2.0	10.4	6860
	269000	370000	16.5	1400	—	1600	311	409	2.5	22.8	6960
	355000	490000	15.0	1300	—	1500	313	447	3.0	43.8	6060
	465000	670000	15.2	950	—	1200	322	518	4.0	88.6	6260
	164000	218000	15.9	1400	—	1600	330	389	2.0	10.9	6864
	266000	370000	16.4	1300	—	1500	331	429	2.5	24.1	6964
	340000	470000	15.3	1200	—	1400	333	467	3.0	46.1	6064

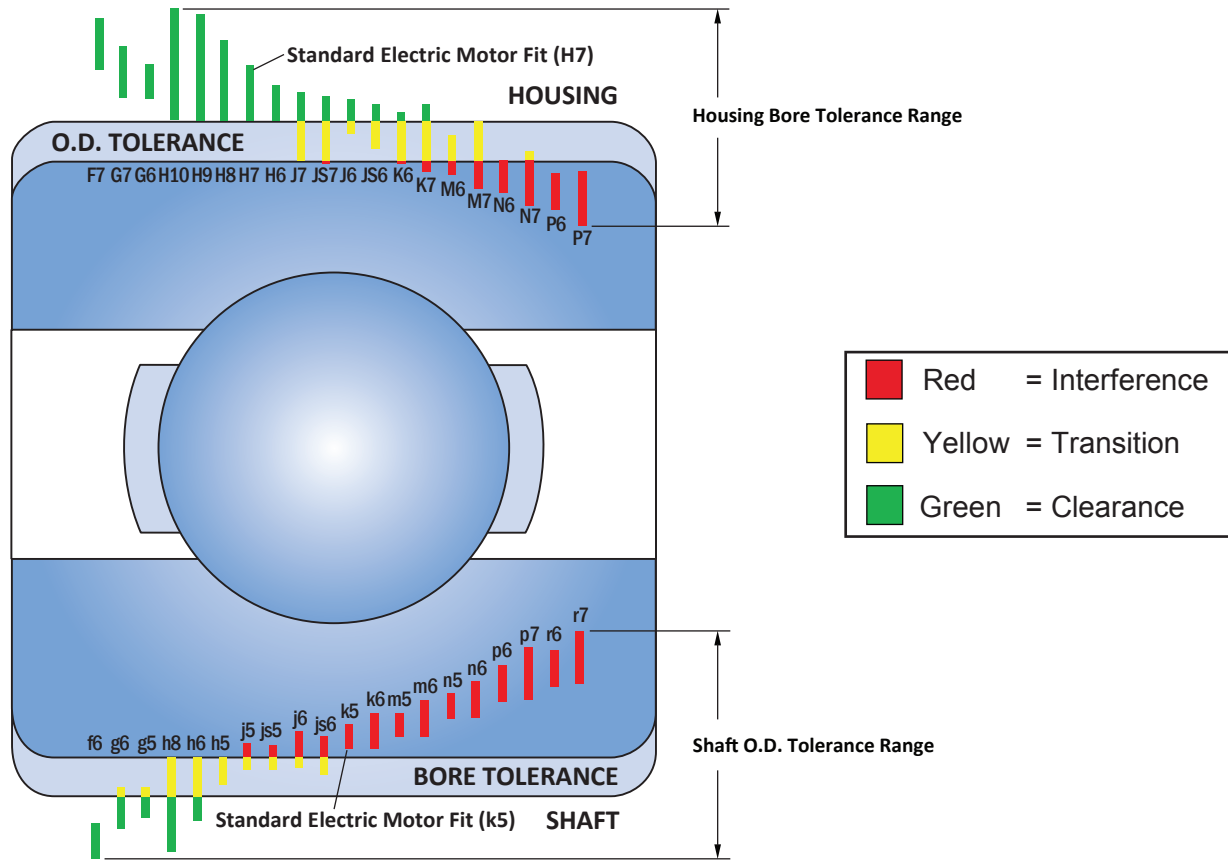
## Radial Internal Clearance

Table 5 Radial Internal Clearance of Deep Groove Ball Bearings (with Cylindrical Bore) (JIS)

Unit:  $\mu\text{m}$

Bearing Bore dia. Nominal d (mm)		Radial Clearance									
		C2		CN (Normal)		C3		C4		C5	
Over	Incl.	min	max	min	max	min	max	min	max	min	max
2.5	6	0	7	2	13	8	23	—	—	—	—
6	10	0	7	2	13	8	23	14	29	20	37
10	18	0	9	3	18	11	25	18	33	25	45
18	24	0	10	5	20	13	28	20	36	28	48
24	30	1	11	5	20	13	28	23	41	30	53
30	40	1	11	6	20	15	33	28	46	40	64
40	50	1	11	6	23	18	36	30	51	45	73
50	65	1	15	8	28	23	43	38	61	55	90
65	80	1	15	10	30	25	51	46	71	65	105
80	100	1	18	12	36	30	58	53	84	75	120
100	120	2	20	15	41	36	66	61	97	90	140
120	140	2	23	18	48	41	81	71	114	105	160
140	160	2	23	18	53	46	91	81	130	120	180
160	180	2	25	20	61	53	102	91	147	135	200
180	200	2	30	25	71	63	117	107	163	150	230
200	225	2	35	25	85	75	140	125	195	175	265
225	250	2	40	30	95	85	160	145	225	205	300
250	280	2	45	35	105	90	170	155	245	225	340
280	315	2	55	40	115	100	190	175	270	245	370
315	355	3	60	45	125	110	210	195	300	275	410
355	400	3	70	55	145	130	240	225	340	315	460
400	450	3	80	60	170	150	270	250	380	350	510
450	500	3	90	70	190	170	300	280	420	390	570
500	560	10	100	80	210	190	330	310	470	440	630
560	630	10	110	90	230	210	360	340	520	490	690
630	710	20	130	110	260	240	400	380	570	540	760
710	800	20	140	120	290	270	450	430	630	600	840
800	900	20	160	140	320	300	500	480	700	670	940
900	1000	20	170	150	350	330	550	530	770	740	1040
1000	1120	20	180	160	380	360	600	580	850	820	1150
1120	1250	20	190	170	410	390	650	630	920	890	1260

# Shaft & Housing Fits



**6000 Series**  
Standard Electric Motor Fits  
Shaft k5, Housing H7

**6200 Series**  
Standard Electric Motor Fits  
Shaft k5, Housing H7

**6300 Series**  
Standard Electric Motor Fits  
Shaft k5, Housing H7

Bearing Size	Shaft Diameter (Rotating) Inches		Housing Bore (Stationary)		Bearing Size	Shaft Diameter (Rotating) Inches		Housing Bore (Stationary)		Bearing Size	Shaft Diameter (Rotating) Inches		Housing Bore (Stationary)	
	Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.		Max.	Min.	Max.	Min.
6000	0.3940	0.3937	1.0244	1.0236	6200	0.3940	0.3937	1.1819	1.1811	6300	0.3940	0.3937	1.3789	1.3780
6001	0.4728	0.4725	1.1032	1.1024	6201	0.4728	0.4725	1.2608	1.2598	6301	0.4728	0.4725	1.4577	1.4567
6002	0.5909	0.5906	1.2608	1.2598	6202	0.5909	0.5906	1.3789	1.3780	6302	0.5909	0.5906	1.6545	1.6535
6003	0.6696	0.6693	1.3789	1.3780	6203	0.6696	0.6693	1.5758	1.5748	6303	0.6696	0.6693	1.8514	1.8504
6004	0.7878	0.7875	1.6545	1.6535	6204	0.7878	0.7875	1.8514	1.8504	6304	0.7878	0.7875	2.0484	2.0472
6005	0.9847	0.9843	1.8514	1.8504	6205	0.9847	0.9843	2.0484	2.0472	6305	0.9847	0.9843	2.4421	2.4409
6006	1.1815	1.1812	2.1665	2.1654	6206	1.1815	1.1812	2.4421	2.4409	6306	1.1815	1.1812	2.8358	2.8346
6007	1.3785	1.3780	2.4421	2.4409	6207	1.3785	1.3780	2.8358	2.8346	6307	1.3785	1.3780	3.1508	3.1496
6008	1.5753	1.5749	2.6783	2.6772	6208	1.5753	1.5749	3.1508	3.1496	6308	1.5753	1.5749	3.5447	3.5433
6009	1.7722	1.7717	2.9539	2.9528	6209	1.7722	1.7717	3.3478	3.3465	6309	1.7722	1.7717	3.9384	3.9370
6010	1.9690	1.9686	3.1508	3.1496	6210	1.9690	1.9686	3.5447	3.5433	6310	1.9690	1.9686	4.3321	4.3307
6011	2.1659	2.1654	3.5447	3.5433	6211	2.1659	2.1654	3.9384	3.9370	6311	2.1659	2.1654	4.7258	4.7244
6012	2.3628	2.3623	3.7415	3.7402	6212	2.3628	2.3623	4.3321	4.3307	6312	2.3628	2.3623	5.1197	5.1181
6013	2.5596	2.5591	3.9384	3.9370	6213	2.5596	2.5591	4.7258	4.7244	6313	2.5596	2.5591	5.5134	5.5118
6014	2.7565	2.7560	4.3321	4.3307	6214	2.7565	2.7560	4.9228	4.9213	6314	2.7565	2.7560	5.9071	5.9055
6015	2.9533	2.9528	4.5289	4.5276	6215	2.9533	2.9528	5.1197	5.1181	6315	2.9533	2.9528	6.3008	6.2992
6016	3.1502	3.1497	4.9228	4.9213	6216	3.1502	3.1497	5.5134	5.5118	6316	3.1502	3.1497	6.6945	6.6929
6017	3.3472	3.3466	5.1197	5.1181	6217	3.3472	3.3466	5.9071	5.9055	6317	3.3472	3.3466	7.0882	7.0866
6018	3.5440	3.5434	5.5134	5.5118	6218	3.5440	3.5434	6.3008	6.2992	6318	3.5440	3.5434	7.4821	7.4803
6019	3.7409	3.7403	5.7102	5.7087	6219	3.7409	3.7403	6.6945	6.6929	6319	3.7409	3.7403	7.8758	7.8740
6020	3.9377	3.9371	5.9071	5.9055	6220	3.9377	3.9371	7.0882	7.0866	6320	3.9377	3.9371	8.4664	8.4646

# NACHI

NACHI AMERICA INC.

## CORPORATE HEADQUARTERS

- Cutting Tool Division
- Machine Tool Division
- Specialty Steel Division
- Hydraulics Division

715 Pushville Road  
Greenwood, IN 46143 U.S.A.  
Phone: 317-530-1001  
Fax: 317-530-1011

## MIAMI BRANCH-LATIN AMERICA DIV.

2315 N.W. 107th Ave.  
Miami, FL 33172 U.S.A.  
Phone: +1-305-591-0054  
Fax: +1-305-591-3110

## NACHI MEXICANA, S.A. de C.V.

Urbina No. 54, Parque Industrial Naucalpan  
Naucalpan de Juarez, Estado de Mexico  
C.P. 53370, MEXICO  
Phone: +52-55-3604-0832

## BEARING DIV. HEADQUARTERS

715 Pushville Road  
Greenwood, IN 46143 U.S.A.  
Phone: 317-530-1002  
Fax: 317-530-1012

## WEST COAST OFFICE

12652 Alondra Boulevard  
Cerritos, CA 90703 U.S.A.  
Phone: 562-802-0055  
Fax: 562-802-2455

## NACHI CANADA

89 Courtland Ave. Unit No. 2  
Concord, Ontario, L4K 3T4 CANADA  
Phone: +1-905-660-0088  
Fax: +1-905-660-1146



[www.nachi.com](http://www.nachi.com)

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