NACHI

DEEP GROOVE BALL BEARINGS

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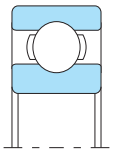
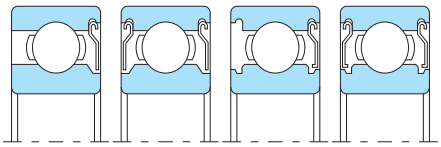
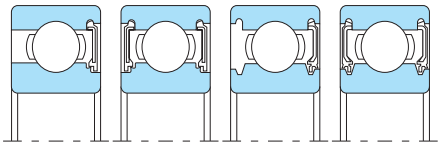
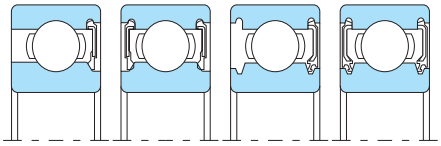
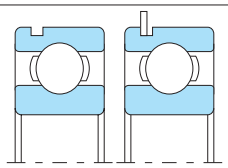
Deep-groove Ball Bearings

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	·Exellent at low speed ·The grease may leak from the bearing at high speeds and high temperature. ·The grease may leak in case of outer ring rotation.
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℃

Deep-groove Ball Bearings

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.

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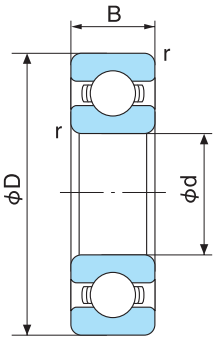
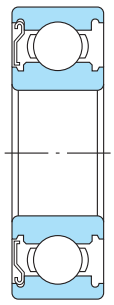
Deep-groove Ball Bearings

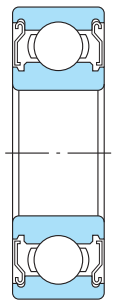
Bore Diameter : 10～25mm



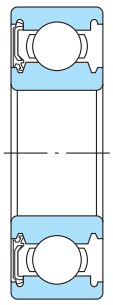
Open



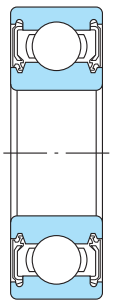
One shield (ZE)



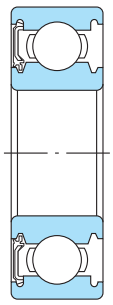
Two shields (ZZE)



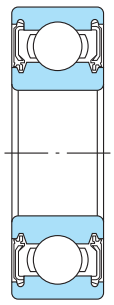
One contact seal (NSE)



Two contact seals (2NSE)

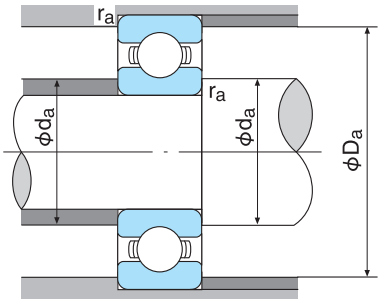


One non-contact seal (NKE)



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
17	26	5	0.3	6803	6803ZE	6803ZZE	6803NSE	6803-2NSE	6803NKE	6803-2NKE
	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
20	32	7	0.3	6804	6804ZE	6804ZZE	6804NSE	6804-2NSE	6804NKE	6804-2NKE
	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
22	50	14	1	62/22	62/22ZE	62/22ZZE	62/22NSE	62/22-2NSE	62/22NKE	62/22-2NKE
	56	16	1.1	63/22	63/22ZE	63/22ZZE	63/22NSE	63/22-2NSE	63/22NKE	63/22-2NKE
25	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
	62	17	1.1	6305	6305ZE	6305ZZE	6305NSE	6305-2NSE	6305NKE	6305-2NKE



- 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

$\frac{Fa}{Cor}$	e	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19	1	0	0.56	2.30
0.028	0.22				1.99
0.056	0.26				1.71
0.084	0.28	1	0	0.56	1.55
0.11	0.30				1.45
0.17	0.34				1.31
0.28	0.38	1	0	0.56	1.15
0.42	0.42				1.04
0.56	0.44				1.00

1N=0.102kgf

Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm) Grease lubrication Open type,ZE, ZZE,NKE,2NKE	Grease lubrication NSE,2NSE	Oil lubrication Open type,ZE	Abutment and fillet dimensions (mm) d_a (min)	D_a (max)	r_a (max)	Mass (kg)	Bearing No.
2120	985	37000	24000	44000	12	17	0.3	0.005	6800
2490	1130	33000	22000	38000	12	20	0.3	0.009	6900
4550	1970	30000	20000	36000	12	24	0.3	0.019	6000
5100	2390	24000	17000	30000	15	25	0.6	0.032	6200
8100	3450	21000	17000	26000	15	30	0.6	0.053	6300
1920	1040	32000	20000	39000	14	19	0.3	0.006	6801
2700	1320	30000	19000	35000	14	22	0.3	0.011	6901
5100	2390	27000	17000	32000	14	26	0.3	0.023	6001
6800	3050	22000	16000	27000	17	27	0.6	0.037	6201
9750	4250	19000	15000	24000	18	31	1.0	0.060	6301
2080	1260	27000	16000	32000	17	22	0.3	0.007	6802
4300	2250	26000	15000	31000	17	26	0.3	0.016	6902
5600	2840	23000	—	28000	20	27	0.3	0.025	16002
5600	2840	23000	14000	28000	17	30	0.3	0.032	6002
7650	3700	19000	13000	24000	20	30	0.6	0.045	6202
11400	5400	17000	12000	20000	21	36	1.0	0.082	6302
2630	1570	25000	15000	30000	19	24	0.3	0.008	6803
4600	2550	24000	14000	29000	19	28	0.3	0.018	6903
6000	3250	20000	—	24000	22	30	0.3	0.032	16003
6000	3250	20000	13000	25000	19	33	0.3	0.039	6003
9550	4800	17000	12000	21000	22	35	0.6	0.065	6203
13600	6550	15000	11000	18000	23	41	1.0	0.115	6303
4000	2640	20000	12000	24000	22	30	0.3	0.019	6804
6350	3700	19000	11000	23000	22	35	0.3	0.036	6904
7900	4500	17000	—	21000	25	37	0.3	0.050	16004
9400	5000	17000	11000	21000	24	38	0.6	0.070	6004
12800	6600	14000	10000	18000	26	41	1.0	0.106	6204
15900	7900	13000	9500	16000	27	45	1.1	0.144	6304
13900	6950	13000	9000	17000	28	44	1.0	0.120	62/22
18400	9250	12000	8000	15000	29	49	1.0	0.176	63/22
4300	2940	18000	10000	20000	27	35	0.3	0.022	6805
7000	4500	16000	9500	20000	27	40	0.3	0.042	6905
6950	4600	15000	—	18000	30	42	0.3	0.060	16005
10100	5850	15000	9000	18000	29	43	0.6	0.079	6005
14000	7900	12000	8500	16000	31	46	1.0	0.128	6205
23600	12100	11000	8000	14000	32	55	1.0	0.232	6305

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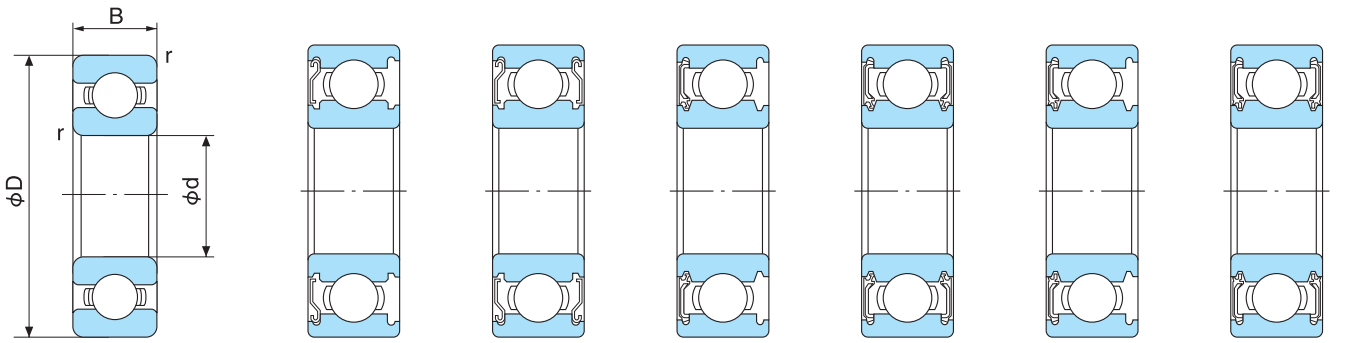
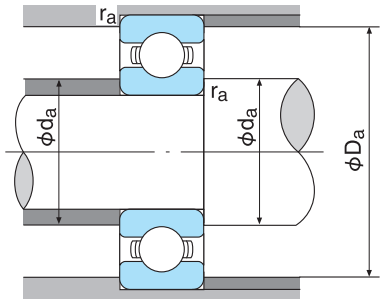
Deep-groove Ball Bearings

Bore Diameter : 28～50mm



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	
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

$\frac{Fa}{Cor}$	e	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19				2.30
0.028	0.22	1	0	0.56	1.99
0.056	0.26				1.71
0.084	0.28				1.55
0.11	0.30	1	0	0.56	1.45
0.17	0.34				1.31
0.28	0.38				1.15
0.42	0.42	1	0	0.56	1.04
0.56	0.44				1.00

1N=0.102kgf

Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
		Grease lubrication		Oil lubrication					
		Open type,ZE, ZZE,NKE,2NKE	NSE,2NSE	Open type,ZE	d_a (min)	D_a (max)	r_a (max)		
17900	9750	11000	8200	14000	34	52	1.0	0.175	62/28
26800	14000	10000	7000	12000	35	61	1.0	0.287	63/28
5350	3800	15000	8700	17000	32	40	0.3	0.026	6806
7250	5000	14000	8200	16000	32	45	0.3	0.045	6906
9950	6550	12000	—	15000	35	50	0.3	0.085	16006
13200	8300	12000	7700	15000	35	50	1.0	0.117	6006
19500	11300	10000	7300	13000	36	56	1.0	0.199	6206
26700	15000	9200	6600	11000	37	65	1.0	0.346	6306
22400	13100	9500	7000	12000	38	59	1.0	0.230	62/32
30000	16200	9000	6000	11000	39	68	1.0	0.382	63/32
4750	3800	13000	7600	15000	37	45	0.3	0.029	6807
10400	7150	12000	7000	14000	39	51	0.6	0.073	6907
11700	8150	11000	—	13000	40	57	0.3	0.110	16007
16000	10300	11000	6800	13000	40	57	1.0	0.156	6007
25700	15300	9000	6300	11000	42	65	1.0	0.288	6207
33500	19200	8400	5900	10000	44	71	1.5	0.457	6307
5950	4900	12000	6700	14000	42	50	0.3	0.033	6808
13700	9950	11000	6100	13000	44	58	0.6	0.108	6908
11100	8550	9700	—	12000	45	63	0.3	0.125	16008
16800	11500	9500	6000	12000	45	63	1.0	0.194	6008
29100	17900	8200	5600	10000	47	73	1.0	0.366	6208
40500	24100	7500	5200	9000	49	81	1.5	0.633	6308
5350	4900	11000	5900	13000	47	56	0.3	0.040	6809
14100	10900	10000	5600	12000	49	64	0.6	0.122	6909
12900	10500	9000	—	11000	52	68	0.6	0.170	16009
20900	15200	8800	5300	11000	50	70	1.0	0.246	6009
32500	20500	7600	5100	9300	52	78	1.0	0.407	6209
53000	32000	6700	4600	8000	54	91	1.5	0.833	6309
6400	5800	10000	5300	12000	52	63	0.3	0.052	6810
14500	11700	9500	5100	11000	54	68	0.6	0.125	6910
16100	13100	8300	—	10000	57	73	0.6	0.180	16010
21800	16600	8300	4800	10000	55	75	1.0	0.264	6010
35000	23200	7000	4700	8600	57	83	1.0	0.463	6210
62000	38000	6200	4100	7300	60	100	2.0	1.07	6310

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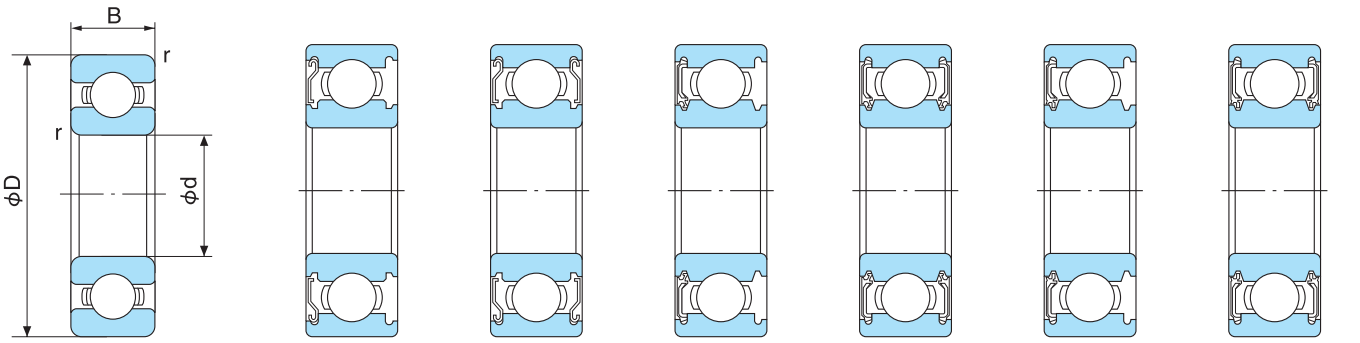
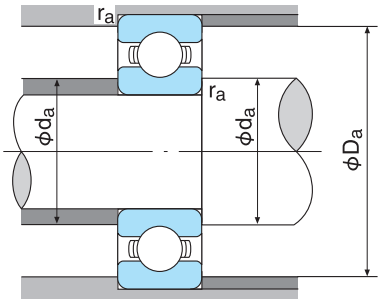
Deep-groove Ball Bearings

Bore Diameter : 55～80mm



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	
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

$\frac{Fa}{Cor}$	e	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19				2.30
0.028	0.22	1	0	0.56	1.99
0.056	0.26				1.71
0.084	0.28				1.55
0.11	0.30	1	0	0.56	1.45
0.17	0.34				1.31
0.28	0.38				1.15
0.42	0.42	1	0	0.56	1.04
0.56	0.44				1.00

1N=0.102kgf

Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
		Grease lubrication		Oil lubrication					
		Open type,ZE, ZZE,NKE,2NKE	NSE,2NSE NSL,2NSL	Open type,ZE	d_a (min)	D_a (max)	r_a (max)		
8800	8100	8500	—	10000	57	70	0.3	0.083	6811
16000	13200	8000	—	9000	60	75	1.0	0.177	6911
15200	13500	7500	—	9000	62	83	0.6	0.260	16011
28300	21300	7500	4400	9000	61	84	1.0	0.384	6011
43500	29300	6300	4200	7700	64	91	1.5	0.607	6211
71500	44500	5600	3800	6600	65	110	2.0	1.37	6311
11500	10600	8000	—	9500	62	76	0.3	0.106	6812
15200	13500	7500	—	9000	65	80	1.0	0.191	6912
16200	14300	7000	—	8200	67	88	0.6	0.280	16012
29400	23200	7000	4100	8300	66	89	1.0	0.418	6012
52500	36000	5800	3800	7100	69	101	1.5	0.783	6212
82000	52000	5100	3500	6100	72	118	2.0	1.70	6312
11900	11500	7500	—	8500	69	81	0.6	0.125	6813
17400	16000	7000	—	8500	70	85	1.0	0.200	6913
20500	18600	6500	—	7500	72	93	0.6	0.300	16013
30500	25200	6500	3800	7800	71	94	1.0	0.438	6013
57000	40000	5300	3500	6500	74	111	1.5	0.990	6213
92500	59500	4700	3300	5700	77	128	2.0	2.08	6313
12100	11900	7000	—	8000	74	86	0.6	0.135	6814
23700	21100	6500	—	7500	75	95	1.0	0.327	6914
26800	23600	6000	—	7000	77	103	0.6	0.433	16014
38000	31000	6000	3500	7100	76	104	1.0	0.607	6014
62000	44000	5000	3300	5900	79	116	1.5	1.07	6214
104000	68000	4400	3100	5300	82	138	2.0	2.52	6314
12500	12800	6500	—	7500	79	91	0.6	0.145	6815
20800	19700	6200	—	7200	80	100	1.0	0.345	6915
27600	25300	5500	—	6500	82	108	0.6	0.457	16015
39500	33500	5700	3300	6700	81	109	1.0	0.645	6015
66000	49500	4800	3100	5600	84	121	1.5	1.18	6215
113000	77000	4100	2900	5000	87	148	2.0	3.02	6315
12700	13300	6000	—	7000	84	96	0.6	0.155	6816
27600	25300	5500	—	6500	85	105	1.0	0.363	6916
32000	29600	5300	—	6200	87	118	0.6	0.597	16016
47500	39500	5300	—	6200	86	119	1.0	0.855	6016
72500	53000	4500	3000	5200	90	130	2.0	1.40	6216
123000	86500	3800	2700	4500	92	158	2.0	3.59	6316

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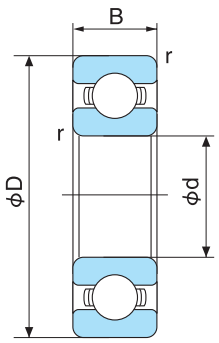
Deep-groove Ball Bearings

Bore Diameter : 80～110mm



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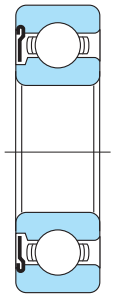
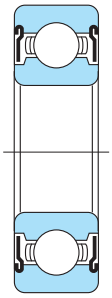
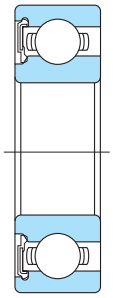
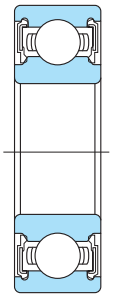
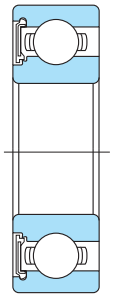
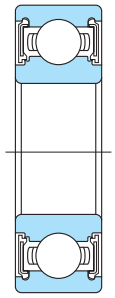

One shield (Z)


Two shields (ZZ)

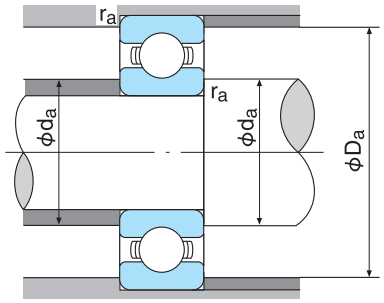

One contact seal (NSL)


Two contact seals (2NSL)


One non-contact seal (NK)


Two non-contact seals (2NK)

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	—	—	—	—



- 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	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19				2.30
0.028	0.22	1	0	0.56	1.99
0.056	0.26				1.71
0.084	0.28				1.55
0.11	0.30	1	0	0.56	1.45
0.17	0.34				1.31
0.28	0.38				1.15
0.42	0.42	1	0	0.56	1.04
0.56	0.44				1.00

1N=0.102kgf

Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
		Grease lubrication		Oil lubrication					
		Open type,Z, ZZ,NK,2NK	NSL,2NSL	Open type,Z	d_a (min)	D_a (max)	r_a (max)		
18700	19000	5500	—	6500	90	105	1.0	0.265	6817
32000	29600	5200	—	6300	91	113	1.0	0.517	6917
31500	29800	5000	—	6000	92	123	0.6	0.626	16017
49500	43000	5000	—	6000	91	124	1.1	0.895	6017
84000	62000	4200	2800	4900	95	140	2.0	1.79	6217
133000	96500	3600	2600	4300	99	166	2.5	4.23	6317
19000	19700	5300	—	6200	95	110	1.0	0.280	6818
33000	31500	5000	—	6000	96	119	1.0	0.540	6918
41500	39500	4800	—	5600	99	131	1.0	0.848	16018
58000	49500	4700	—	5600	97	133	1.5	1.17	6018
96000	71500	3900	2600	4600	100	150	2.0	2.15	6218
143000	107000	3400	2400	4000	104	176	2.5	4.91	6318
19300	20500	5000	—	6000	100	115	1.0	0.298	6819
33500	33500	4700	—	5500	101	124	1.0	0.567	6919
41000	39500	4600	—	5300	104	136	1.0	0.885	16019
60500	54000	4500	—	5300	102	138	1.5	1.22	6019
109000	81500	3700	2400	4300	107	158	2.0	2.62	6219
153000	118000	3200	2200	3800	109	186	2.5	5.67	6319
19600	21200	4600	—	5500	105	120	1.0	0.311	6820
37000	36500	4400	—	5300	106	134	1.0	0.771	6920
37500	39500	4300	—	5000	109	141	1.0	0.910	16020
60000	54000	4200	—	5000	107	143	1.5	1.26	6020
122000	93000	3500	2300	4100	112	168	2.0	3.14	6220
173000	141000	3000	2100	3600	114	201	2.5	7.00	6320
19900	21900	4500	—	5500	110	125	1.0	0.325	6821
42500	42000	4200	—	5100	111	139	1.0	0.793	6921
37500	50500	4000	—	4800	114	151	1.0	1.20	16021
72500	65500	4000	—	4800	113	152	2.0	1.60	6021
133000	104000	3200	—	3900	117	178	2.0	3.76	6221
184000	153000	2800	—	3400	119	211	2.5	8.05	6321
27300	29400	4200	—	5100	115	135	1.0	0.510	6822
38000	38500	4000	—	5000	116	144	1.0	0.830	6922
44000	45000	3800	—	4500	119	161	1.0	1.46	16022
84500	73000	3800	—	4500	118	162	2.0	1.97	6022
144000	117000	3000	—	3700	122	188	2.0	4.36	6222
205000	179000	2600	—	3200	124	226	2.5	9.54	6322

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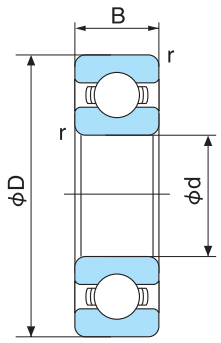
Deep-groove Ball Bearings

Bore Diameter : 120～170mm



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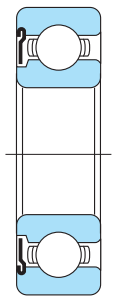
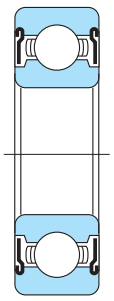
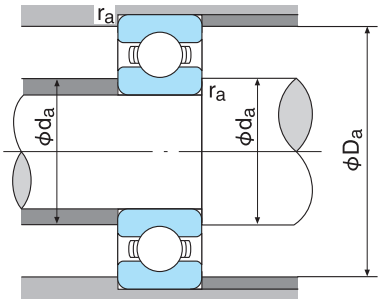

One shield
(Z)


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	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19				2.30
0.028	0.22	1	0	0.56	1.99
0.056	0.26				1.71
0.084	0.28				1.55
0.11	0.30	1	0	0.56	1.45
0.17	0.34				1.31
0.28	0.38				1.15
0.42	0.42	1	0	0.56	1.04
0.56	0.44				1.00

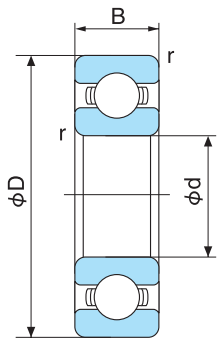
1N=0.102kgf

Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
		Grease lubrication		Oil lubrication					
		Open type,Z, ZZ,NK,2NK	NSL,2NSL	Open type,Z	d_a (min)	D_a (max)	r_a (max)		
28300	31500	4000	—	4800	125	145	1.0	0.549	6824
53000	54000	3700	—	4600	126	159	1.0	1.13	6924
48000	50000	3500	—	4200	129	171	1.0	1.80	16024
88000	79500	3500	—	4200	128	172	2.0	2.67	6024
145000	118000	2800	—	3400	132	203	2.0	5.15	6224
207000	185000	2400	—	3000	134	246	2.5	14.6	6324
37000	41000	3600	—	4400	136	158	1.0	0.790	6826
65000	67000	3400	—	4200	137	173	1.5	1.78	6926
55000	59500	3200	—	3600	144	186	1.0	2.69	16026
106000	101000	3200	—	3800	138	192	2.0	3.92	6026
167000	146000	2600	—	3200	144	216	2.5	5.82	6226
229000	214000	2200	—	2800	148	262	3.0	18.2	6326
38000	44500	3400	—	4000	146	169	1.0	0.840	6828
66500	71000	3200	—	3800	147	183	1.5	1.90	6928
56000	62000	3000	—	3500	154	196	1.0	2.86	16028
110000	109000	3000	—	3600	148	202	2.0	4.15	6028
166000	150000	2400	—	2900	154	236	2.5	7.47	6228
253000	246000	2100	—	2600	158	282	3.0	21.8	6328
47500	54500	3100	—	3500	156	184	1.0	1.20	6830
85500	87000	2800	—	3100	158	202	2.0	2.64	6930
76500	82500	2600	—	3200	164	211	1.0	3.58	16030
126000	126000	2600	—	3200	159	216	2.0	4.48	6030
176000	168000	2200	—	2600	164	256	2.5	9.41	6230
274000	284000	2000	—	2400	168	302	3.0	26.2	6330
48500	56500	2800	—	3100	166	194	1.0	1.30	6832
87500	95500	2600	—	2900	168	212	2.0	3.01	6932
137000	135000	2400	—	3000	169	231	2.0	5.89	6032
185000	186000	2000	—	2400	174	276	2.5	14.3	6232
278000	287000	1800	—	2000	178	322	3.0	28.6	6332
60000	70500	2600	—	3000	177	208	1.0	1.85	6834
86000	95000	2400	—	2800	178	222	2.0	3.17	6934
161000	160000	2200	—	2800	179	251	2.0	7.92	6034
212000	224000	1900	—	2300	188	292	3.0	17.5	6234
325000	355000	1600	—	1900	188	342	3.0	34.0	6334

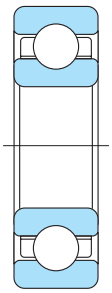
NACHI

Deep-groove Ball Bearings

Bore Diameter : 180～320mm

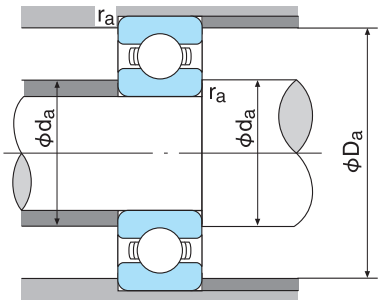


Open



Open
(Machined cage)

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	—	—	—	—	—	—



• 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	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19				2.30
0.028	0.22	1	0	0.56	1.99
0.056	0.26				1.71
0.084	0.28				1.55
0.11	0.30	1	0	0.56	1.45
0.17	0.34				1.31
0.28	0.38				1.15
0.42	0.42	1	0	0.56	1.04
0.56	0.44				1.00

1N=0.102kgf

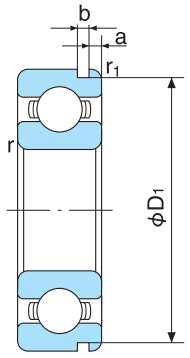
Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm)			Abutment and fillet dimensions (mm)			Mass (kg)	Bearing No.
		Grease lubrication		Oil lubrication					
		Open type,Z, ZZ,NK,2NK	NSL,2NSL	Open type,Z	d_a (min)	D_a (max)	r_a (max)		
60500	73000	2400	—	2900	187	218	1.0	2.02	6836
106000	117000	2200	—	2600	188	242	2.0	4.68	6936
174000	180000	2100	—	2600	189	271	2.0	10.3	6036
227000	242000	1800	—	2200	198	302	3.0	18.3	6236
325000	360000	1500	—	1900	198	362	3.0	41.9	6336
73000	88000	2200	—	2600	198	232	1.5	2.60	6838
108000	123000	2100	—	2500	198	252	2.0	4.90	6938
188000	200000	2000	—	2500	199	281	2.0	10.8	6038
255000	282000	1700	—	2000	208	322	3.0	23.0	6238
355000	415000	1500	—	1800	212	378	4.0	48.2	6338
74000	91000	2100	—	2500	208	242	1.5	2.70	6840
130000	146000	2000	—	2500	209	271	2.0	6.88	6940
202000	222000	1900	—	2400	209	301	2.0	13.9	6040
268000	310000	1600	—	1900	218	342	3.0	28.2	6240
380000	445000	1300	—	1700	222	398	4.0	54.6	6340
76500	98000	1900	—	2400	228	262	1.5	2.98	6844
132000	154000	1800	—	2300	229	291	2.0	7.45	6944
214000	248000	1700	—	2200	230	330	2.5	18.4	6044
310000	375000	1400	—	1700	238	382	3.0	37.0	6244
98500	127000	1800	—	2100	250	291	2.0	4.60	6848
154000	186000	1700	—	2000	249	311	2.0	8.02	6948
222000	268000	1600	—	1900	250	350	2.5	19.6	6048
340000	430000	1200	—	1500	258	322	3.0	49.9	6248
101000	136000	1600	—	2000	269	311	2.0	4.95	6852
204000	254000	1500	—	1800	269	351	2.0	13.4	6952
252000	320000	1400	—	1700	272	388	3.0	29.3	6052
400000	540000	1100	—	1400	282	458	4.0	67.5	6252
133000	177000	1500	—	1800	290	341	2.0	7.35	6856
209000	270000	1400	—	1700	289	371	2.0	14.3	6956
266000	350000	1300	—	1600	293	405	3.0	31.0	6056
400000	550000	950	—	1200	302	478	4.0	71.0	6256
166000	219000	1400	—	1600	311	369	2.0	10.4	6860
269000	370000	1300	—	1500	311	409	2.5	22.8	6960
355000	490000	1200	—	1500	313	447	3.0	43.8	6060
465000	670000	850	—	1100	322	518	4.0	88.6	6260
164000	218000	1300	—	1500	330	389	2.0	10.9	6864
266000	370000	1200	—	1300	331	429	2.5	24.1	6964
340000	470000	1100	—	1300	333	467	3.0	46.1	6064

NACHI

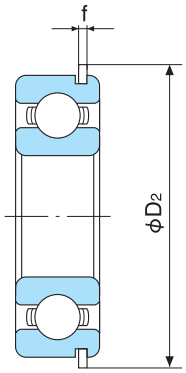
Deep-groove Ball Bearings

With snap ring groove / With snap ring / Shield type with snap ring

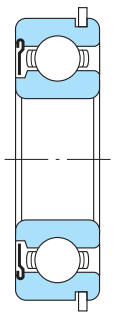
Bore Diameter : 10～30mm



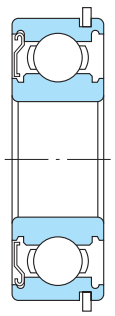
With snap ring groove (N)



With snap ring (NR)



Shield type with snap ring (ZNR)

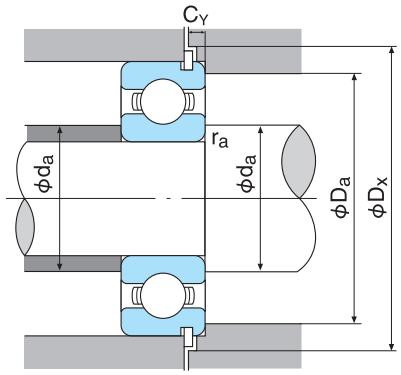


Shield type with snap ring (ZENR)

Boundary dimensions (mm)					Dimensions of snap ring groove and snap ring (mm)					Bearing No. (1)		
d	D	B	r (min)	r1 (min)	D1 (max)	a (max)	b (min)	D2 (max)	f (max)			
10	22	6	0.3	0.3	20.8	1.05	0.8	24.8	0.7	6900N	6900NR	6900ZENR
	30	9	0.6	0.5	28.17	2.06	1.35	34.7	1.12	6200N	6200NR	6200ZENR
	35	11	0.6	0.5	33.17	2.06	1.35	39.7	1.12	6300N	6300NR	6300ZENR
12	24	6	0.3	0.3	22.8	1.05	0.8	26.8	0.7	6901N	6901NR	6901ZENR
	32	10	0.6	0.5	30.15	2.06	1.35	36.7	1.12	6201N	6201NR	6201ZENR
	37	12	1	0.5	34.77	2.06	1.35	41.3	1.12	6301N	6301NR	6301ZENR
15	28	7	0.3	0.3	26.7	1.3	0.95	30.8	0.85	6902N	6902NR	6902ZENR
	32	9	0.3	0.3	30.15	2.06	1.35	36.7	0.85	6002N	6002NR	6002ZENR
	35	11	0.6	0.5	33.17	2.06	1.35	39.7	1.12	6202N	6202NR	6202ZENR
	42	13	1	0.5	39.75	2.06	1.35	46.3	1.12	6302N	6302NR	6302ZENR
17	30	7	0.3	0.3	28.7	1.3	0.95	32.8	0.85	6903N	6903NR	6903ZENR
	35	10	0.3	0.3	33.17	2.06	1.35	39.7	1.12	6003N	6003NR	6003ZENR
	40	12	0.6	0.5	38.1	2.06	1.35	44.6	1.12	6203N	6203NR	6203ZENR
	47	14	1	0.5	44.6	2.46	1.35	52.7	1.12	6303N	6303NR	6303ZENR
20	32	7	0.3	0.3	30.7	1.3	0.95	34.8	0.85	6804N	6804NR	6804ZENR
	37	9	0.3	0.3	35.7	1.7	0.95	39.8	0.85	6904N	6904NR	6904ZENR
	42	12	0.6	0.5	39.75	2.06	1.35	46.3	1.12	6004N	6004NR	6004ZENR
	47	14	1	0.5	44.6	2.46	1.35	52.7	1.12	6204N	6204NR	6204ZENR
	52	15	1.1	0.5	49.73	2.46	1.35	57.9	1.12	6304N	6304NR	6304ZENR
22	50	14	1	0.5	47.6	2.46	1.35	55.7	1.12	62/22N	62/22NR	62/22ZENR
	56	16	1.1	0.5	53.6	2.46	1.35	61.7	1.12	63/22N	63/22NR	63/22ZENR
25	37	7	0.3	0.3	35.7	1.3	0.95	39.8	0.85	6805N	6805NR	6805ZENR
	42	9	0.3	0.3	40.7	1.7	0.95	44.8	0.85	6905N	6905NR	6905ZENR
	47	12	0.6	0.5	44.6	2.06	1.35	52.7	1.12	6005N	6005NR	6005ZENR
	52	15	1	0.5	49.73	2.46	1.35	57.9	1.12	6205N	6205NR	6205ZENR
	62	17	1.1	0.5	59.61	3.28	1.9	67.7	1.7	6305N	6305NR	6305ZENR
28	58	16	1	0.5	55.6	2.46	1.35	63.7	1.12	62/28N	62/28NR	62/28ZENR
	68	18	1.1	0.5	64.82	3.28	1.9	74.6	1.7	63/28N	63/28NR	63/28ZENR
30	42	7	0.3	0.3	40.7	1.3	0.95	44.8	0.85	6806N	6806NR	6806ZENR
	47	9	0.3	0.3	45.7	1.7	0.95	49.8	0.85	6906N	6906NR	6906ZENR
	55	13	1	0.5	52.6	2.08	1.35	60.7	1.12	6006N	6006NR	6006ZENR
	62	16	1	0.5	59.61	3.28	1.9	67.7	1.7	6206N	6206NR	6206ZENR
	72	19	1.1	0.5	68.81	3.28	1.9	78.6	1.7	6306N	6306NR	6306ZENR

Note: (1) Bearing No. ZE means one shield type, two shields type is also available.

Remarks: Dimensions of snap ring groove and snap ring are shown on pages 25 to 28.



- 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	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19				2.30
0.028	0.22	1	0	0.56	1.99
0.056	0.26				1.71
0.084	0.28				1.55
0.11	0.30	1	0	0.56	1.45
0.17	0.34				1.31
0.28	0.38				1.15
0.42	0.42	1	0	0.56	1.04
0.56	0.44				1.00

1N=0.102kgf

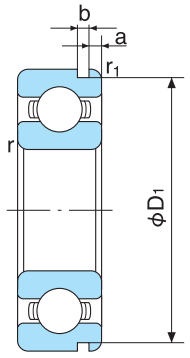
Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm)		Abutment and fillet dimensions (mm)					Mass (kg)	Bearing No.
		Grease lubrication	Oil lubrication	d_a (min)	D_a (max)	D_x (min)	r_a (max)	C_Y (max)		
2490	1130	33000	38000	12	20	25.5	0.3	1.5	0.010	6900N
5100	2390	24000	30000	15	25	35.5	0.6	2.9	0.032	6200N
8100	3450	21000	26000	15	30	40.5	0.6	2.9	0.053	6300N
2700	1320	30000	35000	14	22	27.5	0.3	1.5	0.012	6901N
6800	3050	22000	27000	17	27	37.5	0.6	2.9	0.037	6201N
9750	4250	19000	24000	18	31	42	1	2.9	0.060	6301N
4300	2250	26000	31000	17	26	31.5	0.3	1.8	0.017	6902N
5600	2840	23000	28000	17	30	37.5	0.3	2.9	0.033	6002N
7650	3700	19000	24000	20	30	40.5	0.6	2.9	0.045	6202N
11400	5400	17000	20000	21	36	47	1	2.9	0.082	6302N
4600	2550	24000	29000	19	28	33.5	0.3	1.8	0.019	6903N
6000	3250	20000	25000	19	33	40.5	0.3	2.9	0.041	6003N
9550	4800	17000	21000	22	35	45.5	0.6	2.9	0.065	6203N
13600	6550	15000	18000	23	41	53.5	1	3.3	0.115	6303N
4000	2640	20000	24000	22	30	35.5	0.3	1.8	0.020	6804N
6350	3700	19000	23000	22	35	40.5	0.3	2.3	0.037	6904N
9400	5000	17000	21000	24	38	47	0.6	2.9	0.069	6004N
12800	6600	14000	18000	26	41	53.5	1	3.3	0.106	6204N
15900	7900	13000	16000	27	45	58.5	1	3.3	0.144	6304N
13900	6950	13000	17000	28	44	56.5	1	3.3	0.120	62/22N
18400	9250	12000	15000	29	49	62.5	1	3.3	0.176	63/22N
4300	2940	18000	20000	27	35	40.5	0.3	1.8	0.023	6805N
7000	4500	16000	20000	27	40	45.5	0.3	2.3	0.044	6905N
10100	5850	15000	18000	29	43	53.5	0.6	2.9	0.078	6005N
14000	7900	12000	16000	31	46	58.5	1	3.3	0.128	6205N
23600	12100	11000	14000	32	55	68.5	1	4.6	0.232	6305N
17900	9750	11000	14000	34	52	64.5	1	3.3	0.175	62/28N
26800	14000	10000	12000	35	61	76	1	4.6	0.287	63/28N
5350	3800	15000	17000	32	40	45.5	0.3	1.8	0.027	6806N
7250	5000	14000	16000	32	45	50.5	0.3	2.3	0.047	6906N
13200	8300	12000	15000	35	50	61.5	1	2.9	0.113	6006N
19500	11300	10000	13000	36	56	68.5	1	4.6	0.199	6206N
26700	15000	9200	11000	37	65	80	1	4.6	0.346	6306N

NACHI

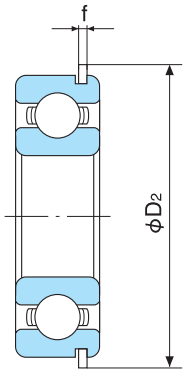
Deep-groove Ball Bearings

With snap ring groove / With snap ring / Shield type with snap ring

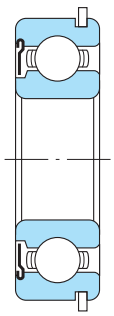
Bore Diameter : 32～60mm



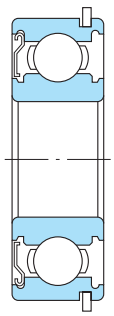
With snap ring groove (N)



With snap ring (NR)



Shield type with snap ring (ZNR)

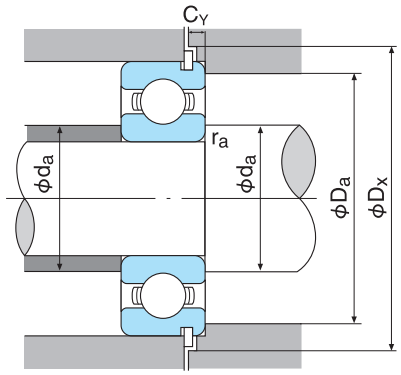


Shield type with snap ring (ZENR)

Boundary dimensions (mm)					Dimensions of snap ring groove and snap ring (mm)					Bearing No. (1)		
d	D	B	r (min)	r1 (min)	D1 (max)	a (max)	b (min)	D2 (max)	f (max)			
32	65	17	1	0.5	62.6	3.28	1.9	70.7	1.7	62/32N	62/32NR	62/32ZENR
	75	20	1.1	0.5	71.83	3.28	1.9	81.6	1.7	63/32N	63/32NR	63/32ZENR
35	47	7	0.3	0.3	45.7	1.3	0.95	49.8	0.85	6807N	6807NR	6807ZENR
	55	10	0.6	0.5	53.7	1.7	0.95	57.8	0.85	6907N	6907NR	6907ZENR
	62	14	1	0.5	59.61	2.08	1.9	67.7	1.7	6007N	6007NR	6007ZENR
	72	17	1.1	0.5	68.81	3.28	1.9	78.6	1.6	6207N	6207NR	6207ZENR
	80	21	1.5	0.5	76.81	3.28	1.9	86.6	1.6	6307N	6307NR	6307ZENR
40	52	7	0.3	0.3	50.7	1.3	0.95	54.8	0.85	6808N	6808NR	6808ZENR
	62	12	0.6	0.5	60.7	1.7	0.95	64.8	0.85	6908N	6908NR	6908ZENR
	68	15	1	0.5	64.82	2.49	1.9	74.6	1.7	6008N	6008NR	6008ZENR
	80	18	1.1	0.5	76.81	3.28	1.9	86.6	1.7	6208N	6208NR	6208ZENR
	90	23	1.5	0.5	86.79	3.28	2.7	96.5	2.46	6308N	6308NR	6308ZENR
45	58	7	0.3	0.3	56.7	1.3	0.95	60.8	0.85	6809N	6809NR	6809ZENR
	68	12	0.6	0.5	66.7	1.7	0.95	70.8	0.85	6909N	6909NR	6909ZENR
	75	16	1	0.5	71.83	2.49	1.9	81.6	1.7	6009N	6009NR	6009ZENR
	85	19	1.1	0.5	81.81	3.28	1.9	91.6	1.7	6209N	6209NR	6209ZENR
	100	25	1.5	0.5	96.8	3.28	2.7	106.5	2.46	6309N	6309NR	6309ZENR
50	65	7	0.3	0.3	63.7	1.3	0.95	67.8	0.85	6810N	6810NR	6810ZENR
	72	12	0.6	0.5	70.7	1.7	0.95	74.8	0.85	6910N	6910NR	6910ZENR
	80	16	1	0.5	76.81	2.49	1.9	86.6	1.7	6010N	6010NR	6010ZENR
	90	20	1.1	0.5	86.79	3.28	2.7	96.5	2.46	6210N	6210NR	6210ZENR
	110	27	2	0.5	106.81	3.28	2.7	116.6	2.46	6310N	6310NR	6310ZENR
55	72	9	0.3	0.3	70.7	1.7	0.95	74.8	0.85	6811N	6811NR	6811ZNR
	80	13	1	0.5	77.9	2.1	1.3	84.4	1.12	6911N	6911NR	6911ZNR
	90	18	1.1	0.5	86.79	2.87	2.7	96.5	2.46	6011N	6011NR	6011ZENR
	100	21	1.5	0.5	96.8	3.28	2.7	106.5	2.46	6211N	6211NR	6211ZENR
	120	29	2	0.5	115.21	4.06	3.1	129.7	2.82	6311N	6311NR	6311ZENR
60	78	10	0.3	0.3	76.2	1.7	1.3	82.7	1.12	6812N	6812NR	6812ZNR
	85	13	1	0.5	82.9	2.1	1.3	89.4	1.12	6912N	6912NR	6912ZNR
	95	18	1.1	0.5	91.82	2.87	2.7	101.6	2.46	6012N	6012NR	6012ZENR
	110	22	1.5	0.5	106.81	3.28	2.7	116.6	2.46	6212N	6212NR	6212ZENR
	130	31	2.1	0.5	125.22	4.06	3.1	139.7	2.82	6312N	6312NR	6312ZENR

Note: (1) Bearing No. ZE means one shield type, two shields type is also available.

Remarks: Dimensions of snap ring groove and snap ring are shown on pages 25 to 28.



- 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	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19				2.30
0.028	0.22	1	0	0.56	1.99
0.056	0.26				1.71
0.084	0.28				1.55
0.11	0.30	1	0	0.56	1.45
0.17	0.34				1.31
0.28	0.38				1.15
0.42	0.42	1	0	0.56	1.04
0.56	0.44				1.00

1N=0.102kgf

Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm)		Abutment and fillet dimensions (mm)					Mass (kg)	Bearing No.
		Grease lubrication	Oil lubrication	d_a (min)	D_a (max)	D_x (min)	r_a (max)	C_Y (max)		
22400	13100	9500	12000	38	59	71.5	1	4.6	0.230	62/32N
30000	16200	9000	11000	39	68	83	1	4.6	0.382	63/32N
4750	3800	13000	15000	37	45	50.5	0.3	1.8	0.030	6807N
10400	7150	12000	14000	39	51	58.5	0.6	2.3	0.075	6907N
16000	10300	11000	13000	40	57	68.5	1	3.4	0.150	6007N
25700	15300	9000	11000	42	65	80	1	4.6	0.288	6207N
33500	19100	8400	10000	44	71	88	1.5	4.6	0.457	6307N
5950	4900	12000	14000	42	50	55.5	0.3	1.8	0.034	6808N
13700	9950	11000	13000	44	58	65.5	0.6	2.3	0.110	6908N
16800	11500	9500	12000	45	63	76	1	3.8	0.186	6008N
29100	17900	8200	10000	47	73	88	1	4.6	0.366	6208N
40500	24100	7500	9000	49	81	98	1.5	5.9	0.633	6308N
5350	4900	11000	13000	47	56	61.5	0.3	1.8	0.042	6809N
14100	10900	10000	12000	49	64	72	0.6	2.3	0.124	6909N
20900	15200	8800	11000	50	70	83	1	3.8	0.239	6009N
32500	20500	7600	9300	52	78	93	1	4.6	0.407	6209N
53000	32000	6700	8000	54	91	108	1.5	5.4	0.833	6309N
6400	5800	10000	12000	52	63	68.5	0.3	1.8	0.054	6810N
14500	11700	9500	11000	54	68	76	0.6	2.3	0.127	6910N
21800	16600	8300	10000	55	75	88	1	3.8	0.252	6010N
35000	23200	7000	8600	57	83	98	1	5.4	0.463	6210N
62000	38100	6200	7300	60	100	118	2	5.4	1.07	6310N
8800	8100	8500	10000	57	70	76	0.3	2.3	0.085	6811N
16000	13200	8000	9000	60	75	86	1	2.9	0.180	6911N
28300	21300	7500	9000	61	84	98	1	5	0.375	6011N
43500	29300	6300	7700	64	91	108	1.5	5.4	0.607	6211N
71500	44500	5600	6600	65	110	131.5	2	6.5	1.37	6311N
11500	10600	8000	9500	62	76	84	0.3	2.5	0.110	6812N
15200	13500	7500	9000	65	80	91	1	2.9	0.195	6912N
29400	23200	7000	8300	66	89	103	1	5	0.403	6012N
52500	36000	5800	7100	69	101	118	1.5	5.4	0.783	6212N
82000	52000	5100	6100	72	118	141.5	2	6.5	1.70	6312N

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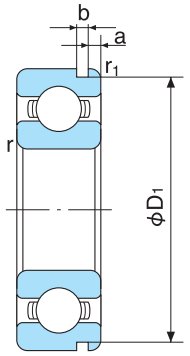
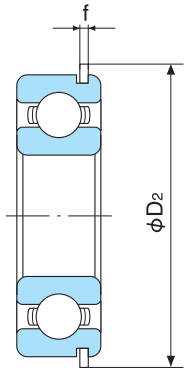
Deep-groove Ball Bearings

With snap ring groove / With snap ring / Shield type with snap ring

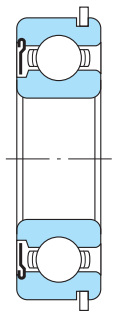
Bore Diameter : 65～90mm



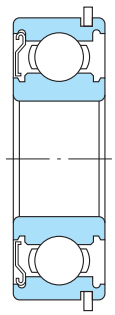
With snap ring groove (N)



With snap ring (NR)



Shield type with snap ring (ZNR)

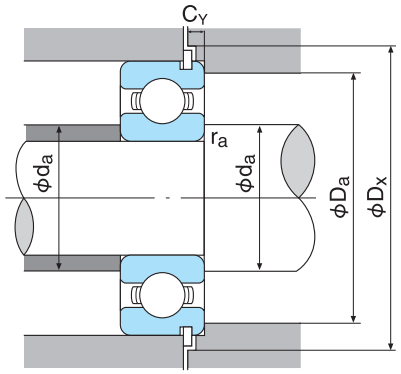


Shield type with snap ring (ZENR)

Boundary dimensions (mm)					Dimensions of snap ring groove and snap ring (mm)					Bearing No. (1)		
d	D	B	r (min)	r1 (min)	D1 (max)	a (max)	b (min)	D2 (max)	f (max)			
65	85	10	0.6	0.5	82.9	1.7	1.3	89.4	1.12	6813N	6813NR	6813ZNR
	90	13	1	0.5	87.9	2.1	1.3	94.4	1.12	6913N	6913NR	6913ZNR
	100	18	1.1	0.5	96.8	2.87	2.7	106.5	2.46	6013N	6013NR	6013ZENR
	120	23	1.5	0.5	115.21	4.06	3.1	129.7	2.82	6213N	6213NR	6213ZENR
	140	33	2.1	0.5	135.23	4.9	3.1	149.7	2.82	6313N	6313NR	6313ZENR
70	90	10	0.6	0.5	87.9	1.7	1.3	94.4	1.12	6814N	6814NR	6814ZNR
	100	16	1	0.5	97.9	2.5	1.3	104.4	1.12	6914N	6914NR	6914ZNR
	110	20	1.1	0.5	106.81	2.87	2.7	116.6	2.46	6014N	6014NR	6014ZENR
	125	24	1.5	0.5	120.22	4.06	3.1	134.7	2.82	6214N	6214NR	6214ZENR
	150	35	2.1	0.5	145.24	4.9	3.1	159.7	2.82	6314N	6314NR	6314ZENR
75	95	10	0.6	0.5	92.9	1.7	1.3	99.4	1.12	6815N	6815NR	6815ZNR
	105	16	1	0.5	102.6	2.5	1.3	110.7	1.12	6915N	6915NR	6915ZNR
	115	20	1.1	0.5	111.81	2.87	2.7	121.6	2.46	6015N	6015NR	6015ZENR
	130	25	1.5	0.5	125.22	4.06	3.1	139.7	2.82	6215N	6215NR	6215ZENR
	160	37	2.1	0.5	155.22	4.9	3.1	169.7	2.82	6315N	6315NR	6315ZENR
80	100	10	0.6	0.5	97.9	1.7	1.3	104.4	1.12	6816N	6816NR	6816ZNR
	110	16	1	0.5	107.6	2.5	1.3	115.7	1.12	6916N	6916NR	6916ZNR
	125	22	1.1	0.5	120.22	2.87	3.1	134.7	2.82	6016N	6016NR	6016ZNR
	140	26	2	0.5	135.23	4.9	3.1	149.7	2.82	6216N	6216NR	6216ZNR
	170	39	2.1	0.5	163.65	5.69	3.5	182.9	3.1	6316N	6316NR	6316ZNR
85	110	13	1	0.5	107.6	2.1	1.3	115.7	1.12	6817N	6817NR	6817ZNR
	120	18	1.1	0.5	117.6	3.3	1.3	125.7	1.12	6917N	6917NR	6917ZNR
	130	22	1.1	0.5	125.22	2.87	3.1	139.7	2.82	6017N	6017NR	6017ZNR
	150	28	2	0.5	145.24	4.9	3.1	159.7	2.82	6217N	6217NR	6217ZNR
	180	41	3	0.5	173.66	5.69	3.5	192.9	3.1	6317N	6317NR	6317ZNR
90	115	13	1	0.5	112.6	2.1	1.3	120.7	1.2	6818N	6818NR	6818ZNR
	125	18	1.1	0.5	122.6	3.3	1.3	130.7	1.12	6918N	6918NR	6918ZNR
	140	24	1.5	0.5	135.23	3.71	3.1	149.7	2.82	6018N	6018NR	6018ZNR
	160	30	2	0.5	155.22	4.9	3.1	169.7	2.82	6218N	6218NR	6218ZNR
	190	43	3	0.5	183.64	5.69	3.5	202.9	3.1	6318N	6318NR	6318ZNR

Note: (1) Bearing No. Z or ZE means one shield type, two shields type are also available.

Remarks: Dimensions of snap ring groove and snap ring are shown on pages 25 to 28.



- 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	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19				2.30
0.028	0.22	1	0	0.56	1.99
0.056	0.26				1.71
0.084	0.28				1.55
0.11	0.30	1	0	0.56	1.45
0.17	0.34				1.31
0.28	0.38				1.15
0.42	0.42	1	0	0.56	1.04
0.56	0.44				1.00

1N=0.102kgf

Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm)		Abutment and fillet dimensions (mm)					Mass (kg)	Bearing No.
		Grease lubrication	Oil lubrication	d_a (min)	D_a (max)	D_x (min)	r_a (max)	C_Y (max)		
11900	11500	7500	8500	69	81	91	0.6	2.5	0.130	6813N
17400	16000	7000	8500	70	85	96	1	2.9	0.210	6913N
30500	25200	6500	7800	71	94	108	1	5	0.413	6013N
57000	40000	5300	6500	74	111	131.5	1.5	6.5	0.990	6213N
92500	59500	4700	5700	77	128	152	2	7.3	2.08	6313N
12100	11900	7000	8000	74	86	96	0.6	2.5	0.140	6814N
23700	21100	6500	7500	75	95	106	1	3.3	0.332	6914N
38000	31000	6000	7100	76	104	118	1	5	0.580	6014N
62000	44000	5000	5900	79	116	136.5	1.5	6.5	1.07	6214N
104000	68000	4400	5300	82	138	162	2.0	7.3	2.52	6314N
12500	12800	6500	7500	79	91	101	0.6	2.5	0.150	6815N
20800	19700	6200	7200	80	100	112	1	3.3	0.350	6915N
39500	33500	5700	6700	81	109	123	1	5	0.615	6015N
66000	49500	4800	5600	84	121	141.5	1.5	6.5	1.18	6215N
113000	77000	4100	5000	87	148	172	2	7.3	3.02	6315N
12700	13300	6000	7000	84	96	106	0.6	2.5	0.160	6816N
27600	25300	5500	6500	85	105	117	1	3.3	0.370	6916N
47500	39500	5300	6200	86	119	136.5	1	5.3	0.825	6016N
72500	53000	4500	5200	90	130	152	2	7.3	1.40	6216N
123000	86500	3800	4500	92	158	185	2	8.4	3.59	6316N
18700	19000	5500	6500	90	105	117	1	2.9	0.272	6817N
32000	29600	5200	6300	91	113	127	1	4.1	0.524	6917N
49500	43000	5000	6000	91	124	141.5	1	5.3	0.863	6017N
84000	62000	4200	4900	95	140	162	2	7.3	1.79	6217N
133000	96500	3600	4300	99	166	195	2.5	8.4	4.23	6317N
19000	19700	5300	6200	95	110	122	1	2.9	0.288	6818N
33000	31500	5000	6000	96	119	132	1	4.1	0.549	6918N
58000	49500	4700	5600	97	133	152	1.5	6.1	1.13	6018N
96000	71500	3900	4600	100	150	172	2	7.3	2.15	6218N
143000	107000	3400	4000	104	176	205	2.5	8.4	4.91	6318N

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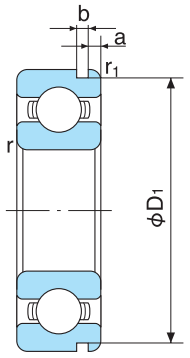
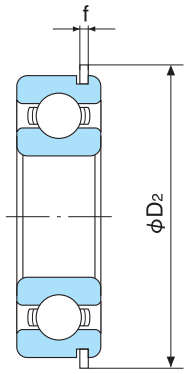
Deep-groove Ball Bearings

With snap ring groove / With snap ring / Shield type with snap ring

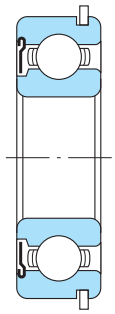
Bore Diameter : 95～130mm



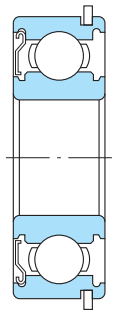
With snap ring groove (N)



With snap ring (NR)



Shield type with snap ring (ZNR)

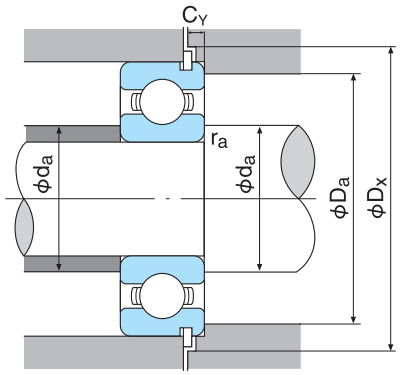


Shield type with snap ring (ZENR)

Boundary dimensions (mm)					Dimensions of snap ring groove and snap ring (mm)					Bearing No. (1)		
d	D	B	r (min)	r_1 (min)	D_1 (max)	a (max)	b (min)	D_2 (max)	f (max)			
95	120	13	1	0.5	117.6	2.1	1.3	125.7	1.12	6819N	6819NR	6819ZNR
	130	18	1.1	0.5	127.6	3.3	1.3	135.7	1.12	6919N	6919NR	6919ZNR
	145	24	1.5	0.5	140.23	3.71	3.1	154.7	2.82	6019N	6019NR	6019ZNR
	170	32	2.1	0.5	163.65	5.69	3.5	182.9	3.1	6219N	6219NR	6219ZNR
	200	45	3	0.5	193.65	5.69	3.5	212.9	3.1	6319N	6319NR	6319ZNR
100	125	13	1	0.5	122.6	2.1	1.3	130.7	1.12	6820N	6820NR	6820ZNR
	140	20	1.1	0.5	137.6	3.3	1.9	145.7	1.7	6920N	6920NR	6920ZNR
	150	24	1.5	0.5	145.24	3.71	3.1	159.7	2.82	6020N	6020NR	6020ZNR
	180	34	2.1	0.5	173.66	5.69	3.5	192.9	3.1	6220N	6220NR	6220ZNR
105	130	13	1	0.5	127.6	2.1	1.3	135.7	1.12	6821N	6821NR	—
	145	20	1.1	0.5	142.6	3.3	1.9	150.7	1.7	6921N	6921NR	—
	160	26	2	0.5	155.22	3.71	3.1	169.7	2.82	6021N	6021NR	6021ZNR
	190	36	2.1	0.5	183.64	5.69	3.5	202.9	3.1	6221N	6221NR	6221ZNR
110	140	16	1	0.5	137.6	2.5	1.9	145.7	1.7	6822N	6822NR	—
	150	20	1.1	0.5	147.6	3.3	1.9	155.7	1.7	6922N	6922NR	—
	170	28	2	0.5	163.65	3.71	3.5	182.9	3.1	6022N	6022NR	6022ZNR
	200	38	2.1	0.5	193.65	5.69	3.5	212.9	3.1	6222N	6222NR	6222ZNR
120	150	16	1	0.5	147.6	2.5	1.9	155.7	1.7	6824N	6824NR	—
	165	22	1.1	0.5	161.8	3.7	1.9	171.5	1.7	6924N	6924NR	—
	180	28	2	0.5	173.66	3.71	3.5	192.9	3.1	6024N	6024NR	6024ZNR
130	165	18	1.1	0.5	161.8	3.3	1.9	171.5	1.7	6826N	6826NR	—
	180	24	1.5	0.5	176.8	3.7	1.9	186.5	1.7	6926N	6926NR	—
	200	33	2	0.5	193.65	5.69	3.5	212.9	3.1	6026N	6026NR	6026ZNR

Note: (1) Bearing No. Z means one shield type, two shields type are also available.

Remarks: Dimensions of snap ring groove and snap ring are shown on pages 25 to 28.



- 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	$\frac{Fa}{Fr} \leqq e$		$\frac{Fa}{Fr} > e$	
		X	Y	X	Y
0.014	0.19				2.30
0.028	0.22	1	0	0.56	1.99
0.056	0.26				1.71
0.084	0.28				1.55
0.11	0.30	1	0	0.56	1.45
0.17	0.34				1.31
0.28	0.38				1.15
0.42	0.42	1	0	0.56	1.04
0.56	0.44				1.00

1N=0.102kgf

Basic dynamic load rating Cr (N)	Basic static load rating Cor (N)	Limiting speed (rpm)		Abutment and fillet dimensions (mm)					Mass (kg)	Bearing No.
		Grease lubrication	Oil lubrication	d_a (min)	D_a (max)	D_x (min)	r_a (max)	C_Y (max)		
19300	20500	5000	6000	100	115	127	1	2.9	0.307	6819N
33500	33500	4700	5500	101	124	137	1	4.1	0.576	6919N
60500	54000	4500	5300	102	138	157	1.5	6.1	1.16	6019N
109000	81500	3700	4300	107	158	185	2	8.4	2.62	6219N
153000	118000	3200	3800	109	186	215	2.5	8.4	5.67	6319N
19600	21200	4600	5500	105	120	132	1	2.9	0.320	6820N
37000	36500	4400	5300	106	134	147	1	4.7	0.780	6920N
60000	54000	4200	5000	107	143	162	1.5	6.1	1.20	6020N
122000	93000	3500	4100	112	168	195	2	8.4	3.14	6220N
19900	21900	4500	5500	110	125	137	1	2.9	0.335	6821N
42500	42000	4200	5100	111	139	152	1	4.7	0.803	6921N
72500	65500	4000	4800	113	152	172	2	6.1	1.54	6021N
133000	104000	3200	3900	117	178	205	2	8.4	3.76	6221N
27300	29400	4200	5100	115	135	147	1	3.9	0.526	6822N
38000	38500	4000	5000	116	144	157	1	4.7	0.846	6922N
84500	73000	3800	4500	118	162	185	2	6.4	1.91	6022N
144000	117000	3000	3700	122	188	215	2	8.4	4.36	6222N
28300	31500	4000	4800	125	145	157	1	3.9	0.567	6824N
53000	54000	3700	4600	126	159	173	1	5.1	1.15	6924N
88000	79500	3500	4200	128	172	195	2	6.4	2.36	6024N
37000	41000	3600	4400	136	158	173	1	4.7	0.815	6826N
65000	67000	3400	4200	137	173	188	1.5	5.1	1.81	6926N
106000	101000	3200	3800	138	192	215	2	8.4	3.60	6026N

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Dimensions of Snap Ring Grooves and Snap Rings

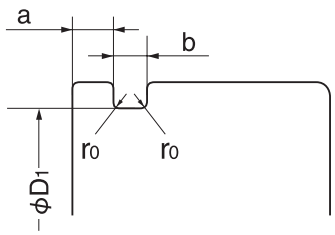

Table 3.1 Dimensions of Snap Ring Grooves for Bearing Dimension Series 18 and 19

Unit: mm

Bearing outside diameter Nominal D	Snap ring groove diameter D1		Snap ring groove location a				Snap ring groove width b		Fillet radius at snap ring groove bottom r0	Applicable snap ring
			Dimension series 18		Dimension series 19					
	Max	Min	Max	Min	Max	Min	Max	Min	Max	
22	20.8	20.5	—	—	1.05	0.9	1.05	0.8	0.2	NR1022
24	22.8	22.5	—	—	1.05	0.9	1.05	0.8	0.2	NR1024
28	26.7	26.4	—	—	1.3	1.15	1.2	0.95	0.25	NR1028
30	28.7	28.4	—	—	1.3	1.15	1.2	0.95	0.25	NR1030
32	30.7	30.4	1.3	1.15	—	—	1.2	0.95	0.25	NR1032
34	32.7	32.4	1.3	1.15	—	—	1.2	0.95	0.25	NR1034
37	35.7	35.4	1.3	1.15	1.7	1.55	1.2	0.95	0.25	NR1037
39	37.7	37.4	—	—	1.7	1.55	1.2	0.95	0.25	NR1039
40	38.7	38.4	1.3	1.15	—	—	1.2	0.95	0.25	NR1040
42	40.7	40.4	1.3	1.15	1.7	1.55	1.2	0.95	0.25	NR1042
44	42.7	42.4	1.3	1.15	—	—	1.2	0.95	0.25	NR1044
45	43.7	43.4	—	—	1.7	1.55	1.2	0.95	0.25	NR1045
47	45.7	45.4	1.3	1.15	1.7	1.55	1.2	0.95	0.25	NR1047
52	50.7	50.4	1.3	1.15	1.7	1.55	1.2	0.95	0.25	NR1052
55	53.7	53.4	—	—	1.7	1.55	1.2	0.95	0.25	NR1055
58	56.7	56.4	1.3	1.15	—	—	1.2	0.95	0.25	NR1058
62	60.7	60.3	—	—	1.7	1.55	1.2	0.95	0.25	NR1062
65	63.7	63.3	1.3	1.15	—	—	1.2	0.95	0.25	NR1065
68	66.7	66.3	—	—	1.7	1.55	1.2	0.95	0.25	NR1068
72	70.7	70.3	1.7	1.55	1.7	1.55	1.2	0.95	0.25	NR1072
78	76.2	75.8	1.7	1.55	—	—	1.6	1.3	0.4	NR1078
80	77.9	77.5	—	—	2.1	1.9	1.6	1.3	0.4	NR1080
85	82.9	82.5	1.7	1.55	2.1	1.9	1.6	1.3	0.4	NR1085
90	87.9	87.5	1.7	1.55	2.1	1.9	1.6	1.3	0.4	NR1090
95	92.9	92.5	1.7	1.55	—	—	1.6	1.3	0.4	NR1095
100	97.9	97.5	1.7	1.55	2.5	2.3	1.6	1.3	0.4	NR1100
105	102.6	102.1	—	—	2.5	2.3	1.6	1.3	0.4	NR1105
110	107.6	107.1	2.1	1.9	2.5	2.3	1.6	1.3	0.4	NR1110
115	112.6	112.1	2.1	1.9	—	—	1.6	1.3	0.4	NR1115
120	117.6	117.1	2.1	1.9	3.3	3.1	1.6	1.3	0.4	NR1120
125	122.6	122.1	2.1	1.9	3.3	3.1	1.6	1.3	0.4	NR1125
130	127.6	127.1	2.1	1.9	3.3	3.1	1.6	1.3	0.4	NR1130
140	137.6	137.1	2.5	2.3	3.3	3.1	2.2	1.9	0.6	NR1140
145	142.6	142.1	—	—	3.3	3.1	2.2	1.9	0.6	NR1145
150	147.6	147.1	2.5	2.3	3.3	3.1	2.2	1.9	0.6	NR1150
165	161.8	161.3	3.3	3.1	3.7	3.5	2.2	1.9	0.6	NR1165
175	171.8	171.3	3.3	3.1	—	—	2.2	1.9	0.6	NR1175
180	176.8	176.3	—	—	3.7	3.5	2.2	1.9	0.6	NR1180
190	186.8	186.3	3.3	3.1	3.7	3.5	2.2	1.9	0.6	NR1190
200	196.8	196.3	3.3	3.1	—	—	2.2	1.9	0.6	NR1200

Remarks: Chamfer at groove side of outer ring clears a fillet radius of:
0.3 mm in dimension series 18 up to and including D = 78 mm and
in dimension series 19 up to and including D = 47 mm;
0.5 mm in dimension series 18 over D = 78 mm and
in dimension series 19 over D = 47 mm

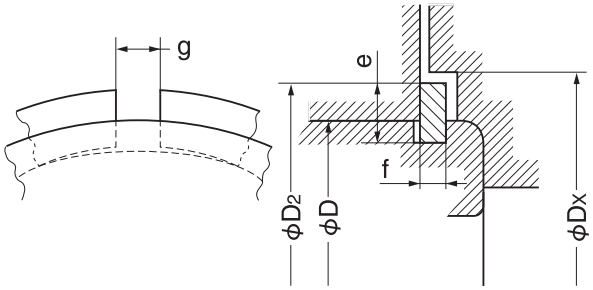

Table 3.2 Snap Ring Dimensions for Bearing Dimension Series 18 and 19

Unit: mm

Snap ring No.	Snap ring dimensions				After snap ring mounting		Applicable bearing			Diameter of end cover bore Dx
	Section height e		Thickness f		Gap g	Outside diameter of snap ring D2 (Max)	Bearing outside diameter Nominal D	Dimension series		
								18	19	
	Max	Min	Max	Min				Bearing bore diameter d		
NR1022	2.0	1.85	0.7	0.6	2	24.8	22	—	10	25.5
NR1024	2.0	1.85	0.7	0.6	2	26.8	24	—	12	27.5
NR1028	2.05	1.9	0.85	0.75	3	30.8	28	—	15	31.5
NR1030	2.05	1.9	0.85	0.75	3	32.8	30	—	17	33.5
NR1032	2.05	1.9	0.85	0.75	3	34.8	32	20	—	35.5
NR1034	2.05	1.9	0.85	0.75	3	36.8	34	22	—	37.5
NR1037	2.05	1.9	0.85	0.75	3	39.8	37	25	20	40.5
NR1039	2.05	1.9	0.85	0.75	3	41.8	39	—	22	42.5
NR1040	2.05	1.9	0.85	0.75	3	42.8	40	28	—	43.5
NR1042	2.05	1.9	0.85	0.75	3	44.8	42	30	25	45.5
NR1044	2.05	1.9	0.85	0.75	4	46.8	44	32	—	47.5
NR1045	2.05	1.9	0.85	0.75	4	47.8	45	—	28	48.5
NR1047	2.05	1.9	0.85	0.75	4	49.8	47	35	30	50.5
NR1052	2.05	1.9	0.85	0.75	4	54.8	52	40	32	55.5
NR1055	2.05	1.9	0.85	0.75	4	57.8	55	—	35	58.5
NR1058	2.05	1.9	0.85	0.75	4	60.8	58	45	—	61.5
NR1062	2.05	1.9	0.85	0.75	4	64.8	62	—	40	65.5
NR1065	2.05	1.9	0.85	0.75	4	67.8	65	50	—	68.5
NR1068	2.05	1.9	0.85	0.75	5	70.8	68	—	45	72
NR1072	2.05	1.9	0.85	0.75	5	74.8	72	55	50	76
NR1078	3.25	3.1	1.12	1.02	5	82.7	78	60	—	84
NR1080	3.25	3.1	1.12	1.02	5	84.4	80	—	55	86
NR1085	3.25	3.1	1.12	1.02	5	89.4	85	65	60	91
NR1090	3.25	3.1	1.12	1.02	5	94.4	90	70	65	96
NR1095	3.25	3.1	1.12	1.02	5	99.4	95	75	—	101
NR1100	3.25	3.1	1.12	1.02	5	104.4	100	80	70	106
NR1105	4.04	3.89	1.12	1.02	5	110.7	105	—	75	112
NR1110	4.04	3.89	1.12	1.02	5	115.7	110	85	80	117
NR1115	4.04	3.89	1.12	1.02	5	120.7	115	90	—	122
NR1120	4.04	3.89	1.12	1.02	7	125.7	120	95	85	127
NR1125	4.04	3.89	1.12	1.02	7	130.7	125	100	90	132
NR1130	4.04	3.89	1.12	1.02	7	135.7	130	105	95	137
NR1140	4.04	3.89	1.7	1.6	7	145.7	140	110	100	147
NR1145	4.04	3.89	1.7	1.6	7	150.7	145	—	105	152
NR1150	4.04	3.89	1.7	1.6	7	155.7	150	120	110	157
NR1165	4.85	4.7	1.7	1.6	7	171.5	165	130	120	173
NR1175	4.85	4.7	1.7	1.6	10	181.5	175	140	—	183
NR1180	4.85	4.7	1.7	1.6	10	186.5	180	—	130	188
NR1190	4.85	4.7	1.7	1.6	10	196.5	190	150	140	198
NR1200	4.85	4.7	1.7	1.6	10	206.5	200	160	—	208

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Dimensions of Snap Ring Grooves and Snap Rings

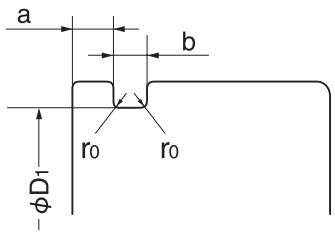

Table 3.3 Dimensions of Snap Ring Grooves for Bearing Diameter Series 0, 2, 3 and 4

Unit: mm

Bearing outside diameter Nominal D	Snap ring groove diameter D1		Snap ring groove location a				Snap ring groove width b		Fillet radius at snap ring groove bottom r0	Applicable snap ring
			Diameter series 0		Diameter series 2, 3, 4					
	Max	Min	Max	Min	Max	Min	Max	Min	Max	
13	12.04	11.91	–	–	1.1	0.95	1.05	0.8	0.2	NR 13
16	15.16	15.04	–	–	1.2	1.05	1.05	0.8	0.2	NR 16
19	18.25	18.1	1.73	1.55	1.73	1.55	1.05	0.8	0.2	NR 19
22	21.11	20.95	1.73	1.55	1.73	1.55	1.05	0.8	0.2	NR 22
24	23	22.85	1.73	1.55	1.73	1.55	1.05	0.8	0.2	NR 24
26	25.15	25	1.73	1.55	1.73	1.55	1.05	0.8	0.2	NR 26
28	26.7	26.4	1.73	1.55	1.73	1.55	1.2	0.95	0.25	NR 28
30	28.17	27.91	–	–	2.06	1.9	1.65	1.35	0.4	NR 30
32	30.15	29.9	2.06	1.9	2.06	1.9	1.65	1.35	0.4	NR 32
35	33.17	32.92	2.06	1.9	2.06	1.9	1.65	1.35	0.4	NR 35
37	34.77	34.52	–	–	2.06	1.9	1.65	1.35	0.4	NR 37
40	38.1	37.85	–	–	2.06	1.9	1.65	1.35	0.4	NR 40
42	39.75	39.5	2.06	1.9	2.06	1.9	1.65	1.35	0.4	NR 42
44	41.75	41.5	2.06	1.9	–	–	1.65	1.35	0.4	NR 44
47	44.6	44.35	2.06	1.9	2.46	2.31	1.65	1.35	0.4	NR 47
50	47.6	47.35	–	–	2.46	2.31	1.65	1.35	0.4	NR 50
52	49.73	49.48	2.06	1.9	2.46	2.31	1.65	1.35	0.4	NR 52
55	52.6	52.35	2.08	1.88	–	–	1.65	1.35	0.4	NR 55
56	53.6	53.35	–	–	2.46	2.31	1.65	1.35	0.4	NR 56
58	55.6	55.35	2.08	1.88	2.46	2.31	1.65	1.35	0.4	NR 58
62	59.61	59.11	2.08	1.88	3.28	3.07	2.2	1.9	0.6	NR 62
65	62.6	62.1	–	–	3.28	3.07	2.2	1.9	0.6	NR 65
68	64.82	64.31	2.49	2.29	3.28	3.07	2.2	1.9	0.6	NR 68
72	68.81	68.3	–	–	3.28	3.07	2.2	1.9	0.6	NR 72
75	71.83	71.32	2.49	2.29	3.28	3.07	2.2	1.9	0.6	NR 75
80	76.81	76.3	2.49	2.29	3.28	3.07	2.2	1.9	0.6	NR 80
85	81.81	81.31	–	–	3.28	3.07	2.2	1.9	0.6	NR 85
90	86.79	86.28	2.87	2.67	3.28	3.07	3	2.7	0.6	NR 90
95	91.82	91.31	2.87	2.67	–	–	3	2.7	0.6	NR 95
100	96.8	96.29	2.87	2.67	3.28	3.07	3	2.7	0.6	NR100
110	106.81	106.3	2.87	2.67	3.28	3.07	3	2.7	0.6	NR110
115	111.81	111.3	2.87	2.67	–	–	3	2.7	0.6	NR115
120	115.21	114.71	–	–	4.06	3.86	3.4	3.1	0.6	NR120
125	120.22	119.71	2.87	2.67	4.06	3.86	3.4	3.1	0.6	NR125
130	125.22	124.71	2.87	2.67	4.06	3.86	3.4	3.1	0.6	NR130
140	135.23	134.72	3.71	3.45	4.9	4.65	3.4	3.1	0.6	NR140
145	140.23	139.73	3.71	3.45	–	–	3.4	3.1	0.6	NR145
150	145.24	144.73	3.71	3.45	4.9	4.65	3.4	3.1	0.6	NR150
160	155.22	154.71	3.71	3.45	4.9	4.65	3.4	3.1	0.6	NR160
170	163.65	163.14	3.71	3.45	5.69	5.44	3.8	3.5	0.6	NR170
180	173.66	173.15	3.71	3.45	5.69	5.44	3.8	3.5	0.6	NR180
190	183.64	183.13	–	–	5.69	5.44	3.8	3.5	0.6	NR190
200	193.65	193.14	5.69	5.44	5.69	5.44	3.8	3.5	0.6	NR200
210	203.6	203.1	5.69	5.44	–	–	3.8	3.5	1	NR210
215	208.6	208.1	–	–	5.69	5.44	3.8	3.5	1	NR215
225	217	216.5	6.5	6.2	6.5	6.2	4.9	4.5	1	NR225
230	222	221.5	–	–	6.5	6.2	4.9	4.5	1	NR230
240	232	231.5	6.5	6.2	6.5	6.2	4.9	4.5	1	NR240
250	242	241.5	–	–	6.5	6.2	4.9	4.5	1	NR250

Remarks: 1. These dimensions are not applied to dimension series 00, 82 and 83.
2. Chamfer at groove side of outer ring clears a fillet radius of:
0.3 mm in diameter series 0 up to and including D = 35 mm,
0.5 mm in diameter series 0 over D = 35 mm and for all diameters in diameter series 2, 3, and 4

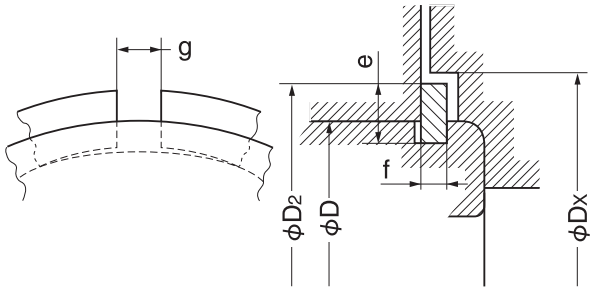

Table 3.4 Snap Ring Dimensions for Bearing Diameter Series 0, 2, 3 and 4

Unit: mm

Snap ring No.	Snap ring dimensions				After snap ring mounting		Applicable bearing					Diameter of end cover bore Dx
	Section height e		Thickness f		Gap g	Outside diameter of snap ring D2 (Max)	Bearing outside diameter Nominal D	Dimension series				
								0	2	3	4	
	Max	Min	Max	Min				Bearing bore diameter d				(Min)
NR 13	1.15	1.0	0.7	0.6	3	14.3	13	–	4	3	–	14.5
NR 16	1.65	1.5	0.7	0.6	3	18.5	16	–	5	4	–	19
NR 19	1.65	1.5	0.7	0.6	3	21.5	19	7	6	5	–	22
NR 22	2.00	1.85	0.7	0.6	3	25.1	22	8	7	6	–	25.5
NR 24	2.00	1.85	0.7	0.6	3	27	24	9	8	–	–	27.5
NR 26	2.00	1.85	0.7	0.6	3	29.2	26	10	9	7	–	30
NR 28	2.05	1.90	0.85	0.75	3	30.8	28	12	–	8	–	31.5
NR 30	3.25	3.1	1.12	1.02	3	34.7	30	–	10	9	8	35.5
NR 32	3.25	3.1	1.12	1.02	3	36.7	32	15	12	–	9	37.5
NR 35	3.25	3.1	1.12	1.02	3	39.7	35	17	15	10	–	40.5
NR 37	3.25	3.1	1.12	1.02	3	41.3	37	–	–	12	10	42
NR 40	3.25	3.1	1.12	1.02	3	44.6	40	–	17	–	–	45.5
NR 42	3.25	3.1	1.12	1.02	3	46.3	42	20	–	15	12	47
NR 44	3.25	3.1	1.12	1.02	3	48.3	44	22	–	–	–	49
NR 47	4.04	3.89	1.12	1.02	4	52.7	47	25	20	17	–	53.5
NR 50	4.04	3.89	1.12	1.02	4	55.7	50	–	22	–	–	56.5
NR 52	4.04	3.89	1.12	1.02	4	57.9	52	28	25	20	15	58.5
NR 55	4.04	3.89	1.12	1.02	4	60.7	55	30	–	–	–	61.5
NR 56	4.04	3.89	1.12	1.02	4	61.7	56	–	–	22	–	62.5
NR 58	4.04	3.89	1.12	1.02	4	63.7	58	32	28	–	–	64.5
NR 62	4.04	3.89	1.7	1.6	4	67.7	62	35	30	25	17	68.5
NR 65	4.04	3.89	1.7	1.6	4	70.7	65	–	32	–	–	71.5
NR 68	4.85	4.7	1.7	1.6	5	74.6	68	40	–	28	–	76
NR 72	4.85	4.7	1.7	1.6	5	78.6	72	–	35	30	20	80
NR 75	4.85	4.7	1.7	1.6	5	81.6	75	45	–	32	–	83
NR 80	4.85	4.7	1.7	1.6	5	86.6	80	50	40	35	25	88
NR 85	4.85	4.7	1.7	1.6	5	91.6	85	–	45	–	–	93
NR 90	4.85	4.7	2.46	2.36	5	96.5	90	55	50	40	30	98
NR 95	4.85	4.7	2.46	2.36	5	101.6	95	60	–	–	–	103
NR100	4.85	4.7	2.46	2.36	5	106.5	100	65	55	45	35	108
NR110	4.85	4.7	2.46	2.36	5	116.6	110	70	60	50	40	118
NR115	4.85	4.7	2.46	2.36	5	121.6	115	75	–	–	–	123
NR120	7.21	7.06	2.82	2.72	7	129.7	120	–	65	55	45	131.5
NR125	7.21	7.06	2.82	2.72	7	134.7	125	80	70	–	–	136.5
NR130	7.21	7.06	2.82	2.72	7	139.7	130	85	75	60	50	141.5
NR140	7.21	7.06	2.82	2.72	7	149.7	140	90	80	65	55	152
NR145	7.21	7.06	2.82	2.72	7	154.7	145	95	–	–	–	157
NR150	7.21	7.06	2.82	2.72	7	159.7	150	100	85	70	60	162
NR160	7.21	7.06	2.82	2.72	7	169.7	160	105	90	75	65	172
NR170	9.6	9.45	3.1	3	10	182.9	170	110	95	80	–	185
NR180	9.6	9.45	3.1	3	10	192.9	180	120	100	85	70	195
NR190	9.6	9.45	3.1	3	10	202.9	190	–	105	90	75	205
NR200	9.6	9.45	3.1	3	10	212.9	200	130	110	95	80	215
NR210	9.6	9.45	3.1	3	10	222.8	210	140	–	–	85	225
NR215	9.6	9.45	3.1	3	10	227.8	215	–	120	100	–	230
NR225	10	9.85	3.5	3.4	10	237	225	150	–	105	90	240
NR230	10	9.85	3.5	3.4	10	242	230	–	130	–	–	245
NR240	10	9.85	3.5	3.4	10	252	240	160	–	110	95	255
NR250	10	9.85	3.5	3.4	10	262	250	–	140	–	100	265

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Tolerance Values for Radial Bearings

Table 4.1 Tolerance Values of Inner Ring and of Outer Ring Width

Bearing bore diameter Nominal d (mm)		Bearing with: Single plane mean bore diameter deviation Δ_{dmp}										Deviation of a single bore diameter (2) Δ_{ds}			
		Class 0		Class 6		Class 5		Class 4		Class 2		Class 4 Diameter series 0,1,2,3,4		Class 2	
Over	Incl.	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
0.6(1)	2.5	0	- 8	0	- 7	0	- 5	0	- 4	0	-2.5	0	- 4	0	-2.5
2.5	10	0	- 8	0	- 7	0	- 5	0	- 4	0	-2.5	0	- 4	0	-2.5
10	18	0	- 8	0	- 7	0	- 5	0	- 4	0	-2.5	0	- 4	0	-2.5
18	30	0	- 10	0	- 8	0	- 6	0	- 5	0	-2.5	0	- 5	0	-2.5
30	50	0	- 12	0	-10	0	- 8	0	- 6	0	-2.5	0	- 6	0	-2.5
50	80	0	- 15	0	-12	0	- 9	0	- 7	0	-4	0	- 7	0	-4
80	120	0	- 20	0	-15	0	-10	0	- 8	0	-5	0	- 8	0	-5
120	150	0	- 25	0	-18	0	-13	0	-10	0	-7	0	-10	0	-7
150	180	0	- 25	0	-18	0	-13	0	-10	0	-7	0	-10	0	-7
180	250	0	- 30	0	-22	0	-15	0	-12	0	-8	0	-12	0	-8
250	315	0	- 35	0	-25	0	-18	—	—	—	—	—	—	—	—
315	400	0	- 40	0	-30	0	-23	—	—	—	—	—	—	—	—
400	500	0	- 45	0	-35	—	—	—	—	—	—	—	—	—	—
500	630	0	- 50	0	-40	—	—	—	—	—	—	—	—	—	—
630	800	0	- 75	—	—	—	—	—	—	—	—	—	—	—	—
800	1000	0	-100	—	—	—	—	—	—	—	—	—	—	—	—
1000	1250	0	-125	—	—	—	—	—	—	—	—	—	—	—	—
1250	1600	0	-160	—	—	—	—	—	—	—	—	—	—	—	—
1600	2000	0	-200	—	—	—	—	—	—	—	—	—	—	—	—

Bearing bore diameter Nominal d (mm)		Deviation of a single inner ring width (or a single outer ring width) (2) Δ_{Bs} (or Δ_{Cs})										Inner (or outer) ring width variation V_{Bs} (or V_{Cs})				
		Single bearing						Paired or stack mounted bearing (4)				Inner ring (or outer ring) (3)		Inner ring		
		Class 0 Class 6		Class 5 Class 4		Class 2		Class 0 Class 6		Class 5 Class 4		Class 0	Class 6	Class 5	Class 4	Class 2
Over	Incl.	High	Low	High	Low	High	Low	High	Low	High	Low	Max	Max	Max	Max	Max
0.6(1)	2.5	0	- 40	0	- 40	0	- 40	—	—	0	-250	12	12	5	2.5	1.5
2.5	10	0	- 120	0	- 40	0	- 40	0	-250	0	-250	15	15	5	2.5	1.5
10	18	0	- 120	0	- 80	0	- 80	0	-250	0	-250	20	20	5	2.5	1.5
18	30	0	- 120	0	-120	0	-120	0	-250	0	-250	20	20	5	2.5	1.5
30	50	0	- 120	0	-120	0	-120	0	-250	0	-250	20	20	5	3	1.5
50	80	0	- 150	0	-150	0	-150	0	-380	0	-250	25	25	6	4	1.5
80	120	0	- 200	0	-200	0	-200	0	-380	0	-380	25	25	7	4	2.5
120	150	0	- 250	0	-250	0	-250	0	-500	0	-380	30	30	8	5	2.5
150	180	0	- 250	0	-250	0	-250	0	-500	0	-380	30	30	8	5	4
180	250	0	- 300	0	-300	0	-300	0	-500	0	-500	30	30	10	6	5
250	315	0	- 350	0	-350	—	—	0	-500	0	-500	35	35	13	—	—
315	400	0	- 400	0	-400	—	—	0	-630	0	-630	40	40	15	—	—
400	500	0	- 450	—	—	—	—	—	—	—	—	50	45	—	—	—
500	630	0	- 500	—	—	—	—	—	—	—	—	60	50	—	—	—
630	800	0	- 750	—	—	—	—	—	—	—	—	70	—	—	—	—
800	1000	0	-1000	—	—	—	—	—	—	—	—	80	—	—	—	—
1000	1250	0	-1250	—	—	—	—	—	—	—	—	100	—	—	—	—
1250	1600	0	-1600	—	—	—	—	—	—	—	—	120	—	—	—	—
1600	2000	0	-2000	—	—	—	—	—	—	—	—	140	—	—	—	—

Notes: (1) This diameter is included in this group.
(2) Applies to bearings with cylindrical bore.
(3) Width deviation and variation of outer ring are the same with of inner ring. Outer ring width variation of classes 5, 4 and 2 are listed in Table 4.2.
(4) Applies to the rings of single bearings made for paired of stack mounting.
(5) Applies ro radial ball bearings such as deep groove ball bearing, angular contact ball bearings.

Remarks: The high deviation of bearing cylindrical bore diameter specified in this table does not apply within a distance of 1.2 × r (max) from the ring face.

Unit: μm

cylindrical bore

Bore diameter variation in a single radial plane (2) V_{dp}										Main bore diameter variation (2) V_{dmp}						Bearing bore diameter Nominal d (mm)	
Class 0			Class 6			Class 5		Class 4		Class 2	Class 0	Class 6	Class 5	Class 4	Class 2		
Diameter series			Diameter series			Diameter series		Diameter series									
7,8,9	0,1	2,3,4	7,8,9	0,1	2,3,4	7,8,9	0,1,2,3,4	7,8,9	0,1,2,3,4								
Max			Max			Max		Max		Max	Max	Max	Max	Max	Max	Over	Incl.
10	8	6	9	7	5	5	4	4	3	2.5	6	5	3	2	1.5	0.6(1)	2.5
10	8	6	9	7	5	5	4	4	3	2.5	6	5	3	2	1.5	2.5	10
10	8	6	9	7	5	5	4	4	3	2.5	6	5	3	2	1.5	10	18
13	10	8	10	8	6	6	5	5	4	2.5	8	6	3	2.5	1.5	18	30
15	12	9	13	10	8	8	6	6	5	2.5	9	8	4	3	1.5	30	50
19	19	11	15	15	9	9	7	7	5	4	11	9	5	3.5	2	50	80
25	25	15	19	19	11	10	8	8	6	5	15	11	5	4	2.5	80	120
31	31	19	23	23	14	13	10	10	8	7	19	14	7	5	3.5	120	150
31	31	19	23	23	14	13	10	10	8	7	19	14	7	5	3.5	150	180
38	38	23	28	28	17	15	12	12	9	8	23	17	8	6	4	180	250
44	44	26	31	31	19	18	14	—	—	—	26	19	9	—	—	250	315
50	50	30	38	38	23	23	18	—	—	—	30	23	12	—	—	315	400
56	56	34	44	44	26	—	—	—	—	—	34	26	—	—	—	400	500
63	63	38	50	50	30	—	—	—	—	—	38	30	—	—	—	500	630
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	630	800
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	800	1000
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1000	1250
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1250	1600
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1600	2000

Unit: μm

Radial runout of assembled bearing inner ring K_{ia}					Inner ring reference face runout with bore S_d			Assembled bearing inner ring face runout with raceway S_{ia} (5)			Bearing bore diameter Nominal d (mm)	
Class 0	Class 6	Class 5	Class 4	Class 2	Class 5	Class 4	Class 2	Class 5	Class 4	Class 2		
Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Over	Incl.
10	5	4	2.5	1.5	7	3	1.5	7	3	1.5	0.6(1)	2.5
10	6	4	2.5	1.5	7	3	1.5	7	3	1.5	2.5	10
10	7	4	2.5	1.5	7	3	1.5	7	3	1.5	10	18
13	8	4	3	2.5	8	4	1.5	8	4	2.5	18	30
15	10	5	4	2.5	8	4	1.5	8	4	2.5	30	50
20	10	5	4	2.5	8	5	1.5	8	5	2.5	50	80
25	13	6	5	2.5	9	5	2.5	9	5	2.5	80	120
30	18	8	6	2.5	10	6	2.5	10	7	2.5	120	150
30	18	8	6	5	10	6	4	10	7	5	150	180
40	20	10	8	5	11	7	5	13	8	5	180	250
50	25	13	—	—	13	—	—	15	—	—	250	315
60	30	15	—	—	15	—	—	20	—	—	315	400
65	35	—	—	—	—	—	—	—	—	—	400	500
70	40	—	—	—	—	—	—	—	—	—	500	630
80	—	—	—	—	—	—	—	—	—	—	630	800
90	—	—	—	—	—	—	—	—	—	—	800	1000
100	—	—	—	—	—	—	—	—	—	—	1000	1250
120	—	—	—	—	—	—	—	—	—	—	1250	1600
140	—	—	—	—	—	—	—	—	—	—	1600	2000

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Tolerance Values for Radial Bearings

Table 4.2 Tolerance Values of Outer Ring

Bearing outside diameter Nominal D (mm)		Single plane mean outside diameter deviation Δ_{Dmp}										Deviation of a single outside diameter Δ_{Ds}			
		Class 0		Class 6		Class 5		Class 4		Class 2		Class 4		Class 2	
												Diameter series 0,1,2,3,4			
Over	Incl.	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low	High	Low
2.5(1)	6	0	- 8	0	- 7	0	- 5	0	- 4	0	- 2.5	0	- 4	0	- 2.5
6	18	0	- 8	0	- 7	0	- 5	0	- 4	0	- 2.5	0	- 4	0	- 2.5
18	30	0	- 9	0	- 8	0	- 6	0	- 5	0	- 4	0	- 5	0	- 4
30	50	0	- 11	0	- 9	0	- 7	0	- 6	0	- 4	0	- 6	0	- 4
50	80	0	- 13	0	-11	0	- 9	0	- 7	0	- 4	0	- 7	0	- 4
80	120	0	- 15	0	-13	0	-10	0	- 8	0	- 5	0	- 8	0	- 5
120	150	0	- 18	0	-15	0	-11	0	- 9	0	- 5	0	- 9	0	- 5
150	180	0	- 25	0	-18	0	-13	0	-10	0	- 7	0	-10	0	- 7
180	250	0	- 30	0	-20	0	-15	0	-11	0	- 8	0	-11	0	- 8
250	315	0	- 35	0	-25	0	-18	0	-13	0	- 8	0	-13	0	- 8
315	400	0	- 40	0	-28	0	-20	0	-15	0	-10	0	-15	0	-10
400	500	0	- 45	0	-33	0	-23	—	—	—	—	—	—	—	—
500	630	0	- 50	0	-38	0	-28	—	—	—	—	—	—	—	—
630	800	0	- 75	0	-45	0	-35	—	—	—	—	—	—	—	—
800	1000	0	-100	0	-60	—	—	—	—	—	—	—	—	—	—
1000	1250	0	-125	—	—	—	—	—	—	—	—	—	—	—	—
1250	1600	0	-160	—	—	—	—	—	—	—	—	—	—	—	—
1600	2000	0	-200	—	—	—	—	—	—	—	—	—	—	—	—
2000	2500	0	-250	—	—	—	—	—	—	—	—	—	—	—	—

Bearing outside diameter Nominal D (mm)		Bearing outside diameter Mean outside diameter variation (2) V_{Dmp}					Radial runout of assembled bearing outer ring K_{ea}					Variation of bearing outside suface generarix inclination with outer ring reference face S_D		
		Class 0	Class 6	Class 5	Class 4	Class 2	Class 0	Class 6	Class 5	Class 4	Class 2	Class 5	Class 4	Class 2
Over	Incl.	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max
2.5(1)	6	6	5	3	2	1.5	15	8	5	3	1.5	8	4	1.5
6	18	6	5	3	2	1.5	15	8	5	3	1.5	8	4	1.5
18	30	7	6	3	2.5	2	15	9	6	4	2.5	8	4	1.5
30	50	8	7	4	3	2	20	10	7	5	2.5	8	4	1.5
50	80	10	8	5	3.5	2	25	13	8	5	4	8	4	1.5
80	120	11	10	5	4	2.5	35	18	10	6	5	9	5	2.5
120	150	14	11	6	5	2.5	40	20	11	7	5	10	5	2.5
150	180	19	14	7	5	3.5	45	23	13	8	5	10	5	2.5
180	250	23	15	8	6	4	50	25	15	10	7	11	7	4
250	315	26	19	9	7	4	60	30	18	11	7	13	8	5
315	400	30	21	10	8	5	70	35	20	13	8	13	10	7
400	500	34	25	12	—	—	80	40	23	—	—	15	—	—
500	630	38	29	14	—	—	100	50	25	—	—	18	—	—
630	800	55	34	18	—	—	120	60	30	—	—	20	—	—
800	1000	75	45	—	—	—	140	75	—	—	—	—	—	—
1000	1250	—	—	—	—	—	160	—	—	—	—	—	—	—
1250	1600	—	—	—	—	—	190	—	—	—	—	—	—	—
1600	2000	—	—	—	—	—	220	—	—	—	—	—	—	—
2000	2500	—	—	—	—	—	250	—	—	—	—	—	—	—

Notes: (1) This diameter is included in this group.
(2) Applies before mounting and after removal of internal or external snap ring.
(3) Applies to radial ball bearings such as deep groove ball bearings, angular contact ball bearings.
(4) Outer ring width variation of class 0 and 6 are listed in Table 4.1.
(5) Applies to radial ball bearings such as deep groove ball bearing, angular contact ball bearings.

Remarks: The high deviation of bearing cylindrical bore diameter specified in this table does not apply within a distance of 1.2 × r (max) from the ring face.

Unit: μm

outside diameter														
Outside diameter variation in a single radial plane (2) V_{Dp}													Bearing outside diameter Nominal D (mm)	
Class 0				Class 6				Class 5		Class 4		Class 2		
Open bearing			Seal・shield bearing	Open bearing			Seal・shield bearing	Open bearing		Open bearing		Open bearing		
Diameter series				Diameter series				Diameter series		Diameter series				
7,8,9	0,1	2,3,4	2,3,4	7,8,9	0,1	2,3,4	0,1,2,3,4	7,8,9	0,1,2,3,4	7,8,9	0,1,2,3,4			
Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Max	Over	Incl.
10	8	6	10	9	7	5	9	5	4	4	3	2.5	2.5(1)	6
10	8	6	10	9	7	5	9	5	4	4	3	2.5	6	18
12	9	7	12	10	8	6	10	6	5	5	4	4	18	30
14	11	8	16	11	9	7	13	7	5	6	5	4	30	50
16	13	10	20	14	11	8	16	9	7	7	5	4	50	80
19	19	11	26	16	16	10	20	10	8	8	6	5	80	120
23	23	14	30	19	19	11	25	11	8	9	7	5	120	150
31	31	19	38	23	23	14	30	13	10	10	8	7	150	180
38	38	23	—	25	25	15	—	15	11	11	8	8	180	250
44	44	26	—	31	31	19	—	18	14	13	10	8	250	315
50	50	30	—	35	35	21	—	20	15	15	11	10	315	400
56	56	34	—	41	41	25	—	23	17	—	—	—	400	500
63	63	38	—	48	48	29	—	28	21	—	—	—	500	630
94	94	55	—	56	56	34	—	35	26	—	—	—	630	800
125	125	75	—	75	75	45	—	—	—	—	—	—	800	1000
—	—	—	—	—	—	—	—	—	—	—	—	—	1000	1250
—	—	—	—	—	—	—	—	—	—	—	—	—	1250	1600
—	—	—	—	—	—	—	—	—	—	—	—	—	1600	2000
—	—	—	—	—	—	—	—	—	—	—	—	—	2000	2500

Unit: μm

Assembled bearing outer ring face runout with raceway S_{ea} (3)			Outer ring width variation V_{Cs} (4)			Bearing outside diameter Nominal D (mm)	
Class 5	Class 4	Class 2	Class 5	Class 4	Class 2		
Max	Max	Max	Max	Max	Max	Over	Incl.
8	5	1.5	5	2.5	1.5	2.5(1)	6
8	5	1.5	5	2.5	1.5	6	18
8	5	2.5	5	2.5	1.5	18	30
8	5	2.5	5	2.5	1.5	30	50
10	5	4	6	3	1.5	50	80
11	6	5	8	4	2.5	80	120
13	7	5	8	5	2.5	120	150
14	8	5	8	5	2.5	150	180
15	10	7	10	7	4	180	250
18	10	7	11	7	5	250	315
20	13	8	13	8	7	315	400
23	—	—	15	—	—	400	500
25	—	—	18	—	—	500	630
30	—	—	20	—	—	630	800
—	—	—	—	—	—	800	1000
—	—	—	—	—	—	1000	1250
—	—	—	—	—	—	1250	1600
—	—	—	—	—	—	1600	2000
—	—	—	—	—	—	2000	2500

Radial Internal Clearance

Table 5 Radial Internal Clearance of Deep-groove Ball Bearings (with Cylindrical Bore) (JIS) Unit: μm

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

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