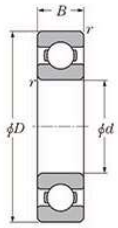
Deep Groove Ball Bearings

NTN



Open type

Shielded type (ZZ)

Non-contact sealed type (LLB, LLF)

Low torque sealed type (LLH)

Contact sealed type (LLU)

d 20～35mm

Boundary dimensions					Basic load ratings (dynamic)		Basic load ratings (static)		Factor	Limiting speeds (grease)	Limiting speeds (oil)			Bearing numbers				
	mm				kN		kgf			min^{-1}								
d	D	B	$r_{s\,min}$ [1]	r_{1s} min	C_r	C_{or}	C_r	C_{or}	f_o	open type ZZ	open type LLB Z	LB LLH	LLU	open type	shielded type	non-contact sealed type	low torque sealed type	contact sealed type
20	72	19	1.1	—	28.5	13.9	2 900	1 420	11.4	12 000	14 000	—	—	6404	—	—	—	—
22	44	12	0.6	0.5	9.40	5.05	955	515	13.9	17 000	20 000	13 000	10 000	60/22	ZZ	LLB	LLH	LLU
	50	14	1	0.5	12.9	6.80	1 320	690	13.5	14 000	17 000	12 000	9 700	62/22	ZZ	LLB	LLH	LLU
	56	16	1.1	0.5	18.4	9.25	1 880	945	12.4	13 000	15 000	11 000	9 200	63/22	ZZ	LLB	LLH	LLU
25	32	4	0.2	—	1.10	0.840	112	86	15.8	4 000	4 600	—	—	6705	—	LLF	—	—
	37	7	0.3	0.3	4.30	2.95	435	300	16.1	18 000	21 000	—	10 000	6805	ZZ	LLB	—	LLU
	42	9	0.3	0.3	7.05	4.55	715	460	15.4	16 000	19 000	—	9 800	6905	ZZ	LLB	—	LLU
	47	8	0.3	—	8.35	5.10	855	520	15.1	15 000	18 000	—	—	16005	—	—	—	—
	47	12	0.6	0.5	10.1	5.85	1 030	595	14.5	15 000	18 000	11 000	9 400	6005	ZZ	LLB	LLH	LLU
	52	15	1	0.5	14.0	7.85	1 430	800	13.9	13 000	15 000	11 000	8 900	6205	ZZ	LLB	LLH	LLU
	62	17	1.1	0.5	21.2	10.9	2 160	1 110	12.6	12 000	14 000	9 700	8 100	6305	ZZ	LLB	LLH	LLU
	80	21	1.5	—	34.5	17.5	3 550	1 780	11.6	10 000	12 000	—	—	6405	—	—	—	—
28	52	12	0.6	0.5	12.5	7.40	1 270	755	14.5	14 000	16 000	10 000	8 400	60/28	ZZ	LLB	LLH	LLU
	58	16	1	0.5	17.9	9.75	1 830	995	13.4	12 000	14 000	9 700	8 100	62/28	ZZ	LLB	LLH	LLU
	68	18	1.1	0.5	26.7	14.0	2 730	1 430	12.4	11 000	13 000	8 900	7 400	63/28	ZZ	LLB	LLH	LLU
30	37	4	0.2	—	1.14	0.950	117	97	15.7	3 300	3 800	—	—	6706	—	LLF	—	—
	42	7	0.3	0.3	4.70	3.65	480	370	16.5	15 000	18 000	—	8.800	6806	ZZ	LLB	—	LLU
	47	9	0.3	0.3	7.25	5.00	740	510	15.8	14 000	17 000	—	8 400	6906	ZZ	LLB	—	LLU
	55	9	0.3	—	11.2	7.35	1 150	750	15.2	13 000	15 000	—	—	16006	—	—	—	—
	55	13	1	0.5	13.2	8.3	1 350	845	14.8	13 000	15 000	9 200	7 700	6006	ZZ	LLB	LLH	LLU
	62	16	1	0.5	19.5	11.3	1 980	1 150	13.8	11 000	13 000	8 800	7 300	6206	ZZ	LLB	LLH	LLU
	72	19	1.1	0.5	26.7	15.0	2 720	1 530	13.3	10 000	12 000	7 900	6 600	6306	ZZ	LLB	LLH	LLU
	90	23	1.5	—	43.5	23.9	4 400	2 440	12.3	8 800	10 000	—	—	6406	—	—	—	—
32	58	13	1	0.5	11.8	8.05	1 200	820	15.4	12 000	15 000	8 700	7 200	60/32	ZZ	LLB	LLH	LLU
	65	17	1	0.5	20.7	11.6	2 110	1 190	13.6	11 000	12 000	8 400	7 100	62/32	ZZ	LLB	LLH	LLU
	75	20	1.1	0.5	29.8	16.9	3 050	1 730	13.1	9 500	11 000	7 700	6 500	63/32	ZZ	LLB	LLH	LLU
35	47	7	0.3	0.3	4.90	4.05	500	410	16.4	13 000	16 000	—	7 600	6807	ZZ	LLB	—	LLU
	55	10	0.6	0.5	9.55	6.85	975	695	15.8	12 000	15 000	—	7 100	6907	ZZ	LLB	—	LLU
	62	9	0.3	—	11.7	8.20	1 190	835	15.6	12 000	14 000	—	—	16007	—	—	—	—
	62	14	1	0.5	16.0	10.3	1 630	1 050	14.8	12 000	14 000	8 200	6 800	6007	ZZ	LLB	LLH	LLU
	72	17	1.1	0.5	25.7	15.3	2 620	1 560	13.8	9 800	11 000	7 600	6 300	6207	ZZ	LLB	LLH	LLU
	80	21	1.5	0.5	33.5	19.1	3 400	1 950	13.1	8 800	10 000	7 300	6 000	6307	ZZ	LLB	LLH	LLU
	100	25	1.5	—	55.0	31.0	5 600	3 150	12.3	7 800	9 100	—	—	6407	—	—	—	—

1) Smallest allowable dimension for chamfer dimension r.

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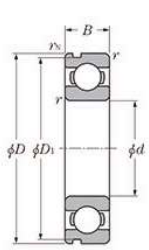
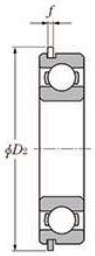
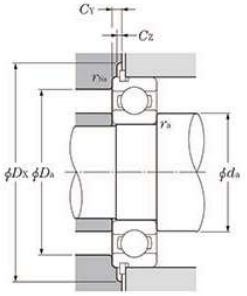


With snap ring groove



With snap ring



Dynamic equivalent radial load

$P_r = XF_r + YF_a$

$\frac{f_o F_a}{C_{or}}$	e	$\frac{F_a}{F_r} \leqq e$ X	$\frac{F_a}{F_r} \leqq e$ Y	$\frac{F_a}{F_r} > e$ X	$\frac{F_a}{F_r} > e$ Y
0.172	0.19	1	0	0.56	2.30
0.345	0.22				1.99
0.689	0.26				1.71
1.03	0.28				1.55
1.38	0.30				1.45
2.07	0.34				1.31
3.45	0.38				1.15
5.17	0.42				1.04
6.89	0.44				1.00

Static equivalent radial load

$P_{or} = 0.6F_r + 0.5F_a$

When $P_{or} < F_r$ use $P_{or} = F_r$

Bearing		Snap ring groove numbers (mm)				Snap ring dimensions (mm)		Abutment and fillet dimensions (mm)							Mass[4]
snap[2] ring groove	snap[2] ring	D_1 max	a max	b min	r_o max	D_2 max	f max	d_a min	d_a max[3]	D_b max	D_X (approx.)	C_Y max	C_Z min	r_{as} max	r_{bs} max	kg (approx.)
—	—	—	—	—	—	—	—	26.5	—	65.5	—	—	—	1	—	0.4
N	NR	41.75	2.06	1.35	0.4	48.3	1.12	26	26.5	40	49	2.9	1.2	0.6	0.5	0.074
N	NR	47.6	2.46	1.35	0.4	55.7	1.12	27	29.5	45	56.5	3.3	1.2	1	0.5	0.117
N	NR	53.6	2.46	1.35	0.4	61.7	1.12	28.5	31	49.5	62.5	3.3	1.2	1	0.5	0.176
—	—	—	—	—	—	—	—	26.6	27.3	30.4	—	—	—	0.2	—	0.005
N	NR	35.7	1.3	0.95	0.25	39.8	0.85	27	28	35	40.5	1.9	0.9	0.3	0.3	0.022
N	NR	40.7	1.7	0.95	0.25	44.8	0.85	27	29	40	45.5	2.3	0.9	0.3	0.3	0.042
—	—	—	—	—	—	—	—	27	—	45.0	—	—	—	0.3	—	0.06
N	NR	44.6	2.06	1.35	0.4	52.7	1.12	29	30.5	43	53.5	2.9	1.2	0.6	0.5	0.08
N	NR	49.73	2.46	1.35	0.4	57.9	1.12	30	32	47	58.5	3.3	1.2	1	0.5	0.128
N	NR	59.61	3.28	1.9	0.6	67.7	1.7	31.5	35	55.5	68.5	4.6	1.7	1	0.5	0.232
—	—	—	—	—	—	—	—	33	—	72	—	—	—	1.5	—	0.53
N	NR	49.73	2.06	1.35	0.4	57.9	1.12	32	34	48	58.5	2.9	1.2	0.6	0.5	0.098
N	NR	55.6	2.46	1.35	0.4	63.7	1.12	33	35.5	53	64.5	3.3	1.2	1	0.5	0.171
N	NR	64.82	3.28	1.9	0.6	74.6	1.7	34.5	38.5	61.5	76	4.6	1.7	1	0.5	0.284
—	—	—	—	—	—	—	—	31.6	32.3	35.4	—	—	—	0.2	—	0.006
N	NR	40.7	1.3	0.95	0.25	44.8	0.85	32	33	40	45.5	1.9	0.9	0.3	0.3	0.026
N	NR	45.7	1.7	0.95	0.25	49.8	0.85	32	34	45	50.5	2.3	0.9	0.3	0.3	0.048
—	—	—	—	—	—	—	—	32	—	53	—	—	—	0.3	—	0.091
N	NR	52.6	2.08	1.35	0.4	60.7	1.12	35	37	50	61.5	2.9	1.2	1	0.5	0.116
N	NR	59.61	3.28	1.9	0.6	67.7	1.7	35	39	57	68.5	4.6	1.7	1	0.5	0.199
N	NR	68.81	3.28	1.9	0.6	78.6	1.7	36.5	43	65.5	80	4.6	1.7	1	0.5	0.36
—	—	—	—	—	—	—	—	38	—	82	—	—	—	1.5	—	0.735
N	NR	55.6	2.08	1.35	0.4	63.7	1.12	37	39	53	64.5	2.9	1.2	1	0.5	0.129
N	NR	62.6	3.28	1.9	0.6	70.7	1.7	37	40	60	71.5	4.6	1.7	1	0.5	0.226
N	NR	71.83	3.28	1.9	0.6	81.6	1.7	38.5	43.5	68.5	83	4.6	1.7	1	0.5	0.382
N	NR	45.7	1.3	0.95	0.25	49.8	0.85	37	38	45	50.5	1.9	0.9	0.3	0.3	0.029
N	NR	53.7	1.7	0.95	0.25	57.8	0.85	39	40	51	58.5	2.3	0.9	0.6	0.5	0.074
—	—	—	—	—	—	—	—	37	—	60	—	—	—	0.3	—	0.11
N	NR	59.61	2.08	1.9	0.6	67.7	1.7	40	42	57	68.5	3.4	1.7	1	0.5	0.155
N	NR	68.81	3.28	1.9	0.6	78.6	1.7	41.5	45	65.5	80	4.6	1.7	1	0.5	0.288
N	NR	76.81	3.28	1.9	0.6	86.6	1.7	43	47	72	88	4.6	1.7	1.5	0.5	0.457
—	—	—	—	—	—	—	—	43	—	92	—	—	—	1.5	—	0.952

2) Sealed and shielded bearings are also available. 3) This dimension applies to sealed and shielded bearings. 4) Does not include bearings with snap rings.