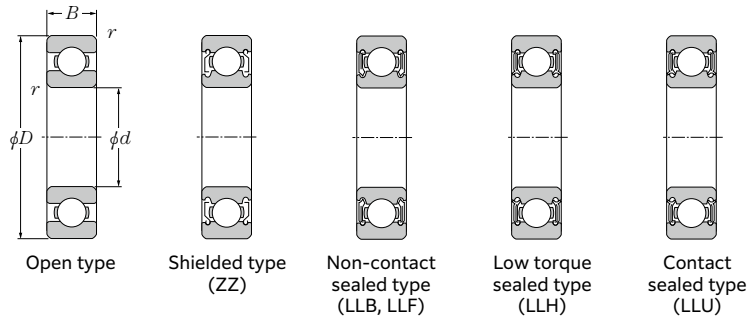


Deep Groove Ball Bearings

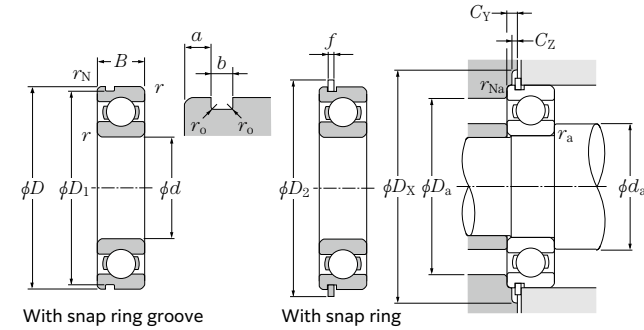


a 10 ~ 20mm

	Boundary dimensions			Basic load rating		Fatigue load limit C_u	Factor f_0	Allowable speed		Bearing number						
	mm	mm	mm	dynamic kN	static kN			min ⁻¹	min ⁻¹	Open type	Shielded or sealed type ²⁾					
	d	D	B	$r_{s, min}^{1)}$	$r_{NS}^{1)}$	C_r	C_{0r}	C_u	f_0	Grease Open type, ZZ, LLB, LLF, Z, LB, LF	Oil Open type, Z, LB, LF	LLH	LLU	Open type	Shielded or sealed type ²⁾	
10	15	3	0.1	—	0.950	0.435	0.018	15.7	10 000	12 000	—	—	—	6700	—	—
	19	5	0.3	—	2.03	0.925	0.072	14.8	32 000	38 000	—	—	24 000	6800	ZZ	LLB - LLU
	22	6	0.3	0.3	2.99	1.27	0.099	14.0	30 000	36 000	25 000	21 000	6900	ZZ	LLB LLH LLU	
	26	8	0.3	—	5.05	1.96	0.138	12.4	29 000	34 000	25 000	21 000	6000	ZZ	LLB LLH LLU	
	30	9	0.6	0.5	5.65	2.39	0.182	13.2	25 000	30 000	21 000	18 000	6200	ZZ	LLB LLH LLU	
35	11	0.6	0.5	9.10	3.50	0.273	11.4	23 000	27 000	20 000	16 000	6300	ZZ	LLB LLH LLU		
12	18	4	0.2	—	1.03	0.530	0.021	16.2	8 300	9 500	—	—	6701	—	LLF - —	
	21	5	0.3	—	2.12	1.04	0.080	15.3	29 000	35 000	—	20 000	6801	ZZ	LLB - LLU	
	24	6	0.3	0.3	3.20	1.46	0.115	14.5	27 000	32 000	22 000	19 000	6901	ZZ	LLB LLH LLU	
	28	7	0.3	—	5.65	2.39	0.187	13.2	26 000	30 000	—	—	16001JRX	—	—	
	28	8	0.3	—	5.65	2.39	0.182	13.2	26 000	30 000	21 000	18 000	6001JRX	ZZ	LLB LLH LLU	
	32	10	0.6	0.5	6.75	2.75	0.214	12.7	22 000	26 000	20 000	16 000	6201	ZZ	LLB LLH LLU	
37	12	1	0.5	10.8	4.20	0.325	11.1	20 000	24 000	19 000	15 000	6301	ZZ	LLB LLH LLU		
15	21	4	0.2	—	1.04	0.585	0.024	16.5	6 600	7 600	—	—	6702	—	LLF - —	
	24	5	0.3	—	2.30	1.26	0.091	15.8	26 000	31 000	—	17 000	6802	ZZ	LLB - LLU	
	28	7	0.3	0.3	4.05	2.00	0.157	14.8	24 000	28 000	—	16 000	6902	ZZ	LLB - LLU	
	32	8	0.3	—	6.20	2.84	0.222	13.9	22 000	26 000	—	—	16002	—	—	
	32	9	0.3	0.3	6.20	2.84	0.199	13.9	22 000	26 000	18 000	15 000	6002	ZZ	LLB LLH LLU	
	35	11	0.6	0.5	8.60	3.60	0.279	12.7	19 000	23 000	18 000	15 000	6202	ZZ	LLB LLH LLU	
42	13	1	0.5	12.7	5.45	0.425	12.3	17 000	21 000	15 000	12 000	6302	ZZ	LLB LLH LLU		
17	23	4	0.2	—	1.11	0.660	0.027	16.3	5 000	6 700	—	—	6703	—	LLF - —	
	26	5	0.3	—	2.47	1.46	0.102	16.1	24 000	28 000	—	15 000	6803	ZZ	LLB - LLU	
	30	7	0.3	0.3	5.15	2.58	0.202	14.7	22 000	26 000	—	14 000	6903JRX	ZZ	LLB - LLU	
	35	8	0.3	—	7.55	3.35	0.263	13.6	20 000	24 000	—	—	16003	—	—	
	35	10	0.3	0.3	7.55	3.35	0.243	13.6	20 000	24 000	16 000	14 000	6003	ZZ	LLB LLH LLU	
	40	12	0.6	0.5	10.6	4.60	0.355	12.8	18 000	21 000	15 000	12 000	6203	ZZ	LLB LLH LLU	
	47	14	1	0.5	15.0	6.55	0.510	12.2	16 000	19 000	14 000	11 000	6303	ZZ	LLB LLH LLU	
62	17	1.1	—	25.2	10.8	0.840	11.1	14 000	16 000	—	—	6403	ZZ	— - —		
20	27	4	0.2	—	1.15	0.730	0.031	16.1	5 000	5 700	—	—	6704	—	LLF - —	
	32	7	0.3	0.3	4.45	2.47	0.185	15.5	21 000	25 000	—	13 000	6804JR	ZZ	LLB - LLU	
	37	9	0.3	0.3	7.05	3.70	0.288	14.7	19 000	23 000	—	12 000	6904	ZZ	LLB - LLU	
	42	8	0.3	—	8.75	4.50	0.350	14.5	18 000	21 000	—	—	16004	—	—	
	42	12	0.6	0.5	10.4	5.05	0.355	13.9	18 000	21 000	13 000	11 000	6004	ZZ	LLB LLH LLU	
	47	14	1	0.5	14.2	6.65	0.505	13.2	16 000	18 000	12 000	10 000	6204	ZZ	LLB LLH LLU	
52	15	1.1	0.5	17.6	7.90	0.615	12.4	14 000	17 000	12 000	10 000	6304	ZZ	LLB LLH LLU		

1) Smallest allowable dimension for chamfer dimension r . 2) This bearing number is for double sealed and double shielded type bearings, but single sealed and single shielded type are also available. B-22

Deep Groove Ball Bearings



With snap ring groove

With snap ring

Dynamic equivalent radial load $P_r = X F_r + Y F_a$

$\frac{f_0 \cdot F_a}{C_{0r}}$	e	$\frac{F_a}{F_r} \leq e$		$\frac{F_a}{F_r} > e$	
		X	Y	X	Y
0.172	0.19				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	0	0.56	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 $P_{0r} = 0.6 F_r + 0.5 F_a$

When $P_{0r} < F_r$ use $P_{0r} = F_r$.

Bearing number	Snap ring groove dimensions			Snap ring dimensions		Installation-related dimensions						Mass ⁵⁾		
	mm			mm		mm							kg	
Groove / Snap ring ³⁾ (See drawings)	D_1 Max.	a Max.	b Min.	r_o Max.	D_2 Max.	f Max.	d_a Min.	D_a Max. ⁴⁾	D_x (approx.)	C_y Max.	C_z Min.	r_{as} Max.	r_{Nas} Max.	(approx.)
—	—	—	—	—	—	—	10.8	—	14.2	—	—	0.1	—	0.0015
—	—	—	—	—	—	—	12	12.5	17	—	—	0.3	—	0.005
N NR	20.8	1.05	0.8	0.2	24.8	0.7	12	13	20	25.5	1.5	0.7	0.3	0.009
— ⁶⁾	— ⁶⁾	—	—	—	—	—	12	13.5	24	—	—	0.3	—	0.019
N NR	28.17	2.06	1.35	0.4	34.7	1.12	14	16	26	35.5	2.9	1.2	0.6	0.032
N NR	33.17	2.06	1.35	0.4	39.7	1.12	14	17	31	40.5	2.9	1.2	0.6	0.053
—	—	—	—	—	—	—	13.6	13.8	16.4	—	—	0.2	—	0.002
—	—	—	—	—	—	—	14	14.5	19	—	—	0.3	—	0.006
N NR	22.8	1.05	0.8	0.2	26.8	0.7	14	15	22	27.5	1.5	0.7	0.3	0.011
—	—	—	—	—	—	—	14	—	26	—	—	0.3	—	0.019
NX2 NX2RX3	26.44	2.20	0.90	0.3	32.7	0.85	14	16	26	33.4	2.8	0.9	0.3	0.021
N NR	30.15	2.06	1.35	0.4	36.7	1.12	16	17	28	37.5	2.9	1.2	0.6	0.037
N NR	34.77	2.06	1.35	0.4	41.3	1.12	17	18.5	32	42	2.9	1.2	1	0.06
—	—	—	—	—	—	—	16.6	16.8	19.4	—	—	0.2	—	0.0025
—	—	—	—	—	—	—	17	17.5	22	—	—	0.3	—	0.007
N NR	26.7	1.3	0.95	0.25	30.8	0.85	17	17.5	26	31.5	1.9	0.9	0.3	0.016
—	—	—	—	—	—	—	17	—	30	—	—	0.3	—	0.025
N NR	30.15	2.06	1.35	0.4	36.7	1.12	17	19	30	37.5	2.9	1.2	0.3	0.03
N NR	33.17	2.06	1.35	0.4	39.7	1.12	19	20	31	40.5	2.9	1.2	0.6	0.045
N NR	39.75	2.06	1.35	0.4	46.3	1.12	20	23	37	47	2.9	1.2	1	0.082
—	—	—	—	—	—	—	18.6	18.8	21.4	—	—	0.2	—	0.0025
—	—	—	—	—	—	—	19	19.5	24	—	—	0.3	—	0.008
N NR	28.7	1.3	0.95	0.25	32.8	0.85	19	20	28	33.5	1.9	0.9	0.3	0.018
—	—	—	—	—	—	—	19	—	33	—	—	0.3	—	0.032
N NR	33.17	2.06	1.35	0.4	39.7	1.12	19	21	33	40.5	2.9	1.2	0.3	0.039
N NR	38.1	2.06	1.35	0.4	44.6	1.12	21	23	36	45.5	2.9	1.2	0.6	0.066
N NR	44.6	2.46	1.35	0.4	52.7	1.12	22	25	42	53.5	3.3	1.2	1	0.5
—	—	—	—	—	—	—	23.5	30	55.5	—	—	1	—	0.27
—	—	—	—	—	—	—	21.6	22.3	25.4	—	—	0.2	—	0.0045
N NR	30.7	1.3	0.95	0.25	34.8	0.85	22	22.5	30	35.5	1.9	0.9	0.3	0.019
N NR	35.7	1.7	0.95	0.25	39.8	0.85	22	24	35	40.5	2.3	0.9	0.3	0.036
—	—	—	—	—	—	—	22	—	40	—	—	0.3	—	0.051
N NR	39.75	2.06	1.35	0.4	46.3	1.12	24	26	38	47	2.9	1.2	0.6	0.069
N NR	44.6	2.46	1.35	0.4	52.7	1.12	25	28	42	53.5	3.3	1.2	1	0.5
N NR	49.73	2.46</												