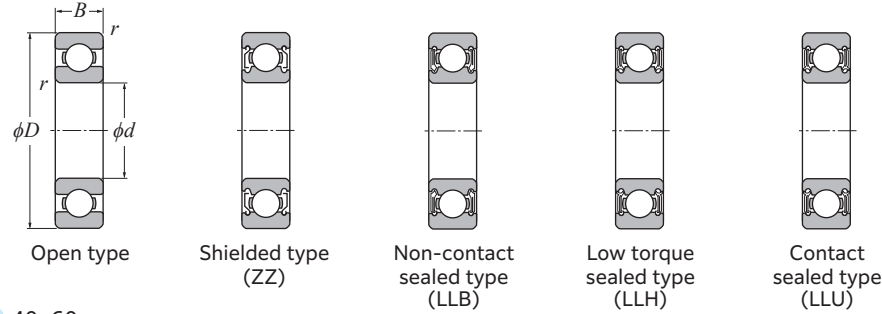
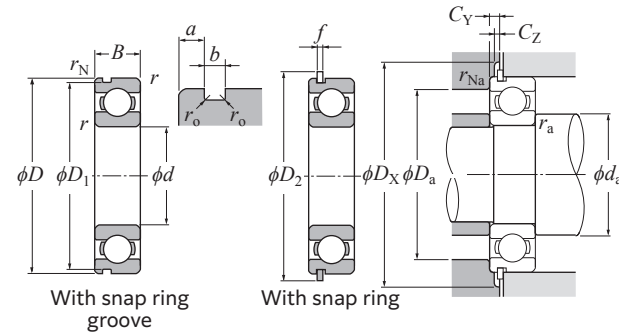


# Deep Groove Ball Bearings



# Deep Groove Ball Bearings



Dynamic equivalent radial load

$$P_r = XF_r + YF_a$$

$f_0 \cdot F_a / C_{Or}$	$e$	$F_a \leq e F_r$		$F_a > e F_r$	
		$X$	$Y$	$X$	$Y$
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				1.45
2.07	0.34	1	0	0.56	1.31
3.45	0.38				1.15
5.17	0.42				1.04
6.89	0.44				1.00

Static equivalent radial load

$$P_{0r} = 0.6F_r + 0.5F_a$$

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

d 40-60 mm

d	Boundary dimensions				Basic load rating				Factor $f_0$	Allowable speed				Bearing number			
	mm				dynamic	static	Fatigue	Grease		Oil		LLH	LLU	Open type		Shielded or sealed type <sup>2)</sup>	
	D	B	$r_{s \min}^{1)}$	$r_{Ns}^{1)}$	$C_r$	$C_{Or}$	load limit $C_u$			Open type, ZZ, LLB	Open type, Z, LB			LLH	LLU	Open type	Shielded or sealed type <sup>2)</sup>
40	52	7	0.3	0.3	5.65	4.40	0.291	16.3	12 000	14 000	8 000	6 700	6808JR	ZZ	LLB	LLH	LLU
	62	12	0.6	0.5	13.5	8.90	0.645	15.8	11 000	13 000	7 500	6 300	6908	ZZ	LLB	LLH	LLU
	68	9	0.3	—	14.0	9.65	0.685	16.0	10 000	12 000	—	—	16008	—	—	—	—
	68	15	1	0.5	18.6	11.5	0.890	15.2	10 000	12 000	7 300	6 100	6008	ZZ	LLB	LLH	LLU
	80	18	1.1	0.5	32.5	17.8	1.24	14.0	8 700	10 000	6 700	5 600	6208	ZZ	LLB	LLH	LLU
	90	23	1.5	0.5	45.0	24.0	1.83	13.2	7 800	9 200	6 400	5 300	6308	ZZ	LLB	LLH	LLU
	110	27	2	—	70.5	36.5	2.85	12.3	7 000	8 200	—	—	6408	ZZ	—	—	—
45	58	7	0.3	0.3	5.95	4.95	0.325	16.1	11 000	12 000	—	5 900	6809JR	ZZ	LLB	—	LLU
	68	12	0.6	0.5	14.5	10.4	0.730	16.1	9 800	12 000	—	5 600	6909	ZZ	LLB	—	LLU
	75	10	0.6	—	14.3	10.5	0.725	16.2	9 200	11 000	—	—	16009	—	—	—	—
	75	16	1	0.5	23.2	15.1	1.16	15.3	9 200	11 000	6 500	5 400	6009	ZZ	LLB	LLH	LLU
	85	19	1.1	0.5	36.0	20.4	1.60	14.1	7 800	9 200	6 200	5 200	6209	ZZ	LLB	LLH	LLU
	100	25	1.5	0.5	58.5	32.0	2.50	13.1	7 000	8 200	5 600	4 700	6309	ZZ	LLB	LLH	LLU
	120	29	2	—	85.5	45.0	3.50	12.1	6 300	7 400	—	—	6409	ZZ	—	—	—
50	65	7	0.3	0.3	7.30	6.10	0.405	16.1	9 600	11 000	—	5 300	6810JR	ZZ	LLB	—	LLU
	72	12	0.6	0.5	14.9	11.2	0.765	16.3	8 900	11 000	6 100	5 100	6910	ZZ	LLB	LLH	LLU
	80	10	0.6	—	14.7	11.3	0.760	16.4	8 400	9 800	—	—	16010	—	—	—	—
	80	16	1	0.5	24.2	16.6	1.24	15.5	8 400	9 800	6 000	5 000	6010	ZZ	LLB	LLH	LLU
	90	20	1.1	0.5	39.0	23.2	1.82	14.4	7 100	8 300	5 700	4 700	6210	ZZ	LLB	LLH	LLU
	110	27	2	0.5	68.5	38.5	2.99	13.2	6 400	7 500	5 000	4 200	6310	ZZ	LLB	LLH	LLU
	130	31	2.1	—	92.0	49.5	3.85	12.5	5 700	6 700	—	—	6410	ZZ	—	—	—
55	72	9	0.3	0.3	9.75	8.10	0.540	16.2	8 700	10 000	—	4 800	6811JR	ZZ	LLB	—	LLU
	80	13	1	0.5	17.7	13.3	0.915	16.2	8 200	9 600	5 500	4 600	6911	ZZ	LLB	LLH	LLU
	90	11	0.6	—	20.6	15.3	1.06	16.2	7 700	9 000	—	—	16011	—	—	—	—
	90	18	1.1	0.5	31.5	21.2	1.62	15.3	7 700	9 000	—	4 500	6011	ZZ	LLB	—	LLU
	100	21	1.5	0.5	48.0	29.2	2.29	14.3	6 400	7 600	—	4 300	6211	ZZ	LLB	—	LLU
	120	29	2	0.5	79.5	45.0	3.50	13.2	5 800	6 800	—	3 900	6311	ZZ	LLB	—	LLU
	140	33	2.1	—	98.5	54.0	4.20	12.7	5 200	6 100	—	—	6411	ZZ	—	—	—
60	78	10	0.3	0.3	12.7	10.6	0.705	16.3	8 000	9 400	—	4 400	6812	ZZ	LLB	—	LLU
	85	13	1	0.5	18.2	14.3	0.965	16.4	7 600	8 900	—	4 300	6912	ZZ	LLB	—	LLU
	95	11	0.6	—	22.1	17.5	1.20	16.3	7 000	8 300	—	—	16012	—	—	—	—
	95	18	1.1	0.5	32.5	23.2	1.73	15.6	7 000	8 300	—	4 100	6012	ZZ	LLB	—	LLU
	110	22	1.5	0.5	58.0	36.0	2.83	14.3	6 000	7 000	4 500	3 800	6212	ZZ	LLB	LLH	LLU
	130	31	2.1	0.5	90.5	52.0	4.10	13.2	5 400	6 300	—	3 600	6312	ZZ	LLB	—	LLU
	150	35	2.1	—	113	64.5	4.90	12.6	4 800	5 700	—	—	6412	ZZ	—	—	—

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.

Bearing number	Snap ring groove dimensions				Snap ring dimensions				Installation-related dimensions						Mass <sup>5)</sup>
	mm				mm				mm						
	Groove / Snap ring <sup>3)</sup>	D <sub>1</sub> Max.	a Max.	b Min.	r <sub>o</sub> Max.	D <sub>2</sub> Max.	f Max.	d <sub>a</sub> Min.	D <sub>a</sub> Max.	D <sub>X</sub> (approx.)	C <sub>Y</sub> Max.	C <sub>Z</sub> Min.	r <sub>as</sub> Max.	r <sub>Nas</sub> Max.	
N NR	50.7	1.3	0.95	0.25	54.8	0.85	42	43	50	55.5	1.9	0.9	0.3	0.3	0.033
N NR	60.7	1.7	0.95	0.25	64.8	0.85	44	45	58	65.5	2.3	0.9	0.6	0.5	0.11
N NR	64.82	2.49	1.9	0.6	74.6	1.7	45	47	63	76	3.8	1.7	1	0.5	0.19
N NR	76.81	3.28	1.9	0.6	86.6	1.7	46.5	51	73.5	88	4.6	1.7	1	0.5	0.366
N NR	86.79	3.28	2.7	0.6	96.5	2.46	48	54	82	98	5.4	2.5	1.5	0.5	0.63
N NR	56.7	1.3	0.95	0.25	60.8	0.85	47	48	56	61.5	1.9	0.9	0.3	0.3	0.04
N NR	66.7	1.7	0.95	0.25	70.8	0.85	49	51	64	72	2.3	0.9	0.6	0.5	0.128
N NR	71.83	2.49	1.9	0.6	81.6	1.7	50	52.5	70	83	3.8	1.7	1	0.5	0.237
N NR	81.81	3.28	1.9	0.6	91.6	1.7	51.5	55.5	78.5	93	4.6	1.7	1	0.5	0.398
N NR	96.8	3.28	2.7	0.6	106.5	2.46	53	61.5	92	108	5.4	2.5	1.5	0.5	0.814
N NR	63.7	1.3	0.95	0.25	67.8	0.85	52	54	63	68.5	1.9	0.9	0.3	0.3	0.052
N NR	70.7	1.7	0.95	0.25	74.8	0.85	54	55.5	68	76	2.3	0.9	0.6	0.5	0.132
N NR	76.81	2.49	1.9	0.6	86.6	1.7	55	57.5	75	88	3.8	1.7	1	0.5	0.261
N NR	86.79	3.28	2.7	0.6	96.5	2.46	56.5	60	83.5	98	5.4	2.5	1	0.5	0.454
N NR	106.81	3.28	2.7	0.6	116.6	2.46	59	68.5	101	118	5.4	2.5	2	0.5	1.07
N NR	70.7	1.7	0.95	0.25	74.8	0.85	57	59	70	76	2.3	0.9	0.3	0.3	0.083
N NR	77.9	2.1	1.3	0.4	84.4	1.12	60	61.5	75	86	2.9	1.2	1	0.5	0.18
N NR	86.79	2.87	2.7	0.6	96.5	2.46	61.5	64	83.5	98	5	2.5	1	0.5	0.388
N NR	96.8	3.28	2.7	0.6	106.5	2.46	63	67	92	108	5.4	2.5	1.5	0.5	0.601
N NR	115.21	4.06	3.1	0.6	129.7	2.82	64	74	111	131.5	6.5	2.9	2	0.5	1.37
N NR	76.2	1.7	1.3	0.4	82.7	1.12	62	64.5	76	84	2.5	1.2	0.3	0.3	0.106
N NR	82.9	2.1	1.3	0.4	89.4	1.12	65	66.5	80	91	2.9	1.2	1	0.5	0.193
N NR	91.82	2.87	2.7	0.6	101.6	2.46	66.5	69	88.5	103	5	2.5	1	0.5	0.414
N NR	106.81	3.28	2.7	0.6	116.6	2.46	68	75	102	118	5.4	2.5	1.5	0.5	0.783
N NR	125.22	4.06	3.1	0.6	139.7	2.82	71	80.5	119	141.5	6.5	2.9	2	0.5	1.73
N NR	71	86	139	—	—	—	—	—	—	—	—	—	—	—	2.77

3) Sealed and shielded bearings are also available. 4) This dimension applies to sealed and shielded bearings. 5) Does not include bearings with snap rings.