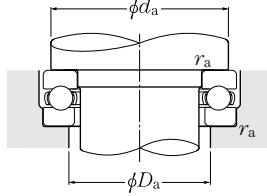
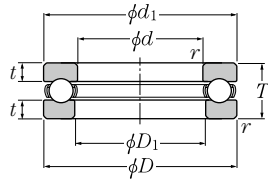


Thrust Ball Bearings



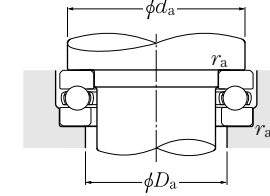
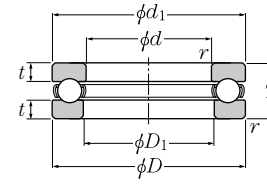
Dynamic equivalent axial load
 $P_a = F_a$
 Static equivalent axial load
 $P_{0a} = F_a$

d 10 ~ 50mm

Boundary dimensions mm	Basic load rating		Fatigue load limit kN C_u	Allowable speed		Bearing numbers	Dimensions			Installation-related dimensions			Mass kg (approx.)			
	dynamic	static		Grease lubrication	Oil lubrication		mm	mm	mm	mm	mm	mm				
d	D	T	$r_{s \min}^1)$	C_a	C_{0a}	C_u	Grease lubrication	Oil lubrication	$d_{1s \max}^2)$	$D_{1s \min}^3)$	t	Min.	Max.	Max.		
10	24	9	0.3	10.0	14.0	0.630	6 700	9 500	51100	24	11	2.5	18	16	0.3	0.021
	26	11	0.6	12.7	17.1	0.770	5 800	8 300	51200	26	12	3.3	20	16	0.6	0.03
12	26	9	0.3	10.3	15.4	0.695	6 400	9 200	51101	26	13	2.5	20	18	0.3	0.023
	28	11	0.6	13.2	19.0	0.860	5 600	8 000	51201	28	14	3.3	22	18	0.6	0.034
15	28	9	0.3	10.5	16.8	0.755	6 200	8 800	51102	28	16	2.5	23	20	0.3	0.024
	32	12	0.6	16.6	24.8	1.12	5 000	7 100	51202	32	17	3.5	25	22	0.6	0.046
17	30	9	0.3	10.8	18.2	0.820	6 000	8 500	51103	30	18	2.5	25	22	0.3	0.026
	35	12	0.6	17.2	27.3	1.23	4 800	6 800	51203	35	19	3.5	28	24	0.6	0.054
20	35	10	0.3	14.2	24.7	1.12	5 200	7 500	51104	35	21	2.5	29	26	0.3	0.04
	40	14	0.6	22.3	37.5	1.70	4 100	5 900	51204	40	22	4.1	32	28	0.6	0.081
25	42	11	0.6	19.6	37.0	1.68	4 600	6 500	51105	42	26	3	35	32	0.6	0.06
	47	15	0.6	27.8	50.5	2.28	3 700	5 300	51205	47	27	4.3	38	34	0.6	0.111
	52	18	1	35.5	61.5	2.77	3 200	4 600	51305	52	27	5	41	36	1	0.176
	60	24	1	55.5	89.5	4.05	2 600	3 700	51405	60	27	6.9	46	39	1	0.33
30	47	11	0.6	20.4	42.0	1.90	4 300	6 200	51106	47	32	3	40	37	0.6	0.069
	52	16	0.6	29.3	58.0	2.63	3 400	4 900	51206	52	32	5	43	39	0.6	0.139
	60	21	1	43.0	78.5	3.55	2 800	3 900	51306	60	32	6.4	48	42	1	0.269
	70	28	1	72.5	126	5.65	2 200	3 200	51406	70	32	8.3	54	46	1	0.516
35	52	12	0.6	20.4	44.5	2.02	3 900	5 600	51107	52	37	3.5	45	42	0.6	0.085
	62	18	1	39.0	78.0	3.55	2 900	4 200	51207	62	37	5.2	51	46	1	0.215
	68	24	1	55.5	105	4.75	2 400	3 500	51307	68	37	7.2	55	48	1	0.383
	80	32	1.1	87.0	155	7.00	1 900	2 800	51407	80	37	9.6	62	53	1	0.759
40	60	13	0.6	26.9	63.0	2.84	3 500	5 000	51108	60	42	3.8	52	48	0.6	0.125
	68	19	1	47.0	98.5	4.45	2 700	3 900	51208	68	42	5.5	57	51	1	0.276
	78	26	1	69.0	135	6.05	2 200	3 100	51308	78	42	7.6	63	55	1	0.548
	90	36	1.1	112	205	9.25	1 700	2 500	51408	90	42	10.7	70	60	1	1.08
45	65	14	0.6	27.9	69.0	3.10	3 200	4 600	51109	65	47	4	57	53	0.6	0.148
	73	20	1	47.5	105	4.75	2 600	3 700	51209	73	47	6	62	56	1	0.317
	85	28	1	80.0	163	7.35	2 000	2 900	51309	85	47	8.3	69	61	1	0.684
	100	39	1.1	130	242	10.9	1 600	2 200	51409	100	47	11.6	78	67	1	1.43
50	70	14	0.6	28.8	75.5	3.40	3 100	4 500	51110	70	52	4	62	58	0.6	0.161
	78	22	1	48.5	111	5.05	2 400	3 400	51210	78	52	7	67	61	1	0.378

1) Smallest allowable dimension for chamfer dimension r. 2) Maximum allowable dimension for shaft washer outer dimension d_1 .
 3) Smallest allowable dimension for housing washer inner dimension D_1 .

Thrust Ball Bearings



Dynamic equivalent axial load
 $P_a = F_a$
 Static equivalent axial load
 $P_{0a} = F_a$

d 50 ~ 90mm

Boundary dimensions mm	Basic load rating		Fatigue load limit kN C_u	Allowable speed		Bearing numbers ⁴⁾	Dimensions			Installation-related dimensions			Mass kg (approx.)			
	dynamic	static		Grease lubrication	Oil lubrication		mm	mm	mm	mm	mm	mm				
d	D	T	$r_{s \min}^1)$	C_a	C_{0a}	C_u	Grease lubrication	Oil lubrication	$d_{1s \max}^2)$	$D_{1s \min}^3)$	t	Min.	Max.	Max.		
50	95	31	1.1	96.5	202	9.10	1 800	2 600	51310	95	52	9.2	77	68	1	0.951
	110	43	1.5	148	283	12.8	1 400	2 000	51410A	110	52	12.9	86	74	1.5	1.9
55	78	16	0.6	35.0	93.0	4.20	2 800	4 000	51111	78	57	5	69	64	0.6	0.226
	90	25	1	69.5	159	7.15	2 100	3 000	51211	90	57	7.5	76	69	1	0.608
	105	35	1.1	119	246	11.1	1 600	2 300	51311	105	57	10.2	85	75	1	1.29
	120	48	1.5	178	360	16.2	1 300	1 800	51411	120	57	14.8	94	81	1.5	2.52
60	85	17	1	41.5	113	5.10	2 600	3 700	51112	85	62	5	75	70	1	0.296
	95	26	1	73.5	179	8.05	2 000	2 800	51212	95	62	8	81	74	1	0.676
	110	35	1.1	123	267	12.0	1 600	2 300	51312	110	62	10.2	90	80	1	1.37
	130	51	1.5	214	435	19.7	1 200	1 700	51412	130	62	15.3	102	88	1.5	3.12
65	90	18	1	41.5	117	5.30	2 400	3 500	51113	90	67	5.5	80	75	1	0.338
	100	27	1	75.0	189	8.50	1 900	2 700	51213	100	67	8.4	86	79	1	0.767
	115	36	1.1	128	287	13.0	1 500	2 200	51313	115	67	10.7	95	85	1	1.51
	140	56	2	232	495	22.0	1 100	1 600	51413	140	68	17.2	110	95	2	3.96
70	95	18	1	43.0	127	5.70	2 400	3 400	51114	95	72	5.5	85	80	1	0.356
	105	27	1	76.0	199	8.95	1 800	2 600	51214	105	72	8.4	91	84	1	0.793
	125	40	1.1	148	340	15.3	1 400	2 000	51314	125	72	12	103	92	1	2.01
	150	60	2	250	555	23.8	1 000	1 500	51414	150	73	18.6	118	102	2	4.86
75	100	19	1	44.5	136	6.15	2 200	3 200	51115	100	77	6	90	85	1	0.399
	110	27	1	77.5	209	9.40	1 800	2 600	51215	110	77	8.4	96	89	1	0.874
	135	44	1.5	171	395	17.4	1 300	1 800	51315	135	77	13.4	111	99	1.5	2.61
	160	65	2	269	615	25.6	940	1 400	51415	160	78	20.4	125	110	2	5.97
80	105	19	1	44.5	141	6.35	2 200	3 100	51116	105	82	6	95	90	1	0.422
	115	28	1	78.5	218	9.85	1 700	2 400	51216	115	82	8.9	101	94	1	0.916
	140	44	1.5	176	425	18.2	1 200	1 800	51316	140	82	13.4	116	104	1.5	2.72
	170	68	2.1	270	620	25.0	890	1 300	51416	170	83	21.3	133	117	2	7.77
85	110	19	1	46.0	150	6.80	2 100	3 000	51117	110	87	6	100	95	1	0.444
	125	31	1	95.5	264	11.6	1 600	2 200	51217	125	88	9.8	109	101	1	1.25
	150	49	1.5	206	490	20.3	1 100	1 600	51317	150	88	15	124	111	1.5	3.52
	180	72	2.1	288	685	26.8	840	1 200	* 51417	177	88	22.7	141	124	2	9.17
90	120	22	1	59.5	190	8.35	1 900	2 700	51118	120	92	7	108	102	1	0.687
	135	35	1.1	117	325	13.9	1 400	2 000	51218	135	93	11.2	117	108	1	1.7
	155	50	1.5	213	525	21.3	1 100	1 600	51318	155	93	15.5	129	116	1.5	3.74
	190	77	2.1	305	750	28.6	790	1 100	* 51418	187	93	24.5	149	131	2	11

1) Smallest allowable dimension for chamfer dimension r. 2) Maximum allowable dimension for shaft washer outer dimension d_1 . 3) Smallest allowable dimension for housing washer inner dimension D_1 . 4) Bearing numbers marked * signify bearings where the bearing shaft washer outer diameter is smaller than the housing shaft washer outer diameter. Therefore when using these bearings, it is possible to use the housing bore as is, without providing a ground undercut on the outer diameter section of the bearing shaft washer as shown in the drawing.