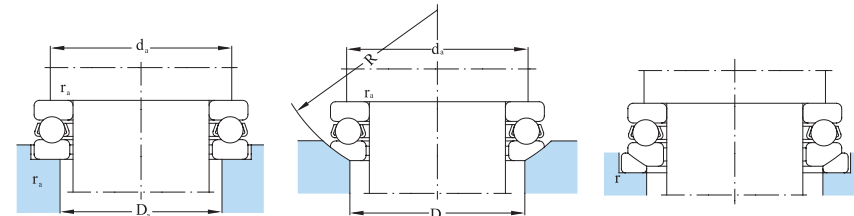
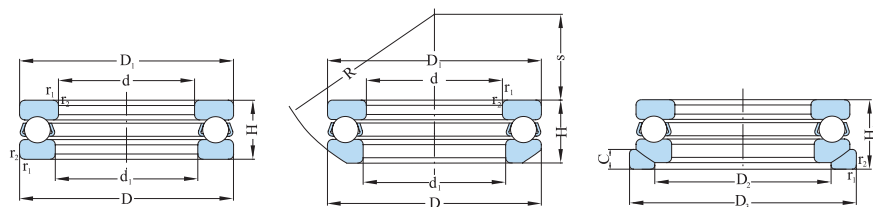


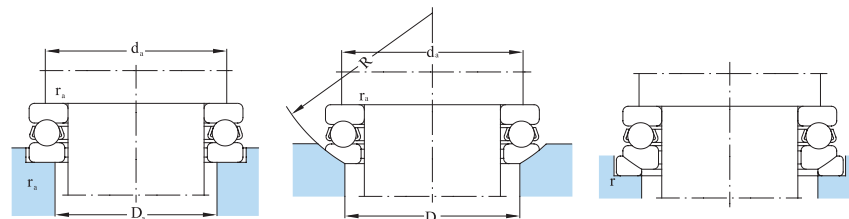
Thrust ball bearings

Single direction



Designations		Boundary dimensions									
Flat housing washer	Sphered housing washer	d	d ₁ min	D	D ₁ max	H	C	H ₁	r _{1,2} min	S	R
mm											
51100		10	11	24	24	9			0.3		
51200	53200		12	26	26	11		11.6	0.6	8.5	22
51101		12	13	26	26	9			0.3		
51201	53201		14	28	28	11	3.5	11.4	0.6	11.5	25
51102		15	16	28	28	9			0.3		
51202	53202		17	32	32	12	4.0	13.3	0.6	12	28
51103		17	18	30	30	9			0.3		
51203	53203		19	35	35	12	4.0	13.2	0.6	16	32
51104		20	21	35	35	10			0.3		
51204	53204		22	40	40	14	5.0	14.7	0.6	18	36
51304		25	22	47	47	18			1.0		
F-2905			25.2	45	45	14			0.6		
51105		30	26	42	42	11			0.6		
51205	53205		27	47	47	15	5.5	16.7	0.6	19	40
51305	53305	35	27	52	52	18		19.8	1.0	21	45
51405	53405		27	60	60	24		26.4	1.0	19	50
F-2906		40	30.2	50	50	14			0.6		
51106			32	47	47	11			0.6		
51206	53206	45	32	52	52	16	5.5	17.8	0.6	22	45
51306	53306		32	60	60	21	7.0	22.6	1.0	22	50
51406	53406	50	32	70	70	28		30.1	1.0	20	56
F-2907			35.2	55	55	16			0.6		
51107		55	37	52	52	12			0.6		
51207	53207		37	62	62	18	7.0	19.9	1.0	24	50
51307	53307	60	37	68	68	24	7.5	25.6	1.0	24	56
51407	53407		37	80	80	32		34	1.1	23	64
51108		65	42	60	60	13			0.6		
F-2908			40.2	60	60	16			0.6		
51208	53208	70	42	68	68	19	7.0	20.3	1.0	28.5	56
51308	53308		42	78	78	26	8.5	28.5	1.0	28	64
51408	53408	75	42	90	90	36	12.0	38.2	1.1	26	72
F-2909			45.2	68	68	16			0.6		

Basic load ratings		Limiting speeds		Minimum axial load factor A	Abutment and fillet dimensions			Mass (flat housing washer)
Ca	Coa	Grease	Oil		d _a min	D _a max	r _a max	
kN		r/min			mm			kg
9.32	8.11	7000	9500	0.0012	19	15	0.3	0.0188
12.7	10.4	6000	8000	0.0018	20	16	0.6	0.0282
9.67	9.49	6700	9000	0.0014	21	17	0.3	0.0210
13.2	12.3	6000	8000	0.0012	22	18	0.6	0.0319
10.5	12.0	6300	8500	0.0012	23	20	0.3	0.0219
13.4	14.5	5300	7000	0.0038	25	22	0.6	0.0430
10.8	13.4	6300	8500	0.0014	25	22	0.3	0.0246
17.2	18.8	5000	6700	0.0047	28	24	0.6	0.0503
15.0	19.7	5600	7500	0.0033	29	26	0.3	0.0371
21.1	23.9	4500	6000	0.0085	32	28	0.6	0.0746
34.3	36.3							0.1490
14.8	29.7							0.0919
15.4	23.9	4800	6300	0.0033	35	32	0.6	0.0554
27.7	36.3	4000	5300	0.0150	38	34	0.6	0.1070
35.7	42.1	3400	4500	0.0180	41	36	1.0	0.1660
55.4	59.8	2600	3600	0.0480	46	39	1.0	0.3370
19.1	40.1							0.1060
16.6	29.4	4500	6000	0.0067	40	37	0.6	0.0692
29.3	43.8	3600	4800	0.0130	43	39	0.6	0.1340
47.1	57.2	2800	3800	0.0260	48	42	1.0	0.2570
72.2	81.0	2000	3000	0.0970	54	46	1.0	0.5230
22.9	49.4							0.1320
19.1	35.9	4300	5600	0.0086	45	42	0.6	0.0806
39.1	58.6	3000	4000	0.0280	51	46	1.0	0.2090
55.4	73.9	2400	3400	0.0480	55	48	1.0	0.3710
86.4	102	1800	2600	0.1500	62	53	1.0	0.7710
26.9	51.2	3800	5000	0.0150	52	48	0.6	0.1160
24.1	55.6							0.1560
47.0	74.1	2800	3800	0.0580	57	51	1.0	0.2620
68.9	95.8	2000	3000	0.0770	63	55	1.0	0.5360
112	133	1700	2400	0.2600	70	60	1.0	1.0900
21.4	55.1							0.2000

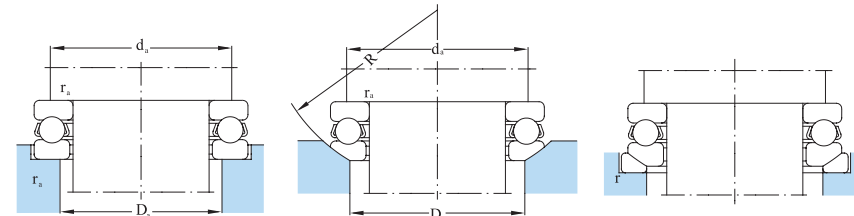
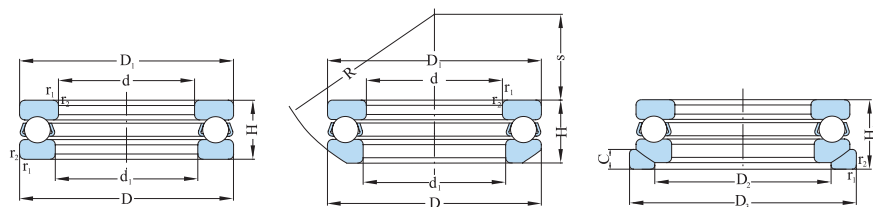


Basic load ratings		Limiting speeds		Minimum axial load factor A	Abutment and fillet dimensions			Mass
Ca	Coa	Grease	Oil		d _a min	D _a max	r _a max	(flat housing washer)
kN		r/min			mm			kg
27.9	57.5	3400	4500	0.0190	57	53	0.6	0.1400
47.5	81.5	2600	3600	0.0380	62	56	1.0	0.3040
79.5	118	1900	2800	0.1200	69	61	1.0	0.6800
130	240	1600	2200	0.3700	78	67	1.0	1.4000
28.0	61.0	3200	4300	0.0240	62	58	0.6	0.1480
54.4	94.4	2400	3400	0.0690	67	61	1.0	0.3650
96.2	146	1800	2600	0.1900	77	68	1.0	0.9360
159	310	1500	2000	0.6000	86	74	1.5	2.0000
34.7	78.7	2800	3800	0.0390	69	64	0.6	0.2230
69.4	123	1900	2800	0.1100	76	69	1.0	0.5920
126	189	1600	2200	0.2600	85	75	1.0	1.3100
178	360	1300	1800	0.7900	94	81	1.5	2.5500
40.2	91.0	2600	3600	0.0540	75	70	1.0	0.2780
70.6	133	1900	2800	0.1200	81	74	1.0	0.6630
129	209	1600	2200	0.2600	90	80	1.0	1.3800
199	400	1100	1600	0.9600	102	88	1.5	3.1000
47.3	108	2400	3400	0.0600	80	75	1.0	0.3140
72.0	144	1800	2600	0.1400	86	79	1.0	0.7410
139	229	1500	2000	0.3000	95	85	1.0	1.5100
216	450	1000	1500	1.2000	110	95	2.0	4.0000
47.8	114	2400	3400	0.0680	85	80	1.0	0.3400
76.0	162	1800	2600	0.1600	91	84	1.0	0.7920
161	268	1400	1900	0.5300	103	92	1.0	2.0000
234	500	950	1400	1.6000	118	102	2.0	5.0000
48.1	120	2200	3200	0.1100	90	85	1.0	0.3820
77.1	172	1700	2400	0.1700	96	89	1.0	0.8170
184	311	1200	1700	0.7900	111	99	1.5	2.5900
251	560	900	1300	1.9000	126	109	2.0	6.7500
50.0	130	2000	3000	0.1200	95	90	1.0	0.4060
86.4	193	1700	2400	0.2200	101	94	1.0	0.9080
189	339	1200	1700	0.7900	116	104	1.5	2.7200
270	620	850	1200	2.3000	133	117	2.0	7.9500



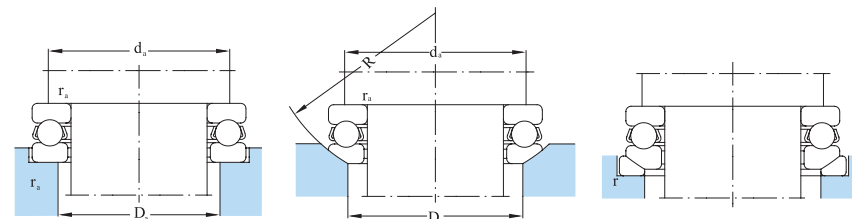
Thrust ball bearings

Single direction



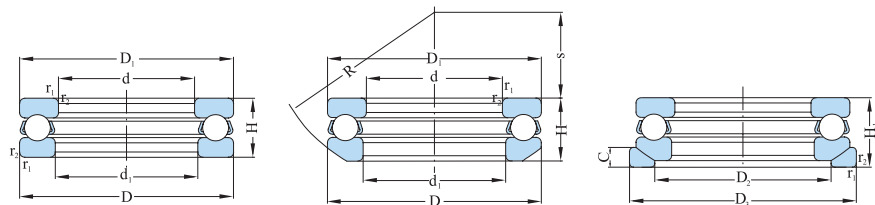
Designations		Boundary dimensions									
Flat housing washer	Sphered housing washer	d	d ₁ min	D	D ₁ max	H	C	H ₁	r _{1.2} min	S	R
mm											
51117		85	87	110	110	19			1.0		
51217	53217		88	125	125	31	11.0	33.1	1.0	52	100
51317	53317		88	150	150	49	17.5	53.1	1.5	43	112
51417M	53417M		88	180	177	72		77	2.1	47	140
51118		90	92	120	120	22			1.0		
51218	53218		93	135	135	35	13.5	38.5	1.1	45	100
51318	53318		93	155	155	50	18.0	54.6	1.5	40	112
51418M	53418M		93	190	187	77	25.5	81.2	2.1	40	140
51120		100	102	135	135	25			1.0		
51220	53220		103	150	150	38	14.0	40.9	1.1	52	112
51320	53320		103	170	170	55	18.0	59.2	1.5	46	125
51420M	53420M		103	210	205	85	27.0	90	3.0	50	160
51122		110	112	145	145	25			1.0		
51222	53222		113	160	160	38	14.0	40.2	1.1	65	125
51322M	53322M		113	190	187	63	20.5	67.2	2.0	51	140
51422M	53422M		113	230	225	95		99.7	3.0	59	180
51124		120	122	155	155	25			1.0		
51224	53224		123	170	170	39	15.0	40.8	1.1	61	125
51324M	53324M		123	210	205	70	22.0	74.1	2.1	63	160
51424M	53424M		123	250	245	102		107.3	4.0	70	200
51126		130	132	170	170	30			1.0		
51226	53226		133	190	187	45	17.0	47.9	1.5	67	140
51326M	53326M		134	225	220	75		80.3	2.1	53	160
51426	53426		134	270	265	110		115.2	4.0	58	200
51128		140	142	180	178	31			1.0		
51228	53228		143	200	197	46	17.0	48.6	1.5	87	160
51328M	53328M		144	240	235	80		84.9	2.1	68	180
51428	53428		144	280	275	112		117	4.0	83	225
51130M		150	152	190	188	31			1.0		
51230M	53230M		153	215	212	50		53.3	1.5	79	160
51330M	53330M		154	250	245	80		83.7	2.1	89.5	200
51430	53430		154	300	295	120		125.9	4.0	69	225

Basic load ratings		Limiting speeds		Minimum axial load factor A	Abutment and fillet dimensions			Mass
Ca	Coa	Grease	Oil		d _a min	D _a max	r _a max	(flat housing washer)
kN		r/min			mm			kg
49.3	131	2000	3000	0.1400	100	95	1.0	0.4240
97.9	229	1600	2200	0.3900	109	101	1.0	1.2500
215	389	1100	1600	1.1000	124	111	1.5	3.5200
286	680	850	1200	2.9000	141	124	2.0	9.4500
66.5	177	1800	2600	0.2200	108	102	1.0	0.6520
125	277	1500	2000	0.5500	117	108	1.0	1.6800
232	410	1000	1500	1.3000	129	116	1.5	3.7300
307	750	800	1100	3.5000	149	131	2.0	11.000
82.7	222	1700	2400	0.4400	121	114	1.0	0.9580
155	341	1300	1800	0.6500	130	120	1.0	2.2300
229	560	950	1400	1.9000	142	128	1.5	4.9500
371	965	700	950	5.8000	165	145	2.5	15.000
87.0	251	1600	2200	0.5200	131	124	1.0	1.0500
162	384	1200	1700	0.7900	140	130	1.0	2.4200
276	720	850	1200	3.2000	158	142	2.0	7.8500
410	1140	630	850	7.7000	181	159	2.5	20.000
88.9	271	1600	2200	0.5800	141	134	1.0	1.1200
163	409	1100	1600	1.0000	150	140	1.0	2.6700
325	915	800	1100	5.0000	173	157	2.0	11.000
423	1220	600	800	16.000	197	173	3.0	25.500
111	341	1400	1900	0.9400	154	146	1.0	1.7100
186	540	950	1400	1.8000	166	154	1.5	4.0000
358	1060	750	1000	6.8000	186	169	2.0	13.000
520	1600	560	750	16.000	213	187	3.0	32.000
113	366	1300	1800	1.0000	164	156	1.0	1.8600
190	570	950	1400	2.0000	176	164	1.5	4.3500
397	1220	700	950	9.1000	199	181	2.0	15.500
520	1600	530	700	16.000	223	197	3.0	34.500
117	371	1200	1700	1.0000	174	166	1.0	2.1700
238	735	900	1300	3.3000	189	176	1.5	6.1000
410	1290	670	900	10.000	209	191	2.0	16.500
559	1800	500	670	20.000	239	211	3.0	42.500

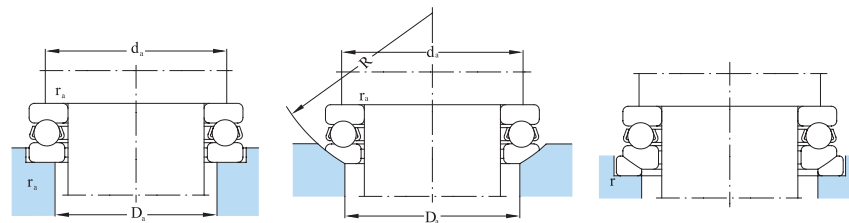


Basic load ratings		Limiting speeds		Minimum axial load factor A	Abutment and fillet dimensions			Mass
Ca	Coa	Grease	Oil		d _a min	D _a max	r _a max	(flat housing washer)
kN		r/min			mm			kg
120	399	1200	1700	1.1000	184	176	1.0	2.3400
242	780	850	1200	3.8000	199	186	1.5	6.5500
449	1500	630	850	14.000	225	205	2.5	21.000
650	2210	450	670		254	226	4.0	52.700
131	443	1100	1600	1.5000	197	188	1.0	2.9600
286	930	800	1100	5.4000	212	198	1.5	8.1500
468	1600	600	800	16.000	235	215	2.5	22.000
715	2480	430	630		269	241	4.0	61.200
134	473	1000	1500	1.7000	207	198	1.0	3.0800
296	1000	800	1100	6.1000	222	208	1.5	8.6000
520	1830	560	750	21.000	251	229	2.5	28.500
750	2730	400	600		285	255	4.0	70.500
172	655	950	1400	2.6000	220	210	1.0	4.0500
332	1160	750	1000	8.4000	238	222	2.0	12.000
550	1960	500	750	30.000	266	244	3.0	36.500
168	655	950	1400	2.6000	230	220	1.0	4.2500
338	1220	750	1000	9.1000	248	232	2.0	12.000
624	2400	480	630	35.000	283	257	3.0	44.500
178	735	900	1300	3.3000	250	240	1.0	4.6000
351	1320	700	950	11.000	268	252	2.0	13.000
234	965	800	1100	5.6000	276	264	1.5	7.5500
462	1860	600	800	21.000	299	281	2.0	23.000
238	1020	800	1100	6.3000	296	284	1.5	8.1000
475	2000	560	750	24.000	319	301	2.0	25.000
319	1340	700	950	11.000	322	308	1.5	12.000
494	2160	560	750	28.000	339	321	2.0	26.500
364	1600	630	850	16.000	348	332	2.0	17.500
371	1700	600	800	18.000	368	352	2.0	19.000
323	1768	600	800	20.000	388	372	2.0	19.900
465	2495	450	600	53.000	411	389	2.5	44.600
863	4439	400	530		452	356	4.0	137.00
486	2717	400	530		425	401	3.0	43.300





Designations		Boundary dimensions									
Flat housing washer	Sphered housing washer	d	d _i min	D	D ₁ max	H	C	H ₁	r _{1,2} min	S	R
51172		360	436	440	364	65			2.0		
51272			495	500	365	110			4.0		
51292		460	615	620	465	130			5.0		
511/600		600	705	710	604	85			3.0		
31688/630		630	760	780	650	112			4.0		
511/670F3		670	795	800	674	105			4.0		



Basic load ratings		Limiting speeds		Minimum axial load factor A	Abutment and fillet dimensions			Mass
Ca	Coa	Grease	Oil		d _a min	D _a max	r _a max	(flat housing washer)
kN		r/min			mm			kg
331	1890	560	750	22.000	408	392	2.0	23.900
610	3591	400	530	90.000	442	418	3.0	64.700
688	4504	430	560	55.000	552	528	4.0	113.00
556	4445	380	500	120.00	667	643	2.5	64.900
697	5515	320	430		717	693	3.0	118.00
683	5778	300	400	270.00	748	722	3.0	109.00

