



Thrust bearings

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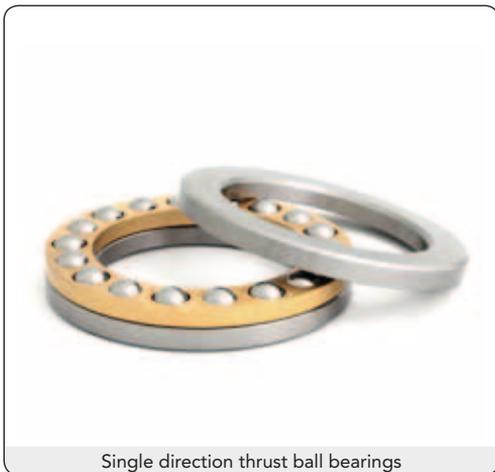
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RKB
BEARING INDUSTRIES
SWITZERLAND

Thrust ball bearings

The thrust ball bearings (TBBs) manufactured by RKB are designed to support high axial loads and, in some cases, even moderate radial loads. The manufacturing program includes single and double direction TBBs with flat or spherical housing washers to meet any requirements in various industrial applications. Thanks to the improved internal geometry and the use of the most suitable raw materials, all RKB TBBs attain the highest axial load ratings and the best reliability.

Depending on application requirements, RKB Bainite Hardening Treatment (HB) and High Temperature Dimensional Stabilization (S) can be applied on bearing rings and rolling elements. The bearing dimensional and running accuracy conforms to ISO/ABMA/GOST specifications.



Single direction thrust ball bearings

Single direction thrust ball bearings

Single direction thrust ball bearings are composed of a shaft washers, housing washers and cage-balls assembly. Bearings are separable so washers and cage-balls assembly can be mounted separately. Axial deep groove ball bearings of series 511, 512, 513, 514 that have an flat housing washers, can support only axial forces in one direction and they cannot support any radial load and any misalignment.

Bearings of series 532 and 533 can support axial force in one direction, but having a spherical housing washer and matched with seating washer U2 and U3, they are able to compensate a misalignment between shaft and housing. No radial load can be supported.

Misalignment

Thrust ball bearings with flat washers do not have possibility to accommodate any misalignment between shaft and housing and any alignment errors between support surfaces in the housing and on the shaft. In presence of misalignment between the support surfaces in the housing and on the shaft, a thrust ball bearing with sphered housing washers matched with sphered seat washers should be used.

Minimum load

A minimum axial load is requested for a thrust ball bearing, like for all ball and roller bearings, to operate correctly, especially in critical application requirements like: high speed, high acceleration and sudden changes of rotating direction. In these operating conditions a skidding between the balls and raceways can be generated by the inertial forces, influencing negatively the bearing life. To calculate the minimum axial load please consult the RKB application engineering service.

However, the minimum axial load is reached or surpassed by the weight of the components

supported by the bearing, mostly when the shaft is vertical and the loads acting on it. If the minimum axial load is not reached or in case of application where a starting up at low temperature is planned or a lubricant with high viscosity is used, it will be necessary to preload the thrust ball bearings by springs or shaft nut. For additional information, please consult the RKB application engineering service.

Designs and variants

Type 51M

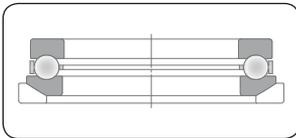


HB
BAINITE HT

S
STABILIZATION

- Flat housing locating washer
- Separable design
- One-piece machined brass cage (M) guided on balls
- Supports unidirectional axial loads

Variant 53M+U



HB
BAINITE HT

S
STABILIZATION

- Sphered housing washer
- Separable design
- One-piece machined brass cage (M) guided on balls
- Supports unidirectional axial loads
- The sphered housing washer is mounted on a locating sphered seating washer to accommodate shaft misalignment

Prefixes

TBB	Out of standard thrust ball bearing followed by drawing number
U	Sphered housing washer associated to related thrust ball bearing

Suffixes**Internal design**

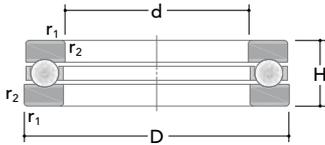
SP	Special or non-standard bearing
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Suffixes**Cage**

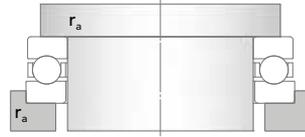
M	Machined brass cage guided on balls
F or MF	Machined steel cage guided on balls
J	Pressed steel cage guided on balls

Suffixes**Accuracy, clearance, running**

P6S	Dimensional and running accuracy between P6 and P5
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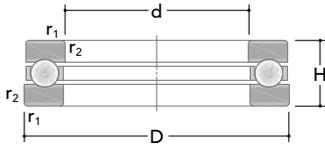


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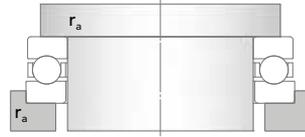


Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation
d	D	H	Dynamic C	Static C_0		Reference	Limiting	
[mm]			[kN]			[rpm]		
10	24	9	9,86	15	0,57	9200	11200	51100
	26	11	12,6	18,3	0,706	7700	9600	51200
12	26	9	10,4	16,3	0,63	8600	11200	51101
	28	11	13,3	20,5	0,776	7800	9500	51201
15	28	9	10,6	18,1	0,68	8100	10500	51102
	32	12	15,7	24,9	0,915	6800	8500	51202
17	30	9	11,5	21,2	0,77	8200	10400	51103
	35	12	16,4	26,6	1	6500	8100	51203
20	35	10	15	28,8	1,07	7300	8500	51104
	40	14	20,9	37,3	1,4	5700	6800	51204
25	42	11	18	38,9	1,44	6000	7700	51105
	47	15	26,2	49,1	1,9	5100	6600	51205
	52	18	34,8	59,9	2,23	4400	5500	51305
	60	24	42,2	66,3	2,49	3400	4400	51405
30	47	11	19	42,9	1,6	5800	7300	51106
	52	16	25	50,3	1,9	4600	5800	51206
	60	21	35,9	64,6	2,4	3600	4600	51306
	70	28	69,2	121	4,5	2800	3700	51406
35	52	12	20,1	50,5	1,87	5400	6400	51107
	62	18	35,6	72,9	2,6	3800	4800	51207
	68	24	49,9	94,9	3,61	3200	4200	51307
	80	32	75,2	136	5,1	2500	3100	51407
40	60	13	25,4	62,1	2,36	4800	6100	51108
	68	19	44,7	96	3,7	3700	4700	51208
	78	26	61,7	122	4,5	2900	3800	51308

Dimensions			Mass	Designation
d	r _{1,2min}	r _{amax}		Standard design
[mm]			[kg]	
10	0,3	0,3	0,02	51100
	0,6	0,6	0,03	51200
12	0,3	0,3	0,022	51101
	0,6	0,6	0,034	51201
15	0,3	0,3	0,023	51102
	0,6	0,6	0,046	51202
17	0,3	0,3	0,025	51103
	0,6	0,6	0,053	51203
20	0,3	0,3	0,037	51104
	0,6	0,6	0,083	51204
25	0,6	0,6	0,056	51105
	0,6	0,6	0,11	51205
	1	1	0,17	51305
	1	1	0,34	51405
30	0,6	0,6	0,063	51106
	0,6	0,6	0,13	51206
	1	1	0,26	51306
	1	1	0,52	51406
35	0,6	0,6	0,08	51107
	1	1	0,22	51207
	1	1	0,39	51307
	1,1	1	0,79	51407
40	0,6	0,6	0,12	51108
	1	1	0,28	51208
	1	1	0,53	51308

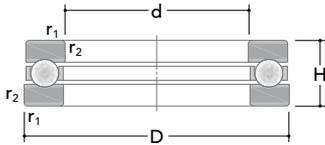


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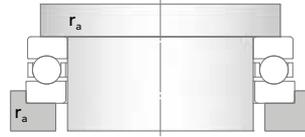


Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation Standard design
d	D	H	Dynamic C	Static C_0		Reference	Limiting	
[mm]			[kN]			[rpm]		
40	90	36	95	180	6,9	2300	2900	51408
(cont.)								
45	65	14	26,7	68,3	2,53	4300	5500	51109
50	70	14	27	73,7	2,8	4100	5500	51110
	78	22	48,9	116	4,3	3300	3900	51210
	95	31	81,5	167	6,4	2500	3100	51310
	110	43	159	335	12,7	1900	2400	51410
55	78	16	30	80,9	3	3600	4600	51111
	90	25	59,1	133	4,9	2700	3500	51211
	105	35	101	220	8,5	2100	2800	51311
	120	48	192	399	14,6	1700	2100	51411
60	85	17	42,1	121	4,59	3400	4300	51112
	95	26	59,4	140	5,1	2700	3400	51212
	110	35	101	222	8,4	2100	2600	51312
	130	51	202	430	16	1500	1900	51412
65	90	18	38	108	4	3300	4100	51113
	100	27	60	149	5,6	2500	3200	51213
	115	36	106	240	8,8	1900	2600	51313
	140	56	213	481	18	1400	1900	51413
70	95	18	40,4	120	4,4	3200	4000	51114
	105	27	63,2	160	5,85	2500	3100	51214
	125	40	135	320	11,8	1800	2300	51314
	150	60	231	540	19,7	1300	1800	51414
75	100	19	44,3	133	4,9	3000	3700	51115
	110	27	63,8	170	6,2	2300	3000	51215
	135	44	162	390	14	1600	2100	51315
	160	65	250	610	20,8	1200	1600	51415

Dimensions			Mass	Designation
d	r _{1,2min}	r _{amax}		Standard design
[mm]			[kg]	
40	1,1	1	1,1	51408
(cont.)				
45	0,6	0,6	0,14	51109
50	0,6	0,6	0,16	51110
	1	1	0,37	51210
	1,1	1	0,94	51310
	1,5	1,5	2	51410
55	0,6	0,6	0,23	51111
	1	1	0,59	51211
	1,1	1	1,3	51311
	1,5	1,5	2,55	51411
60	1	1	0,27	51112
	1	1	0,65	51212
	1,1	1	1,35	51312
	1,5	1,5	3,1	51412
65	1	1	0,33	51113
	1	1	0,72	51213
	1,1	1	1,5	51313
	2	2	4	51413
70	1	1	0,35	51114
	1	1	0,79	51214
	1,1	1	2	51314
	2	2	5	51414
75	1	1	0,4	51115
	1	1	0,83	51215
	1,5	1,5	2,6	51315
	2	2	6,75	51415

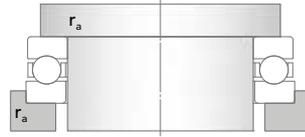
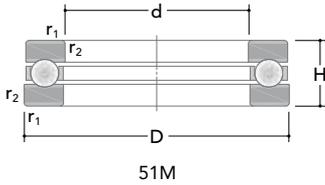


51M



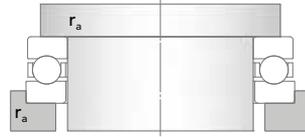
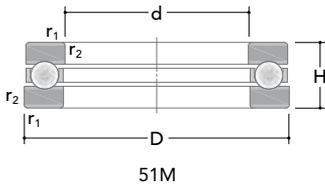
Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation
d	D	H	Dynamic C	Static C_0		Reference	Limiting	Standard design
[mm]			[kN]		[rpm]			
80	105	19	44,6	140	5,1	2900	3700	51116
	115	28	75,2	207	7,69	2300	2900	51216
	140	44	158	388	13,8	1600	2100	51316
	170	68	299	737	25	1100	1500	51416
85	110	19	45,2	146	5,4	2900	3700	51117
	125	31	96,4	275	9,8	2100	2600	51217
	150	49	173	405	14	1500	1900	51317
	180	72	287	736	24	1100	1400	51417
90	120	22	59,2	205	7,6	2500	3300	51118
	135	35	111	286	10,5	1900	2400	51218
	155	50	182	435	14,8	1400	1900	51318
	190	77	308	812	25,6	1000	1300	51418
100	135	25	81	265	9,15	2300	2800	51120
	150	38	118	320	11	1700	2100	51220
	170	55	227	560	18,6	1300	1700	51320
	210	85	369	1040	32,1	920	1200	51420
110	145	25	82,4	280	9,7	2100	2800	51122
	160	38	124	360	11,8	1600	2100	51222
	190	63	281	805	24,8	1100	1500	51322
	197	86	452	1230	41,2			351977
	230	95	407	1210	34,8	870	1140	51422
120	155	25	84,6	305	9,65	2100	2600	51124
	170	39	128	385	12	1500	1900	51224
	210	70	329	970	28,8	1000	1300	51324
	250	102	437	1310	36	780	950	51424
130	170	30	118	435	13,6	1800	2300	51126
	190	45	184	575	17	1300	1800	51226

Dimensions			Mass	Designation
d	r _{1,2min}	r _{amax}		Standard design
[mm]			[kg]	
80	1	1	0,42	51116
	1	1	0,91	51216
	1,5	1,5	2,7	51316
	2,1	2	7,95	51416
85	1	1	0,44	51117
	1	1	1,2	51217
	1,5	1,5	3,55	51317
	2,1	2	9,45	51417
90	1	1	0,67	51118
	1,1	1	1,7	51218
	1,5	1,5	3,8	51318
	2,1	2	11	51418
100	1	1	0,97	51120
	1,1	1	2,2	51220
	1,5	1,5	4,95	51320
	3	2,5	15	51420
110	1	1	1,05	51122
	1,1	1	2,4	51222
	2	2	7,85	51322
	3	2,5	11,5	351977
	3	2,5	20	51422
120	1	1	1,15	51124
	1,1	1	2,65	51224
	2,1	2	11	51324
	4	3	25,5	51424
130	1	1	1,85	51126
	1,5	1,5	4	51226



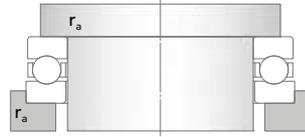
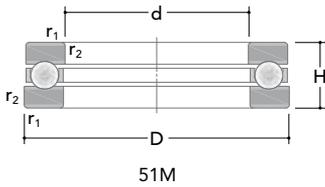
Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation Standard design
d	D	H	Dynamic C	Static C_0		Reference	Limiting	
[mm]			[kN]			[rpm]		
130 (cont.)	225	75	359	1150	32	960	1200	51326
	270	110	518	1710	46	720	900	51426
140	180	31	110	435	13	1700	2300	51128
	200	46	191	610	17,9	1300	1700	51228
	240	80	373	1240	32	910	1120	51328
	280	112	516	1740	44	670	900	51428
150	165	15,175	16	77,3	2,5	2580	-	634133
	190	31	110	435	12,6	1600	2100	51130
	215	50	239	785	22	1200	1600	51230
	250	80	390	1275	34	870	1140	51330
	300	120	551	1940	48	640	820	51430
160	200	31	111	465	12,9	1600	2100	51132
	225	51	236	830	22,4	1100	1500	51232
	270	87	450	1650	41,8	810	1050	51332
170	215	34	134	535	14,4	1500	1900	51134
	240	55	270	920	24	1100	1500	51234
	280	87	463	1740	43	760	940	51334
180	225	34	136	565	15	1400	1900	51136
	250	56	304	1110	28,8	1100	1400	51236
	300	95	527	1970	48,2	720	970	51336
190	240	37	173	700	18	1300	1700	51138
	270	62	334	1250	31	1000	1400	51238
	320	105	553	2220	51	670	810	51338
200	250	37	168	700	17,9	1300	1700	51140
	280	62	335	1310	31,7	1000	1300	51240
	340	110	619	2570	59,2	610	800	51340

Dimensions			Mass	Designation
d	r _{1,2min}	r _{amax}		Standard design
[mm]			[kg]	
130	2,1	2	13	51326
(cont.)	4	3	32	51426
140	1	1	2,05	51128
	1,5	1,5	4,35	51228
	2,1	2	15,5	51328
	4	3	34,5	51428
150	0,6	0,5	0,4	634133
	1	1	2,2	51130
	1,5	1,5	6,1	51230
	2,1	2	16,5	51330
	4	3	42,5	51430
160	1	1	2,35	51132
	1,5	1,5	6,55	51232
	3	2,5	21	51332
170	1,1	1	3,3	51134
	1,5	1,5	8,15	51234
	3	2,5	22	51334
180	1,1	1	3,5	51136
	1,5	1,5	8,6	51236
	3	2,5	28,5	51336
190	1,1	1	4,05	51138
	2	2	12	51238
	4	3	36,5	51338
200	1,1	1	4,25	51140
	2	2	12	51240
	4	3	44,5	51340



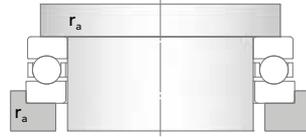
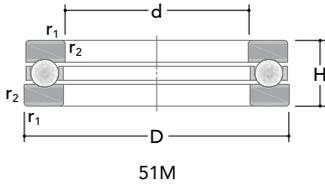
Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation
d	D	H	Dynamic C	Static C_0		Reference	Limiting	
[mm]			[kN]			[rpm]		
220	270	37	176	800	19	1200	1700	51144
	300	63	359	1450	33,7	920	1120	51244
240	300	45	233	1020	24,1	1000	1400	51148
	340	78	450	1970	42,3	770	960	51248
260	320	45	235	1090	24	1000	1300	51152
	360	79	491	2210	47,1	720	970	51252
	480	175	1111	5400	108	360	-	51452
280	350	53	316	1440	30,9	920	1140	51156
	380	80	490	2300	47,9	720	900	51256
300	380	62	368	1740	35,9	810	1050	51160
	420	95	592	2990	57	610	740	51260
320	360	30	115	730	14,7	1200	-	51064
	400	48	243	1302,9	25,8	850	-	59164
	400	63	368	1840	36,9	770	940	51164
	440	95	572	2970	57	580	740	51264
340	420	64	376	1950	37,7	780	950	51168
	460	96	606	3160	59,2	550	690	51268
	540	160	1040	5770	10,5	360	490	51368
360	400	30	119	810	15,7	1120	-	51072
	440	48	257	1490	27,7	810	1050	59172
	440	65	394	2050	39	720	960	51172
	500	110	747	4110	74,2	480	610	51272
366	440	65	296	1450	27	690	-	634132
380	460	36	186	1130	21	890	1210	351793

Dimensions			Mass	Designation
d	r _{1,2min}	r _{amax}		Standard design
[mm]			[kg]	
220	1,1	1	4,6	51144
	2	2	13	51244
240	1,5	1,5	7,55	51148
	2,1	2	23	51248
260	1,5	1,5	8,1	51152
	2,1	2	25	51252
	6	5	135	51452
280	1,5	1,5	12	51156
	2,1	2	26,5	51256
300	2	2	17,5	51160
	3	2,5	42	51260
320	1	1	4,3	51064
	2	2	13,5	59164
	2	2	19	51164
	3	2,5	45,5	51264
340	2	2	20,5	51168
	3	2,5	48,5	51268
	5	4	135	51368
360	1	1	4,85	51072
	2	2	15	59172
	2	2	22	51172
	4	3	70	51272
366	1,1	1	19,5	634132
380	2	2	12,5	351793



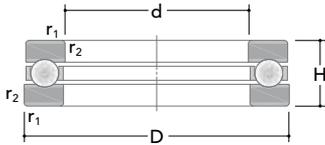
Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation
d	D	H	Dynamic C	Static C_0		Reference	Limiting	
[mm]			[kN]			[rpm]		
380 (cont.)	460	48	254	1510	28	780	1040	59176
	460	65	395	2190	40	730	870	51176
	520	112	721	4080	73	480	600	51276
	670	224	1635	10310	167	250	-	51476
385	510	110	612	3420	61	460	-	350550
400	480	48	257	1600	29	770	1050	59180
	480	65	402	2250	41	670	870	51180
	540	112	764	4490	76,7	450	610	51280
415,2	544,9	125	931	5660	97,2	-	-	351955
420	500	48	262	1670	31	780	1040	59184
	500	65	413	2390	41,7	680	870	51184
	580	130	886	5400	92	390	520	51284
440	520	65	303	1620	27,7	600	840	634131
	540	60	239	1490	25	630	860	59188
	540	80	523	3190	56	570	730	51188
	600	130	911	5590	95	390	520	51288
460	560	80	527	3230	54	570	690	51192
	620	130	922	5800	96	390	520	51292
480	580	80	545	3520	56	530	700	51196
	650	135	1003	6460	103	360	480	51296
500	540	30	133	1110	18,5	900	1210	510/500
	600	60	245	1680	26	620	840	591/500
	600	80	555	3580	57	540	700	511/500
	670	135	1002	6750	105	350	470	512/500

Dimensions			Mass	Designation
d	r _{1,2min}	r _{amax}		Standard design
[mm]			[kg]	
380	2	2	15	59176
(cont.)	2	2	23	51176
	4	3	73	51276
	7,5	6	330	51476
385	4,3	3	66	350550
400	2	2	16,5	59180
	2	2	24	51180
	4	3	78,5	51280
415,2	4,5	4	81	351955
420	2	2	17	59184
	2	2	25,5	51184
	5	4	110	51284
440	1,1	1	24	634131
	2,1	2	28	59188
	2,1	2	42	51188
	5	4	115	51288
460	2,1	2	43,5	51192
	5	4	120	51292
480	2,1	2	45,5	51196
	5	4	130	51296
500	1	1	6,55	510/500
	2,1	2	32	591/500
	2,1	2	47	511/500
	5	4	135	512/500

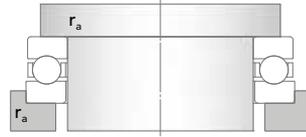


Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation
d	D	H	Dynamic C	Static C_0		Reference	Limiting	
[mm]			[kN]			[rpm]		
522	600	40	279	2230	34,7	-	-	351796
530	580	38	200	1580	25	770	1060	510/530
	590	36	178	1360	21,8	820	1050	351794
	640	67	468	3110	49	560	750	591/530
	640	85	659	4370	68	510	650	511/530
560	610	38	201	1680	25	780	1030	510/560
	670	67	463	3190	49	540	710	591/560
	670	85	651	4610	69	480	600	511/560
600	650	38	215	1790	26,6	740	950	510/600
	710	67	472	3380	49	510	700	591/600
	710	85	657	4720	70,7	480	600	511/600
	800	90	677	4930	70,5	410	540	350769
630	680	38	221	1900	28	730	970	510/630
	750	73	538	3990	57	500	640	591/630
	750	95	730	5310	77,8	430	550	511/630
670	730	45	282	2390	34	640	830	510/670
	800	78	534	4080	58	440	590	591/670
	800	105	842	6630	92,5	380	480	511/670
710	780	53	358	2800	40	550	730	510/710
	850	85	677	5390	72	410	550	591/710
	850	112	948	7640	100	350	460	511/710
730	850	85	669	5370	72	420	-	350627
750	820	53	368	3000	41,2	540	750	510/750
	900	90	732	6300	79	360	530	591/750
	900	120	1020	8480	112	310	420	511/750

Dimensions			Mass	Designation
d	r _{1,2min}	r _{amax}		Standard design
[mm]			[kg]	
522	1,5	1,5	17,5	351796
530	1,1	1	11	510/530
	1	1	12,5	351794
	3	2,5	43,5	591/530
	3	2,5	58,5	511/530
560	1,1	1	11,5	510/560
	3	2,5	45,5	591/560
	3	2,5	61	511/560
600	1,1	1	12	510/600
	3	2,5	48	591/600
	3	2,5	65	511/600
	5	4	117	350769
630	1,1	1	12,5	510/630
	3	2,5	62,5	591/630
	3	2,5	84	511/630
670	1,5	1,5	21	510/670
	4	3	74	591/670
	4	3	105	511/670
710	1,5	1,5	28	510/710
	4	3	88,5	591/710
	4	3	130	511/710
730	3	2,5	88	350627
750	1,5	1,5	30	510/750
	4	3	105	591/750
	4	3	155	511/750

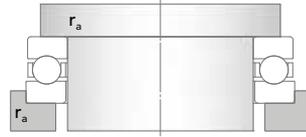
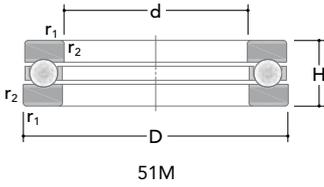


51M



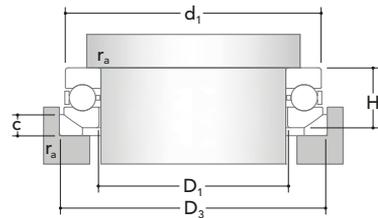
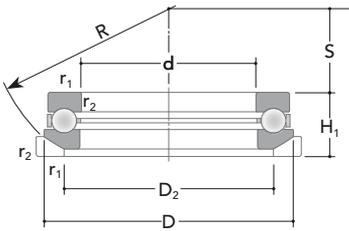
Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation
d	D	H	Dynamic C	Static C_0		Reference	Limiting	
[mm]			[kN]			[rpm]		
800	870	53	369	3160	41	510	690	510/800
	950	90	751	6450	84	360	480	591/800
	950	120	1020	8920	113	310	410	511/800
850	920	53	381	3390	44	-	-	510/850
	1000	90	768	6790	83	-	-	591/850
	1000	120	1070	9460	116	-	-	511/850
900	980	63	526	4810	59,6	-	-	510/900
	1060	95	622	7530	91	-	-	591/900
	1060	130	1110	10600	123	-	-	511/900
950	1080	63	537	5000	61	-	-	510/950
	1120	103	851	8130	96	-	-	591/950
	1120	135	1330	11840	139	-	-	511/950
980	1120	120	1020	9900	116	-	-	351883
						-	-	
						-	-	
1000	1090	70	571	5440	64	-	-	510/1000
	1180	109	931	9060	103	-	-	591/1000
	1180	140	1320	13100	151	-	-	511/1000
1060	1150	70	724	5750	65	-	-	510/1060
	1250	115	1000	10300	113	290	350	591/1060
	1250	150	1410	15000	163	-	-	511/1060
1120	1320	160	1540	16200	174	210	270	511/1120
						-	-	
						-	-	
1180	1400	175	1760	19700	207	-	-	511/1180
1250	1500	150	1420	16000	160	-	-	351006 A
1380	1540	130	1330	16200	157	-	-	351890
						-	-	
						-	-	

Dimensions			Mass	Designation
d	r _{1,2min}	r _{amax}		Standard design
[mm]			[kg]	
800	1,5	1,5	32,5	510/800
	4	3	110	591/800
	4	3	155	511/800
850	1,5	1,5	34,5	510/850
	4	3	115	591/850
	4	3	165	511/850
900	2	2	49	510/900
	5	4	140	591/900
	5	4	205	511/900
950	2	2	52	510/950
	5	4	170	591/950
	5	4	235	511/950
980	5	4	185	351883
1000	2,1	2	68,5	510/1000
	5	4	210	591/1000
	5	4	275	511/1000
1060	2,1	2	72,5	510/1060
	5	4	240	591/1060
	5	4	330	511/1060
1120	5	4	395	511/1120
1180	6	5	495	511/1180
1250	6	5	515	351006 A
1380	5	4	310	351890



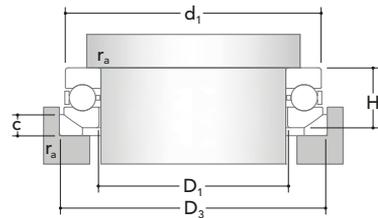
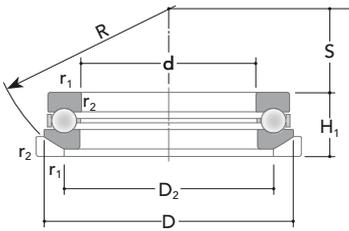
Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation Standard design
d	D	H	Dynamic C	Static C_0		Reference	Limiting	
[mm]			[kN]		[rpm]			
1400	1630	180	1830	23300	200	-	-	511/1400

Dimensions			Mass	Designation
d	r _{1,2min}	r _{amax}		Standard design
[mm]			[kg]	
1400	8	6	665	511/1400



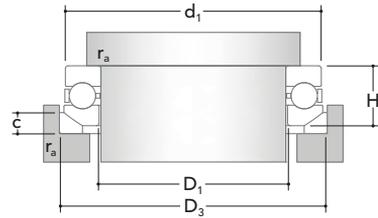
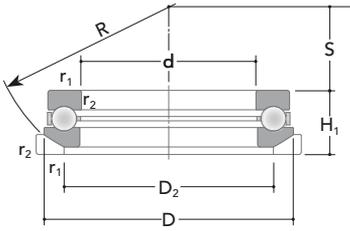
Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation Standard design
d	D	H ₁	Dynamic C	Static C ₀		Reference	Limiting	
[mm]			[kN]			[rpm]		
12	28	13	13,10	20,4	0,78	7700	9400	53201
15	32	15	15,7	24,8	0,926	6800	8500	53202
17	35	15	16,0	27	1	6500	8200	53203
20	40	17	20,9	37	1,4	5400	6900	53204
25	47	19	26,4	49,8	1,89	4800	6100	53205
30	52	20	24,9	50,7	1,87	4300	5400	53206
	60	25	35,9	65,3	2,4	3600	4600	53306
35	62	22	35,7	72,9	2,7	3800	4900	53207
	68	28	48,7	95,7	3,58	3000	3900	53307
40	68	23	44,0	96,5	3,6	3500	4600	53208
	78	31	62,0	121	4,5	2700	3500	53308
	90	42	95,5	181	6,9	2300	2800	53408
45	73	24	40	85,4	3,2	3200	4200	53209
	85	33	77	152	5,6	2500	3300	53309
50	78	26	50,1	114	4,4	3100	3900	53210
	95	37	81,0	169	6,3	2300	3000	53310
	110	50	157,0	335	12,7	1800	2300	53410
55	90	30	58,3	132	5	2700	3300	53211
	105	42	102,2	223	8,3	2100	2600	53311
	120	55	196,0	398	14,7	1600	2100	53411
60	95	31	59,0	138	5,2	2500	3100	53212
	110	42	99,6	222	8,4	1900	2700	53312

Dimensions											Mass	Designation	
d	r _{1,2min}	r _{amax}	d ₁	D ₁	D ₂	D ₃	H	C	R	s		Standard design	Seat washer
[mm]											[kg]		
12	0,6	0,6	28	14	20	30	11,4	3,5	25	11,5	0,045	53201	U 201
15	0,6	0,6	32	17	24	35	13,3	4	28	12	0,063	53202	U 202
17	0,6	0,6	35	19	26	38	13,2	4	32	16	0,071	53203	U 203
20	0,6	0,6	40	22	30	42	14,7	5	36	18	0,1	53204	U 204
25	0,6	0,6	47	27	36	50	16,7	5,5	40	19	0,15	53205	U 205
30	0,6	0,6	52	32	42	55	17,8	5,5	45	22	0,18	53206	U 206
	1	1	60	32	45	62	22,6	7	50	22	0,33	53306	U 306
35	1	1	62	37	48	65	19,9	7	50	24	0,28	53207	U 207
	1	1	68	37	52	72	25,6	7,5	56	24	0,46	53307	U 307
40	1	1	68	42	55	72	20,3	7	56	28,5	0,35	53208	U 208
	1	1	78	42	60	82	28,5	8,5	64	28	0,67	53308	U 308
	1,1	1	90	42	65	95	38,2	12	72	26	1,35	53408	U 408
45	1	1	73	47	60	78	21,3	7,5	56	26	0,39	53209	U 209
	1	1	85	47	65	90	30,1	10	64	25	0,83	53309	U 309
50	1	1	78	52	62	82	23,5	7,5	64	32,5	0,47	53210	U 210
	1,1	1	95	52	72	100	34,3	11	72	28	1,2	53310	U 310
	1,5	1,5	110	52	80	115	45,6	14	90	35	2,3	53410	U 410
55	1	1	90	57	72	95	27,3	9	72	35	0,75	53211	U 211
	1,1	1	105	57	80	110	39,3	11,5	80	30	1,7	53311	U 311
	1,5	1,5	120	57	88	125	50,5	15,5	90	28	3,1	53411	U 411
60	1	1	95	62	78	100	28	9	72	32,5	0,82	53212	U 212
	1,1	1	110	62	85	115	38,3	11,5	90	41	1,7	53312	U 312



Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation Standard design
d	D	H ₁	Dynamic C	Static C ₀		Reference	Limiting	
[mm]			[kN]			[rpm]		
60	130	58	198	424	16	1500	1900	53412
(cont.)								
65	100	32	60,6	149	5,5	2500	3100	53213
	115	43	105,0	237	8,9	1900	2400	53313
70	105	32	62,1	157	5,96	2500	3200	53214
	125	48	135,0	315	12	1700	2300	53314
	150	69	236	545	19,5	1300	1700	53414
75	110	32	64	167	6,3	2300	2900	53215
	135	52	164,0	387	14	1600	2100	53315
	160	75	249	599	21,2	1200	1600	53415
80	115	33	75,1	206	7,72	2300	2800	53216
	140	52	160,0	387	13,8	1500	1900	53316
85	125	37	99	270	9	1900	2600	53217
	150	58	173	397	14	1400	1700	53317
90	135	42	110	287	10,5	1800	2300	53218
	155	59	184	438	14,7	1300	1700	53318
	190	88	301	806	25,8	1000	1300	53418
100	150	45	120,0	324	10,8	1600	2100	53220
	170	64	224,0	562	18,6	1200	1600	53320
	210	98	372,0	1050	31,8	920	1150	53420
110	160	45	126	360	11,8	1600	2100	53222
	190	72	278,0	801	24,9	1000	1400	53322
120	170	46	128,0	385	12	1400	1900	53224
	210	80	327	977	28,6	960	1200	53324

Dimensions												Mass	Designation	
d	r _{1,2min}	r _{amax}	d ₁	D ₁	D ₂	D ₃	H	C	R	s		Standard design	Seat washer	
[mm]												[kg]		
60	1,5	1,5	130	62	95	135	54	16	100	34	3,8	53412	U 412	
(cont.)														
65	1	1	100	67	82	105	28,7	9	80	40	0,91	53213	U 213	
	1,1	1	115	67	90	120	39,4	12,5	90	38,5	1,9	53313	U 313	
70	1	1	105	72	88	110	27	9	80	38	0,97	53214	U 214	
	1,1	1	125	72	98	130	44,2	13	100	43	2,5	53314	U 314	
	2	2	150	73	110	155	63,6	19,5	112	34	6,5	53414	U 414	
75	1	1	110	77	92	115	28,3	9,5	90	49	1	53215	U 215	
	1,5	1,5	135	77	105	140	48,1	15	100	37	3,2	53315	U 315	
	2	2	160	78	115	165	69	21	125	42	8,1	53415	U 415	
80	1	1	115	82	98	120	29,5	10	90	46	1,1	53216	U 216	
	1,5	1,5	140	82	110	145	47,6	15	112	50	3,2	53316	U 316	
85	1	1	125	88	105	130	33,1	11	100	52	1,5	53217	U 217	
	1,5	1,5	150	88	115	155	53,1	17,5	112	43	4,35	53317	U 317	
90	1,1	1	135	93	110	140	38,5	13,5	100	45	2,1	53218	U 218	
	1,5	1,5	155	93	120	160	54,6	18	112	40	4,7	53318	U 318	
	2,1	2	187	93	140	195	81,2	25,5	140	40	13	53418	U 418	
100	1,1	1	150	103	125	155	40,9	14	112	52	2,7	53220	U 220	
	1,5	1,5	170	103	135	175	59,2	18	125	46	5,95	53320	U 320	
	3	2,5	205	103	155	220	90	27	160	50	18	53420	U 420	
110	1,1	1	160	113	135	165	40,2	14	125	65	2,9	53222	U 222	
	2	2	187	113	150	195	67,2	20	140	51	9,1	53322	U 322	
120	1,1	1	170	123	145	175	40,8	15	125	61	3,2	53224	U 224	
	2,1	2	205	123	165	220	74,1	22	160	63	12,5	53324	U 324	



Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation Standard design
d	D	H ₁	Dynamic C	Static C ₀		Reference	Limiting	
[mm]			[kN]			[rpm]		
130	190	53	188,0	580	17	1200	1600	53226
140	200	55	189	614	17,8	1200	1600	53228

Dimensions											Mass	Designation	
d	r _{1,2min}	r _{amax}	d ₁	D ₁	D ₂	D ₃	H	C	R	s		Standard design	Seat washer
[mm]											[kg]		
130	1,5	1,5	187	133	160	195	47,9	17	140	67	4,85	53226	U 226
140	1,5	1,5	197	143	170	210	48,6	17	160	87	5,45	53228	U 228

Double direction thrust ball bearings

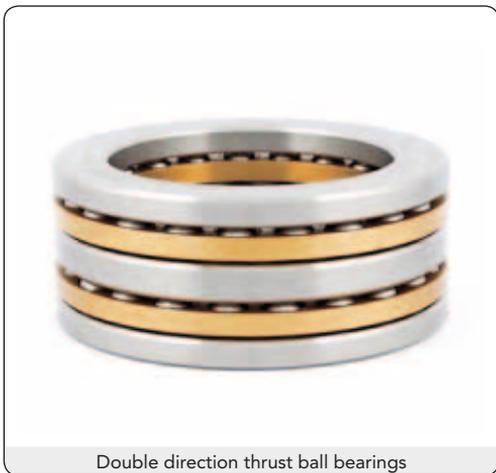
Double direction thrust ball bearings are composed of one shaft washers, two housing washers and two cage-balls assemblies. Bearings are separable so, washers and cage-balls assemblies can be mounted separately. Axial deep groove ball bearings of series 522, 523 that have flat housing washers, can support axial forces in both direction but they cannot withstand any radial load and any misalignment.

Bearings of series 542 and 543 can support axial force in both direction, but having a spherical housing washers and matched with seating washer U2 and U3, they are able to compensate a misalignment between shaft and housing. No radial load can be supported.

The main boundary dimensions of axial deep groove ball bearings with flat and sphered housing washers are in conformity with ISO 104:2015 and DIN 711:2010 and DIN 715:2011 (ISO 20516:2007), respectively. They are manufactured with tolerances according to ISO 199:2014.

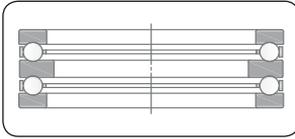
Minimum load

A minimum axial load is requested for a thrust ball bearing, like for all ball and roller bearings, to operate correctly, especially in critical application requirements like: high speed, high acceleration and sudden changes of rotating direction. In these operating conditions a skidding between the balls and raceways can be generated by the inertial forces, influencing negatively the bearing life. To calculate the minimum axial load please consult the RKB application engineering service.

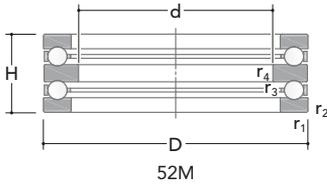


Designs and variants

Type 52M

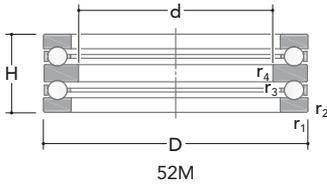


- Flat housing washers
- One-piece machined brass cage (M) guided on balls
- Separable design
- Supports medium to high bidirectional axial loads
- Suitable for applications requiring good limiting speeds



Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation
d	D	H	Dynamic C	Static C_0		Reference	Limiting	Standard design
[mm]			[kN]			[rpm]		
10	32	22	15,70	24,7	0,926	5100	6700	52202
15	40	26	21,2	36,8	1,4	4100	5200	52204
20	47	28	26,1	49,5	1,88	3600	4600	52205
	52	34	35,0	59,5	2,26	3100	3900	52305
	70	52	69,9	121	4,5	2100	2800	52406
25	52	29	25,0	51,4	1,85	3500	4300	52206
	60	38	35,9	64,5	2,4	2700	3400	52306
	80	59	75,8	136	5,1	1900	2400	52407
30	62	34	35	72,9	2,7	2900	3700	52207
	68	36	44,0	95,1	3,7	2700	3300	52208
	68	44	50,0	95,5	3,59	2300	2900	52307
	78	49	63	121	4,5	2100	2600	52308
	90	65	96,0	180	6,9	1700	2100	52408
35	73	37	39,0	86,2	3,2	2500	3100	52209
	85	52	76,7	153	5,6	1900	2400	52309
	100	72	124	240	9	1500	1900	52409
40	78	39	49,9	115	4,3	2300	3000	52210
	95	58	81,9	169	6,3	1700	2300	52310
45	90	45	59,0	132	5	2100	2600	52211
	105	64	102,4	221	8,4	1500	1900	52311
	120	87	194,0	395	14,8	1200	1600	52411
50	95	46	60,0	138	5,2	1900	2400	52212
	110	64	100,8	222	8,4	1500	1900	52312
	130	93	199,0	428	16	1100	1500	52412

Dimensions					Mass	Designation
d	r _{1,2min}	r _{3,4min}	r _{amax}	r _{bmax}		Standard design
[mm]					[kg]	
10	0,6	0,3	0,6	0,3	0,081	52202
15	0,6	0,3	0,6	0,3	0,15	52204
20	0,6	0,3	0,6	0,3	0,22	52205
	1	0,3	1	0,3	0,33	52305
	1	0,6	1	0,6	1	52406
25	0,6	0,3	0,6	0,3	0,25	52206
	1	0,3	1	0,3	0,47	52306
	1,1	0,6	1	0,6	1,45	52407
30	1	0,3	1	0,3	0,41	52207
	1	0,6	1	0,6	0,55	52208
	1	0,3	1	0,3	0,68	52307
	1	0,6	1	0,6	1,05	52308
	1,1	0,6	1	0,6	2,05	52408
35	1	0,6	1	0,6	0,6	52209
	1	0,6	1	0,6	1,25	52309
	1,1	0,6	1	0,6	2,7	52409
40	1	0,6	1	0,6	0,71	52210
	1,1	0,6	1	0,6	1,75	52310
45	1	0,6	1	0,6	1,1	52211
	1,1	0,6	1	0,6	2,4	52311
	1,5	0,6	1,5	0,6	4,7	52411
50	1	0,6	1	0,6	1,2	52212
	1,1	0,6	1	0,6	2,55	52312
	1,5	0,6	1,5	0,6	6,35	52412



Main dimensions			Basic load ratings		Fatigue load limit C_u	Speed ratings		Designation Standard design
d	D	H	Dynamic C	Static C_0		Reference	Limiting	
[mm]			[kN]		[rpm]			
55	100	47	61	148	5,6	1900	2500	52213
	105	47	62,3	159	5,89	1800	2300	52214
	115	64	105,0	237	8,9	1500	1900	52313
	125	72	136,0	319	11,8	1300	1700	52314
	250	107	233	539	19,7	760	1000	52414
60	110	47	64,2	168	6,3	1800	2300	52215
	135	79	163	384	14	1200	1600	52315
65	115	48	77	207	7,69	2300	3000	52216
	140	79	159,0	387	13,8	1200	1600	52316
70	125	55	96	271	9,9	1500	1900	52217
75	135	62	114,0	285	11,8	1400	1700	52218
85	150	67	120	324	10,8	1200	1600	52220
	170	97	225	567	18,4	970	1200	52320
95	160	67	125	358	11,8	1200	1600	52222
100	170	68	128	386	11,9	1100	1500	52224
110	190	80	180,0	584	16,6	1000	1300	52226
120	200	81	191,0	611	17,9	970	1200	52228
130	215	89	236	789	22	910	1100	52230
140	225	90	235,0	829	22,4	870	1100	52232
150	240	97	266	917	24	820	1100	52234
	250	98	303	1110	28,8	770	1000	52236

Dimensions					Mass	Designation
d	r _{1,2min}	r _{3,4min}	r _{amax}	r _{bmax}		Standard design
[mm]					[kg]	
55	1	0,6	1	0,6	1,35	52213
	1	1	1	1	1,5	52214
	1,1	0,6	1	0,6	2,75	52313
	1,1	1	1	1	3,65	52314
	2	1	1,5	1	9,7	52414
60	1	1	1	1	1,55	52215
	1,5	1	1,5	1	4,8	52315
65	1	1	1	1	1,7	52216
	1,5	1	1	1	4,95	52316
70	1	1	1	1	2,4	52217
75	1,1	1	1	1	3,2	52218
85	1,1	1	1	1	4,2	52220
	1,5	1	1	1	8,95	52320
95	1,1	1	1	1	4,65	52222
100	1,1	1,1	1	1	5,25	52224
110	1,5	1,1	1,5	1	8	52226
120	1,5	1,1	1,5	1	8,65	52228
130	1,5	1,1	1,5	1	11,5	52230
140	1,5	1,1	1,5	1	12	52232
150	1,5	1,1	1,5	1	15	52234
	1,5	2	1,5	2	16	52236