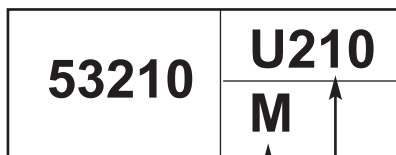




# Thrust Bearings

**Thrust Ball Bearing**



1

with seating washer

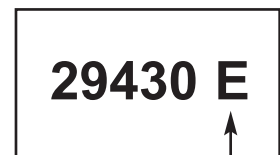
**Cylindrical Roller Thrust Bearing**



1

2

**Spherical Roller Thrust Bearing**



1

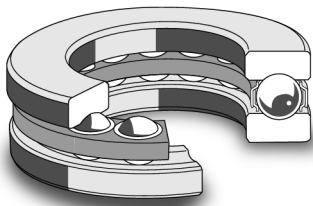
1. Features	
<b>F</b>	Machined steel or special cast iron cage, roller guided
<b>J9</b>	Internal design change to J cage
<b>M</b>	Machined brass cage, roller guided
<b>P5</b>	Dimensional and running accuracy to ISO tolerance class 5 (approximately ABEC 5)

1. Cage	
	Standard Reinforced Polyamide (TN) Machined brass (M) Steel (F)
2. Precision	
	Normal, larger bearings can be offered in P5 (check for availability)

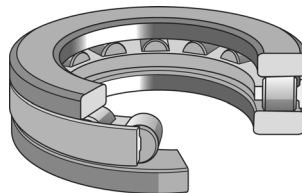
1. Features	
–	Machined brass cage (no symbol)
<b>B</b>	Pressed steel cage, no cage guide ring
<b>E</b>	Improved internal design
<b>M</b>	Machined brass cage, roller guided
<b>RD</b>	Spacer sleeve

## Technical Features

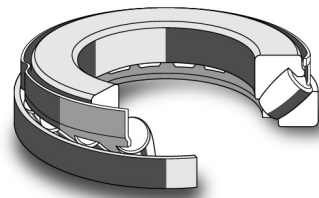
	Thrust Ball Bearings	Cylindrical Roller Thrust Bearings	Spherical Roller Thrust Bearings
<b>Boundary Dimensions</b>	Bearings with flat housing washers are in accordance with ISO 104:2002. The bearings with sphered housing washers have dimensions in accordance with DIN 711:1988 and DIN 715:1987	ISO 104:2002	Boundary dimensions in accordance with ISO 104:2002. Tolerances in accordance with ISO 199:1997 but SKF height tolerance 50% tighter and SKF Explorer height 75% tighter.
<b>Tolerances</b>	Normal (ABEC 1)	Normal to ISO 199:1997	RBEC 1 (Normal)
<b>Heat stabilization</b>	250°F (125°C)	150°C (With Polyamide cages operate up to 120°C only)	392°F (200°C)
<b>Misalignment</b>	None - contact SKF	No misalignment between the shaft and housing, nor any errors of alignment between the support surfaces in the housing and on the shaft.	Normal load conditions/ permissible misalignment $F_a + 2.7 \times F_r < 0.05 C_0$ series 29200 - 2 degrees series 29300 - 2.5 degrees series 29400 - 3 degrees
<b>Cage Materials:</b> Standard Optional	Pressed Steel Machined Brass (M)	Reinforced Polyamide TN9 Machined brass	heavier load conditions $F_a + 2.7 \times F_r > 0.05 C_0$ 1.5 degrees for all series
<b>Axial Load - max</b>	Thrust bearing (see tables in General catalogue)		
<b>Seals</b>	Not available	Not available	Not available



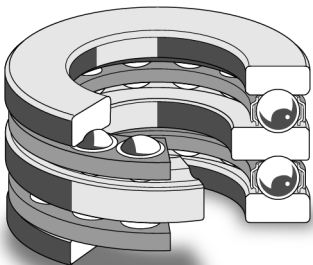
**Single Direction  
Thrust Ball Bearing**  
(data tables on page 196)



**Cylindrical Roller  
Thrust Bearing**  
(data tables on page 205)



**Spherical Roller  
Thrust Bearing**  
(data tables on page 208)



**Double Direction  
Thrust Ball Bearing**  
(data tables on page 202)

# Mounting

SKF spherical roller thrust bearings are of separable design, i.e. the shaft washer with cage and roller assembly can be mounted separately from the housing washer.

If bearings of earlier design with a machined cage, where the cage-guiding sleeve also served as spacer sleeve, are to be replaced by E-design bearings, a spacer sleeve is needed between the shaft washer and shaft shoulder (**figure 1**).

If earlier B-design bearings, which were mounted with a spacer sleeve, are to be replaced, the sleeve must be checked and re-machined if necessary (**figure 2**). The sleeves must be hardened and should have ground end faces. The recommended sleeve outside diameter is given for each bearing in the product table.

Figure 1

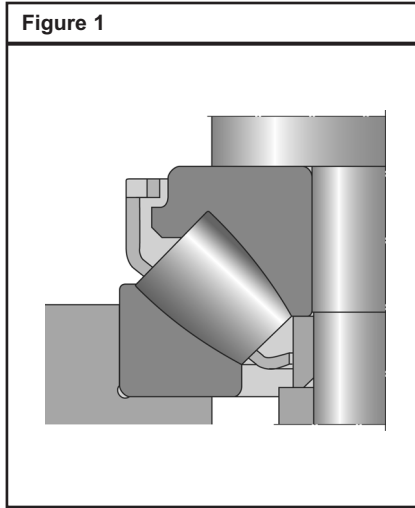
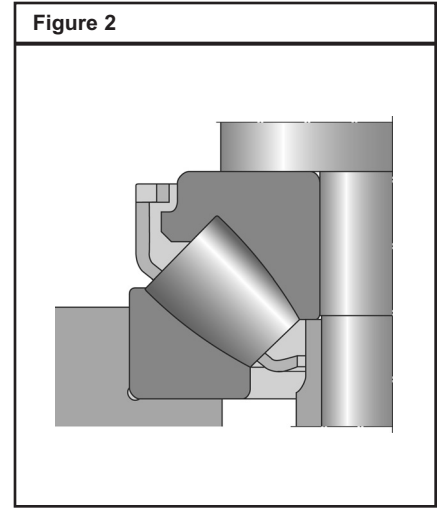


Figure 2



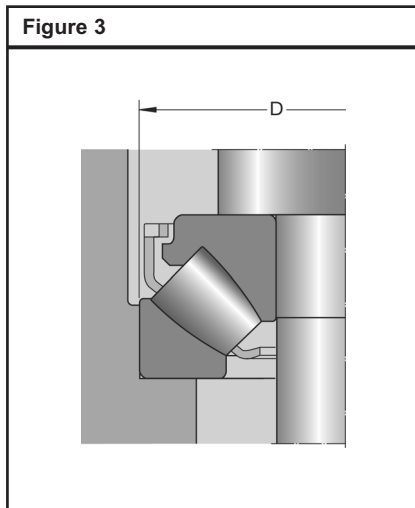
# Design of Associated Components

The abutment dimensions  $d_a$  and  $D_a$  in the product table apply for bearing loads up to approximately  $F_a = 0.1 C_0$ . Where bearings are to be subjected to heavier loads it may be necessary for both shaft and housing washers to be fully supported ( $d_a = d_1$  and  $D_a = D_1$ ) and for radial support to be provided for the housing washer. For additional information, contact the SKF Application Engineering service.

For E-design bearings with a pressed steel cage, the housing bore must be recessed (**figure 3**) to prevent the cage from rubbing against the housing if the shaft should become misaligned. Recommended guideline values for the diameter of this recess are

- $D + 15$  mm for bearings with outside diameter up to and including 380 mm and
- $D + 20$  mm for larger bearings.

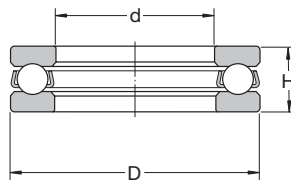
Figure 3



# Single direction thrust ball bearings

d 3 - 40 mm

d 0.118 - 1.575 in



Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor $A$	Speed ratings		Mass kg	Designation
d	D	H	d	D	H	dynamic	static			Refer-ence speed	Limiting speed		
mm			in			kN		kN	—	r/min			
<b>3</b>	8	3.5	<b>0.118</b>	0.315	0.138	1	1	0.028	0.000003	26 000	36 000	0.003	<b>BA 3</b>
<b>4</b>	10	4	<b>0.157</b>	0.394	0.157	1	1	0.044	0.000008	22 000	30 000	0.003	<b>BA 4</b>
<b>5</b>	12	4	<b>0.197</b>	0.472	0.157	1	2	0.06	0.000013	20 000	28 000	0.004	<b>BA 5</b>
<b>6</b>	14	5	<b>0.236</b>	0.551	0.197	2	2	0.085	0.000027	17 000	24 000	0.004	<b>BA 6</b>
<b>7</b>	17	6	<b>0.276</b>	0.669	0.236	3	3	0.12	0.00005	14 000	19 000	0.005	<b>BA 7</b>
<b>8</b>	19	7	<b>0.315</b>	0.748	0.276	3	4	0.15	0.000085	12 000	17 000	0.007	<b>BA 8</b>
<b>9</b>	20	7	<b>0.354</b>	0.787	0.276	4	5	0.17	0.00011	12 000	16 000	0.01	<b>BA 9</b>
<b>10</b>	24	9	<b>0.394</b>	0.945	0.354	10	15	0.56	0.0012	9 500	13 000	0.02	<b>51100</b>
	26	11		1.024	0.433	13	19	0.7	0.0018	8 000	11 000	0.03	<b>51200</b>
<b>12</b>	26	9	<b>0.472</b>	1.024	0.354	10	17	0.62	0.0014	9 000	13 000	0.022	<b>51101</b>
	28	11		1.102	0.433	13	21	0.77	0.0022	8 000	11 000	0.034	<b>51201</b>
<b>15</b>	28	9	<b>0.591</b>	1.102	0.354	9	15	0.56	0.0012	8 500	12 000	0.023	<b>51102</b>
	32	12		1.260	0.472	17	27	1	0.0038	7 000	10 000	0.046	<b>51202</b>
<b>17</b>	30	9	<b>0.669</b>	1.181	0.354	10	17	0.62	0.0014	8 500	12 000	0.025	<b>51103</b>
	35	12		1.378	0.472	17	30	1.1	0.0047	6 700	9 500	0.053	<b>51203</b>
<b>20</b>	35	10	<b>0.787</b>	1.378	0.394	14	25	0.92	0.0033	7 500	10 000	0.037	<b>51104</b>
	40	14		1.575	0.551	23	41	1.53	0.0085	6 000	8 000	0.083	<b>51204</b>
<b>25</b>	42	11	<b>0.984</b>	1.654	0.433	16	32	0.92	0.0033	6 300	9 000	0.056	<b>51105</b>
	47	15		1.850	0.591	28	55	2.04	0.015	5 300	7 500	0.11	<b>51205</b>
	52	18		2.047	0.709	35	60	2.24	0.018	4 500	6 300	0.17	<b>51305</b>
	60	24		2.362	0.945	55	97	3.6	0.048	3 600	5 000	0.34	<b>51405</b>
<b>30</b>	47	11	<b>1.181</b>	1.850	0.433	17	36	1.34	0.0067	6 000	8 500	0.063	<b>51106</b>
	52	16		2.047	0.630	26	51	1.9	0.013	4 800	6 700	0.13	<b>51206</b>
	60	21		2.362	0.827	38	71	2.65	0.026	3 800	5 300	0.26	<b>51306</b>
	70	28		2.756	1.102	73	137	5.1	0.097	3 000	4 300	0.52	<b>51406</b>
<b>35</b>	52	12	<b>1.378</b>	2.047	0.472	17	41	1.53	0.0086	5 600	7 500	0.08	<b>51107</b>
	62	18		2.441	0.709	35	74	2.7	0.028	4 000	5 600	0.22	<b>51207</b>
	68	24		2.677	0.945	49	97	3.55	0.048	3 400	4 800	0.39	<b>51307</b>
	80	32		3.150	1.260	87	170	6.2	0.15	2 600	3 800	0.79	<b>51407</b>
<b>40</b>	60	13	<b>1.575</b>	2.362	0.512	23	55	2.04	0.015	5 000	7 000	0.12	<b>51108</b>
	68	19		2.677	0.748	47	106	4	0.058	3 800	5 300	0.28	<b>51208</b>
	78	26		3.071	1.024	62	122	4.5	0.077	3 000	4 300	0.53	<b>51308</b>
	90	36		3.543	1.417	112	224	8.3	0.26	2 400	3 400	1.1	<b>51408</b>

# Single direction thrust ball bearings

d 45 - 90 mm

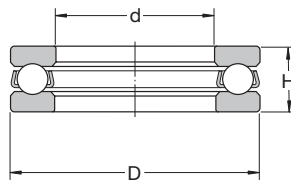
d 1.772 - 3.543 in

Principal dimensions						Basic load ratings		Fatigue load limit P <sub>u</sub>	Minimum load factor A	Speed ratings		Mass kg	Designation
d	D	H	d	D	H	dynamic	static			Refer-ence speed	Limiting speed		
			in				kN		kN	–	r/min		–
<b>45</b>	65	14	<b>1.772</b>	2.559	0.551	24	61	2.28	0.019	4 500	6 300	0.14	<b>51109</b>
	73	20		2.874	0.787	39	87	3.2	0.038	3 600	5 000	0.3	<b>51209</b>
	85	28		3.346	1.102	76	153	5.6	0.12	2 800	4 000	0.66	<b>51309</b>
	100	39		3.937	1.535	130	265	9.8	0.37	2 200	3 000	1.4	<b>51409</b>
<b>50</b>	70	14	<b>1.969</b>	2.756	0.551	26	68	2.55	0.024	4 300	6 300	0.16	<b>51110</b>
	78	22		3.071	0.866	49	116	4.3	0.069	3 400	4 500	0.37	<b>51210</b>
	95	31		3.740	1.220	88	190	6.95	0.19	2 600	3 600	0.94	<b>51310</b>
	110	43		4.331	1.693	159	340	12.5	0.6	2 000	2 800	2	<b>51410</b>
<b>55</b>	78	16	<b>2.165</b>	3.071	0.630	31	85	3.1	0.039	3 800	5 300	0.23	<b>51111</b>
	90	25		3.543	0.984	62	146	5.4	0.11	2 800	4 000	0.59	<b>51211</b>
	105	35		4.134	1.378	104	224	8.3	0.26	2 200	3 200	1.3	<b>51311</b>
	120	48		4.724	1.890	178	390	14.3	0.79	1 800	2 400	2.55	<b>51411</b>
<b>60</b>	85	17	<b>2.362</b>	3.346	0.669	36	102	3.8	0.054	3 600	5 000	0.2	<b>51112</b>
	95	26		3.740	1.024	62	150	5.6	0.12	2 800	3 800	0.65	<b>51212</b>
	110	35		4.331	1.378	101	224	8.3	0.26	2 200	3 000	1.35	<b>51312</b>
	130	51		5.118	2.008	199	430	16	0.96	1 600	2 200	3.1	<b>51412 M</b>
<b>65</b>	90	18	<b>2.559</b>	3.543	0.709	37	108	4	0.06	3 400	4 800	0.33	<b>51113</b>
	100	27		3.937	1.063	64	163	6	0.14	2 600	3 600	0.78	<b>51213</b>
	115	36		4.528	1.417	106	240	8.8	0.3	2 000	3 000	1.5	<b>51313</b>
	140	56		5.512	2.205	216	490	18	1.2	1 500	2 200	4	<b>51413 M</b>
<b>70</b>	95	18	<b>2.756</b>	3.740	0.709	38	112	4.15	0.068	3 400	4 500	0.35	<b>51114</b>
	105	27		4.134	1.063	65	173	6.4	0.16	2 600	3 600	0.79	<b>51214</b>
	125	40		4.921	1.575	135	320	11.8	0.53	1 900	2 600	2	<b>51314</b>
	150	60		5.906	2.362	234	550	19.3	1.6	1 400	2 000	5	<b>51414 M</b>
<b>75</b>	100	19	<b>2.953</b>	3.937	0.748	44	146	5.5	0.11	3 200	4 300	0.4	<b>51115</b>
	110	27		4.331	1.063	68	183	6.8	0.17	2 400	3 400	0.83	<b>51215</b>
	135	44		5.315	1.732	163	390	14	0.79	1 700	2 400	2.6	<b>51315</b>
	160	65		6.299	2.559	251	610	20.8	1.9	1 300	1 800	6.75	<b>51415 M</b>
<b>80</b>	105	19	<b>3.150</b>	4.134	0.748	45	153	5.7	0.12	3 000	4 300	0.42	<b>51116</b>
	115	28		4.528	1.102	76	208	7.65	0.22	2 400	3 400	0.91	<b>51216</b>
	140	44		5.512	1.732	159	390	13.7	0.79	1 700	2 400	2.7	<b>51316</b>
	170	68		6.693	2.677	270	670	22.4	2.3	1 200	1 700	7.95	<b>51416 M</b>
<b>85</b>	110	19	<b>3.346</b>	4.331	0.748	46	163	6	0.14	3 000	4 300	0.44	<b>51117</b>
	125	31		4.921	1.220	98	275	9.8	0.39	2 200	3 000	1.2	<b>51217</b>
	150	49		5.906	1.929	190	465	16	1.1	1 600	2 200	3.55	<b>51317</b>
	180	72		7.087	2.835	286	750	24	2.9	1 200	1 600	9.45	<b>51417 M</b>
<b>90</b>	120	22	<b>3.543</b>	4.724	0.866	59	208	7.5	0.22	2 600	3 800	0.67	<b>51118</b>
	135	35		5.315	1.378	119	325	11.4	0.55	2 000	2 800	1.7	<b>51218</b>
	155	50		6.102	1.969	195	500	16.6	1.3	1 500	2 200	3.8	<b>51318</b>
	190	77		7.480	3.031	307	815	25.5	3.5	1 100	1 500	11	<b>51418 M</b>

# Single direction thrust ball bearings

d 100 - 200 mm

d 3.937 - 7.874 in



Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor $A$	Speed ratings		Mass kg	Designation
d	D	H	d	D	H	dynamic	static			Refer-ence speed	Limiting speed		
mm			in			kN		kN	–	r/min			
<b>100</b>	135	25	<b>3.937</b>	5.315	0.984	85	290	10	0.44	2 400	3 200	0.97	<b>51120</b>
	150	38		5.906	1.496	124	345	11.4	0.62	1 800	2 400	2.2	<b>51220</b>
	170	55		6.693	2.165	229	610	19.6	1.9	1 400	1 900	4.95	<b>51320</b>
	210	85		8.268	3.346	371	1 060	31.5	5.8	950	1 400	15	<b>51420 M</b>
<b>110</b>	145	25	<b>4.331</b>	5.709	0.984	87	315	10.2	0.52	2 200	3 200	1.05	<b>51122</b>
	160	38		6.299	1.496	130	390	12.5	0.79	1 700	2 400	2.4	<b>51222</b>
	190	63		7.480	2.480	276	780	24	3.2	1 200	1 700	7.85	<b>51322 M</b>
	230	95		9.055	3.740	410	1 220	34.5	7.7	900	1 300	20	<b>51422 M</b>
<b>120</b>	155	25	<b>4.724</b>	6.102	0.984	88	335	10.6	0.58	2 200	3 000	1.15	<b>51124</b>
	170	39		6.693	1.535	140	440	13.4	1	1 600	2 200	2.65	<b>51224</b>
	210	70		8.268	2.756	325	980	28.5	5	1 100	1 500	11	<b>51324 M</b>
	250	102		9.843	4.016	520	1 730	45	16	800	1 100	29.5	<b>51424 M</b>
<b>130</b>	170	30	<b>5.118</b>	6.693	1.181	111	425	12.9	0.94	1 900	2 600	1.85	<b>51126</b>
	190	45		7.480	1.772	186	585	17	1.8	1 400	2 000	4	<b>51226</b>
	225	75		8.858	2.953	358	1 140	32	6.8	1 000	2 400	13	<b>51326 M</b>
	270	110		10.630	4.331	520	1 730	45	16	750	1 000	32	<b>51426 M</b>
<b>140</b>	180	31	<b>5.512</b>	7.087	1.220	111	440	12.9	1	1 800	2 600	2.05	<b>51128</b>
	200	46		7.874	1.811	190	620	17.6	2	1 400	1 900	4.35	<b>51228</b>
	240	80		9.449	3.150	397	1 320	35.5	9.1	950	1 300	15.5	<b>51328 M</b>
	280	112		11.024	4.409	520	1 730	44	16	700	1 000	34.5	<b>51428 M</b>
<b>150</b>	190	31	<b>5.906</b>	7.480	1.220	111	440	12.5	1	1 700	2 400	2.2	<b>51130 M</b>
	215	50		8.465	1.969	238	800	22	3.3	1 300	1 800	6.1	<b>51230 M</b>
	250	80		9.843	3.150	410	1 400	36.5	10	900	1 300	16.5	<b>51330 M</b>
	300	120		11.811	4.724	559	1 960	48	20	670	950	42.5	<b>51430 M</b>
<b>160</b>	200	31	<b>6.299</b>	7.874	1.220	112	465	12.9	1.1	1 700	2 400	2.35	<b>51132 M</b>
	225	51		8.858	2.008	242	850	22.8	3.8	1 200	1 700	6.55	<b>51232 M</b>
	270	87		10.630	3.425	449	1 660	41.5	14	850	1 200	21	<b>51332 M</b>
<b>170</b>	215	34	<b>6.693</b>	8.465	1.339	133	540	14.3	1.5	1 600	2 200	3.3	<b>51134 M</b>
	240	55		9.449	2.165	286	1 020	26	5.4	1 100	1 800	8.15	<b>51234 M</b>
	280	87		11.024	3.425	468	1 760	43	16	800	1 100	22	<b>51334 M</b>
<b>180</b>	225	34	<b>7.087</b>	8.858	1.339	135	570	15	1.7	1 500	2 200	3.5	<b>51136 M</b>
	250	56		9.843	2.205	296	1 080	27.5	6.1	1 100	1 500	8.6	<b>51236 M</b>
	300	95		11.811	3.740	520	2 000	47.5	21	750	1 100	28.5	<b>51336 M</b>
<b>190</b>	240	37	<b>7.480</b>	9.449	1.457	172	710	18	2.6	1 400	2 000	4.05	<b>51138 M</b>
	270	62		10.630	2.441	332	1 270	31	8.4	1 000	1 400	12	<b>51238 M</b>
	320	105		12.598	4.134	592	2 400	56	30	700	950	36.5	<b>51338 M</b>
<b>200</b>	250	37	<b>7.874</b>	9.843	1.457	168	710	17.6	2.6	1 400	1 900	4.25	<b>51140 M</b>
	280	62		11.024	2.441	338	1 320	31.5	9.1	1 000	1 400	12	<b>51240 M</b>
	340	110		13.386	4.331	624	2 600	58.5	35	630	900	44.5	<b>51340 M</b>

# Single direction thrust ball bearings

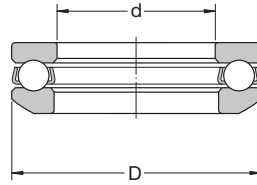
d 220 - 670 mm  
d 8.661 - 26.378 in

Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor A	Speed ratings		Mass kg	Designation
d	D	H	d	D	H	dynamic C	static $C_0$			Refer-ence speed	Limiting speed		
mm			in			kN		kN	–	r/min		kg	–
<b>220</b>	270	37	<b>8.661</b>	10.630	1.457	178	800	19	3.3	1 300	1 900	4.6	<b>51144 M</b>
	300	63		11.811	2.480	351	1 460	33.5	11	950	1 300	13	<b>51244 M</b>
<b>240</b>	300	45	<b>9.449</b>	11.811	1.772	234	1 040	23.6	5.6	1 100	1 600	7.55	<b>51148 M</b>
	340	78		13.386	3.071	462	2 000	44	21	800	1 100	23	<b>51248 M</b>
<b>260</b>	320	45	<b>10.236</b>	12.598	1.772	238	1 100	24	6.3	1 100	1 500	8.1	<b>51152 M</b>
	360	79		14.173	3.110	475	2 160	45.5	24	750	1 100	25	<b>51252 M</b>
<b>280</b>	350	53	<b>11.024</b>	13.780	2.087	319	1 460	30.5	11	950	1 300	12	<b>51156 M</b>
	380	80		14.961	3.150	494	2 320	47.5	28	750	1 000	26.5	<b>51256 M</b>
<b>300</b>	380	62	<b>11.811</b>	14.961	2.441	364	1 760	35.5	16	850	1 200	17.5	<b>51160 M</b>
	420	95		16.535	3.740	605	3 000	58.5	47	630	850	42	<b>51260 M</b>
<b>320</b>	400	63	<b>12.598</b>	15.748	2.480	371	1 860	36.5	18	800	1 100	19	<b>51164 M</b>
	440	95		17.323	3.740	572	3 000	56	47	600	850	45.5	<b>51264 F</b>
<b>340</b>	420	64	<b>13.386</b>	16.535	2.520	377	1 960	37.5	20	800	1 100	20.5	<b>51168 M</b>
	460	96		18.110	3.780	605	3 200	58.5	53	600	800	48.5	<b>51268 F</b>
<b>360</b>	440	65	<b>14.173</b>	17.323	2.559	390	2 080	38	22	750	1 100	22	<b>51172 F</b>
	500	110		19.685	4.331	741	4 150	73.5	90	530	750	70	<b>51272 F</b>
<b>380</b>	460	65	<b>14.961</b>	18.110	2.559	397	2 200	40	25	750	1 000	23	<b>51176 F</b>
	520	112		20.472	4.409	728	4 150	72	90	500	700	73	<b>51276 F</b>
<b>400</b>	480	65	<b>15.748</b>	18.898	2.559	403	2 280	40.5	27	700	1 000	24	<b>51180 F</b>
<b>420</b>	500	65	<b>16.535</b>	19.685	2.559	410	2 400	41.5	30	700	1 000	25.5	<b>51184 F</b>
<b>440</b>	540	80	<b>17.323</b>	21.260	3.150	527	3 250	55	55	600	850	42	<b>51188 F</b>
<b>460</b>	560	80	<b>18.110</b>	22.047	3.150	527	3 250	54	55	600	800	43.5	<b>51192 F</b>
<b>480</b>	580	80	<b>18.898</b>	22.835	3.150	540	3 550	56	66	560	800	45.5	<b>51196 F</b>
<b>500</b>	600	80	<b>19.685</b>	23.622	3.150	553	3 600	57	67	560	800	47	<b>511/500 F</b>
<b>530</b>	640	85	<b>20.866</b>	25.197	3.346	650	4 400	68	100	530	750	58.5	<b>511/530 F</b>
<b>560</b>	670	85	<b>22.047</b>	26.378	3.346	663	4 650	69.5	110	500	700	61	<b>511/560 F</b>
<b>600</b>	710	85	<b>23.622</b>	27.953	3.346	663	4 800	69.5	120	500	700	65	<b>511/600 F</b>
<b>630</b>	750	95	<b>24.803</b>	29.528	3.740	728	5 400	76.5	150	450	630	84	<b>511/630 F</b>
<b>670</b>	800	105	<b>26.378</b>	31.496	4.134	852	6 700	91.5	230	400	560	105	<b>511/670 F</b>

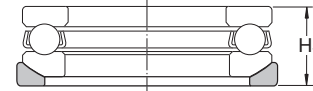
# Single direction thrust bearings with sphered housing washer

d 12 - 80 mm

d 0.472 - 3.150 in



Bearing



Seating washer

\* Bearing and seating washer ordered separately

Principal dimensions						Basic load ratings		Fatigue load limit P <sub>u</sub>	Minimum load factor A	Speed ratings		Mass Bearing + washer kg	Designations*	
d	D	H <sub>1</sub>	d	D	H <sub>1</sub>	dynamic	static			Refer-ence speed	Limiting speed		Bearing	Seating washer
mm			in			kN		kN	–	r/min		kg	–	
12	28	13	0.472	1.102	0.512	13.3	20.8	0.77	0.0022	8 000	11 000	0.045	53201	U 201
15	32	15	0.591	1.260	0.591	16.5	27	1	0.0038	7 000	10 000	0.063	53202	U 202
17	35	15	0.669	1.378	0.591	17.2	30	1.1	0.0047	6 700	9 500	0.071	53203	U 203
20	40	17	0.787	1.575	0.669	22.5	40.5	1.53	0.0085	6 000	8 000	0.1	53204	U 204
25	47	19	0.984	1.850	0.748	27.6	55	2.04	0.015	5 300	7 500	0.15	53205	U 205
30	52	20	1.181	2.047	0.787	25.5	51	1.9	0.013	4 800	6 700	0.18	53206	U 206
	60	25		2.362	0.984	37.7	71	2.65	0.026	3 800	5 300	0.33	53306	U 306
35	62	22	1.378	2.441	0.866	35.1	73.5	2.7	0.028	4 000	5 600	0.28	53207	U 207
	68	28		2.677	1.102	49.4	96.5	3.55	0.048	3 400	4 800	0.46	53307	U 307
40	68	23	1.575	2.677	0.906	46.8	106	4	0.058	3 800	5 300	0.35	53208	U 208
	78	31		3.071	1.220	61.8	122	4.5	0.077	3 000	4 300	0.67	53308	U 308
	90	42		3.543	1.654	112	224	8.3	0.26	2 400	3 400	1.35	53408	U 408
45	73	24	1.772	2.874	0.945	39	86.5	3.2	0.038	3 600	5 000	0.39	53209	U 209
	85	33		3.346	1.299	76.1	153	5.6	0.12	2 800	4 000	0.83	53309	U 309
50	78	26	1.969	3.071	1.024	49.4	116	4.3	0.069	3 400	4 500	0.47	53210	U 210
	95	37		3.740	1.457	88.4	190	6.95	0.19	2 600	3 600	1.2	53310	U 310
	110	50		4.331	1.969	159	340	12.5	0.6	2 000	2 800	2.31	53410	U 410
55	90	30	2.165	3.543	1.181	61.8	146	5.4	0.11	2 800	4 000	0.75	53211	U 211
	105	42		4.134	1.654	104	224	8.3	0.26	2 200	3 200	1.68	53311	U 311
	120	55		4.724	2.165	178	390	14.3	0.79	1 800	2 400	3.08	53411	U 411
60	95	31	2.362	3.740	1.220	62.4	150	5.6	0.12	2 800	3 800	0.82	53212	U 212
	110	42		4.331	1.654	101	224	8.3	0.26	2 200	3 000	1.71	53312	U 312
	130	58		5.118	2.283	199	430	16	0.96	1 600	2 200	3.8	53412 M	U 412
65	100	32	2.559	3.937	1.260	63.7	163	6	0.14	2 600	3 600	0.91	53213	U 213
	115	43		4.528	1.693	106	240	8.8	0.3	2 000	3 000	1.89	53313	U 313
70	105	32	2.756	4.134	1.260	65	173	6.4	0.16	2 600	3 600	0.97	53214	U 214
	125	48		4.921	1.890	135	320	11.8	0.53	1 900	2 600	2.5	53314	U 314
	150	69		5.906	2.717	234	550	19.3	1.6	1 400	2 000	6.5	53414 M	U 414
75	110	32	2.953	4.331	1.260	67.6	183	6.8	0.17	2 400	3 400	1	53215	U 215
	135	52		5.315	2.047	163	390	14	0.79	1 700	2 400	3.2	53315	U 315
	160	75		6.299	2.953	251	610	20.8	1.9	1 300	1 800	8.1	53415 M	U 415
80	115	33	3.150	4.528	1.299	76.1	208	7.65	0.22	2 400	3 400	1.1	53216	U 216
	140	52		5.512	2.047	159	390	13.7	0.79	1 700	2 400	3.3	53316	U 316



## Single direction thrust bearings with sphered housing washer

d 85 - 140 mm  
d 3.346 - 5.512 in

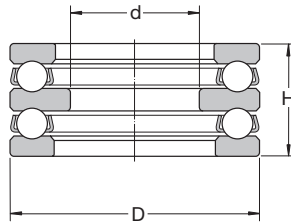
\* Bearing and seating washer  
ordered separately

Principal dimensions						Basic load ratings		Fatigue load limit P <sub>u</sub>	Minimum load factor A	Speed ratings		Mass Bearing + washer kg	Designations*	
d	D	H <sub>1</sub>	d	D	H <sub>1</sub>	dynamic	static			Refer- ence speed	Limiting speed		Bearing	Seating washer
			in			kN		kN	–	r/min		–		
<b>85</b>	125	37	<b>3.346</b>	4.921	1.457	97.5	275	9.8	0.39	2 200	3 000	1.5	<b>53217</b>	<b>U 217</b>
	150	58		5.906	2.283	190	465	16	1.1	1 600	2 200	4.35	<b>53317</b>	<b>U 317</b>
<b>90</b>	135	42	<b>3.543</b>	5.315	1.654	119	325	11.4	0.55	2 000	2 800	2.1	<b>53218</b>	<b>U 218</b>
	155	59		6.102	2.323	195	500	16.6	1.3	1 500	2 200	4.7	<b>53318</b>	<b>U 318</b>
	190	88		7.480	3.465	307	815	25.5	3.5	1 100	1 500	13	<b>53418 M</b>	<b>U 418</b>
<b>100</b>	150	45	<b>3.937</b>	5.906	1.772	124	345	11.4	0.62	1 800	2 400	2.7	<b>53220</b>	<b>U 220</b>
	170	64		6.693	2.520	229	610	19.6	1.9	1 400	1 900	5.95	<b>53320</b>	<b>U 320</b>
	210	98		8.268	3.858	371	1060	31.5	5.8	950	1 400	18	<b>53420 M</b>	<b>U 420</b>
<b>110</b>	160	45	<b>4.331</b>	6.299	1.772	130	390	12.5	0.79	1 700	2 400	2.91	<b>53222</b>	<b>U 222</b>
	190	72		7.480	2.835	276	780	24	3.2	1 200	1 700	9.1	<b>53322 M</b>	<b>U 322</b>
<b>120</b>	170	46	<b>4.724</b>	6.693	1.811	140	440	13.4	1	1 600	2 200	3.2	<b>53224</b>	<b>U 224</b>
	210	80		8.268	3.150	325	980	28.5	5	1 100	1 500	12.5	<b>53324 M</b>	<b>U 324</b>
<b>130</b>	190	53	<b>5.118</b>	7.480	2.087	186	585	17	1.8	1 400	2 000	4.85	<b>53226</b>	<b>U 226</b>
<b>140</b>	200	55	<b>5.512</b>	7.874	2.165	190	620	17.6	2	1 400	1 900	5.45	<b>53228</b>	<b>U 228</b>

## Double direction thrust ball bearings

d 10 - 70 mm

d 0.394 - 2.756 in



Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor $A$	Speed ratings		Mass kg	Designation
d	D	H	d	D	H	dynamic C	static $C_0$			Refer- ence speed	Limiting speed		
mm			in			kN		kN	—	r/min	kg		—
<b>10</b>	32	22	<b>0.394</b>	1.260	0.866	16.5	27	1	0.0038	7 000	10 000	0.081	<b>52202</b>
<b>15</b>	40	26	<b>0.591</b>	1.575	1.024	22.5	41	1.53	0.0085	6 000	8 000	0.15	<b>52204</b>
<b>20</b>	47	28	<b>0.787</b>	1.850	1.102	27.6	55	2.04	0.015	5 300	7 500	0.22	<b>52205</b>
	52	34		2.047	1.339	34.5	60	2.24	0.018	4 500	6 300	0.33	<b>52305</b>
	70	52		2.756	2.047	72.8	137	5.1	0.097	3 600	5 000	1	<b>52406</b>
<b>25</b>	52	29	<b>0.984</b>	2.047	1.142	25.5	51	1.9	0.013	4 800	6 700	0.25	<b>52206</b>
	60	38		2.362	1.496	37.7	71	2.65	0.026	3 800	5 300	0.47	<b>52306</b>
	80	59		3.150	2.323	87.1	170	6.2	0.15	3 000	4 300	1.45	<b>52407</b>
<b>30</b>	62	34	<b>1.181</b>	2.441	1.339	35.1	74	2.7	0.028	4 000	5 600	0.41	<b>52207</b>
	68	36		2.677	1.417	46.8	106	4	0.058	3 800	5 300	0.55	<b>52208</b>
	68	44		2.677	1.732	49.4	97	3.55	0.048	3 400	4 800	0.68	<b>52307</b>
	78	49		3.071	1.929	61.8	122	4.5	0.077	3 000	4 300	1.05	<b>52308</b>
90	65	3.543	2.559	112	224	8.3	0.26	2 400	3 400	2.05	<b>52408</b>		
<b>35</b>	73	37	<b>1.378</b>	2.874	1.457	39	87	3.2	0.038	3 600	5 000	0.6	<b>52209</b>
	85	52		3.346	2.047	76.1	153	5.6	0.12	2 800	4 000	1.25	<b>52309</b>
	100	72		3.937	2.835	130	265	9.8	0.37	2 200	3 000	2.7	<b>52409</b>
<b>40</b>	78	39	<b>1.575</b>	3.071	1.535	49.4	116	4.3	0.069	3 400	4 500	0.71	<b>52210</b>
	95	58		3.740	2.283	88.4	190	6.95	0.19	2 600	3 600	1.75	<b>52310</b>
<b>45</b>	90	45	<b>1.772</b>	3.543	1.772	61.8	146	5.4	0.11	2 800	4 000	1.1	<b>52211</b>
	105	64		4.134	2.520	104	224	8.3	0.26	2 200	3 200	2.4	<b>52311</b>
	120	87		4.724	3.425	178	390	14.3	0.79	1 800	2 400	4.7	<b>52411</b>
<b>50</b>	95	46	<b>1.969</b>	3.740	1.811	62.4	150	5.6	0.12	2 200	3 000	1.2	<b>52212</b>
	110	64		4.331	2.520	101	224	8.3	0.26	1 600	2 200	2.55	<b>52312</b>
	130	93		5.118	3.661	199	430	16	0.96	1 600	2 200	6.35	<b>52412 M</b>
<b>55</b>	100	47	<b>2.165</b>	3.937	1.850	63.7	163	6	0.14	2 600	3 600	1.35	<b>52213</b>
	105	47		4.134	1.850	65	173	6.4	0.16	2 600	3 600	1.5	<b>52214</b>
	115	65		4.528	2.559	106	240	8.8	0.3	2 000	3 000	2.75	<b>52313</b>
	125	72		4.921	2.835	135	320	11.8	0.53	1 900	2 600	3.65	<b>52314</b>
150	107	5.906	4.213	234	550	19.3	1.6	1 400	2 000	9.7	<b>52414 M</b>		
<b>60</b>	110	47	<b>2.362</b>	4.331	1.850	67.6	183	6.8	0.17	2 400	3 400	1.55	<b>52215</b>
	135	79		5.315	3.110	163	390	14	0.79	1 700	2 400	4.8	<b>52315</b>
<b>65</b>	115	48	<b>2.559</b>	4.528	1.890	76.1	208	7.65	0.22	2 400	3 400	1.7	<b>52216</b>
	140	79		5.512	3.110	159	390	13.7	0.79	1 700	2 400	4.94	<b>52316</b>
<b>70</b>	125	55	<b>2.756</b>	4.921	2.165	97.5	275	9.8	0.39	2 200	3 000	2.4	<b>52217</b>

## Double direction thrust ball bearings

d 75 - 150 mm

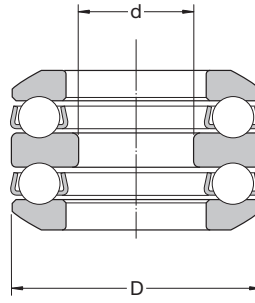
d 2.953 - 5.906 in

Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor A	Speed ratings		Mass	Designation
d	D	H	d	D	H	dynamic	static			Refer-ence speed	Limiting speed		
mm			in			kN		kN	–	r/min		kg	–
<b>75</b>	135	62	<b>2.953</b>	5.315	2.441	119	325	11.4	0.55	2 000	2 800	3.2	<b>52218</b>
<b>85</b>	150	67	<b>3.346</b>	5.906	2.638	124	345	11.4	0.62	1 800	2 400	4.2	<b>52220</b>
	170	97		6.693	3.819	229	610	19.6	1.9	1 400	1 900	8.95	<b>52320</b>
<b>95</b>	160	67	<b>3.740</b>	6.299	2.638	130	390	12.5	0.79	1 700	2 400	4.65	<b>52222</b>
<b>100</b>	170	68	<b>3.937</b>	6.693	2.677	140	440	13.4	1	1 600	2 200	5.25	<b>52224</b>
<b>110</b>	190	80	<b>4.331</b>	7.480	3.150	186	585	17	1.8	1 400	2 000	8	<b>52226</b>
<b>120</b>	200	81	<b>4.724</b>	7.874	3.189	190	620	17.6	2	1 400	1 900	8.65	<b>52228</b>
<b>130</b>	215	89	<b>5.118</b>	8.465	3.504	238	800	22	3.3	1 300	1 800	11.5	<b>52230 M</b>
<b>140</b>	225	90	<b>5.512</b>	8.858	3.543	242	850	22.8	3.8	1 200	1 700	12	<b>52232 M</b>
	250	98		9.449	3.819	286	1 020	26	5.4	1 100	1 600	15	<b>52234 M</b>
<b>150</b>	240	97	<b>5.906</b>	9.843	3.858	296	1 080	27.5	6.1	1 100	1 500	16	<b>52236 M</b>

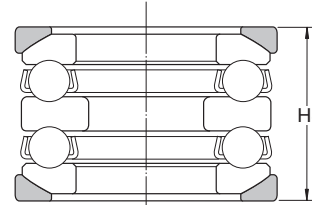
## Double direction thrust ball bearings with sphered housing washers

d 25 - 80 mm

d 0.984 - 3.150 in



Bearing



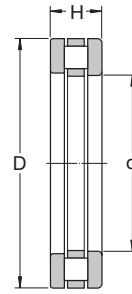
Seating washer

\* Bearing and seating washer ordered separately

Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor $A$	Speed ratings		Mass Bearing + washers kg	Designations*	
d	D	$H_1$	d	D	$H_1$	dynamic C	static $C_0$			Refer- ence speed	Limiting speed		Bearing	Seating washer
mm			in			kN		kN	–	r/min		kg	–	
25	60	46	0.984	2.362	1.811	37.7	71	2.65	0.026	3 800	5 300	0.58	54306	U 306
30	62	42	1.181	2.441	1.654	35.1	73.5	2.7	0.028	4 000	5 600	0.53	54207	U 207
	68	44		2.677	1.732	46.8	106	4	0.058	3 800	5 300	0.63	54208	U 208
	68	52		2.677	2.047	49.4	96.5	3.55	0.048	3 400	4 800	0.85	54307	U 307
	78	59		3.071	2.323	61.8	122	4.5	0.077	3 000	4 300	1.17	54308	U 308
35	73	45	1.378	2.874	1.772	39	86.5	3.2	0.038	3 600	5 000	0.78	54209	U 209
	85	62		3.346	2.441	76.1	153	5.6	0.12	2 800	4 000	1.6	54309	U 309
	100	86		3.937	3.386	130	265	9.8	0.37	2 200	3 000	3	54409	U 409
40	95	70	1.575	3.740	2.756	88.4	190	6.95	0.19	2 600	3 600	2.3	54310	U 310
	110	92		4.331	3.622	159	340	12.5	0.6	2 000	2 800	4.45	54410	U 410
45	90	55	1.772	3.543	2.165	61.8	146	5.4	0.11	2 800	4 000	1.3	54211	U 211
50	110	78	1.969	4.331	3.071	101	224	8.3	0.26	2 200	3 000	2.9	54312	U 312
	140	95		2.559	5.512	3.740	159	390	13.7	0.79	1 700	2 400	0.57	54316
65	170	140	2.559	6.693	5.512	270	670	22.4	2.3	1 200	1 700	1.4	54416 M	U 416
	70	150		2.756	5.906	4.134	190	465	16	1.1	1 600	2 200	7.95	54317
80	210	176	3.150	8.268	6.929	371	1 060	31.5	5.8	950	1 400	29	54420 M	U 420

# Cylindrical roller thrust bearings

d 15 - 100 mm  
d 0.591 - 3.937 in

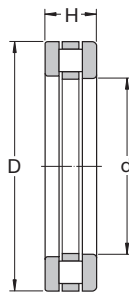


Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor A	Speed ratings		Mass	Designation
d	D	H	d	D	H	dynamic	static			Refer-ence speed	Limiting speed		
mm			in			kN		kN	–	r/min	kg	–	
15	28	9	0.591	1.102	0.354	11	27	2.45	0.000058	4 300	8 500	0.024	81102 TN
17	30	9	0.669	1.181	0.354	12	32	2.85	0.000079	4 300	8 500	0.027	81103 TN
20	35	10	0.787	1.378	0.394	19	48	4.65	0.00018	3 800	7 500	0.037	81104 TN
25	42	11	0.984	1.654	0.433	25	70	6.8	0.00039	3 200	6 300	0.053	81105 TN
30	47	11	1.181	1.850	0.433	27	78	7.65	0.00049	3 000	6 000	0.057	81106 TN
	52	16		2.047	0.630	50	134	13.4	0.0014	2 400	4 800	0.12	81206 TN
35	52	12	1.378	2.047	0.472	29	93	9.15	0.00069	2 800	5 600	0.073	81107 TN
	62	18		2.441	0.709	62	190	19.3	0.0029	2 000	4 000	0.2	81207 TN
40	60	13	1.575	2.362	0.512	43	137	13.7	0.0015	2 400	5 000	0.11	81108 TN
	68	19		2.677	0.748	83	255	26.5	0.0052	1 900	3 800	0.25	81208 TN
45	65	14	1.772	2.559	0.551	45	153	15.3	0.0019	2 200	4 500	0.13	81109 TN
	73	20		2.874	0.787	87	270	28	0.0058	1 800	3 600	0.29	81209 TN
50	70	14	1.969	2.756	0.551	48	166	16.6	0.0022	2 200	4 300	0.14	81110 TN
	78	22		3.071	0.866	92	300	31	0.0072	1 700	3 400	0.36	81210 TN
55	78	16	2.165	3.071	0.630	70	285	29	0.0065	1 900	3 800	0.22	81111 TN
	90	25		3.543	0.984	122	390	40	0.012	1 400	2 800	0.57	81211 TN
60	85	17	2.362	3.346	0.669	80	300	30.5	0.0072	1 800	3 600	0.27	81112 TN
	95	26		3.740	1.024	137	465	47.5	0.017	1 400	2 800	0.64	81212 TN
65	90	18	2.559	3.543	0.709	83	320	32.5	0.0082	1 700	3 400	0.31	81113 TN
	100	27		3.937	1.063	140	490	50	0.019	1 300	2 600	0.72	81213 TN
70	95	18	2.756	3.740	0.709	87	345	34.5	0.0095	1 600	3 200	0.33	81114 TN
	105	27		4.134	1.063	146	530	55	0.022	1 300	2 600	0.77	81214 TN
75	100	19	2.953	3.937	0.748	75	290	29	0.0067	1 600	3 200	0.39	81115 TN
	110	27		4.331	1.063	125	440	45	0.015	1 200	2 400	0.8	81215 TN
80	105	19	3.150	4.134	0.748	77	300	30.5	0.0072	1 500	3 000	0.4	81116 TN
	115	28		4.528	1.102	160	610	63	0.029	1 200	2 400	0.9	81216 TN
85	110	19	3.346	4.331	0.748	88	365	37.5	0.01	1 500	3 000	0.42	81117 TN
	125	31		4.921	1.220	153	550	57	0.024	1 100	2 200	1.25	81217 TN
90	120	22	3.543	4.724	0.866	104	415	42.5	0.013	1 300	2 600	0.62	81118 TN
	135	35		5.315	1.378	232	865	90	0.059	1 000	2 000	1.75	81218 TN
100	135	25	3.937	5.315	0.984	146	585	57	0.027	1 200	2 400	0.95	81120 TN
	150	38		5.906	1.496	224	830	81.5	0.055	900	1 800	2.2	81220 TN

# Cylindrical roller thrust bearings

d 110 - 320 mm

d 4.331 - 12.598 in



Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor A	Speed ratings		Mass	Designation
d	D	H	d	D	H	C	$C_0$			Refer-ence speed	Limiting speed		
mm			in			kN		kN	–	r/min	kg	–	
110	145	25	4.331	5.709	0.984	153	630	61	0.031	1 100	2 200	1.05	81122 TN
	160	38		6.299	1.496	240	915	90	0.066	850	1 700	2.3	81222 TN
120	155	25	4.724	6.102	0.984	160	680	64	0.036	1 100	2 200	1.1	81124 TN
	170	39		6.693	1.535	245	965	91.5	0.074	800	1 600	2.55	81224 TN
130	170	30	5.118	6.693	1.181	183	780	73.5	0.048	950	1 900	1.7	81126 TN
	190	45		7.480	1.772	380	146	137	0.17	700	1 400	4.2	81226 TN
140	180	31	5.512	7.087	1.220	193	850	76.5	0.057	900	1 800	1.9	81128 TN
	200	46		7.874	1.811	360	1 400	129	0.16	700	1 400	4.55	81228 M
150	190	31	5.906	7.480	1.220	200	900	81.5	0.064	850	1 700	2	81130 TN
	215	50		8.465	1.969	465	1 900	170	0.29	630	1 300	5.9	81230 M
160	200	31	6.299	7.874	1.220	216	1 020	90	0.083	850	1 700	2.2	81132 TN
	225	51		8.858	2.008	480	2 000	176	0.32	600	1 200	6.2	81232 M
170	215	34	6.693	8.465	1.339	260	1 180	104	0.11	800	1 600	2.95	81134 TN
	240	55		9.449	2.165	540	2 280	200	0.42	560	1 100	7.7	81234 M
180	225	34	7.087	8.858	1.339	270	1 270	110	0.13	750	1 500	3.05	81136 M
	250	56		9.843	2.205	550	2 400	204	0.46	560	1 100	8.25	81236 M
190	240	37	7.480	9.449	1.457	310	1 460	125	0.17	700	1 400	3.85	81138 M
	270	62		10.630	2.441	695	2 900	250	0.67	500	1 000	10.5	81238 M
200	250	37	7.874	9.843	1.457	310	1 500	127	0.18	700	1 400	4	81140 M
	280	62		11.024	2.441	720	3 100	255	0.77	500	1 000	12	81240 M
220	270	37	8.661	10.630	1.457	335	1 700	137	0.23	670	1 300	4.5	81144 M
	300	63		11.811	2.480	750	3 350	275	0.9	480	950	13	81244 M
240	300	45	9.449	11.811	1.772	475	2 450	196	0.48	560	1 100	7.25	81148 M
	340	78		13.386	3.071	1 100	4 900	390	1.9	400	800	22	81248 M
260	320	45	10.236	12.598	1.772	490	2 600	200	0.54	530	1 100	7.85	81152 M
	360	79		14.173	3.110	1 140	5 300	415	2.2	380	750	24	81252 M
280	350	53	11.024	13.780	2.087	680	3 550	275	1	480	950	10.5	81156 M
	380	80		14.961	3.150	1 160	5 500	425	2.4	360	750	26	81256 M
300	380	62	11.811	14.961	2.441	850	4 400	335	1.5	430	850	16.5	81160 M
	420	95		16.535	3.740	1 530	7 200	540	4.1	320	630	40.5	81260 M
320	400	63	12.598	15.748	2.480	880	4 650	345	1.7	400	800	18	81164 M
	440	95		17.323	3.740	1 560	7 500	550	4.5	300	600	42.5	81264 M

## Cylindrical roller thrust bearings

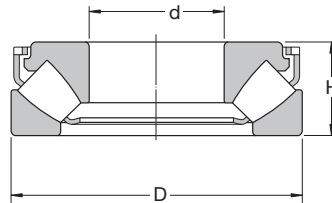
d 340 - 630 mm  
d 13.386 - 24.803 in

Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor A	Speed ratings		Mass	Designation
d	D	H	d	D	H	dynamic	static			Refer-ence speed	Limiting speed		
mm			in			kN		kN	–	r/min	kg	–	
<b>340</b>	420	64	<b>13.386</b>	16.535	2.520	900	4 900	355	1.9	380	800	19.5	<b>81168 M</b>
	460	96		18.110	3.780	1 630	8 000	585	5.1	300	600	47	<b>81268 M</b>
<b>360</b>	440	65	<b>14.173</b>	17.323	2.559	900	4 900	355	1.9	380	750	19.5	<b>81172 M</b>
	500	110		19.685	4.331	2 160	10 400	750	8.7	260	530	65.5	<b>81272 M</b>
<b>380</b>	460	65	<b>14.961</b>	18.110	2.559	930	5 300	375	2.2	360	750	22	<b>81176 M</b>
<b>400</b>	480	65	<b>15.748</b>	18.898	2.559	965	5 600	390	2.5	360	700	23	<b>81180 M</b>
<b>420</b>	500	65	<b>16.535</b>	19.685	2.559	980	5 850	400	2.7	340	700	24	<b>81184 M</b>
<b>440</b>	540	80	<b>17.323</b>	21.260	3.150	1 430	8 000	550	5.1	300	600	39.5	<b>81188 M</b>
<b>460</b>	560	80	<b>18.110</b>	22.047	3.150	1 460	8 500	570	5.8	300	600	41	<b>81192 M</b>
<b>480</b>	580	80	<b>18.898</b>	22.835	3.150	1 460	8 650	585	6	280	560	43	<b>81196 M</b>
<b>500</b>	600	80	<b>19.685</b>	23.622	3.150	1 560	9 300	620	6.9	280	560	44	<b>811/500 M</b>
<b>530</b>	640	85	<b>20.866</b>	25.197	3.346	1 730	10 600	680	9	260	530	55.5	<b>811/530 M</b>
<b>560</b>	670	85	<b>22.047</b>	26.378	3.346	1 760	11 100	710	9.7	260	500	58	<b>811/560 M</b>
<b>600</b>	710	85	<b>23.622</b>	27.953	3.346	1 800	11 600	720	11	240	500	62	<b>811/600 M</b>
<b>630</b>	750	95	<b>24.803</b>	29.528	3.740	2 160	13 700	865	15	220	450	80	<b>811/630 M</b>

# Spherical roller thrust bearings

d 60 - 190 mm

d 2.362 - 7.480 in



Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor A	Speed ratings		Mass	Designation
d	D	H	d	D	H	C	$C_0$			Refer-ence speed	Limiting speed		
mm			in			kN		kN	–	r/min	kg	–	
60	130	42	2.362	5.118	1.654	390	915	114	0.08	2 800	5 000	2.6	* 29412 E
65	140	45	2.559	5.512	1.772	455	1 080	137	0.11	2 600	4 800	3.2	* 29413 E
70	150	48	2.756	5.906	1.890	520	1 250	153	0.15	2 400	4 300	3.9	* 29414 E
75	160	51	2.953	6.299	2.008	600	1 430	173	0.19	2 400	4 000	4.7	* 29415 E
80	170	54	3.150	6.693	2.126	670	1 630	193	0.25	2 200	3 800	5.6	* 29416 E
85	150	39	3.346	5.906	1.535	380	1 060	129	0.11	2 400	4 000	2.75	* 29317 E
	180	58		7.087	2.283	735	1 800	212	0.31	2 000	3 600	6.75	* 29417 E
90	155	39	3.543	6.102	1.535	400	1 080	132	0.11	2 400	4 000	2.85	* 29318 E
	190	60		7.480	2.362	815	2 000	232	0.38	1 900	3 400	7.75	* 29418 E
100	170	42	3.937	6.693	1.654	465	1 290	156	0.16	2 200	3 600	3.65	* 29320 E
	210	67		8.268	2.638	980	2 500	275	0.59	1 700	3 000	10.5	* 29420 E
110	190	48	4.331	7.480	1.890	610	1 730	204	0.28	1 900	3 200	5.3	* 29322 E
	230	73		9.055	2.874	1 180	3 000	325	0.86	1 600	2 800	13.5	* 29422 E
120	210	54	4.724	8.268	2.126	765	2 120	245	0.43	1 700	2 800	7.35	* 29324 E
	250	78		9.843	3.071	1 370	3 450	375	1.1	1 500	2 600	17.5	* 29424 E
130	225	58	5.118	8.858	2.283	865	2 500	280	0.59	1 600	2 600	9	* 29326 E
	270	85		10.630	3.346	1 560	4 050	430	1.6	1 300	2 400	22	* 29426 E
140	240	60	5.512	9.449	2.362	980	2 850	315	0.77	1 500	2 600	10.5	* 29328 E
	280	85		11.024	3.346	1 630	4 300	455	1.8	1 300	2 400	23	* 29428 E
150	215	39	5.906	8.465	1.535	408	1 600	180	0.24	1 800	2 800	4.3	29230 E
	250	60		9.843	2.362	1 000	2 850	315	0.77	1 500	2 400	11	* 29330 E
	300	90		11.811	3.543	1 860	5 100	520	2.5	1 200	2 200	28	* 29430 E
160	270	67	6.299	10.630	2.638	1 180	3 450	375	1.1	1 300	2 200	14.5	* 29332 E
	320	95		12.598	3.740	2 080	5 600	570	3	1 100	2 000	33.5	* 29432 E
170	280	67	6.693	11.024	2.638	1 200	3 550	365	1.2	1 300	2 200	15	* 29334 E
	340	103		13.386	4.055	2 360	6 550	640	4.1	1 100	1 900	44.5	* 29434 E
180	250	42	7.087	9.843	1.654	495	2 040	212	0.4	1 600	2 600	5.8	29236 E
	300	73		11.811	2.874	1 430	4 300	440	1.8	1 200	2 000	19.5	* 29336 E
	360	109		14.173	4.291	2 600	7 350	710	5.1	1 000	1 800	52.5	* 29436 E
190	320	78	7.480	12.598	3.071	1 630	4 750	490	2.1	1 100	1 900	23.5	* 29338 E
	380	115		14.961	4.528	2 850	8 000	765	6.1	950	1 700	60.5	* 29438 E

\* SKF Explorer Bearing



# Spherical roller thrust bearings

d 200 - 420 mm  
d 7.874 - 16.535 in

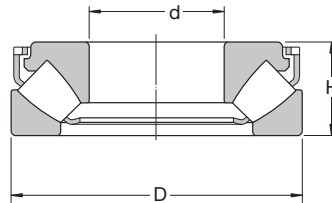
Principal dimensions						Basic load ratings		Fatigue load limit P <sub>u</sub>	Minimum load factor A	Speed ratings		Mass kg	Designation
d	D	H	d	D	H	dynamic	static			Refer-ence speed	Limiting speed		
mm			in			kN		kN	–	r/min		–	
200	280	48	7.874	11.024	1.890	656	2 650	285	0.67	1 400	2 200	9.3	29240 E
	340	85		13.386	3.346	1 860	5 500	550	2.9	1 000	1 700	29.5	* 29340 E
	400	122		15.748	4.803	3 200	9 000	850	7.7	850	1 600	72	* 29440 E
220	300	48	8.661	11.811	1.890	690	3 000	310	0.86	1 300	2 200	10	29244 E
	360	85		14.173	3.346	2 000	6 300	610	3.8	1 000	1 700	33.5	* 29344 E
	420	122		16.535	4.803	3 350	9 650	900	8.8	850	1 500	75	* 29444 E
240	340	60	9.449	13.386	2.362	799	3 450	335	1.1	1 100	1 800	16.5	29248
	380	85		14.961	3.346	2 040	6 550	630	4.1	1 000	1 600	35.5	* 29348 E
	440	122		17.323	4.803	3 400	10 200	930	9.9	850	1 500	80	* 29448 E
260	360	60	10.236	14.173	2.362	817	3 650	345	1.3	1 100	1 700	18.5	29252
	420	95		16.535	3.740	2 550	8 300	780	6.5	850	1 400	49	* 29352 E
	480	132		18.898	5.197	4 050	12 900	1 080	16	750	1 300	105	* 29452 E
280	380	60	11.024	14.961	2.362	863	4 000	375	1.5	1 000	1 700	19.5	29256
	440	95		17.323	3.740	2 550	8 650	800	7.1	850	1 400	53	* 29356 E
	520	145		20.472	5.709	4 900	15 300	1 320	22	670	1 200	135	* 29456 E
300	420	73	11.811	16.535	2.874	1 070	4 800	465	2.2	900	1 400	30.5	29260
	480	109		18.898	4.291	3 100	10 600	930	11	750	1 200	75	* 29360 E
	540	145		21.260	5.709	4 310	16 600	1 340	26	600	1 200	140	29460 E
320	440	73	12.598	17.323	2.874	1 110	5 100	465	2.5	850	1 400	33	29264
	500	109		19.685	4.291	3 350	11 200	1 000	12	750	1 200	78	* 29364 E
	580	155		22.835	6.102	4 950	19 000	1 530	34	560	1 100	175	29464 E
340	460	73	13.386	18.110	2.874	1 130	5 400	480	2.8	850	1 300	33.5	29268
	540	122		21.260	4.803	2 710	11 000	950	11	600	1 100	105	29368
	620	170		24.409	6.693	5 750	22 400	1 760	48	500	1 000	220	29468 E
360	500	85	14.173	19.685	3.346	1 460	6 800	585	4.4	750	1 200	52	29272
	560	122		22.047	4.803	2 760	11 600	980	13	600	1 100	110	29372
	640	170		25.197	6.693	5 350	21 200	1 630	43	500	950	230	29472 EM
380	520	85	14.961	20.472	3.346	1 580	7 650	655	5.6	700	1 100	53	29276
	600	132		23.622	5.197	3 340	14 000	1 160	19	530	1 000	140	29376
	670	175		26.378	6.890	5 870	24 000	1 860	55	480	900	260	29476 EM
400	540	85	15.748	21.260	3.346	1 610	8 000	695	6.1	700	1 100	55.5	29280
	620	132		24.409	5.197	3 450	14 600	1 200	20	530	950	150	29380
	710	185		27.953	7.283	6 560	26 500	1 960	67	450	850	310	29480 EM
420	580	95	16.535	22.835	3.740	1 990	9 800	815	9.1	630	1 000	75.5	29284
	650	140		25.591	5.512	3 740	16 000	1 290	24	500	900	170	29384
	730	185		28.740	7.283	6 730	27 500	2 080	72	430	850	325	29484 EM

\* SKF Explorer Bearing

# Spherical roller thrust bearings

d 440 - 900 mm

d 17.323 - 35.433 in



Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor A	Speed ratings		Mass	Designation
d	D	H	d	D	H	dynamic	static			Refer-ence speed	Limiting speed		
mm			in			kN		kN	–	r/min	kg	–	
<b>440</b>	600	95	<b>17.323</b>	23.622	3.740	2 070	10 400	850	10	630	1 000	78	<b>29288</b>
	680	145		26.772	5.709	4 490	19 300	1 560	35	480	850	180	<b>29388 EM</b>
	780	206		30.709	8.110	7 820	32 000	2 320	87	380	750	410	<b>29488 EM</b>
<b>460</b>	620	95	<b>18.110</b>	24.409	3.740	2 070	10 600	865	11	600	950	81	<b>29292</b>
	710	150		27.953	5.906	4 310	19 000	1 500	34	450	800	215	<b>29392</b>
	800	206		31.496	8.110	7 990	33 500	2 450	110	380	750	425	<b>29492 EM</b>
<b>480</b>	650	103	<b>18.898</b>	25.591	4.055	2 350	11 800	950	13	560	900	98	<b>29296</b>
	730	150		28.740	5.906	4 370	19 600	1 530	36	450	800	220	<b>29396</b>
	850	224		33.465	8.819	9 550	39 000	2 800	140	340	670	550	<b>29496 EM</b>
<b>500</b>	670	103	<b>19.685</b>	26.378	4.055	2 390	12 500	1 000	15	560	900	100	<b>292/500</b>
	750	150		29.528	5.906	4 490	20 400	1 560	40	430	800	235	<b>293/500</b>
	870	224		34.252	8.819	9 370	40 000	2 850	150	340	670	560	<b>294/500 EM</b>
<b>530</b>	710	109	<b>20.866</b>	27.953	4.291	3 110	15 300	1 220	22	530	850	115	<b>292/530 EM</b>
	800	160		31.496	6.299	5 230	23 600	1 800	53	400	750	270	<b>293/530</b>
	920	236		36.220	9.291	10 500	44 000	3 100	180	320	630	650	<b>294/530 EM</b>
<b>560</b>	750	115	<b>22.047</b>	29.528	4.528	2 990	16 000	1 220	24	480	800	140	<b>292/560</b>
	980	250		38.583	9.843	12 000	51 000	3 550	250	300	560	810	<b>294/560 EM</b>
<b>600</b>	800	122	<b>23.622</b>	31.496	4.803	3 740	18 600	1 460	33	450	700	170	<b>292/600 EM</b>
	900	180		35.433	7.087	7 530	34 500	2 600	110	340	630	405	<b>293/600</b>
	1030	258		40.551	10.157	13 100	56 000	4 000	300	280	530	845	<b>294/600 EM</b>
<b>630</b>	850	132	<b>24.803</b>	33.465	5.197	4 770	23 600	1 800	53	400	670	210	<b>292/630 EM</b>
	950	190		37.402	7.480	8 450	38 000	2 900	140	320	600	485	<b>293/630 EM</b>
	1 090	280		42.913	11.024	14 400	62 000	4 150	370	260	500	1 040	<b>294/630 EM</b>
<b>670</b>	900	140	<b>26.378</b>	35.433	5.512	4 200	22 800	1 660	49	380	630	255	<b>292/670</b>
	1 150	290		45.276	11.417	15 400	68 000	4 500	440	240	450	1 210	<b>294/670 EM</b>
<b>710</b>	1 060	212	<b>27.953</b>	41.732	8.346	9 950	45 500	3 400	200	280	500	660	<b>293/710 EM</b>
	1 220	308		48.031	12.126	17 600	76 500	5 000	560	220	430	1 500	<b>294/710 EF</b>
<b>750</b>	1 000	150	<b>29.528</b>	39.370	5.906	6 100	31 000	2 320	91	340	560	325	<b>292/750 EM</b>
	1 120	224		44.094	8.819	9 370	45 000	3 050	190	260	480	770	<b>293/750</b>
	1 280	315		50.394	12.402	18 700	85 000	5 500	690	200	400	1 650	<b>294/750 EF</b>
<b>800</b>	1 060	155	<b>31.496</b>	41.732	6.102	6 560	34 500	2 550	110	320	530	380	<b>292/800 EM</b>
	1 180	230		46.457	9.055	9 950	49 000	3 250	230	240	450	865	<b>293/800</b>
	1 360	335		53.543	13.189	20 200	93 000	5 850	820	190	360	2 025	<b>294/800 EF</b>
<b>850</b>	1 120	160	<b>33.465</b>	44.094	6.299	6 730	36 000	2 550	120	300	500	425	<b>292/850 EM</b>
	1 440	354		56.693	13.937	23 900	108 000	7 100	1 100	170	340	2 390	<b>294/850 EF</b>
<b>900</b>	1 520	372	<b>35.433</b>	59.842	14.646	26 700	122 000	7 200	1 400	160	300	2 650	<b>294/900 EF</b>

## Spherical roller thrust bearings

d 950 - 1600 mm

d 37.402 - 62.992 in

Principal dimensions						Basic load ratings		Fatigue load limit $P_u$	Minimum load factor A	Speed ratings		Mass	Designation
d	D	H	d	D	H	dynamic	static			Reference speed	Limiting speed		
mm			in			kN		kN	–	r/min	kg	–	
<b>950</b>	1 250	180	<b>37.402</b>	49.213	7.087	8 280	45 500	3 100	200	260	430	600	<b>292/950 EM</b>
	1 600	390		62.992	15.354	28 200	132 000	7 800	1 700	140	280	3 065	
<b>1 060</b>	1 400	206	<b>41.732</b>	55.118	8.110	10 500	58 500	3 750	330	220	360	860	<b>292/1060 EF</b>
	1 770	426		69.685	16.772	33 400	156 000	8 500	2 300	120	240	4 280	
<b>1 180</b>	1 520	206	<b>46.457</b>	59.842	8.110	10 900	64 000	3 750	390	220	340	950	<b>292/1180 EF</b>
<b>1 250</b>	1 800	330	<b>49.213</b>	70.866	12.992	24 800	129 000	7 500	1 600	130	240	2 770	<b>293/1250 EF</b>
<b>1 600</b>	2 280	408	<b>62.992</b>	89.764	16.063	36 800	200 000	11 800	3 800	90	160	5 375	<b>293/1600 EF</b>

