

# KOYO

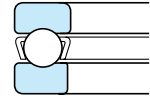


# Thrust ball bearings

Thrust ball bearings are divided into single and double direction types. The former is able to accommodate axial load in one direction, while the latter is able to accommodate it in both directions.

Neither is suitable for applications that involve radial load or high-speed rotation.

## Thrust ball bearings

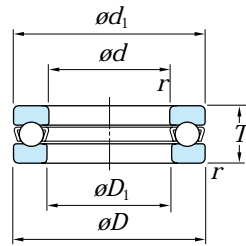


Bore diameter **10 – 200 mm**

Boundary dimensions	As specified in JIS B 1512.																				
Tolerances	As specified in JIS B 1514.																				
Standard cages	<ul style="list-style-type: none"> <li>• Pressed steel cage (supplementary code : //)</li> <li>• Copper alloy or carbon steel machined cage (supplementary code : FY or FC)</li> <li>• Polyamide resin molded cage (supplementary code : MG)</li> </ul> <p><b>Application of standard cages</b></p> <table border="1"> <thead> <tr> <th>Bearing series</th> <th>Molded cage</th> <th>Pressed cage</th> <th>Machined cage</th> </tr> </thead> <tbody> <tr> <td>511</td> <td>51100 - 51107</td> <td>51108 - 51132</td> <td>51134 - 51172</td> </tr> <tr> <td>512</td> <td>51200 - 51207</td> <td>51208 - 51224</td> <td>51226 - 51272</td> </tr> <tr> <td>513</td> <td>–</td> <td>51305 - 51313</td> <td>51314 - 51340</td> </tr> <tr> <td>514</td> <td>–</td> <td>51405 - 51414</td> <td>–</td> </tr> </tbody> </table>	Bearing series	Molded cage	Pressed cage	Machined cage	511	51100 - 51107	51108 - 51132	51134 - 51172	512	51200 - 51207	51208 - 51224	51226 - 51272	513	–	51305 - 51313	51314 - 51340	514	–	51405 - 51414	–
Bearing series	Molded cage	Pressed cage	Machined cage																		
511	51100 - 51107	51108 - 51132	51134 - 51172																		
512	51200 - 51207	51208 - 51224	51226 - 51272																		
513	–	51305 - 51313	51314 - 51340																		
514	–	51405 - 51414	–																		
Required minimum axial load	A certain degree of load is necessary in order for bearings to operate satisfactorily.																				
Allowable misalignment	Misalignment not allowed. (for flat back face type)																				
Equivalent axial load	Dynamic equivalent axial load $P_a = F_a$ Static equivalent axial load $P_{0a} = F_a$																				

# Thrust ball bearings

$d$  10 – 45 mm



Boundary dimensions (mm)				Basic load ratings (kN)		Limiting speeds (min <sup>-1</sup> )		Bearing No.	Dimensions (mm)		(Refer.) Mass (kg)
$d$	$D$	$T$	$r$ min.	$C_a$	$C_{0a}$	Grease lub.	Oil lub.		$d_1$ max.	$D_1$ min.	
10	24	9	0.3	10.0	14.0	6 500	10 000	51100 51200	24	11	0.020
	26	11	0.6	12.7	17.1	5 700	8 800		26	12	0.030
12	26	9	0.3	9.65	14.0	6 500	10 000	51101 51201	26	13	0.022
	28	11	0.6	13.2	19.0	5 400	8 300		28	14	0.034
15	28	9	0.3	9.95	15.4	6 100	9 400	51102 51202	28	16	0.024
	32	12	0.6	16.6	24.8	4 900	7 500		32	17	0.046
17	30	9	0.3	10.8	18.2	6 100	9 400	51103 51203	30	18	0.028
	35	12	0.6	17.2	27.3	4 900	7 500		35	19	0.053
20	35	10	0.3	14.2	24.7	5 100	7 900	51104 51204	35	21	0.040
	40	14	0.6	22.3	37.7	3 900	6 000		40	22	0.082
25	42	11	0.6	19.5	37.2	4 400	6 800	51105 51205 51305	42	26	0.059
	47	15	0.6	27.8	50.4	3 600	5 500		47	27	0.120
	52	18	1	35.7	61.4	3 100	4 800		52	27	0.180
30	60	24	1	55.6	89.4	2 600	4 000	51405 51106 51206 51306	60	27	0.340
	47	11	0.6	20.4	42.2	4 300	6 600		47	32	0.068
	52	16	0.6	29.4	58.2	3 400	5 200		52	32	0.150
	60	21	1	42.8	78.7	2 700	4 200		60	32	0.270
35	70	28	1	72.8	126	2 200	3 400	51406 51107 51207 51307	70	32	0.530
	52	12	0.6	21.2	47.2	3 900	6 000		52	37	0.090
	62	18	1	39.2	78.2	2 900	4 500		62	37	0.220
	68	24	1	55.5	105	2 400	3 700		68	37	0.390
40	80	32	1.1	87.1	155	1 900	2 900	51407 51108 51208 51308	80	37	0.790
	60	13	0.6	26.9	62.8	3 400	5 300		60	42	0.120
	68	19	1	47.0	98.3	2 700	4 200		68	42	0.270
	78	26	1	69.3	135	2 100	3 300		78	42	0.550
45	90	36	1.1	113	205	1 700	2 600	51408 51109 51209 51309	90	42	1.14
	65	14	0.6	27.8	69.1	3 200	5 000		65	47	0.150
	73	20	1	47.7	105	2 600	4 000		73	47	0.320
	85	28	1	80.0	163	1 900	3 000		85	47	0.690
100	39	1.1	130	242	1 500	2 300	51409	100	47	1.47	

Remark) Standard cage types used for the above bearings are described earlier in this section.

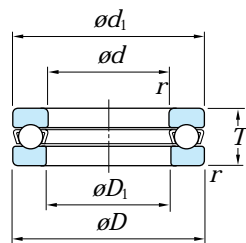
## *d* 50 – 120 mm

	Boundary dimensions (mm)			Basic load ratings (kN)		Limiting speeds (min <sup>-1</sup> )		Bearing No.	Dimensions (mm)		(Refer.) Mass (kg)
	<i>d</i>	<i>D</i>	<i>T</i>	<i>r</i> min.	<i>C<sub>a</sub></i>	<i>C<sub>0a</sub></i>	Grease lub.		Oil lub.	<i>d</i> <sub>1</sub> max.	
<b>50</b>	70	14	0.6	28.8	75.4	3 100	4 800	<b>51110</b>	70	52	0.160
	78	22	1	48.5	111	2 300	3 600	<b>51210</b>	78	52	0.390
	95	31	1.1	96.6	202	1 800	2 700	<b>51310</b>	95	52	1.00
	110	43	1.5	148	283	1 400	2 100	<b>51410</b>	110	52	1.99
<b>55</b>	78	16	0.6	34.8	93.1	2 800	4 300	<b>51111</b>	78	57	0.240
	90	25	1	69.4	159	2 100	3 200	<b>51211</b>	90	57	0.610
	105	35	1.1	119	246	1 600	2 400	<b>51311</b>	105	57	1.34
	120	48	1.5	180	349	1 200	1 900	<b>51411</b>	120	57	2.64
<b>60</b>	85	17	1	41.4	113	2 600	4 000	<b>51112</b>	85	62	0.290
	95	26	1	73.6	179	1 900	3 000	<b>51212</b>	95	62	0.690
	110	35	1.1	124	267	1 500	2 300	<b>51312</b>	110	62	1.43
	130	51	1.5	214	437	1 100	1 700	<b>51412</b>	130	62	3.51
<b>65</b>	90	18	1	41.7	117	2 400	3 700	<b>51113</b>	90	67	0.340
	100	27	1	74.9	189	1 900	2 900	<b>51213</b>	100	67	0.770
	115	36	1.1	128	287	1 400	2 200	<b>51313</b>	115	67	1.57
	140	56	2	232	493	1 000	1 600	<b>51413</b>	140	68	4.47
<b>70</b>	95	18	1	43.1	127	2 300	3 600	<b>51114</b>	95	72	0.360
	105	27	1	76.1	199	1 800	2 800	<b>51214</b>	105	72	0.810
	125	40	1.1	134	291	1 300	2 000	<b>51314</b>	125	72	2.06
	150	60	2	250	553	940	1 450	<b>51414</b>	150	73	5.48
<b>75</b>	100	19	1	44.4	136	2 200	3 400	<b>51115</b>	100	77	0.420
	110	27	1	77.4	209	1 800	2 700	<b>51215</b>	110	77	0.860
	135	44	1.5	154	339	1 200	1 900	<b>51315</b>	135	77	2.68
<b>80</b>	105	19	1	44.7	141	2 100	3 300	<b>51116</b>	105	82	0.430
	115	28	1	78.5	218	1 700	2 600	<b>51216</b>	115	82	0.950
	140	44	1.5	160	368	1 200	1 800	<b>51316</b>	140	82	2.82
<b>85</b>	110	19	1	45.9	150	2 100	3 200	<b>51117</b>	110	87	0.460
	125	31	1	95.4	264	1 500	2 300	<b>51217</b>	125	88	1.29
	150	49	1.5	186	419	1 100	1 700	<b>51317</b>	150	88	3.66
<b>90</b>	120	22	1	59.7	190	1 900	2 900	<b>51118</b>	120	92	0.680
	135	35	1.1	117	326	1 400	2 100	<b>51218</b>	135	93	1.77
	155	50	1.5	193	454	1 000	1 600	<b>51318</b>	155	93	3.88
<b>100</b>	135	25	1	85.0	268	1 600	2 500	<b>51120</b>	135	102	0.990
	150	38	1.1	147	410	1 200	1 900	<b>51220</b>	150	103	2.36
	170	55	1.5	226	556	940	1 450	<b>51320</b>	170	103	5.11
<b>110</b>	145	25	1	87.1	288	1 600	2 400	<b>51122</b>	145	112	1.08
	160	38	1.1	153	451	1 200	1 800	<b>51222</b>	160	113	2.57
	190	63	2	267	704	810	1 250	<b>51322</b>	187	113	7.72
<b>120</b>	155	25	1	89.0	308	1 500	2 300	<b>51124</b>	155	122	1.16
	170	39	1.1	154	472	1 100	1 700	<b>51224</b>	170	123	2.86
	210	70	2.1	311	869	710	1 100	<b>51324</b>	205	123	10.6

Remark) Standard cage types used for the above bearings are described earlier in this section.

# Thrust ball bearings

***d* 130 – 200 mm**



Boundary dimensions (mm)				Basic load ratings (kN)		Limiting speeds (min <sup>-1</sup> )		Bearing No.	Dimensions (mm)		(Refer.) Mass (kg)
<i>d</i>	<i>D</i>	<i>T</i>	<i>r</i> min.	<i>C<sub>a</sub></i>	<i>C<sub>0a</sub></i>	Grease lub.	Oil lub.		<i>d</i> <sub>1</sub> max.	<i>D</i> <sub>1</sub> min.	
<b>130</b>	170	30	1	104	352	1 300	2 000	<b>51126</b>	170	132	1.87
	190	45	1.5	191	566	970	1 500	<b>51226</b>	187	133	4.09
	225	75	2.1	330	958	650	1 000	<b>51326</b>	220	134	13.0
<b>140</b>	180	31	1	107	377	1 200	1 900	<b>51128</b>	178	142	2.02
	200	46	1.5	187	566	940	1 450	<b>51228</b>	197	143	4.46
	240	80	2.1	350	1 050	620	950	<b>51328</b>	235	144	15.5
<b>150</b>	190	31	1	109	402	1 200	1 900	<b>51130</b>	188	152	2.15
	215	50	1.5	213	652	840	1 300	<b>51230</b>	212	153	5.64
	250	80	2.1	361	1 130	580	900	<b>51330</b>	245	154	16.3
<b>160</b>	200	31	1	112	427	1 200	1 800	<b>51132</b>	198	162	2.28
	225	51	1.5	223	718	810	1 250	<b>51232</b>	222	163	6.53
	270	87	3	410	1 340	550	850	<b>51332</b>	265	164	21.0
<b>170</b>	215	34	1.1	131	496	1 100	1 700	<b>51134</b>	213	172	3.25
	240	55	1.5	261	834	750	1 150	<b>51234</b>	237	173	8.12
	280	87	3	463	1 570	520	800	<b>51334</b>	275	174	22.0
<b>180</b>	225	34	1.1	129	496	1 000	1 600	<b>51136</b>	222	183	3.39
	250	56	1.5	265	874	710	1 100	<b>51236</b>	247	183	8.68
	300	95	3	463	1 580	490	750	<b>51336</b>	295	184	28.1
<b>190</b>	240	37	1.1	163	616	970	1 500	<b>51138</b>	237	193	3.95
	270	62	2	308	1 060	650	1 000	<b>51238</b>	267	194	11.7
	320	105	4	543	1 950	440	680	<b>51338</b>	315	195	36.0
<b>200</b>	250	37	1.1	168	657	940	1 450	<b>51140</b>	247	203	4.13
	280	62	2	314	1 110	620	950	<b>51240</b>	277	204	12.2
	340	110	4	596	2 220	420	650	<b>51340</b>	335	205	42.9

Remark) Standard cage types used for the above bearings are described earlier in this section.