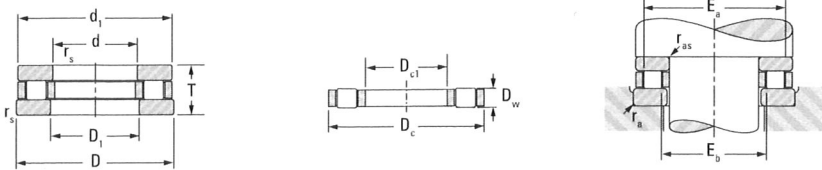


THRUST CYLINDRICAL ROLLER AND CAGE ASSEMBLIES, THRUST WASHERS
METRIC SERIES



Shaft Dia.	Assembly Dimensions								Assembly Designation	Load Ratings		Fatigue Load Limit C ₀	Speed Rating Oil
	D _{c1}	D _{c2}	D _w	T	E ₂ max	E ₂ min	f ₁ max	f ₂ max		Dynamic	Static		
	(E11)	(a13)								C	C ₀		
	mm	mm	mm	mm	mm	mm	mm	mm		kN	lbf	kN	min ⁻¹
50	50 1.9685	70 2.7559	6.0 0.2362	14 0.551	54 2.126	66 2.598	0.6 0.024		K.8110LPB	49.7 11200	155 34800	14.8	4300
	50 1.9685	70 2.7559	6.0 0.2362	14 0.551	54 2.126	66 2.598	0.6 0.024		K.8110TVP	54.8 12300	177 39800	17.0	4300
	50 1.9685	78 3.0709	9.0 0.3543	22 0.866	55 2.165	73 2.874	1.0 0.039		K.81210TVP	101 22700	299 67200	34.6	4000
55	55 2.1654	78 3.0709	6.0 0.2362	16 0.630	60 2.362	73 2.874	0.6 0.024		K.81111TVP	60.3 13600	207 46500	19.8	4000
	55 2.1654	90 3.5433	11.0 0.4331	–	61 2.402	84 3.307	1.0 0.039		K.81211LPB	127 28600	359 80700	39.6	3600
	55 2.1654	90 3.5433	11.0 0.4331	25 0.984	61 2.402	84 3.307	1.0 0.039		K.81211TVP	138 31000	403 90600	45.2	3600
60	60 2.3622	85 3.3465	7.5 0.2953	17 0.669	65 2.559	80 3.150	1.0 0.039		K.81112TVP	84.4 19000	281 63200	30.4	3600
	60 2.3622	95 3.7402	11.0 0.4331	26 1.024	66 2.598	89 3.504	1.0 0.039		K.81212LPB	129 29000	378 85000	42.4	3400
65	65 2.5591	90 3.5433	7.5 0.2953	18 0.709	70 2.756	85 3.346	1.0 0.039		K.81113TVP	88.3 19900	305 68600	33.0	3400
	65 2.5591	100 3.9370	11.0 0.4331	27 1.063	71 2.795	94 3.701	1.0 0.039		K.81213LPB	134 30100	403 90600	45.2	3200
70	70 2.7559	95 3.7402	7.5 0.2953	18 0.709	75 2.953	90 3.543	1.0 0.039		K.81114TVP	92.1 20700	328 73700	35.5	3200
	70 2.7559	105 4.1339	11.0 0.4331	27 1.063	76 2.992	99 3.898	1.0 0.039		K.81214LPB	138 31000	428 96200	48.0	3000
75	75 2.9528	100 3.9370	7.5 0.2953	19 0.748	80 3.150	95 3.740	1.0 0.039		K.81115LPB	86.1 19400	305 68600	33.0	3000
	75 2.9528	110 4.3307	11.0 0.4331	27 1.063	81 3.189	104 4.094	1.0 0.039		K.81215LPB	143 32100	453 101800	50.9	2800
80	80 3.1496	105 4.1339	7.5 0.2953	19 0.748	85 3.346	100 3.937	1.0 0.039		K.81116LPB	87.5 19700	316 71000	34.2	2800
	80 3.1496	115 4.5276	11.0 0.4331	28 1.102	86 3.386	109 4.291	1.0 0.039		K.81216LPB	147 33000	478 107500	53.7	2600
85	85 3.3465	110 4.3307	7.5 0.2953	19 0.748	90 3.543	105 4.134	1.0 0.039		K.81117LPB	88.9 20000	328 73700	35.5	2600
	85 3.3465	125 4.9213	12.0 0.4724	31 1.220	93 3.661	117 4.606	1.0 0.039		K.81217LPB	174 39100	572 128600	65.5	2400
90	90 3.5433	120 4.7244	9.0 0.3543	22 0.866	96 3.780	114 4.488	1.0 0.039		K.81118LPB	119 26800	432 97100	49.3	2400
	90 3.5433	135 5.3150	14.0 0.5512	35 1.378	98 3.858	127 5.000	1.0 0.039		K.81218LPB	215 48300	691 155300	81.5	2400



WS.811, WS.812						GS.811, GS.812					
Approx. Wt.	Washer Dimensions			h		F ₂ min.	Washer Designation		Approx. Wt.	Shaft Dia.	
	d	D ₁	D, d ₁	Max.	Min.						
	mm	mm	mm	mm	mm						
kg lbs	mm	mm	mm	mm	mm	mm	Shaft Piloted	Housing Piloted	kg lbs	mm	
0.052 0.115	50 1.969	52 2.047	70 2.756	4.00 0.157	3.84 0.151	0.6 0.024	WS.81110	GS.81110	0.059 0.130	50	
0.042 0.093	50 1.969	52 2.047	70 2.756	4.00 0.157	3.84 0.151	0.6 0.024	WS.81110	GS.81110	0.059 0.130		
0.089 0.196	50 1.969	52 2.047	78 3.071	6.5 0.256	6.34 0.250	1.0 0.039	WS.81210	GS.81210	0.144 0.317	55	
0.066 0.146	55 2.165	57 2.244	78 3.071	5.00 0.197	4.81 0.189	0.6 0.024	WS.81111	GS.81111	0.094 0.207		
0.156 0.344	55 2.165	57 2.244	90 3.543	7.00 0.276	6.81 0.268	1.0 0.039	WS.81211	GS.81211	0.219 0.483		
0.140 0.309	55 2.165	57 2.244	90 3.543	7.00 0.276	6.81 0.268	1.0 0.039	WS.81211	GS.81211	0.219 0.483		
0.103 0.227	60 2.362	62 2.441	85 3.346	4.75 0.187	4.56 0.180	1.0 0.039	WS.81112	GS.81112	0.106 0.234	60	
0.166 0.366	60 2.362	62 2.441	95 3.740	7.50 0.295	7.31 0.288	1.0 0.039	WS.81212	GS.81212	0.251 0.553		
0.109 0.240	65 2.559	67 2.638	90 3.543	5.25 0.207	5.06 0.199	1.0 0.039	WS.81113	GS.81113	0.125 0.276	65	
0.176 0.388	65 2.559	67 2.638	100 3.937	8.00 0.315	7.81 0.307	1.0 0.039	WS.81213	GS.81213	0.285 0.628		
0.056 0.123	70 2.756	72 2.835	95 3.740	5.25 0.207	5.06 0.199	1.0 0.039	WS.81114	GS.81114	0.133 0.293	70	
0.186 0.410	70 2.756	72 2.835	105 4.134	8.00 0.315	7.81 0.307	1.0 0.039	WS.81214	GS.81214	0.302 0.666		
0.091 0.201	75 2.953	77 3.031	100 3.937	5.75 0.226	5.56 0.219	1.0 0.039	WS.81115	GS.81115	0.155 0.342	75	
0.197 0.434	75 2.953	77 3.031	110 4.331	8.00 0.315	7.81 0.307	1.0 0.039	WS.81215	GS.81215	0.319 0.703		
0.103 0.227	80 3.150	82 3.228	105 4.134	5.75 0.226	5.56 0.219	1.0 0.039	WS.81116	GS.81116	0.165 0.364	80	
0.208 0.459	80 3.150	82 3.228	115 4.528	8.50 0.335	8.31 0.327	1.0 0.039	WS.81216	GS.81216	0.357 0.787		
0.108 0.238	85 3.346	87 3.425	110 4.331	5.75 0.226	5.53 0.218	1.0 0.039	WS.81117	GS.81117	0.173 0.381	85	
0.376 0.829	85 3.346	88 3.465	125 4.921	9.50 0.374	9.28 0.365	1.0 0.039	WS.81217	GS.81217	0.482 1.065		
0.156 0.344	90 3.543	92 3.622	120 4.724	6.50 0.256	6.28 0.247	1.0 0.039	WS.81118	GS.81118	0.253 0.558	90	
0.540 1.190	90 3.543	93 3.661	135 5.315	10.50 0.413	10.28 0.405	1.1 0.043	WS.81218	GS.81218	0.655 1.444		