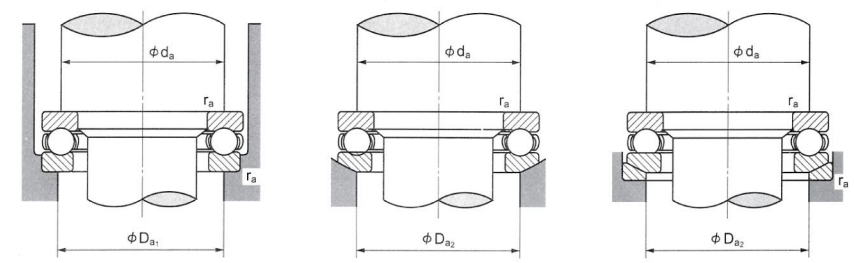
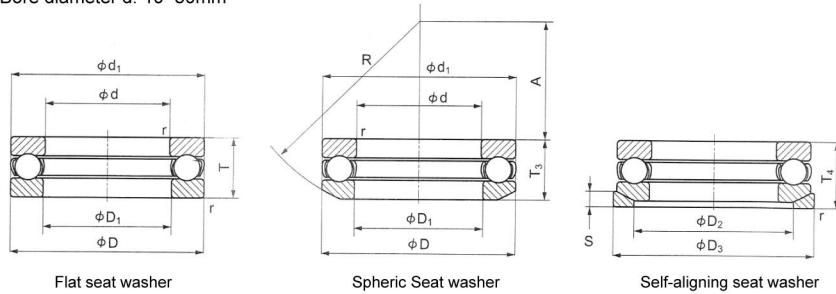


Thrust ball bearings

Bearing ring mounted on shaft is the inner ring and the ring mounted on housing is the outer ring. There are ball raceways on both inner ring and outer ring. The axial load is carried by balls and raceways on rings. Single directional thrust ball bearings can only accommodate axial loads from one direction and combined thrust ball bearings can accommodate axial loads from both directions. Its cage can be pressed sheet steel or machined brass or machined steel. Please do not deform the cages during the handling process.

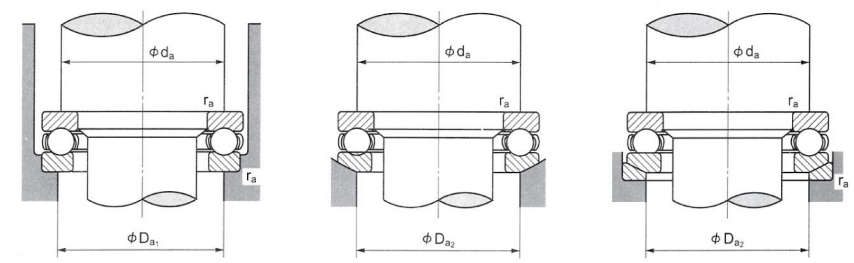
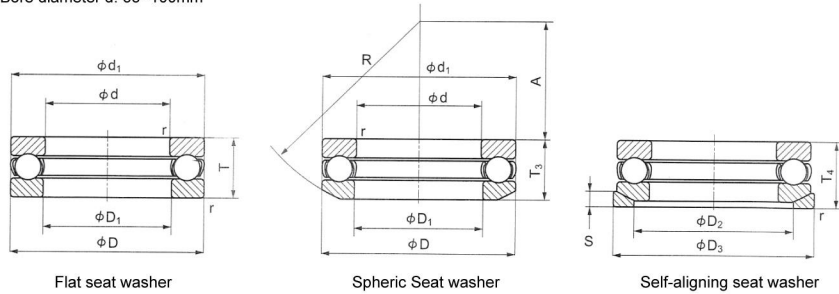
Bore diameter d: 10~50mm



d	Principal dimensions						Designation			Basic load rating		Limiting speed (rpm)	
	D	T	T ₃	T ₄	r ₁ (min)	flat seat washer	Spheric Seat washer	self-aligning seat washer	Dynamic Cr(N)	Static Cor(N)	Grease	Oil	
10	24	9			0.3	51100			10000	14000	6800	10000	
	26	11	11.6	13	0.6	51200	53200	53200U	12700	17100	5900	8800	
12	26	9			0.3	51101			10300	15400	6500	9800	
	28	11	11.4	13	0.6	51201	53201	53201U	13200	19000	5600	8500	
15	28	9			0.3	51102			10500	16800	6200	9400	
	32	12	13.3	15	0.6	51202	53202	53202U	16600	24800	5100	7600	
17	30	9			0.3	51103			10800	18200	6000	9100	
	35	12	13.2	15	0.6	51203	53203	53203U	17100	27300	4800	7300	
20	35	10			0.3	51104			14300	24700	5200	8000	
	40	14	14.7	17	0.6	51204	53204	53204U	22200	27500	4200	6300	
25	42	11			0.6	51105			19500	37000	4600	6900	
	47	15	16.7	19	0.6	51205	53205	53205U	27800	50500	3700	5600	
	52	18	19.8	22	1	51305	53305	53305U	35500	61500	3200	4900	
	60	24	26.4	29	1	51405	53405	53405U	55500	89500	2600	3900	
30	47	11			0.6	51106			20400	42000	4300	6500	
	52	16	17.8	20	0.6	51106	53206	53206U	29300	58000	3400	5200	
	60	21	22.6	25	1	51306	53306	53306U	42500	78500	2800	4200	
	70	28	30.1	33	1	51406	53406	53406U	72500	26000	2200	3300	
35	52	12			0.6	51107			20400	44500	4000	6000	
	62	18	19.9	22	1	51207	53207	53207U	39000	78000	2900	4400	
	68	24	25.6	28	1	51307	53307	53307U	55500	105000	2400	3700	
	80	32	34	37	1.1	51407	53407	53407U	87000	155000	1900	2900	
40	60	13			0.6	51108			28900	63000	3500	5300	
	68	19	20.3	23	1	51208	53208	53208U	47000	98500	2700	4100	
	78	26	28.5	31	1	51308	53308	53308U	69000	135000	2200	3300	
	90	36	38.2	42	1.1	51408	53408	53408U	112000	205000	1700	2600	
45	65	14			0.6	51109			27800	69000	3300	4900	
	73	20	21.3	24	1	51209	53209	53209U	47500	105000	2600	3900	
	85	28	30.1	33	1	51309	53309	53309U	80000	2000	2000	3000	
	100	39	42.4	46	1.1	51409	53409	53409U	129000	243000	1600	2400	
50	70	14			0.6	51110			28800	75500	3100	4700	
	78	22	23.5	26	1	51210	53210	53210U	48500	112000	2400	3600	
	95	31	34.3	37	1.1	51310	53310	53310U	96500	202000	1800	2700	
110	43	45.6	50	1.5	51410	53410	53410U	148000	283000	1400	2100		

Dimensions						Abutment and fillet Dimensions				Ref. Weight (kg)			
D ₁ (min)	d ₁ (max)	D ₂	D ₃	S	R	A	d _a (min)	D _{a1} (max)	D _{a2} (max)	r _a (max)	flat seat washer	Spheric Seat washer	self-aligning seat washer
11	24						18	16		0.3	0.020		
12	26	18	28	3.5	22	8.5	20	16	18	0.6	0.030	0.029	0.036
13	26						20	18		0.3	0.022		
14	28	20	30	3.5	25	11.5	22	18	20	0.6	0.034	0.033	0.041
16	28						23	20		0.3	0.024		
17	32	24	35	4	28	12	25	22	24	0.6	0.046	0.048	0.061
18	30						25	22		0.3	0.028		
19	35	26	38		32	16	28	24	26	0.6	0.053	0.055	0.070
21	35						29	26		0.3	0.040		
22	40	30	42	5	36	18	32	28	30	0.6	0.082	0.080	0.100
26	42						35	32		0.6	0.059		
27	47	36	50	5.5	40	19	38	34	36	0.6	0.120	0.125	0.160
27	52	38	55	6	45	21	41	36	38	1	0.180	0.185	0.225
27	60	42	62	8	50	19	46	39	42	1	0.340	0.350	0.420
32	47						40	37		0.6	0.068		
32	52	42	55	5.5	45	22	43	39	42	0.6	0.150	0.160	0.195
32	60	45	62	7	50	22	48	42	45	1	0.270	0.270	0.325
32	70	50	75	9	56	20	54	46	50	1	0.530	0.530	0.680
37	52						45	42		0.6	0.085		
37	62	48	65	7	50	24	51	46	48	1	0.220	0.220	0.290
37	68	52	72	7.5	56	24	55	48	52	1	0.390	0.390	0.475
37	80	58	65	10	64	23	62	53	58	1	0.790	0.790	0.950
42	60						52	48		0.6	0.120		
42	68	55	72	7	56	28.5	57	51	55	1	0.270	0.270	0.340
42	78	60	82	8.5	64	28	63	55	60	1	0.550	0.570	0.690
42	90	65	95	12	72	26	70	60	65	1	1.14	1.13	1.38
47	65						57	53		0.6	0.150		
47	73	60	78	7.5	56	26	62	56	60	1	0.320	0.320	0.410
47	82	65	90	10	64	25	69	61	65	1	0.690	0.680	0.850
47	100	72	105	12.5	80	29	78	67	72	1	1.47	1.50	1.80
52	70						62	58		0.6	0.160		
52	78	62	82	7.5	64	32.5	67	61	62	1	0.390	0.380	0.480
52	95	72	100	11	72	28	77	68	72	1	1.00	1.00	1.25
52	110	80	115	14	90	35	86	74	80	1.5	1.99	1.97	2.40

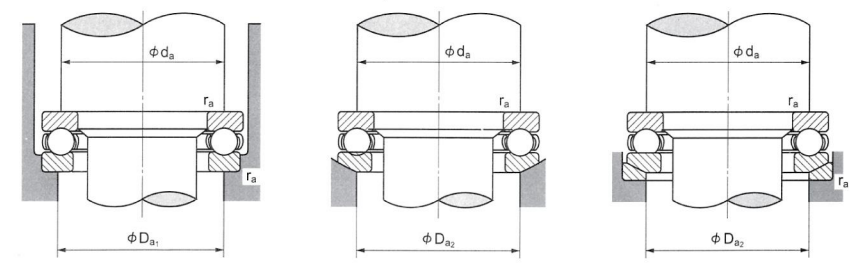
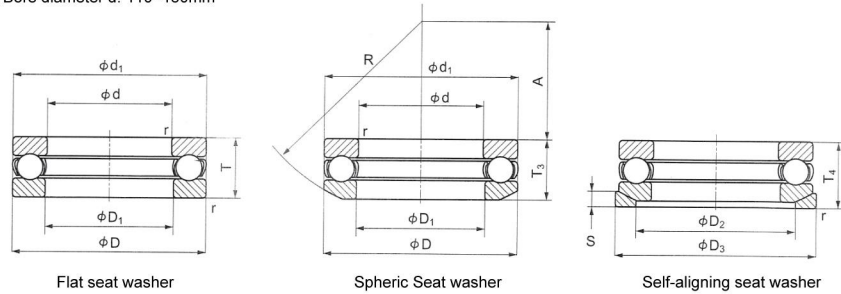
Bore diameter d: 55~100mm



d	Principal dimensions						Designation			Basic load rating		Limiting speed (rpm)	
	D	T	T ₃	T ₄	r ₁ (min)	flat seat washer	Spheric Seat washer	self-aligning seat washer	Dynamic Cr(N)	Static Cor(N)	Grease	Oil	
55	78	16			0.6	51111			35000	93000	2800	4200	
	90	25	27.3	30	1	51211	53211	53211U	69500	159000	2100	3100	
	105	35	39.3	42	1.1	51311	53311	53311U	120000	246000	1600	2400	
	120	48	50.5	55	1.5	51411	53411	53411U	178000	360000	1300	1900	
60	85	17			1	51112			41500	113000	2600	3900	
	95	26	28	31	1	51212	53212	53212U	73500	179000	2000	3000	
	110	35	38.3	42	1.1	51312	53312	53312U	123000	367000	21600	2400	
	130	51	54	58	1.5	51412	53412	53412U	213000	435000	1200	1800	
65	90	18			1	51113			41500	117000	2400	3700	
	100	27	28.7	32	1	51213	53213	53213U	75000	189000	1900	2800	
	115	36	39.4	43	1.1	51313	53313	53313U	127000	287000	1500	2300	
	140	56	60.2	65	2	51413	53413	53413U	231000	495000	1100	1600	
70	95	18			1	51114			43000	127000	2400	3600	
	105	27	28.8	32	1	51214	53214	53214U	76000	199000	1800	2800	
	125	40	44.2	48	1.1	51314	53314	53314U	148000	340000	1400	2100	
	150	60	63.6	69	2	51414	53414	53414U	250000	555000	1000	1500	
75	100	19			1	51115			44500	136000	2200	3400	
	110	27	28.3	32	1	51215	53215	53215U	77500	209000	1800	2700	
	135	44	48.1	52	1.5	51315	53315	53315U	170000	395000	1200	1900	
	160	65	69	75	2	51415	53415	53415U	252000	560000	950	1400	
80	105	19			1	51116			44500	141000	2200	3300	
	115	28	29.5	33	1	51216	53216	53216U	78500	219000	1700	2600	
	140	44	47.6	52	1.5	51316	53316	53316U	176000	425000	1200	1800	
	170	68	72.2	78	2.1	51416	53416	53416U	270000	620000	900	1300	
85	110	19			1	51117			46000	150000	2100	3200	
	125	31	33.1	37	1	51217	53217	53217U	95500	264000	1600	2400	
	150	49	53.4	58	1.5	51317	53317	53317U	206000	490000	1100	1700	
	180	72	77	83	2.1	51417	53417	53417U	288000	685000	850	1200	
90	120	22			1	51118			59500	190000	1900	2900	
	135	35	38.5	42	1.1	51218	53218	53218U	116000	325000	1400	2100	
	155	50	54.6	59	1.5	51318	53318	53318U	213000	525000	1100	1600	
	190	77	81.2	88	2.1	51418	53418	53418U	305000	750000	790	1100	
100	135	25			1	51120			85000	268000	1700	2500	
	150	38	40.9	45	1.1	51220	53220	53220U	146000	410000	1300	1900	
	170	55	59.2	64	1.5	51320	53320	53320U	236000	595000	1000	1500	
	210	85	90	98	3	51420	53420	53420U	345000	895000	710	1000	

Dimensions						Abutment and fillet Dimensions				Ref. Weight (kg)			
D ₁ (min)	d ₁ (max)	D ₂	D ₃	S	R	A	d _a (min)	D _{a1} (max)	D _{a2} (max)	r _a (max)	flat seat washer	Spheric Seat washer	self-aligning seat washer
57	78						69	64		0.6	0.240		
57	90	72	95	9	72	35	76	69	72	1	0.610	0.620	0.800
57	105	80	110	11.5	80	30	85	75	80	1	1.34	1.40	1.70
57	120	88	125	15.5	90	28	94	81	88	1.5	2.64	2.55	3.70
62	85						75	70		1	0.290		
62	95	78	100	9	72	32.5	81	74	78	1	0.690	0.690	0.850
62	110	85	115	11.5	90	41	90	80	85	1	1.43	1.45	1.75
62	130	95	135	16	100	34	102	88	95	1.5	3.30	3.25	3.85
67	90						80	75		1	0.340		
67	100	82	105	9	80	40	86	79	82	1	0.770	0.770	0.940
67	115	90	120	12.5	90	38.5	95	85	90	1	1.57	1.60	1.95
68	140	100	145	17.5	112	40	110	95	100	2	4.18	4.17	4.95
72	95						85	80		1	0.360		
72	105	88	110	9	80	38	91	84	88	1	0.810	0.800	0.980
72	125	98	130	13	100	43	103	92	98	1	0.206	2.15	2.55
73	150	110	155	19.5	112	34	118	102	110	2	5.11	4.94	5.93
77	100						90	85		1	0.420		
77	110	92	115	9.5	90	49	96	89	92	1	0.860	0.840	1.05
77	135	105	140	15	100	37	111	99	105	1.5	2.68	2.70	3.25
78	160	115	165	21	125	42	126	109	115	2	6.35	6.25	7.60
82	105						95	90		1	0.430		
82	115	98	120	10	90	46	101	94	98	1	0.950	0.930	1.16
82	140	110	145	15	112	50	116	104	110	1.5	2.82	2.85	3.45
83	170	125	175	22	125	36	134	116	125	2	7.97	7.83	9.14
87	110						100	95		1	0.460		
88	125	105	130	11	100	52	109	101	105	1	1.29	1.29	1.60
88	150	115	155	17.5	112	43	124	111	115	1.5	3.66	3.65	4.45
88	177	130	185	23	140	47	142	123	130	2	9.30	9.20	10.9
92	120						108	102		1	0.680		
93	135	110	140	13.5	100	45	117	108	110	1	1.77	1.78	2.22
93	155	120	160	18	112	40	129	116	120	1.5	3.88	3.84	4.70
93	187	140	195	25.5	140	40	150	130	140	2	11.0	10.7	12.6
102	135						121	114		1	0.990		
103	150	125	155	14	112	52	130	120	125	1	2.36	2.36	2.87
103	170	135	175	18	125	46	142	128	135	1.5	5.11	5.12	6.10
103	205	155	220	27	160	50	166	144	155	2.5	14.7	14.5	17.2

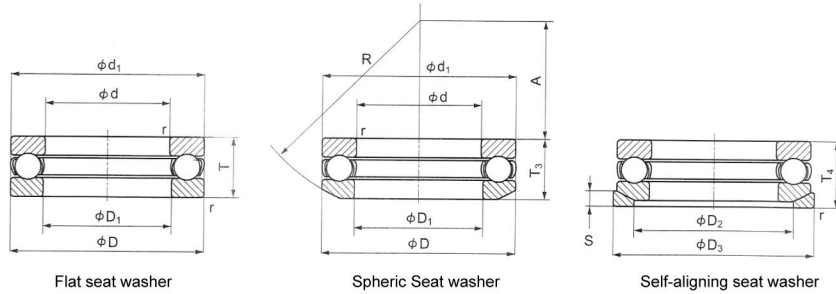
Bore diameter d: 110~180mm



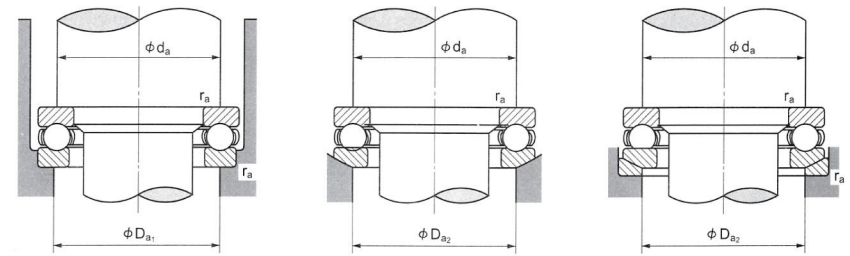
Principal dimensions							Designation			Basic load rating		Limiting speed (rpm)	
d	D	T	T ₃	T ₄	r ₁ (min)	flat seat washer	Spheric Seat washer	self-aligning seat washer	Dynamic Cr(N)	Static Cor(N)	Grease	Oil	
110	145	25			1	51122			87000	288000	1600	2400	
	160	38	40.2	45	1.1	51222	53222	53222U	152000	450000	1200	1900	
	190	63	67.2	72	2	51322	53322	53322U	267000	705000	880	1300	
	230	95	99.7	109	3	51422	53422	53422U	435000	1240000	640	960	
120	155	25			1	51124			89000	305000	1600	2400	
	170	39	40.8	46	1.1	51224	53224	53224U	154000	470000	1200	1800	
	210	70	74.1	80	2.1	51324	53324	53324U	310000	870000	790	1100	
	250	102	107.3	118	4	51424	53424	53424U	455000	1340000	580	880	
130	170	30			1	51126			104000	350000	1300	2000	
	190	45	47.9	53	1.5	51226	53226	53226U	203000	620000	1000	1500	
	225	75	80.3	86	2.1	51326	53326	53326U	330000	960000	730	1100	
	270	110	115.2	128	4	51426	53426	53426U	555000	1750000	540	810	
140	180	31			1	51128			107000	375000	1300	1900	
	200	46	48.6	55	1.5	51228	53228	53228U	205000	650000	1000	1500	
	240	80	84.9	92	2.1	51328	53328	53328U	350000	1050000	680	1000	
	280	112	117	131	4	51428	53428	53428U	545000	1750000	520	780	
150	190	31			1	21130			109000	400000	1200	1900	
	215	50	53.3	60	1.5	51230	53230	53230U	213000	650000	940	1400	
	250	80	83.7	92	2.1	51330	53330	53330U	360000	1130000	670	1000	
	300	120	125.9	140	4	51430	53430	53430U	615000	2010000	480	720	
160	200	31			1	51132			112000	425000	1200	1800	
	225	51	54.7	61	1.5	51232	53232	53232U	223000	720000	900	1300	
	270	87	91.7	100	3	51332	53332	53332U	410000	1340000	610	920	
	320	130	135.3	150	5	51432	53432	53432U	680000	2410000	440	670	
170	215	34			1.1	51134			134000	510000	1100	1700	
	240	55	58.7	65	1.5	51234	53234	53234U	261000	835000	840	1200	
	280	87	91.3	100	3	51334	53334	53334U	420000	1430000	600	900	
	340	135	141	156	5	51434	53434	53434U	755000	2730000	420	630	
180	225	34			1.1	51136			135000	525000	1100	1600	
	250	56	58.2	66	1.5	51236	53236	53236U	266000	875000	810	1200	
	300	95	99.3	109	3	51336	53336	53336U	485000	1700000	550	820	
	360	140	148.3	164	5	51436	53436	53436U	785000	2980000	400	600	

Dimensions							Abutment and fillet Dimensions				Ref. Weight (kg)		
D ₁ (min)	d ₁ (max)	D ₂	D ₃	S	R	A	d _a (min)	D _{a1} (max)	D _{a2} (max)	r _a (max)	flat seat washer	Spheric Seat washer	self-aligning seat washer
112	145						131	124		1	1	1.08	
113	160	135	165	14	125	65	140	130	135	1	2.57	2.53	3.00
113	187	150	195	20.5	140	51	158	142	150	2	7.73	7.66	8.96
113	225	170	240	29	180	59	182	158	170	2.5	19.8	19.4	22.9
122	155						141	134		1	1.16		
123	170	145	175	15	125	61	150	140	145	1	2.86	2.76	3.40
123	205	165	220	22	160	63	174	156	165	2	10.6	10.4	12.4
123	245	185	260	32	200	70	198	172	185	3	25.0	24.6	29.2
132	170		195				154	145		1	1.87		
133	187	160		17	140	67	166	154	160	1.5	4.10	4.03	4.91
134	220	177	235	26	160	53	187	168	177	2	12.7	12.6	15.2
134	265	200	280	38	200	58	214	186	200	3	31.4	30.4	36.7
142	178						164	156		1	2.03		
143	197	170	210	17	160	87	176	164	170	1.5	4.47	4.40	5.61
144	235	190	250	26	180	68	200	180	190	2	15.5	15.3	18.2
144	275	206	290	38	225	83	224	196	206	3	33.9	32.9	39.9
152	188						174	166		1	2.16		
153	212	180	225	20.5	160	79	189	176	180	1.5	5.74	5.60	7.28
154	245	200	260	26	200	89.5	210	190	200	2	16.3	16.0	19.1
154	295	225	310	41	225	69	240	210	225	3	41.6	40.5	48.5
162	198						184	176		1	2.27		
163	222	190	235	21	160	74	223	202	190	1.5	6.64	6.50	8.29
164	265	215	280	29	200	77	226	204	215	2.5	21.0	20.5	24.5
164	315	240	330	41.5	250	84	256	224	240	4	51.2	49.7	58.9
172	213						197	188		1	3.27		
173	237	200	250	21.5	180	91	212	198	200	1.5	8.13	7.89	9.95
174	275	220	290	29	225	105	230	210	220	2.5	22.0	21.3	25.7
174	335	255	350	46	250	74	272	238	255	4	60.1	58.1	69.1
183	222						207	198		1	3.37		
183	247	21	260	21.5	200	112	222	208	210	1.5	8.69	8.26	10.5
184	295	240	310	32	225	91	252	228	240	2.5	28.2	27.0	32.0
184	355	270	370	46.5	280	97	288	252	270	4	69.5	68.8	81.5

Bore diameter d: 190~360mm

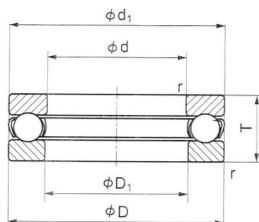


d	Principal dimensions						Designation			Basic load rating		Limiting speed (rpm)	
	D	T	T ₃	T ₄	r ₁ (min)	flat seat washer	Spheric Seat washer	self-aligning seat washer	Dynamic Cr(N)	Static Cor(N)	Grease	Oil	
190	240	37			1.1	51138			170000	655000	1000	1500	
	270	62	65.7	73	2	51238	53238	53238U	310000	1060000	740	1100	
	320	105	111	121	4	51338	53338	53338U	570000	2100000	500	750	
200	250	37			1.1	51140			172000	675000	1000	1500	
	280	62	65.3	74	2	51240	53240	53240U	315000	1110000	720	1000	
	340	110	118.4	130	4	51340	53340	53340U	625000	2380000	470	710	
220	270	37			1.1	51144			177000	740000	970	1400	
	300	63	65.6	75	2	51244	53244	53244U	325000	1210000	690	1000	
	340	110	118.4	130	4	51344	53344	53344U	625000	2380000	470	710	
240	300	45			1.5	51148			228000	935000	830	1200	
	340	78	81.6	92	2.1	51248	53248	53248U	430000	1730000	570	860	
	320	45			1.5	51152			232000	990000	800	1200	
260	360	79	82.8	93	2.1	51252	53252	53252U	445000	1880000	550	830	
	350	53			1.5	51156			315000	1350000	700	1000	
	380	80	85	94	2.1	51256	53256	53256U	450000	1950000	530	800	
300	380	62			2	51160			370000	1660000	610	920	
	420	95	100.5	112	3	51260	53260	53260U	585000	2720000	450	680	
	400	63			2	51164			380000	1760000	590	880	
320	440	95	100.5	112	3	51264	53264	53264U	595000	2830000	440	660	
	420	64			2	51168			385000	1860000	570	850	
	340	460	96	100.3	113	3	51268	53268	53268U	600000	2940000	430	640
340	440	65			2	51172			395000	1960000	550	820	
	360	500	110	116.7	130	4	51272	53272U	745000	3800000	380	570	

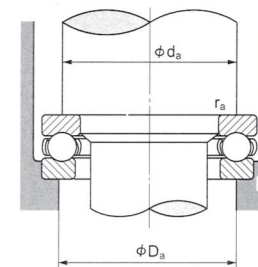


Dimensions										Abutment and fillet Dimensions				Ref. Weight (kg)		
D ₁ (min)	d ₁ (max)	D ₂	D ₃	S	R	A	d _a (min)	D _{a1} (max)	D _{a2} (max)	r _a (max)	flat seat washer	Spheric Seat washer	self-aligning seat washer			
193	237						220	210		1	3.95					
194	267	230	280	23	200	98	238	222	230	2	11.7	11.5	14.0			
195	315	255	330	33	250	104	268	242	255	3	36.1	5.8	41.9			
203	217						230	220		1	4.14					
204	277	240	290	23	225	125	248	232	240	2	12.2	12.0	14.8			
205	335	270	350	38	250	92	284	256	270	3	43.0	43.1	51.0			
223	267						250	240		1	4.51					
224	297	260	310	25	225	118	268	252	260	2	13.5	13.0	16.2			
243	297						276	264		1.5	7.35					
244	335	290	350	30	250	122	300	280	290	2	23.1	22.3	27.4			
263	317						296	284		1.5	7.94					
264	355	305	370	30	280	152	320	300	305	2	25.0	24.0	29.7			
283	347						322	308		1.5	12.0					
284	375	325	390	31	280	143	340	320	325	2	27.0	26.2	32.3			
304	376						348	332		2	17.1					
304	415	360	430	34	320	164	372	348	360	2.5	42.3	41.7	49.9			
324	396						368	352		2	18.5					
325	435	380	450	36	320	157	392	368	380	2.5	44.7	43.8	52.7			
344	416						388	372		2	19.9					
345	455	400	470	36	360	199	412	388	400	2.5	47.6	46.4	56.2			
364	436						408	392		2	20.4					
365	495	430	510	43	360	172	444	416	430	3	69.0	67.7	81.5			

2900 series
Bore diameter d: 10~140mm

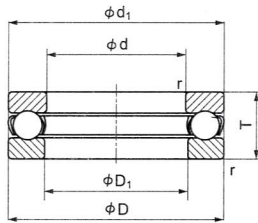


d	Principal dimensions			Designation	Basic load rating		Limiting speed (rpm)	
	D	T	r ₁ (min)		Dynamic Cr(N)	Static Cor(N)	Grease	Oil
10	26	12	0.6	2900	12700	17100	5600	8400
12	28	12	0.6	2901	13200	19000	5400	8100
15	31	12	0.6	2902	14300	22800	5100	7700
18	35	12	0.6	2903	14400	24700	4800	7300
20	37	12	0.6	2904	14800	26600	4700	7100
22	42	14	0.6	2904	18900	34500	4100	6100
25	45	14	0.6	2905	19300	37000	3900	5900
30	50	14	0.6	2906	20200	42000	3700	5600
35	55	16	0.6	2907	29900	62000	3300	5000
40	60	16	0.6	2908	31000	70000	3200	4800
45	68	16	0.6	2909	32500	77500	3000	4500
50	74	18	0.6	2910	38500	94000	2700	4100
55	78	18	0.6	2911	40000	103000	2600	4000
60	82	18	0.6	2912	40500	108000	2600	3900
65	90	20	0.6	2913	47500	129000	2300	3500
70	95	20	0.6	2914	49000	140000	2200	3400
75	100	20	0.6	2915	51000	151000	2200	3300
80	110	22	0.6	2916	57000	171000	2000	3000
85	115	22	0.6	2917	59000	184000	1900	2900
90	120	22	0.6	2918	59500	190000	1900	2900
95	130	25	0.6	2919	75500	236000	1700	2600
100	135	25	0.6	2920	78000	253000	1700	2500
105	140	25	0.6	2921	78500	262000	1600	2500
110	145	25	0.6	2922	78000	262000	1600	2400
115	150	25	0.6	2923	73500	245000	1600	2400
120	160	27	0.6	2924	94000	314000	1500	2200
125	165	27	0.6	2925	85500	298000	1400	2200
140	185	31	0.6	2928	106000	375000	1300	1900

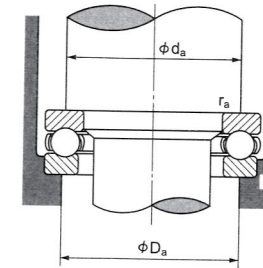


Dimensions		Abutment and fillet Dimensions			Ref. Weight (kg)
D ₁ (min)	d ₁ (max)	d _a (min)	D _a (max)	r _a (max)	
10.2	26	19.6	16.4	0.6	0.035
12.2	28	21.6	18.4	0.6	0.037
15.2	31	25	21	0.6	0.041
18.2	35	28	25	0.6	0.045
20.2	37	30	27	0.6	0.055
22.2	42	34	30	0.6	0.085
25.2	45	37	33	0.6	0.093
30.2	50	42	38	0.6	0.107
35.2	55	47	43	0.6	0.137
40.2	60	52	48	0.6	0.150
45.2	68	59	54	0.6	0.199
50.2	74	64	60	0.6	0.255
55.2	78	69	64	0.6	0.270
60.2	82	73	69	0.6	0.275
65.2	90	80	75	0.6	0.374
70.2	95	85	80	0.6	0.400
75.2	100	90	85	0.6	0.425
80.2	110	98	92	0.6	0.600
85.2	115	103	97	0.6	0.640
90.2	120	108	102	0.6	0.670
95.2	130	116	109	0.6	0.795
100.2	135	121	114	0.6	0.930
105.2	140	126	119	0.6	1.02
110.2	145	131	124	0.6	1.15
115.2	150	136	129	0.6	1.25
120.2	160	141	136	0.6	1.35
125.3	165	149	141	0.6	1.48
140.3	185	167	158	0.6	2.33

3900 series
Bore diameter d: 25~120mm

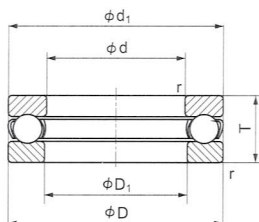


Principal dimensions				Designation	Basic load rating		Limiting speed (rpm)	
d	D	T	r ₁ (min)		Dynamic Cr(N)	Static Cor(N)	Grease	Oil
25	52	16	1	3905	27100	50500	3400	5200
30	60	19	1	3906	38000	72500	2900	4400
35	68	22	1	3907	50500	99000	2500	3800
40	76	25	1	3908	61000	119000	2200	3400
45	85	28	1	3909	79500	163000	2000	3000
50	92	31	1	3910	97000	202000	1800	2800
55	100	33	1	3911	110000	240000	1700	2600
60	106	35	1.5	3912	119000	263000	1600	2400
65	112	36	1.5	3913	128000	287000	1500	2300
70	120	38	1.5	3914	143000	335000	1400	2200
75	128	41	1.5	3915	159000	365000	1300	2000
80	136	44	1.5	3916	183000	425000	1200	1900
85	145	47	1.5	3917	207000	490000	1100	1700
90	155	50	1.5	3918	232000	555000	1100	1600
95	165	54	1.5	3919	253000	630000	1000	1500
100	172	57	1.5	3920	250000	630000	980	1400
105	180	60	2.5	3921	257000	670000	930	1400
110	190	63	2.5	3922	293000	785000	880	1300
115	200	66	2.5	3923	315000	870000	840	1200
120	210	69	2.5	3924	325000	930000	800	1200

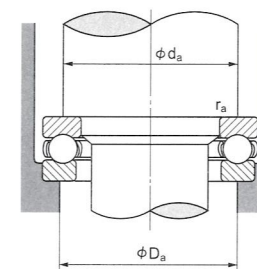


Dimensions		Abutment and fillet Dimensions			Ref. Weight (kg)
D ₁ (min)	d ₁ (max)	d _a (min)	D _a (max)	r _a (max)	
25.2	52	42	36	1.0	0.147
30.2	60	49	43	1.0	0.237
35.2	68	56.5	48.5	1.0	0.346
40.2	76	63	55	1.0	0.486
45.2	85	71	61	1.0	0.684
50.2	92	77	67	1.0	0.889
55.2	100	83.5	73.5	1.0	1.114
60.2	106	89	79	1.5	1.293
65.2	112	95.5	83.5	1.5	1.443
70.2	120	102	90	1.5	1.767
75.2	128	108.5	96.5	1.5	2.132
80.2	136	115	101	1.5	2.606
85.2	145	122	108	1.5	3.157
90.2	155	131	115	1.5	3.907
95.2	165	139	123	1.5	4.810
100.2	172	144	128	1.5	5.454
105.2	180	153	137	2.5	6.354
110.2	190	159	141	2.5	7.333
115.2	200	167.5	147.5	2.5	8.526
120.2	210	178	158	2.5	10.195

Bore diameter d: 9.525~152.400mm

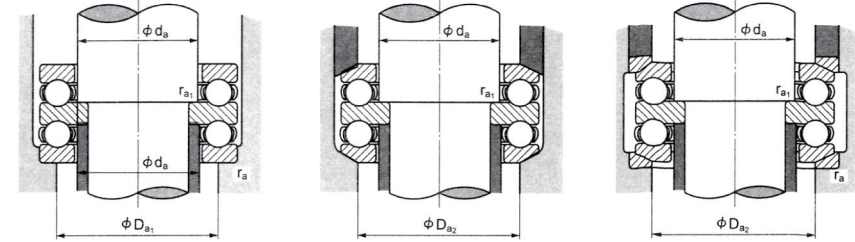
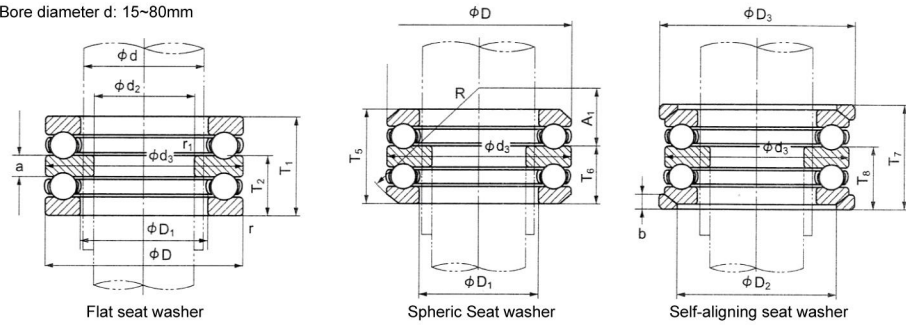


Principal dimensions				Designation	Basic load rating		Limiting speed (rpm)	
d	D	T	r ₁ (min)		Dynamic Cr(N)	Static Cor(N)	Grease	Oil
9.525	25.400	13.494	0.8	O- 3	11800	15200	5400	8100
12.700	32.544	15.875	0.8	O- 4	18600	25100	4300	6500
15.875	35.719	15.875	0.8	O- 5	19400	28300	4100	6200
19.050	38.894	15.875	0.8	O- 6	21400	34500	4000	6000
22.225	42.069	15.875	0.8	O- 7	21900	37500	3800	5800
25.400	45.244	15.875	1.6	O- 8	22500	41000	3700	5500
28.575	48.419	15.875	1.6	O- 9	24100	47000	3600	5400
31.750	53.181	18.256	1.6	O- 10	27900	54500	3200	4800
34.925	56.356	18.256	1.6	O- 11	28600	58000	3100	4600
38.100	59.531	18.256	1.6	O- 12	30500	66000	3000	4500
41.275	62.706	18.256	1.6	O- 13	26700	63000	2900	4400
44.450	68.262	19.050	1.6	O- 14	32500	77500	2700	4100
47.625	71.438	19.050	1.6	O- 15	37500	89000	2700	4000
50.800	75.406	19.050	2.4	O- 16	38000	94000	2600	3900
53.975	81.756	22.225	2.4	O- 17	49500	118000	2300	3500
57.150	84.931	22.225	2.4	O- 18	50500	125000	2300	3400
60.325	91.281	25.400	2.4	O- 19	58000	145000	2000	3100
63.500	94.456	25.400	2.4	O- 20	59500	152000	2000	3000
66.675	97.631	25.400	2.4	O- 21	60500	160000	2000	3000
69.850	102.394	25.400	2.4	O- 22	71500	179000	1900	2900
73.025	105.569	25.400	2.4	O- 23	75500	199000	1900	2800
76.200	111.125	28.575	3.2	O- 24	77000	209000	1700	2600
82.550	122.238	31.750	3.2	O- 26	97500	252000	1600	2400
88.900	128.588	31.750	3.2	O- 28	99000	266000	1500	2300
95.250	134.938	31.750	3.2	O- 30	98500	289000	1500	2200
101.600	147.638	34.925	3.2	O- 32	113000	310000	1300	2000
114.300	166.688	44.450	4.8	O- 36	157000	435000	1100	1700
127.000	185.738	50.800	4.8	O- 40	193000	545000	1000	1500
139.700	204.788	55.562	4.8	O- 44	248000	715000	910	1300
152.400	220.662	60.325	4.8	O- 48	269000	805000	830	1200



Dimensions		Abutment and fillet Dimensions			Ref. Weight (kg)
D ₁ (min)	d ₁ (max)	d _a (min)	D _a (max)	r _a (max)	
9.925	24.606	191	15.9	0.8	0.036
13.097	31.750	246	20.6	0.8	0.077
16.272	34.925	278	23.8	0.8	0.086
19.447	38.100	29	26	0.8	0.095
22.622	41.275	34	30	0.8	0.100
25.797	44.450	37	33	0.8	0.110
28.972	47.625	40	37	0.8	0.128
32.147	52.388	45	40	0.8	0.164
35.322	55.562	48	43	0.8	0.186
38.497	58.738	51	47	1	0.200
41.672	61.912	54	50	1	0.210
44.847	67.469	59	54	1	0.260
48.021	70.644	62	57	1	0.285
51.594	74.613	66	61	1	0.300
54.769	80.962	71	65	1.6	0.405
57.944	84.138	74	68	1.6	0.450
61.119	90.488	79	73	1.6	0.590
64.294	93.662	82	76	1.6	0.610
67.469	96.838	85	79	1.6	0.660
70.644	101.600	89	83	1.6	0.700
73.819	104.775	93	86	1.6	0.730
77.788	109.538	97	90	2	0.900
84.138	120.650	106	98	2	1.30
90.488	127.000	113	105	2	1.32
96.868	133.350	119	111	2	1.36
403.188	146.050	129	120	2	1.88
115.888	165.100	146	135	3	3.18
128.588	184.150	162	150	3	4.54
141.288	203.200	179	166	3	5.90
153.988	219.075	193	180	3	7.25

Bore diameter d: 15~80mm



Principal dimensions								Designation			Basic load rating		Limiting speed (rpm)	
d	d ₂	D	T ₁	T ₅	T ₇	r ₁ (min)	r ₁ (mm)	flat seat washer	Spheric Seat washer	self-aligning seat washer	Dynamic Cr(N)	Static Cor(N)	Grease	Oil
15	10	32	22	24.6	28	0.6	0.3	52202	54202	54202U	16600	24800	5100	7600
20	15	40	26	27.4	32	0.6	0.3	52204	54204	54204U	22200	37500	4200	6300
25	20	47	28	31.4	36	0.6	0.3	52205	54205	54205U	27800	50500	3700	5600
	20	52	34	37.6	42	1	0.3	52305	54305	54305U	35500	61500	3200	4900
30	15	60	45	49.8	55	1	0.6	52405	54405	54405U	55500	89500	2600	3900
	25	52	29	32.6	37	0.6	0.3	52206	54206	54206U	29300	58000	3400	5200
30	25	60	38	41.2	46	1	0.3	52306	54306	54306U	42500	78500	2800	4200
	20	70	52	56.2	62	1	0.6	52406	54406	54406U	72500	126000	2200	3300
35	30	62	34	37.8	42	1	0.3	52207	54207	54207U	39000	78000	2900	4400
	30	68	44	47.2	52	1	0.3	52307	54307	54307U	55500	105000	2400	3700
40	25	80	59	63	69	1.1	0.6	52407	54407	54407U	87000	155000	1900	2900
	30	68	36	38.6	44	1	0.6	52208	54208	54208U	47000	98500	2700	4100
40	30	78	49	54	59	1	0.6	52308	54308	54308U	69000	135000	2200	3300
	30	90	65	69.4	77	1.1	0.6	52408	54408	54408U	112000	205000	1700	2600
45	35	73	37	39.6	45	1	0.6	52209	54209	54209U	47500	105000	2600	3900
	35	85	52	56.2	62	1	0.6	52309	54309	54309U	80000	163000	2000	3000
50	35	100	72	78.8	86	1.1	0.6	52409	54409	54409U	129000	243000	1600	2400
	40	78	39	42	47	1	0.6	52210	54210	54210U	48500	112000	2400	3600
50	40	95	58	64.6	70	1.1	0.6	52310	54310	54310U	96500	202000	1800	2700
	40	110	78	83.2	92	1.5	0.6	52410	54410	54410U	148000	283000	1400	2100
55	45	90	45	49.6	55	1	0.6	52211	54211	54211U	69500	159000	2100	3100
	45	150	64	72.6	78	1.1	0.6	52311	54311	54311U	120000	246000	1600	2400
60	45	120	87	92	101	1.5	0.6	52411	54411	54411U	178000	360000	1300	1900
	50	95	46	50	56	1	0.6	52212	54212	54212U	73500	179000	2000	3000
60	50	110	64	70.6	78	1.1	0.6	52312	54312	54312U	123000	267000	1600	2400
	50	130	93	99	107	1.5	0.6	52412	54412	54412U	213000	435000	1200	1800
65	55	100	47	50.4	57	1	0.6	52213	54213	54213U	75000	189000	1900	2800
	55	115	65	71.8	79	1.1	0.6	52313	54313	54313U	127000	287000	1500	2300
70	50	140	101	109.4	119	2	1	52413	54413	54413U	231000	495000	1100	1600
	55	105	47	50.6	57	1	1	52214	54214	54214U	76000	199000	1800	2800
70	55	125	72	80.4	88	1.1	1	52314	54314	54314U	148000	340000	1400	2100
	55	150	107	114.2	125	2	1	52414	54414	54414U	250000	555000	1000	1500
75	60	110	47	49.6	57	1	1	52215	54215	54215U	77500	209000	1800	2700
	60	135	79	87.2	95	1.5	1	52315	54315	54315U	170000	395000	1200	1900
80	60	160	115	123	135	2	1	52415	54415	54415U	252000	560000	950	1400
	65	115	48	51	58	1	1	52216	54216	54216U	78500	219000	1700	2600
80	65	140	79	86.2	95	1.5	1	52316	54316	54316U	176000	425000	1200	1800
	65	170	120	128.4	140	2.1	1	52416	54416	54416U	270000	620000	900	1300

Dimensions											Abutment and fillet Dimensions					Ref. Weight (kg)		
d ₃ (max)	D ₁ (min)	D ₂	D ₃	T ₂	T ₆	T ₈	a	b	A ₁	R	d _a (min)	D _{a1} (max)	D _{a2} (max)	r _a (max)	r _{a1} (max)	flat seat washer	Spheric Seat washer	self-aligning seat washer
32	17	24	35	13.5	14.8	16.5	5	4	10.5	28	15	22	24	0.6	0.3	0.085	0.090	0.116
40	22	30	42	16	16.7	19	6	5	16	36	20	28	30	0.6	0.3	0.150	0.147	0.189
47	27	36	50	17.5	19.2	21.5	7	5.5	16.5	40	25	34	36	0.6	0.3	0.230	0.241	0.305
52	27	38	55	21	22.8	25	8	6	18	45	25	36	38	1	0.3	0.330	0.340	0.431
60	27	42	62	28	30.4	33	11	8	15	50	25	39	42	1	0.6	0.630	3.650	0.796
52	32	42	55	18	19.8	22	7	5.5	20	45	30	39	42	0.6	0.3	0.272	0.291	0.356
60	32	45	62	23.5	25.1	27.5	9	7	19.5	50	30	42	45	1	0.3	0.490	0.495	0.607
70	32	50	75	32	34.1	37	12	9	16	56	30	46	50	1	0.6	1.00	1.00	1.26
62	37	48	65	21	22.9	25	8	7	21	50	35	46	48	1	0.3	0.420	0.431	0.550
68	37	52	72	27	28.6	31	10	7.5	21	56	35	48	52	1	0.3	0.710	0.711	0.881
80	37	58	85	36.5	38.5	41.5	14	10	18.5	64	35	53	58	1	0.6	1.44	1.43	1.78
68	42	55	72	22.5	23.8	26.5	9	7	25	56	40	51	55	1	0.6	0.540	0.542	0.686
78	42	60	82	30.5	33	35.5	12	8.5	23.5	64	40	55	60	1	0.6	1.06	1.10	1.33
90	42	65	95	40	42.2	46	15	12	22	72	40	60	65	1	0.6	2.03	2.00	2.52
73	47	60	78	23	24.3	27	9	7.5	23	56	45	56	60	1	0.6	0.620	0.617	0.796
85	47	65	90	32	34.1	37	12	10	21	64	45	61	65	1	0.6	1.29	1.28	1.63
100	47	72	105	44.5	47.9	51.5	17	12.5	23.5	80	45	67	72	1	0.6	2.71	2.76	3.40
78	52	62	82	24	25.5	28	9	7.5	30.5	64	50	61	62	1	0.6	0.71	0.697	0.899
95	52	72	100	36	39.3	42	14	11	23	72	50	68	72	1	0.6	1.86	1.92	2.37
110	52	80	115	48	50.6	55	18	14	30	90	50	74	80	1.5	0.6	3.56	3.52	4.36
90	57	72	95	27.5	29.8	32.5	10	9	32.5	72	55	69	72	1	0.6	1.12	1.14	1.54
105	57	80	110	39.5	43.8	46.5	15	11.5	25.5	80	55	75	80	1	0.6	2.51	2.65	3.22
120	57	88	125	53.5	56	60.5	20	15.5	22.5	90	55	81	88	1.5	0.6	4.70	4.55	5.64
95	62	78	100	28	30	33	10	9	30.5	72	60	74	78	1	0.6	1.25	1.25	1.59
110	62	85	115	39.5	42.8	46.5	15	11.5	36.5	90	60	80	85	1	0.6	2.68	2.76	3.39
130	62	95	135	57	60	64	21	16	28	100	60	88	95	1.5	0.6	6.33	6.20	7.45
100	67	82	105	28.5	30.2	33.5	10	9	38.5	80	65	79	82	1	0.6	1.36	1.35	1.72
115	67	90	120	40	43.4	47	15	12.5	34.5	90	65	85	90	1	0.6	2.90	2.98	3.67
140	68	100	145	62	66.2	71	23	17.5	34	112	65	95	100	2	1	8.03	8.01	9.67
105	72	88	110	28.5	30.3	33.5	10	9	36.5	80	70	84	88	1	1	1.48	1.48	1.86
125	72	98	130	44	48.2	52	16	13	39	100	70	92	98	1	1	3.90	4.08	4.92
150	73	110	155	65.5	69.1	71.5	24	19.5	28.5	112	70	102	110	2	1	9.71	9.50	11.5
110	77	92	115	28.5	29.8	33.5	10	9.5	47.5	90	75	89	92	1	1	1.57	1.53	1.96
135	77	105	140	48.5	52.6	56.5	18	15	32.5	100	75	99	105	1.5	1	4.83	4.93	6.04
160	78	115	165	70.5	74.5	80.5	26	21	36.5	125	75	109	115	2	1	11.8	11.6	14.1
115	82	98	120	29	30.5	34	10	10	45	90	80	94	98	1	1	1.69	1.67	2.11
140	82	110	145	48.5	52.1	56.5	18	15	45.5	112	80	104	110	1.5	1	5.06	5.14	6.29
170	83	125	175	73.5	77.7	83.5	27	22	30.5	125	80	116	125	2	1	14.0	13.7	16.5

