LIST OF SYMBOLS

Symbol	Description	Units
B	Basic inner ring width	mm (in)
Bs	Single width of an inner ring	mm (in)
C	Basic outer ring width	mm (in)
Cs	Single width of an outer ring	mm (in)
d	Basic bore diameter	mm (in)
d_s	Single diameter of a bore	mm (in)
d_{mp}	Single plane mean bore diameter	mm (in)
D	Basic outside diameter	mm (in)
D_s	Single diameter of an outside diameter	mm (in)
D_{mp}	Single plane mean outside diameter	mm (in)
K_{ia}	Radial runout of assembled bearing inner ring	μm (in)
K_{ea}	Radial runout of assembled bearing outer ring	μm (in)
S_d	Inner ring reference face runout with bore	μm (in)
S_D	Outside cylindrical surface runout with outer ring reference face	μm (in)
S_{D1}	Variation of outer ring outside surface generatrix inclination with respect to the outer ring flange back face	μm (in)
S_{ia}	Axial runout of assembled bearing inner ring	μm (in)
S_{ea}	Axial runout of assembled bearing outer ring	μm (in)
S_{ea1}	Runout of outer ring face (back face) with respect to the raceway of assembled bearing	μm (in)
V_{Bs}	Variation of inner ring width	μm (in)
V_{Cs}	Variation of outer ring width	μm (in)
V_{C1s}	Variation of outer ring flange width	μm (in)
V_{dmp}	Mean bore diameter variation	μm (in)
V_{dp}	Bore diameter variation in a single radial plane	μm (in)
V_{Dmp}	Mean outside diameter variation	μm (in)
V_{Dp}	Outside diameter variation in single radial plane	μm (in)
Δ_{Bs}	Single inner ring width deviation from basic	μm (in)
Δ_{Cs}	Single outer ring width deviation from basic	μm (in)
Δ_{C1s}	Deviation of a single outer ring flange width	μm (in)
Δ_{ds}	Single bore diameter deviation from basic	μm (in)
Δ_{dmp}	Single plane mean bore diameter deviation from basic for a tapered bore small end	μm (in)
Δ_{d1mp}	Single plane mean bore diameter deviation at large end of tapered bore	μm (in)
Δ_{Ds}	Single outside diameter deviation from basic	μm (in)
Δ_{Dmp}	Single plane mean outside diameter deviation from basic	μm (in)
Δ_{TS}	Deviation of single-row tapered roller bearing overall width	mm (in)
Δ_{T1S}	Deviation of the actual effective width (stand) of the cone	mm (in)
Δ_{T2S}	Deviation of the actual effective width (stand) of the cup	mm (in)

TABLE CD3.1. Shaft Tolerance Range Classification Selection vs Bearing Operating Conditions for Metric Radial Ball, Cylindrical Roller, and Spherical Roller Bearings of Tolerance Classes ABEC-1 or RBEC-1. **PART 1.** Dimensions in Millimeters.

DESIGN & OPERATING CONDITIONS			BALL BEARINGS			CYLINDRICAL BEARINGS			SPHERICAL BEARINGS		
Rotational Conditions	Inner Ring Axial Displaceability	Radial Loading	d		Tolerance Classification[1]	d		Tolerance Classification[1]	d		Tolerance Classification[1]
			Over	Incl.		Over	Incl.		Over	Incl.	
Inner Ring Rotating in relation to Load Direction		Light	0	18	h5	0	40	j6[2]	0	40	j6[2]
			18	All	j6[2]	40	140	k6[2]	40	140	k6[2]
						140	320	m6[2]	140	320	m6[2]
						320	500	n6	320	500	n6
						500	All	p6	500	All	p6
or		Normal	0	18	j5	0	40	k5	0	40	k5
			18	All	k6	40	100	m5	40	65	m5
						100	140	m6	65	100	m6
						140	320	n6	100	140	n6
						320	500	p6	140	280	p6
						500	All	r6	280	500	r6
									500	All	r7
Load Direction is Indeterminate		Heavy	18	100	k5	0	40	m5	0	40	m5
			100	All	m5	40	65	m6	40	65	m6
						65	140	n6	65	100	n6
						140	200	p6	100	140	p6
						200	500	r6	140	200	r6
						500	All	r7	200	All	r7
Inner Ring Stationary in Relation to Load Direction	Inner Ring must be easily axially displaceable	Light	All Sizes		g6	All Sizes		g6	All Sizes		g6
		Normal									
		Heavy									
	Inner Ring need not be easily axially displaceable	Light	All Sizes		h6	All Sizes		h6	All Sizes		g6
		Normal									
		Heavy									
Pure Thrust (Axial) Load			All Sizes		j6	Consult Bearing Manufacturer			Consult Bearing Manufacturer		

[1]Tolerance classification shown are for solid steel shaft. Numerical values are listed in Table CD3.2. For hollow or nonferrous shafts, tighter fits may be needed.

[2]If greater accuracy is needed, substitute j5, k5 and m5 for j6, k6 and m6 respectively.

TABLE CD3.1. Shaft Tolerance Range Classification Selection vs Bearing Operating Conditions for Metric Radial Ball, Cylindrical Roller, and Spherical Roller Bearings of Tolerance Classes ABEC-1 or RBEC-1. **PART 2.** Dimensions in Inches.

DESIGN & OPERATING CONDITIONS			BALL BEARINGS			CYLINDRICAL BEARINGS			SPHERICAL BEARINGS		
Rotational Conditions	Inner Ring Axial Displaceability	Radial Loading	d		Tolerance Classification[1]	d		Tolerance Classification[1]	d		Tolerance Classification[1]
			Over	Incl.		Over	Incl.		Over	Incl.	
Inner Ring Rotating in relation to Load Direction		Light	0	0.71	h5	0	1.57	j6[2]	0	1.57	j6[2]
			0.71	All	j6[2]	1.57	5.51	k6[2]	1.57	5.51	k6[2]
						5.51	12.6	m6[2]	5.51	12.6	m6[2]
						12.6	19.7	n6	12.6	19.7	n6
						19.7	All	p6	19.7	All	p6
or		Normal	0	0.71	j5	0	1.57	k5	0	1.57	k5
			0.71	All	k6	1.57	3.94	m5	1.57	2.56	m5
						3.94	5.51	m6	2.56	3.94	m6
						5.51	12.6	n6	3.94	5.51	n6
						12.6	19.7	p6	5.51	11.0	p6
						19.7	All	r6	11.0	19.7	r6
									19.7	All	r7
Load Direction is Indeterminate		Heavy	0.71	3.94	k5	0	1.57	m5	0	1.57	m5
			3.94	All	m5	1.57	2.56	m6	1.57	2.56	m6
						2.56	5.51	n6	2.56	3.94	n6
						5.51	7.87	p6	3.94	5.51	p6
						7.87	19.7	r6	5.51	7.87	r6
						19.7	All	r7	7.87	All	r7
Inner Ring Stationary in Relation to Load Direction	Inner Ring must be easily axially displaceable	Light	All Sizes		g6	All Sizes		g6	All Sizes		g6
		Normal									
		Heavy									
	Inner Ring need not be easily axially displaceable	Light	All Sizes		h6	All Sizes		h6	All Sizes		g6
		Normal									
		Heavy									
Pure Thrust (Axial) Load			All Sizes		j6	Consult Bearing Manufacturer			Consult Bearing Manufacturer		

[1]Tolerance classification shown are for solid steel shaft. Numerical values are listed in Table CD3.2. For hollow or nonferrous shafts, tighter fits may be needed.

[2]If greater accuracy is needed, substitute j5, k5 and m5 for j6, k6 and m6 respectively.

TABLE CD3.2. Shaft Diameter Tolerance Limits and Deviations vs Tolerance Classifications for Metric Radial Ball, Cylindrical Roller, and Spherical Roller Bearings of Tolerance Classes ABEC-1 or RBEC-1. **PART 1.** Dimensions in Millimeters; Deviations and Fi

d			Tolerance Classifications																									
			g6		h6		h5		j5		j6		k5		k6		m5		m6		n6		p6		r6		r7	
Over	Incl.	Deviation	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit	Shaft Deviation	Resultant Fit
3	6	0	-4	12L	0	8L	0	5L	3	2L	6	2L	6	1T			9	4T										
		-8	-12	4T	-8	8T	-5	8T	-2	11T	-2	14T	1	14T			4	17T										
6	10	0	-5	14L	0	9L	0	6L	4	2L	7	2L	7	1T			12	6T										
		-8	-14	3T	-9	8T	-6	8T	-2	12T	-2	15T	1	15T			6	20T										
10	18	0	-6	17L	0	11L	0	8L	5	3L	8	3L	9	1T			15	7T										
		-8	-17	2T	-11	8T	-8	8T	-3	13T	-3	16T	1	17T			7	23T										
18	30	0	-7	20L	0	13L			5	4L	9	4L	11	2T			17	8T										
		-10	-20	3T	-13	10T			-4	15T	-4	19T	2	21T			8	27T										
30	50	0	-9	25L	0	16L			6	5L	11	5L	13	2T	18	2T	20	9T	25	9T								
		-12	-25	3T	-16	12T			-5	18T	-5	23T	2	25T	2	30T	9	32T	9	37T								
50	80	0	-10	29L	0	19L			6	7L	12	7L	15	2T	21	2T	24	11T	30	11T	39	20T						
		-15	-29	5T	-19	15T			-7	21T	-7	27T	2	30T	2	36T	11	39T	11	45T	20	54T						
80	120	0	-12	34L	0	22L			6	9L	13	9L	18	3T	25	3T	28	13T	35	13T	45	23T	59	37T				
		-20	-34	8T	-22	20T			-9	26T	-9	33T	3	38T	3	45T	13	48T	13	55T	23	65T	37	79T				
120	180	0	-14	39L	0	25L			7	11L	14	11L	21	3T	28	3T	33	15T	40	15T	52	27T	68	43T	90	65T		
		-25	-39	11T	-25	25T			-11	32T	-11	39T	3	46T	3	53T	15	58T	15	65T	27	77T	43	93T	65	115T		
180	200	0	-15	44L	0	29L			7	13L	16	13L	24	4T			37	17T	46	17T	60	31T	79	50T	106	77T		
		-30	-44	15T	-29	30T			-13	37T	-13	46T	4	54T			17	67T	17	76T	31	90T	50	109T	77	136T		
200	225	0	-15	44L	0	29L			7	13L	16	13L	24	4T			37	17T	46	17T	60	31T	79	50T	109	80T	126	80T
		-30	-44	15T	-29	30T			-13	37T	-13	46T	4	54T			17	67T	17	76T	31	90T	50	109T	80	139T	80	156T
225	250	0	-15	44L	0	29L			7	13L	16	13L	24	4T			37	17T	46	17T	60	31T	79	50T	113	84T	130	84T
		-30	-44	15T	-29	30T			-13	37T	-13	46T	4	54T			17	67T	17	76T	31	90T	50	109T	84	143T	84	160T
250	280	0	-17	49L	0	32L			7	16L	16	16L	27	4T			43	20T	52	20T	66	34T	88	56T	126	94T	146	94T
		-35	-49	18T	-32	35T			-16	42T	-16	51T	4	62T			20	78T	20	87T	34	101T	56	123T	94	161T	94	181T
280	315	0	-17	49L	0	32L			7	16L	16	16L	27	4T			43	20T	52	20T	66	34T	88	56T	130	98T	150	98T
		-35	-49	18T	-32	35T			-16	42T	-16	51T	4	62T			20	78T	20	87T	34	101T	56	123T	98	165T	98	185T
315	355	0	-18	54L	0	36L			7	18L	18	18L	29	4T			46	21T	57	21T	73	37T	98	62T	144	108T	165	108T
		-40	-54	22T	-36	40T			-18	47T	-18	58T	4	69T			21	86T	21	97T	37	113T	62	138T	108	184T	108	205T
355	400	0	-18	54L	0	36L			7	18L	18	18L	29	4T			46	21T			73	37T	98	62T	150	114T	171	114T
		-40	-54	22T	-36	40T			-18	47T	-18	58T	4	69T			21	86T			37	113T	62	138T	114	190T	114	211T
400	450	0	-20	60L	0	40L			7	20L	20	20L	32	5T			50	23T			80	40T	108	68T	166	126T	189	126T
		-45	-60	25T	-40	45T			-20	52T	-20	65T	5	77T			23	95T			40	125T	68	153T	126	211T	126	234T
450	500	0	-20	60L	0	40L			7	20L	20	20L	32	5T			50	23T			80	40T	108	68T	172	132T	195	132T
		-45	-60	25T	-40	45T			-20	52T	-20	65T	5	77T			23	95T			40	125T	68	153T	132	217T	132	240T
500	630	0	-22	66L	0	44L			8	22L	22	22L	30	0T			56	26T					122	78T	194	150T	220	150T
		-50	-66	28T	-44	50T			-22	58T	-22	72T	0	80T			26	106T					78	172T	150	244T	150	270T
630	710	0	-24	74L	0	50L			10	25L	25	25L	35	0T			65	30T					138	88T	225	175T	255	175T
		-75	-74	51T	-50	75T			-25	85T	-25	100T	0	110T			30	140T					88	213T	175	300T	175	330T
710	800	0	-24	74L	0	50L			10	25L	25	25L	35	0T			65	30T					138	88T	235	185T	265	185T
		-75	-74	51T	-50	75T			-25	85T	-25	100T	0	110T			30	140T					88	213T	185	310T	185	340T
800	900	0	-26	82L	0	56L			12	28L	28	28L	40	0T			74	34T					156	100T	266	210T	300	210T
		-100	-82	74T	-56	100T			-28	112T	-28	128T	0	140T			34	174T					100	256T	210	366T	210	400T
900	1000	0	-26	82L	0	56L			12	28L	28	28L	40	0T			74	34T					156	100T	276	220T	310	220T
		-100	-82	74T	-56	100T			-28	112T	-28	128T	0	140T			34	174T					100	256T	220	376T	220	410T
1000	1120	0	-28	94L	0	66L			13	33L	33	33L	46	0T			86	40T					186	120T	316	250T	335	250T
		-125	-94	97T	-66	125T			-33	138T	-33	158T	0	171T			40	211T					120	311T	250	441T	250	460T
1120	1250	0	-28	94L	0	66L			13	33L	33	33L	46	0T			86	40T					186	120T	326	260T	365	260T
		-125	-94	97T	-66	125T			-33	138T	-33	158T	0	171T			40	211T					120	311T	260	451T	260	490T

L = Loose, T = Tight

TABLE CD3.2. Shaft Diameter Tolerance Limits and Deviations vs Tolerance Classifications for Metric Radial Ball, Cylindrical Roller, and Spherical Roller Bearings of Tolerance Classes ABEC-1 or RBEC-1.
PART 2. Dimensions in Inches; Deviations and Fits in 0.0001 Inches.

d			Tolerance Classifications																									
			g6		h6		h5		j5		j6		k5		k6		m5		m6		n6		p6		r6		r7	
Over	Incl.	Devi-ation	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit	Shaft Devi-ation	Resul-tant Fit
0.1181	0.2362	0	-2	5L	0	3L	0	2L	1	1L	2	1L	2	0T			4	2T										
		-3	-5	1T	-3	3T	-2	3T	-1	4T	-1	5T	0	5T			2	7T										
0.2362	0.3937	0	-2	6L	0	4L	0	2L	2	1L	3	1L	3	0T			5	2T										
		-3	-6	1T	-4	3T	-2	3T	-1	5T	-1	6T	0	6T			2	8T										
0.3937	0.7087	0	-2	7L	0	4L	0	3L	2	1L	3	1L	4	0T			6	3T										
		-3	-7	1T	-4	3T	-3	3T	-1	5T	-1	6T	0	7T			3	9T										
0.7087	1.1811	0	-3	8L	0	5L			2	2L	4	2L	4	1T			7	3T										
		-4	-8	1T	-5	4T			-2	6T	-2	8T	1	8T			3	11T										
1.1811	1.9685	0	-4	10L	0	6L			2	2L	4	2L	5	1T	7	1T	8	4T	10	4T								
		-4	-11	0.5T	-6	4.5T			-2	6.5T	-2	8.5T	1	9.5T	1	11.5T	4	12.5T	4	14.5T								
1.9685	3.1496	0	-4	11L	0	7L			2	3L	5	3L	6	1T	8	1T	9	4T	12	4T	15	8T						
		-6	-11	2T	-7	6T			-3	8T	-3	11T	1	12T	1	14T	4	15T	4	18T	8	21T						
3.1496	4.7244	0	-5	13L	0	9L			2	4L	5	4L	7	1T	10	1T	11	5T	14	5T	18	9T	23	15T				
		-8	-13	3T	-9	8T			-4	10T	-4	13T	1	15T	1	18T	5	19T	5	22T	9	26T	15	31T				
4.7244	7.0866	0	-6	15L	0	10L			3	4L	6	4L	8	1T	11	1T	13	6T	16	6T	20	11T	27	17T	35	26T		
		-10	-15	4T	-10	10T			-4	13T	-4	16T	1	18T	1	21T	6	23T	6	26T	11	30T	17	37T	26	45T		
7.0866	7.8740	0	-6	17L	0	11L			3	5L	6	5L	9	2T			15	7T	18	7T	24	12T	31	20T	42	30T		
		-12	-17	6T	-11	12T			-5	15T	-5	18T	2	21T			7	27T	7	30T	12	36T	20	43T	30	54T		
7.8740	8.8583	0	-6	17L	0	11L			3	5L	6	5L	9	2T			15	7T	18	7T	24	12T	31	20T	43	31T	50	31T
		-12	-17	6T	-11	12T			-5	15T	-5	18T	2	21T			7	27T	7	30T	12	36T	20	43T	31	55T	31	62T
8.8583	9.8425	0	-6	17L	0	11L			3	5L	6	5L	9	2T			15	7T	18	7T	24	12T	31	20T	44	33T	51	33T
		-12	-17	6T	-11	12T			-5	15T	-5	18T	2	21T			7	27T	7	30T	12	36T	20	43T	33	56T	33	63T
9.8425	11.0236	0	-7	19L	0	13L			3	6L	6	6L	11	2T			17	8T	20	8T	26	13T	35	22T	50	37T	57	37T
		-14	-19	7T	-13	14T			-6	17T	-6	20T	2	25T			8	31T	8	34T	13	40T	22	49T	37	64T	37	71T
11.0236	12.4016	0	-7	19L	0	13L			3	6L	6	6L	11	2T			17	8T	20	8T	26	13T	35	22T	51	39T	59	39T
		-14	-19	7T	-13	14T			-6	17T	-6	20T	2	25T			8	31T	8	34T	13	40T	22	49T	39	65T	39	73T
12.4016	13.9764	0	-7	21L	0	14L			3	7L	7	7L	11	2T			18	8T	22	8T	29	15T	39	26T	57	43T	65	43T
		-16	-21	9T	-14	16T			-7	19T	-7	23T	2	27T			8	34T	8	38T	15	45T	24	55T	43	73T	43	81T
13.9764	15.7480	0	-7	21L	0	14L			3	7L	7	7L	11	2T			18	8T			29	15T	39	26T	59	45T	67	45T
		-16	-21	9T	-14	16T			-8	19T	-7	23T	2	27T			8	34T			15	45T	24	55T	45	75T	45	83T
15.7480	17.7165	0	-8	24L	0	16L			3	8L	8	8L	13	2T			20	9T			31	16T	43	27T	65	50T	74	50T
		-18	-24	10T	-16	18T			-8	21T	-8	26T	2	31T			9	38T			16	49T	27	61T	50	83T	50	92T
17.7165	19.6850	0	-8	24L	0	16L			3	8L	8	8L	13	2T			20	9T			31	16T	43	27T	68	52T	77	52T
		-18	-24	10T	-16	18T			-8	21T	-8	26T	2	31T			9	38T			16	49T	27	61T	52	86T	52	95T
19.6850	22.0472	0	-9	26L	0	17L			3	9L	9	9L	12	0T			22	10T					48	31T	76	59T	87	59T
		-20	-26	11T	-17	20T			-9	23T	-9	29T	0	32T			10	42T					31	68T	59	96T	59	106T
22.0472	24.8031	0	-9	26L	0	17L			3	9L	9	9L	12	0T			22	10T					48	31T	78	61T	89	61T
		-20	-26	11T	-17	20T			-9	23T	-9	29T	0	32T			10	42T					31	68T	61	98T	61	109T
24.8031	27.9528	0	-9	29L	0	20L			4	10L	10	10L	14	0T			26	12T					54	35T	89	68L	100	69T
		-30	-29	21T	-20	30T			-10	34T	-10	40T	0	44T			12	56T					35	84T	69	119T	69	130T
27.9528	31.4961	0	-9	29L	0	20L			4	10L	10	10L	14	0T			26	12T					54	35T	93	73T	104	73T
		-30	-29	21T	-20	30T			-10	34T	-10	40T	0	44T			12	56T					35	84T	73	123T	73	134T
31.4961	35.4331	0	-10	32L	0	22L			5	11L	11	11L	16	0T			29	13T					61	39T	105	83T	118	83T
		-39	-32	29T	-22	39T			-11	44T	-11	50T	0	55T			13	68T					39	100T	83	144T	83	157T
35.4331	39.3701	0	-10	32L	0	22L			5	11L	11	11L	16	0T			29	13T					61	39T	109	87T	122	87T
		-39	-32	29T	-22	39T			-11	44T	-11	50T	0	55T			13	68T					39	100T	87	148T	87	161T
39.3701	44.0945	0	-11	37L	0	26L			5	13L	13	13L	18	0T			34	16T					73	47T	124	98T	140	98T
		-49	-37	38T	-26	49T			-13	54T	-13	62T	0	67T			16	83T					47	122T	98	173T	98	189T
44.0945	49.2126	0	-11	37L	0	26L			5	13L	13	13L	18	0T			34	16T					73	47T	128	102T	144	102T
		-49	-37	38T	-26	49T			-13	54T	-13	62T	0	67T			16	83T					47	122T	102	177T	102	193T

L = Loose, T = Tight

TABLE CD3.3. Housing Bore Tolerance Range Classification Selection vs Bearing Operating Conditions for Metric Radial Ball, Cylindrical Roller, and Spherical Roller

DESIGN & OPERATING CONDITIONS				Tolerance Classification[1]
Rotational Conditions	Loading	Other Conditions	Outer Ring Axial Displaceability	
Outer Ring Stationary in relation to load direction	Light Normal or Heavy	Heat input through shaft	Outer ring axially displaceable	G7[3]
		Housing split axially		H7[2]
		Housing not split axially		H6[2]
	Shock with temporary complete unloading		Transitional Range[4]	J6[2]
Load Direction indeterminate	Light			
	Normal or heavy	Split not recommended		K6[2]
	Heavy shock			M6[2]
Outer Ring Rotating in relation to load direction	Light			
	Normal or heavy		Outer ring not easily axially displaceable	N6[2]
	Heavy	Thin wall housing not split		P6[2]

[1]For cast iron or steel housings. Numerical values are listed in Table CD3.4. For housings of non-ferrous alloys tighter fits may be needed.

[2]Where wider tolerances are permissible, use tolerance classifications H8, H7, J7, K7, M7, N7 and P7 in place of H7, H6, J6, K6, M6, N6 and P6 respectively.

[3]For large bearings and temperature differences between outer ring and housings greater than 10°C, F7 may be used instead of G7.

[4]The tolerance zones are such that outer ring may be either tight or loose in the housing.

TABLE CD3.4. Housing Bore Tolerance Limits and Deviations vs Tolerance Classifications for Metric Radial Ball, Cylindrical Roller, and Spherical Roller Bearings of Tolerance Classes ABEC-1 or RBEC-1. **PART 1.** Dimensions in Millimeters; Deviations and Fits in Micrometers.

D			Tolerance Classifications																											
			F7		G7		H8		H7		H6		J6		J7		K6		K7		M6		M7		N6		N7		P6		P7	
Over	Incl.	Deviation	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit
10	18	0	16	42L	6	32L	0	35L	0	26L	0	19L	-5	14L	-8	18L	-9	10L	-12	14L	-15	4L	-18	8L	-20	1T	-23	3L	-26	7T	-29	3T
		-8	34	16L	24	6L	27	0L	18	0L	11	0L	6	5T	10	8T	2	9T	6	12T	-4	15T	0	18T	-9	20T	-5	23T	-15	26T	-11	29T
18	30	0	20	50L	7	37L	0	42L	0	30L	0	22L	-5	17L	-9	21L	-11	11L	-15	15L	-17	5L	-21	9L	-24	2T	-28	2L	-31	9T	-35	5T
		-9	41	20L	28	7L	33	0L	21	0L	13	0L	8	5T	12	9T	2	11T	6	15T	-4	17T	0	21T	-11	24T	-7	28T	-18	31T	-14	35T
30	50	0	25	61L	9	45L	0	50L	0	36L	0	27L	-6	21L	-11	25L	-13	14L	-18	18L	-20	7L	-25	11L	-28	1T	-33	3L	-37	10T	-42	6T
		-11	50	25L	34	9L	39	0L	25	0L	16	0L	10	6T	14	11T	3	13T	7	18T	-4	20T	0	25T	-12	28T	-8	33T	-21	37T	-17	42T
50	80	0	30	73L	10	53L	0	59L	0	43L	0	32L	-6	26L	-12	31L	-15	17L	-21	22L	-24	8L	-30	13L	-33	1T	-39	4L	-45	13T	-51	8T
		-13	60	30L	40	10L	46	0L	30	0L	19	0L	13	6T	18	12T	4	15T	9	21T	-5	24T	0	30T	-14	33T	-9	39T	-26	45T	-21	51T
80	120	0	36	86L	12	62L	0	69L	0	50L	0	37L	-6	31L	-13	37L	-18	19L	-25	25L	-28	9L	-35	15L	-38	1T	-45	5L	-52	15T	-59	9T
		-15	71	36L	47	12L	54	0L	35	0L	22	0L	16	6T	22	13T	4	18T	10	25T	-6	28T	0	35T	-16	38T	-10	45T	-30	52T	-24	59T
120	150	0	43	101L	14	72L	0	81L	0	58L	0	43L	-7	36L	-14	44L	-21	22L	-28	30L	-33	10L	-40	18L	-45	2T	-52	6L	-61	18T	-68	10T
		-18	83	43L	54	14L	63	0L	40	0L	25	0L	18	7T	26	14T	4	21T	12	28T	-8	33T	0	40T	-20	45T	-12	52T	-36	61T	-28	68T
150	180	0	43	108L	14	79L	0	88L	0	65L	0	50L	-7	43L	-14	51L	-21	29L	-28	37L	-33	17L	-40	25L	-45	5L	-52	13L	-61	11T	-68	3T
		-25	83	43L	54	14L	63	0L	40	0L	25	0L	18	7T	26	14T	4	21T	12	28T	-8	33T	0	40T	-20	45T	-12	52T	-36	61T	-28	68T
180	250	0	50	126L	15	91L	0	102L	0	76L	0	59L	-7	52L	-16	60L	-24	35L	-33	43L	-37	22L	-46	30L	-51	8L	-60	16L	-70	11T	-79	3T
		-30	96	50L	61	15L	72	0L	46	0L	29	0L	22	7T	30	16T	5	24T	13	33T	-8	37T	0	46T	-22	51T	-14	60T	-41	70T	-33	79T
250	315	0	56	143L	17	104L	0	116L	0	87L	0	67L	-7	60L	-16	71L	-27	40L	-36	51L	-41	26L	-52	35L	-57	10L	-66	21L	-79	12T	-88	1T
		-35	108	56L	69	17L	81	0L	52	0L	32	0L	25	7T	36	16T	5	27T	16	36T	-9	41T	0	52T	-25	57T	-14	66T	-47	79T	-36	88T
315	400	0	62	159L	18	115L	0	129L	0	97L	0	76L	-7	69L	-18	79L	-29	47L	-40	57L	-46	30L	-57	40L	-62	14L	-73	24L	-87	11T	-98	1T
		-40	119	62L	75	18L	89	0L	57	0L	36	0L	29	7T	39	18T	7	29T	17	40T	-10	46T	0	57T	-26	62T	-16	73T	-51	87T	-41	98T
400	500	0	68	176L	20	128L	0	142L	0	108L	0	85L	-7	78L	-20	88L	-32	53L	-45	63L	-50	35L	-63	45L	-67	18L	-80	28L	-95	10T	-108	0T
		-45	131	68L	83	20L	97	0L	63	0L	40	0L	33	7T	43	20T	8	32T	18	45T	-10	50T	0	63T	-27	67T	-17	80T	-55	95T	-45	108T
500	630	0	76	196L	22	142L	0	160L	0	120L	0	94L	-7	87L	-22	98L	-44	50L	-70	50L	-70	24L	-96	24L	-88	6L	-114	6L	-122	28T	-148	28T
		-50	146	76L	92	22L	110	0L	70	0L	44	0L	37	7T	48	22T	0	44T	0	70T	-26	70T	-26	96T	-44	88T	-44	114T	-78	122T	-78	148T
630	800	0	80	235L	24	179L	0	200L	0	155L	0	125L	-10	115L	-24	131L	-50	75L	-80	75L	-80	45L	-110	45L	-100	25L	-130	25L	-138	13T	-168	13T
		-75	160	80L	104	24L	125	0L	80	0L	50	0L	40	10T	56	24T	0	50T	0	80T	-30	80T	-30	110T	-50	100T	-50	130T	-88	138T	-88	168T
800	1000	0	86	276L	26	216L	0	240L	0	190L	0	156L	-10	146L	-26	164L	-56	100L	-90	100L	-90	66L	-124	66L	-112	44L	-146	44L	-156	0T	-190	0T
		-100	176	86L	116	26L	140	0L	90	0L	56	0L	46	10T	64	26T	0	56T	0	90T	-34	90T	-34	124T	-56	112T	-56	146T	-100	156T	-100	190T
1000	1250	0	98	328L	28	258L	0	290L	0	230L	0	191L	-10	181L	-28	202L	-66	125L	-105	125L	-106	85L	-145	85L	-132	59L	-171	59L	-186	5L	-225	5L
		-125	203	98L	133	28L	165	0L	105	0L	66	0L	56	10T	77	28T	0	66T	0	105T	-40	106T	-40	145T	-66	132T	-66	171T	-120	186T	-120	225T
1250	1600	0	110	395L	30	315L	0	355L	0	285L	0	238L	-10	228L	-30	255L	-78	160L	-125	160L	-126	112L	-173	112L	-156	82L	-203	82L	-218	20L	-265	20L
		-160	235	110L	155	30L	195	0L	125	0L	78	0L	68	10T	95	30T	0	78T	0	125T	-48	126T	-48	173T	-78	156T	-78	203T	-140	218T	-140	265T
1600	2000	0	120	470L	32	382L	0	430L	0	350L	0	292L	-10	282L	-32	318L	-92	200L	-150	200L	-150	142L	-208	142L	-184	108L	-242	108L	-262	30L	-320	30L
		-200	270	120L	182	32L	230	0L	150	0L	92	0L	82	10T	118	32T	0	92T	0	150T	-58	150T	-58	208T	-92	184T	-92	242T	-170	262T	-170	320T
2000	2500	0	130	555L	34	459L	0	530L	0	425L	0	360L	-10	350L	-34	391L	-110	250L	-175	250L	-178	182L	-243	182L	-220	140L	-285	140L	-305	55L	-370	55L
		-250	305	130L	209	34L	280	0L	175	0L	110	0L	100	10T	141	34T	0	110T	0	175T	-68	178T	-68	243T	-110	220T	-110	285T	-195	305T	-195	370T

L = Loose, T = Tight

TABLE CD3.4. Housing Bore Tolerance Limits and Deviations vs Tolerance Classifications for Metric Radial Ball, Cylindrical Roller, and Spherical Roller Bearings of Tolerance Classes ABEC-1 or RBEC-1. **PART 2.** Dimensions in Inches; Deviations and Fits in 0.0001 Inches.

D			Tolerance Classifications																											
			F7		G7		H8		H7		H6		J6		J7		K6		K7		M6		M7		N6		N7		P6		P7	
Over	Incl.	Deviation	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit	Housing Deviation	Resultant Fit
0.3937	0.7087	0	6	16L	2	12L	0	14L	0	10L	0	7L	-2	5L	-3	7L	-4	4L	-5	5L	-6	1L	-7	3L	-8	1T	-9	1L	-10	3T	-11	1T
		-3	13	6L	9	2L	11	0L	7	0L	4	0L	2	2T	4	3T	1	4T	2	5T	-2	6T	0	7T	-4	8T	-2	9T	-6	10T	-4	11T
0.7087	1.1811	0	8	19.5L	3	14.5L	0	16.5L	0	11.5L	0	8.5L	-2	6.5L	-4	8.5L	-4	4.5L	-6	5.5L	-7	1.5L	-8	3.5L	-9	0.5T	-11	0.5L	-12	3.5T	-14	2.5T
		-3.5	16	8L	11	3L	13	0L	8	0L	5	0L	3	2T	5	4T	1	4T	2	6T	-2	7T	0	8T	-4	9T	-3	11T	-7	12T	-6	14T
1.1811	1.9685	0	10	24.5L	4	17.5L	0	19.5L	0	14.5L	0	10.5L	-2	8.5L	-4	10.5L	-5	5.5L	-7	7.5L	-8	2.5L	-10	4.5L	-11	0.5T	-13	1.5L	-15	3.5T	-17	2.5T
		-4.5	20	10L	13	4L	15	0L	10	0L	6	0L	4	2T	6	4T	1	5T	3	7T	-2	8T	0	10T	-5	11T	-3	13T	-8	15T	-7	17T
1.9685	3.1496	0	12	29L	4	21L	0	23L	0	17L	0	12L	-2	10L	-5	12L	-6	7L	-8	9L	-9	3L	-12	5L	-13	1T	-15	1L	-18	5T	-20	3T
		-5	24	12L	16	4L	18	0L	12	0L	7	0L	5	2T	7	5T	2	6T	4	8T	-2	9T	0	12T	-6	13T	-4	15T	-10	18T	-8	20T
3.1496	4.7244	0	14	34L	5	25L	0	27L	0	20L	0	15L	-2	12L	-5	15L	-7	8L	-10	10L	-11	4L	-14	6L	-15	0T	-18	2L	-20	6T	-23	3T
		-6	28	14L	19	5L	21	0L	14	0L	9	0L	6	2T	9	5T	2	7T	4	10T	-2	11T	0	14T	-6	15T	-4	18T	-12	20T	-9	23T
4.7244	5.9055	0	17	40L	6	28L	0	32L	0	23L	0	17L	-3	14L	-6	17L	-8	9L	-11	12L	-13	4L	-16	7L	-18	1T	-20	2L	-24	7T	-27	4T
		-7	33	17L	21	6L	25	0L	16	0L	10	0L	7	3T	10	6T	2	8T	5	11T	-3	13T	0	16T	-8	18T	-5	20T	-14	24T	-11	27T
5.9055	7.0866	0	17	43L	6	31L	0	35L	0	26L	0	20L	-3	17L	-6	20L	-8	12L	-11	15L	-13	7L	-16	10L	-18	2L	-20	5L	-24	4T	-27	1T
		-10	33	17L	21	6L	25	0L	16	0L	10	0L	7	3T	10	6T	2	8T	5	11T	-3	13T	0	16T	-8	18T	-5	20T	-14	24T	-11	27T
7.0866	9.8425	0	20	50L	6	36L	0	40L	0	30L	0	23L	-3	21L	-6	24L	-9	14L	-13	17L	-15	9L	-18	12L	-20	3L	-24	6L	-28	4T	-31	1T
		-12	38	20L	24	6L	28	0L	18	0L	11	0L	9	3T	12	6T	2	9T	5	13T	-3	15T	0	18T	-9	20T	-6	24T	-16	28T	-13	31T
9.8425	12.4016	0	22	57L	7	41L	0	46L	0	34L	0	27L	-3	24L	-6	28L	-11	16L	-14	20L	-16	10L	-20	14L	-22	4L	-26	8L	-31	5T	-35	0T
		-14	43	22L	27	7L	32	0L	20	0L	13	0L	10	3T	14	6T	2	11T	6	14T	-4	16T	0	20T	-10	22T	-6	26T	-19	31T	-14	35T
12.4016	15.7480	0	24	63L	7	46L	0	51L	0	38L	0	30L	-3	27L	-7	31L	-11	19L	-16	23L	-18	12L	-22	16L	-24	6L	-29	10L	-34	4T	-39	0T
		-16	47	24L	30	7L	35	0L	22	0L	14	0L	11	3T	15	7T	3	11T	7	16T	-4	18T	0	22T	-10	24T	-6	29T	-20	34T	-16	39T
15.7480	19.6850	0	27	70L	8	51L	0	56L	0	43L	0	34L	-3	31L	-8	35L	-13	21L	-18	25L	-20	14L	-25	18L	-26	7L	-31	11L	-37	4T	-43	0T
		-18	52	27L	33	8L	38	0L	25	0L	16	0L	13	3T	17	8T	3	13T	7	18T	-4	20T	0	25T	-11	26T	-7	31T	-22	37T	-18	43T
19.6850	24.8031	0	30	77L	9	56L	0	63L	0	48L	0	37L	-3	35L	-9	39L	-17	20L	-28	20L	-28	10L	-38	10L	-35	3L	-45	3L	-48	11T	-58	11T
		-20	57	30L	36	9L	43	0L	28	0L	17	0L	15	3T	19	9T	0	17T	0	28T	-10	28T	-10	38T	-17	35T	-17	45T	-31	48T	-31	58T
24.8031	31.4961	0	31	93L	9	71L	0	79L	0	61L	0	50L	-4	46L	-9	52L	-20	30L	-31	30L	-31	18L	-43	18L	-39	10L	-51	10L	-54	5T	-66	5T
		-30	63	31L	41	9L	49	0L	31	0L	20	0L	16	4T	22	9T	0	20T	0	31T	-12	31T	-12	43T	-20	39T	-20	51T	-35	54T	-35	66T
31.4961	39.3701	0	34	108L	10	85L	0	94L	0	74L	0	61L	-4	57L	-10	64L	-22	39L	-35	39L	-35	26L	-49	26L	-44	17L	-57	17L	-61	0T	-75	0T
		-39	69	34L	46	10L	55	0L	35	0L	22	0L	18	4T	25	10T	0	22T	0	35T	-13	35T	-13	49T	-22	44T	-22	57T	-39	61T	-39	75T
39.3701	49.2126	0	39	129L	11	101L	0	114L	0	90L	0	75L	-4	71L	-11	79L	-26	49L	-41	49L	-42	33L	-57	33L	-52	23L	-67	23L	-73	2L	-89	2L
		-49	80	39L	52	11L	65	0L	41	0L	26	0L	22	4T	30	11T	0	26T	0	41T	-16	42T	-16	57T	-26	52T	-26	67T	-47	73T	-47	89T
49.2126	62.9921	0	43	156L	12	124L	0	140L	0	112L	0	94L	-4	90L	-12	100L	-31	63L	-49	63L	-50	44L	-68	44L	-61	32L	-80	32L	-86	8L	-104	8L
		-63	93	43L	61	12L	77	0L	49	0L	31	0L	27	4T	37	12T	0	31T	0	49T	-19	50T	-19	68T	-31	61T	-31	80T	-55	86T	-55	104T
62.9921	78.7402	0	47	185L	13	151L	0	170L	0	138L	0	115L	-4	111L	-13	125L	-36	79L	-59	79L	-59	56L	-82	56L	-72	43L	-95	43L	-103	12L	-126	12L
		-79	106	47L	72	13L	91	0L	59	0L	36	0L	32	4T	46	13T	0	36T	0	59T	-23	59T	-23	82T	-36	72T	-36	95T	-67	103T	-67	126T
78.7402	98.4252	0	51	218L	13	180L	0	208L	0	167L	0	141L	-4	137L	-13	154L	-43	98L	-69	98L	-70	71L	-96	71L	-87	55L	-112	55L	-120	21L	-146	21L
		-98	120	51L	82	13L	110	0L	69	0L	43	0L	39	4T	56	13T	0	43T	0	69T	-27	70T	-27	96T	-43	87T	-43	112T	-77	120T	-77	146T

L = Loose, T = Tight

TABLE CD3.5. ANSI/ABMA vs ISO Tolerance Classifications

Ball and Non-Tapered Roller Bearings

ANSI/ABMA	ISO
ABEC 1 or RBEC 1	Normal Class
ABEC 3 or RBEC 3	Class 6
ABEC 5 or RBEC 5	Class 5
ABEC 7	Class 4
ABEC 9	Class 2

Metric Tapered Roller Bearings

ANSI/ABMA	ISO
K	Normal Class
N	Class 6X
C	Class 5
B	Class 4
A	Class 2

TABLE CD3.6. Tolerance Class ABEC-1, RBEC-1. Metric Ball and Roller Bearings [except tapered roller bearings[e]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 1.** Dimensions in Millimeters; Tolerances in Micrometers.

Inner Ring

	d		Δ_{dmp}		V_{dp}[f] diameter series			V_{dmp}	K_{ia}	S_{ia}[g]	Δ_{Bs}			V_{Bs}
	over	incl.	high	low	9	0, 1	2, 3, 4	max.	max.	max.	all high	normal low	modified[d] low	max.
a	0.6	2.5	0	-8	10	8	6	6	10	15	0	-40	---	12
	2.5	10	0	-8	10	8	6	6	10	20	0	-120	-250	15
	10	18	0	-8	10	8	6	6	10	20	0	-120	-250	20
	18	30	0	-10	13	10	8	8	13	25	0	-120	-250	20
	30	50	0	-12	14	12	9	9	15	30	0	-120	-250	20
	50	80	0	-15	19	19	11	11	20	30	0	-150	-380	25
	80	120	0	-20	25	25	15	15	25	35	0	-200	-380	25
	120	180	0	-25	31	31	19	19	30	40	0	-250	-500	30
	180	250	0	-30	38	38	23	23	40	45	0	-300	-500	30
	250	315	0	-35	44	44	26	26	50	55	0	-350	-500	35
	315	400	0	-40	50	50	30	30	60	65	0	-400	-630	40
	400	500	0	-45	56	56	34	34	65	75	0	-450	---	50
	500	630	0	-50	63	63	38	38	70	90	0	-500	---	60
	630	800	0	-75	---	---	---	---	80	100	0	-750	---	70
	800	1000	0	-100	---	---	---	---	90	110	0	-1000	---	80
	1000	1250	0	-125	---	---	---	---	100	125	0	-1250	---	100
	1250	1600	0	-160	---	---	---	---	120	150	0	-1600	---	120
	1600	2000	0	-200	---	---	---	---	140	170	0	-2000	---	140

Outer Ring

	D		Δ_{Dmp}		V_{Dp}[c,f] Open Bearings diameter series			Capped Bearings[b]	V_{Dmp}[c]	K_{ea}	S_{ea}[g]	Δ_{Cs}, Δ_{C1s}[g]		V_{Cs}, V_{C1s}[g]
	over	incl.	high	low	9	0, 1	2, 3, 4	2, 3, 4	max.	max.	max.	high	low	max.
a	2.5	6	0	-8	10	8	6	10	6	15	15			
	6	18	0	-8	10	8	6	10	6	15	20			
	18	30	0	-9	12	9	7	12	7	15	25			
	30	50	0	-11	14	11	8	16	8	20	30			
	50	80	0	-13	16	13	10	20	10	25	35			
	80	120	0	-15	19	19	11	26	11	35	40			
	120	150	0	-18	23	23	14	30	14	40	45			
	150	180	0	-25	31	31	19	38	19	45	55			
	180	250	0	-30	38	38	23	---	23	50	65	Identical to Δ_{Bs} and V_{Bs} of inner ring of same bearing		
	250	315	0	-35	44	44	26	---	26	60	75			
	315	400	0	-40	50	50	30	---	30	70	90			
	400	500	0	-45	56	56	34	---	34	80	100			
	500	630	0	-50	63	63	38	---	38	100	110			
	630	800	0	-75	94	94	55	---	55	120	120			
	800	1000	0	-100	125	125	75	---	75	140	125			
	1000	1250	0	-125	---	---	---	---	---	160	140			
	1250	1600	0	-160	---	---	---	---	---	190	150			
	1600	2000	0	-200	---	---	---	---	---	220	170			
	2000	2500	0	-250	---	---	---	---	---	250	190			

[a]This diameter is included in the group.

[b]No values have been established for diameter series 9, 0 and 1.

[c]Applies before mounting and after removal of internal or external snap ring.

[d]This refers to the rings of single bearings made for paired or stack mounting.

[e]For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

[f]No values have been established for diameter series 7 and 8.

[g]Applies to groove ball bearings only.

TABLE CD3.6. Tolerance Class ABEC-1, RBEC-1. Metric Ball and Roller Bearings [except tapered roller bearings[e]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 2.** Dimensions in Millimeters; Tolerances in 0.0001 Inches.

Inner Ring

	d		Δ_{dmp}		V_{dp}[f] diameter series			V_{dmp}	K_{ia}	S_{ia}[g]	Δ_{Bs}			V_{Bs}
	over	incl.	high	low	9	0, 1	2, 3, 4	max.	max.	max.	all high	normal low	modified[d] low	max.
a	0.6	2.5	0	-3	4	3	2.5	2.5	4	6	0	-16	---	4.5
	2.5	10	0	-3	4	3	2.5	2.5	4	8	0	-47	-98	6
	10	18	0	-3	4	3	2.5	2.5	4	8	0	-47	-98	8
	18	30	0	-4	5	4	3	3	5	10	0	-47	-98	8
	30	50	0	-4.5	6	4.5	3.5	3.5	6	12	0	-47	-98	8
	50	80	0	-6	7.5	7.5	4.5	4.5	8	12	0	-59	-150	10
	80	120	0	-8	10	10	6	6	10	14	0	-79	-150	10
	120	180	0	-10	12	12	7.5	7.5	12	16	0	-98	-197	12
	180	250	0	-12	15	15	9	9	16	18	0	-118	-197	12
	250	315	0	-14	17	17	10	10	20	22	0	-138	-197	14
	315	400	0	-16	20	20	12	12	24	26	0	-157	-248	16
	400	500	0	-18	22	22	13	13	26	30	0	-177	---	20
	500	630	0	-20	25	25	15	15	28	35	0	-197	---	24
	630	800	0	-30	---	---	---	---	31	39	0	-295	---	28
	800	1000	0	-39	---	---	---	---	35	43	0	-394	---	31
	1000	1250	0	-49	---	---	---	---	39	49	0	-492	---	39
	1250	1600	0	-63	---	---	---	---	47	59	0	-630	---	47
	1600	2000	0	-79	---	---	---	---	55	67	0	-787	---	55

Outer Ring

	D		Δ_{Dmp}		V_{Dp}[c,f] Open Bearings diameter series			Capped Bearings[b]	V_{Dmp}[c]	K_{ea}	S_{ea}[g]	Δ_{Cs}, Δ_{C1s}[g]	V_{Cs}, V_{C1s}[g]
	over	incl.	high	low	9	0, 1	2, 3, 4	2, 3, 4	max.	max.	max.	high low	max.
a	2.5	6	0	-3	4	3	2.5	4	2.5	6	6		
	6	18	0	-3	4	3	2.5	4	2.5	6	8		
	18	30	0	-3.5	4.5	3.5	3	4.5	3	6	10		
	30	50	0	-4.5	5.5	4.5	3	6.5	3	8	12		
	50	80	0	-5	6.5	5	4	8	4	10	14		
	80	120	0	-6	7.5	7.5	4.5	10	4.5	14	16		
	120	150	0	-7	9	9	5.5	12	5.5	16	18		
	150	180	0	-10	12	12	7.5	15	7.5	18	22		
	180	250	0	-12	15	15	9	---	9	20	26	Identical to Δ_{Bs} and V_{Bs} of inner ring of same bearing	
	250	315	0	-14	17	17	10	---	10	24	30		
	315	400	0	-16	20	20	12	---	12	28	35		
	400	500	0	-18	22	22	13	---	13	31	39		
	500	630	0	-20	25	25	15	---	15	39	43		
	630	800	0	-30	37	37	22	---	22	47	47		
	800	1000	0	-39	49	49	30	---	30	55	49		
	1000	1250	0	-49	---	---	---	---	---	63	55		
	1250	1600	0	-63	---	---	---	---	---	75	59		
	1600	2000	0	-79	---	---	---	---	---	87	67		
	2000	2500	0	-98	---	---	---	---	---	98	75		

[a] This diameter is included in the group.

[b] No values have been established for diameter series 9, 0 and 1.

[c] Applies before mounting and after removal of internal or external snap ring.

[d] This refers to the rings of single bearings made for paired or stack mounting.

[e] For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

[f] No values have been established for diameter series 7 and 8.

[g] Applies to groove ball bearings only.

TABLE CD3.7. Tolerance Class ABEC-3, RBEC-3. Metric Ball and Roller Bearings [except tapered roller bearings[e]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 1.** Dimensions in Millimeters; Tolerances in Micrometers.

Inner Ring

	d		Δ_{dmp}		V_{dp}[f] diameter series			V_{dmp}	K_{ia}	S_{ia}[g]	Δ_{Bs}			V_{Bs}
	over	incl.	high	low	9	0, 1	2, 3, 4	max.	max.	max.	all	normal	modified[a]	max.
						max.					high	low		
a	0.6	2.5	0	-7	9	7	5	5	5	10	0	-40	---	12
	2.5	10	0	-7	9	7	5	5	6	15	0	-120	-250	15
	10	18	0	-7	9	7	5	5	7	20	0	-120	-250	20
	18	30	0	-8	10	8	6	6	8	20	0	-120	-250	20
	30	50	0	-10	13	10	8	8	10	20	0	-120	-250	20
	50	80	0	-12	15	15	9	9	10	25	0	-150	-380	25
	80	120	0	-15	19	19	11	11	13	25	0	-200	-380	25
	120	180	0	-19	23	23	14	14	18	30	0	-250	-500	30
	180	250	0	-22	28	28	17	17	20	35	0	-300	-500	30
	250	315	0	-25	31	31	19	19	25	40	0	-350	-500	35
	315	400	0	-30	38	38	23	23	30	45	0	-400	-630	40
	400	500	0	-35	44	44	26	26	35	50	0	-450	---	45
	500	630	0	-40	50	50	30	30	40	55	0	-500	---	50

Outer Ring

	D		Δ_{Dmp}		V_{Dp}[c,f] Open Bearings diameter series			Capped Bearings[b]	V_{Dmp}[c]	K_{ea}	S_{ea}[g]	Δ_{Cs}, Δ_{C1s}[g]		V_{Cs}, V_{C1s}[g]
	over	incl.	high	low	9	0, 1	2, 3, 4	2, 3, 4	max.	max.	max.	high	low	max.
						max.								
a	2.5	6	0	-7	9	7	5	9	5	8	10			
	6	18	0	-7	9	7	5	9	5	8	15			
	18	30	0	-8	10	8	6	10	6	9	15			
	30	50	0	-9	11	9	7	13	7	10	20			
	50	80	0	-11	14	11	8	16	8	13	20			
	80	120	0	-13	16	16	10	20	10	18	25			
	120	150	0	-15	19	19	11	25	11	20	30	Identical to Δ_{Bs} and V_{Bs} of inner ring of same bearing		
	150	180	0	-18	23	23	14	30	14	23	35			
	180	250	0	-20	25	25	15	---	15	25	40			
	250	315	0	-25	31	31	19	---	19	30	45			
	315	400	0	-28	35	35	21	---	21	35	50			
	400	500	0	-33	41	41	25	---	25	40	55			
	500	630	0	-38	48	48	29	---	29	50	60			
	630	800	0	-45	56	56	34	---	34	60	65			
	800	1000	0	-60	75	75	45	---	45	75	70			

[a]This diameter is included in the group.

[b]No values have been established for diameter series 9.

[c]Applies before mounting and after removal of internal or external snap ring.

[d]This refers to the rings of single bearings made for paired or stack mounting.

[e]For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

[f]No values have been established for diameter series 7 and 8.

[g]Applies to groove ball bearings only.

TABLE CD3.7. Tolerance Class ABEC-3, RBEC-3. Metric Ball and Roller Bearings [except tapered roller bearings[e]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 2.** Dimensions in Millimeters; Tolerances in 0.0001 Inches.

Inner Ring

	d		Δ_{dmp}		V_{dp}[f] diameter series			V_{dmp}	K_{ia}	S_{ia}[g]	Δ_{Bs}			V_{Bs}
	over	incl.	high	low	9	0, 1	2, 3, 4	max.	max.	max.	all	normal	modified[a]	max.
						max.					high	low		
a	0.6	2.5	0	-3	3.5	3	2	2	2	4	0	-16	---	4.5
	2.5	10	0	-3	3.5	3	2	2	2.5	6	0	-47	-98	6
	10	18	0	-3	3.5	3	2	2	3	8	0	-47	-98	8
	18	30	0	-3	4	3	2.5	2.5	3	8	0	-47	-98	8
	30	50	0	-4	5	4	3	3	4	8	0	-47	-98	8
	50	80	0	-4.5	6	6	3.5	3.5	4	10	0	-59	-150	10
	80	120	0	-6	7.5	7.5	4.5	4.5	5	10	0	-79	-150	10
	120	180	0	-7	9	9	5.5	5.5	7	12	0	-98	-197	12
	180	250	0	-8.5	11	11	6.5	6.5	8	14	0	-118	-197	12
	250	315	0	-10	12	12	7.5	7.5	10	16	0	-138	-197	14
	315	400	0	-12	15	15	9	9	12	18	0	-157	-248	16
	400	500	0	-14	17	17	10	10	14	20	0	-177	---	18
	500	630	0	-16	20	20	12	12	16	22	0	-197	---	20

Outer Ring

	D		Δ_{Dmp}		V_{Dp}[c,f] Open Bearings diameter series			Capped Bearings[b]	V_{Dmp}[c]	K_{ea}	S_{ea}[g]	Δ_{Cs}, Δ_{C1s}[g]		V_{Cs}, V_{C1s}[g]
	over	incl.	high	low	9	0, 1	2, 3, 4	2, 3, 4	max.	max.	max.	high	low	max.
						max.								
a	2.5	6	0	-3	3.5	3	2	3.5	2	3	4			
	6	18	0	-3	3.5	3	2	3.5	2	3	6			
	18	30	0	-3	4	3	2.5	4	2.5	3.5	6			
	30	50	0	-3.5	4.5	3.5	3	5	3	4	8			
	50	80	0	-4.5	5.5	4.5	3	6.5	3	5	8			
	80	120	0	-5	6.5	6.5	4	8	4	7	10			
	120	150	0	-6	7.5	7.5	4.5	10	4.5	8	12	Identical to Δ_{Bs} and V_{Bs} of inner ring of same bearing		
	150	180	0	-7	9	9	5.5	12	5.5	9	14			
	180	250	0	-8	10	10	6	---	6	10	16			
	250	315	0	-10	12	12	7.5	---	7.5	12	18			
	315	400	0	-11	14	14	8.5	---	8.5	14	20			
	400	500	0	-13	16	16	10	---	10	16	22			
	500	630	0	-15	19	19	11	---	11	20	24			
	630	800	0	-18	22	22	13	---	13	24	26			
	800	1000	0	-24	30	30	18	---	18	30	28			

[a]This diameter is included in the group.

[b]No values have been established for diameter series 9.

[c]Applies before mounting and after removal of internal or external snap ring.

[d]This refers to the rings of single bearings made for paired or stack mounting.

[e]For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

[f]No values have been established for diameter series 7 and 8.

[g]Applies to groove ball bearings only.

TABLE CD3.8. Tolerance Class ABEC-5, RBEC-5. Metric Ball and Roller Bearings [except instrument bearings[e] and tapered roller bearings[f]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 1.** Dimensions in Millimeters; Tolerances in Micrometers.

Inner Ring

	d		Δ_{dmp}		V_{dp}[g] diameter series		V_{dmp}	K_{ia}	S_d	S_{ia}[c]	Δ_{Bs}			V_{Bs}
					9	0, 1, 2, 3, 4					all	normal	modified[d]	
	over	incl.	high	low	max.		max.	max.	max.	max.	high	low		max.
a	0.6	2.5	0	-5	5	4	3	4	7	7	0	-40	-250	5
	2.5	10	0	-5	5	4	3	4	7	7	0	-40	-250	5
	10	18	0	-5	5	4	3	4	7	7	0	-80	-250	5
	18	30	0	-6	6	5	3	4	8	8	0	-120	-250	5
	30	50	0	-8	8	6	4	5	8	8	0	-120	-250	5
	50	80	0	-9	9	7	5	5	8	8	0	-150	-250	6
	80	120	0	-10	10	8	5	6	9	9	0	-200	-380	7
	120	180	0	-13	13	10	7	8	10	10	0	-250	-380	8
	180	250	0	-15	15	12	8	10	11	13	0	-300	-500	10
	250	315	0	-18	18	14	9	13	13	15	0	-350	-500	13
	315	400	0	-23	23	18	12	15	15	20	0	-400	-630	15

Outer Ring

	D		Δ_{Dmp}		V_{Dp}[b,g] diameter series		V_{Dmp}	K_{ea}	S_D[h], S_{D1}[c]	S_{ea}[c,h]	S_{ea1}[c]	Δ_{Cs}, Δ_{C1s}[c]		V_{Cs}, V_{C1s}[c]
					9	0, 1, 2, 3, 4								
	over	incl.	high	low	max.		max.	max.	max.	max.	max.	high	low	max.
a	2.5	6	0	-5	5	4	3	5	8	8	11			5
	6	18	0	-5	5	4	3	5	8	8	11			5
	18	30	0	-6	6	5	3	6	8	8	11			5
	30	50	0	-7	7	5	4	7	8	8	11			5
	50	80	0	-9	9	7	5	8	8	10	14			6
	80	120	0	-10	10	8	5	10	9	11	16			8
	120	150	0	-11	11	8	6	11	10	13	18	Identical to Δ_{Bs} and V_{Bs} of		8
	150	180	0	-13	14	10	7	13	10	14	20	inner ring of same bearing		8
	180	250	0	-15	15	11	8	15	11	15	21			10
	250	315	0	-18	18	14	9	18	13	18	25			11
	315	400	0	-20	20	15	10	20	13	20	28			13
	400	500	0	-23	23	17	12	23	15	23	33			15
	500	630	0	-28	28	21	14	25	18	25	35			18
	630	800	0	-35	35	26	18	30	20	30	42			20

[a]This diameter is included in the group.

[b]No values have been established for capped bearings.

[c]Applies to groove type ball bearings only.

[d]This refers to the rings of single bearings made for paired or stack mounting.

[e]For instrument ball bearing tolerances see [3.2, 3.3].

[f]For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

[g]No values have been established for diameter series 7 and 8.

[h]Does not apply to bearings with flanged outer ring.

TABLE CD3.8. Tolerance Class ABEC-5, RBEC-5. Metric Ball and Roller Bearings [except instrument bearings[e] and tapered roller bearings[f]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 2.** Dimensions in Millimeters; Tolerances in 0.0001 Inches.

Inner Ring

	d		Δ_{dmp}		V_{dp}[g] diameter series		V_{dmp}	K_{ia}	S_d	S_{ia}[c]	Δ_{Bs}			V_{Bs}
					9	0, 1, 2, 3, 4					all	normal	modified[d]	
	over	incl.	high	low	max.		max.	max.	max.	max.	high	low		max.
a	0.6	2.5	0	-2	2	1.5	1	1.5	3	3	0	-16	-98	2
	2.5	10	0	-2	2	1.5	1	1.5	3	3	0	-16	-98	2
	10	18	0	-2	2	1.5	1	1.5	3	3	0	-31	-98	2
	18	30	0	-2.5	2.5	2	1	1.5	3	3	0	-47	-98	2
	30	50	0	-3	3	2.5	1.5	2	3	3	0	-47	-98	2
	50	80	0	-3.5	3.5	3	2	2	3	3	0	-59	-98	2.5
	80	120	0	-4	4	3	2	2.5	3.5	3.5	0	-79	-150	3
	120	180	0	-5	5	4	3	3	4	4	0	-98	-150	3
	180	250	0	-6	6	4.5	3	4	4.5	5	0	-118	-197	4
	250	315	0	-7	7	5.5	3.5	5	5	6	0	-138	-197	5
	315	400	0	-9	9	7	4.5	6	6	8	0	-157	-248	6

Outer Ring

	D		Δ_{Dmp}		V_{Dp}[b,g] diameter series		V_{Dmp}	K_{ea}	S_D[h],S_{D1}[c]	S_{ea}[c,h]	S_{ea1}[c]	Δ_{Cs}, Δ_{C1s}[c]		V_{Cs}, V_{C1s}[c]
					9	0, 1, 2, 3, 4								
	over	incl.	high	low	max.		max.	max.	max.	max.	max.	high	low	max.
a	2.5	6	0	-2	2	1.5	1	2	3	3	4.5			2
	6	18	0	-2	2	1.5	1	2	3	3	4.5			2
	18	30	0	-2.5	2.5	2	1	2.5	3	3	4.5			2
	30	50	0	-3	3	2	1.5	3	3	3	4.5			2
	50	80	0	-3.5	3.5	3	2	3	3	4	5.5			2.5
	80	120	0	-4	4	3	2	4	3.5	4.5	6.5			3
	120	150	0	-4.5	4.5	3	2.5	4.5	4	5	7	Identical to Δ_{Bs} and V_{Bs} of		3
	150	180	0	-5	5	4	3	5	4	5.5	8	inner ring of same bearing		3
	180	250	0	-6	6	4.5	3	6	4.5	6	8.5			4
	250	315	0	-7	7	5.5	3.5	7	5	7	10			4.5
	315	400	0	-8	8	6	4	8	5	8	11			5
	400	500	0	-9	9	6.5	4.5	9	6	9	13			6
	500	630	0	-11	11	8.5	5.5	10	7	10	14			7
	630	800	0	-14	14	10	7	12	8	12	16.5			8

[a]This diameter is included in the group.

[b]No values have been established for capped bearings.

[c]Applies to groove type ball bearings only.

[d]This refers to the rings of single bearings made for paired or stack mounting.

[e]For instrument ball bearing tolerances see [3.2, 3.3].

[f]For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

[g]No values have been established for diameter series 7 and 8.

[h]Does not apply to bearings with flanged outer ring.

TABLE CD3.9. Tolerance Class ABEC-7, RBEC-7. Metric Ball [except instrument bearings[f] and tapered roller bearings[i]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 1.** Dimensions in Millimeters; Tolerances in Micrometers.

Inner Ring

	d		Δ_{dmp}		Δ_{ds}[b]		V_{dp}[g] diameter series		V_{dmp}	K_{ia}	S_d	S_{ia}[d]	Δ_{Bs}			V_{Bs}
							9	0, 1, 2, 3, 4					all	normal	modified[e]	
	over	incl.	high	low	high	low	max.		max.	max.	max.	max.	high	low		max.
a	0.6	2.5	0	-4	0	-4	4	3	2	2.5	3	3	0	-40	-250	2.5
	2.5	10	0	-4	0	-4	4	3	2	2.5	3	3	0	-40	-250	2.5
	10	18	0	-4	0	-4	4	3	2	2.5	3	3	0	-80	-250	2.5
	18	30	0	-5	0	-5	5	4	2.5	3	4	4	0	-120	-250	2.5
	30	50	0	-6	0	-6	6	5	3	4	4	4	0	-120	-250	3
	50	80	0	-7	0	-7	7	5	3.5	4	5	5	0	-150	-250	4
	80	120	0	-8	0	-8	8	6	4	5	5	5	0	-200	-380	4
	120	180	0	-10	0	-10	10	8	5	6	6	7	0	-250	-380	5
	180	250	0	-12	0	-12	12	9	6	8	7	8	0	-300	-500	6

Outer Ring

	D		Δ_{Dmp}		Δ_{Ds}[b,c]		V_{Dp}[c,g] diameter series		V_{Dmp}	K_{ea}	S_D[h], S_{D1}[d]	S_{ea}[d,h]	S_{ea1}[d]	Δ_{Cs}, Δ_{C1s}[d]		V_{Cs}, V_{C1s}[d]
							9	0, 1, 2, 3, 4								
	over	incl.	high	low	high	low	max.		max.	max.	max.	max.	max.	high	low	max.
a	2.5	6	0	-4	0	-4	4	3	2	3	4	5	7			2.5
	6	18	0	-4	0	-4	4	3	2	3	4	5	7			2.5
	18	30	0	-5	0	-5	5	4	2.5	4	4	5	7			2.5
	30	50	0	-6	0	-6	6	5	3	5	4	5	7			2.5
	50	80	0	-7	0	-7	7	5	3.5	5	4	5	7	Identical to Δ_{Bs} and V_{Bs} of inner ring of same bearing		3
	80	120	0	-8	0	-8	8	6	4	6	5	6	8			4
	120	150	0	-9	0	-9	9	7	5	7	5	7	10			5
	150	180	0	-10	0	-10	10	8	5	8	5	8	11			5
	180	250	0	-11	0	-11	11	8	6	10	7	10	14			7
	250	315	0	-13	0	-13	13	10	7	11	8	10	14			7
	315	400	0	-15	0	-15	15	11	8	13	10	13	18			8

[a]This diameter is included in the group.

[b]These deviations apply to diameter series 0, 1, 2, 3, and 4 only.

[c]No values have been established for capped bearings.

[d]Applies to groove type ball bearings only.

[e]This refers to the rings of single bearings made for paired or stack mounting.

[f]For instrument ball bearing tolerances see [3.2, 3.3].

[g]No values have been established for diameter series 7 and 8.

[h]Does not apply to bearings with flanged outer ring.

[i]For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

TABLE CD3.9. Tolerance Class ABEC-7, RBEC-7. Metric Ball [except instrument bearings[f] and tapered roller bearings[i]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 2.** Dimensions in Millimeters; Tolerances in 0.0001 Inches.

Inner Ring

	d		Δ_{dmp}		Δ_{ds}[b]		V_{dp}[g] diameter series		V_{dmp}	K_{ia}	S_d	S_{ia}[d]	Δ_{Bs}			V_{Bs}
							9	0, 1, 2, 3, 4					all	normal	modified[e]	
	over	incl.	high	low	high	low	max.		max.	max.	max.	max.	high	low		max.
a	0.6	2.5	0	-1.5	0	-1.5	1.5	1	1	1	1	1	0	-16	-98	1
	2.5	10	0	-1.5	0	-1.5	1.5	1	1	1	1	1	0	-16	-98	1
	10	18	0	-1.5	0	-1.5	1.5	1	1	1	1	1	0	-31	-98	1
	18	30	0	-2	0	-2	2	1.5	1	1	1.5	1.5	0	-47	-98	1
	30	50	0	-2.5	0	-2.5	2.5	2	1	1.5	1.5	1.5	0	-47	-98	1
	50	80	0	-3	0	-3	3	2	1.5	1.5	2	2	0	-59	-98	1.5
	80	120	0	-3	0	-3	3	2.5	1.5	2	2	2	0	-79	-150	1.5
	120	180	0	-4	0	-4	4	3	2	2.5	2.5	3	0	-98	-150	2
	180	250	0	-4.5	0	-4.5	4.5	3.5	2.5	3	3	3	0	-118	-197	2.5

Outer Ring

	D		Δ_{Dmp}		Δ_{Ds}[b,c]		V_{Dp}[c,g] diameter series		V_{Dmp}	K_{ea}	S_D[h], S_{D1}[d]	S_{ea}[d,h]	S_{ea1}[d]	Δ_{Cs}, Δ_{C1s}[d]		V_{Cs}, V_{C1s}[d]
							9	0, 1, 2, 3, 4								
	over	incl.	high	low	high	low	max.		max.	max.	max.	max.	max.	high	low	max.
a	2.5	6	0	-1.5	0	-1.5	1.5	1	1	1	1.5	2	3			1
	6	18	0	-1.5	0	-1.5	1.5	1	1	1	1.5	2	3			1
	18	30	0	-2	0	-2	2	1.5	1	1.5	1.5	2	3			1
	30	50	0	-2.5	0	-2.5	2.5	2	1	2	1.5	2	3			1
	50	80	0	-3	0	-3	3	2	1.5	2	1.5	2	3			1
	80	120	0	-3	0	-3	3	2.5	1.5	2.5	2	2.5	3	Identical to Δ_{Bs} and V_{Bs} of inner ring of same bearing		1.5
	120	150	0	-3.5	0	-3.5	3.5	3	2	3	2	3	4			2
	150	180	0	-4	0	-4	4	3	2	3	2	3	4.5			2
	180	250	0	-4.5	0	-4.5	4.5	3	2.5	4	3	4	5.5			3
	250	315	0	-5	0	-5	5	4	3	4.5	3	4	5.5			3
	315	400	0	-6	0	-6	6	4.5	3	5	4	5	7			3

[a]This diameter is included in the group.

[b]These deviations apply to diameter series 0, 1, 2, 3, and 4 only.

[c]No values have been established for capped bearings.

[d]Applies to groove type ball bearings only.

[e]This refers to the rings of single bearings made for paired or stack mounting.

[f]For instrument ball bearing tolerances see [3.2, 3.3].

[g]No values have been established for diameter series 7 and 8.

[h]Does not apply to bearings with flanged outer ring.

[i]For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

TABLE CD3.10. Tolerance Class ABEC-9, RBEC-9. Metric Ball [except instrument bearings[d] and tapered roller bearings[g]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 1.** Dimensions in Millimeters; Tolerances in Micrometers

Inner Ring

	d		Δ_{dmp}		Δ_{ds}		V_{dp}[b]	V_{dmp}	K_{ia}	S_d	S_{ia}[c]	Δ_{Bs}			V_{Bs}
												all	normal	modified[f]	
	over	incl.	high	low	high	low	max.	max.	max.	max.	max.	high	low	max.	max.
a	0.6	2.5	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5	0	-40	-250	1.5
	2.5	10	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5	0	-40	-250	1.5
	10	18	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5	0	-80	-250	1.5
	18	30	0	-2.5	0	-2.5	2.5	1.5	2.5	1.5	2.5	0	-120	-250	1.5
	30	50	0	-2.5	0	-2.5	2.5	1.5	2.5	1.5	2.5	0	-120	-250	1.5
	50	80	0	-4	0	-4	4	2	2.5	1.5	2.5	0	-150	-250	1.5
	80	120	0	-5	0	-5	5	2.5	2.5	2.5	2.5	0	-200	-380	2.5
	120	150	0	-7	0	-7	7	3.5	2.5	2.5	2.5	0	-250	-380	2.5
	150	180	0	-7	0	-7	7	3.5	5	4	5	0	-250	-380	4
	180	250	0	-8	0	-8	8	4	5	5	5	0	-300	-500	5

Outer Ring

	D		Δ_{Dmp}		Δ_{Ds}[b]		V_{Dp}[b]	V_{Dmp}	K_{ea}	S_D[e], S_{D1}[c]	S_{ea}[c,e]	S_{ea1}[c]	Δ_{Cs}, Δ_{C1s}[c]		V_{Cs}, V_{C1s}[c]
	over	incl.	high	low	high	low	max.	max.	max.	max.	max.	max.	high	low	max.
a	2.5	6	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5	3			1.5
	6	18	0	-2.5	0	-2.5	2.5	1.5	1.5	1.5	1.5	3			1.5
	18	30	0	-4	0	-4	4	2	2.5	1.5	2.5	4			1.5
	30	50	0	-4	0	-4	4	2	2.5	1.5	2.5	4			1.5
	50	80	0	-4	0	-4	4	2	4	1.5	4	6	Identical to Δ_{Bs} and V_{Bs} of inner ring of same bearing		1.5
	80	120	0	-5	0	-5	5	2.5	5	2.5	5	7			2.5
	120	150	0	-5	0	-5	5	2.5	5	2.5	5	7			2.5
	150	180	0	-7	0	-7	7	3.5	5	2.5	5	7			2.5
	180	250	0	-8	0	-8	8	4	7	4	7	10			4
	250	315	0	-8	0	-8	8	4	7	5	7	10			5
	315	400	0	-10	0	-10	10	5	8	7	8	11			7

[a]This diameter is included in the group.

[b]Applicable only to open and capped bearings in diameter series 0, 1, 2, 3 and 4.

[c]Applies to groove type ball bearings only.

[d]For instrument ball bearing tolerances see [3.2, 3.3].

[e]Does not apply to bearings with flanged outer ring.

[f]This refers to the rings of single bearings made for paired or stacked mounting.

[g]For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

TABLE CD3.10. Tolerance Class ABEC-9, RBEC-9. Metric Ball [except instrument bearings[d] and tapered roller bearings[g]] of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 1 of [3.8]. **PART 2.** Dimensions in Millimeters; Tolerances in 0.0001 Inches.

Inner Ring

	d		Δ_{dmp}		Δ_{ds}		V_{dp}[b]	V_{dmp}	K_{ia}	S_d	S_{ia}[c]	Δ_{Bs}			V_{Bs}
												all	normal	modified	
	over	incl.	high	low	high	low	max.	max.	max.	max.	max.	high	low	max.	max.
a	0.6	2.5	0	-1	0	-1	1	0.5	0.5	0.5	0.5	0	-16	-98	0.5
	2.5	10	0	-1	0	-1	1	0.5	0.5	0.5	0.5	0	-16	-98	0.5
	10	18	0	-1	0	-1	1	0.5	0.5	0.5	0.5	0	-31	-98	0.5
	18	30	0	-1	0	-1	1	0.5	1	0.5	1	0	-47	-98	0.5
	30	50	0	-1	0	-1	1	0.5	1	0.5	1	0	-47	-98	0.5
	50	80	0	-1.5	0	-1.5	1.5	1	1	0.5	1	0	-59	-98	0.5
	80	120	0	-2	0	-2	2	1	1	1	1	0	-79	-150	1
	120	150	0	-3	0	-3	3	1.5	1	1	1	0	-98	-150	1
	150	180	0	-3	0	-3	3	1.5	2	1.5	2	0	-98	-150	1.5
	180	250	0	-3	0	-3	3	1.5	2	2	2	0	-138	-197	2

Outer Ring

	D		Δ_{Dmp}		Δ_{Ds}[b]		V_{Dp}[b]	V_{Dmp}	K_{ea}	S_D[e], S_{D1}[c]	S_{ea}[c,e]	S_{ea1}[c]	Δ_{Cs}, Δ_{C1s}[c]		V_{Cs}, V_{C1s}[c]
	over	incl.	high	low	high	low	max.	max.	max.	max.	max.	max.	high	low	max.
a	2.5	6	0	-1	0	-1	1	0.5	0.5	0.5	0.5	1			0.5
	6	18	0	-1	0	-1	1	0.5	0.5	0.5	0.5	1			0.5
	18	30	0	-1.5	0	-1.5	1.5	1	1	0.5	1	1.5			0.5
	30	50	0	-1.5	0	-1.5	1.5	1	1	0.5	1	1.5			0.5
	50	80	0	-1.5	0	-1.5	1.5	1	1.5	0.5	1.5	2.5	Identical to Δ_{Bs} and V_{Bs} of inner ring of same bearing		0.5
	80	120	0	-2	0	-2	2	1	2	1	2	3			1
	120	150	0	-2	0	-2	2	1	2	1	2	3			1
	150	180	0	-3	0	-3	3	1.5	2	1	2	3			1
	180	250	0	-3	0	-3	3	1.5	3	1.5	3	4			1.5
	250	315	0	-3	0	-3	3	1.5	3	2	3	4			2
	315	400	0	-4	0	-4	4	2	3	3	3	4.5			3

[a]This diameter is included in the group.

[b]Applicable only to open and capped bearings in diameter series 0, 1, 2, 3 and 4.

[c]Applies to groove type ball bearings only.

[d]For instrument ball bearing tolerances see [3.2, 3.3].

[e]Does not apply to bearings with flanged outer ring.

[g]For tapered roller bearing tolerances see Tables CD3.11-CD3.20 from [3.6, 3.7].

TABLE CD3.11. Tolerance Class K. Metric Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 2 of [3.6]. Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)												
d		Δ_{dmp}		V_{dp}	V_{dmp}	K_{ia}	Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	max.	max.	max.	high	low	high	low	high	low
10	18	0	-12	12	9	15	100	0	100	0	200	0
18	30	0	-12	12	9	18	100	0	100	0	200	0
30	50	0	-12	12	9	20	100	0	100	0	200	0
50	80	0	-15	15	11	25	100	0	100	0	200	0
80	120	0	-20	20	15	30	100	-100	100	-100	200	-200
120	180	0	-25	25	19	35	150	-150	200	-100	350	-250
180	250	0	-30	30	23	50	150	-150	200	-100	350	-250
250	315	0	-35	35	26	60	150	-150	200	-100	350	-250
315	400	0	-40	40	30	70	200	-200	200	-200	400	-400
400	500	0	-45	60	35	80	a	a	a	a	480	-480
500	630	0	-50	70	35	---	a	a	a	a	480	-480
630	800	0	-80	120	35	---	a	a	a	a	480	-480
800	1000	0	-100	150	35	---	a	a	a	a	450	-450
1000	1200	0	-130	195	35	---	a	a	a	a	450	-450
1200	1600	0	-150	225	35	---	a	a	a	a	450	-450
1600	2000	0	-200	300	35	---	a	a	a	a	450	-450
2000	---	0	-250	375	35	---	a	a	a	a	450	-450

[a]These sizes are matched assemblies only.

Cup (Outer Ring)						
D		Δ_{Dmp}		V_{Dp}	V_{Dmp}	K_{ea}
over	incl.	high	low	max.	max.	max.
18	30	0	-12	12	9	18
30	50	0	-14	14	11	20
50	80	0	-16	16	12	25
80	120	0	-18	18	14	35
120	150	0	-20	20	15	40
150	180	0	-25	25	19	45
180	250	0	-30	30	23	50
250	315	0	-35	35	26	60
315	400	0	-40	40	30	70
400	500	0	-45	45	34	80
500	630	0	-50	50	38	100
630	800	0	-75	95	40	120
800	1000	0	-100	150	42	140
1000	1200	0	-130	195	44	160
1200	1600	0	-165	245	46	180
1600	2000	0	-200	300	48	200
2000	---	0	-250	375	50	200

TABLE CD3.12. Tolerance Class N. Metric Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 2 of [3.6]. Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)											
d		Δ_{dmp}		V_{dp}	V_{dmp}	K_{ia}	Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	max.	max.	max.	high	low	high	low	high	low
10	18	0	-12	12	9	15	50	0	50	0	100	0
18	30	0	-12	12	9	18	50	0	50	0	100	0
30	50	0	-12	12	9	20	50	0	50	0	100	0
50	80	0	-15	15	11	25	50	0	50	0	100	0
80	120	0	-20	20	15	30	50	0	50	0	100	0
120	180	0	-25	25	19	35	50	0	100	0	150	0
180	250	0	-30	30	23	50	50	0	100	0	150	0
250	315	0	-35	35	26	60	100	0	100	0	200	0
315	400	0	-40	40	30	70	100	0	100	0	200	0
400	500	0	-45	60	35	80	a	a	a	a	200	0

[a]These sizes are matched assemblies only.

Cup (Outer Ring)						
D		Δ_{Dmp}		V_{Dp}	V_{Dmp}	K_{ea}
over	incl.	high	low	max.	max.	max.
18	30	0	-12	12	9	18
30	50	0	-14	14	11	20
50	80	0	-16	16	12	25
80	120	0	-18	18	14	35
120	150	0	-20	20	15	40
150	180	0	-25	25	19	45
180	250	0	-30	30	23	50
250	315	0	-35	35	26	60
315	400	0	-40	40	30	70
400	500	0	-45	45	34	80
500	630	0	-50	50	38	100

TABLE CD3.13. Tolerance Class C. Metric Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 2 of [3.6]. Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)												
d		Δ_{dmp}		V_{dp}	V_{dmp}	K_{ia}	Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	max.	max.	max.	high	low	high	low	high	low
10	18	0	-7	4	5	5	100	-100	100	-100	200	-200
18	30	0	-8	4	5	5	100	-100	100	-100	200	-200
30	50	0	-10	4	5	6	100	-100	100	-100	200	-200
50	80	0	-12	5	5	6	100	-100	100	-100	200	-200
80	120	0	-15	5	5	6	100	-100	100	-100	200	-200
120	180	0	-18	5	5	8	100	-100	100	-150	200	-250
180	250	0	-22	6	5	10	100	-150	100	-150	200	-300
250	315	0	-22	7	5	11	100	-150	100	-150	200	-300
315	400	0	-25	11	10	13	150	-150	100	-150	250	-300
400	500	0	-25	14	10	18	a	a	a	a	300	-300
500	630	0	-30	17	10	25	a	a	a	a	300	-400
630	800	0	-40	22	15	35	a	a	a	a	300	-400
800	1000	0	-50	28	15	50	a	a	a	a	350	-400
1000	1200	0	-60	33	20	60	a	a	a	a	350	-450
1200	1600	0	-80	44	25	80	a	a	a	a	350	-500

[a]These sizes are matched assemblies only.

Cup (Outer Ring)						
D		Δ_{Dmp}		V_{Dp}	V_{Dmp}	K_{ea}
over	incl.	high	low	max.	max.	max.
18	30	0	-8	4	5	5
30	50	0	-9	4	5	6
50	80	0	-11	4	6	6
80	120	0	-13	5	7	6
120	150	0	-15	5	8	7
150	180	0	-18	5	9	8
180	250	0	-20	6	10	10
250	315	0	-25	8	13	11
315	400	0	-28	10	14	13
400	500	0	-30	14	14	18
500	630	0	-35	17	14	25
630	800	0	-40	22	14	35
800	1000	0	-50	28	14	50
1000	1200	0	-60	33	14	60
1200	1600	0	-80	44	14	80

TABLE CD3.14. Tolerance Class B. Metric Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 2 of [3.6]. Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)													
d		Δ_{dmp}		V_{dp}	V_{dmp}	K_{ia}	S_{ia}	Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	max.	max.	max.	max.	high	low	high	low	high	low
10	18	0	-5	3	4	3	3	a	a	a	a	200	-200
18	30	0	-6	3	4	3	4	a	a	a	a	200	-200
30	50	0	-8	3	5	4	4	a	a	a	a	200	-200
50	80	0	-9	3	5	4	4	a	a	a	a	200	-200
80	120	0	-10	3	5	5	5	a	a	a	a	200	-200
120	180	0	-13	3	7	6	7	a	a	a	a	200	-250
180	250	0	-15	4	8	8	8	a	a	a	a	200	-300
250	315	0	-15	4	8	---	---	a	a	a	a	200	-300

[a]These sizes are matched assemblies only.

Cup (Outer Ring)							
D		Δ_{Dmp}		V_{Dp}	V_{Dmp}	K_{ea}	S_{ea}
over	incl.	high	low	max.	max.	max.	max.
18	30	0	-6	3	4	3	3
30	50	0	-7	3	5	3	3
50	80	0	-9	3	5	4	4
80	120	0	-10	3	5	4	4
120	150	0	-11	3	6	4	4
150	180	0	-13	3	7	4	5
180	250	0	-15	4	8	5	6
250	315	0	-18	5	9	5	6
315	400	0	-20	5	10	5	6

TABLE CD3.15. Tolerance Class A. Metric Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Metric Radial Bearings Given in Table 2 of [3.6]. Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)													
d		Δ_{dmp}		V_{dp}	V_{dmp}	K_{ia}	S_{ia}	Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	max.	max.	max.	max.	high	low	high	low	high	low
10	18	0	-5	2	2.5	1.9	2.4	a	a	a	a	200	-200
18	30	0	-6	2	2.5	1.9	2.4	a	a	a	a	200	-200
30	120	0	-8	2	2.5	1.9	2.4	a	a	a	a	200	-200
120	180	0	-8	2	2.5	1.9	2.4	a	a	a	a	200	-250
180	265	0	-8	2	2.5	1.9	2.4	a	a	a	a	200	-300

[a]These sizes are matched assemblies only.

Cup (Outer Ring)							
D		Δ_{Dmp}		V_{Dp}	V_{Dmp}	K_{ea}	S_{ea}
over	incl.	high	low	max.	max.	max.	max.
18	120	0	-8	2	2.5	1.9	2.4
120	180	0	-8	2	2.5	1.9	2.4
180	250	0	-8	2	2.5	1.9	2.4
250	315	0	-8	2	2.5	1.9	2.4

TABLE CD3.16. Tolerance Class 4. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART I.** Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)

d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	76.2	13	0	76	-254	102	0	102	0	203	0
76.2	101.6	25	0	76	-254	102	0	102	0	203	0
101.6	152.4	25	0	76	-254	152	-152	203	-102	356	-254
152.4	304.8	25	0	---	---	152	-152	203	-102	356	-254
304.8	609.6	51	0	---	---	178	-178	203	-102	381	-381
609.6	914.4	76	0	---	---	178	-178	203	-102	381	-381
914.4	1219.2	102	0	---	---	178	-178	203	-102	381	-381
1219.2	---	127	0	---	---	178	-178	203	-102	381	-381

Cup (Outer Ring)

D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	101.6	25	0	51	51	51	-254
101.6	304.8	25	0	51	51	51	-254
304.8	355.6	51	0	51	51	51	-254
355.6	609.6	51	0	51	51	---	---
609.6	914.4	76	0	76	76	---	---
914.4	1219.2	102	0	76	76	---	---
1219.2	---	127	0	76	76	---	---

TABLE CD3.16. Tolerance Class 4. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART 2.** Dimensions in Inches; Tolerances in 0.0001 Inches.

Cone (Inner Ring)

d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	3	5	0	30	-100	40	0	40	0	80	0
3	4	10	0	30	-100	40	0	40	0	80	0
4	6	10	0	30	-100	60	-60	80	-40	140	-100
6	12	10	0	---	---	60	-60	80	-40	140	-100
12	24	20	0	---	---	70	-70	80	-80	150	-150
24	36	30	0	---	---	70	-70	80	-80	150	-150
36	48	40	0	---	---	70	-70	80	-80	150	-150
48	---	50	0	---	---	70	-70	80	-80	150	-150

Cup (Outer Ring)

D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	4	10	0	20	20	20	-100
4	12	10	0	20	20	20	-100
12	14	20	0	20	20	20	-100
14	24	20	0	20	20	---	---
24	36	30	0	30	30	---	---
36	48	40	0	30	30	---	---
48	---	50	0	30	30	---	---

TABLE CD3.17. Tolerance Class 2. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART I.** Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)

d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	76.2	13	0	76	-254	102	0	102	0	203	0
76.2	101.6	25	0	76	-254	102	0	102	0	203	0
101.6	152.4	25	0	76	-254	102	0	102	0	203	0
152.4	304.8	25	0	---	---	102	0	102	0	203	0
304.8	609.6	51	0	---	---	178	-178	203	-203	381	-381

Cup (Outer Ring)

D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	101.6	25	0	38	38	51	-254
101.6	304.8	25	0	38	38	51	-254
304.8	355.6	51	0	38	38	51	-254
355.6	609.6	51	0	38	38	---	---
609.6	914.4	76	0	51	51	---	---

TABLE CD3.17. Tolerance Class 2. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART 2.** Dimensions in Inches; Tolerances in 0.0001 Inches.

Cone (Inner Ring)

d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	3	5	0	76	-254	40	0	40	0	80	0
3	4	10	0	76	-254	40	0	40	0	80	0
4	6	10	0	76	-254	40	0	40	0	80	0
6	12	10	0	---	---	40	0	40	0	80	0
12	24	20	0	---	---	70	-70	80	-80	150	-150

Cup (Outer Ring)

D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	4	10	0	15	15	51	-254
4	12	10	0	15	15	51	-254
12	14	20	0	15	15	51	-254
14	24	20	0	15	15	---	---
24	36	30	0	20	20	---	---

TABLE CD3.18. Tolerance Class 3. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART I.** Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)											
d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	76.2	13	0	76	-254	102	-102	102	-102	203	-203
76.2	101.6	13	0	76	-254	102	-102	102	-102	203	-203
101.6	152.4	13	0	76	-254	102	-102	102	-102	203	-203
152.4	304.8	13	0	---	---	102	-102	102	-102	203	-203
304.8						[a]102	[a]-102	[a]102	[a]-102	[a]203	[a]-203
	609.6	25	0	---	---	[b]178	[b]-178	[b]203	[b]-203	[b]381	[b]-381
609.6	914.4	38	0	---	---	178	-178	203	-203	381	-381
914.4	1219.2	51	0	---	---	178	-178	203	-203	381	-381
1219.2	---	76	0	---	---	178	-178	203	-203	381	-381

[a]Cup Outside Diameter $\leq$ 508.0

[b]Cup Outside Diameter > 508.0

Cup (Outer Ring)							
D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	101.6	13	0	8	8	51	-254
101.6	304.8	13	0	8	8	51	-254
304.8	355.6	25	0	18	18	51	-254
355.6	609.6	25	0	18	18	---	---
609.6	914.4	38	0	51	57	---	---
914.4	1219.2	51	0	76	76	---	---
1219.2	---	76	0	76	76	---	---

TABLE CD3.18. Tolerance Class 3. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART 2.** Dimensions in Inches; Tolerances in 0.0001 Inches.

Cone (Inner Ring)

d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	3	5	0	30	-100	40	-40	40	-40	80	-80
3	4	5	0	30	-100	40	-40	40	-40	80	-80
4	6	5	0	30	-100	40	-40	40	-40	80	-80
6	12	5	0	---	---	40	-40	40	-40	80	-80
12						[a]40	[a]-40	[a]40	[a]-40	[a]80	[a]-80
	24	10	0	---	---	[b]70	[b]-70	[b]80	[b]-80	[b]150	[b]-150
24	36	15	0	---	---	70	-70	80	-80	150	-150
36	48	20	0	---	---	70	-70	80	-80	150	-150
48	---	30	0	---	---	70	-70	80	-80	150	-150

[a]Cup Outside Diameter $\leq$ 508.0

[b]Cup Outside Diameter > 508.0

Cup (Outer Ring)

D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	4	5	0	3	3	20	-100
4	12	5	0	3	3	20	-100
12	14	10	0	7	7	20	-100
14	24	10	0	7	7	---	---
24	36	15	0	20	20	---	---
36	48	20	0	30	30	---	---
48	---	30	0	30	30	---	---

TABLE CD3.19. Tolerance Class 0. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART I.** Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)

d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	76.2	13	0	76	-254	102	-102	102	-102	203	-203
76.2	101.6	13	0	76	-254	102	-102	102	-102	203	-203
101.6	152.4	13	0	76	-254	102	-102	102	-102	203	-203
152.4	304.8	13	0	---	---	102	-102	102	-102	203	-203

Cup (Outer Ring)

D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	101.6	13	0	4	4	51	-254
101.6	304.8	13	0	4	4	51	-254

TABLE CD3.19. Tolerance Class 0. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART 2.** Dimensions in Inches; Tolerances in 0.0001 Inches.

Cone (Inner Ring)											
d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	3	5	0	30	-100	40	-40	40	-40	80	-80
3	4	5	0	30	-100	40	-40	40	-40	80	-80
4	6	5	0	30	-100	40	-40	40	-40	80	-80
6	12	5	0	---	---	40	-40	40	-40	80	-80

Cup (Outer Ring)							
D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	4	5	0	1.5	1.5	20	-100
4	12	5	0	1.5	1.5	20	-100

TABLE CD3.20. Tolerance Class 00. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART I.** Dimensions in Millimeters; Tolerances in Micrometers.

Cone (Inner Ring)											
d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	76.2	8	0	76	-254	102	-102	102	-102	203	-203
76.2	101.6	8	0	76	-254	102	-102	102	-102	203	-203
101.6	152.4	8	0	76	-254	102	-102	102	-102	203	-203
152.4	304.8	8	0	---	---	102	-102	102	-102	203	-203

Cup (Outer Ring)							
D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	101.6	8	0	2	2	51	-254
101.6	304.8	8	0	2	2	51	-254

TABLE CD3.20. Tolerance Class 00. Inch Tapered Roller Bearings of Dimensions Conforming to the Basic Plan for Boundary Dimensions of Inch Radial Bearings in [3.7]. **PART 2.** Dimensions in Inches; Tolerances in 0.0001 Inches.

Cone (Inner Ring)											
d		Δ_{dmp}		Δ_{BS}		Δ_{T1S}		Δ_{T2S}		Δ_{TS}	
over	incl.	high	low	high	low	high	low	high	low	high	low
---	3	3	0	30	-100	40	-40	40	-40	80	-80
3	4	3	0	30	-100	40	-40	40	-40	80	-80
4	6	3	0	30	-100	40	-40	40	-40	80	-80
6	12	3	0	---	---	40	-40	40	-40	80	-80

Cup (Outer Ring)							
D		Δ_{Dmp}		K_{ia}	K_{ea}	Δ_{CS}	
over	incl.	high	low	max.	max.	high	low
---	4	3	0	0.75	0.75	20	-100
4	12	3	0	0.75	0.75	20	-100

TABLE CD3.21. Industrial Shaft Tolerance Range Classification Selection vs Bearing Operating Conditions for Metric Radial Single-Row Tapered Roller Bearings of Tolerance Classes K and N. Dimensions in Millimeters; Deviations and Fits in Micrometers.

CONE BORE			DEVIATION FROM MAXIMUM CONE BORE AND RESULTANT FIT																	
			ROTATING CONE			ROTATING OR STATIONARY CONE			STATIONARY CONE											
			ground seat			unground or ground seat			unground seat			ground seat			unground seat			hardened and ground seat		
d			constant load with moderate shock			heavy loads, or high speed or shock			moderate loads, no shock			moderate loads, no shock			sheaves, wheels, idlers			wheel spindles		
over	incl.	deviation	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol
10	18	-12 0	+18 +7	30T 7T	m6	+23 +12	35T 12T	n6	0 -11	12T 11L	h6	-6 -17	6T 17L	g6	-6 -17	6T 17L	g6	-16 -27	4L 27L	f6
18	30	-12 0	+21 +8	33T 8T	m6	+28 +15	40T 15T	n6	0 -13	12T 13L	h6	-7 -20	5T 20L	g6	-7 -20	5T 20L	g6	-20 -33	8L 33L	f6
30	50	-12 0	+25 +9	37T 9T	m6	+33 +17	45T 17T	n6	0 -16	12T 16L	h6	-9 -25	3T 25L	g6	-9 -25	3T 25L	g6	-25 -41	13L 41L	f6
50	80	-15 0	+30 +11	45T 11T	m6	+39 +20	54T 20T	n6	0 -19	15T 19L	h6	-10 -29	5T 29L	g6	-10 -29	5T 29L	g6	-30 -49	15L 49L	f6
80	120	-20 0	+35 +13	15T 13T	m6	+45 +23	65T 23T	n6	0 -22	20T 22L	h6	-12 -34	8T 34L	g6	-12 -34	8T 34L	g6	-36 -58	16L 58L	f6
120	180	-25 0	+52 +27	77T 27T	n6	+68 +43	93T 43T	p6	0 -25	25T 25L	h6	-14 -39	11T 39L	g6	-14 -39	11T 39L	g6	-43 -68	18L 68L	f6
180	200	-30 0	+60 +31	90T 31T	n6	+106 +77	136T 77T	r6	0 -29	30T 29L	h6	-15 -44	15T 44L	g6	-15 -44	15T 44L	g6	-50 -79	20L 79L	f6
200	225					+109 +80	139T 80T													
225	250					+113 +84	143T 84T													
250	280	-35 0	+66 +34	101T 34T	n6	+146 +94	181T 94T	r7	0 -32	35T 32L	h6	-17 -49	18T 49L	g6	-17 -49	18T 49L	g6	-56 -68	21L 88L	f6
280	315					+150 +98	185T 98T													
315	355	-40 0	+73 +37	113T 37T	n6	+165 +108	205T 108T	r7	0 -36	40T 36L	h6	-18 -75	22T 75L	g7	-18 -75	22T 75L	g7	--- ---	--- ---	---
355	400					+171 +114	211T 114T													
400	450	-45 0	+80 +40	125T 40T	n6	+189 +126	234T 126T	r7	0 -40	45T 40L	h6	-20 -83	25T 83L	g7	-20 -83	25T 83L	g7	--- ---	--- ---	---
450	500					+195 +132	240T 132T													
500	630	-50 0	+100 +50	150T 50T	---	+200 +125	250T 125T	---	0 -50	50T 50L	---	-50 -100	0 100L	---	-50 -100	0 100L	---	--- ---	--- ---	---
630	800	-80 0	+125 +50	205T 50T	---	+225 +150	305T 150T	---	0 -75	80T 75L	---	-80 -150	0 150L	---	-80 -150	0 150L	---	--- ---	--- ---	---
800	1000	-100 0	+150 +50	250T 50T	---	+275 +175	375T 175T	---	0 -100	100T 100L	---	-100 -200	0 200L	---	-100 -200	0 200L	---	--- ---	--- ---	---

L=Loose / T=Tight

TABLE CD3.22. Industrial Housing Tolerance Range Classification Selection vs Bearing Operating Conditions for Metric Radial Single-Row Tapered Roller Bearings of Tolerance Classes K and N. Dimensions in Millimeters; Deviations and Fits in Micrometers.

CUP OD			DEVIATION FROM MAXIMUM CUP OD AND RESULTANT FIT															
			STATIONARY CUP									ROTATING CUP						
			floating or clamped			adjustable			nonadjustable or in carriers			nonadjustable or in carriers or sheaves - clamped			sheaves - unclamped		
D																		
over	incl.	deviation	cup seat deviation	resultant fit	symbol	cup seat deviation	resultant fit	symbol	cup seat deviation	resultant fit	symbol	cup seat deviation	resultant fit	symbol	cup seat deviation	resultant fit	symbol
18	30	0 -12	+7 +28	7L 40L	G7	-9 +12	9T 24L	J7	-35 -14	35T 2T	P7	-41 -20	41T 8T	R7	-61 -28	61T 16T	R8
30	50	0 -14	+9 +34	9L 48L	G7	-11 +14	11T 28L	J7	-42 -17	42T 3T	P7	-50 -25	50T 11T	R7	-73 -34	73T 20T	R8
50	65	0 -16	+10 +40	10L 56L	G7	-12 +18	12T 34L	J7	-51 -21	51T 5T	P7	-60 -30	60T 14T	R7	-90 -45	90T 29T	---
65	80											-62 -32	62T 16T				
80	100	0 -18	+12 +47	12L 65L	G7	-13 +22	13T 40L	J7	-59 -24	59T 6T	P7	-73 -38	73T 20T	R7	-100 -50	100T 32T	---
100	120											-76 -41	76T 23T				
120	140	0 -20	+14 +54	14L 74L	G7	-14 +26	14T 46L	J7	-68 -28	68T 8T	P7	-88 -48	88T 28T	R7	-115 -65	115T 45T	---
140	150											-90 -50	90T 30T				
150	160	0 -25	+14 +54	14L 79L	G7	-14 +26	14T 51L	J7	-68 -28	68T 3T	P7	-90 -50	90T 25T	R7	-115 -65	115T 40T	---
160	180											-93 -53	93T 28T				
180	200	0 -30	+15 +61	15L 91L	G7	-16 +30	16T 60L	J7	-79 -33	79T 3T	P7	-106 -60	106T 30T	R7	-125 -75	125T 45T	---
200	225											-109 -63	109T 33T				
225	250											-113 -67	113T 37T				
250	280	0 -35	+17 +69	17L 104L	G7	-16 +36	16T 71L	J7	-88 -36	88T 1T	P7	-126 -74	126T 39T	R7	-140 -90	140T 55T	---
280	315											-130 -78	130T 43T				
315	355	0 -40	+62 +98	62L 138L	F6	-18 +39	18T 79L	J7	-98 -41	98T 1T	P7	-144 -87	144T 47T	R7	-144 -87	144T 47T	R7
355	400											-150 -93	150T 53T		-150 -93	150T 53T	
400	450	0 -45	+68 +95	68L 140L	F5	-20 +43	20T 88L	J7	-108 -45	108T 0	P7	-166 -103	166T 58T	R7	-166 -103	166T 58T	R7
450	500											-172 -109	172T 64T		-172 -109	172T 64T	
500	630	0 -50	+65 +115	65L 165L	---	-22 +46	22T 96L	---	-118 -50	118T 0	---	-190 -120	190T 70T	---	-190 -120	190T 70T	---
630	800	0 -75	+75 +150	75L 225L	---	-25 +50	25T 125L	---	-150 -75	150T 0	---	--- ---	--- ---	---	--- ---	--- ---	---
800	1000	0 -100	+75 +175	75L 275L	---	-25 +75	25T 175L	---	-200 -100	200T 0	---	--- ---	--- ---	---	--- ---	--- ---	---

L=Loose / T=Tight

TABLE CD3.23. Automotive Shaft Tolerance Range Classification Selection vs Bearing Operating Conditions for Metric Radial Single-Row Tapered Roller Bearings of Tolerance Classes K and N. Dimensions in Millimeters; Deviations and Fits in Micrometers.

CONE BORE			DEVIATION FROM MAXIMUM CONE BORE AND RESULTANT FIT																				
			ROTATING CONES																			STATIONARY CONE		
			PINION						rear wheels (semi-floating axles)			transaxles transmissions cross shafts transfer cases			rear wheels (UNIT-BEARING) (semi-floating axles)			differential			front wheels rear wheels (full-floating axles) trailer wheels		
d			adjustable clamped			adjustable collapsible spacer			nonadjustable			nonadjustable			nonadjustable			nonadjustable			adjustable		
over	incl.	deviation	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol	cone seat deviation	resultant fit	symbol
18	30	-12 0	+15 +2	27T 2T	k6	+15 +2	27T 2T	k6	+35 +22	47T 22T	p6	+21 +8	33T 8T	m6	+35 +22	47T 22T	p6	+56 +35	68T 35T	---	-20 -33	8L 33L	p6
30	50	-12 0	+18 +2	30T 2T	k6	+18 +2	30T 2T	k6	+42 +26	54T 26T	p6	+25 +9	37T 9T	m6	+42 +26	54T 26T	p6	+68 +43	80T 43T	---	-25 -41	13L 41L	p6
50	80	-15 0	+21 +2	26T 2T	k6	+21 +2	36T 2T	k6	+51 +32	66T 32T	p6	+30 +11	45T 11T	m6	--- ---	--- ---	---	+89 +59	104T 59T	---	-30 -49	15L 49L	p6
80	120	-20 0	+13 9	33T 9L	j6	--- ---	--- ---	---	+45 +23	65T 23T	n6	+35 +13	55T 13T	m6	--- ---	--- ---	---	+114 +79	134T 79T	---	-36 -58	16L 58L	p6
120	180	-25 0	+14 11	39T 11L	j6	--- ---	--- ---	---	+52 +27	77T 29T	n6	+40 +15	66T 15T	m6	--- ---	--- ---	---	+140 +100	165T 100T	---	-43 -68	18L 68L	p6

L=Loose / T=Tight

TABLE CD3.24. Automotive Housing Tolerance Range Classification Selection vs Bearing Operating Conditions for Metric Radial Single-Row Tapered Roller Bearings of Tolerance Classes K and N. Dimensions in Millimeters; Deviations and Fits in Micrometers.

CUP OD			DEVIATION FROM MAXIMUM CUP OD AND RESULTANT FIT														
			STATIONARY CUP												ROTATING CUP		
			differential (split seal)			[1]transmissions cross shafts transfer cases			rear wheels (semi-floating axles)			[1]transmissions [1]transaxles pinion differential (solid seat) transfer cases			front wheels rear wheels (full-floating axles) trailer wheels		
			adjustable			adjustable			adjustable clamped (UNIT BEARING)			nonadjustable			nonadjustable		
D over	D incl.	deviation	cup seat deviation	resultant fit	symbol	cup seat deviation	resultant fit	symbol	cup seat deviation	resultant fit	symbol	cup seat deviation	resultant fit	symbol	cup seat deviation	resultant fit	symbol
30	50	0 -14	0 +25	0 39L	H7	-13 +3	13T 17L	K6	+9 +34	9L 48L	G7	-50 -25	50T +11	R7	-50 -25	50T +11	R7
50	65	0 -16	0 +30	0 46L	H7	-15 +4	15T 20L	K6	+10 +40	10L 56L	G7	-60 -30	60T 14T	R7	-60 -30	60T 14T	R7
65	80											-62 -32	62T 16T		-62 -32	62T 16T	
80	100	0 -18	0 +35	0 53L	H7	-18 +4	18T 22L	K6	+12 +47	12L 65L	G7	-73 -38	73T 20T	R7	-73 -38	73T 20T	R7
100	120											-76 -41	76T 23T		-76 -41	76T 23T	
120	140	0 -20	-14 +26	14T 46L	J7	-21 +4	21T 24L	K6	+14 +54	14L 74L	G7	-88 -48	88T 28T	R7	-88 -48	88T 28T	R7
140	150											-90 -50	90T 30T		-90 -50	90T 30T	
150	160	0 -25	-14 +26	14T 51L	J7	-21 +4	21T 29L	K6	+14 +54	14L 79L	G7	-90 -50	90T 25T	R7	-90 -50	90T 25T	R7
160	180											-93 -53	93T 28T		-93 -53	93T 28T	
180	200	0 -30	-16 +30	16T 60L	J7	-16 +30	15T 60L	J7	--- ---	--- ---	---	-106 -60	106T 30T	R7	-106 -60	106T 30T	R7
200	225											-109 -63	109T 33T		-109 -63	109T 33T	
225	250											-113 -67	113T 37T		-113 -67	113T 37T	
250	280	0 -35	-16 +36	16T 71L	J7	-16 +36	16T 71L	J7	--- ---	--- ---	---	-126 -74	126T 39T	R7	-126 -74	126T 39T	R7
280	315											-130 -78	103T 43T		-130 -78	103T 43T	

[1]For transmissions and transaxles using aluminum housings, a minimum tight fit of 25 μm is suggested.
L=Loose / T=Tight

TABLE CD3.25. Industrial Shaft Tolerance Range Classification Selection vs Bearing Operating Conditions for Inch Radial Single-Row Tapered Roller Bearings of Tolerance Classes 4 and 2. **PART 1.** Dimensions in Millimeters; Deviations and Fits in Micrometers.

CONE BORE			DEVIATION FROM MAXIMUM CONE BORE AND RESULTANT FIT													
			ROTATING CONE				STATIONARY CONE									
			ground seat		unground or ground seat		unground or ground seat		unground seat		ground seat		unground seat		hardened and ground seat	
d			moderate loads, no shock		heavy loads, or high speed or shock		heavy loads, or high speed or shock		moderate loads, no shock		moderate loads, no shock		sheaves, wheels, idlers		wheel spindles	
over	incl.	deviation	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit
0	76.2	0 +13	+38 +26	38T 13T	+64 +38	64T 25T	+64 +38	64T 25T	+13 0	13T 13L	0 -13	0 26L	0 -13	0 26L	-5 -8	5L 31L
76.2	304.8	0 +25	+64 +38	64T 13T	[1]Heavy Duty Fitting Practice		[1]Heavy Duty Fitting Practice		+25 0	25T 25L	0 -25	0 51L	0 -25	0 51L	-5 -31	5L 56L
304.8	609.6	0 +51	+127 +76	127T 25T					+51 0	51T 51L	0 -51	0 102L	0 -51	0 102L	--- ---	--- ---
609.6	914.4	0 +76	+191 +114	191T 38T	+381 +305	381T 229T	+381 +305	381T 229T	+76 0	76T 76L	0 -76	0 152L	0 -76	0 152L	--- ---	--- ---

[1]Heavy duty fitting practice uses an average interference fit of 0.5 micrometers per mm of cone bore diameter.
L=Loose / T=Tight

TABLE CD3.25. Industrial Shaft Tolerance Range Classification Selection vs Bearing Operating Conditions for Inch Radial Single-Row Tapered Roller Bearings of Tolerance Classes 4 and 2. **PART 2.** Dimensions in Inches; Deviations and Fits in 0.0001 Inches.

CONE BORE			DEVIATION FROM MAXIMUM CONE BORE AND RESULTANT FIT													
			ROTATING CONE				STATIONARY CONE									
			ground seat		unground or ground seat		unground or ground seat		unground seat		ground seat		unground seat		hardened and ground seat	
d			moderate loads, no shock		heavy loads, or high speed or shock		heavy loads, or high speed or shock		moderate loads, no shock		moderate loads, no shock		sheaves, wheels, idlers		wheel spindles	
over	incl.	deviation	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit
0	3	0 +5	+15 +10	15T 5T	+25 +15	25T 10T	+25 +15	25T 10T	+5 0	5T 5L	0 -5	0 10L	0 -5	0 10L	-2 -7	2L 12L
3	12	0 +10	+25 +15	25T 5T	[1]Heavy Duty Fitting Practice		[1]Heavy Duty Fitting Practice		+10 0	10T 10L	0 -10	0 20L	0 -10	0 20L	-2 -12	2L 22L
12	24	0 +20	+50 +30	50T 10T					+20 0	20T 20L	0 -20	0 40L	0 -20	0 40L	--- ---	--- ---
24	36	0 +30	+75 +45	75T 15T	+150 +120	150T 90T	+150 +120	150T 90T	+30 0	30T 30L	0 -30	0 60L	0 -30	0 60L	--- ---	--- ---

[1]Heavy duty fitting practice uses an average interference fit of 0.0005 inches per inch of cone bore diameter.
L=Loose / T=Tight

TABLE CD3.26. Industrial Housing Tolerance Range Classification Selection vs Bearing Operating Conditions for Inch Radial Single-Row Tapered Roller Bearings of Tolerance Classes 4 and 2. **PART 1.** Dimensions in Millimeters; Deviations and Fits in Micrometers.

CUP OD			DEVIATION FROM MAXIMUM CUP OD AND RESULTANT FIT									
			STATIONARY CUP						ROTATING CUP			
			floating or clamped		adjustable		nonadjustable or in carriers		nonadjustable or in carriers or sheaves - clamped		sheaves - unclamped	
D over	D incl.	deviation	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit
0	76.2	+25	+50	25L	0	25T	-39	64T	-39	64T	-77	102T
		0	+76	76L	+25	25L	-13	13T	-13	13T	-51	51T
76.2	127	+25	+50	25L	0	25T	-51	76T	-51	76T	-77	102T
		0	+76	76L	+25	25L	-25	25T	-25	25T	-51	51T
127	304.8	+25	+50	25L	0	25T	-51	76T	-51	76T	-77	102T
		0	+76	76L	+51	51L	-25	25T	-25	25T	-51	51T
304.8	609.6	+51	+102	51L	+26	25T	-76	127T	-76	127T	-102	153T
		0	+152	152L	+76	76L	-25	25T	-25	25T	-51	51T
609.6	914.4	+76	+152	76L	+51	25T	-102	178T	-102	178T	---	---
		0	+229	229L	+127	127L	-25	25T	-25	25T	---	---

L=Loose / T=Tight

TABLE CD3.26. Industrial Housing Tolerance Range Classification Selection vs Bearing Operating Conditions for Inch Radial Single-Row Tapered Roller Bearings of Tolerance Classes 4 and 2. **PART 2.** Dimensions in Inches; Deviations and Fits in 0.0001 Inches

CUP OD			DEVIATION FROM MAXIMUM CUP OD AND RESULTANT FIT									
			STATIONARY CUP						ROTATING CUP			
			floating or clamped		adjustable		nonadjustable or in carriers		nonadjustable or in carriers or sheaves - clamped		sheaves - unclamped	
D over	D incl.	deviation	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit
0	3	+10	+20	10L	0	10T	-15	25T	-15	25T	-30	40T
		0	+30	30L	+10	10L	-5	5T	-5	5T	-20	20T
3	5	+10	+20	10L	0	10T	-20	30T	-20	30T	-30	40T
		0	+30	30L	+10	10L	-10	10T	-10	10T	-20	20T
5	12	+10	+20	10L	0	10T	-20	30T	-20	30T	-30	40T
		0	+30	30L	+20	20L	-10	10T	-10	10T	-20	20T
12	24	+20	+40	20L	+10	10T	-30	50T	-30	50T	-40	60T
		0	+60	60L	+30	30L	-10	10T	-10	10T	-20	20T
24	36	+30	+60	30L	+20	10T	-40	70T	-40	70T	---	---
		0	+90	90L	+50	50L	-10	10T	-10	10T	---	---

L=Loose / T=Tight

TABLE CD3.27. Automotive Shaft Tolerance Range Classification Selection vs Bearing Operating Conditions for Inch Radial Single-Row Tapered Roller Bearings of Tolerance Classes 4 and 2. **PART 1.** Dimensions in Millimeters; Deviations and Fits in Micrometers.

CONE BORE			DEVIATION FROM MAXIMUM CONE BORE AND RESULTANT FIT											
			ROTATING CONE										STATIONARY CONE	
			pinion				rear wheels (semi-floating axles)		transmissions cross shafts transfer cases		differential		front wheels, rear wheels (full-floating axles), trailer wheels	
d			adjustable clamped		adjustable collapsible spacer		nonadjustable		nonadjustable		nonadjustable		adjustable	
over	incl.	deviation	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit
0	76.2	0 +13	+25 +13	25T 0	+30 +18	30T 5T	+51 +38	51T 25T	+38 +25	38T 12T	+102 +64	102T 51T	-5 -18	5L 31L
76.2	304.8	0 +25	+38 +13	38T 12L	--- ---	--- ---	+76 +51	76T 26T	+64 +38	64T 13T	+102 +76	102T 51T	-5 -31	5L 56L

L=Loose / T=Tight

TABLE CD3.27. Automotive Shaft Tolerance Range Classification Selection vs Bearing Operating Conditions for Inch Radial Single-Row Tapered Roller Bearings of Tolerance Classes 4 and 2. **PART 2.** Dimensions in Inches; Deviations and Fits in 0.0001 Inches.

CONE BORE			DEVIATION FROM MAXIMUM CONE BORE AND RESULTANT FIT											
			ROTATING CONE										STATIONARY CONE	
			pinion				rear wheels (semi-floating axles)		transmissions cross shafts transfer cases		differential		front wheels, rear wheels (full-floating axles), trailer wheels	
d			adjustable clamped		adjustable collapsible spacer		nonadjustable		nonadjustable		nonadjustable		adjustable	
over	incl.	deviation	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit	cone seat deviation	resultant fit
0	3	0 +5	+10 +5	10T 0	+12 +7	12T 2T	+20 +15	20T 10T	+15 +10	15T 5T	+40 +25	40T 20T	-2 -7	2L 12L
3	12	0 +10	+15 +5	15T 5L	--- ---	--- ---	+30 +20	30T 10T	+25 +15	25T 5T	+40 +30	40T 20T	-2 -12	2L 22L

L=Loose / T=Tight

TABLE CD3.28. Automotive Housing Tolerance Range Classification Selection vs Bearing Operating Conditions for Inch Radial Single-Row Tapered Roller Bearings of Tolerance Classes 4 and 2. **PART 1.** Dimensions in Millimeters; Deviations and Fits in Micrometers.

CUP OD			DEVIATION FROM MAXIMUM CUP OD AND RESULTANT FIT									
			STATIONARY CUP								ROTATING CUP	
			differential (split seat)		transmisions cross shafts transfer cases		rear wheels (semi-floating axles)		pinion differential (solid seat transfer cases)		front wheels rear wheels (full-floating axles) trailer wheels	
D over	D incl.	deviation	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit
0	76.2	+25 0	+25 +51	0 51L	0 +25	25T 25L	+38 +76	13L 76L	-38 -13	63T 13T	-51 -13	76T 13T
76.2	127	+25 0	+25 +51	0 51L	0 +25	25T 25L	+38 +76	13L 76L	-51 -25	76T 25T	-77 -25	102T 25T
127	304.8	+25 0	0 +51	25T 51L	0 +51	25T 51L	--- ---	--- ---	-77 -25	102T 25T	-77 -25	102T 25T

L=Loose / T=Tight

TABLE CD3.28. Automotive Housing Tolerance Range Classification Selection vs Bearing Operating Conditions for Inch Radial Single-Row Tapered Roller Bearings of Tolerance Classes 4 and 2. **PART 2.** Dimensions in Inches; Deviations and Fits in 0.0001 Inches.

CUP OD			DEVIATION FROM MAXIMUM CUP OD AND RESULTANT FIT									
			STATIONARY CUP								ROTATING CUP	
			differential (split seat)		transmisions cross shafts transfer cases		rear wheels (semi-floating axles)		pinion differential (solid seat transfer cases)		front wheels rear wheels (full-floating axles) trailer wheels	
D over	D incl.	deviation	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit	cup seat deviation	resultant fit
0	3	+10	+10	0	0	10T	+15	5L	-15	25T	-20	30T
		0	+20	20L	+10	10L	+30	30L	-5	5T	-5	5T
3	5	+10	+10	0	0	10T	+15	5L	-20	30T	-30	40T
		0	+20	20L	+10	10L	+30	30L	-10	10T	-10	10T
5	12	+10	0	10T	0	10T	---	---	-30	40T	-30	40T
		0	+20	20L	+20	20T	---	---	-10	10T	-10	10T

L=Loose / T=Tight