RKB
BEARING INDUSTRIES

BEARING TOLERANCES AND RADIAL INTERNAL CLEARANCES

RKB BEARING INDUSTRIES

Bearing Tolerances and Radial Internal Clearances

RKB
BEARING INDUSTRIES

The Alternative Power

The **RKB** Bearing Industries Group is the Swiss manufacturing organization operating in the bearing industry for over 70 years, with an area of 90.000 sqm, 135 million euros of tangible assets, and a monthly production capacity exceeding 350 tons of machined steel. The experience gained over the years provides **RKB** with the know-how and expertise necessary for the development and production of technological valued-added bearings up to 1925 mm outer diameter, particularly for the heavy industry. Thanks to its pioneer business model, based on a vertically integrated system, **RKB** offers reliable cost-effective solutions, with extreme operational flexibility, leading-edge service, huge stock availability (more than 35 million euros of standard and special rolling bearings), short delivery time and the top quality typical of a consistent premium-class bearing source. With a worldwide distribution network and exports to more than 50 countries, **RKB** is globally recognized as *"The Alternative Power"* in the bearing industry.

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Bearing tolerances

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BEARING TOLERANCES

Symbols

Radial bearings

V_{Bs} = variation of inner ring width

Δ_{Bs} = deviation of a single inner ring width

V_{Cs} = variation of outer ring width

V_{C1s} = variation of outer ring flange width

Δ_{Cs} = deviation of a single outer ring width

Δ_{C1s} = deviation of a single outer ring flange width

d = bore diameter

V_{dmp} = variation of mean bore diameter (this applies only to a basically cylindrical bore)

V_{dsp} = variation of bore diameter in a single plane

Δ_{dmp} = deviation of mean bore diameter in a single plane (for a basically tapered bore, Δ_{dmp} refers to the theoretical small end of the bore)

Δ_{ds} = deviation of a single bore diameter

Δ_{d1mp} = deviation of mean bore diameter in a single plane at the theoretical large end of a basically tapered bore

D = outside diameter

V_{Dmp} = variation of mean outside diameter

V_{Dsp} = variation of outside diameter in a single plane

Δ_{Ds} = deviation of a single outside diameter

Δ_{Dmp} = deviation of mean outside diameter in a single plane

K_{ea} = radial runout of outer ring of assembled bearing

K_{ia} = radial runout of inner ring of assembled bearing

S_{ea} = axial runout of outer ring of assembled bearing

S_{ia} = axial runout of inner ring of assembled bearing

Additional symbols for tapered roller bearings

Δ_{Ts} = deviation of the actual (assembled) bearing width

Δ_{T1s} = deviation of the actual effective width of inner subunit

Δ_{T2s} = deviation of the actual effective width of outer ring

Thrust bearings

D = outside diameter of housing washer

d = bore diameter of shaft washer, single-direction bearing

d_2 = bore diameter of central washer, double-direction bearing

S_e = variation in thickness between housing washer raceway and back face (applies only to thrust ball bearings and thrust cylindrical roller bearings with 90° contact angle)

S_i = variation in thickness between shaft washer raceway and back face (applies only to thrust ball bearings and thrust cylindrical roller bearings with 90° contact angle)

V_{Dsp} = variation of outside diameter in a single plane of housing washer

V_{dsp} = variation of bore diameter in a single plane of shaft washer, single-direction bearing

V_{d2sp} = variation of bore diameter in a single plane of central shaft washer, double-direction bearing

Δ_{Dmp} = deviation of mean outside diameter in a single plane of housing washer

Δ_{dmp} = deviation of mean bore diameter in a single plane of shaft washer, single-direction bearing

Δ_{d2mp} = deviation of mean bore diameter in a single plane of central shaft washer, double-direction bearing

Δ_{Ts} = deviation of the actual bearing height, single-direction bearing

Δ_{T1s} = deviation of the actual bearing height, double-direction bearing

Radial bearings (except tapered roller bearings)

Tab. 1 - Normal tolerance class - Inner ring

d mm		Δ_{dmp}		V_{dsp}			V_{dmp}	K_{ia}	Δ_{Bs}			V_{Bs}
				Diameter series								
				9	0, 1	2, 3, 4			all	normal	modified [a]	
>	≤	high	low	max.			max.	max.	high	low		max.
—	0,6	0	– 8	10	8	6	6	10	0	– 40	—	12
0,6	2,5	0	– 8	10	8	6	6	10	0	– 40	—	12
2,5	10	0	– 8	10	8	6	6	10	0	– 120	– 250	15
10	18	0	– 8	10	8	6	6	10	0	– 120	– 250	20
18	30	0	– 10	13	10	8	8	13	0	– 120	– 250	20
30	50	0	– 12	15	12	9	9	15	0	– 120	– 250	20
50	80	0	– 15	19	19	11	11	20	0	– 150	– 380	25
80	120	0	– 20	25	25	15	15	25	0	– 200	– 380	25
120	180	0	– 25	31	31	19	19	30	0	– 250	– 500	30
180	250	0	– 30	38	38	23	23	40	0	– 300	– 500	30
250	315	0	– 35	44	44	26	26	50	0	– 350	– 500	35
315	400	0	– 40	50	50	30	30	60	0	– 400	– 630	40
400	500	0	– 45	56	56	34	34	65	0	– 450	—	50
500	630	0	– 50	63	63	38	38	70	0	– 500	—	60
630	800	0	– 75	—	—	—	—	80	0	– 750	—	70
800	1 000	0	– 100	—	—	—	—	90	0	– 1 000	—	80
1 000	1 250	0	– 125	—	—	—	—	100	0	– 1 250	—	100
1 250	1 600	0	– 160	—	—	—	—	120	0	– 1 600	—	120
1 600	2 000	0	– 200	—	—	—	—	140	0	– 2 000	—	140

[a] Applies to inner rings and outer rings of single bearings made for paired and stack assemblies. Also applies to inner rings with tapered bore with $d \geq 50$ mm.

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Tolerance values in µm

Radial bearings (except tapered roller bearings)

Tab. 2 - Normal tolerance class - Outer ring

D mm		Δ_{Dmp}		V_{Dsp} [a]				V_{Dmp} [a]	K_{ea}	Δ_{Cs} / Δ_{C1s} [b]		V_{Cs} / V_{C1s} [b]
				Open bearings			Capped bearings					
				Diameter series								
				9	0, 1	2, 3, 4	2, 3, 4					
>	≤	high	low	max.				max.	max.	high	low	max.
—	2,5	0	– 8	10	8	6	10	6	15			
2,5	6	0	– 8	10	8	6	10	6	15			
6	18	0	– 8	10	8	6	10	6	15			
18	30	0	– 9	12	9	7	12	7	15			
30	50	0	– 11	14	11	8	16	8	20			
50	80	0	– 13	16	13	10	20	10	25			
80	120	0	– 15	19	19	11	26	11	35			
120	150	0	– 18	23	23	14	30	14	40			
150	180	0	– 25	31	31	19	38	19	45			
180	250	0	– 30	38	38	23	—	23	50	Identical to Δ_{Bs} and V_{Bs} of inner ring of the same bearing as the outer ring.		
250	315	0	– 35	44	44	26	—	26	60			
315	400	0	– 40	50	50	30	—	30	70			
400	500	0	– 45	56	56	34	—	34	80			
500	630	0	– 50	63	63	38	—	38	100			
630	800	0	– 75	94	94	55	—	55	120			
800	1 000	0	– 100	125	125	75	—	75	140			
1 000	1 250	0	– 125	—	—	—	—	—	160			
1 250	1 600	0	– 160	—	—	—	—	—	190			
1 600	2 000	0	– 200	—	—	—	—	—	220			
2 000	2 500	0	– 250	—	—	—	—	—	250			

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

[b] Applies to groove ball bearings only.

ISO 492:2002

Tolerance values in µm

Radial bearings (except tapered roller bearings)

Tab. 3 - Tolerance class 6 - Inner ring

d mm		Δ_{dmp}		V_{dsp}			V_{dmp}	K_{ia}	Δ_{Bs}			V_{Bs}
				Diameter series								
				9	0, 1	2, 3, 4			all	normal	modified [a]	
>	≤	high	low	max.			max.	max.	high	low		max.
—	0,6	0	– 7	9	7	5	5	5	0	– 40	—	12
0,6	2,5	0	– 7	9	7	5	5	5	0	– 40	—	12
2,5	10	0	– 7	9	7	5	5	6	0	– 120	– 250	15
10	18	0	– 7	9	7	5	5	7	0	– 120	– 250	20
18	30	0	– 8	10	8	6	6	8	0	– 120	– 250	20
30	50	0	– 10	13	10	8	8	10	0	– 120	– 250	20
50	80	0	– 12	15	15	9	9	10	0	– 150	– 380	25
80	120	0	– 15	19	19	11	11	13	0	– 200	– 380	25
120	180	0	– 18	23	23	14	14	18	0	– 250	– 500	30
180	250	0	– 22	28	28	17	17	20	0	– 300	– 500	30
250	315	0	– 25	31	31	19	19	25	0	– 350	– 500	35
315	400	0	– 30	38	38	23	23	30	0	– 400	– 630	40
400	500	0	– 35	44	44	26	26	35	0	– 450	—	45
500	630	0	– 40	50	50	30	30	40	0	– 500	—	50

[a] Applies to inner rings and outer rings of single bearings made for paired and stack assemblies. Also applies to inner rings with tapered bore with $d \geq 50$ mm.

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Tolerance values in µm

Radial bearings (except tapered roller bearings)

Tab. 4 - Tolerance class 6 - Outer ring

D mm		Δ_{Dmp}		V_{Dsp} [a]				V_{Dmp} [a]	K_{ea}	Δ_{Cs} / Δ_{C1s} [b]		V_{Cs} / V_{C1s} [b]
				Open bearings			Capped bearings					
				Diameter series								
				9	0, 1	2, 3, 4	0, 1, 2, 3, 4					
>	≤	high	low	max.				max.	max.	high	low	max.
—	2,5	0	– 7	9	7	5	9	5	8			
2,5	6	0	– 7	9	7	5	9	5	8			
6	18	0	– 7	9	7	5	9	5	8			
18	30	0	– 8	10	8	6	10	6	9			
30	50	0	– 9	11	9	7	13	7	10			
50	80	0	– 11	14	11	8	16	8	13			
80	120	0	– 13	16	16	10	20	10	18			
120	150	0	– 15	19	19	11	25	11	20	Identical to Δ_{Bs} and V_{Bs} of inner ring of the same bearing as the outer ring.		
150	180	0	– 18	23	23	14	30	14	23			
180	250	0	– 20	25	25	15	—	15	25			
250	315	0	– 25	31	31	19	—	19	30			
315	400	0	– 28	35	35	21	—	21	35			
400	500	0	– 33	41	41	25	—	25	40			
500	630	0	– 38	48	48	29	—	29	50			
630	800	0	– 45	56	56	34	—	34	60			
800	1 000	0	– 60	75	75	45	—	45	75			

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

[b] Applies to groove ball bearings only.

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Tolerance values in µm

Tapered roller bearings (metric sizes)

Tab. 5 - Normal tolerance class - Inner ring

d mm		Δ_{dmp}		V_{dsp}	V_{dmp}	K_{ia}
>	≤	high	low	max.	max.	max.
—	10	0	– 12	12	9	15
10	18	0	– 12	12	9	15
18	30	0	– 12	12	9	18
30	50	0	– 12	12	9	20
50	80	0	– 15	15	11	25
80	120	0	– 20	20	15	30
120	180	0	– 25	25	19	35
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	– 60	60	40	90
630	800	0	– 75	75	45	100
800	1 000	0	– 100	100	55	115
1 000	1 250	0	– 125	125	65	130
1 250	1 600	0	– 160	160	80	150
1 600	2 000	0	– 200	200	100	170

ISO 492:2002 *Tolerance values in µm*

Tapered roller bearings (metric sizes)

Tab. 6 - Normal tolerance class - Outer ring

D mm		Δ_{Dmp}		V_{Dsp}	V_{Dmp}	K_{ea}
>	≤	high	low	max.	max.	max.
—	18	0	– 12	12	9	18
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	60	38	100
630	800	0	– 75	80	55	120
800	1 000	0	– 100	100	75	140
1 000	1 250	0	– 125	130	90	160
1 250	1 600	0	– 160	170	100	180
1 600	2 000	0	– 200	210	110	200
2 000	2 500	0	– 250	265	120	220

ISO 492:2002 *Tolerance values in μm*

Tapered roller bearings (metric sizes)

Tab. 7 - Normal tolerance class - Width - Inner rings, outer rings, single-row bearings and single-row subunits

d mm		Δ_{Bs}		Δ_{Cs}		Δ_{Ts}		Δ_{T1s}		Δ_{T2s}	
>	≤	high	low	high	low	high	low	high	low	high	low
—	10	0	− 120	0	− 120	+ 200	0	+ 100	0	+ 100	0
10	18	0	− 120	0	− 120	+ 200	0	+ 100	0	+ 100	0
18	30	0	− 120	0	− 120	+ 200	0	+ 100	0	+ 100	0
30	50	0	− 120	0	− 120	+ 200	0	+ 100	0	+ 100	0
50	80	0	− 150	0	− 150	+ 200	0	+ 100	0	+ 100	0
80	120	0	− 200	0	− 200	+ 200	− 200	+ 100	− 100	+ 100	− 100
120	180	0	− 250	0	− 250	+ 350	− 250	+ 150	− 150	+ 200	− 100
180	250	0	− 300	0	− 300	+ 350	− 250	+ 150	− 150	+ 200	− 100
250	315	0	− 350	0	− 350	+ 350	− 250	+ 150	− 150	+ 200	− 100
315	400	0	− 400	0	− 400	+ 400	− 400	+ 200	− 200	+ 200	− 200
400	500	0	− 450	0	− 450	+ 450	− 450	+ 225	− 225	+ 225	− 225
500	630	0	− 500	0	− 500	+ 500	− 500	—	—	—	—
630	800	0	− 750	0	− 750	+ 600	− 600	—	—	—	—
800	1 000	0	− 1 000	0	− 1 000	+ 750	− 750	—	—	—	—
1 000	1 250	0	− 1 250	0	− 1 250	+ 900	− 900	—	—	—	—
1 250	1 600	0	− 1 600	0	− 1 600	+ 1 050	− 1 050	—	—	—	—
1 600	2 000	0	− 2 000	0	− 2 000	+ 1 200	− 1 200	—	—	—	—

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Tolerance values in µm

Tapered roller bearings (inch sizes)

Tab. 8 - Normal and CL2 tolerance classes - Inner ring

d mm		Δ_{ds}		K_{ia}, S_{ia}	
				normal	CL2
>	≤	high	low	max.	max.
76,2	304,8	+ 25	0	51	38
304,8	609,6	+ 51	0	51	38
609,6	914,4	+ 76	0	76	51
914,4	1219,2	+ 102	0	76	—
1219,2	—	+ 127	0	76	—

ANSI/ABMA 19.2:1994 *Tolerance values in µm*

Tapered roller bearings (inch sizes)

Tab. 9 - Normal and CL2 tolerance classes - Outer ring

D mm		Δ_{Ds}		K_{ea}, S_{ea}	
				normal	CL2
>	≤	high	low	max.	max.
—	304,8	+ 25	0	51	38
304,8	609,6	+ 51	0	51	38
609,6	914,4	+ 76	0	76	51
914,4	1219,2	+ 102	0	76	—
1219,2	—	+ 127	0	76	—

ANSI/ABMA 19.2:1994 *Tolerance values in µm*

Tapered roller bearings (inch sizes)

Tab. 10 - Normal and CL2 tolerance classes - Abutment width of single-row bearings

d mm		D mm		Δ_{Ts}			
				normal		CL2	
>	≤	>	≤	high	low	high	low
—	101,6	—	—	+ 203	0	+ 203	0
101,6	266,7	—	—	+ 356	– 254	+ 203	0
266,7	304,8	—	—	+ 356	– 254	+ 203	0
304,8	609,6	—	508	+ 381	– 381	+ 381	– 381
304,8	609,6	508	—	+ 381	– 381	+ 381	– 381
609,6	—	—	—	+ 381	– 381	—	—

ANSI/ABMA 19.2:1994 *Tolerance values in µm*

Tapered bores (1:12)

Tab. 11 - Normal tolerance class - Tapered bore

d mm		Δ_{dmp}		$\Delta_{d1mp} - \Delta_{dmp}$		V_{dsp} [a, b]
>	≤	high	low	high	low	max.
—	10	+ 22	0	+ 15	0	9
10	18	+ 27	0	+ 18	0	11
18	30	+ 33	0	+ 21	0	13
30	50	+ 39	0	+ 25	0	16
50	80	+ 46	0	+ 30	0	19
80	120	+ 54	0	+ 35	0	22
120	180	+ 63	0	+ 40	0	40
180	250	+ 72	0	+ 46	0	46
250	315	+ 81	0	+ 52	0	52
315	400	+ 89	0	+ 57	0	57
400	500	+ 97	0	+ 63	0	63
500	630	+ 110	0	+ 70	0	70
630	800	+ 125	0	+ 80	0	—
800	1 000	+ 140	0	+ 90	0	—
1 000	1 250	+ 165	0	+ 105	0	—
1 250	1 600	+ 195	0	+ 125	0	—

[a] Applies in any single radial plane of the bore.

[b] Does not apply to diameter series 7 and 8.

ISO 492:2002 *Tolerance values in µm*

Tapered bores (1:30)

Tab. 12 - Normal tolerance class - Tapered bore

d mm		Δ_{dmp}		$\Delta_{d1mp} - \Delta_{dmp}$		V_{dsp} [a, b]
>	≤	high	low	high	low	max.
—	50	+ 15	0	+ 30	0	19
50	80	+ 15	0	+ 30	0	19
80	120	+ 20	0	+ 35	0	22
120	180	+ 25	0	+ 40	0	40
180	250	+ 30	0	+ 46	0	46
250	315	+ 35	0	+ 52	0	52
315	400	+ 40	0	+ 57	0	57
400	500	+ 45	0	+ 63	0	63
500	630	+ 50	0	+ 70	0	70

[a] Applies in any single radial plane of the bore.

[b] Does not apply to diameter series 7 and 8.

ISO 492:2002 *Tolerance values in µm*

Thrust bearings

Tab. 13 - Normal tolerance class - Shaft washer, central shaft washer and bearing height

d and d_2 mm		Δ_{dmp}, Δ_{d2mp}		V_{dsp}, V_{d2sp}	S_i	Δ_{Ts}		Δ_{T1s}	
>	≤	high	low	max.	max.	high	low	high	low
—	18	0	–8	6	10	+20	–250	+150	–400
18	30	0	–10	8	10	+20	–250	+150	–400
30	50	0	–12	9	10	+20	–250	+150	–400
50	80	0	–15	11	10	+20	–300	+150	–500
80	120	0	–20	15	15	+25	–300	+200	–500
120	180	0	–25	19	15	+25	–400	+200	–600
180	250	0	–30	23	20	+30	–400	+250	–600
250	315	0	–35	26	25	+40	–400	—	—
315	400	0	–40	30	30	+40	–500	—	—
400	500	0	–45	34	30	+50	–500	—	—
500	630	0	–50	38	35	+60	–600	—	—
630	800	0	–75	55	40	+70	–750	—	—
800	1 000	0	–100	75	45	+80	–1 000	—	—
1 000	1 250	0	–125	95	50	+100	–1 400	—	—
1 250	1 600	0	–160	120	60	+120	–1 600	—	—
1 600	2 000	0	–200	150	75	+140	–1 900	—	—
2 000	2 500	0	–250	190	90	+160	–2 300	—	—

NOTE For double-direction bearings, the values apply only up to and including d_2 = 190 mm.

ISO 199:2005 *Tolerance values in µm*

Thrust bearings

Tab. 14 - Normal tolerance class - Housing washer

D mm		Δ_{Dmp}		V_{Dsp}	S_e
>	≤	high	low	max.	max.
10	18	0	–11	8	Identical to S_i of shaft washer of same bearing
18	30	0	–13	10	
30	50	0	–16	12	
50	80	0	–19	14	
80	120	0	–22	17	
120	180	0	–25	19	
180	250	0	–30	23	
250	315	0	–35	26	
315	400	0	–40	30	
400	500	0	–45	34	
500	630	0	–50	38	
630	800	0	–75	55	
800	1 000	0	–100	75	
1 000	1 250	0	–125	95	
1 250	1 600	0	–160	120	
1 600	2 000	0	–200	150	
2 000	2 500	0	–250	190	
2 500	2 850	0	–300	225	

NOTE For double-direction bearings, the values apply only up to and including D = 360 mm.

ISO 199:2005 *Tolerance values in µm*

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BEARING RADIAL INTERNAL CLEARANCES

Symbols

d = bore diameter

G_r = radial internal clearance

Radial contact groove ball bearings

Tab. 15 - Radial contact groove ball bearings with cylindrical bore

d mm		G_r									
		Group 2		Group N		Group 3		Group 4		Group 5	
>	≤	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
2,5	6	0	7	2	13	8	23	—	—	—	—
6	10	0	7	2	13	8	23	14	29	20	37
10	18	0	9	3	18	11	25	18	33	25	45
18	24	0	10	5	20	13	28	20	36	28	48
24	30	1	11	5	20	13	28	23	41	30	53
30	40	1	11	6	20	15	33	28	46	40	64
40	50	1	11	6	23	18	36	30	51	45	73
50	65	1	15	8	28	23	43	38	61	55	90
65	80	1	15	10	30	25	51	46	71	65	105
80	100	1	18	12	36	30	58	53	84	75	120
100	120	2	20	15	41	36	66	61	97	90	140
120	140	2	23	18	48	41	81	71	114	105	160
140	160	2	23	18	53	46	91	81	130	120	180
160	180	2	25	20	61	53	102	91	147	135	200
180	200	2	30	25	71	63	117	107	163	150	230
200	225	2	35	25	85	75	140	125	195	175	265
225	250	2	40	30	95	85	160	145	225	205	300
250	280	2	45	35	105	90	170	155	245	225	340
280	315	2	55	40	115	100	190	175	270	245	370
315	355	3	60	45	125	110	210	195	300	275	410
355	400	3	70	55	145	130	240	225	340	315	460
400	450	3	80	60	170	150	270	250	380	350	520
450	500	3	90	70	190	170	300	280	420	390	570
500	560	10	100	80	210	190	330	310	470	440	630
560	630	10	110	90	230	210	360	340	520	490	700
630	710	20	130	110	260	240	400	380	570	540	780
710	800	20	140	120	290	270	450	430	630	600	860
800	900	20	160	140	320	300	500	480	700	670	960
900	1 000	20	170	150	350	330	550	530	770	740	1 040
1 000	1 120	20	180	160	380	360	600	580	850	820	1 150
1 120	1 250	20	190	170	410	390	650	630	920	890	1 260
1 250	1 400	30	200	190	440	420	700	680	1 000	—	—
1 400	1 600	30	210	210	470	450	750	730	1 060	—	—

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Clearance values in µm

Cylindrical roller bearings

Tab. 16 - Cylindrical roller bearings with cylindrical bore

d mm		G_r									
		Group 2		Group N		Group 3		Group 4		Group 5	
>	≤	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
—	10	0	25	20	45	35	60	50	75	—	—
10	24	0	25	20	45	35	60	50	75	65	90
24	30	0	25	20	45	35	60	50	75	70	95
30	40	5	30	25	50	45	70	60	85	80	105
40	50	5	35	30	60	50	80	70	100	95	125
50	65	10	40	40	70	60	90	80	110	110	140
65	80	10	45	40	75	65	100	90	125	130	165
80	100	15	50	50	85	75	110	105	140	155	190
100	120	15	55	50	90	85	125	125	165	180	220
120	140	15	60	60	105	100	145	145	190	200	245
140	160	20	70	70	120	115	165	165	215	225	275
160	180	25	75	75	125	120	170	170	220	250	300
180	200	35	90	90	145	140	195	195	250	275	330
200	225	45	105	105	165	160	220	220	280	305	365
225	250	45	110	110	175	170	235	235	300	330	395
250	280	55	125	125	195	190	260	260	330	370	440
280	315	55	130	130	205	200	275	275	350	410	485
315	355	65	145	145	225	225	305	305	385	455	535
355	400	100	190	190	280	280	370	370	460	510	600
400	450	110	210	210	310	310	410	410	510	565	665
450	500	110	220	220	330	330	440	440	550	625	735
500	560	120	240	240	360	360	480	480	600	—	—
560	630	140	260	260	380	380	500	500	620	—	—
630	710	145	285	285	425	425	565	565	705	—	—
710	800	150	310	310	470	470	630	630	790	—	—
800	900	180	350	350	520	520	690	690	860	—	—
900	1 000	200	390	390	580	580	770	770	960	—	—
1 000	1 120	220	430	430	640	640	850	850	1 060	—	—
1 120	1 250	230	470	470	710	710	950	950	1 190	—	—
1 250	1 400	270	530	530	790	790	1 050	1 050	1 310	—	—
1 400	1 600	330	610	610	890	890	1 170	1 170	1 450	—	—
1 600	1 800	380	700	700	1 020	1 020	1 340	1 340	1 660	—	—
1 800	2 000	400	760	760	1 120	1 120	1 480	1 480	1 840	—	—

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Clearance values in µm

Cylindrical roller bearings

Tab. 17 - Cylindrical roller bearings with tapered bore

d mm		G_r							
		Group 2		Group N		Group 3		Group 4	
>	≤	min.	max.	min.	max.	min.	max.	min.	max.
—	10	15	40	30	55	40	65	50	75
10	24	15	40	30	55	40	65	50	75
24	30	20	45	35	60	45	70	55	80
30	40	20	45	40	65	55	80	70	95
40	50	25	55	45	75	60	90	75	105
50	65	30	60	50	80	70	100	90	120
65	80	35	70	60	95	85	120	110	145
80	100	40	75	70	105	95	130	120	155
100	120	50	90	90	130	115	155	140	180
120	140	55	100	100	145	130	175	160	205
140	160	60	110	110	160	145	195	180	230
160	180	75	125	125	175	160	210	195	245
180	200	85	140	140	195	180	235	220	275
200	225	95	155	155	215	200	260	245	305
225	250	105	170	170	235	220	285	270	335
250	280	115	185	185	255	240	310	295	365
280	315	130	205	205	280	265	340	325	400
315	355	145	225	225	305	290	370	355	435
355	400	165	255	255	345	330	420	405	495
400	450	185	285	285	385	370	470	455	555
450	500	205	315	315	425	410	520	505	615
500	560	230	350	350	470	455	575	560	680
560	630	260	380	380	500	500	620	620	740
630	710	295	435	435	575	565	705	695	835
710	800	325	485	485	645	630	790	775	935
800	900	370	540	540	710	700	870	860	1 030
900	1 000	410	600	600	790	780	970	960	1 150
1 000	1 120	455	665	665	875	865	1 075	1 065	1 275
1 120	1 250	490	730	730	970	960	1 200	1 200	1 440
1 250	1 400	550	810	810	1 070	1 070	1 330	1 330	1 590
1 400	1 600	640	920	920	1 200	1 200	1 480	1 480	1 760
1 600	1 800	700	1 020	1 020	1 340	1 340	1 660	1 660	1 980
1 800	2 000	760	1 120	1 120	1 480	1 480	1 840	1 840	2 200

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Clearance values in µm

Double-row self-aligning roller bearings

Tab. 18 - Double-row self-aligning roller bearings with cylindrical bore

d mm		G_r									
		Group 2		Group N		Group 3		Group 4		Group 5	
>	≤	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
14	18	10	20	20	35	35	45	45	60	60	75
18	24	10	20	20	35	35	45	45	60	60	75
24	30	15	25	25	40	40	55	55	75	75	95
30	40	15	30	30	45	45	60	60	80	80	100
40	50	20	35	35	55	55	75	75	100	100	125
50	65	20	40	40	65	65	90	90	120	120	150
65	80	30	50	50	80	80	110	110	145	145	180
80	100	35	60	60	100	100	135	135	180	180	225
100	120	40	75	75	120	120	160	160	210	210	260
120	140	50	95	95	145	145	190	190	240	240	300
140	160	60	110	110	170	170	220	220	280	280	350
160	180	65	120	120	180	180	240	240	310	310	390
180	200	70	130	130	200	200	260	260	340	340	430
200	225	80	140	140	220	220	290	290	380	380	470
225	250	90	150	150	240	240	320	320	420	420	520
250	280	100	170	170	260	260	350	350	460	460	570
280	315	110	190	190	280	280	370	370	500	500	630
315	355	120	200	200	310	310	410	410	550	550	690
355	400	130	220	220	340	340	450	450	600	600	750
400	450	140	240	240	370	370	500	500	660	660	820
450	500	140	260	260	410	410	550	550	720	720	900
500	560	150	280	280	440	440	600	600	780	780	1 000
560	630	170	310	310	480	480	650	650	850	850	1 100
630	710	190	350	350	530	530	700	700	920	920	1 190
710	800	210	390	390	580	580	770	770	1 010	1 010	1 300
800	900	230	430	430	650	650	860	860	1 120	1 120	1 440
900	1 000	260	480	480	710	710	930	930	1 220	1 220	1 570

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Clearance values in µm

Double-row self-aligning roller bearings

Tab. 19 - Double-row self-aligning roller bearings with tapered bore

d mm		G_r									
		Group 2		Group N		Group 3		Group 4		Group 5	
>	≤	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
18	24	15	25	25	35	35	45	45	60	60	75
24	30	20	30	30	40	40	55	55	75	75	95
30	40	25	35	35	50	50	65	65	85	85	105
40	50	30	45	45	60	60	80	80	100	100	130
50	65	40	55	55	75	75	95	95	120	120	160
65	80	50	70	70	95	95	120	120	150	150	200
80	100	55	80	80	110	110	140	140	180	180	230
100	120	65	100	100	135	135	170	170	220	220	280
120	140	80	120	120	160	160	200	200	260	260	330
140	160	90	130	130	180	180	230	230	300	300	380
160	180	100	140	140	200	200	260	260	340	340	430
180	200	110	160	160	220	220	290	290	370	370	470
200	225	120	180	180	250	250	320	320	410	410	520
225	250	140	200	200	270	270	350	350	450	450	570
250	280	150	220	220	300	300	390	390	490	490	620
280	315	170	240	240	330	330	430	430	540	540	680
315	355	190	270	270	360	360	470	470	590	590	740
355	400	210	300	300	400	400	520	520	650	650	820
400	450	230	330	330	440	440	570	570	720	720	910
450	500	260	370	370	490	490	630	630	790	790	1 000
500	560	290	410	410	540	540	680	680	870	870	1 100
560	630	320	460	460	600	600	760	760	980	980	1 230
630	710	350	510	510	670	670	850	850	1 090	1 090	1 360
710	800	390	570	570	750	750	960	960	1 220	1 220	1 500
800	900	440	640	640	840	840	1 070	1 070	1 370	1 370	1 690
900	1 000	490	710	710	930	930	1 190	1 190	1 520	1 520	1 860

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Clearance values in µm

Notes

Notes

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