

Tolerances for rolling bearings

Radial internal clearance

DIN
620-4

ICS 21.100.20

Supersedes August 1987 edition.

Wälzlager – Wälzlagertoleranzen – Teil 4: Radiale Lagerluft

In keeping with current practice in standards published by the International Organization for Standardization (ISO), a comma has been used throughout as the decimal marker.

Foreword

This standard has been prepared by the *Ausschuss Wälzlager* (Rolling Bearings Standards Committee). See Explanatory notes for relationship to International Standard ISO 5753 : 1991, published by the International Organization for Standardization.

Amendments

This standard differs from the August 1987 edition as follows:

- a) The radial internal clearance values have been harmonized with those specified in ISO 5753.
- b) The number of bore diameter ranges has been extended.
- c) The standard has been editorially revised.

Previous editions

DIN 620: 1932-11, 1936-03; DIN 620-1: 1942-08, 1963-03, 1978-01, 1982-06; DIN 620-4: 1962-03, 1968-10, 1983-09, 1987-08.

All dimensions are in millimetres.

1 Scope

This standard specifies radial internal clearance values for radial contact groove ball bearings, self-aligning ball bearings, cylindrical roller bearings, needle roller bearings and self-aligning roller bearings. These values are given for all five types of bearing with cylindrical bore, and also for self-aligning bearings (ball or roller bearings) and cylindrical roller bearings with tapered bore.

The values given apply to bearings which are not mounted and are under no load condition (i.e with no measuring load applied).

Since measurements of radial clearance can only be made with a measuring load applied, the radial displacement resulting from the elastic deformation of the rings and rolling elements shall be added to the values specified in this standard, the magnitude of these values depending on the number and diameter of the rolling elements and on the extent of contact between rolling elements and raceway. As these design features are not standardized, the magnitude of any additional displacement under the effect of a measuring load cannot be allowed for in this standard. It is recommended that these data be requested from the bearing manufacturer. The relevant measuring methods are described in ISO 1132-2.

Document comprises 10 pages.

Translation by DIN-Sprachendienst.

In case of doubt, the German-language original should be consulted as the authoritative text.

2 Normative references

This standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the titles of the publications are listed below. For dated references, subsequent amendments to or revisions of any of these publications apply to this standard only when incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

DIN 623-1	Designation system for rolling bearings
ISO 1132-2 : 2001	Rolling bearings – Tolerances – Part 2: Measuring and gauging principles and methods
ISO 5753 : 1981	Rolling bearings – Radial internal clearance

3 Symbols

Taking into account the various requirements to be met by bearings, these are classified according to radial internal clearance range. The groups thus obtained are identified by the symbols given in table 1. In the designation, the group symbol shall be added to the symbol identifying the bearing (cf. DIN 623-1).

Table 1: Symbols to denote ranges of radial internal clearance

Symbol	Designation	
C2	Radial internal clearance smaller than normal	} See tables 2 to 8 for values.
CN ¹⁾	Normal radial internal clearance	
C3	Radial internal clearance greater than normal	
C4	Radial internal clearance greater than C3	
1) Symbol need not be given in the designation.		

4 Radial internal clearance values

4.1 Radial contact groove ball bearings

Table 2: Radial contact groove ball bearings with cylindrical bore

Nominal bore diameter, d		Radial internal clearance, in μm							
		C2		CN		C3		C4	
Over	Up to	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1,5	6	0	7	2	13	8	23	—	—
6	10	0	7	2	13	8	23	14	29
10	18	0	9	3	18	11	25	18	33
18	24	0	10	5	20	13	28	20	36
24	30	1	11	5	20	13	28	23	41
30	40	1	11	6	20	15	33	28	46
40	50	1	11	6	23	18	36	30	51
50	65	1	15	8	28	23	43	38	61
65	80	1	15	10	30	25	51	46	71
80	100	1	18	12	36	30	58	53	84
100	120	2	20	15	41	36	66	61	97
120	140	2	23	18	48	41	81	71	114
140	160	2	23	18	53	46	91	81	130
160	180	2	25	20	61	53	102	91	147
180	200	2	30	25	71	63	117	107	163
200	225	2	35	25	85	75	140	125	195
225	250	2	40	30	95	85	160	145	225
250	280	2	45	35	105	90	170	155	245
280	315	2	55	40	115	100	190	175	270
315	355	3	60	45	125	110	210	195	300
355	400	3	70	55	145	130	240	225	340
400	450	3	80	60	170	150	270	250	380
450	500	3	90	70	190	170	300	280	420
500	560	10	100	80	210	190	330	310	470
560	630	10	110	90	230	210	360	340	520
630	710	20	130	110	260	240	400	380	570
710	800	20	140	120	290	270	450	430	630
800	900	20	160	140	320	300	500	480	700
900	1 000	20	170	150	350	330	550	530	770
1 000	1 120	20	180	160	380	360	600	580	850
1 120	1 250	20	190	170	410	390	650	630	920
1 250	1 400	30	200	190	440	420	700	680	990
1 400	1 600	30	210	210	470	450	750	730	1 060

4.2 Double row self-aligning ball bearings

Table 3: Double row self-aligning ball bearings with cylindrical bore

Nominal bore diameter, d		Radial internal clearance, in μm							
		C2		CN		C3		C4	
Over	Up to	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
2,5	6	1	8	5	15	10	20	15	25
6	10	2	9	6	17	12	25	19	33
10	14	2	10	6	19	13	26	21	35
14	18	3	12	8	21	15	28	23	37
18	24	4	14	10	23	17	30	25	39
24	30	5	16	11	24	19	35	29	46
30	40	6	18	13	29	23	40	34	53
40	50	6	19	14	31	25	44	37	57
50	65	7	21	16	36	30	50	45	69
65	80	8	24	18	40	35	60	54	83
80	100	9	27	22	48	42	70	64	96
100	120	10	31	25	56	50	83	75	114
120	140	10	38	30	68	60	100	90	135
140	160	15	44	35	80	70	120	110	161
160	180	15	50	40	92	82	138	126	185
180	200	17	57	47	105	93	157	144	212
200	225	18	62	50	115	100	170	155	230
225	250	20	70	57	130	115	195	175	255
250	280	23	78	65	145	125	220	200	295
280	315	27	90	75	165	145	250	230	335
315	355	32	100	85	185	165	285	260	380
355	400	35	110	90	205	185	325	295	430
400	450	38	125	100	230	205	345	315	465
450	500	40	135	110	255	230	380	345	510