SLOVENSKI STANDARD
SIST ISO 5753:2001

01-julij-2001

Kotalni ležaji - Radialni ohlap ležajev

Rolling bearings -- Radial internal clearance

Roulements -- Jeu interne radial

Ta slovenski standard je istoveten z: **ISO 5753:1991**

ICS:

21.100.20 Kotalni ležaji Rolling bearings

SIST ISO 5753:2001 **en**

INTERNATIONAL STANDARD

ISO 5753

Second edition
1991-10-15

Rolling bearings — Radial internal clearance

Roulements — Jeu interne radial

Reference number
ISO 5753:1991(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 5753 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Sub-Committee SC 4, *Tolerances*.

This second edition cancels and replaces the first edition (ISO 5753:1981), which has been technically revised.

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Rolling bearings — Radial internal clearance

1 Scope

This International Standard specifies values of radial internal clearance for

- radial contact groove ball bearings, except those for insert bearings, which are given in ISO 9628;
- double row self-aligning ball bearings;
- cylindrical roller bearings;
- needle roller bearings; and
- double row self-aligning roller bearings.

Values are given for all five types of bearing with cylindrical bore, and also for the self-aligning bearings with tapered bore.

The values given apply to non-preloaded bearings and of a design such that they can take purely radial load.

Depending on bearing design and measuring method, some scatter of the results of repeated measurements may be experienced. Manufacturers are expected to take such scatter into consideration by applying correspondingly reduced manufacturing tolerances.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1132:1980, *Rolling bearings — Tolerances — Definitions.*

ISO 6979:1982, *Needle roller bearings — Heavy series — Dimensions and tolerances.*

ISO 9628:—[1)], *Rolling bearings — Insert bearings and eccentric locking collars.*

3 Definitions

For the purposes of this International Standard, the definitions given in ISO 1132 apply. For the convenience of users of this International Standard, the following definition is reproduced.

3.1 radial internal clearance: G_r (bearing capable of taking purely radial load, non-preloaded): The arithmetical mean of the radial distances through which one of the rings may be displaced relative to the other, from one eccentric extreme position to the diametrically opposite extreme position, in different angular directions and without being subjected to any external load. The mean value includes displacements with the rings in different angular positions relative to each other and with the set of rolling elements in different angular positions in relation to the rings.

NOTE 1 At each limiting eccentric position of the rings in relation to each other, their relative axial position, and the position of the rolling elements relative to the raceways, are to be such that the one ring has actually assumed the extreme eccentric position in relation to the other ring.

1) To be published.

4 Radial internal clearance values

4.1 Radial contact groove ball bearings

See table 1.

Table 1 — Radial contact groove ball bearings with cylindrical bore

Clearance values in micrometres

Bore diameter *d* mm		Group 2		Group N		Group 3		Group 4		Group 5	
over	incl.	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	510
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	690
630	**710**	20	130	110	260	240	400	380	570	540	760
710	**800**	20	140	120	290	270	450	430	630	600	840
800	**900**	20	160	140	320	300	500	480	700	670	940
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

NOTE — These values are not valid for insert bearings; refer to ISO 9628.

4.2 Double row self-aligning ball bearings

See tables 2 and 3.

Table 2 — Double row self-aligning ball bearings with cylindrical bore

Clearance values in micrometres

Bore diameter *d* mm		Group 2		Group N		Group 3		Group 4		Group 5	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
2,5	**6**	1	8	5	15	10	20	15	25	21	33
6	**10**	2	9	6	17	12	25	19	33	27	42
10	**14**	2	10	6	19	13	26	21	35	30	48
14	**18**	3	12	8	21	15	28	23	37	32	50
18	**24**	4	14	10	23	17	30	25	39	34	52
24	**30**	5	16	11	24	19	35	29	46	40	58
30	**40**	6	18	13	29	23	40	34	53	46	66
40	**50**	6	19	14	31	25	44	37	57	50	71
50	**65**	7	21	16	36	30	50	45	69	62	88
65	**80**	8	24	18	40	35	60	54	83	76	108
80	**100**	9	27	22	48	42	70	64	96	89	124
100	**120**	10	31	25	56	50	83	75	114	105	145
120	**140**	10	38	30	68	60	100	90	135	125	175
140	**160**	15	44	35	80	70	120	110	161	150	210

Table 3 — Double row self-aligning ball bearings with tapered bore

Clearance values in micrometres

Bore diameter *d* mm		Group 2		Group N		Group 3		Group 4		Group 5	
over	incl.	min.	max.	min.	max.	min.	max.	min.	max.	min.	max.
18	**24**	7	17	13	26	20	33	28	42	37	55
24	**30**	9	20	15	28	23	39	33	50	44	62
30	**40**	12	24	19	35	29	46	40	59	52	72
40	**50**	14	27	22	39	33	52	45	65	58	79
50	**65**	18	32	27	47	41	61	56	80	73	99
65	**80**	23	39	35	57	50	75	69	98	91	123
80	**100**	29	47	42	68	62	90	84	116	109	144
100	**120**	35	56	50	81	75	108	100	139	130	170
120	**140**	40	68	60	98	90	130	120	165	155	205
140	**160**	45	74	65	110	100	150	140	191	180	240

4.3 Cylindrical roller bearings

See table 4.

Table 4 — Cylindrical roller bearings with cylindrical bore

Clearance values in micrometres

Bore diameter *d* mm		Group 2		Group N		Group 3		Group 4		Group 5	
over	incl.	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

4.4 Needle roller bearings

For complete needle roller bearings, except drawn cup bearings and heavy series given in ISO 6979, the same radial internal clearance values apply as given for cylindrical roller bearings in table 4.

For complete bearings of the heavy series (see ISO 6979), and for needle roller bearings comprising an inner ring delivered as a separate item, the radial clearance is given by the inner ring raceway and the needle roller complement bore diameters. Tolerances for these diameters are given in the International Standards covering needle roller bearing inner rings and needle roller bearings without inner ring.

4.5 Double row self-aligning roller bearings

See tables 5 and 6.

Table 5 — Double row self-aligning roller bearings with cylindrical bore

Clearance values in micrometres

Bore diameter d mm		Group 2		Group N		Group 3		Group 4		Group 5	
over	incl.	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	925	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