
International Standard



6979

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Needle roller bearings — Heavy series — Dimensions and tolerances

Roulements à aiguilles — Série lourde — Dimensions et tolérances

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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6979 was developed by Technical Committee ISO/TC 4, *Rolling bearings*, and was circulated to the member bodies in May 1981.

It has been approved by the member bodies of the following countries :

Australia	Germany, F. R.	Poland
Austria	Hungary	Romania
Brazil	India	Spain
Canada	Italy	Sweden
China	Japan	Switzerland
Czechoslovakia	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Mexico	USA
France	Netherlands	USSR

No member body expressed disapproval of the document.

Needle roller bearings — Heavy series — Dimensions and tolerances

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1 Scope and field of application

This International Standard specifies boundary dimensions and normal class tolerances for complete needle roller bearings, heavy series. Dimensions and tolerances for inner rings and for bearings without inner ring are also specified.

The boundary dimensions of this heavy series do not belong to any of the dimension series in ISO 15.

The chamfer dimension limits are given in ISO 582.

This International Standard does not apply to drawn cup needle roller bearings.

2 References

ISO 6979:1982, *Radial bearings — Boundary dimensions — General plan*.

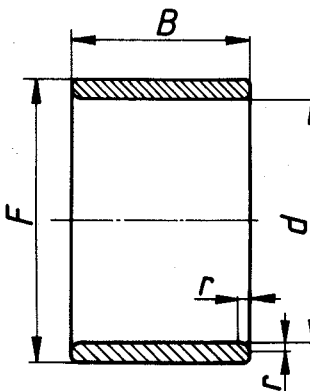
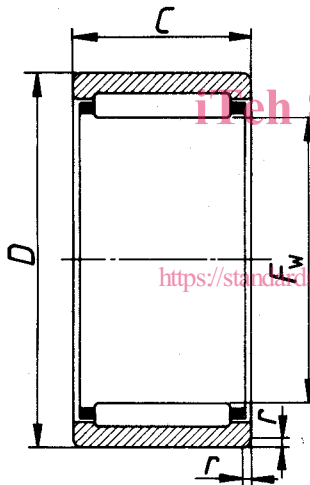
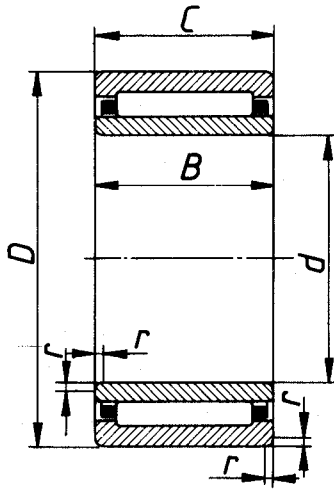
ISO 582, *Rolling bearings — Metric series — Chamfer dimension limits*.

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

3 Definitions

The concepts to which the tolerances specified in this International Standard apply are defined in ISO 1132.

4 Symbols



- d = nominal bore diameter
- Δ_{dmp} = single plane mean bore diameter deviation
- V_{dmp} = mean bore diameter variation
- D = nominal outside diameter
- Δ_{Dmp} = single plane mean outside diameter deviation
- V_{Dmp} = mean outside diameter variation
- F = inner ring raceway diameter, nominal
- Δ_{Fmp} = single plane mean inner ring raceway diameter deviation
- F_w = needle roller complement bore diameter, nominal
- F_{wmin} = smallest single diameter of the needle roller complement bore¹⁾
- $\Delta_{F_{wmin}}$ = deviation of the smallest single diameter of the needle roller complement bore (difference between F_{wmin} and F_w)
- B = nominal inner ring width
- Δ_{Bs} = deviation of a single inner ring width
- V_{Bs} = inner ring width variation
- C = nominal outer ring width
- Δ_{Cs} = deviation of a single outer ring width
- V_{Cs} = outer ring width variation
- K_i = inner ring raceway to bore thickness variation
- K_{ia} = radial runout of assembled bearing inner ring
- K_{ea} = radial runout of assembled bearing outer ring
- r = chamfer dimension
- r_{smin} = smallest permissible single chamfer dimension

1) The "smallest single diameter of the needle roller complement bore" is defined as the diameter of the cylinder with which, when used instead of a bearing inner ring, zero radial internal clearance is obtained in at least one radial direction.

5 Boundary dimensions

Table 1 — Complete bearings, inner rings and bearings without inner ring

Dimensions in millimetres

Complete bearings				Inner rings				Bearings without inner rings			
d	D	B and C	r_{smin}	d	F	B	r_{smin}	F_w	D	C	r_{smin}
10	26	25	0,6	10	15	25	0,6	15	26	25	0,6
12	28	25	0,6	12	17	25	0,6	17	28	25	0,6
15	32	25	0,6	15	20	25	0,6	20	32	25	0,6
17	37	25	0,6	17	25	25	0,6	25	37	25	0,6
20	37	25	0,6	20	25	25	0,6	25	37	25	0,6
25	45	29	1	25	30	29	1	30	45	29	1
30	50	29	1	30	35	29	1	35	50	29	1
35	55	29	1	35	40	29	1	40	55	29	1
40	60	29	1	40	45	29	1	45	60	29	1
40	70	38	1	40	50	38	1	50	70	38	1
45	75	38	1	45	55	38	1	55	75	38	1
50	80	38	1	50	60	38	1	60	80	38	1
55	85	38	1	55	65	38	1	65	85	38	1
60	95	48	1,5	60	70	48	1,5	70	95	48	1,5
65	100	48	1,5	65	75	48	1,5	75	100	48	1,5
70	105	48	1,5	70	80	48	1,5	80	105	48	1,5
75	110	48	1,5	75	85	48	1,5	85	110	48	1,5
80	120	56	2	80	90	56	2	90	120	56	2
85	125	56	2	85	95	56	2	95	125	56	2
90	130	56	2	90	100	56	2	100	130	56	2
95	140	56	2	95	105	56	2	105	140	56	2
100	145	56	2	100	110	56	2	110	145	56	2
105	155	65	2	105	120	65	2	120	155	65	2
110	165	65	2	110	130	65	2	130	165	65	2
120	175	65	2	120	140	65	2	140	175	65	2
130	190	65	2	130	150	65	2	150	190	65	2
140	200	65	2	140	160	65	2	160	200	65	2
150	210	75	2,5	150	170	75	2,5	170	210	75	2,5
160	220	75	2,5	160	180	75	2,5	180	220	75	2,5
170	230	75	2,5	170	190	75	2,5	190	230	75	2,5
180	240	75	2,5	180	200	75	2,5	200	240	75	2,5
190	250	75	2,5	190	210	75	2,5	210	250	75	2,5
200	270	95	3	200	220	95	3	220	270	95	3
220	290	95	3	220	240	95	3	240	290	95	3
240	310	95	3	240	260	95	3	260	310	95	3
260	330	95	3	260	280	95	3	280	330	95	3
280	350	95	3	280	300	95	3	300	350	95	3

6 Tolerances

Table 2 — Inner ring

Tolerance values in micrometres

d mm		Δ_{dmp}		V_{dmp}	K_i and K_{ia}	Δ_{Bs}		V_{Bs}
over	up to and including	high	low	max.	max.	high	low	max.
2,5	10	0	- 8	6	10	0	- 120	15
10	18	0	- 8	6	10	0	- 120	20
18	30	0	- 10	8	13	0	- 120	20
30	50	0	- 12	9	15	0	- 120	20
50	80	0	- 15	11	20	0	- 150	25
80	120	0	- 20	15	25	0	- 200	25
120	180	0	- 25	19	30	0	- 250	30
180	250	0	- 30	23	40	0	- 300	30
250	315	0	- 35	26	50	0	- 350	35

Table 3 — Outer ring

Tolerance values in micrometres

D mm		Δ_{Dmp}		V_{Dmp}	K_{ea}	Δ_{Cs}	V_{Cs}
over	up to and including	high	low	max.	max.	Identical to Δ_{Bs} and V_{Bs} of inner ring ¹⁾ of same bearing	
18	30	0	- 9	7	15		
30	50	0	- 11	8	20		
50	80	0	- 13	10	25		
80	120	0	- 15	11	35		
120	150	0	- 18	14	40		
150	180	0	- 25	19	45		
180	250	0	- 30	23	50		
250	315	0	- 35	26	60		
315	400	0	- 40	30	70		

1) For bearings without inner ring, the values for the corresponding bearing with inner ring apply.

Table 4 — Separate inner rings and needle roller bearings without inner ring
(standard: itelhai)

Tolerance values in micrometres

F and F_w mm		Δ_{Fwmin}		Δ_{Fmp}	
over	up to and including	high	low	high	low
10	18	+ 34	+ 16	- 16	- 27
18	30	+ 41	+ 20	- 20	- 33
30	50	+ 50	+ 25	- 25	- 41
50	80	+ 60	+ 30	- 30	- 49
80	120	+ 71	+ 36	- 38	- 60
120	180	+ 83	+ 43	- 56	- 81
180	200	+ 96	+ 50	- 65	- 94
200	250	+ 96	+ 50	- 88	- 117
250	315	+ 108	+ 56	- 110	- 142

NOTE — The Δ_{Fwmin} values are valid under the condition that the diameter variation in a single radial plane of the outside bearing surface is kept small in relation to the tolerance range for the minimum diameter F_{wmin} .

Radial internal clearance is given by the inner ring raceway and the needle roller complement bore diameter. Limit values may be calculated by means of tables 1 and 4.