
International Standard



1206

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Needle roller bearings — Light and medium series — Dimensions and tolerances

Roulements à aiguilles — Séries légère et moyenne — Dimensions et tolérances

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Descriptors : bearings, rolling bearings, needle bearings, dimensions, dimensional tolerances.

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up 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.

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 1206 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	Hungary	Poland
Austria	India	Romania
Brazil	Italy	Spain
Canada	Japan	Sweden
Czechoslovakia	Korea, Dem. P. Rep. of	Switzerland
Egypt, Arab Rep. of	Korea, Rep. of	United Kingdom
France	Mexico	USA
Germany, F.R.	Netherlands	USSR

No member body expressed disapproval of the document.

This second edition cancels and replaces the first edition (i.e. ISO 1206-1976).

Needle roller bearings — Light and medium series — Dimensions and tolerances

1 Scope and field of application

This International Standard specifies the boundary dimensions and normal class tolerances for needle roller bearings, light and medium series. Both series apply to complete needle roller bearings or to bearings without inner ring; their dimensions were selected in ISO 15 from dimension series 48 for the light series and from dimension series 49 for the medium series.

The chamfer dimension limits are given in ISO 582. Radial internal clearances are given in ISO 5753.

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

2 References

ISO 15, *Rolling bearings — Radial bearings — Boundary dimensions — General plan.*

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

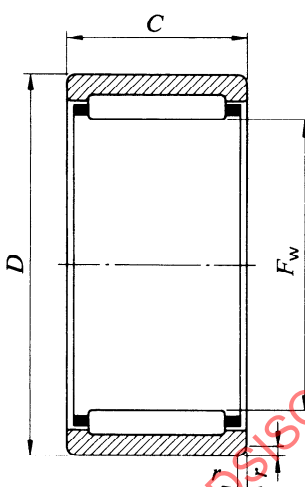
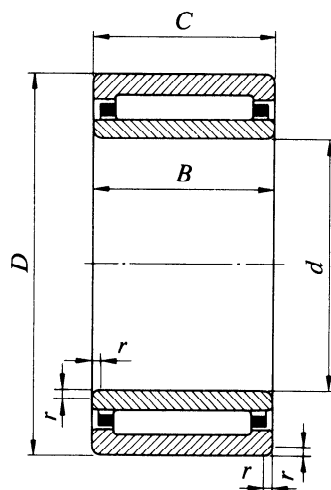
ISO 1132, *Rolling bearings — Tolerances — Definitions.*

ISO 5753, *Rolling bearings — Radial internal clearance.*

3 Definitions

The concepts to which the tolerances specified in this International Standard apply are specified 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_w	= needle roller complement bore diameter, nominal
F_{wmin}	= smallest single diameter of the needle roller complement bore ¹⁾
Δ_{Fwmin}	= 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_{ia}	= radial runout of assembled bearing inner ring
K_{ea}	= radial runout of assembled bearing outer ring
r	= chamfer dimension
r_{smin}	= smallest 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 as bearing inner ring, zero radial internal clearance is obtained in at least one radial direction.

5 Boundary dimensions

Table 1 — Light series

Dimensions in millimetres

Complete bearings				Bearings without inner ring			
d	D	B and C	r_{smin}	F_w	D	C	r_{smin}
110	140	30	1	120	140	30	1
120	150	30	1	130	150	30	1
130	165	35	1,1	145	165	35	1,1
140	175	35	1,1	155	175	35	1,1
150	190	40	1,1	165	190	40	1,1
160	200	40	1,1	175	200	40	1,1
170	215	45	1,1	185	215	45	1,1
180	225	45	1,1	195	225	45	1,1
190	240	50	1,5	210	240	50	1,5
200	250	50	1,5	220	250	50	1,5
220	270	50	1,5	240	270	50	1,5
240	300	60	2	265	300	60	2
260	320	60	2	285	320	60	2
280	350	69	2	305	350	69	2
300	380	80	2,1	330	380	80	2,1
320	400	80	2,1	350	400	80	2,1
340	420	80	2,1	370	420	80	2,1
360	440	80	2,1	390	440	80	2,1

Table 2 — Medium series

Dimensions in millimetres

Complete bearings				Bearings without inner ring			
d	D	B and C	r_{smin}	F_w	D	C	r_{smin}
—	—	—	—	5	11 ¹⁾	10	0,15
—	—	—	—	6	12 ¹⁾	10	0,15
5	13	10	0,15	7	13	10	0,15
6	15	10	0,15	8	15	10	0,15
7	17	10	0,15	9	17	10	0,15
8	19	11	0,2	10	19	11	0,2
9	20	11	0,3	12	20	11	0,3
10	22	13	0,3	14	22	13	0,3
12	24	13	0,3	16	24	13	0,3
—	—	—	—	18	26 ¹⁾	13	0,3
15	28	13	0,3	20	28	13	0,3
17	30	13	0,3	22	30	13	0,3
20	37	17	0,3	25	37	17	0,3
22	39	17	0,3	28	39	17	0,3
25	42	17	0,3	30	42	17	0,3
28	45	17	0,3	32	45	17	0,3
30	47	17	0,3	35	47	17	0,3
32	52	20	0,6	40	52	20	0,6
35	55	20	0,6	42	55	20	0,6
—	—	—	—	45	58 ¹⁾	20	0,6
40	62	22	0,6	48	62	22	0,6
—	—	—	—	50	65 ¹⁾	22	0,6
45	68	22	0,6	52	68	22	0,6
—	—	—	—	55	70 ¹⁾	22	0,6
50	72	22	0,6	58	72	22	0,6
—	—	—	—	60	75 ¹⁾	22	0,6
55	80	25	1	63	80	25	1
—	—	—	—	65	82 ¹⁾	25	1
60	85	25	1	68	85	25	1
—	—	—	—	70	88 ¹⁾	25	1
65	90	25	1	72	90	25	1
—	—	—	—	75	95 ¹⁾	30	1
70	100	30	1	80	100	30	1
75	105	30	1	85	105	30	1
80	110	30	1	90	110	30	1
—	—	—	—	95	115 ¹⁾	30	1
85	120	35	1,1	100	120	35	1,1
90	125	35	1,1	105	125	35	1,1
95	130	35	1,1	110	130	35	1,1
100	140	40	1,1	115	140	40	1,1
110	150	40	1,1	125	150	40	1,1
120	165	45	1,1	135	165	45	1,1
130	180	50	1,5	150	180	50	1,5
140	190	50	1,5	160	190	50	1,5

1) These bearings do not belong to dimension series 49 of ISO 15.

6 Tolerances

Table 3 — Inner ring

Tolerance values in micrometres

d mm		Δ_{dmp}		V_{dmp}	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
315	400	0	- 40	30	60	0	- 400	40

Table 4 — 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.		
6	18	0	- 8	6	15	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		
400	500	0	- 45	34	80		

1) For bearings without inner ring the values for the corresponding bearing with inner ring apply. Where no corresponding inner ring is shown, the values of next larger size complete bearing apply.

Table 5 — Needle roller complement bore diameter for bearings without inner ring

Tolerance values in micrometres

F_w mm		Δ_{Fwmin}	
over	up to and including	high	low
3	6	+ 18	+ 10
6	10	+ 22	+ 13
10	18	+ 27	+ 16
18	30	+ 33	+ 20
30	50	+ 41	+ 25
50	80	+ 49	+ 30
80	120	+ 58	+ 36
120	180	+ 68	+ 43
180	250	+ 79	+ 50
250	315	+ 88	+ 56
315	400	+ 98	+ 62

NOTE — The values are valid on 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} .