INTERNATIONAL STANDARD ISO 1206

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Radial needle roller bearings — Metric series — Dimension series 48 and 49 — Boundary dimensions and tolerances

Roulements à aiguilles — Séries métriques — Séries de dimensions 48 et 49 — Dimensions d'encombrement et tolérances

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Descriptors : rolling bearings, needle bearings, dimensions, metric system.

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 Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

Prior to 1972, the results of the work of the Technical Committees were published as ISO Recommendations; these documents are now in the process of being transformed into International Standards. As part of this process, Technical Committee ISO/TC 4 has reviewed ISO Recommendation R 1206 and found it technically suitable for transformation. International Standard ISO 1206 therefore replaces ISO Recommendation R 1206-1971 as well as International Standard ISO 3097-1974, to which it is technically identical.

ISO Recommendation R 1206 was approved by the Member Bodies of the following countries :

Australia	Hungary	Romania
Austria	India	Spain
Belgium	Iran	Sweden
Brazil	Israel	Switzerland
Canada	Italy	Thailand
Chile	Japan	Turkey
Czechoslovakia	Korea, Rep. of	United Kingdom
Egypt, Arab Rep. of	Netherlands	U.S.A.
Germany	Peru	U.S.S.R.
Greece	Poland	Yugoslavia

The Member Body of the following country expressed disapproval of the Recommendation on technical gounds :

France*

* Subsequently, this Member Body approved the Recommendation.

No Member Body disapproved the transformation of ISO/R 1206 into an International Standard.

International Standard ISO 3097 was approved by the Member Bodies of the following countries :

Australia	Hungary	Spain
Austria	India	Sweden
Belgium	Italy	Switzerland
Brazil	Japan	Thailand
Bulgaria	Mexico	Turkey
Canada	Netherlands	United Kingdom
France	Poland	U.S.S.R.
Germany	Romania	

This International Standard had also been approved by the International Union of Railways (UIC).

The Member Body of the following country expressed disapproval of the document on technical grounds :

U.S.A.

Printed in Switzerland

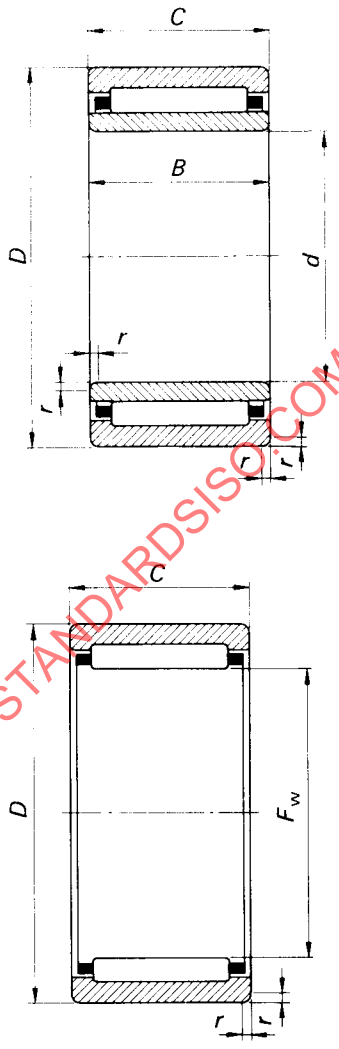
Radial needle roller bearings — Metric series — Dimension series 48 and 49 — Boundary dimensions and tolerances

1 SCOPE AND FIELD OF APPLICATION

This International Standard gives the boundary dimensions for complete needle roller bearings in dimension series 48 and 49. They were selected from the general plan for boundary dimensions of radial bearings given in ISO/R 15, Part I. In addition, it gives boundary dimensions for such needle roller bearings without inner rings, which have dimensions related to dimension series 49. Tolerances for the normal class are also given.

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

2 SYMBOLS



d = the inner ring bore diameter, nominal

Δ_{dmp} = the deviation of a single mean bore diameter[1] of the inner ring (difference between a single mean bore diameter and the nominal bore diameter)

V_{dmp} = the variation of single mean bore diameter[1] of the inner ring (difference between the largest and the smallest actual single mean bore diameters)

D = the outer ring outside diameter, nominal

Δ_{Dmp} = the deviation of a single mean outside diameter[1] of the outer ring

V_{Dmp} = the variation of a single mean outside diameter[1] of the outer ring

F_w = the needle roller complement bore diameter, nominal

F_{wmin} = the smallest single diameter of the needle roller complement bore[2]

Δ_{Fwmin} = the deviation of the smallest single diameter of the needle roller complement bore (difference between F_{wmin} and F_w)

B = the inner ring width, nominal

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

V_{Bs} = the variation of the inner ring width

C = the outer ring width, nominal

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

V_{Cs} = the variation of the outer ring width

K_{ia} = the radial run-out of an assembled bearing inner ring

K_{ea} = the radial run-out of an assembled bearing outer ring

r = chamfer dimension

r_{min} = minimum chamfer dimension

1) "single mean diameter" is defined as the mean diameter in a single radial plane.

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

3 BOUNDARY DIMENSIONS

TABLE 1 — **Complete bearings, dimension series 48**

Dimensions in millimetres

d	*D*	*B* and *C*	r_{min}
110	140	30	1
120	150	30	1
130	165	35	1,1
140	175	35	1,1
150	190	40	1,1
160	200	40	1,1
170	215	45	1,1
180	225	45	1,1
190	240	50	1,5
200	250	50	1,5
220	270	50	1,5
240	300	60	2
260	320	60	2
280	350	69	2
300	380	80	2,2
320	400	80	2,2
340	420	80	2,2
360	440	80	2,2

TABLE 2 — **Complete bearings, dimension series 49, and bearings without inner ring, dimensions related to dimension series 49**

Dimensions in millimetres

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

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

4 TOLERANCES

TABLE 3 – **Inner ring**

Deviations and variations in micrometres

d mm		Δ_{dmp}		V_{dmp}	K_{ia}	Δ_{Bs}		V_{Bs}
over	incl.	high	low	max.	max.	high	low	max.
2,5	10	0	− 8	4	10	0	− 120	15
10	18	0	− 8	4	10	0	− 120	20
18	30	0	− 10	5	13	0	− 120	20
30	50	0	− 12	6	15	0	− 120	20
50	80	0	− 15	8	20	0	− 150	25
80	120	0	− 20	10	25	0	− 200	25
120	180	0	− 25	13	30	0	− 250	30
180	250	0	− 30	15	40	0	− 300	30
250	315	0	− 35	18	50	0	− 350	35
315	400	0	− 40	20	60	0	− 400	40

TABLE 4 – **Outer ring**

Deviations and variations in micrometres

D mm		Δ_{Dmp}		V_{Dmp}	K_{ea}	Δ_{Cs}	V_{Cs}
over	incl.	high	low	max.	max.		
6	18	0	− 8	4	15	Identical to Δ_{Bs} and V_{Bs} of inner ring[1] of same bearing	
18	30	0	− 9	5	15		
30	50	0	− 11	6	20		
50	80	0	− 13	7	25		
80	120	0	− 15	8	35		
120	150	0	− 18	9	40		
150	180	0	− 25	13	45		
180	250	0	− 30	15	50		
250	315	0	− 35	18	60		
315	400	0	− 40	20	70		
400	500	0	− 45	23	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**

Deviations in micrometres

F_w mm		$\Delta_{Fwmin} = F_{wmin} - F_w$	
over	incl.	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 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}.