INTERNATIONAL STANDARD

ISO 3030

Second edition
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Rolling bearings — Radial needle roller and cage assemblies — Dimensions and tolerances

Roulements — Cages à aiguilles radiales — Dimensions et tolérances

Reference number
ISO 3030:1996(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 3030 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Subcommittee SC 5, *Needle roller bearings*.

This second edition cancels and replaces the first edition (ISO 3030:1974), which has been technically revised. In particular it updates the first edition by specifying functional gauge dimensions.

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Rolling bearings — Radial needle roller and cage assemblies — Dimensions and tolerances

1 Scope

This International Standard specifies the boundary dimensions for needle roller and cage radial assemblies, and gives preferred dimensions to be used.

In addition, it gives the tolerances for the width of cages and method of checking free operation.

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 286-2:1988, *ISO system of limits and fits — Part 2: Tables of standard tolerance grades and limit deviations for holes and shafts.*

ISO 3096:1996, *Rolling bearings — Needle rollers — Dimensions and tolerances.*

3 Symbols

The symbols (except those for tolerances) shown in figure 1 and the values given in tables 1 to 3 denote nominal dimensions unless specified otherwise.

4 Boundary dimensions (see figure 1)

General plan is given in tables 1 and 2.

Underlined values are the preferred dimensions.

5 Tolerances

5.1 Tolerance for the needle roller diameter

For diameter values and "gauges" of needle rollers see ISO 3096.

NOTE — Needle roller grade should be agreed between customer and supplier.

5.2 Tolerance for the cage width B_c

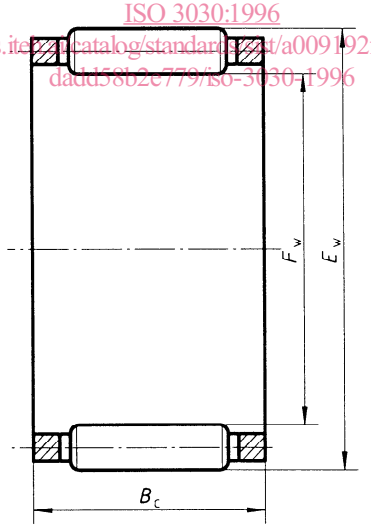
The tolerance over width B_c, in millimetres, is as follows:

– 0,20
– 0,55

6 Functional inspection

Radial needle roller and cage radial assemblies shall operate freely when placed between a cylindrical outer raceway and a cylindrical inner raceway which rotate in relation to each other, the diameter of the outer raceway being equal to E_w plus the low limit of G6 (see ISO 286-2) and the diameter of the inner raceway being equal to F_w.

The functional gauge dimensions are given in table 3.



E_w = needle roller complement outside diameter

F_w = needle roller complement bore diameter

B_c = cage width

Figure 1

Table 1 — Diameter series 1C and 2C

Dimensions in millimetres

F_w	Diameter series 1C								Diameter series 2C							
	E_w	Dimensions series							E_w	Dimensions series						
		11C	21C	31C	41C	51C	61C	71C		12C	22C	32C	42C	52C	62C	72C
		B_c								B_c						
4	7	6	8	10												
5	8	6	8	10	13				9	8	10	13				
6	9	6	8	10	13	15			10	8	10	13	15			
7	10	6	8	10	13	15	17		11	8	10	13	15	17		
8	11	6	8	10	13	15	17		12	8	10	13	15	17	20	
9	12	6	8	10	13	15	17		13	8	10	13	15	17	20	
10	13	6	8	10	13	15	17		14	8	10	13	15	17	20	
12	15	6	8	10	13	15	17		16	8	10	13	15	17	20	
14	18	8	10	13	15	17	20	23	19	10	13	15	17	20	23	27
15	19	8	10	13	15	17	20	23	20	10	13	15	17	20	23	27
16	20	8	10	13	15	17	20	23	21	10	13	15	17	20	23	27
17	21	8	10	13	15	17	20	23	22	10	13	15	17	20	23	27
18	22	8	10	13	15	17	20	23	23	10	13	15	17	20	23	27
20	24	8	10	13	15	17	20	23	25	10	13	15	17	20	23	27
22	26	8	10	13	15	17	20	23	27	10	13	15	17	20	23	27
25	29	8	10	13	15	17	20	23	30	10	13	15	17	20	23	27
28	33	10	13	15	17	20	23	27	34	12	15	17	20	25	30	35
30	35	10	13	15	17	20	23	27	36	12	15	17	20	25	30	35
32	37	10	13	15	17	20	23	27	38	12	15	17	20	25	30	35
35	40	10	13	15	17	20	23	27	41	12	15	17	20	25	30	35
38	43	10	13	15	17	20	23	27	44	12	15	17	20	25	30	35
40	45	10	13	15	17	20	23	27	46	12	15	17	20	25	30	35
42	47	10	13	15	17	20	23	27	48	12	15	17	20	25	30	35
45	50	10	13	15	17	20	23	27	51	12	15	17	20	25	30	35
50	55	10	13	15	17	20	23	27	56	12	15	17	20	25	30	35
55	61	12	15	17	20	25	30	35	62	16	20	25	30	35	40	
60	66	12	15	17	20	25	30	35	67	16	20	25	30	35	40	
65	71	12	15	17	20	25	30	35	72	16	20	25	30	35	40	
70	76	12	15	17	20	25	30	35	77	16	20	25	30	35	40	
75	81	12	15	17	20	25	30	35	82	16	20	25	30	35	40	
80	86	12	15	17	20	25	30	35	87	16	20	25	30	35	40	
85	92	16	20	25	30	35	40		93	20	25	30	35	40	45	
90	97	16	20	25	30	35	40		98	20	25	30	35	40	45	
95	102	16	20	25	30	35	40		103	20	25	30	35	40	45	
100	107	16	20	25	30	35	40		108	20	25	30	35	40	45	

Table 2 — Diameter series 3C, 4C and 5C

Dimensions in millimetres

F_w	Diameter series 3C							Diameter series 4C							Diameter series 5C				
	E_w	Dimension series						E_w	Dimension series						E_w	Dimension series			
		13C	23C	33C	43C	53C	63C		14C	24C	34C	44C	54C	64C		15C	25C	35c	45c
		B_c							B_c							B_c			
6	11	10	13	15															
7	12	10	13	15	17														
8	13	10	13	15	17	20		14	12	15	17	20							
9	14	10	13	15	17	20		15	12	15	17	20							
10	15	10	13	15	17	20		16	12	15	17	20			17	16	20	25	
12	17	10	13	15	17	20	23	18	12	15	17	20			19	16	20	25	
14	20	12	15	17	20	25	30	21	16	20	25	30	35		22	20	25	30	
15	21	12	15	17	20	25	30	22	16	20	25	30	35		23	20	25	30	
16	22	12	15	17	20	25	30	23	16	20	25	30	35		24	20	25	30	35
17	23	12	15	17	20	25	30	24	16	20	25	30	35		25	20	25	30	35
18	24	12	15	17	20	25	30	25	16	20	25	30	35	40	26	20	25	30	35
20	26	12	15	17	20	25	30	27	16	20	25	30	35	40	28	20	25	30	35
22	28	12	15	17	20	25	30	29	16	20	25	30	35	40	30	20	25	30	35
25	31	12	15	17	20	25	30	32	16	20	25	30	35	40	33	20	25	30	35
28	35	16	20	25	30	35	40	36	20	25	30	35	40	45	38	25	30	35	40
30	37	16	20	25	30	35	40	38	20	25	30	35	40	45	40	25	30	35	40
32	39	16	20	25	30	35	40	40	20	25	30	35	40	45	42	25	30	35	40
35	42	16	20	25	30	35	40	43	20	25	30	35	40	45	45	25	30	35	40
38	45	16	20	25	30	35	40	46	20	25	30	35	40	45	48	25	30	35	40
40	47	16	20	25	30	35	40	48	20	25	30	35	40	45	50	25	30	35	40
42	49	16	20	25	30	35	40	50	20	25	30	35	40	45	52	25	30	35	40
45	52	16	20	25	30	35	40	53	20	25	30	35	40	45	55	25	30	35	40
50	57	16	20	25	30	35	40	58	20	25	30	35	40	45	60	25	30	35	40
55	63	20	25	30	35	40	45	65	25	30	35	40	45	50	70	35	40	45	50
60	68	20	25	30	35	40	45	70	25	30	35	40	45	50	75	35	40	45	50
65	73	20	25	30	35	40	45	75	25	30	35	40	45	50	80	35	40	45	50
70	78	20	25	30	35	40	45	80	25	30	35	40	45	50	85	35	40	45	50
75	83	20	25	30	35	40	45	85	25	30	35	40	45	50	90	35	40	45	50
80	88	20	25	30	35	40	45	90	25	30	35	40	45	50	95	35	40	45	50
85	95	25	30	35	40	45	50	100	35	40	45	50	60		105	45	50	60	70
90	100	25	30	35	40	45	50	105	35	40	45	50	60		110	45	50	60	70
95	105	25	30	35	40	45	50	110	35	40	45	50	60		115	45	50	60	70
100	110	25	30	35	40	45	50	115	35	40	45	50	60		120	45	50	60	70

Table 3 — Checking gauge dimensions

Dimensions in millimetres

E_w		Checking gauge dimensions	
>	≤	Inner raceway plug gauge dimension	Outer raceway ring gauge dimension
—	6	equal to F_w	E_w + 0,004
6	10		E_w + 0,005
10	18		E_w + 0,006
18	30		E_w + 0,007
30	50		E_w + 0,009
50	80		E_w + 0,010
80	120		E_w + 0,012

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Descriptors: bearings, rolling bearings, roller bearings, needle bearings, needle rollers, needle roller cages, dimensions, overall dimensions, dimensional tolerances, metric system.

Price based on 4 pages