SLOVENSKI STANDARD
SIST ISO 3245:2001

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Kotalni leģaji - Tuljļ ni igliļ ni leģaji brez notranjega obroļ a - Glavne mere in tolerance

Rolling bearings -- Needle roller bearings, drawn cup without inner rings -- Boundary dimensions and tolerances

Roulements -- Douilles à aiguilles sans bague intérieure -- Dimensions d'encombrement et tolérances

Ta slovenski standard je istoveten z: ISO 3245:1997

ICS:

21.100.20	Kotalni ležaji	Rolling bearings

SIST ISO 3245:2001 **en**

INTERNATIONAL STANDARD

ISO 3245

Second edition
1997-02-15

Rolling bearings — Needle roller bearings, drawn cup without inner rings — Boundary dimensions and tolerances

Roulements — Douilles à aiguilles sans bague intérieure — Dimensions d'encombrement et tolérances

Reference number
ISO 3245:1997(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 3245 was prepared by Technical Committee ISO/TC 4, *Rolling bearings*, Sub-Committee SC 5, *Needle roller bearings*.

This second edition cancels and replaces the first edition (ISO 3245:1974), which has been technically revised. In particular it updates the first edition by defining the symbols used and by giving the bore of the gauge ring used to measure the tolerance for the needle roller complement bore diameter.

Annex A forms an integral part of this International Standard.

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Rolling bearings — Needle roller bearings, drawn cup without inner rings — Boundary dimensions and tolerances

1 Scope

This International Standard specifies the boundary dimensions and preferred dimensions to be used for drawn cup needle roller bearings without inner ring as well as the minimum limit of chamfer dimensions and, for closed end drawn cups, thickness dimensions of the end.

In addition dimensional tolerances and a method for checking of the needle roller complement bore diameter are specified.

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 standard 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/TR 9274:1991, *Rolling bearings — Measuring and gauging principles and methods.*

ISO 10579:1993, *Technical drawings — Dimensioning and tolerancing — Non-rigid parts.*

3 Terms, definitions and symbols

For the purposes of this International Standard, the following terms and definitions apply. The symbols (except those for tolerances) shown in figure 1. The dimensions given in tables 1 to 4 denote nominal dimension unless specified otherwise.

3.1 needle roller complement bore diameter, F_w**:** Diameter of the theoretical cylinder inscribed within the needle roller. See figure 1.

3.2 actual needle roller complement bore diameter, F_{ws}**:** Diameter of the cylinder inscribed within the needle roller complement bore.

NOTE — The actual needle roller complement bore diameter is the diameter of the cylinder which, when placed in the needle roller complement bore, results in zero radial clearance in at least one radial direction.

3.3 deviation of the actual needle roller complement bore diameter, ΔF_{WS}**:** Difference between the actual needle roller complement bore diameter and the nominal needle roller complement bore diameter.

$$\Delta F_{WS} = F_{WS} - F_W$$

3.4 drawn cup outside diameter, D**.** See figure 1.

3.5 drawn cup width, C**.** See figure 1.

3.6 end thickness of profiled end drawn cup, C_1**.** See figure 1.

3.7 end thickness of flat end drawn cup, C_2**.** See figure 1.

NOTE — Flat ends may have small stiffening ribs in which case their overall thickness is included in the C_2 dimension.

3.8 single chamfer dimension, r_s**.** See figure 1.

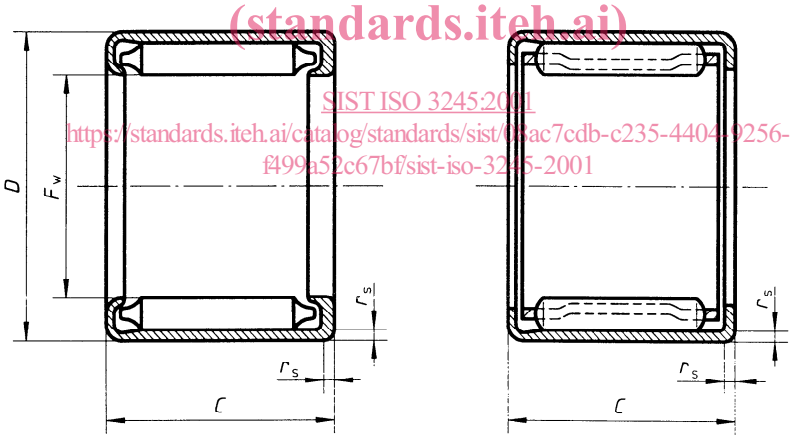
3.9 smallest permissible single chamfer dimension, $r_{s\,min}$.

4 Boundary dimensions (see figure 1)

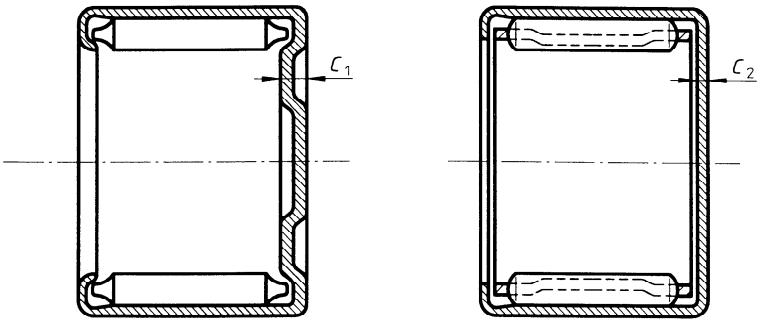
The main dimensions of drawn cup needle roller bearings, without inner ring, closed and open ends, of diameter series 1D are given in table 1, those of diameter series 2D are given in table 2.

Underlined values are the preferred dimensions.

The maximum limits of C_1 and C_2 are given to enable the customer to avoid contact between the shaft end and the drawn cup end. If this contact should be required, the customer should consult the supplier.



a) Open-ended bearings



b) Closed-ended bearings

Figure 1

cx

Table 1 — Diameter series 1D

Dimensions in millimetres

F_w	D	Dimension series 21D C	31D C	41D C	51D C	61D C	71D C	81D C	91D C	C_1 max.[1]	C_2 max.[1]	$r_{s\,min}$[2]
4	8	7	8	9						1,9	1	0,3
5	9	7	8	9								0,4
6	10	7	8	9	10							
7	11	7	8	9	10	12						
8	12	7	8	9	10	12						
9	13	7	8	9	10	12	14					
10	14	7	8	9	10	12	14					
12	16	7	8	9	10	12	14					
14	20	10	12	14	16	18	20			2,8	1,3	
15	21	10	12	14	16	18	20					
16	22	10	12	14	16	18	20					
17	23	10	12	14	16	18	20					
18	24	10	12	14	16	18	20					
20	26	10	12	14	16	18	20					
22	28	10	12	14	16	18	20					
25	32	12	14	16	18	20	24	28	32			0,8
28	35	12	14	16	18	20	24	28	32			
30	37	12	14	16	18	20	24	28	32			
32	39	12	14	16	18	20	24	28	32			
35	42	12	14	16	18	20	24	28	32			
38	45	12	14	16	18	20	24	28	32			
40	47	12	14	16	18	20	24	28	32			
42	49	12	14	16	18	20	24	28	32			
45	52	12	14	16	18	20	24	28	32			
50	58	14	16	18	20	24	28	32	36	2,8	1,6	
55	63	14	16	18	20	24	28	32	36			
60	68	14	16	18	20	24	28	32	36			
65	73	14	16	18	20	24	28	32	36			
70	78	14	16	18	20	24	28	32	36			

1) No minimum limit is specified for end thickness.

2) No maximum limit is specified for chamfer dimensions.

Table 2 — Diameter series 2D

Dimensions in millimetres

F_w	D	Dimension series 22D C	32D C	42D C	52D C	62D C	72D C	82D C	C_1 max.[1]	C_2 max.[1]	$r_{s\,min}$[2]
8	14	10	12	14							0,4
9	15	10	12	14	16						
10	16	10	12	14	16						
12	18	10	12	14	16	18					
14	22	12	14	16	18	20	24				
15	23	12	14	16	18	20	24		2,8	1,3	
16	24	12	14	16	18	20	24				0,8
17	25	12	14	16	18	20	24				
18	26	12	14	16	18	20	24				
20	28	12	14	16	18	20	24				
22	30	12	14	16	18	20	24				
25	35	14	16	18	20	24	28	32			
28	38	14	16	18	20	24	28	32			
30	40	14	16	18	20	24	28	32			
32	42	14	16	18	20	24	28	32			
35	45	14	16	18	20	24	28	32	3,4	1,6	
38	48	14	16	18	20	24	28	32			
40	50	14	16	18	20	24	28	32			
42	52	14	16	18	20	24	28	32			
45	55	14	16	18	20	24	28	32			

1) No minimum limit is specified for end thickness.

2) No maximum limit is specified for chamfer dimensions.

5 Dimensional tolerances

5.1 Tolerance for the needle roller complement bore diameter, F_w

Drawn cup needle bearings are non-rigid parts according to the definition in ISO 10579 and require the drawn cup outside diameter to be restrained in a gauge ring for verification of the needle roller complement bore diameter deviations ΔF_{ws}.

NOTE — The free state condition defined in ISO 10579 is valid for the tolerances applied to dimensions C, C_1, C_2 and r_s.

The deviations ΔF_{ws} given in tables 3 and 4 for the needle roller complement bore diameter F_{ws} are valid on the condition that the drawn cup be held in a suitable solid gauge ring having the bore diameter given in tables 3 and 4. The gauge ring bore diameter is equal to the low limit of tolerance class N6 (see ISO 286-2) when applied to the nominal drawn cup outside diameter D.

If the bore diameter of the gauge ring deviates from this dimension, the limit deviations of the needle roller complement bore diameter (F_{ws}) shall be corrected depending on the actual gauge ring bore diameter. However, the maximum permissible limit of the gauge ring bore diameter is the corresponding high limit of tolerance class N6 (see ISO 286-2).

Table 3 — Diameter series 1D

F_w	D[1]	Gauge ring bore	ΔF_{ws}	
			upper	lower
mm	mm	mm	µm	
4	8	7,984		
5	9	8,984	+28	+10
6	10	89,984		
7	11	10,98		
8	12	11,98	+31	+13
9	13	12,98		
10	14	13,98		
12	16	15,98		
14	20	19,976		
15	21	20,976	+34	+16
16	22	21,976		
17	23	22,976		
18	24	23,976		
20	26	25,976		
22	28	27,976		
25	32	31,972	+41	+20
28	35	34,972		
30	37	36,972		
32	39	38,972		
35	42	41,972		
38	45	44,972		
40	47	46,972	+50	+25
42	49	48,972		
45	52	51,967		
50	58	57,967		
55	63	62,967		
60	68	67,967	+60	+30
65	73	72,967		
70	78	77,967		

1) No deviations are specified for drawn cup outside diameter D. The supplier shall ensure a fit corresponding to the function.