

SLOVENSKI STANDARD SIST ISO 3245:2001

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?chUb]``YÿU']'!'Hi`^b]'][`]b]``YÿU']'VfYn'bchfUb^Y[UcVfc U!';`UjbY'aYfY']b hc`YfUbWY

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

iTeh STANDARD PREVIEW

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

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Rolling bearings

SIST ISO 3245:2001

en



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SIST ISO 3245:2001 https://standards.iteh.ai/catalog/standards/sist/08ac7cdb-c235-4404-9256f499a52c67bf/sist-iso-3245-2001 SIST ISO 3245:2001

INTERNATIONAL STANDARD

ISO 3245

Second edition 1997-02-15

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

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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.

iTeh STANDARD PREVIEW

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 <u>edition (ISO 32451</u>1974), which has been technically revised in particular it updates the first edition c235-4404-9256by 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. (standards.iteh.ai)

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2 Normative references.ndards.iteh.ai/catalog/standards/sist/08ac7cdb-c235-4404-9256-

f499a52c67bf/sist-iso-3245-2001

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.

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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.

 $\Delta F_{\rm WS} = F_{\rm WS} - F_{\rm W}$

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, C₁. See figure 1.
- **3.7** end thickness of flat end drawn cup, C₂. See figure 1.

NOTE — Flat ends may have small stiffening ribs in which case their overall thickness is included in the C₂ dimension.

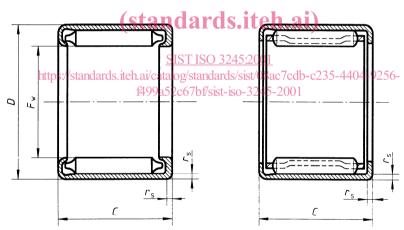
- **3.8** single chamfer dimension, *r*_s. See figure 1.
- 3.9 smallest permissible single chamfer dimension, r_{s min}.

4 Boundary dimensions (see figure 1)

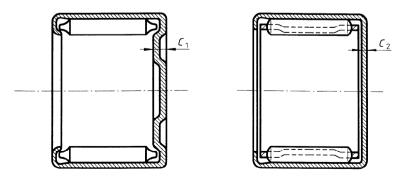
The main dimensions of drawn cup needle roller bearings, without inner ring, closed and open ends, of diameter series 1D are given in table 1, those of diameter series 2D are given in table 2.

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.







b) Closed-ended bearings

Figure 1

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СХ

Table 1 — Diameter series 1D

Dimensions in millimetres

		Dimension series										
		21D	31D	41D	51D	61D	71D	81D	91D			
F_{w}	D	C							C ₁ max. ¹⁾	C ₂ max. ¹⁾	$r_{ m s\ min}^{2)}$	
4	8	7	<u>8</u>	9								0,3
5	9	7	8	<u>9</u>								
6	10	7	8	<u>9</u>	10							
7	11	7	8	<u>9</u>	10	12						
8	12	7	8	9	10	12				1,9	1	
9	13	7	8	9	<u>10</u>	12	14					
10	14	7	8	9	<u>10</u>	12	14					
12	16	7	8	9	<u>10</u>	12	14					0,4
14	20	10	<u>12</u>	14	<u>16</u>	18	20					0,4
15	21	10	12	14	16	18	20					
16	22	10	<u>12</u>	14	<u>16</u>	18	20					
17	23	10	12	14	16	18	20					
18	24	10	<u>12</u>	14	<u>16</u>	18	20					
20	26	10	iTeh	S14 /	16	18	D 20 F	VIE	V			
22	28	10	<u>12</u>	14	<u>16</u>	18	20		• •			
25	32	12	14	<u>16</u> t2	ncai	d 20 it	elz4ai	28	32			
28	35	12	14	<u>16</u>	18	<u>20</u>	24	28	32	2,8	1,3	
30	37	12	14	<u>16</u>	SIBT IS	D 3205:20	<u>01</u> 24	28	32			
32	39	12 http	s://standar		atalog8stan			c23 2 8140	-9232-			
35	42	12	14	<u>16</u> [499	a52¢87bf	sist- <u>20</u> -32	45-2001	28	32			
38	45	12	14	16	18	20	24	28	32			
40	47	12	14	<u>16</u>	18	20	24	28	32			0,8
42	49	12	14	16	18	20	24	28	32			0,0
45	52	12	14	<u>16</u>	18	20	24	28	32			
50	58	14	16	18	<u>20</u>	<u>24</u>	28	32	36			
55	63	14	16	18	<u>20</u>	24	28	32	36			
60	68	14	16	18	20	24	28	32	36	2,8	1,6	
65	73	14	16	18	20	24	28	32	36			
70	78	14	16	18	20	24	28	32	36			
 No minimum limit is specified for end thickness. No maximum limit is specified for chamfer dimensions. 												

		Dimension series									
		22D	32D	42D	52D	62D	72D	82D			
F _w	D				С				C ₁ max. ¹⁾	C ₂ max. ¹⁾	$r_{ m s\ min}^{2)}$
8	14	10	12	14							
9	15	10	12	14	16						
10	16	10	12	14	16						0,4
12	18	10	12	14	16	18					0,4
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				
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			0,8
30	40	14	16	18	20	24	28	32			0,0
32	42	14	16	18	20	24	28	32			
35	45	14	16	18T	20	<u>, 24 r</u>	28D1	32	3,4	1,6	
38	48	14	16	18	20	24	28	32			
40	50	14	16	1 <mark>8st</mark>	areda	ræs.i	teła.a	i) 32			
42	52	14	16	18	20	24	28	32			
45	55	14	16	18	20st	SO 3445:	2001	32			
 No minimum limit is specified for end tricknessai/catalog/standards/sist/08ac7cdb-c235-4404-9256- No maximum limit is specified for chamfer dimensions. 											

Table 2 — Diameter series 2D

Dimensions in millimetres

5 Dimensional tolerances

5.1 Tolerance for the needle roller complement bore diameter, $F_{\rm W}$

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, C1, C2 and rs.

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).

mm mm mm mm μm 4 8 7.984 μm 5 9 8.984 +28 +10 6 10 89,984 +28 +10 6 10 89,984 +28 +10 7 11 10,98 +31 +13 9 13 12,98 +31 +13 10 14 13,98 +31 +13 11 20,976 +34 +16 7 521 20,976 +34 +16 16 523 DA22,976 PREVIEW +16 16 523 DA22,976 PREVIEW +16 18 (24 and ar28,976 total) at 31 22 28 STISC 27,976 total) pass 25,976 22 28 STISC 27,975 total) at 31,972 at 35,993,26,752,976 at 32,972 at 35,993,26,753,48,973,245-20,01 at 32,993,38,972 at 35,933,972 at 35,933,972 at 35,933,972 at 35,933,972	F _w	<i>D</i> ¹⁾	$\Delta F_{\rm WS}$						
487.984 3.984 +28+1059 8.984 +28+10610 89.984 +28+10711 10.98 3 12 11.98 1.98 +31+13913 12.98 +31+131014 13.98 1216 15.98 21 -+34+161521 20.976 23 +34+1616 522 23 28.976 22.976 -+34+162026 25.976 22 28 35.976 2026 25.976 23 2026 25.976 23.35 2123.93 38.972 $35.942323938.97235.942-+50+25404746.97245.976+50+25+25424948.97245.976-+50+25455251.967505857.967+60+30657372.967707877.967+60+301) No deviations are specified for drawn cup outside diameter D. The supplier$				upper	lower				
598.984 $+28$ $+10$ 61089.98471110.9881211.98+31+1391312.98101413.98121615.98142019.976+34+16152120.976+34+1616 f^22 21.976PREVIEW18(24 and ar 28.976 to ai)-202625.9762228 $srt.sc.27.975$ 001http://standards.ite/3ficatalog/standards/st/2245-2001-303736.972323938.972354241.972404746.972455251.967505857.967556362.967606867.967606867.967606867.967707877.9671) No deviations are specified for drawn cup outside diameter <i>D</i> . The supplier	mm	mm	mm	μm					
6 10 89,984	4	8	7,984						
71110,98+31+1381211,98+31+1391312,98+31+13101413,98+31+13121615,98 $+34$ +16152120,976+34+1616 C^{22}_{23} $DA^{22,976}_{22,976}$ PREVIEW+1618(24 an dar 28,976 to hai)202625,976202625,9762228 $ST ISO^{2,976}_{2,976}$ 20202625,9762228 $ST ISO^{2,976}_{2,976}$ 202228 $ST ISO^{2,976}_{2,976}$ 202625,9762228 $ST ISO^{2,976}_{2,976}$ 202625,9762335,993,2675/18,34,972,245-2(01)303736,972303736,9724544,972384544,9724544,972404746,972+50+25424948,9724552455251,967556362,967606867,967+60+30657372,967+60+30707877,967+60+301) No deviations are specified for drawn cup outside diameter D . The supplier	5	9	8,984	+28	+10				
8 12 11,98 +31 +13 9 13 12,98 +31 +13 10 14 13,98 - - 12 16 15,98 - +34 +16 15 21 20,976 +34 +16 +16 16 52,2 2,2,976 PREVIEW +16 16 52,2 2,3 DA22,976 PREVIEW +16 16 52,3 DA22,976 PREVIEW +16 18 (24 and ar 28,976 to h ai) - - - 20 26 25,976 - - - 21 28 ST ISO 7,2976 001 - - - 11 by 55 tandards.iteR2i/catalog/standarb9/sk/08ac7/cdb-cf45-4404 9256+20 - - - - 28 3599a5, co7bf/s34,872,245-2(0) - - - - - 38 45 44,972 + - + -	6	10	89,984						
91312,98+31+13101413,98-121615,98142019,976152120,976+3416 $rec 1$ $rec 1$ 16 $rec 1$ $rec 1$ 17 $rec 1$ $rec 1$ 18 $rec 1$ $rec 1$ 2026 $rec 1$ 2228 $rec 1$ 23 $rec 1$ $rec 1$ 24 $rec 1$ $rec 1$ 25 $rec 1$ $rec 1$ 30 37 $36,972$ 3239 $38,972$ 35 42 $41,972$ 40 47 $46,972$ 45 52 $51,967$ 50 58 $57,967$ 55 63 $62,967$ 60 68 $67,967$ 60 68 $67,967$ 65 73 $72,967$ 70 78 $77,967$ 1) No deviations are specified for drawn cup outside diameter D . The supplier	7	11	10,98						
91312,98101413,98121615,98142019,976152120,97616 S_{23}^{22} AN DA22,976 PREVIEW18(24 an clar 28,976 tch ai)202623 S_{ST} ISO2026222828 S_{ST} ISO29,976 $25,976$ 222834 $35,9952$ 28 $35,9952$ 303736,972323935424047404740474552505857,9675563606867,967606861,96770781) No deviations are specified for drawn cup outside diameter <i>D</i> . The supplier	8	12	11,98	+31	±13				
121615,98 $+34$ $+16$ 142019,976 $+34$ $+16$ 152120,976 $+34$ $+16$ 16 5^{22} 23 23^{976} $PREVIEW$ 18 $(24 \text{ an } 23,976 browner between between$	9	13	12,98	+01	+13				
142019,976 $+34$ $+16$ 152120,976 $+34$ $+16$ 16 2^{22} 2^{2} $2^{1,976}$ $PREVIEW$ 18 $(24$ an d a $28,976$ b at a base of the standard s	10	14	13,98						
152120,976 $+34$ $+16$ 16S 23DA22,976PREVIEW $+16$ 17CellS 23DA22,976PREVIEW18(24 and ar 28,976 tell al)al) -16 202625,976al) -16 202625,976al) -16 2128ST ISO 27,975 tell al) -16 2028ST ISO 27,975 tell al) -16 2028ST ISO 27,975 tell al) -16 2028ST ISO 27,975 tell al) -16 283599a52 c67bf/s34.872 245-2001 -26^{-20} 303736,972 -26^{-20} 303736,972 -26^{-20} 314241,972 $+50$ $+25$ 424948,972 $+50$ $+25$ 455251,967 -160 $+30$ 556362,967 $+60$ $+30$ 657372,967 $+60$ $+30$ 707877,967 -10 The supplier	12	16	15,98						
16 17 17 18 222 23 26 $25,976$ $21,976$ $25,976$ $+34$ $+16$ $+16$ 20 20 22 22 28 28 28 35 32 35 35 32 $25,976$ $25,976$ $-25,976$ $25,976$ 32 35 42 45 42 45 52 55 50 55 563 663 65 573 70 $31,972,976,001$ $70,78$ $-25,976,001$ $70,78$ $+34$ $+16$ $+16$ $+30$ $+34$ $+16$ $+16$ $+16$ $+34$ $+16$ $+16$ $+16$ $+34$ $+16$ $-16,972,976,001$ $+160$ $+30$ $-25,976,001$ $-25,976,001$ $+30$ $-25,976,001$ $-25,976,001$ $+30$ $-25,976,001$ $-25,976,001$ $+30$ $-25,976,001$ $-25,976,001$ $+30$ $-25,976,001$ $-25,976,001$ $+30$ $-25,976,001$ $-25,976,001$ $+10$ $-25,976,001$ $-25,976,001$ -10 $-10,000,000,000,000,000,000,000,000,000,$	14	20	19,976						
16 7 722 23 21.976 22.976 $PREVIEW$ 18(24 and ar 23.976 teh ai)20262228 $STISO 27.976$ 2228 $STISO 27.976$ 2428 $35.99a52$ 28 $35.99a52$ 303736.97232393845404740474552505857.96755636068657370781) No deviations are specified for drawn cup outside diameter <i>D</i> . The supplier	15	21	20,976	+34	+16				
18 $(24 \text{ an } dar 28.976 \text{ teh } ai)$ 202625,9762228S ST ISO 27.976 001http://standards.ite/32i/catalog/standards/1972/08ac7cdb-c_+41-44049256+20283599a52c67bf/s34.872245-2001303736,972323938,972354241,972404746,972404746,972455251,967505857,967556362,967606867,967657372,9671) No deviations are specified for drawn cup outside diameter <i>D</i> . The supplier	16				T 10				
202625,976112228 $STISO 37,976$ 27,9762428 $STISO 32,976$ 9256+2028 $35,99a52$ $36,972$ 9256+203037 $36,972$ 9256+203239 $38,972$ 9256+20384544,9729256+20404746,972+50+25424948,9729256+20455251,9679256+20505857,9679256+20556362,9679256+20606867,9679256+20657372,967+60707877,9671) No deviations are specified for drawn cup outside diameter <i>D</i> . The supplier	↓₇L er	D 23 A	DA22,976						
22 28 ST ISO 37,976,001 Particular of the standard stress of	18	(2tan		ai)					
SIST ISO 32432001 http:25standards.itei%a/catalog/standards?54/08ac7edb-c235-4404-9256+20283599a52c67bf/s84.8723245-2001303736,972323938,972354241,972384544,972404746,972455251,967505857,967556362,967606867,967657372,9671) No deviations are specified for drawn cup outside diameter <i>D</i> . The supplier	20	26	25,976						
28 3599a52c67bf/s34.973245-2001 30 37 36,972 32 39 38,972 35 42 41,972 38 45 44,972 40 47 46,972 +50 42 49 48,972 45 52 51,967 50 58 57,967 55 63 62,967 60 68 67,967 65 73 72,967 1) No deviations are specified for drawn cup outside diameter <i>D</i> . The supplier		5	ST ISO 27,976						
30 37 36,972 Image: marginal system 32 39 38,972	http 2 5standa		8	cdb-c235-4404	-9256 ^{±20}				
32 39 38,972 35 42 41,972 38 45 44,972 40 47 46,972 +50 +25 42 49 48,972 +50 +25 45 52 51,967 - - 50 58 57,967 - - 55 63 62,967 +60 +30 65 73 72,967 +60 +30 70 78 77,967 - - 1) No deviations are specified for drawn cup outside diameter <i>D</i> . The supplier - -		35 99a52		01					
35 42 41,972 +50 +25 38 45 44,972 +50 +25 40 47 46,972 +50 +25 42 49 48,972 +50 +25 45 52 51,967 - - 50 58 57,967 - - 55 63 62,967 +60 +30 65 73 72,967 +60 +30 70 78 77,967 - - 1) No deviations are specified for drawn cup outside diameter <i>D</i> . The supplier - -	30	37	36,972						
38 45 44,972 +50 +25 40 47 46,972 +50 +25 42 49 48,972 +50 +25 45 52 51,967 - - 50 58 57,967 - - 55 63 62,967 +60 +30 65 73 72,967 +60 +30 70 78 77,967 - The supplier	32	39	1						
40 47 46,972 +50 +25 42 49 48,972 - - 45 52 51,967 - - 50 58 57,967 - - 55 63 62,967 - +30 60 68 67,967 +60 +30 65 73 72,967 - +30 70 78 77,967 - The supplier	35	42	41,972						
42 49 48,972	38	45	44,972						
45 52 51,967 50 58 57,967 55 63 62,967 +60 +30 60 68 67,967 +60 +30 65 73 72,967 +60 +30 70 78 77,967 The supplier The supplier	40	47	46,972	+50	+25				
50 58 57,967 55 63 62,967	42	49	48,972						
55 63 62,967 60 68 67,967 65 73 72,967 70 78 77,967 1) No deviations are specified for drawn cup outside diameter D. The supplier	45	52	51,967						
60 68 67,967 +60 +30 65 73 72,967 +60 +30 70 78 77,967 The supplier	50	58	57,967						
65 73 72,967 +60 +30 70 78 77,967	55	63	62,967						
657372,967707877,9671) No deviations are specified for drawn cup outside diameter D. The supplier	60	68	67,967	+60	+30				
1) No deviations are specified for drawn cup outside diameter D. The supplier	65	73	72,967		+50				
	70	78	77,967						

Table 3 — Diameter series 1D