INTERNATIONAL STANDARD 3245

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Rolling bearings — Needle roller bearings, drawn cup, without inner ring — Metric series — Boundary dimensions and tolerances

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

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FOREWORD

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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 3245 was drawn up by Technical Committee ISO/TC 4, *Rolling bearings,* and circulated to the Member Bodies in August 1973.

It has been approved by the Member Bodies of the following countries :

Australia	Japan	Sweden
Austria	Mexico	Switzerland
Czechoslovakia	Netherlands	Thailand
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No Member Body expressed disapproval of the document.

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Rolling bearings — Needle roller bearings, drawn cup, without inner ring — Metric series — Boundary dimensions and tolerances

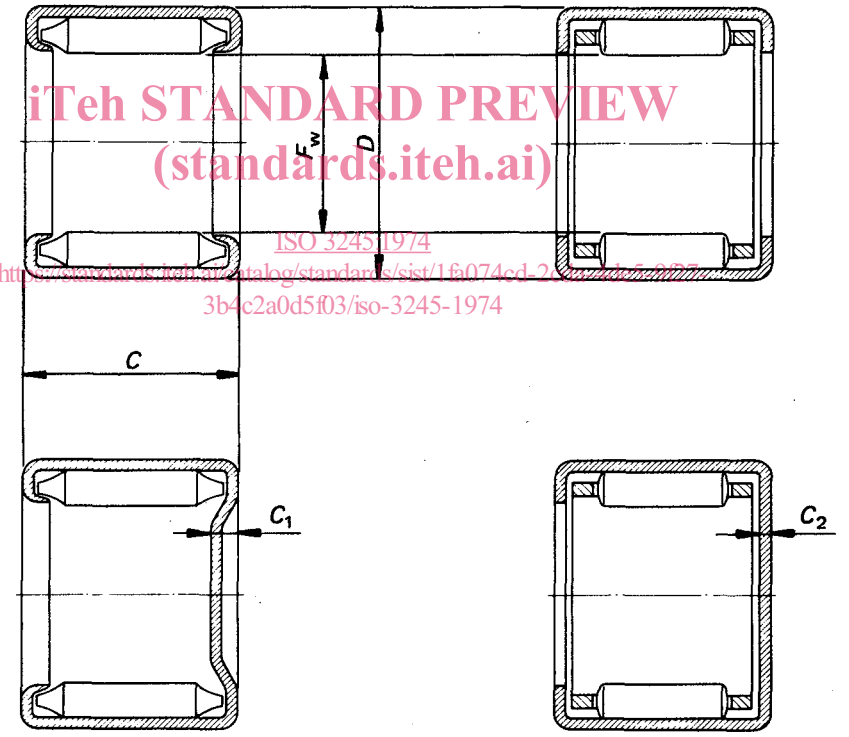
1 SCOPE AND FIELD OF APPLICATION

This International Standard gives a general plan for boundary dimensions for drawn cup needle roller bearings without inner ring and specifies preferred dimensions to be used. For closed end drawn cups dimensions of the end are specified.

In addition it gives tolerances and a method for checking of the needle roller complement bore diameter.

2 BOUNDARY DIMENSIONS

2.1 Symbols



F_w = the needle roller complement bore diameter, nominal

$F_{w\ min}$ = the smallest single diameter of the needle roller complement bore[1)]

$\Delta_{Fw\ min}$ = the deviation of the smallest single diameter of the needle roller complement bore (difference between $F_{w\ min}$ and F_w)

D = drawn cup outside diameter, nominal

C = drawn cup width, nominal

C_1 = end thickness of profiled end drawn cup

C_2 = end thickness of flat end drawn cup

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

2.2 General plan

Underlined values are the preferred dimensions shown in table 3.

TABLE 1 – **Diameter series 1 D**

Dimensions in millimetres

F_w	D	Dimension series									
		21 D	31 D	41 D	51 D	61 D	71 D	81 D	91 D	21 D to 91 D	
		Width C								C_{1max} [1]	C_{2max} [1][2]
4	8	7	8	9						1,9	1,0
5	9	7	8	9							
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		
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) The maximum values of C_1 and C_2 are given to enable the user to avoid contact between the shaft end and the drawn cup end. If this contact should be required, the user should consult with the manufacturer.

2) Flat ends may have small stiffening ribs in which case their overall height is included in the C_2 dimension.

TABLE 2 — **Diameter series 2 D**

Dimensions in millimetres

F_w	D	Dimension series								
		22 D	32 D	42 D	52 D	62 D	72 D	82 D	22 D to 82 D	
		Width C							C_{1max} [1]	C_{2max} [1][2]
8	14	10	12	14					2,8	1,3
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			
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	3,4	1,6
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		
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) The maximum values of C_1 and C_2 are given to enable the user to avoid contact between the shaft end and the drawn cup end. If this contact should be required, the user should consult with the manufacturer.

2) Flat ends may have small stiffening ribs in which case their overall height is included in the C_2 dimension.

2.3 Preferred dimensions

TABLE 3 – **Diameter series 1 D**

Dimensions in millimetres

F_w	D	Width C	
4	8	8	–
5	9	9	–
6	10	9	–
7	11	9	–
8	12	10	–
9	13	10	–
10	14	10	–
12	16	10	–
14	20	12	16
16	22	12	16
18	24	12	16
20	26	12	16
22	28	12	16
25	32	16	20
28	35	16	20
30	37	16	20
35	42	16	20
40	47	16	20
45	52	16	20
50	58	20	24
55	63	20	24

3 TOLERANCES AND CHECKING

3.1 The minimum roller complement bore diameter is checked to be within the values given in table 4 with the cup mounted in a very thick ring, having a cylindrical bore the diameter of which is equal to the low limit of N 6.

If this mounting causes permanent deformation of the cup it is permissible to apply the hight limit of N 6, in which case the $\Delta_{Fw\,min}$ values are correspondingly increased.

TABLE 4 – **Needle roller complement bore diameter tolerances**

Deviations in micrometres

F_w mm		$\Delta_{Fw\,min} = F_{w\,min} - F_w$	
over	incl.	high	low
3	6	+ 28	+ 10
6	10	+ 31	+ 13
10	18	+ 34	+ 16
18	30	+ 41	+ 20
30	50	+ 50	+ 25
50	70	+ 60	+ 30

NOTE – A recommended method for checking $\Delta_{Fw\,min}$ is by means of "Go" and "Not Go" plug gauges.

3.2 Tolerance for the drawn cup width C

$$\begin{matrix} 0 \\ -0{,}250 \text{ mm} \end{matrix}$$