

INTERNATIONAL STANDARD

ISO
240

Second edition
1994-10-01

Milling cutters — Interchangeability dimensions for cutter arbors or cutter mandrels

*Fraises à métaux — Dimensions d'interchangeabilité avec les arbres
porte-fraises ou les mandrins porte-fraise*



Reference number
ISO 240:1994(E)

Foreword

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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 240 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 7, *Milling cutters and milling machine accessories*.

This second edition cancels and replaces the first edition (ISO 240:1975), which has been technically revised.

Annex A of this International Standard is for information only.

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International Organization for Standardization

Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Milling cutters — Interchangeability dimensions for cutter arbors or cutter mandrels

1 Scope

This International Standard specifies the dimensions for interchangeability between the cutter and the arbor or mandrel, i.e. the diameter of the bore and the arbor or mandrel and elements of the drive, whether by keying or tenon.

It applies to all types of milling cutters mounted on cutter arbors or mandrels.

Two groups of tables have been established, relating respectively to the key drive and the tenon drive.

Tables giving the conversion of the metric values into inches are given in annex A.

2 Key drive

See figure 1 and table 1.

3 Tenon drive

See figure 2 and table 2.

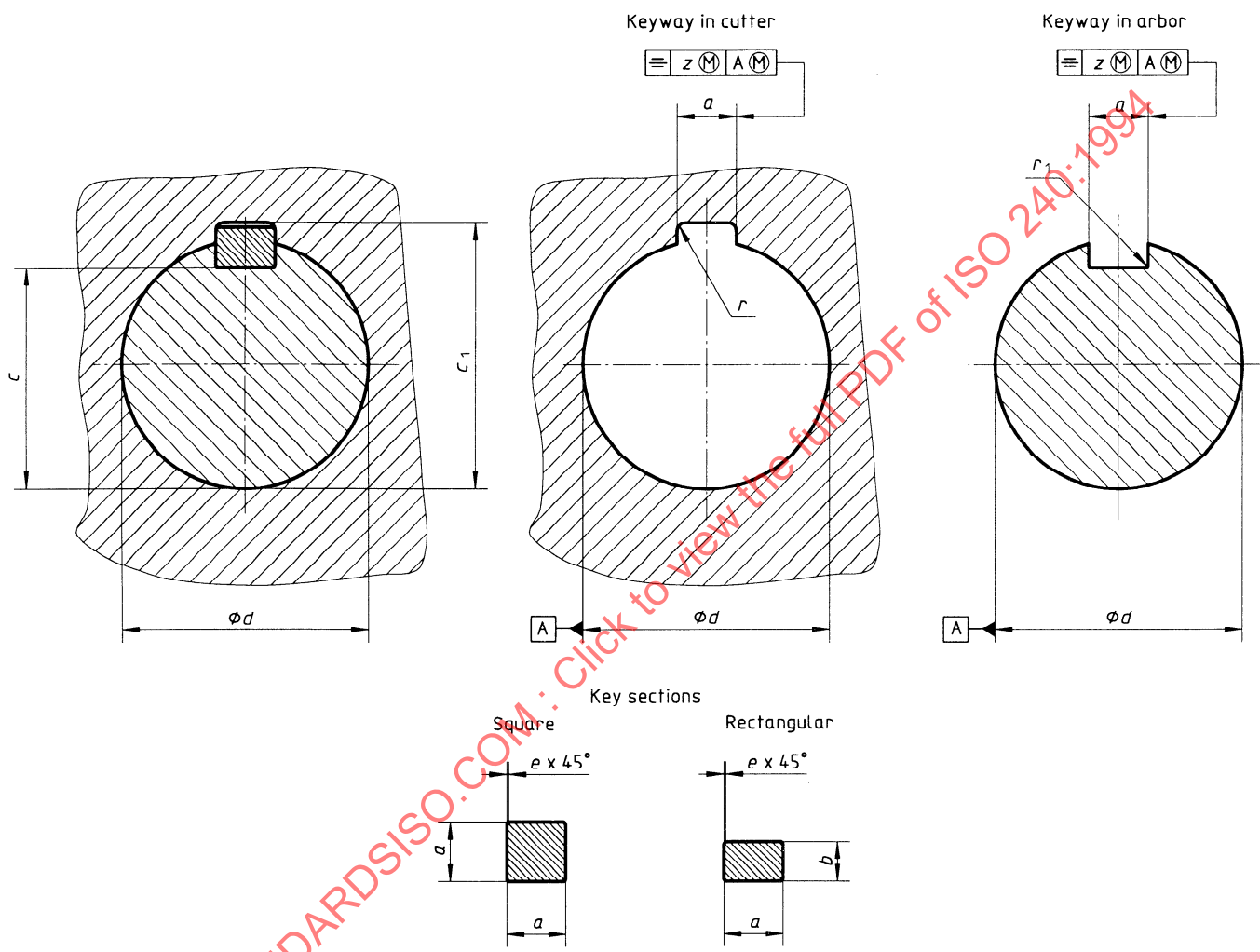


Figure 1

Table 1

Dimensions in millimetres

<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>		<i>c</i> ₁		<i>e</i>		<i>r</i>		<i>r</i> ₁		<i>z</i>
1)	1)	h11	nom.	tol.	nom.	tol.	nom.	tol.	nom.	tol.	nom.	tol.	
8	2		6,7	0 -0,1	8,9	+0,1 0	0,16	+0,09 0	0,4	0 -0,1	0,16	0 -0,08	0,03
10	3		8,2		11,5								
13	3		11,2		14,6								
16	4		13,2		17,7								
19	5		15,6		21,1								
22	6		17,6		24,1								
27	7		22	0 -0,2	29,8	+0,2 0	0,25	+0,15 0	1	0 -0,3	0,25	0 -0,09	0,035
32	8		27		34,8								
40	10		34,5		43,5								
50	12		44,5		53,5								
60	14		54		64,2								
70	16		63,5		75								
80	18		73		85,5		0,4	+0,2 0	1,6	0 -0,5	0,4	0 0,15	0,045
100	25		91		107								
							0,6		2,5		0,6	0 -0,2	0,055

1) Tolerances

— on *d* (except for gear hobs)
on the arbor: h6
on the cutter: H7

— on *a*
for keyway in arbor:
free keying: H9
close keying: N9
for keyway in cutter: C11
key: h9

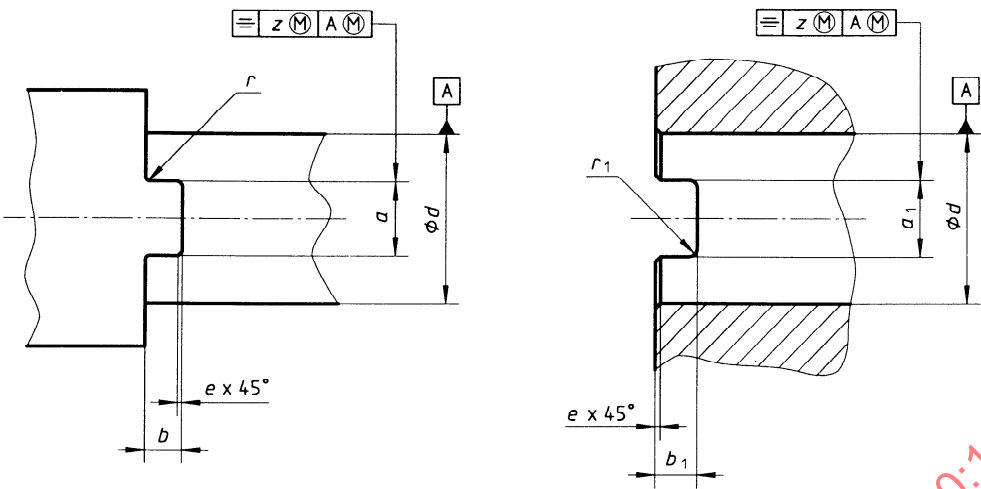


Figure 2

Table 2

Dimensions in millimetres

d 1)	Arbor			Cutter			e		z
	a h11	b h11	r max.	a ₁ H11	b ₁ H13	r ₁ max.	nom.	tol.	
5	3	2	0,3	3,3	2,5	0,6	0,3	+0,1 0	0,15
8	5	3,5	0,4	5,4	4		0,4		0,2
10	6	4	0,5	6,4	4,5	0,8	0,5		
13	8	4,5		8,4	5	1	0,6		
16		5	5,6						
19	10	5,6	10,4	6,3	1,2	0,8			
22									
27	12	6,3	0,8	12,4	7	0,8			
32	14	7		14,4	8		1,6		
40	16	8	1	16,4	9	2	1	+0,3 0	
50	18	9		18,4	10				
60	20	10		20,5	11,2				0,25

1) Tolerances on d (except for gear hobs)

on the arbor: h6
on the cutter: H7

Annex A

(informative)

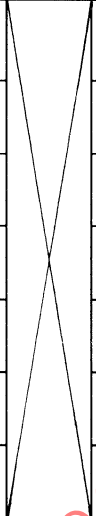
Conversion from metric series to inches

A.1 Key drive

See figure 1 and table A.1.

Table A.1

Dimensions en inches

Designation	<i>d</i>	<i>a</i>	<i>b</i>	<i>c</i>		<i>c</i> ₁		<i>e</i>		<i>r</i>		<i>r</i> ₁		<i>z</i>
	1)	1)	1)	nom.	tol.	nom.	tol.	nom.	tol.	nom.	tol.	nom.	tol.	
8	0,314 9	0,079		0,264	0 -0,004	0,350	0 -0,004	0,006	+0,004 0	0,016	0 -0,004	0,006	0 -0,003	0,001 2
10	0,393 7	0,118		0,323		0,453								
13	0,511 8	0,118		0,441		0,575								
16	0,629 9	0,157		0,520		0,697								
19	0,748 0	0,197		0,614		0,831								
22	0,866 1	0,236		0,693		0,949								
27	1,063 0	0,276		0,866		1,173								
32	1,259 8	0,315	0,276	1,063	0 -0,008	1,370	+0,008 0	0,010	+0,006 0	0,047	0 -0,012	0,010	0 -0,004	0,001 6
40	1,574 8	0,394	0,315	1,358		1,713								
50	1,968 5	0,472	0,315	1,752		2,106								
60	2,362 2	0,551	0,354	2,126		2,528								
70	2,755 9	0,630	0,394	2,500		2,953								
80	3,149 6	0,709	0,433	2,874		3,366								
100	3,937 0	0,984	0,551	3,583		4,213		0,024		0,098		0,024	0 -0,008	0,002 2

1) Tolerances: direct conversion into inches of the metric values of the tolerances h6, h9, h11, H7, H9, N9 and C11.

A.2 Tenon drive

See figure 2 and table A.2.

Table A.2

Dimensions in inches

Designation	d 1)	Arbor			Cutter			e		z	
		a 1)	b 1)	r max.	a_1 1)	b_1 1)	r_1 max.	nom.	tol.		
5	0,196 8	0,118	0,079	0,012	0,130	0,099	0,020	0,012	$+0,004$ 0	0,006	
8	0,314 9	0,197	0,138	0,016	0,213	0,158		0,016		0,020	$+0,008$ 0
10	0,393 7	0,236	0,157	0,020	0,252	0,177	0,030	0,024			
13	0,511 8	0,315	0,177		0,331	0,197	0,040			0,050	
16	0,629 9		0,197	0,024		0,410		0,248	0,031		
19	0,748 0	0,394	0,220		0,488		0,276			0,060	
22	0,866 1			0,031		0,567		0,316	0,080		
27	1,063 0	0,039	0,646		0,355		0,039			$+0,012$ 0	
32	1,259 8			0,709		0,354		0,725	0,394		
40	1,574 8	0,787	0,394		0,807		0,441				
50	1,968 5										
60	2,362 2										

1) Tolerances: direct conversion into inches of the metric values of the tolerances h6, h11, H7, H11 and H13.

1) Tolerances: direct conversion into inches of the metric values of the tolerances h6, h11, H7, H11 and H13.

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