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International Standard



2780

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Milling cutters with tenon drive — Interchangeability dimensions with cutter arbors — Metric series

*Fraises à métaux à entraînement par tenons — Dimensions d'interchangeabilité avec les mandrins porte-fraise — Série métrique*

Second edition — 1986-11-15

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[ISO 2780:1986](#)

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UDC 621.914.2 : 389.63

Ref. No. ISO 2780-1986 (E)

Descriptors : tools, cutting tools, milling cutters, mandrels, dimensions.

## 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.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 2780 was prepared by Technical Committee ISO/TC 29, *Small tools*.

This second edition cancels and replaces the first edition (ISO 2780-1973), tables 1, 2 and 3 and clause A.1 of which have been technically revised.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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# Milling cutters with tenon drive — Interchangeability dimensions with cutter arbors — Metric series

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### 1 Scope and field of application

This International Standard specifies the dimensions for interchangeability between milling cutters with tenon drive and the cutter seating of cutter arbors.

It applies only to milling cutters of the metric series.

This International Standard gives the interchangeability dimensions

- of the milling cutter;
- of the cutter seating on the arbor;
- of the retaining bolt of the cutter on the cutter arbor.

It reproduces an extract from ISO 240 in an annex for information.

### 2 References

ISO 240, *Milling cutters — Interchangeability dimensions for cutter arbors or cutter mandrels — Metric series and inch series.*

ISO 724, *ISO metric screw threads — Basic dimensions.*

ISO 2586, *Shell end mills with plain bore and tenon drive — Metric series.*

### 3 Dimensions

#### 3.1 General layout

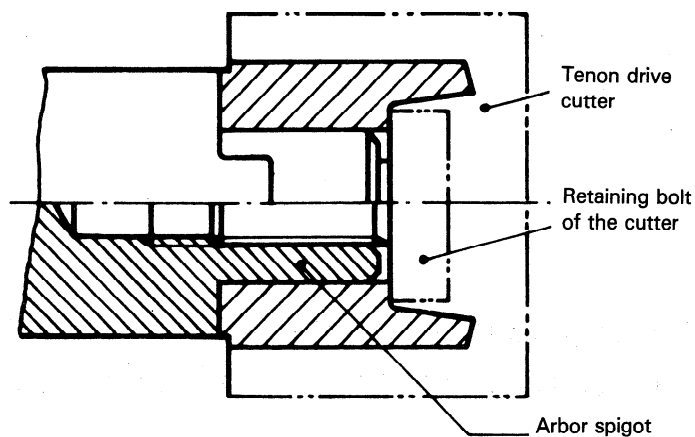
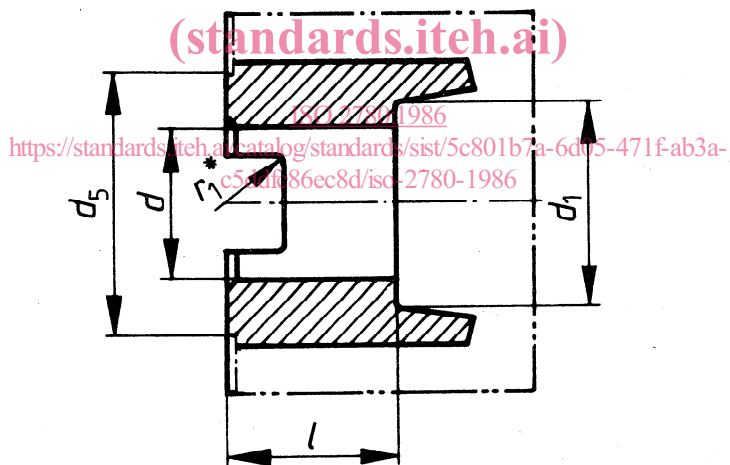


Figure 1 – General layout

#### 3.2 Interchangeability dimensions of the cutter

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\* For dimension  $r_1$ , see the annex.

Figure 2 – Cutter

Table 1

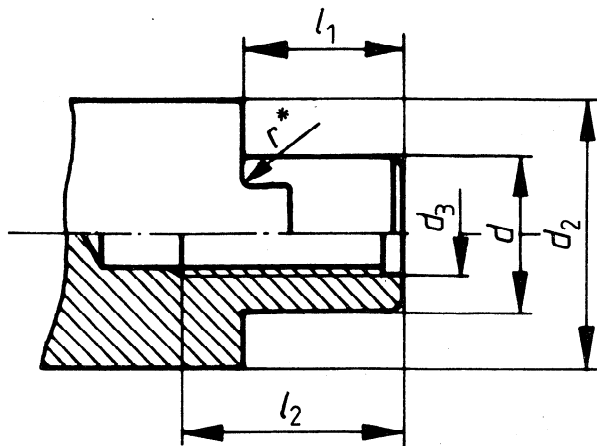
Dimensions in millimetres

$d$ H7	$l$ $+1$ $0$	$d_1$ min.	$d_5^{1)}$ min.
16	18	23	33
22	20	30	41
27	22	38	49
32	25	45	59
40	28	56	71
50	31	67	91

1) A backing-off length on the rear face is optional.

The tenon seatings shall be in accordance with the metric series of ISO 240; see also the annex to this International Standard.

**3.3 Interchangeability dimensions of the seating of the cutter on the arbor**



\* For dimension  $r$ , see the annex

**Figure 3 — Arbor spigot**

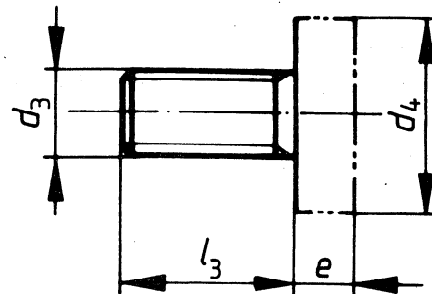
**Table 2**

Dimensions in millimetres

$d$ h6	$l_1$ $\begin{matrix} 0 \\ -1 \end{matrix}$	$d_2$ min.	$d_3$	$l_2$ min.
16	17	32	M8	22
22	19	40	M10	28
27	21	48	M12	32
32	24	58	M16	36
40	27	70	M20	45
50	30	90	M24	50

The tenons seatings shall be in accordance with the metric series of ISO 240; see also the annex to this International Standard.

**3.4 Interchangeability dimensions of the retaining bolt of the cutter to the cutter arbor**



**Figure 4 — Retaining bolt**

**Table 3**

Dimensions in millimetres

$d_1$	$d_3$	$l_3$ $\begin{matrix} +3 \\ 0 \end{matrix}$	$d_4$ max.	$e$ max.
16	M8	16	20	6
22	M10	18	28	7
27	M12	22	35	8
32	M16	26	42	9
40	M20	30	52	10
50	M24	36	63	12

1) Nominal diameter of spigot.

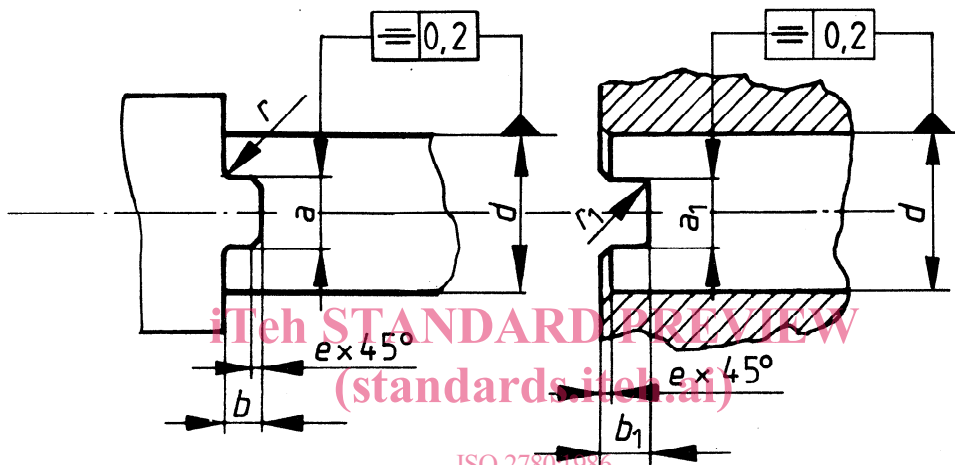
The shape of the retaining screw head is left to the manufacturer's discretion, only the overall dimensions,  $d_4$  and  $e$ , having to be respected.

Annex

Extract from ISO 240

To make the task of the user of this International Standard easier, the interchangeability dimensions given for the metric series in ISO 240 are reproduced below for information; ISO 240 alone is valid as concerns these dimensions.

A.1 Tenon drive



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Dimensions in millimetres

d	Arbor			Cutter			e	
	a	b	r max.	a <sub>1</sub>	b <sub>1</sub>	r <sub>1</sub> max.	Dimension	Tolerance
16	8	5,0	0,6	8,4	5,6	1,0	0,6	+ 0,2 0
22	10	5,6		10,4	6,3	1,2	0,8	
27	12	6,3	12,4	7,0	1,6			
32	14	7,0	1,0	14,4	8,0	2,0	1,0	+ 0,3 0
40	16	8,0		16,4	9,0			
50	18	9,0		18,4	10,0			

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