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

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

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with defined cutting edges, holding tools, cutting items, adaptive items and interfaces*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

This fourth edition cancels and replaces the third edition (ISO 2780:2006), of which it constitutes a minor revision.

The main changes compared to the previous edition are as follows:

— addition of Annex A;

— correction of Figure 3;

— editorial changes to align with the ISO/IEC Directives.

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

1 Scope

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

It is applicable only to milling cutters of the metric series.

It gives the interchangeability dimensions for:

— the milling cutters;

— the cutter seating on the arbor;

— the cutter retaining screw on the cutter arbor.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 240, *Milling cutters — Interchangeability dimensions for cutter arbors or cutter mandrels*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

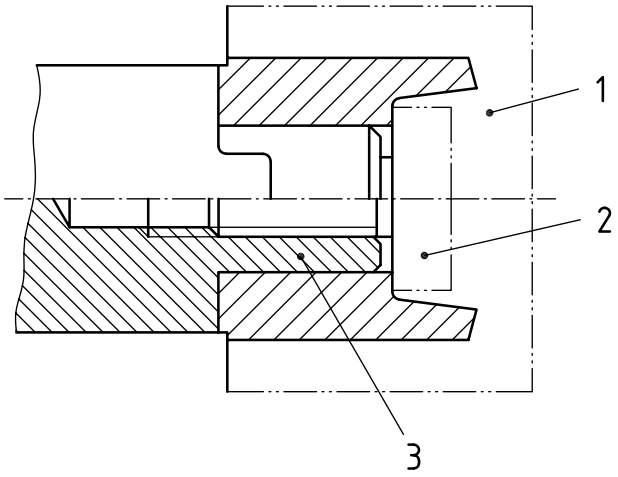
4 Dimensions

4.1 General

All dimensions and tolerances are given in millimetres. Tolerances not specified shall be of tolerance class m, in accordance with ISO 2768-1.

4.2 General layout

See Figure 1.



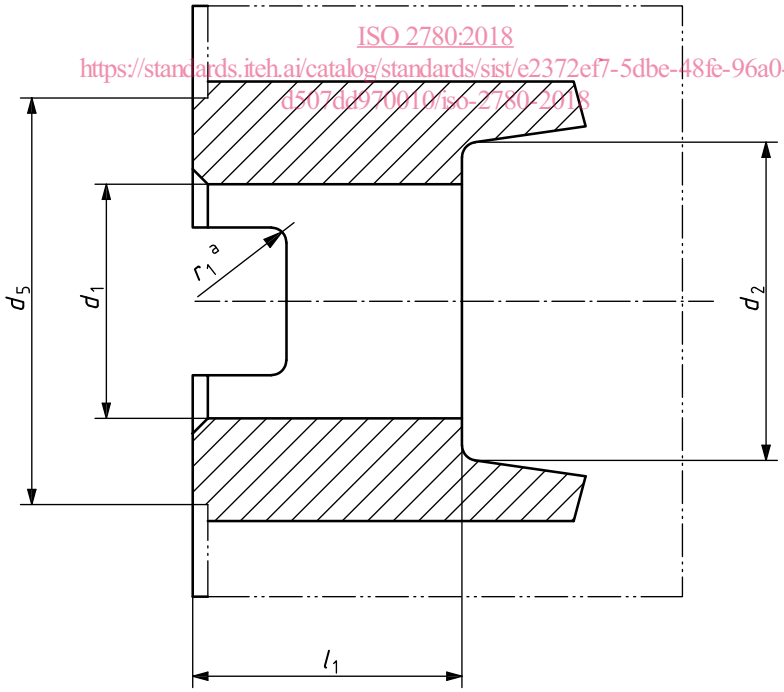
Key

1 tenon drive cutter
2 cutter retaining screw on cutter arbor
3 arbor spigot

Figure 1 — General layout

4.3 Interchangeability dimensions of cutter

The dimensions for the interchangeability of the cutter are shown in Figure 2 and given in Table 1.



Key

a For dimensions r_1, see ISO 240.

Figure 2 — Cutter

Table 1 — Interchangeability dimensions of cutter

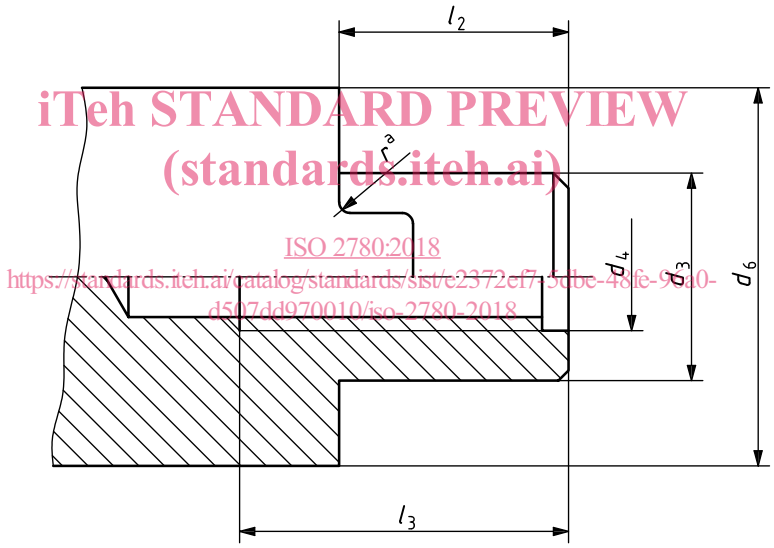
d_1 H7	d_2 min	d_5[a] min	l_1 $^{+1}_{0}$
16	23	33	18
22	30	41	20
27	38	49	22
32	45	59	25
40	56	71	28
50	67	91	31

[a] Relief with diameter d_5 on the back face of the body is optional.

The tenon seatings shall be in accordance with ISO 240.

4.4 Interchangeability dimensions of seating of cutter on arbor

The dimensions for the interchangeability of the seating of the cutter on the arbor are shown in Figure 3 and given in Table 2.



Key

[a] For dimensions r, see ISO 240.

Figure 3 — Arbor spigot

Table 2 — Interchangeability dimensions of the seating

d_3 h6	d_4	d_6 min	l_2 min	l_3 $^{0}_{-1}$
16	M8	32	20	17
22	M10	40	22	19
27	M12	48	26	21
32	M16	58	30	24
40	M20	70	34	27
50	M24	90	40	30

The tenon seatings shall be in accordance with the metric series of ISO 240.

4.5 Interchangeability dimensions of the cutter retaining screw on the cutter arbor

The dimensions for the interchangeability of the cutter retaining screw on the cutter arbor are shown in Figure 4 and given in Table 3.

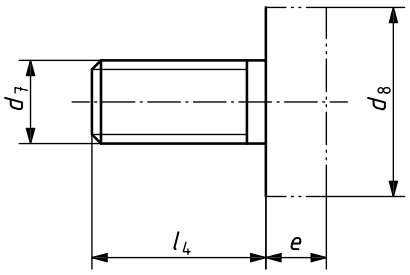


Figure 4 — Cutter retaining screw on cutter arbor

Table 3 — Dimensions of cutter retaining screw on cutter arbor

d_3[a]	d_7	d_8 max	l_4 $^{+3}_{0}$	e max
16	M8	20	16	6
22	M10	28	18	7
27	M12	35	22	8
32	M16	42	26	9
40	M20	52	30	10
50	M24	63	36	12

[a] Nominal diameter of spigot.

The shape of the retaining screw head is at the option of the manufacturer; only the overall dimensions d_8 and e having to be respected.

Annex A
(informative)

Relationship between designations in this document and ISO 13399 (all parts)

See Table A.1.

Table A.1 — Relationship between designations in this document and ISO 13399 (all parts)

Symbol in this document	Reference in this document	Property name in ISO 13399 (all parts)	Symbol in ISO 13399 (all parts)	Reference in ISO 13399 (all parts)
d_1	Figure 2 Table 1	connection diameter machine side	DCONMS	71EBDBF5060E6
d_1 H7	Table 1	tolerance class connection diameter machine side	TCDCONMS	72719B2BD8041
d_5	Figure 2 Table 1	contact surface diameter machine side	DCSFMS	71D087D97FCE3
d_3	Figure 3 Table 2	connection diameter workpiece side	DCONWS	71EAC0DD5D650
d_6	Figure 3 Table 2	contact surface diameter workpiece side	DCSFWS	71EAC0DD5D650