INTERNATIONAL STANDARD

ISO 10649-1

Second edition
2013-10-15

Cutter arbors with parallel key and tenon drive —

Part 1: General dimensions

Mandrins porte-fraise à entraînement par clavette et tenon —

Partie 1: Dimensions générales

Reference number
ISO 10649-1:2013(E)

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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. www.iso.org/directives

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The committee responsible for this document is ISO/TC 29, *Small tools*, Subcommittee SC 2, *High speed steel cutting tools and their attachments.*

This second edition cancels and replaces the first edition (ISO 10649-1:2010), of which it constitutes a minor revision with the following changes:

— addition of Annex A, which gives the relationship between the symbols of this part of ISO 10649 and the symbols according to the ISO 13399 series.

ISO 10649 consists of the following parts, under the general title *Cutter arbors with parallel key and tenon drive:*

— *Part 1: General dimensions*

— *Part 2: Dimensions and designation of tool holders with taper interface with flange contact surface*

— *Part 3: Dimensions and designation of tool holders with 7/24 taper for automatic tool changer*

— *Part 4: Dimensions and designation of tool holders with 7/24 taper without automatic tool changer*

— *Part 5: Dimensions and designation of tool holders with polygonal taper interface with flange contact surface*

— *Part 6: Dimensions and designation of tool holders with modular taper interface with ball track system*

Introduction

The aim of ISO 10649 (all parts) is to specify the main dimensions for tool holders for this type of interface, and prevent the risk of collision when exchanging the assembled tool within the machine tools.

Cutter arbors with parallel key and tenon drive —

Part 1:
General dimensions

1 Scope

This part of ISO 10649 specifies the dimensions of tool interface for cutter arbors with parallel key and tenon drive.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

ISO 2780, *Milling cutters with tenon drive — Interchangeability dimensions for cutter arbors — Metric series*

ISO 10643, *Dimensions of accessories for cutter arbors with parallel key and tenon drive*

3 Dimensions

3.1 General

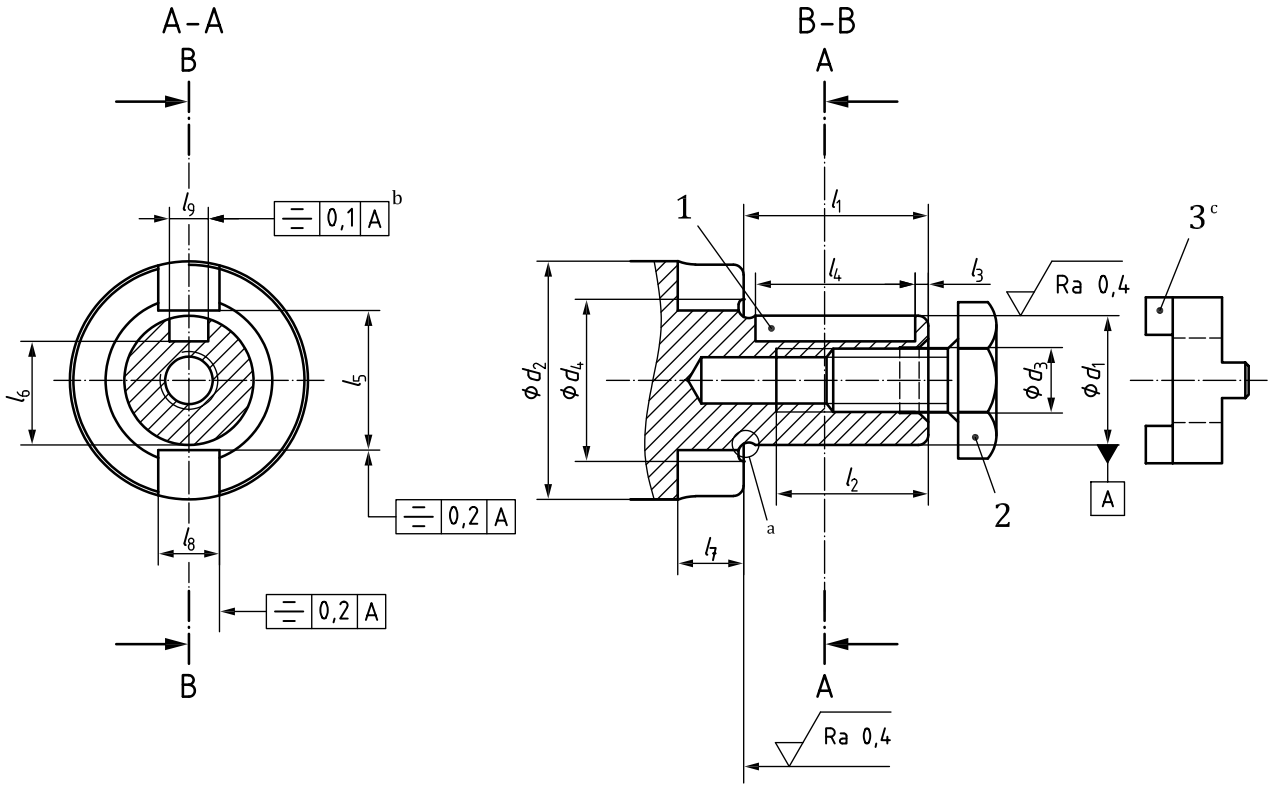
All dimensions and tolerances are given in millimetres. Tolerances not specified shall be of tolerance class “m” in accordance with ISO 2768-1 and of class “K” in accordance with ISO 2768-2.

The figures are schematic and are not intended to specify a given design; only the given dimension shall be met.

The interchangeability dimensions of the milling cutter bearing on the cutter arbors shall be in accordance with ISO 2780.

3.2 Dimensions of tool interface for arbors with parallel key and tenon drive

The dimensions of tool interface for arbors with parallel key and tenon drive shall be in accordance with the dimensions shown in Figure 1 and given in Table 1.



Key

1 parallel key in accordance with ISO 10643

2 cutter retaining screw in accordance with ISO 10643

3 clutch drive ring in accordance with ISO 10643

a Under cut at the manufacturer's discretion.

b Positioning against the position of the cutting edge for right-hand tools with single cutting edge of the interface.

c The clutch drive ring may be fitted on spigot diameter d_1.

Figure 1 — Dimensions of tool interface for arbors with parallel key and tenon drive

Table 1 — Dimensions

d_1 h6	d_2[a]	d_3	d_4 max.	l_1	l_2 min.	l_3	l_4 +0,1 +0,3	l_5	l_6 –	l_6 tol.	l_7 min.	l_8[b] F9	l_9 P9
16	32	M8	19	27	20	2	20	17	13,2	0 -0,1	5,5	8	4
22	40	M10	25	31	22	2	25	23	17,6	0 -0,2	6	10	6
27	48	M12	30	33	26	3	25	28	22	0 -0,2	7	12	7
32	58	M16	36	38	30	3	28	33	27	0 -0,2	7,5	14	8

a From ISO 2780.

b Full with depth l_7.

Table 1 *(continued)*

d_1 h6	d_2[a]	d_3	d_4 max.	l_1	l_2 min.	l_3	l_4 +0,1 +0,3	l_5	l_6 –	l_6 tol.	l_7 min.	l_8[b] F9	l_9 P9
40	70	M20	44	41	34	3	32	41	34,5	0 -0,2	8,5	16	10
50	90	M24	54	46	40	3	36	51	44,5	0 -0,2	9,5	18	12

[a] From ISO 2780.

[b] Full with depth l_7.

Annex A
(informative)

Relationship between the symbols of this part of ISO 10649 and the ISO 13399 series

As this part of ISO 10649 does not define an entire product, the relationship between the symbols of this part of ISO 10649 and symbols according to the ISO 13399 series are not given. They are given in the entire product standards ISO 10649-2, ISO 10649-3, ISO 10649-4, ISO 10649-5 and ISO 10649-6, and future parts to be developed.

Bibliography

[1] ISO 13399 (all parts), *Cutting tool data representation and exchange*

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