INTERNATIONAL STANDARD

**ISO 10649-1**

First edition
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# 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
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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

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.

ISO 10649-1 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 2, *High speed steel cutting tools and their attachments*.

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 hollow taper interface with flange contact surface*

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

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

The dimensions and designations of tool holders with polygonal taper interface with flange contact surface will form the subject of a part 5 and the dimensions and designations of tool holders with modular taper interface with ball track system will form the subject of a part 6.

## 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 referenced documents are indispensable for the application 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 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

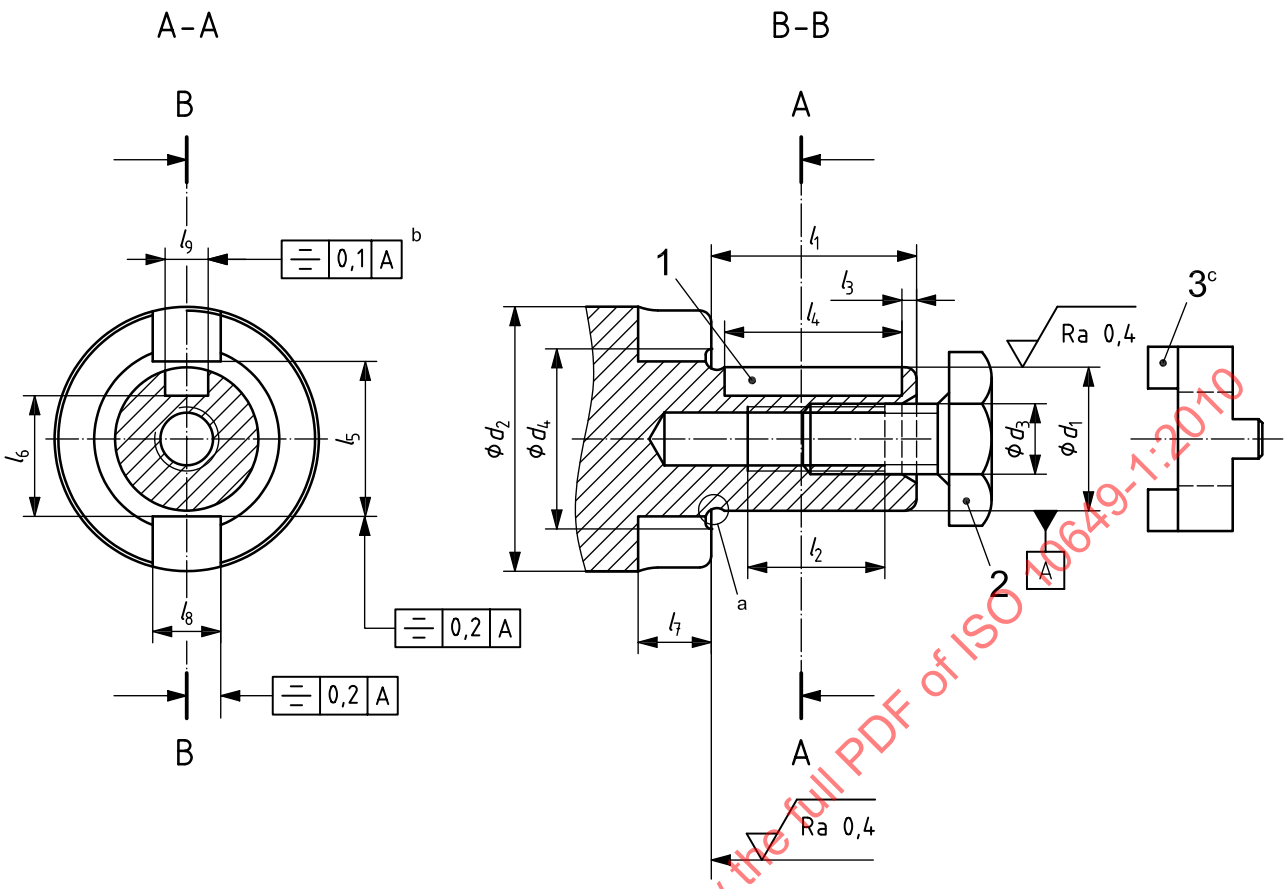
All dimensions and tolerances are given in millimetres. Tolerances not specified shall be of tolerance class “m” in accordance with ISO 2768-1 and of class “K” in accordance with ISO 2768-2.

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 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. | $l_3$ | $l_4$ $^{+0,1}_{+0,3}$ | $l_5$ | $l_6$ | | $l_7$ min. | $l_8$[b] F9 | $l_9$ P9 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | tol. | | | |
| **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 |
| **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 $l_7$.