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## Solid hardmetal end mills with cylindrical shank — Dimensions

*Fraises cylindriques deux tailles monobloc en métaux-durs —  
Dimensions*

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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](http://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](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on 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 the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html). (standards.iteh.ai)

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This third edition cancels and replaces the second edition (ISO 10911:2010), which has been technically revised as follows:

- [Figure 1](#) has been revised;
- [Annex A](#) has been added, showing the relationship between designations in this document and the ISO 13399 series.

# Solid hardmetal end mills with cylindrical shank — Dimensions

## 1 Scope

This document specifies the dimensions of solid hardmetal end mills with cylindrical shank.

NOTE For the relationship between designations in this document and the ISO 13399 series, see [Annex A](#).

## 2 Normative references

There are no normative references in this document.

## 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:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

## 4 Dimensions

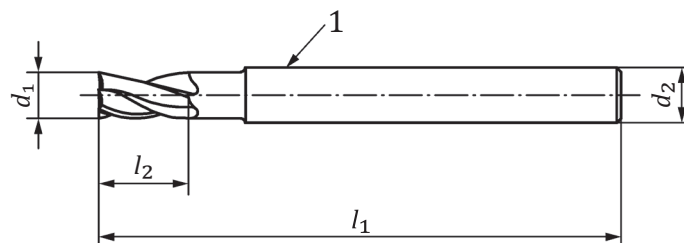
The dimensions of solid hardmetal end mills with plain cylindrical shanks are specified in [Figure 1](#) and [Table 1](#).

NOTE The dimensions given in [Table 1](#) also apply to solid hardmetal end mills with flatted cylindrical shanks in accordance with ISO 3338-2.

## 5 Centre cutting

End mills with two flutes shall be centre-cutting (slot drills).

End mills with three flutes or more may be centre-cutting.



### Key

- 1 plain cylindrical shank in accordance with ISO 3338-1

NOTE See [Table 1](#) for dimensions.

**Figure 1 — Example of an end mill**

Table 1 — Dimensions of end mills with two flutes

Dimensions in millimetres

| Cutting diameter<br>$d_1$<br>h10 | Shank diameter <sup>a</sup><br>$d_2$<br>h6 | Short cutting part        |                           |                 | Long cutting part         |                         |                 |
|----------------------------------|--|---------------------------|---------------------------|-----------------|---------------------------|-------------------------|-----------------|
|                                  |  | Overall length<br>$l_1^b$ | Cutting length<br>$l_2^c$ |                 | Overall length<br>$l_1^d$ | Cutting length<br>$l_2$ |                 |
|                                  |  |                           | 2 or 3 cutting edges      | 4 cutting edges |                           | 2 or 3 cutting edges    | 4 cutting edges |
| 1,0                              | 3,0  | 38,0                      | 3,0                       | 3,0             | —                         | —                       | —               |
| 1,5                              | 3,0  | 38,0                      | 3,0                       | 4,0             | —                         | —                       | —               |
| 2,0                              | 3,0  | 38,0                      | 3,0                       | 4,0             | 38,0                      | 6,0                     | 7,0             |
|                                  | 6,0  | 50,0                      | 3,0                       | 4,0             | 57,0                      | 6,0                     | 7,0             |
| 2,5                              | 3,0  | 38,0                      | 3,0                       | 4,0             | 38,0                      | 7,0                     | 8,0             |
|                                  | 6,0  | 50,0                      | 3,0                       | 4,0             | 57,0                      | 7,0                     | 8,0             |
| 3,0                              | 3,0  | 38,0                      | 4,0                       | 5,0             | 38,0                      | 7,0                     | 8,0             |
|                                  | 6,0  | 50,0                      | 4,0                       | 5,0             | 57,0                      | 7,0                     | 8,0             |
| 3,5                              | 6,0  | 50,0                      | 4,0                       | 6,0             | 57,0                      | 7,0                     | 10,0            |
| 4,0                              | 6,0  | 54,0                      | 5,0                       | 8,0             | 57,0                      | 8,0                     | 11,0            |
| 4,5                              | 6,0  | 54,0                      | 5,0                       | 8,0             | 57,0                      | 8,0                     | 11,0            |
| 5,0                              | 6,0  | 54,0                      | 6,0                       | 9,0             | 57,0                      | 10,0                    | 13,0            |
| 6,0                              | 6,0  | 54,0                      | 7,0                       | 10,0            | 57,0                      | 10,0                    | 13,0            |
| 7,0                              | 8,0  | 58,0                      | 8,0                       | 11,0            | 63,0                      | 13,0                    | 16,0            |
| 8,0                              | 8,0  | 58,0                      | 9,0                       | 12,0            | 63,0                      | 16,0                    | 19,0            |
| 9,0                              | 10,0                                       | 66,0                      | 10,0                      | 13,0            | 72,0                      | 16,0                    | 19,0            |
| 10,0                             | 10,0                                       | 66,0                      | 11,0                      | 14,0            | 72,0                      | 19,0                    | 22,0            |
| 12,0                             | 12,0                                       | 73,0                      | 12,0                      | 16,0            | 83,0                      | 22,0                    | 26,0            |
| 14,0                             | 14,0                                       | 75,0                      | 14,0                      | 18,0            | 83,0                      | 22,0                    | 26,0            |
| 16,0                             | 16,0                                       | 82,0                      | 16,0                      | 22,0            | 92,0                      | 26,0                    | 32,0            |
| 18,0                             | 18,0                                       | 84,0                      | 18,0                      | 24,0            | 92,0                      | 26,0                    | 32,0            |
| 20,0                             | 20,0                                       | 92,0                      | 20,0                      | 26,0            | 104,0                     | 32,0                    | 38,0            |

<sup>a</sup> For the dimensions, see ISO 3338-1.

<sup>b</sup> Tolerance on  $l_1$ , short cutting part:  $+2,0_0$  mm.

<sup>c</sup> Tolerances on  $l_2$  : for  $l_2 \leq 10$  mm:  $+1,0_0$  mm; for  $l_2$  11–22 mm:  $+1,5_0$  mm; for  $l_2 > 22$  mm:  $+2,0_0$  mm.

<sup>d</sup> Tolerance on  $l_1$ , long cutting part:  $+2,0_0$  mm.

## Annex A (informative)

### Relationship between designations in this document and the ISO 13399 series

#### A.1 Relationship between designations

For the relationship between the designations in this document and preferred symbols according to the ISO 13399 series, see [Table A.1](#).

**Table A.1 — Relationship between designations in this document and the ISO 13399 series**

| Symbol in this document | Reference in this document                          | Property name in the ISO 13399 series            | Symbol in the ISO 13399 series | Reference in the ISO 13399 series |
|-------------------------|---|--|--------------------------------|-----------------------------------|
| $d_1$                   | <a href="#">Figure 1</a><br><a href="#">Table 1</a> | Cutting diameter                                 | DC                             | 71D084653E57F                     |
| $d_2$                   | <a href="#">Figure 1</a><br><a href="#">Table 1</a> | Connection diameter machine side                 | DCONMS                         | 71EBDBF5060E6                     |
| $d_2\ h_6$              | <a href="#">Table 1</a>                             | Tolerance class connection diameter machine side | TCDCONMS                       | 72719B2BD8041                     |
| $l_1$                   | <a href="#">Figure 1</a><br><a href="#">Table 1</a> | Overall length                                   | OAL                            | 71D078EB7C086                     |
| $l_2$                   | <a href="#">Figure 1</a><br><a href="#">Table 1</a> | Depth of cut maximum                             | APMX                           | 71D07576C0558                     |

## Bibliography

- [1] ISO 3338-1, *Cylindrical shanks for milling cutters — Part 1: Dimensional characteristics of plain cylindrical shanks*
- [2] ISO 3338-2, *Cylindrical shanks for milling cutters — Part 2: Dimensional characteristics of flatted cylindrical shanks*

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