INTERNATIONAL STANDARD

**ISO 11529-2**

Second edition
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# Milling cutters — Designation —

## Part 2: Shank-type and bore-type milling cutters with indexable inserts

*Fraises — Désignation —*
*Partie 2: Fraises à queue et fraises à trou à plaquettes amovibles*



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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 11529-2 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with cutting edges made of hard cutting materials*.



This second edition cancels and replaces the first edition (ISO 11529-2:1998), which has been technically revised. In particular, it incorporates in 4.10.1 the addition of hollow taper shanks (HSK), types A and C.



ISO 11529 consists of the following parts, under the general title *Milling cutters — Designation*:



— *Part 1: Shank-type end mills of solid or tipped design*

— *Part 2: Shank-type and bore-type milling cutters with indexable inserts*

# Milling cutters — Designation —

## Part 2:
## Shank-type and bore-type milling cutters with indexable inserts

### 1 Scope

This part of ISO 11529 establishes a designation system for shank- and bore-type milling cutters embodying hard-material, indexable inserts, with the purpose of simplifying communication between the users and suppliers of such tools.

### 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 3002-1:1982, *Basic quantities in cutting and grinding — Part 1: Geometry of the active part of cutting tools — General terms, reference systems, tool and working angles, chip breakers*

ISO 3002-3:1984, *Basic quantities in cutting and grinding — Part 3: Geometric and kinematic quantities in cutting*



### 3 Summary explanation of the designation system

Shank-type and bore-type milling cutters are designated by codes comprising symbols which identify the important features of the mills.

Extensions to the designation codes to include manufacturer's or supplier's information about the milling cutters is described in Clause 5.

No addition to or extension of the designation system given in this part of ISO 11529 shall be made without consulting with Technical Committee ISO/TC 29 and obtaining its agreement.

The symbols defined by this part of ISO 11529 are:

| Position | Definition of designation symbols |
|---|---|
| 1 | Designation symbol (letter) identifying the design of milling cutter (see 4.1) |
| 2 | Designation symbol (letter) identifying the type of milling cutter (see 4.2) |
| 3 | Designation symbol (number) identifying the cutting-edge angle, $\kappa_r$ (see 4.3) |
| 4 | Designation symbol (letter) identifying the shape of insert (see 4.4) |
| 5 | Designation symbol (number) identifying the diameter, ∅ (see 4.5) |
| 6 | Designation symbol (letter) identifying the hand of cutting (see 4.6) |

7 Designation symbol (number) identifying the maximum cutting depth or width, $a_p$ (see 4.7)

8 Designation symbol (letter) identifying the orientation of the pockets for indexable inserts in milling cutters (see 4.8)

9 Designation symbol (number) identifying the number of effective cutting edges (see 4.9)

10 Designation symbol (letter) identifying the type of shank or bore (see 4.10)

11 Designation symbol (number) identifying the size of shank or bore (see 4.11)

EXAMPLE

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|
| **S** | **A** | **75** | **S** | **100** | **R** | **010** | **A** | **08** | **S** | **32** |

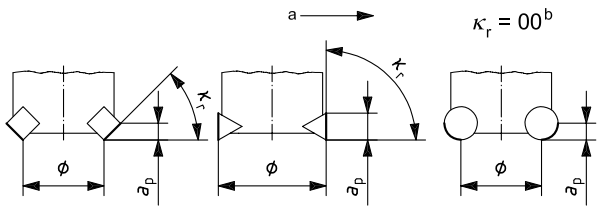
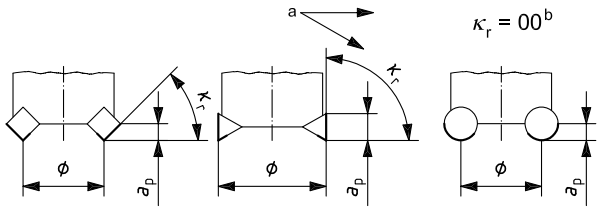
## 4 Designation symbols

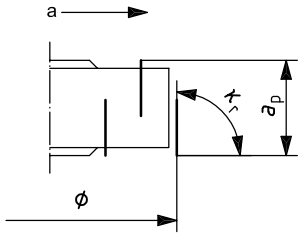
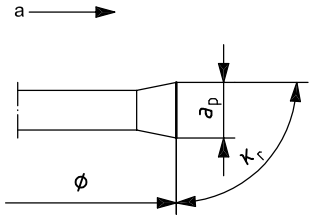
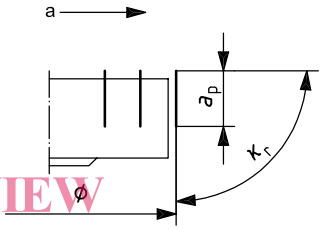
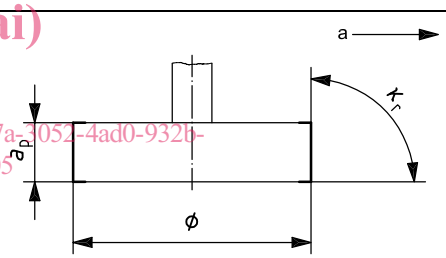
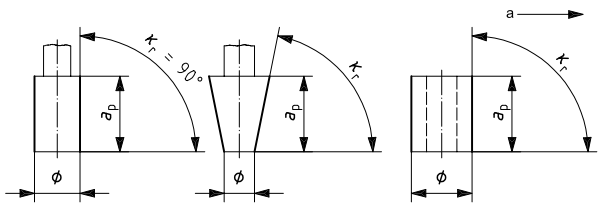
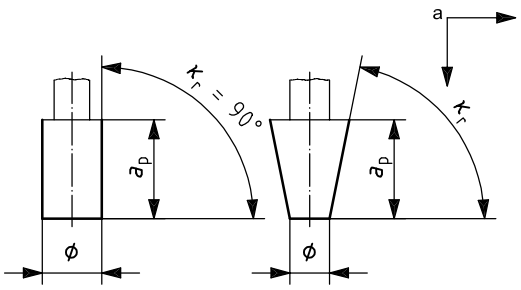
### 4.1 Designation symbol identifying design of milling cutter — Position 1

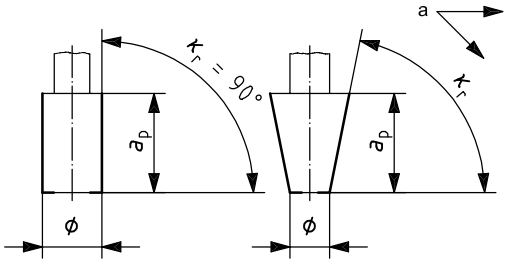
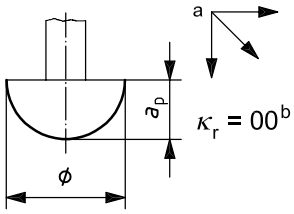
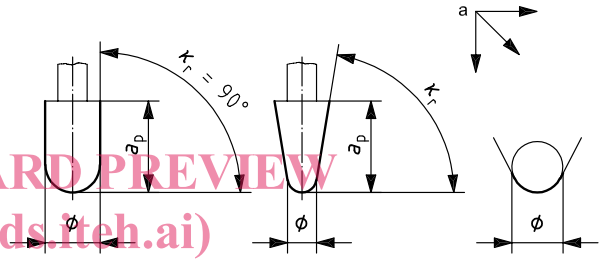
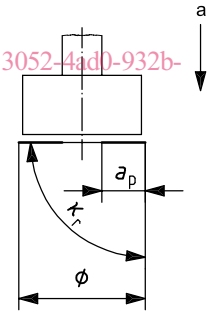
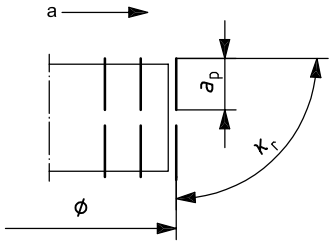
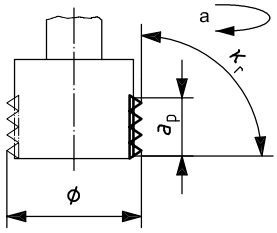
| Designation symbol | Design |
|---|---|
| **C** | Top clamp |
| **P** | Clamping, insert with hole |
| **S** | Clamping with screw, insert with hole |
| **T** | Tangentially mounted insert, with hole |
| **V** | Tangentially mounted insert, without hole |
| **W** | Wedge clamping, insert without hole |
| **X** | Special feature |



### 4.2 Designation symbol identifying type of milling cutter — Position 2

| Designation symbol | Type of milling cutter | Shape |
|---|---|---|
| **A** | Face mill<br>Square shoulder face mill<br>$a_p < \varnothing$ |  |
| **B** | Face mill<br>Square shoulder face mill<br>$a_p < \varnothing$ |  |

| Designation symbol | Type of milling cutter | Shape |
|---|---|---|
| **C** | Full side and face mill<br>$a_p < \varnothing$ |  |
| **D** | Slitting cutter<br>$a_p < \varnothing$ |  |
| **E** | Half-side and face mill<br>$a_p < \varnothing$ |  |
| **F** | T-slot cutter<br>$a_p < \varnothing$ |  |
| **G** | End mill — side cutting<br>($\kappa_r = 90°$)<br>Tapered-end mill — side cutting<br>Slab mill $a_p > \varnothing$ |  |
| **H** | End mill — side and centre cutting<br>($\kappa_r = 90°$)<br>Tapered-end mill — side and centre cutting<br>$a_p > \varnothing$ |  |

| Designation symbol | Type of milling cutter | Shape |
|---|---|---|
| **J** | End mill — side cutting and ramping ($\kappa_r = 90°$)<br>Tapered-end mill — side cutting and ramping<br>$a_p > \varnothing$ |  |
| **K** | Ball-nosed end mill<br>$a_p \leqslant 0{,}5\ \varnothing$ |  |
| **L** | Ball-nosed cylindrical end mill — side and centre cutting ($\kappa_r = 90°$)<br>Ball-nosed tapered end mill — side and centre cutting<br>$a_p > 0{,}5\ \varnothing$ |  |
| **M** | Spot facing cutter<br>centre cutting = $a_p = 0{,}5\ \varnothing$<br>not centre cutting = $a_p < 0{,}5\ \varnothing$ |  |
| **P** | Double half-side and face mill<br>$a_p < \varnothing$ |  |
| **T** | Thread milling cutter |  |

a Feed.

b See 4.3.

### 4.3 Designation symbol identifying cutting edge angle, $\kappa_r$ — Position 3

The symbol identifying the cutting edge angle is a two-digit number, corresponding to the nominal cutting edge angle, in degrees, and omitting any decimals. $\kappa_r$ is defined for the various types of milling cutter and end mill in 4.2, and in ISO 3002-1.

EXAMPLE Cutting edge angle 75°: symbol 75.

For cutters with round inserts and end mills of type K, the symbol identifying the cutting edge angle shall be replaced by 00 (double zero).

If $\kappa_r$ is a decimal value, the symbol identifying the cutting edge angle shall be replaced by XX, and the actual value shown as manufacturer's information (see Clause 5).

### 4.4 Designation symbol identifying shape of insert — Position 4

| Designation symbol | Insert shape | Insert type |
|---|---|---|
| **H** | Hexagonal | Equilateral and equiangular |
| **O** | Octogonal | |
| **P** | Pentagonal | |
| **S** | Square | |
| **T** | Triangular | |
| **C** | Rhombic with 80° included angle | Equilateral but non-equiangular |
| **D** | Rhombic with 55° included angle | |
| **E** | Rhombic with 75° included angle | |
| **M** | Rhombic with 86° included angle | |
| **V** | Rhombic with 35° included angle | |
| **W** | Trigon with 80° included angle | |
| **L** | Rectangular | Non-equilateral but equiangular |
| **A** | Parallelogram-shaped with 85° included angle | Non-equilateral and non-equiangular |
| **B** | Parallelogram-shaped with 82° included angle | |
| **K** | Parallelogram-shaped with 55° included angle | |
| **R** | Round | Round |
| **X** | Cutters equipped with other shapes of inserts | — |
| **Y** | Cutters equipped with more than one shape of inserts | |

NOTE 1 The included angle is always the smaller angle.

NOTE 2 This table is taken from ISO 1832, except for symbols X and Y.



### 4.5 Designation symbol identifying diameter, ∅ — Position 5

The definition of the diameter of milling cutters is shown in the drawings in 4.2 (position 2).

The number symbol identifying the diameter of the milling cutter or end mill is a three-digit number and corresponds to the diameter in millimetres.

EXAMPLE 1 Milling cutter or end mill of diameter 32 mm: symbol 032.

EXAMPLE 2 Milling cutter or end mill of diameter 125 mm: symbol 125.