
**Milling cutters — Designation —
Shank-type and bore-type milling
cutters of solid or tipped design or
with indexable cutting edges**

*Fraises — Désignation — Fraises deux tailles, à queue monobloc ou à
lames ou fraises à alésage à plaquettes amovibles*

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

The first edition of ISO 11529 cancels and replaces ISO 11529-1:2005 and ISO 11529-2:2005, which have been technically revised.

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Milling cutters — Designation — Shank-type and bore-type milling cutters of solid or tipped design or with indexable cutting edges

1 Scope

This International Standard establishes a designation system for shank-type and bore-type milling cutters of either solid or tipped design or with indexable cutting edges with the purpose of simplifying communication between the users and suppliers of such tools.

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 3002-1, *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, *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 are described in [Clause 5](#).

No addition to or extension of the designation system given in this International Standard shall be made without consultation with ISO/TC 29 and without its agreement. The designation code shall consist of the following:

Position	Definition of designation symbols
1	Number symbol identifying the diameter, \emptyset (see 4.1)
2	Letter symbol identifying the type of milling cutter (see 4.2)
3	Number symbol identifying the number of effective cutting edges (see 4.3)
4	Letter symbol identifying the hand of cutting (see 4.4)
5	Number symbol identifying the cutting-edge angle, κ_r (see 4.5)
6	Letter symbol identifying the design of end mill or milling cutter (see 4.6)
7	Number symbol identifying the maximum cutting depth or width, a_p (see 4.7)
8	Letter symbol identifying the helix angle or shape of insert (see 4.8)
9	Letter symbol identifying the type of shank (see 4.9)

- 10 Number symbol identifying the style of shank (see 4.9)
- 11 Number symbol identifying the size of shank (see 4.10)

EXAMPLE

Position	1	2	3	4	5	6	7	8	9	10	11
End milling cutter of solid design	32	G	04	R	090	A	012	S	ZYL	10	032
Milling cutter of indexable design	250	A	12	R	075	S	075	S	HSK	01	100

4 Designation symbols

4.1 Symbol identifying the diameter — Position 1

The diameter of end mills or milling cutters for each letter symbol is shown in the illustrations in Table 1.

The number symbol identifying the diameter is a one-digit to three-digit number and corresponds to the diameter, in millimetres.

- EXAMPLE 1 Ø6 symbol “6”
- EXAMPLE 2 Ø32 symbol “32”
- EXAMPLE 3 Ø125 symbol “125”

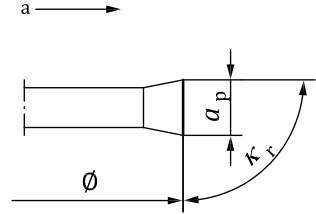
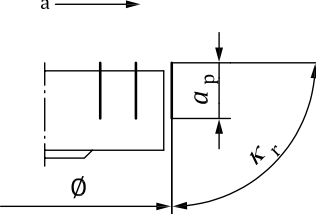
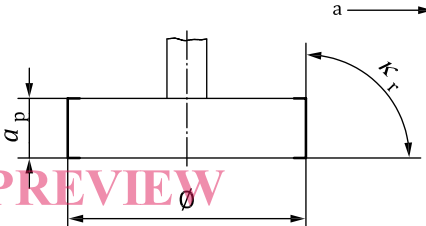
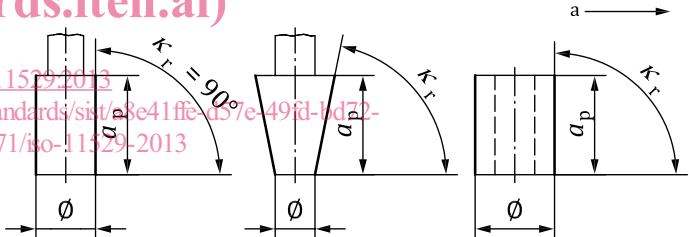
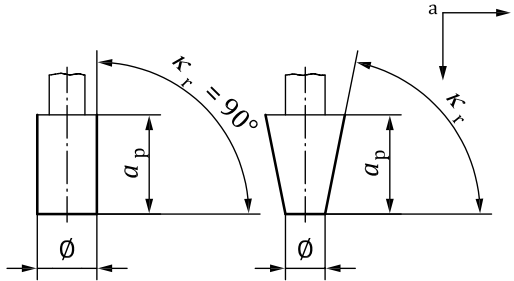
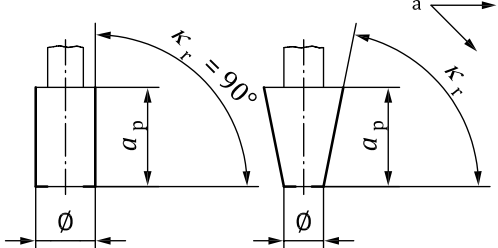
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4.2 Symbol identifying the type of milling cutter — Position 2

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Table 1 — Type of milling cutter

Letter symbol	Type of milling cutter	Shape
A	Face mill Square shoulder face mill $a_p < \varnothing$ side cutting	
B	Face mill Square shoulder face mill $a_p < \varnothing$ side cutting and ramping	
C	Full side and face mill $a_p < \varnothing$	

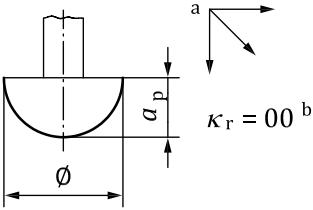
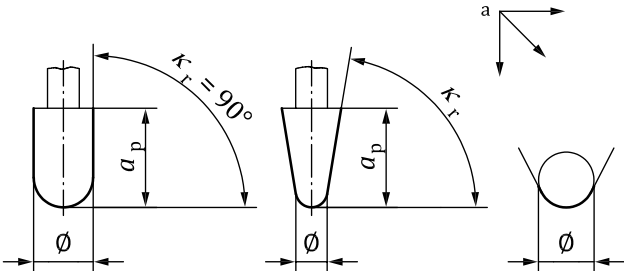
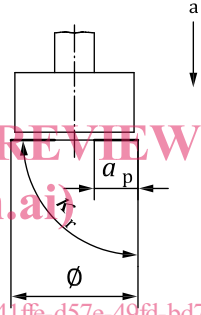
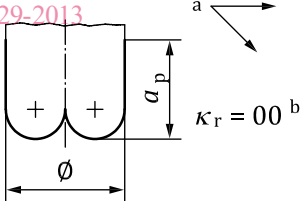
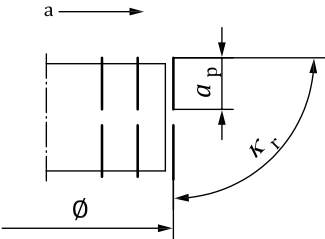
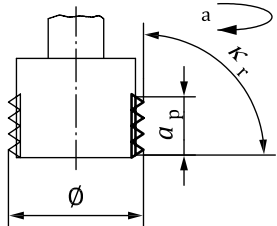
Table 1 (continued)

Letter symbol	Type of milling cutter	Shape
D	Slitting cutter $a_p < \emptyset$	
E	Half side and face mill $a_p < \emptyset$	
F	T-slot cutter $a_p < \emptyset$	
G	End mill – side cutting ($\kappa_r = 90^\circ$) Tapered end mill – side cutting $a_p > \emptyset$	
H	End mill – side and centre cutting ($\kappa_r = 90^\circ$) Tapered end mill – side and centre cutting $a_p > \emptyset$	
J	End mill – side cutting and ramping ($\kappa_r = 90^\circ$) Tapered end mill – side cutting and ramping $a_p > \emptyset$	

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Table 1 (continued)

Letter symbol	Type of milling cutter	Shape
K	Ball-nosed end mill – side and centre cutting $a_p \leq 0,5 \varnothing$	
L	Ball-nosed cylindrical end mill – side and centre cutting ($\kappa_r = 90^\circ$) Ball-nosed tapered end mill – side and centre cutting $a_p > 0,5 \varnothing$	
M	Spot facing cutter centre cutting = $a_p = 0,5 \varnothing$ not centre cutting = $a_p < 0,5 \varnothing$	 <p style="text-align: center; color: red; font-weight: bold;">iTeh STANDARD PREVIEW (standards.iteh.ai)</p> <p style="text-align: center; color: red;">ISO 11529:2013 https://standards.iteh.ai/catalog/standards/sist/a8e41ffe-d57e-49fd-bd72-d62012939c71/iso-11529-2013</p>
N	Toroidal end mill $a_p < \varnothing$	
P	Double half-side and face mill $a_p < \varnothing$	
T	Thread milling cutter	

a Feed.

b See 4.3.

4.3 Symbol identifying the number of effective cutting edges

The number symbol identifying the number of cutting edges is a two-digit number corresponding to the number of effective cutting edges.

EXAMPLE 1 12 effective cutting edges: symbol “12”.

EXAMPLE 2 2 effective cutting edges: symbol “02”.

NOTE The number of effective cutting edges is defined as “the number of cutting edges used to calculate the feed per tooth in the direction of feed motion from which κ_r is defined”.

4.4 Symbol identifying the hand of cutting

The letter symbol for the hand of cutting for a milling cutter is as shown in [Table 2](#):

Table 2 — Hand of cutting

Letter symbol	Hand of cutting
L	Left-hand
R	Right-hand
N	Neutral (both sides)

4.5 Symbol identifying the cutting edge angle, κ_r

The number symbol identifying the cutting edge angle is a three-digit number, corresponding to the nominal cutting edge angle, in degrees, and omitting any decimals. κ_r is defined for the various types of end mill in [4.2](#), and in ISO 3002-1, 5.1.1.1.

The three-digit number designates also milling cutters of dove tail design, where the cutting edge angle is larger than 90°.

EXAMPLE 1 Cutting edge angle 90°: symbol “090”.

EXAMPLE 2 Dove tail milling cutter with cutting edge angle 120°: symbol “120”.

For end mills of types K and N (see [4.2](#)), the symbol identifying the cutting edge angle shall be replaced by 000 [triple (or treble) zero].

If end mills and milling cutters are assembled with cartridges that are carrying the cutting edges, the cutting edge angle shall be replaced by OCA (zero, upper case letter C, upper case letter A).

If κ_r is a decimal value, the symbol identifying the cutting edge angle shall be replaced by XXX, and the actual value shown as the manufacturer’s information (see [Clause 5](#)).

4.6 Symbol identifying the design of end mill or milling cutter

The symbol 6 defines either the design of the end mill or milling cutter, if it is of solid or tipped design, or the design of how the replaceable cutting edges are fixed on to the tool body.

For end mills or milling cutters of solid or tipped design, the letter symbol shall be as shown in [Table 3](#):