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ISO 5609-1

First edition
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Tool holders for internal turning with cylindrical shank for indexable inserts —

Part 1: Designation, styles, dimensions and calculation for corrections

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Porte-plaquette de tournage intérieur à queue cylindrique pour plaquettes amovibles —

Partie 1: Désignation, formes, dimensions et calcul de corrections

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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 5609-1 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with cutting edges made of hard cutting materials*.

This first edition of ISO 5609-1 cancels and replaces ISO 5609:1998 and ISO 6261:2011, which have been technically revised.

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ISO 5609 consists of the following parts, under the general title *Tool holders for internal turning with cylindrical shank for indexable inserts*:

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Part 1: Designation, styles, dimensions and calculation for corrections

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Part 2: Style F

Part 3: Style K

Part 4: Style L

Part 5: Style U

Part 6: Style Q

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Introduction

This part of ISO 5609 also determines tool holder styles adopted from ISO 6261[1)] which are only standardized by the following designations:

Style P of a 117,5° cutting edge angle, offset shank, for end cutting;

Style S of a 45° cutting edge angle, offset shank, for side and end cutting;

Style W of a 60° cutting edge angle, offset shank, for end cutting;

Style Y of an 85° cutting edge angle, offset shank, for end cutting.

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Tool holders for internal turning with cylindrical shank for indexable inserts —

Part 1: Designation, styles, dimensions and calculation for corrections

1 Scope

This part of ISO 5609 specifies the code for the designation, styles, general dimensions and calculation for corrections for tool holders for internal turning with cylindrical shank. It is intended to be used in conjunction with, and is completed by, ISO 5609-2, ISO 5609-3, ISO 5609-4, ISO 5609-5 and ISO 5609-6.

These tool holders are primarily intended for indexable inserts made of hardmetal, ceramic or other cutting materials to be mounted by clamping and to be used for internal turning operations.

This part of ISO 5609 also incorporates the contents of ISO 6261:2011[12)] [designation for tool holders with cylindrical shank (boring bars) for indexable inserts].

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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.

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

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 5608:1995, *Turning and copying tool holders and cartridges for indexable inserts — Designation*

3 Configuration of the designation

The designation code includes 10 symbols for the designation of dimensions and other characteristics of the tool holder and the indexable insert.

In addition to the standardized designation (symbols 1 to 10) a supplementary symbol consisting of a maximum of three letters and/or numbers may be added by the manufacturer for a better description of his/her products on condition that this symbol is separated from the standardized designation by a hyphen.

No addition to or extension of the code given in this part of ISO 5609 shall be made without consultation with ISO/TC 29 and without its agreement. Rather than adding symbols not provided for in this system, all necessary explanations should be added in detailed sketches or specifications to the designation conforming to this International Standard.

The meaning of the 10 compulsory symbols constituting the code is as follows:

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Position	Definition of designation symbols
1	letter symbol identifying the type of tool (see 4.1) [The term “tool” in this part of ISO 5609 refers to boring bars (tool holders with cylindrical shank).];
2	number symbol identifying the diameter of the shank (see 4.2);
3	letter symbol identifying the length of the tool (see 4.3);
—	hyphen not counted as a symbol;
4	letter symbol identifying the method of holding the indexable insert (see 4.4);
5	letter symbol identifying the indexable insert shape (see 4.5) [in accordance with ISO 1832];
6	letter symbol identifying the style of the tool (see 4.6);
7	letter symbol identifying the insert normal clearance (see 4.7);
8	letter symbol identifying the hand of the tool (see 4.8);
9	number symbol identifying the size of the indexable insert (see 4.9) [in accordance with ISO 1832];
10	number symbol identifying the numbers of flats and their location (see 4.10).

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The term “tool” in this part of ISO 5609 refers to boring bars (tool holders with cylindrical shank).

EXAMPLE

1	2	3	—	4	5	6	7	8	9	—	10
S	25	S	—	P	S	K	N	R	12	—	41

4 Designation symbols

4.1 Symbol for the type of tool — Symbol 1

See Table 1.

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Table 1 — Symbol 1

Letter symbol	Type of tool
S	Solid steel tool
A	Solid steel tool with coolant/lubrication hole
B	Solid steel tool with anti-vibration device
D	Solid steel tool with anti-vibration device and coolant/lubrication hole
C	Hardmetal (carbide) tool with fixed steel head
E	Hardmetal (carbide) tool with fixed steel head and coolant/lubrication hole
F	Hardmetal (carbide) tool with fixed steel head and anti-vibration device
G	Hardmetal (carbide) tool with fixed steel head, anti-vibration device and coolant/lubrication hole
H	Solid heavy metal tool
J	Solid heavy metal tool with coolant/lubrication hole
K	Heavy metal tool with fixed steel head
L	Heavy metal tool with fixed steel head and coolant/lubrication hole

4.2 Symbol for the diameter of the shank — Symbol 2

The number symbol for the shank diameter is the value of the diameter, d or d_1, in millimetres. If the resulting symbol has only one digit, it shall be preceded by 0 (zero).

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EXAMPLE 1

shank diameter 25 mm

symbol 25

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EXAMPLE 2

shank diameter 8 mm

symbol 08

4.3 Symbol for the tool length — Symbol 3

See Table 2.

Table 2 — Symbol 3

Dimensions in millimetres

Letter symbol	Tool length
A	32
B	40
C	50
D	60
E	70
F	80
G	90

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Table 2 *(continued)*

Letter symbol	Tool length
H	100
J	110
K	125
M	150
N	160
P	170
Q	180
R	200
S	250
T	300
U	350
V	400
W	450
X	Special length, to be specified
Y	500

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4.4 Symbol for the method of holding the horizontally mounted indexable insert — Symbol 4

See Table 3.

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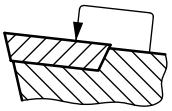
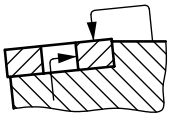
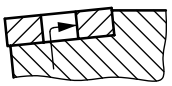
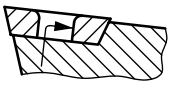
Table 3 — Symbol 4

Letter symbol	Method of holding	Indexable insert	Illustration
C	Top clamping	without hole	
M	Top and hole clamping	with hole or with counterbore for hol-ding	
P	Hole clamping		
S	Screw clamping through hole	with counterbore for hol-ding	

4.5 Symbol for the indexable insert shape — Symbol 5

See Table 4.

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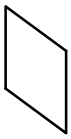
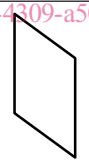
Table 4 — Symbol 5

Dimensions in millimetres

Letter symbol	Included angle ε_r	Indexable insert shape		Remark
H	120°	Hexagonal		Equilateral and equiangular
O	135°	Octagonal		
P	108°	Pentagonal		
S	90°	Square		
T	60°	Triangular		
C	80°	Rhombic		Equilateral but non-equiangular
D	55°			
E	75°			
M	86°			
V	35°			
W	80°	Hexagonal with 80° included angle		
L	90°	Rectangular		Non-equilateral but equiangular
A	85°	Parallelogram-shaped		Non-equilateral and non-equiangular
B	82°			
K	55°			
R	—	Round		Round
NOTE The included angle is always the smaller angle.				

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4.6 Symbol for the tool style — Symbol 6

See Clause 5, Table 9, for symbol 6.

4.7 Symbol for the indexable insert normal clearance — Symbol 7

The letter symbols according to Table 5 apply to the indexable inserts normal clearance, α_n, on the cutting edge (see Figure 1).

For non-equilateral indexable inserts, the symbol applies to the normal clearance of the longer side.

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