INTERNATIONAL STANDARD

ISO 5609-4

First edition
2012-12-15

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

Part 4: **Style L**

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

Partie 4: Forme L

Reference number
ISO 5609-4:2012(E)

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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 5609-4 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 5609-4, together with ISO 5609-1, ISO 5609-2, ISO 5609-3, ISO 5609-5 and ISO 5609-6, cancels and replaces ISO 5609:1998, which has been technically revised.

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

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

Part 2: Style F

Part 3: Style K

Part 4: Style L

Part 5: Style U

Part 6: Style Q

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

Part 4:
Style L

1 Scope

This part of ISO 5609 specifies the characteristics of tool holders for internal turning with cylindrical shank, style L, i.e. with reduced shank and cutting edge angle $\kappa_r = 95°$.

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.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 5609-1, *Tool holders for internal turning with cylindrical shank for indexable inserts — Part 1: Designation, styles, dimensions and calculation for corrections*

3 Dimensions

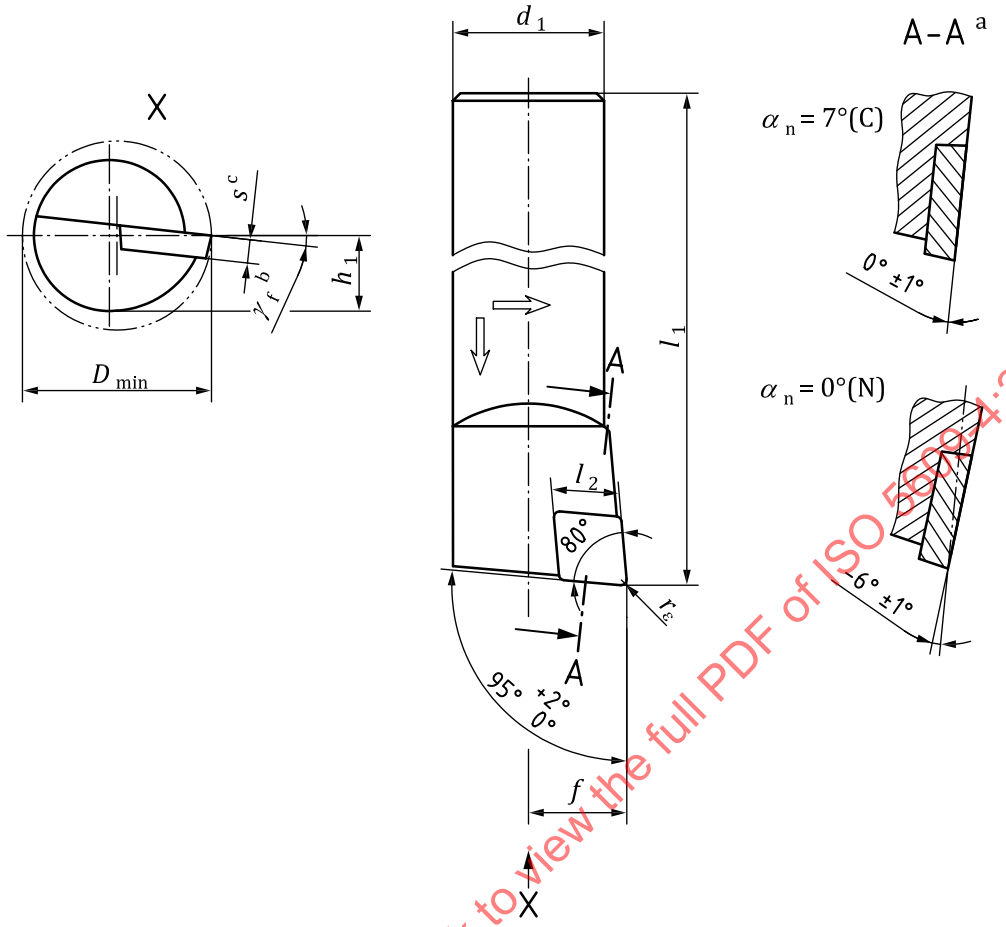
3.1 General

The symbols for dimensions shown in the figures/illustrations in the tables of this part of ISO 5609 and the corresponding preferred symbols of properties defined in ISO 13399 (all parts) are in accordance with Table A.1 of ISO 5609-1:2012.

The tool holders need not comply with the pictorial representation; only the dimensions given shall be observed.

The determination of dimensions f and l_1 and explanation of the designation code for tool holders are given in ISO 5609-1.

3.2 Tool holder, style L, for rhombic indexable insert, shape C



NOTE This figure shows a right-hand tool holder (R); left-hand tool holder (L) laterally reversed.

a Orthogonal rake angle, γ_o, with indexable insert for:
— α_n = 7° (C);
— α_n = 0° (N).
b γ_f is dependent on D_{min} and the indexable insert.
c See Table 1.

Figure 1 — Tool holder, style L, for rhombic indexable insert, shape C

Table 1 —

Dimensions in millimetres

Symbol[a]	d_1	l_1	l_2	f	D_{min}	s^b
	g7	k16	≈	$^{0}_{-0,25}$		
· 08F — SCLCR 06 · 08F — SCLCL 06	8	80	6,4	6	11	2,38
· 10H — SCLCR 06 · 10H — SCLCL 06	10	100	6,4	7	13	2,38
· 12K — SCLCR 06 · 12K — SCLCL 06	12	125	6,4	9	16	2,38
· 16M — SCLCR 09 · 16M — SCLCL 09	16	150	9,7	11	20	3,97

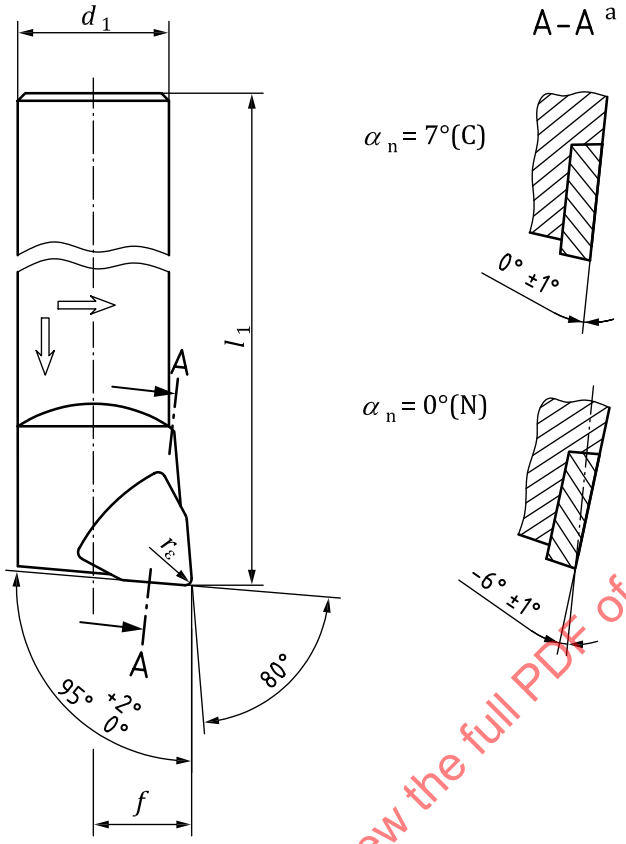
Table 1 *(continued)*

Symbol[a]	d_1	l_1	l_2	f	D_{min}	s^b
	g7	k16	≈	$^{0}_{-0,25}$		
· 20Q — SCLCR 09 **· 20Q — SCLCL 09**	20	180	9,7	13	25	3,97
· 25R — SCLCR 12 **· 25R — SCLCL 12**	25	200	12,9	17	32	4,76
· 32S — SCLCR 12 **· 32S — SCLCL 12**	32	250	12,9	22	40	4,76
· 32S — PCLNR 12 **· 32S — PCLNL 12**						
· 40T — SCLCR 12 **· 40T — SCLCL 12**	40	300	12,9	27	50	4,76
· 40T — PCLNR 12 **· 40T — PCLNL 12**						
· 50U — PCLNR 16 **· 50U — PCLNL 16**	50	350	16,1	35	63	6,35
· 50U — PCLNR 19 **· 50U — PCLNL 19**			19,3			6,35
· 60V — PCLNR 16 **· 60V — PCLNL 16**	60	400	16,1	43	80	6,35
· 60V — PCLNR 19 **· 60V — PCLNL 19**			19,3			6,35

[a] For supplementary symbol, see 6.1.

[b] For indexable insert thickness without shim, if any, see 6.4.

3.3 Tool holder, style L, for hexagonal indexable insert, shape W



NOTE This figure shows a right-hand tool holder (R); left-hand tool holder (L) laterally reversed.

a Inclination angle, λ_n, with indexable insert for:
— α_n = 7° (C);
— α_n = 0° (N).

Figure 2 — Tool holder, style L, for hexagonal indexable insert, shape W

Table 2 —

Dimensions in millimetres

Symbol[a]	d_1	l_1	l_2	f	D_{min}	s[b]
	g7	k16	≈	$^{0}_{-0,25}$		
· 08F — SWLCR L3 · 08F — SWLCL L3	8	80	3,26	6	11	1,98
· 10H — SWLCR 04 · 10H — SWLCL 04	10	100	4,34	7	13	2,38
· 12K — SWLCR 04 · 12K — SWLCL 04	12	125	4,34	9	16	2,38
· 16M — SWLCR 04 · 16M — SWLCL 04	16	150	4,34	11	20	2,38
· 16M — SWLCR 06 · 16M — SWLCL 06			6,52			3,97
· 20Q — SWLCR 06 · 20Q — SWLCL 06	20	180	6,52	13	25	3,97

Table 2 *(continued)*

Symbol[a]	d_1	l_1	l_2	f	D_{min}	s^b
	g7	k16	≈	$^{0}_{-0,25}$		
· 25R — SWLCR 06 · 25R — SWLCL 06	25	200	6,52	17	32	3,97
· 25R — SWLCR 08 · 25R — SWLCL 08			8,69			4,76
· 32S — SWLCR 06 · 32S — SWLCL 06	32	250	6,52	22	40	3,97
· 32S — SWLCR 08 · 32S — SWLCL 08			8,69			4,76
· 40T — SWLCR 06 · 40T — SWLCL 06	40	300	6,52	27	50	3,97
· 40T — SWLCR 08 · 40T — SWLCL 08			8,69			4,76
[a] and [b] See Table 1.						

4 Designation

A tool holder in accordance with this part of ISO 5609 shall be designated by:

a) "Tool holder";

b) reference to this part of ISO 5609, i. e. ISO 5609-4;

c) additional designation symbol, as specified in ISO 5609-1:2012, Clause 4.

EXAMPLE 1 Tool holder for internal turning with cylindrical shank with solid steel tool with lubrication hole (A), diameter d_1 = 32 mm (32), length l_1 = 250 mm (S), for screw clamping through hole (S) rhombic indexable insert with included angle ε_r = 80° (C), style L (L), for indexable insert normal clearance α_n = 7° (C), right-hand type (R), for cutting edge length l_2 = 12,9 mm (12) and round shank without flats is designated as follows:

Tool holder ISO 5609-4 - A32S - SCLCR 12 - 10

EXAMPLE 2 Tool holder for internal turning with cylindrical shank with solid steel tool with lubrication hole (A), diameter d_1 = 25 mm (25), length l_1 = 200 mm (R), for screw clamping through hole (S) hexagonal indexable insert with 80° included angle (W), style L (L), for indexable insert normal clearance α_n = 7° (C), right hand type (R), for cutting edge length l_2 = 6,52 mm (06) and round shank without 4 flats is designated as follows:

Tool holder ISO 5609-4 - A25S - SWLCR 06 - 41

5 Material

Tool holders for internal turning with cylindrical shank in accordance with this part of ISO 5609 shall be made from

steel with a tensile strength of a least 1 000 N/mm^2,

hardmetal (carbide) tool with brazed steel head, or

heavy metal tool.

The material should be left to the manufacturer's discretion.

6 Design

6.1 Type of tool

Tool holders for internal turning with cylindrical shank in accordance with this standard are designed

with or without lubrication hole;

with or without antivibration device.

The design of the type of tool is left to the manufacturer's discretion.

6.2 Type of mounting

The standard design of tool holders with indexable insert mounted shall be in accordance with Tables 1 and 2.

Other types of mounting may be at the manufacturer's discretion or upon agreement. The letter symbol in the designation (symbol 4) shall then be replaced by the respective symbol for the chosen or agreed type of mounting.

For the modified type of mounting deviating from Tables 1 and 2, the relevant insert thickness shall also be considered.

6.3 Corner radius r_ε

Tool holders with cylindrical shank in accordance with this part of ISO 5609 may be equipped with indexable inserts with cutting edge lengths, l_2, as specified in Tables 1 and 2 and any corner radius r_ε.

The values for f and l_1 given in Tables 1 and 2 apply to tool holders with indexable inserts having corner radii, r_ε, in accordance with Table 3.

Table 3 —

Dimensions in millimetres

l_2		r_ε
C	**W**	
—	—	0,4
—	4,34	
6,4	6,52	
9,7	8,69	0,8
12,9	—	
16,1	—	1,2
19,3	—	

NOTE The values given for r_ε are nominal values. The accurate values converted from the Imperial (inch) dimensions are 0,397 mm and 0,794 mm.

For indexable inserts with corner radii, r_ε, other than those specified in Table 3, the dimensions for f and l_1 shall be determined in accordance with ISO 5609-1.

The tolerances on f and l_1 refer to dimensions measured with master indexable insert and master shim, if any.

6.4 Thickness, *s*, of insert

The values for thickness, *s*, given in Tables 1 and 2 apply to indexable inserts without shim and for the standard design of tool holders.

For tool holders for indexable inserts with thicknesses deviating from the specified values, the thickness shall be indicated when ordering or upon delivery (in the handbook).

7 Extent of delivery

Tool holders shall be delivered complete with clamping device but without indexable insert(s).

8 Marking

Tool holders with cylindrical shank shall be marked with the letter symbol and the name or trademark of the manufacturer.

Additional marking may be at the manufacturer's discretion or upon agreement.

Deviations in marking shall be upon agreement.

The general reference to this part of ISO 5609 (i.e. ISO 5609-4) shall be given on the packaging.