INTERNATIONAL STANDARD

ISO 5610-12

First edition
2010-08-01

Tool holders with rectangular shank for indexable inserts —

Part 12: **Style S**

Porte-plaquette à queue rectangulaire pour plaquettes amovibles —

Partie 12: Forme S

Reference number
ISO 5610-12:2010(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 5610-12 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 5610-12, together with ISO 5610-1, ISO 5610-2, ISO 5610-3, ISO 5610-4, ISO 5610-5, ISO 5610-6, ISO 5610-7, ISO 5610-8, ISO 5610-9 ISO 5610-10, ISO 5610-11, ISO 5610-13, ISO 5610-14 and ISO 5610-15, cancels and replaces ISO 5610:1998.

ISO 5610 consists of the following parts, under the general title *Tool holders with rectangular shank for indexable inserts*:

— *Part 1: General survey, correlation and determination of dimensions*
— *Part 2: Style A*
— *Part 3: Style B*
— *Part 4: Style D*
— *Part 5: Style F*
— *Part 6: Style G*
— *Part 7: Style J*
— *Part 8: Style K*
— *Part 9: Style L*
— *Part 10: Style N*
— *Part 11: Style R*
— *Part 12: Style S*
— *Part 13: Style T*
— *Part 14: Style H*
— *Part 15: Style V*

Tool holders with rectangular shank for indexable inserts —

Part 12: **Style S**

1 Scope

This part of ISO 5610 specifies tool holders with rectangular shank, style S, i.e. with offset shank and cutting edge angle $\kappa_r = 45°$ for side cutting.

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

NOTE The symbols for the dimensions shown in the tables of this part of ISO 5610 and the corresponding preferred symbols of properties defined in ISO/TS 13399-2 and ISO/TS 13399-3 are given in ISO 5610-1:2010, Table A.1.

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

ISO 5610-1:2010, *Tool holders with rectangular shank for indexable inserts — Part 1: General survey, correlation and determination of dimensions*

3 Dimensions

3.1 General

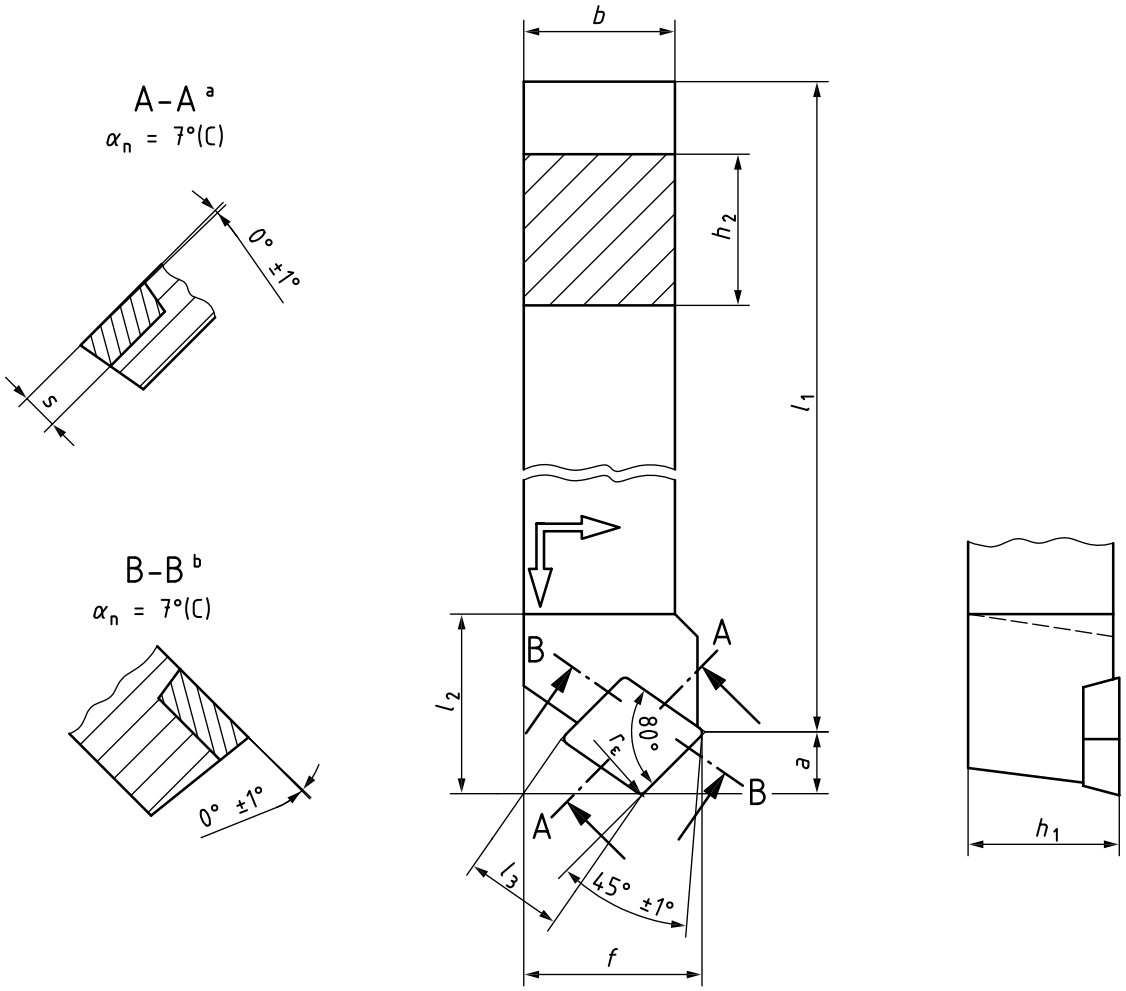
It is not necessary for tool holders to comply with the pictorial representation; only the dimensions given shall be observed.

For determination of dimensions h_1, f and l_1, see ISO 5610-1.

For explanation of the designation code for tool holders, see ISO 5608.

NOTE The values of rake angles and inclination angles shown in the figures are recommended values; they can vary according to the application.

3.2 Tool holder style S for rhombic indexable insert shape C



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

a Inclination angle λ_n.

b Rake angle γ_n.

Figure 1 — Tool holder style S for rhombic indexable insert — C

Table 1

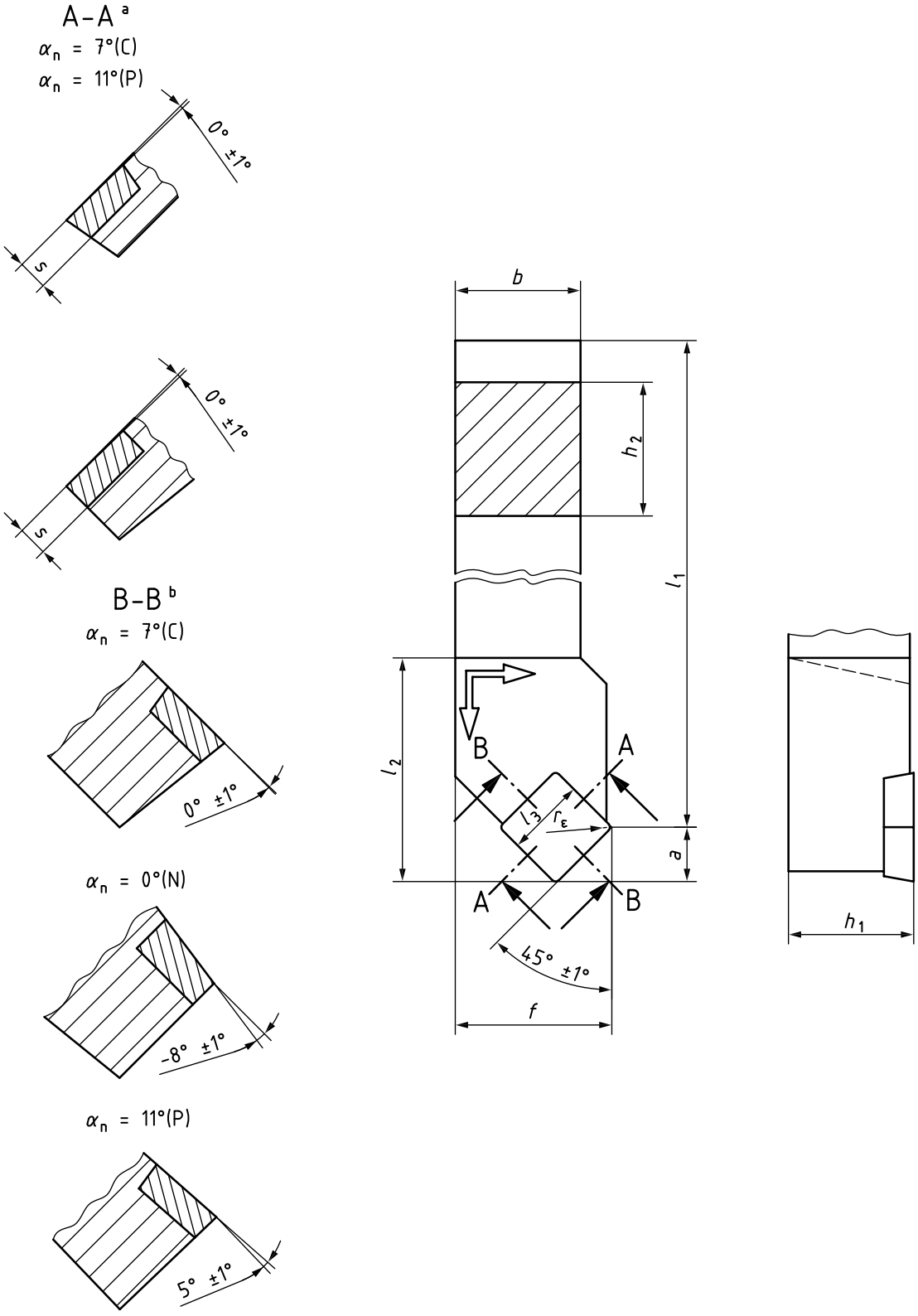
Dimensions in millimetres

Symbol[a]	h_1 js13	b h13	l_3 ≈	a	f $^{+0,5}_{0}$	h_2 h13	l_1[a] k16	l_2 max.	s[b]
SCSCR 0808 — 06	8	8	6,4	4,2	10	8	60	12	2,38
SCSCL 0808 — 06									
SCSCR 1010 — 06	10	10	6,4	4,2	12	10	70	12	2,38
SCSCL 1010 — 06									

a For the selection of length, l_1, the en-dash may be replaced by the dimensions of ISO 5610-1:2010, Table 2. For letter symbols identifying the tool length, see ISO 5608:1995, Table 6.

b Insert thickness without shim, if any.

3.3 Tool holder style S for square indexable insert shape S



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

[a] Inclination angle λ_n.

[b] Rake angle γ_n.

Figure 2 — Tool holder style S for square indexable insert — C

Table 2

Dimensions in millimetres

Symbol[a]	h_1 js13	b h13	l_3 ≈	a	f $^{+0,5}_{0}$	h_2 h13	l_1[a] k16	l_2 max.	s[b]
SSSCR 1212 — 09	12	12	9,525	6,1	16	12	—	32	3,97
SSSCL 1212 — 09									
PSSNR 1212 — 09									3,18
PSSNL 1212 — 09									
CSSPR 1212 — 09									
CSSPL 1212 — 09									
SSSCR 1616 — 09	16	16	9,525	6,1	20	16	—	32	3,97
SSSCL 1616 — 09									
PSSNR 1616 — 09									3,18
PSSNL 1616 — 09									
CSSPR 1616 — 09									
CSSPL 1616 — 09									
SSSCR 1616 — 12	16	16	12,7	8,3	20	16	—	36	4,76
SSSCL 1616 — 12									
PSSNR 1616 — 12									
PSSNL 1616 — 12									
CSSPR 1616 — 12									3,18
CSSPL 1616 — 12									
SSSCR 2020 — 12	20	20	12,7	8,3	25	20	—	36	4,76
SSSCL 2020 — 12									
PSSNR 2020 — 12									
PSSNL 2020 — 12									
CSSPR 2020 — 12									3,18
CSSPL 2020 — 12									
CSSNR 2525 — 12	25	25	12,7	8,3	32	25	—	36	7,94
CSSNL 2525 — 12									
SSSCR 2525 — 12									4,76
SSSCL 2525 — 12									
PSSNR 2525 — 12									
PSSNL 2525 — 12									
CSSPR 2525 — 12									3,18
CSSPL 2525 — 12									

Table 2 (*continued*)

Dimensions in millimetres

Symbol[a]	h_1 js13	b h13	l_3 ≈	a	f $^{+0,5}_{0}$	h_2 h13	l_1[a] k16	l_2 max.	s[b]
SSSCR 2525 — 15	25	25	15,875	10,2	32	25	—	40	5,56
SSSCL 2525 — 15									
PSSNR 2525 — 15									6,35
PSSNL 2525 — 15									
CSSPR 2525 — 19	25	25	19,05	12,5	32	25	—	45	4,76
CSSPL 2525 — 19									
CSSNR 3225 — 12	32	25	12,7	8,3	32	32	—	36	7,94
CSSNL 3225 — 12									
SSSCR 3225 — 12									4,76
SSSCL 3225 — 12									
PSSNR 3225 — 12									
PSSNL 3225 — 12									
CSSPR 3225 — 12									3,18
CSSPL 3225 — 12									
CSSNR 3225 — 15	32	32	15,875	10,2	32	32	—	40	7,94
CSSNL 3225 — 15									
SSSCR 3225 — 15	32	25	15,875	10,2	40	32	—	40	5,56
SSSCL 3225 — 15									
PSSNR 3225 — 15									6,35
PSSNL 3225 — 15									
CSSPR 3225 — 19	32	25	19,05	12,5	40	32	—	45	4,76
CSSPL 3225 — 19									
SSSCR 3232 — 19	32	32	19,05	12,5	40	32	—	45	6,35
SSSCL 3232 — 19									
PSSNR 3232 — 19									
PSSNL 3232 — 19									
CSSPR 3232 — 19									4,76
CSSPL 3232 — 19									
SSSCR 4040 — 19	40	40	19,05	12,5	50	40	—	45	6,35
SSSCL 4040 — 19									
PSSNR 4040 — 19									
PSSNL 4040 — 19									
CSSPR 4040 — 19									4,76
CSSPL 4040 — 19									

Table 2 (*continued*)

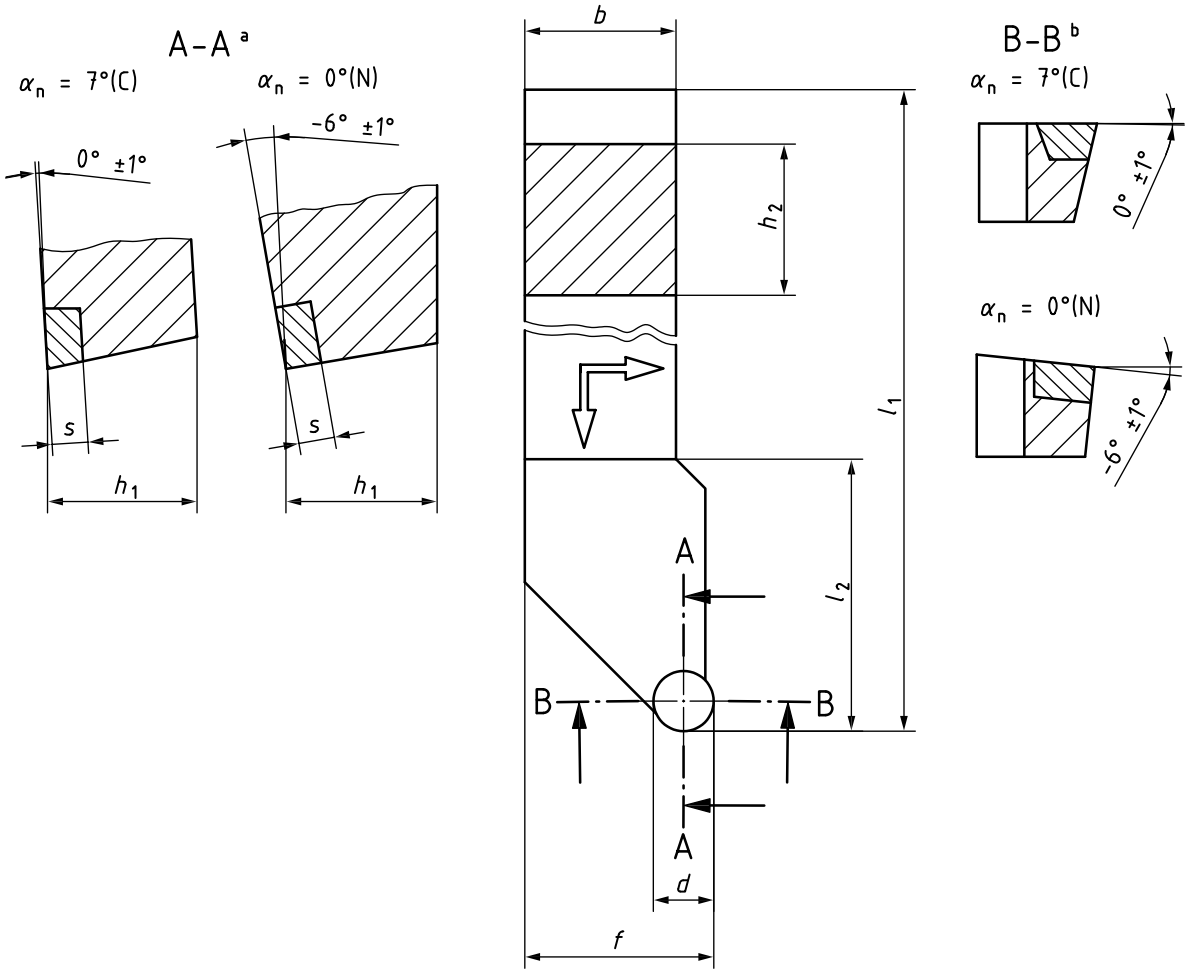
Dimensions in millimetres

Symbol[a]	h_1 js13	b h13	l_3 ≈	a	f $^{+0,5}_{0}$	h_2 h13	l_1[a] k16	l_2 max.	s[b]
PSSNR 4040 — 25	40	40	25,4	16	50	40	—	50	7,94
PSSNL 4040 — 25									
PSSNR 5050 — 25	50	50	25,4	16	60	50	—	50	7,94
PSSNL 5050 — 25									

[a] See Table 1.

[b] See Table 1.

3.4 Tool holder style S for round indexable insert shape R



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

[a] Inclination angle λ_n.

[b] Rake angle γ_n.

Figure 3 — Tool holder style S for round indexable insert — R

Table 3

Dimensions in millimetres

Symbol[a]	h_1 js13	b h13	d	f $^{+0,5}_{0}$	h_2 h13	l_1[a] k16	l_2 max.	s[b]
SRSCR 0808 — 06	8	8	6	10	8	—	25	2,38
SRSCL 0808 — 06								
SRSCR 1010 — 06	10	10	6	12	10	—	25	2,38
SRSCL 1010 — 06								
SRSCR 1010 — 08			8					3,18
SRSCL 1010 — 08								
SRSCR 1212 — 06	12	12	6	16	12	—	32	2,38
SRSCL 1212 — 06								
SRSCR 1212 — 08			8					3,18
SRSCL 1212 — 08								
SRSCR 1616 — 06	16	16	6	20	16	—	32	2,38
SRSCL 1616 — 06								
SRSCR 1616 — 08			8					3,18
SRSCL 1616 — 08								
SRSCR 1616 — 10			10					3,97
SRSCL 1616 — 10								
SRSCR 2020 — 06	20	20	6	25	20	—	36	2,38
SRSCL 2020 — 06								
SRSCR 2020 — 08			8					3,18
SRSCL 2020 — 08								
SRSCR 2020 — 10			10					3,97
SRSCL 2020 — 10								
SRSCR 2020 — 12			12					4,76
SRSCL 2020 — 12								
SRSCR 2525 — 06	25	25	6	32	25	—	40	2,38
SRSCL 2525 — 06								
SRSCR 2525 — 08			8					3,18
SRSCL 2525 — 08								
CRSNR 2525 — 09			9,52					4,76
CRSNL 2525 — 09								
SRSCR 2525 — 10			10					3,97
SRSCL 2525 — 10								
SRSCR 2525 — 12			12					4,76
SRSCL 2525 — 12								
PRSNR 2525 — 12								
PRSNL 2525 — 12								
CRSNR 2525 — 12			12,7					7,94
CRSNL 2525 — 12								
SRSCR 2525 — 16			16					5,56
SRSCL 2525 — 16								

Table 3 (*continued*)

Dimensions in millimetres

Symbol[a]	h_1 js13	b h13	d	f $^{+0,5}_{0}$	h_2 h13	l_1[a] k16	l_2 max.	s[b]
SRSCR 3225 — 12	32	25	12	32	32	—	40	4,76
SRSCL 3225 — 12								
CRSNR 3225 — 12			12,7				36	7,94
CRSNL 3225 — 12								
SRSCR 3225 — 16			16				40	5,56
SRSCL 3225 — 16								
CRSNR 3232 — 12		32	12,7				36	7,94
CRSNL 3232 — 12								
PRSNR 3232 — 19			19,05	40			40	6,35
PRSNL 3232 — 19								
CRSNR 3232 — 19							45	7,94
CRSNL 3232 — 19								
SRSCR 3232 — 20	32	32	20	40	32	—	45	6,35
SRSCL 3232 — 20								
PRSCR 3232 — 20								
PRSCL 3232 — 20								
SRSCR 4040 — 25	40	40	25	50	40	—	50	7,94
SRSCL 4040 — 25								
PRSCR 4040 — 25								
PRSCL 4040 — 25								
CRSNR 4040 — 25			25,4					9,52
CRSNL 4040 — 25								
PRSNR 4040 — 25								
PRSNL 4040 — 25								

[a] See Table 1.

[b] See Table 1.

4 Designation

A tool holder in accordance with this part of ISO 5610 shall be designated by:

a) “Tool holder”;

b) reference to this part of ISO 5610, i.e. ISO 5610-12;

c) type of mounting, in accordance with ISO 5608;

d) symbol for indexable insert shape, in accordance with ISO 5608;

e) symbol for tool style, in accordance with ISO 5608;

f) symbol for the indexable insert normal clearance, in accordance with ISO 5608;

g) symbol for hand of tool, in accordance with ISO 5608;

h) its height, h_1, width, b, and length, l_1 (symbol for tool length in accordance with ISO 5608);

i) its cutting edge length, l_3.

EXAMPLE 1 Tool holder for a screw-clamped (S) rhombic indexable insert shape C (C), tool holder style S (S), for normal clearance of indexable insert $\alpha_n = 7°$ (C), right-hand type (R), with height $h_1 = 10$ mm and width $b = 10$ mm (1010), length $l_1 = 70$ mm (E), for cutting edge length $l_3 = 6{,}4$ mm (06) is designated as follows:

Tool holder ISO 5610-12 - SCSCR 1010 E06

EXAMPLE 2 Tool holder for a horizontally mounted, bore-clamped (P) square indexable insert shape S (S), tool holder style S (S), for normal clearance of indexable insert $\alpha_n = 0°$ (N), right-hand type (R), with height $h_1 = 32$ mm and width $b = 25$ mm (3225), length $l_1 = 170$ mm (P), for cutting edge length $l_3 = 12{,}7$ mm (12) is designated as follows:

Tool holder ISO 5610-12 - PSSNR 3225 P12

EXAMPLE 3 Tool holder for countersunk screw-clamped (S) round indexable insert shape R (R), tool holder style S (S), for normal clearance of indexable insert $\alpha_n = 7°$ (C), right-hand type (R), with height $h_1 = 20$ mm and width $b = 20$ mm (2020), length $l_1 = 125$ mm (K), diameter $d = 10$ mm (10) is designated as follows:

Tool holder ISO 5610-12 - SRSCR 2020 K10

5 Material

The material should be steel with a tensile strength of at least 1 200 N/mm^2.

6 Design

6.1 Type of mounting

Standard design of tool holders with indexable insert shall be mounted in accordance with Tables 1 to 3.

Other types of mounting may be left to the manufacturer's discretion or upon agreement. The letter symbol in the designation, symbol 1, shall then be replaced by the respective symbol for the chosen or agreed-upon type of mounting in accordance with ISO 5608.

For the modified type of mounting deviating from Tables 1 to 3, the relevant indexable insert thickness shall also be considered.

6.2 Corner radius, r_ε

Tool holders in accordance with this part of ISO 5610 may be equipped with inserts with cutting edge lengths, l_3, as specified in Tables 1 and 2 and any corner radius, r_ε.

The values for a and f given in Table 1 and for l_1 in ISO 5610-1:2010, Table 2, apply to tool holders with indexable inserts having corner radii, r_ε, in accordance with Table 4.

Table 4

Dimensions in millimetres

l_3		r_ε
C	S	
6,4	—	0,4
—	9,525	0,8
—	12,7	
—	15,875	1,2
—	19,05	
—	25,4	2,4

NOTE The values given for r_ε are nominal values. The accurate values converted from the inch dimensions are 0,397 mm, 0,794 mm, 1,191 mm and 2,381 mm.

For indexable inserts with corner radii, r_ε, other than those specified in Table 4, the dimensions a, f and l_1 shall be determined in accordance with ISO 5610-1.

The tolerances on h_1, f and l_1 refer to dimensions measured with master indexable insert and master shim, if any.

6.3 Thickness, s, of indexable insert

The values for thickness, s, given in Table 1 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 shall be marked with the letter symbol and the name or trademark of the manufacturer.

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

Deviations in marking shall be upon agreement.

A reference to this part of ISO 5610, i.e. ISO 5610-12:2010, shall be given on the packaging.

Bibliography

[1] ISO 883, *Indexable hardmetal (carbide) inserts with rounded corners, without fixing hole — Dimensions*

[2] 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*

[3] ISO 3364, *Indexable hardmetal (carbide) inserts with rounded corners, with cylindrical fixing hole — Dimensions*

[4] ISO 6987, *Indexable hard material inserts with rounded corners, with partly cylindrical fixing hole — Dimensions*

[5] ISO/TS 13399-2, *Cutting tool data representation and exchange — Part 2: Reference dictionary for the cutting items*

[6] ISO/TS 13399-3, *Cutting tool data representation and exchange — Part 3: Reference dictionary for tool items*

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