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# International Standard



# 5610

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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## Single point tool holders for turning and copying, for indexable inserts — Dimensions

*Porte-plaquette de tournage et de copiage à partie active unique — Dimensions*

Second edition — 1985-09-01

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UDC 621.941.025.7

Ref. No. ISO 5610-1985 (E)

Descriptors : tools, cutting tools, lathe tools, inserts, tool holders, dimensions.

## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 5610 was prepared by Technical Committee ISO/TC 29, *Small tools*.

ISO 5610 was first published in 1981. This second edition, which cancels and replaces the first edition, incorporates draft addendum 1, "Extension to small tool holders".

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# Single point tool holders for turning and copying, for indexable inserts — Dimensions

## 1 Scope and field of application

This International Standard lays down the general dimensions of turning and copying tool holders for indexable inserts, and specifies preferred tool holders (see clause 5).

## 2 References

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

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 3364, *Indexable hardmetal (carbide) inserts with rounded corners, with cylindrical fixing hole — Dimensions.*

ISO 5608, *Turning and copying tool holders and cartridges for indexable (throwaway) inserts — Designation.*

ISO 6987/1, *Indexable hardmetal (carbide) inserts with rounded corners, with partly cylindrical fixing hole — Part 1: Dimensions of inserts with 7° normal clearance.*

## 3 Designation

3.1 The identification system for tool holders is given in ISO 5608.

3.2 For preferred tool holders according to clause 5, a dash replaces the letter symbol identifying tool length.

For tool holders of lengths other than those given in clause 5, letter symbols to be used for tool length are given in ISO 5608.

## 4 Dimensions

### 4.1 Shank (see figure 1)

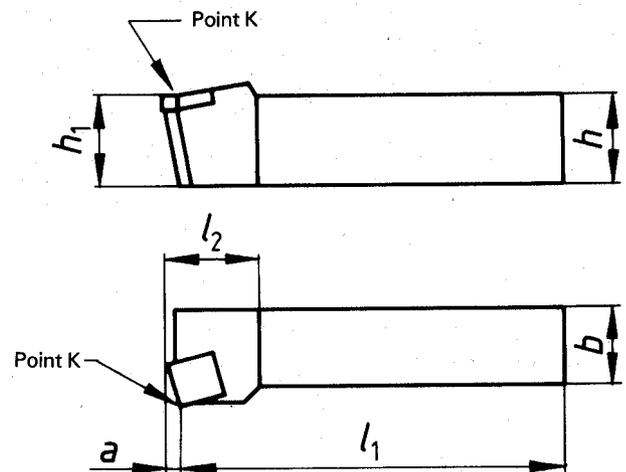


Figure 1

Dimensions in millimetres

$h$ h13		8	10	12	16	20	25	32	40	50
$b$ h13	$b = h$	8	10	12	16	20	25	32	40	50
	$b = 0,8 h$		8	10	12	16	20	25	32	40
$l_1$ k16	long tool holders	60	70	80	100	125	150	170	200	250
	short tool holders	40	50	60	70	80	100	125	150	—
$h_1$ j514		$h_1 = h$								

4.2 Head length  $l_2$  (see figure 1)

The head lengths given in the following table do not apply to tool holders with rhombic indexable inserts shapes D and V.

Dimensions in millimetres

Diameter of the inscribed circle of the insert	$l_2$ max.
6,35	25
9,525	32
12,70	36
15,875	40
19,05	45
25,40	50

4.3 Dimension  $f$  (see figures in clause 5)

Dimensions in millimetres

$b$	$f$				
	Series 1 <sup>1)</sup>	Series 2 + 0,5 0	Series 3 + 0,5 0	Series 4 + 0,5 0	Series 5 + 0,5 0
8	4	7	8,5	9	10
10	5	9	10,5	11	12
12	6	11	12,5	13	16
16	8	13	16,5	17	20
20	10	17	20,5	22	25
25	12,5	22	25,5	27	32
32	16	27	33	35	40
40	20	35	41	43	50
50	25	43	51	53	60
For tool holders style	D, N	B, T	A	R	F, G, J, K, L, S

1) Tolerance for symmetrical tool holders (shape D) :  $\pm 0,25$ .

Tolerance for non-symmetrical tool holders (shape N) :  $\begin{matrix} + 0,5 \\ 0 \end{matrix}$ .

4.4 Application of the dimensions,  $l_1$ ,  $f$  and  $h_1$

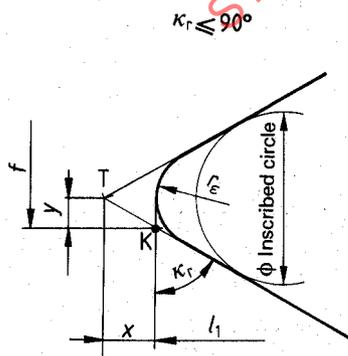


Figure 2

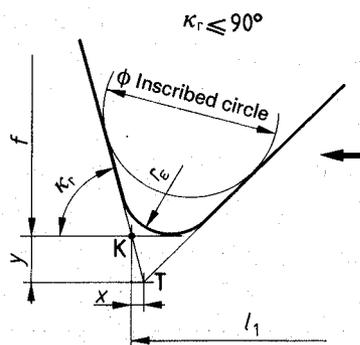


Figure 3

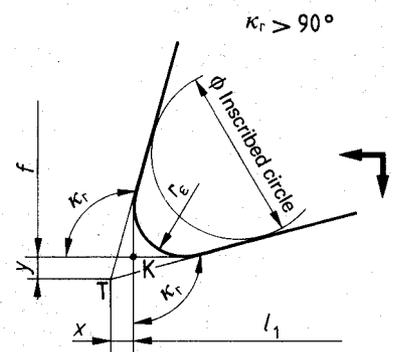


Figure 4

**4.4.1** The length dimension  $l_1$  is the distance from the specified point K (see figures 2, 3 and 4) to the end of the shank.

Dimension  $f$  is the distance between the specified point K and the rear backing surface of the tool holder, measured over a master insert.

Dimension  $h_1$  is the height to the specified point K measured over a master insert.

The values of  $l_1$  according to 4.1,  $f$  according to 4.3 and  $h_1$  according to 4.1 are given for tool holders equipped with master inserts having corner radii according to 4.4.3.

**4.4.2** The specified point K is :

- for  $\kappa_r < 90^\circ$  (figures 2 and 3), the point of intersection of the tangent to the rounded corner with the major cutting edge;
- for  $\kappa_r > 90^\circ$  (figure 4), the point of intersection of two mutually perpendicular tangents to the rounded corner.

**4.4.3** The corner radius  $r_\epsilon$  of the master inserts used for the definition of dimensions  $l_1$ ,  $f$  and  $h_1$  is a function of the diameter of the inscribed circle of the insert, as follows :

Dimensions in millimetres

Diameter of the inscribed circle	6,35	7,94	9,525	12,70	15,875	19,05	25,40
Corner radius $r_\epsilon$ (nominal)	0,4		0,8		1,2		2,4

NOTE — Dimensions  $l_1$ ,  $f$  and  $h_1$  assume corner radii  $r_\epsilon$  converted from inch values, i.e.  $r_\epsilon = 0,397 - 0,794 - 1,191$  and  $2,381$  mm.

**4.4.4** The tolerance  $\pm 0,25$  on dimension  $f$  for series 1 refers to symmetrical tool holders (style D). Therefore, deviating from the definition given in 4.4.2, values in 4.3 are given to the actual intersection of the cutting edges (theoretical corner T).

For particular tool holders, dimension  $f$  shall be given according to the definition in 4.4.2, and shall therefore be corrected to a value rounded off to 0,1 mm depending on the included angle  $\epsilon_r$ , the corner radius  $r_\epsilon$  (see 4.4.6) and the cutting edge angle  $\kappa_r$ .

**4.4.5** The tolerance  $\pm 0,25$  on dimension  $f$  for series 1 does not include the tolerance on the shank width  $b$ .

**4.4.6** Tool holders may be equipped with inserts size according to clause 5 and any corner radius  $r_\epsilon$ . For corner radii  $r_\epsilon$  other than those specified in 4.4.3, dimensions  $l_1$  and  $f$  shall be corrected by using the values  $x$  and  $y$  (see figures 2, 3 and 4), which are the distances from the specified point K to the theoretical corner T.

The new dimensions  $l_1$  and  $f$  are found from the differences between  $x$  and  $y$  corresponding to the corner radius according to 4.4.3, and  $x$  and  $y$  corresponding to the real corner radius.

5 Preferred tool holders

Dimensions in millimetres

Style		$h \times b$	08 08	10 10	12 12	16 16	20 20	25 25	32 25	32 32	40 32	40 32	40 40	50 50	
		$l_1$ k16	60	70	80	100	125	150	170	170	150	200	200	200	250
$h_1$ js14	8	10	12	16	20	25	32	32	40	40	40	40	50		
A		$f + \begin{smallmatrix} 0,5 \\ 0 \end{smallmatrix}$ (series 3)	8,5	10,5											
		$l$ (designation)	06	06											
		$l_2$ max.	25	25											
A		$f + \begin{smallmatrix} 0,5 \\ 0 \end{smallmatrix}$ (series 3)			12,5	16,5	20,5	25,5	25,5	33			41		
		$l$ (designation)			11	11	16	16	16	22			22		
		$l_2$ max.			25	25	32	32	32	36			36		
B		$f + \begin{smallmatrix} 0,5 \\ 0 \end{smallmatrix}$ (series 2)	7	9	11										
		$l$ (designation)	06	06	06										
		$l_2$ max.	25	25	25										
B		$f + \begin{smallmatrix} 0,5 \\ 0 \end{smallmatrix}$ (series 2)				13	17	22	22	27			35	43	
		$l$ (designation)				09	12	12	12	19			19	25	
		$l_2$ max.				32	36	36	36	45			45	50	
D		$f \pm 0,25$ (series 1)			6	8	10	12,5	12,5	16					
		$l$ (designation)			09	09	12	12	12	19					
		$l_2$ max.			32	32	36	36	36	45					
F		$f + \begin{smallmatrix} 0,5 \\ 0 \end{smallmatrix}$ (series 5)	10	12											
		$l$ (designation)	06	06											
		$l_2$ max.	25	25											
F		$f + \begin{smallmatrix} 0,5 \\ 0 \end{smallmatrix}$ (series 5)			16	20	25	32	32	40			50		
		$l$ (designation)			11	11/16	16	16/22	16/22	22			22/27		
		$l_2$ max.			25	25/32	32	32/36	32/36	36			36/40		

NOTE — Dimension  $a$  refers to tool holders having rake  $\gamma_0 = 0^\circ$ , cutting edge inclination  $\lambda_s = 0^\circ$  and master inserts with corner radii  $r_e$  according to 4.4.3. For the rake  $\gamma_0$  and cutting edge inclination  $\lambda_s$  varying between  $\pm 6^\circ$ , variations of  $a$  are less than 0,1 mm and thus negligible.