INTERNATIONAL STANDARD

ISO 5610

Third edition
1989-08-15

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

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

Reference number
ISO 5610 : 1989 (E)

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.

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*.

This third edition cancels and replaces the second edition (ISO 5610 : 1985), subclause 3.3 and clause 4 of which have been technically revised (addition of tool holders style H).

Annex A of this International Standard is for information only.

International Organization for Standardization
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Single-point tool holders for turning and copying, for indexable inserts — Dimensions

1 Scope

This International Standard specifies the general dimensions of turning and copying single-point tool holders for indexable inserts, and specifies preferred tool holders (see clause 4).

2 Remarks

The designation of turning and copying tool holders is dealt with in ISO 5608; however, it should be noted that for preferred tool holders in accordance with clause 4, a dash replaces the letter symbol identifying tool length.

3 Dimensions

3.1 Shank

See figure 1 and table 1.

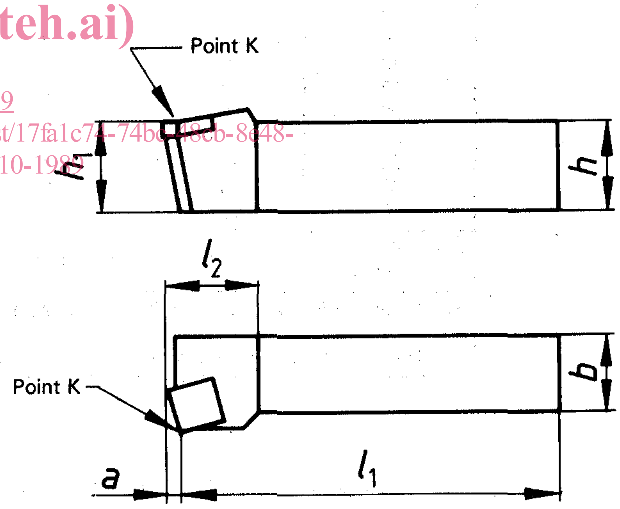


Figure 1

Table 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 js14		$h_1 = h$								

3.2 Head length l_2

See figure 1 and table 2.

The head lengths given in table 2 do not apply to tool holders with rhombic indexable inserts shapes D and V (see ISO 5608).

Table 2

Dimensions in millimetres

Diameter of the inscribed circle of the insert	l_2 max.
6,35	25
9,525	32
12,7	36
15,875	40
19,05	45
25,4	50

3.3 Dimension f

See the figures in clause 4 and table 3.

Table 3

Dimensions in millimetres

b	f				
	Series 1[1]	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, H, J, K, L, S

1) Tolerance for symmetrical tool holders (style D) : ± 0,25

Tolerance for non-symmetrical tool holders (style N) : $^{+0,5}_{0}$

3.4 Identification of dimensions l_1, f and h_1

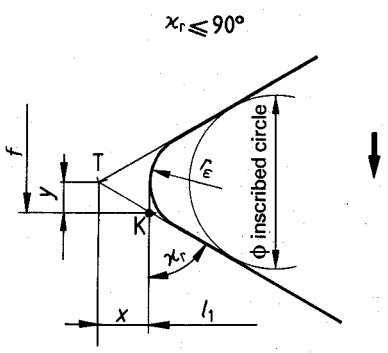


Figure 2

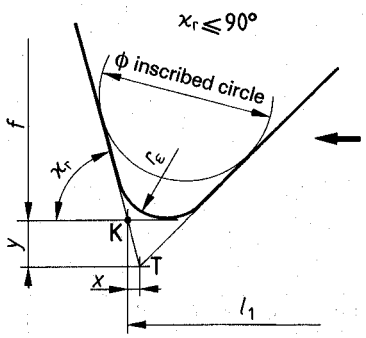


Figure 3

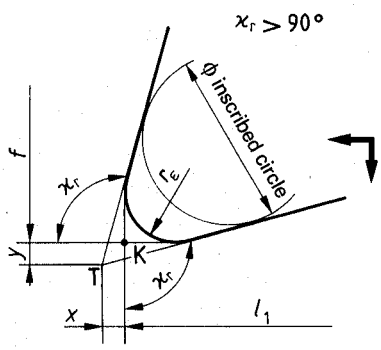


Figure 4

3.4.1 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 as specified in 3.1, f as specified in 3.3 and h_1 as specified in 3.1 are given for tool holders equipped with master inserts having corner radii in accordance with 3.4.3.

3.4.2 The specified point K is defined as follows :

a) for $\kappa_r \leqslant 90°$ (see figures 2 and 3), the point of intersection of the tangent to the rounded corner with the prolongation of the major cutting edge;

b) for $\kappa_r > 90°$ (see figure 4), the point of intersection of two mutually perpendicular tangents to the rounded corner.

3.4.3 The corner radius r_ϵ 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 indicated in table 4.

Table 4

Dimensions in millimetres

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

NOTE — Dimensions l_1, f and h_1 are based on corner radii r_ϵ converted from inch values, i.e. r_ϵ = 0,397 mm, 0,794 mm, 1,191 mm and 2,381 mm.

3.4.4 The tolerance ± 0,25 on dimension f for series 1 refers to symmetrical tool holders (style D). Therefore, deviating from the definition given in 3.4.2, the values in table 3 are given in relation to the actual intersection of the cutting edges (theoretical corner T).

For particular tool holders, dimension f shall be given in accordance with the definition in 3.4.2, and shall therefore be corrected to a value rounded off to 0,1 mm depending on the included angle ϵ_r, the corner radius r_ϵ (see 3.4.6) and the cutting edge angle κ_r.

3.4.5 The tolerance ± 0,25 on dimension f for series 1 does not include the tolerance on the shank width b.

3.4.6 Tool holders may be equipped with inserts of size in accordance with clause 4 and any corner radius r_ϵ.

For corner radii r_ϵ other than those specified in 3.4.3, 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.

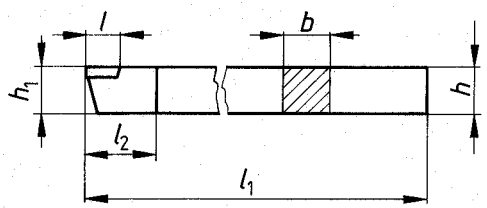
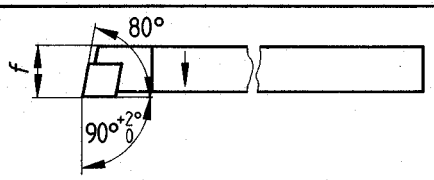
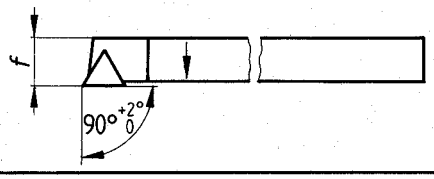
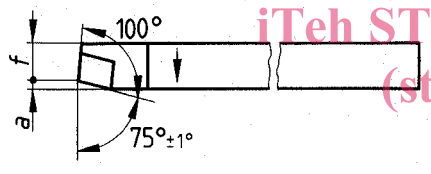
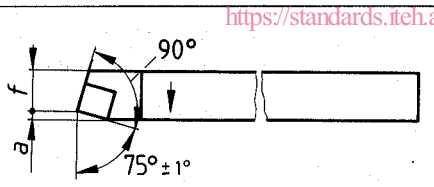
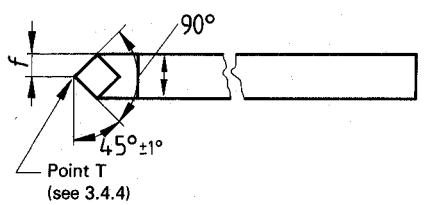
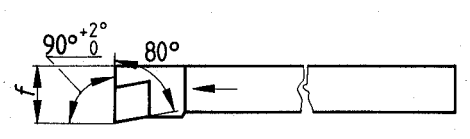
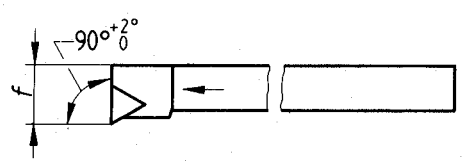
The new dimensions l_1 and f are found from the differences between x and y corresponding to the corner radius according to 3.4.3, and x and y corresponding to the real corner radius.

4 Preferred tool holders

See table 5.

Table 5

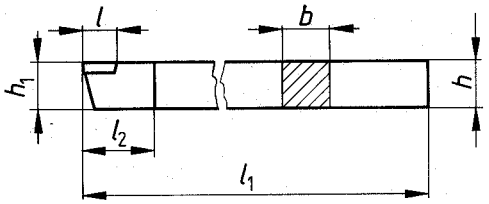
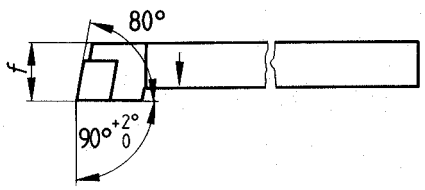
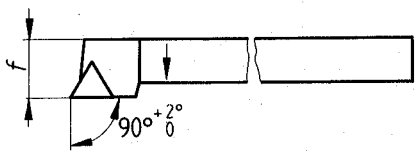
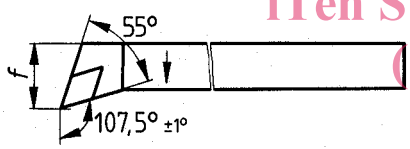
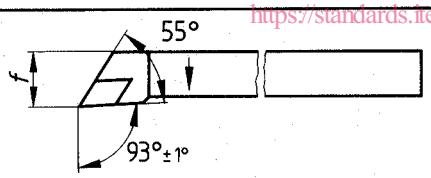
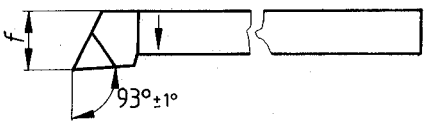
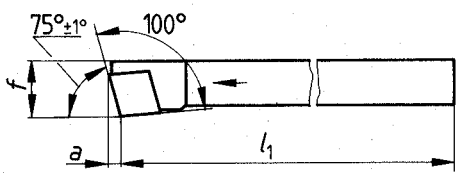
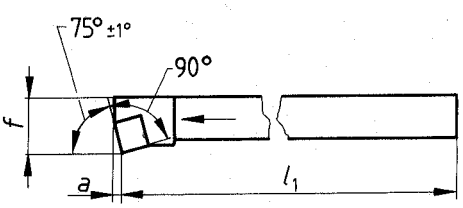
Dimensions in millimetres

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	250
		h_1 js14	8	10	12	16	20	25	32	32	40	40	40	50
A		$f^{+0,5}_{0}$ (series 3)	8,5	10,5										
		l (designation)	06	06										
		l_2 max.	25	25										
		$f^{+0,5}_{0}$ (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		$f^{+0,5}_{0}$ (series 2)	7	9	11									
		l (designation)	06	06	06									
		l_2 max.	25	25	25									
		a	1,6	1,6	1,6									
		$f^{+0,5}_{0}$ (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
		a				2,2	3,1	3,1	3,1	4,6			4,6	5,9
D	 Point T (see 3.4.4)	$f \pm 0,25$ (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		$f^{+0,5}_{0}$ (series 5)	10	12										
		l (designation)	06	06										
		l_2 max.	25	25										
		$f^{+0,5}_{0}$ (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 $\gamma_o = 0°$, cutting edge inclination $\lambda_s = 0°$ and master inserts with corner radii r_ϵ in accordance with 3.4.3. For the rake γ_o and cutting edge inclination λ_s varying between $\pm$ 6°, variations in a are less than 0,1 mm and are thus negligible.

Table 5 (*continued*)

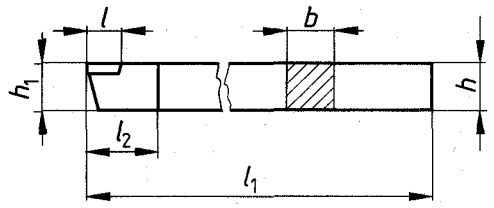
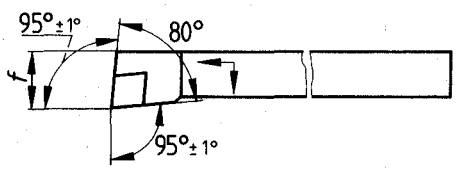
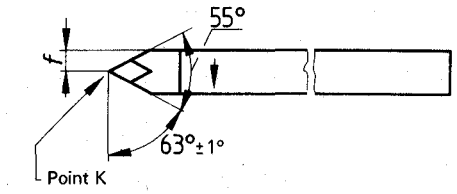
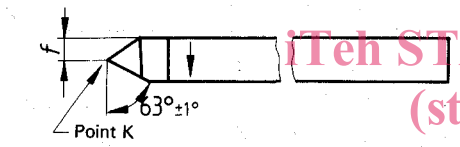
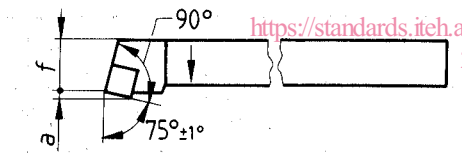
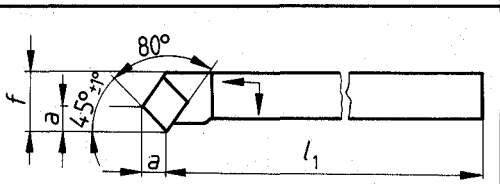
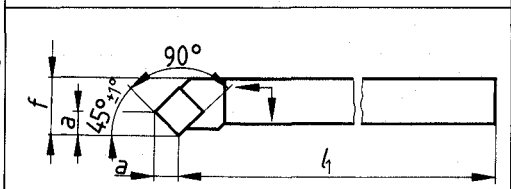
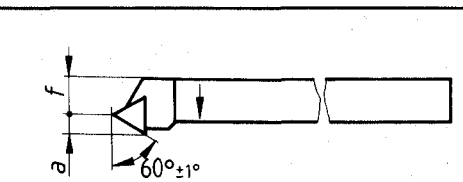
Dimensions in millimetres

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	250
			h_1 js14	8	10	12	16	20	25	32	32	40	40	40	50
G			$f\ ^{+0,5}_{0}$ (series 5)	10	12										
			l (designation)	06	06										
			l_2 max.	25	25										
			$f\ ^{+0,5}_{0}$ (series 5)			16	20	25	32	32	40			50	60
			l (designation)			11	11/16	16	16/22	16/22	22			22/27	27
			l_2 max.			25	25/32	32	32/36	32/36	36			36/40	40
H			$f\ ^{+0,5}_{0}$ (series 5)		12	16	20	25	32	32					
			l (designation)		07	07/11	11	11/15	15	15					
			l_2 max.		25	25/32	32	32/40	40	40					
J			$f\ ^{+0,5}_{0}$ (series 5)	10	12	16	20	25	32	32			40		
			l (designation)	07	07	11	11	15	15	15			15		
			l_2 max.	25	25	32	32	40	40	40			40		
			$f\ ^{+0,5}_{0}$ (series 5)					25	32	32			40		
			l (designation)					16	16/22	16/22			22/27		
			l_2 max.					32	32/36	32/36			36/40		
K			$f\ ^{+0,5}_{0}$ (series 5)	10	12										
			l (designation)	06	06										
			l_2 max.	25	25										
			a	1,6	1,6										
			$f\ ^{+0,5}_{0}$ (series 5)			16	20	25	32	32	40			50	
			l (designation)			09	09/12	12	12/19	12/19	19			19/25	
			l_2 max.			32	32/36	36	36/45	36/45	45			45/50	
			a			2,2	2,2/3,1	3,1	3,1/4,6	3,1/4,6	4,6			4,6/5,9	

NOTE — Dimension a refers to tool holders having rake $\gamma_o = 0°$, cutting edge inclination $\lambda_s = 0°$ and master inserts with corner radii r_ϵ in accordance with 3.4.3. For the rake γ_o and cutting edge inclination λ_s varying between ± 6°, variations in a are less than 0,1 mm and are thus negligible.

Table 5 (*concluded*)

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	250
		h_1 js14	8	10	12	16	20	25	32	32	40	40	40	50
L		$f\ ^{+0,5}_{0}$ (series 5)	10	12	16	20	25	32	32	40			50	
		l (designation)	06	06	09	09/12	12	12/19	12/19	19			19	
		l_2 max.	25	25	32	32/36	36	36/45	36/45	45			45	
N		$f\ ^{+0,5}_{0}$ (series 1)	4	5	6	8	10	12,5	12,5		16			
		l (designation)	07	07	11	11	11/15	15	15		15			
		l_2 max.	25	25	32	32	32/36	45	45		45			
		$f\ ^{+0,5}_{0}$ (series 1)						12,5	12,5		16			
		l (designation)						16/22	16/22		16/22			
		l_2 max.						32/36	32/36		32/36			
R		$f\ ^{+0,5}_{0}$ (series 4)			13	17	22	27	27	35			43	53
		l (designation)			09	09/12	12	12/19	12/19	19			19/25	25
		l_2 max.			32	32/36	36	36/45	36/45	45			45/50	50
		a			2,2	2,2/3,1	3,1	3,1/4,6	3,1/4,6	4,6			4,6/5,9	5,9
S		$f\ ^{+0,5}_{0}$ (series 5)	10	12										
		l (designation)	06	06										
		l_2 max.	25	25										
		a	4,2	4,2										
		$f\ ^{+0,5}_{0}$ (series 5)			16	20	25	32	32	40			50	60
		l (designation)			09	09/12	12	12/19	12/19	19			19/25	25
		l_2 max.			32	32/36	36	36/45	36/45	45			45/50	50
		a			6,1	6,1/8,3	8,3	8,3/12,5	8,3/12,5	12,5			12,5/16	16
T		$f\ ^{+0,5}_{0}$ (series 2)			11	13	17	22	22	27			35	
		l (designation)			11	11	16	16	16	22			27	
		l_2 max.			25	25	32	32	32	36			40	
		a			5	5	7,2	7,2	7,2	10			12,2	

NOTE — Dimension a refers to tool holders having rake $\gamma_o = 0°$, cutting edge inclination $\lambda_s = 0°$ and master inserts with corner radii r_ϵ in accordance with 3.4.3. For the rake γ_o and cutting edge inclination λ_s varying between ± 6°, variations in a are less than 0,1 mm and are thus negligible.

Annex A
(informative)

Bibliography

[1] ISO 883 : 1985, *Indexable hardmetal (carbide) inserts with rounded corners, without fixing hole — Dimensions.*

[2] ISO 3002-1 : 1982, *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 : 1985, *Indexable hardmetal (carbide) inserts with rounded corners, with cylindrical fixing hole — Dimensions.*

[4] ISO 5608 : 1988, *Turning and copying tool holders and cartridges for indexable inserts — Designation.*

[5] ISO 6987-1 : 1983, *Indexable hardmetal (carbide) inserts with rounded corners, with partly cylindrical fixing hole — Part 1: Dimensions of inserts with 7° normal clearance.*