TC 29

INTERNATIONAL STANDARD

ISO 5611

Second edition
1989-08-15

Cartridges, type A, for indexable inserts — Dimensions

Cartouches du type A, à plaquettes amovibles — Dimensions

Reference number
ISO 5611 : 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 5611 was prepared by Technical Committee ISO/TC 29, *Small tools.*

This second edition cancels and replaces the first edition (ISO 5611 : 1981) and ISO 5611 : 1981/Add.1 : 1986, of which it constitutes a technical revision (addition of cartridges with $h_1 = 6$ mm).

Annex A of this International Standard is for information only.

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Cartridges, type A, for indexable inserts — Dimensions

1 Scope

This International Standard specifies the general dimensions of type A cartridges for indexable inserts, and specifies preferred cartridges (see clauses 4 and 5).

2 Remarks

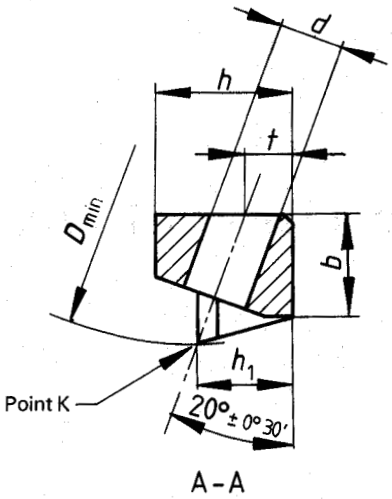
The designation of cartridges is dealt with in ISO 5608; however, for cartridges, type A, the symbol CA shall be applied in reference (7) of the code of symbolization, and for cartridges with lengths in accordance with this International Standard, the letter symbol identifying tool length is replaced by a dash.

3 Dimensions

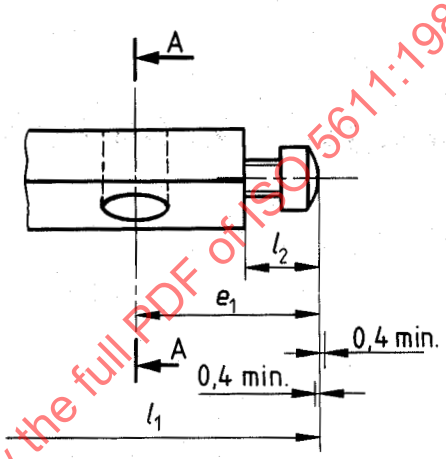
3.1 Shank

The dimensions, in millimetres, given in figure 1 and table 1 apply to shanks of all cartridge styles:

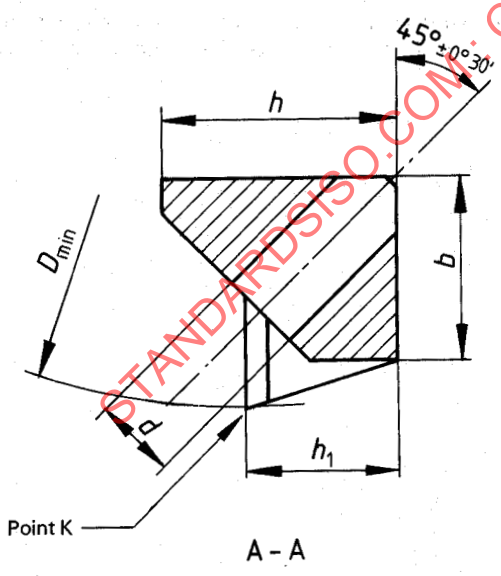
— for cartridges having h_1 = 6[1], 8[2], 10 and 12



— for cartridges having h_1 = 6[1], 8[2], 10, 12, 16 and 20



— for cartridges having h_1 = 16, 20 and 25



— for cartridges having h_1 = 25

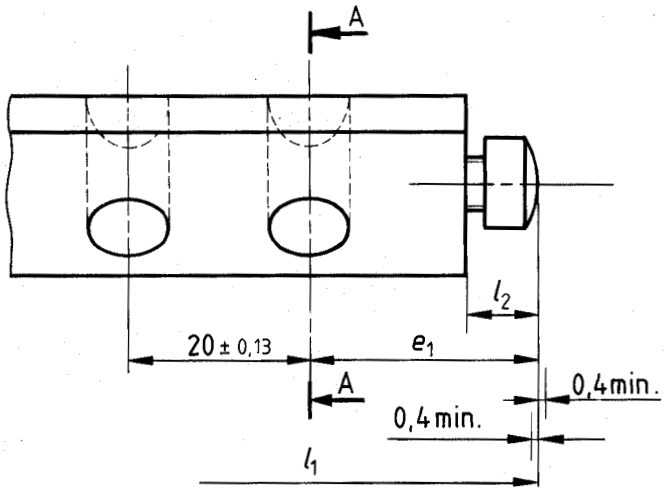


Figure 1

1) Cartridges designed mainly for indexable inserts in accordance with ISO 6987-2.

2) Cartridges designed mainly for indexable inserts in accordance with ISO 6987-1.

Table 1

h_1 ± 0,08	h max.	b max.	e_1	l_2	t ± 0,13	d	Fastening screw
6	8,5	6	12	4,5	3,5	$4^{+0,5}_{0}$	M3,5
8	11	8	17	6	4,5	4,5	M4
10	15	11	20	8	5	7	M6
12	20	16	20	8	6	7	M6
16	25	20	25	8	0	9	M8
20	30	20	30	10	0	9	M8
25	35	25	30	10	0	11	M10

3.2 Identification of dimensions l_1, f and h_1

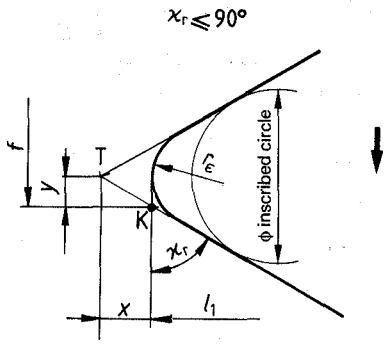


Figure 2

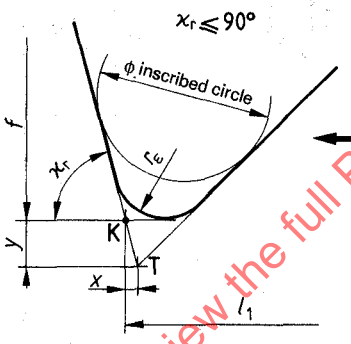


Figure 3

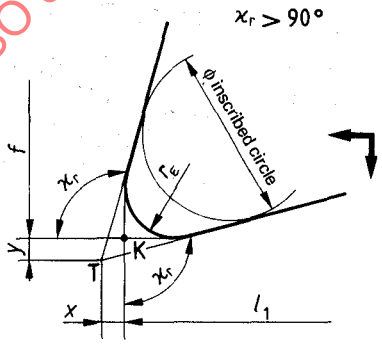


Figure 4

3.2.1 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, including the adjusting screw length l_2 in its mid position.

Dimension f is the distance between the specified point K and the rear backing surface of the cartridge, 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, f and h_1, as specified in clause 5, are given for cartridges equipped with master inserts having corner radii in accordance with 3.2.3.

3.2.2 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.

3.2.3 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 2.

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, and 1,191 mm.

3.2.4 Cartridges may be equipped with inserts of size in accordance with clause 5 and any corner radius r_ε.

For corner radii r_ε other than those specified in 3.2.3, 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, as defined in 3.2.2, to the theoretical corner T.

Table 2

Dimensions in millimetres

Diameter of the inscribed circle	4,76	5,56	6,35	7,94	9,525	12,7	15,875	19,05
Corner radius r_ε (nominal)	0,4				0,8		1,2	

The new dimensions l_1 and f are found from the differences between x and y corresponding to the corner radius according to 3.2.3, and x and y corresponding to the real corner radius.

4 Preferred cartridge styles

4.1 Cartridge styles established by this International Standard are the styles shown in figures 5 to 16. In these figures, right-hand cartridges are shown; left-hand cartridges are symmetrical in their layout.

4.2 The length adjusting screw, as well as the transverse adjusting screw, are at the manufacturer's option; however, dimensions f and l_1 specified in clause 5 shall be respected.

4.3 Cartridges are classified into four families in respect of the working major direction and the corner defined. This allows interchangeability of cartridges within a family.

FAMILY 1

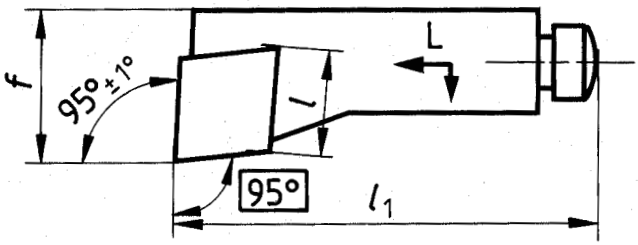


Figure 5

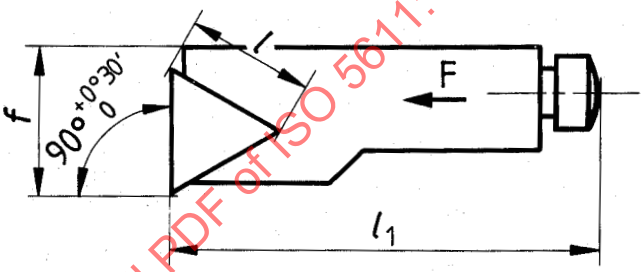


Figure 6

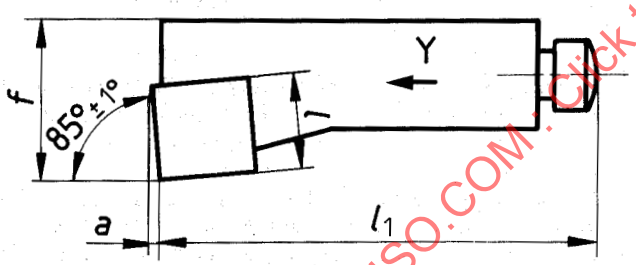


Figure 7

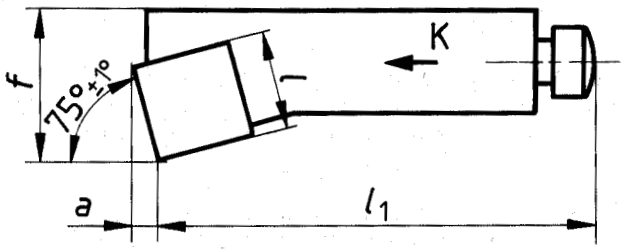


Figure 8

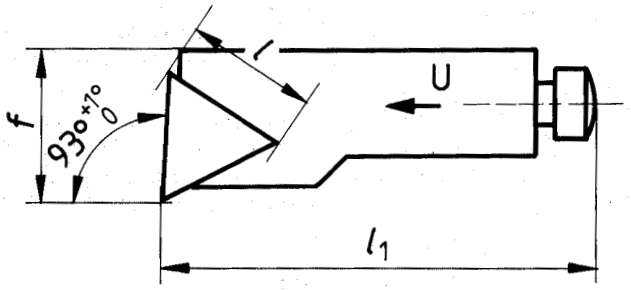


Figure 9

FAMILY 2

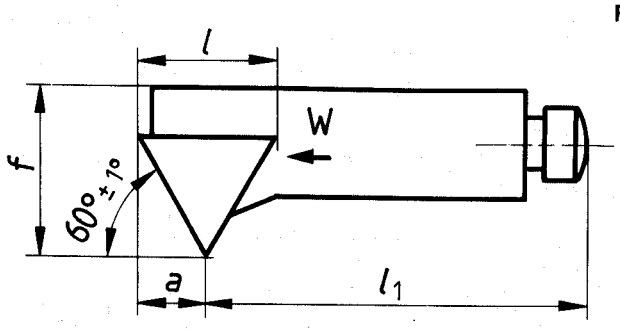


Figure 10

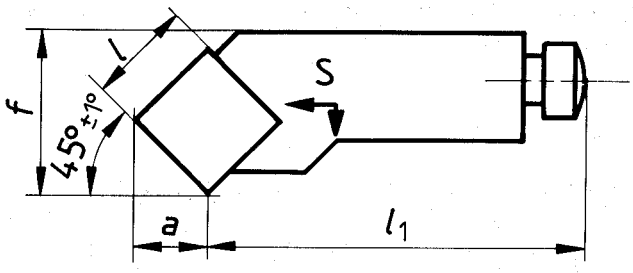


Figure 11

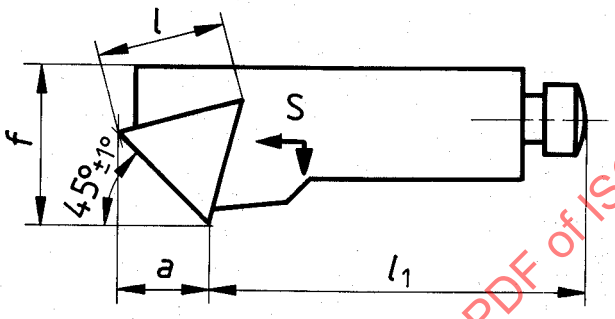


Figure 12

FAMILY 3

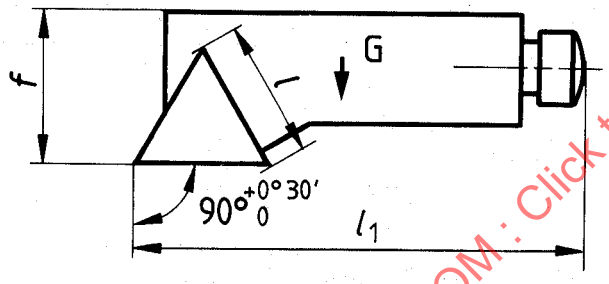


Figure 13

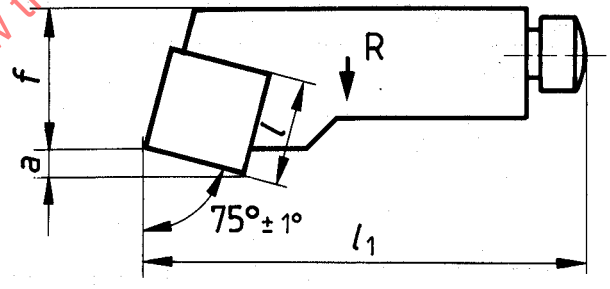


Figure 14

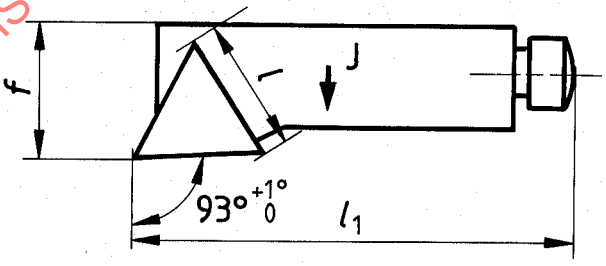


Figure 15

FAMILY 4

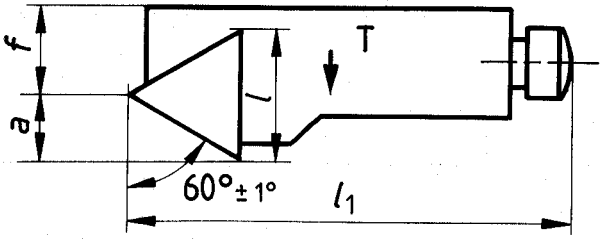


Figure 16

5 General dimensions

See figures 1 and 5 to 16, and tables 3 and 4.

Table 3

Dimensions in millimetres

h_1 ± 0,08	Insert (designation) — Insert shape T △ / S □ / C ▱ — for cartridge style					$f\ ^{0}_{-0,08}$ for cartridge style		l_1 for cartridge style		D (minimum diameter of bore)
	F, G, J, S, T, U, W	K, R, S, Y	L	F, G, K, R, S, T, W, Y	J, U	F, G, J, K, L, R, S, U, W, Y	T	F, G, J, K, L, R, T, U, Y	S, W	
6	—	—	CP..04T1.. CP..0502..	CP..04T1.. CP..0502..	CP..04T1.. CP..0502..	8	5,5	25	21	20
8	09	—	06	06	—	10	6	32	28	25
10	11	09	09	—	—	14	9	50	44	40
12	11	09	09	—	—	20	13	55	47	50
	16	12	12							
16	16	12	12	—	—	25	15	63	53	60
	22	15								
20	22	15	12	—	—	25	15	70	60	70
			16							
25	27	19	19	—	—	32	20	100	87	100

Table 4

Dimensions in millimetres

h_1	Dimension a (see figures 7, 8, 10, 11, 12, 14, 16) for cartridge style					
	K, R	S with insert shape T △	S with insert shape S □	S with insert shape C ▱	T, W	Y
6	1,1[1]	—	—	3,1[1]	2,2[1]	0,4[1]
	1,3[2]	—	—	3,7[2]	2,6[2]	0,4[2]
8	1,6	6,1	—	4,3	4,3[3]; 3[4]	0,6
10	2,2	7	6,1	—	5	0,8
12	2,2	7	6,1	—	5	0,8
	3,1	10,2	8,3	—	7,2	1
16	3,1	10,2	8,3	—	7,2	1
	3,8	14,1	10,2	—	10	1,3
20	3,8	14,1	10,2	—	10	1,3
25	4,6	17,2	12,5	—	12,2	1,6

1) For insert CP..04T1..
2) For insert CP..0502..
3) With insert shape T △
4) With insert shape C ▱

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.*

[6] ISO 6987-2 : —[1], *Indexable hardmetal (carbide) inserts with rounded corners, with partly cylindrical fixing hole — Part 2 : Dimensions of inserts with 11° normal clearance.*

1) To be published.