
**Cartridges, type A, for indexable
inserts —**

**Part 1:
General survey, correlation and
determination of dimensions**

iTeh STANDARD PREVIEW
Cartouches du type A, à plaquettes amovibles —
(standards.iteh.ai) Partie 1: Vue d'ensemble, corrélation et détermination des dimensions

ISO 5611-1:2015

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 29, *Small tools*, Subcommittee SC 9, *Tools with defined cutting edges, cutting items*.

This first edition of ISO 5611-1, together with ISO 5611-2, ISO 5611-3, ISO 5611-4, ISO 5611-5, ISO 5611-6, ISO 5611-7, ISO 5611-8, ISO 5611-9, ISO 5611-10, ISO 5611-11, and ISO 5611-12, cancels and replaces ISO 5611:1995, which has been technically revised.

ISO 5611 consists of the following parts, under the general title *Cartridges, type A, for indexable inserts*:

- *Part 1: General survey, correlation and determination of dimensions*
- *Part 2: Style F*
- *Part 3: Style G*
- *Part 4: Style J*
- *Part 5: Style K*
- *Part 6: Style L*
- *Part 7: Style R*
- *Part 8: Style S*
- *Part 9: Style T*
- *Part 10: Style U*
- *Part 11: Style W*
- *Part 12: Style Y*

Cartridges, type A, for indexable inserts —

Part 1:

General survey, correlation and determination of dimensions

1 Scope

This part of ISO 5611 is general and is completed by ISO 5611-2 to ISO 5611-12. ISO 5611 applied for cartridges, type A, for indexable inserts and gives their styles in relation to their dimensions in accordance with ISO 5611-2 to ISO 5611-12. These cartridges are primarily intended for indexable inserts made of hard metal, ceramic or other cutting materials to be used for turning operations.

These kinds of cartridges are mainly clamped with one or two screws on the cartridges.

Explanation of the designation code according to ISO 5608.

2 Normative references

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

- ISO 5611-2¹⁾, *Cartridges, type A, for indexable inserts — Part 2: Style F*
ISO 5611-3¹⁾, *Cartridges, type A, for indexable inserts — Part 3: Style G*
ISO 5611-4¹⁾, *Cartridges, type A, for indexable inserts — Part 4: Style J*
ISO 5611-5¹⁾, *Cartridges, type A, for indexable inserts — Part 5: Style K*
ISO 5611-6¹⁾, *Cartridges, type A, for indexable inserts — Part 6: Style L*
ISO 5611-7¹⁾, *Cartridges, type A, for indexable inserts — Part 7: Style R*
ISO 5611-8¹⁾, *Cartridges, type A, for indexable inserts — Part 8: Style S*
ISO 5611-9¹⁾, *Cartridges, type A, for indexable inserts — Part 9: Style T*
ISO 5611-10¹⁾, *Cartridges, type A, for indexable inserts — Part 10: Style U*
ISO 5611-11¹⁾, *Cartridges, type A, for indexable inserts — Part 11: Style W*
ISO 5611-12¹⁾, *Cartridges, type A, for indexable inserts — Part 12: Style Y*

3 Survey

[Table 1](#) contains the survey of cartridges, type A, for indexable inserts which are standardized in ISO 5611-2 to ISO 5611-12 their corresponding letter symbols and the height h_1 of the cutting edge. The arrows in the figures show the primary direction of feed.

1) To be published.

Table 1 — Survey of cartridges, type A

Dimensions in millimetres

| Style | Sketch | Height of the cutting edge | | | | | | | Dimensions in ISO |
|-------|--------|----------------------------|---|----|----|----|----|----|-------------------|
| | | h_1 | | | | | | | |
| | | 6 | 8 | 10 | 12 | 16 | 20 | 25 | |
| F | | • | • | | | | | | ISO 5611-2 |
| | | | • | • | • | • | • | • | |
| G | | • | • | | | | | | ISO 5611-3 |
| | | | • | • | • | • | • | • | |
| J | | | • | | | | | | ISO 5611-4 |
| | | | • | • | • | • | • | • | |
| K | | • | • | | | | | | ISO 5611-5 |
| | | | | • | • | • | • | • | |
| L | | • | • | • | • | • | • | • | ISO 5611-6 |

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^a It is left to the manufacturer's discretion or by agreement with edge angle $\epsilon_r = 80^\circ$ instead 100° .
 • = Standardized dimensions.
 blank = Not standardized.

Table 1 (continued)

| Style | Sketch | Height of the cutting edge | | | | | | | Dimensions in ISO |
|-------|--------|----------------------------|----|----|----|----|----|----|-------------------|
| | | 6 | 8 | 10 | 12 | 16 | 20 | 25 | |
| R | | •a | •a | | | | | | ISO 5611-7 |
| | | | | • | • | • | • | • | |
| S | | •a | • | | | | | | ISO 5611-8 |
| | | | | • | • | • | • | • | |
| | | | | • | • | • | • | • | |
| T | | | | | | | | | ISO 5611-9 |
| | | | • | • | • | • | • | • | |
| U | | | • | • | • | • | • | • | ISO 5611-10 |
| W | | • | • | | | | | | ISO 5611-11 |
| | | | • | • | • | • | • | • | |
| Y | | • | • | | | | | | ISO 5611-12 |
| | | | | • | • | • | • | • | |

^a It is left to the manufacturer's discretion or by agreement with edge angle $\epsilon_r = 80^\circ$ instead of 100° .

• = Standardized dimensions.

blank = Not standardized.

4 Correlation of dimensions

4.1 Length l_1 and dimension f

Table 2 contains the correlation between the length l_1 and the dimension f to their relevant height h_1 of the cutting edge and style of the cartridges, see also Figure 1.

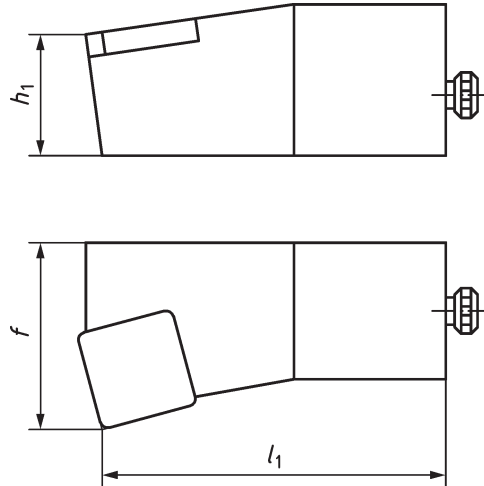


Figure 1 — Cartridge style K

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Table 2 — Correlation of dimensions

Dimensions in millimetres

| h_1 | for cartridge style | | for cartridge style | |
|------------|---------------------------|------|------------------------------|-----|
| | F, G, J, K, L, R, T, U, Y | W, S | F, G, J, K, L, R, S, U, W, Y | T |
| $\pm 0,08$ | | | | |
| 6 | 25 | 21 | 8 | 5,5 |
| 8 | 32 | 28 | 10 | 6 |
| 10 | 50 | 44 | 14 | 9 |
| 12 | 55 | 47 | 20 | 13 |
| 16 | 63 | 53 | 25 | 15 |
| 20 | 70 | 60 | | |
| 25 | 100 | 87 | 32 | 20 |

4.2 Smallest possible internal diameter for operating

Table 3 contains the smallest possible internal diameter $d_{1 \text{ min}}$ for operating in relation with the relevant cartridge size h_1 , see also Figures 4 and 5.

Table 3 — Smallest possible internal diameter for operating

Dimensions in millimetres

| $h_1 \pm 0,08$ | 6 | 8 | 10 | 12 | 16 | 20 | 25 |
|--------------------|----|----|----|----|----|----|-----|
| $d_1 \text{ min.}$ | 20 | 25 | 40 | 50 | 60 | 70 | 100 |

4.3 Correlation of the shank dimension and fastening of the shank

Table 4 contains the correlation between the shank dimensions and the bore diameter for fastening the shank and their relevant height h_1 of the cutting edge, see Figures 2, 3, 4 and 5.

Dimension l_3 applies to the adjusting screw in its mid-position, which is the reference point of the length l_1 , see 5.3. From this position, a minimum adjusting length of 0,4 mm shall be given in both directions.

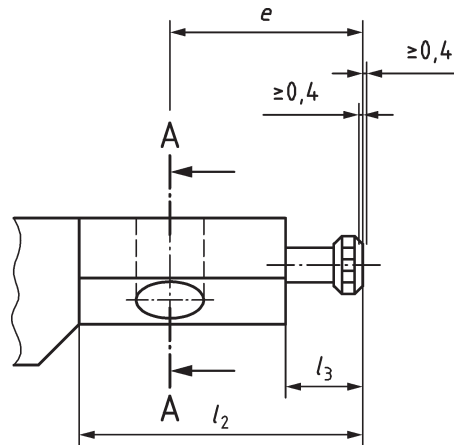


Figure 2 — Shank having $h_1 = 6 \text{ mm}, 8 \text{ mm}, 10 \text{ mm}, 12 \text{ mm}, 16 \text{ mm}$ and 20 mm

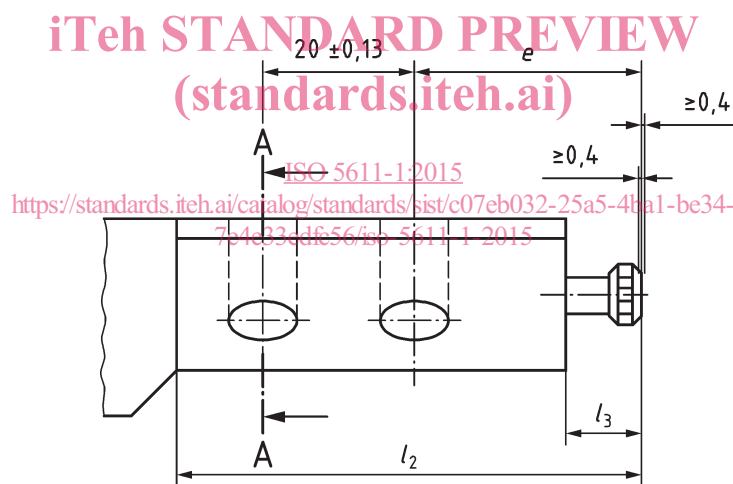


Figure 3 — Shank having $h_1 = 25 \text{ mm}$

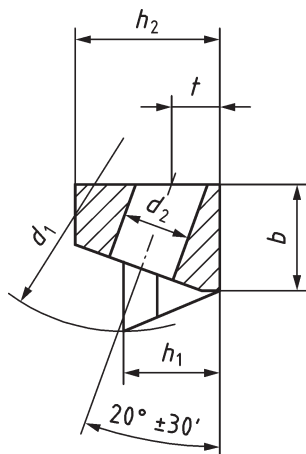


Figure 4 — Sectional drawing A-A for cartridges having $h_1 = 6 \text{ mm}, 8 \text{ mm}, 10 \text{ mm}$ or 12 mm

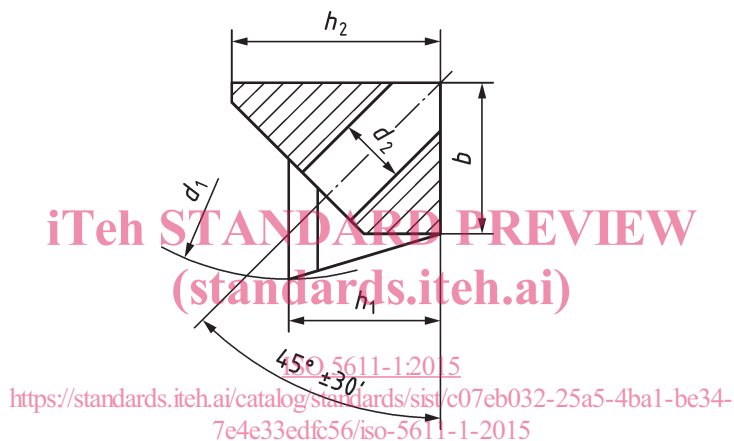


Figure 5 — Sectional drawing A-A for cartridges having $h_1 = 16 \text{ mm}, 20 \text{ mm}$ or 25 mm

Table 4 — Correlation of the shank dimension and fastening of the shank

Dimensions in millimetres

| h_1 | b | d_2^a | e | h_2 | l_2 | l_3 | t | Fastening screw |
|------------|-----------|---------|-----|-----------|-------|-------|------------|-----------------|
| $\pm 0,08$ | 0 -0,2 | H13 | | 0 -0,2 | min. | | $\pm 0,13$ | |
| 6 | 6 | 4 | 12 | 8,5 | 16 | 4,5 | 3,5 | M3,5 |
| 8 | 8 | 4,5 | 17 | 11 | 21,5 | 6 | 4,5 | M4 |
| 10 | 11 | 7 | 20 | 15 | 26 | 8 | 5 | M6 |
| 12 | 16 | | | 20 | | | 6 | |
| 16 | 20 | 9 | 25 | 25 | 32,5 | 10 | — | M8 |
| 20 | 20 | 9 | 30 | 30 | 37,5 | | — | M8 |
| 25 | 25 | 11 | | 35 | 59 | | — | M10 |

^a The hole for fastening screws can be designed also as slotted hole at the manufacturer's option.

5 Determination of dimensions

5.1 Cutting edge corners

5.1.1 Cutting edge corner K

The specified point K is defined as follows:

Consider plane P_f (assumed working plane) and P_s (tool cutting edge plane) according to ISO 3002-1 for a selected point on the major cutting edge (for example point of tangency of major cutting edge with inscribed circle).

- For $\kappa_r \leq 90^\circ$, point K is defined as the intersection of plane P_s , a plane parallel to plane P_f tangent to the corner radius and a plane containing the tool face A_γ (see Figures 6 and 7).
- For $\kappa_r > 90^\circ$, point K is defined as the intersection of a plane parallel to plane P_f tangent to the corner radius, a plane perpendicular to plane P_f tangent to the corner radius and a plane containing the tool face A_γ (see Figures 8 and 9).

NOTE The position of the cutting edge corner K is dependent from the corner radius r_ϵ of the indexable insert.

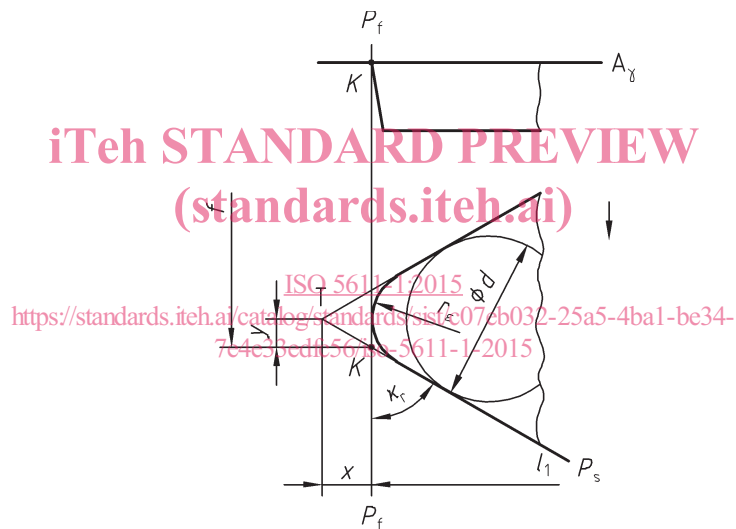


Figure 6 — Cutting edge angle $\kappa_r \leq 90^\circ$, with transverse feed

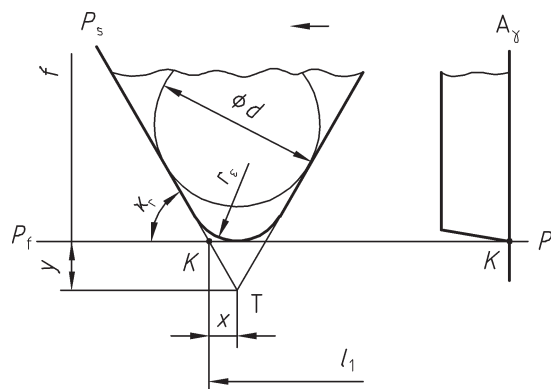


Figure 7 — Cutting edge angle $\kappa_r \leq 90^\circ$, with longitudinal feed