

International Standard



6987/1

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

*Plaquettes amovibles en métaux-durs (carbures métalliques) avec arrondi de pointe et trou de fixation partiellement cylindrique —
Partie 1: Dimensions des plaquettes à dépouille normale 7°*

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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 developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been authorized 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.

International Standard ISO 6987/1 was developed by Technical Committee ISO/TC 29, *Small tools*, and was circulated to the member bodies in July 1982.

It has been approved by the member bodies of the following countries:

Australia	India	Sweden
Austria	Israel	Switzerland
Belgium	Italy	Thailand
Brazil	Netherlands	United Kingdom
Czechoslovakia	Poland	USA
Egypt, Arab Rep. of	Romania	USSR
France	South Africa, Rep. of	
Hungary	Spain	

The member bodies of the following countries expressed disapproval of the document on technical grounds:

Germany, F.R.
Japan

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

1 Scope and field of application

This part of ISO 6987 specifies the dimensions of indexable hardmetal (carbide) inserts with rounded corners, and with a partly cylindrical fixing hole. These inserts are primarily intended to be mounted on turning and boring tools by a countersunk head screw or any other fixing element, such as a pin lock.

2 References

ISO 513, *Application of hardmetals (carbides) for machining by chip removal — Designation of the main groups of chip removal and groups of application.*¹⁾

ISO 883, *Indexable hardmetal (carbide) inserts with rounded corners, without fixing hole — Dimensions.*²⁾

ISO 1832, *Indexable inserts for cutting tools — Designation.*³⁾

ISO 3364, *Indexable hardmetal (carbide) inserts with rounded corners, with cylindrical fixing hole — Dimensions.*⁴⁾

ISO 3365, *Indexable hardmetal (carbide) inserts with wiper edges, without fixing hole — Dimensions.*⁵⁾

3 Types of inserts

The types of indexable hardmetal (carbide) inserts specified in this part of ISO 6987 are the following:

- TC: triangular inserts, with 7° normal clearance;

- SC: square inserts, with 7° normal clearance;
- CC: rhombic inserts, with 7° normal clearance and 80° included angle;
- DC: rhombic inserts, with 7° normal clearance and 55° included angle;
- RC: round inserts, with 7° normal clearance.

Inserts dealt with in this part of ISO 6987 are standardized with chip breakers on the face and without chip breakers.

At present, neither the shape nor the dimensions of chip breakers are standardized. Thus, if necessary, special features have to be explained with a diagram or additional specifications.

Table 8 gives the ranges of sizes for these inserts.

4 Interchangeability

4.1 Tolerances

Indexable hardmetal (carbide) inserts specified in this part of ISO 6987 are provided in tolerance class M according to ISO 1832.

The values of the tolerances according to ISO 1832 are given in annex A.

Other tolerances are included in table 1 for hole dimensions, and in tables 2 to 6 for the insert dimensions.

1) At present at the stage of draft. (Revision of ISO 513-1977.)

2) At present at the stage of draft. (Revision of ISO 883-1977.)

3) At present at the stage of draft. (Revision of ISO 1832-1977.)

4) At present at the stage of draft. (Revision of ISO 3364-1977.)

5) At present at the stage of draft. (Revision of ISO 3365/1-1977 and ISO 3365/2-1980.)

4.2 Thickness *s* of inserts with chip breaker

The thickness *s* of inserts with chip breakers is defined as the distance between the cutting edge at the corner and the opposing supporting surface of the insert, see figure 1 a) and b).

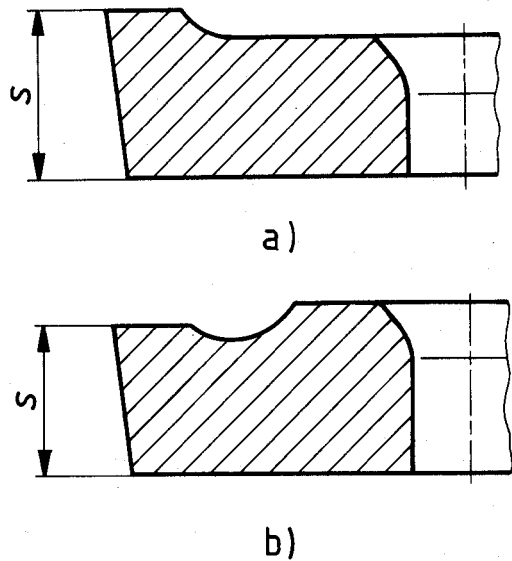


Figure 1

4.3 Fixing hole

In order to guarantee interchangeability when mounting the insert by a countersunk head screw having a head taper angle between 40° and 60°, the form of the hole is partly cylindrical and its dimensions are related to the diameter of the inscribed circle of the insert. Figure 2 and table 1 give the elements of definition of the fixing hole.

The point P is defined by diameter *d*₂ given in table 1 and *t*, measured from the cutting edge, at the corner, and given by the condition

$0,05\ d_1 < t < 0,3\ d_1$

The diameter *d*₁ of the cylindrical part is given in table 1.

The part of the profile between P and *d*₁ is left to the manufacturers' option but shall satisfy the following requirements:

- the use of screws with head taper angle *β* between 40° and 60°;
- the angle of the tangent theoretical taper at point P has value *φ* > 65°;
- the distance between the contact line with a screw having 40° head taper angle and the contact line with a screw having 60° head taper angle shall be as small as possible.

The part of the profile above point P is left to the manufacturers' option.

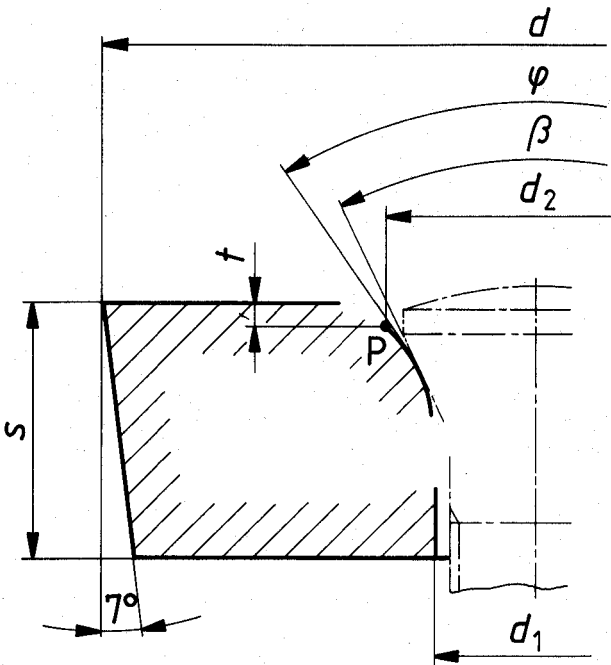


Figure 2

Table 1

Values in millimetres

<i>d</i>	for insert shape	T, S, C, D	5,56	6,35	7,94	9,525	12,7	15,875	19,05	25,4	—
		R	—	6	8	10/12	—	16	20	25	32
<i>d</i> ₁ J ₈ 13			2,5	2,8	3,4	4,4	5,5	5,5	6,5	8,6	8,6
<i>d</i> ₂ J ₈ 13			3,3	3,75	4,5	6	7,5	7,5	9	12	12