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**Tools for pressing — Round punches  
with 60° conical head and reduced shank**

*Outils de presse — Poinçons ronds à tête conique à 60° et à corps  
épaulé*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 9181 was prepared by Technical Committee ISO/TC 29, *Small tools*, Subcommittee SC 8, *Tools for pressing and moulding*.

This second edition cancels and replaces the first edition (ISO 9181:1990), of which it constitutes a minor revision. In particular, the indication of surface textures has been updated in accordance with ISO 1302:2002.

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# Tools for pressing — Round punches with 60° conical head and reduced shank

## 1 Scope

This International Standard specifies the dimensions and tolerances, in millimetres, for round punches with a 60° conical head and reduced shank, having shank diameters  $D_1$  of 2 mm or 3 mm.

It gives examples of materials and hardness, and specifies the designation of punches which meet the requirements of this International Standard.

The main use of punches defined in this International Standard is for punching holes in steel sheet. They may also be used for punching holes in other materials.

## 2 Dimensions

The dimensions of round punches with 60° conical head and reduced shank shall conform to the indications of Figure 1 and Table 1.

## 3 Material and corresponding hardness

The material is left to the manufacturer's discretion. The following hardness values are given as examples:

- a) tool steel with 12 % Cr:
  - point:  $(62 \pm 2)$  HRC
  - head:  $(45 \pm 5)$  HRC
- b) high-speed steel:
  - point:  $(64 \pm 2)$  HRC
  - head:  $(50 \pm 5)$  HRC

## 4 Designation

A round punch with 60° conical head and reduced shank in accordance with this International Standard shall be designated by:

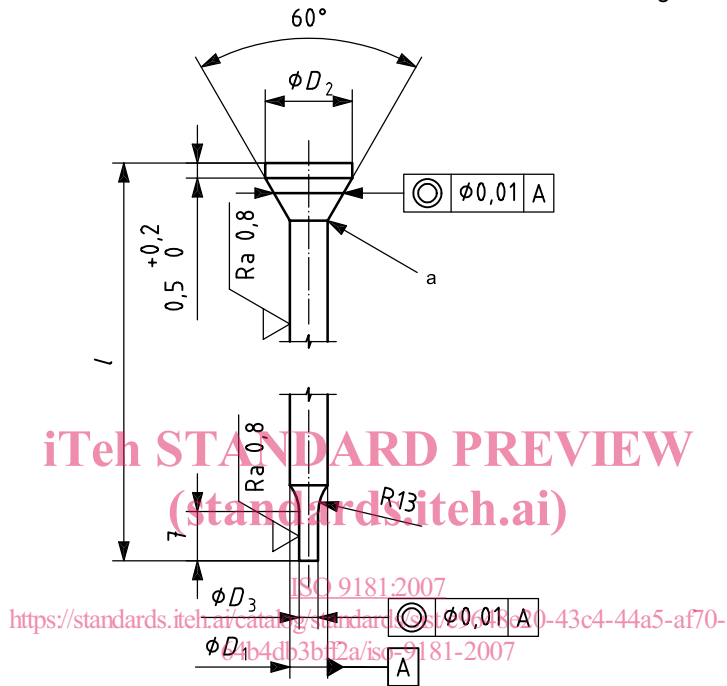
- a) "round punch with conical head";
- b) a reference to this International Standard, i.e. ISO 9181;
- c) its shank diameter,  $D_1$ ;

- d) its point diameter,  $D_3$ ;
- e) its total length,  $l$ ;

EXAMPLE The designation for a round punch with 60° conical head and reduced shank, of shank diameter  $D_1 = 2$  mm, point diameter  $D_3 = 0,5$  mm and total length  $l = 71$  mm is as follows:

**Round punch with conical head ISO 9181 – 2 × 0,5 × 71**

Surface roughness values in micrometres



a Radius.

Figure 1 — Round punches with 60° conical head and reduced shank

Table 1 — Dimensions of round punches with 60° conical head and reduced shank

$D_1$ h6	$D_3$ j6	$D_2$	$l$	
			+0,5 0	
			71	80
2	$0,5 \leq D_3 \leq 1,6$	3	×	×
3	$1,4 \leq D_3 \leq 2,9$	4,5	×	×

## Bibliography

- [1] ISO 1302:2002, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation*
- [2] ISO 4957:1999, *Tool steels*
- [3] ISO 6508:2005 (all parts), *Metallic materials — Rockwell hardness test*
- [4] ISO 6752:—<sup>1)</sup>, *Tools for pressing — Round punches with 60° conical head and straight shank*
- [5] ISO 8695:1987, *Tools for pressing — Punches — Nomenclature and terminology*

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1) To be published. (Revision of ISO 6752:1984)

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