

# International Standard



# 8170

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

## Dental hand instruments — Hand-held cutting instruments for restorative dentistry — Designation and marking of dimensional characteristics

*Instruments dentaires à main — Instruments de coupe à main pour la dentisterie restauratrice — Désignation et marquage des caractéristiques dimensionnelles*

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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.

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 8170 was prepared by Technical Committee ISO/TC 106, *Dentistry*.

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# Dental hand instruments — Hand-held cutting instruments for restorative dentistry — Designation and marking of dimensional characteristics

## 0 Introduction

A wide range of instruments is manufactured throughout the world for use by the dental profession. This International Standard has been drawn up in response to a need by industry, trade, dental practitioners and universities for a universal method for the designation and marking of these instruments.

It establishes a system of designation, using a numerical code, for hand-held cutting instruments for restorative dentistry. However, the benefits of this system will only be derived if it is adopted and widely used; a request is therefore made to the manufacturers of these dental instruments to refer to this designation in their catalogues, to practitioners to refer to it in their orders and to universities to teach it.

This International Standard is the first in a series to be produced on designation systems for hand-held cutting instruments. When the code is fully developed it will take the form shown in 4.1.

The dimensional characteristics of the hand-held cutting instruments for restorative dentistry will also be standardized and particular reference will be made to the following aspects:

- length and width of blade, angle and tolerances of straight and gingival margin trimmers;
- final resultant angle of curvature of blades (for example gingival margin trimmers, spoon and pear-shaped excavators);
- angle of the flat surface of discoid blades to the shaft, which is assumed to be a straight line (for example discoid excavators);
- angle of cleoid blades to the distal part of the shank (for example cleoid excavators);
- methods of measurement and tolerances relating to these different characteristics (including a system for measuring angles in scaling instruments).

## 1 Scope and field of application

This International Standard establishes a system for the designation, marking and identification, using a numerical code, of the dimensional characteristics of hand-held cutting instruments for use in restorative dentistry.

## 2 Reference

ISO 1942, *Dental vocabulary*.

## 3 Definitions

The following terms and definitions, which are reproduced from ISO 1942, apply.

**3.1 hand-held cutting instrument for restorative dentistry:** An instrument comprising:

— a working part or blade with a cutting edge (see figure 1);

— a handle by which the instrument is held and manipulated (see figure 1);

— a connecting part or shank which unites the handle to the blade or to a stem carrying the blade (see figure 2);

— in the case of contra-angle biplane discoids, cleoids and pear-shaped excavators, a stem connects the blade to the shank (see figure 2).

**3.2 straight hand-held cutting instrument:** A hand-held cutting instrument, the handle, blade and shank of which are in the same axis (see figure 1).

**3.3 curved hand-held cutting instrument:** A hand-held cutting instrument the blade of which is curved towards one of its two flat sides (see figure 3).

**3.4 angled hand-held cutting instrument:** A hand-held cutting instrument, the blade of which is at an angle to the long axis of the handle (see figure 4).

**3.5 contra-angle hand-held cutting instrument:** An angled hand-held cutting instrument having a long blade at a sharp angle to the long axis of the instrument, and a shank which has two or more angles or bends which bring the cutting edge within the axial projection of the handle (see figure 5).

**3.6 hatchet:** An angled hand-held instrument, the cutting edge of which is in the same plane as the long axis of the handle (see figure 4).

**3.7 hoe:** An angled hand-held cutting instrument the cutting edge of which is in a plane perpendicular to the long axis of the handle (see figure 6).

**3.8 biplane curved hand-held cutting instrument:** A hatchet-type instrument the blade of which is curved so that the concavity is on the same side of the blade as the cutting edge. Spoon, cleoid, discoid and pear-shaped hand-held cutting instruments are also included in this definition when the stem is similarly curved (see figure 7).

**3.9 chisel:** A hand-held cutting instrument the blade of which is rectangular in cross-section and bevelled to provide a straight cutting edge perpendicular to the long axis of the blade (see figure 1).

The blade is usually straight (parallelepipedic), but may be curved.

**3.10 angle forming chisel:** A chisel the cutting edge of which is not perpendicular to the long axis of the blade (see figure 8).

**3.11 dental excavator:** A hand-held cutting instrument the cutting edge of which is curved (see figure 9).

**3.12 standard position for identification (S.P.I.) of hand-held instruments:** The position in which an instrument should be held by the observer in order to identify it, namely with its working part vertically upwards, and, for angled instruments, the handle oriented towards the observer.

**3.13 right:** Classifies a hatchet-type instrument, the cutting edge of which is on the right side of the blade when the instrument is viewed in the standard position.

Also classifies an angle-forming straight chisel instrument the acute angle of which is on the right side of the blade and the bevel of which is on the far side of the blade when the instrument is viewed in the standard position (see figure 10).

**3.14 left:** Classifies a hatchet-type instrument the cutting edge of which is on the left side of the blade when the instrument is viewed in the standard position.

Also classifies an angle-forming straight chisel instrument the acute angle of which is on the left side of the blade and the bevel of which is on the far side of the blade when the instrument is viewed in the standard position.

**3.15 proximal:** Classifies a hoe-type instrument the cutting edge of which is on the near side of the blade when viewed in the standard position.

Also classifies a gingival margin trimmer the acute angle of which is on the near edge of the blade when viewed in the standard position (see figure 11).

**3.16 distal:** Classifies a hoe-type instrument the cutting edge of which is on the far side of the blade when viewed in the standard position.

Also classifies a gingival margin trimmer the acute angle of which is on the far edge of the blade when viewed in the standard position.

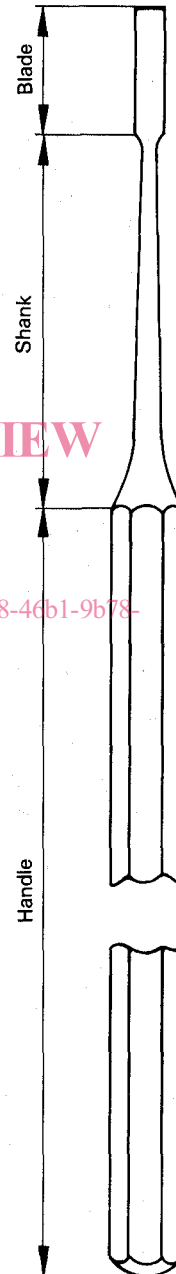
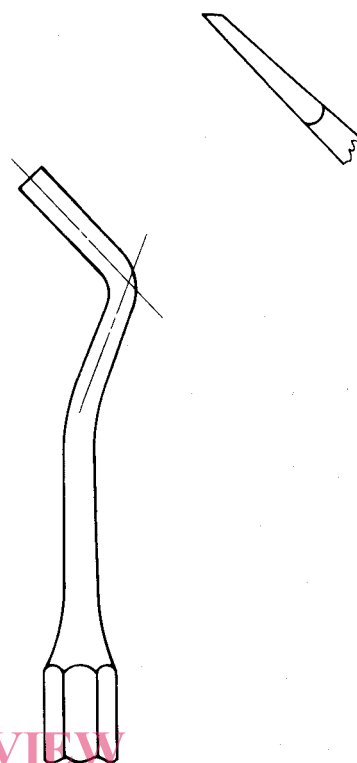
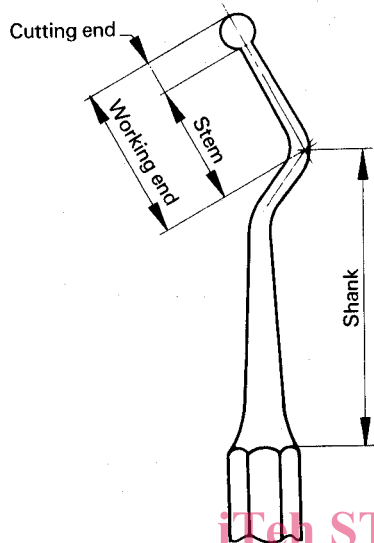


Figure 1 — Example of instruments defined in 3.1, 3.2 and 3.9



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Figure 2 — Example of stem of instrument defined in 3.1

Figure 4 — Example of angled instrument defined in 3.4 and 3.6

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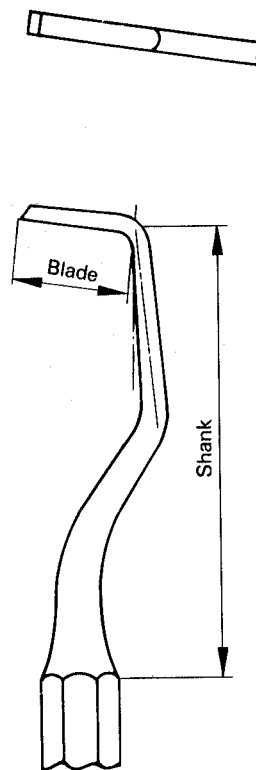
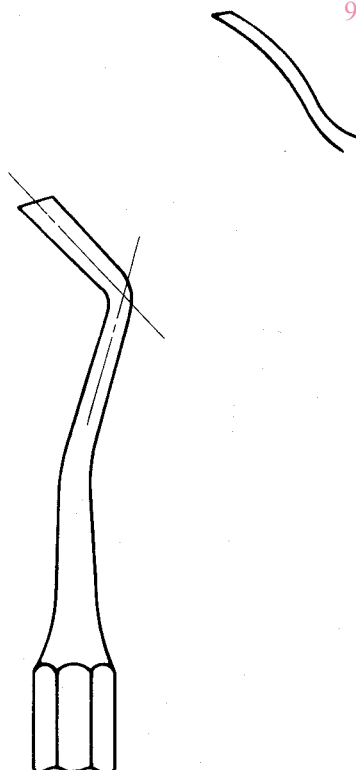
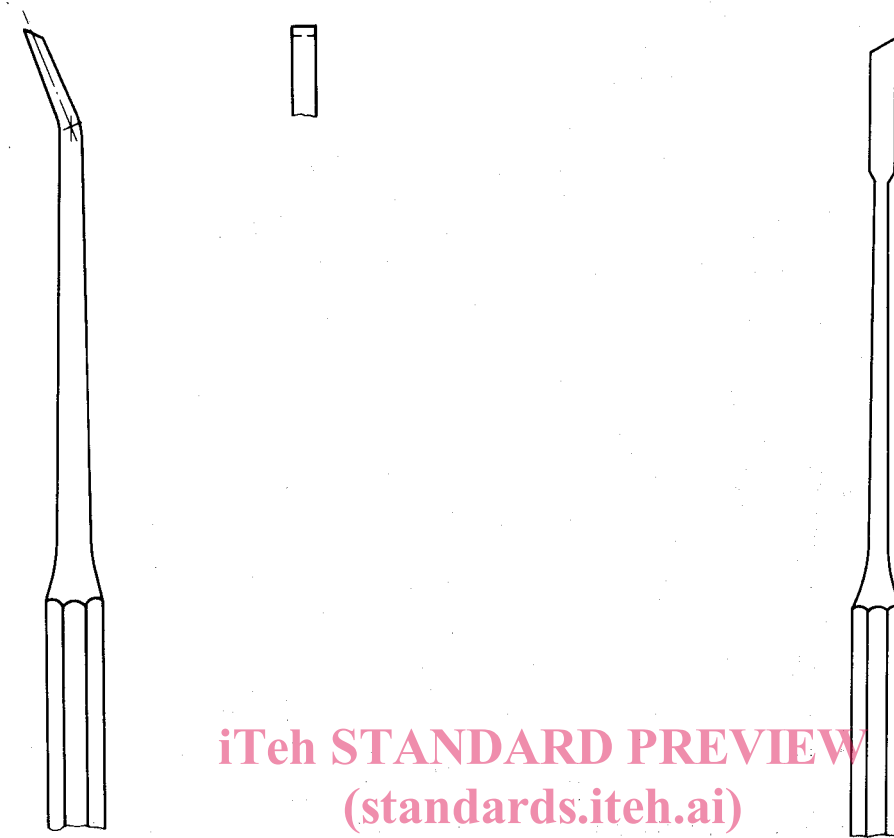


Figure 3 — Example of curved instrument defined in 3.3

Figure 5 — Example of contra-angled instrument defined in 3.5



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Figure 6 — Example of hoe defined in 3.7

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Figure 8 — Example of angle forming chisel defined in 3.10

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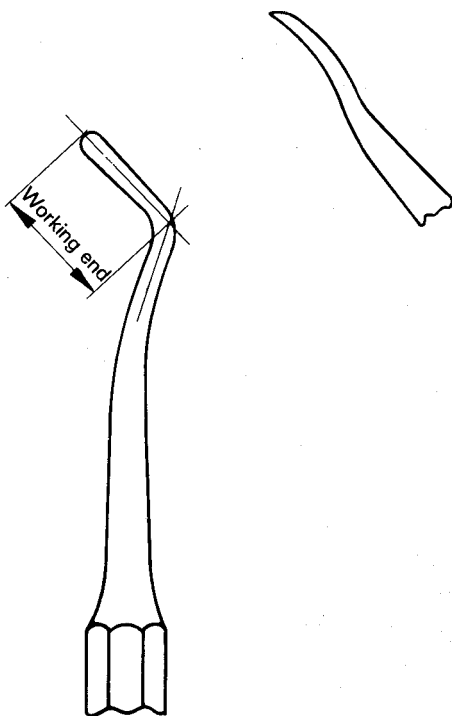


Figure 7 — Example of biplane curved instrument defined in 3.8

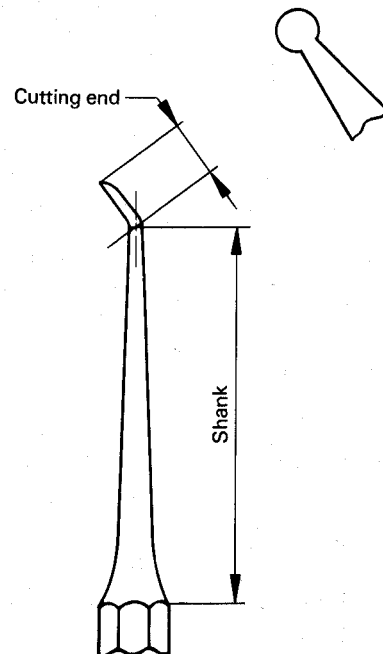


Figure 9 — Example of dental excavator defined in 3.11

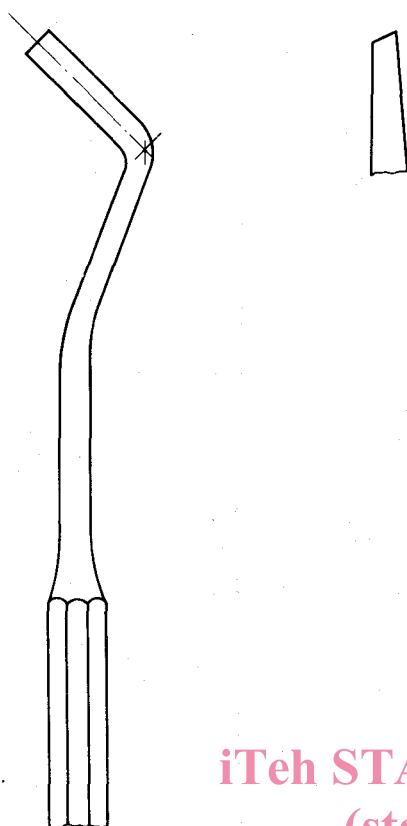


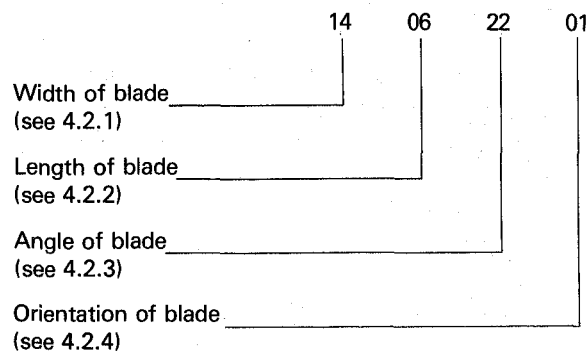
Figure 10 — Example of instrument classified as "right" in 3.13

## 4 Designation and marking

### 4.1 General

The designation to be marked on the instrument consists of the numerical code for the dimensional characteristics.

The designation is made up as shown in the following example:



### 4.2 Numerical code for dimensional characteristics

The code consists of four sets of numbers, each indicating a dimensional characteristic, presented as shown in the example above. The numbers are derived as follows:

#### 4.2.1 Width of blade

The width of the blade is given in tenths of a millimetre.

#### 4.2.2 Length of blade

For angled chisels, the length of the blade is given in millimetres. For straight chisels the length of the blade is ignored and this element of the code is omitted.

The code for straight cutting instruments consists of one pair of digits only (i.e. the width of the blade in tenths of a millimetre). However, for straight, angle forming chisels (which can form left and right pairs), two more digits are introduced in order to indicate whether they are left or right (see 3.13 and 3.14). Consequently, the numerical code for all angled instruments comprises the full code of four sets of numbers.

#### 4.2.3 Angle of blade

The angle between the blade and the extension of the long axis of the instrument is called the angle of the blade and is expressed in degrees using two digits (exceptionally, three digits may be required).

When the angle is 0 (as in the case of straight instruments), no value is indicated.

#### NOTES

1 Manufacturers may indicate that these two (or three) digits refer to an angle by including the degree symbol ( $^{\circ}$ ), for example 14 06 22 $^{\circ}$  20.

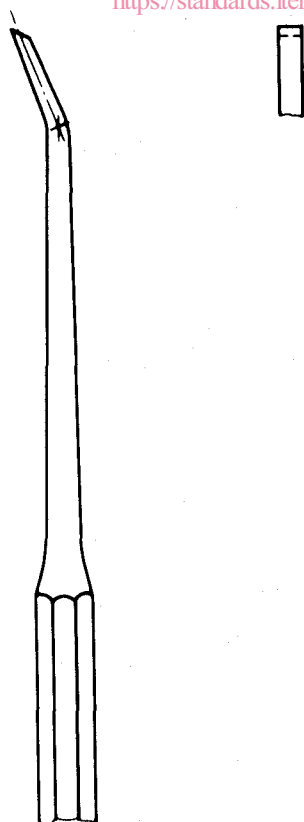


Figure 11 — Example of instrument classified as "proximal" in 3.15

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2 This system, using the angle expressed in degrees, supersedes that previously used (Black's system) in which the angle was expressed in centigrades, i.e. in one-hundredths of a circle.

3 For gingival margin trimmers, the angle of the cutting edge with the long axis of the instrument is not indicated as the information is given by the code for proximal (01) or distal (02) (see 4.2.4 below).

**4.2.4 Direction of blade (location of cutting edge)**

In order to indicate the direction of the blade, the number code given in the table is used.

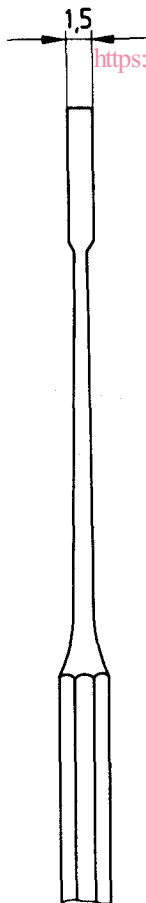
**Table – Number code for direction of blade**

Direction of blade	Number code
Right	10
Left	20
Proximal	01
Distal	02
Right proximal	11
Left proximal	21
Right distal	12
Left distal	22

NOTE – The terms used in the table for the direction of the blade are defined in clause 3.

**5 Examples of codification**

**5.1 Straight enamel chisel (see 3.2 and 3.9)**

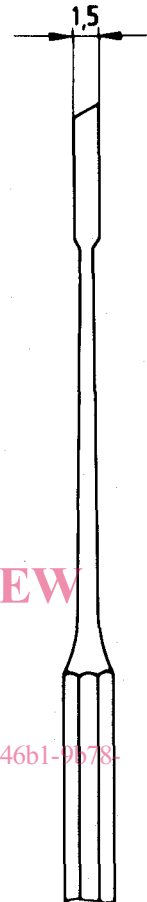


Width of blade: 1,5  
Code: 15

**Figure 12 – Straight enamel chisel**

**5.2 Straight, angle forming chisel, right**  
(see 3.10 and 3.13)

Dimension in millimetres



Width of blade: 1,5  
Acute angle on the right side of the blade when viewed in S.P.I.  
Code: 15 10

**Figure 13 – Straight, angle forming chisel, right**

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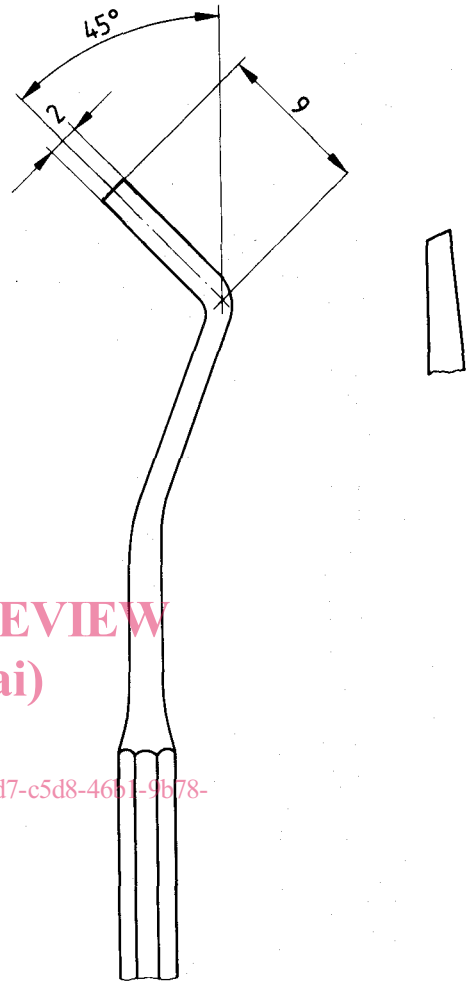


5.3 Straight, angle forming chisel, left (see 3.14)

5.4 Right hatchet (see 3.6 and 3.13)

Dimension in millimetres

Dimensions in millimetres



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Width of blade: 2  
Acute angle on the left side of the blade when viewed in S.P.I.  
Code: 20 20

Width of blade: 2  
Length of blade: 9  
Angle of blade: 45° (see 4.2.3)  
Cutting edge of the right side of the blade when viewed in S.P.I.  
Code: 20 09 45 10

Figure 14 — Straight, angle forming chisel, left

Figure 15 — Right hatchet