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**Dentistry — Laboratory cutters —**  
**Part 1:**  
**Steel laboratory cutters**

*Médecine bucco-dentaire — Fraises de laboratoire —*  
*Partie 1: Fraises de laboratoire en acier*



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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](http://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](http://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 106, *Dentistry*, Subcommittee SC 4, *Dental instruments*.

This second edition cancels and replaces the first edition (ISO 7787-1:1984), which has been technically revised.

ISO 7787 consists of the following parts, under the general title *Dentistry — Laboratory cutters*:

- *Part 1: Steel laboratory cutters*
- *Part 2: Carbide laboratory cutters*
- *Part 3: Tungsten carbide cutters for milling machines*
- *Part 4: Miniature carbide laboratory cutters*

## Introduction

This part of ISO 7787 is one of a series of International Standards relating to dental rotary instruments.

The various dimensional and other requirements specified for steel cutters are those considered important to ensure the interchangeability of these instruments.



# Dentistry — Laboratory cutters —

## Part 1: Steel laboratory cutters

### 1 Scope

This part of ISO 7787 specifies dimensional and other requirements for the nine most commonly used steel cutters which are predominantly used in the dental laboratory.

Other characteristics of laboratory cutters, for example, spiralled blades or cross-cut, are not covered by this part of ISO 7787.

NOTE These cutters are also used in podiatry.

### 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 1797<sup>1)</sup>, *Dentistry — Shanks for rotary and oscillating instruments*

ISO 1942, *Dentistry — Vocabulary*

ISO 2157, *Dentistry — Nominal diameters and designation code numbers for rotary instruments*

ISO 6360-3, *Dentistry — Number coding system for rotary instruments — Part 3: Specific characteristics of burs and cutters*

ISO 8325, *Dentistry — Test methods for rotary instruments*

### 3 Terms, definitions and symbols

For the purposes of this document, the terms and definitions given in ISO 1942, ISO 6360-3, and the following apply.

#### 3.1 Terms and definitions

##### 3.1.1

##### **laboratory cutter**

cutter designed for use with dental materials in the dental laboratory

##### 3.1.2

##### **dental laboratory**

facility where dental technical procedures complementing dental clinical treatment are carried out

[SOURCE: ISO 1942:2009, 2.77]

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1) To be published.

### 3.2 Symbols

For the purposes of this part of ISO 7787, the following symbols apply:

*d* diameter of the working part, head diameter;

*l* length of the working part, head length.

### 4 Material

The shaft and the working part shall be made of steel.

The selection of the type of steel and the treatment given to it shall be left to the discretion of the manufacturer.

### 5 Dimensions and number of blades

All dimensions are in millimetres.

The dimensions, measured as described in ISO 8325, shall be as specified in [Tables 1 to 9](#) and as shown in [Figures 1 to 9](#).

The shank shall be Type 2 of ISO 1797.

The shank length shall be  $(38 \pm 1)$  mm.

In this part of ISO 7787, the laboratory cutters are differentiated according to the shape of the head of the laboratory cutters.

#### 5.1 Round (spherical)

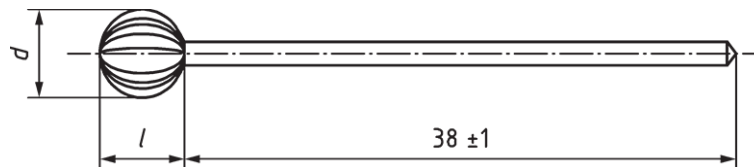


Figure 1 — Round

Table 1 — Round — Dimensions and number of blades

Dimensions in millimetres

Nominal size	<i>d</i> +0,15 -0,25	<i>l</i> ±0,25	Number of blades min.
040	4	3,7	8
050	5	4,7	10
060	6	5,8	12
070	7	6,8	14
080	8	7,8	16



5.2 Cylindrical, double domed

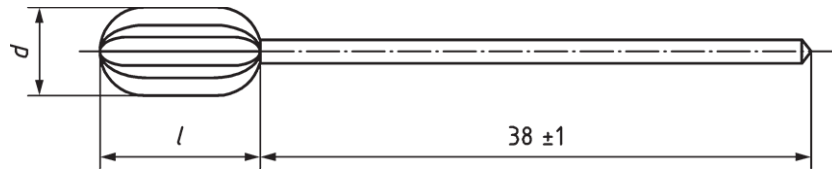


Figure 2 — Cylindrical

Table 2 — Cylindrical — Dimensions and number of blades

Dimensions in millimetres

Nominal size	$d$ +0,15 -0,25	$l$ $\pm 0,25$	Number of blades min.
040	4	9	8
050	5	10	10
060	6	11	12
070	7	12	14
080	8	13	16

5.3 Egg

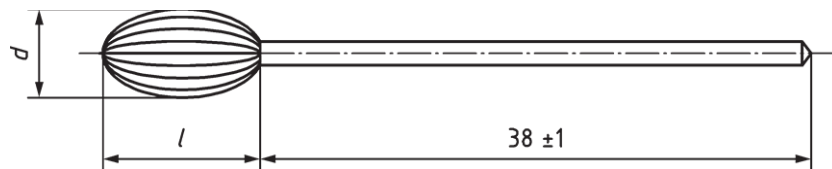


Figure 3 — Egg

Table 3 — Egg — Dimensions and number of blades

Dimensions in millimetres

Nominal size	$d$ +0,15 -0,25	$l$ $\pm 0,25$	Number of blades min.
040	4	9	8
050	5	10	10
060	6	11	12
070	7	12	14
080	8	13	16

5.4 Oval, transverse

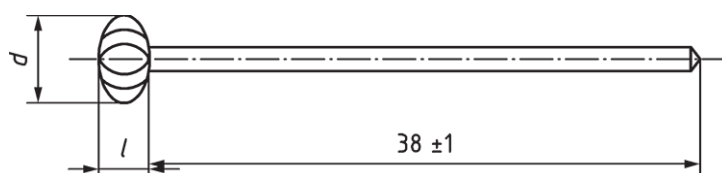


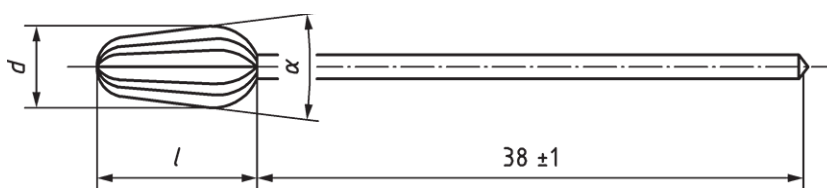
Figure 4 — Oval, transverse

**Table 4 — Oval, transverse — Dimensions and number of blades**

Dimensions in millimetres

Nominal size	$d$ +0,15 -0,25	$l$ $\pm 0,25$	Number of blades min.
040	4	2,5	8
050	5	3,0	10
060	6	3,5	12
070	7	4,0	14
080	8	4,5	16

**5.5 Bud, rounded**



NOTE  $\alpha = 14^\circ$  to  $18^\circ$ .

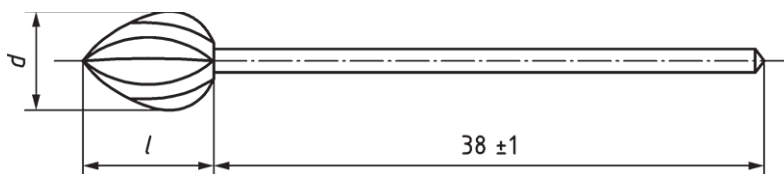
**Figure 5 — Bud, rounded**

**Table 5 — Bud, rounded — Dimensions and number of blades**

Dimensions in millimetres

Nominal size	$d$ +0,15 -0,25	$l$ $\pm 0,25$	Number of blades min.
040	4	8	8
050	5	9,5	10
060	6	11,0	12
070	7	12,5	14
080	8	14,0	16

**5.6 Bud**



NOTE A small flat area is allowed at the tip of no more than 0,1 mm.

**Figure 6 — Bud**

**Table 6 — Bud — Dimensions and number of blades**

Dimensions in millimetres

Nominal size	$d$ +0,15 -0,25	$l$ $\pm 0,25$	Number of blades min.
040	4	7	8
050	5	8	10
060	6	9	12
070	7	10	14
080	8	11	16

**5.7 Pear**



NOTE  $\alpha = 14^\circ$  to  $18^\circ$ .

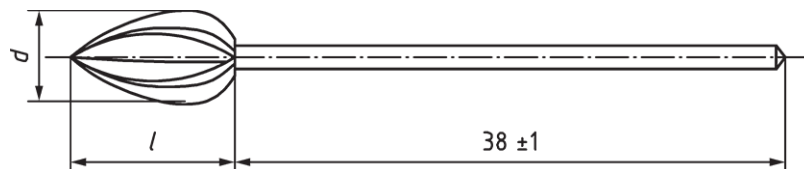
**Figure 7 — Pear**

**Table 7 — Pear — Dimensions and number of blades**

Dimensions in millimetres

Nominal size	$d$ +0,15 -0,25	$l$ $\pm 0,25$	Number of blades min.
040	4	9	8
050	5	10	10
060	6	11	12
070	7	12	14
080	8	13	16

**5.8 Bud, slender**



NOTE A small flat area is allowed at the tip of no more than 0,1 mm.

**Figure 8 — Bud, slender**

Table 8 — Bud, slender — Dimensions and number of blades

Dimensions in millimetres

Nominal size	$d$ +0,15 -0,25	$l$ $\pm 0,25$	Number of blades min.
040	4	10	8
050	5	11	10
060	6	12	12
070	7	13	13
080	8	14	14

## 5.9 Wheel

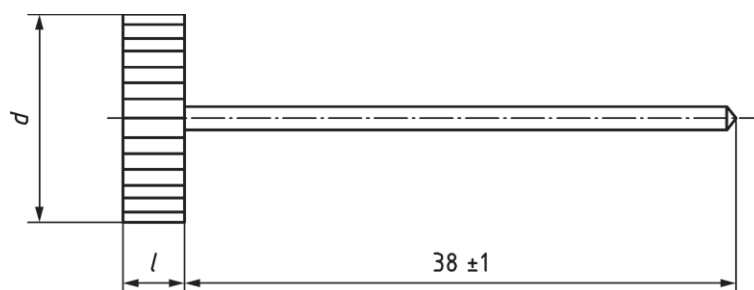


Figure 9 — Wheel

Table 9 — Wheel — Dimensions and number of blades

Dimensions in millimetres

Nominal size	$d$ +0,15 -0,25	$l$ $\pm 0,25$	Number of blades min.
100	10	3,5	18
125	12,5	3,5	22
140	14	4,0	26
160	16	4,0	30

## 6 Run-out

The total indicated run-out determined as described in ISO 8325 shall not exceed 0,12 mm.

Record for each cutting edge the readings and sort the highest and the lowest for further analysis.

## 7 Sampling

Take randomly 10 instruments from validation batch and test them according to the method described in [Clause 6](#). If eight or less samples pass, the product fails.

If nine samples pass, test 10 additional samples. When 10 additional samples are to be tested, all 10 shall pass for the product to comply.

## **8 Designation code number**

The designation code numbers for laboratory cutters shall be in accordance with ISO 2157.

## **9 Marking**

Laboratory cutters shall be marked with the following information:

- a) trade name and/or trade mark of the manufacturer;
- b) nominal size designation.

## Bibliography

- [1] ISO 2859-1, *Sampling procedures for inspection by attributes — Part 1: Sampling schemes indexed by acceptance quality limit (AQL) for lot-by-lot inspection*



