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**Dental rotary instruments — Cutters —  
Part 2:  
Carbide laboratory cutters**

*Instruments rotatifs dentaires — Fraises techniques —*

*Partie 2: Fraises techniques en carbure*

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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.

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.

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International Standard ISO 7787-2 was prepared by Technical Committee ISO/TC 106 *Dentistry*, Subcommittee SC 4, *Dental Instruments*.

This third edition cancels and replaces the 7787-2 second edition (ISO 7787-2:1992), of which it constitutes a minor revision. In particular, annex A is new.

ISO 7787 consists of the following parts, under the general title *Dental rotary instruments — Cutters*:

- *Part 1: Steel laboratory cutters*
- *Part 2: Carbide laboratory cutters*
- *Part 3: Carbide laboratory cutters for milling machines*

Annex A forms an integral part of this part of ISO 7787.

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# Dental rotary instruments — Cutters —

## Part 2: Carbide laboratory cutters

### 1 Scope

This part of ISO 7787 specifies the dimensional and other requirements for the 15 most commonly used carbide cutters<sup>1)</sup> which are predominantly used in the dental laboratory.

Other characteristics of cutters, for example spiralled blades, cross-cut, are not covered by this part of ISO 7787. These will be dealt with in a future International Standard.

Attention is drawn to ISO 6360 which specifies a 15 digit number for the identification of dental rotary instruments of all types.

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### 2 Normative references

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The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7787. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 7787 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1797-1:1992, *Dental rotary instruments — Shanks — Part 1: Shanks made of metals.*

ISO 2157:1992, *Dental rotary instruments — Nominal diameters and designation code number.*

ISO 2859-1:1989, *Sampling procedures for inspection by attributes — Part 1: Sampling plans indexed by acceptable quality level (AQL) for lot-by-lot inspection.*

ISO 6360-1:1985, *Dental rotary instruments — Number coding system — Part 1: General characteristics.*

ISO 6360-2:1986, *Dental rotary instruments — Number coding system — Part 2: Shape and specific characteristics.*

ISO 8325:1985, *Dental rotary instruments — Test methods.*

1) Sometimes called laboratory burs.

### 3 Symbols

The following symbols are used in this part of ISO 7787.

- $d_1$  diameter of the working part, head diameter
- $d_2$  neck diameter
- $l_1$  length of the working part, head length
- $l_2$  length of shank

### 4 Material

The shaft shall be made of steel or other suitable material.

The working part shall be made of tungsten carbide.

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

### 5 Dimensions and number of blades

All dimensions are given in millimetres.

The dimensions, determined as described in ISO 8325, shall be as specified in tables and figures for each type, with the nominal size as specified in ISO 2157. (standards.iteh.ai)

The shank shall be type 2 of ISO 1797-1.

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#### 5.1 Round head (spherical)

A round head cutter shall be as specified in figure 1 and table 1.

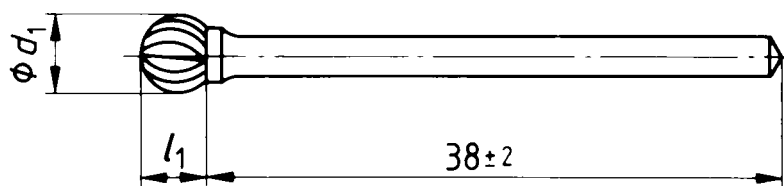


Figure 1

Table 1 — Dimensions and number of blades

| Nominal size | $d_1$ |       | $l_1$ |        | Number of blades<br>min. |
|--------------|-------|-------|-------|--------|--------------------------|
|              |       | tol.  |       | tol.   |                          |
| 031          | 3,1   | ± 0,2 | 2,6   | ± 0,2  | 12                       |
| 040          | 4     | ± 0,3 | 3,3   | ± 0,25 | 14                       |
| 050          | 5     | ± 0,3 | 4,5   | ± 0,25 | 16                       |
| 060          | 6     | ± 0,3 | 5,1   | ± 0,3  | 17                       |

## 5.2 Cylindrical domed (hemispherico-cylindrical)

A cylindrical domed cutter shall be as specified in figure 2 and table 2.

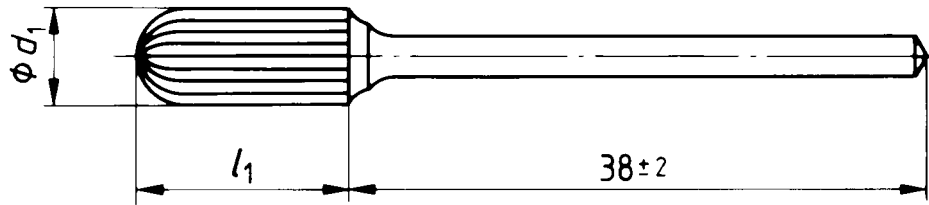


Figure 2

Table 2 — Dimensions and number of blades

| Nominal size | $d_1$     | $l_1$     | Number of blades |
|--------------|-----------|-----------|------------------|
|              | $\pm 0,3$ | $\pm 0,3$ | min.             |
| 060          | 6         | 13        | 17               |
| 070          | 7         | 13        | 17               |

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## 5.3 Egg (longitudinal ellipsoid)

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### 5.3.1 Egg (longitudinal ellipsoid), slender

A slender egg cutter shall be as specified in figure 3 and table 3.

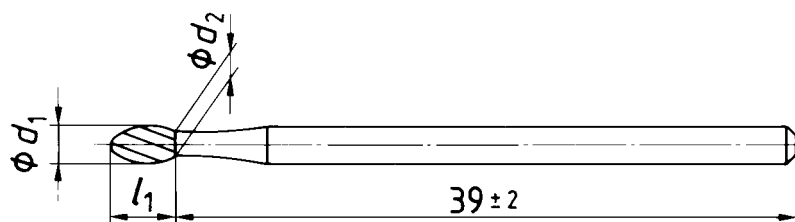


Figure 3

Table 3 — Dimensions and number of blades

| Nominal size | $d_1$     | $l_1$     | $d_2$ | Number of blades |
|--------------|-----------|-----------|-------|------------------|
|              | $\pm 0,1$ | $\pm 0,5$ | max.  | min.             |
| 023          | 2,3       | 4         | 1,7   | 10               |

5.3.2 Egg (longitudinal ellipsoid), regular

A regular egg cutter shall be as specified in figure 4 and table 4.

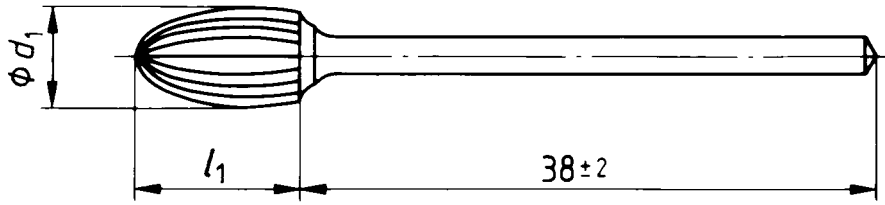


Figure 4

Table 4 — Dimensions and number of blades

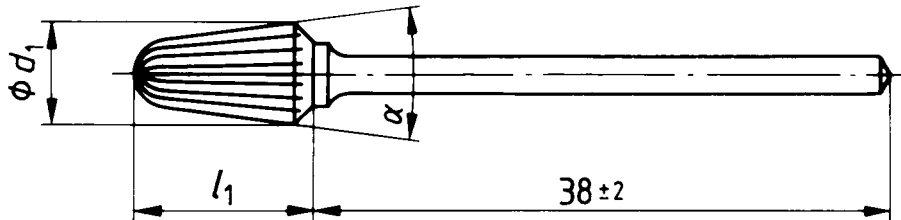
| Nominal size | $d_1$<br>± 0,3 | $l_1$<br>± 0,5 | Number of blades<br>min. |
|--------------|----------------|----------------|--------------------------|
| 060          | 6              | 10             | 17                       |

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5.4 Bud rounded (hemispherical/truncated conical or domed/truncated conical)

A bud rounded cutter shall be as specified in figure 5 and table 5.

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$\alpha = 14^\circ \text{ to } 18^\circ$

Figure 5

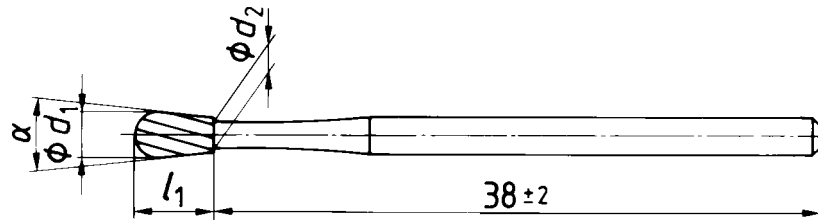
Table 5 — Dimensions and number of blades

| Nominal size | $d_1$<br>± 0,3 | $l_1$<br>± 0,5 | Number of blades<br>min. |
|--------------|----------------|----------------|--------------------------|
| 040          | 4              | 8              | 14                       |
| 050          | 5              | 10             | 14                       |
| 060          | 6              | 11             | 17                       |
| 070          | 7              | 13             | 17                       |

5.5 Pear (hemispherical/inverted conical)

5.5.1 Pear (hemispherical/inverted conical), small

A small pear cutter shall be as specified in figure 6 and table 6.



$\alpha = 6^\circ \text{ to } 12^\circ$

Figure 6

Table 6 — Dimensions and number of blades

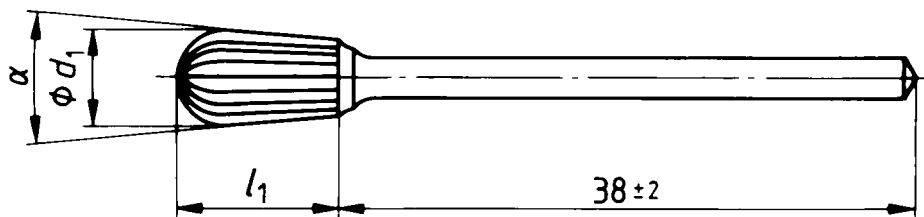
| Nominal size | $d_1$<br>± 0,1 | $l_1$<br>± 0,5 | $d_2$<br>max. | Number of blades<br>min. |
|--------------|----------------|----------------|---------------|--------------------------|
| 023          | 2,3            | 5              | 1,6           | 12                       |
| 029          | 2,9            | 5              | 2             | 12                       |

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5.5.2 Pear (hemispherical/inverted conical), regular

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A regular pear cutter shall be as specified in figure 7 and table 7.



$\alpha = 14^\circ \text{ to } 18^\circ$

Figure 7

Table 7 — Dimensions and number of blades

| Nominal size | $d_1$<br>± 0,3 | $l_1$<br>± 0,5 | Number of blades<br>min. |
|--------------|----------------|----------------|--------------------------|
| 050          | 5              | 10             | 17                       |
| 060          | 6              | 11             | 17                       |
| 070          | 7              | 12             | 17                       |

**5.6 Bud slender (ogivo/ellipsoid, long)**

A bud slender cutter shall be as specified in figure 8 and table 8.

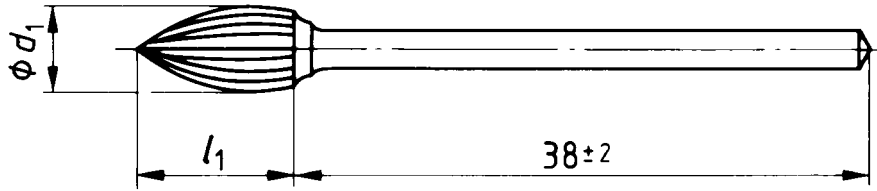


Figure 8

Table 8 — Dimensions and number of blades

| Nominal size | $d_1$<br>± 0,3 | $l_1$<br>± 0,5 | Number of blades<br>min. |
|--------------|----------------|----------------|--------------------------|
| 050          | 5              | 10             | 17                       |
| 060          | 6              | 12             | 17                       |

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**5.7 Cylinder (cylindrical)**

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A cylinder cutter shall be as specified in figure 9 and table 9.  
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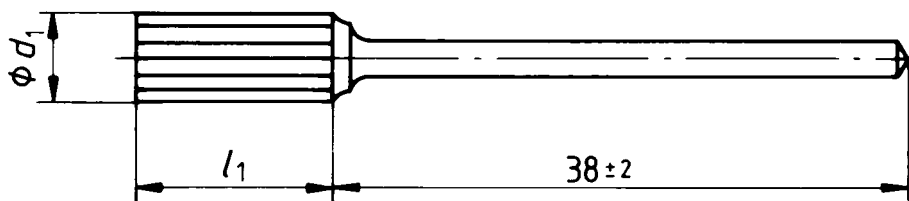


Figure 9

Table 9 — Dimensions and number of blades

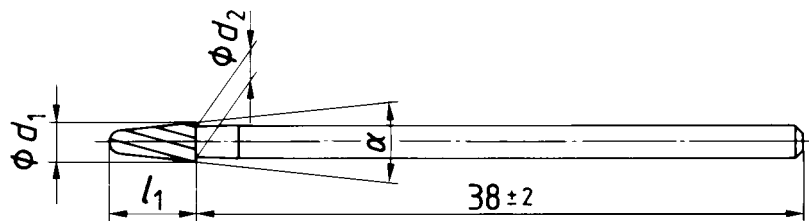
| Nominal size | $d_1$<br>± 0,3 | $l_1$<br>± 0,5 | Number of blades<br>min. |
|--------------|----------------|----------------|--------------------------|
| 060          | 6              | 13             | 20                       |



5.8 Rounded cone (truncated conical, domed)

5.8.1 Rounded cone (truncated conical, domed), small

A small rounded cone cutter shall be as specified in figure 10 and table 10.



$\alpha = 10^\circ$  to  $14^\circ$

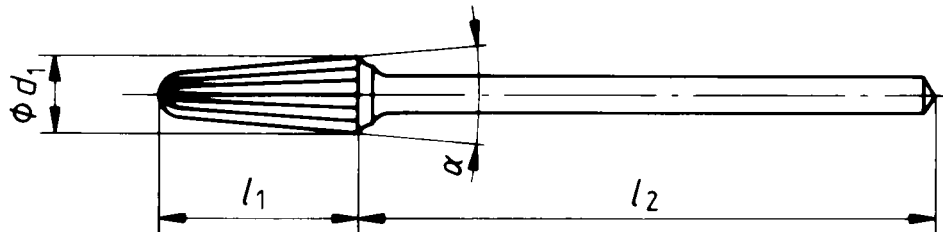
Figure 10

Table 10 — Dimensions and number of blades

| Nominal size | $d_1$     | $l_1$     | $d_2$ | Number of blades |
|--------------|-----------|-----------|-------|------------------|
|              | $\pm 0,1$ | $\pm 0,5$ | max.  | min.             |
| 023          | 2,3       | 5,5<br>8  | 2     | 12               |

5.8.2 Rounded cone (truncated conical, domed), regular

A regular rounded cone cutter shall be as specified in figure 11 and table 11.   
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$\alpha = 10^\circ$  to  $14^\circ$   
 Size 023  $\alpha = 4^\circ$  to  $8^\circ$

Figure 11

Table 11 — Dimensions and number of blades

| Nominal size | $d_1$     | $l_1$     | $l_2$   | Number of blades |
|--------------|-----------|-----------|---------|------------------|
|              | $\pm 0,3$ | $\pm 0,5$ | $\pm 2$ | min.             |
| 023          | 2,3       | 13        | 31,5    | 12               |
| 040          | 4         | 13        | 38      | 12               |
| 050          | 5         | 13        | 38      | 16               |
| 070          | 7         | 13        | 38      | 20               |