

INTERNATIONAL
STANDARD

ISO
7787-2

Third edition
1998-07-01

Dental rotary instruments — Cutters —

Part 2:
Carbide laboratory cutters

Instruments rotatifs dentaires — Fraises techniques —
Partie 2: Fraises techniques en carbure



Reference number
ISO 7787-2:1998(E)

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.

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 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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Printed in Switzerland

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 cutters¹⁾ 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.

2 Normative references

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.

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

5.1 Round head (spherical)

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

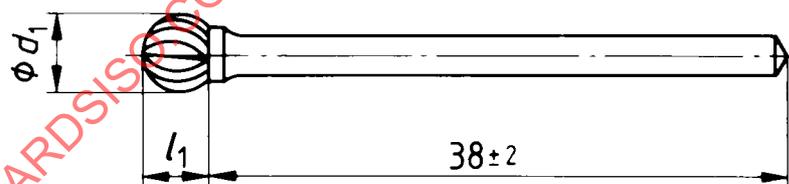


Figure 1

Table 1 — Dimensions and number of blades

Nominal size	d_1		l_1		Number of blades 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.

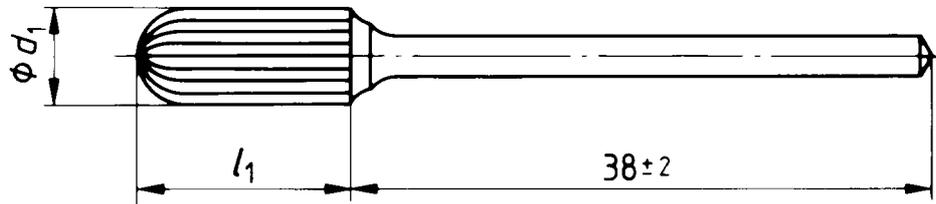


Figure 2

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

5.3 Egg (longitudinal ellipsoid)

5.3.1 Egg (longitudinal ellipsoid), slender

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

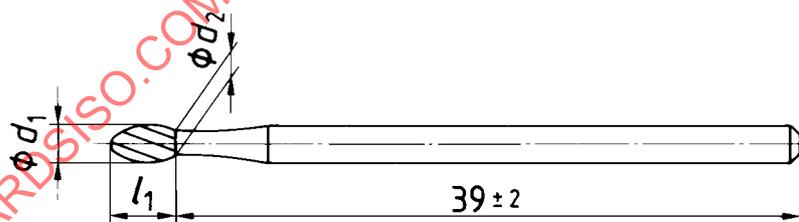


Figure 3

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.

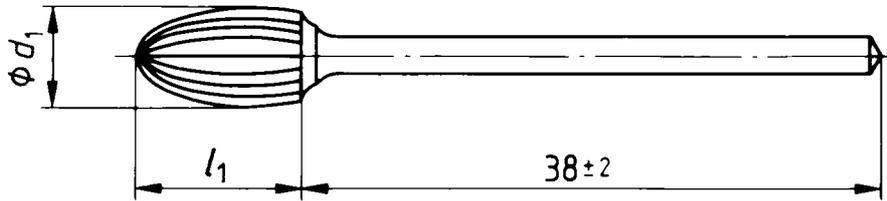


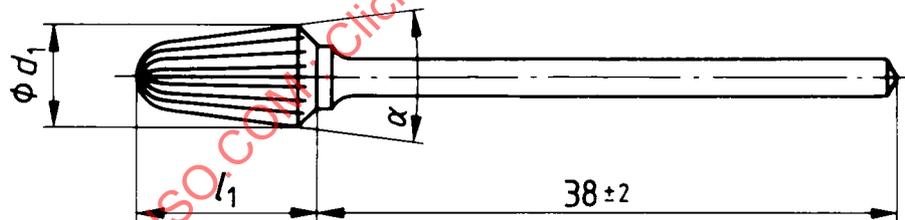
Figure 4

Table 4 — Dimensions and number of blades

Nominal size	d_1	l_1	Number of blades
	$\pm 0,3$	$\pm 0,5$	min.
060	6	10	17

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.



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

Figure 5

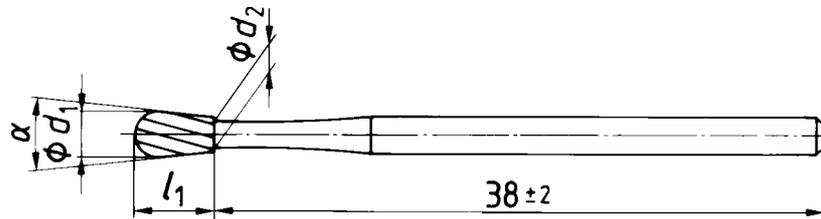
Table 5 — Dimensions and number of blades

Nominal size	d_1	l_1	Number of blades
	$\pm 0,3$	$\pm 0,5$	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.



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

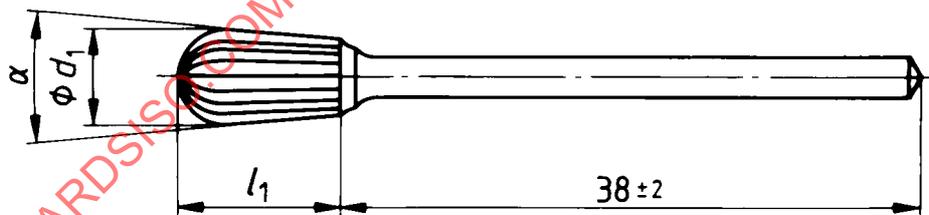
Figure 6

Table 6 — Dimensions and number of blades

Nominal size	d_1	l_1	d_2	Number of blades	
	$\pm 0,1$	$\pm 0,5$	max.	min.	
023	2,3	5	1,6	12	
029	2,9	5	2	12	

5.5.2 Pear (hemispherical/inverted conical), regular

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	l_1	Number of blades	
	$\pm 0,3$	$\pm 0,5$	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.

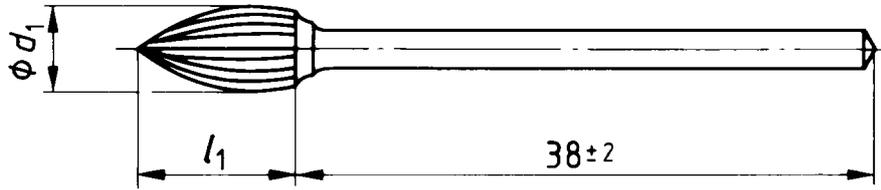


Figure 8

Table 8 — Dimensions and number of blades

Nominal size	d_1	l_1	Number of blades
	$\pm 0,3$	$\pm 0,5$	min.
050	5	10	17
060	6	12	17

5.7 Cylinder (cylindrical)

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

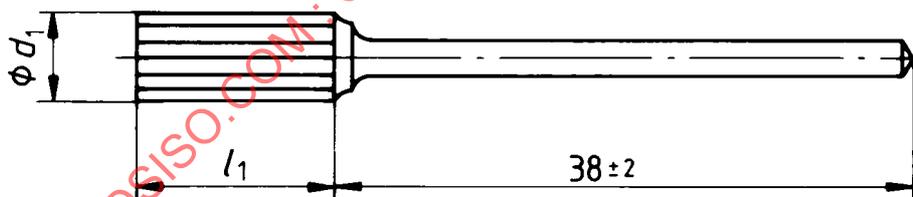


Figure 9

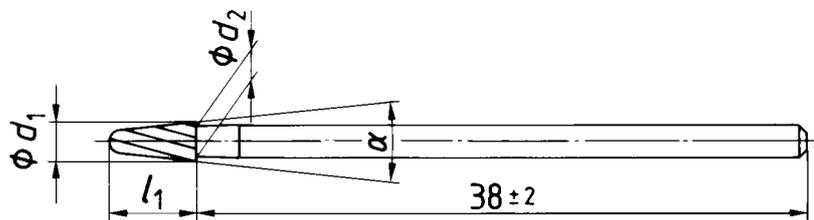
Table 9 — Dimensions and number of blades

Nominal size	d_1	l_1	Number of blades
	$\pm 0,3$	$\pm 0,5$	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.



$$\alpha = 10^\circ \text{ to } 14^\circ$$

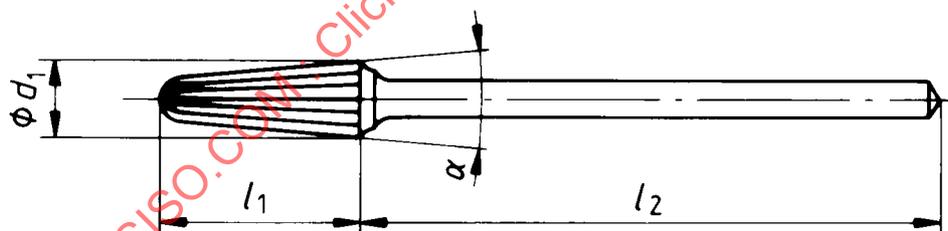
Figure 10

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	2	12
		8		

5.8.2 Rounded cone (truncated conical, domed), regular

A regular rounded cone cutter shall be as specified in figure 11 and table 11.



$$\alpha = 10^\circ \text{ to } 14^\circ$$

Size 023 $\alpha = 4^\circ \text{ to } 8^\circ$

Figure 11

Table 11 — Dimensions and number of blades

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

5.9 Paraboloidal

A paraboloidal cutter shall be as specified in figure 12 and table 12.

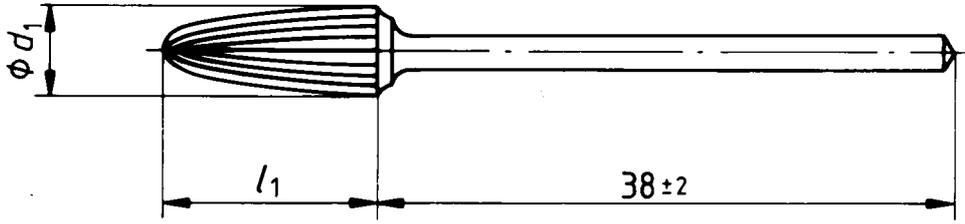


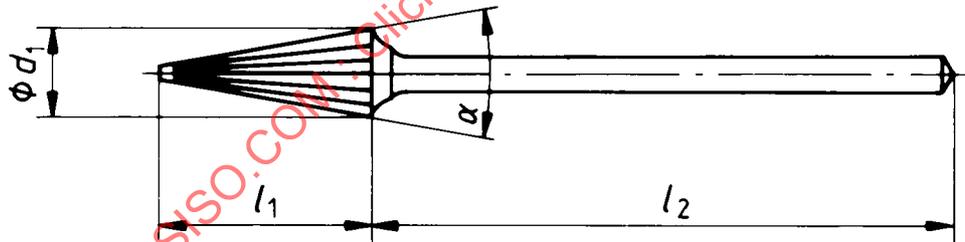
Figure 12

Table 12 — Dimensions and number of blades

Nominal size	d_1	l_1	Number of blades
	$\pm 0,3$	$\pm 0,5$	min.
060	6	14	20
070	7	14	20

5.10 Cone (conical)

A cone cutter shall be as specified in figure 13 and table 13.



Size 023 $\alpha = 6^\circ$ to 10°
 Size 060 $\alpha = 18^\circ$ to 22°

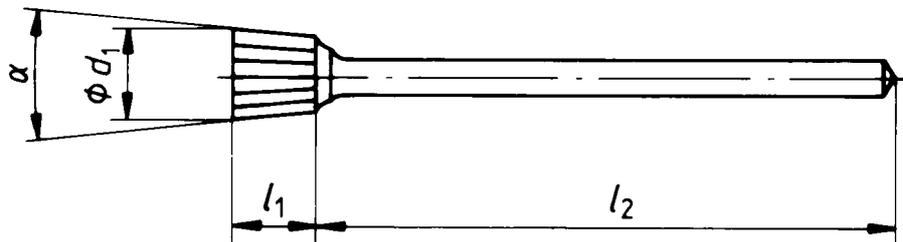
Figure 13

Table 13 — Dimensions and number of blades

Nominal size	d_1	l_1	l_2	Number of blades
	$\pm 0,3$	$\pm 0,5$	± 2	min.
023	2,3	13	31,5	12
060	6	14	38	20

5.11 Inverted truncated conical

An inverted truncated conical cutter shall be as specified in figure 14 and table 14.



Size 031 $\alpha = 12^\circ$ to 16°
 Size 060 $\alpha = 8^\circ$ to 12°

Figure 14

Table 14 — Dimensions and number of blades

Nominal size	d_1	l_1	l_2	Number of blades
	$\pm 0,3$	$\pm 0,5$	± 2	min.
031	3,1	3	41,5	24
060	6	5,5	38	24

5.12 Flame (cylindrical with long ogival end)

A flame cutter shall be as specified in figure 15 and table 15.

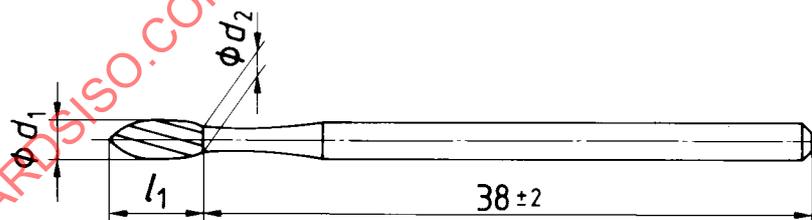


Figure 15

Table 15 — 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	65	1,8	10

6 Run-out

The total indicated run-out determined as described in ISO 8325 shall not exceed 0,08 mm.

The measurement point is the largest diameter or, for cylindrical instruments, the middle of the working part.

7 Sampling and acceptance levels

The acceptable quality level (AQL) according to ISO 2859-1 shall be 6,5.

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