

---

---

**Dental rotary instruments — Cutters —**  
**Part 4:**  
**Miniature carbide laboratory cutters**

*Instruments rotatifs dentaires — Fraises techniques —*

*Partie 4: Fraises techniques miniatures en carbure pour laboratoire*

STANDARDSISO.COM : Click to view the full PDF of ISO 7787-4:2002



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

STANDARDSISO.COM : Click to view the full PDF of ISO 7787-4:2002

© ISO 2002

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.ch](mailto:copyright@iso.ch)  
Web [www.iso.ch](http://www.iso.ch)

Printed in Switzerland

## Contents

	Page
Foreword.....	iv
Introduction.....	v
1 Scope .....	1
2 Normative references .....	1
3 Symbols .....	1
4 Requirements .....	2
4.1 Materials .....	2
4.2 Shapes .....	2
4.3 Dimensions and number of blades.....	2
4.4 Tothing.....	19
4.5 Run-out .....	19
5 Test procedure .....	19
5.1 Shapes .....	19
5.2 Dimensions and number of blades.....	19
5.3 Tothing.....	19
5.4 Run-out .....	19
6 Acceptance quality limit (AQL) .....	19
7 Designation of tothing and number of blades.....	19
8 Marking .....	20
9 Labelling on the package.....	20
10 Packaging.....	20

STANDARDSISO.COM : Click to view the full PDF of ISO 7787-4:2002

## 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 3.

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 part of ISO 7787 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 7787-4 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 4, *Dental instruments*.

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*
- *Part 4: Miniature carbide laboratory cutters*

## Introduction

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

The various dimensional and other requirements specified for miniature carbide laboratory cutters are those considered important to ensure the interchangeability and safe usage of these instruments in the dental laboratory.

The nominal diameters of the working part listed in Tables 1 to 16 comply with the diameters specified in ISO 2157, *Dental rotary instruments — Nominal diameters and designation code number*.

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

STANDARDSISO.COM : Click to view the full PDF of ISO 7787-4:2002



# Dental rotary instruments — Cutters —

## Part 4: Miniature carbide laboratory cutters

### 1 Scope

This part of ISO 7787 specifies the shape and dimensional characteristics, number of blades, type of tothing and run-out for the ten most common miniature carbide laboratory cutters, which are predominantly used in the dental laboratory.

### 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 7787. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 7787 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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

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

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

ISO 8325, *Dental rotary instruments — Test methods*

### 3 Symbols

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

$d_1$  diameter of working part, head diameter;

$d_2$  neck diameter;

$l$  length of working part, head length;

$\alpha$  angle of working part.

## 4 Requirements

### 4.1 Materials

#### 4.1.1 Working part

The working part shall be made of tungsten carbide. The selection of the type of tungsten carbide and its treatment are at the discretion of the manufacturer.

#### 4.1.2 Shank

The material of the shank shall comply with ISO 1797-1.

### 4.2 Shapes

The shapes of the working part shall be as specified in Figures 1 to 15.

Variations of the shapes are permitted within the limited dimensions and the descriptions used in the subclause titles.

Testing shall be carried out in accordance with 5.1.

### 4.3 Dimensions and number of blades

#### 4.3.1 Working part

##### 4.3.1.1 General

Dimensions are given in millimetres and angles are given in degrees.

The dimensions of the working part shall be as specified in Figures 1 to 15 as appropriate and Tables 1 to 15 as appropriate.

The number of blades shall be as specified in Table 16.

Testing shall be carried out in accordance with 5.2.

## 4.3.1.2 Spherical, round

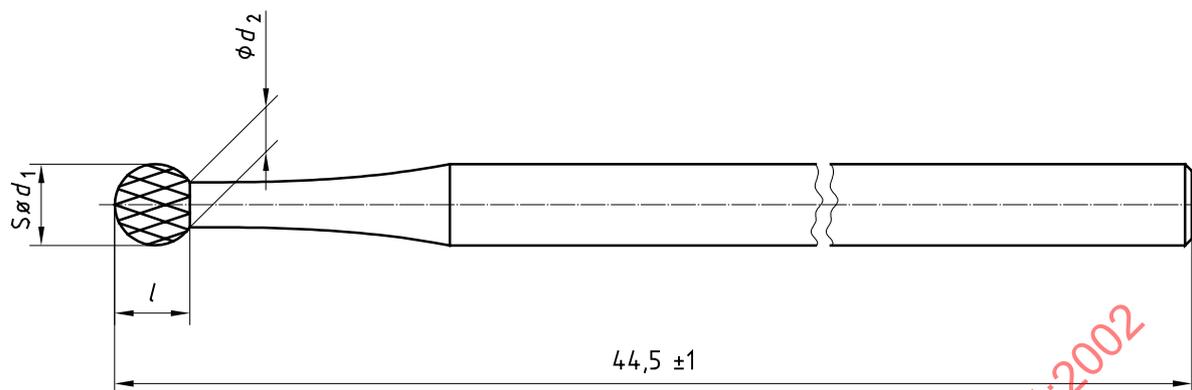


Figure 1

Table 1 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
010	1,0	0,75	0,85
012	1,2	0,85	1,05
014	1,4	0,95	1,25
016	1,6	1,05	1,4
018	1,8	1,20	1,6
021	2,1	1,35	1,9
023	2,3	1,45	2,1
025	2,5	1,50	2,3
027	2,7	1,60	2,5
031	3,1	1,80	2,6

4.3.1.3 Inverted conical

4.3.1.3.1 Inverted conical, regular

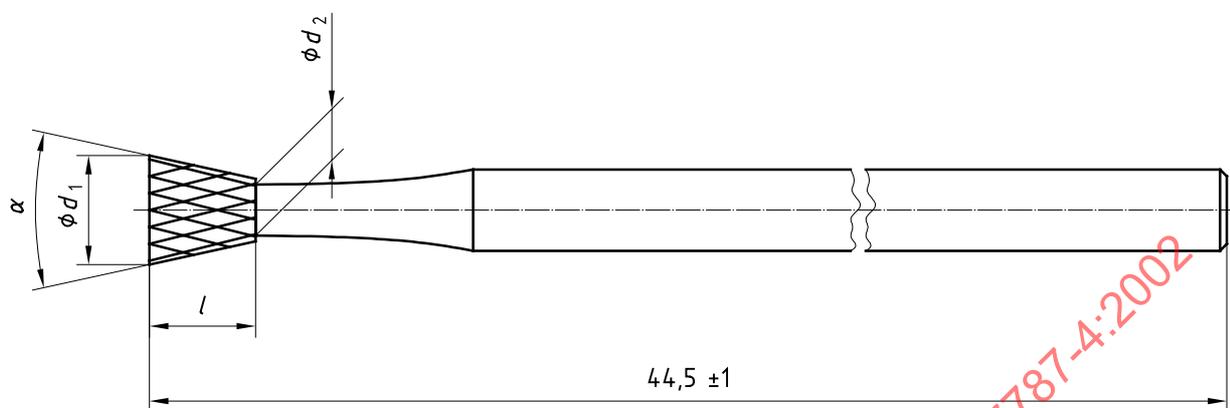


Figure 2

Table 2 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max	$l$ $\pm 0,5$	$\alpha$
014	1,4	0,95	1,2	10° to 16°
018	1,8	1,25	1,55	
031	3,1	2,35	3,0	

## 4.3.1.3.2 Inverted conical, long

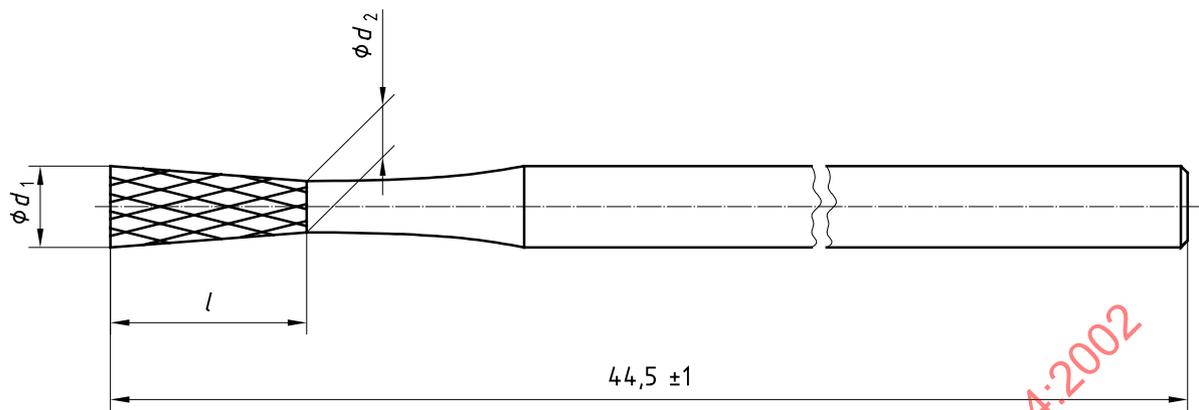


Figure 3

Table 3 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
014	1,4	0,95	4,75
016	1,6	1,10	4,75
023	2,3	1,45	5,5

4.3.1.4 Cylindrical

4.3.1.4.1 Cylindrical, regular

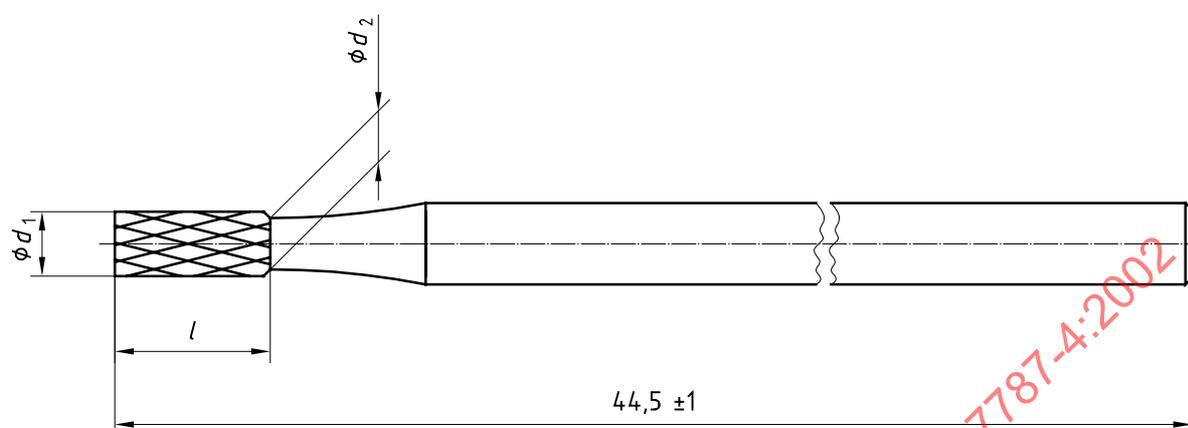


Figure 4

Table 4 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
014	1,4	1,30	4,75
023	2,3	1,85	5,5
025	2,5	2,35	5,5

## 4.3.1.4.2 Cylindrical, long

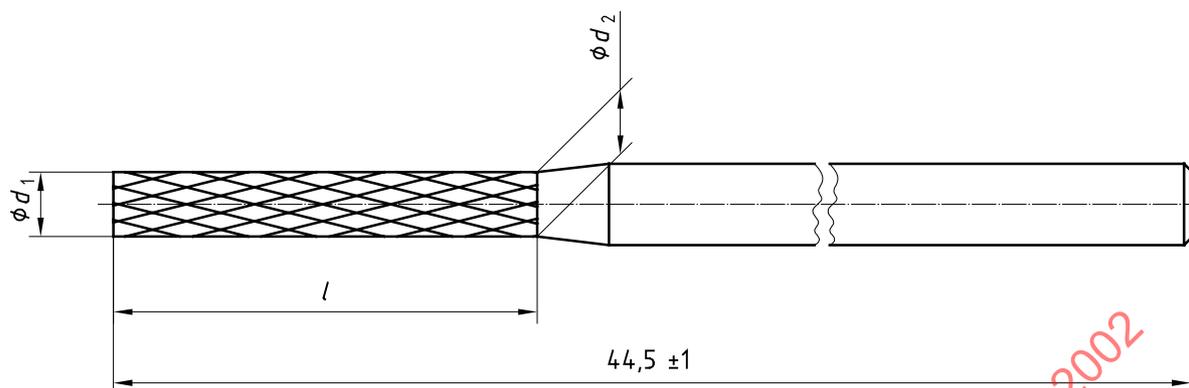


Figure 5

Table 5 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
023	2,3	2,35	15,0

4.3.1.5 Hemispherical, cylindrical

4.3.1.5.1 Hemispherical, cylindrical, regular

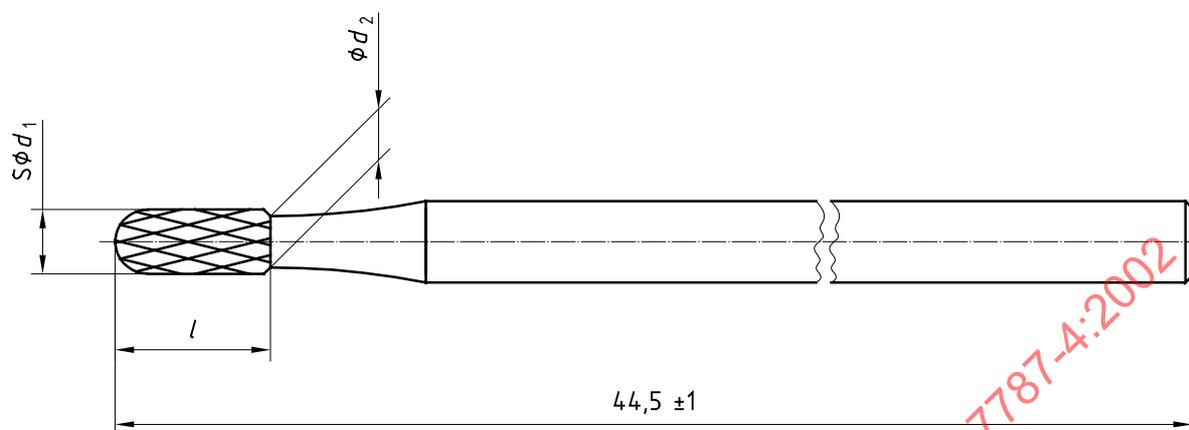


Figure 6

Table 6 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
014	1,4	1,30	4,75
023	2,3	1,85	5,5

## 4.3.1.5.2 Hemispherical, cylindrical, long

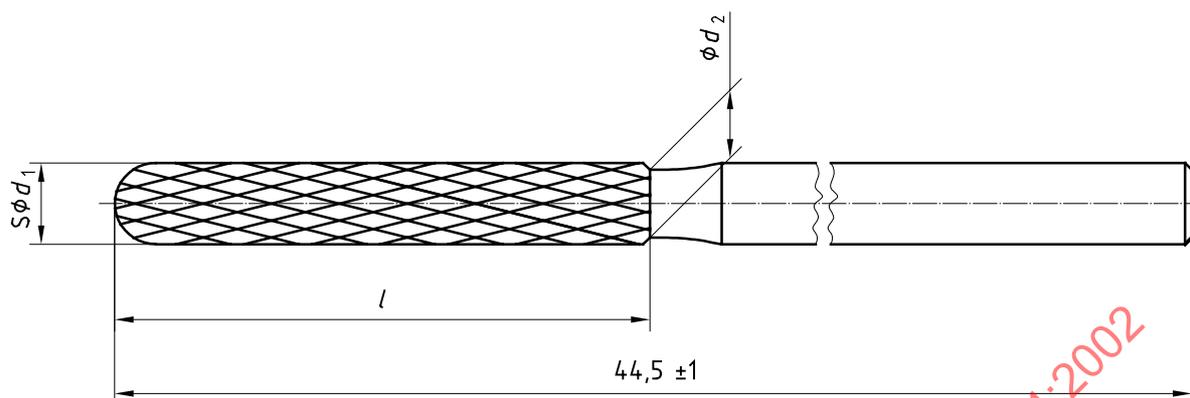


Figure 7

Table 7 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
016	1,6	1,6	9,5
023	2,3	2,35	15,0

4.3.1.6 Truncated conical, domed

4.3.1.6.1 Truncated conical, domed, regular

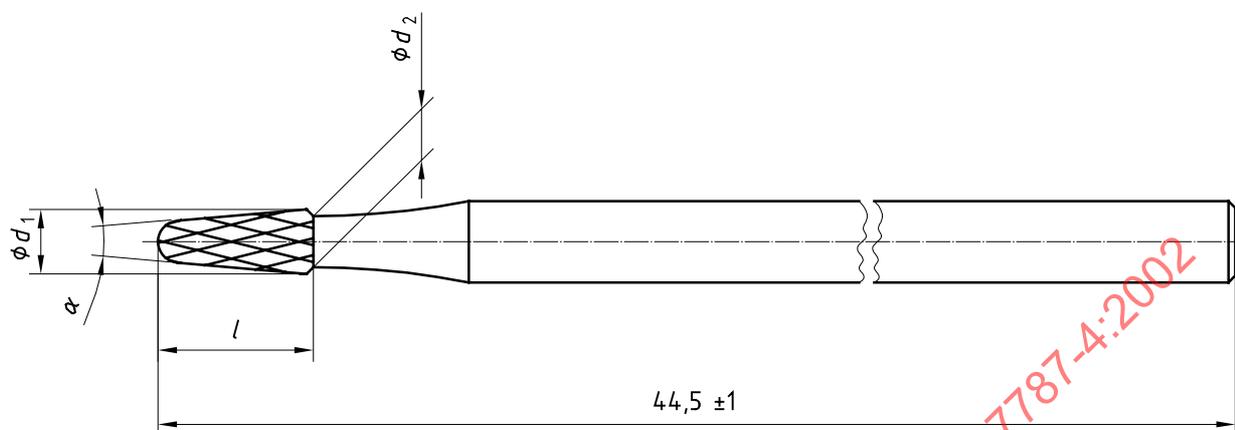


Figure 8

Table 8 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$	$\alpha$
014	1,4	1,25	4,75	10° to 14°
016	1,6	1,50	5,0	
018	1,8	1,60	5,5	
023	2,3	1,95	5,5	

4.3.1.6.2 Truncated conical, domed, long

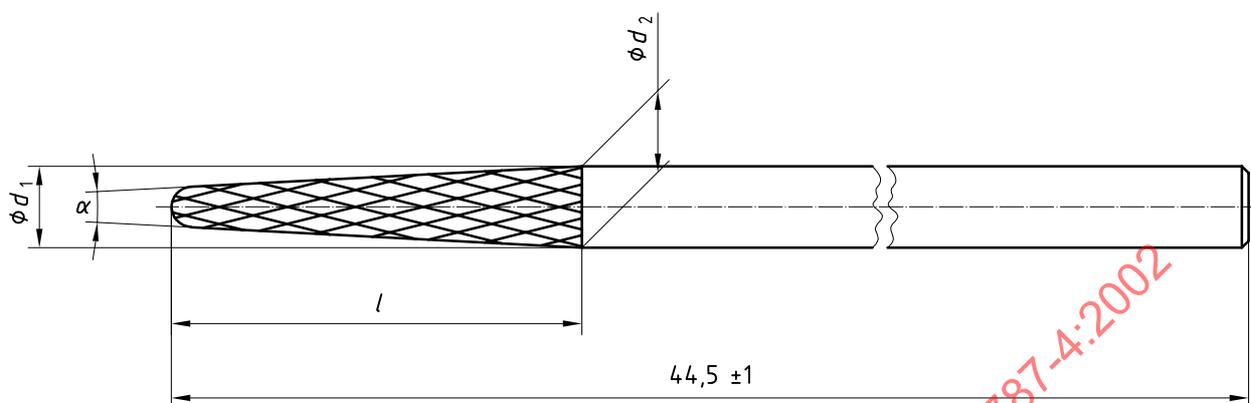


Figure 9

Table 9 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$	$\alpha$
016	1,6	1,6	9,5	6° to 10°
023	2,3	2,35	11,5	

4.3.1.7 Truncated conical, sharp end

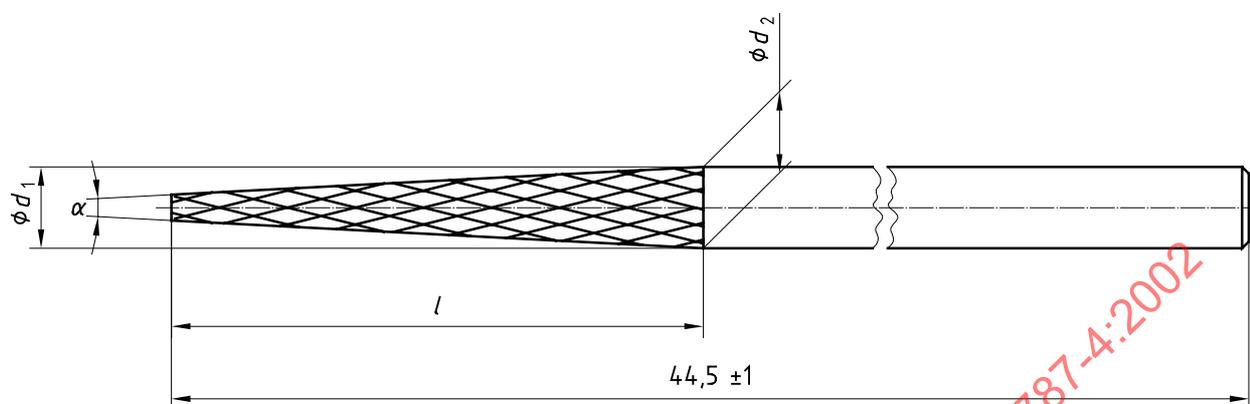


Figure 10

Table 10 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$	$\alpha$
023	2,3	2,35	15,0	6° to 10°

## 4.3.1.8 Egg (longitudinal ellipsoidal)

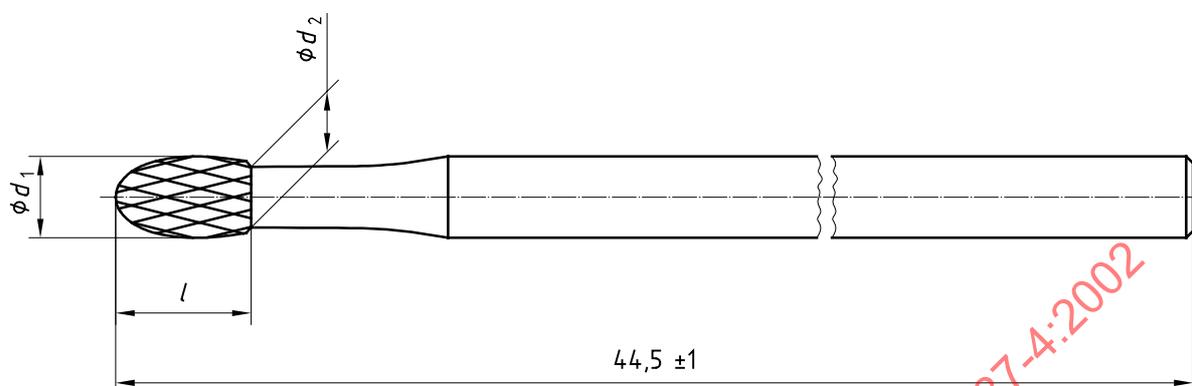


Figure 11

Table 11 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
014	1,4	1,0	2,9
023	2,3	1,7	3,8

4.3.1.9 Torpedo (ogivo/cylindrical)

4.3.1.9.1 Torpedo, regular

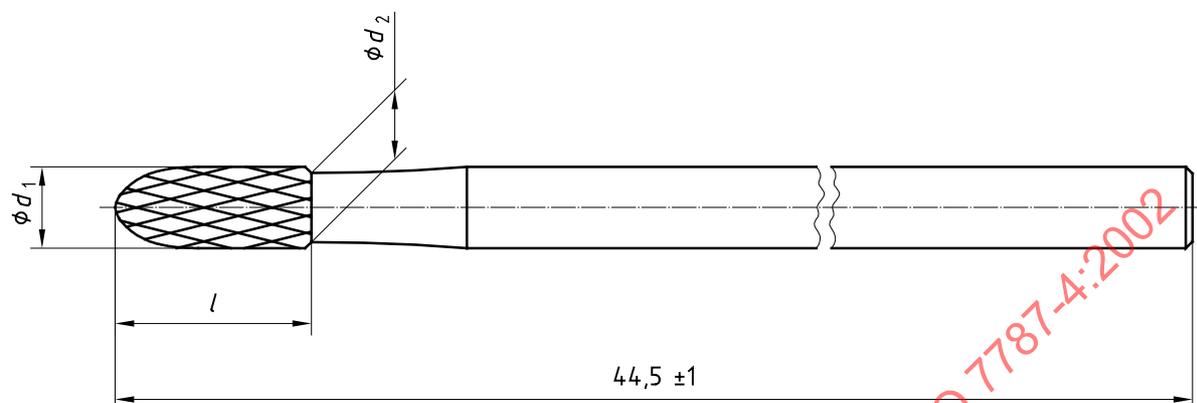


Figure 12

Table 12 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
012	1,2	1,15	4,5
023	2,3	1,85	5,5

## 4.3.1.9.2 Torpedo, long

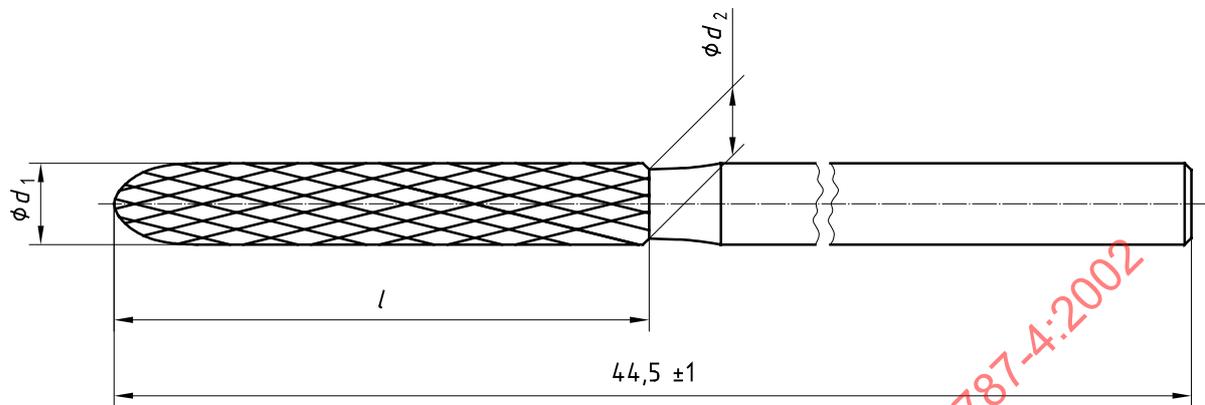


Figure 13

Table 13 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
016	1,6	1,6	9,5
023	2,3	2,35	15,0

4.3.1.10 Pear (hemispherical/inverted conical)

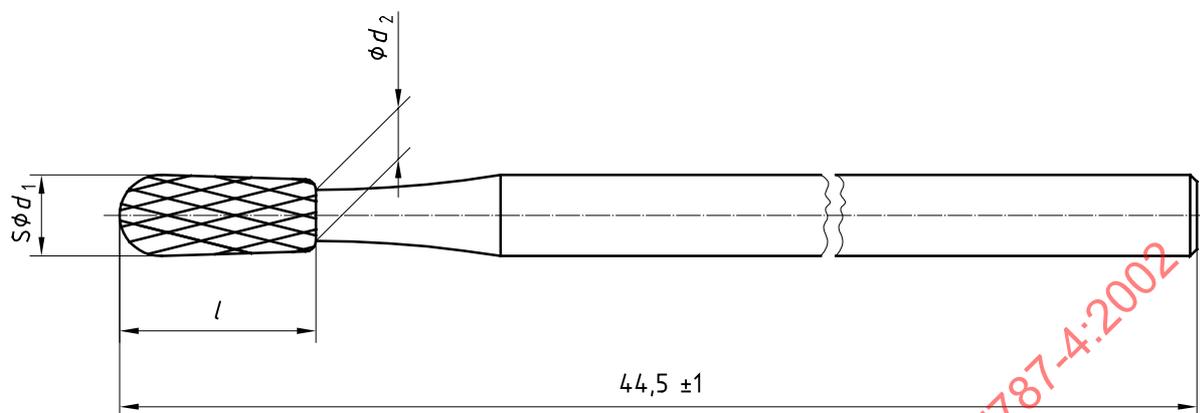


Figure 14

Table 14 — Dimensions

Designation of nominal diameter (Nominal size)	$d_1$ $\pm 0,1$	$d_2$ max.	$l$ $\pm 0,5$
023	2,3	1,45	5,5
029	2,9	2,00	5,5