INTERNATIONAL STANDARD

ISO 21671

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Dentistry — Rotary polishers

Art dentaire — Polissoirs rotatifs

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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

ISO 21671 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 4, *Dental instruments*.

Introduction

This International Standard is one of a series of standards relating to rotary instruments used in dentistry.

The various dimensional and other requirements specified for polishers are those considered important to ensure the interchangeability and safe usage of these instruments in the dental laboratory and at the dentist's working place.

The nominal diameters of the working part listed in Clauses 5 and 6 comply preferably with the diameters specified in ISO 2157.

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

Dentistry — Rotary polishers

1 Scope

This International Standard specifies the dimensions and other requirements for the most commonly used polishers which are used at the working place of the dentist and/or in the dental laboratory.

This International Standard is applicable to unmounted and mounted polishers.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

ISO 1797-2, *Dental rotary instruments — Shanks — Part 2: Shanks made of plastics*

ISO 1942, *Dentistry — Vocabulary*

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, *Dentistry — Number coding system for rotary instruments — Part 1: General characteristics*

ISO 6360-2, *Dentistry — Number coding system for rotary instruments — Part 2: Shapes*

ISO 6360-6, *Dentistry — Number coding system for rotary instruments — Part 6: Specific characteristics of abrasive instruments*

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

ISO 13295, *Dentistry — Mandrels for rotary instruments*

3 Terms, definitions and symbols

3.1 Terms and definitions

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

3.1.1
polisher
rotary instrument used in dentistry for polishing dental materials or teeth

3.1.2
mounted polisher
nondetachable polisher that is fixed on a shank

3.1.3
unmounted polisher
polisher that is delivered without a fixture or shank, but which is to be mounted on a fixture or mandrel with a fixture or a screw

3.2 Symbols

For the purpose of this document the following symbols apply:

d_1 diameter of working part, head diameter;

d_n diameter as appropriate (see Figures 1 to 21);

l_1 length of working part;

l_n length as appropriate (see Figures 1 to 21);

α_1 angle of working part;

α_2 angle of screw-in orifice;

α_n angle as appropriate.

4 Requirements

4.1 Materials

4.1.1 Working part

The working part shall be made of silicon rubber, natural rubber or synthetic rubber with the possible addition of abrasive materials. The selection of the type of material and its treatment shall be at the discretion of the manufacturer.

4.1.2 Shank or mandrel

The material of the shank for mounted polishers shall comply with ISO 1797-1 or ISO 1797-2. The material of the mandrel used for unmounted polishers shall comply with ISO 13295. The material of mandrels not specified shall be at the discretion of the manufacturer.

4.2 Shapes

The shapes of the working part shall be as specified in Figures 1 to 21.

Variations of the shapes within the limited dimensions and the description used in the subclause titles are permitted. Sharp or slightly rounded edges are at the discretion of the manufacturer.

Testing shall be carried out in accordance with 7.1.

4.3 Dimensions

Dimensions are given in millimetres, angles in degrees.

4.3.1 Working part

The dimensions of the working part shall be as specified in the appropriate Tables in Clauses 5 and 6.

Testing shall be carried out in accordance with 7.2.

4.3.2 Shanks and mandrels

4.3.2.1 Mounted polishers

The shank of mounted polishers shall be either Type 1, Type 2, Type 3 or Type 4 of ISO 1797-1:1992. Screw threaded shanks shall be 1,80 mm diameter with 0,35 mm thread pitch or with 0,40 mm thread pitch.

4.3.2.2 Unmounted polishers

Mandrels for unmounted polishers shall be in accordance with ISO 13295.

4.4 Colour codes for marking of grit sizes for diamond-containing abrasives

The application of the colour code is left to the discretion of the manufacturer.

If colour coding is applied, it shall be performed as described in this International Standard.

Take account of the fitting length of the shank according to ISO 1797-1 and to ISO 1797-2.

Position of colour coding: on the shank, next to the working part.

Table 1 — Colour code for grit sizes of diamond-containing abrasives

Grit size of abrasives in the working part	Colour of ring marking
coarse	green
medium	blue
fine	red
extra fine	yellow
ultra fine	white

4.5 Run-out

The run-out shall be as given in the respective Tables in Clauses 5 and 6.

Testing shall be carried out in accordance with 7.3.

5 Unmounted polishers

5.1 Disc

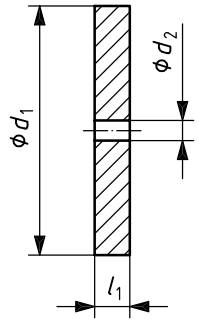
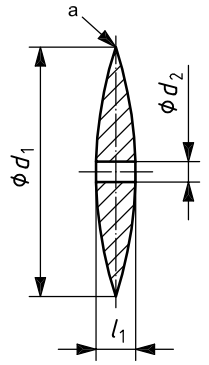


Figure 1 — Disc

Table 2 — Disc — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	d_2 ± 0,2	l_1 ± 0,3	Run-out
120	12	1,8	2,0	0,2
170	17		2,5	
200	20		1,0	
220	22		1,0	
220	22		3,1	
250	25		1,0	
260	26		1,2	

5.2 Lens



a Edge: sharp or slightly rounded at the discretion of the manufacturer.

Figure 2 — Lens

Table 3 — Lens — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	d_2 ± 0,2	l_1 ± 0,5	Run-out
130	13	1,8	2,5	0,2
150	15		2,5	
180	18		3,0	
220	22		3,5	

5.3 Cylindrical for screw-in

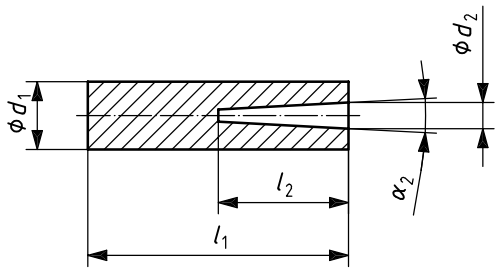


Figure 3 — Cylindrical for screw-in

Table 4 — Cylindrical for screw-in — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	d_2 ± 0,4	l_1 ± 1	l_2 ± 0,5	α_2 °	Run-out
060	6	2,3	23	11	1 to 3	0,2
070	7		20			

5.4 Conical for screw-in, truncated conical

Dimensions in millimetres

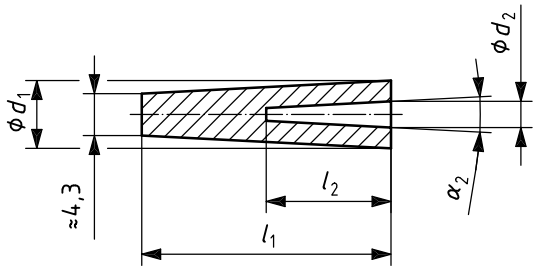


Figure 4 — Conical for screw-in, truncated conical

Table 5 — Conical for screw-in, truncated conical — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	d_2 ± 0,4	l_1 ± 1	l_2 ± 0,5	α_2 °	Run-out
060	6	2,3	22	11	1 to 3	0,2

5.5 Cylindrical for screw-in, end, conical, pointed

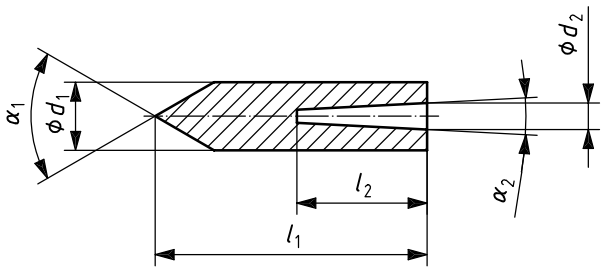


Figure 5 — Cylindrical for screw-in, end, conical, pointed

Table 6 — Cylindrical for screw-in, end, conical, pointed — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,3	d_2 ± 0,4	l_1 ± 1	l_2 ± 0,5	α_1 °	α_2 °	Run-out
060	6	2,3	24	11	60	1 to 3	0,2

5.6 Cylindrical, plain

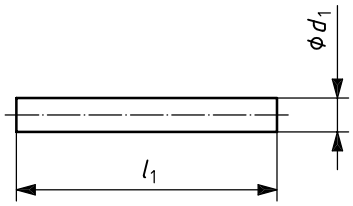


Figure 6 — Cylindrical, plain

Table 7 — Cylindrical, plain — Dimensions

Designation of nominal diameter, nominal size	d_1 $^{+0,05}_{-0,15}$	l_1 ± 1
020	2	19
030	3	23

NOTE This polisher (pin) is used in a mandrel with a chuck which is not standardized. Therefore specification of the run-out is not useful.

5.7 Inverted conical, recessed cylindrical end

Dimensions in millimetres

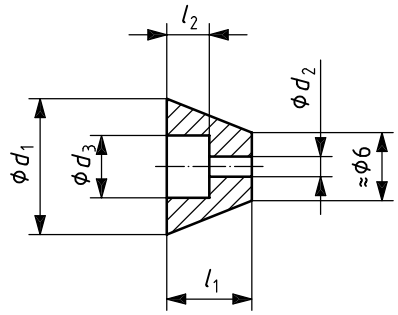


Figure 7 — Inverted conical, recessed cylindrical end

Table 8 — Inverted conical, recessed cylindrical end — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 $\pm 0,5$	d_2 $\pm 0,2$	d_3 $\pm 0,5$	l_1 $\pm 0,5$	l_2 $\pm 0,5$	Run-out
120	12	1,8	5,5	7,5	2,0	0,2

5.8 Inverted conical, recessed conical end

Dimensions in millimetres

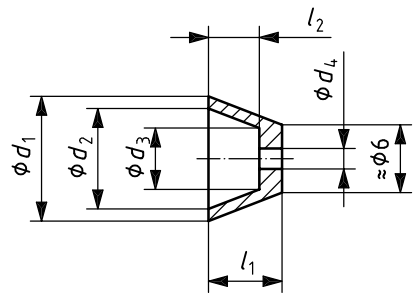


Figure 8 — Inverted conical, recessed conical end

Table 9 — Inverted conical, recessed conical end — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	d_2 ± 0,5	d_3 C 0,5	d_4 ± 0,2	l_1 ± 0,5	l_2 ± 0,5	Run-out
110	11	9	5,5	1,8	6,5	5	0,2
150	15				9,0		

6 Mounted polishers

6.1 Cylindrical

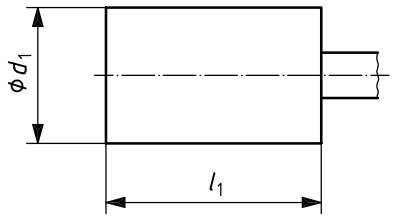


Figure 9 — Cylindrical

Table 10 — Cylindrical — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,5	Run-out
050	5	13,0	0,1
060	6	11,5	
120	12	19,0	0,2
140	14	12,0	

6.2 Disc

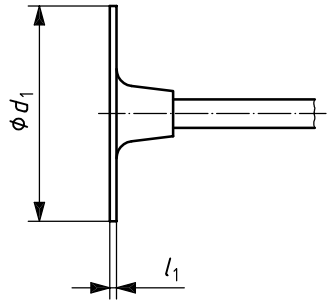


Figure 10 — Disc

Table 11 — Disc — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,2	Run-out
190	19	0,60	0,2
220	22	0,25	
220	22	0,60	
220	22	1,00	

6.3 Wheel

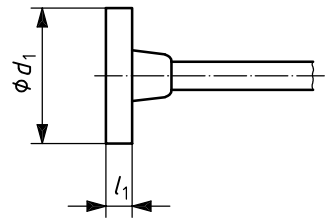


Figure 11 — Wheel

Table 12 — Wheel — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,3	Run-out
060	6,0	1,5	0,1
090	9,0	1,5	
100	10,0	2,3	0,2
110	11,0	2,0	
115	11,5	2,0	
120	12,0	2,5	
150	15,0	2,5	
170	17,0	7,0	

6.4 Spherical

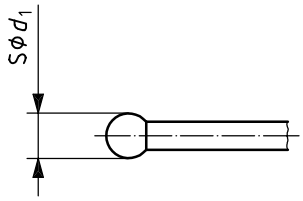
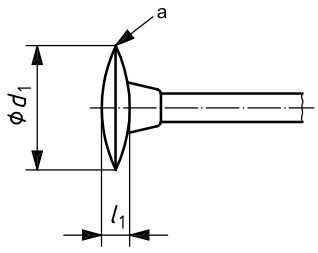


Figure 12 — Spherical

Table 13 — Spherical — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	Run-out
040	4	0,1

6.5 Lens



a Edge: sharp or slightly rounded at the discretion of the manufacturer.

Figure 13 — Lens

Table 14 — Lens — Dimensions and run-out

Designation of nominal diameter Nominal size	d_1 ± 0,5	l_1 ± 0,5	Run-out
060	6	2	0,1
090	9	3	
100	10	2	0,2
120	12	3	
150	15	3	
260	26	2	

6.6 Torpedo, conical

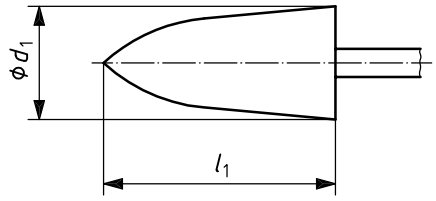


Figure 14 — Torpedo, conical

Table 15 — Torpedo, conical — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,5	Run-out
030	3,0	6,0	0,1
030	3,0	7,0	
040	4,0	9,0	
040	4,0	12,0	
045	4,5	12,0	
050	5,0	10,0	
050	5,0	16,0	
060	6,0	6,5	
060	6,0	17,5	
100	10,0	19,0	
100	10,0	20,5	
125	12,5	25,0	

6.7 Cylindrical, end hemispherical

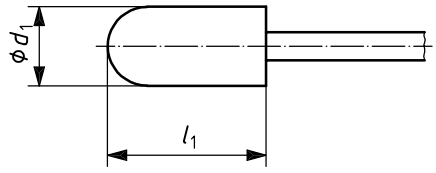


Figure 15 — Cylindrical, end hemispherical

Table 16 — Cylindrical, end hemispherical — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,5	Run-out
070	7	14	0,1
070	7	20	
150	15	17	0,2

6.8 Bullet, tapered with round end

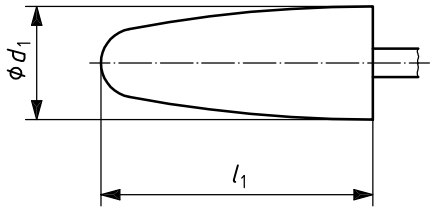


Figure 16 — Bullet, tapered with round end

Table 17 — Bullet, tapered with round end — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,5	Run-out
060	6	17,5	0,1
100	10	22,0	
100	10	24,0	
100	10	25,0	

6.9 Torpedo, cylindrical

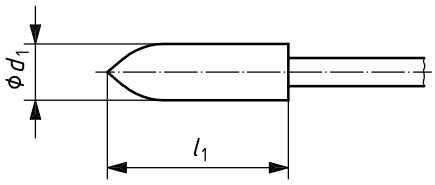


Figure 17 — Torpedo, cylindrical

Table 18 — Torpedo, cylindrical — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,5	Run-out
040	4	12	0,1
040	4	14	
050	5	12	
050	5	14	
050	5	16	

6.10 Bud, slender

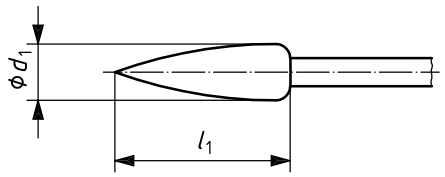
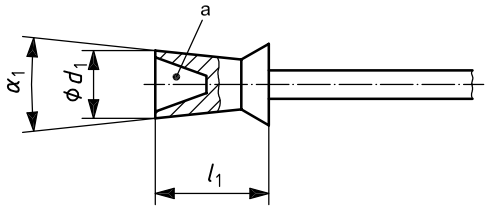


Figure 18 — Bud, slender

Table 19 — Bud, slender — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,5	Run-out
040	4,0	10,0	0,1
040	4,0	13,0	
050	5,0	15,5	
050	5,4	13,0	
060	6,0	15,5	
060	6,0	18,0	

6.11 Inverted conical, recessed conical end, with collar



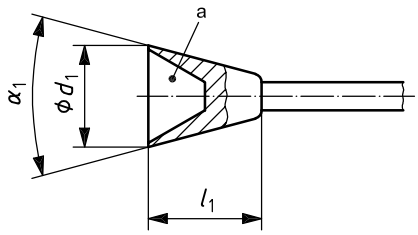
a Ribbed segments inside the cone permitted.

Figure 19 — Inverted conical, recessed conical end, with collar

Table 20 — Inverted conical, recessed conical end, with collar — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,3	l_1 ± 0,3	α_1 °	Run-out
060	6	8	5 to 12	0,2
060	6	10		

6.12 Inverted conical, recessed conical end



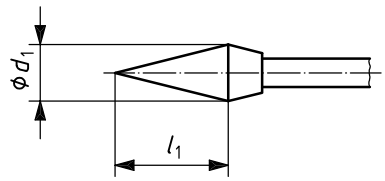
a Ribbed segments inside the cone permitted.

Figure 20 — Inverted conical, recessed conical end

Table 21 — Inverted conical, recessed conical end — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,5	α_1 °	Run-out
050	5,0	8,0	5 to 35	0,2
060	6,0	7,5		
060	6,0	9,5		
065	6,5	10,0		
070	7,0	9,5		
080	8,0	12,0		
090	9,0	8,5		
090	9,0	9,5		

6.13 Inverted conical, conical pointed



NOTE A ribbed version is also possible.

Figure 21 — Inverted conical, conical pointed

Table 22 — Inverted conical, conical pointed — Dimensions and run-out

Designation of nominal diameter, nominal size	d_1 ± 0,5	l_1 ± 0,3	Run-out
060	5	10,0	0,1
060	6	15,0	
110	11	6,3	

7 Test procedures

7.1 Shape

Determine the shape of the polisher by using a shadowgraph or by measuring the relevant dimensions in accordance with ISO 8325.

7.2 Dimensions

Measure the dimensions of the polisher in accordance with ISO 8325.

7.3 Run-out

Determine the run-out of the polisher in accordance with ISO 8325.

The measurement point shall be the largest diameter of the polisher or, for cylindrical polishers, the middle of the working part.

8 Sampling and acceptance quality limit (AQL)

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

9 Marking

The marking of polishers may contain information about the fineness of the grit size used for the working part and its binding. For further information see ISO 6360-6.

Marking by colour shall be at the discretion of the manufacturer. If applied, the marking shall be in accordance with 4.4.

10 Labelling

The labelling on the package of polishers shall contain at least the following information:

a) name and/or trade mark of manufacturer or distributor;

b) material of the active working part;

c) type of shank, in accordance with ISO 1797, if applicable;

d) identification of shape;

e) specific characteristics, e.g. fineness of grit size and binding;

f) nominal diameter, nominal size;

g) lot number.

The information shall be given in accordance with ISO 6360.

11 Packaging

Dental polishers should be packaged at the discretion of the manufacturer.

Bibliography

[1] ISO 2157, *Dental rotary instruments — Nominal diameters and designation code number*

[2] ISO 10323, *Dental rotary instruments — Bore diameters for discs and wheels*

ICS 11.060.20

Price based on 16 pages