

INTERNATIONAL STANDARD

ISO
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First edition
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Dental rotary instruments — Shanks —

Part 2:

Shanks made of plastics

Instruments rotatifs dentaires — Queues —

Partie 2: Queues en matières plastiques



Reference number
ISO 1797-2:1992(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 1797-2 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Sub-Committee SC 4, *Dental instruments*.

This first edition of ISO 1797-2, together with ISO 1797-1, cancel and replace the first edition of ISO 1797 published in 1985, of which they constitute a technical revision.

ISO 1797 consists of the following parts, under the general title *Dental rotary instruments — Shanks*:

- Part 1: *Shanks made of metals*
- Part 2: *Shanks made of plastics*

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Introduction

This International Standard is one of a series of basic standards on dental rotary instruments and constitutes an important link between the standards on dental rotary instruments and those on dental handpieces.

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Dental rotary instruments — Shanks —

Part 2:

Shanks made of plastics

1 Scope

This part of ISO 1797 specifies shanks of dental rotary instruments made of plastics materials and gives measurement methods for the verification of the dimensions. A quality requirement is added in order to ensure a high quality level.

Subclauses 4.6 and 4.7 do not apply to disposable (single-use) instruments.

Shanks made of plastics materials are designed for use at speeds less than 5 000 r/min.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 1797. 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 1797 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/R 527:1966, *Plastics — Determination of tensile properties*.

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

ISO 3274:1975, *Instruments for the measurement of surface roughness by the profile method — Contact*

(stylus) instruments of consecutive profile transformation — Contact profile meters, system M.

ISO 3630-1:—¹⁾, *Dental root-canal instruments — Part 1: Files, reamers, barbed broaches, rasps, paste carriers, explorers and cotton broaches*.

ISO 3630-2:1986, *Dental root canal instruments — Part 2: Enlargers*.

ISO 4288:1985, *Rules and procedures for the measurement of surface roughness using stylus instruments*.

3 Symbols and terms

Symbols and terms are shown in figures 1 to 3, with the following key:

d_1 diameter of shank

d_2 diameter in the groove

s D-flat dimension

l_1 fitting length

l_2 shoulder to end length

l_3 shoulder to groove length

l_4 width of groove

NOTE 1 Figures 2 and 3 are given for consistency with ISO 1797-1.

1) To be published.

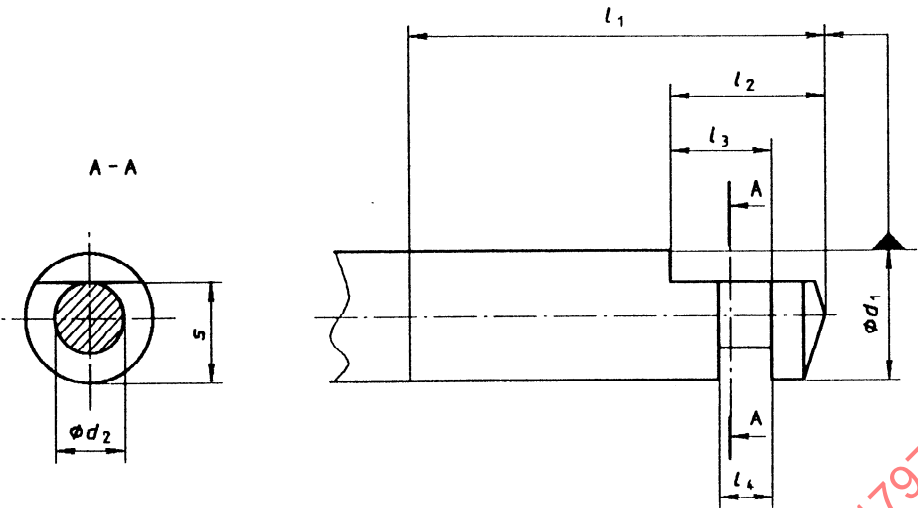


Figure 1 — Type 1 shank

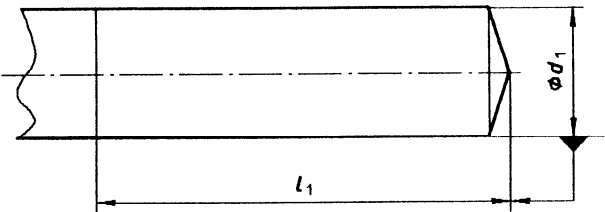


Figure 2 — Type 2 and type 4 shank

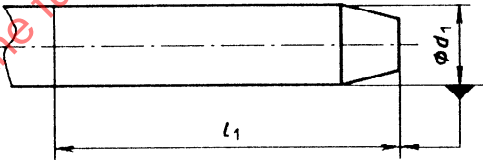


Figure 3 — Type 3 shank

4 Requirements

4.1 Material

Shanks shall be made of plastics materials. The type of plastics and treatment are at the discretion of the manufacturer.

4.2 Dimensions

The dimensions and tolerances shall be as shown in figures 4 and 5.

4.3 Surface irregularities — Flattened portions

Surface irregularities shall comply with the following specifications, which relate to figure 5:

$$d_1 = 2,35 \begin{smallmatrix} 0 \\ -0,05 \end{smallmatrix}$$

$$x = 0,04 \text{ max.}$$

$$d_2 \leq d_1$$

Dimensions in millimetres
Surface roughness values in micrometres

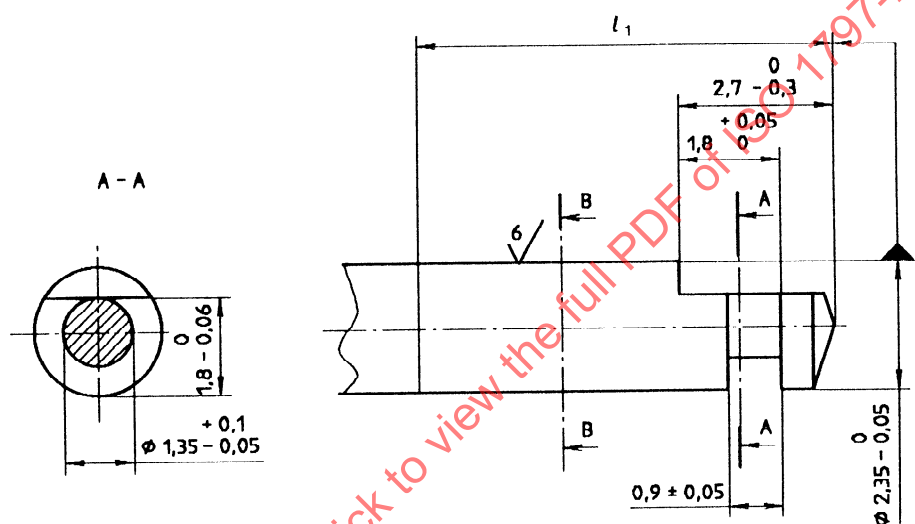


Figure 4 — Shank

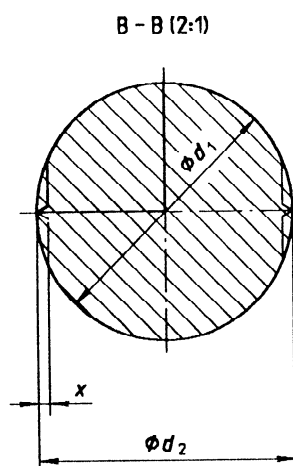


Figure 5 — Flattened portions, cross-section B-B of figure 4

4.4 Surface roughness

The surface roughness within l_1 shall be as specified in figure 4.

Testing shall be carried out in accordance with ISO 3274 and ISO 4288.

4.5 Tensile strength

The tensile strength shall be a minimum of 84 N/mm^2 .

Testing shall be carried out in accordance with ISO/R 527.

4.6 Heat resistance and colour stability

This requirement does not apply to disposable instruments.

Shanks shall show no signs of deformation and there shall not be recognizable colour change after testing.

Testing shall be carried out in accordance with 5.3.

4.7 Stability against swelling and chemicals

This requirement does not apply to disposable instruments.

Shanks shall not swell beyond the specified tolerance range of figure 4 when treated with disinfecting or sterilizing solutions as recommended by the manufacturer. Shanks shall meet the tolerance range of figure 4 when sterilized according to 5.3.

Testing shall be carried out in accordance with 5.1 and 5.2.

4.8 Colour code

The colour of the plastic shanks shall comply with the colour code of the instrument for which it is used. For root-canal instruments, this shall meet the requirements of ISO 3630-1 and ISO 3630-2.

Testing shall be carried out by visual inspection.

5 Test methods

5.1 Shank dimensions

Measurements shall be made using either tungsten carbide ring gauges checked regularly with mating plugs, air gauges, or dial indicators, graduated in divisions of 0,001 mm.

The diameter d_1 shall apply over the length l_1 .

5.2 Other dimensions

Measurements shall be made using either appropriate gauges with tungsten carbide faces, tungsten carbide-faced micrometer calipers, toolmakers' microscopes, or dial indicators.

5.3 Heat resistance, colour stability and stability against swelling and chemicals

5.3.1 Apparatus

Steam autoclave and dry heat sterilizers.

5.3.2 Procedure

Autoclave ten instruments of each size under pressure of 220 kPa (2,2 bar) at $(136 \pm 2)^\circ\text{C}$ for 20 min and dry heat sterilize at $(180 \pm 5)^\circ\text{C}$ for 120 min.

6 Quality control

The specification of ISO 1797-1:1992, clause 8 for shanks of type 1 applies.

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