

INTERNATIONAL STANDARD

ISO
1797-1

First edition
1992-02-15

Dental rotary instruments — Shanks —

Part 1: **Shanks made of metals**

Instruments rotatifs dentaires — Queues —
Partie 1: Queues en matériaux métalliques



Reference number
ISO 1797-1:1992(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 1797-1 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Sub-Committee SC 4, *Dental instruments*.

The first edition of ISO 1797-1, together with ISO 1797-2, cancel and replace the second 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*

Annex A of this part of ISO 1797 is for information only.

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 1:

Shanks made of metals

1 Scope

This International Standard specifies shanks of dental rotary instruments and gives measurement methods for the verification of the dimensions. A quality control requirement is added in order to ensure a high quality level.

Part 1 of ISO 1797 specifies shanks made of metals while part 2 specifies shanks made of plastics.

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

ISO 6507-1:1982, *Metallic materials — Hardness test — Vickers test — Part 1: HV 5 to HV 100.*

3 Classification

The shanks of dental rotary instruments are classified into the following types, according to their diameters and design:

Type 1: diameter 2,35 mm with groove and flat;

Type 2: diameter 2,35 mm cylindrical;

Type 3: diameter 1,6 mm cylindrical with conical or rounded end;

Type 4: diameter 3 mm cylindrical.

4 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

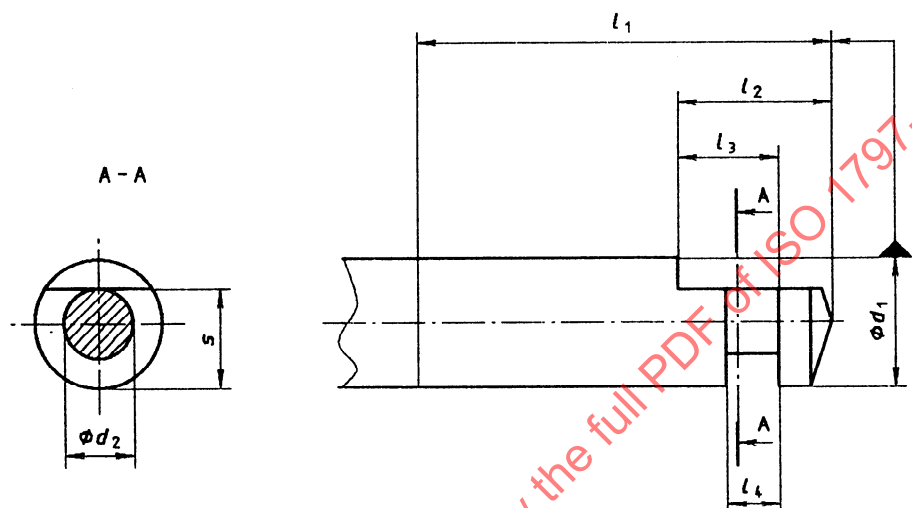


Figure 1 — Type 1 shank

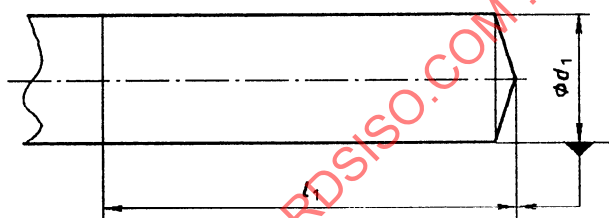


Figure 2 — Type 2 and type 4 shank

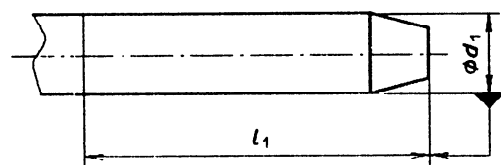


Figure 3 — Type 3 shank

5 Requirements

5.1 Material

Shanks shall be made of metal materials such as, for example steel, carbide. The type of material and the treatment given to it is at the discretion of the manufacturer.

5.2 Dimensions

The dimensions and tolerances shall be as shown in figures 4 to 7 and as given in table 1.

Dimensions are given in millimetres, surface roughness in micrometres.

The end of the shank for types 1, 2 and 4 shall be either flat, conical or rounded. The shape of the end shall be at the discretion of the manufacturer.

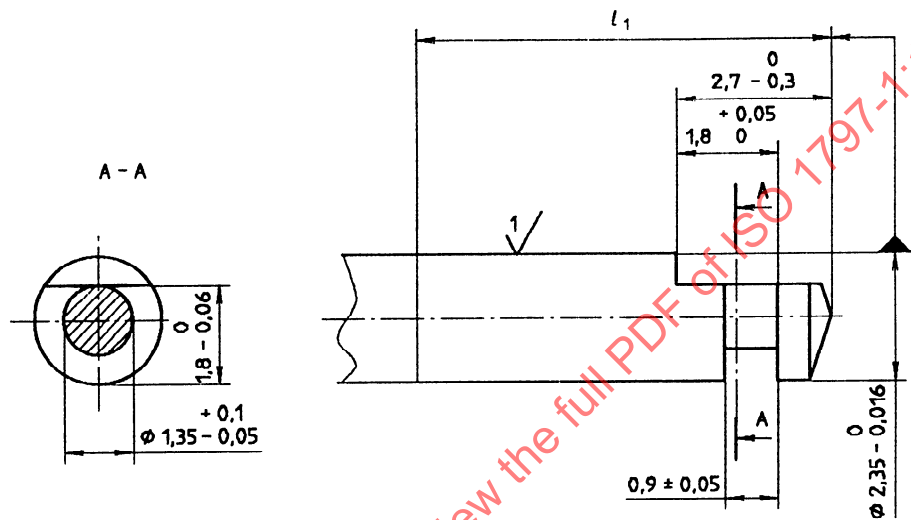


Figure 4 — Type 1 shank

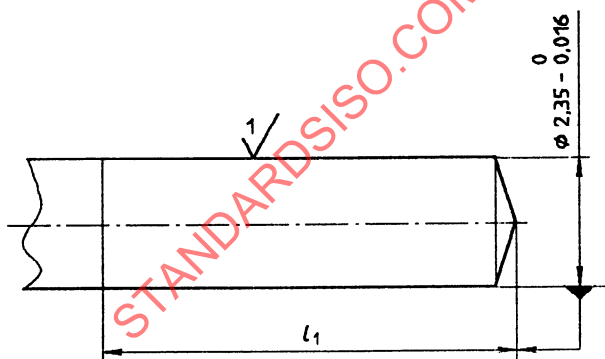
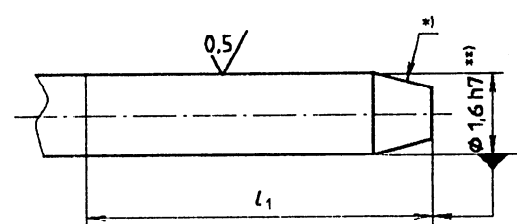


Figure 5 — Type 2 shank



*) Conical or rounded end at the discretion of the manufacturer

**) $h7 = -0.01$

Figure 6 — Type 3 shank

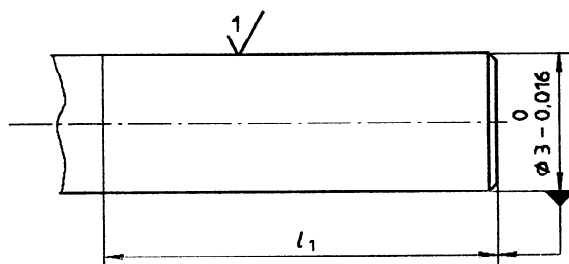


Figure 7 — Type 4 shank

Table 1 — Fitting length of shank

Diameter	l_1 min.				
	Shanks types 1 and 3 Length of instrument			Shank type 2	Shank type 4
	miniature, short	standard, long	extra long		
1,6	9	11	12	--	---
2,35		11 ¹⁾	12 ¹⁾	15 or 30	---
3	—	—	—	—	15 or 30

1) Enlargement should not occur within $l_1 = 13,5$ mm.

5.3 Surface roughness

The surface roughness, as determined by the methods described in ISO 3274 and ISO 4288, shall be as specified in figures 4 to 7.

5.4 Hardness

The hardness, for shanks made from steel or tungsten carbide, as determined by the method specified in ISO 6507-1, shall be not less than 250 HV 5.

6 Sampling

The method of taking samples and the number of instruments needed for testing shall be the subject of agreement between the interested parties.

7 Test methods

7.1 Shank diameters

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 be measured by traversing the length l_1 .

7.2 Other dimensions

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

8 Quality control

8.1 Types of shanks

For the purpose of quality control, the shanks of the instruments shall be classified as given in clause 3.

8.2 Defects

Major defects shall be those deviations from the specifications listed in table 2. Minor defects shall be all deviations in fitting dimensions not listed in table 2.

NOTES

1 Major defects include only those items which prevent an instrument from operating.

2 Minor defects include all other deviations from the specification which lower the quality of the instrument.

8.3 Acceptable quality level (AQL)

The acceptable quality level expressed in terms of the number of defects per 100 pieces, for each type of instrument, shall be as shown in table 3.

Table 2 — Major defects

Shank	d_1	d_2	l_3	l_4	s
Type 1	> 2,35	> 1,45	< 1,80	< 0,85	> 1,80
Type 2	> 2,35	---	---	---	---
Type 3	> 1,60 < 1,59	---	---	---	---
Type 4	> 3	---	---	---	---

Table 3 — Acceptable quality level

Shank	Major defects AQL	Minor defects AQL
Type 1	2,5	6,5
Type 2	2,5	6,5
Type 3	1,5	4,0
Type 4	2,5	6,5