INTERNATIONAL STANDARD

ISO 7711-1

First edition
1997-02-15

Dental rotary instruments — Diamond instruments —

Part 1:

Dimensions, requirements, marking and packaging

Instruments rotatifs dentaires — Instruments diamantés —

Partie 1: Dimensions, exigences, marquage et emballage

Reference number
ISO 7711-1:1997(E)

Contents

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X.400 c=ch; a=400net; p=iso; o=isocs; s=central

Printed in Switzerland

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 7711-1 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 4, *Dental instruments*.

This first edition of ISO 7711-1 cancels and replaces the first edition of ISO 7711:1984, which has been technically revised.

ISO 7711 consists of the following parts, under the general title *Dental rotary instruments — Diamond instruments:*

— *Part 1: Dimensions, requirements, marking and packaging*

— *Part 2: Discs*

— *Part 3: Grit sizes, designation and colour code*

Introduction

This part of ISO 7711 is one of a series of standards relating to dental rotary instruments.

This first edition of ISO 7711-1 contains the updated specifications for diamond instruments given in ISO 7711:1984. It was also aligned in several details with the other International Standards on dental rotary instruments.

The various dimensional and other requirements specified for diamond instruments are those considered important to ensure the interchangeability and safe usage of these instruments in the practice of dentistry.

The nominal diameters of the working part listed in tables 1 to 48 comply with the diameters specified in ISO 2157. The diameters listed in the first column (preferred diameters) should be used in preference.

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

Dental rotary instruments — Diamond instruments —

Part 1:
Dimensions, requirements, marking and packaging

1 Scope

This part of ISO 7711 specifies dimensional and other relevant requirements for the 14 most commonly used shapes of dental diamond instruments, including a quality control for these instruments.

It is envisaged to update this part of ISO 7711 at each periodical revision to cover at that time the commonly used shapes and other specifications.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 7711. 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 7711 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 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

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 7711-3:1992, *Dental rotary instruments — Diamond instruments — Part 3: Grit sizes, designation and colour code.*

ISO 8325:1985, *Dental rotary instruments — Test methods.*

3 Symbols

For the purposes of this part of ISO 7711, the following symbols apply:

d_1 diameter of working part; head diameter

d_2 neck diameter, measured directly behind the diamond coating

d_3 diameter of the coated neck, measured at the smallest diameter

l_1 length of the working part; head length

l_2 overall length

α angle of the working part

4 Requirements

4.1 Materials

4.1.1 Shank

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

4.1.2 Working part

The working part shall be made of diamond grit, bound in either metal, plastics or other suitable material at the discretion of the manufacturer.

Grit sizes shall comply with ISO 7711-3.

4.2 Shapes

The shape of the working part shall be as specified in the appropriate figures 1 to 48. Variations of shape within the limited dimensions and the descriptions in the subclause titles are permitted.

Testing shall be carried out in accordance with 5.1.

4.3 Dimensions

4.3.1 Overall length

The overall length of the instrument, l_2, is the sum of the fitting length of the shank and the length of the working part. In tables 1 to 48, "Standard" refers to instruments with standard fitting lengths of shank. For instruments with longer or shorter shank lengths, the overall length, l_2, will vary accordingly. See ISO 1797-1:1992, table 1, for fitting lengths of shanks.

4.3.2 Shank

The shank shall be Type 1, 2 or 3 of ISO 1797-1.

4.3.3 Working part

The dimensions of the working part shall be as specified in the appropriate tables 1 to 48.

Testing shall be carried out in accordance with 5.1.

4.3.3.1 Round head (spherical)

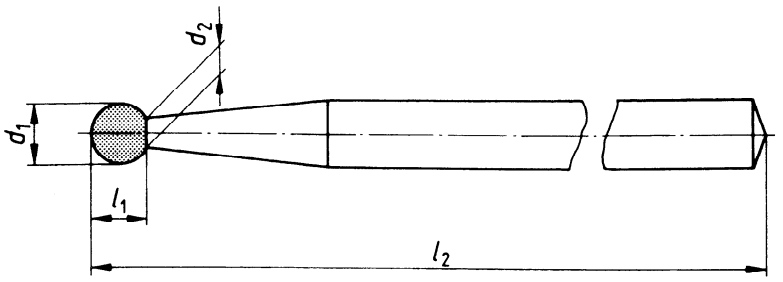

Figure 1

Table 1 — Dimensions (see figure 1)

Dimensions in millimetres

Designation of nominal diameter		d_1		d_2	l_1	l_2 ± 0,5			
Preferred diameters		nom.	tol.	max.	min.	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
—	007	0,7	± 0,08	0,50	0,50	22,0	44,5	19,0	16,5
008	—	0,8		0,53	0,55				
009	—	0,9		0,60	0,60				
010	—	1,0		0,70	0,65				
012	—	1,2		0,73	0,85				
014	—	1,4		0,83	1,05				
016	—	1,6	± 0,10	0,93	1,30				
018	—	1,8		1,03	1,50				
021	—	2,1		1,05	1,80				
023	—	2,3		1,23	2,00				
—	025	2,5		1,25	2,15				
—	027	2,7		1,33	2,35				
—	029	2,9		1,53	2,55				
—	033	3,3		1,63	2,90				
—	035	3,5		1,73	3,10				
—	042	4,2		2,01	3,80				
—	050	5,0		2,35	4,80				

4.3.3.2 Round head (with collar)

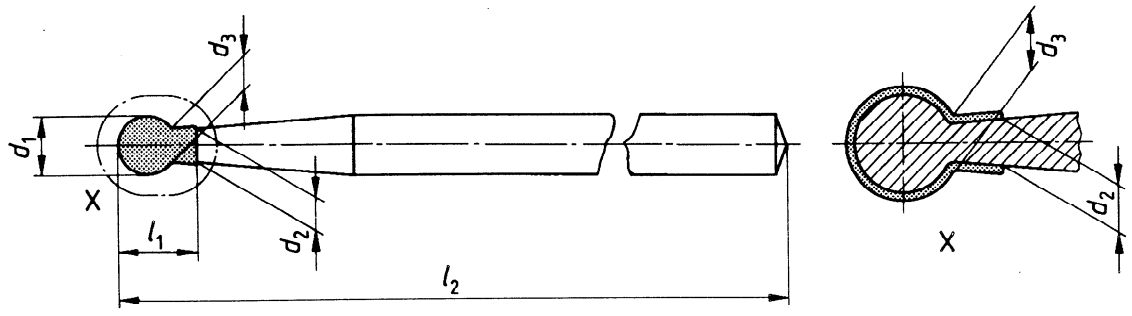

Figure 2

Table 2 — Dimensions (see figure 2)

Dimensions in millimetres

Designation of nominal diameter		d_1		d_2	d_3 ± 0,1	l_1	l_2 ± 0,5			
Preferred diameters		nom.	tol.	max.		min.	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
009		0,9	± 0,08	0,75	0,68	2,2	22,0	44,5	19,0	16,5
010	—	1,0		0,96	0,78					
012	—	1,2	± 0,10	1,00	0,88					
014	—	1,4		1,04	0,98					
016	—	1,6		1,10	1,04					
018	—	1,8		1,18	1,12					
021	—	2,1		1,26	1,20					
023	—	2,3		1,32	1,28	2,5				
—	025	2,5		1,44	1,40					
—	033	3,3		1,60	1,52	3,5				

4.3.3.3 Inverted cone head (inverted, truncated conical)

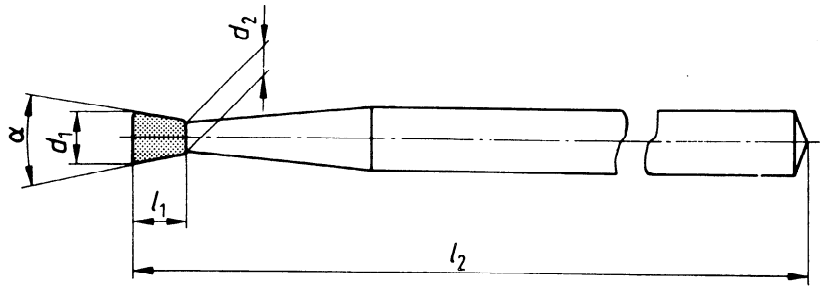

Figure 3

Table 3 — Dimensions (see figure 3)

Dimensions in millimetres, angles in degrees

Designation of nominal diameter		d_1		d_2	α	l_1	l_2 ± 0,5			
Preferred diameters		nom.	tol.	max.		min.	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
—	007	0,7	± 0,08	0,50	8° to 14°	0,50	22,0	44,5	19,0	16,5
008	—	0,8		0,50		0,55				
009	—	0,9		0,53		0,60				
010	—	1,0		0,63		0,65				
012	—	1,2		0,73	10° to 18°	0,85				
014	—	1,4		0,83		1,05				
016	—	1,6		0,89		1,30				
018	—	1,8		1,07		1,50				
021	—	2,1	± 0,10	1,15	10° to 22°	1,80				
023	—	2,3		1,40		2,00				
—	0,25	2,5		1,60		2,15				
—	027	2,7		1,70		2,35				
—	042	4,2		2,00	40° to 60°	2,35				

4.3.3.4 Inverted cone head (with collar)

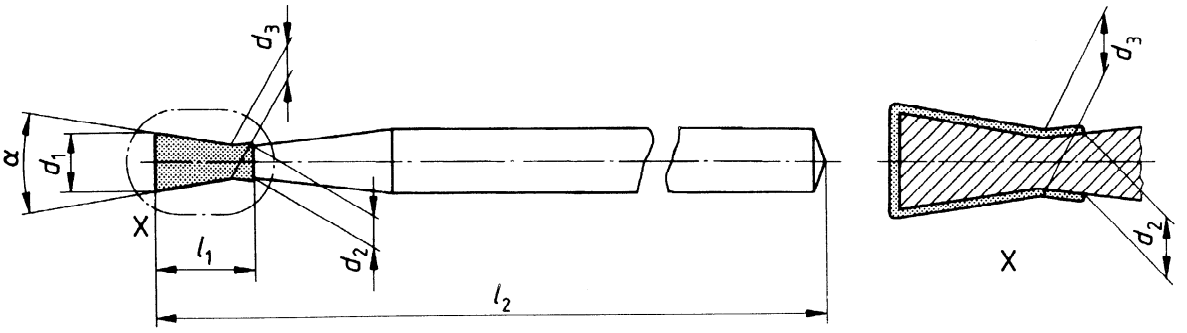

Figure 4

Table 4 — Dimensions (see figure 4)

Dimensions in millimetres, angles in degrees

Designation of nominal diameter		d_1		d_2	d_3	l_1	α	l_2 ± 0,5			
Preferred diameters		nom.	tol.	max.	± 0,1	min.		Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
—	007	0,7	± 0,08	0,68	0,60	2,0	8° to 14°	22,0	44,5	19,0	16,5
008	—	0,8		0,78	0,68						
009	—	0,9		0,84	0,74						
010	—	1,0		0,96	0,78						
012	—	1,2	± 0,10	1,00	0,88		10° to 18°				
014	—	1,4		1,04	0,98	2,2	10° to 22°				
016	—	1,6		1,10	1,04						
018	—	1,8		1,18	1,35						
021	—	2,1		1,26	1,40	2,5					
023	—	2,3		1,32	1,70						
—	025	2,5		1,44	1,90						

4.3.3.5 Wheel

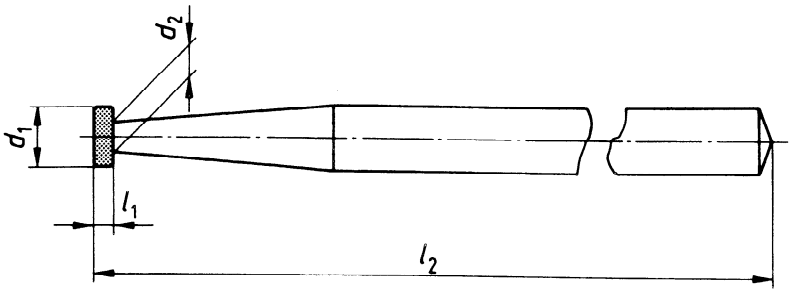

Figure 5

Table 5 — Dimensions (see figure 5)

Dimensions in millimetres

Designation of nominal diameter		d_1	d_2	l_1	l_2 ± 0,5			
Preferred diameters		± 0,1	max.	min.	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
012	—	1,2	0,73	0,3				
014	—	1,4	0,83					
016	—	1,6	0,93	0,4				
018	—	1,8	1,03					
021	—	2,1	1,05	0,5				
023	—	2,3	1,23					
—	025	2,5	1,25					
—	027	2,7	1,43					
—	029	2,9	1,45		22,0	44,5	19,0	16,5
—	031	3,1	1,53					
—	033	3,3	1,63					
—	035	3,5	1,67	0,6				
—	037	3,7	1,77					
—	040	4,0	1,91					
—	042	4,2	2,01					
—	045	4,5	2,01					
—	047	4,7	2,09					
—	050	5,0	2,17					

4.3.3.6 Wheel with collar

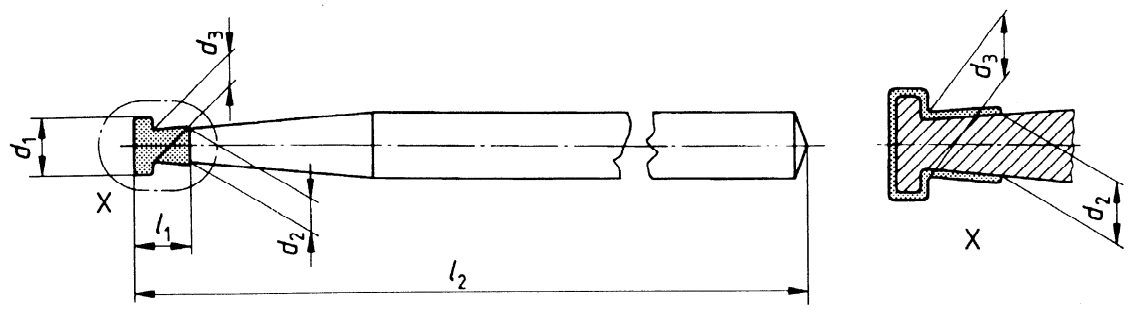

Figure 6

Table 6 — Dimensions (see figure 6)

Dimensions in millimetres

Designation of nominal diameter		d_1	d_2	d_3	l_1	l_2 ± 0,5			
Preferred diameters		± 0,1	max.	± 0,1	min.	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
—	012	1,2	1,00	0,88	2,2	22,0	44,5	19,0	16,5
—	016	1,6	1,10	1,04					
—	018	1,8	1,18	1,12					
—	023	2,3	1,32	1,23	2,5				

4.3.3.7 Cylindrical working part

4.3.3.7.1 Head length 3,0 mm

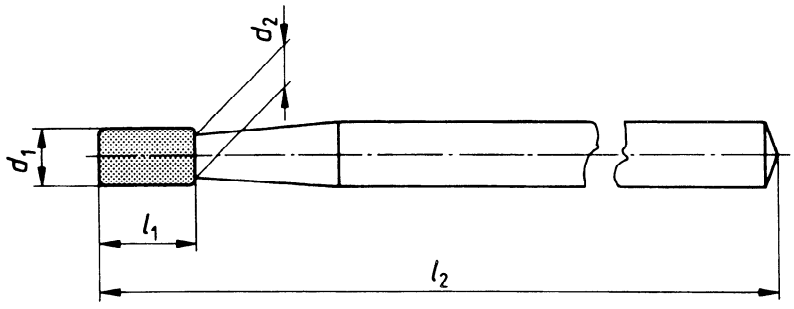

Figure 7

Table 7 — Dimensions (see figure 7)

Dimensions in millimetres

Designation of nominal diameter		d_1		d_2	l_1	l_2 ± 0,5			
Preferred diameters		nom.	tol.	max.	± 0,3	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
008	—	0,8	± 0,08	0,80	3,0	22,0	44,5	19,0	16,5
009	—	0,9		0,90					
010	—	1,0		1,00					
012	—	1,2	± 0,10	1,20					

4.3.3.7.2 Head length 4,0 mm

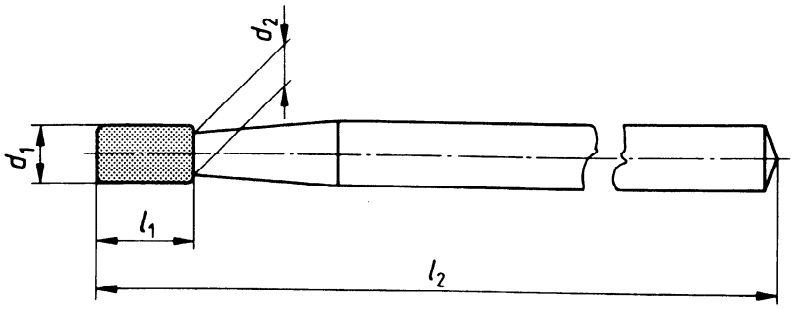

Figure 8

Table 8 — Dimensions (see figure 8)

Dimensions in millimetres

Designation of nominal diameter		d_1		d_2	l_1	l_2 ± 0,5			
Preferred diameters		nom.	tol.	max.	± 0,3	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
009	—	0,9	± 0,08	0,90	4,0	22,0	44,5	19,0	16,5
010	—	1,0		1,00					
012	—	1,2		1,20					
014	—	1,4	± 0,10	1,35					
016	—	1,6		1,50					
018	—	1,8		1,60					

4.3.3.7.3 Head length 5,0 mm

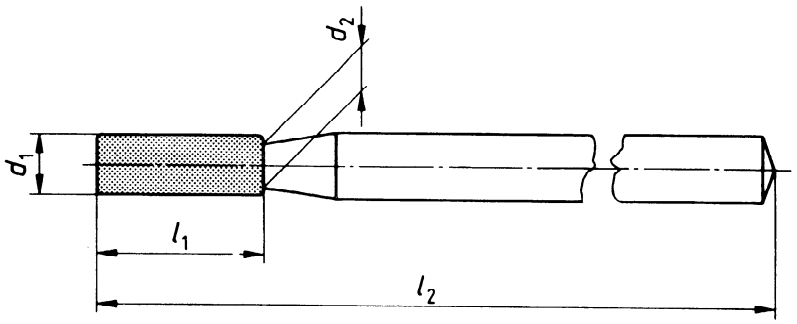

Figure 9

Table 9 — Dimensions (see figure 9)

Dimensions in millimetres

Designation of nominal diameter		d_1	d_2	l_1	l_2 ± 0,5			
Preferred diameters		± 0,1	max.	± 0,3	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
—	021	2,1	1,90	5,0	22,0	44,5	19,0	16,5

4.3.3.7.4 Head length 6,0 mm

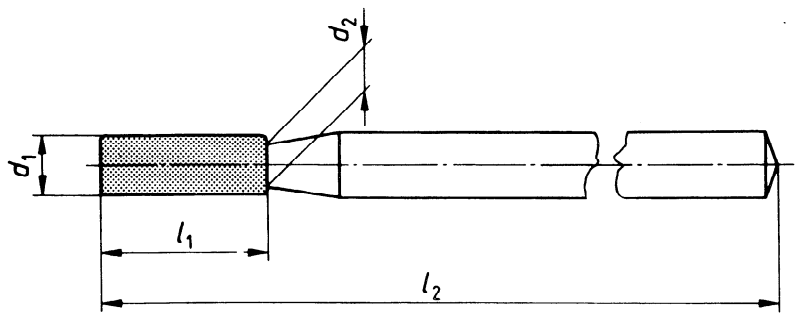

Figure 10

Table 10 — Dimensions (see figure 10)

Dimensions in millimetres

Designation of nominal diameter		d_1		d_2	l_1	l_2 ± 0,5			
Preferred diameters		nom.	tol.	max.	± 0,3	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
008	—	0,8	± 0,08	0,80	6,0	22,0	44,5	21,0	18,5
010	—	1,0		1,00					
012	—	1,2		1,20					
014	—	1,4		1,35					
016	—	1,6	± 0,10	1,50					
018	—	1,8		1,60					
—	027	2,7		2,35					

4.3.3.7.5 Head length 8,0 mm

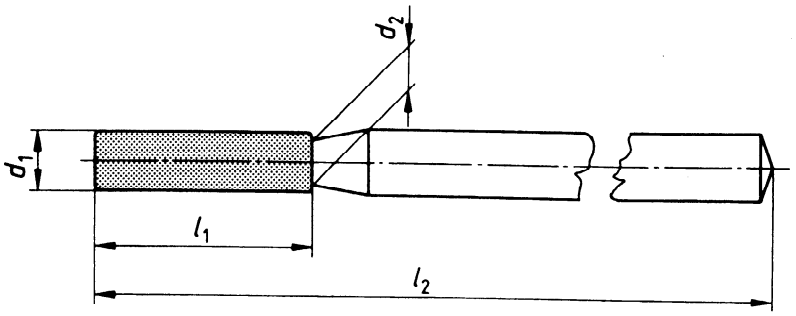

Figure 11

Table 11 — Dimensions (see figure 11)

Dimensions in millimetres

Designation of nominal diameter		d_1	d_2	l_1	l_2 ± 0,5			
Preferred diameters		± 0,10	max.	± 0,3	Shank Type 1 Standard	Shank Type 2 Standard	Shank Type 3 Standard	Shank Type 3 Short
010	—	1,0	1,00	8,0	24,0	44,5	22,0	19,5
012	—	1,2	1,20					
014	—	1,4	1,35					
016	—	1,6	1,50					
018	—	1,8	1,60					
—	025	2,5	1,85					