INTERNATIONAL STANDARD

ISO 9168

Third edition
2009-07-15

Dentistry — Hose connectors for air driven dental handpieces

Art dentaire — Connexions pour pièces à main dentaires à air comprimé

Reference number
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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 9168 was prepared by Technical Committee ISO/TC 106, *Dentistry*, Subcommittee SC 4, *Dental instruments*.

This third edition cancels and replaces the second edition (ISO 9168:1991), which has been technically revised. The following changes were made:

a) requirement resistance to sterilization has been replaced by reprocessing requirement;

b) language-independent figures;

c) introduction of definition for “hose connector” and updated references and Bibliography.

Dentistry — Hose connectors for air driven dental handpieces

1 Scope

This International Standard is applicable for achieving reliable interchangeability between hoses from dental units and dental handpieces.

This International Standard specifies four types of hose connector for use between air driven dental handpieces and the flexible hoses of the dental unit which supply the handpieces with water, air and light, and provide for exhaust.

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 261, *ISO general purpose metric screw threads — General plan*

ISO 1942, *Dentistry — Vocabulary*

ISO 7494-1, *Dentistry — Dental units — Part 1: General requirements and test methods*

3 Terms and definitions

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

3.1
hose connector
connector at the dental handpiece to enable one to connect the hose with the handpiece

4 Classification

For the purpose of this International Standard, hose connectors for air driven dental handpieces are classified into the following four types:

— Type 1: connector with two or three outlets and connection thread 9/16 – 40 UNS;

— Type 2: connector with four or five outlets and connection thread 0,555 – 36 UNS;

— Type 3: connector with four outlets and electrical contacts and connection thread 0,555 – 36 UNS;

— Type 4: connector with three outlets and connection thread M12 × 0,5, in accordance with ISO 261.

5 Requirements

5.1 General

Hose connectors for air driven dental handpieces are specific parts of dental handpieces. Requirements for dental handpieces are specified in the relevant product standards.

NOTE Relevant product standards for dental handpieces are e.g. ISO 7785-1, ISO 13294 and ISO 15606.

5.2 Dimensions

The dimensions, the outlet configuration and the use of the outlets shall be as specified in Figure 1, Figure 2, Figure 3 and Figure 4.

The thread characteristics for Type 1, Type 2 and Type 3 shall be as specified in Table 1. The thread characteristics for Type 4 (M12 × 0,5) shall be in accordance with ISO 261.

Testing shall be carried out in accordance with 7.1.

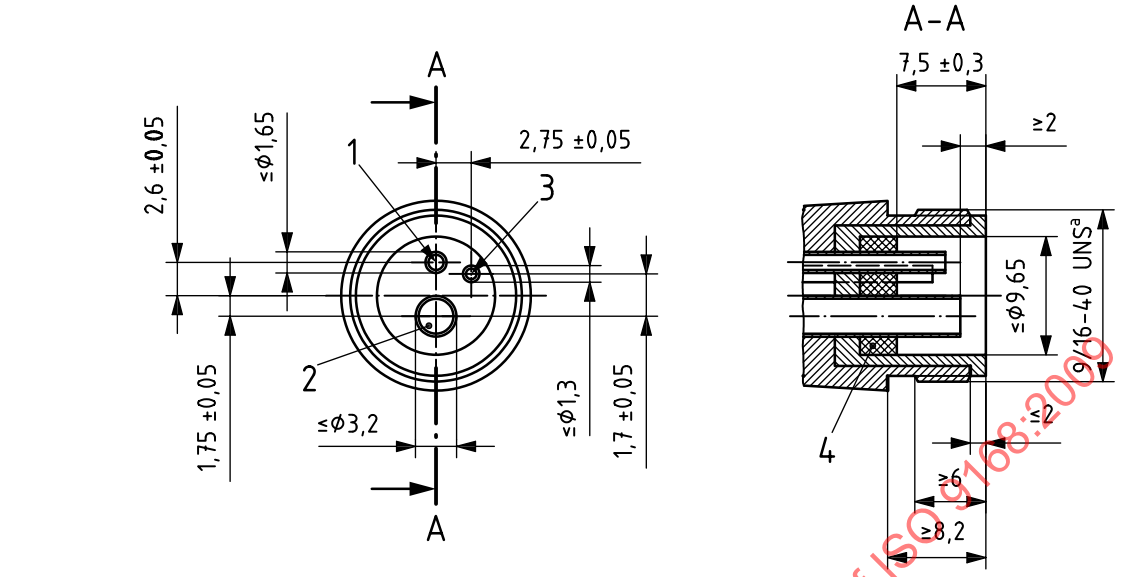
5.3 Resistance to reprocessing

Hose connectors shall be capable of withstanding a minimum of 250 reprocessing cycles as defined in the manufacturer's instructions for use without deterioration in appearance or performance.

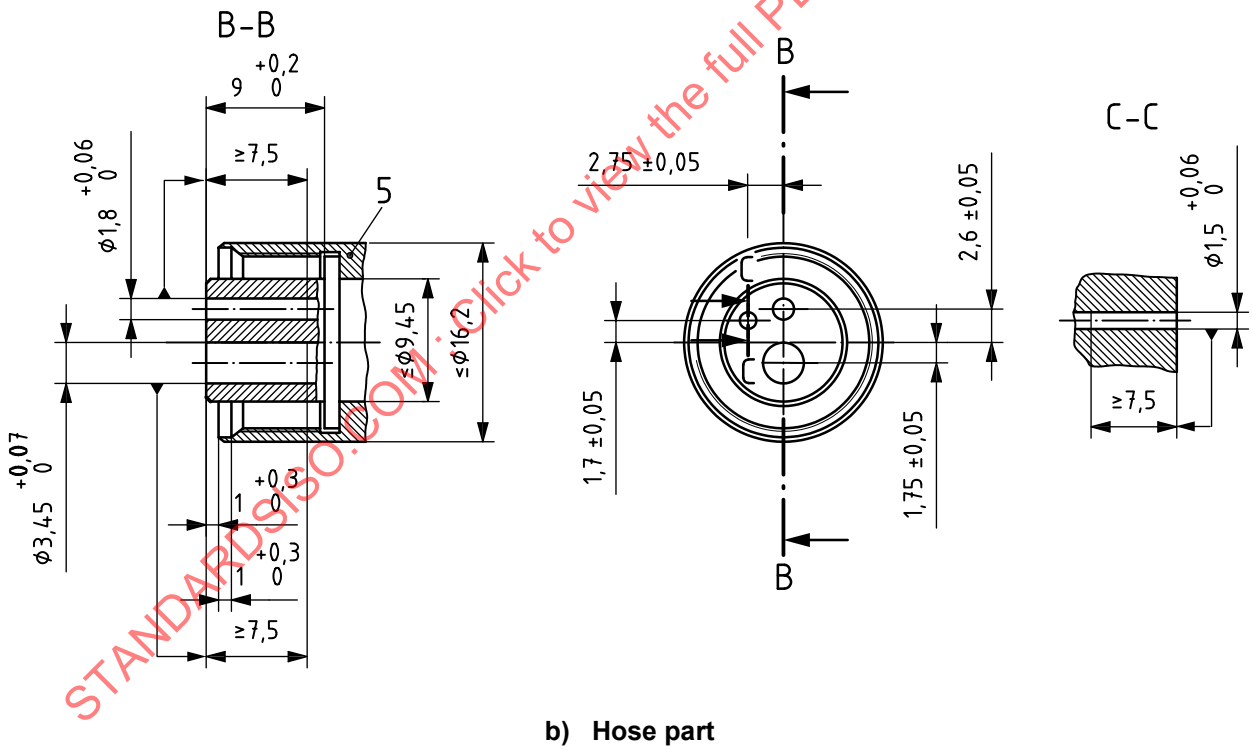
Quick connectors with and without lights supply, which are not permanently fixed to the instrument, shall be capable of withstanding the reprocessing procedure as given in the manufacturer's instructions. In this case the requirements of ISO 7494-1 are applicable.

Testing shall be carried out in accordance with 7.2.

Dimensions in millimetres



a) Handpiece part



b) Hose part

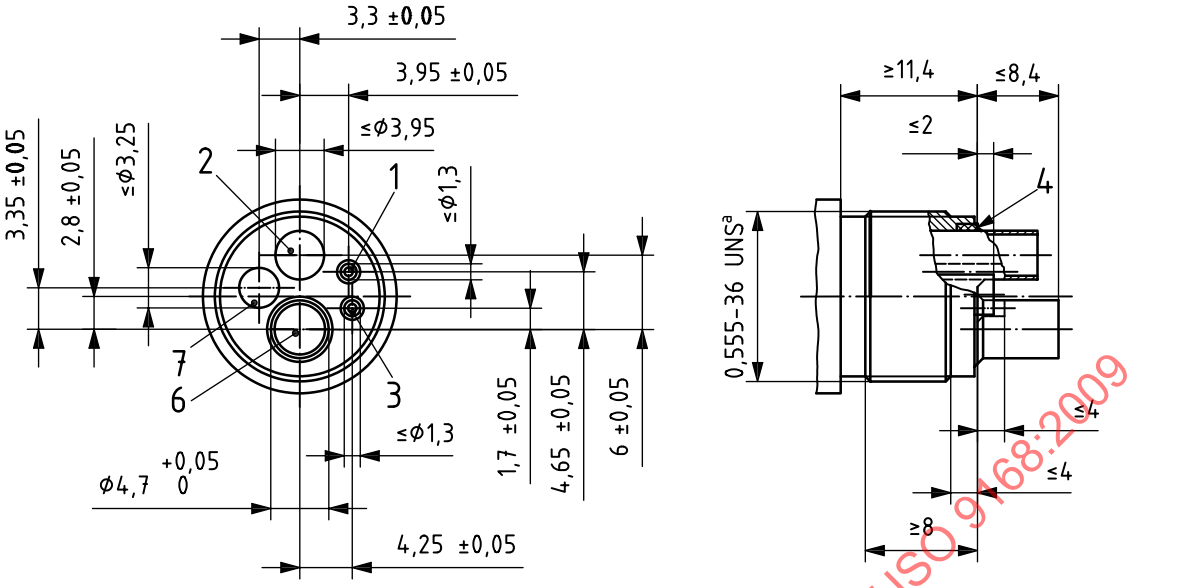
Key

1 water
2 drive air
3 spray air
4 gasket
5 nut

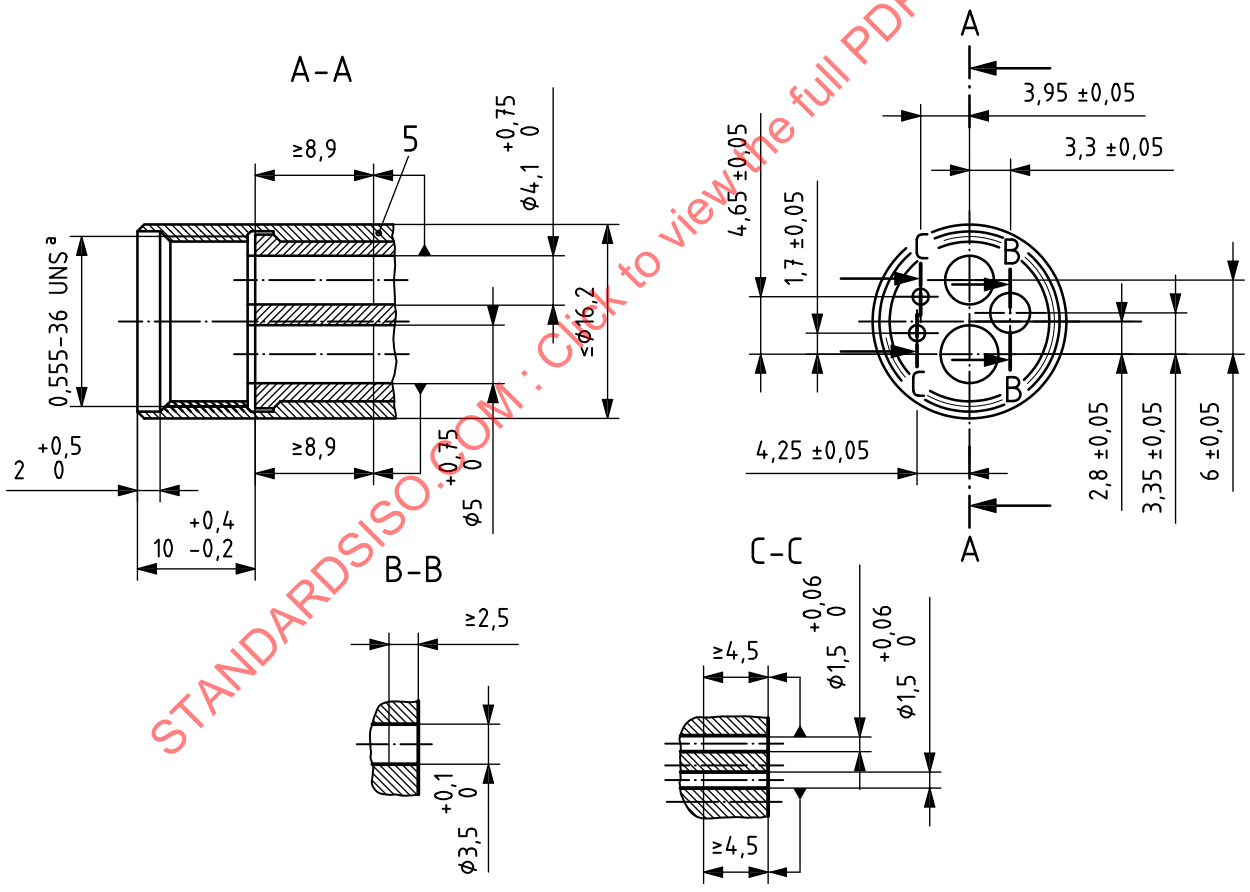
[a] See Table 1 for thread characteristics.

Figure 1 — Type 1 connector

Dimensions in millimetres



a) Handpiece part



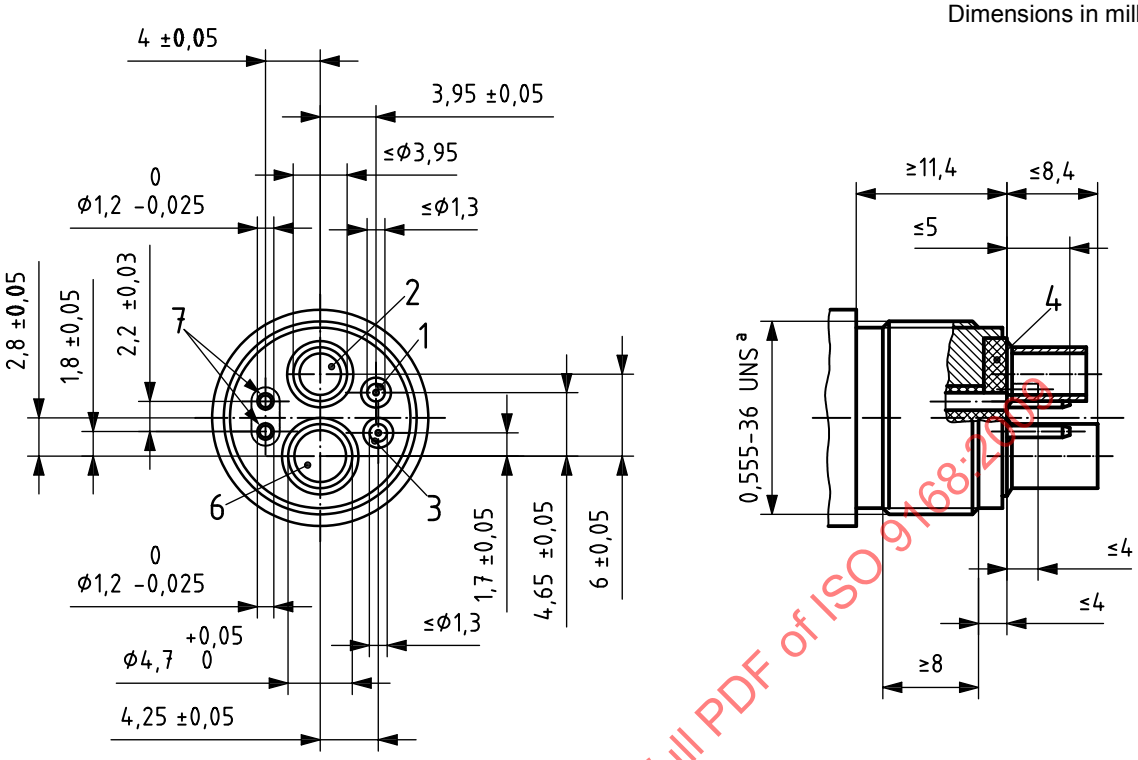
b) Hose part

Key

1	water	4	gasket	7	fibre optic
2	drive air	5	nut		
3	spray air	6	exhaust	[a]	See Table 1 for thread characteristics.

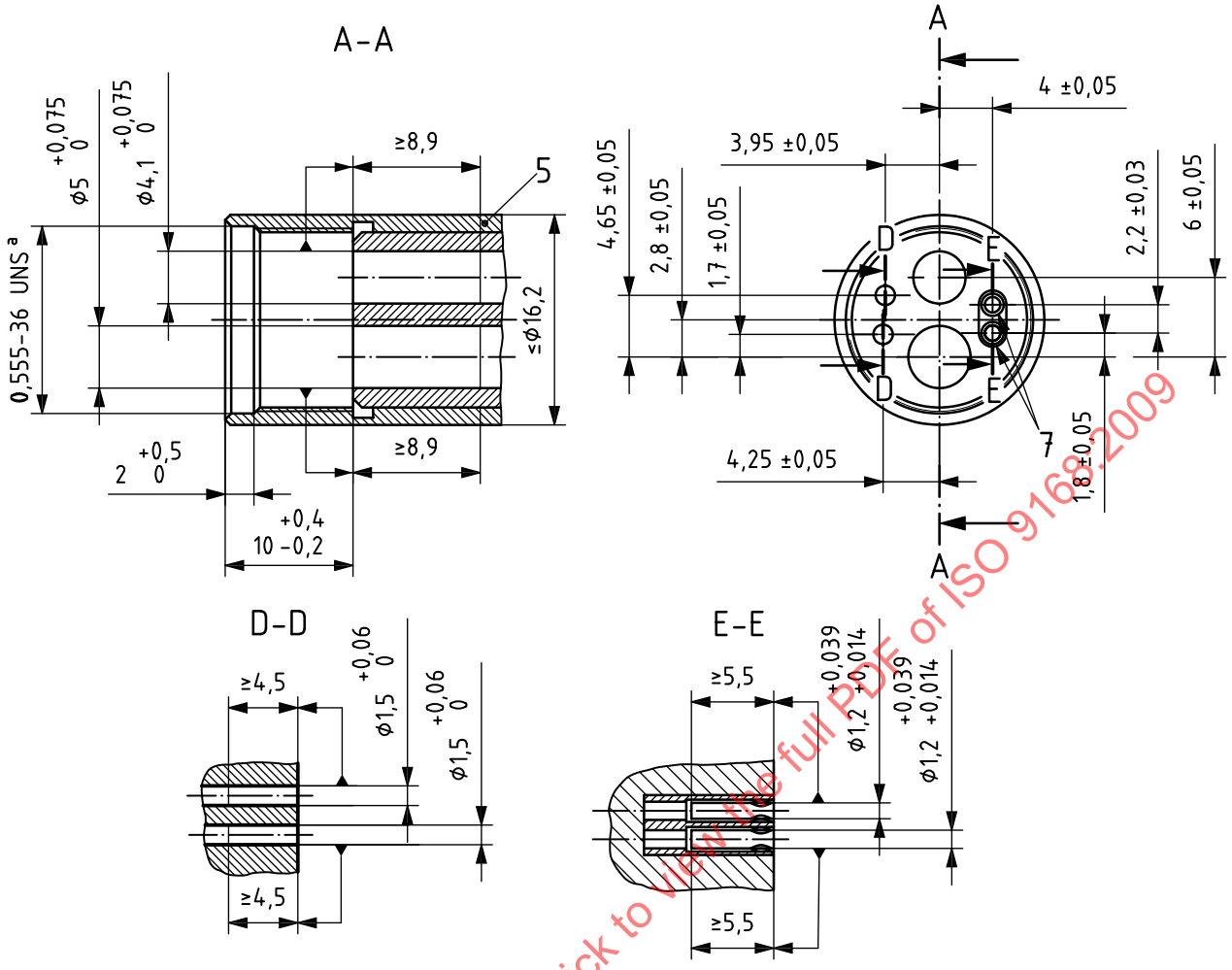
Figure 2 — Type 2 connector

Dimensions in millimetres



a) Handpiece part

Figure 3 — Type 3 connector (*continued*)



b) **Hose part**

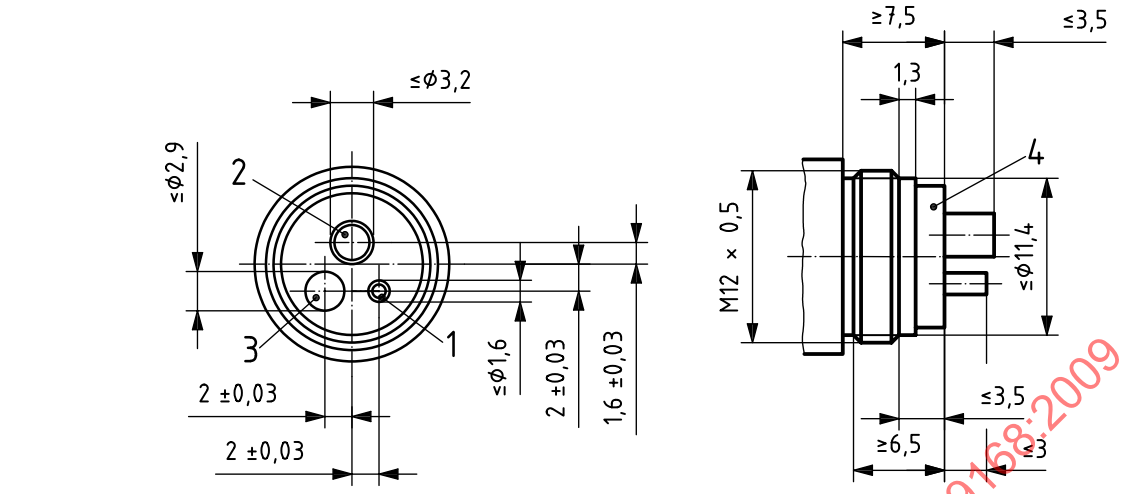
Key

1 water
2 drive air
3 spray air
4 gasket
5 nut
6 exhaust
7 electrical contacts

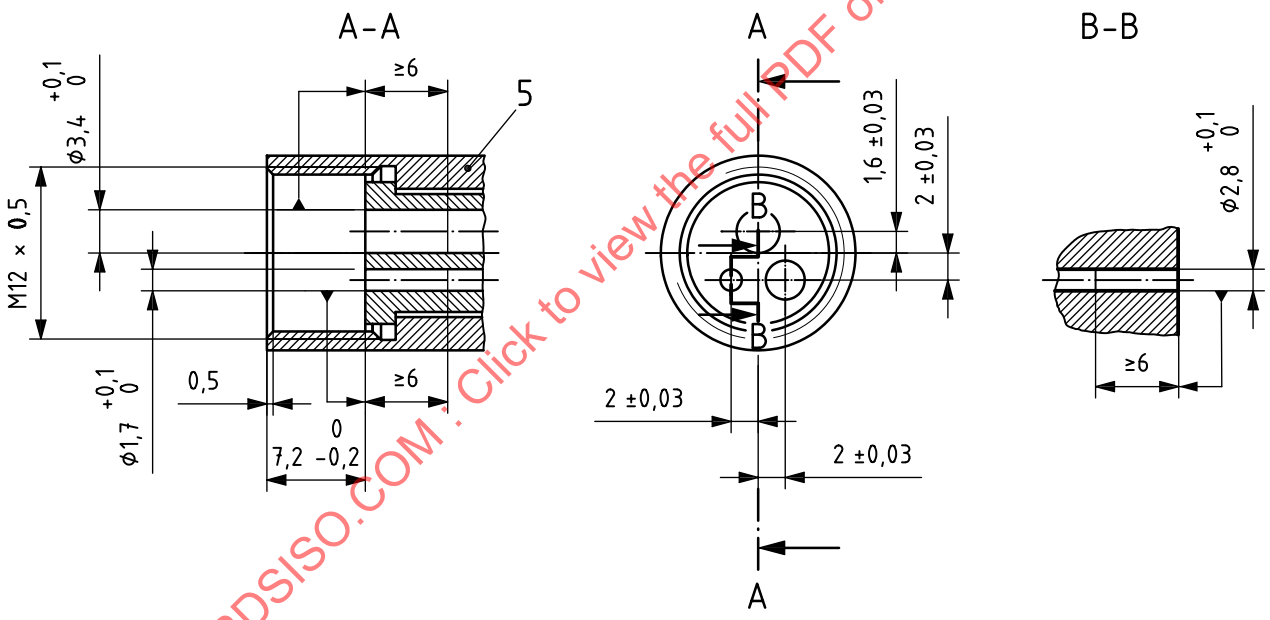
a See Table 1 for thread characteristics.

Figure 3 — Type 3 connector

Dimensions in millimetres



a) handpiece part



b) Hose part

Key

1 water
2 drive air
3 exhaust
4 gasket
5 nut

Figure 4 — Type 4 connector

6 Sampling

One representative sample of the hose connector types shall be selected for the test.

Table 1 — Thread characteristics

Unless otherwise specified, dimensions in millimetres

Thread characteristics			Dimensions of single-start right-hand thread for	
			Type 1	Type 2 and Type 3
Thread designation[a]			9/16 – 40 UNS	0,555 – 36 UNS
Pitch			0,635	0,706
Thread angle			60°	60°
Major diameter	Internal thread	max.	14,379	14,198
		min.	14,287	14,097
	External thread	max.	14,262	14,071
		min.	14,133	13,932
Basic major diameter			14,287	14,097
Pitch diameter	Internal thread	max.	13,980	13,777
		min.	13,876	13,640
	External thread	max.	13,851	13,614
		min.	13,769	13,530
Basic pitch diameter			13,876	13,640
Minor diameter	Internal thread	max.	13,767	13,512
		min.	13,589	13,335
	External thread	max.	13,482	13,208
		min.	13,437	13,157

[a] The screw threads 9/16 – 40 UNS and 0,555 – 36 UNS used for the connectors are based on ANSI B1.1. The diameter/pitch combinations specified in this International Standard are not, however, included in ANSI B1.1; the necessary thread characteristics are therefore specified in this table.

7 Test methods

7.1 Dimensions

Using measuring devices such as a gauge, dial indicator, etc. with an accuracy of ± 0,01 mm for linear dimensions or ± 1° for angles, measure and record the dimensions shown in Figures 1, 2, 3 and 4.

7.2 Resistance to reprocessing

Subject the test pieces to 250 reprocessing cycles using the parameters defined by the manufacturer in the instructions for use.

After the final sterilization cycle, inspect the sterilized items visually. There shall be no visible signs of deterioration or corrosion.

Submit the sterilized items to the test procedures specified in 5.3. All requirements shall be met.