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Pneumatic fluid power -- Push-in connectors for thermoplastic tubes

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Transmissions pneumatiques -- Raccords instantanés pour tubes thermoplastiques
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INTERNATIONAL
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14743

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2004-05-01

**Pneumatic fluid power — Push-in
connectors for thermoplastic tubes**

*Transmissions pneumatiques — Raccords instantanés pour tubes
thermoplastiques*

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ISO 14743:2004(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.

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 14743 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 4, *Connectors and similar products and components*.

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Introduction

In pneumatic fluid power systems, power is transmitted and controlled through air under pressure within a circuit.

Components are connected through their ports by means of connectors (fittings) and conductors.

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Pneumatic fluid power — Push-in connectors for thermoplastic tubes

1 Scope

This International Standard specifies the general requirements and test methods for the design and performance of push-in connectors for use with thermoplastic tubes with outside diameters of 3 mm to 12 mm, inclusive.

This International Standard is intended to establish uniform methods of testing complete push-in connector assemblies as used in pneumatic fluid power applications. It is not applicable to air braking systems.

NOTE In road vehicles, it is necessary to exercise special care to ensure that these connectors are never used in an air braking system.

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 1746 ¹⁾, *Rubber or plastics hoses and tubing — Bending tests*
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ISO 4759-1:2000, *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C*

ISO 5598, *Fluid power systems and components — Vocabulary*

ISO 8573-1, *Compressed air — Part 1: Contaminants and purity classes*

ISO 16030, *Pneumatic fluid power — Connections — Ports and stud ends*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5598 apply.

4 Performance requirements

4.1 Material

4.1.1 Connectors shall be made from materials that will fulfil the performance requirements.

4.1.2 In order to ensure proper grip, the locking mechanism, tube end of reducers and plugs shall be made from suitable thermoplastics.

1) To be published. (Revision of ISO 1746:1998)

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4.2 Pressure and temperature

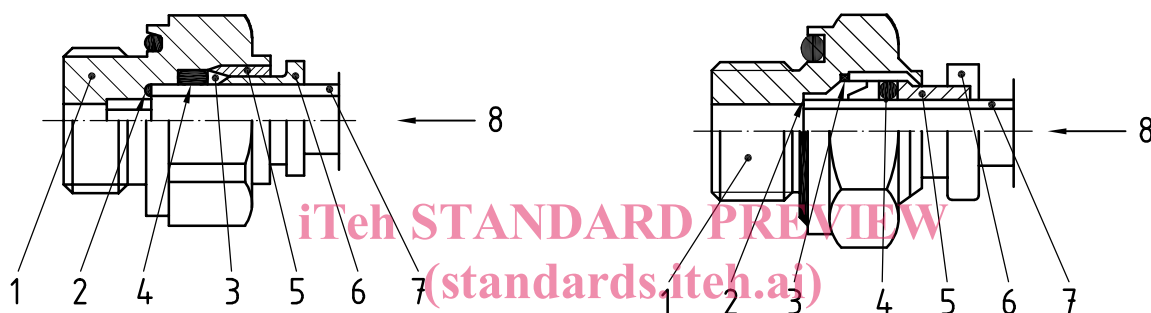
4.2.1 Push-in connectors shall provide connections from $-0,09 \text{ MPa}$ [$-0,9 \text{ bar}^2$] to a working pressure of $1,6 \text{ MPa}$ (16 bar) when used at temperatures between $-20 \text{ }^\circ\text{C}$ and $+80 \text{ }^\circ\text{C}$.

4.2.2 The connector assembly shall meet the performance requirements given in Clause 9.

4.2.3 The connectors shall be capable of meeting or exceeding the combination of the highest pressure and temperature of the tubes specified in Annex A. When tubing with a lower rated pressure is used, the maximum working pressure of the tube and connector assembly shall be that of the tubing.

5 Features

Design is at the choice of the manufacturer. Two examples are shown in Figure 1.



a) With sealing system located behind the locking mechanism b) With sealing system located in front of the locking mechanism

Key

1	body	5	releasing sleeve
2	tube stop	6	removable button (optional)
3	grab ring of tube	7	tube
4	sealing of tube	8	entry of the tube

Figure 1 — Examples of design and description of the features of push-in connectors for use with thermoplastic tubes

6 Outside diameter of tube

The outside diameter of the tube shall be chosen from the following range of sizes:

3 mm, 4 mm, 6 mm, 8 mm, 10 mm and 12 mm.

2) $1 \text{ bar} = 0,1 \text{ MPa} = 10^5 \text{ Pa}$; $1 \text{ MPa} = 1 \text{ N/mm}^2$

7 Design

7.1 Push-in connector dimensions shown in Figures 2 to 7 shall conform to the dimensions given in Tables 1 to 4.

7.2 Hexagon tolerances across flats shall be in accordance with ISO 4759-1:2000, Grade C. The minimum hexagon across-corner turn diameter of 1,092 times the normal across flats dimension shall be used.

7.3 Details of contour shall be at the option of the manufacturer, as long as the dimensions given in the tables are maintained.

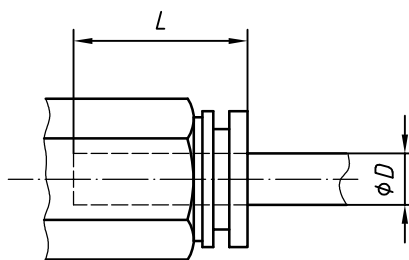


Figure 2 — Tube insertion depth

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Table 1 — Maximum tube insertion depth

SIST ISO 14743:2005 Dimensions in millimetres

Tube OD D	Insertion depth L max.
3	16
4	18
6	19
8	20
10	24
12	25

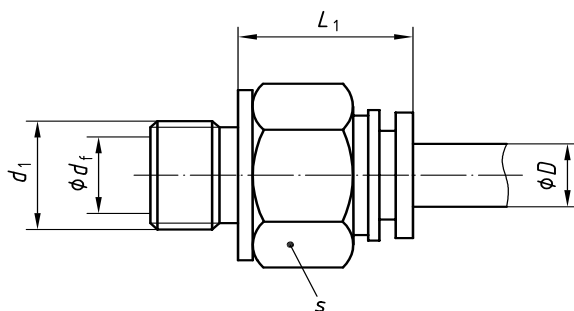


Figure 3 — Stud adaptor (SDS)

Table 2 — Dimensions for stud adaptors (SDS)

Dimensions in millimetres

Tube OD D	d_1^a	L_1 max.	s^b max.	Flow diameter d_f min.
3	M3	10	8	1,2
	M5	17	10	1,8
4	M5	22	12	2
	M7	22	12	2,5
6	M7	23	14	4
	G 1/8	23	14	4
8	G 1/8	24	17	5,5
	G 1/4	24	19	6
10	G 1/4	27	19	7,5
	G 3/8	27	22	8
12	G 3/8	30	22	10
	G 1/2	30	26	10

^a Thread and stud end in accordance with ISO 16030.
^b Hexagon socket or outside diameter at the choice of the manufacturer.