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Pneumatic fluid power — Connections — Ports and stud ends

Transmissions pneumatiques — Raccordements — Orifices et éléments mâles

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

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

This second edition cancels and replaces the first edition (ISO 16030:2001), which has been technically revised.

The main changes are as follows:

— clarification of the scope regarding the use of ISO 16030 and ISO 1179 (all parts);

— update of cycles number (from 1 000 000 to 200 000) in 6.4;

— update of values in Table B.1.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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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 threaded ports by means of connectors to tubes and pipes or to hose fittings and hoses. Ports are an integral part of fluid power components, such as valves, cylinders and filters.

In the past, various thread and port systems (e.g. ISO 7-1 and ISO 1179 (all parts)) have been used in pneumatic fluid power systems. See the scope of this document for further information on the relationship between those standards and this document.

Where ISO 7-1 tapered external threads are intended to connect to pneumatic components with internal threads, the ports in those components should conform to ISO 1179 (all parts).

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Pneumatic fluid power — Connections — Ports and stud ends

1 Scope

This document specifies dimensions and performance requirements for ports and stud ends with parallel threads (G series thread) for pneumatic fluid power applications.

It specifies reusable, positively retained seals for leak-free connections, for use at pressures from −0,09 MPa (−0,9 bar [1)]) up to 1,6 MPa (16 bar).

This document is applicable for threaded ports and stud ends specified in new designs in pneumatic fluid power applications.

WARNING — Ports and stud ends conforming to this document are not intended to connect with ports and stud ends that conform to ISO 1179 (all parts) or threads that conform to ISO 7-1.

As shown in Figure 1, significant differences in thread depth exists between ISO 16030 requirement and ISO 1179-1 (Δ1 and Δ2) that makes ports and stud ends conforming to ISO 7-1 unsuitable.

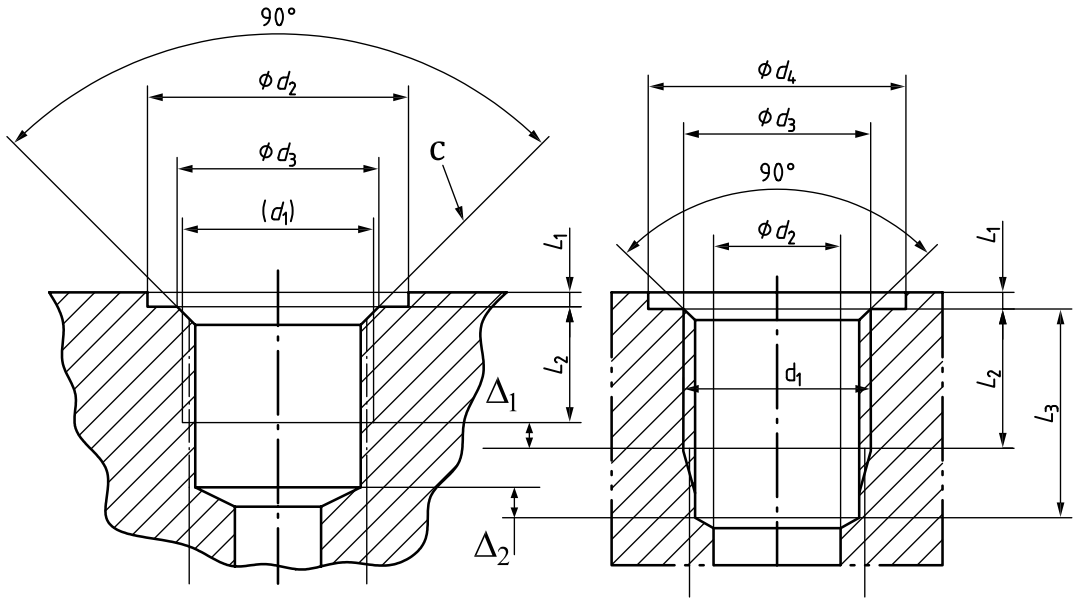


Figure 1 — Different thread depths requirements between ISO 16030 and ISO 1179-1

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

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

1) 1 bar = 0,1 MPa = 10^5 Pa; 1 MPa = 1 N/mm^2

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ISO 3448, *Industrial liquid lubricants — ISO viscosity classification*

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

ISO 8778, *Pneumatic fluid power — Standard reference atmosphere*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
collar
raised portion of a coupling nipple that functions as a connection for a ferrule or other locking device or functions as a hose stop

[SOURCE: ISO 8330:2014, 2.2.9.2]

4 Dimensional requirements

4.1 Ports shall conform to the dimensions shown in Figure 2 and given in Table 1. Examples of distances between centrelines of ISO 16030 ports are provided in Annex B.

4.2 Stud ends shall conform to the dimensions shown in Figure 3 and given in Table 2. The sealing device is an integral part of the stud end. Examples of sealing types are shown in Annex A.

5 Performance requirements

5.1 Rated pressure range

Ports, stud ends and sealing devices shall be designed for use within a rated pressure range from −0,09 MPa (−0,9 bar) up to 1,6 MPa (16 bar), unless otherwise specified by the manufacturer because of the requirements of the materials from which the ports, stud ends and sealing devices are made.

It is important to ensure that there is sufficient material around the port to maintain the pressure.

5.2 Rated temperature range

Ports, stud ends and sealing devices shall be designed for use within a rated temperature range from −20 °C to +80 °C, unless otherwise specified by the manufacturer because of the requirements of the materials from which the ports, stud ends and sealing devices are made.

5.3 Performance verification

Ports, stud ends and sealing devices shall meet or exceed all of the requirements specified in Clause 6.

5.4 Sealing devices

Sealing devices shall be positively retained, reusable and capable of providing long-term performance.

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