



SLOVENSKI STANDARD
SIST ISO 16030:2002

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Pneumatic fluid power -- Connections -- Ports and stud ends

Transmissions pneumatiques -- Raccordements -- Orifices et éléments mâles

Ta slovenski standard je istoveten z: ISO 16030:2001

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ICS:

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INTERNATIONAL STANDARD

**ISO
16030**

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2001-12-15

Pneumatic fluid power — Connections — Ports and stud ends

Transmissions pneumatiques — Raccordements — Orifices et éléments mâles

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ISO 16030:2001(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 3.

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 International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 16030 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*.

Annexes A and B of this International Standard are for information only.

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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 (for example ISO 7-1 and ISO 1179:1981) have been used in pneumatic fluid power systems. See the scope of this International Standard for further information on the relationship between those standards and this International Standard. 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 1179:1981.

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Pneumatic fluid power — Connections — Ports and stud ends

1 Scope

This International Standard specifies dimensions and performance requirements for ports and stud ends with parallel threads for pneumatic fluid power applications.

It specifies reusable, positively retained seals for leak-free connections, for use at pressures from $-0,09$ MPa ($-0,9$ bar¹⁾) up to $1,6$ MPa (16 bar).

Only this International Standard is applicable for threaded ports and stud ends specified in new designs in pneumatic fluid power applications.

Ports and stud ends conforming to this International Standard are not intended to connect with ports and stud ends that conform to ISO 1179 or threads that conform to ISO 7-1.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

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*

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

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

ISO 8778²⁾, *Pneumatic fluid power — Standard reference atmosphere*

3 Terms and definitions

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

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

2) To be published. (Revision of ISO 8778:1990)

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4 Dimensional requirements

4.1 Ports shall conform to the dimensions shown in Figure 1 and given in Table 1.

4.2 Stud ends shall conform to the dimensions shown in Figure 2 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.

6 Test methods

6.1 General

6.1.1 Basic principles

The tests in clause 6 are type tests to qualify port and stud end design and materials. Type tests are usually conducted only once, but retesting is necessary if there are changes in the material from which the port and stud ends are made. Parts used for any of the specified tests shall not be tested further, used, or returned to stock.

6.1.2 Test fluid

The test fluid for the burst pressure test shall be a liquid, and the test fluid for the cyclic endurance (impulse) test shall be either a neutral gas or a liquid. The test fluid for the leakage test and the long-term creep test shall be a neutral gas.

6.1.3 Temperature

Unless otherwise specified, tests shall be conducted at room temperature (23 °C \pm 5 °C).

6.1.4 Material

6.1.4.1 Testing of ports

The ports to be tested shall be from actual products. Stud ends that are used to test ports shall be made of low-carbon steel or stainless steel, with dimension L_4 at its minimum.

6.1.4.2 Testing of stud ends and sealing devices

The stud ends and sealing devices to be tested shall be from actual products. Test blocks that contain the test ports shall be made from low-carbon steel or stainless steel.

6.1.5 Thread lubrication

For testing only, threads and contact surfaces shall be lubricated with hydraulic oil that has a viscosity of VG 32 in accordance with ISO 3448 prior to the application of torque, in order to test correctly the maximum clamp loading.

6.2 Burst pressure test

6.2.1 Principle

Test three samples to confirm that ports, stud ends and sealing devices meet or exceed a ratio of 5:1 between the burst pressure and maximum rated pressure.

6.2.2 Material and torque requirements

6.2.2.1 Testing of stud ends

Test stud ends from actual products in the test block ports (as described in 6.1.4.2) at the torque value given in Table 3.

6.2.2.2 Testing of ports

Test ports from actual products with test stud ends (as described in 6.1.4.1) at twice the torque value given in Table 3.

6.2.3 Procedure and pressure rise rate

Apply torque. Increase the pressure at a constant rate so as to reach the specified test pressure within a time period of 3 s to 15 s. Once the specified test pressure has been reached, hold this pressure level for a period of at least 2 min.

6.2.4 Pass/fail criteria

No cracks, fractures or separation of the stud end from the port shall appear.

6.3 Leakage test

6.3.1 Principle

Test three stud end samples at minimum torque to confirm that they do not leak after the application of 1,5 times the maximum rated pressure for a period of 2 min. It is not necessary to submit ports to the leakage test.