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**Connectors for fluid power and general use — Assembly instructions for connectors  
with adjustable stud ends and O-ring sealing**

*Élément introductif — Élément principal — Partie n: Titre de la partie*

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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~~document 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](http://www.iso.org/directives)).

~~Attention is drawn~~ISO draws attention to the possibility that ~~some of the~~ ~~elements~~implementation of this document may ~~be involve~~ the ~~subject~~use of (a) patent(s). ISO takes no position concerning the ~~evidence, validity or applicability~~ of ~~any claimed~~ patent rights ~~in respect thereof~~. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to ~~implement this document~~. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at [www.iso.org/patents](http://www.iso.org/patents). 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 ).~~

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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](http://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/TS 11686:2017), which has been technically revised.

The main changes ~~compared to the previous edition~~ are as follows:

- Figure 1 ~~was changed to Table 1~~ and Figure 2 ~~was changed to Figure 1~~.
- ~~Table 1 was~~has been completely redrawn and Positions 4 and 5 ~~were~~have been corrected to accurately reflect the position of the washer, nut, O-ring and body.
- ~~Table Figure 1~~ Position 3 and Figure ~~1.2~~ have been redrawn to remove horizontal line in the flowpath.

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](http://www.iso.org/members.html).

## Introduction

In fluid power systems, power is transmitted and controlled through a fluid (liquid or gas) under pressure within an enclosed circuit. In general applications, a fluid may be conveyed under pressure.

Components may be connected through their ports by connections (connectors) and conductors (tubes and hoses). Tubes are rigid conductors; hoses are flexible conductors.

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# Connectors for fluid power and general use — Assembly instructions for connectors with adjustable stud ends and O-ring sealing

## 1 ~~1~~Scope

This document provides common installation instructions for all connectors that have adjustable stud ends and O-ring sealing. Conformance with the requirements of this document will result in a considerable reduction of leaks in hydraulic systems.

## 2 ~~2~~Normative references

The following ~~referenced~~ documents are ~~indispensable for~~referred to in the ~~application 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 1179-1, Connections for general use and fluid power — Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing — Part 1: Threaded ports~~

~~ISO 1179-2, Connections for general use and fluid power — Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing — Part 2: Heavy duty (S series) and light duty (L series) stud ends with elastomeric sealing (type E)~~

~~ISO 1179-3, Connections for general use and fluid power — Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing — Part 3: Light-duty (L series) stud ends with sealing by O-ring with retaining ring (types G and H)~~

~~ISO 1179-4, Connections for general use and fluid power — Ports and stud ends with ISO 228-1 threads with elastomeric or metal-to-metal sealing — Part 4: Stud ends for general use only with metal-to-metal sealing (type B)~~

ISO 5598, Fluid power systems and components — Vocabulary

~~ISO 6149-1, Connections for hydraulic fluid power and general use — Ports and stud ends with ISO 261 metric threads and O-ring sealing — Part 1: Ports with truncated housing for O-ring seal~~

~~ISO 6149-2, Connections for hydraulic fluid power and general use — Ports and stud ends with ISO 261 metric threads and O-ring sealing — Part 2: Dimensions, design, test methods and requirements for heavy-duty (S series) stud ends~~

~~ISO 6149-3, Connections for hydraulic fluid power and general use — Ports and stud ends with ISO 261 metric threads and O-ring sealing — Part 3: Dimensions, design, test methods and requirements for light-duty (L series) stud ends~~

~~ISO 6149-4, Connections for hydraulic fluid power and general use — Ports and stud ends with ISO 261 metric threads and O-ring sealing — Part 4: Dimensions, design, test methods and requirements for external hex and internal hex port plugs~~

~~ISO 9974-1, Connections for general use and fluid power—Ports and stud ends with ISO 261 threads with elastomeric or metal-to-metal sealing—Part 1: Threaded ports~~

~~ISO 9974-2, Connections for general use and fluid power—Ports and stud ends with ISO 261 threads with elastomeric or metal-to-metal sealing—Part 2: Stud ends with elastomeric sealing (type E)~~

~~ISO 9974-3, Connections for general use and fluid power—Ports and stud ends with ISO 261 threads with elastomeric or metal-to-metal sealing—Part 3: Stud ends with metal-to-metal sealing (type B)~~

~~ISO 9974-4, Connections for general use and fluid power—Ports and stud ends with ISO 261 threads with elastomeric or metal-to-metal sealing—Part 4: Dimensions, design, test methods and requirements for external hex and internal hex port plugs~~

~~ISO 11926-1, Connections for general use and fluid power—Ports and stud ends with ISO 725 threads and O-ring sealing—Part 1: Ports with O-ring seal in truncated housing~~

~~ISO 11926-2, Connections for general use and fluid power—Ports and stud ends with ISO 725 threads and O-ring sealing—Part 2: Heavy-duty (S series) stud ends~~

~~ISO 11926-3, Connections for general use and fluid power—Ports and stud ends with ISO 725 threads and O-ring sealing—Part 3: Light-duty (L series) stud ends~~

~~ISO 11926-4, Connections for general use and fluid power—Ports and stud ends with ISO 725 threads and O-ring sealing—Part 4: Dimensions, design, test methods and requirements for hexagon head screw port plugs and hexagon socket screw port plugs~~

### **153 3 Terms and definitions**

For the purposes of this document, the terms and definitions given in ISO 5598 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/obp4>—

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

### **164 Instructions for the assembly of connectors with adjustable stud ends and O-ring sealing**

#### **16.14.1 4.1 Preparation prior to assembly**

**4.1.1** To protect the sealing surfaces and prevent dirt and other contaminants from entering the system, protective caps and/or plugs shall not be removed until it is time to assemble the components.

**4.1.2** Just prior to assembly, protective caps and/or plugs shall be removed, and the connector and the port shall be inspected to ensure that both mating parts are free of burrs, nicks, scratches or any foreign material.

**4.1.3** If an O-ring is not present, one shall be installed on the port end of the connector using a proper O-ring installation tool, taking care not to cut or nick the O-ring.

**4.1.4** The O-ring shall be lubricated with a light coat of system fluid or compatible oil.

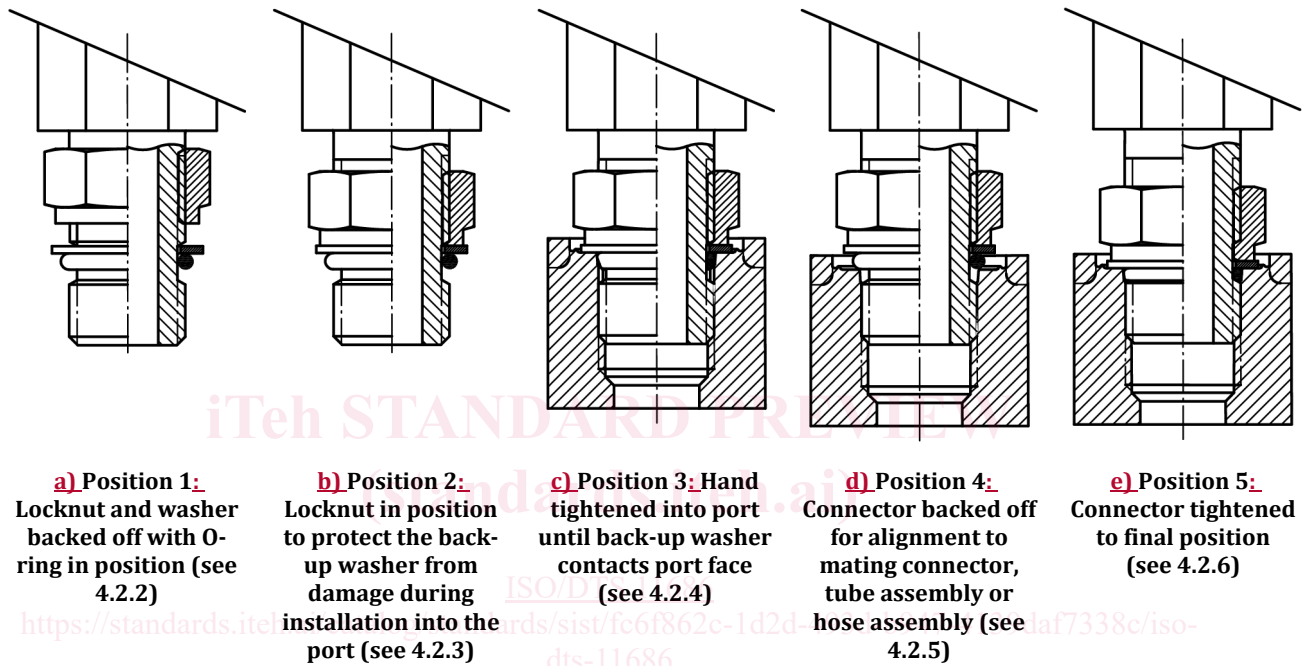


## 16.2.4.2 4.2 Assembly

### 16.2.14.2.1 4.2.1 Illustration

4.2.1.1.1 Table Figure 1 illustrates the steps specified in 4.2.2 through 4.2.6 and the final assembly.

**Table 1—Illustration of instructions for assembling connectors with adjustable stud ends and O-ring sealing**



### 4.2.2 Figure 1 — Illustration of instructions for assembling connectors with adjustable stud ends and O-ring sealing

#### 16.2.24.2.2 Location of O-ring (Position 1 in Table Figure 1)

The O-ring should be located in the groove adjacent to the face of the back-up washer. The washer and O-ring should be positioned at the extreme top end of the groove as shown in Position 1 of Table Figure 1.

#### 16.2.34.2.3 4.2.3 Positioning of locknut (Position 2 in Table Figure 1)

Position the locknut to just touch the back-up washer as shown in Position 2 of Table Figure 1. Having the locknut in this position will eliminate potential damage to the back-up washer during the next step (see 4.2.4).

#### 16.2.44.2.4 4.2.4 Installation of connector into the port (Position 3 in Table Figure 1)

Install the connector into the port until the back-up washer contacts the face of the port as shown in Position 3 of Table Figure 1.

**CAUTION:** Overtightening beyond contact may cause damage to the back-up washer, if the washer is not supported by the locknut.

**16.2.54.2.5 4.2.5—Connector adjustment (Position 4 in Table-Figure 1)**

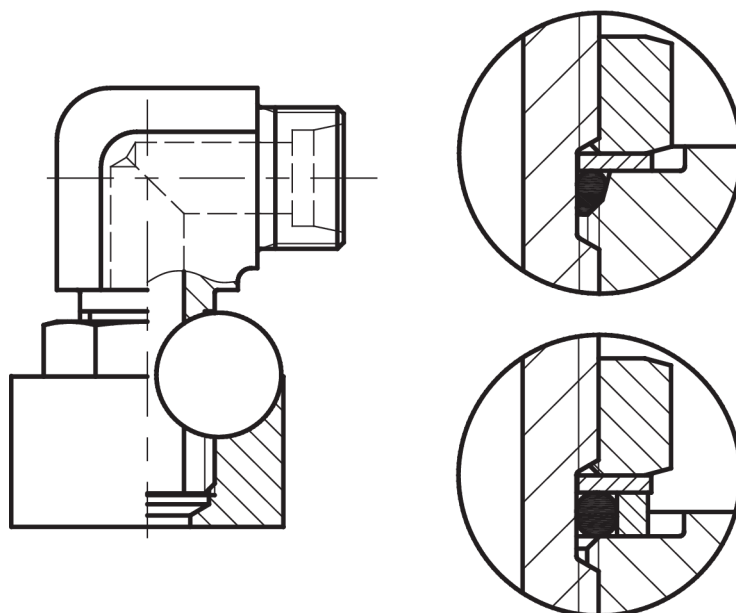
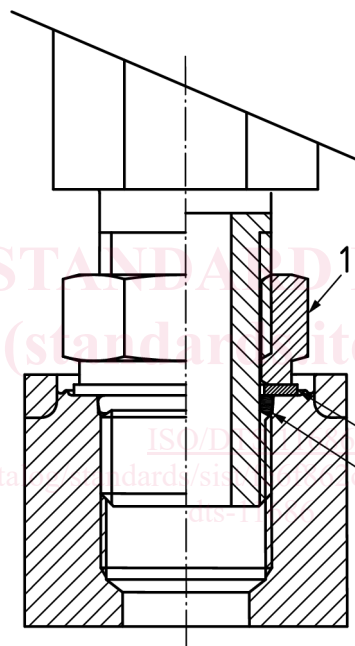
Adjust the connector to the proper position by turning it out, in a counterclockwise manner, up to a maximum of one turn as shown in Position 4 of Table-Figure 1, to provide proper alignment with the mating connector, tube assembly or hose assembly.

**16.2.64.2.6 4.2.6—Final tightening (Position 5 in Table-Figure 1)**

Using two wrenches, use the backup wrench to hold the connector in the desired position and then use the torque wrench to tighten the locknut to the appropriate torque level given by the manufacturer.

**16.2.74.2.7 4.2.7—Final inspection**

Visually inspect, where possible, the joint to ensure that the O-ring is not pinched or bulging out from under the washer and that the backup washer is properly seated flat against the face of the port. Figure 4.2 provides an illustration of the final assembly.



**Key**

- 1 locknut
- 2 O-ring
- 3 back-up washer

**Key**

- 1—Locknut
- 2—O-ring
- 3—Back-up washer

**Figure 1—2— Illustrations of final assembly of adjustable stud ends with O-ring sealing**

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