

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

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

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 6149-3:2007 sisaldab Euroopa standardi EN ISO 6149-3:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 30.03.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 6149-3:2007 consists of the English text of the European standard EN ISO 6149-3:2007.</p> <p>This document is endorsed on 30.03.2007 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p><b>Käsitlusala:</b></p> <p>This part of ISO 6149 specifies dimensions, performance requirements and test procedures for metric adjustable and non-adjustable light-duty (L series) stud ends and O-rings. Stud ends in accordance with this part of ISO 6149 may be used at working pressures up to 40 Mpa [400 bar1)] for non-adjustable stud ends and 31,5 MPa (315 bar) for adjustable stud ends. The permissible working pressure depends upon the stud end size, materials, design, working conditions, application, etc. Conformance to the dimensional information in this part of ISO 6149 does not guarantee rated performance. Each manufacturer should perform testing according to the specification contained in this part of ISO 6149 to assure that components comply with the performance ratings.</p>	<p><b>Scope:</b></p> <p>This part of ISO 6149 specifies dimensions, performance requirements and test procedures for metric adjustable and non-adjustable light-duty (L series) stud ends and O-rings. Stud ends in accordance with this part of ISO 6149 may be used at working pressures up to 40 Mpa [400 bar1)] for non-adjustable stud ends and 31,5 MPa (315 bar) for adjustable stud ends. The permissible working pressure depends upon the stud end size, materials, design, working conditions, application, etc. Conformance to the dimensional information in this part of ISO 6149 does not guarantee rated performance. Each manufacturer should perform testing according to the specification contained in this part of ISO 6149 to assure that components comply with the performance ratings.</p>
---	---

ICS 23.100.40

Võtmesõnad:

ICS 23.100.40

English Version

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 6149-3:2006)

Raccordements pour transmissions hydrauliques et  
applications générales - Orifices et éléments mâles à  
filetage métrique ISO 261 et joint torique - Partie 3:  
Dimensions, conception, méthodes d'essai et exigences  
des éléments mâles de série légère (série L) (ISO 6149-  
3:2006)

Leitungsanschlüsse für Fluidtechnik und allgemeine  
Anwendung - Einschraublöcher und Einschraubzapfen mit  
metrischem Gewinde nach ISO 261 und O-Ring-  
Abdichtung - Teil 3: Maße, Konstruktion, Prüfverfahren und  
Anforderungen für Einschraubzapfen, leichte Reihe (L-  
Reihe) (ISO 6149-3:2006)

This European Standard was approved by CEN on 4 February 2007.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

## Foreword

The text of ISO 6149-3:2006 has been prepared by Technical Committee ISO/TC 131 "Fluid power systems" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 6149-3:2007 by Technical Committee ECISS/TC 29 "Steel tubes and fittings for steel tubes", the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2007, and conflicting national standards shall be withdrawn at the latest by August 2007.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## Endorsement notice

The text of ISO 6149-3:2006 has been approved by CEN as EN ISO 6149-3:2007 without any modifications.

---

---

**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**

*Raccordements pour transmissions hydrauliques et applications  
générales — Orifices et éléments mâles à filetage métrique ISO 261 et  
joint torique —*

*Partie 3: Dimensions, conception, méthodes d'essai et exigences des  
éléments mâles de série légère (série L)*



**PDF disclaimer**

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2006

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
Case postale 56 • CH-1211 Geneva 20  
Tel. + 41 22 749 01 11  
Fax + 41 22 749 09 47  
E-mail [copyright@iso.org](mailto:copyright@iso.org)  
Web [www.iso.org](http://www.iso.org)

Published in Switzerland

## Contents

Page

<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>2</b>
<b>4 Dimensions</b> .....	<b>2</b>
<b>5 Requirements</b> .....	<b>2</b>
<b>6 O-rings</b> .....	<b>3</b>
<b>7 Test methods</b> .....	<b>3</b>
<b>8 Designation of stud ends</b> .....	<b>3</b>
<b>9 Identification</b> .....	<b>3</b>
<b>10 Identification statement</b> (reference to this part of ISO 6149) .....	<b>3</b>
<b>Bibliography</b> .....	<b>10</b>

## 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 6149-3 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 6149-3:1993), which has been technically revised.

ISO 6149 consists of the following parts, under the general title *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*
- *Part 2: Dimensions, design, test methods and requirements for heavy-duty (S series) stud ends*
- *Part 3: Dimensions, design, test methods and requirements for light-duty (L series) stud ends*
- *Part 4: Dimensions, design, test methods and requirements of external and internal hexport plugs*



## Introduction

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

Components are connected through their threaded ports by stud ends on fluid conductor connectors to tubes and pipes or to hose connectors and hoses.

For threaded ports and stud ends specified in new designs in hydraulic fluid power applications, ISO/TC 131/SC 4 recommends that the ISO 6149 series be used because these International Standards specify ports and stud ends with metric threads and O-ring sealing and because the subcommittee would like to help users by recommending one preferred system. ISO/TC 131/SC 4 further recommends that threaded ports and stud ends in accordance with the ISO 1179 series, ISO 9974 series and ISO 11926 series not be used for new designs in hydraulic fluid power applications; these International Standards will be maintained because they specify ports and stud ends that are currently used in hydraulic systems worldwide.

# 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

### 1 Scope

This part of ISO 6149 specifies dimensions, performance requirements and test procedures for metric adjustable and non-adjustable light-duty (L series) stud ends and O-rings.

Stud ends in accordance with this part of ISO 6149 may be used at working pressures up to 40 MPa [400 bar<sup>1)</sup>] for non-adjustable stud ends and 31,5 MPa (315 bar) for adjustable stud ends. The permissible working pressure depends upon the stud end size, materials, design, working conditions, application, etc.

Conformance to the dimensional information in this part of ISO 6149 does not guarantee rated performance. Each manufacturer should perform testing according to the specification contained in this part of ISO 6149 to assure that components comply with the performance ratings.

NOTE 1 A significant number of tests have been conducted to confirm the performance requirements of connection ends made from carbon steel.

NOTE 2 This part of ISO 6149 applies to connectors detailed in ISO 8434-1 and ISO 8434-2 (see ISO 12151-4 for related hose fitting specification).

NOTE 3 The Introduction of this part of ISO 6149 gives recommendations for ports and stud ends to be used for new designs in hydraulic fluid power applications.

### 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 48, *Rubber, vulcanized or thermoplastic — Determination of hardness (hardness between 10 IRHD and 100 IRHD)*

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

ISO 965-1, *ISO general purpose metric screw threads — Tolerances — Part 1: Principles and basic data*

ISO 3601-3:2005, *Fluid power systems — O-rings — Part 3: Quality acceptance criteria*

ISO 4759-1, *Tolerances for fasteners — Part 1: Bolts, screws, studs and nuts — Product grades A, B and C*

---

1) 1 bar = 0,1 MPa = 10<sup>5</sup> Pa; 1 MPa = 1 N/mm<sup>2</sup>.

ISO 5598<sup>2)</sup>, *Fluid power systems and components — Vocabulary*

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 19879, *Metallic tube connections for fluid power and general use — Test methods for hydraulic fluid power connections*

### 3 Terms and definitions

For the purposes of this part of ISO 6149, the terms and definitions given in ISO 5598 and the following apply.

**3.1 adjustable stud end**  
stud end connector that allows for connector orientation through final tightening of the locknut to complete the connection

NOTE This type of stud end is typically used on shaped connectors (e.g. tees, crosses and elbows).

**3.2 non-adjustable stud end**  
stud end connector that does not require specific orientation before final tightening of the connection, because it is only used on straight connectors

### 4 Dimensions

Light-duty (L series) stud ends shall conform to the dimensions given in Figures 1 and 2 and given in Table 1. Hex tolerances across flats shall be in accordance with ISO 4759-1, product grade C.

### 5 Requirements

#### 5.1 Working pressure

Light-duty (L series) stud ends made of low carbon steel shall be designed for use at the working pressures given in Table 2.

#### 5.2 Performance

Light-duty (L series) stud ends made of low carbon steel shall meet or exceed the burst and impulse pressures given in Table 2, when submitted to burst and cyclic endurance (impulse) tests conducted in accordance with Clause 7 and assembled using the torques in Table 5.

#### 5.3 Flatness and fit of adjustable stud end washers

The washer shall be clinched to the stud end with a tight slip fit to an interference fit. The slip fit shall be tight enough so that the washer cannot be shaken loose to cause it to drop from its uppermost position by its own weight. The locknut torque needed to move the washer at the maximum washer interference fit shall not exceed the torques given in Table 3.

---

2) To be published. (Revision of 5598:1985)