INTERNATIONAL STANDARD

ISO 6149-4

Second edition
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Connections for 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

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

Partie 4: Dimensions, conception, méthodes d'essai et exigences des bouchons d'orifice à six pans externes et à six pans internes

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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 on 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 the following URL: www.iso.org/iso/foreword.html.

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

This second edition cancels and replaces the first edition (ISO 6149-4:2006), of which it constitutes a minor revision.

The main change since last version is the addition of a warning statement about the hazards of intermixing of stud ends with the various port types.

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 can 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 fittings and hoses. Fluid ports are closed by inserting a plug in the port.

Connections for 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

1 Scope

This document specifies dimensions and performance requirements for external hex and internal hex port plugs for use with ISO 6149-1 ports.

Port plugs in accordance with this document can be used at working pressures up to 63 MPa (630 bar[1)]). The permissible working pressure depends upon the plug end size, materials, design, working conditions, application, etc.

Conformance to the dimensional information in this document does not guarantee rated performance. Each manufacturer is expected to perform testing according to the specification contained in this document to assure that components comply with the performance ratings.

WARNING — The use of stud ends conforming to this document with ports conforming to the relevant parts of ISO 1179, ISO 9974 and ISO 11926 could lead to a hazardous situation.

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

ISO 261:1998, *ISO general purpose metric screw threads — General plan*

ISO 1629, *Rubber and latices — Nomenclature*

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

ISO 4042, *Fasteners — Electroplated coatings*

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 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*

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

ISO 7789, *Hydraulic fluid power — Two-, three- and four-port screw-in cartridge valves — Cavities*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests*

ISO 10683, *Fasteners — Non-electrolytically applied zinc flake coatings*

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 document, the terms and definitions given in ISO 5598 and the following apply.

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

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

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

3.1
plug
stud end with no through hole for fluid passage, used to contain hydraulic fluid

4 Dimensions

4.1 Plug dimensions

External hex and internal hex plugs shall conform to the dimensions shown in Figures 1 and 2 and given in Tables 1 and 2, respectively.

4.2 Hex tolerances

External hex tolerances across flats shall be in accordance with ISO 4759-1:2000, product grade C. Minimum across corner dimensions are 1,092 times the nominal width across flats. The minimum side flat is 0,43 times the nominal width across flats. Internal hex tolerances across flats shall be in accordance with ISO 4759-1:2000, product grade A. External hex corners shall be chamfered 10 ° to 30 ° to a diameter equal to the width across flats, with a tolerance of $-^{0}_{4}$ mm.

4.3 Screw threads

The screw threads on the plug shall be metric screw threads conforming to ISO 261:1998, class 6g.

5 Requirements

5.1 Working pressures and working temperatures

External hex and internal hex plugs conforming to this document shall be suitable for use at the working pressures given in Table 3 when used at temperatures between −40 °C and +120 °C. For use at pressures and/or temperatures outside of this range, the manufacturer shall be consulted.

Plugs conforming to this document may contain elastomeric seals. Unless otherwise specified, plugs are made and delivered with elastomeric seals for use within the specified working temperature range with petroleum-based hydraulic fluids. The use of these plugs and elastomeric seals with other hydraulic fluids can result in a reduced working temperature range or can render the plugs unsuitable for the application. Manufacturers may supply, upon request, plugs with elastomeric seals for use with hydraulic fluids other than petroleum-based hydraulic fluids that meet the specified working temperature range of the plugs.