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Hydraulic fluid power — Test methods for couplings actuated with or without tools

Transmissions hydrauliques — Méthodes d'essai pour les raccords actionné avec ou sans outils

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Foreword

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).

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

This first edition of ISO 18869 cancels and replaces ISO 7241-2:2000, which has been technically revised with the following changes:

— the title has been changed;

— the scope has been expanded.

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Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. Couplings are used to join or quickly separate fluid conductors. Quick-action couplings, as defined in ISO 5598, can be connected and disconnected without the use of tools. Other types of couplings require the use of tools for connection and disconnection.

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Hydraulic fluid power — Test methods for couplings actuated with or without tools

1 Scope

This document specifies methods for testing and evaluating the performance of quick-action couplings for use in hydraulic fluid power applications. This document does not apply to the testing of tube connections, stud ends for ports and flange connections, which are covered by ISO 19879.

Test methods covered in this document are independent of each other and outline the method to follow for each test. See the respective connector standard for which tests to conduct and for performance requirements. It is not intended that all tests be carried out for every application; it is up to the user of this document to select the applicable tests.

For qualification of the coupling, the minimum number of samples specified in this document is to be tested, unless otherwise specified in the relevant coupling standard or as agreed upon by the manufacturer and the user.

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 IRHD)*

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

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

ISO 4411, *Hydraulic fluid power — Valves — Determination of pressure differential/flow characteristics*

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

ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method*

ISO 6802, *Rubber and plastics hoses and hose assemblies with wire reinforcements — Hydraulic impulse test with flexing*

ISO 6803, *Rubber and plastics hoses and hose assemblies — Hydraulic-pressure impulse test without flexing*

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

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

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3.1
quick-action coupling
connector that can be connected and disconnected multiple times and relatively quickly

EXAMPLE Within 1 s to 30 s either with or without the use of tools.

Note 1 to entry: This connector can contain one or two automatic shut-off valves.

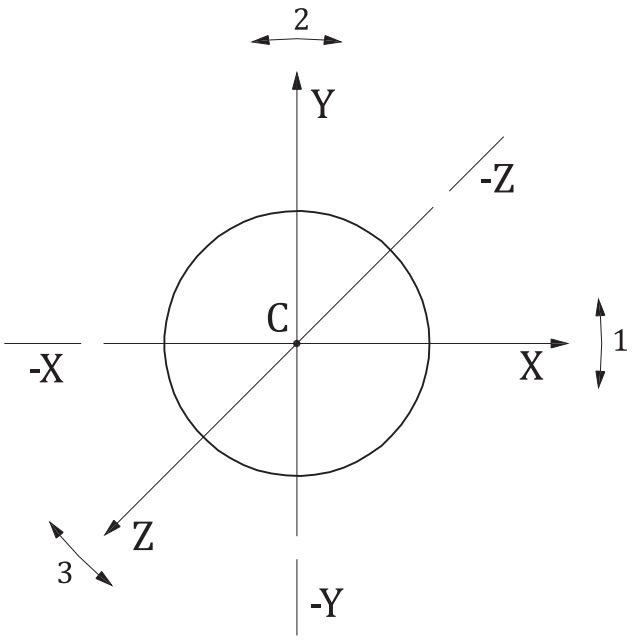
3.2
screw-to-connect coupling
coupling that is designed to be connected and disconnected by more than one turn of one swivel element relatively to the other

3.3
coupling half
uncoupled part of a *quick-action coupling* (3.1)

Note 1 to entry: The terms "female half" and "male half" can be used to describe the two parts of the coupling.

3.4
misalignment
maximum error in the space allowed between the axes of the two coupling halves, indicated in three dimensions and angles of rotation

Note 1 to entry: See Figure 1.



Key
1 misalignment around C respect the X-axis
2 misalignment around C respect the Y-axis
3 misalignment around C respect the Z-axis

Figure 1 — Illustration of indication of misalignment

3.5
side load
load applied perpendicular to the axes of the coupling halves in the disconnected positions, as agreed by the supplier and purchaser

Note 1 to entry: See Figure B.1.

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Note 2 to entry: The value of the side load is expressed in Newton (N).

3.6
rated connect force
force required to achieve complete engagement of the connection

3.7
rated disconnect force
force required to achieve complete disengagement of the connection

3.8
rated connect torque
torque required to achieve complete engagement of the connection

3.9
rated disconnect torque
torque required to achieve complete disengagement of the connection

4 Selection of test assemblies

4.1 Test assemblies (coupling assemblies to be tested) shall be selected to constitute a representative sample of a production lot in all respects: design, material, surface treatment, process, etc. All managerial controls necessary to maintain substantial similarity between test and production couplings shall be used.

4.2 For qualification testing, the number of test samples shall be taken from Table 1.

NOTE The coupling size is based on the nominal hose size, in accordance with ISO 4397.

Table 1 — Number of test sample

Coupling nominal size	Number of samples
5	5
6,3	5
10	5
12,5	5
16	5
19 (20)	5
20	5
25	4
31,5	2
38 (40)	2
51 (50)	2

5 General test conditions

5.1 Safety considerations

5.1.1 The following recommendations are not all inclusive and other pertinent regulations and considerations may apply.

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