
**Hydraulic fluid power — Hose
assemblies —**

**Part 2:
Practices for hydraulic hose assemblies**

Transmissions hydrauliques — Flexibles de raccordement —

Partie 2: Pratiques pour les flexibles de raccordement hydrauliques



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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
Web www.iso.org

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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. www.iso.org/directives

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 131, *Fluid power systems*, Subcommittee SC 4, *Connectors and similar products and components*.

This first edition of ISO/TS 17165-2 cancels and replaces ISO/TR 17165-2:2006, which has been technically revised.

ISO 17165 consists of the following parts, under the general title *Hydraulic fluid power – Hose assemblies*:

- *Part 1: Dimensions and requirements*
- *Part 2: Practices for hydraulic hose assemblies*

Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit.

To allow fluid flow between components, they are interconnected by piping, both rigid (tubes and tube connectors) and flexible (hose assemblies, which consist of hose and hose fittings).

Hydraulic fluid power — Hose assemblies —

Part 2:

Practices for hydraulic hose assemblies

1 Scope

This part of ISO 17165 provides guidelines for selection, routing, fabrication, installation, replacement, maintenance and storage of hose and hose assemblies for hydraulic fluid power systems which are manufactured from hoses conforming to ISO 1436, ISO 3862, ISO 3949, ISO 4079 and ISO 11237, and hose fittings conforming to ISO 12151-1 to ISO 12151-6.

NOTE 1 Many of these practices also can be suitable for use with other types of hoses and systems.

NOTE 2 [Annex A](#) lists examples of actual failure resulting from improper use of hydraulic hose and hose assemblies.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1436, *Rubber hoses and hose assemblies — Wire-braid-reinforced hydraulic types for oil-based or water-based fluids — Specification*

ISO 2230, *Rubber products — Guidelines for storage*

ISO 3457, *Earth-moving machinery — Guards — Definitions and requirements*

ISO 3862, *Rubber hoses and hose assemblies — Rubber-covered spiral-wire-reinforced hydraulic types for oil-based or water-based fluids — Specification*

ISO 3949, *Plastics hoses and hose assemblies — Textile-reinforced types for hydraulic applications — Specification*

ISO 4079, *Rubber hoses and hose assemblies — Textile-reinforced hydraulic types for oil-based or water-based fluids — Specification*

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

ISO 8330, *Rubber and plastics hoses and hose assemblies — Vocabulary*

ISO 8331, *Rubber and plastics hoses and hose assemblies — Guidelines for selection, storage, use and maintenance*

ISO 11237, *Rubber hoses and hose assemblies — Compact wire-braid-reinforced hydraulic types for oil-based or water-based fluids — Specification*

ISO 12151-1, *Connections for hydraulic fluid power and general use — Hose fittings — Part 1: Hose fittings with ISO 8434-3 O-ring face seal ends*

ISO 12151-2, *Connections for hydraulic fluid power and general use — Hose fittings — Part 2: Hose fittings with ISO 8434-1 and ISO 8434-4 24 degree cone connector ends with O-rings*

ISO 12151-3, *Connections for hydraulic fluid power and general use — Hose fittings — Part 3: Hose fittings with ISO 6162-1 or ISO 6162-2 flange ends*

ISO 12151-4, *Connections for hydraulic fluid power and general use — Hose fittings — Part 4: Hose fittings with ISO 6149 metric stud ends*

ISO 12151-5, *Connections for hydraulic fluid power and general use — Hose fittings — Part 5: Hose fittings with ISO 8434-2 37 degree flared ends*

ISO 12151-6, *Connections for hydraulic fluid power and general use — Hose fittings — Part 6: Hose fittings with ISO 8434-6 60 degree cone ends*

ISO 17165-1, *Hydraulic fluid power — Hose assemblies — Part 1: Dimensions and requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5598, ISO 8330 and the following apply.

3.1 manufacturing date of the hose assembly

date when hose and hose fittings were assembled into a hose assembly

4 Safety considerations

4.1 General

The list of potential conditions and situations that can lead to personal injury or property damage described in 4.2 through 4.8 is not necessarily all-inclusive. Reasonable and feasible means, including those described in this clause, shall be taken into consideration, to reduce the risk of personal injury, property damage or both. Training, including the information in this document, for operators, maintenance personnel, and other individuals working with hose assemblies under pressure is encouraged.

4.2 Fluid injections

Fine streams of escaping pressurized fluid can penetrate skin and enter a human body. These fluid injections can cause severe tissue damage and loss of limb. Various means shall be taken into consideration to reduce the risk of fluid injections, particularly in areas normally occupied by operators. Such means include: careful routing of hose, adjacent components, warnings, guards, shields and training programs. Pressure shall be relieved before disconnecting hydraulic or other lines. All connections shall be tightened before applying pressure. Contact with escaping fluids shall be avoided. All leaks shall be treated as if they were pressurized and hot enough to burn skin. No part of the human body shall be used to check a hose for leaks. If a fluid-injection accident occurs, medical treatment by a doctor shall be sought immediately.

WARNING — Fluid-injection injuries shall be treated without delay and shall not be treated as a simple cut.

Any fluid injected into the skin shall be surgically removed *within a few hours*, or gangrene can result. Doctors unfamiliar with this type of injury should consult a knowledgeable medical source.

4.3 Whipping hoses

If a pressurized hose assembly blows apart, the hose fittings can be thrown off at high speed, and the loose hose can flail or whip with great force. This is particularly true in systems that use compressible fluids. When this risk exists, consider guards and restraints to protect against injury.