INTERNATIONAL STANDARD

ISO 5676

Second edition
2023-06

Tractors and machinery for agriculture and forestry — Hydraulic coupling — Braking circuit

Tracteurs et matériels agricoles et forestiers — Coupleurs hydrauliques — Circuit de freinage

Reference number
ISO 5676:2023(E)

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Published in Switzerland

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Foreword

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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 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).

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This document was prepared by Technical Committee ISO/TC 23, *Tractors and machinery for agriculture and forestry*, Subcommittee SC 4, *Tractors*.

This second edition cancels and replaces the first edition (ISO 5676:1983), which has been technically revised.

The main changes are as follows:

— cadmium plating references have been removed;

— reference to ISO 18869 to corrosion test methods has been added.

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.

Tractors and machinery for agriculture and forestry — Hydraulic coupling — Braking circuit

1 Scope

This document specifies the conditions for interchangeability, and the operating characteristics and lays down the technical specifications for tests, for the hydraulic couplings on braking systems for towed agriculture and forestry machinery.

This document applies solely to hydraulic brake couplings.

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 3448, *Industrial liquid lubricants — ISO viscosity classification— Determination of kinematic viscosity and calculation of dynamic viscosity*

ISO 5675, *Agricultural tractors and machinery — General purpose quick-action hydraulic couplers*

ISO 18869:2017, *Hydraulic fluid power — Test methods for couplings*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5675 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/obp

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

4 Characteristics and specifications

4.1 General

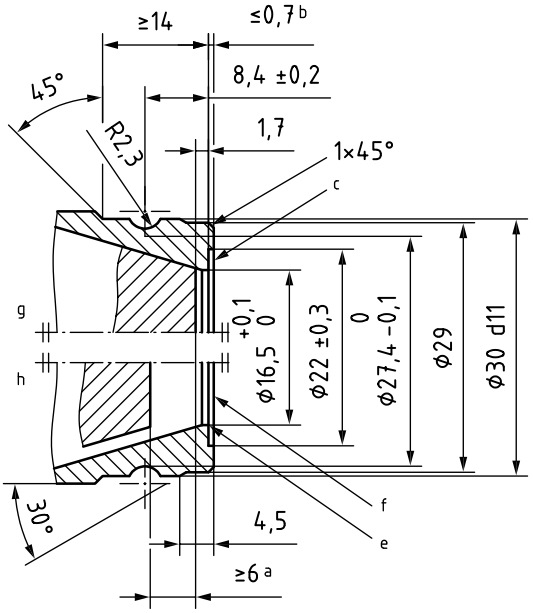
The braking system is of a regulatable type, operated by an increase in pressure within a service pressure range of between 10 MPa and 15 MPa (100 and 150 bar).

The devices are used to connect or disconnect the braking circuit each time trailed agricultural or forestry machinery is hitched or unhitched.

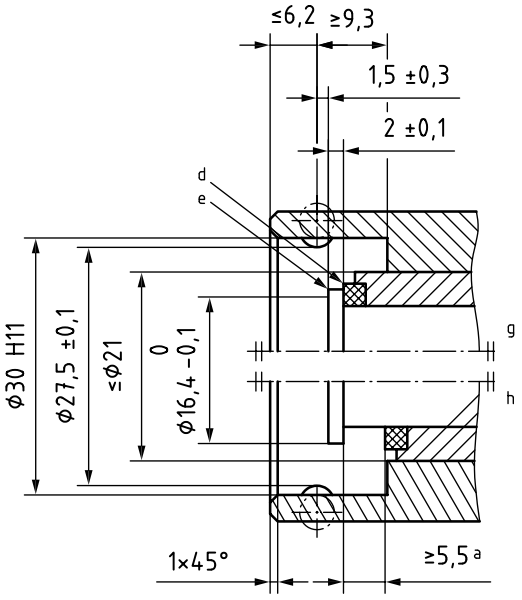
4.2 Dimensional characteristics

The coupling shall conform with Figure 1.

Dimensions in millimetres



a) Fixed part: Male part fixed on tractor



b) Moveable part: Female part fixed to the trailed vehicle

a Travel.

b Optional groove.

c Sealing face.

d End face X.

e Rounded angle.

f Service lock.

g Closed.

h Open.

NOTE The sole aim of the configuration of the coupling is to illustrate and give the reference dimensions. It is not intended to convey design requirements.

Figure 1 — Dimensions of the hydraulic coupling

4.3 Operating characteristics and technical specifications

4.3.1 Operating characteristics

4.3.1.1 Pressures

The normal service pressure shall be 15 MPa (150 bar) maximum.

When the tractor is operated without a trailer, the unconnected male part shall be able to withstand the maximum permissible service pressure of 15 MPa (150 bar).

Connection and disconnection of the coupling device should normally only be carried out without pressure in the circuit.

Under these conditions, the disconnecting force applied to the locking ring shall be less than 45 N. For connection, a force of less than 150 N shall be applied to the body of the female part.

4.3.1.2 Temperature

The operating temperature shall be between -30 °C and 100 °C with possible peaks at 140 °C and shall last not more than 1 h.

4.3.2 Technical specifications

4.3.2.1 Seals

The seals shall be compatible with the oils used in agriculture and under the operating conditions specified in 4.3.1.

4.3.2.2 Protection

Corrosion resistance test shall be performed in accordance with ISO 18869.

4.3.2.3 Testing of the male and female parts with hydraulic fluid

4.3.2.3.1 General

The following tests shall be carried out using a hydraulic fluid with a viscosity of ISO VG 32, in accordance with ISO 3448.

4.3.2.3.2 Hydraulic test pressure

Apply a pressure of 22,5 MPa (225 bar) at 20 °C ± 5 °C for 5 min:

— to the male part alone;

— to the female part alone;

— to the connected male and female parts.

No leakage, permanent distortion or disconnection shall be observed.

4.3.2.3.3 Loss of oil and intake of air on coupling

Insert the male part and female part in a test apparatus according ISO 18869:2017, Figure 6 and maintain a pressure of 0,01 MPa.

After coupling and uncoupling 100 times in the horizontal position at a temperature of 20 ± 5 °C, it shall be verified that:

— total oil loss has not exceeded 5 ml.

4.3.2.3.4 Loss of pressure

For an output of 20 l/min under a pressure of 15 MPa (150 bar) at a temperature of 20 °C ± 5 °C, the loss of pressure shall not exceed 0,2 MPa (2 bar).

5 Fixing of the male half of the coupling

The male part of the coupling shall be mounted on the tractor facing backwards.