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## Hydraulic fluid power — Dimensions and requirements of quick-action couplings

*Transmissions hydrauliques — Dimensions et exigences des raccords  
rapides*

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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](http://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](http://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 meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

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 7241 cancels and replaces ISO 7241-1:1987, which has been technically revised.

## Introduction

In hydraulic fluid power systems, power is transmitted and controlled through a liquid under pressure within an enclosed circuit. Quick-action couplings are used to join or separate fluid conductors quickly and without the use of tools or special devices.

When hydraulic quick-action couplings are used on agricultural machinery, the female coupling half is normally assembled on the tractor and the male coupling half is normally assembled on the tractor attachment.

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# Hydraulic fluid power — Dimensions and requirements of quick-action couplings

## 1 Scope

This International Standard specifies the interface dimensions and basic performance requirements for two series of hydraulic quick-action couplings. Both series are in widespread use and have similar technological advantages. Series A is used predominantly in Europe and is preferred worldwide for agricultural and forestry machinery, and this International Standard also specifies additional requirements for Series A for use in agricultural machinery applications covered in ISO 5675. Series B is used predominantly in North America and in the chemical industry.

## 2 Normative references

The following documents, in whole or in part, are 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 2944, *Fluid power systems and components — Nominal pressures*

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

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

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

ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method (scales A, B, C, D, E, F, G, H, K, N, T)*

ISO 18869<sup>1)</sup>, *Hydraulic fluid power — Test methods for couplings actuated with or without tools*

## 3 Terms and definitions

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

### 3.1

#### **coupling valve opening force**

maximum force required to fully open the hydraulic quick-action coupling valve when the pressure inside the coupling is at zero

### 3.2

#### **female half**

receptacle portion of a quick-action coupling which normally includes the mechanism to lock the two halves of quick-action coupling together

### 3.3

#### **interface**

that portion of a coupling half that establishes and controls interchangeability

### 3.4

#### **male half**

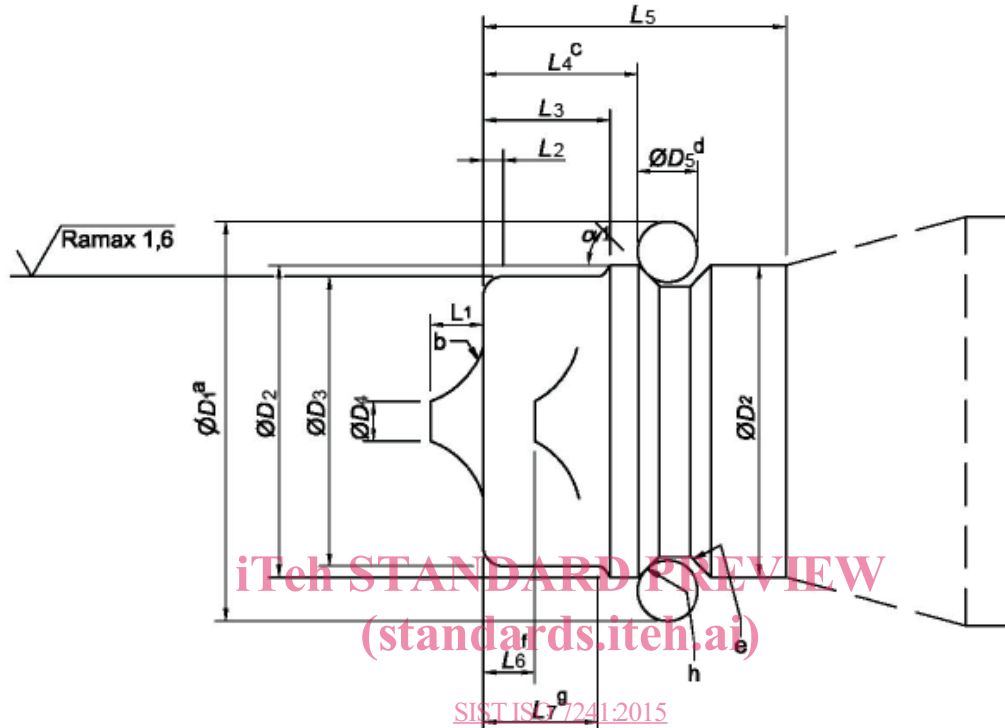
probe portion of a quick-action coupling which fits and locks into the female half

1) This International Standard is under development.

## 4 Dimensional requirements

4.1 Dimensional requirements for Series A hydraulic quick-action couplings are shown in Figure 1 and given in Table 1.

Surface roughness values in micrometres



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### Key

- a Dimension  $D_1$  is the gauge diameter.
- b The shape of the valve is optional, and dimension  $D_4$  is used unless the valve has a spherical form.
- c Dimension  $L_4$  is measured to the ball.
- d Dimension  $D_5$  is the diameter of the gauge ball.
- e The shape of the groove that receives the bearings in the coupled position is left to the manufacturer.
- f Maximum valve travel against stop.
- g Minimum length of diameter  $D_3$ .
- h Minimum hardness shall be 86HR 15N at ball contact point, in accordance with ISO 6508-1.

Figure 1 — Dimensional requirements for Series A couplings



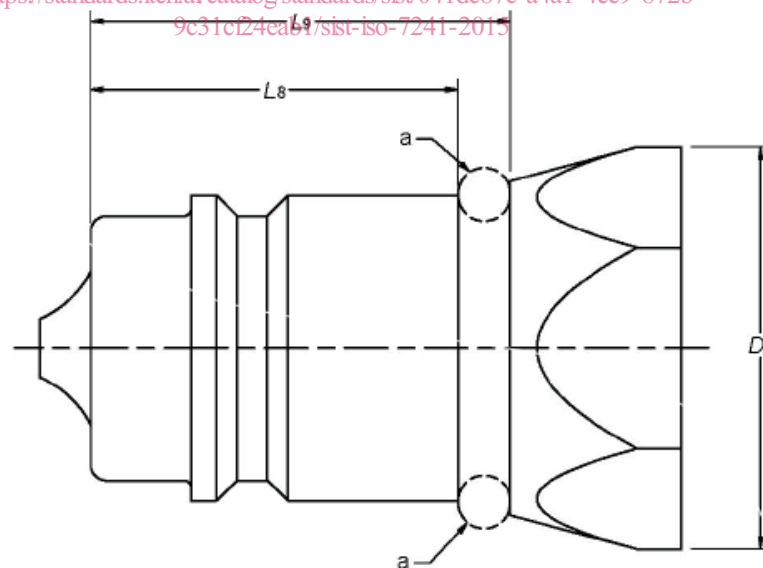
**Table 1 — Dimensional requirements for Series A couplings**

Dimensions in millimetres

Size <sup>a</sup>	$D_1$	$D_2$	$D_3$	$D_4^b$ min.	$D_5$ $\pm 0,002\ 5$	$L_1$ max.	$L_2^c$	$L_3$	$L_4$	$L_5$ min.	$L_6$ max.	$L_7$ min.	$\alpha_1$
6,3	18,7	12,9 13	11,73 11,86	1,9	3,968	2,8	0,7 1,5	5,5 5,7	6,6 6,8	14,5	0,5	3,7	44° 46°
10	24,1	18,3 18,4	17,2 17,3	3	3,968	3,8	0,7 1,5	8,8 9	9,8 10	18	0,5	7	
12,5	30,3	23,66 23,74	20,48 20,56	4,5	4,762	4	0,7 1,5	9,2 9,4	11,6 11,8	24	0,5	8	
20	37,1	30,4 30,5	29 29,1	5,4	4,762	7,2	1 2,5	15,9 16,1	17,5 17,7	27,5	0,6	13,7	
25	43,0	36,5 36,6	34,21 34,34	7,8	4,762	8,5	1,5 3	19,7 20	22,8 23	34	0,7	16,3	
31,5	56,0	47,7 47,8	44,9 45	8,9	6	11	2 4,5	24,9 25,1	28,4 28,6	43	0,7	24	
40	68,5	57,5 57,6	54,9 55	9,9	8	13	3 6	30,6 30,8	33,7 33,9	51	0,8	29,6	
50	83,7	69,9 70	65 65,1	9,9	10	16,6	3 7	35 35,2	39,6 39,8	61	0,8	34	

<sup>a</sup> The size designation corresponds to the nominal size of the hose recommended for use with the coupling; see ISO 4397.  
<sup>b</sup> Use dimension  $D_4$  unless the valve has a spherical form; spherical form is not preferred.  
<sup>c</sup> Radius or chamfer length. Radius with chamfer is optional.

**4.2** Additional dimensional requirements for Series A hydraulic quick-action couplings used in agricultural applications are shown in [Figure 2](#) and given in [Table 2](#).



**Key**

<sup>a</sup> Shape of neck between  $L_8$  and  $L_9$  is optional but shall be circular to accommodate dust sealing.

**Figure 2 — Additional dimensional requirements for Series A couplings used in agricultural applications**