

---

---

**Pneumatic fluid power — Cylindrical quick-action couplings for maximum working pressures of 1 MPa, 1,6 MPa, and 2,5 MPa (10 bar, 16 bar and 25 bar) — Plug connecting dimensions, specifications, application guidelines and testing**

iTeh STANDARD PREVIEW

(standards.iteh.ai)

*Transmissions pneumatiques — Raccords rapides cylindriques pour pressions maximales d'utilisation 1 MPa, 1,6 MPa et 2,5 MPa (10 bar, 16 bar et 25 bar) — Dimensions de raccordement de la partie mâle, spécifications, conseils d'utilisation et essais*

<https://standards.iteh.ai/en/standards/iso-6150-2018/iso-6150-2018-be37dd689998/iso-6150-2018>



**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 6150:2018

<https://standards.iteh.ai/catalog/standards/sist/a7a69250-ccee-4c5f-a6fb-be37dd689998/iso-6150-2018>



**COPYRIGHT PROTECTED DOCUMENT**

© ISO 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office  
CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

Published in Switzerland

# Contents

	Page
<b>Foreword</b> .....	<b>iv</b>
<b>Introduction</b> .....	<b>v</b>
<b>1 Scope</b> .....	<b>1</b>
<b>2 Normative references</b> .....	<b>1</b>
<b>3 Terms and definitions</b> .....	<b>1</b>
<b>4 Dimensions and tolerances</b> .....	<b>2</b>
<b>5 Designation</b> .....	<b>4</b>
<b>6 Requirements</b> .....	<b>5</b>
6.1 Material.....	5
6.2 Hardness.....	5
6.3 Surface finish.....	5
6.4 Corrosion protection.....	5
6.5 Number of couplings and uncouplings.....	5
6.6 Test pressures.....	5
6.7 Tests at extreme working temperatures.....	5
6.8 Limited rotation for self-alignment.....	6
6.9 Structural rigidity.....	6
6.10 Leakage.....	6
<b>7 Application guidelines</b> .....	<b>6</b>
7.1 Installation with vibrating tools.....	6
7.2 Coupling and uncoupling safety considerations.....	6
<b>8 Testing</b> .....	<b>6</b>
8.1 Accuracy of test equipment and instrumentation.....	6
8.2 Checking of compliance.....	7
8.3 Hydraulic test.....	7
8.4 Corrosion test.....	7
8.5 Test for structural rigidity.....	7
8.6 Operational tests.....	8
8.6.1 Disconnect force.....	9
8.6.2 Connect force.....	10
8.6.3 Measurement of leakage at maximum working pressure.....	11
8.6.4 Extreme temperature test at maximum working pressure.....	12
<b>9 Identification statement (Reference to this document)</b> .....	<b>13</b>
<b>Bibliography</b> .....	<b>15</b>

## 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 of 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 [www.iso.org/iso/foreword.html](http://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 second edition cancels and replaces the first edition (ISO 6150:1988), which has been technically revised.

The main changes compared to the previous edition are as follows:

- the complete document was reformatted and updated with the most current information.

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](http://www.iso.org/members.html).

## Introduction

In pneumatic fluid power systems, power is transmitted and controlled through gas under pressure within an enclosed circuit.

Cylindrical quick-action couplings conforming to this document are designed to join or separate fluid conducting lines quickly without the use of tools or special devices.

## iTeh STANDARD PREVIEW (standards.iteh.ai)

[ISO 6150:2018](https://standards.iteh.ai/catalog/standards/sist/a7a69250-ccee-4c5f-a6fb-be37dd689998/iso-6150-2018)

<https://standards.iteh.ai/catalog/standards/sist/a7a69250-ccee-4c5f-a6fb-be37dd689998/iso-6150-2018>

**iTeh STANDARD PREVIEW**  
**(standards.iteh.ai)**

ISO 6150:2018

<https://standards.iteh.ai/catalog/standards/sist/a7a69250-ccee-4c5f-a6fb-be37dd689998/iso-6150-2018>

# Pneumatic fluid power — Cylindrical quick-action couplings for maximum working pressures of 1 MPa, 1,6 MPa, and 2,5 MPa (10 bar, 16 bar and 25 bar) — Plug connecting dimensions, specifications, application guidelines and testing

## 1 Scope

This document specifies the dimensions and tolerances so as to ensure the interchangeability of pneumatic quick-action coupling plugs. It also provides specifications and application guidelines, and specifies the tests to be applied to the plugs together with sockets.

NOTE 1 The construction and dimensions of sockets are left to the manufacturer's option.

This document applies to cylindrical quick-action couplings for maximum working pressures of 1 MPa, 1,6 MPa and 2,5 MPa (10 bar, 16 bar and 25 bar) for use in pneumatic fluid power systems.

NOTE 2 Quick-action couplings with shut-off valves for equipment for welding, cutting and related processes are covered by ISO 7289.

This document applies only to the dimensional criteria of products manufactured in accordance with this document. It does not apply to their functional characteristics.

## 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 4414, *Pneumatic fluid power — General rules and safety requirements for systems and their components*

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

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 definition apply.

ISO and IEC maintain terminological 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/>

### 3.1

#### **maximum working pressure**

maximum pressure at the coupling in a system

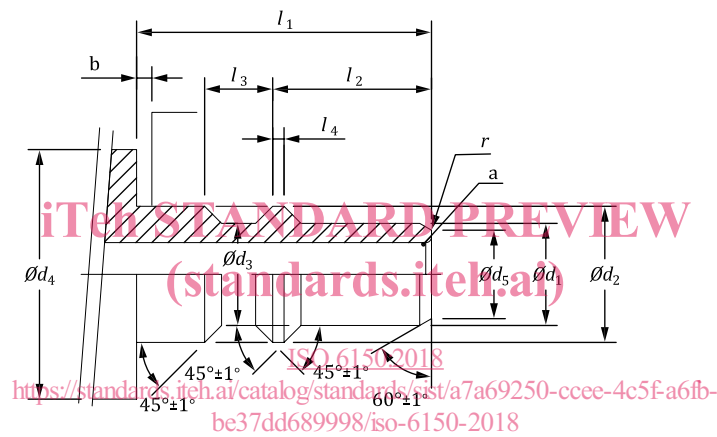
4 Dimensions and tolerances

4.1 Cylindrical quick-action couplings for pneumatic fluid power systems are classified according to their maximum working pressure into the following three different series:

- Series A: Cylindrical quick-action couplings for a maximum working pressure of 1 MPa (10 bar).
- Series B: Cylindrical quick-action couplings for a maximum working pressure of 1,6 MPa (16 bar).
- Series C: Cylindrical quick-action couplings for a maximum working pressure of 2,5 MPa (25 bar).

4.2 Tables 1 to 3 and Figures 1 to 3 are only concerned with the dimensions and tolerances of the plug. The socket is left to the manufacturer's option; the same condition applies to the plug end for connection to either a component, or a pipe or hose.

4.2.1 The dimensions and tolerances for plugs on series A cylindrical quick-action couplings are shown in Figure 1 and given in Table 1.



- a Inside diameter as large as possible.
- b The distance between the shoulder of the plug and the end surface of the socket, when connected, shall not exceed 1 mm.

Figure 1 — Plug for 1 MPa (10 bar) maximum working pressure (series A)

Table 1 — Dimensions for plug for 1 MPa (10 bar) maximum working pressure (series A)

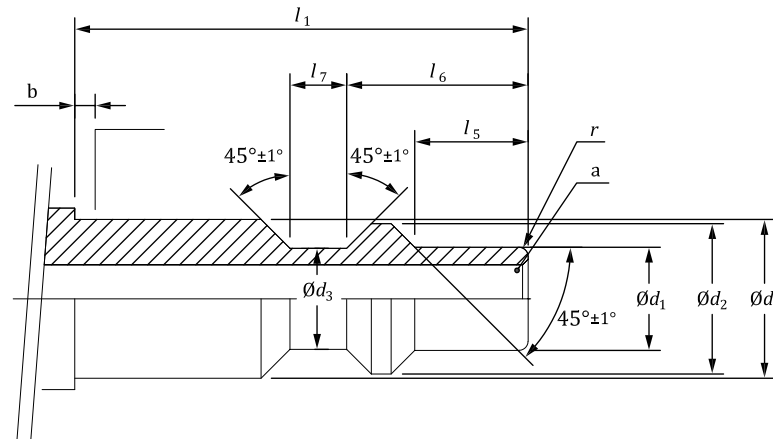
Dimensions in millimetres

Nominal diameter	$d_1$ $h_{11}$	$d_2$ $d_{11}$	$d_3$	$d_4^1$ min.	$d_5$	$l_1$ $+0,2/0$	$l_2$	$l_3$	$l_4$	$r$
6	4,5	6	4,5	11	3,9	16	$7 + 0,2/0$	$3 + 0,15/0$	0,5	0,2 to 0,3
10	8	10	8	15	7	20	$8,5 + 0,3/0$	$5,5 + 0,2/0$	1	0,3 to 0,5
13	11	13	11	18	10	21				
16	13	16	13	20	12	24				
18	16	18	16	23	15	27				

<sup>1</sup> Minimum actual diameter.



4.2.2 The dimensions and tolerances for plugs on series B cylindrical quick-action couplings are shown in Figure 2 and given in Table 2.



- a Inside diameter as large as possible; break corner at 0,5 mm max. Test that the flow characteristics of the male part provide sufficient air flow and strength at the male part.
- b The distance between the shoulder of the plug and the end surface of the socket, when connected, shall not exceed 1 mm.

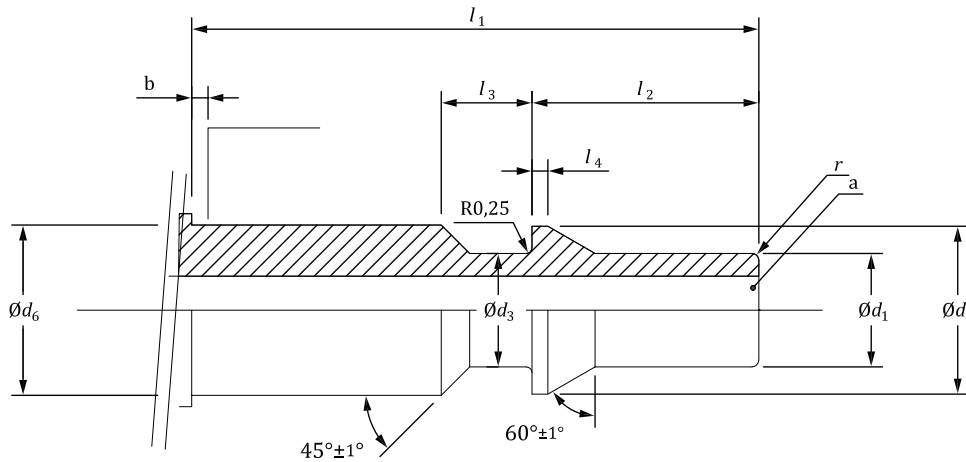
Figure 2 — Plug for 1,6 MPa (16 bar) maximum working pressure (series B)

Table 2 — Dimensions for plug for 1,6 MPa (16 bar) maximum working pressure (series B)

ISO 6150:2018 Dimensions in millimetres

Nominal diameter	$d_1$ -0,1/ -0,2	$d_2$ -0,1/ -0,2	$d_3$ -0,05/ -0,15	$d_6$ -0,1/ -0,2	$l_1$ min.	$l_5$ +0,10/ -0,15	$l_6$ +0,10/ -0,15	$l_7$ +0,10/ -0,15	$r$ +0,10/ -0,15
7	4,55	6,5	4,45	7	20	5	8	2,5	0,4
12	8,2	11	7,9	11,9	23,6	5,4	9,4	2,8	
15	11	14,4	11,6	15,2	26,1	7,65	12,3	2,6	1
17	14,4	16,8	14,3	16,8	34,8	9,55	14,7	2,8	0,4
23	20,55	23	20,45	23	35	6,5	10,7	3	1

4.2.3 The dimensions and tolerances for plugs on series C cylindrical quick-action couplings are shown in Figure 3 and given in Table 3.



- a Inside diameter as large as possible.
- b The distance between the shoulder of the plug and the end surface of the socket, when connected, shall not exceed 1 mm.

Figure 3 — Plug for 2,5 MPa (25 bar) maximum working pressure (series C)

Table 3 — Dimensions for plug for 2,5 MPa (25 bar) maximum working pressure (series C)

Dimensions in millimetres

Nominal diameter	$d_1$ f <sub>8</sub>	$d_2$ js <sub>11</sub>	$d_3$ ±0,15	$d_6$ f <sub>8</sub>	$l_1$ min.	$l_2$ ±0,1	$l_3$ JS <sub>13</sub>	$l_4$ ±0,1	$r$ max.
8	5	7,4	5	7,5	25	10	4,5	0,7	0,3
10	7,5	9,7	7,4	10	27,5	12	7	0,75	1
14	11	13,7	11	14	36,5	17	9,5	1,5	
17	14	16,7	14	17	41	18	12,5	2	
27	23	26,7	23	27	61	27	16	2,5	2

## 5 Designation

The designation for a quick-action coupling in accordance with this document shall include, in the order given, the following information:

- a) identity block, i.e. the word "Coupling";
- b) the reference to this document;
- c) the letter standing for the series of coupling (i.e. A, B or C);
- d) the nominal diameter.

### EXAMPLE

A cylindrical quick-action coupling for maximum working pressure of 1,6 MPa (16 bar), i.e. series B, and having a nominal diameter of 15 mm shall be designated as follows:

**Coupling ISO 6150-B-15**

## 6 Requirements

### 6.1 Material

The choice of the material is left to the discretion of the manufacturer who shall take account of the intended application.

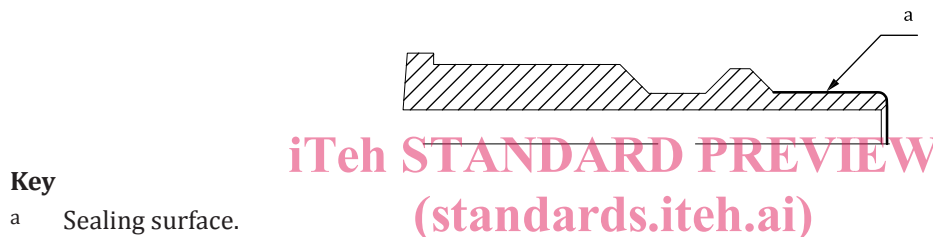
### 6.2 Hardness

The plug shall have a hardness suitable for applications as recommended by the manufacturer.

### 6.3 Surface finish

The surface finish of the plug shall be left to the manufacturer's option, but the surface roughness,  $R_a$ , of the sealing surface as defined In [Figure 4](#) shall be 3,2  $\mu\text{m}$  max.

The requirements for the surface finish of the coupling plug in contact with the seal are dependent on the application and the life-time requirements; any such requirements should be subject to agreement between the manufacturer and user.



**Figure 4** — Definition of sealing surface  
<https://standards.iteh.ai/catalog/standards/sist/a7a69250-ccee-4c5f-a6fb-be37dd689998/iso-6150-2018>

### 6.4 Corrosion protection

The quick-action coupling plug shall meet the requirements for the tests described in [8.4](#).

### 6.5 Number of couplings and uncouplings

After completing 5 000 coupling and uncoupling cycles at maximum working pressure, quick-action couplings shall still meet the requirements specified by the manufacturer.

### 6.6 Test pressures

**6.6.1** Quick-action couplings shall be usable after they have been subjected to a pressure test, as described in [8.3](#), at 1,5 times the maximum working pressure.

**6.6.2** Quick-action couplings shall be designed to withstand four times the maximum working pressure.

### 6.7 Tests at extreme working temperatures

**6.7.1** Subject couplings, in accordance with the procedure described in [8.6.4](#), to the manufacturer's recommended constant extreme operating temperatures in both positions, coupled and uncoupled:

- for 6 h at maximum working temperature, in each position;
- for 4 h at minimum working temperature, in each position.