
**Fluid power systems and components —
16 mm square electrical connector with
earth contact — Characteristics and
requirements**

*Transmissions hydrauliques et pneumatiques — Connecteur électrique
carré 16 mm avec contact de sécurité — Caractéristiques et exigences*

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this International Standard may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15217 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 5, *Control products and components*.

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Introduction

In fluid power systems, power is transmitted and controlled through a fluid (liquid or gas) under pressure within a circuit. Typical components found in such systems are hydraulic and pneumatic controls. These devices are used to regulate the function of a component or system.

Some control components found in fluid power systems are electrically actuated. The electrical plug connectors described in this International Standard are used with control and regulation assemblies for use in hydraulic and pneumatic fluid power systems.

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Fluid power systems and components — 16 mm square electrical connector with earth contact — Characteristics and requirements

1 Scope

This International Standard specifies the following characteristics and requirements for a general-purpose, electrical-plug connector with two or three contacts plus earth, for use with solenoids:

- the electrical characteristics of the connector;
- the dimensions of the contacts;
- the means of fixing the plug to the socket;
- the sealing procedure between the plug and the socket;
- usage requirements.

The electrical-plug connector specified in this International Standard is intended to be used under working conditions such that the connector cannot be damaged by external action (for example, shock or excessive loading).

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 4413:1998, *Hydraulic fluid power — General rules relating to systems*.

ISO 4414:1998, *Pneumatic fluid power — General rules relating to systems*.

ISO 5598:1985, *Fluid power systems and components — Vocabulary*.

IEC 60417-2:1998, *Graphical symbols for use on equipment — Part 2: Symbol originals*.

IEC 60529:1989, *Degrees of protection provided by enclosures (IP Code)*.

IEC 60664-1:1992 *Insulation coordination for equipment within low-voltage systems — Part 1: Principles, requirements and tests*.

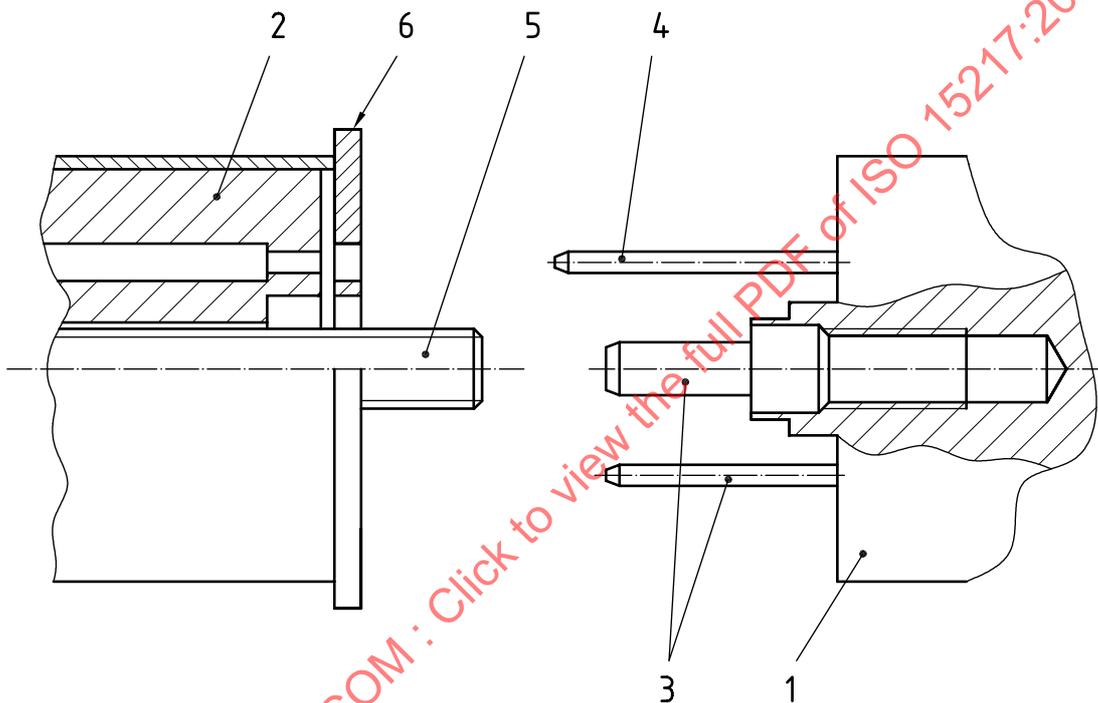
3 Terms and definitions

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

3.1 electrical connector
 assembly consisting of two-pieces (socket and plug) which, when joined, provide electrical continuity

4 Connector components

The components of the connector are illustrated and identified in Figure 1.



Key

1	Plug	4	Earth contact (preleading)
2	Socket	5	Screw for fastening
3	Contact	6	Seal

Figure 1 — Connector components

5 Connector characteristics

The connector shall be designed to meet the following requirements:

- a) voltage: 250 V;
- b) current: 6 A;
- c) pollution degree 2 and overvoltage category II according to IEC 60664-1;
- d) tracking index $175 \leq IRC \leq 400$ (minimum) according to IEC 60664-1;
- e) operating temperature: -20 °C to $+125\text{ °C}$; at elevated temperatures, the variation of current with temperature is given in Figure 2;

- f) degree of protection after fixing the socket onto the plug: IP 65, in accordance with IEC 60529;
- g) clearance, creepage, rated impulse with standing voltage according to IEC 60664-1.

NOTE If it is necessary to specify the mechanical degree of protection, reference should be made to IEC 60529.

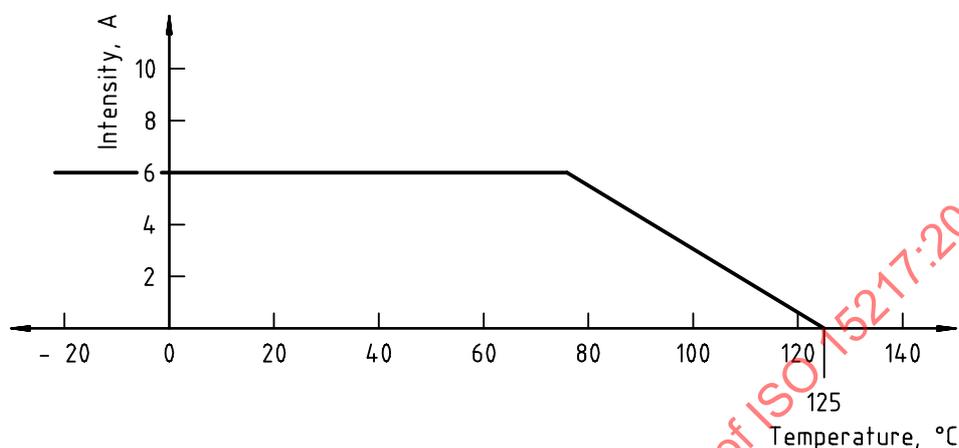


Figure 2 — Variation of the current's intensity with temperature

6 Position of contacts and protective earth contact

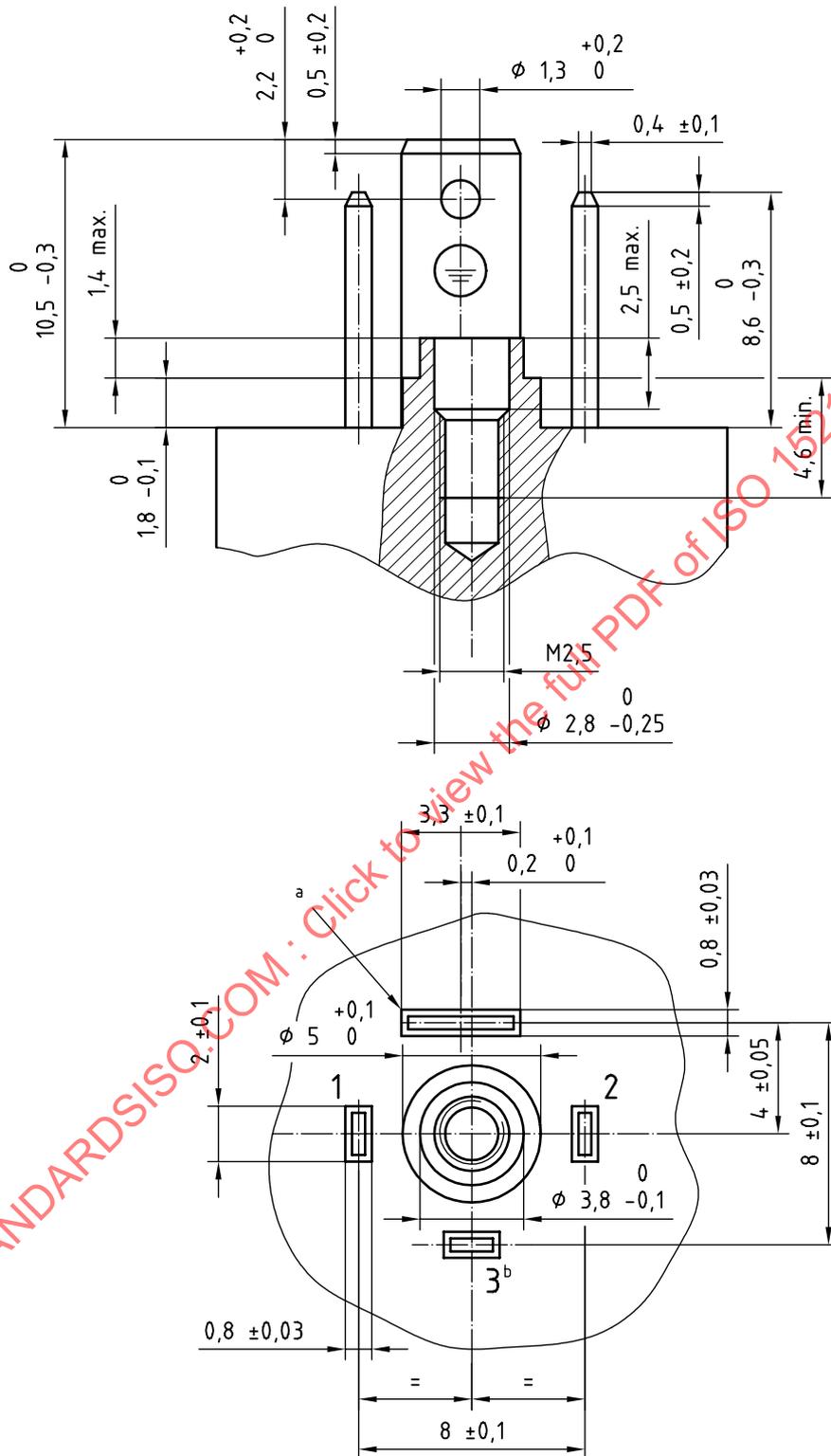
- 6.1 The contacts and protective earth contact shall be fitted on the plug.
- 6.2 The protective earth contact shall be fixed in such a way that earth connection is ensured before the current enters the contacts.
- 6.3 The position, dimensions and marking information of contacts and the protective earth contact shall comply with Figure 3.

7 Fixing the plug to the socket

An M2,5 screw shall be used to fix the plug to the socket in accordance with Figure 1.

8 Socket/plug tightness

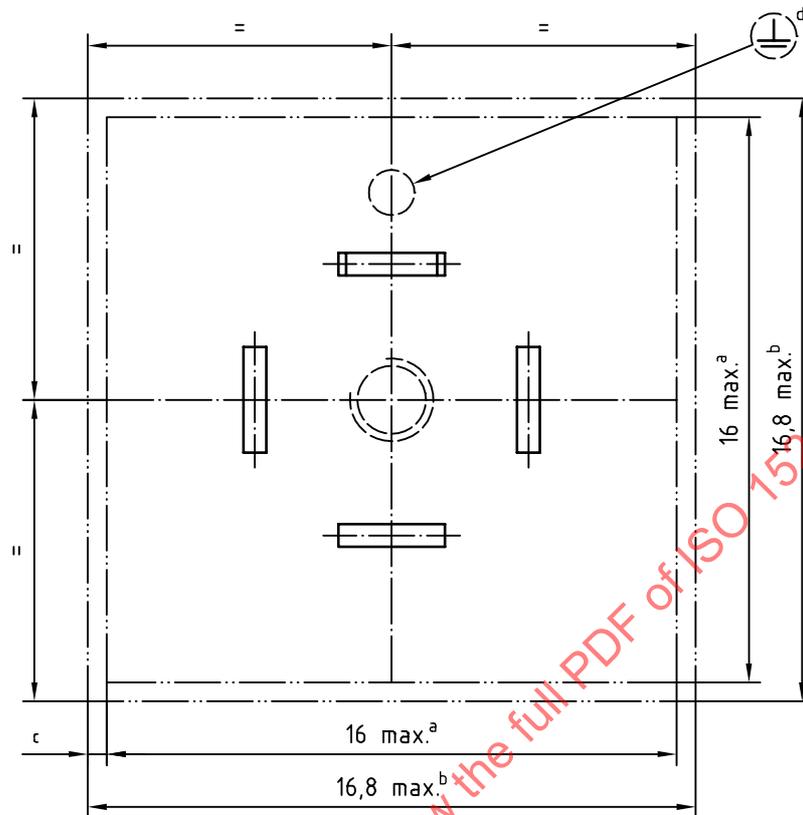
- 8.1 A seal shall be provided with the plug to protect against dust and fluid (IP 65) in the socket/plug assembly.
- 8.2 The seal shall be fitted on the socket to conform with the overall dimensional requirements indicated in Figure 4.
- 8.3 Alternative seal profiles within the dimensions of Figure 4 are possible.



- a Protective earth contact symbol according to IEC 60417-2:1998 (symbol 5019) shall be marked on the earth contact.
- b Contact number 3 does not exist on the two-plus-earth-contact version.

Figure 3 — Connector details

Dimensions in millimetres



- a Maximum dimension of the socket
- b Maximum dimension of the seal
- c Seal overlap beyond the socket
- d Marking

Figure 4 — Overall dimensions

9 Mechanical protection

A cover plate shall be provided to protect the electrical plug specified in this International Standard when the plug has been removed from the socket. The cover plate may be made of plastic or a similar material.

10 Usage

10.1 The connector shall not be used to interrupt the current. It shall be connected or disconnected only after the electricity has been switched off.

10.2 Connectors or leads in installations for which incorrect connection is possible shall be permanently identified according to the actuator identification requirements given in ISO 4413 and ISO 4414.

11 Designation of the interface

Interfaces shall be designated by an alphanumeric code to facilitate ordering. They shall be designated by ISO 15217, followed by a hyphen, then the type of plug or socket, followed by the + sign and the letter symbol PE.