
**Pneumatic fluid power — Five-port
directional control valves, sizes 18 mm and
26 mm —**

Part 1:
**Mounting interface surfaces without
electrical connector**

*Transmissions pneumatiques — Distributeurs de commande directionnels
à cinq orifices, tailles 18 mm et 26 mm —*

Partie 1: Surfaces d'interface de montage sans connecteur électrique



Reference number
ISO 15407-1:2000(E)

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Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 734 10 79
E-mail copyright@iso.ch
Web www.iso.ch

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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 part of ISO 15407 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 15407-1 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*, Subcommittee SC 5, *Control products and components*.

ISO 15407 consists of the following parts, under the general title *Pneumatic fluid power — Five-port directional control valves, sizes 18 mm and 26 mm*:

- *Part 1: Mounting interface surfaces without electrical connector*
- *Part 2: Mounting interface surfaces with optional electrical connector*

Introduction

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

The various devices for gas distribution and control can be either mounted directly onto the piping, or mounted on interface surfaces, allowing quicker dismantling and promoting equipment interchangeability.

Pneumatic directional valves of the five-port type, as used on mounting interface surfaces complying with the requirements of this part of ISO 15407, control the flow of compressed gas.

Standardization of port and orifice identification, the result of control-mechanism actuation and a system of dimensional tolerances are provided to enhance mounting interchangeability of pneumatic control valves used on the mounting surfaces complying with the requirements of this part of ISO 15407.

Pneumatic fluid power — Five-port directional control valves, sizes 18 mm and 26 mm —

Part 1: Mounting interface surfaces without electrical connector

1 Scope

This part of ISO 15407 specifies the following requirements for a mounting interface for five-port pneumatic directional control valves, sizes 18 mm and 26 mm, without electrical connector, for use at a maximum rated pressure of 1,6 MPa [16 bar¹⁾]:

- dimensions and tolerances of the interface features;
- port identification;
- identification of the result of control-mechanism actuation.

It is not applicable to the functional characteristics of interfaces.

NOTE Requirements for mounting five-port pneumatic directional control valves of sizes 18 mm and 26 mm with optional electrical connector are given in ISO 15407-2.

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 1101:—²⁾, *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out.*

ISO 1302:—³⁾, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation.*

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

ISO 11727:1999, *Pneumatic fluid power — Identification of ports and control mechanisms of control valves and other components.*

1) 1 bar = 0,1 MPa = 10⁵ Pa; 1 MPa = 1 N/mm²

2) To be published. (Revision of ISO 1101:1983)

3) To be published. (Revision of ISO 1302:1992)

3 Terms and definitions

For the purposes of this part of ISO 15407, the terms and definitions given in ISO 5598 apply.

4 Dimensional requirements and tolerances

4.1 Dimensional requirements for sizes 18 mm and 26 mm are shown in Figure 1 and given in Table 1.

4.2 The tolerances of form and location of the interface features are shown in Figures 2 and 3.

4.3 Tolerances on surface condition, within the continuous wide lines in Figure 1, shall be as follows:

— surface roughness: $Ra = 1,6 \mu\text{m}$ (see ISO 1302);

— surface flatness: 0,1 mm over a distance of 100 mm (see ISO 1101).

4.4 The mounting surface shall not include any orifices other than those shown in the figures. All passages shown in the interface shall be included, and connected to open ports in the base.

5 Identification of ports and orifices

5.1 The flow path orifices in the mounting surface interface, and the ports serving these orifices, shall be designated as follows (see Figure 4):

— ports 1, 2, 3, 4 and 5 are the principal flow paths;

— ports 12 and 14 are the actuation orifices.

NOTE Port 14 is preferred for single-source external solenoid pilot supply.

5.2 For monostable valves, the mandatory stable position of the valve shall always be identical to the result of control by control mechanism 12, as shown in Figure 4.

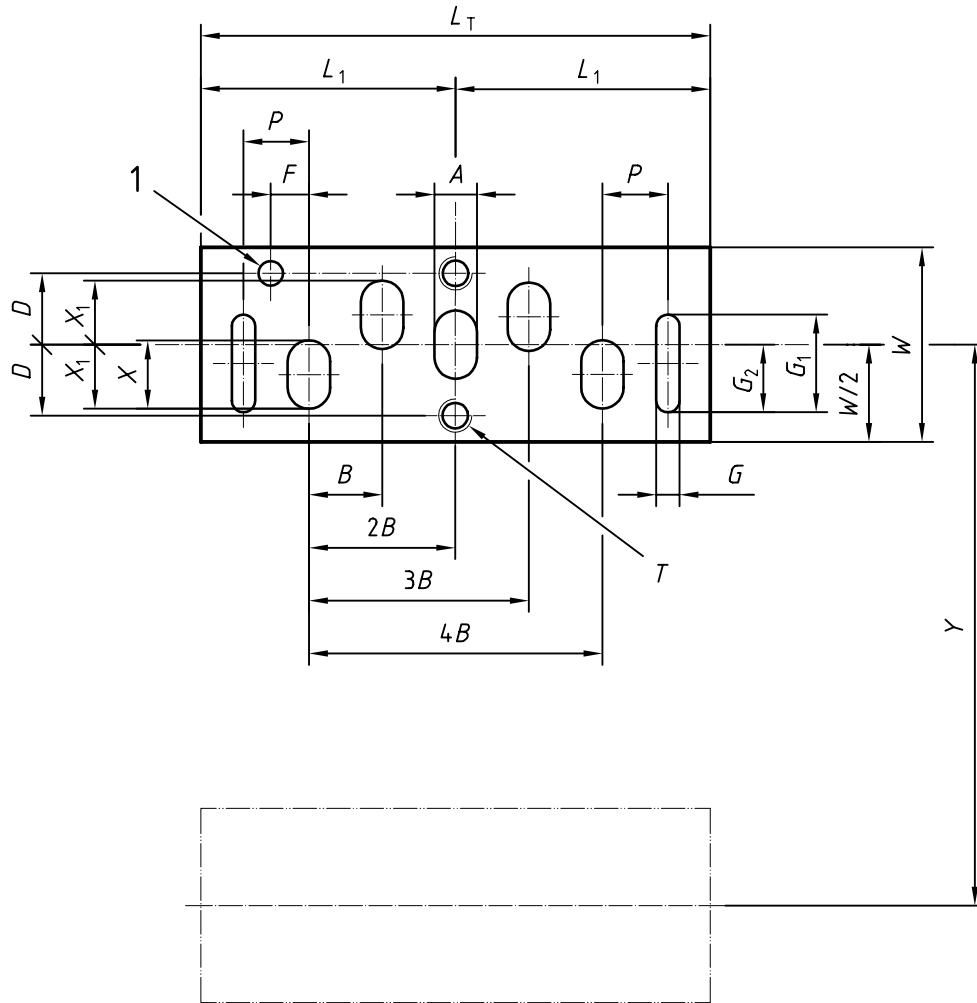
5.3 When a positive pressure signal is applied to port 12, flow port 1 shall be connected with flow port 2 (and 4 with 5). When a positive signal is applied to port 14, flow port 1 shall be connected with flow port 4 (and 2 with 3) (see ISO 11727).

5.4 The orientation of control mechanisms 12 and 14 on the valve relative to flow ports 2, 3, 4 and 5 in the base shall be as shown in Figure 5.

6 Identification statement (Reference to this part of ISO 15407)

Use the following statement in test reports, catalogues and sales literature when electing to comply with this part of ISO 15407:

"Mounting interface dimensions conform to ISO 15407-1:2000, *Pneumatic fluid power — Five-port directional control valves, sizes 18 mm and 26 mm — Part 1: Mounting interface surfaces without electrical connector.*"



Key

1 Location hole $\varnothing U$, depth V

Figure 1 — Mounting surface — Sizes 18 mm and 26 mm

Table 1 — Dimensions of mounting surfaces — Sizes 18 mm and 26 mm

Dimensions in millimetres

Size	A	B	D	F	G^a	G_1	G_2	L_1 min.	L_T min.	P	T	U	V	W min.	X	X_1	Y^b	Orifice area mm^2
18	3,5	7	6,25	3	2	8	6	25	50	6	M3	$\varnothing 3,2$	4	18	6,5	5,25	19	20
26	5,5	9,5	9,5	5	3	13	9	33	66	8,5	M4	$\varnothing 3,2$	4	26	9	8,5	27	43

^a The minimum depth of orifices of width G shall be equal to G .

^b Y represents the minimum distance between the axes of successive mounting interfaces of the same size on a multiple block.

Dimensions in millimetres

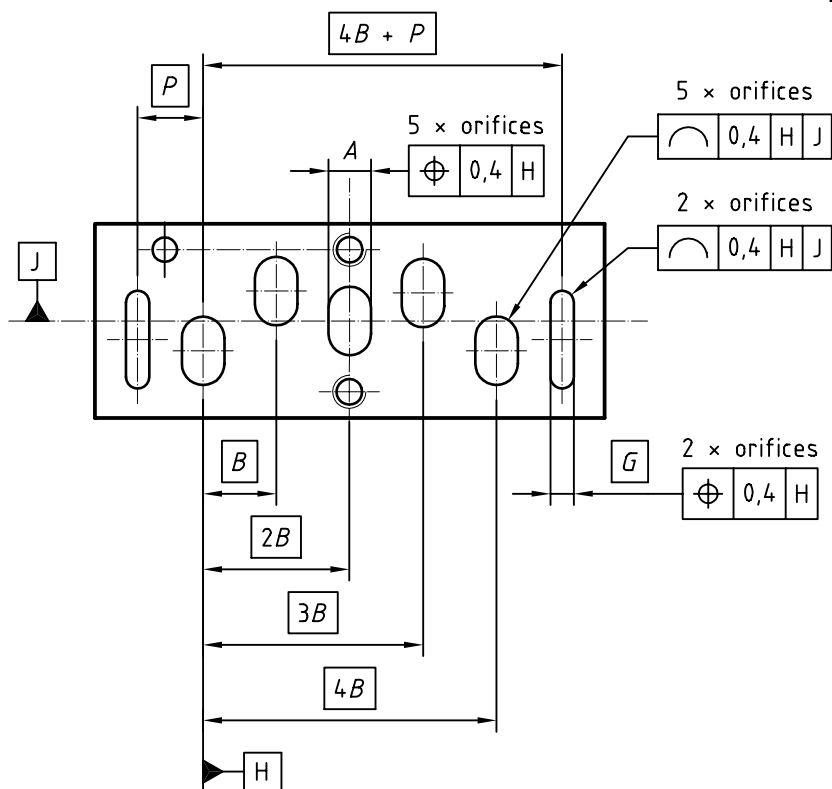
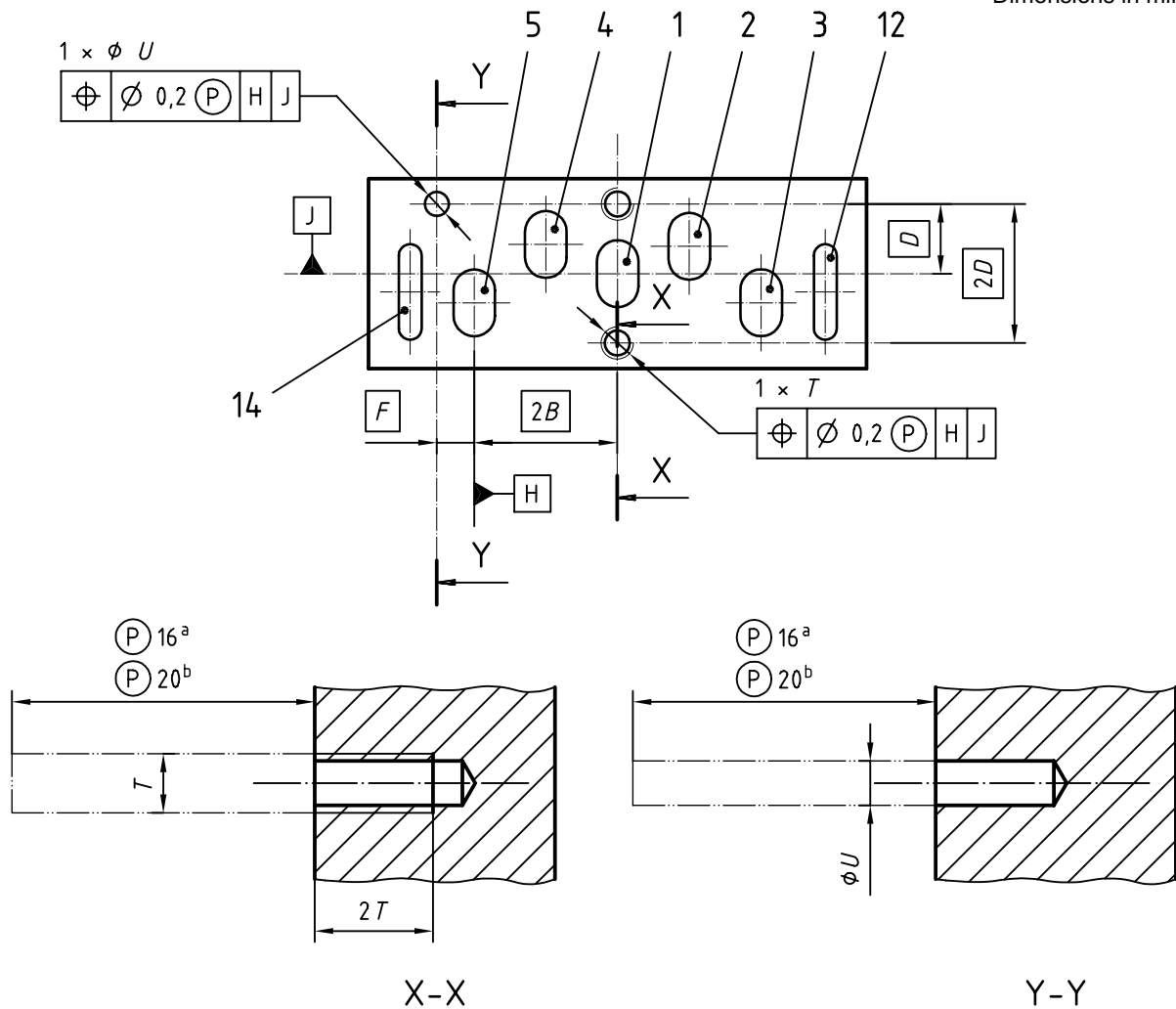


Figure 2 — Dimensions and tolerances of form of interface features

Dimensions in millimetres



- a For size 18 mm
- b For size 26 mm

Figure 3 — Identification of main and actuation orifices and tolerances of position of the mounting surface

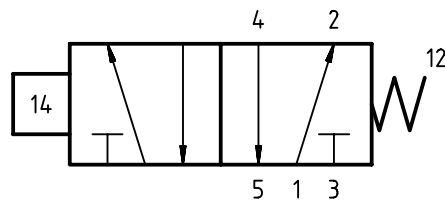


Figure 4 — Mandatory stable position of monostable valve

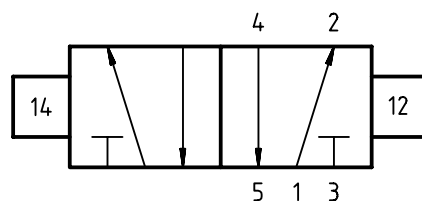


Figure 5 — Communication between ports associated with pilot controls

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