

INTERNATIONAL STANDARD

ISO
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Fluid power systems and components — Fluid logic circuits —

Part 2 : Symbols for supply and exhausts as related to logic symbols

Transmissions hydrauliques et pneumatiques — Logique par les fluides —

*Partie 2 : Symboles pour alimentation et échappement, et règles d'emploi des
symboles pour les fonctions logiques*



Reference number
ISO 5784-2 : 1989 (E)

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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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 5784-2 was prepared by Technical Committee ISO/TC 131, *Fluid power systems*.

ISO 5784 consists of the following parts, under the general title *Fluid power systems and components — Fluid logic circuits* :

- Part 1: Symbols for binary logic and related functions
- Part 2: Symbols for supply and exhausts as related to logic symbols
- Part 3: Symbols for logic sequencers and related functions

Introduction

All connections used in fluid logic control systems assembled with a number of discrete components, interconnected by metal or plastic tubing, including those not carrying binary information, may carry the graphical symbol representing each individual device in order to aid assembly, lay-out and maintenance.

This connection symbol helps to explain the function of the device but does not indicate the physical location of the interconnection.

If safety or other considerations make it desirable, additional codes for numbering certain connections in relation to specific functions may be agreed between suppliers and users on the basis of the general recommendations of this part of ISO 5784.

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Fluid power systems and components — Fluid logic circuits —

Part 2 : Symbols for supply and exhausts as related to logic symbols

1 Scope

This part of ISO 5784 specifies rules for the use of supply or exhaust symbols in basic logic systems needed by the user for better understanding of pipe connections.

This system of symbols may be used to define functions as well as for diagram circuitry. The rules specified in this part of ISO 5784 are applicable to any type of fluid power binary logic device, with or without moving parts.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 5784. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 5784 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1219 : 1976, *Fluid power systems and components — Graphic symbols*.

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

ISO 5784-1 : 1988, *Fluid power systems and components — Fluid logic circuits — Part 1: Symbols for binary logic and related functions*.

IEC 617-12 : 1983, *Graphical symbols for diagrams — Part 12 : Binary logic elements*.

3 Definitions

For the purposes of this part of ISO 5784, the definitions given in ISO 5598 apply.

4 General

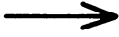
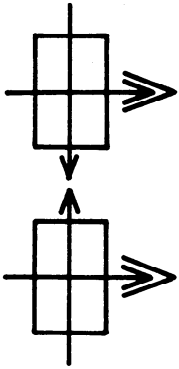
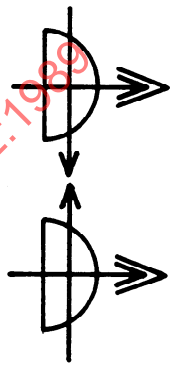
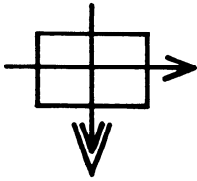
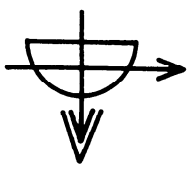
4.1 Shape of graphical symbols

This part of ISO 5784 uses two forms of symbols, in order to be in conformity with ISO 5784-1, in which two forms of symbols are used.

The form A symbols in this part of ISO 5784 are in accordance with IEC 617-12 and are to be preferred; the form B symbols, although currently used, are not to be preferred for future use.

4.2 Signal flow and flow of other quantities

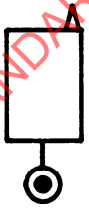
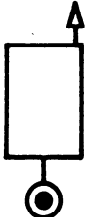
Any connection not carrying information to a component shall be shown perpendicular to the direction of the signal flow.

Graphical symbol Form A	Description	Graphical symbol Form B ¹⁾
	  Signal flow Flow of other quantities	
	When the signal flow direction is from left to right, symbols expressing the input or output of quantities other than signals shall be represented from top to bottom or from bottom to top	
	When the signal flow is from top to bottom, symbols expressing the input and/or outputs of quantities other than signals shall be represented from left to right	
1) This form is not preferred for future use (see 4.1).		

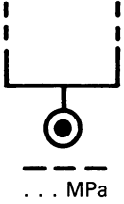
5 Supply and exhaust connections

5.1 The symbols used to show supply and exhaust connections are given in ISO 1219.

5.1.1 Examples

Code number	Graphical symbol Form A	Description	Graphical symbol Form B ¹⁾
5110-05/2		General symbol with supply and open exhaust	
5110-10/2		General symbol with supply and piped exhaust	
1) This form is not preferred for future use (see 4.1).			
NOTE — In the case of hydraulic logic components, the exhaust port is replaced by the drain symbol given in 8.3.1.2 of ISO 1219 : 1976.			

5.1.2 Dual- or multi-pressure supply systems

Code number	Graphical symbol	Description
5120-05/2		When a system requires several different supply pressures, the required pressure for each device shall be indicated at the supply connection
NOTE : 1 MPa = 10 bar		

6 Symbols for unstable and bistable devices with and without complementary outputs

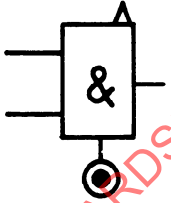
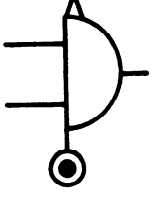
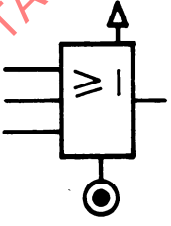
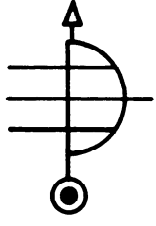
6.1 The rules specified in ISO 5784-1 shall be applied to show unstable or bistable components with or without complementary outputs and exhausts.

6.1.1 Complementary output

In the case of complementary output, the symbol $\uparrow$ shall be located on the side of the envelope close to the corresponding output.

NOTE — The same rule should be applied in the case of multi-pressure supply.

6.1.2 Examples of unstable components with single output

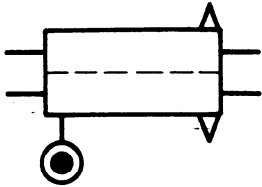
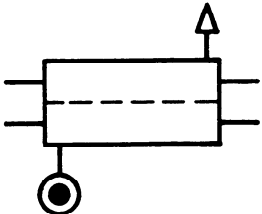
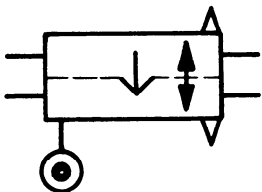
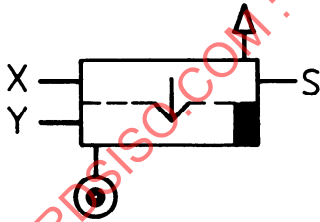
Code number	Graphical symbol Form A	Description	Graphical symbol Form B ¹⁾
6120-05/2		Active AND function with two inputs and open exhaust	
6120-10/2		Active OR function with three inputs and piped exhaust ports	
1) This form is not preferred for future use (see 4.1).			

Code number	Graphical symbol	Description
6120-15/2		Amplifier with supply and piped exhaust port
6120-20/2		Amplifier — Reversed function with supply and open exhaust

6.1.3 Examples of unstable components with two complementary outputs

Code number	Graphical symbol Form A	Description	Graphical symbol Form B ¹⁾
6130-05/2		Active AND function with two inputs, two complementary outputs and separated open exhausts	
6130-10/2		Active OR function with three inputs, two complementary outputs and separated piped exhausts	
1) This form is not preferred for future use (see 4.1). NOTE — A symbol drawn with only one exhaust indicates a common exhaust port.			

6.1.4 Examples of bistable devices

Code number	Graphical symbol	Description
6140-05/2	 A rectangular symbol with a dashed horizontal line. On the left, two horizontal lines represent supply ports. On the right, two horizontal lines represent open exhaust ports, each ending in a triangle pointing outwards. A circle with a dot is connected to the bottom left corner.	Basic symbol (8130-05/1) with the addition of supply and open exhausts
6140-10/2	 A rectangular symbol with a dashed horizontal line. On the left, two horizontal lines represent supply ports. On the right, a single horizontal line represents a common connected exhaust port, ending in a triangle pointing upwards. A circle with a dot is connected to the bottom left corner.	Basic symbol with supply and common connected exhaust port
6140-15/2	 A rectangular symbol with a dashed horizontal line. On the left, two horizontal lines represent supply ports. On the right, two horizontal lines represent open exhaust ports, each ending in a triangle pointing outwards. A circle with a dot is connected to the bottom left corner. Inside the rectangle, there is a vertical line with a downward-pointing arrow on the left and an upward-pointing arrow on the right.	Binary memory (8160-30/1) which holds its previous state in the case of two simultaneous inputs and when the momentarily removed supply is re-established . . . and with supply and open exhausts
6140-20/2	 A rectangular symbol with a dashed horizontal line. On the left, two horizontal lines are labeled 'X' and 'Y'. On the right, a single horizontal line is labeled 'S'. A circle with a dot is connected to the bottom left corner. Inside the rectangle, there is a vertical line with a downward-pointing arrow on the left and an upward-pointing arrow on the right. A shaded rectangular area is located at the bottom right of the rectangle.	Single output's binary memory which holds its previous state in the case of two simultaneous inputs when the momentarily removed supply is re-established . . . and with supply and connected exhaust port