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2003-12-01

Graphical symbols for diagrams —

**Part 8:
Valves and dampers**

Symboles graphiques pour schémas —

Partie 8: Appareils de robinetterie et registres

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ISO 14617-8:2002

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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.

The main task of technical committees is to prepare International Standards. 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 14617 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14617-8 was prepared by Technical Committee ISO/TC 10, *Technical product documentation*, Subcommittee SC 10, *Process plant documentation and tpd-symbols*.

ISO 14617 consists of the following parts, under the general title *Graphical symbols for diagrams*:

- Part 1: General information and indexes
- Part 2: Symbols having general application
- Part 3: Connections and related devices
- Part 4: Actuators and related devices
- Part 5: Measurement and control devices
- Part 6: Measurement and control functions
- Part 7: Basic mechanical components
- Part 8: Valves and dampers
- Part 9: Pumps, compressors and fans
- Part 10: Fluid power converters
- Part 11: Devices for heat transfer and heat engines
- Part 12: Devices for separating, purification and mixing
- Part 15: Installation diagrams and network maps

Other parts are under preparation.

This corrected version of ISO 14617-8:2002 incorporates the correction of the drawing in Application example X2165.

Introduction

The purpose of ISO 14617 in its final form is the creation of a library of harmonized graphical symbols for diagrams used in technical applications. This work has been, and will be, performed in close cooperation between ISO and IEC. The ultimate result is intended to be published as a standard common to ISO and IEC, which their technical committees responsible for specific application fields can use in preparing International Standards and manuals.

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Graphical symbols for diagrams —

Part 8: Valves and dampers

1 Scope

This part of ISO 14617 specifies graphical symbols for valves and dampers in diagrams, including symbols for general-purpose valves, those used in fluid power systems and hygienic valves used in the food and pharmaceutical industries.

For the fundamental rules of creation and application of graphical symbols in diagrams, see ISO 81714-1.

For an overview of ISO 14617, information on the creation and use of registration numbers for identifying graphical symbols used in diagrams, rules for the presentation and application of these symbols, and examples of their use and application, see ISO 14617-1.

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2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 14617. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 14617 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 14617-1:2002, *Graphical symbols for diagrams — Part 1: General information and indexes*

ISO 14617-2:2002, *Graphical symbols for diagrams — Part 2: Symbols having general application*

ISO 14617-4:2002, *Graphical symbols for diagrams — Part 4: Actuators and related devices*

ISO 81714-1:1999, *Design of graphical symbols for use in the technical documentation of products — Part 1: Basic rules*

3 Terms and definitions

For the purposes of this part of ISO 14617, the following terms and definitions apply.

NOTE The list has been restricted to terms whose meaning is not obvious and which have not been defined elsewhere in an International Standard, or which have been defined in various ways in different standards. In preparing these definitions, ISO and IEC standards on terminology have been consulted; see the references in parentheses. However, most of the definitions in those standards were prepared by different technical committees within a restricted scope. This means that many terms so defined have to be given more general or neutral definitions when applied in the context of graphical symbols.

**3.1
safety valve**

valve which automatically, without the assistance of any energy other than that of the fluid concerned, discharges a certified quantity of the fluid so as to prevent a predetermined safe pressure being exceeded, and which is designed to reclose and prevent the further flow of fluid after normal pressure conditions of service have been restored

[ISO 4126-1]

**3.2
vacuum valve**

valve which automatically and without the assistance of any energy other than that of the gas concerned, admits gas to a pipeline or tank in order to prevent a predetermined safe underpressure being exceeded

**3.3
control valve**

power-operated valve in an industrial-process control system for changing the flow rate of the process fluid

[IEC 60050-351]

**3.4
restrictor**

device which restricts the flow of a fluid thereby creating a pressure drop

[ISO 5598]

**3.5
restrictor valve**

valve in which the inlet and outlet ports are interconnected through a restricted passageway

NOTE In a fixed restrictor valve, the cross-sectional area cannot be altered; in an adjustable restrictor valve, the cross-sectional area can be adjusted.

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**3.6
release valve**

valve through which non-desired air or steam in a pipe system may be released

**3.7
pressure-reducing valve
pressure regulator**

valve in which, with varying inlet pressure or outlet flow, the outlet pressure remains substantially constant, but in which the inlet pressure remains higher than the selected outlet pressure

**3.8
pressure-relief valve**

valve which limits maximum pressure by exhausting fluid when the required pressure is reached



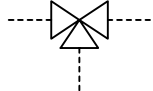
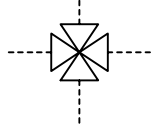
**3.9
exhaust valve**

valve in which the outlet is automatically opened to exhaust when the air pressure falls at the inlet

4 General-purpose valves

4.1 Symbols of a basic nature

NOTE For general application rules, see R2101 (4.2.1).

4.1.1	2101		Two-way valve See R2102 (4.2.2).
4.1.2	2102		Angled two-way valve See R2103 (4.2.3).
4.1.3	2103		Three-way valve
4.1.4	2104		Four-way valve

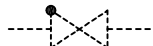
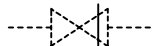
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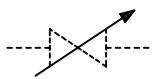
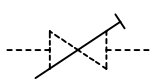
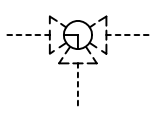

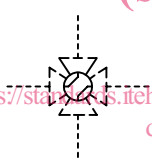
4.2 Application rules for the symbols in 4.1

4.2.1	R2101	Symbols for actuators and devices for delaying, automatic return, detaining, latching and blocking shall be chosen from ISO 14617-4. https://standards.iteh.ai/catalog/standards/sist/99257ea5-e2d1-4f0c-ada9-2025/iso-14617-4 The imaginary direction of movement of the link between the symbol for a valve and that of the actuator or actuating function shall be — towards the valve: valve closing, and — from the valve: valve opening, independent of construction.
4.2.2	R2102	The symbol may be used as a symbol for a two-way valve in general or, in those installation diagrams where it is necessary to indicate whether a valve is straight or angled, as a symbol for a straight valve.
4.2.3	R2103	The symbol shall be used only when it is necessary to indicate the angled construction, for example, in certain installation diagrams.

4.3 Symbols giving supplementary information

4.3.1 Functions

4.3.1.1	2111		Non-return function; check function Flow from left to right possible.
4.3.1.2	2112		Safety function Inlet or internal side to the left.


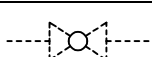
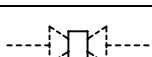
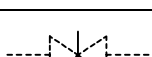

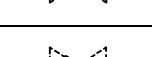
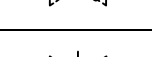
4.3.1.3	201		Adjustability See R201 (4.4.1).
4.3.1.4	203		Pre-set adjustability See R201 (4.4.1).
4.3.1.5	171	* >	Change of state when characteristic quantity passes set value from below, for example, in a safety valve or a pilot switch See R115 (4.4.2) and R121 (2-4.4.10).
4.3.1.6	172	* <	Change of state when characteristic quantity passes set value from above, for example, in a vacuum valve or pilot switch See R115 (4.4.2) and R122 (2-4.4.11).
4.3.1.7	2113		L-bore in a three- or four-way valve
4.3.1.8	2114		T-bore in a three- or four-way valve
4.3.1.9	2115		Double L-bore in a four-way valve




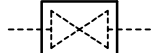
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4.3.2 Construction

NOTE For the use of the symbols, see R2121 (4.4.3).

4.3.2.1	2121		Globe type
4.3.2.2	2122		Ball type
4.3.2.3	2123		Plug type
4.3.2.4	2124		Gate type
4.3.2.5	2125		Needle type
4.3.2.6	2126		Disc or butterfly type
4.3.2.7	2127		Piston type; plunger type

4.3.2.8	2128		Diaphragm type
4.3.2.9	2129		Hose type
4.3.2.10	2130		Reduced bore
4.3.2.11	2131		Jacket

4.4 Application rules for the symbols in 4.3

4.4.1	R201	The symbol should cross the centre of the symbol to which it is added. For examples, see X201 (2-5.5.1) to X206 (2-5.5.6), X2131 (4.5.4.1) and X2141 (4.5.5.1). If the symbol consists of an outline in the form of a square, rectangle or circle and a symbol inside indicating the function, another location could be more appropriate. For an example, see X207 (2-5.5.7).
4.4.2	R115	The asterisk shall be replaced with the letter symbol for the quantity or else shall be omitted. For examples, see X2121 (4.5.3.1) to X2125 (4.5.3.5).
4.4.3	R2121	The symbols shall be used only when it is necessary to show the construction.

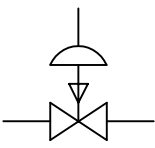
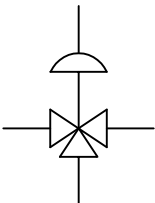
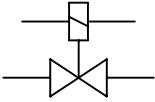
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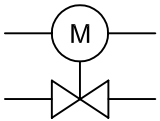
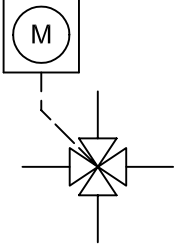
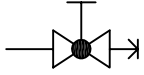
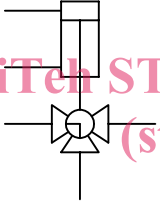
4.5 Application examples

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4.5.1 Shut-off valves

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4.5.1.1	X2101	 403, 654, 725, 2101	Two-way valve with diaphragm actuator, opening when actuated and returning automatically to closed position at cessation of actuation
4.5.1.2	X2102	 403, 725, 2103	Three-way valve with diaphragm actuator
4.5.1.3	X2103	 403, 2101, IEC	Two-way valve with solenoid actuator

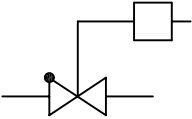
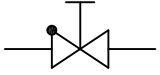
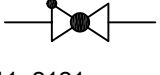

4.5.1.4	X2104	 <p>403, 2101, IEC</p>	Two-way valve with electric motor actuator
4.5.1.5	X2105	 <p>404, 741, 2104, IEC</p>	Four-way valve with actuating device of electric-motor type
4.5.1.6	X2106	 <p>403, 405, 565, 681, 2101, 2121</p>	Globe-type two-way valve with quick-release coupling, for example, for fire hydrant
4.5.1.7	X2107	 <p>403, 2103, 2113, 2442</p>	Ball-type three-way valve with double-acting fluid cylinder actuator

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4.5.2 Non-return valves and check valves

4.5.2.1	X2111	 <p>403, 2001, 2101, 2111</p>	Weight-loaded non-return valve
4.5.2.2	X2112	 <p>403, 681, 2101, 2111</p>	Combined non-return valve and manually actuated stop valve
4.5.2.3	X2113	 <p>2101, 2111, 2121</p>	Globe-type non-return valve; lift-type non-return valve
4.5.2.4	X2114	 <p>2101, 2111, 2126</p>	Swing-type non-return valve