

International Standard



4067/1

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Technical drawings — Installations — Part 1: Graphical symbols for plumbing, heating, ventilation and ducting

Dessins techniques — Installations — Partie 1: Symboles graphiques pour plomberie, chauffage, ventilation et canalisations

First edition — 1984-10-15

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UDC 744.43 : 696/697 : 003.63

Ref. No. ISO 4067/1-1984 (E)

Descriptors : drawings, technical drawings, plumbing, heating, ventilation, pipelines, graphic methods, symbols, graphical symbols.

Price based on 9 pages

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. Every 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.

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 4067/1 was prepared by Technical Committee ISO/TC 10, *Technical drawings*.

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Technical drawings — Installations — Part 1: Graphical symbols for plumbing, heating, ventilation and ducting

0 Introduction

During the preparation of this part of ISO 4067, due consideration was given to ensuring that it was in line with the coordinated system of existing standards and standardization work within closely related technical fields.

A thoroughgoing review to coordinate symbols for use on drawings in all technical areas is, however, urgently needed. A start on this work has already been made by ISO/TC 10, *Technical Drawings*.

This part of ISO 4067 will be modified as soon as results are forthcoming from this coordination work.

1 Scope and field of application

This part of ISO 4067 establishes conventional basic graphical symbols for use on drawings and diagrams concerning the installation of drainage and water supply, space heating and cooling, and ducted air handling systems.

For more detailed representation, these basic symbols may be combined with designations specified in a description, or a system of more detailed symbols, based on these basic symbols, may be devised.

2 References

ISO 128, *Technical drawings — General principles of presentation*.

ISO 3040, *Technical drawings — Dimensioning and tolerancing conventions*.

ISO 3461/2, *Rules for presentation of graphical symbols — Part 2: Symbols for use in technical product documentation*.¹⁾

ISO 3511, *Process measurement control functions and instrumentation* —

Part 1: Basic requirements.

Part 2: Extension of basic requirements.

Part 3: Detailed symbols for instrument interconnection diagrams.

*Part 4: Basic symbols for process computer, interface, and shared display/control functions.*¹⁾

ISO 4067/4, *Technical drawings — Installations — Part 4: Symbols for refrigerating plants*.¹⁾

ISO/TR 8545, *Technical drawings — Installations — Graphical symbols for automatic control*.

3 General rules

A group of components/units is represented by a general symbol. This general symbol shall be completed for any special component. The following two methods of completion are available:

- method A: designations and text;
- method B: complementary additions to make a special symbol.

Only method B is developed in the following clauses, for reasons of simplicity.

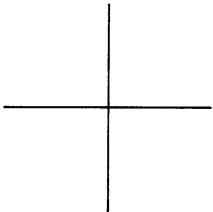
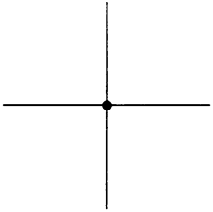
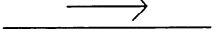
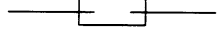
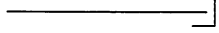
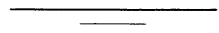
The size and design of the symbols shall be related to the scale or size of the drawing.

The majority of the symbols are shown in conjunction with their corresponding functional connection lines.

¹⁾ At present at the stage of draft.

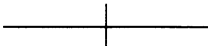
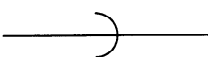
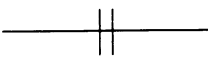
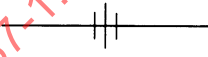
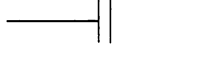
4 Symbols for heating and plumbing installations

4.1 Piping and piping accessories

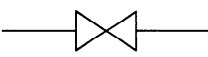
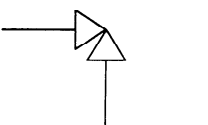
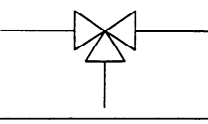
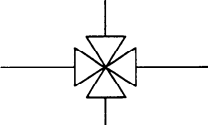
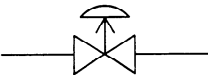
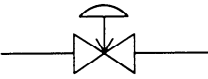
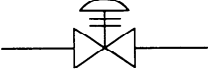
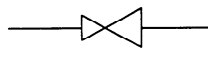
No.	Description	Symbol
4.1.0	Pipe, general symbol	
4.1.1	Method A* : the symbols (lines) indicate the location of the pipe in relation to the section : visible at section concealed at section in front of or above section The nature of fluids is indicated by designations	  
4.1.2	Method B* : the symbols (lines) indicate the nature and the state of fluids	     
4.1.3	Crossing pipe, not connected (Crossing lines, not connected)	
4.1.4	Junction : solid circle of diameter five times the thickness of the line	
4.1.5	Crossing pipe, connected (Pipes with cross-junction)	
4.1.6	Tee (Pipes with junction)	
4.1.7	Flexible pipe, hose	
4.1.8	Direction of flow	
4.1.9	Direction of fall	
4.1.10	Expansion joint, general symbol	
4.1.11	Cap nut	
4.1.12	Sliding support	
4.1.13	Anchor point	

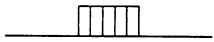
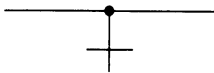
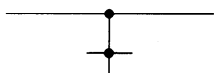
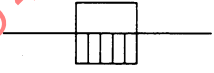
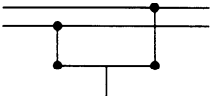
* The choice of one of these two methods (method A or B) implies the exclusion of the other.

4.2 Joints

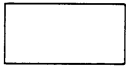
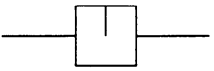
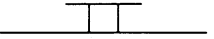
No.	Description	Symbol
4.2.0	Joint, general symbol	
4.2.1	Spigot and socket connection	
4.2.2	Flange connection	
4.2.3	Collar	
4.2.4	Union connection	
4.2.5	Blank flange	

4.3 Valves

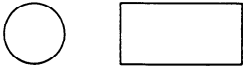
No.	Description	Symbol
4.3.0	Valve, general symbol; also used for shut-off and regulating or control valve, two-way	
4.3.1	Shut-off and regulating or control valve, two-way	
4.3.2	Shut-off and regulating or control valve, three-way	
4.3.3	Shut-off and regulating or control valve, four-way	
4.3.4	Non-return valve (direction of flow from the apex to the base of the triangle indicated by a vertical line)	
4.3.5	Safety valve — opens on failure of actuating energy — closes on failure of actuating energy — retains position on failure of actuating energy	  
4.3.6	Pressure reducing valve (small triangle: high pressure)	

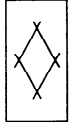
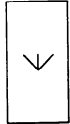
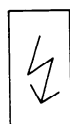
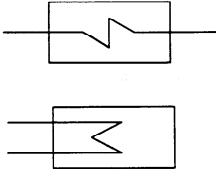
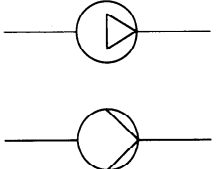
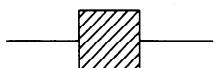
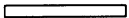
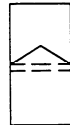
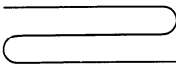
No.	Description	Symbol
4.3.7	Vacuum breaker	
4.3.8	Draw-off point	
4.3.9	Hydrant, general symbol	
4.3.10	Sprinkler head	
4.3.11	Air purging device	
4.3.12	Steam trap	
4.3.13	Mixing tap	

4.4 Gullies

No.	Description	Symbol
4.4.0	Gully, general symbol	
4.4.1	Gully, with trap	
4.4.2	Separator, general symbol	
4.4.3	Trap	View 
		Section 
4.4.4	Drain and inspection opening	

4.5 Equipment

No.	Description	Symbol
4.5.0	Apparatus, general symbol (the circular symbol should preferably be used for apparatus in which there are rotating parts; for other apparatus, the rectangular symbol is used) NOTE — The rectangular symbol may be used in an upright or horizontal position.	

No.	Description	Symbol
4.5.1	Heating-boiler for solid combustible	
4.5.2	Heating-boiler with liquid fuel burner	
4.5.3	Heating-boiler with gas fuel burner	
4.5.4	Electrically heated boiler	
4.5.5	Heat exchanger	
4.5.6	Pump — hydraulic — fluid (liquid)	
4.5.7	Strainer, general symbol	
4.5.8	Heater, radiator	
4.5.9	Expansion vessel, open system	
4.5.10	Expansion vessel with membrane, closed system	
4.5.11	Heat-coil for heating with large surface (ceiling or floor)	
4.5.12	Shower	

5 Symbols for ventilation and air conditioning installations

5.1 Ducts

No.	Description	Symbol
5.1.0	Air duct, general symbol	
5.1.1	Air supply duct	Visible section Hidden section
	Air exhaust duct	Visible section Hidden section
5.1.3	Direction of flow	

5.2 Appliances and fittings

No.	Description	Symbol
5.2.0	Air supply fitting	
5.2.1	Air exhaust fitting	
5.2.2	Air damper	
5.2.3	Air grill	
5.2.4	Fire damper	
5.2.5	Fire arrestor	