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British Standard Recommendations for

Graphic symbols and abbreviations for fire protection drawings

Symboles graphiques et abréviations pour schémas de protection
contre l'incendie – Recommandations

Brandschutz; graphische Symbole und Abkürzungen in Zeichnungen

British Standards Institution

Foreword

This British Standard has been prepared under the direction of the Fire Standards Policy Committee. It supersedes BS 1635:1970, which is withdrawn. In its preparation, consideration has been given to ISO 6790 'Graphical symbols for fire protection plans', published by the International Organization for Standardization (ISO). The symbols agreed by ISO have been used wherever possible, and additional information (tables 7, 8 and 9) included as this was within the scope of the 1970 edition.

The opportunity has also been taken to change the format so that it conforms with the style of BS 1192: Part 3: 1987.

Although based on the principles set out in ISO 6790, this British Standard incorporates precedents that exist in British practice, particularly in the use of qualifying or explanatory abbreviations, and adopts the rationale proposed in BS 1192, and restated in this standard. Graphic conventions proposed by ISO or other authorities that do not conform either to the stated rationale or to national precedent have not been included. The symbols taken from ISO 6790 without modification are noted with an asterisk.

The names given to symbols have wherever possible been derived from BS 4422 and the wording used in group 9, Fire safety signs, complies with BS 5499: Part 1.

Compliance with a British Standard does not itself confer immunity from legal obligations.

Contents

	Page
Foreword	Inside front cover
Committees responsible	Back cover
Recommendations	
Section one. General	
1 Scope	2
2 Definitions	2
3 Rationale	2
4 Design and use of symbolism	2
5 Presentation of the compendium	4
Section two. Compendium	
Group 1. Information devices	
Table 1.1 Convention for indicating zones	7
Group 2. Fire extinguishing devices	
Table 2.1 Portable and transportable equipment	8
Table 2.2 Fixed systems	9
Group 3. Fire fighting devices	
Table 3.1 Fire fighting equipment	10
Group 4. Fire alarm devices	
Table 4.1 Control and indicating equipment	11
Table 4.2 Initiating equipment	12
Table 4.3 Warning equipment	13
Group 5. Means of escape	
Table 5.1 Routes	14
Group 6. Risk areas	
Table 6.1 Fire and explosion	15
Group 7. Fire precautions	
Table 7.1 Building elements	16
Group 8. Emergency lighting	
Table 8.1 Luminaires	18
Group 9. Fire safety signs	
Table 9.1 Descriptions	19
Group 10. Smoke control	
Table 10.1 Venting and pressurization	21
Appendix	
A Example of fire protection drawing	22
Figures	
1 Example of symbols/elements and constructed symbols	3
2 Comparison between representation, simplified representation and symbol	6
3 Formation of symbols from elements, conventions, symbols and simplified representations	6
4 Example of fire protection drawing	22

Section one. General

1 Scope

This British Standard, which is primarily intended for those preparing drawings, gives recommendations for symbols and other graphic conventions for use on drawings for fire protection purposes.

The recommendations include the production of graphical symbols to be used on fire protection drawings in architectural, engineering, building and allied design fields. Details are provided of equipment for fire protection, fire fighting and means of escape on drawings for design, construction, renovation or fire certification purposes.

It also describes a rationale of symbolism (clause 3) which establishes rules for the design of symbols and other graphic conventions, and gives recommendations for the application of those rules and the ways in which symbolism should be used (clause 4).

Appendix A gives an example (for information only) of a drawing using some of these symbols.

NOTE. The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard the definitions given in BS 1192: Part 1, and BS 4422 apply, together with the following definitions and explanations which are taken from BS 1192: Part 3.

2.1 convention. An accepted way of drawing an item which may have the nature of a representation, a simplified representation or a symbol.

2.2 information device. A convention indicating an abstract item.

2.3 representation. A scale view of an object.

2.4 simplified representation. A scale view incorporating only the essential shape, size or features of an object.

2.5 symbol. A graphic device without scale used:

(a) on a drawing to indicate the occurrence and/or location of an item;

(b) in an annotation to indicate one or more of the attributes of an item.

2.6 symbol element (element). A graphic device without scale used only in combination with a symbol (or symbols) or with other elements, to form a symbol.

3 Rationale

3.1 Indication of all features of an object

Although all the features of an object (subject to the

limitations of the scale of the drawing) can be shown on a detailed pictorial view (a representation, see 2.3), there are usually other attributes of the object which need to be described, annotated or referred to in other documents.

3.2 Limited indication of the features of an object

To reduce drawing effort and time, a pictorial view such as that described in 3.1 can sometimes, as appropriate, be limited in detail (a simplified representation, see 2.4) but can still need a description, annotation or reference.

3.3 Non-realistic indication of objects

To reduce drawing effort and time still further for an object of which the size is not significant on a drawing, especially if many such objects occur, the object can be indicated non-realistically by using a symbol (see 2.5).

3.4 Symbols sharing common subsidiary features

Some symbols share common subsidiary features; this British Standard refers to these features as elements (see 2.6). These can be incorporated in new symbols, can be added to established symbols or can be combined with other elements as needed.

A symbol element should not be used in isolation.

3.5 Types of symbol

The simplest form of symbol is the basic symbol. More complex types of symbol are derived from the basic symbol. There are three ways of deriving symbols:

- (a) by embellishment of a basic symbol;
- (b) by a combination of basic symbols;
- (c) by extension of a basic symbol.

Figure 1 gives examples of symbols/elements and constructed symbols.

3.6 Conventions showing abstract items

Conventions showing abstract items are referred to as information devices (2.2).








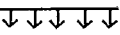



3.7 Comparison between representations, simplified representations and symbols

Figure 2 shows a comparison between representations, simplified representations and symbols.

4 Design and use of symbolism

4.1 Graphic simplicity

4.1.1 The amount of detail in representation should be appropriate to the scale of the drawing, taking account of the recommendations of BS 1192: Part 1 regarding clarity of reproduction and microfilming.

	1	2	3
Symbols/ Elements	 luminaire any type	 fire extinguisher  wall mounted  wheel or skid mounted	 outlet
Column 1: specific symbols with increasing embellishment	 emergency/ safety luminaire	 wall mounted fire extinguisher (foam)	 drencher
Column 2: constructed symbols, symbols combining	 emergency linear luminaire	 wheel or skid mounted fire extinguisher (water)	
Column 3: symbol constructed by repetitive use of element	 emergency linear enclosed luminaire		

NOTE. The elements and symbols given in column 1 are shown in table 8.1

Figure 1. Examples of symbols/elements and constructed symbols

4.1.2 The amount of detail in a simplified representation should be limited to the essential attributes of the object (see 2.4 and figure 2).

4.1.3 Geometric shapes for information devices, elements and symbols are limited. Precedent (see the introduction) can establish that one shape can have several meanings, the relevant meaning being determined normally by context and experience.

A geometric shape should not be used if its meaning is not determined by context and experience.

4.1.4 Over-complexity of information devices, elements and symbols should be avoided by one of the following methods:

- (a) omitting unnecessary information (for example, if all the items in a project are of the same type);
- (b) annotating differences between one item and another;
- (c) referring differences to a schedule or other document.

4.2 Symbols (including elements of symbols)

4.2.1 The size of a symbol does not necessarily relate to the size of an object, nor to the scale of a drawing.

4.2.2 The shape of a symbol does not necessarily relate to the shape of an object.

4.2.3 A symbol does not necessarily indicate graphically all the attributes of an item (see 4.1.4 and figure 3).

4.2.4 A symbol can be combined with an element or a symbol to form another symbol. (See figure 3.)

4.2.5 A symbol can be added to a convention, a representation, a simplified representation or another symbol. (See figure 3.)

4.3 Graphics

4.3.1 The illustrations in section two (the compendium) indicate the size of symbolism that should typically be used on drawings to a scale of 1:100. Account has been taken, in the light of evaluation tests, of producing symbolism by:

- (a) manual drawing using a 0.35 mm pen, including the manufacture of suitable templates (stencils);
- (b) computer drawing;
- (c) using dry transfer.

4.3.2 Graphic techniques should follow the recommendations in BS 1192: Part 1, and in particular:

- (a) line thickness should be not less than 0.25 mm on drawings to be reproduced without reduction or to be microfilmed;
- (b) line thickness should be not less than 0.35 mm on drawings to be reduced by up to 50 %;

(c) if different line thicknesses are used, each thickness should be at least twice the next thinner line;

(d) the space between lines should be not less than 0.7 mm;

(e) inclined lines should be at an angle of 15° or a multiple of 15°;

(f) solidly filled areas should be kept to a minimum (because they tend to disappear in successive reproductions): hatching is preferred;

(g) lettering (including numbers) should have a capital height of:

- (1) not less than 2.5 mm for drawings as in (a) above;
- (2) not less than 3.5 mm for drawings as in (b) above.

4.3.3 The orientation of an element should always be as shown in section two (the compendium), but the orientation of other types of symbolism should not be regarded as affecting the meaning of the symbolism concerned.

4.4 Authority

4.4.1 Each drawing or set of drawings which uses symbolism drawn from this British Standard, should include a statement to that effect in the information panel of the drawing concerned.

4.4.2 Symbols derived from symbols in this standard should be illustrated and their meaning should be clearly explained on the drawings concerned. Care should be exercised to ensure that derived symbols do not become over-complicated.

4.4.3 Where additional symbols are used to those presented in this British Standard, e.g. from BS 1553: Part 1, BS 1192: Part 3 or BS 3939: Part 11, a statement to that effect should be included in the information panel of the drawing concerned, the symbol should be illustrated and its meaning should be clearly explained on the drawing.

5 Presentation of the compendium

5.1 General

Section two comprises a compendium of symbols and other graphic conventions that are recommended for use on fire protection drawings. Examples of the application of symbols are given as appropriate.

The compendium is organized by subject area.

5.2 Background matrix

5.2.1 Elements or symbols having significant relative

sizes are illustrated against a matrix of 4 mm squares.

5.2.2 The background to some elements and symbols incorporates additional lines to indicate, as appropriate, how they should:

- (a) be drawn;
- (b) relate to the context in which they occur.

5.3 Reference system

5.3.1 Tables are grouped in broad categories in groups, and the group number is the first digit of the table number.

5.3.2 The second digit of the table number identifies that table within its group.

5.3.3 Elements are numbered sequentially within their table of origin, with E interposed between the table number and the sequential number.

5.3.4 Conventions and symbols are numbered sequentially (always with two digits) within their table of origin, the sequential number being suffixed to the table number.

5.3.5 Elements and symbols originating in other tables and used in a table are only listed in that table; they are illustrated in their tables of origin.

5.3.6 Applications illustrate examples of conventions and symbols in use, and are not numbered.

5.3.7 The numbers of the elements and symbols used in applications are listed.

5.4 Arrangement of tables

The contents of each table are arranged in the following order:

- (a) elements;
- (b) elements and symbols from other tables;
- (c) conventions;
- (d) symbols;
- (e) simplified representations;
- (f) applications.

NOTE. Not every table includes all these contents.

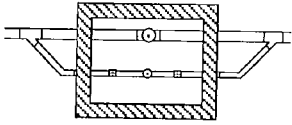
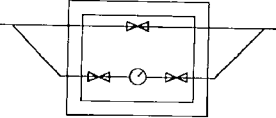
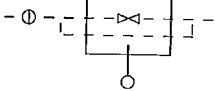
Item	Representation	Simplified representation	Symbol
Fire main with meter on by-pass			

Figure 2. Comparison between representation, simplified representation and symbol

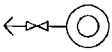
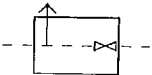
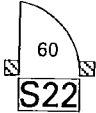
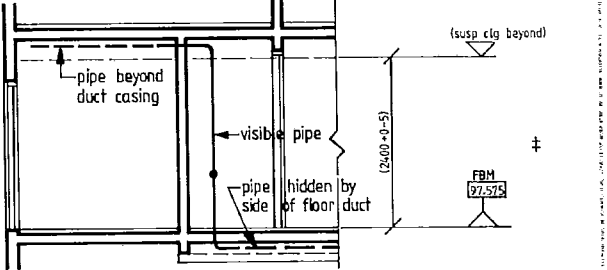
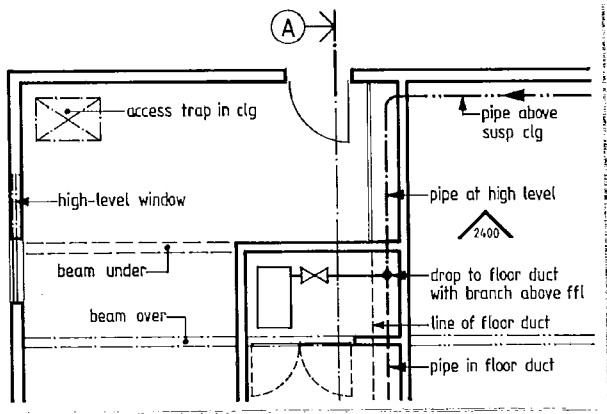
Item	Symbolism	Component parts of symbolism			
		Elements	Conventions	Symbols	Simp. Rep'ns.
Dry riser landing valve		2.2E1 3.1E4	-	3.102	-
Ground hydrant on pipe below ground		2.2E1 3.1E1 3.1E3 3.1E4	1.104	-	-
Fire door with exit sign		7.1E2	-	7.105 7.120 9.101	-

Figure 3. Formation of symbols from elements, conventions, symbols and simplified representations

Section two. Compendium

Group 1. Information devices

Table 1.1 Convention for indicating zones

Conventions	Applications*
1.101 behind cutting plane, hidden	<p>Example of cut (A-A on plan below)</p> 
1.102 behind cutting plane, visible	<p>Example of plan</p> 
1.103 beyond cutting plane, visible	
1.104 beyond cutting plane, hidden	

*Only part of the cut and plan drawing is shown.


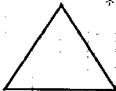



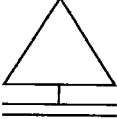




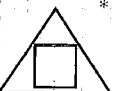















†The cutting plane is not usually drawn on cuts, elevations and sections.

‡Floor bench mark (see BS 5606).

BS 1635:1990

Group 2. Fire extinguishing devices

Table 2.1 Portable and transportable equipment






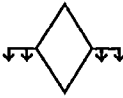


















Elements		Symbols		Applications	
2.1E1 water		2.101 any type		Any type, portable freestanding 2.101	
2.1E2 foam		2.102 water		Any type, portable wall mounted 2.101, 2.1E9	
2.1E3 powder, any type		2.103 foam		Any type, transportable 2.101, 2.1E10	
2.1E4 BC powder		2.104 powder			
2.1E5 ABC powder		2.105 BC powder			
2.1E6 gas, any type		2.106 ABC powder			
2.1E7 halon gas		2.107 gas			
2.1E8 carbon dioxide gas		2.108 halon gas			
2.1E9 wall mounted		2.109 carbon dioxide gas			
2.1E10 transportable wheel or skid mounted		2.110 water bucket			
2.1E11 blanket		2.111 sand bucket			
		2.112 fire blanket			

*From ISO 6790.

BS 1635:1990

Group 2. Fire extinguishing devices

Table 2.2 Fixed systems

Elements		Symbols		Applications	
2.2E1 outlet		2.201 fixed system, any type		Fixed system any type, local application 2.2E1, 2.201	
2.2E2 inlet		2.202 fixed system, water		Drencher system, any type 2.2E1, 2.201	
2.2E3 total application		2.203 fixed system, foam		Fixed system, manually actuated 2.208, 2.201	
2.2E4 actuator any type		2.204 fixed system, powder			
2.2E5 electrical operation		2.205 fixed system, gas			
2.2E6 hydraulic operation		2.206 electrical actuator			
2.2E7 manual operation		2.207 hydraulic actuator			
2.2E8 mechanical operation		2.208 manual actuator			
2.2E9 pneumatic operation		2.209 mechanical actuator			
2.2E10 thermal operation		2.210 pneumatic actuator			
Elements and symbols from other tables		2.211 thermal actuator			
2.1E1 Water					
2.1E2 Foam					
2.1E3 Powder					
2.1E6 Gas					

*From ISO 6790.

BS 1635:1990

Group 3. Fire fighting devices

Table 3.1 Fire fighting equipment







Elements	Symbols	Applications
3.1E1 pipe below ground (see 1.104)		3.101 fire main or riser, any type
3.1E2 pipe above ground		3.102 fire main, dry
3.1E3 chamber in ground		3.103 fire main, wet
3.1E4 valve		3.104 fire main, foam
3.1E5 indicator or meter		3.105 ground hydrant, in chamber, single
3.1E6 length of hose in metres	45	3.106 ground hydrant, in chamber, double
3.1E7 non-return check valve		3.107 pillar hydrant, single
		3.108 pillar hydrant, double
		3.109 fire point
		3.110 hosereel
Elements and symbols from other tables		
2.1E1 water		
2.1E2 foam		
2.2E1 outlet		
2.2E2 inlet		

* From ISO 6790.

BS 1635:1990

Group 4. Fire alarm devices

Table 4.1 Control and indicating equipment










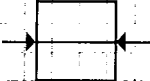
Elements		Symbols	
4.1E1 sounder		4.101 control panel any type	
4.1E2 illuminated signal		4.102 control panel, sounders	
		4.104 control panel illuminated signals	
		4.104 control panel sounders and illuminated signals	

*From ISO 6790.

BS 1635:1990

Group 4. Fire alarm devices

Table 4.2 Initiating equipment












Elements		Symbols	
4.2E1 smoke		4.201 detector, any type	
4.2E2 flame		4.202 heat detector	
4.2E3 beam		4.203 smoke detector	
		4.204 flame detector	
		4.205 gas detector	
		4.206 fire alarm call point, manual	
		4.207 beam detector	
Elements and symbols from other tables			
2.1E6 gas			
2.208 manual actuator			
2.2E10 Thermal operation			

* From ISO 6790.

BS 1635:1990

Group 4. Fire alarm devices

Table 4.3 Warning equipment

Elements		Symbols		Applications
4.3E1 manual sounder		4.301 warning device, any type		Telephone with flashing light 4.301, 4.3E4, 4.1E2
4.3E2 electric bell		4.302 warning device, manual sounder		
4.3E3 loudspeaker		4.303 warning device, sounder		
4.3E4 telephone		4.304 warning device, bell		
		4.305 warning device loudspeaker		
		4.306 warning device, telephone		
		4.307 warning device, visual		
Elements and symbols from other tables				
4.1E1 sounder				
4.1E2 illuminated signal				

* From ISO 6790.

BS 1635:1990

Group 5. Means of escape

Table 5.1 Routes

Elements		Symbols	
5.1E1 directional arrow	→	5.101 escape route	---*
		5.102 escape route, direction to follow	-→-*
		5.103 escape route, final exit	---→*

*From ISO 6790.

BS 1635:1990

Group 7. Fire precautions

Table 7.1 Building elements

Elements		Elements		Symbols	
7.1E1 ramp gradient	1:12	7.1E13 fire resisting	F	7.101 wall opening with window	
7.1E2 fire resistance in minutes	60	7.1E14 smoke resisting	S	7.102 wall opening with roller shutter	
7.1E3 fire resisting glazed element	FRG			7.103 wall opening with up and over door	
7.1E4 security lock	SL			7.104 doorset, hinged leaf	
7.1E5 key in box	K			7.105 doorset, hinged leaf (alternative)	
7.1E6 free from fastenings	FFF			7.106 doorset, hinged leaf, normally closed	
7.1E7 self-closing	SC			7.107 doorset, hinged leaf, normally open	
7.1E8 self-closing automatic release	SCA			7.108 doorset hinged, leaf, opening either way	
7.1E9 vision panel	VP			7.109 doorset, hinged leaf, opening 180°	
7.1E10 guarding handrail	GRL			7.110 doorset, two hinged leaves	
7.1E11 pushbar door ironmongery	PB			7.111 doorset, sliding leaf	
7.1E12 fusible link	FL			7.112 doorset, revolving leaves	

BS 1635:1990





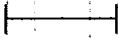

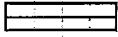




Group 7. Fire precautions

Table 7.1 Building elements (continued)

Symbols		Applications		Applications	
7.113 doorset, sliding/ folding, end hung		Fire resisting glazed screen 7.118, 7.101 7.1E3, 7.1E2		Wall opening with roller shutter 30 min fire resistance, operated by fusible link	
7.114 doorset, sliding/ folding, centre hung		Fire damper in ductwork 7.117		7.102, 7.1E13, 7.1E12	
7.115 stairway, arrow indicates up direction		30 min fire resisting doorset, single leaf, single swing. 7.118, 7.104, 7.1E2, 7.1E13			
7.116 ramp, arrow indicates up direction		60min fire and smoke resisting doorset, single leaf, single swing. 7.118, 7.104, 7.1E2, 7.1E13, 7.1E14			
7.117 fire damper		30min fire and smoke resisting door set, two leaves, single swing, self closing normally held open on electro magnetic devices 7.118, 7.110, 7.1E2 7.1E8, 7.1E13, 7.1E14			
7.118 fire resisting construction, 30 min		Final exit doorset, two leaves, single swing, with push bar door ironmongery 7.110, 7.1E11			
7.119 fire resisting construction 30 min (for small scale drawings)		Ramp showing direction of rise and gradient 7.116, 7.1E1			
		Guarding rail along side of open stairwell 7.115, 7.1E10			

BS 1635:1990

Group 8. Emergency lighting**Table 8.1 Luminaires**

Elements	Symbols	
8.1E1 luminaire, any type		8.101 emergency, enclosed 
8.1E2 luminaire, any type, enclosed		8.102 emergency, self-contained 
8.1E3 luminaire, linear, any type		8.103 emergency, linear, any type 
8.1E4 luminaire, linear, any type, enclosed		8.104 emergency, linear, self- contained 
8.1E5 emergency/ safety		8.105 emergency, linear, enclosed 
		8.106 exit sign, internally illuminated 

BS 1635:1990

Group 9. Fire safety signs**Table 9.1 Descriptions**

Elements		Elements (continued)		Elements (continued)	
9.1E1 general prohibition	S1	9.1E13 fire door, keep shut	S13	9.1E25 push bar to open	S25
9.1E2 smoking is prohibited	S2	9.1E14 fire door, keep locked	S14	9.1E26 directional arrow (green)	S26
9.1E3 smoking and naked flames prohibited	S3	9.1E15 automatic fire door, keep clear	S15	9.1E27 collection of firefighting equipment	S27
9.1E4 water as extinguishing agent prohibited	S4	9.1E16 automatic fire door, keep clear, close at night	S16	9.1E28 fire alarm call point	S28
9.1E5 general warning	S5	9.1E17 door to be secured open	S17	9.1E29 fire telephone	S29
9.1E6 flammable materials	S6	9.1E18 door to be unlocked	S18	9.1E30 fire hose reel	S30
9.1E7 oxidizing materials	S7	9.1E19 gangway, keep clear	S19	9.1E31 fire extinguisher	S31
9.1E8 risk of explosion	S8	9.1E20 fire escape, keep clear	S20	9.1E32 foam inlet	S32
9.1E9 no means of escape	S9	9.1E21 general safe condition sign	S21	9.1E33 dry riser	S33
9.1E10 in event of fire, avoid use of lift	S10	9.1E22 fire exit	S22	9.1E34 wet riser	S34
9.1E11 general mandatory sign	S11	9.1E23 slide to open	S23	9.1E35 fireman's switch	S35
9.1E12 fire action sign	S12	9.1E24 break to obtain access	S24	9.1E36 open valve in event of fire	S36

BS 1635:1990

Group 10. Smoke control

Table 10.1 Venting and pressurization

Elements		Symbols		Symbols (continued)	
10.1E1 smoke vent, on plan		10.101 space requiring smoke ventilation		10.113 window smoke release, automatic	
10.1E2 smoke vent over on plan		10.102 pressurized space		10.114 pressurizing air supply point	
10.1E3 roof light vent on plan		10.103 pressurized space, single stage		10.115 pressurizing air intake	
10.1E4 roof light vent over on plan		10.104 pressurized space, double stage		10.116 smoke curtain, fixed	
10.1E5 smoke vent in horizontal or vertical section		10.105 smoke reservoir		10.117 smoke curtain, automatically actuated	
10.1E6 fan		10.106 pressure differential point		10.118 smoke extraction fan	
10.1E7 flow direction, extract		10.107 smoke vent, manually actuated		10.119 pressurizing air supply fan	
10.1E8 flow direction, supply		10.108 smoke vent, automatically actuated			
		10.109 smoke extract point			
		10.110 smoke discharge point			
		10.111 replacement air intake			
		10.112 window smoke release, manual			

Elements and symbols from other tables
2.2E4 actuator, any type
2.209 mechanical actuator
4.2E2 smoke
7.101 wall opening with window

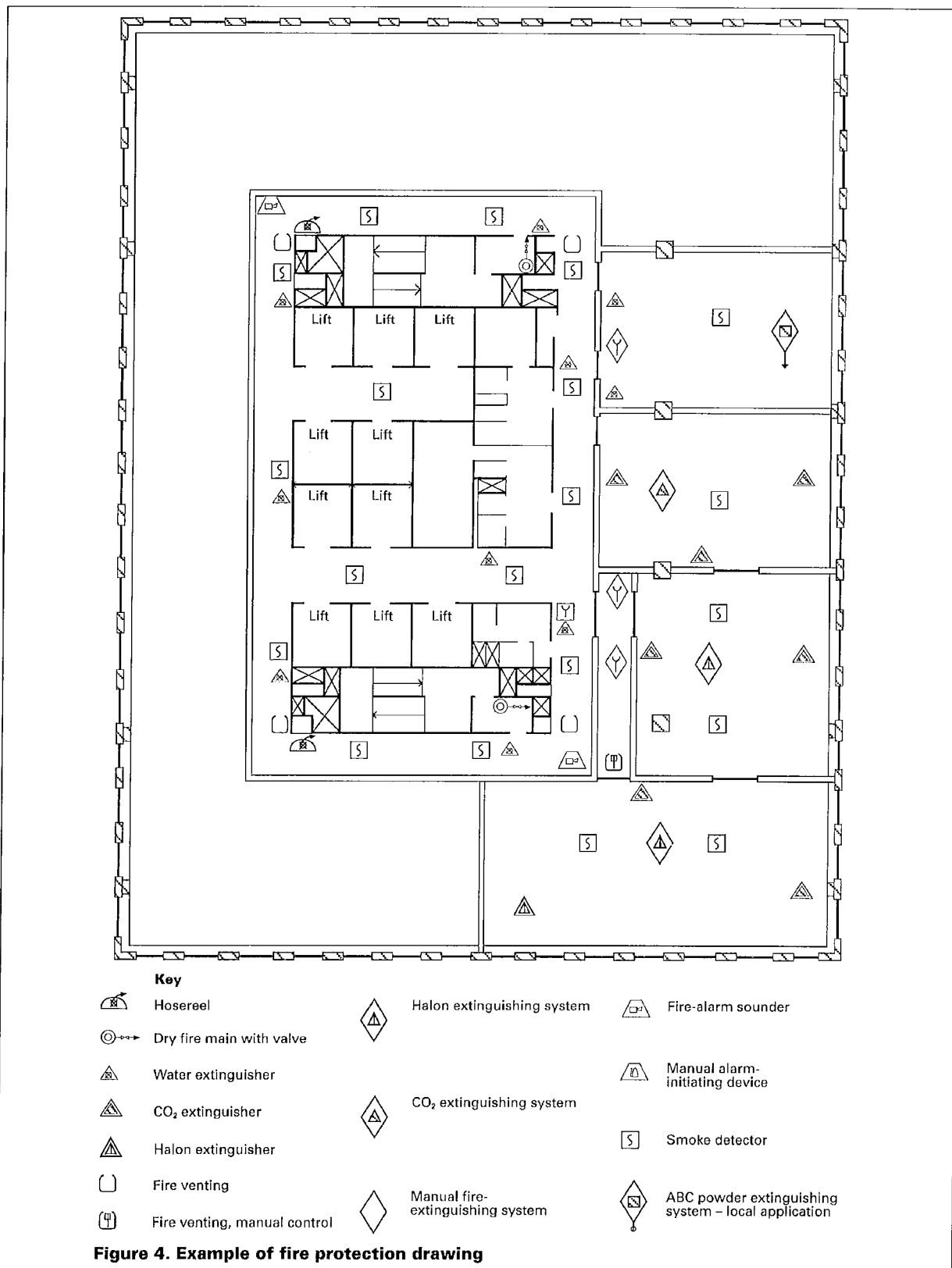
* From ISO 6790.

BS 1635:1990

Appendix

Appendix A. Example of fire protection drawing

Figure 4 gives an example of a fire protection drawing.



Publications referred to

- BS 1192 Construction drawing practice
Part 1 Recommendations for general principles
Part 3 Recommendations for symbols and other graphic conventions
- BS 1553 Specification for graphical symbols for general engineering
Part 1 Piping systems and plant
- BS 3939 Guide for graphical symbols for electrical power, telecommunications and electronics diagrams
Part 11 Architectural and topographical installation plans and diagrams
- BS 4422 Glossary of terms associated with fire
- BS 5499 Fire safety signs, notices and graphic symbols
Part 1 Specification for fire safety signs
- BS 5606 Code of practice for accuracy in building
- ISO 6790 Equipment for fire protection and fire fighting – Graphical symbols for fire protection plans – Specification

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British Standards Institution · 2 Park Street London W1A 2BS · Telephone 071-629 9000 · Telex 266933