BS EN 80416-1:2009

BSI British Standards

Basic principles for graphical symbols for use on equipment —

Part 1: Creation of graphical symbols for registration

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BSI British Standards

National foreword

This British Standard is the UK implementation of EN 80416-1:2009. It is identical to IEC 80416-1:2008. It supersedes BS EN 80416-1:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GEL/3, Documentation and graphical symbols.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

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Compliance with a British Standard cannot confer immunity from legal obligations.

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Amendments issued since publication

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EUROPEAN STANDARD

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EN 80416-1

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Supersedes EN 80416-1:2001

English version

Basic principles for graphical symbols for use on equipment - Part 1: Creation of graphical symbols for registration

(IEC 80416-1:2008)

Principes de base
pour les symboles graphiques
utilisables sur le matériel -
Partie 1: Création des symboles
graphiques pour enregistrement
(CEI 80416-1:2008)

Allgemeine Grundlagen
für Graphische Symbole
auf Geräten und Einrichtungen -
Teil 1: Gestaltung Graphischer Symbole
für die Registrierung
(IEC 80416-1:2008)

This European Standard was approved by CENELEC on 2009-02-01. CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CENELEC member into its own language and notified to the Central Secretariat has the same status as the official versions.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: avenue Marnix 17, B - 1000 Brussels

Ref. No. EN 80416-1:2009 E

Foreword

The text of document 3C/1590/FDIS, future edition 2 of IEC 80416-1, prepared by SC 3C, Graphical symbols for use on equipment, of IEC TC 3, Information structures, documentation and graphical symbols, in cooperation with ISO/TC 145/SC 3, was submitted to the IEC-CENELEC parallel vote and was approved by CENELEC as EN 80416-1 on 2009-02-01.

This European Standard supersedes EN 80416-1:2001.

EN 80416-1:2009 includes the following significant technical changes with respect to EN 80416-1:2001:

– Clause 8 in EN 80416-1:2001 is moved to Clause 4;

– mandatory requirement for the line width in symbol originals is changed to 2 mm or 4 mm (see 6th paragraph of 7.3);

– for negation of a graphical symbol, a single diagonal bar is allowed in addition to two diagonal bars at right angles;

– a new meaning of negation “do not” is allowed;

– some freedom is given for use of the basic pattern such as for symbol originals to be within the 75 mm square instead of the octagon;

– Annex A (normative) is newly introduced for provisions on title, description and notes;

– the nature of notes is changed to be purely informative; and

– Clause 10 in EN 80416-1:2001 is moved to Annex C (informative).

The following dates were fixed:

– latest date by which the EN has to be implemented at national level by publication of an identical national standard or by endorsement	(dop)	2009-11-01
– latest date by which the national standards conflicting with the EN have to be withdrawn	(dow)	2012-02-01

Annex ZA has been added by CENELEC.

Endorsement notice

The text of the International Standard IEC 80416-1:2008 was approved by CENELEC as a European Standard without any modification.

In the official version, for Bibliography, the following notes have to be added for the standards indicated:

IEC 60027	NOTE	Harmonized in EN 60027 series (not modified).
IEC 80416-3	NOTE	Harmonized as EN 80416-3:2002 (not modified).
ISO 31	NOTE	ISO 80000 and IEC 80000 are being harmonized by CEN and CENELEC.
ISO 3098	NOTE	Harmonized in EN ISO 3098 series (not modified).
ISO 81714-1	NOTE	Harmonized as EN ISO 81714-1:1999 (not modified).

Annex ZA
(normative)

Normative references to international publications with their corresponding European publications

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

NOTE When an international publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

Publication	Year	Title	EN/HD	Year
IEC 60417	Data-base	Graphical symbols for use on equipment	-	-
ISO/IEC Guide 71	- [1)]	Guidelines for standards developers to address the needs of older persons and persons with disabilities	-	-
ISO/IEC Guide 74	- [1)]	Graphical symbols - Technical guidelines for the consideration of consumers' needs	-	-
ISO 7000	- [1)]	Graphical symbols for use on equipment - Index and synopsis	-	-
ISO/IEC 80416-2	- [1)]	Basic principles for graphical symbols for use on equipment - Part 2: Form and use of arrows	EN 80416-2	2001 [2)]

[1)] Undated reference.

[2)] Valid edition at date of issue.

CONTENTS

INTRODUCTION

A graphical symbol is defined as a visually perceptible figure with a particular meaning used to transmit information independently of language. Graphical symbols are used on equipment for a wide range of purposes. The understanding of such symbols can be improved by consistent design. This is particularly important where families of symbols are used in one location or on similar equipment. Good design also helps to maintain the legibility of symbols when they are reduced to small dimensions for application. Thus, there is a need to standardize the principles for creating graphical symbols for use on equipment to ensure visual clarity, to maintain consistency and thereby to improve recognition.

International Standard 80416 is a multi-part standard which provides basic principles and guidelines for the creation of graphical symbols for use on equipment (Parts 1 and 2) and also principles and guidelines for adapting registered graphical symbols for use in practice (Parts 3 and 4).

This part of the multi-part standard addresses the basic rules used to create graphical symbols for use on equipment, including line widths, negation elements, and the use of the basic pattern. These design principles should be applied to all graphical symbols for use on equipment. They are required for graphical symbols for registration in IEC 60417 and ISO 7000.

It is recommended that symbol originals intended for specific fields of application are also published in the appropriate technical product standard.

BASIC PRINCIPLES FOR GRAPHICAL SYMBOLS FOR USE ON EQUIPMENT –

Part 1: Creation of graphical symbols for registration

1 Scope

This part of IEC 80416 provides basic principles and guidelines for the creation of graphical symbols for registration, and provides the key principles and rules for the preparation of title, description and note(s).

IEC 80416-1 applies to graphical symbols used:

- to identify the equipment or a part of the equipment (for example, controls or displays);
- to indicate functional states or functions (for example, on, off, alarm);
- to designate connections (for example, terminals, filling points);
- to provide information on packaging (for example, identification of content, instructions for handling);
- to provide instructions for the operation of the equipment (for example, limitations of use).

IEC 80416-1 does not apply to graphical symbols for:

- safety signs;
- use on drawings and diagrams;
- use in technical documentation of products and in technical product documentation;
- use for public information.

This horizontal standard is primarily intended for use by technical committees in the preparation of standards in accordance with the principles laid down in IEC Guide 108.

One of the responsibilities of a technical committee is, wherever applicable, to make use of horizontal standards in the preparation of its publications. The contents of this horizontal standard will not apply unless specifically referred to or included in the relevant publications.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60417, *Graphical symbols for use on equipment*

ISO/IEC Guide 71, *Guidelines for standards developers to address the needs of older persons and persons with disabilities*

ISO/IEC Guide 74, *Graphical symbols – Technical guidelines for the consideration of consumers' needs*

ISO 7000, *Graphical symbols for use on equipment – Index and synopsis*

ISO 80416-2, *Basic principles for graphical symbols for use on equipment – Part 2: Form and use of arrows*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
basic line width
line width used to draw the most significant part of a symbol original; 2 mm or 4 mm

3.2
description
normative text which defines the purpose, the application and the use of the graphical symbol, and optional product area

3.3
equipment
associated assemblies intended to achieve a defined final objective

3.4
graphical symbol
visually perceptible figure with a particular meaning used to transmit information independently of language

3.5
graphical symbol element
part of a graphical symbol which is used with a particular meaning in more than one graphical symbol

NOTE 1 Letters, numerals, punctuation marks and mathematical symbols may be used as graphical symbol elements (see ISO 31 and IEC 60027).

NOTE 2 A graphical symbol element with a specific meaning may be used to provide a common concept in the construction of a symbol family.

3.6
graphical symbol for registration
draft symbol original including the basic pattern, title, description and optional notes

3.7
nominal size
50 mm; the lateral dimension of the basic square 2 as shown in the basic pattern

3.8
symbol original
drawing of a graphical symbol, including the corner markings, prepared in accordance with IEC 80416-1 and, where appropriate, ISO 80416-2, and registered in IEC 60417 or ISO 7000

3.9
title
unique name by which a graphical symbol is identified and spoken of

NOTE The title should be as short as possible; it is only intended to provide a unique name for the graphical symbol and, where appropriate, another name(s), but not to describe its application.

4 Creation procedures

A designer considering the creation of a graphical symbol should become familiar with the context of use of the intended symbol and then follow the following steps:

a) define clearly the purpose and meaning of the graphical symbol – i.e. will it be used to identify equipment, indicate a functional state, designate a connection, provide information on packaging, provide instructions on the operation of equipment, or a combination of these;

b) identify the users of the graphical symbol (see ISO/IEC Guide 74) and any special needs (see ISO/IEC Guide 71) and legal requirements;

c) ascertain whether an existing graphical symbol will fulfil the specifications and requirements by checking IEC 60417 and ISO 7000;

d) where it is clear that a suitable graphical symbol does not exist, design a new graphical symbol in accordance with the provisions of Clause 7 and Clause 8, and, where appropriate:

   1) identify any cultural and ethnic sensibilities and prohibitions that are relevant and take them into account;

   2) consider the effect on legibility of adding a negation cross or diagonal bar and make any necessary adjustments to the design;

   3) take into account the relationship with any other symbols, symbol elements and symbol families and the related visual concept;

   4) ensure that the design does not lend itself to an unintended or ambiguous meaning.

e) undertake an assessment of the legibility, perceptual quality, and comprehensibility of the newly designed graphical symbol and adjust the design if the results are not satisfactory;

f) create a unique title for the graphical symbol; and

g) create a clear and unambiguous description of the graphical symbol and any operational requirements (the latter will be included in the description).

Requirements for title, description and notes are given in Annex A.

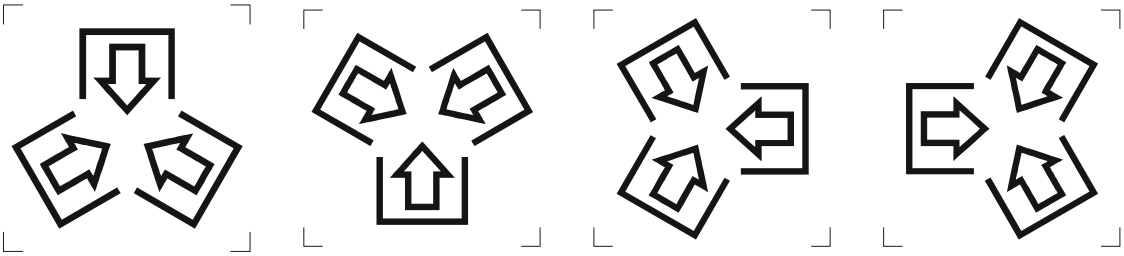
5 Meaning

5.1 Assignment

The meaning assigned to each registered graphical symbol is the result of associating a title, a symbol original and a description. The assigned meaning should be unambiguous and clear.

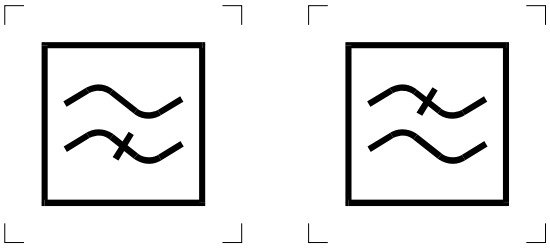
5.2 Orientation of the graphical symbols

Graphical symbols should normally be used in the orientation specified by the symbol originals. Care should be taken to avoid ambiguity in the case of a graphical symbol where its meaning depends on the orientation. Such ambiguity could occur, for instance, when graphical symbols are placed on rotary knobs. Symbol originals should whenever possible be created so as to preserve their meaning in any orientation as the example a) in Figure 1. However, when the meaning of a graphical symbol does depend on its orientation, as in the case of the examples b) in Figure 1, this shall be explicitly stated in the description of the symbol original.



ISO 7000-0414: Cores in moulding position

a) Example of a graphical symbol the meaning of which is independent of its orientation



IEC 60417-5091: High-pass filter

IEC 60417-5092: Low-pass filter

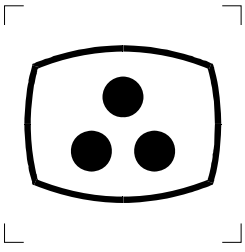
b) Examples of graphical symbols the meaning of which depends upon their orientation

Figure 1 – Graphical symbols in different orientation

NOTE Designation systems for symbol originals in IEC 60417 and ISO 7000 are given in Annex C.

6 Combination of graphical symbols

To represent certain concepts, graphical symbols or graphical symbol elements may be combined to form a new symbol original. The meaning assigned to the new graphical symbol shall be consistent with the meanings of the individual graphical symbols or graphical symbol elements. See the example shown in Figure 2.



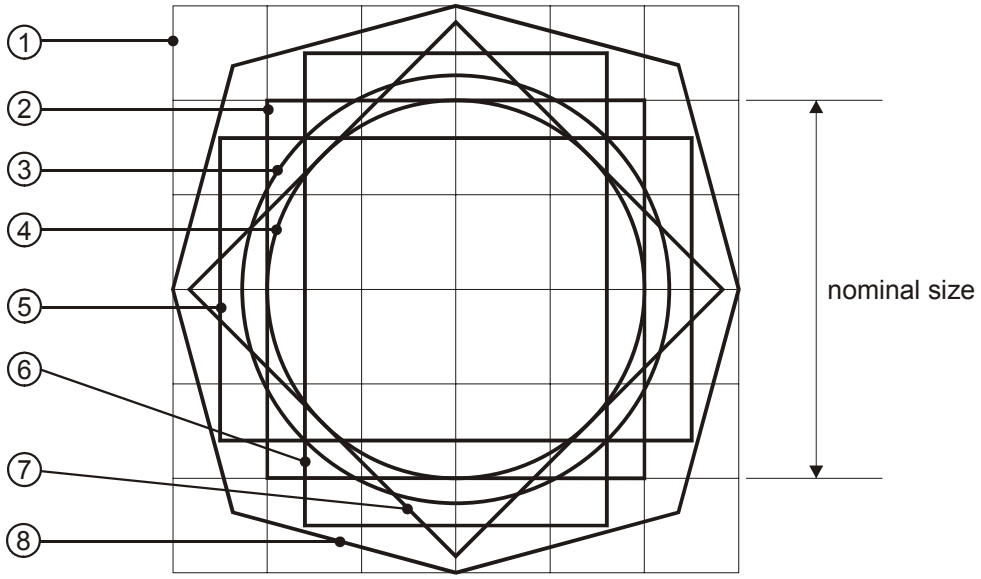
IEC 60417-5050: Colour television

Figure 2 – Example of combination of graphical symbols (IEC 60417-5049: "Television" combined with IEC 60417-5048: "Colour" to give IEC 60417-5050: "Colour television")

7 Creation principles

7.1 Creation of symbol original

A symbol original shall be created within the basic pattern shown in Figure 3, taking into account the requirements given in Clause 8. These guidelines and requirements apply equally to graphical symbols submitted for registration to IEC 60417 and ISO 7000.



Reference	Description
1	Square of 75 mm lateral length, forming the largest horizontal and vertical dimensions of the basic pattern and divided into a grid of 12,5 mm line spacing.
2	Basic square of 50 mm lateral length. This dimension is equal to the nominal size, 50 mm, of the symbol original.
3	Basic circle of 56,6 mm diameter, having approximately the same surface area as the basic square 2.
4	Circle of 50 mm diameter, being the inscribed circle of the basic square 2.
5, 6	Two rectangles having the same surface area as the basic square 2, a width of 40 mm and a height of 62,5 mm. They are mutually perpendicular, each drawn to cross symmetrically opposite sides of the basic square 2.
7	Basic square 2 of 50 mm rotated by 45°.
8	Octagon formed by lines at 15° to the outer sides of grid 1.

NOTE The basic pattern as templates for drawing software can be downloaded from the IEC web site (http://sc3c.iec.ch) and the ISO web site (http://www.iso.ch/tc145/sc3).

Figure 3 – Basic pattern

7.2 Design guidelines

The design of a symbol original should be:

a) simple, in order to facilitate perception and reproduction;

b) readily distinguishable from those of other graphical symbols with which it may be used;

c) easily associated with its intended meaning, that is either self-evident or easily learned;

d) such that it can be produced by usual manufacturing and reproduction methods.

NOTE 1 Particular attention should be given to avoiding unnecessary detail and complexity in the creation of the graphical symbol to prevent poor legibility where the intended size of reproduction of the graphical symbol is small, for example on a small key cap, or the viewing distance is large.

NOTE 2 In practice, to improve the appearance and perceptibility of a symbol original in use, or to coordinate with the design of the equipment to which it is to be applied, it may be necessary to modify symbol originals in accordance with IEC 80416-3 and ISO 80416-4.

7.3 Line width

A symbol original shall be drawn using the basic line width, 2 mm or 4 mm.

Reasons for choosing 2 mm include the existence of related graphical symbols which are already registered or design complexity which makes it impossible to draw the symbol in 4 mm.

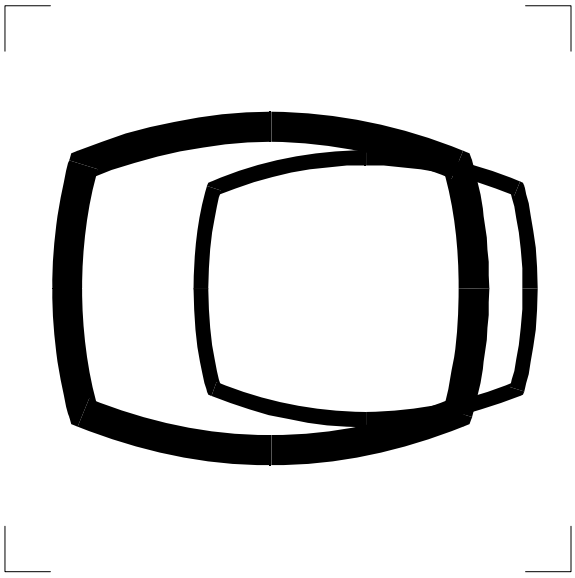
Reasons for choosing 4 mm include the existence of related graphical symbols which are already registered or the avoidance of unnecessary detail and complexity in order to achieve a simple design for easier recognition.

A combination of both line widths may be used to emphasize parts of the graphical symbol or to increase visual clarity. An example is shown in Figure 4.

If graphically necessary, parts of the symbol original may be drawn using other line widths greater than 2 mm, e.g. for depicting shapes.

In exceptional cases, a symbol original may be drawn using line widths other than the basic line width to be consistent with already standardized graphical symbols in ISO 7000 or IEC 60417 which are covered by technical regulations.

Versions of the same graphical symbol using a 2 mm and a 4 mm basic line width may be registered.



IEC 60417-5063: Horizontal picture shift

Figure 4 – Examples of the use of line width

7.4 Spacing

The minimum spacing between lines of a symbol original shall be chosen to take into account visual clarity and the reproduction methods to be used. The minimum space between parallel lines shall be 3 mm.

7.5 Angles

Angles smaller than 30° in a symbol original should be avoided.

7.6 Filled areas

Filled areas in a symbol original should be avoided except when the meaning or legibility of the symbol original requires that an area is filled.

7.7 Symbol original with arrows

For a symbol original which incorporates arrows, the principles in ISO 80416-2 shall apply.

7.8 Characters as symbol elements

For constituent elements of symbol originals such as letters, numbers, punctuation marks and mathematical symbols, a simple character form should be used. The minimum character height in the symbol original should be 10 mm.

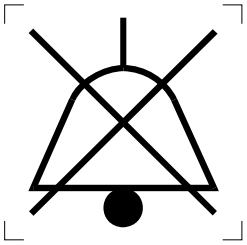
NOTE The font shown in a symbol original is not restrictive; other fonts may be used provided legibility is maintained.

7.9 Negation

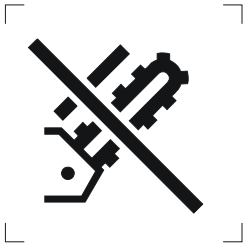
7.9.1 Methods of negation

Negation shall be indicated by a cross of lines formed by two diagonal bars at right angles, as in the examples a) and c) in Figure 5. In exceptional cases, only for visual clarity, a single diagonal bar as in the example b) in Figure 5 may be used.

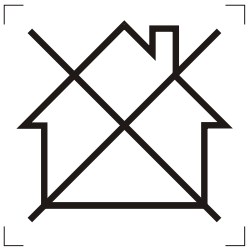
NOTE The standardization of the negated symbol original is only necessary if the negated version represents a specific meaning.



a) IEC 60417-5576: Bell cancel



b) ISO 7000-2259: Trencher, digging chain, disengage



c) IEC 60417-5109: Not to be used in residential areas

Figure 5 – Examples of negation

7.9.2 Angle of negation

For purposes of visual clarity only, the angle at which the diagonal bars meet to form the negation cross may deviate from 90° and the angle of the single diagonal negation bar may deviate from 45°.

7.9.3 Meaning of negation

The negation symbol elements can be used to indicate the non-availability of a function due to cancellation by the user or for operational reasons, as shown in examples a) and b) of Figure 5. The negation symbol elements may also be used to indicate required behaviour (such as “do not”) as in example c) of Figure 5.

7.9.4 Negation as prohibition

A circle combined with a diagonal bar is defined in ISO 3864-1 for use in safety applications to denote a ’prohibition’. Therefore, a circle combined with a diagonal bar, in any colour including black and white, shall not be used for the negation of graphical symbols for use on equipment.

8 Basic pattern

8.1 Structure

The basic pattern shown in Figure 3 shall be used as the basis for the creation of a symbol original (see 8.2). It is used as a tool for the design of a symbol original to ensure a balanced visual impression among the graphical symbols.

8.2 Application of the basic pattern

A symbol original should fit into the basic pattern according to the following principles:

a) for a symbol original consisting of a single geometrical form, such as a circle, a square or a rectangle, the corresponding geometrical forms of the basic pattern described in Figure 3 should be used;

b) for other symbol originals, care should be taken to ensure that the symbol originals have the same visual impression and uniformity and are consistent with related symbols in IEC 60417 and ISO 7000;

c) the key element in the basic pattern, with regard to the nominal size, is the 50 mm basic square 2. The basic circle 3 and the rectangles 5 and 6 have the same surface area. Circles without external parts should therefore be drawn on the basic circle 3, and rectangles should be drawn on the rectangles 5 and 6, in order to achieve the same visual impression of size as the basic square 2 of 50 mm. Circles with external graphical symbol elements should be drawn on the circle 4;

d) symbol originals should be created to the largest size possible, in line with the above principles, and should not exceed the octagon 8 by more than half of the line width. In exceptional cases necessitated by a combination of symbol elements, the symbol original may further extend beyond the octagon 8. Symbol originals shall not extend beyond the 75 mm square 1 of the basic pattern;

e) insofar as it is practicable, the lines of the symbol original should be centred on the lines of the basic pattern. However, the outer border of the lines shall not exceed the 75 mm square 1 as shown in Figure 6.

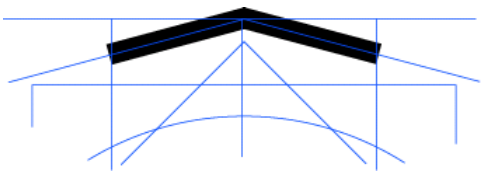
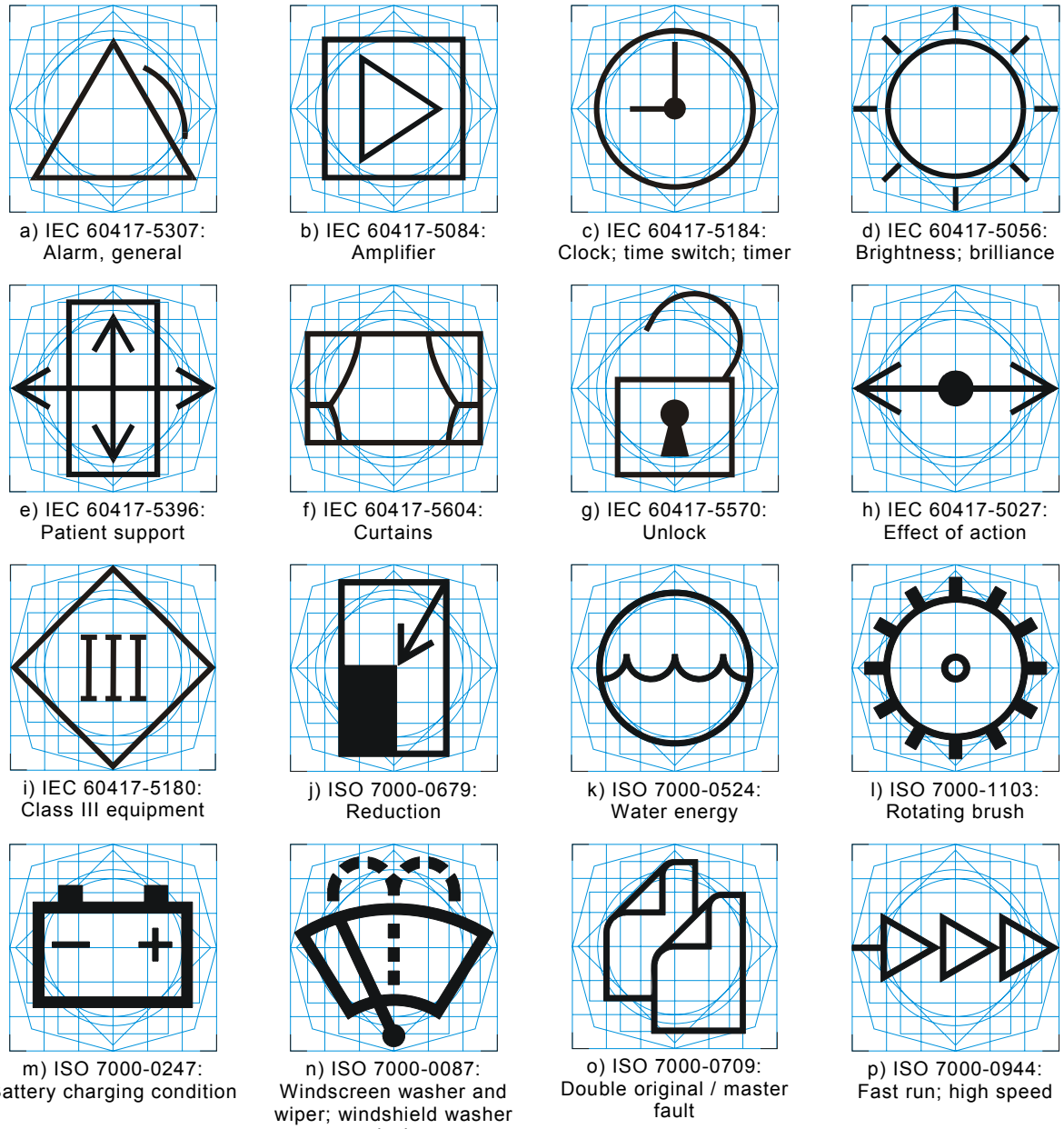


Figure 6 – Example of non-permitted line beyond the basic pattern

Some examples of application of the basic pattern are shown in Figure 7.



a) IEC 60417-5307: Alarm, general

b) IEC 60417-5084: Amplifier

c) IEC 60417-5184: Clock; time switch; timer

d) IEC 60417-5056: Brightness; brilliance

e) IEC 60417-5396: Patient support

f) IEC 60417-5604: Curtains

g) IEC 60417-5570: Unlock

h) IEC 60417-5027: Effect of action

i) IEC 60417-5180: Class III equipment

j) ISO 7000-0679: Reduction

k) ISO 7000-0524: Water energy

l) ISO 7000-1103: Rotating brush

m) ISO 7000-0247: Battery charging condition

n) ISO 7000-0087: Windscreen washer and wiper; windshield washer and wiper

o) ISO 7000-0709: Double original / master fault

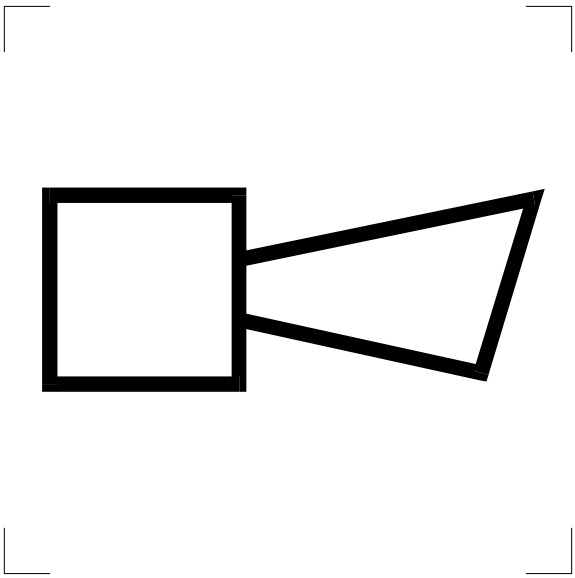
p) ISO 7000-0944: Fast run; high speed

Figure 7 – Application examples

8.3 Specification of symbol original

A symbol original is a drawing of the graphical symbol, including the corner markings as shown in Figure 8. The corner markings correspond to the corners of the 75 mm square 1 in Figure 3 and are used to facilitate accurate positioning and scaling of the symbol original.

Each of the corner markings consists of a vertical line and a horizontal line, each of 6 mm length, which are joined to delineate one corner of the basic pattern.



IEC 60417-5014: Horn

NOTE The size of a graphical symbol as an application of symbol original can be increased or reduced by re-scaling accordingly. See also IEC 80416-3.

Figure 8 – Example of the graphical symbol

Annex A
(normative)

Title, description and notes

A.1 Title

A title should be a noun or a noun phrase. It shall be unique, i.e. not be the same as those already used in IEC 60417 and ISO 7000.

If there is a need for more than one title, the titles shall be separated with the punctuation mark semicolon.

Examples: Live working; double triangle

Clock; time switch; timer

Fast run; high speed

Lamp; lighting; illumination

In order to enable a title phrase to be used with more than one symbol original, a modifier shall be introduced after the title with the punctuation mark comma.

Examples: Battery, general

Tractor with towed implement, implement width

Colour temperature, fluorescent lamp

Colour temperature, sunrise/sunset

Trencher, digging boom, raise

Trencher, digging boom, lower

A.2 Description

The description, together with the title and any optional notes, defines the meaning of a symbol original. It shall be based on the criteria set out in Clause 1 and Clause 4 and include the essential and normative information relevant to the graphical symbol.

The description shall provide enough detail to understand the intended use of the graphical symbol and provide any essential specific information relevant to its meaning or use. In the case of graphical symbols intended for specialist users, non-specialist users should at least be able to identify the product area.

The description may start with the indication that the graphical symbol is primarily intended for use in a particular product area. If so, this shall be a phrase of the form as shown in the following examples.

Examples: On radiological equipment for tomography.

On a video camera or still photography equipment.

The main phrase of the description should be of the form as shown in the following examples.

Examples: To identify the control of …

To identify the controls and terminals for …

To identify the switch or switch position for …

To identify the control or the indicator to …

To identify the indicator for …

To indicate that …

To indicate a reference to …

To provide handling information for …

To provide information on packaging …

NOTE 1 Annex B provides more detailed guidance and examples on how to write the descriptions.

If more information of normative nature needs to be given, for example related to:

– possible graphical modifications;
– restrictions on the use of the graphical symbol;
– colour requirements, or
– specific meaning on a special type of equipment;

then this information shall be added after the main phrases of the description.

Examples: To represent a rotation in one direction only, the other arrow may be omitted.

The triangles may be filled in.

This graphical symbol may be mirrored for …

The symbol MMMM shall be used in conjunction with the symbol NNNN.

In case of application in a warning sign the rules according to ISO 3864-1 shall be adhered to.

This graphical symbol shall not be used for appliances of class III construction having a working voltage up to 24 V.

This symbol should be used in the orientation shown.

If this graphical symbol is reproduced in colour, the colours of the dots shall be red (left), blue (top) and green (right).

On medical electrical equipment, the graphical symbol is used to indicate …

The symbol shall be used in the orientation shown.

NOTE 2 A normative nature is typically expressed by the use of the defined terms *shall*, *should*, or *may*.

A.3 Notes

Supplementary non-normative information, for example, related to the intended use of the graphical symbol, may be added as a note or notes.

Examples: See also symbol NNNN.

See also symbols NNNN, NNNN and NNNN.

The use of this graphical symbol is specified in IEC XXXXX.

The meaning of this graphical symbol depends on its orientation (see symbol NNNN).

Annex B
(informative)

Guidance for the wording of the description for a symbol original

B.1 Basic guidance

The following provides examples on how a description is worded. The examples are descriptions that could be applicable to a symbol original with the title “Brake”.

It is assumed that the intended user of the graphical symbol has sufficient knowledge about what a brake is and that an explanation of brakes and braking actions is not necessary, i.e. the examples are of minimum length. Where this is not the case, further explanation will be necessary about:

– what happens when a control is operated;
– what message an indication is intended to convey; or
– under what circumstances a symbol can be used or shall not be used.

The definite article should be used instead of the indefinite article, for example “the brake” instead of “a brake”. The singular form should be used instead of the plural form, for example “brake” instead of “brakes” (even if a car normally has four brakes).

NOTE The most recent guidance for the wording of the description for a symbol original can be found on both the ISO TC 145/SC 3 and the IEC TC 3/SC 3C websites.

B.2 Guidance by elaborated examples

The following provides guidance by elaborated examples that could be applicable to a symbol original with the title “Brake”.

a) If the graphical symbol only identifies equipment or a part of the equipment:

To identify the brake.

b) If the graphical symbol is used on a control, as an indicator, or both, and the meaning of the graphical symbol is the same for both, it will be described as follows:

To identify the control for the brake.

or

To identify the control or the indicator for the brake.

or

To identify the control or the indicator for braking a movement.

or

To identify the control to activate the brake or to indicate that the brake is active.

or

To identify the control to brake a movement or to indicate that the movement is braked.

c) If the graphical symbol only identifies an indicator:

To indicate that the brake can be used.

or

To indicate that the brake is active.

d) If there are two different meanings of identification and indication:

To identify the brake or to indicate a brake malfunction.

e) If there are two different meanings of control and indication:

To identify the control for the emergency brake or to indicate that the emergency brake can now be operated (is ready for use).

f) If there are three different meanings:

To identify the main brake cylinder, to identify the control for activating the brake, or to indicate a brake malfunction.

g) If a special meaning is indicated by a coloured or flashing symbol (not so much to be associated with the symbol itself but with the aspect of how it is used):

To identify the main brake cylinder, or to identify the control or the indicator for the brake. If used flashing and/or in combination with red colour or on a red background, the symbol indicates a brake system malfunction.

h) If the graphical symbol is used for an operating mode:

To identify the control or the indicator for the operating mode in which the brakes are continuously activated and adjusted for a constant effect.

i) If the graphical symbol can be used in many different ways and aspects:

To indicate a reference to a brake.

or

To indicate a reference to a brake, for example identification, operation, connection.

or

To indicate a reference to a brake, for example identification of the emergency brake handle.

j) If the graphical symbol is primarily intended for use in a particular product area and use in other areas may be inappropriate, to be added before the main phrase of the description:

On road vehicles.

or

On fire fighting and rescue service equipment.

k) If the graphical symbol is for general use but also has a particular meaning in one or more application areas:

To identify the control or the indicator for the brake.

On trains, to identify the emergency brake handle or to indicate that it has been used.

or

To identify the control or the indicator for the brake.

On trains, to identify the emergency brake handle or to indicate that it has been used. On aircraft, to identify the park brake lever or to indicate that the park brake may now be used.

l) If the graphical symbol is for general use but comes from a specific application area, additional information may be added to explain the origin:

To identify the control or the indicator for the brake, for example on a road vehicle.

m) If the graphical symbol description needs supplementary information of normative nature, to be added after the main phrases of the description:

To represent a movement in one direction only, omit the other arrow.

To represent a rotation in one direction only, omit the other arrow.

In case of application in a warning sign, the rules according to ISO 3864-1 shall be adhered to.

Symbol shall be used in the orientation shown.

The symbol may be mirrored to represent “left-side brake”.

Annex C
(informative)

Designation systems

C.1 Principal designation system

The designation system for symbol originals registered in IEC 60417 and ISO 7000 consists of the following:

a) the reference of the International Standard, either IEC 60417 or ISO 7000;

b) a hyphen;

c) the registration number of the symbol original.

Example: IEC 60417-5115

ISO 7000-0091

Any symbol original has only one registration number, either from IEC TC 3/SC 3C (IEC 60417) or ISO/TC 145/SC 3 (ISO 7000). Registration numbers below 5000 have been assigned to ISO 7000 and numbers above 5000 have been assigned to IEC 60417.

C.2 Exceptional designation system

C.2.1 For symbols of alternative representation

In exceptional cases where there are two or more alternative graphical representations for one meaning, these are distinguished by the addition of a letter after the registration number.

Example: IEC 60417-5107A,

IEC 60417-5107B.

C.2.2 For symbols for extended meanings

In exceptional cases where the meaning of a symbol original was extended by a qualifying element to include a specific meaning, the symbol original with the specific meaning has the same registration number with a dashed numerical suffix.

Examples: IEC 60417-5424

IEC 60417-5424-1

IEC 60417-5424-2

IEC 60417-5424-3

Bibliography

IEC 60027 (all parts), *Letter symbols to be used in electrical technology*

IEC 60617, *Graphical symbols for diagrams*

IEC 80416-3, *Basic principles for graphical symbols for use on equipment – Part 3: Guidelines for the application of graphical symbols*

IEC Guide 108, *Guidelines for ensuring the coherency of IEC publications – Application of horizontal standards*

ISO/IEC Guide 51, *Safety aspects – Guidelines for their inclusion in standards*

ISO 31[1] (all parts), *Quantities and units*

ISO 3098 (all parts), *Technical product documentation – Lettering*

ISO 3864-1, *Graphical symbols – Safety colours and safety signs – Part 1: Design principles for safety signs in workplaces and public areas*

ISO 7001, *Graphical symbols – Public information symbols*

ISO 80416-4, *Basic principles for graphical symbols for use on equipment – Part 4: Guidelines for the adaptation of graphical symbols for screens and displays (icons)*

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

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[1] ISO 31 is being successively replaced by the ISO 80000 and IEC 80000 series of standards

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