
British Standard Guide to

Graphical symbols for use on medical electrical equipment

Guide pour symboles graphiques pour équipements électromédicaux

Leitfaden für Symbole auf elektromedizinischen Geräten

National foreword

This British Standard has been prepared under the direction of the Health Care Standards Policy Committee. It is identical with IEC 878 : 1988 'Graphical symbols for electrical equipment in medical practice', published by the International Electrotechnical Commission (IEC).

This British Standard presents a range of graphical symbols that are intended for use on medical electrical equipment. There had been an expressed need for such a standard, which could be used in conjunction with BS 5724 'Medical electrical equipment' and which more conveniently collated those symbols that were appropriate to that application.

The symbols have been selected principally from those published in two, more general, international standards: IEC 417 and ISO 7000. A few symbols have been drawn from IEC 601-1 (symbols 01-15, 01-16, 01-17, 03-02 and 03-04) and one from ISO 361 (symbol 03-03). The following 22 symbols are not attributable to any published international standard:

- (a) 01-38, 39, 53, 62, 63, 64, 65, 66;
- (b) 04-10, 11;
- (c) 05-02, 09, 10, 11, 15, 16, 19, 20, 23, 24, 27, 33.

The intent and use of this standard is explained in more detail in clause 2, but it should be noted that there has been some confusion and disagreement internationally over the significance of the various 'On' and 'Off' symbols (symbols 01-01 to 01-08). In particular, it is not clear whether symbols 01-01 and 01-02 suffice to identify a mains isolating switch in equipment where isolation from the mains is not the same as the function of shutting off the power supply. The UK has requested clarification of this matter and the reduction of the plethora of symbols for ostensibly the same or similar purposes.

Two national appendices, A and B, to this standard present numerical indices for those symbols which have been selected, respectively, from BS 6217 and from ISO 7000.

Cross-references

International standard	Corresponding British Standard
IEC 417 : 1973 (including supplements A to H)	BS 6217 : 1981 Guide to graphical symbols for use on electrical equipment (Technically equivalent)
IEC 601-1 : 1977	BS 5724 Medical electrical equipment Part 1 : 1979 Specification for general safety requirements (Technically equivalent)

ISO 361, ISO 7000 and Draft Addendum ISO 7000/DAD.1, to which reference is made in the standard, have not been implemented as British Standards. However, as their inclusion is for information only, their status does not affect this standard.

The national foreword to BS 6217 refers to the note to the graphical symbol 417-IEC-5036 (i.e. symbol 03-01 of this standard). That foreword explains that:

'In the note to graphical symbol 5036, it is stated that the symbol may be combined with the warning symbol and colours standardized by the International Organization for Standardization (ISO), and reference is made to ISO/R 408-1964 'Safety colours' and ISO/R 557-1967 'Symbols, dimensions and layout for safety signs'. These two international standards have been revised as ISO 3864-1984 'Safety colours and safety signs', the subject matter of which was published in BS 5378 'Safety signs and colours' Part 1 : 1980 'Specification for colour and design' and Part 2 : 1980 'Specification for colorimetric and photometric properties of materials'.

NOTE. Compliance with the requirements of BS 5378 : Part 1 is required in the Safety Signs Regulations 1980 under certain conditions.'

These comments apply equally to symbol 03-01, since clause 2 of this standard states that the symbols in section three may be used in the manner referred to above.

Textual errors. When adopting the text of the international standard, the textual errors listed below were discovered. They have been marked in the text and have been reported to IEC in a proposal to amend the text of IEC 878.

Symbol 04-44 has been reproduced as a mirror image of the original, 417-IEC-5375-a, as given in BS 6217. (This symbol is similarly incorrectly shown in section four of BS 6217.)

Symbol 04-66 has been orientated through 90 ° when reproduced in clause 14.

NOTE. It is correctly shown in clause 13.

The cross-reference to the symbol in IEC 417 corresponding to 04-26 should read '417-IEC 5354'.

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

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GRAPHICAL SYMBOLS FOR ELECTRICAL EQUIPMENT IN MEDICAL PRACTICE

INTRODUCTION

This IEC Publication 878, “Graphical symbols for electrical equipment in medical practice”, is divided into five sections, as follows:

- Section One: General symbols.
- Section Two: Symbols to identify the classification of equipment.
- Section Three: Safety symbols.
- Section Four: Specialized symbols for ionizing radiation equipment.
- Section Five: Specialized symbols for display, communication and recording.

Other introductory remarks will be found in Clause 2.

1. Scope and object

This report provides a list, for easy reference, of graphical symbols for medical electrical equipment.

2. General

This report identifies those symbols already published in IEC Publication 417 or in ISO Standard 7000. A reference to the relevant symbol number is given.

Some symbols essential for compliance with the standards issued by IEC Technical Committee No. 62 or its Sub-Committees are also listed.

Many of the symbols listed in this report have already been used for several years on equipment and will be familiar to experts in that particular field; the meaning of others will become clear when viewed in context on the equipment itself, but it must be appreciated that it is impossible to make self-evident the meaning of all symbols on complex equipment.

However, it is to be noted that the meaning of all symbols used on equipment shall be explained in the accompanying documents to the equipment.

The symbols listed in this report are intended to be displayed on equipment used in medical practice. They are not necessarily associated with graphical symbols used on drawings.

For symbol requirements not met by this report, refer in the first instance to published IEC or ISO symbols. Note that, where necessary, two or more symbols or symbol elements may be grouped together to convey a particular meaning and, provided that the essential communicative characteristics of the basic symbol are maintained, some latitude in graphic design is permissible.

The symbols are grouped in sections for ease of reference (see Introduction).

The safety symbols in Section Three may be used to form safety signs according to local regulations, for example in a yellow triangle.

SECTION ONE — GENERAL SYMBOLS

3. Alphabetical index

Key words	Symbol No.	Key words	Symbol No.
A. Alternating current	01-14	Movement in one direction	01-51
Automatic control (closed loop)	01-46	Movement to and from the operator	01-53
B. Bell	01-41	N. Noiseless (clean) earth (ground)	01-22
Both direct and alternating current	01-19	Normal run	01-60
C. Calibration	01-29	Normal run from a limit	01-62
Clock; time switch; timer	01-40	Normal run to a limit	01-64
Close (a container)	01-67	O. Off (power)	01-02
Connection point for the neutral conductor on per- manently installed equipment	01-16	“OFF” only for a part of equipment	01-08
D. Decreasing temperature	01-34	On (power)	01-01
Direct current	01-18	On/off (push button)	01-04
Disengaging (mechanical deactivation)	01-48	On/off (push-push)	01-03
E. Earth (ground)	01-21	“ON” only for a part of equipment	01-07
Engaging (mechanical activation)	01-47	Open (a container)	01-68
Equipotentiality	01-24	“OUT”-position of a bistable push control	01-13
F. Fan (general)	01-66	Output	01-37
Fast run	01-61	P. Pause; interruption	01-11
Fast run from a limit	01-63	Plus; positive polarity	01-27
Fast run to a limit	01-65	Protective earth (ground)	01-20
Foot switch	01-71	R. Rectilinear repeated positioning	01-55
Frame or chassis	01-23	Remote control	01-38
H. Hand-held switch	01-44	Rotation in two directions	01-58
I. Increasing temperature	01-35	S. Setting to central position	01-43
Indirect lighting	01-31	Slow run	01-59
“IN”-position of a bistable push control	01-12	Stand-by	01-05
Input	01-36	Stand-by or preparatory state for a part of equip- ment	01-06
Iris diaphragm: closed	01-70	Start (of action)	01-09
Iris diaphragm: open	01-69	Stop (of action)	01-10
L. Lamp; lighting; illumination	01-30	T. Temperature	01-33
Limited rectilinear motion	01-54	Three phase alternating current	01-15
Local control	01-39	Three phase alternating current with neutral con- ductor	01-17
Lock or tighten	01-49	U. U-turn of movement (from a pre-set position)	01-57
Low intensity lighting	01-32	Unlock, unclamp	01-50
M. Manual control	01-45	V. Variability	01-25
Minus; negative polarity	01-28	Variability in steps	01-26
Movement in both directions	01-52	Z. Zero point adjustment	01-42
Movement in direction of arrow from a pre-set position	01-56		

4. Numerical index

01-01	On (power)	01-36	Input
01-02	Off (power)	01-37	Output
01-03	On/off (push-push)	01-38	Remote control
01-04	On/off (push button)	01-39	Local control
01-05	Stand-by	01-40	Clock; time switch; timer
01-06	Stand-by or preparatory state for a part of equipment	01-41	Bell
01-07	"ON" only for a part of equipment	01-42	Zero point adjustment
01-08	"OFF" only for a part of equipment	01-43	Setting to central position
01-09	Start (of action)	01-44	Hand-held switch
01-10	Stop (of action)	01-45	Manual control
01-11	Pause; interruption	01-46	Automatic control (closed loop)
01-12	"IN"-position of a bistable push control	01-47	Engaging (mechanical activation)
01-13	"OUT"-position of a bistable push control	01-48	Disengaging (mechanical deactivation)
01-14	Alternating current	01-49	Lock or tighten
01-15	Three phase alternating current	01-50	Unlock, unclamp
01-16	Connection point for the neutral conductor on permanently installed equipment	01-51	Movement in one direction
01-17	Three phase alternating current with neutral conductor	01-52	Movement in both directions
01-18	Direct current	01-53	Movement to and from the operator
01-19	Both direct and alternating current	01-54	Limited rectilinear motion
01-20	Protective earth (ground)	01-55	Rectilinear repeated positioning
01-21	Earth (ground)	01-56	Movement in direction of arrow from a pre-set position
01-22	Noiseless (clean) earth (ground)	01-57	U-turn of movement (from a pre-set position)
01-23	Frame or chassis	01-58	Rotation in two directions
01-24	Equipotentiality	01-59	Slow run
01-25	Variability	01-60	Normal run
01-26	Variability in steps	01-61	Fast run
01-27	Plus; positive polarity	01-62	Normal run from a limit
01-28	Minus; negative polarity	01-63	Fast run from a limit
01-29	Calibration	01-64	Normal run to a limit
01-30	Lamp; lighting; illumination	01-65	Fast run to a limit
01-31	Indirect lighting	01-66	Fan (general)
01-32	Low intensity lighting	01-67	Close (a container)
01-33	Temperature	01-68	Open (a container)
01-34	Decreasing temperature	01-69	Iris diaphragm: open
01-35	Increasing temperature	01-70	Iris diaphragm: closed
		01-71	Foot switch

SECTION ONE –
GENERAL SYMBOLS

01-01 	01-02 	01-03 	01-04 	01-05 	01-06 	01-07 	01-08 
01-09 	01-10 	01-11 	01-12 	01-13 	01-14 	01-15 	01-16 
01-17 	01-18 	01-19 	01-20 	01-21 	01-22 	01-23 	01-24 
01-25 	01-26 	01-27 	01-28 	01-29 	01-30 	01-31 	01-32 
01-33 	01-34 	01-35 	01-36 	01-37 	01-38 	01-39 	01-40 
01-41 	01-42 	01-43 	01-44 	01-45 	01-46 	01-47 	01-48 
01-49 	01-50 	01-51 	01-52 	01-53 	01-54 	01-55 	01-56 
01-57 	01-58 	01-59 	01-60 	01-61 	01-62 	01-63 	01-64 
01-65 	01-66 	01-67 	01-68 	01-69 	01-70 	01-71 	

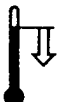
5. Compilation of Section One — General symbols

No.	Symbol	Title	Reference
01-01		On (power)	417-IEC 5007
01-02		Off (power)	417-IEC 5008
01-03		On/off (push-push)	417-IEC 5010
01-04		On/off (push button)	417-IEC 5011
01-05		Stand-by	417-IEC 5009
01-06		Stand-by or preparatory state for a part of equipment	417-IEC 5266
01-07		“ON” only for a part of equipment	417-IEC 5264

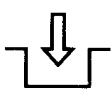
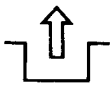
No.	Symbol	Title	Reference
01-08		"OFF" only for a part of equipment	417-IEC 5265
01-09		Start (of action)	417-IEC 5104
01-10		Stop (of action)	417-IEC 5110
01-11		Pause; interruption	417-IEC 5111
01-12		"IN"-position of a bistable push control	417-IEC 5268
01-13		"OUT"-position of a bistable push control	417-IEC 5269
01-14		Alternating current	417-IEC 5032

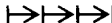
No.	Symbol	Title	Reference
01-15	3 	Three phase alternating current	IEC 601-1
01-16	N	Connection point for the neutral conductor on permanently installed equipment	IEC 601-1
01-17	3N 	Three phase alternating current with neutral conductor	IEC 601-1
01-18		Direct current	417-IEC 5031
01-19		Both direct and alternating current	417-IEC 5033
01-20		Protective earth (ground)	417-IEC 5019
01-21		Earth (ground)	417-IEC 5017

No.	Symbol	Title	Reference
01-22		Noiseless (clean) earth (ground)	417-IEC 5018
01-23		Frame or chassis	417-IEC 5020
01-24		Equipotentiality	417-IEC 5021
01-25		Variability	417-IEC 5004
01-26		Variability in steps	417-IEC 5181
01-27		Plus; positive polarity	417-IEC 5005
01-28		Minus; negative polarity	417-IEC 5006

No.	Symbol	Title	Reference
01-29		Calibration	ISO 7000-0160
01-30		Lamp; lighting; illumination	417-IEC 5012
01-31		Indirect lighting	417-IEC 5320
01-32		Low intensity lighting	417-IEC 5321
01-33		Temperature	ISO 7000-0034
01-34		Decreasing temperature	ISO 7000-0036
01-35		Increasing temperature	ISO 7000-0035

No.	Symbol	Title	Reference
01-36		Input	417-IEC 5034
01-37		Output	417-IEC 5035
01-38		Remote control	—
01-39		Local control	—
01-40		Clock; time switch; timer	417-IEC 5184
01-41		Bell	417-IEC 5013
01-42		Zero point adjustment	ISO 7000- DAD.1 0540

No.	Symbol	Title	Reference
01-43		Setting to central position	ISO/7000-DAD.1 0514
01-44		Hand-held switch	417-IEC 5322
01-45		Manual control	ISO 7000-0096
01-46		Automatic control (closed loop)	ISO 7000-0017
01-47		Engaging (mechanical activation)	ISO 7000-0022
01-48		Disengaging (mechanical deactivation)	ISO 7000-0023
01-49		Lock or tighten	ISO 7000-0018

No.	Symbol	Title	Reference
01-50		Unlock, unclamp	ISO 7000-0019
01-51		Movement in one direction	417-IEC 5022
01-52		Movement in both directions	417-IEC 5023
01-53		Movement to and from the operator	—
01-54		Limited rectilinear motion	ISO 7000-0001
01-55		Rectilinear repeated positioning	ISO 7000-0254
01-56		Movement in direction of arrow from a pre-set position	ISO 7000-DAD.1 0521

No.	Symbol	Title	Reference
01-57		U-turn of movement (from a pre-set position)	ISO/7000- DAD.1 0539
01-58		Rotation in two directions	ISO 7000- 0005
01-59		Slow run	417-IEC 5124
01-60		Normal run	417-IEC 5107
01-61		Fast run	417-IEC 5108
01-62		Normal run from a limit	—
01-63		Fast run from a limit	—