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IEC 617-7 : 1983

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British Standard Guide for
**Graphical symbols for electrical power,
telecommunications and electronics diagrams**
Part 7. Switchgear, controlgear and protective devices

[IEC title: Graphical symbols for diagrams
Part 7: Switchgear, controlgear and protective devices]

Symboles graphiques pour schémas d'électrotechnique, de télécommunications et
d'électronique
Partie 7. Appareillage et dispositifs de commande et de protection

Schaltzeichen für Diagramme in der Elektrotechnik, Nachrichtentechnik und Elektronik
Teil 7. Schaltgeräte, Steuergeräte und Schutzeinrichtungen

BS 3939 : Part 7 : 1985

National foreword

This Part of BS 3939, prepared under the direction of the General Electrotechnical Engineering Standards Committee, recommends graphical symbols, with definitions, for switchgear, controlgear and protective devices for use in electrical power, telecommunications and electronics diagrams. It is identical with the English text in IEC Publication 617-7 : 1983 'Graphical symbols for diagrams', Part 7 'Switchgear, controlgear and protective devices' published by the International Electrotechnical Commission (IEC), except that the English text has been rearranged typographically as a consequence of deleting the corresponding French text.

Together with Part 1*, Parts 2 to 6 and Parts 8 to 13, this Part of BS 3939 supersedes the previous edition which is withdrawn in its entirety.

The titles of the other Parts in the BS 3939 series are as follows:

- Part 1 General principles*
- Part 2 Symbol elements, qualifying symbols and other symbols having general application
- Part 3 Conductors and connecting devices
- Part 4 Passive components
- Part 5 Semiconductors and electron tubes
- Part 6 Production and conversion of electrical energy
- Part 8 Measuring instruments, lamps and signalling devices
- Part 9 Telecommunications: switching and peripheral equipment
- Part 10 Telecommunications: transmission
- Part 11 Architectural and topographical installation plans and diagrams
- Part 12 Binary logic elements
- Part 13 Analogue elements

Titles to any further Parts will be added in due course.

To take account of the development of computer draughting, the symbols have been designed to a grid. A transparent over-lay with this grid will be included in Part 1.

Terminology and conventions. The text of the international standard has been approved for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards.

Cross-references

International standards	Corresponding British Standards
IEC 617-2 : 1983	BS 3939 Guide for graphical symbols for electrical power, telecommunications and electronics diagrams Part 2 : 1985 Symbol elements, qualifying symbols and other symbols having general application (Identical)
ISO 31	BS 5775 Specification for quantities, units and symbols (Identical)

The Technical Committee has reviewed the provisions of IEC 27 and IEC 113-4, to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard.

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

* In preparation.

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British Standard Guide for

Graphical symbols for electrical power, telecommunications and electronics diagrams

Part 7. Switchgear, controlgear and protective devices

CHAPTER I: GENERAL NOTES

- I.1 Chapters II and III of this part give preferred symbols for contact units and switchgear. Each symbol depicts the function of a contact or a switching device, without necessarily being related to the construction of the device it represents.
- I.2 A small circle, open or filled in, representing the hinge-point may be added to most of the symbols for contacts, switches and controlgear, see for example 07-02-02.
- For clarity this symbol must be shown on some symbols, see for example 07-02-05.
- I.3 Some of the older symbols standardized in the 1963 edition of IEC Publication 117-3: Recommended Graphical Symbols, Part 3: Switching and Protective Devices, will be required for a considerable period of time. The relevant symbols are therefore shown in Appendix A.

CHAPTER II: CONTACTS

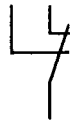
SECTION 1 – QUALIFYING SYMBOLS

No.	Symbol	Description
07-01-01	◻	Contactor function
07-01-02	✕	Circuit breaker function
07-01-03	—	Disconnecter (isolator) function
07-01-04	⌋	Switch-disconnector (isolating-switch) function
07-01-05	■	Automatic release function
07-01-06	∇	Position switch function Limit switch function <i>Notes 1.</i> – This qualifying symbol can be applied to simple contact symbols to indicate position or limit switches if there is no need to show the means of operating the contact. In complicated cases, where it is desirable to show the means of operation, symbols 02-13-16 to 02-13-19 should be used instead. <i>2.</i> – This symbol is placed on both sides of the contact symbol when the contact is mechanically operated in both directions.
07-01-07	◁	Spring return function <i>Notes 1.</i> – This symbol may be used to indicate spring return function. When this convention is invoked, its use should be appropriately referenced. <i>2.</i> – This symbol should not be used together with qualifying symbols 07-01-01, 07-01-02, 07-01-03 and 07-01-04. In many cases, symbol 02-12-07 may be used.

No.	Symbol	Description
07-01-08		Non-spring return (stay put) function <i>Notes 1.</i> – This symbol may be used to indicate non-spring return function. When this convention is invoked, its use should be appropriately referenced. <i>2.</i> – This symbol should not be used together with qualifying symbols 07-01-01, 07-01-02, 07-01-03 and 07-01-04. In many cases, symbol 02-12-08 may be used.

SECTION 2 – CONTACTS WITH TWO OR THREE POSITIONS

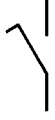
No.	Symbol	Description
07-02-01	Form 1 	Make contact <i>Note.</i> – This symbol is also used as the general symbol for a switch.
07-02-02	Form 2 	
07-02-03		Break contact
07-02-04		Change-over break before make contact
07-02-05		Two-way contact with centre-off position
07-02-06	Form 1 	Change-over make before break contact (bridging)
07-02-07	Form 2 	

No.	Symbol	Description
07-02-08		Contact with two makes
07-02-09		Contact with two breaks

SECTION 3 – PASSING CONTACTS WITH TWO POSITIONS

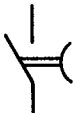
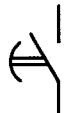
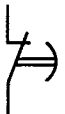
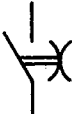
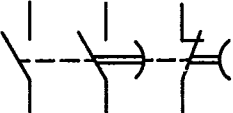
No.	Symbol	Description
07-03-01		Passing make contact closing momentarily when its operating device is actuated
07-03-02		Passing make contact closing momentarily when its operating device is released
07-03-03		Passing make contact closing momentarily when its operating device is actuated or released

SECTION 4 – EARLY AND LATE OPERATING CONTACTS

No.	Symbol	Description
07-04-01		Make contact (of a multiple contact assembly) which is early to close relative to the other contacts of the assembly
07-04-02		Make contact (of a multiple contact assembly) which is late to close relative to the other contacts of the assembly
07-04-03		Break contact (of a multiple contact assembly) which is late to open relative to the other contacts of the assembly
07-04-04		Break contact (of a multiple contact assembly) which is early to open relative to the other contacts of the assembly

SECTION 5—EXAMPLES OF CONTACTS WITH INTENTIONAL DELAY

5.1 See symbols 02-12-05 and 02-12-06.

No.	Symbol	Description
07-05-01	Form 1 	Make contact delayed when closing (operating device actuated)
07-05-02	Form 2 	
07-05-03	Form 1 	Break contact delayed when reclosing (operating device released)
07-05-04	Form 2 	
07-05-05		Make contact delayed when closing and opening
07-05-06		Contact assembly with one make contact not delayed, one make contact delayed when re-opening and one break contact delayed when opening

SECTION 6—EXAMPLES OF SPRING RETURN AND NON-SPRING RETURN (STAY PUT) CONTACTS

6.1 The notes with symbols 07-01-07 and 07-01-08 apply.

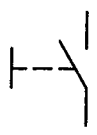
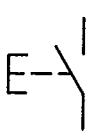
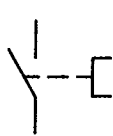
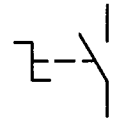
No.	Symbol	Description
07-06-01		Make contact with spring return
07-06-02		Make contact without spring return (stay put)

No.	Symbol	Description
07-06-03		Break contact with spring return
07-06-04		Two-way contact with centre-off position with spring return from the left-hand position but not from the right-hand one (stay put)

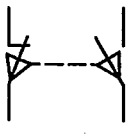
CHAPTER III: SWITCHES, SWITCHGEAR AND STARTERS

- III.1 Devices with "push" or "pull" operation normally have spring return. It is therefore not necessary to show the automatic return symbol (02-12-07). On the other hand, a detent symbol (02-12-08) should be shown in the exceptional cases where locking exists.
- III.2 Devices operated by turning do not usually have automatic return. It is therefore not necessary for the detent symbol (02-12-08) to be shown. On the other hand, the automatic return symbol (02-12-07) should be shown in those cases where an automatic return exists.

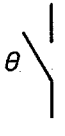
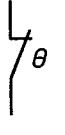
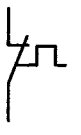
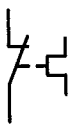
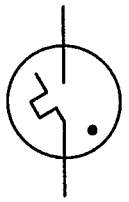
SECTION 7—SINGLE-POLE SWITCHES

No.	Symbol	Description
07-07-01		Manually operated switch, general symbol
07-07-02		Push-button switch (non-locking)
07-07-03		Pull-switch (non-locking)
07-07-04		Turn-switch (locking)

SECTION 8 – POSITION AND LIMIT SWITCHES

No.	Symbol	Description
07-08-01		Position switch, make contact Limit switch, make contact
07-08-02		Position switch, break contact Limit switch, break contact
07-08-03		Position or limit switch mechanically operated in both directions with two separate circuits

SECTION 9 – TEMPERATURE SENSITIVE SWITCHES

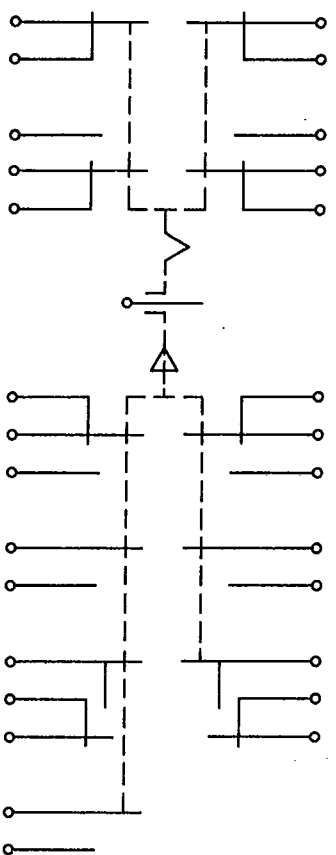
No.	Symbol	Description
07-09-01		Temperature sensitive switch, make contact <i>Note.</i> – θ may be replaced by the operating temperature conditions.
07-09-02		Temperature sensitive switch, break contact The note with symbol 07-09-01 applies
07-09-03		Self-operating thermal switch, break contact <i>Note.</i> – It is important to distinguish between a contact as shown and a contact of a thermal relay, which in detached representation may be shown as follows: 
07-09-04		Gas discharge tube with thermal element Starter for fluorescent lamp

SECTION 10 – SPEED CHANGE SENSITIVE CONTACTS, MERCURY AND LEVELLING SWITCHES

No.	Symbol	Description
07-10-01		Inertia switch (operated by sudden deceleration)
07-10-02		Mercury switch, three terminals Levelling switch, three terminals
07-10-03		Mercury switch, four terminals Levelling switch, four terminals

SECTION 11 – EXAMPLES OF MULTI-POLE AND MULTI-POSITION SWITCHES

11.1 Conventions III.1 and III.2 at the beginning of Chapter III apply.

No.	Symbol	Description
07-11-01		Three position lever-operated switch, locking in the upper position and with spring return from the lower position to the middle one, shown with terminals