

Operation and maintenance of earth-moving machinery —

Part 9: Specification for specific symbols for machines, equipment and accessories

UDC 621.878/.879-58:003.62

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Technical Committee B/513 Construction equipment and plant, and site safety, to Subcommittee B/513/1, Earth-moving machinery, upon which the following bodies were represented:

- British Coal Corporation
- Construction Plant (Hire Association)
- Federation of Civil Engineering Contractors
- Federation of Manufacturers of Construction Equipment and Cranes
- Health and Safety Executive
- Institution of Civil Engineers
- Silsoe Research Institute

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The following BSI references relate to the work on this standard:
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Amendments issued since publication

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National foreword

This Part of BS 6913 has been prepared under the direction of Technical Committee B/513, Construction equipment and plant, and site safety, and is identical with ISO 6405-2:1993 *Earth-moving machinery — Symbols for controls and other displays — Part 2 Specific symbols for machines, equipment and accessories* published by the International Organization for Standardization (ISO).

ISO 6405-2 was prepared by Subcommittee 3, Operation and maintenance, of ISO Technical Committee 127, Earth-moving machinery, with the active participation and approval of the UK.

ISO 6405 consists of the following Parts, under the general title *Earth-moving machinery — Symbols for operator controls and other displays*

— *Part 1: Common symbols;*

— *Part 2: Specific symbols for machines, equipment and accessories.*

Textual error. When adopting the text of the international standard, the textual error given below was discovered. It has been marked in the text and has been reported to ISO in a proposal to amend the text of the international standard.

In 19.4 “Front scarifier — Basic symbol” should be read as “Front scarifier — Hold”.

Cross-references

International standard	Corresponding British Standard
ISO 3461-1:1988	BS 7477:1991 <i>Guide for general principles for the creation of graphical symbols for use on equipment</i> (Identical)
ISO 6165:1987	BS 6914 <i>Terminology (including definitions of dimensions and symbols) for earth-moving machinery</i> Part 1:1988 <i>Glossary of terms for basic types of earth-moving machinery</i> (Identical)
ISO 6405-1:1991	BS 6913 <i>Operation and maintenance of earth-moving machinery</i> Part 8:1992 <i>Specification for common symbols for operator controls and other displays</i> (Identical)
ISO 7000:1989	BS 7324:1990 <i>Guide to graphical symbols for use on equipment</i> (Identical)
IEC 417:1973	BS 5817 <i>Specification for audiovisual, video and television equipment and systems</i> Part 8:1990 <i>Symbols and identification</i>

The Subcommittee has reviewed the provisions of ISO 4196:1984 and found them satisfactory for use with this British Standard.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

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

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 30, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This part of ISO 6405 establishes symbols uniquely for use on operator controls and other displays on earth-moving machinery as defined in ISO 6165.

Symbols given in this part of ISO 6405 apply to controls and displays specific to backhoe loaders, dozers, loaders, graders, scrapers, excavators and dumpers, and for controls and displays for stabilizers, outriggers, grapples, rippers and winches.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 6405. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 6405 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3461-1:1988, *General principles for the creation of graphical symbols — Part 1: Graphical symbols for use on equipment*.

ISO 4196:1984, *Graphical symbols — Use of arrows*.

ISO 6165:1987, *Earth-moving machinery — Basic types — Vocabulary*.

ISO 6405-1:1991, *Earth-moving machinery — Symbols for operator controls and other displays — Part 1: Common symbols*.

ISO 7000:1989, *Graphical symbols for use on equipment — Index and synopsis*.

IEC 417:1973, *Graphical symbols for use on equipment — Index, survey and compilation of the single sheets*.

3 Definition

For the purposes of this part of ISO 6405, the definition of symbol given in ISO 6405-1 applies.

4 General

4.1 Symbols shall be as shown in succeeding clauses of this part of ISO 6405. However, selected symbols and selected combined symbols, which are shown in outline form in this part of ISO 6405, may be shaded in actual use for clarity of reproduction and improved visual perception by the operator, except as otherwise noted for individual symbols.

4.2 Limitations inherent in some reproduction and display technologies may require increased line thickness or other minor modifications of symbols. Such modifications are acceptable provided the symbol remains unchanged in its basic graphical elements and easily discernible by the operator.

4.3 Additionally, to improve the appearance and perceptibility of a graphical symbol or to coordinate with the design of the equipment to which it is applied, it may be necessary to change the line thickness or to round off the corners of the symbol. The graphical designer is normally free to make such changes provided that the essential perceptible characteristics of the symbol are maintained. See ISO 3461-1:1988, subclause **10.2**.

4.4 For actual use, all symbols shall be reproduced large enough to be easily discernible by the operator. See ISO 3461-1 for guidelines on the proper sizing of symbols. Symbols shall be used in the orientations shown in this part of ISO 6405 unless otherwise noted for individual symbols.

4.5 Most symbols are constructed using a building-block approach in which various symbols and symbol elements are combined in a logical manner to produce a new symbol.

4.6 If a symbol shows a machine or parts of a machine in a side view, a machine moving from right to left in the symbol area shall be assumed. If a symbol shows a machine or parts of a machine in a top (overhead) view, a machine moving from bottom to top in the symbol area shall be assumed.

4.7 Symbols on controls and displays shall have good contrast to their background. A light symbol on a dark background is preferred for most controls. Displays may use either a light symbol on a dark background or a dark symbol on a light background, depending upon which alternative provides the best visual perception. When a symbol image is reversed (for example, black to white and vice versa), it shall be done for the entire symbol.

4.8 Symbols shall be located on or adjacent to the control or display that is being identified. Where more than one symbol is required for a control, the symbols shall be located in relation to the control such that movement of the controls towards the symbol shall effect the function depicted by that symbol.

4.9 Arrows used in symbols shall conform to the requirements of ISO 4196. ISO 3461-1 shall be consulted for the general principles of creating symbols.

4.10 ISO/IEC registration numbers are shown for symbols in this International Standard. Registration numbers below 5000 refer to ISO 7000. Registration numbers above 5000 refer to IEC 417.

4.11 Symbols in this part of ISO 6405 are presented 32 % of original size. The grid marks “L” denote the corners of the 75 mm square of the graphic grid presented. The grid marks are not part of the symbol but are provided to ensure consistent presentation of all symbol graphics.

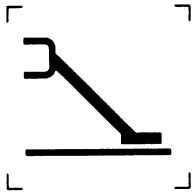
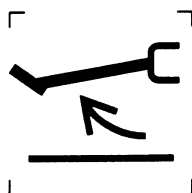
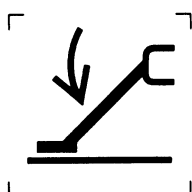
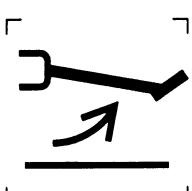
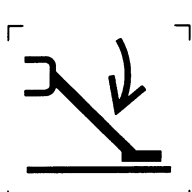
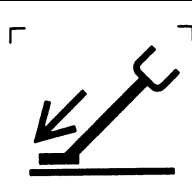
4.12 Microfiches of the symbols are available from the ISO/TC 145 Secretariat.

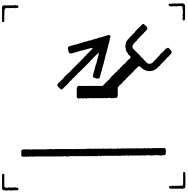
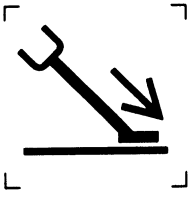
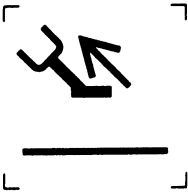
5 Colour

When used on illuminated displays, the following colours have the meanings indicated:

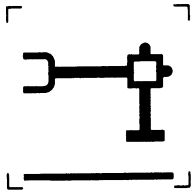
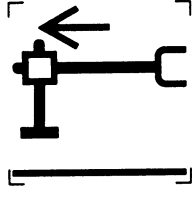
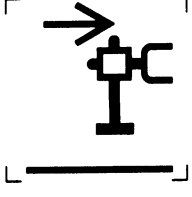
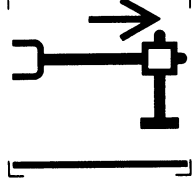
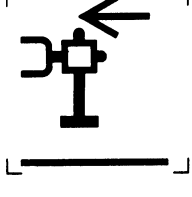
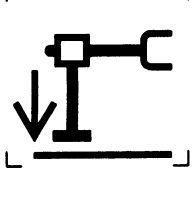
- red: failure or serious malfunction; requires immediate attention;
- yellow or amber: outside normal operating limits;
- green: normal operating condition.

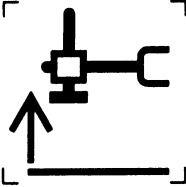
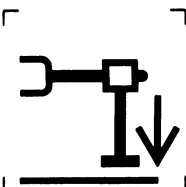
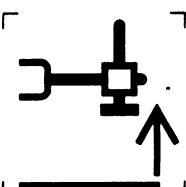
6 Stabilizer symbols

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
6.1		Stabilizer — Basic symbol	2072
6.2		Left stabilizer — Up	2073
6.3		Left stabilizer — Down	2074
6.4		Right stabilizer — Up	1292 second version
6.5		Right stabilizer — Down	1291 second version
6.6		Left stabilizer — Extend	2075

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
6.7		Left stabilizer — Retract	2076
6.8		Right stabilizer — Extend	1536 second version
6.9		Right stabilizer — Retract	1537 second version

7 Outrigger symbols

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
7.1		Outrigger — Basic symbol	2077
7.2		Outrigger — Left beam out — Horizontal extension only	2078
7.3		Outrigger — Left beam in — Horizontal retraction only	2079
7.4		Outrigger — Right beam out — Horizontal extension only	0746 second version
7.5		Outrigger — Right beam in — Horizontal retraction only	0747 second version
7.6		Outrigger — Left jack down — Vertical extension only	2080

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
7.7		Outrigger — Left jack up — Vertical retraction only	2081
7.8		Outrigger — Right jack down — Vertical extension only	0750 second version
7.9		Outrigger — Right jack up — Vertical retraction only	0751 second version