INTERNATIONAL STANDARD

**ISO
6405-2**

First edition
1993-12-15

Earth-moving machinery — Symbols for operator controls and other displays —

Part 2:
Specific symbols for machines, equipment and accessories

Engins de terrassement — Symboles pour les commandes de l'opérateur et autres indications —

Partie 2: Symboles spécifiques aux engins, équipements et accessoires

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 6405-2 was prepared by Technical Committee ISO/TC 127, *Earth-moving machinery*, Sub-Committee SC 3, *Operation and maintenance*.

This first edition of ISO 6405-2, together with ISO 6405-1 published in 1991, cancel and replace ISO 6405-1982, of which they constitute a technical revision.

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*

Earth-moving machinery — Symbols for operator controls and other displays —

Part 2:
Specific symbols for machines, equipment and accessories

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.

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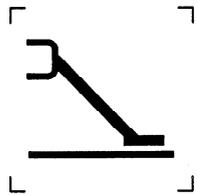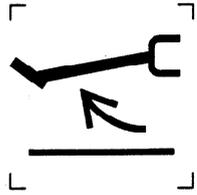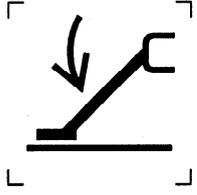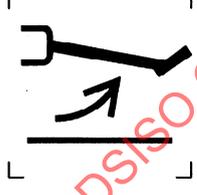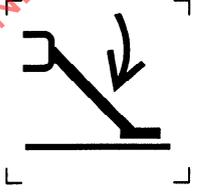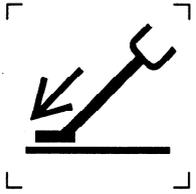
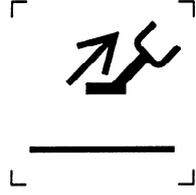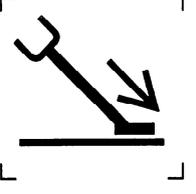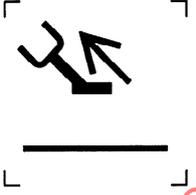**4.12** Microfiches of the symbols are available from the ISO/TC 145 Secretariat.

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;
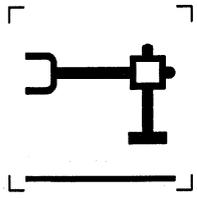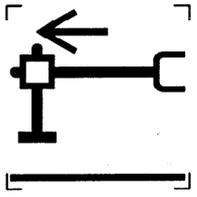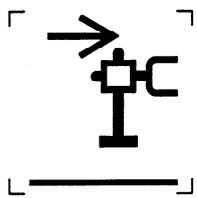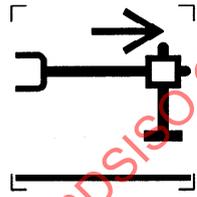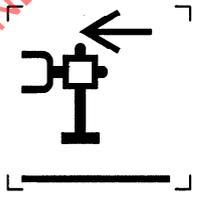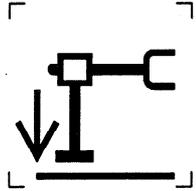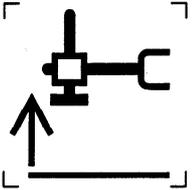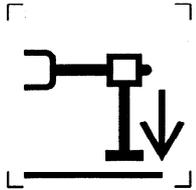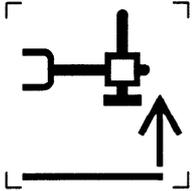
— green: normal operating condition.

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

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
6.6		Left stabilizer — Extend	2075
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

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
7.6		Outrigger — Left jack down — Vertical extension only	2080
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

8 Clamshell bucket symbols

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
8.1		Clamshell bucket — Basic symbol	1494
8.2		Clamshell bucket — Open	1495
8.3		Clamshell bucket — Close	1496
8.4		Clamshell bucket — Rotate	2082
8.5		Clamshell bucket — Rotate clockwise	1497
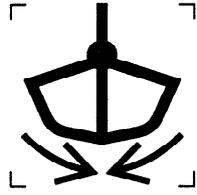
Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
8.6		Clamshell bucket — Rotate counter-clockwise	1498

9 Grapple symbols

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
9.1		Grapple — Basic symbol	1499
9.2		Grapple — Open	1500
9.3		Grapple — Close	1501
9.4		Grapple — Rotate	1502
9.5		Grapple — Rotate clockwise	2083

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
9.6		Grapple — Rotate counter-clockwise	2084

10 Dozer blade symbols

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
10.1		Blade — Basic symbol	1451
10.2		Blade — Raise	1452
10.3		Blade — Lower	1453
10.4		Blade — Hold	1454
10.5		Blade — Float	1455
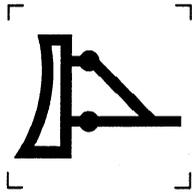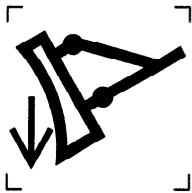
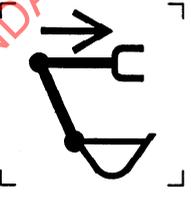| Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
10.6		Blade — Pitch forward	1461
10.7		Blade — Pitch rearward	1460
10.8		Blade — Tilt left	1457
10.9		Blade — Tilt right	1456
10.10		Blade — Angle left	1459
10.11		Blade — Angle right	1458
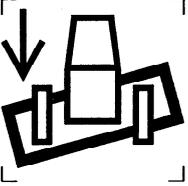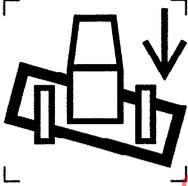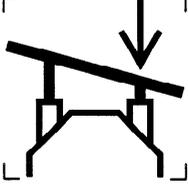
11 Grader equipment symbols
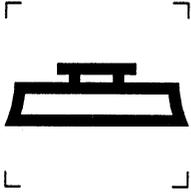
Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
11.1		Blade — Basic symbol	1503
11.2		Blade — Raise left side	1506
11.3		Blade — Lower left side	1507
11.4		Blade — Raise right side	1504
11.5		Blade — Lower right side	1505
11.6		Blade — Side shift left	1509
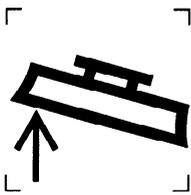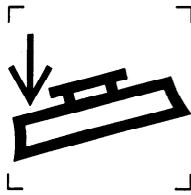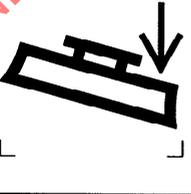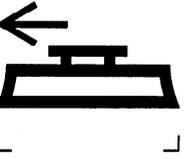
Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
11.7		Blade — Side shift right	1508
11.8		Blade — Raise whole blade	2085
11.9		Blade — Lower whole blade	2086
11.10		Blade circle — Rotate clockwise	1510
11.11		Blade circle — Rotate counter-clockwise	1511
11.12		Blade circle — Shift left	1513
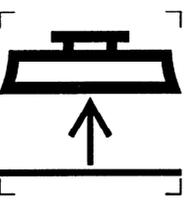
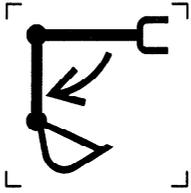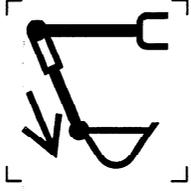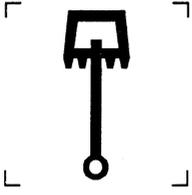| Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
11.13		Blade circle — Shift right	1512
11.14		Wheel lean — Lean left	1518
11.15		Wheel lean — Lean right	1517
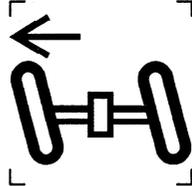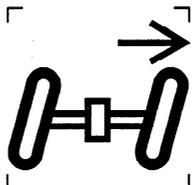
12   Scraper equipment symbols

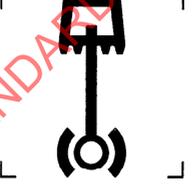| Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
12.1		Bowl — Basic symbol	1523
12.2		Bowl — Raise	1524
12.3		Bowl — Lower	1525
12.4		Bowl — Hold	1526
12.5		Apron — Basic symbol	2087
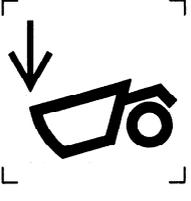
Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
12.6		Apron — Raise	1527
12.7		Apron — Lower	1528
12.8		Apron — Hold	1529
12.9		Apron — Float	1530
12.10		Ejector — Basic symbol	2088
12.11		Ejector — Eject	1531

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
12.12		Ejector — Return	1532
12.13		Ejector — Hold	1533
12.14		Elevator — Basic symbol	2089
12.15		Elevator — Load	1534
12.16		Elevator — Unload	1535
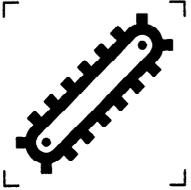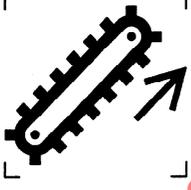
13 Excavator/backhoe equipment

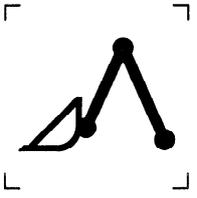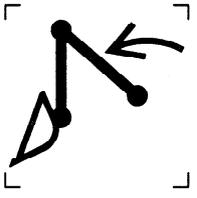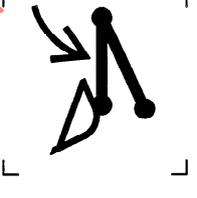| Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
13.1		Hoe equipment — Basic symbol	1468
13.2		Boom — Raise	1470
13.3		Boom — Lower	1469
13.4		Boom — Extend	1472
13.5		Boom — Retract	1471
13.6		Boom — Transport lock [May be used with On (5007) and Off (5008) or On/off (5010), or Engage (0022) and Disengage (0023) symbols.]	1486
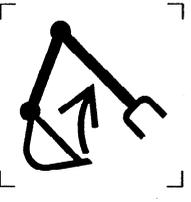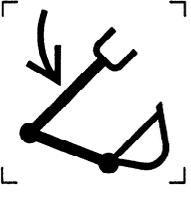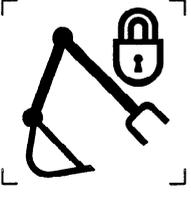
Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
13.7		Arm — Out	1474
13.8		Arm — In	1473
13.9		Arm — Extend	1475
13.10		Arm — Retract	1476
13.11		Bucket — Dump	1477
13.12		Bucket — Dig/rollback	1478

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
13.13		Boom swing — Basic symbol	2090
13.14		Boom swing — Swing left	1480
13.15		Boom swing — Swing right	1479
13.16		Boom swing — Swing lock [May be used with On (5007) and Off (5008) or On/off (5010), or Engage (0022) and Disengage (0023) symbols.]	1481
13.17		Boom swing — Swing brake [May be used with On (5007) and Off (5008) or On/off (5010), or Engage (0022) and Disengage (0023) symbols.]	1482
13.18		Boom side shift — Basic symbol	2091
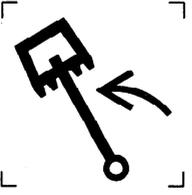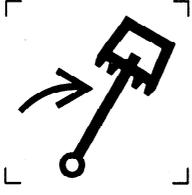
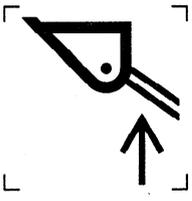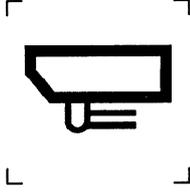| Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
13.19		Boom side shift — Shift left	1483
13.20		Boom side shift — Shift right	1484
13.21		Boom side shift — Shift lock [May be used with On (5007) and Off (5008) or On/off (5010), or Engage (0022) and Disengage (0023) symbols.]	1485
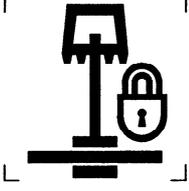
14 Excavator/shovel equipment

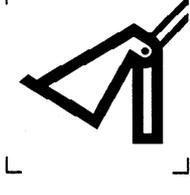| Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
14.1		Shovel equipment — Basic symbol	1487
14.2		Boom — Raise	1489
14.3		Boom — Lower	1488
14.4		Arm — Out	1490
14.5		Arm — In	1491

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
14.6		Bucket — Dump	1492
14.7		Bucket — Dig/rollback	1493
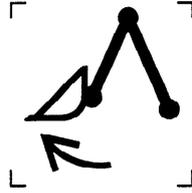
15   Loader bucket symbols

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
15.1		Bucket — Basic symbol	1437
15.2		Bucket — Raise	1438
15.3		Bucket — Lower	1439
15.4		Bucket — Hold	1440
15.5		Bucket — Float	1441
15.6		Bucket — Dump	1442
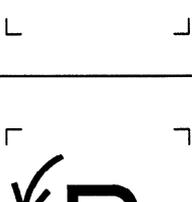
Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
15.7		Bucket — Rollback	1443
15.8		Side-dump bucket — Basic symbol	2092
15.9		Side-dump bucket — Dump	1449
15.10		Side-dump bucket — Return	1450
15.11		Side-dump bucket — Hold	2093
15.12		Multi-purpose bucket — Basic symbol	1445
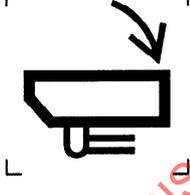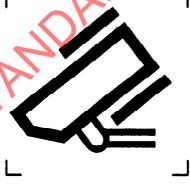
Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
15.13		Multi-purpose bucket — Open	1446
15.14		Multi-purpose bucket — Close	1447
15.15		Multi-purpose bucket — Hold	1448
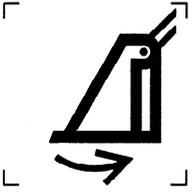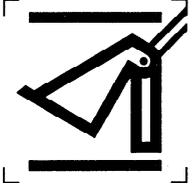
16 Dumper body symbols

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
16.1		Dumper body — Basic symbol	2094
16.2		Dumper body — Raise	1519
16.3		Dumper body — Lower	1520
16.4		Dumper body — Hold	1521
16.5		Dumper body — Float	1522
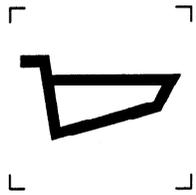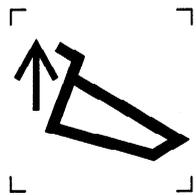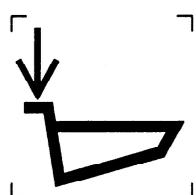
17 Ripper symbols

Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
17.1		Ripper — Basic symbol	1462
17.2		Ripper — Raise	1463
17.3		Ripper — Lower	1464
17.4		Ripper — Hold	1465
17.5		Ripper — Pitch out	1467
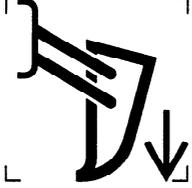
Symbol number	Symbol form/shape	Symbol description/application	ISO/IEC registration number
17.6		Ripper — Pitch in	1466