INTERNATIONAL STANDARD

ISO 80416-2

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Basic principles for graphical symbols for use on equipment —

Part 2: Form and use of arrows

Principes de base pour les symboles graphiques utilisables sur le matériel —
Partie 2: Forme et utilisation des flèches

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 3.

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.

Attention is drawn to the possibility that some of the elements of ISO 80416-2 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

In order to collect all requirements concerning basic principles for graphical symbols for use on equipment, ISO/TC 145, *Graphical symbols*, and IEC/TC 3, *Documentation and graphical symbols*, agreed to prepare jointly all parts of this International Standard and to publish them under the general number 80416. For each of the individual parts of this series, only one of the two organizations is responsible. Meanwhile, the technical committees have agreed that no modification will be made to International Standard 80416 except by mutual agreement.

International Standard ISO 80416-2 was accordingly prepared jointly by Technical Committee ISO/TC 145, *Graphical symbols*, and Technical Committee IEC/TC 3, *Documentation and graphical symbols*. The draft was circulated for voting to the national bodies of both ISO and IEC.

This first edition of ISO 80416-2 cancels and replaces ISO 4196. It provides guidelines which are equally applicable to graphical symbols prepared within ISO and IEC.

International Standard 80416 consists of the following parts, under the general title *Basic principles for graphical symbols for use on equipment*:

— *Part 1: Creation of symbol originals* (published by IEC)

— *Part 2: Form and use of arrows* (published by ISO)

— *Part 3: Guidelines for the application of graphical symbols* (published by IEC)

Annex A forms a normative part of ISO 80416-2.

Introduction

A graphical symbol is a visually perceptible figure used to transmit information independently of language. Graphical symbols are used on equipment for a wide range of purposes. For such symbols, consistency in the design of families of symbols used in one location or on similar equipment is an important issue, as is legibility when these symbols are reduced to small dimensions. Thus, there is a need to standardize the principles for creating graphical symbols for use on equipment in order to ensure visual clarity, to maintain consistency and thereby to improve recognition.

This International Standard addresses the basic rules used to create graphical symbols for use on equipment, including line widths, form and use of arrows, negation elements, and use of the basic pattern which serves as a guideline for drawing equipment symbols. These design principles should be used for all graphical symbols for use on equipment, the standardized graphical symbols of which are found in ISO 7000 and IEC 60417.

ISO 80416-2 has been produced to promote the use of a reduced number of arrow forms as symbol elements or graphical symbols.

Basic principles for graphical symbols for use on equipment —

Part 2:
Form and use of arrows

1 Scope

ISO 80416-2 lays down the basic principles and the proportions for arrows used to indicate various elements, forces, functions or dimensions. The arrows defined in ISO 80416-2 are used as graphical symbols or graphical symbol elements.

When new symbol originals are created or graphical symbols in current use are revised, the principles established in ISO 80416-2 are applicable.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of ISO 80416-2. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on ISO 80416-2 are encouraged to investigate the possibility of applying the most recent edition of the normative document indicated below. For undated references, the latest edition of the normative document referred to applies. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 80416-1:2001, *Basic principles for graphical symbols for use on equipment — Part 1: Creation of symbol originals*.

3 General principle

Symbol originals containing arrows shall be created in accordance with IEC 80416-1.

The head of the arrow is used to indicate the point where a force or dimension applies, or to indicate the direction of a physical movement or functional movement.

4 Definitions of arrow forms and specific meaning

4.1 Basic arrow form

The basic arrow form as specified in Figure 1 shall be used to indicate any meaning which involves a movement, whether physical, functional or otherwise.

IEC 60417-5022: Movement in one direction

Figure 1 — Basic arrow form

4.2 Form of arrows and specification

The arrow forms shown in Table 1 may be used as an alternative to the basic arrow form in order to give special emphasis or to distinguish between two or more meanings.

The use of arrow forms is specified in annex A.

Table 1 — Form of arrows and specification

Forms	Representation	Angle of the arrow head	Meaning
Type 1	 IEC 60417-5022: Movement in one direction	60°	Movement
Type 2	 IEC 60417-5107A: Normal run; normal speed	60°	Speed
	 IEC 60417-5107B: Normal run; normal speed	40°	
Type 3	 ISO 7000-0251: Functional arrow	84°	Function and force
Type 4	 ISO 7000-0439: Dimensional arrow	90°	Dimension
NOTE The arrow with the Belgian head is reserved exclusively for use in the field of public information and safety as in ISO 7001.			

Annex A
(normative)

Use of arrow forms

A.1 Movement

A.1.1 Direction of movement

Direction of movements should be specified based on the basic arrow form as shown in Table A.1.

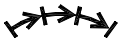
Table A.1 — Direction of movement

<table>
<tr><th>Type of movement</th><th colspan="4">Examples of use</th></tr>
<tr><td>Linear</td><td> 
Up or forward</td><td> 
Down or backward</td><td> 
Diagonal</td><td> 
Left
 
Right (IEC 60417-5022: Movement in one direction)</td></tr>
<tr><td>Rotational, partial</td><td colspan="2"> 
Clockwise (ISO 7000-0004A: Direction of continuous rotation)</td><td colspan="2"> 
Anticlockwise [ISO 7000-0004B: Direction of continuous rotation (rotated)]</td></tr>
<tr><td>Rotational, full circle</td><td colspan="2"> 
Clockwise (ISO 7000-0258: Revolutions)</td><td colspan="2"> 
Anticlockwise (ISO 7000-0937: Revolution, left)</td></tr>
<tr><td rowspan="2">Turn; U-turn</td><td colspan="2"> 
Left turn [ISO 7000-0927B: Turn right (rotated)]</td><td colspan="2"> 
Right turn (ISO 7000-0927A: Turn right)</td></tr>
<tr><td colspan="2"> 
U-turn left [ISO 7000-0924A: Movement with return to the counter direction (U-turn)]</td><td colspan="2"> 
U-turn right [ISO 7000-0924B: Movement with return to the counter direction (U-turn) (rotated)]</td></tr>
<tr><td>Helical</td><td colspan="2"> 
Helical left [ISO 7000-0951B: Helical movement (rotated)]</td><td colspan="2"> 
Helical right (ISO 7000-0951A: Helical movement)</td></tr>
<tr><td>Flow of material or work</td><td colspan="4"> 
Material to be shown as a line of double thickness continuous through the arrow head [ISO 7000-0953B: Direction of material; direction of propagation (rotated)]</td></tr>
</table>

A.1.2 Nature of movement

Nature of movements should be specified based on the basic arrow form as shown in Table A.2.

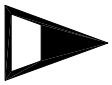
Table A.2 — Nature of movement

Nature of movement	Examples of use	
Continuous	 Linear (IEC 60417-5022: Movement in one direction)	 Rotational (ISO 7000-0258: Revolutions)
Interrupted	 Linear (ISO 7000-0252: Interrupted rectilinear motion)	 Rotational (ISO 7000-0431: Interrupted rotation)
Limited	 Linear (ISO 7000-0001: Limited linear motion)	 Rotational one revolution (ISO 7000-0009: One revolution)
Repeated positioning	 Linear (ISO 7000-0254: Rectilinear repeated positioning)	 Rotational (ISO 7000-0436: Rotary repeated positioning)
Override a limiting stop	 (ISO 7000-0936: Movement in arrow direction with skip of a stop)	

A.2 Speed and acceleration

Table A.3 shows some examples to specify speed and acceleration using the arrow forms specified in Table 1.

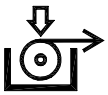
Table A.3 — Speed and acceleration

Indication	Examples of use	
Normal speed	 IEC 60417-5107A: Normal run; normal speed	 IEC 60417-5107B: Normal run; normal speed
Fast speed	 IEC 60417-5108A: Fast run; fast speed	 IEC 60417-5108B: Fast run; fast speed
Slow speed	 IEC 60417-5124A: Slow run; slow speed	 IEC 60417-5124B: Slow run; slow speed
Acceleration	 ISO 7000-0945: Acceleration (*rotated*)	Not applicable
Deceleration	 ISO 7000-0946: Retardation (*rotated*)	Not applicable

A.3 Special meaning of function and force

Table A.4 shows some examples using the arrow forms specified in Table 1.

Table A.4 — Special meaning of function and force

Indication	Examples of use
Function	 ISO 7000-0719: Add roll paper
Force	 ISO 7000-1701: Pressure