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**Graphical symbols for diagrams —  
Part 13:  
Devices for material processing**

*Symboles graphiques pour schémas —*

*Partie 13: Dispositifs de transformation des matériaux*

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ISO 14617-13:2004

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Published in Switzerland

## 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 2.

The main task of technical committees is to prepare International Standards. 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 this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14617-13 was prepared by Technical Committee ISO/TC 10, *Technical product documentation*, Subcommittee SC 10, *Process plant documentation and tpd-symbols*.

ISO 14617 consists of the following parts, under the general title *Graphical symbols for diagrams*:

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- *Part 1: General information and indexes*
  - *Part 2: Symbols having general application* ISO 14617-13:2004  
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  - *Part 3: Connections and related devices*
  - *Part 4: Actuators and related devices*
  - *Part 5: Measurement and control devices*
  - *Part 6: Measurement and control functions*
  - *Part 7: Basic mechanical components*
  - *Part 8: Valves and dampers*
  - *Part 9: Pumps, compressors and fans*
  - *Part 10: Fluid power converters*
  - *Part 11: Devices for heat transfer and heat engines*
  - *Part 12: Devices for separating, purification and mixing*
  - *Part 13: Devices for material processing*
  - *Part 14: Devices for transport and handling of material*
  - *Part 15: Installation diagrams and network maps*

## Introduction

The purpose of ISO 14617 in its final form is the creation of a library of harmonized graphical symbols for diagrams used in technical applications. This work has been, and will be, performed in close co-operation between ISO and IEC. The ultimate result is intended to be published as a standard common to ISO and IEC, which their technical committees responsible for specific application fields can use in preparing International Standards and manuals.

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# Graphical symbols for diagrams —

## Part 13: Devices for material processing

### 1 Scope

This part of ISO 14617 specifies graphical symbols in diagrams for casting machines and machine tools.

For the fundamental rules of creation and application of graphical symbols in diagrams, see ISO 81714-1.

For an overview of ISO 14617, information on the creation and use of registration numbers for identifying graphical symbols used in diagrams, rules for the presentation and application of these symbols, and examples of their use and application, see ISO 14617-1.

### 2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 14617-1:2002, *Graphical symbols for diagrams — Part 1: General information and index*

ISO 81714-1:1999, *Design of graphical symbols for use in the technical documentation of products — Part 1: Basic rules*

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

**NOTE** The list has been restricted to terms whose meaning is not obvious and which have not been defined elsewhere in an International Standard, or which have been defined in various ways in different standards. In preparing these definitions, ISO and IEC standards on terminology have been consulted; see the references in parentheses. However, most of the definitions in those standards were prepared by different technical committees within a restricted scope. This means that many terms so defined have to be given more general or neutral definitions when applied in the context of graphical symbols.

#### 3.1

##### **complex device**

device consisting of several functionally interrelated components or elements, the description of which needs a diagram

#### 3.2


##### **functional unit**

constructional assembly containing functionally interrelated components or devices

[IEC 60050-441]

## 4 Casting machines and machine tools













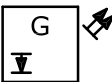
### 4.1 Symbols of basic nature

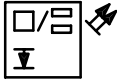















4.1.1	101		Complex device, functional unit, equipment See R101 (2-4.2.1).
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### 4.2 Application rules for the symbol in 4.1

None.

### 4.3 Symbols giving supplementary information

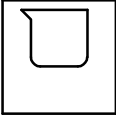
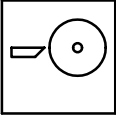
4.3.1	2801		Casting or moulding
4.3.2	2802		Material forming by forging
4.3.3	2803		Material forming by pressing
4.3.4	2804		Material forming by bending or folding
4.3.5	2805		Material forming by rolling
4.3.6	2806		Material forming by extruding or pultruding
4.3.7	2807		Heat treatment, for example, annealing or tempering
4.3.8	2808		Size reduction by crushing, breaking, or pulverization
4.3.9	2809		Size enlarging by sintering, agglomeration, coagulation, or flocculation
4.3.10	2810		Dividing material
4.3.11	2811		Dividing by sawing
4.3.12	2812		Dividing by shearing
4.3.13	CEI		Laser generator

4.3.14	2814		Dividing by laser beam
4.3.15	2815		Boring, drilling
4.3.16	2816		Reaming
4.3.17	2817		Planing
4.3.18	2818		Broaching
4.3.19	2819		Tapping
4.3.20	2820		Threading, for example, machining or thread rolling
4.3.21	2821		Milling
4.3.22	2822		Turning
4.3.23	2823		Joining, for example, by riveting, gluing, welding, brazing or soldering
4.3.24	2824		Surface treatment by removal of material, for example, by grinding, honing, polishing, or sanding
4.3.25	2825		Surface treatment without removal of material, for example, by rolling or shot peening
4.3.26	2826		Calendering
4.3.27	2827		Coating, for example, painting
4.3.28	2828		Sealing, for example, by caulking
4.3.29	2829		Complex function, multi-function, for example, multi-processing

#### 4.4 Application rules for the symbols in 4.3

None.

#### 4.5 Application examples

4.5.1	X2801	 101, 2801	Casting machine
4.5.2	X2802	 101, 2822	Lathe

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## Bibliography

- [1] IEC 60050-441, *International Electrotechnical Vocabulary — Switchgear, controlgear and fuses*

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