
**Technical drawings — General principles
of presentation —**

**Part 1:
Introduction and index**

*Dessins techniques — Principes généraux de représentation —
Partie 1: Introduction et index*
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ISO 128-1:2003

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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 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 128-1 was prepared by Technical Committee ISO/TC 10, *Technical product documentation*, Subcommittee SC 1, *Basic conventions*.

ISO 128 consists of the following parts, under the general title *Technical drawings — General principles of presentation*:

- *Part 1: Introduction and index*
- *Part 20: Basic conventions for lines*
- *Part 21: Preparation of lines by CAD systems*
- *Part 22: Basic conventions and applications for leader lines and reference lines*
- *Part 23: Lines on construction drawings*
- *Part 24: Lines on mechanical engineering drawings*
- *Part 25: Lines on shipbuilding drawings*
- *Part 30: Basic conventions for views*
- *Part 34: Views on mechanical engineering drawings*
- *Part 40: Basic conventions for cuts and sections*
- *Part 44: Sections on mechanical engineering drawings*
- *Part 50: Basic conventions for representing areas on cuts and sections*

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Technical drawings — General principles of presentation —

Part 1: Introduction and index

1 Scope

This part of ISO 128 gives general rules for the execution of technical drawings, as well as presenting the structure of, and an index for, the other parts of ISO 128. In all, ISO 128 specifies the graphical representation of objects on technical drawings with the aim of facilitating the international exchange of information on drawings and ensuring their uniformity in a comprehensive system relating to several technical functions. This part of ISO 128 is applicable to all kinds of technical drawings, including, for example, those used in mechanical engineering and construction (architectural, civil engineering, shipbuilding, etc.). It is applicable to both manual and computer-based drawings. It is not applicable to three-dimensional CAD models.

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2 Normative references

[ISO 128-1:2003](https://standards.iteh.ai/catalog/standards/sis/7af3a5d1-6713-45d1-85a7-9b1192704666/iso-128-1-2003)

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 31-1, *Quantities and units — Part 1: Space and time*

ISO 129 (all parts), *Technical drawings — Indication of dimensions and tolerances*

ISO 286-1, *ISO system of limits and fits — Part 1: Bases of tolerances, deviations and fits*

ISO 1000, *SI units and recommendations for the use of their multiples and of certain other units*

ISO 1101¹⁾, *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Tolerances of form, orientation, location and run-out*

ISO 1302, *Geometrical Product Specifications (GPS) — Indication of surface texture in technical product documentation*

ISO 2553, *Welded, brazed and soldered joints — Symbolic representation on drawings*

ISO 2692²⁾, *Technical drawings — Geometrical tolerancing — Maximum material principle*

ISO 2768-1, *General tolerances — Part 1: Tolerances for linear and angular dimensions without individual tolerance indications*

1) To be published. (Revision of ISO 1101:1983)

2) To be published. (Revision of ISO 2692:1988)

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ISO 2768-2, *General tolerances — Part 2: Geometrical tolerances for features without individual tolerance indications*

ISO 3040, *Technical drawings — Dimensioning and tolerancing — Cones*

ISO 3098-0, *Technical product documentation — Lettering — Part 0: General requirements*

ISO 5455, *Technical drawings — Scales*

ISO 5457, *Technical product documentation — Sizes and layout of drawing sheets*

ISO 5458, *Geometrical Product Specifications (GPS) — Geometrical tolerancing — Positional tolerancing*

ISO 5459, *Technical drawings — Geometrical tolerancing — Datums and datum-systems for geometrical tolerances*

ISO 6284, *Construction drawings — Indication of limit deviations*

ISO 6428, *Technical drawings — Requirements for microcopying*

ISO 6433, *Technical drawings — Item references*

ISO 7083, *Technical drawings — Symbols for geometrical tolerancing — Proportions and dimensions*

ISO 7200³⁾, *Technical drawings — Title blocks*

ISO 7573:1983, *Technical drawings — Item lists*

ISO 8015, *Technical drawings — Fundamental tolerancing principle*

ISO 8560, *Technical drawings — Construction drawings — Representation of modular sizes, lines and grids*

ISO 8785, *Geometrical Product Specification (GPS) — Surface imperfections — Terms, definitions and parameters*

ISO 9431, *Construction drawings — Spaces for drawing and for text, and title blocks on drawing sheets*

ISO 10135, *Technical drawings — Simplified representation of moulded, cast and forged parts*

ISO 10209-1, *Technical product documentation — Vocabulary — Part 1: Terms relating to technical drawings: General and types of drawings*

ISO 11091, *Construction drawings — Landscape drawing practice*

ISO 13715, *Technical drawings — Edges of undefined shape — Vocabulary and indications*

ISO 15785, *Technical drawings — Symbolic presentation and indication of adhesive, fold and pressed joint*

ISO 15787, *Technical product documentation — Heat-treated ferrous parts — Presentation and indications*

ISO 16016, *Technical product documentation — Protection notices for restricting the use of documents and products*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 10209-1 apply.

3) To be published. (Revision of ISO 7200:1984)

4 Arrangement of the ISO 128 series

The various parts of ISO 128 cover specific subjects. See

- the parts up to ISO 128-19 for basics,
- ISO 128-20 to 128-29 for lines,
- ISO 128-30 to 128-39 for views,
- ISO 128-40 to 128-49 for sections,
- ISO 128-50 to 128-59 for the representation of areas on sections, and
- ISO 128-60 to 128-69 for additional conventions.

Within these subject groupings, parts consist of requirements and applications for the different industrial branches — a concept allowing the integration of future developments. A matrix of the structure of ISO 128 (excluding this part of ISO 128) is given in Table 1. Only those parts existent at the time of publication of this part of ISO 128 are indicated by their numbers.

Table 1 — Matrix of structure of ISO 128 (numbers refer to part numbers)

Subject	Application				
	Basic conventions	Special applications	Construction	Mechanical engineering	Shipbuilding
Lines	20	21, 22	23	24	25
Views	30	—	30	34	—
Cuts and sections	40	—	—	44	—
Areas on section	50	—	50	50	50

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5 Fundamental requirements

Technical drawings are a specific type of communication. Technical drawings shall comply with the following principles.

- a) **Unambiguous and clear.** For any feature of a drawing, there shall be only one interpretation. It should be easy to understand for each involved person.
- b) **Complete.** A technical drawing shows the end condition of the represented object for a specific function. The content shall be complete to serve this function, for example, for the manufacture of a part and the verification of its specifications. Only indicated requirements on the drawing or in the related documentation are manufactured or verified.
- c) **To scale.** The outlines and details of a representation should be proportional to the represented part. (For scales, see ISO 5455.) Nevertheless, values for the dimensions of an object shall not be determined or scaled directly from the drawing.
- d) **Appropriate for duplication and copying.** To provide a high quality product when plotting, copying or microcopying and reproducing, these shall be done in accordance with ISO 6428.
- e) **Language independent.** It is preferable that drawings be language independent. Words should be used only within the title block or where it is impracticable to present information graphically.
- f) **In accordance with standards.** The applied International Standard shall be specified on the drawing in accordance with that standard. Additional related documents necessary for the interpretation of the drawing shall be specified.

Assembly drawings shall have an associated item list in accordance with ISO 7573, which may be included on the drawing itself or presented as a separate document. The release procedures for a drawing and any changes on released drawings shall be clearly documented.

6 Basic entities of technical drawings

6.1 General

A technical drawing may consist of the following elements:

- drawing sheet layout in accordance with ISO 5457;
- title block in accordance with ISO 7200 for mechanical engineering drawings or ISO 9431 for construction drawings;
- representation of the object(s) in accordance with the ISO 128 series;
- dimensioning in accordance with the ISO 129 series;
- lettering in accordance with ISO 3098-0;
- item references in accordance with ISO 6433;
- quantities, units and symbols in accordance with ISO 31-1 and ISO 1000;
- protection notice in accordance with ISO 16016.

6.2 Mechanical engineering

The geometrical specifications shall be in accordance with the rules of inherent standards as per the GPS matrix model (see ISO/TR 14638), including

- ISO 286-1 and ISO 8015 for the indication of linear dimensioning and tolerancing,
- ISO 1101, ISO 2692, ISO 5458 and ISO 7083 for the indication of geometrical dimensioning and tolerancing,
- ISO 1302 and ISO 8785 for the indication of surface texture and surface imperfections,
- ISO 3040 for the indication of cones, and
- ISO 5459 for the indication of datums and datum systems.

6.3 Construction engineering

The geometrical specifications shall be in accordance with the rules of inherent standards such as

- ISO 6284 for the indication of limit deviations,
- ISO 8560 for the indication of modular sizes, lines and grids, and
- ISO 11091 for landscape drawing practice.

6.4 Materials and processes

The geometrical specifications shall be in accordance with the rules of inherent standards applicable in different branches, such as

- ISO 2553 for the indication of welded, brazed and soldered joints,
- ISO 2768 for the indication of general tolerances for machined products,
- ISO 10135 for the indication of moulded products,
- ISO 13715 for the indication and tolerancing of edges,

- ISO 15785 for the indication of adhesive, fold and pressed joints, and
- ISO 15787 for the indication of heat treatment.

7 Using ISO 128

EXAMPLE For the execution of mechanical engineering drawings, the following parts of ISO 128 would be used:

- ISO 128-20 and ISO 128-24 for the types of lines to be used to express specific characteristics;
- ISO 128-30 and ISO 128-34 for the manner in which views on an object are arranged and for special rules or simplifications useful in drafting;
- ISO 128-40 and ISO 128-44 for the manner in which cuts and sections are to be made;
- ISO 128-50 for rules for the representation of areas on cuts and sections.

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