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Tehnična dokumentacija izdelkov - Splošna načela prikazovanja - 3. del: Pogledi, prerezi in odrezi (ISO/DIS 128-3:2019)

Technical product documentation - General principles of representation - Part 3: Views, sections and cuts (ISO/DIS 128-3:2019)

Technische Produktdokumentation (TPD) - Allgemeine Grundlagen der Darstellung - Teil 3: Ansichten, Schnitte und Schnittansichten (ISO/DIS 128-3:2019)

Documentation technique de produits (TPD) - Principes généraux de représentation - Partie 3: Vues, sections et coupes (ISO/DIS 128-3:2019)

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Technical product documentation — General principles of representation —

Part 3: Views, sections and cuts

*Documentation technique de produits (TPD) — Principes généraux de représentation —
Partie 3: Vues, sections et coupes*

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is Technical Committee ISO/TC 10, *Technical product documentation*.

This standard combines 6 related former ISO standard parts into a new standard (ISO 128-3).

ISO 128-3 under the general title: General principles of representation Part 3: Views, Sections and Cuts, consists of the following former ISO 128 parts:

- Former Part 30: Basic conventions for views
- Former Part 40: Basic conventions for cuts and sections
- Former Part 50: Basic conventions for representing areas on cuts and sections

ISO 128- 3 —Annex A: consists of:

- Former ISO 128 Part 30: Basic conventions for views – Annex A - Graphic symbols
- Former ISO 128 Part 40: Basic conventions for cuts and sections - Annex A - Graphic symbols

ISO 128- 3 —Annex B: consists of

- Former practices from former ISO 128-30 and ISO 128-40

ISO 128- 3 —Annex C: consists of:

- Former ISO 128 Part 34: Views on mechanical engineering drawings

ISO 128- 3 —Annex D: consists of:

- Former ISO 128 Part 44: Sections on mechanical engineering drawings

ISO 128- 3 —Annex E: consists of:

- Former ISO 128 Part 43: Projection methods in building drawings

ISO 128- 3 —Annex F: consists of:

- Former ISO 128-33: Construction drawings – Representations of views, sections and cuts

A list of all parts in the ISO 128 series can be found on the ISO website.

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ISO 128-3:2019(E)**Introduction**

ISO 128-3 contains generally applicable rules for the presentation of views, sections and cuts in all kinds of technical product documentation. The first angle projection method (formerly referred to as method E) and the third angle projection method (formerly referred to as method A) are described in more detail in ISO 5456-2

The application of views, sections and cuts within drawings of special technical fields varies considerably. Therefore, rules of application specific to technical fields are given in annex A, B and C of ISO 128-3.

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Technical product documentation — General principles of presentation — Part 3: Views, sections and cuts

1 Scope

This part of ISO 128 specifies the general principles for presenting views, cuts and sections applicable to various kinds of technical drawings (mechanical, electrical, architectural, civil engineering, etc.), following the orthographic projection methods specified in ISO 5456-2. Views and sections for shipbuilding technical drawings are discussed in ISO 128-15. Views and sections for 3D models are discussed in ISO 16792.

For the purpose of this International Standard the term “technical drawing” shall be interpreted in the broadest possible sense encompassing the total package of documentation specifying the product (workpiece, subassembly, assembly).

Attention has also been given in this part of ISO 128 to the requirements of reproduction, including microcopying in accordance with ISO 6428.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 128-2, *Technical drawings — General principles of presentation — Part 2: Basic conventions for lines*

ISO 129-1, *Technical drawings — Indication of dimensions and tolerances — Part 1: General requirements*.

ISO 3098-1, *Technical product documentation — Lettering — Part 1: General requirements*

ISO 5456-2, *Technical drawings — Projection methods — Part 2: Orthographic representations*

ISO 6428, *Technical drawings — Requirements for microcopying*

ISO 10209, *Technical product documentation — Vocabulary — Terms relating to technical drawings, product definition and related documentation*

ISO 81714-1, *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 terms and definitions given in ISO 10209 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1

cut

sectional view

section showing, in addition, outlines beyond the cutting plane

[SOURCE: ISO 10209:2012, 3.11]

Note 1 to entry: The usage of the terms “cut” and “section” differs between the mechanical engineering and construction fields. While “cut” is generally used in the construction field, “section” is generally used in the mechanical engineering field, regardless of the definitions in 3.1 or 3.2.

3.2

section

representation showing only the outlines of an object lying in one or more cutting planes

[SOURCE: ISO 10209:2012, 3.61]

Note 1 to entry: The usage of the terms “cut” and “section” differs between the mechanical engineering and construction fields. While “cut” is generally used in the construction field, “section” is generally used in the mechanical engineering field, regardless of the definitions in 3.1 or 3.2.

3.3

technical drawing

drawing showing a technical installation, process, or product with a view to clarifying their structure and to enable for their construction

[SOURCE: ISO 5127:2017, 3.4.7.54]

Note 1 to entry: For the purpose of this International Standard, the term “technical drawing” shall be interpreted in the broadest possible sense, encompassing the total package of documentation specifying the product (work piece, subassembly, assembly).

4 Basic conventions for views

4.1 General information on views

The most informative view of an object shall be used as the front or principal figure, taking into consideration, for example, its functioning position, position of manufacturing or mounting.

Each view, with the exception of the front or principal figure (view, plan, principal figure), shall be given clear identification with a capital letter, repeated near the reference arrow needed to indicate the direction of viewing for the relevant view. Whatever the direction of viewing, the capital letter shall always be positioned in normal relation to the direction of reading and be indicated either above or on the right side of the reference arrow.

The reference arrow is defined in Annex A (for the former practice of arc arrow, see Annex B), as is the lettering height of the identification.

The designated views may be located irrespective of the principal figure. The capital letters identifying the referenced views shall be placed immediately above the relevant views (see Figure 1).

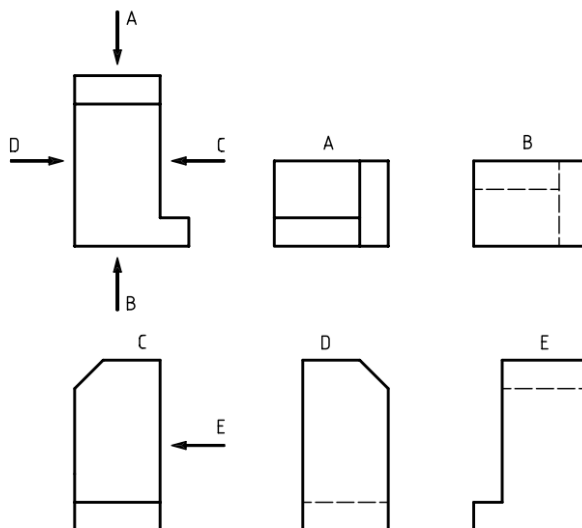


Figure 1 — Identification of referenced views

4.2 Choice of views

When views (including cuts and sections) are needed, these shall be selected according to the following principles:

- limit the number of views (and cuts and sections) to the minimum necessary but sufficient to fully delineate the object without ambiguity;
- avoid the need for hidden outlines and edges;
- avoid unnecessary repetition of a detail.

Views and sections for 3D models are given in ISO 16792.

4.3 Partial views

Features needing specific illustration, but not meriting a full view, may be illustrated using a partial view limited by a continuous narrow line with zigzags of type 01.1.19 according to ISO 128-2 (see Figure 2).

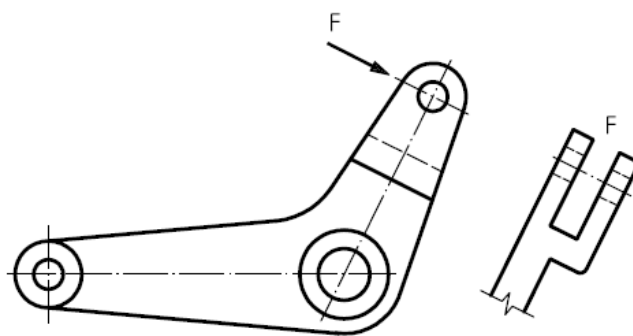


Figure 2 — Partial view

4.4 Simplified view of symmetrical parts

To save time and space, symmetrical objects may be drawn as a fraction of the whole [see Figure 3 a), b) and c)].

The line of symmetry is identified at each of its ends by two narrow short parallel lines drawn at right angles to it [see Figure 3 a), b) and c)]. The graphical symbol for symmetry shall be drawn in accordance with clause A.3 in Annex A.

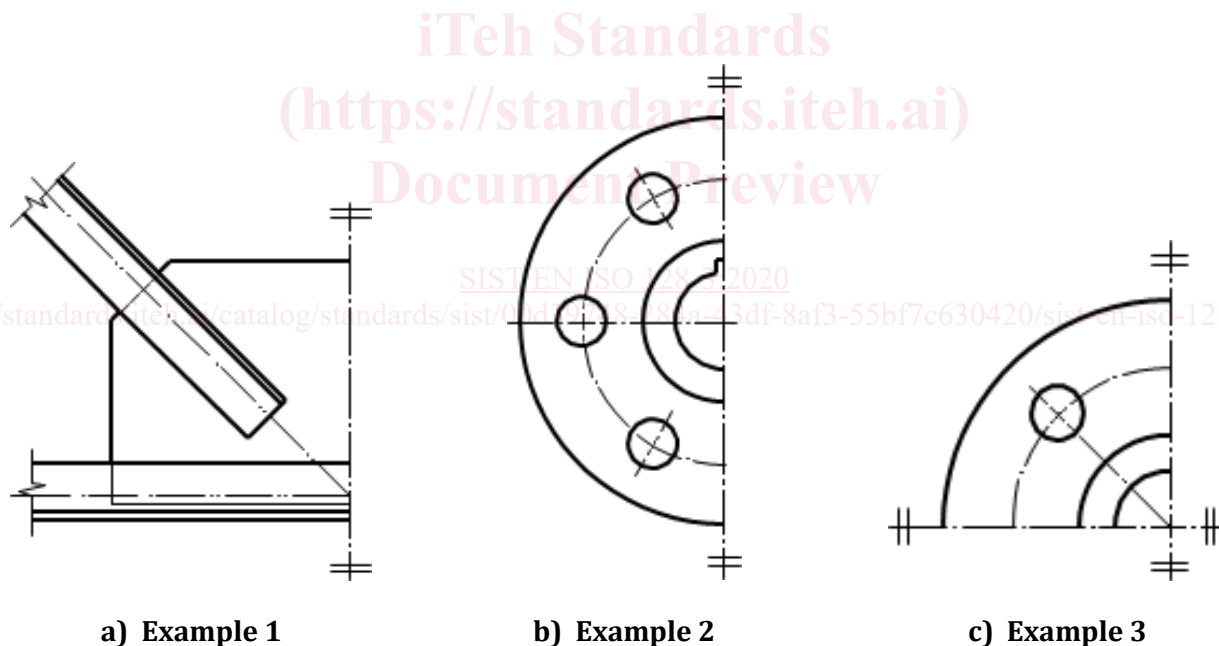


Figure 3 — Simplified view of symmetrical parts

4.5 First angle projection method

The first angle projection method is to be regarded as a requirement of this part of ISO 128. A more detailed description of the first angle projection method is to be found in ISO 5456-2.

4.6 First angle projection method views

With reference to the front view, (a), the other views are arranged as follows (see Figure 6):

- the view from above, (b), is placed underneath;
- the view from below, (e), is placed above;
- the view from the left, (c), is placed on the right;
- the view from the right, (d), is placed on the left;
- the view from the rear, (f), may be placed on the left or right, as convenient.

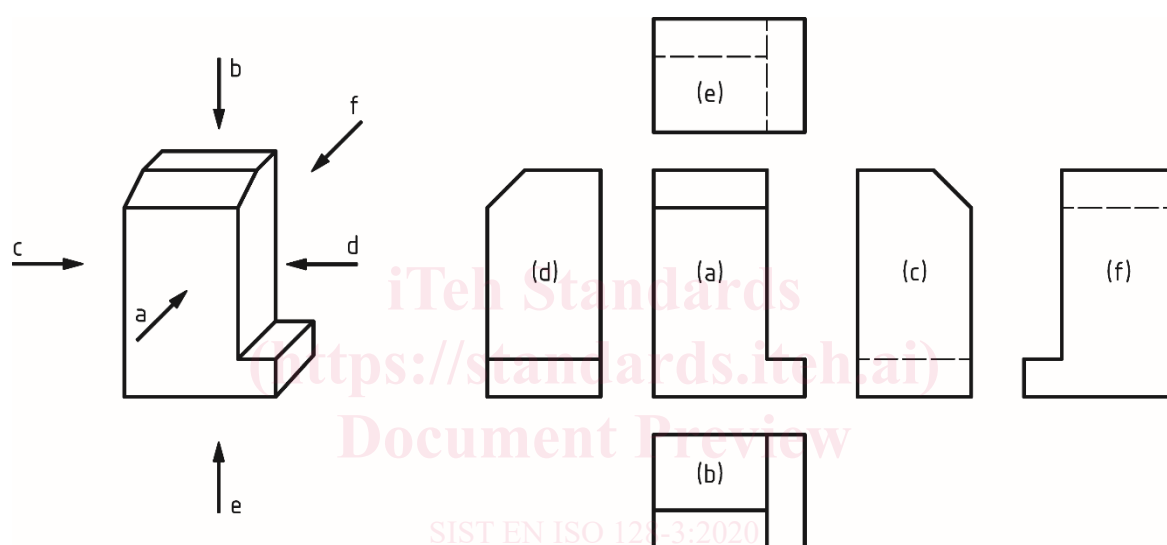


Figure 4 — First angle projection method

4.7 First angle projection graphical symbol

The graphical symbol for the first angle projection method is shown in Figure 5. The proportions and dimensions of this graphical symbol are specified in ISO 5456-2.

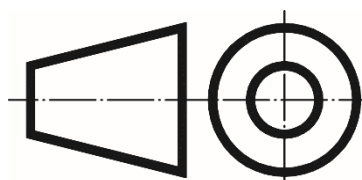


Figure 5 — First angle projection graphical symbol

4.8 Third angle projection method

The third angle projection method is to be regarded as a requirement of this part of ISO 128. A more detailed description of the third angle projection method is to be found in ISO 5456-2.

4.9 Third angle projection method views

With reference to the front view, (a), the other views are arranged as follows (see Figure 6):

- the view from above, (b), is placed above;
- the view from below, (e), is placed underneath;
- the view from the left, (c), is placed on the left;
- the view from the right, (d), is placed on the right;
- the view from the rear, (f), may be placed on the left or right, as convenient.

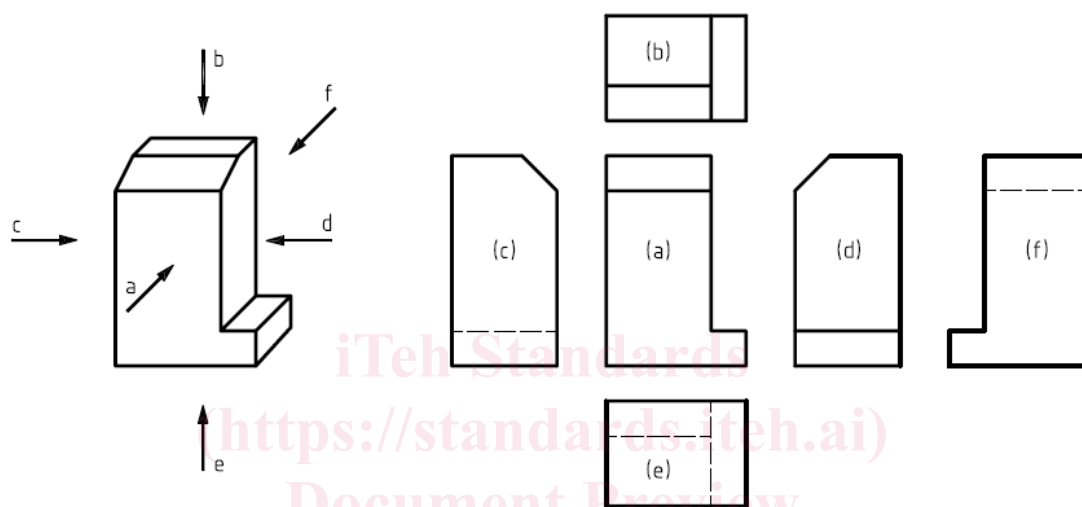


Figure 6 — Third angle projection method

4.10 Third angle projection graphical symbol

The graphical symbol for the third angle projection method is shown in Figure 7. The proportions and dimensions of this graphical symbol are specified in ISO 5456-2.

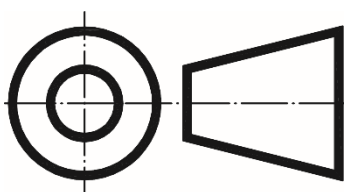


Figure 7 — Third angle projection graphical symbol

4.11 Other Projection Methods

Refer to ISO 5456-2 for information on other projection methods such as mirrored orthographic projections

4.12 Enlarged features

When the scale of a technical drawing does not allow all features to be clearly shown or dimensioned, the unclear features shall be enclosed or encircled by a continuous narrow line (type 01.1), with the area thus