INTERNATIONAL STANDARD

ISO 128-34

First edition
2001-01-15

Technical drawings — General principles of presentation —

Part 34: Views on mechanical engineering drawings

Dessins techniques — Principes généraux de représentation —

Partie 34: Vues applicables aux dessins industriels

Reference number
ISO 128-34:2001(E)

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

Page

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 this part of ISO 128 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

International Standard ISO 128-34 was prepared by Technical Committee ISO/TC 10, *Technical product documentation*, Subcommittee SC 6, *Mechanical engineering documentation*.

This first edition is based on ISO 128:1982, clause 5, and replaces the rules specified in that clause.

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*

Technical drawings — General principles of presentation —

Part 34: Views on mechanical engineering drawings

1 Scope

This part of ISO 128 specifies rules for the presentation of views additional to those of ISO 128-30 and applicable to mechanical engineering drawings that follow the orthographic projection methods specified in ISO 5456-2. Attention has also been given to reproduction requirements, including those of microcopying according to ISO 6428.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 128. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 128 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 128-20:1996, T*echnical drawings — General principles of presentation — Part 20: Basic conventions for lines*.

ISO 128-24:1999, *Technical drawings — General principles of presentation — Part 24: Lines on mechanical engineering drawings*.

ISO 128-30:—[1)], *Technical drawings — General principles of presentation — Part 30: Basic conventions for views*.

ISO 129-1:—[2)], *Technical drawings — Indication of dimensions and tolerances — Part 1: General principles*.

ISO 5456-2:1996, *Technical drawings — Projection methods — Part 2: Orthographic representations*.

ISO 6428:1982, *Technical drawings — Requirements for microcopying*.

ISO 10209-1:1992, *Technical product documentation — Vocabulary — Part 1: Terms relating to technical drawings: general and types of drawings*.

3 Terms and definitions

For the purposes of this part of ISO 128, the terms and definitions given in ISO 10209-1 apply.

---

1) To be published.

2) To be published. (Revision of ISO 129:1985)

4 Types of lines and their application

The basic types of lines referred to in this part of ISO 128 are specified in ISO 128-20. General rules and basic conventions for their application on mechanical engineering drawings are specified in ISO 128-24.

5 Local views

Provided presentation is unambiguous, a local rather than a complete view of symmetrical parts is permitted. Local views should be drawn in third angle projection, regardless of the arrangement used for the general execution of the drawing. Local views shall be drawn with continuous wide lines (type 01.2) and connected to principal views by long dashed dotted narrow lines (type 04.1). Examples are shown in Figures 1 to 4.

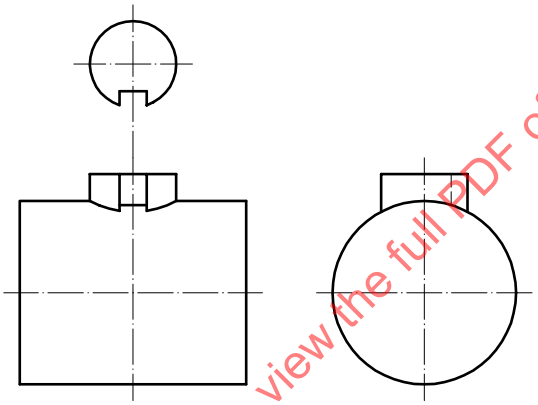


Figure 1 — Local view of journal

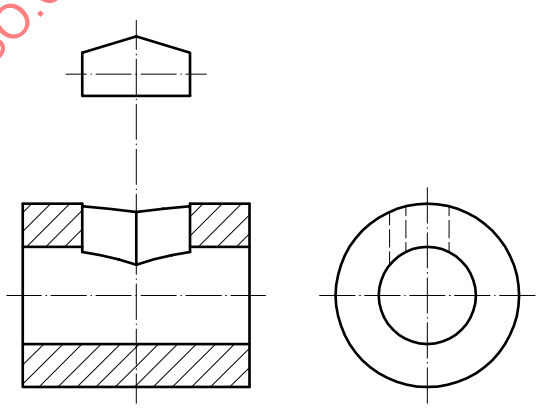


Figure 2 — Local view of groove

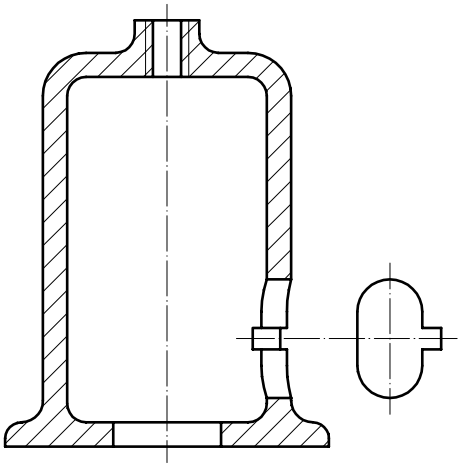


Figure 3 — Local view of hole

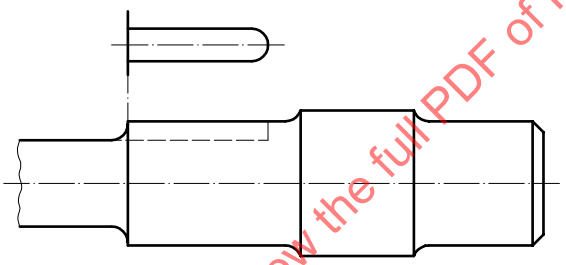


Figure 4 — Local view of groove

6 Adjacent parts and contours

Where parts adjacent to an object are presented, they shall be drawn with long dashed double-dotted narrow lines (type 05.1). The adjacent part shall not hide the principal part, but may be hidden by it (see Figure 5 and Figure 6). Adjacent parts in cuts and sections shall not be hatched.

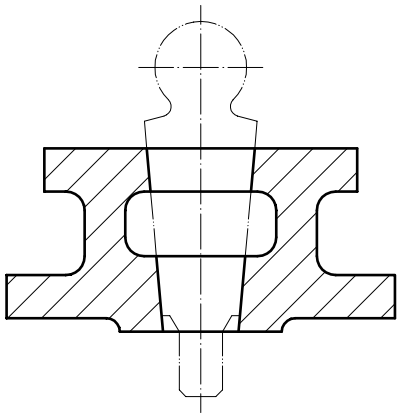


Figure 5 — Bounded adjacent part

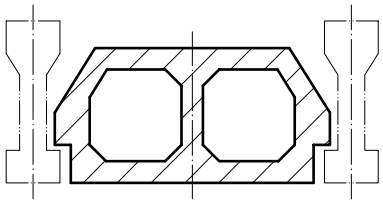
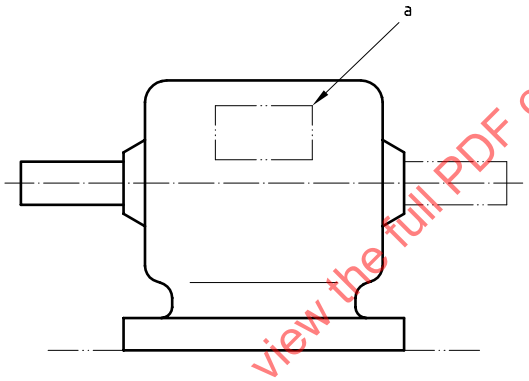


Figure 6 — Adjacent parts

When the contours of features cannot or may not be definitively delineated, the area presumed to enclose them shall be indicated by long dashed double-dotted narrow lines (type 05.1), as in Figure 7 and Figure 8.



a Label for information.

Figure 7 — Indication of contours

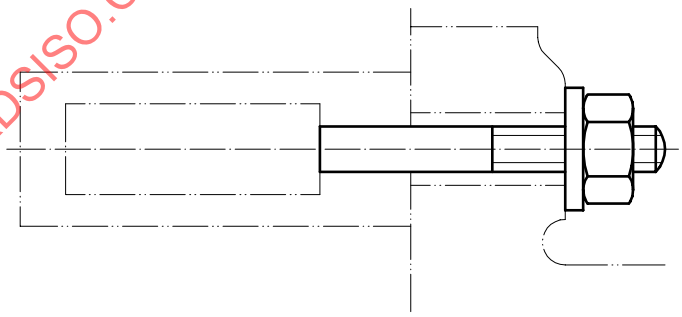


Figure 8 — Indication of contours

7 Intersections

True geometric intersection lines shall be drawn with continuous wide lines (type 01.2) when visible, and with dashed narrow lines (type 02.1) when hidden (see Figure 9).

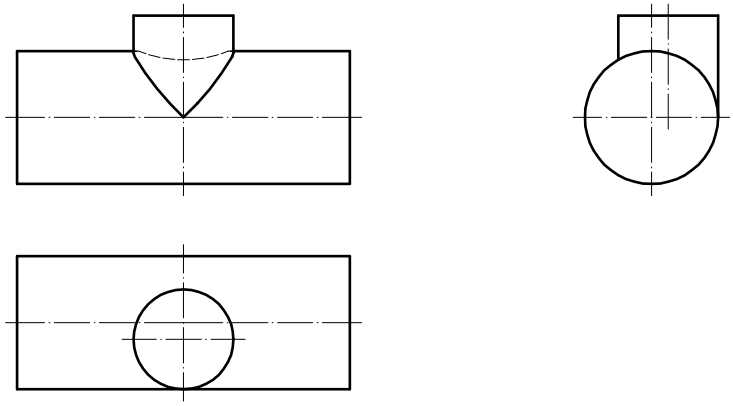


Figure 9 — True intersection

Simplified representations of true geometric intersection lines may be applied at intersections, as follows.

— Between two cylinders the curved lines of intersection may be replaced by straight continuous wide lines (see Figure 10).

— Between a cylinder and a rectangular prism the displacement of the straight line of intersection may be omitted (see Figure 2).

However, the simplified representation should be avoided if it affects the intelligibility of the drawing.

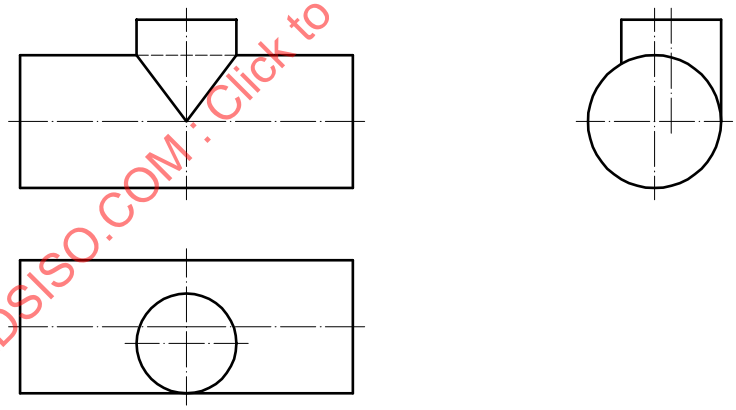


Figure 10 — Simplified intersection

Imaginary intersection lines, such as fillets or rounded corners, shall be indicated in a view by continuous narrow lines (type 01.1) that do not touch the outlines (see Figure 11).

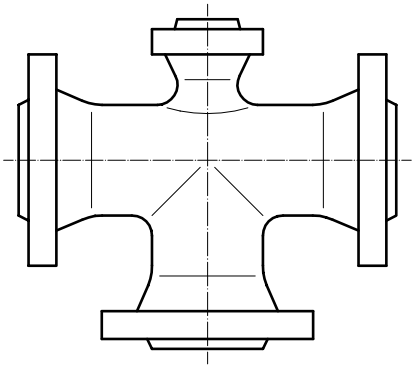


Figure 11 — Imaginary intersections

8 Square ends on shafts

In order to avoid drawing a supplementary view, cut or section, square ends or flats (Figure 12), or tapered square ends on shafts (Figure 13), shall be indicated by diagonals drawn as continuous narrow lines (type 01.1).

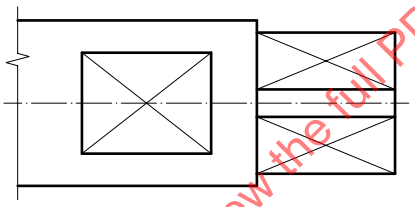


Figure 12 — Square end and flat

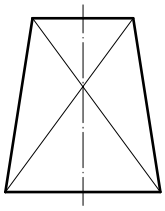


Figure 13 — Tapered square end

9 Interrupted views

In order to save space, it is permissible to show only those portions of a long object needed for its definition. The limits of the parts retained shall be drawn as narrow, freehand or zigzag continuous lines. The portions shall be drawn close to each other (see Figure 14 and Figure 15).

NOTE Interrupted views do not show the true geometry.

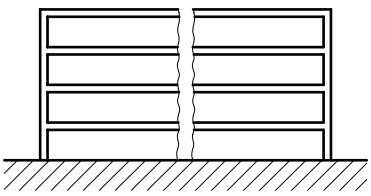


Figure 14 — Interrupted view

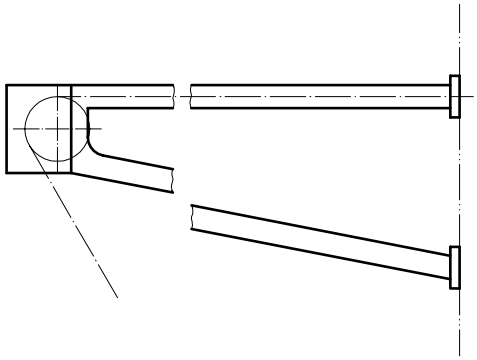


Figure 15 — Interrupted view

10 Repeated features

If certain identical features occur in a regular order, only one of them and their locations need be illustrated. In all cases, the number and kind of repetitive features shall be defined by dimensioning according to ISO 129-1.

For symmetrical features, the location of the non-represented features is shown by long dashed dotted narrow lines (type 04.1), as in Figure 16 and Figure 17. For asymmetrical features, the area of the non-represented features is identified by continuous narrow lines (type 01.1) as shown in Figure 18.

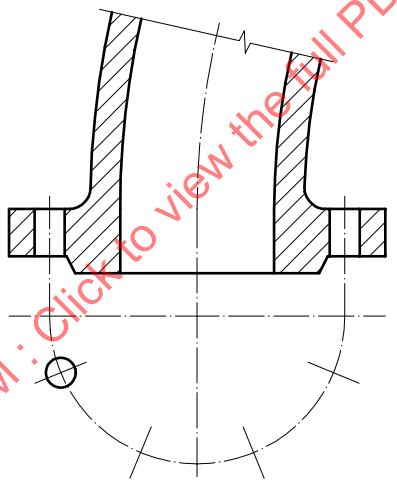


Figure 16 — Symmetrical repeated features

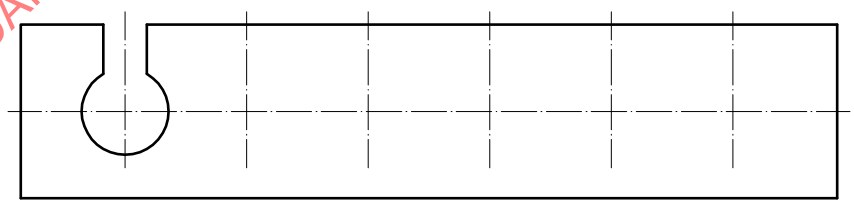


Figure 17 — Symmetrical repeated features

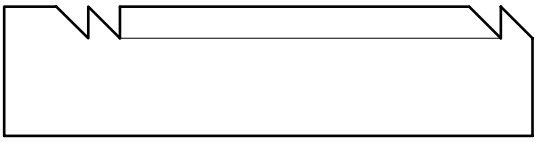


Figure 18 — Asymmetrical repeated features

11 Enlarged features

When the scale of a 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 enclosed identified by a capital letter. The features in the area shall also be shown on an enlarged scale, accompanied by the identification letter and an indication of the scale beside it between parentheses, as shown in Figure 19.

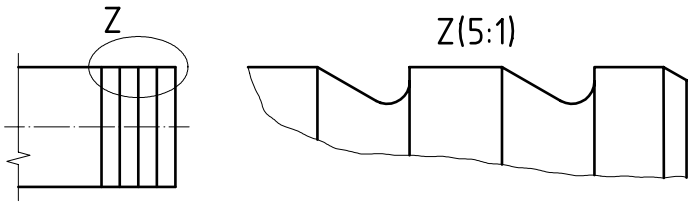


Figure 19 — Enlarged features

12 Initial outlines

When it is necessary to depict initial outlines of a part prior to forming, these shall be indicated by long dashed double-dotted narrow lines (type 05.1), as shown in Figure 20.

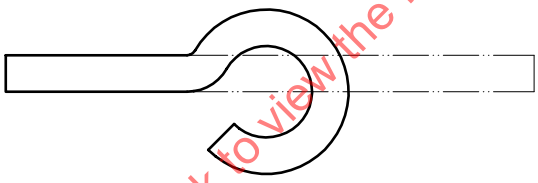
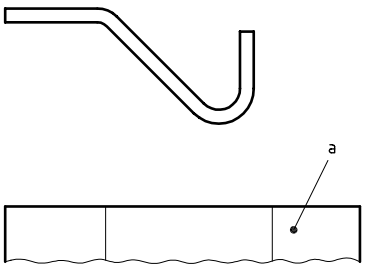


Figure 20 — Initial outlines

13 Bend lines

Bend lines in developed views shall be represented by continuous narrow lines (type 01.1), as shown in Figure 21.



a Developed view.

Figure 21 — Bend lines

14 Slight inclines or curves

If slight inclines or curves (on angled surfaces, tapers, pyramids) are too slight to be clearly indicated in a projection, their representation may be dispensed with. In such cases, only the edge corresponding to the projection of the smaller dimension shall be drawn as a continuous wide line (type 01.2). This is indicated by the projection lines in Figure 22 and Figure 23, which are drawn by way of explanation only.

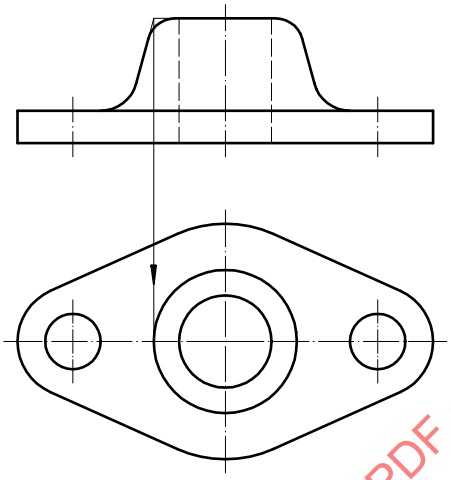


Figure 22 — Slight curve

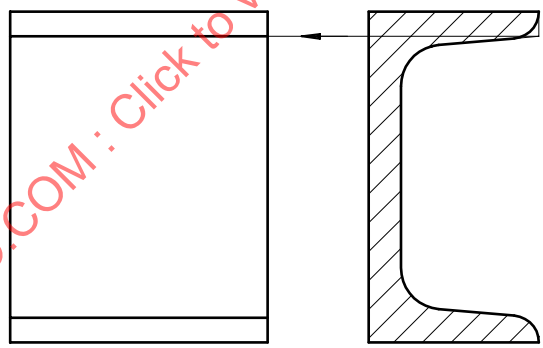


Figure 23 — Slight incline

15 Transparent objects

All objects made of transparent material shall be drawn as if not transparent (see Figure 24).

Within assembly and general-assembly drawings, parts behind transparent parts may be drawn visible (see Figure 25).

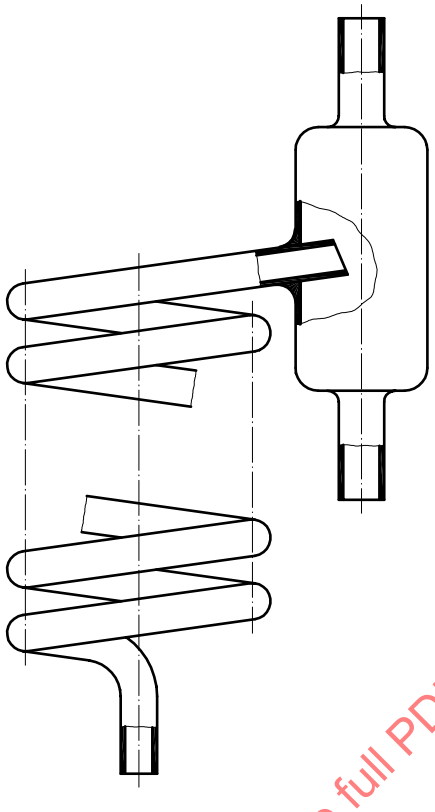


Figure 24 — Transparent object

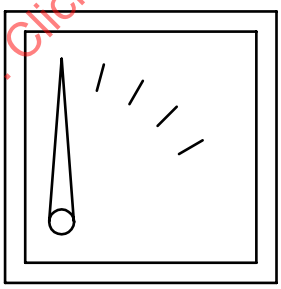


Figure 25 — Assembly of transparent object

16 Movable parts

In assembly drawings the alternative and extreme positions of movable parts may be shown, drawn with long dashed double-dotted narrow lines (type 05.1), as in Figure 26.