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Mazdoor Kisan Shakti Sangathan
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Jawaharlal Nehru
"Step Out From the Old to the New"

Principles of Presentation : 34 Views on mechanical engineering drawings [PGD 24: Drawings]
Indian Standard

TECHNICAL DRAWINGS — GENERAL PRINCIPLES OF PRESENTATION

PART 34 VIEWS ON MECHANICAL ENGINEERING DRAWINGS

ICS 01.100.01

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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Price Group 7
NATIONAL FOREWORD

This Indian Standard (Part 34) which is identical with ISO 128-34 : 2001 'Technical drawings — General principles of presentation — Part 34 : Views on mechanical engineering drawings' issued by International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Drawings Sectional Committee and approval of the Production and General Engineering Division Council.

ISO 128 was published in 1982 and was accordingly adopted as IS 10714:1983. ISO 128 : 1982 was withdrawn and published again in several parts. In view of this, Drawings Sectional Committee decided to adopt ISO 128-34 : 2001 as IS 10714 (Part 34).

This standard 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.

The other parts of this series are given as follows:

- IS 10714 (Part 20) :2001 Technical drawings — General principles of presentation: Part 20 Basic conventions for lines
- IS 10714 (Part 21) :2001 Technical drawings — General principles of presentation: Part 21 Preparation of lines by CAD systems

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words, 'International Standard' appear, referring to this standard, they should be read as 'Indian Standard'.

b) Comma ( , ) has been used as a decimal marker while in Indian Standards, the current practice is to use a point ( . ) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards which are to be substituted in their places, are listed below along with their degree of equivalence for the editions indicated:

<table>
<thead>
<tr>
<th>International Standard</th>
<th>Corresponding Indian Standard</th>
<th>Degree of Equivalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 129-1 : 1985$^{1)}$ Technical drawings — Indication of dimensions and tolerances — General principles</td>
<td>IS 11669 : 1986 General principles of dimensioning on technical drawings</td>
<td>do</td>
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$^{1)}$ Revised as ISO 129-1 : 2004.
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 128-30:—1, Technical drawings — General principles of presentation — Part 30: Basic conventions for views.

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.
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.
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.

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).
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.

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).
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).

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.
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.
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](image)

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](image)

13 Bend lines

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

![Figure 21 — Bend lines](image)
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](image)

![Figure 23 — Slight incline](image)

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).
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.
17 Finished parts and blanks

It is permitted to show the shape of a finished part within the drawing of a blank, or the shape of the blank within the drawing of a finished part. These parts shall be drawn using long dashed double-dotted narrow lines (type 05.1) (see Figure 27 and Figure 28).

18 Parts made from separate, equal elements

Parts made from separate, but equal, elements should be represented as homogeneous. The location of the elements may be indicated by short continuous narrow (type 01.1) lines, as shown in Figure 29.
19 Surface pattern

The structure of knurling, corrugation, fluting, mesh or lattice shall be represented completely or partly by continuous wide lines (type 01.2) (see Figure 30).

![Figure 30 — Surface pattern](image)

20 Fibre and rolled directions

The fibre and rolled directions need not be shown in the representation of a part, but if necessary may be indicated by short continuous narrow (type 01.1) lines with arrowheads, as illustrated in Figure 31 and Figure 32.

![Figure 31 — Fibre direction](image)

![Figure 32 — Rolled direction](image)

21 Parts with two or more identical views

Two or more equal views on any one part may be identified by the indication, “symmetrical part” (see ISO 128-30) or by reference arrows and capital letters or numerals, or both, as in Figure 33 and Figure 34.
22 Mirror-image parts

When simple parts are identical mirror images, a single representation shall suffice for both, provided that no errors can arise in manufacture as a result. An explanatory note shall be placed near the title block. See Figure 35.

If necessary, simplified representations of the two parts drawn on a reduced scale without dimensioning may be provided for emphasis.

Key

1 Part 1

EXAMPLE (In title block) “Part 1, as drawn; part 2, identical mirror image.”
International Standard | Corresponding Indian Standard | Degree of Equivalence
---|---|---
ISO 6428 : 1982 Technical drawings — Requirements for microcopying | IS 10164 : 1985 Requirements to execute technical drawings for microcopying | Identical

The technical committee responsible for formulation of this standard had reviewed the provisions of the following International Standards to which references have been made in the text, and decided that they are acceptable for use in conjunction with this standard:

International Standard | Title
---|---
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Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the latest issue of 'BIS Catalogue' and 'Standards : Monthly Additions'.

This Indian Standard has been developed from Doc : PG 24/MGP 24 (0524).

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