इंटरनेट मानक

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Whereas the Parliament of India has set out to provide a practical regime of right to information for citizens to secure access to information under the control of public authorities, in order to promote transparency and accountability in the working of every public authority, and whereas the attached publication of the Bureau of Indian Standards is of particular interest to the public, particularly disadvantaged communities and those engaged in the pursuit of education and knowledge, the attached public safety standard is made available to promote the timely dissemination of this information in an accurate manner to the public.

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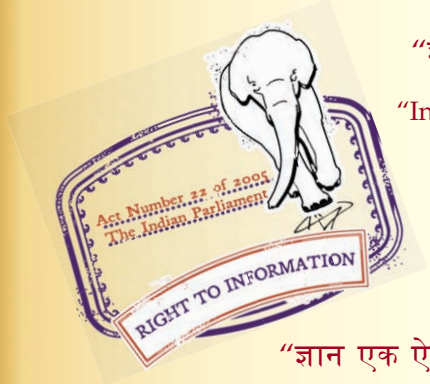
IS 10714-40 (2006): Technical drawings - General Principles of Presentation, Part 40: Basic Conventions for cuts and sections [PGD 24: Drawings]



"ज्ञान से एक नये भारत का निर्माण"
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Bhartṛhari—Nītiśatakam
"Knowledge is such a treasure which cannot be stolen"

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IS 10714 (Part 40) : 2006
ISO 128-40 : 2001

भारतीय मानक

तकनीकी ड्राइंग — प्रस्तुतीकरण के सामान्य सिद्धान्त

भाग 40 कट और सेक्शंस की आधारभूत मान्यताएँ

Indian Standard

TECHNICAL DRAWINGS — GENERAL PRINCIPLES OF PRESENTATION

PART 40 BASIC CONVENTIONS FOR CUTS AND SECTIONS

ICS 01.100.01

BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 2006

Price Group 3

NATIONAL FOREWORD

This Indian Standard (Part 40) which is identical with ISO 128-40 : 2001 'Technical drawings — General principles of presentation — Part 40 : Basic conventions for cuts and sections' issued by the 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 ISO 128 : 1982 was withdrawn and published again in several parts.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 128-40 : 2001 as IS 10714 (Part 40).

This standard specifies general principles for presenting cuts and sections applicable to all kinds of technical drawings (mechanical, electrical, architectural, civil engineering, etc), following the orthographic projection methods specified in ISO 5456-2. For areas on cuts and sections, representation is according to ISO 128-50. The requirements of reproduction, including microcopying in accordance with ISO 6428 has also been taken care of in this standard.

It is applicable for all kinds of technical drawings, including, for example, those used in mechanical engineering and construction. It is applicable to both manual and computer-based drawings. It is not applicable to three-dimensional CAD models.

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 exists. 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:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 3098-0 : 1997 Technical product documentation — Lettering — Part 0 : General requirements	IS 9609 (Part 0) : 2001 Technical product documentation — Lettering: Part 0 General requirements	Identical
ISO 5456-2 : 1996 Technical drawings — Projection methods — Part 2 : Orthographic representations	IS 15021 (Part 2) : 2001 Technical drawings — Projection methods: Part 2 Orthographic representations	do
ISO 6428 : 1982 Technical drawings — Requirements for microcopying	IS 10164 : 1985 Requirements to execute technical drawings for microcopying (*first revision*)	do

(*Continued on third cover*)

Indian Standard

TECHNICAL DRAWINGS — GENERAL PRINCIPLES OF PRESENTATION

PART 40 BASIC CONVENTIONS FOR CUTS AND SECTIONS

1 Scope

This part of ISO 128 specifies the general principles for presenting cuts and sections applicable to all kinds of technical drawings (mechanical, electrical, architectural, civil engineering, etc.) following the orthographic projection methods specified in ISO 5456-2. For areas on cuts and sections, representation is according to ISO 128-50.

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 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 128-23:1999, *Technical drawings — General principles of presentation — Part 23: Lines on construction drawings*

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

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

ISO 128-50, *Technical drawings — General principles of presentation — Part 50: Basic conventions for representing areas on cuts and sections.*

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

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

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

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

ISO 10209-2, *Technical product documentation — Vocabulary — Part 2: Terms relating to projection methods.*

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 part of ISO 128, the terms and definitions given in ISO 10209-1 and ISO 10209-2, and the following, apply.

3.1
cutting plane
imaginary plane at which the object represented is cut through

3.2
cutting line
line indicating the position of a cutting plane, or the sectioning axis in the case of two or more cutting planes

3.3
cut
sectional view
section showing, in addition, outlines beyond the cutting plane

NOTE This is an extract from ISO 10209-1:1992 (term 2.2). However, 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 3.3 or 3.4.

3.4
section
representation showing only the outlines of an object lying in one or more cutting planes

NOTE This is an extract from ISO 10209-1:1992 (term 2.9). However, the usage of the terms "cut" and "section" differs between the mechanical engineering and constrution fields. While "cut" is generally used in the construction field, "section" is generally used in the mechanical engineering field, regardless of the definitions in 3.3 or 3.4.

3.5
half cut/half section
representation of a symmetrical object which, divided by the centre line, is drawn half in view and half in cut or section

3.6
local cut/local section
representation in which only a part of an object is drawn in cut or section

4 General

The general rules for the arrangement of views (see ISO 128-30) apply equally when drawing cuts and sections.

Each cut and section shall be given clear identification with twice the same capital letter, once at each of the reference arrows (drawn with a continuous wide line of type 01.2.8 according to ISO 128-24:1999 or 01.2.8 according to ISO 128-23:1999) indicating the direction of viewing for the relevant cut and section, at the ends of the cutting line (see annex A). This identification should be positioned for reading from the bottom of the drawing. The 30° or 90° cut and section arrow is defined in annex A, as is the lettering height of the identification.

The designated cut and section may be located irrespective of the view in which the cutting plane is taken. The identification of the referenced cuts and sections shall be placed immediately above the relevant representation.

Representation of areas on cuts and sections is covered by ISO 128-50.

The position of the cutting plane(s) shall be indicated by means of a long-dashed dotted wide line (cutting line) of the type 04.2 according to ISO 128-24:1999 or 04.2.1 according to ISO 128-23:1999. A straight cutting plane shall be drawn to a suitable length for legibility (see Figure 1).

If the cutting plane changes its direction, the cutting line should only be drawn at the ends of the cutting plane, where the cutting plane changes direction (see Figure 2).

The cutting line may be drawn to its full length (with a long-dashed dotted narrow line of the type 04.1 according to ISO 128-24:1999 or 04.1 according to ISO 128-23:1999) if necessary for its legibility.

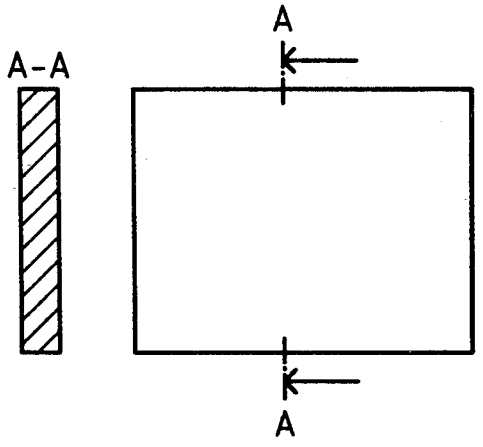


Figure 1 — Example from construction field

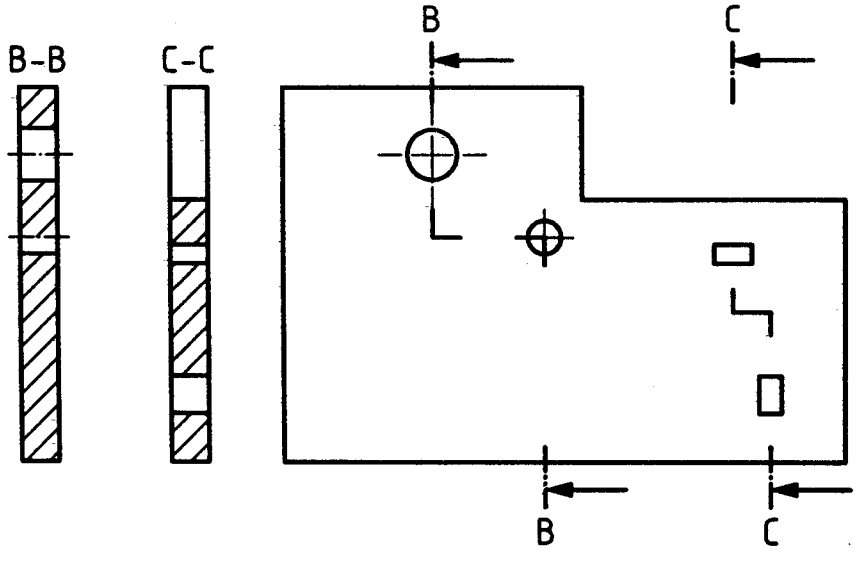
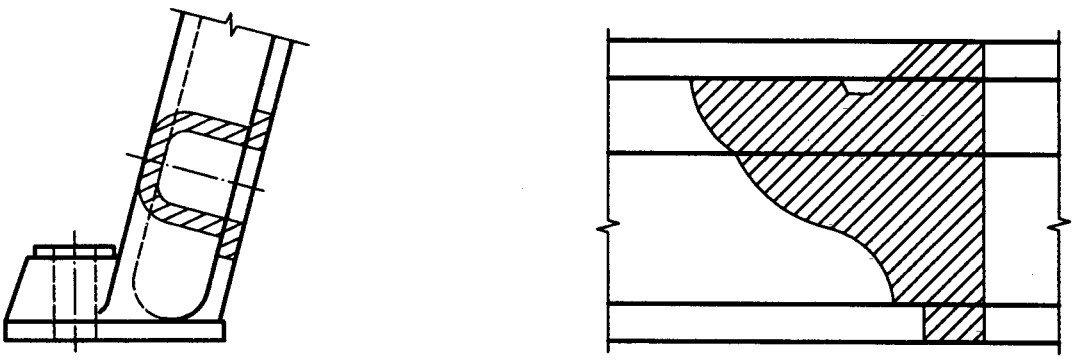


Figure 2 — Example from mechanical engineering field

5 Sections revolved in the relevant view

If unambiguous, a section can be revoived in the relevant view. If this is done, the outline of the section shall be drawn with continuous narrow lines of the type 01.1.16 according to ISO 128-24:1999 or 01.1.11 according to ISO 128-23:1999; further identification is then not necessary [see Figure 3 a) and b)].

NOTE The rotational direction of the section in the view is unknown.



a) Example 1 b) Example 2

Figure 3 — Sections revolved in relevant view

6 Cuts/sections of symmetrical parts

Symmetrical parts may be drawn half in view and half in cut/section (see Figure 4).

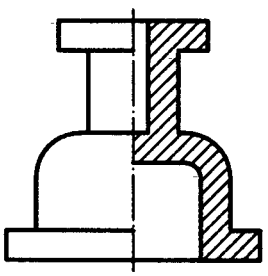


Figure 4 — Half in section of symmetrical part

7 Local cuts/sections

A local cut/section may be drawn if a complete or a half cut/section is unnecessary. The local break shall be shown by a continous narrow line with zigzags or freehand of type 01.1.19 or 01.1.18 according to ISO 128-24:1999 or 01.1.14 according to ISO 128-23:1999. See Figure 5.

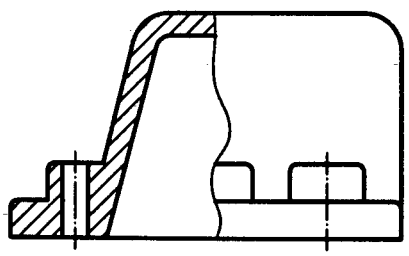


Figure 5 — Local cut

Annex A
(normative)

Graphical symbols

A.1 General

In order to harmonize the sizes of the graphical symbols specified in this part of ISO 128 with those of the other inscriptions on the drawing (dimensions, tolerances, etc.), the rules given in ISO 81714-1 shall apply.

The cut and section identification lettering height, h, shall be larger than the normal lettering on the technical drawing by a factor of $\sqrt{2}$.

Within Figures A.1 and A.2, lettering type B, vertical, according to ISO 3098-0, applies. Other lettering types are also permitted.

A.2 Cut and section arrows

See Figure A.1 for 30° cut and section arrows, and Figure A.2 for 90° cut and section arrows.

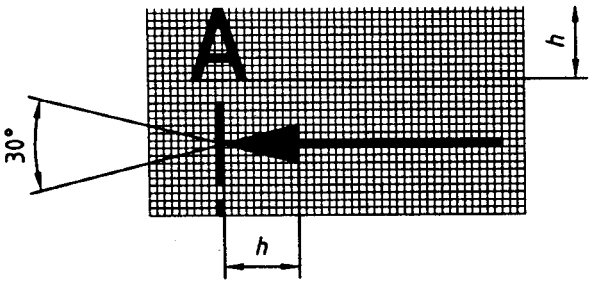


Figure A.1

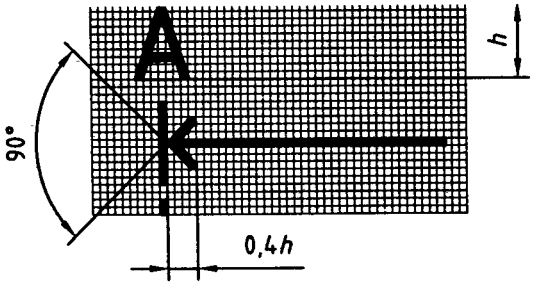


Figure A.2

Bibliography

[1] ISO 128-20, *Technical drawings — General principles of presentation — Part 20: Basic conventions for lines.*

(*Continued from second cover*)

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 10209-1 : 1992 Technical product documentation — Vocabulary — Part 1 : Terms relating to technical drawings general and types of drawings	IS 8930 (Part 1) : 1995 Technical product documentation — Vocabulary: Part 1 Terms relating to technical drawings general and types of drawings	Identical
ISO 10209-2 : 1993 Technical product documentation — Vocabulary — Part 2 : Terms relating to projection methods	IS 8930 (Part 2) : 2001 Technical product documentation — Vocabulary: Part 2 Terms relating to projection methods	do

The Sectional Committee responsible for formulation of this standard has reviewed the provisions of the following International Standards for which references have been made in the text and decided that they are acceptable for use in conjunction with this standard:

International Standard	*Title*
ISO 128-23 : 1999	Technical drawings — General principles of presentation — Part 23 : Lines on construction drawings
ISO 128-24 : 1999	Technical drawings — General principles of presentation — Part 24 : Lines on mechanical engineering drawings
ISO 128-30	Technical drawings — General principles of presentation — Part 30 : Basic conventions for views
ISO 128-50	Technical drawings — General principles of presentation — Part 50 : Basic conventions for representing areas on cuts and sections
ISO 81714-1	Design of graphical symbols for use in the technical documentation of products — Part 1 : Basic rules

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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 (0517).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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Printed at New India Printing Press, Khurja, India