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(JSA)

**Technical drawings —
General principles of presentation —
Basic conventions and applications
for leader lines and reference lines**

ICS 01.100.01

Reference number : JIS Z 8322 : 2003 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee according to the proposal of establishing a Japanese Industrial Standard from the Japanese Standards Association (JSA), with a draft of Industrial Standard based on the provision of Article 12 Clause 1 of the Industrial Standardization Law.

This Standard has been made based on **ISO 128-22:1999** *Technical drawings — General principles of presentation — Part 22: Basic conventions and applications for leader lines and reference lines* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Technical drawings — General principles of presentation — Basic conventions and applications for leader lines and reference lines

Introduction This Standard has been made based on **ISO 128-22** *Technical drawings — General principles of presentation — Part 22: Basic conventions and applications for leader lines and reference lines* published in 1999 as the first edition with some modifications of the technical contents. As to the Annex B (normative) (meaning and application of the graphical supplement "circle" for leader lines) to **ISO 128-22**, in which the cases not of leader lines are deleted from this Standard, because they are likely to be cause of error and they are the matters which are specified in other standard.

The portions given dotted underlines in this Standard are the matters given by modifying the original International Standard. The list of modification is given in Annex 1 together with the explanation.

1 Scope This Standard specifies general rules on the presentation of leader and reference lines and their components as well as on the arrangement of instructions on or at leader lines in all kinds of technical documents.

Remarks: The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

ISO 128-22:1999 *Technical drawings — General principles of presentation — Part 22: Basic conventions and applications for leader lines and reference lines* (MOD)

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS C 1082-1 *Preparation of documents used in electrotechnology — Part 1: General requirements*

Remarks: **IEC 61082-1:1991**, *Preparation of documents used in electrotechnology — Part 1: General requirements* is equivalent to the said standard.

JIS Z 8312 *Technical drawings — General principles of presentation — Basic convention for lines*

Remarks: **ISO 128-20:1996** *Technical drawings — General principle of presentation — Part 20: Basic conventions of lines* is identical with the said standard.

ISO 6428 *Technical drawings — Requirements for microcopying*

3 Definitions For the purposes of this Standard, the following definitions apply.

3.1 leader line continuous narrow line which establishes the connection between the features of a graphical representation and additional alphanumeric and/or written instructions (notes, technical requirements, item references, etc.) in an unambiguous manner

3.2 reference line continuous narrow line connecting with the leader line horizontally or vertically and on or at which the additional instructions are indicated

4 Presentation of leader lines Leader lines are executed as continuous narrow lines in accordance with **JIS Z 8312**. They are drawn preferably at an angle to the relevant representation and/or the frame limiting the drawing sheet, and not parallel to adjacent lines, e.g. hatching lines. The inclination to the relevant lines shall be $> 15^\circ$. See Figs. 1 to 13.

Leader lines may be drawn with sharp kinks (see Fig. 5), and two or more leader lines may be joined up (see Figs. 2, 5, 7, 8 and 11). They should not cross other leader lines, reference lines or indications, such as graphical symbols or dimensional values.

Leader lines shall terminate at the end which touches the features as follows:

- with a closed and filled or a closed arrowhead (included angle 30°) if the leader line ends at lines which represent outlines or edges of parts, pipings or cables in plans, charts or diagrams; arrowheads are also drawn at crossing points of these lines with other lines, e.g. lines of symmetry (see the examples given in Figs. 1 to 7);

Note: If several parallel lines have to be designated, oblique strokes instead of arrowheads are permitted (see **IEC 61082-1**). See the example given in Fig. 8.

- with a dot ($d = 5 \times$ line width) if the leader line ends within the outlines of an object (see the examples given in Figs. 9 to 11);
- without any termination if the leader line ends at another line, e.g. dimension line or line of symmetry (see the examples given in Fig. 12)
- with an arrowhead if the leader line ends at the intersection of the centre lines (see the example given in Fig. 13).

Information: In **ISO 128-22**, the specification is without any termination if the leader line ends at another line (including the intersection of the centre lines).

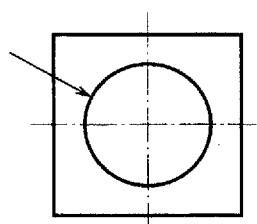


Fig. 1

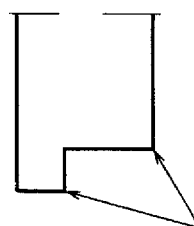


Fig. 2