
**Technical product documentation —
Lettering —**

**Part 0:
General requirements**

Documentation technique de produits — Écriture —

Partie 0: Prescriptions générales



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.

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.

International Standard ISO 3098-0 was prepared by Technical Committee ISO/TC 10, *Technical drawings, product definition and related documentation*, Subcommittee SC 1, *Basic conventions*.

ISO 3098 consists of the following parts, under the general title *Technical product documentation — Lettering*:

- Part 0: *General requirements*
- Part 1: *Currently used characters*
- Part 2: *Greek characters*
- Part 3: *Diacritical and particular marks for the Latin alphabet*
- Part 4: *Cyrillic characters*
- Part 5: *CAD lettering of the Latin alphabet, numerals and marks*

Annex A of this part of ISO 3098 is for information only.

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Technical product documentation — Lettering —

Part 0: General requirements

1 Scope

This part of ISO 3098 specifies the general requirements for lettering, in accordance with all other parts of this International Standard, to be used in technical product documentation (in particular on technical drawings).

It includes basic conventions as well as rules for the application of lettering using the following techniques:

- a) free-hand lettering (by means of an underlaid “grid”);
- b) templates (see ISO 9178) and manual lettering instruments;
- c) dry transfer systems;
- d) numerically controlled lettering and draughting systems.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this part of ISO 3098. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this part of ISO 3098 are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 128-20:1996, *Technical drawings — General principles of presentation — Part 1: Basic conventions for lines.*

3 Definitions

For the purposes of this part of ISO 3098, the following definitions apply.

3.1 central line: Imaginary line in the middle of each line or line element which is a constitutive part of a graphic character set.

NOTES

- 1 Lines may be drawn by means of tubular technical pens conforming with ISO 9175-1 and ISO 9175-2.
- 2 The central line is the basic datum for the design of tools for lettering, e.g. engraving tools for templates, programs for lettering generators.

3.2 graphic character set: Finite set of different graphic characters in a fixed type of lettering, including letters of a certain alphabet, numerals, diacritical marks, punctuation marks and additional graphical symbols, that is considered complete for a given purpose (see also ISO 2382-4).

3.3 lettering

- (1) Procedure of writing graphic characters taken from a graphic character set on a (technical) drawing carrier (in addition to the graphical representation).
- (2) The whole of the nongraphical information on a (technical) drawing carrier (text, instructions, dimensions, etc.).
- (3) The whole of the graphic characters of a graphic character set which can be used for transferring nongraphical information onto a (technical) drawing carrier.

4 General requirements

The basic characteristics required of lettering are given in 4.1 to 4.3.

4.1 Legibility, which shall be maintained by a space between characters of twice the line width used for lettering.

This spacing may be reduced to one line width for a better visual effect with combinations of particular characters, e.g. LA, TV or Tr.

4.2 Suitability for the generally used copying processes (dialo copying, microfilming, telefax, etc.).

4.3 Suitability for numerically controlled draughting systems.

5 Dimensions

5.1 Nominal size

The nominal size of lettering is defined by the height (h) of the outline contour of the upper-case (capital) letters (see figure 1 and tables 1 and 2).

The dimensions shown in figures 1 to 3 as applied to the Latin (L) alphabet shall also be applied to the Cyrillic (C) and Greek (G) alphabets.

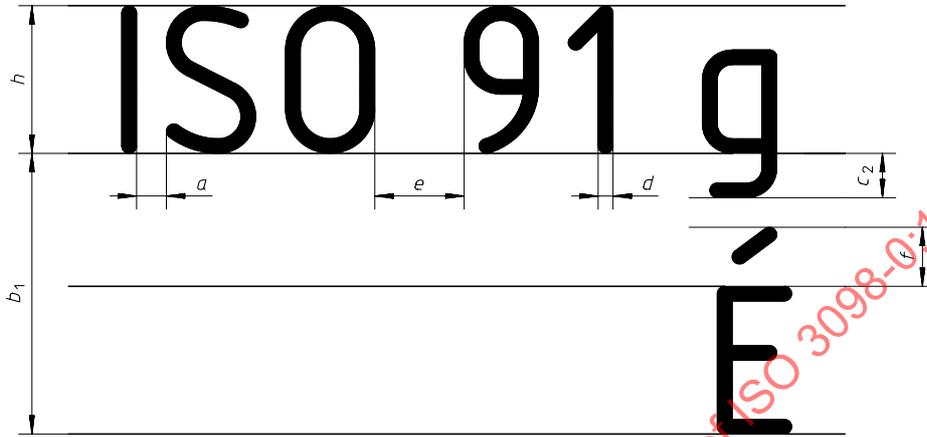


Figure 1

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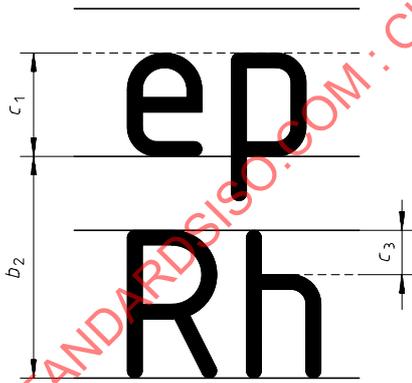


Figure 2

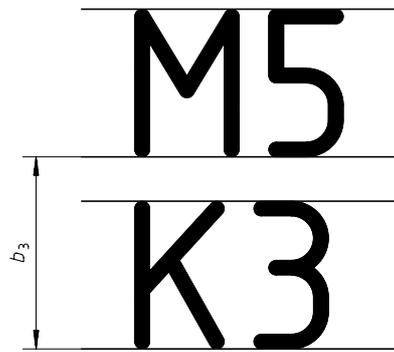


Figure 3

5.2 Location of central lines

The nominal size (h) and the spacing between characters (a) shall be taken as the basis for defining the central line (see figures 4 and 5). For other dimensions see tables 1 and 2.

$$h_1 = h - d$$

$$a_1 = a + d$$

When CAD lettering is used (see ISO 3098-5), the same sizes are required as for other techniques.

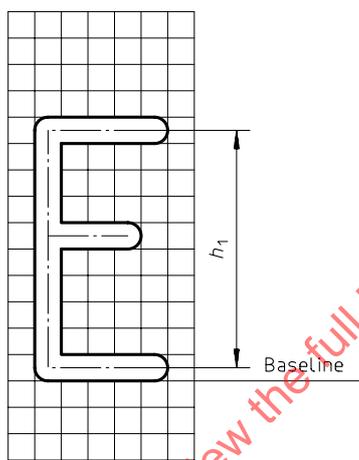


Figure 4

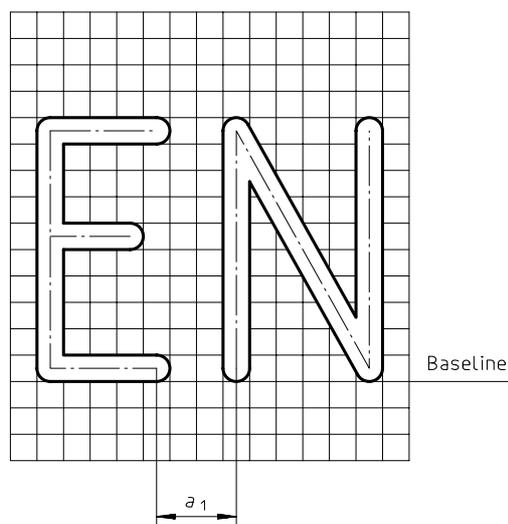


Figure 5

5.3 Range of nominal sizes

The range of nominal sizes is specified as follows:

1,8 mm; 2,5 mm; 3,5 mm; 5 mm; 7 mm; 10 mm; 14 mm; 20 mm

The multiple of $\sqrt{2}$ in the range of heights for lettering is derived from the standardized progression of dimensions for paper sizes (see ISO 216).

The line widths shall be in accordance with ISO 128-20 and the same line width shall be used for both upper-case and lower-case letters.

5.4 Lettering angle

The lettering may be vertical (upright), see figures 1 to 5, or inclined (sloped) to the right at 75° from the horizontal (see figure 6).

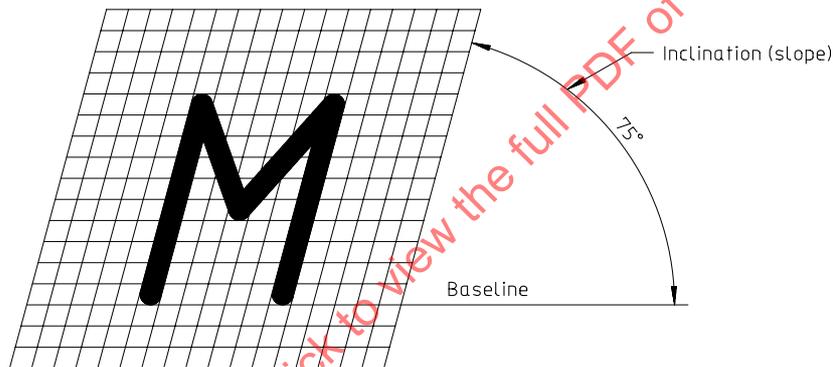


Figure 6

5.5 Types of lettering

The types of lettering are as follows:

- | | | |
|--|---|--|
| — lettering type A, vertical (V) | } | Dimensions specified in table 1 |
| — lettering type A, sloped (S) | | |
| — lettering type B, vertical (V)
(preferred application) | } | Dimensions specified in table 2 |
| — lettering type B, sloped (S) | | |
| — lettering type CA, vertical (V) | } | See ISO 3098-5
(for application of numerically controlled draughting via CAD) |
| — lettering type CA, sloped (S) | | |
| — lettering type CB, vertical (V)
(preferred application) | | |
| — lettering type CB, sloped (S) | | |

Table 1 — Dimensioning of lettering type A

Dimensions in millimetres

Characteristic		Multiple of <i>h</i>	Dimensions								
Lettering height	<i>h</i>	$(14/14)h$	1,8	2,5	3,5	5	7	10	14	20	
Height of lower-case letters (x-height)	<i>c</i> ₁	$(10/14)h$	1,3	1,8	2,5	3,5	5	7	10	14	
Tail of lower-case letters	<i>c</i> ₂	$(4/14)h$	0,52	0,72	1	1,4	2	2,8	4	5,6	
Stem of lower-case letters	<i>c</i> ₃	$(4/14)h$	0,52	0,72	1	1,4	2	2,8	4	5,6	
Area of diacritical marks (upper-case letters)	<i>f</i>	$(5/14)h$	0,65	0,9	1,25	1,75	2,5	3,5	5	7	
Spacing between characters	<i>a</i>	$(2/14)h$	0,26	0,36	0,5	0,7	1	1,4	2	2,8	
Minimum spacing between baselines ¹⁾	<i>b</i> ₁	$(25/14)h$	3,25	4,5	6,25	8,75	12,5	17,5	25	35	
Minimum spacing between baselines ²⁾	<i>b</i> ₂	$(21/14)h$	2,73	3,78	5,25	7,35	10,5	14,7	21	29,4	
Minimum spacing between baselines ³⁾	<i>b</i> ₃	$(17/14)h$	2,21	3,06	4,25	5,95	8,5	11,9	17	23,8	
Spacing between words	<i>e</i>	$(6/14)h$	0,78	1,08	1,5	2,1	3	4,2	6	8,4	
Line width	<i>d</i>	$(1/14)h$	0,13 ⁴⁾	0,18 ⁴⁾	0,25	0,35 ⁴⁾	0,5	0,7 ⁴⁾	1	1,4 ⁴⁾	
1) Lettering style: upper-case and lower-case letters with diacritical marks (see figure 1). 2) Lettering style: upper-case and lower-case letters without diacritical marks (see figure 2). 3) Lettering style: upper-case letters only (see figure 3). 4) Rounded values; the values of the dimensions <i>c</i> ₁ through <i>e</i> are calculated from the rounded values of <i>d</i> .											

Table 2 — Dimensioning of lettering type B

Dimensions in millimetres

Characteristic		Multiple of <i>h</i>	Dimensions								
Lettering height	<i>h</i>	$(10/10)h$	1,8	2,5	3,5	5	7	10	14	20	
Height of lower-case letters (x-height)	<i>c</i> ₁	$(7/10)h$	1,26	1,75	2,5 ⁴⁾	3,5	5 ⁴⁾	7	10 ⁴⁾	14	
Tail of lower-case letters	<i>c</i> ₂	$(3/10)h$	0,54	0,75	1,05	1,5	2,1	3	4,2	6	
Stem of lower-case letters	<i>c</i> ₃	$(3/10)h$	0,54	0,75	1,05	1,5	2,1	3	4,2	6	
Area of diacritical marks (upper-case letters)	<i>f</i>	$(4/10)h$	0,72	1	1,4	2	2,8	4	5,6	8	
Spacing between characters	<i>a</i>	$(2/10)h$	0,36	0,5	0,7	1	1,4	2	2,8	4	
Minimum spacing between baselines ¹⁾	<i>b</i> ₁	$(19/10)h$	3,42	4,75	6,65	9,5	13,3	19	26,6	38	
Minimum spacing between baselines ²⁾	<i>b</i> ₂	$(15/10)h$	2,7	3,75	5,25	7,5	10,5	15	21	30	
Minimum spacing between baselines ³⁾	<i>b</i> ₃	$(13/10)h$	2,34	3,25	4,55	6,5	9,1	13	18,2	26	
Spacing between words	<i>e</i>	$(6/10)h$	1,08	1,5	2,1	3	4,2	6	8,4	12	
Line width	<i>d</i>	$(1/10)h$	0,18	0,25	0,35	0,5	0,7	1	1,4	2	
1) Lettering style: upper-case and lower-case letters with diacritical marks (see figure 1). 2) Lettering style: upper-case and lower-case letters without diacritical marks (see figure 2). 3) Lettering style: upper-case letters only (see figure 3). 4) Rounded values.											

5.6 Underlined and overlined texts or text fields

When a text or text field has to be underlined or overlined, it is recommended to interrupt the underlining or overlining line at all places where a lower-case letter has a tail (e.g. figure 7) or where an upper-case or lower-case letter has a diacritical mark (e.g. cedilla, tilde, umlaut; see figure 8). If this is not feasible, the space between baselines shall be extended.

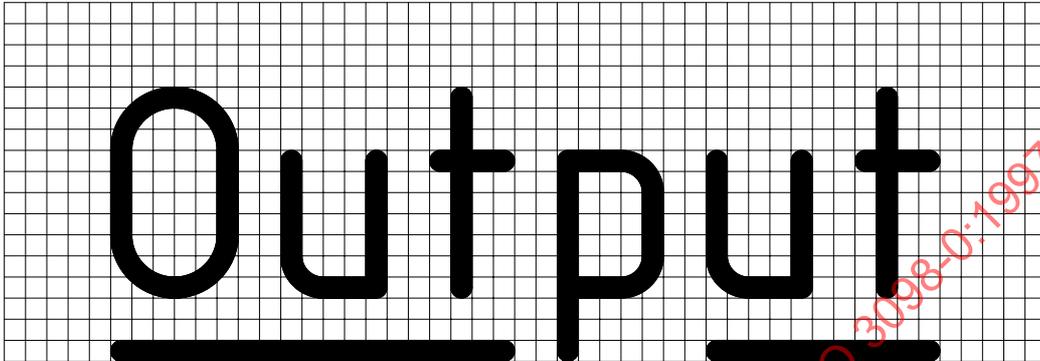


Figure 7

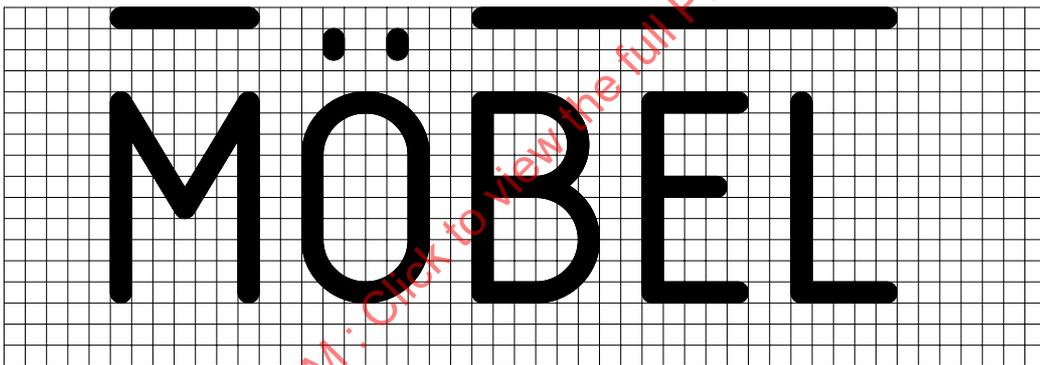


Figure 8

6 Designation

6.1 The designation of lettering types A and B shall comprise the following elements in the given order:

- a) "Lettering";
- b) "ISO 3098";
- c) the type of lettering ("A" or "B");
- d) the inclination of lettering ("V" or "S");
- e) the kind of alphabet ("L", "G" or "C");
- f) the nominal size of the lettering, in millimetres.