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Technical product documentation — Lettering —

Part 1: General requirements

Documentation technique de produits — Écriture —

Partie 1: Exigences générales

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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.org
Web www.iso.org

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 10, *Technical product documentation*, Subcommittee SC 1, *Basic conventions*. This second edition of ISO 3098-1 cancels and replaces the first edition of ISO 3098-0:1997, of which it constitutes a minor revision.

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

— *Part 1: General requirements*

— *Part 2: Latin alphabet, numerals and marks*

— *Part 3: Greek alphabet*

— *Part 4: Diacritical and particular marks for the Latin alphabet*

— *Part 5: CAD lettering of the Latin alphabet, numerals and marks*

— *Part 6: Cyrillic alphabet*

Technical product documentation — Lettering —

Part 1: General requirements

1 Scope

This part of ISO 3098 specifies the general requirements for lettering, in accordance with the other parts of ISO 3098, 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 and manual lettering instruments;

c) dry transfer systems;

d) numerically controlled lettering and draughting systems.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

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

3 Terms and definitions

For the purposes of this document, the following terms and 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

Note 1 to entry: Lines may be drawn by means of tubular technical pens conforming with ISO 9175-1.

Note 2 to entry: 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

Note 1 to entry: See ISO/IEC 2382-4:1999, 04.03.

3.3
lettering

3.3.1
lettering
procedure of writing graphic characters taken from a graphic character set on a (technical) drawing carrier (in addition to the graphical representation)

3.3.2
lettering
whole of the nongraphical information on a (technical) drawing carrier (text, instructions, dimensions, etc.)

3.3.3
lettering
whole of the graphic characters of a graphic character set which can be used for transferring non-graphical information on to a (technical) drawing carrier

4 General requirements

4.1 The basic characteristics required of lettering are given in 4.2 to 4.4.

4.2 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.

EXAMPLE LA, TV or Tr

4.3 Suitability for the generally used copying processes (diazo copying, microfilming, telefax, etc.).

4.4 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 (upper case) 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.

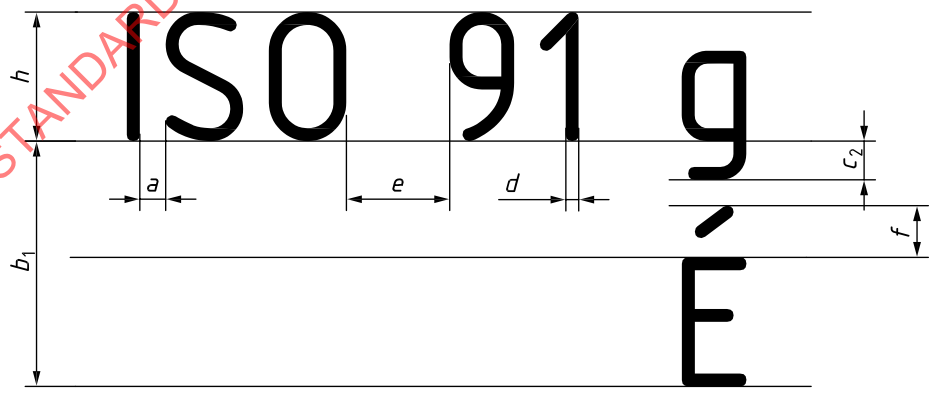


Figure 1

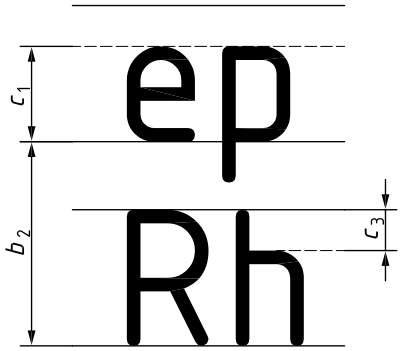


Figure 2

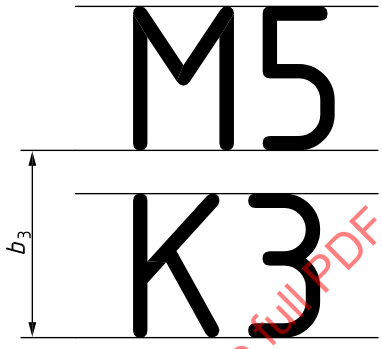


Figure 3

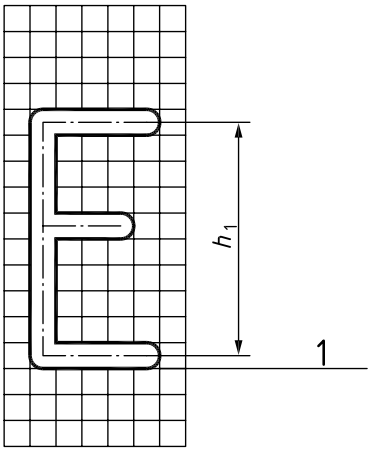
5.2 Location of central lines

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.

$$h_1 = h - d$$

$$a_1 = a + d$$

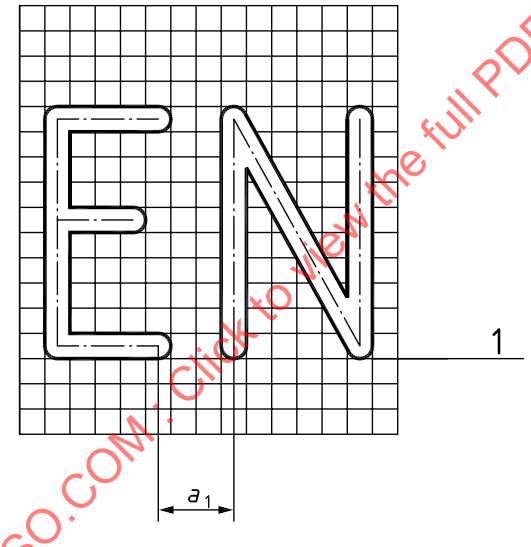
When CAD lettering is used (see ISO 3098-5), the same sizes are required as for other techniques.



Key

1 baseline

Figure 4



Key

1 baseline

Figure 5

5.3 Range of nominal sizes

The range of nominal sizes is specified as follows:

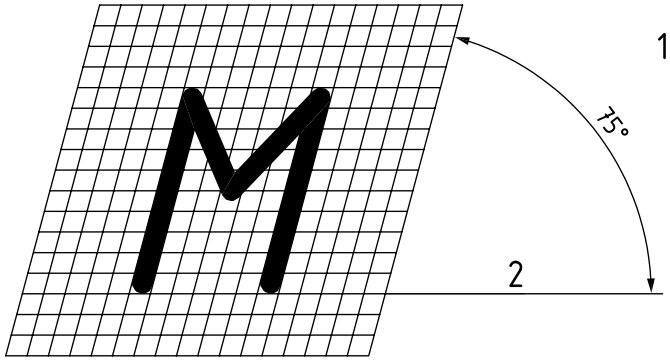
1,8 mm; 2,5 mm; 3,5 mm; 5 mm; 7 mm; 10 mm; 14 mm; 20 mm

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).



Key

1 inclination (slope)
2 baseline

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 h	Dimensions							
Lettering height	h	(14/14)h	1,8	2,5	3,5	5	7	10	14	20
Height of lower-case letters (x-height)	c_1	(10/14)h	1,3	1,8	2,5	3,5	5	7	10	14
Tail of lower-case letters	c_2	(4/14)h	0,52	0,72	1	1,4	2	2,8	4	5,6
Stem of lower-case letters	c_3	(4/14)h	0,52	0,72	1	1,4	2	2,8	4	5,6
Area of diacritical marks (upper-case letters)	f	(5/14)h	0,65	0,9	1,25	1,75	2,5	3,5	5	7
Spacing between characters	a	(2/14)h	0,26	0,36	0,5	0,7	1	1,4	2	2,8
Minimum spacing between baselines[a]	b_1	(25/14)h	3,25	4,5	6,25	8,75		17,5	25	35
Minimum spacing between baselines[b]	b_2	(21/14)h	2,73	3,78	5,25	7,35	10,5	14,7	21	29,4
Minimum spacing between baselines[c]	b_3	(17/14)h	2,21	3,06	4,25	5,95	8,5	11,9	17	23,8
Spacing between words	e	(6/14)h	0,78	1,08	1,5	2,1	3	4,2	6	8,4
Line width	d	(1/14)h	0,13[d]	0,18[d]	0,25	0,35[d]	0,5	0,7[d]	1	1,4[d]

[a] Lettering style: upper-case and lower-case letters with diacritical marks (see Figure 1).

[b] Lettering style: upper-case and lower-case letters without diacritical marks (see Figure 2).

[c] Lettering style: upper-case letters only (see Figure 3).

[d] Rounded values; the values of the dimensions c_1 to e are calculated from the rounded values of d.

Table 2 — Dimensioning of lettering type B

Dimensions in millimetres

Characteristic		Multiple of h	Dimensions							
Lettering height	h	(10/10)h	1,8	2,5	3,5	5	7	10	14	20
Height of lower-case letters (x-height)	c_1	(7/10)h	1,26	1,75	2,5[d]	3,5	5[d]	7	10[d]	14
Tail of lower-case letters	c_2	(3/10)h	0,54	0,75	1,05	1,5	2,1	3	4,2	6
Stem of lower-case letters	c_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)	f	(4/10)h	0,72	1	1,4	2	2,8	4	5,6	8
Spacing between characters	a	(2/10)h	0,36	0,5	0,7	1	1,4	2	2,8	4
Minimum spacing between baselines[a]	b_1	(19/10)h	3,42	4,75	6,65	9,5	13,3	19	26,6	38
Minimum spacing between baselines[b]	b_2	(15/10)h	2,7	3,75	5,25	7,5	10,5	15	21	30
Minimum spacing between baselines[c]	b_3	(13/10)h	2,34	3,25	4,55	6,5	9,1	13	18,2	26
Spacing between words	e	(6/10)h	1,08	1,5	2,1	3	4,2	6	8,4	12
Line width	d	(1/10)h	0,18	0,25	0,35	0,5	0,7	1	1,4	2

[a] Lettering style: upper-case and lower-case letters with diacritical marks (see Figure 1).

[b] Lettering style: upper-case and lower-case letters without diacritical marks (see Figure 2).

[c] Lettering style: upper-case letters only (see Figure 3).

[d] 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.

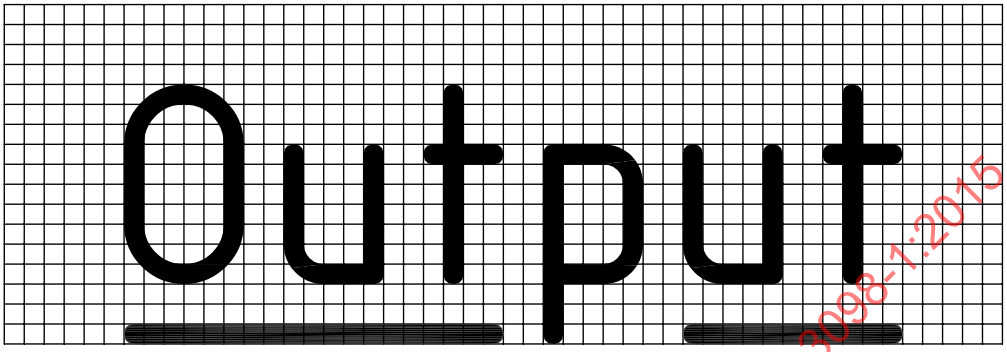


Figure 7

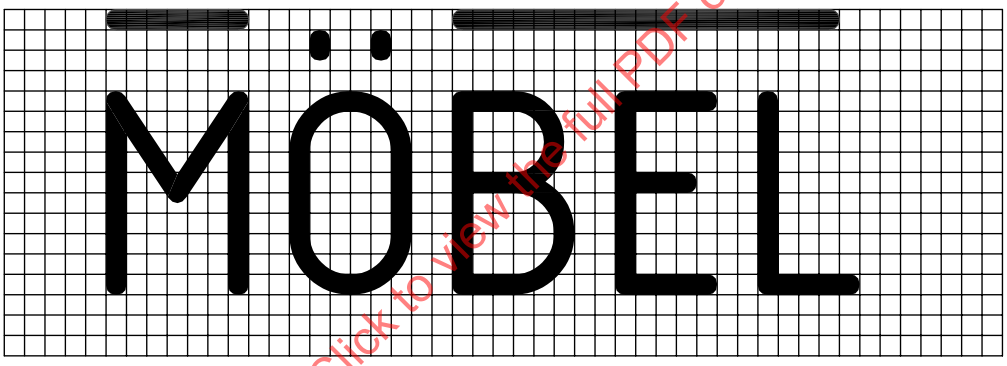


Figure 8