INTERNATIONAL STANDARD

ISO 3098-5

First edition
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Technical product documentation — Lettering —

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

Documentation technique de produits — Écriture —

Partie 5: Écriture en conception assistée par ordinateur de l'alphabet latin, des chiffres et des signes

Reference number
ISO 3098-5:1997(E)

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 3098-5 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*

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Technical product documentation — Lettering —

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

1 Scope

This part of ISO 3098 specifies the general requirements for computer-aided design and draughting (CADD) 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 CAD lettering using the techniques of numerically controlled lettering and draughting systems.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 3098. At the time of publication, the editions indicated were 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 editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 3098-0:1997, *Technical product documentation — Lettering — Part 0: General requirements.*

ISO/TR 10623:1991, *Technical product documentation — Requirements for computer-aided design and draughting — Vocabulary.*

3 Definitions

For the purposes of this part of ISO 3098, the definitions given in ISO 3098-0 apply. Further definitions used in computer-aided design and draughting are given in ISO/TR 10623.

3.1 proportional spacing arrangement: Arrangement of graphic characters in the direction of writing spaced according to their natural width.

3.2 tabular spacing arrangement: Arrangement of graphic characters in the direction of writing within a constant-width space at predetermined positions, independent of the natural width of the characters.

4 General requirements

The general requirements for CAD lettering are specified in ISO 3098-0.

5 Requirements for CAD lettering

5.1 The types of CAD lettering are as follows:

— lettering type CB, vertical (V): see figure 1 (preferred application);

— lettering type CB, sloped (S);

— lettering type CA, vertical (V): see figure 2;

— lettering type CA, sloped (S).

The dimensions of these types of CAD lettering are specified in table 1.

NOTE — In contrast with type CB, the character width (in the direction of lettering) and the line width of lettering type CA may be reduced by a factor of $\sqrt{2}$ (to give approximately lettering type A in accordance with ISO 3098-0).

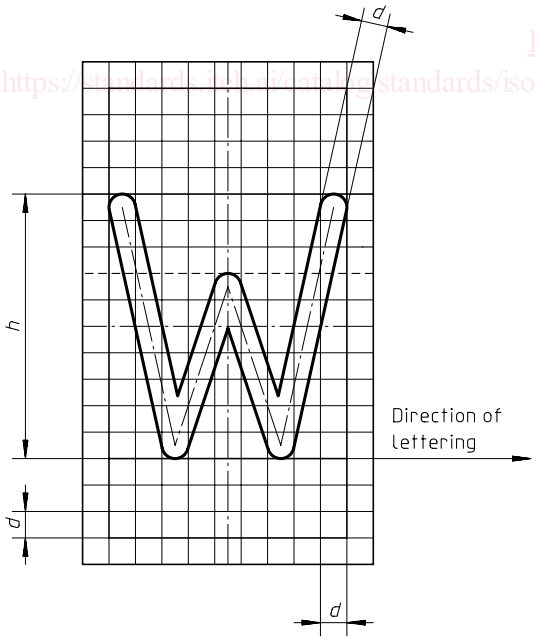


Figure 1

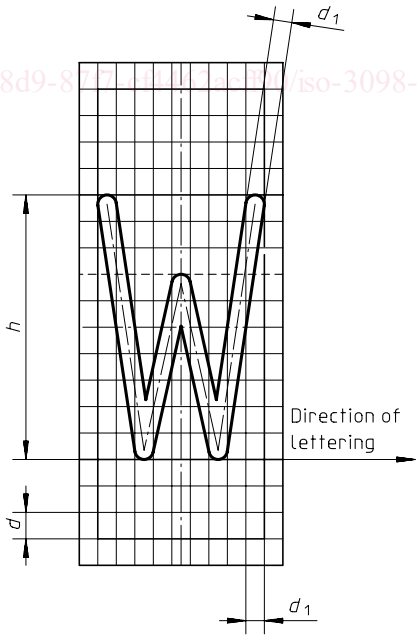


Figure 2

5.2 The types of spacing arrangements are as follows:

— tabular spacing (T): see figure 3;

— proportional spacing (P): see figure 4.

5.3 Each member of a graphic character set is established within a character box. The elements of the characters shall be positioned by means of a grid system. The following criteria for any member of a graphic character set shall be met:

a) dimensions (see figures 5 and 6), shape and location;

b) type of spacing arrangement (see figures 3 and 4);

c) points of adjustment within the character box (see figure 7).

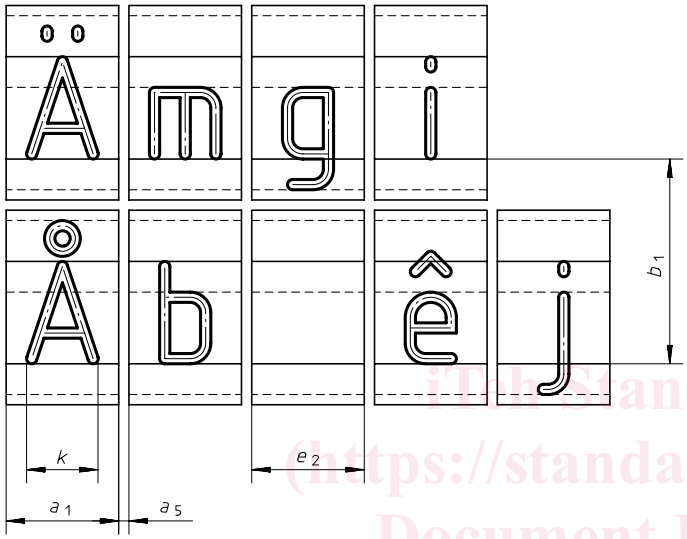


Figure 3

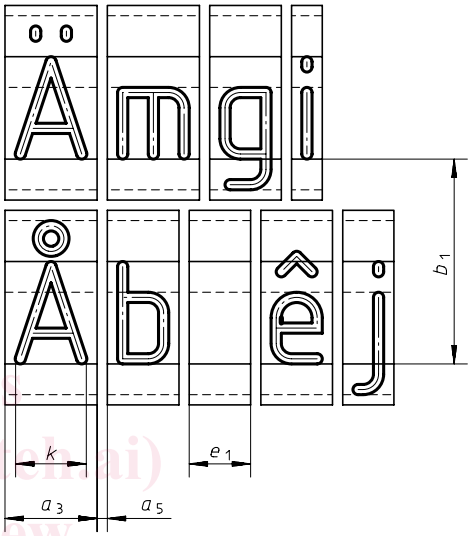


Figure 4

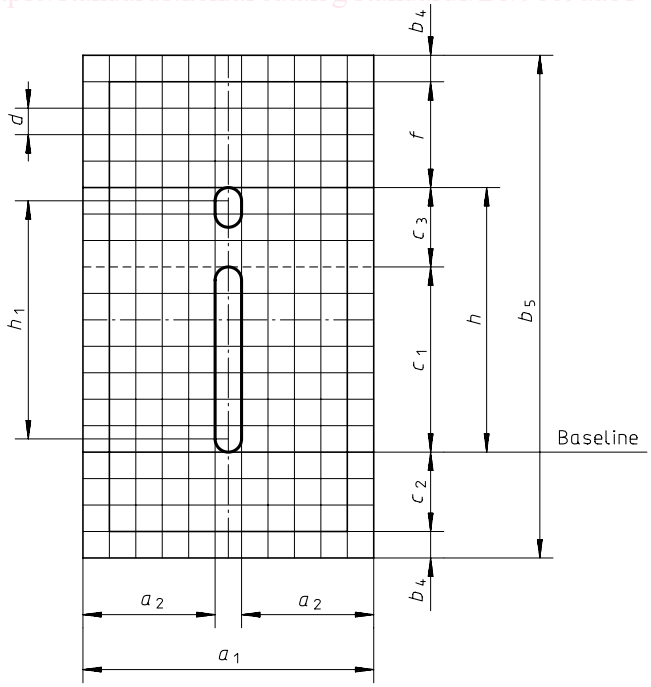


Figure 5

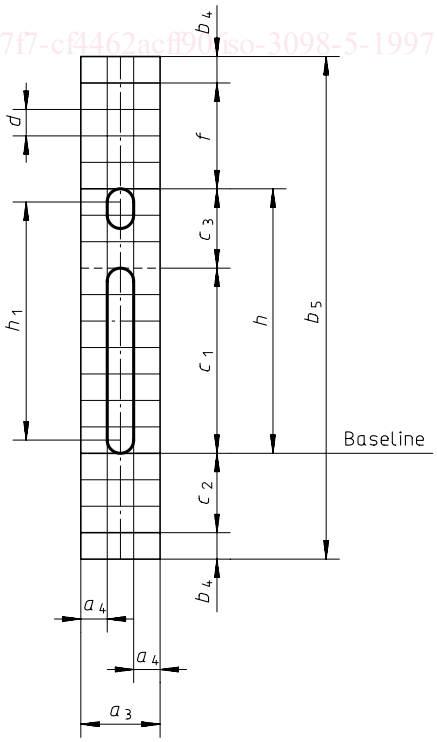


Figure 6

Table 1 — Dimensioning of lettering types CB and CA

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[3]	3,5	5[3]	7	10[3]	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									
Area of diacritical marks (upper-case letters)		f	(4/10)h	0,72	1	1,4	2	2,8	4	5,6	8
Width of any character (lettering type CB)[1]		k	—	See clause 8 and tables 3 to 6							
Height of the central line		h_1	(9/10)h	1,62	2,25	3,15	4,5	6,3	9	12,6	18
Width of the character box (lettering type CB)[1]	T	a_1	(11/10)h	1,98	2,75	3,85	5,5	7,7	11	15,4	22
	P	a_3	[(2/10)h]+k	See clause 8 and tables 3 to 6							
Spacing between baselines[2]		b_1	(19/10)h	3,42	4,75	6,65	9,5	13,3	19	26,6	38
Height of the character box		b_5	(19/10)h								
Horizontal spacing between character box and character (lettering type CB)[1]	T	a_2	($a_1 - k$)/2	See clause 8 and tables 3 to 6							
	P	a_4	(1/10)h	0,18	0,25	0,35	0,5	0,7	1	1,4	2
Vertical spacing between character box and character		b_4	(1/10)h								
Line width lettering	type CB	d	(1/10)h								
	type CA	d_1	(1/14)h	0,13[3]	0,18[3]	0,25	0,35	0,5	0,7[3]	1	1,4[3]
Spacing between words (lettering type CB)[1]	P	e_1	(6/10)h	1,08	1,5	2,1	3	4,2	6	8,4	12
	T	e_2	(11/10)h	1,98	2,75	3,85	5,5	7,7	11	15,4	22
Spacing between character boxes		a_5	$\geqslant 0$	—							

1) In case of lettering type CA the values of the dimensions k, a_1, a_3, a_2, a_4, e_1 and e_2 are calculated by dividing the values of the lettering type CB by $\sqrt{2}$.

2) Lettering style: Upper-case and lower-case letters with diacritical marks; for spacings by b_2 and b_3, see ISO 3098-0:1997, table 2.

3) Rounded values.

6 Alignment

Each character, each line of text and each area to be filled by several lines of text shall have one point of alignment.

The indication and location of points of alignment are given in table 2 and figures 7 and 8.

If numerical values are written in decimal form, the alignment shall be made with respect to the decimal sign (comma[1]). An example is shown in figure 9.

Table 2 — Indication of points of alignment

Direction		Horizontal		
		left	centre	right
Vertical	top	1	4	7
	centre	2	5	8
	bottom	3	6	9

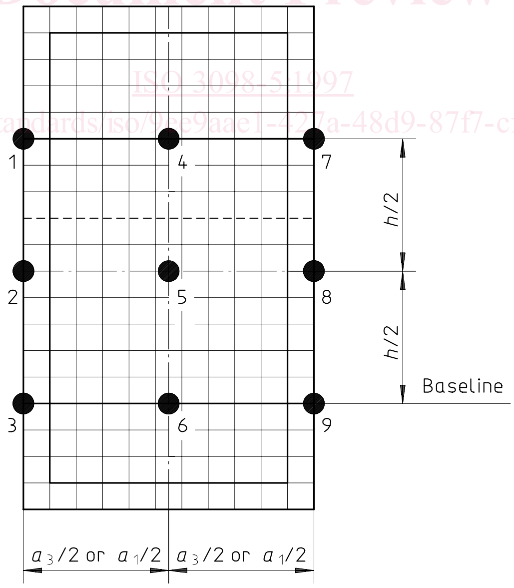


Figure 7

1) See IEC/ISO Directives, Part 3, 1997, 6.6.7.1.

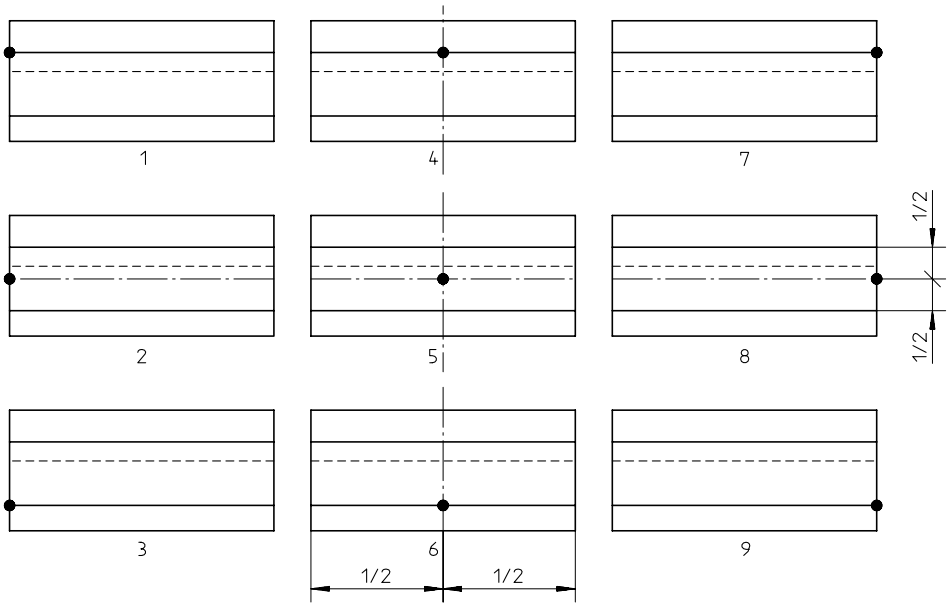


Figure 8

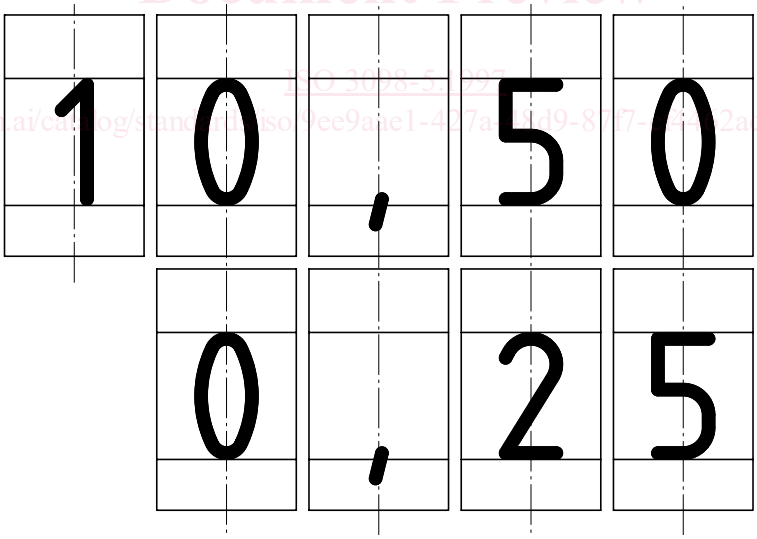


Figure 9

Several lines within an area filled by text may be arranged left-aligned, centred or right-aligned (see figure 10). An example of the location of the point of alignment for a complete area is shown in figure 11.

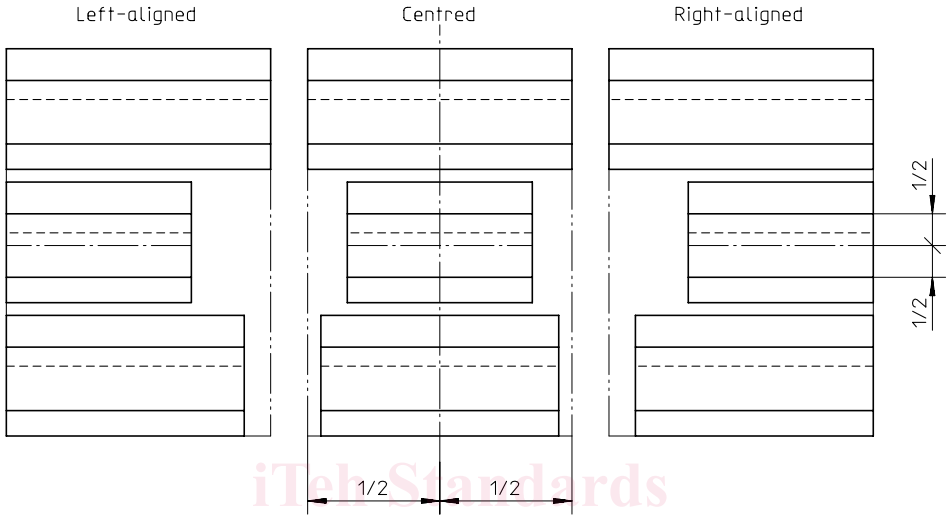


Figure 10

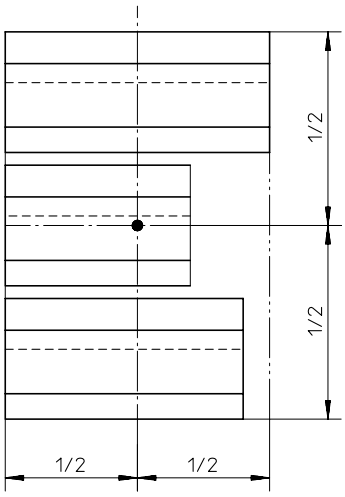


Figure 11

7 Designation

A graphic character set of a CAD lettering type shall be designated in accordance with ISO 3098-0.

EXAMPLE — A graphic character set of lettering type CB in proportional spacing arrangement, vertical, Latin alphabet, size 3,5 mm, shall be designated as follows:

Lettering ISO 3098 - CB PVL - 3,5

8 Form of characters

The characters of the lettering type CB shown in tables 3 to 6 are presented within an imaginary grid which is necessary for identification of positioning and proportions.

An example, shown in figure 12, presents a certain character within an imaginary grid.

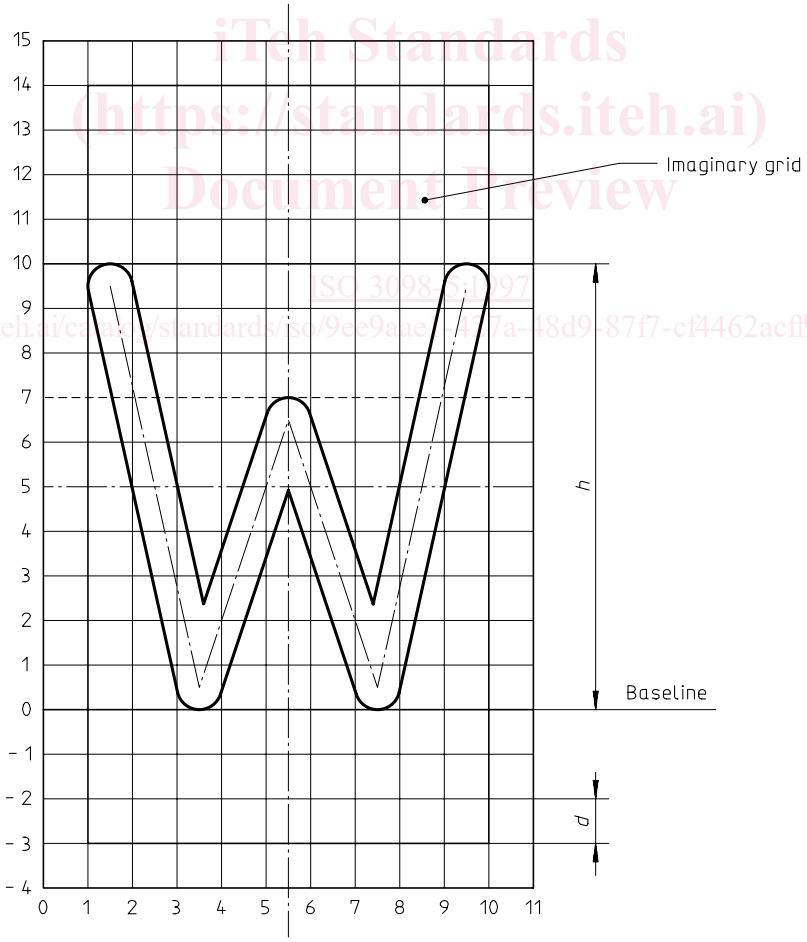


Figure 12

Indications of characters in tables 3 to 6 are interpreted as follows.

a) Numerals in front of the oblique stroke indicate the kind of character.

001/... to 100/...: upper-case (capital) letters (table 3)
101/... to 200/...: lower-case (small) letters (table 4)
201/... to 300/...: numerals (table 5)
301/... to 400/...: marks (table 6)

b) Numerals behind the oblique stroke indicate the diacritical marks of letters.

.../00: without diacritical mark
.../01: with grave accent
.../02: with acute accent
.../03: with circumflex
.../04: with tilde
.../05: with diaeresis
.../06: circle above
.../07: with double acute accent
.../08: with caron
.../09: with breve
.../10: with macron
.../11: with dot above
.../12: with cedilla
.../13: with oblique stroke
.../14: with stroke soft hyphen
.../15: with stroke
.../16: with eta
.../17: diphthong ligature with E
.../18: special letters

Table 3 — Upper-case letters and accents

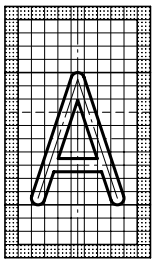
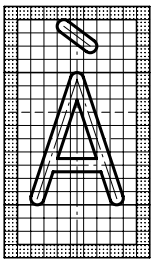
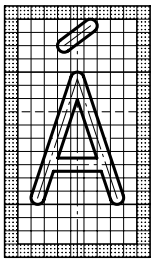
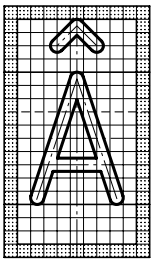
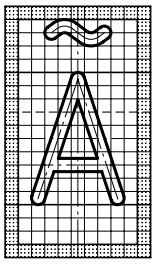
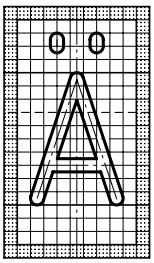
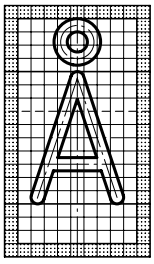
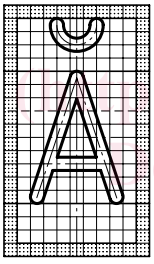
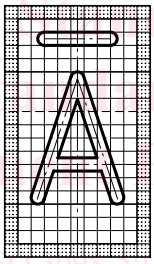
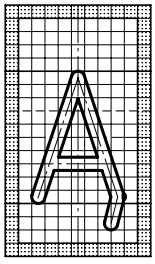
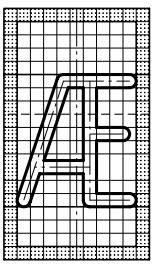
 001/00	 001/01	 001/02	 001/03	 001/04
	 001/05	 001/06		
	 001/09	 001/10		 001/12
	 001/17			

Table 3 — Upper-case letters and accents (*continued*)

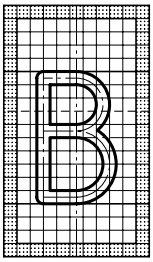
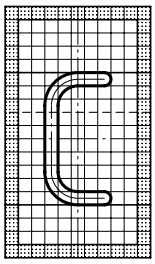
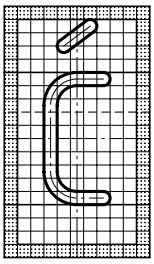
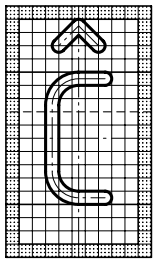
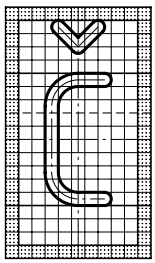
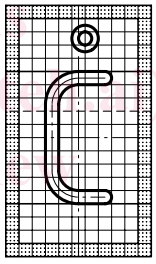
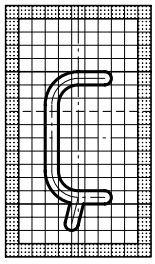
 **002/00**				

Table 3 — Upper-case letters and accents (*continued*)

 003/00		 003/02	 003/03	
				 003/08
			 003/11	 003/12