S L I D E

P O S T E R

(SP)

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A Program Writeup

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Introduction

SP allows the user to produce high quality text drawings from DISSPLA without getting involved with tedious programming details. The basic unit produced by the program is a page (for slides) which is composed of several lines of text (including greek alphabets and some mathematical symbols). If required (for poster presentation) several of these pages may be produced at coordinates specified by the user. In the following a brief description of the concept of usage and parameters are given.

For one particular run the dimension of the plot area is specified (XSIZE, YSIZE, FACT). If required a border may be drawn around the plot area (IBRDR). The user also must indicate whether the output is hard copy or disk plot file (ITEK). These parameters are on the P1 parameter card.

Next the specifications for one individual page are required. The user may specify the origin of the page (XO, YO), the dimension of the page (XPAGE, YPAGE, FCT) and whether it should be framed (IFR) or not. It is also possible to define the origin of the first line of text (XLO, YLO) together with the height of characters (HTO) and the line spacing (SPACE). If the first text line is a title card it will be drawn larger if the ITITLE option is used. By selecting ITYPE and ICHAR the user is free to decide which style to use for plotting the text. At the beginning when debugging the input, ITYPE = 0 and ICHAR = 0 may be used. For the final version TABLE 1 .. TABLE 4 may be consulted to obtain the desired style. Rotation of lines or pages for special effect also can be done. These are the parameters on P2 parameter card and required for each new page.

N.B. Obviously if more than one page is produced, XO and YO must be given, otherwise the first page may be overwritten.

After all the required parameters are specified the user must prepare the text to be plotted. In order to be able to switch alphabets and/or lower case to upper case, some shift characters are selected which are given in a table. The shift characters are not plotted, but when the length of a character string is calculated, they are included. After the last character on a line, it is not necessary to shift back to lower case, which is the default for each new line. If the maximum of 60 characters (which includes the shift characters as well) is not enough, or for special effects, continuation is possible. For this purpose the $ sign is reserved (see comments #3). It is also possible to center any particular line with respect to the X dimension of the page (XPAGE, see ICHAR on DATA card). Although limited success can be achieved by blanks, without ICHAR the centering is very difficult due to variable spacing of characters.

For total flexibility, the current line spacing can be changed to provide more room for the next line which for example contains mathematical symbols or needs highlighting (see YT on DATA card). The effect of this control is only for a single line.

A page terminates with END in columns 1-3. If only a frame is required in a certain position DATA cards are not needed but the END card is required.

The arrangement of input is shown schematically on Figure 4.

P1 PARAMETER CARD (Free Format)

N.B. All variables must be defined and separated by at least one blank space. Where applicable 0 is redefined in the program to the default value specified for the variable!

Variable

XSIZE Defines the horizontal dimension (along the X axis) of the plot area. The actual size is XSIZE times FACT (defined below).

DEFAULT is 12.

YSIZE As above, but for the vertical dimension (along the Y axis).

DEFAULT is 30.

FACT A multiplier which can be used to change the scale of the entire plot area.

The DEFAULT is 1. In this case the numbers given are in inches. If cm unit is desired, then FACT = 0.3937 (~ 1/2.54) should be specified.

IBRDR = 1 draws a border around the requested plot area.

For IBRDR = 0 border is not drawn.

There is no default for this parameter.

ITEK = 0 Hard copy plot is generated directly either on CAL960 or on CAL1051.

= 1 A disk plot file (PLFILE) is generated (which must be catalogued). This file then can be previewed and/or transferred to hard copy by DISSPOP.

There is no default for this parameter.

IREDEF = 0 must be used.

P2 PARAMETER CARD (Free Format)

N.B. All variables must be defined and separated by at least one blank. Where applicable 0 is redefined in the program to the default value specified for the variable!

Variable

XO — X coordinate of the origin of a plot on the plot area

{ specified by XSIZE and YSIZE on P1 card (see Figure 1)}.

DEFAULT is 2.

Negative value terminates the job! (See DATA STRUCTURE)

YO — As above, but for Y.

DEFAULT is 1.

XPAGE — Dimension of plot.

DEFAULT is 8.

YPAGE — As above, but for Y.

DEFAULT is 5.

IFR — = 0, the control is not used.

= 1, a frame, composed of 3 lines, is drawn around the plot, using pen #3.

FCT — Scale applies to this plot.

DEFAULT is 1.

N.B. The final scale is FACT times FCT!

XLO — X coordinate of the first character drawn as referred to XO.

DEFAULT is 0.5.

YLO — As above, but for Y.

DEFAULT is YPAGE -5 times HTO.

HTO — Height of text to be drawn.

DEFAULT is 0.14.

SPACE This parameter can be used to specify line-spacing in terms of the height of text (HT). The default is 2.1 which gives 0.3" spacing if the default HT (= 0.14) is used with FACT = 1 and FCT = 1.

ITITLE = 1. The first data card is treated as a title card. It is drawn with height of 1.5 times HTO size.

= 0. First card is not a title card.

There is no default for this parameter.

ITYPE This control is used to select the style of letters used for plotting. It can have integer values from 0 to 7 (See TABLE 1 ... TABLE 4).

= 0 DEFAULT, plain, should be used for debugging typing errors, ... etc. This is the least expensive to run.

= 1 CARTOGRAPHIC. Upper case only, maximum plotting speed.

= 2 SIMPLEX. Useful for large characters with heavy pen.

= 3 SMALL COMPLEX. Useful for small charactes (less than 0.2" high). Good for mathematical symbols and greek letters.

= 4 COMPLEX. Textbook quality. Most complete collection of character sets. Good for mathematical symbols and greek letters.

= 5 DUPLEX. Drafting quality for heavy characters.

= 6 TRIPLEX. Very high resolution. Poor greek letters and no mathematical symbols.

= 7 GOTHIC. Ornate old manuscript characters. Very slow.

<u>There is no default for ITYPE</u>.

Variable

ICHAR — Permissible values are 0, 1 and 2, or 10, 11 and 12, see ICHAR on DATA. For any given type (specified by ITYPE) the user can select ROMAN, ITALIC or SCRIPT corresponding to 0, 1 and 2. (See TABLE 1 ... TABLE 4).

There is no default for this parameter.

IREDEF — 0 must be used.

ANG — Angle of rotation in decimal degrees for the plot. The rotation is anti-clockwise. This variable has a dual function:

For ANG positive, the rotation is carried out separately for each line of data. If frame is requested, it is not rotated.

For ANG negative, the whole plot is rotated together with the frame.

In both cases the first column of text is parallel with a side of the frame.

DATA Format (6A10,3F5.0,3I1,I2)

Col.	Variable	
1-60	IA	Data to be plotted. Up to 60 characters are available including the shift characters. END in columns 1-3 terminates the plotting within a sub-plot area. (See DATA STRUCTURE) If the last character is a $ sign, then this card is interpreted as a continuation line and the character string is plotted as continuation of the previous line. All the rest of the variables can be used as desired.
61-65	XT	X coordinate where the character plotting will start. DEFAULT is 0.5.
66-70	YT	As above, but for Y. DEFAULT is YPAGE -5 times HTO. As YT should have no legitimate negative values, this parameter has a dual function. For positive value (including zero) it behaves as stated. For negative value it is used to move the plotted line back or forth to provide change in positioning the present line. The following diagram is used to explain how YT can control the line position for a particular line. The lines A, B and C show the psotions of the previous line, the present line and the next line before modification.

	YT
A	-4.0
B	-2.0
C	-0.001

If YT = -4.0, then B moves back to position A, i.e. in this case one can draw characters on the previous line. YT = -2.0 does introduce no change. YT = -1.5 would draw the characters exactly half-way between B and C, and YT = -.001 would practically put it on line C. Any fractional value may be used for YT. Thus if YT is between -2 and -4 then the line is moved back toward the previously drawn line, if YT is between -2

Col.	Variable	
		and -.001 the line is moved forward from its normal spacing. Although this type of movement can be provided by specifying YT as positive number (thus actually giving the desired Y coordinate for the line), due to the possibility of changing scale for the total plot area (FACT), and for the sub-plot (FCT) and also being able to shift the origin of the plot area (YO) and that of the sub-plot area (YLO), the direct specification of YT requires more care than the use of negative YT. For a continuation line (i.e. $ sign after text), YT behaves differently: in this case the present line is represented by B on the previous diagram: YT = -2 will plot on the same line, YT = -2.8 would raise the characters (into a superscript position), YT = -1.7 would lower the characters (into a subscript position). As the rest of the variables in the DATA card can be used as required, with the combination of continuation line ($ sign as last character in IA), YT (the relative movement of the plotting line with respect to the position of the original line), HT (text height for the continued line), IPEN (pen number), etc. a great variety of combinations are available to produce highly complex mathematical or textural expressions.
71-75	HT	Height of text. DEFAULT is 0.14.
76	IREDEF	0 must be used (may be left blank).
77	IPEN	Pen number to be used. Permissible values are 1 to 4.

Col.	Variable	
78	ITYPE	As described above (P2 card). If ITYPE = 0, the value in force (i.e. specified either on the P2 card or earlier in a data card) is used. ITYPE = 9 must be used to set ITYPE to zero..
79-80	ICHAR	As described above (P2 card). If ICHAR = 0, the value in force (i.e. specified either on the P2 card or earlier on a data card) is used. ICHAR = 99 must be used to set ICHAR to zero.. In this position (i.e. on the DATA cards) ICHAR may be used to center the text. The centering is valid only for the given line. It should be used with care because all leading blanks and shift characters are included in the calculation for centering (DISSPLA is doing it that way!). The text line is centered with respect to XPAGE! This feature can be activated by adding 10 to ICHAR. In this case 10, 11 and 12 may be used for ICHAR.

Preparation of text to be plotted (IA):

In order to select a desired alphabet, shift characters are used. The following table shows the alphabets presently available and the shift characters to activate them (U/C = upper case, L/C = lower case).

Alphabet	Shift Character	Card code
Roman L/C	)†	12-8-4
Roman U/C	(	0-8-4
Greek L/C	"	8-4
Greek U/C	*	11-8-4
Mathematic	%	8-6
Other symbols	!	11-0
	:	8-2
	;	12-8-7

† As the Roman L/C is the base alphabet, when a line is started and lower case is required the shift character is not needed.

Table 1, ... Table 4 show what alphabets or special symbols are available. The construction of IA is done as follows:

1. Decide which style to be used (see ITYPE and ICHAR on P2 card),
2. Using Table 1-4 find the character or symbol and its shift character,
3. Look up and punch the Roman U/C character which corresponds to the required character.

For example Δg should be punched as follows:

*D)g

{* shifts to upper greek,) shifts to lower case Roman }

Figure 2 gives the text which is required to produce Figure 3. Careful examination of these figures will help greatly to answer many of the questions which may not be explained in this brief write-up.

Comments on the preparation of data cards.

1. If XT, YT and HT are not specified, the defaults are used as initial values. For plotting the next line the YT is obtained by decreasing the previous value by SPACE times HT. By specifying any of the parameters XT, YT, HT, the new values will be in force until they are changed. For example if HT is decreased to a size of 0.1, then all following lines will be drawn in that size until HT is changed.
2. Indentation can be achieved:
   i) by introducing blank spaces when preparing IA (i.e. leaving the first few columns blank, which must be included in the column count);
   ii) by specifying XT. In this case however one must reset XT when indentation is not needed.
3. Continuation. Putting a $ sign in any position in IA indicates that the present line is a continuation of the previous line. In this case the first character of the present line is plotted (including blanks) next to the last non-blank character of the previous line. This continuation can be repeated any number of times. Of course the user must make sure that there is sufficient room available (i.e. XPAGE is large enough).
4. Horizontal spacing in units of a quarter of text size (HT) can be introduced in the text by inserting !Z. Thus a unit size shift between n and α in sin α can be produced as follows:

   sin!Z"A.

The following is a list of how some subscript and/or superscripts can be obtained from SP:

	Typing this	produces	
1	!Z1	2	as superscript
2	!Z2	1/2	as superscript
3	!Z3	1	as subscript
4	!Z4	i,j	as subscript
5	!Z5	m,n	as superscript and subscript

EXAMPLES

	Typing this	produces
1	X!Z1 + Y!Z1	$x^2 + y^2$
2	(()X!Z1 + Y!Z1 + Z!Z1)!Z2	$(x^2 + y^2 + z^2)^{1/2}$
3	X!Z3,Y!Z3	x_1,y_1
4	C!Z4 = A!Z4 + B!Z4	$c_{ij} = a_{ij} + b_{ij}$
5	(A!Z5 = (S!Z5 + (C!Z5	$A_n^m = S_n^m + C_n^m$

The drawn equations will match the typed text if FCT = 0.566 and the default parameters for HT and SPACE (i.e. 0.14 and 2.14) are used on the P2 card. Use pew size 3 for drawing.

JCL to produce hard copy plot.

```
XXXXX,CM157000,T77,IO777,P2.          NAME          PHONE No.
ACCOUNT(-----)
COMMENT.( )           JOB ID
MOUNT(VSN=EMR130,SN=GMSM)
ATTACH(LGO,SLIDE,ID=NAGY,MR=1,SN=GMSM)
ATTACH(EMRLIB)
LIBRARY(EMRLIB)
BEGIN,DISSPLA,,CAL960,NAME=$NAME/STOP NO$.
7/8/9

    DATA

7/8/9
6/7/8/9
```

NOTES:

1. If more than 2 pens or best possible quality plots are required then use CAL1051. Include P1=NIB,... etc. as required.

2. Monitor the times (T,IO) used by the job and make the necessary adjustments on the job card.

3. If you are familiar with PLFILE, DISSPOP, then you can create a disk file, view it on the TEKTRONIX terminal and produce hard copy only at the final stages.

Appendix A

IFR is positive > 1: Complex frame is drawn.

N.B. Do not use larger IFR than 5!

A frame inside (and bordered by) XPAGE, YPAGE is drawn whose form depends on the value of IFR.

= 2 A rectangular grid rotated by 45° is drawn from the bounding lines of XPAGE, YPAGE towards the inside by XBR, YBR distance where XBR is the larger of $\frac{0.25}{FCT}$, 0.06* XPAGE

Similar relation holds for YBR.

= 3 Similar to IFR=2 case, except that a more complicated frame pattern is generated.

> 4 In this case the user must specify the following parameters (see diagram):

XBR, YBR, AO, DLINE, DA, IP

Provide above information in free format mode, immediately after the P2 parameter card.

XBR.....thickness of frame along X direction

YBR.....as above for Y

AO.....initial azimuth of shading lines positive counterclockwise from the horizontal direction

DLINE...line spacing (i.e. distance between shading lines)
For negative DLINE no shading is done.

DA.....differential angle used only when IFR=5 to produce complex pattern for frame (Use values between 1 to 5)

IP.....pen number to be used to draw the frame.

For negative IP the cross-shading is not done (only parallel lines are drawn).

IFR=4 Produces a frame based upon user specified parameters.

=5 As for IFR=4 but frame pattern is more complex.

IFR is negative: Produces a rectangular grid.

IFR specifies the number of grid lines in the X direction (IXG) and the number of grid lines in the Y direction (IYG) as follows:

IFR = - (IXG + 100 * IYG)

For example to draw a 5 by 2 grid over each unit length (IXG=5, IYG=2):

IFR = -205 (zero must be used as filler!)

If the number of grid lines is the same in both X and Y direction, then it is sufficient to specify IXG: For example:

IFR = -10

would draw a 10 x 10 grid over each unit area.

Of course

IFR = -1010 would do the same!

Appendix B

Additional Features of SP:

So far the user is provided with facilities which may be sufficient for most applications. However if some mathematical text require super - or subscript, then additional programming is required because DISSPLA does not provide a simple procedure for above purpose. To solve this problem the so called Z letter command is used, which enables the user to insert a set of characters into any text. The Z command was implemented in SP in such a way that various levels of attention are required to use them. In general this command takes the form:

Shift character letter Z integer number.

In this implementation the shift character is the ! sign, the integer can take values between 1 and 5. Also the integer can be ommitted.

For examples: !Z !Z3 !Z5

In the following we describe what is implemented in SP.

N.B. After any Z command the user is returned to standard lower case alphabet.

Level 0:

In SP six instructions may be used with the shift character !: !Z, !Z1, !Z2, !Z3, !Z4, !Z5. The first one (!Z) is used to provide a horizontal shift (wherever it is used) of size = 0.25 times the text size. For example AB and A!ZB will be plotted different: the second AB will have a quarter of letter size spacing between them in addition to the spacing provided for the characters by DISSPLA. (Naturally !Z is not plotted, its function is to provide spacing). If it is required, !Z can be used repeatedly such as A!Z!Z!ZB.

In addition to !Z, the other commands can also be used anywhere in the text. Their function is shown in the TABLE A below:

TABLE A

	Typing this	produces		Function type
1	!Z1	2	as superscript	1
2	!Z2	1/2	as superscript	1
3	!Z3	1	as subscript	2
4	!Z4	i,j	as subscript	2
5	!Z5	m n	as superscript and subscript	3

EXAMPLES

	Typing this	produces
1	X!Z1 + Y!Z1	$x^2 + y^2$
2	(()X!Z1 + Y!Z1 + Z!Z1)!Z2	$(x^2 + y^2 + z^2)^{1/2}$
3	X!Z3,Y!Z3	x_1, y_1
4	C!Z4 = A!Z4 + B!Z4	$c_{ij} = a_{ij} + b_{ij}$
5	(A!Z5 = (S!Z5 + (C!Z5	$A_n^m = S_n^m + C_n^m$

NOTE: Level 0 does not require input data.

Level 1:

In the previous level the numerical values or characters were predefined in the programs. If the user wants to use different characters, then the parameters IREDEF must be used.

The simplest way is to set IREDEF to -1. In this case the user can (and must) redefine all the characters given in TABLE A (in the third column under the heading "produces"). Since format free readings is used, all input must be enclosed in quote mark ("). (If " is required inside the ", then use two " for that, see example below). ALL CHARACTERS MUST BE INPUT even if only one is changed. The number of characters for each function type must remain the same as given in TABLE A, but numeric can be changed to alphabetic and vice versa. For example to produce 3/2 when !Z2 is used the following input must be provided:

"2" "3/2" "1" "I,J" "M" "N"

Another example:

"Q" "3/2" "P" """M)" "2" "K"

The fourth input data will produce μ: the quote mark in front of M is a shift character (must be put in as a double quote); this will produce a lower case greek letter. The bracket after M will shift back to the standard lower case alphabet. If the bracket is not used, all the remaining text will be written in lower case greek until a shift character is used to activate another alphabet. Note here that the function types (1 for superscript, ... see TABLE A) cannot be changed.

NOTE: Input data required for Level 1 must follow the card on which IREDEF was activated.

Level 2:

Although Level 1 provides some additional flexibility compared to Level 0, in some applications this may not be sufficient. Therefore in this level more flexibility is provided with requires the user to give more information to the program. In this level IREDEF must be between 1 and 5: it will indicate how many of the available five Z instructions will be changed (the ones which are not changed will have the functions which they had before). Note here that any one can be changed here. Once the numerical value of IREDEF is decided, for each step of the redefinition the following numerical values must be given:

I FT NC CHAR

where I the index value for Z. For example I = 2 will define Z2. The order is not important but I must be between 1 and 5.

FT function type as given in Table A. This can take values between 1 and 3 (see allowable combination with I later).

NC number of characters in character string. This allows the user to specify up to 9 characters (this must include shift characters when changes in alphabets are made). This means that reasonably complicated expressions can be put in as superscript and/or subscripts.

CHAR character string of up to nine elements including all shift characters.

To provide the greatest possible flexibility for $1 \leq I \leq 4$, FT can be any desired value of 1 or 2. This means that the user can define character strings (up to 9 characters) to put into either superscript or subscript position for any of the four values of I specified above.

The following example may make clear some of the points discussed above: Redefine I=1,2,3,5 as superscript, superscript, subscript and super and subscript (i.e. FT = 1,1,2,3 respectively).

Put 8 characters into superscript position,

4 characters into superscript position,

6 characters into subscript position,

9 characters into super and subscript position.

The coresponding characters will be:

$-\mu-\nu+2$

$-5/2$

$2n-1+k$

$2\int\varphi d\varphi \quad -2\mu+4\nu-$

To activate the redefinition set IREDEF to 4 (four changes will be made)!

The input consists of the following:

```
1       1       8     "-""M-N)+2"
2       1       4     "-5/2"
3       2       6     "2N-1+K"
5       3       9     "-%I""F)D""F"  "-""2M+4N-P"
```

NOTE: Input data required for Level 2 must follow the card on which IREDEF was activated.

Level ∞:

All the letter instructions provided by DISSPLA may be used from within SP. In this case the character ! must be used as the shift operator.

Examples: To underline text

```
(THIS IS THE TITLE !U
```

Double underline may be produced as:

```
!P(CAPITAL LETTERS!D
```

N.B. Remember that parameters set by letter commands stay in effect until they are reset. For example if part of the text on a line is elevated, then the rest of the text will be elevated until the parameter is reset!

Summary of instructions to use SP:

To LOGIN:	LOGIN,account number,id.
To activate File:	ATTACH,EWFILE,SAP,ID=NAGY,SN=GMSM TXTEDIT
To submit job for execution:	SAVE,A,NS BATCH,A,INPUT,DF
To LOGOUT:	BYE LOGOUT

TXTEDIT instructions:

To list: L, ℓ_1 - ℓ_2, ℓ_3, ...

where ℓ_1, ℓ_2, ℓ_3 are line numbers

example: L,120-140,270,350-*L
(*L stands for last line)

To delete: D, ℓ_1-ℓ_2, ℓ_3-ℓ_4, ℓ_5, L

(deleted lines listed using L in last position)

example: D,170,220-*L,L

To change characters: /old text/ = /new text/, ℓ_1-ℓ_2, L

example: /TEXT1/=//,130,L

TEXT1 is deleted from line 130

/T/=/TEXT1/,140,L

T is replaced by TEXT1 on line 140

To add text into columns: (C1, C2)=/text/,ℓ_1,L
C1,C2 are the column number ranges
example: (67,70)=/2.5/, 140, L
-2.5 will be put into columns 67 to 70.

To add lines: ℓ_1= text$_1$
ℓ_2= text$_2$ N.B. No blank between ℓ_1 and = sign!

To terminate process put in = in first column.

example: 231=FIN1
232=OUT
=

If several lines are required, one may use the following procedure:

AUTO FROM ℓ_1 BY inc
where ℓ_1 is the starting line number
inc is the line number increment.

In this case the line numbers with = sign are produced by TXTEDIT.

To terminate the process use = sign in column 1.

To duplicate lines: DUP,ℓ_1-ℓ_2 AT ℓ_3

example: DUP, 230-350 AT 510

To produce listing on a "new page" on the terminal
Type in L,ℓ_1 - ℓ_2 (do not retrun carriage)
Hold down SHIFT and press CLEAR HOME
Press RETURN CARRIAGE

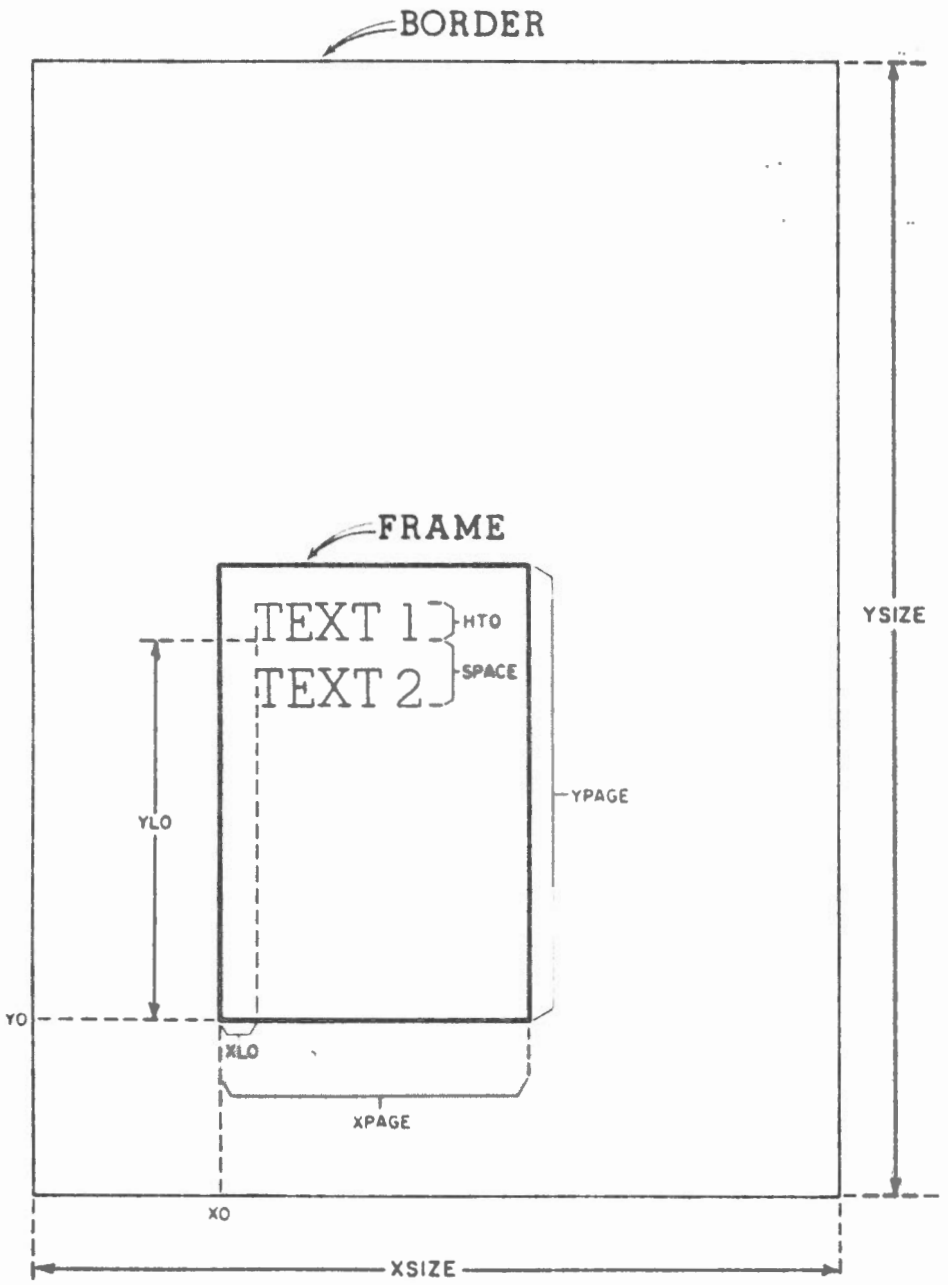

BORDER
FRAME
TEXT 1
TEXT 2
HTO
SPACE
YLO
YPAGE
YSIZE
YO
XLO
XPAGE
XO
XSIZE

Figure 1

```
 10 12 0.7 1 1 0
 1 0 8 10 1 0 0 0 0 0 1 3 0 0 0
          (T H E O R Y
```

(T)HE FUNCTIONS REQUIRED IN ((1))-((7)) , FROM WHICH THE NUMERICAL VALUES (() AT THE ORIGIN) CAN BE CALCULATED BY SUBSTITUTING THE LIMITS, ARE AS FOLLOWS :

```
     (U) = K*R!Z%2)X!ZY!Z!ZLN(()Z+R) + Y!ZZ!ZLN(()X+R)
                   - 0.5!ZX!ZX!ZATAN(()Y!ZZ/X!ZR)                    -1.0
                   - 0.5!ZY!ZY!ZATAN(()Z!ZX/Y!ZR)                    -1.0
                   - 0.5!ZZ!ZZ!ZATAN(()X!ZY/Z!ZR)%3 ),               -1.0
                                                  ((8))              -4.0
```

WHERE K IS THE GRAVITATIONAL CONSTANT, AND *R) IS THE DENSITY OF THE PRISM.

```
   %Q(U/%Q)Z = -*D)G = K!Z*R% 2 )X!Z!ZIN(()Y + R)
                + Y!ZLN(()X+R) - Z!ZATAN(()X!ZY/Z!ZR)%3 ).            -1.0
                                                  ((9))              -4.0
```

(F)ROM (E)Q. ((9)) %Q(U)/%Q)X AND %Q(U)/%Q)Y CAN BE OBTAINED$ BY CYCLIC PERMUTATIONS :

```
         %Q*D)G/%Q)X = - K!Z*R!ZLN(()Y+R) ,
                                                  ((10))             -4.0
         %Q*D)G/%Q)Y = - K!Z*R!ZLN(()X+R) .                          -1.0
                                                  ((11))             -4.0
```

(T)HESE EXPRESSIONS CAN BE OBTAINED EITHER DIRECTLY FROM FIRST PRINCIPLES, OR COMPILED FROM PUBLICATIONS.

```
END
-1 0 0 0 0 0 0 0 0 0 0 0 0 0 0
```

Figure 2

T H E O R Y

The functions required in (1)–(7) , from which the numerical values (at the origin) can be calculated by substituting the limits, are as follows :

$$U = k\rho\Big[x\,y\,\ln(z+r) + y\,z\,\ln(x+r) - 0.5\,x\,x\,\mathrm{atan}(y\,z/x\,r) - 0.5\,y\,y\,\mathrm{atan}(z\,x/y\,r) - 0.5\,z\,z\,\mathrm{atan}(x\,y/z\,r)\Big] , \qquad (8)$$

where k is the gravitational constant, and ρ is the density of the prism.

$$\partial U/\partial z = -\Delta g = k\rho\Big[\,x\,\ln(y+r) + y\ln(x+r) - z\,\mathrm{atan}(x\,y/z\,r)\Big] . \qquad (9)$$

From Eq. (9) $\partial U/\partial x$ and $\partial U/\partial y$ can be obtained by cyclic permutations :

$$\partial\Delta g/\partial x = -\,k\rho\ln(y+r) , \qquad (10)$$

$$\partial\Delta g/\partial y = -\,k\rho\ln(x+r) . \qquad (11)$$

These expressions can be obtained either directly from first principles, or compiled from publications.

Figure 3

DATA STRUCTURE

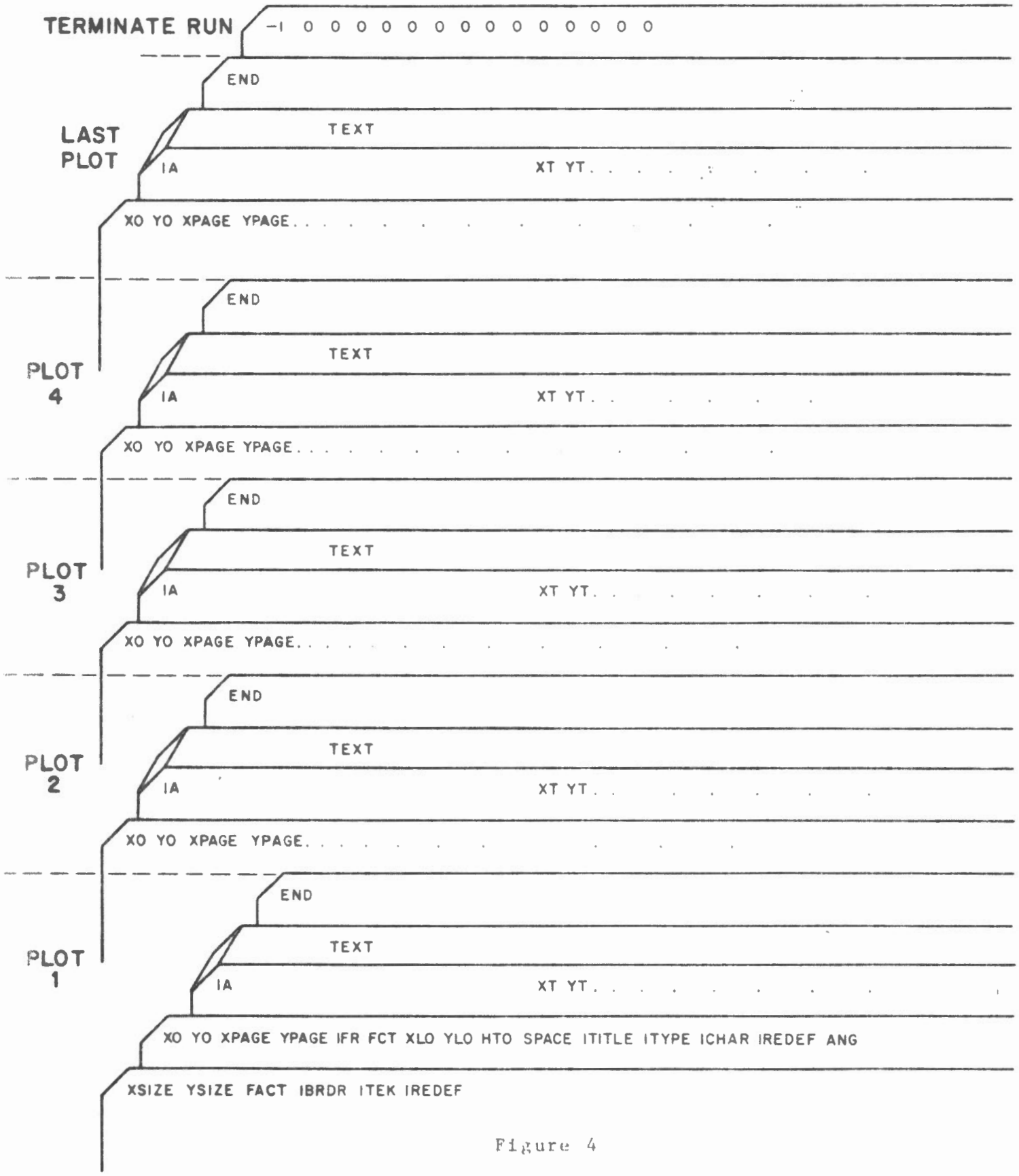


Figure 4

ITYPE = 0

CHARACTERS IN STYLE....DEFAULT

ASCII -31	ROMAN U/C	ROMAN L/C	ITALIC U/C	ITALIC L/C	SCRIPT U/C	SCRIPT L/C	GREEK U/C	GREEK L/C	RUSSIAN U/C	RUSSIAN L/C	SPECIAL SPEC	SPECIAL MATH	HEBREW
1													
2													
3	.	.	.	.	.	.	.	.	.	.			
4													
5	$	$	$	$	$	$	$	$	$	$			$
6													
7													
8	.	.	.	.	.	.	.	.	.	.			.
9	(	(	(	(	(	(	(	(	(	(			(
10	)	)	)	)	)	)	)	)	)	)			)
11	*	*	*	*	*	*	*	*	Э	э			*
12	+	+	+	+	+	+	+	+	Ъ	ъ			+
13	,	,	,	,	,	,	,	,	Я	я			,
14	-	-	-	-	-	-	-	-	Ь	ь			-
15	.	.	.	.	.	.	.	.	Ш	ш			.
16	/	/	/	/	/	/	/	/	Э	э			/
17	0	0	0	0	0	0	0	0	0	0			0
18	1	1	1	1	1	1	1	1	1	1			1
19	2	2	2	2	2	2	2	2	2	2			2
20	3	3	3	3	3	3	3	3	3	3			3
21	4	4	4	4	4	4	4	4	4	4			4
22	5	5	5	5	5	5	5	5	5	5			5
23	6	6	6	6	6	6	6	6	6	6			6
24	7	7	7	7	7	7	7	7	7	7			7
25	8	8	8	8	8	8	8	8	8	8			8
26	9	9	9	9	9	9	9	9	9	9			9
27													
28													
29	<	<	<	<	<	<	<	<	<	<			<
30	-	-	-	-	-	-	-	-	-	-			-
31	>	>	>	>	>	>	>	>	>	>			>
32	?	?	?	?	?	?	?	?	?	?			?
33													
34	A	a	A	a	A	a	A	α	A	a			א
35	B	b	B	b	B	b	B	β	Б	б			ב
36	C	c	C	c	C	c	H	η	Э	э			ב
37	D	d	D	d	D	d	Δ	δ	Д	д			ד
38	E	e	E	e	E	e	E	ε	Й	й			ה
39	F	f	F	f	F	f	Φ	φ	Ф	ф			ף
40	G	g	G	g	G	g	Γ	ɣ	Г	г			ג
41	H	h	H	h	H	h	X	x	Ж	ж			ח
42	I	i	I	i	I	i	I	ι	И	и			ך
43	J	j	J	j	J	j			Ч	ч			י
44	K	k	K	k	K	k	K	κ	К	к			כ
45	L	l	L	l	L	l	Λ	λ	Л	л			ל
46	M	m	M	m	M	m	M	μ	М	м			ם
47	N	n	N	n	N	n	N	ν	Н	н			מ
48	O	o	O	o	O	o	O	ο	О	о			נ
49	P	p	P	p	P	p	Π	π	П	п			ן
50	Q	q	Q	q	Q	q	Θ	θ	Ш	ш			ס
51	R	r	R	r	R	r	P	ρ	Р	р			ע
52	S	s	S	s	S	s	Σ	σ	С	с			ף
53	T	t	T	t	T	t	T	τ	Т	т			פ
54	U	u	U	u	U	u	Υ	υ	Ю	ю			ץ
55	V	v	V	v	V	v	V	ν	В	в			צ
56	W	w	W	w	W	w	Ω	ω	Ш	ш			ק
57	X	x	X	x	X	x	Ξ	ξ	Х	х			ר
58	Y	y	Y	y	Y	y	Ψ	ψ	У	у			ש
59	Z	z	Z	z	Z	z	Z	ζ	З	з			ת

ITYPE = 1

CHARACTERS IN STYLE....CARTOG

ASCII -31	ROMAN U/C	ROMAN L/C	ITALIC U/C	ITALIC L/C	SCRIPT U/C	SCRIPT L/C	GREEK U/C	GREEK L/C	RUSSIAN U/C	RUSSIAN L/C	SPECIAL SPEC	SPECIAL MATH	HEBREW
1													
2	!						!						
3	"	.	.	.	.	.	"	.	.	.			.
4	#						#						
5	$	$	$	$	$	$	$	$	$	$			$
6													
7	&						&						
8	'	.	.	.	.	.	'	.	.	.			.
9	(	(	(	(	(	(	(	(	(	(			(
10	)	)	)	)	)	)	)	)	)	)			)
11	*	*	*	*	*	*	*	*	Э	э			*
12	+	+	+	+	+	+	+	+	Ъ	ъ			+
13	,	,	,	,	,	,	,	,	Я	я			,
14	-	-	-	-	-	-	-	-	Ь	ь			-
15	.	.	.	.	.	.	.	.	Ш	ш			.
16	/	/	/	/	/	/	/	/	Э	э			/
17	0	0	0	0	0	0	0	0	0	0			0
18	1	1	1	1	1	1	1	1	1	1			1
19	2	2	2	2	2	2	2	2	2	2			2
20	3	3	3	3	3	3	3	3	3	3			3
21	4	4	4	4	4	4	4	4	4	4			4
22	5	5	5	5	5	5	5	5	5	5			5
23	6	6	6	6	6	6	6	6	6	6			6
24	7	7	7	7	7	7	7	7	7	7			7
25	8	8	8	8	8	8	8	8	8	8			8
26	9	9	9	9	9	9	9	9	9	9			9
27	:						:						
28	;						;						
29		<	<	<	<	<		<	<	<			<
30	=	-	-	-	-	-	=	-	-	-			-
31		>	>	>	>	>		>	>	>			>
32	?	?	?	?	?	?	?	?	?	?			?
33													
34	A	a	A	a	A	a	A	α	A	a			א
35	B	b	B	b	B	b	B	β	Б	б			ב
36	C	c	C	c	C	c	H	η	Э	э			ב
37	D	d	D	d	D	d	Δ	δ	Д	д			ד
38	E	e	E	e	E	e	E	ε	Й	й			ה
39	F	f	F	f	F	f	Φ	φ	Ф	ф			ף
40	G	g	G	g	G	g	Γ	ɣ	Г	г			ג
41	H	h	H	h	H	h	X	x	Ж	ж			ח
42	I	i	I	i	I	i	I	ι	И	и			ך
43	J	j	J	j	J	j			Ч	ч			י
44	K	k	K	k	K	k	K	κ	К	к			כ
45	L	l	L	l	L	l	Λ	λ	Л	л			ל
46	M	m	M	m	M	m	M	μ	М	м			ם
47	N	n	N	n	N	n	N	ν	Н	н			מ
48	O	o	O	o	O	o	Π	π	О	о			נ
49	P	p	P	p	P	p	Θ	θ	П	п			ן
50	Q	q	Q	q	Q	q	P	ρ	Ш	ш			ס
51	R	r	R	r	R	r	Σ	σ	Р	р			ע
52	S	s	S	s	S	s	T	τ	С	с			ף
53	T	t	T	t	T	t	Υ	υ	Т	т			פ
54	U	u	U	u	U	u	V	ν	Ю	ю			ץ
55	V	v	V	v	V	v	Ω	ω	B	в			צ
56	W	w	W	w	W	w	Ξ	ξ	Ш	ш			ק
57	X	x	X	x	X	x	Ψ	ψ	Х	х			ר
58	Y	y	Y	y	Y	y	Z	ζ	У	у			ש
59	Z	z	Z	z	Z	z			З	з			ת

TABLE 1

ITYPE = 2

CHARACTERS IN STYLE....SIMPLX

ASCII -31	ROMAN U/C	ROMAN L/C	ITALIC U/C	ITALIC L/C	SCRIPT U/C	SCRIPT L/C	GREEK U/C	GREEK L/C	RUSSIAN U/C	RUSSIAN L/C	SPECIAL SPEC	SPECIAL MATH	HEBREW
1													
2	!	!			!	!	!	!					
3	"	"	.	.	"	"	"	"					
4	#	#			#	#	#	#					
5	$	$	$	$	$	$	$	$	$	$			$
6													
7	&	&			&	&	&	&					
8	'	'	.	.	'	'	'	'	.	.			
9	(	(	(	(	(	(	(	(	(	(			(
10	)	)	)	)	)	)	)	)	)	)			)
11	*	*	×	×	*	*	*	ϑ	Ε	e			×
12	+	+	+	+	+	+	+	+	ъ	ъ			+
13	,	,	,	,	,	,	,	ς	Я	я			,
14	–	–	–	–	–	–	–	–	ь	ь			–
15	.	.	.	.	.		.	.	Ш	ш			.
16	/	/	/	/	/	/	/	/	Ы	ы			⌋
17	0	0	0	0	0	0	0	0	0	0			0
18	1	1	1	1	1	1	1	1	1	1			1
19	2	2	2	2	2	2	2	2	2	2			2
20	3	3	3	3	3	3	3	3	3	3			3
21	4	4	4	4	4	4	4	4	4	4			4
22	5	5	5	5	5	5	5	5	5	5			5
23	6	6	6	6	6	6	6	6	6	6			6
24	7	7	7	7	7	7	7	7	7	7			7
25	8	8	8	8	8	8	8	8	8	8			8
26	9	9	9	9	9	9	9	9	9	9			9
27	:	:			:	:	:	:					
28	;	;			;	;	;	;					
29			<	<					<	<			<
30	=	=	-	-	=	=	=	=	-	-			-
31			>	>					>	>			>
32	?	?	?	?	?	?	?	?	?	?			?
33													
34	A	a	A	a	𝒜	𝒶	A	α	A	o			א
35	B	b	B	b	ℬ	𝒷	B	β	Б	б			ב
36	C	c	C	c	𝒞	𝒸	H	η	Э	э			ב
37	D	d	D	d	𝒟	𝒹	Δ	δ	Д	д			ד
38	E	e	E	e	ℰ	ℯ	E	ε	Й	й			ה
39	F	f	F	f	ℱ	𝒻	Φ	φ	Ф	ф			ף
40	G	g	G	g	𝒢	ℊ	Γ	γ	Г	г			ג
41	H	h	H	h	ℋ	𝒽	X	χ	Ж	ж			ה
42	I	i	I	i	ℐ	𝒾	I	ι	И	и			ן
43	J	j	J	j	𝒥	𝒿	J	ε	Ч	ч			י
44	K	k	K	k	𝒦	𝓀	K	κ	К	к			ך
45	L	l	L	l	ℒ	𝓁	Λ	λ	Л	л			ל
46	M	m	M	m	ℳ	𝓂	M	μ	М	м			ם
47	N	n	N	n	𝒩	𝓃	N	ν	Н	н			נ
48	O	o	O	o	𝒪	ℴ	O	o	О	о			ע
49	P	p	P	p	𝒫	𝓅	Π	π	П	п			פ
50	Q	q	Q	q	𝒬	𝓆	Θ	θ	Ш	ш			ם
51	R	r	R	r	ℛ	𝓇	P	ρ	Р	р			צ
52	S	s	S	s	𝒮	𝓈	Σ	σ	С	с			ם
53	T	t	T	t	𝒯	𝓉	T	τ	Т	т			ת
54	U	u	U	u	𝒰	𝓊	T	υ	Ю	ю			ת
55	V	v	V	v	𝒱	𝓋	V	φ	В	в			ו
56	W	w	W	w	𝒲	𝓌	Ω	ω	Ш	ш			ש
57	X	x	X	x	𝒳	𝓍	Ξ	ξ	Х	х			ס
58	Y	y	Y	y	𝒴	𝓎	Ψ	ψ	У	у			ף
59	Z	z	Z	z	𝒵	𝓏	Z	ζ	З	з			ז

ITYPE = 3

CHARACTERS IN STYLE ...SCMPLX

ASCII -31	ROMAN U/C	ROMAN L/C	ITALIC U/C	ITALIC L/C	SCRIPT U/C	SCRIPT L/C	GREEK U/C	GREEK L/C	RUSSIAN U/C	RUSSIAN L/C	SPECIAL SPEC	SPECIAL MATH	HEBREW
1													
2	!	!	!	!			!	!			!	!	
3	"	"	'	"	.	.	"	"			"	≡	
4	#	#	#	#			#	#			#		
5	$	$	$	$	$	$	$	$	$	$	$	$	$
6	%	%	%	%			%	%			%	≀	
7	&	&	&	&			&	&			&	⟩	
8	'	'	'	'		.	'	'			'	'	
9	(	(	(	(	(	(	(	(	(	(	(	(	(
10	)	)	)	)	)	)	)	)	)	)	)	)	)
11	*	*	*	*	×	×	*	ϑ	Ε	e	*	×	×
12	+	+	+	+	+	+	+	+	ъ	ъ	"	±	+
13	,	,	,	,	,	,	,	ς	Я	я	'	,	,
14	–	–	–	–	–	–	–	–	ь	ь	`	∓	–
15	.	.	.	.	.	.	.	.	Ш	ш	,	·	.
16	/	/	/	/	/	/	/	/	Ы	ы	.	∴	⌋
17	0	0	0	0	0	0	0	0	0	0	[	[	0
18	1	1	1	1	1	1	1	1	1	1	]	⌈	1
19	2	2	2	2	2	2	2	2	2	2	<	⌊	2
20	3	3	3	3	3	3	3	3	3	3	>	⌉	3
21	4	4	4	4	4	4	4	4	4	4	≈	⌋	4
22	5	5	5	5	5	5	5	5	5	5	~	⌊	5
23	6	6	6	6	6	6	6	6	6	6	*	⌈	6
24	7	7	7	7	7	7	7	7	7	7	:	⌉	7
25	8	8	8	8	8	8	8	8	8	8	(	⌋	8
26	9	9	9	9	9	9	9	9	9	9	)	⌊	9
27	:	:	:	:			:	:			:	⌈	
28	;	;	;	;			;	;			;	⌉	
29	<	<	<	<	<	<	<	<	<	<	<	⌋	<
30	=	=	=	=	-	-	=	=	-	-	=	⌊	-
31	>	>	>	>	>	>	>	>	>	>	>	⌈	>
32	?	?	?	?	?	?	?	?	?	?	?	⌉	?
33	@	@	@				@	@			☾	⌋	
34	A	a	A	a	A	o	A	α	A	o	☿	⌊	א
35	B	b	B	b	B	b	B	β	Б	б	♀	⌈	ב
36	C	c	C	c	C	c	H	η	Э	э	♂	⌉	ב
37	D	d	D	d	D	d	Δ	δ	Д	д	♁	⌋	ד
38	E	e	E	e	E	e	E	ε	Й	й	Ψ	∈	ה
39	F	f	F	f	F	f	Φ	φ	Ф	ф	♂	∃	ף
40	G	g	G	g	G	g	Γ	γ	Г	г	♃	⊕	ג
41	H	h	H	h	H	h	X	χ	Ж	ж	♄	⊙	ה
42	I	i	I	i	I	ι	I	ι	И	и	♅	∫	ן
43	J	j	J	j	J	J	J	ε	Ч	ч	♆	∮	י
44	K	k	K	k	K	k	K	κ	К	к	♇	∫	ך
45	L	l	L	l	L	l	Λ	λ	Л	л	P	⌠	ל
46	M	m	M	m	M	m	M	μ	М	м	#	∏	ם
47	N	n	N	n	N	n	N	ν	Н	н	†	∝	נ
48	O	o	O	o	O	o	O	o	О	о	‡	∞	ע
49	P	p	P	p	P	o	Π	π	П	п	§	~	פ
50	Q	q	Q	q	O	q	Θ	θ	Ш	ш	'	∂	ם
51	R	r	R	r	R	r	P	ρ	Р	р	'	∇	צ
52	S	s	S	s	S	s	Σ	σ	С	с	'	∑	ם
53	T	t	T	t	S	t	T	τ	Т	т	'	•	ת
54	U	u	U	u	U	u	T	υ	Ю	ю	$	†	ת
55	V	v	V	v	V	v	V	φ	В	в	!	←	ו
56	W	w	W	w	W	w	Ω	ω	Ш	ш	?	↓	ש
57	X	x	X	x	X	x	Ξ	ξ	Х	х	%	√	ס
58	Y	y	Y	y	Y	y	Ψ	ψ	У	у	@		ף
59	Z	z	Z	z	Z	z	Z	ζ	З	з	&		ז

TABLE 2

ITYPE = 4

CHARACTERS IN STYLE....COMPLX

ASCII -31	ROMAN U/C	ROMAN L/C	ITALIC U/C	ITALIC L/C	SCRIPT U/C	SCRIPT L/C	GREEK U/C	GREEK L/C	RUSSIAN U/C	RUSSIAN L/C	SPECIAL SPEC	SPECIAL MATH	HEBREW
1													
2	!	!	!	!	!	!	!	!	!	!	!	!	
3	"	"	"	"	"	"	"	"	"	"	♤	"	
4	#	#	#	#	#	#	#	#	#	#	♡	≡	
5	$	$	$	$	$	$	$	$	$	$	$	∴	$
6	%	%	%	%	%	%	%	%	%	%	◇	≺	
7	&	&	&	&	&	&	&	&	&	&	♧	≻	
8	'	'	'	'	'	'	'	'	'	'	'	'	.
9	(	(	(	(	(	(	(	(	(	(	(	(	(
10	)	)	)	)	)	)	)	)	)	)	)	)	)
11	*	*	*	*	*	*	*	ϑ	Е	е	*	×	×
12	+	+	+	+	+	+	+	+	Ъ	ъ	"	±	+
13	,	,	,	,	,	,	,	ς	Я	я	'	∠	,
14	–	–	–	–	–	–	–	–	Ь	ь	ˋ	∓	–
15	.	.	.	.	.	.	.	.	Ц	ц	.	.	.
16	/	/	/	/	/	/	/	/	Ы	ы	´	÷	⌋
17	0	0	0	0	0	0	0	0	0	0	[	[	0
18	1	1	1	1	1	1	1	1	1	1	]	⌈	1
19	2	2	2	2	2	2	2	2	2	2	<	⌉	2
20	3	3	3	3	3	3	3	3	3	3	>	⌊	3
21	4	4	4	4	4	4	4	4	4	4	{	≀	4
22	5	5	5	5	5	5	5	5	5	5	}	≀	5
23	6	6	6	6	6	6	6	6	6	6	*	≀	6
24	7	7	7	7	7	7	7	7	7	7	;	≀	7
25	8	8	8	8	8	8	8	8	8	8	(	≀	8
26	9	9	9	9	9	9	9	9	9	9	)	≀	9
27	:	:	:	:	:	:	:	:	:	:	♣	≀	
28	;	;	;	;	;	;	;	;	;	;	♦	≀	
29	<	<	<	<	<	<	<	<	<	<	♥	≀	<
30	=	=	=	=	=	=	=	=	=	=	:	≠	-
31	>	>	>	>	>	>	>	>	>	>	>	≥	>
32	?	?	?	?	?	?	?	?	?	?	♠	⊥	?
33	@	@	@	@	@	@	@	@	@	@	☾	~	
34	A	a	A	a	A	a	A	α	A	а	☿	∩	א
35	B	b	B	b	B	b	B	β	Б	б	♀	∪	ב
36	C	c	C	c	C	c	H	η	Э	э	♂	⊂	ב
37	D	d	D	d	D	d	Δ	δ	Д	д	♁	⊃	ד
38	E	e	E	e	E	e	E	ε	Й	й	Ψ	∈	ה
39	F	f	F	f	F	f	Φ	φ	Ф	ф	♃	∃	ף
40	G	g	G	g	G	g	Γ	γ	Г	г	□	⊕	ג
41	H	h	H	h	H	h	X	χ	Ж	ж	♄	⊙	ה
42	I	i	I	i	I	i	I	ι	И	и	♅	∫	ן
43	J	j	J	j	J	j	J	ϵ	Ч	ч	♆	∮	י
44	K	k	K	k	K	k	K	κ	К	к	♇	∯	ך
45	L	l	L	l	L	l	Λ	λ	Л	л	Ɐ	∰	ל
46	M	m	M	m	M	m	M	μ	М	м	#	∏	ם
47	N	n	N	n	N	n	N	ν	Н	н	†	∝	נ
48	O	o	O	o	O	o	O	o	О	о	‡	∞	ס
49	P	p	P	p	P	p	Π	π	П	п	§	~	ף
50	Q	q	Q	q	Q	q	Θ	θ	Ш	ш	¶	≅	ם
51	R	r	R	r	R	r	P	ρ	Р	р	.	∇	ר
52	S	s	S	s	S	s	Σ	σ	С	с	.	∑	ס
53	T	t	T	t	T	t	T	τ	Т	т	.	→	ת
54	U	u	U	u	U	u	Y	υ	Ю	ю	$	↑	ת
55	V	v	V	v	V	v	Φ	φ	В	в	!	←	ו
56	W	w	W	w	W	w	Ω	ω	Щ	щ	?	↓	ש
57	X	x	X	x	X	x	Ξ	ξ	Х	х	%	√	ש
58	Y	y	Y	y	Y	y	Ψ	ψ	У	у	@	∫	'
59	Z	z	Z	z	Z	z	Z	ζ	З	з	&	∫	ו

ITYPE = 5

CHARACTERS IN STYLE....DUPLX

ASCII -31	ROMAN U/C	ROMAN L/C	ITALIC U/C	ITALIC L/C	SCRIPT U/C	SCRIPT L/C	GREEK U/C	GREEK L/C	RUSSIAN U/C	RUSSIAN L/C	SPECIAL SPEC	SPECIAL MATH	HEBREW
1													
2	!	!											
3	"	"	.	.	.	.	.	.	.	.			
4													
5	$	$	$	$	$	$	$	$	$	$			$
6													
7	&	&											
8	'	'	.	.		.	.		.	.			.
9	(	(	(	(	(	(	(	(	(	(			(
10	)	)	)	)	)	)	)	)	)	)			)
11	*	*	×	×	×	×	×	×	Е	е			×
12	+	+	+	+	+	+	+	+	Ъ	ъ			+
13	,	,	,	,	,	,	,	,	Я	я			,
14	–	–	–	–	–	–	–	–	Ь	ь			–
15	.	.	.	.	.	.	.	.	Щ	щ			.
16	/	/	/	/	/	/	/	/	Ы	ы			⌋
17	0	0	0	0	0	0	0	0	0	0			0
18	1	1	1	1	1	1	1	1	1	1			1
19	2	2	2	2	2	2	2	2	2	2			2
20	3	3	3	3	3	3	3	3	3	3			3
21	4	4	4	4	4	4	4	4	4	4			4
22	5	5	5	5	5	5	5	5	5	5			5
23	6	6	6	6	6	6	6	6	6	6			6
24	7	7	7	7	7	7	7	7	7	7			7
25	8	8	8	8	8	8	8	8	8	8			8
26	9	9	9	9	9	9	9	9	9	9			9
27	:	:											
28	;	;											
29			<	<	<	<	<	<	<	<			<
30	=	=	-	-	-	-	-	-	-	-			-
31			>	>	>	>	>	>	>	>			>
32	?	?	?	?	?	?	?	?	?	?			?
33													
34	A	a	A	a	A	a	A	α	A	а			א
35	B	b	B	b	B	b	B	β	Б	б			ב
36	C	c	C	c	C	c	H	η	Э	э			ב
37	D	d	D	d	D	d	Δ	δ	Д	д			ד
38	E	e	E	e	E	e	E	ε	Й	й			ה
39	F	f	F	f	F	f	Φ	φ	Ф	ф			ף
40	G	g	G	g	G	g	Γ	γ	Г	г			ג
41	H	h	H	h	H	h	X	χ	Ж	ж			ה
42	I	i	I	i	I	i	I	ι	И	и			ן
43	J	j	J	j	J	j			Ч	ч			י
44	K	k	K	k	K	k	K	κ	К	к			ך
45	L	l	L	l	L	l	Λ	λ	Л	л			ל
46	M	m	M	m	M	m	M	μ	М	м			ם
47	N	n	N	n	N	n	N	ν	Н	н			נ
48	O	o	O	o	O	o	O	o	О	о			ס
49	P	p	P	p	P	p	Π	π	П	п			ף
50	Q	q	Q	q	Q	q	Θ	θ	Ш	ш			ם
51	R	r	R	r	R	r	P	ρ	Р	р			ר
52	S	s	S	s	S	s	Σ	σ	С	с			ס
53	T	t	T	t	T	t	T	τ	Т	т			ת
54	U	u	U	u	U	u		υ	Ю	ю			ת
55	V	v	V	v	V	v			В	в			ו
56	W	w	W	w	W	w	Ω	ω	Щ	щ			ש
57	X	x	X	x	X	x	Ξ	ξ	Х	х			ש
58	Y	y	Y	y	Y	y	Ψ	ψ	У	у			'
59	Z	z	Z	z	Z	z	Z	ζ	З	з			ו

TABLE 3

ITYPE = 6

CHARACTERS IN STYLE....TRIPLX

ASCII -31	ROMAN U/C	ROMAN L/C	ITALIC U/C	ITALIC L/C	SCRIPT U/C	SCRIPT L/C	GREEK U/C	GREEK L/C	RUSSIAN U/C	RUSSIAN L/C	SPECIAL SPEC	SPECIAL MATH	HEBREW
1													
2	!	!	!	!	.	.	.	.	.	.			
3	"	"	"	"									
4	#	#	#	#									
5	$	$	$	$	$	$	$	$	$	$			$
6	%	%	%	%									
7	&	&	&	&	.	.	.	.	.	.			.
8	'	'	'	'									
9	(	(	(	(	(	(	(	(	(	ь			(
10	)	)	)	)	)	)	)	)	)	)			)
11	*	*	*	*	×	×	×	×	Е	е			×
12	+	+	+	+	+	+	+	+	Ъ	ъ			+
13	,	,	,	,	,	,	,	,	Я	я			,
14	-	-	-	-	-	-	-	-	Ь	ь			-
15	.	.	.	.	.	.	.	.	Ш	ш			.
16	/	/	/	/	/	/	/	/	Э	э			]
17	0	0	0	0	0	0	0	0	0	0			0
18	1	1	1	1	1	1	1	1	1	1			1
19	2	2	2	2	2	2	2	2	2	2			2
20	3	3	3	3	3	3	3	3	3	3			3
21	4	4	4	4	4	4	4	4	4	4			4
22	5	5	5	5	5	5	5	5	5	5			5
23	6	6	6	6	6	6	6	6	6	6			6
24	7	7	7	7	7	7	7	7	7	7			7
25	8	8	8	8	8	8	8	8	8	8			8
26	9	9	9	9	9	9	9	9	9	9			9
27	:	:	:	:									
28	;	;	;	;									
29	<	<	<	<	<	<	<	<	<	<			<
30	=	=	=	=	=	=	=	=	=	=			=
31	>	>	>	>	>	>	>	>	>	>			>
32	?	?	?	?	?	?	?	?	?	?			?
33	@	@	@	@									
34	A	a	A	a	A	o	A	α	A	o			א
35	B	b	B	b	B	b	B	β	Б	б			ב
36	C	c	C	c	C	c	H	η	Э	э			ב
37	D	d	D	d	D	d	Δ	δ	Д	д			ד
38	E	e	E	e	E	e	E	ε	Й	й			ה
39	F	f	F	f	F	f	Φ	φ	Ф	ф			ף
40	G	g	G	g	G	g	Γ	ϑ	Г	г			ג
41	H	h	H	h	H	h	X	x	Ж	ж			ח
42	I	i	I	i	I	ι	I	ι	И	и			ך
43	J	j	J	j	J	j			Ч	ч			י
44	K	k	K	k	K	k	K	κ	К	к			ק
45	L	l	L	l	L	l	Λ	λ	Л	л			ל
46	M	m	M	m	M	m	M	μ	М	м			ם
47	N	n	N	n	N	n	N	ν	Н	н			נ
48	O	o	O	o	O	o	O	o	O	o			ע
49	P	p	P	p	P	p	Π	π	Π	п			ף
50	Q	q	Q	q	Q	q	Θ	e	Ш	ш			ם
51	R	r	R	r	R	r	P	ρ	P	р			ר
52	S	s	S	s	S	s	Σ	σ	C	с			ס
53	T	t	T	t	T	t	T	τ	T	т			ת
54	U	u	U	u	U	u	T	υ	Ю	ю			ת
55	V	v	V	v	V	v			B	в			ו
56	W	w	W	w	W	w	Ω	ω	Щ	щ			ש
57	X	x	X	x	X	x	Ξ	ξ	X	х			ש
58	Y	y	Y	y	Y	y	Ψ	ψ	У	ч			',
59	Z	z	Z	z	Z	z	Z	ζ	З	з			ז

ITYPE = 7

CHARACTERS IN STYLE... GOTHIC

ASCII -31	ROMAN U/C	ROMAN L/C	ITALIC U/C	ITALIC L/C	SCRIPT U/C	SCRIPT L/C	GREEK U/C	GREEK L/C	RUSSIAN U/C	RUSSIAN L/C	SPECIAL SPEC	SPECIAL MATH	HEBREW
1													
2	!	!	!	!	!	!	.	.	.	.			.
3	"	"	"	"	"	"							
4													
5	$	$	$	$	$	$	$	$	$	$			$
6													
7	&	&	&	&	&	&	.		.	.			.
8	'	'	'	'	'	'							
9	(	(	(	(	(	(	(	(	(	(			(
10	)	)	)	)	)	)	)	)	)	)			)
11	*	*	*	*	*	ђ	×	×	Е	е			×
12	+	+	+	+	+	ѕ	+	+	Ъ	ъ			+
13	,	,	,	,	,	,	,	,	Я	я			,
14	-	-	-	-	-	-	-	-	Ь	ь			-
15	.	.	.	.	.	.	.	.	Ш	ш			.
16	/	/	/	/	/	ђ	/	/	Э	э			]
17	0	0	0	0	0	0	0	0	0	0			0
18	1	1	1	1	1	1	1	1	1	1			1
19	2	2	2	2	2	2	2	2	2	2			2
20	3	3	3	3	3	3	3	3	3	3			3
21	4	4	4	4	4	4	4	4	4	4			4
22	5	5	5	5	5	5	5	5	5	5			5
23	6	6	6	6	6	6	6	6	6	6			6
24	7	7	7	7	7	7	7	7	7	7			7
25	8	8	8	8	8	8	8	8	8	8			8
26	9	9	9	9	9	9	9	9	9	9			9
27	:	:	:	:	:	:							
28	;	;	;	;	;	;							
29							<	<	<	<			<
30	=	=	=	=	=	=	-	-	-	-			-
31							>	>	>	>			>
32	?	?	?	?	?	?	?	?	?	?			?
33													
34	A	a	H	a	A	a	A	α	A	o			א
35	B	b	B	b	B	b	B	β	Б	б			ב
36	C	c	C	c	C	c	H	η	Э	э			ב
37	D	d	D	d	D	d	Δ	δ	Д	д			ד
38	E	e	E	e	E	e	E	ε	Й	й			ה
39	F	f	F	f	F	f	Φ	φ	Ф	ф			ף
40	G	g	G	g	G	g	Γ	ϑ	Г	г			ג
41	H	h	H	h	H	h	X	x	Ж	ж			ח
42	I	i	I	i	I	i	I	ι	И	и			ך
43	J	j	J	j	J	j			Ч	ч			י
44	K	k	K	k	K	k	K	κ	К	к			ק
45	L	l	L	l	L	l	Λ	λ	Л	л			ל
46	M	m	M	m	M	m	M	μ	M	м			ם
47	N	n	N	n	N	n	N	ν	H	н			נ
48	O	o	O	o	O	o	O	o	O	o			ע
49	P	p	P	p	P	p	Π	π	Π	п			ף
50	Q	q	Q	q	Q	q	Θ	e	Ш	ш			ם
51	R	r	R	r	R	r	P	ρ	P	р			ר
52	S	s	S	s	S	s	Σ	σ	C	с			ס
53	T	t	T	t	T	t	T	τ	T	т			ת
54	U	u	U	u	U	u	T	υ	Ю	ю			ת
55	V	v	V	v	V	v			B	в			ו
56	W	w	W	w	W	w	Ω	ω	Щ	щ			ש
57	X	x	X	x	X	x	Ξ	ξ	X	х			ש
58	Y	y	Y	y	Y	y	Ψ	ψ	У	ч			',
59	Z	z	Z	z	Z	z	Z	ζ	З	з			ז

TABLE 4

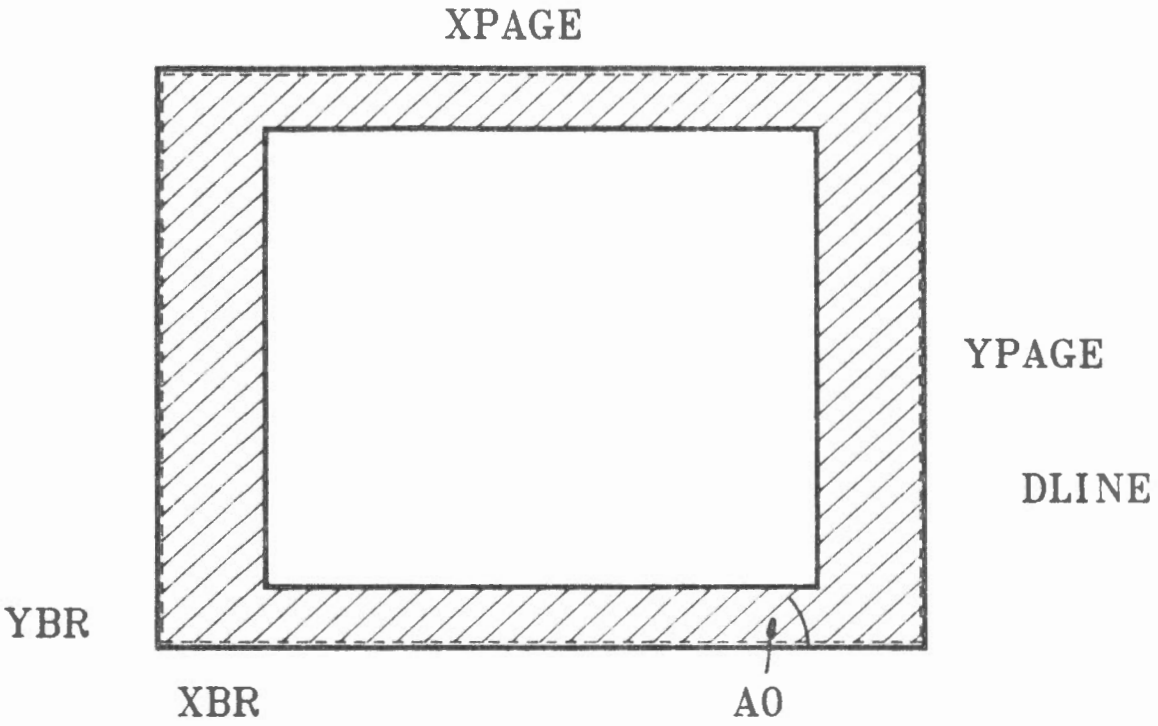
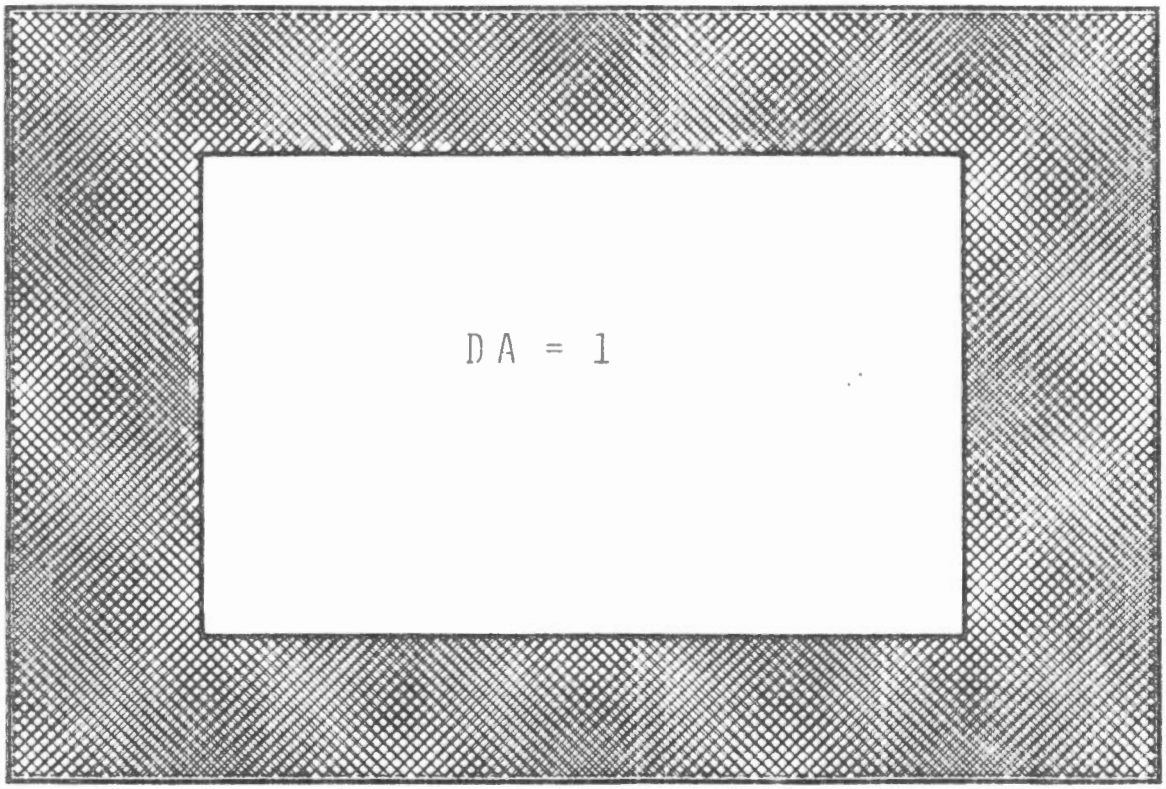


DIAGRAM FOR APPENDIX A



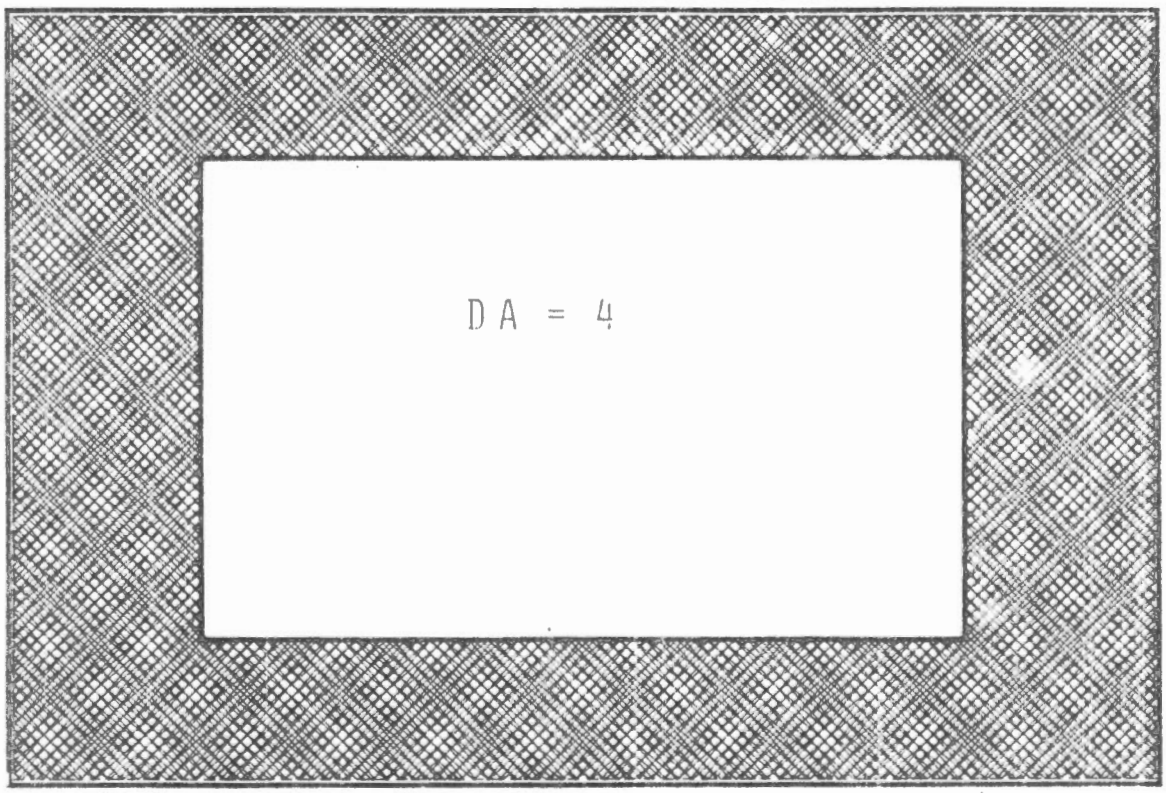


DIAGRAM FOR APPENDIX A