

GDDM-PGF



Vector Symbol Editor

Version 2 Release 1.3

GDDM-PGF



Vector Symbol Editor

Version 2 Release 1.3

Note!

Before using this information and the product it supports, be sure to read the general information under "Notices" on page v.

Second Edition (December 1996)

This edition applies to Version 2 Release 1 Modification 3 of the IBM licensed program GDDM-PGF, program number 5668-812, to GDDM-PGF as an optional feature of OS/390 (program number 5645-001), and to all subsequent versions, releases, and modifications until otherwise indicated in new editions. Consult the latest edition of the applicable IBM system bibliography for current information on this product.

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Preface

Some of the information in this book was previously published in *Graphical Data Display Manager: Presentation Graphics Feature; Vector Symbol Editor User's Guide*, SC33-0145, for Version 1.

Changes are made periodically to the information in this book; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370, 30xx, and 4300 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

Who this book is for

This book is for newcomers to, and existing users of, the Vector Symbol Editor.

What you need to know

This book assumes some experience of using terminals. No knowledge of computer graphics or programming is assumed.

How to use this book

Newcomers should start at the beginning and work through the learning sections. To complete the sessions should typically take about two hours.

The main session uses a non-interactive graphics terminal, an IBM 3279 Color Display Station. It is also suitable for the 3278, 8775, 3290, and 3270-PC. Appendix B covers differences when using an interactive graphics terminal, such as the 3179 Model G Color Graphics Display Station the 3270-PC/G and /GX workstations, the 5080 Graphics System, the Multistation 5550 with Japanese 3270 Personal Computer graphics, or with other interactive PC-based workstations. For information about interactive systems that are supported, refer to the *GDDM General Information* manual..

Some of the instructions in the sessions make use of a vector symbol set called ADMDVSS, which is supplied with GDDM-PGF. If your installation has deleted or renamed this symbol set, you cannot perform the instructions that depend on it.

Experienced users should use the appendixes for reference.

This manual, together with the help panels of the Vector Symbol Editor, provides all the information you need when using the editor.

Book structure

Introduction (1—2)

describes what a vector symbol is and what it is used for, and gets you started.

Session 1. Drawing a vector symbol (3—34)

covers the basic operations, using the symbol edit panel, using the compass keys, the COPY command, and the help panels.

Session 2. Creating characters from an existing vector symbol set (35—48)

tells you how to create characters in a style similar to existing characters, and how to use the REFERENCE and ASPECT commands.

Session 3. Drawing a curved vector symbol (49—64)

shows you how to create circles, ellipses, and other curved shapes.

Session 4. Shading a vector symbol (65—72)

shows you how to fill in an area.

Appendixes (73—105)

Summary of Vector Symbol Editor commands
Using the editor on an interactive graphics terminal
Vector symbol sets supplied with GDDM
Messages
Starting the Vector Symbol Editor

Glossary (109)

Index (111)

Helpful hints to use with the sessions (Appendix F, “Helpful hints to use with the sessions” on page 107)

Special note for online users

The pictures in this book may differ from those in the online version because of the characteristics of your graphics display. In the online version, the pictures show the colors described in the text. The representations of line types, shading patterns, and symbols vary depending on your graphic display, but they are usually more accurate in the online version than in this book.

Latest GDDM information

For up-to-date information on GDDM products, check our Home Page on the Internet at the following URL:

<http://www.hursley.ibm.com/gddm/>

You might also like to look at the IBM Software Home Page at:

<http://www.software.ibm.com>

GDDM publications

GDDM Base	<i>GDDM Base Application Programming Guide</i> , SC33-0867 <i>GDDM Base Application Programming Reference</i> , SC33-0868 <i>GDDM Diagnosis</i> , SC33-0870 <i>GDDM General Information</i> , GC33-0866 <i>GDDM/MVS Program Directory</i> , GC33-1801 <i>GDDM/VM Program Directory</i> , GC33-1802 <i>GDDM/VSE Program Directory</i> , GC33-1803 <i>GDDM Messages</i> , SC33-0869 <i>GDDM Series Licensed Program Specifications</i> , GC33-0876 <i>GDDM System Customization and Administration</i> , SC33-0871 <i>GDDM User's Guide</i> , SC33-0875 <i>GDDM Using the Image Symbol Editor</i> , SC33-0920
GDDM-GKS	<i>GDDM-GKS Programming Guide and Reference</i> , SC33-0334
GDDM-IMD	<i>GDDM Interactive Map Definition</i> , SC33-0338
GDDM-IVU	<i>GDDM Image View Utility</i> , SC33-0479
GDDM-PGF	<i>GDDM-PGF Application Programming Guide</i> , SC33-0913 <i>GDDM-PGF Programming Reference</i> , SC33-0333 <i>GDDM-PGF Interactive Chart Utility</i> , SC33-0328 <i>GDDM-PGF Vector Symbol Editor</i> , SC33-0330 <i>GDDM-PGF OPS User's Guide</i> , SC33-1776

GDDM/MVS is an element of OS/390. GDDM-REXX/MVS and GDDM-PGF are optional features of OS/390. For a complete list of the publications associated with OS/390, see the *OS/390 Information Roadmap*, GC28-1727.

Summary of Changes

Changes for Version 2 Release 1 Modification 3

There are no changes to the functions nor how you use them in Version 2 Release 1 Modification 3. Editorial changes have been made to remove some redundant material.

Changes for Version 2 Release 1

The program

Support for the 5080 Graphics System is added.

Support for the Multistation 5550 is added.

Support for the 3277GA is removed.

Some new vector symbol sets are added, for national language use.

The manual

Descriptions of using the Vector Symbol Editor with the 5080 Graphics System and the Multistation 5550 are added in Appendix B.

The material on the 3277GA is removed.

The new symbol sets are described in Appendix C.

The "Helpful Hints" are moved from an Appendix to inside the back cover.

Changes for Version 1 Release 4

The program

Support is added for new devices: 3270-PC/G, 3270-PC/GX, and 3179-G.

On interactive graphic devices (3270-PC/G, 3270-PC/GX, and 3277GA) the "typing key" menu is displayed if there is sufficient space; the function of PF8 is different.

On a dual-screen device (for example, 3277GA) the "typing key" menu is repositioned to the screen center.

Small changes are made to the panel designs.

The term "X and Y increments" has been changed to "X and Y deltas."

The VSPC Environment is no longer supported.

summary of changes

The manual

Appendix C is extended to cover 3270-PC/G and PC/GX work stations.
All references to the VSPC Environment are removed.

Changes for Version 1 Release 3

The program

The MERGE command is added.

The ability to use the Vector Symbol Editor on a 3277GA and on monochrome graphic devices is added.

New proportionally spaced and national language vector symbol sets are supplied with GDDM.

The manual

Changes are made throughout to incorporate the new Vector Symbol Editor features described above.

A new appendix is added to show you how to use the Vector Symbol Editor on a 3277GA.

Introduction

The Vector Symbol Editor is a program you can use at a display station to create new vector symbols and change existing ones. Vector symbols are used for typefaces and special symbols (for example, arrows).

What is a vector symbol?

A vector symbol is a character or shape made up of a series of lines and curves. It is constructed using **vectors**. A vector is simply a straight line between two specified points. A curve is defined by two or more vectors; how this is done is explained later in this book.

Vector symbols are held in collections known as vector symbol sets, each of which can contain up to 256 symbols. Each set has a name, and each symbol is identified by a **character code**. The character code is the means of addressing the symbol in the symbol set.

Using vector symbols

In this manual you are shown how to create vector symbols. When you have created a symbol, you can make use of it either with the Interactive Chart Utility or in an application program. (The Interactive Chart Utility, which is also supplied with GDDM-PGF, provides an easy way for you to draw business charts.)

For details on how to use vector symbols with the Interactive Chart Utility, see the *GDDM-PGF Interactive Chart Utility* book.

You can also create your own typefaces made of vector symbols and use these typefaces in overhead transparencies that you produce with the Interactive Chart Utility.

Another method of displaying vector symbols is to write an application program. If you want to do this, see the *GDDM Base Application Programming Guide*.

GDDM uses two different types of symbols: vector symbols and image symbols. Vector symbols are created with the Vector Symbol Editor. They are constructed of straight lines and curves. Using the Interactive Chart Utility, you can display them at any size. Using an application program, you can display them at any size, rotate them in any direction, or **shear** them. Each symbol can be only one color. Image symbols are created with the Image Symbol Editor. They are defined as dot patterns, in which each dot corresponds to one **display point** (or **pixel**). Image symbols can be displayed at only one size, and can be multicolored.

The Image Symbol Editor is a program supplied with GDDM. If you want to know how to use the Image Symbol Editor, see the *GDDM Using the Image Symbol Editor* book.

Session 1. Drawing a vector symbol

In this session, you will learn to:

- Choose a symbol set on the Set and Symbol Selection panel
- Draw a vector symbol on the Symbol Edit panel
- Draw a vector symbol using the compass keys
- Control the current vector
- Use the COPY command
- Use the help panels.

The Set and Symbol Selection Panel

When you start the Vector Symbol Editor, the Set and Symbol Selection panel is displayed. You use this panel to choose a symbol set to edit, to look at an entire set of symbols, and to move to the Symbol Edit panel. The Set and Symbol Selection panel is shown in Figure 1.

Messages appear here

This is the command line. Type commands here.

Type the symbol set name here.

Choose a symbol to edit here.

Specify the grid coordinates of a new symbol set here.

This information reminds you of the PF key functions.

Vector Symbol Editor ----- Set and Symbol Selection -----

Command ==>

Set Name ==> -

Symbol ==>

Hex ==> 00

Grid Coordinates for Set:

Maximum X ==>

Maximum Y ==>

PF Keys:

1=Help

2=Save

3=Exit

6=Switch

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL				{	PT									FF	CR
1						NL	BS									
2	()	+	-	}	LF					X					
3	0	1	2	3	4	5	6	7	8	9	X					
4	SP	A	B	C	D	E	F	G	H	I	\$.	<	(+	
5	&	J	K	L	M	N	O	P	Q	R	!	@	*)	;	
6	-	/	S	T	U	V	W	X	Y	Z	:	,	%	_	>	? " #
7	~	^	**	1	2	3	n	°	v		#	@	!	=	"	#
8	~	a	b	c	d	e	f	g	h	i	↑	↓	≤	≥	←	→
9	□	j	k	l	m	n	o	p	q	r	□	□	□	□	□	□
A	-	s	t	u	v	w	x	y	z	n	u	↓	↑	≥	≤	°
B	α	ε	i	ρ	ω	■	x	\	÷	●	∇	∞	Δ	T	J	#
C	{	A	B	C	D	E	F	G	H	I	∞	∇	φ	φ	φ	φ
D	}	J	K	L	M	N	O	P	Q	R	!	!	!	!	!	!
E	\	S	T	U	V	W	X	Y	Z	∇	∇	∇	∇	∇	∇	∇
F	0	1	2	3	4	5	6	7	8	9	∇	∇	∇	∇	∇	∇

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Use this display of the GDDM character set to see the normal character codes in a typeface. Read the hexadecimal codes by row and then column.

Figure 1. The Set and Symbol Selection panel

Choosing a vector symbol set on the Set and Symbol Selection panel

You are going to use the Set and Symbol Selection panel to choose and display an existing vector symbol set called ADMDVSS. This symbol set is supplied with GDDM.

Instructions

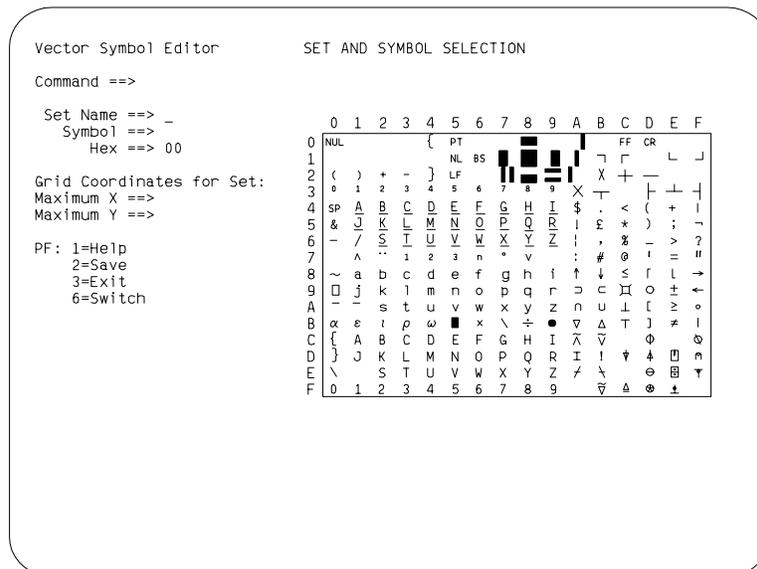
1. Start the Vector Symbol Editor.

The way to start the editor depends on your installation and the terminal you are using. The normal ways to start the editor on any display terminal supported by GDDM are as follows:

```
CICS      - ADMV
IMS       - ADM VSSE
MVS/TSO*- CALL 'data-set-name(ADMVSSE) '
VM/SP    - ADMVSSE
```

* If you are a TSO user, you may need to allocate a suitable symbol-set data set.

If you are still unsure how to start the editor, ask your system programmer or refer to Appendix E, "Starting the Vector Symbol Editor" on page 103. When you start the editor, the first editor panel to be displayed is the Set and Symbol Selection panel.



Use Appendix F, "Helpful hints to use with the sessions" on page 107 to correct any mistakes you make as you follow the instructions in the sessions.

2. Type in the symbol set name as shown:

```

Set Name ==> ADMDVSS           <Enter>
Symbol   ==>
Hex     ==> 00

```

This name identifies the symbol set you want to look at.

3. Look at the message at the top of the panel:

ADM0608 I SYMBOL SET LOADED

If the message “ADM0607 I CREATING NEW VECTOR SYMBOL SET” is displayed, you may find that either you have made a typing error or your installation has renamed ADMDVSS. If you have made a typing error, reenter the symbol set name. If your installation has renamed the symbol set, ask your system programmer the name of the symbol set.

4. Look at the “Grid Coordinates” field.

This field displays the grid coordinates of the symbol set.

Grid Coordinates for Set:

Maximum X ==> 80

Maximum Y ==> 110

If these fields do not display 80 and 110, you have loaded an old version of the symbol set ADMDVSS. Contact your system programmer to obtain the latest version of the symbol set.

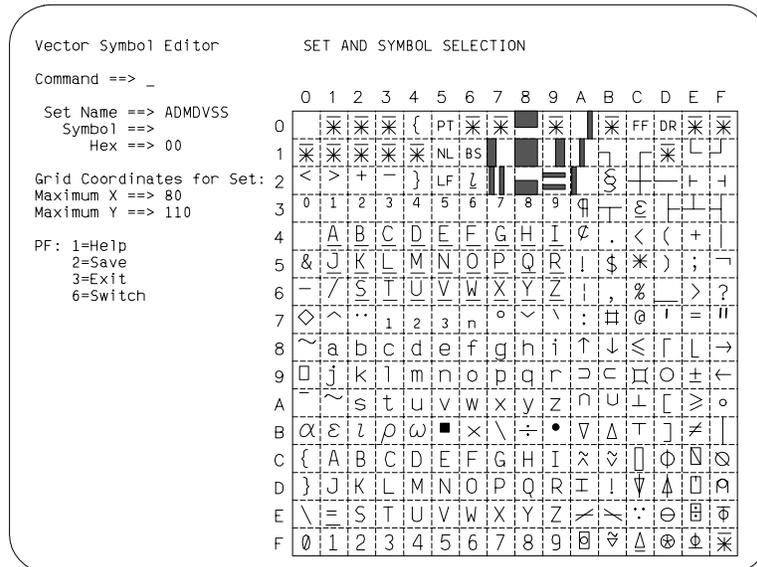
The grid coordinates displayed in this field are the coordinates of the editing grid used to edit the symbol on the Symbol Edit panel. The grid coordinates affect the shape of a displayed symbol. Until you become familiar with the Vector Symbol Editor, use the default values of 80 and 110.

drawing a vector symbol

- Press PF6/18. (That means either PF6 or PF18 — but only one might be available for this purpose on your keyboard; if you get a message “ADM0677 E WRONG KEY OR BUTTON,” try the alternative key.)

Do not worry about any flickering. This happens when you display graphics on a 3278, 3279, 3290, or 8775 display terminal.

The panel now shows the symbols in symbol set ADMDVSS.



PF6/18 executes the SWITCH command. When you press this key, you switch between two versions of the Set and Symbol Selection panel.

This display shows you all the symbols in the symbol set ADMDVSS. You will use this display, as you create a symbol set, to see the character codes that you have already used.

The hex value (00 in this case) corresponds to the row/column in the symbol set table. So hex 6E means row 6 column E, which is the “>” symbol.

- Press PF6/18.

You switch the Set and Symbol Selection panel.

This display shows you the character codes in a symbol set. Each character code has a hexadecimal code and character equivalent. You read the hexadecimal code by row and then column. You use this display as a reference to see the normal positions used for characters in a typeface.

Points to remember

- The only way to choose a symbol set is to enter the symbol set name in the “Set Name” field of the Set and Symbol Selection panel.
- Use PF6/18 to look at which character codes you have used in your symbol set.

Moving from the Selection panel to the Symbol Edit panel

You have looked at the symbols in an existing symbol set. You are now going to move to the Symbol Edit panel to create a symbol set of your own.

Instructions

1. Move the cursor from the command line to the “Set Name” field.
2. Overtyping ADMDVSS in the “Set Name” field with a new name. Choose any name that does not exceed eight characters and starts with an alphabetic character. For example, you could call your symbol set XXVECTOR where “XX” are two of your initials.

Note: Do not include the period (.) character.

Type the new name as shown:

```
Set Name ==> XXVECTOR           <Enter>
Symbol   ==>
Hex      ==> 00
```

3. Look at the message at the top of the panel:

ADM0607 I CREATING NEW VECTOR SYMBOL SET

If the message “ADM0608 I SYMBOL SET LOADED” is displayed, you have chosen the name of an existing symbol set. Choose another name for your symbol set and overtype the first name you chose.

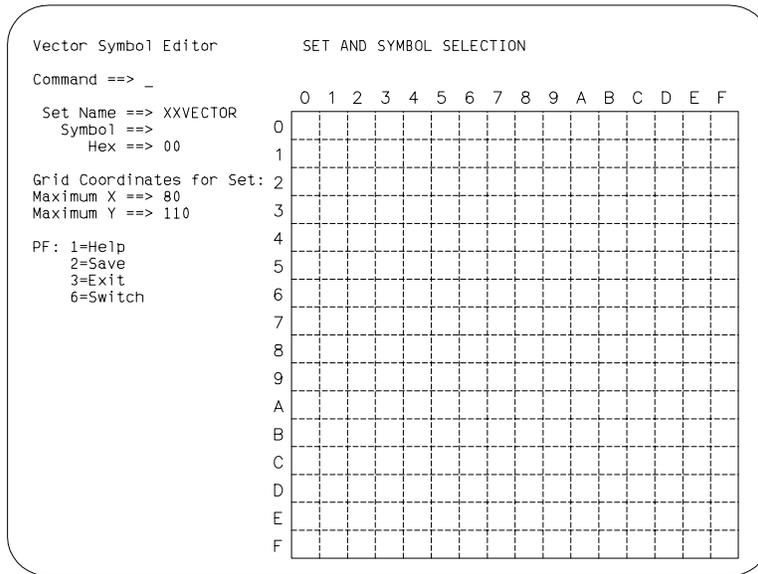
Another message you may see is “ADM0615 E IMAGE SYMBOL SET WITH THIS NAME EXISTS.” As both vector and image symbol sets are stored on the same data set, it is possible to choose the name of an image symbol set. Choose another name for your symbol set and overtype the first name you chose.

The default grid coordinates are selected for you. The editing grid you will use on the Symbol Edit panel will have an x axis of 80 and a y axis of 110.

drawing a vector symbol

4. Press PF6/18.

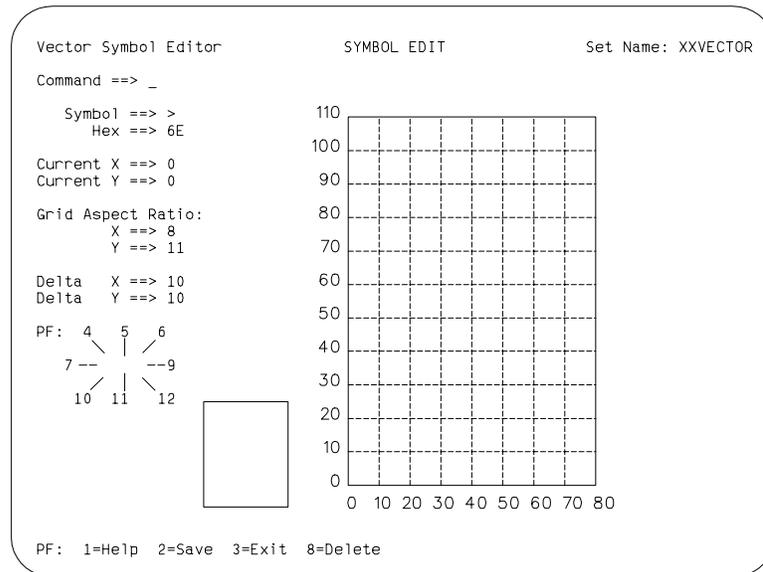
The Set and Symbol Selection panel displays the empty symbol set.



5. Move the cursor to the “Hex” field and type “6E” as shown:

```
Set Name ==> XXVECTOR
Symbol ==>
Hex ==> 6E <Enter>
```

The Symbol Edit panel is displayed. The “Symbol” field displays the character “>”.



You have selected a character code to edit. A character code is selected by either a hexadecimal code or its character equivalent. In this case, hex 6E and its character equivalent “>” are both valid ways of expressing the character code of the symbol you are going to create.

When you use your symbol with the Interactive Chart Utility or in an application program, you need to (1) identify the symbol set that the symbol is in, and (2) identify the symbol in the set by specifying its character code.

Points to remember

- Symbol set names must not be more than eight characters and must start with an alphabetic character. It is best not to use the period (.) character (because the period can be interpreted differently depending on the device in use.)
- You can select a character code in either the “Symbol” or “Hex” fields on both displays of the Set and Symbol Selection panel.

The Symbol Edit panel

As you have seen, when you type a character code in the “Hex” or “Symbol” fields on the Set and Symbol Selection panel, the Symbol Edit panel is displayed. This is the panel you will use to draw symbols. Before starting to draw, you may find it useful to look at the explanations of the fields you use on this panel, as shown in Figure 2.

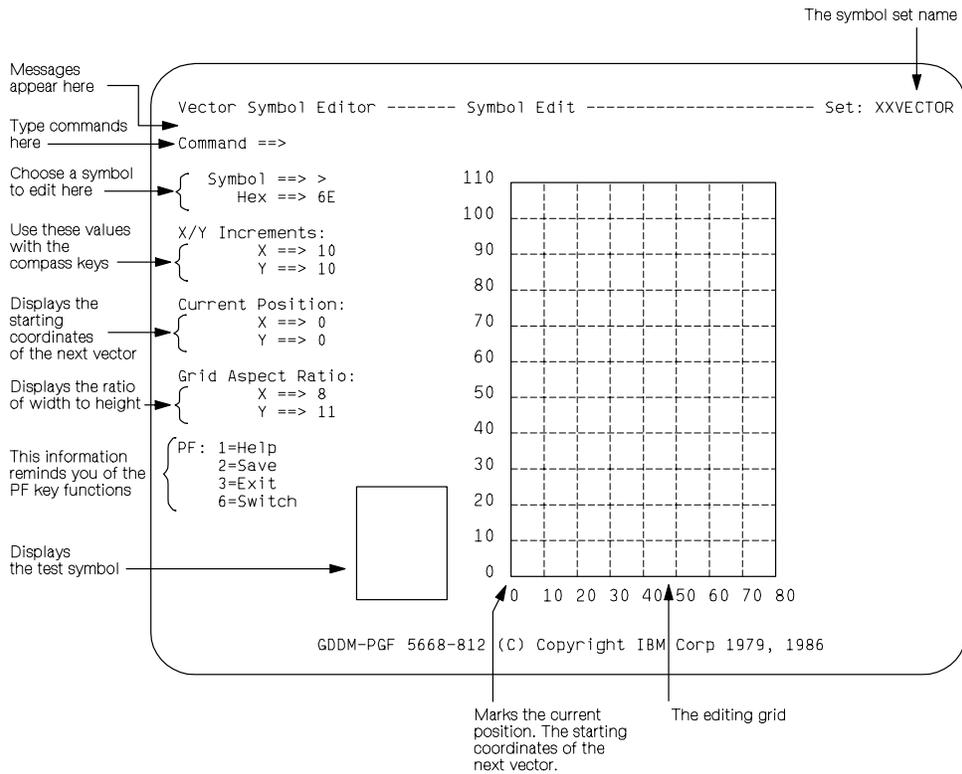
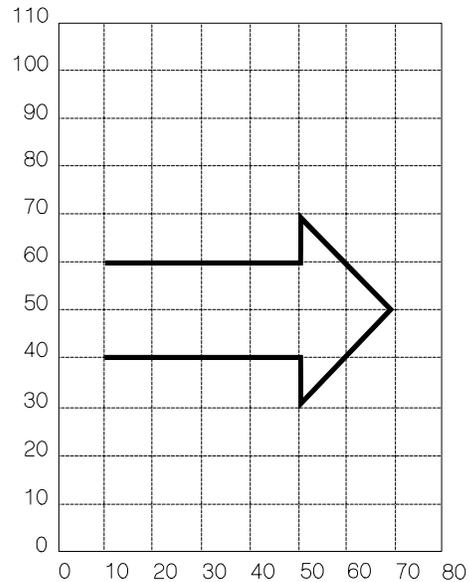


Figure 2. The Symbol Edit panel on a 3279

Drawing a vector symbol on the Symbol Edit panel

The best way to learn how to use the Symbol Edit panel is to draw a simple symbol. The first symbol you are going to draw is an arrow like this:



Instructions

1. Look at the "Current Position" field:

Current X ==> 0

Current Y ==> 0

The **current position** is the starting point from which a vector is drawn. It is marked by a small white cross at grid coordinates 0 0.

2. Type the following command on the command line:

MOVE TO 10 60 <Enter>

The MOVE command moves the current position marked by the small white cross from grid coordinates 0 0 to grid coordinates 10 60. The "Current Position" field is changed to 10 60.

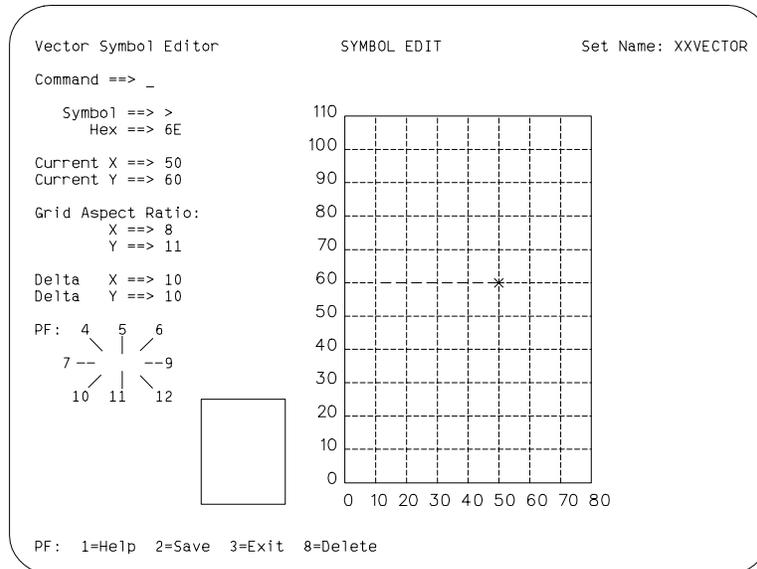
Another way to change the current position is to move the cursor down to the "Current Position" field, alter the values displayed, and press ENTER.

drawing a vector symbol

3. Type the following:

LINE TO 50 60 **<Enter>**

A red dashed vector is drawn from the current position to the target position at grid coordinates 50 60. The grid should look like this:



The vector is shown as a red dashed line because it is the **current vector**. When you are in the process of drawing, the current vector is the last vector you drew. Lines other than the current vector are displayed in white.

Normally, you use the LINE command with the TO parameter to draw straight lines. The TO parameter specifies the target position as an absolute value. Another way to use the LINE command is to specify the target position with the BY parameter. This specifies the target position as a value relative to the current position.

4. Draw the next vector using the BY parameter. This parameter increases or decreases the current position values by the values specified. Type the following:

LINE BY 0 10 **<Enter>**

The x value of the current position remains the same. The y value is increased by 10. A red dashed line is drawn from the current position 50 60 to the target position of 50 70, and the first vector you drew changes to a white line. Only the current vector is a red dashed line.

Note: The TO and BY parameters are used with other commands in addition to the LINE command.

- Now see how to delete a vector. The next vector you draw will be a deliberate mistake. Type the following:

LINE BY 30 0 **<Enter>**

This draws a vector from the current position 50 70 to the target position 80 70.

- Press PF8/20.

This deletes the current vector and returns the current position to 50 70.

When you delete a vector, parts of the grid are also deleted. The panel is not redrawn each time you enter a command, for performance reasons. It is only redrawn after some commands. You will become familiar with these commands as you use the editor.

Note: If you are using an interactive graphics terminal, PF8 has a different use. Refer to Appendix B, "Using the editor on an interactive graphics terminal" on page 77 for further information.

- Continue drawing the arrow. Type the following:

LINE BY 20 -20 **<Enter>**

A vector is drawn from the current position 50 70 to the target position of 70 50. The grid should look like this:

Vector Symbol Editor
SYMBOL EDIT
Set Name: XXVECTOR

Command ==> _

Symbol ==> >

Hex ==> 6E

Current X ==> 70

Current Y ==> 50

Grid Aspect Ratio:

 X ==> 8

 Y ==> 11

Delta X ==> 10

Delta Y ==> 10

PF: 4 5 6

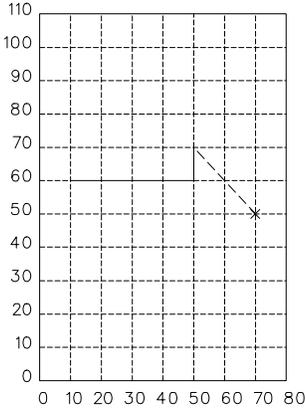
 / | \

7 -- | --9

 / | \

10 11 12





PF: 1=Help 2=Save 3=Exit 8=Delete

drawing a vector symbol

8. Type the following:

LI BY -20 -20 <Enter>

LI is the abbreviation of the LINE command. This draws a vector from the current position 70 50 to the target position of 50 30. The grid should look like this:

```
Vector Symbol Editor          SYMBOL EDIT          Set Name: XXVECTOR
Command ==> _
Symbol ==> >
Hex ==> 6E
Current X ==> 50
Current Y ==> 30
Grid Aspect Ratio:
X ==> 8
Y ==> 11
Delta X ==> 10
Delta Y ==> 10
PF: 4 5 6
    7 11 9
    10 11 12
```

PF: 1=Help 2=Save 3=Exit 8=Delete

9. Type the following:

LI BY 0 10 <Enter>

This draws a vector from the current position 50 30 to the target position of 50 40. The grid should look like this:

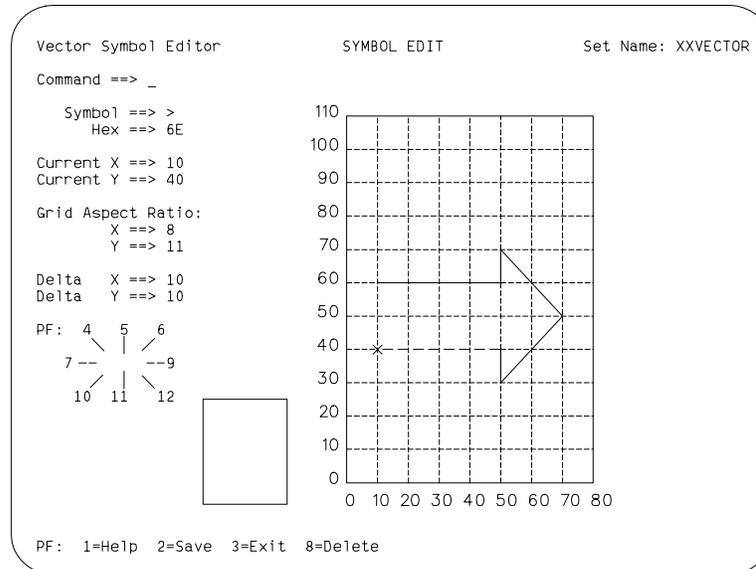
```
Vector Symbol Editor          SYMBOL EDIT          Set Name: XXVECTOR
Command ==> _
Symbol ==> >
Hex ==> 6E
Current X ==> 50
Current Y ==> 40
Grid Aspect Ratio:
X ==> 8
Y ==> 11
Delta X ==> 10
Delta Y ==> 10
PF: 4 5 6
    7 11 9
    10 11 12
```

PF: 1=Help 2=Save 3=Exit 8=Delete

10. Type the following:

LI BY -40 0 <Enter>

This draws a vector from the current position 50 40 to the target position of 10 40. The grid should look like this:



11. Press PF2/14.

This saves the symbol set. The following message is displayed:

ADM0690 I SYMBOL SET SAVED

Points to remember

- A small white cross marks the current position.
- There are two ways to change the current position. Either use the MOVE command or alter the “Current X” and “Current Y” fields.
- The “Current X” and “Current Y” fields change each time you enter a command.
- The current vector is a red dashed line. Other vectors are white.
- You use PF8/20 to delete the current vector (but see Appendix B, “Using the editor on an interactive graphics terminal” on page 77 if you are using an interactive graphics terminal.)
- You use PF2/14 to save the symbol set.
- The symbol set is saved with the name you specified in the Set and Symbol Selection panel.

Drawing a vector symbol using the compass keys

You have seen how to use the LINE command; however, you can also use some of the PF keys to draw vectors, provided that your PF keys are laid out suitably. If your keyboard has a set of twelve PF keys on the right, with a group of them, called the **compass keys**, arranged as shown in Figure 3, this group can be used to draw vectors from the current position in directions corresponding to the major points of the compass. The length of the vector to be drawn is displayed in the “Delta X” and “Delta Y” fields. Using the compass keys is equivalent to using the LINE command with the BY parameter. When the Symbol Edit panel is displayed, the editor gives the x-and y-delta values that equal the distance between the grid lines (a grid interval). You can alter these values at any time.

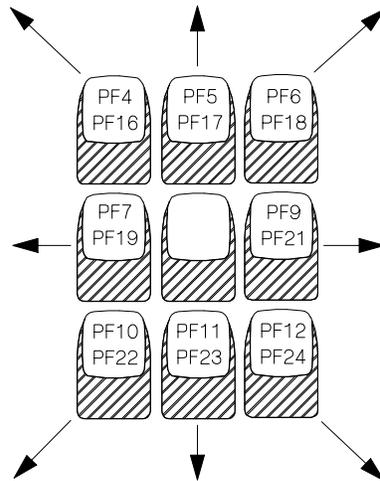


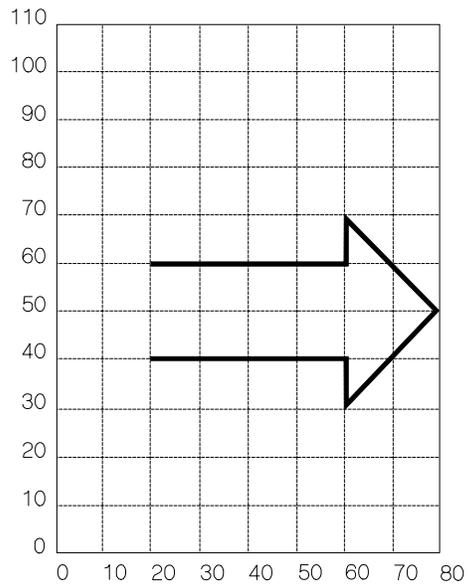
Figure 3. The Compass keys

Note: Not all terminals have a keyboard with this arrangement of PF keys. If you do not have a pad of PF keys on your terminal like the keys in Figure 3, you will probably find it difficult to use the compass keys when you draw your own symbols. If you think that you will not use the compass keys when you draw your own symbols, draw another arrow, as shown on the next page, with LINE commands and continue with the next section, “Controlling the current vector” on page 21.

The compass keys are not available when you are using an interactive graphics terminal, such as the 3179-G, 3270-PC/G, and 3270-PC/GX. Refer to Appendix B, “Using the editor on an interactive graphics terminal” on page 77 if you are using one of these terminals or other interactive graphics terminals.

When you use the compass keys, the PF key in the middle of the set, PF8/20, can be used to delete the current vector. Pressing PF8/20 causes the previous vector to become current.

You are now going to use the compass keys to draw another arrow at different grid coordinates like this:



Instructions

1. Move the cursor from the command line to the "Symbol" field. Overtyping ">" with "<" to select a new character code as shown:

```
Symbol ==> <           <Enter>
Hex     ==> 6E
```

The "Hex" field changes to "4C" when you press ENTER. "<" is the character equivalent of hex 4C.

2. Type the following:

```
MOVE TO 20 60           <Enter>
```

The small white cross marking the current position moves from 0 0 to 20 60. The first vector will start from this point.

3. Look at the "Delta X" and "Delta Y" fields:

```
Delta X ==> 10
Delta Y ==> 10
```

If the fields do not show 10 10, change them to 10 10. The "Delta X" and "Delta Y" fields specify the length of the vectors to be drawn by the compass keys.

drawing a vector symbol

4. Press PF9/21.

This draws a vector to the right for a distance equal to the x-delta value (in this case 10, which is one grid interval).

The screenshot shows the Vector Symbol Editor interface. The title bar includes "Vector Symbol Editor", "SYMBOL EDIT", and "Set Name: XXVECTOR". The command line shows "Command ==> _". The current settings are: Symbol ==> <, Hex ==> 4C, Current X ==> 30, Current Y ==> 60, Grid Aspect Ratio: X ==> 8, Y ==> 11, Delta X ==> 10, Delta Y ==> 10. A keypad diagram shows PF keys 4 through 12. A small empty box is visible below the keypad. The main grid has X and Y axes from 0 to 80 and 0 to 110 respectively. A single asterisk symbol is plotted at the coordinates (30, 60).

```
Vector Symbol Editor          SYMBOL EDIT          Set Name: XXVECTOR
Command ==> _
  Symbol ==> <
  Hex ==> 4C
Current X ==> 30
Current Y ==> 60
Grid Aspect Ratio:
  X ==> 8
  Y ==> 11
Delta X ==> 10
Delta Y ==> 10
PF:  4  5  6
     7  |  8
     10 11 12
```

PF: 1=Help 2=Save 3=Exit 8=Delete

5. Press PF9/21 three more times.

This draws three more vectors to the right.

6. Press PF5/17.

This draws a vector upward.

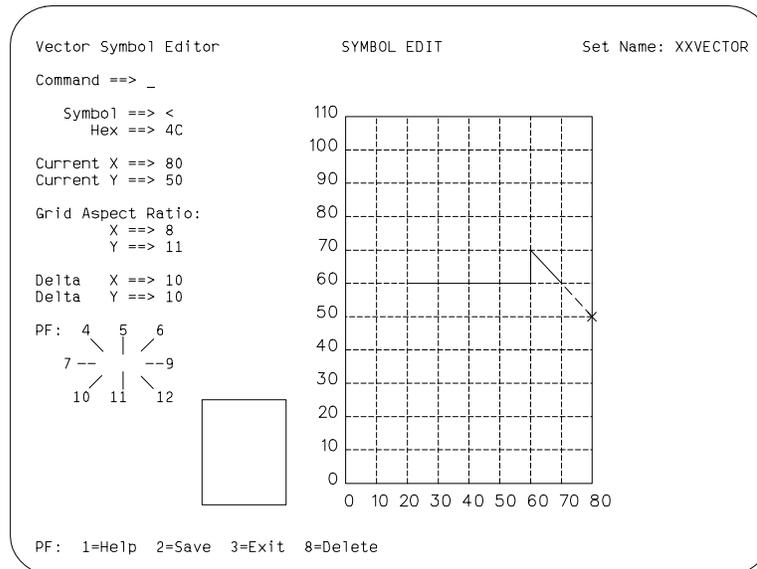
The screenshot shows the Vector Symbol Editor interface after the previous steps. The settings are the same as in the previous screenshot. The keypad diagram is the same. The main grid shows four asterisk symbols plotted at the coordinates (30, 60), (40, 60), (50, 60), and (60, 60). A single asterisk symbol is also plotted at the coordinates (60, 70).

```
Vector Symbol Editor          SYMBOL EDIT          Set Name: XXVECTOR
Command ==> _
  Symbol ==> <
  Hex ==> 4C
Current X ==> 60
Current Y ==> 70
Grid Aspect Ratio:
  X ==> 8
  Y ==> 11
Delta X ==> 10
Delta Y ==> 10
PF:  4  5  6
     7  |  8
     10 11 12
```

PF: 1=Help 2=Save 3=Exit 8=Delete

7. Press PF12/24 twice.

This draws two vectors downward and to the right.

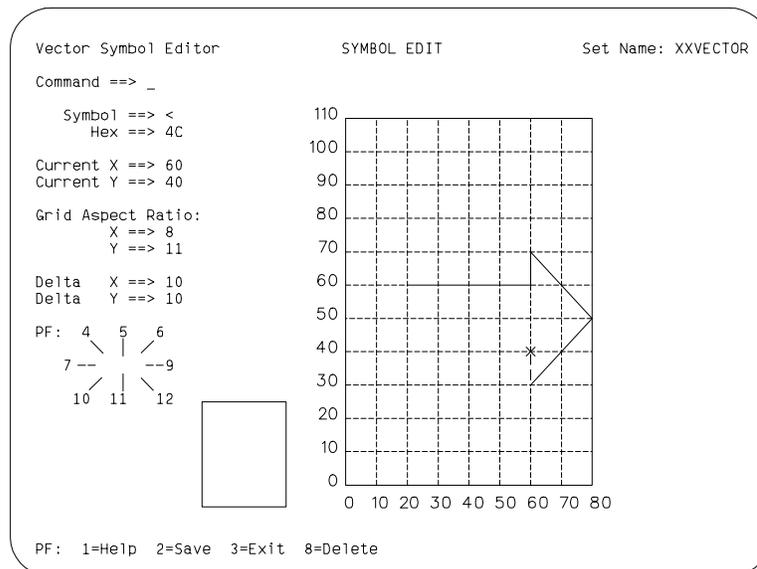


8. Press PF10/22 twice.

This draws two vectors downward and to the left.

9. Press PF5/17.

This draws a vector upward.



drawing a vector symbol

10. Before completing the arrow, change the “Delta X” and “Delta Y” fields. These fields specify the length of the vectors drawn by the compass keys.

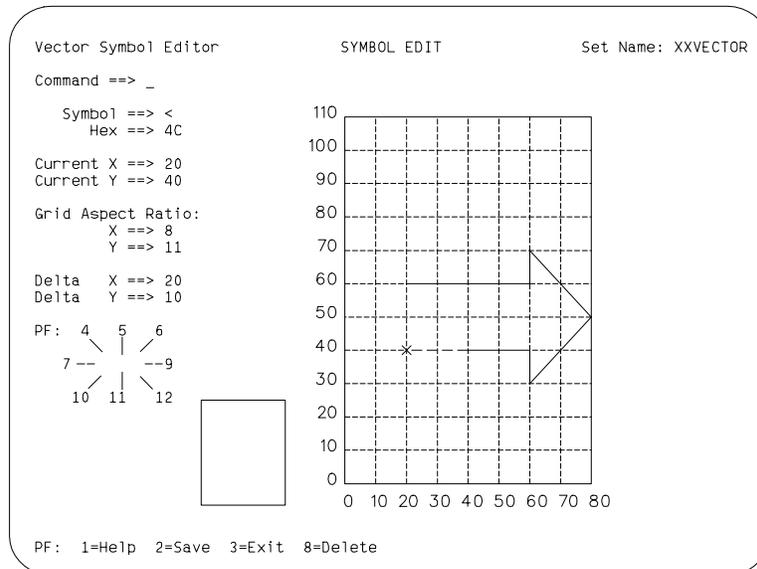
Move the cursor down and change the field as shown:

Delta X ==> 20

Delta Y ==> 10

11. Press PF7/19 twice.

This draws two vectors to the left and is equivalent to entering the command “LINE BY -20 0” twice.



12. Press PF2/14.

This saves the symbol set. The following message is displayed:

ADM0690 I SYMBOL SET SAVED

The SAVE command optimizes the number of vectors in the symbol to simplify the vector sequence. When you saved the symbol, the two vectors that made up the straight line were joined together to make one vector.

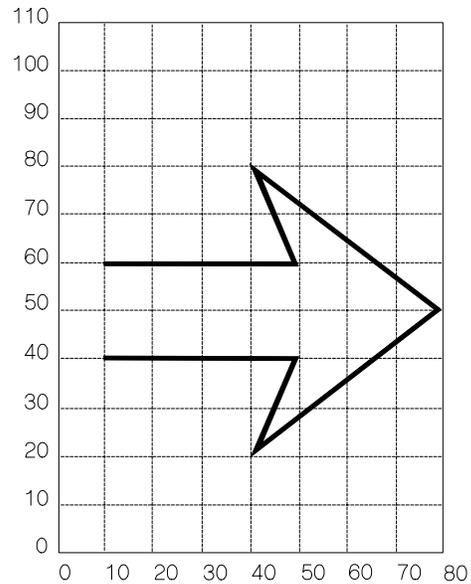
Points to Remember

- You can select a character code in either the Set and Symbol Selection panel or the Symbol Edit panel.
- You alter the values of the “Delta X” and “Delta Y” fields to change the length of the vectors drawn by the compass keys.
- The SAVE command optimizes the number of vectors in the symbol.

Controlling the current vector

It is important that you know which vector is the current vector, because you will be using commands that either act on or act from the current vector. The current vector is identified in different ways on different devices, but it is always shown dashed. The current line is dashed, and is red on a color display.

You are now going to see how to make a vector the current vector and how to use the STRETCH command. You are going to change the first arrow you drew to look like this:



drawing a vector symbol

Instructions

1. Move the cursor from the command line to the "Symbol" field. Overtyping "<" with ">" to select the first arrow you drew:

```
Symbol ==> >                                <Enter>
Hex      ==> 4C
```

The "Hex" field changes to "6E" when you press ENTER. ">" is the character equivalent of hex 6E.

The arrow is displayed on the editing grid and a smaller version of the arrow is displayed in the test symbol. Notice that the test symbol does not change each time you change the arrow. You will be shown how to update the test symbol later in this session.

When you select an existing symbol, the current vector is always the last in the sequence of vectors.

The screenshot shows the Vector Symbol Editor interface. On the left, the command fields are populated with the following values:

```
Vector Symbol Editor          SYMBOL EDIT          Set Name: XXVECTOR
Command ==> _
Symbol ==> >
Hex ==> 6E
Current X ==> 10
Current Y ==> 40
Grid Aspect Ratio:
X ==> 8
Y ==> 11
Delta X ==> 20
Delta Y ==> 10
PF: 4 5 6
     7 8 9
     10 11 12
```

Below the PF list is a test symbol, which is a right-pointing arrow. To the right of the command fields is a grid with a vector arrow drawn on it. The grid has X and Y axes ranging from 0 to 80. The vector arrow starts at (50, 30) and ends at (70, 50). At the bottom of the grid, there is a legend for the PF keys: PF: 1=Help 2=Save 3=Exit 8=Delete.

2. Type the following:

BACKWARD 2 **<Enter>**

The current vector moves back two vectors in the sequence and the vector following the current vector becomes a blue dashed line. This is the **current+1** vector, which indicates the direction of the vector sequence. You need to know the direction of the sequence so you can use the BACKWARD and FORWARD commands to move around the vectors making up the symbol.

Even in a closed figure (for example, a square), the vector sequence has a break point. The coordinates of this point are the start coordinates of the first vector and the end coordinates of the last vector in the sequence.

Vector Symbol Editor
SYMBOL EDIT
Set Name: XXVECTOR

Command ==> _

Symbol ==> >

Hex ==> 6E

Current X ==> 50

Current Y ==> 30

Grid Aspect Ratio:

X ==> 8

Y ==> 11

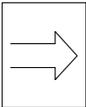
Delta X ==> 20

Delta Y ==> 10

PF: 4 5 6

7 -- | --9

10 | 11 | 12



PF: 1=Help 2=Save 3=Exit 8=Delete

drawing a vector symbol

3. Type the following:

STRETCH TO 40 20 **<Enter>**

This stretches the current vector and the current+1 vector to the target position 40 20. The STRETCH command stretches all vectors that pass through the current position.

Vector Symbol EditorSYMBOL EDITSet Name: XXVECTOR

Command ==> _

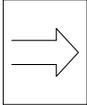
Symbol ==> >
Hex ==> 6E

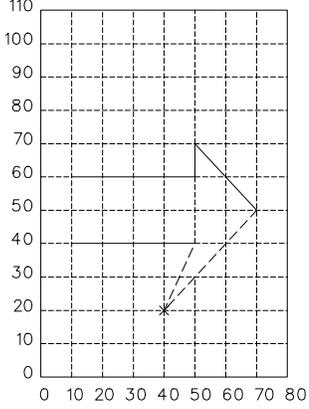
Current X ==> 40
Current Y ==> 20

Grid Aspect Ratio:
X ==> 8
Y ==> 11

Delta X ==> 20
Delta Y ==> 10

PF: 4 5 6
7 -- | --9
10 11 12





PF: 1=Help 2=Save 3=Exit 8=Delete

4. Type the following:

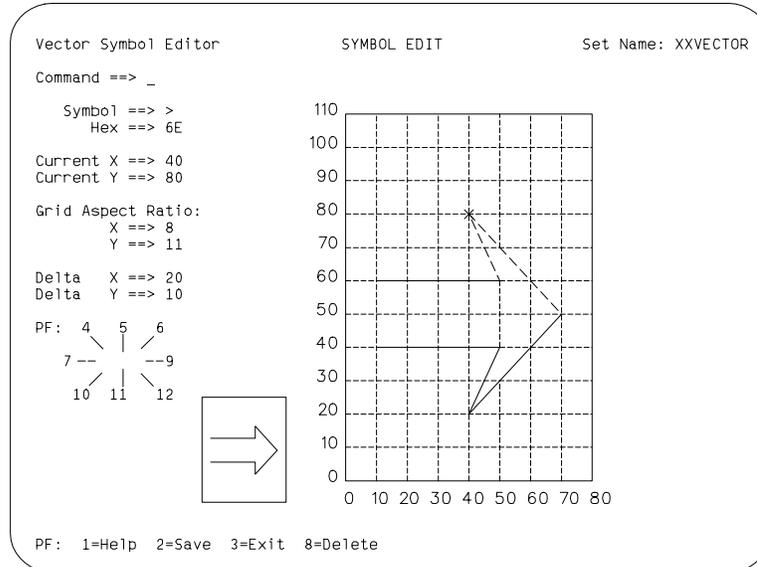
B 2 **<Enter>**

B is the abbreviation of the BACKWARD command. The current vector moves back two vectors in the sequence.

5. Type the following:

ST TO 40 80 **<Enter>**

ST is the abbreviation of the STRETCH command. The current vector and current+1 vector are stretched to the target position 40 80.



6. Type the following:

F **<Enter>**

F is the abbreviation of the FORWARD command. The current vector moves forward one vector in the sequence.

drawing a vector symbol

7. Type the following:

ST BY 10 0 **<Enter>**

You can use both the BY and TO parameters with the STRETCH command. The current vector and current+1 vector are stretched to the target position 80 50.

The screenshot shows the 'Vector Symbol Editor' window with the following content:

```
Vector Symbol Editor                      SYMBOL EDIT                      Set Name: XXVECTOR
Command ==> _
Symbol ==> >
Hex ==> 6E
Current X ==> 80
Current Y ==> 50
Grid Aspect Ratio:
X ==> 8
Y ==> 11
Delta X ==> 20
Delta Y ==> 10
PF: 4 5 6
    |  |  |
7 -- | -- 9
    |  |  |
10 11 12
```

The grid shows a coordinate system from 0 to 80 on the X-axis and 0 to 110 on the Y-axis. A symbol is being drawn, consisting of a horizontal line at Y=20 from X=40 to X=50, and a vertical line at X=50 from Y=20 to Y=80. A dashed line connects the point (40, 80) to (80, 50). A box with a right-pointing arrow is positioned below the PF key layout.

PF: 1=Help 2=Save 3=Exit 8=Delete

8. Display an updated version of the test symbol. Type the following:

REDISPLAY **<Enter>**

The REDISPLAY command redraws the Symbol Edit panel and sequences the vectors. When the Symbol Edit panel is redrawn, any parts of the editing grid that had been deleted are redrawn. In the same way as the SAVE command, the REDISPLAY command optimizes the number of vectors used to draw the symbol.

Note: The current vector moves to the end of the series of vectors.

9. Press PF2/14.

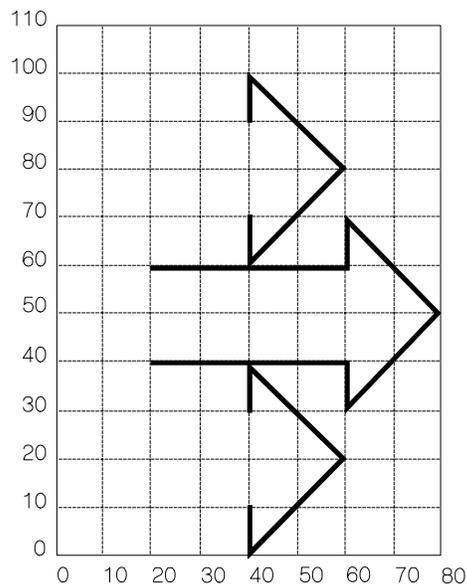
This saves the symbol set.

Points to remember

- The test symbol is **not** updated each time you enter a command.
- When you select a previously drawn symbol, the current vector is always the last vector in the series.
- The current+1 vector is a blue dashed line that indicates the direction of the vector sequence.
- There is always a start and end point in the vector sequence even if the symbol is made up of a closed figure.
- The STRETCH command stretches all vectors passing through the current position.
- The REDISPLAY command updates the test symbol and redraws the editing grid. Like the SAVE command, it optimizes the vector sequence and resequences the vectors so the current vector is displayed at the end of the vector sequence.

Using the COPY command

You are going to use the COPY command to copy the arrow and parts of the arrow at other points on the grid. You are going to produce a symbol like this:



2. Copy all of the vectors making up the symbol. Type the following:

COPY ALL BY -20 30 <Enter>

All vectors are copied at positions 20 to the left and 30 up. "All" means everything that is in the symbol, so another COPY ALL command would copy both arrows.

Vector Symbol Editor
SYMBOL EDIT
Set Name: XXVECTOR

Command ==> _

Symbol ==> <
Hex ==> 4C

Current X ==> 20
Current Y ==> 40

Grid Aspect Ratio:
X ==> 8
Y ==> 11

Delta X ==> 20
Delta Y ==> 10

PF: 4 \ 5 / 6
7 -- | -- 9
10 / 11 \ 12

PF: 1=Help 2=Save 3=Exit 8=Delete

Notice that the current+1 vector appears in the copy of the arrow. The vectors in the copy of the arrow follow on in sequence from the vectors in the original arrow. The current vector is in the middle of the vector sequence.

3. Type the following:

F <Enter>

The current vector moves forward one vector.

drawing a vector symbol

4. Type the following:

DELETE 6 **<Enter>**

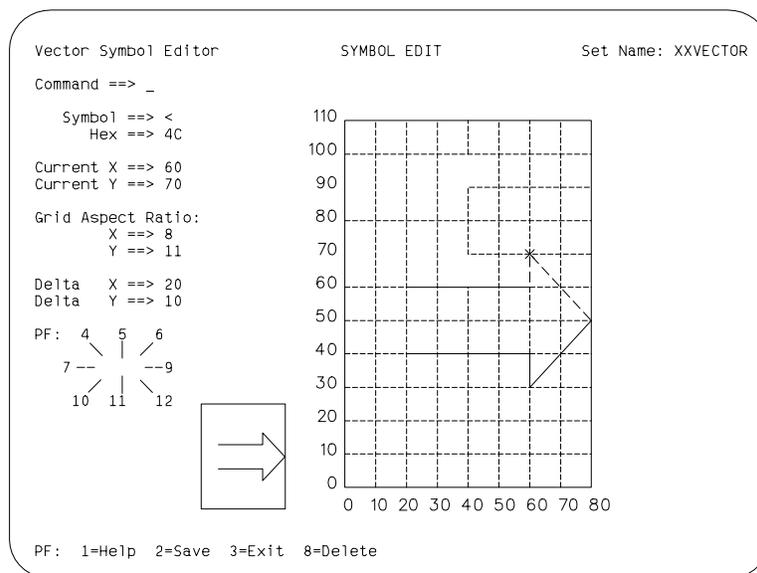
The current vector and the five vectors following it are deleted.

If you do not know how many vectors there are to the end of the sequence making up a symbol, the Vector Symbol Editor allows you to specify a larger number than is actually required. For example, you could have deleted the copied arrow by typing "DELETE 10" although there were only six vectors in the series.

5. Move the current vector backward in the series. Type the following:

B 4 **<Enter>**

The current vector moves back four vectors in the series.



6. Type the following:

COPY 4 BY -20 30 **<Enter>**

The current vector and the three vectors following it are copied at positions 20 to the left and 30 up.

Vector Symbol Editor
SYMBOL EDIT
Set Name: XXVECTOR

Command ==> _

Symbol ==> <

Hex ==> 4C

Current X ==> 60

Current Y ==> 70

Grid Aspect Ratio:

X ==> 8

Y ==> 11

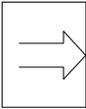
Delta X ==> 20

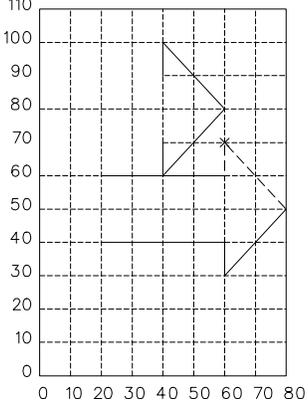
Delta Y ==> 10

PF: 4 5 6

7 -- | --9

10 11 12





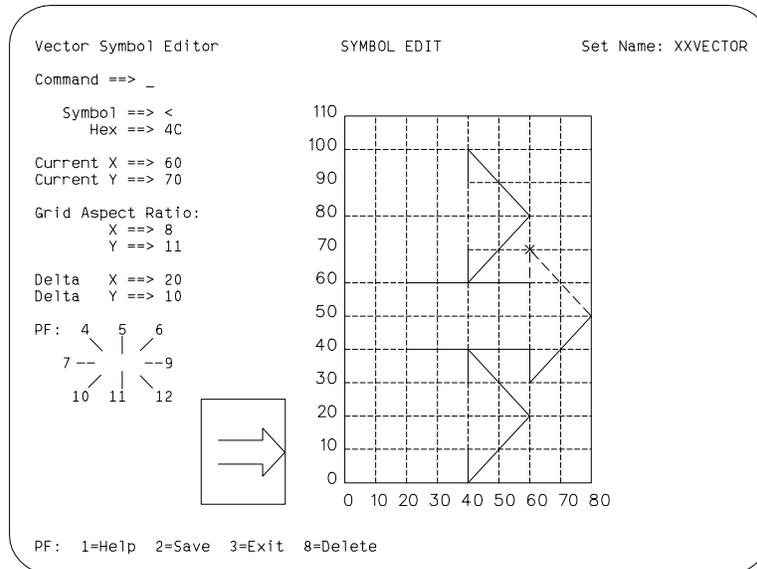
PF: 1=Help 2=Save 3=Exit 8=Delete

drawing a vector symbol

7. Type the following:

COPY 4 TO 40 40 **<Enter>**

The four vectors are copied below the first arrow. The current vector is the first vector copied. The position of the copy is calculated from the current position.



8. Press PF2/14.

The symbol set is saved.

If you make any changes to the symbol set after saving, you will find that until you enter another SAVE command, you are unable to type the name of another symbol set in the "Set Name" field on the Set and Symbol Selection panel.

9. Press PF3/15.

The Set and Symbol Selection panel is displayed showing the symbol set. You can see the two symbols you have drawn in the symbol set at character codes hex 6E and hex 4C.

10. Press PF6/18.

You switch the Set and Symbol Selection panel.

Points to remember

- The COPY ALL command copies **all** the vectors on the editing grid.
- To copy a part of a symbol, move the current vector to the first vector you want to copy and enter the COPY command, with the number of vectors you want to copy.
- You are unable to type into the "Set Name" field on the Set and Symbol Selection panel if you have not entered either the SAVE or the CANCEL command after changing a symbol set.

Using the Help panels

You have now used some of the Vector Symbol Editor commands. If, at any time, you are not sure of the syntax of a command or want to know what a command does, use the Vector Symbol Editor help panels. You can use the help panels from either the Set and Symbol Selection panel or the Symbol Edit panel.

Instructions

1. Press PF1/13.

The master help panel is displayed. This panel lists all the help panels available.

At the bottom of the master help panel is a line of information on the PF key functions in the help panels.

2. Select a topic that interests you (for example, 39 LINE). Type the following:

Enter Option ==> 39 <Enter>

The help panel on the LINE command is displayed.

3. Press PF3/15.

You return to the Set and Symbol Selection panel.

4. Type the following:

HELP COPY <Enter>

The help panel on the COPY command is displayed. If you do not enter the command name in full, the master help panel is displayed.

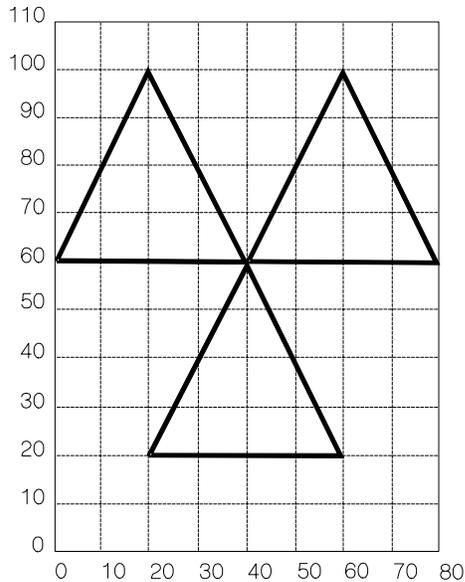
5. Press PF3/15.

You return to the Set and Symbol Selection panel.

You have now finished this session. This is a good point to start experimenting with the editor and using the commands that you have covered in the session. "What to do next" on page 34 suggests a symbol for you to draw on your own. If you do not want to either draw the symbol or continue with the next session, press PF3/15.

What to do next

Try and draw a symbol on your own. Use the commands you have used in this session to draw a symbol like this:



Hints

1. If you have any problems drawing the symbol, refer to Appendix F, Helpful hints to use with the sessions
2. Select a new symbol in your symbol set (for example, "A") in the "Symbol" field.
3. Use the MOVE command to set the current position; this will be the start of the first vector drawn.
4. Use LINE commands to draw the three vectors making up the first triangle.
5. Use the COPY ALL command with the BY parameter to create the second triangle.
6. At this point, it is a good idea to save the symbol in case you make a mistake. Use PF2/14 to save the symbol.
7. Use the COPY command and specify the number of vectors you want to copy to create the third triangle. Do not use COPY ALL as your symbol now contains two triangles. Remember to move the current vector forward one vector in the sequence as the COPY command copies from the current vector.
8. Use PF2/14 to save the symbol set.
9. Use PF3/15 to return to the Set and Symbol Selection panel.

If you do not want to continue with the next session, this is a good point to stop. If you want to stop, press PF3/15.

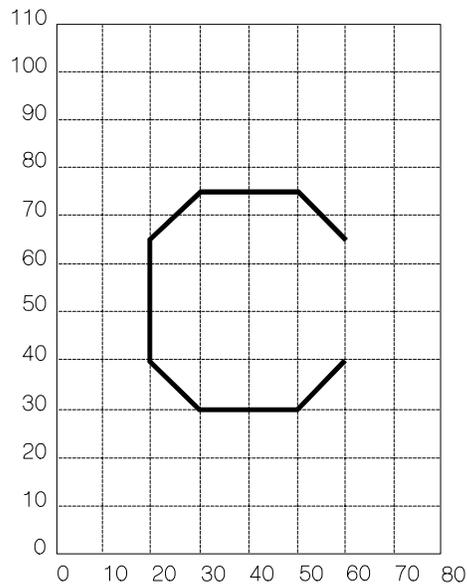
Session 2. Creating characters from an existing vector symbol set

In this session, you will learn how to:

- Create a set of vector symbols in a common style
- Use the REFERENCE command
- Use the ASPECT command.

Creating the first character

In this session you are going to create some characters as if you were designing a typeface. The first symbol you are going to draw is a “c” like this:



The shape of the characters will be based on the “o” symbol in the vector symbol set ADMDVSS supplied with GDDM.

creating characters from an existing vector symbol set

Instructions

1. If you are continuing this session from the last session, start at instruction 4. Otherwise, start at instruction 2.
2. Start the Vector Symbol Editor.
3. Type the name of the symbol set you were using in Session 1 in the "Set Name" field. For example, if your symbol set was called XXVECTOR (where "XX" was two of your initials), you would type:

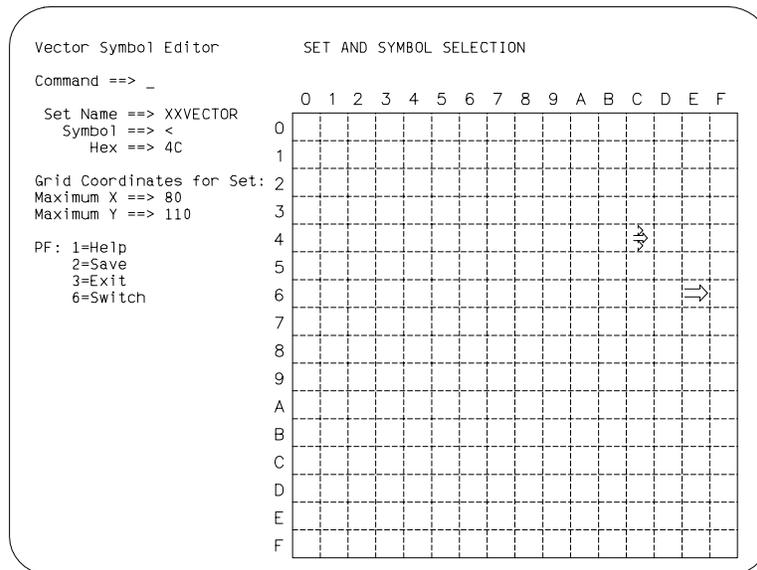
```
Set Name ==> XXVECTOR          <Enter>
Symbol  ==>
Hex     ==> 00
```

As soon as the following message is displayed, you can continue:

ADM0608 I SYMBOL SET LOADED

4. Press PF6/18.

The Set and Symbol Selection panel displays the symbols you drew in Session 1.

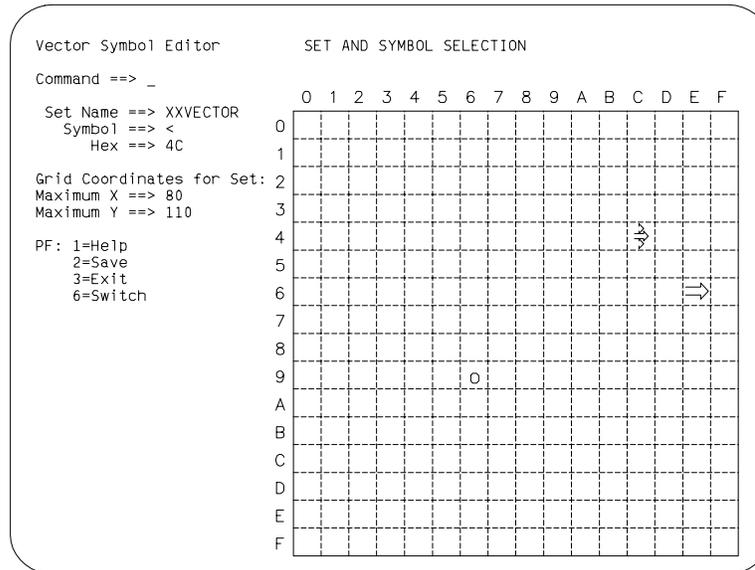


creating characters from an existing vector symbol set

5. Type the following:

SCOPY o FROM ADMDVSS TO o <Enter>

The “o” from the symbol set ADMDVSS has been copied to character code hex 96. You can copy from ADMDVSS because it has the same grid coordinates as your symbol set. You can only copy between symbol sets with the same grid coordinates.



6. Type the following:

SCOPY o TO c <Enter>

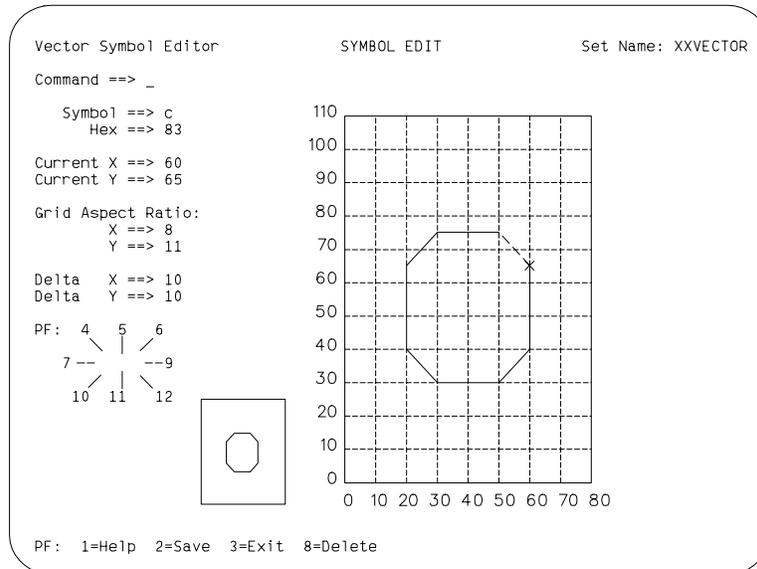
The symbol “o” is copied into the “c” character code. The SCOPY command uses the set you are editing if you do not specify a symbol set to copy from.

creating characters from an existing vector symbol set

7. Move the cursor from the command line to the "Symbol" field and type the character code "c" as shown:

```
Set Name ==> XXVECTOR
Symbol ==> c           <Enter>
Hex ==> 00
```

The Symbol Edit panel is displayed with a lowercase "o" in the editing grid and in the test symbol box. The current vector is at the end of the vector sequence.



8. To create a "c" from the "o", you need to delete the vector between coordinates 60 40 and 60 65. This vector is at the beginning of the vector sequence. To move the current vector from the end of the vector sequence to the beginning of the vector sequence you can use the BACKWARD command. You cannot use the FORWARD command because of the break in the vector sequence. The coordinates of the break point are the start coordinates of the first vector and the end coordinates of the last vector in the sequence. Type the following:

```
B 10           <Enter>
```

Fewer than ten vectors make up the symbol, but you specify a number greater than the number required to reach the start of the vector sequence.

The current+1 vector is displayed at the start of the vector sequence and the following message is displayed:

```
ADM0650 I REACHED BEGINNING OF VECTOR SEQUENCE
```


creating characters from an existing vector symbol set

9. Move the cursor from the command line to the "Symbol" field. Overtyping "d" with "b" to select character code "b" as shown:

```
Symbol ==> b           <Enter>  
Hex    ==> 84
```

The "Hex" field changes to "82" when you press ENTER. "b" is the character equivalent of hex 82.

The Symbol Edit panel is displayed.

10. Type the following:

```
SC d           <Enter>
```

The lowercase "d" that you have just created is copied into the editing grid.

11. Type the following:

```
B 10          <Enter>
```

The current+1 vector is displayed at the start of the vector sequence and the following message is displayed:

```
ADM0650 I REACHED BEGINNING OF VECTOR SEQUENCE
```

12. Type the following:

```
F            <Enter>
```

The current vector is now the vector between 60 100 and 60 30.

13. Type the following:

```
SHIFT BY -40 0  <Enter>
```

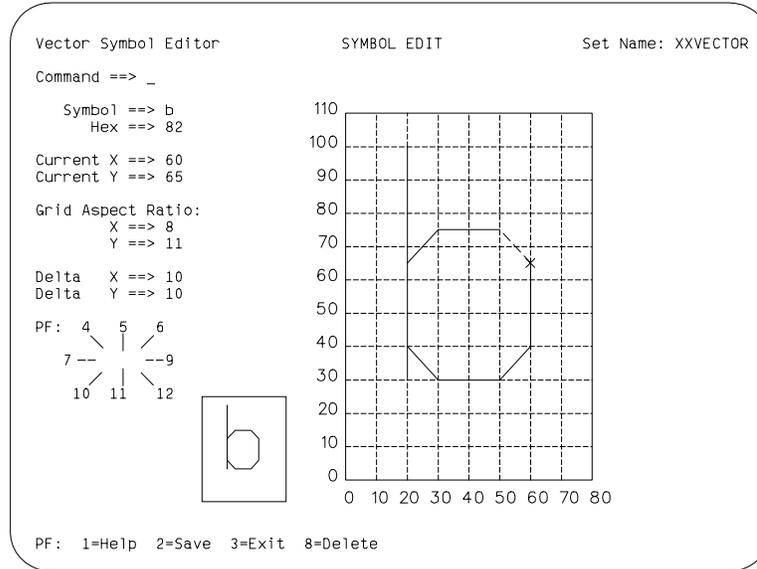
The SHIFT command moves the current vector to the specified position on the editing grid.

The current vector is moved to the left.

14. Type the following command:

MERGE o **<Enter>**

The MERGE command merges two symbols together. You use it like the SCOPY command. You can merge symbols from two different symbol sets if the symbol sets have the same grid coordinates.



15. Press PF2/14.

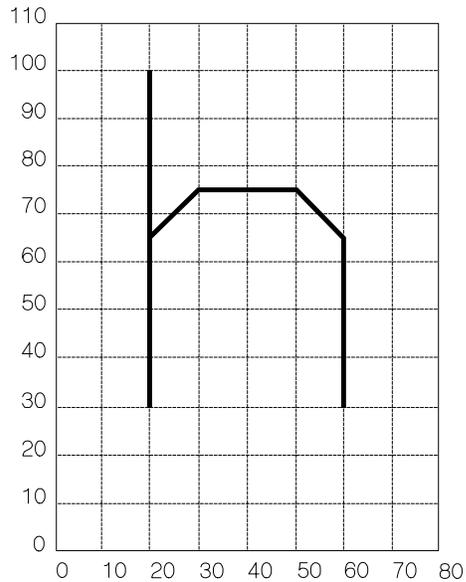
This saves the symbol set.

Points to remember

- You use the NEXT and PREVIOUS commands to move character codes.
- You use the CHANGE command to change either the start or the end of the current vector.
- You use the MERGE command to merge two symbols together.

Using the REFERENCE command

When you are editing a lot of similar characters, you may find it useful to use the REFERENCE command. The REFERENCE command puts the outline of a previously edited symbol onto the editing grid. You then use it as a guide, that you can draw over. It is only an outline. You have not copied a symbol onto the grid. The reference symbol is displayed as a dot-dashed pink line. You are going to draw an “h” like this:



Instructions

1. Move the cursor from the command line to the “Symbol” field. Overtyping “b” with “h” to select character code “h” as shown:

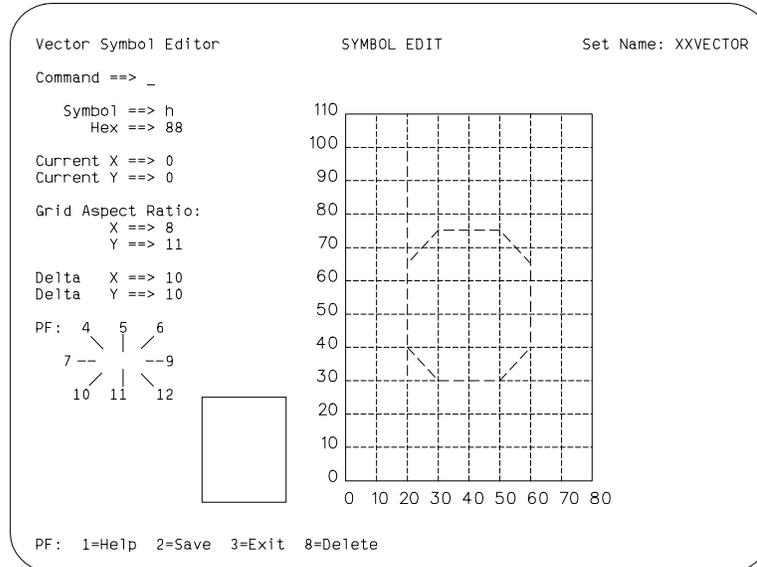
```
Symbol ==> h           <Enter>
Hex     ==> 82
```

The “Hex” field changes to “88” when you press ENTER. “h” is the character equivalent of hex 88.

2. Type the following:

REF b ON **<Enter>**

REF is the abbreviation of the REFERENCE command. You have selected character code "b" as a reference symbol.



3. Use MOVE commands, LINE commands, and/or the compass keys to draw the character "h". You use the outline of the reference symbol as a guide to draw around. You can think of it as equivalent to using tracing paper.

4. Type the following:

REF OFF **<Enter>**

The reference symbol disappears, the editing grid is redisplayed, and the test symbol is updated.

5. Press PF2/14.

This saves the symbol.

6. Press PF3/15.

You return to the Set and Symbol Selection panel.

Points to remember

- The reference symbol is displayed as a pink dot-dashed line.
- You draw over the reference symbol. It is only an outline.

Using the ASPECT command

If you are only going to use vector symbols with the Interactive Chart Utility, you do not need to read this section. If this is the case, you may like to experiment with the commands you have used in this session by drawing a symbol on your own. "What to do next" on page 48 suggests two symbols for you to draw. If you do not want to either draw a symbol on your own or continue with the next session, press PF3/15.

The ASPECT command enables you to see the effect of different aspect ratios on the symbol, without writing a trial application program. The aspect ratio of a symbol is the ratio of width to height.

Instructions

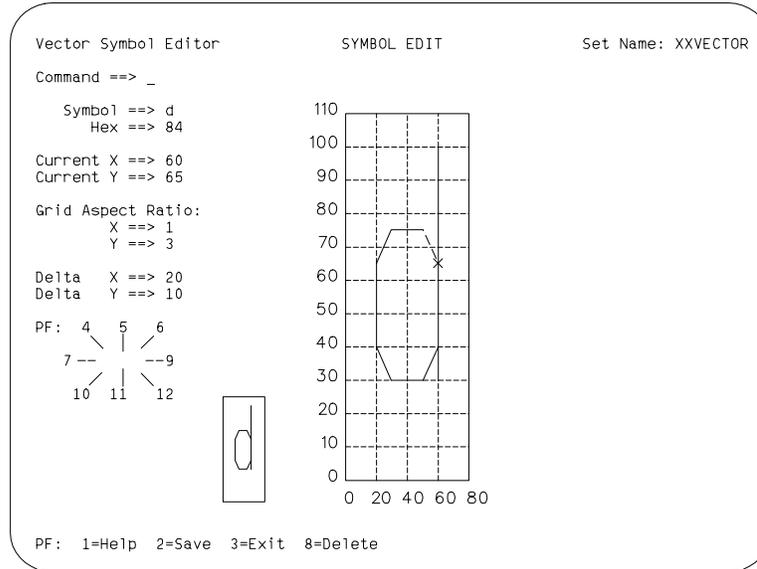
1. Type the following:

ASPECT 1 3 **<Enter>**

The grid should look like this:

The screenshot shows the Vector Symbol Editor interface. On the left, the command 'ASPECT 1 3' has been entered, and the grid coordinates are set to a maximum X of 80 and a maximum Y of 110. On the right, a grid titled 'SET AND SYMBOL SELECTION' is displayed. The grid has columns labeled 0 through F and rows labeled 0 through F. The characters 'b', 'c', 'd', 'h', and 'o' are positioned at grid coordinates (2,8), (3,8), (4,8), (8,8), and (5,9) respectively. A cursor is visible at (4,4) and another at (5,5).

2. Move the cursor to the “Symbol” field and select character code “d”. The grid should look like this:



The “Grid Aspect Ratio” field displays 1 3.

3. To reset the aspect ratio, to a ratio that corresponds to the grid coordinates of 80 and 110, type the following:

ASPECT **<Enter>**

The “Grid Aspect Ratio” field reverts to 8 11.

4. Press PF3/15.

You return to the Set and Symbol Selection panel.

5. Press PF6/18.

You switch the Set and Symbol Selection panel.

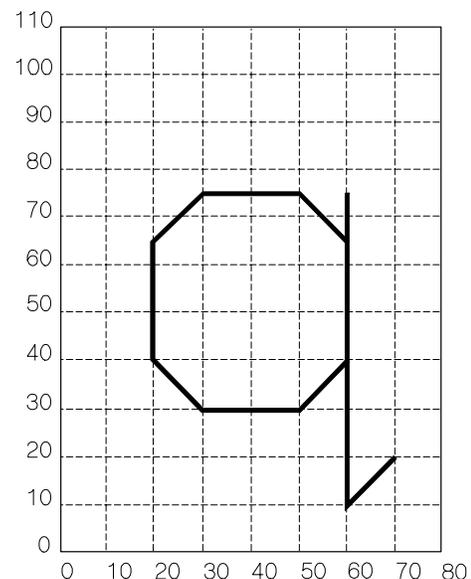
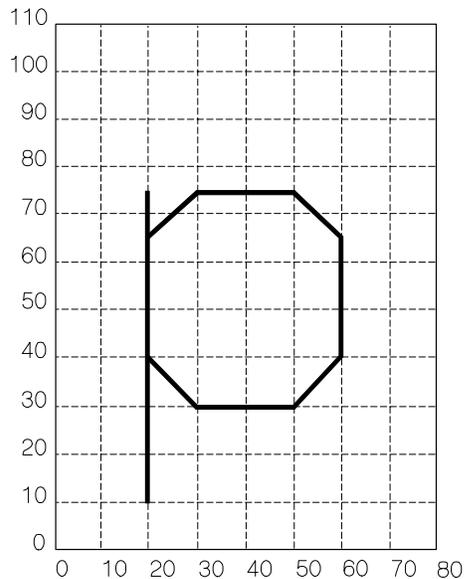
You have now finished this session. This is a good point to start experimenting with the editor and using the commands that you have covered in the session. “What to do next” on page 48 suggests two symbols for you to draw on your own. If you do not want to either draw the symbols or continue with the next session, press PF3/15.

Point to remember

- The ASPECT command lets you see the effect of different aspect ratios on the symbol, without you writing a trial application program.

What to do next

Try to draw two more characters based on the “o” on your own. Draw a “p” and a “q” like this:



Hints

1. If you have any problems drawing the symbols, refer to Appendix F, Helpful hints to use with the sessions.
2. Select the character code for “p” in the “Symbol” field.
3. Use the SCOPY command to copy the “o” into the character code.
4. Use MOVE and LINE commands to complete the character.
5. Use PF2/14 to save the symbol set.
6. Select the character code for “q” in the “Symbol” field.
7. Use the SCOPY command to copy the “p” into the character code.
8. Use SHIFT, MERGE, MOVE, and LINE commands to complete the character.
9. Use PF2/14 to save the symbol set.
10. Use PF3/15 to return to the Set and Symbol Selection panel.

If you do not want to continue with the next session, this is a good point to stop at. If you want to stop, press PF3/15.

Session 3. Drawing a curved vector symbol

In this session, you will learn how:

- The Vector Symbol Editor constructs curves
- To draw a circle
- To draw an ellipse
- To use the NEW CURVE command.

How the Vector Symbol Editor constructs curves

In this session, you are going to experiment with a symbol made up of curves.

To draw curves, the Vector Symbol Editor uses vectors as **curve construction lines**. A curve is defined by two or more curve construction lines (vectors).

A curve made up of two curve construction lines starts at the beginning of the first line and is drawn to the end of the second line. The path of the curve is drawn so that it reaches the end of the second line at a tangent to that line.

A curve made up of more than two curve construction lines starts at the beginning of the first line and curves tangentially to however many curve construction lines there are. The curve ends at the end point of the last line. Figure 4 shows two curves: the first constructed with two curve construction lines and the second constructed with three.

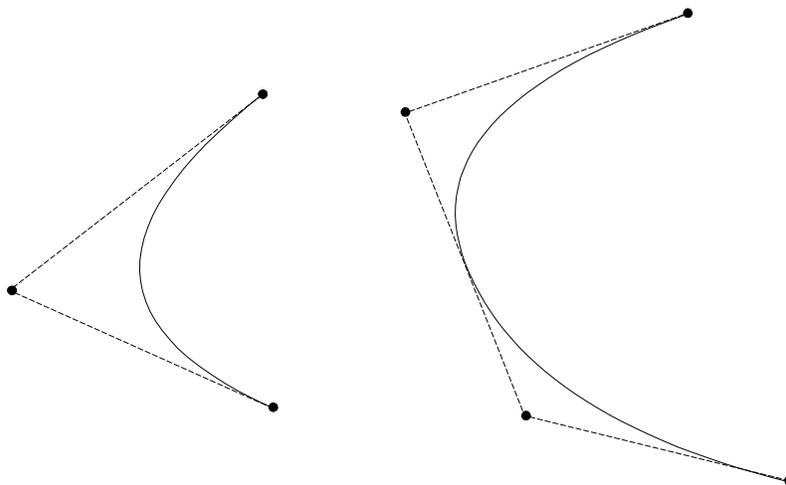


Figure 4. How the Vector Symbol Editor constructs curves

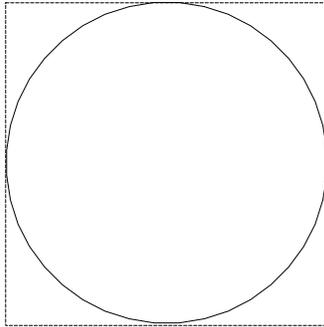
When you draw curves on the Vector Symbol Editor, they will not look quite like the curves in Figure 4. Figure 4 shows all the vectors used as curve construction lines. When you are drawing curves, the current vector is long-dashed; the other curve construction lines are not displayed.

To draw curve construction lines, you use the CURVE command. You can stop curve drawing by using either a MOVE command or a LINE command.

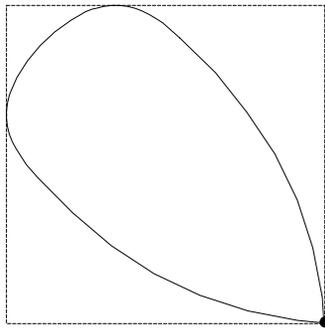
Drawing a circle

There is a particular technique to drawing a circle. Once you have grasped how to draw a circle, you will find it much easier to draw curves on the Vector Symbol Editor.

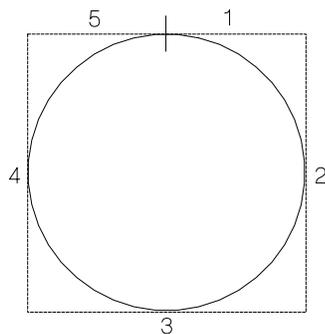
Curves are drawn by the Vector Symbol Editor from a starting point to the mid-point of the curve construction line, to the mid-point of the next curve construction line, and so on. Now, think of a circle within a square:



The four lines of the square are the curve construction lines of a circle. However, if you start and end the series of curve construction lines at any of the corners of the square you will not get a circle:



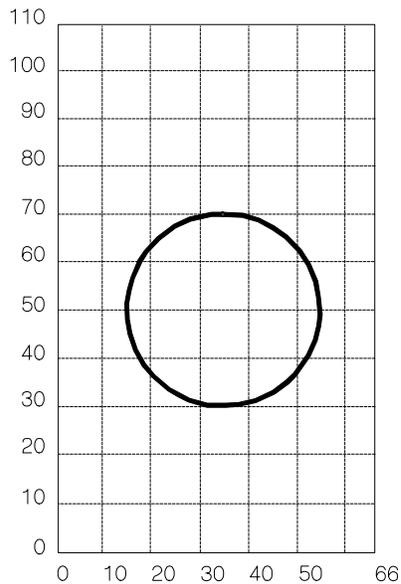
To draw a circle, divide one of the lines of the square in half and start the first vector of the circle from that point:



Then specify the other vectors of the circle as if you were drawing the square.

drawing a curved vector symbol

You are now going to create a new symbol set, with different grid coordinates, and draw a circle like this:



Instructions

1. If you are continuing this session from the last session, start at instruction 3. Otherwise, start at instruction 2.
2. Start the Vector Symbol Editor. The Set and Symbol Selection panel is displayed.
3. Type a new name in the "Set Name" field. For example, if your new symbol set is to be called XXVEC2 (where "XX" are two of your initials), you would type:

Set Name ==> **XXVEC2** **<Enter>**
Symbol ==>
Hex ==> **00**

4. Look at the message at the top of the panel. It should read:

ADM0607 I CREATING NEW VECTOR SYMBOL SET

If the message "ADM0608 I SYMBOL SET LOADED" is displayed, you have chosen the name of an existing symbol set. Choose another name for your symbol set and overtype the first name you chose.

5. Move the cursor down and change the "Grid Coordinates for Set" field as shown:

Grid Coordinates for Set:
Maximum X ==> **66** **<Enter>**
Maximum Y ==> **110**

The grid coordinates of a symbol set affect the shape of a symbol when you display it. If you display a symbol with circles in it with the Interactive Chart Utility, you display the symbol in an area with a predefined aspect ratio (the ratio of symbol width to height). If the grid coordinates do not match the aspect ratio, circles will be oval-shaped.

6. Move the cursor to the "Symbol" field and type "c" as shown:

```

Set Name ==> XXVEC2
Symbol ==> c           <Enter>
Hex ==> 00
    
```

The "Hex" field changes to "83" when you press ENTER. "c" is the character equivalent of hex 83.

The Symbol Edit panel is displayed.

7. Type the following:

```

M TO 33 70           <Enter>
    
```

M is the abbreviation of the MOVE command.

The current position is moved to grid coordinates 33 70. This will be the start of the first curve construction line and the top of the circle.

8. Type the following:

```

CURVE BY 20 0       <Enter>
    
```

The CURVE command starts the drawing of the first curve construction line from the middle of the top line of the square to the top right-hand corner. The grid should look like this:

Vector Symbol Editor
SYMBOL EDIT
Set Name: XXVEC2

```

Command ==> _
  Symbol ==> c
  Hex ==> 83
Current X ==> 53
Current Y ==> 70
Grid Aspect Ratio:
  X ==> 7
  Y ==> 11
Delta X ==> 10
Delta Y ==> 10
PF:  4 \ 5 / 6
     7 -- | -- 9
     10 / 11 \ 12
    
```

PF: 1=Help 2=Save 3=Exit 8=Delete

drawing a curved vector symbol

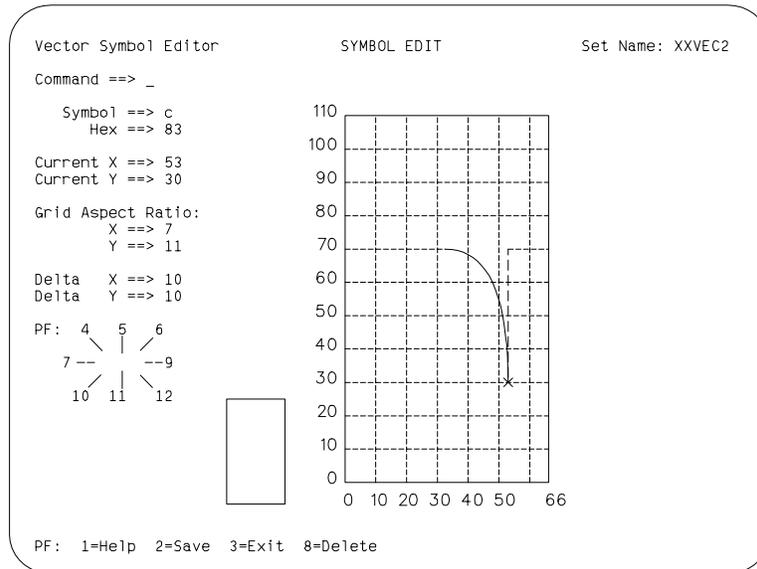
9. Type the following:

CU BY 0 -40 **<Enter>**

CU is the abbreviation of the CURVE command. A curve construction line is drawn from the top right-hand corner of the square to the bottom right-hand corner of the square.

This will draw a curve. The shape of the curve depends on all the connected vectors, so you will see considerable changes in the curve as you draw the other vectors making up the circle.

Once you have executed the CURVE command, you can continue curve drawing until you enter a MOVE command or a LINE command. The grid should look like this:



10. Type the following:

CU BY -40 0 **<Enter>**

A curve construction line is drawn from the bottom right-hand corner of the square to the bottom left-hand corner of the square.

The grid should look like this:

Vector Symbol Editor
SYMBOL EDIT
Set Name: XXVEC2

Command ==> _

Symbol ==> c

Hex ==> 83

Current X ==> 13

Current Y ==> 30

Grid Aspect Ratio:

X ==> 7

Y ==> 11

Delta X ==> 10

Delta Y ==> 10

PF: 4 5 6

7 -- | --9

10 11 12

PF: 1=Help 2=Save 3=Exit 8=Delete

drawing a curved vector symbol

11. Complete the circle the same way. The commands are:

CU BY 0 40 **<Enter>**

CU BY 20 0 **<Enter>**

The circle is complete.

The screenshot shows the 'Vector Symbol Editor' window with the following details:

- Title Bar:** Vector Symbol Editor SYMBOL EDIT Set Name: XXVEC2
- Command Line:** Command ==> _
- Symbol Settings:** Symbol ==> c, Hex ==> 83
- Current Position:** Current X ==> 33, Current Y ==> 70
- Grid Aspect Ratio:** X ==> 7, Y ==> 11
- Delta Settings:** Delta X ==> 10, Delta Y ==> 10
- PF (Function Key) Diagram:** A central point with 12 numbered lines radiating outwards: 4 (top-left), 5 (top), 6 (top-right), 7 (left), 9 (right), 10 (bottom-left), 11 (bottom), 12 (bottom-right).
- Grid:** A coordinate grid with X-axis from 0 to 66 and Y-axis from 0 to 110. A circle is drawn with its center at (33, 70) and a radius of 20. A small 'x' marks the center.
- Footer:** PF: 1=Help 2=Save 3=Exit 8=Delete

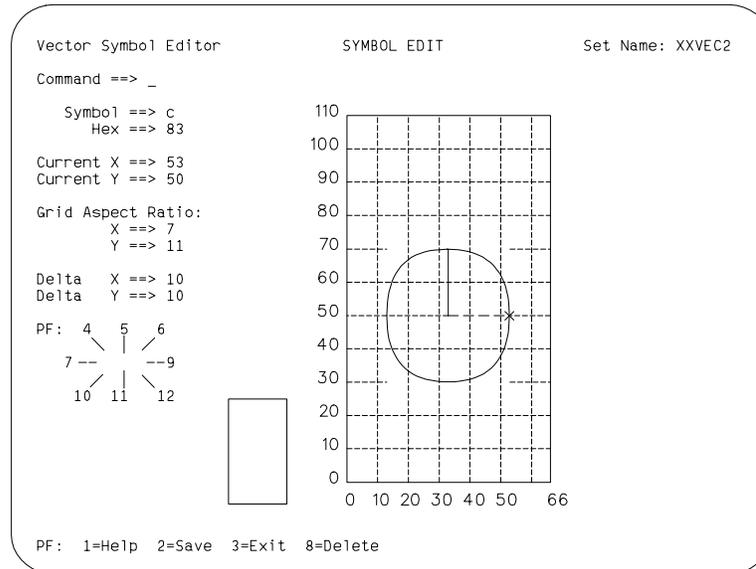
12. You use the LINE command to draw a straight vector immediately after a curve.

Type the following:

LINE BY 0 -20 **<Enter>**

LINE BY 20 0 **<Enter>**

The grid should look like this:



13. Press PF2/14.

This saves the symbol set.

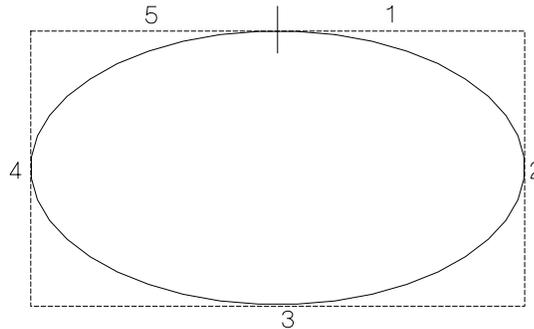
Points to remember

- The grid coordinates of a symbol set affect the shape of a symbol when it is displayed.
- Use the CURVE command to start curve drawing.
- You need five curve construction lines to draw a circle.
- The MOVE command stops curve drawing.
- Use the LINE command to draw a straight vector immediately after a curve construction line.

Drawing an ellipse

Use the same technique you used for constructing a circle to draw an ellipse. Think of an ellipse within a rectangle.

Divide one of the lines of the rectangle in half and start the first curve construction line of the ellipse from that point:



Instructions

1. Move the cursor to the "Symbol" field and type "d" as shown:

```
Symbol ==> d           <Enter>
Hex     ==> 83
```

The "Hex" field changes to "84" when you press ENTER. "d" is the character equivalent of hex 84.

2. Type the following:

```
M TO 33 70           <Enter>
```

```
CU BY 30 0           <Enter>
```

CU is the abbreviation of the CURVE command. This starts curve drawing.

3. Type the following:

```
CU BY 0 -30         <Enter>
```

```
CU BY -60 0         <Enter>
```

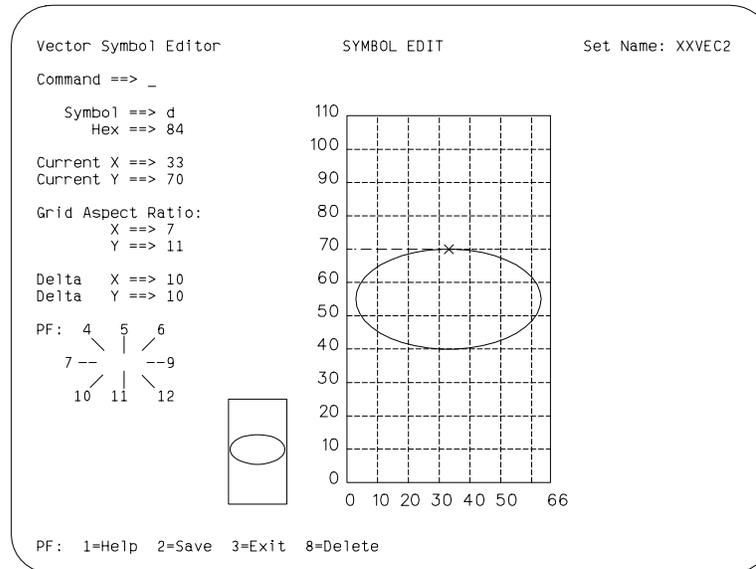
```
CU BY 0 30          <Enter>
```

```
CU BY 30 0          <Enter>
```

4. The ellipse is complete. Type the following:

REDISPLAY **<Enter>**

The test symbol is updated to show the ellipse. The grid should look like this:



5. Press PF2/14.

This saves the symbol set.

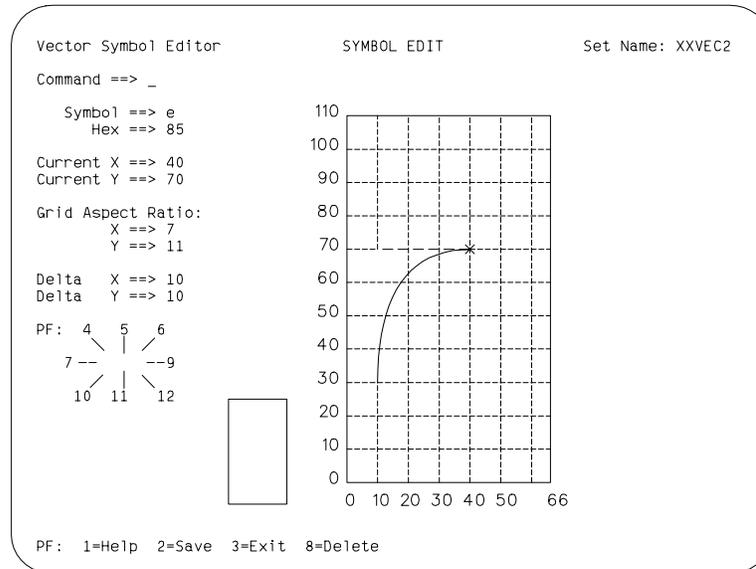
Points to remember

- Use the CURVE command to start curve drawing.
- You need five curve construction lines to draw an ellipse.
- Use the REDISPLAY command to update the test symbol.

4. Type the following:

CU TO 40 70 **<Enter>**

The first curve is complete. The grid should look like this:



5. Type the following:

NEW CURVE TO 40 30 **<Enter>**

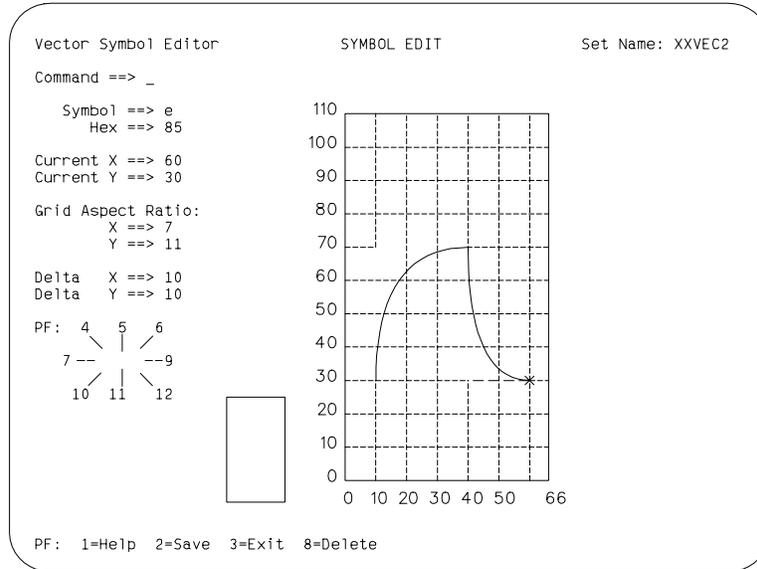
This draws the first curve construction line of the next curve.

drawing a curved vector symbol

6. Type the following:

CU TO 60 30 **<Enter>**

The second curve is complete. The grid should look like this:



7. Press PF2/14.

This saves the symbol set.

8. Press PF3/15.

You return to the Set and Symbol Selection panel.

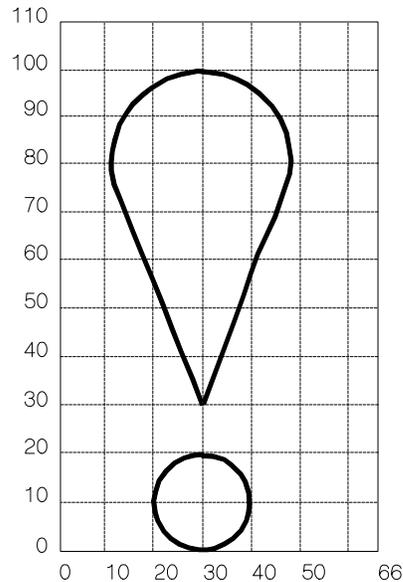
You have now finished this session. This is a good point to start experimenting with the editor and using the commands that you have covered in the session. "What to do next" on page 63 suggests a symbol for you to draw on your own. If you do not want either to draw the symbol or to continue with the next session, press PF3/15.

Point to remember

- Use the NEW CURVE command if you want two curves to follow each other.

What to do next

Try drawing a symbol using curves on your own. Use the commands you have used in this session to draw the following symbol:



Before starting to use the Vector Symbol Editor, it is often easier to rough out more complicated symbol designs. If you do not, you may find it difficult to draw the exact shapes you want.

A useful method to adopt if you are working from an original diagram is to digitize the points that are going to be the start and end of vectors with the aid of an overlay.

Photocopy a sheet of graph paper. Make a transparency from the photocopy. Mark the grid coordinates you have chosen onto the transparency. Lay this over the original diagram and read off the coordinates of each vector.

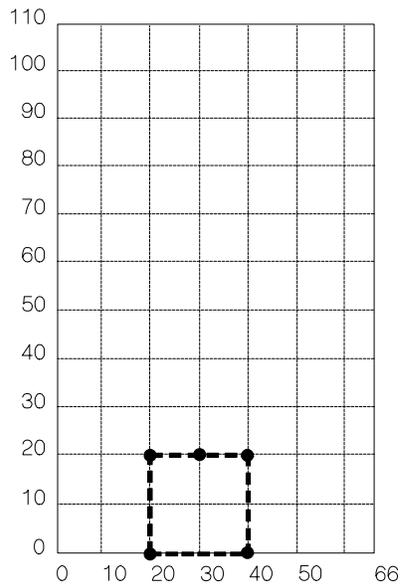
If you are unable to make a transparency to use as an overlay, you may find it quicker to work from a diagram drawn on graph paper.

Hints

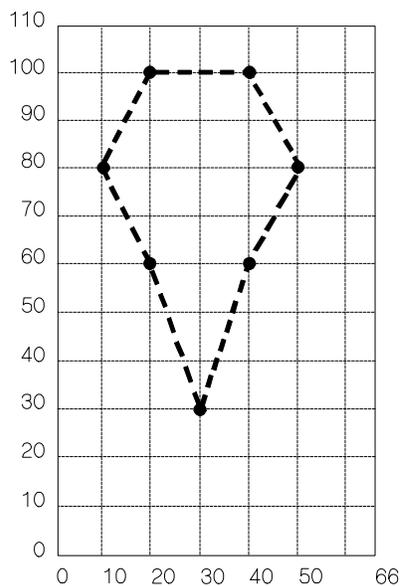
1. If you have any problems drawing the symbol, refer to Appendix F, Helpful hints to use with the sessions.
2. Select a new symbol in your symbol set (for example, “!”) in the “Symbol” field.
3. Use the MOVE command to set the current position to 30 20, ready to start curve drawing.

drawing a curved vector symbol

- Use the CURVE command to draw a circle in a 20 by 20 square. This will be five curve construction lines.



- Use the MOVE command to set the current position to 30 30, ready to start the rest of the exclamation mark. **Note:** The MOVE command stops curve drawing.
- Use the CURVE command to draw the seven curve construction lines making up the rest of the exclamation mark.



- Use PF2/14 to save the symbol set.
- Use PF3/15 to return to the Set and Symbol Selection panel.

If you do not want to continue with the next session, this is a good point to stop. If you want to stop, press PF3/15.

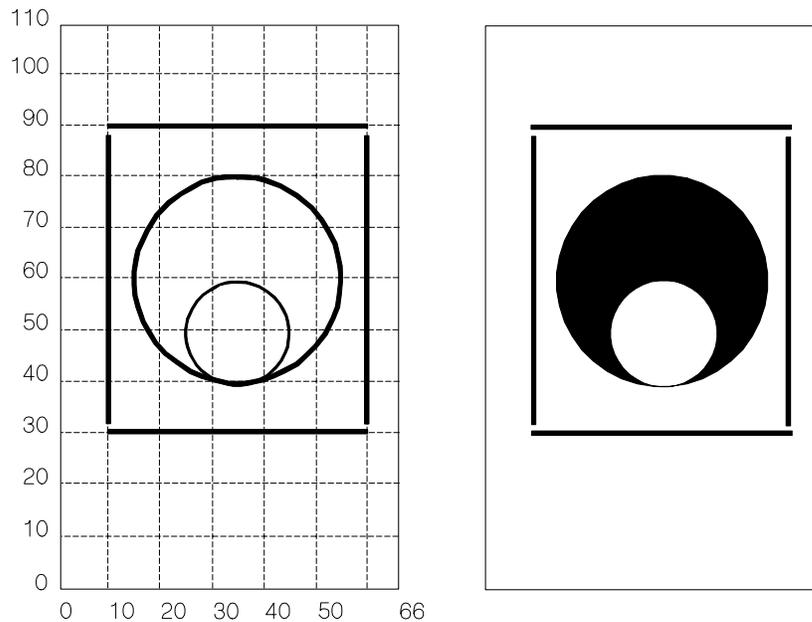
Session 4. Shading a vector symbol

In this session, you will learn:

- How to draw a vector symbol with shading.

Drawing a shaded vector symbol

The easiest way to see the effect of shading is to create a symbol using closed figures (such as circles) and a figure made of straight lines that do not touch. You can use the SHADING command either to shade all the symbols in a symbol set or to shade specific symbols. You are now going to draw a shaded symbol like this:



Instructions

1. If you are continuing this session from the last session, start at instruction 4. Otherwise, start at instruction 2.
2. Start the Vector Symbol Editor.
The Set and Symbol Selection panel is displayed.

shading a vector symbol

3. Type the name of the symbol set you were using in Session 3 in the "Set Name" field. For example, if your symbol set was called XXVEC2, you would type:

```
Set Name ==> XXVEC2           <Enter>
Symbol   ==>
Hex      ==> 00
```

The symbol set should have grid coordinates of 66 and 110. As soon as the following message is displayed, you can continue:

ADM0608 I SYMBOL SET LOADED

4. Press PF6/18.

The Set and Symbol Selection panel is redisplayed.

5. Type the following:

```
SHADING ON ALL           <Enter>
```

The following message is displayed:

ADM0644 I SYMBOL SET IS NOW SHADED

All symbols in this symbol set are filled in. You use this command to shade all the symbols in a symbol set.

6. Type the following:

```
SHADING OFF ALL         <Enter>
```

The shading is removed. The following message is displayed:

ADM0644 I SYMBOL SET IS NOW NOT SHADED

You use this command to remove the shading from a symbol set.

7. Move the cursor to the "Symbol" field and type "s" as shown:

```
Set Name ==> XXVEC2           <Enter>
Symbol   ==> s
Hex      ==> 00
```

The Symbol Edit panel is displayed. The "Hex" field has been given the value "A2". "s" is the character equivalent of hex A2.

8. Type the following:

```
SHADING ON             <Enter>
```

The following message is displayed:

ADM0644 I SYMBOL IS NOW SHADED

Only the "s" character code is shaded.

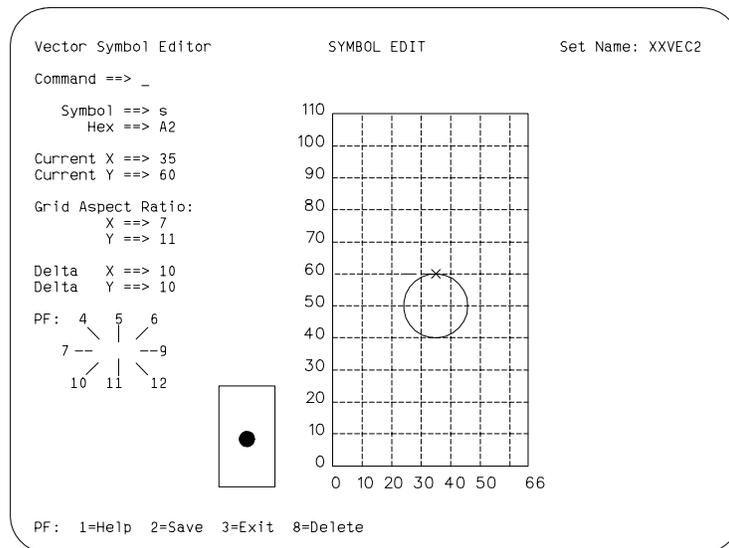
9. Draw a circle. Type the commands shown. Remember that M is the abbreviation for the MOVE command, and CU for CURVE. Use the following commands:

- M TO 35 60** **<Enter>**
- CU BY 10 0** **<Enter>**
- CU BY 0 -20** **<Enter>**
- CU BY -20 0** **<Enter>**
- CU BY 0 20** **<Enter>**
- CU BY 10 0** **<Enter>**

10. Type the following:

RED **<Enter>**

A shaded circle is displayed in the test symbol. "RED" means "REDISPLAY."



11. Draw a second circle around the first circle. Provided closed figures do not overlap, each will be shaded separately. Type the following commands:

- M TO 35 80** **<Enter>**
- CU BY 20 0** **<Enter>**
- CU BY 0 -40** **<Enter>**
- CU BY -40 0** **<Enter>**
- CU BY 0 40** **<Enter>**
- CU BY 20 0** **<Enter>**

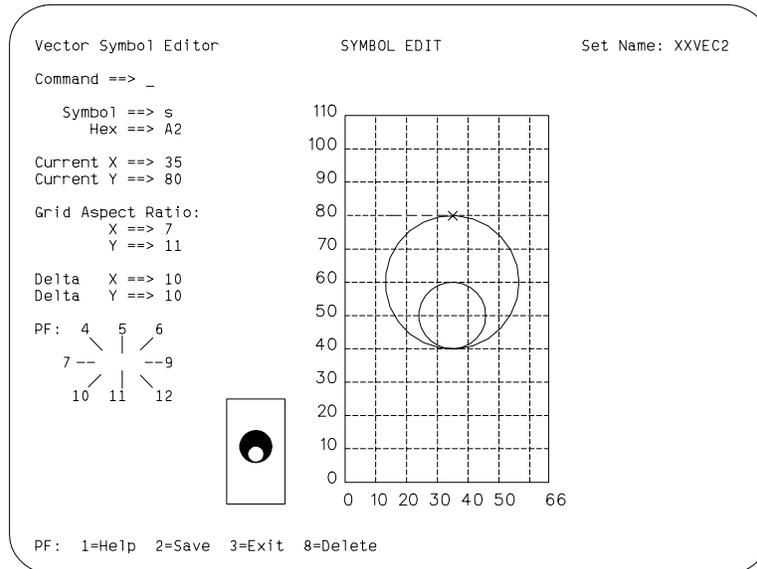
shading a vector symbol

12. Type the following:

RED **<Enter>**

The test symbol is updated. The outer circle is shaded and the area within the inner circle is not.

If you want more information on how GDDM shades overlapping areas, see the *GDDM Base Application Programming Guide*.



13. Now draw a square. Notice that there are small gaps between the vectors making up the square. If the vectors were joined together, the square would be shaded and the shading of the circles would change.

The commands to draw the square are:

MOVE TO 10 90 **<Enter>**

LINE TO 60 90 **<Enter>**

MOVE TO 60 89 **<Enter>**

LINE TO 60 31 **<Enter>**

MOVE TO 60 30 **<Enter>**

LINE TO 10 30 **<Enter>**

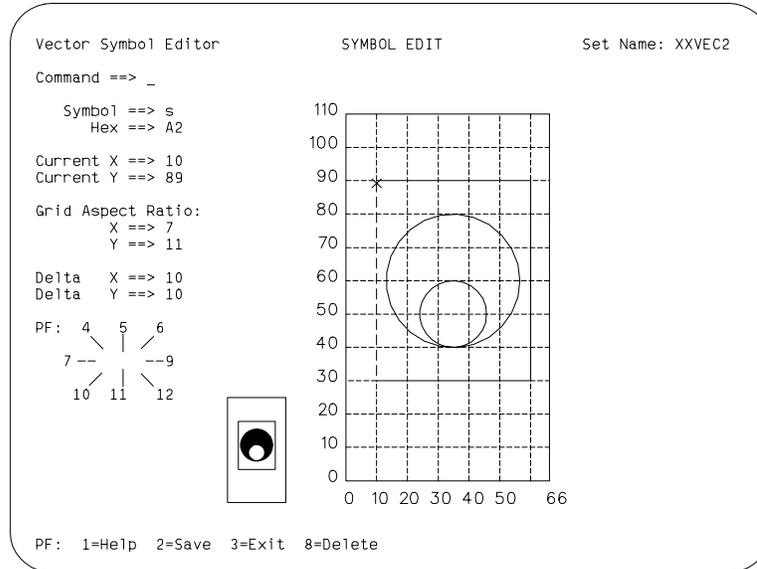
MOVE TO 10 31 **<Enter>**

LINE TO 10 89 **<Enter>**

14. Type the following:

RED

The test symbol is updated. The square is not shaded as it is made up of four separate lines.



15. Press PF2/14.

This saves the symbol set.

16. Press PF3/15.

You return to the Set and Symbol Selection panel.

17. Press PF6/18.

This redisplay the Set and Symbol Selection panel.

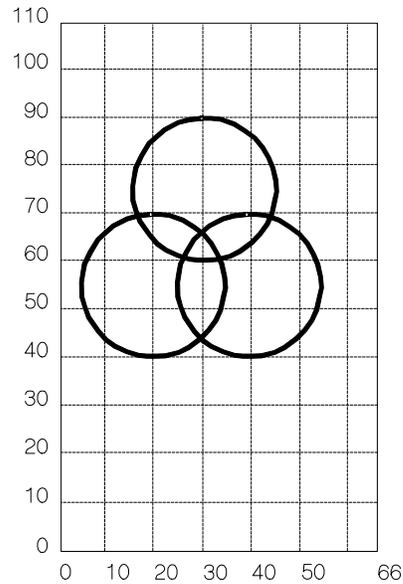
You have now finished this session. This is a good point to start experimenting with the editor and using the commands that you have covered in the session. "What to do next" on page 71 suggests a symbol for you to draw on your own. If you do not want to draw the symbol, press PF3/15.

Points to remember

- You use the SHADING ON ALL command to shade all the symbols in a symbol set.
- You use the SHADING OFF ALL command to remove the shading from all the symbols in a symbol set.
- If you use the SHADING ON command without ALL, only the current symbol is shaded.
- Shaded symbols are shown filled in (solid shading) when they are displayed on the Set and Symbol Selection panel. On the Symbol Edit panel, the test symbol is shaded, but the symbol on the editing grid is never shaded.
- The area of the symbol that you want to shade should be drawn as a continuous series of vectors and the start and end vectors should meet. For example, a closed figure like a square, drawn with continuous vectors, is shaded.
- Open figures are shaded as though a line had been drawn between the two open ends of the figure. For example, the area within two vectors making up a “V” shape is filled in.
- A single line, not adjoining another shape in the symbol, is not shaded.

What to do next

Try to draw a symbol using shading on your own. If you do not have a symbol you want to draw, use this design:



Finally, try using some of the commands you haven't learned about yet. They are:

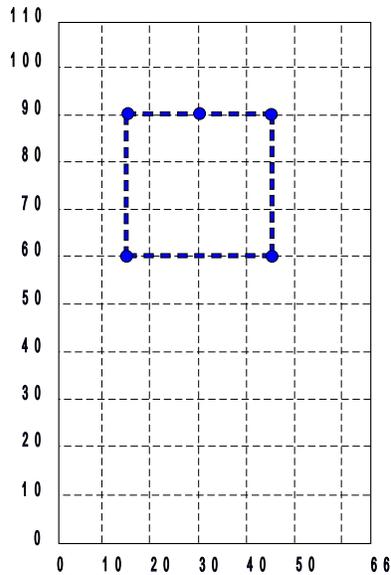
BREAK
CANCEL
CLEAR
DRAW
END
EXIT
FIND
JOIN
PREVIOUS
RENAME
SEQUENCE
WIDTH

The syntax and a brief explanation of these commands is given in Appendix A, "Summary of Vector Symbol Editor commands" on page 73. You can also use the HELP command to find out more about these commands.

shading a vector symbol

Hints

1. If you have any problems drawing the symbol on the previous page, in the previous topic, refer to Appendix F, Helpful hints to use with the sessions.
2. Select a new character code in the "Symbol" field; for example, "t".
3. Use the SHADING ON command to shade the symbol.
4. Use the MOVE command to set the current position to 30 90.
5. Use the CURVE command to draw a circle in a 30 by 30 square.



6. Use the COPY ALL command with the BY parameter to copy the circle at a position 10 to the left and 20 downward.
7. At this point, it is a good idea to save the symbol in case you make a mistake. Use PF2/14 to save the symbol.
8. Use the COPY command, with the number of vectors to be copied, and the BY parameter, to copy the second circle at a position 20 to the right. Do not use COPY ALL because your symbol now contains two circles. A circle has five vectors. Remember to move the current vector forward one vector in the sequence because the COPY command copies from the current vector.
9. Use PF2/14 to save the symbol.
10. Use PF3/15 to return to the Set and Symbol Selection panel.

You have now used all the major functions of the Vector Symbol Editor. To exit from the editor, press PF3/15.

Appendix A. Summary of Vector Symbol Editor commands

This appendix consists of a table listing all the Vector Symbol Editor commands in alphabetical order.

Command syntax

Each command is listed with the syntax for using the command. These conventions have been used:

[]	Any parameter within brackets is optional. Any parameter not within brackets is required.
	Any of the parameters separated by this symbol is acceptable.
lowercase	A variable you supply.
UPPERCASE	Fixed keyword required, if the parameter is used.
...	The rest of the syntax of the BY and TO parameters:

BY [+|-] [x] [+|-] [y]

Defaults: +, x and y increments from the Symbol Edit panel input fields

TO x y

Defaults: None

Note: You can type commands in either uppercase or lowercase.

Abbreviations

Most, but not all, commands have abbreviations, which are usually the minimum number of characters necessary to uniquely identify the command (for example: N for NEXT, SC for SCOPY and SW for SWITCH). Any string longer than that, up to and including the full command, is also an acceptable abbreviation (for example: SW, SWI, SWIT, SWITC, and SWITCH).

Note: You can type abbreviations for commands or parameters in either uppercase or lowercase.

Descriptions

The table gives a short description of each command. If you need a more detailed explanation of any command, refer to the online help panels. Just type HELP, together with the name of the command you want to read about, in either the Set and Symbol Selection panel or the Symbol Edit panel.

Command Syntax	Abbreviation	Defaults	Description
ASPECT [x [y]]	A	Ratio implied by grid coordinates	Changes the aspect ratio
BACKWARD [n]	B	n=1	Moves the current vector backward in the sequence
BREAK	BR	None	Separates a curve into two parts
CANCEL [HOLD]	None	None	Symbol Edit panel: Cancels changes to the symbol and returns you to the Set and Symbol Selection panel. CANCEL HOLD cancels changes to the symbol and leaves the Symbol Edit panel displayed. Set and Symbol Selection panel: Cancels changes to the symbol set and terminates the editor. CANCEL HOLD cancels changes to the symbol set and leaves the set and Symbol Selection panel displayed.
CHANGE [START END] [BY... TO...]	CH	END BY...	Redraws a vector to a different end-point or start-point
CLEAR [character-code]	None	Current character code	Deletes the identified symbol
COPY [n ALL] [BY... TO...]	CO	n=1, BY...	Copies one or more vectors to a different point
[NEW] CURVE [BY... TO...]	CU	BY...	Draws a curve construction line. NEW CURVE starts a new curve when you draw two curves together.
DELETE [n]	None	n=1	Deletes one or more vectors, starting at the current vector
DRAW [BY... TO...]	DR	BY...	Same as LINE or CURVE depending on the circumstances
END	None	None	Symbol Edit panel: Causes you to leave the panel. Set and Symbol Selection panel: Saves the symbol set and causes you to leave the editor
EXIT	EX	None	Same as END without save

Command Syntax	Abbreviation	Defaults	Description
FIND	FI	None	Makes the vector, starting or ending at the current position, the current vector
FORWARD [n]	F	n=1	Moves the current vector forward in the sequence
HELP [character-string]	None	Displays master help panel	Displays help information
JOIN	J	None	Joins two separate curves together
LINE [BY...][TO...]	LI	BY	Draws a straight line
MERGE [from-code] [FROM setname] [TO to-code]	ME	See Note on next page	Merges a character code with another character code
MOVE [BY...][TO...]	M	BY...	Moves the current position
NEXT	N	None	Moves to next character code
PREVIOUS	P	None	Moves to previous character code
REDISPLAY	R	None	Redraws the Symbol Edit panel, sequences the vectors making up the symbol, and updates the test symbol
REFERENCE [character-code] [ON OFF]	REF	ON	Sets up the reference character
RENAME newname [COND] UNCOND]	REN	COND	Renames the set so it can be saved under a new name. The COND option checks whether or not a symbol set already exists with the name specified. The UNCOND option renames the symbol set without checking.
SAVE [DECK]	None	no deck	Saves the symbol set. SAVE DECK saves the symbol set as an object deck.
SCOPY [from-code ALL] [FROM setname] [TO to-code]	SC	See Note	Copies a symbol or a symbol set
SEQUENCE	SE	None	Optimizes the vector sequence and minimizes excess disk storage requirements
SHADING ON OFF [ALL] character code]	SHA	None	Specifies that a symbol set or a symbol are to be filled in

summary of commands

Command Syntax	Abbreviation	Defaults	Description
SHIFT [n ALL] [BY... TO...]	SH	n = 1, BY...	Shifts one or more vectors, starting at the current vector
STRETCH [START END] [BY... TO...]	ST	END BY...	Stretches the current vector and the vector whose start or end point coincides with the start or end (as specified) of the current vector
SWITCH	SW	None	Switches the Set and Symbol Selection panel
WIDTH [-]n	W	None	Sets the width of a symbol (for proportional spacing)

Note:

from-code = current character code
setname = current symbol set name
to-code = current character code

Appendix B. Using the editor on an interactive graphics terminal

This appendix shows you how to use the Vector Symbol Editor on:

- The IBM 3179 Color Display Station models G1 and G2 (known as the 3179-G)
- The IBM 3270 Personal Computer/Graphics Work Stations (known as the 3270-PC/G and 3270-PC/GX, and including the PC AT versions)
- The IBM 5080 Graphics System
- The IBM Multistation 5550 with Japanese 3270 Personal Computer graphics (known as the 5550).

For information about other interactive workstations that can be used with the Vector Symbol Editor, refer to the *GDDM General Information* manual.

The 3179-G

The display screen contents are similar to those of a 3279. The graphics part of the screen is used for creating or changing a symbol.

In addition to the keyboard, the 3179-G may have a **locator pad**, with a **mouse** and three **buttons** to move the graphic cursor, which is different from the alphanumeric cursor and will appear when interactive graphics is required.

Button 1 (on the left) does the same as the DRAW command when it is pressed

Button 2 (in the center) does the same as the MOVE command

Button 3 is reserved.

The graphic cursor can alternatively be moved using the regular cursor movement keys.

The 3270-PC/G and /GX

The keyboard and display are similar to the 3179-G. If you have a **locator pad** and **mouse**, their use is the same as described on page 77.

As an alternative to the locator pad and mouse, the 3270-PC/G may have a **tablet** with either a **four-button cursor** or a **stylus** incorporating a **tip switch**.

The **tip switch** does the same as the DRAW command

Button 1 does the same as the DRAW command

Button 2 does the same as the MOVE command

Button 3 does the same as the FIND command

Button 4 is reserved.

The facilities for moving the graphic cursor are the same as for the 3270-PC/G, but the vector symbol displays appear only on the graphics screen, to the right, while other information appears on the screen to the left.

There are two advantages when using a dual-screen arrangement:

1. The symbol displays occupy a larger than normal area of the screen.
2. The alphanumeric and vector symbol selection grids can be seen side by side on the two screens when the SWITCH command is used on the SET AND SYMBOL SELECTION panel.

The 5080 Graphics System

The 5080 supports the **tablet** as described for the 3270-PC/G, but only **button 1** (to perform the DRAW command) can be used.

The 5080 may be configured in either a dual-screen arrangement, or an arrangement whereby graphics and alphanumerics are shown alternately by appropriate operator action.

The Multistation 5550

The 5550 supports PF keys 13 through 24, but they are not marked on the keyboard. Press the ALT key at the same time as PF 1 through 12 to access these keys.

A **mouse** with two **buttons** may be attached to the keyboard, and can be used to move the graphic cursor. The operation of the mouse and the cursor movement keys depends on the level and configuration of the Japanese 3270 Personal Computer graphics program.

Versions before Version 5.00

Both the mouse and the cursor movement keys move the graphic cursor. Movement is slow, and can be speeded up by simultaneous use of the Alt key.

Both buttons are reserved.

Version 5.00

The mouse moves the graphic cursor quickly and is not affected by the Alt key. The cursor movement keys affect only the alphanumeric cursor, and should not be used for interactive graphics.

Button 1 (on the left) does the same as the DRAW command.

Button 2 (on the right) does the same as the MOVE command.

Alternatively, the configuration can be set such that operation of the mouse and cursor movement keys is compatible with previous versions.

Before you start

Before using this appendix, you should, if possible, work through the four tutorial sessions on a 3279. The sessions explain how to use the editor and the editor commands.

The operation of interactive graphic terminals differs from the 3279 especially in the use of the keyboard. The following differences apply to all interactive graphic terminals:

- PF keys 13 through 24 do not duplicate the functions of PF keys 1 through 12 on **any** panel.
- PF keys 4, 5, 6, 7, 9, 10, 11 and 12 are **not** assigned the compass functions on the SYMBOL EDIT panel.
- PF8 on the SYMBOL EDIT panel switches the graphic cursor on and off. The graphic cursor is a cross-hair cursor that consists of one horizontal line and one vertical line.

Although PF8 does not perform the DELETE function, there are other ways of doing this on an interactive graphic terminal.

There is an extended range of function keys for each interactive graphic terminal. The extra functions can be used for interactive graphics as an alternative to typing in the equivalent commands. The extra functions only apply when the graphic cursor is in use. When the graphic cursor is in use, normal commands **cannot be typed in**.

- On the 3179-G, 5080, and 5550, the extra functions are assigned to PF keys 13 through 24.
- On the 3270-PC/G and /GX, the extra functions are assigned to some of the typing keys.

The command assignments are shown in Table 1.

Key	PF Key	Button	Action
A	13		Alter (Change)
B	14		Backward
C	15		Curve
D	16		Delete
F	17	1	Draw
I	18	3	Forward
J	19		Identify (Find)
L	20		Join
M	21	2	Line
N	22		Move
P			New Curve
R	23		Part (Break)
S	24		Redisplay
			Stretch

Note that only some of the keys and buttons will be available for a particular interactive graphic terminal. The keys available will be listed on the SYMBOL EDIT

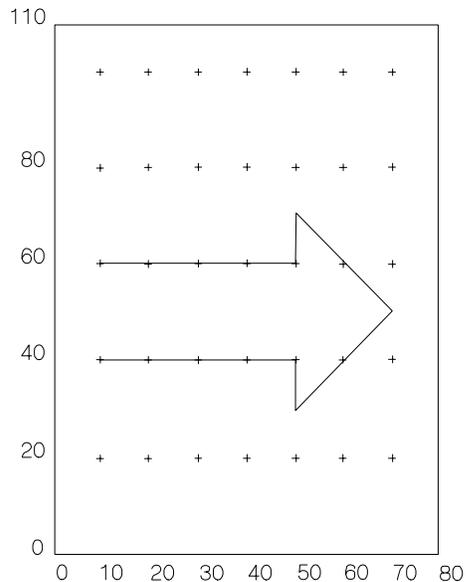
editing on an interactive graphics terminal

panel while the graphic cursor is in use, **except** when using a single screen of less than 32 lines (for example on the 3270-PC or 5550).

The examples which follow are suitable for the 3179-G, 3270-PC/G and /GX. Refer to Table 1 on page 79 for the alternatives appropriate to your terminal.

Drawing a symbol on an interactive graphics terminal

You are now going to draw an arrow like this:



Instructions

1. Follow the instructions in "Starting the Editor from a terminal" on page 103 in Appendix F.
2. Type a new symbol set name in the "Set Name" field on the screen. Choose any name that does not exceed eight characters and starts with an alphabetic character. For example, you could call your symbol set XXIG, where "XX" are two of your initials.

Type the name as shown:

```
Set Name ==> XXIG           <Enter>
Symbol  ==>
Hex     ==>
```

As soon as the message "ADM0607 I CREATING NEW VECTOR SYMBOL SET" appears at the top of your screen, you can continue.

If either of the messages "ADM0608 I SYMBOL SET LOADED" or "ADM0615 E IMAGE SYMBOL SET WITH THIS NAME EXISTS" are displayed, choose another name for your symbol set and overwrite the first name you chose.

3. Move the cursor to the "Hex" field and type "6E" as shown:

```
Set Name ==> XXIG
Symbol  ==>
Hex     ==> 6E           <Enter>
```

You have selected a character code to edit. On a dual-screen terminal, the Symbol Edit panel is displayed on the alphanumeric screen and the editing grid is displayed on the graphics screen.

4. Press PF8.

When you press PF8 the graphic cursor appears. This indicates that you have switched on the graphic cursor and that you can use the assigned typing keys but cannot type commands on the command line.

5. Look at the editing grid and move the graphic cursor.

The cursor movement keys can be used to move the graphic cursor, but more convenient devices might be attached to your terminal.

- The mouse is a device that can be moved over a flat surface (a pad is provided with an optical mouse; the mechanical 5550 mouse uses any plain hard surface) while remaining in contact with it. The graphic cursor moves in sympathy with the mouse; face the buttons on the mouse away from you so that the graphic cursor moves in the right direction.
- The four-button cursor is a device that can be moved over a tablet while remaining in contact with it. The graphic cursor moves in sympathy with the four-button cursor.
- The tablet stylus is a device that can be moved over a tablet while remaining in contact with it. The graphic cursor moves in sympathy with the stylus; think of the tablet as a copy of the graphics screen.

You are going to use the graphic cursor in conjunction with certain typing keys or buttons to draw on the editing grid. You do not need to position the cursor exactly on the coordinates that you want to specify, but it should be within half a unit interval from that point. This is because the nearest coordinates to the graphic cursor are used.

6. Look at the "Current X" and "Current Y" fields:

Current X ==> 0

Current Y ==> 0

The current position is the starting point from which a vector is drawn. It is marked on the graphics screen by a small white cross. It is initially coincident with the graphic cursor.

7. Move the graphic cursor to the following coordinates:

10 60 <Press M>

Remember that you need to position the graphic cursor within half a unit interval of the coordinates that you want.

These two actions (moving the graphic cursor and pressing the M key) are equivalent to using a MOVE command. Pressing the M key corresponds to typing in 'MOVE', and the new position of the graphic cursor provides the coordinates. Thus what you have just done is the equivalent of typing MOVE TO 10 60 on the command line.

The typing keys that correspond to commands are shown on the screen. The commands are shown in capital letters. You can type all other Vector Symbol Editor commands on the command line, but only when the graphic cursor is switched off.

editing on an interactive graphics terminal

The buttons can be used for some functions. For example, pressing button 2 is the same as pressing the M key.

8. Look at the “Current X” and “Current Y” fields:

Current X ==> 10
Current Y ==> 60

If the current position is not 10 60, repeat the last instruction.

9. Move the graphic cursor to the following coordinates:

50 60 <Press L or button 1>

The L key (or button 1) draws a straight line. It corresponds to the LINE command. A dashed line is drawn from the current position to the target position 50 60. If you cannot see the dashed line, move the graphic cursor up or down.

10. Look at the “Current X” and “Current Y” fields:

Current X ==> 50
Current Y ==> 60

If the coordinates are 50 60, continue with the next instruction. Otherwise, reposition the graphic cursor and press the A key. The A key alters the current vector so that it ends at the coordinates specified with the graphic cursor. The A key corresponds to the CHANGE command.

11. The next vector you draw will be a deliberate mistake, so you can learn how to correct one. Move the graphic cursor to the following coordinates:

70 100 <Press L or button 1>

This draws a vector from the current position 50 60 to the target position 70 100.

12. Delete the “wrong” vector:

<Press D>

This deletes the current vector. The current position returns to 50 60.

Note: If you move the graphic cursor before pressing the D key, the current position does not return to 50 60. Instead, it moves to the position of the graphic cursor. Before continuing to draw, you will need to move the current position, by positioning the graphic cursor at 50 60 and pressing the M key.

13. Now you will draw a vector to replace the “wrong” one. Move the graphic cursor to the following coordinates:

50 70 <Press L or button 1>

A vector is drawn from the current position to the target position 50 70.

14. Now try correcting a mistake by using the A key. This key corresponds to the CHANGE command. The next vector you are going to draw is again to the wrong grid coordinates. Move the graphic cursor to the following coordinates:

60 50 <Press L or button 1>

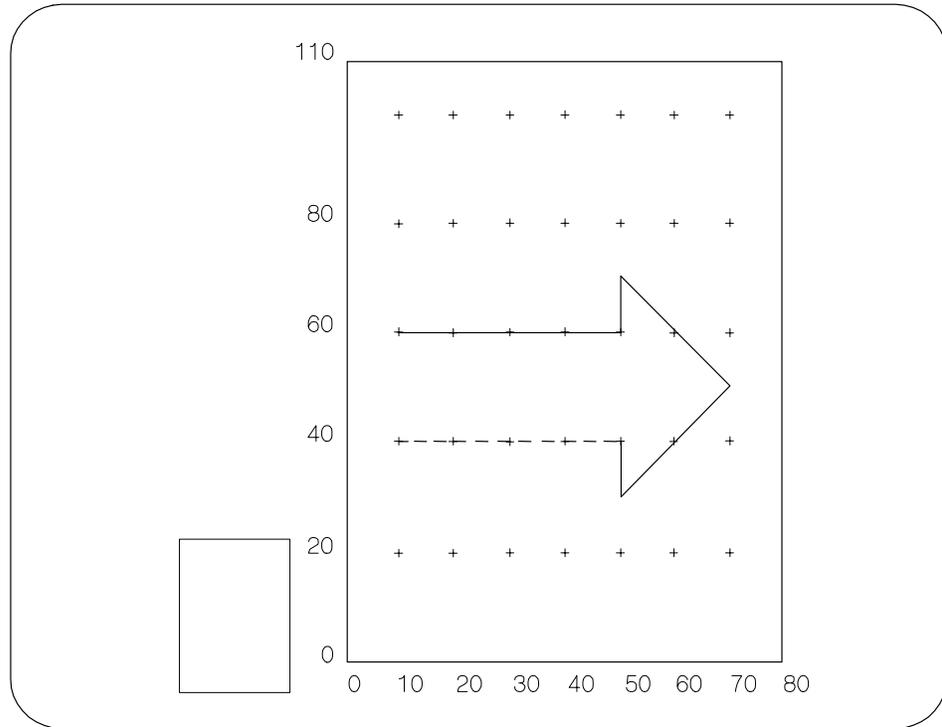
A vector is drawn from the current position to the target position 60 50.

15. Now alter the current vector. Move the graphic cursor to the following coordinates:

70 50 <Press A>

The A key alters the current vector so that it ends at the coordinates indicated by the graphic cursor.

16. Try completing the arrow on your own so that it looks like this:

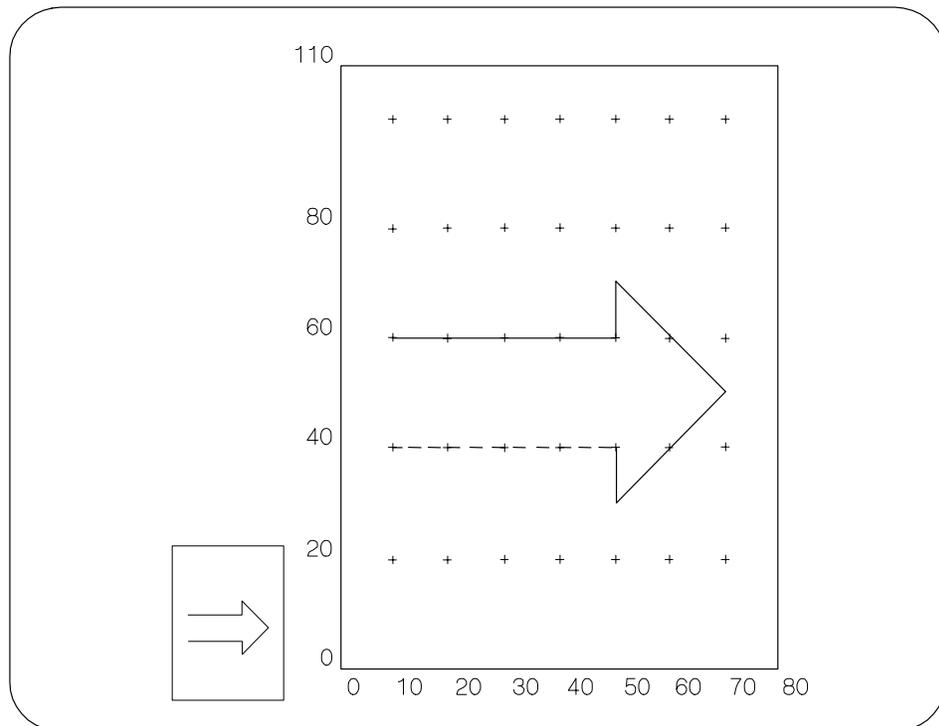


17. When the arrow is complete:

<Press R>

The R key redisplay the graphics screen. Pressing the R key corresponds to issuing the REDISPLAY command. The graphics screen is redrawn, the vectors are sequenced, and the test symbol (in the box at the bottom left) is updated.

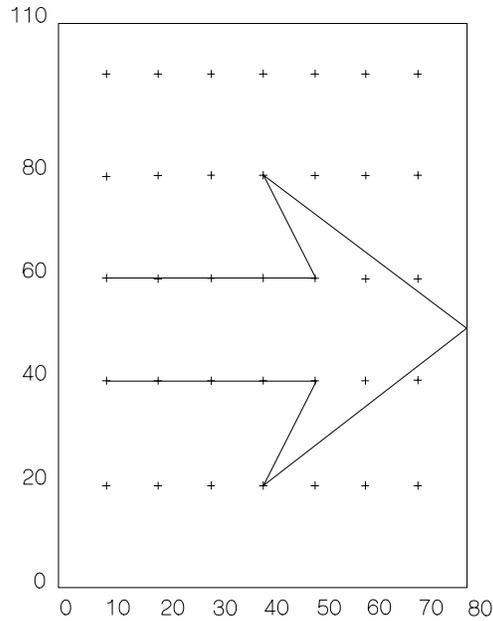
The graphics should look like this:



18. Press PF2.

This saves the symbol set.

Now you are going to change the arrow to look like this:



19. **<Press B>**

Pressing the B key corresponds to issuing the BACKWARD command. The BACKWARD command moves the current vector back one vector in the sequence.

20. **<Press B>**

The current vector moves back one vector in the sequence.

21. Move the graphic cursor to the following coordinates:

40 20 <Press S>

Pressing the S key corresponds to issuing the STRETCH command. This stretches the current and current+1 vectors to the target position 40 20.

22. Move the graphic cursor to the following coordinates:

50 80 <Press I or button 3>

The I key (or button 3) corresponds to the FIND command. The FIND command makes the vector nearest the graphic cursor the current vector.

23. Move the graphic cursor to the following coordinates:

40 80 <Press S>

The current vector and the current+1 vector are stretched to the target position of 40 80.

24. **<Press F>**

Pressing the F key corresponds to issuing the FORWARD command. The current vector moves forward one vector in the vector sequence.

25. Move the graphic cursor to the following coordinates:

80 50 <Press S>

The current vector and the current+1 vector are stretched to the target position.

If you see the message "ADM0653 E TARGET POSITION IS OUTSIDE THE GRID BOUNDARIES", reposition the graphic cursor inside the editing grid and press the S key.

The symbol is complete.

26. **<Press R>**

The graphics is redrawn and the test symbol is updated to show the changed arrow.

27. Press PF8.

This switches off the graphic cursor.

28. Press PF3.

Returns to the Set and Symbol Selection panel.

29. Press PF6.

A full display of the symbols in your symbol set appears.

30. Press PF2.

This saves the symbol set.

You have now finished this session. It is a good idea to try to draw a symbol on your own. If you do not want to do this, press PF3 to exit from the editor.

Points to remember

- You use PF8 to switch the graphic cursor on or off.
- The graphic cursor is a cross-hair cursor. You move it around the graphics screen with a special device.
- When the graphic cursor is switched on, you use some of the typing keys on the keyboard, (or buttons on the mouse or four-button cursor) like PF keys, or you use an extended range of PF keys. These keys are assigned commands that you use to edit a symbol.
- You use the graphic cursor in conjunction with the extended range of function keys to edit the symbol on the graphics screen.
- The current vector is shown as a dashed line.

editing on an interactive graphics terminal

Appendix C. Vector symbol sets supplied with GDDM

This appendix lists the vector symbol sets that IBM provides with GDDM.

ADMDVSS	Contains the default vector symbol set.
ADMDVSSB ADMDVSSD ADMDVSSE ADMDVSSF ADMDVSSG ADMDVSSI ADMDVSSK ADMDVSSN ADMDVSSS ADMDVSSV	Contain the national language vector symbol sets. All these sets, except ADMDVSSK, contain the default vector symbols and the appropriate national language vector symbols.
ADMDHIMJ	Contains the GDDM marker symbols for use on a high-resolution printer.
ADMDHIVJ	Contains the default vector symbol set for a high-resolution printer.
ADMUARP	Contains proportionally spaced vector symbols for use on a high-resolution printer.
ADMUUCIP ADMUUCRP ADMUUCSP ADMUUDRP ADMUUFSS ADMUUGEP ADMUUGGP ADMUUGIP ADMUUKRF ADMUUKRO ADMUUKSF ADMUUKSO ADMUUMOD ADMUUNSF ADMUUNSO ADMUUORP ADMUUSHD ADMUUSRP ADMUUTIP ADMUUTRP ADMUUTSS	Contain proportionally spaced typefaces.

vector symbol sets supplied with GDDM

<p>ADMUVCIP ADMUVCRP ADMUVCSP ADMUVDRP ADMUVFSS ADMUVGEP ADMUVGGP ADMUVGIP ADMUVKRF ADMUVKRO ADMUVKSF ADMUVKSO ADMUVMOD ADMUVNSF ADMUVORP ADMUVSHD ADMUVSRP ADMUVTIP ADMUVTRP ADMUVTSS</p>	<p>Contain non-proportionally spaced typefaces. The characters within these typefaces look the same as the proportionally spaced typefaces.</p>
<p>ADMUWARP ADMUWCIP ADMUWCRP ADMUWCSP ADMUWDRP ADMUWGEP ADMUWGGP ADMUWGIP ADMUWSRP ADMUWTIP ADMUWTRP</p>	<p>Contain proportionally spaced typefaces. The characters within these typefaces are the same as those in the ADMUUxxx symbol sets, except that the space character is wider. They are provided for compatibility with Version 1 of GDDM; you are recommended to use the ADMUUxxx versions for new applications.</p>

Appendix D. Messages

When you are using the Vector Symbol Editor, you will receive various messages; these are intended to help you. Either they will tell you that you have made a mistake, or they will tell you that you need to do something (for example, save or cancel a symbol set before exiting).

Messages appear on the second line of both panels.

The messages take a consistent form. The message text is preceded by a seven-character identifier and a one-character severity code, separated by a blank; for example, ADM0601 E. The identifying number enables you to look up the message in this appendix and the severity code tells you the urgency of the message.

The identifier has two components:

- The characters ADM, which identify the message as originating from GDDM
- A four-digit serial number.

The severity code is one of the following:

I Informational
W Warning
E Error
S Severe error
U Unrecoverable error

Informational messages tell you that GDDM has done something; often, these messages require no further action from you.

Warning messages tell you that there might be a problem, or that GDDM has made some assumption about what you did. Check the message, and correct your input if necessary.

The three types of error messages tell you that something has gone wrong. Check the explanation on the following pages, and do what it says under “Your Response” for the message.

All messages in this appendix start with the identifying letters ADM. If you get a message without these identifying letters, it comes from outside GDDM and you should look elsewhere for information on it. If the message number is not within the range ADM0601 through ADM0699, it is not a Vector Symbol Editor message. GDDM messages are listed in the *GDDM Messages* book.

This appendix lists the messages in numerical order, starting on the next page. Each message is followed by three standard headings:

Explanation: A more detailed explanation of the error than that given in the message itself.

System Action: A description of what the Vector Symbol Editor does.

Your Response: A description of how you can correct the error.

Messages in numerical order

ADM0601 E INVALID CHARACTER CODE FOR EDIT SYMBOL

Explanation: You entered a value that is not in the hexadecimal range X'00' through X'FF' into the "Hex" field on either the Set and Symbol Selection panel or the Symbol Edit panel.

System Action: The input is ignored.

Your Response: Correct the character code value and press the ENTER key.

ADM0602 E INVALID CHARACTER CODE FOR COPY SYMBOL

Explanation: You entered a value that is not in the hexadecimal range X'00' through X'FF' in an SCOPY command.

System Action: The input is ignored.

Your Response: Correct the character code value and press the ENTER key.

ADM0603 E NO EDIT SET NAME SPECIFIED

Explanation: You entered a character code on the Set and Symbol Selection panel but you did not enter a symbol set name in the "Set Name" field.

System Action: The input is ignored and you remain on the Set and Symbol Selection panel.

Your Response: Enter a symbol set name into the "Set Name" field and, if creating a new set, check that you entered the required maximum x-grid and y-grid coordinates into the related fields. Press the ENTER key.

ADM0604 E INVALID MAXIMUM X FOR NEW SYMBOL SET

Explanation: The maximum x value for the editing grid is not acceptable.

System Action: The input is ignored.

Your Response: Enter a value in the range 1 through 32 767.

Note: You can use the default value of 80.

ADM0605 E INVALID MAXIMUM Y FOR NEW SYMBOL SET

Explanation: The maximum y value for the editing grid is not acceptable.

System Action: The input is ignored.

Your Response: Enter a value in the range 1 through 32 767.

Note: You can use the default value of 110.

ADM0606 E CURRENT DEVICE DOES NOT SUPPORT ALPHANUMERICS

Explanation: The Vector Symbol Editor was called, but the current device (which the editor uses to communicate with the operator) has no alphanumeric input or output capability.

System Action: The call is ignored.

Your Response: Replace the current device with a device capable of alphanumeric input and output from the operator and run your application program again.

ADM0607 I CREATING NEW VECTOR SYMBOL SET

Explanation: You identified a vector symbol set that does not already exist on disk and the maximum x-grid and y-grid coordinate values are acceptable.

System Action: The Vector Symbol Editor is now ready to accept more commands.

Your Response: Continue editing; the message is for information only.

ADM0608 I {TYPE {1|2} (OLD FORMAT)} SYMBOL SET LOADED

Explanation: The symbol set you identified was successfully loaded from secondary storage. There are three formats for vector symbol sets stored on data sets. You can use the Vector Symbol Editor to edit all three formats, but the editor creates and saves only type-3 symbol sets; see the *GDDM-PGF Programming Reference* book. Thus an indication is given when a set of a different type is edited.

System Action: The loaded symbol set replaced any other that may have been edited in the same session.

Your Response: The loaded symbol set can be changed, renamed, or saved, as required. If the set has an old format, and you want to preserve it, avoid saving the set under the same name; otherwise continue as usual.

ADM0609 E MAXIMUM GRID COORDINATES CANNOT BE ALTERED FOR EXISTING SET

Explanation: A symbol set was already loaded and the maximum x-grid and y-grid coordinate fields updated to describe the set as it was created. The “Set Name” and maximum x and y fields are not protected until you make a change to the set. This allows you to browse symbol sets. However, you cannot change the grid coordinates of a set that has already been defined.

System Action: The input is ignored.

Your Response: If you are trying to create a new set, enter a new set name in addition to the maximum x-grid and y-grid coordinates you need.

ADM0610 E MAXIMUM GRID COORDINATE EXCEEDS 32767

Explanation: You entered a number greater than 32 767 into one or both of the “Grid Coordinates” fields.

System Action: The input is ignored.

Your Response: Enter a value in the range 1 through 32 767.

ADM0611 E TOO FEW VECTORS FOR JOIN OR BREAK AT THIS POSITION

Explanation: You cannot perform a join or a break unless there is a current vector (a dashed red line) plus another one (a dashed blue line).

System Action: The command is ignored.

Your Response: Move the current vector forward or back.

ADM0612 E BOTH VECTORS FOR JOIN OR BREAK MUST BE CURVES, NOT LINES

Explanation: The current vector (a dashed red line) and the next one (a dashed blue line) must be curve construction lines (displayed as long dashed lines), not straight lines (displayed as short dashed lines).

System Action: The command is ignored.

Your Response: Move the current vector forward or back.

ADM0613 I VECTORS AT THIS POSITION ARE ALREADY JOINED

Explanation: The current vector (a dashed red line) and the next one (a dashed blue line) are already part of the same curve.

System Action: The command is ignored.

Your Response: None required; the message is for information only.

ADM0614 I VECTORS AT THIS POSITION ARE ALREADY SEPARATED

Explanation: The current vector (a dashed red line) and the next one (a dashed blue line) are already part of separate curves.

System Action: The command is ignored.

Your Response: None required; the message is for information only.

ADM0615 E IMAGE SYMBOL SET WITH THIS NAME EXISTS

Explanation: As both vector and image symbol sets are stored on the same data set, it is possible for a naming conflict to occur.

System Action: The command is ignored.

Your Response: Either choose an unused name, or delete the image symbol set of the same name. Then try again.

ADM0616 E INVALID NEW NAME FOR VECTOR SYMBOL SET

Explanation: You specified a name for your symbol set that was not acceptable.

System Action: The command is ignored.

Your Response: Specify a symbol-set name that starts with an alphabetic character and is not longer than eight characters, and press the ENTER key.

ADM0617 E SYMBOL SET ALREADY EXISTS UNCONDITIONAL RENAME MAY BE REQUIRED

Explanation: You tried to rename the symbol set you have been editing with the name of an existing symbol set.

System Action: The command is ignored.

Your Response: Either change the symbol-set name, or use the RENAME command with the UNCOND option.

ADM0618 E INVALID POSITION ENTERED

Explanation: One or both of the values you entered into the "Current Position" is a nonnumeric value. If a value is entered as a negative value, it is converted to a positive value. The values must not exceed the maximum x-grid and y-grid coordinates.

System Action: The input is ignored.

Your Response: Correct the invalid value(s) and press the ENTER key.

ADM0619 E X OR Y DELTA IS INVALID

Explanation: You entered an x or y delta value that is not valid, either into the "X/Y Delta" fields or as part of a command using the BY parameter.

System Action: The value or values entered are ignored.

Your Response: Enter the value as an integer, and press the ENTER key.

ADM0620 E INVALID ASPECT VALUE

Explanation: You entered a nonnumeric value into one of the "Grid Aspect Ratio" fields.

System Action: The input is ignored.

Your Response: Correct the aspect value and press the ENTER key.

ADM0621 E INVALID COMMAND

Explanation: The Vector Symbol Editor cannot recognize the command you entered in the command line.

System Action: The command is rejected.

Your Response: Correct the command and press the ENTER key.

ADM0622 E CURRENT DEVICE IS NOT INTERACTIVE

Explanation: The Vector Symbol Editor was called, but the current device (which the editor uses to communicate with the operator) has no input capability, either graphic or alphanumeric.

System Action: The call is ignored.

Your Response: Replace the current device with a device capable of input from the operator, and try again.

ADM0623 E CHARACTER STRING LONGER THAN 9 CHARACTERS ON COMMAND LINE

Explanation: In a command you entered, the Vector Symbol Editor encountered a character string longer than nine characters. Because no command is longer than nine characters or accepts a parameter of longer than nine characters, the command is in error.

System Action: The command is rejected.

Your Response: Correct the command and press the ENTER key.

ADM0624 W ONE OR MORE COMPLEX CURVES HAVE BEEN SPLIT

Explanation: Because of the length constraints imposed by GDF orders (see the *GDDM-PGF Programming Reference* book), only a limited number of sections can be stored to form a continuous curve.

System Action: One or more complex curves were split (equivalent to using the BREAK command) such that they can be stored. There is a visual effect on each curve affected.

Your Response: None required, but check the symbol set for undesirable curves and edit again as necessary. Using a small edit grid (x and y not greater than 127) lessens the chance of this error occurring.

ADM0625 E INVALID OPERAND

Explanation: In the command you entered, you supplied an operand that was not valid.

System Action: The command is rejected.

Your Response: Correct the operand and press the ENTER key.

ADM0626 E OPERAND MISSING

Explanation: You entered a command with a required operand missing.

System Action: The command is ignored.

Your Response: Use the help panels to find out how to use the command correctly.

ADM0627 E VALUE OUT OF RANGE OR NOT NUMERIC

Explanation: In the command you entered, you supplied a value that was either outside the range acceptable to the command, or else was not a numeric value.

System Action: The command is rejected.

Your Response: Correct the value and press the ENTER key.

ADM0628 E COMMAND NOT APPLICABLE IN THE CURRENT PANEL

Explanation: You entered an edit command in the command line of the Set and Symbol Selection panel.

System Action: The command is rejected.

Your Response: If you want to edit a symbol, move to the Symbol Edit panel.

ADM0629 E CURRENT VECTOR END-POINT AND NEXT VECTOR START-POINT DO NOT MATCH

Explanation: To join two curve construction lines together, the end-point of the current vector (a dashed red line) must be the start-point of the next one (a dashed blue line). Note that each vector is directional (that is, the start-point or end-point may not be at the end of the vector you want).

System Action: The command is ignored.

Your Response: If the two construction lines do not have a common point, use the CHANGE command until they do. If the two construction lines do have a common point, use the SEQUENCE command to try to ensure that the directions of the vectors are suitable. Then try again.

ADM0630 E INVALID ASPECT VALUE ENTERED

Explanation: You entered an aspect value that was not valid into the command line as part of the ASPECT command.

System Action: The input is ignored.

Your Response: Correct the aspect value and press the ENTER key.

ADM0632 E INVALID X OR Y VALUE

Explanation: You entered a command using the BY or TO operand, but you specified a value for the x or y operands, or both of these, that was not valid.

System Action: The command is rejected.

Your Response: Correct the invalid value and press the ENTER key.

ADM0633 E X OR Y VALUE MISSING

Explanation: You entered a command using the TO operand but you did not supply the required x or y values, or both of these.

System Action: The command is rejected.

Your Response: Enter the command again, and supply the required x or y values.

ADM0634 E EDIT COMMANDS INVALID. NO GRAPHICS AVAILABLE

Explanation: The device you are using does not support graphics. Edit commands are allowed only on devices that support graphics.

System Action: The command is rejected.

Your Response: If you want to edit individual symbols, use a different terminal that supports graphics. Suitable terminals are:

- IBM 3179 Model G
- IBM 3270-PC/G and 3270-PC/GX workstations
- IBM 5550 multistation with Japanese 3270-PC graphics
- IBM 3278, 3279, 3290, or 8775 displays with PS
- IBM 5080 Graphics System.

ADM0635 E TOO MANY OPERANDS

Explanation: You supplied too many operands in the command that you entered. Usually this is simply a case of introducing blanks between operands, for example,
 - 6 -5 when -6 -5 was meant.

System Action: The command is rejected.

Your Response: Correct the invalid command line and press the ENTER key.

ADM0636 E INVALID CHARACTER CODE SPECIFIED

Explanation: Character codes can be specified either as a one-character symbol (for example, "A" or "b") or as a two-digit hexadecimal number (for example, X'C1' or X'82'); the character code you used with a command fits neither description.

System Action: The command is rejected.

Your Response: Correct the character code and press the ENTER key.

ADM0637 E FROM SET NAME MISSING

Explanation: You used the FROM keyword with the SCOPY command, but you did not supply the "from" set name.

System Action: The command is rejected.

Your Response: Supply the set name in the command and press the ENTER key.

ADM0638 W UNKNOWN "GDF" ORDERS IN SYMBOL HAVE BEEN IGNORED AND REMOVED

Explanation: When you edit a symbol from a type-3 vector symbol set (see the *GDDM-PGF Programming Reference* book. it is possible, if the set was not created using the Vector Symbol Editor, for the definition of the symbol to contain "orders" that the Vector Symbol Editor cannot process. If this happens, these orders are ignored.

System Action: If the set is saved, all unrecognized orders are lost.

Your Response: If the orders are known to have some valid significance, the set must not be saved using the Vector Symbol Editor, as this would remove these orders.

ADM0639 E SET IS TOO COMPLEX TO SAVE. PLEASE SIMPLIFY AND TRY AGAIN

Explanation: The complexity of the set is such that the storage limitations for vector symbol sets would be exceeded.

System Action: The command is ignored.

Your Response: Try to reduce the complexity of the symbol set. There are various ways in which this can be done (in approximate order of effectiveness):

- Limit the maximum x and y symbol grid coordinates to values less than 128; however, this can be done only for a new, empty symbol set.
- Reduce the number of symbols.
- Reduce the number of vectors in each symbol.
- Remove all proportional spacing from symbols; however, all symbols must have normal width for this measure to be effective.

Note: Symbol shading (on a set basis) has no effect on the storage requirements.

ADM0640 W THERE ARE NO VECTORS

Explanation: There are no vectors in the current symbol.

System Action: The command is rejected.

Your Response: None required.

ADM0644 I {SYMBOL|SYMBOL SET} IS NOW {SHADED|NOT SHADED}

Explanation: Either the specified symbol, or the whole set of symbols, were affected by the SHADING command.

System Action: The Vector Symbol Editor is now ready to accept more commands.

Your Response: None required; the message is for information only.

ADM0645 W {SYMBOL|SYMBOL SET} IS ALREADY {SHADED|NOT SHADED}

Explanation: The command is unnecessary; the required situation already exists.

System Action: The Vector Symbol Editor is now ready to accept more commands.

Your Response: None required.

ADM0646 E INVALID PARAMETER(S) SPECIFIED

Explanation: You tried to start the Vector Symbol Editor with the wrong operands.

System Action: The Vector Symbol Editor is not started.

Your Response: Check the syntax needed to start the Vector Symbol Editor, and then try again.

ADM0647 E SCREEN IS TOO SMALL. 24 ROWS BY 80 COLUMNS REQUIRED

Explanation: The screen you are using is too small for the Vector Symbol Editor.

System Action: The Vector Symbol Editor is not started.

Your Response: Try and start the Vector Symbol Editor on a different device with a larger number of rows, or columns, or both of these.

ADM0649 E SOURCE SET = TARGET SET. NO ACTION TAKEN

Explanation: You used an SCOPY command with the ALL option and the set you are copying from is the edit set.

System Action: The command is rejected.

Your Response: If you want to reset the edit set to what it was when it was last saved, issue the CANCEL command from the Set and Symbol Selection panel. Otherwise, enter the command again, correctly.

ADM0650 I REACHED BEGINNING OF VECTOR SEQUENCE

Explanation: You issued the BACKWARD command and have reached the beginning of the vector sequence.

System Action: The Vector Symbol Editor is ready for more commands.

Your Response: None required; the message is for information only.

ADM0651 E THERE IS NO CURRENT VECTOR

Explanation: You issued a command that requires a vector to be the current vector and none was so.

System Action: The command is rejected.

Your Response: Establish a current vector by drawing or moving forward into the vector sequence. The latter is possible if you issued BACKWARD enough times to go off the top of the vector sequence.

Note: This is the only occasion when the current+1 vector is indicated and the current vector is not.

ADM0652 W TARGET POSITION = CURRENT POSITION : NO ACTION

Explanation: You used an edit command and specified a target position on the grid that equals the position current at that time. For example, if the command you used was DRAW, the command, if allowed, would create a zero-length vector.

System Action: The input is ignored.

Your Response: Choose a new position and enter the command correctly.

ADM0653 E TARGET POSITION IS OUTSIDE THE GRID BOUNDARIES

Explanation: You either entered a command that would result in a vector or vectors extending beyond the boundary of the grid, or you requested a move to a position on the grid such that subsequent vectors would be outside the grid.

System Action: The command is rejected.

Your Response: Correct the invalid value(s) and enter the command again.

ADM0654 W ONE OR MORE VECTORS OUTSIDE SYMBOL BOUNDARIES

Explanation: The symbol being edited has one or more vectors outside the symbol boundaries. It is not possible to create such vectors using the Vector Symbol Editor; therefore some other program was used to create the symbol.

System Action: The Vector Symbol Editor constrains the current position to be within the symbol boundaries by setting the current position to the origin.

Your Response: None is required, but remember that there may be vectors in the current symbol that are not visible on the screen.

ADM0657 E SOURCE SYMBOL = TARGET SYMBOL. NO ACTION TAKEN

Explanation: You entered an SCOPY command without the ALL option, but the source and target character codes are the same.

System Action: The command is rejected.

Your Response: In the command line, provide a different set name, or symbol, or both of these.

ADM0660 E MAX X AND Y VALUES OF SOURCE AND TARGET SETS ARE INCOMPATIBLE

Explanation: The source and target sets identified by the SCOPY command that you entered have different maximum x-grid and y-grid coordinates; this is not allowed.

System Action: The command is rejected.

Your Response: Choose another source set or, if you are trying to create a new set, browse the source set to discover the coordinates of that set and specify these coordinates on the new set, before copying.

ADM0661 E SET CHANGED SINCE LAST SAVE. SAVE AND EXIT, OR CANCEL

Explanation: To protect you when changes have been made to the symbol set, the Vector Symbol Editor does not allow you to exit without either canceling or saving the set.

System Action: The command is rejected.

Your Response: Save or cancel, then exit. Or, you can use the END command to both save and exit.

ADM0662 I END OF VECTOR SEQUENCE

Explanation: You issued the FORWARD command and have reached the end of the vector sequence.

System Action: The Vector Symbol Editor is ready for more commands.

Your Response: None required; the message is for information only.

ADM0663 I END OF SET

Explanation: You reached the last character code in the symbol set by using the NEXT command.

System Action: The Vector Symbol Editor is ready for more commands.

Your Response: None required; the message is for information only.

ADM0664 I BEGINNING OF SET

Explanation: You reached the first character code in the symbol set by using the PREVIOUS command.

System Action: The Vector Symbol Editor is ready for more commands.

Your Response: None required; the message is for information only.

ADM0666 I NO CURRENT VECTOR

Explanation: You deleted the last vector in the symbol.

System Action: The Vector Symbol Editor is ready for more commands.

Your Response: None required; the message is for information only.

ADM0671 E NO HELP PANEL DEFINED FOR THIS REQUEST

Explanation: You entered the HELP command with a character string for which no match could be found.

System Action: The Vector Symbol Editor displays the master help panel.

Your Response: The master help panel is a menu panel that lists all the panels in the help data. Choose the topic about which you want information, enter its number in the input field provided, and press the ENTER key.

ADM0672 E NO HIGHER-LEVEL PANEL IN THE HELP PANEL HIERARCHY

Explanation: You pressed PF2 while the master help panel was displayed. Because this is the topmost panel in the hierarchy, no action is possible.

System Action: The request is ignored.

Your Response: Press PF3 to return to the panel from which you entered the HELP command, or select another topic.

ADM0673 E TOP OF SCROLLABLE TEXT

Explanation: You pressed PF7 to scroll toward the top of the text in this help panel; the top of the text is already displayed.

System Action: The request is ignored.

Your Response: None required.

ADM0674 E BOTTOM OF SCROLLABLE TEXT

Explanation: You pressed PF8 to scroll toward the bottom of the text in this help panel; the bottom of the text is already displayed.

System Action: The request is ignored.

Your Response: None required.

ADM0675 E FIRST HELP PANEL

Explanation: You reached the master panel by pressing PF10, the PREVIOUS key; this is the first panel in the list and so PF10 has no effect.

System Action: The Vector Symbol Editor is ready for more commands entered with the PF keys.

Your Response: None required.

ADM0676 E LAST HELP PANEL

Explanation: You reached the last panel in the list of help panels by pressing PF11.

System Action: The Vector Symbol Editor is ready for more commands entered with the PF keys.

Your Response: None required.

ADM0677 E WRONG KEY OR BUTTON

Explanation: You used either a function key or typing key or button that has no assigned function.

System Action: The input is ignored.

Your Response: None required.

ADM0678 E MUST BE NUMBER, NOT GREATER THAN MAX NUMBER OF PANELS

Explanation: You entered a number as an option on one of the menu panels. The number would advance you beyond the extent of the help panels.

System Action: The input is ignored.

Your Response: Choose one of the options listed in the help panel.

ADM0679 E INPUT FIELDS HAVE BEEN LOST AS A RESULT OF AN ILLEGAL INTERRUPT

Explanation: The Vector Symbol Editor cannot recognize the interrupt code that was passed to it.

System Action: The input is ignored.

Your Response: Proceed at your own discretion; the ability of the Vector Symbol Editor to continue may be impaired.

ADM0680 E PANEL REQUESTED DOES NOT EXIST

Explanation: The help panel that you requested does not exist. The only time this situation can occur is if one of the help panels was not correctly installed and, therefore, was not loaded.

System Action: The request cannot be honored; the Vector Symbol Editor can, however, continue processing.

Your Response: Check with your local expert to see if the requested panel has actually been installed.

ADM0685 E UNABLE TO SATISFY REQUEST DUE TO LACK OF STORAGE

Explanation: The Vector Symbol Editor cannot get enough storage to perform the function you requested. This function is likely to have been:

- An SCOPY where the Vector Symbol Editor tried to get storage for a copy buffer
- A save where the Vector Symbol Editor could not get a save buffer
- An edit where the Vector Symbol Editor could not get an edit buffer
- One of the editing commands where the internal pool of entries describing vectors must be extended to create one or more new vectors.

System Action: The command is rejected.

Your Response: It might be possible to preserve some of the changes made to the editing set by canceling changes to other character codes or clearing some character codes. Depending on the complexity of the symbols and sets created and the extent of changes made in one session, it may be advisable to save more frequently, thus releasing the buffer referred to, or to run the program from the outset with more storage available.

ADM0688 I NO SYMBOL SET TO SAVE. SAVE CANCELED

Explanation: You entered a SAVE command before identifying the symbol set on which you want to work.

System Action: The command is rejected.

Your Response: Identify a symbol set in the "Set Name" field, make some changes to it, and then save it.

ADM0689 I NO CHANGES MADE TO SYMBOL SET. SAVE CANCELED

Explanation: Although you identified a symbol set on which you want to work, you did not make any changes to that set. Consequently, a SAVE command would have no effect.

System Action: The command is rejected.

Your Response: You need not save until you have made some changes to the set.

ADM0690 I SYMBOL SET SAVED

Explanation: The symbol set you edited was successfully written to disk.

System Action: The Vector Symbol Editor is ready for more commands.

Your Response: Identify a new set or continue to edit the present one.

ADM0691 E UNABLE TO WRITE SYMBOL SET TO DISK

Explanation: You tried to save the symbol set that you were editing. The editor could not write the symbol set to disk.

System Action: The command is rejected.

Your Response: Ask your local expert to investigate the cause, which lies outside PGF and GDDM.

ADM0697 E SET REQUESTED IS NOT A VECTOR SYMBOL SET

Explanation: The symbol set you identified in the "Set Name" field exists, but it is not a vector symbol set; it is probably an image symbol set.

System Action: The input is ignored.

Your Response: Choose another name.

ADM0698 I CHANGES CANCELED FOR ENTIRE SYMBOL SET

Explanation: From the Set and Symbol Selection panel, you canceled all changes to the symbol set you were editing.

System Action: The Vector Symbol Editor is ready for more commands.

Your Response: None required. Choose another symbol set or continue with the existing one.

Note: The existing symbol set has been reset to the state it was in at the time of the last SAVE command, or to null if it is a new symbol set.

ADM0699 I CHANGES CANCELED FOR THIS SYMBOL

Explanation: From the Symbol Edit panel, you canceled the changes made to this symbol since it was last saved as part of the symbol set.

System Action: The Vector Symbol Editor is ready for more commands.

Your Response: None required. Continue to edit this symbol, edit another one, or return to the Set and Symbol Selection panel.

Appendix E. Starting the Vector Symbol Editor

Starting the Editor from a terminal

How you start the Vector Symbol Editor depends upon the operating environment you are using. The name of the symbol set to be edited can be passed as a parameter to the editor in all the operating environments, as shown in the following table.

The device you use should be an interactive terminal, otherwise the invocation is rejected. Suitable terminals are:

- 3179 Model G
- 3270-PC/G or PC/GX
- 3278, 3279, 3290, or 8775 with PS
- 5080.

To learn how to start the editor, read the appropriate section for the system you are using. There are special considerations if you are using a 5080 (see “Starting the Editor for a 5080” on page 104).

Starting the Vector Symbol Editor (summary of commands used)	
CICS	- ADMV [symbol-set-name]
IMS	- ADM VSSE [symbol-set-name]
MVS/TSO	- CALL 'data-set-name(ADMVSSE)' ['symbol-set-name']
VM/SP	- ADMVSSE [symbol-set-name]

On CICS

On CICS, the editor is provided as a transaction with the name ADMV. You start the editor by typing:

```
ADMV [symbol-set-name]
```

If you cannot start the editor by using this name, contact your system programmer to find out what the editor is called at your installation.

On IMS

On IMS, the editor is provided as a transaction with the name ADM. You start the editor by typing:

```
ADM VSSE [symbol-set-name]
```

If you cannot start the editor by using this name, contact your system programmer to find out what the editor is called at your installation.

For further information about running the editor under IMS, see the *GDDM Base Application Programming Reference* book.

Note that 3270-PC/G and PC/GX interactive graphic terminals are treated as noninteractive graphic terminals in this environment. This is because of a restriction in IMS. These terminals can still be used, but operate like a 3279.

starting the Vector Symbol Editor

On MVS/TSO

On MVS/TSO, you start the editor by typing:

```
CALL 'data-set-name (ADMVSSE)' ['symbol-set-name']
```

where “data-set-name” is the name of the data set into which the editor has been installed. Ask your system programmer what name you should use.

Before starting the Vector Symbol Editor, check with your system programmer that you have a suitable symbol-set data set. If you do not, you need to allocate a partitioned data set with the following data control block (DCB) characteristics:

GDDM Default File Name	DCB Characteristics		
	RECFM	LRECL	BLKSIZE
ADMSYMBL	F or FB	400	400*n

The file name can then be allocated to the data set by use of the TSO ALLOCATE command. Alternatively, the file name can be allocated by DD statements in your TSO logon procedure, or by dynamic allocation routines in the application program.

The default ddname for the symbol set data set is ADMSYMBL. Both vector symbol sets and image symbol sets are contained in the same data set.

On VM/SP

On VM/SP, you start the editor by typing:

```
ADMVSSE [symbol-set-name]
```

If you cannot start the editor by using this name, contact your system programmer to find out what the editor is called at your installation.

Starting the Editor for a 5080

Before starting the Vector Symbol Editor for use on a 5080 Graphics System, you must ensure that the 5080 is defined for use by GDDM. You do this by defining a nickname for the 5080, which GDDM will use to set up the correct environment for itself. This nickname, like any others you may have defined for using plotters, and so on, goes in a special file.

On MVS/TSO

Your nickname entry goes into a file that is identified by the ddname ADMDEFS.

The entry in that file has the form:

```
NICKNAME PROCOPT=((SPECDEV,IBM5080,ffffff))
```

where ffffffff is the ddname that identifies the 5080.

On VM/SP

Your nickname entry goes into a file with file identification PROFILE ADMDEFS.

The entry in that file has the form:

```
NICKNAME PROCOPT=((SPECDEV,IBM5080,ffffff))
```

where ffffffff is the name that identifies the 5080. This identification is achieved using a FILEDEF command, like this:

```
FILEDEF ffffffff GRAF cuu
```

where cuu is the virtual address of the 5080. This FILEDEF command must be issued before you start the editor.

Starting the Editor from an application program

The Vector Symbol Editor may be started from a user application program. See the *GDDM-PGF Programming Reference* book for details.

starting the Vector Symbol Editor

Appendix F. Helpful hints to use with the sessions

This page is designed to help you if you have any problems during the sessions or when you start to experiment with the Vector Symbol Editor.

Condensed information

You can use the following notes when you are working through the tutorial sessions, or you can copy them and keep them handy when you are using the Vector Symbol editor.

Using the Help panels

- Press PF1/13 to display the master help panel. A list is displayed showing all the help panels available. Choose the panel you want by entering its number after "Enter Option ==>".
- Enter the HELP command together with a command name and press ENTER. This gives you help about the command you specified.

Deleting one vector

To delete the current vector (red dashed vector):

- Press PF8/20 if "8=Delete" appears at the bottom of the screen
- Press PF16 if "16 Delete" appears on the left of the screen (3179-G only)
- Use the D typing key if the graphics cursor is displayed (for 3270-PC/G and /GX only)
- Press PF16 if the graphics cursor is displayed (for 5550 only)
- Type the DELETE command for other devices.

Deleting more than one vector

- If you are not using the graphics cursor, type the DELETE command, together with the number of vectors to be deleted (for example, **DELETE 6**), and press ENTER.

Starting again

- To delete all the vectors in a symbol and start again, enter the CLEAR command.
- To delete vectors added to a previously saved symbol and start again from the saved symbol, enter the CANCEL HOLD command. The changes to the symbol will be canceled and you can continue editing.

If an error message appears

- When you receive a message that you do not understand, look up the message number in Appendix D, "Messages" on page 91.

Keys to use with the graphics cursor

PF8 can be used on some devices to enable or disable the graphics cursor. These keys are set up for you, depending on the type of terminal you are using:

3179-G or 5550 PF key	3270-PC/G or 3270-PC/GX typing key	Meaning (“gcp” means graphics cursor position)
13	A	ALTER (CHANGE TO) the gcp
14	B	BACKWARD
15	C	CURVE TO the gcp
16	D	DELETE, then MOVE TO the gcp
17	F	FORWARD
18	I	IDENTIFY (MOVE TO the gcp, then FIND)
19	J	JOIN, then MOVE TO the gcp
20	L	LINE TO the gcp
21	M	MOVE TO the gcp
22	N	NEW CURVE TO the gcp
none	P	PART (BREAK then MOVE TO the gcp)
23	R	REDISPLAY
24	S	STRETCH TO the gcp.

Exiting from the Vector Symbol Editor

- To exit from the Set and Symbol Selection panel, press PF3/15.
- To exit from the Symbol Edit panel, press PF3/15 twice.

You may see the following message:

ADM0661 E SET CHANGED SINCE LAST SAVE. SAVE AND EXIT, OR CANCEL

If you have made any changes that you want to save, enter the SAVE command and press PF3/15 to exit. If you do not want the changes you have made to the symbol set, enter the CANCEL command.

Glossary

This glossary defines technical terms used in GDDM documentation. If you do not find the term you are looking for, refer to the index of the appropriate GDDM manual or view the *IBM Dictionary of Computing*, located on the Internet at:

<http://www.networking.ibm.com/nsg/nsgmain.htm>

aspect ratio. The width-to-height ratio of an area, symbol, or shape.

character. A letter, digit, or other symbol.

character code. The means of addressing a symbol in a symbol set, sometimes called **code point**.

For the Vector Symbol Editor, a hexadecimal constant in the range X'00'–X'FF' or its EBCDIC character equivalent.

CICS. Customer Information Control System. A subsystem of MVS or VSE under which GDDM can be used.

CMS. Conversational Monitor System. A time-sharing subsystem that runs under VM/SP.

compass keys. A set of PF keys predefined to draw a line in directions corresponding to points of the compass.

current position. In GDDM, the end of the previously drawn primitive. Unless a "move" is performed, this position will also be the start of the next primitive.

current vector. The vector (displayed in red) that is currently being addressed.

current + 1 vector. The vector (displayed in blue) that follows the current vector.

curve construction line. One of a series of vectors that is used in the construction of a curve.

editing grid. A grid used as a guide for editing a symbol. In the Vector Symbol Editor, it is a grid of lines.

font. A particular style of typeface (for example, Gothic English). In GDDM, a font may exist as a programmed symbol set.

four-button cursor. A hand-held device, with cross-hair sight, for indicating positions on the surface of a tablet. Synonymous with **puck**.

GDDM. Graphical Data Display Manager.

graphics cursor. A physical indicator that can be moved (often with a joystick, mouse, or stylus) to any position on the screen.

grid coordinates. The x and y coordinates of a point on the editing grid.

image symbol. A character or symbol defined as a dot pattern.

Image Symbol Editor (ISE). A GDDM-supplied interactive editor that lets users create or modify their own image symbol sets (ISS).

image symbol set (ISS). A set of symbols each of which was created as a pattern of dots. Contrast with **vector symbol set (VSS)**.

IMS. Information Management System. A subsystem of MVS under which GDDM can be used.

Interactive Chart Utility (ICU). A GDDM-PGF menu-driven program that allows business charts to be created interactively by nonprogrammers.

nickname. In GDDM, a quick and easy means of referring to a device, the characteristics and identity of which have been predefined.

PGF. Presentation Graphics Facility.

pixel. The smallest area of a display screen capable of being addressed and switched between visible and invisible states. Synonymous with **display point**, **pel**, and **picture element**.

plotter. An output device that uses pens to draw its output on paper or transparency foils.

Presentation Graphics Facility (PGF). A member of the GDDM family of program products. It is concerned with business graphics, as opposed to general graphics.

programmed symbols (PS). Dot patterns loaded by GDDM into the PS stores of an output device.

reference symbol. A previously defined symbol displayed with the symbol currently being edited, for the purpose of achieving consistent symbol sizes and shapes within a given symbol set.

symbol. Synonymous with **character**. For example, the following terms all have the same meaning: vector symbols, vector characters, vector text.

symbol set. A collection of symbols, usually but not necessarily forming a font. GDDM applications may

glossary

use the hardware device's own symbol set. Alternatively, they can use image or vector symbol sets, which the user may have created.

target position. The grid coordinates of a point on the editing grid to which a vector is to be drawn.

test symbol. An area on the Symbol Edit panel in which the currently chosen symbol is displayed.

transparency. (1) A document on transparent material suitable for overhead projection. (2) An alphanumeric attribute that allows underlying graphics to show.

TSO. Time sharing option. A subsystem of OS/VS under which GDDM can be used.

vector. (1) In computer graphics, a directed line segment. (2) A straight line between two points.

vector symbol. A character or symbol made up of a series of lines or curves.

Vector Symbol Editor. A program supplied with GDDM-PGF, the function of which is to create and edit vector symbol sets (VSS).

vector symbol set (VSS). A set of symbols each of which was originally created as a series of lines and curves.

VM/SP CMS. IBM Virtual Machine/System Product Conversational Monitor System. A system under which GDDM can be used.

VSE. Virtual storage extended. An operating system consisting of VSE/Advanced Functions and other IBM programs. In GDDM, the abbreviation VSE has sometimes been used to refer to the Vector Symbol Editor, but to avoid confusion, this usage is deprecated.

VSS. Vector symbol set.

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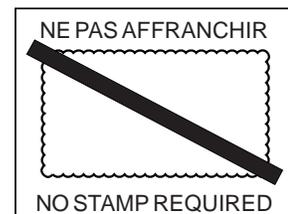
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