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Graphwriter™



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USER'S GUIDE
TO GRAPHWRITER

for the
TANDY[®]

TRS-80
Model 2000
(Catalog Nos.
26-5103 and
26-5104)

Version 01.00.00

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Introduction

Graphwriter For Presentation Graphics

Graphics are powerful tools for business. Graphics improve communications, decision-making, and managerial productivity. Increasingly, the manager, sales person, or decision-maker who does not use business graphics operates at a competitive disadvantage.

Until recently, however, obstacles to using graphics have been formidable. Graphic designers require long lead times, and there is great expense in having them produce presentation-quality charts. Large computer systems produce charts which are of variable quality, cumbersome to use, and expensive. Microcomputer packages produce charts of low quality and limited capability.

Graphwriter is a business graphics software package which overcomes these obstacles. Using Graphwriter, you can create high quality charts at minimal cost in a matter of minutes. You can select a chart, suited to your needs, from a wide variety of formats. And best of all, with Graphwriter, all you have to do is follow a simple two step process:

1. Select a format from the Format Selection Guide or the Select a Graphwriter Format Menu.
2. Then follow the simple menus and prompts to enter your data and plot your chart.

Yet, for all its simplicity and ease of use, Graphwriter offers extensive capabilities and sophisticated features that are essential for producing presentation graphics. Let's examine some of these capabilities.

Variety of Formats

In addition to the standard pie, bar, and line charts, you can select from a wide variety of special formats. The Format Selection Guide illustrates all the formats available with Graphwriter.

Formats Available in GRAPHWRITER BASIC SET are:

- B010 Column Chart (vertical)
- B011 Bar Chart (horizontal)
- B020 Segmented Bars (vertical)
- B021 Segmented Bars (horizontal)
- B030 Clustered Bars (vertical)
- B031 Clustered Bars (horizontal)

- P010 Pie Chart (1 - 4 pies)
- L010 Line Chart
- S010 Scatter Plot (regression)
- C010 Bar/Line Combination
- T010 Text/Word Chart

Formats Available in GRAPHWRITER EXTENSION SET are:

- S020 Gantt Chart
- S030 Organization Chart
- S040 Bubble Chart
- S050 Table Chart
- C020 Pie-Bar Combination
- L020 Surface Line Chart
- L030 Line/Table Chart
- B022 Double Stacked Bars
- B032 Grouped Bars (horizontal)
- B040 Range Chart (bars)
- B050 Paired Bars
- B060 Horizontal Bars (inset labels)

Flexibility to Create Custom Graphics

Because of the pre-designed characteristics of Graphwriter formats, you produce a quality chart by just entering your data. However, to create a custom chart, you modify the default (pre-set) values to make significant changes to the style, layout, size, and orientation of the chart. You produce the chart you want, in the way you want it.

Quality to Rival a Graphic Designer

Graphwriter charts are not only superior in appearance to those other computer graphics systems produce, they are comparable to charts a graphic designer might produce. There are several reasons for this.

- First, the design of Graphwriter is for high resolution output devices such as pen plotters rather than for low to medium resolution CRT screens.
- Second, Graphwriter attends to details. An example is the adjustment of plotter speed to the output medium used. Slower pen speeds for transparencies and glossy paper charts result in sharply outlined, non-smearing charts. Also, Graphwriter uses wide and narrow pens for crisper, more attractive results.
- Third, Graphwriter composes the layout for your chart based on the data and information you provide, as well as for the output device you have selected. Much the way a graphic designer would lay out your chart, Graphwriter uses your data to get the best out of the format design.

Simplicity of Use

Graphwriter is easy to use. It is, indeed, one of the easiest to use software packages, and requires no computer expertise. This is due to several features:

- Menus are clear and unambiguous.
- Prompt sequences guide you easily through every step required to produce a chart.
- Prompts and messages are specific to the format you are using.
- Help messages are available when you need them and explain in detail what is required.
- Function keys make data entry easy.
- Input forms, specific to each graphic format, help you organize your data.

But now that you have an idea of what Graphwriter can do for you, you undoubtedly are anxious to start. The balance of this chapter will help you do just that.

How to Use This Document

Designed for anyone who uses Graphwriter, the User's Guide assumes that you have some practical experience with, and knowledge about, your own microcomputer. But the guide does not assume that you have a knowledge of programming or an understanding of the technical aspects of the microcomputer. This chapter tells you what you can do with Graphwriter, and Chapter 2 tells you how to select formats.

The best way to learn to use Graphwriter is to sit down and use it. To begin, refer to Chapters 3 and 4, which provide step-by-step instructions for setting up your system and producing your first chart.

After you produce several charts, you will want to know more about how Graphwriter format programs work in general, and how to use the powerful editing and customizing capabilities (Chapters 5 and 6).

Chapter 7 provides detailed information on menus and their options.

Chapter 8 provides detailed information on graphic elements and their style characteristics.

Chapters 9, 10, and 11 describe the different formats available with Graphwriter and instructions for using them.

Chapter 12 explains how to use data files with Graphwriter.

Chapter 13 provides trouble shooting information.

Chapter 14 explains how to use Graphwriter to create and store Composed Chart Files, and how to use them in Batch Processing.

Use the appendices when you need specific information about Graphwriter. Appendix A summarizes Graphwriter's special features and capabilities. Appendix B provides information about recommended hardware and its configuration.

Appendix C shows printouts of sessions using two formats: B020, Segmented Bars, and S030, Organization Chart.

Appendix D gives dimensions for custom plot areas, including multiple charts on a page.

Appendix E provides some suggestions for using Graphwriter more effectively.

In Appendix F you will find a set of original input forms, each of which corresponds to one of the Graphwriter formats. Using the forms is optional, but they help you organize your data. If you are not producing the chart yourself, the input forms communicate your chart requirements to the person doing so. Whether or not you choose to use the forms, reviewing them helps you to understand the type of information the individual format programs require.

Table 1-1 outlines how each chapter can be useful to you.

Chapter	Use
Chapter 1: Introduction	Provides an overview of Graphwriter and its documentation.
Chapter 2: Selecting a Graphwriter Format	Offers guidelines for selecting the most appropriate Graphwriter Format for your chart.
Chapter 3: Setting Up Graphwriter	Explains how to install and run Graphwriter.
Chapter 4: Creating Your First Chart	Gives step-by-step instructions for creating your first chart.
Chapter 5: Learning More About Graphwriter	Explains important concepts of Graphwriter and how the programs work.
Chapter 6: Customizing Graphwriter	Explains how to customize Graphwriter with your own style specifications.
Chapter 7: Graphwriter Menus	Explains how to use the menus and function keys.
Chapter 8: Chart Elements and Style Characteristics	Explains chart elements, style characteristics, and how they can be modified.
Chapter 9: Formats in Graphwriter Basic Set	Provides instructions for using individual formats in the Graphwriter Basic Set.
Chapter 10: Text Format	Provides instructions for using the text format.
Chapter 11: Formats in Graphwriter Extension Set	Provides instructions for using individual formats in the Graphwriter Extension Set.
Chapter 12: Using Stored Data Files	Provides instructions for using data files from other application programs.
Chapter 13: Problems Using Graphwriter	Provides assistance for problems encountered using Graphwriter.
Chapter 14: Batch Processing Composed Chart Files	Explains how to use Graphwriter to create and store Composed Chart Files, and how to use them in Batch Processing.
Appendices	Provide additional reference materials.
Glossary	Provides definitions in alphabetical order of terms used with Graphwriter and in this document.
Index	Guides you to sections of interest.

Table 1-1: Guide to Contents

Conventions Used in This Document

To assist you in using this guide, we have used a few special conventions.

Screen Displays

1. Screen displays of menus and prompt sequences appear in reduced size print, and with a frame, as shown below:

```
Change Chart Style
-----
 1. Return to Main Menu
 2. Change Style of Headings and Notes
 3. Change Style of Axis Titles and Axes
 4. Change Color/Fill Palette
 5. Change Bar colors, Fills, Width
 6. Change Style of Bar Labels
 7. Change Style of Legend
 8. Change Style of Comments
 9. Change Other Data

Select one:
```

2. A top half-screen is used to show the beginning portion of a prompt sequence. See the illustration below.

```
Changing Fills in Palettes
-----

Palette element 1 is currently ...solid fill.
Enter new palette fill type .....:

Palette element 2 is currently ...narrow crosshatch.
Enter new palette fill type .....:

Palette element 3 is currently ...narrow right hatch.
Enter new palette fill type .....:
```

3. Screen displays of single prompts appear between quotation marks. Examples are:

"Press RETURN to Continue"

"Segment 1 color is red
Enter new segment 1 color:"

Entering Responses

1. Text or numbers you must type in response to Graphwriter prompts appear underlined. They are preceded by the word "enter" and followed by RETURN. When this document calls for RETURN, use the ENTER key. Examples are:

enter B020 ENTER

enter SMALL COMPUTER SYSTEMS RETURN

Note that this document uses "enter" for "type."

2. When you must enter a response of your choosing to a generic prompt, the response appears underlined and in parentheses. An example is:

enter (Your File Name) RETURN

Special Keyboard Keys

There are two types of special keyboard keys.

1. With Graphwriter, menu options are selected using the numerals "1" through "9." When used to select a menu option, these keys initiate the selected option immediately. It is not necessary to press the ENTER key. In this guide we show these menu choices in bold type preceded by the word "press," followed by the menu option in quotation marks. An example is:

press 2 "Enter all new data"

2. Graphwriter uses function keys for special purposes (see next section). These also are presented in bold type and are preceded by the word "press." Like menu options, function key choices are initiated immediately. You do not need to press RETURN. Examples are:

press Del

press Esc

Using Function Keys with Graphwriter

Graphwriter uses function keys to simplify data entry by allowing you to move forward or backward through a data entry sequence. You can exit prematurely from a program sequence or operation by using function keys. Help is also provided via a function key.

On the Tandy TRS-80 Model 2000, Graphwriter uses special keyboard keys to perform certain functions. Descriptions of the functions, and the keys used for them, are in Table I-2, below.

FUNCTION	HOW FUNCTION APPEARS IN GUIDE	KEYBOARD KEYS YOU CAN USE	
		Primary	Alternate
<u>HELP:</u> To get further information about the current prompt, such as lists of available colors, output devices.	HELP	F1	
<u>EXIT:</u> To leave the program and return to previous menu, retaining all values entered.	Esc	ESC	F2
<u>RETURN TO PREVIOUS ITEM:</u> To back up to previous prompt, such as from Heading 2 to Heading 1, to change entry.	F3	F3	↑
<u>MOVE TO NEXT ITEM:</u> To go forward to next prompt, such as from Heading 1 to Heading 2, without affecting current entry.	RETURN	ENTER	F4 ↓
<u>RETURN TO PREVIOUS SECTION:</u> To back up to previous section, such as from Notes to Headings, without affecting current entry.	PgUp	PG UP	F5
<u>MOVE TO NEXT SECTION:</u> To move you forward one section, such as from Headings to Notes, skipping one entry section or retaining current.	PgDn	PG DN	F6
<u>ENTER NULL VALUE:</u> To erase a previous entry, or enter an empty value, such as beginning, ending or middles values on a line.	Del	DELETE	F7
<u>ENTER TEXT OR VALUE:</u> To enter data into the program, or complete a prompt sequence.	RETURN	ENTER	
<u>GRAPHICS TOGGLE:</u> Switches between graphic preview and menu output on screen without repeating chart composition.	Not Shown	F8	

Table I-2: Using Function Keys with Graphwriter

Selecting a Graphwriter Format

Graphwriter helps you produce high quality charts to use in your reports and presentations. With Graphwriter, you produce charts that are visually attractive and will communicate your message effectively. Graphwriter provides you with a variety of formats, each of which is useful for presenting a specific type of message. The impact of this message depends more on the format used than the data. You can lose the effect of the most remarkable data if it is presented in a format that emphasizes the wrong aspect.

You use charts effectively if you take a few moments before creating a chart to plan what you want to say and how you want to say it. This chapter outlines the most important principles of good graphics, and introduces you to the Graphwriter formats.

Take a few moments to study the chapter. It will help you do the following:

- Decide on the message you wish to communicate with your chart.
- Plan your presentation.
- Select the best format with which to make your point.
- Choose style characteristics to emphasize your message.

Deciding on the Message

The most important step in using graphics well is deciding upon the message you wish to convey with your chart. It is ineffective to present too much data, since your audience may not be able to sift through it for your message. Instead, choose data that leads to a specific conclusion, and let this conclusion make your point.

In addition to deciding the point of your chart, try to make only one point per chart. Good charts communicate instantly to your audience. But instant communication occurs best for one message at a time. If you have more than one point to make, use multiple charts.

Also, be sure your data is well adapted for graphic presentation. For example, an effective chart may show that one sales division has outperformed all the others over the past year. On the other hand, a summary table of sales information for the whole year belongs in an appendix, not a chart.

Or, if you wish to persuade your Board of Directors to approve the introduction of a new product, use a chart to emphasize long-range potential and profit. Save the information you used for analysis for the printed page.

Planning Your Presentation

You have determined the message and desired result for your presentation. Now select an overall style for the chart. Include justification, font, color of headings, color combinations for data values, and layout. Chosen carefully, these will tie the presentation together and give it a professional look. Take advantage of the Graphwriter input forms, and the chart examples in Chapter 9. When used with the Format Selection Guide, they will help you choose the format which best fits your selected chart style.

Selecting the Best Format

Most charts involve comparisons. Frequently, the best reason for selecting a particular chart is the type of comparison you wish to make. You can simply compare current sales versus sales in previous years; or you can present a more complex analysis, such as the breakdown of a whole division's profit by product. No matter what you wish to emphasize, there are several Graphwriter charts that will work. But usually one format presents your message most effectively. The following sections outline some types of comparisons and the format you might use for them.

Trend or Time-Series Comparisons

You will probably use trend or times-series comparisons most frequently. Although you can use both bar and line charts to show a time-series, your data should dictate which you choose. Discrete data works best with bar charts, and continuous data is best with line charts. However, if you use bars, always use vertical rather than horizontal bar charts to compare trends, to allow for the left to right progression of a time-series study.

Use the following Graphwriter formats for trend or time-series comparisons:

- B010 Column Chart (Vertical) Use this format to compare few items with wide fluctuation, or to compare data within a set period of time.

- L010 Line Chart Use this format to compare many items with less fluctuation, and for data with carry-over (e.g., production figures). Use dashed or dotted lines for projections or budgets; one darker line for emphasis.
- C010 Bar-Line Combination Use this format to show item fluctuation over time, and a cumulative trend.
- L030 Line-Table Chart Use this format when you wish to include tables of data values for clarity.

Note: L010, C010 and L030 are compatible formats, and will allow transfer of data within certain limits. See Format Compatibility in Chapter 11.

Comparisons Among Different Items

Item comparisons emphasize how individual items compare with each other. To avoid any time-series association, use horizontal bars to present item comparisons. The exception to this rule is when you wish to show how item comparisons are changing over time. Then a vertical clustered bar format is appropriate.

Use the following Graphwriter formats for item comparisons:

- B011 Bar Chart (Horizontal) Use this format to show how an item's value or quantity varies over time. Use extensions to the left to show unfavorable conditions.
- B030 Clustered Bars (Vertical) Use this format to show movements of items over time.
- B031 Clustered Bars (Horizontal) Use this format when you wish to show items in the most effective order--the vertical dimension is not scaled.
- B032 Grouped Bars (Horizontal) Use this format to compare 4 different sets of data, each with its own axis and number of bars.

- B040 Range Chart Use this format to show the spread between high and low amounts, and to emphasize the difference between ranges.
- B050 Paired Bars Use this format when you wish to show the relationship between two variables.
- B060 Horizontal Bars (inset labels) Use this format when you need a compact layout, with better use of vertical space.

Component Comparisons

A component comparison shows how individual items relate to one another within a whole. Graphwriter has several chart formats for such comparisons. All of the suggested formats have some sort of division within a whole (e.g., segments within bars, or slices within pies).

Use the following Graphwriter formats for component comparisons:

- B020 Segmented Columns (Vertical) Use this format to show the relative value of components within a set, especially in 100% bars. The X axis is unscaled.
- B021 Segmented Bars (Horizontal) Use this format when you wish to plot the bar and components against absolute rather than relative values.
- P010 Pie Chart (1 - 4 Pies) Use this format when you wish to give a clear impression of a total, with slices as a share or percentage of the whole.
- L020 Surface Line Chart Use this format when you wish to make a simple curve more impressive, with a greater feeling for quantities.
- B022 Double Stacked Bars Use this format when you wish to compare two aspects of the same set of components.
- C020 Pie-Bar Combination Use this format when you wish to present a total picture (using the pie), and a bar which itemizes the specifics from a slice of the pie.

Note: B020, B021 and L020 are compatible formats.
P010, B022 and C020 are compatible formats.

Correlation Comparisons

Correlation and regression comparisons show variations between two sets of items. Use a correlation comparison when you want to show the relative correspondence between two sets of data when neither set of items has pre-set values.

Use a regression comparison when you want to show how one set of items with values set at several different levels compares to another variable whose values are not pre-set.

Use the following Graphwriter formats for correlation or regression comparisons:

- S010 Scatter Plot (Regression) Use this format to draw a regression line to show the relationship between variables.
- S040 Bubble Chart Use this format to show correlation of a set of items against one standard item.
- B050 Paired Bars Use this format for comparison between one set of items plotted against two variables.

Other Chart Formats

Of course, comparisons are not the only reason to use charts and graphs. Graphwriter also includes the following formats, each of which has an intended use.

Use the following Graphwriter format for qualitative information:

- T010 Text/Word Chart This format produces effective written tabular reports, and title pages for slide presentations.

Use the following Graphwriter format for scheduling information:

- S020 Gantt Chart Use this format to show project schedules, and to isolate projects needing attention.

Use the following Graphwriter format for organization and flow charts:

- S030 Organization Chart Use this format to present charts showing organizational structure.

Use the following Graphwriter format for presenting tabular data:

- S050 Table Chart Use this format for presenting data as tables. Lines are frames or dividers.

Emphasizing The Message

After you decide on the message to communicate, choose the most appropriate chart, and select the format, you need to decide how to highlight or emphasize your message. Three ways to do this are: (1) select descriptive and concise headings and titles; (2) select appropriate scales for the axes and plot area; and (3) choose colors, fill patterns, line types, or line markers. More details on these methods for highlighting your message are below.

Selecting Headings and Titles

Use headings to make your point and reinforce your message. They can do much more for the data than just label it. The headings make a statement which emphasizes your message. For example, 1980 WAS A RECORD SALES YEAR is a much more powerful heading than SALES PERFORMANCE 1970-1980. If you use headings to communicate your message, then you need other text such as axis titles, pie titles, and legends to label the contents of your chart. Remember, your headings are for the message; the titles and labels explain the content of the chart.

Scaling the Chart

In most cases, scale your axes to accommodate the full range of your data values plus a slight margin. However, do not overlook changes in scaling as a means for emphasizing a point. You make data values appear smaller by extending the scale. Or you make data values appear larger by collapsing the scale (i.e., use a value greater than zero for the Y Min or X Min).

Choosing Color and Fill Patterns

Use color, fill patterns, line types or line markers to emphasize certain portions of your chart. This is a very effective means for directing the attention of your audience to the point you wish to make. Choose a particular bar, pie slice or line to emphasize. In the case of pie charts, you may also explode the pie slice to highlight it.

Highlighting is most effective when used with only one item or one contiguous group of items. If you try to highlight too many items, the result is usually distracting and chaotic. Be discriminating in your use of highlighting.

Also, do not overuse color. When used with discretion, it adds drama and

emphasis. Often the most attractive charts are those using only two colors for the graph itself and a third color, usually black, for headings and other text.

Use two colors in combination with differing fill patterns or line types to achieve distinction between more than two graphic shapes (bars, pie slices or lines).

One effective method for use of fill is in a continuous progression from dense to less dense patterns. Instead of placing a solid bar segment next to an empty segment, progress from a solid segment to a narrow crosshatch segment to an empty segment.

And, it is best to avoid changing colors and fill patterns at the same time. If you change color from segment to segment, use the same fill pattern. If you change fill patterns from segment to segment, do not change colors at the same time.



Setting up Graphwriter

This chapter tells you how to set up and run Graphwriter on your Floppy Disk Model 2000 and Hard Disk Model 2000; it covers the following:

- Graphwriter Disks
- Loading the MS-DOS Operating System.
- Set-up procedures for the Floppy Disk Model 2000:
 - Formatting disks
 - Using DISKCOPY to make copies of Graphwriter program and data disks
 - Using COPYDOS to prepare a bootable Graphwriter GW disk
- Set-up procedures for the Hard Disk Model 2000:
 - Formatting disks
 - Using DISKCOPY to make copies of Graphwriter disks
 - Installing Graphwriter files on the Model 2000 hard disk
 - Removing Graphwriter files from the Model 2000 hard disk

Prior to using the procedures in this chapter, you should have your equipment set up and ready to run. If you are not sure what equipment you need or how to connect it, see Appendix B, "Hardware Configuration," of this guide.

Graphwriter Disks

The complete Graphwriter program - the Basic and Extension Sets together make up the Combination Set - comes to you on a set of disks with the contents of each disk on the label for that disk.

The disk contents are as follows:

<u>Disk</u>	<u>Content</u>
GW	System disk with: - setup program - installation program - user-selected type fonts
GWA	Basic Set Format Programs
GWB	Part of Extension Set Format Programs - plus Device Drivers
GWC	Balance of Extension Set Format Programs

Loading the MS-DOS Operating System

1. Turn-on your Model 2000. Insert a work-copy, MS-DOS System Diskette into drive A.

press **RESET**

(or)

press **Ctrl + Alt + Del** simultaneously.

The MS-DOS system loads and after a few moments the copyright message appears.

If your screen remains blank, refer to your Introduction to the Model 2000 manual.

The program asks for date and time. Enter them and

press **RETURN**

You return to the MS-DOS prompt.

Set Up for Floppy Disk Model 2000 (Catalog #26-5103)

Formatting Disks

You must format any flexible disk before using it for the first time. To make backup copies of Graphwriter (the system, utilities, or format disks for both the Basic and Extension Sets) on double-sided disks, you will need to format a disk for every Graphwriter disk you receive. The FORMAT program is available within MS-DOS; use it to format disks on the Model 2000. The directions follow.

1. Load MS-DOS according to the instructions in the previous section.

You see the MS-DOS prompt.

2. To indicate you are formatting the disk in drive B:,

enter FORMAT B:/V RETURN

The program prompts you to put a disk in drive B.

Be sure the disk you wish to format is in the correct drive. Formatting erases everything on the disk that you are formatting.

3. Insert the disk you wish to format into drive B:, and

press **Any Key**

4. The formatting process begins and you will see the "Formatting tracks" message. When the formatting is completed with no errors, each dash in the message becomes a period. A question mark in place of a period indicates a flawed area. Do not use a disk with any flawed areas for backup. When FORMAT is completed, it asks if you want to label your diskette. If you wish to label the disk:

enter your label (11 characters max.) RETURN

Format displays "Format complete" and detailed storage data; and then the prompt:

"Format another (Y/N)?"

Press "Y" and repeat steps 3 and 4 for every disk you wish to format.

Using DISKCOPY to Make Backup Copies of Graphwriter Disks

To copy Graphwriter program disks, use the DISKCOPY program within MS-DOS.

1. Insert the MS-DOS boot disk into drive A. From the MS-DOS command,

enter DISKCOPY A: B: RETURN

You see the prompt:

"Insert source diskette into drive A:
Insert formatted target diskette into drive B:
Press any key when ready."

2. Begin with the GW disk as the source disk. Remove the MS-DOS disk, insert the source disk into drive A and a blank, formatted disk into drive B, and

press **Any Key**

The "in use" light comes on while the backup disk is being written. When the process is complete, you see the message:

"Copy complete.
Copy another (Y/N)?"

3. Press **Y**

and repeat these steps for each of the Graphwriter disks.

Using COPYDOS to Make a Bootable Graphwriter GW Disk

The Graphwriter GW disk does not contain MS-DOS; thus the disk is not bootable. You can boot your system from an MS-DOS system diskette in drive A and then replace it with the GW disk (in drive A) to execute the program. For greater convenience, however, you can make the GW disk bootable through the use of the MS-DOS utility, COPYDOS.

Do COPYDOS only once for each GW working disk. Follow these steps:

1. Insert a backup copy of your MS-DOS system disk in drive A and a backup of your GW disk in drive B.

2. At the MS-DOS prompt,

enter COPYDOS RETURN

3. At the MS-DOS prompt,

enter COPY MODE.EXE B: RETURN

COPYDOS and the COPYing of MODE.EXE to your GW working copy disk makes it a completely bootable disk.

Set Up for Hard Disk Model 2000 (Catalog #26-5104)

Formatting Disks

You must format any flexible disk before using it for the first time. The FORMAT program is available within MS-DOS which is assumed to be installed on your hard disk. To format disks on the Hard Disk Model 2000, follow these steps:

1. If you have turned-off your Model 2000, turn it on and start up MS-DOS under hard disk control.

You see the MS-DOS prompt.

2. To indicate that you are formatting a disk in drive A:,

enter FORMAT A:/V RETURN

You see the following prompt:

"Insert new diskette for drive A:
and strike any key when ready."

3. Insert a blank disk into drive A.

For making backup copies of Graphwriter (the system, utilities, and Format Program disks for both the Basic and Extension Sets) on double-sided disks, you will need to format a disk for every Graphwriter disk you receive.

Be sure the correct disk you wish to format is in the drive. Formatting erases everything on the disk that you are formatting.

Press Any Key

4. The formatting process begins and you will see the "Formatting tracks" message. When the formatting is completed with no errors, each dash in the message becomes a period. A question mark in place of a period indicates a flawed area. Do not use a disk with any flawed areas for backup. When FORMAT is completed, it asks if you want to label your diskette. If you wish to label the disk:

enter your label (11 characters max.) RETURN

Format displays "Format complete" and detailed storage data; and then the prompt:

"Format another (Y/N)?"

Press "Y" and repeat these steps for every disk you wish to format.

Using DISKCOPY to Make Backup Copies of Graphwriter Program Disks
To copy Graphwriter program disks, data files, and data disks, use the DISKCOPY program within MS-DOS.

1. From the MS-DOS prompt:

enter DISKCOPY RETURN

You see the prompt:

"Insert the formatted target diskette into drive A:
Press any key when ready."

2. Insert the blank formatted disk into drive A:

Press **Any Key**

The "in use" light comes on while the target disk is being checked.

You see the prompt:

"Insert the source disk into drive A:
Press any key when ready."

Begin with the GW disk as the source disk, and copy each disk in the set as follows:

3. Remove the target disk from drive A:, and insert the source disk. Now,

press **Any Key**

The "in use" light comes on while part of the source disk is copied into memory.

Follow the screen prompts to insert and remove disks. The copying proceeds, and when it is complete, you see the message:

"Copy complete.
Copy another (Y/N)?"

Press **Y**

and repeat these steps for each disk you wish to copy.

Installing Graphwriter Files onto the Hard Disk Model 2000

You install the Graphwriter Combination Set onto your Hard Disk Model

The fixed disk installation program is on the GW disk. Generally, the fixed disk drive is drive C: In the directions below, if your fixed disk differs, be sure to replace the "C:" with the volume name of your choice.

Note: You can install Graphwriter onto a subdirectory that you have created. For example, GWHD C:\MYFILES. You must specify a full pathname when installing Graphwriter on a subdirectory, because the pathname is included in the copy of Graphwriter running on the fixed disk. To install Graphwriter, perform the following:

1. Load the MS-DOS Operating System and enter date and time.

The MS-DOS prompt appears. To make certain that your default drive is A:,

enter A: RETURN

2. Insert the GW disk into drive A:

At the MS-DOS prompt,

enter GWHD C: RETURN

In a few moments you see the prompt:

"Insert GWA into A: drive.
Strike any key when ready."

3. Remove the GW disk from the A: drive, insert the indicated disk, and

press Any Key

Remove and insert the Graphwriter disks, as prompted, for both the Basic and Extension Sets until you see the following display:

"GRAPHWRITER COMBINATION SET INSTALLED ON C:"

You are now ready to begin using the Graphwriter Combination Set. Chapter 4, "Creating Your First Chart," explains how to begin.

Removing Graphwriter from the Hard Disk

When you install Graphwriter onto the Hard Disk Model 2000, three things happen:

1. The program file GW.COM is placed on the directory you specified in your GWHD.C:
2. A subdirectory called GWDIR is created on that same directory.
3. All of the Graphwriter program files and data files are placed in the subdirectory GWDIR.

If at some future time you no longer use your Hard Disk Model 2000 to run Graphwriter, you may wish to recover space on the hard disk. To remove Graphwriter from the hard disk, perform the following steps:

1. Delete the file GW.COM. For example, assuming you installed Graphwriter on C:, from the MS-DOS prompt,

enter DEL C:GW.COM RETURN

2. Delete all files in the Graphwriter directory. From the MS-DOS prompt,

enter DEL C:GWDIR*.* RETURN

You see the prompt:

"DEL C:GWDIR *.*
Are you sure? Y/N?"

enter Y RETURN

3. Remove the Graphwriter directory. From the MS-DOS prompt,

enter RMDIR C:GWDIR RETURN

Creating Your First Chart

By this time you have a general idea of Graphwriter's capabilities, and you should have completed some of the necessary preliminary steps. If you have not made backup copies of the Graphwriter system and format disks, or if you have not connected the plotter or printer to your Model 2000, please see Chapter 3, "Setting Up Graphwriter," and Appendix B, "Hardware Configuration."

This chapter provides step-by-step instructions for creating your first chart. Whether you are using a plotter or a printer, the procedure for producing charts is similar. Although the instructions are explicit, you may refer to Appendix C to see copies of all screen displays for the program run described in this chapter.

After you read this chapter and work through the example, you will recognize the most often used menus, and you will be able to create charts using other formats.

Selecting a Graphic Format

The first step in creating a chart is to select a graphic format which will emphasize the message you want your data to communicate. Write down your message in as brief a form as possible. A clear statement of your message helps you select the right format, and you can embody it in the heading of your chart. The Format Selection Guide, provided with Graphwriter, presents samples of all the formats available. The Demonstration Guide gives you, in abbreviated form, the information in this chapter.

The different formats vary primarily in the way they display your data. And, since each of the formats is best suited to emphasize data in a particular way, consider several before making your selection. For guidelines on selecting the most appropriate format, see Chapter 2, "Selecting a Graphwriter Format."

For your first use of a Graphwriter format program, we have selected Format B020: Segmented Bars (vertical) to show a component comparison. And we have provided sample data (Figure 4-1). These data are a composite of market data developed by International Data Corporation and published by Business Week, (February 15, 1983).

Organizing Data

After selecting the appropriate format, consider how best to organize your data. Using input forms, such as that below, simplifies data entry.

Graphwriter™		Input, side 2		B020 Segmented Bars (vertical)						
Titles			Scales							
<small>Print exactly as desired; observe character count maximum.</small>										
Heading 1	SMALL COMPUTER SYSTEMS EXPECTED		48	Y axis minimum	0					
Heading 2	TO REPRESENT THE LARGEST SEGMENT		48	Y axis maximum	70					
Heading 3	OF THE COMPUTER MARKET BY 1985		48	Y label interval	10					
Note 1	Chart by Graphwriter (tm) from		48	Y tic interval	5					
Note 2	Graphic Communications, Inc.		48							
Note 3	200 Fifth Avenue, Waltham, MA 02254		48							
X axis			48	Number of bars (1-20)	3					
Y axis	BILLIONS OF DOLLARS		48	Number of segments per bar (1-8)	3					
Bar legend										
Bar	Line 1	20	Line 2	20	Color	Pattern	Color codes	Pattern codes		
1	MAIN FRAME		COMPUTERS		BLUE	1	1 Black 6 Brown	1		
2	MINI COMPUTERS				BLUE	2	2 Blue 7 Violet	2		
3	WORD PROCESSORS		MICRO COMPUTERS		RED	3	3 Green 8 Turquoise	3		
4							4 Red 9 Gold	4		
5							5 Orange 10 Lime green	5		
6								6		
7								7		
8								8		
Data										
<small>Use additional forms for bars 13-20.</small>										
Bar (1-20)	Bar label	20	Segment values							
1	1975		10.6	1.2	.9					
2	1980		17.2	4.9	6.6					
3	1985		22.8	13.3	27.3					
4										
5										
6										
7										
8										
9										
10										
11										
12										
Comments										
Comment 1					Location					
Comment 2										
Comment 3										

Figure 4-1: Completed Input Form for B020: Segmented Bars (vertical)

Graphwriter provides a separate input form for each format program, to help you organize your data, or communicate it to the person actually producing your chart. Appendix F of this guide contains a complete set of these forms, as well as instructions for using them. As a Graphwriter user you are, of course, allowed to make as many copies of the copyrighted forms as you need.

As you become more familiar with the way the various format programs prompt for data, you will probably use the forms less frequently. Nonetheless, you always have the option of using them. And, if you have any questions about the data values for a particular format, refer to the input form for that format.

For your first time with Graphwriter, refer to the completed input form, shown in Figure 4-1. We have entered the responses you need to make to produce the chart shown at the end of the chapter.

Loading and Running a Graphwriter Format

Before you can enter the data to create a chart, start Graphwriter. To do so, perform the following steps:

Using the Floppy Disk System to Access Graphwriter

The following steps take you to the point at which you enter data, using the Flexible Disk System. If you are using Graphwriter on a Hard Disk, see the next section.

1. Select a format from the Graphwriter Format Selection Guide, then find the disk which contains that format. Be sure you have created a working copy of Graphwriter (see Chapter 3, "Setting Up Graphwriter").
2. Insert the MS-DOS system disk into drive A:, and boot your Model 2000. The MS-DOS copyright screen appears. You now enter time and date, and press **RETURN**.

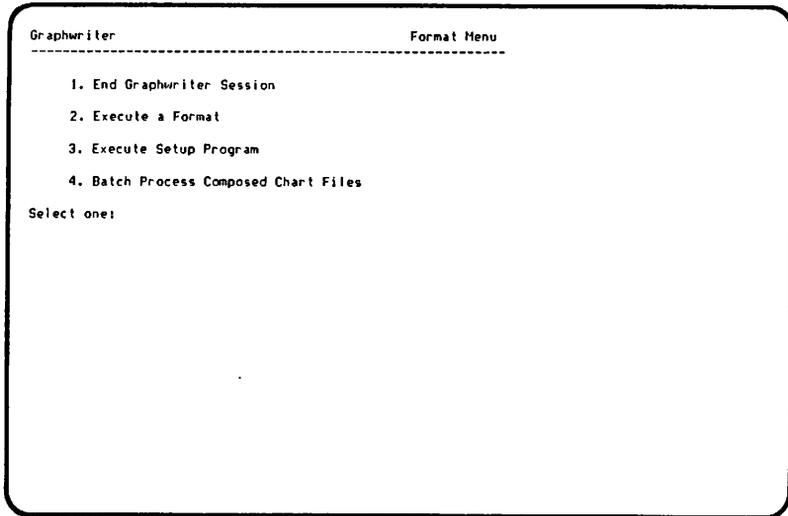
Note: When the program or document asks for **RETURN**, use the ENTER key. Its use indicates that a response is complete, or moves you to the next portion of the program if you do not wish to enter a response.

The use of **RETURN** at this point takes you to the MS-DOS prompt.

3. Remove the MS-DOS disk from drive A:, insert the GW disk into that drive, and

enter GW RETURN

The Graphwriter Copyright message appears, and after a few moments you see the Graphwriter Format Menu.



4. To execute a format, from the Graphwriter Format Menu,

press 2

If the GW disk is recognized by Graphwriter, the Select Graphwriter Format Menu appears.

Select Graphwriter Format

Basic Set	Extension Set
1. B010 - Column chart (vertical)	13. S020 - Gantt Chart
2. B011 - Bar chart (horizontal)	14. S030 - Organization chart
3. B020 - Segmented bars (vertical)	15. S040 - Bubble chart
4. B021 - Segmented bars (horizontal)	16. S050 - Table chart
5. B030 - Clustered bars (vertical)	17. C020 - Pie-Bar combination
6. B031 - Clustered bars (horizontal)	18. L020 - Surface Line chart
7. P010 - Pie chart (1-4 pies)	19. L030 - Line-Table chart
8. L010 - Line chart	20. B022 - Double stacked bars
9. S010 - Scatter plot (regression)	21. B032 - Grouped bars
10. C010 - Bar-Line combination	22. B040 - Range chart (bars)
11. T010 - Text/Word chart	23. B050 - Paired bars
12. - Unused	24. B060 - Horiz. bars (inset labels)

Select one:

5. Insert the format disk which contains Format B020 into Drive B:, and

enter 3 RETURN

or

enter B020 RETURN

The format program begins to run, and after a few moments you see the Select Starting Data Menu. To continue with the production of this chart, go to the section, "Entering the Data."

Using the Hard Disk System to Access Graphwriter

The following steps take you to the point at which you enter data using the Hard Disk System.

1. Be sure you have installed Graphwriter on the hard disk. (See Chapter 3, "Setting Up Graphwriter.")

2. Insert the MS-DOS system disk into drive A: and boot your Model 2000; or, if you have MS-DOS on your hard disk, simply power-up your Model 2000 with no disk in drive A. The MS-DOS copyright screen appears. You now enter time and date and press RETURN.

Note: When the program or document asks for RETURN, use the ENTER key. Its use indicates that a response is complete, or moves you to the next portion of the program if you do not wish to enter a response.

The RETURN at this point takes you to the MS-DOS prompt.

3. These instructions assume that your hard disk is "C:." If necessary, replace the C: in the prompt below with the correct label for your hard disk.

From the MS-DOS prompt,

enter C:GW RETURN

The Graphwriter copyright message appears, and after a few moments you see the Graphwriter Format Menu.

```
Graphwriter                               Format Menu
-----
  1. End Graphwriter Session
  2. Execute a Format
  3. Execute Setup Program
  4. Batch Process Composed Chart Files

Select one:
```

4. To execute a format,

press 2

When using the fixed disk system, immediately after making a choice of option 2, 3 or 4 from the Format Menu, the screen clears. A prompt asks you to insert the GW disk into drive A: If the GW disk you insert is recognized by Graphwriter, the program continues and the Select Graphwriter Format Menu appears.

```
Select Graphwriter Format
-----
          Basic Set                      Extension Set
          -----                      -----
1. B010 - Column chart (vertical)      13. S020 - Gantt Chart
2. B011 - Bar chart (horizontal)       14. S030 - Organization chart
3. B020 - Segmented bars (vertical)    15. S040 - Bubble chart
4. B021 - Segmented bars (horizontal)  16. S050 - Table chart
5. B030 - Clustered bars (vertical)    17. C020 - Pie-Bar combination
6. B031 - Clustered bars (horizontal)  18. L020 - Surface Line chart
7. P010 - Pie chart (1-4 pies)         19. L030 - Line-Table chart
8. L010 - Line chart                   20. B022 - Double stacked bars
9. S010 - Scatter plot (regression)    21. B032 - Grouped bars
10. C010 - Bar-Line combination        22. B040 - Range chart (bars)
11. T010 - Text/Word chart            23. B050 - Paired bars
12. - Unused                           24. B060 - Horiz. bars (inset labels)

Select one:
```

If the GW disk you insert is not recognized by Graphwriter the program asks you if you want to try again. When you answer "No," the program returns you to MS-DOS.

5. When using the hard disk system, you do not need to replace the GW disk with the format disk, as Format B020: Segmented Bars (vertical) is in memory on the hard disk. To specify this format,

enter 3 RETURN

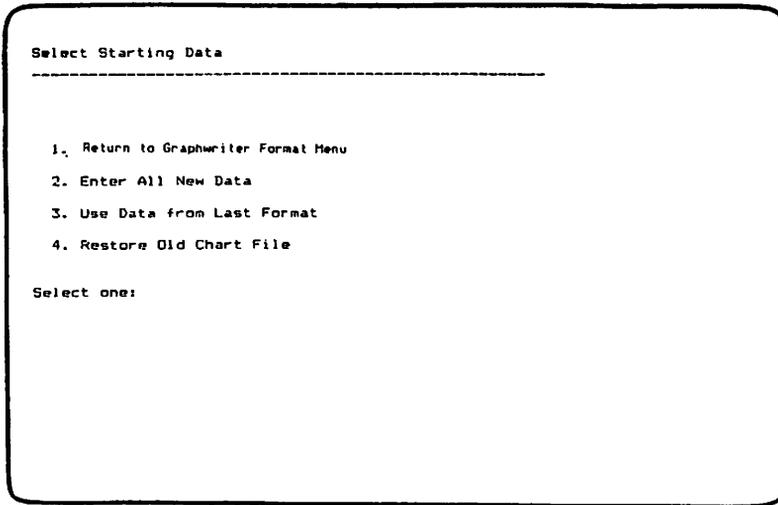
or

enter B020 RETURN

The selected format begins to run. After a brief pause, you see the Select Starting Data Menu.

Entering the Data

You use the Select Starting Data Menu, shown below, to specify the source of the data you are using.



```
Select Starting Data
-----

1. Return to Graphwriter Format Menu
2. Enter All New Data
3. Use Data from Last Format
4. Restore Old Chart File

Select one:
```

To enter your data, follow the steps below.

1. Select the "Enter All New Data" option. To do this,
press 2 "Enter All New Data"

From this option, in any format, the next screen display is the Main Menu for that format. In this case, the screen displays the Main Menu for Format B020.

Main Menu B020 - Segmented Bars (vertical)

1. Change to Another Format
2. Enter/Change Chart Data
3. Change Chart Style
4. Print Data
5. Store Chart
6. Plot Chart

Select one:

The Main Menu of any Format Program lists all the secondary menus available within that program. To select an option from the Main Menu of any Format Program, as well as from any of the secondary menus, simply press the numbered key corresponding to your choice. You do not need to press RETURN.

2. You now wish to enter data, so you select the Enter/Change Chart Data Menu from the Main Menu. To do so,

press 2 "Enter Change/Chart Data"

The Enter/Change Chart Data Menu appears:

Enter/Change Chart Data

1. Return to Main Menu
2. Enter Entire Chart from keyboard
3. Restore Entire Chart from a File
4. Enter/Change Headings only
5. Enter/Change Notes only
6. Enter/Change Axes only
7. Enter/Change Bars only
8. Enter/Change Legend only
9. Enter/Change Comments only

Select one:

3. The "Enter Entire Chart from Keyboard" option from this menu leads you through a series of prompts asking for all the specific data and information needed to create the chart.

Press 2 "Enter Entire Chart from Keyboard"

and you see the following display (the entries you are to make are included and underlined):

Enter headings

Heading 1 is unspecified :
Enter new heading 1: SMALL COMPUTER SYSTEMS EXPECTED
Heading 2 is unspecified :
Enter new heading 2: TO REPRESENT THE LARGEST SEGMENT
Heading 3 is unspecified :
Enter new heading 3: OF THE COMPUTER MARKET BY 1985

4. Enter the first heading shown on the input form. In this case, you enter SMALL COMPUTER SYSTEMS EXPECTED RETURN

If you do not want to respond to a prompt (for example, if you use two lines for headings and wish to skip the third line), press RETURN at that prompt. You will go to the next item prompt.

Note that each text entry has a limit on the number of characters it can contain. A colon-like symbol (!) in the prompt line immediately above the entry line denotes a limit. If you exceed this limit, the program warns you and tells you how many characters you can enter. (Tables in Appendix A, "Graphwriter Capabilities," and the input forms contained in Appendix F show maximum limits for characters in each format.)

If, before you press RETURN, you discover a mistake in the line of information you are currently entering, simply use BACK SPACE to erase the error, then re-enter the correct information and press RETURN.

To correct errors made on lines you entered before, return to the entry line by using the ↑ key or F3 to return to the previous item, and the PgUp key or F5 to return to the previous section. Then re-enter the correct information and press RETURN. If you want to erase information you entered previously, return to the appropriate prompt, then press the Del key and RETURN.

You can correct other mistakes by returning to the Enter/Change Chart Data Menu after data entry is complete. Chapters 7 and 8 explain in greater detail how to make changes.

5. Enter the remaining headings. The program prompts in sequence for the rest of the information you need to produce the chart. The prompts include sections for:

- Notes
- Axis titles and scales
- Text for legends
- Bar color and fill
- Bar data

If at any time you are uncertain about what the requirements are, press HELP for additional information. Again, we remind you that Appendix C shows the screen displays we are describing, with the responses underlined. If you haven't already done so, you might want to follow it as you enter the remaining data from the completed input form.

You may leave a prompt sequence of the Enter/Change Chart Data Menu at any time by pressing Esc, which returns you to that menu. (If you do press Esc before completing all the sections for data entry, the program retains your previously entered information. Use Esc in the same way for any menu.)

When you finish entering all the data, the program automatically returns to the Enter/Change Chart Data Menu.

You are now ready to plot.

Plotting Your Chart

If you wish to print your data to check it for errors, refer to the Print Data Menu in Chapter 7, "Reference: Menus." If you wish to preview your chart on the screen before plotting, use option 4, "Preview on Screen," from the Plot Chart Menu shown below. (See Step 3 of this section.)

You use the Plot Chart Menu for plotting your chart, but to get there from the Enter/Change Chart Data Menu, you must first return to the Main Menu. Follow the steps below.

1. First make sure that the plotter you wish to use is installed. (Refer to Appendix B, Hardware Configuration.) Then, from the Enter/Change Chart Data Menu,

press **1** "Return to Main Menu"

2. From the Main Menu you can go to the Plot Chart Menu.

Press **6** "Plot Chart"

and the Plot Chart Menu appears.

Plot Chart

1. Return to Main Menu
2. Fast Plot on Plotter/Printer
3. Full Plot on Plotter/Printer
4. Preview on Screen
5. Store Composed Chart in File
6. Graphics only on Plotter/Printer (no text)
7. Change Plot Options:

Color Range	color plot	Page Size	A (ANSI 8.5 x 11 in.)
Medium/Pen set ..	plain paper	Orientation	horizontal
Plot area	full page	Graphic Device ...	HP 7478A

Select one:

- If you wish to see a preview of your chart on the CRT screen before producing it on the plotter or printer, your computer must be set up for screen graphics. Make sure your Model 2000 is equipped with the Graphics Option Board.(Refer to Appendix B.)

From the Plot Chart Menu,

press 4 "Preview on Screen"

The program then displays a status message saying it is composing the chart. The composing process is the way Graphwriter arranges all your data and information on the page to produce the best-appearing chart.

After a few moments the screen preview appears, as shown below.

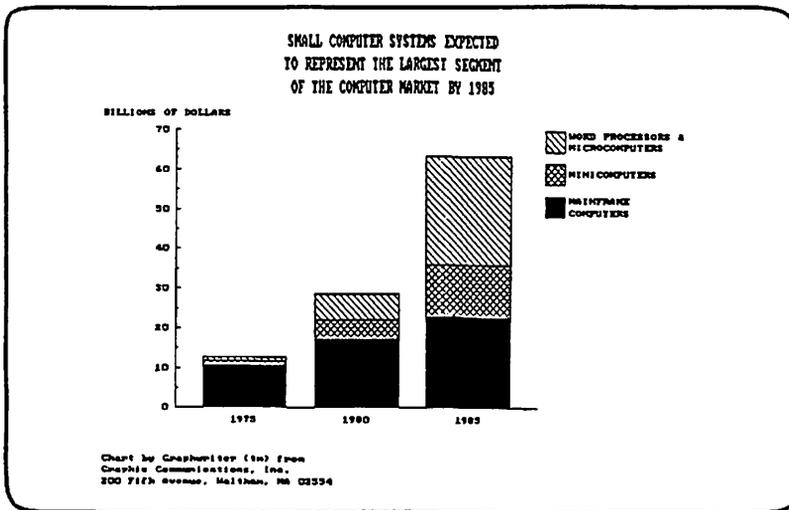


Figure 4-2: Screen Preview of Segmented Bar Format (B020)

- If you are satisfied from the screen that your plot is accurate, to return to the Plot Chart Menu,

press RETURN

Before choosing to plot on the graphic output device, be sure that

(1) it is connected to the computer;

(2) it corresponds to the graphic output device listed on the Plot Chart Menu;

(3) it is turned on and loaded with pens and paper.

5. Press 3 "Full Plot on Plotter/Printer"

If you are using a plotter, the program at this point reminds you to load paper into the plotter and to verify that the proper pens are in your plotter.

6. Then, to continue,

press RETURN

If, during the plotting, your chart requires additional pen colors, the program pauses and instructs you to insert them. After doing so, to continue,

press RETURN

Remember that you can interrupt the plot by pressing Esc. If you do so, the plotter continues to plot briefly, and then returns you to the Plot Chart Menu.

Figure 4-3 shows a reduced size, black and white example of the chart produced on a plotter, using the data you have entered.

SMALL COMPUTER SYSTEMS EXPECTED TO REPRESENT THE LARGEST SEGMENT OF THE COMPUTER MARKET BY 1985

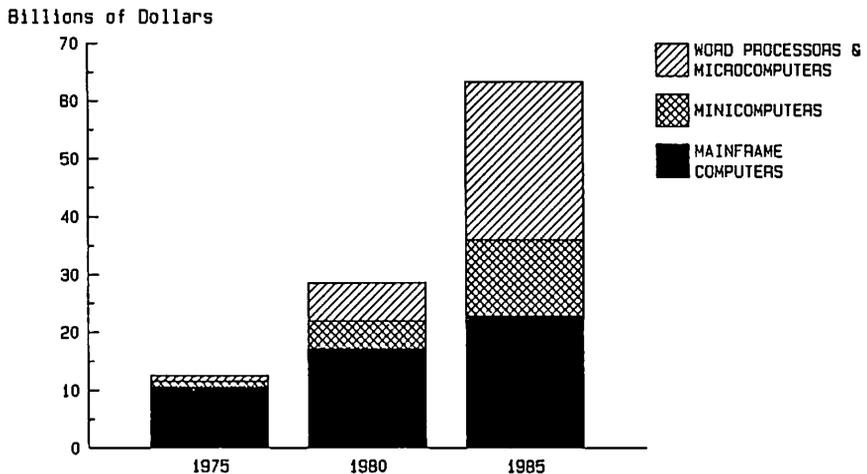


Figure 4-3: Chart Created with Segmented Bar Format (B020)

7. To return to the Main Menu from the Plot Chart Menu,
press | "Return to Main Menu"

If you wish, now is a good time to experiment with some of the other options available within Graphwriter. Read Chapter 5, "Learning More About Graphwriter," for a general idea of how the system works. Refer to Chapters 7 through 13 for answers to specific questions that might come up as you use the system.

If you do not wish to experiment or run any other format programs at this time, remove your disk(s) and turn off the system.

You now have firsthand experience using a Graphwriter Format Program and have seen how easy it is to create a standard, well-designed chart. But you can do much more with Graphwriter's extensive capabilities and sophisticated features.



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Learning More About Graphwriter

You now have a basic understanding of Graphwriter. In Chapter 4 when you created your first chart, you saw how simple menus and prompts guided you through the necessary steps to create the chart. However, the more you know, the better you can use Graphwriter's extensive capabilities to create and customize charts.

This chapter gives you a comprehensive view of Graphwriter. From it, you learn what a chart is made of, what the menus do, and how they relate to one another. Also, you will see more clearly how to move through the programs by selecting menu options, responding to prompts, and using function keys.

For detailed instructions about how to use the menus and follow the prompts, refer to Chapter 7. For information on specific programs, see Chapters 9 through 11.

What Is a Chart?

Bars, pies, or lines, located on a real or implied grid, along with descriptive text and numbers, make up a chart. All these things--bars, pies, grid, and text--are chart elements, and each one has associated style characteristics, such as color, size, and location.

Chart Elements

Chart elements are visual representations of the data you enter into the computer to create a chart. You can make changes to these elements, plot them, and store them. You do so by selecting menu options and following prompts as you did when you created your first chart.

The chart elements fall into three groups--graphic shape, grid, and text. Bars, pies, and lines are examples of graphic shape elements. Axes (X and Y) and tics are examples of grid elements. Headings, notes, and data values (the numbers which establish the size and location of the graphic shapes) are examples of text elements.

Figure 5-1 shows a sample bar chart illustrating most of the typical chart elements and their usual locations. Arrows and labels point to the grid and graphic shape elements, while the text itself identifies a text element. For instance, "Heading Number 1" indicates the text element which is the first heading.

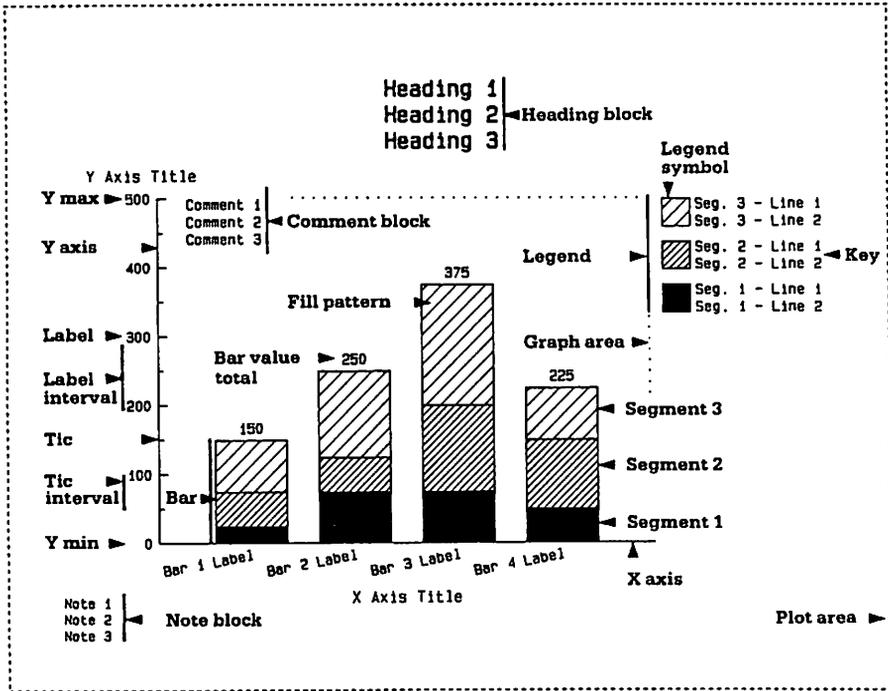


Figure 5-1: Sample Chart With Labeled Elements

Usually, elements within a group share similar style characteristics. For instance, for most text elements you can specify and change the character size, color, and font. For graphic shape elements, you can specify and change color and fill pattern or line type. However, for grid elements, which are more diverse than the other groups of elements, the style characteristics, which you can specify, are also more diverse. Refer to Chapter 8 to see the specific characteristics and their default values for elements in all groups.

Style Characteristics

In a general sense, style refers to the way a chart element looks and where it appears on the page as well as to the entire page layout of the chart. More specifically, a style characteristic is a property of a chart element. For instance, in Figure 5-1 you see that headings appear centered at the top of the page. Their location is a property or style characteristic. You also see different fill patterns within the bars; these are style characteristics of the bars. Compare "Heading 1" with "Y Axis Title." You see differences in size and in the appearance of the characters; these are style characteristics.

Each Graphwriter format has pre-set (default) specifications for the basic style characteristics--location, color, character size, and frame type--to name a few. This prevents you from creating a chart that is poorly laid out or is too complex--a chart that interferes with your message. Without making any style choices, you produce a well-designed chart that clearly presents the point you wish to communicate.

On the other hand, you may choose style characteristics. You can override the default style specifications to create charts with your own choices.

Creating a Chart

You create a chart with Graphwriter by selecting options from the menus and entering your responses to the simple English prompts. Although Graphwriter offers a variety of formats to choose from, each program for a format is similar in structure and function. Each has the same types of menus--entering data, changing data, and plotting--but the specific options vary. Also, the prompt-response sequences vary to fit the data requirements of each format.

By looking at the Menu Map in Figure 5-2, you get an idea of Graphwriter program structure. As you see, each program begins with the Graphwriter Format Menu.

To run a program to create a chart, you select the "Execute a Format" option. You then see a display of the possible formats to choose from, and you choose one. The program loads into the computer and displays the Select Starting Data Menu, which allows you to select how you enter data. You can enter data in three ways:

- You can enter all new data from the keyboard or from a data file, such as SYLK or DIF. (See Chapter 12 for information on how to use data files.)
- You can read in data from a stored chart file--one previously created with the same or a compatible format. (See Chapters 9 and 11 for information on compatible formats.)
- You can use data from the most recently used chart--again, if it is compatible with the current format.

When you enter all new data from the keyboard or a file, the default style characteristics for that format are used unless you specify others. When you use data from previously created charts, the style characteristics of those charts come with the data--again, unless you change them.

After you select the kind of data you will enter, you go to the Main Menu of the format you have chosen. This is the point which leads to the various sub-menus. The Menu Map which follows shows the branching within the program.

Menu Map

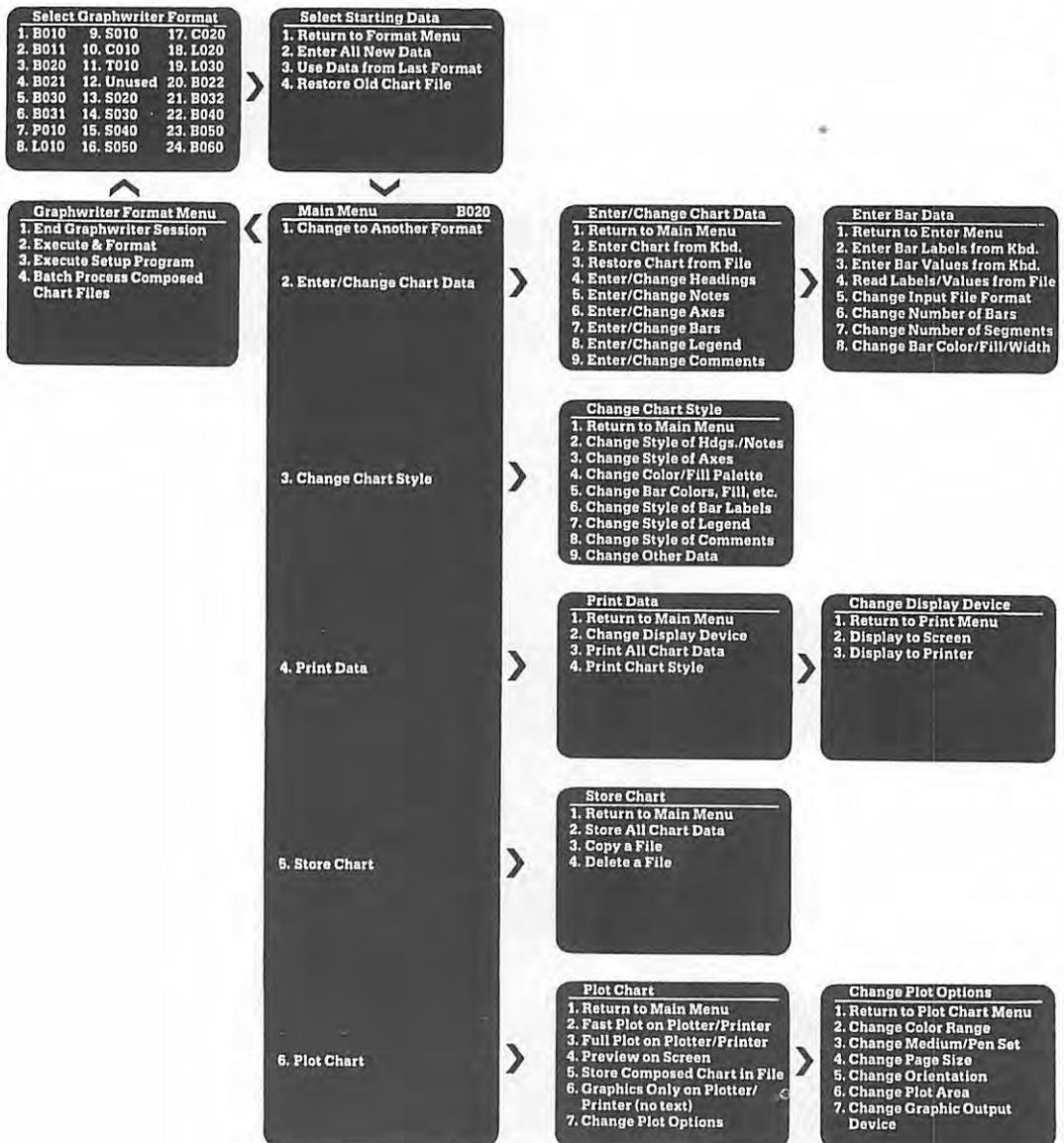


Figure 5-2: Menu Map Showing Graphwriter Program Structure

Menus

Each menu branching from the Main Menu relates to one of the major steps required to produce a chart, such as entering data, changing data, and plotting the chart. And each menu lists several options or ways to perform the major step.

When you select an option from one of these menus by pressing the numbered key corresponding to your selection, you go to another menu or to a prompt-response sequence. After you complete a prompt-response sequence, you automatically return to the menu from which you started the sequence.

You may select any option from the Main Menu and successive menus. However, when going from one sub-menu to another, you must first return to the Main Menu then move to the selected sub-menu.

Type-Ahead

As you probably realize by now, Graphwriter allows you to create complex charts by selecting menu options to move between menus. Even as a beginner you will find it easy to move between menus. However, as you become more proficient, you might want to move more quickly between non-adjacent menus. The type-ahead capability allows you to do this.

Because there is a hierarchy of menus below the main menu, you make successive menu selections as you move through the program. Normally, you wait for each menu to appear before selecting the next menu option. However, to move more rapidly between menus, you can make successive menu selections without waiting for any of the intermediate menus to appear.

Refer again to the Menu Map on page 5-4. It is for Format B020, Segmented Bars (vertical). Since the structure of all Graphwriter formats is similar, a study of this menu map will suggest how you can use the type-ahead capability.

Let us suppose you want to go from the Enter/Change Chart Data Menu to the "Preview on Screen" option of the Plot Chart Menu.

As a beginner, to move from the Enter/Change Chart Data Menu, you

press 1 "Return to Main Menu"

and wait for the Main Menu to appear. From the Main Menu you

press 6 "Plot Chart Menu"

and wait for the Plot Chart Menu. Then to select the "Preview on Screen" option, you

press 4 "Preview on Screen"

and the plot on the screen begins.

You can shorten the sequence by using type-ahead, which means pressing the keys in quick succession.

From the Enter/Change Chart Data Menu

press 1 + 6 + 4

without waiting for any of the intermediate menus to appear. A minor limitation is that you can't do type-ahead through the composing sequence. For instance, after you request an option from the Plot Chart Menu, the program starts to compose then says "Press RETURN to continue." You cannot use type-ahead and press RETURN before you see the prompt.

If, while using type-ahead, you hear beeping noises from the computer, it simply means you are going too fast, or have pressed too many keys. Slow down, or reduce the number of keys pressed.

Prompts

You should now have a good idea of what you can do at each menu and how to move between menus by selecting options. We have not, however, discussed in detail how you perform a particular function within a menu. Let's take a closer look at what happens when you select a menu option.

Usually, when you select a menu option, you go through a prompt-response sequence. This is how the program asks you to supply the information to perform a specific task.

The prompts are open-ended or multiple choice questions, phrased in simple English. To respond, you either enter text or numbers to supply needed information, press a function key, or press RETURN to continue the program.

Basically, you use a prompt-response sequence whenever the program needs specific information. For instance, the prompt-response sequences in the Enter/Change Data Menu ask you to specify chart elements you need. That is, they ask for headings, notes, information about axes, and data values and labels.

The prompt-response sequences in the Change Chart Style Menu ask you to specify style characteristics. That is, they ask you to specify character size, color, and font for headings and notes; they ask for fill patterns and color choices for bars.

Prompt and Response Conventions

The Graphwriter prompt-response sequences use several conventions.

Specified and Unspecified Values

All prompts begin by identifying the chart element or characteristic to which the prompt refers. The current value for the element or characteristic follows.

If you have already specified an element or characteristic, you will see it in the prompt. For example, if you have entered the Y axis title and go back to change it, you will see:

"Y axis title isBillions of Dollars

Enter new Y axis title: "

If you have not specified the value for an element or characteristic, the value appears as unspecified. For example, when entering data, you would see

"Number of bars isunspecified.
Enter new number of bars: "

Any time you wish to retain the existing value for an element or to leave it unspecified, you simply

press **RETURN**

Any time you wish to erase a previously entered response, return to the original prompt line. Then press **Del**.

Character Limits

There is a limit to the number of characters you may use in any particular text item. For headings, this limit is 48 characters per line; for bar labels it is 20 characters. If you do exceed the limit, the program immediately tells you. However, if you want to check the limits before running a program, look at the corresponding input form.

A colon-like symbol in the prompting line indicates the character limit, as you see in the following screen display:

Enter bar labels

```
Bar 1 label is ..... unspecified      |
Enter new bar 1 label: 1975

Bar 2 label is ..... unspecified      |
Enter new bar 2 label: 1980

Bar 3 label is ..... unspecified      |
Enter new bar 3 label: 1985
```

Starting with All

When you specify style characteristics for a group of chart elements, such as headings, notes, or bar values, the program asks which element you wish to start with. If, in response to this prompt, you

enter All RETURN

you can specify style characteristics for the entire group of chart elements at one time. For instance, if you want all your headings to be black, 7.0 mm, and left-justified, you don't need to repeat those specifications for each heading. Just

enter All RETURN

Of course, if you want each heading to have different style characteristics, you specify characteristics for each heading individually.

Function and Special Keys

Graphwriter uses function keys to facilitate your movement within a prompt-response sequence, and special keys, such as BACK SPACE (to remove characters), and RETURN (to continue program operation).

Normally, you enter a prompt-response sequence and proceed item by item to the end. However, by using the function and special keys, you may move forward or backward, or leave a sequence before completion. Refer to Chapter 1, "Introduction," for specific instructions concerning

the use of these keys with your computer. One of the most useful keys is HELP which you should use any time you are unsure of how to respond.

Chart Composition

A unique feature of Graphwriter is its chart composition capability. Chart composition is the process whereby Graphwriter uses the specific data you have entered to layout your chart. The layout is done for the output device and output specifications you have chosen. In this process, Graphwriter simulates the work of a graphic designer, to ensure an attractive chart.

As it composes a chart, Graphwriter considers the following:

- The format selected
- The output device (such as plotter or printer)
- The size and proportions of the character font
- The size of output
- The orientation (i.e., horizontal or vertical) of the output
- The medium for the output (paper, transparency, film)
- The size and number of headings
- The size, number, and length of labels
- The size and length of legends
- The size, number and length of footnotes

During composition, Graphwriter assigns locations for all the chart elements, based on a consideration of the above factors. Also, during composition, Graphwriter sorts the chart by color. This avoids unnecessary pen changes when plotting.

Because of chart composition, Graphwriter can allow you the flexibility to change location, size, length and other attributes of your chart elements, yet still produce an attractive, well-designed chart. And, perhaps most important, Graphwriter can accommodate the different resolution characteristics of pen plotters, printers, and film recorders. Character fonts can be adapted to each class of output device, and Graphwriter will automatically compose your chart in a manner suited to each type.

Chart composition occurs automatically when you choose to create a chart, either on your CRT screen or on a hard copy output device. Graphwriter will re-compose your chart whenever you change output devices or otherwise leave the Plot Chart Menu.

Once a chart has been composed, it becomes format independent. All of the layout intelligence of a Graphwriter format program is incorporated into the composition process for that format. A Composed Chart File can be plotted independently of the format program used to create it. For this reason, Composed Chart Files are the basis for batch processing charts using Graphwriter.

Summary

By reading this chapter you should have gained a comprehensive overview of how Graphwriter works.

Chart Elements and Style Characteristics

Chart elements and their style characteristics make up charts. These chart elements are of three types: graphic shape, grid, and text. The location of the chart elements on the page, and the way they look, are their style characteristics.

Creating a Chart

You create charts by selecting options from menus and entering keyboard responses to prompts. To move from one menu to another, you select options, but you can speed up this process. Instead of waiting for a menu to appear, you can use type-ahead.

Function and special keys facilitate use of the program and movement through the program. The most important of these keys is **HELP** which provides extensive on-line assistance for any questions you might have about how to proceed.

Chart Composition

Chart composition is like a built-in artist. With this feature, Graphwriter composes a chart of high quality.

Customizing Graphwriter

Graphwriter provides you with a wide range of pre-designed formats. Each format has pre-set values for its chart style characteristics and by using these you can create charts quickly and easily. You can, however, modify any of the characteristics to design a custom chart.

To create your own formats, you select new style characteristics and plot options, then store your choices in style files. These choices become the new pre-set style characteristics or default values Graphwriter uses.

If you wish to review the default style characteristics which came with your Graphwriter programs, see Chapter 8, "Reference: Chart Elements and Style Characteristics," and Chapter 10, "Reference: Text Format."

This chapter explains how to:

- Create Style Files
- Set Default Plot Options
- Set Default Palettes
- Set Default Data File Characteristics

Creating Style Files

Creating your own style files requires three simple steps.

1. You decide on the style options you want for your chart.
2. You start up your chosen format program, and, as it runs, change the style options to values you wish to retain.
3. You store this file, with its new defaults, on a data disk (or on your fixed disk).

You can make your changes with or without using data. For example, if you always want the first heading to be your company name in blue, you can enter your company name for Heading One and change the color to blue. Or, if you just want the first heading to be blue regardless of content, simply specify blue as the Heading One color. You can continue this process to make any number of changes.

Temporary Changes

The style file you create can either be used for "temporary changes" or "permanent changes" of the style characteristics, depending on how you name and store the file. For temporary changes, you may name it anything you like, but should probably use a name which indicates the particular format. After you have made all the desired temporary changes, you store the file on a data disk with the name of your choice. You do this by using the Store Chart Menu (page 7-20).

When you use a stored file whose changes are temporary, you must recall that file each time you want to use it. To do this, from the Select Starting Data Menu (page 7-9) you select option 4, "Restore Old Chart File." The program prompts you for the file name, which you enter. The program reads the stored style file, and you now have the new set of style characteristics and can go on to enter your data.

You can use the style file created with and for a particular format for any other format in the same family. See Chapter 9 for a discussion of compatible formats in the Basic Set and Chapter 11 for a discussion of compatible formats in the Extension Set.

Permanent Changes

If you wish to change the default characteristics permanently for a particular program, you do so by using the procedure outlined below. Because this procedure changes the default style characteristics for Graphwriter, be sure you have backup copies for each of your Format Disks before you proceed.

Again, after you make all the desired changes, use the Store Chart Menu to store the chart. But you store the new style characteristics file on the Graphwriter Format Disk (or your fixed disk under the correct volume name) rather than on a data disk.

The file name you use should include the format number, a period (.), and the suffix, "SDB". For example, if you want to change the style characteristics for Segmented Bars (Format B020) permanently, use B020.SDB as the file name. Similarly, for the Pie Chart (Format P010), use P010.SDB as the file name.

If you wish, you may repeat this process with all of the Graphwriter formats to create your own unique set of formats.

You should note that any style characteristics you do not change when you create your new file remain at the original default settings. Also, you may follow this procedure as often as you wish to pre-set style characteristics for a particular program. So "permanent" really means "lasting as long as you choose."

To use style files with permanent changes, you simply run the format program as usual. The program automatically uses the new style files. You do not have to specify on the Select Starting Data Menu that you wish

to restore an old chart file as you did when you created temporary style files.

Setting Default Plot Options

In addition to changing style characteristics for various formats, you may find that you want to change plot characteristics of the chart. For example, you may want all your formats to use a vertical orientation, or to be black and white, or to be on transparencies.

The plot options you can change are

- Color Range
- Medium/Pen Set
- Plot Area
- Page Size
- Orientation
- Graphic Output Device

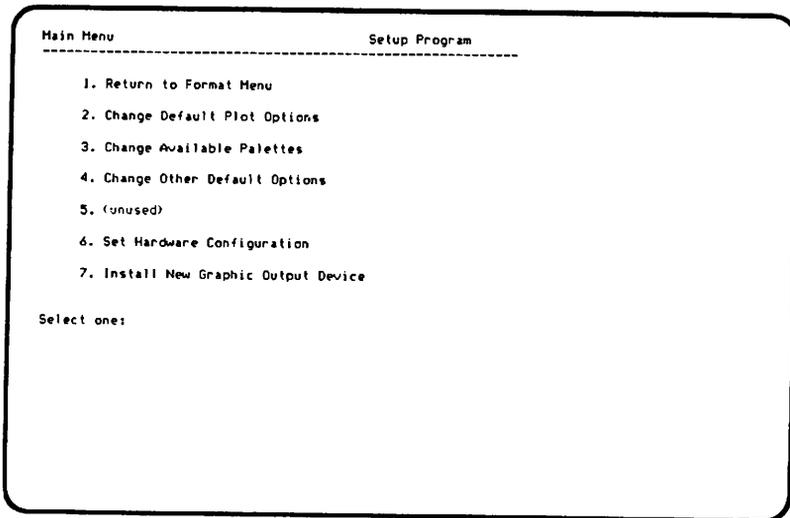
If you wish to change the plot options for any one format, you do so by creating a new style file for either temporary changes or permanent changes as instructed above. Use the Change Plot Options Menu which you reach from the Plot Chart Menu.

If you want to change these options for all formats, then follow the procedure outlined below.

I. From the Graphwriter Format Menu

press 3 "Execute Setup Program"

The Main Menu for the Setup Program appears.



2. From the Setup Program Menu,
press 2 "Change the Default Plot Options"
3. From the Change Plot Option Defaults Menu,
press (Number for plot option to be changed) RETURN
4. To display a list of the available options,
press HELP
5. To change the option,
enter (new setting) RETURN
6. From the Change Plot Option Defaults Menu,
press 1 "Return to Setup Menu"
7. From the Setup Menu,
press 1 "Return to Format Menu"

You are now ready to continue using your Graphwriter programs with the new pre-set plot options.

Setting Default Palettes

Graphwriter formats use default palettes to provide the initial values for colors, fill patterns, line types, and point markers. These stored palettes contain aesthetically pleasing combinations of color and fill patterns, or color and line types, etc. You may, however, specify that wherever formats assign style characteristics such as color and fill patterns, they use your pre-set palettes as defaults.

Before changing palettes, you should understand what palettes are and how Graphwriter uses them.

Palettes Defined

A palette consists of eight pairs of palette elements. One member of each pair is color; the other member of a pair is fill pattern, or line type, or marker type, depending on the palette. If a format, such as segmented bars, requires the use of more than one pair of elements, i.e., color and fill pattern, the program uses the first pair on the palette for the first bar segments, then "rotates" the palette to use the second pair for the second bar segments.

Suppose the pre-set palette is

Black	Solid Fill
Black	Narrow Crosshatch
Black	Narrow Right Hatch
Black	Narrow Left Hatch
Black	Wide Crosshatch
Black	Wide Right Hatch
Black	Wide Left Hatch
Black	Empty

The format program uses the first color/fill pair (Black--Solid Fill) for the first bar segments. The second bar segments use the second color/fill pair (Black--Narrow Crosshatch).

Or suppose the pre-set palette is

Black	Solid Fill
Blue	Narrow Crosshatch
Green	Narrow Right Hatch
Red	Narrow Left Hatch
Orange	Wide Crosshatch
Brown	Wide Right Hatch
Violet	Wide Left Hatch
Turquoise	Empty

The program then selects, for the first bar segments, Black--Solid Fill. For the second segments the program selects Blue--Narrow Crosshatch. Of course, you may respecify any palette values by using the Change Chart

Style Menu or the Enter Bar (Pie,Line) Data Menu. You may not, however, be aware that you are doing so, because the prompts ask you to specify color and fill pattern or line type choices rather than palette choices.

Graphwriter comes with a set of 10 palettes for line types, 10 palettes for marker types, and 10 palettes for fill patterns. You can change the combinations of pairs of elements, i.e. color and fill pattern, color and line type, or color and marker type, in any of these palettes. Recall that you can change the name of any palette, and that you can make these changes for all formats or for any individual format.

Creating New Palettes for all Formats

As you create new palettes, consider how the palette elements will work together. Frequently, you will want to create palettes in which one set of elements, such as color, changes, while another set, such as fill pattern, is constant. The procedure outlined below describes how to create and store your own palettes as well as how to change the palette name.

1. From the Graphwriter Format Menu,
press 3 "Execute Setup Program"
2. From the Setup Program Menu,
press 3 "Change Available Palettes"

You will then see the following menu:

Changing Available Palettes

1. Return to Setup Menu
2. Change Available Bar Color/Fill Palettes
3. Change Available Color/Line Type Palettes
4. Change Available Color/Marker Type Palettes
5. Set Default Palette(s) for Each Format

Select one:

3. From this menu, select the type of palette you wish to change.
4. For the palette type you choose, select the palette you wish to change. In response to the prompt

```
"What palette do you want to change?  
Enter palette number "
```

```
enter      (palette number)   RETURN
```

For a list of the available palettes,

```
press      HELP
```

5. If you wish to change the name that references the palette, in response to the prompt:

```
"Enter new name for palette."
```

```
enter      (your name for palette)   RETURN
```

6. You will see a series of prompts similar to the one below, which identify the current value for each palette element and ask for a new value.

```
Changing Colors in Palettes  
-----  
  
Palette element 1 is currently ...red.  
Enter new palette color .....  
  
Palette element 2 is currently ...green.  
Enter new palette color .....  
  
Palette element 3 is currently ...blue.  
Enter new palette color .....  
  
Palette element 4 is currently ...black.  
Enter new palette color .....  
  
Palette element 5 is currently ...red.  
Enter new palette color .....  
  
Palette element 6 is currently ...green.  
Enter new palette color .....  
  
Palette element 7 is currently ...blue.  
Enter new palette color .....
```

7. Then you see a series of prompts for fill pattern or line type or marker type.

Changing Fills in Palettes

```
Palette element 1 is currently ...solid fill.
Enter new palette fill type .....:

Palette element 2 is currently ...narrow crosshatch.
Enter new palette fill type .....:

Palette element 3 is currently ...narrow right hatch.
Enter new palette fill type .....:

Palette element 4 is currently ...narrow left hatch.
Enter new palette fill type .....:

Palette element 5 is currently ...wide crosshatch.
Enter new palette fill type .....:

Palette element 6 is currently ...wide right hatch.
Enter new palette fill type .....:

Palette element 7 is currently ...wide left hatch.
Enter new palette fill type .....:
```

8. After you repeat steps one through seven to change any palette to one of your choice, you are ready to continue using your Graphwriter programs with the new pre-set palettes.

Specifying Palettes For Individual Formats

The procedure above outlines how to create new palettes with the elements of color and the elements of fill pattern (or line type or marker type). These palettes become part of the available list of palettes which a program can use. This section describes how to specify which of those available palettes a particular format will use.

Each program has an assigned default value for each of the three palette types:

- Bar Color/Fill
- Line Color/Type
- Marker Color/Type

The program asks you to provide a default value for each type of palette for any program using a palette.

The following procedure illustrates how to change the default palette for a particular format.

1. From the Graphwriter Setup Menu,
press 3 "Change Available Palettes"
2. From the Changing Available Palettes Menu,
press 5 "Set Default Palettes for Each Format"

3. Select the format to change. In response to the prompt:

"What format do you want to change the default for?
Type in the corresponding number. "

enter (format number) RETURN

Or to see a list of available formats,

press HELP

4. The program then prompts you for the default palette number for each of the three palette types for the format you select. Respond to the following prompts:

"Current Bar Color/Fill Palette is black, all fill patterns.
Enter new default Bar Color/Fill palette :

"Current Line Color/Type is black, none.
Enter new default Line Color/Type palette :

"Current Marker Color/Type palette is black, none.
Enter new default Marker Color/Type palette : "

Remember that RETURN will retain the current value.

5. Repeat this process for each format you want to change the default palette for.

You are then ready to continue using Graphwriter programs with the new pre-set palettes in the formats in which you specified changes.

Setting Default Data File Characteristics

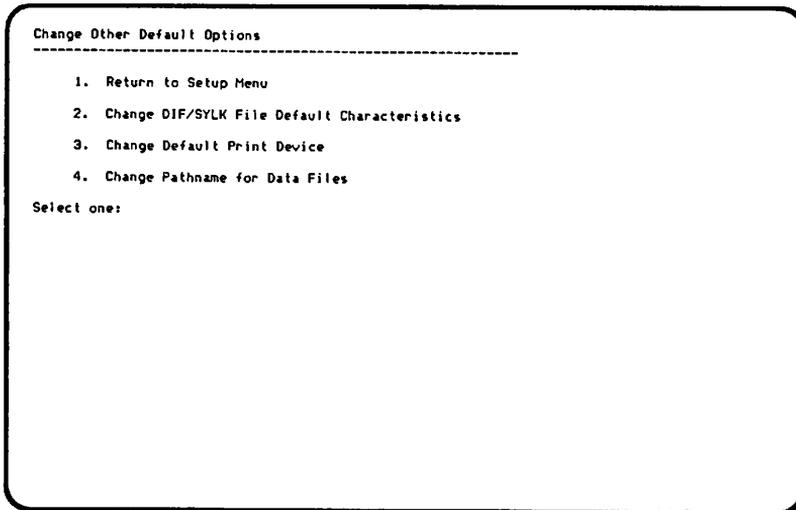
When recalling stored data files, such as SYLK or DIF (see Glossary), with Graphwriter, the program asks whether you wish to read the data file using row or column order. It also asks you to specify the first row or column to read within the data file.

The responses for these questions all have default values. If you find that you always store and retrieve your data files you may want to change these values.

To change the default data values, follow the steps below:

1. From the Graphwriter Format Menu,
press 3 "Execute Setup Program"
2. From the Setup Menu,
press 5 "Change other Default Options"

You see the menu shown below.



3. From the Changing Other Default Options Menu,
press 2 "Change DIF/SYLK File Default Characteristics"
4. Respond to the series of prompts you see in the screen display below.
Enter the value for each that you wish to become the new default value.

Changing DIF/SYLK File Characteristics

Has your data file stored by row or column?

Current stored direction is row

Enter stored direction :

Do you want Graphwriter to read your data file in row or column order?

Current direction is row

Enter new direction (Row or Column):

Begin reading data with which column in each row.

Current first column is 1

Enter new column number:

5. Repeat steps 1 through 4 whenever you wish to re-set the way in which data files are read.

Summary

You now know how to change Graphwriter software to fit your unique graphic design specifications.

Style Files

You can create style files with temporary changes, which you store on a data disk and use by reading into a selected program. And you can create style files with permanent changes, which you store on a Format Disk or volume and which a selected program retrieves automatically.

Plot Options

You can change plot options--Color Range, Medium/Pen Set, Plot Area, Page Size, Orientation, and Plotter. You can make temporary or permanent changes for any selected format in the same way you create style files. You can create changes for all formats by using the Setup Program.

Palettes

You have an idea of what palettes are and how they work. You learned how to create new palettes with elements of color and elements of fill

pattern, line type, or marker type. You learned that by using The Setup Program you can create a new set of available palettes which any of the Graphwriter programs can use. You learned how to specify which available palette any individual program would use. You do this also by using the Setup Program.



Data File Characteristics

Finally, you learned how to set default data file characteristics by using the Setup Program.



Reference: Menus

This chapter will help you understand how to use the different menus and menu options available in Graphwriter. Since you have many ways to use the programs, you will want to experiment to discover which ways most suit your needs. As you use Graphwriter, questions may come up about how to perform a procedure or about what a specific procedure does. You will find the answers to such questions in this chapter.

The chapter is divided by menus. The menus include those from a Format Program and from the Setup Program. Menus used for Batch Processing chart files are discussed separately in Chapter 14, "Batch Processing Composed Chart Files." For information on Polaroid Palette Menus, refer to Chapter 15, "Using Graphwriter with the Polaroid palette."

The menu displays presented from the Format Program are from Format B020: Segmented Bars (vertical), but explanations cover pie and line formats as well. Figure 7-1 shows all the menus within Format B020 and their options. It also shows how you move from one menu to another.

The Setup Program is designed for customizing procedures and hardware configuration.

To help you find the menu you are interested in refer to page 7-3, which lists each menu and the corresponding page number.

If you want to know about editing capabilities, refer to the following menus in this chapter:

- Enter/Change Chart Data Menu
- Enter/Change Bar Data Menu
- Change Chart Style Menu
- Change Plot Options Menu

If before you run a program you want to know what style characteristics are allowed and what the default values are, see Chapter 8, "Chart Elements and Style Characteristics."

If you want to check on data limits for a particular format, see Appendix A, "Graphwriter Capabilities," or look at the appropriate Input Form.

Making the correct choice from a menu or entering the correct response in a prompt sequence is easy to do. If you are not sure about a menu choice or response to a prompt, you can always use HELP for assistance. If you make a mistake, an error message will tell you what is wrong and what is required.

More specifically, to select an option from a menu, simply press the number corresponding to your desired option without pressing RETURN. The program automatically initiates the choice you have indicated. The one exception to this method for selecting options is in the Select Graphwriter Format Menu. In this case you enter the number corresponding to your desired option followed by RETURN.

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GRAPHWRITER MENUS

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Menu Map



Figure 7-1: Menu Map for Format B020



Graphwriter Format Menu

This is the first menu you see after starting up Graphwriter with your GW Disk. It serves as a directory to the formats available in Graphwriter and to the Setup Program.

```
Graphwriter                               Format Menu
-----
 1. End Graphwriter Session
 2. Execute a Format
 3. Execute Setup Program
 4. Batch Process Composed Chart Files

Select one:
```

OPTION	KEY	FUNCTION
"End Graphwriter Session"	1	Allows you to finish running a program.
"Execute a Format"	2	Leads to Select Graphwriter Format Menu, which lists available formats.
"Execute Setup Program"	3	Leads to Setup Program Main Menu. See section on the Setup Program in this chapter.
"Batch Process Chart Files"	4	Leads you to the Batch Plotting Main Menu, which allows you to batch process Composed Chart Files. See Chapter 14.

Select Graphwriter Format Menu

This menu provides a list of all the formats available within Graphwriter Basic and Extension Sets. Selecting an option from this menu is done slightly differently than on other menus. You enter the number corresponding to the desired format, then press RETURN. Once you select the desired format, and if the correct format is in the proper drive, you move directly to the Select Starting Data Menu.

If you select a format from this menu without having the correct format disk in the proper drive, the program asks you to insert it. Once this disk is inserted, you move directly to the Select Starting Data Menu.

```
Select Graphwriter Format
-----
          Basic Set                Extension Set
          -----                -----
1. B010 - Column chart (vertical)   13. S020 - Gantt Chart
2. B011 - Bar chart (horizontal)    14. S030 - Organization chart
3. B020 - Segmented bars (vertical) 15. S040 - Bubble chart
4. B021 - Segmented bars (horizontal) 16. S050 - Table chart
5. B030 - Clustered bars (vertical)  17. C020 - Pie-Bar combination
6. B031 - Clustered bars (horizontal) 18. L020 - Surface Line chart
7. P010 - Pie chart (1-4 pies)       19. L030 - Line-Table chart
8. L010 - Line chart                 20. B022 - Double stacked bars
9. S010 - Scatter plot (regression)  21. B032 - Grouped bars
10. C010 - Bar-Line combination      22. B040 - Range chart (bars)
11. T010 - Text/Word chart          23. B050 - Paired bars
12. - Unused                        24. B060 - Horiz. bars (inset labels)

Select one:
```

Select Starting Data Menu

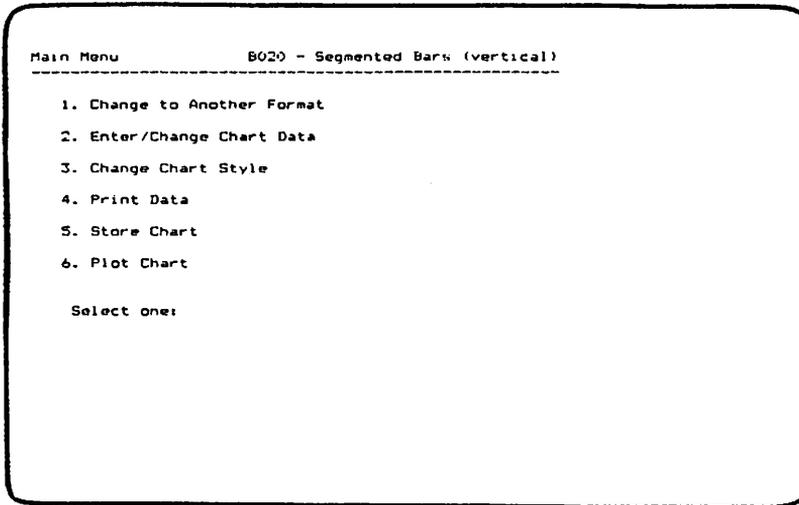
This menu appears after you have selected a format to run from the Select Graphwriter Format Menu. Use this menu to choose the way you will enter data.

```
Select Starting Data
-----
1. Return to Format Menu
2. Enter All New Data
3. Use Data from Last Format
4. Restore Old Chart File
Select one:
```

OPTION	KEY	FUNCTION
"Return to Format Menu"	1	Returns you to Graphwriter Format Menu.
"Enter All New Data"	2	Resets everything to default or unspecified values, as appropriate.
"Use Data From Last Format"	3	Transfers data used with last format to the new format, if formats are compatible. (See Chapter 9, "Reference: Formats in Graphwriter Basic Set," for a discussion of format compatibility.)
"Restore Old Chart File"	4	Prompts for chart file you want to read into the format program. May be used to retrieve style files (see Chapter 6) as well as entire chart files.

Main Menu

The Main Menu, appearing after you select option 2, 3, or 4 from the Select Starting Data Menu, serves as a directory to other menus within a format program. Pressing HELP gives you an explanation of all function keys.



These options, each of which leads to another menu, are similar for all Graphwriter formats.

OPTION KEY FUNCTION

"Change to Another Format"	1	Returns you to Graphwriter Format Menu. Requires a "yes or no" to confirm.
"Enter/Change Chart Data"	2	Moves you to Enter/Change Chart Data Menu.
"Change Chart Style"	3	Moves you to Change Chart Style Menu.
"Print Data"	4	Moves you to Print Data Menu.
"Store Chart"	5	Moves you to Store Chart Menu.
"Plot Chart"	6	Moves you to Plot Chart Menu.

Enter/Change Chart Data Menu

You reach this menu from the Main Menu of any format program. Use the Enter/Change Chart Data Menu to enter data such as headings, scales, and data values into a format program. See Chapter 4, "Creating Your First Chart," and Appendix C, "Example of Program Run," for illustration of data entry procedures.

```
Enter/Change Chart Data
-----
 1. Return to Main Menu
 2. Enter Entire Chart from Keyboard
 3. Restore Entire Chart from a File
 4. Enter/Change Headings only
 5. Enter/Change Notes only
 6. Enter/Change Axes only
 7. Enter/Change Bars only
 8. Enter/Change Legend only
 9. Enter/Change Comments only

Select one:
```

By using the various options on the Enter/Change Chart Data Menu, you may retrieve an old chart, enter data for a new chart, in part or in its entirety, and make changes in any elements. In addition, you can use this menu to add data while entering the chart. If you realize halfway through entering data or even later that you need to add more bars (pies or lines) or segments (pie slices) to your chart, you may do so with this menu.

Should you wish to cancel any entries, use Del.

OPTION	KEY	FUNCTION
"Return to Main Menu"	1	Moves you back to Main Menu.
"Enter Entire Chart from Keyboard"	2	Prompts for <u>all</u> data necessary to produce a chart. All style characteristics will be defaulted.

OPTION	KEY	FUNCTION
"Restore Entire Chart from a File"	3	Prompts for the name of a previously stored file containing an entire chart.

The options specifying entry of specific elements by themselves allow the flexibility of entering partial data and of changing the order of entering your data.

OPTION	KEY	FUNCTION
"Enter/Change Headings only"	4	Prompts for the three headings located at top of page.
"Enter/Change Notes only"	5	Prompts for the three notes located at bottom of page.
"Enter/Change Axes only"	6	Prompts for horizontal and vertical axis titles and scale data. This scale data is required to produce a plot.

When you select any of the following options, you are asked which bar (pie or line) you wish to start with.

OPTION	KEY	FUNCTION
"Enter/Change Bars only"	7	Moves you to a data value entry menu.
"Enter/Change Legend only"	8	Prompts for descriptive text used in legends.
"Enter/Change Comments only"	9	Prompts for text, position, and attach point.

The X,Y coordinate and the attach point determine the comment positioning. The attach point is the point on the comment block of text which connects or "attaches" the comment block to the specified X,Y coordinate. The nine (9) possibilities for the attach point, and their relationship to the comment block, are shown in Figure 7-2.

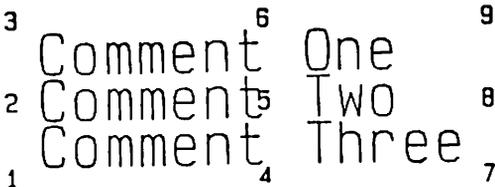


Figure 7-2: Attach Points for Comment Block

Therefore, if you specify 1 as the positioning method, the X,Y coordinate you have specified will be the lower left corner of your comment block. If you specify 4 as the positioning method, the X,Y coordinate you have specified will be the bottom, center point of your block of comments.



Enter Bar Data Menu

This menu is reached from the Enter/Change Chart Data Menu. Use this menu when you want to enter data values only. This menu also allows you to read data files. See Chapter 12, "Using Stored Data Files," for details.

```
Enter Bar Data
-----
1. Return to Enter Menu
2. Enter Bar Labels from Keyboard
3. Enter Bar Values from Keyboard
4. Read Bar Labels/Values from a File
5. Change Input File Format      Currently: SYLK file
6. Change Number of Bars       Currently: unspecified
7. Change Number of Segments   Currently: unspecified
8. Change Bar Colors, Fills, Width

Select one:
```

OPTION	KEY	FUNCTION
"Return to Enter Menu"	1	Moves you back to Enter/Change Chart Data Menu.
"Enter Bar Labels from Keyboard"	2	Prompts you to enter or change bar labels from keyboard.
"Enter Bar Values from Keyboard"	3	Prompts you to either enter or change bar values from keyboard.

OPTION

KEY FUNCTION

"Read Bar Labels/Values from a File"

4 Prompts for series of labels or data values from a previously stored data file.

Before selecting this option, you must be sure the current file format matches your file format. See Chapter 12 for details on using stored data files.

"Change Input File Format"

5 The file formats available are SYLK and DIF files.

"Change Number of Bars"

6 Prompts for number of bars (pies, pie slices, or data points for lines) in your chart. Bars are numbered from left to right. If you specify fewer bars than previously entered, the last bars entered are deleted. If you specify more bars (pies or lines) than previously entered, you must then enter additional values.

"Change Number of Segments"

7 Prompts for number of segments (pie slices) in your chart. Segments are numbered from the bottom to the top. If you specify fewer segments than previously entered, the last segments entered are deleted. If you specify more segments (pie slices) than previously entered, you must then enter the additional values from the keyboard or a file.

"Change Bar Colors, Fills, Width"

8 Prompts for style choices for color, fill pattern, and bar width.

Change Chart Style Menu

This menu is reached from the Main Menu of any format. To change the various chart style characteristics, use this menu.

Change Chart Style

1. Return to Main Menu
2. Change Style of Headings and Notes
3. Change Style of Axis Titles and Axes
4. Change Color/Fill Palette
5. Change Bar Colors, Fills, Width
6. Change Style of Bar Labels
7. Change Style of Legend
8. Change Style of Comments
9. Change Other Data

Select one:

Any or all of the defaulted style characteristics such as font, color, and location of text can be changed. See Chapter 8 for descriptions of the style characteristics, their allowable values, and their default values.

OPTION	KEY	FUNCTION
"Return to Main Menu"	1	Moves you back to Main Menu.
"Change Style of Headings and Notes"	2	Prompts for changes of font, character size, color, and justification. Change headings and notes individually or select "all" to change style for all headings and notes at once.
"Change Style of Axis Titles and Axes"	3	Prompts for changes of font, character size, color, and justification for each axis title. Also, prompts for changes of visibility of tics and size of white space for each axis.

OPTION	KEY	FUNCTION
"Change Color/Fill Palette"	4	Allows user to set a different color/fill, color/line type, or marker color/type palette as the current value.
"Change Bar Colors, Fill, Width"	5	Prompts for changes of fill, color, and bar width for bar formats; fill pattern, color, and angle of origin for pie slices; and color and line types for line formats.
"Change Style of Bar Labels"	6	Prompts for changes of font, character size, and color for data labels.
"Change Style of Legend"	7	Prompts for changes of font, character size, and color.
"Change Style of Comments"	8	Prompts for changes of font, character size, color, and placement. Change comments individually or enter "all" to change style for all comments at once.
"Change Other Data"	9	Prompts for other style information such as bar values above bars.

Selecting Type Fonts

When using the Change Chart Style Menu to specify a type font, you can ask for HELP which lists the possible fonts. However, the displayed list is only the selections for a vector font (plotter output only). The same type font selection numbers (1 through 8) can also access raster fonts (matrix printers). The following is the list of corresponding fonts:

<u>Prompt</u>	<u>Plotter Font</u>	<u>Printer Font</u>
1. standard	1. standard	1. standard
2. bold	2. bold	2. standard
3. italic	3. italic	3. outline
4. bold italic	4. bold italic	4. thick outline
5. expanded	5. expanded	5. expanded
6. bold expanded	6. bold expanded	6. expanded thick outline
7. roman	7. roman	7. expanded outline
8. bold roman	8. bold roman	8. roman

Print Data Menu

This menu is reached from the Main Menu of any format. To display chart elements as well as style characteristics, use the Print Data Menu. You may display data either on printer or screen.

```
Print Data
-----
1. Return to Main Menu
2. Change Display Device      Currently: printer
3. Print all Chart Data
4. Print Chart Style

Select one:
```

OPTION	KEY	FUNCTION
"Return to Main Menu"	1	Moves you back to Main Menu.
"Change Display Device"	2	Leads to sub-menu for changing display device.
"Print all Chart Data"	3	Prints all chart elements to the CRT screen or printer, as previously specified.
"Print Chart Style"	4	Prints current style specifications.

Change Display Device Menu

This menu is reached from the Print Data Menu. To change the display device on which data is shown, use this menu. See Change Other Default Options Menu in this chapter for information on setting default display device.

Change Display Device

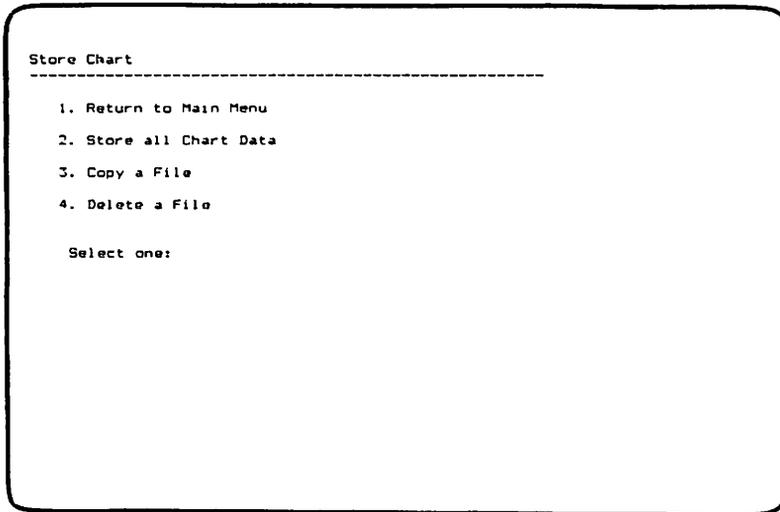
1. Return to Print Menu
2. Display to Screen
3. Display to Printer

Select one:

OPTION	KEY	FUNCTION
"Return to Print Data Menu"	1	Moves you back to Print Data Menu.
"Display to Screen"	2	Enables you to specify the CRT screen as display device.
"Display to Printer"	3	Enables you to specify printer as display device.

Store Chart Menu

This menu, reached from the Main Menu of any format, allows you to store an entire chart, to copy a file, or to delete a file. Pressing HELP will display a listing of the directory contents of your data disk (or any disk you designate).



OPTION	KEY	FUNCTION
"Return to Main Menu"	1	Moves you back to Main Menu.
"Store all Chart Data"	2	Allows you to store an entire chart.
"Copy a File"	3	Copies an existing file onto the same disk. You may copy files that use standard, SYLK or DIF file formats.
"Delete a File"	4	Removes an existing file.

Plot Chart Menu

This menu, reached from the Main Menu of any format, allows you to plot a chart on a plotter or printer, or to store Composed Charts to use in Batch Processing (see Chapter 14).

```
Plot Chart
-----
1. Return to Main Menu
2. Fast Plot on Plotter/Printer
3. Full Plot on Plotter/Printer
4. Preview on Screen
5. Store Composed Chart in File
6. Graphics only on Plotter/Printer (no text)
7. Change Plot Options:
   Color Range ..... color plot   Page Size ..... A (ANSI 8.5 x 11 in.)
   Medium/Pen set .. plain paper   Orientation ..... horizontal
   Plot area ..... full page      Graphic Device ... HP 7478A

Select one:
```

OPTION	KEY	FUNCTION
"Return to Main Menu"	1	Moves you back to the Main Menu.
"Fast Plot on Plotter/Printer"	2	Draws everything except the fill for a bar or pie and line type. However, required colors and text are drawn.
"Full Plot on Plotter/Printer"	3	Draws complete chart, either with default values or as specified.
"Preview on Screen"	4	Displays chart on CRT screen in the same proportion, that is, height to width, as it will appear when plotted on paper or transparency. Does not reflect page placement.
"Store Composed Chart in File"	5	Allows you to store Composed Charts to be used in Batch Processing (see Chapter 14).

OPTION

KEY FUNCTION

"Graphics only on Plotter/
Printer (no text)"

6 Draws all elements as well as specified fill for bars (pies). Text is not drawn at all. Useful when typeset text is to be stripped onto chart manually.



"Change Plot options"

7 Leads to a sub-menu for specifying plot options such as color, page size, or graphic output device. You can change to the graphic device through this option, or through the Setup Program. (Refer to "Setting Device Configuration" in Appendix B.)

The composing process arranges the various elements with appropriate adjustments in size, location, and orientation to optimize the appearance of the completed chart.

After the chart is composed, the program states which pens are needed for the chart and asks you to verify they are in the plotter.

At this time, if you do not wish to plot the chart, you may press Esc to return to the Plot Chart Menu. You may also stop the plotting process once it has started by pressing Esc. However, it may take a few moments for the chart to be interrupted by Esc once it has started.



You may plot as many charts as you wish without waiting for the program to recompose the chart if:

- You don't leave the Plot Chart Menu and return to the Main Menu; or
- You don't change any options on the Change Plot Options Menu other than the medium/pen set or color range options.



Change Plot Options Menu

To specify plot choices, use this menu, which is reached from the Plot Chart Menu. (To set default plot options for all formats, use the Change Plot Option Defaults Menu, which is reached from the Setup Program Main Menu.)

```
Change Plot Options
-----
1. Return to Plot Menu
2. Change Color Range      Currently: color plot
3. Change Medium/Pen Set  Currently: plain paper
4. Change Page Size       Currently: A (ANSI 8.5x11 in.)
5. Change Orientation     Currently: horizontal
6. Change Plot Area       Currently: full page
   left...      20 mm      bottom...      16 mm
   width...     239.4 mm   height...     180.9 mm
7. Change Graphic Device  Currently: HP 7470A

Select one:
```

Each of these options defines a particular specification about the plot. To find out what choices are possible within each option, press **HELP**.

OPTION	KEY	FUNCTION
"Return to Plot Menu"	1	Moves you back to Plot Chart Menu.
"Change Color Range"	2	Allows you to specify black and white plot or color plot.
"Change Medium/Pen Set"	3	The possible choices are: 1. plain paper 2. transparency 3. coated paper

OPTION	KEY	FUNCTION
"Change Page Size"	4	Possible choices are: 1. A (ANSI 8.5x11 in.) 2. trans. (8.5x10.5 in.) 3. B (ANSI 11x16.5 in.) 4. A4 (ISO 210x297mm)
"Change Orientation"	5	Orientation can be either horizontal or vertical on a page.
"Change Plot Area"	6	Changes plot area in terms of location on the page and overall dimensions. Possible choices for placement and size are: 1. full page 5. right half 2. top half 6. slide (35mm) 3. bottom half 7. custom size 4. left half

Only if the custom size placement is chosen, is it necessary to enter the size dimensions. (See Appendix D for dimensions for plot areas.) Custom plot size dimensions are defined as follows:

"Left..." indicates the distance from the left edge of the page to the beginning of the plot area.

"Width..." indicates how wide the plot area is.

"Bottom..." indicates the distance from the bottom of the page to the lower edge of the plot area.

"Height..." indicates how tall the plot area is.

When you select "slide (35mm)" for the plot area choice, you need to be sure you also select "A (ANSI 8.5x11 in.)" for the page size. If you use other page sizes, the proportions for the slide will not be quite right.

OPTION	KEY	FUNCTION
"Change Graphic Device"	7	Allows you to change graphic device. Press HELP for graphic devices supported.

Setup Program Main Menu

You reach the Setup Program Main Menu from the Graphwriter Format Menu. It serves as a directory to other menus within the Setup Program. The Setup Program enables you to customize Graphwriter by setting your own default plot options, palettes, and SYLK and DIF file characteristics. See Chapter 6, "Customizing Graphwriter," for details. Through the Setup Program you also change the hardware configuration for the monitor, and the installed graphic output devices.

Main Menu	Setup Program

1. Return to Format Menu	
2. Change Default Plot Options	
3. Change Available Palettes	
4. Change Other Default Options	
5. (unused)	
6. Set Hardware Configuration	
7. Install New Graphic Output Device	
Select one:	

OPTION	KEY	FUNCTION
"Return to Format Menu"	1	Clears the current program and returns you to Graphwriter Format Menu. Requires a "yes or no" response to confirm.
"Change Default Plot Options"	2	Moves you to Change Plot Option Defaults Menu.
"Change Available Palettes"	3	Moves you to Changing Available Palettes Menu.
"Change Other Default Options"	4	Moves you to Changing Other Default Options Menu.

OPTION	KEY	FUNCTION
(unused)	5	
"Set Hardware Configuration"	6	Allows you to set the program for either a monochrome or color monitor.
"Install New Graphic Output Device"	7	Allows you to change installed graphic devices using device drivers. Refer to the section, "Setting Device Configuration," in Appendix B.



Change Plot Option Defaults

This menu is reached from the Setup Program Main Menu. Change Plot Option Defaults Menu is used to change default values for such things as color, medium/pen set, page size, orientation, plot area and plotter for all formats. You may set the default values as often as you wish. See Chapter 6, "Customizing Graphwriter," for details on setting your plotter as the default plotter. To change plot options for a single chart, use the Change Plot Options Menu, which is reached from the Main Menu of any Graphwriter Format Program. See section on Change Plot Options Menu in this chapter.

Change Plot Option Defaults

1. Return to Setup Menu

2. Change Color Range Currently: color plot

3. Change Medium/Pen Set Currently: plain paper

4. Change Page Size Currently: A (ANSI 8.5x11 in)

5. Change Orientation Currently: horizontal

6. Change Plot Area Currently: full page
 left.... unspecified mm bottom.... unspecified mm
 width... unspecified mm height.... unspecified mm

7. Change Graphic Device Currently: HP 7470A

Select one:

OPTION	KEY	FUNCTION
"Return to Setup Menu"	1	Moves you back to the Setup Program Menu.
"Change Color Range"	2	Allows you the choice of full color or black and white for your chart.
"Change Medium/Pen Set"	3	Allows you to change the type of paper and pen set you will use as defaults. The choices are: 1. plain paper 2. transparency 3. coated paper

OPTION	KEY FUNCTION								
"Change Page Size"	<p>4 Allows you to change the page size. The possible choices are:</p> <ol style="list-style-type: none"> 1. A (ANSI 8.5x11 in.) 2. trans. 8.5x10 3. B (ANSI 11x16.5 in.) 4. A4 (ISO 210x297 mm.) 								
"Change Orientation"	<p>5 Allows you to choose between horizontal or vertical orientation for the chart on the page.</p>								
"Change Plot Area"	<p>6 Allows you to choose size and location of the plot area. The possibilities are:</p> <table border="0" style="width: 100%;"> <tr> <td>1. full page</td> <td>5. right half</td> </tr> <tr> <td>2. top half</td> <td>6. slide (35 mm)</td> </tr> <tr> <td>3. bottom half</td> <td>7. custom side</td> </tr> <tr> <td>4. left half</td> <td></td> </tr> </table>	1. full page	5. right half	2. top half	6. slide (35 mm)	3. bottom half	7. custom side	4. left half	
1. full page	5. right half								
2. top half	6. slide (35 mm)								
3. bottom half	7. custom side								
4. left half									
"Change Graphic Device"	<p>7 Allows you to specify the plotter or printer you wish to use. Press HELP for list of graphic devices supported.</p>								



Changing Available Palettes Menu

This menu, reached from the Setup Program Main Menu, allows you to change palette elements in various palettes, as well as to set default palettes for each format. See Chapter 6, "Customizing Graphwriter," for details on making changes.

Changing Available Palettes

1. Return to Setup Menu
2. Change Available Bar Color/Fill Palettes
3. Change Available Line Color/Type Palettes
4. Change Available Marker Color/Type Palettes
5. Set Default Palette(s) for Each Format

Select one:

In using these options use HELP for a list of possible choices.

OPTION	KEY	FUNCTION
"Return to Setup Menu"	1	Moves you back to Setup Program Menu.
"Change Available Bar Color/ Fill Palettes"	2	Allows you to change palette elements in Bar Color/Fill Palettes. Use HELP and see Table 8-8 for possible choices.
"Change Available Line Color/ Type Palettes"	3	Allows you to change palette elements in Line Color/Type Palettes. Use HELP and see Table 8-8 for possible choices.
"Change Available Marker Color/Type Palettes"	4	Allows you to change palette elements in Marker Color/Type Palettes. Use HELP and see Table 8-8 for possible choices.

OPTION

KEY FUNCTION

"Set Default Palette(s) for Each Format"

5 Allows you to specify the default palettes to be used for any available Graphwriter format.



Changing Other Default Options Menu

This menu, reached from the Setup Program Main Menu, allows you to change how data is read from a SYLK or DIF file, to change the default print device, and to change the pathname in order to retrieve data files. See Chapter 6, "Customizing Graphwriter," for details on setting data file characteristics. See Appendix B, "Hardware Configuration," for information on changing the pathname.

Change Other Default Options

1. Return to Setup Menu
2. Change DIF/SYLK File Default Characteristics
3. Change Default Print Device
4. Change Pathname for Data Files

Select one:

OPTION	KEY	FUNCTION
"Return to Setup Menu"	1	Returns you to Setup Program Menu.
"Change DIF/SYLK File Default Characteristics"	2	Allows you to change the way the program reads SYLK or DIF file characteristics by telling the program whether to read by row or column and with which row or column to begin.
"Change Default Print Device"	3	Allows you to change the default display device. The possible choices are: <ol style="list-style-type: none">1. screen2. printer

"Change Pathname for
Data Files "

- 4 Allows you to select the proper disk drive (i.e., pathname "b:") to retrieve your data files.



Reference: Chart Elements and Style Characteristics

As you become comfortable using Graphwriter, you will want to experiment more with the style of your chart. Although you do not have to make choices about style since the programs provide default style characteristics, you can do so. You will find that Graphwriter allows you to change a wide spectrum of style characteristics for the various chart elements. However, to make these changes you need to know more about the three groups of chart elements -- graphic shape, grid, and text -- and their style characteristics.

This chapter describes in detail the three groups of chart elements and defines style characteristics. Also, this chapter explains what changes can be made, where they can be made, and what happens if you don't make changes.

For easy reference, the chapter is divided into the following units:

- Chart Elements Explained
- Style Characteristics Explained
- Graphic Shape Elements -- Style Characteristics
- Grid Elements -- Style Characteristics
- Text Elements -- Style Characteristics
- Chart -- Style Characteristics

You can read this chapter straight through and gain a good deal of information. However, if you have a specific question about the kinds of changes that can be made for a particular element, you can find the answer. Determine which unit an element falls into by consulting the list of contents which follows, then refer to the appropriate unit.

Refer to the Glossary if you want further definitions for any chart elements or style characteristics.

Contents for

REFERENCE: CHART ELEMENTS AND CATEGORIES

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Axis Title	Text Element	8-19
Bar Label	Text Element	8-19
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Legend Key	Text/Graphic Shape Element	8-19/8-11
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Chart Elements Explained

As a preliminary to understanding what style characteristics can be changed, you should have a good grasp of the three different groups of chart elements, and where they are typically located.

You use charts to present numerical data which might not otherwise be readily understood. The chart is made up of bars, pies, or line representing your numerical data. The graphic shapes -- bars, pies or lines -- are located on a real or implied grid and are accompanied by descriptive text.

The basis of your chart is the graphic shapes. Indeed, they are the reason you have decided to use a chart. In the figure below, because there is no grid, it is impossible to know what values the bars represent. Elements that can be considered graphic shapes are bars, segments, and the legend. But graphic shapes alone, as shown in Figure 8-1, are not enough to explain your data.

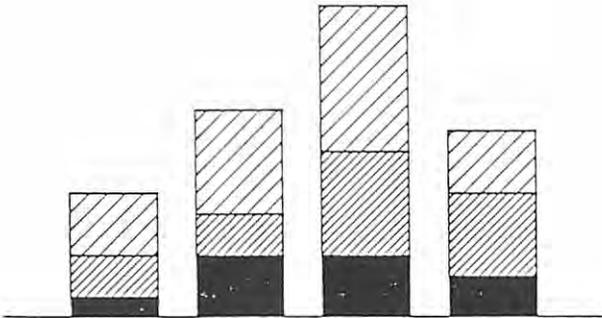


Figure 8-1: Graphic Shapes

Several "floating" bars clearly do not provide much information. Thus, you see the need for the grid elements.

Grid elements include such things as axes, frame, graph area, and tics. A grid or implied grid makes sense of the graphic shapes. For bar charts and line charts, the grid is created by two axes -- a vertical (Y) axis, and a horizontal (X) axis. One of these axes is scaled, i.e., has markings representing units of measure. The vertical (Y) axis is scaled, so we can determine a value for each of the bars and segments.

Consider the figure below.

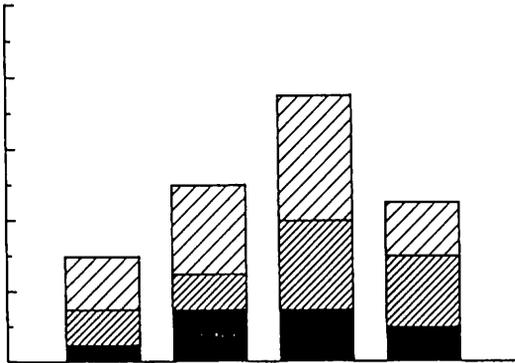


Figure 8-2: Grid Elements with Graphic Shapes

We are starting to have something which looks more like a chart, but no chart can be considered complete without text and numbers. The text elements are the numbers and descriptive text which help the viewer understand what is being represented in the chart. Notice how much more understandable the chart in Figure 8-3 appears.

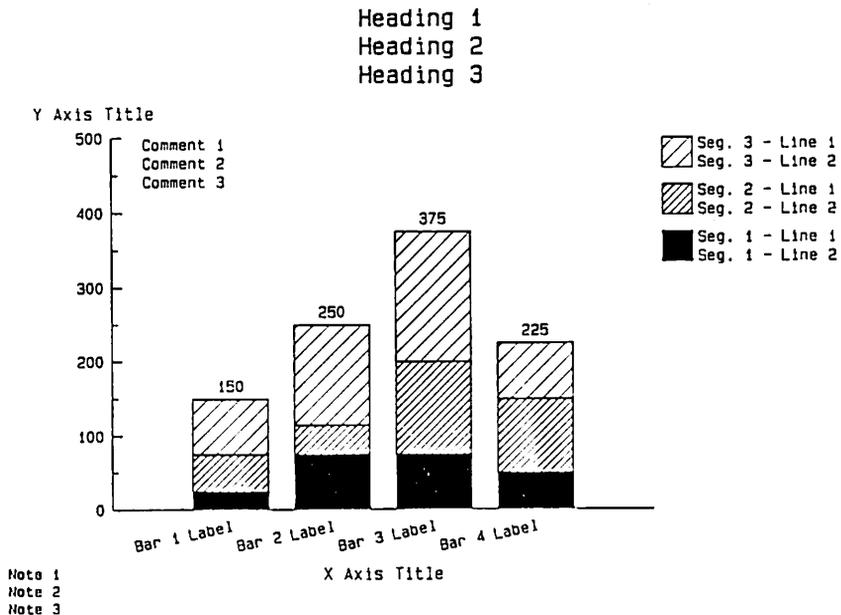


Figure 8-3: Text Elements Added

Now that you know what the basic chart elements are, we show you a complete chart with all the elements labeled.

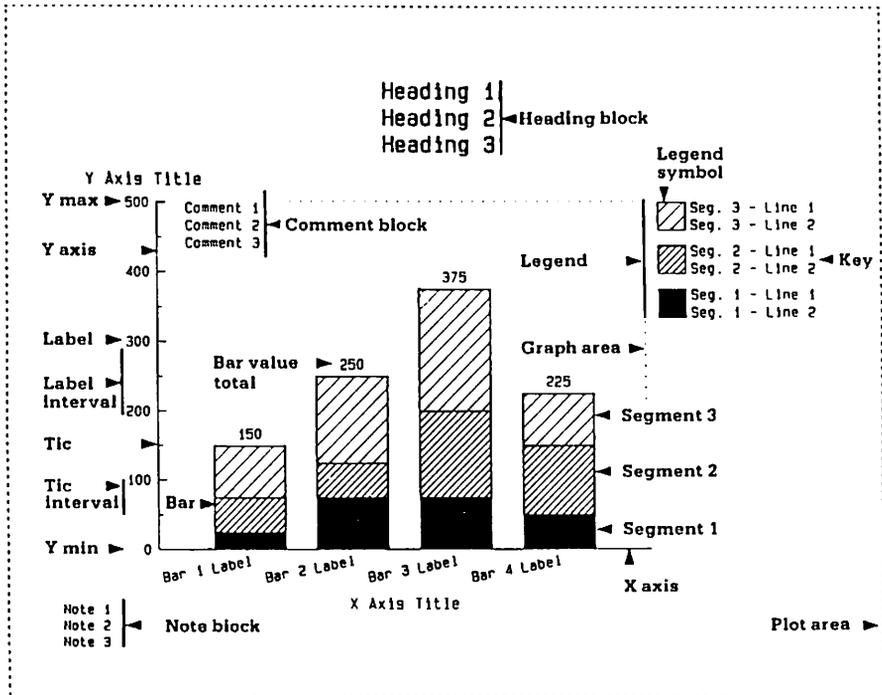


Figure 8-4: Chart Elements -- Graphic Shape, Grid, and Text

Keep in mind that each chart element is an item of data which you enter into a Graphwriter program. But the particular way that chart element will be displayed is a function of the style characteristics.

The following three tables give definitions for the illustrated chart elements in Figure 8-4. These elements are divided into graphic shape, grid, and text categories and alphabetized within each group.

DEFINITION OF GRAPHIC SHAPE ELEMENTS	
Element	Definition
Bar	Represents numeric data; numbered from left to right on the chart.
Legend	Consists of one or more legend keys and explains the graphic shapes. Usually positioned outside the graph area. (Falls both in Text and Graphic Shape categories.)
Legend Key	Explanatory text plus symbol it identifies. (Falls both in Text and Graphic Shape categories.)
Legend Symbol	Small illustration of particular fill pattern, line type, or marker type. Along with the legend text, it makes up the Legend Key.
Segment (or bar segment)	Component of segmented bars; numbered from bottom to top of chart.

Table 8-1: Definitions of Graphic Shape Elements

DEFINITION OF GRID ELEMENTS	
Elements	Definition
Frame	Provides border to graph area.
Graph Area	Area within the frame.
Label Interval	Distance between axis labels; specified by a number if the axis is scaled.
Plot Area	Entire area displaying graph and related text.
Tic Interval	Space between tic marks; specified by a number.
Tic	Marking on axis at equidistant intervals between maximum and minimum values.
X Axis	Horizontal axis with equal interval markings; may be scaled or unscaled.
Y Axis	Vertical axis with equal interval markings; may be scaled or unscaled.

Table 8-2: Definitions of Grid Elements

DEFINITION OF TEXT ELEMENTS	
Text Element	Definition
Axis Label (Scaled)	Number marking equidistant intervals on an axis, determined by the specified label interval between minimum and maximum axis values.
Axis Label (Unscaled)	Name or number on an axis to describe graphic shapes or their locations.
Bar Label	Descriptive name or number appearing under the bars on an unscaled axis.
Bar Value Total	Cumulative data value for segmented bars.
Comment	Text, used or positioned in any way on the chart.
Comment Block	Area determined by height of all comments and width of longest comment.
Data Value	Number used to determine the size of a bar, location of a point on a line, or relative size in degrees of a pie slice. This value may or may not be displayed.
Heading Block	Area determined by height of all headings and width of longest heading.
Headings	Lines of text used to identify and describe the graph.
Legend	Explanation for graphic shapes. Consists of one or more legend keys and explains the graphic shapes. Usually positioned outside the graph area.
Legend Key	Explanatory text, plus symbol it identifies.
Note Block	Area determined by the height of all notes used and width of the longest note.
Notes	Lines of text used to provide additional explanation of the chart, located at the bottom of page.

Table 8-3: Definitions of Text Elements

DEFINITION OF TEXT ELEMENTS (Continued)	
Text Element	Definition
X Axis Title	Descriptive line of text for the X axis.
X Max	Maximum numeric value assigned to a scaled X axis; e.g., 100 for a scaled axis from 0 to 100.
X Min	Minimum numeric value assigned to a scaled X axis; e.g., zero for a scaled axis from 0 to 100.
Y Axis Title	Descriptive line of text for the Y axis.
Y Max	Maximum number assigned to a scaled Y axis; e.g., 100 is maximum for scale from 0 - 100.
Y Min	Minimum number assigned to a scaled Y axis; e.g., 0 is minimum for scale from 0 - 100.

Table 8-3: Definition of Text Elements (Continued)

Style Characteristics Explained

You can think of style characteristics as the things you change to make the chart look different. Style characteristics are attributes or properties of chart elements. And within each group of elements you can change similar things.

You probably have an intuitive understanding of what style is, but perhaps some examples are in order. Fill pattern is a style characteristic. In Figure 8-5 you see how varying fill patterns differentiate the bar segments.

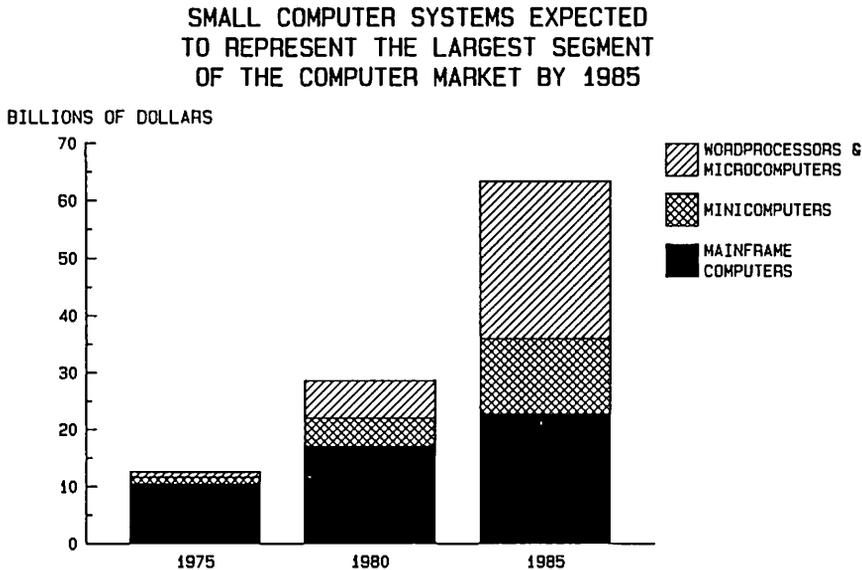


Figure 8-5: Varying Fill Patterns for Segments

Clearly, if each segment used the same fill pattern, the chart would not be as effective.

Font, character size, and justification are style characteristics of text elements. Figure 8-6 shows how the headings and notes use different choices of these style characteristics. The headings use the bold italic

font, a character size of 5.0, and are left-justified. The notes use standard font, character size of 3.0, and are right-justified.

OPEC PAYS A PRICE

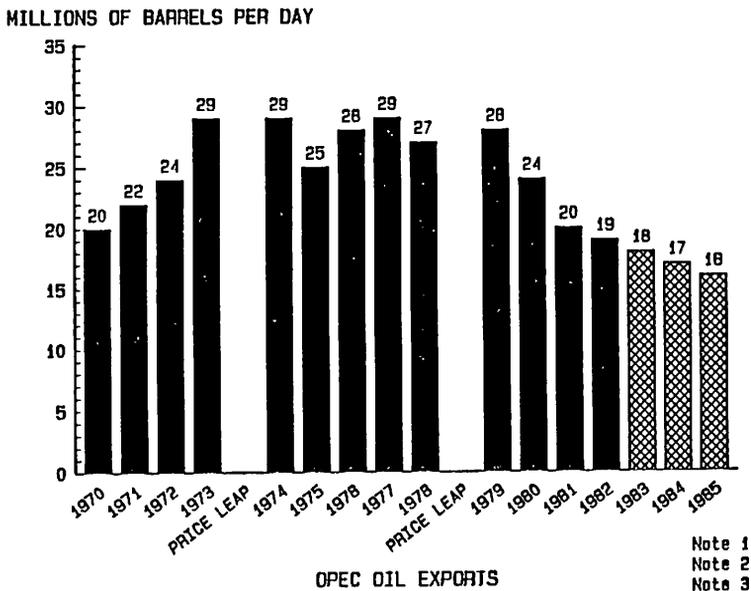


Figure 8-6: Varying Style Patterns for Segments

In general, the chart elements themselves are entered and changed in the Enter/Change Chart Data Menu, while the style characteristics are specified in the Change Style Menu, unless otherwise noted. Pre-set or default style characteristics can also be changed using the Setup Program. See Chapter 6, "Customizing Graphwriter," for a detailed explanation of how to do this.

For each group of chart elements we present a set of tables with definitions, allowable values, examples, and default values for style characteristics.

Style Characteristics for Graphic Shape Elements

Graphic Shape Elements: ALLOWABLE AND DEFAULT VALUES FOR STYLE CHARACTERISTICS

Graphic Shape Elements: ALLOWABLE AND DEFAULT VALUES FOR STYLE CHARACTERISTICS			
Characteristic	Description	Allowable Values	Default Values
Angle	The position at which the first pie slice starts	0 - 360 degrees	0 degrees
Bar Width	Width of bar relative to available space; specified in percent	1% - 100%	75%
Color*	Pen or CRT colors to be used in chart; CRT colors may appear differently from pen colors on plotted chart	Black Blue Green Red Orange	Brown Violet Turquoise Gold Lime Green
Fill Pattern	Textures used to differentiate bar segments from one another and pie slices from one another, and line areas from one another	Solid Fill Narrow crosshatch Narrow right hatch Narrow left hatch Wide crosshatch Wide right hatch Wide left hatch Empty	Rotation of allowable values in default palette, beginning with solid fill
Line Type	Type of line	Solid Dashed Dotted Long dash	Chain,dotted Chain,dashed Bold None
Marker Type	Symbol for data points on lines	Asterisk Circle Square	Triangle None
Palette	Set of pre-defined color and fill patterns, or line types, or marker types	See Table 8-8	Depending on Format: Bar,Pie, Surface Line: Black, all fill patterns Line: Black, all line types Black, all marker types
* Available colors will vary depending upon the plotter used.			

Table 8-4: Graphic Shape Elements: Allowable and Default Values for Style Characteristics

Graphic Shape Elements:
EXAMPLES OF STYLE CHARACTERISTICS

Graphic Shape Elements: EXAMPLES OF STYLE CHARACTERISTICS															
Characteristic	Examples														
Angle	<p>0 Degrees 45 Degrees 120 Degrees</p>														
Bar Width	<p>50% Bar Width 75% Bar Width - Default 100% Bar Width</p>														
Fill Pattern	<table border="0"> <tr> <td> Empty</td> <td> Wide crosshatch</td> <td> Narrow crosshatch</td> </tr> <tr> <td> Wide left hatch</td> <td> Narrow left hatch</td> <td> Solid fill</td> </tr> <tr> <td> Wide right hatch</td> <td> Narrow right hatch</td> <td></td> </tr> </table>	Empty	Wide crosshatch	Narrow crosshatch	Wide left hatch	Narrow left hatch	Solid fill	Wide right hatch	Narrow right hatch						
Empty	Wide crosshatch	Narrow crosshatch													
Wide left hatch	Narrow left hatch	Solid fill													
Wide right hatch	Narrow right hatch														
Line Type	<table border="0"> <tr> <td></td> <td>Solid</td> </tr> <tr> <td></td> <td>Dashed</td> </tr> <tr> <td></td> <td>Dotted</td> </tr> <tr> <td></td> <td>Long Dash</td> </tr> <tr> <td></td> <td>Chain, dotted</td> </tr> <tr> <td></td> <td>Chain, dashed</td> </tr> <tr> <td></td> <td>Bold</td> </tr> </table>		Solid		Dashed		Dotted		Long Dash		Chain, dotted		Chain, dashed		Bold
	Solid														
	Dashed														
	Dotted														
	Long Dash														
	Chain, dotted														
	Chain, dashed														
	Bold														
Marker Type	<table border="0"> <tr> <td></td> <td></td> <td></td> <td></td> <td>Marker Types are: Asterisk, Circle, Square, Triangle.</td> </tr> <tr> <td colspan="5">Size of marker may be adjusted.</td> </tr> </table>					Marker Types are: Asterisk, Circle, Square, Triangle.	Size of marker may be adjusted.								
				Marker Types are: Asterisk, Circle, Square, Triangle.											
Size of marker may be adjusted.															

Table 8-5: Graphic Shape Elements: Examples of Style Characteristics

**Graphic Shape Elements:
STYLE CHARACTERISTICS**

Graphic Shape Elements: STYLE CHARACTERISTICS	
Element	Style Characteristics
Bar	Bar Width, Color, Fill, Palette
Legend Symbol	Color, Fill Pattern, Line Type, Marker Type
Line	Color, Marker Type, Line Type, Palette
Pie Slice	Angle, Color, Fill, Palette
Segment	Bar Width, Color, Fill, Palette

Table 8-6: Graphic Shape Elements: Style Characteristics

**Graphic Shape Elements:
DEFAULT STYLE CHARACTERISTICS**

Graphic Shape Elements: DEFAULT STYLE CHARACTERISTICS			
Element	Angle	Bar Width	Palette
Bar		75%	Black, all fill patterns
Legend Symbol			Depends on format: Bar, Pie, Surface Line: Black, all fill patterns Line: Black, all fill patterns Black, all marker types
Line			Black, all line types Black, all marker types
Pie Slice	0 Degrees		Black, all fill patterns
Segment		75%	Black, all fill patterns

Table 8-7: Graphic Shape Elements: Default Style Characteristics

**Graphic Shapes:
AVAILABLE PALETTES**

Palettes	Available Choices
Fill Pattern	<ol style="list-style-type: none"> 1. Black, all fill patterns 2. Blue, all fill patterns 3. Green, all fill patterns 4. Red, all fill patterns 5. Eight colors, solid fill 6. Eight colors, all fill patterns 7. Four colors, all fill patterns 8. Black, no fill 9. Black, solid fill 10. Red, solid fill
Line Type	<ol style="list-style-type: none"> 1. Black, all line types 2. Blue, all line types 3. Green, all line types 4. Red, all line types 5. Eight colors, solid line 6. Eight colors, bold line 7. Four colors, all line types 8. Eight colors, all line types 9. Black, none 10. Black, solid line
Marker Type	<ol style="list-style-type: none"> 1. Black, all marker types 2. Blue, all marker types 3. Green, all marker types 4. Red, all marker types 5. Eight colors, asterisks 6. Eight colors, four marker types 7. Four colors, five marker types 8. Eight colors, five marker types 9. Black, none 10. Black, asterisk

NOTE: The default palette for each characteristic palette (fill pattern, line type, and marker type) is dependent on the individual formats. To list the default palettes, use HELP while in the appropriate menu.

Table 8-8: Graphic Shape Elements: Available Palettes

Style Characteristics for Grid Elements

Grid Elements: ALLOWABLE AND DEFAULT VALUES FOR STYLE CHARACTERISTICS

Grid Elements: ALLOWABLE AND DEFAULT VALUES FOR STYLE CHARACTERISTICS				
Characteristic	Description	Allowable Values		Default Values
Color*	Pen or CRT colors to be used in chart; CRT colors may appear differently from pen colors on plotted chart.	Black Blue Green Red Orange	Brown Violet Turquoise Gold Lime Green	Black
Frame Type	Line which surrounds the graph area	None X only Y only	X & Y Full frame	Format Dependent
Orientation	Position of plot area on page	Horizontal Vertical		Horizontal
Placement	Location on page for graph or plot areas. Note: Plot area is user-defined; graph area is related to plot area.	Anywhere on page		Centered on page
Size	Width and height of plot area	Defined by user		H: 109 mm W: 146 mm
* Available colors will vary depending upon the plotter used.				

Table 8-9: Grid Elements: Allowable and Default Values for Style Characteristics

Grid Elements:
 EXAMPLES OF STYLE CHARACTERISTICS

Grid Elements: EXAMPLES OF STYLE CHARACTERISTICS	
Characteristic	Examples
Frame Type	<p>Y Axis Only X Axis Only</p> <p>X & Y Axis Full Frame No Frame</p>
Orientation	<p>Horizontal Vertical</p>

Table 8-10: Grid Elements: Examples of Style Characteristics

**Grid Elements:
STYLE CHARACTERISTICS**

Grid Elements: STYLE CHARACTERISTICS		
Element	Style Characteristics	Menu Where Changed
Frame	Frame Type Visibility	Change Chart Style Menu
Graph Area	Placement	Plot Chart Menu (after chart composed)
Plot Area	Orientation Size Placement	Plot Chart Menu
Tic	Visibility	Change Chart Style Menu
White Space	Size	Change Chart Style Menu
X Axis	Visibility	Change Chart Style Menu
Y Axis	Visibility	Change Chart Style Menu

Table 8-11: Grid Elements: Style Characteristics

**Grid Elements:
DEFAULT STYLE CHARACTERISTICS**

Grid Elements: DEFAULT STYLE CHARACTERISTICS					
Element	Color	Placement	Size	Visibility	Orientation
Frame	Black	FD	-	Visible	-
Graph Area	-	FD	FD	Visible	-
Plot Area	-	Full page	H: 109mm W: 146mm	Visible	Horizontal
Tic	Black	-	-	Visible	-
White Space	-	-	FD	-	-
X Axis	Black	-	-	Visible	-
Y Axis	Black	-	-	Visible	-
<u>KEY</u>					
- = Not Applicable H = Height FD = Format Dependent W = Width					

Table 8-12: Grid Elements: Default Style Characteristics

Style Characteristics for Text Elements

Of all chart elements, text elements are the most dependent upon the particular output device you are using. Graphwriter uses different text fonts for different classes of output devices. Basically these text fonts can be divided into vector fonts (for pen plotters), and raster fonts (for bit-map or dot matrix devices such as printers, film recorders and CRT screens).

Vector Fonts

Vector fonts consist of characters created by linear strokes, and are associated with pen plotters. Because the letters are "drawn," resolution is high and detailed characters can be produced without any significant deterioration in quality. Vector fonts have the advantage of being available in a continuous range of sizes.

Raster Fonts

Raster fonts, on the other hand, consist of dots, or pixels, and are used with "bit-map" or "dot matrix" output devices such as printers, film recorders or CRT screens. These output devices usually offer a lower resolution than pen plotters.

To avoid the deterioration that commonly occurs when drawing vector fonts on a bit-map device, Graphwriter uses a set of raster fonts which has been constructed especially for these devices. Raster fonts are usually bolder than vector fonts, and have some special characteristics such as outlining in a different color, or using a special drop shadow effect. These fonts, however, are only available in several discrete sizes, not in a continuous range of sizes. Graphwriter always prompts for character size in millimeters. And when using raster fonts, the size closest to the entered size is chosen automatically.

**Text Elements:
ALLOWABLE AND DEFAULT VALUES FOR STYLE CHARACTERISTICS**

Text Elements: ALLOWABLE AND DEFAULT VALUES FOR STYLE CHARACTERISTICS																														
Characteristic	Description	Allowable Values	Default Values																											
Character size	Height in millimeters	1 to 100 millimeters	Headings: 4.5 mm Notes: 2.8 mm Comments: 3.3 mm Axis Titles: 3.3 mm																											
Color*	Pen or CRT colors to be used in chart; CRT colors may appear differently from pen colors on plotted chart	Black Blue Green Red Orange Brown Violet Turquoise Gold Lime Green	Black																											
Decimal Places	Number of decimal places shown for a number	-1, 0 to 5. Note: With -1, the program determines the proper number of decimal places.	Variable																											
Font	Style of plotted characters	<table border="0"> <tr> <td style="text-align: center;"><u>Vector</u></td> <td style="text-align: center;"><u>Printer Raster</u></td> <td></td> </tr> <tr> <td>1. Standard</td> <td>1. Standard</td> <td>Headings: #2</td> </tr> <tr> <td>2. Bold</td> <td>2. Standard</td> <td>Other Text: #1</td> </tr> <tr> <td>3. Italic</td> <td>3. Outline</td> <td></td> </tr> <tr> <td>4. Bold Italic</td> <td>4. Thick Outline</td> <td></td> </tr> <tr> <td>5. Expanded</td> <td>5. Expanded</td> <td></td> </tr> <tr> <td>6. Bold expanded</td> <td>6. Expanded Thick Outline</td> <td></td> </tr> <tr> <td>7. Roman</td> <td>7. Expanded Outline</td> <td></td> </tr> <tr> <td>8. Bold Roman</td> <td>8. Roman</td> <td></td> </tr> </table>	<u>Vector</u>	<u>Printer Raster</u>		1. Standard	1. Standard	Headings: #2	2. Bold	2. Standard	Other Text: #1	3. Italic	3. Outline		4. Bold Italic	4. Thick Outline		5. Expanded	5. Expanded		6. Bold expanded	6. Expanded Thick Outline		7. Roman	7. Expanded Outline		8. Bold Roman	8. Roman		
<u>Vector</u>	<u>Printer Raster</u>																													
1. Standard	1. Standard	Headings: #2																												
2. Bold	2. Standard	Other Text: #1																												
3. Italic	3. Outline																													
4. Bold Italic	4. Thick Outline																													
5. Expanded	5. Expanded																													
6. Bold expanded	6. Expanded Thick Outline																													
7. Roman	7. Expanded Outline																													
8. Bold Roman	8. Roman																													
Justification	Horizontal position of text within block	Left-Flush Right-Flush Centered	Headings: Centered Notes: Left-Flush																											
Label Format	Prefix or suffix used with an axis label or data value.	\$, X, % none	None																											
Position	Horizontal location of text block on page.	Left-Flush Right-Flush Centered	Heading Block: Centered Note Block: Left-Flush																											

* Available colors will vary depending upon the plotter used.

Table 8-13: Text Elements: Allowable and Default Values for Style Characteristics

**Text Elements:
EXAMPLES OF STYLE CHARACTERISTICS**

Text Elements: EXAMPLES OF STYLE CHARACTERISTICS		
Character Size		
2 3 4 5 6 7 8 9 10		
Decimal Places		
2.20 2.24 2.237		2.2374 2.23737
Fonts		
<u>Vector</u>	<u>Printer Raster</u>	
Standard	Standard	
Bold	Standard	
<i>Italics</i>	Outline	
<i>Bold italics</i>	Thick Outline	
Expanded	Expanded	
Bold expanded	Expanded	Thick Outline
ROMAN	Expanded	Outline
BOLD ROMAN	Roman	
Justification		
Left Flush	Centered	Right Flush
Label Format (Prefix or Suffix)		
\$2.81 1,000 X		29%

Table 8-14: Text Elements: Examples of Style Characteristics

**Text Elements:
STYLE CHARACTERISTICS**

Text Elements: STYLE CHARACTERISTICS			
Element	Style Characteristics		
Axis Label (scaled)	Character Size Color	Decimal Places Font	Label Format Visibility
Axis Label (unscaled)	Character Size Color	Font Label Format	Visibility
Bar Label	Character Size Color	Font Label Format	Visibility
Bar Title	Character Size Color	Font	
Comment	Character Size Color	Font Justification	
Comment Block	Position		
Data Value	Character size Color	Decimal Places Font	Label Format Visibility
Heading Block	Position		
Heading	Character Size Color	Font Justification	
Legend Text	Character Size Color	Font	
Note Block	Position		
Note	Character Size Color	Font Justification	
Pie Slice Label	Character Size Color	Font Label	

Table 8-15: Text Elements: Style Characteristics

**Text Elements:
STYLE CHARACTERISTICS (Continued)**

Text Elements: STYLE CHARACTERISTICS (Continued)			
Pie Slice Value or %	Character Size Color	Font Label Format	Visibility
Pie Title	Character Size Color	Font Position	
X Axis Label	Character Size Color	Decimal Places (scaled)	Font Label Format Visibility
X Axis Title	Character Size Color	Font	
Y Axis Label	Character Size Color	Decimal Places (scaled)	Font Label Format Visibility
Y Axis Title	Character Size Color	Font	

Table 8-15: Text Elements: Style Characteristics (Continued)

**Text Elements:
DEFAULT STYLE CHARACTERISTICS**

Text Elements: DEFAULT STYLE CHARACTERISTICS					
Element	Font Vector/Raster	Character Size (mm)	Color	Justification	Other Characteristics
Axis Label (scaled)	Standard/Edge	3.0	Black	Centered	Decimal Places: Variable
Axis Label	Standard/Edge	3.0	Black	Centered	
Bar Label	Standard/Edge	3.0	Black	Variable	
Bar Title	Standard/Edge	3.0	Black	Variable	
Comment	Standard/Edge	3.3	Black	Left-Flush	
Comment Block	-	-	-	-	Position: Variable
Data Value	Standard/Edge	3.0	Black	Centered	
Heading Block	-	-	-	-	Position: Centered
Heading	Bold/Edge	4.5	Black	Centered	
Legend Text	Standard/Edge	3.0	Black	Variable	
Note Block	-	-	-	-	Position: Left-Flush
Note	Standard/Edge	2.8	Black	Left-Flush	
Pie Slice Label	Standard/Edge	2.8	Black	Centered	Decimal Places: Variable
Pie Slice Value or %	Standard/Edge	2.8	Black	Variable	Decimal Places: Variable
Pie Title	Standard/Edge	3.3	Black	Centered	
X Axis Title	Standard/Edge	3.3	Black	Centered	
Y Axis Title	Standard/Edge	3.3	Black	Centered	

Table 8-16: Text Elements: Default Style Characteristics

Style Characteristics of the Chart

In addition to the style characteristics for each group of chart elements, there are style characteristics for the chart itself. All of these style characteristics are specified in the Change Plot Options Menu. The pre-set or default plot options can be changed in the Setup Program. See Chapter 6, "Customizing Graphwriter," for a detailed explanation of how to do this.

Table 8-17 shows the style characteristics and allowable values for the chart itself.

Chart: ALLOWABLE AND DEFAULT VALUES FOR STYLE CHARACTERISTICS

Chart: ALLOWABLE AND DEFAULT VALUES FOR STYLE CHARACTERISTICS		
Style Characteristics	Allowable Values	Default Values
Color Range	Full color or Black and White	Black and White
Medium/Pen Set	Plain Paper Transparency Coated Paper	Plain Paper
Paper Size	8.5 x 11 inches 8.5 x 10.5 inches 11 x 16.5 inches 210 x 297 mm	8.5 x 11 inches
Orientation (Refers to plot area on page)	Horizontal Vertical	Horizontal
Plot Area (Refers to placement and size of plot area on page)	Full page Top half Bottom half Right half Left half Slide (35 mm) Custom size	Full Page

Table 8-17: Chart: Allowable and Default Values for Style Characteristics



Reference: Formats in Graphwriter Basic Set

The formats in Graphwriter Basic Set cover a broad spectrum of types. Bar, pie, line, scatter plot, and text formats are included and are described in this chapter. Because the text format provides so many unique capabilities, it is discussed in greater detail in a separate chapter, Chapter 10.

One of the main points made in Chapter 5, "Learning More About Graphwriter," was that all the Graphwriter format programs were structured similarly. Again, in Chapter 7, "Graphwriter Menus," we reinforced that point by showing you menus from the B020 program as representative of the way Graphwriter works. In this chapter we continue to emphasize that the Graphwriter format programs are similar -- but with minor differences.

Since we have explained Graphwriter in terms of B020 in several places, we will assume that you are familiar with that format. Thus, we will explain the minor difference among the format programs in terms of how they differ from B020.

You probably have some intuitive notions of what the differences might be from Chapter 2, "Selecting a Graphwriter Format," where we discussed best uses for different formats and how to select the format most suited to your needs. The primary way in which formats vary, of course, is in what data are asked for and what the data represent. These differences will be most apparent in the Enter/Change Chart Data Menu, and the Change Chart Style Menu.

It is well to keep in mind that after selecting a particular format to use for your chart, you should check the data limits. You want to be sure the selected format will accommodate all your data.

We describe each format in the Graphwriter Basic Set using the following outline:

- Description
- Differences from B020 -- Data Entry
- Differences from B020 -- Style Characteristics
- Data and Character Limits
- Compatibility
- Discussion of Examples
- Special Instructions

Perhaps a word should be said about the examples. For each format, we show a chart produced with some actual or hypothetical data. Then we show a generic diagram with the format specific chart elements labeled.

Format Compatibility

We have mentioned before that you can use several different formats to present your data, but one format will present your message more effectively. We have not, however, considered that you may wish to present several different messages using the same set of data.

To make it easier for you to do this, Graphwriter provides families of formats which can share data without its being re-entered from the keyboard. Formats that can use data in this way are grouped into families and considered compatible formats.

There are basically two families which can share data. These two families include formats from both the Basic Set and the Extension Set as shown in Table 9-1.

FORMAT FAMILIES			
Family 1		Family 2	
<u>Basic Set</u>	<u>Extension Set</u>	<u>Basic Set</u>	<u>Extension Set</u>
B010	C020	B020	L020
B011	B022	B021	L030
P010	B060	B030	
		B031	
		L010	
		C010	

Table 9-1: Format Families

Even though this chapter is devoted to discussing formats in the Basic Set, we do think you should know which formats in the Extension Set are compatible with formats in the Basic Set.

The balance of the formats in the Basic and Extension Sets are not compatible with any other formats.

We will discuss in detail how data is transferred within each of these families after we discuss the notion of data transfer in general.

Data Transfer Between Formats

An important notion to understand about format families is how they use the same data. For instance, the same data can be used by the Segmented Bar Format (B020) and the Clustered Bar Format (B030). But the results are different.

To help you understand what happens when data are used by compatible formats, let us suppose you have the following data:

NUMBER OF TRANSPORTATION UNITS SOLD (in millions)				
	1981	1982	1983	1984
Cars	200	100	300	400
Motorcycles	200	250	300	350
Bicycles	400	300	200	250
Total	800	650	800	1000

Table 9-2: Number of Transportation Units Sold (in millions)

You could display it as segmented bars, clustered bars, or data points on lines. By just entering the data once you could show it in these three different formats because the Segmented Bar, Clustered Bar, and Line Charts are compatible with one another.

Using the data above, you might first decide to show it as segmented bars because you want to emphasize how the components relate to one another as well as a total. Figure 9-1 shows this.

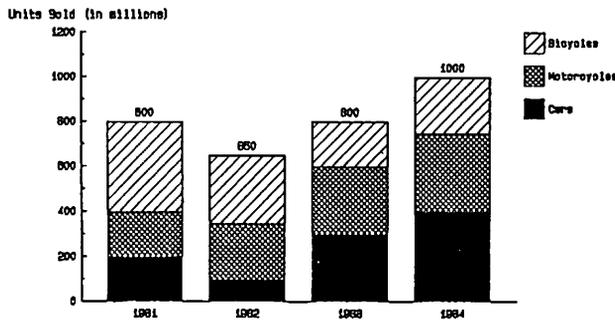


Figure 9-1: Segmented Bar Chart (B020)

Next, suppose you decide to use the Clustered Bar Format because you want to emphasize the individual values of the different groups rather than emphasize the cumulative value of a group. You can use the entered data in the Clustered Bar Format (B030) without re-entering the data from the keyboard.

To transfer data between these two formats, you could enter the required data into B020. You could then store the entered data in a chart file, but it is not necessary. However, Graphwriter automatically keeps a file of entered data in memory until the data is changed or a format in a different family is used.

Because the data from the previously used format is automatically saved, you can use it for a new format, within the same family, without re-entering from the keyboard. Return to the Graphwriter Format Menu. Select Format B030 from the menu and start it up. Format B030 can now use the data entered for B020.

The segment values in B020 become the individual bar values in each cluster. That is, segment series one becomes bar series one; segment series two becomes bar series two, and segment series three becomes bar series three. Perhaps you can also see that the segmented bars become the aggregate cluster of bars. Figure 9-2 shows how the same data looks when transferred from Segmented Bars (B020) to Clustered Bars (B030).

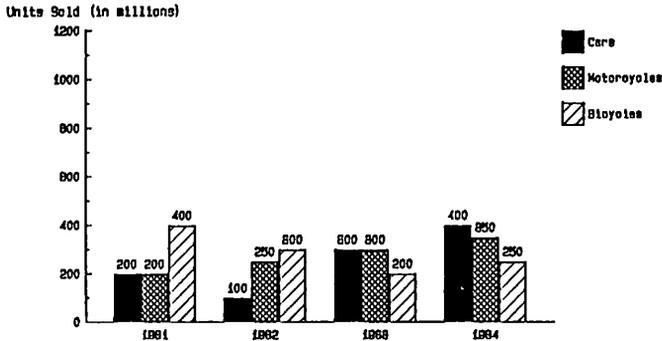


Figure 9-2: Clustered Bar Chart (B030)

If you decided to show this same data in a line chart, you could do so just as easily. You could select and start up L010, which could then use original data entered in B020. In this case, each segment series value becomes a point on a line, and you would have three lines of data. You can see in Figure 9-3 how the data looks in a Line Chart (L010).



Figure 9-3: Line Chart (L010)

You can see that the Line Chart tends to emphasize how each group changes over time. In the Clustered Bar Chart you notice how each group compares to the other group at different time intervals. And in the Segmented Bar Chart the cumulative aspect is emphasized.

Thus you can see how transferring data between formats can be useful for emphasizing different aspects of the data. Before you transfer data, however, you will probably want to know how each format transfers and receives chart elements. We have summarized that information in Tables 9-3 and 9-4.

Table 9-3 shows how various chart elements are transferred from format to format within Family 1. Table 9-4 does the same for Family 2.

RESULTS OF DATA TRANSFERS WITHIN FAMILY 1						
Format of Origin	Chart Element	Resulting Chart Element				
		B010 B011	P010	C020	B022	B060
B010 B011	Bar	---	Pie slice	Pie slice	Segment in Bar # 1	Bar with Inset Labels
	Set of Bars	---	Pie	Pie	Bar # 1 Bar # 2 No Transfer	Set of Bars with Inset Labels
P010	Pie Slice (Pie # 1)	Bar	---	Pie Slice	Segment within Bar # 1	Bar with Inset Labels
	Pie (Pie # 1)	Set of Bars	---	Pie Slice	Bar # 1	Set of Bars
	Pie Slice (Pie # 2)	No Transfer	---	Segment within Expanded Bar	Segment within Bar # 2	No Transfer
	Pie (Pie # 2)	No Transfer	---	Expanded Bar	Bar # 2	No Transfer
	Pie (# 3 & 4)	No Transfer	---	No Transfer	No Transfer	No Transfer

Table 9-3: Results of Data Transfers in Family 1

RESULTS OF DATA TRANSFERS WITHIN FAMILY I (continued)						
Format of Origin Element	Chart Element	Resulting Chart Element				
		B010 B011	P010	C020	B022	B060
C020	Pie Slice	Bar	Pie Slice	---	Segment within Bar # 1	Horizontal Bar with Inset Labels
	Pie	Set of Bars	Pie	---	Bar # 1	Set of Bars
	Segment within Bar	No Transfer	No Transfer	---	No Transfer	No Transfer
B022	Segment within Bar # 1	Bar	Pie Slice	Pie Slice	---	Bar with Inset Labels
	Bar # 1	Set of Bars	Pie # 1	Pie # 1	---	Set of Bars with Inset Labels
	Segment within Bar # 2	No Transfer	Pie Slice	No Transfer	---	No Transfer
	Bar # 2	No Transfer	Pie # 2	No Transfer	---	No Transfer
B060	Bar with Inset Labels	Bar	Pie Slice (1 Pie)	Pie Slice	Segment in Bar # 1	---
	Set of Bars with Inset Labels	Set of Bars	Pie # 1	Pie	Bar # 1	---

Table 9-3: Results of Data Transfer within Family I (Continued)

RESULTS OF DATA TRANSFERS WITHIN FAMILY 2							
Format of Origin	Chart Element	Resulting Chart Element					
		B020 B021	B030 B031	L010	C010	L020	L030
B020 B021	Segment within Bar	---	Bar within Cluster	Point on Line	Point on Line	Point on Line	No Trans.
	Bar	---	Cluster	Line	Line	Line with Fill below	No Trans
B030 B031	Bar within Cluster	Segment within Bar	---	Point on Line	Point on Line	Point on Line	No Trans
	Cluster	Bar	---	Line	Line	Line with Fill below	No Trans.
L010	Point on Line	Segment within Bar	Bar within Cluster	---	Point on Line	Point Line	No Trans
	Line	Bar	Cluster	---	Line	Line with Fill below	No Trans
C010	Point on Line	Segment within Bar	Bar within Cluster	Point on Line	---	Point on Line	Point on Line
	Line	Bar	Cluster	Line	---	Line with Fill below	Line
	Bar	No Trans	No Trans	No Trans	---	No Trans	No Trans
L020	Point on Line	Segment within Bar	Bar within Cluster	Point on Line	Point on Line	---	Point on Line
	Line with Fill below	Bar	Cluster	Line	Line	---	Line
L030	Point on Line	Segment within Bar	Bar within Cluster	Point on Line	Point on Line	Point on cumulative Line	---
	Line	Bar	Cluster	Line	Line	Line with Fill below	---
					Bar within Set of Bars*		

* If 8 sets of data are entered, last set becomes bars.

Table 9-4: Results of Data Transfers in Family 2

From the table you see that the segments in Format B020 become bars in Format B030 and become points on lines in Format L010.

There are some limitations to transferring or mapping data between formats. In some cases, these limitations are straightforward and can be discerned by checking the data limits. In some cases, there are additional constraints on the exchange of data between formats.

The data limits and additional constraints are outlined for Family 1 and Family 2 below.

Compatibility Limitations for Family 1

Format compatibility is limited by the data limits of the receiving format and occasionally some additional constraints of the receiving and sending formats. A good preliminary step to transferring data between formats is to check the data limits of the receiving format. This will help you determine how much of your original data will be accepted.

The data limits for Family 1 are shown in Table 9-5.

DATA LIMITS FOR FAMILY 1			
Format	Method of Representing Data	Data Limits	
B010	Bars (vertical)	Number of Bars:	36
B011	Bars (horizontal)	Number of Bars:	36
P010	Pies	Number of Pies:	4
	Pie Slices	Number of Slices/Pie:	16
C020	Pie	Number of Pies:	1
	Pie Slices	Number of Slices/Pie:	16
	Bar	Number of Bars:	1
	Bar Segments	Number of Segments/Bar:	16
B022	Bars (vertical)	Number of Bars:	2
	Segments	Number of Segments/Bar:	16
B060	Bars (horizontal) (inset labels)	Number of Bars:	18

Table 9-5: Data Limits for Family 1

You see right away that the data limits for B010 and B011 are the same. And you surmise, correctly, that data can easily be exchanged between the

two formats. Assumptions about exchanging data between P010 and B010 or B011 are not so readily made. In fact, there are some additional rules about entering data into each of these formats.

- P010 only accepts data to create 1 pie, not 4 pies, with up to 16 slices in that pie.
- B010 requires a Y axis and B011 requires an X axis be specified before plotting when data from P010 is used.

If you try to plot directly from P010 to B010 or B011, you will see the following message on the screen:

"Reason for incomplete plot:

Invalid axis scale (minimum and/or maximum).
Press NEXT ITEM to continue."

You are then led back to the Plot Chart Menu. You need to go to the Enter/Change Chart Data Menu and select the "Enter/Change Axes" option to enter an axis. Then go back to the Plot Chart Menu to plot your chart.

- B010 and B011 only accept up to 16 slices from P010, not the possible 64 slices which can be used in P010.
- B010 transfers to B022; however, all bars are stacked within the original Y axis maximum which may not be adequate for the sum of the bars. Check the Y axis maximum prior to plotting and adjust the maximum to accommodate all data.
- B010 transfers to B060; however, the fill pattern below the bar may overwrite the inset labels. Direct entry, rather than data transfer assures proper labelling.
- C020 transfers only its pie slices and pie to other formats. It does not transfer its segmented bar. However, when receiving data from P010, C020 accepts a first pie as a pie and a second pie as a segmented bar.
- C020 transfers data to: B010, B011, B022, and B060. If the X or Y axis is not specified, an incomplete plot occurs with the error message: Invalid axis scale. To obtain complete plotting: after the transferring of data and prior to plotting, select the appropriate format and enter axis values.
- B022 transfers only its first segmented bar to B010 and B011. B022 will transfer both bars to P010.
- B022 transfers to B060; however, the fill pattern below the bar may overwrite the inset labels. Direct entry, rather than data transfer, assures proper chart labelling.
- B022 transfers to C020 where B022 bar 1 converts into C020 pie and explodes segment 1 into C020 bar using B022 bar 2 as data. Therefore, make sure

B022 bar 2 properly relates to bar 1 before using the data transfer from B022 to C020.

- B060 transfers its bars directly as bars to B010 and B011 and as pie slices in one pie in P010. The inset labels become axis labels or pie slice labels.

Compatibility Limitations for Family 2

Format compatibility is limited by the data limits of the receiving format and occasionally some additional constraints of the receiving and sending formats. A good preliminary step to transferring data between formats is to check the data limits of the receiving format. This will help you determine how much of your original data will be accepted.

The data limits for Family 2 are shown in Table 9-6.

DATA LIMITS FOR FAMILY 2			
Format	Method of Representing Data	Data Limits	
B020	Bars (vertical) Segments	Number of Bars:	20
		Number of Segments/Bar:	8
B021	Bars (horizontal) Segments	Number of Bars:	20
		Number of Segments/Bar:	8
B030	Clusters (vertical) Bars	Number of Clusters:	20
		Number of Bars/Cluster:	8
B031	Clusters (horizontal) Bars	Number of Clusters:	20
		Number of Bars/Cluster:	8
L010	Lines Points on lines	Number of Lines:	8
		Number of Points/Line:	100
C010	Lines	Number of Lines:	7
	Points on lines	Number of Points/Line:	36
	Bar	Number of Bars:	36
L020	Lines with Shaded Area Below Points on Lines	Number of Lines:	8
		Number of Points/Line:	18
L030	Lines	Number of Lines:	8
	Points on Lines	Number of Points/Line:	18
	Data Values Table	Number of Rows:	4*
		Number of Columns:	18

* If markers used, 2 rows and 18 columns is maximum for table.

Table 9-6: Data Limits for Family 2

By looking at this table, you can begin to see how the data limits affect data exchanges.

For instance, B020 accepts data for up to 20 bars from formats C010 and L010. You can't "squeeze" 100 points of a line allowed in L010 or C010 into 20 bars in B020 or 20 clusters in B030.

The additional constraints for formats in Family 2 are as follows:

- B020 requires that you specify a Y axis large enough to accommodate cumulative values of your data points. You should do so before plotting. If you don't do so, you run the risk of not getting all your data plotted.
- B021 requires that you specify an X axis large enough to accommodate cumulative values of your data points. You should do so before plotting. If you don't do so, you run the risk of not getting all your data plotted.
- B030 transfers to B020 and B021; however, negative values are not reflected after transfer because of the cumulative nature of the B020/B021 formats. When negative values are needed in B030, either do not transfer the data or reenter data to reflect negative values.
- In L010 if the original chart is created with a log Y axis, a linear Y axis will automatically be used in any receiving formats.

- C010 must receive eight (8) sets of data from other formats in order to display a set of bars. If fewer data sets are entered, bars will not be displayed.

C010 will never send out to another format the data which have been displayed as bars. It only sends out the data which have been displayed as lines. If the line and bar data must be used in another format, the data must be reentered.

- L020 sends points of a specific X location to become segments of a bar in B020 and B021 or to become bars in a cluster in B030 and B031. L020 sends absolute Y point values of a specific X location to become points on non-cumulative lines in L010, L030, and C010. Only if there are eight (8) lines in L020, will the eighth line transfer as a set of bars in C010.
- L030 sends points on lines directly as points on lines in L010 and C010. Only if there are eight (8) lines in L030 will the eighth line transfer as a set of bars in C010.

L030 sends points on lines as segments of bars in B020 and B021, and as bars in clusters in B030 and B031.

L030 will not receive data from any of the formats in the family.

You can see from this discussion that some care must be taken when transferring data between formats.

Transfer of Style Characteristics for Graphic Shapes

The style characteristics which may be transferred, depending on the format, are: color, marker type, line type, and fill pattern.

You can think of style characteristics as being "attached" to a graphic shape. If data is transferred between formats and results in the same graphic shape, it is easy to predict how the style characteristics will appear in the new format. They will be the same. For instance, a red, solid line with an asterisk marker type in L010 will appear as a red, solid line with an asterisk marker type in C010.

However, if the graphic shapes are different in different formats, which they usually are, it is not quite as easy to predict how they will appear. There are two rules:

1. The style characteristics will transfer directly if appropriate. For instance, a red segment in B020 becomes a red bar in B030.
2. They will not be transferred if not appropriate to the new shape. For instance, a marker type, while appropriate for a line, is not appropriate for a bar.
3. The style characteristics become transformed as appropriate on the basis of a code number. (See the input forms or press **HELP** for code numbers for the style characteristics.) The style characteristics affected by this last rule are line type and fill pattern. Table 9-7 shows how they transfer between formats.

TRANSFER BETWEEN LINE TYPE AND FILL PATTERN	
Line Type	Fill Pattern
1. Solid	1. Standard
2. Dashed	2. Narrow crosshatch
3. Dotted	3. Narrow right hatch
4. Long dash	4. Narrow left hatch
5. Chain, dotted	5. Wide crosshatch
6. Chain, dashed	6. Wide right hatch
7. Bold	7. Wide left hatch
8. None	8. Empty

Table 9-7: Transfer Between Line Type and Fill Pattern

In the following pages you will find detailed information on each of the formats in Graphwriter Basic Set, as listed below.

**Contents for:
FORMATS IN GRAPHWRITER BASIC SET**

Format	Title	Page
B010	Column Chart	9-15
B011	Bar Chart (horizontal)	9-17
B020	Segmented Bars (vertical)	9-19
B021	Segmented Bars (horizontal)	9-21
B030	Clustered Bars (vertical)	9-23
B031	Clustered Bars (horizontal)	9-25
L010	Line Chart	9-27
C010	Bar-Line Combination	9-31
P010	Pie Chart (1-4 pies)	9-33
S010	Scatter Plot (regression)	9-37
T010	Text/Word Chart (Also, see Chapter 10.)	9-43

--- NOTE ---

Before transferring data from one Format to another, be sure to refer to:

- Format Compatibility - page 9-2
- Compatibility Limitations (Family 1) - page 9-8
- Compatibility Limitations (Family 2) - page 9-10

OPEC PAYS A PRICE
*Oil Exports Decline Markedly
 As Slower Growth and Conservation Take Hold*

MILLIONS OF BARRELS PER DAY

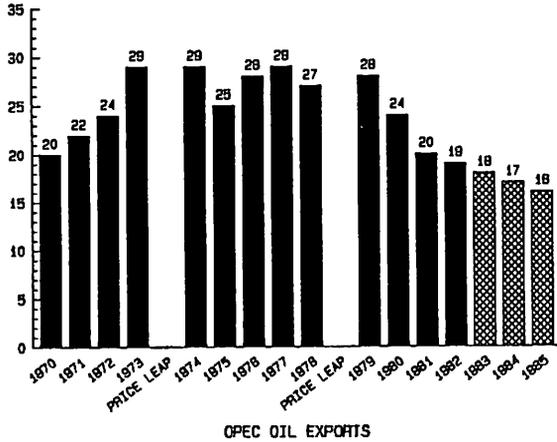


Figure 9-4: Example of B010: Column Chart (vertical)

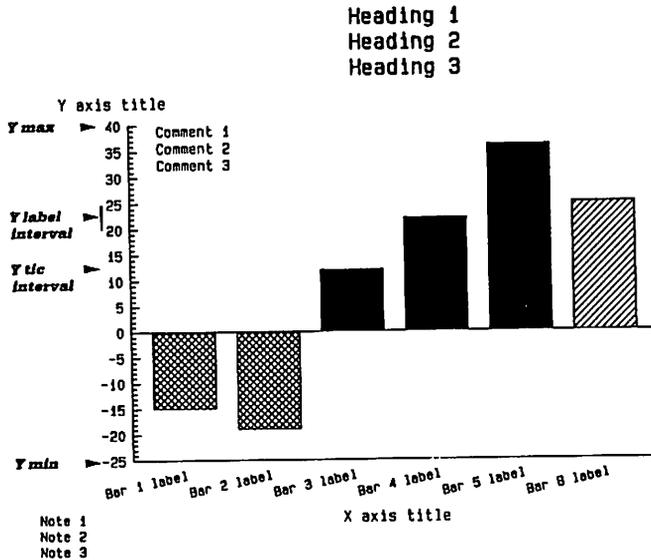


Figure 9-5: Generic Diagram for B010 Column Chart (vertical)

Format B010: Column Chart (vertical)

Description

Probably the most commonly used format, B010 may be used with any combination of positive and negative data values along the vertical (Y) axis. The horizontal (X) axis is drawn at the zero point on the vertical (Y) axis. Only the vertical (Y) axis is scaled.

Differences from B020 — Data Entry

The primary difference in the data entered from B020 is:

- Data values are represented by bars not segments.

Differences from B020 — Style Characteristics

The primary differences in terms of style characteristics from B020 are:

- Colors and fill patterns are specified for each bar instead of each segment.
- No legend is used.
- Style characteristics may be specified for each bar label rather than for all bar labels.

Data and Character Limits

This format has the following data and character limits:

Number of Bars	36	Number of Characters/Bar Label	20
----------------	----	--------------------------------	----

Compatibility

This format is compatible with the following formats:

B011	Bar Chart (horizontal)	C020	Pie-Bar Combination
P010	Pie Chart (1 - 4 pies)	B022	Double Stacked Bars
		B060	Horizontal Bars (inset labels)

Discussion of Examples

In the example of Figure 9-4 the data is a single list of numbers representing millions of barrels per day. This data is represented by the individual bars.

Figure 9-5 shows this format can be used to represent negative values. Usually, negative values will represent percent changes or be in terms of dollars, such as deficit spending.

Special Instructions

No special instructions are required to use this format.

WINNERS AND LOSERS IN THE U.S. OIL SHAKEOUT

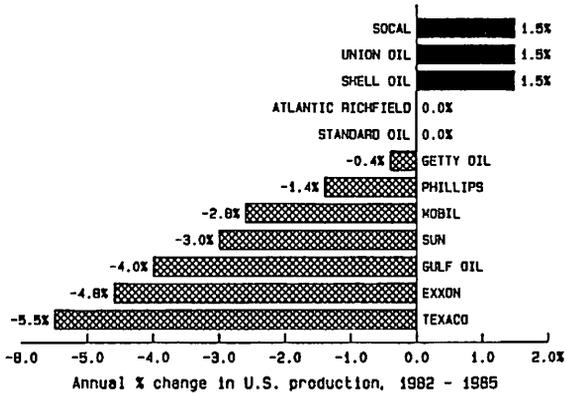


Figure 9-6: Example of B011: Bar Chart (horizontal)

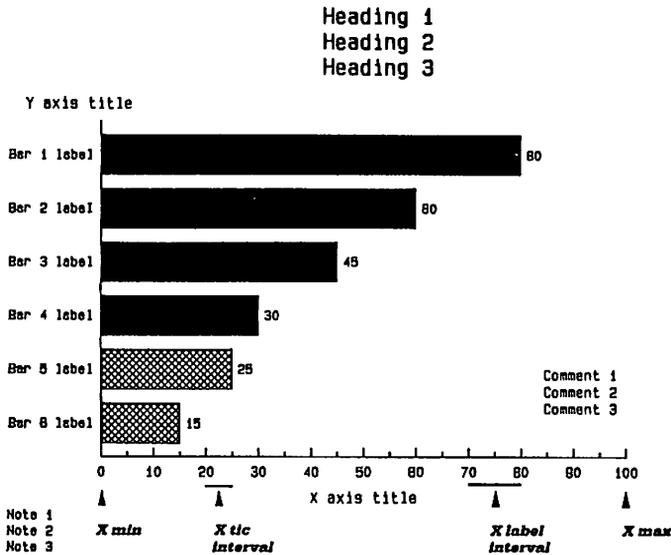


Figure 9-7: Generic Diagram for B011: Bar Chart (horizontal)

Format B011: Bar Chart (horizontal)

Description

This format can be used for any combination of positive and negative values on the horizontal (X) axis. Bar labels appear on the opposite side of the vertical axis (Y) axis from the bars they identify. Only the horizontal (X) axis is scaled.

Differences from B020 — Data Entry

The primary differences in terms of the data entered from B020 are:

- Data values are represented by bars not segments.
- The horizontal (X) axis is used to scale the size of the bars. Thus, bars are horizontal rather than vertical.

Differences from B020 — Style Characteristics

The primary differences in terms of style characteristics from B020 are:

- Colors and fill patterns are specified for each bar instead of segment.
- No legend is used.
- Style characteristics may be specified for each bar label rather than for all bar labels.

Data and Character Limits

Format B011 has the following data and character limits:

Number of Bars	36	Number of Characters/Bar Label	32
----------------	----	--------------------------------	----

Compatibility

This format is compatible with the following formats:

B010	Column Chart (vertical)	C020	Pie-Bar Combination
P010	Pie Chart (1 - 4 pies)	B022	Double Stacked Bars
		B060	Horizontal Bars (inset labels)

Discussion of Examples

The data here represent negative and positive percentage changes. Remember that whenever you are showing a percentage change, you may want to use a log scale, which is available in both Formats L010 and S010.

Special Instructions

No special instructions are required to use this format.

Microcomputer, Word Processor, Small Business and Minicomputers are Expected to Continue to Erode Mainframe Market Share

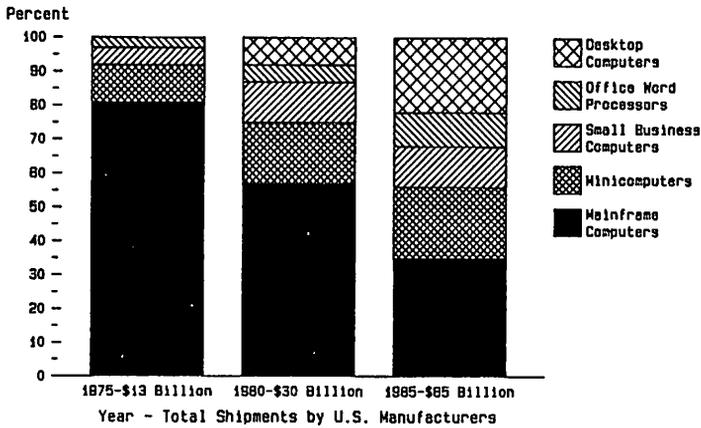


Figure 9-8: Example of B020: Segmented Bars (vertical)

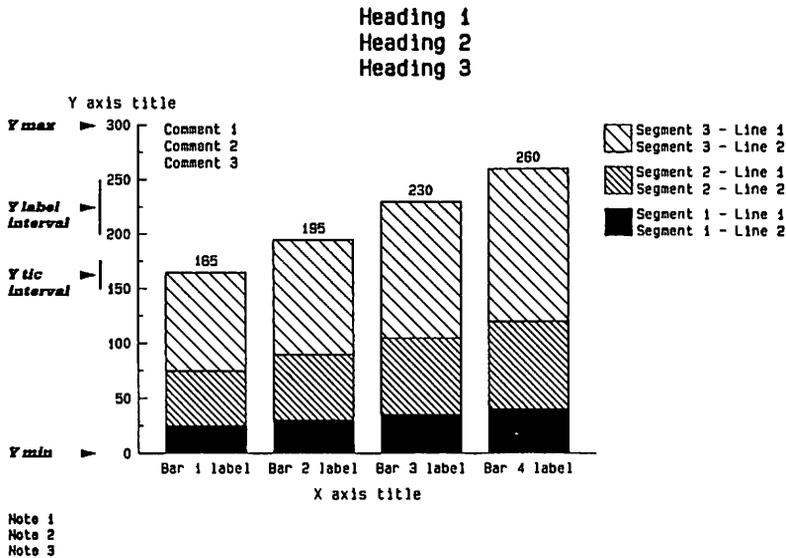


Figure 9-9: Generic Diagram for B020: Segmented Bars (vertical)

Format B020: Segmented Bars (vertical)**Description**

This format can be used to compare various items and can accommodate both positive and negative values on the vertical (Y) axis. Only the vertical (Y) axis is scaled.

Data and Character Limits

Format B020 has the following data and character limits:

Number of Bars	20	Number of Characters/Legend	
Number of Segments/Bar	8	Line 1	20
Number of Characters/ Bar Label	20	Line 2	20

Compatibility

This format is compatible with the following formats:

B021	Segmented Bars (horizontal)	L020	Surface Line Chart
B030	Clustered Bars (vertical)	L030	Line-Table Chart
B031	Clustered Bars (horizontal)		
L010	Line Chart		
C010	Bar-Line Combination		

Special Instructions

See Chapter 4 of this guide for step-by-step instructions on using this format. This is the prototype format representing typical structure and menu options.

**UNITED STATES
Imports of Petroleum Products
1981 Average Daily Totals**

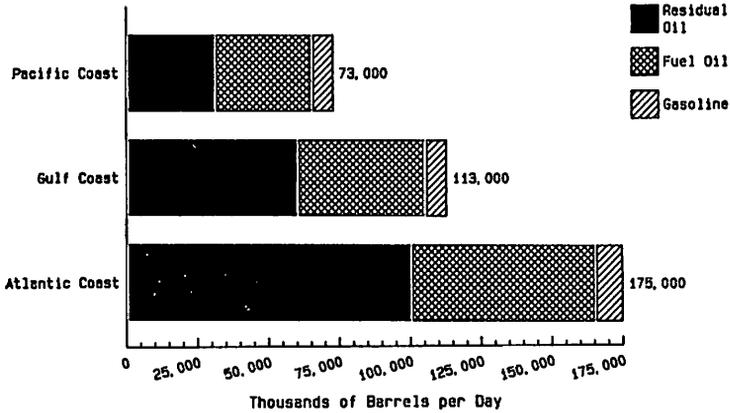


Figure 9-10: Example of B021: Segmented Bars (horizontal)

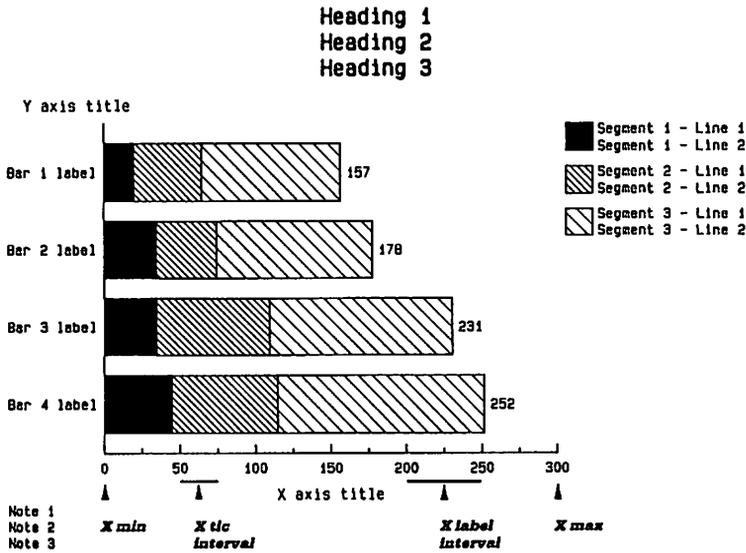


Figure 9-11: Generic Diagram for B021: Segmented Bars (horizontal)

Format B021: Segmented Bars (horizontal)**Description**

This format can be used to represent comparisons among separate items and can accommodate any combination of positive and negative values along the horizontal (X) axis. Only the horizontal (X) axis is scaled.

Differences from B020 — Data Entry

The primary difference in terms of data entered from B020 is:

- The horizontal (X) axis is used to scale the size of bars and bar segments.

Differences from B020 — Style Characteristics

There is no difference from B020 in terms of style characteristics.

Data and Character Limits

This format has the following data and character limits:

Number of Bars	20	Number of Characters/Legend	
Number of Segments/Bar	8	Line 1	20
Number of Characters/Bar Label	20	Line 2	20

Compatibility

This format is compatible with the following formats:

B020	Segmented Bars (vertical)	L020	Surface Line Chart
B030	Clustered Bars (vertical)	L030	Line-Table Chart
B031	Clustered Bars (horizontal)		
L010	Line Chart		
C010	Bar-Line Combination		

Special Instructions

No special instructions are required to use this format.

**EARNINGS PERFORMANCE DOES NOT
SUPPORT INCREASES IN DIVIDENDS . . .**

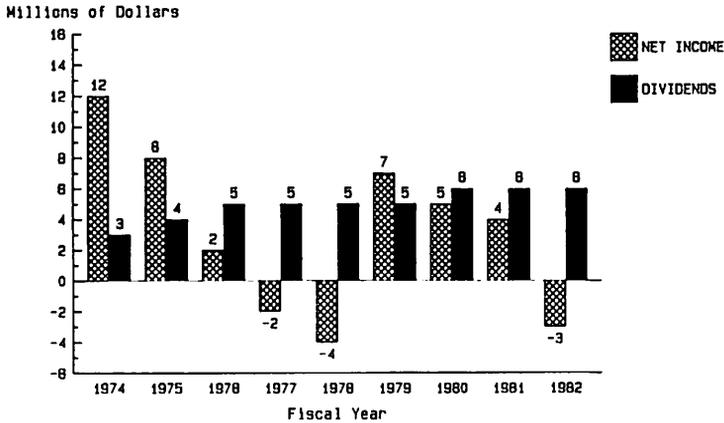


Figure 9-12: Example of B030: Clustered Bars (vertical)

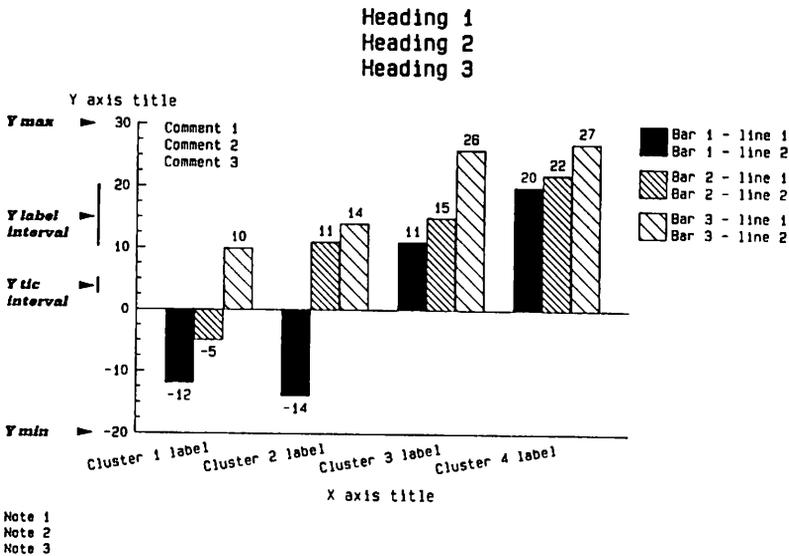


Figure 9-13: Generic Diagram for B030: Clustered Bars (vertical)

Format B030: Clustered Bars (vertical)

Description

This format can be used to represent comparisons among different items. Any combination of positive and negative values can be used. Bar sizes are measured along the vertical (Y) axis.

Differences from B020 — Data Entry

The primary differences in terms of data entered from B020 are:

- Data values are represented by individual bars rather than segments.
- Labels identify each cluster not each bar.
- The legend identifies each bar within a cluster rather than each segment within a bar.

Differences from B020 — Style Characteristics

The primary difference in terms of style characteristics from B020 is:

- Color and fill pattern are specified for bars rather than segments.

Data and Character Limits

This format has the following data and character limits:

Number of Clusters	20	Number of Characters/Legend	
Number of Bars/Cluster	8	Line 1	20
Number of Characters/ Cluster Label	20	Line 2	20

Compatibility

This format is compatible with the following formats:

B020	Segmented Bars (vertical)
B021	Segmented Bars (horizontal)
B031	Clustered Bars (horizontal)
L010	Line Chart
C010	Bar-Line Combination

Special Instructions

No special instructions are required to use this format.

**THE EFFECTS OF INFLATION:
Income and Return on Assets are Lower;
Tax and Dividend Payouts are Higher.**

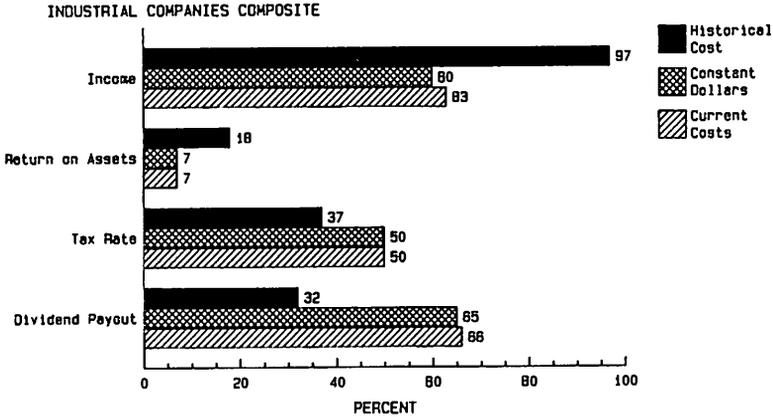


Figure 9-14: Example of B031: Clustered Bars (horizontal)

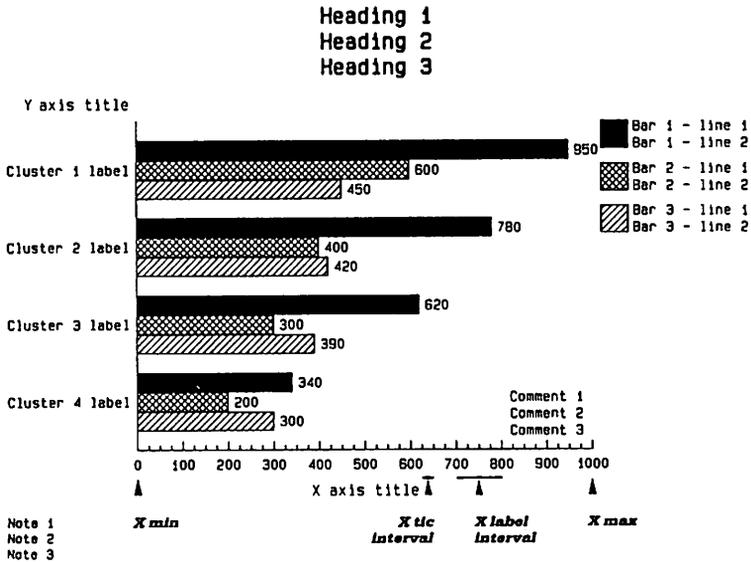


Figure 9-15: Generic Diagram for B031: Clustered Bars (horizontal)

Format B031: Clustered Bars (horizontal)**Description**

This format can be used to represent comparisons among different items. Any combination of positive and negative values may be used. Bar values are measured along the horizontal (X) axis. Only the horizontal (X) axis is scaled.

Differences from B020 — Data Entry

The primary differences in terms of data entered from B020 are:

- The horizontal (X) axis is used to scale the size of the bars.
- Data values are represented by individual bars rather than segments.
- Labels identify each cluster not each bar.
- The legend identifies each bar within a cluster rather than each segment within a bar.

Differences from B020 — Style Characteristics

The primary difference in terms of style characteristics from B020 is:

- Color and fill pattern are specified for bars rather than segments.

Data and Character Limits

This format has the following data and character limits:

Number of Clusters	20	Number of Characters/Legend	
Number of Bars/Cluster	8	Line 1	20
Number of Characters/ Cluster Label	20	Line 2	20

Compatibility

This format is compatible with the following formats:

B020	Segmented Bars (vertical)	L020	Surface Line Chart
B021	Segmented Bars (horizontal)	L030	Line-Table Chart
B030	Clustered Bars (vertical)		
L010	Line Chart		
C010	Bar-Line Combination		

Special Instructions

No special instructions are required to use this format.

Jackson Hole Corporation Range Forecast for International Hole Market

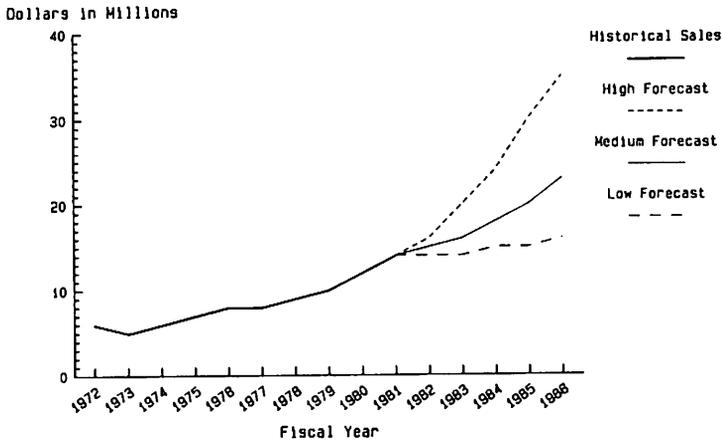


Figure 9-16: Example of L010: Line Chart

Heading 1
 Heading 2
 Heading 3

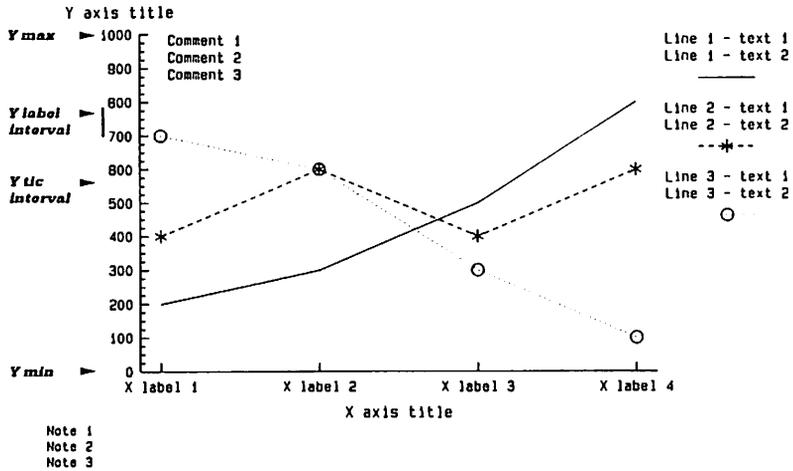


Figure 9-17: Generic Diagram for L010: Line Chart

Format L010: Line Chart

Description

This format accommodates any combination of positive and negative values on the vertical (Y) axis. Only the vertical (Y) axis is scaled and it can be logarithmically scaled. In addition to color and line type, lines may be differentiated with marker types.

Differences from B020 — Data Entry

The primary differences in terms of data entered from B020 are:

- Data values are represented by points on a line rather than segments.
- Lines may be truncated at the beginning or end by using Del to enter null values in the beginning or end positions.
- The vertical (Y) axis may have a logarithmic scale. (To use a logarithmic scale for the horizontal (X) axis, use Format S010: Scatter Plot.)

Differences from B020 — Style Characteristics

The primary differences in terms of style characteristics from B020 are:

- A line type may be specified for each line; the option of not having a line drawn is also allowed.
- Data points may be indicated by markers such as asterisk, circle, or triangle.

Data and Character Limits

This format has the following data and character limits:

Number of Lines	8	Number of Characters/Legend	
Number of Points	100	Line 1	20
Number of Characters/ X Axis Label	20	Line 2	20

Compatibility

This format is compatible with the following formats:

B020	Segmented Bars (vertical)	L020	Surface Line Chart
B021	Segmented Bars (horizontal)	L030	Line-Table Chart
B030	Clustered Bars (vertical)		
B031	Clustered Bars (horizontal)		
C010	Bar-Line Combination		

Discussion of Examples

Data in Figure 9-16 represents some actual data as well as three different sets of hypothetical data. To do this, you have to specify three lines of data and enter null values using Del for two of the forecast lines up to the break point, i.e., the point where the forecast data begins.

Special Instructions

No special instructions are required to use this format.





**A STRONG START IS FADING
PARKER-HANSON BUSINESS BY MONTH
1981**

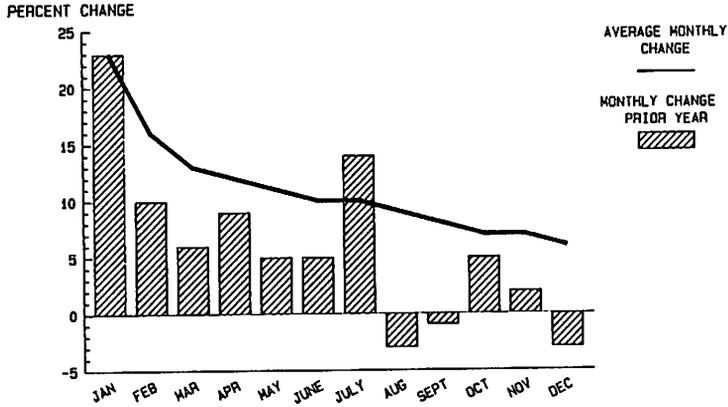


Figure 9-18: Example of C010: Bar-Line Combination

**Heading 1
Heading 2
Heading 3**

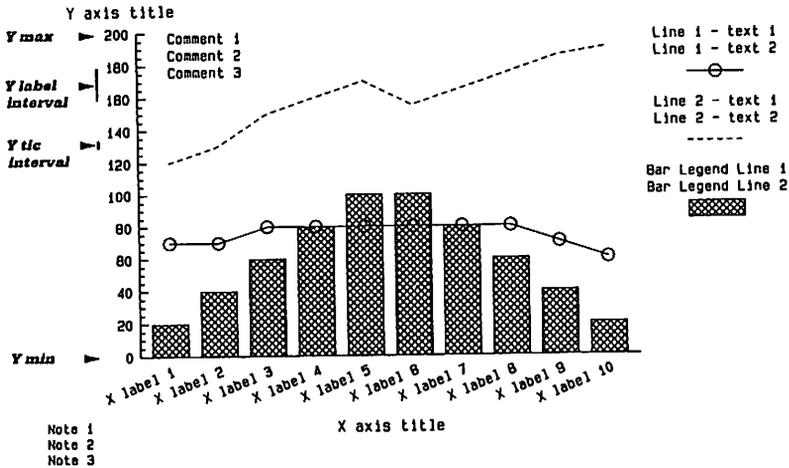


Figure 9-19: Generic Diagram for C010: Bar-Line Combination

Format C010: Bar-Line Combination

Description

This format is basically a standard line chart in which one of the lines has been replaced by a series of vertical bars. One bar is shown for each data point on the line. A legend identifies both the different lines and the one set of bars. Color and fill patterns are specified for each line and for the entire set of bars.

Differences from B020 — Data Entry

The primary differences in terms of data entered from B020 are:

- Data values are represented by points on a line or by individual bars.
- The legend contains a bar symbol as well as line and marker symbols.

Differences from B020 — Style Characteristics

The primary differences in terms of style characteristics from B020 are:

- Color, line types, and marker types may be specified for each line.
- Color and fill pattern are specified for the entire set of bars.

Data and Character Limits

This format has the following data and character limits:

Number of Bars	36	Number of Characters/Legend	
Number of Lines	7	Line 1	20
		Line 2	20
Number of Points/Line	36	Number of Characters/ X Axis Label	20

Compatibility

This format is compatible with the following formats:

B020	Segmented Bars (vertical)	L020	Surface Line Chart
B021	Segmented Bars (horizontal)	L030	Line-Table Chart
B030	Clustered Bars (vertical)		
B031	Clustered Bars (horizontal)		
L010	Line Chart		

Special Instructions

No special instructions are required to use this format.

Southern Utilities

Sources and Uses of Funds

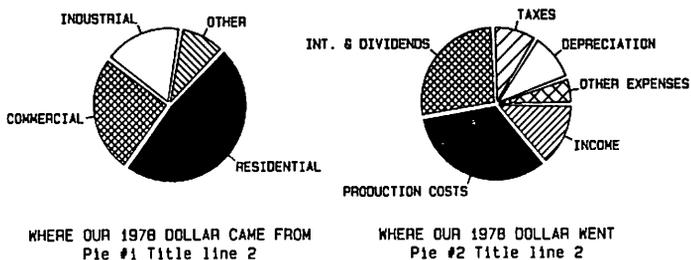
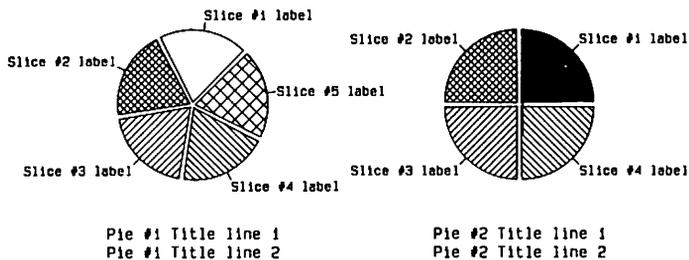


Figure 9-20: Example of P010: Pie Chart (1 - 4 pies)

Heading 1
Heading 2
Heading 3



Note 1
Note 2
Note 3

Comment 1
Comment 2
Comment 3

Figure 9-21: Generic Diagram for P010: Pie Chart (1 - 4 pies)

Format P010: Pie Chart (1 - 4 pies)

Description

This format can be used to present component comparisons. Up to four pies may be used per chart. Each pie is assigned a size and location depending on the number of pies used.

Differences from B020 -- Data Entry

The primary differences in terms of data entered from B020 are:

- Data values are represented by pie slices instead of bar segments.
- There are no axes. All scaling is relative within a pie and each pie is scaled independently.
- Each data value is translated into a percent of the total pie and determines the size of each pie slice accordingly.
- Pies within a chart may be assigned different sizes. This is done by specifying a radius value in terms of a percent of the standard radius for a pie on that chart. For example, to make one pie 50% larger than another, you specify its radius as 150% of the standard pie radius. Select this option from the "Change Chart Style" menu.
- Labels may be assigned to each pie slice.
- The legend represents the different pie slices.

Differences from B020 -- Style Characteristics

The primary differences in terms of style characteristics from B020 are:

- The beginning angle from which pie slices are measured begins at 0 degrees in the three o'clock position. Successive slices are measured in a counter-clockwise direction. This beginning angle may be rotated.
- The X,Y coordinates designating the center of a pie may be moved on the page.
- Style characteristics can be specified for each slice label.
- An individual slice may be exploded from its pie; that is, the slice is moved out from the center of the pie. Select this option from the "Change Chart Style" menu.
- An individual slice may be blanked, which means the slice is not shown. However, a value must be assigned to a blank slice in order to size the area. Select this option from the "Change Chart Style" menu.

Data and Character Limits

This format has the following data and character limits:

Number of Pies	4	Number of Characters/ Pie Title	
Number of Slices/Pie	16	Line 1	32
Number of Characters/ Slice Label	20	Line 2	32

Compatibility

This format is compatible with the following formats:

B010	Column Chart (vertical)	C020	Pie-Bar Combination
B011	Bar Chart (horizontal)	B022	Double Stacked Bars
		B060	Horizontal Bars (inset labels)

Special Instructions

No special instructions are required to use this format.



MICROWAVE OVEN MARKET SHOWS SIGNS OF MATURATION
WHILE CONVECTION OVEN MARKET IS GROWING RAPIDLY

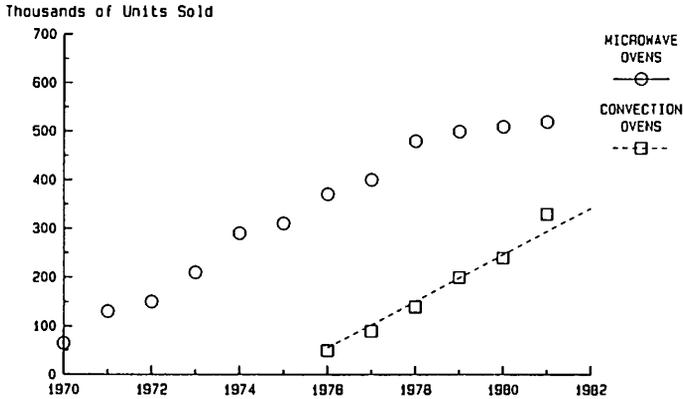


Figure 9-22: Example of S010: Scatter Plot (regression)

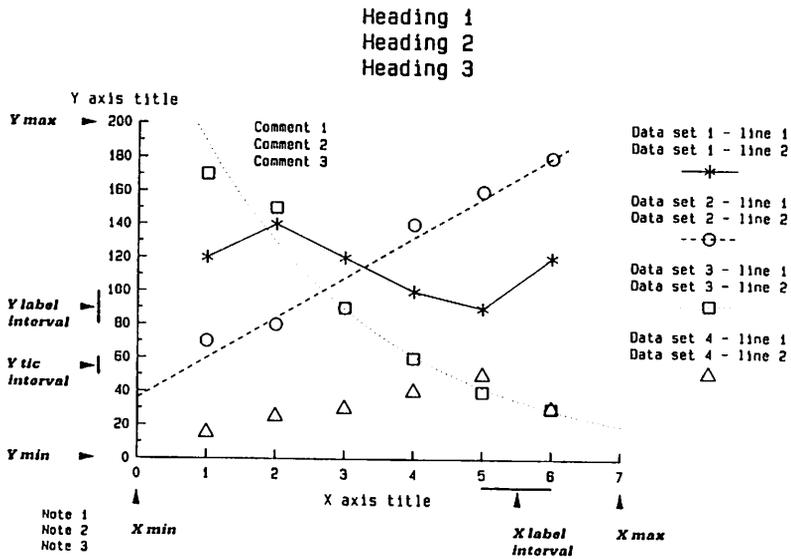


Figure 9-23: Generic Diagram for S010: Scatter Plot (regression)

Format S010: Scatter Plot (Regression)

Description

The Scatter Plot may be used with four different regression formulas. Both axes are scaled, and both can be scaled using a log scale. Marker types may be specified for data points.

Differences from B020 -- Data Entry

The primary differences in terms of data entered from B020 are:

- Data values are represented by points on a line.
- Each point is determined by an X value and a Y value.
- Both the vertical (Y) axis and horizontal (X) axis are scaled, and both axes may use a log scale (to base 10).

If a log scale is used, you are only prompted for minimum and maximum axis values. You are not prompted for label and tic intervals. Also, if you try to enter a minimum or maximum value of less than or equal to 0, you are warned with a message.

For a log scale, the values are automatically calculated for you. For each cycle (intervals from 1 to 10, from 10 to 100, etc.) the default labels are 1, 3, 10; 10, 30, 100; 100, 300, 1000, etc.

Negative values are permitted if linear scales are used, with exceptions noted below.

- The number of points in each data set can vary, depending on how you answer the question:

"Will the same X-axis values be used for all data sets (currently yes)?"

If you say "no," you are then prompted for X values for each data set, and each data set may have a different number of points.

If you say "yes," you are asked for X values only once, and all data sets will have the same number of points.

- A data set must contain at least one point. However, it should contain a minimum of three points if you want to use a regression calculation that is valid.
- A regression line may be fitted to each set of data points. The regression line may be specified using linear, log, exponential, or power curve equations (described below).

- A regression choice of "None" results in scatter points being connected in a manner similar to the way they are connected in L010.
- Lines may be created from a subset of the points used in the regression calculation by specifying the desired X min and X max. The default values used by the computer are the X min and X max used for the X axis scale.
- Legend text may be entered for each set of data.

Differences from B020 -- Style Characteristics

The primary differences in terms of style characteristics from B020 are:

- The number of labels can be specified for a log scale. You are then prompted for each label (which must be numeric and fit between the minimum and maximum values).

Once you specify the number of labels you want, they will not be recalculated for you. You have to enter each one.
- Color, line type, and marker type may be specified for each set of data.

Data and Character Limits

This format has the following data and character limits:

Number of Sets of Data Points	8	Number of Characters/Legend	
Number of Points/Set	80	Line 1	20
		Line 2	20

Compatibility

This format is not compatible with any other format.

Special Instructions

Regression Lines

With Format S010, you may fit a regression line to each set of data points. The regression line may be selected from the following options:

1. Linear: This is calculated with the formula: $y = a + bx$.
2. Exponential: This is calculated with the formula: $y = ae^{bx}$ where x is greater than 0.
3. Logarithmic: This is calculated with the formula: $y = a + b(\ln x)$.
4. Power curve: This is calculated with the formula: $y = ax^b$ where x is greater than 0.
5. None: This option simply connects points. No regression line is calculated.

After you select a regression formula and enter your data, you may look at the calculated r^2 values prior to plotting your data. Select option 5 from the Print Data Menu to display regression information.

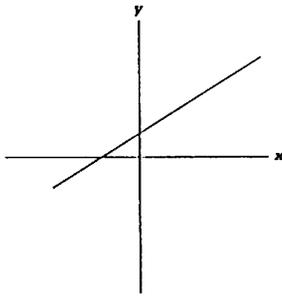
Invalid Regression

One of the things you want to check is the validity of the regression calculation. Although the program will give you a warning message if r^2 is invalid, it will still try to plot with an invalid regression. The plot will not be completed.

There are four cases when the regression is not valid.

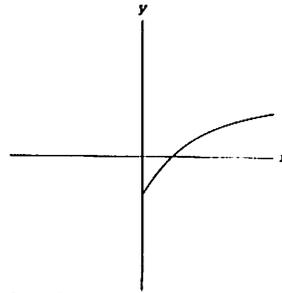
1. The regression calculation is not valid when the Y line has an infinite slope, thus is vertical. All X values entered were the same.
2. The regression calculation is not valid when the X line has an infinite slope, thus is horizontal. All Y values entered were the same.
3. The regression calculation is not valid if you have only entered two data points.
4. The regression calculation is not valid when the X or Y values entered or the combination of the X and Y values entered is too large. This can happen only in the exponential and power curve regression calculations.

Examples of each type of curve (created with linear scales) are shown in the following figures:



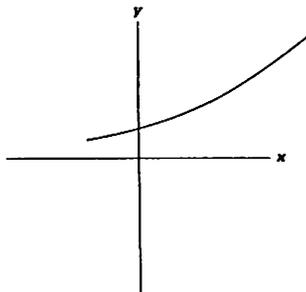
Linear

Figure 9-24: Curve With Linear Regression Formula



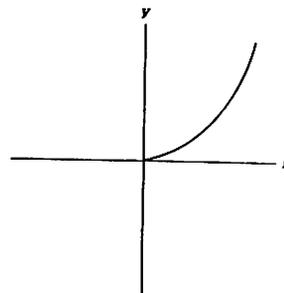
Logarithmic

Figure 9-25: Curve With Logarithmic Regression Formula



Exponential

Figure 9-26: Curve With Exponential Regression Formula



Power

Figure 9-27: Curve With Power Curve Regression Formula



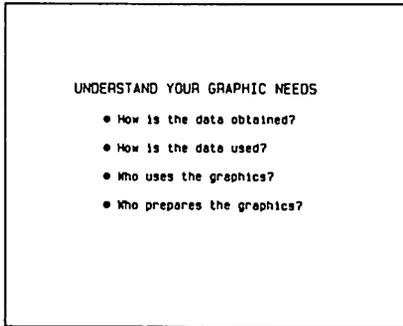


Figure 9-28: Bullet Page Format (1 to 6 Bullets)

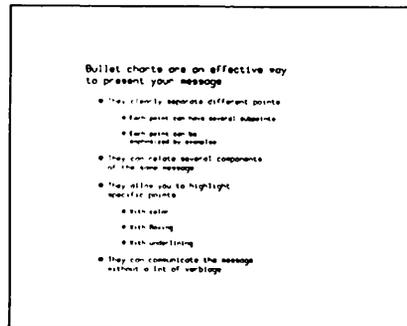


Figure 9-29: Bullet Page Format (4 to 12 Bullets)

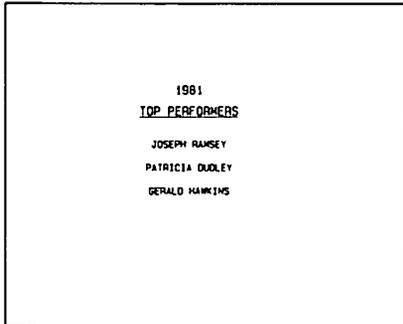


Figure 9-30: Centered Page Format (Up to 12 Lines)

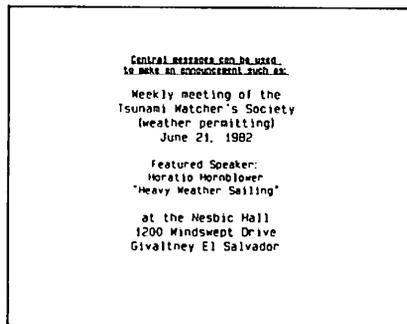


Figure 9-31: Centered Page Format (Up to 20 Lines)

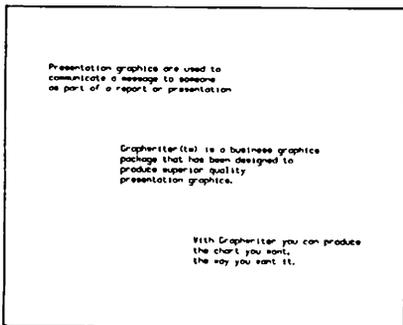


Figure 9-32: Paragraph Page Format

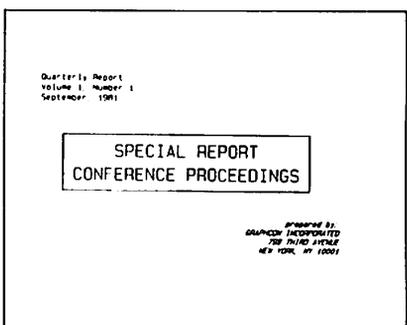


Figure 9-33: Title Page Format

Format T010: Text/Word Chart

Description

With this format you can create text charts or slides using up to seven (7) different pre-defined page formats, each with eight (8) different block styles. You may also define your own page formats.

Differences from B020 -- Data Entry

The primary differences in terms of the data entered from B020 are:

- Before entering your text, you must first select a page format.

Page format refers to overall layout or look of the page and text. Examples, shown in Figures 9-28 through 9-33, are:

- | | |
|---------------------|--|
| Bullet (1 - 6) | Refers to number of text blocks on a page. |
| Bullet (4 - 12) | Refers to number of text blocks on a page. |
| Centered (up to 12) | Refers to number of lines of text on a page. |
| Centered (up to 20) | Refers to number of lines of text on a page. |

Paragraph

Title Page

In addition, you may select Manual Placement of text on the page. This means you specify X,Y coordinates for each block of text.

- The next choice you must specify before entering text is block style. In each block of text you may enter up to eight (8) lines. And there are eight (8) possible block styles for each page format.

Block style refers to initial values for:

Size	Highlighting	Line Spacing
Color	Bullet	Block Spacing
Font	Justification	
Indentation		

You may add up to 24 blocks of text but will not be warned if you run out of room on the page.

- You may specify three (3) style characteristics for the block style which will supersede the initial values. These are:

Color	Font	Highlighting
-------	------	--------------

Differences from B020 -- Style Characteristics

The primary differences in terms of style characteristics from B020 are:

- In addition to being able to change the usual style characteristics available for text -- size, color, font, and justification, you may change other style characteristics applying to block style. These are:

Highlighting	Line Spacing
Bullet	Block Spacing
Indentation	

Style changes are, of course, made in the Change Style Menu.

- Also on the Change Style Menu you may re-define characteristics for any page format. These style characteristics are:

Page Format Name
Margin in mm (millimeters) to top of first Text Block
8 Block Styles for that page

Data and Character Limits

This format has the following data and character limits:

Number of Text Blocks	24	Number of Characters/	
Number of Lines/Text Block	8	Text Line	48

Data limits for the number of text lines and number of characters per line are variable and depend roughly on the character size of the block styles used.

Compatibility

This format is not compatible with any other formats.

Discussion of Examples

Figures 9-28, 9-29, 9-30, 9-31, 9-32, and 9-33 show different page formats.

Special Instructions

To find out the specific details of each page format and its eight (8) block styles, select the "Print all Page Formats" option from the Print Data Menu.

Also, you may find it helpful to first sketch your text charts on the grid provided on the T010 Input Form.

For more detailed definitions of style characteristics, listings of default values, descriptions of prompt sequences, explanations of the finer points, and suggestion of applications for this program, see Chapter 10.

Reference: Text Format

In Graphwriter Basic Set one program requires more explanation than the others. This is the Text/Word Chart (T010), which allows you to create a wide variety of text charts.

This chapter explains in detail the additional facts you need to know to use this program. In particular, it provides definitions of format specific elements and style characteristics, listings of default values, descriptions of prompt-response sequences, and suggestions for applications.

T010: Text/Word Chart

The Graphwriter Text/Word Chart Format allows you to create text charts or slides quickly and easily. This format is similar to other Graphwriter programs in that it is reached from the Graphwriter Format Menu and it has menus with options. The primary difference from other Graphwriter programs is you must specify a page format for the chart and a block style for each text block before entering text.

You may use any of seven (7) pre-defined page formats, or, if you prefer, you can create and store your own page formats, incorporating your own page layout specifications and page format name.

The seven (7) pre-defined page formats are:

- Bullet (1 to 6 Bullets)
- Bullet (4 to 12 Bullets)
- Centered (Up to 12 Lines)
- Centered Chart (Up to 20 Lines)
- Paragraph
- Manual Placement
- Title Page

Each page format provides overall page layout specifications, including a specification for the top margin on the page, and also has its own set of eight (8) block styles.

specification for the top margin on the page, and also has its own set of eight (8) block styles.

Each block style includes specifications for the entire block of text as well as the text itself. Examples of style characteristics for blocks, such as horizontal position, font, character size, and color are defined below.

All the block style characteristics may be changed in the Change Chart Style Menu. However, three of them -- color, font, and highlighting -- may also be specified in the Enter/Change Text Elements Menu before text is entered.

To use the Text/Word program, you first select the "Change Page Format" option to specify a new page format or use the page format currently specified. You should select a page format which most closely describes the type of text chart you wish to create. Then specify a block style for each block of text before entering text.

The explanation and description of T010 is divided into the following sections:

- Block Style Characteristics
- Pre-Defined Page Formats
- Specifying a Page Format
- Specifying Block Styles and Entering Your Text
- Moving Text Blocks
- Defining Your Own Page Formats

Block Style Characteristics

Following is a list, in alphabetical order, of the style characteristics along with definitions and allowable values, for text blocks.

Style

Characteristic	Definition and Allowable Values
Block Spacing:	This defines the amount of space between text blocks. Like line spacing, block spacing is defined as a percent of the character size for the text block. The space itself is <u>above</u> the text block to which it refers. In other words, this is the amount of space that will be skipped before beginning the text block.

Allowable values are 1% to 2000%.

Style Characteristics Definition and Allowable Values

Bullet Type: This defines the type of symbol to be used with text and is usually placed at the beginning of the first line of the text block. A space automatically follows the bullet symbol.

An exception to this placement rule for bullets is when text is right-flush justified. In this case, the bullet is to the right of the first text line in the block.

Allowable values are:

<input type="checkbox"/>	Open Square	*	Asterisk
<input type="radio"/>	Open Circle	-	Dash
<input checked="" type="checkbox"/>	Solid Square		None
<input checked="" type="radio"/>	Solid Circle		

Character Size: This defines the height in millimeters for each character of the text block.

Allowable values are 1.0 to 100.0 mm. Usual character sizes are between 3.0 and 8.0 mm.

Color: This defines the color for all text in the text block, as well as for any bullets, underlining, or boxing of the text block. Default values are provided, but other color choices may be specified at the time the text is entered. Available values vary according to the graphic device used.

Possible values, depending on the plotter used, are:

Black	Brown
Blue	Violet
Green	Turquoise
Red	Gold
Orange	Lime Green

Font: This defines the character font for the entire text block. Although a default value is provided, another font may be specified at the time text is entered.

Allowable values are:

Style

Characteristic

Definition and Allowable Values

Vector font

Raster Font

Standard	Bold Italic	Edge	Expanded Edge
Bold	Expanded	Edge	Expanded
Italic	Bold Expanded	Plain	Expanded Drop
Roman	Bold Roman	Drop Shadow	

Highlighting:

This defines any additional emphasis to be applied to the entire text block. Although a default value is provided, another choice may be specified when text is entered.

Allowable values are:

Underline Box Neither

Horizontal Position

This defines the distance from the left edge of the paper to the beginning of the text block and is measured in millimeters.

On an 8.5 x 11 inch page oriented horizontally, full page allowable values are from 7.9 to 271.3 mm; 140 mm is the center of the page.

Justification:

This defines the relative positioning of the text block and the text within the block to the point specified by the horizontal location.

Allowable values are:

Left-flush
Center
Right-flush

Line Spacing:

This defines the amount of space to be placed between individual text lines within a block of text. Line spacing is defined as a percent of the character size used for the text in the block.

Allowable values are 1% to 300%.

Pre-Defined Page Formats

Brief descriptions of each of the seven pre-defined page formats follow. Default values for block style characteristics for all page formats except Manual Placement are shown in Tables 10-1 through 10-6. Examples of all page formats except Manual Placement are shown in Figures 10-1 through 10-6.

Bullet Chart (1-6 Bullets)

Bullet charts are perhaps the most commonly used text or word charts. Typically they present a series of statements or list of items which will be identified or discussed by the presenter; each statement or item is emphasized with a bullet (or other graphic symbol).

This bullet chart format is designed to be used for charts containing relatively few statements or items. Accordingly, the character sizes for this page format are larger than those for a more complex chart containing more lines of text. Table 10-1 lists the style characteristics which are pre-defined for this page format.

Page Format: BULLET CHART (1-6 BULLETS)								
Distance from top of page to top of first text block (mm): 65								
Block Style	1	2	3	4	5	6	7	8
Character Size (mm)	6.5	5.5	5.5	5.5	5.5	4.5	4.5	4.5
Color	Black	Red	Red	Red	Black	Red	Red	Red
Font	Bold	Bold	Bold	Bold	Bold	Bold	Bold	Bold
Highlighting	None	None	None	None	None	None	None	None
Bullet Type	None	Solid Circle	Solid Square	Dash	None	Solid Square	Solid Circle	Dash
Justification	Left	Left	Left	Left	Left	Left	Left	Left
Line Spacing (% Character Size)	75	75	75	75	75	75	75	75
Block Spacing (% Character Size)	175	175	175	175	175	175	175	175
Horizontal Position (mm)	45	70	70	90	45	70	70	90

Table 10-1: Default Block Style Characteristics for Bullet Page Format (Horizontal Orientation) With 1 - 6 Bullets

Note: Block styles 1 - 4 are best used for charts with up to 3 bullets, while block styles 5 - 8 are best used for charts with 4 - 6 bullets.

Bullet Chart (4-12 Bullets)

This page format is very similar to the preceding one. It is designed for bullet charts which are more complex and contain more statements and items.

The primary differences between this page format and the simple bullet format explained above are the character sizes used for the various text blocks and the spacing within and between text blocks. If you would like to use bullet charts with a greater number of lines, you may use the "Define Page Format" option to reduce the character sizes for the text blocks. Table 10-2 presents the style characteristics which have been pre-defined for this page format.

Page Format: BULLET CHART (4 to 12 BULLETS)								
Distance from top of page to top of first text block (mm): 55								
Block Style	1	2	3	4	5	6	7	8
Character Size (mm)	5	4.3	4.3	4.3	4	3.4	3.4	3.4
Color	Black	Red	Red	Red	Black	Red	Red	Red
Font	Bold	Bold	Bold	Bold	Bold	Bold	Bold	Bold
Highlighting	None	None	None	None	None	None	None	None
Bullet Type	None	Solid Circle	Solid Square	Dash	None	Solid Circle	Solid Square	Dash
Justification	Left	Left	Left	Left	Left	Left	Left	Left
Line Spacing (% Character Size)	75	75	75	75	75	75	75	75
Block Spacing (% Character Size)	175	175	175	175	175	175	175	175
Horizontal Position (mm)	45	70	70	90	45	70	70	90

Table 10-2: Default Block Style Characteristics for Bullet Page Format (Horizontal Orientation) With 4 - 12 Bullets

Note: Block styles 1 - 4 are best used for charts with 4 - 8 bullets, while block styles 5 - 8 are best used for charts with 9 - 12 bullets.

Centered Chart (Up to 12 Lines)

This chart style is useful for introducing new sections of a presentation, for presenting a list of items, or for preparing messages or signs. With it you can center each line of text on your page. When using this page format, spaces or blank text blocks should be counted against the recommended number of lines for the chart. The pre-defined style characteristics for this page format are presented in Table 10-3.

Page format: CENTERED CHART (UP to 12 LINES)								
Distance from top of page to top of first text block (mm): 55								
Block Style	1	2	3	4	5	6	7	8
Character Size (mm)	9	7	6.5	6	5.5	5	4.5	4
Color	Black							
Font	Bold							
Highlighting	None							
Bullet Type	None							
Justification	Center							
Line Spacing (% Character Size)	75	75	75	75	75	75	75	75
Block Spacing (% Character Size)	175	175	175	175	175	175	175	175
Horizontal Position (mm)	140	140	140	140	140	140	140	140

Table 10-3: Default Block Style Characteristics for Centered Page Format (Horizontal Orientation) With Up to 12 Lines

Note: A variety of character sizes is provided for use. These start at 9 mm in Block Style 1 and decrease to 4 mm in Block Style 8.

Centered Chart (Up to 20 Lines)

This page format is very similar to the simple Centered Chart Format explained above. This format is designed for centered charts with a greater number of lines in the chart. Smaller character sizes are used to allow for the increased number of lines. The pre-defined style characteristics for this page format are presented in Table 10-4.

Page Format: CENTERED CHART (UP to 20 LINES)								
Distance from top of page to top of first text block (mm): 55								
Block Style	1	2	3	4	5	6	7	8
Character Size (mm)	7	5	4.5	4	3.7	3.5	3.3	3
Color	Black							
Font	Bold							
Highlighting	None							
Bullet Type	None							
Justification	Center							
Line Spacing (% Character Size)	75	75	75	75	75	75	75	75
Block Spacing (% Character Size)	175	175	175	175	175	175	175	175
Horizontal Position (mm)	140	140	140	140	140	140	140	140

Table 10-4: Default Block Style Characteristics for Centered Page Format (Horizontal Orientation) With Up to 20 Lines

Note: A variety of character sizes are provided for use. These start at 7 mm in Block Style 1 and go to 3 mm in Block Style 8.

Paragraph Chart

This page format is designed for text charts which contain a fairly large amount of text on the page. In particular, it can be used when your text is structured in sentence or paragraph form rather than as fragments of sentences as is commonly done for bullet charts.

Smaller character sizes and tighter spacing of text are characteristic of this type of chart. The pre-defined style characteristics for the paragraph page format are contained in Table 10-5.

Page Format: PARAGRAPH CHART								
Distance from top of page to top of first text block (mm): 55								
Block Style	1	2	3	4	5	6	7	8
Character Size (mm)	5.5	5.5	5.5	5.5	3.5	3.5	3.5	3.5
Color	Black							
Font	Bold							
Highlighting	None							
Bullet Type	None							
Justification	Left	Left	Left	Right	Left	Left	Left	Right
Line Spacing (% Char. Size)	65	65	65	65	65	65	65	65
Block Spacing (% Char. Size)	230	230	230	230	230	230	230	230
Horizontal Position (mm)	45	100	155	195	45	100	155	195

Table 10-5: Default Block Style Characteristics for Paragraph Page Format (Horizontal Orientation)

Note: Block Styles 1 - 4 provide different levels of indentation using a text size of 5.5 mm. Block Styles 5 - 8 do the same for a text size of 3.5 mm. In both cases vertical spacing is similar to typewriter spacing between lines of text with double spacing between paragraphs.

Title Page

This page format is designed for creating title pages for reports and presentations. Separate blocks of text are sized and positioned to allow for:

- o Date, volume, report number, or other identifying information.
- o Title of the report.
- o Name, address, etc., of the author of the report.

As with the other page formats, you can easily modify these specifications to create your own title page format. The pre-defined style specifications for horizontal and vertical title pages are presented in Table 10-6.

Page Format: TITLE PAGE								
Distance from top of page to top of first text block (mm): 50								
Block Style	HORIZONTAL PAGES				VERTICAL PAGES			
	1	2	3	4	5	6	7	8
Character Size (mm)	3.5	8	8	3.5	3.5	8	8	3.5
Color	Black	Blue	Blue	Black	Black	Red	Red	Black
Font	Std.	Bold	Bold	Std.	Std.	Bold	Bold	Std.
Highlighting	None	None	None	None	None	None	None	None
Bullet Type	None	None	None	None	None	None	None	None
Justification	Left	Left	Center	Right	Left	Left	Center	Right
Line Spacing (% Char. size)	75	75	75	75	75	75	75	75
Block Spacing (% Char. Size)	1200	475	475	1200	2000	650	650	2000
Horizontal Position (mm)	40	40	140	240	35	35	140	240

Table 10-6: Default Block Style Characteristics for Title Page Format (Horizontal Orientation)

Note: Block Styles with small characters are for such items as dates and company names, while Block Styles with large characters offer a choice for title placement.

UNDERSTAND YOUR GRAPHIC NEEDS

- How is the data obtained?
- How is the data used?
- Who uses the graphics?
- Who prepares the graphics?

Figure 10-1: Bullet Page Format (1 to 6 Bullets)

Bullet charts are an effective way to present your message

- They clearly separate different points
 - Each point can have several subpoints
 - Each point can be emphasized by subline
- They can relate several components of the same message
- They allow you to highlight specific points
 - With color
 - With boxes
 - With underlining
- They can communicate the message without a lot of verbiage

Figure 10-2: Bullet Page Format (4 to 12 Bullets)

1981
TOP PERFORMERS
JOSEPH RAMSEY
PATRICIA OUDLEY
GERALD HAWKINS

Figure 10-3: Centered Page Format (Up to 12 Lines)

Critical messages can be used to make an announcement such as:
Weekly meeting of the Tsunami Watcher's Society (weather permitting)
June 21, 1982
Featured Speaker:
Horatio Hornblower
"Heavy Weather Sailing"
at the Messic Hall
1200 Windswept Drive
Givaltney El Salvador

Figure 10-4: Centered Page Format (Up to 20 Lines)

Presentation graphics are used to communicate a message to someone as part of a report or presentation

Graphwriter is a business graphics package that has been designed to produce superior quality presentation graphics.

With Graphwriter you can produce the chart you want, the way you want it.

Figure 10-5: Paragraph Page Format

Quarterly Report
Volume 1, Number 1
September 1981

**SPECIAL REPORT
CONFERENCE PROCEEDINGS**

PRODUCED BY
GRAPHICER INCORPORATED
700 THIRD AVENUE
NEW YORK, NY 10017

Figure 10-6: Title Page Format

Manual Placement

This page format option allows you to create your text chart by locating individual blocks or lines of text anywhere on a page. With this option, you can specify style characteristics and page location for your text "on the fly." When using this option, you are prompted for all style characteristics for the text block (e.g., character size, color, and font) and for X and Y coordinates, expressed in millimeters relative to the lower left-hand corner of your page.

Specifying a Page Format

Now that you have an understanding of the page formats and their block styles, you can select the one most appropriate for your chart. As with all Graphwriter programs, after you specify the kind of data you will use in the the Select Starting Data Menu, you see the Main Menu for the particular format.

Since the Main Menu for T010 is a little different from other format Main Menus, we show it below.

```
Main Menu                                T010 - Text/Word Chart
-----
1. Change to Another Format
2. Enter/Change Text
3. Change Chart Style
4. Print Text & Style
5. Store Chart
6. Plot Chart
7. Change Page Format..... Currently: Bullet Chart (1 to 6 bullets)

Select one:
```

Notice that the current page format is a bullet chart. You can either use this page format or select another. If you wish to change the page format

press

7 "Change Page Format"

You then see the following menu:

Select Page Format Currently: Bullet Chart (1 to 6 bullets)

1. Return to Main Menu
2. Manual Placement
3. Bullet Chart (1 to 6 bullets)
4. Bullet Chart (4 to 12 bullets)
5. Centered (up to 12 lines)
6. Centered (up to 28 lines)
7. Paragraph

Select one:

Notice this menu lists the current page format at the top. After selecting the page format, return to the Main Menu.

Specifying Block Styles and Entering Your Text

We now assume you have selected the most appropriate page format for your chart and are ready to proceed.

From the Main Menu

press 2 "Enter/Change Text"

You see the following menu:

Enter/Change Text

1. Return to Main Menu
2. Enter all Text
3. Change Text
4. Insert a Block of Text
5. Delete a Block of Text
6. Restore Old Chart from a File
7. Move Text Blocks

Select one:

Text is entered as blocks of one (1) to eight (8) text lines, sharing style characteristics. The lines of text in a block have a common margin and are placed below one another; they share such things as font style, character size, and color.

To enter a new text chart from the keyboard

press 2 "Enter All Text"

This initiates a prompt-response sequence, which you repeat for each block of text entered and which is shown below.

Enter Style for Text Block 1

Press PgDn to begin entering text.
Press Esc to return to the menu.

Character size for block 1 is 5.5 mm
Enter new character size for block 1 :

Color for block 1 is black
Enter new color for block 1 :

Font for block 1 is bold
Enter new font for block 1 :

Highlighting for block 1 is none
Enter new highlighting for block 1 :

Bullet type for block 1 is none
Enter new bullet type for block 1 :

The first prompt requires that you select a block style -- one of the eight (8) pre-defined block styles available within each page format. (Refer to the table for the selected page format in Tables 10-1 through 10-6 for the default block style characteristics.) By selecting a block style you assign a set of characteristics to the text block entered.

Your selection of a block style for each text block depends, of course, on how you want to present that particular block of text. Frequently, you will want to select style type 1 for your first block of text, particularly if the text is for a heading. Successive blocks of text might be assigned any of the other styles, which are usually arranged with progressively greater indentation levels and smaller character sizes.

Even after you select a particular block style, you can override the color, font, and highlighting associated with that block style during text entry. You can make changes to these additional style prompts or retain the existing values.

To proceed to the text entry sequence,

press PgDn

After you have specified the style for your text block you will be asked to enter the actual text, one line at a time, in response to a prompt.

The following display shows the text entry sequence:

```
Enter Text, Block 1
-----
Press PgDn to start the next block.
Press Esc to return to the menu.

Block 1, line 1 is.....: unspecified          |
Enter line 1 for block 1: FIRST LINE OF TEXT FOR BLOCK ONE
Block 1, line 2 is.....: unspecified          |
Enter line 2 for block 1: SECOND LINE OF TEXT
Block 1, line 3 is.....: unspecified          |
Enter line 3 for block 1: THIRD LINE OF TEXT
Block 1, line 4 is.....: unspecified          |
Enter line 4 for block 1: AND SO ON
```

The maximum number of characters you can enter for any text line is 48, and depending on the font and specified character size, the maximum will frequently be fewer characters.

The program indicates the maximum character length by placing a ":" mark at the appropriate location on the prompt line. Characters typed beyond the ":" mark may not fit on your chart. However, you can type past this mark then change the character size or horizontal position of the text block so the text line will fit on the chart.

The program prompts you for up to a maximum of eight (8) lines of text within a block. To go on to a new text block

press PgDn

You will again specify the block style; you may override some of those style specifications; and you will be prompted for a maximum of eight (8) lines in the new text block.

To complete the text entry sequence and return to the Enter/Change Text Menu after entering the last line of text in your last block

press Esc

Data Entry Using Manual Placement

Each of the page formats — bullet, centered, page, and title — automatically places and positions your text blocks. However, there may be times when you wish to locate text blocks by entering X and Y coordinates for the location of each text block. You can do this by selecting the Manual Placement page format option.

(There may also be times when you do not wish to use any pre-defined page formats but neither do you wish to use the Manual Placement option. At such times you can re-define any of the page formats, as we describe below.)

As you might surmise, the text entry sequence for the Manual Placement option differs from the sequence described above. You are not asked for a block style type; instead you respond to prompts for each of the style characteristics within a text block. (See pp. 10-2 to 10-4 for definitions and allowable values.)

Each of these characteristics is provided with a default value. And once you have specified a style value, it becomes the default value for succeeding blocks.

The following two (2) screen displays show how style is specified when using the Manual Placement option.

```
Enter Style for Text Block 1
-----
Press PgDn to begin entering text.
Press Esc to return to the menu.

Character size for block 1 is ..... 5.5 mm
Enter new character size for block 1 :

Color for block 1 is ..... black
Enter new color for block 1 :

Font for block 1 is ..... bold
Enter new font for block 1 :

Highlighting for block 1 is ..... none
Enter new highlighting for block 1 :

Bullet type for block 1 is ..... none
Enter new bullet type for block 1 :
```

Justification within block for block 1 is left flush
Enter new justification for block 1

Spacing between lines for block 1 is: 75x
Enter new spacing for block 1

The horizontal position for block 1 is: 139.7mm.
Enter new position for block 1

The vertical position for block 1 is 106.4mm.
Enter new position for block 1

Moving Text Blocks

After you have entered your text and plotted the chart, you may discover the layout is not exactly the way you expected it to be. If such is the case, you probably want to change things a little. You can do such "fine tuning" by using the "Moving Text Blocks" option from the Enter/Change Text Menu. Using this option, you can move any of your text blocks by specifying the direction and distance, in millimeters, that you want the block moved. Although you may move the text block in any of four (4) directions -- up, down, left and right -- you are only prompted twice for direction during any single prompt sequence. You can, of course, repeat the prompt sequence as many times as you wish.

To move text blocks, first go to the Enter/Change Text Menu. From this menu,

press 7 "Move Text Blocks"

You see the following sequence.

```
Move Text Blocks
-----
You have entered one block of text.
Move the text in what direction (up, down, left, right)? 2
Move how far (mm)? 20
Move the text in what direction (up, down, left, right)? Left
Move how far (mm)? 4
Moving text...
Done.
```

When you complete the sequence, you are returned to the Enter/Change Text Menu.

Defining Your Own Page Formats

One of the most valuable features of the Text/Word Format Program is the ability it gives you to define and store your own page formats.

You can change any of the seven (7) pre-defined page formats. If you change the Manual Placement page format option, you only change one set of style characteristics. These characteristics become the initial defaults which are used during text entry.

When you specify new style characteristics for a particular format, the specifications for the new page format will be applied only to the current text chart, if any.

If you want to save the new specifications, you can do so. To save newly defined page formats for future use, store them by using the Store Chart Menu. The procedure is exactly the same for the Text/Word Format as it is for other Graphwriter programs. To use the new format, select the "Restore Old Chart File" option from the Select Starting Data Menu. Then enter the file name when prompted.

If you wish to change the page formats permanently, you may do so by storing your chart file as "T010.SDB." Thereafter, when you begin the Text/Word program, the file, "T010.SDB," will automatically be read into the program and your new page formats will be used as the starting set.

To define your own format is easy. The following is an example of the procedure used to define a new page format.

From the Main Menu,

press 3 "Change Chart Style"

Then

press 2 "Define a New Page Format"

You will be asked a series of questions which allow you to change the name of the page format and to specify the style characteristics for each of the eight (8) block style types within the page format.

You are led to the sequence for defining a page format. The following three (3) screen displays are representative of the sequence of prompts for changing a page format and one block style type.

Define a Page Format

The name of this page format is: Bullet Chart (1 to 6 bullets) ;
Enter new name.....:

The margin to the top of the first block is : 65 mm.
Enter new margin

Changing Page Format "Bullet Chart (1 to 6 bullets)", Style 1

Character size for style type 1 is 6.5 mm
Enter new character size for style type 1 :

Color for style type 1 is black
Enter new color for style type 1 :

Font for style type 1 is bold
Enter new font for style type 1 :

Highlighting for style type 1 is.....: none
Enter new highlighting for style type 1 :

Bullet type for style type 1 is..... none
Enter new bullet type for style type 1:

Justification within block for style type 1 is left flush
Enter new justification for style type 1 :

Spacing between lines for style type 1 is: 75%
Enter new spacing for style type 1

Spacing above the block for style type 1 is:175%
Enter new block spacing for style type 1 :

Changing Page Format "Bullet Chart (1 to 4 bullets)". Style 1

The horizontal position for style type 1 is: 45mm.
Enter new position for style type 11

Reference: Formats in Graphwriter Extension Set

The Graphwriter Extension Set of format programs was designed to give you a broader variety of chart formats from which to select. While these programs are not as commonly used as those in the Basic Set, they are very effective for presenting specific types of information such as scheduling, resource allocation, organizational structure, market demographics, and strategic planning concepts.

The outline of this chapter is similar to Chapter 9. Each section begins with a sample chart using actual or hypothetical data and a generic chart with the specific chart elements labeled. For each format, these chart examples are followed by the sections outlined below.

- Description
- Differences from B020 -- Data Entry
- Differences from B020 -- Style Characteristics
- Data and Character Limits
- Compatibility
- Special Instructions

There is one exception to this approach. The Organization Chart (S030) is substantially different from the other Graphwriter formats and so a more detailed section has been provided. A step-by-step guide to the production of a sample organization chart is also included in Appendix C.

Format Compatibility

As discussed in Chapter 9, data can be transferred between programs having similar data requirements. Similar programs are said to belong to the same Graphwriter family. These families, Family 1 and Family 2, include programs from both the Basic Set and the Extension Set because data requirements are similar. Table 11-1 lists compatible formats.

FORMAT FAMILIES			
Family 1		Family 2	
<u>Basic Set</u>	<u>Extension Set</u>	<u>Basic Set</u>	<u>Extension Set</u>
B010	C020	B020	L020
B011	B022	B021	L030
P010	B060	B030	
		B031	
		L010	
		C010	

All other formats are unique and are not compatible with any other.

Table 11-1: Format Families

Data Transfer Between Formats

When data is transferred from one program to another, the graphic shape representing the data in one program changes to conform to the requirements in another. For instance, a bar in one program might become a pie slice in another program. (Refer to pp. 9-2 to 9-8 for a more detailed discussion of the concept of data transfer from one program to another.)

Transferring data from one program to another is often useful because it allows you to emphasize different aspects of your data, or to determine quickly the best way to display your data without re-entering it from the keyboard. Tables 11-2 and 11-3 show how data is transferred and received for both families of formats.

RESULTS OF DATA TRANSFERS WITHIN FAMILY I						
Format of Origin	Chart Element	Resulting Chart Element				
B010 B011	Bar	B010 B011 ----	P010 Pie slice	C020 Pie slice	B022 Segment in Bar # 1	B060 Bar with Inset Labels
	Set of Bars	----	Pie	Pie	Bar # 1 Bar # 2 No Transfer	Set of Bars with Inset Labels?
P010	Pie Slice (Pie # 1)	Bar	----	Pie Slice	Segment within Bar # 1	Bar with Inset Labels
	Pie (Pie # 1)	Set of Bars	----	Pie Slice	Bar # 1	Set of Bars
	Pie Slice (Pie # 2)	No Transfer	----	Segment within Expanded Bar	Segment within Bar # 2	No Transfer
	Pie (Pie # 2)	No Transfer	----	Expanded Bar	Bar # 2	No Transfer
	Pie (# 3 & 4)	No Transfer	----	No Transfer	No Transfer	No Transfer
C020	Pie Slice	Bar	Pie Slice	----	Segment within Bar # 1	Horizontal Bar with Inset Labels
	Pie	Set of Bars	Pie	----	Bar # 1	Set of Bars
	Segment within Bar	No Transfer	No Transfer	----	No Transfer	No Transfer

Table 11-2: Results of Data Transfers within Family I

RESULTS		OF DATA TRANSFERS WITHIN FAMILY I (continued)				
Format of Origin	Chart Element	Resulting Chart Element				
B022	Segment within Bar # 1	B010 B011 Bar	P010 Pie Slice	C020 Pie Slice	B022 ----	B060 Bar with Inset Labels
	Bar # 1	Set of Bars	Pie # 1	Pie # 1	----	Set of Bars with Inset Labels
	Segment within Bar # 2	No Transfer	Pie Slice	No Transfer	----	No Transfer
	Bar # 2	No Transfer	Pie # 2	No Transfer	----	No Transfer
B060	Bar with Inset Labels	Bar	Pie Slice (1 Pie)	Pie Slice	Segment in Bar # 1	----
	Set of Bars with Inset Labels	Set of Bars	Pie # 1	Pie	Bar # 1	----

Table 11-2: Results of Data Transfers within Family I (Continued)

RESULTS OF DATA TRANSFERS WITHIN FAMILY 2							
Format of Origin	Chart Element	Resulting Chart Element					
		B020 B021	B030 B031	L010	C010	L020	L030
B020 B021	Segment within Bar	---	Bar within Cluster	Point on Line	Point on Line	Point on Line	No Trans.
	Bar	---	Cluster	Line	Line	Line with Fill below	No Trans
B030 B031	Bar within Cluster	Segment within Bar	---	Point on Line	Point on Line	Point on Line	No Trans
	Cluster	Bar	---	Line	Line	Line with Fill below	No Trans.
L010	Point on Line	Segment within Bar	Bar within Cluster	---	Point on Line	Point on Line	No Trans
				Bar within Set of Bars*			
	Line	Bar	Cluster	---	Line	Line with Fill below	No Trans
C010	Point on Line	Segment within Bar	Bar within Cluster	Point on Line	---	Point on Line	Point on Line
				Line	---	Line with Fill below	Line
	Bar	No Trans	No Trans	No Trans	---	No Trans	No Trans
L020	Point on Line	Segment within Bar	Bar within Cluster	Point on Line	Point on Line	---	Point on Line
	Line with Fill below	Bar	Cluster	Line	Line	---	Line
L030	Point on Line	Segment within Bar	Bar within Cluster	Point on Line	Point on Line	Point on cumulative Line	---
	Line	Bar	Cluster	Line	Line	Line with Fill below	---
					Bar within Set of Bars*		

* If 8 sets of data are entered, last set becomes bars.

Table 11-3: Results of Data Transfer in Family 2

There are some limitations to transferring data between formats. In some cases, these limitations are straightforward and can be discerned by checking the data and character limits. In some cases there are additional constraints on the exchange of data between formats.

If you attempt to transfer data between two incompatible formats, the program will inform you through the Select Starting Data Menu. Option 3, "Use Data from last Format", will give you the following warning: "Cannot access incompatible series file." If you choose Option 4, "Restore Old Chart File", the screen will say, "Data from File (#?) is not compatible with this format!". Once you have successfully transferred data, you may use Option 3 on the Print Data Menu to print out all your chart data for review.

Compatibility Limitations for Family I

The data limits for programs in Family I are shown in Table 11-4, and in Table 11-5 for Family 2.

DATA LIMITS FOR FAMILY I			
Format	Method of Representing Data	Data Limits	
B010	Bars (vertical)	Number of Bars:	36
B011	Bars (horizontal)	Number of Bars:	36
P010	Pies	Number of Pies:	4
	Pie Slices	Number of Slices/Pie:	16
C020	Pie	Number of Pies:	1
	Pie Slices	Number of Slices/Pie:	16
	Bar	Number of Bars:	1
	Bar Segments	Number of Segments/Bar:	16
B022	Bars (vertical)	Number of Bars:	2
	Segments	Number of Segments/Bar:	16
B060	Bars (horizontal) (inset labels)	Number of Bars:	18

Table 11-4: Data Limits for Family I

For Family I formats, observe the following rules:

- B010 transfers to B022; however, all bars are stacked within the original Y axis maximum which may not be adequate for the sum of the bars. Check the Y axis maximum prior to plotting and adjust the maximum to accommodate all data.

- B010 transfers to B060; however, the fill pattern below the bar may overwrite the inset labels. Direct entry, rather than data transfer assures proper chart labelling.
- C020 transfers only its pie slices and pie to other formats. It does not transfer its segmented bar. However, when receiving data from P010, C020 accepts a first pie as a pie and a second pie as a segmented bar.
- C020 transfers data to: B010, B011, B022, B060. If the X or Y axis is not specified, an incomplete plot occurs with the error message: Invalid axis scale. To obtain complete plotting: after the transferring of data and prior to plotting, select the appropriate format and enter axis values.
- B022 transfers only its first segmented bar to B010 and B011. B022 will transfer both bars to P010.
- B022 transfers to B060; however, the fill pattern below the bar may overwrite the inset labels. Direct entry, rather than data transfer assures proper chart labelling.
- B022 transfers to C020 where B022 bar 1 converts into C020 pie and explodes segment 1 into C020 bar using B022 bar 2 data. Therefore, make sure B022 bar 2 properly relates to bar 1 before using the data transfer from B022 to C020.
- B060 transfers its bars directly as bars to B010 and B011 and as pie slices in one pie to P010. The inset labels become axis labels or pie slice labels.

Compatibility Limitations for Family 2

DATA LIMITS FOR FAMILY 2			
Format	Method of Representing Data	Data Limits	
B020	Bars (vertical) Segments	Number of Bars:	20
		Number of Segments/Bar:	8
B021	Bars (horizontal) Segments	Number of Bars:	20
		Number of Segments/Bar:	8
B030	Clusters (vertical) Bars	Number of Clusters:	20
		Number of Bars/Cluster:	8
B031	Clusters (horizontal) Bars	Number of Clusters:	20
		Number of Bars/Cluster:	8
L010	Lines Points on lines	Number of Lines:	8
		Number of Points/Line:	100
C010	Lines	Number of Lines:	7
	Points on lines	Number of Points/Line:	36
	Bar	Number of Bars:	36
L020	Lines with Shaded Area Below Points on Lines	Number of Lines:	8
		Number of Points/Line:	18
L030	Lines	Number of Lines	8
	Points on Lines	Number of Points/Line:	16
	Data Values Table	Number of Rows:	4*
		Number of Columns:	18

* If markers used, 2 rows and 18 columns is maximum for table.

Table 11-5: Data Limits for Family 2

For Family 2 formats, observe the following rules:

- B030 transfers to B020 and B021; however, negative values are not reflected after transfer because of the cumulative nature of the B020/B021 formats. When negative values are needed in B030, either do not transfer the data to B020/B021 or reenter data to reflect negative values.
- C010 transfers only line data to the other formats for plotting. If both the line and bar data must be used in another format, the data should be reentered.

- L020 sends points of a specific X location to become segments of a bar in B020 and B021 or to become bars in a cluster in B030 and B031.

L020 sends absolute Y point values of a specific X location to become points on non-cumulative lines in L010, L030, and C010. Only if there are eight (8) lines in L020, will the eighth line transfer as a set of bars in C010.

- L030 sends points on lines directly as points on lines in L010 and C010. Only if there are eight (8) lines in L030 will the eighth line transfer as a set of bars in C010.

L030 sends points on lines as segments of bars in B020 and B021 and as bars in clusters in B030 and B031.

L030 will not receive data from any of the formats in its family.

In the following pages you will find detailed information on each of the formats in the Graphwriter Extension Set, as listed below.

Contents for Formats in Graphwriter Extension set

	Page
S020: Gantt Chart	11-11
S030: Organization Chart	11-15
S030: Organization Chart: Special Instructions	11-16
S040: Bubble Chart	11-49
S050: Table Chart	11-53
C020: Pie-Bar Combination	11-57
L020: Surface Line Chart	11-61
L030: Line-Table Chart	11-63
B022: Double Stacked Bars	11-65
B032: Grouped Bars	11-67
B040: Range Chart (bars)	11-71
B050: Paired Bars	11-75
B060: Horizontal Bars (inset labels)	11-77

--- NOTE ---

Before transferring data from one Format to another, be sure to refer to:

- Format Compatibility - page 11-1
- Compatibility Limitations (Family 1) - page 11-5
- Compatibility Limitations (Family 2) - page 11-7

NEW TIMETABLES FOR 'SAFE HARBOR' LEASING
*The old types of leases will be phased out...
 ...but the tax law allows these replacements*

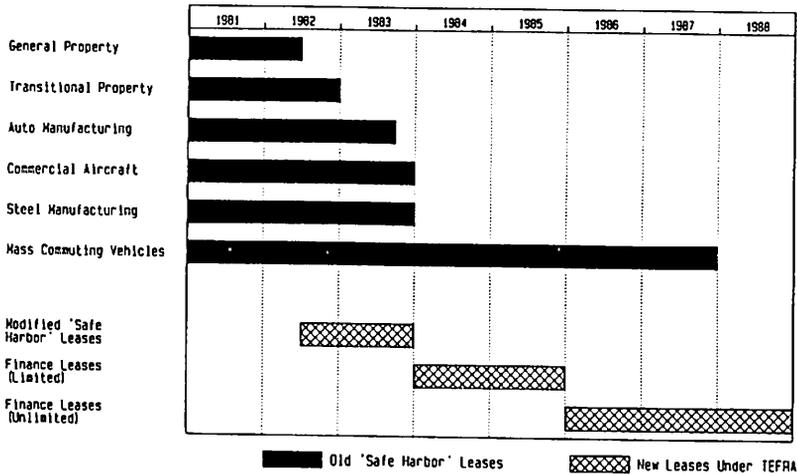
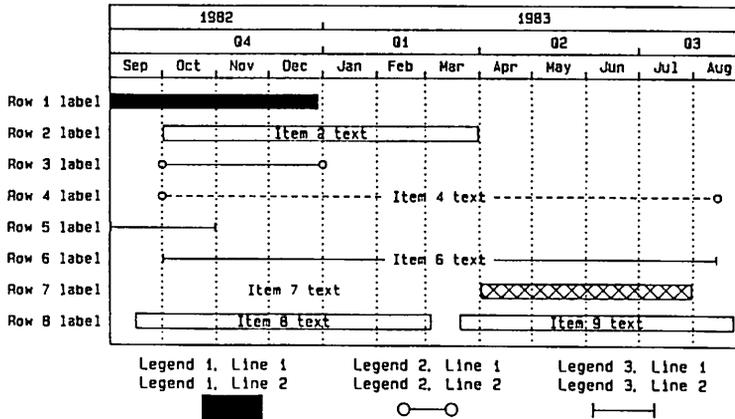


Figure 11-1: Example of S020: Gantt Chart

Heading 1
 Heading 2
 Heading 3

Y axis title

X axis title



Legend 1, Line 1
 Legend 1, Line 2

Legend 2, Line 1
 Legend 2, Line 2

Legend 3, Line 1
 Legend 3, Line 2

Note 1
 Note 2
 Note 3

Comment 1
 Comment 2
 Comment 3

Figure 11-2: Generic Diagram for S020: Gantt Chart

Format S020: Gantt Chart

Description

This format is used for scheduling tasks and projects, allocating resources, and anything else associated with calendar time. It allows the display of up to 20 rows of chart elements, which may be any combination of bars, lines, and text strings. Referred to as items, each bar, line, or text string is sized and located with beginning and ending values on the X axis and a row number. This format is distinguished primarily by its horizontal calendar axis at the top of the graph area. The calendar may be scaled to include any combination of years, quarters, months, weeks, or days.

Differences from B020 — Data Entry

The primary differences from B020 in terms of the data entered are:

- Chart elements, referred to as items, may be specified as bars, bars with text, lines with flat ends, lines with circles at the ends, lines of either type with text, or text alone. One type of item is used for the entire chart, unless a new item type is specified on an item-by-item basis in the Change Chart Style Menu.
- The length and location of each chart element is determined by beginning and ending points on the X axis or axes, and a row number.
- Multiple chart elements may be specified for each row.
- Five different X axes may be specified. These are years, quarters, months, weeks, and days.
- A legend, containing up to six legend keys (text and symbol) is specified independently of chart elements, and appears horizontally below the graph area. Coordinating color and fill pattern between the chart elements and the legend is up to the user.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- For each item, style characteristics of item type, color, and fill pattern or line type may be specified.
- For each text string used alone or with a bar or line, text style characteristics of font, size, and color may be specified.
- Text style characteristics of color, font and size may be specified for each row label.
- Text style characteristics of color, font and size may be specified for legend text for each legend.

- Vertical grid lines may be drawn or not drawn, from each axis label of the lowest X axis. Color and line type may be specified for grid lines.
- Style characteristics for the X axis labels cannot be specified.
- Width of bars may be specified.

Data and Character Limits

This format has the following data and character limits:

Number of Rows	20	Number of Characters	
Number of Total Items	48	of Text in an Item	48
Number of Legends	6	Number of Characters/ Row Label	32
		Number of Characters/Legend	
		Line 1:	20
		Line 2:	20

Compatibility

This format is not compatible with any other format.

Special Instructions

Data Entry

After responding to prompts for headings, notes, and axis titles, you are asked to give beginning and ending dates for the chart. These are your X axis minimum and maximum values. Acceptable formats for these values are:

M D YY	M-D-YY	M/D/YY	M.D.YY
M D YYYY	M-D-YYYY	M/D/YYYY	M.D.YYYY
MM DD YY	MM-DD-YY	MM/DD/YY	MM.DD.YY
MM DD YYYY	MM-DD-YYYY	MM/DD/YYYY	MM.DD.YYYY

where: M = digit for month, D = digit for day, and YY = last two digits for year.

The possible range of dates is from January 1, 1950 or 1/1/50, to December 31, 2035 or 12-31-2035.

Next you are prompted for the number of axes in the chart. It can have from 1 to 5.

Next you are asked to select which X axis or combination of axes is to be drawn. The possible choices are yearly, quarterly, monthly, weekly, and daily. You are asked to specify the first letter for each axis to be drawn, i.e., Y, Q, M, W, D. These letters can be entered in any order with no character or space separations. For example, if you wish the axes to be monthly, weekly, and daily, you would specify MWD.

You are then asked to specify the number of rows and the row label names. Row width is determined by the program on the basis of the number of rows you have specified.

Next you specify the number of items (from 1 to 48) in the chart, and then the type of item -- bar with text or fill, line with circles at ends with text or without text, line with vertical ends with or without text, or text alone. One item type is used for all items in the chart, unless you respecify item type on an item by item basis in the Change Chart Style Menu.

For each item you are asked to specify its row number, beginning date, ending date, and any text. Text may have up to 48 characters, and is centered within the beginning and ending dates. If the text is too long to fit between the dates, it runs over at both ends. Text may also run out of the plot area.

When used with a bar or line, text is centered horizontally within the bar or line. When used with a line, the line is drawn from each end of the text (plus one character space) to the beginning and ending dates for the line. If the text is too long, the line disappears.

Specifications for the legend are prompted for up to six (6) legend entries. Text alone may be chosen as a legend type, in which case no symbol is printed. The legend area is centered under the plot area.

Plotting

The calendar axes (each of which takes up the same amount of space), are drawn in the plot area. To accomodate multiple axes, the graph area, i.e., area where the bars or lines are plotted, is squeezed.

The axis with the longest time interval, i.e., year, is at the top and the one with the shortest time interval is on the bottom.

If there is room on a particular axis to have a label at every interval without overlap, then all the labels appear. If there is not room for all labels, then labels are placed at intervals. For example, on the year axis, the months January, February, March, etc., will be written out in full if there is room. If not, January, March, and May might be used, depending on the space.

EXECUTIVE OFFICE OF THE PRESIDENT

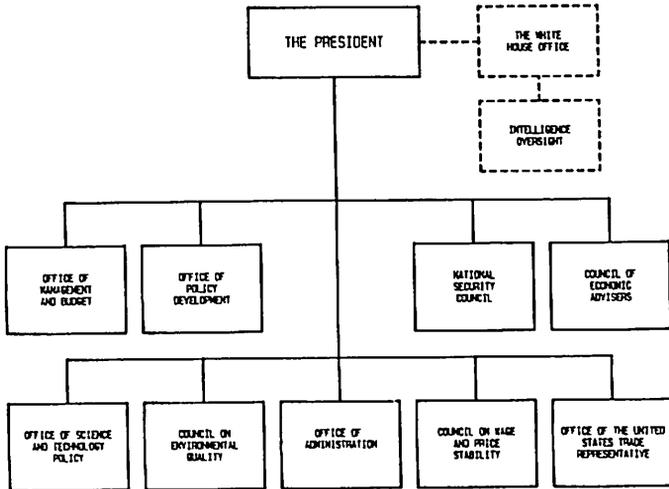
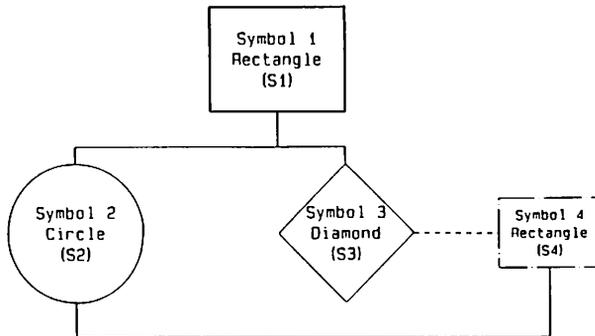


Figure 11-3: Example of S030: Organization Chart

Heading 1
 Heading 2
 Heading 3



Note 1
 Note 2
 Note 3

Comment 1
 Comment 2
 Comment 3

Figure 11-4: Generic Diagram for S030: Organization Chart

Format S030: Organization Chart

Description

This format allows you to create charts made up of symbols—rectangles, diamonds and circles—and connecting lines. Text (up to three lines) can be placed within each symbol. Primarily designed to produce organization charts, the format is very flexible, and you can use it to create flow charts and free-form diagrams as well.

Because each organization chart is unique, you need to do some pre-planning. This consists of a few basic steps:

- Sketch the chart.
- Identify and locate the symbols to be used.

The specific steps necessary to produce a chart using this format are outlined in the following sections. In addition, a step-by-step guide through the creation of a sample organization chart is provided in Appendix C.

Differences from B020

Because most Graphwriter formats are designed to produce one specific chart type, with pre-designed layout and positioning, you don't have to specify layout and positioning.

The Organization Chart, on the other hand, requires a different approach. This format allows you to create an enormous range of chart types using just one program. This flexibility does require, however, that you rely on the User's Guide to a much greater degree. We recommended that you read through the following sections before running the program. The sample organization chart program run in Appendix C is also a useful tool in becoming familiar with this format.

Data and Character Limits

This format has the following data and character limits:

Number of Symbols/Chart	48	Number of Text Lines/Symbol	3
Number of Connecting Lines	80	Number of Characters/Text Line	32*

- * The maximum number of characters fitting into any symbol is 32 but may be less, depending on the symbol.

Compatibility

This format is not compatible with any other format.

Special Instructions

The flexibility of the Organization Chart program allows you to approach the creation of a chart in a number of different ways. It is possible to produce a chart where each symbol and its position have been established by your specifications. It is also possible to use symbols and positions that have been pre-defined by the program. You may also choose to use a combination of both methods. All these approaches are discussed in this section.

The first part of this section is designed to help you create your first chart. By relying primarily on some of the pre-defined features of the program, you will become familiar with how the program is structured. The second part outlines how you can use your own specifications for symbols and positioning in place of those provided.

In either case, you will be able to use this program more efficiently if you follow the steps outlined below:

1. Draw a preliminary sketch of the chart you want to produce.
2. Choose one of the Symbol Sets offered as the set from which your symbols will be derived. Six (6) different Symbol Sets, with samples, are illustrated in Figures 11-6 through 11-17 on the following pages. (Additional information about Symbol Sets is outlined below.)
3. Using the millimeter grid provided on the Input Form for S030, lay out your chart symbols, connecting lines, and whatever text you wish to use. (See Figure 1: Sketch for Organization Chart, on the following page.)
4. Identify the X and Y millimeter coordinates for the center of each symbol and for the position of each connecting line. (For example, in Figure 11-5, Symbol 1 is centered with the coordinates X=50 mm and Y=160 mm. A vertical line is located along X=90 mm.
5. Assign a number to each symbol (S1, S2, etc.) and to each line (L1, L2, etc.).

Once you have sketched your chart, you are ready to enter your data and to produce the chart. However, before you do so, familiarize yourself with some of the conventions used in the program, including symbol sets, X,Y coordinates, and connecting lines.

Organization Chart Sketch

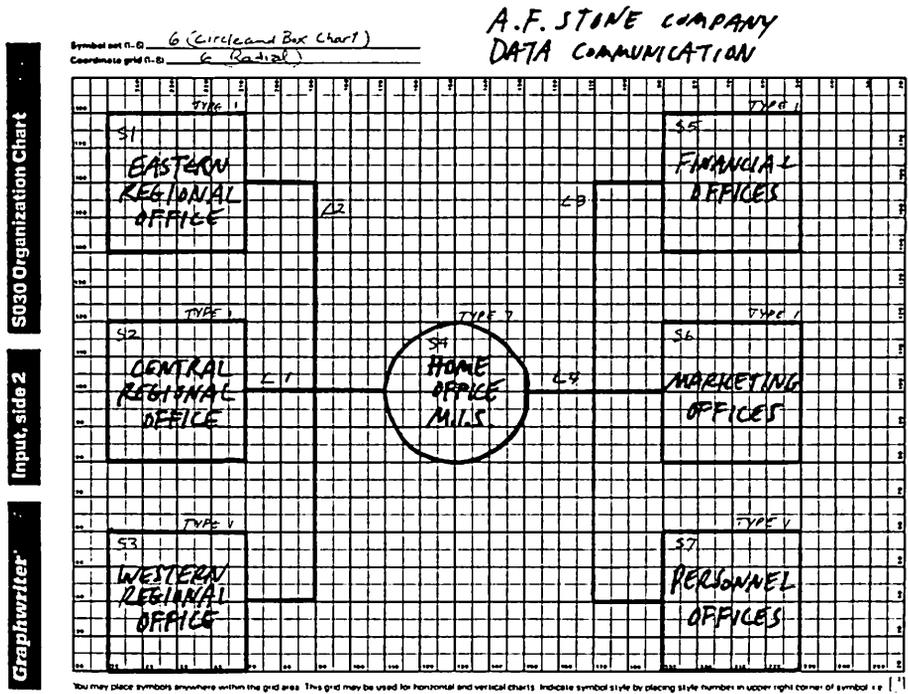


Figure 11-5: Organization Chart Sketch

Symbol Sets

Six sets of pre-defined symbols are provided. (See Figures 11-6 through 11-17.) Each set provides 12 different symbols, with variations in the following characteristics:

- graphic shape
- dimension
- color of symbol
- line type
- number of text lines
- text style characteristics: color, size, and font

These Symbol Sets have been provided to save you time. If you had to define each symbol in your chart each time you used it, it would quickly become a tedious task. The Symbol Sets are each designed for a typical chart type (identified by the name of the Symbol Set), and offer symbols that would reasonably be needed in each case. However, you may use any Symbol Set for any chart you wish to create, and as described below can create your own symbol sets.

With these illustrations you can easily select the appropriate symbols for the chart you are creating. While running the program, you may view the characteristics of any symbol within a particular set by using the Print Data Menu. Simply select the option to print the Symbol Set in which you are interested.

Symbol Set 1 is specified in the program as the default. Use the "Change Symbol Set" option to select another Symbol Set.

X, Y Coordinates

From your sketch on the Input Form, identify the X and Y millimeter coordinates for the center of each symbol and the position of every connecting line. For example, in Figure 11-5, Symbol 1 is centered on the coordinates X=50 mm and Y=160 mm. A vertical line is located along X=90 mm. Note that the lower left corner of the grid is 0,0, or X=0 mm and Y=0 mm.

Using the millimeter coordinates from the Input Form to lay out a chart is an important approach, and we recommend you use it to create your first few charts. There are 8 pre-defined Grid Sets. Each Grid Set consists of a group of X coordinates referred to as X1, X2, etc., and a group of Y coordinates referred to as Y1, Y2, etc. Therefore, instead of entering "120" for X, you would enter "X3", where X3 represents a position 120 mm along the X coordinate axis. Although very powerful, particularly for editing your chart, these grids should be used by experienced users. After using X and Y coordinates a few times you should be comfortable using grids.

The Grid Sets are shown in Figures 11-19 through 11-26. While running the program, the coordinates of any Grid Set can be viewed by using the Print Data Menu.

Grid Set 1 is specified in the program as the default. However, you may enter millimeter measurements at any time and you will not be confined by the coordinates offered in the particular default Grid Set. You may also add grid lines to any Grid Set.

Connecting Lines

The symbols on your chart generally need to be connected with lines. You may connect:

- symbol to symbol
- symbol to point (or coordinate)
- point to point

To do this, you are asked to specify an origin, a destination, and a coordinate along which the line is to be drawn, referred to as a "travel line." These can be indicated in three ways:

1. Symbol (i.e., S1, S3).
2. Millimeter location (i.e., I20). The program will prompt as to whether this is an X or Y coordinate.
3. An X or Y coordinate from the Grid Set being used (i.e., X6, Y9).

An origin and destination must be specified, but the travel line may be optional. If none is specified, the program will automatically choose a route for the line.

Lines must be horizontal or vertical. No diagonal lines may be drawn. The rules for how connecting lines are drawn, including examples, are shown below. These should be reviewed before attempting to use this format.

Symbol Set Illustrations

After reading through the above information, you are ready to select a Symbol Set. The following pages illustrate the six Symbol Sets along with a sample chart produced using each one.

Sample Chart Using Symbol Set I

FTR Manufacturing
Project Group
Organization

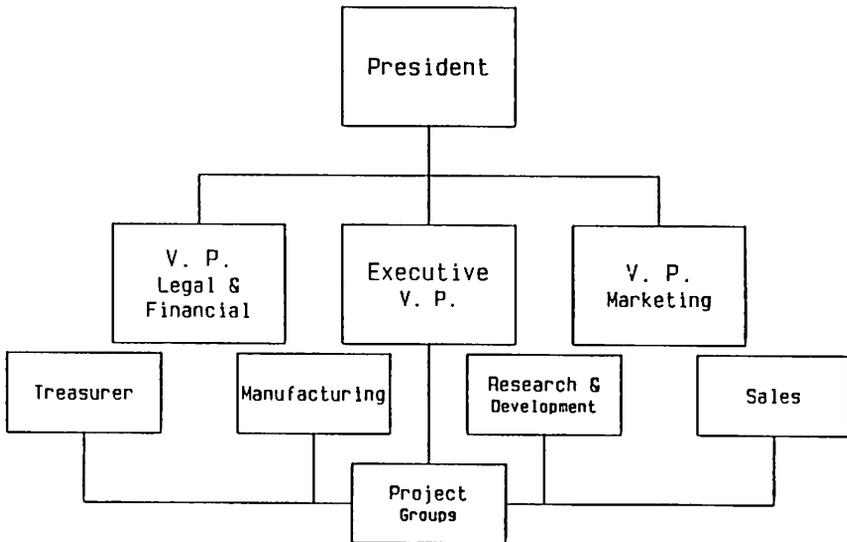


Figure 11-6: Sample Chart Using Symbol Set I

Symbol Set 1: Organization Chart (3 to 4 Levels)

SYMBOL SET 1

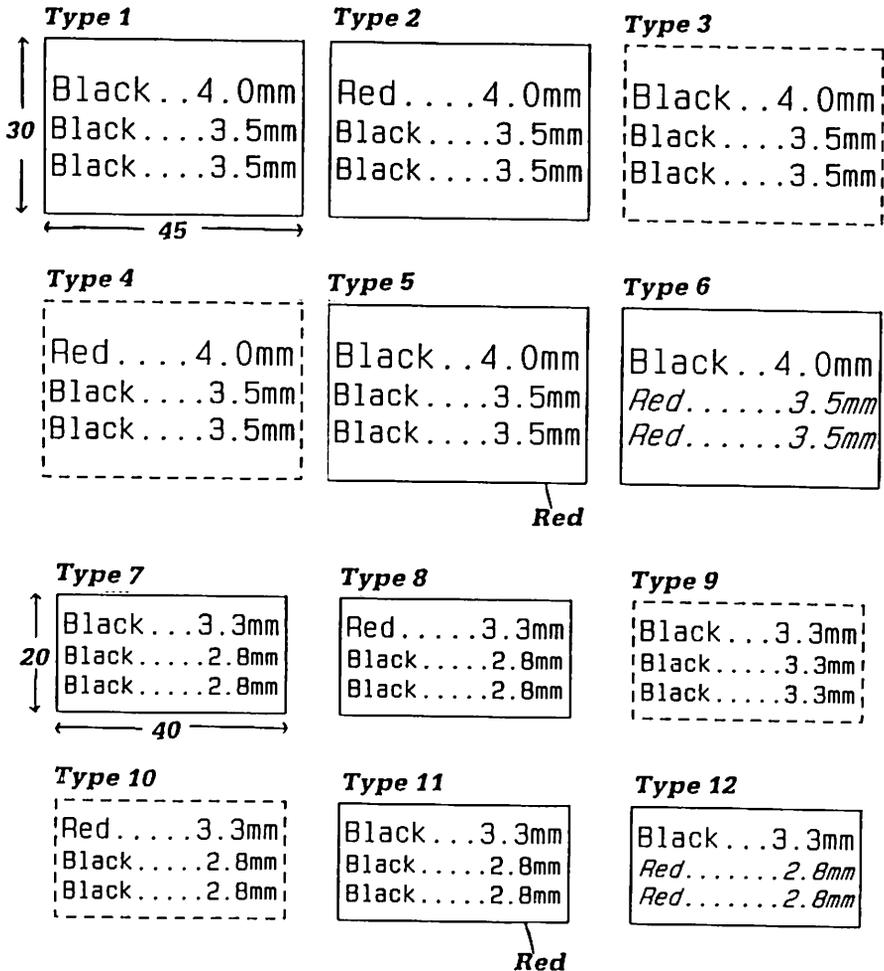


Figure 11-7: Symbol Set 1: Organization Chart (3 to 4 Levels)

Sample Chart Using Symbol Set 2: Organization Chart (5 to 6 Levels)

GRAPHWRITER
Menu Map

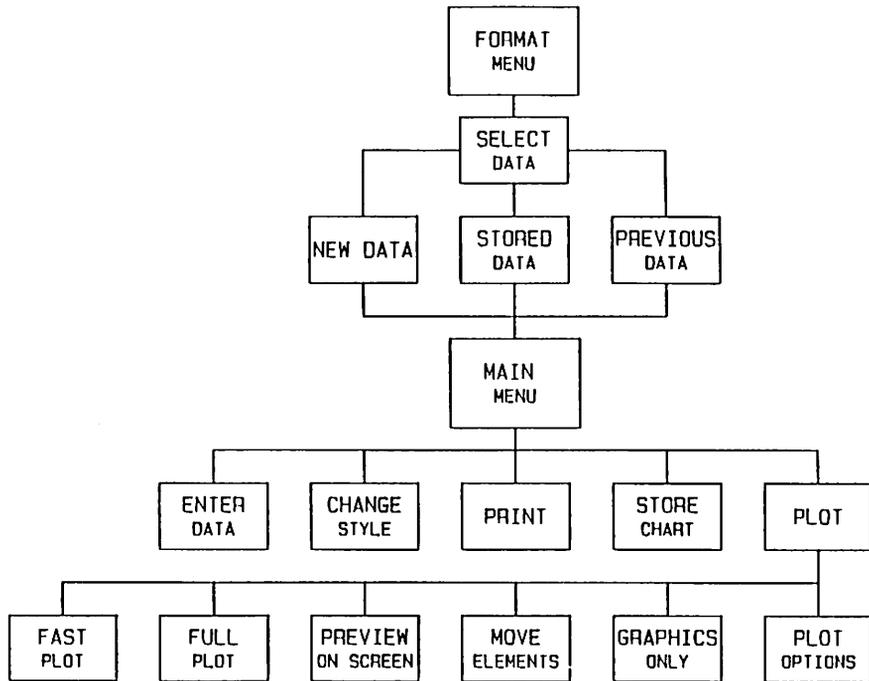


Figure 11-8: Sample Chart Using Symbol Set 2: Organization Chart (5 to 6 Levels)

Symbol Set 2: Organization Chart (5 to 6 Levels)

SYMBOL SET 2

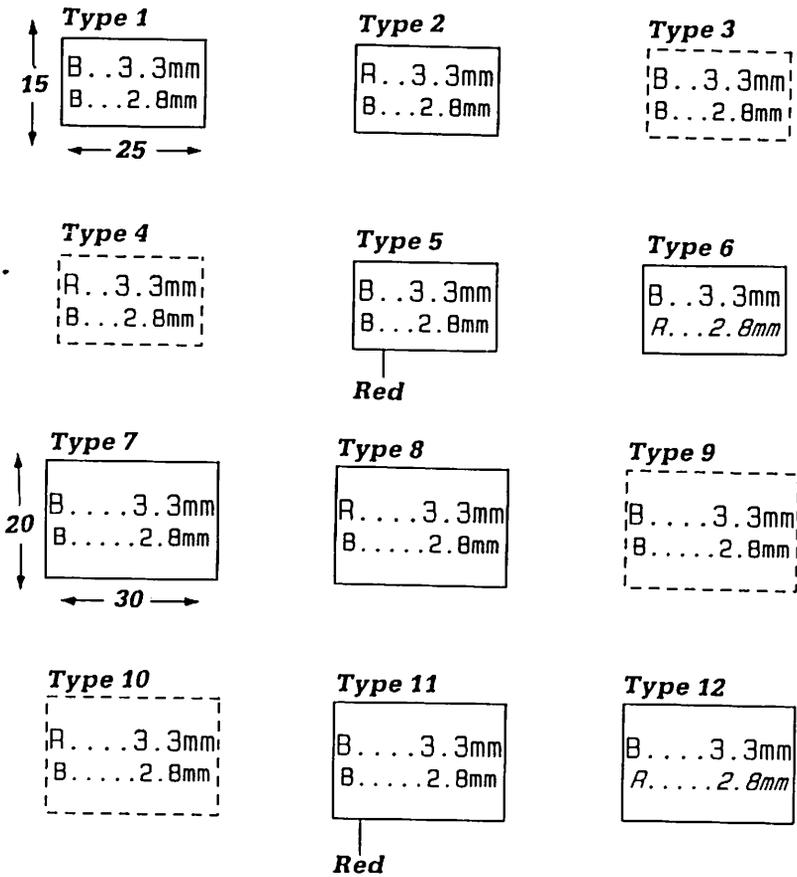


Figure 11-9: Symbol Set 2: Organization Chart (5 to 6 Levels)

Sample Chart Using Symbol Set 3: Flow Chart (3 Levels)

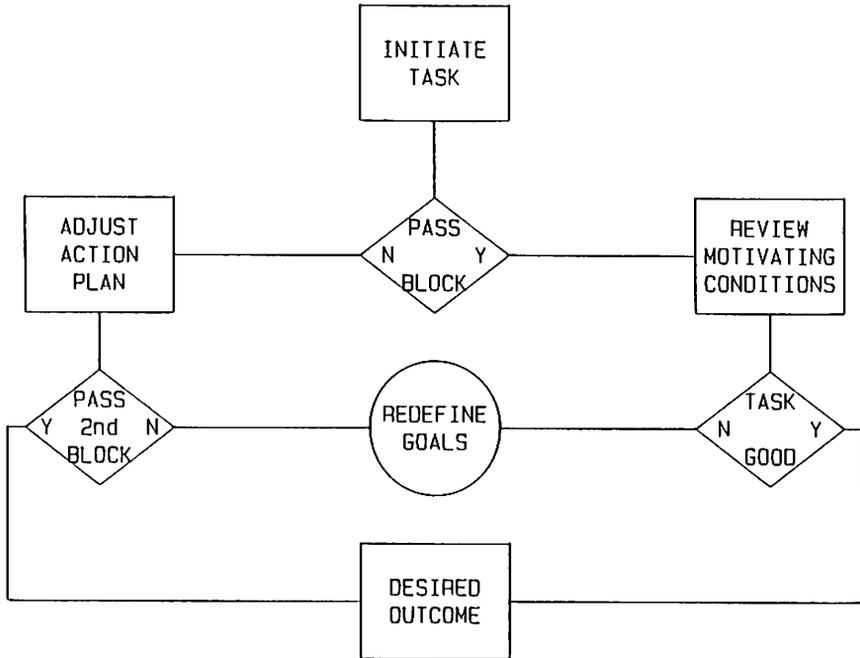


Figure 11-10: Sample Chart Using Symbol Set 3: Flow Chart (3 Levels)

Symbol Set 3: Flow Chart (3 Levels)

SYMBOL SET 3

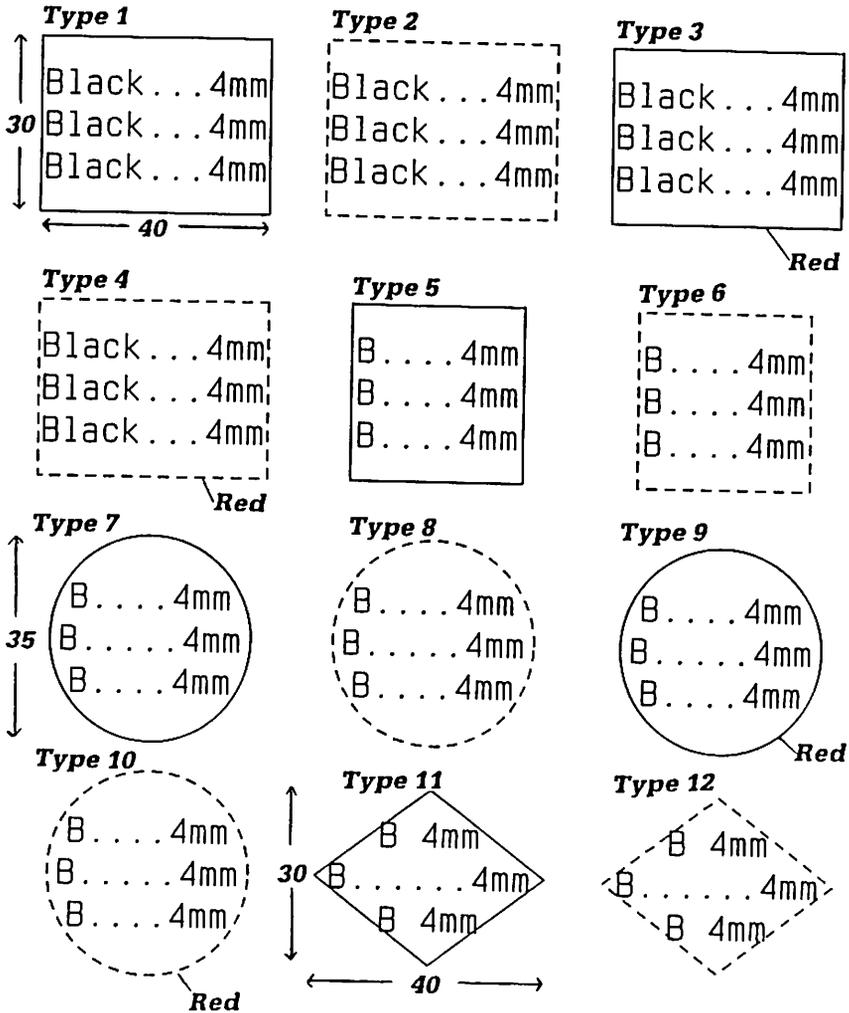


Figure 11-11: Symbol Set 3: Flow Chart (3 Levels)

Sample Chart Using Symbol Set 4: Flow Chart (4 to 5 Levels)

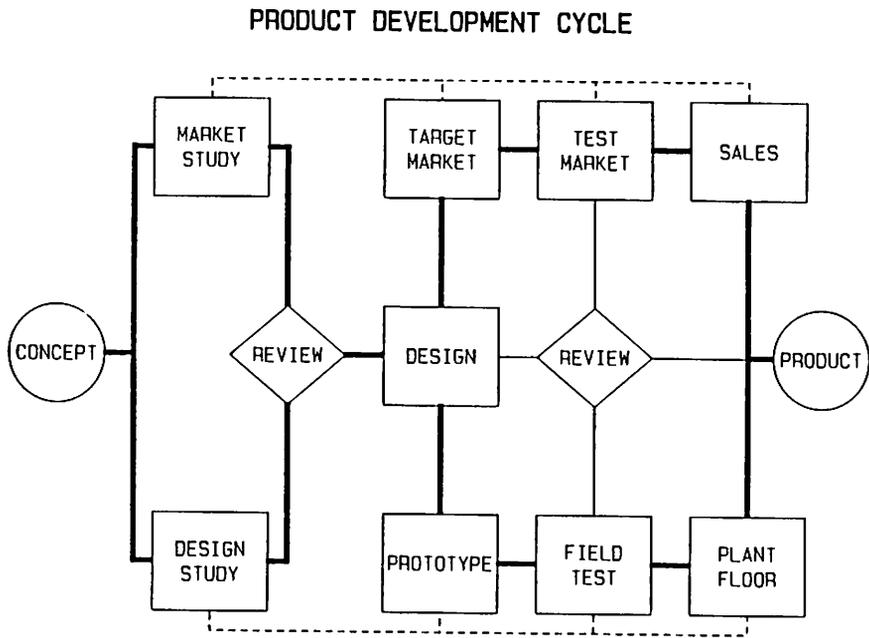


Figure 11-12: Sample Chart Using Symbol Set 4:
Flow Chart (4 to 5 Levels)

Symbol Set 4: Flow Chart (4 to 5 Levels)

SYMBOL SET 4

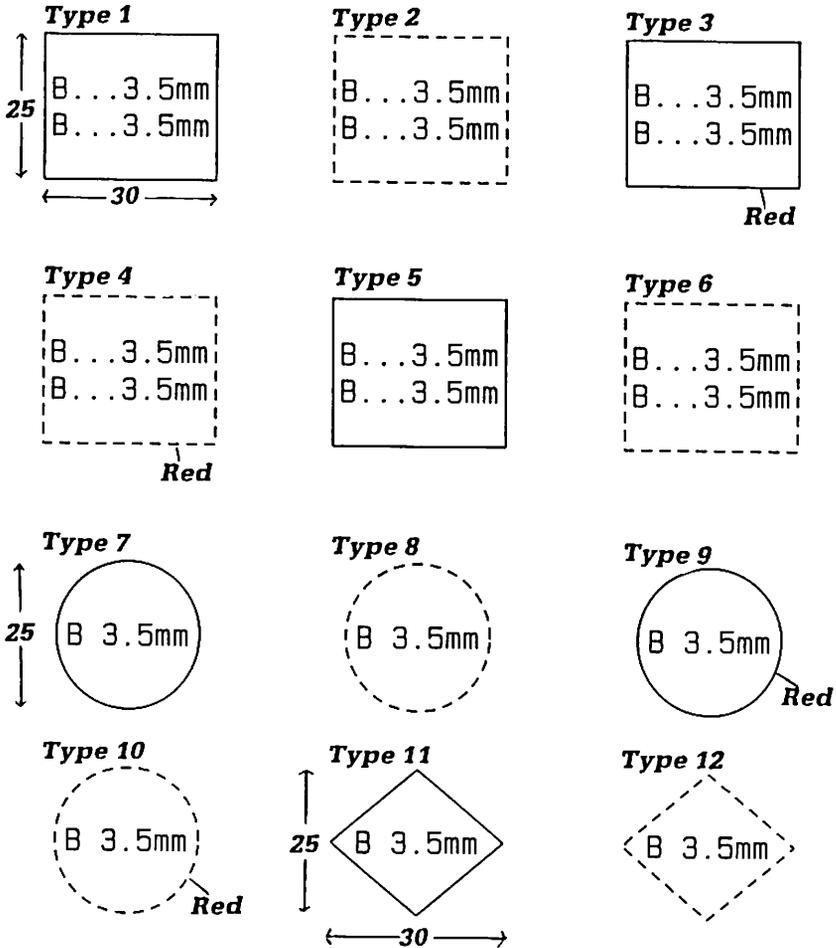


Figure 11-13: Symbol Set 4: Flow Chart (4 to 5 Levels)

Sample Chart Using Symbol Set 5: Box Chart

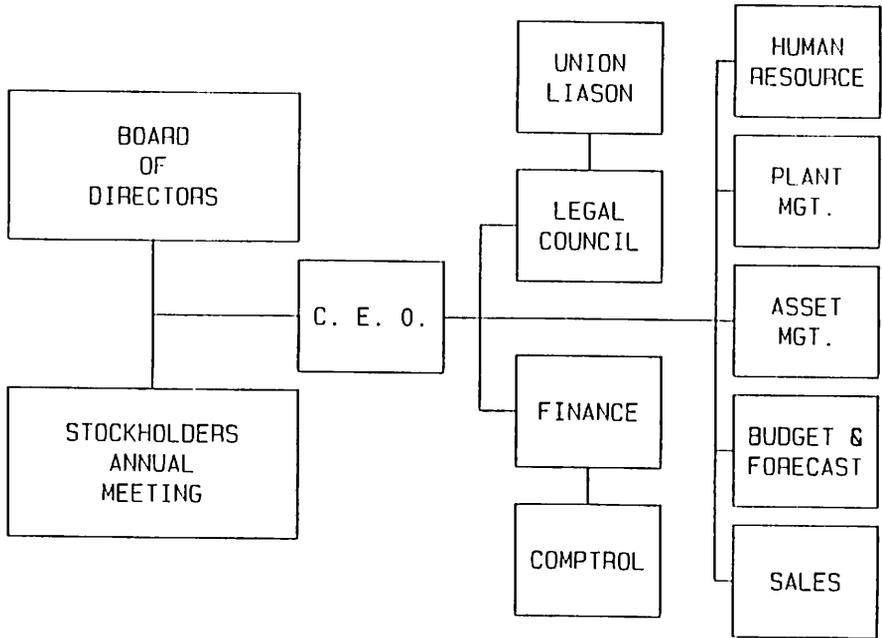


Figure 11-14: Sample Chart Using Symbol Set 5: Box Chart

Symbol set 5: Box Chart

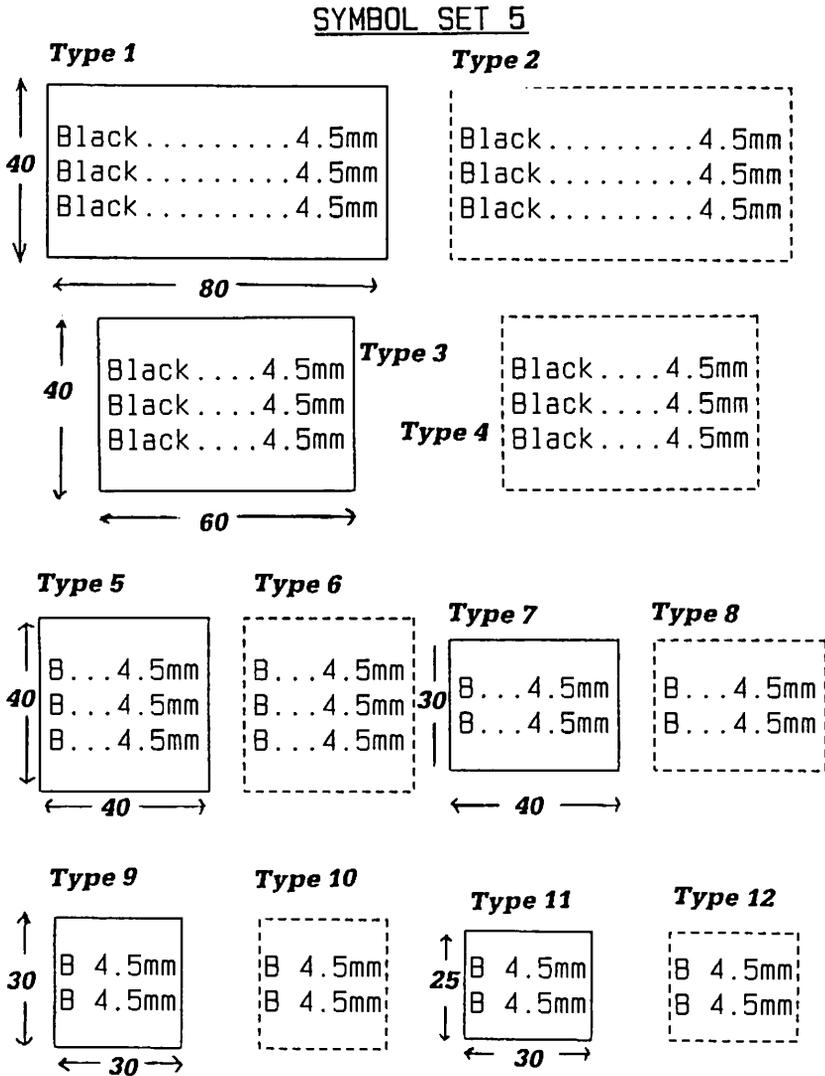


Figure 11-15: Symbol Set 5: Box Chart

Sample Chart Using Symbol Set 6: Circle and Box Chart

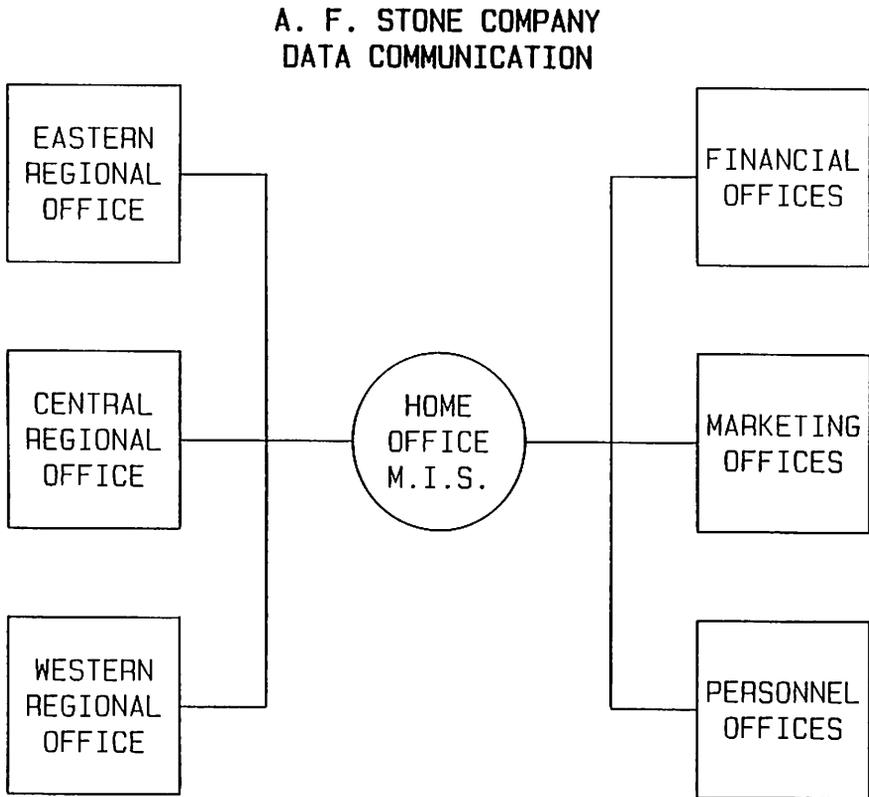


Figure 11-16: Sample Chart Using Symbol Set 6: Circle and Box Chart

Symbol Set 6: Circle and Box Chart

SYMBOL SET 6

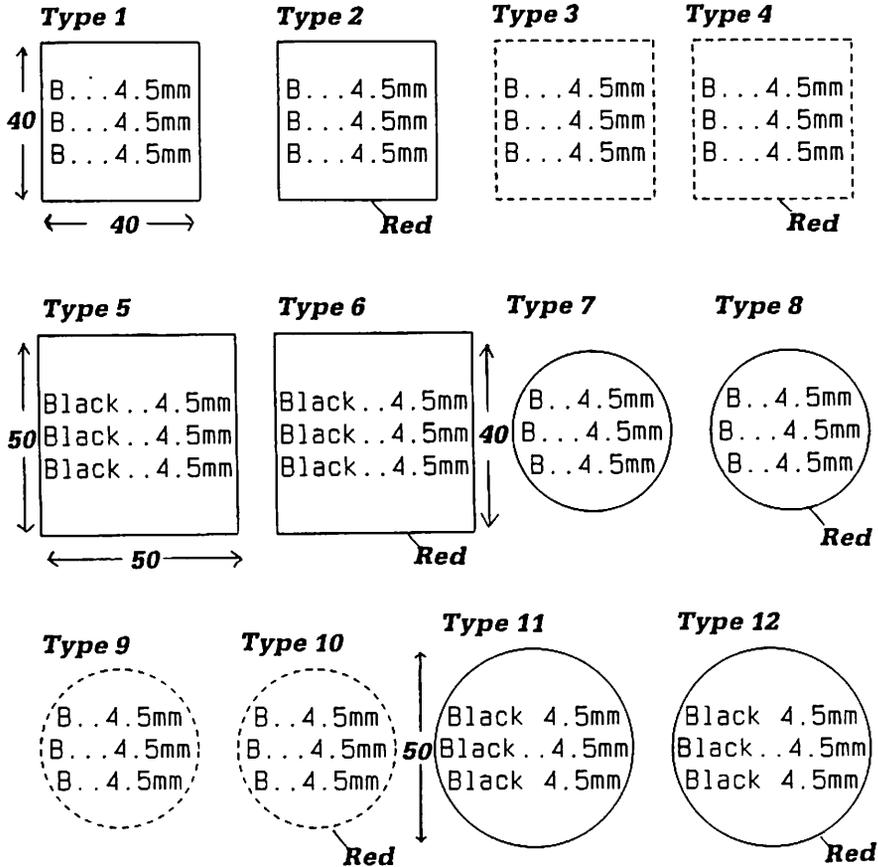


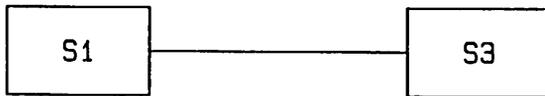
Figure 11-17: Symbol Set 6: Circle and Box Chart

Rules for Connecting Lines

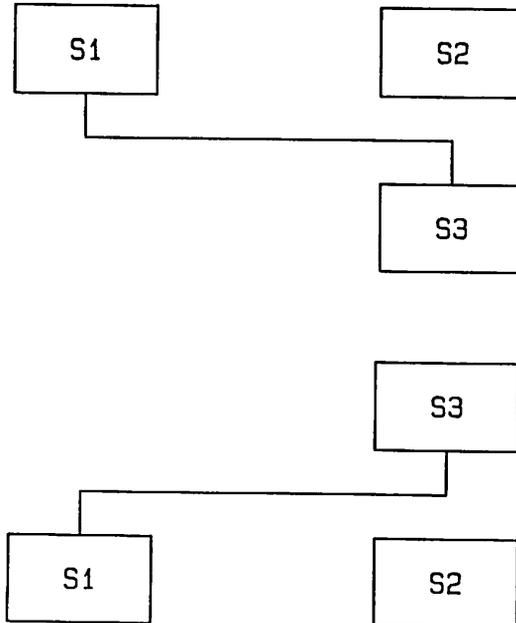
Having selected the symbols to use, you must understand the rules whereby these symbols are connected. Once these rules are understood, you are ready to sketch your chart, enter the data, and plot the chart.

The path of the connecting line can either be specified or left to the discretion of the program. For example, when connecting a symbol to a symbol, if you specify only that S1 is the origin point and S3 the destination point, the following paths will be chosen for the connecting line:

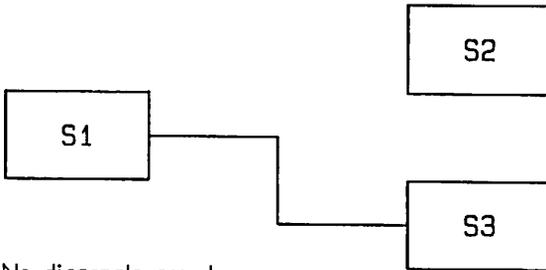
- To a symbol on the same level, straight line



- To a symbol on a level below or above, the attach point is from the bottom (or top) of the first symbol to the top (or bottom) of the other:

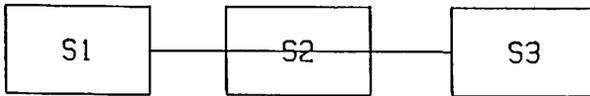


- If one symbol is not entirely above or below another, the attach points will be from the side of the first to the side of the second:

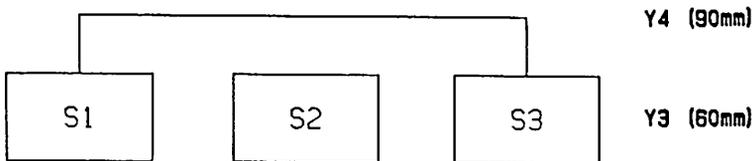


No diagonals are drawn.

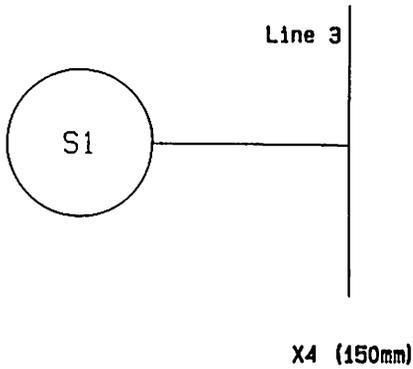
- If there is a "barrier" symbol between the two symbols, the connecting line will pass through the intermediate symbol:



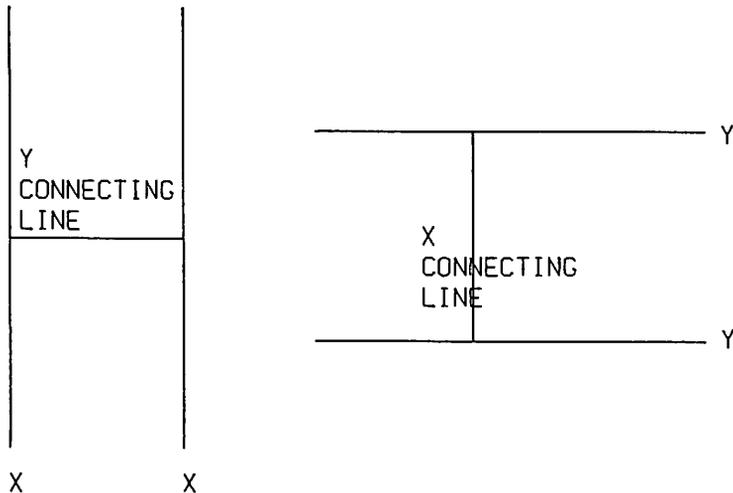
Therefore, a travel line should be specified (in this case, Y4):



- When connecting a symbol to a point on a line, for example, S1 to point (X4), the program draws a straight line.



- You can create this line by specifying that S1 connect to X4 or its millimeter location (X=150). When connecting a point to a point, you can specify the origin, destination point, and travel lines as:
 - Millimeter locations for X and Y (i.e., 120), or
 - X and Y coordinates from the Grid Set being used (i.e., X6, Y9).



The origin and destination points for each line must both be vertical (X coordinates) or horizontal (Y coordinates). In either case the travel line specified must be of the opposite type.

Symbol Sets: Redefining, Additional Information

A single Symbol Set may not offer the particular array of options that you would like to use. You may want to change a single characteristic of one symbol type in the set (color of text, for example), or change the symbol altogether (a circle instead of a square, etc.). In both cases, go to the Change Chart Style Menu and use the "Redefine Symbol Set" option. You will be prompted to make whatever change is needed. The range of characteristics and allowable values is shown in Table 11-6.

Symbol Types: ALLOWABLE VALUES AND STYLE CHARACTERISTICS			
Style Characteristics	Allowable Values		
Graphic Shape	<ol style="list-style-type: none"> 1. Rectangle 2. Circle 3. Diamond 		
Dimensions	<ol style="list-style-type: none"> 1. Width 2. Height 3. Diameter 		
Color	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"> <ol style="list-style-type: none"> 1. Black 2. Blue 3. Green 4. Red 5. Orange </td> <td style="width: 50%;"> <ol style="list-style-type: none"> 6. Brown 7. Violet 8. Turquoise 9. Gold 10. Lime Green </td> </tr> </table>	<ol style="list-style-type: none"> 1. Black 2. Blue 3. Green 4. Red 5. Orange 	<ol style="list-style-type: none"> 6. Brown 7. Violet 8. Turquoise 9. Gold 10. Lime Green
<ol style="list-style-type: none"> 1. Black 2. Blue 3. Green 4. Red 5. Orange 	<ol style="list-style-type: none"> 6. Brown 7. Violet 8. Turquoise 9. Gold 10. Lime Green 		
Line Type	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"> <ol style="list-style-type: none"> 1. Solid 2. Dashed 3. Dotted 4. Long dash </td> <td style="width: 50%;"> <ol style="list-style-type: none"> 5. Chain, dotted 6. Chain, dashed 7. Bold </td> </tr> </table>	<ol style="list-style-type: none"> 1. Solid 2. Dashed 3. Dotted 4. Long dash 	<ol style="list-style-type: none"> 5. Chain, dotted 6. Chain, dashed 7. Bold
<ol style="list-style-type: none"> 1. Solid 2. Dashed 3. Dotted 4. Long dash 	<ol style="list-style-type: none"> 5. Chain, dotted 6. Chain, dashed 7. Bold 		
Number of Text Lines	<ol style="list-style-type: none"> 1. None 2. One 3. Two 4. Three 		
Font Vector	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"> <ol style="list-style-type: none"> 1. Standard 2. Bold 3. Italic </td> <td style="width: 50%;"> <ol style="list-style-type: none"> 4. Bold Italic 5. Expanded 6. Bold Expanded </td> </tr> </table>	<ol style="list-style-type: none"> 1. Standard 2. Bold 3. Italic 	<ol style="list-style-type: none"> 4. Bold Italic 5. Expanded 6. Bold Expanded
<ol style="list-style-type: none"> 1. Standard 2. Bold 3. Italic 	<ol style="list-style-type: none"> 4. Bold Italic 5. Expanded 6. Bold Expanded 		
Font - Raster	<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;"> <ol style="list-style-type: none"> 1. Edge 2. Edge 3. Plain 4. Drop Shadow </td> <td style="width: 50%;"> <ol style="list-style-type: none"> 5. Expanded Edge 6. Expanded 7. Expanded Drop </td> </tr> </table>	<ol style="list-style-type: none"> 1. Edge 2. Edge 3. Plain 4. Drop Shadow 	<ol style="list-style-type: none"> 5. Expanded Edge 6. Expanded 7. Expanded Drop
<ol style="list-style-type: none"> 1. Edge 2. Edge 3. Plain 4. Drop Shadow 	<ol style="list-style-type: none"> 5. Expanded Edge 6. Expanded 7. Expanded Drop 		
Character Size	1 mm - 100 mm		

Table 11-6: Symbol Types: Allowable Values and Style Characteristics

The allowable length for a line of text in a symbol will vary according to:

- size of text characters
- dimension (length) of the symbol

The Symbol Set illustrations in Figures 11-7 through 11-17 clearly display what the character limitations are for each symbol type. In addition, there is an on-screen marker that indicates the maximum number of characters allowed for each symbol being used. The marker will adjust according to changes you may choose to make to a symbol type. An easy reference guide is also included in Figure 11-18.

If you change to another Symbol Set while running the program, all the symbols in your current chart will change to symbol types from the new Symbol Set.

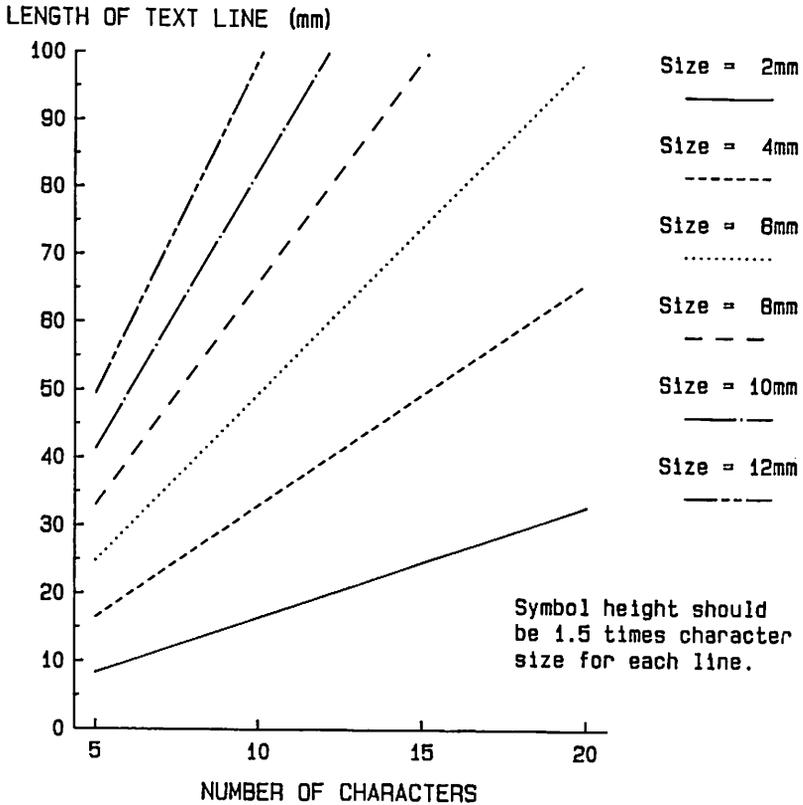
Changes made to a Symbol Set are only operative during the current run of the program. If you wish to make permanent changes to an existing Symbol Set, you may do so through the following procedure:

1. Identify the characteristics you would like to include in the Symbol Set.
2. Load Format S030 and go directly to the Change Chart Style Menu.
3. Without entering any other data, choose the Symbol Set you want to redefine. You will be prompted for possible changes.
4. Once you have completed the changes desired, use the Store Chart Data Menu to store a file under the name S030.SDB. (In general you should not store any files other than those ending with the suffix, ".SDB" on your format disks.)

When you run the program again, your redefined specifications will be operative. It is therefore possible to replace the 6 Symbol Sets with 6 of your own design.

Character Size Ranges

**SPACE USED BY
STANDARD AND
ITALIC CHARACTERS**



Size = 2mm	8.3	16.5	24.8	33
Size = 4mm	16.5	33.0	49.5	66
Size = 8mm	24.8	49.5	74.3	99
Size = 8mm	33.0	66.0	99.0	132
Size = 10mm	41.3	82.5	123.8	165
Size = 12mm	49.5	99.0	148.5	198

Figure 11-18: Character Size Ranges

X, Y Coordinates: Redefining, Additional Information

Once you have become familiar with this format, using the Grid Sets provided can be a valuable time saver. By using a pre-defined coordinate (X1, for example), you can then reposition an entire row of symbols by simply redefining that one coordinate. The eight Grid Sets are outlined in Figures 11-19 through 11-26 on the following pages.

Additional coordinates can be added to a Grid Set. You are allowed to use up to 25 X coordinates and 25 Y coordinates. Additional coordinates may be positioned anywhere on the grid and do not need to be sequential. (X14 can be located between X3 and X4, for example.)

If you change to another Grid Set while running the program, the coordinates in your current chart will change to coordinates from the new Grid Set. Changing the Grid Set will not alter coordinates entered as millimeters, however.

Changes made to a Grid Set are only operative during the current run of the program. Permanent changes can be made to an existing Grid Set by following the procedure outlined for Symbol Sets in the section above.

GRID SET 1

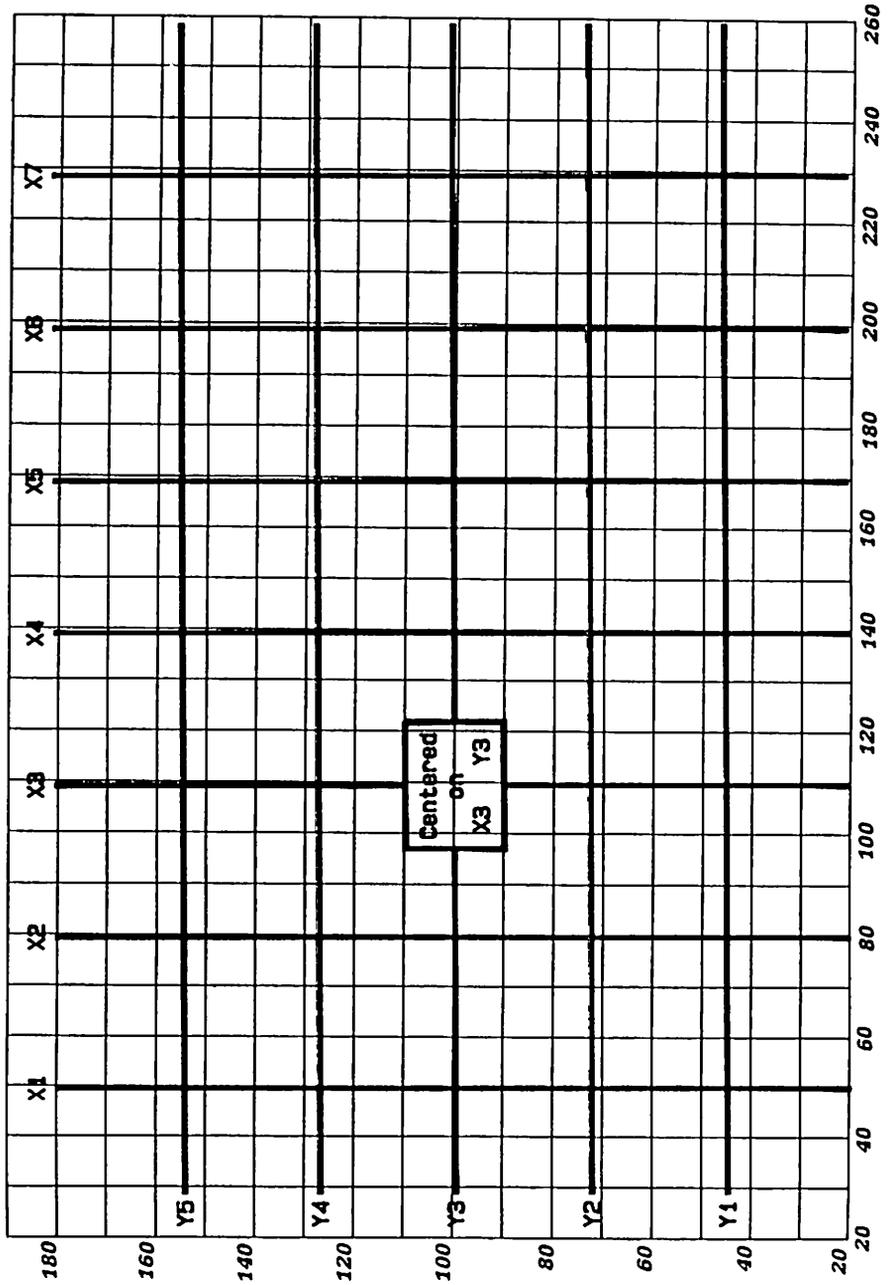


Figure II-19: Grid Set I: Three Level Organization Chart

GRID SET 2

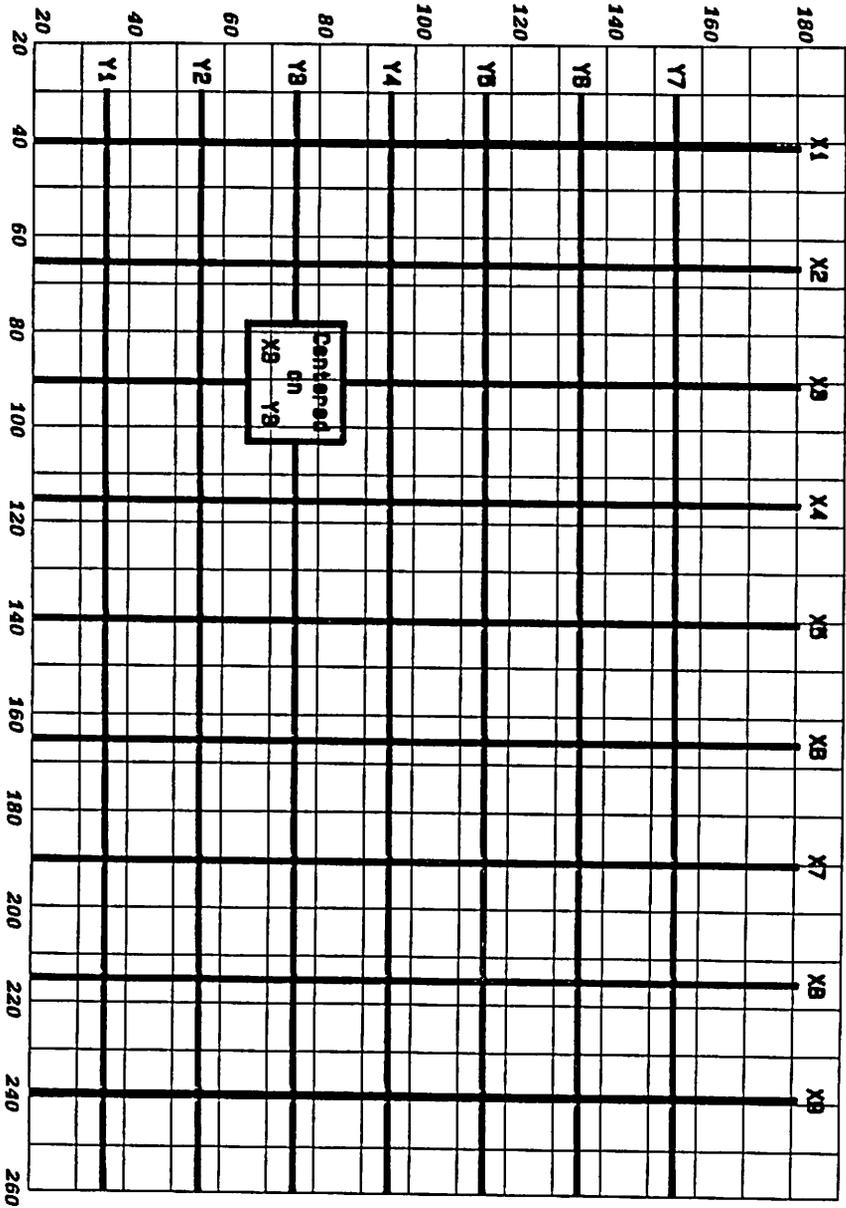


Figure II-20: Grid Set 2: Four Level Organization Chart

GRID SET 3

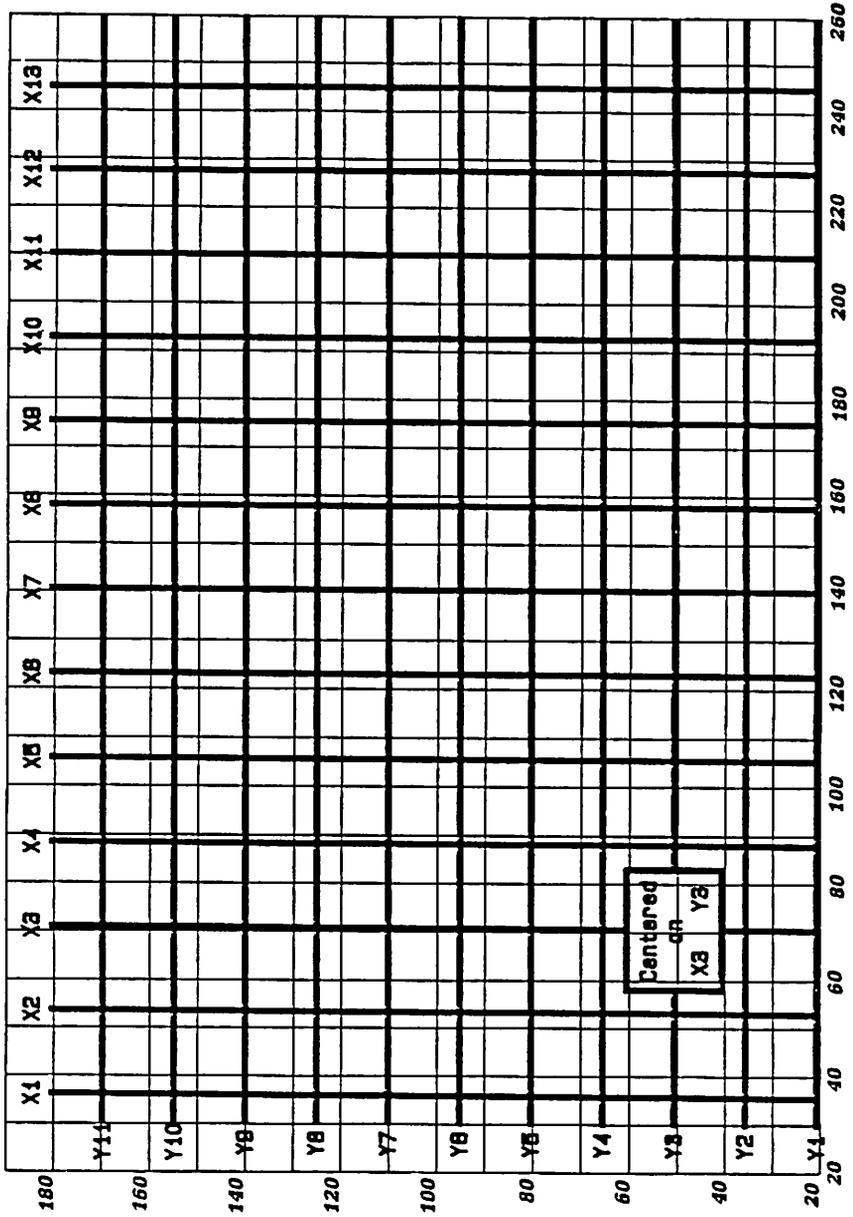


Figure 11-21: Five to Six Level Org. Chart

GRID SET 4

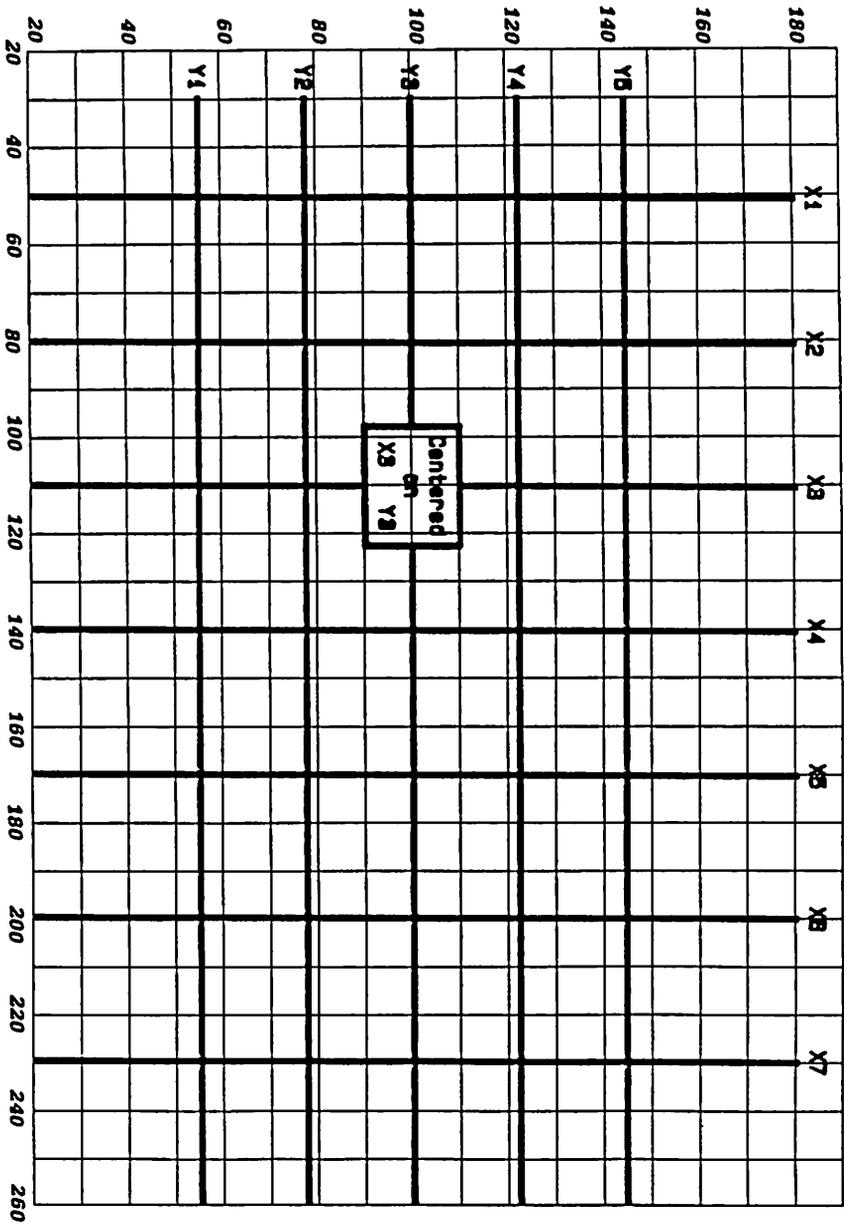


Figure 11-22: Grid Set 4: Three Level Flow Chart

GRID SET 5

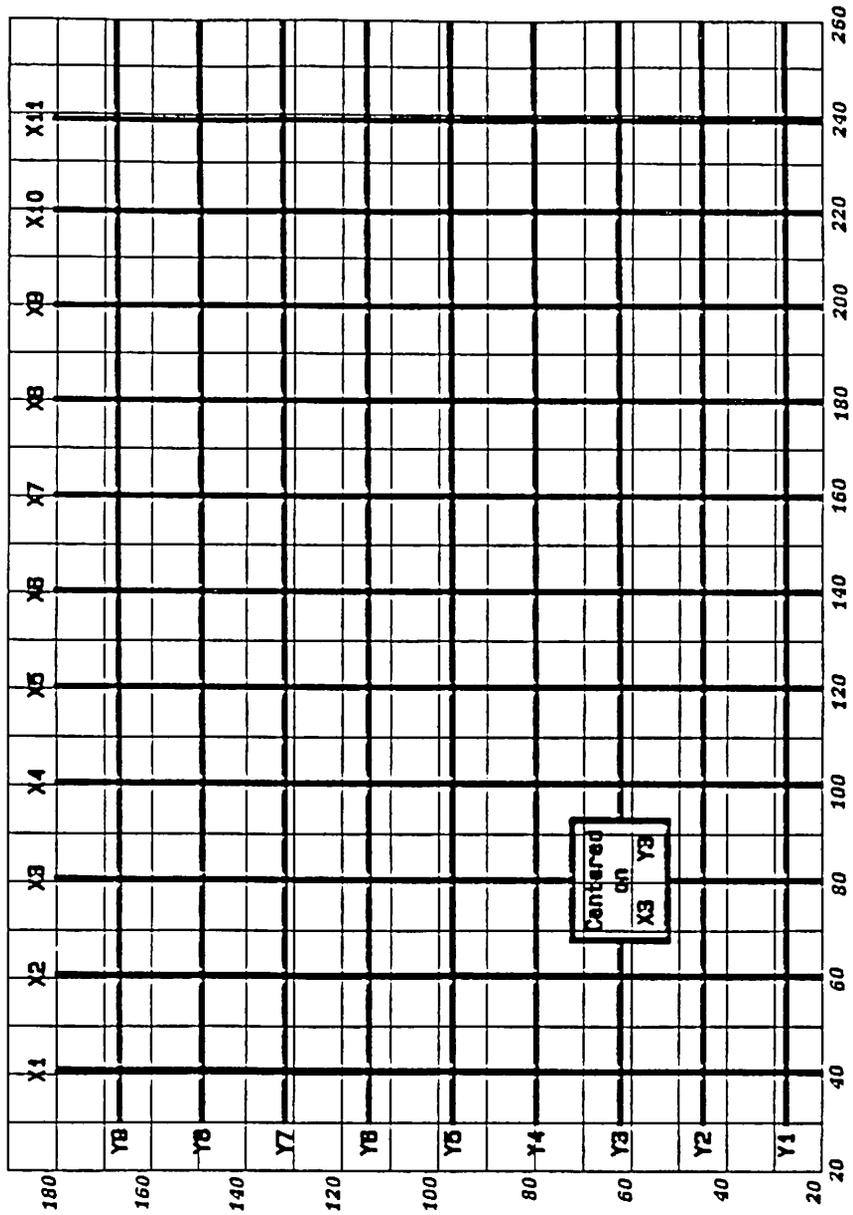


Figure 11-23: Grid Set 5: Five Level Flow Chart

GRID SET 6

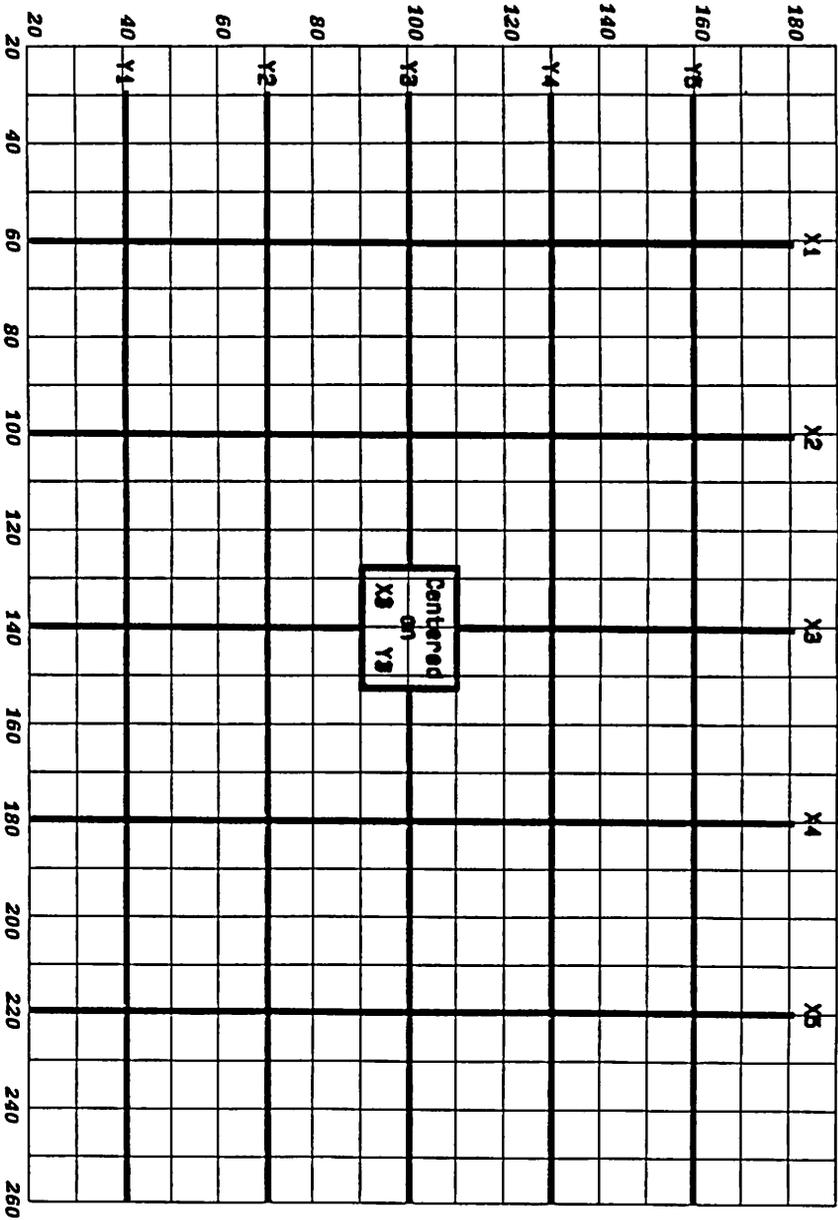


Figure 11-24: Grid Set 6: Radial Chart

GRID SET 7

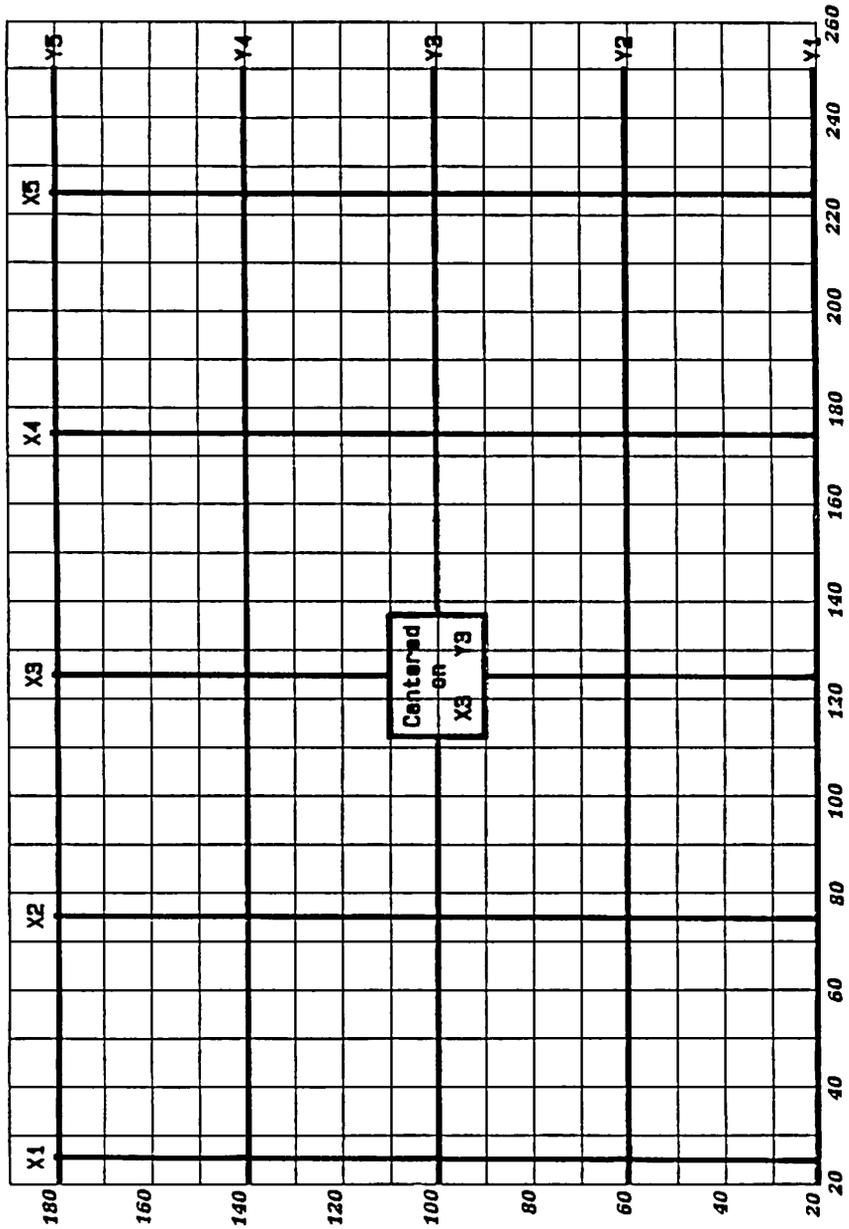


Figure II-25: Grid Set 7: Five by Five Chart

GRID SET B

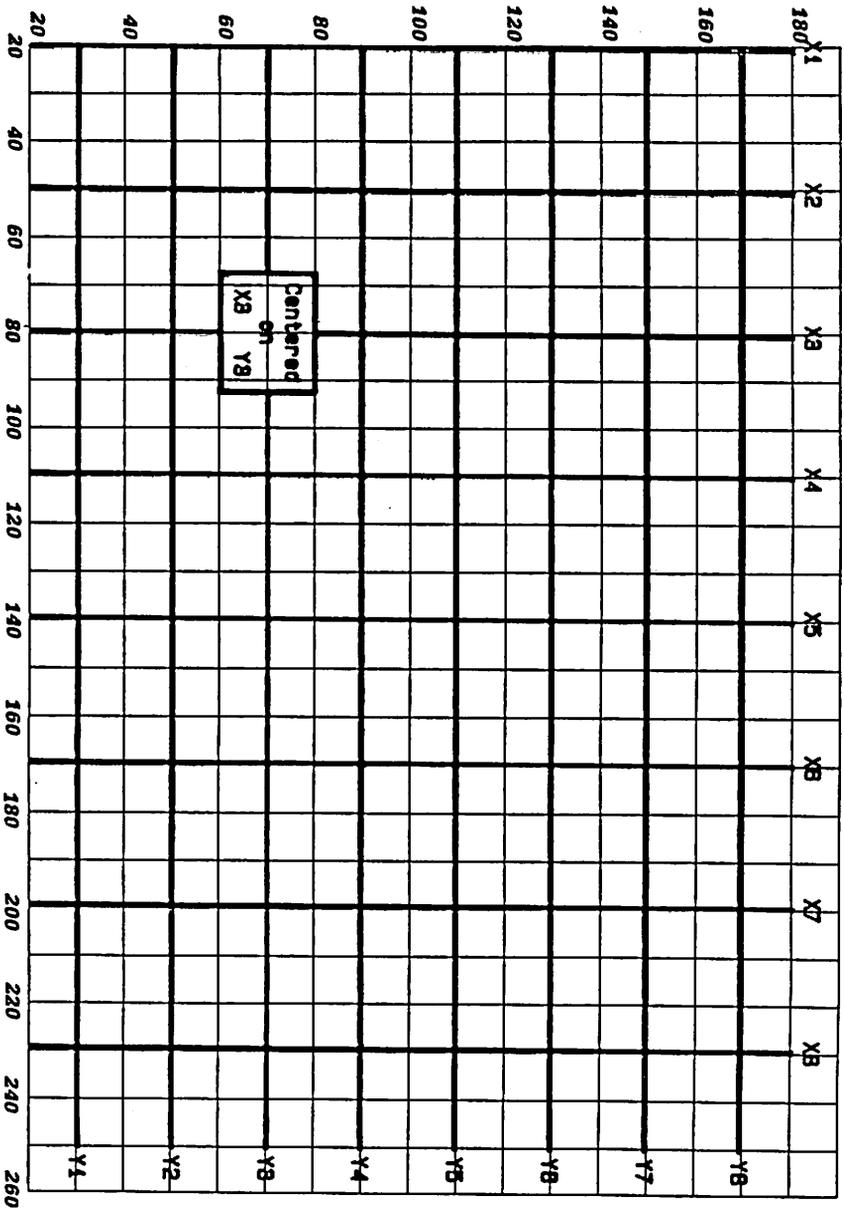


Figure 11-26: Grid Set 8: Eight by Eight Chart



**CONSUMER CAN MARKET
CUSTOMER GROWTH vs. PRODUCT GROWTH**

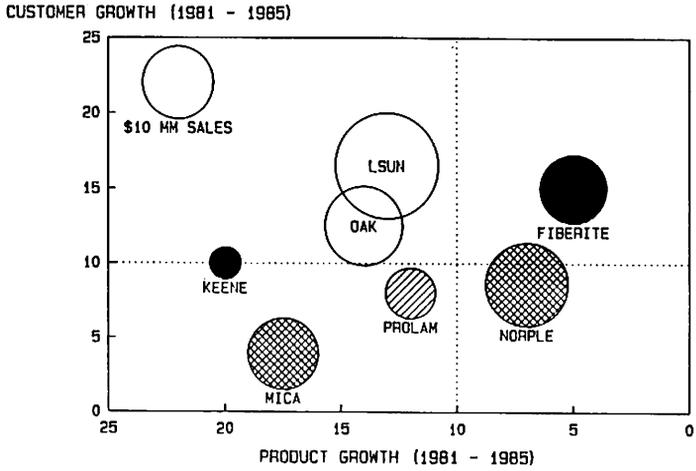
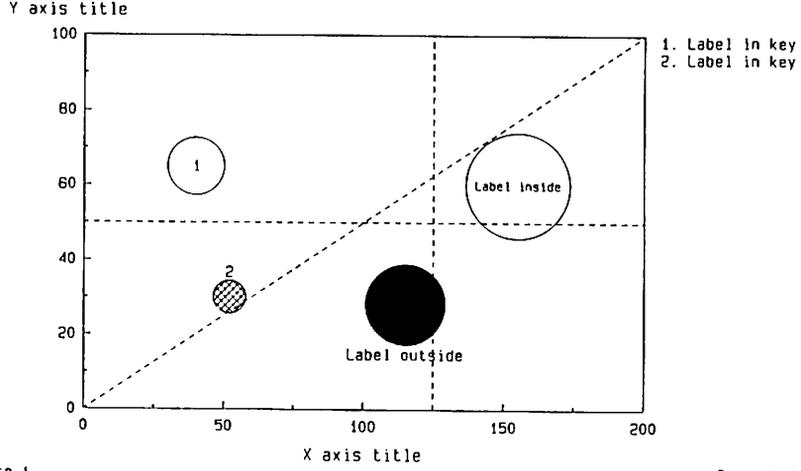


Figure 11-27: Example of S040: Bubble Chart

**Heading 1
Heading 2
Heading 3**



Note 1
Note 2
Note 3

Comment 1
Comment 2
Comment 3

Figure 11-28: Generic Diagram for S040: Bubble Chart

Format S040: Bubble Chart

Description

The format allows you to place bubbles (circles) of various sizes within a graph area, scaled with linear or logarithmic axes. One value is entered for a one (1) inch diameter bubble and establishes the standard against which other bubbles are sized. The bubbles may be filled or empty, and are positioned with an X and a Y coordinate, which indicate the center of the bubble in the graph area. Labels may be given for each bubble. These labels may be placed in the legend or attached to the bubble. This format is commonly used with logarithmic axes for strategic planning analysis.

Differences from B020 — Data Entry

The primary differences from B020 in terms of data entered are:

- Axes may be scaled or logarithmic.
- Axes may be reversed to run from maximum to minimum values.
- Vertical and horizontal reference lines as well as a diagonal line may be specified to divide the graph area.
- A value (number) must be entered for a one (1) inch standard bubble so other bubbles may be sized accordingly. However, it is the ratio of the area to the assigned value of the standard bubble which determines the size of your data bubbles. It is not the ratio of the diameter to the assigned value which is used.
- Each bubble has a value to determine size, X and Y coordinates to determine location, a label, a color, and a fill pattern.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- Color/fill palette may be changed.
- Color and fill may be changed for each bubble.
- A label placement may be specified for each bubble. Label placement indicates whether the label will be inside the bubble, outside the bubble, or in the legend with the legend number key inside or outside the bubble. The default label placement is outside the bubble.
- If a label or number is outside the bubble, a label position in terms of degrees must be specified. Label positions start at 0 degrees (3 o'clock) position and increase counter clockwise to 360 degrees. The default label position is at 270 degrees.
- A legend is created only if label placement is in the legend with the

corresponding number either inside or outside bubble.

- Font, color, and size may be specified for each bubble label. The same text characteristics specified for the label will be used in any legend.
- Color and line type may be specified for quadrant and diagonal lines.

Data and Character Limits

This format has the following data and character Limits:

Number of Bubbles	36	Number of Characters/ Bubble Label	20
Number of Legend Entries	36		

Compatibility

This format is not compatible with any other format.

Special Instructions

Labels and their placement may be specified for each bubble. The label itself is entered in the Enter/Change Chart Data Menu, while its placement is specified in the Change Chart Style Menu. Select the option to "Change Style of Bubble Labels." You then enter a section to "Change Label Placement." Press HELP to see possible label placement choices of:

1. Label in legend, number inside bubble
2. Label in legend, number outside bubble
3. Label outside bubble
4. Label centered in bubble

If you select either number 2 or number 3, you must also specify a position, in terms of degrees, for the label. Label positions start with 0 degrees in the 3 o'clock position and increase counter clockwise to 360 degrees.

To make your chart as clear as possible, you might want to use the comments to indicate the value represented by the one (1) inch standard bubble.



PERIPHERAL MARKET SHARES BY SYSTEMS VENDORS
(% of units acquired in 1980)

	DEC	HP	DATA GENERAL
FIXED MEDIA DRIVES	4	3	6
REMOVABLE HARD DISK	28	6	6
ALPHANUMERIC CRT'S	10	7	6
TELEPRINTERS WITH KEYBOARDS	31	3	1
CHARACTER SERIAL PRINTERS	5	3	2
			SUBTOTAL
			13
			42
			23
			35
			9

Source:
MINI-MICRO SYSTEMS
Computer Market Report 1981

Figure 11-29: Example of S050: Table Chart

Heading 1
Heading 2
Heading 3

	Col. 1	Col 2 label	Col. 3	Col 4 label
Row 1 label	10.052	COL 2 - ROW 1	\$10000	COL 4 - ROW 1
Row 2 label	15.000	COL 2 - ROW 2	20000	COL 4 - ROW 2
Row 3 label	17.500	COL 2 - ROW 3	30000	COL 4 - ROW 3
Row 4 label	20.000	COL 2 - ROW 4	40000	COL 4 - ROW 4
Row 5 label	200.000	COL 2 - ROW 5	50000	COL 4 - ROW 5

Note 1
Note 2
Note 3

Comment 1
Comment 2
Comment 3

Figure 11-30: Generic Diagram for S050: Table Chart

Format S050: Table Chart

Description

This format allows you to create a table of numbers, text, or both. A table may contain up to eight (8) columns, each of which can be headed with a label, and up to 24 rows, each of which can have a row label. The contents of each column may be numbers or text, and dividers between any row or any column can be specified.

Differences from B020 — Data Entry

The primary differences from B020 in terms of the data entered are:

- Data values entered are displayed as such, not as graphic shapes.
- The number of rows and columns must be specified.
- Labels are entered for each column and for each row.
- Data type of text or number must be specified for each column.
- Data values are entered by columns, not by row.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- Style characteristics of font, character size, and color may be specified individually for each column label.
- Style characteristics of font, character size, and color may be specified for all row labels but not individual row labels.
- Style characteristics — font, character size, color, number of decimals, and format (prefix of \$ or suffix of X or %) -- may be specified for each column of data values.
- Divider lines may be used to separate columns.
- Line type and color may be specified for divider lines.
- Margins for each column may be increased in terms of percent of the current margin, which is considered 1. Thus, the column width may be increased. The column width is initially established by the widest entry of column data in a particular column plus margins.
- Frame types may be specified.
- Line type and color may be specified for frame types.

Data and Character Limits

This format has the following data and character Limits:

Number of Columns	8	Number of Characters/Column	20
Number of Rows	24	Number of Characters/Row Label	32

Compatibility

This format is not compatible with any other format.

Special Instructions

If many columns are used with large data values, the columns may run off the chart.



**People 26-40 Chosen as Target Market
Because of Higher than Average Family Income**

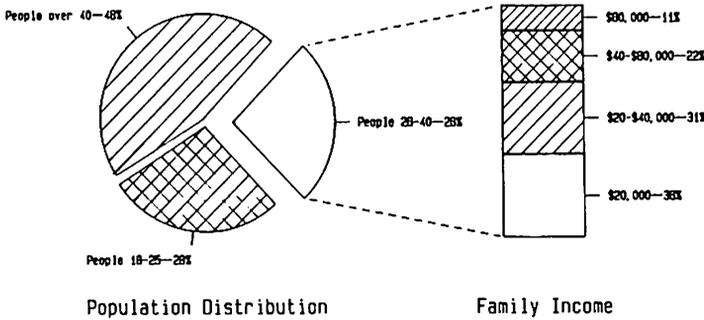
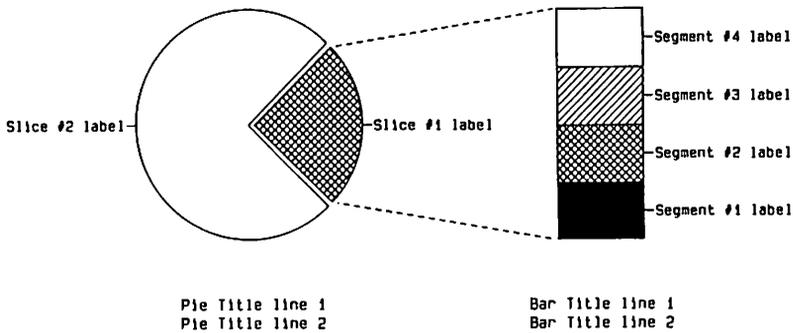


Figure 11-31: Example of C020: Pie/Bar Combination Chart

Heading 1
Heading 2
Heading 3



Note 1
Note 2
Note 3

Comment 1
Comment 2
Comment 3

Figure 11-32: Generic Diagram for C020: Pie/Bar Combination Chart

Format C020: Pie/Bar Combination Chart

Description

This format combines a pie with a segmented bar, and usually connects the two with a pair of lines. The segmented bar is shown to the right of the pie and is used to show the components of one of the pie slices. This format is very effective for showing subset information such as demographics.

Differences from B020 — Data Entry

The primary differences from B020 in terms of the data entered are:

- Data values are represented by pie slices and bar segments.
- Each data value is translated into a percent of the total pie or the total bar.
- There are no axes. All scaling is relative within the pie or bar.
- Labels are entered for each pie slice and for each bar segment.
- The pie and the bar each have a two line title.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- Style characteristics such as color, size, and font may be specified for pie and bar titles.
- The relative size of the pie and the bar may be changed by specifying the percent of the standard for the radius of the pie and for the width and height of the bar.
- Each pie slice can be exploded or blanked.
- One pie slice can be expanded into the segmented bar. The expanded slice is automatically exploded and rotated to the right side of the pie. The expanded slice can be "de-exploded." If no slice is expanded into the bar, the pie and bar are treated as independent elements, and no connecting lines are drawn.
- Line type and color may be specified for the lines connecting the pie and the bar.

Data and Character Limits

Format C020 has the following data and character Limits:

Number of Pie Slices	16	Number of Characters/ Pie or Bar Title	
Number of Pies	1	Line 1	32
Number of Segments/Bar	16	Line 2	32
Number of Bars	1	Number of Characters/ Slice or Bar Label	20

Compatibility

This format is compatible with the following formats:

B010: Bar Chart (Vertical)	B060: Horizontal Bars (Inset Labels)
B011: Bar Chart (Horizontal)	B022: Double Stacked Bars
P010: Pie Chart	



*The Projected Recovery Won't Set New Records
But Sales Will Beat the Averages of the 1970s*

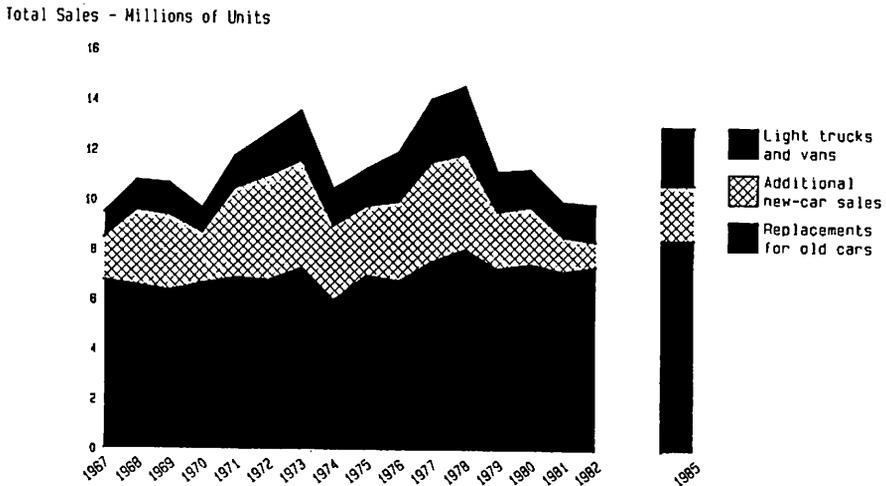


Figure 11-33: Example of Chart L020: Surface Line Chart

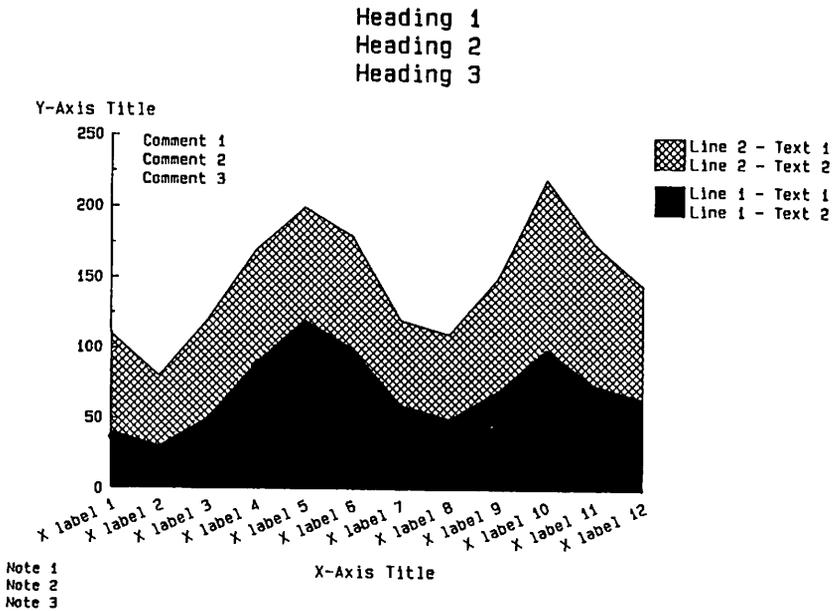


Figure 11-34: Generic Diagram for L020: Surface Line Chart

Format L020: Surface Line Chart

Description

This format is similar to the Line Chart (L010), with three principle differences. The area beneath each line is shaded; successive lines are cumulative, and the legend refers not to each line but to the area between lines.

Differences from B020 — Data Entry

The primary differences from B020 in terms of data entered are:

- Data values are represented by points on a line and area beneath the lines rather than by segments in a bar.
- Lines may be truncated at the beginning or end by using Del to indicate missing data values. If Del is used in the middle of the line, the line connects to points on either side.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- Color and line type may be specified for each line.
- Color and fill patterns may be specified for the shaded area beneath each line.

Data and Character Limits

This format has the following data and character Limits:

Number of Lines	8	Number of Characters/ X Axis Label	20
Number of Points/Line	100*	Number of Characters/Legend Line 1 and Line 2	20

*This maximum limit may be reduced if large numbers of other chart elements such as tic marks and labels are specified.

Compatibility

This format is compatible with the following formats:

B020: Segmented Bars (vertical)	L030: Line-Table Chart
B021: Segmented Bars (horizontal)	
B030: Clustered Bars (vertical)	
B031: Clustered Bars (horizontal)	
C010: Bar-Line Combination	
L010: Line Chart	

Special Instructions

No special instructions are required to use this format.

**Universal Life Insurance
\$100,000 Policy
John Williams - Age 35**

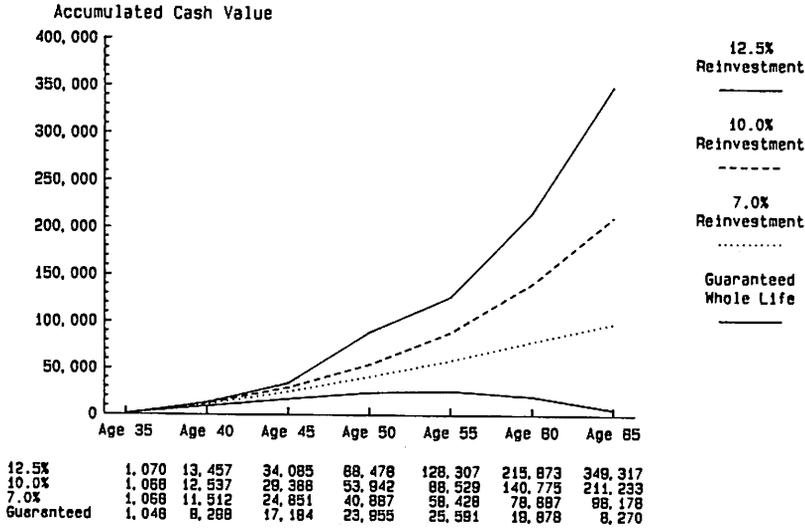
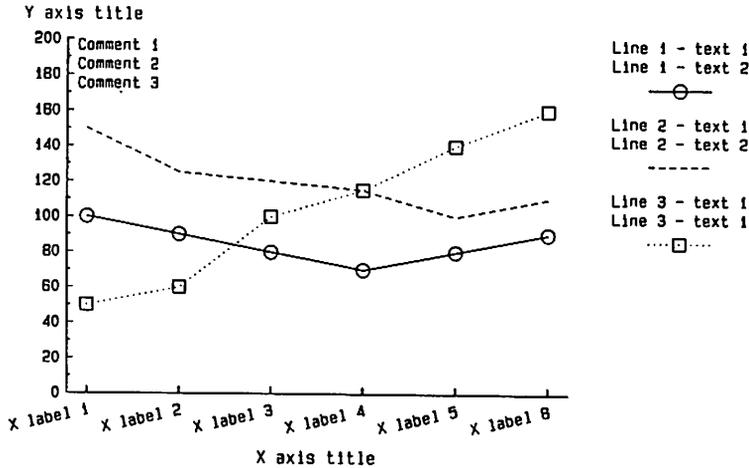


Figure 11-35: Example of L030: Line-Table Chart

**Heading 1
Heading 2
Heading 3**



Line 1 - text 1	100	90	80	70	60	90
Line 2 - text 1	150	125	120	115	100	110
Line 3 - text 1	50	80	100	115	140	180

Figure 11-36: Generic Diagram for L030: Line-Table Chart

Format L030: Line-Table Chart

Description

This format adds a table of data values below the graph area of a line chart. The values displayed in the table are the data values used to draw the lines in the graph area. With this format you have the graphic impact of a line chart without sacrificing the precision of the actual data values.

Differences from B020 — Data Entry

The primary differences from B020 in terms of data entered are:

- Data values determine points on a line rather than segments in a bar.
- Lines may be truncated at the beginning or end by using Del to indicate missing data values. If Del is used in the middle of the line, the line connects to point on either side.
- The vertical (Y) axis may have a logarithmic scale.
- Row labels for the table are created automatically using the first legend text line for each data line.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- Line type, color, and marker type may be specified for each line; the option of not having a line drawn is also allowed.
- The text style characteristics used for a legend will apply to the corresponding row label in the table.

Data and Character Limits

This format has the following data and character Limits:

Number of Lines	8	Number of Characters/Legend	
Number of Points/Line	16	Line 1 and Line 2:	20
		Number of Characters/ X Axis Label	20

Compatibility

This format is compatible with the following formats:

B020	Segmented Bars (vertical)	L020	Surface Line Chart
B021	Segmented Bars (horizontal)		
B030	Clustered Bars (vertical)		
B031	Clustered Bars (horizontal)		
C010	Bar-Line Chart		

Special Instructions

No special instructions are required to use this format.

THE FINANCIAL PICTURE
INCOME STATEMENT
Corroon & Black Corp. (CBL-NY)

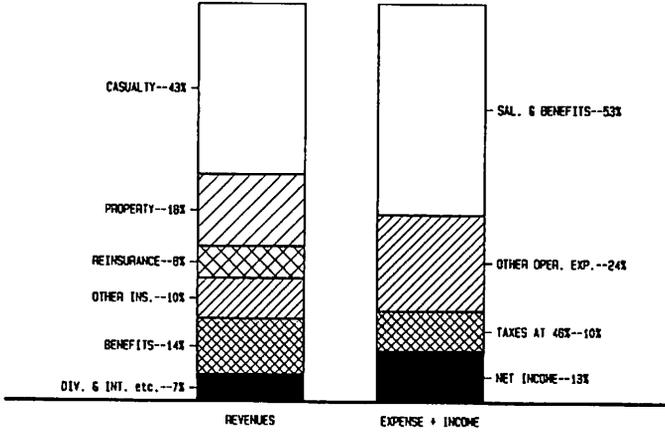
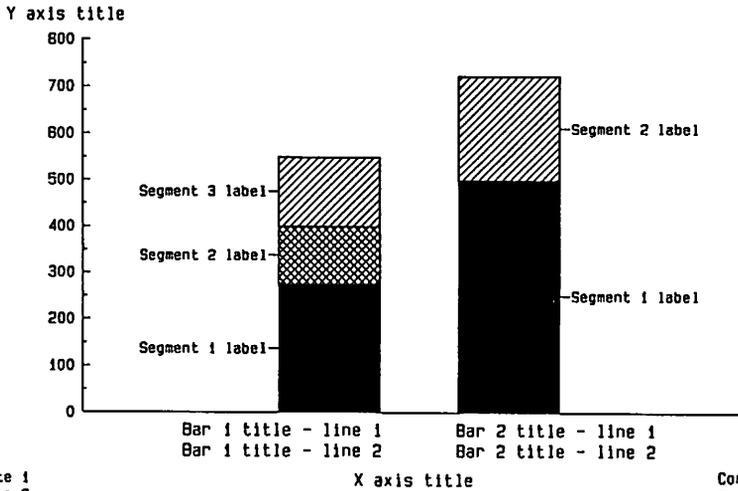


Figure 11-37: Example of B022: Double Stacked Bars

Heading 1
 Heading 2
 Heading 3



Note 1
 Note 2
 Note 3

Comment 1
 Comment 2
 Comment 3

Figure 11-38: Generic Diagram for B022: Double Stacked Bars

Format B022: Double Stacked Bars

Description

This format allows you to display two vertical segmented (or stacked) bars with a different label for each segment of each bar. It also allows a different number of segments in each bar and provides choices of color and fill pattern for each segment of each bar. Similar in function to a double pie chart, this format has the added capability of a vertical scale for visual comparison within and between cumulative bars.

Differences from B020 — Data Entry

The primary differences from B020 in terms of data entered are:

- A segment label, color, and fill pattern are entered for each bar segment.
- A bar title, consisting of two lines, is entered for each bar.
- No legend is provided.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- Text style characteristics of color, font, and size can be specified for each segment label and bar title.
- The width of each bar may be changed.
- Segment values or percents may or may not be displayed along with segment labels. They may be displayed with a prefix of \$, a suffix of % or X, or with no prefix or suffix.

Data and Character Limits

This format has the following data and character Limits:

Number of Bars	2	Number of Characters/ Segment Label	20
Number of Segments/Bar	16	Number of Characters/ Bar Title	
		Line 1	32
		Line 2	32

Compatibility

This format is compatible with the following formats:

B010	Column Chart (vertical)	B060	Horizontal Bars (inset labels)
B011	Bar Chart (Horizontal)	C020	Pie-Bar Combination
P010	Pie Chart		

Special Instructions

No special instructions are required to use this format.

*Graphwriter, Micros and New Plotter Technology
 Reduce the Cost of Presentation Graphics by 90%
 Hardware, software & maintenance (5 yr depr.)*

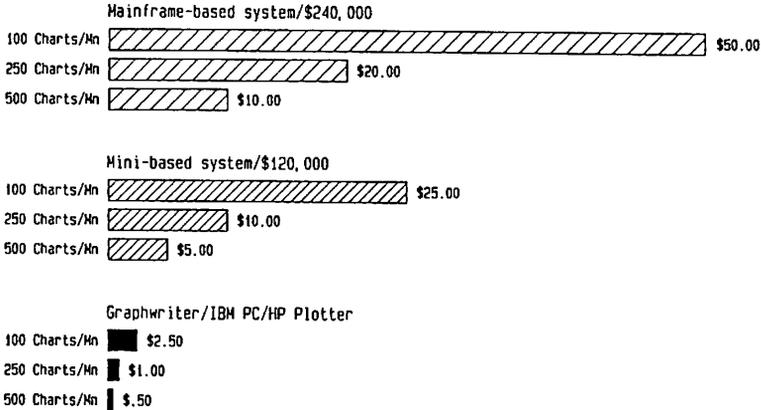


Figure 11-39: Example of B032: Grouped Bars

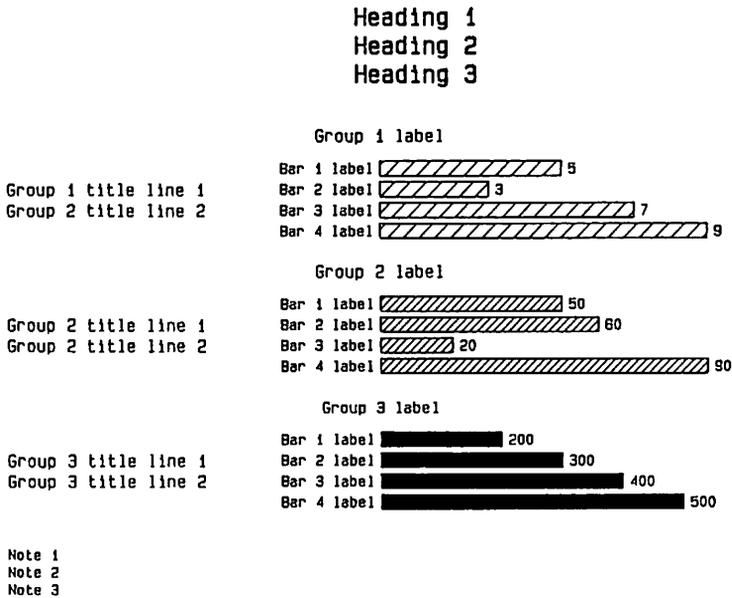


Figure 11-40: Generic Diagram for B032: Grouped Bars

Format B032: Grouped Bars

Description

This format program allows you to present one to four groups of horizontal bars on the same chart. Each group of bars is a miniature Horizontal Bar Chart (B011), with its own axes, bar labels, and title. In addition, each group of bars can have a different number of bars.

Differences from B020 — Data Entry

The primary differences from B020 in terms of data entered are:

- Data values determine bars, not bar segments. Values may be positive or negative.
- Individual horizontal (X) axes are used to scale the size of the bars within each group.
- Each group of bars has its own horizontal (X) axis, X axis labels, vertical (Y) axis, group title, and group label.
- The group title consists of two text lines. The group label is actually a Y axis title. There is no X axis title.
- Each bar within each group has its own bar value and bar label.
- No legend can be specified.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- Colors and fill patterns may be specified for each bar.
- Bar width may be specified for each group of bars.
- Text style characteristics such as color, font, and size may be specified for each group title, group label and bar label.
- Label and tic intervals for the X axes are specified in the Change Chart Style Menu rather than in the Enter/Change Chart Data Menu.
- Bar values may be displayed or not; they may also be displayed with a prefix \$, a suffix X or %, or with no prefix or suffix.

Data and Character Limits

This format has the following data and character Limits:

Number of Groups	4	Number of Characters/ Bar Label	20
Number of Bars/Group	12	Number of Characters/ Group Label	32
		Number of Characters/ Group Title	32
		Line 1	32
		Line 2	32

Compatibility

This format is not compatible with any other formats.

Special Instructions

No special instructions are required to use this format.



Robotics Corporation
 Component Testing - January 1982
 Based on a Sample of 250

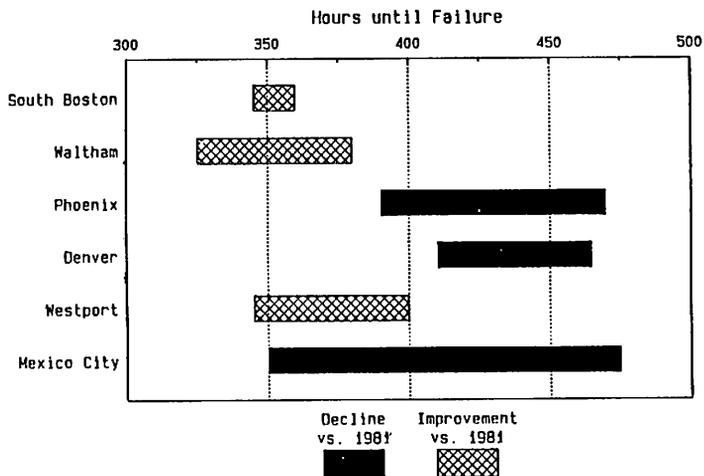


Figure 11-41: Example of B040: Range Chart

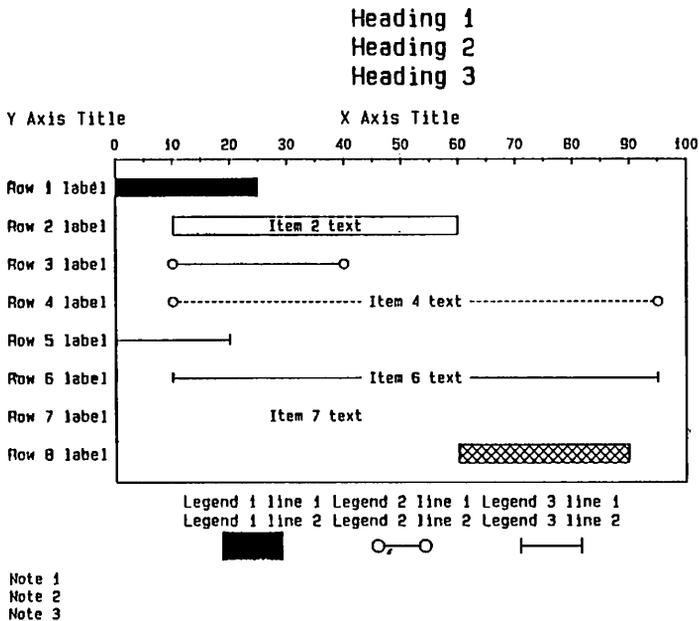


Figure 11-42: Generic Diagram for B040: Range Chart

Format B040: Range Chart

Description

This format allows the display of up to 20 rows of horizontal chart elements, which may be bars, lines, or text. Referred to as items, each bar, line, or text string is located and sized with beginning and ending values on the X axis, and a row number. A legend is optional and may be used to distinguish or identify further the chart elements. This format is very similar to the Gantt Chart but with a scaled axis replacing the automatic calendar axis.

Differences from B020 — Data Entry

The primary differences from B020 in terms of data entered are:

- Two data values on the X axis, i.e., begin and end values, and the row number determine any single chart element.
- Chart elements, referred to as items, may be specified as bars, bars with text, lines with flat ends, lines with circles at the ends, lines of either type with text, or text alone. One type of item is used for the entire chart at this point, until respecified on an item by item basis in the Change Chart Style Menu.
- The horizontal axis is scaled.
- A legend, containing up to six legend keys (text and symbol) is specified independently of chart elements, and appears horizontally below the graph area. Coordinating color and fill pattern between the chart elements and the legend is up to the user.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- For each item, style characteristics of item type, color, and fill pattern or line type may be specified.
- For each text string used alone or with a bar or line, text style characteristics of font, size and color may be specified.
- Text style characteristics of color, font, and size may be specified for each row label and for each X axis label.
- Text style characteristics of color, font and size may be specified for legend text for each legend.
- Vertical grid lines may be drawn or not drawn. Color and line type may be specified for grid lines.
- Width of bars may be specified.

Data and Character Limits

This format has the following data and character Limits:

Number of Rows	20	Number of Characters/ Row Label	20
Number of Total Items	48	Number of Characters/Legend Line 1	20
Number of Legends	6	Line 2	20
		Number of Characters/ Text in an Item	48

Compatibility

This format is not compatible with any other formats.

Special Instructions

Data Entry

The data entry section for Format B040 is somewhat different from that of other formats.

After responding to prompts for headings, notes, and axes, you are asked to specify the number of rows and their labels. Row width is determined by the program on the basis of the number of rows you have specified.

Next you specify type of item — bar, bar with text, line with flat ends, line with circles at the ends, line of either type with text, or text alone. One item type is used for all items in the chart, until you respecify item type on an item by item basis in the Change Chart Style Menu.

For each item you are asked to specify its row number, beginning value, ending value and text. Text may have up to 48 characters and is centered within the beginning and ending dates. If the text is too long to fit between the dates, it runs over at both ends. Text may also run out of the plot area.

When used with a bar or line, text is centered horizontally within the bar or line. When used with a line, the line is drawn from each end of the text (plus one characters space) to the beginning and ending values for the line. If the text is too long, the line disappears.

Specifications for the legends are prompted for up to six (6) legend entries. Text alone may be chosen as a legend type, in which case no symbol is printed. The legend area is centered under the plot area.



FOR ITS SIZE MOBIL IS SHORT ON DOMESTIC RESERVES

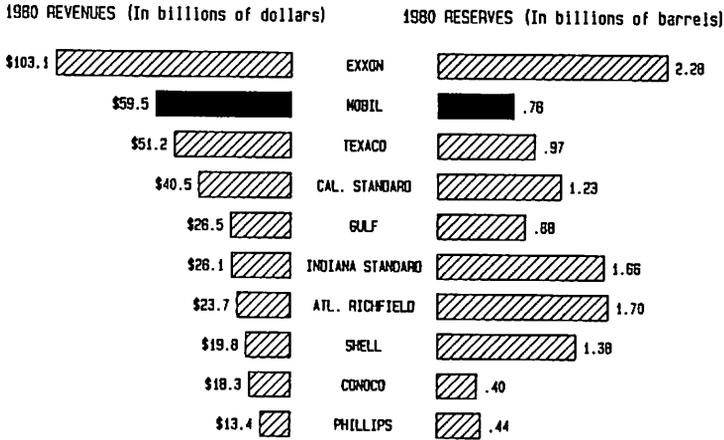
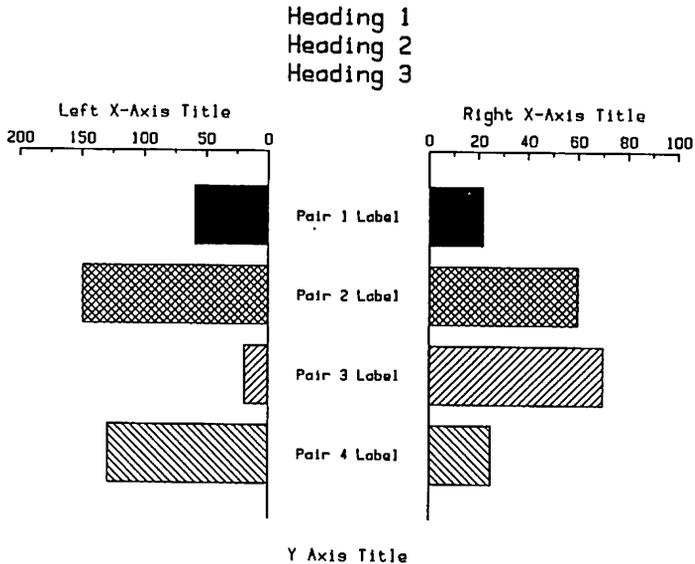


Figure 11-43: Example of B050: Paired Bars



Note 1
Note 2
Note 3

Comment 1
Comment 2
Comment 3

Figure 11-44: Generic Diagram for B050: Paired Bars

Format B050: Paired Bars

Description

This format allows you to present and compare two different aspects or dimensions of a single set of items on the same chart in the form of paired bars. Up to 24 pairs may be shown. Each set of bars, representing one dimension, is independently scaled among the horizontal or X axis. However, the two sets of bars share a common vertical Y axis, with common bars labels.

Differences from B020 — Data Entry

The primary differences from B020 in terms of data entered are:

- Data values are represented by bars, not bar segments. Two data values are entered for each bar label.
- Each set of bars can accommodate both positive and negative values.
- Each set of bars has its own horizontal (X) axis. The vertical (Y) axis is shared by all pairs of bars.
- For each bar in each set, bar values, color, and fill pattern are prompted for.
- No legend is used.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- Colors and fill patterns may be specified for each bar of each set.
- Style characteristics may be specified for each label rather than for all bar labels.
- Style characteristics may be specified for each axis.

Data and Character Limits

This format has the following data and character limits:

Number of Sets of Bars	2	Number of Characters/ Bar Label	32
Number of Bars/Set	24		

Compatibility

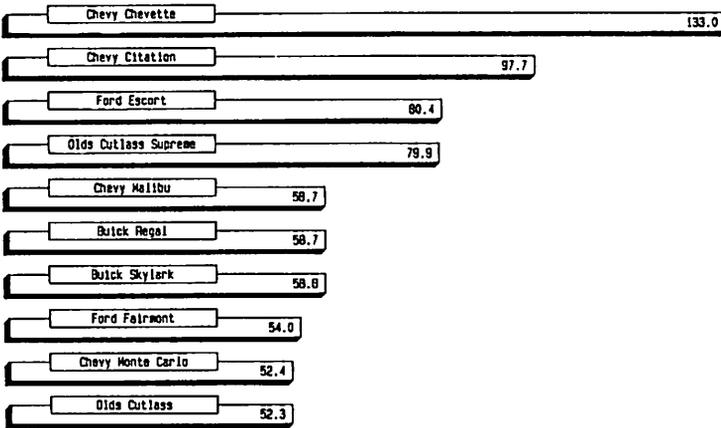
This format is not compatible with any other formats.

Special Instructions

No special instructions are required to use this format.

Top Selling U.S. Cars

1st Quarter of 1981



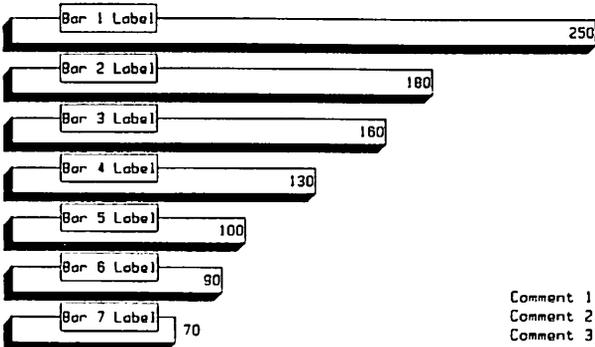
Figures In Thousands

Figure 11-45: Example of B060: Horizontal Bars (inset labels)

Heading 1

Heading 2

Heading 3



X-Axis Title

Note 1
Note 2
Note 3

Figure 11-46: Generic Diagram for B060: Horizontal Bars (inset labels)

Format B060: Horizontal Bars (inset labels)

Description

This format is very similar in function to B011: Bar Chart (horizontal). There are two primary differences. First, the individual bar labels are embedded within the bars themselves. This allows more chart area to be used for scaling and drawing the bars and also provides a more visually pleasing way to associate each bar with its label. The second difference from B011 is the three dimensional appearance provided by a shaded section on each bar.

Differences from B020 — Data Entry

The primary differences from B020 in terms of data entered are:

- Data values are represented by bars not by segments in a bar.
- The horizontal (X) axis is used to scale the size of the bars. Thus, bars are horizontal rather than vertical.

Differences from B020 — Style Characteristics

The primary differences from B020 in terms of style characteristics are:

- Colors and fill patterns are specified for each bar instead of each segment.
- Style characteristics may be specified for each bar label rather than for all bar labels.
- No legend is used.

Data and Character Limits

This format has the following data and character limits:

Number of Bars	18	Number of Characters/ Bar Label	32
----------------	----	------------------------------------	----

Compatibility

This format is compatible with the following formats:

B010	Column Chart (vertical)	B022	Double Stacked Bars
B011	Bar Chart (horizontal)	C020	Pie-Bar Combination
P010	Pie Chart (1-4 pies)		

Special Instructions

No special instructions are required to use this chart.



Reference: Using Stored Data Files

In addition to being able to retrieve stored chart files (see Chapter 7, section on Enter/Change Chart Data Menu) and to retrieve and use stored style files (see Chapter 6, "Customizing Graphwriter"), you can also use stored data files.

Often the data you will wish to present in graphic form is derived from analyses you have performed previously. If the amount of data is small or if the analysis was performed manually, the best method for entering the data is by keyboard. However, when you have large amounts of data which are stored in a data file using another software package, you will want to load the data directly from the stored data file. Graphwriter allows you to retrieve data values from file formats used by several popular spreadsheet and database packages.

A file name can be up to eight (8) characters in length, followed by an optional extension, consisting of a period and up to three (3) characters.

After you have entered the labels and data in your application program, store your file on a separate data disk

When you store your data, be sure to include all the data you may wish to chart. You can always select a subset of data. If you do think you will use a subset of your data, you might find it helpful to list the data and to mark the number starting each row or column.

Data Files

Graphwriter allows you to use files stored using file formats such as SYLK or DIF. For more information on changing default settings for storing data in DIF/SYLK files, or reading data from them, refer to the section, "Changing DIF/SYLK File Default Characteristics," in Appendix B.

How to Use SYLK Files

To use SYLK files with Graphwriter, follow the procedure below.

1. Store your SYLK file using an application program.
2. Load and run the desired Graphwriter Format Program.
3. From the Select Starting Data Menu

- press 2 "Enter all new Data"
4. From the Main Menu of the selected format
- press 2 "Enter Change Chart Data"
5. From the Enter/Change Chart Data Menu
- press 7 "Enter/Change (Bars, Pies, Lines only)"
6. You are led to the Enter Bar (Pie, Line) Data Menu as shown below.

```
Enter Bar Data
-----
1. Return to Enter Menu
2. Enter Bar Labels from Keyboard
3. Enter Bar Values from Keyboard
4. Read Bar Labels/Values from a File
5. Change Input File Format        Currently: SYLK file
6. Change Number of Bars         Currently: unspecified
7. Change Bar Colors and Fills

Select one:
```

- Notice on this menu option #5, "Change Input File Format" specifies the SYLK file format.
7. From this menu
- press 4 "Read Bar Labels/Values from a File"
8. You now see a series of screen displays, as shown below. The prompts require you to enter the number of bars (lines/pies) and segments (points/slices), and further prompts ask you how you want to read the file.

Reading series from file

Number of bars is unspecified
Enter new number of bars: 2

Number of segments per bar is ... unspecified
Enter new number of segments : 3

Open SYLK file

If you are using a floppy disk for your stored files, please insert
your data disk in the B: drive.

Data file is unspecified
Enter file containing data: I23SYLK.SLK

Do you want Graphwriter to read your file in row or column order?
Current direction is row
Enter new direction (Row or Column):

Begin reading data with which column in each row?
Current first column is 1
Enter new column number:

Enter Series to read from file

Which row from the file should be read for Bar Labels?
Enter new row number:

Which row from the file should be read for Segment 1 values?
Enter new row number:

Which row from the file should be read for Segment 2 values?
Enter new row number:

Which row from the file should be read for Segment 3 values?
Enter new row number:

9. When you have specified how your file should be read, you see the following prompts:

"Reading file (file name)"

"Please replace the format disk.
Press RETURN to continue."

To continue, remove your data disk, insert the Graphwriter Format Disk, and

press RETURN

You return to the Enter Bar Data Menu.

Although your basic data is entered, you probably will want to return to the Enter/Change Chart Data Menu and use the various options to enter such things as headings, axes, legends, and comments.

How to Use DIF Files

To use DIF files with Graphwriter, follow the procedure below.

1. Store your DIF file using your application program.

When you store your DIF file, you will be storing a two-dimensional array containing labels and data values. Be sure to include all the data you may wish to chart. You can always select a subset of your data.

When you create your DIF file, some application programs allow you to store it in either row or column format. Graphwriter is able to read it either way.

Make a listing of your data when it is stored, and mark the number starting each row or column. This is particularly important if you want to read the data differently from the way it was stored, or if you want to read only a subset of your data.

In addition to reading your data by row or by column, as you specify, Graphwriter begins reading with the particular row or column you tell it to start with. In this way you can specify a subset of your original data is to be used.

2. Load and run the desired Graphwriter Format Program.
3. From the Select Starting Data Menu
press 2 "Enter all new Data"
4. From the Main Menu of the selected format

- press 2 "Enter Change Chart Data"
5. From the Enter/Change Chart Data Menu
- press 7 "Enter/Change (Bars, Pies, Lines only)"
6. You are led to the Enter Bar (Pie, Line) Data Menu as shown below.

```
Enter Bar Data
-----
1. Return to Enter Menu
2. Enter Bar Labels from Keyboard
3. Enter Bar Values from Keyboard
4. Read Bar Labels/Values from a File
5. Change Input File Format            Currently: DIF file
6. Change Number of Bars             Currently: unspecified
7. Change Bar Colors and Fills

Select One:
```

- Notice on this menu option #5, "Change Input File Format" tells you which file format is currently specified. Be sure DIF is the current input file format.
7. From this menu
- press 4 "Read Bar Labels/Values from a File"
8. You will then see the following screen display requiring you to enter the number of bars (lines/pies) and segments (points/slices).

```
Reading series from file
-----
Number of bars is ..... unspecified
Enter new number of bars        : 2

Number of segments per bar is ... unspecified
Enter new number of segments    : 3
```

9. Next you see the screen display shown below asking you to insert your data disk in the B: drive and to enter the name of your data file.

```
Open DIF file
-----
If you are using a floppy disk for your stored files, please insert
your data disk in the B: drive.

Data file is .....unspecified
Enter file containing data:  I23DIF.DIF
..
Has this file stored by rows or columns?
Current direction is ..... row
Enter new direction (Row or Column):

Do you want Graphwriter to read your file in row or column order?
Current direction is ..... row
Enter new direction (Row or Column):

Begin reading data with which column in each row?
Current first column is ..... 1
Enter new column number:
```

You can press HELP for a listing of the disk contents.

After you respond to the above prompts you are asked to respond to the prompts similar to the ones in the screen display shown below.

```
Enter series to read from file
-----
Which row from the file should be read for Bar Labels?
Enter new row number:

Which row from the file should be read for Segment 1 values?
Enter new row number:

Which row from the file should be read for Segment 2 values?
Enter new row number:

Which row from the file should be read for Segment 3 values?
Enter new row number:
```

10. After responding to the prompts above, the program announces it is reading the file and, if you are running Graphwriter from floppy disks, instructs you to remove the data disk and re-insert the Graphwriter Format Disk into the B: drive.

11. To return to the Enter Bar Data Menu,

press RETURN

If you wish to enter headings, axes, legends and comments, press I on the Enter Bar Data menu, and you return to the Enter/Change Chart Data Menu.



Reference: Problems Using Graphwriter

Despite all precautions, there will be times when a chart doesn't look quite right or when you have difficulties running a program. Figuring out how to adjust a chart so it does conform to your expectations is usually quite straightforward. When you have difficulties running a program, diagnosing the problem can sometimes be more complicated.

This chapter describes most of the problems you can run into in each category. Also, it offers suggestions for making your chart look right as well as suggestions for diagnosing problems encountered when running a program.

The Chart Doesn't Look Right

When the chart doesn't look right, you can usually fix it without much trouble. Generally, the problems of the less than perfect chart fall into two categories -- those of proportion and those having to do with the drawing of the chart. First, let's look at the problems of proportion.

Problems of Proportion

The Graphwriter format programs have extensive capabilities. They allow you to specify literally dozens of elements and style characteristics. It is because so much can be done to a chart, that you will occasionally create a chart that is awkwardly proportioned.

How does this happen? You are allowed to specify character sizes for every chart element on the page. If large character sizes or a maximum number of characters have been specified for several text elements, it is possible that the program will not be successful in its attempt to compose your chart. In this case, some elements might run off the page or overlap one another.

The program tries to prevent this from happening by moving or squeezing all chart elements to keep them in the plot area, which contains the graph area plus the descriptive text and legends. The program will not, however, change the character sizes you have specified. The chart in Figure 13-1 explains and shows some of the ways Graphwriter tries to fit all the chart elements on the page.

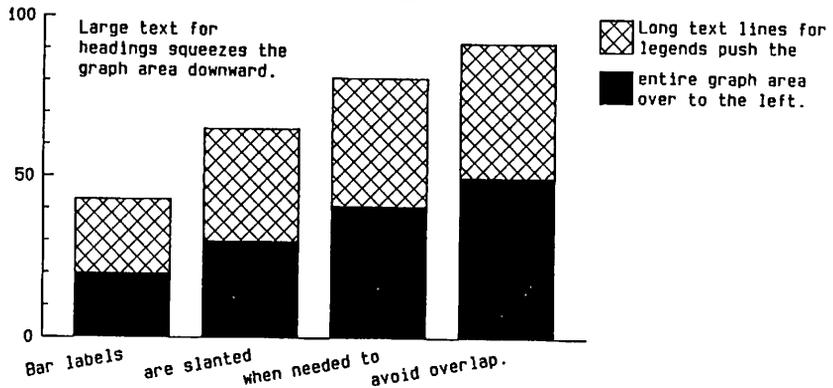
The fail-safe way to prevent poorly proportioned charts, of course, is to let the program determine all character sizes. This, however, does not allow full use of Graphwriter capabilities. Perhaps the most productive approach is to make changes gradually. Experiment with changing character

size by changing the size of one or two different elements at a time. By doing this you will gradually acquire more of a feel for how much space is available for various elements and how they will appear on the page. You will soon be able to make major modifications and still produce a well-proportioned, well-designed chart.

Graphwriter

features intelligent positioning
of chart elements

The Y axis title never hits the Y axis.



The X axis title never hits notes or labels.

The notes are fixed but will never run into other chart elements. If more room is needed, the graph area is squeezed upward.

Figure 13-1: Graphwriter Features Intelligent Positioning of Chart Elements

Problems with the Drawing

Occasionally, your chart will exhibit an imperfection such as a poorly drawn character or an inconsistent fill pattern. With few exceptions, these problems are related to the plotter pens or plotter medium.

Table 13-1 summarizes several of these problems.

DRAWING PROBLEMS

DRAWING PROBLEMS	
Problem	Solution
Fill patterns gap or are askew.	Check the cable connections between computer and plotter. Be sure the connections are secured at each end.
Fill patterns are streaked; lines are uneven; or characters are poor quality.	Check your plotter pens. They may have dust on them or they may need to be replaced.
Lines skip on page.	Check the plotting medium (paper or transparency). There may be an air bubble under the medium or oil on the surface.
Fill patterns, lines, or characters are not sharp.	The paper you are using to plot may be too grainy. Try using a paper with a smoother finish.

Table 13-1: Drawing Problems

Problems Encountered During a Program

While running a program you may encounter simple errors which you can fix readily, program error messages which can often be fixed right away, or system error messages, which may require some creative trouble shooting on your part.

Simple Data Entry Errors

There will be times when you make mistakes while using the format programs. Some of these mistakes might be misspellings of some text or incorrect data values. These mistakes are not detected by the program because they are legitimate responses to the program prompts.

If you discover such a mistake while entering a line of information, simply use **BACK SPACE** to erase the error, then re-enter the correct information and press **RETURN**.

If you have already pressed **RETURN** for the line in question, you may press **PgUp** to return to that item. Then re-enter the correct information

and press **RETURN**. You may not discover some mistakes until after you have completed the data entry process. You can still correct them easily. Return to the Enter/Change Chart Data Menu and select the option for the section containing the mistake. Re-enter the correct information and press **RETURN**.

Program Error Messages

Some mistakes you make might result in program error messages. These will happen either during data entry or editing, plotting, or storing files. For instance, you might try to enter an axis title with more characters than are allowed. Because this is an illegal response to the prompt, the program recognizes your mistake and tells you how to correct it as follows:

"Please enter the text for this heading.
Enter up to 48 letters."

When errors such as this happen, you must re-enter the entire response correctly before the program can continue.

The mistakes resulting in error messages similar to the ones above fall into the categories shown in Table 13-2.

The messages are clear and usually offer corrective measures you can take. However, one error message you might encounter deserves some special attention. This a message you might encounter during plotting, more specifically, during plot composition. It is:

"Not enough memory to hold graphic elements."

When you see this message,

press **RETURN**

You return to the Plot Chart Menu.

This message occurs when your chart contains more graphic elements than are able to fit in available memory. For example, a bar chart with a large number of bars, data values, above the bars, and many axis labels and tic marks could exceed the memory available for graphic elements.

Another example would be a line chart with many lines and many points on each line. Because Graphwriter has a dynamic memory allocation for chart elements, it is not always possible to predict when you might exceed the memory allocation.

To get around this particular problem, check your axes, particularly the label and tic intervals. If you can reduce the number of label intervals and/or tic intervals, you should do so. Less commonly, you might need to reduce the number points on a line (in a line chart) or segments or bars (in a bar chart).

After you have reduced the number of graphic elements, return to the Plot Chart Menu, and try to plot.

PROGRAM ERRORS AND MESSAGES	
Type of Error	Program Error Message
Exceeding the number of letters allowed.	"Please enter text of bar label. Enter up to 20 letters."
Entering a letter instead of a number.	"Must be a number."
Entering a number out of range.	"Must be a number between 0 and 50."
Failing to enter required information.	"Please enter a palette number."
Entering something other than yes or no where one or the other is required.	"Unrecognized character, please re-enter."
Problems with files.	"Error reading current file."
Plotting errors.	"Not enough memory to hold graphic elements."
	"Invalid scale for Y axis."

Table 13-2: Program Errors and Messages

You may at some time run into a problem where the program gets "stuck" but does not give you an error message. An example of this would be the program trying to compose your chart but taking too long to do so. Or the program may begin to plot but not be able to continue. At such times you might be able to recover by pressing Esc repeatedly.

MS-DOS Messages

Other types of errors you might run across are those from MS-DOS. They drop you back to the MS-DOS system prompt, A . However, you should remember that any data you have entered with Graphwriter is not lost. You can retrieve your data by restarting Graphwriter and selecting the "Use Data From Last Format" option from the Select Starting Data Menu.

1. From the Select Graphwriter Format Menu.

enter Format Number RETURN

You see the Select Starting Data Menu.

2. From this menu,

press 3 "Use Data from Last Format"

Your previously entered data has been restored, and you are ready to continue from when you were interrupted.

Batch Processing Composed Chart Files

Graphwriter includes a batch processing capability which is designed to allow you to batch process sets of Composed Chart Files created using Graphwriter Format Programs. With this capability, you can

- Enter your data into a Format Program
- Preview your chart on your computer's graphics monitor
- Store the Composed Chart File for printing, plotting or film exposure at a later time, or on another computer.

And, if your hard copy output device is a printer, camera system, or plotter with batch processing features, you can create an entire series of chart files which can be produced without operator intervention.

The batch processing option of Graphwriter may be accessed from the Graphwriter Format Menu, the first menu you encounter after starting Graphwriter. The balance of this chapter explains how batch processing works with Graphwriter, and how you can use it to process your Composed Chart Files. This chapter includes the following sections:

- Composed Chart Files
- Creating and Storing Composed Chart Files
- Retrieving Composed Chart Files
- Creating a Batch List
- Setting Batch Processing Options
- Running the Batch Process

Composed Chart Files

A Composed Chart File is different from the normal chart files you store using the Store Chart Menu explained in Chapter 7, "Reference: Menus." (See Page 7-20.) A Composed Chart File is created by one of the individual Graphwriter Format Programs when you decide to plot your chart data, either on the screen or on a hard copy output device.

Chart composition is the process during which Graphwriter lays out your chart for the output device you have selected, using the data you provided.

When a chart is composed, Graphwriter converts your data values into a set of graphic elements that are suitable for drawing on a graphic output device. For example, an X axis for your plot is translated into a long horizontal line. It is put into a specific position, and intersected by a series of short lines (tic marks). Axis labels become a series of text characters. They have specific locations, which will correspond to the tic marks on your axis.

Each of the Graphwriter format programs has its own, built-in, graphic design decision rules. They are applied to the chart when it is composed. The data you enter must be composed by the Format Program of your choice before it can be plotted. However, once your data has been composed you can use the batch processing capability which is format independent.

Creating and Storing Composed Chart Files

Composition is done automatically by Graphwriter whenever you decide to plot your chart on the screen or on a hard copy output device. However, to prepare a Composed Chart File for later use in the batch processing portion of Graphwriter, you must store your Composed Chart file on a data disk, using a name of your choosing.

To create and store a Composed Chart File, follow these steps:

1. Select a Graphwriter Format Program.
2. Set the current graphic device (shown on the Graphwriter Plot Chart Menu of your format program) to be the output device you wish to use for your batch processing.
3. Enter your data, using the Enter/Change Chart Data Menu.
4. Preview your chart on the graphics monitor for your computer. (Optional)
5. Store your chart file, using option 5, "Store a Composed Chart File," on the Graphwriter Plot Chart Menu.

The program prompts will ask you to insert your data disk, and to supply a name for your Composed Chart File. We suggest that you use the extension .CMP to name Composed Chart Files.

After you have stored one or more Composed Chart Files, you can use the batch processing option explained below to produce hard copy output of your charts.

Retrieving Composed Chart Files

After you create a Composed Chart File, you may retrieve it from your data disk to examine its contents. To do so, perform the following steps:

1. From the Graphwriter Format Menu, select option 4, "Batch Process Chart Files."

You go to the Batch Plotting Main Menu, shown below.

```
Main Menu                                Batch Plotting
-----
1. Return to Format Menu
2. Change Batch Plot Options
   Graphic device..... TRS FP-215           Copies per chart.. 1
   Pause between charts.. yes
3. Enter/Change Batch List
4. Begin Batch Plotting
5. Read Composed Chart File                 Currently: unspecified
6. Preview Composed Chart on Screen
7. Store Composed Chart File

Select one:
```

2. From this menu,
press 5 "Read Composed Chart File"

Prompts will ask you to insert your data disk, and to enter the name of your Composed Chart File. If you press HELP, you will see information

on file names. From the HELP message you can also see a directory listing of your files. After your Composed Chart File is read by the program, you will see information similar to that shown on the following screen.

```
Created by Graphwriter format L010 - Line Chart.

Composed for these plot options.
Graphic Device .. HP 7470A           Page Size .... A (ANSI 8.5x11 in.)
Medium/Pen Set .. plain paper       Orientation .. vertical
Plot Area ..... full page
```

If you have a graphics monitor and graphics board in your computer, you can also request a screen preview of your Composed Chart File by selecting option 6, "Preview Composed Chart on Screen," from the Batch Plotting Menu.

Remember, the screen preview that you see will be of a chart that you composed for the graphic output device which was the current device at the time you composed the chart. Your screen preview will not be composed for the screen.

Creating a Batch List

The Batch Processing option uses a batch list of chart files to determine what Composed Chart Files to produce. When you begin the batch processing sequence, you have the opportunity to select, from your current file list, the beginning and ending files used to produce a Batch List for the batch run. This section explains how to create the Batch List.

1. To create a Batch List, go to the Batch Plotting Menu, and
press 3 "Enter/Change Batch List"

You see the following prompt:

"Use current batch list (default is yes)?"

2. If you want to edit or extend the current list of files (created previously),

enter Y RETURN

If you want to eliminate the current list of files, and create an entirely new list,

enter N RETURN

Remember that you do not have to batch process all of the files in the current list. If you want to retain part of an old list, for example five

files, you can start your new list as file number six. You then begin the batch processing using the number six as the first file of your batch sequence.

You now see the prompt:

```
"Number of files on list is currently .....  
Enter new number of files on list: "
```

If you decide to modify or extend the current Batch List (by your answer to the previous question), you enter the number of files in your new list.

To retain the current number of files, simply

```
press          RETURN
```

You now see the prompt:

```
"Begin with which file?"
```

3. Your response to this question indicates where in the Batch List of files you wish to begin entering or editing.

Note that the question does not specify the first file that will be used in the batch processing sequence. That file name and the ending file name are specified prior to beginning the batch sequence itself. (See the section, Running the Batch Process, in this chapter.)

You can answer the current question using a name, or the number in the list, of the file you wish to begin with. Press RETURN to begin with the first file in the list.

4. Next, prompts ask you to enter or change the names for the files in the Batch List. The following screen shows a typical sequence.

```
Enter/change file list  
-----  
Begin with which file?  
File number  Current File          New File  
1           b:1010.otp          :  
2           b:1010.cht          :  
3           b:c010.tre          :  
4           b:b010.tre          :
```

5. After you enter the balance of the files in the Batch List, Graphwriter returns you to the Batch Plotting Menu.

You may use Esc at any time to return to the Batch Plotting Menu prior to reaching the end of the Batch List.

Setting Batch Processing Options

You can select the following options for use in a batch processing sequence.

- **Graphic Device:** The output device to be used during the batch sequence. Normally this is the device that was the current device when the chart files were composed. However, you can use any device available on your system for the batch sequence (such as a graphics printer to preview your charts).
- **Copies per Chart:** This number determines how many copies will be made of each chart included in the batch sequence.
- **Pause Between Charts:** This option allows you to pause the program after each chart in order to insert pages or advance your film. This is for graphic devices which do not support batch processing.

To set these options, from the Batch Plotting Menu,

press 2 "Change Batch Plot Options"

Prompts will ask you to respond to the three questions shown on the following screen.

```
Change batch plot option
-----
Graphic device is currently ..... TRS FP-215
Enter new graphic device .....:

Number of copies per chart is currently .. 1
Enter new number of copies per chart ....:

Pause between plots (currently yes) .....?
```

After responding to these questions, you return to the Batch Plotting Menu. You will see the revised values for each option.

Running the Batch Process

After you have created your Composed Chart Files, set up your Batch List, and selected your Batch Processing options, you are ready to begin the Batch Processing sequence.

1. To begin Batch Processing, from the Batch Plotting Menu,
press **F4** "Begin Batch Plotting"

You see the following prompt:

```
"Current first file for batch run is ....abc.CMP
Begin this batch run with which file?          "
```

2. Enter the name or the number of the file you wish to begin the sequence with. Press **HELP** to get a list of file names.

Next you will see the prompt:

```
"Current ending file for batch run is ...xyz.CMP
End this batch run with which file?           "
```

3. Enter the name or the number of the last file for the batch sequence. Press **HELP** to get a list of file names.

You are asked to insert your data disk, and to press **RETURN** to continue the process.

4. To continue,

press **RETURN**

To abort the process,

press **Esc**

If you continue, Graphwriter will batch process your files according to the specifications you have provided.

Make sure that there is enough paper or film in your output device to accommodate the number of charts you have decided to create or expose.

After completing the batch processing sequence, you see a status report indicating whether everything progressed as it should during the batch run, or if there was a problem of some kind. The screen display below shows several of these reports.

Batch run completed

<u>File number</u>	<u>File name</u>	<u>Status</u>
1	c:\S011tre.CHP	Plotting completed
2	c:\B020tre.CHP	User pressed exit
3	c:\P010tre.CHP	Note: composed for different device
4	c:\B011tre.CHP	Not a composed chart file
5	c:\B011tre.CHP	File not found

Press RETURN to return to the Batch Plotting Menu.

Graphwriter Capabilities

Available Charts

The wide variety of chart types available with Graphwriter, their numbers and names, and the set they belong to are listed below. See the [Format Selection Guide](#) for illustrations of each type of format.

Type	Number and Name	Basic Set	Extension Set
Bar Charts	B010 Column Chart (vertical)	x	
	B011 Bar Chart (horizontal)	x	
	B020 Segmented Bars (vertical)	x	
	B021 Segmented Bars (horizontal)	x	
	B030 Clustered Bars (vertical)		x
	B031 Clustered Bars (horizontal)	x	
	B022 Double Stacked Bars		x
	B032 Grouped Bars		x
	B040 Range Chart (bars)		x
	B050 Paired Bars		x
B060 Horizontal Bars (inset labels)		x	
Line Charts	L010 Line Chart	x	
	L020 Surface Line Chart		x
	L030 Line-Table Chart		x
	S010 Scatter Plots (regression)	x	
Pie Charts	P010 Pie Charts (1 to 4 pies)	x	
Combination Charts	C010 Bar-Line Combination	x	
	C020 Pie-Bar Combination		x
Special Purpose Charts	S020 Gantt Chart		x
	S030 Organization Chart		x
	S040 Bubble Chart		x
	S050 Table Chart		x
Text/Word Charts	T010 Text/Word Chart	x	
	- Bullet (simple)		
	- Bullet (complex)		
	- Centered (simple)		
	- Centered (complex)		
	- Paragraph		
- Title Page			

User Interface

- Formats are selected and charts created by selecting options from menus.
- A type-ahead feature allows quick movement between non-adjacent menus.
- Data is entered and style specified through prompt-response sequences.
- Function keys facilitate movement through prompt-response sequences.
- HELP Key can be used for assistance at menus and in prompt-response sequences.

Data Entry

- Keyboard input.
- Stored Graphwriter chart files.
- Stored data files: SYLK files, DIF files.
- Transfer data directly between compatible formats.
- Input form for each format.

Editing

- Data values may be added, deleted or changed.
- Style characteristics of all chart elements may be changed:

For Text Elements:

Location
Color
Font
Size
Justification

For Graphic Shape Elements:

Color
Line Type
Fill Pattern
Marker Type
Bar Width

For Grid Elements:

Color
Frame Type
Orientation
Placement
Size

Plotting Options

- Horizontal page
- Vertical page

- Full page
- Top half
- Bottom half
- Left side
- Right side
- 35 mm proportions
- Custom size and location

- Transparency
- Paper
- Coated Paper

Data and Character Limits

Data limits and character limits for all formats, in general, are as listed below. Specific data and character limits for each format are given in Tables A-I through A-11.

Graphic Shape Element	Data Limit
Bars or Columns	36
Segments/Bar	8
Bars/Cluster	8
Lines	8
Points/Line	100
Pies	4
Slices/Pie	16

Data limits may vary with the particular format program. Refer to the description of individual formats in Chapters 9, 10, and 11 of this guide. Also, check the individual input forms in Appendix F of this guide.

Text Element	Number Allowed	Character Limit
Headings	3	48 characters/line
Footnotes	3	48 characters/line
Comments	3	48 characters/line
Axis Titles	2	48 characters/line
Legends	8	2 lines; 20 characters/line
Bar Labels	36	20 characters/label (32 for horizontal bars)
Pie Slice Labels	16	20 characters/label
Pie Titles	4	32 characters/line (2 lines)

Data and character limits for individual formats follow in tables.

DATA AND CHARACTER LIMITS FOR FAMILY I				
Format	Method of Representing Data	Data Limits		
B010	Bars (Vertical)	Number of Bars:	36	
		Number of Characters/ Bar Label:	20	
B011	Bars (Horizontal)	Number of Bars:	36	
		Number of Characters/ Bar Label:	32	
P010	Pies	Number of Pies:	4	
	Pie Slices	Number of Slices/Pie:	16	
	Bar	Number of Characters/ Slice Label:	20	
	Segments	Number of Characters/ Pie Titles: Line 1 and Line 2:	20	
C020	Pie	Number of Pies:	1	
	Pie Slices	Number of Slices/Pie:	16	
	Bar	Number of Bars:	1	
	Segments	Number of Segments/Bar: Number of Characters/ Slice or Bar Label:	16 20	
		Number of Characters/ Pie or Bar title: Line 1 and Line 2:	32	
B022	Bars (vertical)	Number of Bars	2	
	Segments	Number of Segments/Bar Number of Characters/ Segment Label:	16 20	
		Number of Characters/ Bar Title: Line 1 and Line 2::	32	
		Number of Characters/ X Axis Title	20	
		Number of Characters/ Y Axis Title	20	
B060	Bars (horizontal) (inset labels)	Number of Bars:	18	
		Number of Characters/ Bar Label	32	
		Number of Characters/ X Axis Title	20	
		Number of Characters/ Y Axis Title	20	

Table A-1: Data and Character Limits for Family I

DATA AND CHARACTER LIMITS FOR FAMILY 2			
Format	Method of Representing Data	Data Limits	
B020	Segmented Bars (vertical)	Number of Bars:	20
		Number of Segments/Bar:	8
		Number of Characters/Bar Label:	20
		Number of Characters/Legend:	20
B021	Segmented Bars (horizontal)	Number of Bars:	20
		Number of Segments/Bar:	8
		Number of Characters/Bar Label:	20
		Number of Characters/Legend:	20
B030	Clusters (vertical) Bars	Number of Clusters:	20
		Number of Bars/Cluster:	8
		Number of Characters/ Cluster Label:	20
		Number of Characters/Legend:	20
B031	Clusters (horizontal) Bars	Number of Clusters:	20
		Number of Bars/Cluster:	8
		Number of Characters/ Cluster Label:	20
		Number of Characters/Legend:	20
L010	Lines Points on lines	Number of lines:	8
		Number of points/line:	100
		Number of Characters/ X Axis Label:	20
		Number of Characters/Legend:	20
C010	Lines Points on lines Bars	Number of Lines:	7
		Number of Points/Line:	36
		Number of Characters/ X Axis Label:	20
		Number of Characters/Legend:	20
L020	Lines with Shaded Area Below	Number of Lines:	8
		Number of Points/Line:	100*
		Number of Characters/ X Axis Label:	20
		Number of Characters/Legend:	20
L030	Lines Points on a Line Table of data values	Number of Lines:	8
		Number of Points/Line:	12
		Number of Columns:	16
		Number of Rows:	4
		Number of Characters/ X Axis Label:	20
		Number of Characters/Legend:	20

Table A-2: Data and Character Limits for Family 2

DATA AND CHARACTER LIMITS FOR S010: Scatter Plot (Regression)		
Format	Method of Representing Data	Data Limits
S010	Data Points	Number of Sets of Data Points: 8 Number of Points/Set: 80
	Legends	Number of Characters/Legend: 20

Table A-3: Data and Character Limits for S010: Scatter Plot (Regression)

DATA AND CHARACTER LIMITS FOR T010: Text/Word Chart		
Format	Method of Representing Data	Data Limits
T010	Text Blocks	Number of Text Blocks: 24 Number of Lines/Block: 8 Number of Characters/Line: 48 Size of Characters: Variable

Table A-4: Data and Character Limits for T010: Text/Word Chart

DATA AND CHARACTER LIMITS FOR S020: Gantt Chart		
Format	Method of Representing Data	Data Limits
S020	Horizontal Bars, Lines, Text or Combination in Rows	Number of Rows: 20 Number of Characters/Number of Characters/Row Label: 32 Number of Items: 48 Number of Legends: 6 Number of Characters/Legend: Line 1: 20 Line 2: 20

Table A-5: Data and Character Limits for S020: Gantt Chart

DATA AND CHARACTER LIMITS FOR S030: Organization Chart			
Format	Method of Representing Data	Data and Character Limits	
S030	Symbols, with Text and Connecting Lines	Number of Symbols:	48
		Number of Connecting Lines:	80
		Number of Text Lines/Symbol	3
		Number of Characters/Text Line	32*

* Maximum number of characters which will fit into any particular symbol may be fewer.

Table A-6: Data and Character Limits for S030: Organization Chart

DATA AND CHARACTER LIMITS FOR S040: Bubble Chart			
Format	Method of Representing Data	Data and Character Limits	
S040	Circles, with or without Text	Number of Bubbles	36
		Number of Legend Entries	36
		Number of Characters/ Bubble Label	20

Table A-7: Data and Character Limits for S040: Bubble Chart

DATA AND CHARACTER LIMITS FOR S050: Table Chart			
Format	Method of Representing Data	Data and Character Limits	
S050:	Table of Numbers, Text, or both	Number of Columns	8
		Number of Rows	24
		Number of Characters/Column	20
		Number of Characters/ Row Label	32

Table A-8: Data and Character Limits for S050: Table Chart

DATA AND CHARACTER LIMITS FOR B032: Grouped Bars			
Format	Method of Representing Data	Data and Character Limits	
B032:	Groups of Horizontal Bars	Number of Groups	4
		Number of Bars/Group	12
		Number of Characters/Bar Label	20
		Number of Characters/Group Label	32
		Number of Characters/Group Title	32

Table A-9: Data and Character Limits for B032: Grouped Bars

DATA AND CHARACTER LIMITS FOR B040: Range Chart			
Format	Method of Representing Data	Data and Character Limits	
B040:	Bars, Lines, or Text	Number of Rows	20
		Total Items	48
		Number of Legends	6
		Number of Characters/Row Label	20
		Number of Characters/Legend Line 1 and Line 2	20
		Number of Characters/Text in an Item	48

Table A-10: Data and Character Limits for B040: Range Chart (bars)

DATA AND CHARACTER LIMITS FOR B050: Paired Bars			
Format	Method of Representing Data	Data and Character Limits	
B050:	Paired Bars	Number of Sets of Bars	2
		Number of Bars/Set	24
		Number of Characters/Bar Label	32

Table A-11: Data and character Limits for B050: Paired Bars

DATA AND CHARACTER LIMITS FOR B060: Horizontal Bars (inset labels)			
Format	Method of Representing Data	Data and Character Limits	
B060	Bars with Inset Labels	Number of Bars:	18
		Number of Characters/ Bar Label	32

Table A-12: Data and character limits for B060: Horizontal Bars (inset labels)

Documentation

- Assistance available throughout program by using **HELP** Key
- User's Guide
- Format Selection Guide

Special Features

- **Chart Composition:** Charts are individually composed based on the actual data used. Graphwriter automatically produces a well proportioned chart.
- **Input Forms:** A special input form is provided for each Graphwriter program. These may be used to help organize data or to communicate chart requirements to personnel actually producing the chart.
- **Customized Formats:** Custom formats may be created by changing style characteristics of a chart then storing the chart in a chart file.



Hardware Configuration

Graphwriter runs on both the Tandy TRS-80 Floppy Disk Model 2000 (Catalog #26-5103) and the Hard Disk Model 2000 (Catalog #26-5104), while producing hard copy charts on several different plotters and printers.

This appendix is divided into the following sections:

- Hardware Recommendations
 - RS-232 Cable for Plotters
- Plotters
- Printers
- Setting Device Configuration
 - Device Driver Installation
 - Defining Monitor Type
- Changing DIF/SYLK File Default Characteristics
- Changing Default Pathname for Data Files.
- User Installed Fonts
- Setting Baud Rates

Hardware Recommendations

Graphwriter uses standard hardware configurations when running on the Tandy TRS-80 Floppy Disk Model 2000 and the Hard Disk Model 2000. To run Graphwriter programs and to produce hard copy charts, you require the following hardware configuration:

- **256K Memory.** Either Internal 128K Board (Catalog #26-5160) or External 256K Board with 128K RAM (Catalog #26-5161) added to the Model 2000 standard memory.
- **2 Disk Drives** (Catalog #26-5103)
or
1 Disk Drive, and 1 10MB Hard Disk Drive (Catalog #26-5104)

- **Parallel Printer Cable**, for parallel plotter or printer (optional)
- **RS-232 Cable**, for serial plotter (optional)
- **Pen Plotter**, one of the following (optional):
 - FP-215
 - HP 7470A
 - HP 7475A
- **Printer**, one of the following (optional):
 - DMP-2100
 - DMP-420
 - DMP-200
 - DMP-500
 - CGP-220

To preview plots on the screen requires the following additional equipment:

- Monochrome Graphics Options Board (Catalog #26-5140) with, or without, Color Graphics Option Kit (Catalog #26-5141),
and
- VM-1 Monochrome Monitor (Catalog #26-5111)
or
- Monochrome Graphics Option Board with, or without, Color Graphics Option Kit*,
and
- CM-1 Color Monitor (Catalog #26-5112)*

* Required for color preview.

RS-232 Cable for Plotters

An RS-232 cable is used to communicate with your plotter. The RS-232 cable can vary in its pin configuration, and it is common for different software packages to require different pin configurations. To ensure that your plotter can talk to the Tandy Model 2000 using Graphwriter, verify the pin configuration is as shown in Table B-1.

Model 2000	Plotter
1 -----	1
2 -----	3
3 -----	2
4 -----	5
5 -----	4
6 -----	20
20 -----	6
7 -----	7

Table B-1: RS-232 Pin Configuration for Running Graphwriter

With any other pin configuration, you may not be able to plot your chart.

Plotters

Graphwriter supports numerous plotters and printers, and can draw charts on both plotters and printers. In addition, Graphwriter can output data values on printers. Your selection of the specific devices is made using the Setup Program and the Plot Chart Menu.

All supported plotters and printers are described, along with their appropriate switch settings, in the following paragraphs.

TRS FP-215 (I-pen) plotter

This plotter uses a parallel cable and is attached to the parallel printer connector of your computer's main unit. The plotter has 4 switches, these switches should all be set to off (down).

Certain limitations should be considered when using the FP-215, these are:

- The line types of chained dotted and chained dashed are modified to different length dashes, rather than the dots and simple dashes provided by other plotters.
- Type fonts are restricted as follows:
 - Bold fonts are not available.
 - Expanded fonts are not available.
 - Italic fonts are not available.

HP 7470A (2-pen) plotter

This plotter uses the RS-232 cable. Connect one end of the cable to the plotter, and the other end to the appropriate serial port (RS232), of the computer. Table B-2 shows the correct plotter switch settings.

Switch	Setting	Controls
S2	0	Set no parity.
S1	0	
D/Y	0	Sets operating environment to endline.
A4/US	1	Sets paper size to 8.5 x 11 inches.
B4	1	Set baud rate to 2400.*
B3	0	
B2	0	
B1	0	
*You can select a different baud rate. Refer to your plotter operator's manual for instructions.		

Table B-2: HP 7470A Plotter Switch Settings

HP 7475A (6-pen) plotter

This plotter uses the RS-232 cable. You connect one end of the cable to the plotter, and the other end to the appropriate serial port (RS232). Table B-3 shows the correct plotter switch settings.

Switch	Setting	Controls
S2	0	Set no parity.
S1	0	
D/Y	0	Sets operating environment for endline.
MET/US	1	Sets for U.S. paper size.
B4	1	Set baud rate to 2400.*
B3	0	
B2	0	
B1	0	
*You can select a different baud rate. Refer to your plotter operator's manual for instructions.		

Table B-3: HP 7475A Plotter Switch Settings

Printers

Graphwriter supports a variety of printers; all are parallel printers and should be connected to the parallel port on your computer. The supported printers are as follows:

<u>Printer</u>	<u>Switch Setting</u>
DMP-2100	Not applicable
DMP-420	8 switches, all set to OFF (down)
DMP-200	Same as DMP-420
DMP-500	Same as DMP-420
CGP-220	Not applicable

All the above printers require a parallel printer cable and are connected to parallel printer connector on the back of your computer main unit.

Setting Device Configuration

Device Driver Installation

Graphwriter supports 3 plotters, 5 printers as graphic output devices. This allows you tremendous flexibility in producing charts on plotters and printers. Three of these devices can be installed in the program at any one time. As Graphwriter comes to you, the three default graphic output devices are: (1) DMP-2100, (2) CGP-220, and (3) DMP-420.

If you wish to use a graphic output device other than the default plotter or printer, however, you can do so. You do this by substituting the device you wish to use for either the plotter or printer already installed.

The devices supported are divided into groups, and each group is controlled by a separate part of the program known as a "Device Driver." The Device Drivers are on the GWB disk. When you wish to replace an installed device with one that is not installed, you do it through the device driver. The list which follows shows the devices available.

Plotters

FP-215
HP 7470A
HP 7475A

Printers

DMP-2100
DMP-420
DMP-200)Same as DMP-420
DMP-500)Same as DMP-420
CGP-220

Before you begin, decide which device you wish to install and which of the three devices you wish to replace.

```
Main Menu                               Setup Program
-----
1. Return to Format Menu
2. Change Default Plot Options
3. Change Available Palettes
4. Change Other Default Options
5. (unused)
6. Set Hardware Configuration
7. Install New Graphic Output Device

Select one:
```

1. From this menu,

press **7** "Install New Graphic Output Device"

The following prompt is the first one you see:

```
*Install New Graphic Output Device
-----
Please insert the correct device driver disk in drive B:.
Press RETURN to continue."
```

2. Use the **GWB** disk, which contains the device drivers, and insert the disk into drive **B**(on the Floppy Disk Model 2000) or drive **A**(on the Hard Disk Model 2000). Press **RETURN** to continue.

The screen clears, and then the message on the screen tells you that the program is reading the device names. If the disk you inserted does not contain the proper device driver files, an error message will inform you.

The next prompt asks for the name of the device.

```
Enter the name of the device you wish to install....:
```

Press **HELP** for the list of devices available. Again, error messages will tell you if you choose an incorrect number or name, or if the device is already installed.

The screen now says:

"Enter the name of the device you would like to replace." If you press HELP, you see the following message:

```
You must replace a previously installed device to install a new device.
The devices currently installed are:
 1. DMF-2119
 2. CGP-220
 3. DMF-420
```

Again, error messages inform you if you enter a value other than 1 or 2, or an invalid device name.

3. If you have entered a correct number or name, you see a confirmation screen display similar to the one that follows:

```
Confirm: Replace CGP-220 with (Your chosen device name) ? Y/N
```

4. To install your chosen device,

enter Y

The screen now says, "Installing new device."

If you are using a flexible disk system, the screen display below now appears:

```
Please replace the format disk in the B: disk drive.
Press RETURN to continue.
```

5. To return to the Setup Main Menu,

press RETURN

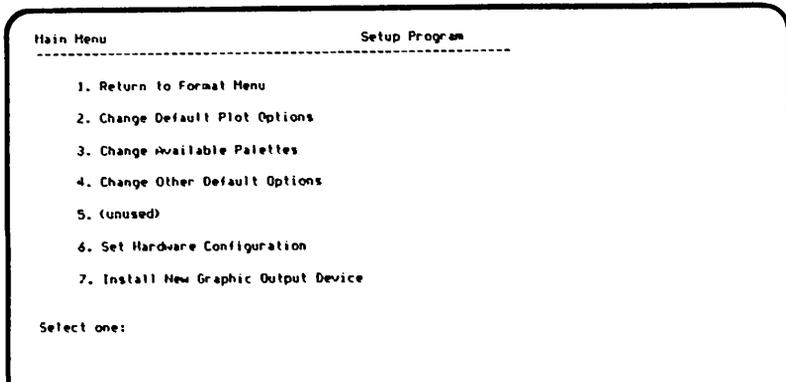
Defining Monitor Type

Graphwriter requires that you identify whether you are using a color monitor, monochrome monitor, or both.
To set up or change the monitor type, follow the procedure below:

1. From the Graphwriter Main Menu:

press 3 "Execute Setup Program"

The Main Menu for the Setup Program is displayed.



The screenshot shows a terminal window with a title bar that reads "Main Menu" on the left and "Setup Program" on the right, separated by a dashed line. Below the title bar is a list of seven menu options:

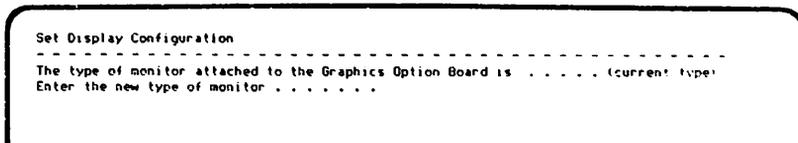
- 1. Return to Format Menu
- 2. Change Default Plot Options
- 3. Change Available Palettes
- 4. Change Other Default Options
- 5. (unused)
- 6. Set Hardware Configuration
- 7. Install New Graphic Output Device

At the bottom of the list, it says "Select one:".

2. From the Setup Program Main Menu:

press 6 "Set Hardware Configuration"

3. Respond to the prompts you see on the screen display. They will be similar to those shown below.



The screenshot shows a terminal window with a title bar that reads "Set Display Configuration" on the left and "Setup Program" on the right, separated by a dashed line. Below the title bar is a prompt:

The type of monitor attached to the Graphics Option Board is (current type)
Enter the new type of monitor

The monitor type choices are:

1. Monochrome
2. Color
3. Both

Note: If you do not have a Graphics Option Board installed you cannot change the display configuration and you cannot preview charts on the screen.

After responding to the monitor-type prompt, Graphwriter returns you to the Setup Program Main Menu.

Changing DIF/SYLK File Default Characteristics

Graphwriter allows you to specify either DIF or SYLK files as input, from other software, for your presentation graphics. In addition, you can specify how these files are read and then store these new parameters as your default values. To change the DIF/SYLK file default characteristics:

1. From the Graphwriter Format Menu,
press 3 "Execute Setup Program"

The Main Menu for the Setup Program is displayed.

2. From the Setup Program Main Menu,
press 4 "Change Other Default Options"

The Change Other Default Options is displayed.

```
Change Other Default Options
-----
1. Return to Setup Menu
2. Change DIF/SYLK File Default Characteristics
3. Change Default Print Device
4. Change Pathname for Data Files
Select one:
```

3. From the Change Default Options Menu,
 - press 2 "Change DIF/SYLK File Default Characteristics"
4. Respond to the current default file characteristic prompt, below, and specify which type of file you want as the new default.

For example: Changing the default file from DIF to SYLK:

```

Changing DIF/SYLK File Characteristics
-----
Current data file input format is ... DIF file
Enter new input format .....: sylk
  
```

After changing the default to SYLK, Graphwriter will prompt you to specify the order in which data is read (row or column), the begin-reading-data position by column (1 to 63) in each row, or the begin-reading-data position by row (0 to 255) in each column.

```

Do you want Graphwriter to read your data file in row or column order?
Current direction is ..... row.
Enter new direction (row or column).:

Begin reading data with which column in each row.
Current first column is ..... 1.
Enter new column number .....:
  
```

If a DIF file is specified, see below, Graphwriter will prompt you to identify the order in which your data is stored (row or column), the order in which Graphwriter is to read your data (row or column), the begin-reading-data position by column (1 to 256) in each row or the begin-reading data position by row (1 to 256) in each column.

```

Changing DIF/SYLK File Characteristics
-----
Current data file input format is ... DIF file
Enter new input format .....:

Was your data file stored by row or column?
Current stored direction is ..... column.
Enter stored direction (row or column).:

Do you want Graphwriter to read your data file in row or column order?
Current direction is ..... row.
Enter new direction (row or column).:

Begin reading data with which column in each row.
Current first column is ..... 1.
Enter new column number .....:
  
```

After responding to all DIF/SYLK prompts, Graphwriter returns you to the Change Other Default Options Menu.

Changing Default Pathname for Data Files

Graphwriter allows you to specify your own pathname for all data files. To change the default pathname, follow the procedure below:

1. From the Graphwriter Main Menu:

press 3 "Execute Setup Program"

The Main Menu for the Setup Program is displayed.

2. From the Setup Program Main Menu:

press 4 "Change Other Default Options"

The Change Other Default Options Menu is displayed.

```
Change Other Default Options
-----
1. Return to Setup Menu
2. Change DIF/SYLK File Default Characteristics
3. Change Default Print Device
4. Change Pathname for Data Files
Select one:
```

3. From the Change Other Default Options Menu:

press 4 "Change Pathname for Data Files"

4. Respond to prompt you see on the screen display, below. Enter the pathname you wish to become the new default pathname.

```
Change Default Pathname for Data Files
-----
The default pathname for reading and storing data files is ...pr\data\
Enter new pathname .....
```

After responding to the pathname prompt, Graphwriter returns you to the Change Other Default Options Menu.

User Installed Fonts

Graphwriter provides a total of 6 different Hershey vector fonts in two line weights - thin pen (regular) and wide pen (bold). The 6 available fonts are:

<u>Font</u>	<u>Description & Example</u>	<u>File Name</u>
Simplex Roman	Light san serif typeface <i>A a B b C c</i>	SIMROM.FNT
Complex Roman	Traditional serified Roman typeface <i>A a B b C c</i>	COMROM.FNT
Complex Italic	Italic version of Complex Roman <i>A a B b C c</i>	COMITA.FNT
Duplex Roman	Medium san serif <i>A a B b C c</i>	DUPROM.FNT
Triplex Roman	Heavier traditional serified Roman typeface <i>A a B b C c</i>	TRIROM.FNT (Installed Default)
Triplex Italic	Italic version of Triplex Roman <i>A a B b C c</i>	TRIITA.FNT

Only one vector font, in both regular (thin pen) and bold (wide pen) line weights, is accessible at one time through the font selection portion of the Change Chart Style Menu of any format, by specifying "Roman" (thin pen) or "Bold Roman" (wide pen). When using a printer as your graphic output device, only "Bold Roman" is available. To install a Hershey font, other than Triplex Roman (installed default), use the following installation procedure.

Installing Alternate Hershey Fonts.

For the Floppy Disk Model 2000:

1. At the MS-DOS prompt A ,
Insert your GW disk in A: and the GWB disk in B:
2. Type in:

```
COPY B:(font-file-name) A:VECTOR.FNT
```

where (font-file-name) is the file name given in the preceding font list.

Press RETURN

3. Start Graphwriter and, when using the Change Chart Style Menu, select Roman or Bold Roman for your font.

For the Hard Disk Model 2000:

1. At the MS-DOS prompt, C ,

Change your default directory to the directory where Graphwriter is installed (e.g., C: GWDIR) by typing in:

```
CHDIR GWDIR
```

Press RETURN

2. Verify you are in the correct directory by listing the generic font file name (VECTOR.FNT) by typing in:

```
DIR VECTOR.FNT
```

Proceed with step 3 if VECTOR.FNT is verified; if not found, change to the correct directory.

3. Put GWB disk in drive A:
4. Type in:

```
COPY A:(font-file-name) VECTOR.FNT
```

where (font-file-name) is the file name given in the preceding font list.

Press RETURN

5. When using the Change Chart Style Menu, select roman or Bold Roman for your font.

- Note: Once installed, the new vector font is available each time your run Graphwriter until you install another font.
- Note: All Hershey font files are stored on the GWB disk and must be individually transferred to the GW disk VECTOR.FNT File for use.
- Note: These Hershey fonts were developed by Dr. A. V. Hershey of the Naval Weapons Laboratory and augmented by the National Bureau of Standards. For further information, see:

Wolcott, Norman M. (Computer Services Division), and Hilsenrath, Joseph (Office of Standard and Reference Data), "A Contribution to Computer Typesetting Techniques: Tables of Coordinates for Hershey's Repertory of Occidental Type Fonts and Graphic Symbols," National Bureau of Standards, April 1976, 172 pages; available through NTIS, Springfield, Va., Document No. PB-251-845, NBS Special Publication 424.

Setting Baud Rates

Using the MS-DOS operating system, you have the option of defining the baud rate for communication with your serial plotter.

The baud rate is set by using the DOS command MODE (on a bootable GW disk). An explanation of this command and the way Graphwriter uses it follows. For further detail, refer to your MS-DOS (Disk Operating System) manual.

For example, to set a baud rate of 2400:

1. Insert your GW disk into your default drive and boot DOS.

The MS-DOS prompt is displayed.

2. Enter MODE COM,48,n,8,l
3. Press **RETURN**

This sets the baud rate for the serial port to 4800.

If you must change baud rates for your plotter, you should consider creating an AUTOEXEC.BAT file containing your parameters. This type of file executes automatically whenever you boot MS-DOS.

1. For example, place your MS-DOS system disk into your default drive, and

enter COPY CON: AUTOEXEC.BAT

2. Follow the statement with your correct MODE commands (see above). Then,

press **F6 RETURN**



Example of Program Run

This appendix consists of two parts:

1. Part 1 displays copies of the successive screens which appear when you create your first chart using Format B020: Segmented Bars (vertical). (See Chapter 4, "Creating Your First Chart.")

At the end of the screen displays is a copy of the chart created on this program run.

2. Part 2, beginning on page C-15, displays copies of the successive screens encountered when using Format S030: Organization Chart. (See section in Chapter 11, "Reference: Formats in Graphwriter Extension Set.")

Program Run for Format B020: Segmented Bars (vertical)

Graphwriter	Format Menu

1. End Graphwriter Session	
2. <u>Execute a Format</u>	
3. Execute Setup Program	
4. Batch Process Composed Chart Files	
Select one:	

Select Graphwriter Format	

Basic Set	Extension Set

1. B010 - Column chart (vertical)	13. S020 - Gantt Chart
2. B011 - Bar chart (horizontal)	14. S030 - Organization chart
3. B020 - Segmented bars (vertical)	15. S040 - Bubble chart
4. B021 - Segmented bars (horizontal)	16. S050 - Table chart
5. B030 - Clustered bars (vertical)	17. C020 - Pie-Bar combination
6. B031 - Clustered bars (horizontal)	18. L020 - Surface Line chart
7. P010 - Pie chart (1-4 pies)	19. L030 - Line-Table chart
8. L010 - Line chart	20. B022 - Double stacked bars
9. S010 - Scatter plot (regression)	21. B032 - Grouped bars
10. C010 - Bar-Line combination	22. B040 - Range chart (bars)
11. T010 - Text/Word chart	23. B050 - Paired bars
12. - Unused	24. B060 - Horiz. bars (inset labels)
Select one: <u>3</u>	

Select Starting Data

1. Return to Format Menu
2. Enter All New Data
3. Use Data from Last Format
4. Restore Old Chart File

Select one:

Main Menu B020 - Segmented Bars (vertical)

1. Change to Another Format
2. Enter/Change Chart Data
3. Change Chart Style
4. Print Data
5. Store Chart
6. Plot Chart

Select one:

Enter/Change Chart Data

1. Return to Main Menu
2. Enter Entire Chart from Keyboard
3. Restore Entire Chart from a File
4. Enter/Change Headings only
5. Enter/Change Notes only
6. Enter/Change Symbols only
7. Enter/Change Connecting Lines only
8. Enter/Change Comments only

Select one:

Enter headings

Heading 1 is	unspecified	
Enter new heading 1:	<u>SMALL COMPUTER SYSTEMS EXPECTED</u>	
Heading 2 is	unspecified	
Enter new heading 2:	<u>TO REPRESENT THE LARGEST SEGMENT</u>	
Heading 3 is	unspecified	
Enter new heading 3:	<u>OF THE COMPUTER MARKET BY 1985</u>	

Enter notes

Note 1 is unspecified ;
Enter new note 1: _____

Note 2 is unspecified ;
Enter new note 2: _____

Note 3 is unspecified ;
Enter new note 3: _____

Enter/Change axis titles

X axis title is unspecified ;
Enter new X axis title : _____

Y axis title is unspecified ;
Enter new Y axis title : Billions of Dollars

Y axis minimum is unspecified ;
Enter new Y axis minimum : 0

Y axis maximum is unspecified ;
Enter new Y axis maximum : 70

Y axis label interval is unspecified ;
Enter new Y axis label interval : 10

Y axis tic interval is unspecified ;
Enter new Y axis tic interval : 5

Number of bars is unspecified
Enter new number of bars: 3

Number of segments per bar is ... unspecified
Enter new number of segments : 3

Enter legend for segment 1

Line 1 is unspecified |
Enter new line 1 : MAINFRAME

Line 2 is unspecified |
Enter new line 2 : COMPUTERS

Enter legend for segment 2

Line 1 is unspecified |
Enter new line 1 | MINICOMPUTERS
Line 2 is unspecified |
Enter new line 2 | _____

Enter legend for segment 3

Line 1 is unspecified |
Enter new line 1 | WORD PROCESSORS &
Line 2 is unspecified |
Enter new line 2 | MICROCOMPUTERS

Enter segment colors

Segment 1 color is black
Enter new segment 1 color: _____

Segment 2 color is blue
Enter new segment 2 color: _____

Segment 3 color is green
Enter new segment 3 color: _____

Enter segment fill

Segment 1 fill is solid fill
Enter new segment 1 fill : _____

Segment 2 fill is solid fill
Enter new segment 2 fill : narrow crosshatch

Segment 3 fill is solid fill
Enter new segment 3 fill : narrow right hatch

Enter bar labels

Bar 1 label is unspecified |
Enter new bar 1 label: 1975
Bar 2 label is unspecified |
Enter new bar 2 label: 1980
Bar 3 label is unspecified |
Enter new bar 3 label: 1985

Enter segment 1 values (MAINFRAME COMPUTERS)

Bar #	Label	Current Value	New Value
Bar 1	1975		: <u>18.6</u>
Bar 2	1980		: <u>17.2</u>
Bar 3	1985		: <u>22.8</u>

Enter segment 2 values (MINICOMPUTERS)

Bar #	Label	Current Value	New Value
Bar 1	1975		: <u>1.2</u>
Bar 2	1980		: <u>4.9</u>
Bar 3	1985		: <u>13.3</u>

Enter segment 3 values (WORD PROCESSORS & MICROCOMPUTERS)

Bar #	Label	Current Value	New Value
Bar 1	1975		: <u>.9</u>
Bar 2	1980		: <u>6.6</u>
Bar 3	1985		: <u>27.3</u>

Enter/Change Chart Data

1. Return to Main Menu
2. Enter Entire Chart from Keyboard
3. Restore Entire Chart from a File
4. Enter/Change Headings only
5. Enter/Change Notes only
6. Enter/Change Symbols only
7. Enter/Change Connecting Lines only
8. Enter/Change Comments only

Select one:

Main Menu

BO20 - Segmented Bars (vertical)

1. Change to Another Format
2. Enter/Change Chart Data
3. Change Chart Style
4. Print Data
5. Store Chart
6. Plot Chart

Select one:

Plot Chart

1. Return to Main Menu
 2. Fast Plot on Plotter/Printer
 3. Full Plot on Plotter/Printer
 4. Preview on Screen
 5. Store Composed Chart in File
 6. Graphics only on Plotter/Printer (no text)
 7. Change Plot Options:
 - Color Range color plot
 - Medium/Pen set .. plain paper
 - Plot area full page
- | | |
|-------------------|-----------------------|
| Page size | A (ANSI 8.5 x 11 in.) |
| Orientation | horizontal |
| Graphic Device .. | HP 7478A |

Select one:

Composing Chart

.....

Plot Chart

1. Return to Main Menu
2. Fast Plot on Plotter/Printer
3. Full Plot on Plotter/Printer
4. Preview on Screen
5. Store Composed Chart in File
6. Graphics only on Plotter/Printer (no text)
7. Change Plot Options:
 Color Range color plot Page size A (ANSI 8.5 x 11 in.)
 Medium/Pen set .. plain paper Orientation horizontal
 Plot area full page Graphic Device .. HP 7478A

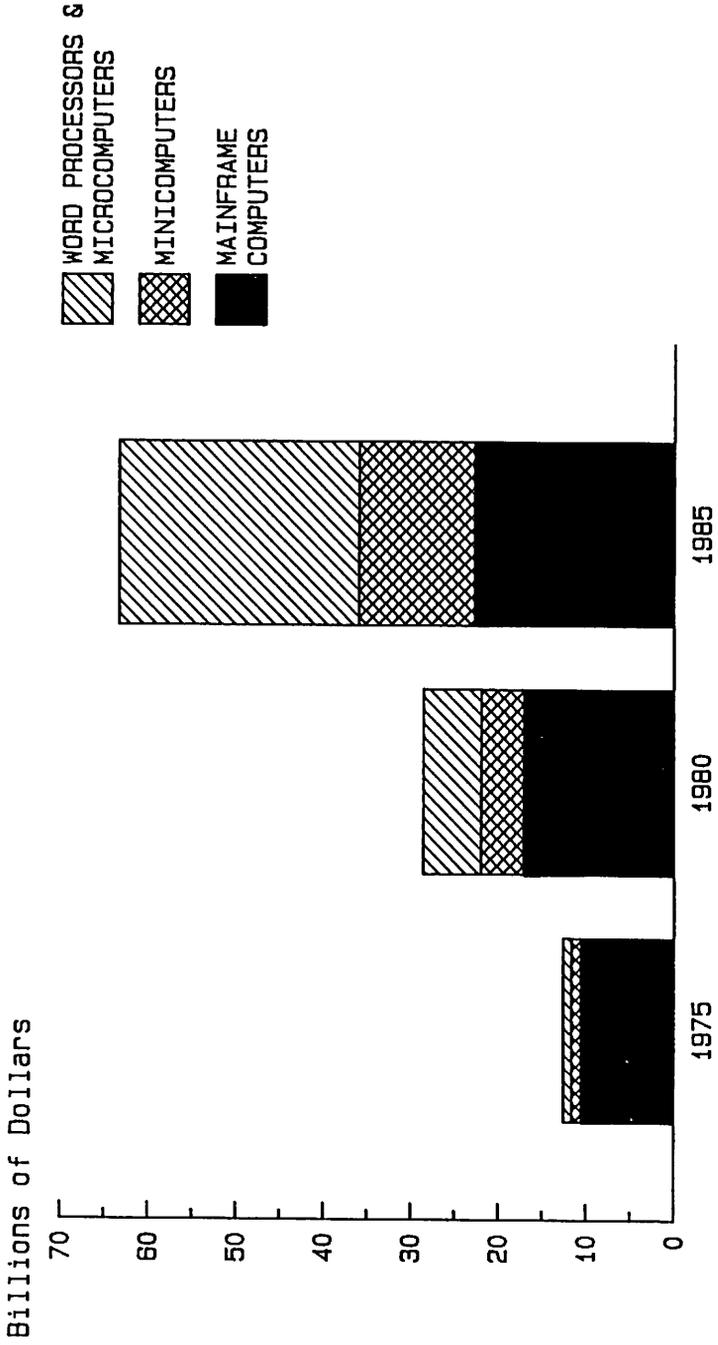
Select one:

Main Menu B020 - Segmented Bars (vertical)

1. Change to Another Format
2. Enter/Change Chart Data
3. Change Chart Style
4. Print Data
5. Store Chart
6. Plot Chart

Select one:

**SMALL COMPUTER SYSTEMS EXPECTED
TO REPRESENT THE LARGEST SEGMENT
OF THE COMPUTER MARKET BY 1985**

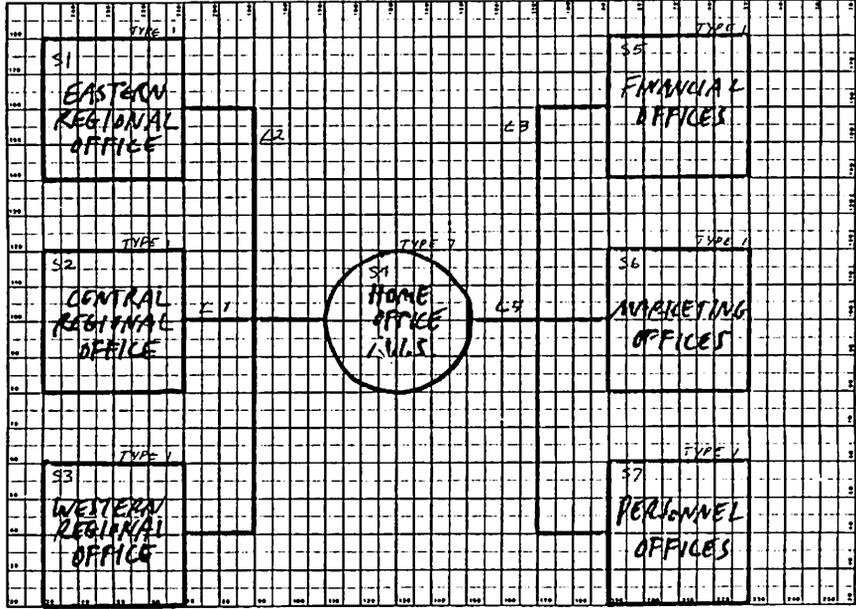


Program run for Format S030: Organization Chart

A.F. STONE COMPANY
DATA COMMUNICATION

Symbol set (1) G (Circle and Box Chart)
Coordinate grid (1) G (Radial)

S030 Organization Chart
Input side 2
Graphwriter



You may place symbols anywhere within the grid area. This grid may be used for horizontal and vertical charts. Indicate symbol style by placing style number in upper right corner of symbol.

Graphwriter Format Menu

1. End Graphwriter Session
2. Execute a Format
3. Execute Setup Program
4. Batch Process Composed Chart Files

Select one:

Select Graphwriter Format

Basic Set

1. B010 - Column chart (vertical)
2. B011 - Bar chart (horizontal)
3. B020 - Segmented bars (vertical)
4. B021 - Segmented bars (horizontal)
5. B030 - Clustered bars (vertical)
6. B031 - Clustered bars (horizontal)
7. P010 - Pie chart (1-4 pies)
8. L010 - Line chart
9. S010 - Scatter plot (regression)
10. C010 - Bar-Line combination
11. T010 - Text/Word chart
12. - Unused

Extension Set

13. S020 - Gantt Chart
14. S030 - Organization chart
15. S040 - Bubble chart
16. S050 - Table chart
17. C020 - Pie-Bar combination
18. L020 - Surface Line chart
19. L030 - Line-Table chart
20. B022 - Double stacked bars
21. B032 - Grouped bars
22. B040 - Range chart (bars)
23. B050 - Paired bars
24. B060 - Horiz. bars (inset labels)

Select one: 14

Select Starting Data

1. Return to Format Menu
2. Enter All New Data
3. Use Data from Last Format
4. Restore Old Chart File

Select one:

Main Menu

S030 - Organization Chart

-
1. Change to Another Format
 2. Enter/Change Chart Data
 3. Change Chart Style
 4. Print Data
 5. Store Chart
 6. Plot Chart
 7. Change Symbol Set Currently: Organization chart (3-4 levels)
 8. Change Grid Currently: 3 level organization chart

Select one:

Change Symbol Set

Symbol set is Organization chart (3-4 levels)
Enter new symbol set : 6

Main Menu

5030 - Organization Chart

-
1. Change to Another Format
 2. Enter/Change Chart Data
 3. Change Chart Style
 4. Print Data
 5. Store Chart
 6. Plot Chart
 7. Change Symbol Set Currently: Circle and box chart
 8. Change Grid Currently: 3 level organization chart

Select one:

Change Grid

Grid is 3 level organization chart
Enter new grid : 6

Main Menu

S030 - Organization Chart

-
1. Change to Another Format
 2. Enter/Change Chart Data
 3. Change Chart Style
 4. Print Data
 5. Store Chart
 6. Plot Chart
 7. Change Symbol Set Currently: Circle and box chart
 8. Change Grid Currently: radial
- Select one:

Enter/Change Chart Data

-
1. Return to Main Menu
 2. Enter Entire Chart from Keyboard
 3. Restore Entire Chart from a File
 4. Enter/Change Headings only
 5. Enter/Change Notes only
 6. Enter/Change Symbols only
 7. Enter/Change Connecting Lines only
 8. Enter/Change Comments only
- Select one:

Enter headings

Heading 1 is unspecified
Enter new heading 1: A. F. STONE COMPANY

Heading 2 is unspecified
Enter new heading 2: DATA COMMUNICATION

Heading 3 is unspecified
Enter new heading 3: _____

Enter notes

Note 1 is unspecified
Enter new note 1: _____

Note 2 is unspecified
Enter new note 2: _____

Note 3 is unspecified
Enter new note 3: _____

Change number of symbols

Number of symbols in chart is .. unspecified
Enter new number of symbols ...: 2

Enter Symbol 1

Type for symbol 1 is 1
Enter new type for symbol 1: 1

X coordinate for center of symbol 1 is unspecified
Enter new X coordinate for center of symbol 1: X1

Y coordinate for center of symbol 1 is unspecified
Enter new Y coordinate for center of symbol 1: Y5

Text line 1 is unspecified |
Enter new text line 1: EASTERN |

Text line 2 is unspecified |
Enter new text line 2: REGIONAL |

Text line 3 is unspecified |
Enter new text line 3: OFFICE |

Enter Symbol 2

Type for symbol 2 is 1
Enter new type for symbol 2 1
X coordinate for center of symbol 2 is unspecified
Enter new X coordinate for center of symbol 2: X1
Y coordinate for center of symbol 2 is unspecified
Enter new Y coordinate for center of symbol 2: Y3
Text line 1 is unspecified |
Enter new text line 1: CENTRAL |
Text line 2 is unspecified |
Enter new text line 2: REGIONAL |
Text line 3 is unspecified |
Enter new text line 3: OFFICE |

Enter Symbol 3

Type for symbol 3 is 1
Enter new type for symbol 3 1
X coordinate for center of symbol 3 is unspecified
Enter new X coordinate for center of symbol 3: X1
Y coordinate for center of symbol 3 is unspecified
Enter new Y coordinate for center of symbol 3: Y1
Text line 1 is unspecified |
Enter new text line 1: WESTERN |
Text line 2 is unspecified |
Enter new text line 2: REGIONAL |
Text line 3 is unspecified |
Enter new text line 3: OFFICE |

Enter Symbol 4

Type for symbol 4 is 1
Enter new type for symbol 4 7
X coordinate for center of symbol 4 is unspecified
Enter new X coordinate for center of symbol 4: X3
Y coordinate for center of symbol 4 is unspecified
Enter new Y coordinate for center of symbol 4: Y3
Text line 1 is unspecified |
|
Enter new text line 1: HOME
Text line 2 is unspecified |
|
Enter new text line 2: OFFICE
Text line 3 is unspecified |
|
Enter new text line 3: M.I.S.

Enter Symbol 5

Type for symbol 5 is 7
Enter new type for symbol 5 1
X coordinate for center of symbol 5 is unspecified
Enter new X coordinate for center of symbol 5: X5
Y coordinate for center of symbol 5 is unspecified
Enter new Y coordinate for center of symbol 5: Y5
Text line 1 is unspecified |
|
Enter new text line 1: FINANCIAL
Text line 2 is unspecified |
|
Enter new text line 2: OFFICES
Text line 3 is unspecified |
|
Enter new text line 3: _____

Enter Symbol 6

Type for symbol 6 is 1
Enter new type for symbol 6 1 1

X coordinate for center of symbol 6 is unspecified
Enter new X coordinate for center of symbol 6: X5

Y coordinate for center of symbol 6 is unspecified
Enter new Y coordinate for center of symbol 6: Y3

Text line 1 is unspecified |

Enter new text line 1: MARKETING

Text line 2 is unspecified |

Enter new text line 2: OFFICES

Text line 3 is unspecified |

Enter new text line 3: _____ |

Enter Symbol 7

Type for symbol 7 is 1
Enter new type for symbol 7 1 1

X coordinate for center of symbol 7 is unspecified
Enter new X coordinate for center of symbol 7: X5

Y coordinate for center of symbol 7 is unspecified
Enter new Y coordinate for center of symbol 7: Y1

Text line 1 is unspecified |

Enter new text line 1: PERSONNEL

Text line 2 is unspecified |

Enter new text line 2: OFFICES

Text line 3 is unspecified |

Enter new text line 3: _____ |

Enter Connecting Line 1

You may enter lines until you have reached the maximum number of lines (80). When you have finished entering lines, press EXIT (F2).

Beginning point for line 1 is unspecified
Enter new beginning point for line 1: S2

End point for line 1 is unspecified
Enter new end point for line 1: S4

Line 1 will be drawn along unspecified
Enter new position for line 1:

Enter Connecting Line 2

You may enter lines until you have reached the maximum number of lines (80). When you have finished entering lines, press EXIT (F2).

Beginning point for line 2 is unspecified
Enter new beginning point for line 2: S1

End point for line 2 is unspecified
Enter new end point for line 2: S3

Line 2 will be drawn along unspecified
Enter new position for line 2: X2

Enter Connecting Line 3

You may enter lines until you have reached the maximum number of lines (80). When you have finished entering lines, press EXIT (F2).

Beginning point for line 3 is S5
Enter new beginning point for line 3:

End point for line 3 is S7
Enter new end point for line 3

Line 3 will be drawn along X4
Enter new position for line 3

Enter Connecting Line 4

You may enter lines until you have reached the maximum number of lines (80). When you have finished entering lines, press EXIT (F2).

Beginning point for line 4 is unspecified
Enter new beginning point for line 4: S4

End point for line 4 is unspecified
Enter new end point for line 4 S6

Line 4 will be drawn along unspecified
Enter new position for line 4

Enter/Change Chart Data

1. Return to Main Menu
2. Enter Entire Chart from Keyboard
3. Restore Entire Chart from a File
4. Enter/Change Headings only
5. Enter/Change Notes only
6. Enter/Change Symbols only
7. Enter/Change Connecting Lines only
8. Enter/Change Comments only

Select one:

Main Menu

S030 - Organization Chart

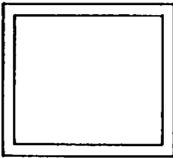
1. Change to Another Format
2. Enter/Change Chart Data
3. Change Chart Style
4. Print Data
5. Store Chart
6. Plot Chart
7. Change Symbol Set Currently: Circle and box chart
8. Change Grid Currently: radial

Select one:

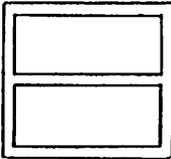


Dimensions for Plot Areas

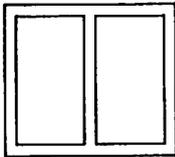
Page Size in inches	Orientation and Plot Area	MM from left	Width in mm	MM from bottom	Height in mm
8.5 x 11	Horizontal Full Page	20	239.4	16	180.9



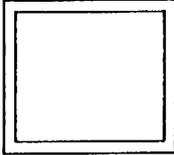
8.5 x 11	Horizontal Top Half	20	239.4	110.1	86.8
	Bottom Half	20	239.4	16	86.8



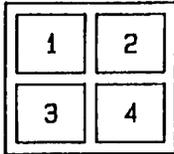
8.5 x 11	Horizontal Left Half	20	114.9	16	180.9
	Right Half	144.5	114.9	16	180.9



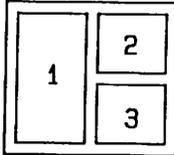
Page Size in inches	Orientation and Plot Area	MM from left	Width in mm	MM from bottom	Height in mm
8.5 x 11	Horizontal 35 mm Slide	24.8	234.6	30.5	166.4



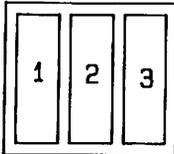
8.5 x 11	Horizontal Custom Size	1.	16	117	108	84
		2.	147	117	108	84
		3.	16	117	12	84
		4.	147	117	12	84



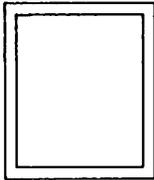
8.5 x 11	Horizontal Custom Size	1.	15	117	12	180
		2.	147	117	108	84
		3.	147	117	12	84



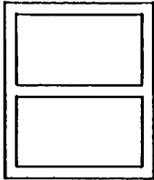
8.5 x 11	Horizontal Custom Size	1.	15	77	24	156
		2.	102	77	24	156
		3.	189	77	24	156



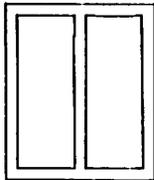
Page Size in inches	Orientation and Plot Area	MM from left	Width in mm	MM from bottom	Height in mm
8.5 x 11	Vertical Full Page	16	180.9	20	239.4



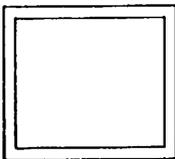
8.5 x 11	Vertical Top Half	16	180.9	144.5	114.9
	Vertical Bottom Half	16	180.9	20	114.9



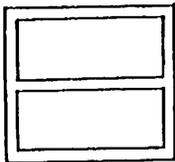
8.5 x 11	Vertical Left Half	16	86.6	20	239.4
	Vertical Right Half	110.1	86.8	20	239.4



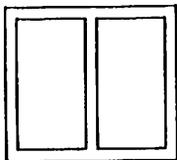
8.5 x 10.5 (Transparency)	Horizontal Full Page	29	210	25	164.7
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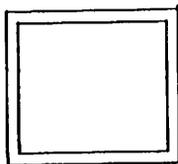
Page Size in inches	Orientation and Plot Area	MM from left	Width in mm	MM from bottom	Height in mm
8.5 x 10.5 (Transparency)	Horizontal Top Half	29	210	110.6	79.1
	Bottom Half	29	210	25	79.1



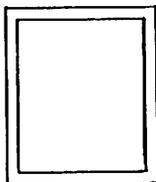
8.5 x 10.5 (Transparency)	Horizontal Left Half	29	100.8	25	164.7
	Right Half	138.2	100.8	25	164.7



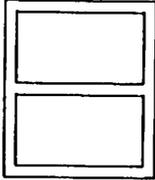
8.5 x 10.5 (Transparency)	Horizontal 35 mm Slide	33.2	205.8	38.2	151.5
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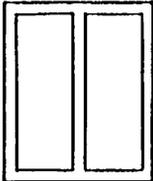
8.5 x 10.5 (Transparency)	Vertical Full Page	25	164.7	30.5	166.4
------------------------------	-----------------------	----	-------	------	-------



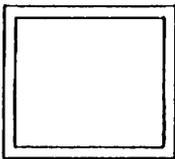
Page Size in inches	Orientation and Plot Area	MM from left	Width in mm	MM from bottom	Height in mm
8.5 x 10.5 (Transparency)	Vertical Top Half	25	164.7	136.9	100.8
	Bottom Half	25	164.7	27.7	100.8



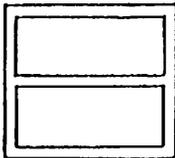
8.5 x 10.5 (Transparency)	Vertical Left Half	25	79.1	27.7	210
	Right Half	110.6	79.1	27.7	210



11 x 16.5	Horizontal Full Page	20	379.7	16	247.4
-----------	-------------------------	----	-------	----	-------



11 x 16.5	Horizontal Top Half	20	379.7	144.6	118.8
	Bottom Half	20	379.7	16	118.8



Page Size in inches	Orientation and Plot Area	MM from left	Width in mm	MM from bottom	Height in mm
------------------------	------------------------------	--------------------	----------------	----------------------	-----------------

11 x 16.5

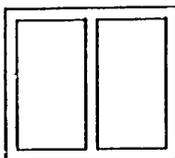
Horizontal
Left Half
Right Half

20
217.4

182.3
182.3

16
16

247.4
247.4



11 x 16.5

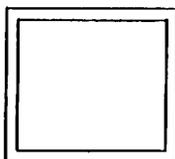
Horizontal
35 mm Slide

27.6

372.1

35.8

227.6



11 x 16.5

Horizontal
Custom
Size

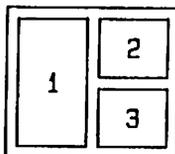
1.
2.
3.

37
229
229

167
167
167

25
148
25

229
106
106



11 x 16.5

Horizontal
Custom
Size

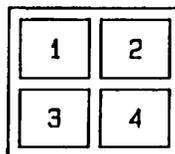
1.
2.
3.
4.

37
229
37
229

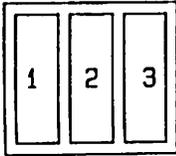
167
167
167
167

148
148
25
25

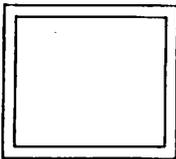
106
106
106
106



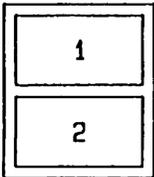
Page Size in inches	Orientation and Plot Area		MM from left	Width in mm	MM from bottom	Height in mm	
11 x 16.5	Horizontal	1.	37	103	25	205	
		Custom	2.	165	103	25	205
		Size	3.	293	103	25	205



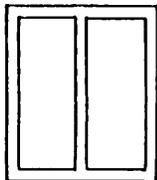
11 x 16.5	Vertical Full Page		16	247.4	19.4	379.7
-----------	-----------------------	--	----	-------	------	-------



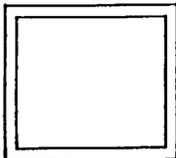
11 x 16.5	Vertical	Top Half	16	247.4	216.8	182.3
		Bottom Half	16	247.4	19.4	182.3



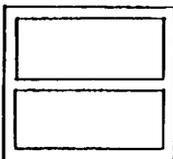
11 x 16.5	Vertical	Left Half	16	118.8	19.4	379.7
		Right Half	144	118.8	19.4	379.7



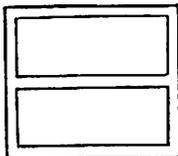
Page Size in mm	Orientation and Plot Area	MM from left	Width in mm	MM from bottom	Height in mm
A4 (ISO 210 x 297)	Horizontal Full Page	20	257	16	175



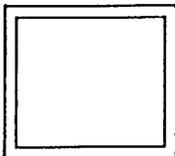
A4 (ISO 210 x 297)	Horizontal Top Half	20	257	107	84
	Bottom Half	20	257	16	84



A4 (ISO 210 x 297)	Vertical Left Half	20	123.4	16	175
	Right Half	153.6	123.4	16	175



A4 (ISO 210 x 297)	Horizontal 35 mm Slide	25.1	251.9	30	161
-----------------------	---------------------------	------	-------	----	-----





**Page Size
in mm**

**Orientation
and Plot Area**

**MM
from
left**

**Width
in mm**

**MM
from
bottom**

**Height
in mm**

**A4
(ISO 210 x 297)**

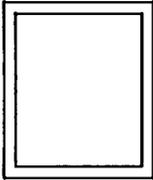
**Vertical
Full page**

16

175

20

257





Helpful Hints

In this chapter we present some suggestions for using Graphwriter. Many of these suggestions have come from Graphwriter users who have discovered interesting ways to utilize Graphwriter's extensive customization features. Others are included to call special attention to features which are particularly useful. You will undoubtedly develop your own "helpful hints" as you use Graphwriter. We encourage you to send them on to Graphic Communications, Inc., so that we can tell other Graphwriter users.

These hints for using Graphwriter are divided into three sections:

- Improving the appearance of your charts
- Using Graphwriter more efficiently
- Creating the chart you want
- Chart Data Files and Composed Chart Files

Within these sections there is no particular order. We suggest that you read through these hints from time to time, and incorporate them into your usage of Graphwriter as it seems appropriate.

Improving the Appearance of your Chart

Using coated papers such as Kromekote often results in charts which have brighter colors and sharper definition. We have found that plotter transparency pens frequently work well with these papers. The only disadvantage of such papers seems to be that from time to time the pen may skip across the surface of the paper to produce a line of inconsistent thickness.

Kromekote or other coated papers can be ordered from most paper supply companies. You may have to ask the paper company to cut the pages to 8.5 by 11 inch size.

You can achieve greater ink saturation on paper plots by using the transparency plot option in combination with a coated paper. The slower pen speeds used for transparency plots will put more ink down on the page. However, your chart will take longer to plot.

The ink on transparency plots normally takes 10 to 15 minutes to dry. Although you can remove your chart from the plotter right away, be careful not to touch the ink until it is dry. If you wish, you can speed up the

drying process by using an electric blower.

For charts which are to be projected using an overhead or 35 mm projector, use less text but make the individual characters in the remaining text larger. Simplify your charts as much as possible.

When producing multiple charts on a page, be sure to consider increasing the relative size of the characters in your headings, titles, etc.

Set the label intervals on your axes so that you have between 5 and 10 labels and between 10 to 40 tic marks on the scaled axis.

Occasionally, you will produce a pie chart where adjacent labels touch each other. You can remedy this by rotating one or more of the pies to move the labels into non-adjacent positions or by changing the character size of the labels.

Using Graphwriter More Efficiently

Using "All"

There will be times when you want to specify the same style characteristics for all headings or notes. To save yourself some time, in response to the prompt

"Begin with which heading?"

enter ALL RETURN

The subsequent changes that you make will be applied to the entire set of elements.

Saving Time When Plotting

Before you try to plot on plotter or screen, it is a good idea to verify that the plot options are set correctly. This will eliminate unnecessary chart recomposition. For instance, you can go from a CRT screen plot to a plot on the plotter without having your chart recomposed. This is true, however, only if:

- You do not change any option on the Change Plot Options Menu other than medium/pen or color range;
- Or you do not return to the Main Menu.

If you change something other than medium/pen or color range or if you leave the Plot Chart Menu for the Main Menu and then return, the program recomposes your chart to incorporate any changes you may have made.

conditions including all of the original style settings, you may do so by using the "Restore an Entire Chart" option from the Enter/Change Chart Menu.

When you are prompted by the program for the name of the file to restore, enter a file name which consists of the format number and ".SDB" as a suffix. For example, if you are using Format B020, you would

enter B020.SDB RETURN

You may find it useful to create a series of stored Text/Word Chart files which contain different combinations of the number of lines of text and the chart layout. Then to create a new text chart, you simply load the appropriate file and edit the lines of text to create your chart.

Creating a Custom Chart

You can customize your charts in several ways.

For instance, you can turn a standard bar chart into a histogram by changing the relative width of the individual bars to 100% of the available space for each bar. This results in a solid mass of bars. To specify bar width, use the Change Chart Style Menu.

On line charts, you can create lines of unequal length. On bar charts you create additional space between two bars. You do either of these feats by using the **NULL VALUE** key. Graphwriter will not draw any beginning or ending line segment or any bar which is represented by a null value.

You can eliminate a legend or any part of a legend by eliminating the text lines for the legend.

In addition to making standard line charts from Format S010 (Scatter Plot), you can create a variety of non-standard shapes. You can do this by arranging a desired pattern of data points on the X and Y axes, then joining them in a "connect the dots" fashion.

Customizing Text and Organization Charts

In creating text charts and organization charts, take a few minutes before starting data entry to define the style characteristics you want. This will save a great deal of time in data entry.

Chart Data Files and Composed Chart Files

- A **Chart Data File** contains the chart data values which are entered when using a chart format. These values (the file) may be stored and then recalled for: use in that original format or a compatible format or modified in any way.

Note: Only Chart Data Files can be edited prior to plotting.

Chart Data Files are stored only through option #2 of the Store Chart Menu.

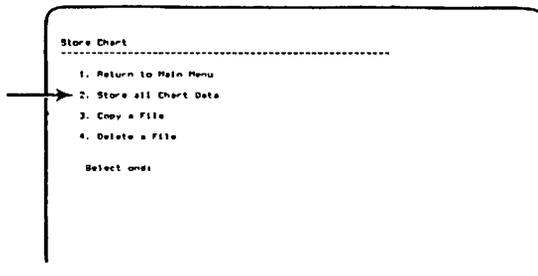
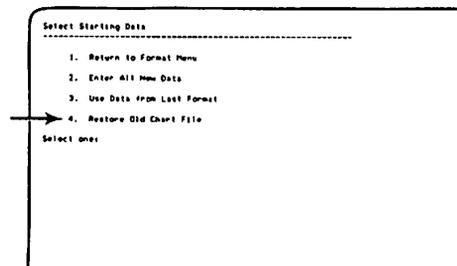
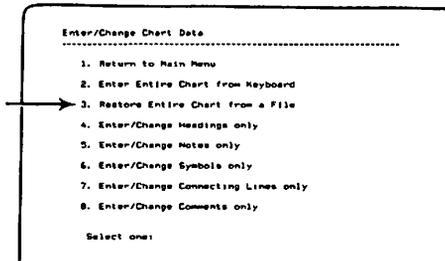


Chart Data Files are retrieved through option #3 of the Enter/Change Chart Data Menu or option #4 of the Select Starting Data Menu.



- **Composed Chart Files** are files which contain all the information necessary for plotting. Composed Chart Files are designed for use with the Batch Processing portion of Graphwriter. (Refer to Chapter 14, "Batch Processing.") A Composed Chart File is stored "in toto," and when retrieved will appear as originally designed.

Note: Composed Chart Files cannot be edited prior to plotting. If you wish to edit your chart data, you must also store a Chart Data File for that data.

Store Composed Chart Files through option #5 of the Plot Chart Menu.

```

Plot Chart
-----
1. Return to Main Menu
2. Full Plot on Plotter/Printer
3. Full Plot on Plotter/Printer
4. Preview on Screen
5. Store Composed Chart in File
6. Graphics only on Plotter/Printer (no text)
7. Change Plot Options:
   Color Range .... Color plot   Page Size ..... 8 1/2 x 11 in.
   Medium/Pen set .. plain paper Orientation ..... Horizontal
   Plot area ..... Full page   Graphics Device ... HP 7470a

Select one:
  
```

Composed Chart Files are retrieved only through option #5 of the Batch Processing Menu.

```

Main Menu          Batch Plotting
-----
1. Return to Execut Menu
2. Change Batch Plot Options
   Graphic device..... Polaroid Palatte   Copies per chart.. 1
   Pause between charts.. yes
3. Enter/Change Batch List
4. Begin Batch Plotting
5. Read Composed Chart File   Currently unspecified
6. Preview Composed Chart on Screen
7. Store Composed Chart File

Select one:
  
```

Using Filenames for Chart Data Files and Composed Chart Files

- In order to allow more flexibility in filenames, Graphwriter does not attach extensions automatically.
- However, in order to avoid confusion between Chart Data Files and Composed Chart Files, we suggest the files be named as follows:

For Chart Data Files: 8 characters plus the extension .SER

For Composed Chart Files: 8 characters plus the extension .CMP

- These names will allow you to make selective directories. Thus, when calling a directory using Graphwriter, when you see the following prompt:

Disk drive specifier and/or directory pathname
e.g., "b:" or "b:gw/data")?

For Chart Data Files type b:*.ser

For Composed Chart Files type b:*.cmp



Input Forms

Instructions for Completing Input Forms

Each of the Graphwriter format programs has its own unique input form. These input forms serve several purposes:

- For the novice, the input form clearly specifies the minimum information required to produce the selected format. If a user can complete the input form, he or she can produce the chart.
- For the manager who will have an assistant produce the chart, the input form provides a means for communicating the exact chart requirements, including the data necessary to produce the chart.
- For all users of charts, the input form provides a way to organize the data and the message to be communicated in the chart.

The few moments required to complete the input form usually result in a better chart.

Although the input forms are copyrighted, you may reproduce enough forms for your own use in producing charts with Graphwriter. Any other reproduction of these input forms is prohibited.

Each format program, identified with a code consisting of one letter followed by three digits, has its own input form, identified with the same code. Select the input form that corresponds to the format you have chosen.

Available formats are listed on p. F-3.

Side One

This side requires general information and provides you with a generic diagram of the graph you want to generate. Use the diagram as a reference while you fill out side two.

1. First, enter your name, and other specific information you may want to communicate if someone else in your organization is producing your chart.
2. Then specify whether you want the chart to be produced on paper, transparency film, or on coated paper and whether you want a color or black and white chart.

3. Specify whether the plot area for the chart should be full page, half page or 35 mm proportions.
4. Finally, specify horizontal or vertical orientation and size of the page for the chart.

Side Two

This side requires the specific information needed by the program; the information requested will vary slightly with each format.

5. Under the category of titles, print up to three lines of headings. The headings are lines of text which state the title of the chart and give some descriptive information about its contents.

Note the number 48 which appears at the end of the space provided for each heading. Throughout the form, numbers such as this indicate the character limit for various text elements.

Print up to to three lines of notes. Notes typically cite the source of information, credit the author, or footnote information contained in the chart.

Print axis titles and any other labels required. Axis titles usually define the units used for the data values which are displayed along the indicated axis, e.g., "Years" or "Millions of Dollars."

Be sure to print all information exactly as desired, using upper and lower case letters and punctuation marks as you wish them to appear on the chart.

6. Define scales for the plot area by entering numbers for the minimum and maximum axis positions, the label intervals, and the tic intervals.
7. Indicate the number of bars, lines, or pies and the number of segments, clusters, slices, or points for the chart.
8. Enter any legends. These are combinations of text and symbols explaining what is represented by the bars, pie slices, or lines. They are usually positioned outside the graph itself. Select colors, fill patterns, line types, or line markers, as applicable, to key the legend to the graphic shapes on the chart.
9. Enter the data. These include labels or names and numeric values which are used to size bars and pie slices or to locate points on a line.
10. Enter any special text comments you wish to display on the chart. Also, indicate the location for the comments in the chart.

GRAPHWRITER FORMATS

Basic Set

B010 Column Chart (vertical)
B011 Bar Chart (horizontal)
B020 Segmented Bars (vertical)
B021 Segmented Bars (horizontal)
B030 Clustered Bars (vertical)
B031 Clustered Bars (horizontal)
P010 Pie Chart (1-4 pies)
L010 Line Chart
S010 Scatter Plot (regression)
C010 Bar-Line Combination
T010 Text/Word Chart

Extension Set

S020 Gantt Chart
S030 Organization Chart
S040 Bubble Chart
S050 Table Chart
C020 Pie-Bar Combination
L020 Surface Line Chart
L030 Line-Table Chart
B022 Double Stacked Bars
B032 Grouped Bars
B040 Range Chart (bars)
B050 Paired Bars
B060 Horizontal Bars (inset labels)



Chart specifications

Submitted by ▶		
Telephone ▶	Job no ▶	Disk ▶
Date submitted ▶	Date in ▶	File ▶
Date due ▶	Date out ▶	Operator ▶

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B&W ▶	1 pg top ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1 pg bottom ▶		C other ▶
		25 mm proportions ▶		

Special instructions ▶

Suggestions on format usage

This format is useful for presenting a time series progression for discrete data values.

Remember that you can change the color or pattern for each individual bar.

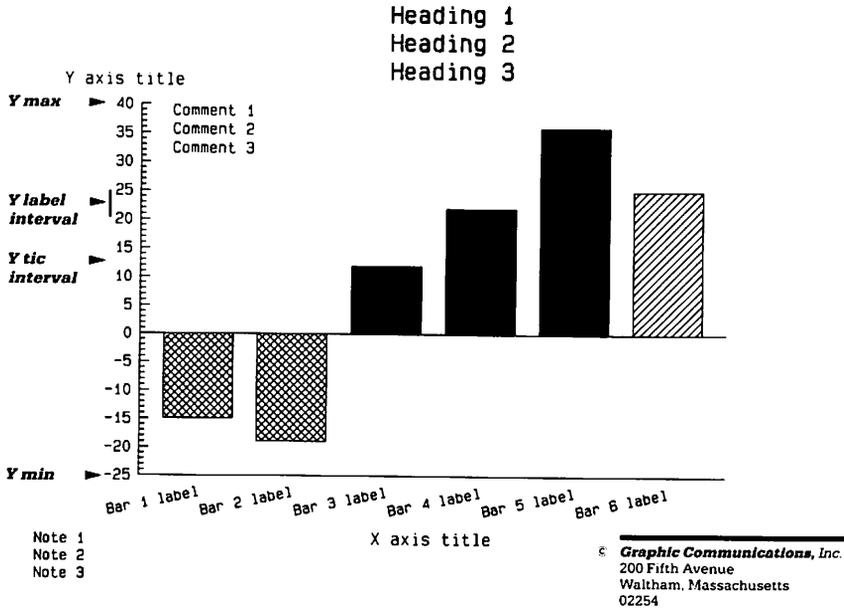


Chart specifications

Submitted by ▶

Telephone ▶ Job no ▶ Disk ▶

Date submitted ▶ Date in ▶ File ▶

Date due ▶ Date out ▶ Operator ▶

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶ Left ▶	Horizontal ▶	A 5.5 x 11 ▶
Transparency ▶	B & W ▶	Top ▶ Right ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		Bottom ▶ 35mm proportions ▶		C other ▶

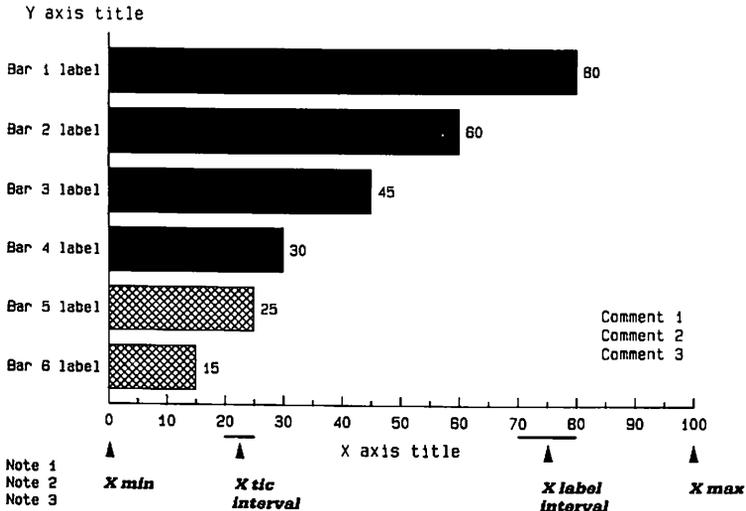
Special instructions ▶

Suggestions on format usage

Use this format for presenting item comparisons. Sorting items from largest to smallest can be very effective. Positive and negative bars can be used to present a deviation chart.

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Waltham, Massachusetts
02254

Heading 1
Heading 2
Heading 3



Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

X axis minimum ▶
X axis maximum ▶
X label interval ▶
X tic interval ▶

Data

Use additional forms for bars 21–36.

Bar (1–36)	Bar label	32	Bar value	Color	Pattern
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
13					
14					
15					
16					
17					
18					
19					
20					

Color codes

1 Black	6 Brown
2 Blue	7 Violet
3 Green	8 Turquoise
4 Red	9 Gold
5 Orange	10 Lime green

Pattern codes

1	
2	
3	
4	
5	
6	
7	
8	

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶

Telephone ▶	Job no ▶	Disk ▶
Date submitted ▶	Date in ▶	File ▶
Date due ▶	Date out ▶	Operator ▶

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8.5 x 11 ▶
Transparency ▶	B&W ▶	Top, top ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		Top, bottom ▶		C Other ▶
		Left, right ▶		
		35mm proportions ▶		

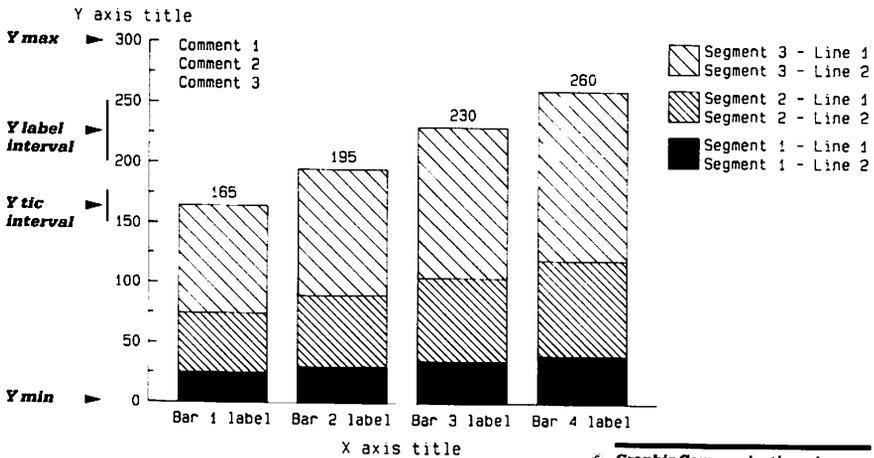
Special instructions ▶

Suggestions on format usage

Segmented columns are useful for illustrating how the whole is made up of its component parts.

This format is also useful for depicting how the components change over time.

Heading 1
Heading 2
Heading 3



Note 1
 Note 2
 Note 3

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Graphwriter™

Input, side 2

B020 Segmented Bars (vertical)

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

Y axis minimum ▶
Y axis maximum ▶
Y label interval ▶
Y tic interval ▶
Number of bars (1-20) ▶
Number of segments per bar (1-8) ▶

Bar legend

Segment	Line 1	20	Line 2	20	Color	Pattern
1						
2						
3						
4						
5						
6						
7						
8						

Color codes		Pattern codes
1 Black	6 Brown	1
2 Blue	7 Violet	2
3 Green	8 Turquoise	3
4 Red	9 Gold	4
5 Orange	10 Lime green	5
		6
		7
		8

Data

Use additional forms for bars 13-20.

Bar (1-20)	Bar label	20	Segment values							
			1	2	3	4	5	6	7	8
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶ _____

Telephone ▶ _____ Job no. ▶ _____ Disk ▶ _____

Date submitted ▶ _____ Date in ▶ _____ File ▶ _____

Date due ▶ _____ Date out ▶ _____ Operator ▶ _____

Plot options

Select one from each category:

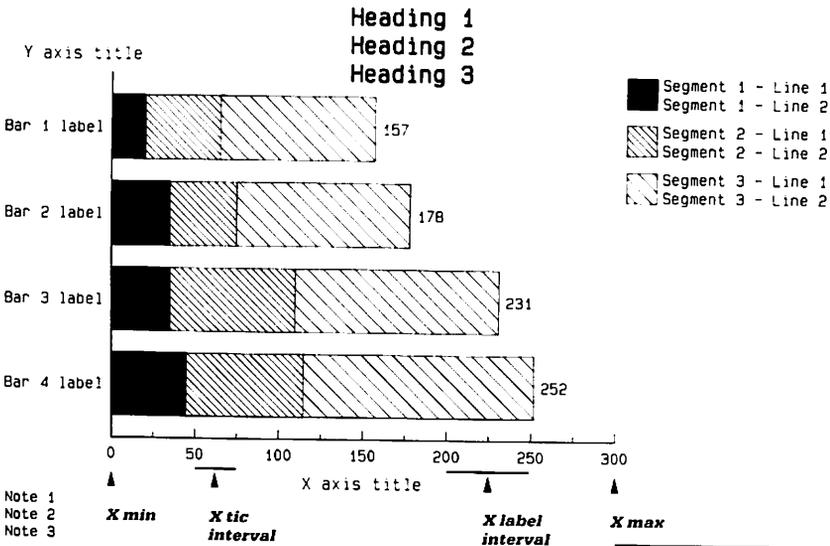
Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B & W ▶	1/2 pg. top ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1/2 pg. bottom ▶		C other ▶

Special instructions ▶ _____

Suggestions on format usage

Use this format to show a component comparison of a number of items.

100% bars are very effective with this format.



Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

X axis minimum ▶
X axis maximum ▶
X label interval ▶
X tick interval ▶
Number of bars (1-20) ▶
Number of segments per bar (1-8) ▶

Bar legend

Segment	Line 1 (top) 20	Line 2 (bottom) 20	Color	Pattern
1				
2				
3				
4				
5				
6				
7				
8				

Color codes		Pattern codes
1 Black	6 Brown	1
2 Blue	7 Violet	2
3 Green	8 Turquoise	3
4 Red	9 Gold	4
5 Orange	10 Lime green	5
		6
		7
		8

Data

Use additional forms for bars 13-20.

Segment values

Bar (1-20)	Bar label 20	1	2	3	4	5	6	7	8
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶ _____

Telephone ▶ _____ Jobline ▶ _____ Disk ▶ _____

Date submitted ▶ _____ Date in ▶ _____ File ▶ _____

Date due ▶ _____ Date out ▶ _____ Operator ▶ _____

Plot options

Select one from each category:

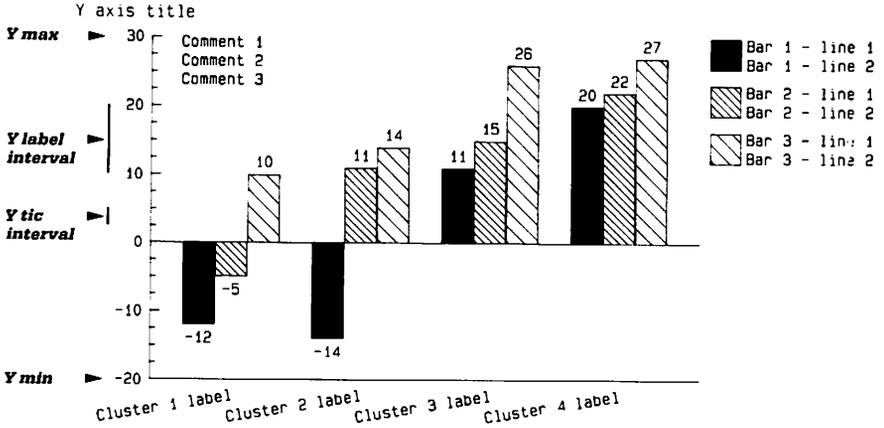
Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8.5 x 11 ▶
Transparency ▶	B&W ▶	1 pg. top ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1 pg. bottom ▶		C other ▶
		35mm proportions ▶		

Special instructions ▶ _____

Suggestions on format usage

Use this format to show how a set of items has changed over time. Use a distinctive color or pattern to call attention to the most important item in each set.

Heading 1
Heading 2
Heading 3



Note 1
 Note 2
 Note 3

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Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

Y axis minimum ▶
Y axis maximum ▶
Y label interval ▶
Y tic interval ▶
Number of clusters (1-20) ▶
Number of bars per cluster (1-8) ▶

Bar legend

Bar	Line 1 (top) 20	Line 2 (bottom) 20	Color	Pattern
1				
2				
3				
4				
5				
6				
7				
8				

Color codes	Pattern codes
1 Black	1
2 Blue	2
3 Green	3
4 Red	4
5 Orange	5
6 Brown	6
7 Violet	7
8 Turquoise	8
9 Gold	9
10 Lime green	10

Data

Use additional forms for clusters 13-20.

Cluster (1-20)	Cluster label 20	Bar values							
		1	2	3	4	5	6	7	8
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶ _____

Telephone ▶ _____	Job no ▶ _____	Disk ▶ _____
Date submitted ▶ _____	Date in ▶ _____	File ▶ _____
Date due ▶ _____	Date out ▶ _____	Operator ▶ _____

Plot options

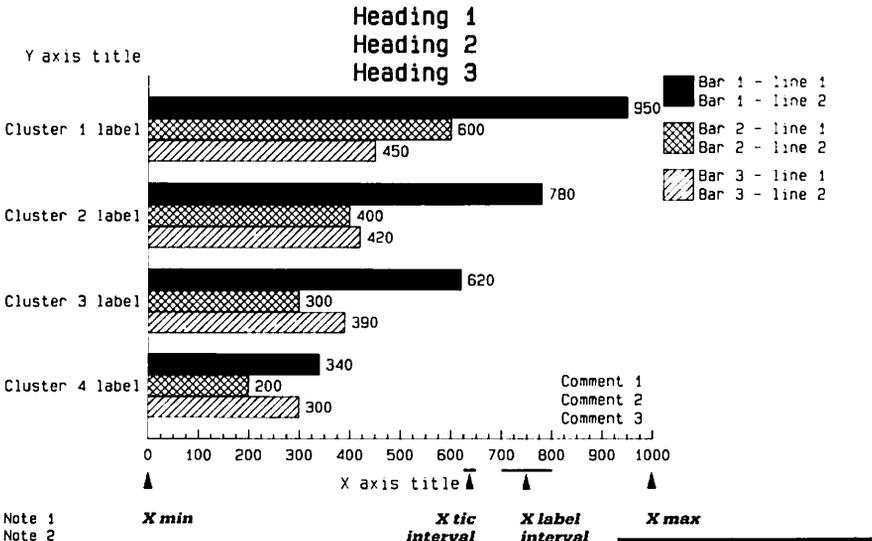
Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶ _____	Color ▶ _____	Full ▶ _____	Horizontal ▶ _____	A 8 1/2 x 11 ▶ _____
Transparency ▶ _____	B & W ▶ _____	1/4 pg. top ▶ _____	Vertical ▶ _____	B 11 x 17 ▶ _____
Glossy paper ▶ _____		1/4 pg. bottom ▶ _____		C other ▶ _____
		35 mm. proportions ▶ _____		

Special instructions ▶ _____

Suggestions on format usage

This format is useful for comparisons within sets of items where the absolute size of each element is important.



Note 1
Note 2
Note 3

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

X axis minimum ▶
X axis maximum ▶
X label interval ▶
X tick interval ▶
Number of clusters (1-20) ▶
Number of bars per cluster (1-8) ▶

Bar legend

Bar	Line 1 (top)	20	Line 2 (bottom)	20	Color	Pattern
1						
2						
3						
4						
5						
6						
7						
8						

Color codes		Pattern codes
1 Black	6 Brown	1
2 Blue	7 Violet	2
3 Green	8 Turquoise	3
4 Red	9 Gold	4
5 Orange	10 Lime green	5
		6
		7
		8

Data

Use additional forms for clusters 13-20.

Cluster (1-20)	Cluster label	20	Bar values							
			1	2	3	4	5	6	7	8
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶		
Telephone ▶	Job no. ▶	Disk ▶
Date submitted ▶	Date in ▶	File ▶
Date due ▶	Date out ▶	Operator ▶

Plot options

Select one from each category:

Medium	Color range	Plot area		Orientation	Page size
Paper ▶	Color ▶	Full ▶	Opp. left ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B&W ▶	Opp. top ▶	Opp. right ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		Opp. bottom ▶	35mm proportions ▶		C Other ▶

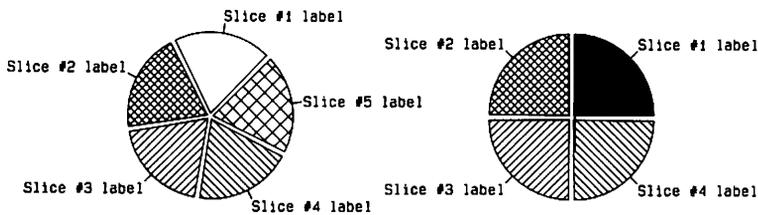
Special instructions ▶

Suggestions on format usage

Pies are useful for component comparisons where the relative or percentage size of each component

is important. Remember that each pie may have a different set of components.

Heading 1
 Heading 2
 Heading 3



Pie #1 Title line 1
 Pie #1 Title line 2

Pie #2 Title line 1
 Pie #2 Title line 2

Note 1
 Note 2
 Note 3

Comment 1
 Comment 2
 Comment 3

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Titles

Scales

Print exactly as desired; observe character count maximum.

Heading 1 ▶				48
Heading 2 ▶				48
Heading 3 ▶				48
Note 1 ▶				48
Note 2 ▶				48
Note 3 ▶				48
Pie 1 title	Line 1	32	Line 2	32
Pie 2 title	Line 1	32	Line 2	32
Pie 3 title	Line 1	32	Line 2	32
Pie 4 title	Line 1	32	Line 2	32

Data

Slice (1-16)	Slice label	20	Slice value	Color	Pattern	Color codes	Pattern codes
Pie 1 Each pie may have up to 16 slices.							
1						1 Black 6 Brown	1
2						2 Blue 7 Violet	2
3						3 Green 8 Turquoise	3
4						4 Red 9 Gold	4
						5 Orange 10 Lime green	5
							6
							7
							8
Pie 2							
1							
2							
3							
4							
Pie 3							
1							
2							
3							
4							
Pie 4							
1							
2							
3							
4							

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶ _____

Telephone ▶ _____	Job no ▶ _____	Disk ▶ _____
Date submitted ▶ _____	Date in ▶ _____	File ▶ _____
Date due ▶ _____	Date out ▶ _____	Operator ▶ _____

Plot options

Select one from each category:

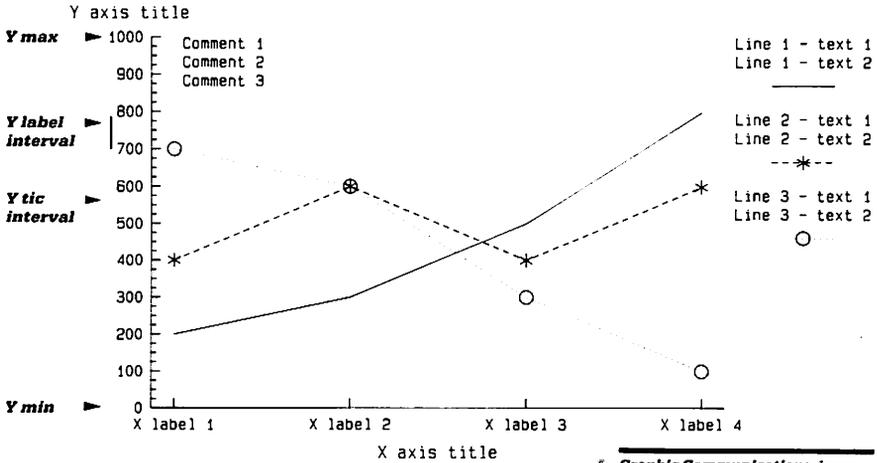
Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B&W ▶	1/4 pg top ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1/4 pg bottom ▶		C letter ▶
		35 mm prep print ▶		

Special instructions ▶ _____

Suggestions on format usage

Line charts are useful for presenting continuous data or data series which have a large number of points.

Heading 1
 Heading 2
 Heading 3



Note 1
 Note 2
 Note 3

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Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

Y axis scaling (linear or log.) ▶
Y axis minimum ▶
Y axis maximum ▶
Y label interval ▶
Y tic interval ▶
Number of lines (1-8) ▶
Number of points per line (1-100) ▶

Line legend

Line	Text line 1	20	Text line 2	20	Color	Line type	Marker type	Marker codes	Color codes
1								1 *	1 Black 6 Brown
2								2 ○	2 Blue 7 Violet
3								3	3 Green 8 Turq
4								4 △	4 Red 9 Gold
5								5 None	5 Orange 10 Lime
6									
7									
8									

Line types	
1	5
2	6
3	7
4	8 None

Data

Use additional forms for additional points.

Line values

Point (1-100)	Axis label	20	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶		
Telephone ▶	Job no ▶	Disk ▶
Date submitted ▶	Date in ▶	File ▶
Date due ▶	Date out ▶	Operator ▶

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size	
Paper ▶	Color ▶	Full ▶	1/2 pg. left ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B&W ▶	1/2 pg. top ▶	1/2 pg. right ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1/2 pg. bottom ▶	35mm. projections ▶		C other ▶

Special instructions ▶

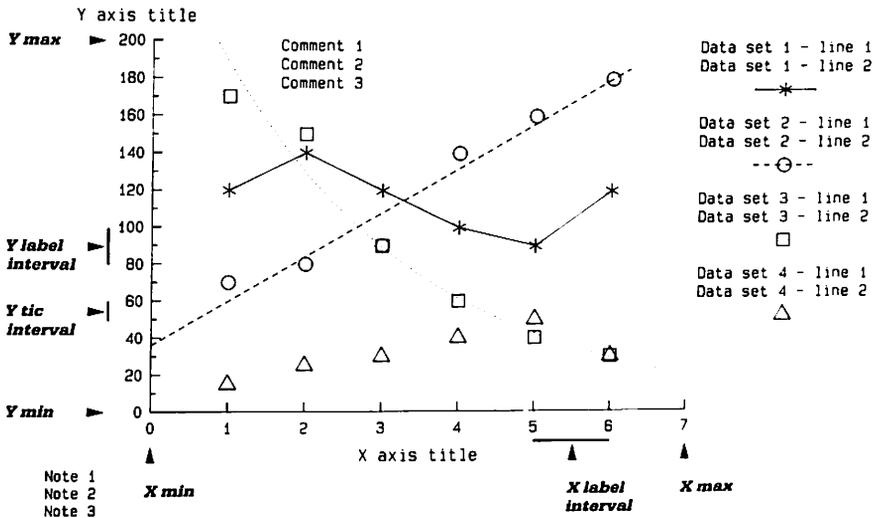
Suggestions on format usage

Scatter plots are useful for identifying correlations. A regression line can be drawn to quantify the relationship.

This format can also be used to present a line chart with a logarithmic X axis and a logarithmic Y axis.

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Heading 1
 Heading 2
 Heading 3



Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

X axis scaling (linear or log)	▶
X axis minimum	▶
X axis maximum	▶
X label interval	▶
X tic interval	▶
Y axis scaling (linear or log)	▶
Y axis minimum	▶
Y axis maximum	▶
Y label interval	▶
Y tic interval	▶
Number of data sets (lines)	▶

Data set legend

Data set	Line 1	20	Line 2	20	Line color	Line type	Marker type	Number of points	Regression type	First point	Last point
1											
2											
3											
4											

Data

Point (1-100)	Data set 1		Data set 2		Data set 3		Data set 4	
	X value	Y value						
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								

Marker codes

Marker codes	Color codes
1 *	1 Black 6 Brown
2 ○	2 Blue 7 Violet
3	3 Green 8 Turquoise
4 △	4 Red 9 Gold
5 None	5 Orange 10 Lime green

Line types

1	_____	5	— · — ·
2	-----	6	-----
3	7	-----
4	-----	8	None

Regression types

- 1 Linear
- 2 Exponential
- 3 Logarithmic
- 4 Power Curve

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶ _____

Telephone ▶ _____ Jobtime ▶ _____ Disk ▶ _____

Date submitted ▶ _____ Date in ▶ _____ File ▶ _____

Date due ▶ _____ Date out ▶ _____ Operator ▶ _____

Plot options

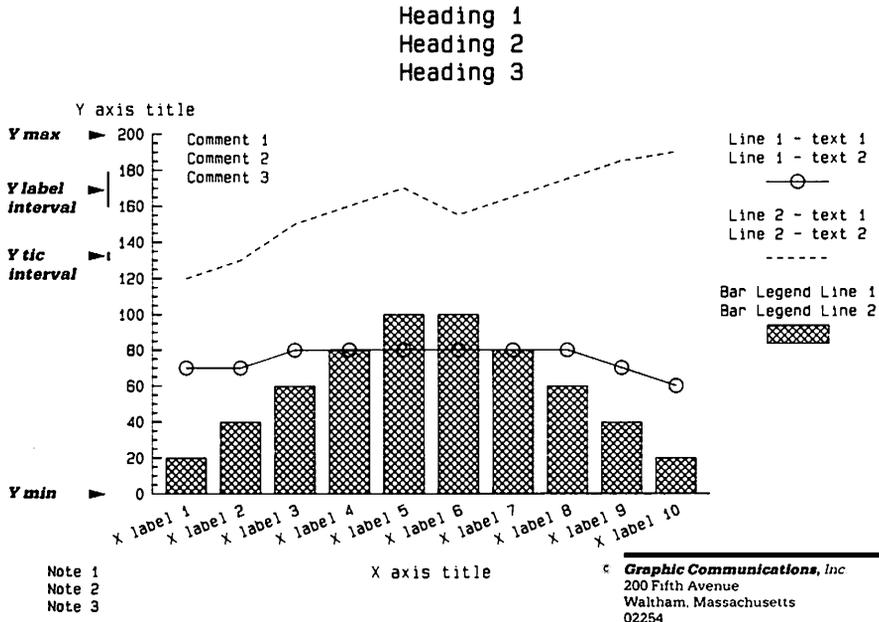
Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A ▶
Transparency ▶	B & W ▶	Upper ▶	Vertical ▶	B ▶
Gloss paper ▶		Upper right ▶		C ▶

Special instructions ▶ _____

Suggestions on format usage

The combination of character and line for the same format and plot area combination will be displayed as behaving in relation to one another.



Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

Y axis scaling (linear or log) ▶
Y axis minimum ▶
Y axis maximum ▶
Y label interval ▶
Y tic interval ▶
Number of lines (1-7) ▶
Number of points on X axis ▶

Legend

	Text line 1 (top) 20	Text line 2 (bottom) 20	Color	Pattern/ line type	Marker
Bar					
Line 1					
2					
3					
4					
5					
6					
7					

Pattern codes	Marker codes	Color codes
1	1 *	1 Black 6 Brown
2	2 ○	2 Blue 7 Violet
3	3	3 Green 8 Turq.
4	4 △	4 Red 9 Gold
5	5 None	5 Orange 10 Lime
6	Line types	
7	1	5
8	2	6
	3	7
	4	8 None

Data

Use additional forms for additional points.

Point (1-36)	X-axis label 20	Bar values	Line values						
			1	2	3	4	5	6	7
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶		
Telephone ▶	Job no ▶	Disk ▶
Date submitted ▶	Date in ▶	File ▶
Date due ▶	Date out ▶	Operator ▶

Plot options

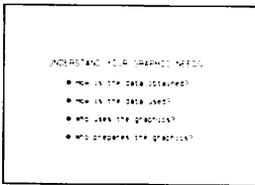
Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B & W ▶	1/4 pg. top ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1/4 pg. bottom ▶		C other ▶
		1/2 pg. right ▶		
		1/2 pg. left ▶		
		1/8 in. proportions ▶		

Special instructions ▶

Suggestions on format usage

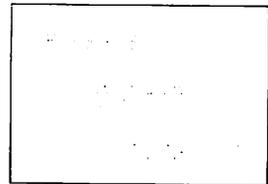
Select the text format which will best present your message. If you want to uniformly place text on a page, select the manual option. You also may define your own text formats. See the **Graphwriter** User's Guide for instructions on creating your own text formats.



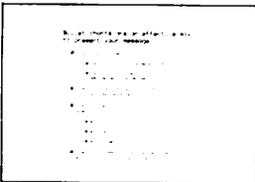
Bullet Chart (1 to 6 Bullets)



Centered (Up to 12 Lines and Spaces)



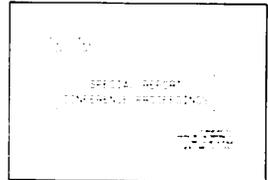
Paragraph



Bullet Chart (4 to 12 Bullets)



Centered (Up to 20 Lines and Spaces)



Title Page

Graphwriter

Input, side 1

S020 Gantt Chart

Chart specifications

Submitted by ▶ _____

Telephone ▶ _____ Job no ▶ _____ Disk ▶ _____

Date submitted ▶ _____ Date in ▶ _____ File ▶ _____

Date due ▶ _____ Date out ▶ _____ Operator ▶ _____

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A ▶
Transparency ▶	RGB ▶	Left ▶	Vertical ▶	B ▶
Glossy paper ▶		Right ▶		C ▶

Special instructions ▶ _____

Suggestions on format usage

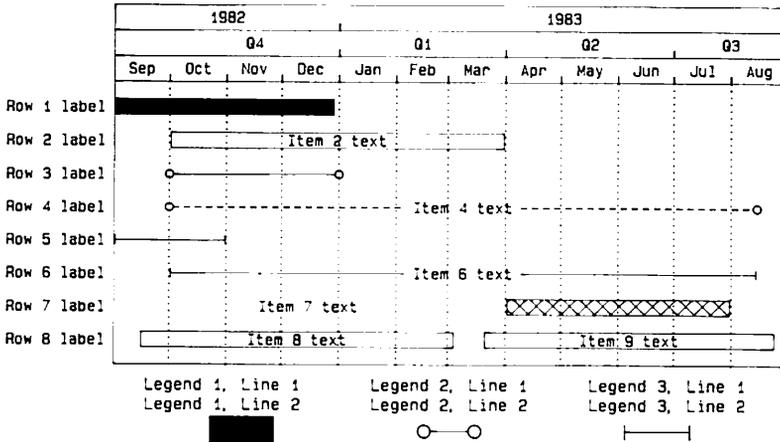
Use this format for scheduling events within sequential time periods.

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Heading 1
Heading 2
Heading 3

Y axis title

X axis title



Note 1
Note 2
Note 3

Comment 1
Comment 2
Comment 3

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
Y axis ▶	48
X axis ▶	48

Scales

Begin date	
End date	
Number of axes (1-5)	▶
Yearly	▶
Quarterly	▶
Monthly	▶
Weekly	▶
Daily	▶
Number of rows (1-20)	▶

Data

Use additional forms for rows 6-20.

Row	Row label	32
1		
2		
3		
4		
5		

Color codes

Pattern codes

1 Black	6 Brown	1		6	
2 Blue	7 Violet	2		7	
3 Green	8 Turq.	3		8	
4 Red	9 Gold	4			
5 Orange	10 Lime	5			

Use additional forms for items 9-48.

Item	Item type	Row	Beg. date	End date	Text	48	Color	Pattern
1								
2								
3								
4								
5								
6								
7								
8								

Legend	Line 1	20	Line 2	20	Item type	Color	Pattern
1							
2							
3							
4							
5							
6							

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶		
Telephone ▶	Job no ▶	Disk ▶
Date submitted ▶	Date in ▶	File ▶
Date due ▶	Date out ▶	Operator ▶

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B & W ▶	1/4 pg. top ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1/4 pg. bottom ▶		C other ▶
		3/4 pg. left ▶		
		3/4 pg. right ▶		
		35 mm proportions ▶		

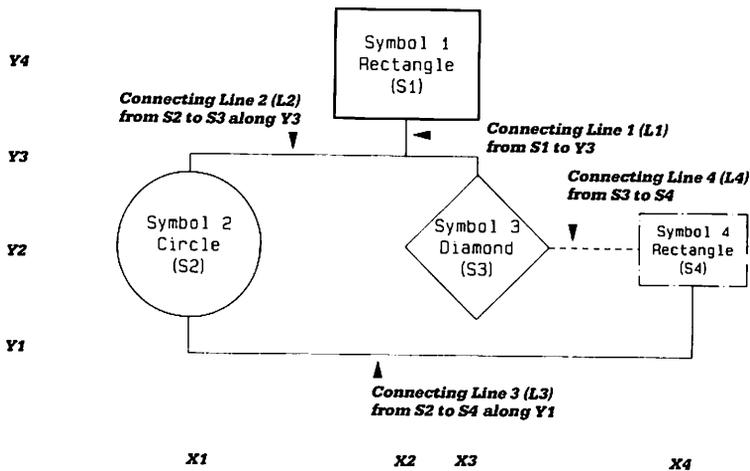
Special instructions ▶

Suggestions on format usage

Use this format for organization charts, flow charts or any application where symbols interrelate

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Heading 1
 Heading 2
 Heading 3



Note 1
 Note 2
 Note 3

Comment 1
 Comment 2
 Comment 3

Symbol set (1-6): _____
Coordinate grid (1-8): _____

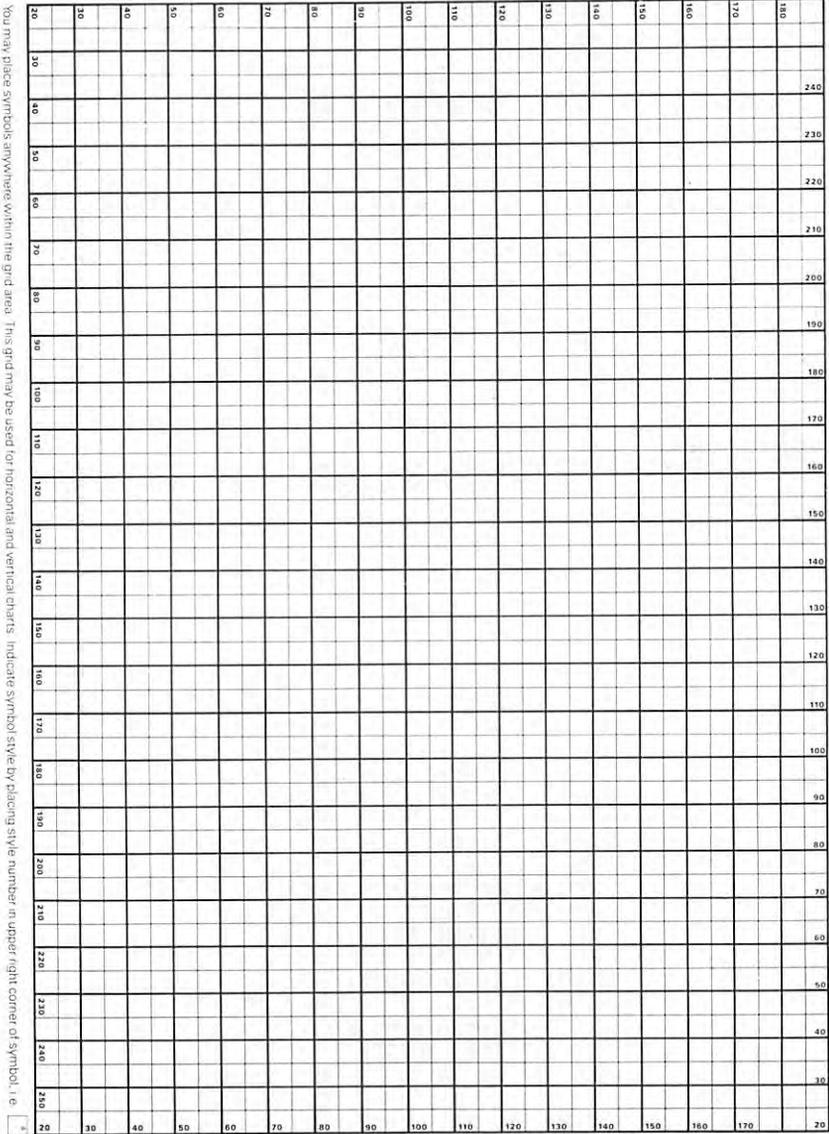


Chart specifications

Submitted by ▶ _____

Telephone ▶ _____ Address ▶ _____ Disk ▶ _____

Date submitted ▶ _____ Date in ▶ _____ File ▶ _____

Date due ▶ _____ Date out ▶ _____ Operator ▶ _____

Plot options

Select one from each category:

Medium	Color range	Plot area		Orientation	Page size
Paper ▶	Color ▶	Full ▶	ppr: 40 ▶	Horizontal ▶	A 8.5x11 ▶
Transparency ▶	B & W ▶	1/4 top ▶	ppr: 40 ▶	Vertical ▶	B 11x17 ▶
Glossy paper ▶		1/4 bottom ▶	Format: proportions ▶		C other ▶

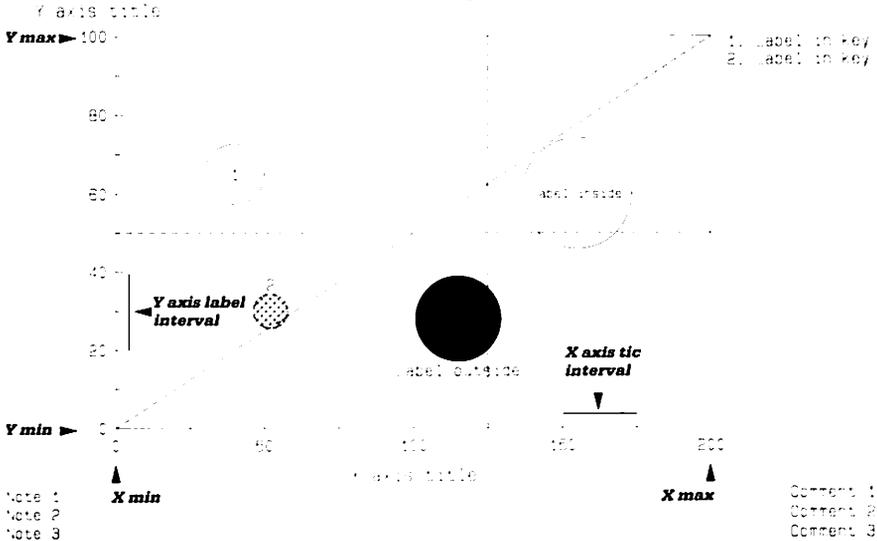
Special instructions ▶ _____

Suggestions on format usage

This format utilizes three dimensions. As in the third dimension, represent both bubble size. The chart is used in corporate planning to show the relationship of business units in the relative size.

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Heading 1
Heading 2
Heading 3



Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

X axis scaling (linear or log) ▶
X axis minimum ▶
X axis maximum ▶
X label interval ▶
X tic interval ▶
Y axis scaling (linear or log) ▶
Y axis minimum ▶
Y axis maximum ▶
Y label interval ▶
Y tic interval ▶
Vertical reference line ▶
Horizontal reference line ▶
Diagonal line (y/n) ▶

Data

Use additional forms for bubbles 18-36.

Value for 1 inch bubble ▶

Bubble	Label	20	Value	Y Location	X Location	Color	Pattern
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							

Color Codes

1 Black	6 Brown
2 Blue	7 Violet
3 Green	8 Turq
4 Red	9 Gold
5 Orange	10 Lime

Pattern codes

1	
2	
3	
4	
5	
6	
7	
8	

Comments

Comment 1	Location
Comment 2	
Comment 3	

Graphwriter

Input, side 1

S050 Table Chart

Chart specifications

Submitted by ▶		
Telephone ▶	Job no ▶	Disk ▶
Date submitted ▶	Date in ▶	File ▶
Date due ▶	Date out ▶	Operator ▶

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶ 1/4 pg. left ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B & W ▶	1/4 pg. top ▶ 1/4 pg. right ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1/4 pg. bottom ▶ 35 mm proportions ▶		C other ▶

Special instructions ▶

Suggestions on format usage

Use this format for displaying a list of information or non-graphic data

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Heading 1
Heading 2
Heading 3

	Col. 1	Col 2 label	Col. 3	Col 4 label
Row 1 label	10.052	COL 2 - ROW 1	\$10000	COL 4 - ROW 1
Row 2 label	15.000	COL 2 - ROW 2	20000	COL 4 - ROW 2
Row 3 label	17.500	COL 2 - ROW 3	30000	COL 4 - ROW 3
Row 4 label	20.000	COL 2 - ROW 4	40000	COL 4 - ROW 4
Row 5 label	200.000	COL 2 - ROW 5	50000	COL 4 - ROW 5

Note 1
Note 2
Note 3

Comment 1
Comment 2
Comment 3

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48

Labels

Column (1-8)	Label	20
1		
2		
3		
4		

Color codes

1 Black	6 Brown
2 Blue	7 Violet
3 Green	8 Turquoise
4 Red	9 Gold
5 Orange	10 Lime green

Use additional forms for rows 12-24.

Row	Label	32
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		

Data

Column (1-8)	Data type	Value	20
1			
2			
3			
4			

Comments

Comment 1	Location
Comment 2	
Comment 3	

Graphwriter

Input, side 1

C020 Pie-Bar Combination

Chart specifications

Submitted by ▶

Telephone ▶ Job no ▶ Disk ▶

Date submitted ▶ Date in ▶ File ▶

Date due ▶ Date out ▶ Operator ▶

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8.5 x 11 ▶
Transparency ▶	B&W ▶	1/4 pg top ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1/4 pg bottom ▶		C other ▶
		35mm preparations ▶		

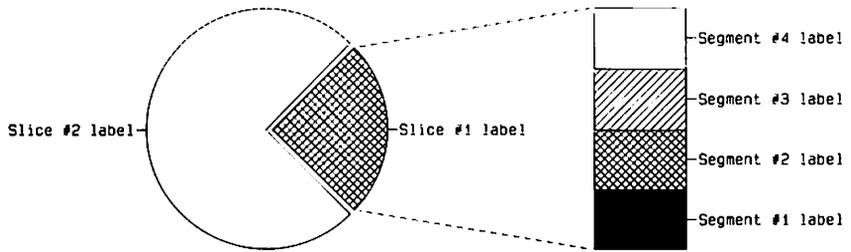
Special instructions ▶

Suggestions on format usage

This format is effective when one portion of a whole has several sub-components

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Heading 1
 Heading 2
 Heading 3



Pie Title line 1
 Pie Title line 2

Bar Title line 1
 Bar Title line 2

Note 1
 Note 2
 Note 3

Comment 1
 Comment 2
 Comment 3

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48

Pie title	Line 1	32	Line 2	32
Bar title	Line 1	32	Line 2	32

Data

Use additional forms for slices/segments 9-16.

Pie	Which slice expanded into bar?				
Slice (1-16)	Slice label	20	Slice value	Color	Pattern
1					
2					
3					
4					
5					
6					
7					
8					

Color codes

1 Black	6 Brown
2 Blue	7 Violet
3 Green	8 Turquoise
4 Red	9 Gold
5 Orange	10 Lime green

Pattern codes

1	
2	
3	
4	
5	
6	
7	
8	

Bar					
Seg. (1-16)	Segment label	20	Seg. value	Color	Pattern
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by

Telephone Job no Disk

Date submitted Date in File

Date due Date out Operator

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper <input type="checkbox"/>	Color <input type="checkbox"/>	Full <input type="checkbox"/> Left <input type="checkbox"/>	Horizontal <input type="checkbox"/>	A 8.5 x 11 <input type="checkbox"/>
Transparency <input type="checkbox"/>	B&W <input type="checkbox"/>	Top <input type="checkbox"/> Right <input type="checkbox"/>	Vertical <input type="checkbox"/>	B 11 x 17 <input type="checkbox"/>
Glossy paper <input type="checkbox"/>		Bottom <input type="checkbox"/> Proportions <input type="checkbox"/>		C other <input type="checkbox"/>

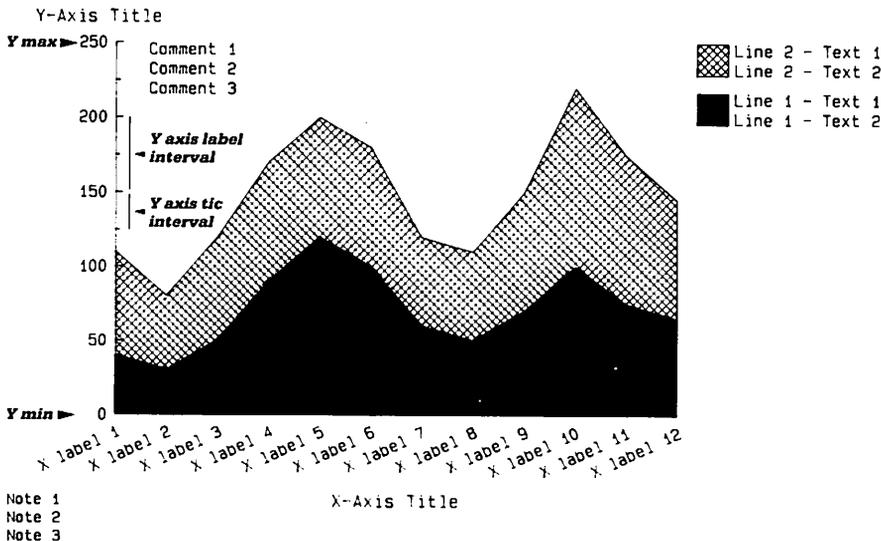
Special instructions

Suggestions on format usage

Use this format for data series with components that change over time.

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Heading 1
 Heading 2
 Heading 3



Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

Y axis minimum ▶
Y axis maximum ▶
Y label interval ▶
Y tic interval ▶
Number of lines (1-8) ▶
Number of points per line (1-100) ▶

Line legend

Line	Text line 1	20	Text line 2	20	Color	Pattern
1						
2						
3						
4						
5						
6						
7						

Color codes		Pattern codes
1 Black	6 Brown	1
2 Blue	7 Violet	2
3 Green	8 Turquoise	3
4 Red	9 Gold	4
5 Orange	10 Lime green	5
		6
		7
		8

Data

Use additional forms for additional points.

Line values

Point	Axis label	20	Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶

Telephone ▶ Job no ▶ Disk ▶

Date submitted ▶ Date in ▶ File ▶

Date due ▶ Date out ▶ Operator ▶

Plot options

Select one from each category:

Medium	Color range	Plot area		Orientation	Page size
Paper ▶	Color ▶	Full ▶	2 pg left ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B & W ▶	1/2 pg top ▶	1/2 pg right ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		1/2 pg bottom ▶	35mm proportions ▶		C other ▶

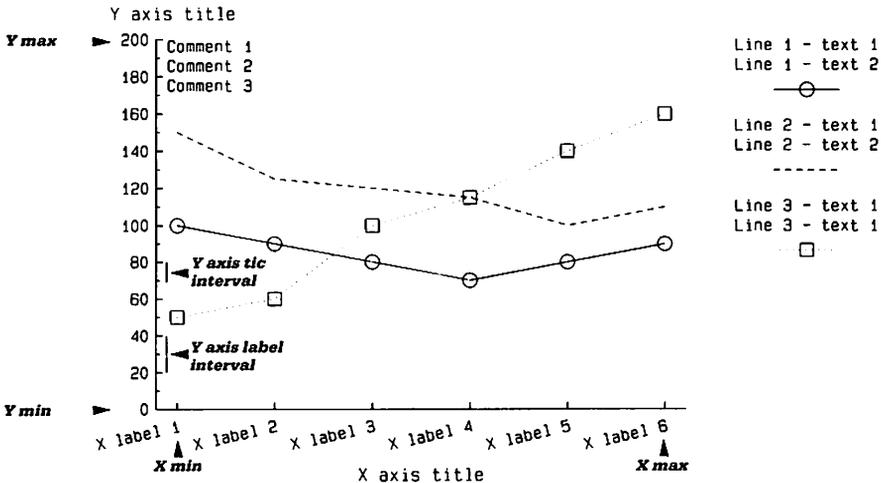
Special instructions ▶

Suggestions on format usage

This format can be used when the actual values of each data series need to be displayed

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Heading 1
Heading 2
Heading 3



Line 1 - text 1	100	90	80	70	80	90
Line 2 - text 1	150	125	120	115	100	110
Line 3 - text 1	50	60	100	115	140	160

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
X axis ▶	48
Y axis ▶	48

Scales

Y axis minimum ▶
Y axis maximum ▶
Y label interval ▶
Number of lines (1-8) ▶
Number of points per line (1-16) ▶

Line legend

Line	Text line 1	20	Text line 2	20	Color	Line type	Marker	Marker codes	Color codes
1								1 *	1 Black 6 Brown
2								2 ○	2 Blue 7 Violet
3								3	3 Green 8 Turq.
4								4 △	4 Red 9 Gold
5								5 None	5 Orange 10 Lime
6									
7									
8									

Line types	
1	5
2	6
3	7
4	8 None

Data

Point	Axis label	20	Line values							
			Line 1	Line 2	Line 3	Line 4	Line 5	Line 6	Line 7	Line 8
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶ _____

Telephone ▶ _____	Job no. ▶ _____	Disk ▶ _____
Date submitted ▶ _____	Date in ▶ _____	File ▶ _____
Date due ▶ _____	Date out ▶ _____	Operator ▶ _____

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	B&W ▶	Clip top ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		Clip bottom ▶		C other ▶
				35 mm preparations ▶

Special instructions ▶ _____

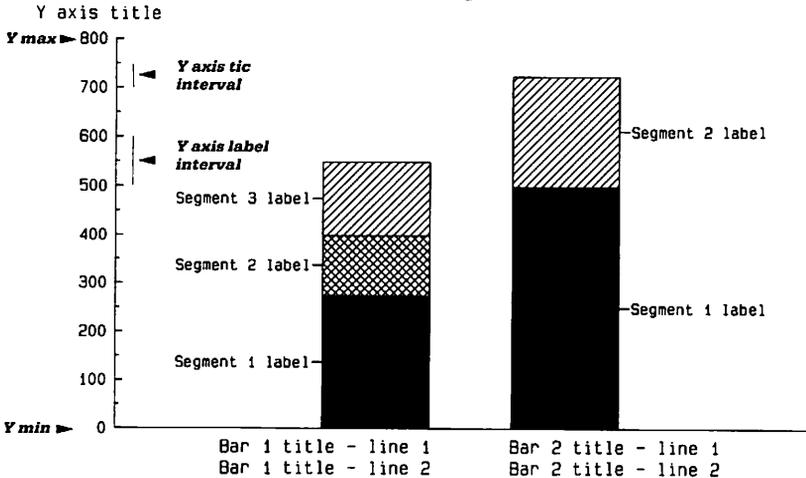
Suggestions on format usage

Segmented columns illustrate how the whole is made up of component parts.

Use this format when each component needs to be labeled individually.

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Heading 1
 Heading 2
 Heading 3



Note 1
 Note 2
 Note 3

Comment 1
 Comment 2
 Comment 3

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
X axis ▶	48
Y axis ▶	48
Bar 1 title	32 Line 2
Bar 2 title	32 Line 2

Scales

Y axis minimum ▶
Y axis maximum ▶
Y label interval ▶
Y tic interval ▶
Number of segments per bar (1-16)
Bar 1 ▶
Bar 2 ▶

Data

Use additional forms for segments 11-16.

Bar 1 segment	Segment label	20	Seg. value	Color	Pattern
1					
2					
3					
4					
5					
6					
8					
9					
10					

Bar 2 segment

1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Color codes

1 Black	6 Brown
2 Blue	7 Violet
3 Green	8 Turquoise
4 Red	9 Gold
5 Orange	10 Lime green

Pattern codes

1	
2	
3	
4	
5	
6	
7	
8	

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Submitted by ▶ _____

Telephone ▶ _____ Jet ▶ _____ Disk ▶ _____

Date submitted ▶ _____ Color ▶ _____ File ▶ _____

Date due ▶ _____ Output ▶ _____ Operator ▶ _____

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶	Color ▶	Full ▶	Horizontal ▶	A 8 1/2 x 11 ▶
Transparency ▶	8 1/2 ▶	Top 1/4 ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		Bottom 1/4 ▶		C Other ▶

Special instructions ▶ _____

Suggestions on format usage

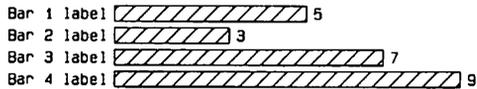
This format permits the presentation of a great deal of information on one page.

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Heading 1
Heading 2
Heading 3

Group 1 label

Group 1 title line 1
 Group 2 title line 2



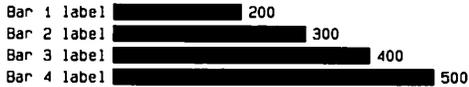
Group 2 label

Group 2 title line 1
 Group 2 title line 2



Group 3 label

Group 3 title line 1
 Group 3 title line 2



Note 1
 Note 2
 Note 3

Comment 1
 Comment 2
 Comment 3

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48		
Heading 2 ▶	48		
Heading 3 ▶	48		
Note 1 ▶	48		
Note 2 ▶	48		
Note 3 ▶	48		
Bar group 1 title Line 1	32	Line 2	32
Bar group 2 title Line 1	32	Line 2	32
Bar group 1 label	48		
Bar group 2 label	48		

Scales

Use additional forms for groups 3-4.

Bar group	X axis min	X axis max
1		
2		

Data

Bar (1-12)	Bar label	20	Bar value	Color	Pattern
Bar group 1	Each group may have up to 12 bars.				
1					
2					
3					
4					
5					
6					
8					
9					
10					

Color codes		Pattern codes
1 Black	6 Brown	1
2 Blue	7 Violet	2
3 Green	8 Turquoise	3
4 Red	9 Gold	4
5 Orange	10 Lime green	5
		6
		7
		8

Bar group 2

1					
2					
3					
4					
5					
6					
7					
8					
9					
10					

Comments

Comment 1	Location
Comment 2	
Comment 3	

Graphwriter

Input, side 1

B040 Range Chart (bars)

Chart specifications

Submitted by ▶ _____

Telephone ▶ _____	Job no ▶ _____	Disk ▶ _____
Date submitted ▶ _____	Date in ▶ _____	File ▶ _____
Date due ▶ _____	Date out ▶ _____	Operator ▶ _____

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper ▶ _____	Color ▶ _____	Full ▶ _____	Horizontal ▶ _____	A 8 1/2 x 11 ▶ _____
Transparency ▶ _____	B&W ▶ _____	1/4 pg. top ▶ _____	Vertical ▶ _____	B 11 x 17 ▶ _____
Glossy paper ▶ _____		1/4 pg. bottom ▶ _____		C other ▶ _____
		35 mm preparations ▶ _____		

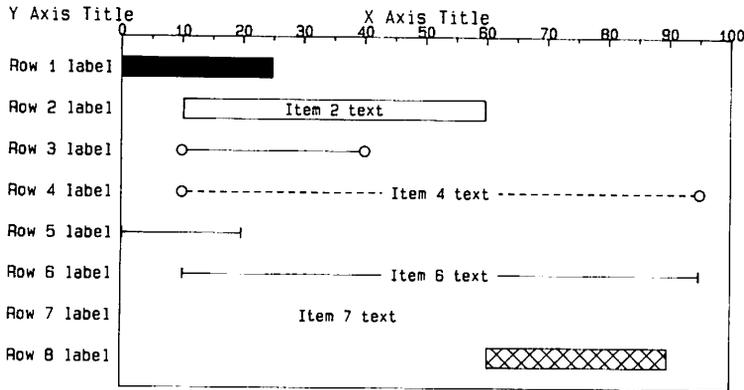
Special instructions ▶ _____

Suggestions on format usage

Use this format for comparing data ranges for a series of items.

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Heading 1
Heading 2
Heading 3



Legend 1 line 1 Legend 2 line 1 Legend 3 line 1
Legend 1 line 2 Legend 2 line 2 Legend 3 line 2



Note 1
Note 2
Note 3

Comment 1
Comment 2
Comment 3

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
Y axis ▶	48
X axis ▶	48

Scales

Begin value	
End value	
X label interval ▶	
X tic interval ▶	
Number of rows (1-20) ▶	

Data

Use additional forms for rows 6-20.

Row	Row label	32
1		
2		
3		
4		
5		

Color codes		Pattern codes	
1 Black	6 Brown	1	
2 Blue	7 Violet	2	
3 Green	8 Turq.	3	
4 Red	9 Gold	4	
5 Orange	10 Lime	5	
		6	
		7	
		8	

Use additional forms for items 9-48.

Item	Item type	Row	Begin value	End value	Text	48	Color	Pattern
1								
2								
3								
4								
5								
6								
7								
8								

Legend	Line 1	20	Line 2	20	Item type	Color	Pattern
1							
2							
3							
4							
5							
6							

Comments

Comment 1	Location
Comment 2	
Comment 3	

Chart specifications

Super title: _____

Telephone: _____ Job no: _____ Disk: _____

Date submitted: _____ Date in: _____ File: _____

Date due: _____ Date out: _____ Operator: _____

Plot options

Select one from each category:

Medium	Color range	Plot area	Orientation	Page size
Paper	Color	Full	Horizontal	A 8.5 x 11
Transparency	B & W	Left Top	Vertical	B 11 x 17
Glossy paper		Left Bottom		C Other

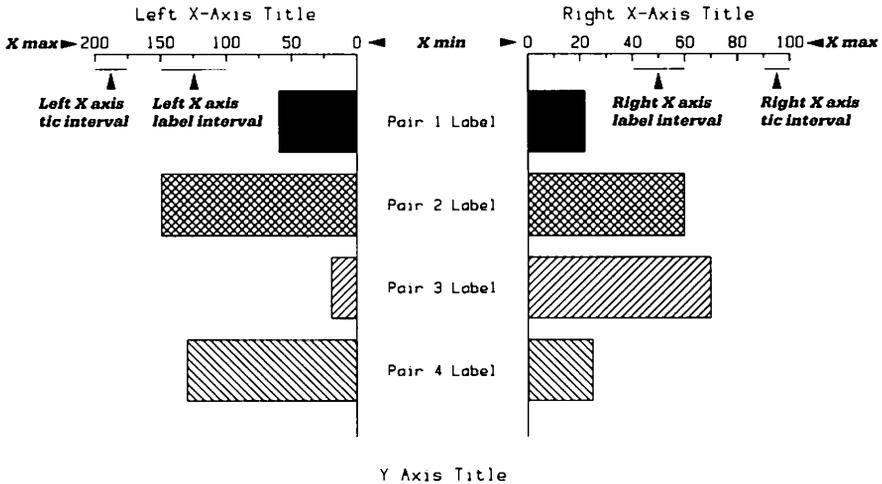
Special instructions: _____

Suggestions on format usage

This format permits comparisons even when the items compared do not use the same scale.

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Heading 1
 Heading 2
 Heading 3



Note 1
 Note 2
 Note 3

Comment 1
 Comment 2
 Comment 3

Titles

Print exactly as desired; observe character count maximum.

		Set 1 (left)	▶
Heading 1 ▶	48	X axis minimum	▶
Heading 2 ▶	48	X axis maximum	▶
Heading 3 ▶	48	X label interval	▶
Note 1 ▶	48	X tic interval	▶
Note 2 ▶	48	Set 2 (right)	▶
Note 3 ▶	48	X axis minimum	▶
Y axis ▶	48	X axis maximum	▶
Right X axis ▶	48	X label interval	▶
Left X axis ▶	48	X tic interval	▶

Color codes		Pattern codes	
1 Black	6 Brown	1	6
2 Blue	7 Violet	2	7
3 Green	8 Turq	3	8
4 Red	9 Gold	4	
5 Orange	10 Lime	5	

Data

Use additional forms for pairs 14–24.

Bar	Bar label	Set 1 value	Set 2 value	Set 1 color	Set 2 color	Set 1 pattern	Set 2 pattern
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							

Comments

Comment 1	Location
Comment 2	
Comment 3	

Graphwriter

Input, side 1

B060 Horizontal Bars (inset labels)

Chart specifications

Submitted by ▶		
Telephone ▶	Job no ▶	Disk ▶
Date submitted ▶	Date in ▶	File ▶
Date due ▶	Date out ▶	Operator ▶

Plot options

Select one from each category:

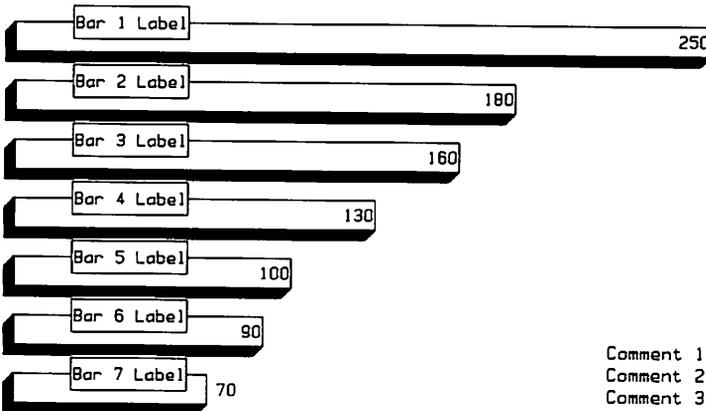
Medium	Color range	Plot area		Orientation	Page size
Paper ▶	Color ▶	Full ▶	.pg left ▶	Horizontal ▶	A 8.5 x 11 ▶
Transparency ▶	B & W ▶	.pg top ▶	.pg right ▶	Vertical ▶	B 11 x 17 ▶
Glossy paper ▶		.pg bottom ▶	35mm proportions ▶		C other ▶
Special instructions ▶					

Suggestions on format usage

This format can be used for comparison of individual categories

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Heading 1
Heading 2
Heading 3



Comment 1
Comment 2
Comment 3

X-Axis Title

Titles

Print exactly as desired; observe character count maximum.

Heading 1 ▶	48
Heading 2 ▶	48
Heading 3 ▶	48
Note 1 ▶	48
Note 2 ▶	48
Note 3 ▶	48
Y axis ▶	48
X axis ▶	48

Scales

X axis minimum ▶
X axis maximum ▶
X label interval ▶
X tic interval ▶

Data

Bar	Bar label	20	Bar value	Color	Pattern
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					

Color codes		Pattern codes
1 Black	6 Brown	1 
2 Blue	7 Violet	2 
3 Green	8 Turquoise	3 
4 Red	9 Gold	4 
5 Orange	10 Lime green	5 
		6 
		7 
		8 

Comments

Comment 1	Location
Comment 2	
Comment 3	

Glossary

Allowable Values	Refers to possible choices available for particular style characteristics, or refers to data limits for a particular format.
Alpha Mode	Manner in which Graphwriter usually functions, i.e., displays text prompts and allows you to enter text or numbers, which are alphabetic characters. See Graphic Display Mode.
Angle	The initial position from which pie slices are measured. The range is 0 to 360 degrees.
Axis	Fixed line along which distances are measured or to which positions are referenced, e.g. the X axis and Y axis determining the grid area for bar and line formats.
Axis Label (scaled)	Number marking one of the equidistant intervals on an axis.
Axis Label (unscaled)	Either a name or number used to describe a position on an axis. Often it will be a bar label.
Axis Title	Descriptive text for the X axis or Y axis.
Bar	Rectangle in which the length of the side parallel to the scaled axis represents a numeric value.
Bar Label	Name or number appearing on an unscaled axis used to describe what bars represent.
Bar Title	Descriptive text for the bar in pie-bar combination charts.
Bar Value	Number that determines the relative size of a bar.
Bar Width	Refers to how wide a bar is relative to the available space. It is specified in percent. The range is 1% to 100%.
Batch List	A list of Composed Chart Files which you can use for Batch processing.
Batch Processing	Using stored Composed Chart Files, in an automatic sequence, for processing on an output device such as a plotter, printer or the Polaroid Palette.

Baud Rate	Measure of serial data flow (usually in bits) between pieces of hardware such as computer and plotter.
Bit-map image	The image which results when a chart is "drawn" into the graphics (bit-map) memory of the computer.
Block	Refers to an area determined by one or more lines of text; specifically, this area is determined by the height of all text lines and the width of the longest line.
Block Gap	Style characteristic for text blocks referring to amount of space between text blocks, defined as a percent of the average character size used in the two adjacent text blocks.
Bold	Particular option of the character font style characteristic, or particular option for the line type or line weight style characteristics.
Bold Expanded	Particular option of the font style characteristic.
Bold Italic	Particular option of the font style characteristic.
Bullet Chart	Chart created the Text/Word Format (T010), in which text blocks are emphasized by circles or other graphic shapes.
Bullet Type	Style characteristic for text blocks referring to type of symbol such as asterisk, dash, or open circle, used to emphasize the text.
Centered Chart	Chart created the Text/Word format (T010), in which the text is centered on the page.
Change Chart Style Menu	Sub-menu of Main Menu which provides choices for editing or changing style characteristics of various chart elements.
Change Display Device Menu	Sub-menu of the Print Data Menu, allowing the user to specify the output device on which data is displayed.
Change Plot Options Menu	Sub-menu of the Plot Chart Menu, providing choices for color range, medium and pen set, page size, orientation, plot area, and plotter.
Changing Available Palettes Menu	Sub-menu of the Main Menu of the Setup Program providing choices to change available bar fill/color palettes, line type/color palettes, marker type/color palettes, and to set default palettes for each format.

Changing Other Default Options Menu	Sub-menu of the Main Menu of the Setup Program which allows you to change how data is read from a data file, or to change the print device.
Changing Plot Option Defaults Menu	Sub-menu of the Main Menu of the Setup Program providing choices for changing default values for color, medium/pen set, page size, orientation, plot area and plotter for all formats.
Characteristic	Attribute or property of chart elements; examples are color, font, character size.
Character Font	Style characteristic for text elements. Can be bold, italic, etc.
Character Size (CSize)	Style characteristic, specified in millimeters, denoting height of text elements.
Chart	Composition of geometric or graphic shapes such as bars, pies, and lines, laid out on a real or implied grid, and accompanied by descriptive text and numbers.
Chart Element	Essential component or building block of a chart. The three different categories are: graphic shape elements, such as bars, pies, and lines; grid elements, such as axes, tic marks, and legend symbols; and text elements, such as headings, notes, and axis labels.
Chart File	File containing all the information, including text, axis scale values, and data values, necessary to re-create a chart.
Cluster	A group of bars positioned near one another physically and related by a common idea; used to compare items.
Color	Style characteristic ascribing hue or shade to various chart elements.
Comment	Text which may be used or positioned in any way on the chart.
Comment Block	Area determined by height of all comments and width of longest comment.
Composed Chart File	An intermediate chart description created by Graphwriter, using your data values, <u>after</u> you choose a plotting option from the Plot Menu. The Composed Chart File is designed for the output device that is current on the Plot Chart Menu. The Composed Chart Files can be stored and retrieved for Batch Processing.

Coordinate	Either of a pair of numbers specifying the location of a point on a two-dimensional graph, usually referred to as X-coordinate or Y-coordinate.
Compatibility	Capability of two or more formats within a format family to share data without its being re-entered from the keyboard.
CRT	(Cathode Ray Tube) Type of display screen, video screen, or monitor used to display prompts-responses, menus, and often graphics (if graphic capability available).
Current Value	Value originally provided by program, or subsequently by user, which is operative.
Cursor	Small, white highlighted pattern that indicates the current entry position on the CRT screen.
Custom Size	Non-standard plot, sized and located according to the user's specifications.
Custom Size Values	Four numbers (in millimeters) required to indicate the size and location of the custom plot.
Data	Any or all information, either numbers or text which can be processed by the programs.
Data Disk	Flexible disk used to store all the data necessary to recreate a chart or a data series in files. See "Format Disk".
Data Label	Name or number used to describe data.
Data Series	Data values or data labels that may be or have been stored in a file.
Data Value	Number which determines the size of bars and pie slices or the location of points on a line.
Decimal Places	Number of places used for decimals in a number. You may use 0 to 5 places or let the program decide.

Default	Standard specification, values, or condition of a program when no other specification or choice is given by the user.
Dependent Variable	Variable or factor that is determined or affected by some other factor or factors.
Device Name	Name or number you assign to such peripheral devices as your disk drives, which are recognized by the operating system.
DIF File	Particular format for data files used by such application packages as Visicalc and Lotus 1-2-3.
Disk	Storage medium, such as a floppy disk, used to store programs, files, and data files.
Display Device	Piece of equipment on which data may be displayed, e.g., screen or printer.
Element	Component of a chart, e.g. heading, axis or bar.
Enter Bar (Pie, Line) Data Menu	Sub-menu providing option for entering data values from keyboard or files, and for changing data values, including the number and style characteristics.
Enter/Change Chart Data Menu	Sub-menu of the Main Menu, which provides choices for entering and editing chart elements.
Enter/Change Text Menu, T010	Sub-menu of the Main Menu of the Text/Word Format which allows you to enter or change text in blocks.
Explode	Style characteristic of a pie slice referring to the position of the slice, i.e., the slice is moved out from the center of the circle.
Fill Pattern	Hatching or solid coloring used to fill in or texture bars and pie segments.
Font	Style characteristic for text elements. Can be bold, italic, standard, etc.
Format	Design and overall layout of a chart; also a procedure for preparing a disk to receive data.
Format Code	Refers to prefix or suffix such as \$ or % which may be used with numbers.
Format Disk	Flexible disk containing Graphwriter programs to produce charts. See "Data Disk."

Format Menu	The first menu to appear when you start up Graphwriter. It serves as a directory to the formats available, and the Setup Program.
Format Program	Graphwriter program generating a particular chart such as bar, pie, or line with associated text.
Frame	Line that borders all or part of the graph area.
Frame Type	Style characteristic of frame, such as no frame, X axis only, Y axis only, X and Y axes, or full box.
Function Key	Keyboard key, such as Esc or F1, that automatically performs a specific task.
Graph	A diagram plotted on an implied or actual grid using points, lines, bars, or pie slices to represent successive changes, comparative changes, or frequency of occurrence of a variable.
Graph Area	The implied or actual grid upon which a graph is plotted; it is located within the plot area of the chart.
Graphic Display Mode	Manner in which Graphwriter functions when displaying a screen preview. See Alpha Mode.
Graphic Shape	Chart element, such as bar or pie, representing a data value.
Graphwriter Format Menu	The first menu to appear when you start up Graphwriter. It serves as a directory to the formats available, and the Setup Program.
Grid	Horizontal and vertical lines intersecting each other to form the graph area for line and bar charts. Lines radiating from a point in degrees to form the graph area for pie charts.
Grid Element	Chart element associated with the graph area, e.g. axis, tic, frame.
Hardware	Equipment, such as computer, printer disk drive, and plotter, used to run programs (software) and create charts or other output.
Heading	Text element consisting of lines of text located at the top of the chart, usually used to identify and describe the chart.
Heading Block	Area determined by the height of all headings used and the width of the longest heading.

HELP	Function of the FI key providing additional information about a prompt.
Highlight	General term referring to various ways, such as using color and fill patterns, to emphasize the message of your chart. Specifically, it is a style characteristic for text blocks, referring to boxing or underlining them.
Indentation	Style characteristic for text blocks, referring to distance from left edge of paper to beginning of text block, measured in millimeters.
Independent Variable	Variable or factor that is not affected or determined by other factors.
Initialization	Software routine which sets a program to an original state.
Input	Broad term referring to data and information entered into a program.
Input Form	Two-sided form designed as an aide to organize data for entering into a program text.
Justification	The positioning of type or print within an area, i.e. left-flush, center, or right-flush. See "Position."
Key	Legend item consisting of a line or more of text and the accompanying symbol; also refers to button or lever on computer keyboard.
Label	Text or numbers specifying the axis scale or identifying a bar, pie slice, or data point on a line.
Label Interval	Distance between axis labels, which on a scaled axis are specified by a number.
Legend	Explanation of the bars, pie slices, points, or lines on a chart. It may consist of one or more keys, each of which is made up of text and a symbol. The legend is usually positioned outside the graph area of the chart.
Legend Key	Legend entry consisting of text and a symbol.
Legend Symbol	Fill pattern, line type, or marker type identifying a graphic shape, e.g. bar, pie, line, or data point.
Legend Text	Explanation of symbol in legend key.
Line	Connection of data points to form a graphic shape, i.e., line.

Line Gap	Style characteristic for text blocks, referring to amount of space between lines of text, defined as a percent of the character size used in the text block.
Line Type	Style characteristic of a line, such as solid or dashed.
Line Weight	Style characteristic of a line indicating its width, which is determined by use of a narrow tipped or a wide tipped pen.
Main Menu	First menu of each format program or of the Setup Program, listing sub-menus for that program.
Marker Type	Style characteristic such as asterisk, circle, or square to denote data points.
Medium	Material upon which a chart is plotted, i.e., plain paper, coated paper or transparency.
Menu	List of the various options or functions available within a format program. It is displayed on the screen and the user must press one of the numbered keys to enter a prompt sequence or to go to a secondary menu.
Note	Text element, consisting of lines of text used to provide additional explanation of the chart. It is located below the graph area but within the plot area.
Note Block	Area determined by the height of all notes used and the width of the longest note.
Null Value	Empty value entered by using the Del key.
Operating System	Control program, such as MS-DOS, that allows one to run other programs.
Orientation	Style characteristic of a chart indicating whether chart is plotted horizontally or vertically on a page.
Output	Broad term referring to the graphic display, chart, or printed data produced by a program from data entered or input.
Override	To change the default or initial values in a format program by specifying different values.

Palette	Set of pre-defined style characteristics for bars, pies, or lines, consisting of color and fill patterns, color and line types, or color and marker types.
Pen Set	Set of pens that might be used in a plot to draw thin and thick lines in various colors.
Pie	Circle representing the whole or 100% of a quantity; usually divided into slices.
Pie Slice	Represents a component of a pie as a percentage of the pie.
Pie Title	Text describing what a pie represents; usually found underneath the pie.
Placement	Style characteristic of graph areas or plot referring to location on page.
Plot Area	Area of the chart displaying the graph and the related text. Different plot areas may be specified, e.g., full page, top half, bottom half, left half, right half, custom size.
Plot Chart Menu	Sub-menu of the Main Menu in a format program, which provides choices for plotting, such as full plot, graphics only, etc.
Plotter	Piece of equipment which mechanically draws what has been entered in the computer.
Point	Location on a two-dimensional graph determined by an X coordinate and a Y coordinate.
Position	Style characteristic of a text block. Referring to its location on a page, e.g. left-flush. See "Justification."
Prefix	Style characteristic of labels such as \$ which may be used with numbers. It is specified with a format code. (See: Format Code.)
Print Data Menu	Sub-menu of the Main Menu, which provides choices for displaying chart data or style specifications either to the screen or a printer.
Prompt	Message generated by the format program and displayed on the CRT screen which requires a response from the user before the program can continue.

Scale	Numerical measurement; a series of spaces marked by lines or tic marks; numeric values are assigned to the minimum and maximum X axis and Y axis positions, the intervals, and the tic marks.
Scaled Axis	Axis using numbers to locate data values; e.g., 0 to 100; \$5 to \$5,000.
Segment	One of the parts or components of a segmented bar.
Segmented Bar	Bar made up of two or more segments which are positioned on top of or alongside of one another to represent a cumulative amount.
Segment Value	Number that determines the relative length of a segment.
Select Graphwriter Format Menu	Menu reached through the Graphwriter Format Menu which allows you to choose a format from a list of all available formats in Graphwriter Basic and Extension Sets.
Select Page Format menu	Sub-menu of the Enter/Change Text Menu of the Text/Word Format. It allows you to specify the type of page format for the Text/Word chart.
Select Starting Data Menu	Menu of Graphwriter program providing options for entering data, such as all new data, data from last format, or from a chart file.
Setup Program	Option allowing user to perform such tasks as changing default plot options and changing available palettes.
Setup Program Main Menu	First menu of Setup Program listing options such as changing default plot options or changing available palettes.
Slice	Component of a pie representing a percentage of the pie.
Slice Value	Number that determines the relative size of a slice in a pie.
Software	The programs and routines used by a computer and other hardware to generate charts or other output. (See: Hardware).
Specified Value	Value put in by the user for style characteristics or other data or chart elements.
Store Chart Menu	Sub-menu of the Main Menu, which allows the user to store data series or charts in files.

Style Characteristic	Property or attribute of a chart element. Fill pattern and color are style characteristics of graphic shape elements such as bars and pies. Character size, font, and color are style characteristics of text elements, such as heading and notes.
Suffix	Style characteristic of labels such as % which may be used with numbers. It is specified with a format code.
SYLK File	A file containing data and labels that Graphwriter can access to create charts.
Text Block	Refers to an area determined by one or more lines of text; specifically, this area is determined by the height of all text lines and the width of the longest text line.
Text Element	Chart element consisting of words such as headings or notes, or numbers such as bar label values.
Tic Interval	Numeric measurement of the space between tic marks.
Tic Mark	Scale marking along the axis placed between the minimum and maximum numeric values.
Toggle	To move between alpha mode and graphic display mode.
Transparency	Clear plastic medium used for charts to be placed in overhead projectors. Also called foils, overheads, acetates, etc.
Unscaled Axis	Axis which is labeled in equidistant intervals with axis labels such as January, February, etc. rather than a series of sequential numbers.
Unspecified	Indicates that a chart element or style characteristic has not been entered into a format program. Using the Del key can produce this condition if the user has no value to enter when Graphwriter prompts for one.
Value	Assigned or calculated numeric quantity; usually used to determine size of bars, location of points on lines, and size of pie slices.
Variable	Items, factors, or events that can take on various numeric values.
Visibility	Refers to whether or not a chart element appears on the chart.
White Space	Amount of space between the axis end and the nearest bar. White space can be adjusted to cluster the bars toward the center of the axis or to spread them out.

X Axis	Horizontal axis specifying equidistant intervals for the graph area.
X Axis Title	A single line of text located beneath the X axis used to describe or identify the values displayed on the X axis.
X Coordinate	Value on the X axis which determines the position of a point or size of a bar relative to the X (horizontal) axis.
X Max	Maximum numeric value assigned to a scaled X axis; e.g., 100 for a scaled axis from 0 to 100.
X Min	Minimum numeric value assigned to a scaled X axis; e.g., zero for a scaled axis from 0 to 100.
X Tic Interval	Number assigned to specify the distance between the tic marks within the label interval on the X axis.
Y Axis	Vertical axis specifying equidistant intervals for the graph area.
Y Axis Title	A single line of text used to describe or identify the values displayed on the Y axis.
Y Coordinate	Value on the Y axis which determines position of a point or size of a bar relative to the Y (vertical) axis.
Y Label Interval	Number assigned to specify the distance between labels on the Y axis.
Y Max	Maximum numeric value assigned to a scaled Y axis; e.g., 100 is the maximum value for an axis scaled from 0 to 100.
Y Min	Minimum numeric value assigned to a scaled Y axis; e.g., 0 is the minimum value for an axis scaled from 0 to 100.
Y Tic Interval	Number assigned to specify the distance between the tic marks within the label interval on the Y axis.

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