

Create professional-looking graphs and charts as easily as entering the data and selecting the designs, colors, and graph types of your choice. Throw away your pens, rulers, and drafting tools. Now you can create five types of presentation-quality graphic representations—the bar, column, pie, line, and point graphs—by letting PhantomGraph be your drafter. You can even combine your charts to create “slide show,” quality special effects.

The beginning drafter will welcome the simplicity of PhantomGraph. The advanced drafter will appreciate the varied capabilities offered by this program.

Spreadsheet enthusiasts will be glad to know that Dynacalc and Syk (Symbolic Link) file programs can be converted to PhantomGraph files.

Required Equipment:

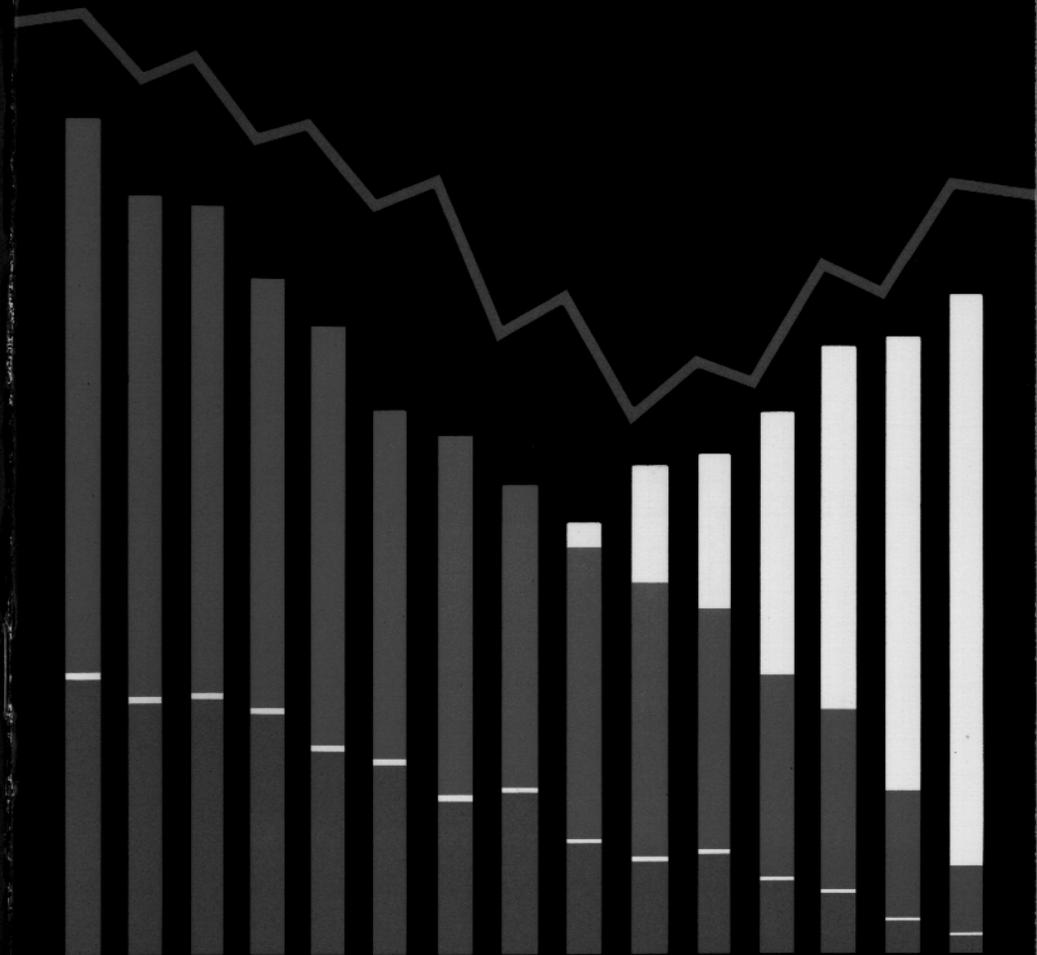
- Tandy Color Computer 3 (minimum 512K memory)
- CM-8 Color Monitor (recommended) or standard color television set
- Disk drive and cable
- Color Mouse (recommended) or Joystick

Optional Equipment:

- Serial Printer

Phantomgraph

For the Color Computer 3



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PHANTOMGRAPH

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OS-9 Level Two Operating System
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Introduction

PhantomGraph is a computer program that lets you easily convert numeric data into graphical representations. Because PhantomGraph handles the chores of calculating and scaling, drawing a graph is as easy as typing in data and selecting the type of presentation you want.

Using PhantomGraph, you can create:

- *Line graphs*, which plot elements using connecting lines.
- *Bar charts*, which use a horizontal bar to represent each element.
- *Pie charts*, which depict a circular graph divided into sections of data.
- *Scatter charts*, which portray the degree and type of relationship between sets of data.

You can display some of the graph types in more than one format. For instance, you can create bar graphs that are standard, grouped, columnar, and so on.

You can choose to label your chart's axes, elements, or both. You can also title and subtitle your creations.

Why Graph Data?

Graphs are pictures of data. One glance at a photograph can often provide a better understanding of an object than pages of written descriptions. In the same manner, graphs provide a way to instantly visualize data. A month-by-month graph of revenue versus expenses can tell you in a moment whether a company is riding the high road to success or sliding down the low road to failure. Then, to see what the future might hold, you could expand the graph to depict future projections.

Using data from the past, you can project what your favorite football team might do in the future. Compare its chart with the charts of other teams, based on the same categories of data. You might plot your team all the way to the Super Bowl.

Why Use a Computer?

Computer graphing is easy and quite flexible. You do not need pens, ink, rulers, or drafting tools. The computer is your drafter. If you do not like the way the finished product looks, you can change the data, the type of graph, the labels, or the titles in a moment, and you do not need an eraser.

PhantomGraph features the ability to read two types of spreadsheet files: Dynacalc and Sylk. These files enable you to create charts and graphs from spreadsheet data. PhantomGraph also features the ability to compute with greater than 20-digit accuracy.

Required Equipment

PhantomGraph requires a Color Computer 3 with 512K of RAM, a minimum of one diskette drive, and a Color Mouse or joystick. To print your charts and graphs, you need a serial printer and a serial printer cable. You can use most Tandy dot-matrix printers with PhantomGraph, including the DMP 106, DMP 130A, and the DMP 430.

Copying Your Diskette

Before you start using PhantomGraph, connect a mouse or joystick to the right joystick connector; then make a *backup* (copy) of the PhantomGraph diskette. To make a backup, perform the following steps:

1. Insert a blank diskette into Drive 0.
2. Type:

DSKINI 0 **(ENTER)**

-
3. Remove the diskette from Drive 0. Place a diskette label marked "PhantomGraph Backup" on the diskette.
 4. Insert the original PhantomGraph diskette into Drive 0.
 5. Type:
BACKUP 0 **(ENTER)**
 6. The BACKUP command gives you instructions to swap diskettes. Follow the instructions that appear on the screen.
 7. Store the original PhantomGraph diskette in a cool, dry place.

Installing PhantomGraph

Depending on the version of Disk Extended Color BASIC your disk controller contains, you can install PhantomGraph by using a DOS or OS-9 operating system or with a BASIC program. To find out which version your system is using, perform the following steps:

1. Be sure your equipment is connected properly.
2. Turn on the computer. The Color Computer 3 displays:

```
DISK EXTENDED COLOR BASIC x.y  
COPR. 1982, 1986 BY TANDY  
UNDER LICENSE FROM MICROSOFT  
AND MICROWARE SYSTEMS CORP.
```

OK

-
3. Look at the numbers on the right side of the first line to determine the version of Disk Extended Color BASIC your disk controller contains. If γ is one or greater, use the DOS command. If γ is less than one, install PhantomGraph with BASIC. To install with OS-9 simply requires *booting* the OS-9 operating system, and then loading PhantomGraph.

Follow the appropriate installation instructions below for the version of Disk Extended Color BASIC your disk controller contains.

Installing with the DOS command

To use the DOS command, insert the PhantomGraph diskette in Drive 0, and type:

```
DOS (ENTER)
```

Installing with a BASIC Program

You can start PhantomGraph with a BASIC program by inserting a blank formatted diskette into Drive 0. Enter the following program from Disk Extended Color BASIC:

```
10 REM *****
20 REM * BOOT OS-9 FROM BASIC
30 REM *****
40 FOR I=0 TO 70
50 READ A$
60 POKE &H5000+I, VAL("&H"+A$)
70 NEXT I
80 CLS:PRINT "INSERT PHANTOMGRAPH INTO"
90 PRINT "DRIVE 0 AND PRESS THE SPACE
BAR."
100 A$=INKEY$:IF A$="" THEN 100
110 EXEC &H5000
120 DATA 86,22,8E,26,00,8D,0D
130 DATA FC,26,00,10,83,4F,53
140 DATA 26,03,7E,26,02,39,34
```

```
150 DATA 20,10,BE,C0,06,A7,22
160 DATA 86,02,A7,A4,6F,21,6F
170 DATA 23,6C,23,AF,24,10,BE
180 DATA C0,06,A6,23,81,13,27
190 DATA 12,AD,9F,C0,04,4D,27
200 DATA 06,6C,23,6C,24,20,E9
210 DATA 7F,FF,40,35,A0,4F,20
220 DATA F8
```

Save the program on the formatted diskette in Drive 0 by typing:

```
SAVE "*" (ENTER)
```

Label the diskette so that you can identify it easily. Now, whenever you want to start PhantomGraph from BASIC, insert this startup diskette into Drive 0, and type:

```
RUN "*" (ENTER)
```

When the INSERT PHANTOMGRAPH prompt appears, insert the PhantomGraph diskette into Drive 0, press the space bar, and answer the date and time prompts. When you see the OS-9: prompt, type the following command:

```
pg (ENTER)
```

Installing with OS-9 Operating System

If you have the OS-9 Level Two operating system, first boot the system with the OS-9 diskette. Then, remove the OS-9 diskette and insert PhantomGraph. At the OS-9: prompt type:

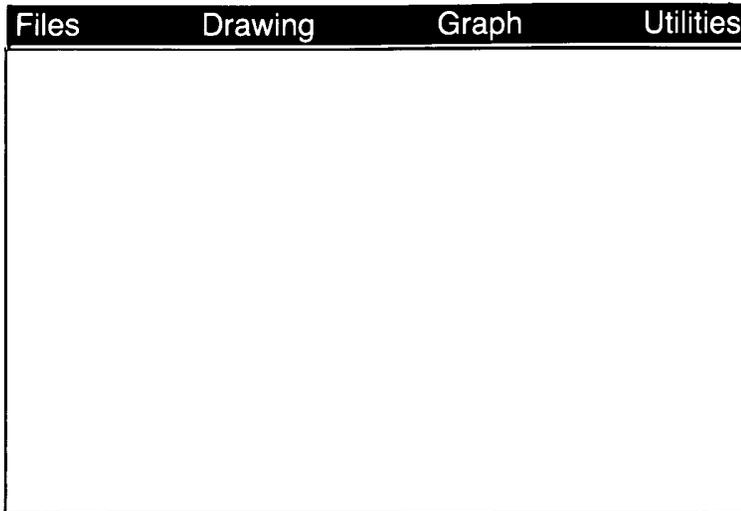
```
chx /d0/cmds (ENTER)
```

When the prompt reappears, type:

```
pg (ENTER)
```

The Main Menu

The first thing that you see when you run PhantomGraph is the title screen. Press the spacebar to access the Main Menu screen. PhantomGraph lists the Main Menu options on a line at the top of the screen. The screen looks like this:



Each Main Menu option contains several additional choices. When you select a Main Menu option, the choices for that option appear in a dialog box. The dialog boxes work in the same manner as the Main Menu options. Some choices in these boxes offer even more selections. For samples and definitions of the options, refer to the "Graphic Reference" section in the back of the manual.

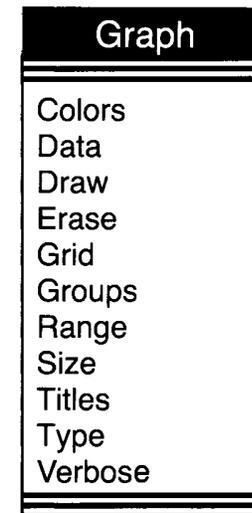
The blank area below the list of options is used to display the dialog boxes and draw the graphs you create. Once PhantomGraph draws a graph on the screen, you can either select an option from the Main Menu or display a dialog box while still displaying the graph. This feature gives you the opportunity to see each modification you make to your drawing as you enter new information or change existing data.

Once PhantomGraph is loaded into your system, an arrow appears on the screen. Use your pointing device to move the arrow to different areas on the screen. Select an option by placing the arrow over the selection desired, and then pressing the button on your pointing device.

Creating Your First Graph

PhantomGraph has many powerful features, but you do not have to know how to use all of them to get started. To create your first graph, perform the following steps:

1. Select the Graph Main Menu option.
Note: Each time you select an option, the screen changes to show you any additional options that are available. For example, when you select Graph from the Main Menu, the screen displays:



2. Select **Data**. A window opens in which you can type to create a graph:

```

===== <===== Group 1 ===== >=====
Value 1 ..... 0
Value 2 ..... 0
Label ..... 0
Color ..... 0
Pattern ..... 0
Attribute ..... 0
===== ^===== Element 1 ===== ^=====

```

To enter the data, move the arrow into the blank areas between the data names (Value 1, Value 2, Label, and so on) and the zeroes. When you do, PhantomGraph highlights that area. Press the button to erase the zero. Type a new value, and press **ENTER**. For your first graph, make Value 1 equal to 3. Make Color equal to 4.

```

===== <===== Group 1 ===== >=====
Value 1 ..... 3
Value 2 ..... 0
Label ..... 0
Color ..... 4
Pattern ..... 0
Attribute ..... 0
===== ^===== Element 1 ===== ^=====

```

3. Notice the arrows near the corners of the data dialog box. Use the up and down arrows to select the Element number of the set of data values in the dialog box. With the up and down arrows, you can go forward or backward through as many as 20 sets of data values. For now, select the down arrow to go to the second set of data values. Make Value 1 equal to 5, and make Color equal to 6.

4. To close the dialog box, move the arrow outside the box, and press the button.
5. Select the Graph option.
6. Now, select Type.
7. To tell PhantomGraph that you want a pie chart, select Pie.
8. Select Graph again.
9. Select Draw.

Congratulations! You have created your first graph with PhantomGraph. Repeat the steps, except this time select a different kind of graph. For example, you might try one of the three types of bar charts instead of a pie chart. Try entering different values and colors in the data. You can choose from several colors, numbered 0-7.

Advanced Graphing

This section assumes you are comfortable with how to enter data and switch to and from menus easily. If you are not comfortable with these tasks, review "Creating Your First Graph."

Here's your data to enter:

Camp Costs				
April				
Element #	Value 1	Label	Color	Pattern
1	46.42	BACKPACK	3	6
2	75.81	FOOD	4	5
3	163.09	TENT	5	4
4	98.08	STOVE	6	3
5	22.10	LAMP	2	7

You will also enter the following data for each element: **Group number=1, Value 2=0, and Attribute=0.**

1. From the Main Menu select the Graph option.
2. Select Type.

PhantomGraph can draw five types of graphs: point, line, bar, column, and pie.

3. For this exercise, select the Column option.

PhantomGraph can create column graphics for each element entered on the Data screen. Select the standard option.

4. Select Data to begin entering the data.

When you select Data, the following screen appears. It lets you enter the *parameters* (fixed limits) for data displayed in your graph.

Group 1	
Value 1	0
Value 2	0
Label	0
Color	0
Pattern	0
Attribute	0
Element 1	

5. PhantomGraph lets you combine data into one block of information for your graph. You can create and store this data in any one of the four major blocks called Groups.

The arrows at the top of the screen select the group number. Use the left arrow to decrease the group number. Use the right arrow to increase the number.

Select Group 1.

6. Each group allows you to enter information in 20 categories labeled *elements*. An element defines specific parameters for each entry of information displayed.

The arrows at the bottom of the screen select the element number. Use the up arrow to decrease the element number. Use the down arrow to increase the element number.

Select Element 1.

7. Value identifies the element in numeric terms. You can enter up to nine numeric characters for each value.

Enter 46.42 for Value 1. Use the default (automatic value assigned by the system) for Value 2.

8. For each value, you can enter an identifying name or label in the Label field. You can enter up to nine alphabetic characters on the screen for each label. Only the first five characters will be plotted on the graph.

Enter **Backpack**.

9. PhantomGraph has the capability of displaying eight different element colors.

Enter 4.

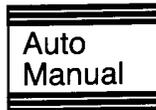
10. Eight different patterns are available to distinguish elements.

Enter 6 to specify the pattern form of your first element.

11. The attribute option is used only for the pie graph. Selecting 0 displays the element as an intact slice of the pie. Selecting 1 displays the slice as pulled out from the remainder of the pie.

Use the default value 0 for Attribute.

12. Now that you have entered data for Element 1, repeat Steps 4 through 11 for each of the other five elements, using the data listed in the chart at the beginning of this sample session.
13. Reselect the Graph option from the Main Menu, and then select Range. The following window opens. Use this window to indicate whether you or PhantomGraph will specify the limits of the graph. Select Manual if you want to select the range yourself. Select Auto (automatic) if you want PhantomGraph to set the range.



14. Select Manual to enter the range of the graph yourself. A window opens to display:

Manual Page		
Value 1	: Min.	0
	: Max.	175
	: Res.	10
Value 2	: Min.	0
	: Max.	1
	: Res.	10

15. Min is the lowest number you can use on the graph to identify Value 1. You can set the minimum to either 0 (if all the data is positive) or lower than the lowest negative value in your data. The value of the MIN number must be lower than the current MAX number.

The value defaults to 0. Leave 0 as your minimum number.

16. Max is the largest number you can use on the graph for Value 1. You can set a numeric maximum to either 0 (if all the data is negative) or a number higher than the highest positive value in your data. The MAX number must be higher than the current MIN number.

The most expensive camping item purchased during April was the tent for \$163.09. Therefore, setting the maximum at \$175 provides ample range to incorporate all the purchases on the graph.

Enter 175.

17. Res (Resolution) determines the axes scale divisions on the graph. The divisions usually represent variable range intervals.

The value defaults to 10. Leave the number 10.

18. Value 2 works just like Value 1. This field allows you to enter a second factor for each element when plotting X and Y data when you use the scatter graph or the low value on a high low bar or column graph.

In this exercise do not use Value 2. Leave the value default displayed by PhantomGraph.

19. Select Titles to enter the name of the graph's main title, subtitle, x-axis title, and y-axis title. You can use up to 10 characters to name each title.

Title identifies the name of the graph. This name is displayed at the top of the screen outside of the axis border.

Enter Camp Costs.

20. The Subtitle is a secondary name or heading for your graph. This name is displayed under the title.

Enter April.

-
21. The `X Axis` title labels the horizontal axis. This title is displayed at the bottom of the screen.

Enter `Items`.

22. The `Y Axis` title labels the vertical axis. This title is displayed at the left side of the screen.

Enter `Dollars`.

23. Select `Verbose`.

The `Verbose` option lets you control which titles and labels are displayed on the graph. Use `on` to display a title. Use `off` and the title will not appear.

24. Adjust each switch to display:

Title	On
Sub-Title	On
X Axis Title	On
Y Axis Title	On
Group 1 Labels	On
Group 2 Labels	Off
Group 3 Labels	Off
Group 4 Labels	Off
X Axis Range	On
Y Axis Range	On
Pre-Clear	On

25. Select the `Graph` option, and then select `Draw`. PhantomGraph draws the graph you just created.
26. Select `Graph`. This time, choose `Erase` to remove your graph from the screen.

Now that you have created data for the `Camp Costs` in April graph, you need to save this information on the `PhantomGraph` diskette for later use. To save the file on the diskette, perform the following steps:

27. Access the `Files` option, and then select `Close`. A window opens, prompting you to select `Drawing`, `Graph`, or `Data`.

Select `Graph`.

28. Now, another window opens, prompting you to enter the name of the file.

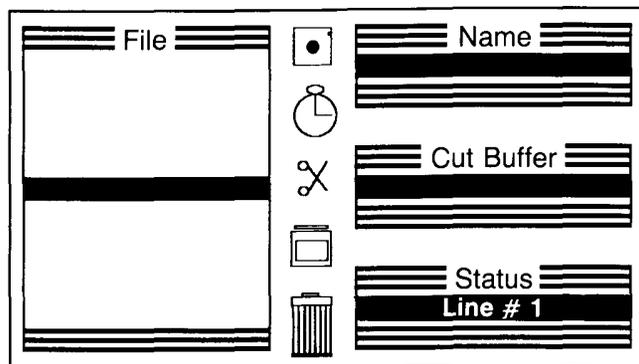
Enter `Camp Costs`, and `PhantomGraph` saves this file.

Repeat the "Creating a Graph" procedure found at the beginning of the manual. Enter the same data, but this time use the more detailed procedures outlined in "Advanced Graphing." After you save the file, label it `File 1`. Change the information slightly to create another graph, and then label it `File 2`.

You should now have three graph files on your `PhantomGraph` diskette-`File 1`, `File 2`, and `Camp Costs`.

29. You can combine the graph files previously entered on the PhantomGraph diskette to form a Drawing file. The Drawing file is a "slide show" of graph files you create using the Drawing option.

Select the Drawing option, and then select Edit. The following screen appears:



30. Select the  (diskette) icon. A window opens to display the name of the three graph files you created.
31. Select File 1. PhantomGraph returns to the Edit function with File 1 highlighted in the file window. Repeat this procedure until File 2 and Camp Costs are also in the file window. Your file window now reads:

```
Camp Costs
File 2
File 1
```

32. You anticipate that you will need an intermission period between File 1 and File 2. Therefore, you want to insert a pause between the two files.

Use the down arrow in the top right corner of the file window to move the filenames toward the top of the screen. Stop only when File 1 is highlighted.

33. Next, select the  (Pause) icon to insert a pause between files of your slide show. You can insert pauses wherever you like throughout the slide show file you are creating. Your file window reads:

```
Camp Costs
File 2
Pause
File 1
```

34. Now you realize that the Camp Costs file is situated in the wrong order for your presentation. You want to place it after File 2.

The cut buffer transfers a filename to another position in the file window. Use the up and down arrows to highlight Camp Cost. Select the cut buffer , and Camp Costs is moved to the cut buffer. Use the up and down arrows again to place Camp Costs after File 2.

35. Now that the Camp Costs file is in the right position, access the  (paste) function to paste the file back into the list. The file reads:

```
File 2
Camp Costs
Pause
File 1
```

36. Use the  (trash) function to delete a file or a pause displayed in the file window.

Use the up and down arrows to highlight pause, and then select trash. The file now reads:

```
File 2
Camp Costs
File 1
```

37. Access the File Menu and repeat the procedure for saving information on the PhantomGraph diskette. When the system prompts you to select Drawing, Graph, or Data, choose Drawing.
38. Another window opens, prompting you to enter the name of the file. Enter **Total Bill**.
39. Select the Drawing option. Select Draw. PhantomGraph draws your slide show, Total Bill. Remember, if you inserted a Pause anywhere in your presentation, PhantomGraph stops at each pause and waits until you press the button on the pointing device before continuing.
40. To print your slide show, access Utilities and select Print. A window opens with the prompts:

```
DMPTandy
DMPIBM
```

41. Use DMPTandy if your printer is set to Tandy® mode. Use DMPIBM if your printer is set to IBM® mode. **Note:** The IBM mode is available only on Tandy printers set to the parallel mode.

Your Color Computer 3's default baud rate is 600. Be sure your printer is set to the 600 baud rate and your DIP switches are set to serial mode for Tandy or parallel mode for IBM. Now, answer the prompt by selecting the print mode. PhantomGraph prints your slide show.

Utility

Dynacalc

Dyna converts Dynacalc spreadsheet files into PhantomGraph files. Once you save a Dynacalc file using Dynacalc's "S#S" option, the data is placed in a data file you specify. After the PhantomGraph dyna conversion procedure is complete, the Data file is loaded into PhantomGraph by performing the "Files, Open, Data" sequence. In order to perform the conversion process, you must have the Dyna utility in your CMDS (commands) directory on your PhantomGraph diskette.

To execute the conversion procedure, complete the following steps:

1. Access the Utilities option from the Main Menu, and then select Convert. A window opens to display the utility programs in the diskette directory.
2. Select dyna. The screen displays:

Input File Name	
Data File Name	
Group Number	1
Value 1 Column	0
Value 2 Column	0
Label Column	0
Color Column	0
Pattern Column	0
Attribute Column	0

Enter:

Input File Name-The name of the Dynacalc "S#S" file to be converted. You can use up to ten characters.

Data File Name-The name of the PhantomGraph data file to create. You can use up to ten characters.

Group Number-The group number for the data file. Group 1 is the default.

Column data allows you to convert Value 1, Value 2, Label, Color, Pattern, and/or Attribute. If you choose to convert this data, then enter a value to identify where the data is located in your dyna files.

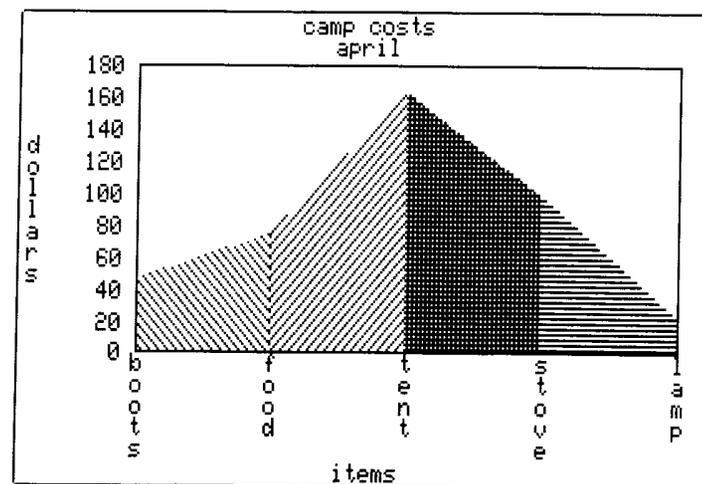
A value of 1 through 255 specifies the column or row number from your dyna files. A value of 0 means not to convert the value.

3. Position the arrow on the data window (not on a data field), and press the button on your pointing device. The system starts the conversion process. When the data window appears, the file is in the PhantomGraph format.
4. Now, position the arrow off the data window and click the button to return to PhantomGraph.
5. Select the Graph option, and then select Type. Specify your graph type.
6. Select your Grid type.
7. Next, select and enter the data for the Titles and Verbose options.
8. To load the converted data file, access the Open option in the Files function. Select Data and the system displays the PhantomGraph filename you specified in Step 2. Next, select the filename and PhantomGraph loads the data file.
9. Finally, use the Draw option to draw your graph.

Graphic Reference

**area
line graph**

A type of graph that is similar to the standard line graph in that it is used to plot lines at an equal distance across the X-axis. The lines used to identify the elements, however, are filled in with the color and pattern specified on the Data screen. See standard line graph.



**attribute
option**

See pie graph.

auto range

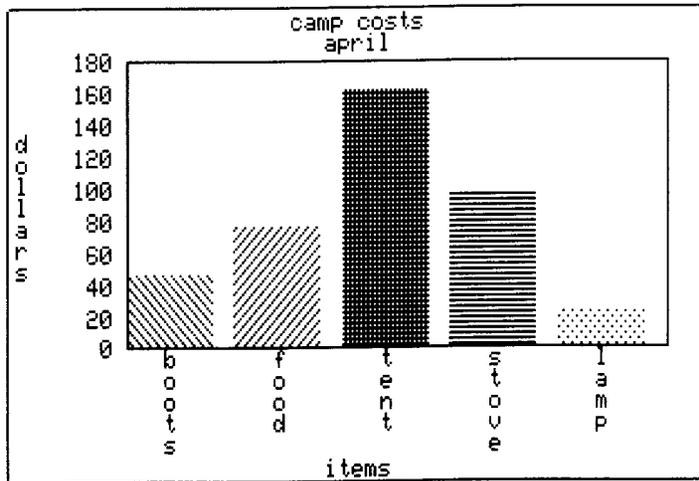
PhantomGraph automatically sets the minimum and maximum scale limits for your graph to include all the group values.

axes

The plural of "axis," the intersecting lines that define a coordinate. The axes usually intersect at the origin 0, 0. The axes are divided into units marked off by short lines at regular intervals. These short lines are called *tick marks*.

Normally the primary axis or scale represents the independent variable, and the secondary axis represents the dependent variable. Usually, time is the independent variable, and a related amount is the dependent variable. The divisions on the X-axis are determined by the time units in the original data and can be represented by days, months, or other specified units.

The amount scale is always represented on the secondary or Y-axis. The intervals specified for the vertical scale should be easy to read and should cover the entire range of data values.



bar graph

A type of graph with bars drawn across the Y-axis. The length of the bar is determined by the Value 1 or amount of each element category. The size and proportions of the graph and the number of bars influence the width. See standard bar graph.

Usually bars are arranged in order of size, with the smallest element plotted first. Sometimes, however, an alphabetic, geometric, or other systematic ordering of the data is more appropriate. PhantomGraph has the standard, stacked, and high/low bar graphs.

Chd.
(Change)

A files function option used to change disk directories. The present directory path is displayed, and you have the option to change it. PhantomGraph uses the selected directory path as the data directory.

Close

A files function option that lets you close a previously opened drawing, graph, or data file. When you select a file type, Close displays the name of the file currently opened, and then asks whether you want to change the filename. After you select the filename, Close writes the file on the diskette.

Colors

The foreground and background screen colors, as well as the element pattern colors, change according to the data you enter. Valid colors when using a Type 7, four color high resolution window are:

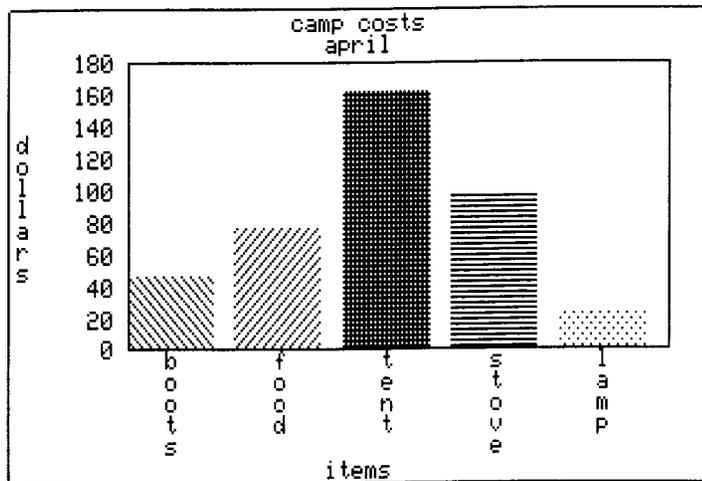
- | | |
|----------|-----------|
| 0 = Gray | 2 = Black |
| 1 = Blue | 3 = Green |

Valid colors when using a Type 8, 16 color window high resolution are:

- | | |
|----------------|-----------------|
| 0 = Gray | 4 = Orange |
| 1 = Blue | 5 = Yellow |
| 2 = Black | 6 = Pink |
| 3 = Dark Green | 7 = Light Green |

column
graph

A type of graph that is identical to a Bar graph except that columns are plotted across the X-axis (vertically). The three types of column graphs are standard, stacked, and high/low. See Bar Graph.



Convert

An utility option that changes a Dynacalc data file to a PhantomGraph data file. Convert can read and change Dyna (Dynacalc) data files to PhantomGraph data files.

Data

An option used to enter and/or change information that refers to a graph element.

default

The value PhantomGraph automatically assigns to a parameter when you do not specify any data.

Draw

The Graph option that draws the graph(s) on the screen.

The Drawing option that allows you to create graph presentations. For instance, you can tell PhantomGraph to draw one or more graphs on the same screen. Or, you can tell it to draw a chart, pause, clear the screen, draw another chart, and so on.

You can halt the Drawing process at any time by pressing the spacebar. The process stops after completing the current graph.

Edit

A Drawing option that lets you edit the contents of a Drawing file. Edit provides several functions. They are:

 Displays a list of the graph filenames in the current data directory. You select a filename for the list to insert at the current cursor position.

 Inserts a pause into the drawing list. When the Draw option reaches this point, it stops and waits for you to press the pointing device button.

 Transfers the highlighted graph filename to the cut buffer. You can then paste the cut filename back into the drawing list.

 Transfers the graph filename that is in the cut buffer into the drawing list at the highlighted file position.

 Removes the highlighted graph filename and does not save the filename for later insertion.

element An item of data appearing in a set of information on your graph. The element consists of specific data details that distinguish it from the other graph elements.

Files A Main Menu function used to open and close graph data files, change directories, and exit PhantomGraph.

Grid The major tick marks that extend completely across the X-axis and/or Y-axis. The PhantomGraph Grid option can also create a box outlining the area around the graph. Four options are available to create grids for your graph.

group The combining of data into one block of information for your graph. Each group can have up to 20 elements. *See* element.

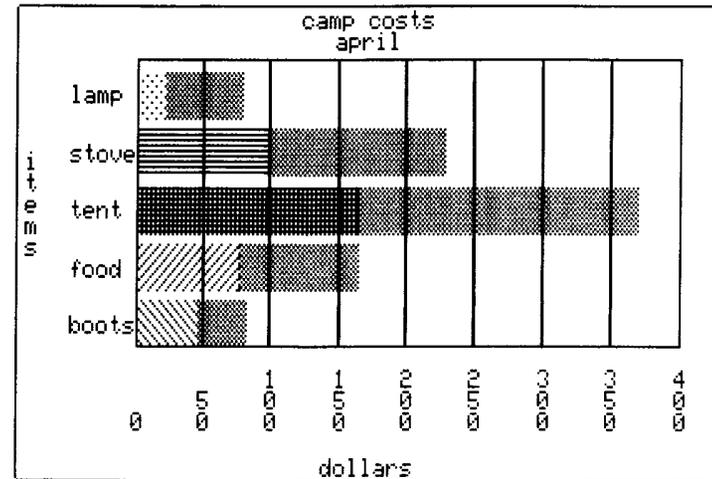
high/low bar graph A type of graph that is similar to the standard bar graph except that the origin of the bar is plotted at Value 2 and the top of the bar is plotted at Value 1. *See* standard bar graph.

icon A pictorial representation of a function within the PhantomGraph system.

label An identifying name for your value(s).

line graph A type of line graph that plots elements using connecting, colored lines to identify each value. The element lines are joined together in one continuous line. The color of the line is based upon the color specified on the Data screen. PhantomGraph creates standard, scatter, and area line graphs.

line grid A line used to outline the area around the graph. The lines are extended across the X-axis and/or Y-axis.



manual range A drawing option that allows you to set the minimum and maximum scale limits of your graphs.

Object A function that creates a file to merge using the PhantomGraph window features. The merge must be in the same type of window, and a shell cannot be invoked.

The Object function can be used to display a graph created with PhantomGraph on another system that does not have PhantomGraph, provided the user has the OS-9 Level Two operating system.

The command for merging an object file to a specific window is:

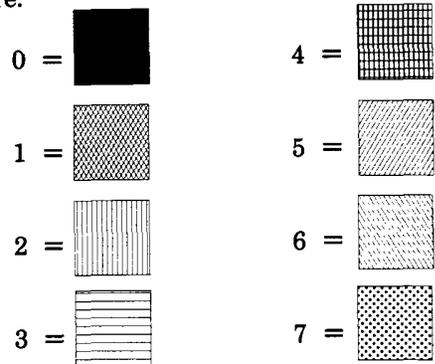
merge filename.obj >/wx

Open

A file option that lets you select a drawing, graph, or data file. Open prompts you for the file type. When you select a file type, a list of files in the current directory is displayed. Then, you select the file that you want to use.

pattern

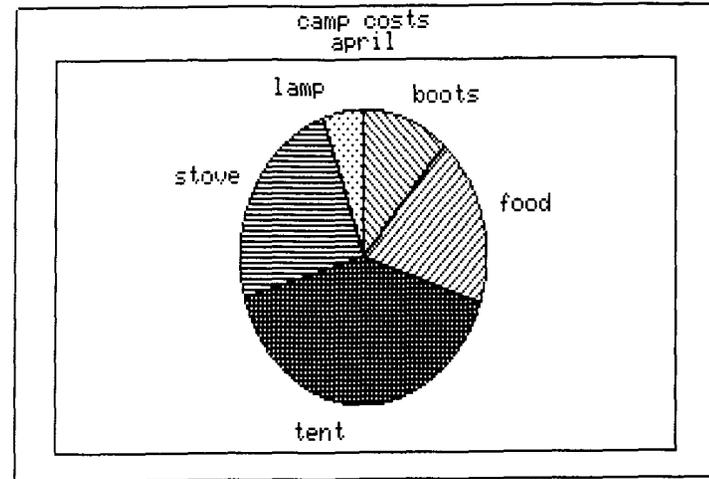
A design used to distinguish graph elements. The eight patterns drawn by PhantomGraph are:



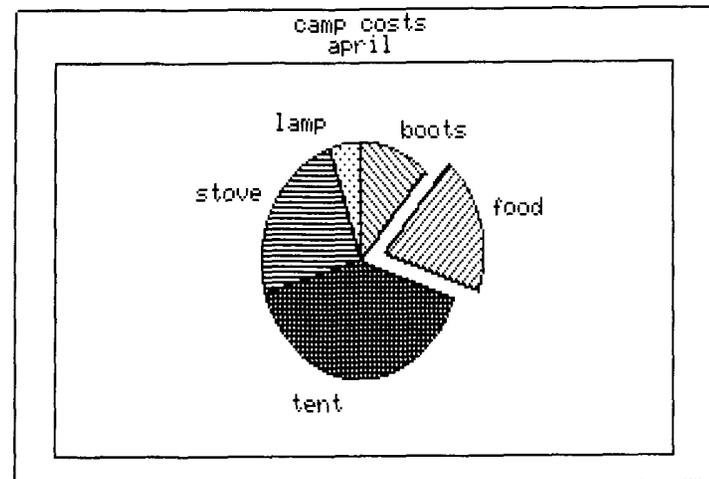
pie graph

A circular graph that is divided into sections. The first section, or slice, originates at the zero degree mark (12 o'clock), and each subsequent slice begins where the previous slice ended. The pattern and color of each pie slice is determined by the data entered on the Data screen.

When the Attribute option 0 is entered on the Data screen, the slice appears as an intact slice of the pie.



When Attribute is set to 1, the pie slice appears "pulled out" from the remainder of the pie.



point graph

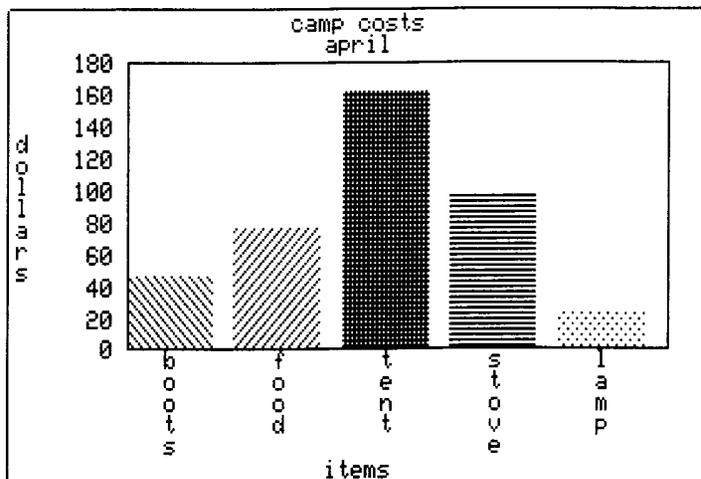
A type of graph that depicts each element as a (+) on the coordinate surface. Two types of point graphs can be created with PhantomGraph: standard and scatter.

point grid A box outlining the area around the graph is drawn. Points are placed at the intersection of the X- and Y-axes.

Quit The command used to exit PhantomGraph by returning to the OS-9 shell.

range The minimum and maximum scale limits of the graph.

Res (resolution) The axes scale divisions on the graph. The divisions usually represent the variable range intervals. See tick marks.

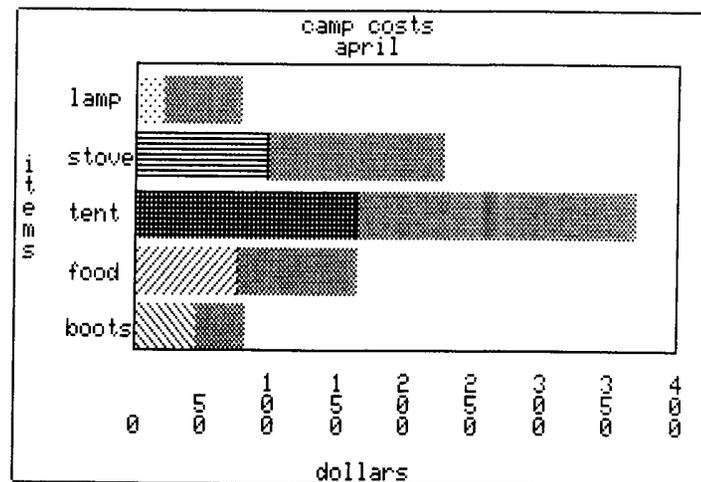


scatter line graph The type of graph that plots lines across the Y-axis. The number entered for Value 1 on the Range/Manual screen defines how the lines are plotted on the X-axis. The number entered for Value 2 on the Range/Manual screen defines how the lines are plotted on the Y-axis.

Scatter point graph The type of graph that plots elements as (+) across the Y-axis. The number entered for Value 1 on the Range/Manual screen defines how the elements are plotted on the X-axis. The number entered for Value 2 on the Range/Manual screen defines how the elements are plotted on the Y-axis. Grid lines are drawn across the X- and Y-axis.

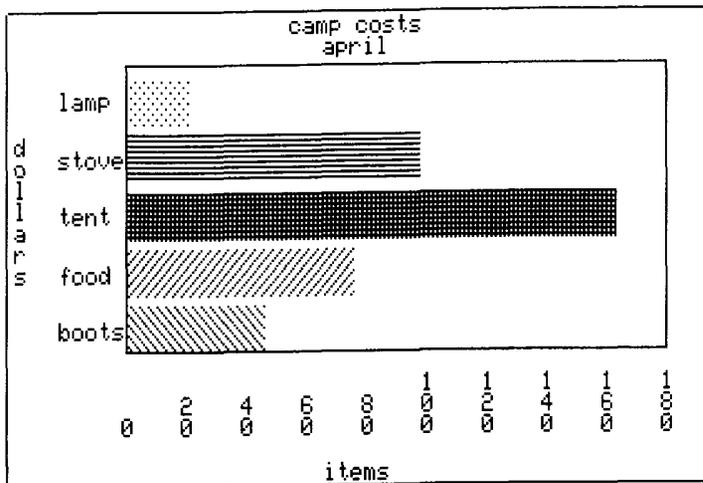
Size The placement option for your graph that lets you determine the size and location of the graph as it will appear on the screen and print in proportion to your paper size.

stacked bar graph A variation of the standard bar graph in respect to origin of the bar, X value of the bar, and tick marks. The first stack of bars represents the values of elements plotted for Group 1, the second stack represents Group 2, and so on.



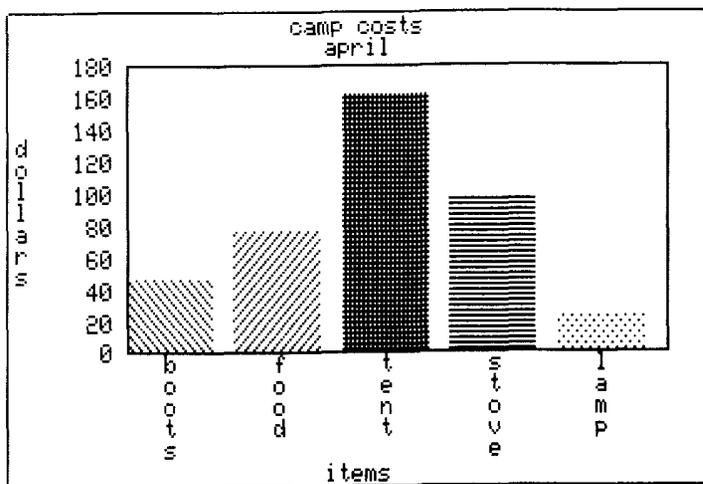
standard
bar graph

The type of graph that plots bars at an equal distance across the Y-axis. The origin of the bar is zero, and Value 1 is used as the X value of the bar. Tick marks are drawn across the X-axis to compare linear values.



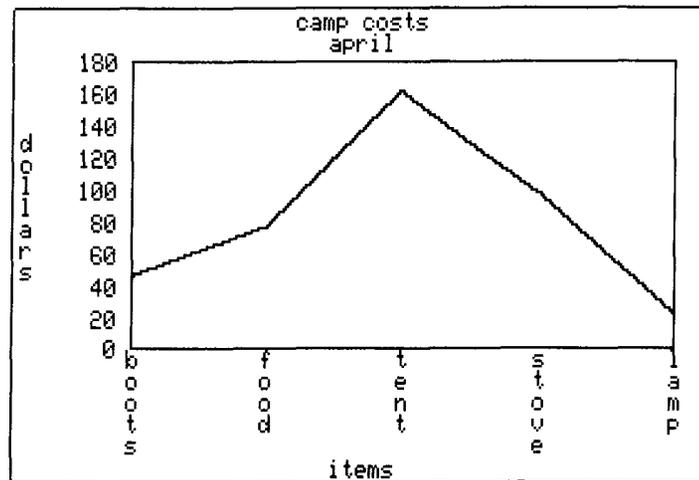
standard
grid

A box outlining the area around the graph.



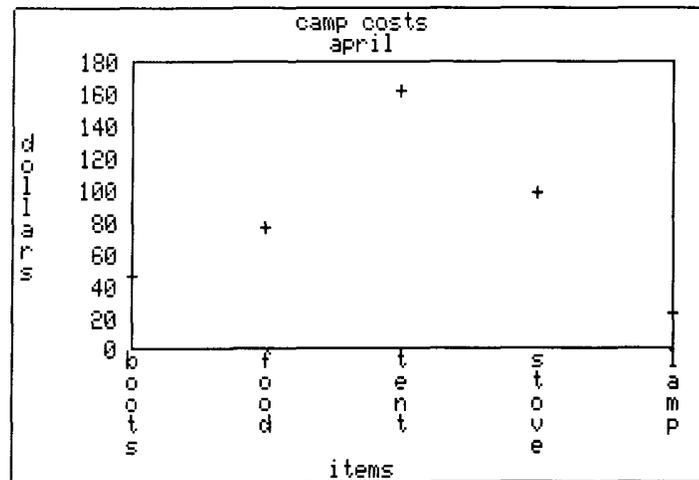
standard
line graph

The type of graph that plots lines at an equal distance between elements across the X-axis.



standard
point graph

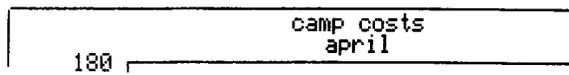
The type of graph that plots elements as (+) at equal distances across the X-axis. The number entered for Value 1 on the Range/Manual screen defines how the elements are plotted on the X-axis.



subtitle The secondary, usually explanatory name or phrase used to identify the graph. The subtitle is placed directly beneath the title at the top, outside of the graph frame.

tick marks The division or grid marks along the axis used to identify the range intervals.

titles The identifying name of the graph. It is centered at the top outside of the graph frame. The title should be brief, yet descriptive.



type The kinds of graphs PhantomGraph has the ability to draw. The five kinds of graphs are: point, line, bar, column, and pie.

value The number on the graph that identifies an element.

Verbose The legend used to select which titles and labels should appear on the graph, whether the X and Y axis range displays are on or off, and whether to clear the screen before drawing the next graph.

X-axis The primary axis of the graph. The axis line runs horizontally across the drawing. *See Axes.*

Y-axis Generally, the secondary axis of the graph. The axis line runs vertically across the drawing. *See axes.*

Appendix

Sylk

Sylk is a utility program used to convert Symbolic Link (Sylk) spreadsheet files into PhantomGraph files.

The following example shows a sample Sylk command line:

```
sylk -i= <path1> -o= <path2> OPTIONS
```

This command line provides the following required information:

-i= Specifies the name of the Sylk file to convert.

-o= Specifies the name of the Dynacalc file to create.

Optional command line entries are:

-f= The name of the path where functions found in the Sylk file are sent.

-m= Specifies which mode, row, or column the Dynacalc file is generated in.

-m=r denotes the row mode

-m=c denotes column mode (the default mode)

Note: Remember to keep the modes, rows, and columns of the Sylk file consistent when generating the conversion files for Dynacalc. If the original Sylk spreadsheet file was organized by rows (numbers going from left to right), then use the row mode. If the file was initially organized by columns (numbers going from top to bottom), then use the column mode.

Executing Sylk

To execute a Sylk file conversion to Dynacalc, the following data directory requirements must be met:

1. The current data directory is /d0.
2. A Sylk format file, `syk`, is located in the directory /d0.
3. A Dynacalc format file, `dyna`, will be created in directory /d1.

File Conversion

To convert the Sylk format file to Dynacalc format in the column mode, enter either:

```
syk -i=syk -o=/d1/dyna
```

```
syk -i=syk -o=/d1/dyna -m=c
```

To convert the Sylk format file to Dynacalc format in the row mode, enter:

```
syk -i=syk -o=/d1/dyna -m=r
```

To convert the Sylk format file to Dynacalc format in the row mode, and then send a list of the syk functions to the printer, enter:

```
syk -i=syk -o=/d1/dyna -m=r -f=/p
```

To convert the Sylk format file to Dynacalc format in the row mode, and then send a list of the syk functions to a disk file in directory "/d1", enter:

```
syk -i=syk -o=/d1/dyna -m=r -f=/d1/functions
```

Function Listing

If you calculate a value on a Sylk spreadsheet from an expression instead of entering it as a number, the value appears as a numeric function in the Sylk file. This numeric function cannot be read by the Dynacalc "S#L#" file load command. The Sylk utility has an option to obtain a list of the numeric functions. Enter `-f=<path>` on the command line and the screen displays the following list:

SyLK Converter Function Listing

This listing contains SYLK Functions (equations) found during the conversion of <path>

Function at Column XXX, Row XXX: <function>

Function at Column XXX, Row XXX: <function>

Finally, from Dynacalc, use the function listing to enter the information needed to complete the conversion process.