

# GRAPHICS™

by Robert Rennard

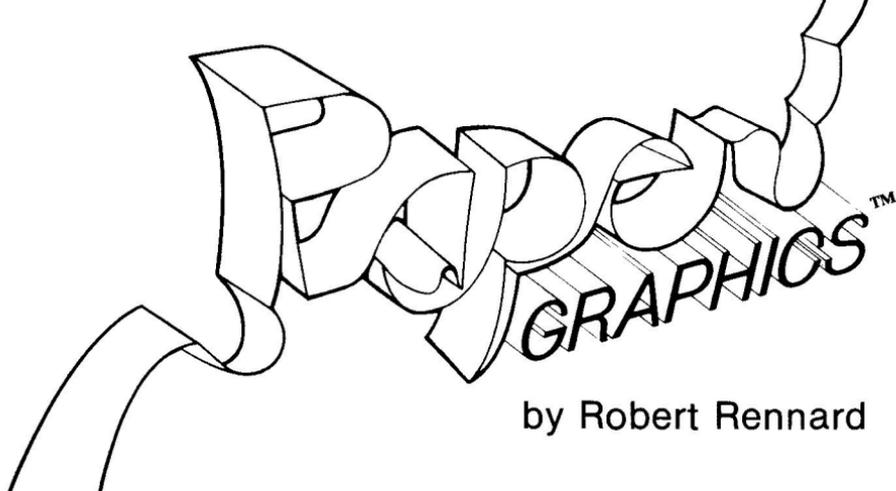


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# Paper Graphics™

by Robert Rennard

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# TABLE OF CONTENTS

Chapter 1 - Introduction	4
1.1 Preparation	
1.2 Printer Set-Up	
1.3 Backup Copies	
1.4 Prompts, Defaults and Data Entry	
1.5 The Program Selection Menu	
Chapter 2 - The Configuration Program	6
Chapter 3 - Magnified Hi-Res Printing	7
3.1 Initialization Data	
3.2 Letter Quality Printers	
3.3 Loading and Viewing	
3.4 Printing Hi-Res Graphics	
Chapter 4 - Quick Hi-Res Printing	11
4.1 Setting Print Format Parameters	
4.2 Function Menu	
4.3 Print From Screen	
4.4 Auto Load and Print	
Chapter 5 - The Graphic Composer	13
5.1 Hi-Res Page Selection	
5.2 Loading Files	
5.3 Unpacking Files	
5.4 View / Position / Black and White Borders	
5.5 Framing / Cropping / Bordering	
5.6 Erase or Fill a Window	
5.7 Text Annotation	
5.8 Packing and Saving Pictures	
5.9 Other Font Sets	
Chapter 6 - Miscellaneous	16
6.1 Limitations	
6.2 Customizing	
6.3 Tailoring I/O Card Drivers	
6.4 Saving Hi-Res Pictures	
6.5 Use With Apple Logo	
6.6 Moving Paper Graphics to Other Disks	
6.7 Using Paper Graphics From Other Programs	
6.8 Using Paper Graphics with the RTR Software Dow Jones Market Analyzer	

# Chapter 1 - Introduction

**Paper Graphics** is designed for use with Apple II, II+, IIe, and Apple-compatible microcomputers, such as the Basis 108 and Franklin. It also operates in the Apple II emulator mode on the Apple III computer.

**Paper Graphics** provides a flexible hi-res graphics screen-to-printer utility with magnification and cropping abilities, a configurable quick hi-res printing utility for fast screen dumps, and a hi-res graphic screen composition utility, the Graphic Composer, which allows editing and labeling of hi-res screens.

The hi-res printing utilities support over 100 dot matrix, thermal, ink jet, and letter quality printers. Many of these printers are supported with selectable graphic printing densities. The programs also support a majority of the I/O cards that are used with the Apple II. The "magnified hi-res printing program" may be used to specify and save parameters for the "quick hi-res printing program". The "magnified" program offers extensive features that are not always needed; the "quick" program allows the user to pre-specify the formats to be used for expedited graphic printing.

The Graphic Composer provides picture file loading, picture framing for emphasis, window filling and erasing, bordering and cropping of the screen edges, picture file packing for reduced disk storage, packed picture file unpacking for viewing or printing, and on screen text annotation in any of four directions. The annotation alphabet includes both upper and lower case Roman and Greek letters, numerals, arrows; and pound Sterling, mathematical, and other symbols.

A Hi-Res Picture Save Utility is provided for easily capturing hi-res pictures created by other programs.

## 1.1 Preparation

You should refer to section 6.2 on customizing if your disk controller card is not in slot 6. You may also need to refer to the "tailor I/O" section 6.3 if your Apple system is not using a standard I/O card interface.

## 1.2 Printer Set-Up

Your printer may require special options or set-up before it can print graphics. Consult the included Appendix C "Printer Set-Up - Special Cases" list before proceeding further. When switches must be set on your printer, set them, then turn the power OFF and back ON. Most printers will only read the switch settings when power is first applied. If you have one of these printers, consult your printer manual for more information.

## 1.3 Backup Copies

**Paper Graphics** is provided on a copyable disk, and all the routines are accessible by your own programs. We strongly recommend that the first thing you do is make a backup copy or two and store the original in a safe place.

A registration number is written on your **Paper Graphics** disk and stamped on the inside cover of your manual. If you call with questions regarding use of this product, please be prepared to provide this number. Also remember to send in your registration card so that we may notify you of any new versions or updates.

## 1.4 Prompts, Defaults and Data Entry

This program has a large number of default values. They can usually be selected by pressing **SPACE**. If a default value is available, it will appear as <v> with the cursor over the v, where v is the default value. If you do not wish to use the default value, you must select a valid alternate value. If < > appears without a letter inside, there is no default, and you must choose a valid entry! If a prompt and flashing cursor are present and no < > symbol is present, then you must provide a numeric or string input followed by a **RETURN**.

Note that throughout this manual, for ease of reading and understanding, single-key choices will be listed with their meanings. Most of the choices in **Paper Graphics** require only a single key press, but expressing them in the form “(P)rint” instead of “P” helps you follow the meaning of each a little more easily.

## 1.5 The Program Selection Menu

After booting the disk or typing RUN HELLO you are presented with the following four choices:

- <1> MAGNIFIED HI-RES PRINTING
- <2> QUICK HI-RES PRINTING
- <3> GRAPHIC COMPOSER
- <4> CONFIGURE/RECONFIGURE

Pressing the “1” key allows you to use all of the hi-res graphic printing features of **Paper Graphics**, including magnification, selectable printing density, and selectable margins. This part of the program is explained in chapter 3.

Pressing the “2” key allows you to use a fixed format hi-res printing program that you create to your specifications. A template for this is made with the option “1” program. Template creation is explained in the chapter on quick hi-res printing (chapter 4).

Pressing the “3” key will switch operation of the **Paper Graphics** program to the Graphic Composer, a picture alteration and text annotation utility, described in chapter 5.

Pressing the “4” key allows you to specify the printer type, I/O card type, I/O card slot number, and some printer parameters required in the option “1” and option “2” programs. This must be done at least once to configure for your current printer/I/O card setup. Use of the configuration program is detailed in the next chapter.

**NOTE:** Be sure you are using a notched backup copy when you configure your program. The setup information is saved in a file on your disk so it is always accessible to **Paper Graphics**.

## Chapter 2 - The Configuration Program

The first group of configuration menus allow you to select the printer type that you are using. Press **SPACE** to page through this menu. When you find the menu entry for the printer you are using, type in the corresponding letter that appears in inverse video.

You may be greeted with a request to select a carriage width. If your printer only accepts letter size paper (8 inch width) then choose "**(N)**arrow". If your printer accepts ledger size paper (14 inch width) then choose "**(W)**ide". This paper width refers to the printing area and does not include the pinfeed strips, if they exist.

Next, you may be greeted with a query about the setting of the LINE FEED after RETURN switch setting in your printer. If your printer is not generating line feeds then **Paper Graphics** should, and you should answer "**(Y)**es". If your printer is generating line feeds, then you should answer "**(N)**o". If double spaced graphics or overprinting result, then use program Option 4 again to reconfigure for the opposite setting. NOTE: If your I/O card has been set to generate a line feed after return, but the printer has not, then answer "**(N)**o".

The configuration program will ask

PRINTER I/O CARD IS IN SLOT (1-7) <1>.

Generally you will answer 1, the default value, but not necessarily. If you have an Apple /// or BASIS 108 computer, you select the internal serial port by choosing slot 1.

Next you will make a selection from one of three I/O card menus. If you cannot find your card on a menu, consult the enclosed I/O Card Driver Table in Appendix B for cross-reference data.

After you make your selections, the configuration data is recorded on your disk in the file CONFIG. DATA

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### SUPPLEMENTAL INFORMATION:

Epson MX-70, MX-100 and a few MX-80 printers have Type II graphics features that do not support the 216th inch microfeed invoked by sending the printer ESC 3 n1. If you have one of these printers use the menu selection for EPSON MX-70 / MX-100. If you have a GRAFTRAX-equipped Epson MX-80 or MX-100 or one with Type III (GRAFTRAX-Plus) features, then use the EPSON MX-80 / MX-100(+) menu selection. If you have an Epson FX-series printer, use the selection for EPSON MX-80 / MX-100(+). If you have a NEC Spinwriter model ending in 5, such as 3525, 5515, etc., Data Terminals Corporation 380Z, Daisywriter operating in Qume or Diablo emulation, Linolex, or any other printer that is compatible with the control sequences for QUME/DIABLO/XEROX printers, use the QUME/DIABLO/XEROX menu entry.

If you have a Daisywriter operating in the NEC Spinwriter emulation mode, use the NEC XXX0 SPINWRITER menu entry.

If you have one of these printers and are not sure if this special information refers to you, consult your printer manual or your dealer.

# Chapter 3 - Magnified Hi-Res Printing

## 3.1 Initialization Data

After the Magnified Hi-Res Printing program begins to run, it will present you with the opportunity to select the density of print (usually dots per inch). This feature allows you to achieve effects unavailable with any other graphic printing program. Density selection is done differently for dot matrix and letter quality printers.

The density selection menu for dot matrix printers has the form:

	HORIZONTAL	VERTICAL
3	120	144
2	160	144
1	120	72
0	60	72

SELECT <0>

If only one choice is presented, there is no decision to be made, so press **SPACE** to move to the next part of the initialization sequence. You may select any of the available densities, and change it while using the program. Normally, you should choose the density values closest to 72 by 72 because these values produce the most even printing. **NOTICE:** Except for Anadex WP-6000 and DP-9625, and Printek 910, 920, and 930 printers, the vertical density values should be interpreted as vertical overprint values. Most printers using selections 2 or 3 will advance one partial graphic dot and then overprint the line for added emphasis. The models mentioned above truly achieve the densities specified.

## 3.2 Letter Quality Printers

You will be given choices 1 - 9 for horizontal print density in dots per inch. Actual values will vary with your printer, but a higher density will give good results when using a period as your single dot graphics character. With lower densities (which give larger pictures), a "+" or "\*" character may be more appropriate. After choosing the horizontal density, you'll be given similar choices for vertical density, also in dots per inch.

Then the letter quality printer driver asks:

PLOT CHARACTER IS USUALLY <.> OR <\*> SELECT PLOT CHARACTER <>

Press the key you wish to use in creating the graphic image. Usually ., \*, or + are used, but any printable character will be accepted.

## 3.3 Loading and Viewing

The Magnified Hi-Res Printing program displays the acceptable range of paper widths in inches, and asks you to indicate the paper width that you are using.

PAPER WIDTH RANGE: 3 to yy INCHES. CURRENT VALUE IS zz INCHES. ENTER PAPER WIDTH IN INCHES.

The value yy is the mechanical width of the carriage which is determined by the type of printer you have. The value zz is the current working value of paper width. You must make a numeric entry followed by **RETURN**.

When you have finished entering the Initialization Data, you will be shown the Function Menu.

The Function Menu allows you to:

- <L>OAD FILES
- <V>IEW SCREENS
- <P>RINT GRAPHICS
- <I>NITIALIZE
- <Q>UIT

Press the desired key.

## VIEWING HI-RES SCREENS

Press "**(V)**iew" and the number 1 or 2, of the hi-res screen you wish to view. Press **SPACE** when you are ready to return to the Function Menu.

NOTE: We suggest you view both screens before loading any files. **Paper Graphics** does not destroy picture images when it loads. Thus you can use it immediately after creating pictures even if the picture was created by another program. See section 6.4 for more information about capturing pictures from other programs.

## LOADING GRAPHIC FILES

Press "**(L)**oad" and then the number of the drive, "1" or "2". You will be presented with a list of up to 36 binary files from the disk that: a) are less than 35 sectors in length and have a name ending in .PAC, or b) are 33 or 34 sectors long. If there are more than 18 files that could be pictures, then the **SPACE** bar will show the rest of the files. Press **RETURN** if you do not want to load a file. Select the file by the corresponding letter if you do wish to load it. **Paper Graphics** is unique in that it will load and unpack ".PAC" packed picture files as well as loading ".PIC" files.

NOTE: It is possible for binary files with lengths of 33 or 34 sectors that are not pictures to appear in the list of files. Loading such a file will put garbage on the hi-res screen, but not hurt anything.

## 3.4 PRINTING HI-RES GRAPHICS

Press "**(P)**rint". Next, you will be greeted by a menu explaining the features that will be available while the screens are being previewed for selection. You may: **(E)**xchange" the blacks and whites on the screen, creating a negative image. NOTE: The image must be set so that what you want to be printed as black on the paper is displayed as white on the screen. Only dots that are "on" will be printed on the printer.

"**(S)**wap" the right and left ends of the image.

"**(R)**otate" the image 180 degrees so that it is upside down, but not mirrored.

"**(F)**lip" the image upside down.

"(C)opy" the viewed hi-res page onto the alternate hi-res page. Use this feature for plotting symmetrical images using the two-screen mode of Paper Graphics.

NOTE: These features also work while the screen is in view during the "(V)iew" mode and the "(L)oad" mode.

Press **SPACE** and the first screen will be previewed. You may alter it while it is in view. Then press **SPACE** to proceed. You will be asked

PRINT SCREEN JUST VIEWED (Y/N) <N>

If you want to print the screen, press "(Y)es". Regardless of what is pressed, you will then preview the next screen, and may alter it while it is in view. Then you will be asked

PRINT SCREEN JUST VIEWED (Y/N) <N>

If you want to print the screen, press "(Y)es".

After both screens have been viewed, if you have selected NO screens, you will be returned to the Function Menu.

If you did select one or both screens, you will be asked

PRINT UPRIGHT OR ROTATED (U/R) <U>

The image will be printed "(U)pright" (as viewed on the screen) unless you press "(R)otate". Pressing "(R)otate" will cause the image to be rotated 90 degrees clockwise. NOTE: If you want the image to be printed rotated 90 degrees counterclockwise or upside down, use the "(R)otate" feature while the screen is in view to invert it, and then choose "(R)otate" when printing. Also, if you print both pages, then "(U)pright" means Page 1 is printed above Page 2, and "(R)otate" means Page 1 goes to the left of Page 2.

After you have selected a printing mode you will be asked

PRINT FULL OR PARTIAL SCREEN (F/P) <F>

If you select "(P)artial" you must specify the diagonal corners of the portion of the screen that you wish to print. If you selected both pages during the preview, you will have to select which to use as the template for cropping both pages. This is because identical cropping is applied to both pages when you elect to print both at the same time.

If you selected "(P)artial", a box cursor will appear overlaid on the Hi-Res page. One at a time, the corners of the box defining the image cropping border are moved using the **I J K M** keys. Press **SPACE** to change the speed at which the **I J K M** keys move the corner. After you have specified the upper left corner, press "(T)oggle" to toggle to the lower right corner. Repeat the process for setting the lower right corner, and then press **RETURN** when you are done. You can go back and forth between corners by pressing "(T)oggle".

## Scale Factors

**Paper Graphics** individually prompts for horizontal and vertical scale factors. Based on the size of the screen segment to be reproduced, paper width, and printer design parameters, **Paper Graphics** computes a scale limit. This number is the largest integer magnification across the paper that can be specified. There is a design limit of 9. If the paper is too narrow to reproduce even a 1x image, you will be advised to load larger paper, and return to the Initialization Data section of the control program. If only a 1x choice is available it will be assumed. Otherwise, you may select any horizontal magnification less than or equal to the limit of 9. After you have specified the horizontal scale factor, you may specify the vertical scale factor. It too has a design limit of 9.

NOTE: Normally, both the horizontal and vertical magnifications will be specified identically, but the ability to specify them separately allows you to alter the aspect ratio of the graphics that you reproduce, allowing you to produce unusual effects. If you are using a higher than normal horizontal graphic density, you may want to compensate the scale factors to preserve the screen image aspect ratio. This is because the graphic density selection affects the range of scale factors available.

## Margin Setting

After scale factor selection, you select whether you wish to “(C)enter” the picture, place it at the “(L)eft” or “(R)ight” margins, or place it “(M)anually” in inches. If you select to place the image manually, you will be presented with a range of indentation values in inches, and asked to specify an image indentation within the indicated range. If the picture segment barely fits the paper, you will receive a message indicating that the image is a tight fit and will not be allowed to specify placement. **RETURN** is required only after the inches input.

## Printer Preparation

Be sure that your printer is ON, ON LINE, and has an adequate supply of paper. If it does and you are satisfied with your parameter selections, answer “(Y)es” to the PRINTER READY (Y/N) < > prompt. Answer “(N)o”, and you will be returned to the Function Menu.

## Pause or Abort While Printing

If you wish the printer to pause while printing press **SPACE**. To resume printing, press **SPACE** again. To terminate graphic printing, press **ESC**. Use the pause feature to avoid printhead overheating if printing large black areas. Most printers have a 50% or less duty cycle when printing graphics, and usually you need not be concerned about overheating.

## Feed Paper

Type “(F)eed” to advance paper one line.

## Quitting

Press “(Q)uit” to leave the printing program. If you have just set the printing parameters, you are given the option to capture the print parameter settings, printer driver, and I/O card driver for use by the Quick Hi-Res Printing program, and/or return to the Program Selection Menu.

# Chapter 4 - Quick Hi-Res Printing

The Quick Hi-Res Printing program is intended for use when you do not need the full versatility of the Magnified Hi-Res Printing program and want to avoid the number of data entries its versatility requires. Before you can use the Quick Hi-Res Printing program, you must use the Magnified Hi-Res Printing program to preset values for the Quick program.

## 4.1 Setting Print Format Parameters

Select Program Selection Menu Option 1, the Magnified Hi-Res Printing program. Then, pretend to print the picture you will eventually wish to print during production. Type "(P)rint Graphics", select either page, and then follow through the entire prompt sequence, selecting the values for orientation, full or partial screen, cropping boundaries, scale factors, and margin settings that you wish to use. When you are at the prompt that reads PRINTER READY (Y/N) < >, do NOT print! Press N to NOT print, Q to quit the program. Then press Y to capture the print format settings. This will capture the I/O card driver, the printer driver, and all of the set-up values that you entered while using the Magnified Hi-Res Printing program into a file named GRAPHICS. QUICK.

## 4.2 Function Menu

The Function Menu allows you to

- <L>OAD FILES
- <P>RINT FROM SCREEN
- <A>UTO LOAD AND PRINT
- <F>EED PAPER
- <Q>UIT

The "(L)oad files" feature works like it does in the Magnified Hi-Res Printing program, Section 3.4.

### 4.3 Print From Screen

The **E S F R** and **C** keys will have the same effect on a previewed hi-res screen as is described in the Magnified Hi-Res Printing program section.

After you preview the first screen, you will be prompted

PRINT SCREEN JUST VIEWED (Y/N) <N>

If you want to print the screen, press "**(Y)**es". Then preview the next screen. Again you will be asked.

PRINT SCREEN JUST VIEWED (Y/N) <N>

If you want to print the screen, press "**(Y)**es".

If you selected "**(N)**o" for both screens, you will return to the Function Menu. If you selected either or both screens, printing will begin immediately!

### 4.4 Auto Load and Print

This feature allows you to catalog either disk drive and specify any or all graphic files for printing in any order that you chose, possibly with repetition. Printing will be formatted using the parameters captured with GRAPHICS. QUICK.

After the graphic file directory is displayed on screen, enter the letters corresponding to the files you wish to print in the order you want them to be printed. The print sequence will appear on screen as you enter it. Press **SPACE** to toggle between file lists. When you have entered all of the file selector letters you want, press **RETURN**.

You will then be asked how many line feeds to place between pictures. There is no set response to this query due to the differences in picture formatting. Therefore, we suggest a little experimentation to assist yourself in determining a suitable value.

# Chapter 5 - The Graphic Composer

The Graphic Composer is a utility for modifying hi-res graphic images. The Graphics Composer provides for positioning the image on the screen, cropping the image, bordering the image, framing all or part of the image, window erasure or fill, and annotation with keyboard entered text. The Graphic Composer will also pack hi-res images, decreasing the amount of diskette storage required.

Two types of disk files are used with the Graphic Composer. One of these is a conventional 33 or 34 sector picture file from either hi-res page. By convention, these files should carry an extension of ".PIC" to indicate that they are PICture files (for example, PENGUIN.PIC). The Graphic Composer also works with packed picture files which we denote with the extension .PAC (such as PENGUIN.PAC).

The following sections describe the operation of the modes of the Graphic Composer. Press a single key as prompted on the Graphic Composer menu to select each mode.

## 5.1 Hi-Res Page Selection

You may "(T)oggle" between the two hi-res pages. The displayed inverse digit will change accordingly. The page number should be set before other modes, except "Load", which allows you to set the destination page for a graphic file load.

## 5.2 Loading Files

The "(L)oad" command is used to load either previously described type of picture file for use by the Graphic Composer. Press "(L)oad" to select this mode, and then select drive 1 or 2. Then a menu of possible picture (.PIC) and packed (.PAC) files will appear. You may select a file by letter, press **SPACE** to go to the second page of the menu, or press **RETURN** if you do not wish to load a file. If you select a file, then you must also select a destination page. Unpacking of packed (.PAC) files onto the selected hi-res screen will occur automatically.

## 5.3 Unpacking Files

If you loaded a .PAC type file, and want to also unpack it to the opposite screen, use the page "(T)oggle" to change to the opposite page, and press "(U)npack". While loading a packed picture as described above does automatically unpack it, to display it on another page requires a second unpacking. To move a picture from one screen to the other, you can use the sequence a "(P)ack" with "(N)o file saving", a "(T)oggle" to change pages and an "(U)npack" to transfer the picture.

## 5.4 View / Position / Black and White Borders

This feature allows you to "(V)iew" the hi-res page picture and move it around using the **I J K M** keys. The **SPACE** bar changes the speed of picture motion. As the image slides, the border of the screen will fill in with black or white. Toggle the fill color using the "(B)lack" and "(W)hite" keys. If you wish to "(E)xchange" black for white, press the "(E)xchange" key. Pressing "(E)xchange" does NOT toggle the fill color! To exit the positioner, press **RETURN**.

This feature provides one way to apply a border or crop the edges of a picture by proper selection of fill color and positioning commands.

## 5.5 Framing / Cropping / Bordering

If you wish to place a “(F)rame” around part of the picture, or you wish to quickly crop the edges or apply a border, select the framing feature. After you do this, you will preview the hi-res image and use the **I J K M** keys to specify the inside boundary of the frame. After you have placed the upper left inside corner, press **RETURN** and specify the lower right inside corner in the same fashion. After both inside corners have been defined, you may accept or veto their coordinates. If you veto them, you get to start over.

If you accept them, you will be asked how many dots wide the frame is to be drawn and in what hi-res color. The color selection range is the standard Apple colors from 0 to 7. If you wish to crop the edges to black, select 0 or 4 for black and a frame thickness wide enough to reach all the edges. You may use a large number, like 200, which will take a little longer to clear the edges, but you will not have to complete the process by guessing the frame thickness in dots. You can also generate a colored border in this fashion.

## 5.6 Erase or Fill a Window

You can “(E)rase” a strip for subsequent use as a text window by placing the cursor endpoints at the diagonal corners of the rectangle to be erased, and then selecting black (0) as a fill (erase) color. You can also specify a rectangle and then fill it with any Apple hi-res color (0 to 7).

## 5.7 Text Annotation

The text “(A)notation” mode allows you to independently select the direction of travel of text and orientation. Example: this text is traveling to the right, and the orientation of the characters is upright.

After you have selected direction of travel and orientation, a large cursor will appear on the screen. You move the cursor using the **I J K M** keys, and use **SPACE** to change the speed of motion. Press **RETURN** when the cursor is where you want the center of the first character to appear while you are typing.

The cursor allows you to start typing text at any arbitrary point on the screen provided it is not too close to the edge of the screen. If you are too close, a warning will appear, and you will have to reset the cursor. While you are typing on the screen, several control keys are active:

“(CTRL-N)ormal” (type by holding the CTRL key down and pressing the N key) selects the normal character set. This is the default entry and corresponds to the key cap definitions of the Apple II keyboard. This character set creates English/Roman text.

“(CTRL-aL)ternate” selects the a(L)ternate character set. It includes upper and lower case Greek letters, math symbols, and numerals and punctuation from the Normal character set.

The **ESC** key toggles back and forth between lower case and upper case. If you have an Apple //e or an auxiliary device that allows your keyboard to generate lower case ASCII codes, you will not need to use (and in fact, should avoid) the **ESC** key.

“(CTRL-O)verstrike” performs a non-destructive backspace for over-striking.

The left pointing arrow key performs a backspace and erase.

"(CTRL-Q)uit" allows you to quit the text annotation session.

**RETURN** ends the text input and recalls the cursor to the screen.

Pressing the left arrow will delete only the last typed character correctly. The following process will allow you to back space further. First, backspace onto the symbol to be deleted. Then, type over it with the same symbol that appeared in that position before you backed onto it. This will advance the cursor position and allow you to backspace over it and rub it out. This process can be continued until a whole line is erased. It may take a while, but it does work!

If you run into a hi-res page boundary while typing or erasing, the bell will beep and nothing else will happen. This allows you to recover by reverse erasing.

## 5.8 Packing and Saving Pictures

You may "(S)ave" the image as a 33-sector screen image, or "(P)ack" it and save it as a .PAC packed picture file, which will take less disk space.

## 5.9 Other Font Sets

ASC.SHAPES is loaded at \$6580, and ALT.SHAPES is loaded at \$6A80. You may use other shape tables if you like. The tables are created in ASCII sequence beginning with a shape for **SPACE**. You may also use these shape tables with your graphic programs. Consult the Applesoft manual for details. You must BLOAD the tables, and then use the POKEs at 232 and 233 to tell Applesoft where the shape tables reside.

# Chapter 6 - Miscellaneous

## 6.1 Limitations

Few printers will reproduce circles on the hi-res screen as circles on the paper. This is due to the fact that few printers print the same number of dots-per-inch horizontally as they do vertically, and that dots on the Apple screen are spaced differently horizontally and vertically. You may have to balance the eccentricity of your printer by a compensating eccentricity when drawing on the hi-res screen. Consult your printer manual to determine its dot densities, and also check the printer information tables in the Printer Application Guide, Appendix A.

**Paper Graphics** may alter top of form setting and character font size during the process of reproducing graphics. We usually return the printer to 10 character per inch mode. **Paper Graphics** adjusts top of form on some printers to avoid image splitting.

At completion of each printing pass, Paper Graphics restores the line feed spacing to the value for normal text. Therefore, if you continue on by printing additional pictures, there may be a slight split between successive pictures.

## 6.2 Customizing

In some instances, you may need to alter PAPER GRAPHICS II.LQPR, PAPER GRAPHICS II.MTRX, and PAPER GRAPHICS II.QUICK. Each of these programs assumes that your disk controller is in slot 6. If it is not, you will need to boot a standard DOS diskette and then insert the Paper Graphics diskette into drive 1.

Unlock and load one of the above programs. Note that in line 345 of PAPER GRAPHICS II.MTRX and PAPER GRAPHICS II.LQPR, and line 495 of PAPER GRAPHICS II.QUICK there is a statement POKE 7,6. The number 6 refers to slot 6. If your disk controller card is not in slot 6, then change the statement to POKE 7,s where 's' is the proper slot number. Then save the file back onto the Paper Graphics diskette using the same file name and lock it.

Repeat this process for the other two programs. Only unlock one program at a time to avoid accidentally overwriting the wrong program. Be sure to lock the program immediately after you save it back to the diskette.

NOTE: You will have to repeat this sequence if you ever change the slot again.

## 6.3 Tailoring I/O Card Drivers

If you are using an Apple Super Serial, Apple /// internal serial, Mountain Computer CPS serial, or a very early Apple parallel card, you may need to use the Tailor I/O program.

Hardware on the 3 serial cards mentioned above requires that the "clear to send" (CTS) control line be true if data is to be sent to the printer. Our I/O card drivers also test to see if the "data set ready" (DSR) control line is true, and transparently support X-ON/X-OFF protocol. If you are using X-ON/X-OFF software handshaking or using CTS alone for control, you do not need DSR control. You may need to invert the polarity of the DSR test for some applications. We also provide the ability to test the data carrier detect (DCD) control line, and although it is very unlikely that you will use it, you may invert the polarity of the DCD test, also.

Normally our I/O card handlers should work without modification except when CTS is used alone without DSR for control! If the program locks up when you answer Y to the READY response in **Paper Graphics**, use 'TAILOR I/O' to turn the DSR sense OFF (the N response). If the program is sending data more rapidly than the printer is accepting it resulting in faulty graphics or the data only flows when the printer is OFF LINE, then try using 'TAILOR I/O' to invert the DSR sense polarity, or to add DCD sensing. Experimenting might be necessary, but it won't hurt anything.

If you have a very early Apple Computer parallel card the program will probably lock up and not print graphics. You will need to alter the card driver using 'TAILOR I/O'. This includes cards sold before 1979.

To use the above utility, boot the **Paper Graphics** diskette, and immediately press control-C to stop execution of the HELLO program. Then type RUN TAILOR I/O. Follow the card selection prompts and configuration prompts, and then the HELLO program will be RUN by TAILOR I/O.

## 6.4 Saving Hi-Res Pictures

### Immediate Mode Saving

Before using the programs, you should have the desired graphic image loaded onto hi-res page 1 or page 2, or on diskette. You can save images on diskette by using the following immediate mode DOS commands:

From page 1: BSAVE name.PIC, A\$2000,L\$1FFA.

From page 2: BSAVE name.PIC, A\$4000,L\$1FFA.

The suffix, "PIC", indicates that the file is a graphic image. For example, if you wish to save a picture of a penguin from hi-res page 2, you could use:

```
BSAVE PENGUIN.PIC, A$4000, L$1FFA
```

It is usually best if you do not have to save the graphic files on the Paper Graphics diskette! Use an initialized data disk for safety.

### Using the Hi-Res Save Utility

Protected programs may not accept normal DOS BSAVE commands. We suggest that if this is the case, you should exit the protected program after creating the picture you wish to save. Without turning the power off, boot a standard DOS SLAVE diskette onto which you have saved the Hi-Res Save Utility. If you are not sure what a slave disk is, consult the Apple DOS reference manual. If you are using RAM-resident Applesoft, it must be loaded by the HELLO program since Hi-Res Save Utility is written in Applesoft; use a slave copy of your System Master diskette which includes a copy of the Hi-Res Save Utility for this purpose. CAUTION: After transferring Hi-Res Save Utility to a slave diskette, do not use the MASTER CREATE utility from the System Master diskette on the slave diskette. A MASTER CREATED diskette will overwrite the hi-res screen image when it boots, but a slave disk will not. **Paper Graphics** comes on a 48K slave diskette for this reason. The Hi-Res Save Utility will preview each hi-res page, and enable you to save them selectively using any name that you supply.

## 6.5 Use With Apple Logo

To enter **Paper Graphics** from Logo Computer Systems' Apple Logo, use the command .PRINTER 6 from within Logo. This will boot the **Paper Graphics** diskette in slot 6 without damaging any picture in memory.

## 6.6 Moving Paper Graphics to Other Disks

You may move PAPER GRAPHICS II.MTRX or PAPER GRAPHICS II.LQPR, an I/O card driver, PAPER GRAPHICS.TRIX, a printer driver, and PAPER CONFIG.DATA to another diskette using the file transfer program from your Apple Computer System Master Diskette. This allows you to transport the full Magnified Hi-Res Printing capability. Use the appendices to determine what the file names are for the I/O card driver and printer driver you would need, or type PRINT C\$, G\$ after quitting the Magnified Hi-Res Printing program. After moving these files, type RUN PAPER GRAPHICS II.MTRX or RUN PAPER GRAPHICS II.LQPR to invoke this capability.

You may move PAPER GRAPHICS II.QUICK and GRAPHICS.QUICK to transport the Quick Hi-Res Printing capability. After relocating these files, RUN PAPER GRAPHICS II.QUICK to invoke this capability.

## 6.7 Using Paper Graphics From Other Programs

You may transport GRAPHICS.QUICK to your disks if you wish to call **Paper Graphics** printing routines from within your own program.

Within your own program you will need the statement:

```
PRINT CHR$(4): "BLOAD GRAPHICS.QUICK"
```

to load the printer and I/O card drivers. Use the capture feature of the Magnified Hi-Res Printing program to create GRAPHICS.QUICK as described in the section on the Quick Hi-Res Printing program, Section 4.1.

### Use From User Programs - Approach 1

Communication of parameters that control the activity of the printer dump program is accomplished via a control block that begins at \$61D0 (25040). The following table and discussion shows the structure of and how to use the control block.

#### Variable locations and functions

Hex	Decimal	Function	Description
\$61D0	25040	Mode	Mode control byte
\$61D1	25041	Indent. lo	Indentation in D4 units = D4 * indent in inches
\$61D2	25042	Indent. hi	
\$61D3	25043	Csize	Cross page scale factor regardless of rotation
\$61D4	25044	Dsize	Down page scale factor regardless of rotation

\$61D5	25045	Top	Top line of screen to print
\$61D6	25046	Bottom	Bottom line of screen to print
\$61D7	25047	Left. lo	Left border of screen to print
\$61D8	25048	Left. hi	
\$61D9	25049	Right. lo	Right border of screen to print
\$61DA	25050	Right hi	

Letter Quality Printers also use the following:

\$61DB	25051	Hadv	Horizontal advance numerator
\$61DC	25052	Vadv	Vertical advance numerator
\$61DD	25053	Pchar	Plotted character

The following are the two entry points for the printer drivers:

\$6200	25088	Line feed entry point
\$6203	25091	Graphic printing entry point

NOTES: Hadv and Vadv may not exceed 15 for pictures using the PG2.ZLQPR driver, or 9 for the PG2.ZAJ830 driver. Pchar is the ordinate value of the character to be plotted from an ASCII character table. Example: \$2E or 46 is the value for period (.). The mode byte is coded as follows:

decimal value

bit7 -	suppress line feeds	128
bit6 -	select Hi Res page 2	64
bit5 -	select Hi Res page 1	32
bit4 -	print a negative image	16
bit3 -	vertical emphasis bit	8
bit2 -	horizontal density bit	4
bit1 -	print both pages bit	2
bit0 -	print rotated bit	1

NOTE: Only bit6 or bit5 may be set or clear at one time. Both bit5 and bit6 cannot have the same value.

NOTE: Only certain values for bit2 and bit3 are valid. To determine what they are, examine the density table during the initialization portion of the Magnified Hi-Res Printing program, or see the D6% values in Appendix A. The values to be placed into bit2 and bit3 are the binary equivalent of multiplying the value in the # column of the initialization section (D6%) times 4. Also note that within a printer family, the D6% value may only specify different family members, not different densities.

To poke the values into the control block, we suggest the following as a simple technique for doing this: Replace the lower case mnemonics shown in the DATA statements below with integer values in your program.

```
xxx2 DATA mode, indent.lo, indent.hi, csize, dsize
xxx3 DATA top, bottom, left.lo, left.hi
xxx4 DATA right.lo, right.hi, hadv, vadv, pchar
xxx5 RESTORE
xxx6 FOR J=0 to 13
xxx7 READ V
xxx8 POKE 25040+J,V
xxx9 NEXT J
```

A more complex approach for stuffing the control block may be required to allow for interaction with the user. Consult PAPER GRAPHICS II.xxxx for ideas.

To call the program, use:

```
PRINT CHR$(21) : REM Apple //e only

X=PEEK(54) : Y=PEEK(55) : POKE 54,0 : POKE 55,192+SN% :
CALL 25091 : POKE 55, Y : POKE 54,X
```

Where SN% is the printer I/O card slot numer.

This technique usually insures that 80 column cards, etc. do not get unhooked when returning from printing graphics. Unfortunately, this will not work with the Apple //e. Therefore, use: PRINT CHR\$(21) to disable the Apple //e 80 column card.

Using the above calling sequence with CALL 25088 will send a line feed to the printer.

## Computation of Data Values and Formats

The full size Apple II hi-res screen is 280 pixels wide, numbered 0 through 279, and 192 pixels high, numbered 0 through 191. Therefore, the smallest value of TOP and LEFT is 0, the largest value of BOTTOM is 191, and the largest value of RIGHT is 279. BOTTOM must be numerically greater than TOP, and RIGHT must be numerically greater than LEFT! You can print any part of the screen or the whole screen. Measured in graphic dots, the width, PW%, of a rotated image is BOTTOM - TOP + 1 dots, and the width of a horizontal image is RIGHT - LEFT + 1 dots. The maximum value for PW% is 280 for horizontal images and 192 for rotated images.

Refer to the Printer Application Guide, Appendix A, for printer-dependent variable values. D4 is the indent rate in units per inch for dot matrix printers, and D5 is the printing density in dots per inch.  $D4 = C4/Hadv$  is the indent rate for letter quality printers, except Anderson Jacobsen which is always  $D4 = C4$ , and  $D5 = C5/Hadv$  is the printing density. The width of the printer, DW%, is  $DW\% = D5 * P6$  dots where P6 is the width in inches.

The largest the cross paper scale factor, (or Csize), may be is the truncated integer value of  $DW\% / PW\%$ , or 255, whichever is smaller. The printed image will be  $Csize * PW\%$  dots wide, and the remaining  $DW\% - Csize * PW\%$  dots are available for indentation. The dots available for indentation should be converted back to inches by dividing by D5. The

value of the actual indent must be less than this amount. Convert it to indent units by multiplying by D4.

Two byte control block values use VALUE MOD 256 (integer remainder) in the first byte (.lo) and VALUE/256 in the second byte (.hi). For example, if the desired VALUE is 480, then VALUE MOD 256 is 224 and VALUE/256 is 1.

DOT MATRIX PRINTER EXAMPLE: In normal density mode (D6%=0), the MX-80 has D4 = 10, D5 = 60 and P6 = 8. Therefore DW% = D5 \* P6 gives a printer width of 480 dots. A rotated full screen image is PW% = 192 dots wide. Therefore, Csize cannot exceed 2 since DW%/PW% = 2.5. If Csize is 2, the image is Csize \* PW% = 384 printed dots wide, leaving 96 dots for margin. The indent value in inches is 96 / D5 = 1.6 giving an indent value of 1.6 \* D4 = 16 spaces, but to be safe, use an indent of 15.

If a horizontal image is printed that has a left margin of 20 and a right margin of 249, the viewport width is 230 dots (right - left + 1). This image can be printed at 2x width on the MX-80, since Csize + PW% = 460 dots. There are 20 dots of the total of 480 available for lateral positioning. The indent range is 0 to 20/D5 = 1/3 inches. With D4 = 10, the maximum indent value is 3.

LETTER QUALITY PRINTER EXAMPLE: The NEC Spinwriter, the Qume Sprints, the Diablo 6x0, and 16x0, the Itoh F-10, Apple, DTC, and Daisywriter letter quality printers all have table values of C4 = C5 = 120 and P6 = 13.2. Graphic line feeds will advance paper at VADV/48 inches. Indent density is D4 = C4/HADV per inch, and printing density is D5 = C5/HADV per inch. Suppose HADV = 2. Then the printing and indent densities are 60 per inch. The width of picture would be the same as in the Epson example above since the Epson also prints at 60 dots per inch. However, at 60 dots per inch, a 13.2 inch carriage is 792 dots wide. Since 792-384 gives 408, specifying IND = 204 will center the picture. We do not have to convert 408 to inches and back to indent values since the printing (D5) and indent (D4) densities are equal.

NOTICE: The Anderson Jacobsen driver PG2.ZAJ830 always indents at 60 per inch regardless of the value of Hadv.

## Memory Conflict Management

If you are using **Paper Graphics** from another program, you may find that it resides in the same memory region that another program you wish to use occupies. **Paper Graphics** occupies \$6000 to \$6600 approximately. We suggest the following as a possible solution.

```
xxxx1 PRINT CHR$(4); "BSAVE CHUNK, A$6000, L$600"  
xxxx2 PRINT CHR$(4); "BLOAD GRAPHICS. QUICK"  
xxxx4 pokes to CONTROL BLOCK if needed  
xxxx5 X=PEEK(54) : Y=PEEK(55) : POKE54,0 : POKE55,192+slot  
xxxx6 CALL 25091 : POKE 54,X : POKE 55,Y  
xxxx7 PRINT CHR$(4); "BLOAD CHUNK"
```

Line xxxx1 saves the region of the program that also occupies \$6000-\$6700 memory onto disk. Line xxxx2 loads the **Paper Graphics** printer and card drivers into this same memory. Control parameters are specified in line xxxx4. The **Paper Graphics** dump is called in line xxxx6. The portion of the other program is restored in line xxxx7. This technique requires that the GRAPHICS.QUICK file be on disk, space for patching in the above code, and room on disk for stashing the CHUNK.

## Use From User Programs - Approach 2

In this simplified approach, all you need to do is load GRAPHICS.QUICK using

```
PRINT CHR$(4); "BLOAD GRAPHICS. QUICK"
```

and then call it as in lines XXX5 and XXX6 in the example above. This will give you a constant printing format. Be sure to set the page you wish printed when preparing GRAPHICS.QUICK from within the Magnified Hi-Res Printing program.

## 6.8 Using Paper Graphics with the RTR Software Dow Jones Market Analyzer,

1. OBJECTIVE - To allow users of the **Dow Jones Market Analyzer** software to use **Paper Graphics** within the Analyzer for printing graphics generated by the analysis program.
2. REQUIREMENTS - The user must move a program named USER, from his **Paper Graphics** disk onto his Dow Jones Market Analyzer program diskette using the instructions below. The techniques being used here are described in the "User" Appendix of the Analyzer manual.
3. CREATING GRAPHICS.QUICK - Enter the Magnified Hi-Res Printing program of **Paper Graphics** using Option 1 of the main program menu that comes up just after you boot the diskette. If you have not used the program before, you will have to select configuration options for printer and I/O card type. Then select a printing density and a paper width. After you do this, select the Function Menu "(P)rint" mode. This will lead to the sequence of events that begins on page 9 of the **Paper Graphics** manual. You must select page 1 for printing by answering "(Y)es" after the first screen appears. Then select "(U)pright" or "(R)otated" for orientation, "(F)ull screen", and two scale factors. We suggest a Rotated, Full screen, 2x by 2x picture as being optimum for most applications. Type "(C)enter" the printed picture, and then when asked if the printer is ready type "(N)o" **RETURN**. This will return you to the Master Function Menu in the Magnified Hi-Res Program. Then type "(Q)uit". The next prompt you will see is CAPTURE (Y/N) <N>. Type "(Y)es" to capture the file GRAPHICS.QUICK. Then you will be asked if you want to run the program menu, type "(N)o" and you will return to the Applesoft prompt.

4. THE USER PROGRAM - Type NEW to clear the existing Applesoft program from memory. Then type LOAD USER **RETURN**. The program you have loaded is a variation of the program in approach 1 of the previous section in this manual. If you list it, it should read -

```
31000 PRINT : PRINT D$; "BSAVE CHUNK, A$6000, L$600"  
31010 PRINT D$; "BLOAD GRAPHICS.QUICK"  
31020 U1=PEEK(54) : U2=PEEK(55) : POKE 54, 0 : POKE 55,192+P%  
31030 CALL 25091 : POKE 54,U1 : POKE 55,U2  
31040 PRINT : PRINT D$; "BLOAD CHUNK"  
31050 IF LQ=2 THEN CALL 1002 : PRINT : PRINT D$; "OPEN BF" : PRINT  
D$; "READ BF"  
31060 RETURN
```

Insert a copy of the Market Analyzer Program Diskette that does NOT have a write protect sticker over the write protect notch into your disk drive and type SAVE USER **RETURN**. Then remove the diskette. There should be room on the disk.

5. OPERATION - Use the Analyzer diskette as you would normally. After a chart has been plotted on the screen, the Market Analyzer will be in the Flashing Carat Mode (⌘). If you wish to dump the chart to your printer, remove the Market Analyzer data diskette from its drive, and insert the **Paper Graphics** diskette in its place. After you have made this exchange, you can type U to invoke the **Paper Graphics** dump program. The USER routine saves a chunk of the Analyzer program to the **Paper Graphics** diskette, loads and executes **Paper Graphics** and then restores the saved chunk of the Analyzer. Be sure to remove the **Paper Graphics** diskette and reinsert the Market Analyzer data diskette after the Flashing Carat returns.



# Appendix A - Printer Application Guide

## Using the Printer Specifications Table

This table is useful to programmers wishing to incorporate GRAPHICS.QUICK into their own programs. Each printer is described in terms of its width in inches (P6), its indentation rates (D4), its printing densities (D5), and whether or not it uses linefeeds while printing (L%). The following variable names are used in **Paper Graphics**.

D4,C4	- indent rate in units per inch
D5,C5	- printing density in dots per inch
D6%	- density selector
D7	- vertical density/emphasis in dots per inch
P6	- width of the carriage in inches.
L% = 128	- implies that the printer family may or may not need a line feed after return for vertical spacing.
L% = 0	- implies that the printer does not use line feeds codes to determine vertical spacing
G\$	- the printer driver name, such as PG2.ANADEX
C\$	- the I/O card handler name, see Appendix B

D4 is derived from C4 and Hadv for letter quality printers except AJ83x-series, and D5 is derived from C5 and Hadv for all letter quality printers.

When a matrix printer has more than one possible set of values for D4, D5, and D7, then the values are arrayed in A4, A5, and A7 respectively. The selector D6% is used to extract values from the A4, A5, and A7 arrays for use as D4, D5, and D7. That is D4 = A4(D6%), D5 = A5(D6%), and D7 = A7(D6%).

## Data for Matrix, Thermal and Ink Jet Printers

### Anadex

G\$ = PG2.ANADEX

L% = 0

Anadex DP-9000 and DP-9001

P6 = 8 inches

DP-9500, DP-9501, DP-9620

P6 = 13.2 inches

WP-6000

P6 = 13.2 inches

D4	D5	D6%	D7	Model
60	60	0	72	DP-9000 / DP-9500
75	75	0	72	DP-9001 / DP-9501
72	72	0	72	DP-9620
72	72	1	72	WP-6000
144	144	2	144	WP-6000

## Digital Equipment LA-34, LA-50, LA-100

G\$ = PG2.DEC

L% = 0

D4	D5	D6%	D7	P6	Model
132	66	2	72	13	DEC LA-34
132	132	1	72		DEC LA-34
144	72	2	72	8	DEC LA-50
144	144	1	72		DEC LA-50
133	66	2	72	13.2	DEC LA-100
133	133	1	72		DEC LA-100

## Epson

G\$ = PG2.EPSON

L% = 128

Epson MX-70, MX-80, MX-82, FX-80, RX-80 P6 = 8 inches

MX-100 and FX-100

P6 = 13.5 inches

D4	D5	D6%	D7	Model
10	60	0	72	all but MX-82
12	72	0	72	Epson MX-82
10	120	1	72	all but MX-82
12	144	1	72	MX-82
10	60	2	144	RX/FX/MX-80&FX/MX-100(+)
10	120	3	144	RX/FX/MX-80&FX/MX-100(+)

MX-100 (+) has GRAFTRAX-Plus (Italics)

## Facit 4510

G\$ = PG2.F4510

L% = 0

D4	D5	D6%	D7	P6
60	60	0	72	8
72	72	1	72	
100	100	2	72	

## Facit IPS 5000

G\$ = PG2.F5000

D4	D5	D6%	D7	P6	L%
40	40	0	72	13.2	0
60	60	1	72		
120	120	2	72		

## Anadex DP-9625

G\$ = PG2.ANADEX

D4	D5	D6%	D7	P6	L%
72	72	0	72	13.2	0
144	144	3	144		

## Apple Computer Dot Matrix Printer (DMP)

G\$ = PG2.APPLE                      L% = 128

P6 = 8.0 inches

Density table same as C. Itoh 8510 below.

## Apple Computer Silentype

G\$ = PG2.SILENT                      L% = 0

D4	D5	D6%	D7	P6
62	62	0	72	8

## BMC Dot Matrix Printer

G\$ = PG2.BMC                      L% = 128

D4	D5	D6%	D7
10	60	0	72
10	120	1	72
10	60	2	144
10	120	3	144

## Centronics 739, 122, 351, 352, and 353

G\$ = PG2.CENT                      L%=128

D4	D5	D6%	D7	P6	Model
75	75	0	72	7.92	Centronics 739/122
66	66	1	72	13.2	Centronics 35x

## C. Itoh

G\$ = PG2.TECDM                      L% = 128

C. Itoh 8510, NEC PC-8023, Sony SMI-7020 P6 = 8 inches

C. Itoh 1550 and NEC PC-8025                      P6 = 13.5 inches

D4	D5	D6%	D7	Data applies to all models
10	80	0	72	
17	136	1	72	
10	80	2	144	
17	136	3	144	

## Hi-G Printer Products 9/80 and 9/32

G\$ = PG2.ISHG		L% = 0			
D4	D5	D6%	D7	P6	Model
72	72	0	72	8	9/80
72	72	0	72	13.2	9/132

## IBM Graphics Printer (same as Epson MX-80)

### Infoscribe 1000, 1200, 1500

G\$ = PG2.ISHG		L% = 0			
D4	D5	D6%	D7	P6	Model
72	72	0	72	13.2	Late 1000, 1200, 1500
72	72	1	72	13.2	Early 1000

### Integral Data 440G and 445G

G\$ = PG2.IDS40		L% = 0			
D4	D5	D6%	D7	P6	
64.2	64.2	0	72	7.95	
51.2	51.2	1	72	7.95	

### Integral Data 460G, 560G, Prism 80, Prism 132, microPrism 480

G\$ = PG2.IDS60		L% = 0			
D4	D5	D6%	D7	P6	Models
120	84	0	84	8	460G, 480G, Prism 80
120	84	0	84	13.2	560G, Prism 132

### Malibu Dual Mode 200

G\$ = PG2.MALIBU		L% = 0			
D4	D5	D6%	D7	P6	
60	60	0	72	13.2	
120	120	1	72		
60	60	2	144		
120	120	3	144		

## Mannesman Tally MT-160 and MT-180

G\$ = PG2.MT160      L% = 0

MT-160 P6 = 8

MT-180 P6 = 13.2

D4	D5	D6%	D7
50	50	0	64
100	100	1	64

## Micro Peripherals Incorporated

G\$ = PG2.MPI      L% = 0

MPI 88G and 99G

P6 = 8 inches

MPI 150G and PrintMate 150

P6 = 13.2 inches

D4	D5	D6%	D7	Model
50	50	0	72	All MPI
60	60	1	72	All MPI
75	75	2	72	All MPI
82.5	82.5	3	72	88G and 99G only
85	85	3	72	150G and Printmate 150 only

## NEC PC-8023 and PC-8025

(same as C. Itoh 8510 and 1550)

## Okidata 82a, 83a, 92, 93

G\$ = PG2.OKI1      L%=0

D4	D5	D6%	D7	P6	Model
60	60	1	66	8	82
100	100	3	66	8	82
60	60	1	72	8	92
72	72	2	72	8	92

Model 83 and 93 have width P6 = 13.5

Model 83 has same densities as model 82

Model 93 has same densities as model 92

## Okidata 84

G\$ = PG2.OKI84      L%=128

D4	D5	D6%	D7	P6
12	72	0	72	13.5
12	144	1	72	
12	72	2	144	
12	144	3	144	

## Sony SMI-7020

(same as C. Itoh 8510 above)

## Star Delta 10, Gemini 10/10x, Gemini 15

G\$ = .PG2.STAR L%=128

Delta 10, Gemini 10, 10x

Gemini 15

P6 = 13.5

D4	D5	D6%	D7
10	60	0	72
10	120	1	72

## Star Micronics 10x/15x, Delta 10

G\$ = PG2.STARX

D4	D5	D6%	D7
10	60	0	72
10	120	1	72
10	60	2	144
10	120	3	144

## Texas Instruments 810LQ

G\$ = PG2.RSTR

D4	D5	D6%	D7	P6	L%
12	72	3	72	13.2	0

## Data for Letter Quality Printers

G\$ = PG2.ZLQPR L%=128

C4	C5	D6%	D7	P6	Models
120	120	0	48	13.2	<b>Qume, Diablo, Xerox, Apple DTC 380Z, C. Itoh F-10, Spinwriter XXX5 models,</b>
120	120	1	48	13.2	<b>NEC Spinwriter xxx0 models</b>
120	120	2	48	13.2	<b>Daisywriter (*)</b>
120	120	3	48	13.2	<b>Olympia ESW 102/103</b>

(\*) Use D6%=2 only if using the native Daisywriter features.

Otherwise use settings for the appropriate emulation mode.

G\$ = PG2.ZAJ830 L%=0

C4	C5	D6%	D7	P6	Models
60	60	0	48	13.2	<b>Anderson Jacobsen 83x</b>

## Printek 910, 920 and 930

## Printronix 150, 300, and 600

G\$ = PG2.RSTR		L% = 128				
D4	D5	D6%	D7	P6	Model	
26	72	2	72	13.2	Printek 910/920/930	
24	144	0	144	13.2	Printek 910/920/930	
10	60	1	72	13.2	Printronix 150/300/600	

## Qantex 7030 and 7040

G\$ = PG2.Q70X0		L% = 0			
D4	D5	D6%	D7	P6	
60	60	0	72	13.2	
72	72	1	72		
120	120	2	72		
144	144	3	72		

## Radio Shack LP-7, LP-8, DMP-200, DMP-400, DMP-500

G\$ = PG2.RSLP		L% = 128				
D4	D5	D6%	D7	P6	Model	
60	60	0	72	8	LP-7/LP-8	
60	60	1	72	8	DMP-200	
60	60	1	72	13.2	DMP-400/500	
72	72	2	72		DMP-2/4/500	
100	100	3	72		DMP-2/4/500	

## Seikosha GX-100 / Gorilla Banana

G\$ = PG2.GX100		L% = 0			
D4	D5	D6%	D7	P6	
60	60	0	63	8	

## Siemens 2712 Ink Jet

G\$ = PG2.92712		L% = 128			
D4	D5	D6%	D7	P6	
70	70	0	84	13.2	
84	84	1	84		
115.5	115.5	2	84		



# Appendix B - I/O Card Driver Application Table

C\$	I/O Cards Serviced
STD PARA. BIN	Apple II/III, Epson 8131/8132, Tymac, Prometheus, Microtek RV-611, Grappler + Basis 108 internal, late Wizard BPO/SOB/IP1 Paper Pusher, Buffered Grappler +
AI0 PARA.BIN	SSM AI0/APIO, CCS 7720 parallel
AI02 PARA. BIN	SSM AIO-II
CCS PARA. BIN	CCS 7728 parallel, MPI Auto-Plot
OMG PARA. BIN	Orange Micro Grappler OR Interface, Star Micronics Grafstar
MCI PARA. BIN	Mountain Computer CPS card, parallel
GENI PARA. BIN	GENIE Parallel Graphics Card
JBE PARA. BIN	John Bell 79-295 Parallel Card
EP12 PARA. BIN	ANY Interactive Structures PKASO
MDGX PARA. BIN	Microtek Dumping GX
STD SER. BIN	Apple II communications card, SSM AIO-II, CCS 7710
AIO SER. BIN	SSM AIO and ASIO serial, Prometheus serial
APL SER. BIN	both early Apple II serial cards
APL3 SER. BIN	Apple III internal serial
MCI SER. BIN	Mountain Computer CPS, serial
SUPR SER. BIN	Apple Super Serial
BASIS SER. BIN	Basis 108 internal serial
PPMB BUFR. BIN	Practical Peripherals Microbuffer
WZRD BUFR. BIN	Early Wizard BPO or SOB buffer cards
MD64 BUFR. BIN	Microtek Dumping with buffer

Serial SSM, CCS, Apple Communications and Super Serial, and Apple III internal serial card drivers transparently support X-ON/X-OFF protocol. If you need to use this protocol, configure your printer so that it generates DC3 to stop printing. Printing will resume upon receipt of the NEXT character generated by the printer, even if it is not DC1. NOTE: Only I/O cards that pass all 8 bits of data will work with the Mannesman Tally, Radio Shack, Seikosha and Siemens printers.

# Appendix C - Printer Set-Up: Special Cases

**Anadex DP-9000** series printers should have the Option R 2K RAM buffer if you are going to print pictures with scale factors larger than 2x.

**DataSouth 180** printers must have the graphic option installed and enabled at the front panel.

Early **Epson MX-80** printers with block graphics must be retrofitted with GRAFTRAX PROMs for use with this program.

Early **Infoscrite 1000** models with graphic codes between 00 and 3F hex require you to select density option 1 during the initialization sequence of the Magnified Hi-Res Printing program. Option 0 is used with later Infoscrite 1x00 printers with graphic codes between 40 and 7F hex.

**Integral Data** printers must be equipped with the dot addressable graphics option. Set the skip over perforation switch on the top of the printer so that it is OFF, and enable the extended features ON. Consult your printer user's manual to determine which switch poles are to be set.

**Okidata 82a and 83a** printers with block graphics must be retrofitted with Okigraph I PROMs for use with this program.

**Some letter quality printers** (like the C. Itoh F-10) have both serial (character sequential) and buffered line modes. In order for the graphic control codes to be enabled, these printers should be in the serial mode so that the horizontal motion codes will be accepted.

**NEC 5530** parallel input **Spinwriters** must have SW1 pole 5 on the G9BNA (rear) circuit board set ON so that AUTO RETURN is INVALID. You will have to take the printer apart to set this switch.

If you are using a **CII Daisywriter** which is emulating another type of printer, such as NEC, QUME, or DIABLO, then be sure to select the menu options for the type of printer being emulated. If you are using the Daisywriter mode, then select the Daisywriter option.

Paper Graphics is a utility for printing out high resolution graphics screens to virtually any printer/interface card combination available.

- Print any portion of a screen in any of 9 magnifications
- Do rotated, flipped, mirrored, or inverse pictures
- Add text and labels
- Print several pictures sequentially and automatically
- Frame or crop pictures
- Vary print densities for darker or lighter prints
- Print both pages for a panorama effect
- Can be used with Dow Jones Market Analyzer software and virtually any other program that uses hi-res graphics screens

Paper Graphics is not copy-protected and print routines can be transferred to other disks for swap-free printing of important data.

Paper Graphics supports the following printers & interface cards:

Anadex DP-9000, DP-9001, DP-9500, DP-9501, DP-9620, DP-9625, WP-6000.

Anderson Jacobsen 83x.

Apple Computer DMP, Silentype, DTC 380Z.

BMC Dot Matrix.

Centronics 739, 122, 351, 352, 353.

C. Itoh 8510, 8600, 1550, F-10.

Daisywriter.

Datasouth 180, 220

Diablo.

Digital Equipment LA-34, LA-50, LA-100.

Dynax 15.

Epson MX-70, MX-80, MX-82, FX-80, RX-80, MX-100, FX-100.

Facit 4510.

Facit IPS 5000.

Hi-G Printer Products 9/80, 9/32.

IBM Graphics Printer.

Infoscribe 1000, 1200, 1500.

Integral Data Systems 440G, 445G, 460G, 580G, Prism 80, Prism 132, microPrism 480.

Malibu Dual Mode 200.

Mannesman Tally MT160, MT-180

Micro Peripherals Inc (MPI) 88G, 99G, 150G, PrintMate 150.

NEC PC-8023, PC-8025, Spinwriter xxx0 models, Spinwriter XXX5 models.

Okidata 82a, 83a, 84, 92, 93.

Olympia ESW 102/103.

Printek 910, 920, 930.

Printronix 150, 300, 600.

Qantex 7030, 7040.

Qume.

Radio Shack LP-7, LP-8, DMP-200, DMP-400, DMP-500.

Selkosha GX-100 — Gorilla Banana.

Siemens 2712 Ink Jet.

Sony SMI-7020.

Star Gemini 10, Gemini 10x, Gemini 15, Gemini 15x, Delta 10.

Texas Instruments 810 LQ.

Xerox.

Interface Cards:

Parallel: Apple II/III, Epson 8131/8132, Tymac, Prometheus, Microtek RV-611, Grappler +, Basis 108 Internal, late Wizard BPO/SOB/IPI, Paper Pusher, Buffered Grappler +, SSM AIO/APIO, CCS 7720 parallel, SSM AIO-II, CCS 7728 parallel, MPI Auto-Plot, Orange Micro Grappler OR Interface, Star Micronics GRAFSTAR, Mountain Computer CPS card, Genie, John Bell 79-295 Parallel Card, Interactive Structures PKASO (any), Microtek Dumping GX.

Serial: Apple II Communications Card, SSM AIO-II, CCS 7710, SSM AIO and ASIO serial, Prometheus serial, both early Apple II serial cards, Apple III Internal serial, Mountain Computer CPS serial, Apple Super Serial, Basis 108 Internal serial, Practical Peripherals Microbuffer, early Wizard BPO or SOB buffer cards, Microtek Dumping with buffer.