ProGrappler®
Printer Interface

Operator's Manual

COPYRIGHTS WARNING

Pro Grappler ®
Printer Interface
Operator's Manual

TABLE OF CONTENTS

Introduction

Congratulations! You now own the ProGrappler, the latest version of the best selling, most copied printer interface in the entire Apple world. The ProGrappler has been updated to provide maximum support for the Apple IIGS, Apple's latest innovation, and contains powerful new features for Apple IIe users as well. The ProGrappler still provides all the well-known benefits of its predecessors for Apple II and II+ owners.

Perhaps most convenient of the new features is the ProGrappler-IIGS Screen-Shot utility, allowing your to print virtually any screen from any program, without resetting your Apple. Once the ProGrappler is installed as a IIGS desk accessory, you can access it at any time through the IIGS "Control Panel," as long as your software allows it. When your printing is done, you just "quit" the ProGrappler and exit back to your application in progress. For more on this powerful IIGS feature, see page 12.

Maximizing the Power of Your System

The ProGrappler will serve as a parallel printer interface in any Apple II, II+, IIe or IIGS computer, but the more powerful your Apple, the more power the ProGrappler can provide. As a result, this manual has been written in sections which reference the systems to which they apply. If you do not see your system listed at the beginning of a section, the features described in that section are not available to you.

What's in the Package

You should find the following items in the ProGrappler package:

1. ProGrappler Interface Card
2. Printer Cable

What Else You Need

To complete installation, you need the following:
1. A screwdriver
2. A complete Apple II, II+, IIe or IIGS system
3. A Parallel printer with paper, ribbon, etc.

NOTE: *If you are using an Apple IIe mouse, you must also have an Enhanced Apple IIe and and 80 column card for proper operation of the mouse and ProGrappler menus.*

Compatibility Notes

The ProGrappler is designed to work in a wide range of Apple II applications. However, certain limitations do exist, due to the many configurations possible with this versatile system.

Computer Compatibility

The ProGrappler will work with all Apple II slotted computers. It provides basic screen dump capability to all models, and provides additional user interface options on the Apple IIe and IIGS, including pull-down menus. On the Apple IIGS, the ProGrappler firmware installs as a Classic Desk Accessory (CDA), allowing you to print from almost any application without quitting your program. Sections of this manual describing ProGrappler features are preceded by a list of the Apple systems supporting those features.

Software Compatibility

The ProGrappler is generally compatible with Applesoft BASIC, DOS 3.3, ProDOS, Integer BASIC, PASCAL and CP/M. PASCAL 1.0 and CP/M require specific procedures for ProGrappler tabs and right margins. See "Troubleshooting" on page 30 for details.

To fully utilize the ProGrappler, software must by able to recognize its standard code set. The ProGrappler is recognized by thousands of software titles, but not by all of them. Check your software manual for references to selecting a printer card. Generally, ProGrappler, Grappler+ or Grappler selections will work. Other selections which often work include Orange Interface, Epson APL, Dumpling, Printerface and Graphicard.

APPLE IIGS SOFTWARE NOTE: Many new packages for the Apple IIGS support only the ImageWriter II printer at this time. In their present form, they cannot support the ProGrappler or parallel printers. Many of these may be adapted through the simple addition of drivers for your printer and ProGrappler card, which are still under development as of this manual writing. Ask your dealer for details, or contact Orange Micro.

PASCAL-CP/M NOTE: Whenever booting up a PASCAL or CP/M program, your printer must be ON and ON-LINE, or the system will hang up.

Printer Compatibility

As a physical link between your printer and your Apple, the ProGrappler is compatible with virtually all parallel printers following the Centronics parallel standard. As of this manual's writing, no currently produced parallel printers are known to use another standard, except Tandy printers.

For graphic screen dumps and other special commands contained within the ProGrappler, compatibility is only slightly more limited. The ProGrappler supports several dozen popular parallel printers, listed in the DIP switch table on page 7. If your printer is not listed, try the various Epson settings, as this is a popular standard. (Be sure to turn power off and to follow the installation procedures precisely each time the switches are changed.) Next contact your dealer or printer manufacturer. Your printer must use codes compatible with one of the printers listed in order to use the ProGrappler's built-in features.
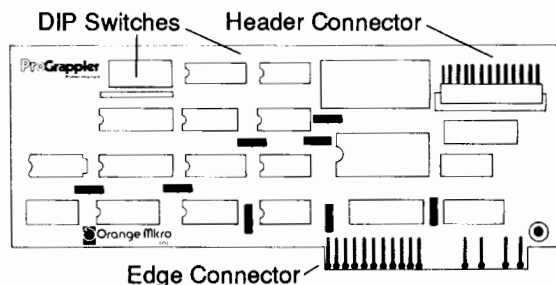
Installing the ProGrappler

To install the ProGrappler board into your Apple computer you will need a screwdriver. Then follow the steps shown below:

1. POWER OFF. Unplug your computer, printer and monitor from power outlets before doing anything. *Do not install or remove a board when power is applied. This could damage the board and/or the computer.*
2. Remove the cover from your computer. This is the large, flat part of your system on which the monitor sits.
3. Next, touch any metal part of the back panel of the Apple with your finger to discharge any static electricity you may have built up so far. This protects any sensitive components on the ProGrappler from damage due to high static voltages.
4. Set the ProGrappler DIP switches:

Locate your printer model in table 1 on the following page. If you do not see it listed, try settings for any other models by the same manufacturer. If your manufacturer is not shown, try the Epson MX series setting, as Epson is a widely accepted standard. If this does not work, contact your dealer or printer manufacturer to determine compatibility with any of the listed printers. Your printer must be compatible with one of the listed ProGrappler models to be supported by the ProGrappler special printing features.

Refer to figure 1, which shows the layout of the ProGrappler board. The switches are located at the top left of the card, labeled 1 through 6. Using a toothpick, pencil, paper clip or pen, set these switches according to the settings indicated in table one.

Figure 1

The on/off positions are indicated on the left side of the DIP Switches. Note that the DIP Switches are always pressed <u>down</u> to select the desired position. For example: for ON, press down on the ON side. For OFF, press down on the OFF side.

Printer and Model	SWITCHES					
	#1	#2	#3	#4	#5	#6
BROTHER						
1109, 1509, TWINWRITER 5	OFF	OFF	ON	OFF	OFF	OFF
Citizen						
MSP 10, MSP 15, MSP 20, MSP 25	OFF	ON	OFF	OFF	OFF	OFF
C. ITOH						
ProWriter 310/315	ON	ON	OFF	OFF	OFF	OFF
ProWriter 8510	OFF	OFF	ON	OFF	ON	OFF
Color 310	ON	ON	OFF	OFF	OFF	ON
EPSON						
RX, LX, LQ, FX, DX Series, SQ 2000, HS 80	ON	ON	ON	OFF	OFF	OFF
Color Models	ON	ON	ON	OFF	OFF	ON
MX Series and Compatibles	ON	ON	OFF	ON	ON	OFF
Hewlett Packard						
ThinkJet (Epson Mode)	ON	ON	OFF	ON	OFF	OFF
NEC						
Pinwriter P2, P3, and P5	OFF	OFF	ON	ON	OFF	OFF
Color Models (CP2, CP3)	OFF	OFF	ON	ON	OFF	ON
Okidata						
190, 290 Series, 2410	OFF	ON	ON	OFF	OFF	OFF
80, 90 Series	ON	OFF	OFF	OFF	OFF	OFF
Color Models (290 Series)	OFF	ON	ON	OFF	OFF	ON
Okimate 10 and 20	OFF	ON	ON	ON	OFF	ON
Note that all Okidata 80 series printers except the Model 84 are supported.						
PANASONIC						
KX-P1080, KX-P1090, KX-P1091, KX-P1092						
KX-P1592	ON	ON	ON	OFF	OFF	OFF
Star Micronics						
SG, SR, SD Series	ON	OFF	ON	OFF	OFF	OFF
Toshiba						
P-321, P-341, P-350, P-351, P-1341, P-1350, P-1351	OFF	ON	OFF	ON	OFF	OFF
Color Model (P-351C)	OFF	ON	OFF	ON	OFF	ON
Transparent Mode (Letter Quality)	OFF	OFF	OFF	OFF	OFF	OFF

Table 1. ProGrappler DIP Switch settings

5. Moving back to the Apple, locate slot #1[1]. Figure 2 shows the inside of an Apple IIGS, but all Apple IIs have similar slot layout. Looking into the Apple from the front, you will see the slots arranged in a row along the back of the Apple. These slots are labeled one of two ways: either 0 through 7, or 1 through 7 with an auxiliary slot closer to the front of the machine. It is strongly recommended that you use slot #1 for the ProGrappler, as most of your software, as well as the IIGS desk accessory menu, expects to see the printer at that location. Other slots may be used (except Ø), but you will have to modify or reconfigure many of your programs. Remove any cutouts or plugs to clear the appropriate corresponding opening at the rear of the Apple II.
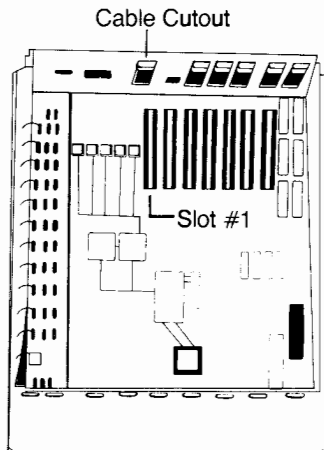
Cable Cutout

Figure 2.

Slot #1

6. FCC regulations require that all computing equipment be grounded to limit interference with television and other radio frequency transmissions. These regulations apply only to later model computing equipment, including the Apple IIe enhanced and the Apple IIGS. Earlier models were not designed to properly limit interference. Locate the ProGrappler printer cable, and notice the ground clamp near the small end of the cable. Using a screwdriver, loosen the screw running parallel to the cable. Pass the small end of the ProGrappler printer cable in through the appropriate opening in the Apple. Slide the clamp up inside the cutout such that the screw fits into the notch. Tighten the screw with the screwdriver. In certain Apple II models, this clamp may not provide sufficient contact with the computer's metal lining. A small washer may be used to improve this contact.

[1] We assume that you inserted the ProGrappler into Slot # 1. If you inserted the ProGrappler into a different slot, be sure to remember that slot number. Substitute that slot number whenever you see the command "PR # 1"; for example, "PR#2" for Slot#2.

7. Examining the connector at the small end of the cable, now inside your Apple, you will see that one side of the connector has a wire occupying each position, and the other has only a few wires in total. The "full" side should be facing out from the ProGrappler card when the cable is attached. Making sure that the connectors are lined up and centered, press the cable connector onto the ProGrappler card.

8. To install the ProGrappler, position its edge connector (see figure 1) over slot #1 and press firmly down on the card, rocking it gently until it is completely and solidly seated in the slot.

9. Replace the cover on your computer.

10. Most printers are factory set for compatibility with the ProGrappler. This requires that 8 data bits are being used, as opposed to 7, and no linefeeds should be added by the printer. These settings are determined by switches INSIDE YOUR PRINTER. Consult your printer manual for more details. Plug the printer end of the ProGrappler cable into the printer.

11. Now reattach power to your computer, monitor and printer. You are now ready to let your Apple know that a ProGrappler has been installed. Refer to the following "Installation Test and Set-Up" section appropriate for your computer model.

Apple IIGS Installation Test and Set-Up
The IIGS Control Panel
The Apple IIGS needs to know that a printer card is to be used instead of the serial port at the back of the computer. Use the following procedure.

1. Insert the IIGS system disk into the drive.
2. Turn on power, booting the system disk
3. When the drive stops spinning, press CONTROL-Ö-ESC simultaneously. This will bring up the Classic Desk Accessory menu.
4. Using the UP/DOWN arrow keys, select CONTROL PANEL and hit (Return).
5. Using the arrow keys, select SLOTS and press (Return).
6. With the arrow keys, select SLOT 1 (unless the ProGrappler is installed in another slot).
   Then use the LEFT/RIGHT arrow keys to change PRINTER PORT to read YOUR CARD
   and press (Return).
7. Use UP/DOWN arrows to select QUIT from the Control Panel menu, and then the Desk Accessory menu.
8. Turn OFF the computer and wait about 30 seconds. When you turn it back on, it will remember the settings you have made.

9. Run the Apple IIe/DOS test routine found below, using the system disk in place of the Apple DOS disk.

The Apple IIGS and Print Drivers

Newer software programs designed specifically for the Apple IIGS may use a new printing format not found in earlier Apple II software. Generally, software which displays visible folders on the "Desktop" before booting will be of this variety, but this is not an absolute rule. This later software may require the addition of a special driver in order to recognize or use any printer card or the printer attached to it. This is IN ADDITION TO the control panel procedure performed above. Contact your dealer, Orange Micro, or the publisher of your software for additional information regarding the availability of print drivers on the Apple IIGS.

The ProGrappler also has a full set of graphics and text printing features that can be installed as a seperate Classic Desk Accessory. This still requires that the control panel installation procedure be performed. A full discussion of the ProGrappler as a IIGS Desk Accessory is found on page 12.

APPLE IIe and APPLE II+ Installation Tests

If You Are Using Apple DOS:

1. Insert an Apple DOS diskette all the way into your Disk Drive and close the door.
   NOTE: Do not insert a diskette while the disk drive is running. If the red light on the disk drive is lit, turn off the power to your computer, then insert the diskette.
2. After double-checking everything, you may now turn on your computer, monitor and printer. This automatically starts your program.
3. Press **CONTROL-RESET** simultaneously, then press (Return). This resets your system.
4. When you see the "]" prompt on the screen, type PR#1, then hit (Return) several times. (Remember to substitute the correct slot number here if the ProGrappler is not plugged into Slot #1.) Your printer should be printing an "]" each time you hit the (Return) key, after a few seconds delay.
5. Type PR#Ø, then press (Return).
6. You may now place any program in the drive and type PR#6 and press (Return) to start the program.

If You Are Using CP/M:

CP/M is NOT on your standard Apple system disk, but some applications use this Operating System. If you are using CP/M, the ProGrappler *must* be installed in Slot #1. If it is not, go back to the beginning of this section (Installing The ProGrappler) and re-install the ProGrappler into Slot #1 at this time. (Also, when using CP/M and Wordstar, see Appendix F: Transparent Mode.)

1. Make sure that power is off on the computer, monitor and printer.
2. Insert the CP/M diskette all the way into the Disk Drive and close the drive door.
3. Turn on the computer, monitor and printer. This automatically starts the program.
   NOTE: Be sure to turn on your printer first and make sure it is "on-line" whenever booting up PASCAL or CP/M.
4. When you see the "A>" prompt, enter the Control-P command. That is: hold down the Control key and press the P key, then release both keys.
5. Now hit the Return key several times. The printer should print an "A>" each time you press the key.

If You Have Trouble:

Double-check everything in the last section. If you cannot find the problem, check for the following:
   a) Printer power cord is plugged in
   b) Printer power is on
   c) Printer cable is solidly attached
   d) Printer "Select" is on
   e) Paper is in the printer

HOW TO USE THE PROGRAPPLER

Introduction

In addition to serving as a standard parallel printer interface, the ProGrappler provides dozens of powerful features for the printing and formatting of graphics and text, including printing of color graphics directly from the screen on selected color printers. These features can be used in a number of different ways, and what system you have will determine the options available to you.

This section of the manual is divided into four sections. Part A, using the ProGrappler as a Desk Accessory, only applies to users of the Apple IIGS. Part B covers the use and functionality of the ProGrappler's pull-down menus, and applies to all Apple IIGS and IIe enhanced users. Regular Apple IIe users may also use pull-down menus, but they may not appear as expected due to the characters available on that computer. Part

C covers the use of the keyboard to enter ProGrappler commands, and this is valid on all Apple IIs, although certain commands may work only on later models. Part D recaps all the ProGrappler commands, showing both the CONTROL-I keyboard command and the BASIC equivalent. BASIC commands will be used when including ProGrappler commands within a program.

SECTION A
THE PROGRAPPLER AS A CLASSIC DESK ACCESSORY (SCREEN SHOT FEATURE) (APPLE IIGS ONLY)

The many screen printing functions of the ProGrappler are available through the Classic Desk Accessory (CDA) menu of the Apple IIGS (remember where you specified "Your Card" in installation?). When active as a CDA, the ProGrappler allows you to print any screen from virtually any software that allows the use of CDAs. The ProGrappler CDA will bring up the pull-down menus described in sections B and D. **If you are using a 5-1/4" drive, or are NOT using the IIGS system disk, use the "Apple IIe and II+ Installation Test" for Apple DOS as it appears on page 10, starting with step 3, to install the ProGrappler CDA.** You may do this at any time while using Apple IIe/II+ software. This method will work until you start a program that "re-boots" the system. In these cases the ProGrappler CDA is not accessible.

1. **The ProGrappler must be installed as a CDA at the beginning of each computing session.** Some software may contain drivers installing the ProGrappler automatically, but many will require installation with each power-up. Insert the IIGS system disk into drive 1 and turn on power. Select and open BASIC from the launcher menu. When the cursor appears, type **PR#1** and press (Return). The printer will respond with a carriage return if properly installed. If there is no response see "Installation Tests" on page 9. Type **PR#0** and press (Return), then type **BYE** and press (Return). The Apple IIGS launcher will appear.
2. Press **CONTROL-⌂-ESC** to bring up the CDA menu, which will display the ProGrappler as a selection.
3. Using the UP/DOWN arrows, select ProGrappler and press return. The ProGrappler menus will appear, with the printer selected by your ProGrappler displayed in the right top corner. (Refer to DIP switch settings on page 7.) The next section, "Using Pull-Down Menus," will tell you how to use this screen. For now, press ESC to return to the CDA menu.
4. Select QUIT from the CDA menu. This will return you to the screen visible immediately prior to entering the CDA menu.

IMPORTANT NOTE: If you reset your Apple IIGS at any point, by typing a **CONTROL-⌂-RESET**, starting a self-booting program, or turning the computer off, you must repeat the above procedure before using the ProGrappler CDA. You will have to turn off the IIGS for about 30 seconds before starting Step 1.

5. Remove the System Disk from the drive and insert any Apple IIGS application disk. Press (Return). The launcher will now display the files available on the new disk. Using the mouse or the arrow keys, select and launch the application.
6. **TO DO A SCREEN SHOT.** When the program displays a desired screen, press **CONTROL-⌂-ESC** to open the CDA menu. If ProGrappler is shown, then installation was successful, and your software properly supports the Apple IIGS CDA routines. Select QUIT to return to your application, or perform a screen dump by following the menu procedures described in the next section.

SECTION B
PROGRAPPLER PULL-DOWN MENUS
(Apple IIGS, Apple IIe enhanced and Apple IIe[2] w/80 column cards only)

Pull down menus give you all the functions of the ProGrappler on-screen. You don't need to remember anything except how to access the menu bar. The rest is spelled out in plain english, right on the screen.

The procedure for executing a command from the menus is straightforward:
1. Access the menu bar
2. *Pull* down a menu
3. *Select* a menu item
4. *Set* a menu item
5. *Close* the menu
6. *Close* the menu bar

A "Dialog Box" may appear when an item is selected. Dialog Box use is the same as Menu use.

The menu bar may be accessed two ways. The first is through the Apple IIGS CDA menu as described in section A. The other is through a Control-I command, which will be

---

[2]The original Apple IIe can be used, but inverse characters will be displayed in place of mouse text.

discussed futher in the next section, "Using Keyboard Commands." Control-I commands can only be entered from BASIC, so you must leave your program first. To do this, press CONTROL and RESET (the gray key above the keyboard on the IIGS) simultaneously when the graphics screen you wish to print is displayed. This will cause your program to stop running and will give you an empty screen with a cursor in the upper left corner. The graphic is no longer displayed, but is still retained in screen memory within the Apple.

Next, type **PR#1** and press Return. The printer will respond with a carriage return and will print the single prompt. You will now enter a CONTROL-I FM, as follows:

1.   Hold down the **CONTROL** key and press I.
2.   Release I and then release **CONTROL**.
3.   Type **FM** without spaces, and press **Return**.
      The ProGrappler menu bar will appear on the screen.

NOTE: *To use a mouse, you must have the following: an enhanced Apple IIe or an Apple IIGS. The Apple II+ does not support a mouse interface.*

Specific Use of Menus

		Using Keyboard	Using Mouse
1.	To *Select* a menu	Use arrow keys or type SHIFT-#[3]	Point mouse
2.	To *Pull* down menu	Press (Return)	Click and Hold
3.	*Select* a menu item	Use arrow keys or type SHIFT-#	Point mouse while holding
4.	*Set* menu item	Press (Return)	Release mouse

If a dialog box appears after step 4:
   Select item with arrow keys, SHIFT-# or mouse
   Open or set items with (Return) or mouse click
   Enter specific responses with the keyboard
   Close dialog box by pressing ESC or clicking on OK box

5.	*Close* menu	Press ESC	(No action req'd)
6.	Leave menu bar	Press ESC	Select QUIT under FILE menu

[3] You may also select a menu by entering (Shift-#), where "#" is the number or character in front of the desired menu item.

A Pull-Down Menu
This is what the menu bar looks like with an open menu. The numbers preceding the names are used in the SHIFT-# commands. Three dots (...) indicate that a dialog box will appear with that selection. A check mark will precede already selected items.

```
1. ⌂   2. File  3. Format  4. Size  5. Style  6. Graphics
        ┌─────────────────────┐
        │ 1. Set Values...    │
        │ 2. Text Dump 80     │
        │ 3. Text Dump 40     │
        │ 4. Text Dump 1 & 2  │
        │ 5. Form Feed        │
        │ 6. Print Test       │
        │ 7. Quit             │
        └─────────────────────┘
```

1 ." ⌂ " Menu

1. **About ProGrappler** - Provides a brief description of the ProGrappler, and displays the copyright notice and ProGrappler Version # on screen.
2. **Troubleshooting** - Displays common incompatibilities between certain combinations of hardware and software and methods of resolving them.

2 ."File" Menu

1. **Set Values**...When selected, a Dialog Box appears with the following selections (each affect the file as a whole):
   1.   **Bell** - Allows Bell (Control-G) command to be sent to printer.
   2.   **Linefeed** - When selected, automatically appends a linefeed after every carriage return. When unselected, linefeed must be generated by software.
   3.   **Bit8** - When selected, allows the eighth (high order) bit to be sent to the printer. When unselected, prevents the eighth bit from being sent to the printer. Some printers use the eighth bit to set an alternate character set for special print formatting such as italics and block graphics. The standard character set may not be available when Bit 8 is selected.
   4.   **Hold** - When selected, the values entered in the Format, Style, and Size Menus are held (or "fixed") and are automatically set the next time you turn on your ProGrappler. When unselected, the normal (default) values are used.

NOTE *All special settings are lost when power is turned off.*

5. **Video** - When selected, text sent to the printer is also sent to the screen. When unselected, text is only sent to the printer.

6. **Transparent** - When selected, the ProGrappler operates as a normal ("dumb") printer controller and forwards all print commands directly to the printer. When unselected, the ProGrappler operates as an "intelligent" printer controller and interprets all (Control-I) commands to the printer.

7. **Color** - Selects the ribbon color to be used for printing:
0. Black   1. Red   2. Blue   3. Yellow

8. **Control Character** - Selects the control character recognized by the ProGrappler for print commands. Use "I" when using Applesoft BASIC, DOS 3.3, ProDos, ProDos 16, PASCAL 1.1, or Integer BASIC. Use "Y" when using PASCAL 1.0, or CP/M.
1. I   2. Y

2. **Text Dump 80** - Prints from an 80 column wide screen (for Apple IIe systems using an Apple 80 column board, or for an Apple IIGS in 80 column mode).

3. **Text Dump 40** - Prints from standard 40 column wide screen.

4. **Text Dump 1 & 2** - Prints two 40 column text pages side-by-side (page 1 on the left, page 2 on the right).

5. **Form Feed** - Sends a "top-of-form" command to the printer each time this command is issued. This advances the paper to the next page.

6. **Print Test** - Prints a set of characters seven times.

7. **Quit** - Returns you to where you were in the program just prior to calling the Menu Bar.

3. "Format" Menu

1. **Page Set-up**...A Dialog Box appears with the following selections:
   1. **Left Margin** = _____ Sets the left margin, as measured in spaces from the left edge of the paper. User may enter any number desired (within range of the printer).
   2. **Right Margin** = _____ Sets the right margin to the number of spaces entered here, as measured from the left edge of the paper. A carriage return is generated at the first space after the right margin setting, but before the end of the line if set by the Line Length command. This helps to prevent words

from being split (this is often called "wordwrap"). A value of "Ø" disables this command.

3. **Line Length** = _____ Sets the length of a line, as measured in characters from the left edge of the paper (not the left margin). A carriage return is generated after the last character or space of the line as specified (except when a Right Margin is set - see Right Margin preceding). Text is not echoed to the screen during printing when this command is selected. Line Length should be selected before Right Margin. A value of "Ø" disables the carriage return. The carriage return must be provided by your Apple program when Ø is selected.

4. **Page Length** = _____ Sets the number of lines on the page. The printer generates six (6) line feeds after the last line printed. This allows the perforation between pages to be automatically skipped if the number of lines is set properly. A value of "Ø" disables the automatic six line feeds.

5. **Lines/Inch** = _____ Sets the number of lines per inch according to the following selections:

1. 6   2. 8

4. "Size" Menu
The following commands provide a selection of text sizes to be printed. These sizes vary according to the printer you use.
   1. **Expanded** - The text size selected is horizontally elongated by a factor of two.
   2. **Pica**
   3. **Elite**
   4. **Condensed**

5. "Style" Menu
   1. **Draft** - Sets the printer into draft mode.
   2. **Double-Strike** - The printer emphasizes text by printing each line twice (two separate passes). This creates a Bold look.
   3. **Emphasized** - The printer emphasizes text by striking each dot twice during a single pass. The second dot is slightly offset from the first dot, creating a Bold look to the text. This is usually the preferred way of creating Bold text.
   4. **NLQ** - Text is printed using "Near Letter Quality" printing.

5. **Headline** - Text is printed using Expanded and Emphasized features. This is useful for headlines and other unique text applications.
6. **Proportional** - Text is printed with a proportional style type.
7. **Underline** - Each character is underlined when printed.
8. **Italic** - Each character is italicized when printed.
9. **Sub-Script** - Each character is sub-scripted when printed.
10. **Super-Script** - Each character is super-scripted when printed.

NOTE: The ProGrappler cannot generate typestyles not available with your particular printer.

6. "Graphic" Menu

Provides selections for printing graphics. Unlike text commands, which remain in effect until cancelled, you must select options each time you want a screen dump.

Before doing anything else, set the proper screen type for your picture. If you are unsure of your correct screen type, try your best guess and then select the WINDOW SET option from the GRAPHIC menu. If your picture is displayed, then you have selected the correct screen type. If something other than your complete picture is displayed, then return to the SCREEN TYPE option and try again. (Examples of screen types are Hi-Res, Super Hi-Res, etc.)

1. **Print** - Causes the printer to start printing the graphics you currently have in the Hi-Res screen memory.
2. **Screen Type**...A Dialog Box appears providing the following selections:
   1. **Mix Text and Graphics**[4] - Prints the graphics screen plus the four-line text window beneath it. The printing begins 20 spaces from the left edge of the paper.
   2. **Page 1** - Prints the Hi-Res graphics image from Page 1. Each white screen dot is printed as a black dot.
   3. **Page 2** - Prints the Hi-Res graphics image from Page 2 instead of Page 1.

---

[4] Cannot be used with Rotate, Double-Size, or Left Margin options.

---

   4. **Side-By-Side**[5] - Prints both Hi-Res graphics images (Page 1 on the left, Page 2 on the right).
   5. **Double Hi-Res**[6] - Prints the Double Hi-Res graphics image.
   6. **Super Hi-Res** - Prints a graphics image using the 320 x 200 or 640 x 200 dot screen memory. Only available from the Apple IIGS.
3. **Invert** - Prints the "inverse" image as seen on the screen. Normally, white dots on the screen print as black dots on paper. This results in an image which looks like a photographic negative. The Invert command produces an image much like a photograph, where the black portions on the screen print as black on paper.
4. **Rotate**[7] - Prints the graphic screen image rotated 90 degrees clockwise.
5. **Color** - When selected, prints a color graphics image as defined by the colors in the image itself. When unselected, prints in black and white.

   When printing color, be aware that your printer cannot reproduce all of the over 4000 colors that the IIGS can display. For this reason, certain colors appearing different on the screen may appear the same on paper. (For example, light brown and deep orange may appear the same color when printed.)
6. **Hi-Density** - Prints an image using the printers' emphasized print mode.
7. **Aspect Ratio**...A Dialog Box appears providing a selection from 1 to 6.
8. **Page Position**...A Dialog Box appears providing a choice of positions:
   1. **Center: Narrow Carriage** - Prints the image centered on a 8 1/2 " carriage.
   2. **Center: Wide Carriage** - Prints the image centered on a 14" carriage. Be sure your printer has a wide carriage.
   3. **Left Margin** - When selected, prints image using the Left Margin set in the Format menu. When unselected, prints image centered on an 8 1/2" carriage.

---

[5] Cannot be used with Rotate or Double-Size options.
[6] This is a special Apple IIe (Rev B or later) option. It is not available with Apple II or II+. Cannot be used with Rotate or Double-Size options.
[7] Only Hi-Res graphics can be rotated. Text cannot be rotated.

9. **Enlargement**...A Dialog Box appears providing a choice of enlargements of the printed screen image:
   1. **Double Size** - Prints the image with four dots for every screen dot (two in the vertical direction and two in the horizontal direction). This results in an image twice the normal size.
   2. **Custom Size** - Prints the image using "X" dots for each screen dot in the horizontal direction (XMAG), and "Y" dots for each screen dot in the vertical direction (YMAG). Values of 1 thru 6 may be used:
      1. XMAG _____   2. YMAG _____
10. **Window Set** - Allows you to print a portion of your image by setting a window over the part you want printed. When selected, your screen image is displayed temporarily with a small box located near the top left corner of the screen.

    First, position the box with the arrow keys such that the top left corner of this box aligns with the top left corner of the desired window. Then hit (Return) to set this position. Next, position the lower right corner of the box such that it aligns with the lower right corner of the desired window. Again, use the arrow keys. You now see a window which contains the image you will print. Then hit (Return) to set this position. If you want to make changes at this point, repeat step10 until you are satisfied, then print.

    If you are using a mouse, move the window to the top left corner of the area you want to print. Hold down the mouse button and drag to the lower right corner of the area you want to print.

SECTION C
USING THE PROGRAPPLER KEYBOARD COMMANDS
(For Apple IIGS, IIe and II+)

In order to give the ProGrappler a Keyboard command the cursor must be visible on your computer screen. If you are inside a program, first Exit your program by pressing the (CTRL-RESET) keys simultaneously. This should produce a cursor, at which you can enter the appropriate commands. (A few programs will not allow this, and so cannot be used with the ProGrappler features.) The basic procedure is as follows:
   1. Turn ON the ProGrappler.
   2. Give the Keyboard Command.
   3. Turn OFF the ProGrappler.

   TO TURN PROGRAPPLER ON:
   If you are using Applesoft BASIC, type: PR#1 after the "]" prompt, then hit (Return).
   If you are using CPM, enter: (Control-P).

   TO TURN PROGRAPPLER OFF:
   If you are using Applesoft BASIC, type: PR#Ø after the "]" prompt, then hit (Return).
   If you are using CP/M, enter: (Control-P) again.

Once the ProGrappler is turned ON, you can give a command by using the CTRL key on your keyboard along with the 'I' key, followed by specific sequences of characters. The (Control-I) commands use mnemonics such as GR for rotate. To enter a (Control-I) command, you would first turn ON the ProGrappler (see above). Then, press down on the CTRL key and continue to hold it down as you type the letter 'I'. Release the CTRL key, then type 'GR'. The mnemonics for each command are listed under "Section D: ProGrappler Commands." After the command is executed, turn OFF the ProGrappler.

NOTE: *Commands can also be entered as part of a PRINT statement which executes from within a program. PRINT statements are for experienced users and programmers. A list of the PRINT statements is included under "Section E: ProGrappler Commands."*

Any command can be entered using (Control-I). The (Control-I) commands maintain total compatibility with software using the existing Grappler+ commands.

Using Control-I Commands

A (Control-I) is used for Applesoft, Integer BASIC, ProDos, ProDos 16, DOS 3.3, or PASCAL1.1. A (Control-Y) followed by a "function-specific" mnemonic is used for PASCAL 1.0 CP/M.

NOTE: We assume the use of (Control-I) commands throughout this manual. Be sure to substitute "Y" for "I" if you are using PASCAL1.0 or CP/M.

Enter (Control-I) commands by the following simple procedure:
1. While holding down the (Control) key, type the letter "I", then release the (Control) key. This is what is meant by (Control-I).
2. Now type whatever follows the "I", such as "G" for graphic screen dump.
3. Press (Return).

Stringing (Control-IG) Commands Together

Several (Control-IG) commands may be executed with a single command by adding on the "function-specific" part of each command to the first command. Only graphics commands may be strung together.

Example: To print an inverted and rotated color image, the entry looks like this: (Control-IGCIR), where "IG" activates the graphics mode, "C" prints a color image, "I" inverts the image, and "R" rotates the image.

Using "PRINT" Statements

The use of PRINT statements usually requires some knowledge of BASIC programming. Therefore no attempt is made to explain the details. A list of PRINT statements are provided in "Section D: ProGrappler Commands" for those who wish to use them.

SECTION D: PROGRAPPLER COMMANDS

Menu names are listed below, along with the equivalent (Control-I) command, and PRINT statement. A brief description of each command is also provided. If you need more detail about a particular command, please refer to the description provided in the appropriate section: Pull-down Menus or Keyboard Commands.

General Commands

Function Name	(Control-I)	PRINT Statement[8]
Bell	(Control-IB)	?CHR$(9);"B"
Allows Bell (Control-G) command to be sent to the printer.		
	(Control-IC)	?CHR$(9);"C"
Cancels the Bell command		
Bit8	(Control-IH)	?CHR$(9);"H"
Allows Bit 8 to be sent to printer.		
	(Control-IX)	?CHR$(9);"X"
Cancels Bit 8.		
Hold	(Control-IFA)	?CHR$(9);"FA"
Retains current values during initialization of printer port.		
	(Control-IQA)	?CHR$(9);"QA"
Restores to default values upon initialization of printer port		
Access Menus	(Control-IFM)	?CHR$(9);"FM"
Displays the Menu Bar.		
Video	(Control-II)	?CHR$(9);"I"
Echo's printer output to screen.		
	(Control-IQV)	?CHR$(9);"QV"
Cancel's printer echo.		
Transparent	(Control-IT)	?CHR$(9);"T"
Instructs ProGrappler to ignore all frther (Control-I) commands until re- initialized. This is the "Transparent" mode.		
Transparent	(Control-IZ)	?CHR$(9);"Z"
This command may be used in place of the command above.		
Trouble-shooting	(Control-IFT)	?CHR$(9);"FT"
Prints Troubleshooting information to the printer.		
Print Test	(Control-IFS)	?CHR$(9);"FS"
Prints the entire alpha-numeric character set. Similiar to Printer Self-Test.		

[8]A "?" is used in place of "PRINT."

Text Formatting And Style Commands

Menu Item	(Control-I)	PRINT Statement
Italic	(Control-IWI)	d?CHR$(9) ;"WI"
	Puts printer in Italic mode.	
	(Control-IQI)	?CHR$(9);"QI"
	Cancels Italic command	
Draft	(Control-IWD)	?CHR$(9);"WD"
	Puts printer in Draft mode.	
NLQ	(Control-IWN)	?CHR$(9); "WN"
	Puts printer in Near Letter Quality mode.	
	(Control-IQN)	?CHR$(9);"QN"
	Cancels NLQ command	
Double-Strike	(Control-IWL)	?CHR$(9); "WL"
	Puts printer in Double-Strike mode.	
	(Control-IQL)	?CHR$(9);"QL"
	Cancels Double-Strike command.	
Emphasized	(Control-IWE)	?CHR$(9);"WE"
	Puts printer in Emphasized mode.	
	(Control-IQE)	?CHR$(9);"QE"
	Cancels Emphasized command.	
Color	(Control-InMC)	?CHR$(9);"nMC"
	Sets the ribbon color, where:	

Sets the ribbon color, where:

n=0   Black
n=1   Red
n=2   Blue
n=3   Yellow

Headline	(Control-IWH)	?CHR$(9);"WH"
	Puts the printer into Headline mode.	
	(Control-IQH)	?CHR$(9);"QH"
	Cancels Headline command.	
Left Margin	(Control-InL)	?CHR$(9);"nL"
	Sets left margin to "n" spaces from left edge of paper.	
Line Feed	(Control-IA)	?CHR$(9);"A"
	Appends a Line Feed to each Carriage Return.	
	(Control-IK)	?CHR$(9);"K"
	Cancels Line Feed command.	
Line Length	(Control-InN)	?CHR$(9);"nN"

Sets Line Length to "n" characters (n = 0 to 255) with a Carriage Return. A value of "0" disables line formatting.

Lines/Inch	(Control-InML)	?CHR$(9);"nML"

Sets the number of lines per inch, where:

n=6   Six lines/inch
n=8   Eight lines/inch

Page Length	(Control-InP)	?CHR$(9);"nP"

Sets the page length to "n" lines. Six carriage returns are generated after "n" lines are printed. A value of "0" disables this command.

Expanded	(Control-InMP)	?CHR$(9);"nMP"

Sets printer pitch (characters per inch) to "n", where:

n=1   Pica
n=2   Elite
n=3   Condensed
n=4   Extended Pica
n=5   Extended Elite
n=6   Extended Condensed

Proportional	(Control-IWR)	?CHR$(9);"WR"

Sets printer to Proportional mode. Not all printers support this mode.

	(Control-IQR)	?CHR$(9);"QR"
	Cancels Proportional command.	
Right Margin	(Control-InR)	?CHR$(9);"nR"

Sets the right margin to "n" characters by generating a Carriage Return after the first space following "n" characters. Same as Word Wrap.

Text Dump 40	(Control-IS)	?CHR$(9);"S"

Prints the current 40 column screen to the printer. Position is 20 spaces from the left edge of the paper. Not compatible with 80 column text display boards.

Text Dump 80	(Control-I8S)	?CHR$(9);"8S"

Prints an 80 column screen to the printer.

Subscript	(Control-IWB)	?CHR$(9);"WB"
	Sets printer to Subscript mode.	
Superscript	(Control-IWP)	?CHR$(9);"WP"
	Sets printer to Superscript mode.	
	(Control-IQS)	?CHR$(9);"QS"
	Cancels both Subscript and Superscript commands.	
Form Feed	(Control-IFP)	?CHR$(9);"FP"
	Sends a Form Feed to the printer.	
Underline On	(Control-IWU)	?CHR$(9);"WU"
	Sets printer to Underline mode.	
	(Control-IQU)	?CHR$(9);"QU"
	Cancels Underline command.	
About Pro-Grappler	(Control-IV)	?CHR$(9);"V"

Prints version of ProGrappler ROM to the printer. This is not echoed to the screen.

Text Dump 1 & 2	(Control-I2S)	?CHR$(9);"2S"

Prints 40-column Text Pages 1 and 2 side by side (Page 1 on the left, Page 2 on the right). Not compatible with 80 column output boards.

Control Character	(Control-I Control-Y)	?CHR$(9);CHR$(25)

Changes the Control character from "I" to "Y". However, care should be taken to avoid using a character already in use by your printer.

Control	(Control-Y	
Character	Control-I)	?CHR$(25);CHR$(9)

Changes the Control character from "Y" back to "I".

Graphics Commands

Menu Item	(Control-I)	PRINT Statement
Page 1	(Control-IG)	?CHR$(9);"G"

Prints Hi-Res graphics Page 1 to the printer. Additional commands which may follow it (using a comma as the delimiter) include:

Color	(Control-IGC)	?CHR$(9);"GC"

Prints a color image to the printer. This option is available for both Normal Hi-Res and Double Hi-Res images.

Double Hi-Res	(Control-IGe)	?CHR$(9);"Ge"

Prints a Double Hi-Res image to the printer. All options are available in this mode.

Super-Hi Res	(Control-IGA)	?CHR$(9);"GA"

Prints an image with a resolution of 320 x 200 or 640 x 200 pixels to the printer. Only available on the Apple IIGS.

Double Size	(Control-IGD)	?CHR$(9);"GD"

Prints a double-size image to the printer. Each dot is printed with four dots (XMAG=2, YMAG=2).

Hi-Density	(Control-IGE)	?CHR$(9);"GE"

Prints an image using the printers' emphasized print mode.

Invert	(Control-IGI)	?CHR$(9);"GI"

A black screen dot is printed as a black dot.

Left Margin	(Control-IGL)	?CHR$(9);"GL"

Prints graphics using the left margin set in the "LEFT = n" command. When not set, prints image centered on a narrow carriage (same as for "+GRAPH").

Page 2	(Control-IG2)	?CHR$(9);"G2"

Prints the graphics image stored in Page 2.

Aspect Ratio	(Control-IG*n)	?CHR$(9);"G*n"

Prints the graphics image with a width to height of "n" (n = I to 6).

Rotate	(Control-IGR)	?CHR$(9);"GR"

Prints a graphics image rotated 90 degrees clockwise.

Center: Wide Carriage	(Control-IGG)	?CHR$(9);"GG"

Prints a graphics image centered on a wide (14") carriage.

Window Set	(Control-IGWn)	?CHR$(9);"GWn"

Prints that portion of an image falling inside a box (n = X1,X2,Y1,Y2) whose upper left coordinate is X2,Y2.

XMAG	(Control-IGXn)	?CHR$(9);"GXn"

Prints a graphics image magnified by "n" in the horizontal (X) direction (n = integer from 1 to 6).

YMAG	(Control-IGYn)	?CHR$(9);"GYn"

Prints a graphics image magnified by "n" in the vertical (Y) direction (n = integer from 1 to 6).

Print Side-	(Control-IGS)	?CHR$(9);"GS"

Print Side-by-Side	(Control-IGS)	?CHR$(9);"GS"

Prints graphics images from Page 1 and Page 2 side by side to the printer. Cannot be used with Rotate or Double-Size options.Mix Text &

Graphics	(Control-IGM)	?CHR$(9);"GM"

Prints the graphics image and the 4 line text window to the printer.

Default Parameters

Default parameters are those commands which are automatically set when you turn on your system.

The following is a list of the default parameters as set by the factory:

Command	Applesoft BASIC	PASCAL & CP/M
Left Margin	Ø	Ø
Right Margin	Ø	Ø
Line Length	Ø	Ø
Page Length	Ø	Ø
Screen	On	Off
Display	On	Off
Line Feed		

TROUBLESHOOTING

The following is intended to provide a guide to the most common problems you might encounter when installing or using the ProGrappler. Most of the problems you might encounter are incompatibilities due to certain combinations of hardware and software.

If you are using...
Appleworks version 1.0 or 1.1

and the problem is ...
An "80N" appears in the upper left corner of all printouts, or... Strange text formatting appears, then...

The Solution Is...
Obtain an upgrade to version 1.2 or greater from your Apple dealer. Then enter the Interface Card section in the Appleworks menu and change the code from (Control-I 80N) to (Control-I ØN).

If you are using...
Appleworks version 1.2, 1.3, or 2.0

and the problem is ...
An "80N" appears in the upper left corner of all printouts, or... Strange text formatting appears, then...

The Solution Is...
Enter the Interface Card section in the Appleworks menu and follow the same procedure as above.

If you are using...
PFS:Write or PFS: Graph

and the problem is...
The printer prints garbage when you merge a graph with a text file, then...

The Solution Is...
Set the ProGrappler to Transparent mode (or enter the *P09,84* command in the PFS software). Then enter the name of your printer in place of "ProGrappler" using the "Print Options" command in the installation section of the PFS software.

If you are using...
Wordstar (Micro-Pro) with a Letter Quality Printer

and the problem is...
You get garbage when you print, then...

The Solution Is...
Set the Transparent mode in the ProGrappler. Insert a (Control-IT) in the printer installation area of your program if allowed.

If you are using...
MousePaint with ProDos (Apple Computer Company)

and the problem is...
You get garbage when printing a graphics picture, then...

The Solution Is...
Obtain a patch program called "MousePrint" and instructions from AHWARE Software Company, Danville, CA (415) 284-5180.

If you are using...
Homeword (Sierra On-Line)

and the problem is...
You get no printing, or your software hangs, then...

The Solution Is...
Change the selection from ProGrappler to "Other" in the installation program of Homeword.

If you are using...
Dollars and Sense (Monogram Software)

and the problem is...
Graphics cannot be printed from within the program, then...

The Solution Is...
First exit the program to the Operating System level. Then boot up "System Master 3.3" and load the Dollars and Sense graphics diskette. Then use the ProGrappler "BLOAD" command described in Appendix B of this manual.

If you are using...
VisiPlot or VisiTrend, Version 1.0 or 1.1 (VisiCorp)

and the problem is...
The program will not do a screen dump, then...

The Solution Is...
First, save your graphics to a data disk. Then use the ProGrappler "BLOAD" command described in Appendix B of this manual.

If you are using...   **and the problem is...**
Paintworks Plus   You can't print anything, then...
(Activision)

The Solution Is...
Copy the file "Basic.System" from the Apple IIGS system disk to the Paintworks disk. Then use the newly configured Paintworks disk to install the ProGrappler following the normal startup procedure in this ProGrappler manual. You can then use the ProGrappler CDA to print selected graphics from Paintworks Plus.

If you are using...
PASCAL 1.Ø or CP/M **in any application...**

The Solution Is...
1. PASCAL I.Ø AND CP/M use (CONTROL-I) to represent a horizontal tab. If you are listing a file which contains tabs, first set the tabs according to your printer manual. Then list the file.
2. PASCAL 1.Ø and CP/M use one of the I/O RAM locations to pass the output character. Since the ProGrappler uses all available locations for its variables, the Right Margin function is not available to maintain compatibility with existing software.

APPENDIX A: RUNNING TEST PROGRAMS

The following programs are for the experienced user, and allow testing the graphics capabilities of the ProGrappler.

Applesoft Basic
```
5    TEXT
1Ø   HOME
2Ø   PRINT "ENTER THE SLOT YOUR PROGRAPPLER
     IS IN AND"
3Ø   INPUT "HIT THE RETURN KEY:";S
5Ø   HGR:REM CLEAR HI-RES PAGE 1
6Ø   HCOLOR=3:REM SET COLOR TO WHITE
7Ø   POKE 49234,Ø:REM SWITCH TO FULL-SCREEN
     GRAPHICS
8Ø   HPLOT Ø,Ø TO 279,Ø TO 279,19Ø TO Ø,19Ø TO
     Ø,Ø:REM DRAWS RECTANGLE
9Ø   FOR X=Ø  TO 279 STEP 9:HPLOT X,Ø TO
     X,19Ø:REM PLOT VERTICAL LINES
1ØØ  NEXT X
11Ø  FOR Y=Ø TO 19Ø STEP 5:HPLOT 279 ,Y TO
     Ø,Y:REM PLOT HORIZONTAL LINES
12Ø  NEXT Y
13Ø  PRINT CHR$(4);"PR#";S:REM TURNS ON PRO-
     GRAPPLER
14Ø  PRINT CHR$(9);"G":REM DUMP HI-RES PAGE 1
     NORMAL
15Ø  PRINT  CHR$(4);"PR#Ø": REM TURNS OFF PRO-
     GRAPPLER
16Ø  TEXT:REM HOME CURSOR
999  END
```

If you do not use DOS, substitute the following for lines 130 and 150:

```
13Ø  PR#S
15Ø  PR#Ø
```

Line 14Ø allows you to experiment with different options. Try changing the function-specific part of the command in the PRINT statement. For example, substitute "GI" or "GDR" for "G".

PASCAL: Example #1

Appendix A - Running Test Programs

FOR PASCAL USER:

```
PROGRAM DEMO;
USES TURTLE GRAPHICS, APPLESTUF;
VAR ANGLE, DISTANCE:INTEGER
    PRINT:TEXT
    BEGIN
      ANGLE:=8Ø;
      INITTURTLE;
      PENCOLOR(WHITE);
      FOR DISTANCE:= 1 to 99 DO
                      BEGIN
                        MOVE(2*DISTANCE);
                        TURN(ANGLE);
                      END
      REWRITE(PRINT,'PRINTER:')
      WRITELN(PRINT,CHR$(25),'G');
    END
```

PASCAL - EXAMPLE #2

This program demonstrates how to load a picture which has been saved to disk using a BLOCKWRITE command.

```
PROGRAM LOAD PIC:
USES TURTLEGRAPHICS, APPLESTUF;
CONST Hi-Res ____ Page _____ 1 = 8192:
VAR Disk _____ Block: RECORD CASE BOOLEAN OF TRUE:
                    (Intpart:INTEGER);
                    FALSE;(Ptrpart:Y INTEGER);
END:
  ch:CHAR
fname:STRING;
  prnt:TEXT;
PROCEDURE Bload (Filename:STRING);
VAR io:INTEGER;
  f:FILE;
BEGIN
  DISK ____BLOCK.Intpart;=Hi-Res ____ Page _____1;
  RESET(f,Filename);
  io:=BLOCKREAD(f,Disk ___ Block ____ Ptpart Y,16);
  CLOSE(f,LOCK);
END;
PROCEDURE Print ____ Picture;
VAR options: STRING;
BEGIN
  WRITE("Enter options:');
  READLN(options);
  REWRITE(prnt,'PRINTER:');
  WRITELN(prnt, CHR$(25),'G',options);
  CLOSE(prnt);
END
BEGIN
  INITTURTLE
REPEAT
TEXTMODE
WRITELN ('Enter picture name(specify drive):)
```

(An example of an entry would be:
```
    #5:Picture, Foto
```
where Picture,Foto is a picture on Drive#2.)
```
READLN(fname);
GRAFMODE;
Bload (fname);
REPEAT UNTIL KEYPRESS;(wait until key is pressed)
READ(KEYBOARD,ch);clear keyboard
TEXTMODE;
Print _____Picture;
WRITE('Print more pictures?');
READLN(ch);
UNTIL(ch='N') or (ch='n');
END
```

APPENDIX B: PRINT GRAPHIC SAVED TO DISK

The following Applesoft BASIC programs are for the experienced user. They allow you to print graphics (from one of the popular graphics programs) which have been saved to disk.

Example # 1

```
 5    S = 1⁹
1Ø    HOME
2Ø    D$=CHR$(4):REM CTRL-D for Apple DOS
4Ø    PRINT "ENTER THE NAME OF THE GRAPH:"
5Ø    INPUT N$
6Ø    HGR:REM  Clear Hi-Res Page 1
7Ø    PRINT D$;"BLOAD";N$;",A$2ØØØ":REM Load
      Picture
8Ø    VTAB 22
```

---

[9] If your ProGrappler is not in Slot #1, change this to read the correct slot.

```
90      PRINT "ENTER OPTIONS
        (D,I,R,L,E,NORMAL);"
100     INPUT A$
105     IF LEFT$(A$,1)="N" THEN A$="":REM If normal,
        then no options.
110     PRINT D$;"PR#n";S:REM Turns PRO-
        GRAPPLER on
120     PRINT I$;"G";A$: REM Dump Hi-Res Page 1
        with options
130     PRINT D$;"PR#0":REM Turns PRO-
        GRAPPLER off
140     TEXT:HOME
999     END
```

Example #2

Enter a (Control-D) between the quotes in line 30. Enter a (Control-I) between the quotes in line 40.

```
5       S=1
10      CALL-936:REM Home Cursor
20      DIM N$(30):DIM A$(10)
30      D$=CHR$(4)
40      I$=CHR$(9)
50      PRINT "ENTER THE NAME OF THE GRAPH:"
60      INPUT N$
70      PRINT D$:"BLOAD";N$;",A$2000":REM Load
        Picture into Hi-Res Page 1
80      PRINT "ENTER OPTIONS (D,I,R,E,L NORMAL):"
90      INPUT A$
100     PRINT D$;"PR#n";S:REM Turns ProGrappler on
110     PRINT I$;"G";A$:REM Dump Hi-Res Page 1 with
        options
120     PRINT D$;"PR#0":REM Turns ProGrappler off
130     TEXT:CALL-936:REM Home Cursor
999     END
```

APPENDIX C: LOADING DUAL HI-RES PAGES

You must load a picture file into Hi-Res Pages 1 and 2 in order to use the DUAL HI-RES command.

From the Keyboard

For Hi-Res Page 1, enter:
    BLOAD filename, A$2000
For Hi-Res Page 2, enter:
    BLOAD filename, A$4000

From within a Program

For Hi-Res Page 1, enter:

    PRINT CHR$(4);"BLOAD filename,A$2000"
For Hi-Res Page 2, enter:
    PRINT CHR$(4);"BLOAD filename, A$4000"

These DOS commands must precede the line containing the PR#n which turns the ProGrappler on.

Sample Program

The following program loads two Hi-Res binary files (pictures): GRAPH 1 is loaded into Page 1, GRAPH 2 is loaded into Page 2.
They are then printed to the printer using the DUAL HI-RES command.

```
10 PRINT CHR$(4);"BLOAD  GRAPH 1,A$2000"
20 PRINT CH4$(4); "BLOAD GRAPH 2,A$4000"
30 PR#1
40 PRINT CHR$(9);"GS"
60 PR#0:END
```

APPENDIX D: SIMULATING A CHART RECORDER

A chart recorder prints a continuous graph on a roll of paper. If your chart might exceed a single page on your printer, you can simulate a chart recorder by printing successive pages together.

The following program loads binary graph files (GRAPH 1 into Hi-Res Page 1, GRAPH 2 into Hi-Res Page 2) and prints one right after the other without the spaces between them (the ROTATE command may also be used with this program):

```
10      PRINT CHR$(4);"BLOAD GRAPH 1,A$2000"
20      PRINT CHR$(4);"BLOAD GRAPH 2,A$4000"
30      PR#1
40      PRINT CHR$(9);"GR"
50      PRINT CHR$(9);"G2R"
60      PR#0:END
```

APPENDIX E - ROUTINES FOR ADVANCED PROGRAMMERS

The following ProGrappler commands are provided for the benefit of advanced (assembly language) programmers:

CTRL-IUA Jump to the user routine starting at $300.
    This bypasses the ProGrappler firmware. The Accumulator contains the output character. The user should perform this operation when finished:

        PLA
        TAY

```
PLA
TAX
LDA $478
PLP
RTS
```

CTRL-I1U Jump to the user routine starting at $DØØØ, Bank A
of a RAM card in Slot # Ø.
The ProGrappler enables the RAM card prior to the
Jump instruction. As with the CTRL-IU, the Accumulator
contains the output character. The user
should perform this operation when finished:

```
LDA $CØ81
PLA
TAY
PLA
TAX
LDA $478
PLP
RTS
```

APPENDIX F: TRANSPARENT MODE

If you have a program (such as Wordstar) which uses the
same control codes as the ProGrappler, you need to make the
ProGrappler transparent to that program. The Transparent
Mode causes the ProGrappler to pass all commands on to the
printer just like a standard parallel printer controller would.

You can activate the Transparent Mode with a Control
code[10]. It remains in effect until you turn the ProGrappler off,
or until you reset the computer.

To activate the Transparent Mode

Type PR#1, enter (Control-IT), then hit (Return).
This causes the ProGrappler to ignore all subsequent control
codes until the ProGrappler is turned off with a PR#Ø, or when
the computer is reset.

NOTE: Characters sent to the printer, either from a program
or from the keyboard, are not echoed to the screen when in
the Transparent Mode.

To de-activate the Transparent Mode:

Type PR#0, then hit (Return), or reset the computer by
entering (Control - ♂ - Reset).

[10] You can also activate the Transparent Mode by setting the DIP switch as
according to the settings indicated in Table 1 under *Transparent Mode*. To de
activate the Transparent Mode using the DIP switch, first turn power OFF. Then
remove the ProGrappler board and set the switch positions according to
the settings indicated for your printer, then reset the computer.

APPENDIX G: MEMORY LOCATIONS AND CUSTOM DRIVERS

Memory Locations

The ProGrappler uses those RAM locations set aside for its
particular slot and the slot scratchpad area common to all
slots. The ROM is turned on using the standard ROM
expansion protocol and resides in the locations $C800 to
$CFFF. The entry points and the various RAM variables are
listed below (N = slot number)

Cold Entry	$CNØØ
Warm Entry	$CNØ2
Left Margin	$478 + $ØN
Right Margin	$678 + $ØN
Line Length	$578 + $ØN
Page Length	$5F8 + $ØN
Character Count	$4F8 + $ØN
Line Counter	$6F8 + $ØN
Current Cmd. Char.	$778 + $ØN
Text Flags	$7F8 + $ØN

Text Flag Bit Representations:

Bit 7 = Output high order bit
Bit 6 = Video turned on
Bit 5 = LF after CR
Bit 4 = Bell On
Bit Ø-3 = Reversed

Custom Drivers

If you are writing your own drivers, the following locations are
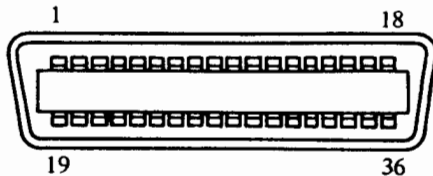used to access the card (Y = NO where N = slot #):

ADDRESS	READ	WRITE
$CØ8Ø,Y	Status	Output
$CØ81,Y		Select bank of ROM

APPENDIX H: PROGRAPPLER PIN ASSIGNMENTS

Table 3 lists the pin assignments for each connector on the ProGrappler cable. The 36 pin male Centronics printer connector is shown in Figure 3.

PROGRAPPLER

HEADER	SIGNAL NAME	PRINTER SIDE
1	Strobe	1
2	Ground	19
3	Data Bit 0	2
4	Ground	20
5	Data Bit 1	3
6	Ground	21
7	Data Bit 2	4
8	Ground	22
9	Data Bit 3	5
10	Ground	23
11	Data Bit 4	6
12	Ground	24
13	Data Bit 5	7
14	Ground	25
15	Data Bit 6	8
16	Ground	26
17	Data Bit 7	9
18	Ground	27
19	Acknowledge	10
20	Ground	28
21	Busy	11
22	Ground	29
23	Paper Empty	12
25	Select	13
26	Ground	30

Table 3.   ProGrappler Pin Assignments

36 Male Centronics

Figure 3

APPENDIX I: PRINTER COMPATIBLITY

Some printers do not have all of the commands which the ProGrappler provides. Table 4 shows the ProGrappler commands which are not supported by that printer.

PROGRAPPLER COMMANDS NOT SUPPORTED

NEC; C. ITOH	Unavailable Text Commands: Compressed, Super and Subscript.
Epson FX-80 and compatibles	Unavailable Text Commands: Compressed
Okidata	Unavailable Text Commands: Compressed, Proportional

Table 4. ProGrappler commands not supported

Note that some printers are supported only in specific modes. The following chart indicates the modes supported by the ProGrappler:

PRINTER	MODE SUPPORTED
BROTHER TWINWRITER 2	DP Mode
BROTHER 2024L	DP Mode
BROTHER M-1509	Mode 1 (EPSON Mode)
CITIZEN MSP20/25	EPSON - FX
C. ITOH C - 310/15 P/R	Standard
C. ITOH 310 XP	EPSON
EPSON EX - 800/1000	EPSON
H.P. THINKJET	Alternate Mode (EPSON)
NEC PINWRITER P5	Standard

OKIDATA 290 SERIES	Standard *(NOTE: Printer must be set to 7-bit data format by using MENU SELECT OPTIONS.)*
OKIMATE 20	Standard
PANASONIC KX-P1091	Standard
STAR SD	STAR
STAR SR, SG	STAR
STAR NX	Standard (Using EPSON dip switch setting on ProGrappler.)
TOSHIBA P351C	TOSHIBA (QUME)
TOSHIBA P321	Standard

RADIO FREQUENCY INTERFERENCE

This equipment generates and uses radio frequency energy, and if not installed and used properly in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for class B computing device in accordance with the specifications in Subpart j of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio and television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

1. Reorient the receiving antenna.

2. Relocate the computer into a different outlet so that the computer and receiver are on different branch circuits.

3. Consult the dealer or an experienced radio/television technician for additional suggestions.

4. Obtain a copy of "How to Identify and Resolve Radio-TV Interference Problems" (Stock No. 004-000-00398-5) by the Federal Communications Commission. It may be ordered free of charge by writing to: U.S. Government Printing Office, Washington, D. C. 20402 and specifying the above title and its stock number.

Shielded cables must be used with this unit to meet compliance requirements of the FCC.

LIMITED WARRANTY

Every ProGrappler board is fully tested and checked for quality prior to shipment. It is warranted to be free from defects in materials and workmanship for a period of **one (1) year** from the date of purchase. During that time period, Orange Micro Inc. will, at no charge to the purchaser of record, repair or replace any defective unit returned to its Service Department in accordance with the following instructions:

> *NOTE: Do NOT return the ProGrappler to Orange Micro Inc. until you have received a Return Authorization number. Phone the Orange Micro Technical Support Department at 714/779-2772 to obtain a Return Authorization Number.*

1. Provide Orange Micro Inc. with: Model, Serial Number, Proof of Purchase with Date, Return Address, and preferred return shipping method. Enclose a clear description of the problem experienced and any sample printouts showing the problem, if possible.

2. Ship in the original carton or securely packed in a cardboard carton with at least two inches of cushioned packing material on all sides. Mark the package "FRAGILE" and ship via UPS, Parcel Post, or Air Freight, insured and prepaid.

> *NOTE: Do not send COLLECT - collect shipments will be refused and returned to sender.*

Orange Micro Inc. disclaims any liability to users of the ProGrappler for consequential damages of any kind arising from or connected with the use of the ProGrappler board.

This warranty is void in cases of misuse, abuse, abnormal conditions of operations or attempts to alter or modify the function of a part or assembly.

This limited warranty is in lieu of all other warranties expressed or implied, and no representative or other person is authorized to represent or assume for Orange Micro Inc. any warranty liability beyond that set forth herein.

This warranty gives you specific legal rights, and you may also have additional rights which vary from state to state. The warranty expressed herein applies only to the ProGrappler sold and used in the United States of America.