

---



# **User's Guide**

**1720148**

## Trademark Acknowledgments

QMS® is a registered trademark of QMS, Inc. SmartWriter® is a registered trademark of QMS, Inc. QMS Kiss™ is a trademark of QMS, Inc. Diablo® is a registered trademark of Xerox Corp. Qume® and Sprint® are registered trademarks of Qume, Inc. Epson® is a registered trademark of Epson America, Inc. FX-80™ is a trademark of Epson America, Inc. HP™, HP LaserJet+™, HPGL 7475A™ and Vectra™ are trademarks of Hewlett-Packard Company. IBM®, IBM-PC®, PC-XT®, PC-AT®, Personal System/2®, and Proprinter® are registered trademarks of International Business Machines Corporation. Paper+™ is a trademark of QMS, Inc. Centronics® is a registered trademark of Centronics Data Computer Corp. Lotus® is a registered trademark of Lotus Development Corp. Wordstar™ is a trademark of MicroPro International Corp. Multimate™ is a trademark of Multimate International Corp. Microsoft Word® is a registered trademark of Microsoft Corp. Displaywrite™ is a trademark of International Business Machines Corp. Symphony® is a registered trademark of Lotus Development Corp. Xywrite™ is a trademark of XyQuest Inc. Volkswriter® is a registered trademark of Lifetree Software, Inc. MS-DOS™ is a trademark of MicroSoft, Inc. SideKick™ is a trademark of Borland International, Inc. WordPerfect® is a registered trademark of WordPerfect Corporation. Xywrite™ is trademark of XyQuest, Inc. Dbase® is a registered trademark of Ashton-Tate. Leading Edge™ is a trademark of Leading Edge Products, Inc. Mass-11™ is a trademark of Microsystems Engineering Corporation. PFSwrite® is a registered trademark of Software Publishing Corporation. SAMNA™, SAMNA WORD™ are trademarks of SAMNA Corporation. R:base™ is a trademark of Microrim, Inc. Compaq™ is a registered trademark of Compaq Computer Corporation. Tektronix™ is a registered trademark of Tektronix Corporation.

# Proprietary Statements and Notices

## Copyright Notice

This manual and the digitally encoded software included with the printer is Copyrighted 1988 by QMS, Inc., Mobile, Ala., All Rights Reserved. This manual may not be copied in whole or in part, nor transferred to any other media or language, without the express written permission of QMS, Inc.

## Manual Notice

QMS, Inc. reserves the right to make changes to this manual and to the equipment described herein without notice. Considerable effort has been made to insure that this manual is free of inaccuracies and omissions. However, QMS, Inc. makes no warranty of any kind including, but not limited to, any implied warranties of merchantability and fitness for a particular purpose with regard to this manual. QMS, Inc. assumes no responsibility for, or liability for, errors contained in this manual or for incidental, special, or consequential damages arising out of the furnishing of this manual, or the use of this manual in operating the equipment, or in connection with the performance of the equipment when so operated.

## FCC Compliance

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the Instruction Manual may cause interference to radio communications. It has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential environment. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or 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 with respect to the receiver.
3. Move the computer away from the receiver.
4. Plug the computer into a different outlet so that the computer and receiver are on different branch circuits.
5. If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The Federal Communications Commission has prepared a helpful booklet: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington, DC 20402. Stock No. 004-000-00345-4.

A SHIELDED INTERFACE CABLE IS REQUIRED TO COMPLY WITH THE CLASS B LIMITS.

**WARNING!** To prevent electrical shock, do not remove any covers from your printer. No user-serviceable parts are inside. Any servicing should be referred to a qualified technician.

**Electronics Emissions**

Your printer complies with the Electronics Emissions Requirements of the West-German Federal Minister for Postal and Telecommunication Technology regulation:

VFG. 1046/1984

Your printer complies with the Electronics Emissions Requirements of the European Economic Council directive:

82/499/EEC

A shielded cable is required to comply with VFG 1046, 82/499/EEC.

**Safety**

This printer is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. This means that the printer does not produce hazardous laser radiation.

Since radiation emitted inside the printer is completely confined withing protective housings and external covers, the laserbeam cannot escape from the machine during any phase of user operation.

# About This User's Guide

This user's guide is divided into these major parts:

<b>Primer</b>	The Primer should be read first. It offers important basic information necessary to fully utilize the user's guide.
<b>Font Setup</b>	Fonts are the typefaces the printer uses. Chapter 3 describes what they are and how to change them.
<b>Page Setup</b>	You can control page margins, how many copies of each page are printed, and how the text is oriented on the page. You can also print using the manual feed feature. Chapter 3 tells you how.
<b>Emulations Setup</b>	Your printer works easily with the different software packages because it emulates (imitates) several popular printers. In chapter 4 the features of these emulations are explained.
<b>Interface Setup</b>	The two available interfaces (Centronics and RS232) have several important options which match the printer to your computer. Chapter 5 lists these options.
<b>Miscellaneous Setup</b>	Chapter 6 describes several important printer options.
<b>Buffer Setup</b>	The Buffer Setup menu is used to assign and view the available space in the user-defined storage areas (buffers) in the printer. Chapter 7 explains the buffers and how to change them.

**Trouble-  
shooting  
and  
Maintenance**

Chapter 8 dicusses simple maintenance and troubleshooting you can do.

**Appendices**

The Appendices contain additional information not contained in the rest of the user's guide.



---

## Table of Contents

---

### Primer

Introduction . . . . .	1-1
Key Concepts of Laser Printing . . . . .	1-2
The Printer Control Panel . . . . .	1-4
Changing Printer Setup . . . . .	1-6
Emulation . . . . .	1-7
Page Orientation . . . . .	1-12
Page Margins . . . . .	1-14
Paper Size . . . . .	1-17
Copy Count . . . . .	1-18
Saving the Changes to Printer Setup . . . . .	1-19
When You Have Finished . . . . .	1-20

### Font Setup

Font Setup . . . . .	2-1
Selecting Fonts by Name . . . . .	2-4
Selecting Fonts by Number . . . . .	2-7
Printing Font Examples . . . . .	2-8
Font Examples Software Command . . . . .	2-9
Download Fonts . . . . .	2-10

	Optional Font Cartridges . . . . .	2-11
	Font Selection Software Command . . . . .	2-12
	Font Deletion Software Command . . . . .	2-14
<b>Page Setup</b>		
	Page Setup . . . . .	3-1
	Printing Multiple Copies . . . . .	3-2
	Setting Copy Count by Software Command . . . . .	3-3
	Page Orientation . . . . .	3-4
	Page Orientation Software Command . . . . .	3-5
	Selecting Paper Size . . . . .	3-6
	Setting Page Margins . . . . .	3-7
	Engine Alignment Margins . . . . .	3-9
	Manual Feed Operation . . . . .	3-10
	Paper Size and Source Software Command . . . . .	3-15
<b>Emulation Setup</b>		
	Emulation Setup . . . . .	4-1
	Changing the Emulation Mode . . . . .	4-3
	Emulation Mode Software Command . . . . .	4-6
	Shared Emulation Setup . . . . .	4-9
	Special Setup for ANSI X3.64 . . . . .	4-13
	Special Setup for Diablo 630 . . . . .	4-16
	Special Setup for Epson FX-80 . . . . .	4-19
	Special Qume Sprint Setup . . . . .	4-23
	Special IBM Proprinter Setup . . . . .	4-26
	Special Tektronix 4014 Setup . . . . .	4-27
	Special HPGL 7475A Setup . . . . .	4-30

## **Interface Setup**

Interface Setup . . . . .	5-1
Interface Selection . . . . .	5-2
Shared Interface Setup . . . . .	5-4
RS232 Setup . . . . .	5-7
Centronics Setup . . . . .	5-9

## **Miscellaneous Setup**

Miscellaneous Setup . . . . .	6-1
Stopping the Printer . . . . .	6-3
Suppressing Pages . . . . .	6-4
Page Eject Delay . . . . .	6-5
Manual Delay . . . . .	6-6
Printing a Status Page . . . . .	6-7
Status Page Software Command . . .	6-8
Resetting Printer Setup . . . . .	6-9
Diagnostic Options . . . . .	6-10
Hex Dump Software Command . . .	6-11
Pausing the Printer . . . . .	6-12

## **Buffer Setup**

Buffer Setup . . . . .	7-3
Page Buffer . . . . .	7-5
Full Page/Window Memory . . . . .	7-6
Displaying Buffer Sizes . . . . .	7-7
Changing the Host Input Buffer . . . .	7-8
Changing the Download Buffer . . . .	7-9
Number of Sequences . . . . .	7-10

**Trouble-  
shooting/  
Maintenance**

Printer Troubleshooting . . . . . 8-1  
Clearing Paper Jams . . . . . 8-6  
Replacing the Print Cartridge . . . . . 8-9  
Adjusting Print Contrast . . . . . 8-10  
Cleaning the Primary Corona Wire . 8-11  
Cleaning the Transfer Corona Wire and  
Transfer Guides . . . . . 8-13  
Troubleshooting with Hex Dump  
Mode . . . . . 8-17

**Font Width  
Tables**

Font Width Tables . . . . . A-1

**ASCII  
Tables**

ASCII Conversion Table . . . . . B-2

**Specifications**

Printer Specifications . . . . . C-1  
Parallel Interface Cable . . . . . C-4  
Addressable/Printable Areas  
of Page . . . . . C-5  
Serial Interface Cable Specifications . C-6

**Advanced User  
Information**

Advanced User Information . . . . . D-1

# Primer

## Contents

Introduction	1-1
Key Concepts of Laser Printing	1-2
Page Printing	1-2
Printer Setup	1-2
Default Settings	1-2
Online/Offline	1-3
Fonts	1-3
Page Orientation	1-3
Menus	1-3
The Printer Control Panel	1-4
Control Panel Keys	1-4
Control Panel Indicators	1-5
Changing Printer Setup	1-6
Emulation	1-7
Page Orientation	1-12
Page Margins	1-14
Paper Size	1-17
Copy Count	1-18
Saving the Changes to Printer Setup	1-19
When You Have Finished	1-20



## Introduction

Your laser printer represents the latest in printer technology. It fits conveniently on a desktop and quietly prints at eight pages per minute. Its 300x300 dot resolution (a measure of its ability to print images on the page) produces text and graphics that are crisp and smooth. It uses normal copier or bond paper (in five possible sizes) and can also print on envelopes, labels, and transparencies. It also offers several fonts (typefaces) to choose from.

The printer is quickly adaptable to your specific requirements by selecting the appropriate options through the control panel. You can, for example, print spreadsheets or charts longways on the page, print multiple copies of a single document, or fine tune the character or line spacing to fit a specific form. Your printer is easy to use with most popular applications software packages because it emulates several different line printers. Or, you can program it yourself using the ANSI X3.64 programming language.

Maintenance of your printer is simple. The printer contains no ribbons or daisy wheels. The dry ink (toner) used in printing is contained in an easily replaceable cartridge. The only other maintenance is an occasional cleaning.

## Key Concepts of Laser Printing

Laser printing is a relatively new technology and has a few unique concepts that you may not be very familiar with. Reading through these concepts will help you better understand the remainder of this manual and therefore allow you to fully utilize your new laser printer.

**Page Printing** Laser printers are page printers. They store data sent by the computer until an entire page of the data is received and then print and eject the page. Compare this to the more familiar "impact" or line printers (those that print like a very fast typewriter, striking the page with a hammer through an inked ribbon). Impact printers store only one line of characters before printing. The process of storing a line and then printing that line before storing the next makes a printer slow. More detailed technical information on how your laser printer goes about printing a page can be found in Appendix E of this manual.

**Printer Setup** You may have a setup or configuration program for your computer. This program sets operating conditions that the computer reads whenever it is turned on. Likewise on your laser printer, you will use the control panel to setup certain conditions (power up settings) that the printer will use whenever it is turned on. Almost all the instructions in this manual concern printer setup in some way.

**Default Settings** When you first unpack your laser printer, its setup conditions have been "pre-set." These settings (referred to in this manual as "manufacturer's defaults") provide a base from which you will make setup changes to enable the printer to work to your requirements. There is an option that will return the printer setup to the manufacturer's defaults if you ever need to start from scratch.

**Online/Offline** Online and offline are convenient terms that describe whether or not the printer is ready to receive data from your computer. When it is online, the printer is ready. Offline is the opposite. On the control panel, a small indicator lights when the printer is online.

**Fonts** Fonts are typefaces. You can think of each font as a different daisy wheel on an impact printer or a new set of typebars on a typewriter (if you could change them). Detailed information about fonts and how to use them will be presented later in this manual.

**Page Orientation** If you were using a typewriter to type a letter to a friend, you would load the paper narrow edge first into the carriage. In your laser printer, this orientation of the paper is called "portrait." If you wanted to use the typewriter to type a wide table of columns of numbers, you would load the wider edge of the paper first. In your laser printer, this orientation is called "landscape." Paper can only be loaded into your laser printer in one direction. The switching from one orientation to the other is done electronically through the control panel.

**Menus** If you have been using your computer and software package, you're probably already familiar with the concept of menus: lists of items or choices that represent actions or that switch you to another menu. Your laser printer employs this same concept to present printer setup choices. The only difference is that on your laser printer, only one menu choice is visible at a time. Scroll keys (on the printer control panel) allow you to move up or down in the menus so that all items may eventually be seen through the control panel's message window.

# The Printer Control Panel

The printer control panel (fig. 1.1) allows you to view and change the printer setup and other printer features. The message window displays the choices from the many setup menus. It also displays status and error messages to let you know if something has gone wrong.

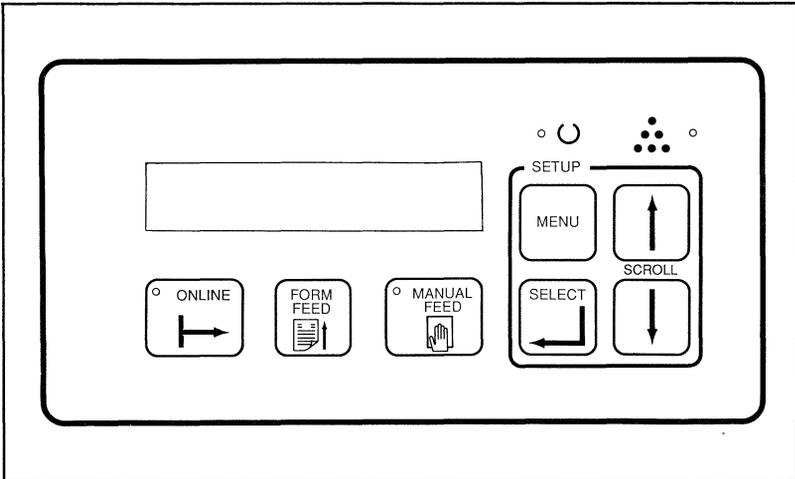


Fig. 1.1. The printer control panel.

**Control Panel Keys** The Online key allows you to put your computer "on hold" by taking the printer "offline" (temporarily interrupting communication). None of the other keys on the control panel will function until the printer is offline. The four Setup keys (Menu, Select and two Scroll keys) are used when making changes to the printer setup. The Manual Feed key lets you switch from using the paper cassette to using the manual feed (feeding one sheet at a time by hand into the printer) feature. The Form Feed key ejects a page out of the printer.

**Control Panel Indicators** Also on the control panel are two indicators: a data light and a low toner light. The data light comes on whenever the printer receives data from the computer. The low toner light comes on after about 4,000 sheets have been printed. This warns you that the cartridge is almost empty and should be replaced soon.

## Changing Printer Setup

Your laser printer is a very versatile tool. Through the printer setup menus, you can easily adjust the printer's capabilities to suit your specific needs. But before you change anything, you need to know what to change.

Take a look at the status page that printed when you first turned on the printer. Under the heading "Printer Setup" you'll find the current settings (highlighted in reverse text) for "Emulation," "Page Orientation," "Page Margins," "Paper Size," and "Copy Count." Use the instructions that follow to learn how to use the printer control panel as you change the setup for your needs.

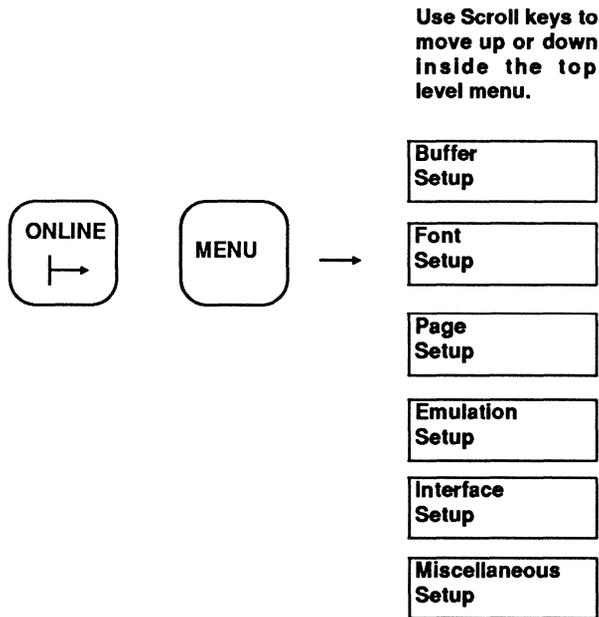
## Emulation

Your laser printer is capable of emulating any one of the different printers listed under "Emulation" on the status page. This feature enables you to print to the laser printer from almost any software package that you may want to use. In any software package is a list of supported printers. Make a note of any printers listed in your software package that match those listed under "Emulation." You will have to decide which of the matching supported printers you want your laser printer to emulate. If the highlighted printer listed under "Emulation" on the status page is not the printer you wish to use, you can use the control panel to change the current emulation setting.

Press the Online key on the printer control panel. Notice that the green light in the key goes out. The printer is now offline and the other keys on the control panel may be used. Press the Menu key and notice that the message window changes to "Font Setup."

You are now in the top level printer setup menu. Within this menu (or any other menu) you may use the Scroll keys to move up or down (fig. 1.2).

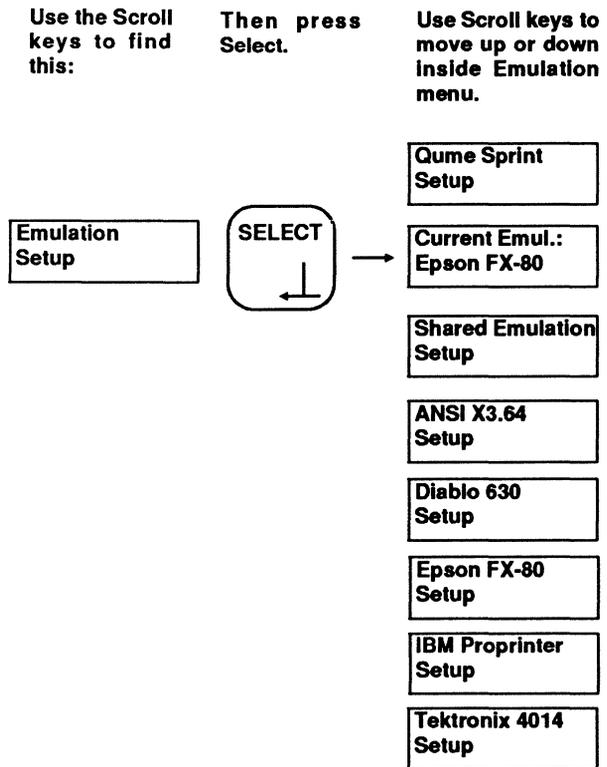
**Fig. 1.2**  
*The top level setup menu.*



Press either one of the Scroll keys on the printer control panel until you see "Emulation Setup" in the message window. Notice the small arrow icon in the lower right corner. This icon means that the message in the window is the name of a lower level menu (sub-menu). Press the Select key now to open the Emulation Setup menu (fig. 1.3). Within the Emulation Setup menu you may use the Scroll keys to move up or down in the menu.

**Fig. 1.3**

*Emulation Setup menu.*

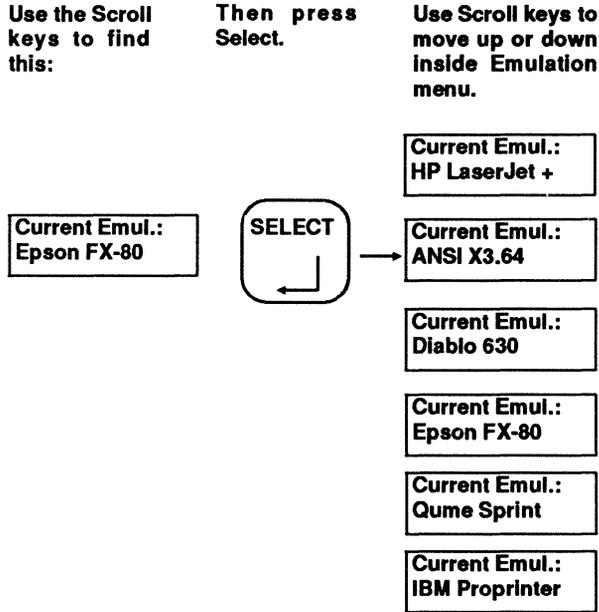


The emulations available on your printer will be different depending on the functionality card installed. Refer to the status page or your Quick Reference Card for a complete list of printer emulations.

Press either one of the Scroll keys on the printer control panel until you see "Current Emulation" in the message window. Press Select to open the Current Emulation menu (fig. 1.4). The Current Emulation menu differs depending on the functionality card installed in the printer.

**Fig. 1.4**

*Current Emulation menu.*



Sample list of current emulations. Your printer may differ depending on the functionality card installed. Refer to the status page or your Quick Reference Card for a complete list of printer emulations.

Note the icon showing in the lower right corner of the printer's message window. This icon means that the selection in the message window is one choice of several possible selections. When this icon is showing in the window, you may use the Scroll keys to move up or down through the possible selections. When the printer that you wish to emulate is showing in

the message window, press Select. This changes the Current Emulation setting.

Press the Menu key once. Note that the icon in the corner has changed back to the arrow. The Menu key can be used to move up (or home) through the different levels of menus. Continue pressing the Menu key until you return to Emulation Setup (the top level menu). Figure 1.5 reviews the control panel keys you used to change Current Emulation and the icons that appeared in the message window.

*Fig. 1.5*

*Summary of  
setup keys and  
icons.*



**Press the Online key before using any other key on the printer control panel. The green light in the key goes out when the printer is offline.**



**Press the Menu key after pressing the Online key to move to the top level printer setup menu. When you are in the setup menus, press the Menu key to move up to the next higher menu level.**



**Press the Select key to open a menu or to make a change to printer setup. Always note which icon is showing in the lower right corner of the message window. This icon indicates what action will be taken when you press the Select key.**



**When this icon is showing in the lower right corner of the message window, the message in the window is the name of a menu. Press Select to open this menu.**



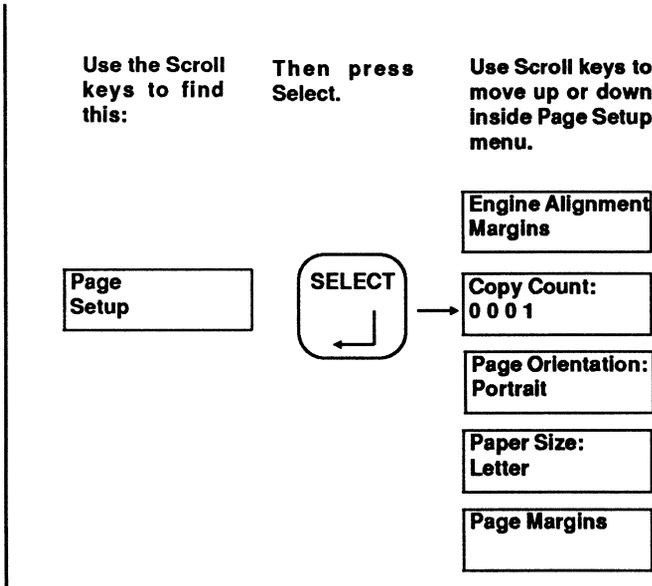
**When this icon is showing in the lower right corner of the message window, the message in the window is one of several choices for the option you are changing. Press Select when the choice you want appears in the window.**

# Page Orientation

Earlier in this chapter, you read about the concept of portrait and landscape orientation. You should decide which orientation you want to use. If the highlighted choice for orientation on the status page is not the setting you want, you can use the printer control panel to change it. (Landscape orientation requires using landscape fonts. More detailed information about using fonts will be presented later in this manual.)

Press either one of the Scroll keys until "Page Setup" is showing in the message window. Notice the icon in the lower right corner that represents a sub-menu. Press Select to open the Page Setup menu (fig. 1.6).

*Fig. 1.6*  
*Page Setup menu.*



Press either one of the Scroll keys until you see "Page Orientation" in the window. Notice that a new icon is in the corner. This icon means that the selection shown in the window is one of two possible choices. Pressing Select when this icon is in the window changes the current setting (in this case, the current setting of the Page Orientation). You may continue to press Select to switch back and forth between the two choices. The selection that appears in the window at any time is the current setting.

Figure 1.7 reviews the control panel keys you used and the icons that appeared in the message window when you set Page Orientation. The next three setup changes are in the Page Setup menu. You do not need to press the Menu key.

*Fig. 1.7*

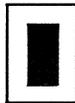
*Summary of  
keys and  
icons.*



**Press the Select key to open a menu or to make a change to printer setup. Always note which icon is showing in the lower right corner of the message window. This icon indicates what action will be taken when you press the Select key.**



**When this icon is showing in the lower right corner of the message window, the message in the window is the name of a menu. Press Select to open this menu.**



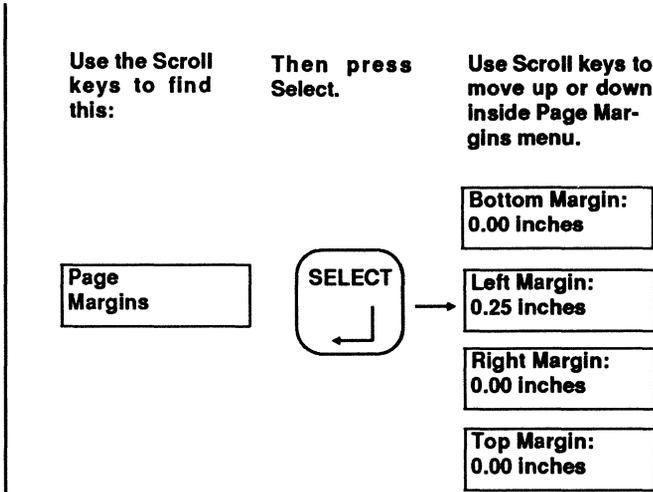
**When this icon is showing in the lower right corner of the message window, the message in the window is one of two choices for the option. Press Select to switch between the two choices.**

# Page Margins

Press either one of the Scroll keys until "Page Margins" appears in the message window. Press Select to open the Page Margins menu (fig. 1.8).

*Fig. 1.8*

*Page Margins menu.*



The current page margin settings are displayed in inches. Make a note of the page margins you want to use (if different from those already set). Most word processors and similar software packages provide a means to set page margins through the software. If you wish to use the software package to set page margins, you will want change these printer setup page margins to 0.00" for top and left margins, 8.5" for the right margin, and 11" for the bottom.

Notice the icon in the lower right corner of the message window. This icon means that the option in the message is a numeric setting and that each digit of the option may be changed.

Press either one of the Scroll keys until you see "Left Margin: 0.25 Inches" in the message window. (NOTE: This example will set a new left margin of 1.00 inch. If you do not want to use this setting, substitute the numbers you want in the example.) Press Select and the first digit of the left margin setting is highlighted (fig. 1.9).

*Fig. 1.9*

*Setting page margins.*

Use the Scroll keys to change the first digit to "1." (Note that you cannot go higher than "4." This is the built-in limit for the margin.) Press Select and the second digit begins to flash.

Left Margin:  
1.25 inches

Use the Scroll keys to change the second digit to "0." Press Select and the third digit begins to flash.

Left Margin:  
1.05 inches

Use the Scroll keys to change the third digit to "0." When finished, press Select.

Left Margin:  
1.00 inches

Press either one of the Scroll keys until the number "1" is highlighted (fig. 1.9). Press Select and the second digit is highlighted. Press the Scroll keys until "0" is highlighted. Press Select again and the third digit is highlighted. Press the Scroll keys until "0" is highlighted. Press Select after you have set all the digits. This changes the Left Margin setting (fig. 1.9). All other page margins may be changed in the same manner. Press the Menu key to return to "Page Margins."

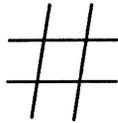
Figure 1.10 reviews the control panel keys and the icons that appeared in the message window when you changed the page margins.

**Fig. 1.10**

*Summary of keys and icons.*



**Press the Select key to open a menu or to make a change to printer setup. Always note which icon is showing in the lower right corner of the message window. This icon indicates what action will be taken when you press the Select key.**



**When this icon is in the lower right corner of the message window, you can use the Select and Scroll keys to change each digit of the option in the window.**

**NOTE:** Due to limitations imposed by the mechanical operation of the printer, you cannot print inside of an approximate 0.25" border around all edges of the paper. Remember to take this border into account when setting margins either through the control panel or through your software package.

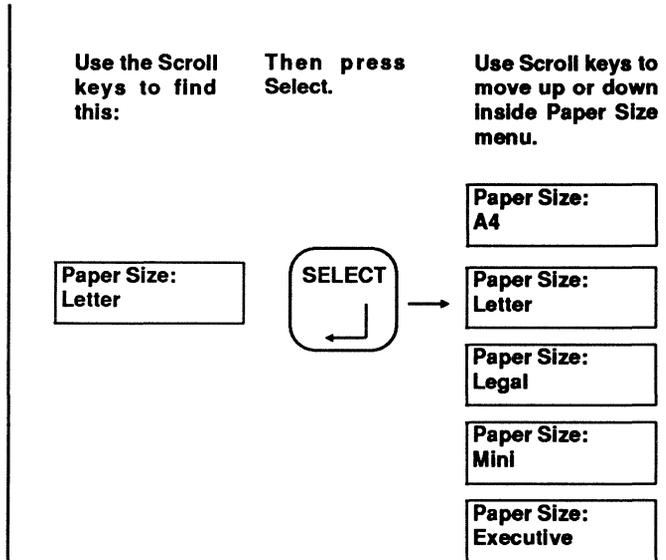
## Paper Size

The paper size you set must match the paper cassette installed in the printer. The size of the cassette is printed on its front edge.

Press either one of the Scroll keys until you see "Paper Size" and the current paper size setting in the message window. Press Select to open the Paper Size menu (fig. 1.11).

**Fig. 1.11**

*Paper Size menu.*



Press either one of the Scroll keys until you find the paper size selection that matches the paper cassette installed in your printer. Press Select to change the paper size setting. Press the Menu key to return to "Paper Size." Note the current paper size setting in the message window.

# Copy Count

Copy count is the number of duplicate copies your printer will print for every single job you send to it.

Press either one of the Scroll keys until you see "Copy Count" and the current copy count setting in the message window. Notice the icon in the lower right corner. The copy count is a numeric setting. You may set any number of copies from 1 to 5000.

Press Select to highlight the first digit. Use the Scroll keys to set the number you want for the first digit of the copy count (fig. 1.12). Press Select to highlight the second digit and repeat until you have set the copy count.

**Fig. 1.12**

*Changing copy count.*

Use the Scroll keys to change the first digit to "2." (Note that you cannot go above "5." This is the built-in limit for the copy count.) Press Select and the second digit begins to flash.

Copy Count:  
2 0 0 1

Use the Scroll keys to change the second digit to "4." Press Select and the third digit begins to flash.

Copy Count:  
2 4 0 1

Use the Scroll keys and the Select key to change the third digit to "6" and the last digit to "9." Press Select when finished. (Be sure to change the copy count back to "1.")

Copy Count:  
2 4 6 9

## Saving the Changes to Printer Setup

All changes to printer setup that you make through the control panel take effect as soon as you press Select. However, these changes must be "saved" into the printer's memory before they will take effect after the printer is turned off and back on (see "Printer Setup" discussed earlier).

After you have made all changes to printer setup that you want to make, press the Online key. The message window will display "Select to Save, Online Otherwise" (fig. 1.13). If you press Select when this message is in the window, all changes you made to printer setup will be stored as power up settings in the printer's memory. Power up settings are not erased from memory when the printer's power is turned off. If you press Online, the changes will be in effect only until you turn off the printer's power.

Fig. 1.13

*Saving changes.*

After you press Online key this message will appear in the message window.

Select to Save  
Online Otherwise

Press Select if you want to save the changes and store them as power up settings. Press Online if you want to store the changes in memory until power is turned off. A status page will print after you press Select.

Printer Active  
Download Present

## When You Have Finished

You have now learned how to use the control panel keys to make changes to the printer setup. Your printer should now be ready to work with your computer and software package. The remaining chapters of this manual are organized around the different setup menus. As you become more proficient, you may want to read these and learn more about the details of printer setup.

One other icon that will appear in the message window is the question mark (?). When you see this icon in the lower right corner of the message window, the message in the window describes an "action" that the printer will perform when you press the Select key.

Some chapters of this manual contain information about software commands that may be sent to the printer to make changes to printer setup that would otherwise require using the printer control panel. After you feel comfortable with the printer, you might want to try working with some of these commands.

**NOTE:** The menus and options shown in this manual may differ from those you can see when you use the printer control panel. The menus and options differ depending on the functionality card installed in the printer. Refer to the status page or your Quick Reference Card for a complete list of the menus and options included in your printer.

# Font Setup

## Contents

Font Setup . . . . .	2-1
Selecting Fonts by Name . . . . .	2-3
Selecting Fonts by Number . . . . .	2-5
Printing Font Examples . . . . .	2-6
Font Examples Software Command . . . . .	2-7
Download Fonts . . . . .	2-8
Optional Font Cartridges . . . . .	2-9
Font Selection Software Command . . . . .	2-10
Font Deletion Software Command . . . . .	2-12



## Font Setup

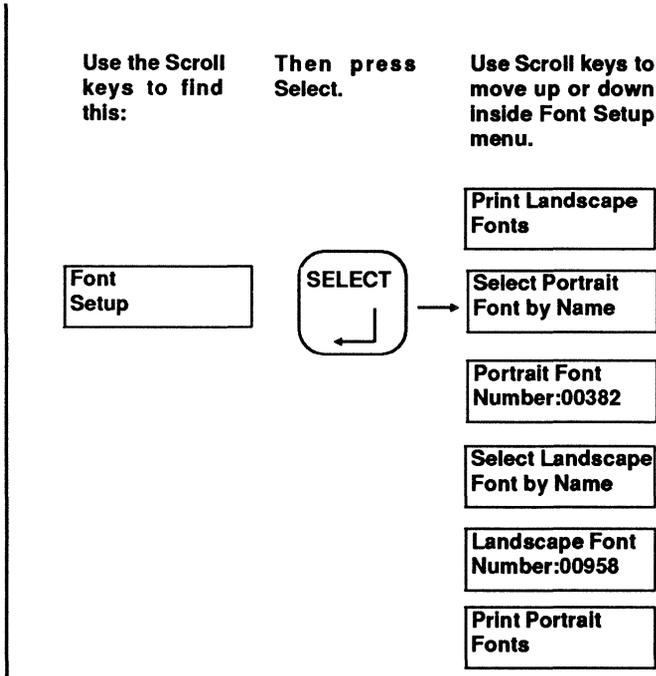
Your laser printer contains various styles and sizes of typefaces (fonts). A laser printer font is made up of a complete alphabet including all letters, numerals, and punctuation marks in a particular style, weight, and size. Each member of a font is called a character. Each font also has a number. The status page lists each font number, the name of the font (which includes size and style information), the orientation of the font, and the number of bytes of memory that the font uses.

Although the status page lists all the available fonts, some of the fonts are best used **only** in certain emulations. Depending on the functionality card installed in your printer, you may or may not have the printer emulations that these fonts require. The "Tektronix" fonts work best when the printer is using Tektronix 4014 emulation. Font numbers 300 and 301 work best when the printer is using HP LaserJet+ emulation.

The Font Setup menu is shown in Figure 2.1.

**Fig. 2.1**

*The Font Set-up menu.*



Use the Font Setup menu when you want to:

- Select a font by name.
- Select a font by number.
- Print sample pages of the available fonts.

## Selecting Fonts by Name

Two options in the Font Setup menu allow you to select a portrait or a landscape font by name (fig. 2.2). Use the Select key to open the menus. The font names that you may choose from are the same as those printed on the status page.

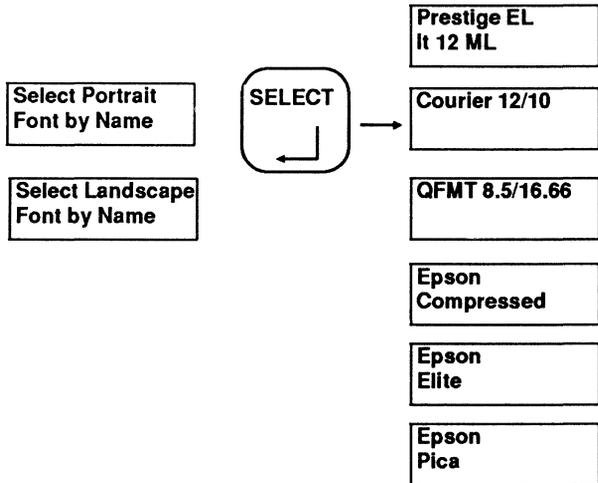
**Fig. 2.2**

*Selecting  
Fonts by  
Name.*

Use the Scroll  
keys to find  
one of these:

Then press  
Select.

Use Scroll keys to  
move up or down  
inside Font by  
Name menu.



Sample list of font names. More names will appear as you scroll up or down. Refer to the status page or your Quick Reference Card for a complete font list.

- When a font is picked from the Landscape Font by Name menu, it will be downloaded (copied) into memory from the portrait font of the same name. When the status page prints, a **D** will indicate fonts that are downloaded.
- Character spacing and height values are included in the font names. The characters per inch (CPI) and point (PT) size may be read directly from some of the fonts. "Compressed," "Elite," and "Pica" describe 17.6 CPI, 12 CPI, and 10 CPI fonts, respectively. "Points" are units of measure that describe a font's height. One point is equal to 1/72nd inch.
- Fonts selected from your software application will override the fonts selected from the control panel.
- If you are using HPGL 7475A emulation, you will not be able to select fonts from the control panel.
- If you are using HP LaserJet+ emulation and wish to print in **landscape** page orientation, use the control panel to select (i.e., rotate to landscape) all the fonts you want to use *before* you begin printing.

## Selecting Fonts by Number

Two options in the Font Setup menu allow you to select a portrait or a landscape font by number (fig. 2.3). Use the Select and Scroll keys to choose a font number. The font numbers that you may choose are listed on the status page.

Fig. 2.3

Selecting font  
by number.

Use Select and Scroll keys to change each digit of the font number. After last digit, press Select to lock in change.

Portrait Font  
Number: 0 0 3 8 2

Portrait Font  
Number: 0 7 5 0 6

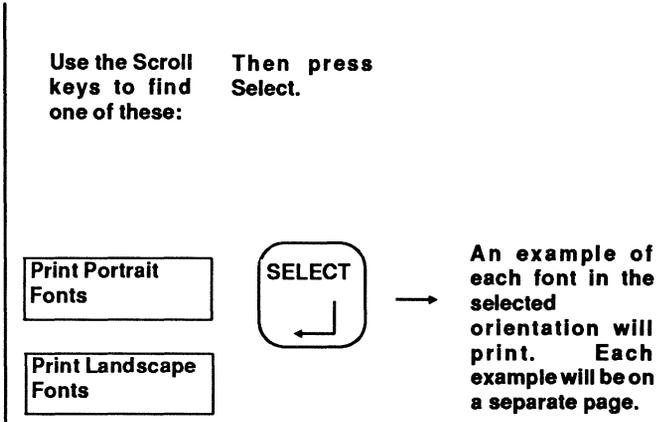
- When a font is selected by the Landscape Font Number option, it will be downloaded (copied) into memory from the portrait font of the same name. When the status page prints, a **D** will indicate fonts that are downloaded.
- Fonts selected from your software application will override the fonts selected from the control panel.
- If you are using HPGL 7475A emulation, you will not be able to select fonts from the control panel.
- If you are using HP LaserJet+ emulation and wish to print in landscape page orientation, use the control panel *before you begin printing* to select (i.e., rotate to landscape) all the fonts you want to use.

# Printing Font Examples

Two options in the Font Setup menu allow you to print samples (character sets) of the available fonts in each orientation (fig. 2.4). Use the Select key to print the font examples.

*Fig. 2.4*

*Printing font examples.*



# Font Examples Software Command

Use this software command to print the font example pages of portrait or landscape fonts.

*Syntax:* <ESC>[p1<SP>r

<ESC>[	Command initiator.
p1	3 = Print portrait fonts. 4 = Print landscape fonts.
<SP>r	Command terminator (<SP> = Decimal 32; lower case "r").

## Download Fonts

Downloaded fonts are fonts that have been copied into the printer's memory. Once a font has been downloaded to the printer, it may be selected and used for printing. On the status page, downloaded fonts are identified by a **D** after the number of bytes.

There is always at least one downloaded font in the printer. This font is the default landscape font. All the factory-installed fonts are in portrait orientation. When you turn on the printer, one font is downloaded into landscape orientation. This downloaded landscape font is a rotated copy of a portrait font of the same name.

The printer can accommodate up to 128 fonts (factory-installed plus downloaded) in its memory depending on the size of the fonts and the amount of download memory allocated. (See chapter 7, "Buffer Setup," for information on allocating memory.) If, while downloading a font, the download memory is exceeded, a page with the message "Download memory exceeded" will print. If, while rotating a font, the download memory is exceeded, a page with either "Insufficient download RAM to rotate requested font" or "Insufficient download RAM to rotate all characters in requested font" will print. In either case, you should delete some fonts from memory or increase the size of the download memory.

Download fonts may be purchased from your dealer on various media.

## Optional Font Cartridges

Optional font cartridges (available from your dealer) provide you with additional fonts in an easily accessible form. Whenever a font cartridge is installed, its fonts are immediately available for printing (like factory-installed fonts) and do not take up memory (like download fonts). When font cartridges are installed, the maximum number of available fonts (factory-installed, downloaded, and cartridge) must not exceed 128.

**To Install a Font Cartridge** Press the Online key to put the printer offline. The indicator in the key will go out when the printer is offline.

Insert a font cartridge into either of the two cartridge slots on the front of the printer (under the paper cassette). Two different font cartridges may be used at the same time. When the cartridge is installed, press the Online key.

**To Remove a Font Cartridge** Press the Online key to put the printer offline. The indicator in the key will go out when the printer is offline. Carefully pull the cartridge out of the slot. Press the Online key to put the printer back online.

**NOTE:** Do not insert or remove a cartridge when the printer is on-line.

## Font Selection Software Command

Use this software command to select, delete or rotate a font without leaving your application software. Refer to your application software documentation for instructions on "escape sequences" or "printer commands."

*Syntax:* <ESC>[p1;p2;p3s

<ESC>[	Command initiator.
p1	Number of font or overlay (from status page). Valid values range from 0 to 32767 (default value is number of font currently highlighted on status page).
p2	0 = Portrait orientation font (default) 1 = Landscape orientation font 2 = Overlay
p3	0 = Delete font or overlay 1 = Select font or overlay (default) 2 = Rotate font to opposite orientation
s	Command terminator (lower case).

This command also allows you to select an overlay or "macro" that you can program and download to the printer's memory. (For more information about overlays, see the *ANSI X3.64 Programming Manual* available from your dealer.)

- A font selection made with this command (or from any application software) overrides selections made from the printer control panel.
- Any downloaded font or overlay may be deleted from memory by using this command.

- Fonts may be rotated from one orientation to another by using this command. (However, the download memory must have enough room for the rotated copy of the font or an error message will print.)
- Separators (;) must be included between parameters.
- If you are using HPGL 7475A emulation, you will not be able to select fonts using the software command.
- If you are using HP LaserJet+ emulation and wish to print in **landscape** page orientation, use this software command *before you begin printing* to rotate to landscape orientation all the fonts you want to use.

## Font Deletion Software Command

Use this command to delete all fonts or overlays from the printer's memory at one time.

*Syntax:* <ESC>[p1<SP>{

<ESC>[	Command initiator.
p1	0 = Delete all downloaded portrait orientation fonts from printer memory. 1 = Delete all downloaded landscape orientation fonts from printer memory. 2 = Delete all downloaded overlays from printer memory. 3 = Delete all downloaded fonts and overlays from printer memory.
<SP>{	Command terminator (<SP> = Decimal 32).

# Page Setup

## Contents

Page Setup . . . . .	3-1
Printing Multiple Copies . . . . .	3-2
Setting Copy Count by Software Command . . . . .	3-3
Page Orientation . . . . .	3-4
Page Orientation Software Command . . . . .	3-5
Selecting Paper Size . . . . .	3-6
Setting Page Margins . . . . .	3-7
Engine Alignment Margins . . . . .	3-9
Manual Feed Operation . . . . .	3-10
"First Page" Manual Feed . . . . .	3-10
Full-Time Manual Feed . . . . .	3-11
Switching Back to Automatic Feed . . . . .	3-11
Printing Two-Sided Pages . . . . .	3-13
Printing Transparencies, Labels, and Envelopes . . . . .	3-13
Paper Size and Source Software Command . . . . .	3-15

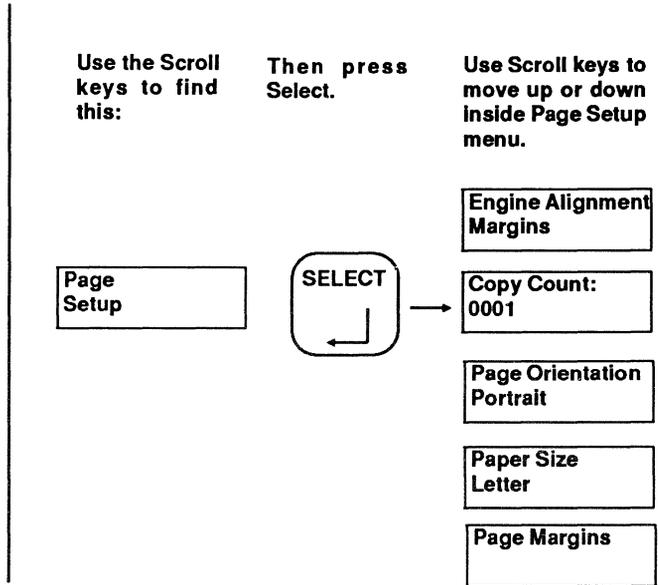


# Page Setup

The appearance of the pages printed with your laser printer will be affected by the option settings in the Page Setup menu (fig. 3.1).

*Fig. 3.1*

*Page setup menu.*



Use the Page Setup menu when you want to:

- Print more than one copy of a document
- Change page orientation
- Change paper size
- Set new page margins
- Check or adjust the alignment of the printer

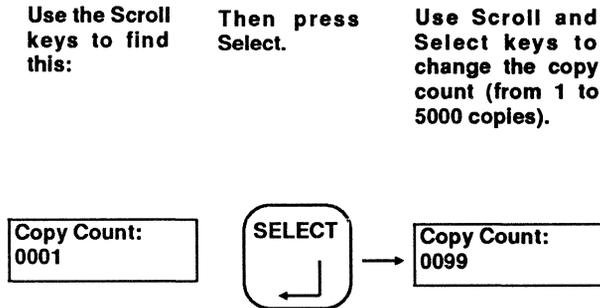
This chapter also includes information on how to use the manual feed feature of the printer.

## Printing Multiple Copies

You can set the printer to print up to 5000 duplicates of a single document. If you want to change the copy count (number of copies), open the Page Setup menu and use the Scroll keys to find the copy count option (fig. 3.2). Each digit of the copy count option may be changed using the printer setup keys. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

Fig. 3.2

*Copy Count option.*



- The copy count option will multiply any copy count setting that you may have made within your software package.
- During a job, you can stop the printer from printing multiple copies by using the Multiple Copy Abort option from the Miscellaneous Setup menu (see chapter 6).
- The control panel has a built-in limit that prevents you from selecting more than 5000 copies.

## Setting Copy Count by Software Command

Use this command to *temporarily* change the copy count to any number from 1 to 5000.

*Syntax:* <ESC>[pu

<ESC>[	Command initiator.
p <u>1</u>	Number of copies (1 to 5000). Any number greater than 5000 will cause the current (power-up setting) number of copies to be used.
u	Command terminator (lower case).

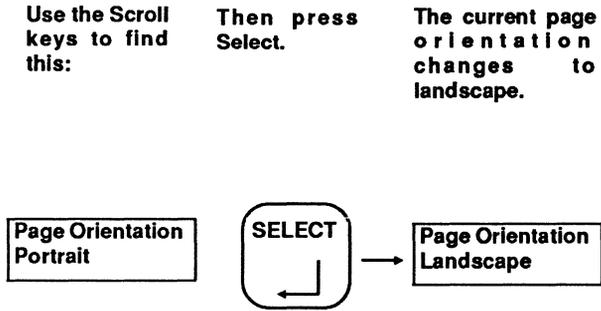
The change to the copy count will remain in effect until a new copy count is set (either through the control panel or a new software command) or until the printer is turned off.

## Page Orientation

When the printer is set for portrait orientation, text prints along the shorter dimension of the paper. When it is set for landscape orientation, text prints along the longer dimension. If you want to change orientation, open the Page Setup menu and use the Scroll keys to find the page orientation option (fig. 3.3). Press Select to change orientation. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

Fig. 3.3

Page Orientation Option



- Whenever you change page orientation, remember the page margin settings. The same margins will apply to either landscape or portrait but the length of a line will be greater in landscape orientation.
- If you are using HP LaserJet+ emulation, use the correct HP LaserJet+ software command to change orientation.
- If you are using HP LaserJet+ emulation, use the software command described in Chapter 2 to rotate the fonts you will need *before* you begin printing.

## Page Orientation Software Command

Use this command to *temporarily* change the page orientation.

*Syntax:* <ESC>[p1p

<ESC>[	Command initiator.
p1	0 = portrait orientation. 1 = landscape orientation.
p	Command terminator (lower case).

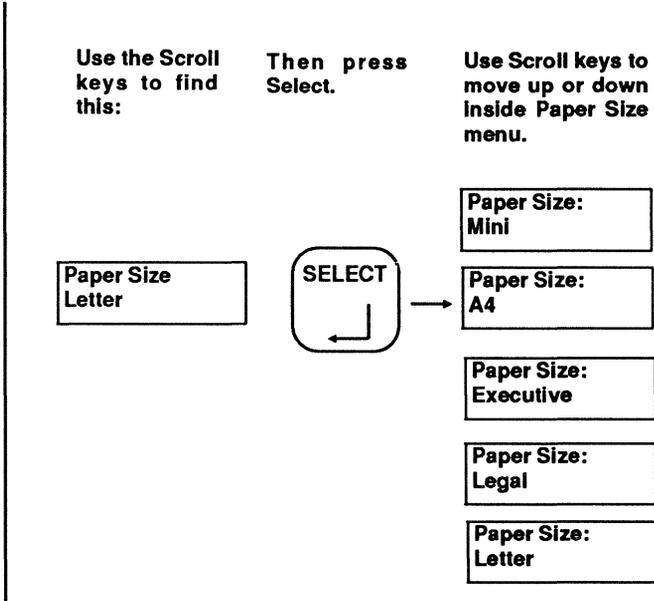
Any change in orientation made with this command will remain in effect until page orientation is changed again (either through a command or the control panel) or until the printer is turned off.

# Selecting Paper Size

You may set your laser printer for letter (8.5"x11"), legal (8.5"x14"), A4, Executive (7.25"x10.5") or Mini (3.9"x5.5") paper size. If you want to change paper size, open the Page Setup menu and use the Scroll keys to find the Paper Size menu (fig. 3.4). Open the Paper Size menu and use the Scroll keys to find the paper size you want to use. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

Fig. 3.4

*Paper Size menu.*



Use the Scroll keys to find this:

Then press Select.

Use Scroll keys to move up or down inside Paper Size menu.

- The paper size you select must match the paper cassette you are using with your printer.
- Remember to check page margins whenever you change paper sizes.

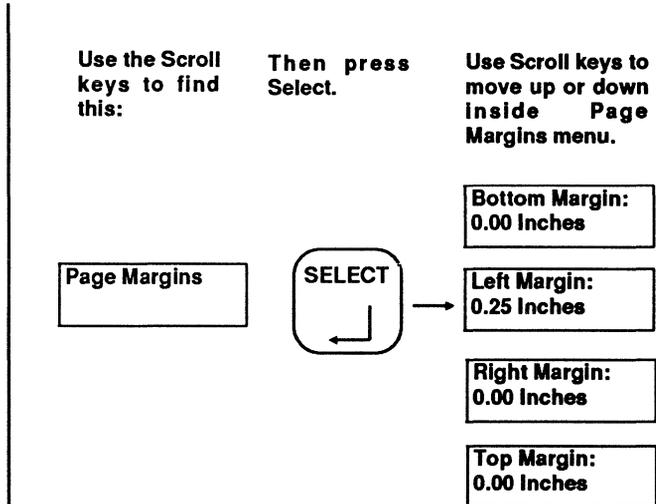
## Setting Page Margins

You may set page margins either from the control panel or from your software package. Before setting page margins for the first time, check the page alignment and adjust it if necessary. See "Engine Alignment Margins" later in this chapter.

If you want to set the page margins from the printer control panel, open the Page Setup menu and use the Scroll keys to find the Page Margins menu (fig. 3.5). Open the Page Margins menu and use the Scroll keys to find the margin you want to change. Each digit of the left, right, top and bottom margin setting may be changed using the printer setup keys. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

*Fig. 3.5*

*Page Margins menu.*



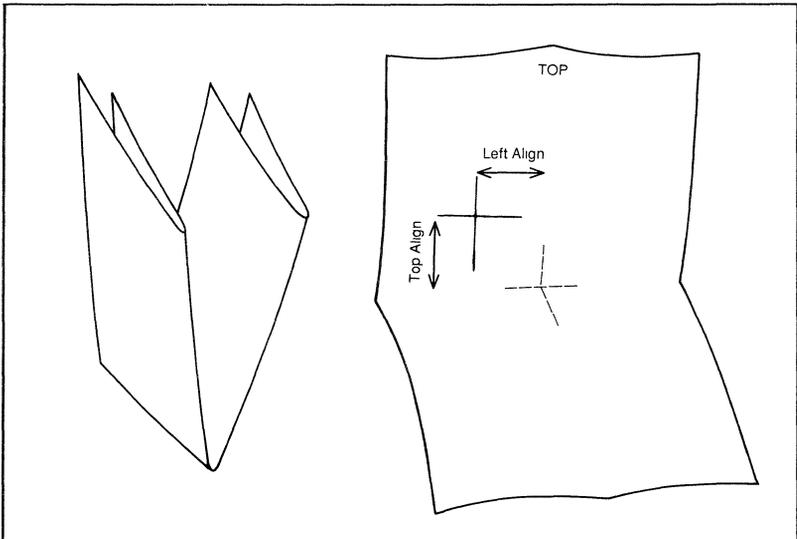
- The maximum setting for each of the four margin options is 4.00". The control panel will not allow you to set margins greater than this.
- Any page margins set from within your software package will override margins set from the control panel.

- Page margins are not recognized in HP LaserJet+ emulation.
- Your laser printer cannot print within approximately one-quarter inch of the top, bottom, left and right edges of the page. For best results, always use a minimum of 0.25" for all margins.

## Engine Alignment Margins

Page alignment varies slightly with each printer. The Engine Alignment options let you adjust the printer so that the center of the page (and, consequently, the page margins) align with the paper.

Print an alignment test page before making any changes to the printer alignment (or before making changes to page margins the first time). To print an alignment test, open the Page Setup menu and use the Scroll keys to find the Engine Alignment menu. Open the Engine Alignment menu, use the Scroll keys to find the "Print Alignment Page" option and press the Select key. A quick way to check the alignment is to fold the test page in half twice. When you unfold the page, the creases intersect at the center. The cross-hairs show where the printer is placing the center of the page (fig. 3.6). The distance from the cross-hairs to the actual center of the page may be adjusted by setting the Left Alignment and Top Alignment options in the Engine Alignment menu.



*Fig. 3.6. Alignment test page.*

## Manual Feed Operation

Although you may use automatic paper feed most of the time, there will be jobs that require manual feed operation. You will use the Manual Feed key on the control panel to change the paper source from cassette (automatic feed) to manual (hand-feeding one sheet at a time) and back again.

**"First Page" Manual Feed** You will probably want to keep the paper cassette filled with the type of paper you use most often. When you need to print a single page on a different type of paper (for example, the first page of a business letter on company stationery), set the paper guides (fig. 3.7) to the size paper you are using and insert the page into the printer between the guides. (Insert the page face up and top edge first.) Now, give the command to begin printing from your computer. The printer will pull the page from the paper guides and print the first page of your letter on it. If there is more than one page to your letter, the printer will pull the paper for the remaining pages from the paper cassette.

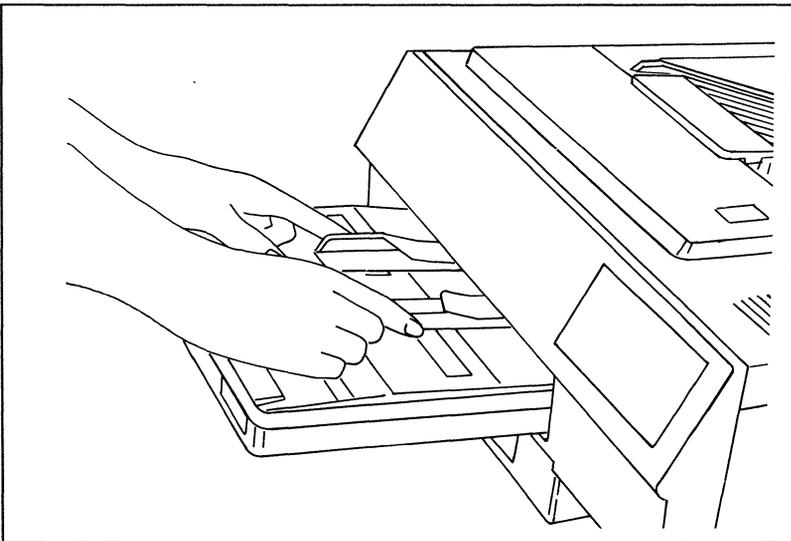
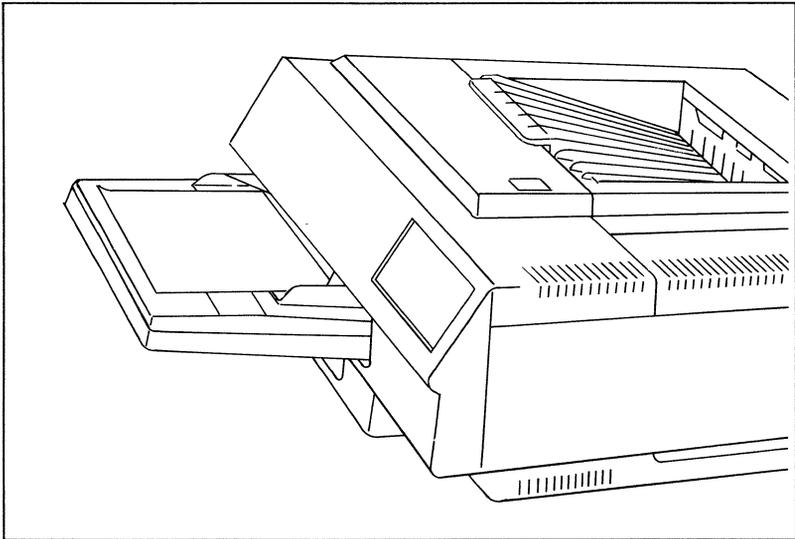


Fig. 3.7. Setting the paper guides.

**Full-Time Manual Feed** If you need to print more than one page on a different type of paper from whatever is loaded in the paper cassette, you should switch the printer to manual feed.

With the printer offline, press the Manual Feed key on the control panel. A small indicator in the key lights to let you know that the printer is switched to manual feed. Now put the printer back online and give the command to start printing from your computer. Watch the message window. When the message "Paper Out" appears, insert a page (face up and top edge first) into the printer between the paper guides (fig. 3.8). Continue inserting paper into printer until all pages have printed.



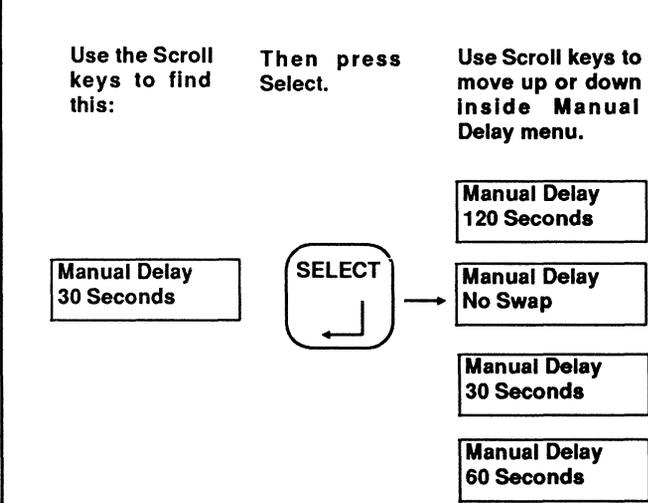
*Fig. 3.8. Manually feeding paper.*

**Switching Back to Automatic Feed** Your printer has a built-in feature that switches back to automatic (cassette) feed after a specified number of seconds. This "timeout" is pre-set to 60 seconds. After your last page has printed, the printer will switch off the manual feed indicator and return to automatic feed after 60 seconds. You may change the timeout value to 30

or 120 seconds. You may also disable the timeout so that the printer will stay in manual feed until you switch it back to automatic feed.

If you wish to change the manual feed delay, open the Miscellaneous Setup menu and use the Scroll keys to find the Manual Delay menu (fig. 3.9). Open the Manual Delay menu and use the Scroll keys to find the setting you want. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

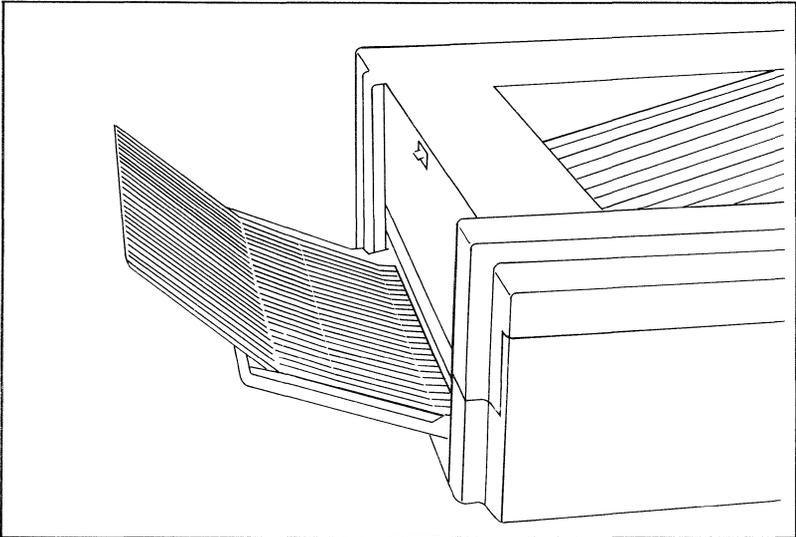
**Fig. 3.9**  
*Manual Delay menu.*



If you want to switch the printer back to automatic feed before the timeout takes effect, put the printer offline, press the Manual Feed key, and then press the Online key to put the printer back online. The indicator in the Manual Feed key goes out and the message window changes to "Printer Idle Download Present" to let you know the printer is back in automatic feed. When you put the printer back online it will be ready to print from the paper cassette.

**Printing Two-Sided Pages** You can print two-sided pages by using manual feed operation and sending the paper through the printer twice. Always feed the paper into the paper guides face up (the side to be printed) and top edge first. To print the second side, turn the page over and feed it into the printer face up and top edge first.

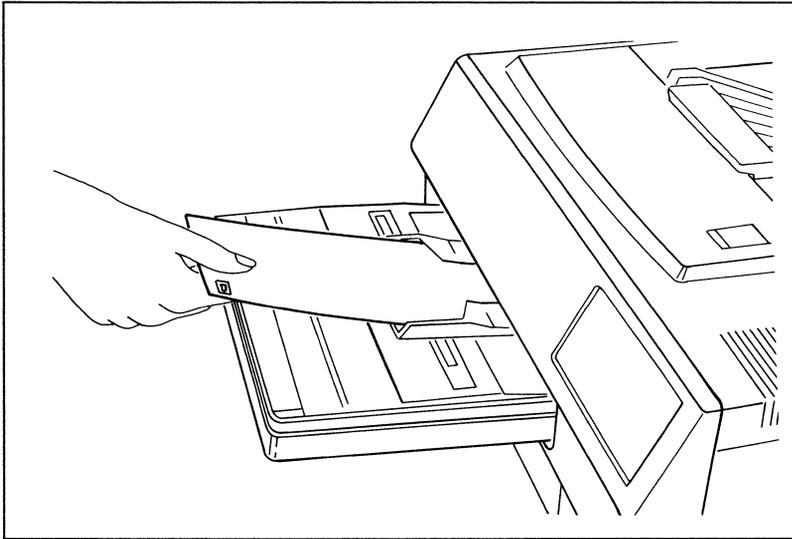
**Printing Transparencies, Labels, and Envelopes** Transparencies for overhead projectors, sheets of self-adhesive labels and envelopes of almost any size may be printed with your laser printer using manual feed operation. All these special materials require using the face-up collating tray at the rear of the printer (fig. 3.10).



*Fig. 3.10. Face-up collating tray.*

- Always make sure that any special material you send through the printer is rated for laser printing. Check with your supplier to be sure.

When printing on envelopes, use landscape orientation and feed the envelope into the printer as shown in Figure 3.11.



*Fig. 3.11. Printing on envelopes.*

- Landscape orientation fonts need to be used when printing on envelopes. Refer to chapter 2, "Font Setup," for a complete explanation of landscape and portrait orientation fonts.

## Paper Size and Source Software Command

Use this command to *temporarily* change paper size and paper source (manual feed or cassette feed). You may change both size and source simultaneously or change just one of the features.

*Syntax:* <ESC>[p1;p2x

<ESC>[	Command initiator.
p1	0 = cassette feed 1 = manual feed
p2	0 = A4 1 = Executive 2 = Legal 3 = Letter 4 = Mini
x	Command terminator (lower case).

To change just one of the features (paper size or paper source), omit the parameter for the feature you *do not* want to change. The current setting for the omitted feature will be selected.

- The paper size you select through this command must match the paper cassette installed in the printer (even if you are using manual feed).
- The separator (;) between the two parameters must be included even if you omit one of the parameters.
- When manual feed is selected through this command, the message window will display "Paper Out" when the page is ready to be printed but the Manual Feed indicator on the control panel will not light until you insert paper into the paper guides.

- The manual feed "timeout" feature will take effect after the last page has been printed. See "Switching Back to Automatic Feed" earlier in this chapter.

# Emulation Setup

## Contents

Emulation Setup . . . . .	4-1
Changing the Emulation Mode . . . . .	4-3
Emulation Mode Software Command . . . . .	4-5
Shared Emulation Setup . . . . .	4-7
Carriage Returns . . . . .	4-8
Linefeeds . . . . .	4-8
Linefeed Repeat . . . . .	4-8
<ESC> Character . . . . .	4-8
Lower Case to Upper Case Conversion . . . . .	4-9
Special Setup for ANSI X3.64 . . . . .	4-10
Character Spacing . . . . .	4-10
Line Spacing . . . . .	4-11
Unit of Measure . . . . .	4-12
Print Past Right Margin . . . . .	4-12
Special Setup for Diablo 630 . . . . .	4-13
Character Spacing . . . . .	4-14
Proportional Type . . . . .	4-14
Special Setup for Epson FX-80 . . . . .	4-15
Print Mode . . . . .	4-15
Pica Quality . . . . .	4-16
Character Set . . . . .	4-16
Printing Zeros . . . . .	4-18
Pica Font . . . . .	4-18
Special Qume Sprint Setup . . . . .	4-19
Character Spacing . . . . .	4-20
Proportional Type . . . . .	4-20
Line Spacing . . . . .	4-20

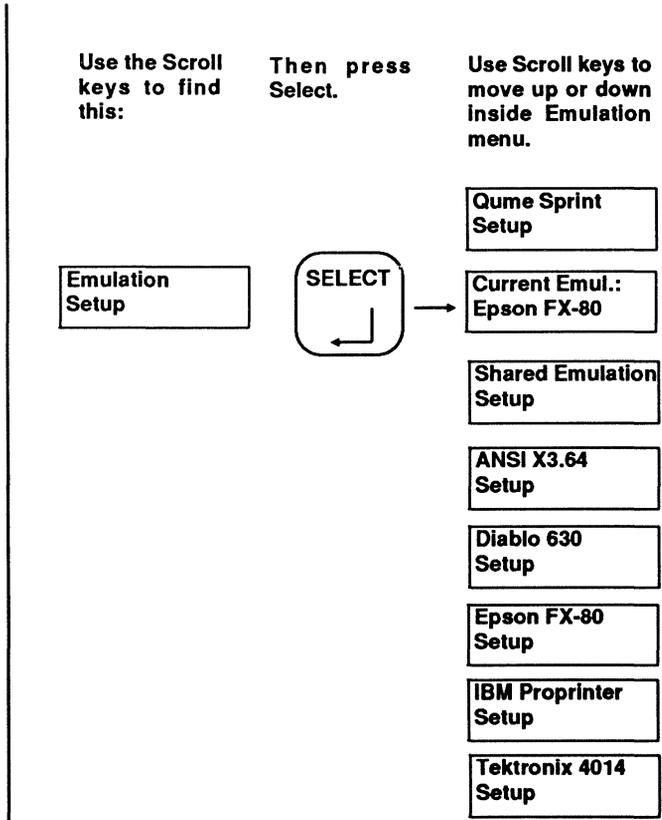
Wrap at Right Margin . . . . .	4-21
Special IBM Proprinter Setup . . . . .	4-22
Character Set . . . . .	4-22
Printing Zeros . . . . .	4-22
Pica Font . . . . .	4-23
Special Tektronix 4014 Setup . . . . .	4-24
Carriage Returns . . . . .	4-24
Linefeeds . . . . .	4-25
Scale . . . . .	4-25
Use Current Margins . . . . .	4-25
Dual Cursor . . . . .	4-26
Quadrant 3 . . . . .	4-26
Special HPGL 7475A Setup . . . . .	4-27
Pen Width . . . . .	4-27

# Emulation Setup

Your laser printer makes it easy to work with the different software packages you may use. The options in the Emulation Setup menu let you customize the laser printer to emulate any one of several other popular printers.

The Emulation Setup menu is shown in Figure 4.1. Your printer may have different emulations than those shown here. Refer to the printer's status page or your *Quick Reference Card* for a list of emulations.

**Fig. 4.1**  
*Emulation setup menu.*



Use the Emulation Setup menu when you want to:

- Pick a printer to emulate
- Change from one emulation to another
- Change how the printer responds to carriage returns and line feeds
- Make the tilde character represent <ESC> if needed by your software.
- Reset the Translation Tables

## Changing the Emulation Mode

When you want to print something created with your application software, you must select (through the software program's setup) the printer that you are using. Although your software may support a number of different printers, the printer that you are using may not be one of them.

Your laser printer has several emulation modes. This feature enables you to set the printer to work with the software package(s) you are using. In your software package is a list of supported printers. Make a note of any printers that match those listed under "Emulation" on the status page. Once you have decided which printer you want the laser printer to emulate, you can make the change through the Emulation Setup menu.

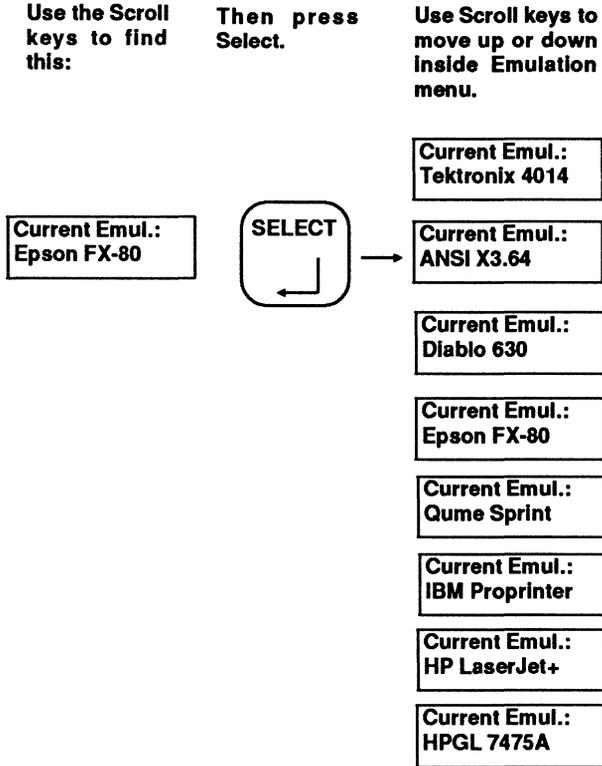
Open the Emulation Setup menu and use the Scroll keys to find the Current Emulation option. Open the Current Emulation menu and use the Scroll keys to find the printer emulation mode you want to use (fig. 4.2). Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

- Whenever you change emulation modes, ensure that the options in the Shared Emulation Setup menu and in the other special setup menus are set correctly for your needs.
- Character spacing is affected by the emulation mode you use. Form best results, use your software package to adjust characters per inch (CPI) or lines per inch (LPI).

- Your printer may not have all the emulations shown in Figure 4.2. Refer to the status page or the *Quick Reference Card* for a complete listing of emulation modes available on your printer.

**Fig. 4.2**

*Current Emulation menu.*



- Whenever you change emulation modes, ensure that the options in shared emulation setup and other "special" setup menus are set correctly for your needs.

## Emulation Mode Software Command

Use this command to *temporarily* change the printer emulation mode.

*Syntax:* <ESC>[p1;p2r

<ESC>[	Command initiator.
p1	0 = Use current setting for emulation mode (default) 1 = ANSI X3.64 2 = Diablo 630 3 = Epson FX-80 4 = Qume Sprint 5 = HP LaserJet+ 6 = Tektronix 4014 7 = IBM Proprinter 8 = HPGL 7475A 99 = Return to previous selected emulation mode.
p2	0 = Reset printer to power-up settings for the emulation mode selected by p1 (default) 1 = No reset
r	Command terminator (lower case).

Whenever you change emulation modes, ensure that the options in the Shared Emulation Setup menu and in the other special setup menus are set correctly for your needs.

- Character spacing is affected by the emulation mode you use. For best results, use your software package to adjust characters per inch (CPI) or lines per inch (LPI).
- Your printer may not have all the emulations listed for this command. Refer to the status page or the *Quick Reference Card* for the emulation modes available on your printer.

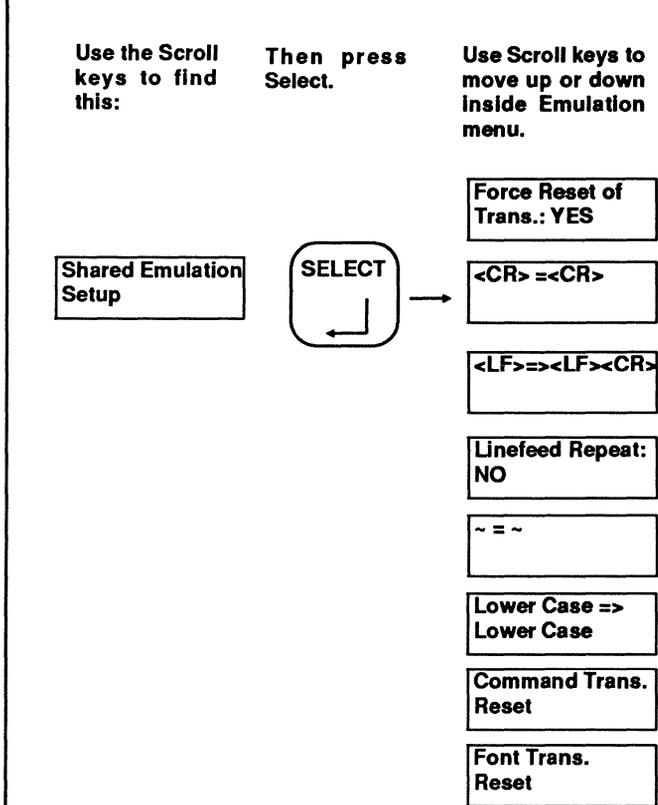
- Separators (;) must be included between parameters even if one parameter is omitted.
- Reset ( $p_2 = 0$ ) returns the current font selection, page margins, horizontal tabs, vertical tabs, character spacing, line spacing, absolute horizontal position, and absolute vertical position to their power-up settings for the emulation mode selected by  $p_1$ .
- When  $p_1 = 99$ , the printer returns to the last emulation mode that was in use. This parameter allows you to use the software command to switch between two emulation modes.

# Shared Emulation Setup

The options in the Shared Emulation Setup menu take effect regardless of the emulation mode used. The Shared Emulation Setup menu is shown in Figure 4.3.

Fig. 4.3

Shared Emulation Setup Menu



The options "Command Translation Reset," "Font Translation Reset," and "Force Reset of Translation" in the Shared Emulation Setup menu concern the Font and Command Translation Tables. Redefining and resetting the Translation Tables are advanced user features and are discussed in Appendix D, *Advanced User Information*.

**Carriage Returns** If your files are overprinting on one line, you may need to set the `<CR>=><CR>` option to `<CR>=><CR><LF>`. Doing so will add a linefeed to every carriage return. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Linefeeds** If the lines of text in your files do not align at the left margin, you may need to set the `<LF>=><LF>` option to `<LF>=><LF><CR>`. Doing so will add a carriage return to every linefeed. If you are using Diablo 630 or Qume Sprint emulation mode, set this option to `<LF>=><LF>`. If you are using Epson FX-80 emulation mode, set this option to `<LF>=><LF><CR>`. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Linefeed Repeat** Set this option to Yes if you want double-spaced lines. You can also change line spacing through your software package. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**<ESC> Character** The `<ESC>` character is used in each software command explained in this User's Guide. Do not confuse the `<ESC>` character with the Esc key on your computer's keyboard. Some software packages allow you to transmit an `<ESC>` character to the printer. (Refer to "Escape sequences" or "Printer commands" in your software documentation.) If your software package does not provide a means to transmit `<ESC>`, you may want to set this option to `~=><ESC>`. You can then transmit the character `~` to the printer and the printer will interpret it as the `<ESC>` character. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys. (For a complete

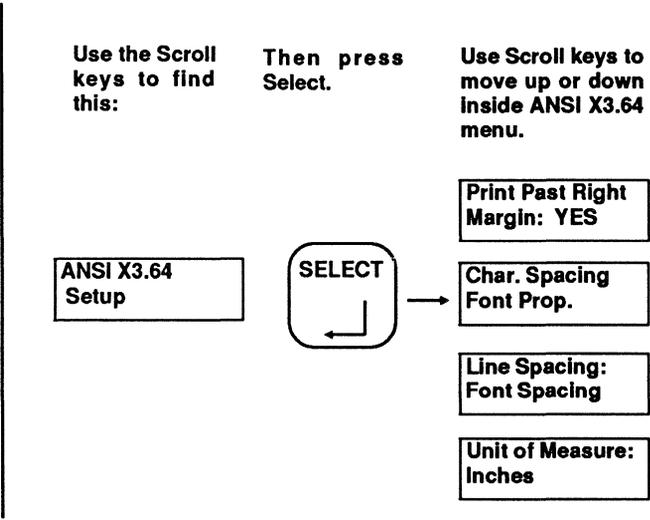
explanation of all supported printer commands, order the *Technical Reference Manual* and the *ANSI X3.64 Programming Manual* from your dealer.)

**Lower Case to Upper Case Conversion** Set this option to Lower Case => Upper Case if you want the printer to only print with upper case characters. For normal operation, set the option to Lower Case => Lower Case. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

# Special Setup for ANSI X3.64

If you are using ANSI X3.64 emulation mode, the options in the ANSI X3.64 Setup menu control character spacing, line spacing, units of measure, and line overflow. Figure 4.4 shows the ANSI X3.64 Setup menu. Refer to chapter 1, "Primer," for a complete explanation of the setup keys. If you are not using ANSI X3.64 emulation mode, you do not need to change these options.

*Fig. 4.4*  
*ANSI X3.64*  
*Setup Menu*

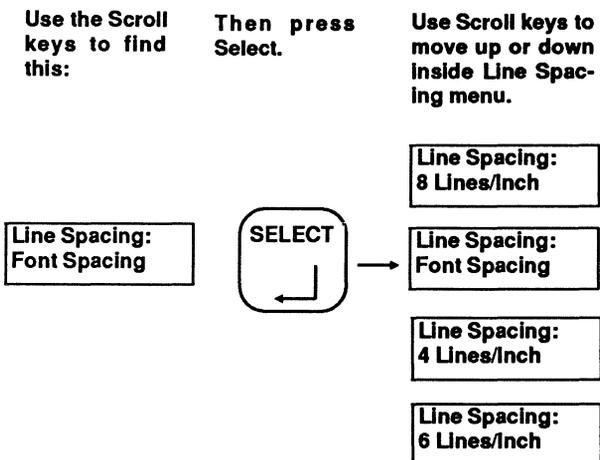


**Character Spacing** If you are using proportional spacing in your software package, set this option to Font Proportional. If you are not using proportional spacing, keep this option set to Font Fixed. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Line Spacing** Set this option to the number of lines per inch you want the printer to print. Any line spacing set by your software package will override this option. Figure 4.5 shows the ANSI X3.64 Line Spacing menu. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

*Fig. 4.5*

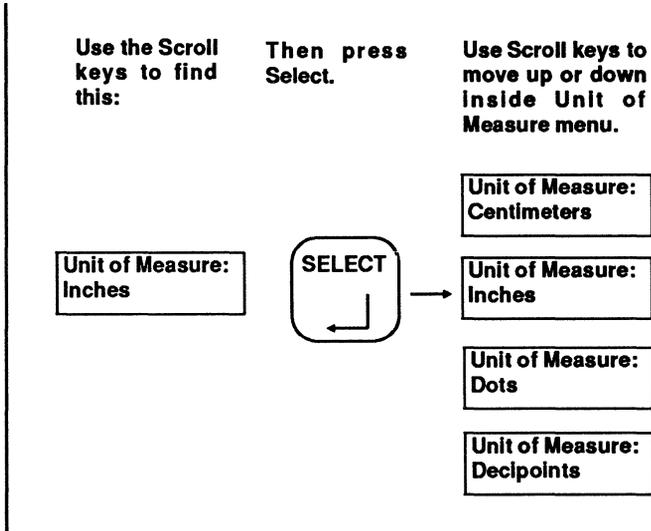
*ANSI X3.64  
Line Spacing  
Menu*



**Unit of Measure** The printer interprets any ANSI measurement command (such as margin commands) in terms of the unit of measure set by this option. Figure 4.6 shows the Unit of Measure menu. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

Fig. 4.6

*Unit of Measure Menu.*



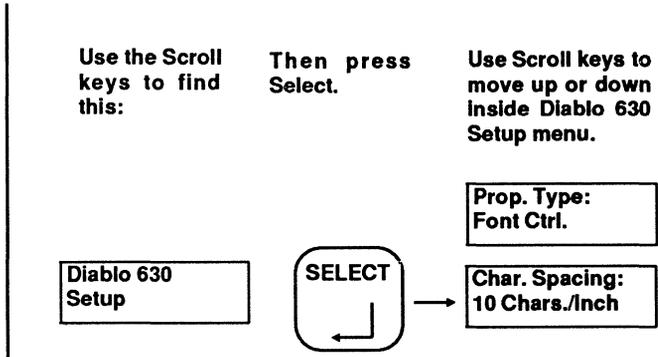
**Print Past Right Margin** This option controls whether or not data that extends past the right margin will print. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

## Special Setup for Diablo 630

If you are using Diablo 630 emulation mode, the options in the Diablo 630 Setup menu control character spacing and type of proportional spacing. Figure 4.7 shows the Diablo 630 Setup menu. Refer to chapter 1, "Primer," for a complete explanation of the setup keys. If you are not using Diablo 630 emulation mode, you do not need to change these options.

*Fig. 4.7*

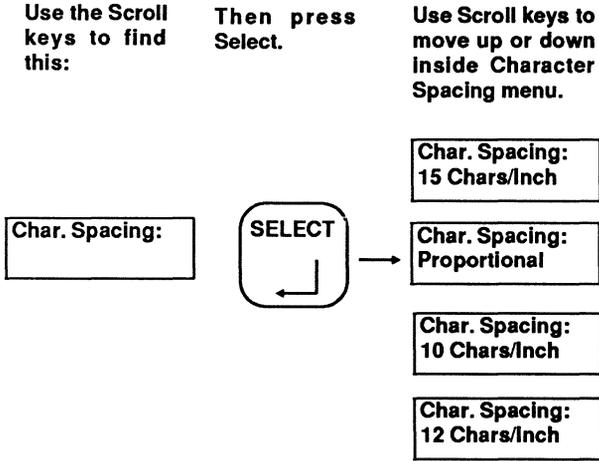
*Diablo 630  
setup menu.*



**Character Spacing** Set this option to the number of characters per inch you want the printer to print. Any character spacing set by your software package will override this option. Figure 4.8 shows the Character Spacing menu. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

Fig. 4.8

Character Spacing menu



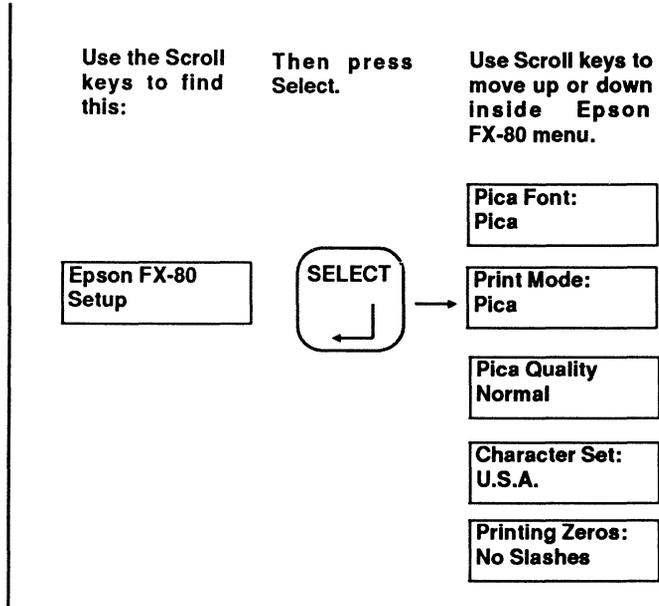
**Proportional Type** If you are using proportional spacing, use this option to select the type of spacing control for the printer to use. If you select Font Control, the printer will use proportional spacing information encoded in the font you are using. If you select Table Control, the printer will use proportional spacing information based on a 10 CPI font. For the most accurate proportional spacing, select Font Control. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

## Special Setup for Epson FX-80

If you are using Epson FX-80 emulation mode, the options in the Epson FX-80 Setup menu control print mode font, pica quality, special character set, printing of zeros, and pica font. Figure 4.9 shows the Epson FX-80 Setup menu. Refer to chapter 1, "Primer," for a complete explanation of the setup keys. If you are not using Epson FX-80 emulation mode, you do not need to change these options.

**Fig. 4.9**

*Epson FX-80  
setup menu.*



**Print Mode** Print mode is the character spacing that the printer will use when in Epson FX-80 emulation mode. Your choices are: compressed (17 characters per inch) or pica (10 characters per inch). If no character spacing command is received from the software package, the printer will use the setting of this option. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Pica Quality** Pica quality is the style of printing for Pica mode in Epson FX-80 emulation. Your choices for this option are: normal or emphasized (slightly darker). If no pica quality command is received from the software package, the printer will use the setting of this option. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Character Set** Use this option to change certain characters to the nationality you normally use. Figure 4.10 shows the different character sets available. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

	35	36	64	91	92	93	94	96	123	124	125	126
USA	#	\$	@	[	\	]	^	'	{		}	~
FRANCE	#	\$	a	'	ç	š	^	'	e	u	e	'
GERMANY	#	\$	š	A	o	U	^	'	a	o	u	ß
U.K.	£	\$	@	[	\	]	^	'	{		}	~
DENMARK	#	\$	@	Æ	Ø	Å	^	'	æ	ø	å	~
SWEDEN	#	O	E	Å	o	Å	U	e	a	o	a	u
ITALY	#	\$	@	'	\	e	^	u	a	o	e	ı
SPAIN	₧	\$	@	ı	Ñ	¿	^	'		ñ	}	~
JAPAN	#	\$	@	[	¥	]	^	'	{		}	~

INTERNATIONAL CHARACTER SETS

You may also print the International Character Set using the Italic Mode as shown in the table below.

	35	36	64	91	92	93	94	96	123	124	125	126
USA	#	\$	@	[	\	]	^	'	{	/	}	~
FRANCE	#	\$	a		ç	š	^	'	e	u	e	
GERMANY	#	\$	š	A	o	U	^	'	a	ó	u	ß
U.K.	£	\$	@	[	\	]	^	'	{	/	}	~
DENMARK	#	\$	@	Æ	Ø	Å	^	'	æ	ø	å	~
SWEDEN	#	O	E	A	o	A	U	e	a	ö	a	u
ITALY	#	\$	@		\	e	^	u	a	o	e	ı
SPAIN	₧	\$	@	ı	Ñ	¿	^	'		ñ	}	~
JAPAN	#	\$	@	[	¥	]	^	'	{	/	}	~

ITALIC INTERNATIONAL CHARACTER SETS

Fig. 4.10 Epson International Character Set

**Printing Zeros** Set this option to Slashes if you want zeros printed with slashes. Use the Select key to make the change to printer setup. Refer to Chapter 1, Primer for a complete explanation of the setup keys.

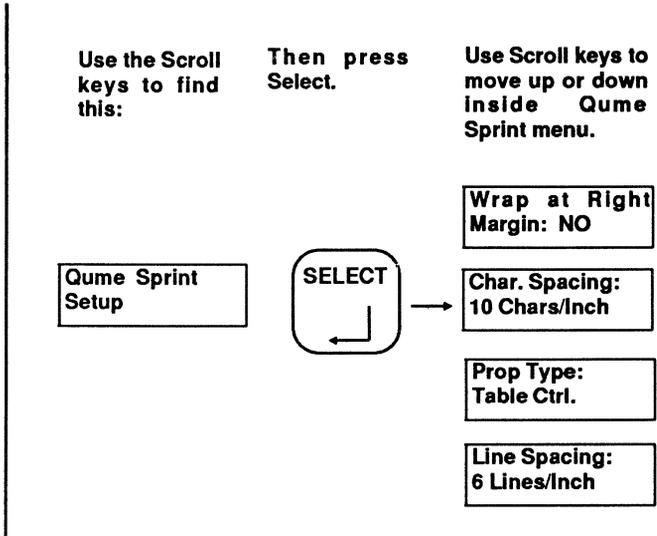
**Pica Font** Set this option to Pica if you want the font you are using to change to Epson Pica whenever you use Epson FX-80 emulation mode. Set this option to Current if you want your currently selected font to remain whenever you use Epson FX-80 emulation mode. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

## Special Qume Sprint Setup

If you are using Qume Sprint emulation mode, the options in the Qume Sprint Setup menu control character spacing, type of proportional spacing, line spacing, and text wrap-around at the right margin. Figure 4.11 shows the Qume Sprint Setup menu. Refer to chapter 1, "Primer," for a complete explanation of the setup keys. If you are not using Qume Sprint emulation mode, you do not need to change these options.

*Fig. 4.11*

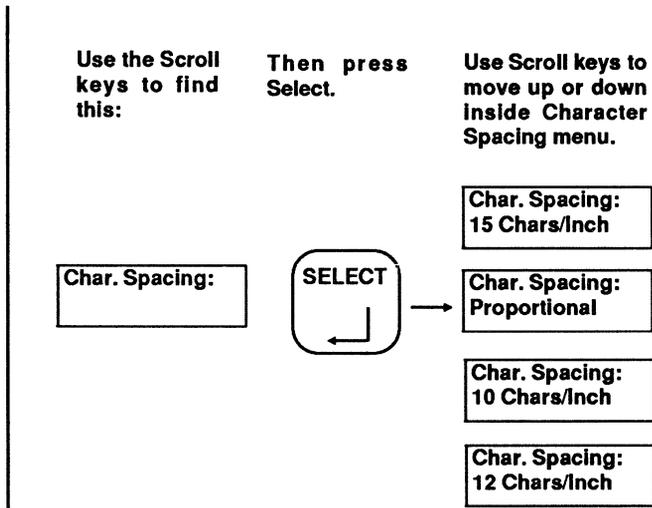
*Qume Sprint  
setup menu.*



**Character Spacing** Set this option to the number of characters per inch you want the printer to print. Any character spacing set by your software package will override this option. Figure 4.12 shows the Character Spacing menu. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

Fig. 4.12

Character Spacing menu.



**Proportional Type** If you are using proportional spacing, use this option to select the type of spacing control for the printer to use. If you select Font Control, the printer will use proportional spacing information encoded in the font you are using. If you select Table Control, the printer will use proportional spacing information based on a 10 CPI font. For the most accurate proportional spacing, select Font Control. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Line Spacing** Set this option to the number of lines per inch you want the printer to print. Any line spacing set by your software package will override this option. Use the Select key

to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

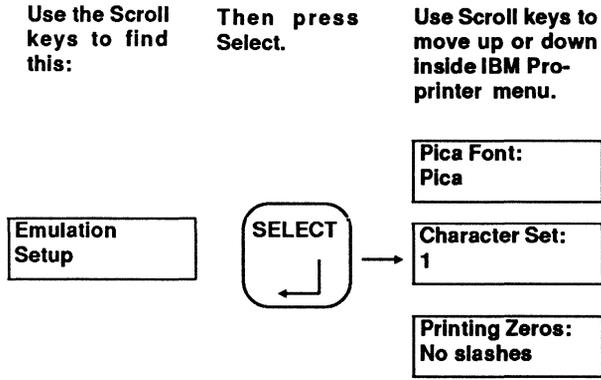
**Wrap at Right Margin** Set this option to Yes if you want text to "wrap-around" to the next line when the number of characters printed on a line would exceed the right margin. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

# Special IBM Proprinter Setup

If you are using IBM Proprinter emulation mode, the options in the IBM Proprinter Setup menu control character set, printing zeros, and pica font. Figure 4.13 shows the IBM Proprinter Setup menu. Refer to chapter 1, "Primer," for a complete explanation of the setup keys. If you are not using IBM Proprinter emulation mode, you do not need to change these options. Your printer may or may not have IBM Proprinter emulation mode depending on the functionality card installed. Refer to the status page for a complete listing of emulation modes available on your printer.

Fig. 4.13

IBM Pro-  
printer setup  
menu.



**Character Set** Use this option to select between Character Set 1 and Character Set 2. The character set you select should match the same setting in your software package. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Printing Zeros** Set this option to Slashes if you want zeros printed with slashes. Use the Select key to make the change to printer setup. Refer to Chapter 1, Primer for a complete explanation of the setup keys.

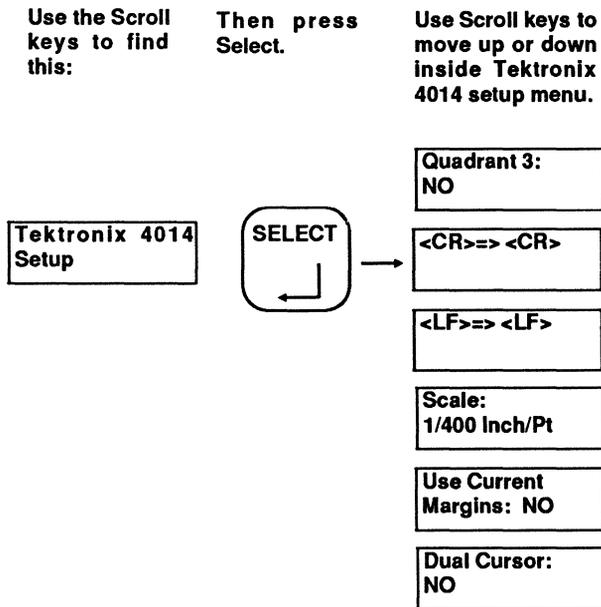
**Pica Font** Set this option to Pica if you want the font you are using to change to Proprinter Pica whenever you use IBM Proprinter emulation mode. Set this option to Current if you want your currently selected font to remain whenever you use IBM Proprinter emulation mode. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

## Special Tektronix 4014 Setup

If you are using Tektronix 4014 emulation mode, the options in the Tektronix 4014 Setup menu control how the printer handles carriage returns and linefeeds, scale, margins, graphics cursor, and origin point. Figure 4.14 shows the Tektronix 4014 Setup menu. Refer to chapter 1, "Primer," for a complete explanation of the setup keys. If you are not using Tektronix 4014 emulation mode, you do not need to change these options. **Your printer may or may not have Tektronix 4014 emulation mode depending on the functionality card installed. Refer to the status page for a complete listing of emulation modes available on your printer.**

Fig. 4.14

*Tektronix 4014 setup menu.*



**Carriage Returns** Set this option to <CR> => <CR><LF> if you wish to automatically execute a line feed whenever a carriage return is executed. Use the Select key to make the change

to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Linefeeds** Set this option to <LF> => <LF><CR> if you wish to automatically execute a carriage return whenever a linefeed is executed. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Scale** Set this option to 1/400 Inch/Pt if you wish to use Plot-10 mode. Set it to 1/300 Inch/Pt if you wish to use Dot mode. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Use Current Margins** If you set this option to No, the printer will center the Tektronix image on the page and ignore the current system margins. If you set this to Yes, the printer will use the system margins to offset the Tektronix image from the top and left and to clip the image from the bottom and right. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Dual Cursor** Set this option to No if you want the Tektronix character cursor to track the graphics cursor. Set it to Yes if you want the character cursor separate from the graphics cursor. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

**Quadrant 3** Set this option to No if you want the origin point for Tektronix addressing to be the lower left-hand corner of the page. Set it to Yes if you want the origin point to be the upper left-hand corner of the page (X axis increasing down the page). Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

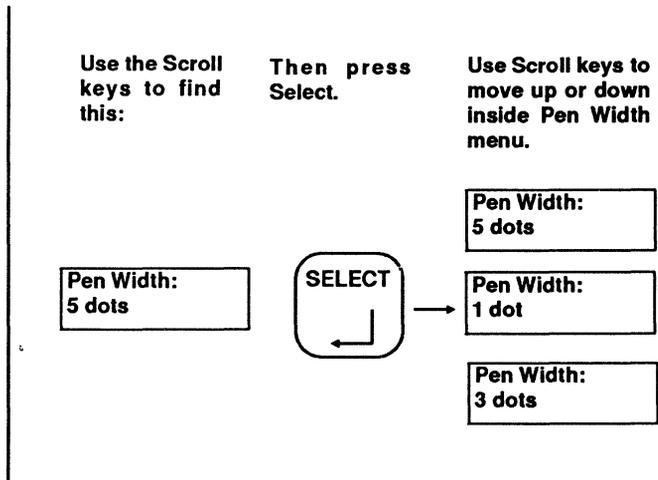
## Special HPGL 7475A Setup

If you are using HPGL 7475A emulation mode, the option in the HPGL 7475A Setup menu controls the default pen width that the printer will use. Refer to chapter 1, "Primer," for a complete explanation of the setup keys. If you are not using HPGL 7475A emulation mode, you do not need to change these options. **Your printer may or may not have HPGL 7475A emulation mode depending on the functionality card installed. Refer to the status page for a complete listing of emulation modes available on your printer.**

**Pen Width** Set this option to the pen width you want the printer to use. The Pen Width menu is shown in Figure 4.15. Use the Select key to make the change to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

Fig. 4.15

*Pen Width menu.*





# Interface Setup

## Contents

Interface Setup . . . . .	5-1
Interface Selection . . . . .	5-2
Shared Interface Setup . . . . .	5-3
Power Up . . . . .	5-3
8th Data Bit . . . . .	5-4
<FF><CR> . . . . .	5-4
RS232 Setup . . . . .	5-5
Parity Checking . . . . .	5-6
Parity Type . . . . .	5-6
Stop Bits . . . . .	5-6
Data Bits . . . . .	5-6
Baud Rate . . . . .	5-6
DTR . . . . .	5-6
RTS . . . . .	5-7
XON/XOFF . . . . .	5-7
ETX/ACK . . . . .	5-7
ENQ/ACK . . . . .	5-7
Centronics Setup . . . . .	5-8
Busy on Printer Error . . . . .	5-9
Printer Error on Error . . . . .	5-9
Fault Bit on Error . . . . .	5-9
Offline on Error . . . . .	5-9
Busy on Offline . . . . .	5-9
Busy for Data Flow . . . . .	5-9



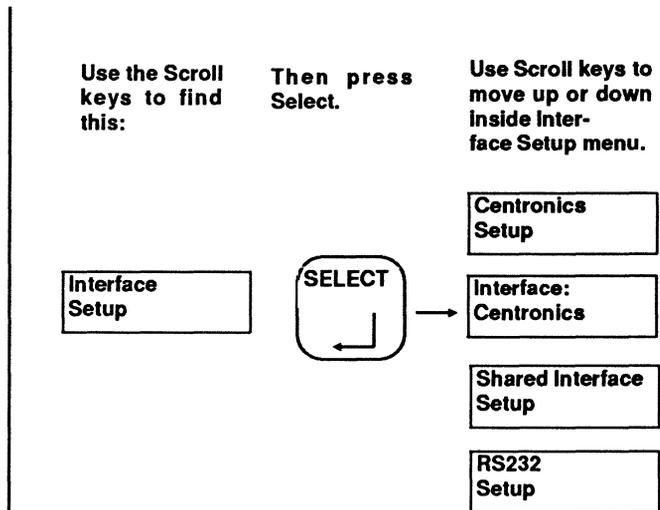
## Interface Setup

The Interface Setup menu allows you to select the interface you wish to use: Centronics parallel or RS232 serial. Before you use the printer's control panel to select an interface, you should have the correct interface cable and you should have the correct interface connector on your PC. Technical specifications for the two types of interface cables are found in Chapter 11, *Specifications*. Your dealer is best able to help you in selecting the correct interface cable. The interface connector on your PC must be set for either parallel or serial data transmission. Refer to your computer's documentation and your DOS manual for information on how to use the MODE command to do this.

The Interface Setup menu is shown in Figure 5.1. Refer to Chapter 1, *Primer*, for a complete explanation of the setup keys.

Fig. 5.1

*The Interface Setup menu.*



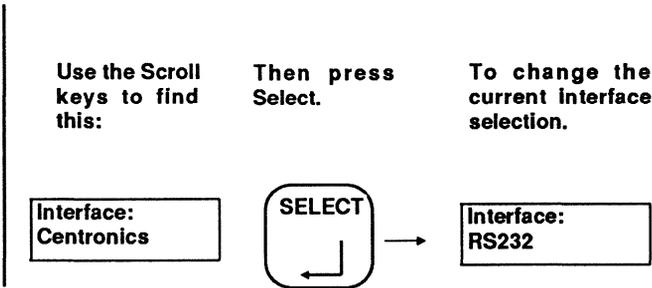
# Interface Selection

You have two interface choices on your printer: Centronics parallel or RS-232 serial. The current interface is shown on the printer's status page.

If you want to change the interface, use the Scroll keys to find Interface Setup in the top level menu and open it by pressing the Select key. After opening the menu, use the Scroll keys to find the interface selection option (fig. 5.2). Press Select to change the interface selection. You will see the change immediately in the control panel message window. Refer to Chapter 1, *Primer*, for a complete explanation of the setup keys.

Fig. 5.2

Interface selection.



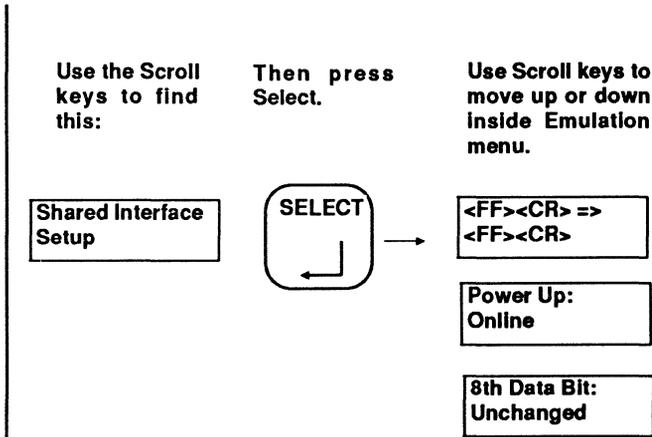
- There is also a Shared Interface Setup menu with options common to both interface selections.
- If you have selected Centronics, you may also need to change options in the Centronics setup menu.
- If you have selected RS232, you may also need to change options in the RS232 setup menu.

## Shared Interface Setup

The three options in the Shared Interface Setup menu are common to both the Centronics parallel and RS232 serial interface selections. To check the current setting of these options, you must use the Scroll keys to find them in the Shared Interface Setup menu. The Shared Interface Setup menu is shown in Figure 5.3. Refer to Chapter 1, *Primer*, for a complete explanation of the setup keys.

Fig. 5.3

*Shared Interface Setup*



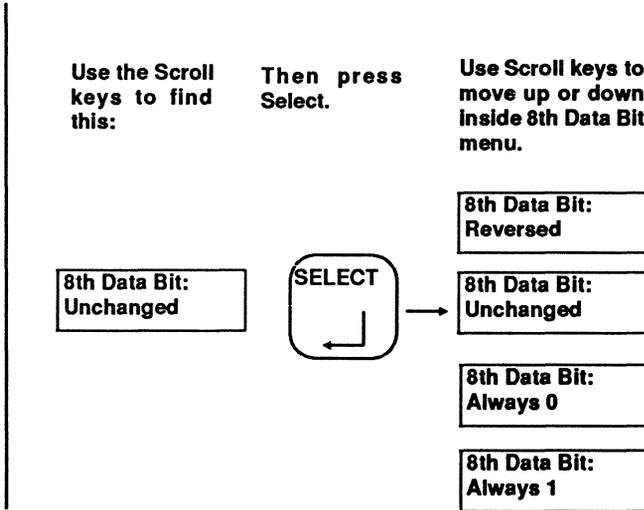
- The default settings of these options should suit the needs of most users. Before you attempt to change any of these options, you may want to send several test files to the printer to determine if you need to make the changes.

**Power Up** Change the setting of this option to "Offline" if you wish the printer to be offline (i.e., unable to receive information from your computer) whenever it is turned on. With Power Up set to "Online," the printer is ready to receive information when it is turned on.

**8th Data Bit** For most users, this option should be kept at its default "Unchanged" setting. If you are using a sophisticated graphics package, you may need to change this setting. Refer to your computer or software documentation. Your choices for the 8th data bit are shown in Figure 5.4.

Fig. 5.4

8th Data Bit.



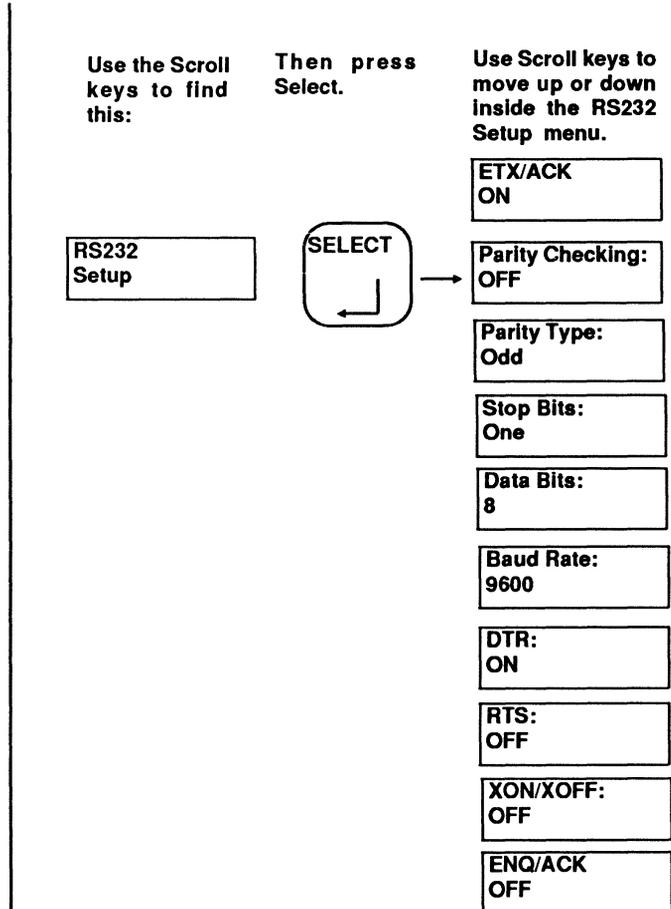
**<FF><CR>** If your computer system adds a carriage return to every system form feed, you may need to change the setting of this option. With **<FF><CR> = <FF>** set, the extra carriage return generated by your computer will be ignored by the printer. Refer to your computer's documentation for information on system-generated form feeds before changing the setting of this option.

## RS232 Setup

The RS232 Setup menu consists of several options that allow you to set the printer's serial interface to the same settings as your computer. Before you change any of the RS232 Setup options, refer to your computer's documentation for information about baud rate, parity, flow control protocol, stop bits and the DOS MODE command. The RS232 Setup menu is shown in Figure 5.5. To open the RS232 Setup menu, use the Scroll keys to find "RS232 Setup" in the Interface Setup menu and press Select.

Fig. 5.5

RS-232 Set-up menu.



- Before you attempt to change any of these options, you may want to send several test files to the printer to determine if you need to make the changes. The default settings of these options should suit the needs of most users.

**Parity Checking** If your computer is set for "No parity" or "Parity Ignored," set this option to "OFF." If your computer is set for some type of parity checking, set this option to "ON" and go to the "Parity Type" menu.

**Parity Type** To open the Parity Type menu, use the Scroll keys to find "Parity Type" in the RS232 Setup menu and press Select. Your choices for parity type are "Odd," "Even," "Mark," or "Space" parity. If the "Parity Checking" option is set to "OFF," the setting of "Parity Type" is ignored.

**Stop Bits** Your choices for the number of stop bits are "1" or "2".

**Data Bits** Your choices for the number of data bits are either "7" or "8."

**Baud Rate** To open the Baud Rate menu, use the Scroll keys to find "Baud Rate" in the RS232 Setup menu and press Select. Your choices for baud rate range from 50 to 19200. Refer to your computer's documentation for information about the baud rates it supports.

**DTR** DTR (Data Terminal Ready) is a type of flow control protocol. Refer to your computer's documentation for infor-

mation about the type of protocol it uses. For most PC users, this option should be set to "ON."

**RTS** RTS (Request to Send) is a type of flow control protocol. Refer to your computer's documentation for information about the type of protocol it uses. For most PC users, this option should be set to "OFF."

**XON/XOFF** XON/XOFF is a type of flow control protocol. Refer to your computer's documentation for information about the type of protocol it uses. For most PC users, this option should be set to "ON."

**ETX/ACK** ETX/ACK is a polling data protocol commonly used with Diablo 630 printers. If your computer uses ETX/ACK, choose ON for this option.

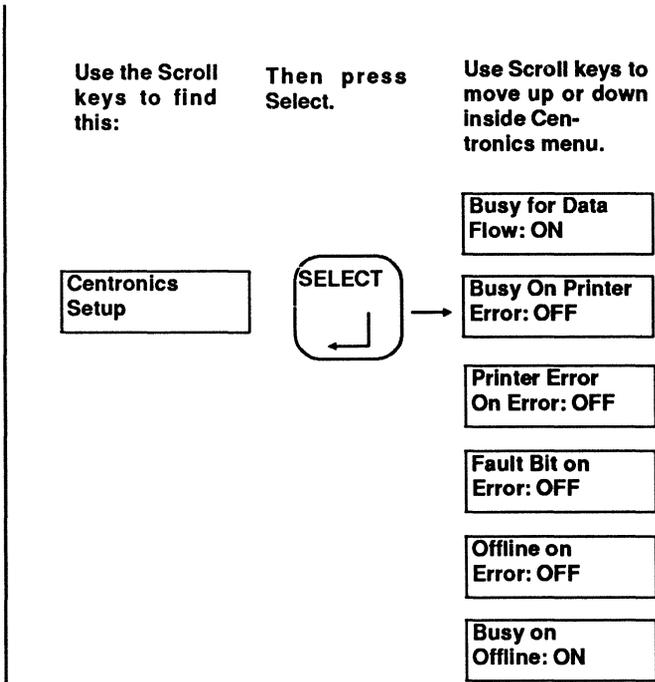
**ENQ/ACK** ENQ/ACK is a type of data protocol. If your computer uses ENQ/ACK, choose ON for this option.

# Centronics Setup

The Centronics Setup menu consists of several options that allow you to set the printer's parallel interface to the same settings as your computer. Before you change any of the Centronics Setup options, refer to your computer's documentation for information about parallel data transmission. The Centronics Setup menu is shown in Figure 5.6. To open the Centronics Setup menu, use the Scroll keys to find "Centronics Setup" in the Interface Setup menu and press Select.

Fig. 5.6

Centronics setup menu.



- Before you attempt to change any of these options, you may want to send several test files to the printer to determine if you need to make the changes. The default settings of these options should suit the needs of most users.

**Busy on Printer Error** When this option is on, all communication between printer and computer is halted when a printer error occurs. The setting of this option should match your computer. For most PC users, this option should be "OFF."

**Printer Error on Error** When this option is on, the printer error bit is set whenever a printer error occurs. The setting of this option should match your computer. For most PC users, this option should be "OFF."

**Fault Bit on Error** When this option is on, the fault bit is set whenever a printer error occurs. The setting of this option should match your computer. For most PC users, this option should be "OFF."

**Offline on Error** When this option is on, the printer will go offline whenever a printer error occurs. Once the printer is offline, you must press the Online key on the printer control panel before the printer can receive any more information from the computer. The setting of this option should match your computer. For most PC users, this option should be "OFF."

**Busy on Offline** When this option is on, the printer will "go busy" whenever it is offline. This puts the computer "on hold" and prevents data from being transmitted to the printer until the printer is online again. For most PC users, this option should be "ON." (See also "Busy for Data Flow" below.)

**Busy for Data Flow** When this option is on, the printer will use the "busy bit" to control data flow from the computer. This

option is used in conjunction with the "Busy on Offline" option. For most PC users, this option should be set to "ON."

# Miscellaneous Setup

## Contents

Miscellaneous Setup . . . . .	6-1
Stopping the Printer . . . . .	6-3
Multiple Copy Abort . . . . .	6-3
Cancel Printing . . . . .	6-3
Suppressing Pages . . . . .	6-4
Suppress Blank Pages . . . . .	6-4
Suppress Status Page at Power-Up . . . . .	6-4
Suppress Status Page at Restart . . . . .	6-4
Page Eject Delay . . . . .	6-5
Manual Delay . . . . .	6-6
Printing a Status Page . . . . .	6-7
Status Page Software Command . . . . .	6-8
Resetting Printer Setup . . . . .	6-9
Diagnostic Options . . . . .	6-10
Hex Dump . . . . .	6-10
Display Product Code . . . . .	6-10
Print Option Page . . . . .	6-10
Hex Dump Software Command . . . . .	6-11
Pausing the Printer . . . . .	6-12

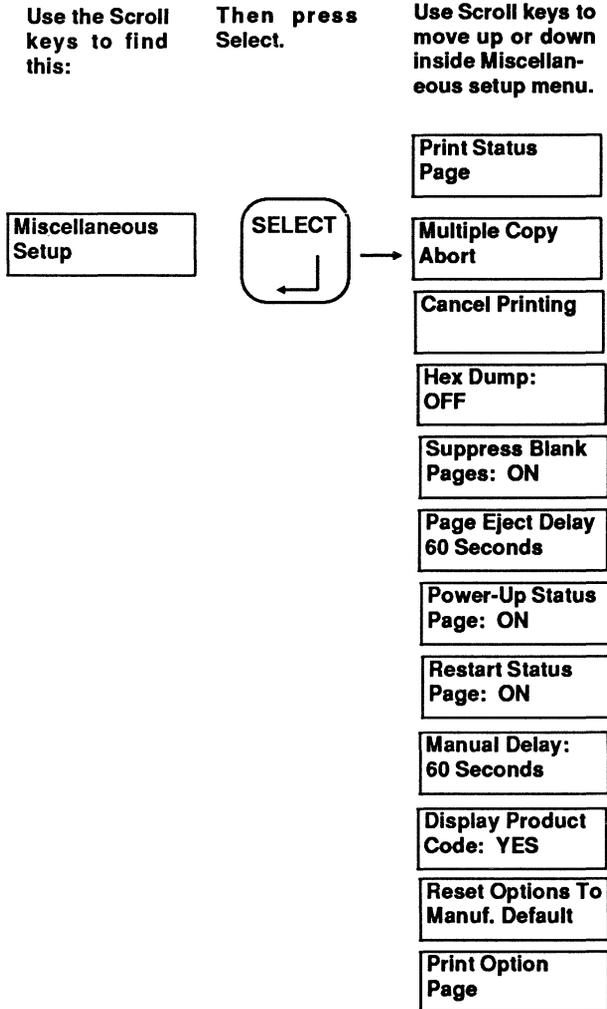


# Miscellaneous Setup

The Miscellaneous Setup menu contains important options controlling the operation of your printer. Two features to note are Multiple Copy Abort, which stops a multiple copy job from printing, and Cancel Printing, which is an "emergency stop" option. The Miscellaneous Setup is shown in Figure 6.1.

Fig. 6.1

*Miscellaneous setup menu.*



Use the Miscellaneous Setup menu when you want to:

- Abort a multi-copy print job
- Stop printing
- Use hex dump mode
- Prevent blank pages from printing
- Set the page eject delay
- Prevent the status page from printing
- Set the manual feed delay
- Display the product code on the status page
- Print a status or option page
- Reset all printer setup options to manufacturer's defaults

## Stopping the Printer

Two options in the Miscellaneous Setup menu may be used to stop the printer if you ever send a file accidentally. Both of these options display the question mark (?) icon in the message window. This indicates that the action takes place as soon as you press the Select key. Refer to Chapter 1, *Primer*, for a complete explanation of the setup keys.

**Multiple Copy Abort** Use this option to stop a multiple copy job from printing.

The copy count will be temporarily reset to one. When power is turned off or when the copy count is reset through the Page Setup menu, the power up copy count will be reinstated.

**Cancel Printing** Use this option to stop the printing of any file. When the printer is placed back online, the message window will show that the printer is idle.

## Suppressing Pages

You may want to use these options to save paper. Use the Select key to make any changes to printer setup. Refer to Chapter 1, *Primer*, for a complete explanation of the setup keys.

**Suppress Blank Pages** Set this option to Yes to keep any form feed command that immediately follows a form feed command from causing a blank page to print. (A form feed command that follows a carriage return or other similar "unprintable" character will print a blank page regardless of this option's setting.)

**Suppress Status Page at Power-Up** Set this option to Yes if you do not want a status page printed whenever you turn on your printer. Use the Print Status Page option or software command to print a status page at any time.

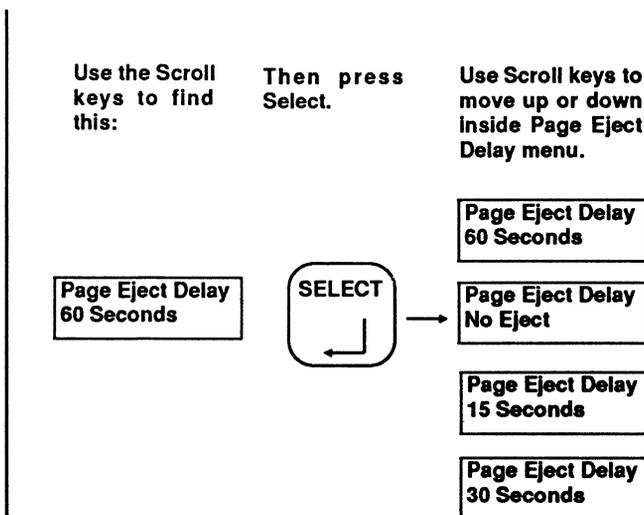
**Suppress Status Page at Restart** Set this option to Yes if you do not want a status page printed whenever you change printer setup. Use the Print Status Page option or software command to print a status page at any time.

## Page Eject Delay

Use this option to change the number of seconds that the printer will wait before ejecting a partial page (any page that does not have enough data on it to generate a form feed command). A partial page will usually be the last page of a file sent to the printer. The Page Eject Delay menu is shown in Figure 6.2. Use the Select key to make any changes to printer setup. Refer to Chapter 1, *Primer*, for a complete explanation of the setup keys.

Fig. 6.2

*Page Eject Delay menu.*



When the message window shows "Printer Active Download Present" but the Data light is not on, a partial page is waiting to be ejected.

If you set the page eject delay to "No Eject," you must press the Online key followed by the Form Feed key to eject the page. If you do not eject the page, any data on it will overprint on the first page of the next file you send.

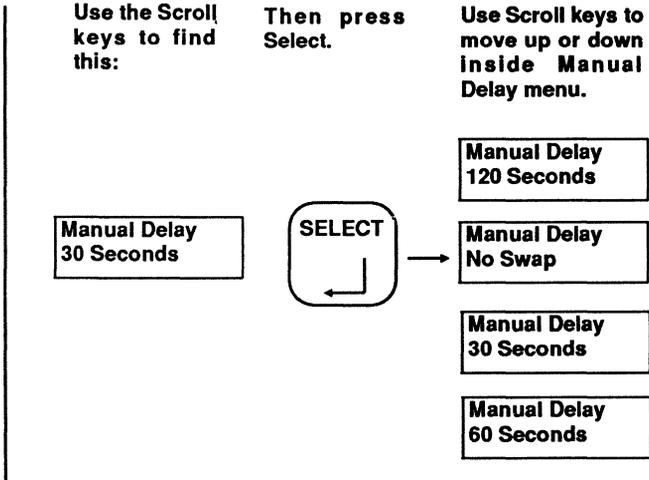
# Manual Delay

Set this option to the number of seconds that the printer will wait before switching from manual feed to automatic (cassette) feed. Figure 6.3 shows the Manual Delay menu. Use the Select key to make any changes to printer setup. Refer to Chapter 1, *Primer*, for a complete explanation of the setup keys.

The delay clock will start after the last page of the file has been printed.

Fig. 6.3

Manual Delay menu.



If you set the manual delay to "No Swap," you must press the Online key followed by the Manual Feed key to switch back to automatic feed.

## Printing a Status Page

Use this option to print a status page at any time. The status page lists all the available fonts as well as the current settings of some printer setup options.

# Status Page Software Command

Use this command to print a status page at any time. The status page lists all the available fonts as well as the current settings of some printer setup options.

*Syntax:* <ESC>[2<SP>r

<ESC>[	Command initiator.
2	2 = Print status page.
<SP>r	Command terminator (<SP> = Decimal 32; lower case "r").

## **Resetting Printer Setup**

Use this option to reset all printer setup options to the "manufacturer's" default settings (i.e., settings programmed into the printer by the manufacturer). This option will erase all changes to printer setup that you may have made.

**IMPORTANT:** The paper size will reset to "Letter" and the Current Emulation will reset to "Epson FX-80." If you are using a different paper size or emulation, you will have to change these options after a reset to manufacturer's defaults.

## Diagnostic Options

The remaining options in the Miscellaneous Setup may be considered diagnostic options because you only need to use them if you are having problems printing or if instructed to use them by a qualified service technician.

**Hex Dump** Use this option to print the hexadecimal values of all data received by the printer. See Chapter 8, Maintenance, for more information.

**Display Product Code** Setting this option to Yes will print a product code on the status page that may be helpful to a qualified service technician.

**Print Option Page** Use this option to print a coded page that lists the current settings of all printer setup options.

## Hex Dump Software Command

Use this command to enter hex dump mode. Any data received by the printer after this command will be printed in a hex dump. See Chapter 8 for an example of a hex dump. To exit hex dump mode, turn the printer off.

*Syntax:* <ESC>[1<SP>r

<ESC>[	Command initiator.
1	Enter hex dump mode.
<SP>r	Command terminator (<SP> = Decimal 32; lower case "r").

## Pausing the Printer

Use this command whenever you wish to take the printer offline and temporarily suspend printing. After this command has been received, the message window will display "User Pause" and the online indicator will go out. If you are installing a font cartridge during the pause, ensure that the printer is offline before inserting the cartridge. To place the printer back online and continue printing, press the Online key on the control panel twice.

*Syntax:* <ESC>[0<SP>r

<ESC>[	Command initiator.
0	Printer pause.
<SP>r	Command terminator (<SP> = Decimal 32; lower case "r").

# Buffer Setup

## Contents

Buffer Setup . . . . .	7-1
Buffers . . . . .	7-1
Host Input Buffer . . . . .	7-1
Download Buffer . . . . .	7-2
Page Buffer . . . . .	7-3
Full Page/Window Memory . . . . .	7-4
Displaying Buffer Sizes . . . . .	7-5
Changing the Host Input Buffer . . . . .	7-6
Changing the Download Buffer . . . . .	7-7
Number of Sequences . . . . .	7-8

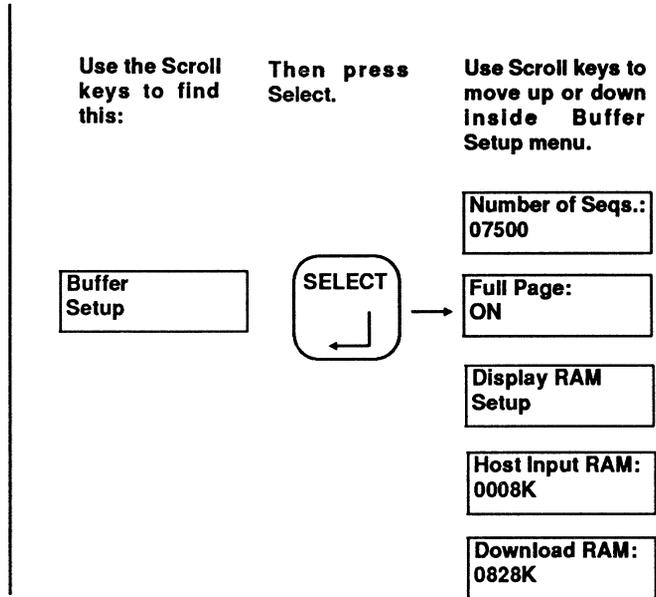


# Buffer Setup

The Buffer Setup menu is used to assign and view the amount of memory in the printer for data from the computer and for downloaded fonts. It also allows you to adjust data storage to print complex graphics. Figure 7.1 shows the Buffer Setup menu.

Fig. 7.1

Buffer Setup menu.



**Buffers** Buffers are areas of memory (RAM) in the printer which temporarily hold fonts or data to be printed. Your printer has three buffers which share a set amount of user-defined random access memory (RAM): the host input buffer, the download buffer, and the page buffer.

**Host Input Buffer** The host input buffer receives data from the computer and holds it until the printer is ready for it. When this buffer is full the printer signals the computer to stop send-

ing data. Generally, the larger this host input buffer is, the faster data is printed and the sooner your computer is free to do other things. The current size of the host input buffer appears on the Display RAM Setup display and on the status page. The size of this buffer can be changed through the control panel.

**Download Buffer** The download buffer stores downloaded fonts and fonts rotated from one orientation to the other. To download or rotate a font, there must be enough RAM available in this buffer. If there is not enough RAM, only the characters that fit will be downloaded or rotated. The size of the download font buffer appears on the Display RAM Setup display and on the status page. The size of this buffer can be changed through the control panel.

## **Page Buffer**

The page buffer stores data being "built" into a page. The size of this buffer affects print speed. The page buffer will contain the portion of total RAM which is left over after the host input buffer and download buffers are set. The size of the page buffer appears on the Display RAM Setup display and the status page. The page buffer is changed indirectly by adjusting the host input and download buffers.

## Full Page/Window Memory

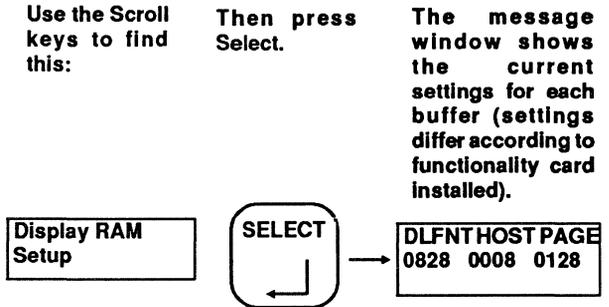
When set for full page memory, the printer "draws" the entire page(text or graphics) in memory before printing actually occurs. Full page memory is necessary for printing graphics or for using HPGL 7475A emulation and Tektronix 4014. When set for window memory, the printer "draws" only a portion ("window") of the page before printing that portion. The "window" progresses down the page until the whole page is printed. For most applications, you will probably keep your printer set for full page memory. However, if you need exceptionally large amounts of download font memory, switch to window memory. **Full page memory is only available with certain functionality cards. If your printer has this option, the current setting is shown on the status page.**

## Displaying Buffer Sizes

The status page shows the total number of bytes in printer memory and the current settings of the host input, download and page buffers. You may also use the Display RAM Setup option (fig. 7.2) in the Buffer Setup menu to view the current settings of the three buffers in the printer's message window.

*Fig. 7.2*

*Display RAM setup.*



## Changing the Host Input Buffer

The host input buffer may be increased to accept data in larger increments. When the host input buffer is full, the printer signals the computer to temporarily stop sending data. The larger the host input buffer, the fewer the number of stops while the computer is sending data. Increasing the size of the host input buffer will decrease the page buffer by the same amount. Use the Select key to make any changes to printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

## Changing the Download Buffer

The download buffer may be increased to allow more room for downloaded fonts and rotated fonts. Increasing the download buffer will decrease the page buffer by the same amount. The download buffer may be reduced to allot more RAM to the page buffer. The values in the message window display may not decrease as much as you wish. This means the decrease in size of the download buffer size threatens to erase some portion of memory already used by a download font. There are four possible solutions to this:

1. Do not decrease the size of the download buffer.
2. Look at the latest status summary sheet and check the number of bytes available for download. Determine how much smaller you can make the download buffer without threatening your present downloaded fonts.
3. Use a software command to selectively delete download fonts from the download area of memory.
4. Power-off/power-on the printer to clear the downloaded fonts and then reduce the download buffer.

## Number of Sequences

The option called Number of Sequences is necessary only to correct a possible error when printing graphics and some landscape text. This error appearing on the diagnostic page reads, "Incomplete page due to maximum sequences exceeded." If you receive this message increase the number of sequences. Increasing the number of sequences will decrease the page buffer by approximately 4K for every 1000 sequences.

Use the Select key to make any change to the printer setup. Refer to chapter 1, "Primer," for a complete explanation of the setup keys.

A diagnostic page listing "Incomplete page due to page buffer overflow" immediately after a restart of the printer indicates a page buffer setting that is too low to permit the printing of a status page. Use the setup keys to decrease download or host input buffers until the status page prints.

# Troubleshooting/Maintenance

## Contents

Printer Troubleshooting . . . . .	8-1
Clearing Paper Jams . . . . .	8-6
Replacing the Print Cartridge . . . . .	8-9
Adjusting Print Contrast . . . . .	8-10
Cleaning the Primary Corona Wire . . . . .	8-11
Cleaning the Transfer Corona Wire and Transfer Guides . . . . .	8-13
Troubleshooting with Hex Dump Mode . . . . .	8-16



## Printer Troubleshooting

This section contains troubleshooting charts to assist you if problems occur with your laser printer. Also included are instructions for keeping your printer clean. No special tools are needed for the maintenance procedures presented in this manual.

### Printer not printing.

- Check interface cable for loose connection at printer or computer.
- Check Online key. Printer must be online to receive data.
- Check Manual Feed key. If light in key is on, printer is in manual feed. Change the paper source to automatic (cassette) feed. Feed one sheet of paper through the paper guides. The remaining pages will be printed from the paper cassette.
- If using serial interface, check baud rate, parity, number of data bits, stop bits, protocol and flow control settings on printer. These settings must match the MODE COM1: command line in your AUTOEXEC.BAT file.
- Check printer setting for type of interface (Centronics or RS-232). Printer ignores data received over the interface that was not selected.
- Using a ball point pen or similar size object, press Test Print button on right side of printer. If no test page prints, call your dealer.

### Last page of file does not print; message window reads **PRINTER ACTIVE**

- Take printer offline and press Form Feed key. If last page of file prints, add form feed command to end of file or

change the setting of PAGE EJECT DELAY in the Miscellaneous Setup menu.

### **No status page at power-up**

- Make sure printer is plugged into power sources.
- Check setting of POWER-UP STATUS PAGE in the Miscellaneous Setup menu.
- Check paper cassette. Fill cassette with paper before printing.

### **Font selected by number does not print**

- Incorrect font number requested. Check list of available fonts on the status summary page.

### **Printer changes fonts after changing emulation mode to Epson or to IBM Proprinter**

- Change the setting of PICA FONT in EPSON FX 80 SETUP menu or IBM Proprinter setup.

### **Some characters of a downloaded font do not print**

- When the font was downloaded, the printer's memory did not have enough room for the entire font. Delete some fonts to make more room available or change the setting of DOWNLOAD RAM in the Buffer Setup menu. Check the status summary page for a tally of "bytes available for download" and re-download the font.

### **Prints streaked or too light**

- If Low Toner indicator is on, replace print cartridge.
- If Low Toner indicator is not on, remove the print cartridge and rock it gently to distribute toner evenly.

Nothing prints on page; new print cartridge installed

- Using a ball point pen or similar size object, press Test Print button on right side of printer. If no test page prints, call your dealer.
- Sealing tape not removed from cartridge.

**Printer Status and Error Messages** The following status messages and error messages may appear in the printer's message window.

<b>CONTROLLER ERROR</b>	Power the printer off and on. Call your dealer if the message repeats.
<b>DIAGNOSTICS IN PROGRESS</b>	Printer self-tests are operating.
<b>DOWNLOADING FONTS...</b>	The printer is receiving download fonts from your computer.
<b>DOWNLOADING OVERLAYS...</b>	The printer is receiving download overlays from your computer.
<b>INTERFACE ERROR</b>	Check the cable connecting your printer to the computer; make sure the settings of the Interface Setup menu correspond to the settings of your computer.
<b>NO FONTS PRESENT</b>	Call your dealer.
<b>CARTRIDGE OUT</b>	A toner cartridge is not installed in the printer.

<b>PAPER JAM</b>	Paper is stuck inside the printer.
<b>PAPER OUT</b>	The paper cassette is empty OR the printer is in manual feed mode.
<b>POWER UP</b>	The power has been turned on and the printer is warming up.
<b>PRINTER ACTIVE DOWNLOAD PRESENT</b>	The printer's memory is holding data for printing. If this message appears when the data light is out, use the Form Feed key to eject a page.
<b>PRINTER ERROR</b>	Sometimes seen before or after the "Upper cover open" message. Turn the printer off and on. Call your dealer if "Printer Error" reappears without other error messages.
<b>PRINTER IDLE DOWNLOAD PRESENT</b>	The printer is waiting for data from the computer.
<b>PRESS SELECT TO SAVE ONLINE OTHERWISE</b>	Do you wish the changes you just made to printer setup to take effect whenever you turn on the printer? Pressing the Select key will store the changes into the printer's memory; pressing the Online key will only keep the changes in effect until the printer is reset or turned off.
<b>UPPER COVER OPEN</b>	Printer upper cover is ajar; close the cover tightly.

## USER PAUSE

The printer has received a pause command. To resume printing after a pause, press the Online key twice.

## Clearing Paper Jams

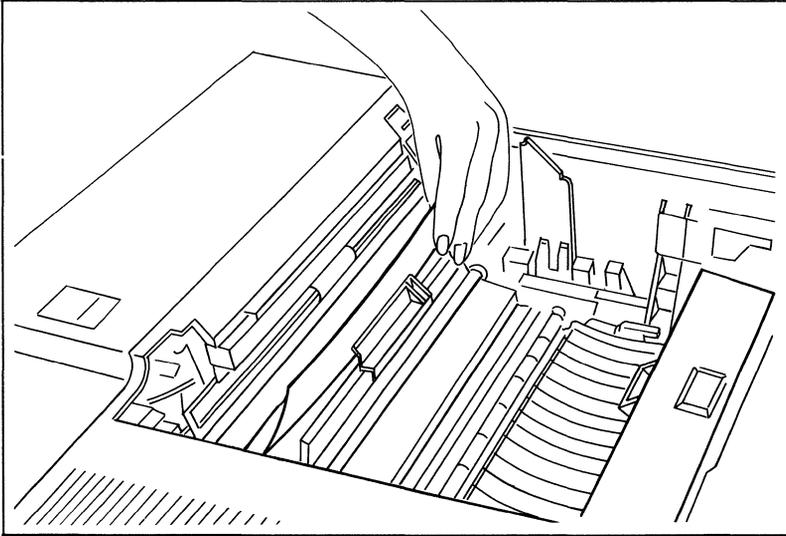
When **Paper Jam** appears in the message window, a piece of paper is stuck inside the printer. Open the printer top section and locate the jammed paper.

---

**CAUTION: The inside of the printer may be hot.**

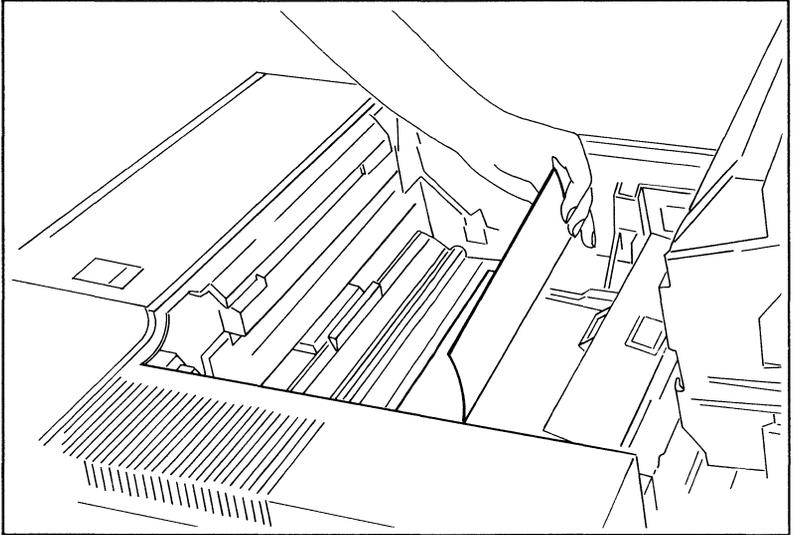
---

If the paper is stuck in the transfer guide area, open the transfer guide paper lock and remove the paper (fig. 8.1).



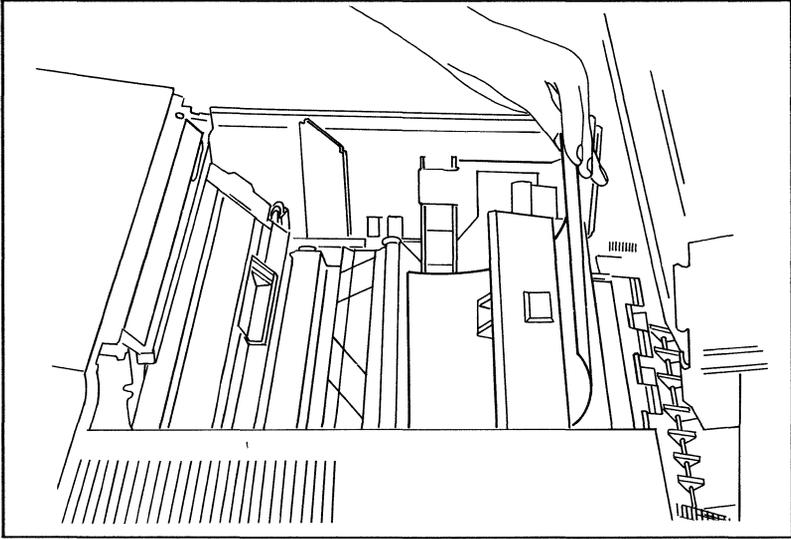
*Fig. 8.1. Removing paper from transfer guide paper lock.*

If the paper is stuck under the transfer guide, pull the paper out (fig. 8.2).



*Fig. 8.2. Removing paper from the transfer guide.*

If the paper is stuck in the toner fuser, carefully pull the paper out (fig. 8.3). The paper will be hot and the toner may still be powdery.



*Fig. 8.3. Removing paper from the toner fuser.*

## Replacing the Print Cartridge

Under average conditions, expect the print cartridge to last for approximately 4,000 prints. When the Low Toner indicator on the control panel (fig. 8.4) lights or when print darkness decreases, you should replace the print cartridge.

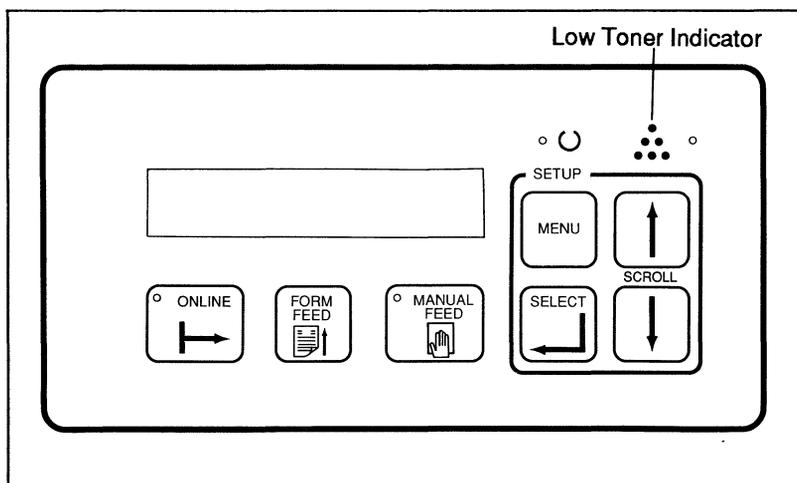
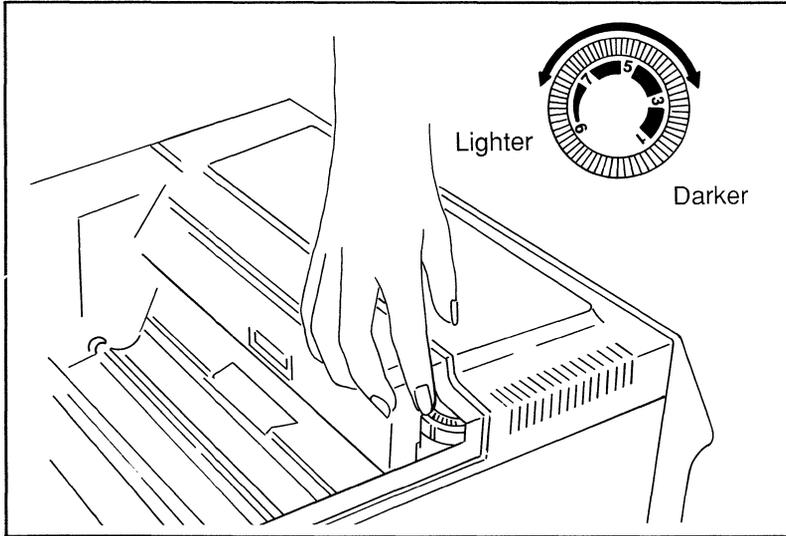


Fig. 8.4. Low toner indicator.

Always replace the fuser wiper when replacing the print cartridge. Instructions for replacing the print cartridge and fuser wiper are in your *Getting Started* manual or print cartridge box.

## Adjusting Print Contrast

Normally, your laser printer produces a rich, black image on the paper. As the print cartridge is depleted, you may want to increase the print contrast setting. The adjustment dial for print contrast is inside the printer (fig. 8.5).



*Fig. 8.5. Adjusting print contrast.*

Moving the dial to a lower number increases print contrast. The normal setting for the dial is "5". Always set the dial to "5" after installing a new print cartridge.

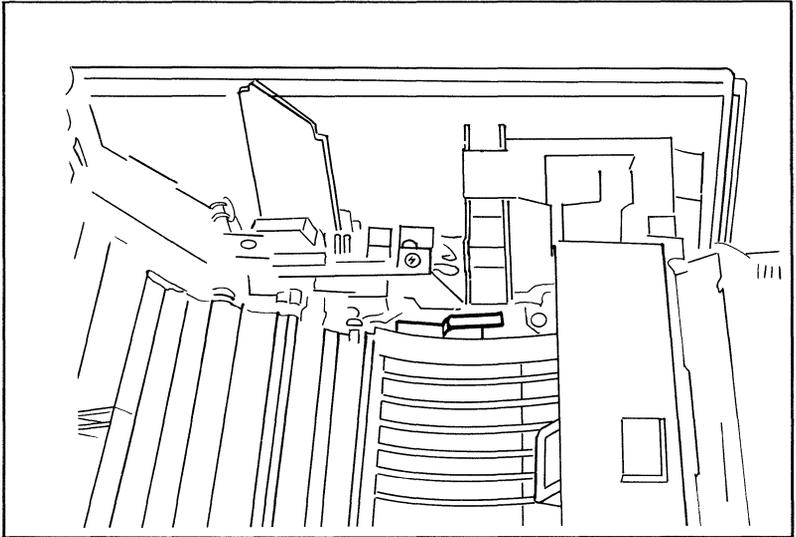
Setting the contrast adjustment to a higher number will decrease the number of prints you can expect from the print cartridge.

**NOTE:** If the font you are using looks "heavier" than normal, adjust the contrast to a lower number for better printing.

## Cleaning the Primary Corona Wire

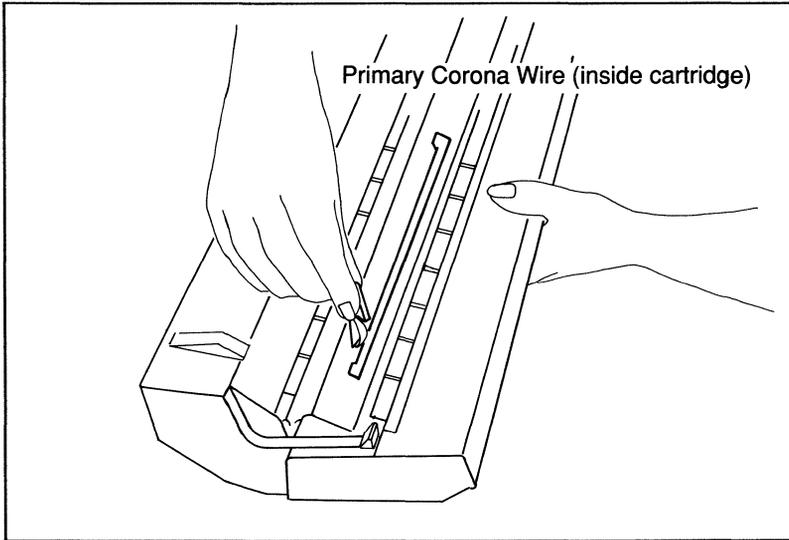
The primary corona wire (inside the print cartridge) places an electric charge on the drum in the print cartridge. If this wire is dirty, your printouts may be smudged or streaked.

1. Open the printer top section and remove the print cartridge. Do not stand the cartridge on end or keep it in bright light for long.
2. Remove the wire cleaner from the printer (fig. 8.6).



*Fig. 8.6. Wire cleaner.*

3. Insert the felt end of the cleaner into the slot in the print cartridge. Slide the cleaner to the opposite end of the slot and remove it (fig. 8.7).



*Fig. 8.7. Cleaning the primary corona wire.*

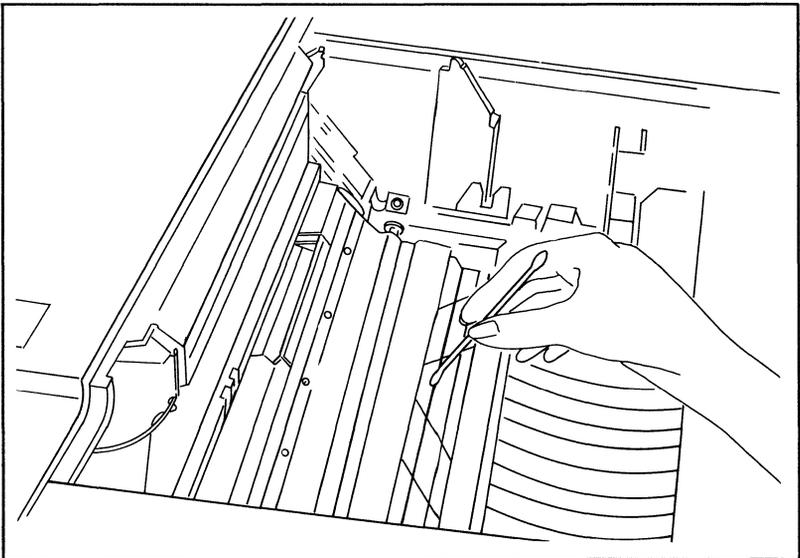
4. Wipe the outside of the print cartridge with a damp cloth to remove any dust or toner residue.
5. Replace the wire cleaner and the print cartridge. Close the printer top section.

## Cleaning the Transfer Corona Wire

The transfer corona wire places an electric charge on each sheet of paper passing into the printer. The difference between the charge on the paper and the charge on the print cartridge drum attracts toner to the paper. If the transfer corona wires are dirty, your printouts may be smudged or streaked. The transfer guides control the path of the paper as it passes into the printer. Paper dust can accumulate on these guides and, over time, affect the appearance of your printouts.

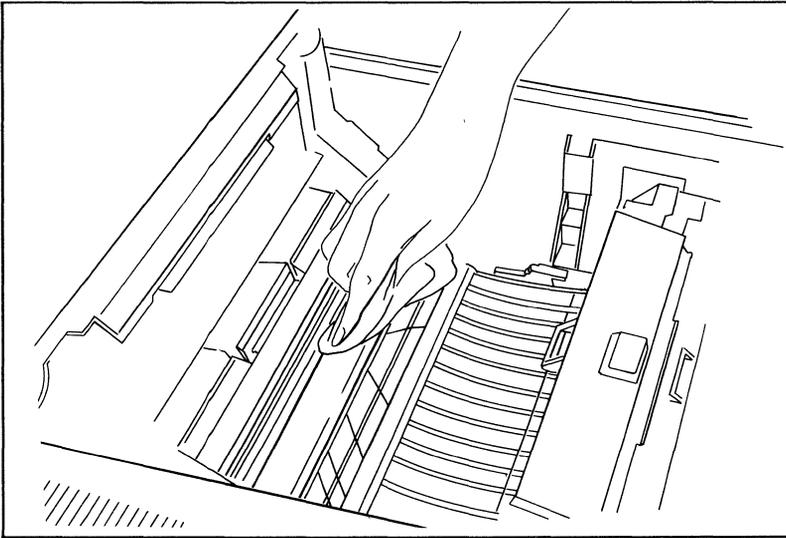
**WARNING!** Turn off printer before cleaning transfer corona wires.

1. Open the printer top section.
2. Using a cotton swab dampened with alcohol, gently clean the transfer corona wire (fig. 8.8).



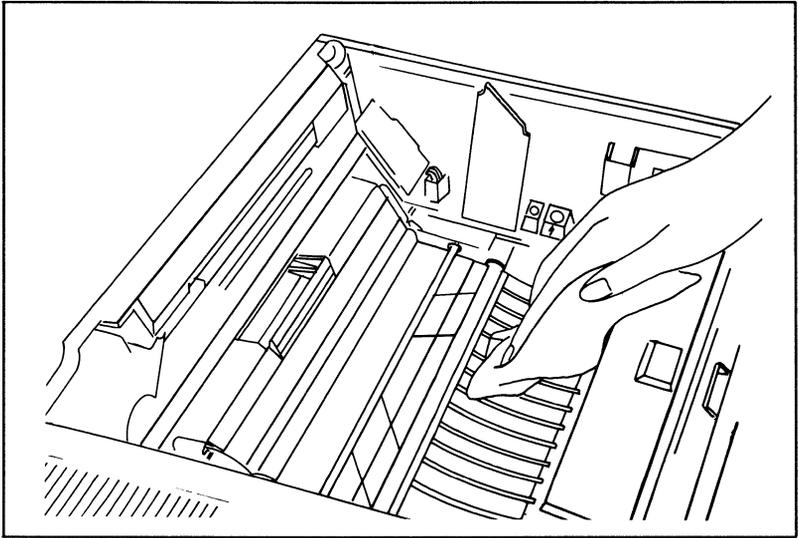
*Fig. 8.8. Cleaning the transfer corona wire.*

3. Wipe the transfer guide (the silver bar closest to the front of the printer) with a damp cloth (fig. 8.9).



*Fig. 8.9. Cleaning the transfer guide and paper lock.*

4. Lift the green handle on the transfer guide paper lock. Wipe the paper lock mechanism with a damp cloth.
5. Wipe the paper feed guide (fig. 8.10) with a damp cloth to remove any paper dust accumulated there. Close the printer upper cover when finished.



*Fig. 8.10. Cleaning the paper feed guide.*

## Troubleshooting with Hex Dump Mode

In a hex dump, the printer prints the hexadecimal value of each data byte received. Comparing the hex dump to the data (file) sent from the computer is an effective way to troubleshoot the connection between the computer and printer.

To start a hex dump, select Hex Dump: On in the Miscellaneous Setup menu. Any data received by the printer while hex dump is on prints in hexadecimal code. (This manual includes a chart of the hexadecimal values in Appendix B.) One side of the hex dump printout translates the hexadecimal values (fig. 8.11).

1B 61 64 1B 1A 49 OD 1B 34 1B 42 1B 1E 09 1B 1F OD	.ad...l...4.B.....
OD 1B 1E 09 1B 1E 31 OA 1B 35 1B 1F 7E 20 20 1B 1F	.....1A.5.....
1B 20 1B 1F 07 20 1B 1F 02 42 1B 1F 0C 42 1B 1F 02	.....B...B.....
41 1B 1F 0C 41 1B 1F 02 55 1B 1F 0C 55 1B 1F 02 45	A...A...U...U...E
1B 1F 0C 45 1B 1F 02 52 1B 1F 0C 52 1B 1F 02 20 1B	...E...R...R...E...
1F 0C 20 1B 1F 02 45 1B 1F 0C 45 1B 1F 02 4E 1B 1F	...N...E...E...N...
0C 4E 1B 1F 02 54 1B 1F 0C 54 1B 1F 02 45 1B 1F 0C	...N...T...T...E...
45 1B 1F 02 52 1B 1F 0C 52 1B 1F 02 50 1B 1F 0C 50	E...R...R...P...P
1B 1F 02 52 1B 1F 0C 52 1B 1F 02 49 1B 1F 0C 49 1B	...R...R...I...I...
1F 02 53 1B 1F 0C 53 1B 1F 02 45 1B 1F 0C 45 1B 1F	...S...S...E...E...
02 53 1B 1F 0C 53 1B 1F 02 20 1B 1F 0C 20 1B 1F 02	...S...S...E...E...
50 1B 1F 0C 50 1B 1F 02 52 1B 1F 0C 52 1B 1F 02 4F	P...P...R...R...O
1B 1F 0C 4F 1B 1F 02 44 1B 1F 0C 44 1B 1F 02 55 1B	...O...D...D...U...
1F 0C 55 1B 1F 02 43 1B 1F 0C 43 1B 1F 02 54 1B 1F	...U...C...C...T...
0C 54 1B 1F 02 53 1B 1F 0C 53 1B 1F 02 20 1B 1F 0C	...T...S...S.....
20 1B 1F 02 41 1B 1F 0C 41 1B 1F 02 4E 1B 1F 0C 4E	...A...A...N...N
1B 1F 02 44 1B 1F 0C 44 1B 1F 02 20 1B 1F 0C 20 1B	...D...D.....
1F 02 53 1B 1F 0C 53 1B 1F 02 45 1B 1F 0C 45 1B 1F	...S...S...E...E...
02 52 1B 1F 0C 52 1B 1F 02 56 1B 1F 0C 56 1B 1F 02	...R...R...V...V...
49 1B 1F 0C 49 1B 1F 02 43 1B 1F 0C 43 1B 1F 02 45	I...I...C...C...E
1B 1F 0C 45 1B 1F 02 53 1B 1F 0C 53 1B 1E 09 OA OA	...E...S...S.....
OA 1B 36 1B 1F 7E 20 20 1B 1F 1C 20 1B 1F 07 20	...6.....
1B 1F 02 53 1B 1F 0C 53 1B 1F 02 45 1B 1F 0C 45 1B	...S...S...E...E...
1F 02 4C 1B 1F 0C 4C 1B 1F 02 49 1B 1F 0C 49 1B 1F	...L...L...L...L...
02 46 1B 1F 0C 46 1B 1F 02 20 1B 1F 0C 20 1B 1F 02	...F...F...L...L...
59 1B 1F 0C 59 1B 1F 02 54 1B 1F 0C 54 1B 1F 02 49	Y...Y...T...T...I
1B 1F 0C 49 1B 1F 02 4C 1B 1F 0C 4C 1B 1F 02 49 1B	...I...L...L...L...
1F 0C 49 1B 1F 02 42 1B 1F 0C 42 1B 1F 02 49 1B 1F	...L...B...B...L...
0C 49 1B 1F 02 54 1B 1F 0C 54 1B 1F 02 41 1B 1F 0C	...T...T...A...A...
41 1B 1F 02 50 1B 1F 0C 50 1B 1F 02 4D 1B 1F 0C 4D	A...P...P...M...M
1B 1F 02 4F 1B 1F 0C 4F 1B 1F 02 43 1B 1F 0C 43 OA	...O...O...C...C...
1B 35 1B 1F 07 20 1B 1F 07 20 1B 1F OD 43 6F 6D 70	...5... ..Comp
61 74 69 62 69 6C 69 74 79 20 77 69 74 68 20 74 68	atibility with th
65 20 74 6F 70 20 73 6F 66 74 77 61 72 65 20 70 61	e top software pa
63 6B 61 67 65 73 20 69 73 20 69 6D 70 6F 72 74 61	ckages is importa

Fig. 8.11. Example of hex dump.

To return to normal operation, select Hex Dump: Off in the Miscellaneous Setup menu.

## Font Width Tables

Vertical line



## Font Width Tables

Each laser printer font is a particular character set in a particular style, a particular size and orientation. Each font is also assigned a name and font number.

All fonts included with your laser printer are portrait orientation fonts. Your printer will rotate any of these fonts to landscape orientation if you request it (see chapter 2, "Font Setup") and if memory space is available (see chapter 7, "Buffer Setup").

The tables that follow are character width charts. The width of each character is expressed in "dots" (1/300"). The charts also provide the Hex value associated with each character.

Epson Compressed [10 Pt. 17.6 CPI]  
 Font 380 Glyph Ht. 43 Baseline 30 Version 2

	0x	1x	2x	3x	4x	5x	6x	7x
0	à 17	š 17	17	0 17	@ 17	P 17	` 12	p 17
1	è 17	ß 17	! 9	1 17	A 17	Q 17	a 17	q 17
2	ù 17	ƒ 17	" 15	2 17	B 17	R 17	b 17	r 15
3	ò 17	œ 17	# 17	3 17	C 17	S 17	c 17	s 17
4	ì 11	ø 17	\$ 17	4 17	D 17	T 17	d 17	t 16
5	· 12	ø 17	% 17	5 17	E 16	U 17	e 17	u 17
6	£ 17	18	& 17	6 17	F 16	V 17	f 16	v 17
7	í 9	Ä 17	' 12	7 17	G 17	W 17	g 17	w 17
8	¿ 17	ö 17	( 16	8 17	H 17	X 17	h 17	x 17
9	ñ 17	ü 17	) 16	9 17	I 9	Y 17	i 9	y 17
A	ñ 17	ä 17	* 17	: 11	J 17	Z 17	j 12	z 17
B	ð 17	ö 17	+ 17	; 12	K 17	[ 16	k 17	{ 16
C	ƒ 17	ü 17	, 12	< 17	L 16	\ 17	l 9	l 9
D	À 17	É 17	- 17	= 17	M 17	] 16	m 17	} 16
E	á 17	é 17	· 11	> 17	N 17	^ 17	n 17	~ 17
F	ç 17	¥ 17	/ 17	? 17	O 17	- 17	o 17	ø 17

Epson Compressed [10 Pt. 17.6 CPI]  
 Font 380 Glyph Ht. 43 Baseline 30 Version 2

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	à 17	š 17	17	0 17	@ 17	P 17	` 12	ƒ 17
1	é 17	ß 17	! 13	1 17	A 17	Q 17	a 17	q 17
2	ù 17	Æ 17	" 16	2 17	B 17	R 17	b 17	r 17
3	ò 17	æ 17	# 17	3 17	C 17	S 17	c 17	s 17
4	ì 10	ø 17	\$ 17	4 17	D 17	T 16	d 17	t 15
5	· 12	ø 17	% 17	5 17	E 17	U 17	e 17	u 17
6	£ 17	· 15	& 17	6 17	F 17	V 17	f 16	v 17
7	ï 13	Ä 17	' 10	7 17	G 17	W 17	g 17	w 17
8	í 17	ö 17	( 17	8 17	H 17	X 17	h 17	x 17
9	ñ 17	ü 17	) 17	9 17	I 12	Y 17	i 13	y 17
A	ñ 17	ä 17	* 17	: 12	J 17	Z 17	j 17	z 17
B	ö 17	ö 16	+ 17	; 12	K 17	[ 17	k 17	{ 17
C	À 17	ü 17	, 11	< 17	L 16	\ 17	l 12	/ 17
D	À 17	É 17	- 17	= 17	M 17	] 17	m 17	} 17
E	á 16	é 17	. 10	> 17	N 17	^ 16	n 17	~ 17
F	ç 17	¥ 17	/ 17	? 17	0 17	- 17	o 17	ø 17

Epson Elite [10 Pt. 12 CPI]  
 Font 381 Glyph Ht. 43 Baseline 30 Version 2

	0x	1x	2x	3x	4x	5x	6x	7x
0	à 23	á 23	â 20	ã 25	@ 25	P 22	' 11	p 23
1	è 24	é 24	! 10	1 25	A 25	Q 25	a 23	q 23
2	ù 23	û 25	" 17	2 25	B 24	R 22	b 23	r 18
3	ò 25	æ 25	# 24	3 25	C 25	S 23	c 23	s 23
4	ì 11	ø 25	\$ 25	4 25	D 24	T 24	d 23	t 18
5	í 11	ø 25	% 25	5 25	E 21	U 23	e 24	u 24
6	£ 25	¨ 19	& 25	6 25	F 21	V 25	f 19	v 23
7	î 10	Ä 23	' 11	7 25	G 25	W 25	g 24	w 25
8	ï 23	ö 25	( 15	8 25	H 23	X 24	h 21	x 20
9	ñ 24	Ü 23	) 15	9 25	I 10	Y 24	i 9	y 23
A	ñ 23	ä 23	* 25	: 11	J 20	Z 21	j 14	z 21
B	ü 25	ö 25	+ 25	; 13	K 25	[ 15	k 23	{ 18
C	ü 25	ü 23	, 13	< 23	L 22	\ 22	l 9	i 8
D	À 23	É 21	- 25	= 25	M 25	] 15	m 25	} 18
E	à 23	é 24	. 11	> 23	N 25	^ 19	n 23	~ 22
F	ç 23	¥ 25	/ 22	? 21	O 25	- 25	o 25	ø 25

Epson Elite [10 Pt. 12 CPI]  
 Font 381 Glyph Ht. 43 Baseline 30 Version 2

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	à 25	š 25	20	0 25	@ 25	P 25	` 12	p 25
1	è 25	ß 25	! 15	1 25	A 25	Q 25	a 25	q 25
2	ù 25	£ 25	" 19	2 25	B 25	R 25	b 25	r 21
3	ó 25	æ 25	# 25	3 25	C 25	S 25	c 24	s 24
4	ì 15	ø 25	\$ 25	4 25	D 25	T 25	d 25	t 20
5	° 13	ø 25	% 25	5 25	E 25	U 25	e 25	u 25
6	£ 25	° 20	& 25	6 25	F 25	V 25	f 23	v 25
7	í 14	Ä 25	' 12	7 25	G 25	W 25	g 25	w 25
8	í 22	ö 25	( 21	8 25	H 25	X 25	h 25	x 25
9	ñ 25	ü 25	) 21	9 25	I 16	Y 25	i 15	y 25
A	ñ 25	ä 25	* 25	: 15	J 25	Z 25	j 22	z 25
B	ø 25	ö 24	+ 25	; 16	K 25	[ 25	k 23	{ 22
C	£ 25	ü 25	, 13	< 25	L 22	\ 20	l 14	/ 24
D	À 25	É 25	- 25	= 25	M 25	] 25	m 25	} 22
E	á 25	é 25	· 11	> 25	N 25	^ 21	n 25	~ 22
F	ç 25	¥ 25	/ 22	? 23	O 25	- 25	o 25	ø 25

Epson Pica [10 Pt. 10 CPI]  
 Font 382 Glyph Ht. 43 Baseline 30 Version 2

	0x	1x	2x	3x	4x	5x	6x	7x
0	à 30	š 25	25	0 30	@ 30	P 30	' 13	p 28
1	è 30	ß 28	! 13	1 20	A 30	Q 30	a 30	q 28
2	ù 28	Æ 30	" 20	2 30	B 30	R 30	b 28	r 28
3	ò 25	æ 30	# 30	3 30	C 30	S 30	c 28	s 30
4	ì 15	ø 30	\$ 30	4 30	D 30	T 30	d 28	t 28
5	· 20	ø 30	% 30	5 30	E 30	U 30	e 30	u 28
6	£ 30	¨ 20	& 30	6 30	F 30	V 30	f 25	v 30
7	ï 13	Ä 30	' 13	7 30	G 30	W 30	g 28	w 30
8	¿ 30	ö 30	( 15	8 30	H 30	X 25	h 28	x 25
9	Ñ 30	Ü 30	) 15	9 30	I 20	Y 30	i 20	y 30
A	ñ 28	ä 30	* 30	: 15	J 28	Z 25	j 23	z 25
B	Ö 30	ö 25	+ 30	; 15	K 30	[ 20	k 25	{ 23
C	Ɔ 30	ü 28	, 18	< 25	L 30	\ 25	l 20	! 13
D	À 30	É 30	- 30	= 30	M 30	] 20	m 30	} 23
E	á 30	é 30	· 15	> 25	N 30	^ 30	n 28	~ 30
F	ç 28	¥ 30	/ 25	? 30	O 30	— 30	o 30	ø 30

Epson Pica [10 Pt. 10 CPI]  
 Font 382 Glyph Ht. 43 Baseline 30 Version 2

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	à 28	š 30	25	0 30	@ 30	P 30	` 13	p 28
1	è 28	ß 28	! 25	1 23	A 30	Q 30	a 28	q 28
2	ù 28	Æ 30	" 25	2 30	B 30	R 30	b 28	r 25
3	ò 28	æ 30	# 30	3 30	C 30	S 30	c 28	s 28
4	ì 20	ø 30	\$ 28	4 30	D 30	T 30	d 30	t 25
5	í 20	ø 28	% 30	5 30	E 30	U 30	e 28	u 28
6	£ 30	¨ 23	& 30	6 28	F 30	V 28	f 30	v 25
7	ï 25	Ä 30	' 13	7 30	G 30	W 30	g 28	w 30
8	î 28	ö 30	( 20	8 30	H 30	X 30	h 28	x 30
9	ñ 30	ü 30	) 20	9 28	I 25	Y 30	i 23	y 28
A	ñ 30	ä 28	* 30	: 20	J 30	Z 30	j 25	z 30
B	ö 30	ö 28	+ 30	; 23	K 30	[ 28	k 28	{ 25
C	ü 30	ü 30	, 20	< 25	L 25	\ 18	l 23	/ 23
D	Ä 30	É 30	- 30	= 28	M 30	] 28	m 28	} 25
E	à 28	é 28	. 18	> 23	N 30	^ 25	n 25	~ 30
F	ç 28	¥ 30	/ 25	? 28	O 30	- 30	o 28	ø 30

Q-Format SML [16 Point, 7 CPI]  
 Font 950 Glyph Ht. 85 Baseline 64 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	43	0 43	a 43	P 43	` 43	p 43
1	0	0	! 43	1 43	A 43	Q 43	a 43	q 43
2	0	0	" 43	2 43	B 43	R 43	b 43	r 43
3	0	0	# 43	3 43	C 43	S 43	c 43	s 43
4	0	0	\$ 43	4 43	D 43	T 43	d 43	t 43
5	0	0	% 43	5 43	E 43	U 43	e 43	u 43
6	0	0	& 43	6 43	F 43	V 43	f 43	v 43
7	0	0	' 43	7 43	G 43	W 43	g 43	w 43
8	0	0	( 43	8 43	H 43	X 43	h 43	x 43
9	0	0	) 43	9 43	I 43	Y 43	i 43	y 43
A	0	0	* 43	: 43	J 43	Z 43	j 43	z 43
B	0	0	+ 43	; 43	K 43	[ 43	k 43	{ 43
C	0	0	, 43	< 43	L 43	\ 43	l 43	43
D	0	0	- 43	= 43	M 43	] 43	m 43	} 43
E	0	0	. 43	> 43	N 43	^ 43	n 43	~ 43
F	0	0	/ 43	? 43	O 43	43	o 43	o

Q-Format SML [16 Point, 7 CPI]  
 Font 950 Glyph Ht. 85 Baseline 64 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	Š 43	0	0	° 43	À 43	Đ 43	à 43	đ 43
1	š 43	0	ı 43	± 43	Á 43	Ñ 43	á 43	ñ 43
2	ÿ 43	0	¢ 43	² 43	Â 43	Ò 43	â 43	ò 43
3	■ 43	0	£ 43	³ 43	Ã 43	Ó 43	ã 43	ó 43
4	0	0	¤ 43	´ 43	Ä 43	Ô 43	ä 43	ô 43
5	0	0	¥ 43	µ 43	Å 43	Õ 43	å 43	õ 43
6	0	0	43	¶ 43	Æ 43	Ö 43	æ 43	ö 43
7	0	0	§ 43	· 43	Ç 43	Ç 43	ç 43	œ 43
8	0	f 43	¨ 43	¸ 43	È 43	Ø 43	è 43	ø 43
9	0	Pt 43	© 43	¹ 43	É 43	Ù 43	é 43	ù 43
A	0	Cr 43	ª 43	º 43	Ê 43	Ú 43	ê 43	ú 43
B	0	£ 43	« 43	» 43	Ë 43	Û 43	ë 43	û 43
C	0	0	¬ 43	¼ 43	Ì 43	Ü 43	ì 43	ü 43
D	0	0	0	½ 43	Í 43	Ý 43	í 43	ý 43
E	0	0	® 43	¾ 43	Î 43	Þ 43	î 43	þ 43
F	0	0	¯ 43	¿ 43	Ï 43	ß 43	ï 43	ÿ 43

Q-Format SML [5 Point, 16.7 CPI]  
 Font 958 Glyph Ht. 30 Baseline 23 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	18	<sup>0</sup> 18	<sup>a</sup> 18	<sup>P</sup> 18	<sup>`</sup> 18	<sup>p</sup> 18
1	0	0	18	<sup>1</sup> 18	<sup>A</sup> 18	<sup>Q</sup> 18	<sup>a</sup> 18	<sup>q</sup> 18
2	0	0	18	<sup>2</sup> 18	<sup>B</sup> 18	<sup>R</sup> 18	<sup>b</sup> 18	<sup>r</sup> 18
3	0	0	18	<sup>3</sup> 18	<sup>C</sup> 18	<sup>S</sup> 18	<sup>c</sup> 18	<sup>s</sup> 18
4	0	0	18	<sup>4</sup> 18	<sup>D</sup> 18	<sup>T</sup> 18	<sup>d</sup> 18	<sup>t</sup> 18
5	0	0	18	<sup>5</sup> 18	<sup>E</sup> 18	<sup>U</sup> 18	<sup>e</sup> 18	<sup>u</sup> 18
6	0	0	18	<sup>6</sup> 18	<sup>F</sup> 18	<sup>V</sup> 18	<sup>f</sup> 18	<sup>v</sup> 18
7	0	0	18	<sup>7</sup> 18	<sup>G</sup> 18	<sup>W</sup> 18	<sup>g</sup> 18	<sup>w</sup> 18
8	0	0	18	<sup>8</sup> 18	<sup>H</sup> 18	<sup>X</sup> 18	<sup>h</sup> 18	<sup>x</sup> 18
9	0	0	18	<sup>9</sup> 18	<sup>I</sup> 18	<sup>Y</sup> 18	<sup>i</sup> 18	<sup>y</sup> 18
A	0	0	18	<sup>:</sup> 18	<sup>J</sup> 18	<sup>Z</sup> 18	<sup>j</sup> 18	<sup>z</sup> 18
B	0	0	18	<sup>;</sup> 18	<sup>K</sup> 18	<sup>[</sup> 18	<sup>k</sup> 18	<sup>{</sup> 18
C	0	0	18	<sup>&lt;</sup> 18	<sup>L</sup> 18	<sup>\</sup> 18	<sup>l</sup> 18	<sup> </sup> 18
D	0	0	18	<sup>=</sup> 18	<sup>M</sup> 18	<sup>]</sup> 18	<sup>m</sup> 18	<sup>}</sup> 18
E	0	0	18	<sup>&gt;</sup> 18	<sup>N</sup> 18	<sup>^</sup> 18	<sup>n</sup> 18	<sup>~</sup> 18
F	0	0	18	<sup>?</sup> 18	<sup>O</sup> 18	<sup>_</sup> 18	<sup>o</sup> 18	0

Q-Format SML [5 Point, 16.7 CPI]  
 Font 958 Glyph Ht. 30 Baseline 23 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	š 18	0	0	• 18	À 18	Đ 18	à 18	đ 18
1	š 18	0	ı 18	± 18	Á 18	Ñ 18	á 18	ñ 18
2	Ÿ 18	0	ç 18	² 18	Â 18	ò 18	â 18	ô 18
3	■ 18	0	É 18	³ 18	Ã 18	ó 18	ã 18	ó 18
4	0	0	ı 18	ˆ 18	Ä 18	ô 18	ä 18	ö 18
5	0	0	ı 18	μ 18	Å 18	õ 18	å 18	ø 18
6	0	0	ı 18	¶ 18	Æ 18	ö 18	æ 18	ö 18
7	0	0	š 18	• 18	Ç 18	œ 18	ç 18	œ 18
8	0	f 18	• 18	˙ 18	È 18	ø 18	è 18	ø 18
9	0	ř 18	© 18	¹ 18	É 18	Ù 18	é 18	ù 18
A	0	ç 18	ı 18	º 18	Ê 18	Ú 18	ê 18	ú 18
B	0	é 18	« 18	» 18	Ë 18	Û 18	ë 18	û 18
C	0	0	˘ 18	¼ 18	Ì 18	Ü 18	ì 18	ü 18
D	0	0	0	½ 18	Í 18	Ý 18	í 18	ý 18
E	0	0	® 18	¾ 18	Î 18	Þ 18	î 18	þ 18
F	0	0	— 18	¿ 18	Ï 18	ß 18	ï 18	ÿ 18

Courier 10 SML [10 CPI]

Font 7504 Glyph Ht. 54 Baseline 40 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	30	0 30	@ 30	P 30	` 30	p 30
1	0	0	!	1 30	A 30	Q 30	a 30	q 30
2	0	0	"	2 30	B 30	R 30	b 30	r 30
3	0	0	#	3 30	C 30	S 30	c 30	s 30
4	0	0	\$	4 30	D 30	T 30	d 30	t 30
5	0	0	%	5 30	E 30	U 30	e 30	u 30
6	0	0	&	6 30	F 30	V 30	f 30	v 30
7	0	0	'	7 30	G 30	W 30	g 30	w 30
8	0	0	(	8 30	H 30	X 30	h 30	x 30
9	0	0	)	9 30	I 30	Y 30	i 30	y 30
A	0	0	*	: 30	J 30	Z 30	j 30	z 30
B	0	0	+	; 30	K 30	[ 30	k 30	{ 30
C	0	0	,	< 30	L 30	\ 30	l 30	30
D	0	0	-	= 30	M 30	] 30	m 30	} 30
E	0	0	.	> 30	N 30	^ 30	n 30	~ 30
F	0	0	/	? 30	O 30	_ 30	o 30	0

Courier 10 SML [10 CPI]  
 Font 7504 Glyph Ht. 54 Baseline 40 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	Š 30	0	0	° 30	À 30	Đ 30	à 30	đ 30
1	š 30	0	ı 30	± 30	Á 30	Ñ 30	á 30	ñ 30
2	Ÿ 30	0	¢ 30	² 30	Â 30	Ò 30	â 30	ò 30
3	■ 30	0	£ 30	³ 30	Ã 30	Ó 30	ã 30	ó 30
4	0	0	¤ 30	´ 30	Ä 30	Ô 30	ä 30	ô 30
5	0	0	¥ 30	µ 30	Å 30	Õ 30	å 30	õ 30
6	0	0	¦ 30	¶ 30	Æ 30	Ö 30	æ 30	ö 30
7	0	0	§ 30	• 30	Ç 30	Ɔ 30	ç 30	œ 30
8	0	f 30	¨ 30	¸ 30	È 30	Ø 30	è 30	ø 30
9	0	℞ 30	© 30	¹ 30	É 30	Ù 30	é 30	ù 30
A	0	ƒ 30	ª 30	º 30	Ê 30	Ú 30	ê 30	ú 30
B	0	£ 30	« 30	» 30	Ë 30	Û 30	ë 30	û 30
C	0	0	¬ 30	¼ 30	Ì 30	Ü 30	ì 30	ü 30
D	0	0	0	½ 30	Í 30	Ý 30	í 30	ý 30
E	0	0	® 30	¾ 30	Î 30	Þ 30	î 30	þ 30
F	0	0	¯ 30	¿ 30	Ï 30	ß 30	ï 30	ÿ 30

Prestige Elite 12 SML [12 CPI]  
 Font 7506 Glyph Ht. 50 Baseline 38 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	25	0 25	@ 25	P 25	` 25	p 25
1	0	0	!	1 25	A 25	Q 25	a 25	q 25
2	0	0	"	2 25	B 25	R 25	b 25	r 25
3	0	0	#	3 25	C 25	S 25	c 25	s 25
4	0	0	\$	4 25	D 25	T 25	d 25	t 25
5	0	0	%	5 25	E 25	U 25	e 25	u 25
6	0	0	&	6 25	F 25	V 25	f 25	v 25
7	0	0	'	7 25	G 25	W 25	g 25	w 25
8	0	0	(	8 25	H 25	X 25	h 25	x 25
9	0	0	)	9 25	I 25	Y 25	i 25	y 25
A	0	0	*	: 25	J 25	Z 25	j 25	z 25
B	0	0	+	; 25	K 25	[ 25	k 25	{ 25
C	0	0	,	< 25	L 25	\ 25	l 25	25
D	0	0	-	= 25	M 25	] 25	m 25	} 25
E	0	0	.	> 25	N 25	^ 25	n 25	~ 25
F	0	0	/	? 25	O 25	- 25	o 25	0

Prestige Elite 12 SML [12 CPI]

Font 7506 Glyph Ht. 50 Baseline 38 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	Š 25	0	0	° 25	À 25	Đ 25	à 25	đ 25
1	š 25	0	ı 25	± 25	Á 25	Ñ 25	á 25	ñ 25
2	Ÿ 25	0	ç 25	² 25	Â 25	Ò 25	â 25	ò 25
3	■ 25	0	£ 25	³ 25	Ã 25	Ó 25	ã 25	ó 25
4	0	0	¤ 25	´ 25	Ä 25	Ô 25	ä 25	ô 25
5	0	0	¥ 25	µ 25	Å 25	Õ 25	å 25	õ 25
6	0	0	¦ 25	¶ 25	Æ 25	Ö 25	æ 25	ö 25
7	0	0	§ 25	· 25	Ç 25	Ø 25	ç 25	œ 25
8	0	f 25	¨ 25	¸ 25	È 25	Ø 25	è 25	ø 25
9	0	ř 25	© 25	¹ 25	É 25	Ù 25	é 25	ù 25
A	0	ğ 25	ª 25	º 25	Ê 25	Ú 25	ê 25	ú 25
B	0	£ 25	« 25	» 25	Ë 25	Û 25	ë 25	û 25
C	0	0	¬ 25	¼ 25	Ì 25	Ü 25	ì 25	ü 25
D	0	0	0	½ 25	Í 25	Ý 25	í 25	ý 25
E	0	0	® 25	¾ 25	Î 25	ß 25	î 25	þ 25
F	0	0	— 25	¿ 25	Ï 25	β 25	ï 25	ÿ 25

Letter Gothic 15 SML [15 CPI]  
 Font 7509 Glyph Ht. 49 Baseline 37 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	20	0 20	@ 20	P 20	` 20	p 20
1	0	0	!	1 20	A 20	Q 20	a 20	q 20
2	0	0	"	2 20	B 20	R 20	b 20	r 20
3	0	0	#	3 20	C 20	S 20	c 20	s 20
4	0	0	\$	4 20	D 20	T 20	d 20	t 20
5	0	0	%	5 20	E 20	U 20	e 20	u 20
6	0	0	&	6 20	F 20	V 20	f 20	v 20
7	0	0	'	7 20	G 20	W 20	g 20	w 20
8	0	0	(	8 20	H 20	X 20	h 20	x 20
9	0	0	)	9 20	I 20	Y 20	i 20	y 20
A	0	0	*	: 20	J 20	Z 20	j 20	z 20
B	0	0	+	; 20	K 20	[ 20	k 20	{ 20
C	0	0	,	< 20	L 20	\ 20	l 20	20
D	0	0	-	= 20	M 20	] 20	m 20	} 20
E	0	0	.	> 20	N 20	^ 20	n 20	~ 20
F	0	0	/	? 20	O 20	- 20	o 20	0

Letter Gothic 15 SML [15 CPI]  
 Font 7509 Glyph Ht. 49 Baseline 37 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	Š 20	0	0	° 20	À 20	Đ 20	à 20	đ 20
1	š 20	0	ı 20	± 20	Á 20	Ñ 20	á 20	ñ 20
2	ÿ 20	0	¢ 20	² 20	Â 20	Ò 20	â 20	ò 20
3	▪ 20	0	£ 20	³ 20	Ã 20	Ó 20	ã 20	ó 20
4	0	0	¤ 20	´ 20	Ä 20	Ô 20	ä 20	ô 20
5	0	0	¥ 20	µ 20	Å 20	Õ 20	å 20	õ 20
6	0	0	¦ 20	¶ 20	Æ 20	Ö 20	æ 20	ö 20
7	0	0	§ 20	• 20	Ç 20	Ç 20	ç 20	œ 20
8	0	f 20	¨ 20	· 20	È 20	Ø 20	è 20	ø 20
9	0	ř 20	© 20	¹ 20	É 20	Ù 20	é 20	ù 20
A	0	ŕ 20	ª 20	º 20	Ê 20	Ú 20	ê 20	ú 20
B	0	£ 20	« 20	» 20	Ë 20	Û 20	ë 20	û 20
C	0	0	¬ 20	¼ 20	Ì 20	Ü 20	ì 20	ü 20
D	0	0	0	½ 20	Í 20	Ý 20	í 20	ý 20
E	0	0	® 20	¾ 20	Î 20	Þ 20	î 20	þ 20
F	0	0	¯ 20	¿ 20	Ï 20	ß 20	ï 20	ÿ 20

Prestige Elite Italic 12 SML [12 CPI]  
 Font 7526 Glyph Ht. 50 Baseline 38 Version 2

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	25	0 25	@ 25	P 25	` 25	p 25
1	0	0	! 25	1 25	A 25	Q 25	a 25	q 25
2	0	0	" 25	2 25	B 25	R 25	b 25	r 25
3	0	0	# 25	3 25	C 25	S 25	c 25	s 25
4	0	0	\$ 25	4 25	D 25	T 25	d 25	t 25
5	0	0	% 25	5 25	E 25	U 25	e 25	u 25
6	0	0	& 25	6 25	F 25	V 25	f 25	v 25
7	0	0	' 25	7 25	G 25	W 25	g 25	w 25
8	0	0	( 25	8 25	H 25	X 25	h 25	x 25
9	0	0	) 25	9 25	I 25	Y 25	i 25	y 25
A	0	0	* 25	: 25	J 25	Z 25	j 25	z 25
B	0	0	+ 25	; 25	K 25	[ 25	k 25	{ 25
C	0	0	, 25	< 25	L 25	\ 25	l 25	25
D	0	0	- 25	= 25	M 25	] 25	m 25	} 25
E	0	0	· 25	> 25	N 25	^ 25	n 25	~ 25
F	0	0	/ 25	? 25	O 25	- 25	o 25	0

Prestige Elite Italic 12 SML [12 CPI]  
 Font 7526 Glyph Ht. 50 Baseline 38 Version 2

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	Š 25	0	0	° 25	À 25	Đ 25	à 25	đ 25
1	š 25	0	ı 25	± 25	Á 25	Ñ 25	á 25	ñ 25
2	ÿ 25	0	ç 25	² 25	Â 25	Ò 25	â 25	ò 25
3	■ 25	0	£ 25	³ 25	Ã 25	Ó 25	ã 25	ó 25
4	0	0	¤ 25	´ 25	Ä 25	Ô 25	ä 25	ô 25
5	0	0	¥ 25	µ 25	Å 25	Õ 25	å 25	õ 25
6	0	0	¦ 25	¶ 25	Æ 25	Ö 25	æ 25	ö 25
7	0	0	§ 25	· 25	Ç 25	Ø 25	ç 25	œ 25
8	0	f 25	¨ 25	¸ 25	È 25	Ø 25	è 25	ø 25
9	0	ř 25	© 25	¹ 25	É 25	Ù 25	é 25	ù 25
A	0	ğ 25	ª 25	º 25	Ê 25	Ú 25	ê 25	ú 25
B	0	£ 25	« 25	» 25	Ë 25	Û 25	ë 25	û 25
C	0	0	¬ 25	¼ 25	Ì 25	Ü 25	ì 25	ü 25
D	0	0	0	½ 25	Í 25	Ý 25	í 25	ý 25
E	0	0	® 25	¾ 25	Î 25	ß 25	î 25	þ 25
F	0	0	¯ 25	¿ 25	Ï 25	ß 25	ï 25	ÿ 25

Courier 10 HP [12 Point, 10 CPI]  
 Font 300 Glyph Ht. 50 Baseline 38 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	30	0 30	@ 30	P 30	' 30	p 30
1	0	0	!	1 30	A 30	Q 30	a 30	q 30
2	0	0	"	2 30	B 30	R 30	b 30	r 30
3	0	0	#	3 30	C 30	S 30	c 30	s 30
4	0	0	\$	4 30	D 30	T 30	d 30	t 30
5	0	0	%	5 30	E 30	U 30	e 30	u 30
6	0	0	&	6 30	F 30	V 30	f 30	v 30
7	0	0	'	7 30	G 30	W 30	g 30	w 30
8	0	0	(	8 30	H 30	X 30	h 30	x 30
9	0	0	)	9 30	I 30	Y 30	i 30	y 30
A	0	0	*	: 30	J 30	Z 30	j 30	z 30
B	0	0	+	; 30	K 30	[ 30	k 30	{ 30
C	0	0	,	< 30	L 30	\ 30	l 30	30
D	0	0	-	= 30	M 30	] 30	m 30	} 30
E	0	0	.	> 30	N 30	^ 30	n 30	~ 30
F	0	0	/	? 30	O 30	_ 30	o 30	® 30

Courier 10 HP [12 Point, 10 CPI]  
 Font 300 Glyph Ht. 50 Baseline 38 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	0	0	0	̄ 30	â 30	Å 30	Á 30	᐀ 30
1	0	0	À 30	0	ê 30	î 30	Ã 30	ᐁ 30
2	0	0	Â 30	0	ô 30	ø 30	ã 30	0
3	0	0	È 30	° 30	û 30	Æ 30	ᐃ 30	0
4	0	0	Ê 30	Ç 30	á 30	å 30	ᐄ 30	0
5	0	0	Ë 30	ç 30	é 30	í 30	Í 30	0
6	0	0	Ï 30	Ñ 30	ó 30	ø 30	Ì 30	̄ 30
7	0	0	İ 30	ñ 30	ú 30	æ 30	Ó 30	¼ 30
8	0	0	ı 30	ı 30	à 30	Ä 30	Ò 30	½ 30
9	0	0	˙ 30	˙ 30	è 30	ì 30	Õ 30	ª 30
A	0	0	ˆ 30	ı 30	ò 30	Ö 30	õ 30	º 30
B	0	0	˚ 30	£ 30	ù 30	Ü 30	Š 30	« 30
C	0	0	˜ 30	¥ 30	ä 30	É 30	š 30	■ 30
D	0	0	Û 30	§ 30	ë 30	ï 30	Ú 30	» 30
E	0	0	Û 30	f 30	ö 30	ß 30	Ÿ 30	± 30
F	0	0	€ 30	¢ 30	ü 30	Ô 30	ŷ 30	0

Q-Format HP [8.5 Point, 16.66 CPI]  
 Font 301 Glyph Ht. 35 Baseline 26 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	18	0 18	a 18	P 18	' 18	p 18
1	0	0	! 18	1 18	A 18	Q 18	a 18	q 18
2	0	0	" 18	2 18	B 18	R 18	b 18	r 18
3	0	0	# 18	3 18	C 18	S 18	c 18	s 18
4	0	0	\$ 18	4 18	D 18	T 18	d 18	t 18
5	0	0	% 18	5 18	E 18	U 18	e 18	u 18
6	0	0	& 18	6 18	F 18	V 18	f 18	v 18
7	0	0	' 18	7 18	G 18	W 18	g 18	w 18
8	0	0	( 18	8 18	H 18	X 18	h 18	x 18
9	0	0	) 18	9 18	I 18	Y 18	i 18	y 18
A	0	0	* 18	: 18	J 18	Z 18	j 18	z 18
B	0	0	+ 18	; 18	K 18	[ 18	k 18	{ 18
C	0	0	, 18	< 18	L 18	\ 18	l 18	18
D	0	0	- 18	= 18	M 18	] 18	m 18	} 18
E	0	0	. 18	> 18	N 18	^ 18	n 18	~ 18
F	0	0	/ 18	? 18	O 18	_ 18	o 18	® 18

Q-Format HP [8.5 Point, 16.66 CPI]  
 Font 301 Glyph Ht. 35 Baseline 26 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	0	0	0	18	à 18	À 18	Á 18	â 18
1	0	0	À 18	0	é 18	ì 18	Ã 18	ã 18
2	0	0	Á 18	0	ó 18	ø 18	ä 18	0
3	0	0	È 18	18	û 18	Æ 18	ð 18	0
4	0	0	É 18	ç 18	á 18	à 18	đ 18	0
5	0	0	Ê 18	ç 18	é 18	í 18	í 18	0
6	0	0	Ï 18	Ñ 18	ó 18	ø 18	ï 18	– 18
7	0	0	I 18	ñ 18	ú 18	æ 18	ó 18	¼ 18
8	0	0	18	ì 18	à 18	À 18	ò 18	½ 18
9	0	0	18	í 18	è 18	ï 18	õ 18	° 18
A	0	0	18	ñ 18	ò 18	ò 18	ö 18	² 18
B	0	0	18	í 18	ù 18	Û 18	š 18	« 18
C	0	0	18	ÿ 18	ä 18	É 18	š 18	▪ 18
D	0	0	Û 18	š 18	ë 18	ı 18	Û 18	» 18
E	0	0	Û 18	ı 18	ö 18	ß 18	ÿ 18	± 18
F	0	0	£ 18	¢ 18	ú 18	ó 18	ÿ 18	0

Compressed [10 Point, 17.6 CPI]  
 Font 383 Glyph Ht. 57 Baseline 37 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	17	0 17	@ 17	P 17	' 17	p 17
1	0	0	!	1 17	A 17	Q 17	a 17	q 17
2	0	0	"	2 17	B 17	R 17	b 17	r 17
3	▼	0	#	3 17	C 17	S 17	c 17	s 17
4	◆	¶	\$	4 17	D 17	T 17	d 17	t 17
5	‡	§	%	5 17	E 17	U 17	e 17	u 17
6	♠	0	&	6 17	F 17	V 17	f 17	v 17
7	0	0	'	7 17	G 17	W 17	g 17	w 17
8	0	0	(	8 17	H 17	X 17	h 17	x 17
9	0	0	)	9 17	I 17	Y 17	i 17	y 17
A	0	→	*	:	J 17	Z 17	j 17	z 17
B	0	←	+	;	K 17	[ 17	k 17	{ 17
C	0	0	,	<	L 17	\ 17	l 17	17
D	0	0	-	=	M 17	] 17	m 17	} 17
E	0	0	.	>	N 17	^ 17	n 17	~ 17
F	0	∅	/	?	0 17	- 17	o 17	0

Compressed [10 Point, 17.6 CPI]  
 Font 383 Glyph Ht. 57 Baseline 37 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	Ç 17	É 17	á 17	17	Ł 17	ll 17	α 17	≡ 17
1	ü 17	æ 17	í 17	17	ł 17	ř 17	β 17	± 17
2	é 17	Æ 17	ó 17	17	ṽ 17	π 17	Γ 17	≥ 17
3	â 17	ô 17	ú 17	17	ł 17	ll 17	π 17	≤ 17
4	ä 17	ö 17	ñ 17	17	- 17	Ł 17	Σ 17	∫ 17
5	à 17	ò 17	Ñ 17	17	ł 17	F 17	σ 17	∫ 17
6	á 17	û 17	ä 17	17	Ł 17	π 17	μ 17	÷ 17
7	ç 17	ù 17	ø 17	17	ll 17	ll 17	τ 17	≈ 17
8	ê 17	ÿ 17	¿ 17	17	ll 17	ł 17	Φ 17	° 17
9	ë 17	ö 17	ƒ 17	17	ll 17	ł 17	θ 17	• 17
A	è 17	Ü 17	ƒ 17	17	ll 17	ł 17	Ω 17	• 17
B	ï 17	ç 17	½ 17	17	ř 17	17	δ 17	∫ 17
C	î 17	£ 17	¼ 17	17	ll 17	17	∞ 17	∞ 17
D	ì 17	¥ 17	ı 17	17	= 17	17	ø 17	² 17
E	Ä 17	℞ 17	« 17	17	ll 17	17	Ε 17	17
F	Å 17	f 17	» 17	17	ł 17	17	∩ 17	17

Elite [10 Point, 12 CPI]  
 Font 384 Glyph Ht. 57 Baseline 37 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	25	0 25	@ 25	P 25	' 25	p 25
1	0	0	!	1 25	A 25	Q 25	a 25	q 25
2	0	0	"	2 25	B 25	R 25	b 25	r 25
3	♥ 25	0	#	3 25	C 25	S 25	c 25	s 25
4	♦ 25	¶ 25	\$	4 25	D 25	T 25	d 25	t 25
5	‡ 25	§ 25	%	5 25	E 25	U 25	e 25	u 25
6	♠ 25	0	&	6 25	F 25	V 25	f 25	v 25
7	0	0	,	7 25	G 25	W 25	g 25	w 25
8	0	0	(	8 25	H 25	X 25	h 25	x 25
9	0	0	)	9 25	I 25	Y 25	i 25	y 25
A	0	→ 25	*	: 25	J 25	Z 25	j 25	z 25
B	0	← 25	+	; 25	K 25	[ 25	k 25	{ 25
C	0	0	,	< 25	L 25	\ 25	l 25	25
D	0	0	-	= 25	M 25	] 25	m 25	} 25
E	0	0	.	> 25	N 25	^ 25	n 25	~ 25
F	0	∅ 25	/	? 25	O 25	- 25	o 25	0

Elite [10 Point, 12 CPI]  
 Font 384 Glyph Ht. 57 Baseline 37 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	Ç 25	É 25	á 25	25	Ł 25	ll 25	α 25	≡ 25
1	ü 25	æ 25	í 25	▒ 25	⊥ 25	ƒ 25	β 25	± 25
2	é 25	Æ 25	ó 25	▓ 25	⌈ 25	π 25	Γ 25	≥ 25
3	â 25	ô 25	ú 25	25	‡ 25	ll 25	π 25	≤ 25
4	ä 25	ö 25	ñ 25	‡ 25	- 25	⌋ 25	Σ 25	25
5	à 25	ò 25	ñ 25	‡ 25	† 25	F 25	σ 25	J 25
6	å 25	û 25	ä 25	‡ 25	‡ 25	π 25	μ 25	÷ 25
7	ç 25	ù 25	º 25	π 25	‡ 25	‡ 25	τ 25	≈ 25
8	ê 25	ÿ 25	¿ 25	‡ 25	ll 25	‡ 25	Φ 25	° 25
9	ë 25	ö 25	ƒ 25	‡ 25	ƒ 25	J 25	θ 25	· 25
A	è 25	Û 25	¬ 25	‡ 25	ll 25	Γ 25	Ω 25	· 25
B	ï 25	ϕ 25	½ 25	‡ 25	ƒ 25	■ 25	δ 25	J 25
C	î 25	£ 25	¼ 25	‡ 25	‡ 25	■ 25	∞ 25	ⁿ 25
D	ì 25	¥ 25	ì 25	‡ 25	= 25	■ 25	ø 25	² 25
E	Ë 25	₣ 25	« 25	‡ 25	‡ 25	■ 25	Ε 25	■ 25
F	À 25	ƒ 25	» 25	‡ 25	⊥ 25	■ 25	∩ 25	25

Pica [10 Point, 10 CPI]  
 Font 385 Glyph Ht. 57 Baseline 37 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	30	0 30	@ 30	P 30	' 30	p 30
1	0	0	! 30	1 30	A 30	Q 30	a 30	q 30
2	0	0	" 30	2 30	B 30	R 30	b 30	r 30
3	♥ 30	0	# 30	3 30	C 30	S 30	c 30	s 30
4	♦ 30	¶ 30	\$ 30	4 30	D 30	T 30	d 30	t 30
5	♣ 30	§ 30	% 30	5 30	E 30	U 30	e 30	u 30
6	♠ 30	0	& 30	6 30	F 30	V 30	f 30	v 30
7	0	0	' 30	7 30	G 30	W 30	g 30	w 30
8	0	0	( 30	8 30	H 30	X 30	h 30	x 30
9	0	0	) 30	9 30	I 30	Y 30	i 30	y 30
A	0	→ 30	* 30	: 30	J 30	Z 30	j 30	z 30
B	0	← 30	+ 30	; 30	K 30	[ 30	k 30	{ 30
C	0	0	' 30	< 30	L 30	\ 30	l 30	! 30
D	0	0	- 30	= 30	M 30	] 30	m 30	} 30
E	0	0	· 30	> 30	N 30	^ 30	n 30	~ 30
F	0	∅ 30	/ 30	? 30	O 30	- 30	o 30	0

Pica [10 Point, 10 CPI]  
 Font 385 Glyph Ht. 57 Baseline 37 Version 1

	8x	9x	Ax	Bx	Cx	Dx	Ex	Fx
0	Ç 30	É 30	á 30	30	Ł 30	⊥ 30	α 30	≡ 30
1	ü 30	æ 30	í 30	⌘ 30	⊥ 30	⌘ 30	β 30	± 30
2	é 30	Æ 30	ó 30	⌘ 30	⌘ 30	⌘ 30	Γ 30	≥ 30
3	â 30	ô 30	ú 30	30	† 30	⊥ 30	π 30	≤ 30
4	ä 30	ö 30	ñ 30	† 30	- 30	⊥ 30	Σ 30	∫ 30
5	à 30	ò 30	ñ 30	† 30	† 30	⌘ 30	σ 30	∫ 30
6	å 30	û 30	ä 30	∥ 30	† 30	⌘ 30	μ 30	÷ 30
7	ç 30	ù 30	º 30	⌘ 30	∥ 30	∥ 30	τ 30	≈ 30
8	ê 30	ÿ 30	¿ 30	† 30	⊥ 30	≠ 30	Φ 30	° 30
9	ë 30	ö 30	⌘ 30	∥ 30	⌘ 30	∥ 30	θ 30	· 30
A	è 30	ü 30	¬ 30	∥ 30	⊥ 30	⌘ 30	Ω 30	· 30
B	ï 30	ϕ 30	½ 30	∥ 30	⌘ 30	■ 30	δ 30	∫ 30
C	î 30	ƒ 30	¼ 30	∥ 30	∥ 30	■ 30	∞ 30	ⁿ 30
D	ì 30	¥ 30	¡ 30	⊥ 30	= 30	■ 30	ø 30	² 30
E	Ä 30	ƒ 30	« 30	∥ 30	∥ 30	■ 30	Ε 30	■ 30
F	À 30	f 30	» 30	∥ 30	⊥ 30	■ 30	∩ 30	30

Tektronix [8 Point, 13 CPI]

Font 521 Glyph Ht. 39 Baseline 27 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	23	0 23	@ 23	P 23	` 23	p 23
1	0	0	23	! 23	A 23	Q 23	a 23	q 23
2	0	0	23	" 23	B 23	R 23	b 23	r 23
3	0	0	23	# 23	C 23	S 23	c 23	s 23
4	0	0	23	\$ 23	D 23	T 23	d 23	t 23
5	0	0	23	% 23	E 23	U 23	e 23	u 23
6	0	0	23	& 23	F 23	V 23	f 23	v 23
7	0	0	23	' 23	G 23	W 23	g 23	w 23
8	0	0	23	( 23	H 23	X 23	h 23	x 23
9	0	0	23	) 23	I 23	Y 23	i 23	y 23
A	0	0	23	* 23	J 23	Z 23	j 23	z 23
B	0	0	23	+ 23	K 23	[ 23	k 23	{ 23
C	0	0	23	, 23	L 23	\ 23	l 23	23
D	0	0	23	- 23	M 23	] 23	m 23	} 23
E	0	0	23	. 23	N 23	^ 23	n 23	~ 23
F	0	0	23	/ 23	O 23	_ 23	o 23	0

Tektronix [10 Point, 12 CPI]  
 Font 522 Glyph Ht. 42 Baseline 30 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	25	0 25	@ 25	P 25	' 25	p 25
1	0	0	!	1 25	A 25	Q 25	a 25	q 25
2	0	0	"	2 25	B 25	R 25	b 25	r 25
3	0	0	#	3 25	C 25	S 25	c 25	s 25
4	0	0	\$	4 25	D 25	T 25	d 25	t 25
5	0	0	%	5 25	E 25	U 25	e 25	u 25
6	0	0	&	6 25	F 25	V 25	f 25	v 25
7	0	0	'	7 25	G 25	W 25	g 25	w 25
8	0	0	(	8 25	H 25	X 25	h 25	x 25
9	0	0	)	9 25	I 25	Y 25	i 25	y 25
A	0	0	*	: 25	J 25	Z 25	j 25	z 25
B	0	0	+	; 25	K 25	[ 25	k 25	{ 25
C	0	0	,	< 25	L 25	\ 25	l 25	25
D	0	0	-	= 25	M 25	] 25	m 25	} 25
E	0	0	.	> 25	N 25	^ 25	n 25	~ 25
F	0	0	/	? 25	O 25	_ 25	o 25	0

Tektronix [12 Point, 7.9 CPI]  
 Font 523 Glyph Ht. 64 Baseline 44 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	38	0 38	@ 38	P 38	' 38	p 38
1	0	0	! 38	1 38	A 38	Q 38	a 38	q 38
2	0	0	" 38	2 38	B 38	R 38	b 38	r 38
3	0	0	# 38	3 38	C 38	S 38	c 38	s 38
4	0	0	\$ 38	4 38	D 38	T 38	d 38	t 38
5	0	0	% 38	5 38	E 38	U 38	e 38	u 38
6	0	0	& 38	6 38	F 38	V 38	f 38	v 38
7	0	0	' 38	7 38	G 38	W 38	g 38	w 38
8	0	0	( 38	8 38	H 38	X 38	h 38	x 38
9	0	0	) 38	9 38	I 38	Y 38	i 38	y 38
A	0	0	* 38	: 38	J 38	Z 38	j 38	z 38
B	0	0	+ 38	; 38	K 38	[ 38	k 38	{ 38
C	0	0	, 38	< 38	L 38	\ 38	l 38	38
D	0	0	- 38	= 38	M 38	] 38	m 38	} 38
E	0	0	· 38	> 38	N 38	^ 38	n 38	~ 38
F	0	0	/ 38	? 38	O 38	- 38	o 38	0

Tektronix [13 Point, 7.3 CPI]  
 Font 524 Glyph Ht. 69 Baseline 48 Version 1

	0x	1x	2x	3x	4x	5x	6x	7x
0	0	0	41	0 41	@ 41	P 41	` 41	p 41
1	0	0	! 41	1 41	A 41	Q 41	a 41	q 41
2	0	0	" 41	2 41	B 41	R 41	b 41	r 41
3	0	0	# 41	3 41	C 41	S 41	c 41	s 41
4	0	0	\$ 41	4 41	D 41	T 41	d 41	t 41
5	0	0	% 41	5 41	E 41	U 41	e 41	u 41
6	0	0	& 41	6 41	F 41	V 41	f 41	v 41
7	0	0	' 41	7 41	G 41	W 41	g 41	w 41
8	0	0	( 41	8 41	H 41	X 41	h 41	x 41
9	0	0	) 41	9 41	I 41	Y 41	i 41	y 41
A	0	0	* 41	: 41	J 41	Z 41	j 41	z 41
B	0	0	+ 41	; 41	K 41	[ 41	k 41	{ 41
C	0	0	, 41	< 41	L 41	\ 41	l 41	41
D	0	0	- 41	= 41	M 41	] 41	m 41	} 41
E	0	0	· 41	> 41	N 41	^ 41	n 41	~ 41
F	0	0	/ 41	? 41	O 41	_ 41	o 41	0





---

# ASCII Tables





## ASCII Conversion Table

BINARY	OCTAL	DECIMAL	HEX	ASCII	EBCDIC	
0000	0000	000	000	00	NUL	NUL
0000	0001	001	001	01	SOH	SOH
0000	0010	002	002	02	STX	STX
0000	0011	003	003	03	ETX	ETX
0000	0100	004	004	04	EOT	PF
0000	0101	005	005	05	ENQ	HT
0000	0110	006	006	06	ACK	LC
0000	0111	007	007	07	BEL	DEL
0000	1000	010	008	08	BS	
0000	1001	011	009	09	HT	RLF
0000	1010	012	010	0A	LF	SMM
0000	1011	013	011	0B	VT	VT
0000	1100	014	012	0C	FF	FF
0000	1101	015	013	0D	CR	CR
0000	1110	016	014	0E	SO	SO
0000	1111	017	015	0F	SI	SI
0001	0000	020	016	10	DLE	DLE
0001	0001	021	017	11	DC1	DC1
0001	0010	022	018	12	DC2	DC2
0001	0011	023	019	13	DC3	DC3
0001	0100	024	020	14	DC4	RES
0001	0101	025	021	15	NAK	NL
0001	0110	026	022	16	SYN	BS
0001	0111	027	023	17	ETB	IL
0001	1000	030	024	18	CAN	CAN
0001	1001	031	025	19	EM	EM
0001	1010	032	026	1A	SUB	CC
0001	1011	033	027	1B	ESC	
0001	1100	034	028	1C	FS	IFS
0001	1101	035	029	1D	GS	IGS
0001	1110	036	030	1E	RS	IRS
0001	1111	037	031	1F	US	IUS
0010	0000	040	032	20	SP	DS
0010	0001	041	033	21	!	SOS
0010	0010	042	034	22	"	FS
0010	0011	043	035	23	#	
0010	0100	044	036	24	\$	BYP
0010	0101	045	037	25	%	LF
0010	0110	046	038	26	&	ETB
0010	0111	047	039	27	'	ESC
0010	1000	050	040	28	(	
0010	1001	051	041	29	)	
0010	1010	052	042	2A	*	SM

BINARY	OCTAL	DECIMAL	HEX	ASCII	EBCDIC
0010	1011	053	043	2B	+
0010	1100	054	044	2C	,
0010	1101	055	045	2D	-
0010	1110	056	046	2E	.
0010	1111	057	047	2F	/
0011	0000	060	048	30	0
0011	0001	061	049	31	1
0011	0010	062	050	32	2
0011	0011	063	051	33	3
0011	0100	064	052	34	4
0011	0101	065	053	35	5
0011	0110	066	054	36	6
0011	0111	067	055	37	7
0011	1000	070	056	38	8
0011	1001	071	057	39	9
0011	1010	072	058	3A	:
0011	1011	073	059	3B	;
0011	1100	074	060	3C	<
0011	1101	075	061	3D	=
0011	1110	076	062	3E	>
0011	1111	077	063	3F	?
0100	0000	100	064	40	@
0100	0001	101	065	41	A
0100	0010	102	066	42	B
0100	0011	103	067	43	C
0100	0100	104	068	44	D
0100	0101	105	069	45	E
0100	0110	106	070	46	F
0100	0111	107	071	47	G
0100	1000	110	072	48	H
0100	1001	111	073	49	I
0100	1010	112	074	4A	J
0100	1011	113	075	4B	K
0100	1100	114	076	4C	L
0100	1101	115	077	4D	M
0100	1110	116	078	4E	N
0100	1111	117	079	4F	O
0101	0000	120	080	50	P
0101	0001	121	081	51	Q
0101	0010	122	082	52	R
0101	0011	123	083	53	S
0101	0100	124	084	54	T
0101	0101	125	085	55	U
					ENQ
					ACK
					BEL
					SYN
					PN
					RS
					UC
					EOT
					DCA
					NAK
					SUB
					SP
					CENT
					.
					<
					(
					+
					&

BINARY	OCTAL	DECIMAL	HEX	ASCII	EBCDIC	
0101	0110	126	086	56	V	
0101	0111	127	087	57	W	
0101	1000	130	088	58	X	
0101	1001	131	089	59	Y	
0101	1010	132	090	5A	Z	!
0101	1011	133	091	5B	[	\$
0101	1100	134	092	5C	\	*
0101	1101	135	093	5D	]	)
0101	1110	136	094	5E	↑	;
0101	1111	137	095	5F	-	↑
0110	0000	140	096	60	,	-
0110	0001	141	097	61	a	/
0110	0010	142	098	62	b	
0110	0011	143	099	63	c	
0110	0100	144	100	64	d	
0110	0101	145	101	65	e	
0110	0110	146	102	66	f	
0110	0111	147	103	67	g	
0110	1000	150	104	68	h	
0110	1001	151	105	69	i	
0110	1010	152	106	6A	j	
0110	1011	153	107	6B	k	,
0110	1100	154	108	6C	l	%
0110	1101	155	109	6D	m	-
0110	1110	156	110	6E	n	>
0110	1111	157	111	6F	o	?
0111	0000	160	112	70	p	
0111	0001	161	113	71	q	
0111	0010	162	114	72	r	
0111	0011	163	115	73	s	
0111	0100	164	116	74	t	
0111	0101	165	117	75	u	
0111	0110	166	118	76	v	
0111	0111	167	119	77	w	
0111	1000	170	120	78	x	
0111	1001	171	121	79	y	
0111	1010	172	122	7A	z	:
0111	1011	173	123	7B	{	#
0111	1100	174	124	7C		@
0111	1101	175	125	7D	}	'
0111	1110	176	126	7E	~	=
0111	1111	177	127	7F	DEL	"
1000	0000	200	128	80		

	BINARY	OCTAL	DECIMAL	HEX	ASCII	EBCDIC
	1000	0001	201	129	81	a
	1000	0010	202	130	82	b
	1000	0011	203	131	83	c
	1000	0100	204	132	84	d
	1000	0101	205	133	85	e
	1000	0110	206	134	86	f
	1000	0111	207	135	87	g
	1000	1000	210	136	88	h
	1000	1001	211	137	89	i
	1000	1010	212	138	8A	
	1000	1011	213	139	8B	
	1000	1100	214	140	8C	
	1000	1101	215	141	8D	
	1000	1110	216	142	8E	
	1000	1111	217	143	8F	
	1001	0000	220	144	90	
	1001	0001	221	145	91	j
	1001	0010	222	146	92	k
	1001	0011	223	147	93	l
	1001	0100	224	148	94	m
	1001	0101	225	149	95	n
	1001	0110	226	150	96	o
	1001	0111	227	151	97	p
	1001	1000	230	152	98	q
	1001	1001	231	153	99	r
	1001	1010	232	154	9A	
	1001	1011	233	155	9B	
	1001	1100	234	156	9C	
	1001	1101	235	157	9D	
	1001	1110	236	158	9E	
	1001	1111	237	159	9F	
	1010	0000	240	160	A0	
	1010	0001	241	161	A1	
	1010	0010	242	162	A2	s
	1010	0011	243	163	A3	t
	1010	0100	244	164	A4	u
	1010	0101	245	165	A5	v
	1010	0110	246	166	A6	w
	1010	0111	247	167	A7	x
	1010	1000	250	168	A8	y
	1010	1001	251	169	A9	z
	1010	1010	252	170	AA	
	1010	1011	253	171	AB	

BINARY		OCTAL	DECIMAL	HEX	ASCII	EBCDIC
1010	1100	254	172	AC		
1010	1101	255	173	AD		
1010	1110	256	174	AE		
1010	1111	257	175	AF		
1011	0000	260	176	B0		
1011	0001	261	177	B1		
1011	0010	262	178	B2		
1011	0011	263	179	B3		
1011	0100	264	180	B4		
1011	0101	265	181	B5		
1011	0110	266	182	B6		
1011	0111	267	183	B7		
1011	1000	270	184	B8		
1011	1001	271	185	B9		
1011	1010	272	186	BA		
1011	1011	273	187	BB		
1011	1100	274	188	BC		
1011	1101	275	189	BD		
1011	1110	276	190	BE		
1011	1111	277	191	BF		
1100	0000	300	192	C0		
1100	0001	301	193	C1		A
1100	0010	302	194	C2		B
1100	0011	303	195	C3		C
1100	0100	304	196	C4		D
1100	0101	305	197	C5		E
1100	0110	306	198	C6		F
1100	0111	307	199	C7		G
1100	1000	310	200	C8		H
1100	1001	311	201	C9		I
1100	1010	312	202	CA		
1100	1011	313	203	CB		
1100	1100	314	204	CC		
1100	1101	315	205	CD		
1100	1110	316	206	CE		
1100	1111	317	207	CF		
1101	0000	320	208	D0		
1101	0001	321	209	D1		J
1101	0010	322	210	D2		K
1101	0011	323	211	D3		L
1101	0100	324	212	D4		M
1101	0101	325	213	D5		N
1101	0110	326	214	D6		O

BINARY		OCTAL	DECIMAL	HEX	ASCII	EBCDIC
1101	0111	327	215	D7		P
1101	1000	330	216	D8		Q
1101	1001	331	217	D9		R
1101	1010	332	218	DA		
1101	1011	333	219	DB		
1101	1100	334	220	DC		
1101	1101	335	221	DD		
1101	1110	336	222	DE		
1101	1111	337	223	DF		
1110	0000	340	224	E0		
1110	0001	341	225	E1		
1110	0010	342	226	E2		S
1110	0011	343	227	E3		T
1110	0100	344	228	E4		U
1110	0101	345	229	E5		V
1110	0110	346	230	E6		W
1110	0111	347	231	E7		X
1110	1000	350	232	E8		Y
1110	1001	351	233	E9		Z
1110	1010	352	234	EA		
1110	1011	353	235	EB		
1110	1100	354	236	EC		
1110	1101	355	237	ED		
1110	1110	356	238	EE		
1110	1111	357	239	EF		
1111	0000	360	240	F0		0
1111	0001	361	241	F1		1
1111	0010	362	242	F2		2
1111	0011	363	243	F3		3
1111	0100	364	244	F4		4
1111	0101	365	245	F5		5
1111	0110	366	246	F6		6
1111	0111	367	247	F7		7
1111	1000	370	248	F8		8
1111	1001	371	249	F9		9
1111	1010	372	250	FA		
1111	1011	373	251	FB		
1111	1100	374	252	FC		
1111	1101	375	253	FD		
1111	1110	376	254	FE		
1111	1111	377	255	FF		

---

# **Specifications**





## Printer Specifications

**Type:** Desktop page printer

**Print Method:** Electrophotographic recording with semi-conductor laser.

**Resolution:** 300 dots per inch.

**Paper Weight:** 16-35 lb. (60-135g/m<sup>2</sup>)

**Paper Cassette Capacity:** Approximately 200 sheets of 17.1-pound (64 g/m<sup>2</sup>) paper.

**Available Paper Cassettes:** Letter; legal; A4; executive; B5.

**Face-down Output Capacity:** 100 sheets.

**Face-up Output Tray Capacity:** 20 sheets.

**Recommended Temperature:** 50-90.5 degrees F (10-32.5 degrees C)

**Recommended Relative Humidity:** 20-80%

**Noise Level During Printing:** 53 dB or less.

**Noise Level During Standby:** 40 dB or less.

**Power Requirement:** 110V-120V/60Hz or 220V-240V/50Hz.

**Monthly Duty Cycle:** 3,000 prints.

**Dimensions (without cassette):** 20.1"W x 21"D x 9.4"H (510mm x 529mm x 239mm)

**Weight:** Approximately 41.9 lbs. (19Kg) without EP-S cartridge.

**Power Consumption:** Less than 810W.

## **Parallel Interface Cable**

The tables on the following pages describe the standard Centronics parallel interface cable for the printer.

To ensure compliance with FCC requirements:

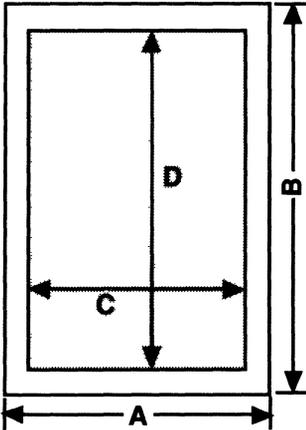
1. The cable must be of the type with an overall braided shield similar to Belden 8345.
2. Connectors must have shielded housings.
3. The overall shield must be bonded to the shielded housings at both ends of the cable.

Signal Pin No.	Return Pin No.	Signal	Direction	Description
1	19	*STROBE	In	STROBE pulse to read data in. Pulse width must be more than 100 nsec at receiving terminal. The signal level is normally "high"; read-in of data is performed at the "low" level of this signal.
2	20	DATA 1	In	These signals represent information of the 1st to 8th bits or parallel data respectively. Each signal is at "high" level when data is logical "1" and "low" when data is logical "0".
3	21	DATA 2	In	
4	22	DATA 3	In	
5	23	DATA 4	In	
6	24	DATA 5	In	
7	25	DATA 6	In	
8	26	DATA 7	In	
9	27	DATA 8	In	
10	28	*ACKNLG	Out	Approx. 4 $\mu$ s pulse; "low" indicates that data has been received and the printer is ready to accept other data.
11	29	BUSY	Out	A "high" signal indicates that the printer cannot receive data. The signal becomes "high" in the following cases: 1) Character received that corresponds to setting in S1; 2) FIFO full condition reached; 3) In "offline" state; 4) During printer error status.
12	30	PE	Out	A "high" signal indicates that the printer is out of paper or offline.

Continued on next page.

Signal Pin No.	Return Pin No.	Signal	Direction	Description
13	--	SLCT	Out	This signal indicates that the printer is in the selected state.
14	--	NC	--	Not Used.
15	--	NC	--	Not Used.
16	--	GND	--	Logic GND level.
17	--	CHASSIS GND	--	Printer chassis GND.
18	--	NC	--	Not Used.
19-30	--	GND	--	"Twisted-pair Return" signal; GND level.
31	--	NC	--	Not Used.
32	--	FAULT	--	A "low" signal indicates: 1)out of paper, 2)shuttle not moving, 3)printer is not selected.
33	--	GND	--	Same as with pin numbers 19-30.
34	--	NC	--	Not Used.
35	--	NC	--	Not Used.
36	--	NC	--	Not Used.

# Addressable/Printable Areas of Page



	A	B	C	D
A4	210 mm	297 mm	201 mm	285 mm
B5	182 mm	257 mm	173 mm	247 mm
LTR	8.5"	11.0"	8.15"	10.61"
LGL	8.5"	14.0"	8.15"	13.61"
EXEC	7.25"	10.5"	6.89"	10.11"

# Serial Interface Cable Specifications

An RS-232C (DB-25 connector) cable may be purchased from your dealer. The following table describes the pin assignment of the serial connector on the printer and the serial connectors of some of the more popular personal computers.

Laser Printer	HP Vectra	IBM-PC/AT	IBM-PC/XT	IBM-PC
1 (Chassis Grnd)	1 (Chassis Gmd)		1 (Chassis Grnd)	1 (Chassis Grnd)
2 (Trans data)	3 (Rec data)	2 (Rec data)	3 (Rec data)	3 (Rec data)
3 (Rec data)	2 (Trans data)	3 (Trans data)	2 (Trans data)	2 (Trans data)
4 (Request to send)				
6 (Data set ready)				
7 (Logic grnd)	7 (Logic grnd)	5 (Logic grnd)	7 (Logic grnd)	7 (Logic grnd)
20 (Data term ready)	5 (Clear to send)	6 (Data set ready)	5 (Clear to send)	5 (Clear to send)
	6 (Data set ready)	8 (Clear to send)	6 (Data set ready)	6 (Data set ready)

Laser Printer	Compaq Portable	Compaq DeskPRO	AT&T PC 6300
1 (Chassis Grnd)		1 (Chassis Grnd)	1 (Chassis Grnd)
2 (Trans data)	2 (Rec data)	3 (Rec data)	3 (Rec data)
3 (Rec data)	3 (Trans data)	2 (Trans data)	2 (Trans data)
4 (Request to send)			
6 (Data set ready)			
7 (Logic grnd)	5 (Logic grnd)	7 (Logic grnd)	7 (Logic grnd)
20 (Data term ready)	6 (Data set ready)	5 (Clear to send)	5 (Clear to send)
	8 (Clear to send)	6 (Data set ready)	6 (Data set ready)

---

## Advanced User Information

Vertical line



## Advanced User Information

The translation tables are a versatile feature of your laser printer that allow remapping of decimal values to different commands or characters in the 255 value range. Use the translation tables to access ASCII commands or characters normally beyond the reach of your software.

**WARNING!** The information in this appendix is designed for advanced users. Study these instructions carefully before using the command.

**Redefining Translation Tables** The translation tables act as "switchboards" that pass the decimal codes received from your computer to the area in the printer that makes up the page for printing. Most of the time you want the decimal codes that the computer sends to be relayed exactly as they are to the printing area. For example, if your computer sends the decimal code 65 (A), you probably want the printer to print an A. In this case the translation tables pass the decimal code 65 along as a decimal code 65.

However, you may have instances where you need to print a character or transmit a control character (a value lower than decimal 20) that your computer will not accommodate. Your laser printer provides the two translation tables for these occurrences. You should redefine the command translation table when you wish to transmit a control character to the printer. Redefine the font translation table when you wish to print a special character that is beyond the normal range of your computer keyboard. The software command for redefining or resetting the translations tables is shown below.

*Syntax:* <ESC>[p1;p2;p3;p4;p5;p6;p7;p8<SP>~

<ESC>[	Command initiator.
p1	0 = Selects command translation table. 1 = Selects font translation table.
p2	0 = Redefine table selected in p1. 1 = Reset table selected in p1 to power-up settings. 2 = Save current settings of table selected in p1 as new power-up settings. 3 = Save current settings of both tables as new power-up settings.
p3	Decimal value to be changed.
p4	New decimal value to be exchanged for decimal value in p3.
p5	Decimal value to be changed.
p6	New decimal value to be exchanged for decimal value in p5.
p7	Decimal value to be changed.
p8	New decimal value to be exchanged for decimal value in p7.
<SP>~	Command terminator (<SP> = Decimal 32).

**Command Translation Table** If your computer will not transmit control characters to the printer, you can change the command translation table to assign a control character to any decimal code you desire. For example, you could assign the Form Feed character (decimal code 12) to the backslash character (decimal code 92) or to any other decimal code you choose.

(When reassigning characters you should choose characters that you do not normally need during printing.)

To make this change to the command translation table, you would send this command:

```
<ESC>[0;0;92;12<SP>~
```

- Once you modify the command translation table, it will affect all emulation modes.
- Modifications to the command translation table affect all fonts.
- If two or more people are using the same printer, all users need to be aware of modified translation tables.
- Decimal values in this command may only be used in pairs (p3 through p8). No more than three pairs of decimal values may be redefined in any one command.

**WARNING!** When redefining the command translation table, never enter 27 as the first, third, or fifth values. This would have serious consequences for your printer or software.

**Font Translation Table** If you want the printer to print a character that does not appear on your computer keyboard, you can change the font translation table to assign that character to another character that does appear on your keyboard. For example, you could assign decimal code 228 to the left bracket character (decimal code 91) or to any other character you choose. The character corresponding to decimal 228 may differ depending on the font you use. (When reassigning characters you should choose characters that you do not normally need during printing.)

To make this change to the font translation table, you would send this command:

```
<ESC>[1;0;91;228 ~
```

- When the printer is in Epson emulation mode, the font translation table is ignored. Any modifications to the translation table will not affect fonts selected during Epson emulation mode.
- Modifications to the font translation table affect all fonts selected during any other mode except Epson emulation modes. All fonts, however, do not have the same characters in the same locations. Refer to the tables in Appendix B for the correct locations of all characters in the resident fonts.
- If two or more people are using the same printer, all users need to be aware of modified translation tables.
- Decimal values in this command may only be used in pairs (p3 through p8). No more than three pairs of decimal values may be redefined in any one command.

**Resetting Translation Tables** Whenever the value for p2 is 1, the table specified in p1 is reset to its power-up settings. If you have not previously saved the table(s) as new power-up settings, the translation tables will be reset to factory default values (decimal values 0-255) whenever the printer is powered off/on or whenever you make any changes to printer setup through the printer control panel. If you have previously saved the table(s) and you wish to restore them to factory settings (0-255), you must perform a printer setup reset. This is a control panel procedure. A printer setup reset will reset all printer setup options (including page margins, default fonts, interface settings, etc.) to the factory settings. To reset the printer to its manufacturer's default settings, refer to Chapter 6, *Miscellaneous Setup*, for information about the Reset to Manufacturer's Defaults option.

After performing the printer setup reset and before the printer is back online, use the Select and Scroll keys to locate either the Command Translation Reset or Font Translation Reset option in the Shared Emulation Setup menu. Press Select when either of these options appears in the message window to reset the translation table.

---

**CAUTION:** In plot or graphics mode, reassigned characters may cause problems (depending upon what characters have been reassigned). Plot mode is only affected by the command translation table. Do a reset of the command translation table before sending plot or graphics mode data to the printer.

---

Valid values for the three paired parameters are the decimal values 0 through 255.

**BASIC Examples** The following are examples in BASIC of how to use the software command to redefine the font and command translation tables.

*Syntax:* LPRINT CHR\$(27);"[0;0;94;10 ~"

The above command example selects the command translation table and causes the printer to interpret every ^ character (decimal 94) received from the computer as the ASCII command character line feed (decimal 10).

*Syntax:* LPRINT CHR\$(27);"[0;2 ~"

The above command example saves the command translation table (and any changes to it that are in effect) as the power-up setting.

**Syntax:** LPRINT CHR\$(27);"[1;0;91;228;93;235 ~"

The above command example selects the font translation table and causes the printer to interpret every left bracket (decimal 91) character it receives from the computer as a decimal 228 and every right bracket (decimal 93) character as a decimal 235. The characters that correspond to decimal 228 and decimal 235 may differ depending on the font you use.

**How a Laser Printer Works** Unlike an impact line printer, your laser printer receives data from your computer and prints it an entire page at a time. It works like this:

1. The computer, through its application software, converts your input to data that describes the makeup of the page and sends it to the printer.
2. The printer's controller converts the data from the computer to a bit-mapped image (an image comprised of dots with each dot controlled by one "bit" of data) and stores it in memory.
3. The laser scans a rotating photosensitive drum. This causes a change in electrostatic charge in the form of a dot at each point it contacts the drum, placing 300 dots per inch horizontally and vertically. As the laser scans it transfers the dots of the bit-mapped image to the drum forming a latent image.
4. As the drum rotates to the toner supply, the toner is attracted to the electrostatic charge and forms the image on the drum.
5. The drum continues to rotate bringing the image in contact with the paper. The paper is given an electrostatic charge opposite the toner by the transfer corona wire. This causes the toner to be transferred to the paper.

6. The paper passes through the fixer which fuses the toner image to the paper with heat and pressure.
7. The paper moves to the output tray.
8. The drum continues to rotate past a cleaner blade which scrapes off excess toner and the primary corona wire which places a uniform charge on the drum preparing it for the next page.





**ANSI X3.64**

A set of commands developed by the American National Standards Institute (ANSI).

**Application Software**

Pre-packaged, off-the-shelf computer programs and their documentation.

**ASCII**

An acronym for American Standard Code for Information Exchange. It is a 7-bit (or 8-bit) coding scheme for the computer representation of letters, numbers, and other symbols commonly found on a standard typewriter. It also represents special unprintable characters used by computer devices.

**Automatic Feed**

Using the paper cassette to feed paper into the printer.

**BASIC**

A programming language designed for personal computers.

**Baud Rate**

The number of bits per second transmitted to the printer by the computer. Important for serial interface users.

**Buffer**

A storage device used to compensate for a difference in rate or sequence of data flow when transmitting data from one device to another.

**Carriage Return**

Movement of the print position back to the left margin.

**Cassette Cover**

The plastic cover including the manual feed paper guides that fit over the paper cassette.

**Centronics**

A computer industry standard for parallel interface users.

**Character Set**

The "members" of a font; usually, all upper and lower case letters of the alphabet, all punctuation marks, numerals (0 - 9), and symbols found on the computer keyboard.

**Character Spacing**

The amount of space between characters. Character spacing may be either fixed (a specific number of characters per inch) or proportional (in relation to the width of the characters). See Fixed or Proportional.

## **Command**

An instruction to the printer comprised of a specific sequence of characters.

## **Control Codes**

Non-printable characters used to control the position of printed or displayed data.

## **Control Panel**

The panel on the front of your laser printer where status and error messages are displayed and where you make changes to the printer setup.

## **Copy Count**

Number of copies of a document to be printed.

## **Data Bits**

The number of bits of "data" in a byte transmitted to the printer from the computer. Important for serial interface users.

## **Decimal**

The number system with a base of 10.

## **Default**

Any printer setting to which the printer reverts whenever power is turned off and back on again or whenever a warm restart is performed.

## **Download**

Sending data from your computer to the printer that is intended to be stored in the printer's memory during a power up cycle. Fonts or overlays (logos, forms) are examples of data frequently downloaded. Download data must be loaded each time the printer is turned off and then on.

## **Escape Command**

The special command character (<ESC>) that precedes most printer commands (decimal 27).

## **Fixed Spacing**

A measure of the number of characters of any font that fit on a one-inch line. Some fonts in your laser printer are described by their number of "characters per inch" or "CPI". See also Proportional.

## **Font Cartridge**

A small cartridge containing font information that, when inserted into either slot in the front of the printer, adds fonts to the list of available fonts. A font cartridge is an optional item.

## **Fonts**

Typefaces.

## **Form Feed**

A special command that orders the printer to eject a sheet of paper (decimal 12).

## **Functionality Card**

The circuit board that contains all fonts and printer emulation modes for your laser printer.

## **Fuser Roller**

A heated roller inside the printer that causes the toner to adhere to the paper.

## **Fuser Wiper**

A felt-covered plastic "stick" that wipes any excess toner from the paper after it leaves the fuser roller.

## **Hex**

An abbreviation of hexadecimal, a number system with the base 16. The hexadecimal system uses sixteen number symbols (0 through 9, and A through F) and is used as a simple way to represent binary numbers.

## **Interface**

The hardware connection between printer and computer that allows the transmission of data. The interface cable connects the printer interface port to the computer interface port.

## **Landscape**

Printing along the longer dimension of the page.

**Line Feed**

A command to the printer that causes the print position to move one line down.

**Line Spacing**

A measure of the number of lines per inch or "LPI".

**Manual Feed**

Feeding paper into the printer by hand through the paper guides on the cassette cover.

**Manufacturer's Defaults**

The "factory settings" for printer setup.

**Menu Key**

The control panel key that accesses the printer setup menu.

**Octal**

A number system with the base 8. The octal system uses eight number symbols (0 through 7) and is used as a simple way to represent binary numbers.

**Offline**

When the printer is not in communication with the computer.

**Online**

When the printer is in communication with the computer.

**Options**

The individual items of the printer setup menus.

**Orientation**

Refers to the direction of printed material on a page. See portrait or landscape.

**Overlay**

A group of printer commands downloaded to the printer and stored in its memory under a user-defined number. The overlay may be recalled at any time by selecting that number. Logos or forms are examples of overlays.

**Paper Cassette**

Holds the printer's supply of paper for automatic paper feed.

**Parallel**

Transmission of data to the printer in one-byte intervals.

**Parameter**

The variables within a command that determine the action which the command will initiate.

**Parity**

A method of error checking for serial data transmission.

**Port**

The receptacle on your computer and printer for the interface cable which is used to connect the two together.

**Portrait**

Printing along the shorter dimension of the page.

**Print Cartridge**

The cartridge containing the toner supply and light-sensitive drum.

**Printer Emulation**

The ability of your laser printer to "imitate" a different printer.

**Printer Setup**

Changing options (through the printer control panel) to customize your laser printer.

**Printer Upper Cover**

The portion of the printer that holds the print cartridge.

**Proportional Spacing**

Character spacing based on the width of the individual characters of a font instead of the number of characters per inch.

**RAM**

Random Access Memory.

**ROM**

Read Only Memory.

**RS232**

A computer industry standard for serial interface users.

**Select Key**

The key on the printer control panel that performs a given action during printer setup depending on the symbol displayed with the option in the message window.

**Serial**

Transmission of data to the printer at one-bit intervals.

**Setup Menus**

Lists of printer setup options accessed by the Menu, Scroll and Select keys.

**Status Page**

A list of available fonts (by number and name) and printer setup information. This page prints automatically when printer is turned on or when a warm restart is performed.

**Stop Bits**

The number of bits required to signal the end of a data byte during serial data transmission. Important for serial interface users.

**Terminator (command)**

A character that signals the end of a printer software command.

**Toner**

Dry ink used for printing.

**Toner Fuser**

The fuser roller and fuser wiper.

**Warm Restart**

A "re-boot" of the printer that causes changes to the printer setup to go into effect.

**A**

A4 paper ..... 3-6, 3-15  
 Abort, multiple copy ..... 6-3  
 Addressable area ..... 3-8  
 Alignment, page ..... 3-9  
 ANSI X3.64  
   line spacing ..... 4-11  
   proportional spacing ..... 4-10  
   right margin ..... 4-12  
   setup ..... 4-10  
   unit of measure ..... 4-12  
 Autoexec.bat file ..... 8-1

**B**

Baud rate ..... 5-6  
 Blank pages, suppress ..... 6-4  
 Buffer setup ..... 7-1

**C**

Cancel printing ..... 6-3  
 Carriage returns ..... 4-8, 4-24  
 Cartridge fonts ..... 2-9  
 Character spacing ..... 2-4, 4-10,  
   ..... 4-14 - 4-15, 4-20  
 Collating tray ..... 3-13  
 Concepts, laser printing ..... 1-2  
 Contrast, adjusting ..... 8-10  
 Control panel ..... 1-4  
 Copy count ..... 1-18, 3-2 - 3-3  
 Corona wire ..... 8-11, 8-13  
 CPI  
   See Character spacing

**D**

Data bits ..... 5-6  
 Data light ..... 1-5  
 Default settings ..... 1-2  
 Diablo 630  
   character spacing ..... 4-14  
   linefeeds ..... 4-8  
   proportional spacing ..... 4-14  
   setup ..... 4-13

Display RAM option ..... 7-5  
 Dot mode (Tektronix) ..... 4-25  
 Double-spaced lines ..... 4-8  
 Download buffer ..... 7-2, 7-7  
 Downloading fonts ..... 2-8  
 Duplicate copies  
   See Copy count

**E**

Emulation ..... 1-7  
 Emulation modes  
   changing ..... 4-3, 4-5  
   setup menu ..... 4-1  
   shared setup options ..... 4-7  
   software command ..... 4-5  
 Envelopes ..... 3-13 - 3-14  
 Epson FX-80  
   character set ..... 4-16  
   linefeeds ..... 4-8  
   pica font ..... 4-18  
   pica quality ..... 4-16  
   print mode ..... 4-15  
   setup ..... 4-15  
   zeros ..... 4-18  
 Error messages ..... 8-3  
 ESC ..... 4-8  
 Escape sequences ..... 4-8  
 Executive size paper ..... 3-6, 3-15

**F**

Fonts  
   cartridge ..... 6-12  
   cartridges ..... 2-9  
   defined ..... 1-3  
   deleting ..... 2-10, 2-12  
   downloaded ..... 2-4 - 2-5, 2-8, 7-2, 7-7  
   download memory ..... 8-2  
   HPGL emulation ..... 2-4 - 2-5, 2-11  
   LaserJet+ emulation .. 2-4 - 2-5, 2-11  
   maximum number ..... 2-8  
   orientation ..... 2-4 - 2-5, 2-8  
   rotating ..... 2-10  
   sample pages ..... 2-6 - 2-7

- selecting by name ..... 2-3
- selecting by number ..... 2-5, 2-10
- Form feed ..... 6-4, 8-2
- Form feed key ..... 1-4
- Full page memory ..... 7-4

## H

- Hex dump mode ..... 6-10, 6-11, 8-16
- Host input buffer ..... 7-1, 7-6
- HPGL 7475A
  - pen width ..... 4-27
  - setup ..... 4-27

## I

- IBM Proprinter
  - character set ..... 4-22
  - pica font ..... 4-23
  - setup ..... 4-22
  - zeros ..... 4-22
- Interface
  - parallel setup ..... 5-8
  - selection ..... 5-2
  - setup ..... 5-1
  - shared selections ..... 5-3

## L

- Labels ..... 3-13
- Landscape orientation ..... 3-4 - 3-5
- Laser printing ..... 1-2
- Legal size paper ..... 3-6, 3-15
- Letter size paper ..... 3-6, 3-15
- Line spacing ..... 4-8, 4-11, 4-20
- Linefeeds ..... 4-8, 4-25
- Low toner indicator ..... 1-5
- LPI
  - See Line spacing

## M

- Maintenance
  - adjusting contrast ..... 8-10
  - fuser wiper ..... 8-9
  - hex dump mode ..... 8-16
  - paper jams ..... 8-6
  - primary corona wire ..... 8-11
  - print cartridge ..... 8-9

- Manual delay ..... 6-6
- Manual feed
  - envelopes ..... 3-14
  - first page ..... 3-10
  - full-time ..... 3-11
  - key ..... 3-11
  - software command ..... 3-15
  - special materials ..... 3-13
  - timeout ..... 3-11
  - two-sided pages ..... 3-13
- Manual feed key ..... 1-4
- Manufacturer's defaults ..... 6-9
- Margins ..... 1-14, 3-7
- Menu key ..... 1-4
- Menus ..... 1-3
- Message window ..... 1-4
- Mini size paper ..... 3-6, 3-15
- Miscellaneous Setup ..... 6-1

## O

- Online key ..... 1-4
- Online/offline ..... 1-3 - 1-4
- Option page ..... 6-10
- Orientation ..... 1-12, 3-4 - 3-5
- Overlays
  - deleting ..... 2-10, 2-12
  - selecting ..... 2-10

## P

- Page buffer ..... 7-3
- Page eject delay ..... 6-5
- Page Setup menu ..... 3-1
- Panel, printer control ..... 1-4
- Paper
  - clearing jams ..... 8-6
  - size selection ..... 1-17, 3-6, 3-15
- Paper guides ..... 3-10 - 3-11
- Paper jam ..... 8-6, 8-8
- Parallel ..... 5-2
- Parity ..... 5-6
- Partial page ..... 6-5
- Plot-10 mode (Tektronix) ..... 4-25
- Points (font size) ..... 2-4
- Portrait orientation ..... 3-4 - 3-5
- Primary corona wire ..... 8-11
- Product code ..... 6-10
- Proportional spacing ..... 4-14, 4-20
- Protocol ..... 5-6 - 5-7

## Q

- Qume Sprint
  - character spacing ..... 4-20
  - linefeeds ..... 4-8
  - proportional spacing ..... 4-20
  - setup ..... 4-19
  - wrap at right margin ..... 4-21

## R

- Reset, printer setup ..... 6-9
- Resolution ..... 1-1

## S

- Saving changes ..... 1-19
- Scroll keys ..... 1-4
- Select key ..... 1-4
- Sequences, number of ..... 7-8
- Serial ..... 5-2
- Serial interface ..... 5-5
- Setup keys ..... 1-4
- Setup menus
  - buffer ..... 7-1
  - Centronics ..... 5-8
  - emulation ..... 4-1
  - font ..... 2-2
  - interface ..... 5-1
  - miscellaneous ..... 6-1
  - page ..... 3-1
  - RS232 ..... 5-5
  - shared interface ..... 5-3
- Setup, printer ..... 1-2
- Software commands
  - copy count ..... 3-3
  - deleting fonts/overlays ..... 2-12
  - emulation modes ..... 4-5
  - ESC ..... 4-8
  - font examples ..... 2-7
  - font selection ..... 2-10
  - hex dump ..... 6-11
  - orientation ..... 3-5
  - paper size ..... 3-15
  - paper source ..... 3-15
  - pause ..... 6-12
  - status page ..... 6-8
- Status messages ..... 8-3

- Status page ..... 1-6, 2-3, 2-5,  
..... 6-4, 6-7 - 6-8, 7-2
- Stop bits ..... 5-6

## T

- Tektronix 4014
  - carriage returns ..... 4-24
  - dual cursor ..... 4-26
  - linefeeds ..... 4-25
  - margins ..... 4-25
  - quadrant 3 ..... 4-26
  - scale ..... 4-25
  - setup ..... 4-24
- Test button, printer ..... 8-1
- Tilde = ESC ..... 4-8
- Toner cartridge, replacing ..... 8-9
- Toner low indicator ..... 8-9
- Transfer guides ..... 8-13
- Transparencies ..... 3-13
- Troubleshooting ..... 8-1, 8-16
- Two-sided pages ..... 3-13
- Typefaces ..... 2-1
  - See also Fonts

## U

- Upper case conversion ..... 4-9
- User pause ..... 6-12

## W

- Window memory ..... 7-4

