HP LaserJet 4V and 4MV Printers

User's Manual

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Hewlett-Packard Company
11311 Chinden Boulevard
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Conventions

This manual uses the following conventions:

Bold indicates emphasis or a minor heading.

Italic refers to a document title or is used for emphasis.

COMPUTER type indicates text visible on a computer screen.

DISPLAY FONT indicates text visible on the printer control panel's display.

The cursive letter ℓ is used in examples to distinguish the letter **l** from the numeral **1** (one). The character Ø is used in examples to distinguish the numeral **0** from the letter **O**.

Key Face indicates keys (such as On Line) on the printer's control panel.

Key Face indicates keys (such as Insert) on your computer keyboard.

Note Notes contain important information set off from the text.

Caution Caution messages appear before procedures which, if not observed, could result in loss of data or in damage to equipment.

Warning **Warning messages alert you to a specific procedure or practice which, if not followed correctly, could cause serious personal injury.**

Supplementary Documents

The technical reference guides listed below are designed for programmers. The paper specification guide is useful for purchasing agents and paper buyers. These documents are available in English only.

You can order the documents listed below through HP Direct Distribution or by contacting your authorized HP Dealer (see the inside cover or Appendix F). There is a charge for some documents.

Documentation Available for the HP LaserJet 4V and 4MV Printers

Title	Part Number
The *PCL/PJL Technical Reference Package* contains the following documents: • *PCL 5 Printer Language Technical Reference Manual*. Explains the PCL 5 printer language for experienced users and programmers. • *Printer Job Language Technical Reference Manual*. Explains HP's Printer Job Language (PJL) for experienced users and programmers. • *PCL/PJL Technical Quick Reference Guide*. • *PCL Comparison Guide*. Describes the different implementation of commands and extensions across the printer family supporting PJL and PCL 5.	5961-0701
HP LaserJet Printer Family Paper Specification Guide.	5002-1801

Customer Service

Customer Support

Customer Support options US and Canada			
Customer Support Assistance	(208) 323-2551 *Mon-Fri 7 a.m. to 6 p.m. Wednesday 7 a.m. to 4 p.m. (Mountain Time) During the Warranty Period*		
Obtaining Printer Drivers	**Phone:**	(303) 339-7009	**Internet:** Anonymous FTP to 192.6.71.2 or ftp.boi **Download:** Using your Modem, (208) 344-1691
	Fax:	(303) 330-7655	
	Mail:	Hewlett Packard P.O. Box 1754 Greeley, CO 80632	
Accessories and Supplies	(800) 538-8787		
HP Authorized Dealers and Service	(800) 243-9816 (US) (800) 387-3867 (Canada)		
HP Repair Contracts	(800) 633-3600 (US) (800) 268-1221 (Canada)		
Software Application Notes and Audio Tips			
HP FIRST*	(800) 333-1917 (208) 344-4809		
All other countries contact your authorized HP dealer, see Appendix F.			

Customer Support options Europe		
Customer Support Assistance	See the flyer included with printer.	
Obtaining Printer Drivers	Call HP First.	
Accessories and Supplies	See Appendix F.	
HP Authorized Service	See Appendix F.	
HP Dealer	See Appendix F.	
Software Application Notes		
HP FIRST*	United Kingdom	0-800-96-02-71
	Netherlands	06-02-22-420
	Belgium	078-11-19-06
	Belgium (French)	078-11-70-43
	Germany	0130-8100-61
	France	05-90-5900
	Switzerland (German)	155-1527
	Switzerland (French)	155-1526
	Austria	0660-8128
	English outside of U.K.	(31) 20-681-5792

* HP First (Fax Information Retrieval Support Technology) is a no-charge, 24 hours self-help service that provides answers to the most common questions about your printer. Through HP FIRST, you can receive ordering information, software application notes and printer driver update request forms.

Simply dial the HP FIRST number from a touch tone phone connected with a Group 3 Facsimile machine and follow the voice prompts that guide you to select an index of available support and product documents.

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1

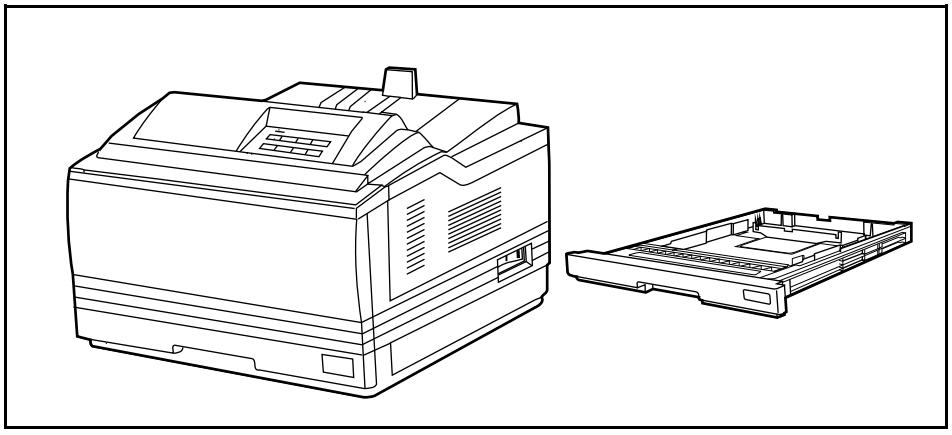
About Your Printer

Introduction

This chapter introduces the features listed below for the HP LaserJet 4V and 4MV printers (Figure 1-1). More information about these features appear in later chapters.

- Enhanced Print Quality
- PCL Language and Language Switching
- Paper Handling
- Memory and Memory Management
- Printer Drivers and Software
- Input/Output Features
- Energy Savings and Toner Economy
- Typefaces
- PostScript and Memory
- Networking Capabilities
- Accessories and Options
- HP LaserJet 4V and 4MV Printer Parts

Figure 1-1



HP LaserJet 4V/4MV printer with interchangeable Paper Cassette

The HP LaserJet 4V Printer

The HP LaserJet 4V printer provides 16-page-per-minute printing of Letter or A4 paper at true 600-dpi (dots-per-inch) resolution. Your printer can easily handle a wide variety of paper sizes, including wide format paper.

Your HP LaserJet 4V can grow along with your printing and networking needs by adding a wide variety of accessories and options. For example, Adobe's PostScript language, extra memory, I/O cards, additional 250-sheet paper cassettes, and an optional 500-sheet Universal Lower Cassette are available to increase your printing capabilities.

Enhanced Print Quality

The HP LaserJet 4V prints at true 600-dpi with Resolution Enhancement technology (REt) and MicroFine toner. REt adjusts the size and placement of each dot to smooth angles and curves. Combined with MicroFine toner, this sharpens the appearance of text and graphics.

The printer also offers 300-dpi printing with REt to give you a wider range of printing alternatives.

PCL Language and Language Switching

The HP LaserJet 4V printer arrives with enhanced PCL 5 printer language, which is compatible with all previous HP LaserJet printers. PCL 5 provides faster printing performance, built-in Intellifont and TrueType type scaling technologies, built-in HP-GL/2 vector graphics, and advanced imaging capabilities, such as reverse (white on black) printing and patterned fonts.

When optional, additional printer languages (such as PostScript) are installed, the HP LaserJet 4V printer can assess printer jobs as it receives them and automatically switch to the appropriate language.

Paper Handling

Your printer arrives with a pull-down Multipurpose (MP) Tray to handle a variety of print media. The MP Tray holds approximately 100 sheets of paper, and adjusts to print on an envelope, labels, or transparencies. You also receive two interchangeable 250-sheet Paper Cassettes for Letter or A4, and 11x17 or A3 paper. These features are shown along with the media sizes they handle in Figure 3-1 of Chapter 3.

Optional replacement Paper Cassettes and a 500-sheet Universal Lower Cassette base unit are also available. They are described later in this chapter.

Memory and Memory Management

The HP LaserJet 4V printer comes with 4 MBytes of memory and can be expanded to 68 MBytes. The printer has four SIMM (Single In-line Memory Module) slots for additional 1, 2, 4, 8, and 16 MBytes. The SIMM slots can also hold optional languages (such as PostScript), typefaces, and other SIMM-based products.

Memory Enhancement technology (MEt), a standard printer feature, allows most documents to print using the printer's standard amount of memory. MEt automatically compresses data to print complex pages.

Printer Drivers and Software

Your printer arrives with a software package that contains DOS drivers and the HP LaserJet 4V/4MV Printing System for Microsoft Windows 3.1 which includes 45 TrueType screen fonts.

Input/Output (I/O) Features

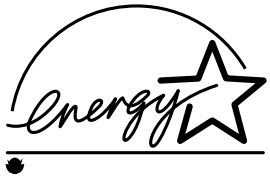
Standard built-in Bi-Tronics parallel interface allows high-speed two-way communication between the printer and your computer. Your printer also comes with a Modular I/O (MIO) slot designed to support optional MIO cards. Automatic I/O switching between all installed I/O ports allow you to connect multiple computers or even multiple networks to the printer simultaneously. If serial connection is required, contact your local dealer for information about an optional serial MIO card or serial-to-parallel converter.

Toner Economy and Energy Savings

The printer's EconoMode reduces the amount of toner on the printed page and is ideal for printing document drafts. When EconoMode is on, the print on the page appears significantly lighter but still readable.

The HP LaserJet 4V and 4MV printers are designed to conserve electricity by substantially reducing power consumption when idle for a user-specified length of time. Adjustable Power Save qualifies both models for the U.S. Environmental Protection Agency's Energy Star Computers award.

The EPA, as a matter of policy, does not endorse any particular company or its products.



Typefaces

The HP LaserJet 4V Printer comes with 35 scalable Intellifont typefaces, as well as 10 TrueType typefaces, and one bitmapped line printer font that match the Windows 3.1 type offering. You can scale TrueType typefaces within the printer. You also receive matching TrueType screen fonts for true WYSIWYG, short for "what you see is what you get." Type samples appear in Figure 1-2.

PCL Typefaces

Intellifont

Albertus
Albertus Extrabold
Antique Olive
Antique Olive Italic
Antique Olive Bold
Clarendon Condensed
Coronet
Courier
Courier Italic
Courier Bold
Courier Bold Italic
Garamond Antiqua
Garamond Kursiv
Garamond Halbfett
Garamond Kursiv Halbfett
Letter Gothic
Letter Gothic Italic
Letter Gothic Bold

Marigold
CG Omega
CG Omega Italic
CG Omega Bold
CG Omega Bold Italic
CG Times
CG Times Italic
CG Times Bold
CG Times Bold Italic
Univers Medium
Univers Medium Italic
Univers Bold
Univers Bold Italic
Univers Medium Condensed
Univers Medium Condensed Italic
Univers Bold Condensed
Univers Bold Condensed Italic

Line Printer (16.67 pitch, 8.5 point only)

TrueType

Arial
Arial Italic
Arial Bold
Arial Bold Italic

Times New Roman
Times New Roman Italic
Times New Roman Bold
Times New Roman Bold Italic

Symbol αβχΔΕΦΓ

Wingdings

Figure 1-2

The HP LaserJet 4MV Printer

The HP LaserJet 4MV printer offers all the features of the HP LaserJet 4V printer, plus is fully configured with additional memory, Adobe's PostScript Level 2 language, and an HP JetDirect interface that allows you to connect your printer to LocalTalk or Ethernet networks.

PostScript and Memory

The HP LaserJet 4MV printer comes with Adobe's PostScript Level 2, which is backward compatible with earlier versions of Adobe's PostScript. Type samples are shown in Figure 1-3.

The printer contains 12 MBytes of installed memory. By adding optional 1, 2, 4, 8, or 16 MByte SIMMs you can increase memory to a total of 44 MBytes. An optional 42.8 MByte PostScript Disk Accessory is available for storing downloaded fonts.

Networking Capabilities

The printer's factory installed HP JetDirect card lets you connect your printer directly to your local area network (LAN). The HP JetDirect card automatically switches among networked protocols, so a single printer can serve many networks at once or be moved to a new network with no additional hardware investment.

The printer's built-in HP JetDirect card supports the following network operating systems. Clients can be DOS, Windows, OS/2, Macintosh, or UNIX.

- Novell NetWare 286 v. 2.15c and beyond; 386 v. 3.11, 3.12, 4.0, 4.01
- Microsoft LAN Manager for OS/2, v. 2.1
- IBM LAN Server for OS/2, v. 3.0
- Microsoft Windows for Workgroups, v. 3.1, 3.11
- Microsoft Windows NT, v. 1.0
- HP-UX v. 8.0, 9.0
- SunOS v. 4.1.1, 4.1.2, 4.1.3
- SCO UNIX V/386 v. 3.2.2, 3.2.4
- Solaris v. 2.1, 2.2
- IBM/AIX v. 3.2.5
- Apple EtherTalk System 6 and 7
- Apple LocalTalk System 6 and 7

PostScript Typefaces

PostScript Typefaces

ITC Avant Garde Gothic Book
ITC Avant Garde Gothic Book Oblique
ITC Avant Garde Gothic Demi
ITC Avant Garde Gothic Demi Oblique

ITC Bookman Light
ITC Bookman Light Italic
ITC Bookman Demi
ITC Bookman Demi Italic

New Century Schoolbook Roman
New Century Schoolbook Italic
New Century Schoolbook Bold
New Century Schoolbook Bold Italic

Courier
Courier Oblique
Courier Bold
Courier Bold Oblique

ITC Zapf Chancery Medium Italic

Helvetica
Helvetica Oblique
Helvetica Bold
Helvetica Bold Oblique

Helvetica Narrow
Helvetica Narrow Oblique
Helvetica Narrow Bold
Helvetica Narrow Bold Oblique

Palatino
Palatino Italic
Palatino Bold
Palatino Bold Italic

Times Roman
Times Italic
Times Bold
Times Bold Italic

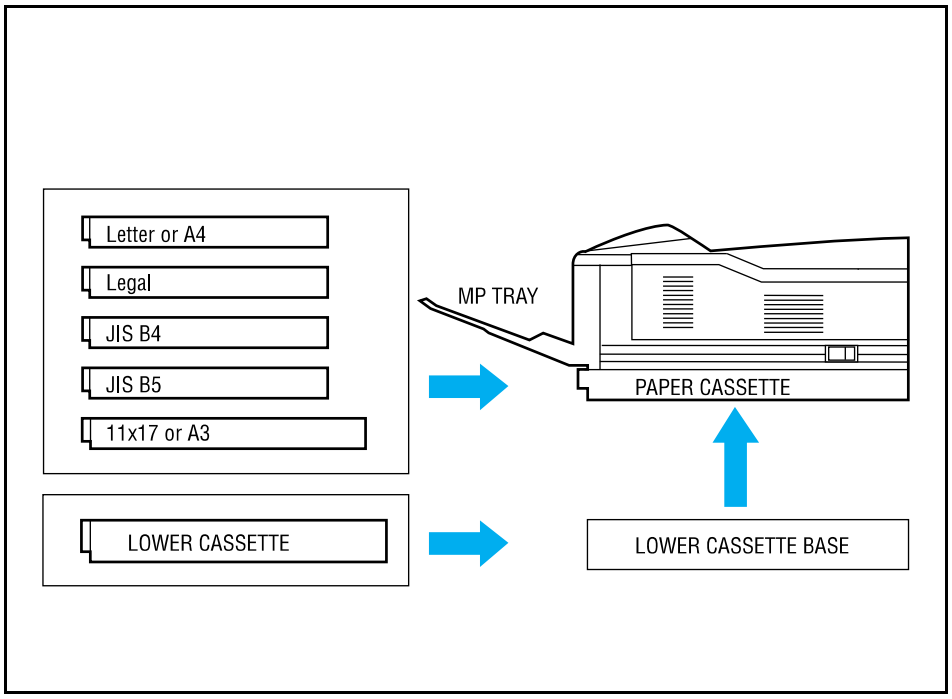
Symbol Σψμβολ
ITC Zapf Dingbats ✤✻■✳❂✿▼

Figure 1-3

Accessories and Options

You can increase your printer's capabilities by adding accessories and options such as the 500-sheet Universal Lower Cassette and replacement 250-sheet Paper Cassettes shown in Figure 1-4. Table 1-1 on the next page lists the paper sizes and capacity for each option. See the inside front cover of this manual for HP dealer and ordering information. See Chapter 3 to find more information about media specifications.

Figure 1-4



Printer with Paper Cassette options.

Table 1-1 Accessories and Options

Option	Part Number	Description or Use
Toner Cartridge	C3900A	Replacement toner cartridge.
Memory upgrades	1 MByte - C3130A 2 MByte - C3131A 4 MByte - C3132A 8 MByte - C3133A 16 MByte - C3146A	You can upgrade to a total of 68 MBytes of memory, in the HP LaserJet 4V and upgrade to 44 MBytes in the HP LaserJet 4MV.
Adobe's PostScript Level 2 printer language	C3159A	You can add Adobe's Level 2 PostScript language by installing this SIMM in your printer. (Additional memory required.) It is standard in the 4MV printer.
250-sheet replacement Paper Cassette	C3160A	250 sheet, adjustable between Letter and A4.
250-sheet replacement Paper Cassette	C3161A	250 sheets, adjustable between 11x17 and A3.
250-sheet replacement Paper Cassette	C3162A	250 sheets, legal only.
250-sheet replacement Paper Cassette	C3163A	250 sheets, JIS B4 only.
250-sheet replacement Paper Cassette	C3164A	250 sheets, JIS B5 only.
500-sheet Universal Lower Cassette Base Unit (includes 500-sheet paper cassette)	C3760A	500 sheets, adjustable for Letter, legal, 11x17, A4, A3, JIS B4.
500-sheet replacement paper cassette for Universal Lower Cassette Base	C3761A	500 sheets, adjustable for Letter, legal, 11x17, A4, A3, JIS B4.
Bi-Tronics Parallel cable	24542D	HP-recommended Bi-Tronics parallel cable.
Modular I/O and Network Cards	J2550A J2552A J2555A	HP JetDirect Multi-protocol Network Card with Ethernet/IEEE802.3 10Base-T. HP JetDirect Multi-protocol Network Card with LocalTalk, DIN-8 and Ethernet/IEEE802.3 10Base-T, BNC. (Standard in 4MV.) HP JetDirect Multi-protocol Network Card with Token Ring (DB9 and RJ45).
UNIX Interface Software	J2374B J2375B	HP JetDirect interface software for HP-UX systems. HP JetDirect interface software for SunOS and Solaris UNIX systems.
PostScript Disk Accessory	C3295A	42.8 MBytes

HP LaserJet 4V/4MV Printer Parts

The following illustrations show the locations and names of key printer parts (Figures 1-5 through 1-7).

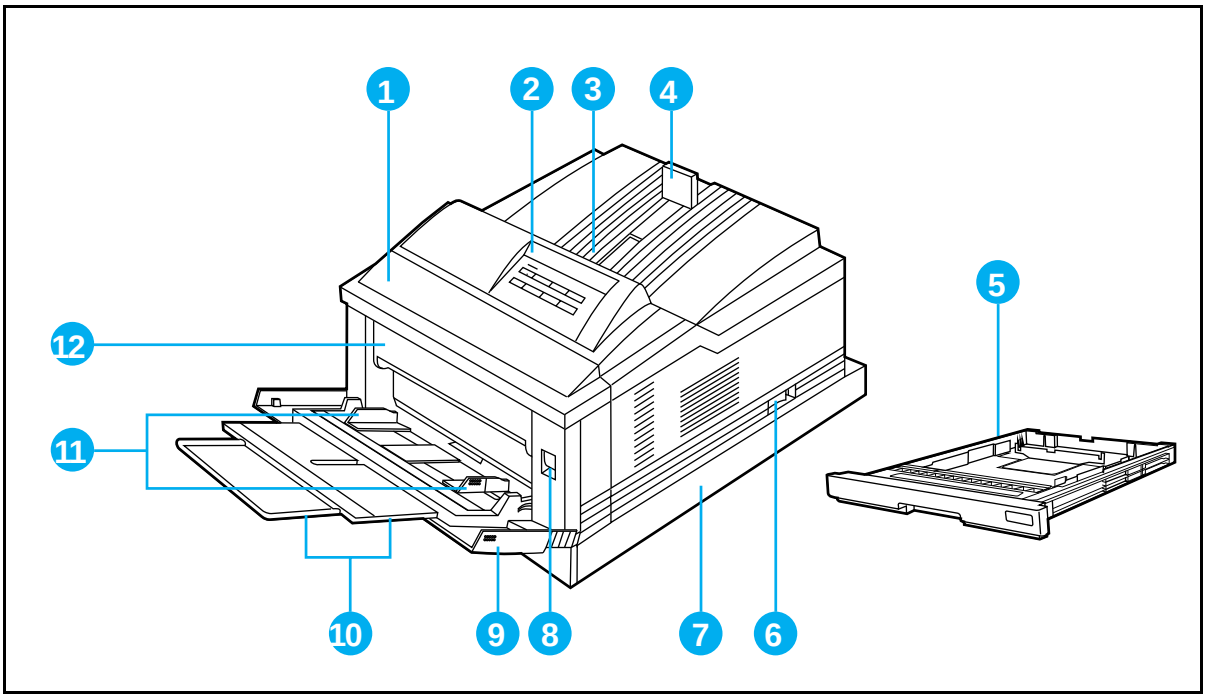


Figure 1-5 Front and right side view with MP Tray open

1. Front cover
2. Control panel
3. Output bin
4. Adjustable paper stop
5. 250-sheet 11x17 or A3 Paper Cassette
6. ON/OFF switch
7. 250-sheet Letter or A4 Paper Cassette
8. Front cover release button
9. Multipurpose (MP) Tray
10. MP Tray extension
11. MP Tray paper width guides
12. Fuser assembly door

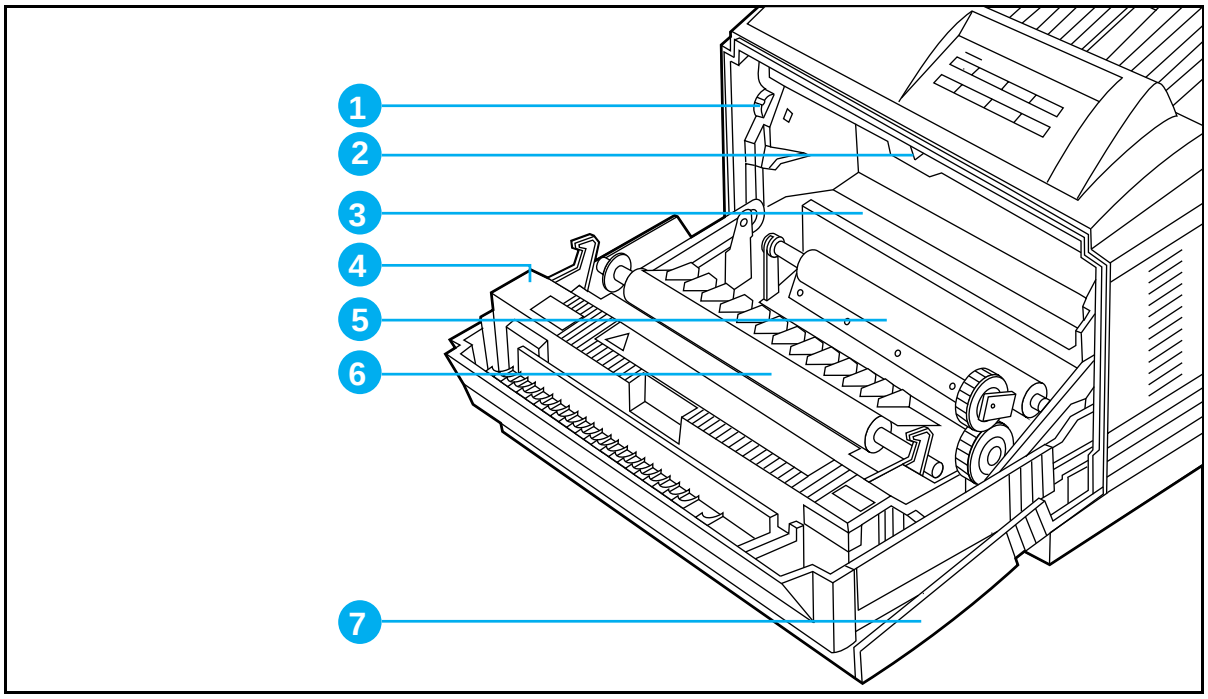


Figure 1-6 Front view with front cover open (with toner cartridge removed)

1. Print density dial
2. Arrow guide for installing toner cartridge in printer
3. Location of toner cartridge
4. Fuser
5. Registration roller
6. Transfer roller
7. Multipurpose (MP) Tray

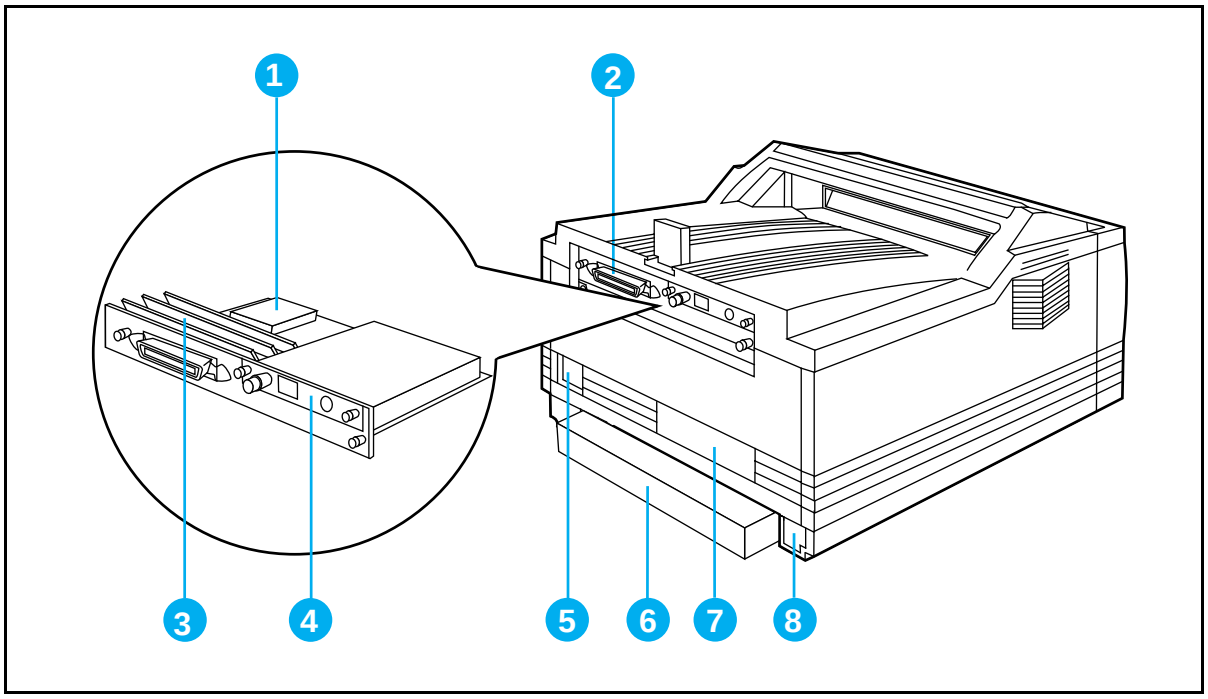


Figure 1-7 Rear and left side view

1. Optional PostScript Disk Accessory location
2. Parallel Bi-Tronics interface
3. Single In-line Memory Module [SIMM] slots
4. HP JetDirect interface (optional on LaserJet 4V printer)
5. Power connector outlet
6. Dust cover for 250-sheet 11x17 or A3 Paper Cassette
7. Serial number location
8. Optional Universal Lower Cassette connector access

2

Software For Your Printer

Introduction

This chapter introduces the software you received with your printer and briefly describes its features. It also lists additional software you can obtain for your printer by contacting HP Distribution or your authorized HP dealer (see the inside cover of this manual).

Packaged with the HP LaserJet 4V printer is software you need to take full advantage of your printer's features in Windows and DOS environments. The HP LaserJet 4MV printer also comes with software to use with Adobe's PostScript language and software to connect your printer to a wide variety of networks.

To set up your printer correctly, you must have already installed the appropriate software for your printer and environment. If you have not installed the software, see the *Getting Started Guide*.

Software for the HP LaserJet 4V Printer

The HP LaserJet 4V printer comes with Windows and DOS software drivers that you need to use your printer with Hewlett-Packard's PCL printer language. Drivers are program files that allow your software to use the printer's features, including the internal typefaces.

Note

Installing a driver is an important part of setting up your printer. Follow the instructions in the *Getting Started Guide* to install the software for your printer.

Software for Windows 3.1

Your printer comes with the HP LaserJet 4V/4MV Printing System for Microsoft Windows 3.1 software, which includes the following:

- Windows PCL printer driver
- TrueType screen fonts

Windows PCL Printer Driver

The printer driver enables your Windows applications to communicate with your printer and use all of your printer's features. Once you load the Windows driver, you can change printer settings or access features using the Print dialog box in any Windows application by choosing Print Setup, or from the Windows Control Panel group.

TrueType Screen Fonts

Screen fonts allow you to see on your computer screen what your printed page will look like. This approximation of screen display to printed result is known as WYSIWYG, short for "what you see is what you get." The TrueType fonts match the printer's internal typefaces. These fonts are automatically loaded and configured when you install the HP LaserJet 4V/4MV Printing System for Windows 3.1.

Software for DOS

Included with your printer is a package that contains drivers and installation instructions for serveral DOS applications. If a driver for your DOS software package was not included, contact your software manufacturer.

Note

If a driver is not yet available, you could use an older HP LaserJet printer driver (such as the HP LaserJet 4 or III printer driver) until a newer driver becomes available. However, you may not be able to access the advanced features of your new printer without the proper driver.

Software for the HP LaserJet 4MV Printer

In addition to the capabilities of the HP LaserJet 4V printer, the HP LaserJet 4MV printer comes with both the PCL and PostScript languages and connectivity features. The HP LaserJet 4MV printer comes with all the HP LaserJet 4V software described earlier in this chapter, plus the software listed on the following pages.

Software for the Macintosh

The HP LaserJet 4MV printer comes with software that installs the following Macintosh software on your computer's hard disk:

- HP LaserJet Printer Driver and Guide
- Bitmapped screen fonts
- HP LaserJet Utility and Guide

HP LaserJet Printer Driver and Guide

The HP LaserJet 4MV printer comes with printer driver for Macintosh computers, an auto-installation utility and an online printing guide. Once you install this driver, most of your printer's features are available from the Print Options dialog box.

Bitmapped Screen Fonts

When you install the HP LaserJet 4MV printer driver, bitmapped screen fonts are automatically installed on your system. These screen fonts match your printer's 35 internal PostScript fonts, allowing you to see on screen how your printed page will look.

HP LaserJet Utility and Guide

The LaserJet Utility allows you to control most printer features from your computer screen. You can display or customize the current control panel message. You can name the printer, assign it to a zone on your network, download files and fonts, and change most of the printer's default settings using this utility. The utility also allows you to permanently download fonts to the printer's optional PostScript Disk Accessory. You can set the printer's password and even lock out the control panel without leaving your computer. This utility's illustrated screens make selecting printer features from your Macintosh easier than ever. The HP LaserJet Utility Guide is an online manual that explains how to use the HP LaserJet Utility.

PostScript Driver for Windows 3.1

The HP LaserJet 4MV printer comes with a printer driver for use with Adobe's PostScript language. Once you install this driver, most of your printer's features are available from the Print Setup dialog box within your Windows applications. You can also use this software to permanently download fonts to the printer's optional PostScript Disk Accessory.

Networking Software

You can connect the HP LaserJet 4MV printer to more kinds of network environments than ever before. For Windows and DOS, your printer comes with software for Novell NetWare. For OS/2 platforms, Microsoft LAN Manager and IBM LAN Server print utilities are supplied. You can also obtain printer software for other networking environments, as explained later in this section.

Novell Networking Software

The HP LaserJet 4MV printer comes with printer description files for Novell networking, plus the following utilities.

HP JetAdmin for Windows and DOS: HP JetAdmin is a utility for Novell network administrators that helps you set up and manage your printer in a Novell networked environment. HP JetAdmin provides simple installation, configuration, troubleshooting, and management of HP JetDirect-connected printers. The HP JetAdmin utility allows you to remotely configure, troubleshoot, and manage all the HP network printers and plotters on a Novell network from computers running Windows or DOS. You can also set passwords for the printer's control panel using HP JetAdmin.

HP JetPrint Utility for Windows: The HP JetPrint Utility makes network printing easier and more productive than ever by allowing you to view, select, and print to all HP printers on the network from an easy-to-use screen. HP JetPrint allows you to view control panel messages and to check the status and progress of print jobs on your computer screen. The HP JetPrint Utility works only in Windows.

Microsoft LAN Manager and IBM LAN Server

This software helps network administrators quickly setup HP LaserJet printers through an OS/2 server. Along with an installer, there are two software components. The **Redirector** allows the redirection of print data from a spooler directly to the HP LaserJet printer. The **Setup** component allows the network administrator to specify which printer receives print data and provides seamless integration between the Redirector and the LAN Manager or LAN Server print system.

Optional Networking Software

You can order optional networking software from HP Distribution or your nearest authorized HP Dealer (see inside cover of this manual). Software for the following networks is available:

- Windows for Workgroups
- HP-UX
- SunOS
- Solaris

To learn more about networking with the HP LaserJet 4MV printer, see the *HP JetDirect Network Interface Configuration Guide.*

Optional Printer Drivers Available

You can order the following optional printer drivers from HP Distribution or your nearest authorized HP Dealer (see inside cover of this manual):

- OS/2 PCL printer driver
- OS/2 PostScript printer driver

Note

If your software is not listed here, please contact your software manufacturer or distributor and request a driver for the HP LaserJet 4V printer or the HP LaserJet 4MV printer. If a driver is not yet available, you could use an older HP LaserJet printer driver (such as the HP LaserJet 4 or III printer driver) until a newer driver becomes available. However, you may not be able to access the advanced features of your new printer without the proper driver.

3

Printing Tasks

Introduction

Your new LaserJet printer makes it easy for you to perform a wide variety of printing tasks. You can print on several sizes and weights of paper and envelopes, as well as on transparencies and labels.

This chapter explains how to do the following:

- Printing paper from the best paper source
- Selecting paper and other print media
- Loading paper into the Letter or A4 and 11x17 or A3 Paper Cassettes
- Loading Letter, Legal, 11x17, A4, or A3 paper into the Multipurpose (MP) Tray
- Manually feeding paper from the MP Tray
- Printing on labels, transparencies, or custom-sized paper from the MP Tray
- Printing Letterhead documents, preprinted forms, and special papers
- Reserving or locking out the MP Tray or Paper Cassettes
- Printing an envelope from the MP Tray
- Printing from the optional 500-sheet Universal Lower Cassette
- Stopping a print request

Printing Paper from the Best Paper Source

Your printer can print on envelopes and all the paper sizes identified in Figure 3-1 and Table 3-1 using the adjustable Multipurpose (MP) Tray **(1)** the Letter or A4 Paper Cassette, and 11x17 or A3 Paper Cassette **(2**) that arrived with your printer. You can use the MP Tray to hold one, several or as many as 100 sheets of paper. The MP Tray also adjusts for many envelope sizes. The Paper Cassettes can hold approximately 250 sheets of paper.

You can purchase the optional 500-sheet Universal Lower Cassette **(3)** or 250-sheet replacement trays. These options and accessories are listed in Chapter 1 with paper size specifications.

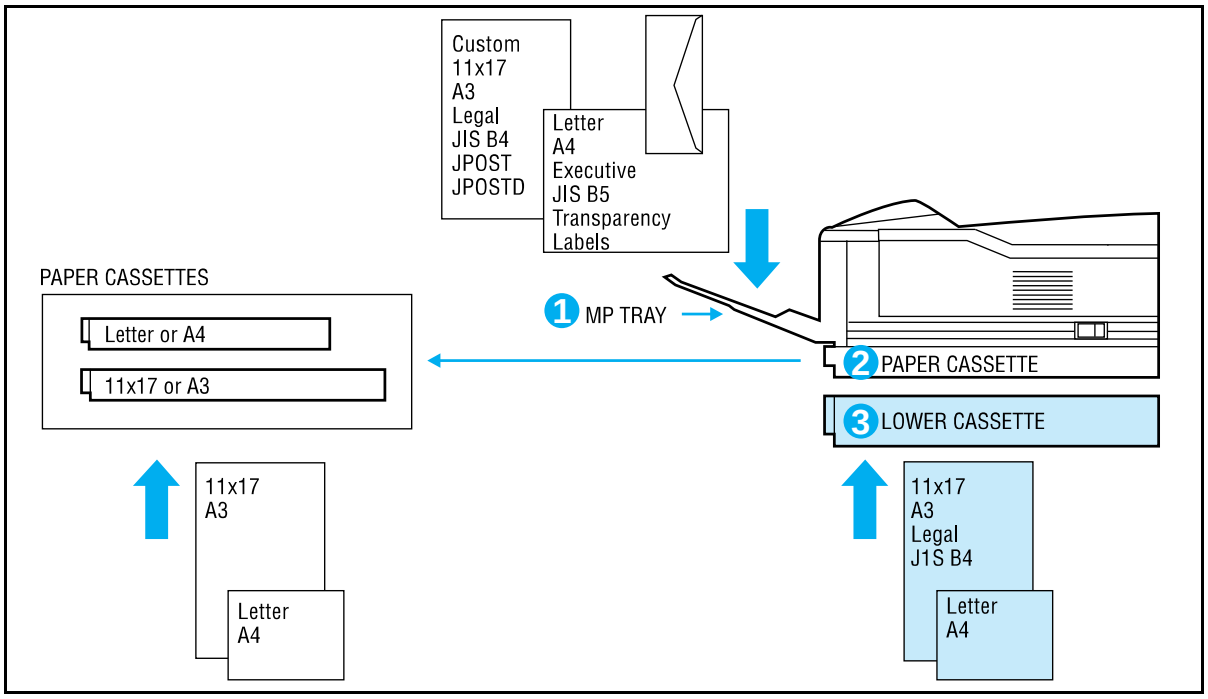


Figure 3-1 Paper sources (optional sources are shaded)

Caution

Print heavy-weight papers, labels, and transparencies only from the MP Tray. Load only one size of paper at a time in the MP Tray.

Selecting Paper and Other Print Media

Table 3-1 presents guidelines to select supported paper for printing from the MP Tray or Paper Cassette. (See Appendix C for more information.)

Table 3-1 Media Specifications

MP Tray	Dimensions	Weight	Capacity
Maximum Paper Size	11.7 x 17.7 in 297 x 450 mm	Single sided:16 to 20 lb. (60 to 75 g/m^2)	100 sheets of 20# paper
Minimum Paper Size	3.9 x 5.8 in 100 x 148 mm	Single side:16 to 28 lb. (60 to 105 g/m^2)	
Paper, Letter	8 1/2 x 11 in 216 x 279 mm		
Paper, A4	8.3 x 11.7 in 210 x 297 mm		
Paper, Executive	7.3 x 10.5 in 191 x 267 mm		
Paper, Legal	8 1/2 x 14 in 216 x 356 mm		
Paper, 11x17	11 x 17 in 297 x 432 mm		
Paper, A3	11.7 x 16.5 in 297 x 420 mm		
Paper, JIS B5	6.9 x 9.8 in 176 x 250 mm		
Paper, JIS B4	9.8 x 13.9 in 250 x 353 mm		
Postcard, JPOST	3.9 x 5.8 100 x 148 mm		
Postcard, JPOSTD	5.8 x 7.9 148 x 200 mm		
Transparency	See minimum and maximum paper sizes listed above.	0.0039 in to 0.0045 in. thick (0.099 to 0.114 mm)	limit to paperfill mark on paper width guides
Labels		0.005 in to 0.007 in thick (0.127 to 0.178 mm)	
Envelopes	see “Printing an Envelope” later in this chapter		1 at a time

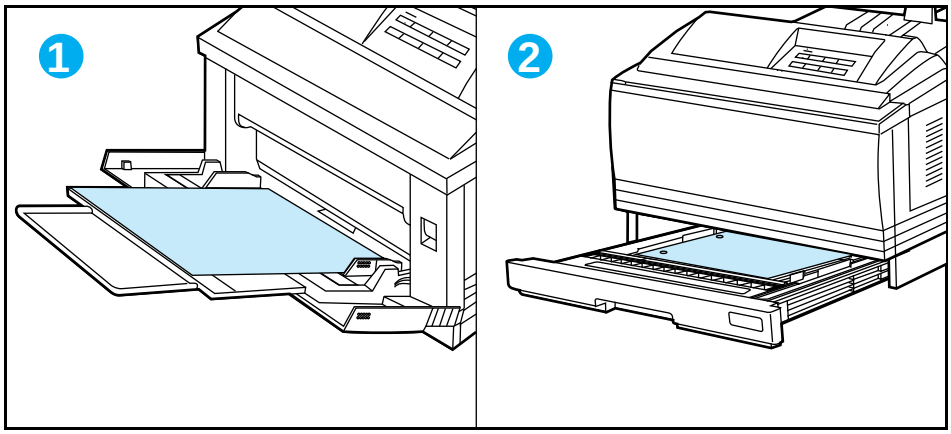
Table 3-1 *(cont.)* Media Specifications

Paper Cassette	Dimensions	Weight	Capacity
Paper, Letter	8 1/2 x 11 in 216 x 279 mm	Single sided: 16 to 28 lb. (60 to 105 g/m^2)	250 sheets of 20# paper
Paper, A4	8.3 x 11.7 in 210 x 297 mm		
Paper, 11x17	11 x 17 in 297 x 432 mm		
Paper, A3	11.7 x 16.5 in 297 x 420 mm		
Paper, Legal (optional)	8 1/2 x 14 in 216 x 356 mm		
Paper, JIS B4 (optional)	9.8 x 13.9 in 250 x 353 mm		
Paper, JIS B5 (optional)	6.9 x 9.8 in 176 x 250 mm		

Loading Paper

Your printer handles paper from the Multipurpose (MP) Tray (**1**, Figure 3-2**)** or a Paper Cassette (**2**, Figure 3-2**)**. By default, the printer draws first from the MP Tray, unless you specify otherwise through your software or the control panel configuration.

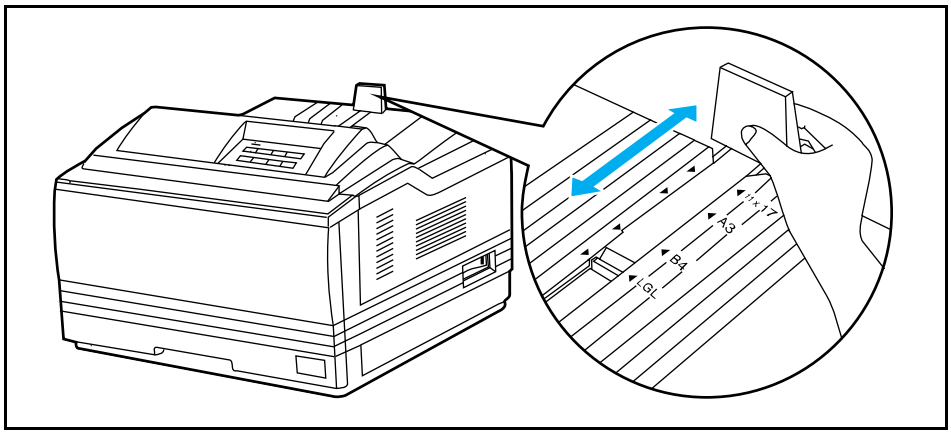
Figure 3-2



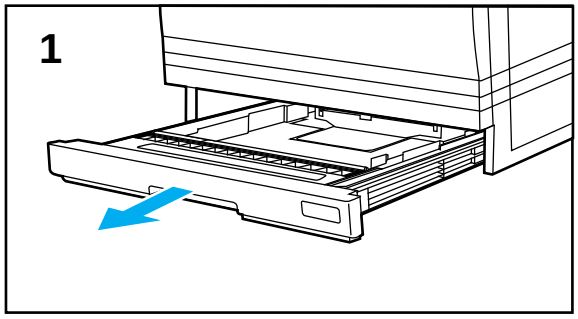
Adjusting the Paper Stop

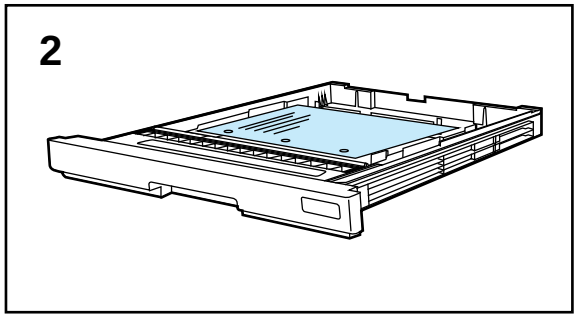
Printed pages are delivered to the output bin located at the top of your printer. When loading paper, set the adjustable paper stop (Figure 3-3) on the output tray to match the paper size you are loading. This adjustment allows the paper to exit the printer and lie flat in the output bin.

Figure 3-3



Loading Paper into the Letter or A4 Paper Cassette





The Letter or A4 Paper Cassette holds approximately 250 sheets of paper. See Table 3-1 and Appendix C for media specifications.

Caution

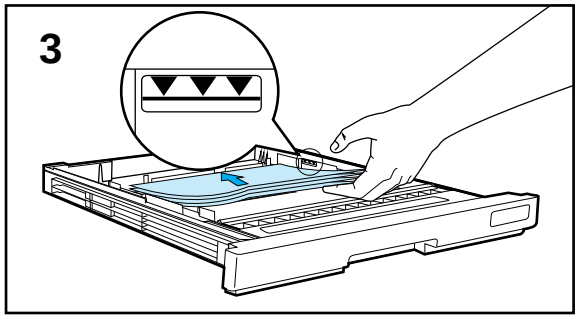
To avoid a paper jam, never remove the cassette while printing. If paper curls or skews excessively when printed, take the cassette out and turn the stack of paper over.

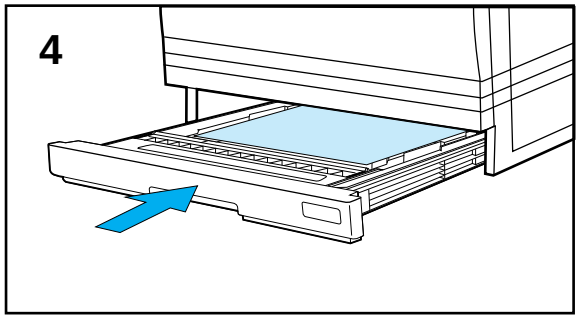
To load paper into the Paper Cassette:

1. Pull the Letter or A4 Paper Cassette out of the printer and place it on a flat surface.

2. Load paper with the side-to-be-printed up and top of page toward the left side of the cassette.

(Continued on the next page.)





3 Slide in a stack of paper until it is in solid contact with the rear of the cassette.

Press down on all four corners of the paper stack so paper rests flat in the cassette, fits under front metal holders, and below back tabs.

Make sure the height of the paper stack does not exceed the limit mark on the right side of the cassette.

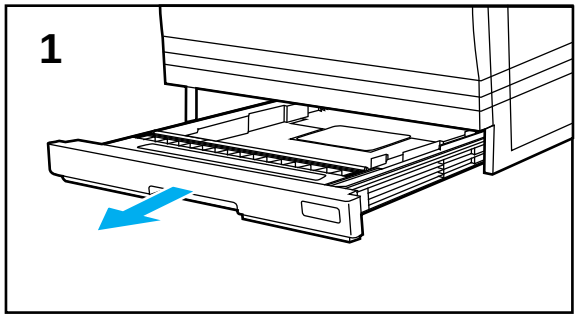
4 Slide the cassette back into the printer.

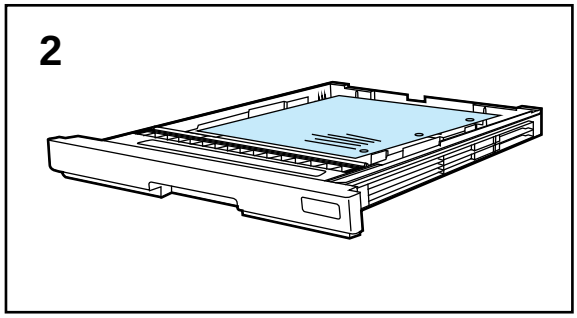
Remember to adjust the paper stop guide on the output bin (see Figure 3-3).

Note

Use this procedure to load paper into the optional JIS B5 Paper Cassette.

Loading Paper into the 11x17 or A3 Paper Cassette





The 11x17 or A3 Paper Cassette holds approximately 250 sheets. See Table 3-1 and Appendix C for media specifications.

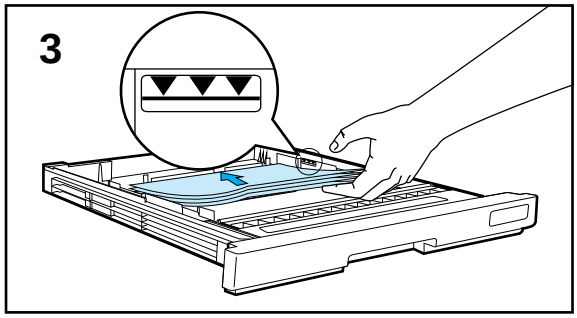
Caution

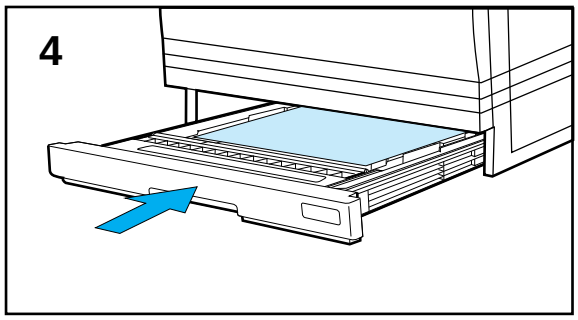
To avoid a paper jam, never remove the cassette while printing. If paper curls or skews excessively when it is printed, take the cassette out and turn the stack of paper over.

To load paper into the Paper Cassette:

1. Pull the 11x17 or A3 Paper Cassette out of the printer and place it on a flat surface.
2. Load paper with the side-to-be-printed up and top of page toward the front of the cassette.

(Continued on the next page.)





3 Slide in a stack of paper until it is in solid contact with the rear of the cassette.

Press down on all four corners of the paper stack so paper rests flat in the cassette, fits under front metal holders, and below back tabs.

Make sure the height of the paper stack does not exceed the limit mark on the right side of the cassette.

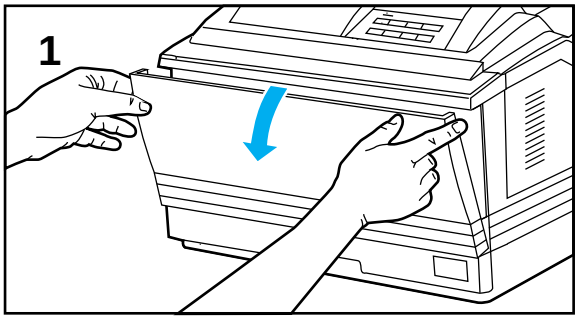
4 Slide the cassette back into the printer.

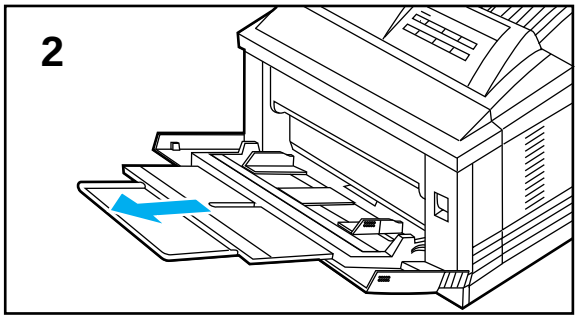
Remember to adjust the paper stop guide on the output bin (see Figure 3-3).

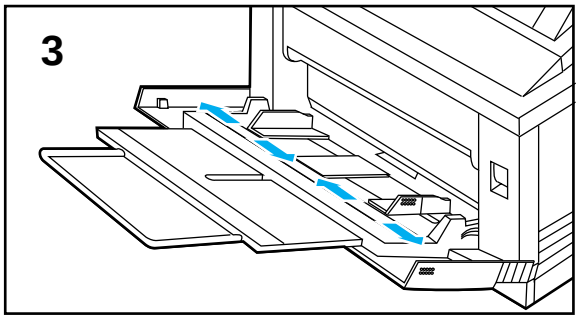
Note

Use these procedures to load paper into the optional legal and JIS B4 Paper Cassettes.

Loading Letter, Legal, 11x17, A4, or A3 Paper into the MP Tray







The Multipurpose (MP) Tray allows you to feed one sheet of paper at a time, or to automatically feed a stack of approximately 100 sheets. The MP Tray can be used for standard and custom-sized papers, envelopes, labels, and transparencies. See Table 3-1 and Appendix C for the MP Tray's media specifications.

Caution

To avoid a paper jam, never add paper or other print media to the MP Tray while the printer is printing.

To load paper into the MP Tray:

1. Open the MP Tray by grasping the door on the front of the printer, at the pattern of raised dots on each side.

   Pull the tray down gently until it stops.

2. Pull out the tray extension, if needed for the paper size you are printing.

3. Slide the paper width guides to the appropriate size marked on the tray.

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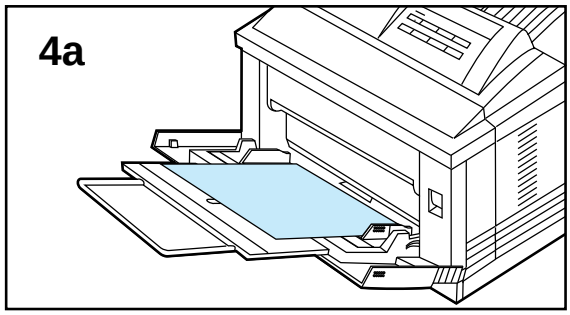
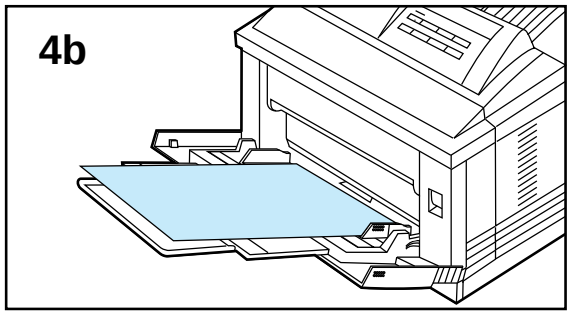
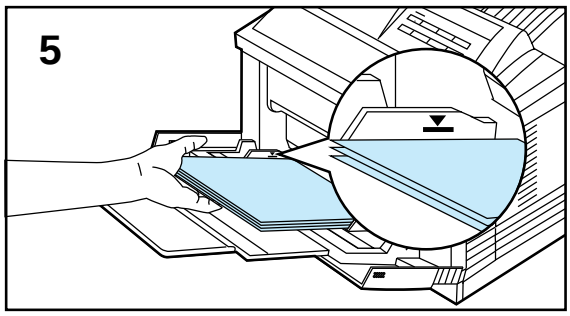






4 Place paper in the MP Tray, with side-to-be-printed down. The height of the paper stack should not exceed the limit mark on the paper width guides.

Paper loading differs by size.

a. Load **Letter or A4** with the top of the page to be printed placed toward the left side of the MP Tray.

b. Load **Legal, 11x17 or A3** with the top of the page to be printed leading into the printer.

5 Slide paper into the printer as far as it will go, until leading edges rest lightly against the printer.

Make sure the paper fits squarely and firmly between the paper width guides, without bending the paper.

Remember to adjust the paper stop guide on the output bin (see Figure 3-3).

Manually Feeding Pages from the MP Tray

On rare occasions (when printing transparencies, for instance), you may want the printer to stop after each page. Usually, you select Manual Feed through your software. However, if it is not available you can set MANUAL FEED=ON in the Printing Menu of the printer's control panel.

To manually print a single sheet of paper with software:

1 Make sure the MP Tray is empty.

2 In your software application's print setup, set Paper Source to Manual Feed or complete the procedure below.

Note

The paper source you select in your software application overrides the control panel setting. To manually feed paper, be sure you select Manual Feed in your software application's print setup.

3 Send the document to the printer. The printer goes off-line. The control panel displays the message, MF FEED LETTER, if you choose Letter size paper.

4 Place the sheet of paper into the MP Tray with the side-to-be-printed down. Move the paper width guides to lightly touch the edges of the paper. The printer automatically pulls the sheet of paper into the printer.

To select Manual Feed from the control panel:

1 Press **On Line** to take the printer off line.

2 Press **Menu** once to reach PRINTING MENU.

3 Press **Item** until MANUAL FEED=*setting* appears.

4 Press **+/-** once to reach MANUAL FEED=ON.

5 Press **Enter** to save your selection.

6 Press **On Line** to put the printer back on line.

Printing Labels or Transparencies from the MP Tray

Print labels and transparencies from the MP Tray to prevent them from curling or jamming in the printer.

Caution

To avoid damaging the printer: Do not print labels or transparencies from a Paper Cassette or optional Universal Lower Cassette. Do not print on both sides of labels or transparencies.

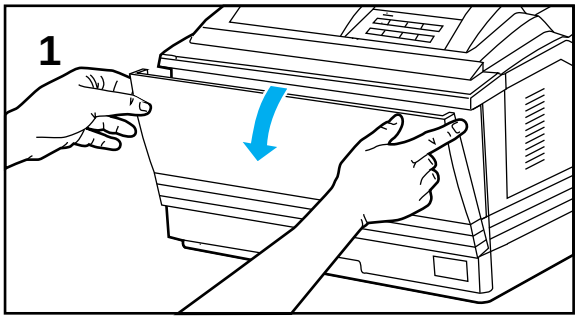
Guidelines and Specifications

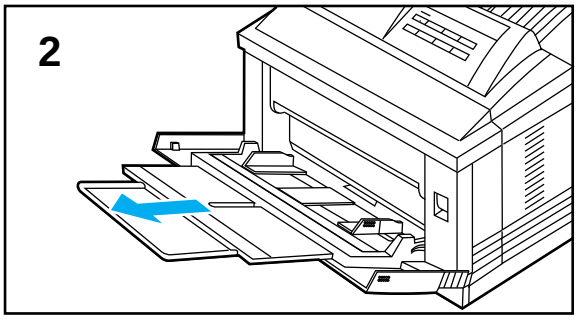
Use only labels recommended for laser printers. The labels must be compatible with the heat and pressure of the fusing assembly process. See Appendix C for media specifications.

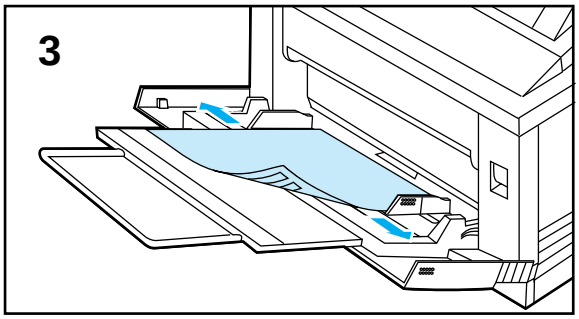
Do not use labels that separate from the backing sheet or that are wrinkled or damaged in any way. Do not feed a sheet of labels through the printer more than once because the label adhesive is designed for only one pass through the printer.

Use only transparencies recommended for use in laser printers, such as HP or 3M overhead transparency film. Because transparency films tend to stick to each other, remove each transparency from the output bin before printing the next one.

For best results when printing labels and transparencies, use the loading and printing procedures on the next page.







To load and print labels or transparencies:

1 Open the MP Tray by grasping the door on the front of the printer, at the pattern of raised dots on each side.

   Pull the tray down gently until it stops.

2 Pull out the tray extension if needed for the paper size you are printing.

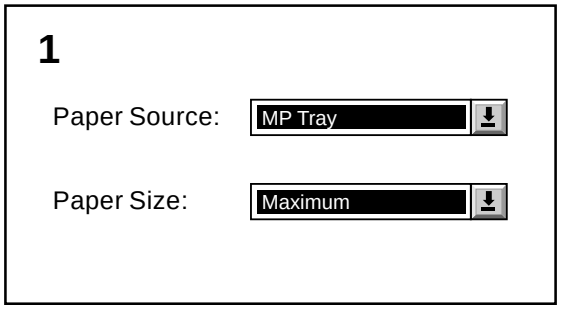
3 Place labels or transparencies, side-to-be-printed down, with top of page to the left of the MP Tray. Move the paper width guides to lightly touch the paper on both sides.

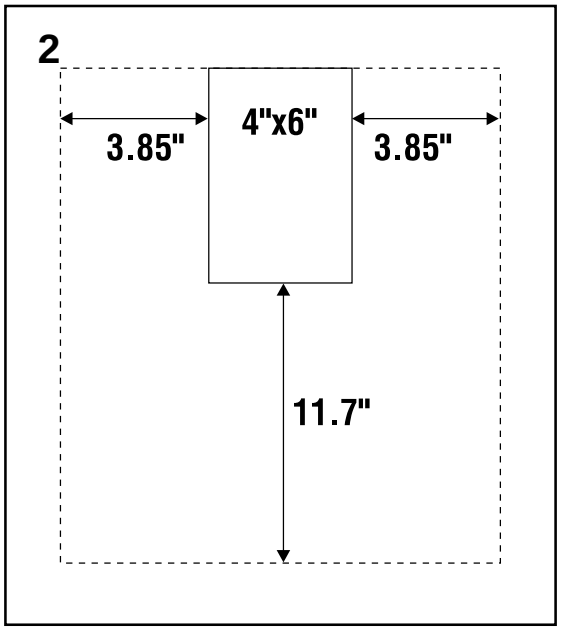
   In your software application's print setup, specify the paper size and Manual Feed.

Note

When printing multiple transparencies, as each print, promptly remove it from the output bin so sheets won't stick together.

Printing on Custom-sized Paper from the MP Tray





You can print on custom-sized paper from the MP Tray. The largest size of paper supported is 11.7x17.7 inches (297x450 mm) of 20 lb. paper and the smallest size is 3.9x5.8 inches (100x148 mm). *When you select custom-sized paper, the printer assumes the maximum page size is 11.7x17.7 inches (297x450 mm).*

To print Tabloid Bleeds:

Since the printer has the ability to print on specially cut paper up to 11.7x17.7 inches, you can print tabloid size (11x17 in.) bleed images with crop marks. Refer to your software application and HP LaserJet Utility Guide (Macintosh) or Windows on-line help.

To print on Custom-sized Paper:

Some software applications require you to calculate margins in order to print on custom-sized paper. The following example is provided as a guideline. Adapt this example to your paper size and unit of measurement.

1. In your software application, select MP Tray for the paper source and "Maximum" (Windows PCL) or "Oversize" (Macintosh and Windows PostScript) for the paper size.
2. Calculate margins to identify the area to be printed. Illustration 2 and steps 2A and 2B show how to calculate a margin for 4x6 inch paper.

   A. Take the maximum paper width size 11.7 inches, and subtract 4 inches for the width of the card. Take the answer, 7.7 inches, and divide it by 2 which equals 3.85 inches.

   In your software application, select a left margin of 3.85 and a right margin of 3.85 inches.

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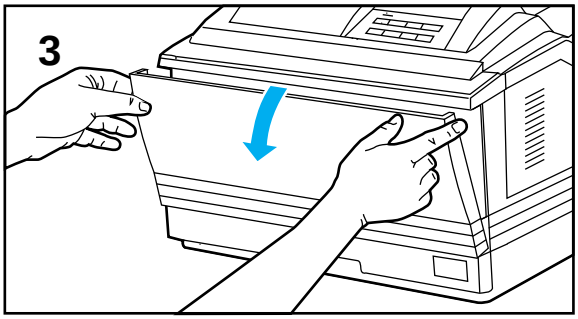
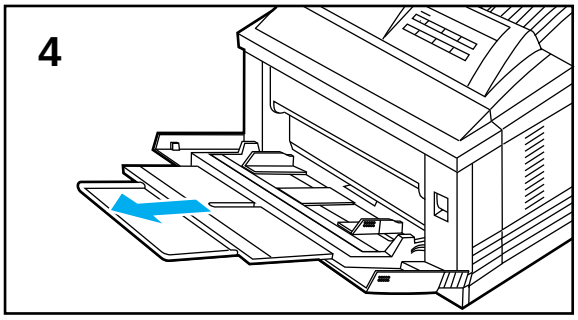
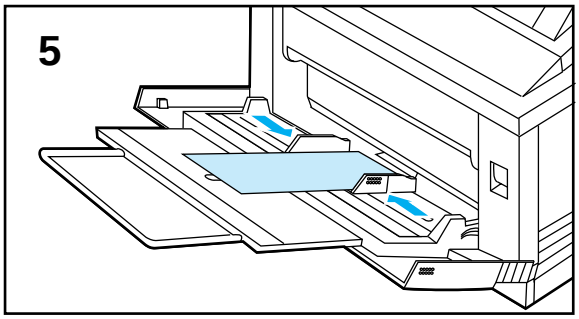






B. If your software allows for it, also set the bottom margin. Take the maximum paper length size 17.7 inches, subtract 6 inches (the length of the card). The bottom margin equals 11.7 inches.

Note

The edge of the paper feeding into the printer must be at least 3.9 inches (100 mm) to allow rollers inside the printer to grab the paper. Side edges must be at least 5.8 in (148 mm).

3 Open the MP Tray by grasping the door on the front of the printer, at the pattern of raised dots on each side.

Pull the tray down gently until it stops.

4 Pull out the tray extension if needed for the paper size you are printing.

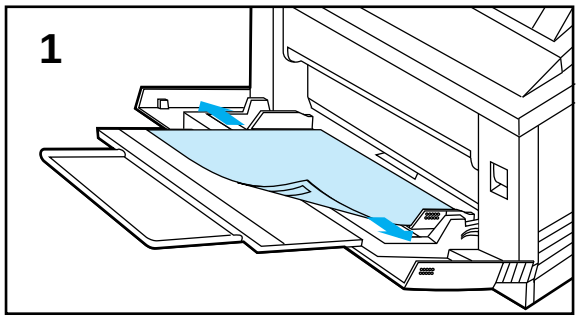
5 Place paper in the tray between the paper width guides, with the side-to-be-printed down.

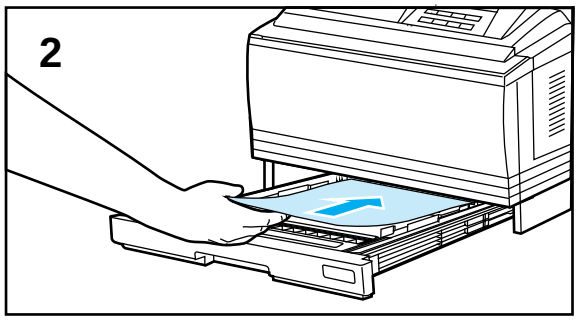
Adjust the paper width guides to lightly touch both edges of the paper, without bending.

Remember to adjust the paper stop guide on the output bin of the printer (see Figure 3-3).

Send the document to the printer.

Printing Letterhead Documents, Preprinted Forms, and Special Papers





Use the following procedures to print the first page of a document on preprinted or special paper and the next on different paper.

Note for Network Users

You might want to reserve the cassette in which your preprinted paper is loaded so other users won't accidentally print on your Letterhead or forms. The procedure for reserving or locking out a cassette is on the next page.

To print the first page of a document on Letterhead:

The following steps explain how to print a two-page letter using Letter or A4 paper as an example.

Note

These steps assume the printer is set to MP TRAY=FIRST, the printer's default setting. See Configuration Menu in Chapter 4.

1. Place a sheet of Letterhead in the MP Tray, side-to-be-printed down, with top of page toward the left of the printer.

2. Load plain paper (for the second page of the letter) in the Paper Cassette.

   Print the Letter.

Reserving or Locking Out the MP Tray or Paper Cassettes

You can reserve, or lock out, paper cassettes that hold special papers from other users. Reserve one or more cassettes (including the MP Tray) by locking them out from the paper selection process through the printer's control panel. (Your software application can override these settings.)

The following procedure configures the MP Tray as a cassette, then locks out the MP Tray so it is a protected source of Letterhead, a preprinted form, or colored paper. Lock out any other paper cassette or combination of cassettes the same way.

To reserve or lock out a cassette:

1 From the printer's control panel, press **On Line** to take the printer off line.

2 Press **Menu** until `CONFIG MENU` appears.

3 Press **Item** until `MP TRAY=`*setting* appears.

4 Press **+/–** until `MP TRAY=CASS` appears, then press **Enter**.

5 Press **Item** until `LOCK=SETTING` appears.

6 Press **+/-** until `LOCK=MP` appears, then press **Enter** to save your selection.

7 Press **On Line** to place the printer back on line.

8 Press **MP Paper Size**, then select the size of paper you have in the MP Tray (by pressing the **+/-**), then press **Enter** to save your selection.

9 Place a stack of paper into the MP Tray with side-to-be-printed down. Load Letter or A4 paper with the top of the page placed toward the left side of the printer. Load legal, 11x17, and A3 paper with top of page leading into the printer.

The MP Tray is now locked out from its default selection.

Printing an Envelope from the MP Tray

You can print an envelope from the MP Tray. This section explains how to print an envelope using your software application.

Table 3-2 lists the kinds of envelopes you can print. Thick envelopes might jam inside the printer. (See Appendix C for media specifications.).

Table 3-2 Envelope Specifications for the MP Tray

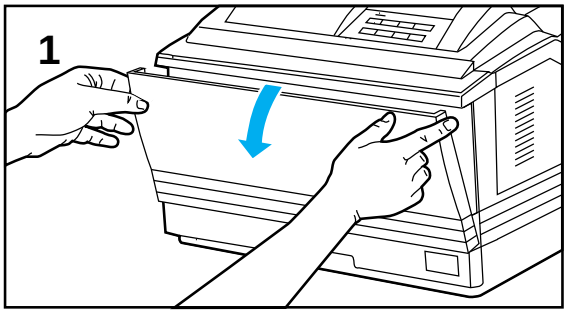
Item	Specifications
Quantity	1 envelope, maximum
Envelope Size	Dimensions
Commercial #10 (COM 10)	4.1 in x 9.5 in (105 mm x 241 mm)
#7 3/4 (Monarch)	3.8 in x 7.5 in (98 mm x 191 mm)
DL	109 mm x 218 mm (4.3 in x 8.6 in)
C5	163 mm x 231 mm (6.4 in x 9.1 in)
ISO B5	178 mm x 251 mm (7.0 in x 9.9 in)

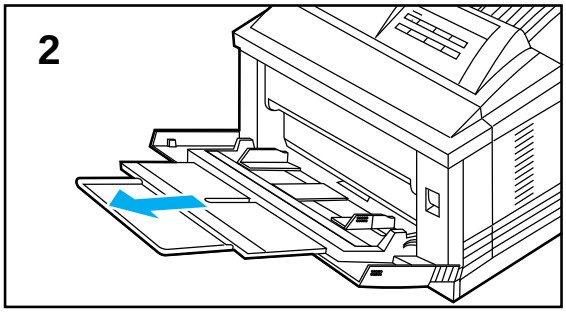
Caution

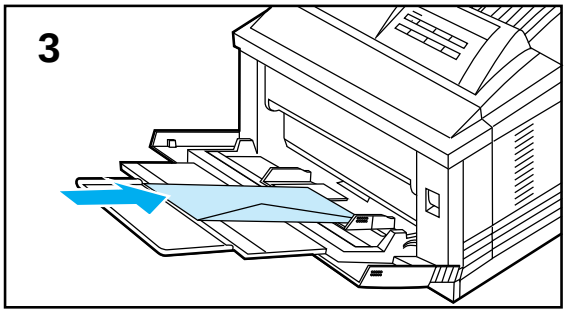
Never use envelopes with clasps, snaps, windows, coated linings, self-stick adhesives (peel and seal), or other synthetic materials. These items can severely damage your printer. Never try to print on both sides of an envelope. Jamming and printer damage can result.

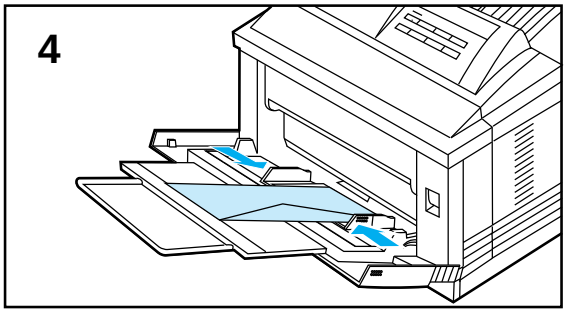
Before you load an envelope in the MP Tray, check to make sure it is regular in shape and undamaged. It's a good idea to run a pen or pencil down the leading edge to flatten it before you insert it in the MP Tray.

Loading an Envelope into the MP Tray









1 Open the MP Tray by grasping the door on the front of the printer, at the pattern of raised dots on each side.

Pull the tray down gently until it stops.

2 Pull out the tray extension if needed for the envelope size you are printing.

3 Gently slide one envelope in the tray between the paper width guides, with side-to-be-printed down, the back flap lying against the right paper guide.

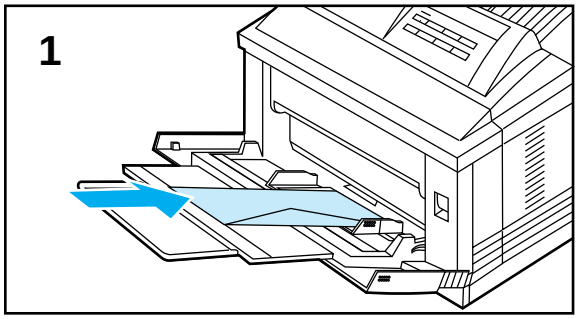
4 Slide paper width guides until they lightly touch both sides of the envelope without bending it.

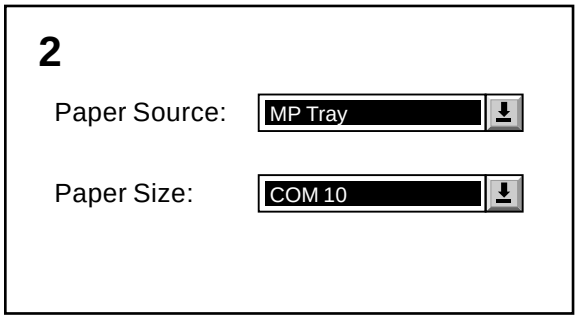
Send the envelope printing job to the printer.

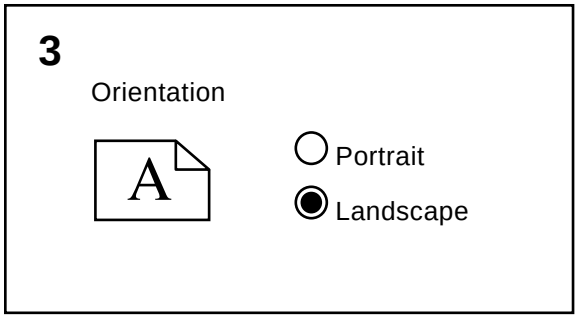
Note

The paper guide ensures that the envelope feeds correctly into the printer without jamming. An envelope must fit squarely and firmly between the paper width guides.

Printing an Envelope from a Software Application







1 Load an envelope into the MP Tray.

2 Specify MP Tray in your software application's printer setup and set the page-size setting to the appropriate envelope size, such as COM 10 or DL.

3 If your software does not automatically format an envelope, specify Landscape for page orientation in your software application's print setup.

Send the envelope printing job to the printer.

Caution

To avoid a printer jam, once you begin printing, do not remove the envelope and reinsert it.

To set margins for return and mailing address:

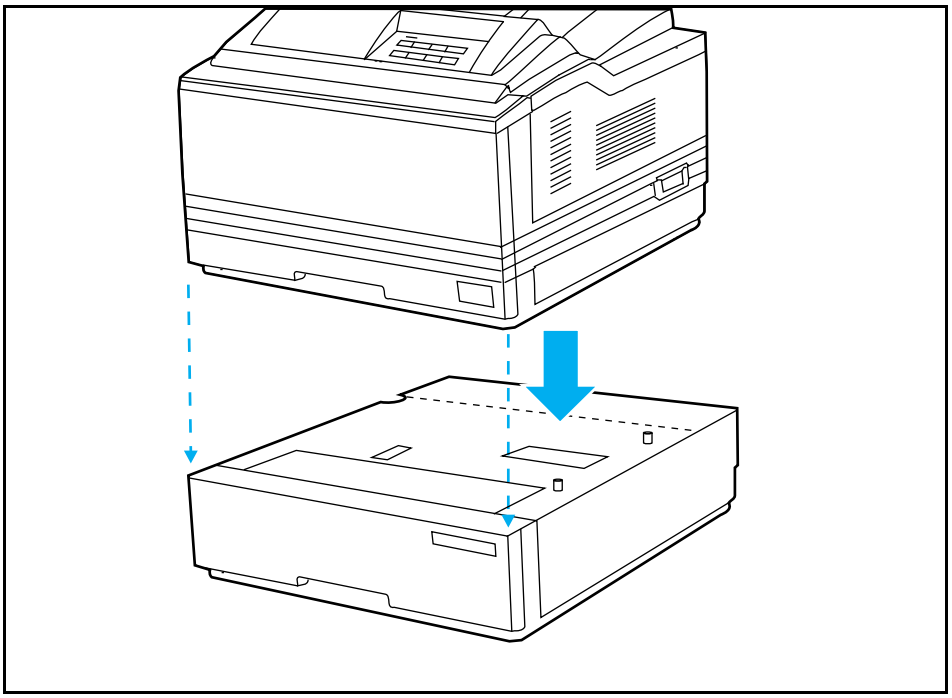
For best print quality, use the following table. It gives you typical address margins for a Commercial #10 or DL envelope. For envelopes of other sizes, adjust the margin settings until they please you. Try to avoid printing over the area where an envelope's three back flaps meet.

Type of Address	Left Margin	Top Margin
Return	0.5 in (15 mm)	0.5 in (15 mm)
Mail destination	4.0 in (85 mm)	2.0 in (51 mm)

Printing from the Optional 500-sheet Universal Lower Cassette

An optional 500-sheet Universal Lower Cassette is available for your printer. It consists of a base into which a paper cassette slides. Your printer rests on top of the Lower Cassette base.

Figure 3-4



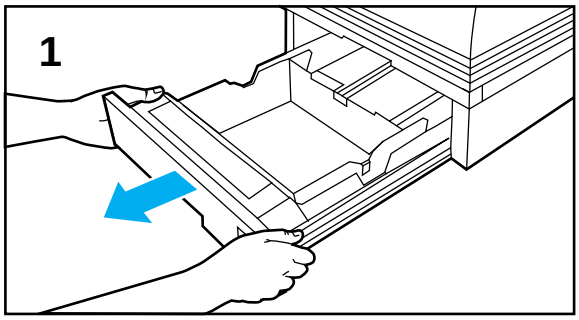
The Lower Cassette adjusts for Letter, legal, 11x17, A4, A3, and JIS B4 paper. The cassette holds approximately 500 sheets of 20 lb. (75 g/m^2) paper.

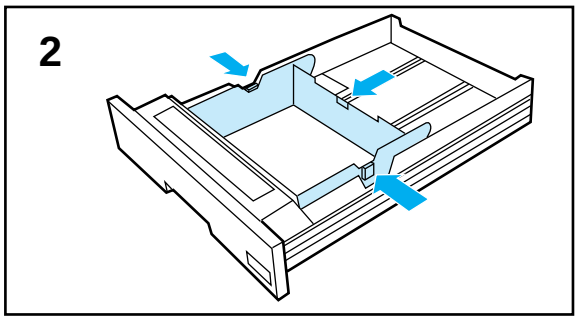
When a Lower Cassette is installed, by default the printer prints on media in the following order:

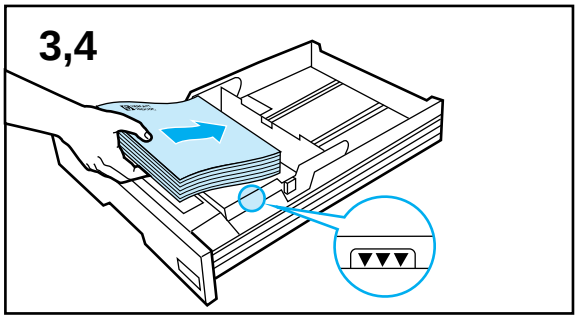
1 MP Tray **2** Lower Cassette **3** Paper Cassette

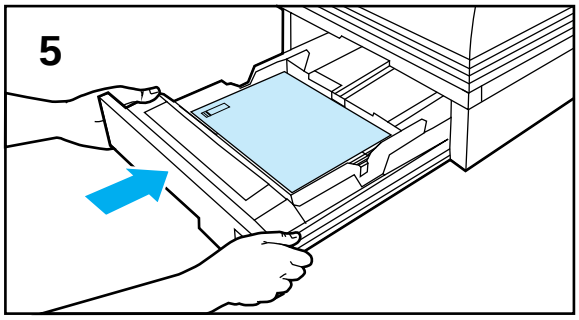
You can change the printing order by reconfiguring it through the printer control panel. For example, assume all paper sources contain the same size of paper. If you send a print request to the printer and the MP Tray is empty, the printer prints from the Lower Cassette unless you specify otherwise. If the Lower Cassette is also empty, the printer prints from the Paper Cassette.

Loading Paper into the Optional Lower Cassette









1 Pull the Lower Cassette out of the base.

2 Adjust the cassette for the paper size you want to load by moving the side paper guides and rear paper guide. **The rear guide must click in the correct position for the paper size you are printing.**

3 Slide approximately 500 sheets of paper into the cassette, not to extend beyond the limit mark on the sides.

Paper loading differs by size.

A. Load **Letter or A4** paper with the top of the page toward the left side of the Lower Cassette, side-to-be-printed up (shown in illustration 3).

B. Load **11x17, legal, A3, or JIS B4** paper with top of the page toward the front of the printer, side-to-be-printed up.

4 Press down on all four corners of the paper stack to ensure the paper rests flat in the cassette, without bending the paper.

The paper stack must be in contact with the front slanted wall of the Lower Cassette.

5 Slide the Lower Cassette back into the base.

Remember to adjust the paper stop guide on the output bin (see Figure 3-3).

Stopping a Print Request

You can stop a print request from your software application or from the printer's control panel. In either case, the printer prints the pages it received and stored in memory before you stopped the print request, then cancels the remainder.

If many requests have been sent to the printer through your software, they may be waiting in a print queue (Windows Print Manager, for example). See the instructions that came with your software for specific instructions on canceling a print request.

To stop a print request from the printer's control panel:

1 Press **On Line** to take the printer off-line.

The printer stops receiving data.

2 When the display reads `00 OFFLINE`, hold down **Shift** and press **Reset** until the display reads `07 RESET`. Any remaining pages in the printer's memory are cleared.

4

Understanding the Control Panel

Introduction

You can perform most routine printing tasks from your computer, through your software applications. Software is usually the most convenient way to control your printer. Many of the functions described in this chapter can also be performed using the software that came with your printer. Refer to Chapter 2, “Software for your Printer,” or the online help files associated with the software for more information.

The commands in your software override control panel settings. Use the control panel only to access printer features not supported by your software.

Some special tasks can only be performed from the printer’s control panel. (See Chapter 5, “Special Tasks.”)

If you use the PostScript language option, see Chapter 6, “PostScript Printing,” for additional information about the control panel.

Note for Windows and Macintosh Users

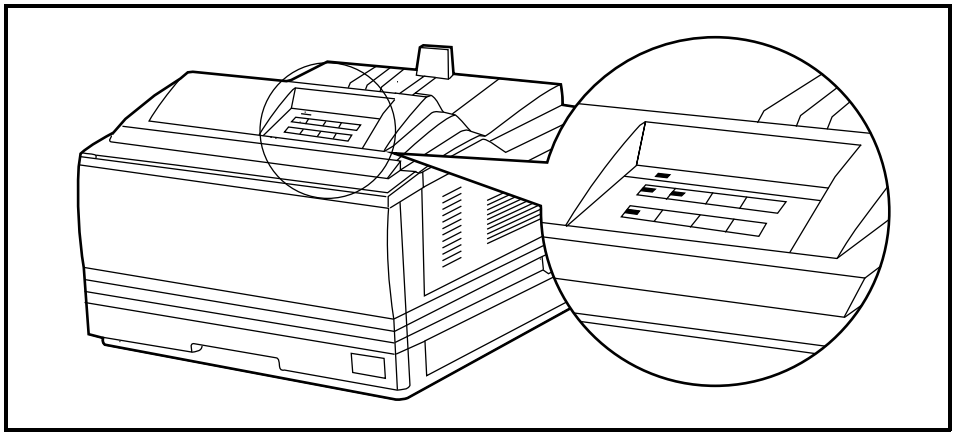
The following terms, which you know from the Windows and Macintosh interfaces, have different meanings in this user’s guide:

Control panel refers to the printer’s control panel, not to your computer screen. *Menu* refers to a control panel key, and to the menus of selectable items on the printer’s control panel that you reach by pressing this key, not to a menu you choose from your computer screen.

Control Panel Layout

The control panel consists of a 16-character display panel, three indicator lights, and eight keys, three of which have alternate functions.

Figure 4-1



Indicator Lights

The control panel's indicator lights are described in the following table. The column furthest to the right includes an action only when an action is required.

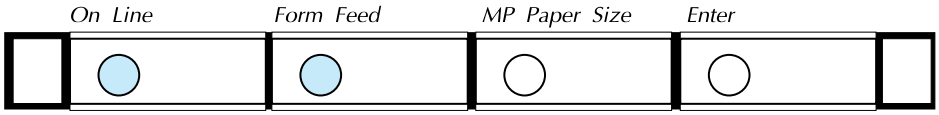
When this indicator:	Looks like this:	It means this:	Do this:
Ready	On Flashing Off	Ready to print. Print job in progress. Not ready to print.	 Let job finish printing. See display panel message.
On Line	On Flashing Off	Ready to receive data. Going off line. Printer is off line.	 Access other keys or press **On Line** to place printer back on line.
Form Feed	On Flashing Off	Data still in print buffer. Buffered data is printing. No buffered data in printer.	Take printer off line; press **Form Feed**; press **On Line** to place printer back on line.

Control Panel Keys

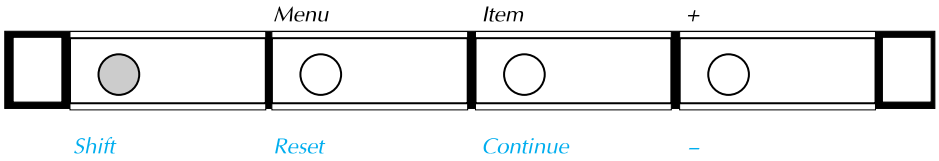
Note

You must take the printer off line (press **On Line** to do so) to use control panel keys, except for **MP Paper Size** and keys related to its operation.

The control panel has two rows of keys. Each key in the top row has a single function that you perform by pressing the key.



Three keys in the bottom row have more than one function. The name of each key's primary function appears above the key. To perform a key's primary function, press the key.



The name of each key's alternate function appears below the key. These alternate function names are color-coded to match the **Shift** key, which you must hold down to select an alternate function.

To select an alternate function:

- Hold down **Shift** and press the second-row key of your choice.

You can rapidly scroll through some selections by holding down the **+/-** key.

Table 4-1 explains how control panel keys work.

Table 4-1 Control Panel Keys

Key	Explanation
On Line	Switches the state of communication between computer and printer either on (on line) or off (off line). For the printer to receive data, both the On Line and Ready indicator lights must be lit.
Form Feed	Prints any data remaining in printer's buffer. Does *not* send a blank sheet of paper through the printer.
MP Paper Size	Only active when MP Tray is set to cassette (select `MP TRAY=CASS` in the Configuration Menu). Selects size of paper loaded in MP Tray. Pressing Enter saves your selection. (See Chapter 3 for more information about the MP Tray.)
Enter	Saves a control panel key setting you selected. An asterisk (*) appears next to the saved selection, indicating that it is the default. Default settings remain in place when the printer is switched off or reset.
Shift	Accesses alternate functions of bottom-row control panel keys, which are color coded to match it. Hold down while pressing an associated key.
Menu	Cycles through menus, returning to `00 OFFLINE` at the end of the cycle unless a problem is encountered. When an option is added to the printer (PostScript, for example), a menu for that option appears in the sequence. (See "Control Panel Menu" in this chapter.)
Reset (Shift + Reset)	Resets the printer (displays `07 RESET`). Clears the printer's buffer and makes the current control panel values the defaults. (See "The Menu of Resets" at the end of this chapter).
Item	Cycles through the selected menu's items. Menu items vary depending on options installed and configuration of other menu choices.
Continue (Shift + Continue)	Allows the printer to resume printing after a printer message (such as `20 MEM OVERFLOW`) has placed it off line. Clears most printer messages (such as manual feed requests) and places the printer back on line.
+ or -	Press + to step through a menu's items. Hold down + to scroll through items. Press or hold down - (Shift + -) to move through items in reverse order.

Settings and Defaults

The printer makes most printing decisions based on either temporary settings or permanent defaults.

Note Settings you send from software applications override printer defaults.

Table 4-2 Setting the Defaults

Setting or Default	Explanation
Temporary setting	A value set for the current print job by your software application. For example, a request from your software to print three copies instead of the control panel default value of one copy is a temporary setting. The printer continues to use the temporary setting until you send another software request or reset the printer.
Control panel default	A value you set at the control panel by selecting a menu item, then pressing Enter. An asterisk appears following the item's name to indicate that it is now the default. The printer retains this default when it is switched off.
Factory default	The value set for each menu item at the factory. Factory defaults are marked with an asterisk in the menu tables on the pages that follow.

Control Panel Menus

Pressing **Menu** gives you access to the menus, one after another. Each menu is described in a separate table in this section. When options (such as the PostScript language) are installed in the printer, new menus or menu items automatically appear in the appropriate menus.

Control Panel Menu Map

PRINTING MENU	PCL MENU	PS MENU	JOB MENU	CONFIG MENU	MEM CONFIG MENU*	PARALLEL MENU	TEST MENU
COPIES	FONT SOURCE	PRT PS ERRS	RESOLUTION	MP TRAY	IO BUFFER	HIGH SPEED	SELF TEST
PAPER [ENVELOPE]	FONT NUMBER	JAM RECOVER	PERSONALITY	LOCK	IO SIZE	ADV FNCTNS	CONT SELF TEST
ORIENTATION	PITCH or PT SIZE		PWR SAVE	CLR WARN	RESRCSAVE		PCL TYPEFACE LIST
FORM	SYM SET		IO TIMEOUT	AUTO CONT	PCL MEM		PCL DEMO PAGE
MANUAL FEED				LOW TONER	PS MEM		PS CONFIG PAGE
RET							PS TYPEFACE LIST
ECONOMODE							PS DEMO PAGE
You can change these menu items either from a software application or from the printer's control panel.				You can change these menu items only from the printer's control panel.			
Shaded items appear when the PostScript option is installed.							

* These items will appear if sufficient memory is available.
Additional menu items may appear if options are installed (such as MIO cards).

To select a menu item:

1. Press **On Line** to take the printer off line.
2. Press **Menu** repeatedly until the menu you want appears.
3. Press **Item** repeatedly until the item you want appears.
4. Press **+** repeatedly (or hold down **+** to scroll) until the setting you want appears.
5. Press **Enter** to save your selection. An asterisk appears next to your selection, indicating that it is now the default.
6. Press **On Line** to place the printer back on line.

Printing Menu

You can override or change any Printing Menu setting through most software applications. When you change a setting from the printer's control panel, the new setting becomes the printer's default value.

Table 4-3 Printing Menu Items

Item	Options	Explanation
COPIES	1* to 999	Select any number from 1 to 999.
PAPER	LETTER**, LEGAL, A4***, EXEC, 11x17, A3, JIS B4, JIS B5, CUSTOM COM10**, MONARCH, C5, DL***, B5, JPOST, JPOSTD	Sets default image size at which printer formats page unless a software setting overrides it.
ORIENTATION	P*, L	P means portrait (vertical) and L means landscape (horizontal) orientation of print on the page.
FORM	5 to 128 LINES (60** and 64***)	Sets vertical spacing, from 5 to 128 lines, for default paper size. Scrolls in increments of 1 line.
MANUAL FEED	OFF*, ON	Available only through MP Tray. When Manual Feed is on and the MP Tray is empty, the printer goes off line when it receives a print job and displays `MF FEED` *paper size* or `ME FEED` *envelope size*. When you place a sheet in the MP Tray, the printer goes back on line and prints the sheet.
RET	OFF, LIGHT, MEDIUM*, DARK	Refines print quality of characters and graphics by smoothing the fine gradations along the angles and curves of the printed image. (See "Enhancing Resolution" in Chapter 5.)
ECONOMODE	OFF*, ON	EconoMode substantially reduces the amount of toner on the printed page; the result is similar to draft mode on some dot matrix printers. (See "Saving Toner with EconoMode" in Chapter 5.)

*Factory default. **Factory default for 110V printers. ***Factory default for 220V printers.

PCL Menu

PCL Menu items allow you to choose the printer's default font and symbol set. Printer Control Language (PCL) is HP's printer language. You can also change such PCL Menu items as the FONT SOURCE through your software application.

Table 4-4 PCL Menu Items

Item	Options	Explanation
FONT SOURCE	I* S Mn	Internal fonts* Permanent soft fonts SIMM Module: n=slot number. Typefaces stored in one of the four ROM SIMM slots (M1=slot 1, for example).
FONT NUMBER	0 to 999	The printer assigns a number to each typeface and lists them on the PCL Typeface List, which you can print out. (See "Checking Installed PCL Fonts" in Chapter 5.) The font number appears in the Font # column of the printout. You must select a FONT SOURCE in order for FONT NUMBER to appear. Defaults and other conditions are as follows: I* 0* is the default. S 1* is the default. You can select from the control panel only a permanent soft font that is currently in the printer. Mn SIMM Module; n=SIMM slot (1-4). Typefaces stored in one of the four ROM SIMM slots (M1=slot 1, for example).
PITCH or PT. SIZE	Range Pitch: 10.00* Point: 12.00*	The pitch or point size item available depends on the FONT SOURCE and FONT NUMBER you select. Pitch: For fixed-pitch outline typefaces, select pitch sizes from .44 to 99.99. Point: For proportionally-spaced outline typefaces, select point sizes from 4.00 to 999.75 in .25-point increments.
SYM SET	ROMAN-8* Many others	A symbol set is a unique grouping of all the characters in a font. PC-8 or PC-850 is recommended for line draw characters. Symbol set charts appear in the *HP LaserJet Printer Technical Reference*.

*Factory default.

Job Menu

You can change Job Menu items through your software application if you have installed an appropriate printer driver.

Table 4-5 Job Menu Items

Item	Options	Explanation
RESOLUTION	300 or 600*	At 600 dpi (dots per inch), the printer might need as much as four times more memory to format a page than it needs at 300 dpi. For most purposes, 600 dpi is recommended.
PERSONALTY	AUTO* PCL PS	*Personality* means printer language. Your printer can switch from its standard personality, PCL, to other personalities, such as PostScript. When `PERSONALTY` is set to `AUTO`, the printer analyzes each print job it receives and switches personalities automatically. When you make another personality the default, the printer stops switching personalities automatically unless a software command specifically instructs it to do so. (See "Switching Printer Languages (Personalities)" in Chapter 5.) If you select PS as the default, you may want to set `ADV FNCTNS` in the Parallel Menu to `OFF`.
PWRSAVE	OFF, 15 MIN, 30 MIN*, 1 HR, 2 HRS, 3 HRS	Sets the amount of time the printer is idle before the fuser shuts down. The printer automatically starts warming the fuser when you send a print job to the printer, press a control panel key, load or remove paper, or open the top door. (See "Saving Energy with Power Save" in Chapter 5.)
IO TIMEOUT	5 to 300 15*	I/O timeout refers to the time, measured in seconds, that the printer waits before ending an incomplete print job. Scrolls in increments of 10. This setting allows you to adjust timeout for best performance. If data from other ports appear in the middle of your print job, increase the timeout value.
PAGEPROTCT	AUTO* ON	You will not see this item unless the error `21 PRINT OVERRUN` has occurred. (See Chapter 8, "Solving Printer Problems.")

*Factory default.

Configuration Menu

Configuration Menu items can be selected only from the printer's control panel. You cannot temporarily change them in your software application.

Table 4-6 Configuration Menu Items

Item	Options	Explanation
MP TRAY	FIRST*	Draws paper from the MP Tray regardless of paper size.. `MP TRAY=FIRST` is not recommended for shared environments.
	CASS	Operates as a paper cassette. Paper feeds automatically. Paper size must be selected with the **MP Paper Size** key because the MP Tray cannot sense the size of the paper. If the MP Tray is set as a cassette, the Paper Cassette (or Lower Cassette) becomes the default. The **MP Paper Size** key works only when the MP Tray is set to `CASS`.
	MANUAL	Operates only as a manual feed tray.
LOCK	NONE* MP PC LC and combinations	You can lock out a tray or a combination of trays so the printer will not draw paper from it. (See "Reserving Cassettes" in Chapter 3.) Lock-out options depend on how the MP Tray is configured and whether an optional 500-sheet Lower Cassette (LC) is installed. When the MP Tray is set to `MANUAL` or `FIRST` and no optional Lower Cassette is installed, no paper sources are available to be locked out. All possible options and their definitions are as follows: NONE — No trays or cassettes locked out. MP — The MP Tray is locked out. PC — The Paper Cassette is locked out. LC — The optional Lower Cassette is locked out. PC MP — Only the optional Lower Cassette is available. LC MP — Only the Paper Cassette is available. LC PC — Only the MP Tray is available.

*Factory default.

Table 4-6 Configuration Menu Items *(continued)*

Item	Options	Explanation
CLR WARN	ON*, JOB	A clearable warning indicates a transient condition in the printer. The printer continues to function because it is still on line. When `CLR WARN` is set to `ON`, the last clearable warning message displayed replaces `00 READY` until you press **Shift** + **Continue**. When this item is set to `JOB`, the message remains visible until the printer receives another job. A number of clearable warning messages can appear for each job to be printed, depending in the length and complexity of the job. (See “Clearable Warnings” in Chapter 8.)
AUTO CONT	OFF*, ON	The auto continue function determines how the printer reacts to data and printer errors. When auto continue is set to `OFF`, the printer displays a message and goes off line until you press **Shift** + **Continue**. When auto continue is set to `ON`, the printer displays a message and goes off line for about 10 seconds, then comes back on line. If your printer is part of a network or remote spooling system, set auto continue to `ON`.
LOW TONER	CONT*, STOP	Determines printer’s response to the message, `16 TONER LOW`, which indicates the printer senses the cartridge is running out of toner. When `LOW TONER=CONT`, the printer remains on line and continues to print after the `16 TONER LOW` message appears; print quality may degrade. When `TONER LOW=STOP`, the printer goes off line and waits for the printer operator to take action. (See “Clearing the TONER LOW Message” in Chapter 7.)

*Factory default.

Memory Configuration Menu

This menu contains the items for personality Resource Saving and I/O Buffering. Depending on how your printer's memory is configured, any combination of menu items and possible values can appear. See Chapter 6, "PostScript Printing" for additional information.

When you change an item in this menu, the printer automatically resets, and all fonts, macros and downloaded data in the printer are lost (except data stored on the optional PostScript Disk Accessory). Memory Configuration Menu items can be selected only from the printer's control panel.

Table 4-7 Memory Configuration Menu Items

Item	Options	Explanation
IO BUFFER	AUTO*, OFF, ON	The I/O buffer is a portion of the printer's memory set aside to hold incoming data. When this item is set to AUTO, the memory set aside for I/O buffering is automatically determined by the printer based on available memory. When it is set to ON, the size can be manually adjusted. When it is set to OFF, no memory is set aside. If you have a 4MV printer it was set to OFF at the factory. (See "How I/O Buffering Improves Performance" in Chapter 5.)
[IO SIZE]	10K and up	When IO BUFFER is set to ON, I/O SIZE appears in the menu. Use this item to add or reduce I/O buffer memory in increments of 10 KBytes up to 100 KBytes, then in 100 KByte increments.
RESRCSAVE	AUTO*, OFF, ON	This item appears when a certain amount of memory and a personality SIMM are installed in the printer. If it is set to AUTO, the printer automatically determines the amount of memory to allocate to installed personalities (languages). When it is set to ON, additional memory management item selections appear for each installed personality (see next item). When it is set to OFF, no memory is allocated and personality-dependent resources (such as fonts) are lost when personality changes. If you have a 4MV printer it was set to OFF at the factory. (See "How Your Printer Uses Memory" in Chapter 5.)

Parallel Menu

Parallel Menu items can be selected only from the printer's control panel. You cannot change or override them from your software application.

Table 4-8 Parallel Menu Items

Item	Options	Explanation
HIGH SPEED	YES*, NO	The speed at which data is transmitted to the printer. `YES` sets the Bi-tronics parallel interface to run at a higher data rate supported by newer computers. `NO` sets the Bi-tronics parallel interface to run at a slower speed compatible with older computers.
ADV FNCTNS	ON*, OFF	Choosing `ADV FNCTNS=ON` enables bi-directional parallel communication, which allows your printer to send status readback messages to your computer. Setting advance functions to `ON` may slow personality switching.

*Factory default.

Test Menu

Test Menu items can be selected only from the printer's control panel. You cannot change or override them from your software application. See "Testing Your Printer" in Chapter 5 for detailed information about running printer tests and interpreting their results. Additional information about test printouts appears in Chapter 6, "PostScript Printing."

Table 4-9 Test Menu Items

Item	Explanation
SELF TEST	When `SELF TEST` is displayed, and you press **Enter**, the printer runs a self test during which it displays the message `05 SELF TEST` and all control panel lights are lit. During the printing portion of the self test, the message `06 PRINTING TEST` is displayed. (See "Understanding the Self Test Printout," in Chapter 5.)
CONT SELF TEST (Continuous Self Test)	Prints continuous self-test pages until you press **On Line** or **Shift** + **Continue**. Then the `04` portion of the display blinks and several more pages print until the buffer clears. Press **On Line** when pages stop printing.
PCL TYPE LIST	Prints a list of the typefaces and bitmapped fonts currently available in your printer (both internal and accessory) for PCL print jobs. (See "Understanding the PCL Typeface List Printout," in Chapter 5.)
PCL DEMO PAGE	Prints a page that illustrates the printer's features.

Menu of Resets

Additional reset options are available through the Menu of Resets. You can lose buffered page data or printer configuration data when you select this option. Use it only in the following circumstances:

- You want to restore the default printer settings.
- Communication between the printer and computer is interrupted.
- You are using both the Bi-Tronics parallel I/O port and MIO ports, and one of the ports is not working properly.

To access the Menu of Resets:

1 Press **On Line** to take the printer off line.

2 Hold down both **Shift** and **Reset** for at least 10 seconds until `RESET=MENU*` appears on the display.

3 Use **+** or **Shift** + **-** to cycle through the items.

4 Press **Enter** to select your choice of resets.

5 Press **On Line** to execute the reset.

The following table shows the three reset options:

Menu of Resets

Option Selected	Printer Response	Explanation
`RESET=MENU`	`09 MENU RESET`	`RESET=MENU` restores most of the printer's factory default settings. It also performs a reset. Items in the Config, Memory Configuration and Parallel Menus are not reset. `RESET=MENU` clears only the active input buffer.
`RESET=ACTIVE I/O`	`09 RST ACTIVE I/O`	`RESET=ACTIVE I/O` clears the input and output buffers for the active I/O only and performs a simple reset.
`RESET=ALL I/O`	`09 RESET ALL I/O`	`RESET=ALL I/O` clears the input and output buffers for all I/Os and performs a simple reset.

5

Special Tasks

Introduction

This chapter explains special tasks you perform occasionally to adjust your printer, manage its memory, and fine-tune print quality using the printer's control panel. Many of these functions can also be performed using the software that came with your printer. Refer to Chapter 2, "Software for your Printer," or the online help files associated with the software for more information.

For more information about the printer's control panel, see Chapter 4, "Understanding the Control Panel."

Chapter 6, "PostScript Printing," describes special tasks you perform differently when you print with Adobe's PostScript language.

This chapter explains how to perform the following special tasks:

- Switching printer languages (personalities)
- Printing a test page
- Printing a list of PCL typefaces
- Determining how much memory you need
- Choosing print resolution
- Fine-tuning print quality
- Saving toner with EconoMode
- Saving energy with Power Save

Switching Printer Languages (Personalities)

If more than one printer language is installed, by default your printer is set to switch automatically between languages as it receives printing jobs. For example, if you have a HP LaserJet 4M printer, you can send jobs to the printer in either Hewlett-Packard's PCL or Adobe's PostScript language documents without making special control panel settings.

In your printer's control panel, printer languages are referred to as *personalities*.

Note

Normally you should not change the printer's personality setting from AUTO, the default. If you do change it to a specific printer language (PCL or PS), the printer will not automatically switch from one language to another unless software commands are sent to the printer.

To change the printer's personality setting:

1. Press **On Line** to take the printer off line.
2. Press **Menu** until JOB MENU appears.
3. Press **Item** until PERSONALTY=*setting* appears.
4. Press **+** or **Shift** + **-** until the setting you want appears.
5. Press **Enter** to save your selection. An asterisk (*) appears next to your selection.
6. Press **On Line** to place the printer back on line.

Testing Your Printer

Using the printer's control panel, you can run the following tests to get information about your printer's current settings, options, and print quality. (If PostScript is installed, you can also print three PostScript tests. See Chapter 6, "PostScript Printing," for more information.)

- Self Test
- Continuous Self Test

When you run a self test, the printer checks its internal controller and I/O interface, then prints a test page. You can review the self test printout to verify proper installation of such options as paper trays or personalities. You can also use the self test printout to view current print density and Resolution Enhancement settings and harmonize them.

Printing a Test Page

You print all test pages from the printer control panel's Test Menu.

To print a test page:

1 Press **On Line** to take the printer off line.

2 Press **Menu** until `TEST MENU` appears.

3 Press **Item** until the test you want to print appears.

4 Press **Enter** to print the test.

5 Press **On Line** to place the printer back on line.

Note

When you select `CONT SELF TEST`, the printer prints self test pages continuously until you press **Shift** + **Continue** or **On Line**.

Understanding the Self Test Printout

Figure 5-1 is a sample self test printout. Numbers in the sample printout match numbers in the key to the printout on the following page. The appearance of the self test printout varies depending on the options currently installed in your printer.

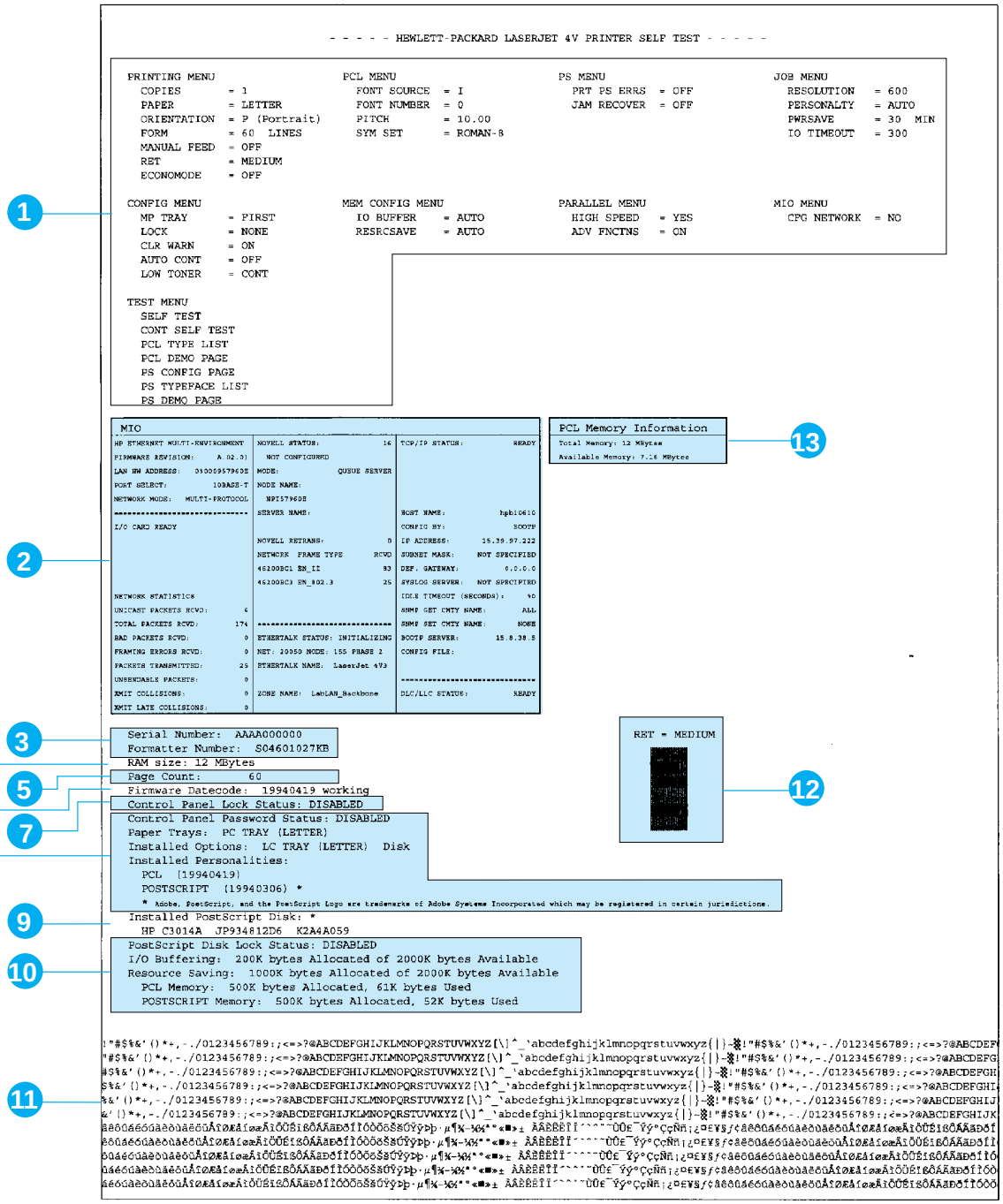

- - - - - HEWLETT-PACKARD LASERJET 4V PRINTER SELF TEST - - - - -
PRINTING MENU
COPIES = 1
PAPER = LETTER
ORIENTATION = P (Portrait)
FORM = 60 LINES
MANUAL FEED = OFF
RET = MEDIUM
ECONOMODE = OFF
PCL MENU
FONT SOURCE = I
FONT NUMBER = 0
PITCH = 10.00
SYM SET = ROMAN-8
PS MENU
PRT PS ERRS = OFF
JAM RECOVER = OFF
JOB MENU
RESOLUTION = 600
PERSONALTY = AUTO
PWRSAVE = 30 MIN
IO TIMEOUT = 300
CONFIG MENU
MP TRAY = FIRST
LOCK = NONE
CLR WARN = ON
AUTO CONT = OFF
LOW TONER = CONT
MEM CONFIG MENU
IO BUFFER = AUTO
RESRCSAVE = AUTO
PARALLEL MENU
HIGH SPEED = YES
ADV FNCTNS = ON
MIO MENU
CFG NETWORK = NO
TEST MENU
SELF TEST
CONT SELF TEST
PCL TYPE LIST
PCL DEMO PAGE
PS CONFIG PAGE
PS TYPEFACE LIST
PS DEMO PAGE
MIO
HP ETHERNET MULTI-ENVIRONMENT
FIRMWARE REVISION: A.02.30
LAN HW ADDRESS: 0X000957960E
PORT SELECT: 10BASE-T
NETWORK MODE: MULTI-PROTOCOL
I/O CARD READY
NETWORK STATISTICS
UNICAST PACKETS RCVD: 6
TOTAL PACKETS RCVD: 174
BAD PACKETS RCVD: 0
FRAMING ERRORS RCVD: 0
PACKETS TRANSMITTED: 25
UNSENDABLE PACKETS: 0
XMIT COLLISIONS: 0
XMIT LATE COLLISIONS: 0
NOVELL STATUS: 16
NOT CONFIGURED
MODE: QUEUE SERVER
NODE NAME:
NPI57960E
SERVER NAME:
NOVELL RETRANS: 0
NETWORK FRAME TYPE RCVD
46200BC1 EN_II 93
46200BC1 EN_802.3 25
ETHERTALK STATUS: INITIALIZING
NET: 20050 NODE: 155 PHASE 2
ETHERTALK NAME: LaserJet 4V3
ZONE NAME: LabLAN_Backbone
TCP/IP STATUS: READY
HOST NAME: hpb10610
CONFIG BY: DOCTP
IP ADDRESS: 15.39.97.222
SUBNET MASK: NOT SPECIFIED
DEF. GATEWAY: 0.0.0.0
SYSLOG SERVER: NOT SPECIFIED
IDLE TIMEOUT (SECONDS): 90
SNMP GET CMTY NAME: ALL
SNMP SET CMTY NAME: NONE
BOOTP SERVER: 15.8.38.5
CONFIG FILE:
DLC/LLC STATUS: READY
PCL Memory Information
Total Memory: 12 MBytes
Available Memory: 7.16 MBytes
Serial Number: AAAA000000
Formatter Number: S04601027KB
RAM size: 12 MBytes
Page Count: 60
Firmware Datecode: 19940419 working
Control Panel Lock Status: DISABLED
Control Panel Password Status: DISABLED
Paper Trays: PC TRAY (LETTER)
Installed Options: LC TRAY (LETTER) Disk
Installed Personalities:
PCL (19940419)
POSTSCRIPT (19940306) *
* Adobe, PostScript, and the PostScript Logo are trademarks of Adobe Systems Incorporated which may be registered in certain jurisdictions.
Installed PostScript Disk: *
HP C3014A JP934812D6 K2A4A059
PostScript Disk Lock Status: DISABLED
I/O Buffering: 200K bytes Allocated of 2000K bytes Available
Resource Saving: 1000K bytes Allocated of 2000K bytes Available
PCL Memory: 500K bytes Allocated, 61K bytes Used
POSTSCRIPT Memory: 500K bytes Allocated, 52K bytes Used
RET = MEDIUM
1
2
3
4
5
6
7
8
9
10
11
12
13

Figure 5-1

Item	Key to Figure 5-1
1	**Menu selections:** Lists selections in the order in which they appear in the control panel display. Also includes options such as PostScript and Modular I/Os.
2	**MIO information:** Reserved for MIO and network statistics. For some installed MIO options, this block of information can be as long as 20 lines and three columns.
3	**Serial Number and Formatter Number:** Shows version number of internal code.
4	**RAM size:** Shows total installed printer memory.
5	**Page Count:** Shows the number of pages the printer has printed.
6	**Firmware Datecode:** Eight-digit date (YYYYMMDD) and version number of formatter code.
7	**Control Panel options status:** Shows status of control panel Lock and Password functions.
8	**Other installed options:** Lists optional paper trays, personalities, and other installed options.
9	**PostScript Disk:** Appears when the option is installed and displays access status.
10	**I/O Buffering and Resource Saving:** Information about the current configuration appears here. If the printer does not have enough memory installed to enable I/O Buffering or Resource Saving, the amount of additional memory needed appears here.
11	**Print Pattern:** Illustrates print density and quality.
12	**Resolution Enhancement:** When resolution is set to 600 dpi, the REt block appears here. The REt block illustrates current resolution enhancement. (See “Fine-Tuning Print Quality,” in this chapter).
13	**PCL Memory Information:** Shows the total amount of installed memory. Also indicates the amount of available memory for PCL applications (such as font downloading software).

Checking Installed PCL Fonts

Your HP LaserJet printer comes with 45 scalable typefaces (35 Intellifont and 10 TrueType internal scalable typefaces) and one bitmapped Line Printer font. You can find out which PCL fonts are currently installed in your printer by printing a PCL Typeface List.

You can also print a PostScript Typeface List. See Chapter 6, “PostScript Printing,” for more information.

The typeface list printout shows the standard PCL typefaces and fonts, optional SIMM-based fonts and permanent soft fonts. Permanent soft fonts are downloaded soft fonts that stay resident in the printer until you download other fonts to replace them, or until you turn the printer off.

To print a PCL Typeface List:

Follow the steps shown on page 5-3, selecting `PCL TYPE LIST` in step 3.

Understanding the PCL Typeface List Printout

Figure 5-2 is the first page of a sample PCL Typeface List. Numbers in the sample typeface list match numbers in the key to Figure 5-2 shown below.

See Appendix A, “Common PCL Printer Commands,” for step-by-step instructions on using printer commands to select a font in DOS applications.

Item	Key to Figure 5-2
1	**Typeface** is the name of the typeface.
2	**Pitch/Point** indicates the specified pitch or point size of the font. “Scale” indicates a scalable typeface.
3	**Escape Sequence** (a PCL programming command) is used to select the designated font.
4	**Font #** is the number you use to select internal or downloaded soft fonts from the control panel. (Do not confuse the font *number* with the soft font *ID*, described next.) The letter preceding the font number shows the source of the font (I means *Internal,* and S means *Permanent* soft font, and M means *SIMM*) (slot number follows).
5	**Font ID** is the number *you assign* to soft fonts when you download them through your software.

HEWLETT PACKARD

HP LaserJet 4V Printer
PCL Typeface List

1 2 3 4 5

Internal Scalable Typefaces and Bitmapped Fonts

Typeface	Pitch/Point	Escape Sequence	Font #	Font ID
Courier	Scale	<esc>(□<esc>(s0p▒h0s0b4099T	I 000	
CG Times	Scale	<esc>(□<esc>(s1p▒v0s0b4101T	I 001	
CG Times Bold	Scale	<esc>(□<esc>(s1p▒v0s3b4101T	I 002	
CG Times Italic	Scale	<esc>(□<esc>(s1p▒v1s0b4101T	I 003	
CG Times Bold Italic	Scale	<esc>(□<esc>(s1p▒v1s3b4101T	I 004	
CG Omega	Scale	<esc>(□<esc>(s1p▒v0s0b4113T	I 005	
CG Omega Bold	Scale	<esc>(□<esc>(s1p▒v0s3b4113T	I 006	
CG Omega Italic	Scale	<esc>(□<esc>(s1p▒v1s0b4113T	I 007	
CG Omega Bold Italic	Scale	<esc>(□<esc>(s1p▒v1s3b4113T	I 008	
Coronet	Scale	<esc>(□<esc>(s1p▒v1s0b4116T	I 009	
Clarendon Condensed	Scale	<esc>(□<esc>(s1p▒v4s3b4140T	I 010	
Univers Medium	Scale	<esc>(□<esc>(s1p▒v0s0b4148T	I 011	
Univers Bold	Scale	<esc>(□<esc>(s1p▒v0s3b4148T	I 012	
Univers Medium Italic	Scale	<esc>(□<esc>(s1p▒v1s0b4148T	I 013	
Univers Bold Italic	Scale	<esc>(□<esc>(s1p▒v1s3b4148T	I 014	
Univers Medium Condensed	Scale	<esc>(□<esc>(s1p▒v4s0b4148T	I 015	
Univers Bold Condensed	Scale	<esc>(□<esc>(s1p▒v4s3b4148T	I 016	
Univers Medium Condensed Italic	Scale	<esc>(□<esc>(s1p▒v5s0b4148T	I 017	
Univers Bold Condensed Italic	Scale	<esc>(□<esc>(s1p▒v5s3b4148T	I 018	
Antique Olive	Scale	<esc>(□<esc>(s1p▒v0s0b4168T	I 019	
Antique Olive Bold	Scale	<esc>(□<esc>(s1p▒v0s3b4168T	I 020	
Antique Olive Italic	Scale	<esc>(□<esc>(s1p▒v1s0b4168T	I 021	
Garamond Antiqua	Scale	<esc>(□<esc>(s1p▒v0s0b4197T	I 022	
Garamond Halbfett	Scale	<esc>(□<esc>(s1p▒v0s3b4197T	I 023	

▒Pitch: .10 - 576 □Symbol set ▒Point size: .25 - 999.75
See your HP LaserJet 4V Printer User's Manual for more information.

Figure 5-2

How Much Memory Do You Need?

The amount of memory you need depends on how you use your printer. Your HP LaserJet 4V printer, which contains only the PCL language, comes with 4 MBytes of internal memory. The PCL printer language is compact and efficient, so you can print most text and graphics at 300 or 600 dpi without adding memory to your printer.

You might want to add memory to your printer if you commonly print complex graphics, use many downloaded typefaces, print complex documents or you want to use advanced functions (such as I/O Buffering and Resource Saving). For the HP LaserJet 4V printer, you can add up to 64 MBytes of memory for a total of 68 MBytes.

Your HP LaserJet 4MV printer comes with 4 MBtyes of internal memory, and a pre-installed 8 MByte memory SIMM for a total of 12 MBytes. You can add up to 32 MBytes of additional memory.

For storage of downloaded fonts, an optional 42.8 MByte PostScript Disk Accessory is available. See Chapter 6, “PostScript Printing,” for more information about PostScript printing.

Note

To find out how much memory is installed in your printer, print a self test. See “Printing a Test Page,” earlier in this chapter, for more information.

How Your Printer Uses Memory

The printer's memory receives, holds, and processes data from incoming print jobs and manages downloaded resources. Resources include PCL soft fonts, symbol sets, macros, and patterns, and (when the PostScript option is installed) PostScript fonts, forms, and patterns.

Keeping Downloaded Resources in Memory

When only the PCL personality is installed, the printer uses all available memory to maintain downloaded resources. When two or more personalities are installed, the printer reserves a portion of memory for each personality's resources. This feature is called Resource Saving. It enables the printer to keep downloaded resources in memory under most conditions.

Resource Saving in PCL-Only Printers

In a PCL-only printer, available memory is automatically allocated to keep downloaded resources in memory. When you add memory to the printer, more memory automatically becomes available for Resource Saving. You need not change the amount of memory available for Resource Saving in a PCL-only printer.

Resource Saving in PCL and PostScript Printers

When the PostScript option is installed, Resource Saving automatically becomes available when sufficient memory is installed. By default, the printer automatically allocates resources to each printer personality, depending on the amount of memory each personality needs. Most users will not need to customize the printer's Resource Saving configuration, but you *can* change the amount of memory allocated to each printer personality.

If you download a large number of PostScript fonts, consider ordering the optional 42.8 MByte PostScript Disk Accessory.

You may want to change the amount of memory allocated if you download an unusually large number of fonts, or if your printer is in a shared environment. These instructions do not pertain to fonts downloaded to the optional PostScript Disk Accessory.

To determine how much memory to allocate to a personality:

1. Press **On Line** to take the printer off line, then press **Menu** until `MEM CONFIG MENU` appears.
2. Press **Item** until `RESRCSAVE` appears, then press **+** until `ON` appears. Press **Enter** to save your selection. An asterisk (*) appears.
3. Press **Item** until either `PS MEM` or `PCL MEM` appears. Choose the personality you want.
4. Hold down **+** until the highest value is displayed. This amount varies depending on how much memory is installed in the printer. Press **Enter** to save your selection. An asterisk (*) appears. Press **On Line** to return the printer on line.
5. Using your software package, download all the fonts you want to use in the printer personality you selected.
6. Print a PCL self test (see "Printing a Test Page" earlier in this chapter). The amount of memory the fonts use is listed next to the personality. Round up this figure to the nearest 100 KBytes. For example, if the self test shows that 475 KBytes are used, 500 KBytes should be reserved.
7. Press **On Line** to take the printer off line, then press **Menu** until `MEM CONFIG MENU` appears.
8. Press **Item** until either `PCL MEM` or `PS MEM` appears, then press **+** or **Shift** + **-** until the number you determined in Step 6 appears.
9. Press **Enter** to save your selection. An asterisk (*) appears.
10. Press **On Line** to return the printer on line.

Note

All downloaded resources are deleted when you change the Resource Saving setting. Download your fonts again.

How I/O Buffering Improves Performance

When you send a job to the printer, you can get back to work more quickly after you press Print from a software program because your printer automatically reserves a portion of its memory, an I/O buffer, to hold jobs in progress.

In most cases, it is to your advantage to let the printer automatically reserve memory for I/O buffering. See "Memory Configuration Menu" in Chapter 4 for information about changing this setting.

For each MByte of memory you add to your printer, 100 KBytes will automatically be reserved to hold print jobs in progress. This feature, called I/O Buffering, and works like a print spooler. The printer's memory holds the job while it prints, freeing up your system so you can get back to work.

Note

When you change the IO BUFFER setting, all downloaded resources are deleted, unless they are stored on the optional PostScript Disk Accessory.

Choosing Print Resolution

You can select 300 or 600 dpi (dots per inch) from the RESOLUTION item in the Job Menu (see Chapter 4). Your printer offers greatly improved print quality at 600 dpi. To take best advantage of 600-dpi printing, use software printer drivers designed for your printer.

Note

When you change the RESOLUTION setting, all downloaded resources are deleted, unless they are stored on the optional PostScript Disk Accessory.

Fine-Tuning Print Quality

You can fine-tune the quality of your printer's output by adjusting print density and setting Resolution Enhancement technology (REt). Print density and REt settings work together, so it is likely that when you adjust one, you will want to adjust the other. To do so most effectively, see "Harmonizing Print Density and REt Settings," at the end of this section.

Adjusting Print Density

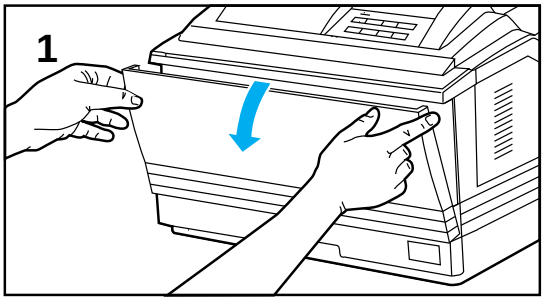
Print density is a measure of the darkness of print on the page. Print density adjustments are made using the print density dial. The printer is shipped with the dial in the center position.

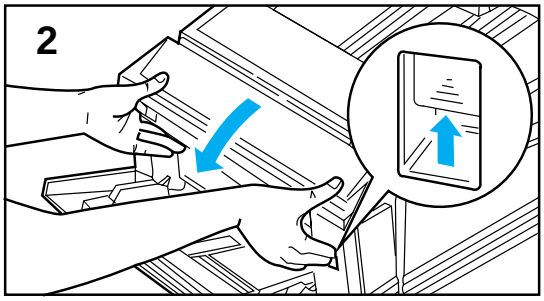
Note

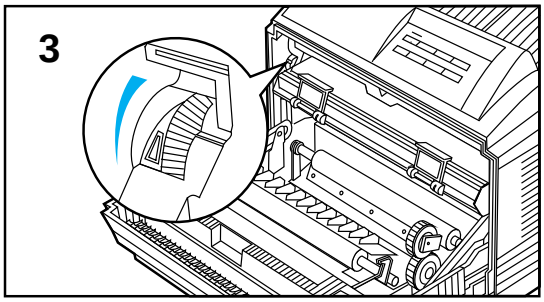
Print density is affected by the Resolution Enhancement setting you select. The new print density setting stabilizes after you print about 20 pages.

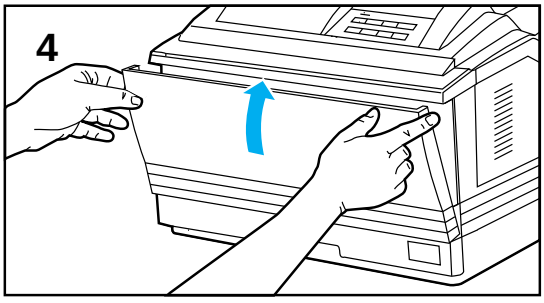
The higher the print density setting, the more toner the printer uses. To extend the life of your toner cartridge, choose lighter print density settings.

The steps to adjust print density are on the next page.









To Adjust Print Density

You can change the print density using the printer's density dial by following these steps:

Warning

The fusing assembly gets HOT. Do not touch the fusing assembly.

1. Using both hands, open the MP Tray by grasping the door on the front of the printer, at the pattern of raised dots on each side. If the MP Tray is open, remove any paper.
2. Push up the front cover release button and gently pull open the front cover.
3. The density dial is located at the upper left corner of the printer. Move the dial forward (toward you) to increase the density or backward (away from you) to reduce the density. The factory default is set at the center or mid-range.
4. Using both hands, gently close the front cover and, unless you want to use it, close the MP Tray.

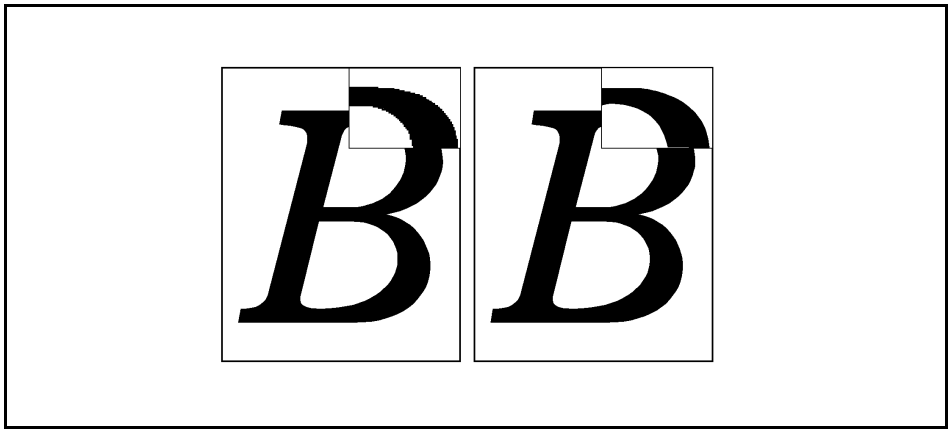
Note

It may take printing up to 20 pages for the new print density setting to stabilize.

Enhancing Resolution

Resolution Enhancement technology (REt) refines the print quality of characters and graphics by smoothing the fine gradations along the angles and curves of the printed image. Figure 5-3 shows two magnified images: the left one shows REt set to OFF; the right one shows it set to MEDIUM, the default. You can also select LIGHT or DARK.

Figure 5-3



To adjust REt:

You can change this setting using the software that came with your printer (see software and online help) or through the printer's control panel by following these steps:

1 Press **On Line** to take the printer off line.

2 Press **Menu** until PRINTING MENU appears.

3 Press **Item** until RET=*setting* appears.

4 Press **+** or **Shift** + **-** until the setting you want appears.

5 Press **Enter** to save your selection. An asterisk (*) appears next to your selection.

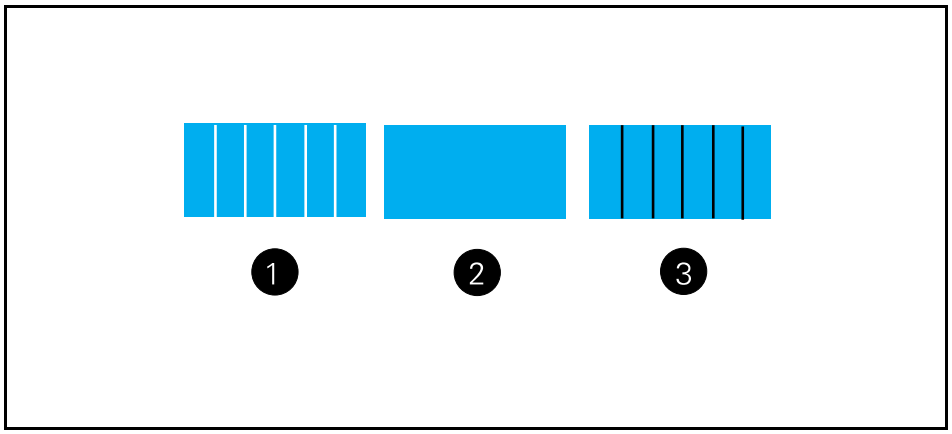
6 Press **On Line** to place the printer back on line.

Checking the Effect of an REt Setting

You can check the effect of a REt setting by printing a self test at 600 dpi and examining the Resolution Enhancement block on the printout (see Figure 5-1, Item 12). The Resolution Enhancement block does not appear on self test printouts printed at 300 dpi.

Figure 5-4 illustrates three REt settings. Set REt so that the REt block is a uniform gray with no vertical lines (see Image 2 below). Image 1 is too light and Image 3 is too dark.

Figure 5-4



Harmonizing Print Density and REt Settings

Because print density and REt settings affect each other, it is wise to adjust them at the same time.

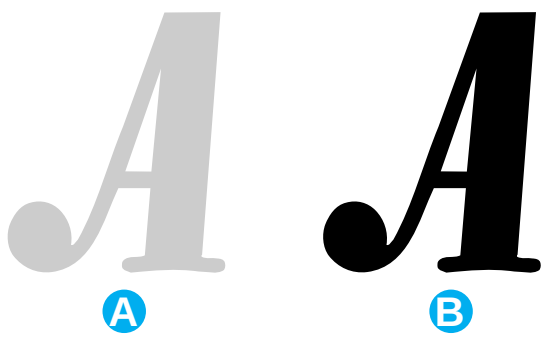
To harmonize print density and REt settings:

1. Make sure printer resolution is set to 600 dpi.
2. Adjust the print density dial. (The center default position usually produces a uniform gray REt block on the self test printout.)
3. Print a self test and examine the Resolution Enhancement block.
4. Set REt to produce a block as close to a uniform gray as possible, as shown in Image 2 of Figure 5-4.

Saving Toner with EconoMode

EconoMode lowers printing costs by reducing the amount of toner on the printed page. We recommend EconoMode for draft copy only due to substantial reduction of print quality. When set to ON, the printed image is lighter (like A, below), but still readable. (B, below represents the default OFF setting.)

Figure 5-5



To turn on EconoMode:

You can change this setting using the software that came with your printer (see software and online helps) or through the printer's control panel by following these steps:

1. Press **On Line** to take the printer off line.
2. Press **Menu** until PRINTING MENU appears.
3. Press **Item** until ECONOMODE=OFF appears.
4. Press **+** to select ECONOMODE=ON.
5. Press **Enter** to save your selection. An asterisk (*) appears next to your selection.
6. Press **On Line** to place the printer back on line.

Note

HP does not recommend full-time use of EconoMode. Full-time use will result in a loss of print quality due to normal toner cartridge mechanical wear.

Saving Energy with Power Save

To reduce the amount of power it consumes, your printer has an adjustable Power Save feature. Power Save shuts down the printer's fuser after the printer has been idle for a specified amount of time.

The Power Save feature is both adjustable and optional. You can set Power Save to start after the printer has been idle for 15 minutes, 30 minutes, 1 hour, 2 hours, or 3 hours, or you can turn Power Save off. By default, Power Save is set to ON. and the amount of idle time is set to 30 minutes.

When the printer is in Power Save mode, the printer's control panel displays the message `00 POWERSAVE`, which replaces messages on the control panel (such as `00 READY` or `00 OFF LINE`).

Note

Error messages override the Power Save message. When an error condition is present, the printer displays the error message. At the appropriate time, the printer goes into Power Save, but the error message continues to be displayed.

The printer automatically warms up when you send a print job to the printer, press a control panel key, load or remove paper, or open the front cover.

To change the Power Save setting:

You can change this setting using the software that came with your printer (see software and online helps) or through the printer's control panel by following these steps:

1. Press **On Line** to take the printer off line.
2. Press **Menu** until `JOB MENU` appears.
3. Press **Item** until `PWRSAVE=`*setting* appears.
4. Press **+** until the setting you want appears.
5. Press **Enter** to save your selection. An asterisk (*) appears next to your selection.
6. Press **On Line** to place the printer back on line.

6

PostScript Printing

Introduction

Adobe's PostScript language is available as an option for the HP LaserJet 4V printer and is standard with the HP LaserJet 4MV printer. This is genuine Adobe PostScript Level 2 software and it is backward compatible with earlier versions.

Chapters 4 and 5 focus on using your printer with Hewlett-Packard's PCL language. You perform some tasks differently when you print with Adobe's PostScript language.

This chapter describes differences the PostScript option makes in how your printer works and shows you the following:

- Using the right printer driver
- Control panel differences
- Test Menu items
- PostScript Disk Accessory

Printer functions not included in this chapter work the same as described in other chapters of this manual.

Note for Macintosh and Windows Users

The following terms, which you know from the Macintosh and Windows interfaces, have different meanings in this user's guide:

Control panel refers to the printer's control panel, not to your computer screen. *Menu* refers to a control panel key, and to the menus of selectable items on the printer's control panel that you reach by pressing this key, not to a menu you choose from your screen.

Using the Right Printer Driver

This chapter assumes you have an HP LaserJet 4MV printer or that you have added the PostScript language SIMM to your HP LaserJet 4V printer. To print in Adobe's PostScript language you also need the right printer driver for your software.

Printer Drivers for Macintosh

The HP LaserJet 4MV printer and HP JetDirect network cards come with a printer driver for Macintosh computers, bitmapped screen fonts and the HP LaserJet Utility and Guide.

Printer Drivers for Windows

To make full use of your printer's features, you must use the PostScript printer driver that came with your printer.

Printer Drivers for DOS Applications

For DOS applications, you must select a PostScript language printer driver from within your software application. If your software does not include a PostScript language printer driver selection, it may not support PostScript printing. For more information on selecting and installing a DOS PostScript printer driver, see your software documentation or contact your software vendor.

How Much Memory Do You Need?

The HP LaserJet 4MV printer comes with 4 MBytes of internal memory and an 8 MByte SIMM for a total of 12 MBytes of memory. If you have the HP LaserJet 4V printer and are adding PostScript, we recommend that you install at least 8 MBytes of additional memory and turn I/O Buffering and Resource Saving to OFF at the control panel.

To use I/O Buffering and Resource Saving, we recommend adding additional memory beyond 12 MBytes.

Control Panel Differences

As explained in Chapter 4, “Understanding the Control Panel,” pressing **Menu** gives you access to menus, one after another. Most menu items apply to all installed personalities (languages) and are the same as described in Chapter 4. Only those that specifically apply to PostScript are described in this chapter.

The menu map on the next page shows you the placement of PostScript-specific items in the control panel system of menus.

How Form Feed and Reset Work

Most indicator lights and control panel keys work the same way in PCL and in PostScript languages. **Form Feed** and **Reset** work differently. The differences in PostScript are as follows:

- Pressing **Form Feed** does not send a page through the printer.
- Pressing **Shift** + **Reset** removes all downloaded data, including fonts and forms (except those stored on the optional PostScript Disk Accessory.).

Control Panel Menu Map

PRINTING MENU	PCL MENU	PS MENU	JOB MENU	CONFIG MENU	MEM CONFIG MENU*	PARALLEL MENU	TEST MENU
COPIES	FONT SOURCE	PRT PS ERRS	RESOLUTION	MP TRAY	IO BUFFER	HIGH SPEED	SELF TEST
PAPER [ENVELOPE]	FONT NUMBER	JAM RECOVER	PERSONALTY	LOCK	IO SIZE	ADV FNCTNS	CONT SELF TEST
ORIENTATION	PITCH or PT SIZE		PWR SAVE	CLR WARN	RESRCSAVE		PCL TYPEFACE LIST
FORM	SYM SET		IO TIMEOUT	AUTO CONT	PCL MEM		PCL DEMO PAGE
MANUAL FEED				LOW TONER	PS MEM		PS CONFIG PAGE
RET							PS TYPEFACE LIST
ECONOMODE							PS DEMO PAGE
You can change these menu items either from a software application or from the printer's control panel.				You can change these menu items only from the printer's control panel.			
Shaded items appear when the PostScript language is installed.							

* These items will appear if sufficient memory is available.
Additional menu items may appear if options are installed (such as MIO cards).

To select a menu item:

1. Press **On Line** to take the printer off line.
2. Press **Menu** repeatedly until the menu you want appears.
3. Press **Item** repeatedly until the item you want appears.
4. Press **+** repeatedly (or hold down **+** to scroll) until the setting you want appears.
5. Press **Enter** to save your selection. An asterisk appears next to your selection, indicating it is now the default.
6. Press **On Line** to place the printer back on line.

Note Remember: When you change a control panel setting, it changes for all installed languages, such as PCL, as well as for PostScript.

PostScript Menu

When PostScript is installed, a PostScript language menu is added to the control panel system of menus.

Table 6-1 PostScript Menu Items

Item	Options	Explanation
PRT PS ERRS	OFF*, ON	When this option is set to ON, the printer prints a page that describes errors the PostScript interpreter encounters. No PostScript error messages display on the control panel. This page is useful if you are developing a PostScript technical application or troubleshooting a problem. Otherwise, leave this item set to OFF.
JAM RECOVER	OFF*, ON	Setting this item to ON causes the printer to reprint page(s) after recovering from a paper jam.

*Factory default.

Menu Items Affected by PostScript

Most PostScript menu items are similar to those for the PCL language. Those that are different are listed in the following tables. For menu items common to PostScript and PCL, see Chapter 4, “Understanding the Control Panel.”

Table 6-2 Printing Menu Differences

Item	Options	Explanation
PAPER	None	These settings are ignored because of the way PostScript formats pages.
ORIENTATION		
FORM		

Table 6-3 Job Menu Differences

Item	Options	Explanation
RESOLUTION	300 or 600*	If your PostScript printer driver cannot select 600 dpi, you can select 600 dpi resolution from the printer's control panel. Note that a file set for 300 dpi overrides the 600 dpi control panel setting *for that file only,* printing the job at 300 dpi.
PERSONALTY	AUTO*, PCL, PS	When you set personality to `AUTO`, the printer automatically selects PostScript when it receives a PostScript job. When you set personality to `PS`, the printer stops switching personalities automatically. Instead, it switches to another personality only when a software command specifically instructs it to do so. `AUTO` is recommended, especially in shared printer environments.
IO TIMEOUT	15* (5 to 300)	The PostScript waittimeout and jobtimeout operators are not affected by this menu item. The `IO TIMEOUT` setting does not affect how long a PostScript job is allowed to run or how long PostScript waits for input.

*Factory default.

Table 6-4 Memory Configuration Menu Differences

Item	Options	Explanation
IO BUFFER	n/a	With 12 MBytes of memory, the I/O buffering option appears.
RESRCSAVE	n/a	With 12 MBytes of memory, the Resource Saving option appears.

Test Menu Items

The PostScript Test Menu includes:

- PS Config Page
- PS Typeface List
- PS Demo Page

To print a Test Menu page

1 Press **On Line** to take the printer off line.

2 Press **Menu** repeatedly until `TEST MENU` appears.

3 Press **Item** repeatedly until `PS CONFIG PAGE` (or another PS test page) appears.

4 Press **Enter** to print the page. The page will print in less than one minute.

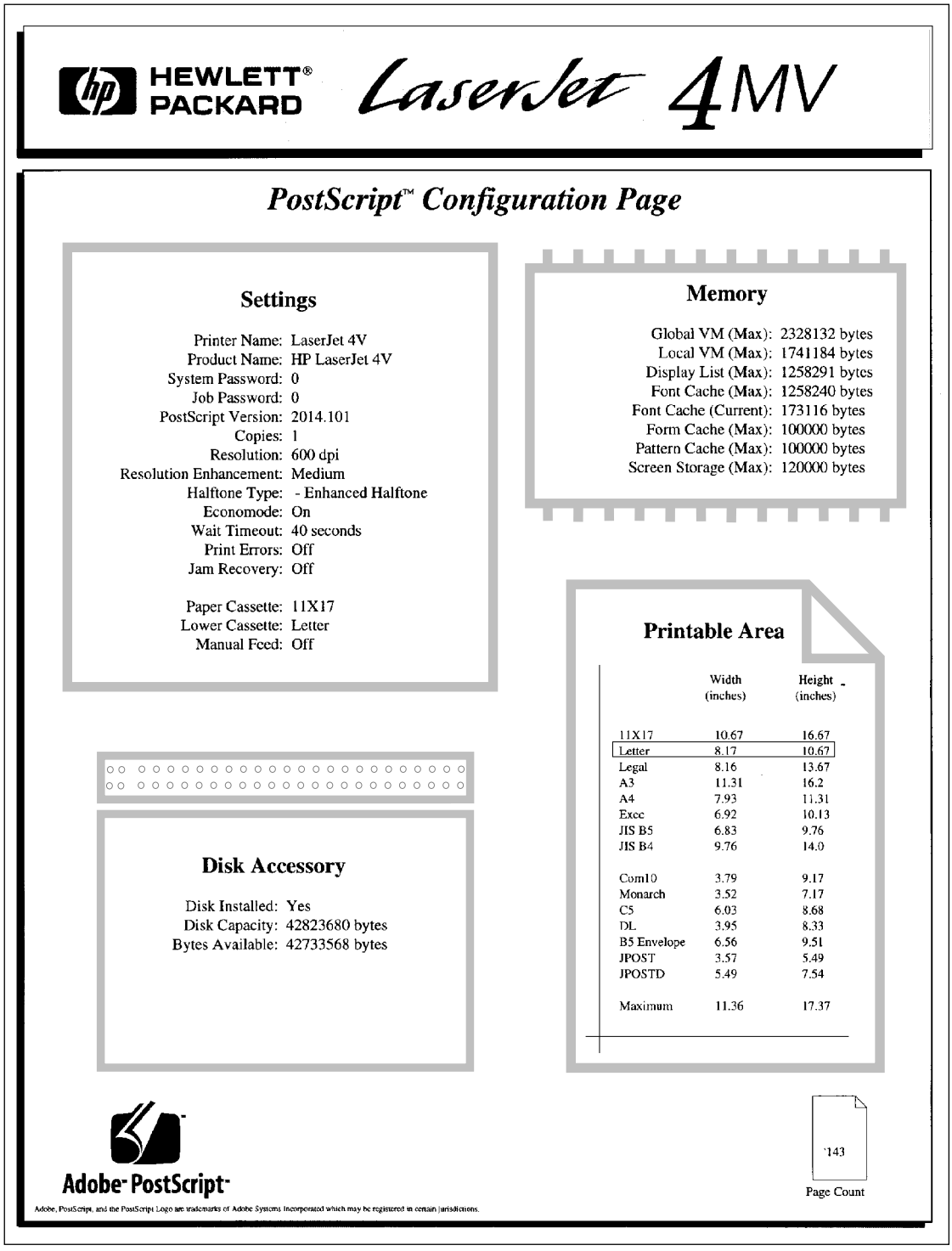
5 Press **On Line** to place the printer back on line.

PostScript Configuration Page

The PostScript configuration page (the PS CONFIG PAGE item in the Test Menu) is shown in Figure 6-1.

Table 6-5 PostScript Configuration Page Printout Items

Item	Explanation
1	**Settings:** Current printer control panel default settings and product-specific information: **Printer Name:** Name set by user (a network name, for instance). **Product Name:** HP LaserJet printer model. **System Password/Job Password:** Values are either "0" (default) or "Not Default" (a password is present). **PostScript Version:** The version of PostScript installed. **Copies:** The default number of copies that will be printed. **Resolution:** Either 600 or 300 dots per inch. **Resolution Enhancement:** See "Enhancing Resolution" in Chapter 5. **HalftoneType:** The current halftone type. **Economode:** On or Off. See "Saving Toner with EconoMode" in Chapter 5. **Wait Timeout:** This setting shows how long PostScript waits for additional data. **Print Errors:** Value set through the printer control panel's PS Menu. **Jam Recovery:** Indicates whether Jam Recovery is ON or OFF. **Paper Cassette:** Indicates size of paper in the cassette. **Manual Feed:** Either On or Off.
2	**Printable Area:** Gives the dimensions within the margins of the image area. The current default is shown in the hollow box.
3	**Memory:** The values show how PostScript uses printer memory. This may be useful for more experienced users since PostScript Level 2 allows users to configure memory parameters (see Adobe's *PostScript Language Reference Manual* for specific information about these values).
4	**Page Count**: Shows how many pages have been printed by the printer in all printer languages. You can use the page count to track printer use.
5	**Fixed Disk:** Shows whether the optional disk is installed, the total capacity of the disk, and how many bytes are available for use.



HEWLETT® PACKARD LaserJet 4MV

PostScript™ Configuration Page

Settings

Printer Name:	LaserJet 4V
Product Name:	HP LaserJet 4V
System Password:	0
Job Password:	0
PostScript Version:	2014.101
Copies:	1
Resolution:	600 dpi
Resolution Enhancement:	Medium
Halftone Type:	- Enhanced Halftone
Economode:	On
Wait Timeout:	40 seconds
Print Errors:	Off
Jam Recovery:	Off
Paper Cassette:	11X17
Lower Cassette:	Letter
Manual Feed:	Off

Memory

Global VM (Max):	2328132 bytes
Local VM (Max):	1741184 bytes
Display List (Max):	1258291 bytes
Font Cache (Max):	1258240 bytes
Font Cache (Current):	173116 bytes
Form Cache (Max):	100000 bytes
Pattern Cache (Max):	100000 bytes
Screen Storage (Max):	120000 bytes

Printable Area

	Width (inches)	Height (inches)
11X17	10.67	16.67
Letter	8.17	10.67
Legal	8.16	13.67
A3	11.31	16.2
A4	7.93	11.31
Exec	6.92	10.13
JIS B5	6.83	9.76
JIS B4	9.76	14.0
Com10	3.79	9.17
Monarch	3.52	7.17
C5	6.03	8.68
DL	3.95	8.33
B5 Envelope	6.56	9.51
JPOST	3.57	5.49
JPOSTD	5.49	7.54
Maximum	11.36	17.37

Disk Accessory

Disk Installed: Yes
Disk Capacity: 42823680 bytes
Bytes Available: 42733568 bytes

Adobe PostScript

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Page Count

Figure 6-1 PostScript Configuration Page

PostScript Demonstration Page

The PostScript language demonstration page (PS DEMO PAGE in the control panel's Test Menu) is designed to illustrate your printer's features and print quality when using the PostScript printer language.

PostScript Typeface List

The PostScript Typeface List (PS TYPE LIST in the control panel's Test Menu) has samples of the 35 built-in PostScript language typefaces plus fonts downloaded to the printer's memory and optional PostScript Disk Accessory (see Figure 6-2).

To print the list, see "To Print a Test Menu Page," earlier in this chapter. Because of the complexity of the PostScript Typeface List, *it may take more than 30 seconds before printing begins.*

The list will *not* display the printer's internal or downloaded PCL typefaces.

The characters shown on the PostScript Typeface List are printed in only one size. When printing from a software application, you can scale these characters to virtually any size.

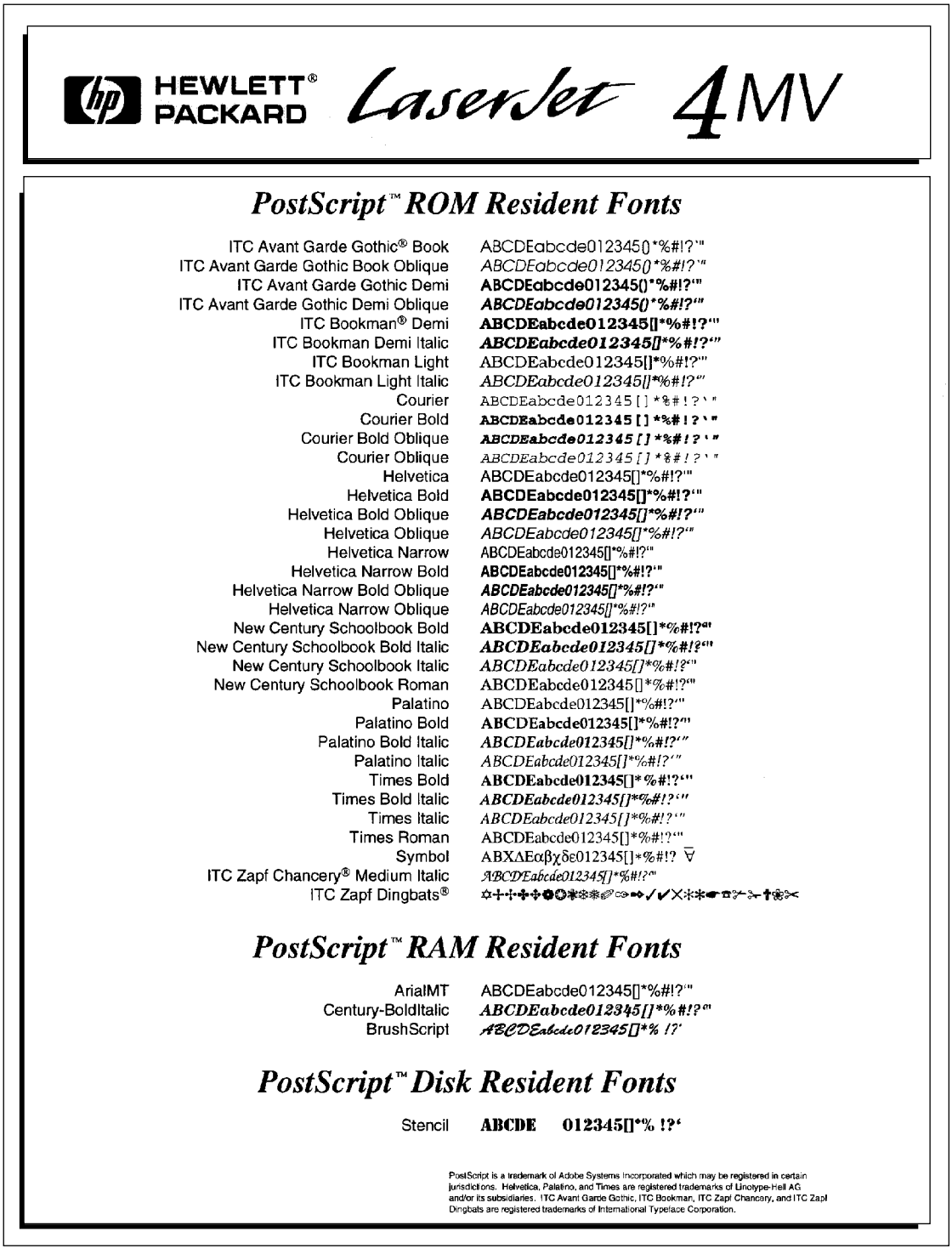


Figure 6-2 PostScript Typeface List

The PostScript Disk Accessory

If you have an HP LaserJet 4MV printer or if you have added the PostScript option to your HP LaserJet 4V printer, you can install the optional 42.8 MByte PostScript Disk Accessory.

The PostScript Disk Accessory can be used to permanently store downloaded fonts and forms in the printer. Unlike the standard printer memory, permanently downloaded items remain in the printer even when the printer is powered off.

Fonts downloaded to the PostScript Disk Accessory are available to all PostScript users of the printer.

Macintosh users can use the HP LaserJet Utility and Windows users can use the HP printer software to download fonts. The PostScript Disk Accessory can also be write protected through software for additional security. Refer to the online help associated with your software for more information.

If you are a PostScript language programmer, refer to Adobe's *PostScript Language Reference Manual* for information about downloading forms, patterns, etc. to the disk. For the Macintosh environment, refer to the HP LaserJet Utility Guide on-line help included with the HP LaserJet Utility Software. For the Windows environment, refer to your Windows on-line help.

7

Maintaining Your Printer

Introduction

Your printer requires minimum routine maintenance. This chapter explains the following tasks:

- Cleaning the printer
- Working with the toner cartridge
- Extending toner cartridge life
- Clearing the TONER LOW message

Cleaning the Printer

To maintain print quality, thoroughly clean your printer:

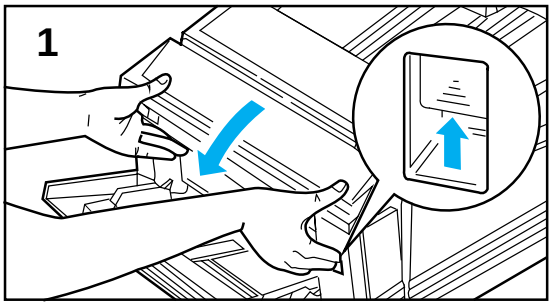
- Every time you change the toner cartridge
- After printing approximately 7,500 pages
- Whenever print quality problems occur

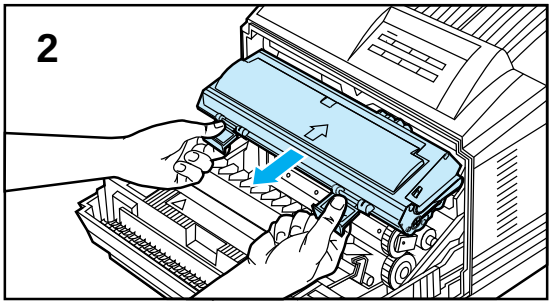
Clean the *outside* of the printer with a lightly water-dampened cloth. Clean the *inside* with only a dry, lint-free cloth. Observe the warnings and cautions that follow the cleaning tasks on the following page.

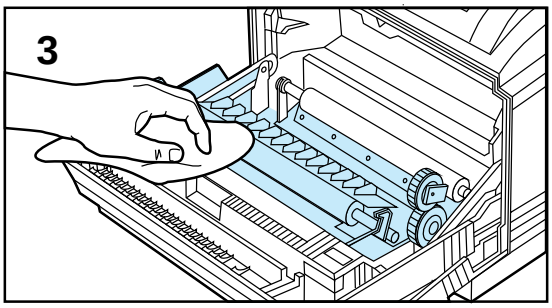
Caution

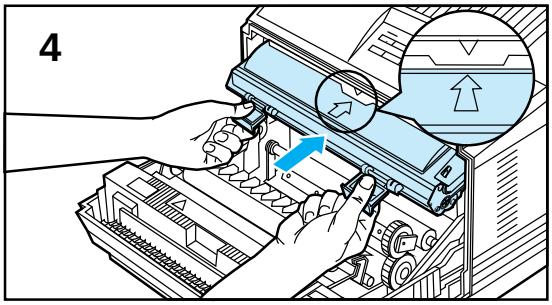
To avoid permanent damage to the toner cartridge, do not use ammonia-based cleaners on or around your printer.

Printer Cleaning Tasks









To clean the printer:

Warning

Before you begin these steps, **turn the printer OFF and unplug the power cord**.

1 Open the printer's front cover.

2 Remove the toner cartridge.

Caution

Do not touch the transfer roller (black sponge-rubber roller) with your fingers. Skin oils on the roller can cause print quality problems.

If toner gets on your clothes, wipe it off with a dry cloth and wash your clothes in *cold* water. Hot water sets toner into fabric.

3 With a *dry* lint-free cloth, wipe any residue from the paper path area and the toner cartridge cavity.

Warning

Avoid touching the adjacent fusing area. It may be HOT.

4 Replace the toner cartridge, close the printer, plug in the power cord, and switch the printer ON.

Working with the Toner Cartridge

Toner Cartridge Life

The life of your toner cartridge depends on the amount of toner your print jobs require. When you print word-processed text, average toner cartridge yield is 7,500 pages, printed at 5% coverage (a typical full-page business letter is about 5% coverage). This assumes that the print density setting is in the middle range (see “Adjusting Print Density” in Chapter 5, “Special Tasks”).

Using EconoMode can further extend average toner cartridge yield (see “Saving Toner with EconoMode” in Chapter 5, “Special Tasks”).

Note

HP does not recommend full-time use of EconoMode. Full-time use will result in a loss of print quality due to normal toner cartridge mechanical wear.

Storing, Installing, and Recycling the Toner Cartridge

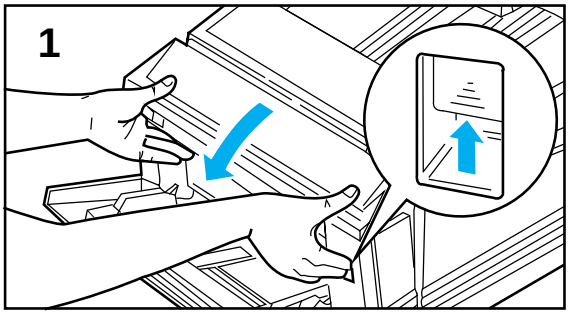
Storing: *Do not remove the toner cartridge from its packaging until you are ready to use it.* The shelf life of an unopened cartridge package is approximately 2 1/2 years of storage; the shelf life of an opened cartridge package is approximately six months. Use the cartridge before the expiration date (the expiration date is stamped on your toner cartridge box).

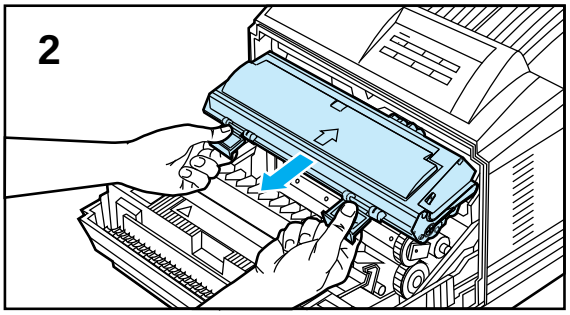
Installing and Recycling: To install a new toner cartridge, follow the instructions in the *Installation Guide* included in your toner cartridge box. A separate *Recycling Instruction Guide* is also included.

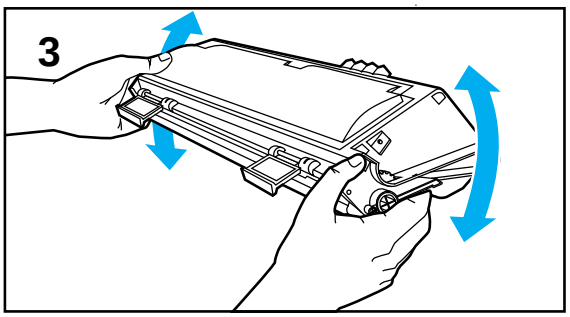
HP’s Policy on Use of Non-HP Toner Cartridges

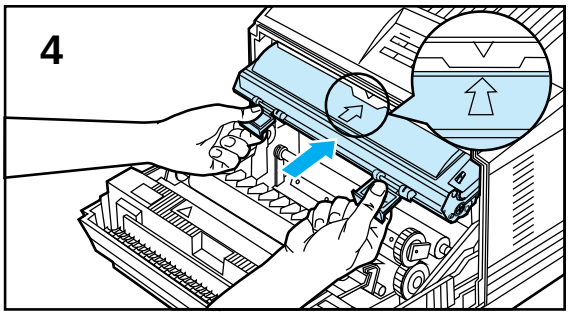
Hewlett-Packard cannot recommend use of non-HP toner cartridges, either new or remanufactured. Because they are not HP products, HP cannot influence or control their quality.

Extending Toner Cartridge Life









You can extend the life of your toner cartridge and *temporarily* reestablish print quality by redistributing the toner.

To redistribute toner:

1. Open the printer's front cover.
2. Remove the toner cartridge.
3. Rotate the toner cartridge back and forth 5 or 6 times to redistribute toner.
4. Reinsert the toner cartridge and close the front cover.

The `16 TONER LOW` message may continue to appear, but the print quality should improve. If the print remains light, replace the toner cartridge using the instructions in the *Installation Instruction Guide* which is inside the toner cartridge box.

Clearing the TONER LOW Message

When the toner level in the toner cartridge gets low, a `16 TONER LOW` message appears in the control panel display. You can either rotate the cartridge back and forth to redistribute the toner (shown in "Extending Toner Cartridge Life" on the previous page) or replace the cartridge. If you continue to use the cartridge, your print will become lighter and white streaks may soon appear.

Setting the Toner Low Message: In the Config Menu (see Chapter 4, "Understanding the Control Panel"), you can set `TONER LOW=STOP` or `TONER LOW=CONT`:

- When set to the default, `TONER LOW=CONT*`, the printer will continue to print with the `16 TONER LOW` message displayed on the control panel instead of `00 READY`. Use `TONER LOW=CONT*` when printing long or unattended print jobs.

- When set to `TONER LOW=STOP`, the printer will stop printing and go off line when low toner is detected. To resume printing, press **Shift** + **Continue**. The printer will continue to display the `16 TONER LOW` message until you change the cartridge.

8

Solving Printer Problems

Introduction

This chapter discusses the following:

- Troubleshooting check list
- Clearing paper jams
- Improving print quality
- Understanding printer messages

If, for some reason, the printer does not print a print job, use the "Troubleshooting Check List" section to help you solve the problem. In addition, if a control panel message is displayed, refer to "Understanding Printer Messages" later in this chapter for additional information.

Troubleshooting Check List

Use the following information to help solve printer problems. For networked printers, check with your network administrator if you suspect a network-related problem.

Printer Response Problems

Printer not ON

Situation	Solution
Printer not plugged in.	Plug the AC power cord firmly into the power receptacle and the printer (be sure the power source is energized).
Printer not switched ON.	Put the printer's power switch in the ON position.
Printer voltage is not correct.	Make sure line voltage is correct for the printer's power configuration (see the plate next to the power receptacle on the back of your printer for voltage requirements).

Control panel display is blank or garbled

Situation	Solution
Printer not switched ON.	Put the printer's power switch in the ON position.
Printer is switched ON but printer's fan is not running.	Make sure the line voltage is correct for the printer's power configuration (see the plate next to the power receptacle on the back of your printer for voltage requirements). If you are using a power strip and its voltage is not within specification, plug the printer directly into the power receptacle.
Display is blank but printer's fan is running.	Press all keys in case one is stuck; contact your HP service representative if this does not work.
Printer display is in the wrong language or displays unfamiliar characters.	Reconfigure the control panel display language. (Hold down Enter while switching the printer on. Press + to select the language you want, then press Enter to save the selection.) If the display language is correctly configured but the display shows garbled or unfamiliar characters, contact your HP service representative.

The printer cannot produce a self-test printout

Situation	Solution
Printer is not off line.	Press **On Line** to place the printer off line (the printer control panel should display `00 OFFLINE`).
Toner cartridge sealing tape not removed.	Remove sealing tape from toner cartridge. See the *Getting Started Guide* or the installation guide that came with your toner cartridge.
Paper Cassette not correctly installed or out of paper.	Push the Paper Cassette firmly into printer (add paper if necessary).
front cover is open.	Firmly close the front cover.
Paper is jammed in the printer.	Check for paper jams (see “Clearing Paper Jams” in this chapter).
Messages appear in the display.	Review the messages for help (see “Understanding Printer Messages” in this chapter). If no error messages appear but the self test still does not print, call for assistance.

Display messages reappear or cannot be removed

Message	Solution
10 RESET TO SAVE continues to appear.	If there is data in the printer’s buffer when you change control panel menu items, the `10 RESET TO SAVE` message will appear. See `10 RESET TO SAVE` in the “Understanding Printer Messages” section of this chapter for information on how to clear this message.
16 TONER LOW	See “Clearing the TONER LOW Message” in Chapter 7.
MP LOAD LEGAL or similar messages persist, requesting that you load media.	Clear the printer’s buffer by performing a reset (**Shift** + **Reset**).
W_ _____ (clearable warnings) are frequently displayed.	See “Clearable Warnings” in the “Understanding Printer Messages” section of this chapter.
18 MIO NOT READY	If the printer MIO card is operating correctly and communicating with the network, this message will disappear after approximately one minute and no action is required. If the MIO card is unable to communicate with the network, this message will remain for five minutes and the go away. In this case the printer is not communicating with the network (even though the message is no longer present). The problem may be a bad MIO card, bad cable/connection on the network, or a network problem. Contact your network administrator.

Software, Computer, and Printer Interface Problems

Job sent to printer but nothing prints

Situation	Solution
Printer is OFF or not connected to an active power source.	Make sure the printer is ON and that it is firmly plugged into both the printer and an active power source.
Printer is off line.	1. Press **On Line** to put the printer on line. Printer should display `00 READY`. and the on-line key should be lit. 2. If you are in Power Save mode, the printer may be off line. Press **On Line** to be sure the printer is on line.
Printer is on line but not receiving data.	**Check your I/O cable**: 1. Check for loose I/O cable connections at printer and computer. 2. Try your I/O cable on a system that you know works. 3. Check that the correct interface cable was selected and securely connected to both the printer and the computer. If the cable is not correctly configured, see the *Getting Started Guide* for configuration information. 4. Check that the interface cable is not plugged in upside-down.
Printer displays a message.	See Table 8-1, “Printer Messages,” for printer messages and recommended actions.
Data from a previous print job is still in the printer’s buffer.	Take the printer off line and press **Form Feed** to print the pages stored in the printer buffer. If this does not work, press **Shift** + **Reset** to clear the buffer.
Last page did not print and Form Feed light is on.	Take the printer off line and press **Form Feed** to print the page stored in the printer buffer (some older software programs do not automatically send an “end of job” (page eject) command). Press **On Line** to put the printer back on line.
Ready light flashing but nothing prints.	In the PS MENU turn `PRT PS ERRS=ON*` to print out the PostScript error page. Check your software application setup to ensure that it is correct. Also check your cabling to ensure that it is secure.

Computer, network, or I/O port problems

Situation	Solution
Printer interface problems.	Run a self test to verify that the interface configurations shown on the printout match those on your host computer (see Chapter 5 for self test information).
Computer software problem.	Check that your computer is working correctly by printing from a software application you know works or by printing a plain MS-DOS file (for example, **`C:\dir>LPTn`** where n is the number of the computer port the printer is connected to, for example LPT1) to see if the problem is with your software application or printer driver.
Software is selecting the wrong port.	Check your software application to be sure the print job is being sent to the correct port (LPT1, for example).
Printer port problem.	Check that your computer's port is configured and working properly. One way to check this is to connect another printer, if available, to that port on your computer and print an application you know works.
Printer is in Power Save mode and a message on your computer screen says the printer port is not responding.	1. Turn Power Save off (see "Saving Power with the Power Save Feature" in Chapter 5). 2. Increase the I/0 timeout duration in your software application (see your software application manual).
Network or shared printer problems.	Check to ensure there are no network or shared printer problems by connecting your computer directly to the printer and printing from an application you know works. If you suspect network problems, check with your network administrator or consult the network documentation that came with your MIO card.

Computer displays DOS messages such as:
`Write Fault Error Writing Device LPTn: Abort, Retry, Ignore?`
	1. Add a Mode command to your computer's AUTOEXEC.BAT file for the parallel port. It should be inserted immediately following the PATH statement:
	For DOS versions below 4.0, add:
	`MODE LPT1:,,P`
	For DOS versions 4.0 and greater, add:
	`MODE LPT1:,,B`
	2. Your I/O cable might be faulty; see "Garbled pages print ..." situation in the "Blank, Garbled, or Incomplete Pages Print or Printing is interrupted" table on the following page.

Print speed is slow

Situation	Solution
First page takes much longer to print than following pages.	Set the Power Save feature for a longer time period or turn it off (see "Saving Energy with Power Save" in Chapter 5). (A page may take longer to print due to complex formatting commands, thus changing the Power Save period may not result in the first page being printed faster.
Printer is usually slow to respond.	1. Printer speed is highly dependent on how your software application is setup and which printer driver you are using. See the *Getting Started Guide* for configuration information. 2. You may need to add more memory. See "Accessories and Options" in Chapter 1 for HP memory part numbers.
Printer is slow to switch between personalities.	Set `ADV FNCTNS=OFF` in the Parallel Menu (see Chapter 4, "Understanding the Control Panel").

Blank, garbled, or incomplete pages print or printing is interrupted

Situation	Solution
Blank pages print.	Turn the printer off then back on. Toner cartridge sealing tape has not been removed (see the *Getting Started Guide* or the installation guide that came with your toner cartridge).
Garbled pages print, there are overprints, or a portion of a page prints.	1. Ensure that your software application is configured for the correct printer. 2. Replace the printer interface (I/O) cable with a cable you know works to see if the cable is defective. 3. Your parallel printer cable quality may be bad. Use a high-quality cable, see “Accessories and Options” in Chapter 1 for an HP cable part number. 4. Set the PERSONALTY item in the Job Menu to AUTO (see Chapter 4). The printer was set to PCL and a PostScript job was sent to the printer. 5. Data file sent to the printer may be corrupt. Try sending another file to see if it prints.
Data is missing, but there are no printer messages.	1. Check your software application to be sure the print file contains no errors. 2. Check your cable to ensure that it is securely connected to both the printer connector and the computer connector. 3. Your parallel printer cable may be defective. Use a high-quality cable; see “Accessories and Options” in Chapter 1 for an HP printer cable part number. 4. Check you printer port or switch box to ensure that the printer is correctly connected.
Printing stops in the middle of the job.	1. Check the control panel for an error message. 2. If you are on a network, make sure your computer is correctly configured and there is not a network problem (see your network administrator). 3. Check your line voltage to ensure that it is steady and within printer specifications (see Appendix B, “Environmental Specifications”). 4. Turn the printer off then back on. 5. Check the time-out setting in your network application. It may need to be increased. 6. If you are trying to copy a file to the printer from the DOS prompt, use the copy command: COPY filename LPTn /B (where n=number of printer port, such as LPT1).

Printer does not recognize typefaces, tray selection, other printer personalities (PostScript, etc.), or similar requests

Situation	Solution
Printer prints some wrong typefaces, fonts, formats.	1. The typeface or font is not present in the printer and must be downloaded by your software application or proper font SIMM must be installed. Check your software program to ensure the correct printer driver has been installed and configured. To verify that the typeface, font, or format you want is available, print a typeface list (see Chapter 5, “Special Tasks”). 2. Your software selected a substitute font for one that is not available in the printer. (See your software application manual for more information on font selection.)
Printer draws media from the wrong paper source.	1. Ensure that the printer driver for your software application is correctly installed, configured, and capable of printer tray selection. 2. Paper tray may be reserved (“locked out”). Print a self test to determine if a tray has been reserved (see Chapter 5, “Special Tasks”) or check the “Lock” item in the printer’s Config Menu (see Chapter 4). 3. The size of paper you are requesting is not in the tray you have selected. The printer draws paper from the next default tray having the correct size. Put the correct size paper in the tray or, if you are using an adjustable tray, ensure that the tray is adjusted for the correct size paper. 4. If you selected the 500-sheet Lower Cassette and did not turn the printer off when installing it, the printer will not recognize it and will draw paper from the next default size paper source (switch the printer OFF, then back ON, so the printer will recognize it). 5. The MP tray paper size is set to a different size than the size you are using (your application is set to). Use the MP Paper Size key to set the MP Tray to the size of paper you are using.
Printer prints in wrong personality.	1. Ensure that the personality (printer personality, such as PostScript) is installed in the printer (see Chapter 6, “PostScript Printing”). 2. If you software application allows you to set personality, ensure that it is set for the correct personality. If you software application does not allow you to select personality, then you should set the “Personalty” item in the Job Menu to the correct personality (also, refer to Job Menu in Chapter 4).
Control panel settings, such as tray selection or typeface selection, do not work or are ignored.	Software commands override control panel settings (see Chapter 4 for information on how your software works with control panel settings).

Manual feed problems

Situation	Solution
Cannot clear manual feed messages.	A previous print job may still be in the printer's buffer. Press Shift + Reset to remove the previous print job.
Cannot print from MP Tray.	Check to be sure you have selected "Manual Feed" and "MP Tray" through your software application. If your application does not have selections for either of these, you must select them from the printer control panel: MANUAL FEED=ON* selected from the Printing Menu and MP TRAY=MANUAL* selected from the Config Menu.

Problems Using Optional Accessories

Optional 500-sheet Universal Lower Cassette problems

Situation	Solution
Media size adjustment and installation.	See "Printing from the Universal Lower Cassette" in Chapter 3.
Paper jams and paper feeding problems.	1. See the "Clearing Paper Jams" section in this chapter. 2. Ensure that the paper weight is within recommended range (see Appendix C, "Media Specifications," and Chapter 3, "Printing Tasks"). 3. Don't pull a paper tray out while printing.
Cannot access Universal Lower Cassette.	1. Ensure that the paper tray guides are adjusted correctly for the paper size you are using (see "Printing from the Optional 500-Sheet Universal Lower Cassette" in Chapter 3.). 2. Check the printer's control panel to ensure that the lock function in the Config menu is disabled, so the tray is not locked out
Printer does not recognize Universal Lower Cassette.	1. Ensure that the cable from the Lower Cassette Base is plugged into the printer. If not, plug the cable into the printer, then switch printer OFF then ON again. If the printer still does not recognize the Lower Cassette, contact your dealer or authorized HP service provider.

250-sheet PC cassette problems

Situation	Solution
General operation problems.	For general paper operation information refer to Chapter 3 “Printing Tasks” (also see “Printing from the Optional 500-Sheet Universal Lower Cassette” in that chapter, since the 250-sheet paper cassette is similar to the lower cassette).
Paper jams and paper feeding problems.	1. Refer to “Clearing Paper Jams” in this chapter. 2. Ensure that paper weight is within recommended range (see Appendix C, “Media Specifications,” and Chapter 3, “Printing Tasks”).
Cannot access PC cassette.	1. The printer selects paper from trays in a certain priority, see “Printing from the Optional 500-Sheet Universal Lower Cassette” in Chapter 3. 2. Software application paper size must be selected for the same media size as the PC cassette. 3. Ensure that the cassette is adjusted correctly for the paper size you are using, refer to Chapter 3, Loading Paper into Your Paper Cassette. 4. Check the printer’s control panel to ensure that the lock function in the Config menu is disabled, so that the tray is not locked out.

PostScript Troubleshooting

The items below are PostScript language specific and may occur where several printer languages are used and in shared printer environments.

Situation	Solution
A text listing of PostScript commands prints instead of your PostScript printing job.	The control panel PERSONALTY=AUTO setting may have been confused by a nonstandard PostScript code. Check PERSONALTY= to see if it is set to PS or PCL. If it is set to PCL, set it to PERSONALTY=PS for this print job only, then, when the job has printed, return the setting to AUTO.
The job prints in Courier (the printer's default typeface) instead of the typeface you requested.	The requested typeface is not available in the printer or is not present on the disk. Use a font download utility to download the desired font. Fonts downloaded to memory are lost when the printer is switched OFF. They are also lost if Resource Saving is not used and a personality switch is performed to print a PCL job. Disk fonts are not affected by PCL jobs or by switching the printer OFF. Print a font printout to verify that the font is available. If a disk font appears to be missing, it may be because a software utility was used to delete the font, because the disk was re-initialized, or because the disk drive is not installed correctly. Print a self test to verify that the disk drive is installed and functioning correctly.
A legal page prints with clipped margins.	If the page margins are clipped, you may have to print the page at 300-dpi resolution or install more memory (see Chapter 6, "PostScript Printing").
A page fails to print.	First, set PRT PS ERRS=ON, then send the job again to print a PostScript error page. If an error page prints, refer to the following table entry "A PostScript error page prints,". If this does not correct the problem try turning Resource Saving and I/O Buffering OFF, or installing more memory (see Chapter 6, "PostScript Printing").
A PostScript error page prints.	Make sure the print job is a PostScript job. Check to see whether your software expected you to send a setup or PostScript header file to the printer. Check the printer setup in your software application to ensure that the printer is selected. Also, check you cable connections to ensure that they are secure.

Clearing Paper Jams

If the message 13 PAPER JAM appears in the display panel, look for jammed paper in any of the locations indicated in Figure 8-2.

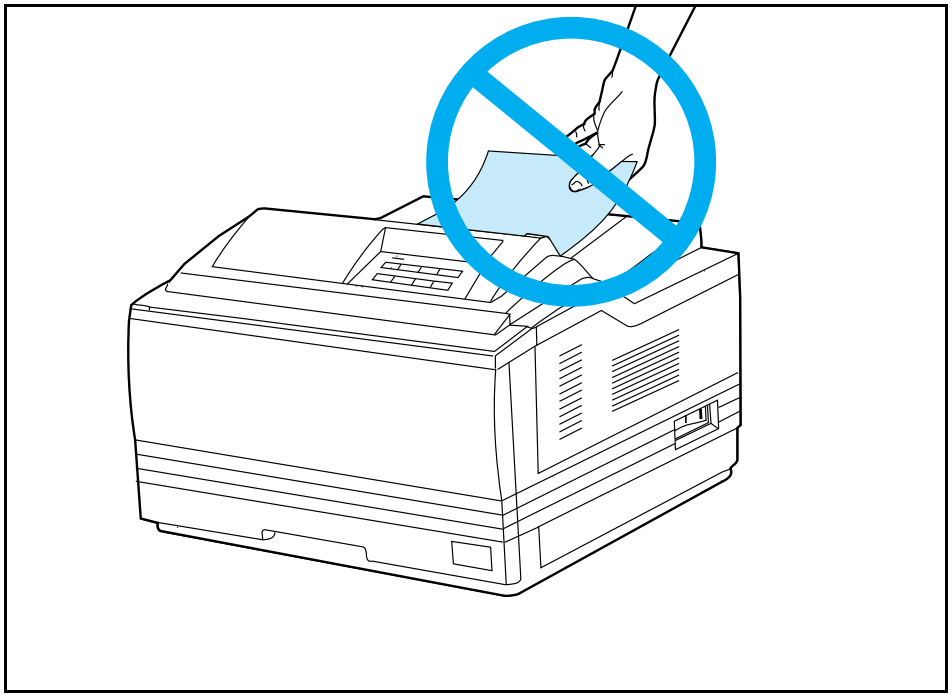
If you get repeated paper jams or if the paper jam message appears repeatedly, see “Repeated Paper Jams” at the end of this section.

Paper jams occur most often when:

- Paper cassettes are not correctly loaded (see Chapter 3, “Printing Tasks”).
- Your print media does not meet the specifications listed in Chapter 3, “Printing Tasks,” and Appendix C, “Media Specifications.”
- The media is in poor condition.
- The printer needs cleaning.

If the paper jam extends into the output area, as shown in Figure 8-1, always open the front cover before removing the paper.

Figure 8-1

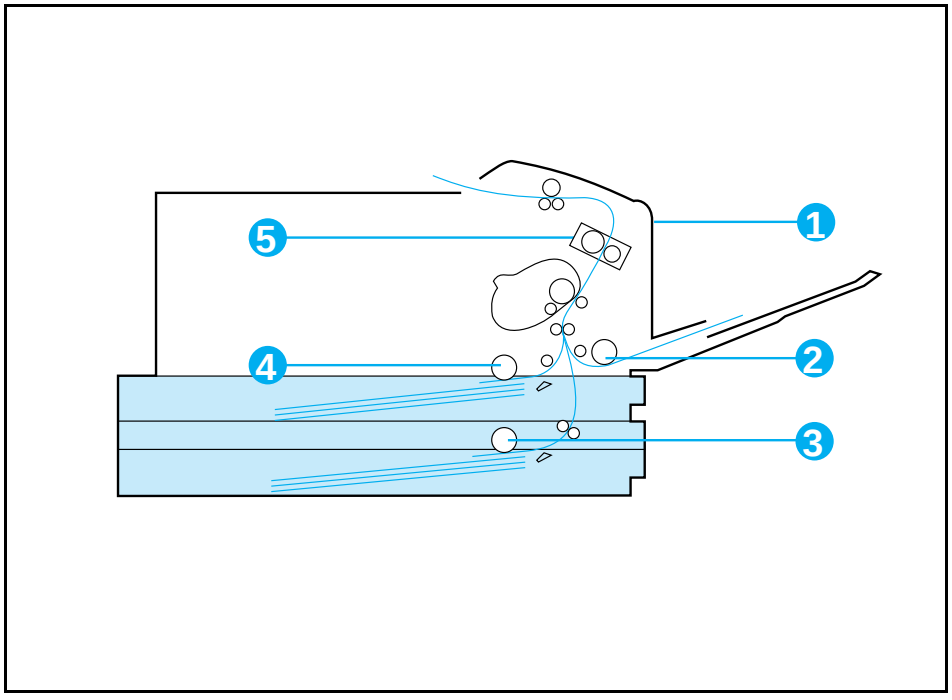


Note

The front cover must be opened then closed to clear the paper jam message.

Since jams can occur in more than one area, be sure to check all areas.

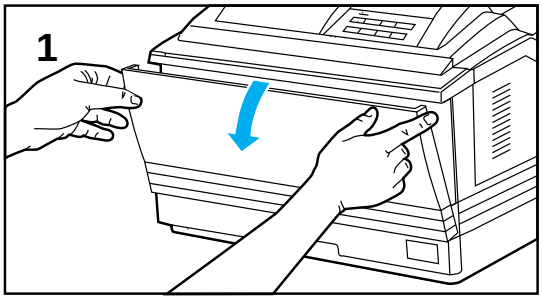
Figure 8-2

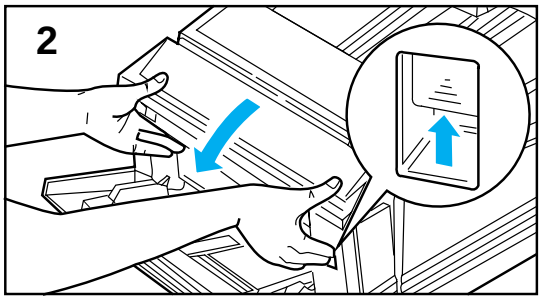


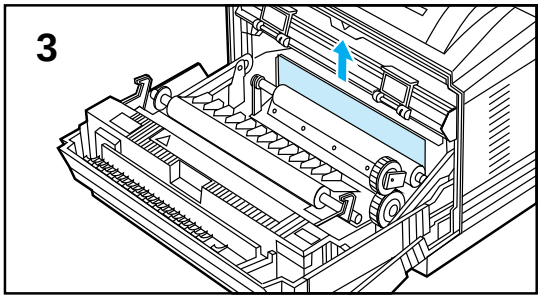
Paper Path Jam Locations (shaded areas are optional assemblies)

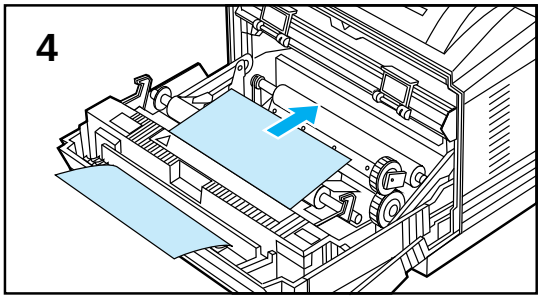
1. Upper front cover area
2. MP Tray pick-up roller
3. Optional Lower Cassette pick-up roller
4. Paper cassette pick-up roller
5. Fusing assembly area

Removing Paper Jams









1 Open the MP tray by grasping the door on the front of the printer, at the pattern of raised dots on each side. Pull the tray down gently until it stops.

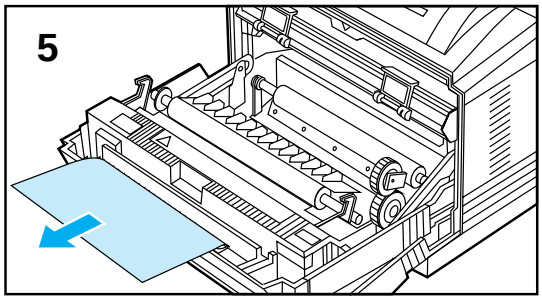
2 Open the front cover by pushing up on the release button and pulling it open.

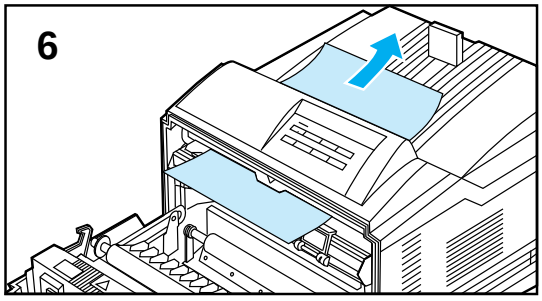
3 Remove any paper from this area by pulling it in the direction shown by the arrow then close the front cover.

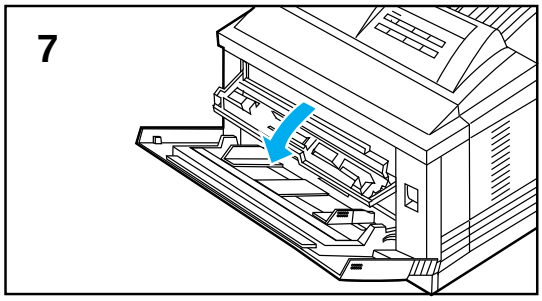
Note

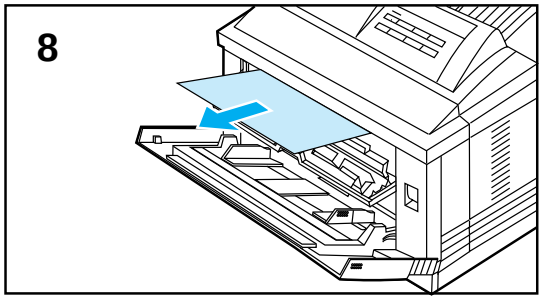
To clear a paper jam condition from the printer the front cover must be opened and then closed.

4 Remove any paper from this area by pulling it in the direction shown by the arrow.









5 Remove any paper from this area by pulling it in the direction shown by the arrow then close the front cover.

6 Remove any paper from this area by pulling it in the direction shown by the arrow then close the front cover.

Note

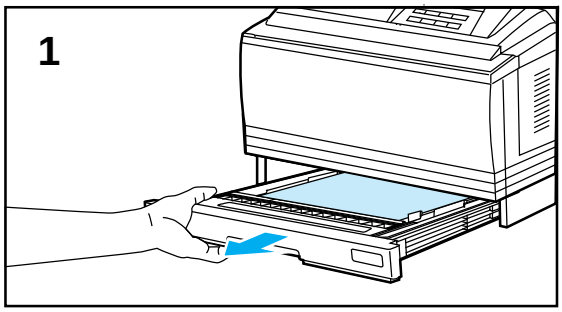
If toner gets on your clothes, wipe it off with a dry cloth and wash with cold water. Hot water sets toner into fabric.

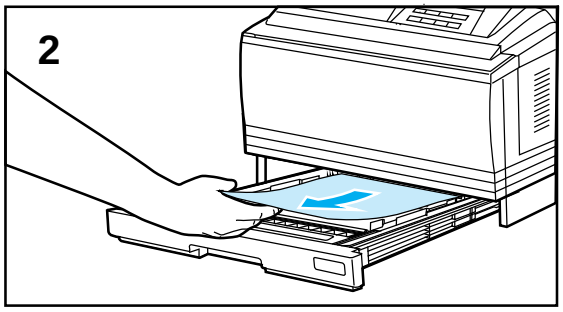
7 Open the fuser assembly door by pressing your finger in the door recess and pulling firmly outward and down.

WARNING

Use care when removing paper from the fuser area. The fuser area is very hot and can cause severe burns.

8 Remove any paper from the fuser area then close the fuser assembly door.





Cassette Area Paper Jams

Check both, the Paper Cassette and the optional Lower Cassette, for paper jams. The procedure for removing paper jams from these two cassettes is the same.

1. Remove the cassette from the printer.

2. Check the cassette pick-up roller area inside the printer. Remove any paper from this area then reinstall the cassette.

Note

If there are frequent paper jams or multi-feed problems in the Lower Cassette area, see "Printing from the Optional Lower Cassette" in Chapter 3 and "Repeated Paper Jams" at the end of this section.

Repeated Paper Jams

Situation	Solution
General repeated paper jam problems.	1. Check to see that media is correctly loaded in trays (see Chapter 3, “Printing Tasks.”) 2. Do not use peviously printed paper, torn, worn, or irregular paper. 3. Certain media jam, other media do not. For the recommended paper and other media for your printer, see Appendix C, “Media Specifications.” 4. Try turning over the stack of paper in the tray. 5. Printer may be dirty. Clean the printer. 6. If jams continue, contact your authorized HP service provider.
MP Tray repeated jams.	1. If jams persist after you have cleaned the printer, check the media specifications and verify that you are loading the MP Tray correctly (see Chapter 3, “Printing Tasks”). 2. The paper is longer than 17.7 in. (450 mm) or wider than 11.7 in. (297 mm), which is greater than the maximum width or length the printer can feed, and will cause the printer to jam.
Paper Cassette repeated jams.	If jams persist after you have cleaned the printer, check the media specifications and verify that you are loading the cassette correctly (see Chapter 3, “Printing Tasks”).
Lower Cassette repeated jams.	Ensure that the lower cassette is set for the size of paper installed and that the cassette is not overloaded.

Improving Print Quality

Solutions to general causes of print quality problems are given in the checklist below, followed by specific samples of common print quality problems. If the listed solutions do not work, call for help (see the end of this chapter).

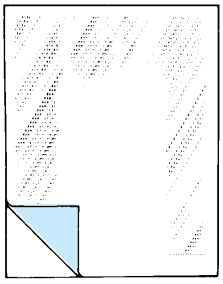
Print Quality Checklist

- Redistribute the toner in the toner cartridge (see "The Toner Cartridge" in Chapter 7).
- Clean the inside of the printer (see "Cleaning the Printer" in Chapter 7).
- Adjust the print density (see "Adjusting Print Density" in Chapter 5).
- Check the paper type and quality (see Appendix C, "Media Specifications").
- Adjust resolution for the type of document you are printing (see "Enhancing Resolution" in Chapter 5).
- Replace the toner cartridge, then check print quality again.

Note

Toner cartridges should be allowed to stabilize at room temperature prior to use, otherwise print quality may be affected.

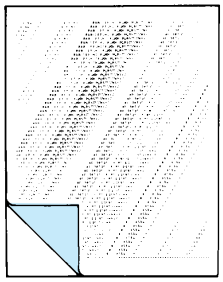
Fade



If a white streak or faded area appears on the page (in the direction the paper passes through the printer):

- The toner cartridge toner supply is low. Remove the toner cartridge from the printer and rotate it back and forth. If shaking the cartridge does not improve the print quality, replace the toner cartridge.
- The print density adjustment is too light. Adjust the density adjustment setting (See "Adjusting Print Density" in Chapter 5).

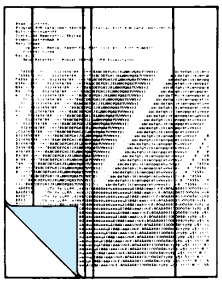
Dropouts



If faded-out areas, generally rounded, occur randomly on the page:

- The moisture content of the paper is uneven or the paper has moist spots on its surface. Try paper from a different source.
- The paper lot is bad. The manufacturing processes can cause some areas to reject toner. Try paper from a different source.
- If using paper within the specification required by the printer (refer to Appendix C, “Media Specifications”) does not correct your problem, your printer may need service. Contact your authorized HP dealer or your HP service representative.

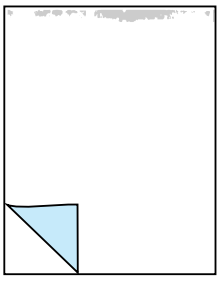
Lines



If sharp black streaks appear on the page (in the direction the paper passes through the printer), the photosensitive drum inside the toner cartridge has probably been scratched. Replace the toner cartridge.

If smeared black streaks appear (in the direction the paper passes through the printer), the fuser may be bad. Contact your HP service representative.

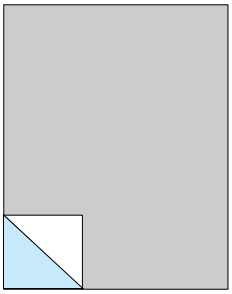
Toner Smear



If toner smears appear on the leading edge (as it passes through the printer) of the paper, the paper guides are dirty. Clean the printer as described in “Cleaning the Printer” in Chapter 7.

If toner on the paper is loose or can be wiped off easily, your fuser may be damaged. Contact your authorized HP dealer or your HP service representative.

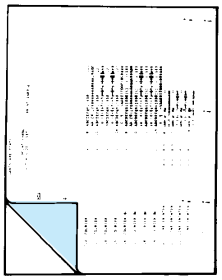
Background Gray Toner Shading



If the amount of background toner shading becomes unacceptable, the procedures described below may help to clear the condition:

- Lower the density setting (see “Adjusting Print Density” in Chapter 5). This will decrease the amount of background shading.
- Change the paper to a lighter basis weight.
- Check the printer’s environment; very dry (low humidity) conditions can increase the amount of background shading.
- Replace the toner cartridge.
- If the above procedures do not fix the the problem, the transfer roller may need replacing. Contact your authorized HP dealer or your HP service representative.

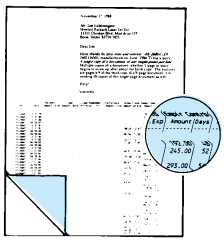
Repetitive Defects



If marks appear repeatedly on the printed side of the page (in the direction the paper passes through the printer):

- The toner cartridge is damaged. The circumference of the toner cartridge drum is 3 3/4 inches (94 mm). If a repetitive mark occurs every 3 3/4 inches (94 mm) on the page, replace the toner cartridge.
- The developer roller is bad. If a repetitive mark occurs every 2 inches (51 mm) on the page, replace the toner cartridge.
- The charger roller is bad. If black lines (which are perpendicular to the direction the paper travels through the printer) occur every 1 1/2 inches (38 mm), replace the toner cartridge.
- The transfer roller has toner on it. If defects occur every 2 3/8 inches (61 mm) on the back of the page, the problem will likely correct itself after a few more pages.

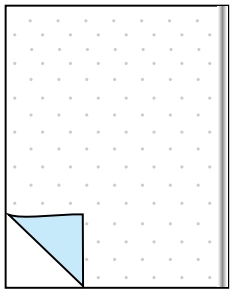
Improperly Formed Characters



If characters are improperly formed, producing hollow characters, your paper stock may be too slick. Try a different paper.

If characters are improperly formed, producing a wavy effect, the laser scanner needs service. Call your authorized HP dealer or HP service representative.

Line at Edge of Paper



If a line appears on the edge of the paper after printing about 10,000 pages (usually the right side and running the direction that the paper travels through the printer), the drum in your toner cartridge is wearing out. The line will grow wider, with cross-hatching. Replace the toner cartridge. Shaking the cartridge will not relieve the problem.

Understanding Printer Messages

The following table lists printer messages and their meanings and describes recommended actions. Messages that begin with a number are listed first, followed by messages that begin with a letter.

Table 8-1 Printer Messages

Message	Description	Recommended Action
Numeric Listings		
00 READY	The default ready message. The printer is ready to use.	No action required.
00 POWERSAVE	Printer is in Power Save mode. In Power Save mode all control panel keys operate normally. (See "Saving Power with the Power Save Feature" in Chapter 5.)	Press any printer control panel key to take printer out of Power Save mode. Receipt of data or an error condition will also take the printer out of Power Save mode. The job will print when the fuser has warmed.
00 OFFLINE	Printer is off line and cannot receive data.	Press **On Line**.
02 WARMING UP	The printer is warming up and is not ready to accept data.	Wait until the printer signals ready. If necessary, press **On Line**.
04 SELF TEST	Printing a continuous self test.	Press **On Line** or **Shift** + **Continue** to stop the test. Several more pages may print.
05 SELF TEST	Printer self test in process (non-printing).	No action required.
06 PRINTING TEST	Printing a self test.	No action required.
06 TYPEFACE LIST	Printing a Typeface List. (Note that PCL/PostScript formats are different.)	No action required.
06 DEMO PAGE	Printing a Demonstration Page. (Note that PCL/PostScript formats are different.)	No action required.
06 CONFIG PAGE	Printing a Configuration Page.	No action required.
07 RESET	Follows a control panel **Shift** + **Reset** selection. The printer returns all Printing, PCL, Job, and installed personality (PS, etc.) Menu items to user-selected settings and clears buffered page data, clears temporary soft fonts, and clears temporary macros.	No action required unless the printer is receiving data (you may have to press **Shift** + **Reset** several times to prevent printing unwanted pages).
08 COLD RESET	The printer returns all Printing, PCL, Job, Config, Mem Config, Parallel, MIO (if installed), and the installed personality (PCL, PS, etc.) Menu settings to their factory default configurations, except for page count, MP Tray size, and display language.	Reconfigure your printer and MIO. When you install an MIO card, to reinitialize the printer's control panel you may need to perform a cold reset. (Note: In a shared environment, this task should only be performed by the system administrator.) To perform a cold reset, hold down **On Line** while switching the printer ON until `08 COLD RESET` appears in the display.

Message	Description	Recommended Action
09 MENU RESET	Clears the page buffer, removes temporary data such as downloaded fonts, and sets user-selected defaults (such as Power Save) to their factory defaults.	To access, press Shift + Reset for about 10 seconds until RESET=MENU appears, then use the + key to select the kind of reset you want.
09 RST ACTIVE IO	Clears the page buffer and removes temporary data such as downloaded fonts, but affects the active I/O port only.	Same as 09 MENU RESET above.
09 RESET ALL I/O	Clears the page buffer and removes temporary data such as downloaded fonts, but affects all I/O ports.	Same as 09 MENU RESET above.
10 RESET TO SAVE	You changed menu items while data, temporary fonts, or temporary macros were present in printer memory or while the printer was in the middle of a job.	Reset the printer. There are two choices: 1. To immediately activate your selections, press Shift + Reset until 07 RESET appears (you will delete temporary macros, fonts, and buffered data). 2. Press Shift + Continue or On Line. Your changes will remain recorded in the menu (marked with an *), but will not become active until the printer is reset or the printer detects the end of the job.
12 PRINTER OPEN	The printer's front cover is not firmly closed, or your toner cartridge is not installed correctly.	Make sure your toner cartridge is fully seated and the front cover is firmly closed.
13 PAPER JAM	Paper is jammed in the paper path, or a paper jam sensor may be stuck, causing a false paper jam warning.	*Remove jammed paper* (see "Clearing Paper Jams" in this chapter). The front cover must be opened and closed again before pressing On Line to resume. If no paper jams are found but the message persists, see "Repeated Paper Jams" in this chapter for other possible causes.
14 NO TONER CART	The toner cartridge is not installed correctly or is not installed.	Insert a toner cartridge or make sure the cartridge is fully seated and the front cover is fully closed, then press On Line to resume.
16 TONER LOW	The toner cartridge is running out of toner. If TONER LOW=CONT* is displayed, the printer will continue printing; if TONER LOW=STOP, the printer will stop printing and go off line.	Shake the toner cartridge or replace it (see "The Toner Cartridge" in Chapter 7). If TONER LOW=STOP, press On Line or Shift + Continue to allow printing to continue (print quality will gradually degrade).
18 MIO INIT	The MIO card is initializing. This is a status message; during initialization the MIO is not active, but since the printer supports I/O switching, the printer remains on line.	No action required. Display will clear automatically (this may take up to a minute, depending on the card). However, if the message remains after 5 minutes a problem does exist. Contact you network administrator or consult the network documentation that came with your MIO card.

Message	Description	Recommended Action
18 MIO NOT READY	The MIO card is not ready. The Bi-Tronics parallel port will continue to operate normally.	If the printer MIO card is operating correctly and communicating with the network, this message will disapear after approximately one minute and no action is required. If the MIO card is unable to communicate with the network, this message will remain for five minutes and then go away. In this case the printer is not communicating with the network (even though the message is no longer present). The problem may be a bad MIO card, bad cable/connection on the network, or a network problem. Contact your network administrator or consult the network documentation that came with your MIO card.
20 MEM OVERFLOW	The printer received more data from the computer than can fit in its available user memory.	Press **Shift** + **Continue** to print the transferred data (data loss may result), then: make more memory available in the printer by removing some fonts, macros, or any other data from memory; or, simplify the page sent to the printer; or, install additional memory. (Note, if AUTO CONT=ON the printer will automatically continue printing when this error occurs).
21 PRINT OVERRUN	The data (dense text, rules, raster or vector graphics) sent to the printer was too complex.	Press **Shift** + **Continue** to resume printing. (Note, if AUTO CONT=ON the printer will automatically continue printing when this error occurs). You may lose some data. Try to simplify your print job. If you must print the job "as is," set PAGEPROTCT=ON in the Job Menu, print the job, then return PAGEPROTCT=AUTO. *Do not leave* PAGEPROTCT *set to* ON *as it will degrade performance.*
22 PAR IO ERROR, 22 MIO ERROR	For Bi-Tronics parallel (PAR) configuration, the computer and printer are not communicating because of improper signal protocols. This is an I/O buffer overrun error. **Parallel configuration:** may mean a loose cable connection or a bad or poor quality cable. **MIO configuration:** This is an I/O buffer overrun error.	Press **Shift** + **Continue** to clear the error message (data will be lost). If the error continues, call your dealer or HP service representative. **Parallel configuration:** check for loose cable; use a high-quality cable (see "Accessories and Options" in Chapter 1 or the *Getting Started Guide* for HP cable part numbers and information). (Note: some non-HP parallel cables may be missing pin connections). If you are using an I/O other than the Bi-Tronics parallel I/O, see the manual for that device or contact your dealer. If you are on a network, contact your network administrator.
40 MIO ERROR	Indicates an abnormal connection break occurred while transferring data from the computer.	(If you are using an I/O other than the Bi-Tronics parallel I/O, refer to the user's manual for that product.) Press **Shift** + **Continue** to clear the error message.
If the following errors persist, call your HP-authorized service provider.		

Message	Description	Recommended Action
41.[X] ERROR *X=1, 2, 4, or 5*	A temporary printing error occurred.	Remove the page from the output bin and press Shift + Continue. The page containing the error will automatically be reprinted. (Note, if AUTO CONT=ON the printer will automatically continue printing when this error occurs).
41.3 PAPER ERROR	The wrong size paper was fed from the MP tray or the printer picked two sheets of paper at once.	Ensure that the paper is within the specification required. If the page jammed, remove the jam. Press Shift + Continue and the page containing the error will automatically be reprinted. (Note, if AUTO CONT=ON the printer will automatically continue printing when this error occurs).
50 SERVICE	The printer identified an internal service error.	If this error appears, switch the printer OFF *for at least 15 minutes* and then back ON. If the error continues, call your dealer or HP service representative.
51 ERROR	The printer detected a temporary error condition.	Press Shift + Continue to resume operation. (Note, if AUTO CONT=ON the printer will automatically continue printing when this error occurs).
52 SERVICE	The printer identified an internal service error.	If this error appears, switch the printer OFF and then back ON. If the error continues, call your dealer or HP service representative.
53.XY.ZZ ERROR	An error occurred during configuration and validation of SIMM memory: **X (Hardware Type):** 0: ROM 1: RAM **Y (Hardware Device):** 0: Internal Memory 1: SIMM Slot 1 (closest to processor) 2: SIMM Slot 2 3: SIMM Slot 3 4: SIMM Slot 4 **ZZ (Error Number):** 0: Unsupported memory 1: Unrecognized memory 2: Unsupported memory size 3: Failed RAM test 4: Exceeded maximum RAM size 5: Exceeded maximum ROM size 6: Invalid SIMM speed 7: SIMM reporting information incorrectly 8: SIMM RAM parity error 9: SIMM ROM needs to be mapped to an unsupported address 10: SIMM address conflict 11: ROM out of bounds 12: Could not make temporary mapping	Make sure your SIMM board is installed correctly (see Appendix D, “SIMM Board Installation”). Replace the SIMM that caused the error. Shift + Continue will allow you to continue but the SIMM that caused the error will not be configured. If the SIMM device has more than one bank of memory, the good banks will be configured.
55 ERROR	See 51 ERROR.	See 51 ERROR.
57 and 58 SERVICE	See 50 SERVICE.	See 50 SERVICE.

Message	Description	Recommended Action
61.[x] SERVICE *X=0 - 4*	The printer encountered a parity error when accessing the RAM memory SIMM in slot "X". If X=0, the slot with the defective SIMM could not be determined.	Switch the printer OFF and then ON (data stored in printer will be lost). If the error is still present, first verify that the SIMM board is correctly installed (see Appendix D, "SIMM Board Installation," for procedure). Switch the printer ON. If the error is still present, switch the printer OFF and remove the SIMM board. Switch the printer back ON. If the error message does not appear, the problem is on the SIMM. See Appendix D, "SIMM Board Installation," for more information.
62.[x] SERVICE *X=0 - 6*	The printer identified a problem while checking its memory. "X" refers to the device the printer was checking when it encountered the error. 0: Internal Memory 1–4: SIMM Slot 6: Cache	If the printer contains a SIMM memory board, switch the printer OFF. Verify that the SIMM board is installed correctly (see Appendix D, "SIMM Board Installation") and switch the printer back ON. If the error is still present, switch the printer OFF and remove the SIMM board. Switch the printer back ON. If the error message does not appear, the problem is on the SIMM board. See Appendix D, "SIMM Board Installation," for more information.
63 SERVICE/ 63 NEEDS SERVICE	The printer found a problem in its internal RAM memory.	Switch the printer OFF, then back ON. If the error reappears, call your dealer or HP service representative.
64 SERVICE	The printer identified an internal service error.	If this error appears, switch the printer OFF, then back ON. If the error continues, call your dealer or HP service representative.
65 and 67 SERVICE	See 50 SERVICE.	See 50 SERVICE.
68 ERROR	The printer detected an error in the nonvolatile memory (NVRAM).	Press **Shift** + **Continue**, then check your control panel settings for changes (print a self test).
68 SERVICE or 68 READY/SERVICE	The printer's nonvolatile memory (NVRAM) is full.	Press **Shift** + **Continue**; the `00 READY` message will be replaced by `68 READY/SERVICE` until the condition is cleared. If you switch the printer OFF, then ON, you may lose settings (to check settings, print a self test). If the error reappears, call your dealer or HP service representative.
70 or 71 ERROR	A language (personality) SIMM problem was identified.	Remove or replace the language (personality) SIMM.
79 SERVICE (__)	An internal controller error occurred. The numbers "__" following the error indicate the specific kind of error.	Switch the printer OFF, then back ON. If the error appears again, remove any non-HP SIMM memory boards from the printer then switch the printer OFF, then back ON. If the error appears again, record the numbers following the error message and call your dealer or HP service representative.
80 SERVICE (__)	The printer detected a problem in the MIO card. The numbers "__" following the error message indicate the specific type of error.	Switch the printer OFF and then back ON. If the error appears again, record the numbers following the error message and call your dealer, card supplier, or HP service representative.

Message	Description	Recommended Action
Alphabetical Listings		
FS DISK FAILURE	Printer detected a disk failure.	Printer operation may continue, provided access to the disk is not required. Press **Shift** + **Continue**, to continue printing when this error occurs.
MENUS LOCKED	Your network administrator has locked out access to the control panel menu system, except for the Test Menu and MP Tray size.	See your network or printer administrator. A removable instruction sheet was located on Page ii.
MF FEED *paper size*	The printer requested that media be manually fed. *Paper size* may be: LETTER, LEGAL, A4, EXEC, 11x17, A3, JIS B4, JIS B5, CUSTOM.	Insert the appropriate paper size into the MP tray and press **On Line**; or, press **Shift** + **Continue**, if the MP Tray is not in "first" mode as selected from the control panel, to feed from the Paper Cassette or Lower Cassette. (See Chapter 3, "Printing Tasks.")
ME FEED *envelope size*	The printer requested that an envelope be manually fed. *Envelope size* may be: COM10, MONARCH, DL, C5, B5, JPOST, or JPOSTD.	Insert the appropriate envelope size into the MP tray and press **On Line** or **Shift** + **Continue** if MP Tray is not in "first" mode to print from the envelope feeder. (See Chapter 3, "Printing Tasks.")
MP LOAD, PC LOAD, or LC LOAD *paper size*,or *envelope size*	The printer received a request for a paper or envelope size not available in the printer.	MP LOAD: Load MP Tray with the requested media. If the size is not selected in the printer control panel,use the **MP Paper Size** key to enter the requested size, or press **Shift** + **Continue** to draw the requested size from another source, if available. Note: If MP LOAD remains in the display, you may have to clear the printer's buffer by resetting the printer. Press **Shift** + **Reset**. **PC or LC LOAD**: Load the Paper Cassette or Lower Cassette with the requested media. Also, the back paper guide in the cassette must be set to the correct media size (the printer determines the media size by reading the location of this guide).
PC TRAY EMPTY or LC TRAY EMPTY	A tray (cassette) is empty.	Add paper to the empty tray.
PC INSTALL	The printer currently has the Lower Cassette selected as the paper source and has detected that the Paper Cassette is not installed.	Install or reseat the Paper Cassette (it serves as a paper guide for the Lower Cassette).

Clearable Warnings

If you receive a clearable warning message, the printer changed settings (see Table 8-2 below) in order to print your print job.

Table 8-2 Clearable Warning Messages

Message	Meaning
W0 JOB 600/A4	Because the job parameters of resolution and page protection could not be met with the available memory, the job was downgraded to a resolution of 600 dpi and page protect of A4.
W1 IMAGE ADAPT	The printer received a graphics print file that was too complex to print at the requested resolution. Check the printout for loss of data or print quality. NOTE: if this warning occurs frequently, install additional memory.
W2 INVALID PERS	The job was not printed because you requested a personality, such as PostScript, that had not been installed. Install the personality that matches the personality of the files you are sending, together with enough memory to support that personality.
W3 JOB ABORTED	The printer was forced to abort the print job because there was not enough installed memory to support the current printer language (PostScript, for example). Install additional memory.
WD DISK NOT INIT	The printer was unable to read the root directory from the disk. Use the disk initalization utility to initialize the disk.
W8 JOB 600/OFF	Because the job parameters of resolution and page protection could not be met with the available memory, the job was downgraded to a resolution of 600 dpi and page protect off.
W9 JOB 600/LTR	Because the job parameters of resolution and page protection could not be met with the available memory, the job was downgraded to a resolution of 600 dpi and page protect of letter.
WM JOB 300	The job was printed at 300 dpi. NOTE: if this warning occurs frequently, install additional memory.
WM JOB 600/A3	Because the job parameters of resolution and page protection could not be met with the available memory, the job was downgraded to a resolution of 600 dpi and page protect of A3.
WM JOB 600/LGL	Because the job parameters of resolution and page protection could not be met with the available memory, the job was downgraded to a resolution of 600 dpi and page protect of legal.
WM MEM CNFIG N/A	The printer did not have enough memory when switched on to support the previous settings for I/O Buffering and/or Resource Saving, probably because you removed a memory SIMM, or added a new personality SIMM. (You can check settings by printing a self test.)
WM CHK MEM CNFIG	I/O Buffering and/or Resource Saving settings were altered when the printer was switched on because the printer did not have enough memory. This usually occurs after memory has been removed from the printer. (You can check settings by printing a self test.) Adding additional memory should correct this problem.
WM [*personality*] MEM FULL	The Resource Saving memory area for the specified *personality* is full. Press Shift + Continue to continue printing (some data will be lost). The current job will print, but some resources (downloaded fonts, etc.) may not be saved. If this error occurs frequently, you may need to adjust Resource Saving settings.

A clearable warning appears if the printer detects a transient condition, such as an invalid or uninstalled personality, or lack of memory causes a temporary change in resolution. A number of clearable warnings can appear while printing a job. The printer will continue on line while the message is displayed. Clear the message by pressing Shift + Continue. For information about eliminating the need to respond to clearable warning messages, see under the “Configuration Menu” in Chapter 4.

Calling for Help

If you try all the suggestions given in this manual and still need assistance, call the authorized Hewlett-Packard dealer where you purchased your printer. For additional sources of assistance, see the telephone numbers on the inside front cover of this manual.

A

Common PCL Printer Commands

PCL Printer Commands (Escape Sequences)

Most software applications do not require you to enter printer commands. See your computer and software documentation to find the method to use for entering printer commands, if needed.

PCL printer commands tell the printer which tasks to perform or which fonts to use. This appendix is not intended to provide complete information about PCL commands, only to provide a quick reference for users who are already familiar with PCL command structure.

Note

The table at the end of this appendix contains commonly used PCL commands. For a complete listing and explanation of how to form PCL, HP-GL/2, and PJL commands, order the *PCL/PJL Technical Reference Package,* which is described in the "Supplementary Documents" section at the beginning of this manual (to order, see the inside front cover for information).

PCL Printer Command Syntax

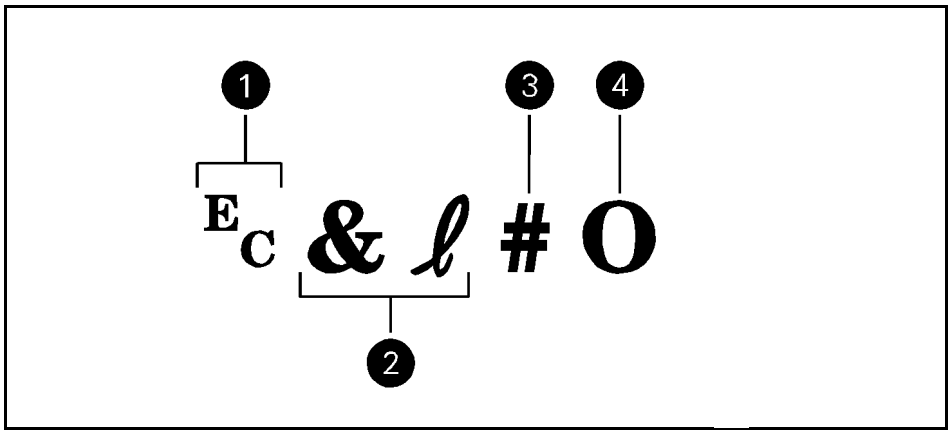
Before using printer commands, compare these characters:

Lowercase l:	ℓ	Uppercase O:	O
Number one:	1	Number 0:	Ø

Many printer commands use the lowercase letter l (ℓ) and the number one (1), or the uppercase letter O (O) and the number zero (Ø). These characters may not appear on your screen as shown here. *You must use the exact character and case specified for PCL printer commands.*

Figure A-1 displays the elements of a typical printer command (in this instance a command for page orientation).

Figure A-1



Printer Command Explanation

1 Escape character (begins escape sequence)
2 Command category
3 Value field (contains both alpha and numeric characters)
4 Uppercase letter that terminates the escape sequence

Using PCL Printer Commands

Escape Character

Printer commands always begin with the escape character (EC). Table A-1 shows the escape character for various software applications. (The keyboard escape key will not produce the escape character.) Check your software manual for additional information.

Table A-1 Software Escape Character Commands

DOS Software Package	What You Enter	What Appears on Screen
Lotus 1-2-3 and Symphony	Type \Ø27	Ø27
Microsoft Word for DOS	Hold down Alt key and type Ø27 on the numeric keypad	←
WordPerfect for DOS	Type <27>	<27>
MS-DOS Editor	Hold down CTRL P then press Esc	←
MS-DOS Edlin	Hold down CTRL V then type [	^[
dBase	?? CHR(27)+"*command*"	?? CHR(27)+" "

PCL Font Selection

PCL printer commands for selecting fonts appear in the PCL Typeface List (see Chapter 5, “Special Tasks”). An example from this list is shown below. Notice the two variable boxes for symbol set “ᴇc(” and point size:

If these variables are not filled in, the printer will use defaults. For example, if you want a symbol set that contains line-draw characters, select the 10U (PC-8) or 12U (PC-850) symbol set. Other common symbol set codes are listed in Table A-2. Order the *PCL/PJL Technical Reference Package* if you require symbol set charts or want more information.

Table A-2 Common Symbol Set Values

Code	Symbol Set	Code	Symbol Set
8U	HP Roman-8 Default Symbol Set	19U	Windows 3.1 Latin 1
10U	IBM Layout (PC-8) (code page 437)	9E	Windows 3.1 Latin 2 (commonly used in Eastern Europe)
12U	IBM Layout for Europe (PC-850) (code page 850)	5T	Windows 3.1 Latin 5 (commonly used in Turkey)
8M	Math-8	579L	Wingdings Font

Point size (or pitch) is another variable. In the following example, “12U” has been filled in for the PC-850 symbol set and “12” for the point size. This printer command would select a 12-point Univers Medium font.

ᴇc(12Uᴇc(s1p12vØsØb4148T

Setup Strings

Some software applications, like older versions of Lotus 1-2-3 for DOS, require setup strings with PCL printer commands. In the following example, the Lotus escape character (\027) is shown. This setup string is used to change the orientation to landscape and to select the small Line Printer font.

\Ø27&ℓ1O\Ø27(sØp16.67h8.5vØsØbØT

Frequently used PCL printer commands are shown in Table A-3.

Table A-3 Frequently Used PCL Printer Commands

Printer Command	Function	# Refers To
Esc	Escape character	(see Table A-1 or your software manual.)
L F	Line feed	n/a
F F	Form feed	n/a
C R	Carriage return	n/a
EscE	Resets the printer	n/a
Esc&**ℓØH**	Eject page	n/a
Esc&**ℓ#X**	Indicates number of copies	1 to 32,767
Esc&**ℓ#H**	Selects paper source	Ø = prints/ejects current page 1 = Paper Cassette 2 = manual feed - paper 3 = manual feed - envelope 4 = MP Tray 5 = optional 500-sheet universal lower cassette
Esc&**ℓ#A**	Sets paper size or envelope size	1= Executive 2 = Letter 3 = Legal 11 = 11x17 26 = A4 27 = A3 45 = JIS B5 46 = JIS B4 71 = JPOST 72 = JPOSTD 8Ø = Monarch 81 = Commercial 10 9Ø = DL 91 = International C5 1ØØ = Commercial B5 101 = Custom
Esc&**ℓ#O**	Selects orientation	Ø = portrait 1 = landscape 2 = reverse portrait 3 = reverse landscape
Esc&a#L	Sets left margin	Column number
Esc&a#M	Sets right margin	Column number
Esc&**ℓ#E**	Sets top margin	Number of lines
Esc&**ℓ#F**	Sets text length (bottom margin)	Number of lines from top margin
Esc&**ℓ#D**	Sets line spacing	Lines per inch: (1,2,3,4,6,8,12,16, 24, or 48)
Esc&d#D	Begins underline	Ø = fixed 3 = floating
Esc&d@	Ends underline	n/a
Esc&k#H	Sets horizontal motion index	1/120 inch increments (compresses print horizontally)
Esc&**ℓ#C**	Sets vertical motion index	1/48 inch increments (compresses print vertically)
Esc&a#**R**	Sets # of vertical position, rows	Sets current vertical print position to specified row number (#)
Esc*p#**Y**	Sets # of vertical position, dots	Sets current vertical print position to specified dot number (#)
Esc&a#**V**	Sets # of vertical position, decipoints	Sets current vertical print position to specified decipoint number (#)
Esc&a#**C**	Sets # of horizontal position, rows	Sets current horizontal print position to specified row number (#)
Esc*p#**X**	Sets # of horizontal position, dots	Sets current horizontal print position to specified dot number (#)
Esc&a#**H**	Sets # of horizontal position, decipoints	Sets current horizontal print position to specified decipoint number (#)

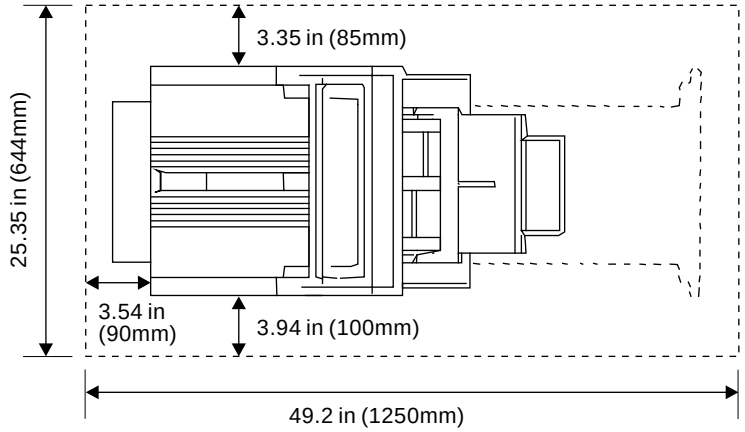
B

Environmental Specifications

Location Requirements

Place your printer on a sturdy, level surface in a well ventilated room. The environment should be stable, with no abrupt changes in temperature or humidity and no exposure to direct sunlight or chemicals. Figure B-1 shows the suggested amount of space to leave around the printer. Leave adequate space to remove paper trays and to allow air circulation around vents to prevent overheating.

Figure B-1



Printer Clearance Dimensions

Specifications for 4V and 4MV Printers

Physical Dimensions

Height	12.5 in. (317 mm)
Height of Lower Cassette option	4.7 in. (120 mm)
Width	18.1 in. (459 mm)
Width with exhaust grill	18.7 in. (476 mm)
Depth (body)	20.6 in. (522 mm)
Depth with 11" x 17" Cassette installed	23.2 in. (590 mm)
Depth with Lower Cassette option	23.2 in. (590 mm)
Weight (without toner cartridge and with paper cassette)	51.1 lb (23.2 kg)

Electrical Specifications (Typical Values)

Power Requirements	**100/120V (+/- 10%) 50/60Hz (+/- 2Hz) 127V, 60Hz (+/- 2Hz)**	**220/240V (+/- 10%) 50 Hz (+/- 2Hz)**
Power Consumption, 4V	During printing, 380 W (average) During standby, 110 W (average) During Power Save, 28 W (average)	During printing, 395 W (average) During standby, 115 W (average) During Power Save, 35 W (average)
Power Consumption, 4MV	During printing, 385 W (average) During standby, 115 W (average) During Power Save, 31 W (average)	During printing, 400 W (average) During standby, 120 W (average) During Power Save, 38 W (average)
Min. recommended circuit capacity, typical installation (4V and 4MV)	11.5 Amps at 120 V	5.1 Amps at 220 V

Environmental Specifications

Item	**Operating Printing**	**Storage/ Standby**
Temperature (printer and toner cartridge)	50° to 91° F (10° to 32.5° C)	32° to 105° F (0° to 40° C)
Relative humidity	20% to 80%	10% to 95%

Acoustic Emissions

Operation/ Position	**(Per ISO 9296, DIN 45635,T.19)**	**Bystander 1m**	**(Per ISO 7779, DIN 45635,T.19)**	**Sound Power**	**(Per ISO 9296)**
Printing	L_{PA} 54.7dB(A)	**Printing**	L_{PA} 51.6 dB(A)	**Printing**	L_{WAD}=6.6 bels(A)
Standby	L_{PA} 44.4dB(A)	**Standby**	L_{PA} 39.4 dB(A)	**Standby**	L_{WAD}=5.4 bels(A)

FCC Regulations

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 of the following measures:

- Reorient or relocate receiving antenna.
- Increase separation between equipment and receiver.
- Connect equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult your dealer or an experienced radio/TV technician.

Note

Any changes or modifications not expressly approved by HP could void the user's authority to operate this equipment.

Use of a shielded interface cable is required to comply within the Class B limits of Part 15 of FCC rules.

VCCI Statement (Japan)

The VCCI statement, similar to the FCC regulations, is required in Japan.

Figure B-2

この装置は，第二種情報装置（住宅地域又はその隣接した地域において使用されるべき情報装置）で住宅地域での電波障害防止を目的とした情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）基準に適合しております。

しかし，本装置をラジオ，テレビジョン受信機に近接してご使用になると，受信障害の原因となることがあります。

取扱説明書に従って正しい取り扱いをして下さい。

Safety Information

Laser Safety

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration has implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States. 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. Since radiation emitted inside this printer is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

WARNING **Never operate or service the printer with the protective cover removed from the Laser/Scanner Assembly. The reflected beam, although invisible, can damage your eyes.**

Ozone Emission

The HP LaserJet 4V and HP LaserJet 4MV printers do not use high voltage corona wires in the electrophotographic process, and therefore generate no measurable ozone gas (O_3). These printers instead use charging rollers in the toner cartridge and in the print engine.

Laser Statement for Finland

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

HP LaserJet 4V/4MV laserkirjoitin on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalissa käytössä kirjoittimen suojakotelointi estää lasersäteen pääsyn laitteen ulkopuolelle.

Kirjoittimen on hyväksynyt Suomessa laserturvallisuuden osalta Sähkötarkastuskeskus. Laitteen turvallisuusluokka on määritetty valtioneuvoston päätöksen N:o 472/1985 ja standardin EN 60825 (1991) mukaisesti.

VAROITUS !
Laitteen käyttäminen muulla kuin käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING !
Om apparaten används på annat sätt än i bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

HUOLTO
HP LaserJet 4V/4MV -kirjoittimen sisällä ei ole käyttäjän huollettavissa olevia kohteita. Laitteen saa avata ja huoltaa ainoastaan sen huoltamiseen koulutettu henkilö. Tällaiseksi huoltotoimenpiteeksi ei katsota väriainekasetin vaihtamista, paperiradan puhdistusta tai muita käyttäjän käsikirjassa lueteltuja, käyttäjän tehtäväksi tarkoitettuja ylläpitotoimia, jotka voidaan suorittaa ilman erikoistyökaluja.

VARO !
Mikäli kirjoittimen suojakotelo avataan, olet alttiina näkymättömälle lasersäteilylle laitteen ollessa toiminnassa. Älä katso säteeseen.

VARNING !
Om laserprinterns skyddshölje öppnas då apparaten är i funktion, utsättas användaren för osynlig laserstrålning. Betrakta ej strålen.

Tiedot laitteessa käytettävän laserdiodin säteilyominaisuuksista:

Aallonpituus 770-795 nm
Teho 5 mW
Luokan 3B laser

DECLARATION OF CONFORMITY

according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name:	Hewlett-Packard Company
Manufacturer's Address:	11311 Chinden Boulevard Boise, Idaho 83714-1021, USA

declares that the product

Product Name:	LaserJet 4V and LaserJet 4MV*
Model Number:	C3141A and C3142A*
Product Options:	All

conforms to the following Product Specifications:

Safety: EN 60950:1988 + A1, A2
IEC 825:1984 + A1:1990 laser class 1

EMC: CISPR-22:1985 / EN 55022:1988 class B[1]
CISPR-22:1985 / EN 55022:1988 class A*
EN 50082-1:1992
IEC 801-2:1991 / prEN55024-2:1992 - 3 kV CD, 8 kV AD
IEC 801-3:1984 / prEN55024-3:1991 - 3 V/m
IEC 801-4:1988 / prEN55024-4:1992 - 0.5 kV Signal Lines, 1 kV Power Lines

Supplementary Information:

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC.

[1] The product was tested in a typical configuration with Hewlett-Packard Personal Computer and Test Systems.
* This printer contains Local Area Network (LAN) options. When the interface cable is attached to either of the IEEE 802.3 connectors, the printer meets the requirements of EN55022 Class A.

Office of Quality Manager
Boise, Idaho USA
December 22, 1993

European Contact: Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department ZQ / Standards Europe, Herrenberger Straße 130, D-7030 Böblingen (FAX: + 49-7031-14-3143)

C

Media Specifications

Introduction

You can use a variety of paper and other print media successfully with the HP LaserJet printer using the guidelines in this appendix. Media that does not meet these guidelines may increase the incidence of paper jams, cause premature wear to the printer, and contribute to repair costs.

Before purchasing any media or specialized forms in quantity, make sure your paper supplier obtains and understands the paper and print media requirements specified in the *HP LaserJet Printer Family Paper Specification Guide* (HP part number 5002-1801). You may want to order this guide for your purchasing agent.

Note

Hewlett-Packard neither warrants nor recommends the use of a particular brand of print media. Media properties are subject to change by the manufacturer and HP has no control over these changes.

It is possible that paper could meet all of the guidelines in this appendix and still not print satisfactorily. This might be due to improper handling, unacceptable temperature and humidity levels in the room, or other variables over which Hewlett-Packard has no control.

We recommend testing any paper before buying it in large quantities.

Caution

Using media outside these specifications may cause problems requiring service. This service is not covered by the Hewlett-Packard warranty or service agreements.

Paper and Preprinted Forms

For best results, use conventional 20-lb (75-g/m^2) xerographic paper. Make sure the paper is of good quality and free of cuts, nicks, tears, spots, loose particles, dust, wrinkles, voids, and curled or bent edges.

Heavy Paper Stock

See the specific requirements given in Chapter 3, "Printing Tasks," for each paper tray. *Do not* use paper heavier than 28 lb (105 g/m^2) from any tray; misfeeds, stacking problems, paper jams, poor toner fusing, poor print quality, and excessive mechanical wear can result.

Paper Guidelines

Follow these guidelines to avoid paper jams, poor print quality, or damage to your printer:

- Do not use paper that is very rough, very smooth, or embossed. Such paper may cause feeding or print quality problems, and rough papers may have poor toner adhesion.
- Do not use paper with cutouts or perforations.
- Do not use letterhead papers that are printed with low temperature inks, such as those used in some types of thermography.
- Use only colored papers or preprinted forms that use inks compatible with your printer's fusing temperature (392°F/200°C for 0.1 second).
- Keep paper stored in moisture-proof wrapping to prevent changes in moisture content which may cause poor print quality, jamming, and curl.
- Avoid paper having ragged cut edges to prevent feeding problems.

Adhesive Labels

Use only labels recommended for use in laser printers. To purchase labels, consult your HP authorized dealer or see the inside front cover of this manual for more information.

Label Construction

When selecting labels, consider the quality of each component:

- **Adhesives:** The adhesive material should be stable at the 392°F/200°C temperatures encountered in the printer's fusing process. None of the adhesive between the labels should be exposed.
- **Label arrangement:** If possible, use labels with no exposed areas between labels. If labels with exposed areas *are* used, arrange them on the carrier sheet (the backing) so that they cover the entire page *with the exposed areas of the carrier sheet running lengthwise down the sheet*. Using label stock with spaces between labels often causes labels to peel off during the printing cycle, causing serious jamming problems. *Only use a sheet of labels once.*
- **Label curl:** Labels must lie flat with no more than 0.5 in (13 mm) of curl in any direction.
- **Poorly manufactured labels:** Do not use labels with wrinkles, bubbles, or other indications of delamination.

Overhead Transparencies

Overhead transparencies used in HP LaserJet printers must be able to withstand the 392°F/200°C temperature encountered in the printer's fusing process. See Chapter 3, "Printing Tasks," for specific printing and other characteristics.

Caution Use only overhead transparencies recommended for use in laser printers.

Ordering Transparency Film

To purchase transparency film, consult your HP authorized dealer or see the inside front cover of this manual for more ordering information.

Envelopes

You can print many types of envelopes with your printer. Some envelope styles perform better than others because their construction is better suited to feeding through a laser printer.

Envelope Construction

- **Weight:** The weight of the envelope paper should not exceed a 28 lb (105 g/m^2) rating or jamming may result.
- **Construction:** Envelopes should lie flat with less than 0.25 in (6 mm) curl.
- **Manufacture:** Make sure envelopes are not wrinkled, nicked, or otherwise damaged.
- **Sizes:** See "Printing an Envelope from the MP Tray" in Chapter 3 for sizes.

Envelopes with Adhesive Strips or Flaps

Envelopes with a peel-off adhesive strip or with more than one flap that folds over to seal must use adhesives compatible with the heat and pressure of the fusing rollers in the printer. The extra flaps and strips may result in wrinkling or creasing, and may cause jamming.

Caution

Never use envelopes with clasps, snaps, windows, coated linings, self-stick adhesives, or other synthetic materials. These items can severely damage your printer. Never try to print on both sides of an envelope. Jamming and printer damage can result.

Before you load envelopes in your MP Tray, check to make sure they are regular in shape and undamaged. It's a good idea to run a pen or pencil down the leading edge to flatten them before you insert them in the MP Tray. Also, check to see that the envelopes are not stuck together.

D

Memory/Personality SIMM Installation

General Information

Your HP LaserJet printer has four SIMM (Single In-line Memory Module) slots. Use them to install additional printer memory and printer personalities (languages, such as Adobe's PostScript language).

- The HP LaserJet 4V printer comes with 4 MBytes of memory and can be expanded to 68 MBytes.
- The HP LaserJet 4MV printer contains 12 MBytes of installed memory. By adding optional 1, 2, 4, 8, or 16 MByte SIMMs you can increase memory to a total of 44 MBytes.

Note

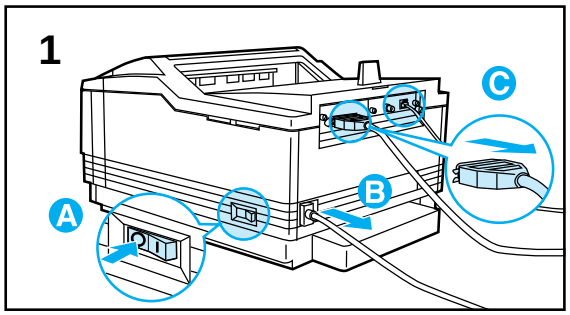
Memory SIMMs for the HP LaserJet 4 Plus and 4M Plus printers *can* be used in the HP LaserJet 4V and 4MV printers. PostScript language SIMMs for the HP LaserJet 4 Plus and 4M Plus printers *cannot* be used in the HP LaserJet 4V and 4MV printers.

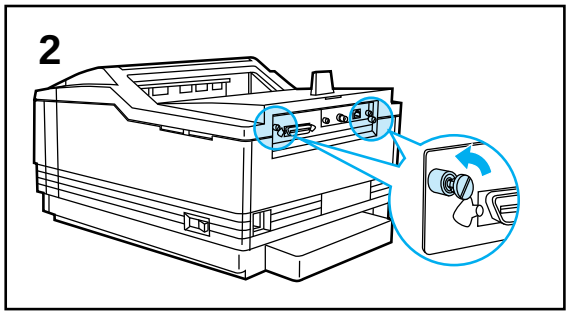
Memory SIMM Part Numbers

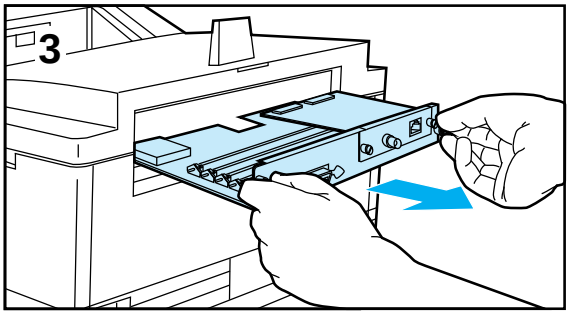
For memory boards, compare the part number on the outside of the package to the part number in the table below. If you have not received the correct SIMM, notify your authorized Hewlett-Packard dealer.

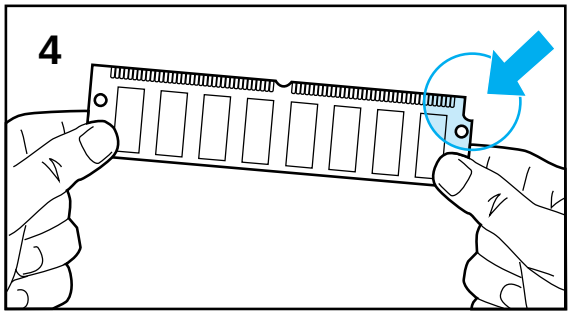
Size	Part Number
One MByte	C3130A
Two MBytes	C3131A
Four MBytes	C3132A
Eight MBytes	C3133A
Sixteen MBytes	C3146A

Installing a SIMM Board





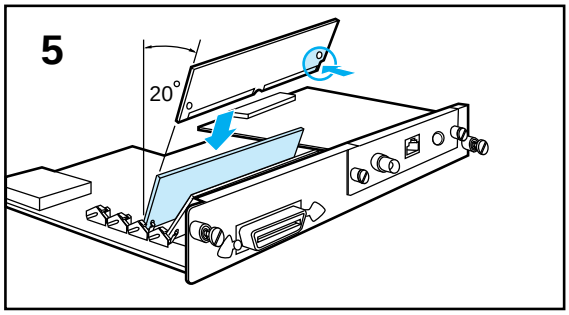


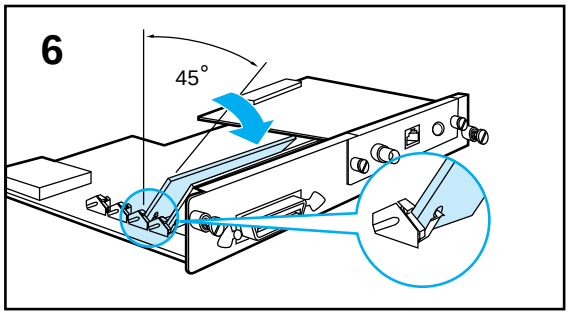


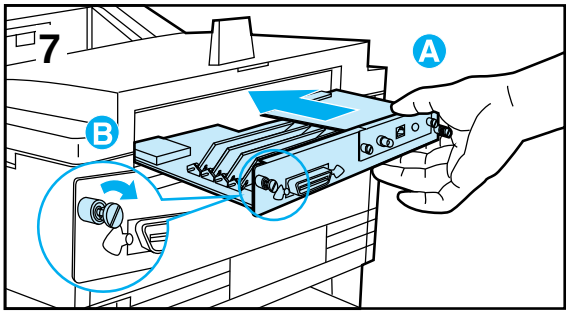
Caution

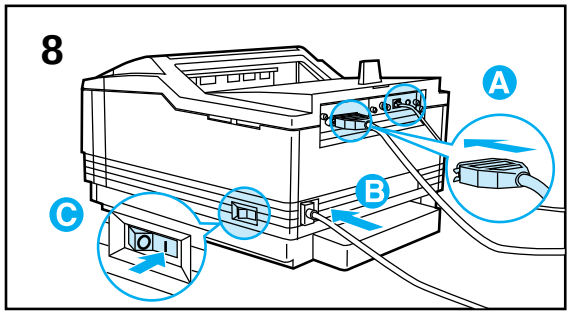
SIMM boards and your printer controller board can be damaged by small amounts of static electricity. Wear an antistatic wrist strap or touch the surface of the antistatic package before touching a board. When handling a board, wear an antistatic wrist strap or frequently touch the antistatic bag or bare metal on the printer.

1. In this order, switch the printer OFF (**A**) and unplug the power cord (**B**) and any attached cables (**C**).
2. Loosen (do not remove) the two captive screws.
3. Grasp the screws and pull the printer's controller board out of the printer. Place it on a flat, non-conductive surface. (For ease of replacement, note how the board fits into slots in the printer.)
4. Remove the SIMM board from the antistatic package. Hold the board with your forefingers on the side edges and your thumbs against the back edge, so the notch on one end is on the *right* and the metal teeth face toward the SIMM slot.









5 Insert the board *firmly* into the SIMM slot at about a 20-degree angle. Use closest open slot toward the back of the printer.

6 Rotate the SIMM toward the back of the printer to about a 45-degree angle until it clicks into the metal locking tabs. If it is properly seated, it will not lift away from the slot. (To remove a SIMM, you must first release the metal locking tabs.)

7 Slide the printer controller board back into the printer (**A**) and tighten the two screws (**B**).

8 Reattach any cables (**A**) and the power cord (**B**), *then* switch the printer ON (**C**) and test the SIMM (see the following section).

Testing a SIMM Board

Use the procedures below to print a self test to verify SIMM board installation. Procedures are given for both memory and PostScript or other personality SIMMs.

Memory SIMM

Running a Self Test Printout

1 Plug in the power cord and switch the printer ON.

2 After a few seconds, the On Line indicator should light and `00 READY` should appear in the control panel display. If a printer message appears, see "Troubleshooting a SIMM Board" later in this appendix.

3 Press **On Line** to take the printer off line.

4 Press **Menu** until `TEST MENU` appears in the control panel display.

5 Press **Item** until `SELF TEST` appears in the control panel display.

6 Press **Enter** to print a self test.

7 Press **On Line** to return the printer on line.

Locate "RAM SIZE" on the self-test printout (see "Understanding the Self Test Printout" in Chapter 5 for more information). This is the amount of memory now installed in your printer.

If the amount of memory has not increased since installing the SIMM, it may not be installed correctly (repeat installation procedure) or it may be defective (see "Troubleshooting a SIMM Board" later in this chapter).

PostScript SIMM

Note

PostScript language SIMMs for the HP LaserJet 4 plus and 4M plus printers *cannot* be used in the HP LaserJet 4V and 4MV printers. Only a PostScript language SIMM designed for this printer can be used.

To verify your PostScript SIMM installation:

1. Plug in the power cord and turn the printer ON.
2. After a few seconds, the On Line light should go on and `00 READY` should appear in the control panel display. If a printer message appears instead, see "Troubleshooting a SIMM Board" below.
3. Press **On Line** to take the printer off line.
4. Press **Menu** until `PS MENU` appears in the control panel display. This indicates that your printer recognizes that the PostScript language is installed. If `PS MENU` does not appear, check the SIMM installation.
5. Press **On Line** to return the printer on line.

Troubleshooting a SIMM Board

Service / Error Messages

These messages can be generated when your printer is checking its internal memory. (For more information on the messages below, see Chapter 8, "Solving Printer Problems.") They will appear in the format:

`61.x SERVICE` where x = 0, 1, 2, 3, or 4.

This error indicates a SIMM parity error. The x indicates which SIMM slot generated the error. If x = 0, the slot with the defective SIMM could not be determined. Check the HP part number to make sure you have the right SIMM board; if you do, see the checking procedure for `61.x SERVICE` and `62.x ERROR` on the next page.

`62.x ERROR` where x = 0, 1, 2, 3, or 4.

This error indicates your printer identified a problem while checking memory:

- If x = 0, the problem is in internal Read Only Memory (ROM); see your HP Service Representative.
- If x = 1, 2, 3, or 4, the problem is in SIMM slot 1, 2, 3, or 4.

To check memory for the `61.x SERVICE` and `62.x ERROR` messages:

1. Switch the printer OFF, then back ON (*data will be lost*).
2. If the error message appears again, switch your printer OFF and verify that the SIMM board is installed correctly, then switch your printer ON.
3. If the error message appears again, switch printer OFF, remove the SIMM board(s), then switch printer back ON.
4. If the error message appears again, the problem is in printer memory. If the error message does not appear, the problem is in SIMM memory. Call your HP service representative.

`63 NEEDS SERVICE / 63 SERVICE`

The printer found a problem in its internal RAM memory. Switch your printer OFF, then ON, to clear the error. If the message reappears, call your authorized HP dealer or service representative.

Validation Error Messages

Validation error messages appear when a SIMM fails to be initialized when the printer is turned on. This error is in the format, `53.XY.ZZ ERROR`.

X (Hardware Type)	Y (Hardware Device)	ZZ (Error Number)
0: ROM 1: RAM	0: Internal Memory 1: SIMM Slot 1 2: SIMM Slot 2 3: SIMM Slot 3 4: SIMM Slot 4	0: Unsupported memory 1: Unrecognized memory 2: Unsupported memory size 3: Failed RAM test 4: Exceeded maximum RAM size 5: Exceeded maximum ROM size 6: Invalid SIMM speed 7: SIMM reporting information incorrectly 8: SIMM RAM parity error 9: SIMM ROM needs to be mapped to an unsupported address 10: SIMM address conflict 11: ROM out of bounds 12: Could not make temporary mapping

Although these errors can be ignored, the SIMM that caused the error will not be configured. You can still print if the SIMM has more than one bank of memory.

E

Warranty and Software License

Limited Warranty

This Warranty gives you specific legal rights. You may also have other rights which may vary from area to area.

Hewlett-Packard warrants its computer hardware products against defects in materials and workmanship for a period of one year from receipt by the end user.

Hewlett-Packard warrants its software for 90 days from the date of purchase and warrants that the software will execute its programming instructions when properly installed on the computer for which it is intended, and that the media upon which the software is recorded will be free from defects in materials and workmanship under normal use.

During the warranty period, HP will, at its option, either repair or replace hardware products that prove to be defective. The sole remedy for software shall be to return the diskettes to HP for replacement.

Should HP be unable to repair or replace the product within a reasonable amount of time, a refund of the purchase price may be made upon return of the product.

To have your printer serviced by Hewlett-Packard, you must make arrangements to have it serviced in the country of purchase.

Exclusions

The warranty on your HP LaserJet printer shall not apply to defects or damage resulting from:

- Improper or inadequate maintenance by customer.
- Customer-supplied software or interfacing.
- Unauthorized modification or misuse.
- Operation outside of the environmental specifications for the product.
- Operation of non-supported printing media.
- Duty cycle abuse (see the following explanation).
- Operating the printer from a mechanical switchbox without a designated surge protector.
- Improper site preparation and maintenance.
- Use of non-HP toner cartridges (see the following explanation), SIMM memory boards, or interface boards.

The use of non-Hewlett-Packard toner cartridges does not affect either the warranty or any maintenance contract purchased from HP. However, if an HP LaserJet printer failure or printer damage is found to be directly attributable to the use of any non-HP product, the repair will not be covered under the warranty or HP maintenance contract. Hewlett-Packard cannot recommend use of non-HP cartridges, either new or remanufactured, because they are not HP products and HP cannot influence or control their quality.

Operation of the printer beyond the limit of its duty cycle (printing more than the equivalent of 35,000 single-sided pages per month) shall be deemed printer abuse and all repairs thereafter will be billed on a time and materials basis.

If you are using a mechanical switchbox, ensure that it is equipped with a surge protector. Damage to your printer could occur from the use of unprotected mechanical switchboxes.

The warranty period begins either on the date of delivery or, where the purchase price includes installation by Hewlett-Packard, on the date of installation.

Warranty Limitations

The warranty set forth above is exclusive and no other warranty, whether written or oral, is expressed or implied. Hewlett-Packard specifically disclaims the implied warranties of merchantability and fitness for a particular purpose.

Some areas do not allow limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you. However, any implied warranty of merchantability or fitness is limited to the one-year duration of this written warranty.

Limit of Liability

In no event will Hewlett-Packard or its suppliers be liable to you for any consequential or incidental damages, including any lost profits or lost savings, or for any claim by any party, even if a representative of HP or its suppliers has been advised of the possibility of such damages.

Some areas, states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

Service During the Warranty Period

If your hardware should fail during the warranty period, bring your printer to an authorized HP dealer, repair center, or HP Customer Service Center. To locate the nearest authorized Customer Service Center in your area, see the inside front cover of this manual.

When sending equipment to an HP Customer Service Center or service-authorized HP dealer, follow the repacking guidelines in this chapter. We recommend insuring the equipment for shipment.

Warning

Shipping damage as a result of inadequate packaging is the customer's responsibility. Use the original packing materials whenever possible.

Service After the Warranty Period

If your hardware fails after the warranty period and you have an HP Maintenance Agreement, request service as specified in that agreement. If you do not have an HP Maintenance Agreement, contact a service-authorized HP dealer or an HP Customer Service Center to obtain service.

When sending equipment to an HP Customer Service Center or a service-authorized HP dealer, follow the repacking guidelines which follow. Also include a copy of your proof of purchase. HP recommends insuring the equipment for shipment.

Repacking Guidelines

- Remove and retain the toner cartridge.
- Remove and retain the 500-sheet optional Lower Cassette, if installed.
- Use the original shipping container and packing materials, if possible.
- Include print samples and 50-100 sheets of the paper or forms you are having trouble printing, if possible.

Note

If you have already disposed of your printer's packaging material, packaging material can be ordered from HP (see inside front cover for telephone numbers). Order part number C3099-60102.

Help From the HP Customer Support Center

If your organization's support personnel or your dealer are unable to answer your question, Hewlett-Packard has a Customer Support Center available to help you. It is available from 7 a.m. until 6 p.m.; (Mountain Time) on Monday, Tuesday, Thursday, and Friday; and 7 a.m. until 4 p.m. on Wednesday. **Be sure to obtain the *model number and serial number* of your printer before you call**.

Before contacting the Customer Support Center, try the following:

- Read and try the troubleshooting suggestions in Chapter 8.
- Print the Configuration and Typeface pages, if possible (see Chapter 4, "Understanding the Control Panel").
- Check with your software vendor for help if you suspect a software problem.
- Call the HP First and Audio Tips (see the inside front cover).

In Warranty Support

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