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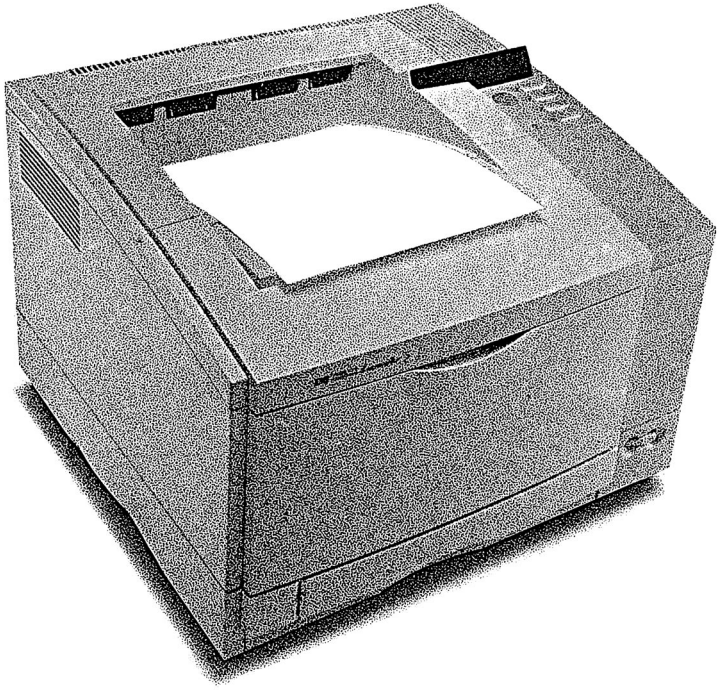

English

HP LaserJet 5 and 5M Printer User's Manual

HP LaserJet 5 and 5M Printers

User’s Manual

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Network Security

Note

This information is NOT repeated in this manual.

HP LaserJet 5/5M printers allow you to lock out other users' abilities to change most printer control panel settings. This is done by setting a password and turning the lock command on. To verify, the message ACCESS DENIED will appear when you enter a change using the printer control panel.

There are three ways to implement printer security:

1. HP LaserJet Utility for Macintosh users.
2. JetAdmin for Novell networks.
3. PJL escape sequence sent from any ASCII editor.

HP LaserJet Utility (Macintosh)

1. Select the **HP LaserJet Utility** icon in the HP LaserJet folder on your hard drive.
2. If necessary, click on the **Select Printer** button to select the HP LaserJet 5M.
3. Select the **Security** panel by scrolling down and clicking on the key icon.
4. Click on the **Lock Control Panel** button. You will be prompted to enter a password if the password has been set. If a password has not been set, go to the next step.
5. Click the **Set Password** button. On the Printer Security dialog, enter the new password (numeric values can be set from 0 to 65535), and click on the **OK** button.

HP JetAdmin Utility (Novell Networks)

1. Run JETADMIN.
2. Select the printer you want to configure. It is listed under its "JetDirect Interface Name" which appears on the self test page/configuration plot.
3. Click on **Printer** at the top of the menu.
4. Click on **Properties**.
5. When the Property Pages appear click on the **Security** tab.
6. Select the **Lock** option under **Control Panel Lock**
7. Click on the **OK** button.

ASCII PJL Escape Sequence

Password: send this sequence to the printer from any ASCII editor:

$^{E}_{C}$ %-12345X@PJL JOB
@PJL DEFAULT PASSWORD=[*numeric password (0 to 65535)*]
@PJL EOJ
$^{E}_{C}$ %-12345X

CPLOCK: to turn on or off, assuming that a password has **NOT** been set, send the following ASCII sequence to the printer:

$^{E}_{C}$ %-12345X@PJL JOB
@PJL DEFAULT CPLOCK=ON [*OFF*]
@PJL EOJ
$^{E}_{C}$ %-12345X

If a password **HAS** been set, send the following ASCII sequence to the printer to turn CPLOCK on or off.:

$^{E}_{C}$ %-12345X@PJL JOB PASSWORD=(numeric password)
@PJL DEFAULT CPLOCK=ON(OFF)
@PJL EOJ
$^{E}_{C}$ %-12345X

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 display.

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

Key Face indicates keys (such as Menu) on the printer control panel.

Key Face indicates keys (such as Enter) 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. There is a charge for some documents. See the inside cover of this manual for telephone numbers.

Documentation Available for the HP LaserJet 5\5M Printers

Title	Part Number
PCL/PJL Technical Reference Package	5961-0633
PostScript SIMM Technical Reference	C3129-90901
HP LaserJet Printer Family Paper Specification Guide	5961-0920

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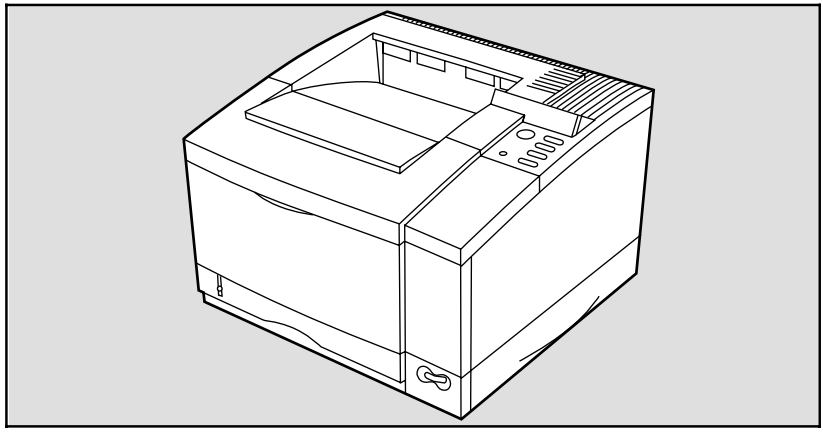
1

About Your Printer

Introduction

This chapter introduces the features of the HP LaserJet 5 and 5M printers and provides illustrations of key printer parts.

Figure 1-1



Introducing the HP LaserJet 5/5M printer

This chapter is divided into the following sections:

- HP LaserJet 5 Printer Features
- HP LaserJet 5M Printer Features
- Accessories and Options
  - Ordering Information
- HP LaserJet Printer Parts

HP LaserJet 5 Printer Features

Print Speed

A 12 page-per-minute engine with Accelerated Printing Technologies for impressive performance.

Print Quality

The printer offers true 600-dpi printing with Resolution Enhancement technology (REt), MicroFine toner, and 120 levels of gray for smooth, photo-like images. REt adjusts the size and placement of each dot to smooth edges and curves. Combined with MicroFine toner, this sharpens the appearance of text and graphics.

PCL Language

The printer comes with the PCL 6 printer language, which is compatible with all previous HP LaserJet printers. PCL 6 offers 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.

Language Switching

When optional printer languages (such as PostScript) are installed, the printer can automatically determine and switch to the appropriate language of a print job.

Paper Handling

The printer can print on a variety of sizes and weights of paper as well as envelopes, labels, and transparencies.

- Tray 1 adjusts to hold envelopes and various sizes of paper that can be fed manually or stacked for multiple copies.
- Tray 2 holds up to 250 sheets of 20 lb. (75 g/m^2) paper.
- An optional Tray 3 holds up to 500 sheets of 20 lb. (75 g/m^2) paper.
- An optional Duplex Unit allows printing on both sides of the paper.
- An optional Envelope Feeder holds approximately 75 envelopes for continuous envelope printing.

Memory

The printer comes with 4 MBytes of memory and is upgradable to a maximum of 66 MBytes. The printer has four SIMM slots for additional 1, 2, 4, 8, and 16 MByte industry-standard memory modules. The SIMM slots can also hold optional languages (such as PostScript), typefaces, and Flash SIMMs.

Memory Management

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

Software Utilities

In addition to printer drivers that let you select most printer options from your computer screen, the software includes utilities specific for Windows, Macintosh and networked computers. See Chapter 2 for a description of the various software utilities.

I/O Features

- The printer provides automatic I/O switching between all installed I/O ports allowing multiple computers to be connected simultaneously.
- The printer comes with a Modular I/O (MIO) slot designed to support optional HP JetDirect cards or compatible MIO cards from other companies. (See the "Accessories and Options" section later in this chapter for a list of HP JetDirect cards.)
- The printer comes with an IEEE 1284 parallel interface for high-speed two-way communications between the printer and the computer.
- A standard RS-232 serial port is included.
- A serial infrared port is included for wireless printing with the optional HP IR adapter.

Energy Savings

The printer is designed with the PowerSave feature to conserve electricity by substantially reducing power consumption when it is idle for a specified length of time. The user-adjustable PowerSave feature qualifies the HP LaserJet 5 Printer for the U.S. Environmental Protection Agency's ENERGY STAR Computers award.

Toner Savings

The EconoMode feature lowers printing costs by reducing the amount of toner on the printed page by 50%, so the toner cartridge lasts longer. The printed result is similar to the draft mode found on some dot matrix printers.

Fonts

The printer comes with 45 scalable TrueType fonts built-in and an additional 65 on disk for MS Windows. HP FontSmart software is also included for simple font management in MS Windows.

Options

The HP LaserJet 5 printer also offers a wide variety of accessories and options, such as a PostScript language SIMM, Flash SIMM, extra memory, Network Interface Cards, duplexer (for two-sided printing), additional trays (with varying sizes and capacities) and an envelope feeder.

HP LaserJet 5M Printer Features

The HP LaserJet 5M printer offers all the features of the HP LaserJet 5 printer, plus more memory, a built-in PostScript language SIMM, and an HP JetDirect card that can connect your printer to LocalTalk and EtherNet networks.

Memory

The printer has 6 MBytes of installed memory (upgradable to 52 MBytes), and 3 available SIMM slots for additional 1, 2, 4, 8, and 16 MByte industry-standard memory modules.

PostScript

The HP LaserJet 5M printer comes with the Adobe PostScript Level 2 software, which is backward compatible with earlier versions of Adobe PostScript. The printer also comes with Adobe PostScript Level 2 printer drivers for Macintosh and Windows (version 3.1 and later), and the *HP LaserJet Utility for the Macintosh*.

Fonts

The printer comes with 35 built in fonts and an additional 75 fonts on disk for MS Windows.

Networking

The printer's JetDirect card lets you connect directly to your LAN (Local Area Network) for faster printing. You can also print in multiple platform environments. The HP JetDirect card automatically switches between protocols, so a single printer can serve many networks at once or be moved to a new network with no additional hardware investment.

The HP JetDirect card supports the following networks. Clients can be DOS, Windows, OS/2, Macintosh, or UNIX.

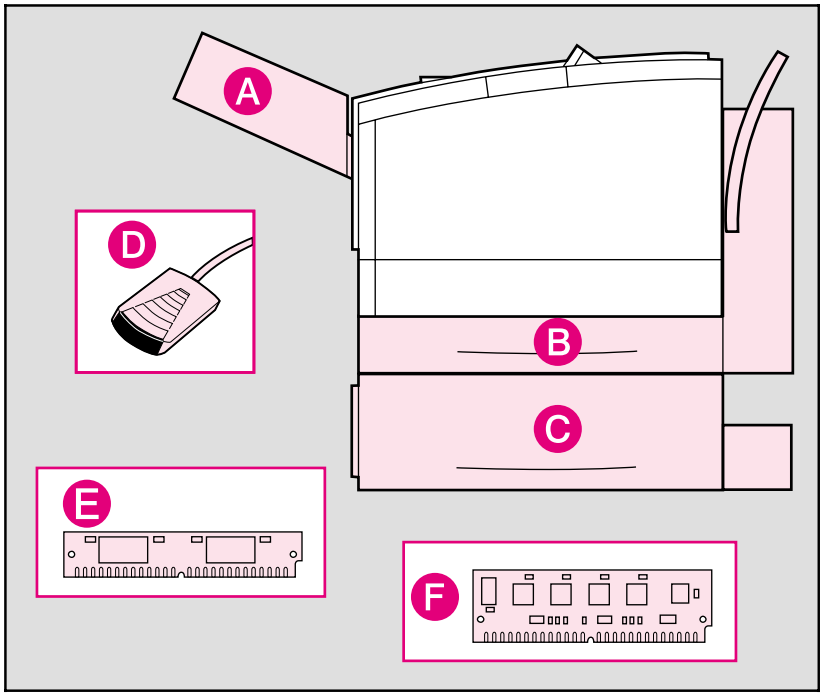
- Novell NetWare 3.x, 4.x
- Microsoft LAN Manager for OS/2, v. 2.x
- IBM LAN Server for OS/2, v. 2.x, 3.x
- Microsoft Networking
- HP-UX v. 9.x, 10.x
- SunOS v. 4.1.3, 4.1.4
- SCO UNIX V/386 (contact OS vendor for level of support)
- Solaris v. 2.3, 2.4
- IBM/AIX (contact OS vendor for level of support)
- Apple EtherTalk, phase 1 and 2

Accessories and Options

You can increase your printer's capabilities by adding the following accessories and options. See the inside front cover of this manual for HP dealer and ordering information.

Note Accessories and Options from previous HP LaserJet printers do *not* work with the HP LaserJet 5\5M printers.

Figure 1-2



Printer with options shown shaded

A.	Envelope Feeder	**D.**	IR Adapter (wireless printing)
B.	Duplex Unit (for two-sided printing)	**E.**	PostScript SIMM
C.	500-sheet Tray 3	**F.**	Flash SIMM

Note Other accessories and options (not shown) are available. For a complete listing, see the table on the following page.

Option	Description or Use	Part Number
Toner Cartridge		
Toner Cartridge	Replacement toner cartridge.	92298A
Paper Handling Accessories		
Tray 2 replacement	250 sheet tray: legal, letter, executive, A4.	C3924A (universal)
	250 sheet tray, letter only.	C3925A (letter)
	250 sheet tray, A4 only.	C3926A (A4)
Tray 3 assembly	Includes a base unit and an adjustable 500 sheet tray for legal, letter, executive, and A4.	C3921A (universal)
Tray 3 replacement	500 sheet tray: legal, letter, executive, A4.	C3923A (legal/universal)
Envelope Feeder	75-envelope power feeder. Supports Commercial #10, #7$^{3}/_{4}$ (Monarch) DL, C5, and B5 envelope sizes.	C3927A
Duplex Unit	The Duplex Unit allows you to automatically print on both sides of a page.	C3920A
Cable and Interface Accessories		
Parallel cable	2 Meter IEEE-1284 cable 3 Meter IEEE-1284 cable	C2950A C2951A
Serial cables	9-9 pin serial cable (male/female).	C2932A
	9-25 pin serial cable (male/female).	C2933A
Serial Adapter	25-9 pin adapter.	C2909A
HP IR Adapter	Unit required for an Infrared interface with a IrDA-compliant portable device.	C2929A
Macintosh Serial Cable		92215S
Macintosh Network Cable-Kit	For PhoneNET or LocalTalk.	92215N

Option	Description or Use	Part Number
Modular I/O and Network Cards	HP JetDirect Multi-protocol Network Card with Ethernet/IEEE802.3 10Base-T. HP JetDirect Multi-protocol Network Card with LocalTalk and Ethernet/IEEE802.3 10Base-T, BNC, and DN8. HP JetDirect Multi-protocol Network Card with Token Ring (DB9 and RJ45).	J2550A J2552A * J2555A
UNIX Interface Software	HP JetDirect interface software for HP-UX systems. HP JetDirect interface software for SunOS and Solaris UNIX systems.	J2374C J2375C
Memory, additional languages		
Memory SIMMs	You can install up to 64 MBytes of additional memory, in the HP LaserJet 5 and up to 48 MBytes in the HP LaserJet 5M.	1 MByte - C3130A 2 MByte - C3131A 4 MByte - C3132A 8 MByte - C3133A 16 MByte - C3146A
Flash SIMM	Additional non-volatile RAM.	2 MByte - C3930A 4 MByte - C3931A
Adobe PostScript Level 2 printer language (this includes 2MB of additional memory).	You can add the Adobe Level 2 PostScript language by installing this SIMM in your printer.	C3918A *

* Ships with HP LaserJet 5M

Ordering Information

To order HP LaserJet 5/5M accessories and options :

United States

- Call HP Direct Ordering at (800) 538-8787.
- To find a dealer near you (or if your dealer is temporarily out of stock), call the HP Customer Information Center (800) 752-0900.

Worldwide

- See Appendix G for Sales and Service Offices for authorized dealers outside of the U.S.

HP LaserJet Printer Parts

The following illustrations give the location and names of key printer parts.

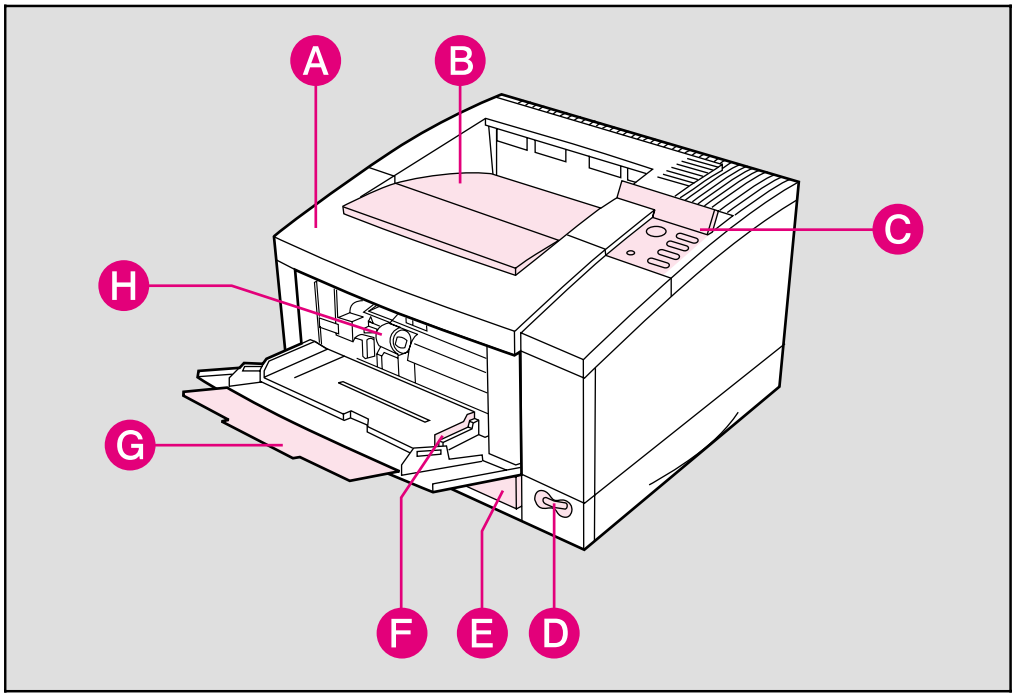


Figure 1-3 Front/right side view (with Tray 1 open)

A. Top cover
B. Output bin
C. Control panel and display
D. ON/OFF power switch
E. 250-sheet Tray 2
F. Tray 1 paper width guide
G. Tray 1 and extension
H. Envelope Feeder access cover location (shown with cover removed)

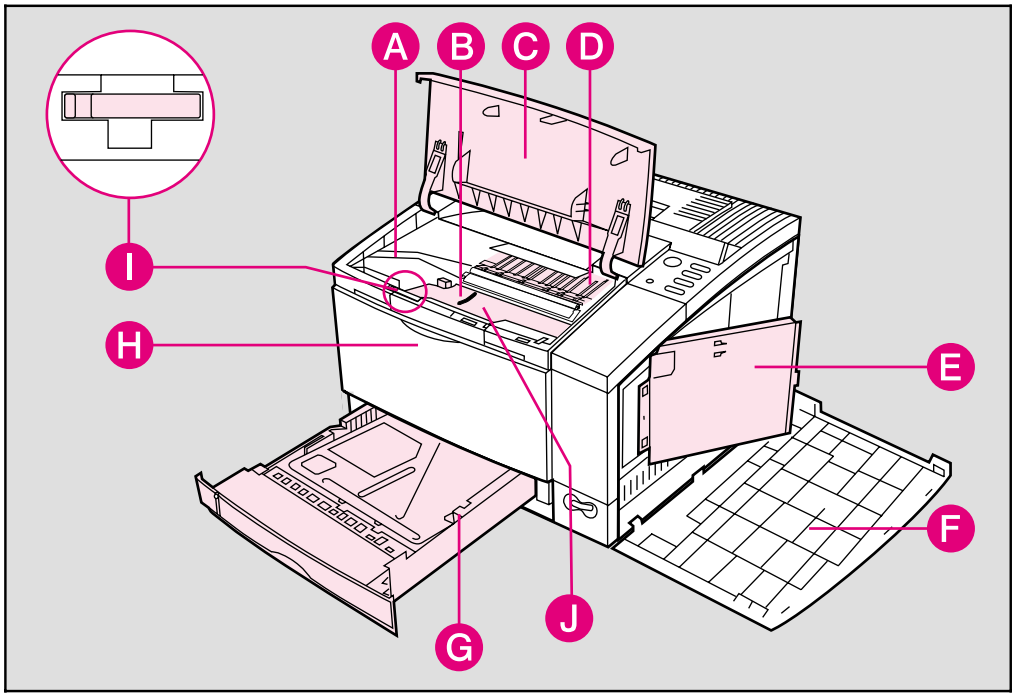


Figure 1-4 Top/right side view with top door open and toner cartridge removed

A. Toner cartridge guides
B. Paper access door (for paper jam removal)
C. Top door (opened)
D. Toner cartridge location (shown with cartridge removed)
E SIMM slots access door
F. Right side cover (opened)
G. 250-sheet Tray 2
H. Tray 1 release point (pull to open)
I. Transfer Roller removal tool
J. Serial Number Label

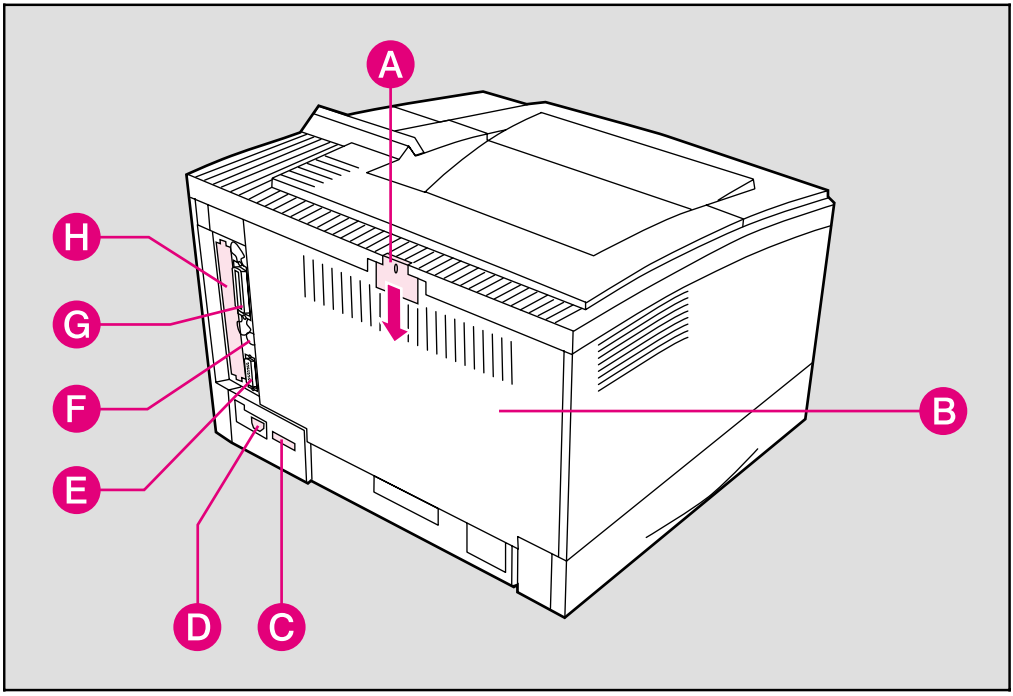


Figure 1-5 Rear/left side view

A. Rear access cover latch (press down to release)
B. Rear access cover
C. Serial number label
D. Power plug connector
E. Serial port
F. Serial Infrared port
G. Bi-Tronics parallel port
H. Modular I/O (MIO) slot

2

Printing Software Overview

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.

Your printer is packaged with the software you need to take full advantage of your printer's features in MS Windows, some DOS environments, and to connect your printer to a wide variety of networks. The HP LaserJet 5M printer also comes with software you need to use your printer with the PostScript language for Macintosh and MS Windows environments.

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

This chapter is divided into the following sections:

- Software for MS Windows
  - MS Windows Printer Drivers
  - MS Windows Status Utilities
  - Fonts
  - Network Management Utilities (HP JetAdmin)
- Software for DOS
  - DOS Printer Drivers
  - DOS Utilities
- Software for Macintosh
  - Macintosh Printer Drivers
  - Bitmapped Screen Fonts
  - HP LaserJet Utility
- Optional Software
  - Optional Printer Drivers Available
  - Optional Networking Software Available

Software for MS Windows

Your printer comes with the HP LaserJet 5/5M Printing System for Microsoft Windows. If you have set up your printer correctly, you have already used the auto-installation setup program to load the following:

- MS Windows Printer Drivers
- Status Utilities
- Fonts
- Network Management Utilities

MS Windows Printer Drivers

The printer drivers enable your MS Windows applications to communicate with your printer and use all of your printer's features. Once you load the MS Windows drivers, you can reach them from the **Print** dialog box in any MS Windows application. This is usually accessed from the **Printer Setup** or **Printer Options** selection, however, each application may be different. The MS Windows Printer Drivers work in the MS Windows 3.1, 3.11, MS Windows for Workgroups and MS Windows 95 environments.

Note

Each driver has screen helps which can be activated from the **Help** button on each property sheet on the printer driver. These help screens can give detailed information about the specific driver you are using.

These driver helps are separate from your software application's screen helps. You will know that you are in an HP printer driver if the HP logo is on the bottom of the window.

HP LaserJet 5/5M - Standard

The standard driver provides full backward compatibility for LaserJet printers. This allows you to print documents created with other HP drivers and ensure that the output will be similar. This driver can be selected in the **Printers** settings window located in the MS Windows **Control Panel**.

HP LaserJet 5/5M - Enhanced

This is a new, enhanced driver which provides better printing performance with complex graphics in MS Windows, as well as better WYSIWYG (what-you-see-is-what-you-get) performance. This may provide output which is slightly different than earlier drivers which were not WYSIWYG. This driver can be selected from the MS Windows Printer Control Panel.

PostScript Level 2

The PostScript for MS Windows driver for MS Windows 3.1 and MS Windows 95 provides new functions such as *n*-up printing and watermarks.

MS Windows Status Utilities

Status utilities display the printer's status, job status and error messages on the computer screen. Status utilities are provided for both networked environments and directly connected computers.

Note No status utilities are available when using serial cables or switch boxes.

Status Window

This utility is for computers using the MS Windows 3.1 environment that are directly connected to the printer.

The Status Window is a program that reports printer activities directly on your computer screen. When a printer condition arises that needs your attention, the Status Window displays a description of the condition and suggests an action. For example, if the printer runs out of paper or is low on toner an appropriate message will pop-up on the computer screen.

Note Status Window is only available if your printer and computer are directly connected through a parallel port (for example, LPT1 or LPT2).

HP JetPrint

The HP JetPrint utility for networks reports printer activities similar to the Status Window. It also allows users to see all accessible print queues and allows users to manage their print jobs. The **Job Details** button on the HP JetPrint screen provides more detailed information on a print job.

HP JetPrint is represented by an icon in the lower left hand corner in the MS Windows 3.1 Networked Environment.

In MS Windows 95, HP JetPrint is available for both networked environments and directly connected computers. HP JetPrint is represented as a tray icon in the lower right hand corner.

To see status information, click on the icon. The icon changes colors based on the status of the printer:

- Red- the printer is not able to print.
- Yellow- warning message.
- Green- the printer is ready to print.

Fonts

HP FontSmart

HP FontSmart is a MS Windows application that delivers the screen fonts for the printer's internal 45 printer fonts, plus another 65 fonts on disk. HP FontSmart adds font management for MS Windows 3.1/3.11, MS Windows 95 and MS Windows NT. When PostScript is available, HP FontSmart also delivers the matching screen fonts for the 35 PostScript fonts using the MS Windows font names.

TrueType Screen Fonts

Screen fonts allow you to see a close representation on the computer screen of what the printed page will look like. This is known as WYSIWYG, short for "what-you-see-is-what-you-get." The TrueType fonts match the printer's internal fonts. These fonts are automatically loaded and configured when you install the HP LaserJet 5/5M Printing System for Microsoft Windows.

Network Management Utilities

Network Management Utilities allow remote configuration and control of networked printers. These utilities allow network administrators to setup and configure networked printers in a variety of network environments.

Note

Network utilities are available through the *Custom* setup option during software installation. These utilities will not be loaded when running the default (*Typical*) installation unless you are signed on as a network administrator. To add these utilities at a later time re-load the installation program (see *Getting Started Guide*) and run the *Custom* setup option. Follow the instructions on the screen.

HP JetAdmin

HP JetAdmin allows management and configuration of the printers and accessories on a Novell Netware or Microsoft network. This also offers in-depth printer and network diagnostics, as well as the ability to upload printer drivers to a network file server. Management of the flash accessory is also provided through HP JetAdmin.

HP JetAdmin is available through the Control Panel in MS Windows 95 or from the LaserJet group in MS Windows 3.1.

Software for DOS

Your printer comes with two DOS application printer drivers and two DOS-environment software utilities.

DOS Printer Drivers

Printer drivers are program files that allow your software to use the printer's features, including the internal fonts. Printer drivers for the following DOS applications are included on the *DOS Application Utilities and Drivers* diskette:

- WordPerfect 5.1 and 6.0
- Lotus 1-2-3 versions 2.3, 2.4, 3.1, 3.4, 4.0

Note

To obtain printer drivers for additional DOS applications:

- Check your DOS application's installation disks to see if they include support for the HP LaserJet 5/5M printer.
- Order an updated driver from your DOS application's vendor.

DOS Utilities

Note

The DOS utilities are only available when the printer is directly connected to the computer with a parallel cable. They will not be available if a serial cable or switch box is being used.

Status Monitor

The Status Monitor, a terminate-and-stay-resident (TSR) program, reports printer messages and error conditions directly to your computer screen. It is especially useful if you can't see the printer while you work. When a printer condition arises, the Status Monitor displays a message on your screen without affecting your work in progress.

You can set up your computer to run the Status Monitor automatically when you turn on your computer, or you can load it at any time.

To load the Status Monitor, type STAT at the DOS prompt. You can display the Status Monitor Main Menu at any time by typing Ctrl + Alt + E, the default hot-key combination.

Remote Control Panel

The Remote Control Panel, or RCP, enables you to change printer settings if your DOS software application does not support the printer feature you want to use.

Note

Some DOS applications, such as WordPerfect for DOS, may override settings you specify from the RCP. Change all desired settings available in your software application first, and any remaining settings with the RCP.

You can start the Remote Control Panel from the Status Monitor by typing R. You can also start the Remote Control Panel from the DOS prompt by typing RCP.

Additional help is available for the Remote Control Panel by clicking on the help tab at the top of the screen or by typing Alt + H.

Note

You can use the Remote Control Panel and Status Monitor only in DOS, and only if your printer and computer are directly connected through a local parallel port (for example, LPT1 or LPT2). These applications do not work on networked printers.

Software for Macintosh

The HP LaserJet 5M printer comes with an installer program that automatically installs the following on your hard disk:

- Macintosh printer drivers
- Bitmapped screen fonts
- HP LaserJet Utility

Macintosh Printer Drivers

HP LaserJet

The “HP LaserJet” is an Adobe PostScript Level 2 printer driver. Once you install this driver, most of your printer’s features are available from the Print and Page Setup dialog boxes.

LaserJet 5M GX

The “LaserJet 5M GX” is a printer driver designed to give you access to your printer from a Macintosh with QuickDraw GX installed. If you are not using QuickDraw GX, you will not need this driver.

Fonts

Bitmapped Screen Fonts

When you install the HP LaserJet 5M 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

The HP 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 default settings using this utility. You can set the printer's password and even lock out the control panel without leaving your computer. The utility's illustrated screens make selecting printer features from your Macintosh easier than ever.

Optional Software

Optional Printer Drivers Available

You can order the following optional printer drivers from HP Distribution or your nearest authorized HP Dealer (see the HP Support pages at the front of this manual):

- OS/2 PCL/PCL XL printer driver
- OS/2 PostScript printer driver
  (These two drivers listed above are also available from IBM and they are packaged with OS/2.)
- MS Windows NT Driver

Note

If your software is not listed here, please contact your software manufacturer or distributor and request a driver for the HP LaserJet 5 printer or the HP LaserJet 5M printer. If a driver is unavailable, you could use an older HP LaserJet printer driver (such as the HP LaserJet 4 Plus printer) until a new driver becomes available, however, you may not be able to access the advanced features of your new printer without the proper driver.

Optional Networking Software Available

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

- Microsoft LAN Manager for OS/2
- IBM LAN Server for OS/2
- HP-UX
- SunOS
- Solaris
- Novell Netware NLM

To learn more about networking with the HP LaserJet 5M printer, see the *HP JetDirect Print Server Software Installation Guide* and *Macintosh Notes for the HP LaserJet 5M Printer*.

3

Using the Printer Control Panel

Introduction

You can perform most routine printing tasks from your computer, through your software application. 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 comes with your printer. Refer to Chapter 2, “Printing Software Overview” or the online help files associated with the software for more information.

Note

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

This chapter is divided into the following sections:

- Control Panel Layout
  - Control Panel Keys
- Control Panel Menus

Note for Macintosh Users

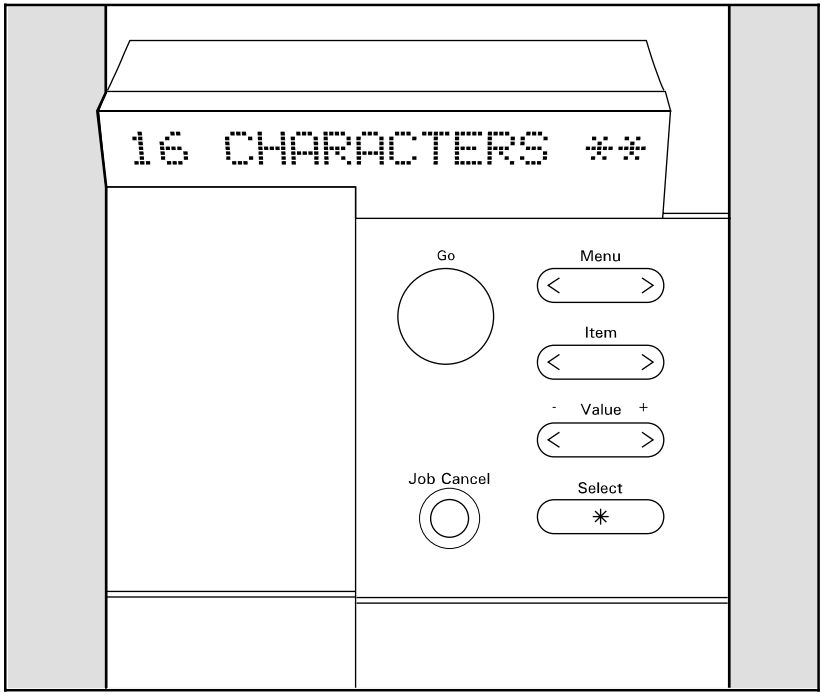
If you purchased the HP LaserJet 5M printer, see the *Macintosh Notes* for additional information. The following terms, which you may recognize from the Macintosh interface, have different meanings in this user guide:

- *Control Panel* refers to the control panel on the printer and has nothing to do with the Controls Panels folder in your System Folder or the control panels that are stored there.
- *Menu* refers to a key on the printer control panel and to the menus of items available on the printer control panel, not the pull-down or pop-up menus that are part of your Macintosh user interface.

Control Panel Layout

The printer control panel consists of a 16-character display panel and six keys, three of which have forward and backward scrolling functions.

Figure 3-1



Control Panel Layout

Note

In the right side of the display panel a square icon blinks when receiving data or processing a print job.

Control Panel Keys

The table on the following page explains how the printer control panel keys work.

Table 3-1 Control Panel Keys

Key	Explanation
Go	The Go key replaces the On Line, Form Feed and Continue keys from previous HP LaserJet printers. The Go key performs six main functions: • Switches the state of communication between computer and printer either on (on line) or off (off line). • Prints any data remaining in printer's buffer. Does *not* send a blank sheet of paper through the printer. • Allows the printer to resume printing after a printer message has placed it off line. Clears most printer messages and places the printer back on line. • Overrides paper or envelope size selection regardless of size of media in Tray 1, optional Envelope Feeder, Tray 2, or Tray 3. • Confirms a manual feed request if there is media in Tray 1. • Overrides a request to manually feed paper or an envelope by selecting paper from the next available source instead.
Job Cancel	The Job Cancel key deletes a print job from the printer: • Press Job Cancel to cancel a job that the printer is currently processing. The printer will display CANCELING JOB, clear the printer buffer, and return to a READY state. This may take a while, depending on the size of the print job. If Job Cancel is accidentally pushed the job must be reprinted. There is no undo function. If Job Cancel is pushed when the printer is idle, NO JOB TO CANCEL will appear briefly, and then a READY display will reappear.
Menu	Press Menu to cycle through the printer control panel menus. Press the > end of the key to move forward through the menus. Press the < end of the key to move backward through the menus. When an option is added to the printer (PostScript, for example), a menu for that option appears in the sequence. See "Control Panel Menus," in this chapter, for more information.
Item	Press Item to cycle through the selected menu's items. Press the > end of the key to move forward through the items. Press the < end of the key to move backward through the items Menu items vary depending on options installed and configuration of other menu choices.
- Value +	Press - Value + to cycle through the selected item's values. Press the > end of the key to move forward through the values. Press the < end of the key to move backward through the values.
Select	The Select key saves a printer control panel 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. The Select key is also used when printing a test page or configuration page from the printer control panel.

Control Panel Menus

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

To print a menu map of the control panel menus:

1 Press **Menu** until `PRINTING MENU` appears.

2 Press **Item** until `PRINT MENU MAP` appears.

3 Press **Select** to print the menu map.

Store the menu map near the printer for a useful reference. An additional copy of the HP LaserJet 5 menu map is provided on the following page. The appearance of the menu map will vary for the HP LaserJet 5M. It will also vary depending on the options currently installed in your printer.

To change a printer control panel setting:

1 Press **Menu** repeatedly until the desired menu appears.

2 Press **Item** repeatedly until the desired item appears.

3 Press **- Value +** until the desired setting appears.

4 Press **Select** to save your selection.

Note An asterisk (*) appears next to your selection in the display, indicating that it is now the default.

5 Press **Go** to exit the menu.

These instructions are also provided on the Menu Map printout (see following page), letter **K**.

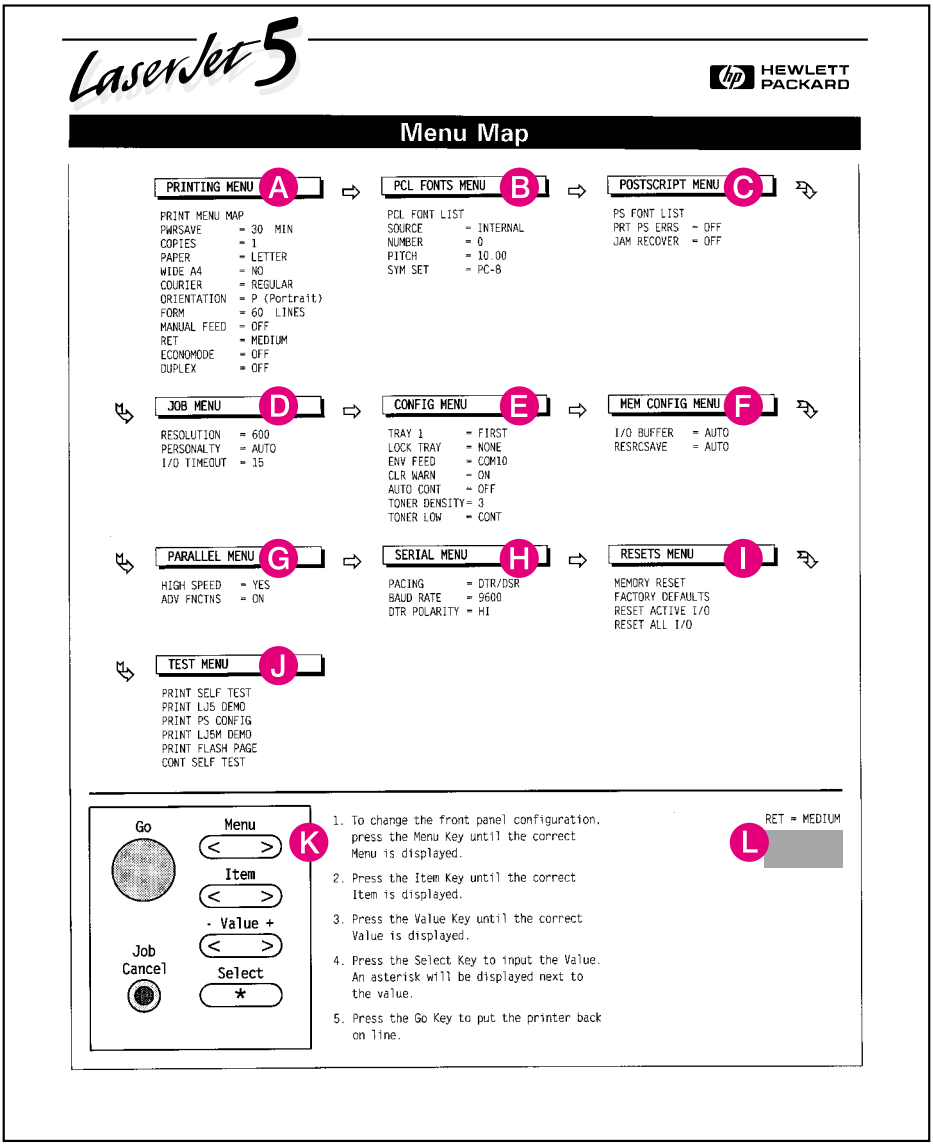


Figure 3-2 Control Panel Menu Map

Printing Menu

When a Printing Menu item is changed through the printer control panel, the new setting then becomes the default value. However, any selections made through a software application will override printer control panel settings. See Figure 3-2, item **A** for the location of the Printing Menu on the Menu Map.

Table 3-2 Printing Menu Items

Item	Options	Explanation
PRINT MENU MAP	No options available	When PRINT MENU MAP is displayed, press Select to print a configuration page and a menu map. The message PRINTING CONFIGURATION PAGE is displayed. (See ``Understanding the Self Test Printout,'' in Chapter 7.)
PWRSAVE	OFF, 15 MIN, 30 MIN*, 1 HR, 2 HRS, 3 HRS	PWRSAVE stands for PowerSave. This menu item sets the amount of time the printer is idle before the printer cools down. The printer automatically starts warming to printing temperature when a job is sent to the printer, a printer control panel key is pressed, paper is loaded or removed, or the top door is opened. (See "Saving Power with the PowerSave Feature" in Chapter 8.)
COPIES	1* to 999	Select any number from 1 to 999. Press - Value + once to change setting by increments of 1 or hold down to scroll by increments of 10.
PAPER ENVELOPE	LETTER* (110V printers), A4* (220V printers), Executive, Legal, A5 (from Tray 1 only) COM10* (110V printers), DL* (220V printers), Monarc, C5, B5	The default image size for paper or envelopes can be set with the printer control panel.
WIDE A4	NO* YES	The Wide A4 setting changes the number of characters that may be printed on a single line of A4 paper. For example, when set to NO, 78 10-pitch characters will be printed on one line. When set to YES, 80 10-pitch characters will be printed.
COURIER	REGULAR* DARK	When set to REGULAR, the internal courier font is the same font used in the LaserJet series 4 printers. When set to DARK, the internal courier font is the same as the LaserJet series 3 printers. Both fonts are not available at the same time.
ORIENTATION	P* L	P stands for portrait (vertical) and L stands for landscape (horizontal) orientation of type on the page.

*Indicates factory default.

Table 3-2 Printing Menu Items (continued)

Item	Options	Explanation
FORM (5 to 128 LINES)	60* (110V printers) 64* (220V printers)	Sets vertical spacing, from 5 to 128 lines, for default paper size. Press - Value + once to change setting by increments of 1 or hold down to scroll by increments of 10.
MANUAL FEED	OFF* ON	Available only through Tray 1. When Manual Feed is ON and Tray 1 is empty, the printer goes off line when it receives a print job and displays MANUALLY FEED *media size*. See "Manually Feeding Pages" in Chapter 4.
RET	OFF LIGHT MEDIUM* DARK	RET stands for "Resolution Enhancement technology." It refines the 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 6 for more information.
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 "EconoMode Printing" in Chapter 6.
DUPLEX	OFF* ON	Determines whether the printer prints on both sides (duplex) or one side (simplex) of a sheet. See "Printing with the Duplex Unit" in Chapter 4.
BIND	LONG EDGE* SHORT EDGE	Determines orientation of print on the page when using a duplex unit. See "Specifying a Duplex Setup" in Chapter 4.

*Indicates factory default.
Shading denotes optional items.

PCL Fonts Menu

PCL Fonts Menu items allow you to choose the default font and symbol set. Printer Control Language (PCL) is HP's printer language. You can also change such PCL Menu items as the SOURCE through your software application. See Figure 3-2, item **B** for the location of the PCL Fonts Menu on the Menu Map.

Table 3-3 PCL Fonts Menu Items

Item	Options	Explanation
PCL FONT LIST	No options available	Press Select to print a list of the PCL fonts. (See "Understanding the PCL Font List Printout," in Chapter 7.)
SOURCE	INTERNAL* SOFT SLOT *N*	Internal fonts* Permanent soft fonts SIMM Module: n=slot number. Fonts stored in one of the four ROM SIMM slots (SLOT=slot 1, for example).
NUMBER	0 to 999	The printer assigns a number to each font and lists them on the PCL Font List, which you can print out. (See top row in this table for how to print a PCL Font List.) The font number appears in the Font # column of the printout. Defaults and other conditions are as follows: Internal* 0* is the default. Soft 1* is the default. You can select from the control panel only a permanent soft font that is currently in the printer. Do not use the ID number of a downloaded soft font. SLOT SIMM Module; n=SIMM slot (1-4). Fonts stored in one of the four ROM SIMM slots (1=FONT 1, for example).
PITCH or PT. SIZE	Pitch: 10.00* Pt: 12.00*	The pitch or point size item available depends on the SOURCE and NUMBER you select. Press -Value+ once to change setting by increments of .01 for pitch and .25 for point-size or hold down to scroll by increments of 1. Pitch: For fixed-pitch outline fonts, select pitch sizes from .44 to 99.99. Point: For proportionally-spaced outline fonts, select point sizes from 4.00 to 999.75 in .25-point increments.
SYM SET	PC-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 Guide*.

*Indicates factory default.

PostScript Menu

When the PostScript language is installed in the printer the following items will automatically appear in the printer control panel menus. See Figure 3-2, item **C** for the location of the PostScript Menu on the Menu Map.

Table 3-4 PostScript Menu Items

PS FONT LIST	No options available	Press **Select** to print a list of the fonts. While the list is being printed the message PRINTING FONT LIST is displayed.
PRT PS ERRS	OFF* ON	PRT PS ERRS stands for PRINT POSTSCRIPT ERRORS. This setting allows PostScript error messages to be printed.
JAM RECOVER	OFF* ON	PostScript can be set to automatically reprint jammed pages after a paper jam is cleared.

*Indicates factory default.

Job Menu

You can change Job Menu items through your software application if you have installed an appropriate printer driver. See Figure 3-2, item **D** for the location of the Job Menu on the Menu Map.

Table 3-5 Job Menu Items

Item	Options	Explanation
RESOLUTION	300 600*	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. It is recommended that you use 300-dpi for some bitmapped fonts and graphics designed to be printed at 300-dpi or for compatibility with the HP LaserJet 3 family of printers.
PERSONALTY	AUTO* PCL POSTSCRIPT (optional)	The printer can be switched from its standard personality (language), 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.
PAGEPROTCT	AUTO* ON	This menu item will not be available unless a `21 PAGE TOO COMPLEX, PRESS GO KEY` error occurs (see "Understanding Printer Messages" in Chapter 7). Memory Enhancement technology (MEt) attempts to guarantee that all pages will print. If the page does not print, turn `PAGEPROTCT` to `ON`. This may increase chances of a `20 INSUFFICIENT MEMORY, PRESS GO KEY` message. If this occurs, you need to add memory.
I/O TIMEOUT	15* (5 to 300)	I/O timeout refers to the time, measured in seconds, that the printer waits before ending a print job. 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. Press **- Value +** once to change setting by increments of 1 or hold down to scroll by increments of 10.

*Indicates factory default.

Configuration Menu

Configuration Menu items can be selected only from the printer control panel. You cannot temporarily change them in your software application. See Figure 3-2, item **E** for the location of the Configuration Menu on the Menu Map.

Table 3-6 Configuration Menu Items

Item	Options	Explanation
TRAY 1	FIRST*	When set to FIRST Tray 1 is configured as the default tray and will be used first during printing. TRAY 1=FIRST is not recommended for networked (shared) environments.
	CASSETTE	When set to CASSETTE Tray 1 no longer operates as a universal tray. A paper size must be assigned to Tray 1 using the SIZE 1 option (the next Item in the Configuration Menu when TRAY 1=CASSETTE). This allows Tray 1 to be used as a reserved tray. When Tray 1 is set as a cassette, Tray 2 becomes the new default paper source.
SIZE 1	LETTER* (110V printers) A4* (220V printers) Executive Legal A5 COM10 DL Monarch C5 B5	This menu item only appears if TRAY 1 priority has been changed from the default FIRST setting to CASSETTE. This item sets the size of media in Tray 1.
LOCK TRAY	NONE* 1 (Tray 1) 2 (Tray 2) 3 (Tray 3) (Combinations of the above)	You can lock out a tray or a combination of trays so the printer will not draw paper from it. (See "Reserving or Locking-out Trays" in Chapter 4.) Lock-out options depend on how Tray 1 is configured and whether an optional Tray 3 is installed. When Tray 1 is set to FIRST and no other tray is installed, no paper sources are available to be locked out. All possible options and their definitions are as follows: NONE — No trays locked out. 1 — Tray 1 is locked out. 2 — Tray 2 is locked out. 3 — Tray 3 is locked out. 1, 2 — Only Tray 3 is available. 1, 3 — Only Tray 2 is available. 2, 3 — Only Tray 1 is available.
ENV FEED	COM10* DL Monarc C5 B5	This menu item only appears if the optional envelope feeder is installed in the printer. It is necessary to designate the envelope size through the printer control panel since the envelope feeder cannot automatically sense the size of the envelope.

*Indicates factory default.

Shading denotes optional items

Table 3-8 Configuration Menu Items (continued)

Item	Options	Explanation
CLR WARN	ON* JOB	CLR WARN stands for “clearable warnings.” This setting determines how long a clearable warning will be displayed on the printer control panel. When set to ON, the warning is displayed until the Go key is pushed. If set to JOB, the warning will be displayed until the end of the print job in which it was generated.
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 an error message and goes off line until you press Go. 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.
TONER DENSITY	1 2 3* 4 5	Determines the relative darkness of print on the paper. To make print darker, choose a higher number; to make it lighter, choose a lower number. See “Fine-Tuning Print Quality” in Chapter 6.
TONER LOW	CONT* STOP	The TONER LOW message will first appear when the printer is almost out of toner (about 100 to 300 sheets can still be printed). If TONER LOW is set to CONT, the printer will remain on line and continue to print while the message is displayed. If TONER LOW is set to STOP, the printer will go off line and wait for further action. See “Clearing the TONER LOW Message” in Chapter 8.

*Indicates 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 5 for additional PostScript 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. Memory Configuration Menu items can be selected only from the printer control panel. You cannot change them temporarily in your software application. See Figure 3-2, item **F** for the location of the Memory Configuration Menu on the Menu Map.

Table 3-9 Memory Configuration Menu Items

Item	Options	Explanation
I/O BUFFER	AUTO* OFF ON	The I/O buffer is a portion of the printer memory set aside to hold incoming data. This reduces the time your computer must wait when a job is sent to the printer. 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 for I/O buffers. (See "How I/O Buffering Improves Performance" in Appendix D.)
I/O SIZE	10K and up	When I/O BUFFER is set to ON, this item appears in the menu. Press + Value + 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. This item enables or disables Resource Saving. If it is set to AUTO, the printer automatically determines the amount of memory to allocate to each installed personality (language), and no additional items appear in the menu. When it is set to ON, additional memory management item selections appear for each installed personality. When it is set to OFF, no memory is allocated and personality-dependent resources, such as fonts and macros, are lost when personality or resolution changes. (See "How Your Printer Uses Memory" in Appendix D.)
PCL MEM PS MEM	0K and up	When Resource Saving is set to ON, each installed personality (for example, PCL and PostScript) is added as a menu item. You can increase memory for each installed personality in increments of 100 KBytes up to the maximum amount of memory available.

*Indicates factory default.

Parallel Menu

Parallel Menu items can be selected only from the printer control panel. You cannot change or override them from your software application. See Figure 3-2, item **G** for the location of the Parallel Menu on the Menu Map.

Table 3-10 Parallel Menu Items

Item	Options	Explanation
HIGH SPEED	YES* NO	The speed at which data is transmitted to the printer. YES sets the parallel interface to run at a higher data rate which is supported by newer computers. NO sets the parallel interface to run at a slower speed which is compatible with older computers.
ADV FNCTNS	ON* OFF	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.

*Indicates factory default.

Serial Menu

Serial Menu items can be selected only from the printer control panel. You cannot change or override them from your software application. See Figure 3-2, item **H** for the location of the Serial Menu on the Menu Map.

Table 3-11 Serial Menu Items

Item	Options	Explanation
PACING	DTR/DSR*, XON/XOFF	Pacing (or *handshaking*) allows the printer to tell the computer when to send information. Select DTR/DSR if your computer requires hardware flow control (most personal computers do). Select XON/XOFF if your computer requires software flow control (for example, if you are using a UNIX workstation).
BAUD RATE	9600* 300 to 57600	The baud rate tells the printer how fast information will be transferred from the computer to the printer.
ROBUST XON	ON* OFF	Appears only when PACING is set to XON/XOFF. If it is set to ON, the printer sends an XON when the printer is on line and when sufficient buffer space has become available. If it is set to OFF, the printer sends one XON when it can accept more data or when it is on line.
DTR POLARITY	HI* LO	Determines whether pin #8 is high or low when the printer is ready. When it is set to HI, pin #8 is high when the printer is ready. When it is set to LO, pin #8 is low when the printer is ready.

*Indicates factory default.

Resets Menu

Reset options are available through the Resets Menu. Use the Resets Menu option with caution.

Note

You can lose buffered page data or printer configuration data when you select these options. You should only use it 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 serial and parallel I/O ports, and one of the ports is having problems.

See Figure 3-2, item **I** for the location of the Resets Menu on the Menu Map.

Table 3-12 Resets Menu Items

Menu Selection	Printer Response	Explanation
MEMORY RESET	CLEARING MEMORY	Press **Select** to perform a MEMORY RESET. This will clear the printer buffer and make the printer control panel defaults current.
FACTORY DEFAULT	FACTORY DEFAULTS BEING RESTORED	Press **Select** to perform a FACTORY DEFAULT. This restores most of the printer's factory default settings as it performs a simple reset. Items in the Config, Memory Configuration, Parallel, and Serial Menus are not reset. MEMORY RESET clears only the active input buffer.
RESET ACTIVE I/O	RESETTING ACTIVE I/O	Press **Select** to perform an RESET ACTIVE I/O. This clears the input and output buffers *for the active I/O only* and performs a simple reset.
RESET ALL I/O	RESETTING ALL I/O	Press **Select** to perform an RESET ALL I/O. This clears the input and output buffers *for all I/Os* and performs a simple reset.

Note

The printer control panel resets will clear all memory in the printer, while the **Job Cancel** key only clears the current job.

Test Menu

Test Menu items can be selected only from the printer control panel. You cannot change or override them from your software application. See Chapter 5, “PostScript Printing’’ for additional information. See Figure 3-2, item **J** for the location of the Test Menu on the Menu Map.

Table 3-13 Test Menu Items

Item	Explanation
PRINT SELF TEST	When `PRINT SELF TEST` is displayed, press **Select** to print a self test. The printer will display `PRINTING CONFIGURATION PAGE`. (See ``Understanding the Self Test Printout,'' in Chapter 7.)
PRINT LJ5 DEMO	When `PRINT LJ5 DEMO` is displayed, press **Select** to begin printing. The display will scroll the message `PRINTING DEMO PAGE` while the page is being configured and printed.
PRINT PS CONFIG	When `PRINT PS CONFIG` is displayed, press **Select** to print a PostScript configuration page. The display will scroll the message `PRINTING CONFIGURATION PAGE`. (See Chapter 5 for a description and example of the PostScript configuration page.)
PRINT LJ5M DEMO	When `PRINT LJ5M DEMO` is displayed, press **Select** to begin printing. The display will scroll the message `PRINTING DEMO PAGE` while the page is being configured and printed.
PRINT FLASH PAGE	When `PRINT FLASH PAGE` is displayed, press **Select** to begin printing. The display will scroll the message `PRINTING FLASH PAGE` while the page is being printed.
CONT SELF TEST	When `CONT SELF TEST` is displayed, press **Select** to begin printing a series of PCL Configuration Pages. The display will continue to scroll the message `CONTINUOUS TEST, PRESS JOB CANCEL KEY` until **Job Cancel** is pressed. Several pages may print until the buffer clears.

4

Printing

Introduction

This chapter explains your printing options and gives common printing tasks:

- Preparing for Printing
  - Selecting Paper and Other Print Media
  - Media Input Options
  - Loading Tray 2
  - Loading Tray 1
- Printing Tasks
  - Stopping a Print Job
  - Manually Feeding Pages
  - Reserving or Locking-out Trays
- Printing on Special Media
  - Printing Letterhead and Preprinted Forms
  - Printing Envelopes
  - Printing Labels and Transparencies
- Printing with Optional Accessories
  - Printing from the 500-sheet Tray 3
  - Printing with the Duplex Unit (2-Sided Printing)
  - Printing with the Envelope Feeder
  - Printing with the Infrared Serial Port

Preparing for Printing

Selecting Paper and Other Print Media

HP LaserJet printers produce documents of excellent print quality. You can print on a variety of print media, such as paper (including recycled paper), envelopes, labels, overhead transparencies and custom sized media. Properties such as weight, grain, and moisture content are important factors affecting printer performance and output quality.

Note To achieve the best possible print quality use only high quality, copier-grade paper. See Appendix A for more detailed paper specifications.

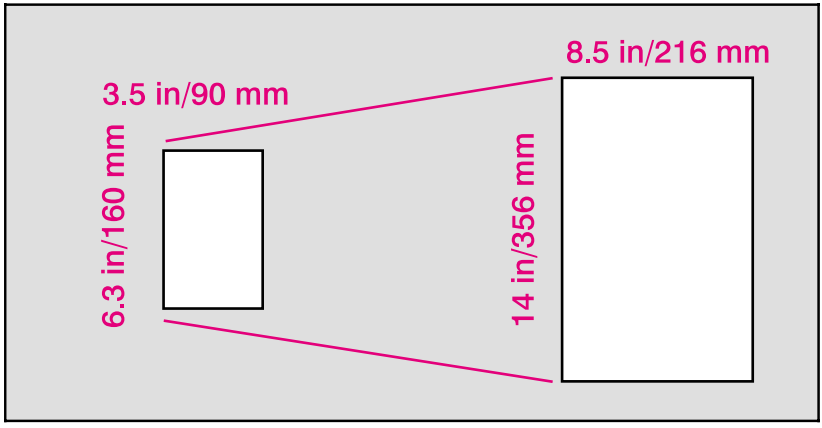
Note **Always test a sample of paper before purchasing large quantities.** Your paper supplier should understand the requirements specified in the *HP LaserJet Printer Family Paper Specifications Guide* (HP part number 5961-0920). See the HP Support pages at the front of the manual for ordering information.

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.

Printing on Custom Sizes of Paper

Custom sized paper can be printed from Tray 1. Minimum and maximum sizes are shown below.

Figure 4-1



Minimum to Maximum Paper Sizes

Note All media sizes should be inserted lengthwise (vertically) into the printer. If you want to print horizontally (in landscape mode), make this selection through your software. Inserting paper horizontally may cause a paper jam.

Printing on Standard Sizes of Paper

The printer can print on standard sizes and types of media.

Table 4-1 Paper and Media Specifications

Paper Type	Dimensions	Tray 1	Tray 2	Optional
Paper, Letter	8 1/2 x 11 in 216 x 279 mm	X	X	Tray 3
Paper, Legal	8 1/2 x 14 in 216 x 356 mm	X		Universal Tray 2*, Tray 3
Paper, Executive	7.25 x 10.5 in 191 x 267 mm	X		Universal Tray 2*, Tray 3
Paper, A4	8.27 x 11.69 in 210 x 297 mm	X	X	Tray 3
Paper, A5	5.83 x 8.27 in 148 x 210 mm	X		
Transparencies	Letter, A4	X		
Labels	Letter, A4	X		
Envelopes		X		Envelope Feeder

* A Universal Tray 2 is an optional accessory. See “Accessories and Options” in Chapter 1 for ordering information.

Media Input Options

The printer comes with two standard paper trays. By default, the printer draws first from Tray 1. If Tray 1 is empty, the printer draws from Tray 2. (If the optional 500-Sheet Tray 3 is attached to the printer the print order will change. See “Printing from the 500-sheet Tray 3.”)

Tray 1

Tray 1 (**A**) serves as a multipurpose input tray.

- Tray 1 can hold up to 100 sheets of 20 lb. (75 g/m^2) paper or up to 10 envelopes.
- Tray 1 adjusts to hold a variety of both paper and envelope sizes.
- Tray 1 can be reserved or locked out of the paper selection order (see “Reserving or Locking-out Trays” later in this chapter).

Caution Heavy-weight papers, labels, and transparencies should be printed from Tray 1 only. Load only one size of paper at a time in Tray 1.

Tray 2

Tray 2 (**B**) holds about 250 sheets of 20 lb. (75 g/m^2) paper.

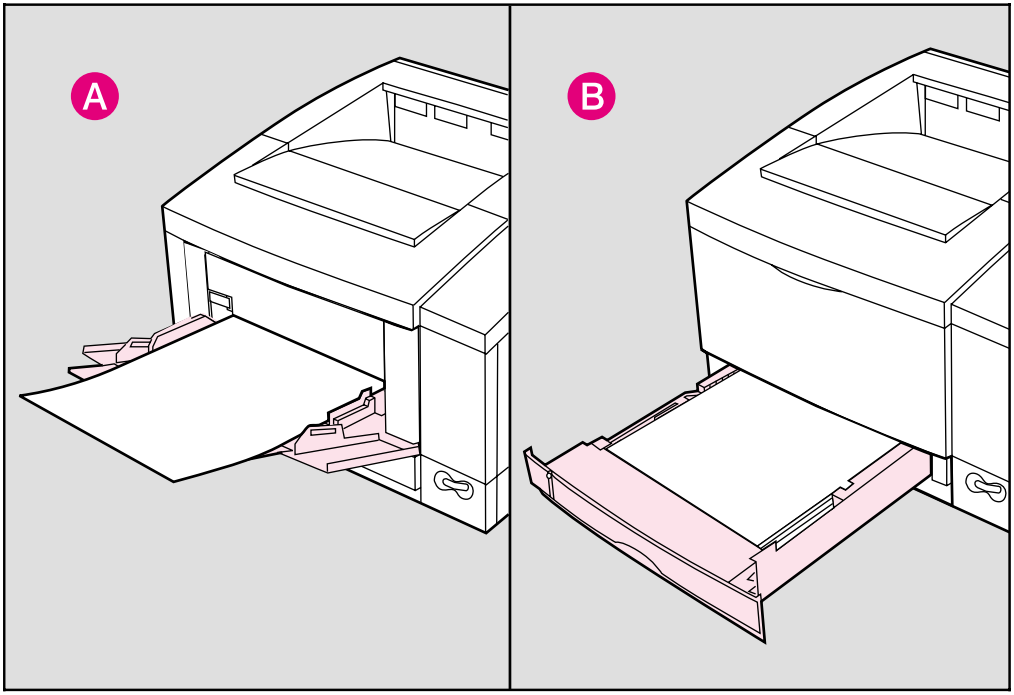
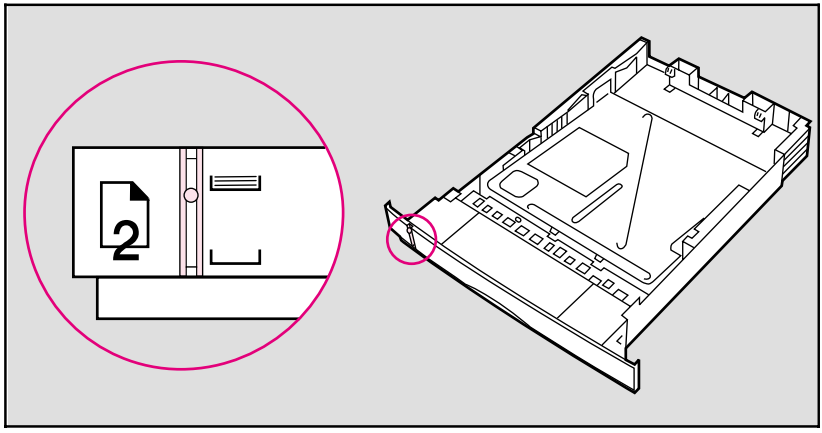


Figure 4-2 Standard Media Input Options

A gauge on the front left of Tray 2 shows the media level in the tray. When the gauge is at the top, the tray is full.

Figure 4-3



Optional Media Inputs

You can also purchase other media inputs for the printer:

A Optional 500-sheet Tray 3 Assembly:
- Includes base unit and a universal paper tray (adjusts to legal, letter, A4, and executive paper sizes).

B Optional Envelope Feeder

C Universal Paper Tray for Tray 2

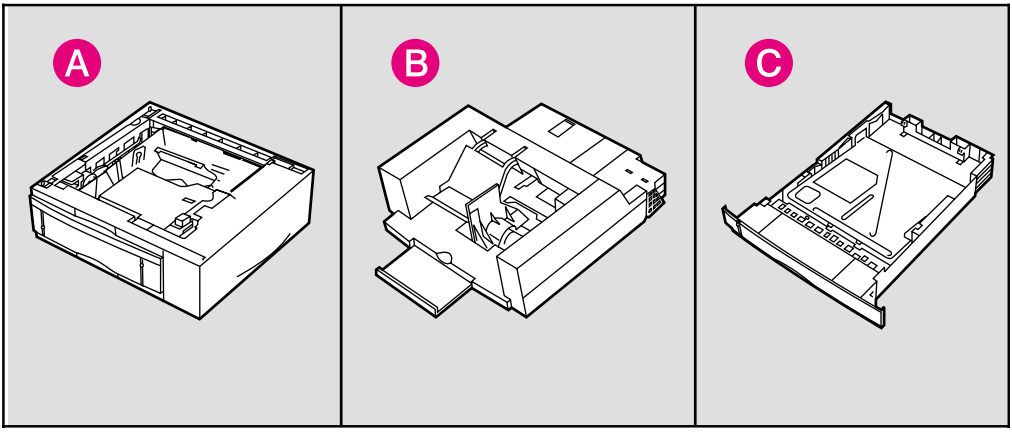
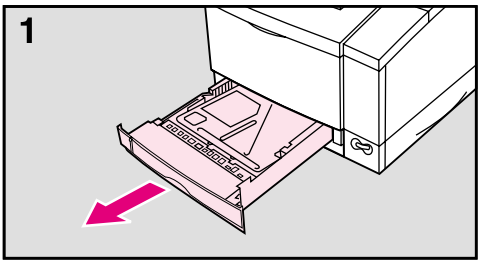
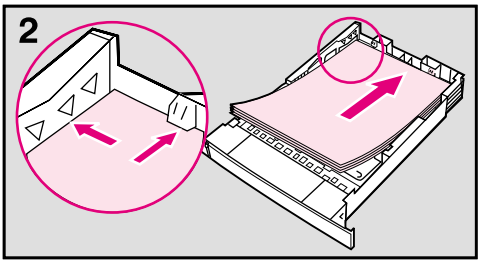


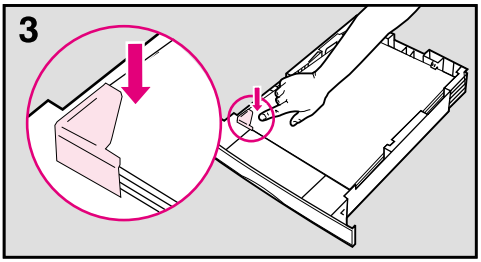
Figure 4-4 Optional Media Inputs

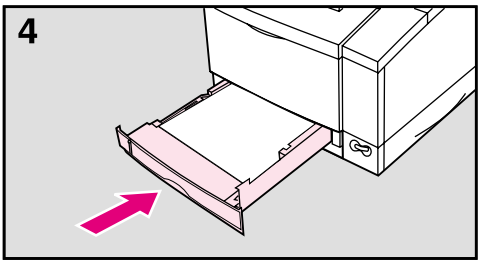
See “Accessories and Options” in Chapter 1 for additional accessories, part numbers and ordering information.

Loading Tray 2









Tray 2 holds about 250 sheets of 20 lb. (75 g/m^2) paper.

To load Tray 2:

1. Pull Tray 2 straight out of the printer.
2. Slide a stack of paper into the tray until the paper is in solid contact with the rear of the tray. Do not fill above the arrows on the left rear of the tray.

Note

See the sections on letterhead and duplex printing later in this chapter for proper media orientation for specific jobs.

3. Press down on all four corners of the paper stack to ensure that the paper rests flat in the tray and fits under the front left corner tab.
4. Slide Tray 2 back into the printer.

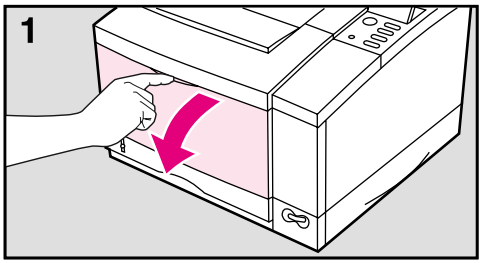
Caution

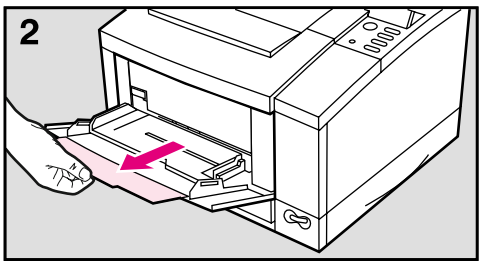
Do not remove the tray while the printer is printing. This could cause a paper jam.

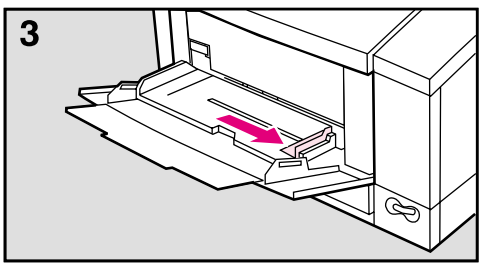
Note

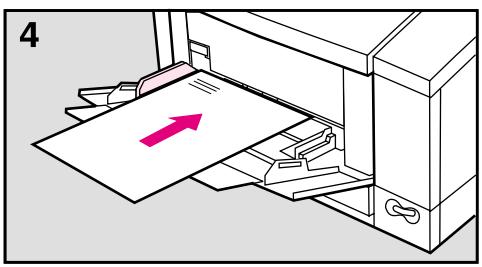
If paper curls or skews excessively when printed, turn over the stack of paper in Tray 2.

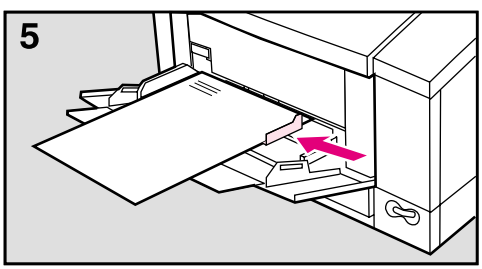
Loading Tray 1











Tray 1 allows you to automatically feed up to 100 sheets of paper or manually feed one sheet at a time. Tray 1 can be used for standard and odd-sized papers, envelopes, labels, and transparencies.

To load Tray 1:

1. Open Tray 1 by pulling down on the top center of the door.
2. Pull out the tray extension until it clicks into place.
3. Slide the paper width guide to the far right side of the tray.
4. Place paper in the tray. The paper should be flush left, under the arrows on the paper guide tabs.

Note

See the sections on letterhead, envelope, and duplex printing later in this chapter for proper media orientation for specific jobs.

5. Slide the paper width guide to the left until it lightly touches the stack of paper without bending the paper.

Printing Tasks

Stopping a Print Job

A print job can be stopped from the **Job Cancel** button or from a software application. In either case, the printer prints the pages it received before you stopped the print job, then cancels the remainder of the job.

Note

Do not stop a print job from both the printer and the computer. Cancel the job from only one location.

If the printer experiences an error, such as a paper jam, the error must be cleared before a print job can be canceled.

To stop a print job from the printer:

Press **Job Cancel** to stop the print job. The message `CANCELING JOB` is displayed until the current job is canceled. The printer waits until the computer stops sending data and then cancels the job.

Note

Pressing **Job Cancel** will cancel only the current job in the printer. If more than one print job is in printer memory **Job Cancel** must be pushed once for each job.

Caution

If you are hooked up to a network, be sure that the job you are canceling is your own!

To stop a print job from a software application:

If many jobs have been sent to the printer, they may be waiting in a print queue (like Windows Print Manager, for example). See your software instruction manual for instructions on canceling a print job from your software application.

Manually Feeding Pages

Occasionally (such as when printing transparencies), you may want the printer to pause between printing each page. The Manual Feed feature allows you to feed paper into the printer by hand rather than automatically being fed from one of the trays.

Manual Feed should normally be set through a software application. If your software does not have this option, set Manual Feed through the printer control panel.

To turn on MANUAL FEED in your software application

1 In your software application select **Print** or **Print Setup**.
2 In the **Source** option select **Manual Feed**.
3 Print the document.

To turn on MANUAL FEED in the printer control panel

1 Press **Menu** until `PRINTING MENU` is displayed.

2 Press **Item** until `MANUAL FEED=`*setting* is displayed.

3 Press **- Value +** until `MANUAL FEED=ON` is displayed.

4 Press **Select** to save your selection.

5 Press **Go** to return to the `READY` message.

When the Manual Feed option is turned `ON` the printer will respond in the following ways when a job is received:

- When Tray 1 is configured as the primary tray (`TRAY1=FIRST`):
  - The printer will automatically print on media that is loaded into Tray 1. The printer will not pause between pages.
  - If Tray 1 is empty the printer will display the message `MANUALLY FEED` [*media size*]. Once the media is loaded the printer will automatically print the sheet. The printer will then pause, waiting for additional pages to be loaded.

- When Tray 1 is not configured as the primary tray in the printing order (`TRAY1=CASSETTE`):
  - The printer will display the message, `MANUALLY FEED` [*media size*]. Load the desired media. The printer will start printing. If the desired media is already in Tray 1 press **Go**. The printer will continue to print from Tray 1 until the end of the print job or until Tray 1 becomes empty.

Reserving or Locking-out Trays

You can reserve a tray to hold a designated size or type of media. For instance Tray 1 can be reserved to hold letterhead while Tray 2 holds regular paper. Another example would be to designate Tray 1 to hold envelopes, while Tray 2 is reserved for letterhead.

Once the tray is reserved it will be locked-out of the automatic selection during printing. The printer will not draw from a reserved tray unless specifically requested to do so. To print from the reserved tray it must be selected from your software application.

Note Reserving or locking out trays helps prevent unwanted printing on special media.

Media Size Designations

Tray 1 does not have the ability to sense the size of the installed media. When Tray 1 is reserved or locked out a size needs to be assigned through the control panel. Table 4-2 lists the sizes available. See the procedure on the following page for assigning a size to Tray 1.

Table 4-2 Media Size Designations Available for Tray 1

Paper Size Supported	Executive
	Letter
	A4
	A5 (from Tray 1 only)
	Legal
Envelope Size Supported	Com10
	Monarch
	C5
	DL
	B5

To reserve and lock out Trays:

This procedure does the following:

- Changes the configuration of Tray 1 from the primary printing source (TRAY 1=FIRST) to a reserved printing source (TRAY 1=CASSETTE), and specifies a media size.
- Selects a size for Tray 1 from the control panel.

Locking Tray 1

1 Press **Menu** until CONFIG MENU appears.

2 Press **Item** until TRAY 1=*setting* appears.

3 Press **- Value +** until TRAY 1=CASSETTE appears, then press **Select**.

4 Press **Item** until LOCK TRAY=NONE appears.

5 Press **- Value +** until LOCK TRAY=1 appears, then press **Select** to save your selection.

6 Press **Item** until SIZE 1=*setting* appears.

7 Press **- Value +** until the desired size of paper you have selected appears, then press **Select**.

8 Press **Go** to place the printer back on line.

9 Place a stack of paper into Tray 1.

Tray 1 is now locked out from automatic selection. The printer will not draw from Tray 1 unless it is selected through a software application.

Locking Tray 2 and Optional Tray 3

- To reserve and lock out Tray 2 when no Tray 3 is present, first change the configuration of Tray 1 to TRAY 1=CASSETTE (follow steps 1-3).
- Tray 2 and the optional Tray 3 are locked out the same way as Tray 1 (follow steps 4 through 8).

To print a document from a reserved tray:

1 In your software application select **Print** or **Print Setup**.
2 In the **Source** option select the reserved tray (for example, “Tray 1”).
3 Print the document.

To print a multiple-page document from two trays:

1 In your software application find the **Source** option setting. This may be found under **Page Setup**, **Print** or **Print Setup**.

Note Some software applications may not give the option of pre-selecting more than one source for the media. If this option is not available, see “Manually Feeding Pages” earlier in this chapter for another method of printing on more than one type of media for a print job.

2 Set the **First Page** setting to the reserved tray (for example, Tray 1 holding letterhead).

3 Set the **Other Pages** setting to the second paper source (for example, Tray 2 for plain paper).

4 Print the document.

The printer prints page 1 on letterhead from Tray 1 and subsequent pages on plain paper from Tray 2.

Printing on Special Media

Printing Letterhead and Preprinted Forms

If letterhead and forms will be printed regularly, it may be useful to reserve and lock-out a tray for these special papers. If letterhead and form printing is only occasional, Tray 1 can be used to easily print these special papers.

Regular Printing on Special Paper

The HP LaserJet 5/5M printer can be set to recognize a paper source (such as Tray 1) as being reserved for letterhead, preprinted forms, or other type of special paper. This is helpful when several multi-page jobs print on more than one type of media. For instance, if a letter is longer than one page, the first page may be printed on letterhead and subsequent pages on regular paper.

If the printer is networked, locking-out the tray in which the preprinted paper is loaded will remove the tray from the automatic selection during printing. The printer will not draw from a reserved tray unless specifically requested to do so. This may help prevent other users from accidentally printing their jobs on the letterhead or forms. To print from the reserved tray it must be selected from your software application.

To reserve a tray for a specified paper type, see the section “Reserving or Locking-out Trays,” earlier in this chapter.

Occasional Printing on Special Paper

Tray 1, by default, will be printed from first. This feature can be useful when printing an occasional multi-page job on more than one type of media. The following example demonstrates how to print the first page of a letter on letterhead (from Tray 1) and the following pages on regular paper (from Tray 2).

1 Place a sheet of preprinted letterhead in Tray 1, print-side-up, top edge in, (see “Letterhead Orientation” on the following page).

2 Load regular (plain) paper in Tray 2 (see “Loading Tray 2,” earlier in this chapter).

3 Print the letter from your software application.

The printer will print on the sheet of letterhead in Tray 1 first, and all subsequent pages on paper from Tray 2.

Tray 1 Letterhead Orientation

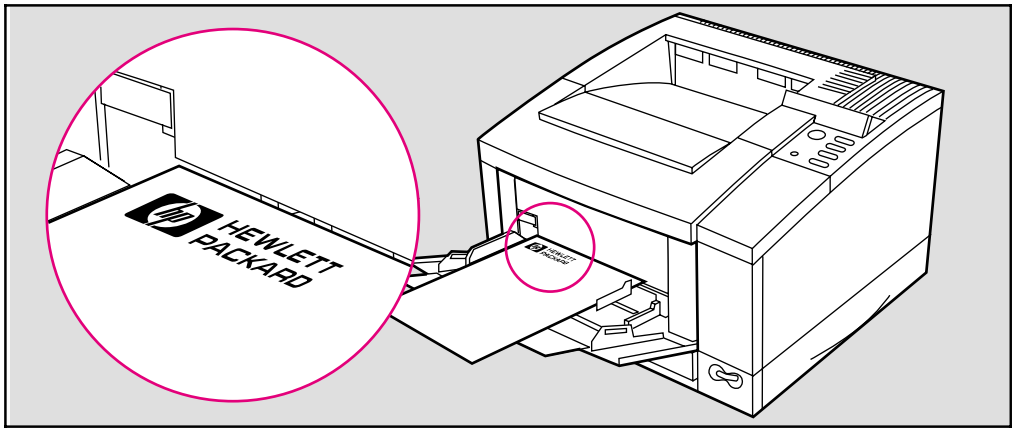


Figure 4-5 Tray 1 letterhead orientation: print-side up, top edge forward.

Tray 2 Letterhead Orientation

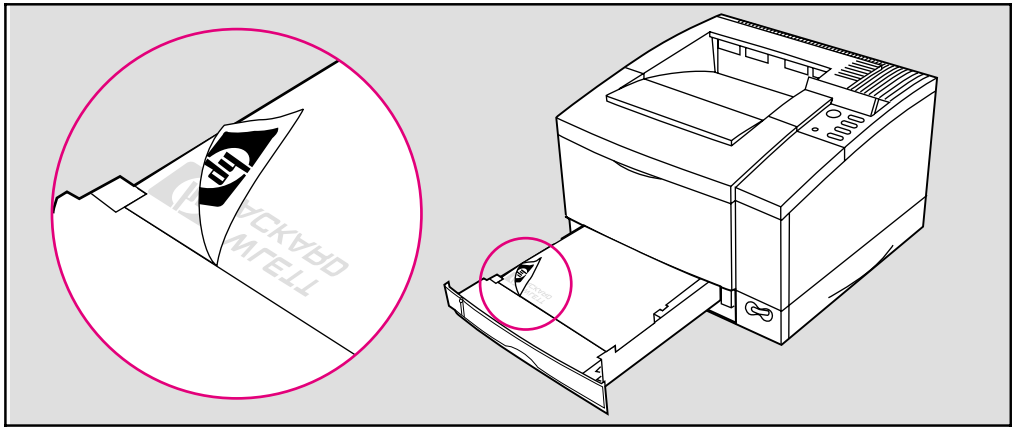


Figure 4-6 Tray 2 letterhead orientation: print-side down, bottom edge forward.

Note Letterhead orientation is different when printing with a Duplex Unit. See “Printing with the Duplex Unit,” later in this chapter.

Printing Envelopes

You can print envelopes from Tray 1 or from the optional Envelope Feeder. This section explains how to print envelopes from Tray 1 using your software application or the printer control panel. If you purchased the optional Envelope Feeder, see "Printing with the Envelope Feeder" later in this chapter (see the *Envelope Feeder User's Guide* for detailed instructions).

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.

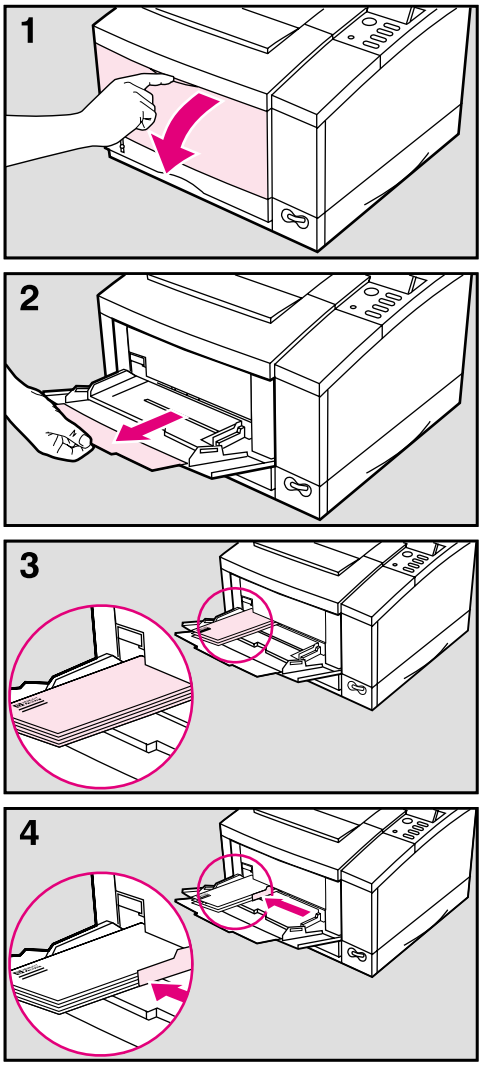
Before you load envelopes in Tray 1, make sure they are regular in shape and undamaged. Also, check to see that the envelopes are not stuck together.

Table 4-3 lists the kinds of envelopes you can print in Tray 1. It is important that the basis weight of the envelope paper be no more than 28 lb (105 g/m^2). Thicker envelopes can jam your printer. (See Appendix A for additional notes on envelope construction and specifications.)

Table 4-3 Envelope Specifications for Tray 1

Item	Specifications
Minimum envelope size	3.5 in x 6.3 in (90 mm x 160 mm)
Maximum envelope size	8.5 in x 14.0 in (216 mm x 356 mm)
Weight	16 to 28 lb (60 to 105 g/m^2)
Quantity	Maximum 10 envelopes
Envelope Size	Dimensions
Commercial #10 (COM 10)	4.1 in x 9.5 in (105 mm x 241 mm)
#7 3/4 (Monarch)	3.9 in x 7.5 in (99 mm x 191 mm)
DL	110 mm x 220 mm (4.3 in x 8.7 in)
C5	162 mm x 229 mm (6.4 in x 9.0 in)
B5	176 mm x 250 mm (6.9 in x 9.8 in)

To Load Envelopes into Tray 1:



1 Open Tray 1 by pulling down on the top center of the door.

2 Pull out the tray extension until it snaps into place.

3 Place up to 10 envelopes against the left side of the tray, **print-side up**, with the **postage-end in** (see illustration for orientation). Slide the stack of envelopes into the printer as far as it will go without forcing it. If the stack of envelopes jams while feeding into the printer try reducing the amount of envelopes in the tray.

4 Slide the paper width guide to the left until it lightly touches the right side of the envelope stack without bending the envelopes.

Note

The paper width guide ensures that envelopes feed correctly into the printer. Envelopes must fit squarely and firmly between the paper width guide and the left side of Tray 1. If they do not, they may feed into the printer incorrectly resulting in a paper jam.

Printing Labels and Transparencies

Print labels and transparencies from Tray 1, rather than from Tray 2 or optional trays. Tray 1 has a straighter paper path, resulting in fewer paper jams.

Note

If labels and transparencies jam or multiple pages are fed at one time during printing try the following:

- Fan the stack of labels or transparencies, allowing space between each sheet.
- If problems persist, print one sheet at a time through Tray 1.

Caution

Do not try to print on both sides of labels or transparencies. Do not try to print labels or transparencies from the optional Tray 3. Damage to the printer may occur.

Label Guidelines

Only use labels recommended for use in laser printers (the labels must be compatible with the heat and pressure of the fusing assembly process). See Appendix A for media specifications.

- Do not use labels that are separating from the backing sheet or that are wrinkled or damaged in any way.
- Do not use label sheets with the backing sheet exposed, such as labels with any spaces between them.
- Do not feed a sheet of labels through the printer more than once. The label adhesive is designed for only one pass through the printer.

Caution

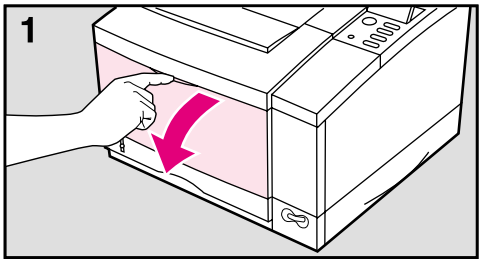
If a sheet of labels becomes jammed in the printer, turn off the printer, remove the toner cartridge, and carefully pull the labels out towards the front of the printer.

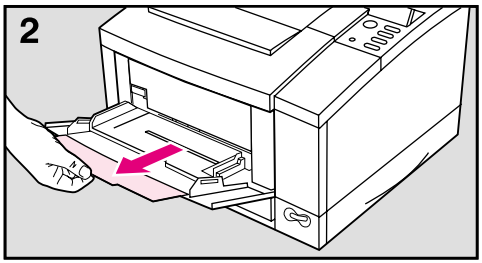
Transparency Guidelines

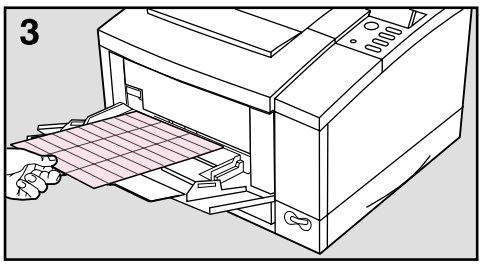
Only use transparencies recommended for use in laser printers, such as HP or 3M overhead transparency film. See Appendix A for media specifications.

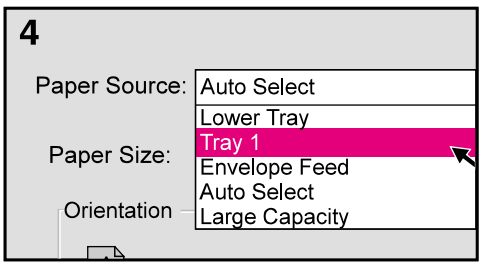
- To avoid transparency curl, remove the transparency as it comes out of the printer and set it on a flat surface to cool.
- To avoid transparencies sticking together, remove any transparencies in the output bin before printing another transparency.

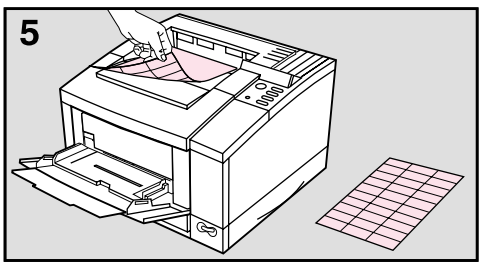
To Print Transparencies or Labels:











1 Open Tray 1 by pulling down on the top center of the door.

2 Pull out the tray extension until it clicks into place.

3 Place up to 8 mm of labels or transparencies **print-side-up** in Tray 1.

Caution

Do not load transparencies up to the arrow on the paper guide tabs. The stack of transparencies shouldn't reach higher than 2 mm below the arrow.

4 In your software's print setup, specify paper size and **Tray 1** for the paper source.

5 After printing, remove the printed sheet from the output bin and lay it on a flat surface.

Printing with Optional Accessories

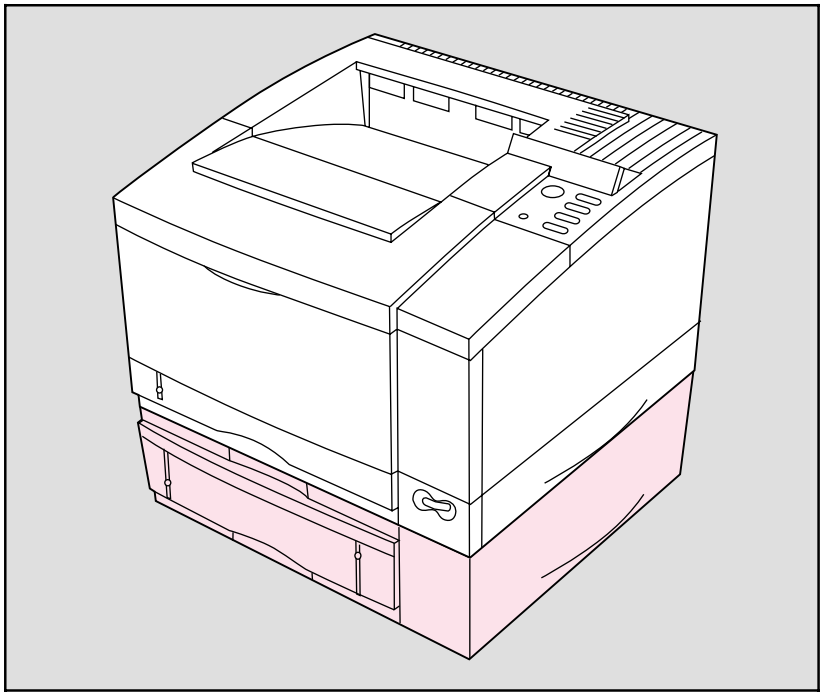
Printing from the 500-sheet Tray 3

An optional 500-Sheet Lower Assembly is available for your printer. It consists of a base and a 500-sheet paper tray. Your printer rests on top of the Tray 3 base.

Note

See the *Set-up Guide* included with the 500-Sheet Lower Assembly for installation and setup instructions.

Figure 4-7



Tray 3 adjusts for letter, legal, A4, and executive paper and holds about 500 sheets of 20 lb. (75 g/m^2) paper.

See “Accessories and Options” in Chapter 1 for part numbers and ordering information.

WARNING!

Do not pick up the printer with the optional Tray 3 Assembly installed. If relocating the printer, first separate the printer from the Tray 3 assembly.

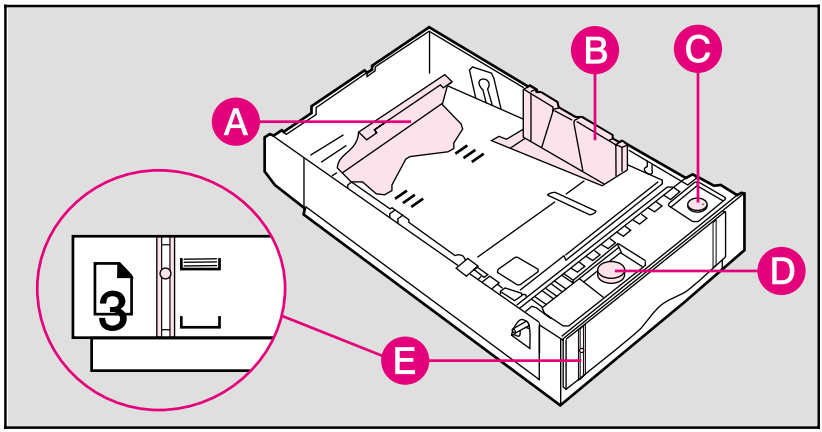
When an optional Tray 3 Assembly is installed, it replaces Tray 2 as the second default source in the printing order. As long as Tray 1 settings have not been changed the printer will now print on media in the following order:

Media Source	Default Printing Priority
Tray 1	1 (first)
Tray 3	2 (second)
Tray 2	3 (third)

For example, assuming all paper sizes are the same, if you send a job to the printer and Tray 1 is empty, the printer prints the job from Tray 3 unless you specify otherwise. If Tray 3 is also empty, the printer prints the job from Tray 2.

500-Sheet Tray 3 Details

Figure 4-8



A Adjust paper length here.

B Adjust paper width here.

C Set paper size with this knob.

D Adjust spring tension for each change in paper size and weight with this knob.

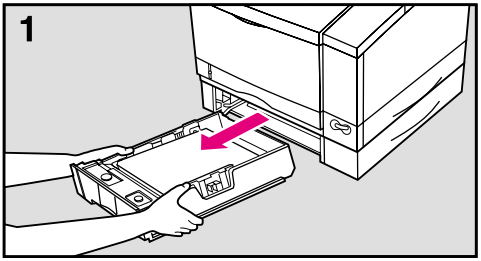
E Indicates amount of paper in tray.

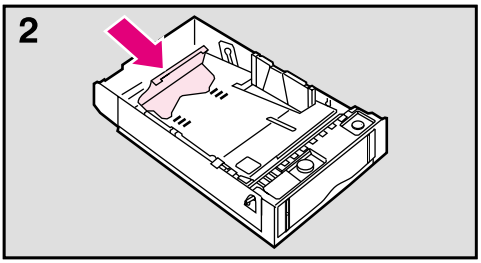
Note

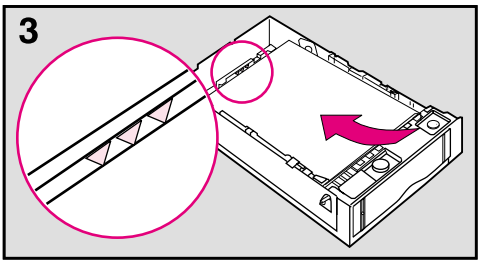
For best results, always fill the tray to the arrows in the middle of the paper length bracket (see step 3 on the next page). Overfilling the tray will cause paper jams.

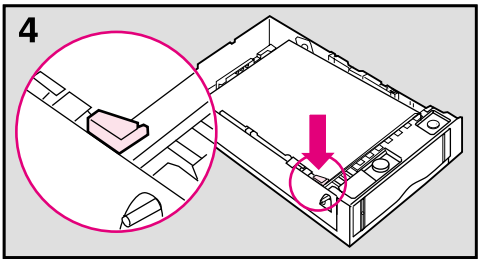
When loading the printer with a new size or weight of media, be sure to adjust the (**C**) paper size and (**D**) tension control. See the following pages for instructions on adjusting the spring tension on the Tray 3 Assembly.

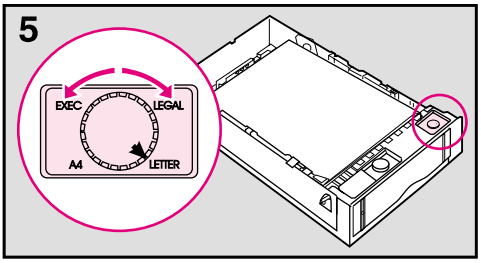
To Load Paper into the Optional Tray 3:











1 Pull the tray straight out of the printer.

2 Adjust the tray length guide for the desired paper size.

3 Slide up to 500 sheets of paper into the tray until the front end of the stack fits against the adjustable paper length bracket in the back of the tray.

Do not fill above the arrows in the middle of the paper length bracket.

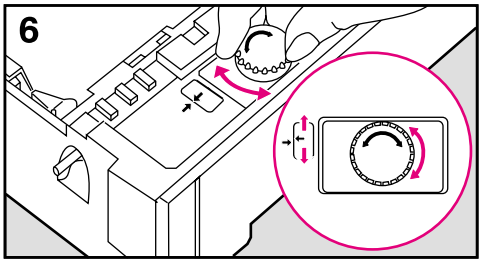
Note

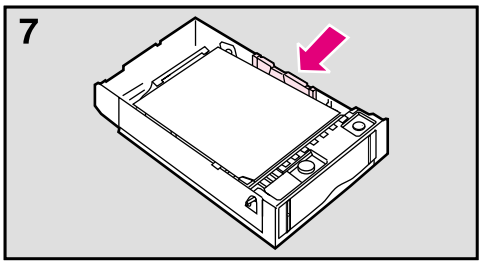
For best results, always fill the tray completely when loading paper.

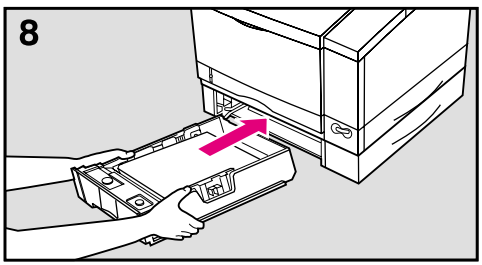
4 Press down on all four corners of the paper stack to ensure that the paper rests flat in the tray and fits under the front left metal holder.

5 Set the paper size knob to correspond with the paper being loaded. The paper size indicator on the front of the tray will show the new paper size.

Continued on next page







Note

Step 6 is only necessary if you are changing the size of the paper or the weight of the paper in Tray 3. Tray 3 comes preajusted for 20 lb. (75 g/m^2) letter sized paper. If you are not changing paper size or weight, skip to Step 7.

6 Lightly push on the stack of paper to make sure it moves freely up and down. Release the tray width guide if necessary. Adjust the tray spring tension by turning the tension knob until the adjustable arrow lines up with the stationary arrow.

Note

This adjustment may be easier if the tray is inserted part way into the printer

7 Adjust the tray width guide to rest firmly against the side of the paper stack.

8 Slide the full tray back into the Tray 3 assembly.

Printing with the Duplex Unit (2-Sided Printing)

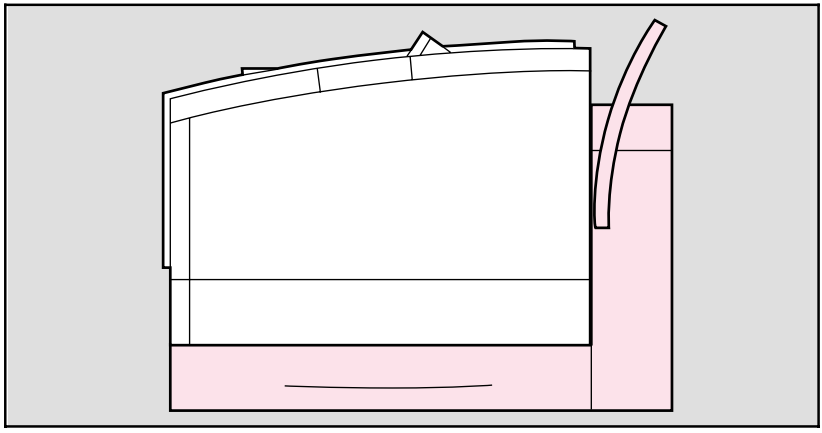
With an optional duplex unit, a print job can be printed on both sides of a sheet of paper (this is known as duplexing). See “Accessories and Options” in Chapter 1 for part numbers and ordering information.

Specifying a Duplex Setup

To use the Duplex Unit a 2-sided setup must be selected in the HP Printer Driver. The drivers, can be reached from the Print dialog box in any MS Windows application. This is usually accessed from the Printer Setup or Printer Options command, however, each application may be different.

Paper orientation and setup work together. The setup determines how the printer sets each page so that the printed areas on the front and back of each sheet match.

Figure 4-9



Caution

The duplex unit only prints letter, A4, legal, and executive size pages. **Never try to print on both sides of labels, transparencies, envelopes, odd-sized pages, or paper heavier than 24 lb (90 g/m^2)**. Damage to your printer and paper jamming can result.

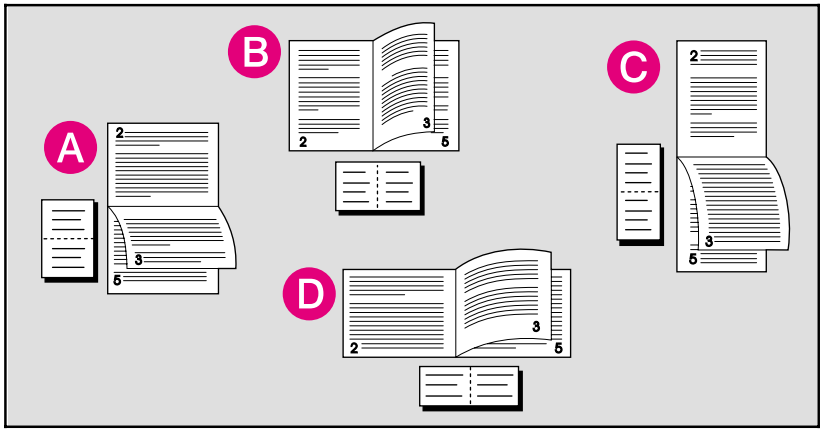
WARNING!

Do not pick up the printer with the duplex unit installed. If relocating the printer, first separate the Duplex Unit from the printer.

Paper orientation options for duplex (2-sided) printing

The four paper orientation options are shown and explained on this page.

Figure 4-10



A *Long-edge landscape orientation*

This kind of layout is often used in accounting, data processing, and spreadsheet applications. With this setup, every other printed image is oriented upside-down so that pages can be flipped through, as for a calendar.

B *Long-edge portrait orientation*

This is the conventional layout used. With this setup, every printed image is oriented right side up.

C *Short-edge portrait orientation*

This kind of layout is often used with clipboards. When short-edge binding in portrait orientation is selected, every other printed image is oriented upside-down.

D *Short-edge landscape orientation*

This layout is a variation that is also used. Each printed image is oriented right side up.

Tray 1 Letterhead Orientation for 2-Sided Printing

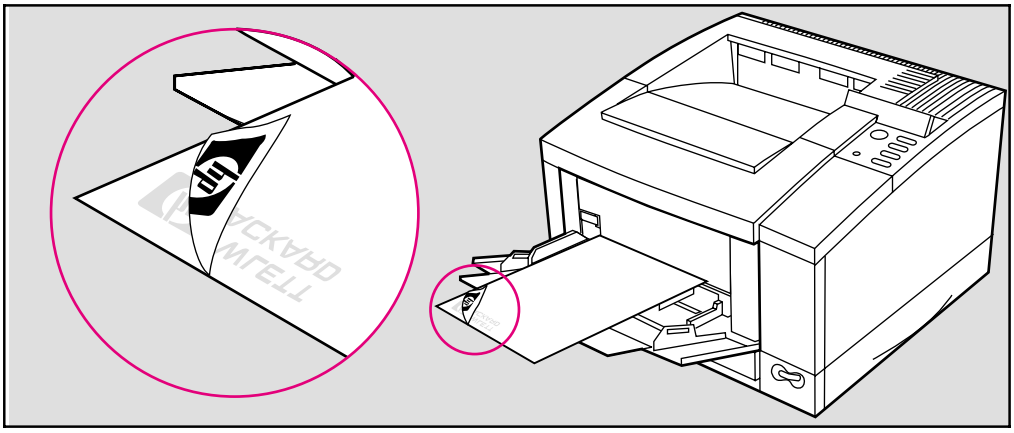


Figure 4-11 Tray 1 orientation for 2-sided printing: print-side down, bottom edge forward.

Tray 2 Letterhead Orientation for 2-Sided Printing

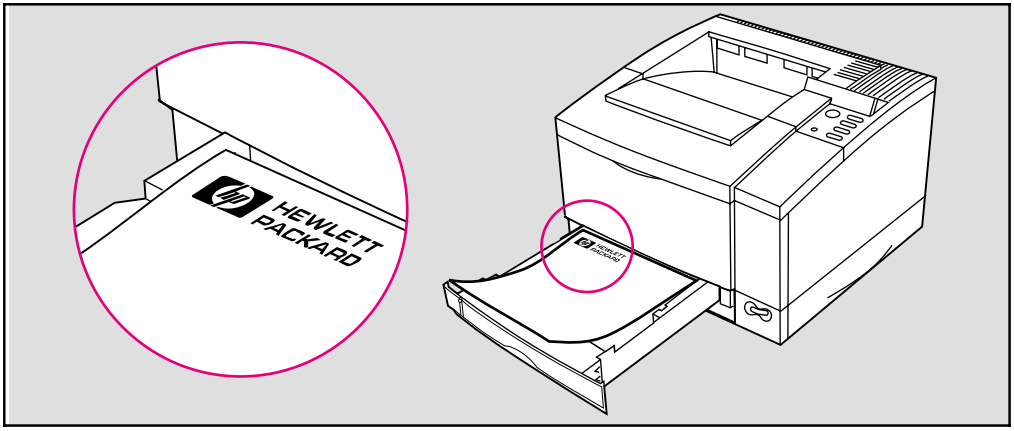


Figure 4-12 Tray 2 orientation for 2-sided printing: print-side up, top edge forward.

Printing with the Envelope Feeder

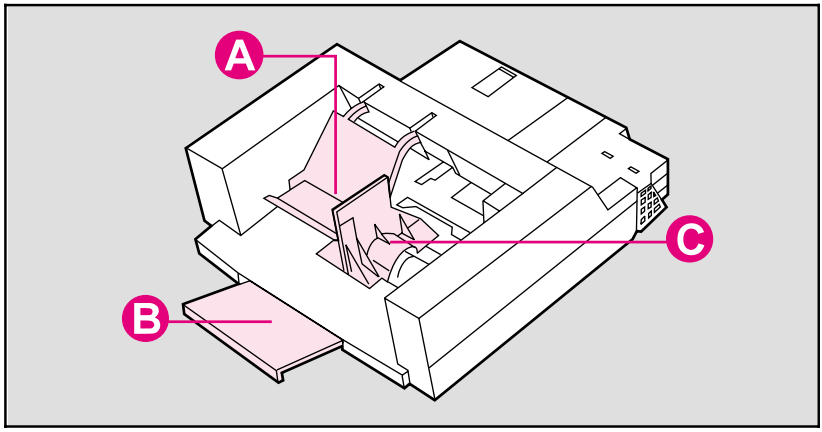
An optional Envelope Feeder is available for the printer. It holds up to 75 envelopes and prints up to nine envelopes per minute. See "Accessories and Options" in Chapter 1 for ordering information.

Note

See the "*Envelope Feeder User's Guide*" included with the Envelope Feeder for complete installation and setup instructions.

Envelope Feeder Details

Figure 4-13



A Pressure Plate

B Extension Tray

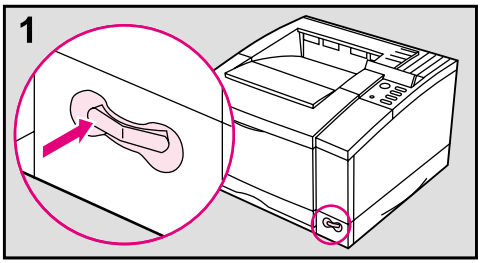
C Side Guide

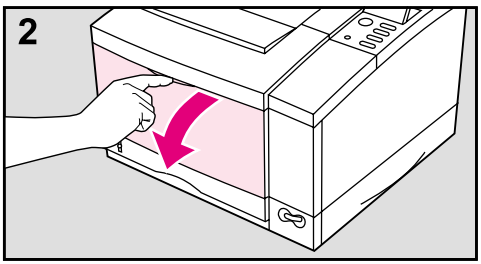
Note

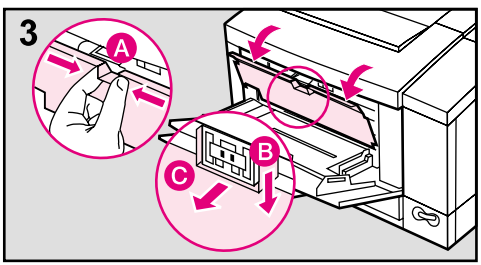
The Minimum envelope size that can be used in the envelope feeder is 3.5 in. x 6.3 in. (90 mm x 160 mm).

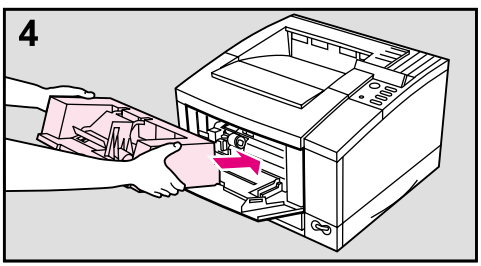
The Maximum envelope size that can be used in the envelope feeder is 7 in. x 10 in. (178 mm x 254 mm).

Inserting the Envelope Feeder









1 Turn the printer off

Caution

Always turn the printer off before inserting or removing the envelope feeder

2 Open Tray 1

3 Remove the black, envelope feeder access cover. Grasp the top handle (**A**), pull it firmly downward (**B**), and gently pull it toward you (**C**).

4 Insert the envelope feeder into the printer as far as it will go.

Select the desired envelope size using the following steps:

A Turn the printer on.

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

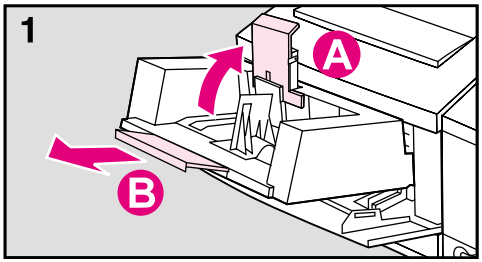
C Press **Item** until `ENV FEED=` *size* appears.

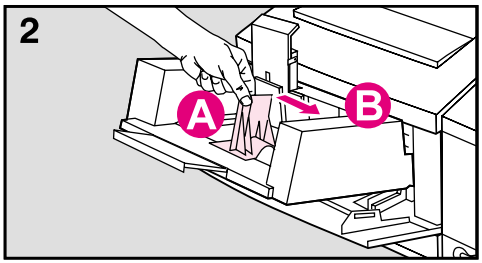
D Press **-** **Value** **+** to select the desired envelope size.

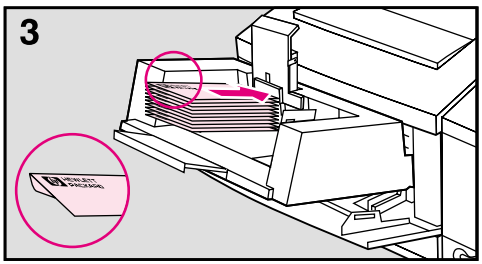
E Press **Select** to save your selection.

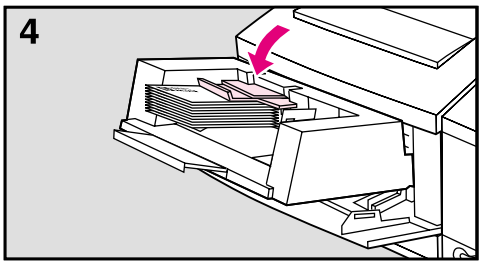
F Press **Go** to exit the menus.

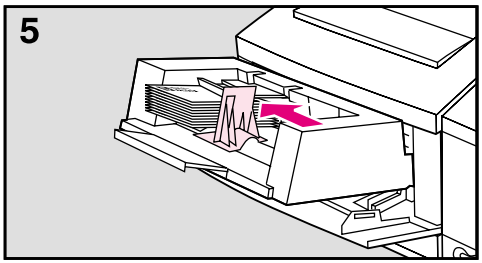
Loading Envelopes in the Envelope Feeder











Note

Only print on approved envelopes. See "Printing Envelopes" earlier in this chapter and "Envelopes" in Appendix A.

1. Lift up the pressure plate (**A**). It will stay in a vertical position. Pull the extension tray out (**B**).

2. Squeeze the release lever against the envelope side guide (**A**) and slide the side guide all the way to the right (**B**).

3. Load envelopes into the Envelope Feeder with the print-side up, the sealing flap down, and the postage end in.

Note

Do not fill the Envelope Feeder above the arrow on the envelope side guide. Make sure envelope flaps are not interlocked or stuck together.

4. Lower the pressure plate against the envelope stack.

5. Slide the envelope side guide against the envelope stack. The guide should be pressed firmly against the stack, but not tight enough to buckle the envelopes.

Note

Make sure the envelopes are pushed into the Envelope Feeder as far as they can go.

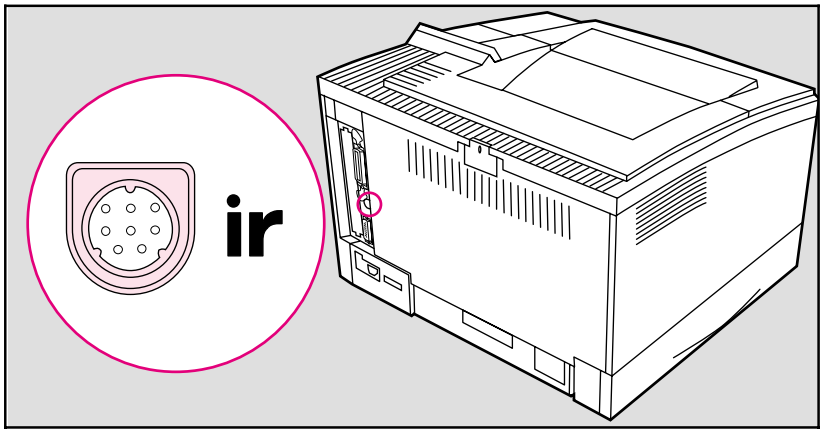
Printing with the Infrared Serial Port

An optional HP infrared (IR) adapter is available for the HP LaserJet 5/5M printer. This adapter is compliant with the specifications determined by the Infrared Data Association (IrDA).

The HP IR adapter works by transmitting data similarly to a serial interface but without the cable. Data transmission occurs at speeds up to 115 k bits per second.

The HP infrared adapter attaches to the IR port on the back of the printer, located between the parallel port and serial port (see Figure 4-14).

Figure 4-14



The HP IR adapter is compatible with a wide variety of IrDA-compliant portable devices (such as a laptop computer); however, the method for printing will vary depending on the type of device and the operating system in use. Refer to the instruction manual for your portable equipment for specific instructions on printing from that device.

Note

The IrDA standard for infrared communications represents an emerging technology. Older non-IrDA-compliant portable devices may not be compatible with the HP LaserJet 5/5M printer. If you experience problems when printing with the IR adapter, contact the manufacturer or dealer of your portable device to verify compatibility with the IrDA standard.

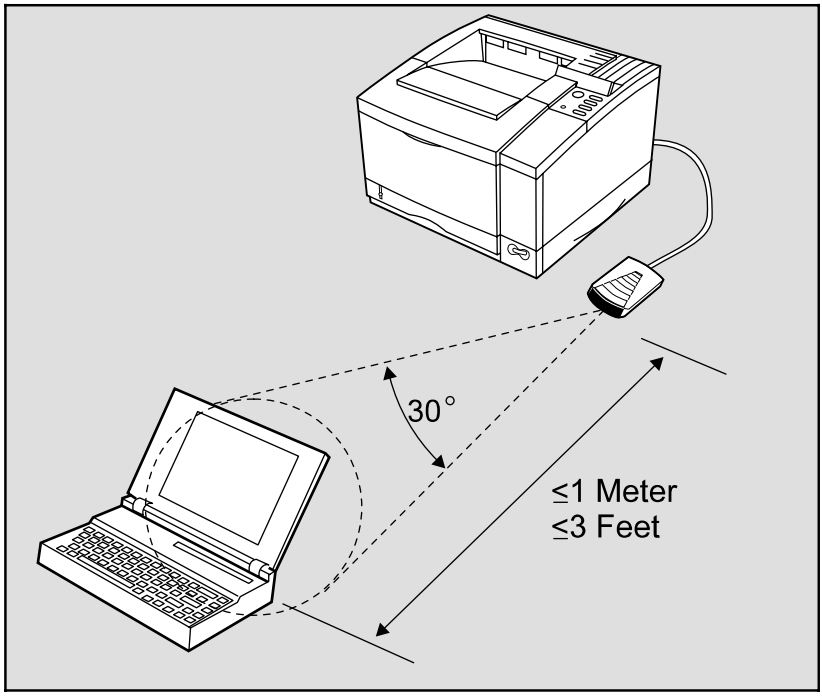
See “Accessories and Options” in Chapter 1 for ordering information.

To print using the HP Infrared Adapter:

1 Make sure that the printer is in READY mode.

2 Align your laptop computer (or other portable equipment) that is equipped with an IrDA-compliant IR window within 2 to 3 feet (1 m) of the HP IR adapter on the printer and at an angle of +/- 15 degrees to ensure an adequate connection for printing.

Figure 4-15



3 Send the print job. The status light above the IR adapter should turn on. If not, realign the adapter with the IR port on the sending device, resend the print job, and keep the equipment within the range of operation during printing.

4 If you have to move the equipment, for example, to add paper, make sure it remains within the range of operation to maintain the connection. If the connection is interrupted before your print job is complete, the IR adapter status light will turn off. You have between 3 to 40 seconds to correct the interruption and continue the job. In this case, the HP IR adapter status light will turn back on.

Note

The connection can be permanently broken if the sending port is moved out of range of operation or if anything passes between the ports blocking the transmission, such as a hand, piece of paper, or direct sunlight.

Printing with the IR adapter is generally slower than printing with a direct connection through the parallel port, depending on the size of the print job.

5

PostScript Printing

Introduction

The PostScript language is available as an option for the HP LaserJet 5 printer and comes standard with the HP LaserJet 5M printer. Chapter 3 focused on using the printer in the PCL mode. Some tasks are performed differently when printing in the PostScript mode.

This chapter describes differences the PostScript option makes in printer performance and discusses the following PostScript specific information:

- Preparing for PostScript Printing
- Control Panel Differences with PostScript
- Printing PostScript Test Pages

Printer functions not included in this chapter work the same as described in Chapter 4, “Printing,” Chapter 3, “Using the Printer Control Panel,” and other chapters of this manual.

Note for Macintosh Users

If you purchased an HP LaserJet 5M printer, see the *Macintosh Notes* for additional information. Some standard Macintosh terms may have different meanings in this manual:

- Control panel refers to the control panel on the printer and has nothing to do with the Controls Panels folder in your System Folder or the Control Panels that are stored there.
- Menu refers to a key on the printer control panel and to the menus of items available on the printer control panel, not the pull-down or pop-up menus that are part of your Macintosh user interface.

Preparing for PostScript Printing

This chapter assumes a PostScript language SIMM is installed in your printer (see Appendix D, “Printer Memory.”). Your PostScript language SIMM contains genuine PostScript Level 2 software from Adobe. It is backward-compatible with earlier versions of PostScript software.

Additional requirements for PostScript printing:

- A PostScript printer driver.
- Sufficient printer memory (printing 600-dpi and duplex printing requires more memory in PostScript than in PCL).

Using PostScript Printer Drivers

PostScript Printer Drivers for MS Windows

To make full use of the printer features in MS Windows, you must use the PostScript printer driver that came with the printer or your PostScript SIMM. For the latest driver installation and setup instructions (as well as an additional explanation of PostScript driver features), see the “readme” file on the PostScript disk.

PostScript Printer Drivers for DOS/UNIX Applications

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

Printer Memory and PostScript Printing

The HP LaserJet 5M printer comes with Adobe PostScript Level 2 and 6 MBytes of installed memory.

Table 5-1 shows the total memory required to print a letter/A4 or legal size page and to use the I/O Buffering and Resource Saving features. (For an explanation of I/O Buffering and Resource Saving, see “How Your Printer Uses Memory” in Appendix D.) Print a self test page to determine current printer memory (see “Printing a PostScript Configuration Page” later in this chapter for printing instructions).

Table 5-1 PostScript Printing Memory Recommendations

Requirement	300 dpi Simplex*	300 dpi Duplex*	600 dpi Simplex	600 dpi Duplex
Letter/A4	6 MBytes	6 MBytes	6 MBytes	10 MBytes
Legal	6 MBytes	6 MBytes	6 MBytes	12 MBytes
I/O Buffering	6 MBytes	12 MBytes	6 MBytes	12 MBytes
Resource Saving	8 MBytes	13 MBytes	8 MBytes	13 MBytes

*If you are printing complex PostScript graphics files in 300 dpi and want increased performance, you may need more memory.

Printing a Legal Page in PostScript

Most legal-size pages will print at 600 dpi. To print a legal page at 300 dpi, your printer must have at least 6 MBytes of installed memory. (The HP LaserJet 5M comes with 6 MB.) Printing 600 dpi legal-size pages requires at least 6 MBytes of installed memory. To check how much memory you have print a PS Config Page (see later in this chapter).

Note

If you have less than 12 MBytes of installed memory with the optional duplex unit installed and duplex selected, a “mini-legal” or “mini-A4” page—pages with slightly increased margins—may be printed instead. If this is not satisfactory, you must set resolution to 300 dpi or add more memory.

Switching Printer Languages (Personalities)

The HP LaserJet 5 printer comes with the PCL 6 printer *personality* or operating language, which gives you 45 built-in scalable fonts. You can also add a PostScript SIMM (Single In-Line Memory Module) which gives you Adobe's 35 Type 1 fonts.

If more than one printer language is installed, your printer is set by default to switch automatically between languages as it receives printing jobs. This allows you to print either HP PCL 6 or PostScript Level 2 language documents without leaving your application.

Note

Normally you should not change the printer 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 the printer.

To change the printer's personality setting:

1 Press **Menu** until JOB MENU appears.

2 Press **Item** until PERSONALTY=*setting* appears.

3 Press **- Value +** until the setting you want appears.

4 Press **Select** to save your selection. An asterisk (*) appears next to your selection in the display.

5 Press **Go** to exit menus.

Control Panel Differences with PostScript

As explained in Chapter 3, “Using the Printer Control Panel,” pressing **Menu** provides access to menus, one after another. Most menus and items apply to all installed personalities. Only those that specifically apply to PostScript are described in this chapter.

The Menu Map in Chapter 3 lists the placement of the PostScript options in the control panel system of menus (see the shaded entries).

To select a menu item:

1. Press **Menu** repeatedly until the menu you want appears.
2. Press **Item** repeatedly until the item you want appears.
3. Press **- Value +** until the setting you want appears.
4. Press **Select** to save your selection. An asterisk (*) appears next to your selection in the display, indicating that it is now the default.
5. Press **Go** to exit the menus.

Note

Remember: When a control panel setting is changed, it is changed for all installed languages, including PCL, as well as PostScript.

PostScript Menu

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

Table 5-2 PostScript Menu Items

Item	Options	Explanation
PS FONTS LIST	None	A printed list of PostScript fonts is available by pressing **Select** when this item is displayed.
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	Lets you decide whether PostScript automatically attempts to recover from paper jams. Setting this item to ON will reduce the printer's printing performance.

*Indicates factory default.

PostScript Fonts List

The PostScript Fonts List has samples of the 35 built-in PostScript language fonts (see Figure 5-1 on the following page).

The PostScript Fonts List displays *only* the 35 PostScript language fonts, with print samples for each font. The list will *not* display the printer's internal or downloaded PCL fonts or any PostScript language downloaded fonts.

The characters shown on the PostScript Fonts List are printed in only one size. When printing from many applications you can scale these characters to a wide range of sizes.

Note

You *cannot* use your PostScript fonts in combination with PCL fonts resident in your printer or with other PCL fonts. Language switching allows you to use either the PostScript- or PCL-supported type, but not both simultaneously.

To print a PostScript Fonts List:

1. Press **Menu** repeatedly until `PS MENU` appears.
2. Press **Item** repeatedly until `PS FONT LIST` appears.
3. Press **Select** to print the page.

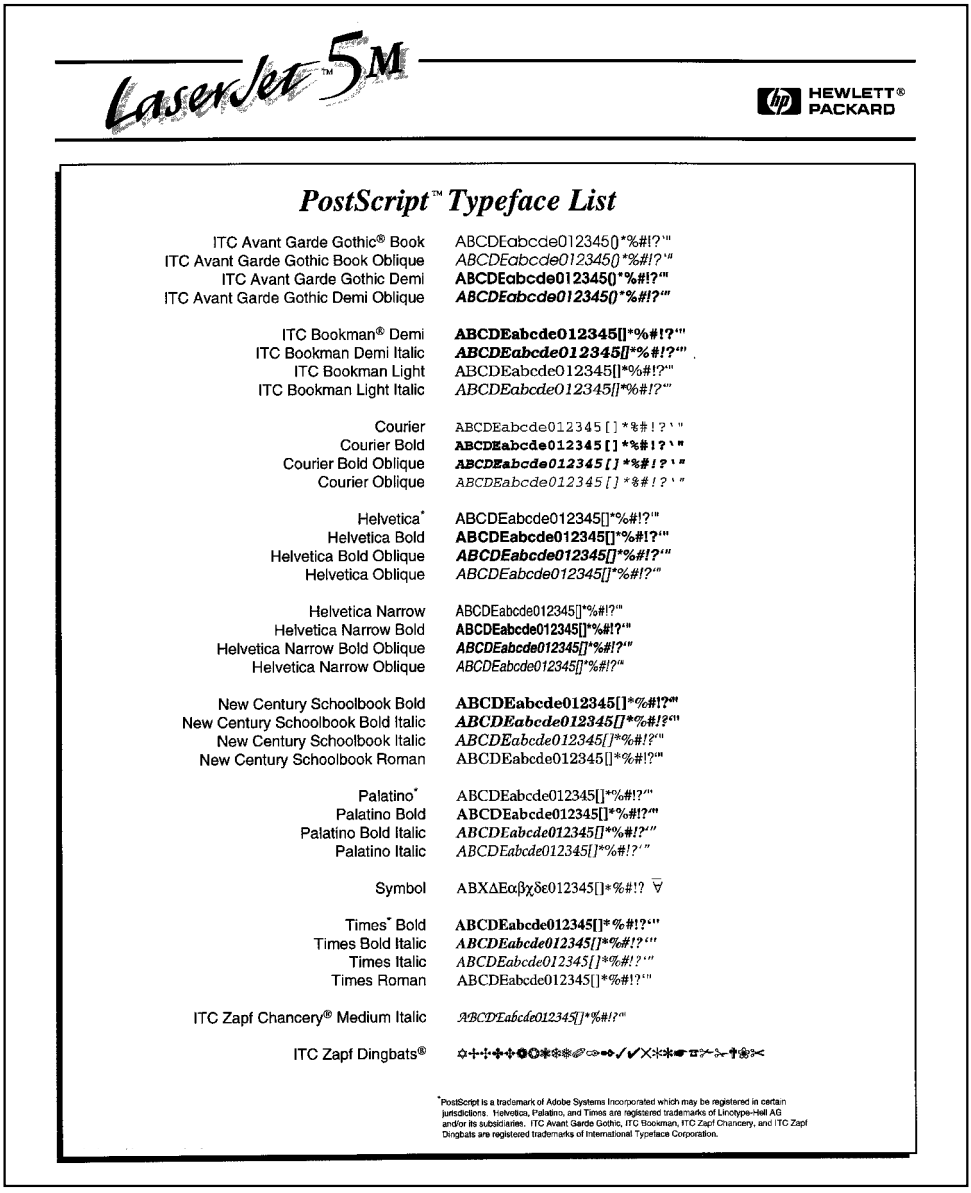


Figure 5-1 PostScript Fonts List

Menu Items Affected by PostScript

Most PostScript menu items are similar to those for the PCL mode. Those that are different are listed in the following tables. For menu items common to PostScript and PCL, see Chapter 3, “Using the Printer Control Panel.”

Table 5-3 Printing Menu Differences

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

Table 5-4 Job Menu Differences

Item	Options	Explanation
RESOLUTION	300 600*	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. The setting reverts to the default after the job prints.
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.
I/O TIMEOUT	15* (5 to 300)	I/O timeout refers to the time, measured in seconds, that the printer waits before ending a print job. The PostScript wait timeout and job timeout operators are not affected by this menu item. The `I/O TIMEOUT` setting does not affect how long a PostScript job is allowed to run or how long PostScript waits for input.

*Indicates factory default.

Table 5-5 Configuration Menu Differences

Item	Options	Explanation
AUTO CONT	n/a	PostScript language errors will not appear on the control panel display.

Table 5-6 Memory Configuration Menu Differences

Item	Options	Explanation
IO BUFFER	n/a	With 6 MBytes of memory (12 MBytes for duplex), the I/O buffering option appears.
RESRCSAVE	n/a	With 7 MBytes of memory (13 MBytes for duplex), Resource Saving appears.

Printing a PostScript Configuration Page

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

2 Press **Item** repeatedly until `PS CONFIG PAGE` appears.

3 Press **Select** to print the page. The page will print in less than one minute.

See the following pages for descriptions and examples of the PostScript configuration page.

PostScript Configuration Page

The PostScript configuration page (the PS CONFIG PAGE item in the Test Menu) is shown in Figure 5-2 on the following page.

Table 5-7 PostScript Configuration Page Printout Items

A	**Settings:** Current printer control panel default settings and product-specific information such as Printer Name and PostScript version. PostScript-specific settings include (but are not limited to): **HalftoneType:** The current halftone type. **Wait Timeout:** The PostScript timeout, not the timeout value in the Job Menu. **Printer Name:** Name set by user (a network name, for instance). **Print Errors:** Value set through the printer control panel's PS Menu. **PostScript Version:** The version of PostScript installed. **System Password/Job Password:** Values are either "0" (default) or "Not Default" (a password is present). **Jam Recovery:** Indicates whether Jam Recovery is ON or OFF.
B	**Memory:** The value shows how PostScript uses printer memory. This may be useful for more experienced users since PostScript Level 2 allows users to configure memory parameters (see the PostScript Level 2 "Red Book" for specific information about these values).
C	**Flash Accessory:** This setting will appear when the Flash SIMM is installed. It will include the number and the SIMM size
D	**Printable Area:** Gives the dimensions within the margins of the image area. Printable area is dependent on the amount of memory installed. The current default is shown in the hollow box.
E	**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.

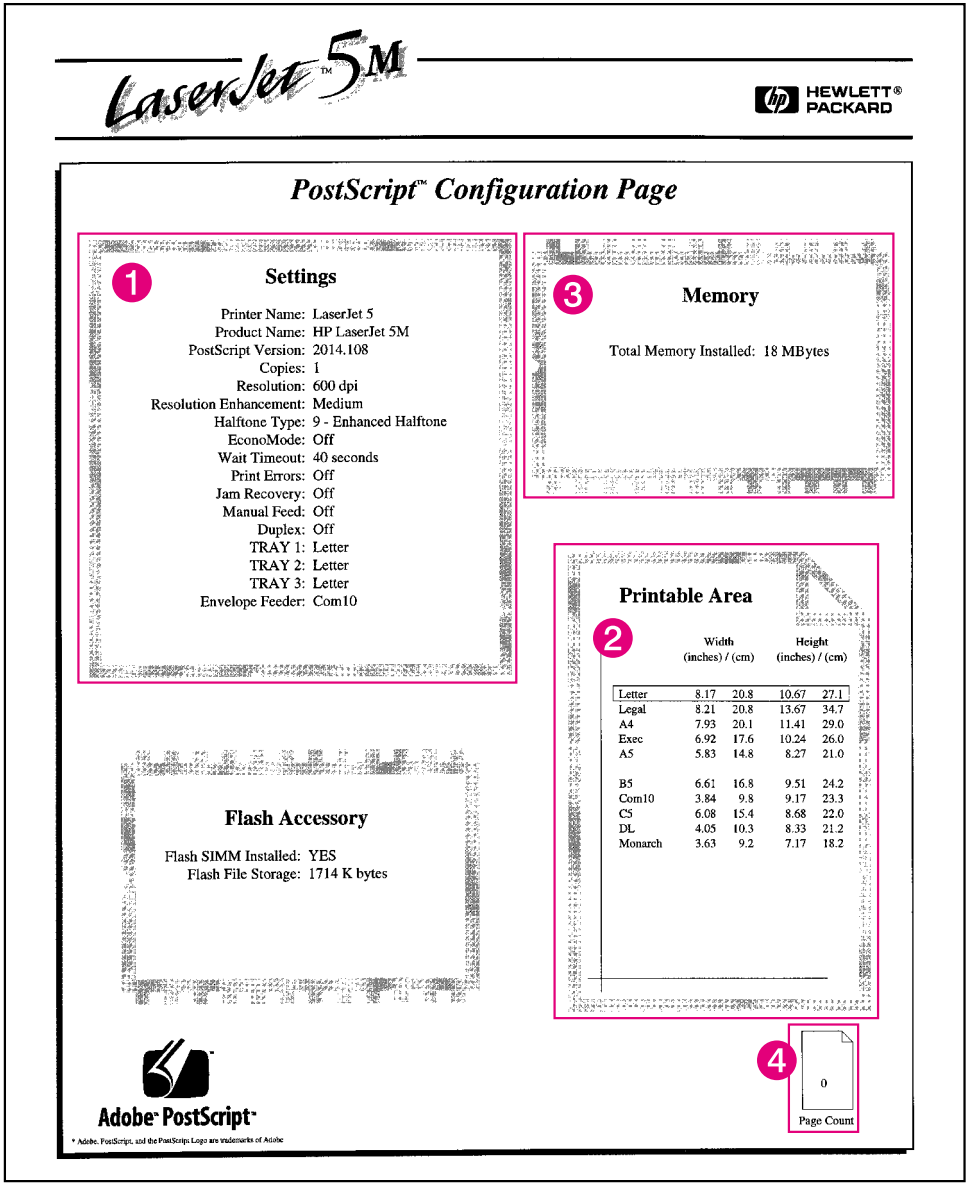


Figure 5-2 PostScript Configuration Page

6

Adjusting Print Quality

Introduction

This chapter explains special tasks to be performed occasionally, in order to adjust print quality using the control panel. These include:

- Choosing print resolution
- Fine-tuning print quality
- EconoMode printing

Many of these functions can also be performed using the software that came with your printer. Refer to Chapter 2, “Printing Software Overview” or the online help files associated with the software for more information.

Choosing Print Resolution

The default resolution setting for the printer is 600 dpi (dots per inch). This setting offers the best print quality. The resolution setting can be adjusted to 300 dpi from the RESOLUTION item in the Job Menu (see Chapter 3).

To take best advantage of 600 dpi printing, use the internal fonts (or accessory scalable fonts) and the software printer drivers designed for the printer.

Note

If possible, set print resolution from your software application. If your software application does not adjust the print resolution, set print resolution from the control panel. Settings that are selected in your software application override control panel settings.

Fine-Tuning Print Quality

Print quality can be fine-tuned by adjusting print density and setting Resolution Enhancement technology (REt). Print density and REt settings work together, so both should be adjusted at the same time (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 settings range from 1 to 5, with 1 producing the lightest print, and 5 the darkest. By default, print density is set to 3.

Note Print density is affected by the Resolution Enhancement setting.

To adjust print density from the control panel:

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

2 Press **Item** until `DENSITY=`*setting* appears.

3 Press **- Value +** to reach the print density setting you want.

4 Press **Select** to save your selection. An asterisk (*) appears next to your selection in the display.

5 Press **Go** to exit the menus.

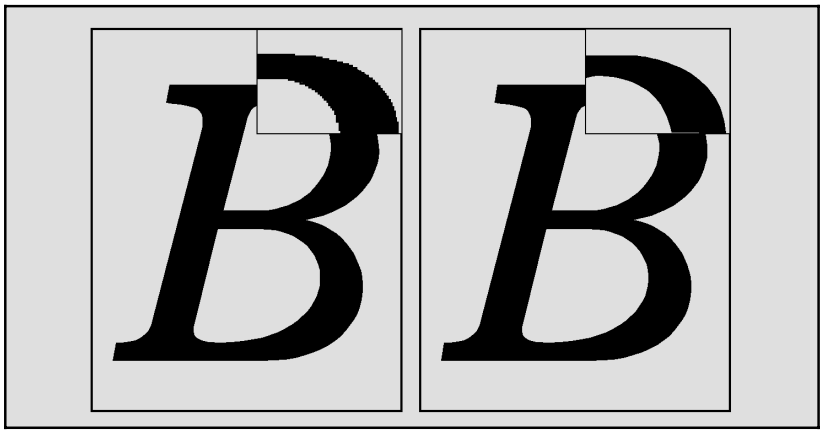
6 Print a self test and examine the print pattern (see Chapter 7, "Testing the Printer").

7 Continue adjusting print density until you are satisfied with the print pattern.

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 6-1 shows two magnified images: the left one shows Resolution Enhancement set to OFF; the right one shows it set to MEDIUM, the default. You can also select LIGHT or DARK.

Figure 6-1



Note

The REt setting should normally be set through a software application. If your software does not have this option, set REt through the printer control panel.

To adjust REt from the control panel:

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

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

3 Press **- Value +** until the desired setting appears.

4 Press **Select** to save your selection. An asterisk (*) appears next to your selection in the display.

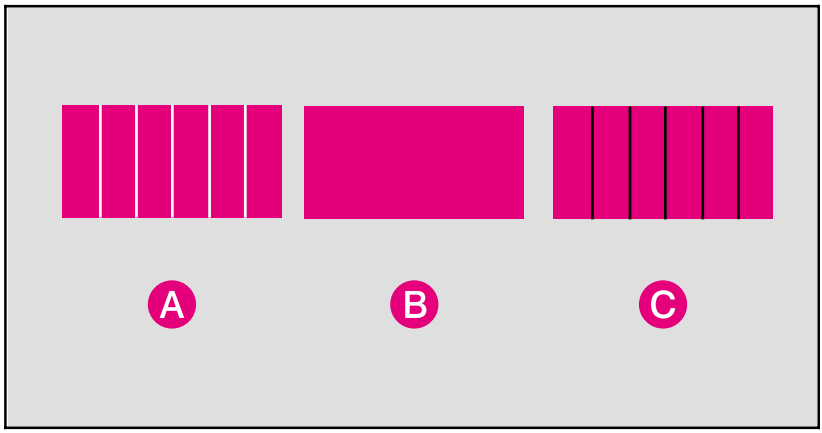
5 Press **Go** to exit the menus.

Checking the Effect of a 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 example of Menu Map printout, Figure 3-2, letter **L**). The Resolution Enhancement block does not appear on menu map printouts printed at 300 dpi.

Figure 6-2 illustrates three REt settings. Set REt so that the REt block is a uniform gray with no vertical lines (**B**), or with vertical lines tending toward dark (**C**), rather than light (**A**).

Figure 6-2



Harmonizing Print Density and REt Settings

It is suggested that both print density and REt settings be adjusted at the same time since they affect each other.

To harmonize print density and REt settings:

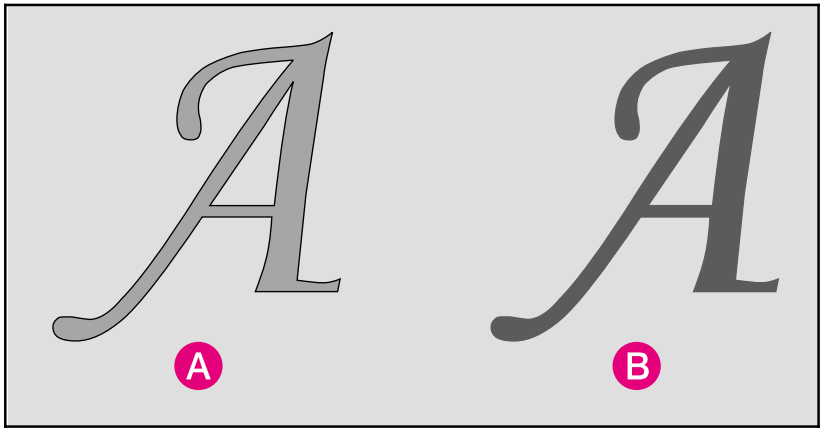
1. Make sure printer resolution is set to 600 dpi.
2. Select a print density setting. (A default setting of 3 usually produces a uniform gray REt block on the self test printout.)
3. Print a self test and examine the Resolution Enhancement block.
4. Set REt to produce a block as close to a uniform gray as possible (**B**), or with vertical lines tending toward dark (**C**), rather than light (**A**).

EconoMode Printing

Saving Toner with EconoMode

EconoMode lowers printing costs by reducing the amount of toner on the printed page. EconoMode also substantially reduces print quality. The result is similar to the draft mode found on some dot matrix printers. When set to ON, the printed image is lighter (like **A**), but still readable. EconoMode is a good choice for printing rough drafts. (**B** represents the default OFF setting for high quality regular printing.)

Figure 6-3



Note

The EconoMode setting should normally be set through a software application. If your software does not have this option, set EconoMode through the printer control panel.

To turn on EconoMode from the control panel:

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

2 Press **Item** until ECONOMODE=OFF appears.

3 Press **- Value +** to select ECONOMODE=ON.

4 Press **Select** to save your selection. An asterisk (*) appears next to your selection in the display.

5 Press **Go** to exit the menus.

7

Solving Printer Problems

Introduction

This chapter helps you troubleshoot printer problems in the following areas:

- Clearing Paper Jams
- Resetting the Printer
- Testing the Printer
- Improving Print Quality
- Understanding Printer Messages
- Troubleshooting Checklist

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 HP Support pages at the front of this manual.

Clearing Paper Jams

If a REMOVE PAPER JAM or REMOVE DUPLEX JAM message appears in the display panel, look for jammed paper in any of the locations indicated in Figure 7-1. (This message may also be displayed if the rear door is not closed correctly.)

If paper jams are a recurring problem, see "Repeated Paper Jams" at the end of this section.

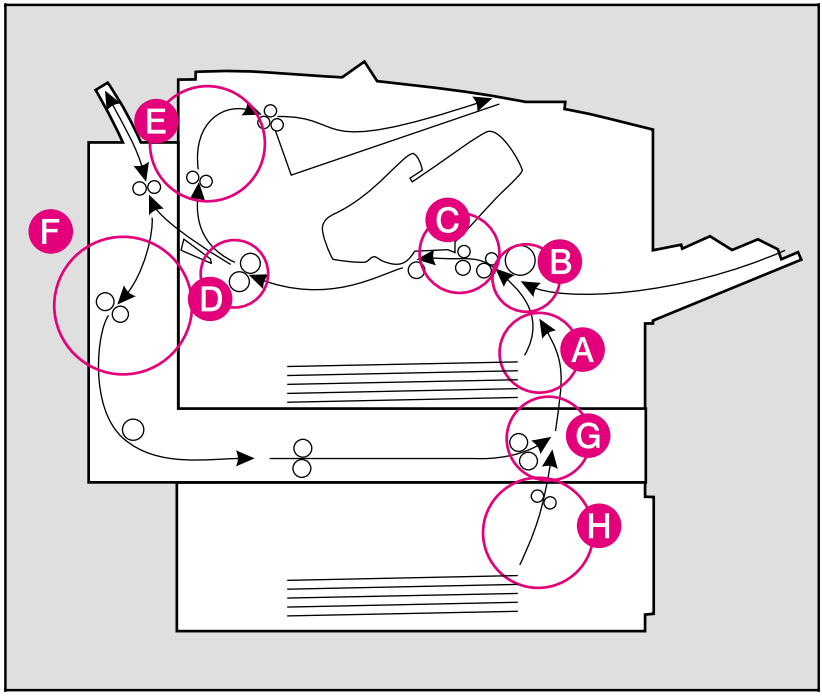
Paper jams occur most often when:

- Paper trays are not correctly loaded (see Chapter 4).
- Your print media does not meet the specifications listed in Appendix A.
- The media is in poor condition.
- The printer needs cleaning.
- User-replaceable parts are wearing out (see Chapter 8).

Note

The top cover or rear cover of the printer must be opened and then closed in order to clear the paper jam message. If paper jams occur frequently, clean the printer and check the quality of your paper or other print media.

Figure 7-1



Paper Path Jam Locations

A. Paper pickup area for Tray 2

B. Paper pickup area for Tray 1

C. Transfer guide area

D. Fusing assembly area

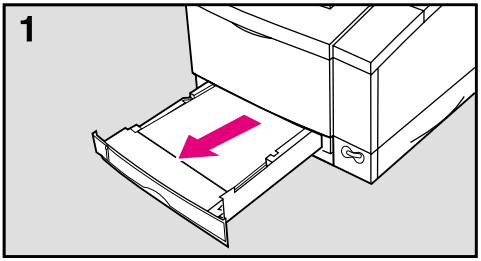
E. Paper output area

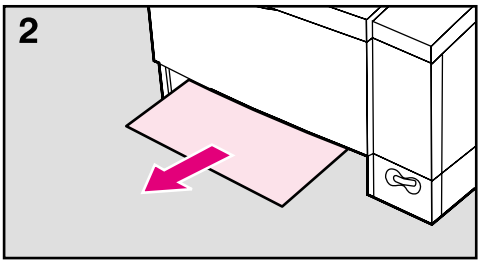
F. Duplex rear cover area (optional)

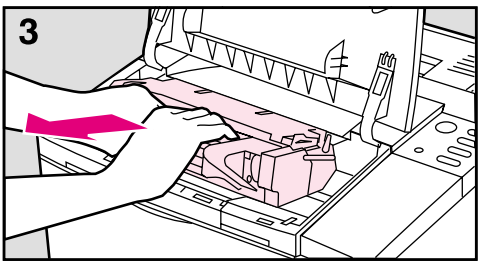
G. Duplex front cover area (optional)

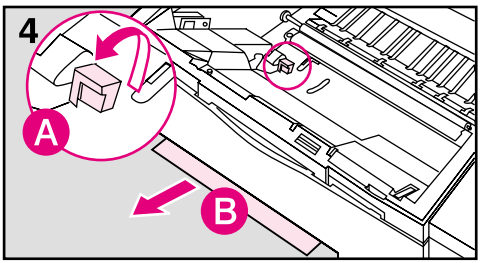
H. Tray 3 (optional)

Paper Pickup and Transfer Guide Paper Jams









1 Remove Tray 2.

2 Carefully pull the paper out through the front of the printer.

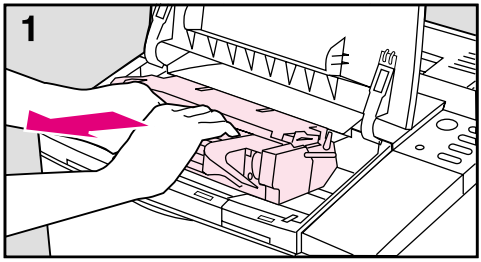
Note

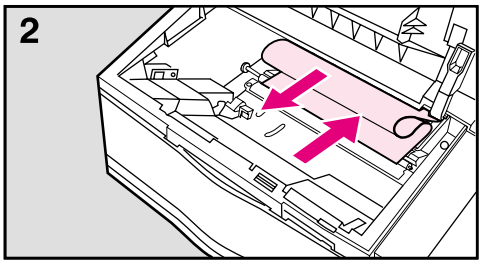
Do not force the paper if it is not moving easily. If the paper is stuck in the tray opening remove it through the Transfer Guide area (see next steps).

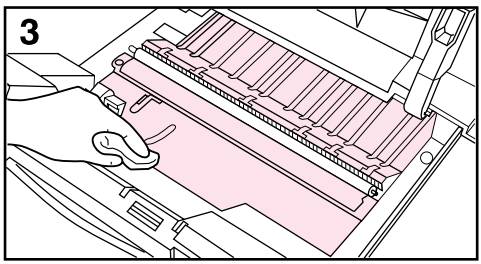
3 Open the top cover and remove the toner cartridge.

4 Raise the green handle (**A**) to free the paper, and (**B**) pull the paper up and out through the front of the printer.

Fusing Assembly Paper Jams—Top Cover







1 Open the top cover and remove the toner cartridge.

2 Remove the paper by pulling it back out of the fuser, into the printer body. Roll the paper toward you to avoid spilling loose (unfused) toner.

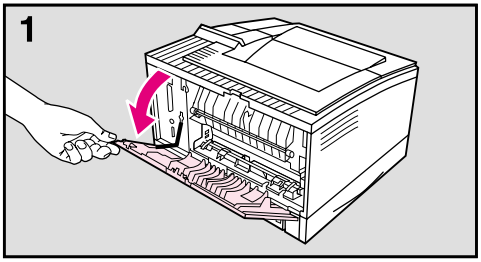
3 Clean any loose toner that may have fallen into the printer using a dry, lint-free cloth.

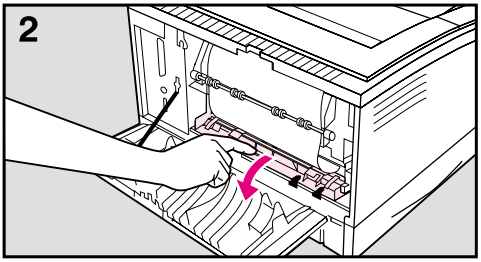
Note

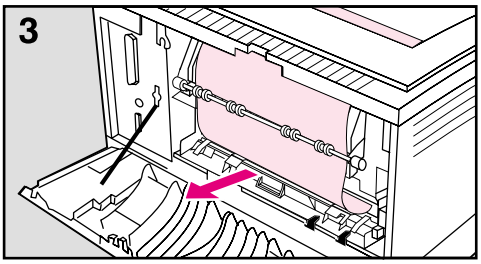
If loose toner falls into the fuser, it may cause print quality problems.

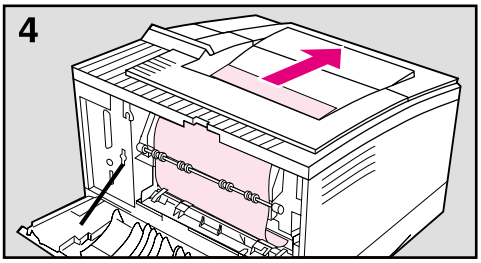
If toner gets on your clothes, wipe it off with a dry cloth and wash your clothes in cold water. Hot water sets toner into fabric.

Fusing Assembly and Paper Exit Paper Jams—Rear Cover









1 Open the rear cover.

WARNING!

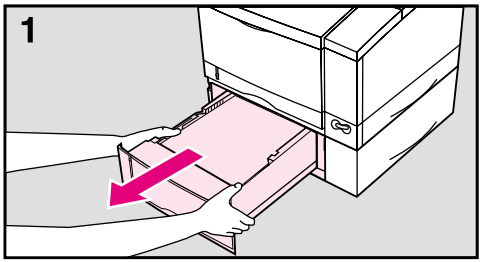
Do not touch the fusing area, it gets **hot**!

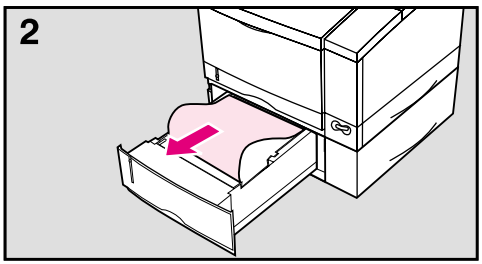
2 Open the rear door of the fusing assembly, if necessary.

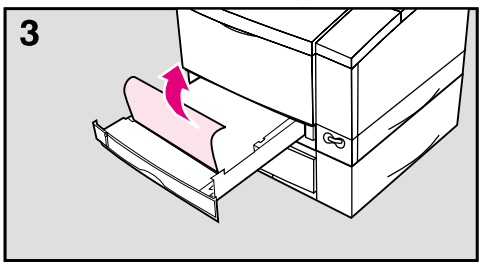
3 Pull the jammed paper from the fusing assembly.

4 If necessary, pull the paper out of the output bin from the top edge.

Optional Tray 3 Paper Jam







1 Partially remove Tray 3.

2 *Carefully* remove jammed paper and any pages in the tray that are damaged.

Caution

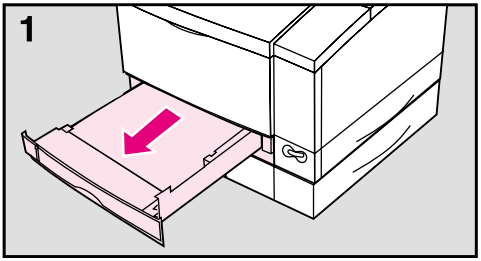
When jammed paper is removed from the tray too vigorously the pickup roller may be rotated out of position. If a grinding noise occurs during printer warm-up the roller is out of place. Turn off the printer and follow the instructions in the "Optional Tray 3 Pickup Roller" section in Chapter 8 for readjusting the roller.

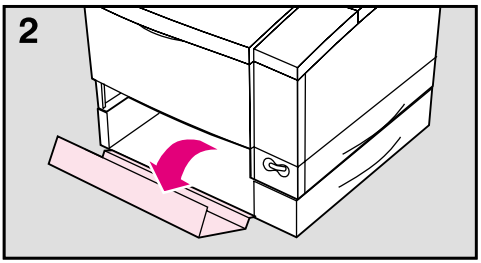
3 If necessary, partially remove Tray 2 and remove jammed paper. (You should not need to open or remove the optional duplex unit, if one is installed.)

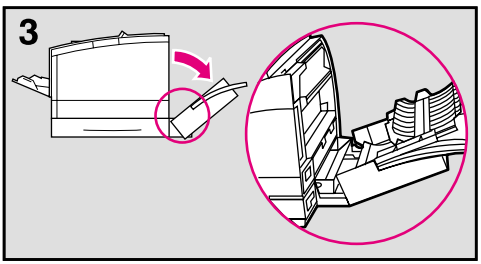
Note

If there are frequent paper jams or multi-feed problems in the Tray 3 area, see "Printing from the 500-Sheet Tray 3" in Chapter 4 and "Repeated Paper Jams" at the end of this section.

Optional Duplex Unit Paper Jams







1 Remove Tray 2.

2 Open the front access cover of the duplex unit and remove any paper. Also, remove any paper protruding from the rear of the duplex unit.

3 Open the rear duplex door and remove any paper.

Close rear duplex door (it should latch when completely closed). Close the duplex unit's front access cover and replace Tray 2.

Repeated Paper Jams

Situation	Solution
General repeated paper jam problems.	1. Check to see that media is correctly loaded in the trays (see Chapter 4). 2. Previously printed paper or torn, worn, or irregular paper should not be used. 3. Certain types of media jam more than others. See Appendix A, “Media Specifications.” 4. Try turning over the stack of paper in the tray. 5. Parts may be worn. See Chapter 8, “User-Replaceable Parts.”
Tray 1 has repeated jams.	If jams persist after you have cleaned the printer, check the media specifications and verify that you are loading the tray correctly (see Chapter 4). You may need to replace the Tray 1 Pickup Roller as described in Chapter 8.
Tray 2 has repeated jams.	If jams persist after you have cleaned the printer, check the media specifications and verify that you are loading the tray correctly (see Chapter 4). You may need to replace the Tray 2 Pickup Roller as described in Chapter 8. If using the universal (adjustable) tray, verify that the paper size knob and other adjustments are set correctly and that the tray is not overloaded.
Tray 3 has repeated jams.	Adjust the tray as described in Chapter 4. Verify that the paper size, paper width guide, paper length guide, tension, and other adjustments are set correctly and that the tray is not overloaded. Verify Tray 3 is not filled above the arrows in the middle of the paper length bracket. If it is overfilled, remove any excess media. If two or more pieces of media are being selected at once, it may help to decrease the tension (turn the adjustment clockwise). If media is not being picked from the tray, increase the tension (turn the adjustment counterclockwise).
Labels or transparencies jam.	The media may be sticking together. Try fanning the media to separate each sheet. If this does not solve the problem, print each sheet separately from Tray 1. (See Chapter 4 for printing instructions for labels and transparencies.)
Envelope jams	Try stacking less envelopes in Tray 1 or try feeding one envelope at a time.

Resetting the Printer

Reset the printer with caution. You can lose buffered page data or printer configuration data when you reset. Only use it 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 serial and parallel I/O ports, and one of the ports is having problems.

Four different resets are available through the RESETS MENU on the control panel. Each reset will affect different settings for the printer.

Reset	Action
Memory Reset	Clears memory
Factory Default	Resets menus to defaults
Active I/O Reset	Resets Active I/O Port
All I/O Reset	Resets all I/O Ports

See the “Resets Menu” in Chapter 3 for further details on each reset.

To activate a printer reset:

1 Press **Menu** until RESETS MENU appears.

2 Press **Item** until the desired reset is displayed.

3 Press **Select** to activate the reset.

Testing the Printer

Self Tests

Self tests can be printed to determine the current printer settings, options, and print quality. (If PostScript is installed, you can also print PostScript tests. See Chapter 5 for more information.)

You can review the self test printout to verify proper installation of such options as memory SIMMs, paper trays, and personalities. You can also use the self test printout to view current print density and Resolution Enhancement settings and harmonize them.

To print a test page:

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

2 Press **Item** until `PRINT SELF TEST` is displayed.

3 Press **Select** to print the test.

Note

If you select `CONT SELF TEST`, the printer prints self test pages continuously until you press **Job Cancel**. Several more pages may print until the buffer clears.

Understanding the Self Test Printout

Figure 7-2 is a sample self test printout of the HP LaserJet 5. Letters in the sample printout match the letters in the following table. The appearance of the self test printout will vary for the HP LaserJet 5M. It will also vary depending on the options currently installed in your printer.

Item	Key to Figure 7-2
A	**Printer Information:** Lists the Formatter Number, Firmware Datecode, and Page Count for the printer.
B	**Memory:** Lists printer memory, I/O Buffering data, and Resource Saving data
C	**Installed Personalities and Options:** Lists all personalities such as PCL and PostScript that are installed, the status of each SIMM slot, and other installed options such as the IR Adapter and the Flash SIMM.
D	**Paper Trays and Options:** Lists all optional input trays that are installed including 500-sheet Tray 3, the Duplex Unit, and the envelope feeder. This item also lists any configured settings for the Trays.
E	**Security:** Lists the status of the Control Panel Lock, Control Panel Password, and Flash Write Protect.

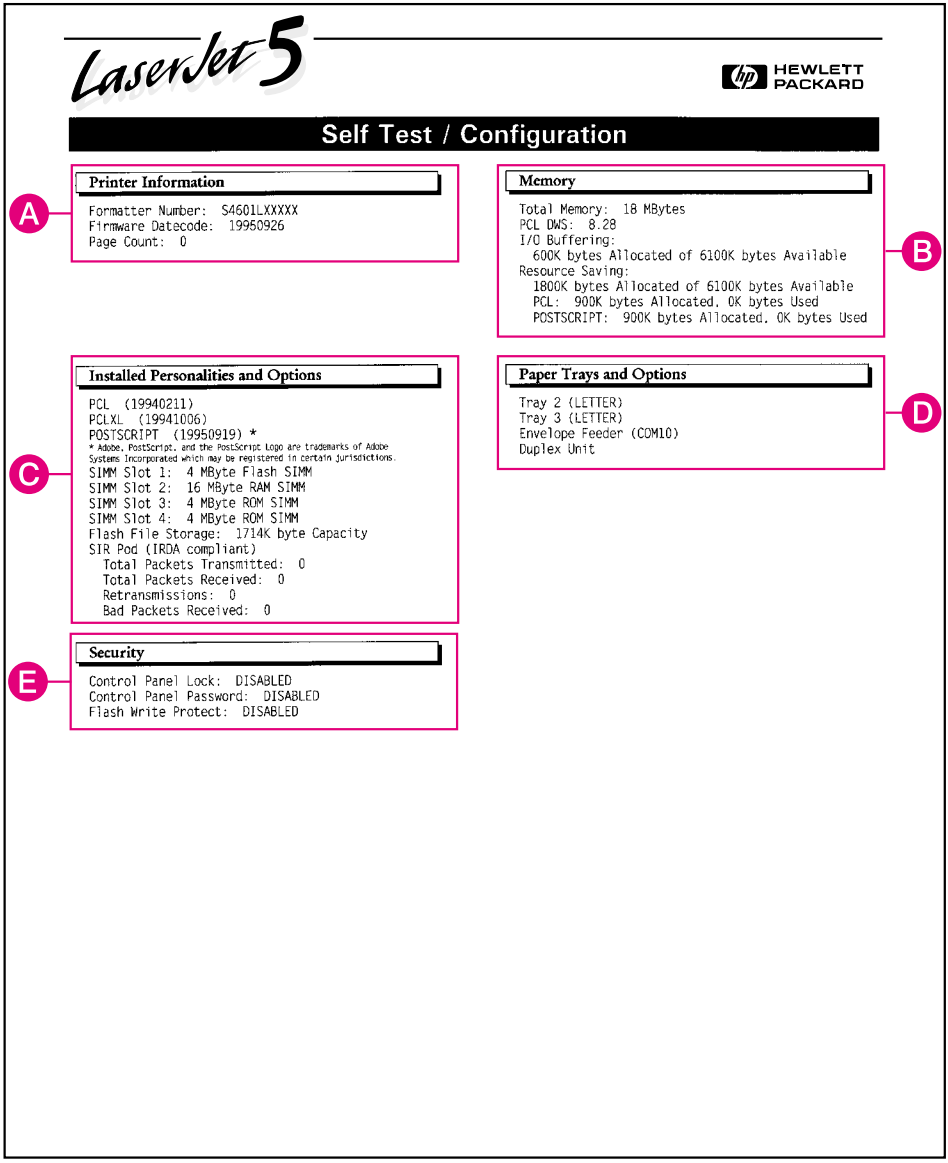


Figure 7-2 Self Test Printout

Checking Installed PCL Fonts

Your HP LaserJet printer comes with 45 scalable fonts and one bitmapped Line Printer font. You can find out which PCL fonts are currently installed in your printer by printing a PCL font list. (If you have PostScript installed you can also print a PostScript font list. See Chapter 5 for more information.)

The font list printout shows only 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 Font List:

1 Press **Menu** until `PCL FONTS MENU` appears.

2 Press **Item** until `PCL FONT LIST` is displayed.

3 Press **Select** to print the list.

Understanding the PCL Font List Printout

Figure 7-3 is the first page of a sample PCL Typeface List. Letters in the sample font list match numbers in the key to Figure 7-3 shown below.

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

Item	Key to Figure 7-3
A	**Font** is the name of the font.
B	**Pitch/Point** indicates the specified pitch or point size of the font. “Scale” indicates a scalable font.
C	**Escape Sequence** (a PCL programming command) is used to select the designated font.
D	**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 is *Internal*, S is *Permanent* soft font, and Slot is *SIMM* (slot number follows)).
E	**Font ID** is the number *you assign* to soft fonts when you download them through your software.
F	**Escape Sequence Legend**

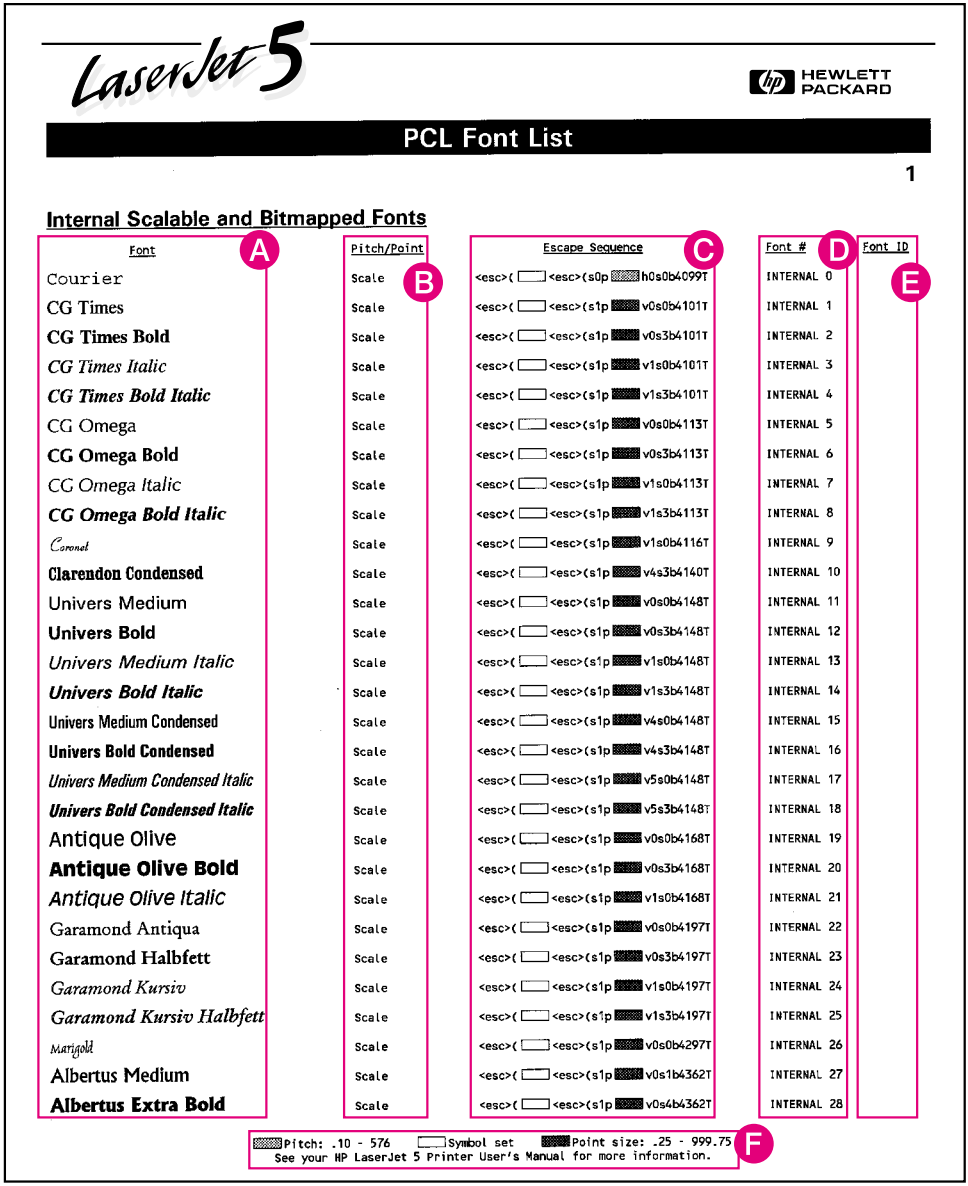


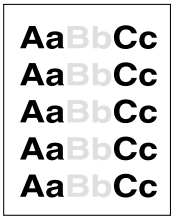
Figure 7-3 PCL Font List

Improving Print Quality

General print quality problems can be solved by following the checklist below. Following the checklist are specific samples of common print quality problems. If the listed solutions do not work, see the "HP Support" pages at the front of this manual for additional sources of assistance.

Print Quality Checklist

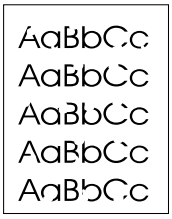
- Redistribute the toner in the toner cartridge (see Chapter 8).
- Clean the inside of the printer (see Chapter 8).
- Adjust the print density (see Chapter 6).
- Check the paper type and quality (see Appendix A).
- Adjust resolution for the type of document you are printing (see Chapter 6).
- Replace the toner cartridge, then check print quality again.
- Check to make sure EconoMode is off (see "EconoMode Printing" in Chapter 6).



Vertical Fade

If a vertical white streak or faded area appears on the page:

- The toner supply is low. See "Extending Toner Cartridge Life" in Chapter 8. If this does not improve the print quality, replace the toner cartridge.
- The print density adjustment is too light. Adjust the print density from the control panel (1 is light; 5 is dark). (See "Adjusting Print Density" in Chapter 6.)

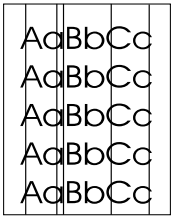


Dropouts

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 a different kind or brand of paper.
- The transfer roller is dirty. Replace the transfer roller (see "User-Replaceable Parts" in Chapter 8).

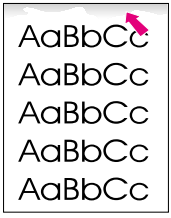
Vertical Lines



If sharp black vertical streaks appear on the page, the photosensitive drum inside the toner cartridge has probably been scratched. Replace the toner cartridge.

If smeared black vertical streaks appear, the fuser may be bad. Inspect the rollers for scratches and excessive wear and, if necessary, replace the fusing assembly as described in “User-Replaceable Parts” in Chapter 8.

Toner Smear



If toner smears appear on the leading edge of the paper, the paper guides are dirty. Clean the printer as described in “Cleaning the Printer” in Chapter 8.

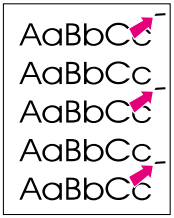
If toner on the paper is loose or can be wiped off easily, your fuser may be damaged. See an HP authorized dealer or service representative.

Background Gray Toner Shading

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

- *Increase* the density setting (see “Adjusting Print Density” in Chapter 6). 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.
- Replace the transfer roller (see “User-Replaceable Parts” in Chapter 8).

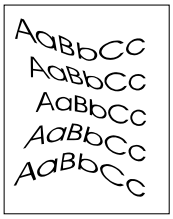
Vertical Repetitive Defects



If marks repeatedly appear on the printed side of the page:

- The toner cartridge is damaged. The circumference of the toner cartridge drum is 3 3/4 inches (95 mm). If a repetitive mark occurs every 3 3/4 inches (95 mm) on the page, replace the toner cartridge.
- The developer roller is defective. If a repetitive mark occurs every 2 inches (51 mm) on the page, replace the toner cartridge.
- The charger roller in the toner cartridge is defective. If a horizontal black line occurs every 1 1/2 inches (38 mm), replace the toner cartridge.
- The transfer roller has toner on it. If the defects occur every 2 1/16 inches (53 mm) on the back of the page, the problem will likely correct itself after a few more pages.

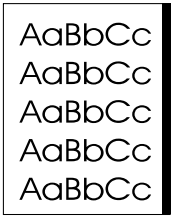
Improperly Formed Characters



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.

Vertical Line at Edge of Paper



If a vertical line appears on the page's margin (usually the right margin) after printing about 10,000 pages, the drum in your toner cartridge is wearing out. The line will grow wider, with cross-hatching. Replace the toner cartridge.

Understanding Printer Messages

The following tables list printer messages, their meanings, and recommended actions. Printer messages are divided into four categories:

- Status messages
- Warning messages
- Error messages
- Service messages

Status Messages

Status messages are displayed when the printer is ready and does not have any error or warning messages. The table lists the messages in alphabetical order.

Message	Description	Recommended Action
CLEARING MEMORY	This message is displayed during a memory reset. When completed the printer returns to the ready state.	No action required.
CONTINUOUS TEST, PRESS JOB CANCEL KEY	This message is displayed during a continuous self test.	Press Job Cancel to stop printing. Several pages may still print until the print buffer is clear.
DATA RECEIVED	This message is displayed when the printer has received data and is waiting for a form feed.	Press Go to print page.
ENGINE TEST	This message is displayed during an engine self test.	No action required.
FACTORY DEFAULTS BEING RESTORED	This message is displayed during a Factory Default Reset.	No action required.
HP LASERJET DEMONSTRATION PRESS A KEY	The printer is in the demonstration mode.	Turn the printer off. Hold down Go and Select keys at the same time while turning the printer back on.
INITIALIZING	The printer is performing initialization tasks after being powered-on.	No action required.
OFFLINE	Printer is off line and not able to receive data.	Press Go to return to on line status.
PLEASE WAIT	This message is briefly displayed when the printer is going off line or going into the menus.	No action required.
POWERSAVE ON	Printer is in PowerSave mode.	Press any key or print a job to take the printer out of PowerSave mode.

Message	Description	Recommended Action
PRINTING CONFIGURATION PAGE	This message is displayed during the formatting and printing of the configuration page printout.	No action required. Press **Job Cancel** to stop the test.
PRINTING DEMO PAGE	Printing a Demonstration Page.	No action required.
PRINTING FLASH PAGE	This message is displayed while the flash directory page is being formatted and printed.	No action required.
PRINTING FONT LIST	This message is displayed while the PCL or PS FONT LIST is being formatted and printed.	No action required.
PROCESSING JOB	This message is displayed when the printer is processing a print job. A square will blink on the right side of the display panel.	No action required.
READY	The default message. The printer is ready to use.	No action required.
RESETTING ACTIVE I/O	This message is displayed during an Active I/O Reset.	No action required.
RESETTING ALL I/O	This message is displayed during an All I/O Reset.	No action required.
RESTORING FACTORY SETTINGS	This message is displayed during a cold reset. The printer returns all Printing, PCL, Job, Config, Mem Config, Parallel, Serial, MIO (if installed), and installed personality (PCL, PS, etc.) menu settings to their factory default configurations, except for page count, and display language.	No action required.
WARMING UP	The printer is warming up and is not ready to accept data.	No action required. Wait until the printer signals READY.

Warning Messages

Warning messages indicate that something has gone wrong with the printer. The problem is not serious enough to prevent printing. The table lists the messages in alphabetical order.

Message	Description	Recommended Action
INSUFFICIENT MEMORY, JOB CLEARED	This warning means that the requested language for the print job did not have sufficient printer memory. The job will not print and will be cleared from memory.	Press Go to return to READY.
INSUFFICIENT MEMORY, PRINTING AT 300 DPI	This warning indicates that the PostScript job could not be printed at 600 dpi so the job was printed at 300 dpi.	Press Go to return to READY.
MEMORY LOW, PAGE SIMPLIFIED	This warning indicates that available memory was not sufficient for the print job. Some data loss may have occurred.	Press Go to return to READY.
MEMORY SETTINGS CHANGED	This warning indicates that the printer does not have enough memory to use the current settings for I/O buffering and resource saving. This usually occurs after removing memory from the printer, adding a duplex unit, or adding a printer language.	Change settings for I/O buffering and resource saving from the control panel or add more memory to the printer. See Appendix D.
REQUESTED LANGUAGE NOT AVAILABLE	This warning indicates that a print job requested a personality that did not exist in the printer. The job will not print and will be cleared from memory.	Print the job using a different personality or add the requested personality to the printer.
TONER LOW	The toner cartridge is running out of toner. If the printer is set to TONER LOW=CONT*, the printer will remain on line. If the printer is set to TONER LOW=STOP, the printer will go off line until you press Go or change the toner cartridge.	See “Extending Toner Cartridge Life” in Chapter 8.
TRAY *x* EMPTY	This message is displayed when a tray that is not currently selected has run out of paper. The printer will remain online.	Load paper in the empty tray to clear message.
XXXX MEMORY FULL, DATA LOST XXXX = PCL, PS...	The resource save area for personality XXXX is full.	The page will be printed, however some downloaded resources may not be saved. If this error occurs frequently, you may need to adjust the resource Saving settings. See the “Memory Configuration Menu” in Chapter 3.

Error Messages

Error messages communicate errors that prevent printing. All errors in this category (with the exception of 41.3 UNEXPECTED PAPER SIZE) are affected by the AUTO CONTINUE setting. If set to ON when an error occurs, the error message will display and the printer will go offline for ten seconds before returning to an on line state. If AUTO CONTINUE is set to OFF, the error message will remain on the display until the Go key is pushed.

Message	Description	Recommended Action
20 INSUFFICIENT MEMORY, PRESS GO KEY	The printer received more data from the computer than can fit in its available user memory. You may have tried to transfer too many macros or soft fonts, or graphics that were too complex.	Press Go to print the transferred data (data loss may result), then simplify your print job or install additional memory.
21 PAGE TOO COMPLEX, PRESS GO KEY	The data (dense text, rules, raster or vector graphics) sent to the printer was too complex.	Press Go to resume printing. You may lose some data. Try to simplify your print job by using fewer graphics. 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 SERIAL IO ERROR, PRESS GO KEY 22 PARALLEL IO ERROR, PRESS GO KEY 22 HP MIO ERROR, PRESS GO	For serial or parallel 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. **Serial configuration:** wrong pacing option may have been selected. The HP LaserJet printer uses XON/XOFF and DTR/DSR signal protocols rather than ETX/ACK protocol. **MIO configuration:** This is an I/O buffer overrun error.	Press Go 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.) **Serial configuration:** check for correct serial pacing option. If you are using an I/O card see the manual for that device or contact your dealer. If you are on a network, contact your network administrator.
40 BAD SERIAL DATA FORMAT, PRESS GO KEY 40 HP MIO ERROR, PRESS GO KEY	The printer encountered an error while transferring data from the computer. On a serial configuration, the error may have occurred because the computer was turned on or off while the printer was on line or the printer's baud rate or parity was not the same as the computer's. For network MIO cards, this means there was an abnormal connection break.	Make sure the printer is set at the same baud rate as the computer. (If you are using an I/O interface other than the serial/Bi-Tronics parallel I/O, refer to the user's manual for that product.) See the BAUD RATE item under the Serial Menu in Chapter 3. Press Go to clear the error message.
41.[X] ERROR, PRESS GO KEY *X=1, 2, 4, or 5*	A temporary printing error occurred.	Remove the page from the output bin and press Go. The page containing the error will automatically be reprinted.

Message	Description	Recommended Action
41.3 UNEXPECTED PAPER SIZE	This error most commonly occurs during one of the following situations: 1. When the paper size knob on a 250- or 500-sheet universal tray does not match the installed paper size, 2. If the tension adjustment knob on the optional Tray 3 has not been set, 3. If the printer picks two sheets of paper at once. 4. If you are trying to duplex a custom sized sheet from Tray 1.	1. Ensure that the paper size knob is set for the installed paper size. 2. Reset the paper tension adjustment (see Chapter 4). 3. Remove the page from the output bin and press Go. The page containing the error will automatically be reprinted. 4. Turn the duplex option off in the printer software.
CLOSE PRINTER COVER	The printer's top cover is not firmly closed, or your toner cartridge is not installed correctly.	Make sure your toner cartridge is fully seated and the top cover is firmly closed.
INSTALL TONER CARTRIDGE	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 top cover is fully closed.
INSTALL TRAY 2	This error appears when the printer is trying to select media from Tray 3 but is unable to since Tray 2 is open or not installed correctly.	Re-install Tray 2.
MANUALLY FEED *envelope size*	The printer requested that an envelope be manually fed. *Envelope size* may be: COM10, MONARCH, DL, C5, B5, or ENVELOPE.	Insert the appropriate paper size into Tray 1. Press Go if the desired paper is already loaded in the tray.
MANUALLY FEED *paper size*	The printer requested that media be manually fed. *Paper size* may be: LETTER, LEGAL, EXEC, A4, or A5.	Insert the appropriate paper size into Tray 1. Press Go if the desired paper is already loaded in the tray.
REMOVE DUPLEX JAM	Paper is jammed in the Duplex Unit's paper path.	Remove jammed paper (see "Optional Duplex Unit Paper Jams" in this chapter). See REMOVE PAPER JAM below for additional information.
REMOVE PAPER JAM	Paper is jammed in the paper path, the printer rear door is open, or the paper jam sensor at the rear of the fusing assembly may be stuck, causing a false paper jam warning.	Remove jammed paper (see "Clearing Paper Jams" in this chapter). The top cover or the rear cover must be opened and closed again. Check that the rear cover is closed; an open rear cover will cause a paper jam message. If an optional Tray 3 is installed, the paper tension setting may need adjustment (see Chapter 4). If no paper jams are found but the message persists, see "Repeated Paper Jams" in this chapter for general problems that cause paper jams.
TONER LOW, PRESS GO KEY	The toner cartridge is running out of toner. The printer will go off line until you press Go or change the toner cartridge.	See "Extending Toner Cartridge Life" in Chapter 8.
TRAY *x* LOAD *paper size*	The printer received a request for a paper size not available in the printer. The x stands for 1-Tray 1, 2-Tray 2, or 3-Tray 3.	Load the requested media into the desired tray. If loading media in Tray 1 select the size in the control panel menu (see Chapter 3).
X LOAD *envelope size*	This error is displayed when a requested envelope size is not loaded into the printer. X is the envelope feeder or Tray 1.	Load the requested envelope size into the envelope feeder or Tray 1.

Service Messages

Service messages communicate a failure condition with the printer. Most instances can be cleared by following the Recommended Action column (usually resetting the printer, or turning the printer off and back on). If a service message continues, contact your dealer or HP service representative.

Message	Description	Recommended Action
50 FUSER ERROR, CYCLE POWER	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 PRINTER ERROR, CYCLE POWER	The printer detected a temporary error condition.	If this error appears, switch the printer off and then back on. If the error continues, call your dealer or HP service representative.
52 PRINTER ERROR, CYCLE POWER	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 2: Flash **Y (Hardware Device):** 0: Internal Memory 1: SIMM Slot 1 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 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). Replace the SIMM that caused the error. Go 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 PRINTER ERROR, PRESS GO KEY	The printer detected a temporary error condition.	Press Go to resume operation.
57 MOTOR FAILURE, CALL SERVICE	The printer identified an internal service error.	Call your dealer or HP service representative.
58 FAN MOTOR FAILURE, CALL SERVICE	The printer identified an internal service error.	Call your dealer or HP service representative.

Message	Description	Recommended Action
62.[x] SERVICE *X=0 - 4*	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	If the printer contains a SIMM memory board, switch the printer off. Verify that the SIMM board is installed correctly (see Appendix D) 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 for more information.
63 NEEDS SERVICE	The printer found a problem in its internal RAM memory.	If this error appears, switch the printer off and then back on. If the error continues, call your dealer or HP service representative.
64 PRINTER ERROR, CYCLE POWER	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.
65 PRINTER ERROR, CYCLE POWER	The printer identified a RAM controller error.	If this error appears, switch the printer off and then back on. If the error continues, call your dealer or HP service representative.
67 PRINTER ERROR, CYCLE POWER	The printer identified an interface hardware error.	If this error appears, switch the printer off and then back on. If the error continues, call your dealer or HP service representative.
68 NVRAM ERROR, SETTINGS NOT SAVED	The printer detected an error in the nonvolatile memory (NVRAM).	Press Go, then check your control panel settings for changes (print a self test).
68 NVRAM FULL, SETTINGS NOT SAVED	The printer's nonvolatile memory (NVRAM) is full.	Press Go. 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.
79 SERVICE (XXXX)	The firmware has detected an unrecoverable error. The numbers following the error indicate the specific kind of error.	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 (XXXX)	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 or HP service representative.
81 SERVICE (XXX)	The printer detected a problem.	If this error appears, switch the printer off and then back on. If the error continues, call your dealer or HP service representative.
INCOMPATIBLE ENVELOPE FEEDER INSTALLED	An HP LaserJet 4 Envelope Feeder has been installed. This option will not work on HP LaserJet 5/5M printers.	Remove the incompatible envelope feeder. Press Go to clear the display.
INCOMPATIBLE TRAY 3 INSTALLED	An HP LaserJet 4 lower cassette has been installed. This option will not work on HP LaserJet 5/5M printers.	Remove the incompatible lower cassette. Press Go to clear the display.

Troubleshooting Checklist

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 is not plugged in.	Plug the AC power cord firmly into the power receptacle and the printer (be sure the power source is energized).
Printer is 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 the 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).
Display is blank but the printer's fan is running.	Press all keys on the printer control panel 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 Select while switching the printer on. Press - Value + to select the language you want, then Select to save the selection.) If the display language is correctly configured but the display shows garbled or unfamiliar characters, contact your HP service representative.

Printer cannot produce a self-test printout

Situation	Solution
Toner cartridge sealing tape is not removed.	Remove sealing tape from toner cartridge. See the Printer's *Getting Started Guide* or the installation guide that came with your toner cartridge.
Tray 2 is not correctly installed or out of paper.	Push Tray 2 firmly into printer (add paper if necessary).
Printer's top cover is open.	Firmly close the printer top cover.
Paper is jammed in the printer.	Check for paper jams (see "Clearing Paper Jams" earlier in this chapter).
Messages appear in the display.	Review the display messages in this chapter. If no error messages appear but the self test still does not print, call your dealer or HP service representative for assistance.

Display messages reappear or cannot be removed

Message	Solution
TONER LOW	See "Clearing the TONER LOW Message" in Chapter 8.
41.3 UNEXPECTED PAPER SIZE reappears.	See the "Error Messages" section of this chapter.
TRAY *x* LOAD or similar messages requesting that you load media persist.	Clear the printer's buffer by performing a reset (or pressing Job Cancel).

Software/Computer/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 the power cable is firmly plugged into both the printer and an active power source.
Printer is off line.	Press Go to put the printer 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 f*or configuration information. 4. Check that the interface cable is not plugged in upside-down.
Data from a previous print job is still in the printer buffer.	Press Go to print the pages stored in the printer buffer. If this does not work, press Job Cancel to clear the buffer.
Last page did not print.	Press Go to print the page stored in the printer buffer (some older software programs do not automatically send an “end of job” or page eject command).
Job did not print.	Set the PERSONALTY item in the Job Menu to AUTO (see Chapter 3). If it is set to PCL (or PS) and a PostScript (or PCL) job is sent, the printer will not accept the print job and no error message will appear.

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 self test section earlier in this chapter).
Computer software problem.	Check that your computer is working correctly by printing from a software application you know works. You can also try printing a plain MS-DOS file (for example, `C:\dir>prn`) 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).
There is a 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 from an application you know works.
Network or shared printer problems.	Check that 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.

Computer displays messages such as: Write Fault Error Writing Device LPTn: Abort, Retry, Ignore?	1. Add a Mode command to your computer's AUTOEXEC.BAT file. It can be inserted anywhere after the PATH statement:
	For a parallel port, add:
	`MODE LPT1:,,P`
	For a serial port, add:
	`MODE COM1:9600,N,8,1,P`
	`MODE LPT1=COM1`
	2. Your I/O cable could be faulty; see "Blank, garbled, or incomplete pages..." later in this chapter.

Print speed is slow

Situation	Solution
First page takes much longer to print than following pages.	Set the PowerSave feature for a longer time period or turn it off.
Printer is generally slow to respond.	1. Printer speed is highly dependent on how your software application is set up 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 3).

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

Situation	Solution
Blank pages print.	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 bad. 3. Your parallel printer cable quality may be bad. Use a high-quality cable (see Chapter 1 for an HP cable part number).
Data is missing, but there are no printer messages.	1. Check your software application to be sure the print file contains no errors. 2. Your parallel printer cable may be bad. Use a high-quality cable (see Chapter 1 for an HP printer cable part number).
Printing stops in the middle of the job.	1. Check to see if the **Job Cancel** key was pushed. 2. Check the control panel for an error message. 3. If you are on a network, make sure your computer is correctly configured or there is not a network problem (see your network administrator). 4. Check that your line voltage is steady and within printer specifications (see Appendix C).

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

Situation	Solution
Printer prints some wrong fonts or formats.	1. The font is not present in the printer and must be downloaded by your software application. Check your software program to ensure the correct printer driver has been installed and configured. To verify that the font, or format you want is available, print a font list (see “Checking Installed PCL Fonts” earlier in this chapter). 2. Your software is selecting a substitute font for one that is not available in the printer (see your software application manual for font selection).
Courier font is too dark.	Change the COURIER setting to REGULAR in the Printing Menu. See “Printing Menu” Chapter 3 for details.
Courier font is too light	Change the COURIER setting to DARK in the Printing Menu. See “Printing Menu” Chapter 3 for details.
Printer prints in wrong personality.	1. Ensure that the personality (printer language, such as PostScript) is installed in the printer (see Chapter 5, “PostScript Printing”). 2. Check the PERSONALTY item in the Job Menu; if it is not set to AUTO, then your software application may not be sending a command telling the printer to switch to that personality.
Control panel settings, such as tray selection or font selection, do not work or are ignored.	Software commands override control panel settings (see Chapter 3 for information on how your software works with control panel settings).

Situation	Solution
Printer draws media from the wrong paper source.	1. Check the paper source option in your software application. 2 Ensure that the printer driver for your software application is correctly installed, configured, and capable of printer tray selection. 3. Paper tray may be reserved (“locked out”). Print a self test to determine if a tray has been reserved (see “Testing the Printer” earlier in this chapter) or check the “Lock” item in the printer’s Config Menu (see Chapter 3). 4. 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, check that the paper size knob is set to the correct size paper. 5. If you selected the optional Tray 3 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). 6. If you are printing to Tray 1 but the software is not selecting it, try setting `TRAY 1=CASSETTE`.

Manual feed problems

Situation	Solution
Cannot clear manual feed messages.	A previous print job may still be in the printer’s buffer. Press **Job Cancel** to remove the previous print job.
Cannot print from Tray 1.	Check to be sure you have selected “Manual Feed” or “Tray 1” through your software application.

Problems when printing transparencies and labels

Situation	Solution
Labels and/or Transparencies jam or multifeed when printing.	1. The media might be sticking together. Try fanning the media, allowing them to separate from each other. 2. If this does not solve problem, print the labels or transparencies individually from Tray 1.

Problems Using Optional Accessories

500-sheet Tray 3 problems

Situation	Solution
General operation problems.	For general operation and problems, see “Printing from the 500-sheet Tray 3” in Chapter 4.
Paper jams and paper feeding problems.	1. See “Clearing Paper Jams” earlier in this chapter. 2. Ensure that paper weight is within recommended range. (See Appendix A, “Media Specifications,” and Chapter 4, “Printing”) Then see Chapter 4 for information on setting Tray 3 tension adjustment.
Cannot access Tray 3.	Adjust the paper size knob for the correct size paper (see “To Load Paper into the Optional Tray 3” in Chapter 4).
Printer does not recognize Tray 3.	1. Ensure the Tray 3 Assembly is firmly seated, then switch printer off, then on again. If the printer still does not recognize Tray 3, contact your dealer or authorized HP service provider. 2. Verify that you are using a Tray 3 Assembly for the *HP LaserJet 5/5M* printers (the Lower Cassette Assembly for the HP LaserJet 4/4M printers will not work).
A grinding noise is coming from Tray 3.	This noise will occur if the pickup roller has been rotated out of adjustment. This can happen from removing jammed paper too vigorously, causing the paper to catch the roller and rotate it out of position. This noise will also occur if a replacement roller has been installed incorrectly. Follow the instructions in the “Optional Tray 3 Pickup Roller” section in Chapter 8 for readjusting the roller.

Duplex option problems

Situation	Solution
General operation problems.	For general operation tasks, see “Printing with the Duplex Unit” in Chapter 4. You must have the optional duplex unit installed to do two-sided printing with the HP LaserJet 5/5M printers.
Paper jams.	See “Clearing Paper Jams” earlier in this chapter.

Envelope Feeder option problems

Situation	Solution
General operation problems.	See the manual that came with your Envelope Feeder option.
Paper jams and envelope feeding problems.	1. See “Clearing Paper Jams” earlier in this chapter. 2. Ensure envelopes meet the specifications in Chapter 4, “Printing” and in Appendix A, “Media Specifications.” 3. Ensure there is no media in Tray 1 (if there is paper in the Tray 1, the printer will draw from there first).
Printer does not recognize the Envelope Feeder.	1. Ensure the Envelope Feeder is firmly seated, then switch the printer off, then on again. If the printer still does not recognize the Envelope Feeder, contact your dealer or authorized HP service provider. 2. Verify that you are using an Envelope Feeder for the *HP LaserJet 5/5M* printers (the feeder for the HP LaserJet 4/4M printers will not work).

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. Set the control panel PERSONALTY setting 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 font) instead of the font you requested.	The requested font is not downloaded. A personality switch may have been performed to print a PCL job just before the PostScript printing job was received. Download the desired font.
A legal page prints with clipped margins.	If the page margins are clipped, you may need to print the page at 300-dpi resolution or install more memory (see Chapter 5, "Printing a Legal Page in PostScript").
A legal 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, see "A PostScript error page prints," below. If margins are clipped, see "A legal page prints with clipped margins" above.
Letter page jobs fail to print.	First, set PRT PS ERRS=ON, then send the job again to print a PostScript error page. If an error page prints, see "A PostScript error page prints," below. If this does not correct the problem, you may need to install more memory (see Chapter 5, "PostScript Printing").
A PostScript error page prints.	Make sure the print job is a PostScript job. Check to see if your software expected you to send a setup or PostScript header file to the printer.

8

Maintaining and Adjusting the Printer

Introduction

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

- Managing the Toner Cartridge
- Cleaning the Printer
- Saving Power with the PowerSave Feature
- User-replaceable Parts

Managing 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 text, a toner cartridge lasts an average of 6,800 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 (set to 3 - see "Adjusting Print Density" in Chapter 6).

Using EconoMode can further extend toner cartridge life (see "EconoMode Printing" in Chapter 6).

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 a cartridge in an unopened package is approximately 2 1/2 years of storage; the shelf life of a cartridge in an opened package is approximately six months.

Installing and Recycling: To install a new toner cartridge, follow the instructions in the *Installation and Recycling Guide* included in your toner cartridge box. The guide also includes information on recycling.

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.

Clearing the TONER LOW Message

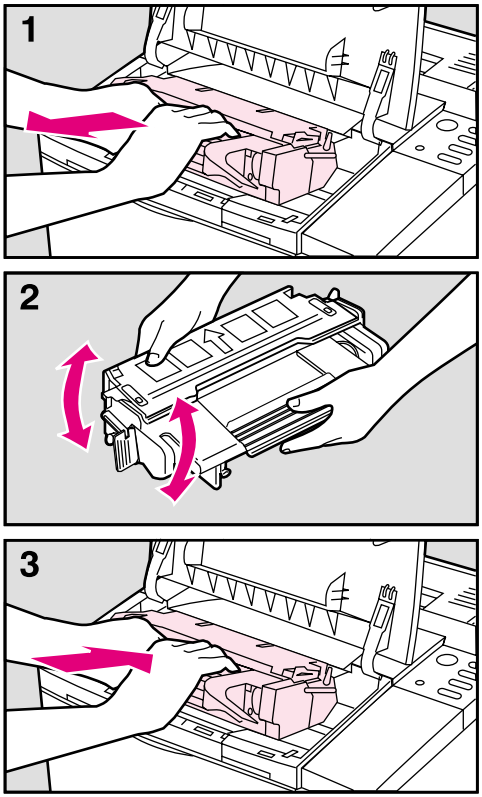
When the level in the toner cartridge gets low, a TONER LOW message appears in the printer control panel display. You can either rotate the cartridge back and forth to redistribute the toner (see "Extending Toner Cartridge Life" on the following page) or replace the cartridge. If you continue to use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

In the Config Menu (see Chapter 3, "Using the Printer Control Panel") you can set TONER LOW=STOP or TONER LOW=CONT:

- If TONER LOW=CONT* (the default setting) the printer will continue to print when the TONER LOW message is displayed on the printer control panel. Use TONER LOW=CONT* when printing long or unattended print jobs.

- If TONER LOW=STOP, the printer will stop printing when low toner is detected. To resume printing, press Go. The printer will continue to display the TONER LOW message until you change the cartridge.

Extending Toner Cartridge Life



You can extend the life of your toner cartridge and *temporarily* re-establish print quality by redistributing the toner:

1. Open the printer's top cover and remove the toner cartridge.
2. Rotate the toner cartridge back and forth as shown to redistribute toner.
3. Reinsert the toner cartridge and close the top cover.

The TONER LOW message may still appear, but the print quality should improve. If the print remains light, replace the toner cartridge using the instructions in the *Installation and Recycling Guide* which is inside the toner cartridge box.

Cleaning the Printer

To maintain print quality, thoroughly clean your printer:

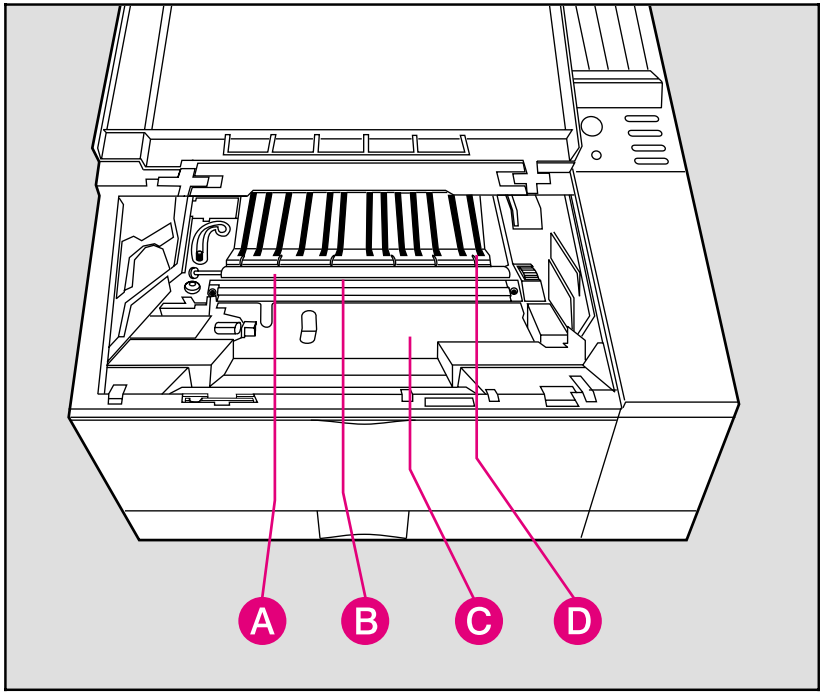
- Every time you change the toner cartridge.
- Whenever print quality problems occur.

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.

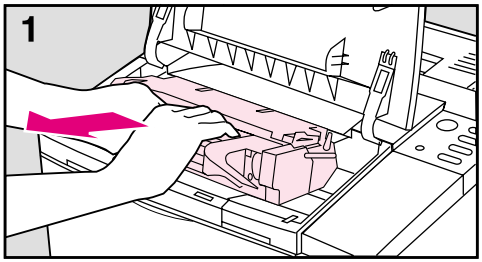
Figure 8-1

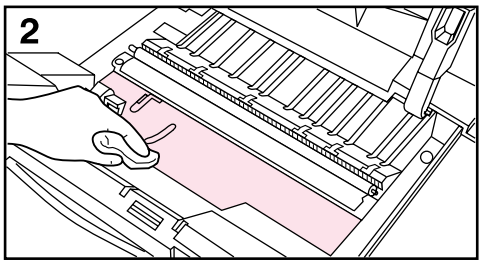


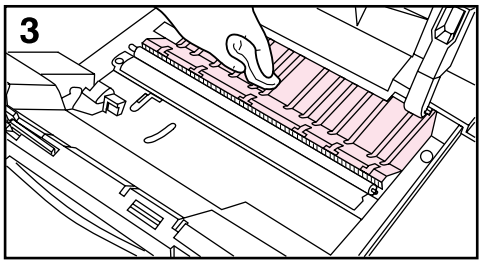
Printer Cleaning Locations (top cover open and toner cartridge removed)

A. Transfer Roller (*do not clean*)
B. Anti-static Teeth
C. Paper Access Cover
D. Paper Feed Guide

Printer Cleaning Tasks







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

1. Open the printer top cover and remove the toner cartridge.

2. With a *dry* lint-free cloth, wipe any residue off the paper access cover (it has a green handle) and the adjacent silver metal strip.

Caution

Do not touch the transfer roller (black sponge-rubber roller shown in Figure 8-1) 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. Wipe any dust or dirt off the paper feed guides with a *dry*, lint-free cloth.

WARNING!

Avoid touching the adjacent fusing area. It may be **hot**!

Saving Power with the PowerSave Feature

To reduce the amount of power it consumes, your printer has a PowerSave feature. PowerSave shuts down the fuser after the printer has been idle for a specified amount of time.

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

When the printer is in PowerSave mode, the printer control panel displays the message POWERSAVE ON, which will replace the READY message on the printer control panel.

Note

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

The printer automatically comes out of PowerSave when you send a print job to the printer, press a printer control panel key, load or remove paper, or open the top cover.

When the printer comes out of PowerSave, the printer control panel displays the message WARMING UP, as the fuser warms to operating temperature. The longer the printer was in PowerSave, the longer it takes the fuser to warm up. For example, after the printer has been in PowerSave overnight, it can take up to 45 seconds for the fuser to warm up.

Continued on next page

To change the PowerSave setting:

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

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

2 Press **Item** until PWRSAVE=*setting* appears.

3 Press **- Value +** until the setting you want appears.

The options are Off, 15 min., 30 min., 1 hr., 2 hrs., or 3 hrs.

4 Press **Select** to save your selection. An asterisk (*) appears next to your selection.

5 Press **Go** to exit the menus.

User-Replaceable Parts

During the printer warranty period, Hewlett-Packard recommends that only HP-authorized service technicians service your printer. After the warranty period, some worn parts can be replaced by the owner. See Chapter 7, “Solving Printer Problems,” to troubleshoot problems that may be related to worn user-replaceable parts.

WARNING! Switch the printer off and unplug before replacing parts. Failure to do so may result in personal injury or damage to the printer. Allow the printer to cool for 30 minutes before replacing any parts.

Unless specifically noted, **the replacement process is the reverse of the removal process**. Always carefully observe the position and alignment of the part you are removing; this is your best guide to replacement.

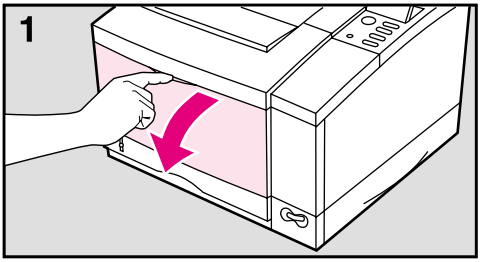
Table 8-1 User-Replaceable Parts

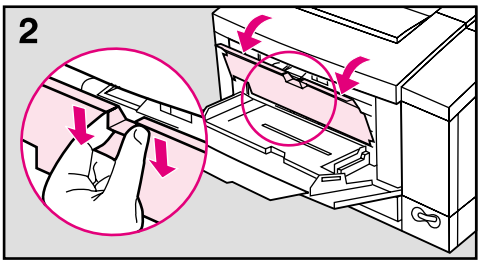
Part Name	Part Number	Remarks
110V Maintenance Kit	C3916-69001	Kit includes commonly used parts to maintain 110V LaserJet 5/5M printers: Tray 1, Tray 2, and Tray 3 Pickup Rollers, Tray 1 Separation Pad, Transfer roller, 110V Fuser Assembly.
220V Maintenance Kit	C3916-69002	Kit includes commonly used parts to maintain 220V LaserJet 5/5M printers: Tray 1, Tray 2, and Tray 3 Pickup Rollers, Tray 1 Separation Pad, Transfer roller, 220V Fuser Assembly.
Fusing Assembly	C2037-69001	100-127 Volts.
	C2037-69002	220-240 Volts.
Optional Tray 3 Pickup Roller	RB1-7983-000CN	See Chapter 7 for replacement conditions.
Transfer Roller	RF5-0349-000CN	See Chapter 7 for replacement conditions.
Transfer Roller Tool (hook)	RB1-7895-000CN	See Chapter 7 for replacement conditions.
Tray 1 Pickup Roller	RB1-2205-000CN	Replace both the Tray 1 Pickup Roller and the Tray 1 Separation Pad at the same time.
Tray 1 Separation Pad	RF5-0343-000CN	
Tray 2 Pickup Roller	RB1-7911-000CN	See Chapter 7 for replacement conditions.

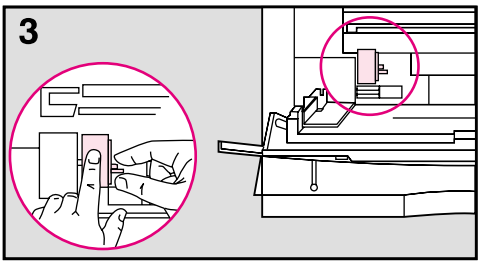
Ordering Information

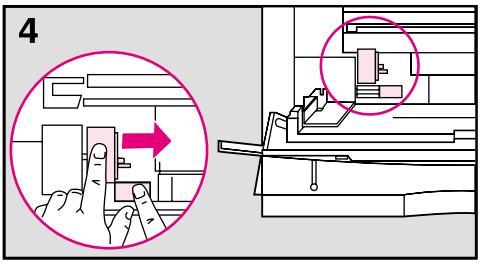
User-replaceable parts are available from your authorized HP dealer or from Hewlett-Packard. To order parts, see the HP Support pages at the front of this manual.

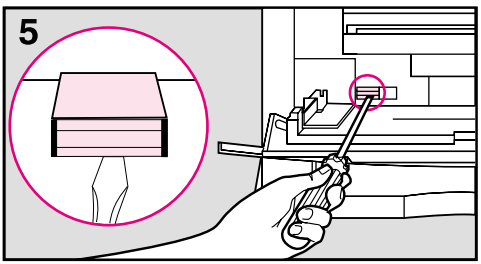
Tray 1 Paper Pickup Roller & Separation Pad











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

1. Open Tray 1 by pulling down on the top center of the front door.

2. Remove the envelope feeder access cover by grasping each side of the tab and *pulling downward and toward you.*

3. **To release the Pickup Roller** pinch the retaining clip on the right end of the roller with your right hand while sliding the roller to the right with your left hand.

4. **To remove the Pickup Roller** push in on the small plastic tab with your right hand while sliding the roller off the shaft with your left hand.

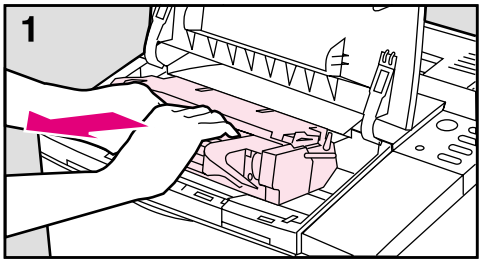
5. **To remove the Separation Pad** insert a flat-blade screwdriver into the indentation at the front of the pad. Carefully rotate the screwdriver to loosen the pad. When loose, gently lift out the pad.

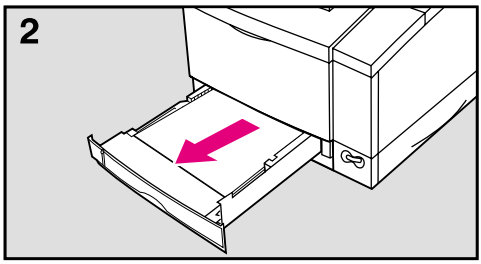
To install a new separation pad, place it over the opening and press it down firmly with your forefinger to seat it. *Be sure the metal edge is toward the front of the printer.*

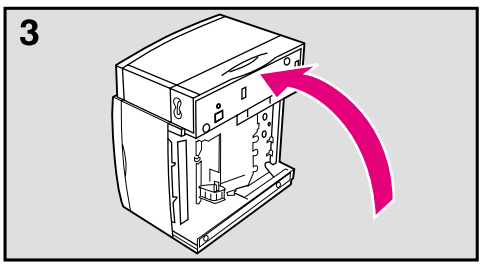
To install a new Pickup Roller, slide it over the shaft and rotate it so that the flat side of the roller is aligned with the flat side of the shaft. Slide the roller to the left until it clicks into place.

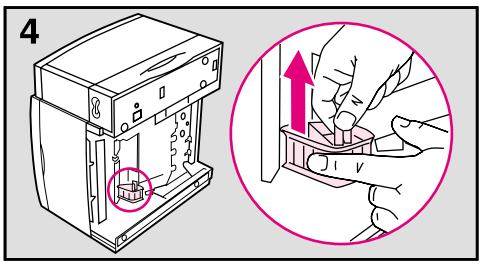
Reinstall the envelope feeder access cover and discard the used roller and pad.

Tray 2 Pickup Roller









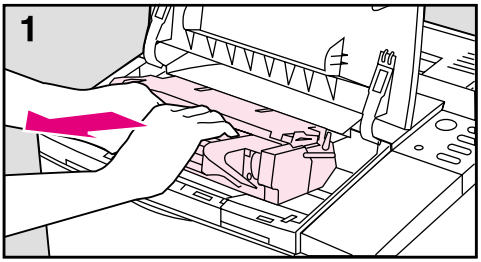
Before you begin these steps, turn the printer off and unplug the power cord.

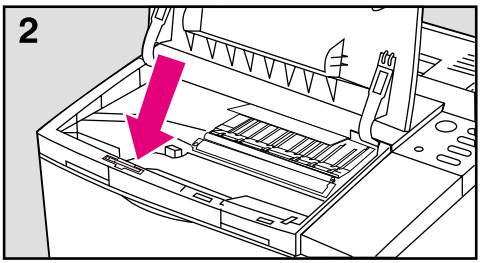
1. Open the top cover and remove the toner cartridge.
2. Remove Tray 2.
3. Gently rotate the printer onto its left side so that the bottom of the printer is easily accessible.
4. To remove the Pickup Roller pinch the retaining clip on top of the roller with your right hand while sliding the roller up off the shaft with your left hand.

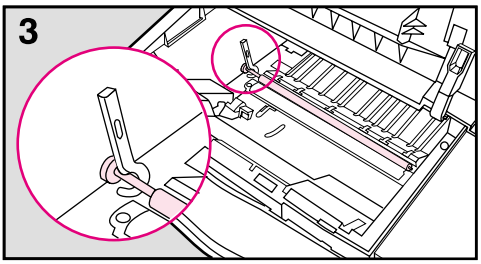
To install a new Pickup Roller, slide it over the shaft and rotate it until properly aligned. Slide the roller down until it clicks into place.

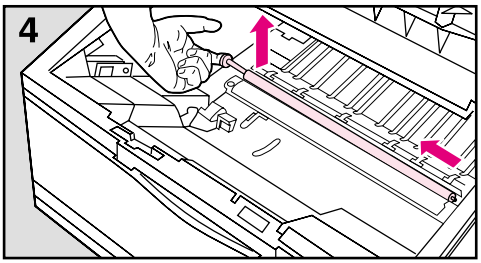
Place the printer upright. Replace the toner cartridge and Tray 2. Plug in the power cord. Switch the printer on. Discard the used roller.

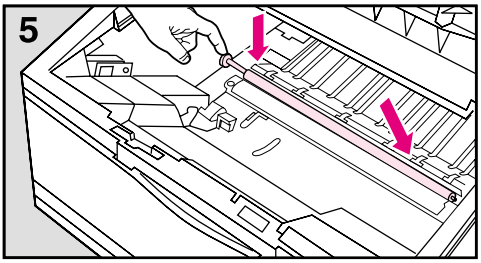
Transfer Roller











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

1. Open the top cover and remove the toner cartridge.
2. Remove the transfer roller hook tool, located near the left end of the inside front panel.
3. Lift up on the chrome shaft using the hook tool.
4. Lift the roller up and out of its retaining slots. *Discard the used roller*.

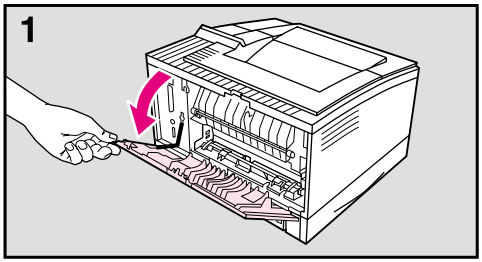
Caution

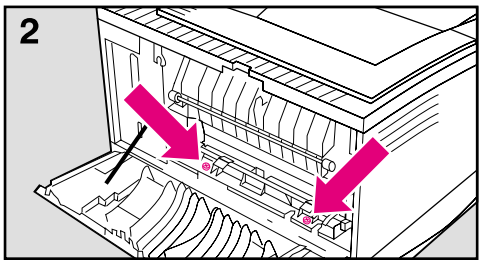
Be careful not to touch the black sponge-rubber on the new transfer roller. Finger oils on the roller can cause print quality problems.

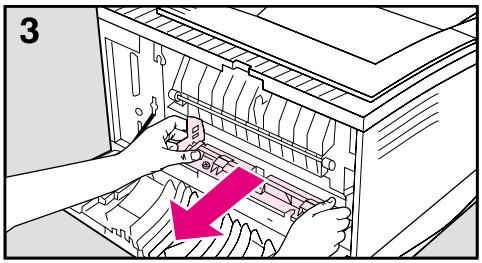
5. Slide the right end of the new roller (the end *without* the gear) into the right slot. Press the gear end into the left slot until it clicks into place.

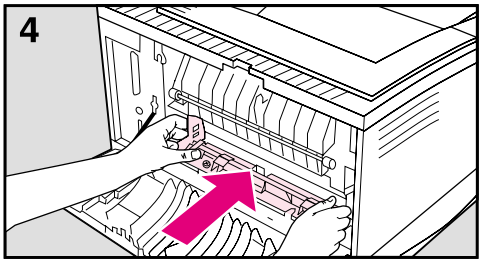
Replace the transfer roller hook tool and toner cartridge. Close the top cover. Plug in the power cord and switch the printer on.

Fusing Assembly









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

WARNING!

The fusing area gets **hot**! After unplugging the power cord, allow the printer to cool for at least 30 minutes before continuing.

1 After the printer is cool, open the rear cover.

2 Remove the 2 screws that hold the fusing assembly to the printer.

3 *See the Caution below,* then gently lift the fusing assembly up and pull it straight out from the printer body.

Caution

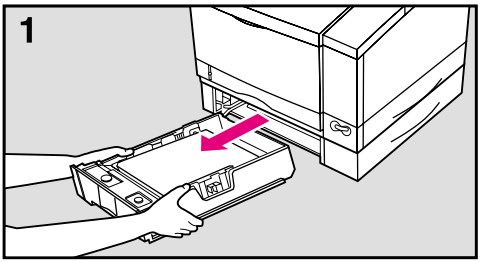
Pull the fusing assembly *straight out* from the printer. Otherwise the sensor lever, located on the right rear of the fusing assembly, may catch on the inside of the printer.

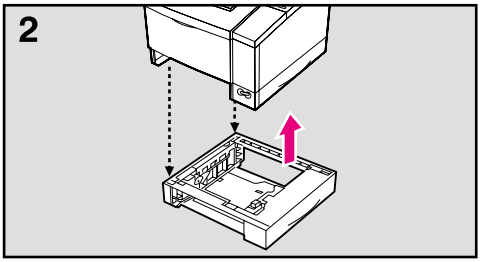
4 Slide the new fusing assembly *firmly* into the printer until the screw holes align, then replace the screws, tightening until snug.

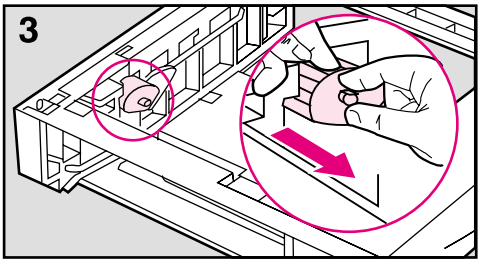
Note

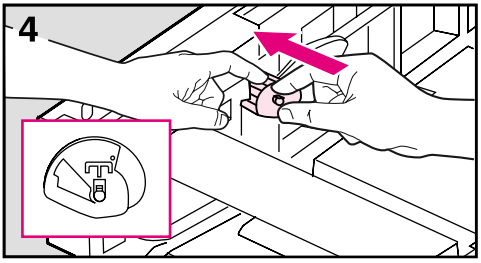
If the message `50 FUSER ERROR, CYCLE POWER` appears in the display, switch the printer off and wait 15 minutes. If the problem continues, check the fuser installation again. If the problem still continues, contact your authorized HP dealer.

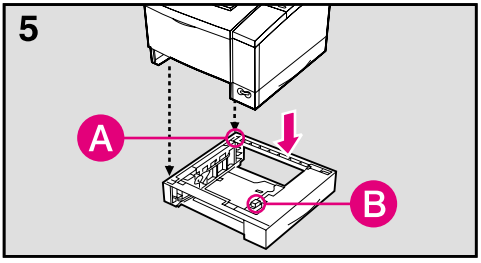
Optional Tray 3 Pickup Roller











Before you begin these steps, switch the printer off and unplug the power cord.

1 Remove both Tray 2 and Tray 3 from the printer.

Caution

The printer is heavy. Use two people to lift it.

2 Lift the the printer from the Tray 3 Assembly.

3 Pinch the retaining clip on the right end of the roller with your right hand while sliding the roller off the shaft with your left hand (discard the used roller).

4 Slip the new roller onto the shaft and rotate it until properly aligned. Slide the roller to the left until it clicks into place. The inset on illustration #4 shows the correct orientation of the roller.

Note

If the roller is not installed correctly it will make a grinding noise during printer warm up. If this happens reinstall the roller.

5 Align the printer over the pins (**A**) and connector (**B**) on the Tray 3 Assembly, and set the printer on the assembly.

Replace Tray 2 and Tray 3.

Plug in the power cord and switch the printer on. If there are problems, check the installation instructions that came with the Tray 3 Assembly.

Media Specifications

Introduction

You can use a variety of paper and other print media successfully with the HP LaserJet 5/5M 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 it meets the media requirements specified in the *HP LaserJet Printer Family Paper Specification Guide* (HP part number 5961-0920). 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 4 for each paper tray. *Do not* use paper heavier than 36 lb (135 g/m^2) from Tray 1 or 28 lb (105 g/m^2) from the Tray 2; misfeeds, stacking problems, paper jams, poor toner fusing, poor print quality, and excessive mechanical wear can result. If you have the duplex option or the 500-sheet Tray 3, do not use paper heavier than 24 lb (90 g/m^2).

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.
- The printer uses heat and pressure to fuse toner to the page. Make sure that any colored papers or preprinted forms use inks that are compatible with this fusing temperature (392° F/200° C for 0.1 second).
- Keep paper stored in its moisture-proof wrapping to prevent changes in moisture content, which may cause poor print quality, jamming, and curl.
- To prevent feeding problems avoid paper with ragged cut edges.
- Use long-grain paper to prevent feeding problems and minimize curl.

Table A-1 Media Size Specifications

Tray 1	Dimensions	Weight	Capacity
Minimum	3.5 x 6.3 in 90 x 160 mm	Single sided printing: 16 to 36 lb. 60 to 135 g/m^2 Duplex (2 sided printing): 16 to 24 lb. 60 to 90 g/m^2	Approximately 100 sheets of 20 lb (75 g/m2) paper.
Maximum	8.5 x 14 in 216 x 356 mm		
Paper, Letter	8 1/2 x 11 in 216 x 279 mm		
Paper, Legal	8 1/2 x 14 in 216 x 356 mm		
Paper, Executive	7.25 x 10.5 in 191 x 267 mm		
Paper, A4	8.27 x 11.69 in 210 x 297 mm		
Paper, A5	5.83 x 8.27 in 148 x 210 mm		
Transparencies	Letter, A4	0.0039 in to 0.0045 in thick (0.009 to 0.114 mm)	8 mm. stack height
Labels	Letter, A4	0.005 in to 0.007 in thick (0.127 to 0.178 mm)	8 mm. stack height
Envelopes	see “Printing Envelopes” in Chapter 4.		up to 10
Tray 2	Dimensions	Weight	Capacity
Paper, Letter 110v	8 1/2 x 11 in 216 x 279 mm	Single sided printing: 16 to 28 lb. 60 to 105 g/m^2 Duplex (2 sided printing): 16 to 24 lb. 60 to 90 g/m^2	Approximately 250 sheets of 20 lb (75 g/m^2) paper.
Paper, A4 220v	8.27 x 11.69 in 210 x 297 mm		
Paper, Legal (optional)	8 1/2 x 14 in 216 x 356 mm		
Paper, Executive (optional)	7.25 x 10.5 in 191 x 267 mm		

Note A5 paper is supported from Tray 1 only.

Adhesive Labels

Use only labels recommended for use in laser printers. To purchase labels, consult your HP authorized dealer or see the HP Support pages at the front 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 should be exposed between the labels.
- **Label arrangement:** It is best to 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.
- **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.

Label Guidelines

- Do not use labels that are separating 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, the label adhesive is designed for only one pass through the printer.

Overhead Transparencies

Overhead transparencies used in HP LaserJet 5 and 5M printers must be able to withstand the 392° F (200° C) temperature encountered in the printer's fusing process.

Caution Use only overhead transparencies recommended for use in laser printers, such as HP or 3M overhead transparency film.

Ordering Transparencies

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

Transparency Guidelines

- To avoid transparency curl, remove the transparency as it comes out of the printer and set it on a flat surface to cool.
- To avoid transparencies sticking together, remove any transparencies in the output bin before printing another transparency.

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 laser printing.

Envelope Construction

Envelope construction is very critical. Envelope fold lines can very considerably, not only between manufacturers but also within a box from the same manufacturer. Successful printing on envelopes is very dependent upon the quality of the media.

- **Weight:** The weight of the envelope paper should not exceed 28 lb (105 g/m^2) 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:** Use only envelopes within the following sizes:

Tray 1

- Minimum: 3.5 x 6.3 in (90 mm x 160 mm)
- Maximum: 8.5 x 14.0 in (216 mm x 356 mm)

Envelope Feeder

- Minimum: 3.5 x 6.3 in (90 mm x 160 mm)
- Maximum: 7.0 x 10.0 in (178 mm x 254 mm)

Double Side Seam Envelopes

Double side seam construction has vertical seams at both ends of the envelope rather than diagonal seams. This style generally performed adequately in Hewlett-Packard testing, but may be more likely to wrinkle.

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 Tray 1, check to make sure they are regular in shape and undamaged. Also, check to see that the envelopes are not stuck together.

Envelope Storage

Proper storage of envelopes helps contribute to quality printing:

- Envelopes should be stored in an air-tight container, protecting the envelopes from moisture.
- Envelopes should be kept flat when being stored. Loose envelopes may trap air inside. This could create an air bubble which would wrinkle the envelope during printing.

Envelope Margins

The following table gives typical address margins for a Commercial #10 or DL envelope. For envelopes of other sizes, adjust the margin settings as desired.

Type of Address	Top Margin	Left Margin
Return Address	0.6 in (15 mm)	0.6 in (15 mm)
Delivery Address	2 in (51 mm)	3.5 in (89 mm)

Note

For best print quality, position margins no closer than .5 inch (13 mm) from the edges of the envelope.

Try to avoid printing over the area where the envelope's three back flaps meet.

B

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 (see the HP Support pages at the front of this manual for ordering information).

PCL Printer Command Syntax

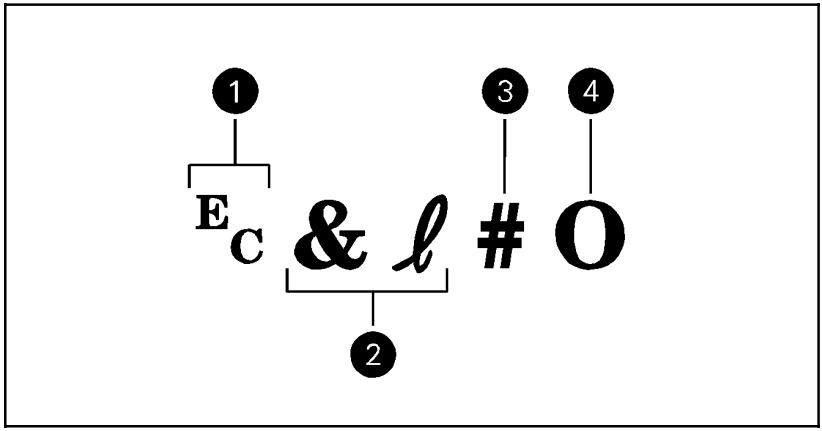
Before using printer commands, compare these characters:

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

Figure B-1



Printer Command Explanation

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

Using PCL Printer Commands

Escape Character

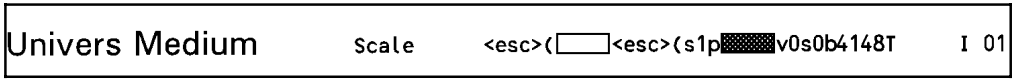
Printer commands always begin with the escape character (Ec). Table B-1 shows how the escape character can be entered from various software applications.

Table B-1 Software Escape Character Commands

DOS Software Package	Entry	What Appears
Lotus 1-2-3 and Symphony	Type \Ø27	027
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 Esc	←
MS-DOS Edlin	Hold down CTRL V then [	^[
dBase	?? CHR(27)+"command"	?? CHR(27)+" "

PCL Font Selection

PCL printer commands to select fonts can be found on the PCL Font List (see Chapter 7, “Checking Installed PCL Fonts”). A sample section is shown below. Notice the two variable boxes for symbol set “Ec” and point size:



These variables must be filled in or 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 B-2 (see next page). Order the *PCL/PJL Technical Reference Package* if you require symbol set charts or want more information.

Table B-2 Common Symbol Sets Values

Code	Symbol Set	Code	Symbol Set
8U	HP Roman-8 Symbol Set	19U	Windows 3.1 Latin 1
10U	IBM Layout (PC-8) (code page 437) Default Symbol Set	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 “12v” for the point size. This printer command would select a 12 point Univers Medium font.

ESC(12UESC(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 charter (\027) is shown. This setup string would be used to change the orientation to landscape, select the PC-8 symbol set with line draw characters, select the small Line Printer font, and change the line spacing to 8 lines-per-inch.

\Ø27&ℓ1O\Ø27(1ØU\Ø27(sØp16.67h8.5vØsØbØT\Ø27&ℓ8D

Several frequently used PCL printer commands are shown below:

Function	Command	Decimal Value
Job Control Commands		
Reset	ESCE	027 069
Number of Copies (1-999)	ESC&ℓ#X	027 038 108 # 088
2 sided/1 sided printing	ESC&ℓ#S	027 038 108 # 083
Page Control Commands		
Page Length and Size		
Paper Source	ESC&ℓ#H	027 038 108 # 072
Paper size	ESC&ℓ#A	027 038 108 # 065
Orientation	ESC&ℓ#O	027 038 108 # 079

Paper Source: 1=Tray 2, 2=manual feed Tray 1, 4=Tray 1, 5=optional Tray 3.
Paper Size: 1=executive, 2=letter, 3=legal, 25=A5, 26=A4, 81=Com10, 80=monarch, 91=C5, 90=DL, 100=B5.
Orientation: 0 =portrait, 1=landscape.

Function	Command	Decimal Value
Page Control Commands (continued)		
Margins and Text Length		
Top Margin (# of lines)	Esc&ℓ#E	027 038 108 # 069
Text Length (# of lines)	Esc&ℓ#F	027 038 108 # 070
Left Margin (# of columns)	Esc&a#L	027 038 097 # 076
Right Margin (# of columns)	Esc&a#M	027 038 097 # 077
Horizontal Motion Index		
Horizontal Motion Index	Esc&k#H	027 038 107 # 072
Vertical Line Spacing		
Vertical Motion Index	Esc&ℓ#C	027 038 108 # 067
Line Spacing (lines/inch)	Esc&ℓ#D	027 038 108 # 068
Perforation Skip Mode		
Perforation Skip	Esc&ℓ#L	027 038 108 # 076
Font Selection		
Symbol Set		
Symbol Sets (see Table B-2)	Esc(#	027 040 185 # 080
Spacing		
Primary Spacing	Esc(s#P	027 040 115 # 080
Pitch (characters/inch)		
Primary Pitch	Esc(s#H	027 040 115 # 072
Set Pitch Mode	Esc&k#S	027 040 107 # 083
Point Size (# of points)		
Primary Height	Esc(s#V	027 040 115 # 086
Style		
Primary Style	Esc(s#S	027 040 115 # 083
Stroke Wt.		
Primary Stroke Wt.	Esc(s#B	027 040 115 # 066
Primary Typeface Family		
Typeface	Esc(s#T	027 040 115 # 084

Continued on next page

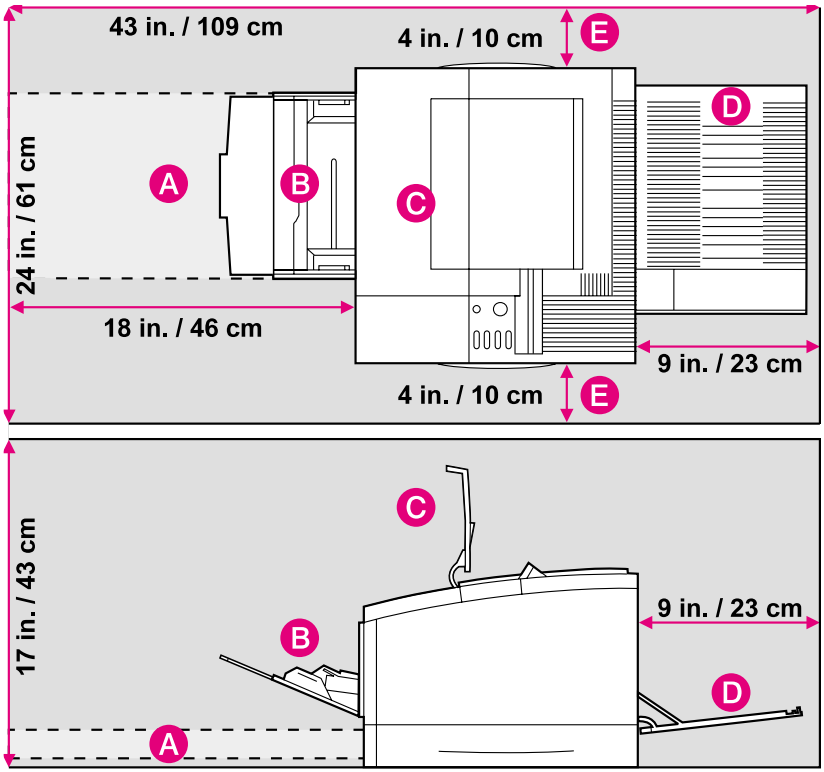
Function	Command	Decimal Value
Cursor Positioning		
Vertical and Horizontal		
Vertical Position (Rows)	$_{EC}$&a#R	027 038 097 # 082
Vertical Position (Dots)	$_{EC}$*p#Y	027 042 112 # 089
Vertical Position (Decipoints)	$_{EC}$&a#V	027 038 097 # 086
Horizontal Position (Columns)	$_{EC}$&a#C	027 038 097 # 087
Horizontal Position (Dots)	$_{EC}$*p#X	027 042 112 # 088
Horizontal Position (Decipoints)	$_{EC}$&a#H	027 038 097 # 072
Half Line Feed	$_{EC}$=	027 061
End of Line Termination		
Line Termination	$_{EC}$&k#G	027 038 107 # 071
Programming Hints		
End of Line Wrap	$_{EC}$&s#C	027 038 115 # 067
Display Functions On	$_{EC}$Y	027 089
Display Functions Off	$_{EC}$Z	027 090
PCL to Vector Graphics Switching		
Enter PCL Mode	$_{EC}$%#A	027 037 # 065
Enter HP-GL/2 Mode	$_{EC}$%#B	027 037 # 066

Specifications & Regulatory Information

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. See the figure below for the suggested amount of space to leave around the printer.

Figure C-1



Make sure there is adequate space for:

A. opening Tray 2.
B. opening Tray 1.
C. opening the top door.
D. opening the rear door.
E. allowing air circulation.

Printer Specifications

Physical Dimensions

Height	11.7 in. (297 mm)
Height of optional Tray 3	5.0 in. (129 mm)
Height of Duplex option	2.36 in. (60 mm)
Width	16.4 in. (415 mm)
Depth (body)	15.9 in. (403 mm)
Depth with optional Tray 3	18.4 in. (467 mm)
Depth with Duplex option	19.3 in. (488 mm)
Weight (without toner cartridge)	37 lb (16.8 kg)

Electrical Specifications

Power Requirements	**100/127V (+/- 10%) 50/60Hz (+/- 2Hz)**	**220/240V (+/- 10%) 50 Hz (+/- 2Hz)**
Power Consumption (typical for LaserJet 5 and 5M printers)	During printing, 290 W (average)	During printing, 290 W (average)
	During standby, 100 W (average) During PowerSave mode, 18 to 24 W	During standby, 100 W (average) During PowerSave mode, 18 to 24 W
Minimum recommended circuit capacity (typical printer)	11.2 Amps	5 Amps

Environmental Specifications

Item	**Operating Printing**	**Storage/ Standby**
Temperature (printer and toner cartridge)	50° to 91° F (10° to 32.5° C)	32° to 95° F (0° to 35° 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} 55dB(A)	**Printing**	L_{PA} 48 dB(A)	**Printing**	L_{WAD}=6.2 bels(A)
Standby	L_{PA} 36dB(A)	**Standby**	L_{PA} 30 dB(A)	**Standby**	L_{WAD}=4.5 bels(A)

Environmental Product Stewardship

Protecting the Environment

Hewlett-Packard Company is committed to providing quality products in an environmentally-sound manner. This HP LaserJet printer has been designed with several attributes to minimize impacts on our environment.

This HP LaserJet printer design eliminates:

- **Ozone Production**

  This printer does not generate measurable ozone gas thereby not affecting our environment's natural ozone balance.

- **CFC Usage**

  Ozone depleting chemicals (Chloroflorocarbons, for example) have been eliminated from the manufacturing process.

This HP LaserJet printer design reduces:

- **Energy Consumption**

  Energy usage drops from 300 watts during printing to 80 watts while idle and down to as little as 22 watts while in PowerSave mode. Not only does this save natural resources, but it also saves money without affecting the high performance of this printer. This product qualifies for the United States' Environmental Protection Agency's ENERGY STAR Program. ENERGY STAR is a voluntary program established to encourage the development of energy-efficient computer products.

  Also, the printers are shipped from manufacturing sites to distribution centers in bulk packs. Because more printers can fit on each pallet, fuel consumption and emissions are reduced.

  As an ENERGY STAR partner, Hewlett-Packard Company has determined that this product meets ENERGY STAR Guidelines for energy efficiency.

Continued on next page

- **Toner Consumption**

  EconoMode uses about 50% less toner, thereby extending the life of the toner cartridge.

- **Paper Use**

  The printer's duplexing, or two-sided printing option, reduces paper usage and the resulting demands on natural resources.

This HP LaserJet design re-uses:

- **Packaging**

  Cushions used in bulk pack shipments from manufacturing sites to distribution centers are re-used in shipment from distribution centers to end-user outlets.

Worldwide: This HP LaserJet printer design facilitates recycling of:

- **Plastics**

  Major plastic parts have markings which enhance the ability to identify and recycle the materials at the end of the printer's life.

- **Manuals**

  The manuals are printed on recycled paper using vegetable-based inks without added heavy metals. The manuals are recyclable.

- **Paper**

  This printer is suited for the use of recycled papers that meet the standards in the *HP LaserJet Printer Family Paper Specifications Guide* (HP part number 5961-0920).

US Only: This HP LaserJet printer design facilitates recycling of:

- **Toner Cartridges**

  Each HP toner cartridge box sold in the U.S. contains instructions and a shipping label for returning the cartridge to HP for recycling. HP pays the postage.

- **Printer and Parts**

  HP's Hardware Recycling Organization will take back this printer and other HP products when you have no further use for them. HP disposes of these products in an environmentally-sound manner. Many of the functional parts are recovered, tested, and re-used as fully warrantied service parts (used parts are not used in new product manufacturing). The remainder of the product parts are recycled if possible. Call 800-535-7933 for this service.

Regulatory Information

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

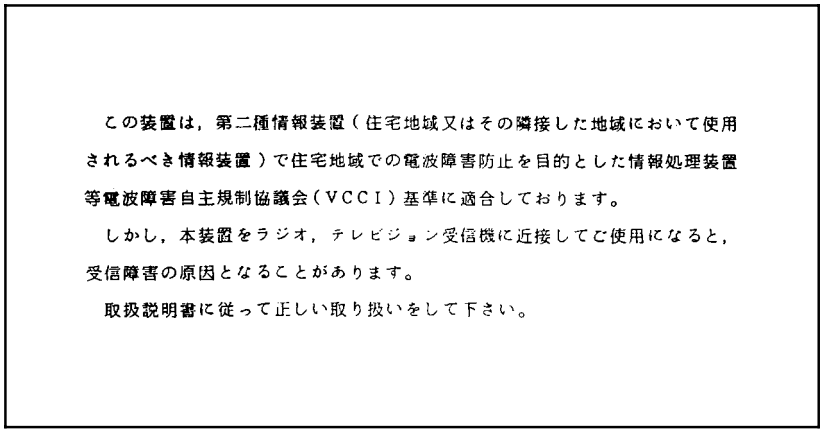
Any changes or modifications to the printer not expressly approved by HP could void the user's authority to operate this equipment.

Use of a shielded interface cable is required to comply with 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 C-2



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.

Laser Statement for Finland

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE
KLASS 1 LASER APPARAT

HP LaserJet 5/5M 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 5/5M -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 5 and LaserJet 5M
Model Number:	C3916A and C3917A
Product Options:	All

conforms to the following Product Specifications:

Safety: IEC 950:1991+A1+A2/EN 60950:1992+A1+A2
IEC 825:1984+A1/EN 60825:1989 Class 1

EMC: CISPR-22:1993 / EN 55022:1994 class B[1]
CISPR-22:1993 / EN 55022:1994 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 following Directives and carries the CE-marking accordingly:
- the EMC Directive 89/336/EEC (inclusive 93/68/EEC)
- the Low Voltage Directive 73/23/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
January 15, 1996

European Contact: Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard Gmbh, Department HQ-TRE/ Standards Europe, Herrenberger Straße 130, D-71034 Böblingen (FAX: + 49-7031-14-3143)

Printer Memory

Determining Needed Printer Memory

The amount of printer memory you need depends on what you are printing and the printer language you are using. For example, PCL is compact and efficient, so you can print most text and graphics at 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, or print complex documents in PostScript. The table below shows the printers' standard memory and the maximum amount of additional memory you can install. You can install additional memory through four SIMM (Single In-Line Memory Module) slots.

Printer Memory	Standard (MB)	Maximum (MB)
HP LaserJet 5	4	66
HP LaserJet 5M	6	52

The HP LaserJet 5 printer can print letter, A4, and legal pages at 300 or 600-dpi, simplex or duplex, with standard memory. For added printer personalities, complex graphics, or advanced functions (such as I/O Buffering and Resource Saving), you may need additional memory. HP recommends that you install a minimum of 2 MBytes of additional memory to print using the PostScript printer personality.

The HP LaserJet 5M printer comes with Adobe PostScript Level 2 and 6 MBytes of installed memory. See Chapter 5 for more information about PostScript printing and the memory requirements of your HP LaserJet 5M printer.

Note

To find out how much memory is installed in your printer, print a self test. See Chapter 7, "Testing the Printer," for more information.

How Your Printer Uses Memory

Your printer uses memory in several ways:

- Stores the printer's *personality* or operating language software (such as PCL and PostScript).
- Receives, holds, and processes data from incoming print jobs.
- Manages downloaded resources (such as symbol sets, macros, and patterns or PostScript fonts, forms, and patterns when PostScript is installed).

Optional Flash SIMM

The Optional Flash SIMM 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 Flash SIMM are available to all users of the printer.

Fonts can be downloaded to Flash by using the JetAdmin Utility. JetAdmin also allows you to write protect the Flash SIMM for additional security.

The font smart software allows you to access the fonts stored in the Flash SIMM.

If you are a PostScript language programmer, refer to Adobe's *PostScript Language Reference Manual* for information about downloading forms and patterns to the disk. For the Macintosh environment, refer to the HP LaserJet Utility Guide online help included with the HP LaserJet Utility software. For the MS Windows environment, refer to your HP MS Windows driver online help.

See Chapter 1 for ordering information.

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. The printer deletes downloaded resources from its memory when you change personalities or resolutions.

For printers with more than one personality, Resource Saving enables the printer to keep downloaded resources in memory under most conditions. PCL-only printers do not require Resource Saving because available memory is automatically allocated to keep downloaded resources in memory.

Resource Saving in PCL and PostScript Printers

When the PostScript option is installed, Resource Saving automatically becomes available if 8 MBytes (or 13 MBytes in duplex mode) of memory or more are available in the printer. 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 through Resource Saving (see the procedure on the following page).

To determine how much memory to allocate to a personality

You are most likely to want to change the amount of memory if you download an unusually large number of fonts, or if your printer is in a shared environment. The minimum amount of memory you can allocate to Resource Saving is 400 KBytes each for PCL and PostScript. (The minimum amount may be different for other printer personalities.) This needs to be configured only if PostScript or another personality is installed.

1 Press **Menu** until `MEM CONFIG MENU` appears.

2 Press **Item** until `RESRCSAVE=`*setting** appears, then press **- Value +** until `ON` appears. Press **Select** to save your selection. An asterisk (*) appears next to your selection in the display.

3 Press **Item** until either `PS MEM=400K` or `PCL MEM=400K` appears. Choose the personality you want to adjust. Hold down **- Value +** until the highest value is displayed. This amount will vary depending upon how much memory you have installed in the printer. Press **Select** to save your selection. An asterisk (*) appears next to your selection in the display.

4 Press **Go** to exit menus.

5 Using your software package, download all the fonts you want to use in your selected personality.

6 Print a self test (see Chapter 8). The amount of memory used by the fonts is listed next to the personality. Round up this figure to the nearest 100 KBytes. For example, if 475 KBytes are shown as used for the personality, 500 KBytes should be reserved.

7 Press **Menu** until `MEM CONFIG MENU` appears.

Continued on the following page.

8 Press **Item** until either PS MEM=400K or PCL MEM=400K appears, then press **- Value +** until the number you determined in Step 6 appears. Press **Select** to save your selection. An asterisk (*) appears next to your selection in the display.

9 Press **Go** to exit menus.

10 Repeat Step 5.

Note You must download all fonts again because all downloaded resources are deleted when you change the Resource Saving setting. The downloaded fonts remain in memory until you change Resource Saving or I/O Buffering settings or turn the printer off.

How I/O Buffering Improves Performance

The printer's I/O Buffer holds a print job in progress, freeing up computer memory. This allows the user to continue operating the computer without waiting for the print job to finish. When additional memory is added to the printer 100 KBytes are automatically reserved for the I/O Buffer for each MByte of memory added.

In most cases, it is to your advantage to let the printer automatically reserve memory for I/O Buffering. Network administrators might want to increase I/O Buffering to speed network printing. See "Memory Configuration Menu" in Chapter 3 for information about changing this setting.

Note When you change the I/O BUFFER setting, all downloaded resources will need to be downloaded again.

SIMM Board Installation

The HP LaserJet 5 printer has four SIMM (Single In-line Memory Module) slots. The HP LaserJet 5M printer has three available SIMM slots (the fourth is used for the PostScript SIMM). Use the SIMM slots to install additional printer memory and printer languages (such as the Adobe PostScript language). For the HP LaserJet 5 printer, you can add up to 64 MBytes of memory (4 MBytes are standard). For the HP LaserJet 5M, you can add up to 40 MBytes of memory (6 MBytes are standard).

Note

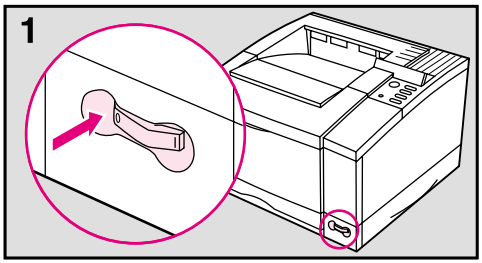
Use only memory and PostScript language SIMMs designed for the HP LaserJet 5 and 5M printers. Match the SIMM you are installing with part numbers in the table below.

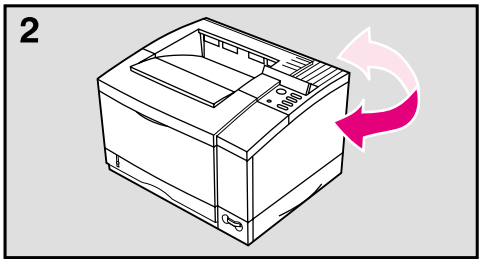
Memory SIMM Part Numbers

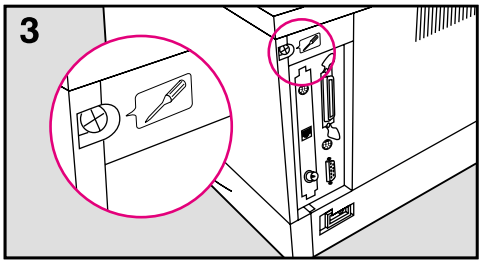
Compare the part number on the outside of the package to the part number in the table below. If you did not purchase the correct SIMM, contact your authorized Hewlett-Packard dealer for the appropriate part.

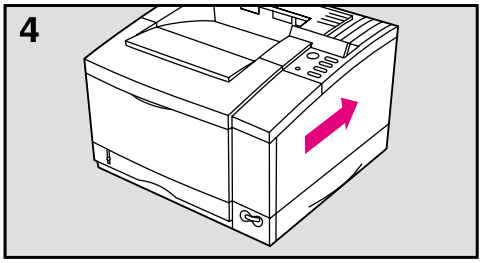
Part Number	Size (MB)
C3130A	1
C3131A	2
C3132A	4
C3133A	8
C3134A	16

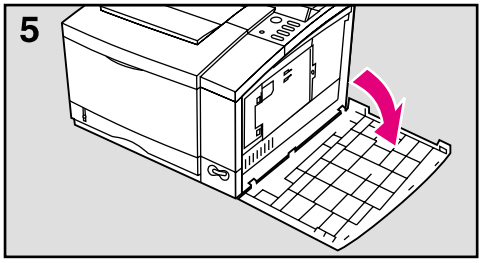
Installing SIMMs











Caution

SIMM boards can be damaged by small amounts of static electricity. Wear an antistatic wrist strap (or frequently touch the surface of the antistatic package or bare metal on the printer) when handling the board, and before installing or removing it.

1 Before you begin these steps, turn the printer off and unplug the power cord.

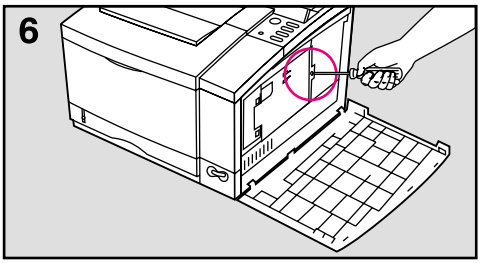
2 Rotate the printer so that you have easy access to the right and back sides of the printer.

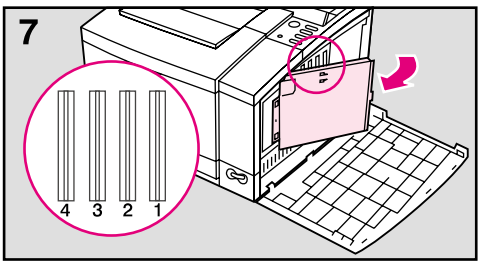
3 Loosen the captive screw in the upper left corner of the back panel with a Phillips #2 screwdriver. The screw does not need to be completely removed from the printer.

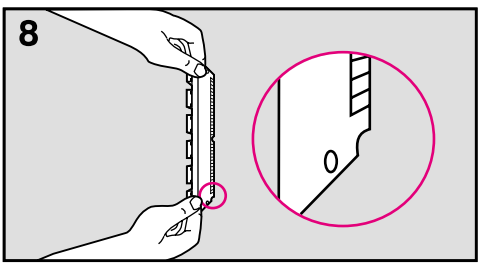
4 Slide the right side panel towards the back of the printer (approximately an inch (25 mm)).

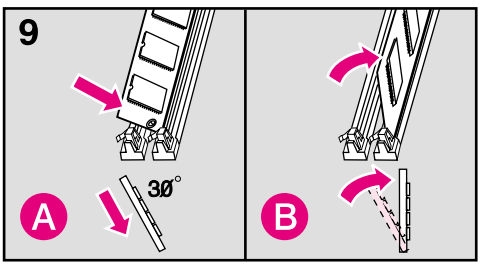
5 The panel should now easily open, exposing the SIMM door.

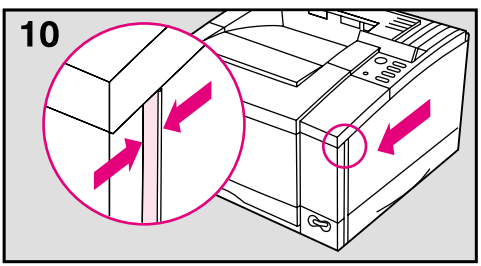
Continued on next page











6 Loosen the captive screw holding the SIMM door with a Phillips #2 screwdriver. Open the SIMM door.

7 Note the four SIMM slots (a PostScript SIMM will already be installed in a slot in the HP LaserJet 5M). For easiest installation, fill the slots from **right to left**, starting with slot 1 (see inset).

8 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. Hold the board so the notch on one end is on the *bottom* and the metal teeth face toward the SIMM slot.

9 Hold the SIMM board at a 30-degree angle to the slot and push the edge of the board evenly and firmly into the slot (see **A**). Rotate the SIMM board to the right until the board "clicks" into the metal locking tabs, securing the board in place (see **B**).

Close the SIMM door and tighten the screw (see picture 6).

Set the bottom of the right side panel onto the printer. Make sure the three bottom tabs on the panel align with the corresponding slots on the printer. Fold the cover up. The printer is now in the same condition as picture 4.

10 Slide the panel to the left until it becomes firm (1/4 inch gap (7 mm) remaining). Tighten the screw in the upper left corner on the back panel. This will close the remaining gap between the panel and the frame.

Continued on the next page

Caution It is important to correctly align the right side panel and tighten the screw on the back panel before attempting to move the printer.

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 SIMMs.

Memory SIMM: running a self test printout

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

2 After warm up, READY should appear in the control panel display. If a printer message appears, see "Troubleshooting a SIMM Board" on the following page.

3 Press **Menu** until TEST MENU appears in the display.

4 Press **Item** until PRINT SELF TEST appears in the display.

5 Press **Select** to print a self test.

6 Press **Go** to exit menus.

Locate "RAM SIZE" on the self-test printout (see "Understanding the Self Test Printout" in Chapter 7 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 the SIMM may be defective (see "Troubleshooting a SIMM Board" on the following page).

PostScript SIMM

Use these instructions to verify your PostScript SIMM installation:

1 Plug in the power cord and turn the printer on.

2 After warm up READY should appear in the control panel display. If a printer message appears, see “Troubleshooting a SIMM Board” next in this appendix.

3 Press **Menu** until PS MENU appears in the display. If this message appears, your printer recognizes that the PostScript language is installed. If PS MENU does not appear, check the SIMM installation.

4 Press **Go** to exit menus.

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 7, “Solving Printer Problems.”)

Error	Problem	Solution
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). If x = 1, 2, 3, or 4, the problem is in SIMM slot 1, 2, 3, or 4. See the checking procedure for 62.x ERROR described on the next page.
63 NEEDS 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.

Checking Procedure

To check memory for the `62.x ERROR` message, follow the procedure below:

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) or cartridge, 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.

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 2: Flash	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 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.

Serial Pin-out and Cabling Configuration

Serial Communication

Serial communication is simply the transmission of data one bit at a time. With just one bit to transmit at a time, data can be transferred with a simple electrical circuit consisting of only two wires. In this fashion an eight bit byte is transmitted one bit at a time and the individual bits are reassembled into the original byte on the receiving end. Bit transmission occurs from the least significant bit to the most significant bit.

Data Terminal Equipment (DTE)

Transmit on pin 2 and receive on pin 3. A printer is typically a DTE device.

Data Communications Equipment (DCE)

Transmit on pin 3 and receive on pin 2. A modem is typically a DCE device.

Asynchronous Communication

Asynchronous communication or start/stop transmission is the concept of enclosing a character with a start and stop bit. The RS-232 specification defines the standards for asynchronous serial communication.

Parity

Parity is a method of error checking in which a bit is added to keep the number of bits in a character even or odd depending upon whether or not even or odd parity is used.

HP LaserJet Serial Data Format

Transmission is asynchronous, with one start bit, eight data bits and one stop bit. Parity is not used. HP LaserJets are DTE devices.

Serial Interface Protocol (handshaking)

Handshaking is the method in which the flow of data between two devices is controlled. The two methods of flow control that are used by HP LaserJet printers are software flow control, in which one device controls another by the content of the data and hardware flow control, in which one device can control another by changing the voltage on a wire.

Software Flow Control (software handshaking)

Xon/Xoff is a data stream handshake protocol which sends Xon (DC1; 11 Hex) to the computer from the printer's transmit data pin when the printer is able to accept data and sends Xoff (DC3; 13 Hex) when the printer is not ready for data.

Hardware Flow Control (hardware handshaking)

By definition hardware handshaking is performed when two programs manipulate RS-232 control pins-DTR, DSR, RTS, and CTS to achieve a hardware-based form of flow control. In DTR/DSR handshaking, the sender asserts DTR (Data Terminal Ready) before sending the first character in a stream of data and waits for DSR (Data Set Ready) to be asserted in return. RTS/CTS handshaking is similar, but uses the Request To Send and Clear To Send pins rather than Data Terminal Ready. In either case, the sender delays transmitting data until the receiver is ready.

Hewlett-Packard offers the following serial cables and adapter for use with the HP 5/5M Printers:

HP Part Number	Description
C2932A	9 to 9-pin M/F RS-232 Serial Cable, 3m
C2933A	9 to 25-pin M/F RS-232 Serial Cable, 3m
C2809A	9 to 25-pin M/F Serial Cable Adapter

With the C2809A serial cable adapter installed on the printer you can connect a 25-pin cable connector to the printer. The adapter pin connections are shown below.

25 to 9 pin adapter (C2809A)

Standard DB-25 (female adapter end)	Printer DB-9 (male adapter end)
2- Transmit Data	2- Transmit Data
3- Receive Data	3- Receive Data
6- Data Set Ready	4- Data Set Ready
7- Signal Ground	5- Signal Ground
20- Data Terminal Ready	6- Data Terminal Ready

DB-9 Serial Cable pin outs

Computer DB-9	Printer DB-9 (male cable end)
2- Receive Data	2- Transmit Data
3- Transmit Data	3- Receive Data
4- Data Terminal Ready	4- Data Set Ready
5- Ground	5- Ground
6- Data Set Ready	6- Data Terminal Ready
8- Clear to Send	8- Data Terminal Ready

DB-25 Serial Cable pin outs

Computer DB-25	Printer DB-9 (male cable end)
3- Receive Data	2- Transmit Data
2- Transmit Data	3- Receive Data
20- Data Terminal Ready	4- Data Set Ready
7- Ground	5- Ground
6- Data Set Ready	6- Data Terminal Ready
5- Clear to Send	8- Data Terminal Ready

Note

The pin outs for the computer end are typical pin numbers. The actual pin numbers for you PC may be different. Please check the documentation for your computer to verify the proper pin outs.

Pins not shown are not used by the printer.

Pin Functions

Pin 1- Protective Ground	This pin is also referred to as chassis ground and should not be confused with pin 7, or common ground which serves as the circuit common. The purposed of this pin is to provide protection against electrical shock where two pieces of equipment are connected and one piece does not include a ground connection, or round prong on its AC plug. In some cases not connecting chassis ground may disable communication or connecting these pins may create a problem known as a ground loop. Both of these situations are rare in general and in most cases pin 1 is not needed to establish communication between two devices. Questions regarding the need for connecting or not connecting chassis ground should be referred to an electrical expert.
Pin 2- Transmitted Data (TxD or TD)	This pin transmits data.
Pin 3- Received Data (RxD or RD)	This pin receives data.
Pin 4- Request to Send (RTS)	General purpose output. Uses vary widely. In half-duplex modems this is used to signal a desire to transmit data.
Pin 5- Clear to Send (CTS)	General purpose input. Uses vary widely. In half-duplex modems this is used to grant permission to transmit.
Pin 6- Data Set Ready (DSR)	General purpose input to signal that the DTE and the DCE is powered up and ready to go.
Pin 7- Common	Reference point for all interface voltages.
Pin 8- Data Carrier Detect (DCD)	On modems DCD is asserted when connected to a remote modem. On a DTE it is frequently used to disable data reception.
Pin 20- Data Terminal Ready (DTR)	General purpose output. Generally used to signal to the DCE that the DTE has been powered up and is ready to go.

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/region 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.
- Printing of non-supported 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 HP Support pages at the front 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.

Caution

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

For telephone assistance about using your printer past the one-year warranty, you have two choices:

1 You can call (900) 555-1500 (U.S.) at $2.50* per minute. Charges begin once a live service operator answers the call.

2 You can call (800) 999-1148 (U.S.) at $25.00* per call (VISA or MasterCard).

Outside the U.S., contact a service-authorized HP dealer or an HP Customer Service Center to obtain service.

* Prices are subject to change without notice.

Repacking Guidelines

- Remove and retain any SIMMs installed in your printer.
- Remove and retain the toner cartridge.
- Remove and retain the 500-sheet optional Tray 3, 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. Contact a local packaging and mailing service for the repackaging of your printer.

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Sales and Service Offices

Calling for Help

To locate HP-Authorized Dealers, go to http://www.hp.com/support.

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