Service Supplement

HP LaserJet 5P / 5MP / 6P / 6MP Printer (C3150A/ C3155A/ C3980A/ C3982A)

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HP LaserJet 5P / 5MP Printer (C3150A / C3155A)

Warranty

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WARNING

Electrical Shock Hazard

To avoid electrical shock, use only supplied power cords and connect only to properly grounded (3-hole) wall outlets.

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Conventions

This manual uses the following conventions:

Color is used to emphasize items which are important to the material under discussion.

The names of major printer parts and assemblies are Capitalized.

Bold is used for emphasis, particularly in situations where *italic* type would be confusing.

Italic type is used to indicate related documents or emphasis.

`COMPUTER` type indicates text as seen on a computer monitor.

Note Notes contain important information set off from the text.

CAUTION Caution messages alert you to the possibility of damage to equipment or loss of data.

WARNING! Warning messages alert you to the possibility of personal injury.

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HP LaserJet 5P Printer Service Supplement

Overview

The HP LaserJet 5P and 5MP printers (HP Product Numbers C3150A and C3155A) have many service and repair processes in common with their predecessors, the HP LaserJet 4L/4ML and 4P/4MP printers. These processes are documented in the *Combined Service Manual* for the *HP LaserJet 4L/4ML (C2003A/C2015A) HP LaserJet 4P/4MP (C2005A/C2040A).* The purpose of this appendix is to provide supplemental service information that is unique to the HP LaserJet 5P and 5MP printers.

Product Information

Printer Features

Features	
Print Speed	6 PPM
Text & Graphics Resolution	600 dpi; plus Resolution Enhancement Technology (REt)
Printer Languages **HP LaserJet 5P** **HP LaserJet 5MP**	 Enhanced PCL 5 PostScript Level 2[1] Enhanced PCL 5
Monthly Usage (pages)	Up to 12,000
Memory:	2MByte on-board standard memory
Tray 1 Capacity	100
Tray 2 Capacity	250
Output Tray capacity	100
Internal Typefaces **HP LaserJet 5P** **LaserJet 5MP**	45 PCL 45 PCL, 35 PS
Standard Interfaces	2 Parallel (B connector, C connector) 1 LocalTalk 1 SIR
Power Control	Power switch
NVRAM	Yes
Status Panel	2 Buttons 5 LEDs
Economode (toner saving)	yes
Min. Paper Size **(using flat paper path)**	3 x 5 inch (76 x 127mm)
[1]**SIMM includes 1 MByte additional memory.**	

Key Printer Locations and Parts.

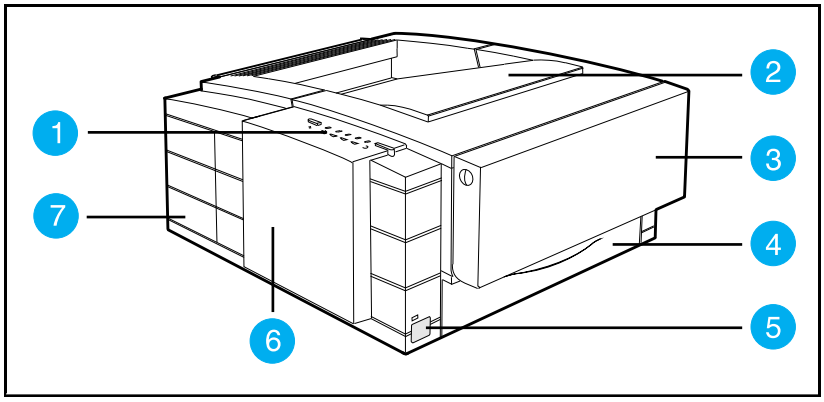


Figure 1 Front View

1. Status Panel
2. Top Output Tray
3. Tray 1 - MultiPurpose Tray
4. Tray 2 - 250-sheet Paper Cassette
5. Infrared Port and Status Light
6. Removable Side Panel
7. Interface Cable Door

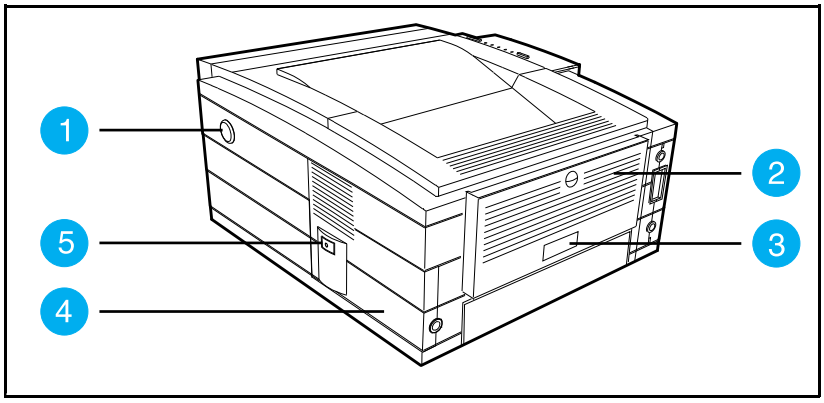


Figure 2 Rear View

1. Top Cover Release Button
2. Rear Output Tray
3. Serial Number Label
4. Power Cable Door
5. On/Off Button

Model and Serial Numbers

The model number and serial numbers are listed on identification labels located on the rear of the printer. The model number is alphanumeric, such as C3150A for the HP LaserJet 5P printer and C3155A for the HP LaserJet 5MP printer.

The serial number contains information about the Country of Origin, the Revision Level, the Production Code, and production number of the printer.

The rear labels also contain power rating and regulatory information as shown in Figure 3.

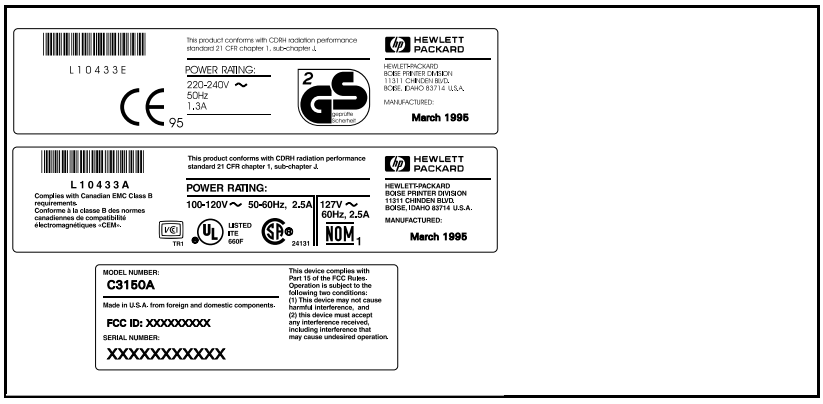


Figure 3 Sample Model and Serial Number Labels

Product Specifications

Dimensions

Width	15.79 in. (401 mm)
Depth	17.38 in. (441.7mm)
Height	7.92 in. (201.1mm)
Weight	15.4 lbs. (7 kg)

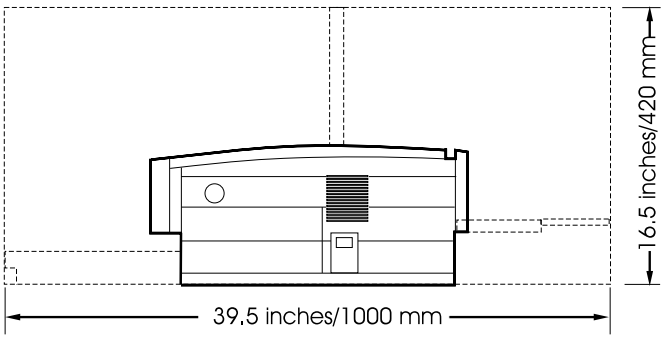


Figure 4. Location Space Requirements

Electrical Specifications

Power Requirements	100/120V (+/- 10%) 50/60Hz (+/- 2Hz) 127 Volts NOM	220/240V (+/- 10%) 50 Hz (+/- 2Hz)
Power Consumption (typical for HP LaserJet 5P and HP LaserJet 5MP)	During printing - 165 W (average)	During printing - 165 W (average)
	During standby – 5W (instant power save) During power save mode - 5 W	During standby – 5W (instant power save) During power save mode - 5 W
Minimum recommended circuit capacity	4 Amps	1.8 Amps

Environmental Specifications

Item	Operating Printing	Storage/Standby
Temperature (printer and toner cartridge)	59° to 89° F (15° to 32.5° C)	-4° to 104° F (-20° to 40° C)
Relative humidity	10% to 80%	10% to 90%

Acoustic Emissions (Per ISO 9296)

	Operator Position	Bystander (1m)	Sound Power
Printing	L_{pAm} 52dB(A)	L_{pAm} 46dB(A)	L_{WAd} 6.0 bels(A)
Power Save*	L_{pAm} <22dB(A)	L_{pAm} <22dB(A)	L_{WAd} <3.6 bels(A)

*In this mode, the printer is essentially quiet.

Documentation and Software

Documentation

You can order the documents listed below. There is a charge for some documents.

Table 1. Related Documentation

Title	Part Number
The *PCL/PJL Technical Reference Package* contains the following documents*	5961-0601
PCL5 Printer Language Technical Reference Manual. Explains the PCL 5 printer language for experienced users and programmers.	
Printer Job Language Technical Reference Manual. Explains HP's Printer Job Language (PJL) for experienced users and programmers.	
PCL/PJL Technical Quick Reference Guide.	
PCL Comparison Guide. Describes the different implementation of commands and extensions across the printer family supporting PJL and PCL 5.	
HP LaserJet 5P/5MP Printer User's Manual	C3150-90901
HP LaserJet 5MP Macintosh Notes* (included with HPLaserJet 5MP Printer and optional Adobe PostScript Level 2 SIMM)	C3155-90901
HP LaserJet Printer Family Paper Specification Guide*	5002-1801

* This item must be ordered through HP Parts Direct Ordering, (800) 227-8164. Outside the U.S., see the ordering information in "Parts and Diagrams" later in this chapter.

Software

The following software driver diskettes are shipped with the C3150A HP LaserJet 5P printer:

- The *HP LaserJet 5P DOS Utilities and DOS Printer Drivers* diskette. The DOS utilities include a Status Monitor and Remote Control Panel. The DOS printer drivers include WordPerfect (versions 5.1, 5.1+, and 6.0) and Lotus 1-2-3 (versions 2.3, 2.4, 3.1 and 3.4).

- The *HP LaserJet Printing System for Microsoft Windows 3.1 and 3.11* contains the PCL drivers and the HP FontSmart utility for font management.

The following software driver diskettes are shipped with the C3155A HP LaserJet 5MP printer:

- *The HP LaserJet 5MP Printer Software for Macintosh.* Supports System 6.07 to 7.5.

- The *PostScript Printer Software for Windows 3.1 and 3.11* includes the PostScript drivers and the HP FontSmart utility for font management.

New Product Features

The HP LaserJet 5P/5MP Status Panel

This HP LaserJet printer has been designed to be controlled mainly by software. However, some simple functions are also available from the status panel. You also receive status information about the operation of the IrDA-compatible infrared (IR) port from the status light just above the port (for more information, see “To Print Using the Infrared Port,” later in this appendix).

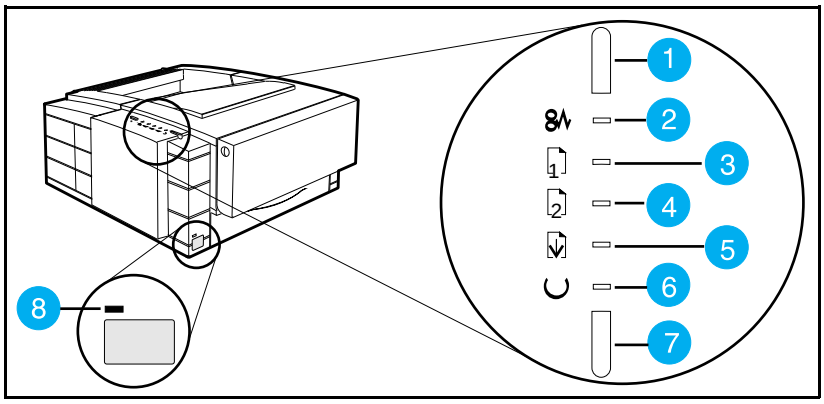


Figure 5 Status Panel Buttons and Lights

1. RESET button
2. ERROR status light
3. TRAY 1 status light
4. TRAY 2 status light
5. DATA status light
6. READY status light
7. GO button
8. IR port status light

The Status Panel consists of two buttons you use to complete certain tasks and five status lights that indicate the status of the printer (see Figure 5).

The GO and RESET Buttons

The printer has two buttons: GO and RESET.

Pressing the GO button:

- Tells the printer to resume printing.
- Prints a demo page. The printer must be in Ready Mode (the green Ready light on steady).
- Prints a self-test page when pressed simultaneously with the RESET button. The printer must be in Ready Mode (the green Ready light on steady).

Pressing the RESET button:

- Clears incomplete print jobs from the printer's memory.
- Clears errors.
- Removes all temporary fonts and macros.
- Returns all printer settings to the default values that you selected.

The Status Lights

There are five Status Panel lights on the printer:

- ERROR
- TRAY 1
- TRAY 2
- DATA
- READY

These lights indicate the current status of the printer by displaying an amber or a green hue and flashing individually or sequentially as a group (cascading).

The status light above the IR port indicates the current status of the IR port by displaying a green hue. This status light comes on only when the IR port is being used—the Status Panel lights operate the same for the IR port as they do for any other port on the printer.

ERROR (amber)

Indicates an error condition, such as a paper jam, missing toner cartridge, or the printer's top cover is open.

TRAY 1 (amber)
Tray 1 (the MP tray) is empty. Add paper to Tray 1. When the Tray 1 light is flashing, the printer is waiting for paper to be manually fed into Tray 1. Once you have inserted the paper, you must press the GO button to feed the paper.

TRAY 2 (amber)
Tray 2 (the Paper Cassette) is empty. Add paper to Tray 2.

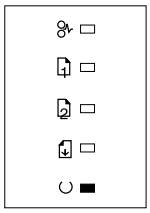
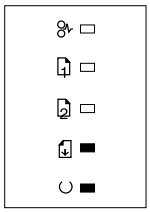
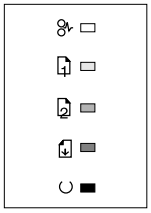
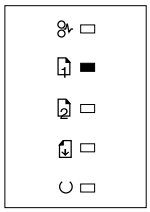
DATA (green)
When the Data light is on, the printer is printing. When the Ready light and the Data light are both on, the printer still has unprinted data in its memory. Either press GO to print the remaining data, or press RESET to clear the data from the printer's memory.

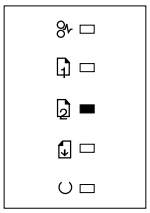
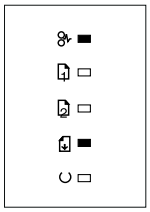
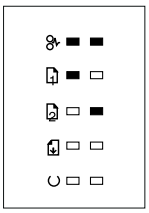
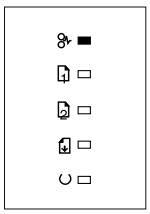
READY (green)
The printer is in Ready Mode when the Ready light is on. If the light is flashing, the printer is currently receiving data or in the process of printing.

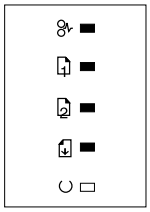
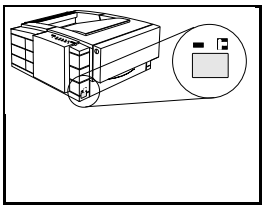
IR Port Status Light (green)
If this light is on, it indicates that an infrared (IR) connection has been established.

Common LED patterns

The chart following shows the light patterns for normal HP LaserJet 5P/5MP printer states.

Light Pattern	Description
	The printer is in Ready Mode and is ready to print. Press the GO button to print a demo page. Press the GO and RESET buttons to print a self-test page.
	The printer has received data. If the Ready light is flashing, the printer is processing the data—wait for the next page to be printed. If the Data light and the Ready light are both on for an extended period of time (the Ready light does not begin to flash), press the GO button to print the next page. A document or page may take a long time to print if, for example, the document or page contains complex text or graphics.
	The printer is warming up or resetting after you have pressed the RESET button. The lights on the Status Panel “cascade” (each light turns on and off sequentially) until the printer is ready to print.
	Tray 1 (the MP Tray) is empty. Add paper to the tray. If the Tray 1 light is flashing, the printer is waiting for paper to be manually fed into Tray 1. Once you have inserted the paper, you must press the GO button to feed the paper.

Light Pattern	Description
	Tray 2 (the Paper Cassette) is empty. Add paper to the tray.
	A data error has occurred. Press the GO button to continue printing (some data may be lost). For more information, see “Data Error Light Patterns,” later in this appendix.
	A SIMM error has occurred. Make sure your SIMM is installed correctly. Replace the SIMM that caused the error. Or press the GO button on the printer to continue without configuring the SIMM that caused the error. If the SIMM has more than one bank of memory, the good banks will be automatically configured.
	A recoverable error has occurred, such as a paper jam, the top cover is open, or the toner cartridge is missing.

Light Pattern	Description
	A fatal error has occurred. Turn the printer off and then back on. If the same light pattern reappears, turn the printer off again and leave it off for about 10 minutes, then turn it back on. If the same light pattern reappears. refer to the discussion of Fatal Errors in "Troubleshooting."
	When the IR port status light is on, a connection has been established. If you are printing to the IR port and the status light does not come on, make sure the printer is in Ready Mode and that the IR port you are printing from is within range of operation and is IrDA-compliant. If you continue to have trouble printing, refer to the “Infrared Port Not Responding” table, later in this section.

Paper Movement Overview

The paper feed system picks print media automatically from the paper cassette or accepts it from the manual feed slot and delivers it to the image formation system at precisely the right time. The system then feeds the media to the fusing station, and delivers the finished product to the output position, either the face-down output tray on top of the printer, or through the face-up delivery slot at the rear of the printer. The output path is user-selectable by opening the rear output tray.

Figure 6 shows the possible paper paths and locations of the various solenoids, photosensors and rollers.

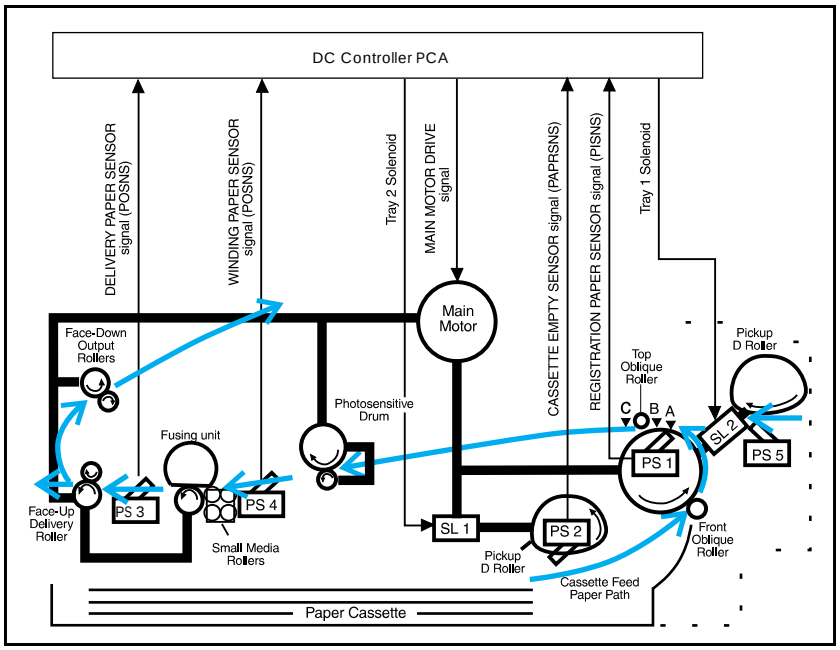


Figure 6 HP LaserJet 5P Printer Paper Path

PS1 Input Paper Sensor
PS2 Tray 2 Paper Out Sensor
PS3 Exit Paper Sensor
PS4 Winding Paper Sensor
PS5 Tray 1 Paper Out Sensor

Input Paper Sensor (PS1) Positions:
A = Manual Feed Sense Position
B = Registration Sense Position
C = TOP Sense Position

SL1 Tray 2 Solenoid
SL2 Tray 1 Solenoid

Infrared Communication

The HP LaserJet 5P and 5MP printers are equipped with an Infrared Datalink Association (IrDA) compliant port. The IrDA specification allows "wireless" transmission of print data between a wide variety of hosts (primary) and peripheral (secondary) devices. A primary device -- such as a PC or laptop computer -- is capable of reading and writing data to another primary device or writing to a secondary device, such as a printer. Secondary devices are read-only; they cannot initiate its own communication, and can only respond to a host command when properly addressed.

The IrDA protocol uses a transceiver chip in both devices to send and receive data packets. The packets are checked for validity, and a response is sent by the secondary device indicating whether the packets were complete or in error.

The IrDA protocol is contained in three layers:

- The physical electronics are the hardware elements in each device for sending and receiving the data.
- The Link Access Protocol (LAP) layer controls the physical layer, packetizes/unpacketizes data, and sets transmission rates.
- The Link Management Protocol (LMP) layer routes data to and from the host operating system (DOS/Windows).

The data flow is shown in Figure 7.

The LAP and LMP layers can reside in either firmware, software, or a combination of both. There are different LAP and LMP protocols for primary and secondary devices.

The HP LaserJet 5P printer has the complete secondary protocol, and any host trying to communicate via the infrared (IR) port must have the complete primary protocol installed. *The primary protocol software is the responsibility of the host supplier. It is not provided by Hewlett-Packard Company with the printer.*

IrDA communications can be obtained either via an internal IR port or an external IR accessory. Several manufacturers offer complete accessory upgrades for both host and peripheral devices.

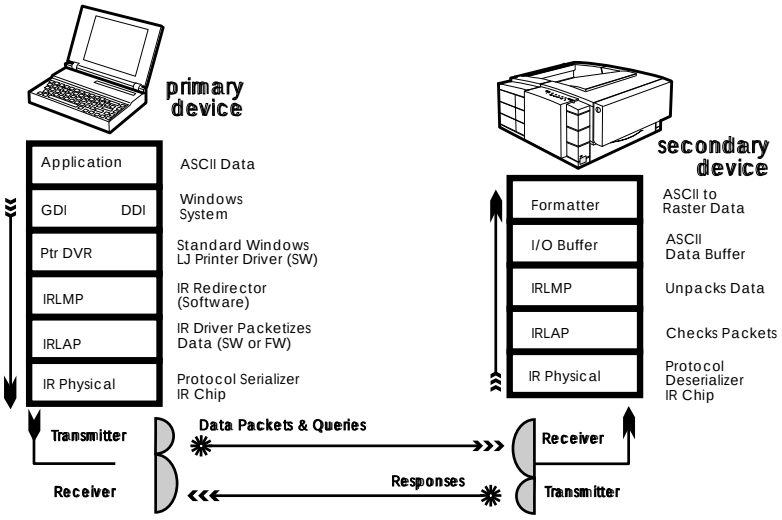


Figure 7. IR Data Flow.

System Requirements

- Hardware
- Both the primary and secondary devices must be equipped with an IrDA-compliant IR component. Older, non-IrDA-compliant devices may not be compatible with the HP LaserJet 5P/MP printers.
- Software
- The primary device must be loaded during boot-up with software provided by the manufacturer for infrared operation.
- The primary device must be properly configured with an infrared COM port, IRQ level, and base address value.
- The infrared port must be installed and selected in the Printers section of the Windows Control Panel.

To Print Using the Infrared Port

The infrared (IR) port on your HP LaserJet 5P or 5MP printer is located on the lower front left corner of the printer (Figure 8). This port is compliant with the specifications determined by the Infrared Data Association (IrDA). Just above the port is a status light that indicates when the port is activated. To use the IR port, you need to use a portable device that also includes an IrDA-compliant IR port and be within the range of operation (see Figure 9).

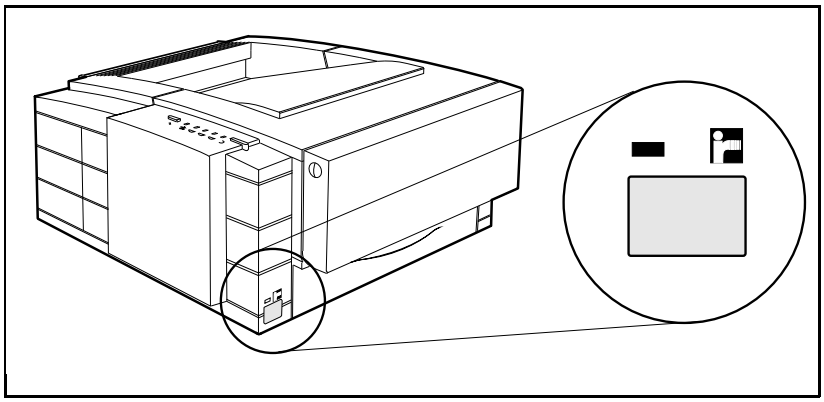


Figure 8 IrDA Port Location

The IR port is compatible with a wide variety of IrDA-compliant portable devices; 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.

The IR port works by receiving data similarly to a serial port, however, without a cable and operates at speeds of up to 115 k bits per second. When the IR connection is established, the status light comes on. If the connection is broken or when the print job is complete, the status light goes off.

1. Make sure the printer is in Ready Mode (the Ready light is on).

2. Align your laptop computer (or other portable equipment) that is equipped with an IrDA-compliant IR port within 3 feet

(1 m) of the IR port on the printer and at an angle of ±15 degrees to ensure printing (Figure 9).

3. Send the print job. The status light above the IR port turns on (printing a complex document or using a software print spooler on your PC may delay the time it takes for the IR status light to turn on). If the status light does not turn on, realign the port on your portable equipment with the port on the printer, resend the print job and stay within the range of operation during printing.

4. If you have to move the device, for example, to add paper, make sure you stay within the range of operation to maintain the connection. If the connection is interrupted before your print job is complete, the IR port status light will turn off. You have from 3 to 40 seconds (depending on the host implementation) to correct the interruption and continue the job. In this case, the IR port status light turns back on.

5. The connection can be permanently broken (interrupted for more than 3 to 40 seconds) if the "sending" IR port is moved out of the range of operation or if anything passes between the two ports to block the transmission, such as a hand or piece of paper, or even direct sunlight. In this case, the job needs to be reprinted.

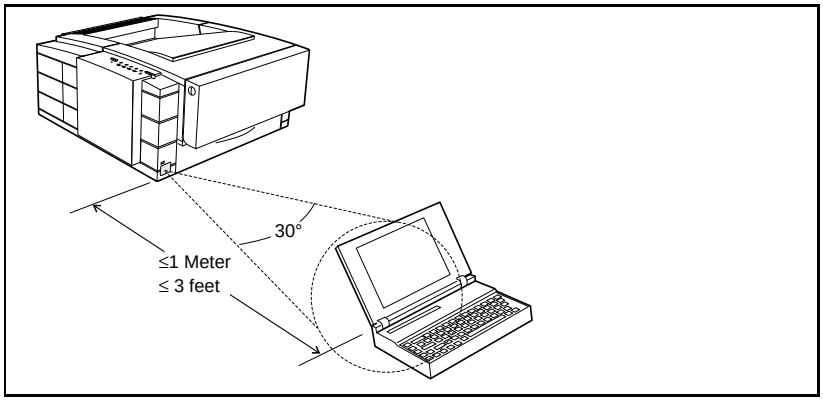


Figure 9 IRDA Port ranges

If you still have problems printing, make sure you are using an IrDA-compliant device and proper software and have selected the proper port for printing. See "Infrared Port Not Responding" on page 65.

Note The IrDA standard for infrared communications represents an emerging technology. Older non-IrDA-compliant portable devices may not be compatible with your HP LaserJet 5P/5MP printer. If you continue to have problems printing using the IR port, contact the manufacturer or dealer where you purchased your portable device to verify compatibility with the IrDA standard, and follow the troubleshooting procedure immediately following.

Troubleshooting IR Printing Problems

IR printing problems may be caused by any of the several system components or by lack of proper configuration. The following checklist will help determine the source of the problem.

6. Verify the user is operating the printer and PC as described in the User's Manual: less than one meter between devices, and not more than ±15 degrees from direct center.

7. Verify the host PC or laptop and the printer are IrDA-compliant and have the necessary hardware components for IR communication.

8. Verify the IR software has been loaded on the primary device. (This is system software and should be available from the PC manufacturer.)

9. Verify the host PC or laptop is properly configured. Check the port assignment, the IRQ level, and the base address value. Check both the DOS AUTOEXEC.BAT and CONFIG.SYS files, and the Windows system configuration.

If all these elements are properly installed and configured, use the IR test tool to test the IrDA protocol transmission and device operation. This tool for troubleshooting IR communication problems, shown in Figure 10, has been developed by Genoa Technology, Inc., in cooperation with Hewlett-Packard. The part number is 5062-4661 and can be ordered through HP Parts Direct Ordering.

The IR test tool can be used with any IrDA-compliant primary or secondary device, regardless of manufacturer.

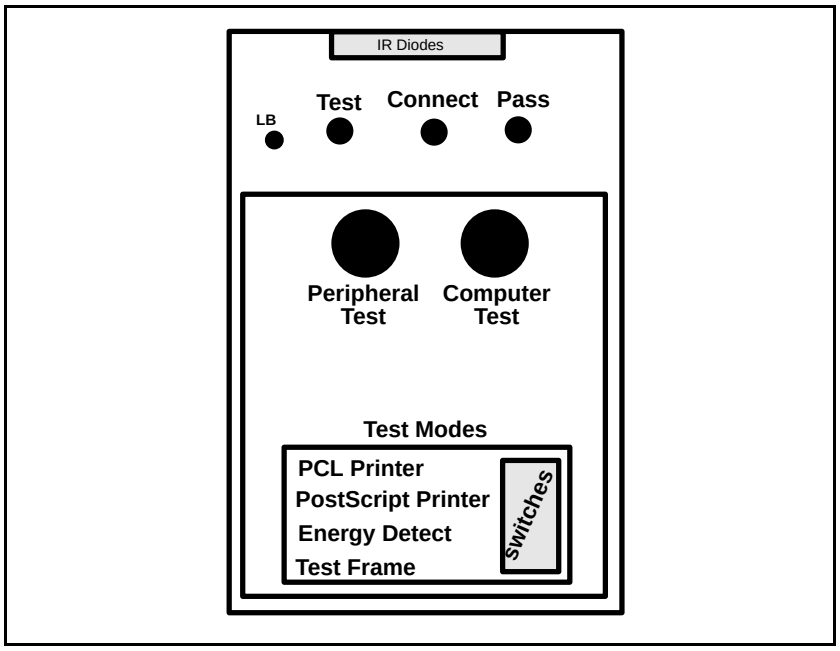


Figure 10 Infrared Test Tool

To test the peripheral device:

1. Put the HP LaserJet 5P in Ready Mode.
2. Press the "Peripheral Test" button on the test tool. The LEDs on the test tool will sequence.

If the "PASS" LED lights, the test was successful, indicating that communication with the printer's IR port is functioning normally. On HP LaserJet printers, a self-test page will be initiated by the test.

If the "TEST" LED goes out and the "PASS" LED fails to light, the printer's IR port is not functioning correctly; check the operator's instructions included with the IR test tool.

To test the host computer:

1. Place the test tool on a table in front of the PC's IR port

2. Press the "Computer Test" button. The test tool will sequence the LEDs.

If the "PASS" LED light, the test was successful, indicating that communication with the printer's IR port is functioning normally.

If the "TEST" LED goes out and the "PASS" LED fails to light, the host's IR port is not functioning correctly.

Interface Connections

Your HP LaserJet 5P or 5MP printer supports the following interfaces (see Figure 11):

- Two IEEE-1284–compliant parallel ports at the back of the printer—one large B-type and one small C-type.
- One LocalTalk port at the back of the printer.
- One IrDA-compliant infrared port at the front of the printer.

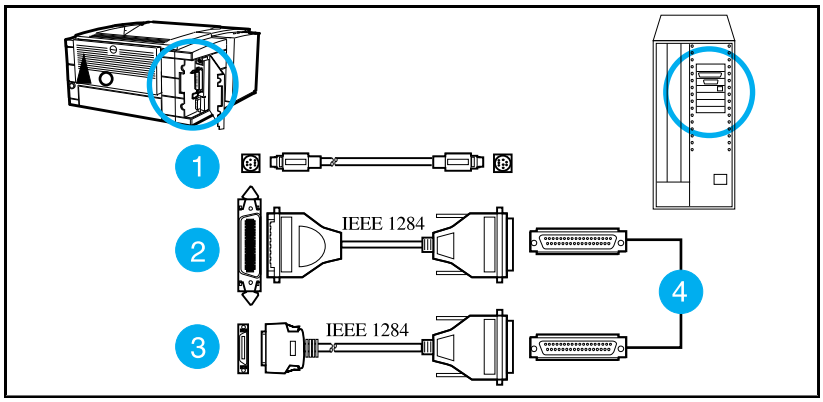


Figure 11 HP LaserJet 5P/5MP Printer Interface Connections

1. LocalTalk cable and connectors.
2. IEEE-1284 parallel cable and large (B-type) printer connector.
3. IEEE-1284 parallel cable and small (C-type) printer connector. (The cable will be stamped as IEEE-1284 compatible.
4. Host PC connector (A-type) (in the future C-type connectors may also be available on host PCs).

Caution Make sure that all power and interface cables on your printer and host computer are properly grounded and in compliance with local electrical codes.

The Parallel Printer Interfaces

These interfaces are compliant with IEEE-1284 specifications for "Compatibility Mode" and "Nibble Mode" or "HP Bi-tronics". To use advanced interface functions, such as bi-directional communication, the parallel port on your host PC must also be IEEE-1284 "Nibble Mode" compatible.

The small "C" connector offers IEEE-1284 II (level 2) electrical interfacing, i.e. support for cables up to 10 meter length. The large "B" connector supports standard cable lengths up to 3 meters.

The parallel interfaces can operate at speeds of up to 2 MBytes per second. Use a high-quality, shielded IEEE-1284 compliant parallel interface cable to insure best performance and support of advanced interface functions such as bi-directional communication. Compliant cables are marked with "IEEE-1284" on the cable.

Applications such as the Remote Control Panel, Status Monitor, or the Status Window use the printer's parallel interface to send status information back to the computer (bi-directional communication). This requires a direct connection from the computer to the printer via a local parallel port (for example, LPT1:, LPT2:). These applications may not work through a network or a switching device.

Connecting to Networks and Switchboxes

Most devices connected between the printer and the host computer prevent the printer from sending data back to the computer. Therefore, the Remote Control Panel, Status Monitor, and Status Window may not work with networks, most hardware print spoolers, some software print spoolers, and some switchboxes. Newer sharing devices are available that fully support status feedback. Check with your supplier on support for bi-directional communication.

Automatic I/O Switching

The printer automatically switches between all interfaces (parallel, infrared, and LocalTalk) when multiple users share the printer.

Resource Saving

Resource Saving gives the printer the ability to save certain entities such as permanent soft fonts, macros, symbol sets and user-defined graphics patterns when the printer changes personalities, resolutions or page protect modes. For example, if a user switches the printer from PCL mode to PostScript mode, all PCL soft fonts and macros are lost.

With resource saving, the HP LaserJet 5P/5MP printer can retain these in memory. When the user switches back to PCL from PostScript all of the PCL entities would still be resident in the HP LaserJet 5P/5MP printer. Resource Saving can be changed via software, but can only be accessed when the printer has the PostScript language installed and a minimum memory configuration of 7 MB.

Resource Saving can be set via software for one of three modes, AUTO (default), ON, and OFF. Auto configuration sets the Resource Saving for PCL and Postscript to a minimum value (400 KBytes) for each personality. Setting Resource Saving to ON allows the user to determine how much printer memory will be used for Resource Saving for the PCL personality and the Postscript personality. The memory can be allocated in 100 KBytes increments. For example, if the user sets the Resource Saving memory size to 200 KBytes, a total of 400 KBytes of memory will be assigned to Resource Saving. 200 KBytes of memory will be used for Postscript Resource Saving and 200 KBytes of memory will be used for PCL Resource Saving. Turning Resource Saving OFF disables the Resource Saving function and no memory is allocated to Resource Saving.

I/O Buffering

I/O buffering allows the user to allocate printer memory to hold the job while it prints, freeing up the host system sooner, like a print spooler. The standard printer has approximately 10 KBytes of memory allocated to I/O buffering and an additional 100 KBytes of memory is assigned to I/O buffering for each MBytes of memory added to the printer.

If the printer has a minimum of 6 MBytes of memory installed, the I/O buffer size can also be adjusted via software. Three settings exist for the I/O buffer; AUTO (default), ON, and OFF. AUTO sets the printer's I/O buffer to a minimum value that is determined by the total amount of memory that is resident in the printer. Setting I/O buffering to ON allows the user to set the I/O buffer size Setting the I/O buffering to OFF disables I/O buffering .

Note When you change the I/O buffer setting all downloaded resources are deleted.

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Service Mode, PJL Defaults

The Service Mode should be used only by authorized service personnel. While in Service Mode, you can:

- Print a Service Mode Self Test.
- Verify and set the Page Count (the page count also is displayed on the standard self test).
- Set the Cold Reset Default. (This sets the factory default paper size to either Letter or A4).
- Set the Demo Page=True/False. Used to remove the Demo Page option from the self test menu.
- Set the Diagnostic Functions ON or OFF (for software developers use only).

Since the HP LaserJet 5P/5MP printer does not have a front control panel, Service Mode and many configuration tasks are accessible only through software (PJL commands).

The following example shows how to use PJL commands to enter Service Mode and perform various Service Mode configuration tasks.

Note Text is CASE-sensitive in PJL; enter exactly as shown. The $^{E}_{C}$ symbol stands for the ASCII escape character (ESC or /027). When the PJL code is entered, print the data file (or use the DOS `COPY` command to copy it to the printer).

Detailed explanations of PJL commands and their functions can be found in the Printer Job Language Technical Reference Manual (HP part number 5961-0704).

Common PJL Commands

PJL Command	Explanation
E_C%-12345X@PJL	Start PJL job.
@PJL SET SERVICEMODE=HPBOISEID	Enter Service Mode
@PJL SET PAGES=0	Set page count [= xxxxx]
@PJL SET CRPAPER=LETTER	Sets cold reset page size [= Letter/A4]
@PJL SET SKIPDEMO=FALSE	Skips demo/PCL type page [= true/false]
@PJL SET DIAGNOSTICS=OFF	Sets diagnostics [= OFF/ON] (for ISV use)
@PJL SET SERVICEMODE=EXIT	Exits Service Mode
@PJL DEFAULT PAPER=LETTER	Selects user paper size default
@PJL RESET	Performs PJL reset
E_C%-12345X	Exits PJL mode
E_Cz	Prints Self-Test page
E_CE	Resets the printer.
Other PJL Command examples:	
@PJL INITIALIZE	Sets user environment to factory defaults.
@PJL SET ECONOMODE=ON	Sets Economode
@PJL SET PAGEPROTECT=LEGAL	Sets the memory size for page protection to LEGAL paper size.
@PJL SET MANUALFEED=ON	Sets manual feed mode.
@PJL SET LANG = *FRENCH, GERMAN...*	Sets the default display language[1]

[1] Do not confuse this command with @PJL ENTER LANGUAGE, which sets the printer language to PCL or PostScript.

Test Pages and Resets

Test pages, resets, and NVRAM initialization can all be performed by using the GO and RESET buttons on the HP LaserJet 5P/5MP printer status panel. Table 2 shows how to perform these tests and diagnostic functions.

Table 2. Button Functions

FUNCTION	ACTION	RESULT
Self Test	Press GO and RESET buttons simultaneously.	Prints a Self Test page.
Continuous Self Test	Hold GO button *more* than 20 seconds after powering on printer	Prints continuous self test pages. Press the button to stop printing.
Reset (all I/O)	Press RESET button.	Clears all data from memory, including unprinted data, downloaded fonts and macros.
Continue	(Waiting for paper, or continuable error.) Press the GO button.	Allows the printer to recover and continue printing the job.
Form Feed	Press the GO button.	Print remaining data in printer memory.
Cold Reset	Hold RESET button *less* than 20 seconds after turning power on.	Clears all data from memory, including unprinted data, downloaded fonts and macros. Resets printer to factory default settings.
NVRAM Initialization	Hold RESET button *more* than 20 seconds after turning power on.	Clears all I/O and print configuration information from NVRAM.
Service Error Codes	Press GO and RESET buttons to display additional code.	See "Troubleshooting" to determine the problem and solution.

Printing a Self-Test Page

You can print a self-test page to get information about your printer's current settings, options, and print quality. You can use this page to troubleshoot print quality problems and to view current print density and Resolution Enhancement settings so you can adjust them.

You can also print the demo, or demonstration, page to quickly check that the printer is operational.

To print a self-test page:

Simultaneously press the GO and RESET buttons on the printer's Status Panel while the printer is in Ready Mode.

Or using the HP LaserJet PCL Windows Printer Driver, under "Device Option", select the "Configure Printer" button and choose "PCL Self-Test Page".

Or using the Remote Control Panel (in DOS), under "Options" select "Print Test Page" and choose "PCL Self-Test Page".

Figure 12 shows a sample self-test page. Numbers in the sample self-test page match numbers in the Key to Figure 12 , which follows the illustration. The appearance of the self-test page varies depending on the options currently installed in your printer.

Note The factory default for the self-test page is English. A PJL command is required to change the self-test language to appear in a language other than English. Refer to the discussion of PJL commands on page 31

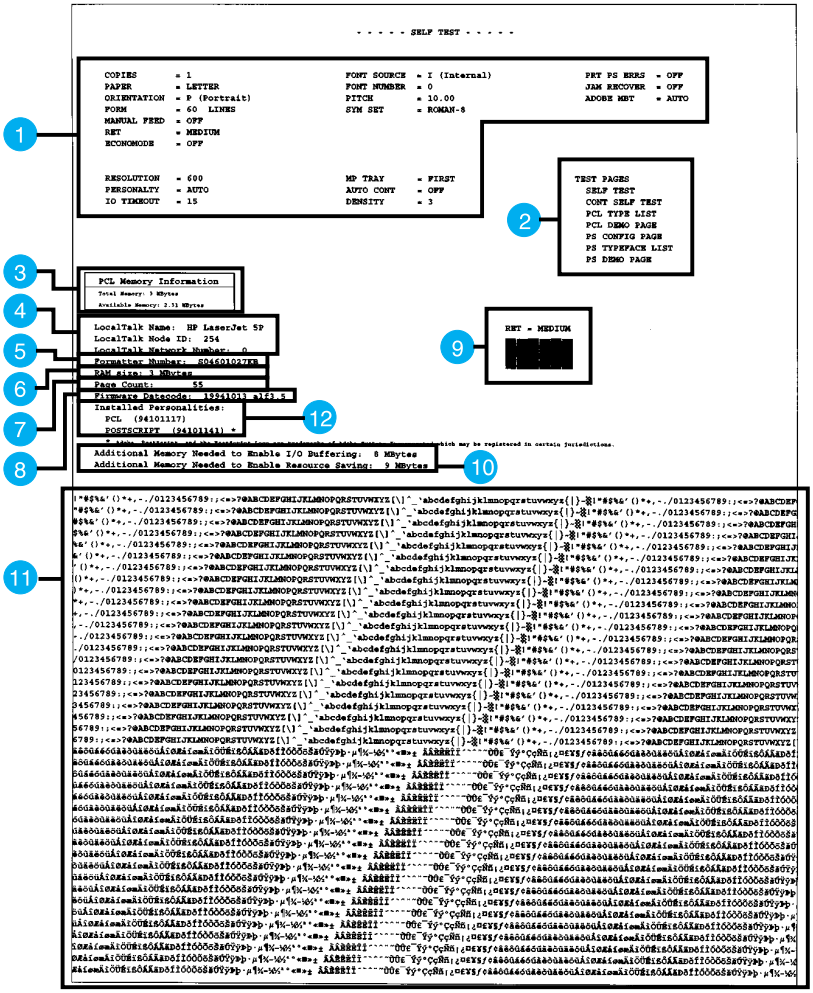


Figure 12. HP LaserJet 5P Self-Test Page

Key to Figure 12. Self-Test Page

Item	Explanation
1	**Printer Options:** Lists printer options you can adjust using your printer software (see Appendix F, "Software Procedures").
2	**Test Pages:** Shows test pages you can print from your printer.
3	**PCL Memory Information:** Shows the total amount of installed memory. Also indicates the amount of available memory for PCL applications.
4	**LocalTalk Name/Node ID/Network Number:** If your printer is connected to a LocalTalk network, shows the network name, node ID for your printer, and the network number.
5	**Formatter Number:** Shows serial number of internal electronics board.
6	**RAM size:** Shows total installed printer memory.
7	**Page Count:** Shows number of pages the printer has printed.
8	**Firmware Datecode:** Eight-digit date (YYYYMMDD) of formatter firmware.
9	**Resolution Enhancement:** When resolution is set to 600 dpi, the Resolution Enhancement technology (REt) block appears here. The REt block illustrates current resolution enhancement (see "Fine-Tuning Print Quality," in Chapter 2, "Printing").
10	**I/O Buffering and Resource Saving:** Information about the current configuration appears here. If the printer does not have enough memory installed to enable I/O Buffering or Resource Saving, the amount of additional memory needed appears here.
11	**Print Pattern:** Illustrates print density and quality.
12	**Installed Personalities:** Shows which printer languages (personalities) are installed.

Life Expectancy of Consumables

Always inspect the components listed in the following table for wear when servicing the printer. Replace these components as needed, based on printer failures or wear, not strictly on usage.

Table 3. Life Expectancy of Consumables

	DESCRIPTION	PART NO.	QTY	EST. LIFE (pages)	REMARKS
1.	Toner Cartridge	C3903A	1	4000[1]	When print becomes faint, shake cartridge to distribute remaining toner.
2.	Tray 1 Pickup Roller	RG5-2205-000CN	1	100,000	Replace roller and separation pad together.
3.	Tray 2 Pickup Roller	RB1-6332-000CN	1	100,000	Look for glazing and cracks.
4.	Separation Pad	RF5-0343-000CN	1	100,000	Look for glazing and grooves. Replace together with Pickup Roller.
5.	Transfer Charging Roller	RF5-1287-000CN	1	100,000	May affect print quality and/or paper jams.
6.	Fuser Assembly (115 V, 50/60 Hz) Fuser Assembly (220 V, 50 Hz)	RG5-1700-000CN RG5-1701-000CN	1 1	100,000 100,000	May affect print quality and/or paper jams. Look for marks on rollers.
7.	Exhaust Fan	RG5-1801-000CN	1	25,000 hrs.	

[1] The estimated Toner Cartridge life is based on A4 or letter size prints with an average of 5% toner coverage, and with the density setting at 3.

Removal and Replacement

Overview

The removal and replacement procedures for many HP LaserJet 5P printer Field Replaceable Units (FRUs) are identical to the HP LaserJet 4L and 4P printers. This section describes only those differences unique to the HP LaserJet 5P for removing:

- Power Door
- I/O Cover
- Left Side Cover
- Top Cover
- Tray 1 Pickup Assembly
- Formatter Board Assembly
- Fuser Assembly
- DC Controller Assembly

WARNING! Unplug the power cord from the power outlet before attempting to service the printer. If this warning is not followed, severe injury may result.

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.

CAUTION The printer contains parts that are electrostatic discharge (ESD) sensitive. Always service printers at an ESD protected workstation.

To install a self-tapping screw, first turn it counter-clockwise to align it with the existing thread pattern, then carefully turn clockwise to tighten. **Do not over-tighten.** If a self-tapping screw-hole becomes stripped, repair of the screw-hole or replacement of the affected assembly is required.

Note Always remove the toner cartridge and the paper cassette from the printer before removing or replacing printer parts.

Required Tools

Refer to page 6-3 of the Combined Service Manual.

A TORX T-10 head screwdriver is needed to remove the formatter shield.

Removing the Power Door

The Power Door is located on the right rear of the printer.

1. Ensure the power to the printer is turned OFF.
2. Grasp the power door by the finger slot directly above the power cord, and swing the rear of the door out and forward. The door easily tilts and lifts out.
3. Unplug the power cord from the printer power socket.

Removing the I/O Cover

The I/O Cover is located to the left rear of the printer.

1. Locate the two release tabs shown in Figure 13. Press the tabs in, and swing the rear of the door out and forward. The door easily lifts away from the printer.

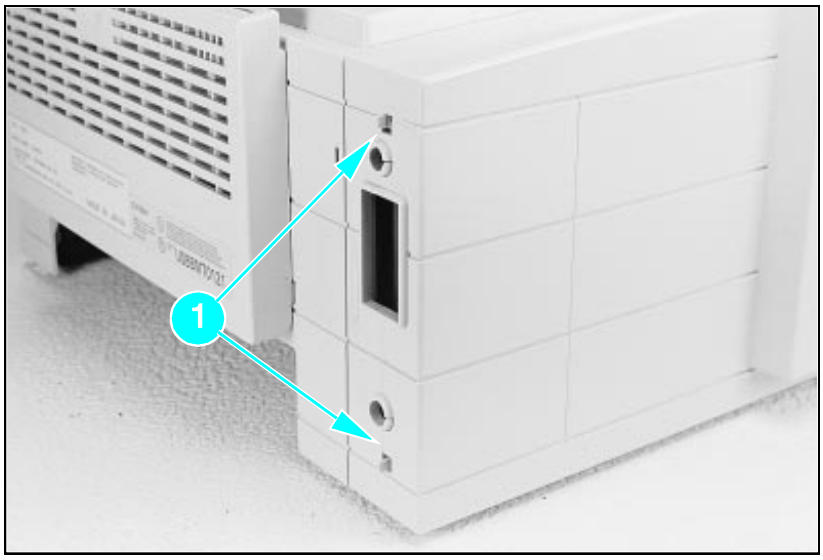


Figure 13 I/O Cover Release Tabs

Removing the Left Side Cover

1. Disconnect all I/O cables.

2. Press the Top Cover Release button on the right side of the printer, and open the top cover.

3. Press the removable side panel release latch shown in Figure 14.

4. Slide the cover forward and pull straight away from the side of the printer.



Figure 14 Left Side Cover Release Latch

Removing the Top Cover

1. Remove the toner cartridge and paper cassette if they have not already been removed.

2. Remove the (4) self-tapping printer cover screws (Figure 15).

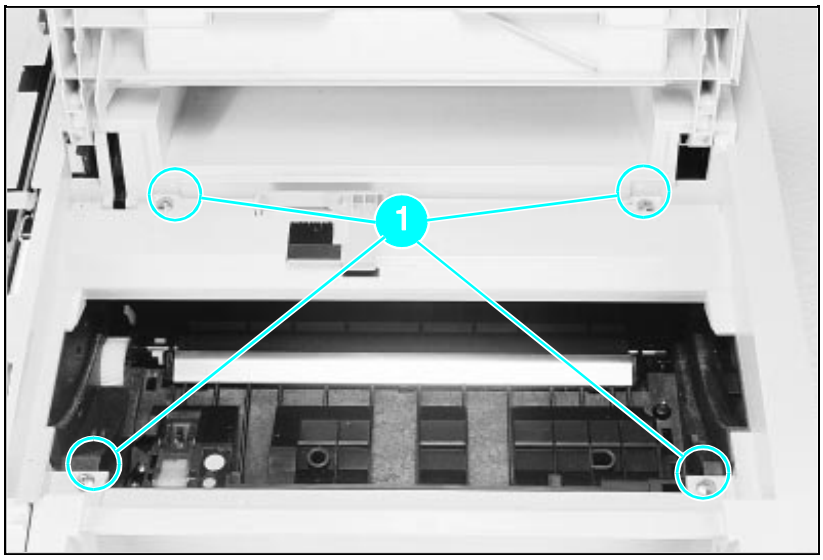


Figure 15 Removing the Top Cover Screws

3. Grasp the lower left front corner of the top cover, and lift it forward and up.

4. Grasp the lower portion of the right front cover, and pull forward and up.

5. At the rear of the printer, lower the face-up output tray.

6. Lift the rear of the printer slightly. Grasp the lower right back corner. With your thumbs, flex the plastic toward you, up, and out. Figure 16 shows this process for the rear right corner. Repeat the process for the left rear corner.

Note Note the position of the tabs and the catches carefully. This step may require considerable twisting and flexing of the plastic in order to free the release tabs.

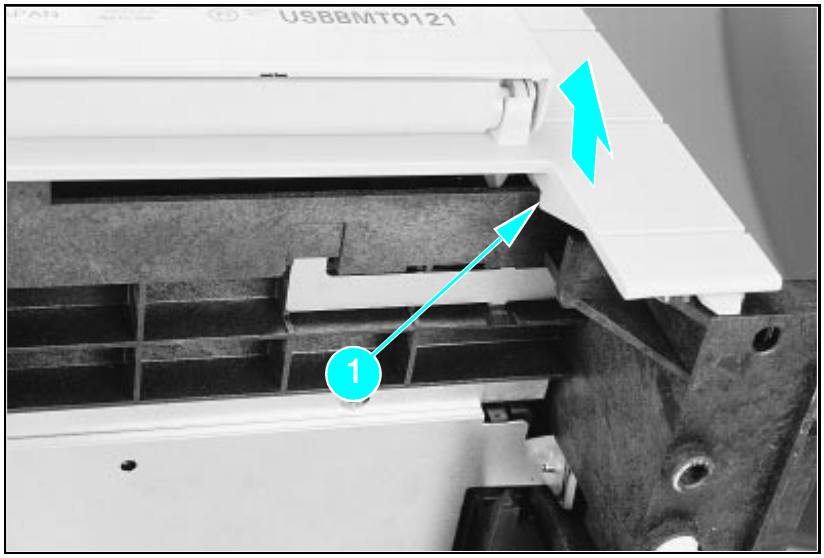


Figure 16 Releasing the Back Corner of the Top Cover.

7. Lift the printer cover straight up.

Replacement Note

When reseating the top cover onto the printer frame, ensure the black paper-out flag in front of Tray 1 is seated in the groove of the Tray 1 lift plate. If not in the groove, it can easily break when the cover is forced into place. Refer to Figure 17

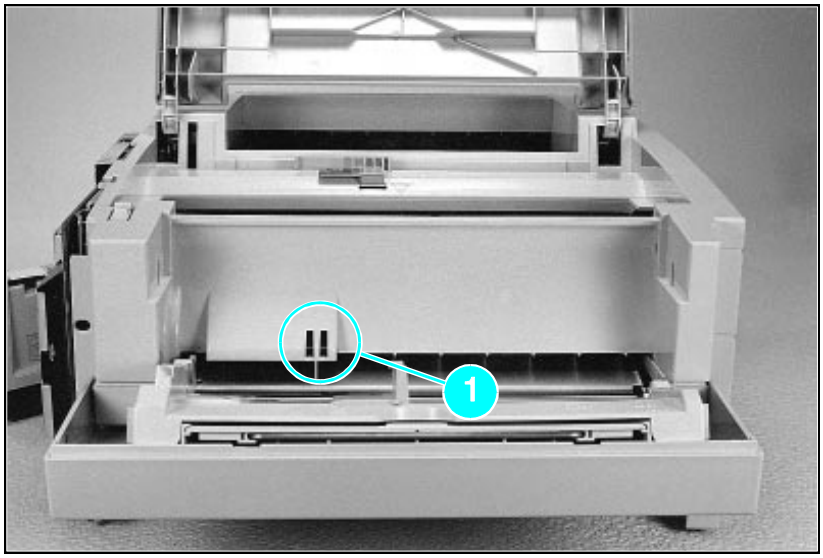


Figure 17 Paper-Out Flag

Removing the Tray 1 Pickup Assembly

1. Remove Tray 1 by opening the tray at a 45° angle and pulling up on the tray (Figure 18).



Figure 18 Removing Tray 1.

2. Unplug the two cables (Callout **2** in Figure 19) by grasping the cables where they attach to the plug and pulling straight back.

3. Route the cables through the right side of the printer chassis and bring them to the front.

4. Remove the 5 screws (callout **1** in Figure 19) from the front of the pickup assembly. (Two screws are adjacent in the lower left corner.)

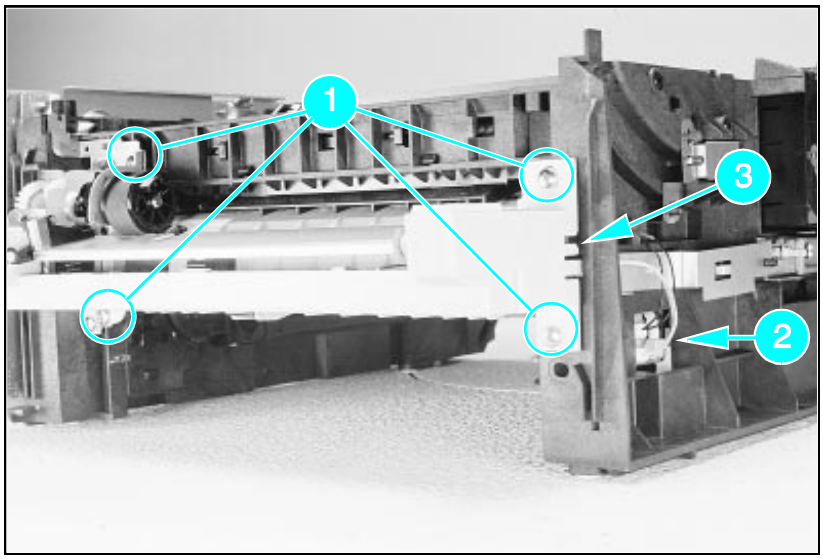


Figure 19 Tray 1 Pickup Assembly Locations.

5. Press the two release tabs on either side of the pickup assembly (callout **3** in Figure 19) and pull the assembly away from the printer. (The left side release tab is partially hidden from view. Pressing in on both sides will release the tabs.)

6. Pull the pickup assembly straight out from the back of the printer.

7. To remove the roller from the pickup assembly, grasp the tabs on the right end of the roller and slide it to the right (shown in Figure 20).

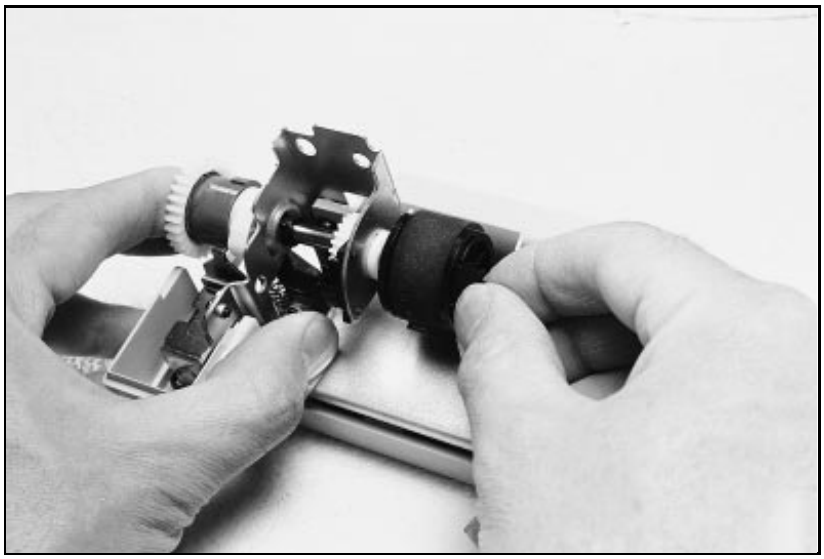


Figure 20 Replacing the Pickup Roller

Replacement Note

When replacing the pickup assembly roller, hold the shaft from the left side so that the pickup roller shaft and gears will remain in place.

Removing the Formatter Board and Shield

1. Remove any installed SIMMs.

Note There are two TORX screws holding the I/O connector in position (Callout **1** in Figure 21). These are the only two TORX screws in the HP LaserJet 5P printer. Note also the location of the test print button hole (Callout **2**) on the side of the formatter board cover.

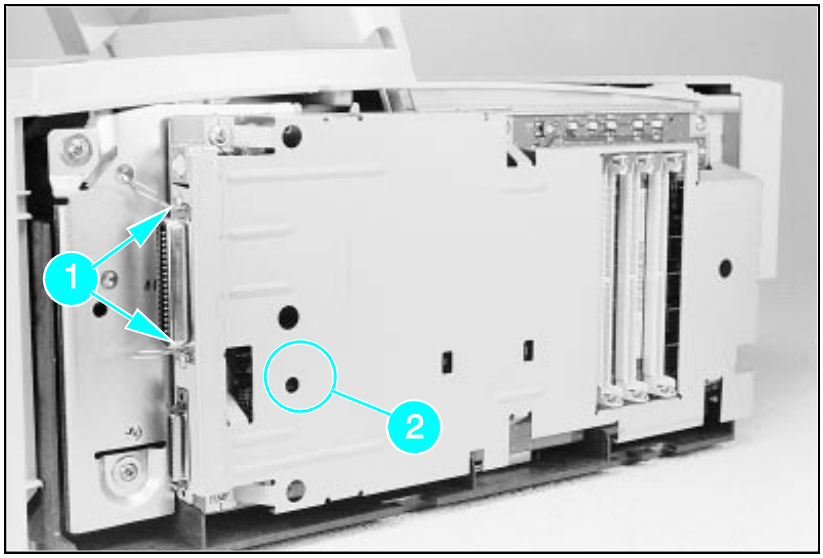


Figure 21 TORX Screw Locations.

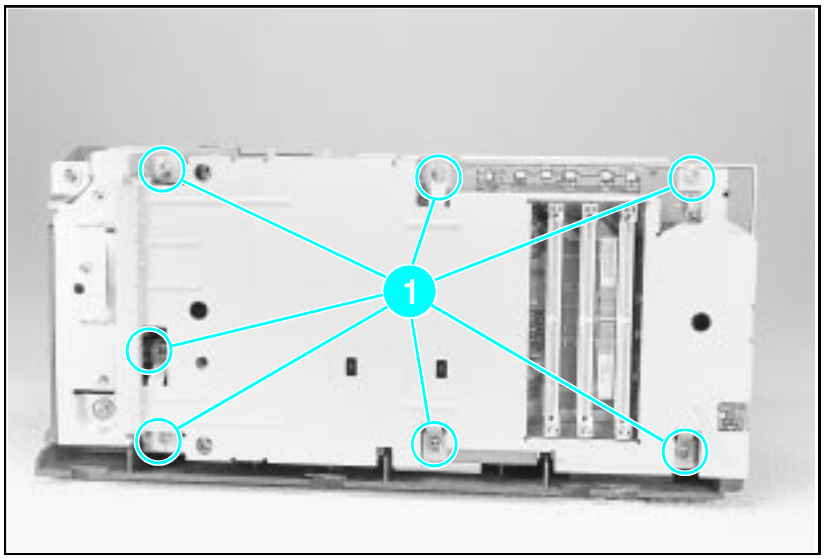


Figure 22 Removing the formatter screws.

2. Remove the (7) screws shown in Figure 22.

3. Pull the formatter board straight from the side of the chassis. (There will be a slight resistance from the DC Controller interconnect.)

4. Pull the DC controller interconnect out (Figure 23).

5. To separate the formatter PCA from its shield, remove the two screws (refer to callout **1** in Figure 21).

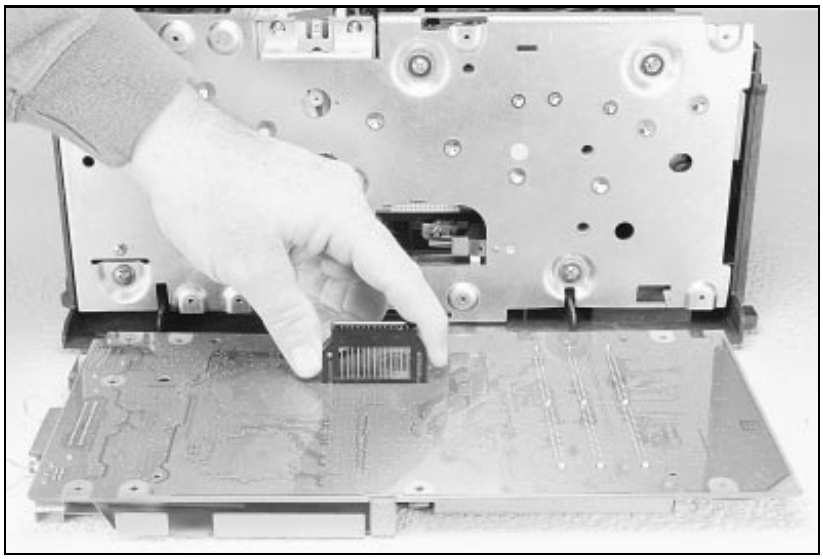


Figure 23 Removing the DC Controller Interconnect.

Note RETAIN THE DC CONTROLLER INTERCONNECT when replacing the DC Controller Board. The replacement board part number does **not** include this interconnect.

Removing the Fusing Assembly

1. Remove the top cover assemblies.
2. Locate the black plastic fuser cover at the back of the printer. Press the release tab (callout **1** in Figure 24).
3. Slide the cover all the way to the right.
4. Pull the left end of the strip toward you at a 45° angle.
5. Slide the cover to the left and out of the printer.
6. Remove the four screws (2 self-tapping screws, two machine screws with washers) directly below the fuser assembly.
7. Grasp the fuser by the green plastic handle and pull out from the printer.

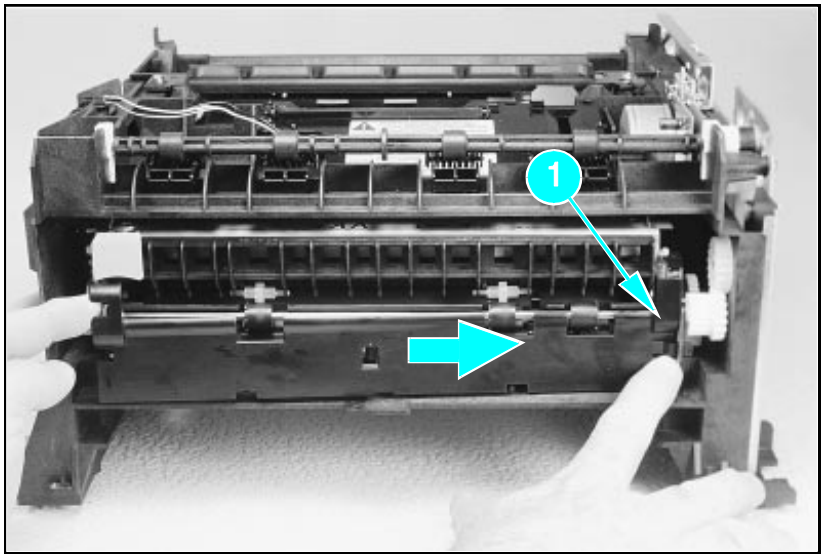


Figure 24 Removing the fuser cover.

Removing the DC Controller Assemblies

The DC Controller Assembly is located on the bottom of the printer. The PCA is protected by a metal shield assembly, and is mounted to a plastic base. The Formatter PCA and Fusing Assemblies are connected directly into the DC Controller and must be removed prior to removal of the DC Controller Assembly.

Caution Failure to remove these components before removing the DC Controller will result in printer damage.

1. Remove the printer covers (page 39), Formatter PCA and Shield (page 48), and Fusing Assemblies (page 50).
2. On the right side, remove the machine screw and washer (Figure 25) holding the grounding spring in place. (Callout **1** in Figure 25).
3. Disconnect the two cables to the tray 1 assembly (callout **2** in Figure 25).

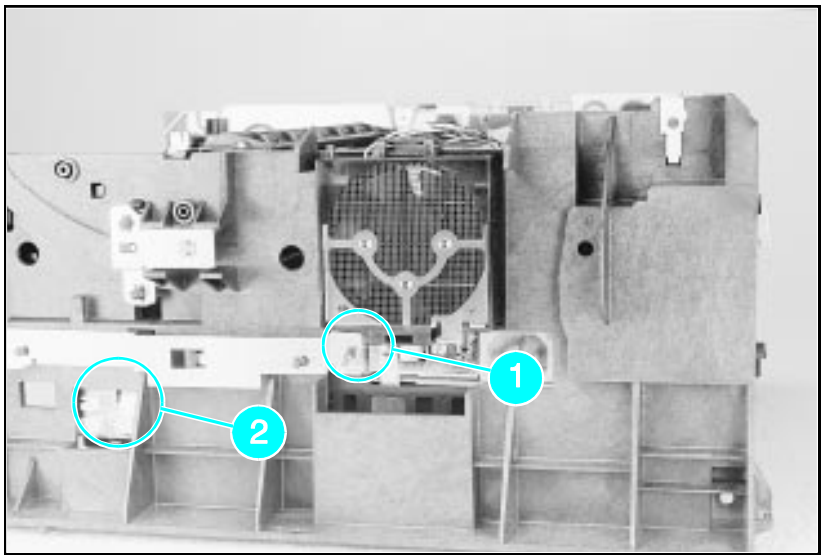


Figure 25 Grounding Spring screw location.

4. On the left side, remove the (2) screws that attach the grounding strap to the Gear Train Assembly (see callout **1** in Figure 6-36 of the Combined Service Manual). Turn the assembly upside-down before proceeding with further steps.

5. Remove the (5) self-tapping screws and the (1) machine screw with star washer from the bottom of the DC Controller Assembly. (See callouts **2** and **3** in Figure 6-36 in the Combined Service Manual.)

6. Lift the DC Controller Assembly away from the printer frame.

Note The PS1 Input Sensor Arm may come loose and fall out when you remove the DC Controller Assembly. See Figure 6-51 in the Combined Service Manual for re-installation.

7. Remove the metal backing plate from the DC Controller Assembly (see pages 6-43 and 6-44 in the Combined Service Manual for this procedure.)

8. Disconnect Tray 1 Interconnect PCA (callout **2** in Figure 26) and cable 302 (callout **1** in Figure 26) from the DC Controller PCA.

Caution Remove the Tray 1 Interconnect PCA carefully; it can easily be broken when separating it from the black plastic cover.

Note The Tray 1 Interconnect PCA and cable must also be retained when replacing the DC Controller Board. The part number for the DC Controller Board does not include a replacement PCA and cable. This cable can be directly pulled from the connector no releases are necessary.

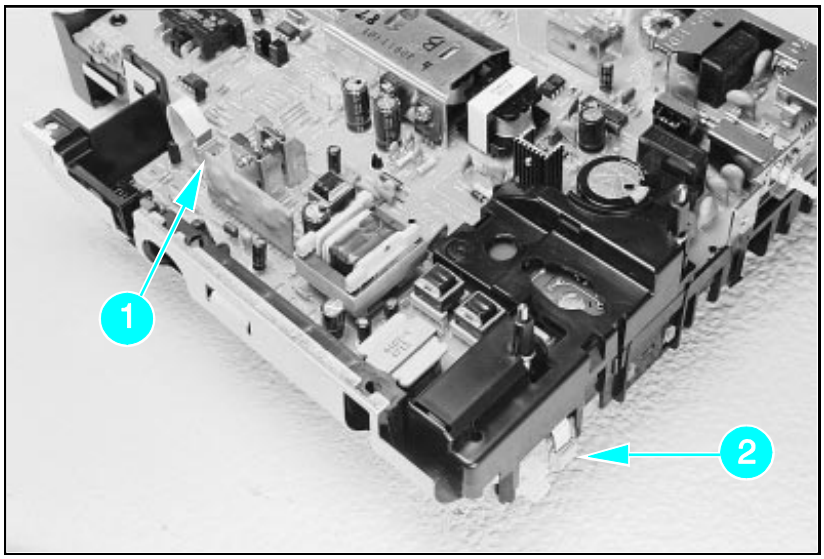


Figure 26 Tray 1 Interconnect PCA and Cable 302

Troubleshooting

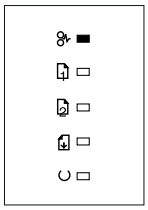
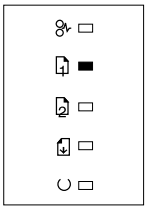
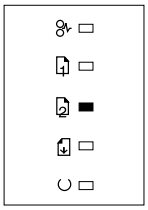
The troubleshooting process for the HP LaserJet 5P/5MP printer has two key differences from the 4L/4ML printer:

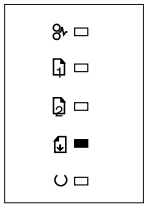
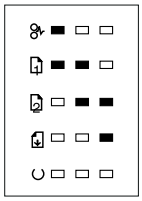
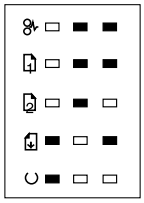
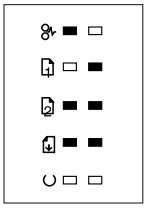
- Different error light patterns (5 LEDs instead of 4).
- Infrared port troubleshooting.

This section provides a list and explanation of the error LED patterns and instructions on troubleshooting the infrared port

Continuable Data Error Light Patterns

Possible data error light patterns are listed in the first column of the following table. If the Error and Data lights on the Status Panel are lit, simultaneously press the GO and RESET buttons on the printer to display a secondary light pattern. This secondary light pattern, or data error light pattern, will more precisely describe the problem. Where more than one data error light pattern is possible, corresponding computer messages are listed in the second column.

Data Error Light Pattern	Computer Message	Description	Recommended Action
	20 MEM OVERFLOW	Too much data, or data too complex.	Turn Page Protection ON or to AUTO (can be set within the Remote Control Panel). 2. Add optional memory. 3. Reduce the complexity of the print job. Press GO to resume printing.
	21 PRINT OVERRUN		
	22 IO ERROR	The computer and printer are not communicating because of improper signal protocols. Indicates a loose cable connection or a bad or poor quality cable.	Reseat the cable and make sure you are using a high-quality cable

Data Error Light Pattern	Computer Message	Description	Recommended Action
	40 ERROR	Indicates an abnormal connection break occurred while transferring data from the computer.	Press GO on the printer to clear the error message.
	41 ERROR	A temporary error occurred while printing. This error most commonly occurs when the printer picks two sheets of paper at once. The page containing the error is reprinted automatically. (first two light sequences)	Remove the page from the output tray and press GO on the printer
	51/52 ERROR	(first and second light sequence)The printer detected a temporary error condition.	Turn the printer off then on. If the problem persists replace the laser scanner assembly.
	55 ERROR	(third light sequence) The printer detected a temporary error condition	Turn the printer off then back on. If problem persists, replace the DC Controller. If the problem still continues, replace the formatter PCA.
	68 SERVICE or 68 READY/SERVICE	The printer's nonvolatile memory (NVRAM) is full.	Press GO on the printer to clear the error message. If problem persists, 1. Perform NVRAM Reset to clear NVRAM (hold down the RESET button for more than 20 seconds during power on. 2. Replace the formatter PCA.

Error 53 -- Memory/SIMM Errors

Error 53 is indicated by a combination of the Error LED and either Tray LED, on and steady. More detail about the error is found by pressing the GO and RESET buttons simultaneously, which causes a secondary sequence of light patterns. These secondary patterns form a binary representation of the exact hardware type, device and error number in the form 53-XY-ZZ as shown in Table 4.

Table 4. Memory Error Codes

X-Hardware Type	Y-Hardware Device	ZZ - Error Number
0: ROM	0: On board RAM/ROM	00: Unsupported memory
1: RAM	1: SIMM slot 1	01: Unrecognized memory
	2: SIMM slot 2	03: Unsupported memory size
	3: SIMM slot 3	04: Invalid SIMM speed
		05: SIMM reporting information incorrectly
		06: SIMM address conflict
		07: SIMM address conflict

Figure 27 explains how to read the light sequences. The initial sequence (Part 1) shows that ERROR 53 can be indicated by two different light sequences, depending on the X value: ROM (x =0) or in RAM (x =1) . Pressing GO and RESET together produces a secondary light pattern, which reveals the Y- and ZZ- values, which complete the error code (Part II) . The binary Y value is read from the top two LEDS; the binary Z value is read from the lower three LEDS. Part III of Figure 27 shows the binary values of the different light combinations.

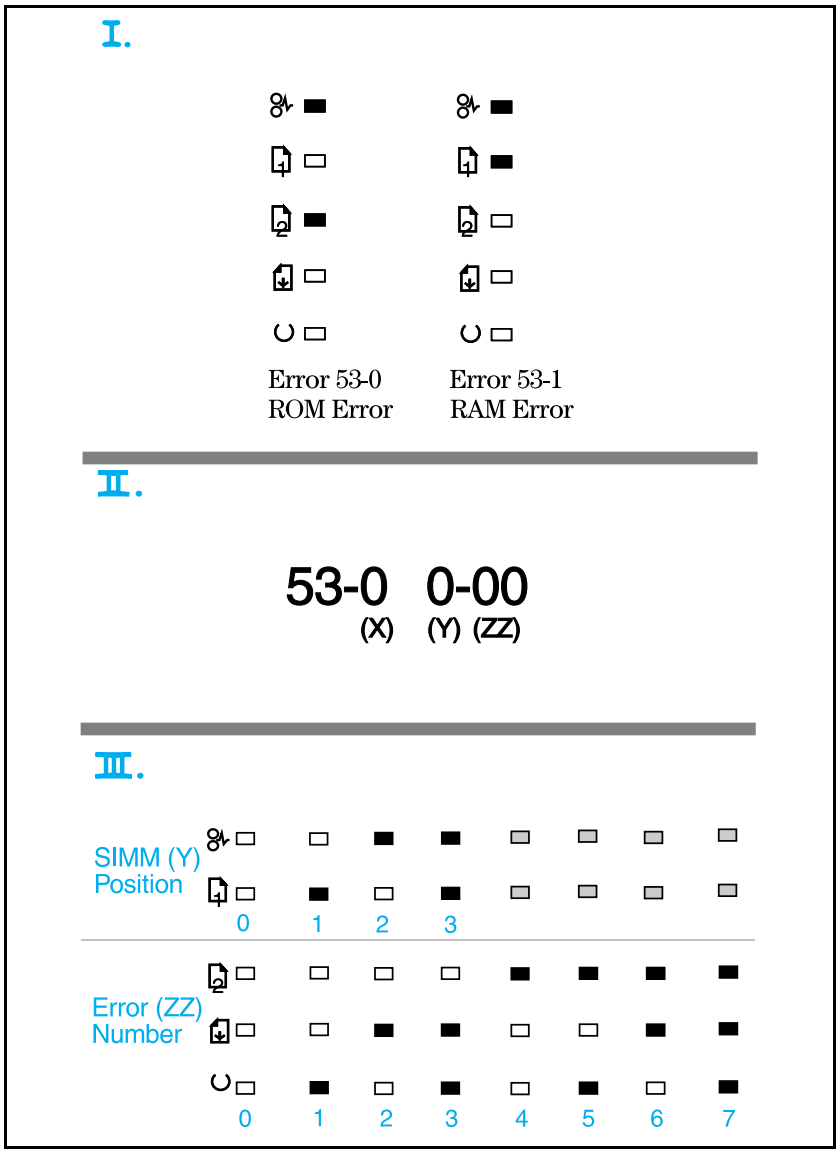


Figure -27 Secondary Light Patterns

Fatal/Service Errors

The following tables show fatal/service errors, which are not continuable; no further operation of the printer will occur until corrective action is taken.

Table 5. Fuser Malfunction

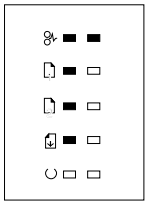
LED Display	ERROR CODE	Description and Recommendation
	50 Fuser Malfunction	1. Remove power to the printer for 10 minutes. If this doesn't clear the error: 2. Perform the Fuser Checks shown in Table C-6. 3. Check the Fuses (FU101 and FU201) on the DC Controller PCA. Replace if faulty. 3. Replace the DC Controller PCA.

Table 6. Fuser Checks

SUSPECTED CAUSE	CHECK
1. Connector Contact	Ensure that J103 and J204 connectors on the Fusing Assembly are seated securely into the DC Controller PCA connectors (see Figure 6-29 in the Combined Service Manual for locations). Reseat the Fusing Assembly.
2. Thermistor wire open.	Remove the Fuser and measure the resistance between connectors J204-1 and J204-2 (see Figure 6-29 in the Combined Service Manual for location). Resistance should read approximately 440 K Ohms at 20 Deg C (room temperature). If the thermistor wire is open, replace the Fusing Assembly.
3. Thermal Fuse.	Measure the continuity between connectors J103-1 and J103-2 on the Fuser (see Figure 6-29, the Combined Service Manual for location). It should be approximately 30±5 Ohms for 100-120 VAC or 127±5 Ohms for 220-245 VAC. If the thermal fuse is open, replace the Fusing Assembly.

Table 7. 57/58 Main Motor Failure

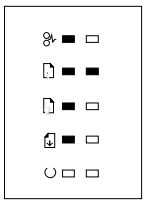
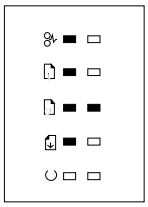
LED Display	ERROR CODE	Description and Recommendation
	57/58 Main Motor Failure	The DC Controller has reported a general motor failure. The Main Motor is controlled by the DC Controller PCA, and seated into connector J601. Power-cycle the printer. If this doesn't clear the message: 1. Does the main motor rotate on power-up? **If no**: a. Reseat the Main Motor into the DC Controller connector. b. Inspect the Gear Train for debris that would block the free operation of the gears. c. The toner cartridge may not be rotating. Refer to "Drum Rotation Functional Check in the Combined Service Manual. d. Main Motor faulty. Power up the printer and observe if stacker rollers rotate. If not, replace the Main Motor. e. Replace the DC Controller PCA. If the main motor **does** rotate: 2. Does the fan turn during printing? If no: a. Power-cycle the printer. b. Check the fan to determine if it is blocked from operation. c. Reseat the fan connector on the Laser/Scanner Assembly. d. Replace the Fan. e. Replace the Laser/Scanner Assembly. f. Replace the DC Controller. g. Replace the connector between the scanner and DC Controller.
		

Table 8. 61.x/62.x SIMM Parity and Memory Errors

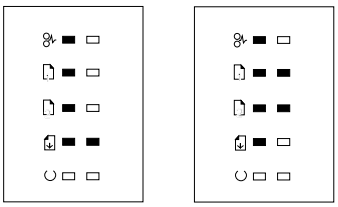
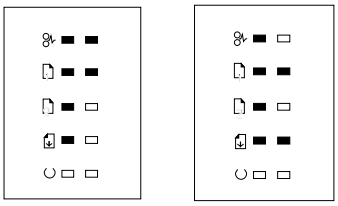
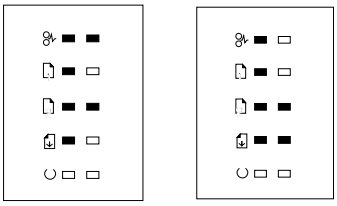
LED Display	ERROR CODE	Description and Recommendation
	61.1 SIMM Slot One Parity Error 62.1 SIMM Slot One Memory Problem	1. Power-cycle the printer. 2. Reseat the SIMM. 3. Replace the SIMM.
	61.2 SIMM Slot Two Parity Error 62.2 SIMM Slot Two Memory Problem	
	61.3 SIMM Slot Three Parity Error 62.3 SIMM Slot Three Memory Problem	

Table 9. 62/63/64 Internal Memory Error

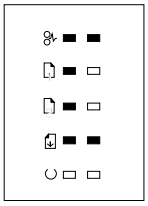
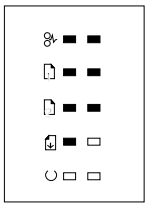
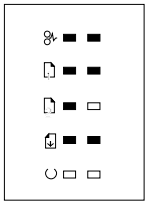
LED Display	ERROR CODE	Description and Recommendation
	62.0 Internal Memory Problem 63 Internal RAM Memory Test Failed 64 Scan Buffer Error	1. Power-cycle the printer. 2. Replace the Formatter PCA.
		
		

Table 10. Video DMA Timeout Error

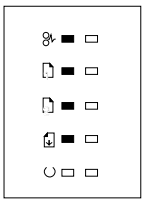
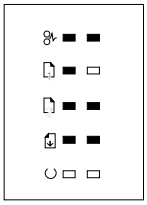
LED Display	ERROR CODE	Description and Recommendation
	64 ERROR: Video DMA Timeout	1. Power-cycle the printer. 2. Replace the Formatter PCA.

Table 11. Dynamic RAM Controller Error

LED Display	ERROR CODE	Description and Recommendation
	65 ERROR: Dynamic RAM Controller	1. Power-cycle the printer. 2. Replace the Formatter PCA.

‘

Infrared Port Not Responding

Situation	Solution
The connection cannot be established or the transmission seems to be taking longer than usual.	Make sure the device you are using is IrDA-compliant; look for an IrDA symbol on the device or refer to the manual for the device for IrDA specifications. Make sure that the operating system on your computer includes an IR driver and your application uses a HP LaserJet 5P/5MP compatible printer driver. Make sure you have positioned the device within the range of operation and that no objects, such as a finger, paper, books, or bright light, are interfering with the connection. Also make sure the two IR ports are clean (free from dirt and grease). Bright light of any kind (sunlight, incandescent light, fluorescent light, or light from an infrared remote control, such as those used for TVs and VCRs) shining directly into one of the IR ports may cause interference. Position the device closer to the IR port on the printer.
The printer prints only part of a page or document.	The connection has been broken during transmission. If you move the portable device during transmission, the connection can be broken. IrDA-compliant devices are designed to recover from temporary connection interruptions. Re-establish the connection (depending on the device you are using, you can have anywhere from 3 to 40 seconds to re-establish the connection).

Situation	Solution
The print job has been properly sent to the printer, but the printer will not print.	If the connection is broken before the entire print job has been transmitted to the printer (printing has not yet started), the printer may not print any of the job. If the Data light is on, press the RESET button to clear the printer's memory. Then, position the device within the range of operation, and print the job again.
The IR status light turns off during transmission.	The connection may have been broken. If the Data light is on, press the RESET button to clear the printer's memory. Then, position the device within the range of operation, and print the job again.

Using the Infrared Test Tool

A special infrared troubleshooting test tool manufactured by Genoa Technology, Inc. in cooperation with Hewlett-Packard is available through HP Direct Ordering (part number 5062-4461). Refer to the discussion beginning on page 22 for more information.

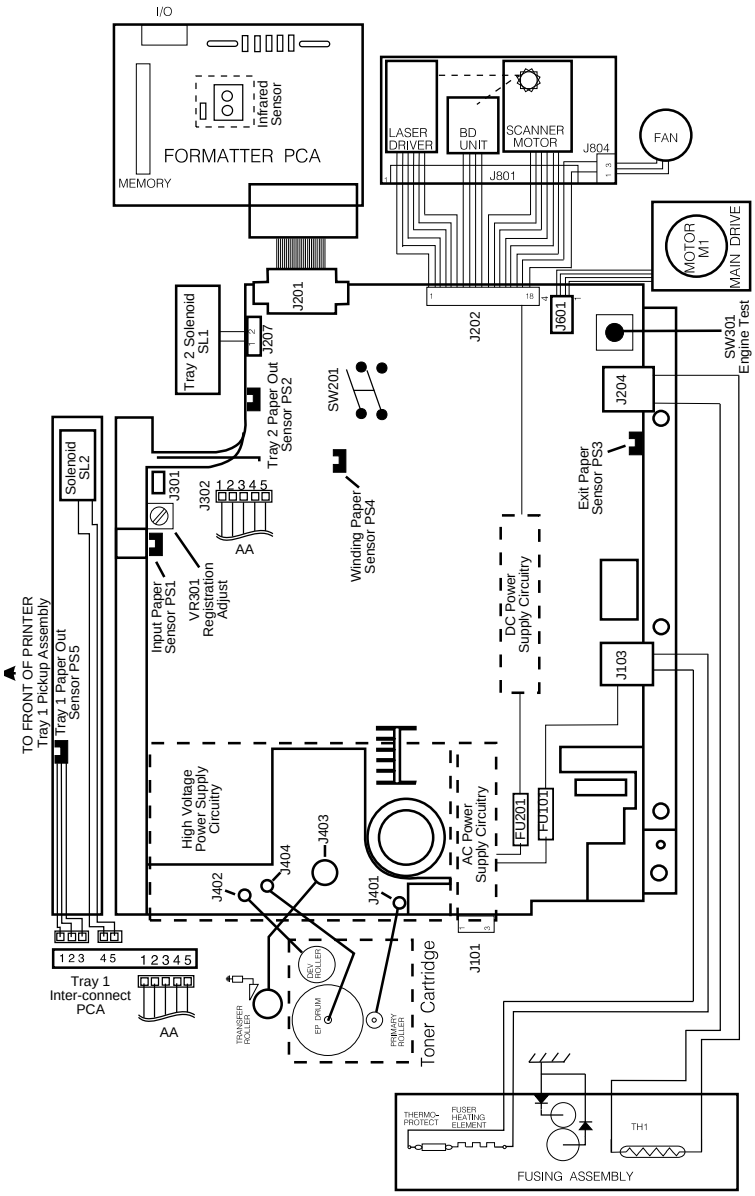


Figure 28 Main Wiring Diagram

Parts and Diagrams

The figures in this section illustrate the major subassemblies in the printer and their component parts. A table (material list) follows each exploded assembly diagram. Each table lists the reference designator (item number) for each part, the associated part number for the item, the quantity, and a description of the part.

While looking for a part number, pay careful attention to the voltage listed in the description column to ensure that the part number selected is for the correct model of printer.

Ordering Parts

All standard part numbers listed are stocked and may be ordered from HP's Parts Direct Ordering, or Parts Center Europe (PCE).

Hewlett-Packard Co.
Support Materials Organization
8050 Foothills Blvd.
Roseville, CA 95678
Parts Direct Ordering: 1-800-227-8164 (U.S. Only)

Hewlett-Packard Co.
Parts Center, Europe
Wolf-Hirth Strasse 33
D-7030 Boeblingen, Germany
(49 7031) 14-2253

Contact your local HP Parts Coordinator for other local phone numbers.

Ordering Consumables

Consumables and accessories such as those listed on page 8-5, and in Table 4-1, Chapter 4, may be ordered direct from Hewlett-Packard. The phone numbers are:

U.S.: 1-800-538-8787
Canada: 1-800-387-3154
(Toronto) 416-671-8383
United Kingdom: 0734-441212
Germany: 0130-3322

Contact your local HP Parts Coordinator for other local phone numbers.

Note Parts that have no reference designator or part number are not field replaceable parts and cannot be ordered through SMO.

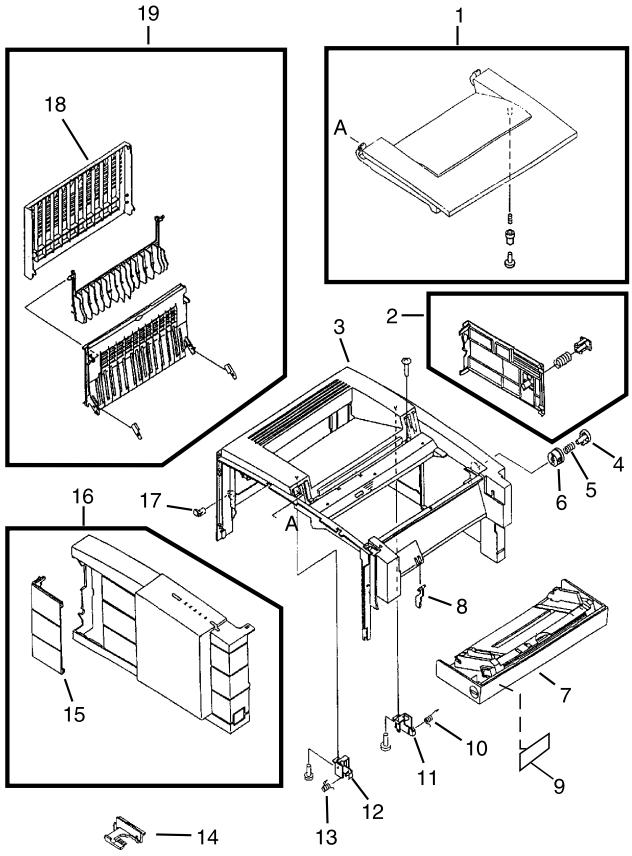


Figure 29. HP LaserJet 5P Covers and Doors

Table 12. Covers and Doors

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1709-000CN	1	Top Door Assembly
2	RG5-1699-000CN	1	Power Connector Cover Assy
3	RB1-5931-000CN	1	Cover, Main
4	RB1-5935-000CN	1	Button, Lock
5	RS5-2228-000CN	1	Spring, Compression
6	RB1-5936-000CN	1	Guide, Lock Button
7	RG5-1697-000CN	1	Paper Feed Tray Assembly
8	RB1-5939-000CN	1	Arm, Tray 1 Sensor
9	C3150-00004 C3155-00001	1	Nameplate (HP LaserJet 5P) Nameplate (HP LaserJet 5MP)
10	RS5-2418-000CN	1	Spring, Torsion
11	RB1-5937-000CN	1	Stopper, Hinge, Right
12	RB1-5938-000CN	1	Stopper, Hinge, Left
13	RS5-2419-000CN	1	Spring, Torsion
14	RF5-0593-000CN	1	Brush, Mirror
15	RB1-5934-000CN	1	Cover, Interface Connector
16	RG5-1710-000CN	1	Side Cover Assembly
17	RB1-5927-000CN	1	Bushing
18	RB1-5924-000CN	1	Tray, Sub-assy, Face-Up
19	RG5-1707-000CN	1	Face-Up Tray Assembly

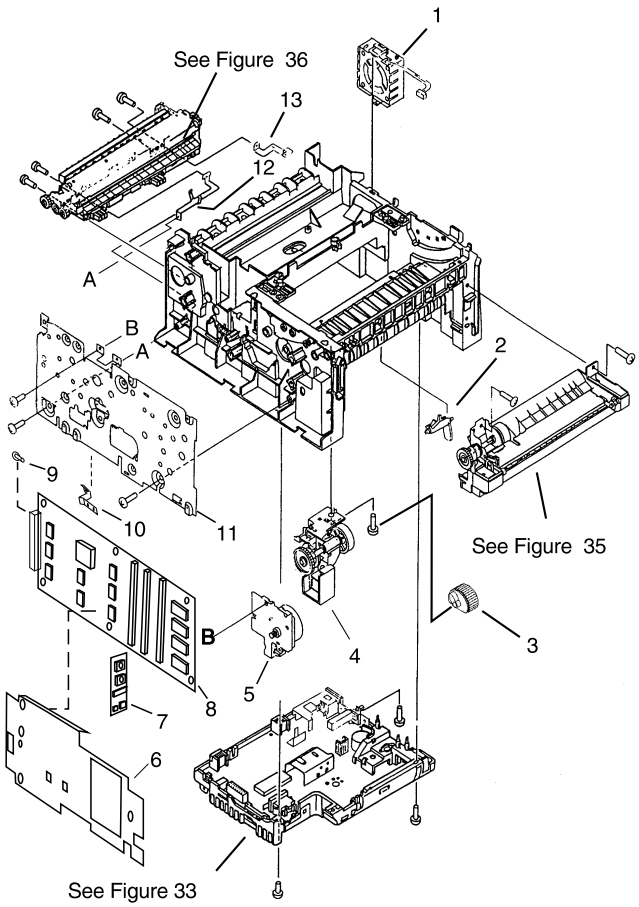


Figure 30. HP LaserJet 5P Internal Components (1)

Table 13. Internal Components (1)

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1801-000CN	1	Fan Assembly
2	RB1-6006-000CN	1	Arm, Sensor
3	RB1-6332-000CN	1	Pick-Up Roller (tray 2)
4	RG5-1692-000CN		Pick-Up Assy (tray 2)
5	RG5-1799-000CN	1	Motor Assembly
6	C3150-00005	1	Formatter Shield
7	C3152-69001	1	PostScript SIMM (exch.)
8	C3151-67901 C3151-69001	1	Formatter PCA (new) Formatter PCA (exch.)
9	0515-2701	2	TORX screws
10	RB1-5971-000CN	1	Leaf Spring
11	RG5-1713-000CN	1	Gear train Assembly
12	RB1-5999-000CN	1	Plate, Grounding, Left
13	RB1-5998-000CN	1	Plate, Grounding, Right

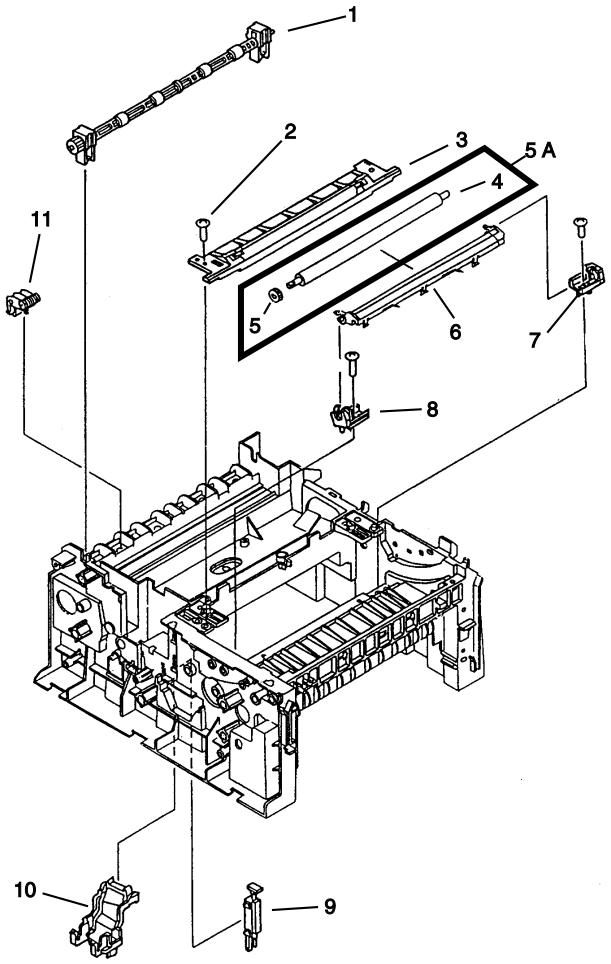


Figure 31. HP LaserJet 5P Internal Components (2)

Table 14. Internal Components (2)

REF	PART NO.	QTY	DESCRIPTION
1	RG5-0683-020CN	1	Roller, Upper Output Assembly
2	XA9-0666-000CN	2	Screw, TP
3	RG5-1786-000CN	1	Mirror Assembly
4	RB1-5873-000CN	1	Roller, Transfer
5	RS5-0313-000CN	1	Gear, 17T
5a	RF5-1287-000CN	1	Transfer Roller Assembly
6	RG5-1706-000CN	1	Transfer Guide Assembly
7	RG5-0675-000CN	1	Transfer Mount Assy, Right
8	RG5-0674-000CN	1	Transfer Mount Assy, Left
9	RG5-0694-020CN	1	Switch, Plunger Assembly
10	RG5-0766-030CN	1	Scanner Connector Assy
11	RG5-0682-030CN	4	Lower Delivery Roller

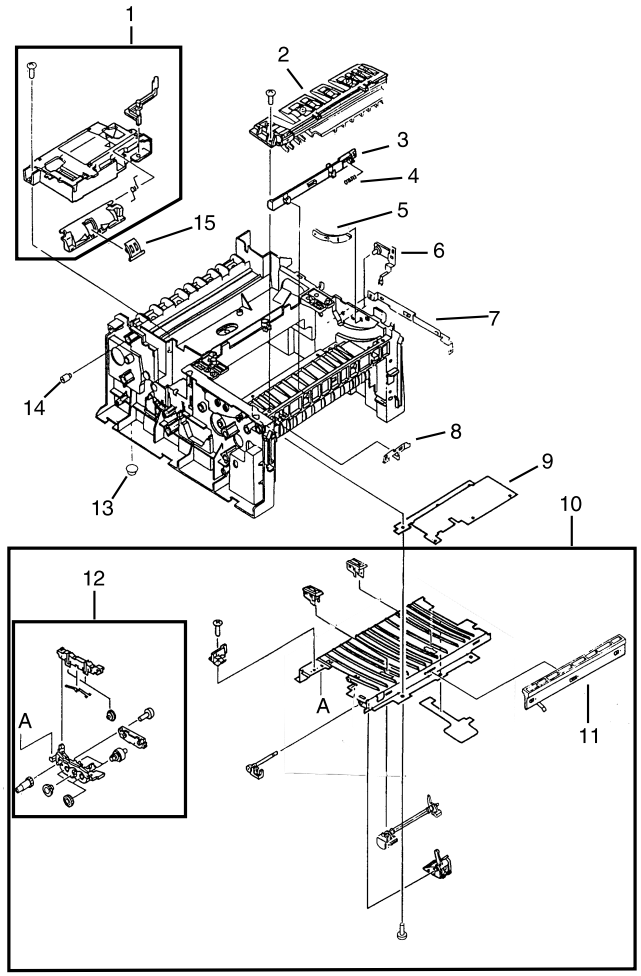


Figure - 32. HP LaserJet 5P Internal Components (3)

Table 15. Internal Components (3)

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1780-000CN C3150-69005	1	Laser Scanner Assembly (new) Laser Scanner Assembly (exch.)
2	RG5-1698-000CN	1	Top Oblique Roller Assy
3	RB1-3002-040CN	1	Plunger Lock, Door
4	RS5-2232-000CN	1	Spring, Compression
5	RB1-6003-000CN	1	Plate, Cartridge
6	RB1-6002-000CN	1	Plate, Cartridge Grounding
7	RF5-1286-000CN	1	Plate, MP Grounding, Right
8	RB1-6001-000CN	1	Arm, Input Paper Sensor
9	RB1-2987-020CN	1	Shield, HVT
10	RG5-0584-000CN	1	Feeder Guide Assembly
11	RF5-1283-000CN	1	Eliminator, Static Charge
12	RG5-1814-000CN	1	Roller Assembly, Small Media
13	RB1-6007-000CN	4	Foot, Chassis
14	RB1-6008-000CN	6	Damper, Rubber
15	RB1-3681-000CN	1	Cap, Laser Shutter

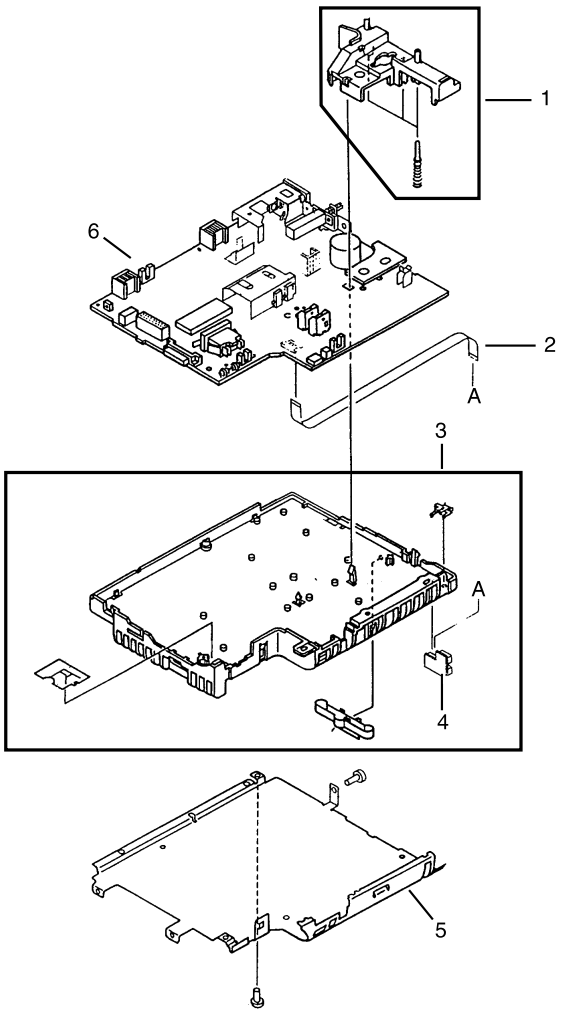


Figure 33. DC Controller Assembly

Table 16. DC Controller Assembly

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1719-000CN	1	HVT Controller Assembly
2	RH2-5259-000CN	1	Cable, Flat
3	RG5-1712-000CN	1	DC Controller Case Assy
4	RG5-1808-000CN	1	Tray 1 Connector PCA Assy
5	RB1-5987-000CN	1	Shield, Case
6	RG5-1798-000CN C3150-69001 RG5-1809-000CN C3150-69002	1	DC Controller PCA (100-120V) (new) (exchange) DC Controller PCA (220-240V) (new) (exchange)

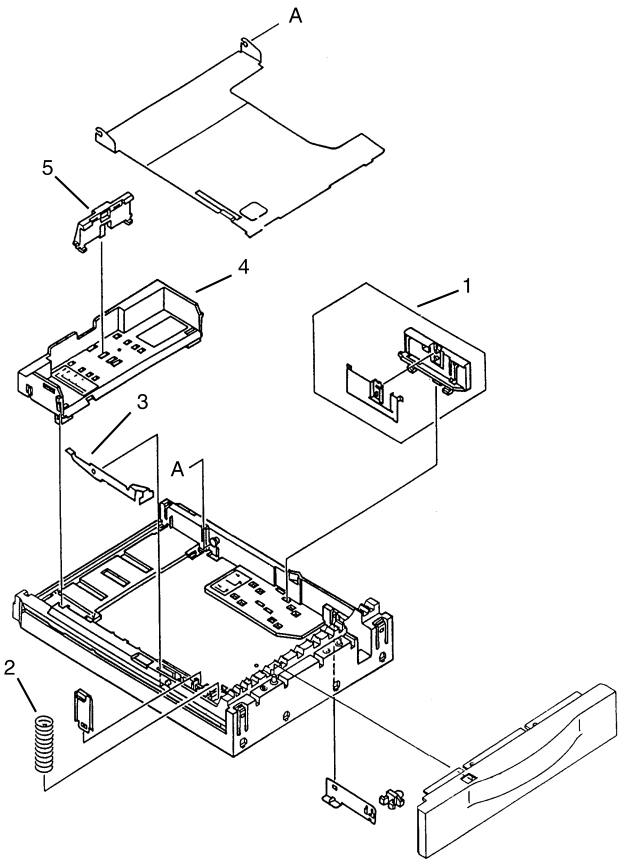


Figure 34. Tray 2 Assembly

Table 17. Tray 2 Assembly

REF	PART NO.	QTY	DESCRIPTION
	R75-4000-000CN	1	Complete Tray 2 Assembly
1	RF5-0673-000CN	1	Plate, Side
2	RS5-2458-000CN	1	Spring, Compression
3	RB1-3426-000CN	1	Claw, Separation
4	RB1-6378-000CN	1	Tray, Legal
5	RB1-3338-000CN	1	Plate, End

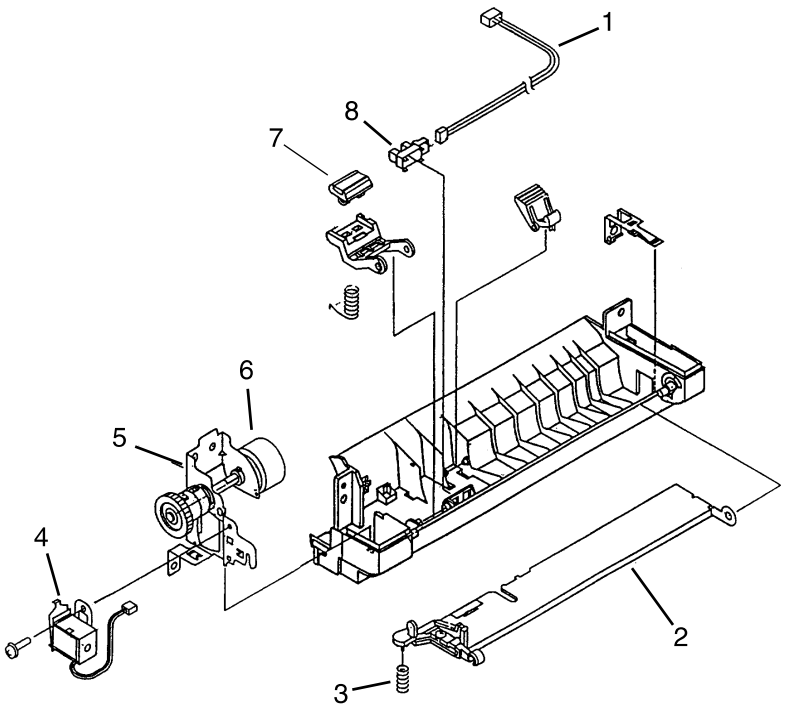


Figure 35. Tray 1 Assembly

Table 18. Tray 1 Assembly

REF	PART NO.	QTY	DESC
	RG5-1695-000CN	1	Complete Tray 1 Pickup Assy
1	RG5-1804-000CN	1	Tray 1 Sensor Cable
2	RG5-1694-000CN	1	Paper guide Plate Assy
3	RS5-2415-000CN	1	Spring, Compression
4	RH7-1258-000CN	1	Solenoid SL2
5	RG5-1693-000CN	1	Tray 1 Pickup Roller Assy
6	RB1-2205-000CN	1	Roller, Tray 1 Pickup
7	RF5-0343-000CN	1	Pad, Separation
8	WG8-5210-000CN	1	Photosensor PS5

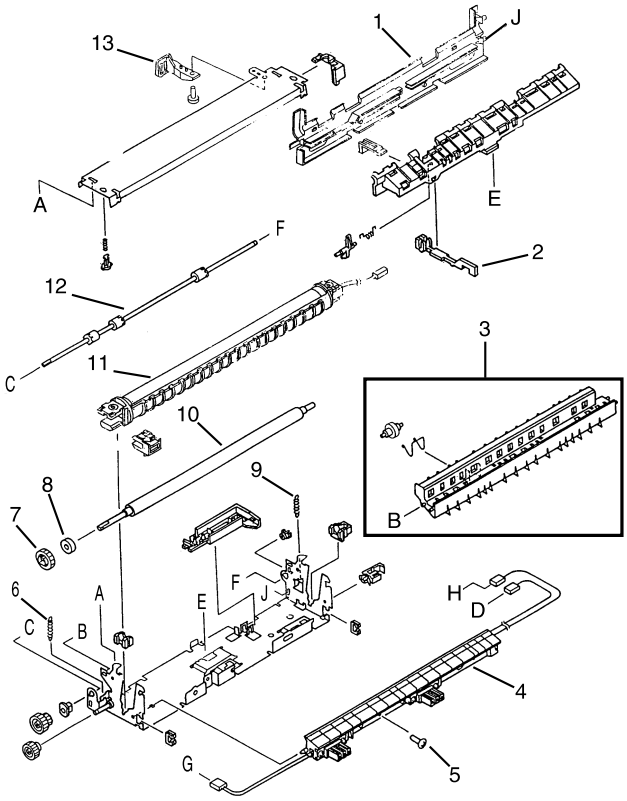


Figure 36. HP LaserJet 5P Fusing Assembly

Table 19. Fusing Assembly

REF	PART NO.	QTY	DESCRIPTION
	RG5-1700-000CN C3150-69003 RG5-1701-000CN C3150-69004	1 1	Complete Fuser Assy (100-120V) (new) (exchange) Complete Fuser Assy (220-240V) (new) (exchange)
1	RB1-5918-000CN	1	Cover, Delivery
2	RB1-3097-000CN	1	Flag, Exit Sensor
3	RG5-0681-000CN	1	Fuser Delivery Assembly
4	RG5-1813-000CN	1	Guide , Fuser Entrance
5	XB2-8300-809CN	2	Screw, W/Star, M3X8
6	RS5-2421-000CN	1	Spring, Tension
7	RS5-0637-000CN	1	Gear, 24T
8	RB1-3109-000CN	1	Rubber, Continuity
9	RS5-2421-000CN	1	Spring, Fuser Hook
10	RB1-5910-000CN	1	Roller, Fuser Pressure
11	RG5-1702-000CN RG5-1703-000CN	1	Fuser Film Assembly (100-120v) Fuser Film Assembly (220-240V)
12	RB1-5917-000CN	1	Roller, Fuser Delivery
13	RB1-5906-000CN	1	Tab, Fuser Release

Accessories

Listed below are the accessories and supplies, including supplemental documentation you can order for your HP LaserJet 5P or 5MP printer.

Option	Part Number	Description or Use
Toner Cartridge	C3903A	Replacement toner cartridge.
Memory upgrades	1 MByte—C3130A 2 MByte—C3131A 4 MByte—C3132A 8 MByte—C3133A 16 MByte—C3146A	Adds up to 48 MBytes of memory to the HP LaserJet 5P printer, for a total of 50 MBytes. Adds up to 32 MBytes of memory to the HP LaserJet 5MP printer, for a total of 35 MBytes.
Adobe's PostScript Level 2 SIMM for the HP LaserJet 5P	C3152A	Adds PostScript Level 2 language and 1 MByte of memory to the HP LaserJet 5P printer; includes software for Macintosh, Windows 3.1 and 3.11, and "HP LaserJet 5MP Macintosh Notes" (factory-installed in the 5MP printer).
IEEE-1284 Parallel Cable	2 Meter A to B—C2950A 3 Meter A to B—C2951A 3 Meter A to C—C2946A 10 Meter A to C—C2947A	IEEE-1284-compliant cables, where: A=host computer connector (A-type) B=large printer connector (B-type) C=small printer connector (C-type)
LocalTalk Network cable for Macintosh	92215N	Connect to a LocalTalk Network.
Serial printer cable for Macintosh	92215S	Directly connect to a Macintosh computer.
HP JetDirect EX print servers (external)	J2382B J2383B J2593A J2594A	Ethernet (1 parallel ports) TokenRing (1 parallel ports) Ethernet (3 parallel ports) TokenRing (3 parallel ports)
HP Printer Pal (external)	C2971A	Printer fax accessory. Allows faxes to be printed by the printer; faxes can also be sent electronically from the PC. Availability outside the US may vary.
Extra Paper Cassette (Tray 2)*	R75-4000-000CN	Universal tray.
IrDA Test Tool	5062-4661	Infrared communications test tool manufactured by Genoa Technologies, Inc.

* This item must be ordered through HP Parts Direct Ordering, (800) 227-8164. Outside the U.S., see "Parts and Diagrams earlier in this appendix.

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HP C3150A Printer Service Manual Reader's Comment Sheet

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Conventions

This manual uses the following conventions:

Color is used to emphasize items which are important to the material under discussion.

The names of major printer parts and assemblies are Capitalized.

Bold is used for emphasis, particularly in situations where *italic* type would be confusing.

Italic type is used to indicate related documents or emphasis.

COMPUTER type indicates text as seen on a computer monitor.

Note Notes contain important information set off from the text.

CAUTION Caution messages alert you to the possibility of damage to equipment or loss of data.

WARNING! Warning messages alert you to the possibility of personal injury.

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Overview

The HP LaserJet 5P/5MP and 6P/6MP printers (HP Product Numbers C3150A/C3155A, and C3980A/C3982A) have many service and repair processes in common with their predecessors, the HP LaserJet 4L/4ML and 4P/4MP printers. These processes are documented in the *Combined Service Manual* for the *HP LaserJet 4L/4ML (C2003A/C2015A) HP LaserJet 4P/4MP (C2005A/C2040A)*. The purpose of this appendix is to provide supplemental service information that is unique to the HP LaserJet 5P/5MP and 6P/6MP printers.

Product Information

Printer Features

Features	HP LaserJet 5P/5MP	HP LaserJet 6P/6MP
Print Speed	6 PPM	8 PPM
Text & Graphics Resolution	600 dpi; plus Resolution Enhancement Technology (REt)	600 dpi; plus Resolution Enhancement Technology (REt)
Printer Languages **HP LaserJet 5P and 6P** **HP LaserJet 5MP and 6MP**	 Enhanced PCL 5 PostScript Level 2[1] Enhanced PCL 5	 PCL 6 PostScript Level 2[1] PCL 6
Monthly Usage (pages)	Up to 12,000	Up to 12,000
Memory: **HP LaserJet 5P and 6P** **HP LaserJet 5MP and 6MP**	 2MByte on-board standard memory 3MByte on-board standard memory	 2 MByte on-board standard memory 3 MByte on-board standard memory
Tray 1 Capacity	100	100
Tray 2 Capacity	250	250
Output Tray capacity	100	100
Internal Typefaces **HP LaserJet 5P and 6P** **LaserJet 5MP and 6MP**	 45 PCL 45 PCL, 35 PS	 45 PCL 45 PCL 35 PS
Standard Interfaces	2 Parallel (B connector, C connector) 1 LocalTalk 1 SIR	2 Parallel (B connector, C connector) 1 LocalTalk 1 Infrared (wireless) port
Power Control	Power switch	Power switch
NVRAM	Yes	Yes
Status Panel	2 Buttons 5 LEDs	2 Buttons 5 LEDs
Economode (toner saving)	yes	yes
Min. Paper Size **(using flat paper path)**	3 x 5 inch (76 x 127mm)	3 x 5 inch (76 x 127mm)

[1] SIMM includes 1 MByte additional memory.

Key Printer Locations and Parts.

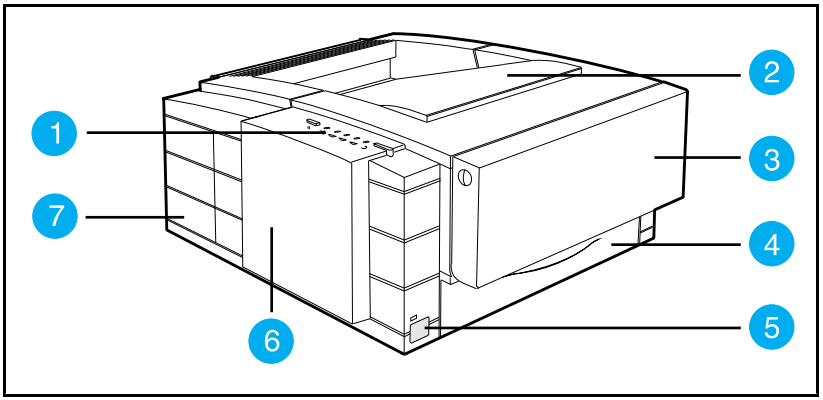


Figure 1 Front View (5P/5MP shown)

1. Top Status Panel
2. Top Output Tray
3. Tray 1 - MultiPurpose Tray
4. Tray 2 - 250-sheet Paper Cassette
5. Infrared Port and Status Light
6. Removable Side Panel
7. Interface Cable Door

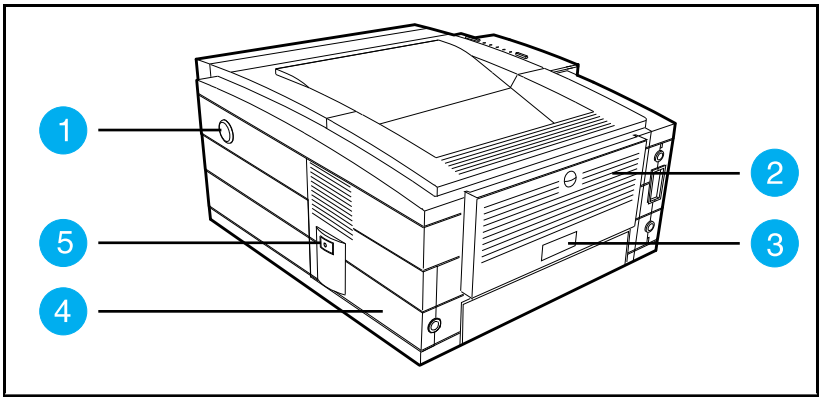


Figure 2 Rear View (5P/5MP shown)

1. Top Cover Release Button
2. Rear Output Tray
3. Serial Number Label
4. Power Cable Door
5. On/Off Button

Model and Serial Numbers

The model number and serial numbers are listed on identification labels located on the rear of the printer. The model numberd are alphanumeric:

- HP LaserJet 5P C3150A
- HP LaserJet 5MP C3155A
- HP LaserJet 6P C3980A
- HP LaserJet 6MP C3982A

The serial number contains information about the Country of Origin, the Revision Level, the Production Code, and production number of the printer.

The rear labels also contain power rating and regulatory information as shown in Figure 3.

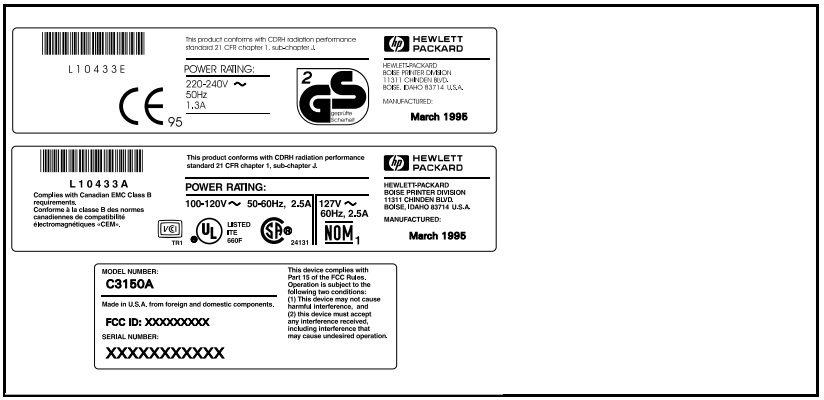


Figure 3 Sample Model and Serial Number Labels (5P/5MP shown)

Product Specifications

HP LaserJet 5P/5MP

Physical Dimensions

Width	15.79 in. (401 mm)
Depth	17.38 in. (441.7mm)
Height	7.92 in. (201.1mm)
Weight	15.4 lbs. (7 kg)

Electrical Specifications

Power Requirements	100/120V (+/- 10%) 50/60Hz (+/- 2Hz) 127 Volts NOM	220/240V (+/- 10%) 50 Hz (+/- 2Hz)
Power Consumption (typical for HP LaserJet 5P and HP LaserJet 5MP)	During printing - 165 W (average)	During printing - 165 W (average)
	During standby – 5W (instant power save) During power save mode - 5 W	During standby – 5W (instant power save) During power save mode - 5 W
Minimum recommended circuit capacity	4 Amps	1.8 Amps

Environmental Specifications

Item	Operating Printing	Storage/Standby
Temperature (printer and toner cartridge)	59° to 89° F (15° to 32.5° C)	-4° to 104° F (-20° to 40° C)
Relative humidity	10% to 80%	10% to 90%

Acoustic Emissions (Per ISO 9296)

	Operator Position	Bystander (1m)	Sound Power
Printing	L_{pAm} 52dB(A)	L_{pAm} 46dB(A)	L_{WAd} 6.0 bels(A)
Power Save*	L_{pAm} <22dB(A)	L_{pAm} <22dB(A)	L_{WAd} <3.6 bels(A)

*In this mode, the printer is essentially quiet.

HP LaserJet 6P/6MP

Physical Dimensions

Height	7.87 in (200 mm)
Width	15.75 in (400 mm)
Depth (body)	17.52 in (445 mm)
Weight	15.4 lbs. (7 kg)

Electrical Specifications

Power Requirements	100/120V (+/- 10%) 50/60Hz (+/- 2Hz) 127 Volts NOM	220/240V (+/- 10%) 50/60 Hz (+/- 2Hz)
Power Consumption (typical for 6P and 6MP)	During printing – 175 W (average)	During printing – 175 W (average)
	During standby – 8 W (instant power save) During power save mode – 8 W	During standby – 8 W (instant power save) During power save mode – 8 W
Minimum recommended circuit capacity	5 Amps	2.4 Amps

Environmental Specifications

Item	Operating Printing	Storage/Standby
Temperature (printer and toner cartridge)	59° to 89° F (15° to 32.5° C)	-4° to 104° F (-20° to 40° C)
Relative humidity	10% to 80%	10% to 90%

Acoustic Emissions (Per ISO 9296)

Printer State	Operator Position	Bystander (1m)	Sound Power
Printing	L_{pAm} 54dB(A)	L_{pAm} 48dB(A)	L_{WAd} 6.3 bels(A)
Power Save*	L_{pAm} <21dB(A)	L_{pAm} <21dB(A)	L_{WAd} <3.6 bels(A)

*In this mode, the printer is essentially quiet.

Location Space Requirements

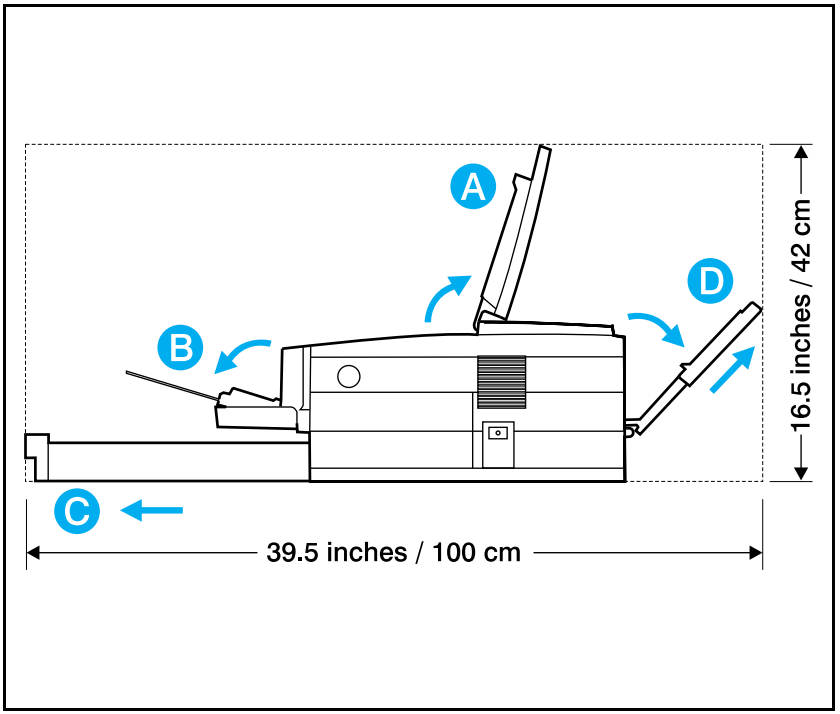


Figure 4. Location Space Requirements

Make sure there is adequate space for:

- Opening top cover (A)
- Opening Tray 1 (B)
- Loading Tray 2 (C)
- Extending rear output tray (D)

Documentation and Software

Documentation

You can order the documents listed below. There is a charge for some documents.

Table 1. Related Documentation

Title	Part Number
The *PCL/PJL Technical Reference Package* contains the following documents* • *PCL5 Printer Language Technical Reference Manual*. Explains the PCL 5 printer language for experienced users and programmers. • *Printer Job Language Technical Reference Manual*. Explains HP's Printer Job Language (PJL) for experienced users and programmers. • *PCL/PJL Technical Quick Reference Guide*. • *PCL Comparison Guide*. Describes the different implementation of commands and extensions across the printer family supporting PJL and PCL 5.	5961-0601
HP LaserJet 5P/5MP Printer User's Manual (English)	C3150-90901
*HP LaserJet 5MP Macintosh Notes** (included with HPLaserJet 5MP Printer and optional Adobe PostScript Level 2 SIMM)	C3155-90901
*HP LaserJet Printer Family Paper Specification Guide**	5010-6394
HP LaserJet 6P/6MPPrinter User's Manual (English)	C3980-90968
HP LaserJet Family Quick Service Reference Guide	5010-6395

* This item must be ordered through HP Parts Direct Ordering, (800) 227-8164. Outside the U.S., see the ordering information in "Parts and Diagrams" later in this chapter.

Software

The following table lists the software that is shipped with each printer.

HP LaserJet 5P C3150A
• The *HP LaserJet 5P DOS Utilities and DOS Printer Drivers* diskette. The DOS utilities include a Status Monitor and Remote Control Panel. The DOS printer drivers include WordPerfect (versions 5.1, 5.1+, and 6.0) and Lotus 1-2-3 (versions 2.3, 2.4, 3.1 and 3.4).
• The *HP LaserJet Printing System for Microsoft Windows 3.1 and 3.11* contains the PCL drivers and the HP FontSmart utility for font management.
HP LaserJet 5MP C3155A
• *The HP LaserJet 5MP Printer Software for Macintosh*. Supports System 6.07 to 7.5.
• The *PostScript Printer Software for Windows 3.1 and 3.11* includes the PostScript drivers and the HP FontSmart utility for font management.
HP LaserJet 6P C3980A
• The HP LaserJet 6P DOS Utilities diskette. The DOS utilities include a Status Monitor and Remote Control Panel software.
• The HP LaserJet Printing Software for Windows 3.x and Windows 95 contains the Standard (PCL) driver, Enhanced (PCL XL) driver, HP FontSmart, toolbox utilities, and a software deinstaller.
HP LaserJet 6MP C3982A
• The HP LaserJet 6P DOS Utilities diskette. The DOS utilities include a Status Monitor and Remote Control Panel software.
• The HP LaserJet Printing Software for Windows 3.x and Windows 95 contains the PostScript drivers (both Windows 3.x and Windows 95) in addition to the Standard (PCL) driver, Enhanced (PCL XL) driver, HP FontSmart, toolbox utilities, and a software deinstaller.
• The HP LaserJet 6MP Printer Software for Macintosh (supports System 6.07 to 7.5)

New Product Features

The HP LaserJet 5P/5MP Status Panel

This HP LaserJet printer has been designed to be controlled mainly by software. However, some simple functions are also available from the status panel. You also receive status information about the operation of the IrDA-compatible infrared (IR) port from the status light just above the port (for more information, see "To Print Using the Infrared Port," later in this appendix).

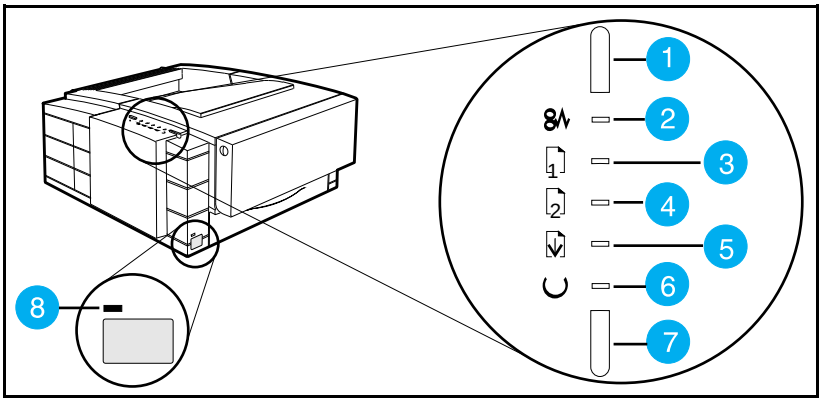


Figure 5 5P/5MP Status Panel Buttons and Lights

1. RESET button
2. ERROR status light
3. TRAY 1 status light
4. TRAY 2 status light
5. DATA status light
6. READY status light
7. GO button
8. IR port status light

The Status Panel consists of two buttons for completing tasks and six lights that indicate the status of the printer (see Figure 5).

The HP LaserJet 6P/6MP Status Panel

The status panel on the HP LaserJet 6P/6MP printer differs slightly from the 5P/5MP printer. The status lights for Tray 1 and Tray 2 have been moved from top status panel down to the front of the printer. These status lights are now located next to the trays. In addition, the Reset button has been replaced by the Job Cancel button.

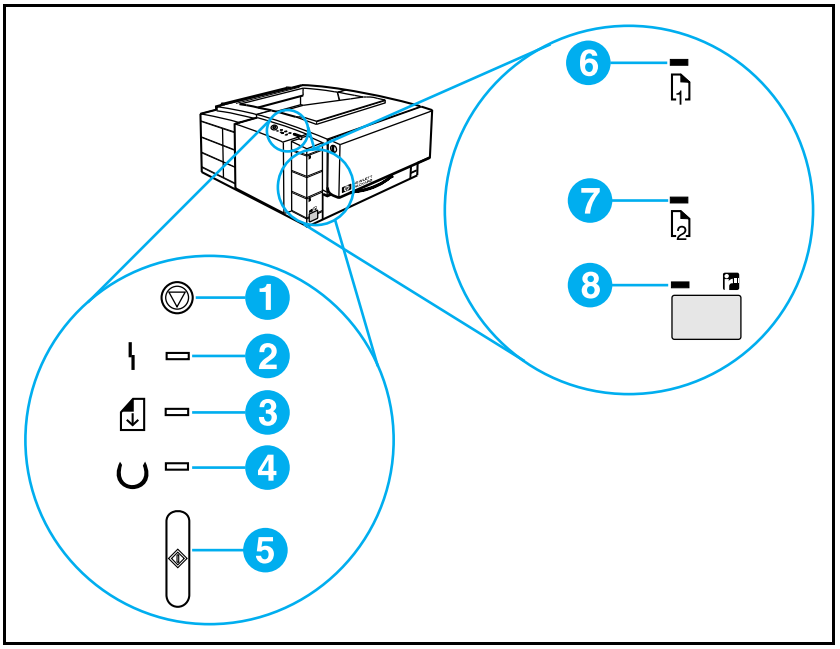


Figure 6 6P/6MP Status Panel Buttons and Lights

1. JOB CANCEL button
2. ERROR (back) light
3. DATA (middle) light
4. READY (front) light
5. GO button
6. TRAY 1 (top) status light
7. TRAY 2 empty light
8. IR (bottom) status light

The Status Panel consists of two buttons for completing tasks and six lights that indicate the status of the printer (see Figure 6).

Status Panel Buttons

The HP LaserJet 5P/5MP printer has two buttons: GO and RESET.

The HP LaserJet 6P/6MP printer has two buttons: GO and JOB CANCEL.

Pressing the GO button:

- Tells the printer to resume printing.
- Prints a demo page. The printer must be in Ready Mode (the green Ready light on steady).
- Prints a self-test page when pressed simultaneously with the RESET button (JOB CANCEL button on the 6P/6MP. The printer must be in Ready Mode (the green Ready light on steady).
- Prints unprinted data in the printer's memory (the Ready and Data lights are both on steady).

Pressing the RESET button: (available on 5P/5MP)

- Clears incomplete print jobs from the printer's memory.
- Clears errors.
- Removes all temporary fonts and macros.
- Returns all printer settings to the default values that you selected.

Pressing the JOB CANCEL button: (available on the 6P/6MP)

- Press to cancel a job that the printer is currently printing. The top status panel lights will cycle while the printer memory is being cleared, and then return to a ready state (front light on). The printer will continue receiving data until the job is complete. This data will be discarded. 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, the top panel status lights will cycle, but nothing else will happen.

Status Panel Lights

There are six Status Panel lights on the printer:

- ERROR
- DATA
- READY
- TRAY 1
- TRAY 2
- IR Status

These lights indicate the current status of the printer by displaying an amber or a green hue and flashing individually or sequentially as a group (cascading).

ERROR (amber)

Indicates an error condition, such as a paper jam, missing toner cartridge, or the printer's top cover is open.

DATA (green)

When the Data light is on, the printer is printing. When the Ready light and the Data light are both on, the printer still has unprinted data in its memory. Either press GO to print the remaining data, or press RESET/JOB CANCEL to clear the data from the printer's memory.

READY (green)

The printer is in Ready Mode when the Ready light is on. If the light is flashing, the printer is currently receiving data or in the process of printing.

TRAY 1 (amber)

Tray 1 (the MP tray) is empty. Add paper to Tray 1. When the Tray 1 light is flashing, the printer is waiting for paper to be manually fed into Tray 1. Once you have inserted the paper, you must press the GO button to feed the paper.

TRAY 2 (amber)

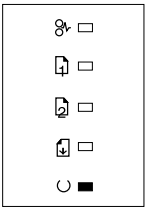
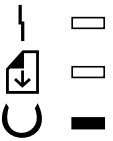
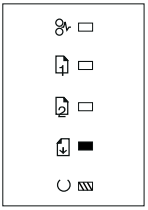
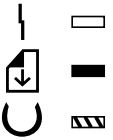
Tray 2 (the Paper Cassette) is empty. Add paper to Tray 2.

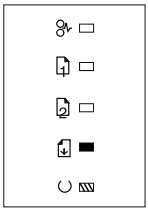
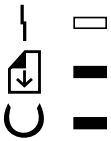
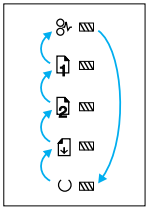
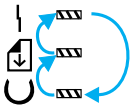
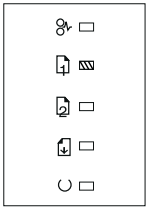
IR Port Status Light (green)

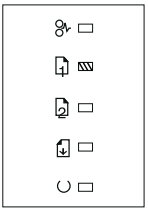
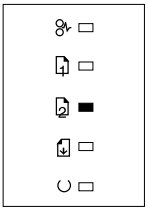
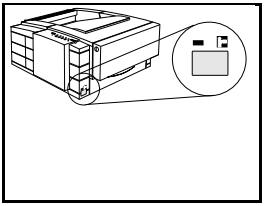
The status light above the IR port indicates the current status of the IR port by displaying a green hue. This status light comes on when a connection has been established with the IR port. The other Status Panel lights operate the same for the IR port as they do for any other port on the printer.

Common LED patterns

The following chart shows the light patterns for normal HP LaserJet 5P/5MP and 6P/6MP printer states. If the Error light is on, the printer is experinecing an error. Error messages are listed later in this appendix.

Light Pattern		Description
5P/5MP	6P/6MP	
		The printer is in Ready Mode and is ready to print. Press the GO button to print a demo page. Press the GO and RESET/JOB CANCEL buttons to print a self-test page.
		The printer has received data. If the Ready light is flashing, the printer is processing the data—wait for the next page to be printed.

Light Pattern		Description
5P/5MP	6P/6MP	
		If the Data light and the Ready light are both on for an extended period of time (the Ready light does not begin to flash), press the GO button to print the data in the printer. A page may take a long time to print if, for example, the page contains complex text or graphics.
		If each light briefly turns on and off, in sequence, the printer is warming up, processing a self test, or canceling a print job.The lights will continue to "cascade" until the printer is ready to print.
		Tray 1 (the MP Tray) is empty. Add paper to the tray.

Light Pattern		Description
5P/5MP	6P/6MP	
		If the Tray 1 light is flashing, the printer is waiting for paper to be manually fed into Tray 1. Once you have inserted the paper, you must press the GO button to feed the paper.
		Tray 2 (the Paper Cassette) is empty. Add paper to the tray.
		When the IR port status light is on, a connection has been established. If you are printing to the IR port and the status light does not come on, make sure the printer is in Ready Mode and that the IR port you are printing from is within range of operation and is IrDA-compliant. If you continue to have trouble printing, refer to the “Infrared Port Not Responding” table, later in this section.

Paper Movement Overview

The paper feed system picks print media automatically from Tray 1 or Tray 2 and delivers it to the image formation system at precisely the right time. The system then feeds the media to the fusing station, and delivers the finished product to the output position, either the face-down output tray on top of the printer, or through the face-up delivery slot at the rear of the printer. The output path is user-selectable by opening the rear output tray.

Figure 7 shows the possible paper paths and locations of the various solenoids, photosensors and rollers.

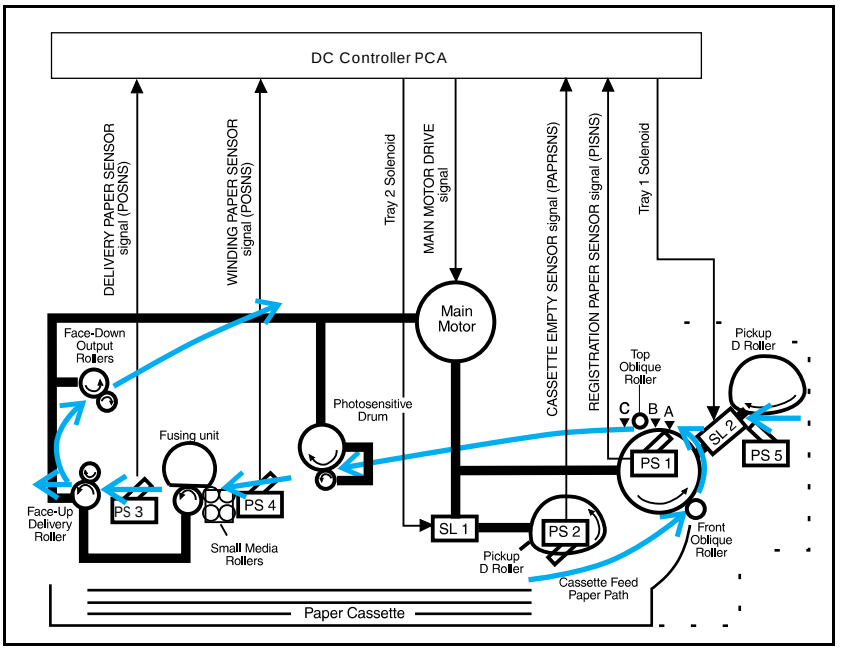


Figure 7 HP LaserJet 5P/6P Printer Paper Path

PS1 Input Paper Sensor
PS2 Tray 2 Paper Out Sensor
PS3 Exit Paper Sensor
PS4 Winding Paper Sensor
PS5 Tray 1 Paper Out Sensor

Input Paper Sensor (PS1) Positions:
A = Manual Feed Sense Position
B = Registration Sense Position
C = TOP Sense Position

SL1 Tray 2 Solenoid
SL2 Tray 1 Solenoid

Infrared Communication

The HP LaserJet 5P/5MP and 6P/6MP printers are equipped with an Infrared Datalink Association (IrDA) compliant port. The IrDA specification allows “wireless” transmission of print data between a wide variety of hosts (primary) and peripheral (secondary) devices. A primary device -- such as a PC or laptop computer -- is capable of reading and writing data to another primary device or writing to a secondary device, such as a printer. Secondary devices are read-only; they cannot initiate their own communication, and can only respond to a host command when properly addressed.

The IR port works by receiving data similarly to a serial port, but without a cable. The port’s speed depends on the printer model:

- **HP Laserjet 5P/5MP printer**
  - 115 k bits per second
- **HP Laserjet 6P/6MP printer**
  - up to 4 megabits per second

When the IR connection is established, the status light comes on. If the connection is broken or when the print job is complete, the status light goes off.

The IrDA protocol uses a transceiver chip in both devices to send and receive data packets. The packets are checked for validity, and a response is sent by the secondary device indicating whether the packets were complete or in error.

The IrDA protocol is contained in three layers:

- The physical electronics are the hardware elements in each device for sending and receiving the data.
- The Link Access Protocol (LAP) layer controls the physical layer, packetizes/unpacketizes data, and sets transmission rates.
- The Link Management Protocol (LMP) layer routes data to and from the host operating system (DOS/Windows).

The data flow is shown in Figure 8.

The LAP and LMP layers can reside in either firmware, software, or a combination of both. There are different LAP and LMP protocols for primary and secondary devices.

The HP LaserJet 5P/5MP and 6P/6MP printers have the complete secondary protocol, and any host trying to communicate via the infrared (IR) port must have the complete primary protocol installed. *The primary protocol software is the responsibility of the host supplier. It is not provided by Hewlett-Packard Company with the printer.*

IrDA communications can be obtained either via an internal IR port or an external IR accessory. Several manufacturers offer complete accessory upgrades for both host and peripheral devices.

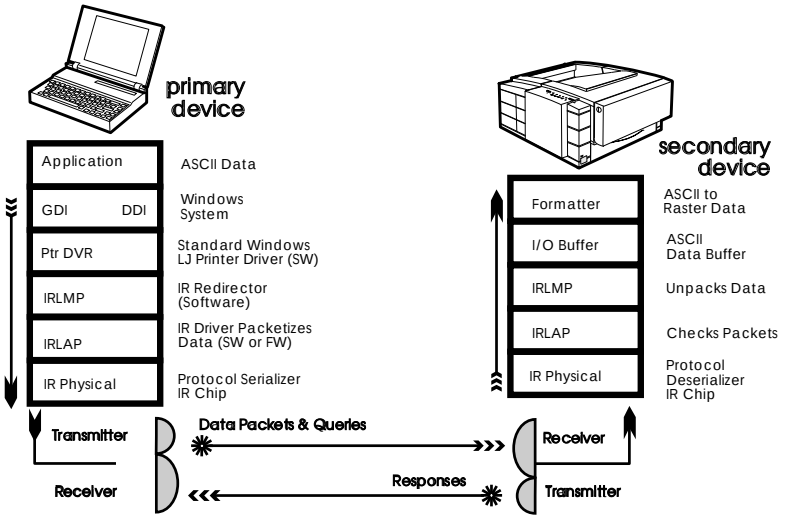


Figure 8. IR Data Flow.

System Requirements

- Hardware
  - Both the primary and secondary devices must be equipped with an IrDA-compliant IR component. Older, non-IrDA-compliant devices may not be compatible with the HP LaserJet 5P/5MP and 6P/6MP printers.
- Software
  - The primary device must be loaded during boot-up with software provided by the manufacturer for infrared operation.
  - The primary device must be properly configured with an infrared COM port, IRQ level, and base address value.
  - The infrared port must be installed and selected in the Printers section of the Windows Control Panel.

- Software drivers
  - The IR driver for Windows 3.1 is available through hardcopy fulfillment. The driver shipped is proprietary to Extended Systems, Inc. (ESI) and is supported by Hewlett-Packard to the level of identifying the cause as the ESI driver. Beyond that, the call must be escalated to ESI. The ESI driver is not available through HP's Electronic Fulfillment.
  - The IR driver for Windows 95 is the Microsoft IRDA supported driver. It is available on the Microsoft electronic BBS. After November 1995, machines manufactured with Windows 95 will already have this driver installed. Users must enable the IR port on the PC. The Microsoft IrDA driver has a Tray Icon that provides status and run options. It is Plug and Play and polls the area for other IR devices within range. Hewlett-Packard recommends that users turn off Plug and Play and Polling when not in use or not needed to prevent draining the battery.
  - There is currently no IR support for Macintosh products (October 96).

To Print Using the Infrared Port

The infrared (IR) port on your HP LaserJet 5P/5MP or 6P/6MP printer is located on the lower front left corner of the printer (Figure 9). This port is compliant with the specifications determined by the Infrared Data Association (IrDA). Just above the port is a status light that indicates when the port is activated. To use the IR port, you need to use a portable device that also includes an IrDA-compliant IR port and be within the range of operation (see Figure 10).

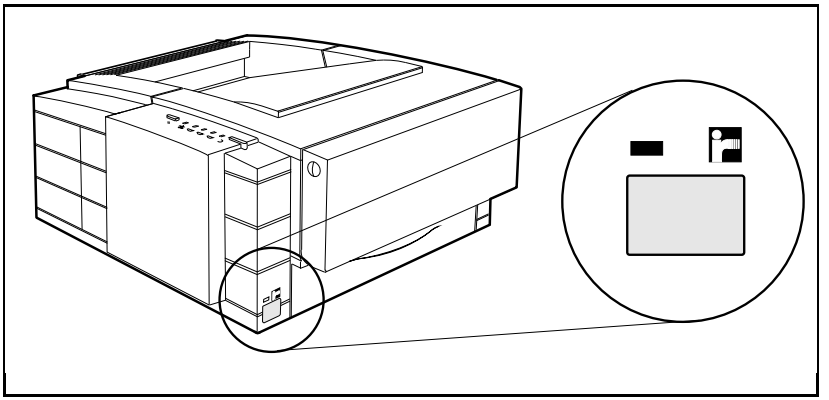


Figure 9 IrDA Port Location (5P/5MP shown)

The IR port is compatible with a wide variety of IrDA-compliant portable devices; 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.

1. Make sure the printer is in Ready Mode (the Ready light is on).

2. Align your laptop computer (or other portable equipment) that is equipped with an IrDA-compliant IR port within 3 feet (1 m) of the IR port on the printer and at an angle of ±15 degrees to ensure printing (Figure 10).

3. Send the print job. The status light above the IR port turns on (printing a complex document or using a software print spooler on your PC may delay the time it takes for the IR status light to turn

on). If the status light does not turn on, realign the port on your portable equipment with the port on the printer, resend the print job and stay within the range of operation during printing.

4. If you have to move the device, make sure you stay within the range of operation to maintain the connection. If the connection is interrupted before your print job is complete, the IR port status light will turn off. You have from 3 to 40 seconds (depending on the host implementation) to correct the interruption and continue the job. In this case, the IR port status light turns back on.

5. The connection can be permanently broken (interrupted for more than 3 to 40 seconds) if the “sending” IR port is moved out of the range of operation or if anything passes between the two ports to block the transmission, such as a hand or piece of paper, or even direct sunlight. In this case, the job needs to be reprinted.

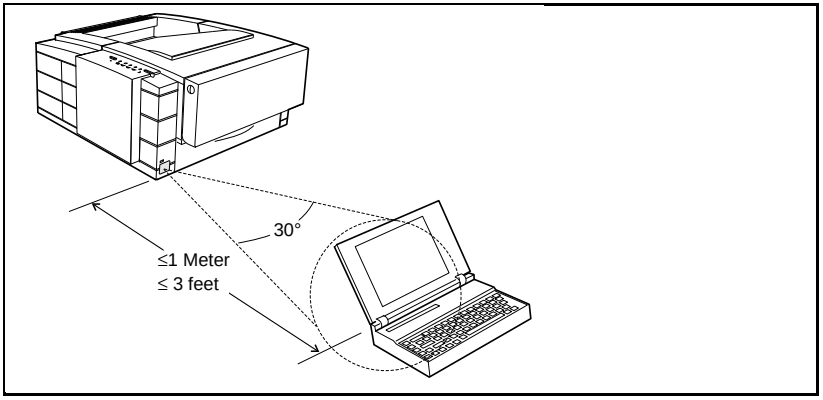


Figure 10 IRDA Port ranges (5P/5MP shown)

If you still have problems printing, make sure you are using an IrDA-compliant device and proper software and have selected the proper port for printing. See "Infrared Port Not Responding" on page 71.

Note

The IrDA standard for infrared communications represents an emerging technology. Older non-IrDA-compliant portable devices may not be compatible with your HP LaserJet 5P/5MP, 6P/6MP printer. If you continue to have problems printing using the IR port, contact the manufacturer or dealer where you purchased your portable device to verify compatibility with the IrDA standard, and follow the troubleshooting procedure immediately following.

Troubleshooting IR Printing Problems

IR printing problems may be caused by any of the several system components or by lack of proper configuration. The following checklist will help determine the source of the problem.

1. Verify the user is operating the printer and PC as described in the User's Manual: less than one meter between devices, and not more than ±15 degrees from direct center.

2. Verify the host PC or laptop and the printer are IrDA-compliant and have the necessary hardware components for IR communication.

3. Verify the IR software has been loaded on the primary device. (This is system software and should be available from the PC manufacturer.)

4. Verify the host PC or laptop is properly configured. Check the port assignment, the IRQ level, and the base address value. Check both the DOS AUTOEXEC.BAT and CONFIG.SYS files, and the Windows system configuration.

If all these elements are properly installed and configured, use the IR test tool to test the IrDA protocol transmission and device operation. This tool for troubleshooting IR communication problems, shown in Figure 10, has been developed by Genoa Technology, Inc., in cooperation with Hewlett-Packard. The part number is 5062-4661 and can be ordered through HP Parts Direct Ordering.

The IR test tool can be used with any IrDA-compliant primary or secondary device, regardless of manufacturer.

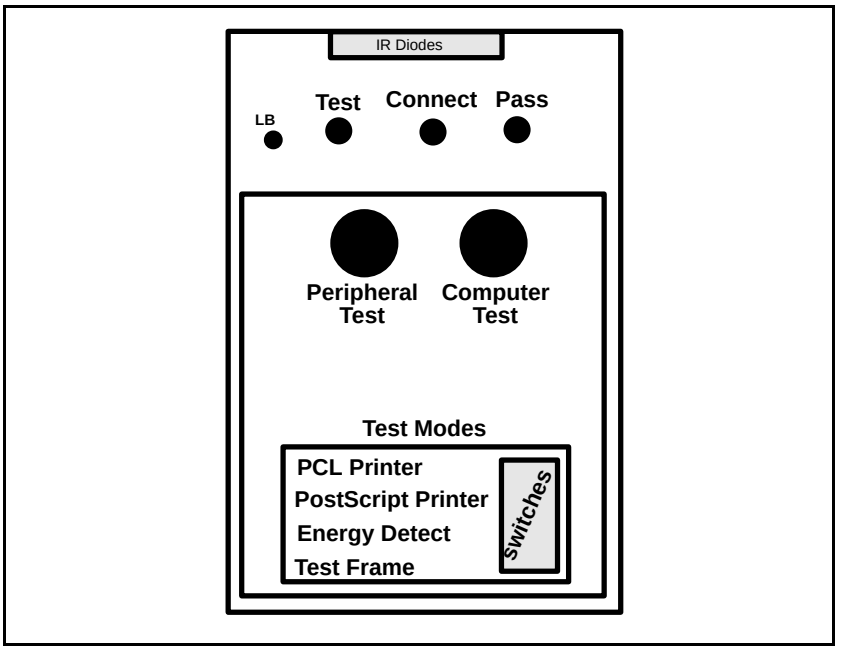


Figure 11 Infrared Test Tool

To test the peripheral device:

1. Put the printer in Ready Mode.
2. Press the "Peripheral Test" button on the test tool. The LEDs on the test tool will sequence.

If the "PASS" LED lights, the test was successful, indicating that communication with the printer's IR port is functioning normally. On HP LaserJet printers, a self-test page will be initiated by the test.

If the "TEST" LED goes out and the "PASS" LED fails to light, the printer's IR port is not functioning correctly; check the operator's instructions included with the IR test tool.

To test the host computer:

1. Place the test tool on a table in front of the PC's IR port

2. Press the "Computer Test" button. The test tool will sequence the LEDs.

If the "PASS" LED light, the test was successful, indicating that communication with the printer's IR port is functioning normally.

If the "TEST" LED goes out and the "PASS" LED fails to light, the host's IR port is not functioning correctly.

Interface Connections

Your HP LaserJet 5P/5MP, 6P/6MP printer supports the following interfaces (see Figure 12):

- Two IEEE-1284–compliant parallel ports at the back of the printer—one large B-type and one small C-type.
- One LocalTalk port at the back of the printer.
- One IrDA-compliant infrared port at the front of the printer.

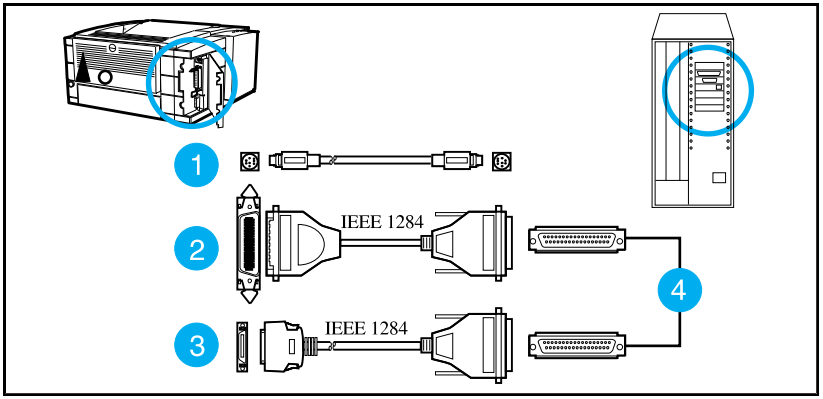


Figure 12 HP LaserJet 5P/5MP, 6P/6MP Printer Interface Connections

1. LocalTalk cable and connectors.
2. IEEE-1284 parallel cable and large (B-type) printer connector.
3. IEEE-1284 parallel cable and small (C-type) printer connector. (The cable will be stamped as IEEE-1284 compatible.
4. Host PC connector (A-type) (in the future C-type connectors may also be available on host PCs).

Caution Make sure that all power and interface cables on your printer and host computer are properly grounded and in compliance with local electrical codes.

The Parallel Printer Interfaces

These interfaces are compliant with IEEE-1284 specifications for "Compatibility Mode" and "Nibble Mode" or "HP Bi-tronics". To use advanced interface functions, such as bi-directional communication, the parallel port on your host PC must also be IEEE-1284 "Nibble Mode" compatible.

The small "C" connector offers IEEE-1284 II (level 2) electrical interfacing, i.e. support for cables up to 10 meter length. The large "B" connector supports standard cable lengths up to 3 meters.

The parallel interfaces can operate at speeds of up to 2 MBytes per second. Use a high-quality, shielded IEEE-1284 compliant parallel interface cable to insure best performance and support of advanced interface functions such as bi-directional communication. Compliant cables are marked with "IEEE-1284" on the cable.

Applications such as the Remote Control Panel, Status Monitor, or the Status Window use the printer's parallel interface to send status information back to the computer (bi-directional communication). This requires a direct connection from the computer to the printer via a local parallel port (for example, LPT1:, LPT2:). These applications may not work through a network or a switching device.

Connecting to Networks and Switchboxes

Most devices connected between the printer and the host computer prevent the printer from sending data back to the computer. Therefore, the Remote Control Panel, Status Monitor, and Status Window may not work with networks, most hardware print spoolers, some software print spoolers, and some switchboxes. Newer sharing devices are available that fully support status feedback. Check with your supplier on support for bi-directional communication.

Automatic I/O Switching

The printer automatically switches between all interfaces (parallel, infrared, and LocalTalk) when multiple users share the printer.

Resource Saving

Resource Saving gives the printer the ability to save certain entities such as permanent soft fonts, macros, symbol sets and user-defined graphics patterns when the printer changes personalities, resolutions or page protect modes. For example, if a user switches the printer from PCL mode to PostScript mode, all PCL soft fonts and macros are lost.

With resource saving, the HP LaserJet 5P/5MP, 6P/6MP printer can retain these in memory. When the user switches back to PCL from PostScript all of the PCL entities would still be resident in the HP LaserJet 5P/5MP, 6P/6MP printer. Resource Saving can be changed via software, but can only be accessed when the printer has the PostScript language installed and a minimum memory configuration of 7 MB.

Resource Saving can be set via software for one of three modes, AUTO (default), ON, and OFF. Auto configuration sets the Resource Saving for PCL and Postscript to a minimum value (400 KBytes) for each personality. Setting Resource Saving to ON allows the user to determine how much printer memory will be used for Resource Saving for the PCL personality and the Postscript personality. The memory can be allocated in 100 KBytes increments. For example, if the user sets the Resource Saving memory size to 200 KBytes, a total of 400 KBytes of memory will be assigned to Resource Saving. 200 KBytes of memory will be used for Postscript Resource Saving and 200 KBytes of memory will be used for PCL Resource Saving. Turning Resource Saving OFF disables the Resource Saving function and no memory is allocated to Resource Saving.

I/O Buffering

I/O buffering allows the user to allocate printer memory to hold the job while it prints, freeing up the host system sooner, like a print spooler. The standard printer has approximately 10 KBytes of memory allocated to I/O buffering and an additional 100 KBytes of memory is assigned to I/O buffering for each MBytes of memory added to the printer.

If the printer has a minimum of 6 MBytes of memory installed, the I/O buffer size can also be adjusted via software. Three settings exist for the I/O buffer; AUTO (default), ON, and OFF. AUTO sets the printer's I/O buffer to a minimum value that is determined by the total amount of memory that is resident in the printer. Setting I/O buffering to ON allows the user to set the I/O buffer size Setting the I/O buffering to OFF disables I/O buffering.

Note When you change the I/O buffer setting all downloaded resources are deleted.

Reprinting Jammed Pages

When a paper jam is cleared in the HP LaserJet 5P printer and other previous HP LaserJet printers, the printer will automatically reprint the page(s) that were jammed. The HP LaserJet 6P printer will not do this by default with standard memory installed. The user must send the affected page(s) again from the host system to reprint them. If the user wishes the printer to reprint jammed pages automatically, the best solution is to add memory to the printer. If the user does not want to add memory but still wants jammed pages to reprint automatically, the "REPRINT" PJL variable should be changed from its default setting of AUTO to ON.

Note If the "REPRINT" variable is turned ON with only default memory installed in the HP LaserJet 6P printer, the user may experience delays when printing multi-page jobs. These delays may substantially reduce the number of pages printed per minute.

Service Mode, PJL Defaults

The Service Mode should be used only by authorized service personnel. While in Service Mode, you can:

- Print a Service Mode Self Test.
- Verify and set the Page Count (the page count also is displayed on the standard self test).
- Set the Cold Reset Default. (This sets the factory default paper size to either Letter or A4).
- Set the Demo Page=True/False. Used to remove the Demo Page option from the self test menu.
- Set the Diagnostic Functions ON or OFF (for software developers use only).

Since the HP LaserJet 5P/5MP, 6P/6MP printer does not have a front control panel, Service Mode and many configuration tasks are accessible only through software (PJL commands).

The following example shows how to use PJL commands to enter Service Mode and perform various Service Mode configuration tasks.

Note Text is CASE-sensitive in PJL; enter exactly as shown. The $^{E}_{C}$ symbol stands for the ASCII escape character (ESC or /027). When the PJL code is entered, print the data file (or use the DOS `COPY` command to copy it to the printer).

Detailed explanations of PJL commands and their functions can be found in the Printer Job Language Technical Reference Manual (HP part number 5961-0704).

Common PJL Commands

PJL Command	Explanation
E_C%-12345X@PJL	Start PJL job.
@PJL SET SERVICEMODE=HPBOISEID	Enter Service Mode
@PJL SET PAGES=0	Set page count [= xxxxx]
@PJL SET CRPAPER=LETTER	Sets cold reset page size [= Letter/A4]
@PJL SET SKIPDEMO=FALSE	Skips demo/PCL type page [= true/false]
@PJL SET DIAGNOSTICS=OFF	Sets diagnostics [= OFF/ON] (for ISV use)
@PJL SET SERVICEMODE=EXIT	Exits Service Mode
@PJL DEFAULT PAPER=LETTER	Selects user paper size default
@PJL RESET	Performs PJL reset
E_C%-12345X	Exits PJL mode
E_Cz	Prints Self-Test page
E_CE	Resets the printer.
Other PJL Command examples:	
@PJL INITIALIZE	Sets user environment to factory defaults.
@PJL SET ECONOMODE=ON	Sets Economode
@PJL SET PAGEPROTECT=LEGAL	Sets the memory size for page protection to LEGAL paper size.
@PJL SET MANUALFEED=ON	Sets manual feed mode.
@PJL SET LANG = *FRENCH, GERMAN...*	Sets the default display language[1]

[1] Do not confuse this command with @PJL ENTER LANGUAGE, which sets the printer language to PCL or PostScript.

Test Pages and Resets

Test pages, resets, and NVRAM initialization can all be performed by using the GO and RESET/JOB CANCEL buttons on the HP LaserJet 5P/5MP, 6P/6MP printer status panel. Table 2 shows how to perform these tests and diagnostic functions.

Table 2. Button Functions

FUNCTION	ACTION	RESULT
Demo Page	Press GO button when printer is idle.	Prints page that highlights printer features and demonstrates print quality.
Self Test	Press GO and RESET/JOB CANCEL buttons simultaneously.	Prints a Self Test page.
Continuous Self Test	Hold GO button *more* than 20 seconds after powering on printer	Prints continuous self test pages. Press the button to stop printing.
Reset (all I/O)	Press RESET button. (5P/5MP only)	Clears all data from memory, including unprinted data, downloaded temporary fonts and macros.
Job Cancel	Press JOB CANCEL button. (6P/6MP only)	Stops a job that is curently printing, including receiving data from the host until the job is finished. Memory will clear and printer will return to a Ready State.
Continue	(Waiting for paper, or continuable error.) Press the GO button.	Allows the printer to recover and continue printing the job.
Form Feed	Press the GO button.	Print remaining data in printer memory.
Cold Reset	Hold RESET/JOB CANCEL button *less* than 20 seconds after turning power on.	Clears all data from memory, including unprinted data, downloaded fonts and macros. Resets printer to factory default settings.
NVRAM Initialization	Hold RESET/JOB CANCEL button *more* than 20 seconds after turning power on.	Clears all I/O and print configuration information from NVRAM.
Service Error Codes	Press GO and RESET/JOB CANCEL buttons to display additional code.	See "Troubleshooting" to determine the problem and solution.

Printing a Self-Test Page

You can print a self-test page to get information about your printer's current settings, options, and print quality. You can use this page to troubleshoot print quality problems and to view current print density and Resolution Enhancement settings so you can adjust them.

You can also print the demo, or demonstration, page to quickly check that the printer is operational.

To print a self-test page:

Simultaneously press the GO and RESET/JOB CANCEL buttons on the printer's Status Panel while the printer is in Ready Mode.

Or using the HP LaserJet PCL Windows Printer Driver, under "Device Option", select the "Configure Printer" button and choose "PCL Self-Test Page".

Or using the Remote Control Panel (in DOS), under "Options" select "Print Test Page" and choose "PCL Self-Test Page".

Figure 13 shows a sample self-test page for the HP LaserJet 5P printer. Numbers in the sample self-test page match numbers in the Key to Figure 13, which follows the illustration. The appearance of the self-test page varies depending on the options currently installed in the printer.

Figure 14 shows a sample self-test page for the HP LaserJet 6P printer. Numbers in the sample selft test page match numbers in the Key to Figure 14, which follows the illustriation. The appearance of the self-test page varies depending on the options currently installed in the printer.

Note The factory default for the self-test page is English. A PJL command is required to change the self-test language to appear in a language other than English. Refer to the discussion of PJL commands on page 33

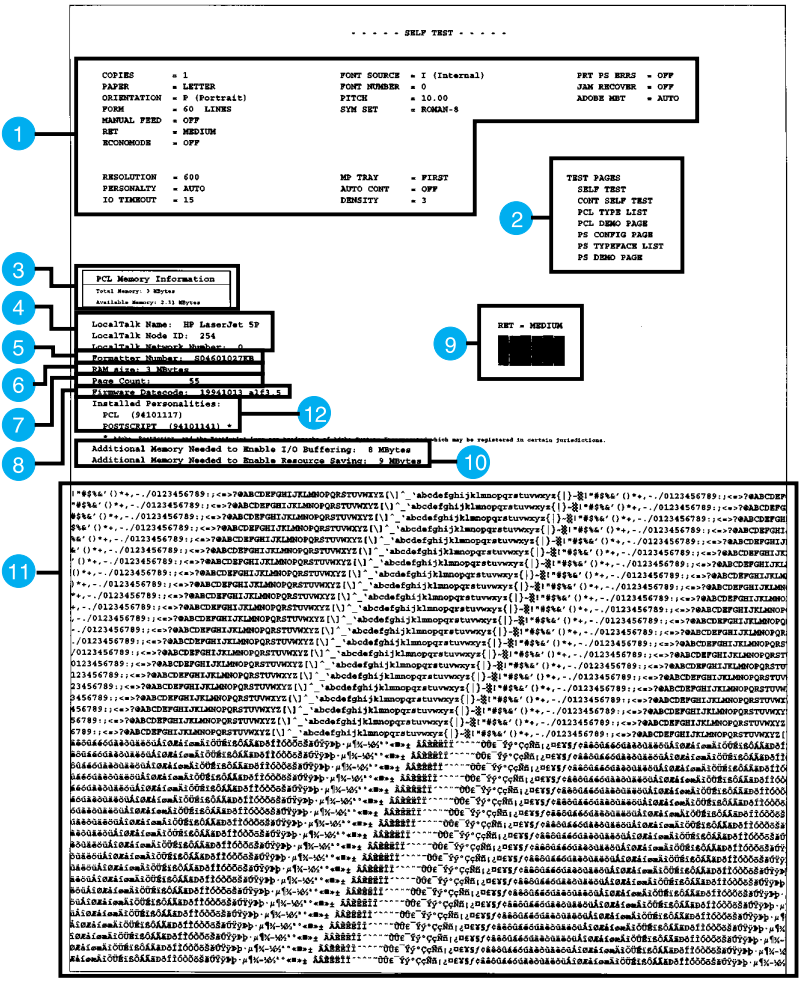


Figure 13. HP LaserJet 5P Self-Test Page

Key to Figure 13. Self-Test Page

Item	Explanation
1	**Printer Options:** Lists printer options you can adjust using your printer software (see Appendix F, "Software Procedures").
2	**Test Pages:** Shows test pages you can print from your printer.
3	**PCL Memory Information:** Shows the total amount of installed memory. Also indicates the amount of available memory for PCL applications.
4	**LocalTalk Name/Node ID/Network Number:** If your printer is connected to a LocalTalk network, shows the network name, node ID for your printer, and the network number.
5	**Formatter Number:** Shows serial number of internal electronics board.
6	**RAM size:** Shows total installed printer memory.
7	**Page Count:** Shows number of pages the printer has printed.
8	**Firmware Datecode:** Eight-digit date (YYYYMMDD) of formatter firmware.
9	**Resolution Enhancement:** When resolution is set to 600 dpi, the Resolution Enhancement technology (REt) block appears here. The REt block illustrates current resolution enhancement (see "Fine-Tuning Print Quality," in Chapter 2, "Printing").
10	**I/O Buffering and Resource Saving:** Information about the current configuration appears here. If the printer does not have enough memory installed to enable I/O Buffering or Resource Saving, the amount of additional memory needed appears here.
11	**Print Pattern:** Illustrates print density and quality.
12	**Installed Personalities:** Shows which printer languages (personalities) are installed.

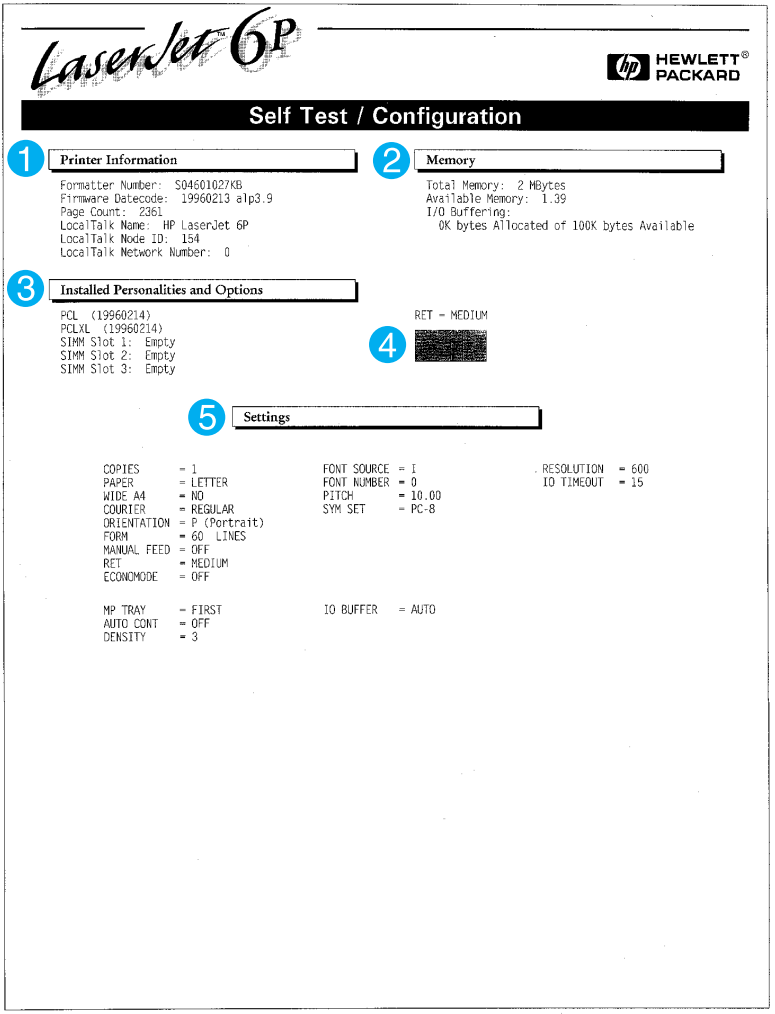


Figure 14. HP LaserJet 6P Self-Test Page

Key to Figure 14. Self-Test Page

Item	Explanation
1	**Printer Information:** **Lists the Formatter Number, Firmware Datecode, Page Count, and LocalTalk Network information for the printer.**
2	**Memory:** **Lists printer memory, I/O Buffering data, and Resource Saving data.**
3	**Installed Personalities and Options:** **Lists all personalities, such as PCL and PostScript that are installed, and the status of each SIMM slot.**
4	**REt block:** **This block is used when adjusitng the Resolution Enhancement technology (REt) setting.**
5	**Settings:** **Current pritner default settings and product-specific information.**

Life Expectancy of Consumables

Always inspect the components listed in the following table for wear when servicing the printer. Replace these components as needed, based on printer failures or wear, not strictly on usage.

Table 3. Life Expectancy of Consumables

	DESCRIPTION	QTY	EST. LIFE (pages)	REMARKS
1.	Toner Cartridge	1	4000[1]	When print becomes faint, shake cartridge to distribute remaining toner.
2.	Tray 1 Pickup Roller	1	100,000	Replace roller and separation pad together.
3.	Tray 2 Pickup Roller	1	100,000	Look for glazing and cracks.
4.	Separation Pad	1	100,000	Look for glazing and grooves. Replace together with Pickup Roller.
5.	Transfer Charging Roller	1	100,000	May affect print quality and/or paper jams.
6.	Fuser Assembly (115 V, 50/60 Hz) Fuser Assembly (220 V, 50 Hz)	1 1	100,000 100,000	May affect print quality and/or paper jams. Look for marks on rollers.
7.	Exhaust Fan	1	25,000 hrs.	

[1] The estimated Toner Cartridge life is based on A4 or letter size prints with an average of 5% toner coverage, and with the density setting at 3.

Removal and Replacement

Overview

The removal and replacement procedures for many HP LaserJet 5P/5MP, 6P/6MP printer Field Replaceable Units (FRUs) are identical to the HP LaserJet 4L and 4P printers. This section describes only those differences unique to the HP LaserJet 5P/5MP, 6P/6MP for removing:

- Power Door
- I/O Cover
- Left Side Cover
- Top Cover
- Tray 1 Pickup Assembly
- Formatter Board Assembly
- Fuser Assembly
- DC Controller Assembly

WARNING! Unplug the power cord from the power outlet before attempting to service the printer. If this warning is not followed, severe injury may result.

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.

CAUTION The printer contains parts that are electrostatic discharge (ESD) sensitive. Always service printers at an ESD protected workstation.

CAUTION To install a self-tapping screw, first turn it counter-clockwise to align it with the existing thread pattern, then carefully turn clockwise to tighten. **Do not over-tighten.** If a self-tapping screw-hole becomes stripped, repair of the screw-hole or replacement of the affected assembly is required.

Note Always remove the toner cartridge and the paper cassette from the printer before removing or replacing printer parts.

Required Tools

Refer to page 6-3 of the Combined Service Manual.

A TORX T-10 head screwdriver is needed to remove the formatter shield.

Removing the Power Door

The Power Door is located on the right rear of the printer.

1. Ensure the power to the printer is turned OFF.
2. Grasp the power door by the finger slot directly above the power cord, and swing the rear of the door out and forward. The door easily tilts and lifts out.
3. Unplug the power cord from the printer power socket.

Removing the I/O Cover

The I/O Cover is located to the left rear of the printer.

5P/5MP I/O Cover

1. Locate the two release tabs shown in Figure 15. Press the tabs in, and swing the rear of the door out and forward. The door easily lifts away from the printer.



Figure 15 5P/5MP I/O Cover Release Tabs

6P/6MP I/O Cover

1. Pull the I/O door out using the finger slot for levarage.

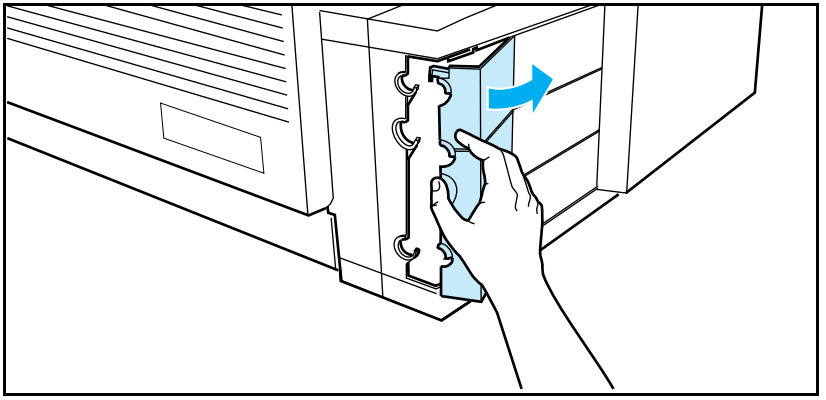


Figure -16 6P/6MP I/O Cover Finger Slot

Removing the Left Side Cover

1. Disconnect all I/O cables.

2. Press the Top Cover Release button on the right side of the printer, and open the top cover.

3. Press the removable side panel as shown in Figure 17.

4. Slide the cover forward and pull straight away from the side of the printer.



Figure 17 Left Side Cover Release Latch (5P/5MP shown)

Removing the Top Cover

1. Remove the toner cartridge and paper cassette if they have not already been removed.

2. Remove the (4) self-tapping printer cover screws (Figure 18).



Figure 18 Removing the Top Cover Screws

3. Grasp the lower left front corner of the top cover, and lift it forward and up.

4. Grasp the lower portion of the right front cover, and pull forward and up.

5. At the rear of the printer, lower the face-up output tray.

6. Lift the rear of the printer slightly. Grasp the lower right back corner. With your thumbs, flex the plastic toward you, up, and out. Figure 19 shows this process for the rear right corner. Repeat the process for the left rear corner.

Note Note the position of the tabs and the catches carefully. This step may require considerable twisting and flexing of the plastic in order to free the release tabs.



Figure 19 Releasing the Back Corner of the Top Cover

7. Lift the printer cover straight up.

Replacement Note

When reseating the top cover onto the printer frame, ensure the black paper-out flag in front of Tray 1 is seated in the groove of the Tray 1 lift plate. If not in the groove, it can easily break when the cover is forced into place. Refer to Figure 20

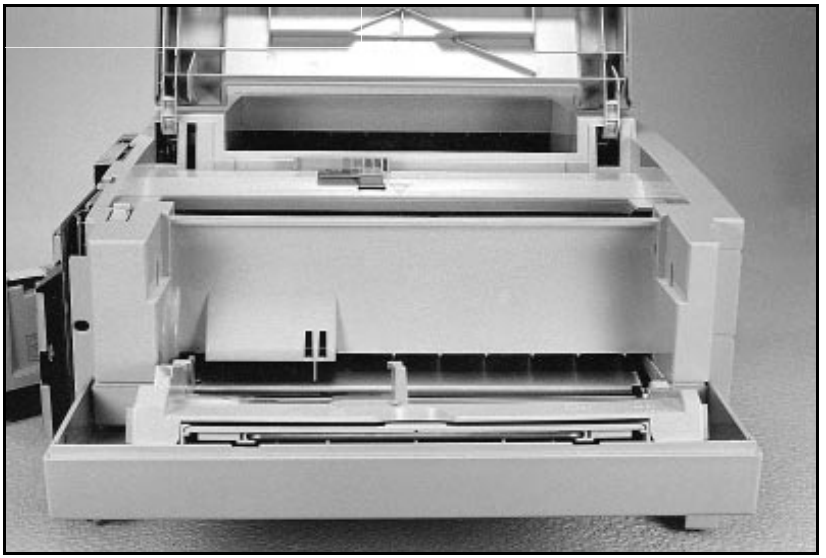


Figure 20 Paper-Out Flag

Removing the Tray 1 Pickup Assembly

1. Remove Tray 1 by opening the tray at a 45° angle and pulling up on the tray (Figure 21).



Figure 21 Removing Tray 1.

2. Unplug the two cables (Callout **2** in Figure 22) by grasping the cables where they attach to the plug and pulling straight back.

3. Route the cables through the right side of the printer chassis and bring them to the front.

4. Remove the 5 screws (callout **1** in Figure 22) from the front of the pickup assembly. (Two screws are adjacent in the lower left corner.)

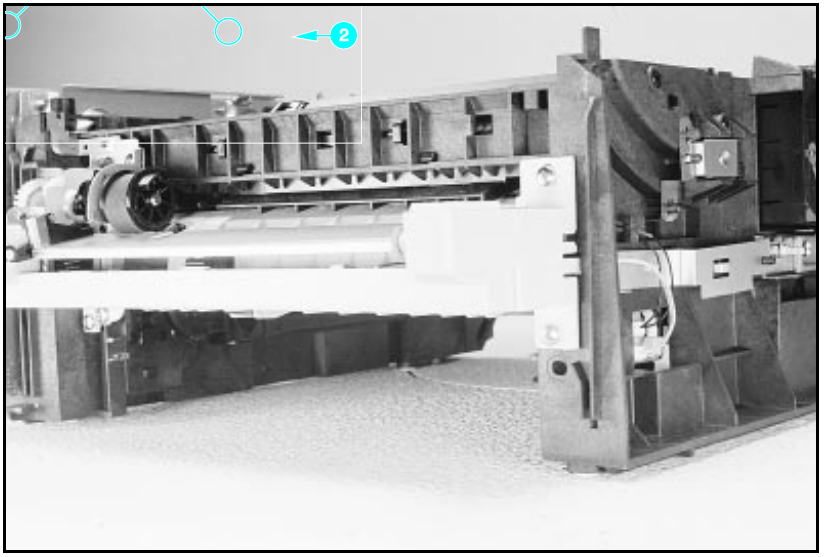


Figure 22 Tray 1 Pickup Assembly Locations.

5. Press the two release tabs on either side of the pickup assembly (callout **3** in Figure 19) and pull the assembly away from the printer. (The left side release tab is partially hidden from view. Pressing in on both sides will release the tabs.)

6. Pull the pickup assembly straight out from the back of the printer.

7. To remove the roller from the pickup assembly, grasp the tabs on the right end of the roller and slide it to the right (shown in Figure 23).

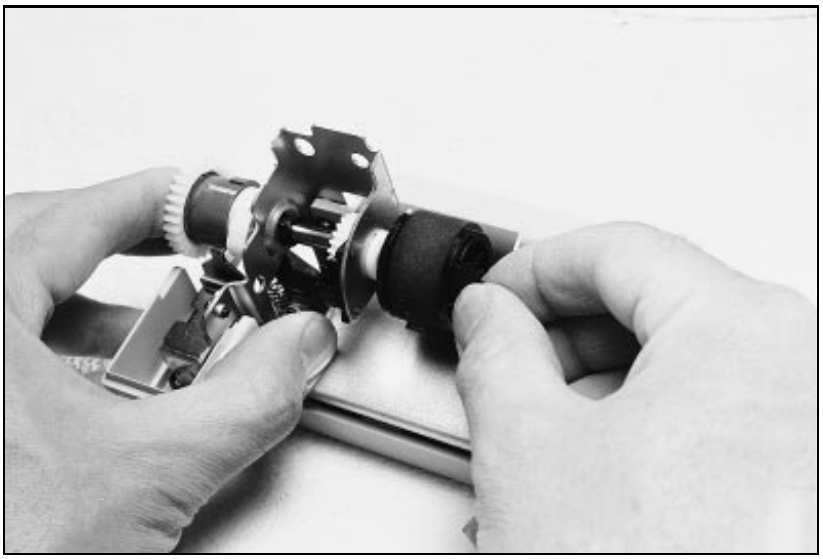


Figure 23 Replacing the Pickup Roller

Replacement Note

When replacing the pickup assembly roller, hold the shaft from the left side so that the pickup roller shaft and gears will remain in place.

Removing the Formatter Board and Shield

1. Remove any installed SIMMs.

Note

There are two TORX screws holding the I/O connector in position (Callout **1** in Figure 24). These are the only two TORX screws in the HP LaserJet 5P printer. Note also the location of the test print button hole (Callout **2**) on the side of the formatter board cover.

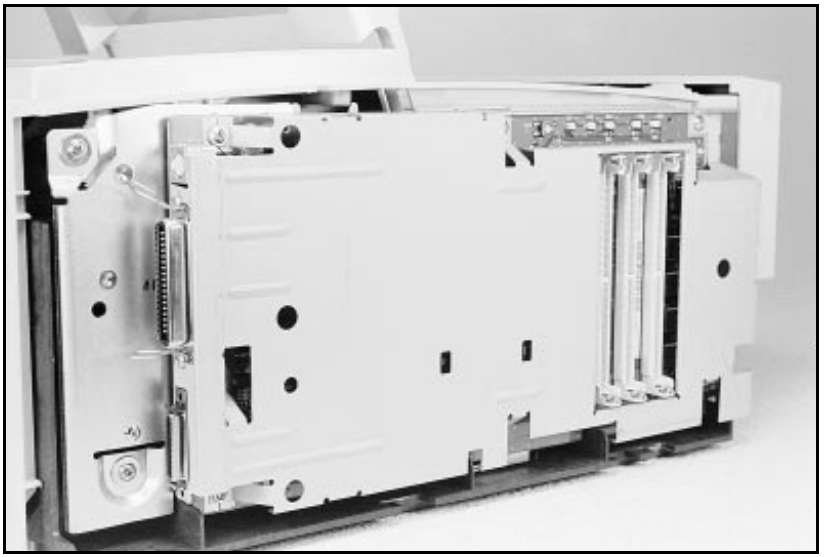


Figure 24 TORX Screw Locations.

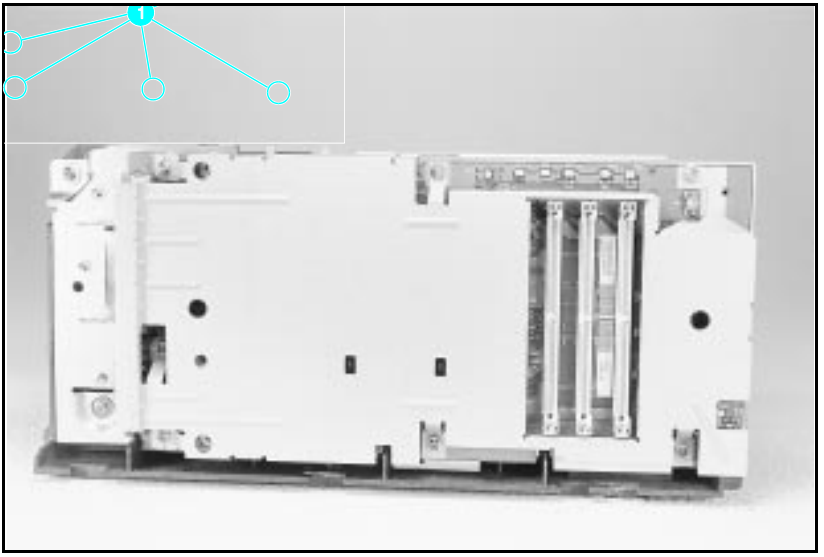


Figure 25 Removing the formatter screws.

2. Remove the (7) screws shown in Figure 25.

3. Pull the formatter board straight from the side of the chassis. (There will be a slight resistance from the DC Controller interconnect.)

4. Pull the DC controller interconnect out (Figure 26).

5. To separate the formatter PCA from its shield, remove the two screws (refer to callout **1** in Figure 21).

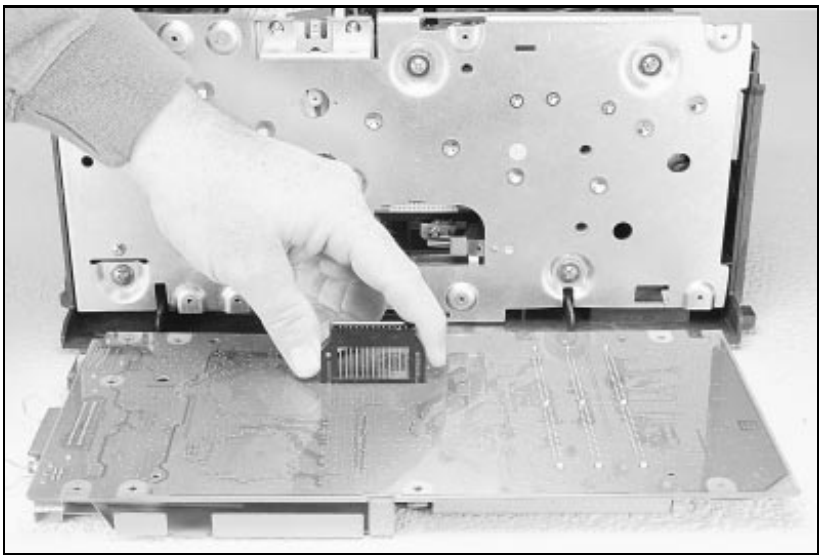


Figure 26 Removing the DC Controller Interconnect.

Note

RETAIN THE DC CONTROLLER INTERCONNECT when replacing the DC Controller Board. The replacement board part number does **not** include this interconnect.

Removing the Fusing Assembly

1. Remove the top cover assemblies.
2. Locate the black plastic fuser cover at the back of the printer. Press the release tab (callout **1** in Figure 27).
3. Slide the cover all the way to the right.
4. Pull the left end of the strip toward you at a 45° angle.
5. Slide the cover to the left and out of the printer.
6. Remove the four screws (2 self-tapping screws, two machine screws with washers) directly below the fuser assembly.
7. Grasp the fuser by the green plastic handle and pull out from the printer.

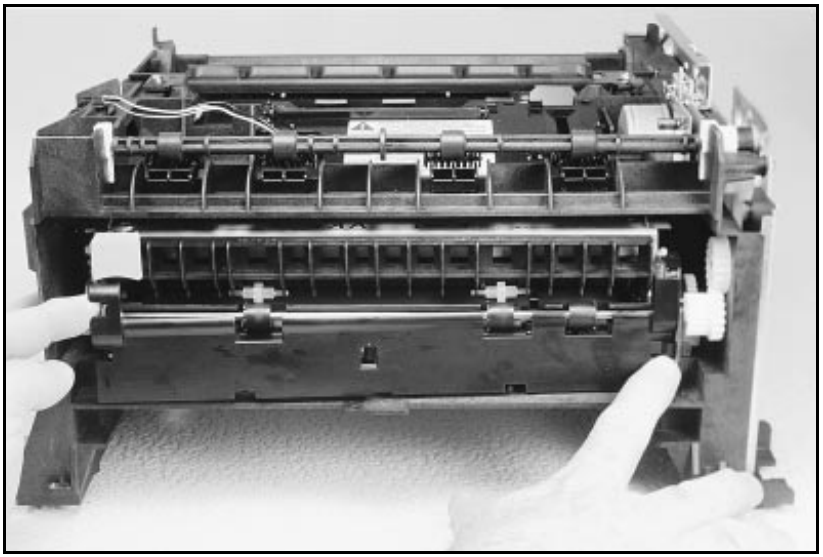


Figure 27 Removing the fuser cover.

Removing the DC Controller Assemblies

The DC Controller Assembly is located on the bottom of the printer. The PCA is protected by a metal shield assembly, and is mounted to a plastic base. The Formatter PCA and Fusing Assemblies are connected directly into the DC Controller and must be removed prior to removal of the DC Controller Assembly.

Caution Failure to remove these components before removing the DC Controller will result in printer damage.

1. Remove the printer covers (page 43), Formatter PCA and Shield (page 53), and Fusing Assemblies (page 55).

2. On the right side, remove the machine screw and washer (Figure 28) holding the grounding spring in place. (Callout **1** in Figure 25).

3. Disconnect the two cables to the tray 1 assembly (callout **2** in Figure 25).

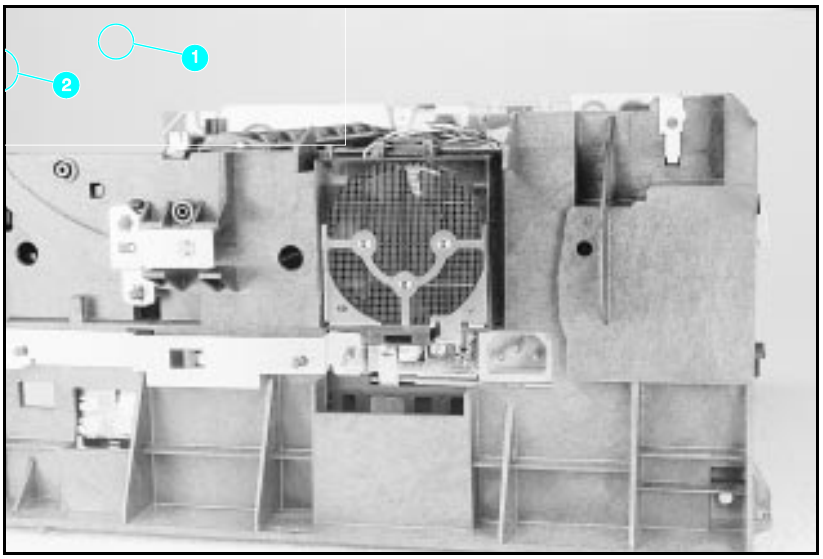


Figure 28 Grounding Spring screw location.

4. On the left side, remove the (2) screws that attach the grounding strap to the Gear Train Assembly (see callout 1 in Figure 6-36 of the Combined Service Manual). Turn the assembly upside-down before proceeding with further steps.

5. Remove the (5) self-tapping screws and the (1) machine screw with star washer from the bottom of the DC Controller Assembly. (See callouts **2** and **3** in Figure 6-36 in the Combined Service Manual.)

6. Lift the DC Controller Assembly away from the printer frame.

Note The PS1 Input Sensor Arm may come loose and fall out when you remove the DC Controller Assembly. See Figure 6-51 in the Combined Service Manual for re-installation.

7. Remove the metal backing plate from the DC Controller Assembly (see pages 6-43 and 6-44 in the Combined Service Manual for this procedure.)

8. Disconnect Tray 1 Interconnect PCA (callout **2** in Figure 26) and cable 302 (callout **1** in Figure 29) from the DC Controller PCA.

Caution Remove the Tray 1 Interconnect PCA carefully; it can easily be broken when separating it from the black plastic cover.

Note The Tray 1 Interconnect PCA and cable must also be retained when replacing the DC Controller Board. The part number for the DC Controller Board does not include a replacement PCA and cable. This cable can be directly pulled from the connector no releases are necessary.

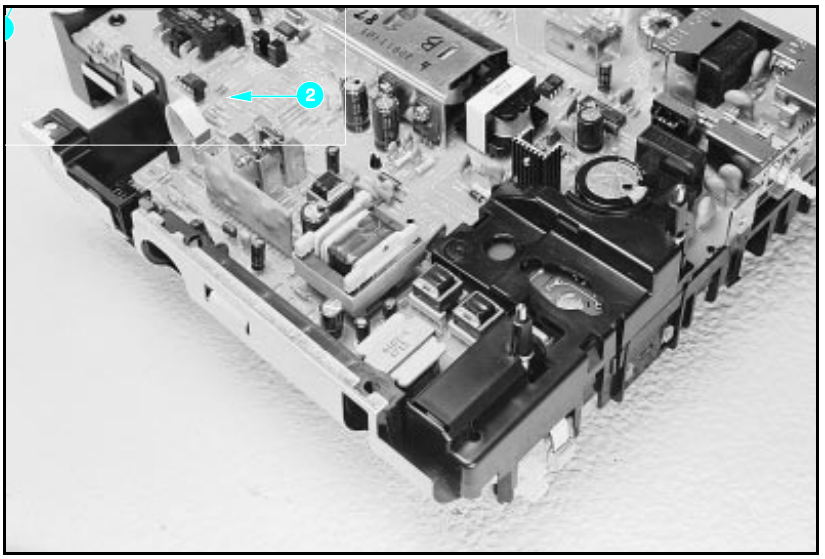


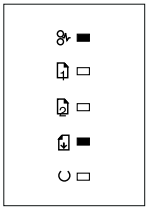
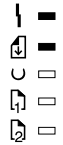
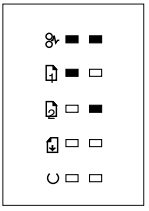
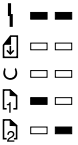
Figure 29 Tray 1 Interconnect PCA and Cable 302

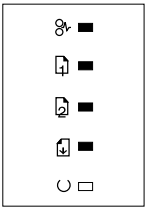
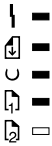
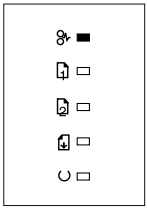
Troubleshooting

The troubleshooting process for the HP LaserJet 5P/5MP and 6P/6MP printers has two key differences from the 4L/4ML printer:

- Different error light patterns (5 LEDs instead of 4).
- Infrared port troubleshooting.

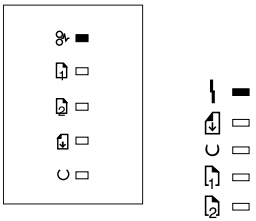
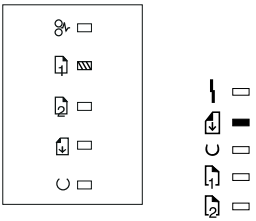
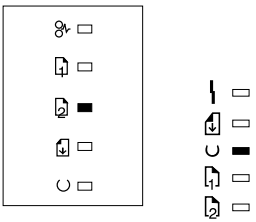
This section provides a list and explanation of the error LED patterns and instructions on troubleshooting the infrared port

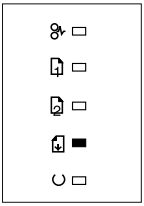
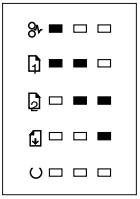
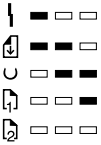
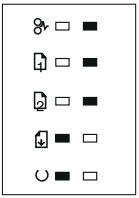
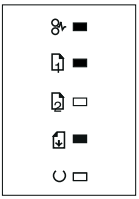
		A data error has occurred. Press the [GO] button to continue printing (some data may be lost). For more information, see “Data Error Light Patterns,” later in this appendix.
		A SIMM error has occurred. Make sure your SIMM is installed correctly. Replace the SIMM that caused the error. Or press the [GO] button on the printer to continue without configuring the SIMM that caused the error. If the SIMM has more than one bank of memory, the good banks will be automatically configured.

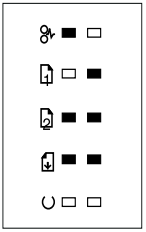
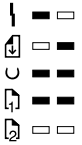
		A fatal error has occurred. Turn the printer off and then back on. If the same light pattern reappears, turn the printer off again and leave it off for about 10 minutes, then turn it back on. If the same light pattern reappears. refer to the discussion of Fatal Errors in "Troubleshooting."
		A recoverable error has occurred, such as a paper jam, the top cover is open, or the toner cartridge is missing.

Continuable Data Error Light Patterns

Possible data error light patterns are listed in the first column of the following table. If the Error and Data lights on the Status Panel are lit, simultaneously press the GO and RESET/JOB CANCEL buttons on the printer to display a secondary light pattern. This secondary light pattern, or data error light pattern, will more precisely describe the problem. Where more than one data error light pattern is possible, corresponding computer messages are listed in the second column.

Data Error Light Pattern 5P/5MP 6P/6MP	Computer Message	Description & Recommended Action
	20 MEM OVERFLOW	Too much data, or data too complex. Turn Page Protection ON or to AUTO (can be set within the Remote Control Panel). 2. Add optional memory. 3. Reduce the complexity of the print job. Press GO to resume printing.
	21 PRINT OVERRUN	
	22 IO ERROR	The computer and printer are not communicating because of improper signal protocols. Indicates a loose cable connection or a bad or poor quality cable. Reseat the cable and make sure you are using a high-quality cable

Data Error Light Pattern 5P/5MP	6P/6MP	Computer Message	Description & Recommended Action
		40 ERROR	Indicates an abnormal connection break occurred while transferring data from the computer. Press GO on the printer to clear the error message.
		41 ERROR	A temporary error occurred while printing. This error most commonly occurs when the printer picks two sheets of paper at once. The page containing the error is reprinted automatically. (first two light sequences) Remove the page from the output tray and press GO on the printer
		51/52 ERROR	The printer detected a temporary error condition. Turn the printer off then on. If the problem persists replace the laser scanner assembly.
		55 ERROR	The printer detected a temporary error condition Turn the printer off then back on. If problem persists, replace the DC Controller. If the problem still continues, replace the formatter PCA.

Data Error Light Pattern 5P/5MP 6P/6MP	Computer Message	Description & Recommended Action
 	68 SERVICE or 68 READY/ SERVICE	The printer's nonvolatile memory (NVRAM) is full or defective. Press GO on the printer to clear the error message. If problem persists, 1. Perform NVRAM Reset to clear NVRAM (hold down the RESET/JOB CANCEL button for more than 20 seconds during power on. 2. Replace the formatter PCA.

Error 53 -- Memory/SIMM Errors

Error 53 is indicated by a combination of the Error LED and either Tray LED, on and steady. More detail about the error is found by pressing the GO and RESET/JOB CANCEL buttons simultaneously, which causes a secondary sequence of light patterns. These secondary patterns form a binary representation of the exact hardware type, device and error number in the form 53-XY-ZZ as shown in Table 4.

Table 4. Memory Error Codes

X-Hardware Type	Y-Hardware Device	ZZ - Error Number
0: ROM	0: On board RAM/ROM	00: Unsupported memory
1: RAM	1: SIMM slot 1	01: Unrecognized memory
	2: SIMM slot 2	03: Unsupported memory size
	3: SIMM slot 3	04: Invalid SIMM speed
		05: SIMM reporting information incorrectly
		06: SIMM address conflict
		07: Could not make temporary mapping

Figure 30 explains how to read the light sequences. The initial sequence (Part 1) shows that ERROR 53 can be indicated by two different light sequences, depending on the X value: ROM (x =0) or in RAM (x =1) . Pressing GO and RESET/JOB CANCEL together produces a secondary light pattern, which reveals the Y- and ZZ-values, which complete the error code (Part II) . The binary Y value is read from the top two LEDS; the binary Z value is read from the lower three LEDS. Part III of Figure 27 shows the binary values of the different light combinations.

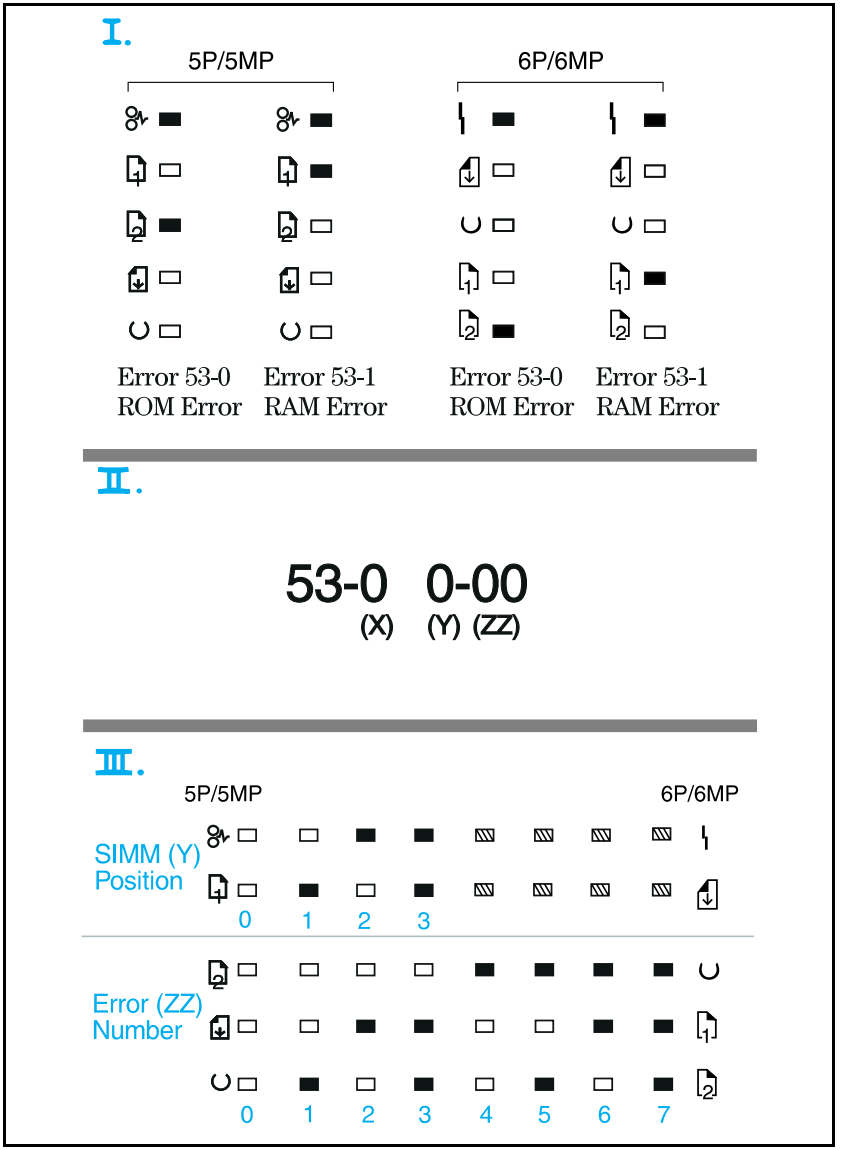


Figure -30 Secondary Light Patterns

Fatal/Service Errors

The following tables show fatal/service errors, which are not continuable; no further operation of the printer will occur until corrective action is taken.

Table 5. Fuser Malfunction

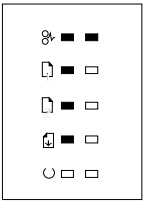
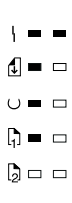
LED Display 5P/5MP	LED Display 6P/6MP	ERROR CODE	Description and Recommendation
		50 Fuser Malfunction	1. Remove power to the printer for 10 minutes. If this doesn't clear the error: 2. Perform the Fuser Checks shown in Table C-6. 3. Check the Fuses (FU101 and FU201) on the DC Controller PCA. Replace if faulty. 3. Replace the DC Controller PCA.

Table 6. Fuser Checks

SUSPECTED CAUSE	CHECK
1. Connector Contact	Ensure that J103 and J204 connectors on the Fusing Assembly are seated securely into the DC Controller PCA connectors (see Figure 6-29 in the Combined Service Manual for locations). Reseat the Fusing Assembly.
2. Thermistor wire open.	Remove the Fuser and measure the resistance between connectors J204-1 and J204-2 (see Figure 6-29 in the Combined Service Manual for location). Resistance should read approximately 440 K Ohms at 20 Deg C (room temperature). If the thermistor wire is open, replace the Fusing Assembly.
3. Thermal Fuse.	Measure the continuity between connectors J103-1 and J103-2 on the Fuser (see Figure 6-29, the Combined Service Manual for location). It should be approximately 30±5 Ohms for 100-120 VAC or 127±5 Ohms for 220-245 VAC. If the thermal fuse is open, replace the Fusing Assembly.

Table 7. 57/58 Main Motor Failure

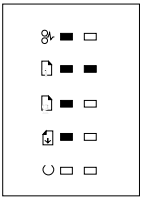
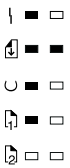
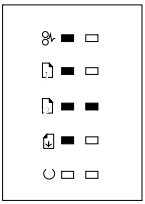
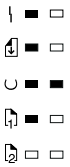
LED Display 5P/5MP	LED Display 6P/6MP	ERROR CODE	Description and Recommendation
		57/58 Main Motor Failure	The DC Controller has reported a general motor failure. The Main Motor is controlled by the DC Controller PCA, and seated into connector J601. Power-cycle the printer. If this doesn't clear the message: 1. Does the main motor rotate on power-up? **If no**: a. Reseat the Main Motor into the DC Controller connector. b. Inspect the Gear Train for debris that would block the free operation of the gears. c. The toner cartridge may not be rotating. Refer to "Drum Rotation Functional Check in the Combined Service Manual. d. Main Motor faulty. Power up the printer and observe if stacker rollers rotate. If not, replace the Main Motor. e. Replace the DC Controller PCA. If the main motor **does** rotate: 2. Does the fan turn during printing? If no: a. Power-cycle the printer. b. Check the fan to determine if it is blocked from operation. c. Reseat the fan connector on the Laser/Scanner Assembly. d. Replace the Fan. e. Replace the Laser/Scanner Assembly. f. Replace the DC Controller. g. Replace the connector between the scanner and DC Controller.
			

Table 8. 61.x SIMM Parity and Memory Errors

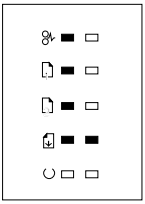
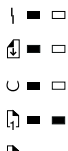
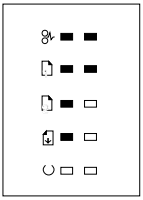
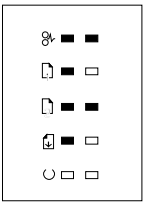
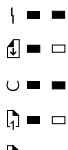
LED Display 5P/5MP	LED Display 6P/6MP	ERROR CODE	Description and Recommendation
		61.1 SIMM Slot One Parity Error	1. Power-cycle the printer. 2. Reseat the SIMM. 3. Replace the SIMM.
		61.2 SIMM Slot Two Parity Error	
		61.3 SIMM Slot Three Parity Error	

Table 9 62.x SIMM Parity and Memory Errors

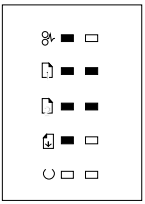
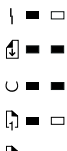
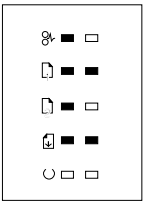
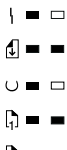
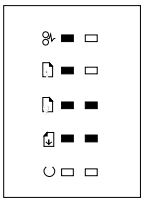
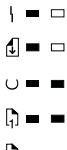
LED Display 5P/5MP	LED Display 6P/6MP	ERROR CODE	Description and Recommendation
		62.1 SIMM Slot One Memory Problem	1. Power-cycle the printer. 2. Reseat the SIMM. 3. Replace the SIMM.
		62.2 SIMM Slot Two Memory Problem	
		62.3 SIMM Slot Three Memory Problem	

Table 10. 62/63/64 Internal Memory Error

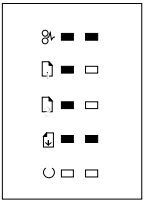
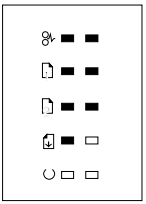
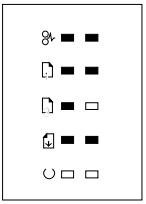
LED Display 5P/5MP 6P/6MP	ERROR CODE	Description and Recommendation
	62.0 Internal Memory Problem 63 Internal RAM Memory Test Failed 64 Scan Buffer Error	1. Power-cycle the printer. 2. Replace the Formatter PCA.
		
		

Table 12. Video DMA Timeout Error

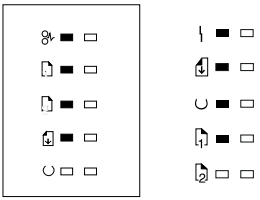
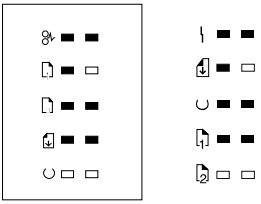
LED Display 5P/5MP 6P/6MP	ERROR CODE	Description and Recommendation
	64 ERROR: Video DMA Timeout	1. Power-cycle the printer. 2. Replace the Formatter PCA.

Table 11. Dynamic RAM Controller Error

LED Display 5P/5MP 6P/6MP	ERROR CODE	Description and Recommendation
	65 ERROR: Dynamic RAM Controller	1. Power-cycle the printer. 2. Replace the Formatter PCA.

Infrared Port Not Responding

Situation	Solution
The connection cannot be established or the transmission seems to be taking longer than usual.	Make sure the device you are using is IrDA-compliant; look for an IrDA symbol on the device or refer to the manual for the device for IrDA specifications. Make sure that the operating system on your computer includes an IR driver and your application uses a HP LaserJet 5P/5MP, 6P/6MP compatible printer driver. Make sure you have positioned the device within the range of operation and that no objects, such as a finger, paper, books, or bright light, are interfering with the connection. Also make sure the two IR ports are clean (free from dirt and grease). Bright light of any kind (sunlight, incandescent light, fluorescent light, or light from an infrared remote control, such as those used for TVs and VCRs) shining directly into one of the IR ports may cause interference. Position the device closer to the IR port on the printer.
The printer prints only part of a page or document.	The connection has been broken during transmission. If you move the portable device during transmission, the connection can be broken. IrDA-compliant devices are designed to recover from temporary connection interruptions. Re-establish the connection (depending on the device you are using, you can have anywhere from 3 to 40 seconds to re-establish the connection).
The print job has been properly sent to the printer, but the printer will not print.	If the connection is broken before the entire print job has been transmitted to the printer (printing has not yet started), the printer may not print any of the job. If the Data light is on, press the RESET/JOB CANCEL button to clear the printer's memory. Then, position the device within the range of operation, and print the job again.
The IR status light turns off during transmission.	The connection may have been broken. If the Data light is on, press the RESET/JOB CANCEL button to clear the printer's memory. Then, position the device within the range of operation, and print the job again.

Using the Infrared Test Tool

A special infrared troubleshooting test tool manufactured by Genoa Technology, Inc. in cooperation with Hewlett-Packard is available through HP Direct Ordering (part number 5062-4461). Refer to the discussion beginning on page 22 for more information.

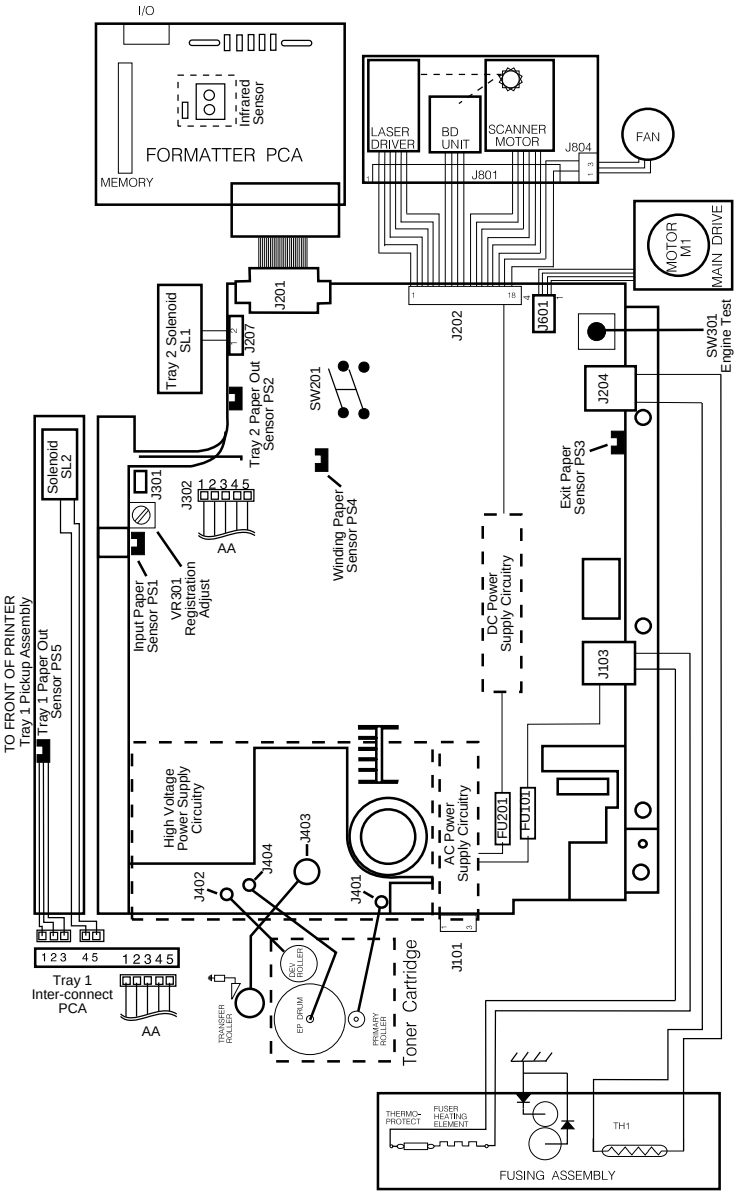


Figure 31 Main Wiring Diagram

Parts and Diagrams

The figures in this section illustrate the major subassemblies in the printer and their component parts. A table (material list) follows each exploded assembly diagram. Each table lists the reference designator (item number) for each part, the associated part number for the item, the quantity, and a description of the part.

While looking for a part number, pay careful attention to the voltage listed in the description column to ensure that the part number selected is for the correct model of printer.

Ordering Parts

All standard part numbers listed are stocked and may be ordered from HP's Parts Direct Ordering, or Parts Center Europe (PCE).

Hewlett-Packard Co.
Support Materials Organization
8050 Foothills Blvd.
Roseville, CA 95678
Parts Direct Ordering: 1-800-227-8164 (U.S. Only)

Hewlett-Packard Co.
Parts Center, Europe
Wolf-Hirth Strasse 33
D-7030 Boeblingen, Germany
(49 7031) 14-2253

Contact your local HP Parts Coordinator for other local phone numbers.

Ordering Consumables

Consumables and accessories such as those listed on page 8-5, and in Table 4-1, Chapter 4, may be ordered direct from Hewlett-Packard. The phone numbers are:

U.S.: 1-800-538-8787
Canada: 1-800-387-3154
(Toronto) 416-671-8383
United Kingdom: 0734-441212
Germany: 0130-3322

Contact your local HP Parts Coordinator for other local phone numbers.

Note

Parts that have no reference designator or part number are not field replaceable parts and cannot be ordered through SMO.

The majority of parts numbers are the same for both the HP LaserJet 5P/5MP and the 6P/6MP printers. Parts that are different for the HP LaserJet 6P/6MP printers are highlighted.

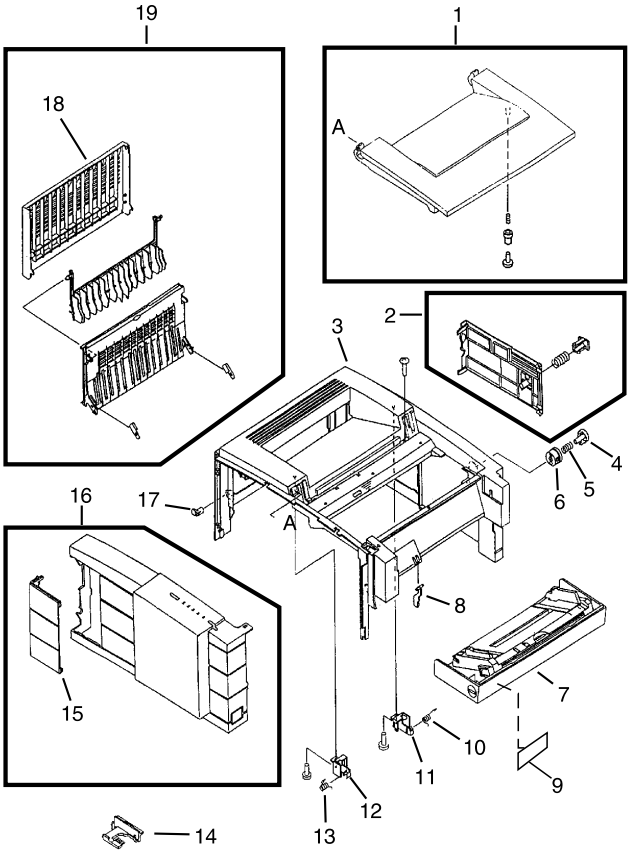


Figure 32. HP LaserJet 5P/6P Covers and Doors

Table 13. Covers and Doors

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1709-000CN RG5-2782-000CN	1	Top Door Assembly (5P/5MP) Top Door Assembly (6P/6MP)
2	RG5-1699-000CN RG5-2779-000CN	1	Power Connector Cover Assy (5P/5MP) Power Connector Cover Assy (6P/6MP)
3	RB1-5931-000CN RB1-9160-000CN	1	Cover, Main (HP LaserJet 5P/5MP) Cover, Main (HP LaserJet 6P/6MP)
4	RB1-5935-000CN RB1-9164-000CN	1	Button, Lock (HP LaserJet 5P/5MP) Button, Lock (HP LaserJet 6P/6MP)
5	RS5-2228-000CN	1	Spring, Compression
6	RB1-5936-000CN RB1-9165-000CN	1	Guide, Lock Button (HP LaserJet 5P/5MP) Guide, Lock Button (HP LaserJet 6P/6MP)
7	RG5-1697-000CN RG5-2785-000CN	1	Paper Feed Tray Assembly (5P/5MP) Paper Feed Tray Assembly (6P/6MP)
8	RB1-5939-000CN	1	Arm, Tray 1 Sensor
9	C3150-00004 C3155-00001 C3980-00001 C3982-00001	1	Nameplate (HP LaserJet 5P) Nameplate (HP LaserJet 5MP) Nameplate (HP LaserJet 6P) Nameplate (HP LaserJet 6MP)
10	RS5-2418-000CN	1	Spring, Torsion
11	RB1-5937-000CN	1	Stopper, Hinge, Right
12	RB1-5938-000CN	1	Stopper, Hinge, Left
13	RS5-2419-000CN	1	Spring, Torsion
14	RF5-0593-000CN	1	Brush, Mirror
15	RB1-5934-000CN RB1-9151-000CN	1	Cover, Interface Connector (5P/5MP) Cover, Interface Connector (6P/6MP)
16	RG5-1710-000CN RG5-2780-000CN	1	Side Cover Assembly (5P/5MP) Side Cover Assembly (6P/6MP)
17	RB1-5927-000CN	1	Bushing
18	RB1-5924-000CN RB1-9171-000CN	1	Tray, Sub-assy, Face-Up (5P/5MP) Tray, Sub-assy, Face-Up (6P/6MP)
19	RG5-1707-000CN RG5-2784-000CN	1	Face-Up Tray Assembly (5P/5MP) Face-Up Tray Assembly (6P/6MP)

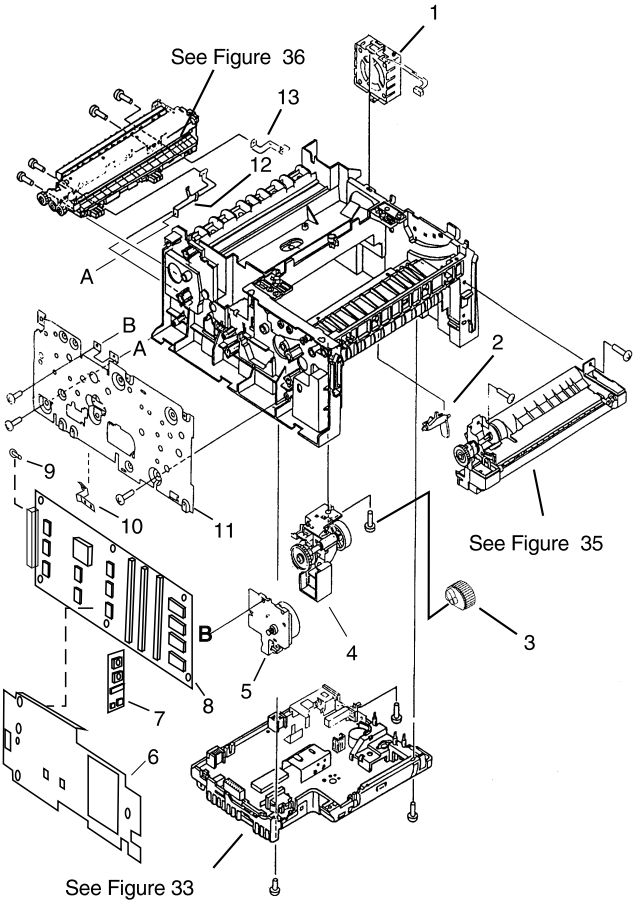


Figure 33. HP LaserJet 5P/6P Internal Components (1)

Table 14. Internal Components (1)

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1801-000CN RG5-2776-000CN	1	Fan Assembly (5P/5MP) Fan Assembly (6P/6MP)
2	RB1-6006-000CN	1	Arm, Sensor
3	RB1-6332-000CN	1	Pick-Up Roller (tray 2)
4	RG5-1692-000CN RG5-2796-000CN		Pick-Up Assy (tray 2) (5P/5MP) Pick-Up Assy (tray 2) (6P/6MP)
5	RG5-1799-000CN RG5-2786-000CN	1	Motor Assembly (5P/5MP) Motor Assembly (6P/6MP)
6	C3150-00005 C3980-00007	1	Formatter Shield (5P/5MP) Formatter Shield (6P/6MP)
7	C3152-69001 C3987-69001	1	PostScript SIMM (exch.) (5P/5MP) PostScript SIMM (exch.) (6P/6MP)
8	C3151-67901 C3151-69001 C3981-69001	1	Formatter PCA (new) Formatter PCA (exch.) (5P/5MP) Formatter PCA (exch.) (6P/6MP)
9	0515-2701	2	TORX screws
10	RB1-5971-000CN	1	Leaf Spring
11	RG5-1713-000CN RG5-2778-000CN	1	Gear train Assembly (5P/5MP) Gear train Assembly (6P/6MP)
12	RB1-5999-000CN RB1-9195-000CN	1	Plate, Grounding, Left (5P/5MP) Plate, Grounding, Left (6P/6MP)
13	RB1-5998-000CN RB1-9194-000CN	1	Plate, Grounding, Right (5P/5MP) Plate, Grounding, Right (6P/6MP)

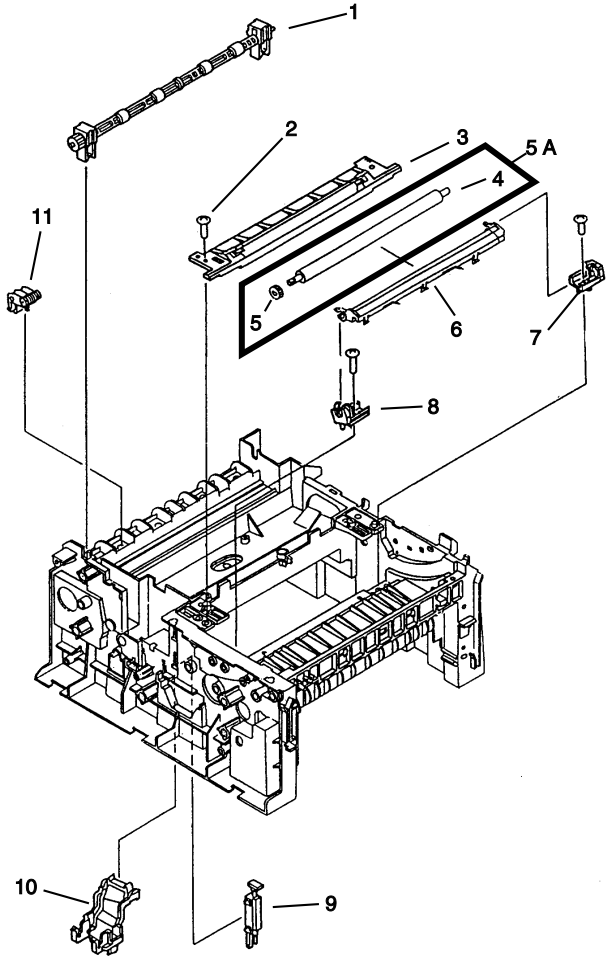


Figure 34. HP LaserJet 5P/6P Internal Components (2)

Table 15. Internal Components (2)

REF	PART NO.	QTY	DESCRIPTION
1	RG5-0683-020CN	1	Roller, Upper Output Assembly
2	XA9-0666-000CN	2	Screw, TP
3	RG5-1786-000CN	1	Mirror Assembly
4	RB1-5873-000CN	1	Roller, Transfer (5P only)
5	RS5-0313-000CN	1	Gear, 17T
5a	RF5-1287-000CN RF5-0596-000CN	1	Transfer Roller Assembly (5P/5MP) Transfer Roller Assembly (6P/6MP)
6	RG5-1706-000CN	1	Transfer Guide Assembly
7	RG5-0675-000CN	1	Transfer Mount Assy, Right
8	RG5-0674-000CN	1	Transfer Mount Assy, Left
9	RG5-0694-020CN	1	Switch, Plunger Assembly
10	RG5-0766-030CN	1	Scanner Connector Assy
11	RG5-0682-030CN	4	Lower Delivery Roller

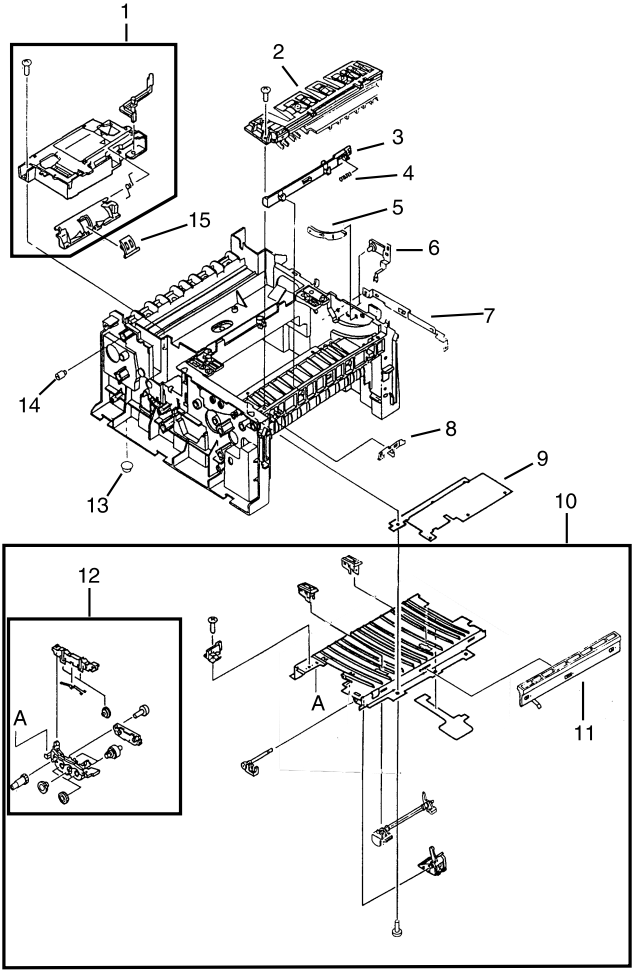


Figure -35. HP LaserJet 5P/6P Internal Components (3)

Table 16. Internal Components (3)

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1780-000CN RG5-2848-000CN C3150-69005 C3980-69005	1	Laser Scanner Assembly (new 5P/5MP) Laser Scanner Assembly (new 6P/6MP) Laser Scanner Assembly (exch 5P/5MP) Laser Scanner Assembly (exch 6P/6MP)
2	RG5-1698-000CN	1	Top Oblique Roller Assy
3	RB1-3002-040CN	1	Plunger Lock, Door
4	RS5-2232-000CN	1	Spring, Compression
5	RB1-6003-000CN	1	Plate, Cartridge
6	RB1-6002-000CN	1	Plate, Cartridge Grounding
7	RF5-1286-000CN	1	Plate, MP Grounding, Right
8	RB1-6001-000CN	1	Arm, Input Paper Sensor
9	RB1-2987-020CN	1	Shield, HVT
10	RG5-0584-000CN	1	Feeder Guide Assembly
11	RF5-1283-000CN	1	Eliminator, Static Charge
12	RG5-1814-000CN	1	Roller Assembly, Small Media
13	RB1-6007-000CN	4	Foot, Chassis
14	RB1-6008-000CN	6	Damper, Rubber
15	RB1-3681-000CN	1	Cap, Laser Shutter

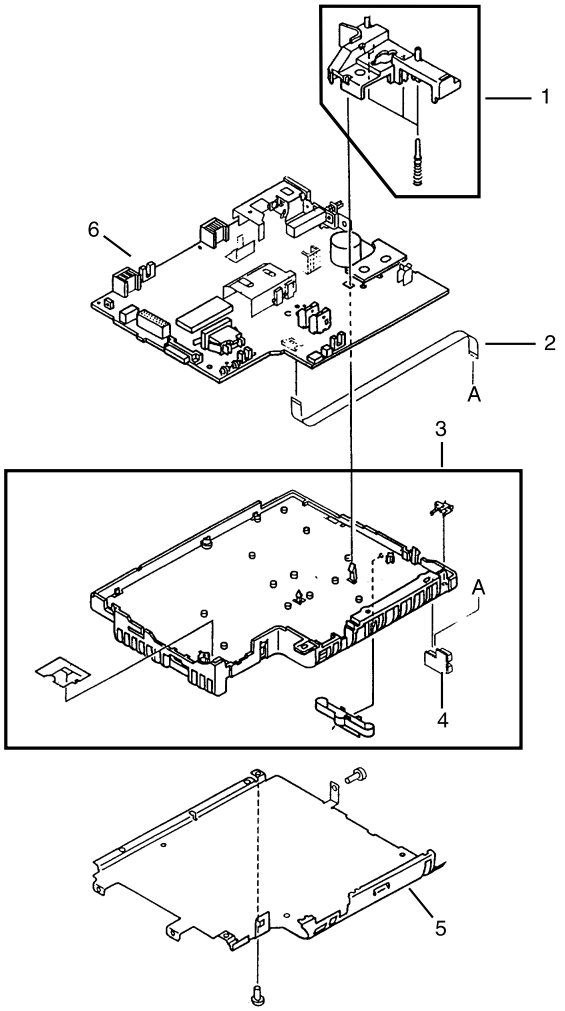


Figure 36. DC Controller Assembly

Table 17. DC Controller Assembly

REF	PART NO.	QTY	DESCRIPTION
1	RG5-1719-000CN	1	HVT Controller Assembly
2	RH2-5259-000CN	1	Cable, Flat (5P/5MP)
3	RG5-1712-000CN RG5-2774-000CN	1	DC Controller Case Assy (5P/5MP) DC Controller Case Assy (6P/6MP)
4	RG5-1808-000CN	1	Tray 1 Connector PCA Assy
5	RB1-5987-000CN	1	Shield, Case
6	 RG5-1798-000CN RG5-2826-000CN C3150-69001 C3980-69001 RG5-1809-000CN RG5-2827-000CN C3150-69002 c3980-69002	1	DC Controller PCA 100-120V new (5P/5MP) new (6P/6MP) exchange (5P/5MP) exchange (6P/6MP) DC Controller PCA 220-240V new (5P/5MP) new (6P/6MP) exchange (5P/5MP) exchange (6P/6MP)

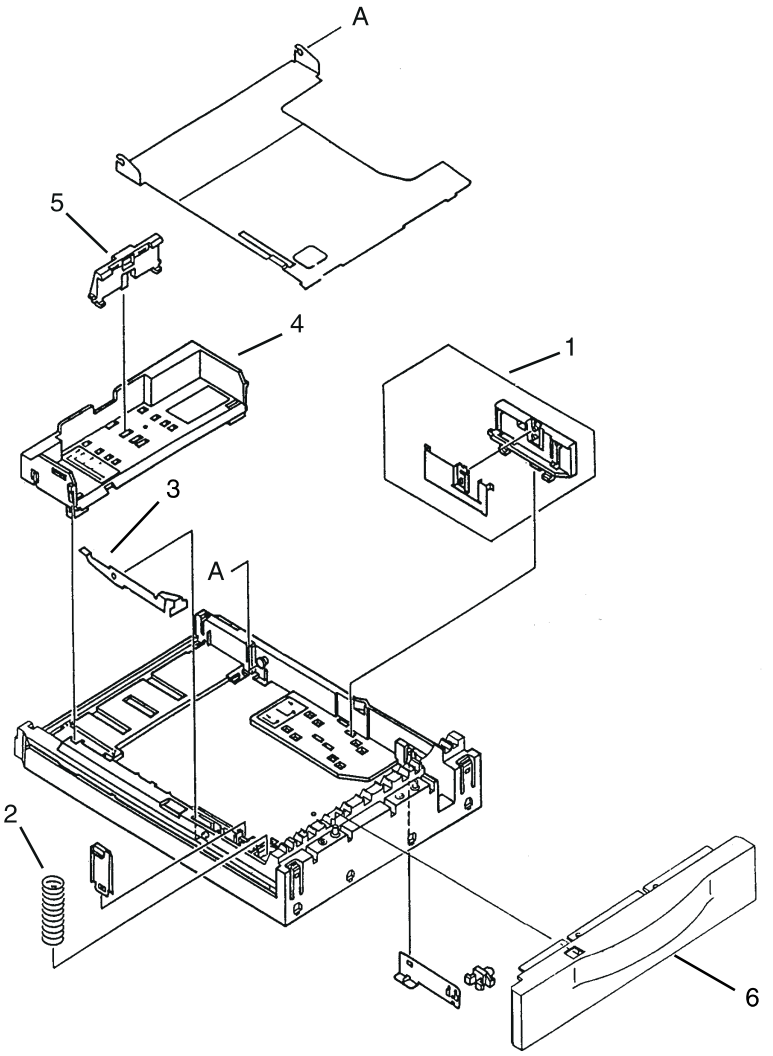


Figure 37. Tray 2 Assembly

Table 18. Tray 2 Assembly

REF	PART NO.	QTY	DESCRIPTION
	R75-4000-000CN R98-1001-000CN	1	Complete Tray 2 Assembly (5P/5MP) Complete Tray 2 Assembly (6P/6MP)
1	RF5-0673-000CN	1	Plate, Side
2	RS5-2458-000CN	1	Spring, Compression
3	RB1-3426-000CN	1	Claw, Separation
4	RB1-6378-000CN	1	Tray, Legal
5	RB1-6382-000CN	1	Plate, End
6	RB1-9205-000CN	1	Tray 2 Front Panel

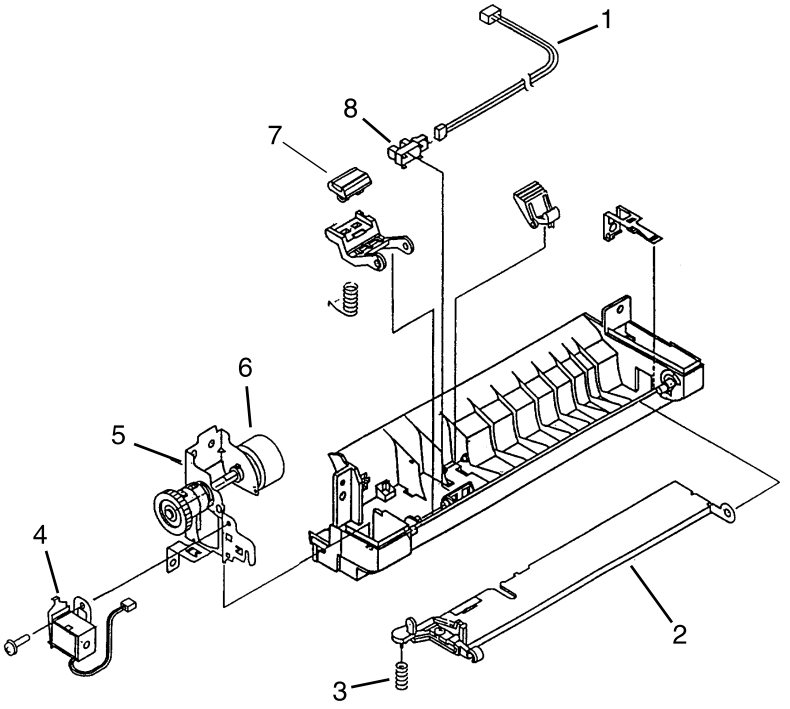


Figure 38. Tray 1 Assembly

Table 19. Tray 1 Assembly

REF	PART NO.	QTY	DESC
	RG5-1695-000CN RG5-2790-000CN	1	Complete Tray 1 Pickup Assy (5P/5MP) Complete Tray 1 Pickup Assy (6P/6MP)
1	RG5-1804-000CN	1	Tray 1 Sensor Cable
2	RG5-1694-000CN	1	Paper guide Plate Assy
3	RS5-2415-000CN	1	Spring, Compression
4	RH7-1258-000CN RH7-5160-000CN	1	Solenoid SL2 (5P/5MP) Solenoid SL2 (6P/6MP)
5	RG5-1693-000CN RG5-2791-000CN	1	Tray 1 Pickup Roller Assy (5P/5MP) Tray 1 Pickup Roller Assy (6P/6MP)
6	RB1-2205-000CN	1	Roller, Tray 1 Pickup
7	RF5-0343-000CN	1	Pad, Separation
8	WG8-5210-000CN	1	Photosensor PS5

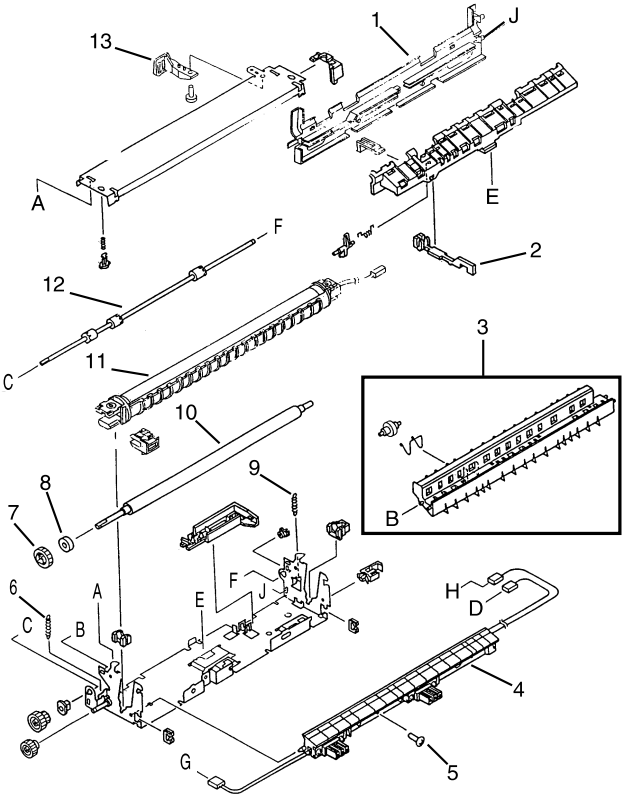


Figure 39. HP LaserJet 5P/6P Fusing Assembly

Table 20. Fusing Assembly

REF	PART NO.	QTY	DESCRIPTION
	RG5-1700-000CN RG5-2800-000CN C3150-69003 C3980-69003 RG5-1701-000CN RG5-2801-000CN C3150-69004 C3980-69004	1 1	Complete Fuser Assy (100-120V) new (5P/5MP) new (6P/6MP) exchange (5P/5MP) exchange (6P/6MP) Complete Fuser Assy (220-240V) new (5P/5MP) new (6P/6MP) exchange (5P/5MP) exchange (6P/6MP)
1	RB1-5918-000CN	1	Cover, Delivery
2	RB1-3097-000CN	1	Flag, Exit Sensor
3	RG5-0681-000CN	1	Fuser Delivery Assembly
4	RG5-1813-000CN RG5-2799-000CN	1	Guide , Fuser Entrance (5P/5MP) Guide , Fuser Entrance (6P/6MP)
5	XB2-8300-809CN	2	Screw, W/Star, M3X8
6	RS5-2421-000CN RS5-2643-000CN	1	Spring, Tension (5P/5MP) Spring, Tension (6P/6MP)
7	RS5-0637-000CN	1	Gear, 24T
8	RB1-3109-000CN	1	Rubber, Continuity
9	RS5-2421-000CN	1	Spring, Fuser Hook
10	RB1-5910-000CN RB1-9179-000CN	1	Roller, Fuser Pressure (5P/5MP) Roller, Fuser Pressure (6P/6MP)
11	RG5-1702-000CN RG5-2802-000CN RG5-1703-000CN RG5-2803-000CN	1	Fuser Film Assembly 100-120v (5P/5MP) Fuser Film Assembly 100-120v (6P/6MP) Fuser Film Assembly 220-240V (5P/5MP) Fuser Film Assembly 220-240V (6P/6MP)
12	RB1-5917-000CN RB1-9181-000CN	1	Roller, Fuser Delivery (5P/5MP) Roller, Fuser Delivery (6P/6MP)
13	RB1-5906-000CN	1	Tab, Fuser Release

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DESCRIPTION	PART NUMBER	FIG
Arm, Input Paper Sensor	RB1-6001-000CN	35
Arm, Sensor	RB1-6006-000CN	33
Arm, Tray 1 Sensor	RB1-5939-000CN	32
Brush, Mirror	RF5-0593-000CN	32
Bushing	RB1-5927-000CN	32
Button, Lock (HP LaserJet 5P/5MP)	RB1-5935-000CN	32
Button, Lock (HP LaserJet 6P/6MP)	RB1-9164-000CN	32
Cable, Flat	RH2-5259-000CN	36
Cap, Laser Shutter	RB1-3681-000CN	35
Claw, Separation	RB1-3426-000CN	37
Complete Fuser Assy (100-120V), exchange (5P/5MP)	C3150-69003	39
Complete Fuser Assy (100-120V), exchange (6P/6MP)	C3980-69003	39
Complete Fuser Assy (100-120V), new (5P/5MP)	RG5-1700-000CN	39
Complete Fuser Assy (100-120V), new (6P/6MP)	RG5-2800-000CN	39
Complete Fuser Assy (220-240V), exchange (5P/5MP)	C3150-69004	39
Complete Fuser Assy (220-240V), exchange (6P/6MP)	C3980-69004	39
Complete Fuser Assy (220-240V), new (5P/5MP)	RG5-1701-000CN	39
Complete Fuser Assy (220-240V), new (6P/6MP)	RG5-2801-000CN	39
Complete Tray 1 Pickup Assy (5P/5MP)	RG5-1695-000CN	38
Complete Tray 1 Pickup Assy (6P/6MP)	RG5-2790-000CN	38
Complete Tray 2 Assembly (5P/5MP)	R75-4000-000CN	37
Complete Tray 2 Assembly (5P/5MP)	R98-4000-000CN	37
Cover, Delivery	RB1-5918-000CN	39

DESCRIPTION	PART NUMBER	FIG
Cover, Interface Connector (5P/5MP)	RB1-5934-000CN	32
Cover, Interface Connector (6P/6MP)	RB1-9151-000CN	32
Cover, Main (HP LaserJet 5P/5MP)	RB1-5931-000CN	32
Cover, Main (HP LaserJet 6P/6MP)	RB1-9160-000CN	32
Damper, Rubber	RB1-6008-000CN	35
DC Controller Case Assy (5P/5MP)	RG5-1712-000CN	36
DC Controller Case Assy (6P/6MP)	RG5-2774-000CN	36
DC Controller PCA 100-120V, exchange (5P/5MP)	C3150-69001	36
DC Controller PCA 100-120V, exchange (6P/6MP)	C3980-69001	36
DC Controller PCA 100-120V, new (5P/5MP)	RG5-1798-000CN	36
DC Controller PCA 100-120V, new (6P/6MP)	RG5-2826-000CN	36
DC Controller PCA 220-240V, exchange (5P/5MP)	C3150-69002	36
DC Controller PCA 220-240V, exchange (6P/6MP)	C3980-69002	36
DC Controller PCA 220-240V, new (5P/5MP)	RG5-1809-000CN	36
DC Controller PCA 220-240V, new (6P/6MP)	RG5-2827-000CN	36
Eliminator, Static Charge	RF5-1283-000CN	35
Face-Up Tray Assembly (5P/5MP)	RG5-1707-000CN	32
Face-Up Tray Assembly (6P/6MP)	RG5-2784-000CN	32
Fan Assembly (5P/5MP)	RG5-1801-000CN	33
Fan Assembly (6P/6MP)	RG5-2776-000CN	33
Feeder Guide Assembly	RG5-0584-000CN	35
Flag, Exit Sensor	RB1-3097-000CN	39
Foot, Chassis	RB1-6007-000CN	35
Formatter PCA (exch.) (5P/5MP)	C3151-69001	33
Formatter PCA (exch.) (6P/6MP)	C3981-69001	33
Formatter PCA (new)	C3151-67901	33

DESCRIPTION	PART NUMBER	FIG
Formatter Shield	C3150-00005	33
Fuser Delivery Assembly	RG5-0681-000CN	39
Fuser Film Assembly 100-120v (5P/5MP)	RG5-1702-000CN	39
Fuser Film Assembly 100-120v (6P/6MP)	RG5-2802-000CN	39
Fuser Film Assembly 220-240V (5P/5MP)	RG5-1703-000CN	39
Fuser Film Assembly 220-240V (6P/6MP)	RG5-2803-000CN	39
Gear train Assembly (5P/5MP)	RG5-1713-000CN	33
Gear train Assembly (6P/6MP)	RG5-2778-000CN	33
Gear, 17T	RS5-0313-000CN	34
Gear, 24T	RS5-0637-000CN	39
Guide , Fuser Entrance (5P/5MP)	RG5-1813-000CN	39
Guide , Fuser Entrance (6P/6MP)	RG5-2799-000CN	39
Guide, Lock Button (HP LaserJet 5P/5MP)	RB1-5936-000CN	32
Guide, Lock Button (HP LaserJet 6P/6MP)	RB1-9165-000CN	32
HVT Controller Assembly	RG5-1719-000CN	36
Laser Scanner Assembly (exch 5P/5MP)	C3150-69005	35
Laser Scanner Assembly (exch 6P/6MP)	C3980-69005	35
Laser Scanner Assembly (new 5P/5MP)	RG5-1780-000CN	35
Laser Scanner Assembly (new 6P/6MP)	RG5-2848-000CN	35
Leaf Spring	RB1-5971-000CN	33
Lower Delivery Roller	RG5-0682-030CN	34
Mirror Assembly	RG5-1786-000CN	34
Motor Assembly (5P/5MP)	RG5-1799-000CN	33
Motor Assembly (6P/6MP)	RG5-2786-000CN	33
Nameplate (HP LaserJet 5MP)	C3155-00001	32
Nameplate (HP LaserJet 5P)	C3150-00004	32

DESCRIPTION	PART NUMBER	FIG
Pad, Separation	RF5-0343-000CN	38
Paper Feed Tray Assembly (5P/5MP)	RG5-1697-000CN	32
Paper Feed Tray Assembly (6P/6MP)	RG5-2785-000CN	32
Paper guide Plate Assy	RG5-1694-000CN	38
Photosensor PS5	WG8-5210-000CN	38
Pick-Up Assy (tray 2) (5P/5MP)	RG5-1692-000CN	33
Pick-Up Assy (tray 2) (6P/6MP)	RG5-2796-000CN	33
Pick-Up Roller (tray 2)	RB1-6332-000CN	33
Plate, Cartridge	RB1-6003-000CN	35
Plate, Cartridge Grounding	RB1-6002-000CN	35
Plate, End (5P/5MP)	RB1-3338-000CN	37
Plate, End (6P/6MP)	RB1-6382-000CN	37
Plate, Grounding, Left (5P/5MP)	RB1-5999-000CN	33
Plate, Grounding, Left (6P/6MP)	RB1-9195-000CN	33
Plate, Grounding, Right (5P/5MP)	RB1-5998-000CN	33
Plate, Grounding, Right (6P/6MP)	RB1-9194-000CN	33
Plate, MP Grounding, Right	RF5-1286-000CN	35
Plate, Side (5P/5MP)	RF5-0673-000CN	37
Plate, Side (6P/6MP)	RF5-0673-000CN	37
Plunger Lock, Door	RB1-3002-040CN	35
PostScript SIMM (exch.)	C3152-69001	33
Power Connector Cover Assy (5P/5MP)	RG5-1699-000CN	32
Power Connector Cover Assy (6P/6MP)	RG5-2779-000CN	32
Roller Assembly, Small Media	RG5-1814-000CN	35
Roller, Fuser Delivery (5P/5MP)	RB1-5917-000CN	39
Roller, Fuser Delivery (6P/6MP)	RB1-9181-000CN	39

DESCRIPTION	PART NUMBER	FIG
Roller, Fuser Pressure (5P/5MP)	RB1-5910-000CN	39
Roller, Fuser Pressure (6P/6MP)	RB1-9179-000CN	39
Roller, Transfer	RB1-5873-000CN	34
Roller, Tray 1 Pickup	RB1-2205-000CN	38
Roller, Upper Output Assembly	RG5-0683-020CN	34
Rubber, Continuity	RB1-3109-000CN	39
Scanner Connector Assy	RG5-0766-030CN	34
Screw, TP	XA9-0666-000CN	34
Screw, W/Star, M3X8	XB2-8300-809CN	39
Shield, Case	RB1-5987-000CN	36
Shield, HVT	RB1-2987-020CN	35
Side Cover Assembly (5P/5MP)	RG5-1710-000CN	32
Side Cover Assembly (6P/6MP)	RG5-2780-000CN	32
Solenoid SL2 (5P/5MP)	RH7-1258-000CN	38
Solenoid SL2 (6P/6MP)	RH7-5160-000CN	38
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Spring, Compression	RS5-2232-000CN	35
Spring, Compression	RS5-2415-000CN	38
Spring, Compression	RS5-2458-000CN	37
Spring, Fuser Hook	RS5-2421-000CN	39
Spring, Tension (5P/5MP)	RS5-2421-000CN	39
Spring, Tension (6P/6MP)	RS5-2643-000CN	39
Spring, Torsion	RS5-2418-000CN	32
Spring, Torsion	RS5-2419-000CN	32
Stopper, Hinge, Left	RB1-5938-000CN	32
Stopper, Hinge, Right	RB1-5937-000CN	32

DESCRIPTION	PART NUMBER	FIG
Switch, Plunger Assembly	RG5-0694-020CN	34
Tab, Fuser Release	RB1-5906-000CN	39
Top Door Assembly (5P/5MP)	RG5-1709-000CN	32
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Top Oblique Roller Assy	RG5-1698-000CN	35
TORX screws	0515-2701	33
Transfer Guide Assembly	RG5-1706-000CN	34
Transfer Mount Assy, Left	RG5-0674-000CN	34
Transfer Mount Assy, Right	RG5-0675-000CN	34
Transfer Roller Assembly (5P/5MP)	RF5-1287-000CN	34
Transfer Roller Assembly (6P/6MP)	RF5-0596-000CN	34
Tray 1 Connector PCA Assy	RG5-1808-000CN	36
Tray 1 Pickup Roller Assy (5P/5MP)	RG5-1693-000CN	38
Tray 1 Pickup Roller Assy (6P/6MP)	RG5-2791-000CN	38
Tray 1 Sensor Cable	RG5-1804-000CN	38
Tray 2 Front Panel	RB1-9205-000CN	37
Tray, Legal	RB1-6378-000CN	37
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C3150-69002	DC Controller PCA 220-240V, exchange (5P/5MP)	36
C3150-69003	Complete Fuser Assy (100-120V), exchange (5P/5MP)	39
C3150-69004	Complete Fuser Assy (220-240V), exchange (5P/5MP)	39
C3150-69005	Laser Scanner Assembly (exch 5P/5MP)	35
C3151-67901	Formatter PCA (new)	33
C3151-69001	Formatter PCA (exch.) (5P/5MP)	33
C3152-69001	PostScript SIMM (exch.)	33
C3155-00001	Nameplate (HP LaserJet 5MP)	32
C3980-69001	DC Controller PCA 100-120V, exchange (6P/6MP)	36
C3980-69002	DC Controller PCA 220-240V, exchange (6P/6MP)	36
C3980-69003	Complete Fuser Assy (100-120V), exchange (6P/6MP)	39
C3980-69004	Complete Fuser Assy (220-240V), exchange (6P/6MP)	39
C3980-69005	Laser Scanner Assembly (exch 6P/6MP)	35
C3981-69001	Formatter PCA (exch.) (6P/6MP)	33
R75-4000-000CN	Complete Tray 2 Assembly (5P/5MP)	37
R98-4000-000CN	Complete Tray 2 Assembly (5P/5MP)	37
RB1-2205-000CN	Roller, Tray 1 Pickup	38
RB1-2987-020CN	Shield, HVT	35
RB1-3002-040CN	Plunger Lock, Door	35
RB1-3097-000CN	Flag, Exit Sensor	39
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PART NUMBER	DESCRIPTION	FIG
RB1-3338-000CN	Plate, End (5P/5MP)	37
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RB1-3681-000CN	Cap, Laser Shutter	35
RB1-5873-000CN	Roller, Transfer	34
RB1-5906-000CN	Tab, Fuser Release	39
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RB1-5924-000CN	Tray, Sub-assy, Face-Up (5P/5MP)	32
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RB1-5931-000CN	Cover, Main (HP LaserJet 5P/5MP)	32
RB1-5934-000CN	Cover, Interface Connector (5P/5MP)	32
RB1-5935-000CN	Button, Lock (HP LaserJet 5P/5MP)	32
RB1-5936-000CN	Guide, Lock Button (HP LaserJet 5P/5MP)	32
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RB1-5939-000CN	Arm, Tray 1 Sensor	32
RB1-5971-000CN	Leaf Spring	33
RB1-5987-000CN	Shield, Case	36
RB1-5998-000CN	Plate, Grounding, Right (5P/5MP)	33
RB1-5999-000CN	Plate, Grounding, Left (5P/5MP)	33
RB1-6001-000CN	Arm, Input Paper Sensor	35
RB1-6002-000CN	Plate, Cartridge Grounding	35
RB1-6003-000CN	Plate, Cartridge	35
RB1-6006-000CN	Arm, Sensor	33
RB1-6007-000CN	Foot, Chassis	35

PART NUMBER	DESCRIPTION	FIG
RB1-6008-000CN	Damper, Rubber	35
RB1-6332-000CN	Pick-Up Roller (tray 2)	33
RB1-6378-000CN	Tray, Legal	37
RB1-6382-000CN	Plate, End (6P/6MP)	37
RB1-9151-000CN	Cover, Interface Connector (6P/6MP)	32
RB1-9160-000CN	Cover, Main (HP LaserJet 6P/6MP)	32
RB1-9164-000CN	Button, Lock (HP LaserJet 6P/6MP)	32
RB1-9165-000CN	Guide, Lock Button (HP LaserJet 6P/6MP)	32
RB1-9171-000CN	Tray, Sub-assy, Face-Up (6P/6MP)	32
RB1-9179-000CN	Roller, Fuser Pressure (6P/6MP)	39
RB1-9181-000CN	Roller, Fuser Delivery (6P/6MP)	39
RB1-9194-000CN	Plate, Grounding, Right (6P/6MP)	33
RB1-9195-000CN	Plate, Grounding, Left (6P/6MP)	33
RB1-9205-000CN	Tray 2 Front Panel	37
RF5-0343-000CN	Pad, Separation	38
RF5-0593-000CN	Brush, Mirror	32
RF5-0596-000CN	Transfer Roller Assembly (6P/6MP)	34
RF5-0673-000CN	Plate, Side (5P/5MP)	37
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Accessories

Listed below are the accessories and supplies, including supplemental documentation you can order for your HP LaserJet 5P/5MP, 6P/6MP printer.

Option	Part Number	Description or Use
Toner Cartridge	C3903A	Replacement toner cartridge.
Memory upgrades	1 MByte—C3130A 2 MByte—C3131A 4 MByte—C3132A 8 MByte—C3133A 16 MByte—C3146A	Adds up to 48 MBytes of memory to the HP LaserJet 5P/6P printers, for a total of 50 MBytes. Adds up to 32 MBytes of memory to the HP LaserJet 5MP/6MP printers, for a total of 35 MBytes.
Adobe's PostScript Level 2 SIMM	C3152A (HP LaserJet 5P) C3987A (HP LaserJet 6P)	Adds PostScript Level 2 language and 1 MByte of memory to the printer.
IEEE-1284 Parallel Cable	2 Meter A to B—C2950A 3 Meter A to B—C2951A 3 Meter A to C—C2946A 10 Meter A to C—C2947A	IEEE-1284-compliant cables, where: A=host computer connector (A-type) B=large printer connector (B-type) C=small printer connector (C-type)
LocalTalk Network cable for Macintosh	92215N	Connect to a LocalTalk Network.
Serial printer cable for Macintosh	92215S	Directly connect to a Macintosh computer.
HP JetDirect EX print servers (external)	J2382B J2383B J2593A J2594A	Ethernet (1 parallel ports) TokenRing (1 parallel ports) Ethernet (3 parallel ports) TokenRing (3 parallel ports)
HP Printer Pal (external)	C2971A	Printer fax accessory. Allows faxes to be printed by the printer; faxes can also be sent electronically from the PC. Availability outside the US may vary.
Extra Paper Cassette (Tray 2)*	R75-4000-000CN	Universal tray.
IrDA Test Tool	5062-4661	Infrared communications test tool manufactured by Genoa Technologies, Inc.

* This item must be ordered through HP Parts Direct Ordering, (800) 227-8164. Outside the U.S., see "Parts and Diagrams earlier in this appendix.

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