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HP LaserJet Family Quick Reference Service Guide

Volume II

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Contents

Ordering other manuals

The HP LaserJet Quick Reference Service Guide, Volume II*,* provides support for newer monochrome printers (see the following page for a complete list of supported printers). It has been created to help the HP LaserJet service engineer quickly troubleshoot common printer problems.

For older monochrome printers, see the *HP LaserJet Quick Reference Service Guide,* Volume I. It provides support for the following printers: LJ 6L, LJ 5Si Mopier, LJ 5Si, LJ 5Si MX, LJ 5L, LJ 6P, LJ 6MP, LJ 5P, LJ 5MP, LJ 5, LJ 5M, LJ 5N, LJ 4V, LJ 4MV, LJ 4P, LJ 4MP, LJ 4L, LJ 4ML, LJ 4+, LJ 4M+, LJ4, LJ 4M, LJ 4Si, LJ 4Si MX, LJ IIISi, LJ IIIP, LJ IIP+, LJ IIP, LJ IIID, LJ III, LJ IID, LJ II, LJ 2686D, LJ 2686A.

While the quick reference guides are intended to provide all the information the service engineer will need for on-site repair of HP products, they are not intended to replace the service manual for any HP LaserJet product. For detailed information about the HP LaserJet products described in this guide, see the user guide or service manual for that product.

Service manuals for HP LaserJet products are available from Hewlett-Packard. The phone number for the Service Parts Order Desk is:

(800) 227-8164 (U.S. only)

If you are located outside of the U.S., contact your local HP Sales and Service office.

Supported products

Reference name used in this guide	Model number	Maximum pages per month	Service Manual part number
LJ 4000/4000T 4000N/4000TN	C4118A/C4119A/ C4120A/C4121A	65K	C4118-99024
LJ Companion	LJ C3989A/ C3979A/C4106A	N/A	HP Central Repair Only
LJ 5000/5000N/ 5000GN	C4110A/C4111A/ C4112A	65K	C4110-91033
LJ 3100	C3948A	6K	C3948-90958
LJ8000/8000N/ 8000DN	C4085A/C4086A/ C4087A	130K	C4085-91017
LJ Mopier 240	C4228A	130K	C4085-91017

Note

This guide will be updated on a regular basis as the service needs change, as new products are introduced, and as information becomes available.

1 Control panel messages

Overview

This chapter provides a list of printer control panel messages. Alphabetical messages are listed first, followed by numerical messages. Control panel messages that are self-explanatory are not included. If you need more detailed information, see the service manual for the printer.

Alphabetical messages

(number) is a group, group not allowed

- Enter a different one-touch key or an unassigned speed-dial code.

Access denied, menus locked

- Ask the network administrator to unlock the function.

Already in group

- While programming a group-dial code, a fax number has been added that is already in the group.
  - Add the next fax number to the group.

Bad duplexer connection

- Re-install the duplexer.
- If the message persists, make sure that the duplexer is connected and that the connector is not damaged.
- Replace the duplexer.

Bad opt tray connection

- Re-install the optional tray.
- Make sure that the optional tray is connected and that the connector is not damaged.
- Replace the optional tray.

Blacklisted (France only)

- The attempted fax number has received a voice answer or no answer, was busy on the first dial and redials, or was busy with redials pending.
  - Unplug the power cord for the fax machine from the power strip or outlet, and then plug it back in.

Busy

- Check the fax number and try resending the fax. If the message appears again, try sending to another fax machine or try again later.

Cancel group edit, ENTER to confirm

- Back space was pressed while in a group-dial code in the Group Dial Setup level of the menu.

1. Press **Start** to return to the group-dial code and continue editing.
2. Press **Enter/Menu** to go to the Group Dial Setup level of the menu. (Press **Enter/Menu** again to choose a different group-dial code.)
3. Press **Stop/Clear** to exit the Menu settings.

Check finisher device alternates with Clear jam

- Check to see if paper is jammed in the external paper-handling finishing device.

Check finisher device alternates with Finisher align error

- Check to see if an alignment error has occurred in the external paper-handling finishing device.

Check input device alternates with Paper path open, please close it

- Check the doors and trays.
- Check the tabs and sensor levers in the tray for proper operation.
  - Replace any defective tabs or sensors.
- Replace the printed-circuit assembly (PCA) controller in the feeder.

Check output device alternates with Close output delivery path

- Make sure the paper path is closed between the printer and the external paper-handling output device.

Chosen language not available

1. Print the job using a driver for a different printer language, or add the requested language to the printer (if available).
2. Press **Go** to continue.

Clear document from scanner

- Check to see if the document is jammed or if multiple sheets of the document were loaded.
- Check the special media lever. It should be to the left for regular-weight items or to the right for thick items. Thick items must be fed one at a time.
- Check the control panel configuration for outgoing faxes, including the “send long pages” setting.

Close top cover

- Check SW101 for proper operation. Verify that the wires are connected.
- If necessary, replace SW101.
  - If the new switch does not solve the error, the wiring or the engine controller board may be defective.

Communication error

1. Try resending the fax.
2. If the call fails again, check that the telephone cord is securely connected. Then check for a dial tone on the phone line by pressing **Manual Dial**.
3. Wait; try resending the fax later.

Note

For additional details, see the *HP LaserJet 3100 Product Service Manual*.

Configuration err # (number 1-4)

- An error was detected in the static random-access memory (SRAM).
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Config. stuck addr

- In Service mode only, SRAM stuck address test.
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Config. tied addr.

- In Service mode only, SRAM tied address test.
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

[Date] [Time]

- The battery has failed. You can continue to use the HP LaserJet 3100 product without replacing the battery, but if you re-enter the Menu settings and then turn off the power, the settings are erased again.

Decoding error # (number 1-3)

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Disk device failure

- Reseat the enhanced input/output (EIO) disk or replace the old disk device with a new disk.

Disk file operation failed

- Check the filename and directory name.
- Reattempt the operation.

Disk file system is full

- Delete the files from the EIO disk and then try again, or add a Flash dual inline memory module (DIMM).
- Download or delete files from the HP JetAdmin software, and download or delete fonts from the HP FontSmart software.

Disk is write protected

- Use the HP JetAdmin software to disable the write protection.

Documents were lost, START to continue

1. Press **Start**. A report is printed.
2. Check the fax log status column for the “Fax Document was Lost” message.
3. Resend the associated outgoing faxes. Ask the sender to resend incoming faxes.

Duplex error, check duplexer

- Check the duplexer for a paper jam.
- Reseat the duplex assembly, and check the connection.
- Replace the Duplex unit.

EIO x disk initializing

- Stand by until the EIO disk is done initializing.

EIO x disk spinning up

- Stand by until the disk accessory card is done initializing.

EIO disk x non-functional

- Replace the EIO disk.

Encoding error

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, replace the formatter.

Envelope feeder load

1 Load the requested envelope type and size into the envelope feeder.

2 Make sure that the envelope size and type are set correctly on the Paper-Handling menu in the printer control panel.

3 Press **Go** if the envelope is already loaded in the feeder.

4 Press **-Value+** to scroll through the available types and sizes.

Errors likely in pages: (page range)

- Resend the fax or ask the sender to resend the fax to you.

Fax document was lost

- If you set up faxes to be sent at a future time or to be polled, print a fax log to identify which faxes were lost. Then re-enter the faxes.
- Faxes that were received to memory (instead of printing) have been lost. Ask the sender to resend the fax.

Fax memory error # (number 1-5)

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If you set up faxes to be sent at a future time or to be polled, print a fax log to identify which faxes may have been lost. Then, re-enter the faxes.
- Faxes that were received to memory (instead of printing) have been lost. Ask the sender to resend the fax.
- If the error persists, replace the formatter.

Flash device failure

- Remove the Flash DIMM and replace it with a new one.

Flash file operation failed

- Check the filename and directory name.
- Reattempt the operation.

Flash file system is full

- Delete files from the Flash DIMM or add another DIMM.
- Download or delete files from the HP JetAdmin software, and download or delete fonts from the HP FontSmart software.

Flash is write protected

- Use the HP JetAdmin software to disable the write protection.

Group is empty, use ONE-TOUCH/SPEED DIAL

1 Begin adding fax numbers to the group-dial code by pressing the one-touch key for each number or by pressing **Speed Dial**.

2 Enter the speed-dial code for the fax number.

3 Press **Enter/Menu**.

Initializing

- Reseat the DIMM(s).

Input device condition xx.yy

1st x = Device number in chain.

2nd x = Device type (3 types):

1 = Input
2 = Output
3 = Stapler/stacker unit

yy = Device specific error.

- See the documentation that came with the paper-handling device.

Input limit reached

- The maximum number of fax numbers that can be added to an ad-hoc group is 100. Resend the fax, but only to 100 or fewer fax numbers.

Install front duplex cover

- Re-insert the duplexer's front cover.

Install tray x

- Re-insert the specified tray.
- Check for damaged tabs in the tray.
- Check for damaged switches in the printer.
- Replace the PCA controller in the feeder.

Invalid date or time

- Re-enter the date and time.

Keypad test failed

- Run the keypad test again.
- If the error persists, try each of the following in the order given:
  - Check the cabling.
  - Replace the control panel.
  - Replace the formatter.

Loading program <number> alternates with Do not power off

- Wait for the program to load.

Long page? START to continue

- Press **Start** to continue scanning. If **Start** is not pressed within 3 seconds, the message disappears and the document scanner stops scanning because it thinks the page has jammed.
- If sending a fax or copying a document longer than 991 mm (39 in), the control panel configuration can also be set to “Send long pages.” This ensures that long pages feed without having to monitor the task. Press **Start** before the document scanner shuts off.

Manually feed [type] [size]

1. Load the requested paper into Tray 1.
2. Press **Go** if the appropriate paper is already loaded in Tray 1.
3. Press **-Value+** to scroll through the available types and sizes.
4. Press **Select** to accept the alternate type or size.

Memory full - send unscanned pages

- Reload the unscanned pages and re-send them to finish the fax job.
- Scan the unscanned pages to the computer and fax them from the computer.

Memory full - stored data lost

- Add more memory to the printer or simplify the print job.

Memory is full

- This message should clear automatically when the next task starts (for example, when you start a copy or receive a fax).

Memory settings changed

- Try changing the memory settings for I/O Buffering and Resource Saving (although default settings are usually best).
- Install additional memory in the printer.

Memory shortage job cleared

- Press **Go** to continue.
- On the printer control panel, change the setting for resource saving, or add more memory to the printer.

Memory shortage page simplified

- Press **Go** to continue.
- Add more memory to the printer.

Modem error # (number 1-3)

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the error persists, try each of the following in the order given:
  - Check the cabling.
  - Replace the LIU.
  - Replace the formatter.

No answer

- Check the fax number and try resending the fax. If the message appears again, try sending to another fax machine or try again later.

No dial tone

- Check that the telephone cord is securely connected.
- Check for a dial tone on the phone line by pressing **Manual Dial**.
- If necessary, check the wall outlet by plugging in a phone and attempting to place a call.

No fax in (number) tries

- Check the fax number and try resending the fax. If the message appears again, try sending to another fax machine or try again later.

No fax pages in memory to reprint

- Wait for a fax. As soon as a fax is in the memory, the fax will reprint.

No memory for report, erase/print document

- Print all faxes that have been received in memory.
- If you have several faxes set up to be sent at a future time or to be polled, use job status to clear them.

No modem installed

- There is a problem with the line interface unit (LIU).
  - Unplug the power cord from the power source, wait 10 seconds, and replug in the power cord.
- If the problem persists, replace the LIU.
- If the problem persists, replace the formatter.

No room in fax log

- The fax log was unable to print because of an error, such as out-of-paper.
  - Load paper in the paper input bin so the HP LaserJet 3100 product can print the log.

Not enough memory

- Try resending the job. If the error persists, try reducing the amount of activity on the HP LaserJet product. Cancel jobs in memory before resending the job.

Out of memory -- switching to ONE COPY

- The HP LaserJet product continues to copy, but only one copy is output.
  - Divide the copy job into smaller sections and then try copying again.
  - If you are collating the job, turn the collation feature off, make only one copy of the document at a time, or see the user guide for instructions about using the Document Assistant.

Output bin full alternates with Clear paper from [bin name]

1. Remove the media from the face-down tray.
2. Check PS1401 on the sensor PCA.
3. Make sure the sensor flag moves freely.

Paper bin is empty, please add paper

1 Load paper.

2 If paper is already loaded, remove it.

3 Check for, remove, and discard any jammed sheets.

4 Reload the paper.

Password must be 4 digits

- Re-enter a four-digit password.

Paused (memory full)

- Reduce activity on the HP LaserJet product, or wait for other jobs to finish so memory will be freed.
- If faxes are set up to be polled or sent at a future time, you may want to cancel these jobs to free memory.

Perform printer maintenance

Reset the maintenance page count only after a maintenance kit has been installed. Resetting the maintenance page count causes `PERFORM PRINTER MAINTENANCE` to appear after another 150,000 (LJ 5000 series), 200,000 (LJ 4000 series), or 350,000 (LJ 8000) pages have printed.

1 Hold down the **Item-** and **Value-** keys.

2 Turn the printer on.

3 Wait until `RESET MAINTENANCE COUNT` appears, and then release both keys.

PC print timed out

- Let the “print jobs retry” continue for 5 minutes. If the HP LaserJet 3100 product still does not print, resend the print job.

Phone number error

- The maximum number of characters that can be entered is 40. If you have a number longer than 40 characters, break the number into smaller chunks.

1 Enter the first part of the number, and press **Redial/Pause** as the last character in the first number.

2 Enter the second part of the number as if it were a second number going to a group. When the product dials, it will treat both numbers as if they are one.

Polling-in error

- Make sure that the sender's fax machine is ready to be polled, and check the fax number. Then set up to poll again.

Printer comm error^1

- Check that the parallel cable is securely connected between the HP LaserJet 3100 product and the computer.
- If the problem persists, unplug the power cord from the power source for 5 seconds, and then replug it.
- If the problems persists, replace the formatter.

Printer cover open or no cartridge

- Verify that the printer door is closed.
- Check the toner cartridge for proper installation.

Printer fixing error, replace fixing unit

- There is an error with the print engine.
- Check the cabling to the heating element.
- If the problem persists, replace the heating element.
- If the problem persists, replace the ECU.

Printer is busy

- No action is needed. If you already started another job, the job will be completed when the HP LaserJet product becomes available.

Printer laser error, call for service

- Open and reclose the printer door.
- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the problem persists, replace the laser scanner assembly.

Printer motor error, call for service

- A problem has occurred with the print engine.
  - Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
  - If the problem persists, replace the motor.
  - If the problem persists, replace the ECU.

Printer paper jam, check paper path

- Check the input areas, the output areas, and the interior for the jam, and then clear the jam. The job should continue to print. If it does not, try reprinting the job.

Printer signal error

- Open and reclose the printer door.
- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the problem persists, replace the laser scanner assembly.

Processing job from Tray x

- Check the tray selected and the type settings. If the printer does not respond after you press the control panel keys, turn the printer off, and then turn the printer on to clear the message.
- If paper is loaded when the printer is in Power Save mode, it might not be recognized. Open and close the affected source when the printer is in Ready mode.

RAM disk device failure

- Turn the printer off and on to clear the message.
- If the message persists, install a new RAM disk.

RAM disk file operation failed

- Check the filename and directory name.
- Reattempt the operation.

RAM disk file system is full

- Delete files and then try again, or turn the printer off and then turn the printer on to delete all files on the device. (Use HP JetAdmin software, HP FontSmart software, or another software utility to delete files.)
- If the message persists, increase the size of the RAM disk.
  - Change the RAM disk size from the Configuration menu in the printer control panel.

RAM disk is write protected

- Use HP JetAdmin software to disable the write protection.

Received error

- Ask the sender to resend the fax.

Redial failed

- Try resending the fax. If the fax still fails to transmit, call the recipient to check that the fax machine is on and working and to verify the fax number.

Remote fax was busy

- Try resending the fax. If the fax still fails to transmit, call the recipient to check that the fax machine is on is on and working and to verify the fax number.

Scan reference error

- Recalibrate the document scanner.
- If the problem persists, replace the CIS.

Scanner error #1

- An error has occurred within the SRAM.
- Press and hold down the **Stop/Clear** key for 7 seconds to reset the product.
- If the error persists, unplug the power cord from its power source for 10 seconds, and then replug it.
- If the error persists, replace the CIS.
- If the error persists, replace the formatter.

Scanner isn’t available

- The document scanner mechanism is in use.
  - Wait until the document scanner has finished the current job before sending the next job.

Scanner jam - reload

- Pull open the document release door and then remove the jammed document.

Speed dial (number) is not assigned

- Choose a speed-dial code that has already been assigned a fax number.

System error

- Unplug the power cord from the power source, wait 10 seconds, and replug the power cord.
- If the message is still displayed, replace the formatter.

There are no documents in memory

- No action is required. There are no faxes to retrieve.

Tray x empty

- Load the empty tray (X) to clear the message.
- Inspect the tray for damaged tabs.
- Check the sensor-arm flags for damage. Be sure the flags can move freely.
- Replace any defective sensors.

Tray x lifting

- Verify that the media can be pulled from another tray.
- Replace the paper input unit.

Tray x load

1. Load the requested paper into the specified tray (X). Ensure that the trays are correctly adjusted for size.
2. Press **Go** to print from the next available tray.
3. Press **-Value+** to scroll through the available types and sizes.
4. Press **Select** to accept the alternate type or size.
5. Inspect the switches in the tray.
6. Remove the tray, and then turn the printer on. Push the switches by hand to see if the switches register.

Unrecognized format

- When printing, the incorrect printer driver was selected or an error occurred on the parallel interface.

1 After selecting the Print command in the software application you are using, select the HP LaserJet 3100 as the printer.

2 Reprint the job.

Unsuccessful call

- Check the fax number and try resending the fax.
- If the message appears again, try sending to another fax machine or try again later.

Unsupported size in tray [yy]

- Load a supported paper size in the tray.

Use [type] [size] instead?

1 Press **-Value+** to scroll through the available types and sizes.

2 Press **Select** to accept the alternate type or size.

Numerical messages

XX.YY printer error, press GO to continue

Press **Go** on the printer control panel to clear the error message.

13 Paper jam

- Remove the jammed paper from the specified location. Check the entire paper path for other pieces of paper.
- Open and close the top cover to clear the message.
- Check sensors and flags in the paper path for proper operation.

13.1 Paper delay jam at paper feed area
13.2 Paper stopped jam at paper feed area

- Ensure that the paper trays are loaded properly so that paper can feed from the trays.
- Check the input area for obstructions such as paper in the paper path or damage to the registration assembly.
- Verify that the transfer roller is positioned correctly.
- Check PS 102 and PS 103 (4000 series) and PS 402 and PS 403 (5000 series) for proper operation.
  - Replace any defective sensors or flags.

13.5 Paper delay jam at fuser
13.6 Paper stopped jam at fuser

- Check the transfer roller and small media belt to ensure that the roller and belt are operating and can feed the paper.
- Check the paper path for obstructions at the transfer roller, toner cartridge, paper feed guide, and fuser.
- Check PS 501 and PS 106 (4000 series), PS 1307 (5000 series), or PS 1403 (8000 series) for proper operation. Replace any defective sensors or flags.

13.9 Check left door

- Inspect the path between the fuser and delivery assemblies.
- Check the diverter assembly.

13.10 Paper delay jam at paper reversing area/ duplexer

- Check the duplexer and the rear area of the printer for obstructions or damage.
- In the duplexer, check PS 701 and PS 703 for proper operation.
- Replace the duplexer if a sensor is defective.

13.11 Paper jam

- Check the entire paper path.
- Reseat the duplexer.
- Try the Paper Path Test.
- Replace the duplexer.

13.11 Paper jam in input device

1 Open the vertical transfer unit (VTU) and remove the media.

2 Verify that the entry or exit sensor can move freely.

3 If the problem persists, open the VTU and override its Open Door sensor, perform a Paper Path test from the 2,000-sheet Input Tray (or 2x500-sheet Input Tray), and make sure the feed rollers are advancing the paper.

- If the rollers do not rotate, verify the connections at the main drive assembly, pickup assembly, controller PCA, and power supply. If the rollers still do not rotate or do not drop down, replace the pickup assembly.
- If the rollers rotate and drop down without advancing the paper, replace the feed rollers using the maintenance kit.
- If the problem persists, replace the VTU.

13.12 Paper jam

- Check the paper path between the fuser and duplex assembly.
- Reseat the duplexer.
- Replace the duplexer.

13.13 Paper jam

- Check the entire paper path.
- Remove the duplex assembly and look for paper in the side of the assembly.
  - Retest.
- Replace the duplexer.

13.20 Paper jam

- Check the paper path for obstructions.
- Check that all assemblies are seated and all doors are closed.
- Check all sensors and flags in the paper path.

13.21 Door open jam

- Check that all assemblies are seated and all doors are closed.
- Check all sensors and flags in the paper path.

13.22 Paper jam in output device

- Open the flipper jam access door and remove the media.
- Make sure the sensor flag moves freely.
- Make sure that the flipper shaft is in place.
- If the problem persists, replace the flipper assembly.
- If the problem persists, replace the mailbox controller PCA.

20 Insufficient memory alternates with Press GO to continue

- Press **Go** to print the transferred data (some data might be lost); then simplify the print job or install additional memory.

21 Page too complex

- Press **Go** to print the transferred data. (Some data could be lost).
- To print the job without losing data, select Page Protect=on from the Configuration menu in the printer control panel and then print the job. Afterward, return to Page Protect=auto. Do not leave Page Protect=on; doing so could degrade performance.
- If this message appears often, simplify the print job or install additional memory.

22 EIO x buffer overflow alternates with Press GO to continue (too much data sent to EIO card)

- Press **Go** to clear the message. (Data will be lost.)

22 Parallel I/O buffer overflow (too much data sent to parallel port)

- Check for a loose cable connection. Use a high-quality IEEE-1284 cable.
- Press **Go** to clear the error message. (Data will be lost.)

22 Serial I/O buffer overflow alternates with Press GO to continue (too much data sent to the serial port)

- Verify that the correct option for serial pacing is selected on the I/O menu.
- Print a Menu Map and verify that the serial pacing item (from the I/O Menu on the printer control panel) matches the setting on the computer.
- Press **Go** to clear the error message. (Data will be lost.)

40 Bad serial transmission (data transfer error)

- Verify cable connections.
- Verify that the printer serial configuration is set the same as the computer.
  - Access the serial baud rate setting from the I/O Menu on the printer control panel.
- Press **Go** to clear the error message and continue printing.

40 EIO x bad transmission (connection between printer and EIO card broken)

x = Description

1 = EIO slot 1

2 = EIO slot 2

- Turn the printer off and reseat the card.
- Press **Go** to clear the error message and continue printing.

41.3 Unexpected paper size

- Verify that all trays are adjusted correctly for size. (The printer attempts to print the job until size settings are correct.)
- If you are trying to print from Tray 1, make sure that the paper-size setting in the printer control panel is configured correctly.
- If you are trying to print from the optional 500-sheet tray, be sure to set the paper-size dial to match the paper size loaded in the tray.
- Press **Go**. The page containing the error is automatically reprinted. (Or, press **Cancel Job** to clear the job from the printer's memory.)

41.x Printer error alternates with Press GO to continue

- A temporary printing error occurred.

  x = Description

  1 = Unknown misprint error

  2 = Beam detect error

  4 = No VSYNC error

  5 = Media feed error

  9 = Noise VSREQ error

- Press **Go**. The page containing the error reprints automatically. If the error persists, try the following procedures:
  - Reseat the connections to the laser scanner and the engine controller board.
  - Replace the laser scanner.
  - Replace the engine controller board.

50.x Fuser error

x = Description

1 = Low fuser temperature

2 = Fuser warm-up service

3 = High fuser temperature

4 = Faulty fuser

5 = Inconsistent fuser

1 Turn the printer off, wait 20 minutes, and then turn the printer on.

2 If the message persists, reseat the fuser.

3 If the message persists, replace the fuser.

51.x Printer error (loss of beam detect)

x = Description

1 = Beam detect error

2 = Laser error

- Press **Go**. The page containing the error reprints automatically.
- Turn the printer off and then on.
- Reseat the cables.
- Replace the laser scanner.

52.x Printer error (the laser scanner speed is incorrect)

x = Description

1 = Scanner startup error

2 = Scanner rotation error

- Press **Go**. The page containing the error reprints automatically.
- Turn the printer off and then on.
- Reseat the cables.
- Replace the laser scanner.

53.xy.zz Printer memory error with an accessory

The DIMM that caused the error will not be used.

x = DIMM type

0 = read only memory (ROM)

1 = random access memory (RAM)

y = Device location

0 = Internal memory (ROM or RAM)

1 to 3 = DIMM slots 1, 2, or 3

zz = Error number

0 = Unsupported memory

1 = Unrecognized memory

2 = Unsupported memory size

3 = Failed RAM test

4 = Exceeded maximum RAM size

5 = Exceeded maximum ROM size

6 = Invalid DIMM speed

7 = DIMM reporting information incorrectly

8 = DIMM RAM parity error

9 = ROM needs to be mapped to an unsupported address

10 = DIMM address conflict

11 = PDC XROM out of bounds

12 = Unable to make a temporary mapping

- Turn the printer off, and reseat or replace the specified DIMM.
- Try the DIMM in another slot.
- Replace the DIMM that caused the error.

55 Printer error alternates with Press GO to continue (internal communications problem)

- Press **Go**. The page containing the error reprints automatically.
- Check the power at the site.
- Replace the formatter PCA.
- Replace the DC controller.
- Replace the engine controller board.

56.x Printer error alternates with Cycle Power to continue

x = Description

1 = Illegal input

2 = Illegal output

- Press **Go**. The page containing the error reprints automatically.
- Turn the printer off and on.
- Check the printer's configuration.

57.x Printer Error

x = Description

4 = Printer fan

7 = Duplex fan

- Check the fan's connector and verify that the fan is not blocked.
- Replace the fan.

59.x Printer error

x = Description

0 = Motor error

1 = Motor startup error

2 = Motor rotation error

- Turn the printer off and then on.
- Make sure that the fuser or toner cartridge is not hindering gear movement in the drive train.
- Verify that the cable in the main motor is seated properly.
- If the error persists, replace the motor.

62.x Printer error (printer memory)

x = Location of problem

0 = Internal memory

1 to 3 = DIMM slots 1, 2, or 3

- Reseat or replace the specified DIMM.

64.x Printer error (scan buffer)

- Turn the printer off and then on.
- If the message persists, replace the formatter.

66 Error (external paper-handling device)

First x = Device number in chain

Second x = Device type (3 types):

1 = Input

2 = Output

3 = Stapler/stacker unit

yy = Device-specific error

- Press **Go** to clear the message.
- Turn the printer off and then on.
- Check all of the cables.
- Reseat the external paper-handling device.

66.11 Input device failure

- Verify that the lifting plate lifts up freely by hand.
- Verify that the paper size plates are installed correctly and are not bent.
- Check the pickup roller for proper installation.
- Check the pickup assembly and replace if necessary.
- Replace Tray 4.

66.xx.yy Input device failure alternates with Check cables and cycle power

- Check for an error in an external paper-handling device.

  1st x = Device number in chain

  2nd x = Device type (3 types):

  1 = Input

  2 = Output

  3 = Stapler/stacker unit

  yy = Device specific error
- Press **Go** to clear the message.
- Turn the printer off, and then turn the printer on.
- Reseat the external paper-handling device.

68 NVRAM full check settings

- Print a configuration page and check the printer settings to determine which values have changed.
- Hold down **Cancel Job** while turning the printer on.

69.x Printer error

x = Description

0 = The duplex mechanism has failed.

1 = The duplex side adjust has failed.

- Turn the printer off, and then turn the printer on.
- Reseat the duplexer.

79.xxxx Error (printing)

The printer detected an error. The numbers (xxxx) indicate the specific type of error.

- Turn the printer off and then on.
- Try printing a job from a different software application. If the job prints, go back to the first application and try printing a different file. (If the message appears only with a certain software application or print job, the customer should contact the software vendor for assistance.)

If the message persists, try the following procedures:

- Turn the printer off and then on.
- Reseat or replace the interface cable and power cycle the printer.
- Remove the DIMMs one at a time and power cycle the printer.
- If possible, use the parallel interface.
- With the EIO cards removed from the printer, perform a cold reset.
- If the error persists, replace the formatter.

8x.yyyy critical error (EIO accessory)

- The EIO accessory in slot x has encountered a critical error as specified by yyyy.

  x = Description

  1 = EIO slot 1 -The printer detected an error with the EIO card.

  2 = EIO slot 2 -The printer detected an error with the EIO card.

  6 = EIO slot 1 -The EIO card detected an error.
  The EIO card may be defective.

  7 = EIO slot 2 -The EIO card detected an error.
  The EIO card may be defective.

- Turn the printer off, and then turn the printer on.
- Reseat or replace the EIO board.

2 Service mode

Overview

Service mode allows service personnel to verify and manipulate internal printer settings and to access the diagnostic feature. Service mode should be used only by authorized service personnel.

Service mode tasks

You can perform the following tasks while in Service mode.

- Verify the page count.
- Set the page count.
- Set the maintenance count.
- Verify and set the serial number.
- Set the cold reset default. This sets the factory default paper size to either Letter or A4.
- Turn the diagnostic function on or off (for software developer's use only).
- Clear the event log.
- Use the extended Service mode.
- Reset softswitches.
- Perform a firmware download.
- Recalibrate the document scanner.
- Set the interval at which the `PERFORM PRINTER MAINTENANCE` message appears on the control panel.

Accessing Service mode

4000, 5000, and 8000 series only

Use the following procedure to access Service mode.

1. Turn the printer off.
2. Press **Select** and **Cancel Job** simultaneously while turning the printer on. Hold the keys down until all lights are illuminated. (If the control panel reads INITIALIZING, the keys were released too soon.)
3. Press the right side of the **Menu** key, and then press **Select**. SERVICE MODE appears.
4. To exit Service mode, press **Go**.

Accessing Service mode

3100 only

Use the following procedure to access Service mode.

1. Press **Backspace#**** to access the extended service menu.
2. Use the **<** and **>** keys to select the choices given in the extended service menu (see the Extended service menu tree, page 52) and press **Enter/Menu**.

See the display for further instructions. Notes about some of the menu choices are provided in the Extended service menu tree on page 52.

Setting the page count

4000, 5000, and 8000 series only

The page count is stored in the printer's non-volatile memory. If it is necessary to replace the formatter PCA, the page count should be set to the current value to reflect the age of the print engine. Use the following procedure to set the page count.

1 Before replacing the formatter PCA, print a Configuration Page to verify the current page count and serial number of the printer, if possible. Use the information on the Configuration Page to reset the page count and serial number for the new formatter PCA.

Note

Press the right side of the **Menu** and **Item** buttons to increase the value (+). Press the left side of the **Menu** and **Item** buttons to decrease the value (-).

2 Press **Menu+** to display SERVICE MENU.

3 Press **Item+** to advance to the PAGES=XXXXXX display. XXXXXX represents the page count currently stored in the non-volatile memory. The underlined character denotes the position of the cursor.

4 Press **Select** to advance the cursor one digit to the right. If the last digit is currently selected, the cursor will move to the first digit when you press the **Select** key.

5 Press **Value+/-** to scroll the digit until the correct value is displayed for the underlined digit. (Pressing **Value+** when 9 is the value of the currently selected digit changes the value of the digit to 0).

6 Press **Select** to enter numeric changes to the current digit and to advance the cursor one digit to the right.

7 Press **Go** to exit the Service Menu.

Setting the maintenance count

4000 and 5000 series only

The maintenance count should be reset only after a maintenance kit has been installed. Resetting the maintenance count resets the maintenance counter so that the message PERFORM PRINTER MAINTENANCE displays after another 150,000 (5000 series), 200,000 (4000 series), or 350,000 (8000 series) pages are printed.

Note

MAINTENANCE COUNT in the Service mode Menu sets the page count interval for when the next printer service is due for the printer. The maintenance count is set initially at the factory. Editing this number is similar to editing the PAGES item.

1. Hold down the **Item-** and **Value-** keys.
2. Turn the printer on.
3. Wait until RESET MAINTENANCE COUNT displays and then release both keys.

Setting the serial number

4000 and 5000 series only

Re-enter the serial number whenever you replace a formatter.

1. Press **Menu** to display the SERVICE MENU.
2. Press **Item+** three times. SERIAL NUMBER=XXXXXX displays. XXXXXX represents the page count currently stored in the printer's non-volatile memory. The underlined character denotes the position of the cursor.
3. Press **Select** to advance the cursor one digit to the right. If the last digit is currently selected, the cursor wraps around the first digit when you press the **Select** key.
4. Press **Value+/-** to scroll the digit until the correct value is displayed for the underlined digit. (Pressing **Value+** when 9 is the value of the currently selected digit will change the value of the digit to 0).
5. Press **Select** to enter numeric changes to the current digit and to advance the cursor one digit to the right.
6. Press **Go** to exit the Service Menu.

Setting the page count, maintenance count, and serial number

8000 series only

The page count, maintenance count, and printer serial numbers are stored in non-volatile memory. PAGECOUNT is the total number of images printed by the printer; MAINTCOUNT is the page count when the next preventive maintenance should be performed (every 350,000 images); and S.N. is the printer serial number (also located on the printer back cover).

If it is necessary to replace the formatter PCA, these numbers should be set to the current values to accurately reflect the age of the print engine. The printer service manual provides the procedure for setting these values.

Before removing the old formatter PCA, print a configuration page to verify the current values, if possible.

Note

If it is not possible to print a configuration page, try to verify the values before replacing the formatter PCA by following steps 1 through 5, below.

After verifying the page count, maintenance count, and printer serial number from the old formatter PCA, replace it with the new PCA.

1. Enter Service mode. See “Service mode” in the printer service manual for instructions.
2. When SERVICE MODE is displayed, press **Menu** to access the Service Menu.
3. Press **Items** to display Pages = Maintenance count = Maintenance Interval = Serial Number =.
4. Enter the appropriate values for each item.
5. Press **Go** to exit Service mode.

Setting the default paper size used in a cold reset

4000, 5000, and 8000 series only

Cold reset clears all data from the printer memory and sets all defaults back to the factory setting.

The default paper size is stored in NVRAM. Whenever the printer is cold reset, the default paper size is restored. The default paper size is set to the factory setting. Possible values are `COLD RESET PAPER=LETTER` and `COLD RESET PAPER=A4`. When replacing the formatter in countries that use the A4 paper size (in place of the letter- size paper), set the cold reset paper size to A4.

To customize the cold reset paper size:

1. Enter the Service mode. See “Service Mode in the printer service manual for instructions.
2. Press **Menu** to display `SERVICE MENU`.
3. Press **Item+** until `COLD RESET PAPER=LETTER* or A4` displays.
4. Press **Item+** to toggle between `LETTER` and `A4`.
5. Press **Select** to activate your choice.
6. Press **Go** to exit the Service Menu.

Diagnostics

4000, 5000, and 8000 series only

The diagnostics menu item enables or disables the use of the firmware diagnostic features. These features are accessible when DIAGNOSTICS=ON displays. To access the diagnostic features, verify that the printer is in the READY state and press **Select**.

Note

This procedure is for software developers only.

Clear event log

Select this item to clear the internal event log.

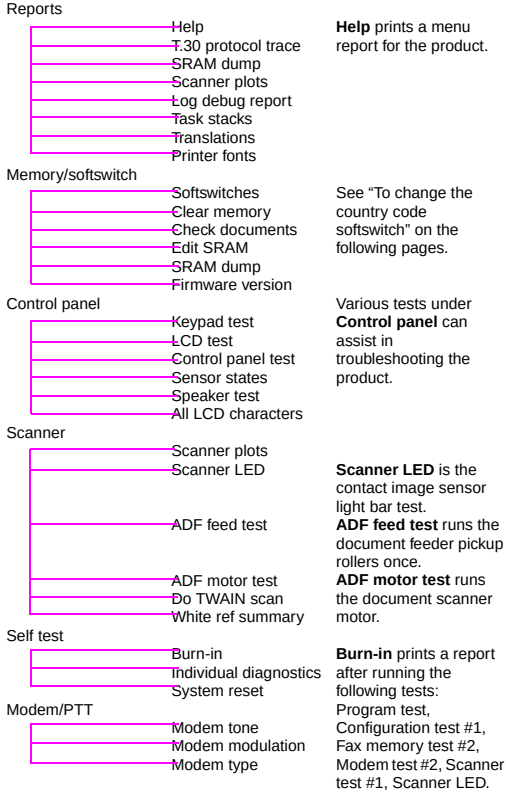
Extended service menu

3100 only

Use the extended service menu to run various self-tests and to change softswitch settings, such as the country code softswitch setting.

The following page shows the layout of the extended service menu settings in a hierarchical diagram.

Extended service menu tree



Self-test in extended service mode

3100 only

If you perform a self-test from the extended Service Menu, the printed report will also show the firmware revision number and details.

Note

Print the internal reports before performing extended service mode tests. The reports contain a record of all settings and can assist you in restoring the product to its settings.

The table below lists the tests that are performed during a self-test and the actions to take when tests fail.

Extended service mode self-test failures

Test	If the test fails, take these actions:
Configuration test #1	Replace the formatter.
Fax memory test #1	
Program test #1	**1** Cycle power by unplugging the power cord from the power source, waiting 10 seconds, and replugging the power cord. **2** If the test fails again, clear all memory (see the extended service menu tree, page 52). **3** If the test fails again, replace the formatter.
Configuration test #2	
Configuration test #3	
Configuration test #4	
Fax memory test #2	
Fax memory test #3	
Fax memory test #4	
Fax memory test #5	
Modem 1 test #1	
Modem 1 test #2	
Modem 1 test #3	

Extended service mode self-test failures

Test	If the test fails, take these actions:
Modem 1 dial tone detect	**1** Make sure that the telephone cable is plugged into the correct connector on the product and that the telephone line is operational (use a telephone to test the line). **2** If the test fails again, check the configuration settings in the control panel. **3** If the test fails again, replace the LIU.
Scanner test #1	This test fails under normal conditions if the document scanner is busy. If the document scanner is not busy: **1** Cycle power by unplugging the power cord from the power source, waiting 10 seconds, and replugging in the power cord. **2** If the test fails again, clear all memory (see the extended service menu tree). **3** If the test fails again, replace the formatter.

Other tests in extended service mode

3100 only

The following charts shows tests that can be performed in extended service mode and provides a brief explanation of each test:

Extended service mode tests

Test	Explanation
Keypad test	Tests that all keys are functioning (by pressing the keys in sequence)
LCD test	Tests the control panel display
Control panel test	Tests the control panel lights
Sensor states	Shows current detector activation levels. Detector 1 and detector 2 are paper-size detectors. The control panel display shows the percentage of time each detector is activated
All LCD characters	Scrolls through the full list of control panel display characters
Scanner plots	Tests and recalibrates the document scanner
Scanner LED	After selecting this menu item, lift the document release door and verify that all of the LEDs in the contact image sensor are lit.
ADF feed test	Runs the document scanner pickup rollers once
ADF motor test	Runs the document scanner motor
Individual diagnostics	Run individual tests from the self-test sequence (see the extended service mode self-test failures table).
Modem tone	Generates tones with various frequencies from 300 Hz to 2425 Hz
Modem modulation	Generates various fax identification signals

Reports in extended service mode

3100 only

The following chart shows reports that can be printed from extended service mode and provides a brief explanation of each report.

Extended service mode reports

Report	Explanation
T.30 protocol trace	Prints a report of the G3 protocol transmissions and receptions
SRAM dump	Prints SRAM address values in an address range you select
Scanner plots	Prints the calibration page
Log debug report	Prints detailed fax and memory address information. Fax information includes job number, start time used, fax ID, transmission type, pages, communication mode, and status.
Task stacks	Prints address locations of various tasks
Translations	Prints text strings used in the display, beginning with the number you select. These text strings are printed in the language currently in use by the product. Compare the numbers in this report to the numbers in an English report to translate non-English messages on the display.
Printer fonts	Prints all characters of fonts available in memory
Firmware version (under “memory/ softswitch”)	Shows firmware revision information on the control panel display
White reference summary (under “scanner”)	Displays average, minimum, and maximum white reference values

Clear memory in extended service mode

3100 only

CAUTION

Clearing memory clears all parameters, which can render the product illegal or inoperable. Print the internal reports before clearing memory in extended service mode. The reports contain a record of all settings and can assist you in restoring the product to its settings.

To perform a system reset, use extended service mode to choose `Memory/softswitch`, and then choose `Clear memory`. Use the < and > keys to select the memory you want to clear:

- `Documents (and log)` deletes all documents stored in memory and all log information.
- `Phonebook` deletes all numbers stored in the phonebook.
- `Configuration` resets all menu settings printed in the configuration report to their defaults.
- `Softswitches` resets all softswitches to their defaults.
- `Counters` resets all page counts except the total number of pages printed. These page counts are printed at the end of the configuration report.
- `Everything` deletes and resets all of the above. Information retained includes white reference curve, total page count, and serial number.

Softswitches

3100 only

Note

Reset the country code softswitch whenever the formatter board is replaced or otherwise removed from the product, or when softswitches are reset to defaults.

Extended service mode allows you to change softswitches on the 3100 product. A softswitch is a set of eight bits. See the software service manual for a complete list of softswitches.

To change the country code softswitch

1. Press **Backspace**, **#**, *****, and *****, in sequence, to access the extended service menu.
2. Press **<** or **>** until `Memory/Softswitches` appears below `Service` on the control panel.
3. Press **Enter/Menu**.
4. If `Softswitches` does not appear below `Memory/Softswitches` on the control panel, press **<** or **>** until it appears.
5. Press **Enter/Menu**.
6. Use the keypad to enter **101** (the “country code” softswitch).
7. Press **Enter/Menu**.
8. Use the keypad to enter the sequence that corresponds to the country in which the product is used. (See the list on the following page.)

Country code softswitch sequences

Australia	00001011 (0B hex)
Denmark	00001100 (0C hex)
Finland	00001000 (08 hex)
France	00000111 (07 hex)
Germany	00000110 (06 hex)
Ireland	00000010 (02 hex)
Netherlands	00001101 (0D hex)
Norway	00000101 (05 hex)
Sweden	00000100 (04 hex)
United Kingdom	00000001 (01 hex)
United States	00000000 (00 hex)
Canada	00101001 (29 hex)

9 Press **Enter/Menu** to complete the softswitch change.

10 Press **Stop/Clear**.

The product will exit extended service mode within a few minutes.

Firmware download

3100 only

Newer versions of the firmware for the HP LaserJet 3100 product can be downloaded to the product.

To perform a firmware download

1 Restart the computer in MS-DOS® mode (do not use an MS-DOS window).

2 Press down and hold **Stop/Clear** while performing step 3.

3 Cycle power by unplugging the power cord from the power source, and then replugging in the power cord.

4 Type the following, substituting the current version of the firmware for XXX:

```
Copy /b leonXXX.rom lpt1:
```

Recalibrating the document scanner

3100 only

Recalibrate the document scanner if you notice that copies, items scanned to the computer, or faxes you send have black or white lines running through them.

To recalibrate the document scanner

1. Clean the HP LaserJet 3100 product before recalibrating it. (See “Cleaning the HP LaserJet 3100 product” in the product service manual.)
2. On the control panel, press **Enter/Menu**.
3. Press **<** once to display `Service` and press **Enter/Menu**.
4. Use the **<** and **>** keys to select `Scan Correction` and press **Enter/Menu**.
5. Insert a blank, bright white piece of letter-sized paper into the document feeder tray.

The HP LaserJet 3100 product pulls the piece of paper through and then prints a recalibration test page. Discard this page. The recalibration procedure is complete.

3 Power supply

Overview

This chapter details the distribution of AC and DC power.

Distribution of AC and DC power for the LaserJet 4000 series

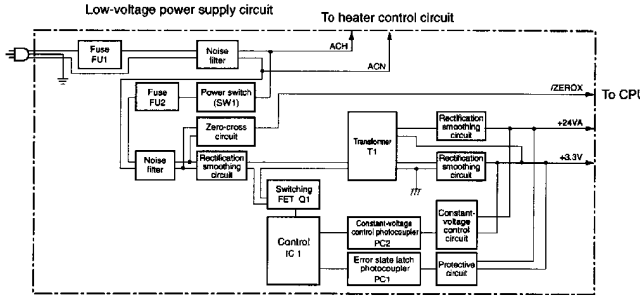
AC power is supplied to the low-voltage power supply circuit in the engine controller board when the power switch (SW 101) is turned on. The low-voltage power supply circuit supplies +24 V DC and +3.3 V DC to the printer. DC power drives the following items:

+24 VDC

- main motor
- scanner motor
- fan
- high-voltage power supply

+3.3 VDC

- sensors
- ICs on the engine controller board
- EIO accessories



Low-voltage power supply circuit (4000 series)

Distribution of AC and DC power for the LaserJet 5000 series

The AC line voltage for the LaserJet 5000 printer is applied through the main switch (SW 101) and supplied to the low-voltage power supply circuit through the fuse (FU1). The low-voltage power supply divides the AC voltage to +24 VDC, +5 VDC and +3.4 VDC and supplies them to the DC controller PCA. This circuit generates a zero-cross signal (ZEROX) and supplies it to the DC controller PCA.

DC power is supplied as follows:

+3.4 VDC

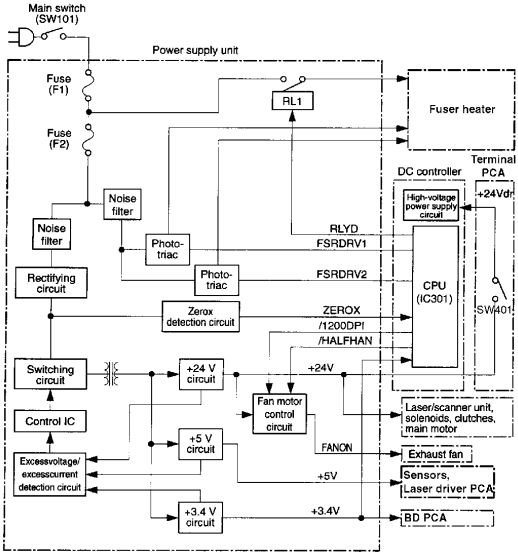
- ICs on the DC controller PCA and the BD PCA

+5 VDC

- laser driver PCA
- sensors

+24 VDC

- high-voltage power supply PCA to drive the main motor
- exhaust fan
- scanner motor
- clutches
- solenoids



Low-voltage power supply circuit (5000 series)

Distribution of AC and DC power for the HP LaserJet 3100

The AC, DC, and high-voltage power supply circuits are all contained within the ECU.

The AC power circuitry supplies AC voltage whenever the power cord is connected to the AC power source. AC voltage is distributed to the DC power supply circuitry and to the AC driver circuitry. The AC driver circuitry controls AC voltage to the heating element in the fusing assembly.

The DC power distribution circuitry distributes +5 V DC and +12 V DC as follows:

+5 V DC

- formatter
- photosensors
- DC controller circuitry
- laser/beam detect circuitry

+12 V DC

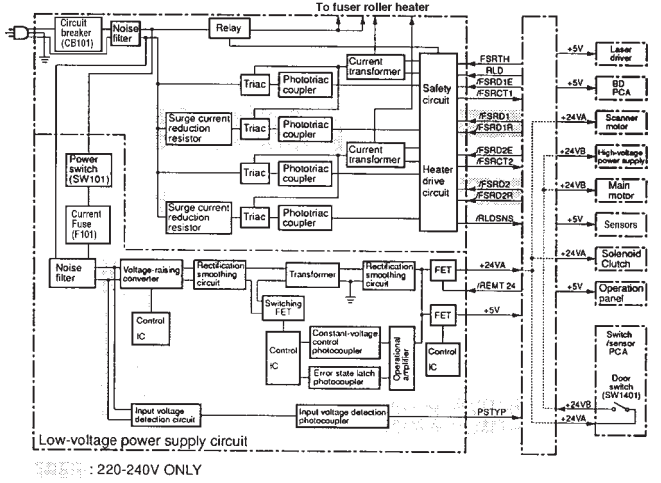
- motor
- scanner motor
- solenoid

+12VA DC

- high-voltage power supply

Distribution of AC and DC power for the HP LaserJet 8000 series

The AC and DC power supply circuits are contained in the low-voltage power supply (LVPS). The high voltages required for image formation are generated by the high-voltage power supply (HVPS). The low-voltage power supply and distribution system are illustrated below.



Low-voltage power supply circuit (8000 series)

Protection Systems

Problems on the load side, such as short-circuits, can cause an excessive flow of current from the DC power supplies or can generate abnormal voltage. When this happens, the excess-current and excess-voltage protection systems automatically shut off output voltage to protect the power supplies.

If the protection systems are activated and the power supply circuit does not output DC voltage, turn the printer off, correct the problem in the faulty load, and then turn the printer on again.

4 Input/Output (I/O)

Overview

This chapter provides information on cabling and the printer interface.

Bidirectional parallel interface

The formatter PCA receives incoming data through its bidirectional interface (IEEE 1284).

The bidirectional parallel interface (IEEE-1284 compliant) is compatible with Centronics parallel interfaces. To take advantage of its enhanced capabilities, such as bidirectional communication, the following must be provided:

- Software application support for these features.
- An IEEE-1284 compliant parallel cable with the correct pin configuration (see Table 4-1).

4000, 5000, and 8000 only

The user may configure the HIGH SPEED item in the Control Panel menu. The default setting, YES, allows the I/O to run at the higher speeds supported by most newer computers. When set to NO, the parallel interface runs at the slower mode that is compatible for older computers. The user may also configure the ADVANCED FUNCTIONS item. The default setting, ON, allows for two-way parallel communications. The OFF mode disables this advanced functionality.

Pin configurations

Signal Name	Printer Pin #	Parallel Port Pin #
nSTROBE	1	1
DATA 1	2	2
DATA 2	3	3
DATA 3	4	4
DATA 4	5	5
DATA 5	6	6
DATA 6	7	7
DATA 7	8	8
DATA 8	9	9
nACKNLG	10	10
BUSY	11	11
CALL (PE)	12	12
SELECT	13	13
nAUTOFd	14	14
On VDC (GND)	19 THRU 30	18 THRU 25
nFAULT	32	15
nSelIn	36	17

IEEE-1284 compliant parallel cables

HP helped develop the IEEE-1284 standard and is one of the first companies to introduce products that are compliant with it. HP offers four IEEE-1284 compliant parallel cables. Each is described below.

Part number	Length	Connector type
C2950A	2 meters (7 feet)	Host A to printer B (large) connector
C2951A	3 meters (10 feet)	Host A to printer B (large) connector
C2945A	2 meters (7 feet)	Host A to printer C (small) connector
C2946A	3 meters (10 feet)	Host A to printer C (small) connector
C2947A	10 meters (33 feet)	Host A to printer C (small) connector

Maximum I/O Cable Lengths

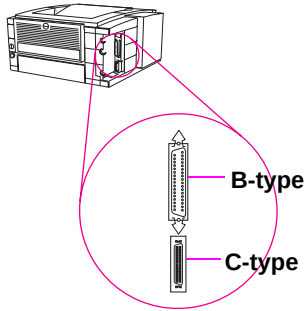
Serial RS-232C RS-422A	15 meters (50 feet) 610 meters (2000 feet)
Parallel (non-IEEE-1284)	3 meters (10 feet)
Parallel (IEEE-1284) with “B” type connector	3 meters (10 feet)
Parallel (IEEE-1284) with “C” type connector	10 meters (33 feet)

Attaching the printer cables

The printer's parallel port can have one or both of the following connectors:

B-type parallel (large)

C-type parallel (small)



Printer interface connections

RS-232-C/RS-422-A serial interface

For this information, see the wiring diagram for common serial input/output cables in the printer service manual.

Configuring the computer interface

To configure the computer interface, see the *HP LaserJet Family Quick Reference Service Guide*, Volume I.

HP LaserJet *5000 series printers* HEWLETT® PACKARD

EIO 1 - JETDIRECT PAGE 1

JetDirect Configuration Page

GENERAL INFORMATION

```
HP JETDIRECT                J3111A
FIRMWARE REVISION:         G.05.33
LAN HW ADDRESS:       0060B0426558
PORT SELECT:       10BASE-T (RJ45)
MFG ID:             37273727200533

I/O CARD READY
```

```
NETWORK STATISTICS
UNICAST PACKETS RCVD:           52
TOTAL PACKETS RCVD:          19645
BAD PACKETS RCVD:                0
FRAMING ERRORS RCVD:             0
PACKETS TRANSMITTED:           419
UNSENDABLE PACKETS:              0
XMIT COLLISIONS:                58
XMIT LATE COLLISIONS:            0
```

PROTOCOL INFORMATION

```
TCP/IP STATUS:                  40
  ARP DUPLICATE IP ADDRESS
  0060B042A567

HOST NAME:           NOT SPECIFIED
CONFIG BY:              RARP/BOOTP
IP ADDRESS:            192.0.0.192
SUBNET MASK:         NOT SPECIFIED
DEF. GATEWAY:          192.0.0.192
SYSLOG SERVER:       NOT SPECIFIED
IDLE TIMEOUT (SECONDS):         90
SNMP GET CMTY NAME:            ALL
SNMP SET CMTY NAME:           NONE
BOOTP/DHCP SERVER:         0.0.0.0
CONFIG FILE:         NOT SPECIFIED

WEBJA SERVER:        NOT SPECIFIED

NOVELL STATUS:                  16
  NOT CONFIGURED
MODE:                 QUEUE SERVER
NODE NAME:
  NPI426558
```

```
APPLETALK STATUS:            READY
ETALK NET:    340 NODE: 130  P2
ETALK NET:      0 NODE: 209
APPLETALK NAME:  HP LaserJet 500
0 Series1
ETALK ZONE:  CSC_EtherTalk3

DLC/LLC STATUS:              READY

NOVELL RETRANS:                  0
NETWORK  FRAME TYPE          RCVD
73D785D5 EN_802.2            4809
UNKNOWN  ENTSNAP               28
UNKNOWN  EN_II                264
```

LocalTalk I/O*

The printer implements AppleTalk networking protocol through LocalTalk hardware. The LocalTalk network cable (HP part number 92215N) is connected through the EIO card.

Expanded I/O*

The optional expanded I/O card can be installed in the slots provided on the Formatter PCA. The expanded I/O card provides automatic I/O switching between multiple computers or networks connected to the printer. The network version printers include the HP JetDirect Multi-protocol Network Card with Ethernet/10Base-T and 10Base-2, and LocalTalk.

Flash*

Flash is provided in optional 2 and 4 megabyte (MB) flash memory DIMMs for storage of forms, fonts, and signatures.

Disk*

The optional EIO-based hard disk is used for creating multiple original prints (mopies) and for storing forms, fonts, and signatures.

*This feature does not apply to the HP LaserJet 3100.

5 Media specifications

Overview

Use media that meet the specifications listed on the following pages. By doing so, you will minimize the incidents of paper jams, prevent premature wear to the printer, and reduce repair costs. Hewlett-Packard recommends testing print media before buying it in large quantities.

Note

For complete paper specifications for all HP LaserJet printers, see the *HP LaserJet Family Paper Specification Guide*.

Paper sizes

Metric System

Size	Metric Dimensions	U.S. Dimensions
A0	841 x 1189 mm	33.1 x 46.8 in
A3	297 x 420 mm	11.7 x 16.5 in
A4	210 x 297 mm	8.3 x 11.7 in
A5	148 x 210 mm	5.8 x 8.3. in
B4 (ISO)	250 x 353 mm	9.8 x 13.9 in
B5 (ISO)	176 x 250 mm	6.9 x 9.8 in

Imperial (U.S.) System

Size	U.S. Dimensions	Metric Dimensions
Ledger	11 x 17 in	279 x 432 mm
Legal	8.5 x 14 in	216 x 356 mm
Letter	8.5 x 11 in	216 x 279 mm
Executive	7.3 x 10.5 in	191 x 267 mm
Custom	5.8 x 8.2 in to 8.5 x 14 in	149 x 210 mm to 216 x 356 mm
JIS B4**	10.1 x 14.3 in	257 x 364 mm
JIS B5**	7.2 x 10 in	182 x 257 mm
J Postcard*	3.9 x 5.8 in	100 x 148 mm
J Double Postcard*	5.8 x 7.9 in	148 x 200 mm

* J - Japanese
** JIS Japanese Industry Standard

Paper specifications

Category	Specifications
Acid content	5.5 pH to 8.0 pH
Basis weight: 4000 series Tray 1 4000/4000 N Tray 2 4000 T/4000 TN Tray 2 and Tray 3 4000 series optional 500-sheet tray 4000 series Duplexer	 60 to 199 g/m^2 (16 to 53 lbs) 60 to 105 g/m^2 (16 to 28 lbs) 60 to 105 g/m^2 (16 to 28 lbs) 60 to 105 g/m^2 (16 to 28 lbs) 60 to 105 g/m^2 (16 to 28 lbs)
5000 series: Tray 1 Tray 2 or optional 250-sheet Tray Optional 500-sheet Tray Duplexer	 60 to 105 g/m^2 (16 to 28 lbs)
3100: Paper input bin Single-sheet input slot Document feeder tray	60 to 105 g/m^2 (16 to 28 lbs) (up to 42 lbs using the front output slot) 60 to 105 g/m^2 (16 to 28 lbs) (up to 42 lbs using the front output slot) 44 to 105 g/m^2 (12 to 28 lbs) (up to 67 lbs using the special media lever)
8000 series: Standard output bin Left output bin Optional 2000-sheet input tray Duplexer	 60 to 105 g/m^2 (16 to 28 lbs)
Optional envelope feeder: 4000 series 8000 series	 75 to 105 g/m^2 (20 to 28 lbs) 60 to 90 g/m^2 (16 to 24 lbs)
Caliper	3.0 to 7.0 mils (0.094-0.18 mm)
Curl in ream	Flat within 5 mm (0.2 in)
Condition of cut edge	Cut with sharp blades with no visible fray
Fusing compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 205°C (400°F) for 0.1 second
Grain	Long grain
Moisture content	4% to 6% by weight
Smoothness	100-250 Sheffield

Paper weight equivalences

Use this table to determine approximate equivalent points in weight specifications other than U.S. bond weight. For example, to determine the equivalent of 20 lb U.S. bond weight paper in U.S. cover weight, locate the bond weight (in row 3, fourth column) and scan across the row to the cover weight (in the sixth column). The equivalent is 28 lb.

Note

Shaded areas indicate a standard weight for that grade.

Metric wt (g/m^2)		**U.S. weights (lb) or thickness (mm)**						
Europe	Japan	Postcard* thickness	Bond Wt	Text book Wt	Cover Wt	Bristol Wt	Index Wt	Tag Wt
60	60		16	41	22	27	33	37
64	64		17	43	24	29	35	39
75	75		20	50	28	34	42	46
80	80		21	54	30	36	44	49
80	81		22	56	31	38	46	51
90	90		24	60	33	41	50	55
100	100		27	68	37	45	55	61
105	105		28	70	39	49	58	65
120	120		32	80	44	55	67	74
120	128		34	86	47	58	71	79
135	135		36	90	50	62	75	83
148	148	0.18	39	100	55	67	82	91
157	157	0.19	42	107	58	72	87	97
163	163	0.20	43	110	60	74	90	100
176	176	0.23	47	119	65	80	97	108
199	199		53	134	74	90	110	122

* U.S. postcard measurements are approximate. Use for reference only.

Troubleshooting paper problems

Paper problems can be difficult to detect. The following series of steps will help isolate paper-induced problems versus printer problems:

- Isolate a paper path.
- Isolate a brand of paper.
- Isolate a type of paper.
- Evaluate paper-use practices.
- Evaluate environmental conditions.

Here are some paper usage tips:

- Turn the paper over and print on the other side. Doing so often corrects excess paper curl.
- Rotate the paper 180° (end-for-end) to feed a different leading edge. This can help correct multi-sheet feeding problems.

Papers to avoid

- NCR self-carbon (or “carbonless” paper)
- paper that has been preprinted (such as letterhead) with ink that will not withstand fuser heat (205° C [400° F] for 0.1 second)
- plastic-fiber paper
- embossed paper
- paper with cutouts or perforations
- chemically treated paper
- coated paper
- synthetic paper
- multi-part forms
- odd-sized paper

If your printer is having trouble with paper jams, multi-feeds, or misfeeds, use HP-brand paper: HP 20 lb Multi-Purpose Paper, part number 9300-2092; HP 24 lb LaserJet Paper, part number 9300-2091.

General tips

Paper curl

Paper curl results from both the heating process used to bond the print image (toner) to the paper and from the path that the paper must negotiate through the printer.

Take the following actions to help reduce paper curl:

1. Turn the paper over in the input tray. Some paper packages (reams) have an arrow indicating the preferred printing side. Experiment to determine which orientation yields the least curl.
2. Try a different output paper path (if available for your printer). Using the “face-up” output path may yield more acceptable results than the standard “face-down” output bin.
3. Protect the paper from adverse environmental conditions prior to use. Paper designed for laser printing has an initial moisture content of 4-6 percent which is maintained as long as it is stored properly. Once the paper has been removed from its packaging it will dry out or absorb additional moisture, depending on the environment. Excess moisture in the paper will increase the amount of curl.
4. Try a different type or brand of paper. Not all paper is designed for laser printing.

Much of the paper curl that is induced by the laser printer fusing process will tend to relax within the first 24 hours following printing. However, the curl on the leading edge of the page may remain longer because the leading edge tends to remain in contact with the fusing roller for longer periods.

Envelope specifications

Category	Specifications
Basis weight	Should not exceed 105 g/m^2 (28 lb)
Caliper	3.3 to 5.5 mils (0.084 to 0.14 mm) single layer thickness
Curl	Less than 6 mm (0.25 in) curl across entire surface
Finishing	Accurate, sharply creased folds with no more than two thicknesses of paper at the leading edge
Fusing compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 205° C (400° F) for 0.1 second
Moisture content	4% to 6% by weight
Paper	Must meet all the normal paper specifications
Smoothness	100 to 250 Sheffield

Envelope sizes

Imperial (U.S.) system

Size	U.S. Dimensions	Metric Dimensions
Tray 1: Minimum Maximum	 3 x 5 in 8.5 x 14 in	 76 x 127 mm 216 x 356 mm
Optional envelope feeder: Minimum Maximum	 3.5 x 6.3 in 7 x 10 in	 90 x 160 mm 178 x 254 mm

Envelopes to avoid

Do not use the following envelopes:

- with clasps, snaps, or tie strings
- with transparent windows, holes, perforations, or cutouts
- having an open flap with adhesive exposed
- having paper, inks, adhesives, or materials that discolor, melt, offset, or release hazardous emissions when exposed to 205° C (400° F)
- having extremely smooth, shiny, rough, textured, or deeply embossed surfaces
- damaged, wrinkled, or irregularly shaped
- constructed with encapsulating adhesives that do not require moistening, but rely instead on pressure to seal them

Preventing printer malfunctions caused by envelopes

When you are printing on envelopes, use these preventive measures to avoid printer malfunctions.

- Carefully feed the envelopes into the printer.
- Be aware of the envelope’s construction.

Envelope feeding

Follow these preventive measures when feeding envelopes:

- Envelopes can be manually fed through the printer or they can be fed automatically through an envelope tray or feeder.
- Closely inspect the leading edge of the envelopes before feeding them into the printer. Ensure that the leading edge is flat. Watch for envelope curl. Flatten the leading edge of the envelope before printing.
- Be patient; in manual feed mode the printer displays a message when it is ready to accept the next envelope. Wait for this message to appear before inserting the next envelope.
- Do not allow a large quantity of envelopes to accumulate in the output bin.
- On most printers, use the rear (or front) output bin (if available) when printing envelopes. Do not use the top (face-down) output bin.

Envelope construction

- The corner folds need to be well-creased, with no more than two thicknesses of paper.
- The envelopes must lay flat.
- The paper grain should be diagonal to the direction of the feed.
- Adhesives must meet HP specifications for fusing compatibility.
- Basis weight must not exceed 105 g/m^2 (28 pounds).
- Do not use envelopes with clasps, snaps, tie strings, or windows.
- Do not use envelopes made of synthetic materials.

Label specifications

Category	Specifications
Adhesive	Must not be on any external surfaces of the label before, during, or after printing. Label construction and die-cutting must not allow labels to peel off during transport, printing, or fusing.
Caliper	Must not exceed 0.18 mm (0.007 in)
Curl	In ream: flat within 13 mm (0.5 in)
Finishing precision	Cut sheet within 0.79 mm (0.031 in) of nominal and 0.20° square
Fusing compatibility	All adhesions, carrier sheets, top sheets, and other materials used in label construction must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset, or release hazardous emissions when heated to 205° C (400° F) for 0.1 second.
Packaging	Use moisture-proof wrap to preserve properties.

Preventing printer malfunctions caused by adhesive labels

As with envelopes, prevention is the best way to avoid printer malfunctions caused by adhesive labels. To prevent paper jams and feed problems, labels must meet the following requirements:

- Be cut long grain (as opposed to short grain).
- Totally cover the carrier sheet (no spaces between labels, no removed labels).
- Contain no excessive glue. (The adhesive should be acrylic-based emulsion and should not come into direct contact with the printer.)
- Meet HP specifications for fusing compatibility.
- Meet HP specifications for caliper.
- Have a carrier sheet that is not too smooth.
- Use the flat paper path (manual feed slot and rear, or front, face-up delivery door), which is the recommended printing method.

Transparency specifications

Category	Specifications
Caliper	3.9 to 4.3 mils (0.100 to 0.110 mm)
Cutting angle	90° ± 0.2°
Finishing precision	Cut sheet to within 0.8 mm (0.03 in) of nominal and ± 0.2° of square
Fusing compatibility	Overhead transparency material must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset material, or release hazardous emissions when heated to 205° C (400° F) for 0.1 second.

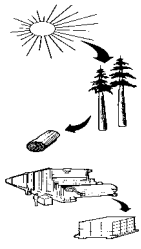
Preventing printer malfunctions caused by transparencies

Use these preventive measures to avoid printer malfunctions caused by transparencies:

- Use the straightest paper path to avoid curling and other problems.
- Use transparencies with the correct resistivity.
- Use transparencies that meet HP specifications for fusing compatibility.
- Remove each printed sheet from the tray and place it on a flat surface before printing the next sheet.

HP paper training video

HP has developed a training video focusing on how paper is manufactured and how the manufacturing process relates to the use of paper in HP LaserJet printers. Part numbers are shown below.

	Part Number	Version (VHS Format)
 The Paper Video explains the manufacturing process.	5961-0711	National Standard Television Committee (NTSC) version (U.S.)
	5961-0712	PAL version (Europe, Asia)

6 Toner cartridge information

Overview

This chapter provides information on toner cartridges and their use. Hewlett-Packard recommends using HP toner cartridges, which are designed specifically to enhance the output from the HP LaserJet family of printers.

Cartridge weights and page counts

HP LaserJet	Product	Cartridge	Full weight	Empty weight	Page count at 5% coverage
4000 series	C4127A	EP-A	1295 gm (45.7 oz)	1020 gm (36 oz)	6,000
4000 series	C4127X	EP-X	1445 gm (51 oz)	1000 gm (35.3 oz)	10,000
5000 series	C4129X		1880 gm (66.3 oz)	1450 gm (51.1 oz)	10,000
3100	C3906A		730 gm (26.1 oz)	640 gm (22.7 oz)	2,500
8000 series	C3909A		3000 gm (106 oz)	2200 gm (80.5 oz)	15,000
Mopier 240	C3909S		3000 gm (106 oz)	2200 gm (80.5 oz)	15,000

Potential toner cartridge issues

Banding

When printing with a laser printer, the toner is applied across the page in horizontal strips. The page is moved through the printer and toner is continually applied. When printing text or black image pages, a large amount of toner is deposited on the page. As the amount of toner deposited on the page decreases, slight speed variations become more apparent. As the resolution (dots per inch) and the speed (pages per minute) increase, a variation in pattern intensity may appear on the page as lines or bands.

The bands are more visible in certain grayscale patterns. High speed printers that are capable of printing high resolution grayscale patterns are more likely to display the pattern variations. Changing the grayscale pattern or reducing the resolution may significantly reduce the amount of banding that occurs.

Character voids

Small gaps or voids may appear in some of the characters when printing on media other than standard photocopier paper. These “character voids” occur because some print media does not accept the transfer of toner as well as others.

To minimize the occurrence of character voids, avoid media with a rough finish. Use media that is within the Hewlett-Packard paper specifications listed in the user guide or the *HP LaserJet Family Paper Specification Guide*. If the finish is too rough, the surface will consist of large inconsistencies. If the finish is too smooth, toner will not adhere well. Adjusting the print density may affect the severity of character voids.

Toner cracking

When the paper is folded and the crease aligns with a line of text, it is possible with certain types of paper for the text to break along the line, giving the appearance of a white line through the text. Papers that do not meet the smoothness (100-250 Sheffield, 100-500 Bendtsen) or wax pick (>11 Dennison) are likely to exhibit this effect more than others.

Toner in the HP LaserJet printers is composed of minute particles of pigmented plastic material (styrene) and iron oxide. When the toner is subjected to the fusing temperature, these individual iron-impregnated plastic particles become part of a larger plastic image on the page. When the printed page is subsequently folded, the plastic image must also give, in some fashion, to accommodate the fold. If the print image has been well-set into the paper, this resulting break in the plastic will not be apparent. However, if the toner is unable to adequately penetrate the paper fibers or if, in the process of folding the paper, the paper fibers behind the toner break away from the page itself, the result will be a “white line” through the image. There are several ways to minimize this effect:

- Ensure that the paper being used meets all of the specifications provided in the *HP LaserJet Printer Family Paper Specification Guide*; in particular the smoothness and wax pick.
- A lighter density setting will ensure that the toner image will be composed of less plastic material, thus minimizing the resulting effect of trying to fold the toner image.
- For the reasons listed earlier, a more narrow character-stroke width might also help.
- Magnetic Ink Character Recognition (MICR) paper may fix toner cracking problems (see also the *HP MICR User’s Guide*).

In xerographic (laser) printing, using paper that has a laid finish often causes problems. The surface roughness of the paper is often responsible for the problems.

Paper that is stiffer than xerographic paper also causes problems. Stiff papers do not fold well. When stiff paper is folded and a toner image is applied to the paper’s surface, the problems are even worse.

Transfer of toner image

After printing a document on an HP LaserJet printer, folding it, and sending it through the mail, you might observe that a portion of the print image was transferred to opposing surfaces of the folded document.

The laser printing process uses a pigmented plastic powder (toner) to form a print image that is first transferred to a sheet of paper (or other print medium) and then melted (fused) onto the surface of the paper to form a permanent image. Though paper is usually thought of as being “soft,” it is actually quite abrasive. When the printed page is folded, movement under pressure between a paper surface and the toner image may cause the paper to abrade (scratch) the toner, causing a transfer of the toner material onto the opposing surface of the paper. This can be demonstrated by rubbing a print image against (or into) a clean sheet of paper.

Some machinery, such as that used by the U.S. Postal Service to sort mail, can apply the necessary pressure and agitation to cause this toner image transfer phenomenon.

To minimize this effect:

- Minimize the amount (or height) of toner used to produce the print image.
- Use a paper that is less abrasive.
- Ensure optimal fusing of the toner (print) image to the paper.

The **amount** of toner used to produce a print image is controlled by the print density dial, slide, or control panel settings in the HP LaserJet printers. The print density should be adjusted for a **lighter** image to reduce the amount (height) of toner prone to abrasive transfer.

HP LaserJet printers have been designed for optimum results with xerographic (laser) bond papers, such as XEROX 4024 photocopy paper. The properties of this type of paper (for example, surface roughness, composition, moisture content) are such that the other causes of potential toner transfer are minimized. Photocopy papers are typically less abrasive than other types of paper (such as writing bond) and are also formulated to ensure optimal fusing of the toner image. Using other types of paper will generally yield less than optimal results in laser printers. For help in selecting paper suitable for use in the

HP LaserJet printers, refer to the *HP LaserJet Printer Family Paper Specification Guide*. This guide can be ordered by calling HP Parts Direct at 800-227-8164 in the U.S., or HP Distribution at 970-339-7009.

Because of the way that laser printing is accomplished, currently there is no way to entirely eliminate the possibility of toner transfer. However, using these techniques should yield more satisfactory results and will often reduce the problem to imperceptible levels.

Gray background on envelopes

Poor print quality is normally the result of using envelopes that are of the incorrect weight or finish. The paper used to construct the envelope may be embossed; or may be too heavy, too rough or too slick; or may be made in such a way that it is incompatible with the high temperatures encountered in toner fusing. The result is that the toner does not adhere well to the surface. Also, on heavier envelopes, a gray background may appear on the front (or print side) of the envelope. To reduce the gray background, the print density may need to be set to a darker setting.

HP PLANET PARTNERS

The U. S., Canada, Europe, and Australia now have HP toner cartridge recycling programs. The used toner cartridge should be placed in the wrapper and box that held the new cartridge and sent back for recycling.

U.S.

A brochure explaining the recycling program in the U.S., part number 5091-1325EUS, can be ordered. The customer returns used toner cartridges via UPS at no cost to the customer using shipping labels included in the brochure. The toner cartridges can be shipped one at a time or in volume shipments. Some of the parts are recycled to make new cartridges. Other parts are melted for re-use as raw materials. If the customer has any questions, and to receive the free recycling brochure, refer them to the Customer Information Center at (800) 752-0900.

AUSTRALIA

Australian customers can send their toner cartridges to their local HP dealer. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.

EUROPE

The recycling program in Europe currently includes these countries: Germany, Switzerland, Austria, United Kingdom, the Netherlands, and Sweden. If more than 30 cartridges a month are used, contact the local dealer for instructions on how to have the cartridges picked up directly from the customer's site. For further information, contact the dealer or local HP sales office.

CANADA

Canada uses Federal Express for their recycling program. At least eight but no more than 40 Toner Cartridges can be shipped at one time. Shipments of less than eight cartridges are at the shipper's expense. Call Federal Express at (800) GoFedEx; (800) 463-3339 to arrange for free pickup of the bundled cartridges. Fill out a Federal Express Waybill or obtain a preprinted one from your dealer.

In Alberta, B.C., Manitoba, NWT, Saskatchewan, and the Yukon,
send the bundles to:
Hewlett-Packard Toner Cartridge Recycling Program
6551 Westminister Hwy, Unit 160
Richmond, B.C. V7C 4V4
Acct. No.: 1246-1740-5

In the Atlantic provinces, Ontario, and Quebec
send the bundles to:
Hewlett-Packard Toner Cartridge Recycling Program
6600 Goreway Drive, Unit C
Mississauga, Ontario L4V 1S6
Acct. No.: 1246-1740-5

For more information, call: Canada wide: (800) 387-3867
Dept. 129; Toronto: (800) 678-9430 Ext. 4981

Note

Recycling information is included in the toner cartridge package.

For additional information about HP corporate-wide, environmental policies, practices, and awards, visit **www.hp.com**.

Refill Statement

Hewlett-Packard toner cartridges have been designed to maximize the reliability of the HP LaserJet printer by including all of the components that need frequent replacement or adjustment within the cartridge. While we recognize that all parts of this critical printer mechanism will not wear consistently, the HP toner cartridge has been designed to optimize the exceptional print quality that is synonymous with the HP LaserJet printer name. While Hewlett-Packard does not prohibit the use of refilled toner cartridges during the warranty period or under a maintenance contract, we also do not recommend their use for the following reasons:

1 The HP LaserJet toner cartridge is not designed to be refilled or remanufactured.

2 Hewlett-Packard has no control or process to ensure that a refilled toner cartridge will function at the high level of reliability of a new HP LaserJet toner cartridge. Hewlett-Packard also cannot predict what the long-term effect on the printer's reliability could be from using different toner formulations found in refilled cartridges. Because the HP LaserJet printer has the highest reliability reputation in the industry, we are concerned about any usage that might affect this reputation.

3 Hewlett-Packard has no control over the actual print quality of a refilled toner cartridge. The print quality of the HP LaserJet toner cartridge directly influences the customer's perception of the HP LaserJet printer itself. The high print quality of the HP LaserJet printer is one of the primary reasons for the success of the product and we are keenly interested in maintaining that image.

The entire family of HP LaserJet printers is covered under a standard one-year warranty from the date of purchase. Hewlett-Packard offers optional maintenance contracts after the one-year warranty expires. The use of refilled toner cartridges alone does not affect either the warranty or any maintenance contract purchased from HP. **However, if an HP LaserJet printer failure or damage is found to be directly attributed to the use of a refilled toner cartridge, the repair will not**

be covered under the warranty or by the maintenance contract. Rather, standard time and material charges will be applied to service the printer for that particular failure or damage.

Hewlett-Packard is constantly striving to provide the highest quality printer products possible. The HP LaserJet printer family was designed for optimum output performance when the printing mechanism is periodically replaced with a new HP toner cartridge. The HP toner cartridge is designed specifically to enhance the output from the HP family of printers. We know that the highest quality print results will be obtained when new HP toner cartridges are used with HP LaserJet printers.

7 Printer options and replaceable parts

Overview

The following tables list the products, product numbers, product descriptions, and service part numbers for each printer. Parts can be ordered through HP Parts Direct Ordering at (800) 227-8164 (U.S. only). For additional product support, see the inside back cover of this guide.

Printer options and replaceable parts

Product	Product Number	Product Description	Service Part Number
Memory	C4135A	4 MB EDO DIMM	C4135-67901
	C4136A	8 MB EDO DIMM	C4136-67901
	C4137A	16 MB EDO DIMM	C4137-67901
	C4140A	4 MB SDRAM DIMM	C4140-67901
	C4141A	8 MB SDRAM DIMM	C4141-67901
	C4142A	16 MB SDRAM DIMM	C4142-67901
	C4143A	32 MB SDRAM DIMM	C4143-67901
	C3913A	64 MB SDRAM DIMM	C3913-67901
	C4286A	2 MB Flash DIMM	N/A
	C4287A	4 MB Flash DIMM	N/A
Fonts	C4292A	Traditional Chinese Font DIMM (8 MB Asian ROM)	N/A
	C4293A	Simplified Chinese Font DIMM (8 MB Asian ROM)	N/A
	D4838A	Korean (8 MB Asian ROM)	N/A
Enhanced I/O Cards	J3110A	Ethernet RJ-45 only	N/A
	J3111A	Ethernet RJ-45 and BNC, LocalTalk	J3111-61003
	J3112A	Token Ring RJ-45 and DB-9	N/A
	J3113A	10/100Base-TX networks	N/A
Hard Disk	C2985A	Hard Disk	N/A

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Product	Product Number	Product Description	Service Part Number
Parallel Cables	C2950A	Parallel IEEE-1284 compliant A to B (2.0 m)	N/A
	C2951A	Parallel IEEE-1284 compliant A to B (3.0 m)	N/A
	C2945A	Parallel IEEE-1284 compliant A to C (2.0 m)	N/A
	C2946A	Parallel IEEE-1284 compliant A to C (3.0 m)	N/A
	C2947A	Parallel IEEE-1284 compliant A to C (10.0 m)	N/A
Serial Cables	C2932A	9-9 pin serial cable (male/female)	N/A
	C2933A	9-25 pin serial cable (male/female)	N/A
	C2809A	25-9 pin serial adaptor (male/female)	N/A
	92215S	Macintosh Computer Serial Cable	N/A
	92215N	Macintosh Network Cable Kit	N/A
Trays	C4781A	2,000-sheet Input Tray and Paper Feeder	N/A
	C4124A	500-sheet Paper Feeder and Tray	C4125-67901
	C4125A	500-Sheet Universal Replacement Tray	N/A
	C3122A	Standard 500-sheet Tray	N/A
	C4115A	500-sheet Paper Feeder and Tray	N/A
	C4117	500-Sheet Replacement Tray	C4117-69001

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Product	Product Number	Product Description	Service Part Number
Trays, continued	C4780A	Two 500-sheet trays and Paper Feeder	N/A
	C4114A	250-sheet Paper Feeder and Tray	N/A
	C4126A	250-sheet Universal Replacement Tray	C4126-67901
	C4116A	250-sheet Replacement Tray	C4116-69001
	C4098A	Tray 2 (500-sheet Input Tray) or Tray 4 (2 x 500-sheet Input Tray)	RG5-3951-000CN
	C4099A	Tray 3 (500-sheet Input Tray) or Tray 5 (2 x 500-sheet Input Tray)	RG5-3952-000CN
Envelope Feeder	C4122A	Envelope Feeder	C4122-69001
	C3765B	Envelope Feeder	
Duplexer	C4123A	Duplex Printing Accessory	C4123-69001
	C4113A	Duplex Printing Accessory	C4113-69001
	C4782A	Duplex Printing Accessory	
Mailbox	C4783A	7-bin Tabletop Mailbox	
	C4785A	Multibin Mailbox	
	C4787A	5-bin Mailbox with stapler	
Media	HPM1120	HP Multi-purpose Paper	M1120
	HPJ1124	HP LaserJet Paper	J1124

4000	5000	8000	3100
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Product	Product Number	Product Description	Service Part Number
Toner Cartridges	C4127A	Toner Cartridge (6,000 pages)	N/A
	C4127X	Toner Cartridge (10,000 pages)	N/A
	C4129X	Toner Cartridge (10,000 pages)	N/A
	C3906A	Toner Cartridge (2,500 pages)	N/A
	C3909A	Toner Cartridge (15,000 pages)	N/A
	C3909S	3 Toner Cartridges (15,000 pages) (Mopier 240)	N/A
Power Box	C4789A	Connects a multibin mailbox to the printer when the printer is on a printer stand.	N/A
Upgrade Kit	C4095A	LJ 5Si to LJ 8000 Upgrade Kit	N/A

4000	5000	8000	3100
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			●
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		●	
		●	

Product	Product Description	Service Part Number	Exchange Number
Maintenance Kit	Service Maintenance Kit with 110V fuser (4000 series)	C4118-67902	C4118-69001*
	Service Maintenance Kit with 220V fuser (4000 series)	C4118-67903	C4118-69002*
	Service Maintenance Kit with 110V fuser (5000 series)	C4110-67902	C4110-69006*
	Service Maintenance Kit with 220V fuser (5000 series)	C4110-67903	C4110-69007*
	Preventative Maintenance Kit with 110 V fuser (8000 series)	C3971B	C3971-69002*
	Preventative Maintenance Kit with 220 V fuser (8000 series)	C3972B	C3972-69002*

*Requires exchange

4000	5000	8000	3100
•			
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8 Printer parts

Overview

This chapter provides the part numbers and descriptions of the most commonly used assemblies and subassemblies in the HP LaserJet printers. The shaded numbers in the tables refer to the location of the part in the printer, as shown in the corresponding illustrations.

Note

See your printer service manual for a complete listing of hardware components.

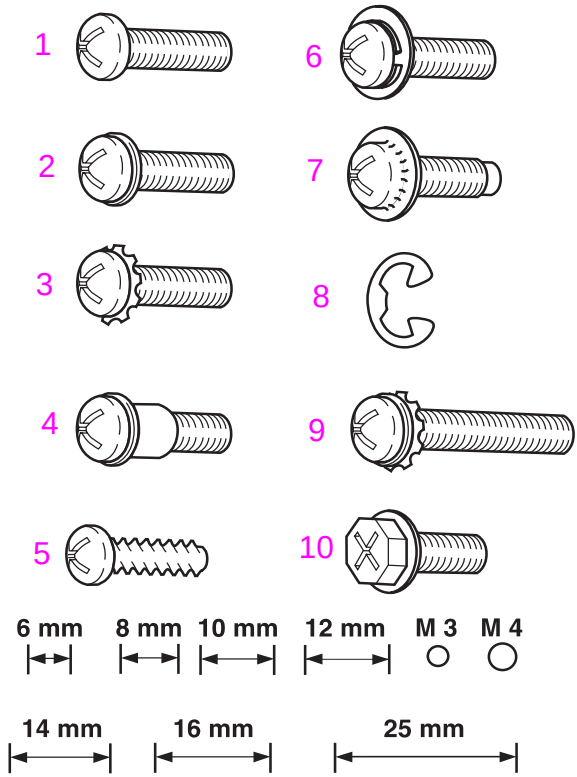


Figure 8-1 Common Hardware

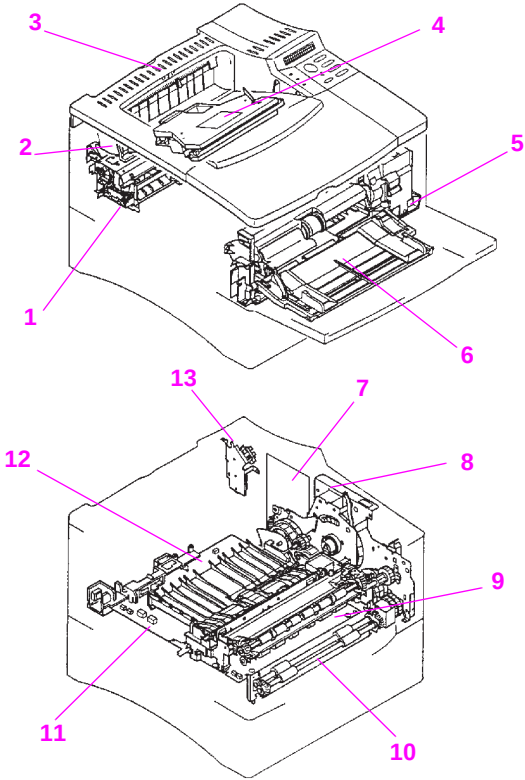
Common Hardware

	Part Number	Product Description	
1	XB1-2300-606CN	M3 x 5mm	Pan-head Phillips
1	XB1-2300-507CN	M3 x 5mm	Pan-head Phillips
1	XB1-2300-607CN	BH3 x 6mm	Pan-head Phillips
1	0515-1895	M3 x 8mm	Pan-head Phillips
1	XB1-2301-407CN	M4 x 14mm	Pan-head Phillips
1	XB1-2400-606CN	M4 x 6mm	Pan-head Phillips
1	XB1-2400-809CN	M4 x 8mm	Pan-head Phillips
1	0515-1912	M4 x 8mm	Pan-head Phillips
1	XB1-1300-807CN	M3 x 8 mm	Pan-head Phillips
2	FA9-1449-000CN	M3 x 6mm	Washer-head Phillips
2	XA9-0267-000CN	M3 x 6mm	Washer-head Phillips
2	XA9-0253-000CN	M3 x 8mm	Washer-head Phillips
2	XA9-0542-000CN	M3 x 10mm	Washer-head Phillips
2	XA9-0540-000CN	M4 x 8mm	Washer-head Phillips
3	XA9-0653-000CN	M3 x 6mm	Star-washer Phillips
3	XA9-0653-000CN	M3 x 6mm	Star-washer Phillips
3	XA9-0389-000CN	M3 x 8mm	Star-washer Phillips
3	XA9-0654-000CN	M3 x 10mm	Star-washer Phillips
3	XA9-0192-000CN	M4 x 6mm	Star-washer Phillips
3	XA9-0828-000CN	M3 x 6mm	Star-washer Phillips
4	RBI-5552-000CN	M3	Shoulder Screw Phillips
4	RAI-7636-000CN	M3	Shoulder Screw Phillips
4	RBI-5489-000CN	M3 x 4mm	Shoulder Screw Phillips
4	XA9-0342-000CN	M3 x 8mm	Shoulder Screw Phillips
5	XB4-7300-609CN	M3 x 6mm	Self-tapping Phillips
5	XB6-7300-607CN	M3 x 6mm	Self-tapping Phillips
5	XB4-7400-809CN	M4 x 8mm	Self-tapping Phillips
5	XA9- 0870-000CN	M4 x 10mm	Self-tapping Phillips (black)
5	XB4-7401-009CN	M4 x 10mm	Self-tapping Phillips
5	XB4-7401-007CN	M4 x 10mm	Self-tapping Phillips
5	XB4-7401-209CN	M4 x 12mm	Self-tapping Phillips
5	XA9-0773-000CN	M4 x 12mm	Self-tapping Phillips
5	XA9-0916-000CN	M4 x 14mm	Self-tapping Phillips
6	XA9-0253-000CN	M3 x 8mm	Loose Flat/Lock Washer Phillips
6	XA9-0584-000CN	M3 x 12mm	Loose Flat/Lock Washer Phillips

	Part Number	Product Description	
7	FA9-1449-000CN		Star-washer trus-head Phillips
7	XB1-2302-507CN	M3 x 25mm	Trus-head Phillips
7	XB6-7300-809CN	M3 x 8mm	Trus-head Phillips
7	XA9-0326-000CN	M3 x 4mm	Trus-head Phillips
7	XB6-7300-807CN	M3 x 8mm	Trus-head Phillips
8	XD2-1100-242CN	2.4mm	Retaining Ring (e-type)
8	XD2-1100-322CN	3.2mm	Retaining Ring (e-type)
8	XD2-1100-402CN	4.0mm	Retaining Ring (e-type)
8	XD2-1100-502CN	5.0mm	Retaining Ring (e-type)
8	XD2-1100-642CN	6.4mm	Retaining Ring (e-type)
8	XG9-0260-000CN		Retaining Ring (e-type)
8	XD2-2300-507CN	5.0mm	Grip Ring (c-type)
9	XA9-0375-000CN	3m x 25 mm	Loose Flat/Star Washer Phillips
10	XA9-0686-000CN	M3 x 6mm	Hexhead Screw
10	XA9-0724-000CN	M3 x 8 mm	Hexhead Screw
10	XA9-0824-000CN	M3 x 10mm	Hexhead Screw
10	XA9-0813-000CN	M3 x 8mm	Hexhead Screw with washer

Notes

Parts for the HP LaserJet 4000 series

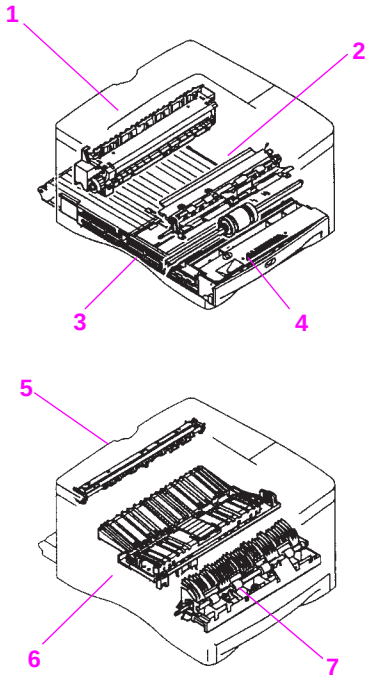


HP LaserJet 4000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Fusing Assembly	C4118-69003 (110V)** C4118-69004 (220V)**
2	Paper Delivery Assembly	RG5-2648-000CN
	Paper Pick-up Drive Assembly	RG5-2690-000CN
	Pick-up Roller	RB1-8865-000CN
	Feed Separation Roller	RF5-2490-000CN
	Drive Coupler	RB1-8877-000CN
3	Top Cover Assembly	RG5-2663-000CN
	Front Panel	RG5-2666-000CN
4	Laser Scanner Assembly	C4110-69008**
5	Tray 1 Pick-up Assembly	RG5-2655-000CN
	Tray 1 Pick-up Roller	RG5-3718-000CN
6	Tray 1 Assembly	RG5-2656-000CN
7	Formatter Assembly	C4118-69008**
8	Printer Drive Assembly	RG5-2653-000CN
	Release Rod	RB1-8756-000CN
	Main Motor	RH7-1331-000CN
9	Registration Assembly	RG5-2652-000CN
10	Paper Feed Assembly	RG5-2651-000CN
	Clutch	RB1-8974-000CN
11	ECU (Engine Controller Board)	C4118-69006 (110V)** C4118-69007 (220V)**
12	Paper Feed Guide Assembly	RG5-2643-000CN
	Paper Feed Belt	RB1-8668-000CN
	Transfer Roller	RG5-4283-000CN
13	Delivery Drive Assembly	RG5-3721-000CN

**These parts require exchange

Parts for the HP LaserJet 5000 series



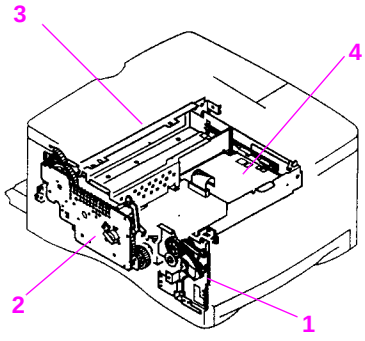
Major assembly locations (1 of 2)

HP LaserJet 5000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Fusing Assembly	C4110-69002 (110V)** C4110-69003 (220V)**
2	Registration Assembly	RG5-3524-000CN
3	Paper Pick-up Assembly	RG5-3521-000CN
	Pick-up Roller	RB2-1820-000CN
4	Paper Tray	C4116-69001 (250-sheet)** C4117-69001 (500-sheet)**
5	Upper Delivery Assembly	RG5-3542-000CN
	Delivery Roller	RB2-1984-000CN
6	Paper Feed Belt Assembly	RG5-3526-000CN
	Paper Feed Belt (Large)	RB2-1887-000CN
	Paper Feed Belt (Small)	RB2-1888-000CN
	Transfer Roller	RG5-3579-000CN
7	Paper Feed Roller Assembly	RG5-3522-000CN

**These parts require exchange

Parts for the HP LaserJet 5000 series



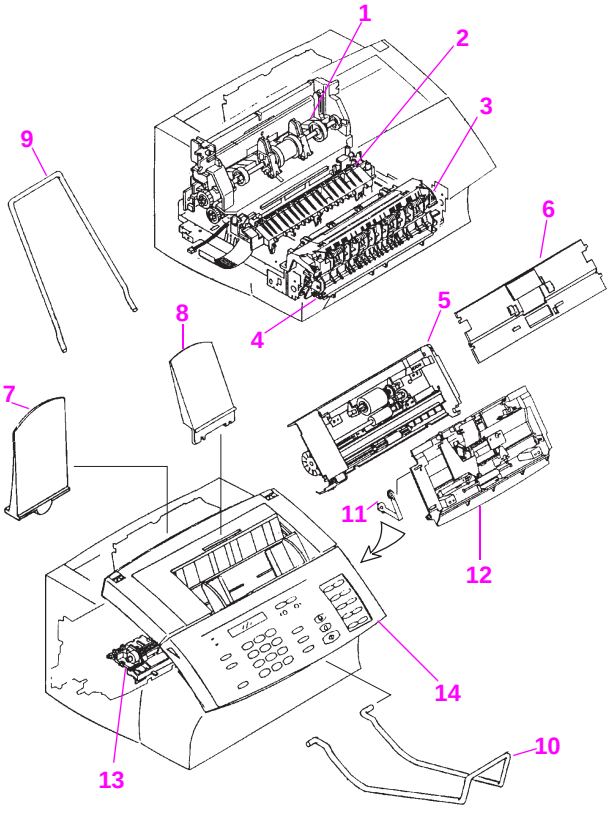
Major assembly locations (2 of 2)

HP LaserJet 5000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Pick-up Drive Assembly	RG5-3544-000CN
	Spring	RS5-2434-000CN
2	Main Gear Assembly	RG5-3543-000CN
	Main Motor	RH7-1357-000CN
3	DC Controller	C4110-69001**
4	Formatter	C3974-69001**
	Laser Scanner Assembly	C4110-69008**
	DC Power Supply	C4110-69004 (110V)** C4110-69005 (220V)**
	Top Cover	RB2-1748-000CN
	Front Panel	RG5-3604-000CN
	Fan	RH7-1354-000CN
	Toner Cartridge Engagement Arm	RB2-1856-000CN
	Separation Pad with Spring	RG5-3585-000CN
	Paper-handling PCA	RG5-3560-000CN
	MP Separation Pad	RF5-2400-000CN

**These parts require exchange

Parts for the HP LaserJet 3100



Major assembly locations

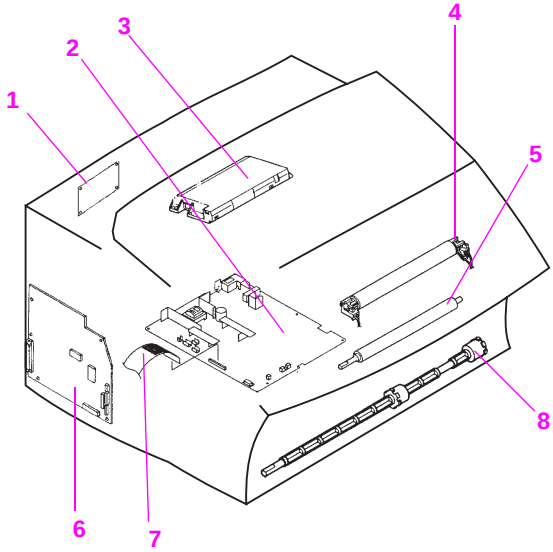
HP LaserJet 3100 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Paper Pick-up Assembly	RG5-3484-000CN
	Pick-up Roller Assembly	RG5-3486-000CN
	Clutch	RB1-7197-020CN
	Separation Arm Assembly	RB1-7181-000CN
	Input Sensor Assembly	RB1-7182-000CN
	Solenoid	RH7-5139-000CN
2	Transfer Guide Assembly	RG5-3452-000CN
	Transfer Roller	RF5-1534-000CN
3	Delivery Assembly	RG5-3474-020CN
4	Separation Guide Assembly	RG5-3475-020CN
	Lever Sensor Arm	RB1-7293-000CN
	Fuser Exit Roller Assembly	RF5-2368-000CN
5	Document Scanner Assembly	RG5-4223-000CN
	Pick-up Roller Assembly	RG5-4688-000CN
	Scanner Motor, AC 1.08 Watts	RH7-1376-000CN
	Contact Image Sensor Assembly	RG5-4239-000CN
	Cable, Contact Image Sensor	RG5-4233-000CN
6	Document Scanner Guide/Cover	RB2-3436-000CN
7	Paper Input Support*	RB2-3362-000CN
8	Paper Output Support*	RB2-3410-000CN
9	Document Feeder Support*	RB2-3455-000CN
10	Document Output Support*	RB2-3470-000CN
11	Strap*	HB1-2867-000CN
12	Upper Guide Assembly	RG5-4221-000CN
	Cover, Arm***	HB1-2895-000CN
	Sheet, Pad***	RB2-4114-000CN
	Document Scanner Separation Pad***	RB2-3430-000CN
13	Feed Assembly	RG5-3485-030CN
	Feed Roller	RB2-1699-000CN
14	Control Panel Assembly	RG5-4241-000CN

* These are customer-replaceable parts.

*** Replace these 3 parts as a set.

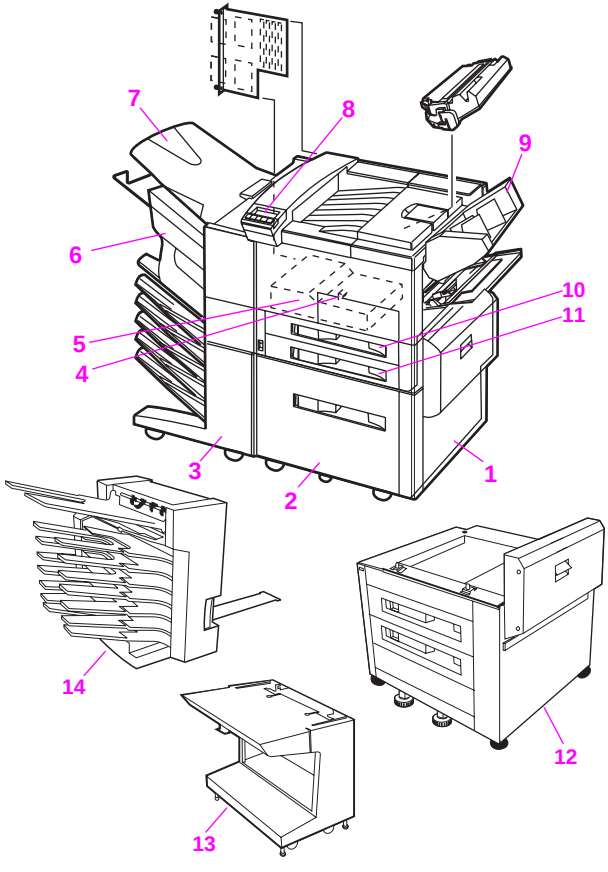
Parts for the HP LaserJet 3100



HP LaserJet 3100 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	LIU Board (U.S.) LIU Board (Worldwide)	C3948-67903 C3948-67904
2	ECU (Engine Controller Board) 110V ECU 220 V	RG5-4690-000CN RG5-4691-000CN
3	Laser Scanner Assembly	RG5-3494-050CN
4	Fixing/Fusing Assembly 110V Fixing/Fusing Assembly 220V	RG5-4678-000CN RG5-4681-000CN
5	Fixing Assembly Pressure Roller	RF5-2362-000CN
6	Formatter (without shield)	C3949-67901
7	Cable ECU to Formatter	RH2-5346-000CN
8	Fuser Exit Roller Assembly	RF5-2368-000CN
	Foot (4)	RF5-2663-000CN
	Speaker	RH6-3845-000CN
	Cable, Laser	RG5-2035-000CN
	Motor, D.C. 12V	RH7-1320-000CN
	RFI Shield, Formatter	C3948-00002

Parts for HP LaserJet 8000 series

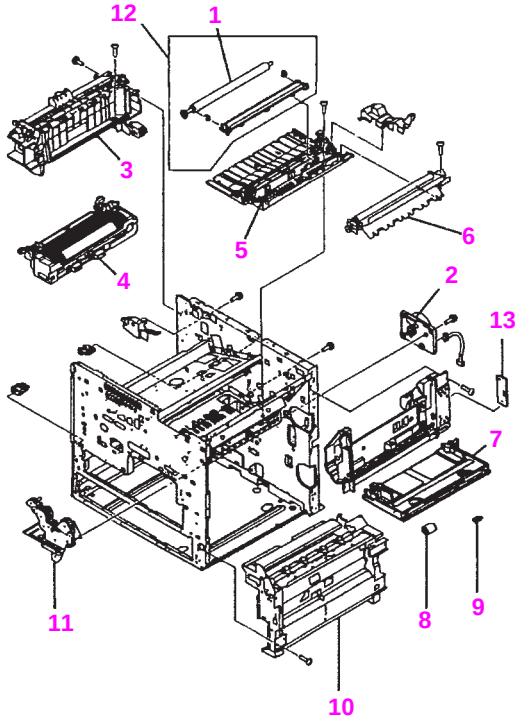


Major assembly locations (1 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	2000-sheet Input Unit Assembly	C4781A
2	Tray 4 Assembly	RG5-2155-000CN
3	Multi-Bin Mailbox	C4785B
4	Duplex Unit Roller 1	RB1-6822-000CN
5	Duplex Unit	C4782A
6	5-Bin Mailbox with Stapler	C4787A
7	Face-up Bin	RB1-6491-000CN
8	Control Panel Display	RG5-4384-000CN
9	Envelope Feeder	C3765B
10	Tray 2	RG5-3951-000CN
11	Tray 3	RG5-3952-000CN
12	Multiple Input Tray (2 x 500-sheet Input Tray)	C4780A
13	7-bin Stand	C4784A
14	7-bin Tabletop Mailbox	C4783A

Parts for HP LaserJet 8000 series

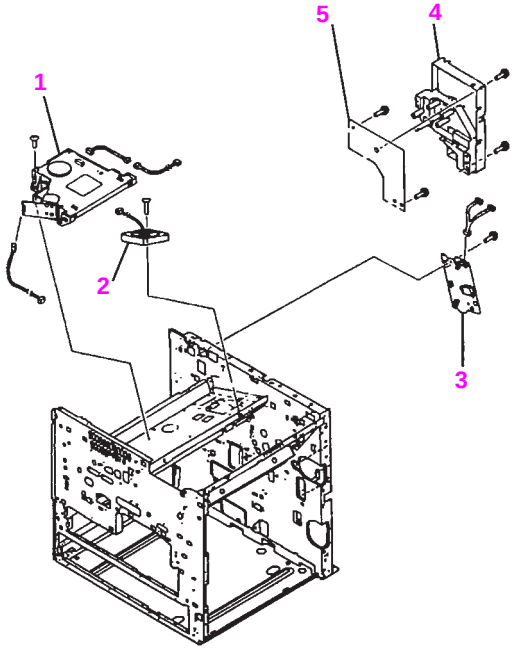


Major assembly locations (2 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Transfer Roller	RF5-1412-000CN
2	Main Motor	RH7-1260-000CN
3	Face-down Delivery Assembly	RG5-1874-000CN
4	Fusing Assembly 100V-120v	C3166-69012**
4	Fusing Assembly 220V-240v	C3166-69013**
5	Feeder Assembly	RG5-1834-000CN
6	Registration Assembly	RG5-1833-000CN
7	Tray 1 Pick-up Assembly	RG5-1880-100CN
8	Tray 1 Feed Roller	RB1-6730-000CN
9	Tray 1 Separation Pad	RF5-1455-000CN
10	Paper Input Unit (PIU)*	C3166-69011-000**
11	Main Gear Assembly	RG5-1847-000CN
12	Transfer Roller Assembly	RG5-1887-000CN
13	Tray 1 PCA	RG5-1884-000CN

**These parts require exchange.

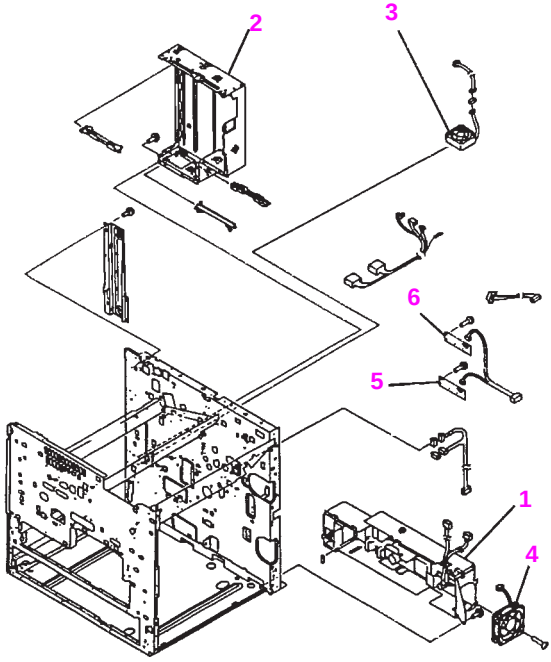


Major assembly locations (3 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Laser Scanner Assembly	C3166-69006**
2	Fan 1	RH7-1266-000CN
3	Switch/Sensor PCA	RG5-1846-000CN
4	High Voltage Power Supply*	C3166-69005**
5	DC Controller PCA*	C3166-69010**

**These parts require exchange.



Major assembly locations (4 of 4)

HP LaserJet 8000 assemblies and subassemblies

Assemblies and subassemblies		Part numbers
1	Low Voltage Power Supply, 110V-220V	C3166-69007**
1	Low Voltage Power Supply, Universal	C3166-69008**
2	Formatter	C4186-69001**
3	Fan 3	RH7-1271-000CN
4	Fan 2	RH7-1266-000CN
5&6	Paper Size Sensing PCA, Trays 2 and 3	RG5-1845-000CN

**These parts require exchange.

9 Image quality

Overview

This chapter provides examples of image defects and a list of remedies. Repetitive image defect rulers are supplied at the end of the chapter to use when measuring the approximate distances between repetitive image defects.

Cleaning page

For print-quality defects, try generating a cleaning page from the printer's control panel (4000, 5000, or 8000 series) or from the JetSuite Pro software (3100). The HP LaserJet Cleaning Utility works on all HP monochrome printers, regardless of driver type. Running the utility at regular intervals can extend the useful life of the fuser and reduce service procedures.

If your printer can not generate a cleaning page, you can download the HP LaserJet Cleaning Utility file and obtain instructions on its usage by accessing the worldwide web at www.hp.com/cposupport/eschome.html.

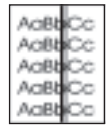
Note

For the cleaning page to work properly, make sure to print the page on copier grade paper (not bond or rough paper).

Image Defect Table

For more information, see the page numbers below each image.

Background scatter (see page 142)



Black lines (see page 142)

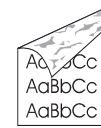
Black pages (see page 143)

Blank page (see page 144)

Blank spots (see page 145)

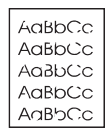
Bottom of page is blank or graphic image is cut off (see page 145)

Character voids (see page 146)



Dirt on back of page (see page 146)

DIstorted image (see page 146)

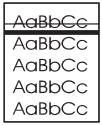


Dropouts (see page 147)

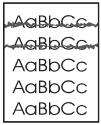
Faded print or bubbles (see page 147)

Gray background (see page 148)

9



Horizontal black lines or smears (see page 148)



Horizontal smudges (see page 148)

Horizontal white lines (see page 149)

Light print, dark print, faded print (see page 149)

Loose toner (see page 149)

Outgoing faxes/ copies/scanned images are too light or too dark (see page 150)

Print is faded or vertically aligned white streaks are apparent (see page 150)

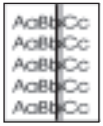
Random black spots (see page 151)

Repetitive defects (see page 151)

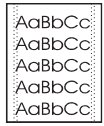
Scanned images have black dots or streaks in top and bottom margins (see page 151)

Scanned text is unclear (see page 152)

Toner Smear (see page 152)



Vertical black lines
(see page 152)



Vertical dots
(see page 153)

Vertical white lines
(see page 153)

Image defect details

Background scatter

- The media does not meet HP specifications.
- The toner cartridge is defective.
- Toner has spilled inside the product.
- The pickup roller is dirty.
- The print density setting is too low.
- The transfer roller is dirty or worn.

Black lines

- The toner cartridge is defective.
- The toner cartridge is not seated properly.
- The fusing assembly is contaminated or damaged.
- The static eliminator teeth are contaminated or defective.

Black pages

- The high-voltage power supply connections are dirty.
- The high-voltage power supply is installed improperly. If the high-voltage power supply has been removed and replaced, it may not be seated properly.
- Check the ECU (engine controller unit) for damage.
- The toner cartridge is defective.
- Light is leaking into the printer.
  - Ensure all covers are in place.
- The primary charging roller is bad.
- The DC controller PCA is defective.
- The laser scanner assembly is faulty (turning laser on continuously).
- The connectors between the laser scanner unit and the DC controller PCA are not seated properly or are defective.
- There is a problem in the ECU or the laser scanner.

Blank pages

- No toner is available for print.
- The laser shutter is defective.
- The toner cartridge guide is damaged, improperly positioned, or missing.
- No transfer roller voltage.
  - Check the ECU.
- No developing bias.
  - Check the ECU.
- Check the ground path.
- The laser scanner cable assembly is defective.
- There is a problem with the software's configuration.
- There is a problem with the network configuration. Some sharing devices on networks may generate a blank page as a separator.
  - Check with the network administrator.
- The printer may be feeding two or more pages at once because the paper is difficult to separate.
- The sealing tape has been left in the toner cartridge.
- The toner cartridge is empty or defective.
- The laser scanner door does not open properly.
  - Remove and reseat the toner cartridge.
  - Check the laser scanner shutter door for proper operation.
- The toner cartridge guide is damaged, improperly positioned, or missing.
- There is no transfer roller voltage.
  - Perform the Half Self-Test Functional Check to check all other electrophotographic processes.
  - Replace the transfer roller if necessary.
- The high-voltage connector springs are dirty or defective.

- The high-voltage connectors are mounted on the high-voltage power supply PCA and protrude into the toner cartridge cavity.
  - Check the springs for functionality. Clean if dirty; replace if defective or missing.
- The high-voltage power supply PCA is defective.
- The DC controller PCA is defective.
- There is no developing bias.
  - Clean the high-voltage power supply contacts. With no developing bias charge, toner is not attracted to the drum.
  - Replace the ECU.
- There is no drum ground path.
  - Check the drum ground.
  - Replace the ECU.
- The laser scanner cable assembly is defective.
- The page length and margins are not set correctly for the paper size.
- Your software application is sending an extra page-eject command.
  - Check the software's printing configuration information.

Blank spots

- The paper does not meet HP paper specifications or is stored improperly.
- The toner cartridge is defective.
- The transfer roller is dirty or deformed.

Bottom of page is blank or graphic image is cut off

- The page is too complex. (There is not enough memory to process the page.)
  - Set the resolution to 300 dpi through the software or printer driver. See the online help for printer driver issues.

Character voids

- The surface of the paper is too rough or the paper's surface is too smooth for proper toner adhesion.
  - Use paper that meets HP paper specifications.
- Printing is on the wrong side of the paper.
- The transparencies are not designed for proper toner adhesion.
- The transfer roller is bad.
- The laser scanner assembly is bad.

Dirt on back

- Dirt is inside of the printer (tray separation roller, feed roller, fuser, toner cartridge).
- The paper does not meet HP paper specifications or is stored improperly.
- The pressure roller in the fuser is contaminated.

Distorted image

- The paper does not meet HP paper specifications or is stored improperly.
- The printer operating environment does not meet HP specifications.
- The output bin is incorrect for the paper type.
- The connection of the cables to the laser scanner is poor.
- The connection of the cables to the ECU is poor.
- The laser scanner is defective.
- The ECU is defective.

Dropouts

- The paper does not meet HP paper specifications.
- The printer's operating environment does not meet specifications.
- The toner density setting is wrong.
- A single sheet of paper is defective.
  - Try reprinting the job.
- The fuser setting was wrong for the paper type.*
- The DC controller PCA is defective.
- The high-voltage power supply PCA is defective.
- The transfer roller is defective.
- "Draft mode" or "economode" is selected in the software.

*This feature does not apply to all products.

Faded print or bubbles

- Check the ground path.
- Replace the ECU.
- The toner supply is low.
- The print density is set incorrectly.
  - Change to a darker setting and retry printing.
- If economode is on, turn it off.
- Try a different paper lot.
- Inspect the transfer roller for proper installation and contact.
  - Replace the transfer roller if it is damaged.
- The laser scanner door is not opening properly.
  - Remove and reseat the toner cartridge.
  - Check the laser scanner door for proper operation.
- The high-voltage contact springs are dirty or defective.
- The DC controller PCA is defective.

Gray background

- The paper does not meet HP paper specifications or is stored improperly.
- The printer operating environment does not meet specifications.
- The toner density setting is wrong.
- The toner cartridge is faulty.
- The inside of the printer is dirty.
- The printer is printing on envelope seams.
  - Move the text to an area without seams.

Horizontal black lines or smears

- The laser scanner assembly or ECU is defective.
- The toner cartridge was improperly installed.
- The toner cartridge is defective.
- The printer needs to be cleaned.
- There is a problem in the heating element.
- A gear is damaged.

3100 only

- Horizontal lines appear in the margins and across entire pages of faxes that are being sent.
  - The HP LaserJet 3100 product needs to be cleaned.
  - There is a problem in the contact image sensor.

Horizontal smudges

- The paper path is contaminated or damaged.

Horizontal white lines

- The toner cartridge may be defective.
- The fusing assembly is dirty or defective.
- The laser scanner assembly or ECU may be faulty.
- There is dirt in the laser path.
- The mirror in the laser scanner is dirty.

Light print, dark print, faded print

- The toner density setting is wrong.
- The toner cartridge is low.
- The transfer roller is defective.
- The paper does not meet HP paper specifications or is stored improperly.
- Contact is poor to the ECU.
- The laser scanner is defective.
- The ECU is defective.
- The high-voltage power supply is defective.

Loose toner

- Dirt is in the printer.
- The toner cartridge is defective.
- Paper might be too smooth.
- The fuser setting for the paper type is wrong.
- The fuser is defective.

Outgoing faxes/copies/scanned images are too light or too dark

- The contrast is not set correctly.
- The original image is very light or very dark.
- The scanned image is too light or too dark because the original was on a colored paper.

3100 only

- Recalibrate the product.

Print is faded or vertically aligned white steaks are apparent

- The toner cartridge is getting low on toner.
- The paper you are using does not meet HP paper specifications.
- The toner density setting is not adjusted correctly.
- The internal mirror or optics are contaminated.
- The laser scanner is damaged.
- The document scanner needs to be recalibrated.
- There is a problem in the contact image sensor.
- There is a problem in the formatter.

3100 only

- The HP LaserJet 3100 product needs to be cleaned.
- The HP LaserJet 3100 product is damaged.

Random black spots

- The paper you are using does not meet HP paper specifications.
- You are printing on the wrong side of the paper.
- The printer requires cleaning with a cleaning page.
- The toner cartridge is damaged.

Repetitive defects

- Locate the defective roller in the printer.
- There is dirt on the roller or the roller is defective.
- The toner cartridge is damaged.
- The rollers are dirty.
- The fusing assembly is defective or dirty.
- The gears are worn, causing slippage or jumping.
- The paper does not meet HP paper specifications.

Scanned images have black dots or streaks in top and bottom margins

3100 Only

- There is ink, glue, white-out, or some other substance on the contact image sensor.
- There is a problem in the contact image sensor.
  - Replace the contact image sensor.

Scanned text is unclear

3100 Only

- The contrast, resolution, or brightness needs to be adjusted before scanning.
- The original is on colored paper.
- There is a problem in the contact image sensor.
  - Replace the contact image sensor.

Toner smear

- There is dirt on the paper.
- The fusing rollers are dirty.
- The paper does not meet HP specifications.
- The toner cartridge is defective.
- Wrong fuser setting for the paper type.
- The fusing assembly is defective.
- There is dirt in the printer.
- The static eliminator is dirty or is not grounded, allowing a static charge to remain on a page.
- The DC controller PCA is defective.

Vertical black lines

- The toner cartridge is defective.
- The toner cartridge is not seated properly.
- The fuser entrance is dirty.
- The fuser has scratches on it.
- This may be a repetitive defect. If so, the lines will be repeated at a consistent interval down the page.
- The printer needs to be cleaned.
- There is a problem in the heating element.

3100 Only

- Scanned images have unwanted lines through them.
  - There is ink, glue, white-out, or some other substance on the contact image sensor.
  - Slick paper could be the problem; use a carrier sheet to send the item.
  - Recalibrate the product.

Vertical dots

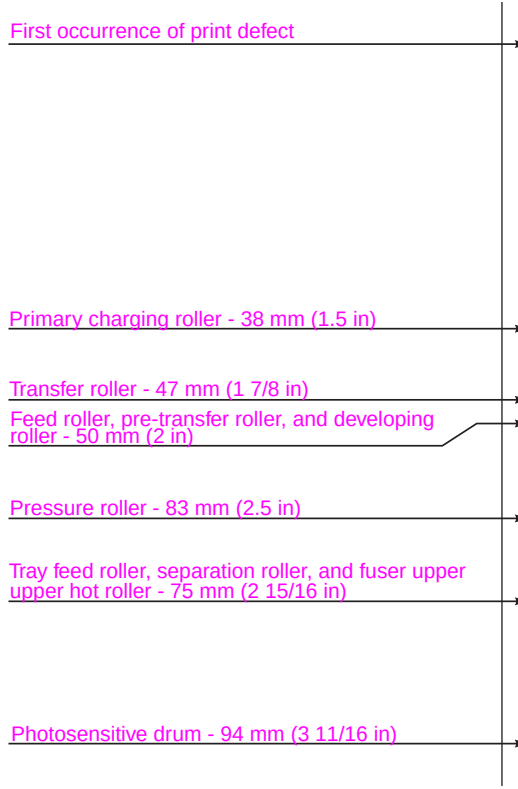
- The static eliminator teeth are dirty.
- There is poor contact between the static eliminator and the ECU.
- The transfer roller is deformed or it has deteriorated.
- The ECU is defective.

Vertical white lines

- There is a lack of toner or the toner cartridge is faulty.
- There is dirt in the laser path.
- The fuser is defective.
- A mirror in the laser scanner is dirty.

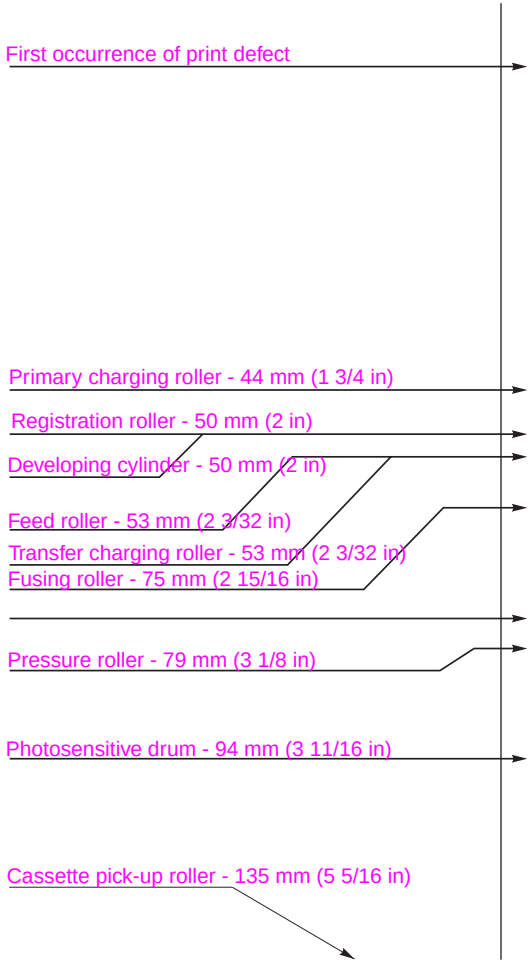
Notes

LJ 4000 series repetitive defect ruler



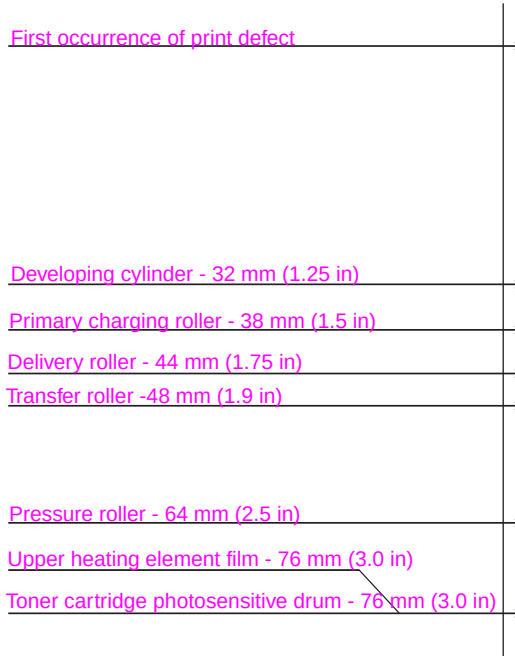
Notes

LJ 5000 series repetitive defect ruler



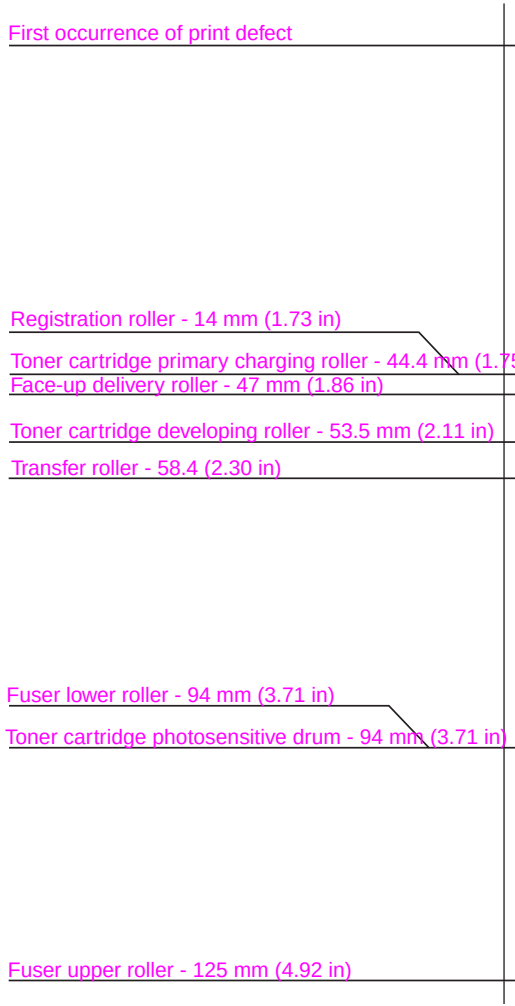
Notes

LJ 3100 repetitive defect ruler



Notes

8000 repetitive defect ruler



10 Wiring diagrams

Overview

This chapter provides wiring diagrams for printers supported in this guide.

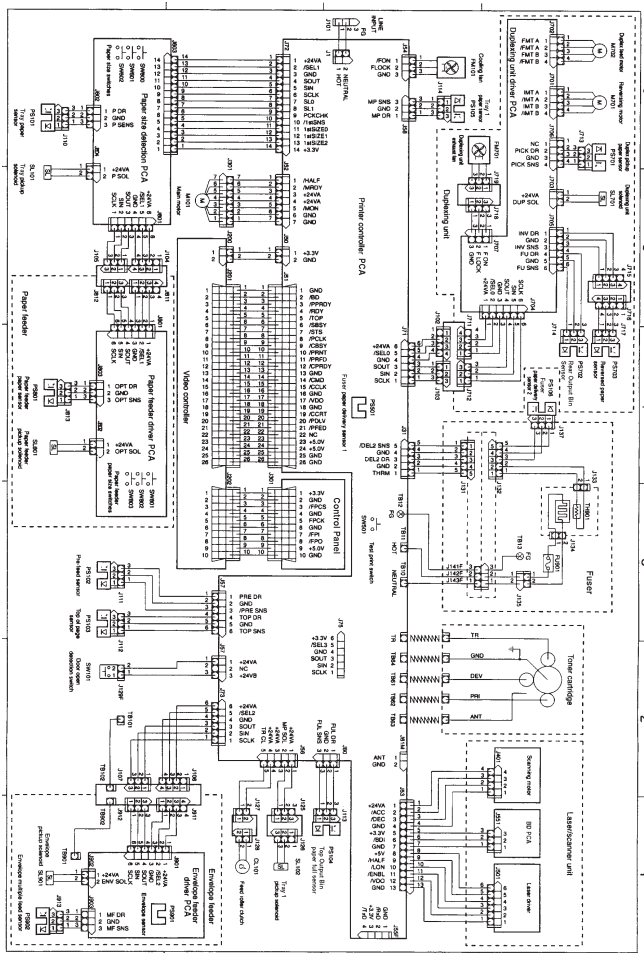


Figure 10-1 Wiring diagram (HP LaserJet 4000/4000 N)

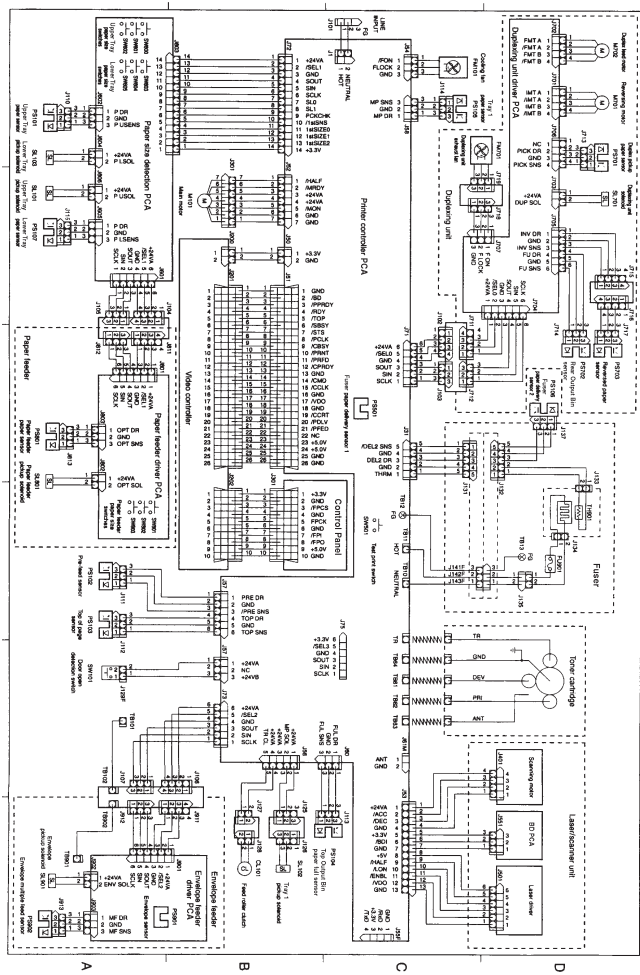


Figure 10-2 Wiring diagram (HP LaserJet 4000 T/4000 TN)

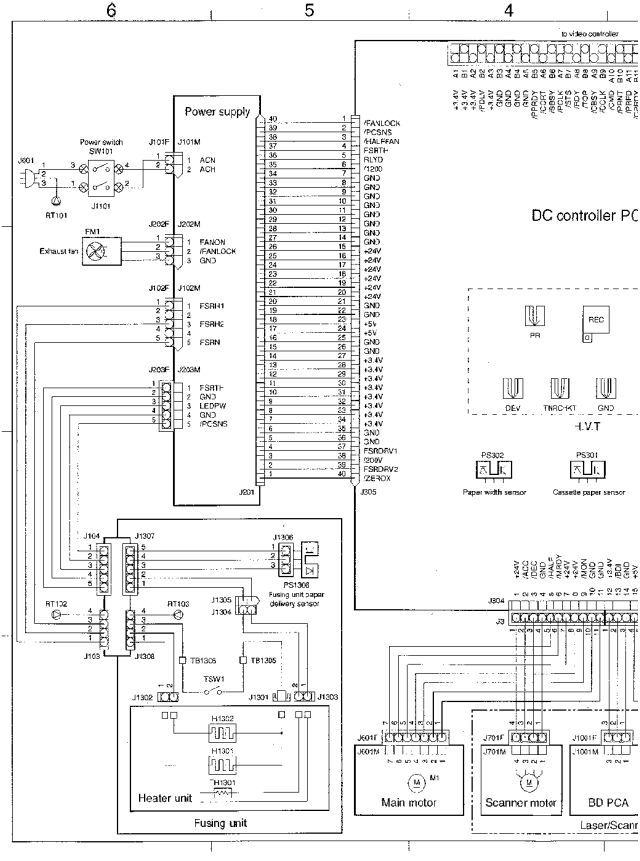


Figure 10-3 Wiring diagram (HP LaserJet 5000 series, 1 of 2)

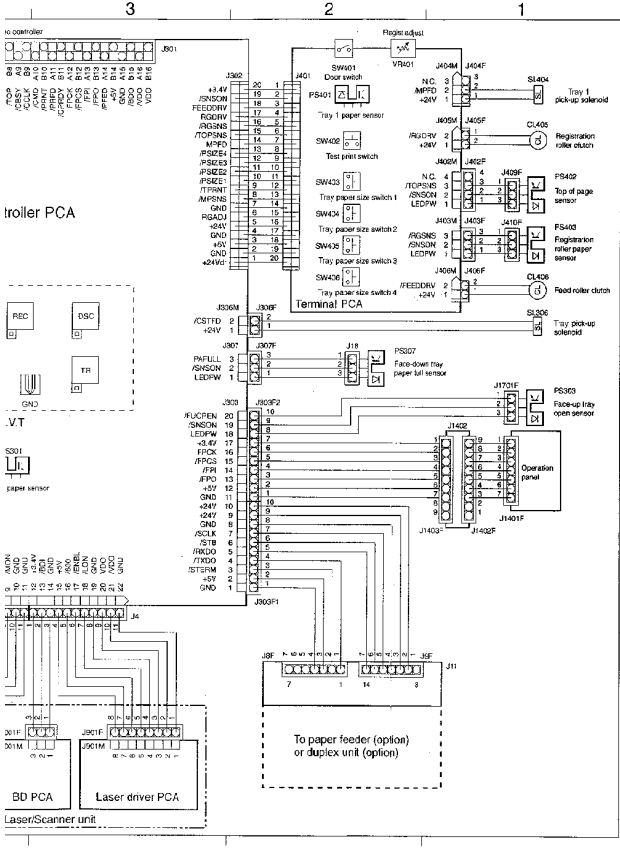


Figure 10-4 Wiring diagram (HP LaserJet 5000 series, 2 of 2)

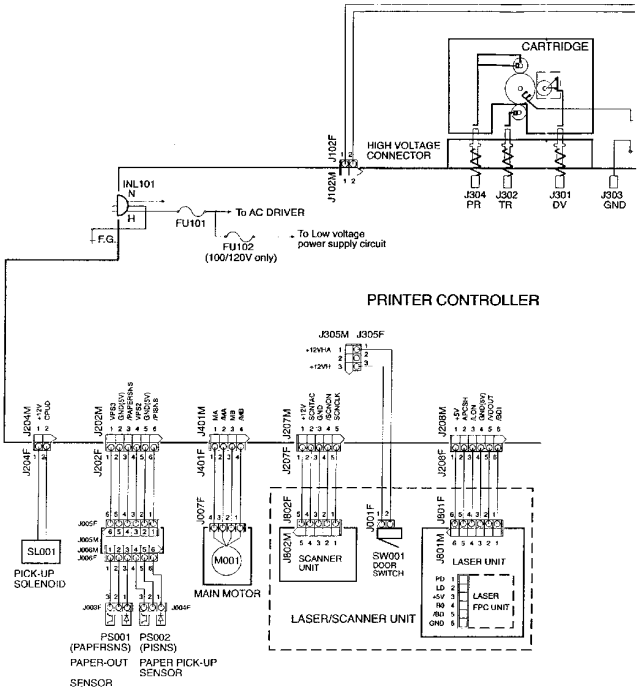


Figure 10-5 Wiring diagram (HP LaserJet 3100, 1 of 2)

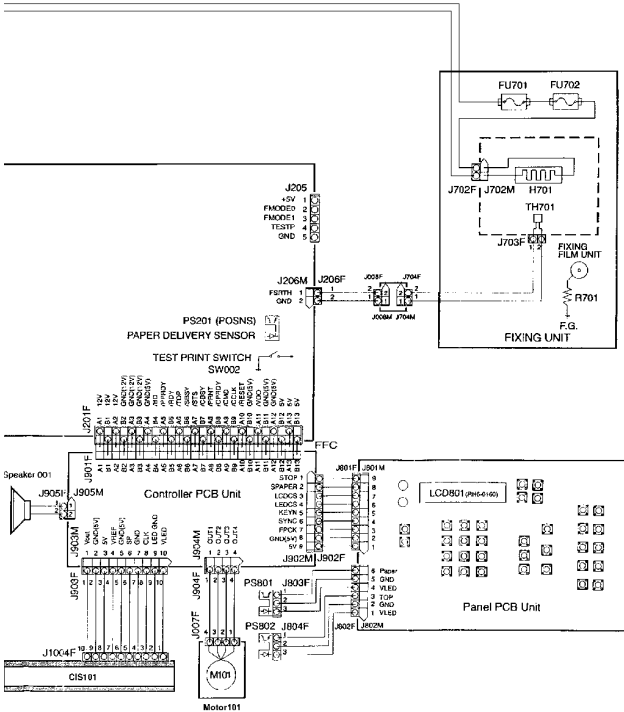


Figure 10-6 Wiring diagram (HP LaserJet 3100, 2 of 2)

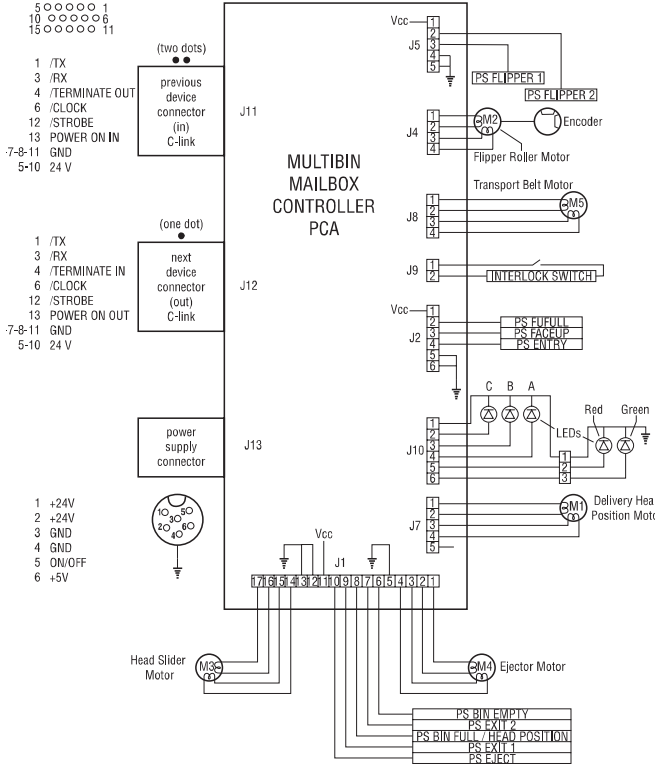


Figure 10-7 Wiring diagram (HP LaserJet 8000 series, 1 of 2)

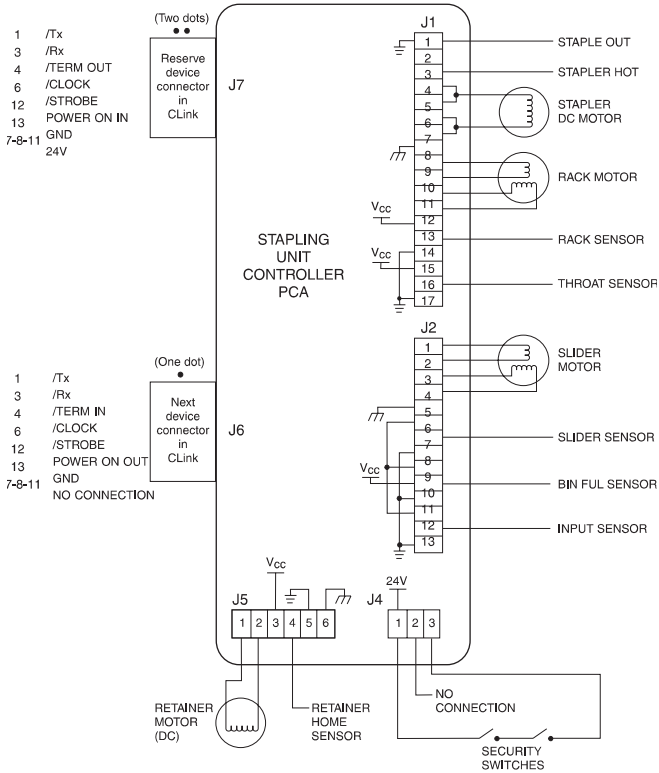


Figure 10-8 Wiring diagram (HP LaserJet 8000 series, 2 of 2)

11 Services and support/ resources and training

Overview

This chapter provides information on obtaining training, support, and materials.

How to get training

Lecture/lab training (U.S. only)

Service technicians who want individual, hands-on training can attend regularly scheduled lecture/lab training classes. These classes are offered throughout the country. To receive the latest schedule, call HP FIRST at (800) 333-1917, or see the HP website (www.hp.com/go/resellertraining) and request document ID number 9104. The latest schedule will immediately be sent to the fax number of your choice. Class schedule and registration information can also be obtained by calling the centralized registration center at (512) 434-1520.

Self-paced training kits

Product	Description	Part number
All LaserJet Printers	Basic Hardware Training Course (prerequisite for all LaserJet service training)	5961-0880
	Paper Training Video	5961-0711 (NTSC) 5961-0712 (PAL)
LJ 4000/4000 N/ 4000 T/4000 TN	Self-paced Training Kit NTSC Format PAL Format	 C4118-61101 C4118-61102
LJ 5000/5000 N/ 5000 GN	Self-paced Training Kit NTSC Format PAL Format	 C4110-61101 C4110-61102
LJ 3100	Self-paced Training Kit NTSC Format PAL Format	 C3948-61101 C3948-61102
LJ 8000/ LJ Mopier 240	Self-paced Training Kit NTSC Format PAL Format	 C4085-67901 C4085-67902

Support resources

North American Response Center (NARC)

The North American Response Center (NARC) is available for technical support to assist service technicians. The NARC can be reached at (800) 544-9976 (U.S.).

Other areas

Outside of North America and Europe, contact your local HP sales office for assistance in obtaining technical support.

HP FIRST fax system

HP FIRST (Fax Information Retrieval Support Technology) is a phone-in fax service that provides technical information to HP LaserJet users as well as to service personnel. Receiving a fax requires a group-3 facsimile machine or fax card. The following service-related information is available:

- service notes (HP-authorized dealers)
- application notes
- product data sheets
- material safety data sheets (MSDS)
- typeface and accessory information
- printer support software information
- toner information
- forms for requesting drivers and the software matrix

To retrieve service notes

(Authorized dealers, HP customer engineers (CEs) ONLY)

1. Dial (1) (800) 333-1917 (U.S.) from any touch-tone phone.
2. Select (1) for HP FIRST.
3. Select (3) for a password customer.
4. Enter the password: 737842.
5. Follow the voice prompts to enter a document ID number or to select the index.
6. Follow the voice prompts to enter your fax number or the fax number of your customer.

Note
Delivery time depends on the length and complexity of the document.

HP FIRST, U.S.

Call the HP ASAP system (800) 333-1917 (U.S.) and follow the voice prompts to enter HP FIRST.

HP FIRST, Europe

Call HP FIRST at one of the following numbers:

United Kingdom	(44) (134) 0800-960271
Netherlands	(31) (20) 0800-222420
Belgium (Dutch)	(32) (2) 0800-11906
Germany	(49) (13) 081-0061
Switzerland (German)	(41) (1) 0800-551527
Austria	(43) (1) 0660-8128

For English service outside the above countries, call:
(31) (20) 681-5792.

HP end-user support options

Local support assistance

The user's first source of assistance should be their local dealer or service center. HP continuously provides local computer dealers and service centers with the latest information regarding products and services. To locate the nearest authorized dealer or service center, phone (800) 243-9816 (U.S.) or (800) 387-3867 (Canada).

24-hour support information

Phone (800) 333-1917 to access the HP ASAP system for 24-hour automated support services. User support information includes notes for common software applications and troubleshooting tips. Users may request up to three documents per call.

Electronic information services

For 24-hour access to information via modem, we suggest:

- **CompuServe -** The CompuServe HP Peripherals forum (GO HPPER) provides printer drivers and interactive sharing of technical communication. To subscribe, call CompuServe, Inc. at (800) 524-3388. **Note**: CompuServe is not an official HP support channel, but the forum is maintained and supported by users.
- **Internet -** Printer drivers and product and support information can be obtained from the HP anonymous file transfer protocol (FTP) site 192.6.71.2 or ftp-boi.external.hp.com. The site is available to anyone with FTP access to the Internet. Access through the World Wide Web is available at URL http://www.hp.com/.

Printer drivers by mail

To obtain printer drivers, contact the software application manufacturer. HP distributes printer drivers for a few of the most popular applications. Call (970) 339-7009, 6 days a week, 24 hours a day (closed Sundays). Shipping and handling charges may apply on some printer drivers.

Telephone assistance – in warranty

Call (1) (208) 323-2551 Monday through Friday from 6 am to 10 pm, Saturday 9 am to 4 pm (Mountain Time) free of charge during the warranty period. However, your standard long-distance phone charges still apply. Have your system nearby and your serial number ready when calling.

Telephone assistance – post-warranty

Post-warranty telephone assistance is available to answer your product usage questions. Call (1) (900) 555-1500 ($2.50 per minute, U.S. only) or call 1-800-999-1148 ($25 per call, Visa or MasterCard, U.S. and Canada) Monday through Friday from 7 am to 6 pm and Saturday from 9 am to 3 pm (Mountain Time). *Charges begin only when you connect with a support technician. Prices subject to change.*

Hardware repair services

To find a local authorized repair center for hardware repair needs, call (800) 243-9816. HP also offers a variety of service contract options to complement the standard warranty. Call (800) 743-8308 (U.S.) or (800) 268-1221 (Canada).

12 Hewlett-Packard LaserJet Companion

Overview

This section provides information on the LaserJet 300 DPI page scanner, which is available in three models.

Hewlett-Packard LaserJet Companion

The HP LaserJet Companion includes the following models:

- C3989A Companion
- C3079A Companion SE
- C4106A Companion XI

(These are all the same product except for minor software differences.)

Description

The HP LaserJet Companion is a 300-DPI page scanner, parallel port pass-through accessory designed for Hewlett-Packard LaserJet 4000 series printers.

Warranty

The HP LaserJet Companion comes with a 1-year warranty, offering Central Repair only (no dealer repairs); Express Exchange (U.S. and Canada); and Repair and Return (Worldwide).

Supported media

- The following media sizes are supported:
  - Maximum: 216 mm x 762 mm (8.5 by 30 inch)
  - Minimum: 51 mm x 89 mm (2 by 3.5 inch)
- The following media weights are supported:
  - 60 to 105 g/m^2 (16 lb to 28 lb)

Skew specifications

Some skew is normal. The maximum amount of skew that is considered normal is 3.35 millimeters (0.13 inches) over 279 millimeters (11 inches). Skew exceeding the normal amount may be caused by media that is damaged, media that does not meet the specifications, or media that is loaded incorrectly.

If media meets specifications, is not damaged, and is correctly loaded, but skew remains excessive, clean the separation pad, pickup roller, and scan roller.

Cleaning

Clean these parts with isopropyl alcohol:

- separation pad
- pickup roller
- white scan roller

Clean the image sensor with glass cleaner.

Cables

Cable part numbers

HP part number	Part description
8120-6963	Cable shipped with the HP LaserJet Companion
C2950A	Printer parallel cable (IEEE-1284) 2 meters (7 feet)
C2951A	Printer parallel cable (IEEE-1284) 3 meters (10 feet)

Power supply modules

Output = 22VDC, + or - 25%

Power supply part numbers

HP part number	Part description
9100-5534	120 Vac 60 Hz (US/CN/MX)
9100-5535	230 Vac 50 Hz (EUROPE)
9100-5536	240 Vac 50 Hz (U.K.)
9100-5537	220 Vac 50 Hz (ARG)
9100-5539	240 Vac 50 Hz (AUSTRL)
9100-5541	220 Vac 50 Hz (TI/INDO)
9100-5542	220 Vac 50 Hz (HNG KNG)

A Acronyms and abbreviations

Acronyms and abbreviations

AC	Alternating current
AUTOCONT	Automatic continue
BNC	A 10-Base 2 connector used with coaxial cables
CE	Customer engineer
CFG	Configuration on control panel
DC	Direct current
DCPS	Direct current power supply
MS-DOS	Disk operating system
DPI	Dots per inch
DTR	Data terminal ready
DTR LINE	Data terminal ready line
ECU	Engine control unit
EP	Electro-photographic
EPH	External paper handling
FRU	Field replacement unit
FTP	File transfer protocol
HP ASAP	Hewlett-Packard Automated Support Access Program
HP FIRST	Hewlett-Packard Fax information retrieval support technology

Acronyms and abbreviations (continued)

HP-GL/2	Hewlett-Packard graphics language
HTML	Hypertext markup language
HV	High voltage
HVPS	High-voltage power supply
I/O	Input/output
IR	Infrared
IrDA	Infrared Data Association
IRQ	Interrupt request
JEIDA	A type of memory module
JOBID	Print job identification
JP	Jobpack
LAN	Local area network
LED	Light-emitting diode
LVPS	Low-voltage power supply
LC PICKUP ROLLER	Lower-cassette pickup roller
MB	Megabyte
MEM	Memory
MIO	Modular input/output
MP PICKUP ROLLER	Multipurpose tray pickup roller
MP Tray	Multipurpose tray
MSDS	Material safety data sheets
NARC	North American Response Center
NTSC	National Television Standard Committee
NVRAM	Nonvolatile random-access memory
Ohm	A unit of measure of electrical resistance
PAL	Phase alternation line format
PCA	Printed-circuit assembly

Acronyms and abbreviations (continued)

PCB	Printed circuit board
PCL	Printer command language
PC PICKUP ROLLER	Paper-cassette pickup roller
PIU	Paper input unit
PJL	Printer job language
RAM	Random-access memory
RIP	Raster image process
ROM	Read-only memory
SIMM	Single inline memory module
SMO	Support materials organization
SMODE	Service mode
SPEC	Specifications
SRVR	Server
TCP/IP	Transmission control protocol/Internet protocol
TS I/T52	Thermoswitch
UNIX®	Network operating system using TCP/IP protocol
URL	Universal resource locator
VDC	Volts direct current

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Service Websites

Electronic Support Center

Software, drivers, support documentation, frequently asked questions

http://www.hp.com/go/support

HP Technical Training (North America)

Classes and schedules

http://www.hp.com/go/resellertraining

Parts

Parts information

http://outfield.external.hp.com/spi/welcome.htm

Service Phone Numbers

All numbers listed are for North America only.

Dealer Response Line
Dealer pre/post sales and service support
(800) 544-9976 *U.S. Only* **(800) 363-6594** *Canada*

Customer Care Center
User questions, applications, LaserJet Fax
(208) 323-2551

HP First Fax – Information Retrieval System
Service notes, sales information, user help, software information
(208) 344-4809 **(800) 333-1917** *U.S. Only*

Customer Information Center
Sales dealer locations, literature, and specifications
(800) 752-0900 *U.S. Only*

HP Driver Distribution Center
Printer drivers and software application notes orders
(970) 339-7009 *U.S. Only*

Customer Support Sales Center
Authorized repair locations
(800) 243-9816 *U.S. Only*

Parts Direct Ordering / SMO
Service parts, supplies, and accessories orders
(800) 227-8164 *U.S. Only*

Parts Identification
Service part number identification
(916) 783-0804

North American Response Center
Online technical assistance
(800) 477-5526 *HP Only*

Corvallis Customer Service Center
Express exchange/customer return services
(916) 785-1200

Supported Products

HP LaserJet 4000/4000T/4000N/4000TN printer
HP LaserJet Companion 3989A
HP LaserJet 5000/5000N/5000GN printer
HP LaserJet 3100 multifunction printer
HP LaserJet 8000/8000N/8000DN printer
HP LaserJet 240 Mopier

Printed on at least 50% Total Recycled Fiber with at least 10% Post-Consumer Paper

Manual Part No. 5021-8942

5021-8942