hp LaserJet 2300
series printer

hp invent ®

service

hp LaserJet 2300 series printer

service manual _____

Warranty

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Tables

1 Product description

Chapter contents

Printer configurations

The HP LaserJet 2300 series printer is available in six configurations.

The illustrations in this guide are based on the HP LaserJet 2300 printer model unless otherwise stated. To find out which HP LaserJet 2300 configuration you have, look at the label on the front of the printer.

HP LaserJet 2300L

The HP LaserJet 2300L printer prints letter-size paper at speeds up to 20 pages per minute (ppm) or A4-size paper at up to 19 ppm. It comes with a built-in 250-sheet tray, a parallel and a universal serial bus (USB) port, and 32 MB RAM. The printer is expandable, and has one available enhanced input/output (EIO) slot and two dual inline memory module (DIMM) slots for adding a network print server card, fonts, and memory.
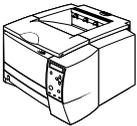
HP LaserJet 2300

The HP LaserJet 2300 printer is the same as the HP LaserJet 2300L printer, except that it prints at speeds up to 25 ppm for letter-size paper and 24 ppm for A4-size paper.
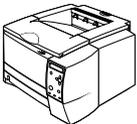
HP LaserJet 2300d

The HP LaserJet 2300d printer is the same as the HP LaserJet 2300 printer, except that the printer comes with 48 MB RAM and automatically duplexes (prints on both sides of paper).
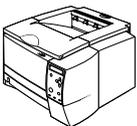
HP LaserJet 2300n

The HP LaserJet 2300n printer is the same as the HP LaserJet 2300 printer, except that it is designed for network users. It comes with a full-featured HP Jetdirect EIO print server card (for connecting to a 10/100Base-TX network) and 48 MB RAM.
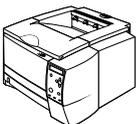
HP LaserJet 2300dn

The HP LaserJet 2300dn printer is the same as the HP LaserJet 2300n printer, except that the printer also automatically duplexes (prints on both sides of paper).

HP LaserJet 2300dtn

The HP LaserJet 2300dtn printer is the same as the HP LaserJet 2300dn printer, except that it has an additional 500-sheet tray.

Printer features

The following table describes the features of the HP LaserJet 2300 series printers.

Fast print speed	• The HP LaserJet 2300L prints on letter-size paper at speeds up to 20 pages per minute (ppm) or A4-size paper at up to 19 ppm. • All other models print on letter-size paper at speeds up to 25 ppm or A4-size paper at up to 24 ppm.
Built-in duplexing	• Automatic two-sided (duplex) printing is a standard feature of the HP LaserJet 2300d, HP LaserJet 2300dn, and HP LaserJet 2300dtn printers.
Print cartridge and status features	• The 6,000-page HP Smart Print Cartridge detects and reports toner status. • The no-shake design maximizes toner use. • The supplies status page provides a toner gauge, page count, and information about paper sizes that have been used.
Excellent print quality	• FastRes 1200 produces 1200-dpi print quality for fast, high-quality printing of business text and graphics. • ProRes 1200 produces 1200-dpi printing for the best quality in line art and graphic images. • Adjustable settings optimize print quality. • The HP Smart Print Cartridge produces crisp, sharp output.
Flexible paper handling	• Use tray 1 (the multipurpose tray) for letterhead, envelopes, labels, transparencies, custom-sized media, postcards, and heavy paper. • Use the adjustable 250-sheet tray (tray 2 or tray 3) for standard sizes of paper. • Use the 500-sheet tray (tray 3) for letter and A4-size paper. • Two output bins are available: select either the top output bin or the rear output bin for the most appropriate output location, depending on media type. • A straight-through paper path is available from tray 1 to the rear output bin. • Built-in automatic two-sided (duplex) printing is available for the HP LaserJet 2300d, HP LaserJet 2300dn, and HP LaserJet 2300dtn printers.
Expandability	• A 250-sheet or 500-sheet tray is available, so that you do not have to add paper as often. • One EIO card slot is available for interface. • Three DIMM slots are available, two for adding memory and fonts.
Printer languages and fonts	• Fast printing performance, advanced font and graphics technologies, and advanced imaging capabilities are benefits of the PCL 6 printer language. The PCL 6 technology also includes 45 scalable TrueType™ fonts and one bitmapped line printer font. • The other available languages and fonts are HP PCL5e and PostScript® (PS) 3 emulation, which includes 35 built-in PS language fonts. • The printer automatically determines and switches to the appropriate language for the print job.

Interface connections and networking	●	The printer includes a bidirectional ECP type-B parallel port (IEEE-1284 compliant) and a USB port (compatible with 1.1 and 2.0 low- and full-speed certified devices)
	●	The printer has an EIO slot for HP Jetdirect EIO print servers so that you can connect quickly and easily.
Enhanced memory and memory expansion	●	The HP LaserJet 2300 series printers come with either 32 MB or 48 MB of memory and can be expanded to 288 or 304 MB, respectively, with the available memory (DIMM) slots. Most documents can be printed by using the standard amount of printer memory.
Energy savings	●	The printer automatically conserves electricity by reducing power consumption when it is not printing.
	●	When the PowerSave feature is activated, the printer conserves energy when it is not in use.
	●	As an ENERGY STAR® partner, Hewlett-Packard Company has determined that this product meets ENERGY STAR® guidelines for energy efficiency.
Economical printing	●	N-up printing saves paper by printing multiple pages on one sheet of media.
	●	Automatic two-sided printing with the built-in duplexer saves paper (the built-in duplexer is included only with the HP LaserJet 2300d, HP LaserJet 2300dn, and HP LaserJet 2300dtn printers).
	●	Printing in EconoMode saves toner.

The table below gives a quick summary of the features for each model.

Table 1. Features for each configuration

Features	HP LaserJet 2300L	HP LaserJet 2300	HP LaserJet 2300n	HP LaserJet 2300d	HP LaserJet 2300dn	HP LaserJet 2300dtn
Standard memory Maximum memory	32 MB 288 MB	32 MB 288 MB	48 MB 304 MB	48 MB 304 MB	48 MB 304 MB	48 MB 304 MB
PostScript 3 emulation	Standard	Standard	Standard	Standard	Standard	Standard
Automatic duplex printing	N/A	N/A	N/A	Standard	Standard	Standard
250-sheet feeder	Standard	Standard	Standard	Standard	Standard	Standard
500-sheet feeder	Optional	Optional	Optional	Optional	Optional	Standard

Identification

The model number and printer serial number are listed on identification labels located inside the top cover (callout 1) and on the rear output bin (callout 2).
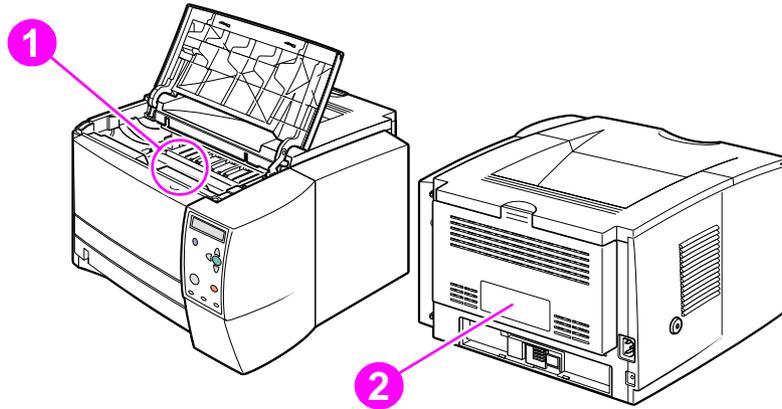
Figure 1.   **Locations of identification labels**

The model number is alphanumeric. The serial number contains information about the country of origin, as well as the revision level and the production code of the printer. An example of a serial number is USBB123456.

The identification label on the back of the printer also contains power rating and regulatory information. See figure 2.

Note   The power rating and regulatory information vary by country/region.
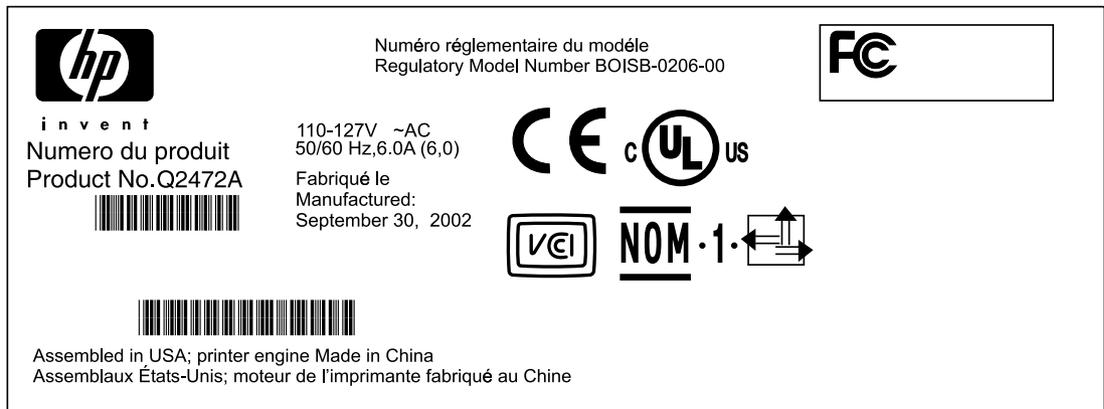
Figure 2.   **Sample identification label**

Specifications

Physical specifications

Table 2. Physical specifications

	HP LaserJet 2300L, 2300, 2300n, 2300d, 2300dn	HP LaserJet 2300dtn (with 500-sheet tray)
Height	259.7 mm (10.2 inches)	397.2 mm (15.6 inches)
Width	412.8 mm (16.2 inches)	412.8 mm (16.2 inches)
Depth (body)	450 mm (17.7 inches)	450 mm (17.7 inches)
Weight (with print cartridge)	14.3 kg (31.6 lb)	18.9 kg (41.6 lb)

Electrical specifications

WARNING! Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This can damage the printer and void the product warranty.

Table 3. Electrical specifications

Electrical specifications	110-volt models	220-volt models
Power requirements	110 to 127 V (+/- 10%) 50/60 Hz (+/- 3 Hz)	220 to 240 V (+/- 10%) 50/60 Hz (+/- 3 Hz)
Minimum recommended circuit capacity	5.0 amps	2.5 amps

Power consumption

Table 4. Power specifications[1]

Product model	Average power consumption (in watts)				
	Printing (20 ppm)	Printing (25 ppm)	Standby	PowerSave[2]	Off
HP LaserJet 2300L	394 W	—	8.8 W	8.6 W	0 W
HP LaserJet 2300	—	426 W	8.8 W	8.4 W	0 W
HP LaserJet 2300n	—	426 W	9.6 W	9.3 W	0 W
HP LaserJet 2300d	—	426 W	8.8 W	8.4 W	0 W
HP LaserJet 2300dn	—	426 W	9.6 W	9.3 W	0 W
HP LaserJet 2300dtn	—	426 W	9.6 W	9.3 W	0 W

1 Values are subject to change. See http://www.hp.com/support/lj2300 for current information.
2 The PowerSave default activation time is 15 minutes.

Acoustic emissions

Table 5. Acoustic emissions specifications[1]

Sound power level	Declared per ISO 9296
Printing (HP LaserJet 2300L at 20 ppm)	L_{WAd} = 6.6 bels(A)
Printing (all other models at 25 ppm)	L_{WAd} = 6.7 bels(A)
PowerSave/standby[2] (all models)	Inaudible
Sound pressure level, bystander position	**Declared per ISO 9296**
Printing (HP LaserJet 2300L at 20 ppm)	Inaudible
Printing (all other models at 25 ppm)	L_{pAm} = 52 dB(A)
PowerSave/standby[2] (all models)	Inaudible
Sound pressure level, operator position	**Declared per ISO 9296**
Printing (HP LaserJet 2300L at 20 ppm)	Inaudible
Printing (all other models at 25 ppm)	L_{pAm} = 59 dB(A)
PowerSave/standby[2] (all models)	Inaudible

1 Values are subject to change. See http://www.hp.com/support/lj2300 for current information.
2 In standby, no mechanical parts are moving and therefore no sounds are made.

Operating environment

Table 6. Operating environment specifications

Environmental condition	Printing	Storage/standby
Temperature (printer and print cartridge)	15 to 32.5 degrees C (59 to 90.5 degrees F)	-20 to 40 degrees C (-4 to 104 degrees F)
Relative humidity	10 to 80 percent	10 to 90 percent

Product overview

Top output bin
Top cover
Tray 1
Tray 2
Control panel
I/O cover
DIMM cover
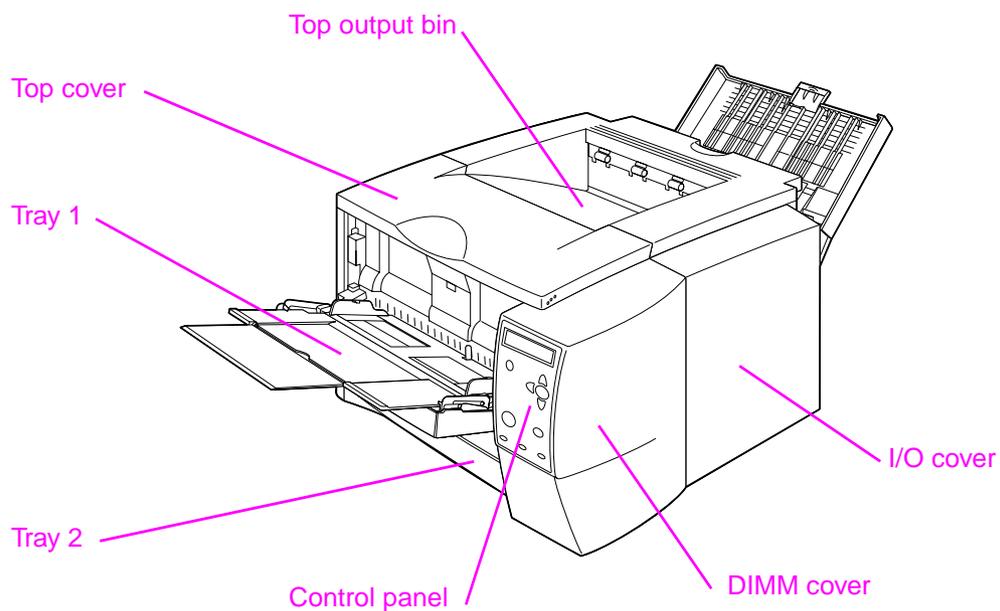
Figure 3.   **Front and right side**

Rear output bin
Power connector
Power switch
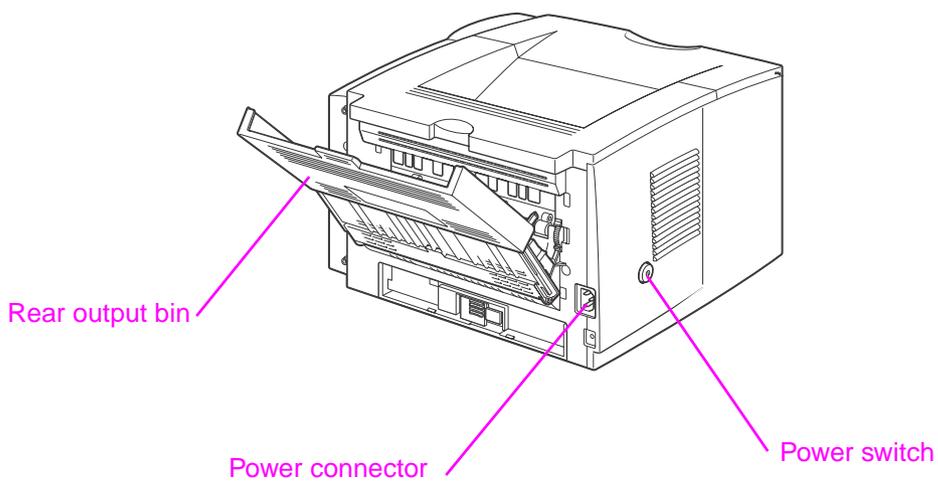
Figure 4.   **Back and left side**

Safety information

Print-cartridge and toner safety

For information about print-cartridge and toner safety, see the Toner Cartridge Material Safety Data Sheet (MSDS), which can be obtained at http://www.hp.com/go/msds.

Handling and storage

WARNING! Keep print cartridges and toner particles away from excessive heat, sparks, and open flames.

If toner is spilled, avoid breathing in toner particles. Inhalation of toner particles causes respiratory-tract irritation. Vacuum or sweep the material into a bag or other sealed container. A vacuum specifically designed for cleaning toner can be used if it is capable of filtering fine particles (5 microns in diameter).

WARNING! Do not vacuum toner using a conventional vacuum. Toner particles used in this product might be too fine for effective vacuuming and could result in damage to a conventional vacuum.

Dispose of waste toner in accordance with local requirements. Do not discharge toner particles in drains.

First aid measures

● **Ingestion**. If you ingest toner, rinse your mouth out thoroughly with water and drink several glasses of water. Get medical attention if symptoms occur.

● **Inhalation**. If you inhale toner particles, move to fresh air immediately. If symptoms occur, consult a physician.

● **Eye contact**. If toner comes in contact with your eyes, immediately flush the eyes with plenty of water for at least 15 minutes. If irritation persists, consult a physician.

● **Skin contact**. If toner spills on your skin, remove as much toner as possible with a dry tissue, and then wash with cold water.

Clothing contact

Note Toner can stain clothing. Hot water or heat (such as heat from a clothes dryer) can cause toner to melt and permanently fuse to clothing.

Clothing is best cleaned by removing as much toner as possible with a dry tissue, and then washing with cold water. Air-dry the clothing.

Laser safety

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration has implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products that are marketed in the United States. The printer is certified as a Class 1 laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968.

Because radiation emitted inside the printer is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

CAUTION   Using controls, making adjustments, bypassing safety switches, or performing procedures other than those specified in this service manual can result in exposure to hazardous radiation.

Regulatory information

For regulatory information and requirements, please see the user guide.

FCC regulations

For FCC regulations, please see the user guide.

Declaration of conformity

For the declaration of conformity, please see the user guide.

Environmental product stewardship program

Protecting the environment

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

Ozone production

This product generates no appreciable ozone gas (O3).

Energy consumption

Energy usage drops significantly while the printer is in PowerSave mode, which saves natural resources and saves money without affecting the performance of the printer. This product qualifies for ENERGY STAR ®, a voluntary program established to encourage the development of energy-efficient office products.

ENERGY STAR ® is a U.S. registered service mark of the United States Environmental Protection Agency. As an ENERGY STAR ® partner, Hewlett-Packard Company has determined that this product meets the ENERGY STAR ® guidelines for energy efficiency. For more information, see http://www.epa.gov/energystar/ .

Toner consumption

EconoMode uses significantly less toner, which might extend the life of the print cartridge.

Paper use

This product's automatic two-sided (duplex) printing feature and n-up printing capability (multiple pages printed on one sheet of paper) can reduce paper usage and the resulting demands on natural resources.

Plastics

Plastic parts more than 25 grams in weight are marked according to international standards that enhance the ability to identify plastics for recycling purposes at the end of the product's life.

HP LaserJet printing supplies

In many countries/regions, this product's printing supplies (for example, the print cartridge, drum, and fuser) can be returned to HP through the HP Printing Supplies Returns and Recycling Program. An easy-to-use takeback program is available in more than 48 countries/regions. Multilingual program information and instruction are included in every new HP LaserJet print cartridge and consumables package.

Paper

This printer is suited for the use of recycled papers when the paper meets the guidelines outlined in the *HP LaserJet Printer Family Print Media Guide*. Also, this printer is suitable for the use of recycled paper according to DIN 19309.

Material safety data sheet

Material safety data sheets (MSDS) can be obtained by contacting the HP LaserJet Supplies website at http://www.hp.com/go/msds .

HP Printing Supplies Environmental Program information

Since 1990, the HP Printing Supplies Returns and Recycling Program has collected millions of used LaserJet print cartridges that otherwise might have been discarded in the world's landfills. The HP LaserJet print cartridges and consumables are collected and bulk-shipped to our resource and recovery partners, who disassemble the cartridges for recycling. After a thorough quality inspection, selected parts are reclaimed for use in new cartridges. Remaining materials are separated and converted into raw materials for use by other industries to make a variety of useful products.

U.S. returns

For a more environmentally-responsible return of used cartridges and consumables, HP encourages the use of bulk returns. Simply bundle two or more cartridges together and use the single, pre-paid, pre-addressed UPS label that is supplied in the package. For more information, call (1) (800) 340-2445 or visit the HP LaserJet Supplies website at http://www.hp.com/recycle .

Non-U.S. returns

Customers should call their local HP sales and service office or visit http://www.hp.com/recycle for information regarding availability of the HP Supplies Returns and Recycling Program.

Service approach

Bench-repair warranty

The warranty for this product is "return to bench" for a period of one year from the date of purchase. This means that customers who need warranty repair must return their printer to an HP repair center or an Authorized Service Provider (ASP). See "Reseller sales and service support" on page 28.

HP Express Exchange

Through Customer Care Centers in the United States and Canada, customers have an option to initiate Express Exchange. Under this option, customers can have a factory-refurbished printer sent to them within 24 hours.

1   The customer contacts the local HP Customer Care Center listed in the product documentation. A technician troubleshoots the situation and determines whether the printer has actually failed. If so, the technician refers the customer to the HP Service Center.

2   A representative from the service center requests product and customer information. In some regions, collateral might also be requested.

3   Hewlett-Packard Company ships a refurbished replacement unit to arrive the next day. (Geographic distance might prevent next-day shipping.)

4   The customer sends the defective printer to Hewlett-Packard at HP's expense.

Customers with onsite support service provided by HP should work directly with the local Customer Care Center instead of following the steps outlined here.

Exchanged units carry the remainder of the original unit's warranty or a 90-day warranty, whichever is greater. The faster turnaround from HP Express Exchange minimizes downtime over traditional service programs that require the user to ship the failed unit to the manufacturer and then wait for it to be repaired and returned. Because HP pays the shipping charges, the user incurs no hidden costs for the service.

Note   For warranty information and requirements, please see the user guide.

Information about ordering

"Ordering parts" in chapter 8 of this manual contains factory-replacable unit (FRU) and accessory part numbers. Replacement parts can be ordered from the HP Customer Services and Support Organization.

Use only accessories that are specifically designed for this printer. Order accessories from an authorized service or support provider.

World Wide Web

Printer drivers, updated HP printer software, and product and support information can be obtained from the following URL:
in the U.S., http://www.hp.com/support/lj2300

Printer drivers can be obtained from the following sites:

- China, ftp://www.hp.com.cn/support/lj2300
- Japan, ftp://www.jpn.hp.com/support/lj2300
- Korea, http://www.hp.co.kr/support/lj2300
- Taiwan, http://www.hp.com.tw/support/lj2300
  or the local driver website, http://www.dds.com.tw

HP service parts-information compact disc

This powerful, CD-ROM-based parts-information tool is designed to give users fast, easy access to parts information, such as pricing and recommended stocking lists, for a wide range of HP products. To subscribe to this quarterly service in the U.S. or Canada, call (1) (800) 336-5987. In Asia Pacific countries/regions, call (65) 740-4484. Parts identification and pricing information can also be found on the World Wide Web at http://www.hp.com/go/partsinfo .

HP support-assistant compact disc

This support tool offers a comprehensive online information system that is designed to provide technical and product information about Hewlett-Packard products. To subscribe to this quarterly service in the U.S. or Canada, call (1) (800) 457-1762. In Hong Kong SAR, Indonesia, Malaysia, or Singapore, call Mentor Media at (65) 740-4477.

Reseller sales and service support

The HP Customer Care Center is available to assist resellers and service technicians. You can reach this support center in the U.S. or Canada by calling (1) (800) 544-9976.

HP authorized resellers and support

To locate authorized HP resellers and support, call (1) (800) 243-9816 in the U.S. or (1) (800) 387-3867 in Canada.

HP service agreements

Call (1) (800) 743-8305 in the U.S. or (1) (800) 268-1221 in Canada.

Other areas

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

2 Installation

Chapter contents

Site requirements

Operating environment

The electrical and environmental specifications must be maintained to ensure the correct operation of this printer. Consider the following points before installing the printer:

● Install in a well-ventilated, dust-free area.

● Install on a level, flat, and continuous surface that can support the printer's weight. Make sure all four printer feet are level. Do not install on carpet or other soft surfaces.

● Ensure adequate power supply circuitry (see "Electrical specifications" on page 20).

● Install where there is stable temperature and humidity, with no abrupt changes (away from water sources, humidifiers, air conditioners, refrigerators, or other major appliances). See "Operating environment" on page 21.

● Install away from direct sunlight, areas with vibration, open flames, ultrasonic heaters, ammonia fumes, or magnets and devices that emit a magnetic field. If the printer is placed near a window, make sure the window has a curtain or blind to block any direct sunlight.

● Maintain enough space around the printer for proper access and ventilation. See "Printer space requirements" on page 31.

Printer space requirements

450.3 mm
(17.73 inches)

412.8 mm
(16.25 inches)

Figure 5.   **Top view**

961.7 mm (37.86 inches)

407.5 mm
(16 inches)
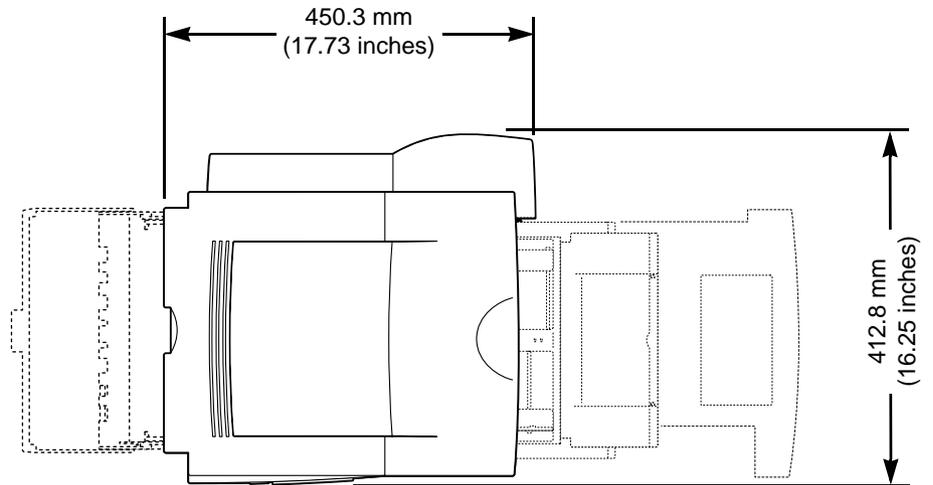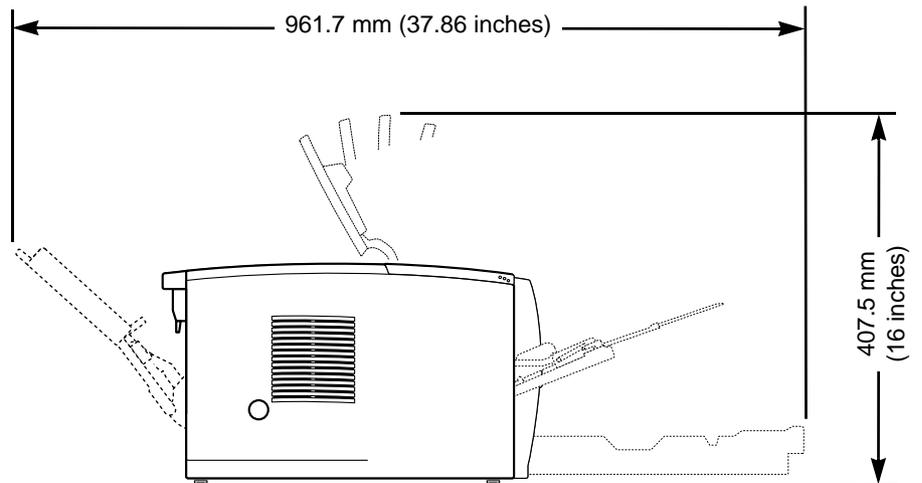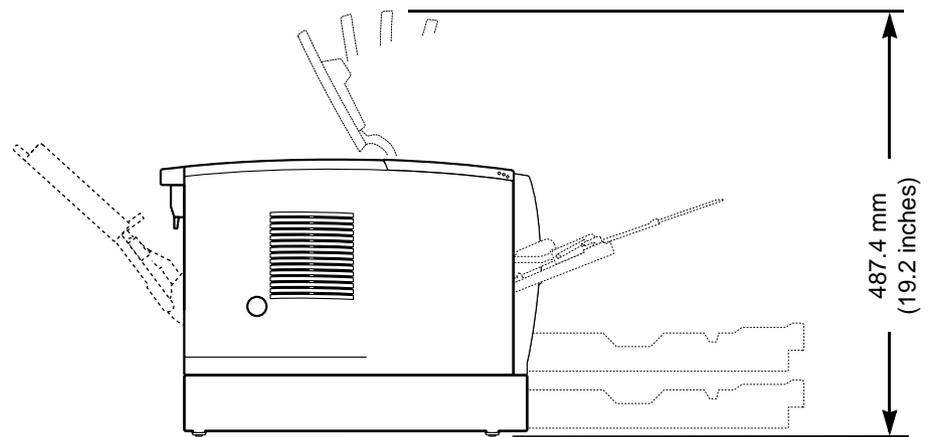
Figure 6.   **Side view**

Figure 7.   **Side view (with an optional 250-sheet tray)**
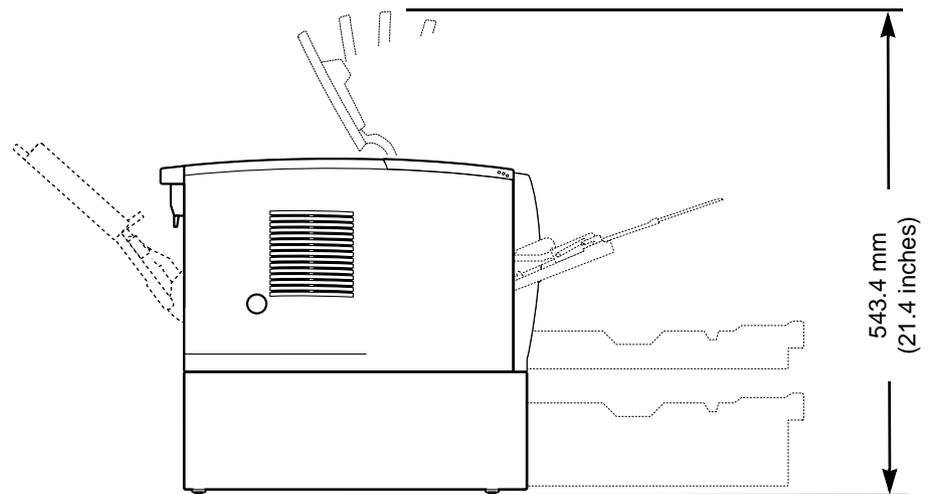
Figure 8.   **Side view (with an optional 500-sheet tray**

Interface ports

The HP LaserJet 2300 printer has two interface ports:

- IEEE-1284B Type B parallel port
- USB port (compatible with 1.1 and 2.0 low- and full-speed certified devices)

The HP LaserJet 2300n, HP LaserJet 2300dn, and HP LaserJet 2300dtn printers also include an HP Jetdirect EIO print server card that contains a 10/100Base-TX port. You can purchase an HP Jetdirect EIO print server card for the other HP LaserJet 2300 series printers. See Chapter 8 for information about ordering accessories.
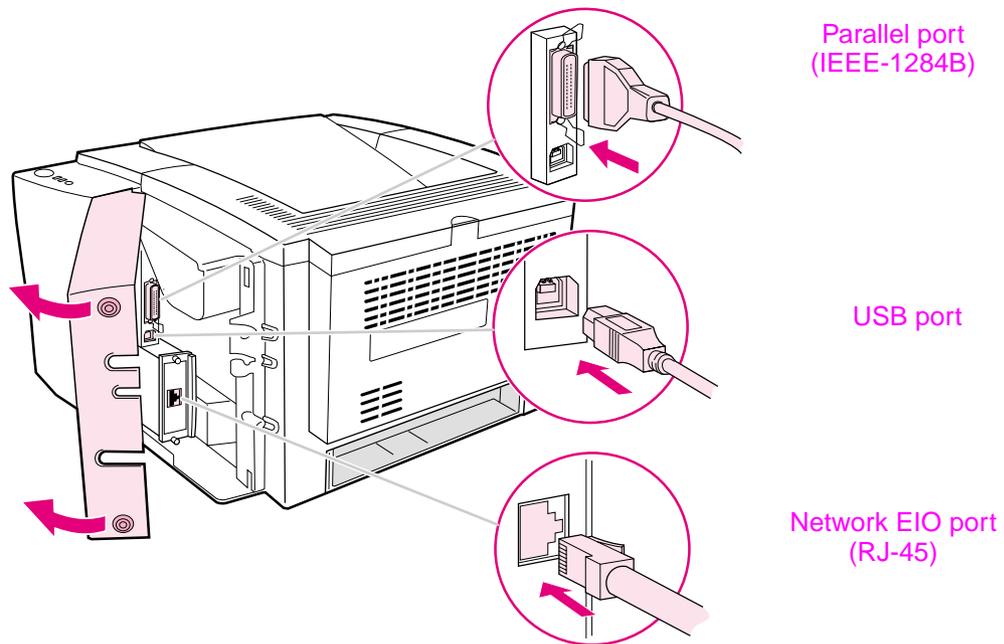
Figure 9. **Interface ports**

Media specifications

General media specifications

The HP LaserJet 2300 series printers accept a variety of media, such as cut-sheet paper (including up to 100 percent recycled-fiber-content paper), envelopes, labels, transparencies, and custom-size paper. Properties such as weight, composition, grain, and moisture content are important factors that affect printer performance and output quality. Media that does not meet the guidelines outlined in this manual can cause the following problems:

- poor print quality

- increased jams

- premature wear on the printer, requiring repair

Note Some print media might meet all of the guidelines in this manual and still not produce satisfactory results. This might be the result of improper handling, unacceptable temperature and humidity levels, or other variables over which Hewlett-Packard has no control.

CAUTION Using print media that does not meet HP specifications might cause problems for the printer, requiring repair. This repair is not covered by the Hewlett-Packard warranty or service agreements.

Note Before purchasing large quantities of paper, make sure the paper meets the requirements specified in this service manual and in the *HP LaserJet Printer Family Print Media Guide.* Always test print media before buying large quantities. For more information see the *HP LaserJet Printer Family Print Media Guide at* http://www.hp.com/support/ljpaperguide.

Media input options

The printer comes with up to three paper trays. The printer automatically selects the requested media from the correct tray if that media is loaded in any of the trays. If the media is not available, a message on the control panel prompts you to select the media or tray that you want instead.

Tray 1

Tray 2
(250-sheet tray)

Tray 3
(500-sheet tray,
if installed)
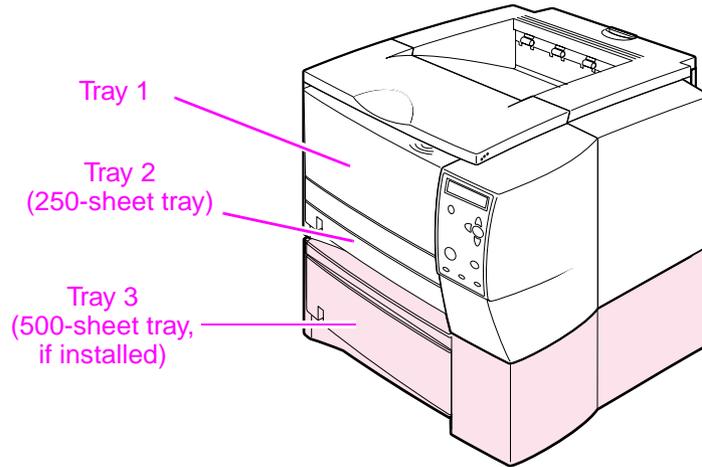
Tray 1 media sizes

Tray 1, a multipurpose tray, adjusts for sizes from 76 by 127 mm (3 by 5 inches) to a legal-size sheet, 216 by 356 mm (8.5 by 14 inches). Tray 1 should be used when printing the following types of media:

● envelopes (see "Envelope specifications" on page 39)

● labels (see "Label specifications" on page 41)

● transparencies (see "Transparency specifications" on page 42)

● custom-sized media, cardstock, or postcards

Tray 1	Dimensions	Weight	Capacity
Minimum size (custom)	76 by 127 mm (3 by 5 inches)	60 to 163 g/m^2 (16- to 43-lb bond)	100 sheets of 75 g/m^2 (20-lb bond) paper
Maximum size (custom)	216 by 356 mm (8.5 by 14 inches)		
Transparency	Minimum: 76 by 127 mm (3 by 5 inches)	Thickness: .10 to .14 mm (0.0039 to 0.0055 inches)	75 (typical)
Labels	Maximum: 216 by 356 mm (8.5 by 14 inches	Thickness: .10 to .14 mm (0.0039 to 0.0055 inches)	50 (typical)
Envelopes		Up to 90 g/m^2 (16 to 24 lb)	Up to 10

Optional 250-sheet tray (tray 2 or tray 3) paper sizes

A 250-sheet tray (tray 2) can be purchased as an accessory if the printer did not come with a tray 3. Optional 250-sheet trays have settings for the following paper sizes:

● A4

● A5

● B5 (ISO)

● B5 (JIS)

● Letter

● Legal

● Executive

● 8.5 by 13 inches (FoolsCap, Folio, JIS Exec)

CAUTION   Load only paper in the optional 250-sheet tray. Other types of print media, such as labels or transparencies, can jam if you try to print on them from either the optional 250-sheet tray or the optional 500-sheet tray. Load other types of media into tray 1 only.

See the user guide for information about loading media.

Tray 2 and tray 3	Dimensions	Weight	Capacity
Letter	216 by 279 mm (8.5 by 11 inches)	60 to 105 g/m^2 (16- to 28-lb bond)	250 sheets of 75 g/m^2 (20-lb bond) paper
A4	210 by 297 mm (8.3 by 11.7 inches)		
Executive	191 by 267 mm (7.3 by 10.5 inches)		
Legal	216 by 356 mm (8.5 by 14 inches)		
B5 (ISO)	176 by 250 mm (6.9 by 9.9 inches)		
B5 (JIS)	182 by 257 mm (7.2 by 10 inches)		
A5	148 by 210 mm (5.8 by 8.2 inches)		
8.5 by 13 in	216 by 330 mm (8.5 by 13 inches)		

Optional 500-sheet tray (tray 3) paper sizes

A 500-sheet tray can be purchased as an accessory if the printer did not come with a tray 3. It has settings for the following paper sizes:

● A4

● Letter

Load only paper in the optional 500-sheet tray. Other types of print media, such as labels or transparencies, can jam if you try to print on them from either the optional 250-sheet tray or the optional 500-sheet tray. Load other types of media into tray 1 only.

See the user guide for information about loading media.

Tray 3 (500-sheet tray)	Dimensions	Weight	Capacity
Letter	216 by 279 mm (8.5 by 11 inches)	60 to 105 g/m^2 (16- to 28-lb bond)	500 sheets of 75 g/m^2 (20-lb bond) paper
A4	210 by 297 mm (8.3 by 11.7 inches)		

Paper sizes for automatic duplexing

The automatic duplexer has settings for the following paper sizes:

● Letter

● A4

● Legal

● 8.5 by 13 in

See the user guide for information about loading media.

Duplexer	Dimensions	Weight
Letter	216 by 279 mm (8.5 by 11 inches)	60 to 105 g/m^2 (16- to 28-lb bond)
A4	210 by 297 mm (8.3 by 11.7 inches)	
Legal	216 by 356 mm (8.5 by 14 inches)	
8.5 by 13 in	216 by 330 mm (8.5 by 13 inches)	

Guidelines for selecting paper

For best results, use conventional 80-g/m^2 (20-lb) paper. Make sure that the paper is of good quality, and free of cuts, nicks, tears, spots, loose particles, dust, wrinkles, voids, and curled or bent edges.

If you are unsure about what type of paper you are loading (such as bond or recycled), check the label on the package of paper.

The following problems with paper can cause print-quality deviations, jamming, or damage to the printer.

Table 7. Solutions for problem media

Symptom	Problem with paper	Solution
Poor print quality, toner adhesion, or problems with feeding	Too moist, too rough, too heavy, too smooth, or embossed; faulty paper lot	Try another kind of paper, between 100 and 250 Sheffield, and with 4 percent to 6 percent moisture content
Dropouts, jamming, or curl	Stored incorrectly	Store paper flat in its moisture-proof wrapping
	Side-to-side variability of paper	Turn paper over
Increased gray background shading, or printer wear	Too heavy	Use lighter paper; open the rear output bin
Excessive curl or problems with feeding	Too moist, wrong grain direction, or short-grain construction	Open the rear output bin; use long-grain paper
	Side-to-side variability of paper	Turn paper over
Jamming or damage to printer	Cutouts or perforations	Do not use paper with cutouts or perforations
Problems with feeding	Ragged edges	Use good, high-quality paper
	Side-to-side variability of paper	Turn paper over

Envelope specifications

Envelope construction is critical. Envelope fold lines can vary considerably, not only between manufacturers, but also within a box from the same manufacturer. Successful printing on envelopes depends upon the quality of the envelopes. When selecting envelopes, consider the following components:

- **Weight:** The weight of the envelope paper should not exceed 105 g/m^2 (28 lb) or jamming can occur.
- **Construction:** Before printing, envelopes should lie flat with less than 6 mm (0.24 inch) curl, and should not contain air.
- **Condition:** Envelopes should not be wrinkled, nicked, or otherwise damaged.
- **Temperature:** Envelopes should be compatible with the heat and pressure of the printer.
- **Size:** Envelopes must be within the following size ranges: minimum of 76 by 127 mm (3 by 5 inches) and maximum of 216 by 356 mm (8.5 by 14 inches).

Note   Use only tray 1 to print on envelopes. Send envelopes straight through the printer, entering at tray 1 and exiting from the rear output bin.

CAUTION   Jams might occur when printing on media that is shorter than 178 mm (7 inches). This can result from environmental conditions. See "Evaluate environmental conditions" in chapter 7.

Envelopes might meet the general specifications that are listed in table 8 and still not print satisfactorily because of the printing environment or other variables over which HP has no control.

Table 8. Envelope specifications

Description	Specification
Paper	Paper that is used for envelope construction must meet the paper specifications listed in this manual and the *HP LaserJet Printer Family Print Media Guide*.
Basis weight	60 to 100 g/m2 (16 to 27 lb), single thickness. Jamming might result if 100-g/m^2 (27-lb) weight is exceeded. See "Moisture-content field test" on page 46.
Finish	Avoid using envelopes that contain adhesive that is exposed to the printer. Envelopes must be folded accurately so that no more than two thicknesses of paper occur anywhere along the leading edge. All folds must be well scored and sharply creased, and construction must be tight (not baggy). Avoid using envelopes that are stuck together with excess seam gum. See "Furnish (fiber-composition) field test" on page 48.
Fusing compatibility	All inks, adhesives, and other materials that are used in the envelope must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset materials, or release hazardous emissions when heated to 200 degrees C (392 degrees F) for 0.1 second. See "Fusing-compatibility field test" on page 48.
Curl (Pre-printed)	Envelopes must lie flat, with no more than 6 mm (0.25 inch) of curl across the entire surface. See "Curl field test" on page 47.
Caliper	Caliper of 0.084 to 0.14 mm (.0034 inch to .0056 inch), single thickness. See "Caliper field test" on page 46.

Envelopes with adhesive strips or flaps

Envelopes with a peel-off adhesive strip or with more than one flap that folds over to seal must use adhesives that are compatible with the heat and pressure in the printer.

The extra flaps and strips might cause wrinkling, creasing, or jams, and can even damage the fuser and separation pad.

Envelope storage

Proper storage of envelopes contributes to good print quality. Envelopes should be stored flat. If air is trapped in an envelope and creates an air bubble, then the envelope might wrinkle during printing.

Envelopes with double side seams

Double-side-seam construction has vertical seams at both ends of the envelope rather than diagonal seams. This style might be more likely to wrinkle. Be sure that the seam extends all the way to the corner of the envelope, as illustrated.
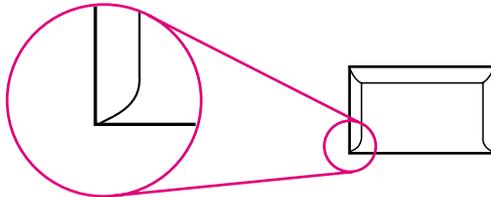
Figure 10. **Correct double side seam**
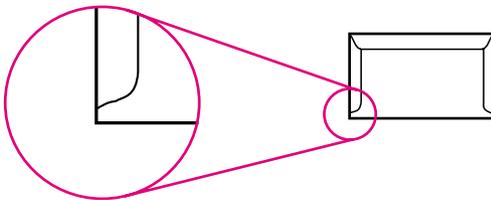
Figure 11. **Incorrect double side seam**

Envelope margins

The following gives typical address margins for a commercial #10 or DL envelope.

Type of address	Top margin	Left margin
Return address	15 mm (0.6 inch)	15 mm (0.6 inch)
Delivery address	51 mm (2 inches)	89 mm (3.5 inches)

Note For the best print quality, position margins no closer than 15 mm (0.6 inch) from the edges of the envelope. Avoid printing over the area where the envelope seams meet.

Label specifications

When selecting labels, consider the quality of each component:

● **Adhesives:** The adhesive material should be stable at 200 degrees C (392 degrees F), which is the printer's fusing temperature.

● **Arrangement:** Only use labels that have no exposed backing between them. Labels can peel off sheets that have spaces between the labels, causing jams.

● **Curl:** Before printing, labels must lie flat with no more than 13 mm (0.5 inch) of curl in any direction.

● **Condition:** Do not use labels that have wrinkles, bubbles, or other indications of separation.

Note   Use only tray 1 to print on labels. Send labels straight through the printer, entering at tray 1 and exiting from the rear output bin

CAUTION   To avoid damaging the printer, use only labels that are recommended for laser printers.

Never print on the same sheet of labels more than once or print on a partial sheet of labels.

Description	Specification
Adhesive	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	Caliper must not exceed 0.19 mm (0.007 inch). See "Caliper field test" on page 46.
Curl	In ream: flat within 13 mm (0.5 inch). See "Curl field test" on page 47.
Surface resistivity	2.0 to 15 by 10 to the 10th ohm squared. See "Fusing-compatibility field test" on page 48.
Volume resistivity	1.2 to 15 by 10 to the 11th ohm-centimeter. See "Fusing-compatibility field test" on page 48.
Finishing precision	Cut sheet within 0.79 mm (0.031 inch) of nominal and +0.20 degrees square.
Fusing compatibility	All adhesives, carrier sheets, top sheets, and other materials that are used in label construction must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset materials, or release hazardous emissions when heated to 200 degrees C (392 degrees F) for 0.1 second. See "Fusing-compatibility field test" on page 48.
Packaging	Store in moisture-proof wrap to preserve properties.
Shelf life	One year, maximum, stored at 22 degrees C (72 degrees F) and 50 percent relative humidity.

Transparency specifications

Transparency construction is critical.

CAUTION Transparencies that are used in the printer must be able to withstand 200 degrees C (392 degrees F), the printer's fusing temperature.

To avoid damaging the printer, use only transparencies that are recommended for use in laser printers.

Description	Specification
Surface resistivity	2.0 to 15 by 10 to the 10th ohm squared. See "Fusing-compatibility field test" on page 48.
Volume resistivity	1.2 to 15 by 10 to the 11th ohm-cm. See "Fusing-compatibility field test" on page 48.
Finishing precision	Cut sheet within 0.79 mm (0.031 inch) of nominal and +0.20 degrees square.
Fusing compatibility	Transparency materials must be compatible with the heat and pressure of the fusing process. Materials must not discolor, melt, offset materials, or release hazardous emissions when heated to 200 degrees C (392 degrees F) for 0.1 second. See "Fusing-compatibility field test" on page 48.
Caliper	Caliper of 0.100 to 0.110 mm (0.0039 to 0.0043 inch). See "Caliper field test" on page 46.

Storing print media

Ideally, the printing and media storage environment should be at or near room temperature, and not too dry or too humid. Remember that paper is hygroscopic; it absorbs and loses moisture rapidly.

Heat works with humidity to damage paper. Heat causes the moisture in paper to evaporate, while cold causes it to condense on the sheets. Heating systems and air conditioners remove most of the humidity from a room. As a paper package is opened and used, it loses moisture, which causes streaks and smudging in the printed output. Humid weather or water coolers can increase the humidity in a room. As paper is opened and used, it absorbs any excess moisture, which causes light print and dropouts in the printed output. Also, as paper loses and gains moisture, it can distort. This can cause jams.

As a result, paper storage and handling are as important as the paper-making process itself. Paper storage environmental conditions directly affect the feed operation.

Users should not purchase more paper than can be easily used in a short time (about three months). Paper stored for long periods might experience heat and moisture extremes, which can cause damage. Planning is important to prevent damage to a large supply of paper.

Unopened paper in sealed reams can remain stable for several months before use. Opened packages of paper have more potential for environmental damage, especially if they are not wrapped with a moisture-proof barrier.

A well-maintained paper-storage environment ensures optimum printer performance. The required environmental conditions are 20 degrees to 24 degrees C (68 degrees to 75 degrees F), with relative humidity of 45 percent to 55 percent. The following guidelines should be helpful when evaluating the papers storage environment:

- Paper should be stored at or near room temperature.
- The air should not be too dry or too humid.
- The best way to store an opened ream of paper is to rewrap it tightly in its moisture-proof wrapping. If the printer environment is subject to extremes, unwrap only the amount of paper that will be used during the day's operation to prevent unwanted moisture changes.

Shipping print media

When shipping print media through different environments, plastic-wrap all cartons on the shipping pallet. When shipping media across bodies of water, also wrap individual cartons. The packaging must protect the media from physical damage.

Paper fillers

Additional chemicals and fillers are frequently added to paper during the manufacturing process. These can affect the paper strength, pick resistance, printability, bulk, feel, and color.

An emulsion that contains wax, rosin, starch, or other non-water soluble materials is added to the paper pulp to help control the penetration of water and other liquids. Dyes are added and the paper might be bleached. Bleaching is a multistep process that uses chemicals, such as hydrogen peroxide and chlorine dioxide.

Finely ground fillers, such as clay, talc, and calcium carbonate, might be added to even out the "peaks and valleys" that occur in the paper mixture, and to serve as brighteners. Over time, these fillers can build up on internal assemblies of the printer such as rollers or the print cartridge. This buildup can eventually cause jams and print defects. To minimize this risk, periodically clean the printer according to procedures (see "Cleaning the printer" on page 75).

Testing media specifications

The following tests describe ways to make sure that the media meets the specifications listed in this manual and the *HP LaserJet Printer Family Print Media Guide.* See "Tools and suppliers" on page 49 for help in obtaining tools to perform these tests.

Basis-weight field test

The basis weight should be indicated on the ream label. If the label is not available, a simple field test can identify the basis weight of paper. The basis weight of paper is equal to the weight of 2000 sheets of paper, or four full reams. Weigh a full ream on a postal scale and then multiply that weight by four. Or, weigh 10 sheets of paper, divide that weight by 10, multiply by 2000, and then divide by 16.

Amount	Formula
4 reams	weight = basis weight
1 ream	weight x 4 = basis weight
10 sheets	(weight divided by 10) x 2000 and then divided by 16 = basis weight

Note   Example:

10 sheets weigh 1.6 ounces

0.16 ounce x 2000 = 320 ounces

320 ounce ÷ 16 ounce/lb = 20 lb paper

Paper weight equivalence table

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 paper, locate the bond weight (in row 3, second column) and scan across the row to the cover weight (in the fourth column). The equivalent is 28-b media. Shaded areas indicate a standard weight for that grade.

	U.S. post-card thick-ness* (mm)	U.S. bond weight (lb)	U.S. text/ book weight (lb)	U.S. cover weight (lb)	U.S. bristol weight (lb)	U.S. index weight (lb)	U.S. tag weight (lb)	Europe metric weight (g/ m2)	Japan metric weight (g/ m2)
1		16	41	22	27	33	37	60	60
2		17	43	24	29	35	39	64	64
3		20	50	28	34	42	46	75	75
4		21	54	30	36	44	49	80	80
5		22	56	31	38	46	51	81	81
6		24	60	33	41	50	55	90	90
7		27	68	37	45	55	61	100	100
8		28	70	39	49	58	65	105	105
9		32	80	44	55	67	74	120	120
10		34	86	47	58	71	79	128	128
11		36	90	50	62	75	83	135	135
12	.18	39	100	55	67	82	91	148	148
13	.19	42	107	58	72	87	97	157	157
14	.20	43	110	60	74	90	100	163	163
15	.23	47	119	65	80	97	108	176	176
16		53	134	74	90	110	122	199	199

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

Metric Sizes

For metric-size paper (A4), use this method to determine basis weight:

Take 16 sheets of A4 paper and weigh them. One square meter of paper contains approximately 16 A4 size sheets. Compare this weight to the appropriate weight in the preceding table.

Caliper field test

The specified caliper differs with the type of media used. See "Operating environment" on page 30.

Use a micrometer to measure for caliper in the field.

Never use the coarse-adjustment end of the micrometer when measuring for caliper. The coarse adjustment will compress the paper fibers, resulting in an inaccurate reading. For example, if the fibers are compressed, 6 mil paper could measure as few as 3 mils. Always use the fine adjustment to measure for caliper.

Using the fine adjustment, slide the micrometer along the edge of the paper and measure at one end. To double-check the accuracy of the reading, always measure again at the opposite end of the paper.

Paper-finish field test

Paper finish, or smoothness, can be accurately measured with a Sheffield meter. If this tool is not available, use a new U.S. dollar bill as a benchmark for comparing paper texture. A dollar bill has a finish of 350 Sheffields, which is 100 over specifications. If paper feels as rough as a dollar bill, it is recommended that users avoid continually using this paper in the printer.

Moisture-content field test

Use paper with 4 percent to 6 percent moisture content.

A ream or sheet of paper can be measured with a moisture meter. In general, only evaluate the customer's storage environment to determine if excess moisture or dryness is the cause of a problem with paper.

Grain field test

The grain direction is usually specified on the ream label (written out "long" or "short"). The paper dimensions listed on the label also indicate grain direction. For example, the label for short-grain letter-size paper reads "11 by 8.5" and for long-grain paper reads "8.5 by 11."

If the grain direction is not included on the ream label, it can be determined by using a simple wet test. Cut a small square from the corner of a sheet of paper, wet it, and observe the manner in which it curls.

Envelopes should have a diagonal grain, which gives them the best stability. To determine this, cut a square section from one corner of an envelope. Wet this section and observe the manner in which it curls. Two opposite corners should curl toward each other.
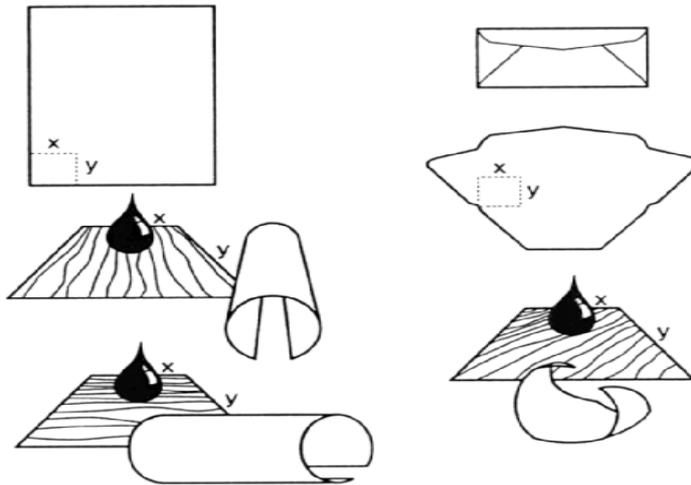
Figure 12.   **Wet test for long, short, and diagonal grain curl**

Curl field test

To check for paper curl, place a single sheet of paper onto a flat surface and measure curl at the greatest deflection by holding a ruler perpendicular to the flat surface.
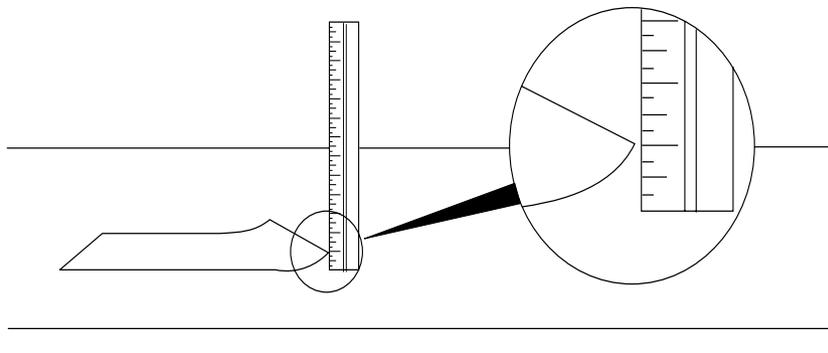
Figure 13.   **Measuring curl**

Cut-edge condition field test

Use a loupe or maginfying glass to observe the condition of the cut edge. Under magnification, a good edge appears even. A poorly cut edge shows fraying, jagged edges, compressed fibers, and other damage.

Furnish (fiber-composition) field test

Use paper made from 100 percent chemical wood pulp and/or cotton fiber. Recycled paper that contains no more than 5 percent groundwood is also acceptable.

Read the ream label to determine the fiber composition of the paper. Paper is usually specified as xerographic bond (suitable for copiers or laser printers) or cotton bond. Paper of 25 percent, 50 percent, or 100 percent cotton bond is indicated on a watermark. If paper is less than 25 percent cotton bond, the watermark will not indicate a percentage.

A wood-pulp test kit can also be used to test fiber composition.

Fusing-compatibility field test

Inspect the rollers for ink buildup from preprinted logos or letterhead, and for toner buildup or spots. Inspect printed output for repetitive defects and smearing. If necessary, have users contact their forms vendor to ensure that the paper is compatible with HP LaserJet printers.

Tools and suppliers

Hewlett-Packard neither warrants nor recommends a particular manufacturer, supplier, or tool. Products are subject to change and HP has no control over such changes. However, the following table of tools and their suppliers is provided for convenience.

Tool	Part Number	Supplier Address
Paper moisture meter Single-sheet clamp probe	2RRDMP 2R43E	Mitchell Instrument 1570DDD Cheroke St. San Marcos, CA 92069-2433
Temperature/humidity meter	#3T331	Industrial Motor Service 2000 Albright Montgomery, IL 60538
Sheffield tester: precisionaire column Sheffield tester: smoothcheck gauge	TM 58-25-01 TM 58-25-02	TMI Testing Machines Inc. 400 Bayview Avenue Amityville, NY 11701 (516) 842-5400
Wood-pulp test kit pH test kit	4280-2 4360-2	Shape Products 1127 57th Avenue Oakland, CA 94621 (800) 444-0015

Resistivity test tool:
   precision current/resistance meter
Resistivity test tool:
   surface resistivity probe
	278
	
	96117-1
		Monroe Electronics
		100 Housel Avenue
		PO Box 100
		Lyndonville, NY 14098
		(800) 821-6001

3 Operation

Chapter contents

Control panel

This section provides information about the control panel and its features.

Control-panel layout

The control panel contains the following controls:

- a graphical display that can show up to two lines of messages
- four navigation buttons: ⤴ (BACK arrow), ▲ (UP arrow), ▼ (DOWN arrow), and ✓ (SELECT)
- a **?** (HELP) button
- a PAUSE/RESUME button
- a CANCEL JOB button
- three light-emitting diode (LED) indicator lights: Ready light, Data light, and Attention light

See "Troubleshooting with control-panel messages" on page 184 to identify and troubleshoot control-panel messages.
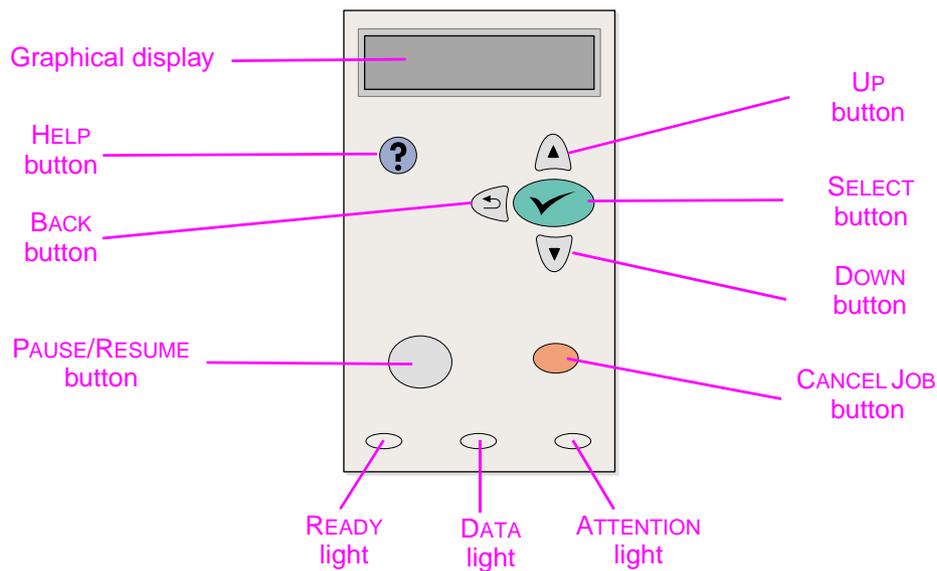
Figure 14.   **Control-panel layout**

Control-panel buttons

Button	Function
? (HELP)	● Provides information about the message on the graphical display.
↰ (BACK)	● Backs up one level in the menu tree, or backs up one numeric entry. ● Closes menus if it is held down for more than 1 second.
PAUSE/RESUME	● Pause: Causes the printer to stop printing the current job and expel all active pages from the paper path. ● Resume: Returns the printer to the ready or busy state from the menus or the online Help.
▲ (UP)	● Navigates to the previous item in the list, or increases the value of numerical items.
✓ (SELECT)	● Opens menus and navigates through menu levels. ● Clears an error condition when the condition can be cleared. ● Saves the selected value for an item. ● Performs the action associated with the item that is highlighted on the graphical display.
▼ (DOWN)	● Navigates to the next item in the list, or decreases the value of numerical items.
CANCEL JOB	● Cancels the current print job in process and expels all active pages from the paper path. The time that it takes to cancel the job depends on the size of the print job. (Press the button only once.) **NOTE:** The control-panel lights cycle while the print job is cleared from both the printer and the computer, and then return to the ready state (Ready light on).

Control-panel lights

Light	State	Indication
Ready	On	The printer is online and ready to accept data to print.
	Off	The printer cannot accept data because it is offline (paused) or has experienced an error.
	Blinking	The printer is going offline. The printer stops processing the current print job and expels all active pages from the paper path.
Data	On	The printer has data to print, but is waiting to receive all of the data.
	Off	The printer has no data to print.
	Blinking	The printer is processing or printing the data.
Attention	On	The printer has experienced a problem. Note the message on the control-panel display, and then turn the printer off and then on again. See "Troubleshooting with control-panel messages" on page 184 for help in resolving problems.
	Off	The printer is functioning without error.
	Blinking	Action is required. See the control-panel display.

Changing control-panel settings

For a complete list of menu items and possible values, see "Control-panel menus—user" on page 55. Certain menu options appear only if the associated tray or accessory is installed. For example, the EIO menu appears only if you have an EIO card installed.

To change a control-panel setting

1   Press ✓ (SELECT) to open the menus.

2   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to the menu that you want, and then press ✓ (SELECT).

3   Some menus might have several submenus. Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to the submenu item that you want, and then press ✓ (SELECT).

4   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to the setting, and then press ✓ (SELECT). Some settings change rapidly if ▲ (UP arrow) or ▼ (DOWN arrow) is held down. An asterisk (*) appears next to the selection on the display, indicating that it is now the default.

5   Press PAUSE/RESUME to close the menu.

Note   Printer-driver settings override control-panel settings. Software program settings override both printer-driver settings and control-panel settings.

If you cannot gain access to a menu or item, it is either not an option for the printer, or you have not enabled the associated higher-level option. See your network administrator if a function has been locked (`Access denied menus locked` appears on the control-panel display).

Printing control-panel menus

To see the current settings for the menus and items that are available at the control panel, print a control-panel menu map. You might want to store the menu map near the printer for reference.

To print a control-panel menu map

1   Press ✓ (SELECT) to open the menus.

2   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to `INFORMATION`, and then press ✓ (SELECT).

3   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to `PRINT MENU MAP`, and then press ✓ (SELECT).

Control-panel menus—user

Retrieve job menu

The HP color LaserJet 2300 printer and the HP color LaserJet 2300L printer do not include this menu.

This menu provides a list of the stored jobs in the printer and access to all the job-storage features. You can print or delete these jobs at the control panel.

The section that follows lists the settings and possible values. In the Values column, the default value for each setting is the one with an asterisk (*) next to it.

If you turn the printer power off, all stored jobs are deleted.

Table 9. Retrieve job menu

Item	Values	Explanation
[USERNAME]	There is no value to select.	The name of the person who sent the job.
[JOBNAME]	There is no value to select.	The name of the job stored in the printer. Select one of your jobs or all of your private jobs (those that were assigned a PIN in the printer driver). To select all of your private jobs, select ALL PRIVATE JOBS.
NO STORED JOBS	There is no value to select.	Indicates that there are no stored jobs to print or delete.
ALL PRIVATE JOBS	There is no value to select.	Appears if two or more private jobs are stored in the printer. Selecting this item prints all private jobs stored in the printer for that user, after the correct PIN is typed.
Print	There is no value to select.	Prints the selected job.
ENTER PIN TO PRINT	*0000 to 9999	A prompt that appears for jobs that were assigned a personal identification number (PIN) in the printer driver. You must type the PIN to print the job.
COPIES	*1 to 32000	Is used to select the number of copies that you want to print. 1-32000: Prints the requested number of copies of the job.
Delete	There is no value to select.	Deletes the selected job from the printer.
ENTER PIN TO DELETE	*0000 to 9999	A prompt that appears for jobs that were assigned a PIN in the printer driver. You must type the PIN to delete the job.

Information menu

The Information menu contains printer information pages that give details about the printer and its configuration. Scroll to the information page that you want and press ✓ (S<small>ELECT</small>).

Table 10. Information menu

Item	Explanation
PRINT MENU MAP	The menu map shows the layout and current settings of the control-panel-menu items. For more information, see "To print a control-panel menu map" on page 54.
PRINT CONFIGURATION	The configuration page shows the current printer configuration. If an HP Jetdirect print server is installed, an HP Jetdirect configuration page will print out as well. For more information, see "Printing a configuration page" on page 199.
PRINT SUPPLIES STATUS PAGE	The supplies status page shows the levels of the supplies for the printer, calculation of the number of pages remaining, and cartridge-usage information. This page is available only if you are using genuine HP supplies. For more information, see "Supplies status page" on page 81.
PRINT USAGE PAGE	The usage page shows the quantity of pages printed, as well as the paper source used. It also shows the number of one-sided versus two-sided pages that have been printed. For more information, see "Printing a usage page" on page 201. **NOTE:** This menu item appears only if a mass-storage device that contains a recognized file system is installed in the printer, such as an optional flash DIMM. This item generates a page containing information that can be used for accounting purposes.
PRINT FILE DIRECTORY	This menu item appears only if a mass storage device that contains a recognized file system is installed in the printer, such as an optional flash DIMM. The file directory shows information for all installed mass storage devices.
PRINT PCL FONT LIST	The PCL font list shows all the PCL fonts that are currently available to the printer.
PRINT PS FONT LIST	The PS font list shows all the PS fonts that are currently available to the printer.

Paper-handling menu

If paper-handling settings are correctly configured at the control panel, you can print by selecting the type and size of paper in the program or printer driver.

Some items on this menu (such as duplex and manual feed) are available in the program or printer driver (if the appropriate driver is installed). Program and printer-driver settings override control-panel settings.

The following table lists the settings and possible values. In the Values column, the default value for each setting is the one with an asterisk (*) next to it.

Table 11. Paper-handling menu

Item	Values	Explanation
TRAY 1 SIZE	*ANY SIZE LETTER LEGAL EXECUTIVE 8.5 x 1 A4 A5 B5 (ISO) B5 (JIS) EXECUTIVE (JIS) DPOSTCARD (JIS) 16K ENVELOPE #10 ENVELOPE MONARCH ENVELOPE C5 ENVELOPE DL ENVELOPE B5 CUSTOM ANY CUSTOM	Sets the value to correspond with the media size currently loaded in tray 1. ● ANY SIZE: If both the type and size for tray 1 are set to ANY, the printer will pull media from tray 1 first as long as media is loaded in the tray. ● A size other than ANY SIZE: The printer does not pull from this tray unless the type or size of the print job matches the type or size loaded in this tray.
TRAY 1 TYPE	*ANY TYPE PLAIN PREPRINTED LETTERHEAD TRANSPARENCY PREPUNCHED LABELS BOND RECYCLED COLOR CARDSTOCK>164 G/M2 ROUGH ENVELOPE	Sets the value to correspond with the type of paper or other print media currently loaded in tray 1. ● ANY TYPE: If both the type and size for tray 1 are set to ANY, the printer will pull media from tray 1 first as long as media is loaded in the tray. ● A type other than ANY TYPE: The printer does not pull from this tray unless the type or size of the print job matches the type or size loaded in this tray.
TRAY 2 SIZE	*ANY SIZE LETTER LEGAL EXECUTIVE 8.5 x 1 A4 A5 B5 (ISO) B5 (JIS) EXECUTIVE (JIS) 16K	Sets the value to correspond with the paper size currently loaded in tray 2.

Table 11. Paper-handling menu (continued)

Item	Values	Explanation
TRAY 2 TYPE	ANY TYPE PLAIN PREPRINTED *LETTERHEAD TRANSPARENCY PREPUNCHED LABELS BOND RECYCLED COLOR ROUGH	Sets the value to correspond with the paper type currently loaded in tray 2.
TRAY 3 SIZE	*ANY SIZE LETTER A4	Sets the value to correspond with the paper size currently loaded in tray 3. **NOTE:** This menu appears only if a tray 3 is installed.
TRAY 3 TYPE	*ANY TYPE PLAIN PREPRINTED LETTERHEAD TRANSPARENCY PREPUNCHED LABELS BOND RECYCLED COLOR ROUGH	Sets the value to correspond with the paper type currently loaded in tray 3. **NOTE:** This menu appears only if a tray 3 is installed.
TRAY [N] CUSTOM	There is no value to select.	This item appears only if a tray is set to a custom size.
UNIT OF MEASURE	INCHES *MILLIMETERS	Selects the unit of measure to use when you set custom paper sizes for the specified tray.
X DIMENSION	3.0 to 8.50 INCHES 76 to 216 MM	Sets the measurement of the width of the paper (measurement from side to side in the tray).
Y DIMENSION	5.0 to 14.00 INCHES 127 to 356 MM	Sets the measurement of the length of the paper (measurement from front to back in the tray). After the Y DIMENSION value is selected, a summary screen appears. This screen contains feedback that summarizes all the information that was selected on the previous three screens, such as TRAY 1 SIZE= 8.50 x 14 INCHES, Setting saved.

Configure device menu

This menu contains administrative functions.

Printing submenu

Some items on this menu are available in the program or printer driver (if the appropriate driver is installed). Program and printer-driver settings override control-panel settings. In general, it is better to change these settings in the printer driver, if applicable.

The following table lists the settings and possible values. In the Values column, the default value for each setting is the one with an asterisk (*) next to it.

Table 12. Configure device menu—printing submenu

Item	Values	Explanation
COPIES	*1 to 999	Sets the default number of copies by selecting any number from 1 to 999. Use ▲ (UP arrow) or ▼ (DOWN arrow) to select the number of copies. This setting applies only to print jobs that do not have the number of copies specified in the program or printer driver, such as a UNIX® or Linux application. **NOTE:** It is best to set the number of copies in the program or printer driver. (Program and printer-driver settings override control-panel settings.)
DEFAULT PAPER SIZE	*LETTER LEGAL EXECUTIVE 8.5 x 13 A4 A5 B5 (ISO) B5 (JIS) EXECUTIVE (JIS) DPOSTCARD (JIS) 16K ENVELOPE #10 ENVELOPE MONARCH ENVELOPE C5 ENVELOPE DL ENVELOPE B5 CUSTOM	Sets the default image size for paper and envelopes. (The item name changes from paper to envelope as you scroll through the available sizes.) This setting applies only to print jobs that do not have the paper size specified in the program or printer driver.
DEFAULT CUSTOM PAPER SIZE	UNIT OF MEASURE X DIMENSION Y DIMENSION	Sets a default custom paper size for tray 1. This menu appears only if the Custom-Standard switch in the selected tray is set to Custom.
DUPLEX	*OFF ON	Appears only for printers that include a built-in duplexer (HP LaserJet 2300d printer, HP LaserJet 2300dn printer, and HP LaserJet 2300dtn printer). Set the value to ON to print on both sides (duplex) or OFF to print on one side of a sheet of paper.
DUPLEX BINDING	*LONG EDGE SHORT EDGE	Changes the binding edge for duplex printing. The menu item appears only if the printer includes a built-in duplexer (HP LaserJet 2300d printer, HP LaserJet 2300dn printer, and HP LaserJet 2300dtn printer) and DUPLEX=ON.
OVERRIDE A4/LETTER	*NO YES	Directs the printer to print an A4-size job on letter-size paper if A4-size paper is not loaded in the printer (or vice versa).

Table 12. Configure device menu—printing submenu

Item	Values	Explanation
MANUAL FEED	*OFF ON	Feeds the paper manually from tray 1, rather than automatically from a tray. If MANUAL FEED=ON and tray 1 is empty, the printer goes offline when it receives a print job. MANUALLY FEED [PAPER SIZE] appears on the control-panel display.
COURIER FONT	*REGULAR DARK	Selects the version of Courier font to use: ● REGULAR: The internal Courier font available on the HP LaserJet 4 series printers. ● DARK: The internal Courier font available on the HP LaserJet III series printers.
WIDE A4	*NO YES	Changes the number of characters that can be printed on a single line of A4-size paper. ● NO: Up to 78 10-pitch characters can be printed on one line. ● YES: Up to 80 10-pitch characters can be printed on one line.
PRINT PS ERRORS	*OFF ON	Determines whether a PS error page prints or not. OFF: PS error page never prints. ON: PS error page prints when PS errors occur.
PCL	There is no value to select.	Is used to configure the printer's PCL settings.
FORM LENGTH	5 to 128 (*60)	Sets vertical spacing from 5 to 128 lines for default paper size.
ORIENTATION	*PORTRAIT LANDSCAPE	Is used to select default page orientation. **NOTE:** It is best to set the page orientation in the program or printer driver. (Program and printer-driver settings override control-panel settings.)
FONT SOURCE	*INTERNAL SOFT SLOT 1, 2, or 3	● INTERNAL: Internal fonts. ● SOFT: Permanent soft fonts. This option is available only if it is installed. ● SLOT 1, 2, or 3: Fonts stored in one of the three DIMM slots. This option is available only if it is installed.
FONT NUMBER	*0 to 999 (*0)	The printer assigns a number to each font and lists the numbers on the PCL Font List. The font number appears in the Font # column of the printout.
FONT PITCH	0.44 to 99.99 (*10.00)	Selects the font pitch. This item might not appear, depending on the font selected.
FONT POINT SIZE	4.00 to 999.75 (*12.00)	Selects the font point size. This appears only if a font with a scalable point size is selected as the default font.
SYMBOL SET	*PC-8 Several	Selects any one of several available symbol sets at the control panel. A symbol set is a unique grouping of all the characters in a font. PC-8 or PC-850 is recommended for line-draw characters.
APPEND CR TO LF	*NO YES	Select YES to append a carriage return to each line feed encountered in backward-compatible PCL jobs (pure text, no job control). Some environments, such as UNIX, indicate a new line using only the line-feed control code. Use this option to append the required carriage return to each line feed.

Print-quality submenu

Some items on this menu are available in the program or printer driver (if the appropriate driver is installed). Program and printer-driver settings override control-panel settings. In general, it is best to change these settings in the printer driver, if applicable.

The following table lists the settings and possible values. In the Values column, the default value for each setting is the one with an asterisk (*) next to it.

Table 13. Configure device menu—print-quality submenu

Item	Values	Explanation
SET REGISTRATION	There is no value to select.	Shifts the margin alignment to center the image on the page from top to bottom, and left to right. You can also align the image that is printed on the front with the image that is printed on the back.
PRINT TEST PAGE	There is no value to select.	Prints a test page to show the current registration settings.
SOURCE	ALL TRAYS TRAY 1 *TRAY 2 TRAY 3	Selects the tray for which you want to print the test page.
ADJUST TRAY [N] X1 Shift X2 Shift Y Shift	-20 to 20 (*0)	Sets the registration for the specified tray, where [N] is the number of the tray. A selection appears for each tray that is installed, and registration must be set for each tray. ● X1 SHIFT: Registration of the image on the paper from side to side, as the paper lies in the tray. For duplexing, this side is the second side (back) of the paper. ● X2 SHIFT: Registration of the image on the paper from side to side, as the paper lies in the tray, for the first side (front) of a duplexed page. This item appears only if the printer includes a built-in duplexer (HP LaserJet 2300d printer, HP LaserJet 2300dn printer, and HP LaserJet 2300dtn printer) and DUPLEX=ON (see "DUPLEX" on page 59). Set the X1 SHIFT first. ● Y SHIFT: Registration of the image on the paper from top to bottom as the paper lies in the tray.

Table 13. Configure device menu—print-quality submenu

Item	Values	Explanation
FUSER MODES PLAIN PREPRINTED LETTERHEAD TRANSPARENCY PREPUNCHED LABELS BOND RECYCLED COLOR CARDSTOCK>164 G/ROUGH ENVELOPE RESTORE MODES	*NORMAL HIGH1 HIGH2 LOW REDUCE CURL MODE	Configures the fuser mode associated with each paper type. Change the fuser mode only if you are experiencing problems printing on certain paper types. After you select a type of paper, you can select a fuser mode that is available for that type. The available selections might include some or all of the following modes: ● NORMAL: Used for most types of paper. ● HIGH 1: Used for rough paper. ● HIGH 2: Used for paper with a special or rough finish. ● LOW: Used for transparencies. ● REDUCE CURL MODE: Used to reduce paper curl. Turning the option on might decrease print quality, because the setting reduces the amount of heat that the fuser applies during the printing process. With the lower temperature, toner might not completely bond to the media that you are using. The default fuser mode is NORMAL for all print media types except transparencies (LOW), and rough paper (HIGH1). **CAUTION:** Do not change the fuser mode for transparencies. Failure to use the LOW setting while printing transparencies can result in permanent damage to the printer and fuser. Always select Transparencies as the Type in the printer driver and set the tray type at the control panel to TRANSPARENCY. When selected, RESTORE MODES resets the fuser mode for each media type back to its default setting.
OPTIMIZE	There is no value to select.	
HIGH TRANSFER	*OFF ON	Increases the intensity at which toner is transferred to the media. Set to ON for the following reasons: ● You are using highly resistive, lower-quality papers. (HP recommends using only HP paper and print media.) ● A combination of low humidity and high temperature is causing toner to scatter around the characters (halo effect).
LINE DETAIL	*OFF ON	Set to ON to combat toner explosion on labels and recycled media.
MORE SEPARATION	*OFF ON	Decreases the possibility for jams in the print-cartridge area under conditions of high humidity and high temperature.
RESTORE OPTIMIZE	There is no value to select.	Returns to the defaults for the Optimize settings.

Table 13. Configure device menu—print-quality submenu

Item	Values	Explanation
RESOLUTION	300 600 *FASTRES 1200 PRORES 1200	Selects the resolution. All values print at the same speed. ● 300**:** Produces draft print quality and can be used for compatibility with the HP LaserJet III family of printers. ● 600**:** Produces high-quality text printing and can be used for compatibility with the HP LaserJet 4 family of printers. ● FASTRES 1200: Produces 1200-dpi print quality for fast, high-quality printing of business text and graphics. ● PRORES 1200: Produces 1200-dpi printing for the best quality in line art and graphic images. **NOTE:** It is best to change the resolution in the program or printer driver. (Program and printer-driver settings override control-panel settings.)
RET	OFF LIGHT *MEDIUM DARK	Use the Resolution Enhancement technology (REt) setting to produce print that has smooth angles, curves, and edges. REt does not affect print quality if the print resolution is set to FastRes 1200. All other print resolutions benefit from REt. **NOTE:** It is best to change the REt setting in the program or printer driver. (Program and printer-driver settings override control-panel settings.)
ECONOMODE	*OFF ON	Turn EconoMode ON (to save toner) or OFF (for high quality). EconoMode creates draft-quality printing by reducing the amount of toner on the printed page. **NOTE:** It is best to turn EconoMode on or off in the program or printer driver. (Program and printer-driver settings override control-panel settings.) **CAUTION:** HP does not recommend full-time use of EconoMode. If EconoMode is used full-time, it is possible that the toner supply will outlast the mechanical parts in the print cartridge.
TONER DENSITY	1 2 *3 4 5	Lighten or darken the print on the page by setting the toner density. Select a setting ranging from 1 (light) to 5 (dark). The default setting of 3 usually produces the best results.
CREATE CLEANING PAGE	There is no value to select.	Press ✓ (SELECT) to print a cleaning page (to clean toner from the fuser). Open the rear output bin. Follow the instructions on the cleaning page. For more information, see "Cleaning the fuser" on page 76.
PROCESS CLEANING PAGE	There is no value to select.	This item is available only after a cleaning page has been created. Follow the instructions on the cleaning page. The cleaning process might take up to 2.5 minutes.

System-setup submenu

Items on this menu affect printer behavior. Configure the printer according to your printing needs.

The following table lists the settings and possible values. In the Values column, the default value for each setting is the one with an asterisk (*) next to it.

Table 14. Configure device menu—system-setup submenu

Item	Values	Explanation
JOB STORAGE LIMIT	1 to 100 (*32)	Specifies the number of quick copy jobs that can be stored on the printer.
JOB HELD TIMEOUT	*OFF 1 HOUR 4 HOURS 1 DAY 1 WEEK	Sets the amount of time that held jobs are kept before being automatically deleted from the queue.
SHOW ADDRESS	*AUTO< OFF	Defines whether or not the printer address is shown on the display with the READY message. ● AUTO: The IP address is shown with the READY message if the device is connected to a network. ● OFF: The IP address does not appear with the READY message.
TRAY BEHAVIOR	USE REQUESTED TRAY< MANUALLY FEED PROMPT	Determines how the printer responds to jobs that request certain trays.
USE REQUESTED TRAY	*EXCLUSIVELY FIRST	Determines whether the printer tries to pull media from a tray other than the one you selected in the printer driver. ● EXCLUSIVELY: Sets the printer to pull only from the tray you selected and not pull from another tray, even if the tray you selected is empty. ● FIRST: Sets the printer to pull from the tray you selected first, but allows the printer to pull from another tray automatically if the tray you selected is empty.
MANUALLY FEED PROMPT	ALWAYS *UNLESS LOADED	Determines when the printer shows a prompt regarding pulling from tray 1 if your print job does not match the type or size loaded in any other tray. ● ALWAYS: Select this option if you always want to be prompted before the printer pulls from tray 1. ● UNLESS LOADED: Prompts you only if tray 1 is empty.
DUPLEX BLANK PAGES	*AUTO YES	● AUTO: To increase performance, the printer does not print blank second sides of duplexed pages, except for Any, Letterhead, Preprinted, or Prepunched paper types. ● YES: All blank pages are printed.

Table 14. Configure device menu—system-setup submenu

Item	Values	Explanation
POWERSAVE TIME	1 MINUTE 15 MINUTES *30 MINUTES 60 MINUTES 90 MINUTES 2 HOURS 4 HOURS	Sets how long the printer remains idle before it enters PowerSave mode. PowerSave mode does the following: ● minimizes the amount of power the printer consumes when it is idle ● reduces wear on electronic components in the printer (turns off the display backlight, but the display is still readable) The printer automatically comes out of PowerSave mode when you send a print job, press a control-panel button, open a tray, or open the top cover. To turn PowerSave mode on and off, see "POWERSAVE" on page 70.
DISPLAY BRIGHTNESS	1 2 3 4 *5 6 7 8 9 10	Customizes the readability of the display panel for your environment by lowering or raising brightness.
PERSONALITY	*AUTO PCL PS	Selects the default printer language (personality). Possible values are determined by which valid languages are installed in the printer. Normally, you should not change the printer language. If you change it to a specific printer language, the printer will not switch automatically from one language to another unless specific software commands are sent to the printer.
CLEARABLE WARNINGS	*JOB ON	Sets the amount of time that a clearable warning is shown on the control-panel display. ● JOB: The clearable warning message appears until the end of the job that generated the message. ● ON: The clearable warning message appears until you press ✓ (SELECT).
AUTO CONTINUE	OFF *ON	Determines how the printer reacts to errors. If the printer is on a network, you probably want to turn AUTO CONTINUE to ON. ● ON: If an error occurs that prevents printing, the message appears on the control-panel display, and the printer goes offline for 10 seconds before returning online. ● OFF: If an error occurs that prevents printing, the message remains on the control-panel display, and the printer remains offline until you press ✓ (SELECT).

Table 14. Configure device menu—system-setup submenu

Item	Values	Explanation
CARTRIDGE LOW	*CONTINUE STOP	Determines how the printer behaves if the print cartridge is low. The ORDER CARTRIDGE message first appears when about 10 percent of the toner remains in the print cartridge at 5 percent coverage (about 600 pages remaining). Print quality is not guaranteed if you print after receiving this message. ● CONTINUE**:** The printer continues to print, and the message appears until you replace the print cartridge. ● STOP: The printer pauses printing until you replace the print cartridge or press ✓ (SELECT) before each job to print it. The message appears until you replace the print cartridge.
CARTRIDGE OUT	*CONTINUE STOP	Determines how the printer reacts if the print cartridge is empty. ● CONTINUE**:** The printer continues to print, and the REPLACE CARTRIDGE message appears until you replace the print cartridge. HP does not guarantee print quality if you select CONTINUE after a REPLACE CARTRIDGE condition. Replace the print cartridge as soon as possible to ensure print quality. ● STOP**:** The printer stops printing until you replace the print cartridge. If the end of drum life is reached, the printer stops, regardless of the CARTRIDGE OUT setting.
JAM RECOVERY	*AUTO OFF ON	Determines how the printer behaves if a jam occurs. ● AUTO: The printer automatically selects the best mode for printer jam recovery (usually ON). ● OFF: The printer does not reprint pages following a jam. Printing performance might be increased with this setting. ● ON: The printer automatically reprints pages after a jam is cleared.
RAM DISK	*AUTO OFF	Determines how the RAM disk is configured. (This item does not apply to printers with only 32 MB of RAM, such as the HP LaserJet 2300L and HP LaserJet 2300 printers.) ● AUTO: The printer determines the optimal RAM-disk size based on the amount of available memory. ● OFF: The RAM is disabled. **NOTE:** If you change the setting from OFF to AUTO or from AUTO to OFF, the printer automatically reinitializes when it becomes idle.
LANGUAGE	*ENGLISH Several others	Selects the language for the messages that appear on the control-panel display.

I/O submenu

Items on the I/O (input/output) menu affect the communication between the printer and the computer. The submenu appears only when an EIO (enhanced input/output) device is installed in an EIO slot on the printer (such as an HP Jetdirect print server). The contents of the submenu depend on which type of EIO card is installed. If the printer contains an HP Jetdirect print server EIO card, you can configure basic networking parameters by using the submenu. These and other parameters can also be configured through HP Web Jetadmin or other network configuration tools, such as Telnet or the embedded Web server.

The following table lists the settings and possible values. In the Values column, the default value for each setting is the one with an asterisk (*) next to it.

Table 15. Configure device menu—I/O submenu

Item	Values	Explanation
I/O TIMEOUT	5 to 300 (*15)	Select the I/O timeout period in seconds.
		Use this setting to adjust timeout for best performance. If data from other ports appear in the middle of your print job, increase the timeout value.
PAGE BUFFERING	*OFF ON	Adjust the buffering so that the engine does not spin up and down while it waits for information to be transferred. ● OFF: Indicates maximum performance and the fastest first page out. ● ON: Indicates minimum wear, moderate performance, and slower first page out. **NOTE:** This item should be set to ON if you are using USB 1.1 or Ethernet 10 base T and the engine continues to spin up and down.
PARALLEL INPUT	There is no value to select.	Configure the parallel features.
HIGH SPEED	NO *YES	Select YES to enable the printer to accept the faster parallel communications that are used for connections with newer computers.
ADVANCED FUNCTIONS	OFF *ON	Turn the bidirectional parallel communication on or off. The default is set for a bidirectional parallel port (IEEE-1284). The function allows the printer to send status readback messages to the computer. (Turning the parallel advanced functions on might slow language switching.)
EIO [X] JETDIRECT MENU	There is no value to select.	The [X] represents the slot in which the optional HP Jetdirect print server is installed, if any. Which of the following submenus appears depends on the type of print server that is installed: ● TCP/IP ● IPX/SPC ● APPLETALK ● DLC/LLC
TCP/IP	There is no value to select.	Use this menu to configure the printer's TCP/IP settings.
ENABLE	OFF *ON	Select whether the TCP/IP protocol stack is enabled or disabled.

Table 15. Configure device menu—I/O submenu

Item	Values	Explanation
HOST NAME	*NPIXXXXX	An alphanumeric string (up to 32 characters long) that is used to identify the device. This name is listed on the Jetdirect configuration page. The default host name is NPIXXXXX, where XXXXX is composed of the last six digits of the LAN hardware (MAC) address.
CONFIG METHOD	*BOOTP DHCP MANUAL	Select whether the TCP/IP configuration parameters are set automatically from a network server by using BootP (Bootstrap Protocol) or DHCP (Dynamic Host Configuration Protocol), or manually from the I/O submenu. ● If you select DHCP and a DHCP lease exists, use the DHCP settings to set DHCP lease options. ● If you select MANUAL, use the MANUAL settings to configure TCP/IP parameters.
DHCP	DHCP RELEASE *NO YES	This menu appears if CONFIG METHOD is set to DHCP and a DHCP lease for the print server exists. ● NO (default): The current DHCP lease is saved. ● YES: The current DHCP lease along with the leased IP address are released.
	DHCP RENEW *NO YES	This menu appears if CONFIG METHOD is set to DHCP and a DHCP lease for the print server exists. ● NO (default): The print server does not request to renew the DHCP lease. ● YES: The print server requests to renew the current DHCP lease.
MANUAL	IP ADDRESS n.n.n.n	The unique IP address of the printer, where n is a value from 0 to 255.
	SUBNET MASK m.m.m.m	The subnet mask for the printer, where m is a value from 0 to 255. The mask is applied to IP addresses to uniquely identify subnetworks and nodes.
	SYSLOG SERVER n.n.n.n	The IP address of the syslog server that is used to receive and log syslog messages.
	DEFAULT GATEWAY n.n.n.n	The IP address of the gateway or route that is used for communications with other networks.
	IDLE TIMEOUT XX	The timeout value (in seconds) before an idle TCP print data connection is automatically closed. The default value is 270 seconds. 0 disables the timeout.
IPX/SPX	There is no value to select.	Use this menu to configure the printer's IPX/SPX settings.
ENABLE	OFF *ON	Select whether the IPX/SPX protocol stack (in Novell NetWare networks, for example) is enabled or disabled. If set to OFF, the FRAME TYPE and SOURCE ROUTING items do not appear.
FRAME TYPE	*AUTO EN_8023 EN_II EN_SNAP TR_8022 TR_SNAP	Select the frame type setting for your network. ● AUTO (default): Automatically sets and limits the frame type to the first one detected. ● For an Ethernet network only, frame type selections include EN_8023, EN_II, EN_8022, and EN_SNAP. ● For a Token Ring network only, frame type selections include TR_8022 and TR_SNAP.

Table 15. Configure device menu—I/O submenu

Item	Values	Explanation
SOURCE ROUTING	*AUTO OFF ALL ROUTES SINGLE ROUTE	For a Token Ring network only, specify the NetWare Token Ring Source Routing parameter. AUTO (default): The type of source routing that is required on the network is automatically sensed. OFF: All packets are sent without source routing, and only packets from the same ring are received. ALL ROUTES and SINGLE ROUTE: All packets are sent with source routing (broadcasts and when the route is unknown).
APPLETALK	There is no value to select.	Use this menu to configure the printer's AppleTalk settings.
ENABLE	OFF *ON	For an Ethernet network only, select whether the AppleTalk protocol stack is enabled or disabled.
DLC/LLC	There is no value to select.	Use this menu to configure the printer's DLC/LLC settings.
ENABLE	OFF *ON	Select whether the DLC/LLC protocol stack is enabled or disabled.
SECURE WEB	*HTTPS REQUIREMT HTTPS OPTIONAL	For configuration management, specify whether the embedded Web server will accept communications using HTTPS (Secure HTTP) only, or both HTTP and HTTPS. HTTPS REQUIRED (default): For secure, encrypted communications, only HTTPS access is accepted. The printer server will appear as a secure site. HTTPS OPTIONAL: Access using either HTTP or HTTPS is permitted.
RESET SECURITY	*NO YES	Specify whether the current security settings on the print server will be saved or reset to factory defaults. NO (default): The current security settings are maintained. YES: Security settings are reset to factory defaults.
LINK SPEED	*AUTO 10T HALF 10T FULL 100TX HALF 100TX FULL	For an Ethernet network only, select the network link speed and the communication mode of the HP Jetdirect 10/100Base-TX print server. The default setting is AUTO, where the printer automatically configures itself to match the network link speed (10 or 100 Mbps) and communication mode (half-duplex or full-duplex).

Resets submenu

Items on the Resets submenu relate to returning settings to the defaults and changing settings such as PowerSave.

The following table lists the settings and possible values. In the Values column, the default value for each setting is the one with an asterisk (*) next to it.

Table 16. Configure device menu—resets submenu

Item	Values	Explanation
RESTORE FACTORY SETTINGS	There is no value to select.	Performs a simple reset and restores most of the factory (default) settings. This item also clears the input buffer for the active I/O. Restoring factory settings does not affect network parameter settings on the optional HP Jetdirect print server. **CAUTION:** Restoring memory during a print job cancels the print job.
CLEAR MAINTENANCE	There is no value to select.	Clears the PERFORM PRINTER [X] MAINTENANCE warning message displayed when the printer has reached its prescribed number of pages printed between regularly scheduled maintenance operations. Appears only when the maintenance interval has been exceeded
CHARGER CLEANED	*NO YES	• YES: Clears CLEAN POST CHARGER message. • NO: Returns display to CLEAN POST CHARGER message.
POWERSAVE	OFF *ON	Turns PowerSave mode on or off. PowerSave mode does the following: • minimizes the amount of power consumed by the printer when it is idle • reduces wear on electronic components in the printer (turns off the display backlight, but display is still readable) The printer automatically comes out of PowerSave mode when you send a print job, press a control-panel button, open a tray, or open the top cover. You can set how long the printer remains idle before it enters PowerSave mode. (See "POWERSAVE TIME" on page 65.)

Diagnostics menu

Administrators can use this menu to isolate parts and to troubleshoot jam and print-quality issues.

The following table lists the settings and possible values. In the Values column, the default value for each setting is the one with an asterisk (*) next to it.

Table 17. Diagnostics menu

Item	Values	Explanation
PRINT EVENT LOG	There is no value to select.	Press ✓ (SELECT) to generate a list of the 50 most recent entries in the event log. The printed event log shows error number, page count, error code, and description or personality.
SHOW EVENT LOG	There is no value to select.	Press ✓ (SELECT) to scroll through the contents of the event log at the control panel and shows the 50 most recent events. Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll through the event log contents.
PAPER PATH TEST	There is no value to select.	Generates a test page that is useful for testing the paper-handling features of the printer. The following four menu items appear after you select PAPER PATH TEST and press ✓ (SELECT).
PRINT TEST PAGE	There is no value to select.	Press ✓ (SELECT) to start the paper path test using the source (tray), destination (output bin), duplex, and number of copies settings that you set in the other items on the PAPER PATH TEST menu. Set the other items before selecting PRINT TEST PAGE.
SOURCE	ALL TRAYS TRAY 1 *TRAY 2 TRAY 3	Select the tray that uses the paper path you want to test. You can select any tray that is installed. Select ALL TRAYS to test all tray paper paths. (Paper must be loaded in the selected trays.)
DUPLEX	*OFF ON	Determine whether or not the paper goes through the duplexer during the paper-path test. The menu item appears only if the printer includes a built-in duplexer (HP LaserJet 2300d printer, HP LaserJet 2300dn printer, and HP LaserJet 2300dtn printer).
COPIES	*1 10 50 100 500	Set how many sheets of paper are used from each tray during the paper-path test. If you are testing the optional stapler stacker (DESTINATION item), select 10 or higher.

Control-panel menus—service

The Service menu is locked and requires a PIN for access. This menu is intended for use by authorized service personnel.

The PIN for the HP LaserJet 2300 series printer is: 11230002.

Entering service mode

1   Press ✓ (SELECT).

2   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to SERVICE, and then press ✓ (SELECT). The message SERVICE USE ONLY appears on the control panel.

3   To type the PIN, use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to the correct number, and then press ✓ (SELECT) to set that number and move to the next number.

    For example, for the first number, use ▲ (UP arrow) to scroll to 1. Then press ✓ (SELECT). The printer changes the 1 to ＊ and waits for you to scroll to the next number in the PIN.

4   Finish typing the PIN and press ✓ (SELECT). The following menu items appear.

Table 18. Service menu

Item	Values	Explanation
CLEAR EVENT LOG	There is no value to select.	Press ✓ (SELECT) to clear the event log.
TOTAL PAGE COUNT	There is no value to select.	Press ✓ (SELECT) to view the printer's total page count. Use ▲ (UP arrow) or ▼ (DOWN arrow) to adjust the count, and press ✓ (SELECT) to save the new total.
REFURBISH PAGE COUNT	There is no value to select.	Press ✓ (SELECT). A refurbished total of ⌀ appears in the control-panel display. Press ✓ (SELECT) again to reset the count to 0, or use ▲ (UP arrow) or ▼ (DOWN arrow) to adjust the count, and press ✓ (SELECT) to save the new total.
SERIAL NUMBER	There is no value to select.	Press ✓ (SELECT). The control-panel display shows XXXXXXXXX. Use ▲ (UP arrow) or ▼ (DOWN arrow) to set each number, and press ✓ (SELECT) to set the number and move to the next X. When you have entered all 10 digits, press ✓ (SELECT) to save the new serial number.
SERVICE ID	There is no value to select.	Press ✓ (SELECT). The control-panel display shows the date the printer was installed (in a YYDDD format) or, if the date was unavailable when it was installed, ＊00000. Use ▲ (UP arrow) or ▼ (DOWN arrow) to change each ⌀, and press ✓ (SELECT) to set the number and move to the next ⌀. When you have entered all five digits, press ✓ (SELECT) to save the new service ID number.
COLD RESET PAPER	＊LETTER A4	Letter is the factory default setting. Use ▲ (UP arrow) or ▼ (DOWN arrow) to select the proper default paper size and press ✓ (SELECT) to save your selection.

Note   See Chapter 7, "Troubleshooting," for more service features.

4 Printer maintenance

Chapter contents

Periodic inspection of parts

Periodic replacement parts are the parts that should be inspected and, if required, replaced at regular intervals. Failure of these parts can seriously affect the printer's performance. These parts should be inspected during a regular service visit near the end of their expected life, and any that are found to be worn or damaged should be replaced.

The following parts should be inspected and, if required, replaced after approximately 150,000 pages of use:

- fuser assembly
- transfer roller
- separation pads (tray 1, tray 2, and tray 3)
- pickup rollers (tray 1, tray 2, and tray 3)
- output feed rollers (upper and lower)
- transport belts and rollers

See "Removal and replacement" in chapter 6 for procedures to remove and replace these parts.

See "Parts and diagrams" in chapter 8 for the part numbers.

Variables such as media, environment, and usage can cause these parts to wear prematurely. See "Media specifications" in chapter 2 for information about suitable media, environment, and usage conditions.

Cleaning the printer

Over time, particles of toner and paper accumulate inside the printer. This can cause print-quality problems during printing. Cleaning the printer eliminates or reduces these problems.
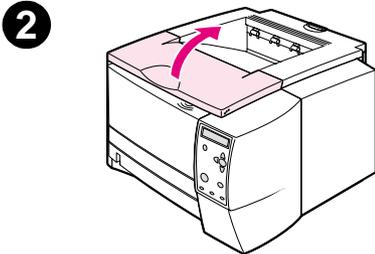
Cleaning the paper path and print-cartridge areas

Clean the paper path and print-cartridge areas every time that you change the print cartridge or whenever print-quality problems occur. As much as possible, keep the printer from dust and debris.

To clean the inside of the printer

1   Turn the printer off and unplug the power cord.

2   Open the top cover.

3   Remove the print cartridge.

CAUTION
To prevent damage to the print cartridge, do not expose it to light for more than a few minutes.

Be careful not to touch the transfer roller (the black, rubber roller located underneath the print cartridge). Skin oils on the roller can cause print-quality problems.
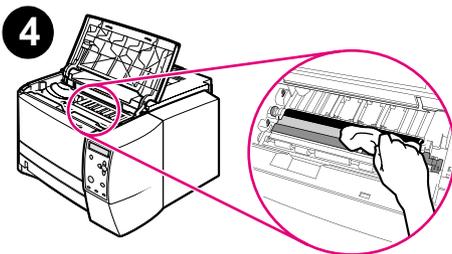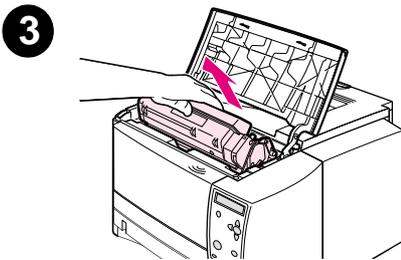
4   With a dry, lint-free cloth, wipe any residue from the paper path area and the print cartridge cavity.

5   Reinstall the print cartridge and close the top cover.

Note
If the print cartridge is difficult to reinstall, make sure that the registration plate has been flipped back down into position and that you have pushed the print cartridge firmly in place.
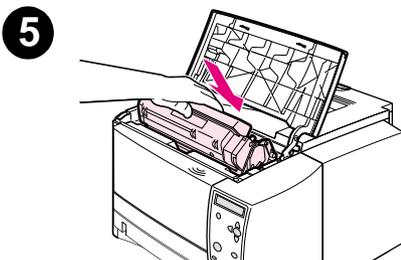
6   Plug in the power cable and turn the printer on.

Cleaning the fuser

Run the printer cleaning page to remove toner and paper particles that can sometimes accumulate on the fuser. Accumulation of toner and particles can cause specks to appear on the front or back side of your print jobs. (See "Toner specks" on page 213.)

To ensure optimum print quality, HP recommends that you use the cleaning page every time that you replace the print cartridge or on an automatic interval that you can set up.

The cleaning procedure takes about 2.5 minutes to complete. A message (either CREATING CLEANING PAGE or CLEANING) appears on the control-panel display while the cleaning is taking place.

To run the cleaning page

In order for the cleaning page to work correctly, print the page on copier-grade paper (not bond, heavy, or rough paper).

1   If your printer model includes a duplexer, open the rear output bin.

2   Press ✓ (SELECT button) to open the menus.

3   Use ▲ (UP button) or ▼ (DOWN button) to scroll to CONFIGURE DEVICE, and then press ✓ (SELECT button).

4   Use ▲ (UP button) or ▼ (DOWN button) to scroll to PRINT QUALITY, and then press ✓ (SELECT button).

5   Use ▲ (UP button) or ▼ (DOWN button) to scroll to CREATE CLEANING PAGE, and then press ✓ (SELECT button).

6   Follow the instructions on the cleaning page to complete the cleaning process.

7   If your printer model includes a duplexer, close the rear output bin.

Cleaning the outside of the printer

Clean the outside of the printer with a cloth that has been dampened with water.

CAUTION   Do not use ammonia-based cleaners on or around the printer.

Managing the print cartridge

This section provides information about HP print cartridges, how to store them, how to identify genuine ones, and their life expectancy. It also provides information about non-HP print cartridges.

HP print cartridges

When you use a genuine new HP print cartridge, part number Q2610A (6,000-page cartridge), you can obtain several types of information, such as the following:

● amount of toner remaining

● estimated number of pages remaining

● number of pages printed

● other supplies information

Non-HP print cartridges

Hewlett-Packard Company cannot recommend the use of non-HP print cartridges, either new or remanufactured. Because they are not HP products, HP cannot influence their design or control their quality. Service or repair that is required as a result of using a non-HP print cartridge is *not* covered under the printer warranty.

If you use a non-HP print cartridge, the printer is unable to report the levels of the supplies for the printer, calculation of the number of pages remaining, and cartridge-usage information. The printer does report a non-HP print cartridge with a message on the control-panel display (`Non-HP cartridge detected`).

Print-cartridge authentication

The printer informs you that a print cartridge is not a genuine HP print cartridge when you insert it into the printer.

If the control-panel message states that this is not a genuine HP print cartridge and you believe you purchased an HP print cartridge, call the HP fraud hotline. Hewlett-Packard will help determine if the product is genuine and take steps to resolve the problem.

In the United States, call toll-free: (1) (877) 219-3183.

Outside the United States, you can call collect. Dial the operator and ask to place a collect call to this telephone number: (1) (770) 263-4745. If you do not speak English, a representative at the HP fraud hotline who speaks your language will assist you. Or, if someone who speaks your language is not available, a language-line interpreter will connect approximately one minute after the beginning of the call. The language-line interpreter is a service that translates between you and the representative for the HP fraud hotline.

Print-cartridge storage

Do not remove the print cartridge from its package until you are ready to use it. Print cartridges should be stored in an environment ranging from minus-20 degrees Celsius to 40 degrees Celsius (minus-4 degrees Fahrenheit to 104 degrees Fahrenheit). Store the supply in a horizontal position in a dark, dry location away from heat and magnetic sources.

CAUTION   To prevent damage to the print cartridge, do not expose it to light for more than a few minutes.

Print-cartridge life expectancy

The life of the print cartridge depends on the amount of toner that print jobs require and the length of life for the components inside the cartridge. When printing text at 5 percent coverage (typical for a business letter), an HP print cartridge lasts an average of 6,000 pages. This assumes that toner density is set to 3 and EconoMode is off. (These are the default settings. For details about these settings, see the description of ECONOMODE and TONER DENSITY in "Print-quality submenu" on page 61.)

At any time, you can verify life expectancy by checking the supply level, as described in "Checking the supply level" on page 79.

Note   Hewlett-Packard recommends that a print cartridge be completely used within six months of opening the cartridge's packaging.

Checking the supply level

You can check the supply (toner) level using the printer control panel, the embedded Web server, the printer software, or HP Web Jetadmin.

To check the supply level by using the control panel

1 Press ✓ (SELECT button) to open the menus.

2 Use ▲ (UP button) or ▼ (DOWN button) to scroll to INFORMATION, and then press ✓ (SELECT button).

3 Use ▲ (UP button) or ▼ (DOWN button) to scroll to PRINT SUPPLIES STATUS PAGE, and then press ✓ (SELECT button). See "Supplies status page" on page 81 for information about the supplies status page.

To check the supply level by using the embedded Web server

1 In your Web browser, enter the IP address for the printer home page. This takes you to the printer status page. See the user guide for more information about the embedded Web server.

2 On the left side of the screen, click Supplies Status. This takes you to the supplies status page, which provides supply level information.

To check the supply level by using the printer software

Three things are required to use this feature:

● The Printer Status and Alerts software on the CD-ROM that came with the printer must be installed on your computer. Printer Status and Alerts can be installed through the custom install option on the CD-ROM. See the user guide for more information about Printer Status and Alerts.

● The printer must be directly connected to your computer with a parallel cable.

● You must have access to the Internet.

1 At the lower-right corner of your screen, double-click the **Printer** icon. This opens the status window.

2 On the left side of the status window, click the **Printer** icon from which you want to obtain status.

3 At the top of the status window, click the **Supplies** link. You can also scroll down to **Supplies Status**.

Note If you want to order supplies, click **Order Supplies**. This opens a browser that produces a URL from which you can purchase supplies. Select the supplies that you want to order, and finish the ordering process.

To check the supply levels using HP Web Jetadmin

In HP Web Jetadmin, select the printer device. The device status page shows supply-level information.

Cartridge-low and cartridge-out conditions

The printer alerts you if the print cartridge is low on toner or out of toner.

When the cartridge is low on toner

When the cartridge is low on toner, the printer control panel shows the ORDER CARTRIDGE message. The ORDER CARTRIDGE message first appears when about 10 percent of the toner remains in the print cartridge (at 5 percent coverage, about 600 pages remaining).

The default is for the printer to continue printing until the toner runs out, but you might prefer to have the printer stop instead of continuing when the ORDER CARTRIDGE message first appears (for example, if you want print quality to remain consistently high during print jobs, or if you do not want the cartridge to run out during a long print job). To configure the printer to stop, set CARTRIDGE LOW=STOP (in the System Setup submenu of the Configure Device menu). (See "CARTRIDGE LOW" on page 66.) Then, when ORDER CARTRIDGE appears, the printer will stop printing. You can resume printing by pressing ✓ (SELECT) for each print job.

When the cartridge is out of toner or drum life

The REPLACE CARTRIDGE message appears in one of these situations:

● **When the print cartridge is out of toner.** If CARTRIDGE OUT is set to CONTINUE (in the SYSTEM SETUP submenu of the CONFIGURE DEVICE menu), the printer continues printing without interaction until the cartridge reaches the end of drum life. HP does not guarantee print quality after the REPLACE CARTRIDGE message first appears. Replace the print cartridge as soon as possible. (See "Ordering parts and supplies and getting support" on page 242.) The REPLACE CARTRIDGE message remains until you replace the print cartridge. If CARTRIDGE OUT is set to STOP, the printer stops printing until you replace the print cartridge or resume printing by pressing ✓ (SELECT) for each print job.

● **When the print-cartridge drum life is over**. You must replace the print cartridge to continue printing. No override is possible, even if toner remains in the cartridge. (See "Ordering parts and supplies and getting support" on page 242.) This situation occurs to protect the printer.

Supplies status page

Use the supplies status page to obtain information about the print cartridge that is installed in the printer, the amount of life remaining in the print cartridge, and the number of pages and jobs that have been processed.

Note You can also obtain supplies status information in the embedded Web server. For details, see page 79.

To print a supplies status page at the control panel

1 Press ✓ (SELECT) to open the menus.

2 Use ▲ (UP) or ▼ (DOWN) to scroll to INFORMATION, and then press ✓ (SELECT).

3 Use ▲ (UP) or ▼ (DOWN) to scroll to PRINT SUPPLIES STATUS PAGE, and then press ✓ (SELECT).
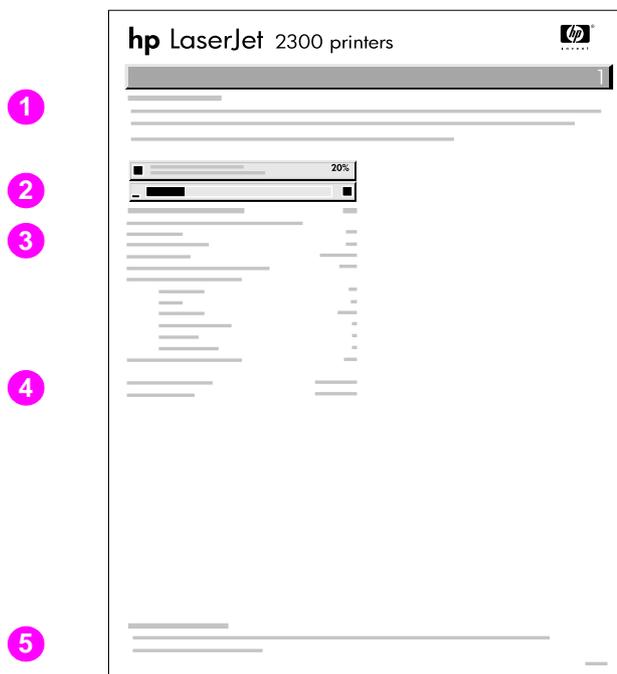
Figure 15. Supplies status page

1	Supplies website	Lists the local website for ordering supplies through the Internet.
2	Cartridge information	Provides information about the estimated number of pages remaining for the amount of toner left in the cartridge and the status of the toner supply, as well as the print-cartridge serial number.
3	Printing statistics	Lists statistics about total number of pages and jobs that have been processed using this print cartridge and the page count by paper size.
4	Manufacture information	Shows the installation date and last use date for this print cartridge.
5	Recycling website	Lists the website for information about returning used HP print cartridges.

5 Theory of operation

Chapter contents

Introduction

This chapter presents an overview of the relationships between major components of the HP LaserJet 2300 printer. The following systems are discussed:

● engine control

● laser/scanner

● image formation

● pickup and feed

● formatter

Basic sequence of operation

Operation sequences are controlled by the CPU in the engine controller PCA. Table 19 describes engine operations for each period of a print operation.

Table 19. Basic sequence of operation

Period	Timing	Purpose	Remarks
WAIT (wait period)	From power-on until completion of the main-motor initial drive.	Clears the drum surface potential and cleans the transfer charging roller.	Detects whether or not the cartridge is installed. Also, during WAIT, the LEDs cycle and the HP logo appears on the control-panel display.
STBY (standby period)	From the end of the WAIT period until the print instruction command is received from the formatter, or from the end of LSTR until the print instruction command is input from the formatter, or until the power is switched off.	Maintains the printer in a ready state.	
INTR (initial rotation period)	From receipt of the print instruction command from the formatter until the media reaches the top-of-page sensor.	Stabilizes the sensitivity of the photosensitive drum in preparation for printing.	
PRINT (print period)	From the end of INTR until 0.8 seconds after the top-of-page sensor detects the trailing edge of the media.	Forms an image on the photosensitive drum according to instructions from the formatter and transfers the image to media.	
LSTR (last rotation period)	From completion of printing until the main motor stops rotating.	Delivers the final page out of the printer and cleans the transfer charging roller.	If a print instruction command is received from the formatter, the printer bypasses WAIT and STANDBY and immediately enters INTR.

Power-on sequence

The the following steps describe the sequence from power-on until the printer enters the standby (STBY) mode.

1   Power-on.

2   CPU initialization.

3   Formatter communication start.

4   Main motor, reverse motor, and fan drive—Reads the paper-detecting status of each sensor in the printer immediately before driving the main motor, and assesses a jam if residual media is detected.

5   Residual paper check—After starting the main motor, detection of residual media in the printer resumes. If residual media is detected, the printer assesses a jam or automatically delivers the residual media.

6   High-voltage control—Detects the cartridge presence and cleans the transfer charging roller after the primary charging ac bias is turned on.

7   Failure or abnormality check—Detects door-open, fan-motor, and fuser-unit failures during the other sequence periods.

Engine control system

The engine control system coordinates all printer functions. It drives the laser/scanner system, the image-formation system, and the pickup and feed system.
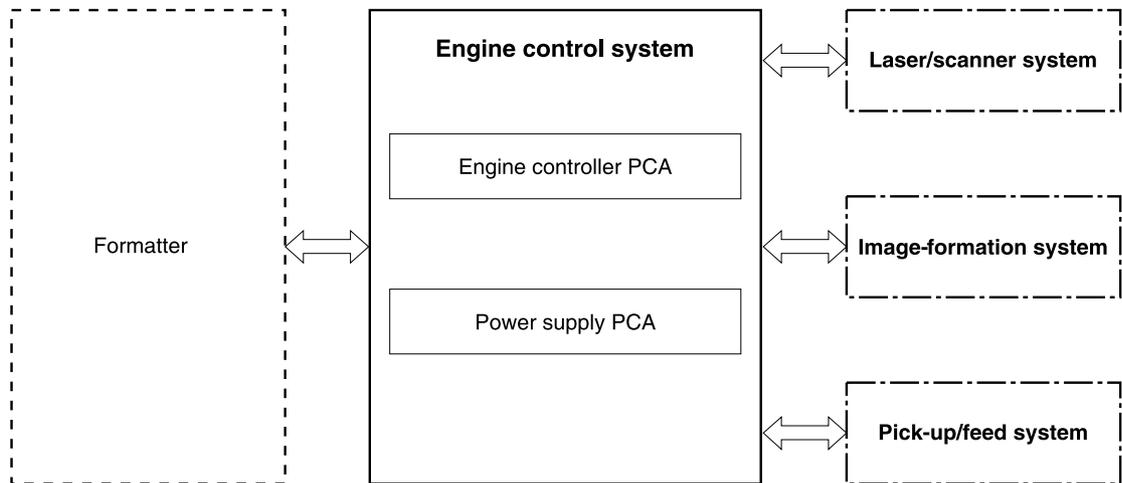
Figure 16.   **Engine control system**

The engine controller PCA controls the operation sequence of the printer.

The power supply PCA contains the following components:

- fuser control circuit—regulates the heat of the fuser
- high-voltage power supply—applies biases to the primary charging roller, developing cylinder, transfer charging roller, and fuser film
- low-voltage power supply—converts ac power to dc power for main motor, scanner motor, fan, and solenoid function

Laser/scanner system

At the laser/scanner assembly, laser beams focus onto the photosensitive drum and discharge the drum's negative potential. This creates a latent electrostatic image, which later is developed into a visible image.

The laser diode beams shine onto a scanning mirror. As the mirror rotates, the beams reflect off the mirror and sweep the page from left to right.

A set of lenses and mirrors focuses the horizontal sweeping beams through the beam access slots in the rear of the toner cartridge and onto the photosensitive drum. Because the beams sweep the entire length of the drum while the drum rotates, the entire circumference of the drum can be covered.

At the beginning of each sweep (before the beams reach the drum), the beam detect mirror reflects the beams. The momentary pulse of light goes to the engine controller PCA, which converts the light to an electrical signal that is used to synchronize other activities in the printer and to diagnose problems with the laser/scanner assembly.

Portions of the drum that are not exposed to the laser still contain the uniform negative potential that was placed there by the primary charging roller, but the portions that have been exposed to light have been discharged to ground to form the latent electrostatic image.
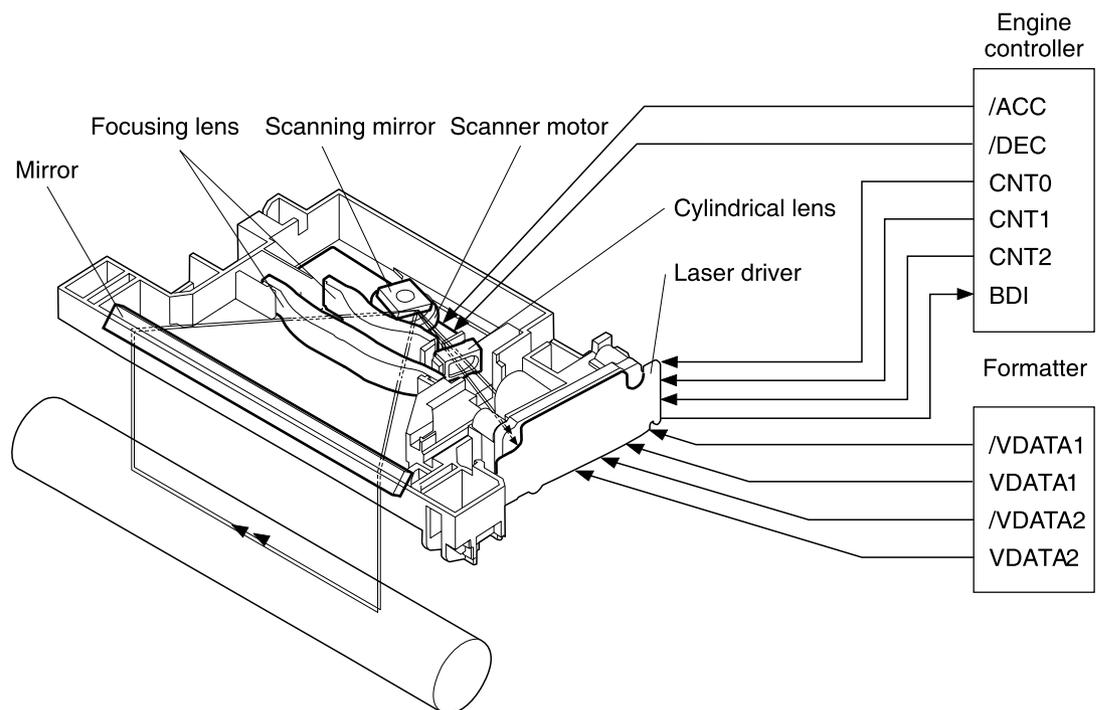
Figure 17.   **Laser/scanner system**

Image-formation system

The image-formation system, which forms a toner image on media, consists of several interdependent systems.

Laser beams
Print cartridge
Primary charging roller
E_label reader
Blade
Fuser film
Developing cylinder
Cleaner blade
Photosensitive drum
Fuser
Pressure roller
Static charge eliminator
Transfer charging roller

Formatter
Print command
Engine controller PCA
Power supply PCA
FV
PR1
TRS
DEV
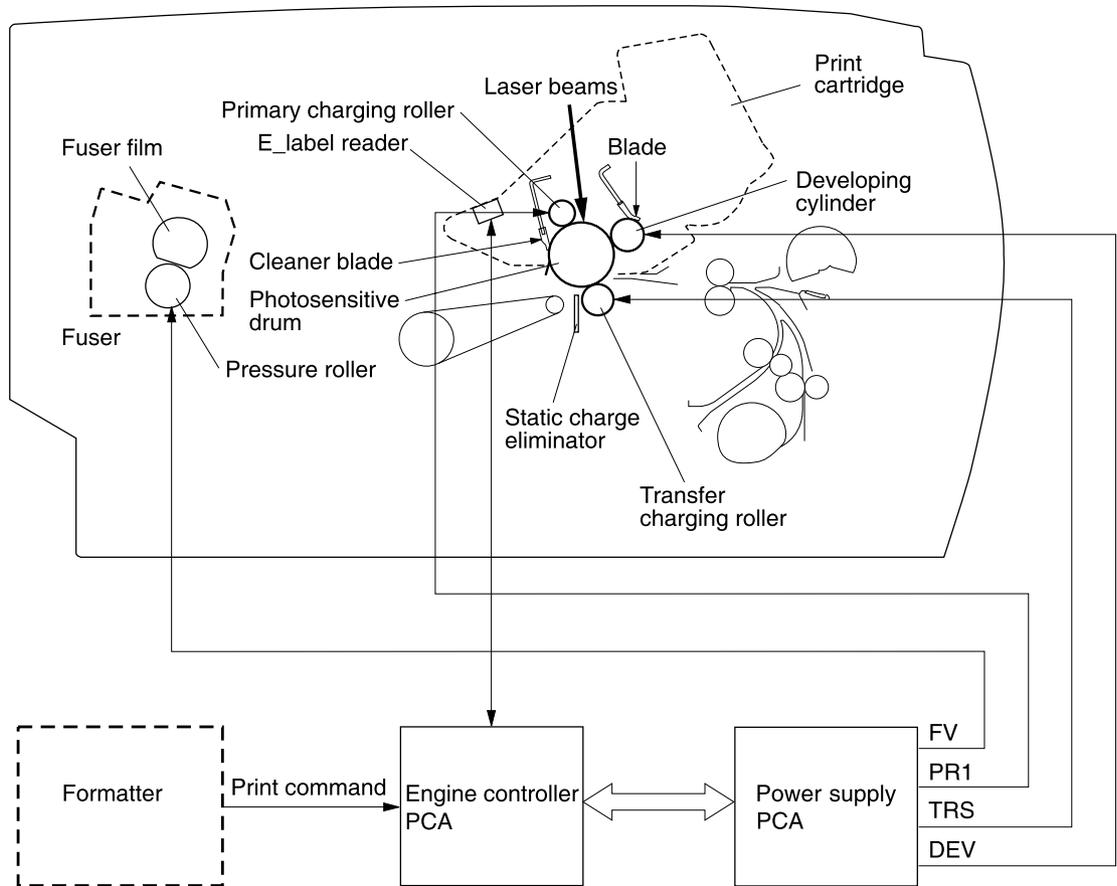
Figure 18.   **Image-formation system**

Image-formation process

Laser printing requires the interaction of several different technologies, including electronics, optics, and electrophotographics, to provide a printed page. Each process functions independently and must be coordinated with the other printer processes. Image formation consists of the following five processes:

● electrostatic latent-image formation

● developing

● transfer

● fusing

● drum cleaning

The five processes contain eight steps, which are shown in figure 19 and described in the following sections.
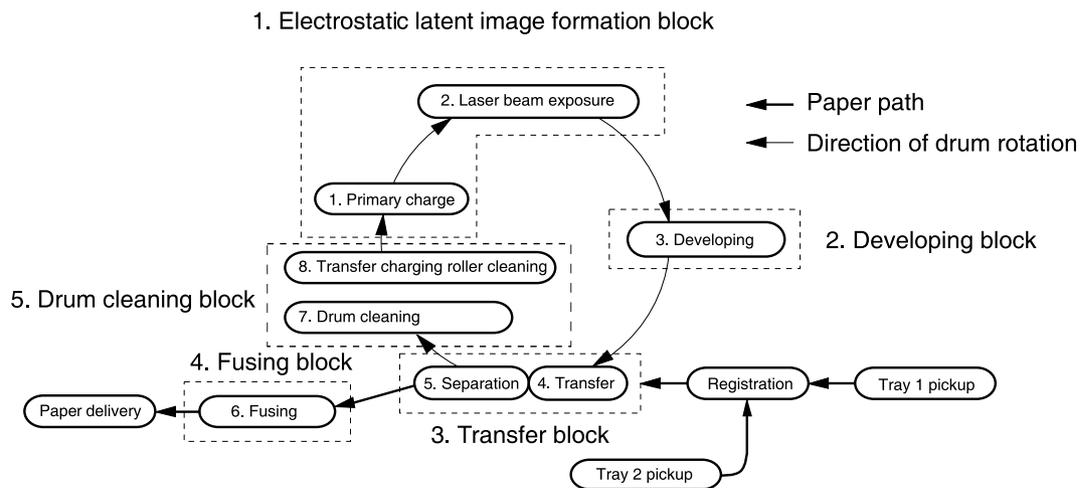
Figure 19.   **Image-formation system**

Electrostatic latent-image-formation block

Step 1: primary charging

A dc bias is applied to the primary charging roller, which transfers a uniform negative potential to the photosensitive drum.
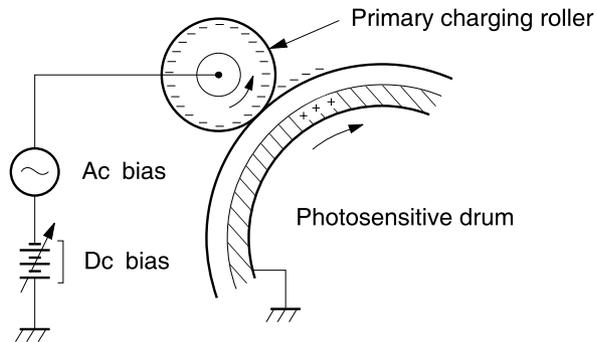
Figure 20.   **Step 1: primary charging**

Step 2: laser-beam exposure

The laser beam scans the photosensitive drum to neutralize negative charges on parts of the drum. An electrostatic latent image is formed on the drum where negative charges were neutralized.
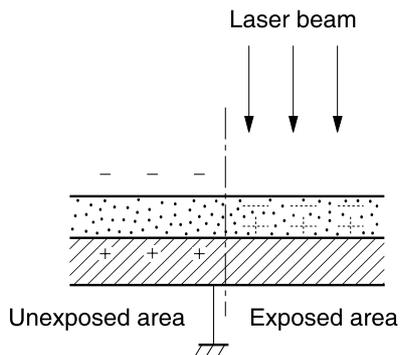
Figure 21.   **Step 2: laser-beam exposure**

Developing block

The developing cylinder comes in contact with the photosensitive drum to deposit toner onto the electrostatic latent image.

Note   The charges on the exposed area of the drum are shown as positive in figure 22. The charges are actually negative, but they are more positive than the charges on the developing cylinder.
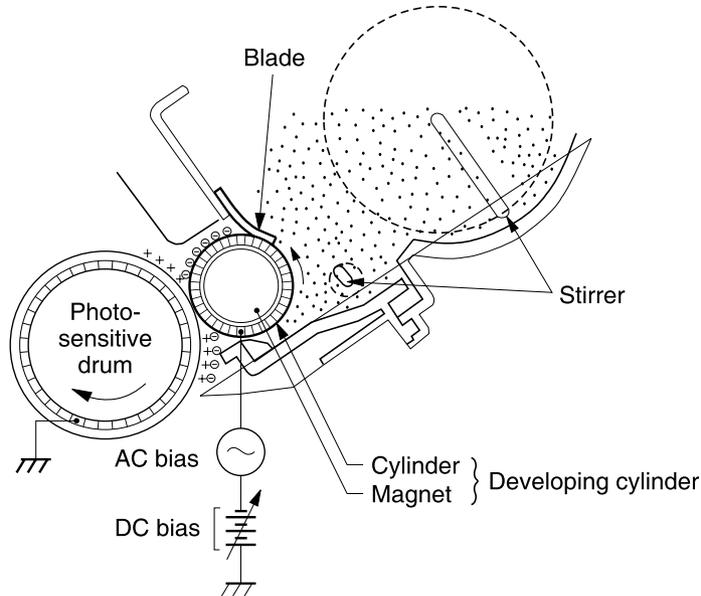
Figure 22.   **Developing block**

Step 3: developing

Toner acquires a negative charge through friction from the developing cylinder and the blade. When the negatively charged toner comes in contact with the drum, the toner adheres to the electrostatic latent image. The image on the drum becomes visible because of the toner.
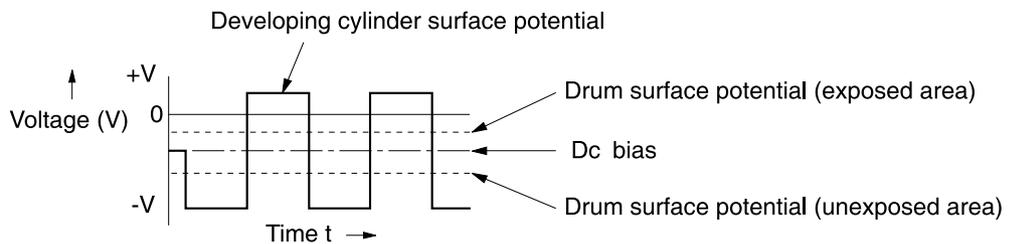
Figure 23.   **Step 3: developing**

Transfer block

Step 4: transfer

The transfer charging roller, to which a dc positive bias is applied, imparts a positive charge on the print media. When the print media comes in contact with the photosensitive drum, the toner is transferred to the print media.
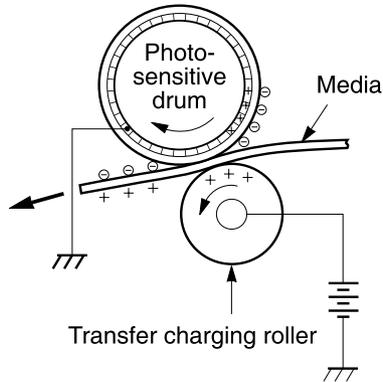
Figure 24.   **Step 4: transfer**

Step 5: separation

The elasticity of the print media causes its separation from the photosensitive drum. A static charge eliminator aids separation by weakening any electrostatic adhesion.
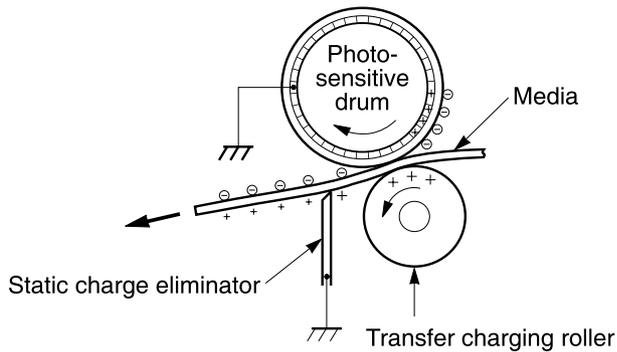
Figure 25.   **Step 5: separation**

Fusing block

Step 6: fusing

The dc negative bias applied to the fusing film strengthens the holding force of the toner on the print media and prevents the toner from scattering.
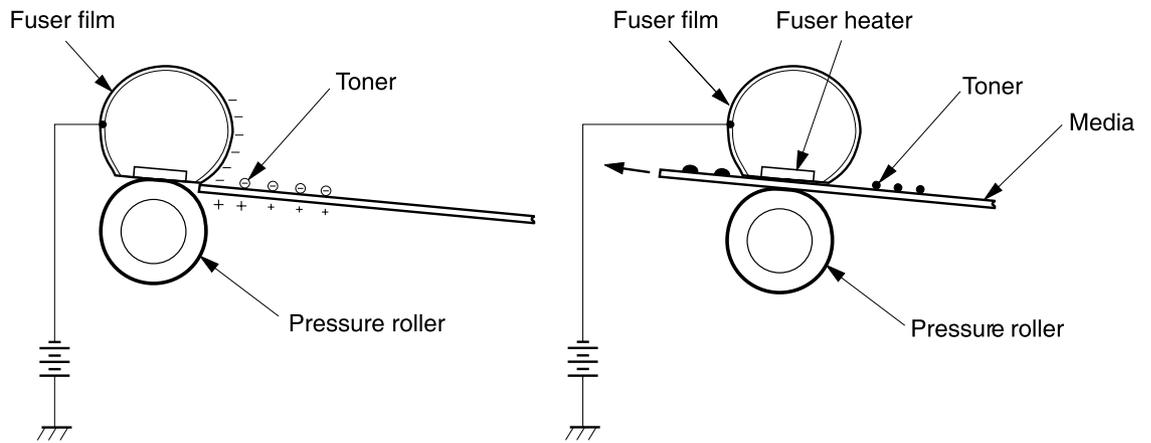
Figure 26.   **Step 6: fusing**

Drum-cleaning block

Step 7: drum cleaning

The cleaning blade scrapes the residual toner off of the photosensitive drum and deposits it into the waste toner case.
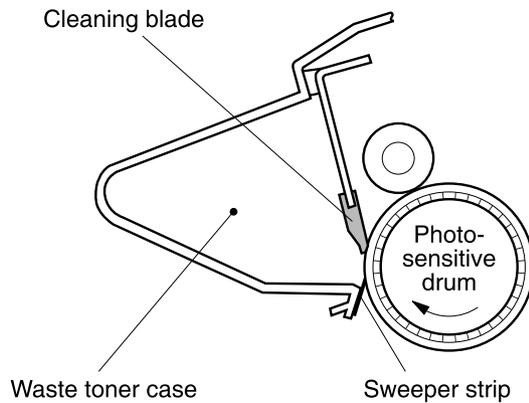
Figure 27.   **Step 7: drum cleaning**

Step 8: transfer charging roller cleaning

Negatively-charged residual toner on the transfer charging roller is collected by the photosensitive drum when a dc negative bias is applied to the transfer charging roller.
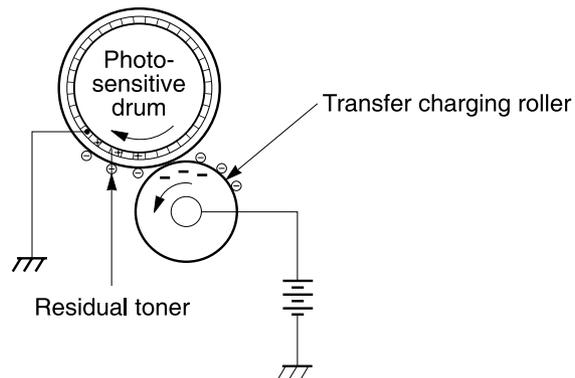
Figure 28.   **Step 8: transfer charging roller cleaning**

Pickup/feed system

When the formatter sends a print command to the engine controller PCB, the main motor and scanner motor start rotating and the fuser heater temperature control starts.

The paper-feed system automatically picks print media from tray 1, tray 2, or tray 3 (if installed) and delivers it to the registration roller. Before the media reaches the registration roller, the separation pad separates any excess sheets of media, and the registration shutter corrects the media skew.

Single-sided printing

After the top-of-page sensor detects the leading edge of the page, the engine controller PCB sends a signal to the formatter. This signal functions as a synchronization between the engine controller PCB and the formatter. This synchronization allows the leading edge of the image on the photosensitive drum to match the leading edge of the page. After the transferring stage of the image-formation process, the paper is fed to the fuser assembly by the feed belts.

The delivery sensor detects the exiting paper, which is usually fed to the top or rear output bin unless duplex is enabled.

Duplex printing

To print duplex, the printer prints one side of the paper, as described in "Single-sided printing," transports it to the face-down tray once, and then reverses the paper by feeding it back to the duplex feed unit.

The face-up sensor detects paper delivered face-down, with one side printed.

The delivery sensor detects the trailing edge of the paper, then signals the engine controller. The engine controller rotates the reverse motor counterclockwise to send the paper to the duplexer feed unit.

The reversed paper sensor receives the paper, then signals the engine controller to turn the duplexer solenoid on. The paper is transported by the oblique roller to the registration roller. If next paper is picked up, the duplex-fed paper stops at the specified position. The top page sensor senses the next paper, the specified period of time passes, then the duplex-fed paper is retransported.

The retransported paper is printed with the other side and delivered to the face-down tray.
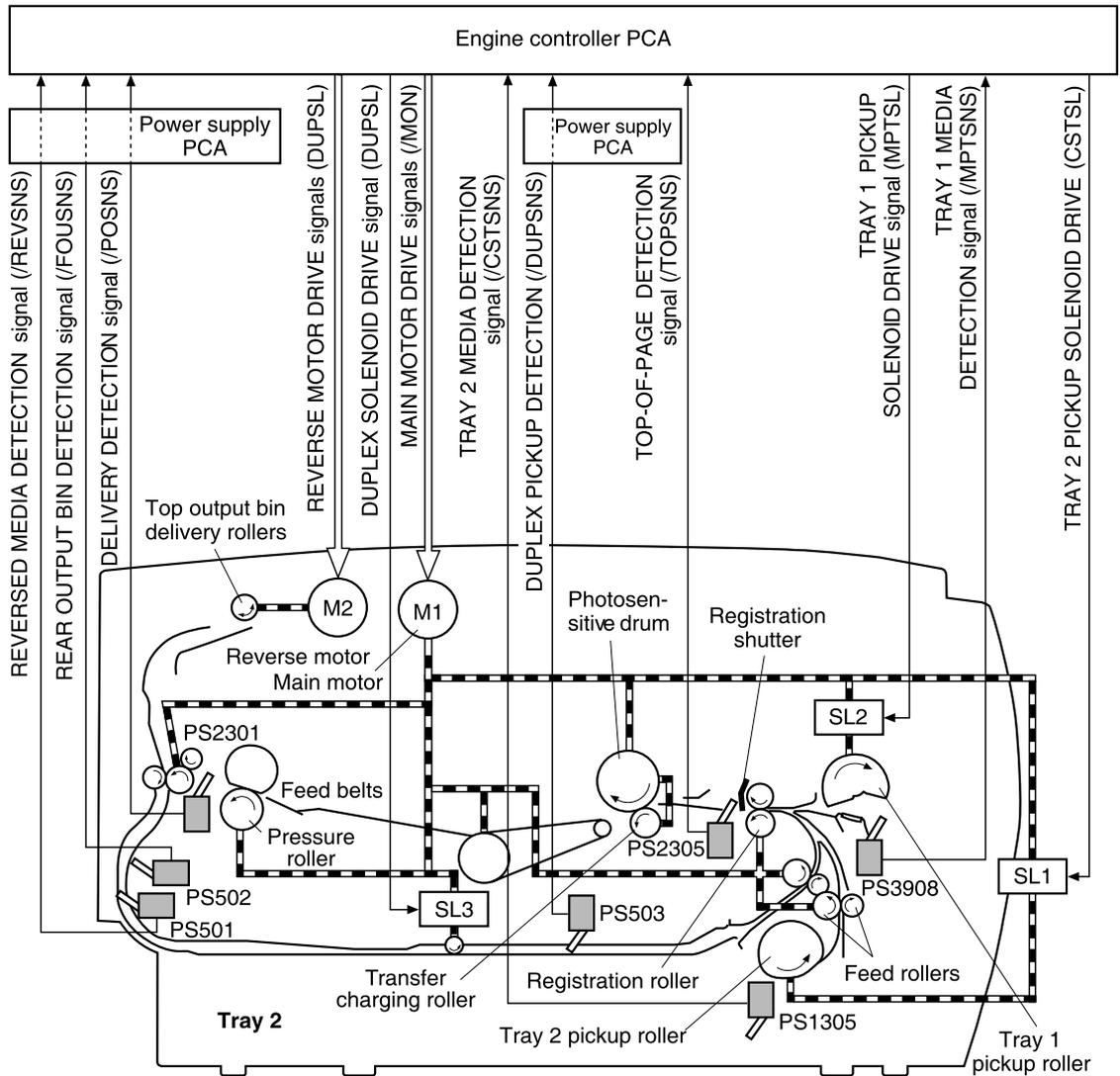
Figure 29.   **Pickup/feed system**

PS501: Reversed paper sensor	PS502: Face-up sensor
PS503: Automatic duplex pickup sensor	PS1305: Tray 2 media sensor
PS2301: Delivery sensor	PS2305: Top-of-page sensor
PS3908: Tray 1 media sensor	SL1: Tray 2 pickup solenoid
SL2: Tray 1 pickup solenoid	SL3: Automatic duplex solenoid

Delivery
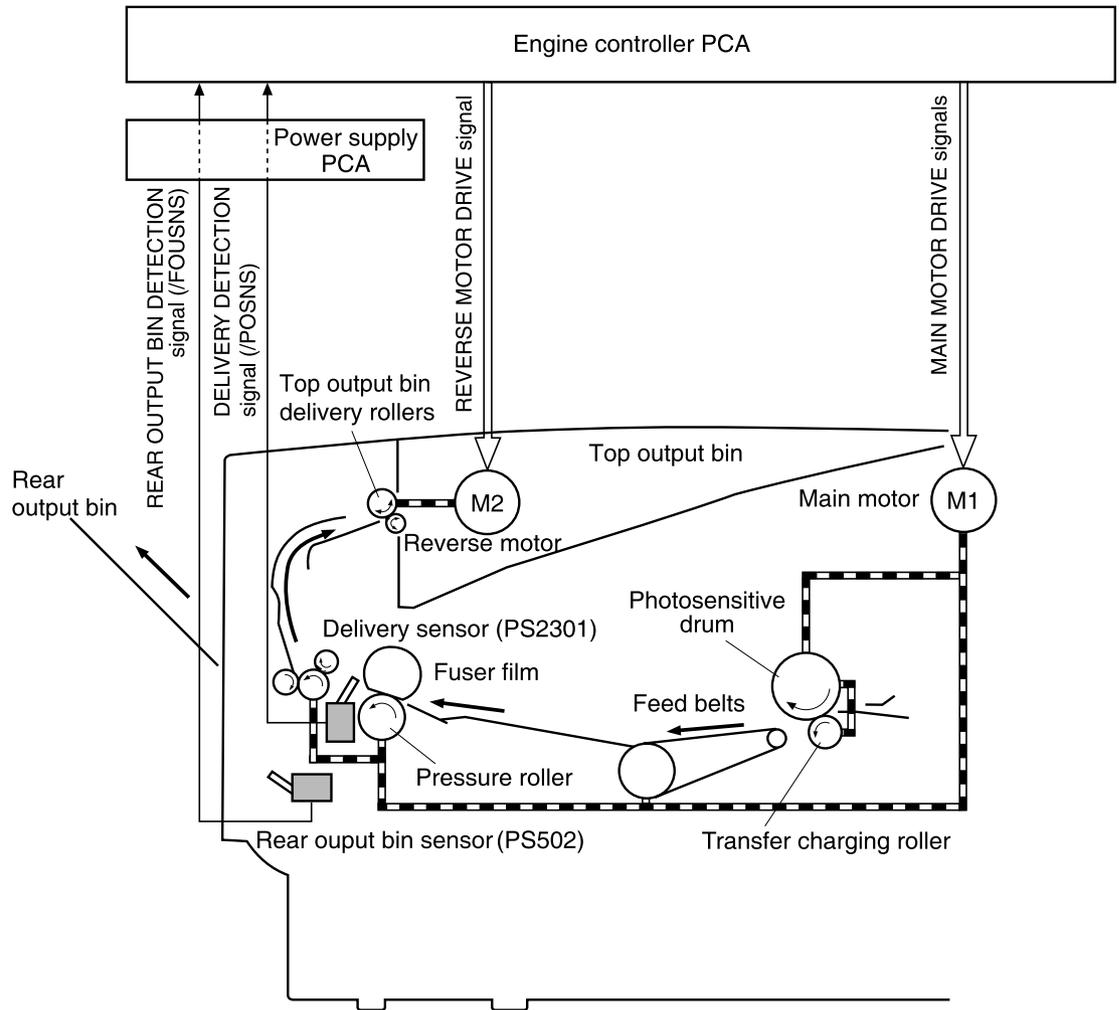
Figure 30. Delivery

Automatic duplexer
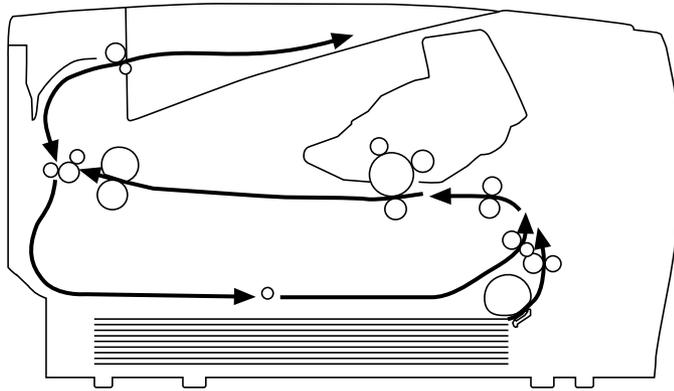
Figure 31.   **Automatic duplexer path**
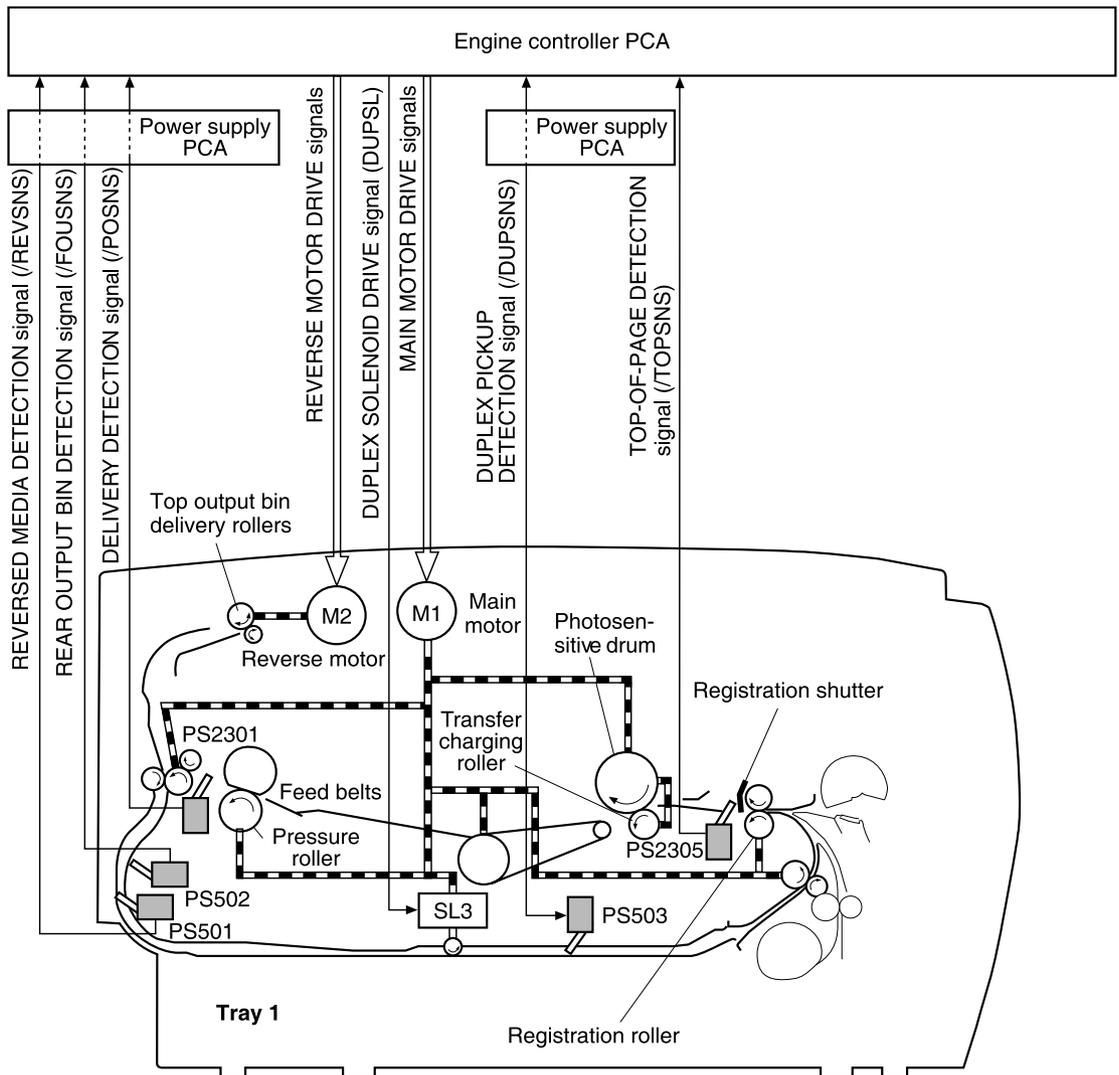
Figure 32.   **Automatic duplexer feed and delivery**

Formatter system

The formatter system is responsible for the following:

- receiving and processing data from the various printer interfaces
- monitoring control-panel input and relaying printer status information (through the control panel and the I/O)
- developing and coordinating data placement and timing with the print engine
- storing font information and macros
- communicating with the host computer

The formatter receives data from the I/O and converts it into a dot image. The formatter then sends a print signal to the engine controller assembly. The engine controller assembly synchronizes the image-formation system with the paper-feed system, and signals the formatter to send the print-image data. The formatter sends the print-image data (dots) in the form of a video signal and the printing process begins.

Formatter hardware

The formatter system contains the following:

- **CPU**—Is a 266 Mhz RISC microprocessor.
- **Read-only memory (ROM)**—Stores the dot patterns of internal character sets (fonts) in addition to storing microprocessor control programs.
- **Random-access memory (RAM)**—Stores printing and font information received from the host system, and can also serve to temporarily store a full page of print-image data before the data is sent to the print engine. Increasing the RAM will increase performance of graphic intense printing operations but it will not increase the I/O buffer space or cause the printer to print more pages per minute.
- **Nonvolatile memory (NVRAM)**—Stores information about the I/O and print environment configuration. The printer keeps the contents of NVRAM when the power is turned off or disconnected. (As in other HP LaserJet printers, downloaded fonts and macros are saved in conventional RAM and are lost when power is turned off.)
- Interfaces
  - **Parallel interface**—Receives incoming data through its IEEE1284 B interface connector. The IEEE1284 B interface provides high-speed, two-way communication between the printer and the host, letting the user change printer settings from the host computer.
  - **USB**—Receives incoming data through its universal serial bus (USB) connector. The USB interface provides high-speed, two-way communication between the printer and the host, letting the user change printer settings computer.
  - **EIO**—The PCI-based enhanced input/output (EIO) slots support a wide range of print servers and other add-on devices. HP JetDirect EIO cards provide high-speed, two-way communication for network printing over Ethernet, Ethernet and LocalTalk, Token Ring, or Fast Ethernet networks.

Formatter subsystem

Resolution Enhancement technology (300 and 600 dpi only)

This subsystem contains circuitry for Resolution Enhancement technology (REt), which modifies the standard video dot data on its way to the engine controller assembly to produce smoothed black-to-white boundaries. The default is on.

Print-density adjustment

This subsystem controls the line width (boldness) of the print image. This is accomplished by varying the developer dc bias, which controls the amount of toner that is applied to the photosensitive drum. Settings range from 1 (lightest) to 5 (darkest). The default is 3.

EconoMode

EconoMode uses less toner than standard mode printing by reducing the dot density. Users can adjust EconoMode, which can also be thought of as draft mode, through software applications. The default setting is off. EconoMode does not affect print speed or memory usage.

Memory management

This printer uses various methods to conserve and make the most of available memory. Several of these methods are explained in the following sections'.

Memory Enhancement technology

Memory Enhancement technology (MEt) enhances the printer's standard memory through a variety of font and data compression methods. The feature also automatically compresses fonts for desktop publishing applications. The feature is available in all printing modes (PCL 5e, PCL 6, and PS). When printing graphics, MEt analyzes each page as it is being printed and automatically applies a variety of compression techniques to print the complete page at the correct resolution.

Image Adapt

Image Adapt uses a compression technique so that you can print full-page graphics from the printer's base memory. Image Adapt is only used in PCL 5e (PCL 6 and PS do not require Image Adapt). The available settings are auto, on, and off. The default is auto.

Some data might be lost if Image Adapt is used. To see if there has been a loss of graphic detail, print a self-test page and check the Image Adapt Used line in the Printer Information section. If the printer invoked Image Adapt since the last time the self test was printed (or the last time the printer was turned off and on), that line reads "Image Adapt Used: Yes."

Page Protect

A page's complexity (rules, complex graphics, or dense text) might exceed the printer's ability to create the page image fast enough to keep pace with the engine's printing process. If a page is too complex, it might print in parts (for example, the top half of data might appear on one page and the bottom half on the next page). Some print data loss is likely in these instances, and the printer Attention light flashes.

Using Page Protect, the formatter creates the entire page image in memory before moving the paper through the printer. This process ensures that the entire page is printed. The default is off, which provides the best performance. Page Protect should only be enabled when necessary.

Printer Job Language overview

Printer Job Language (PJL) is an integral part of the printer's configuration, in addition to the standard Printer Command Language (PCL). The printer uses PJL to perform certain functions:

- **Two-way communication** with the host computer through an IEEE1284 B interface connection. The printer can communicate information to the host, such as the control-panel settings, and the control-panel settings can be set from the host.
- **Dynamic I/O switching** allows the printer to be configured with a host on each I/O. The printer can receive data from more than one I/O simultaneously until the buffer is full. This can occur even when the printer is offline.
- **Context-sensitive switching** allows the printer to automatically recognize the personalities (PS or PCL) of each host and configure itself to serve that personality.
- **Isolating print environment settings** from one print job to the next. For example, if a print job is sent to the printer in landscape mode, subsequent print jobs print only in landscape if they are formatted for landscape printing.

For more information, see the *HP LaserJet 2300 Series Printer Software Technical Reference*. The complete PJL Status Code listing is contained in the appendix of the *Printer Job Language Technical Reference*. Also see HP's website at http://www.hp.com .

Sheet feeders

HP LaserJet 2300 series printers can use two optional sheet feeders: the 250-sheet feeder and the 500-sheet feeder.

The sheet feeders are driven by the printer and controlled by the printer's engine controller. The engine controller drives the solenoid at a necessary timing through the sheet feeder PCA. The paper sensor detects media.

The sheet feeder picks up media loaded in the cassettes and transports it to the printer.

The flow of media is illustrated in figure 33 (the 500-sheet paper feeder is shown).
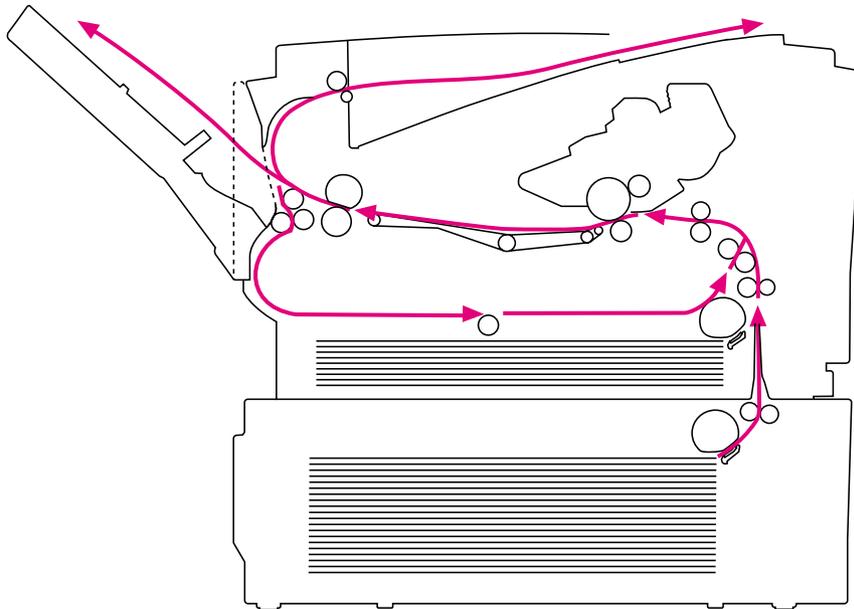
Figure 33.　　**Pickup-feed paper path**

The main motor (M903) uses gears to drive the sheet feeder.

When a print command is received from the formatter, the main motor (M903), reverse motor (M904), and scanner motor start rotating. The heating element temperature begins to rise.

The sheet feeder pickup solenoids (SL2001, SL2002) are turned on when the following three requirements are met:

● the main motor has been driven for 0.35 seconds

● the scanner motor has reached the specified rotation number

● the heating element temperature has been brought to the specified temperature, or the specified period of time has elapsed after start of the temperature control

SL2001 and SL2002 transmit the main motor's rotation to the pickup roller. The pickup roller makes a rotation to pick up media in the cassette.

The separation pad separates the media and transports it to the printer. The media goes through the transfer, separation, and fuser/delivery blocks, and is delivered to the selected tray.
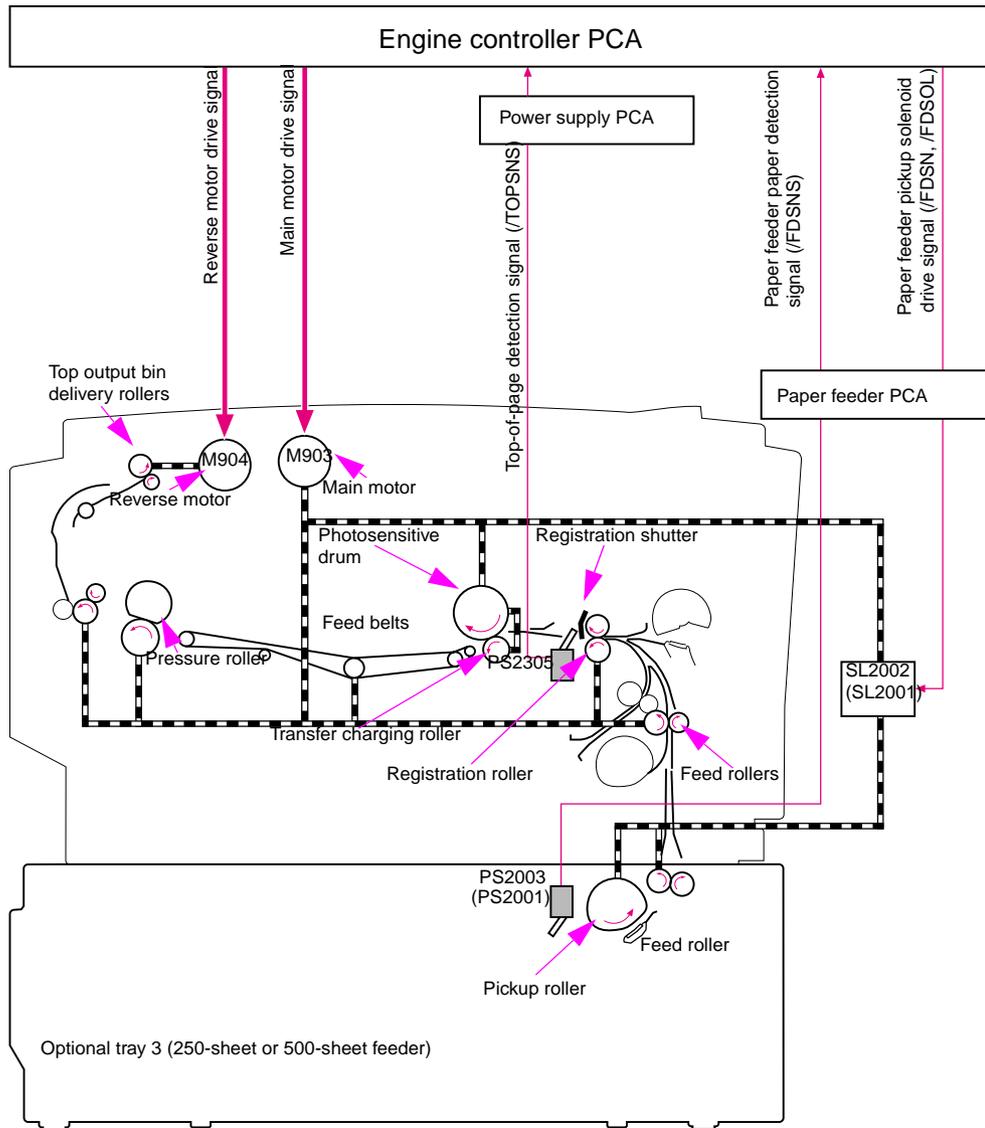
Figure 34. **Sheet-feeder pickup and feed**

PS2305: Top-of-page sensor (printer)   PS2001: 250-sheet feeder media sensor

PS2003: 500-sheet feeder media sensor   SL2001: 250-sheet feeder pickup solenoid

SL2002: 500-sheet feeder pickup solenoid

Media detection

The model for media detection is essentially the same for all three trays. The paper sensor levers shown in the following figure detect the presence of media in the trays. If the sensor does not detect any media, the formatter illuminates the display LED until media is added.
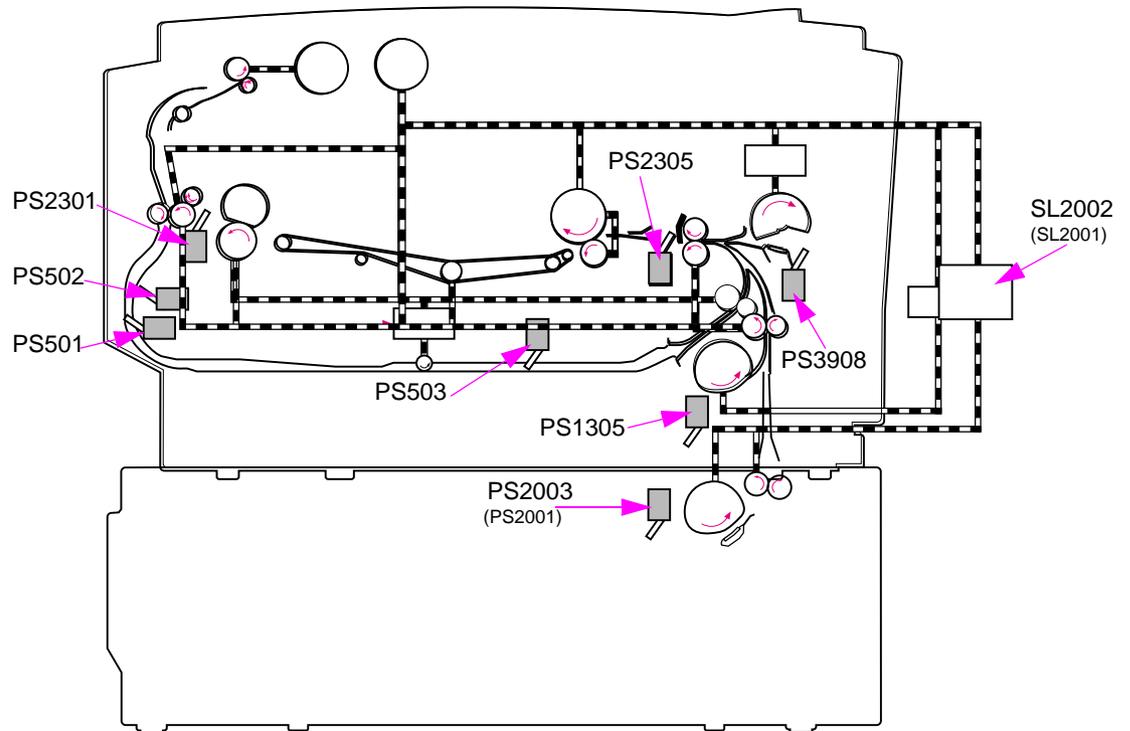
Figure 35.   **Media-detection sensors**

PS2305: Top-of-page sensor (printer)	PS2001: 250-sheet feeder media sensor
PS2003: 500-sheet feeder media sensor	SL2001: 250-sheet feeder pickup solenoid
SL2002: 500-sheet feeder pickup solenoid	PS502: Rear output bin sensor
PS501: Reversed paper sensor	PS1305: Tray 2 media sensor
PS503: Automatic duplex pickup paper sensor	PS3908: Tray 1 media sensor
PS2301: Delivery sensor	

Media-size detection

The HP LaserJet 2300 printer does not contain a media-size detection mechanism; therefore, the printer cannot detect the size of media stored in the trays. The printer detects the media size by measuring the time from when the top-of-page sensor detects the leading edge of the page until the trailing edge of the page clears the sensor.

Jam detection

The following mechanisms detect the presence of media and paper-feed conditions:

- top-of-page sensor (PS2305)
- delivery sensor (PS2301)
- reversed-paper sensor (PS501)
- automatic duplexer pickup paper sensor (PS503)

The CPU detects a jam by checking for the presence of media through sensors against the timing stored in the CPU.

If the CPU determines a jam, it stops the print operation and notifies the formatter of a jam.

Pickup sensors

Pickup delay jam

This printer performs retry control to readdress any pickup delay jam that the pickup error causes. Pickup operation is conducted a maximum of twice at all pickup sources except for the automatic duplex feed unit.

If the top-of-page sensor (PS2305) cannot detect the media leading edge within a specified period of time (T) the printer performs the pickup operation again. If PS2305 cannot detect the media leading edge within the specified period of time (T), a jam is indicated.

- paper pickup from the tray1: T = approximately 2.5 seconds
- paper pickup from the cassette: T = approximately 3.0 seconds
- paper pickup from the paper feeder: T = approximately 4.4 seconds
- paper pickup from the automatic duplexer feed unit: T = approximately 4.5 seconds

Pickup stationary jam

A. When the WAIT period starts—a pickup stationary jam is assessed if the top-of-page sensor detects media when the WAIT period starts.

B. During media feeding—a pickup stationary jam is assessed if the top-of-page sensor (PS2305) does not detect the trailing edge of the media within 3.8 seconds after detecting the leading edge.

Delivery sensors

Delivery delay jam

A delivery delay jam is assessed if the media does not reach the delivery sensor (PS2301) within a specified period of time (T) after the top-of-page sensor (PS2305) detects the leading edge.

- paper 270 mm or longer: T = approximately 2.6 seconds
- paper 200 mm to 270 mm: T = approximately 2.7 seconds
- paper shorter than 200 mm: T = approximately 4.6 seconds

Delivery stationary jam

A. When the WAIT period starts—a delivery stationary jam is assessed if the delivery sensor (PS2301) detects media when the WAIT period starts.

B. During media feeding—a delivery stationary jam is assessed if the delivery sensor (PS2301) does not detect the trailing edge of the media within a specified period of time (T) after the top-of-page sensor (PS2305) detects the trailing edge.

- paper 200 mm or longer: T = approximately 2.7 seconds
- paper shorter than 200 mm: T = approximately 5.2 seconds

C. When a pickup delay jam occurs—the printer enters the last rotation period to deliver the jammed media. A delivery stationary jam is assessed if the delivery sensor (PS2301) does not detect the trailing edge of the media within 8 seconds after the completion of the forced laser emission.

D. During pressure-roller cleaning—a delivery stationary jam is assessed if the delivery sensor (PS2301) does not detect the trailing edge of the media within 8 seconds after the 35th feed operation.

Reversing sensors

Reversing delay jam

A reversing delay jam is assessed if the reversed paper sensor (PS501) does not detect the leading edge of the media within 3.9 seconds after the reversing motor starts rotating.

Reversing stationary jam

A reversing stationary jam is assessed when the reversed paper sensor (PS501) detects media after automatic duplexer pickup operation has been performed for about 0.77 seconds.

Automatic duplexer sensors

Duplexer pickup delay jam

A duplexer pickup delay jam is assessed if the duplexer pickup paper sensor (PS503) does not detect media within 4.9 seconds after the reversed paper sensor (PS501) detects the leading edge.

Duplexer pickup stationary jam

A duplexer pickup stationary jam is assessed if the duplexer pickup paper sensor (PS503) detects media after about 3.4 seconds has passed since the reversed paper sensor (PS501) detected the trailing edge.

Paper-feed sensor

Jam detection for the paper feeders during the pickup and feed operations is same as that for the printer. For jam detection, see page 106.

6 Removal and replacement

Chapter contents

Removal and replacement strategies

This chapter documents the removal and replacement of the field-replaceable units (FRUs) only.

Replace the parts in the reverse order of their removal. If replacement requires difficult or critical installation procedures, the notes that are provided give detailed special instructions.

WARNING! To avoid serious injury, unplug the power cable from the power outlet before servicing the printer. During troubleshooting, certain functional checks must be performed while power is supplied to the product. However, the power supply should be disconnected during disassembly.

Never operate or service the printer with the protective cover removed from the laser/scanner assembly. The reflected beam, although invisible, can damage eyes.

The clip gasket that is attached to the formatter's radio frequency interference (RFI) shield contains nickel. Do not touch the clip gasket with your bare hands. Repair technicians should wear gloves to handle this gasket. Be advised in accordance with European Union Directive 76/769/EEC that ingesting water-soluble nickel salts can cause nausea, vomiting, and diarrhea.

The printer might have sharp sheet metal edges. Be careful to avoid these edges when you are working on the printer.

CAUTION The printer contains parts that are sensitive to electrostatic discharge (ESD). Always service the printer at an ESD-protected workstation or use an ESD mat.

To install a self-tapping screw, first turn it counterclockwise to align it with the existing thread pattern, and then carefully turn it clockwise to tighten it. Do not overtighten. If a self-tapping screw-hole becomes stripped, repair the screw-hole or replace the affected assembly.

Always remove the print cartridge before removing or replacing the assemblies and parts.

Note Note the lengths, diameters, and locations of the screws. Be sure to use them in their original locations during reassembly.

Note Incorrectly routed or loose wire harnesses can interfere with other internal components and become damaged or broken. Frayed or pinched harness wires can be difficult to find. When you replace wire harnesses, always use the provided wire loops and wire-harness guides.

Required tools

The following tools are required used to remove and replace the assemblies that are described in this chapter:

- Phillips #2 screwdriver with magnetic tip
- small flatblade screwdriver
- needle-nose pliers
- ESD mat

Before you begin

1 Unplug the power and communications cables.

2 Lift the printer off of the optional tray (if installed).

3 Remove the print cartridge.

    a Open the top door.

    b Lift the print cartridge straight up and out of the printer.

Figure 36.   **Removing the print cartridge**

4 Remove tray 2.

Figure 37.   **Removing tray 2**

Covers

I/O cover

1   Press two release buttons (callout 1) on the back of the I/O cover.

2   Rotate the back of the cover away from the printer to remove the cover.
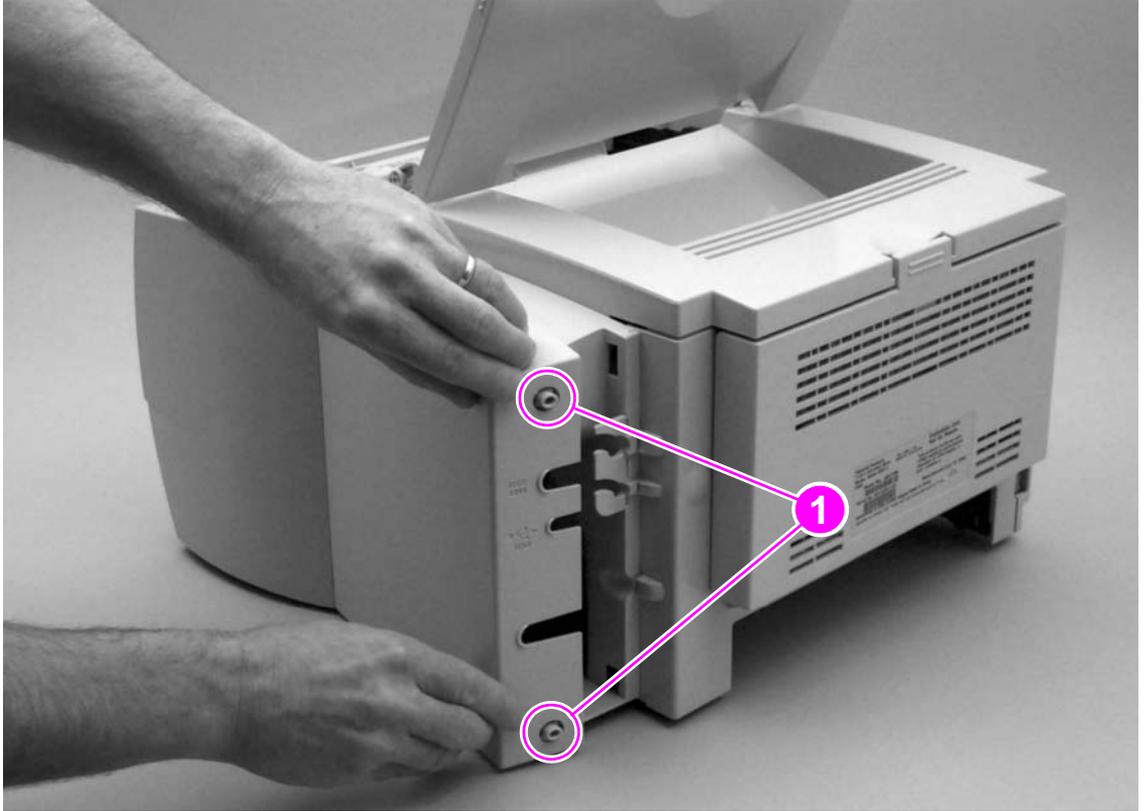
Figure 38.   **Removing the I/O cover**

Print server

1   Open or remove the I/O cover (see page 113).

2   Unscrew two thumb screws (callout 1).

3   Remove the print server by pulling it toward the back of the printer.
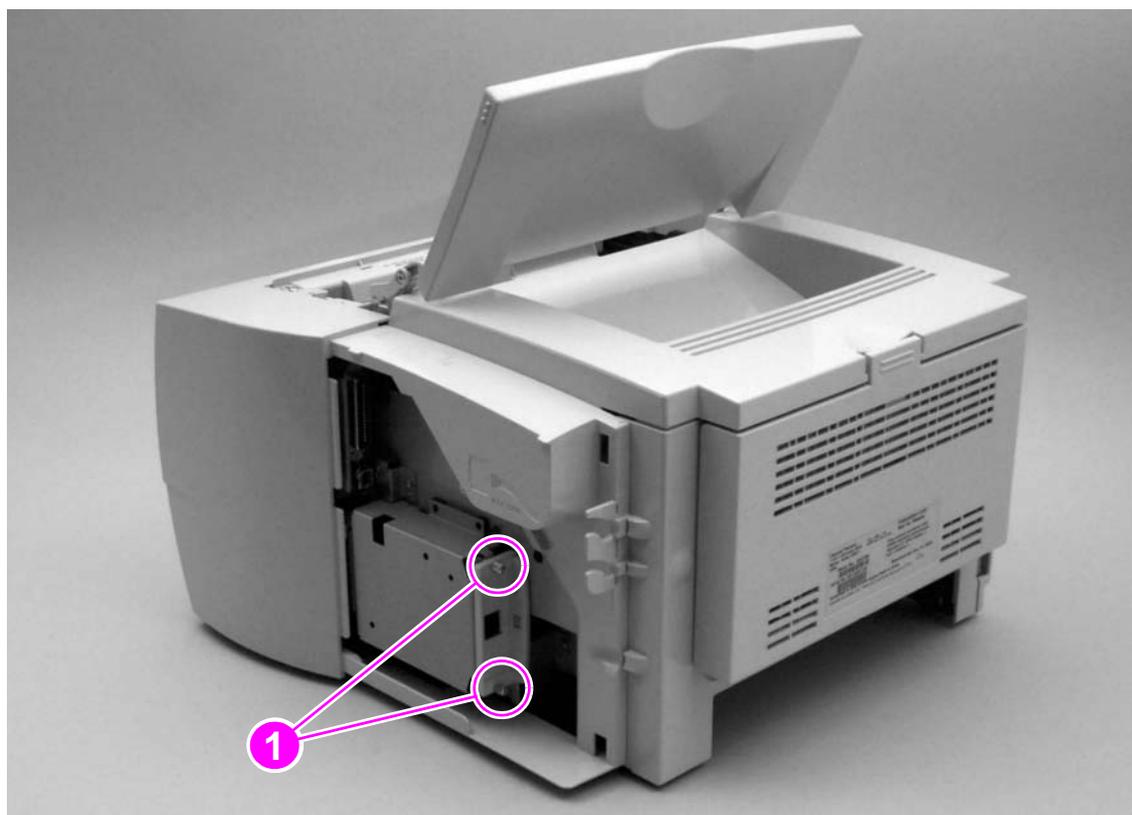
Figure 39.   **Removing the print server**

DIMM cover

1 Remove the I/O cover (see page 113).

2 Release two tabs—one at the top of the printer (callout 1) and one inside the tray 2 cavity (callout 2).
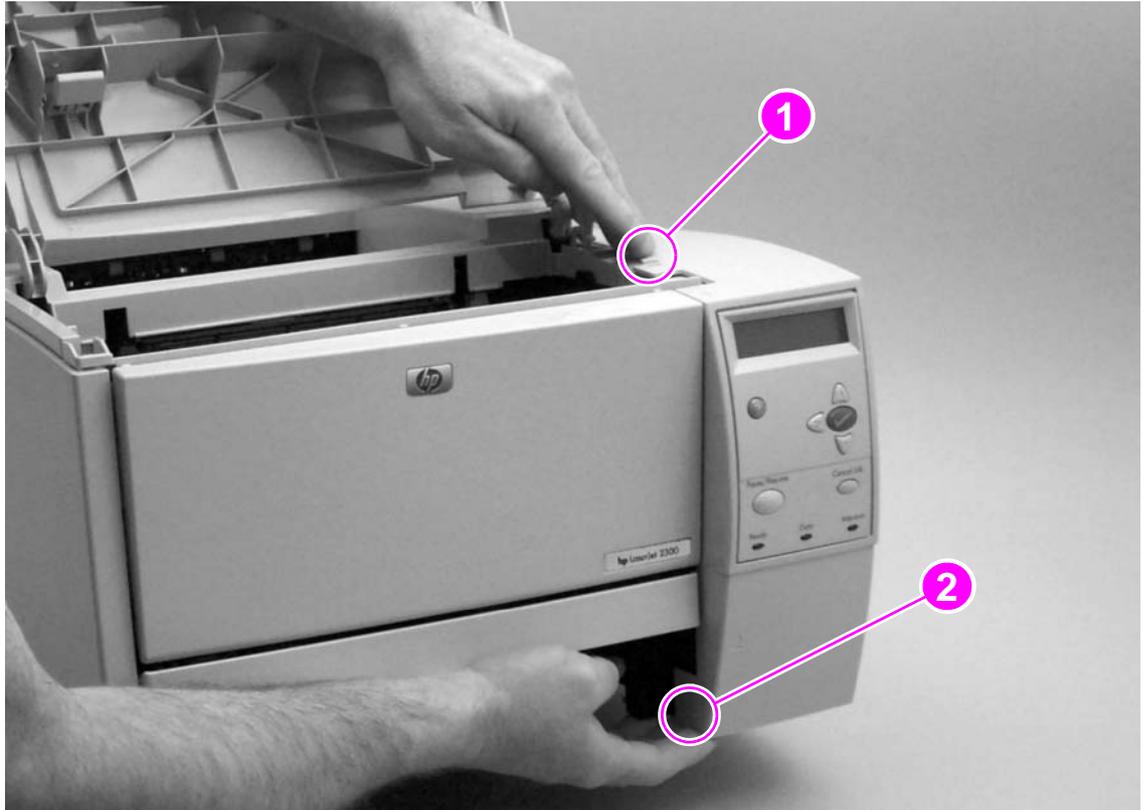
Figure 40. **Removing the DIMM cover**

3 Pull the cover toward the front of the printer to release the cover from the frame, and then lift the cover away from the printer.

4 Remove the DIMMs from the printer.

Rear cover

1   Remove the following covers:

  - I/O cover (see page 113)
  - DIMM cover (page 115)

2   Open the rear output bin and then lift it to an angle that allows you to disengage two pins (callout 1) on the rear guide, one at each side of the bin.
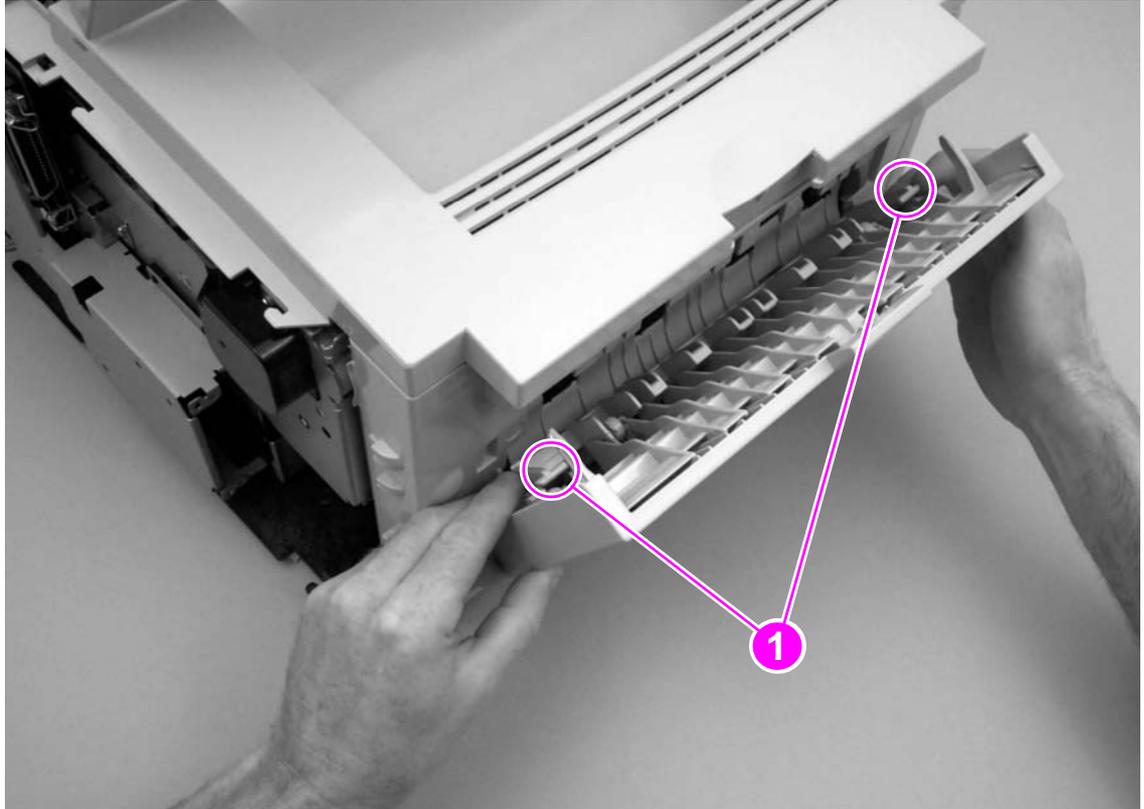
Figure 41.   **Removing the rear cover (1 of 3)**

3 Lower the rear output bin to the work surface, and then remove two screws (callout 2) from the rear cover.
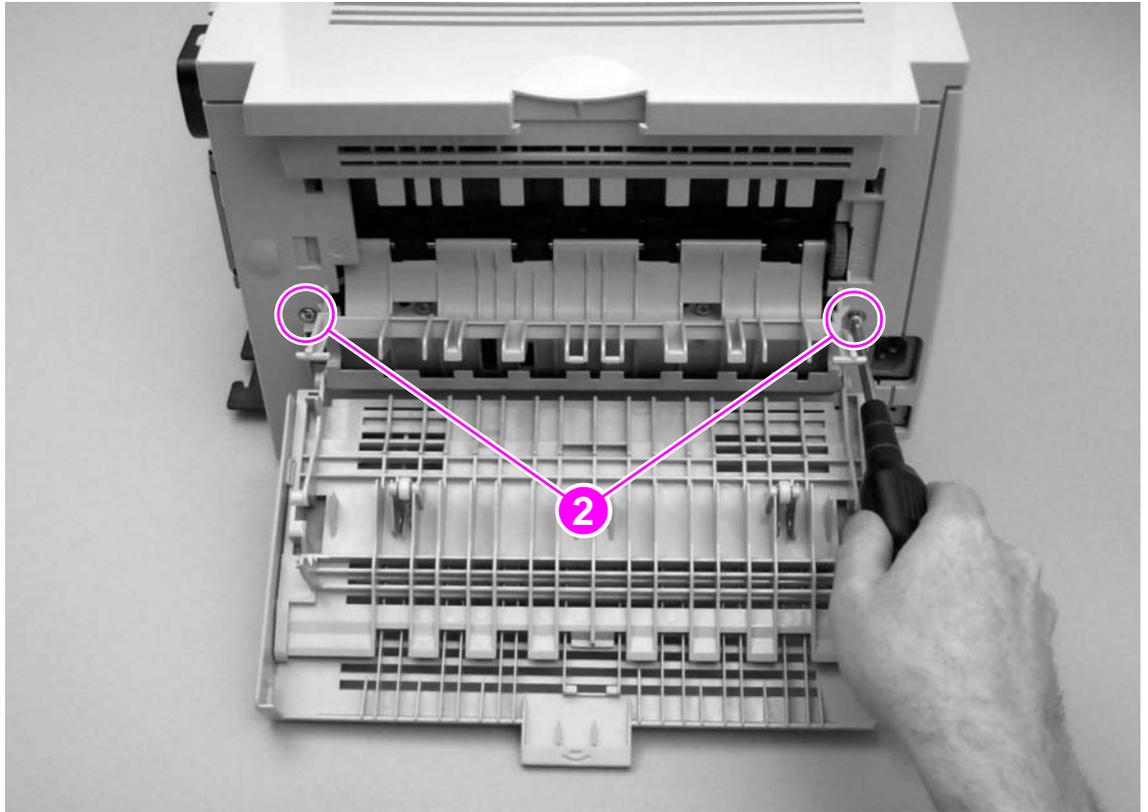
Figure 42. **Removing the rear cover (2 of 3)**

4 Lift up the rear output bin with one hand and then use a flatblade screwdriver to release two tabs (callout 3)—one on each side of the rear cover—inside the tray 2 cavity.
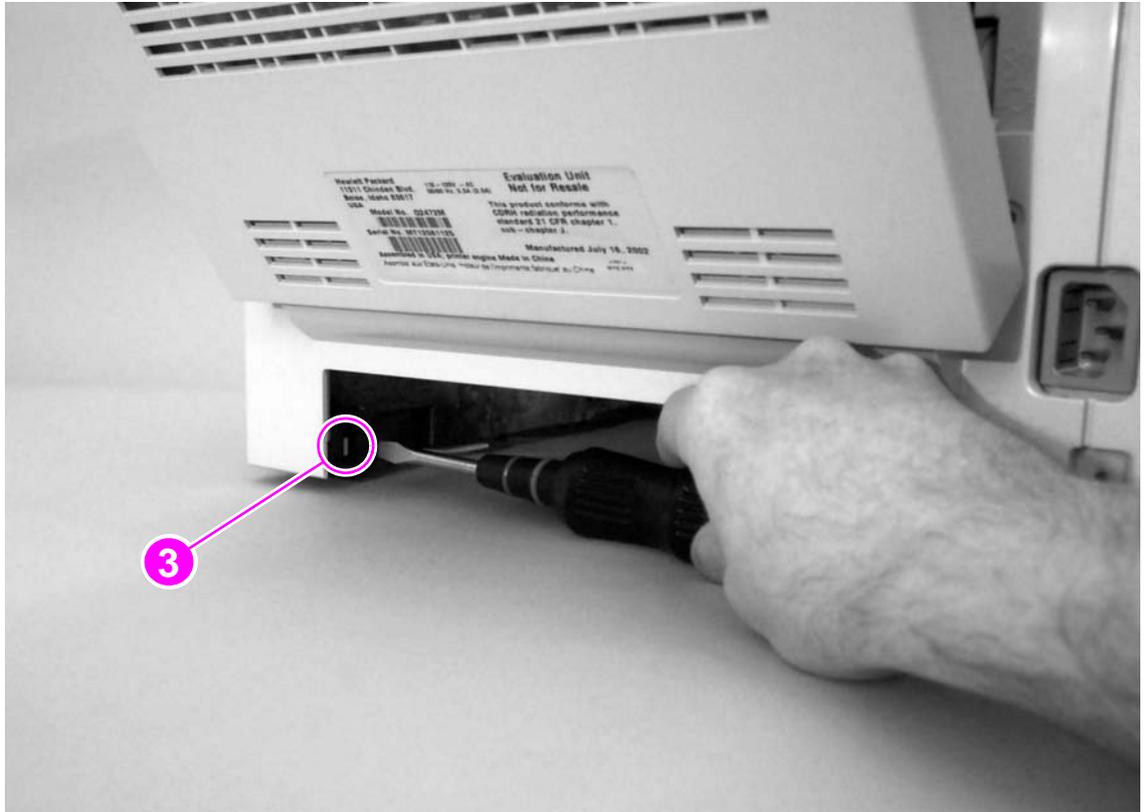
Figure 43. **Removing the rear cover (3 of 3)**

5 Lift the cover away from the printer.

Front cover

1 Remove the following covers:
- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)

2 Open the top door.

3 Open tray 1.

4 Remove two screws (callout 1) from the front cover.
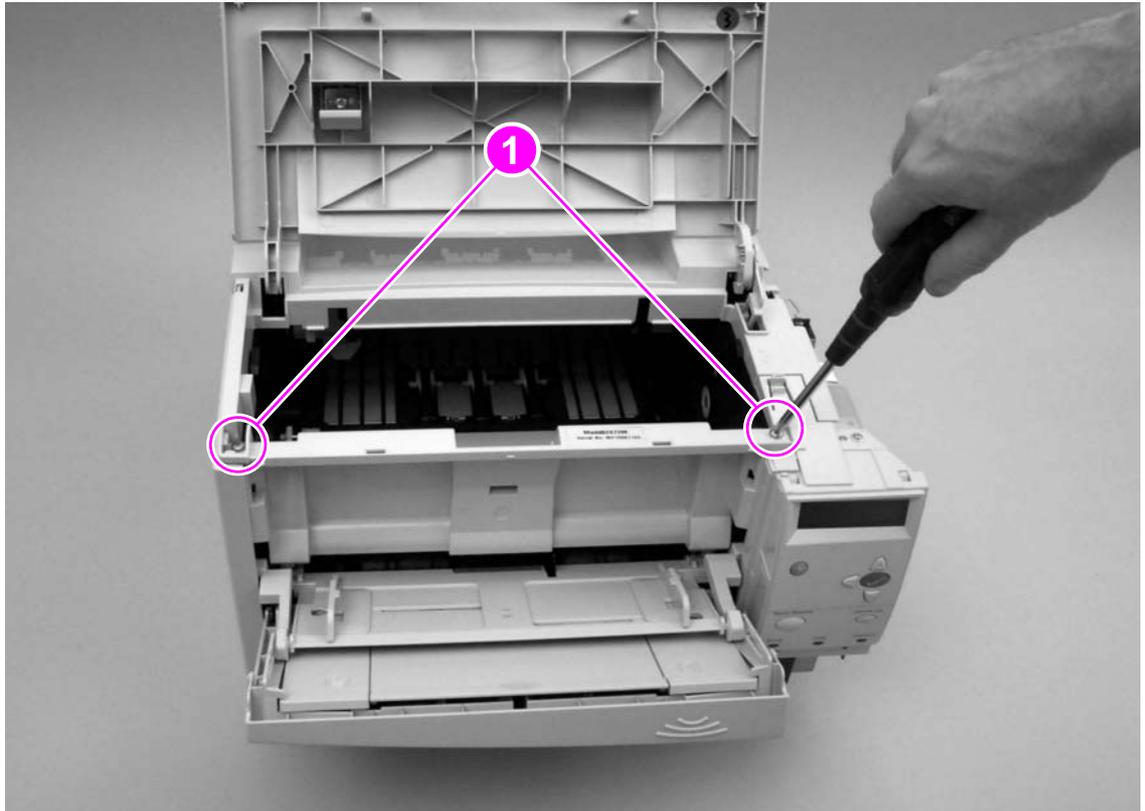
Figure 44.   **Removing the front cover**

5 Lift the cover straight up and away from the printer.

Control panel

1 Remove the following covers

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)

2 Remove three screws (callout 1) from the control panel.

3 Disconnect one connector (callout 2).
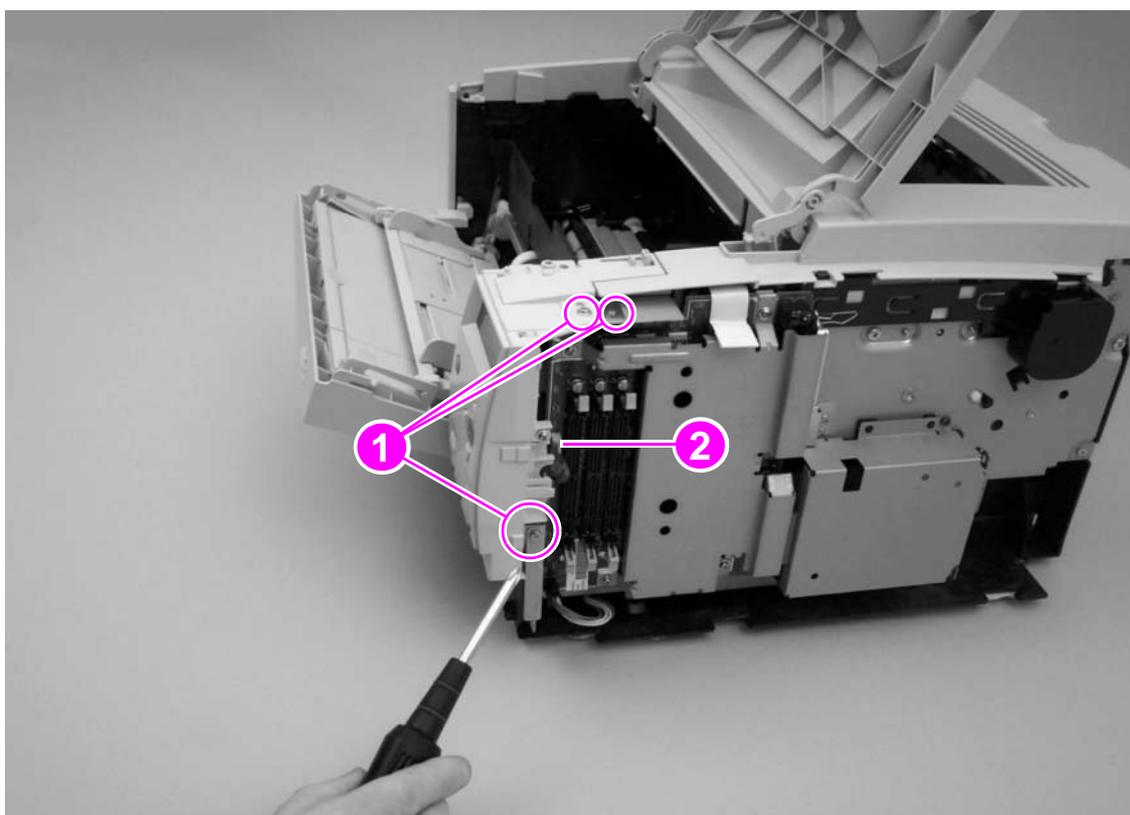
Figure 45.   **Removing the control panel**

4 Lift the control panel away from the printer.

Reinstall note

Make sure that the connector shown in callout 2 in figure 45 is reconnected correctly. If, after reassembly, the control panel malfunctions, unplug this connector and then reconnect it.

Top-cover assembly

1 Remove the following covers and assemblies:

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)
- control panel (page 120)

2 Open the top door.

3 Use needle nose pliers to pinch the tabs on the coupling and press the tabs through the hole in the top-door arm.

4 Allow the coupling to fall into the printer.
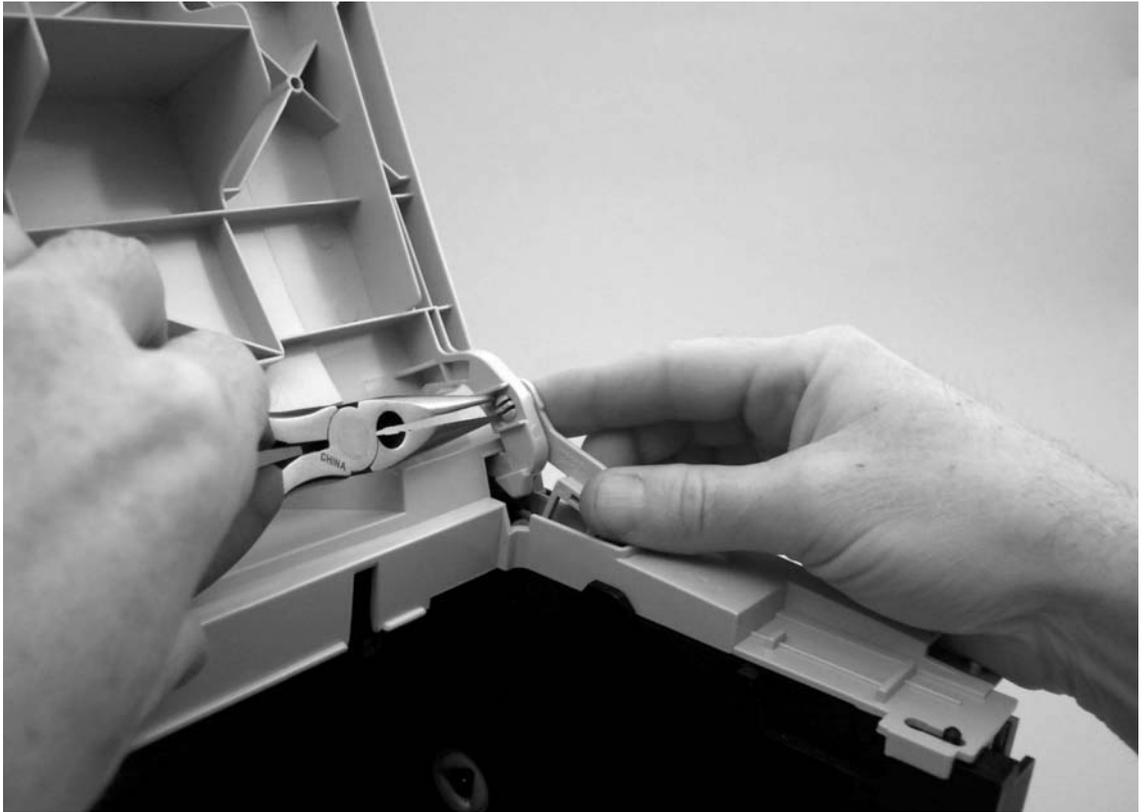
Figure 46.   **Removing the top-cover assembly (1 of 3)**

5 Remove two screws (callout 1) from the top cover at the back of the printer.
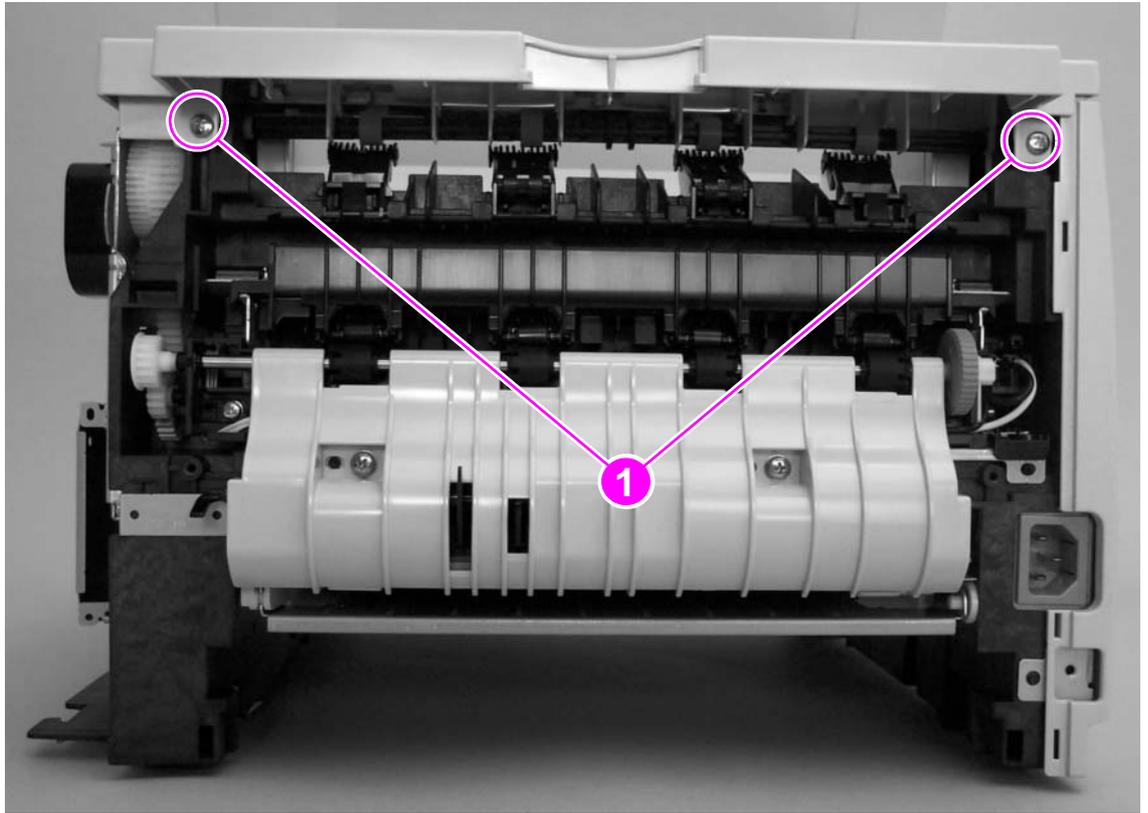
Figure 47. Removing the top-cover assembly (2 of 3)

6 Use a flatblade screwdriver to release one tab (callout 2) at the left side of the top cover.
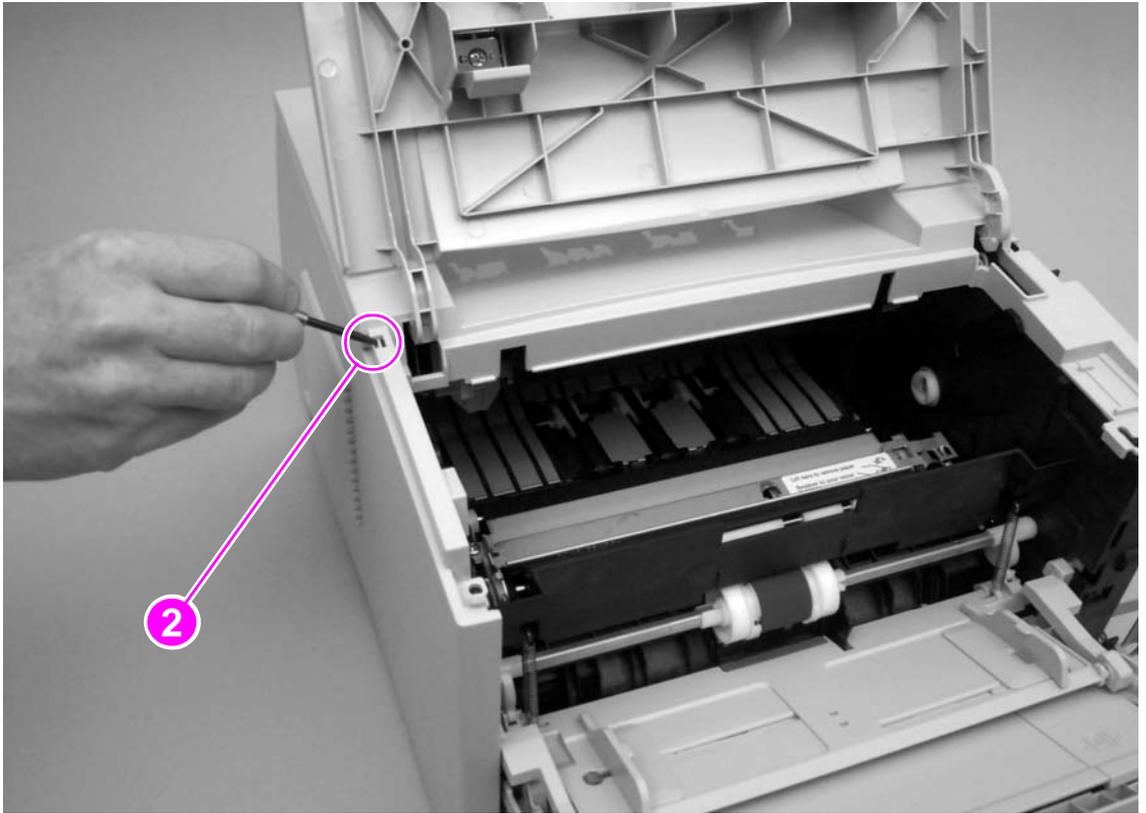
Figure 48.   **Removing the top-cover assembly (3 of 3)**

7 Lift the cover off of the printer.

Left-side cover

Remove the following assemblies:

1 Remove the following covers and assemblies

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)
- control panel (page 120)
- top cover assembly (page 121)

2 Release one tab (callout 1).

3 Rotate the top of the left-side cover away from the printer and then lift the cover off of the printer frame.
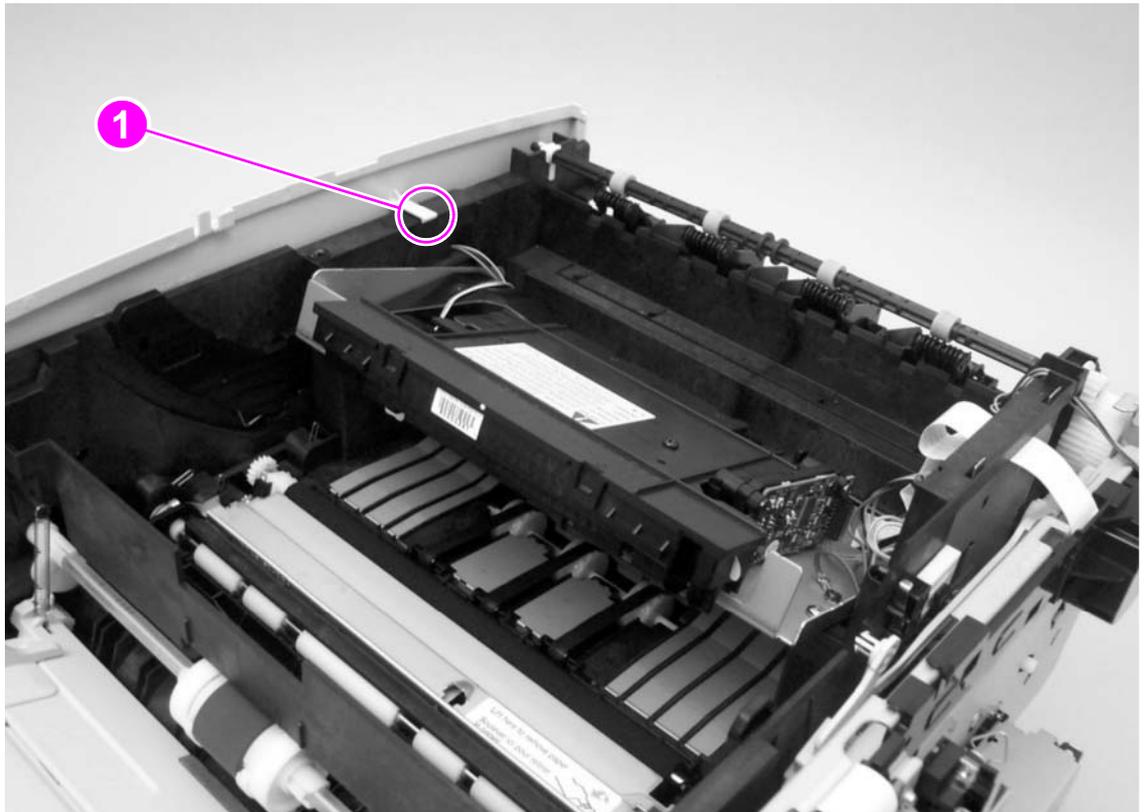
Figure 49.   **Removing the left-side cover**

Power switch

1 Remove all of the covers and the control-panel assembly (see pages 113 through 124).

2 On the inside of the left-side cover, pinch two tabs (callout 1) together to release the spring (callout 2).

3 After removing the spring, pinch the two tabs together and press them through the holes in the left-side cover to release the power switch.
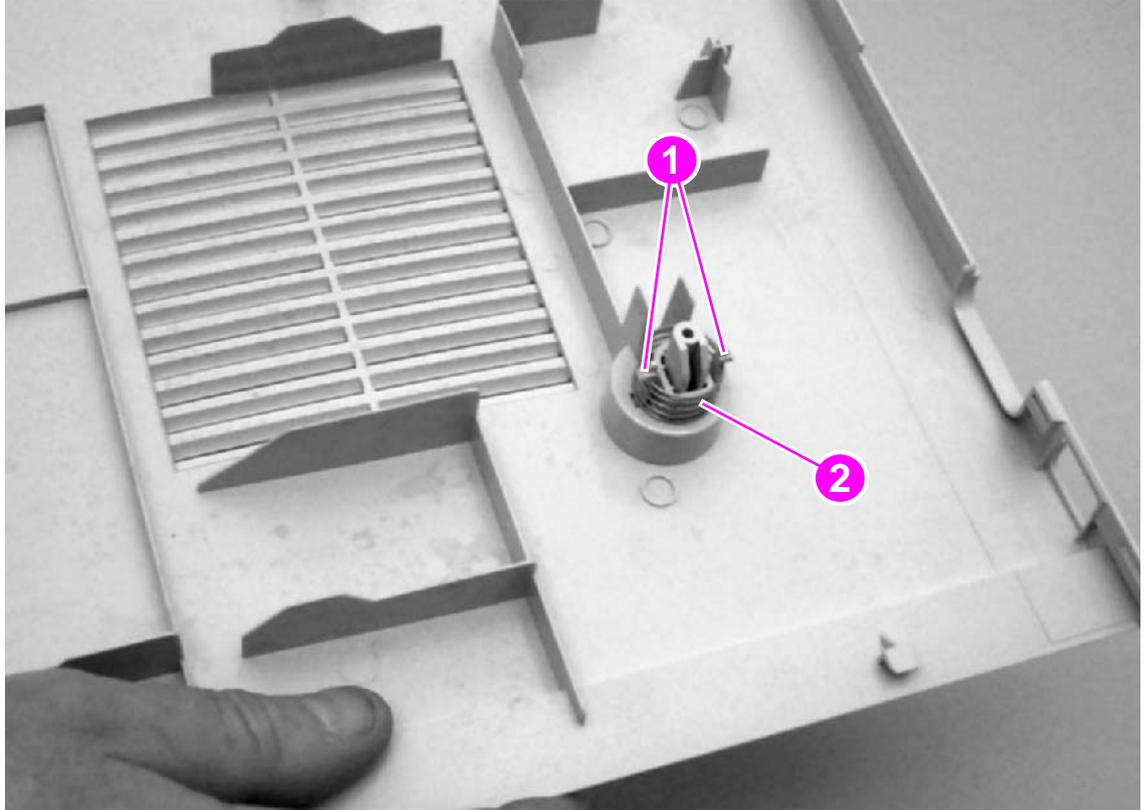
Figure 50. **Removing the power switch**

Tray 1 assembly

1 Remove all of the covers and the control-panel assembly (see pages 113 through 124).

2 Open tray 1.

3 Lift tray 1 slightly to align the notch (callout 1) in the tray 1 cover (callout 2) with the hinge pins of the tray 1 hinges (callout 3).

4 Push the right tray 1 hinge to the left while pulling the tray 1 cover to the right to carefully disengage the hinge pin from the tray 1 cover.

CAUTION Do not pull the tray 1 cover to the right by pulling the notched portion of the tray 1 cover. The notched portion of the cover bends or breaks easily.

5 Disengage the left tray 1 hinge (callout 4) from the tray 1 cover.

6 Close the tray 1 guide (callout 5).
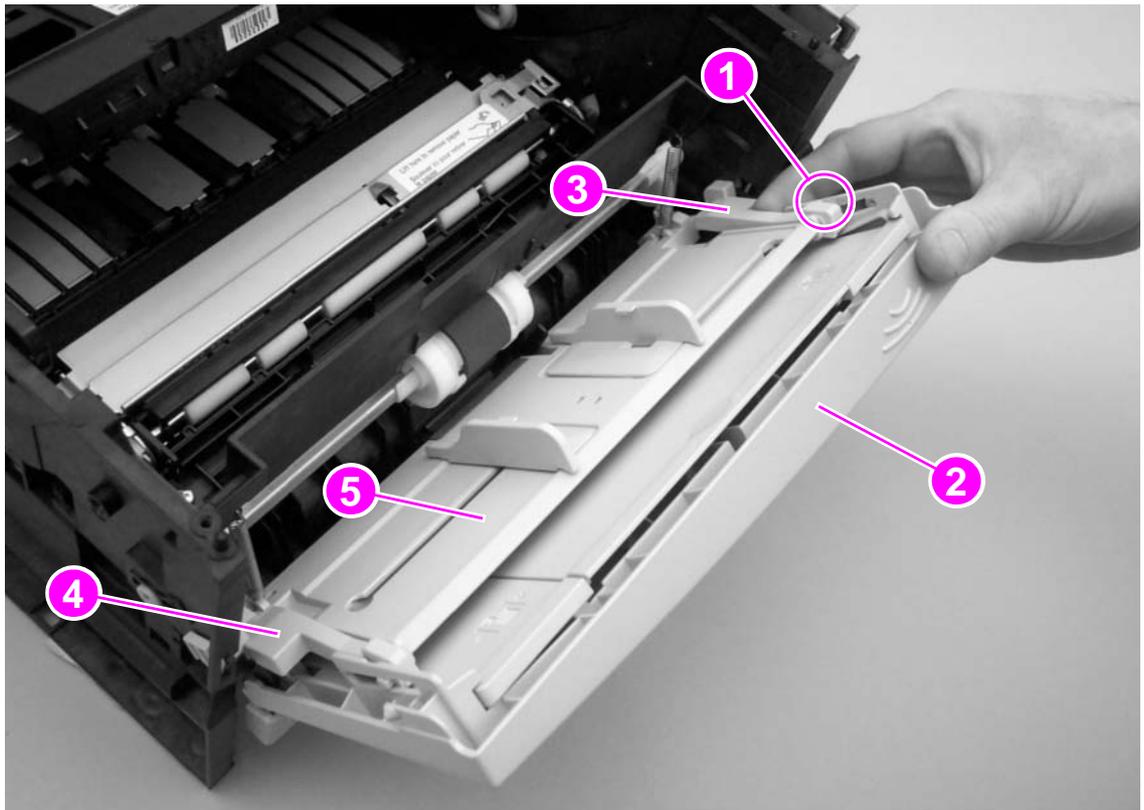
Figure 51. Removing the tray 1 assembly (1 of 4)

7 Open the tray 1 cover, and then slide the tray 1 cover to the left to remove it from its pins (callout 7).
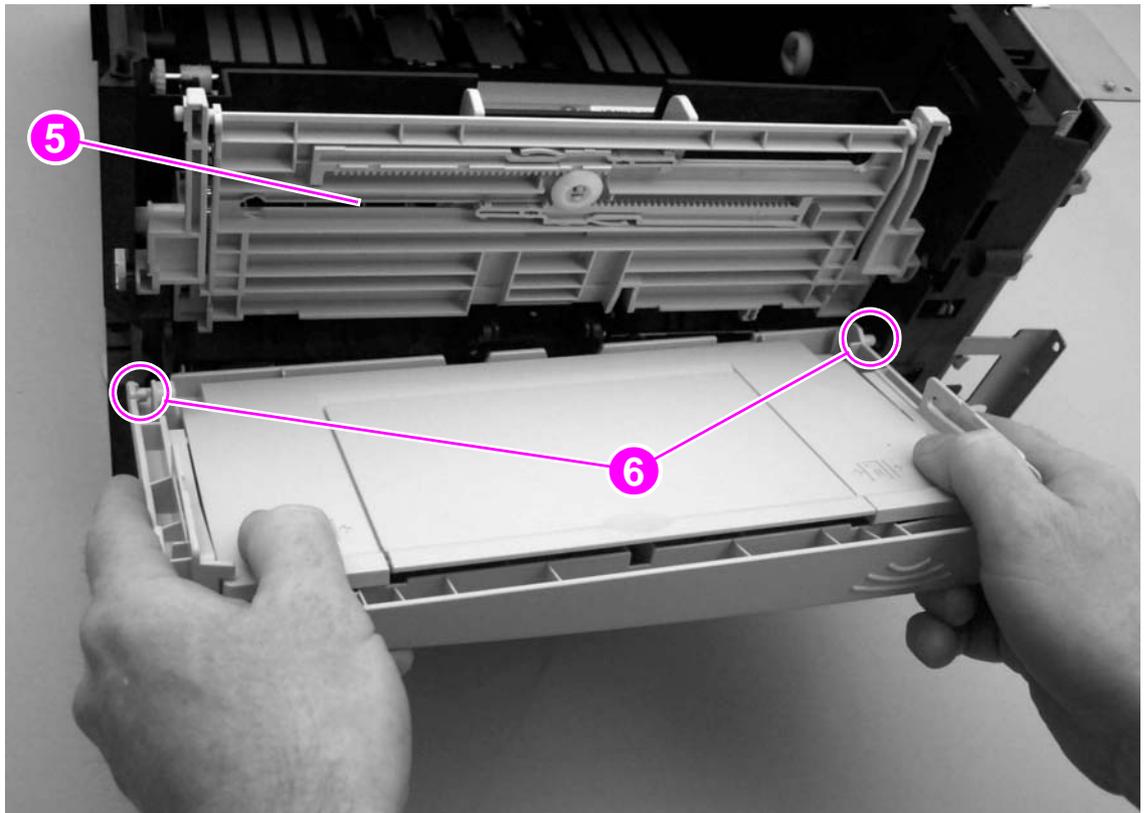
Figure 52.   **Removing the tray 1 assembly (2 of 4)**

8 Disengage the right and left hinges from the tray 1 guide and then rotate each hinge down to slide it off of its keyed hole (callout 7) in the printer.
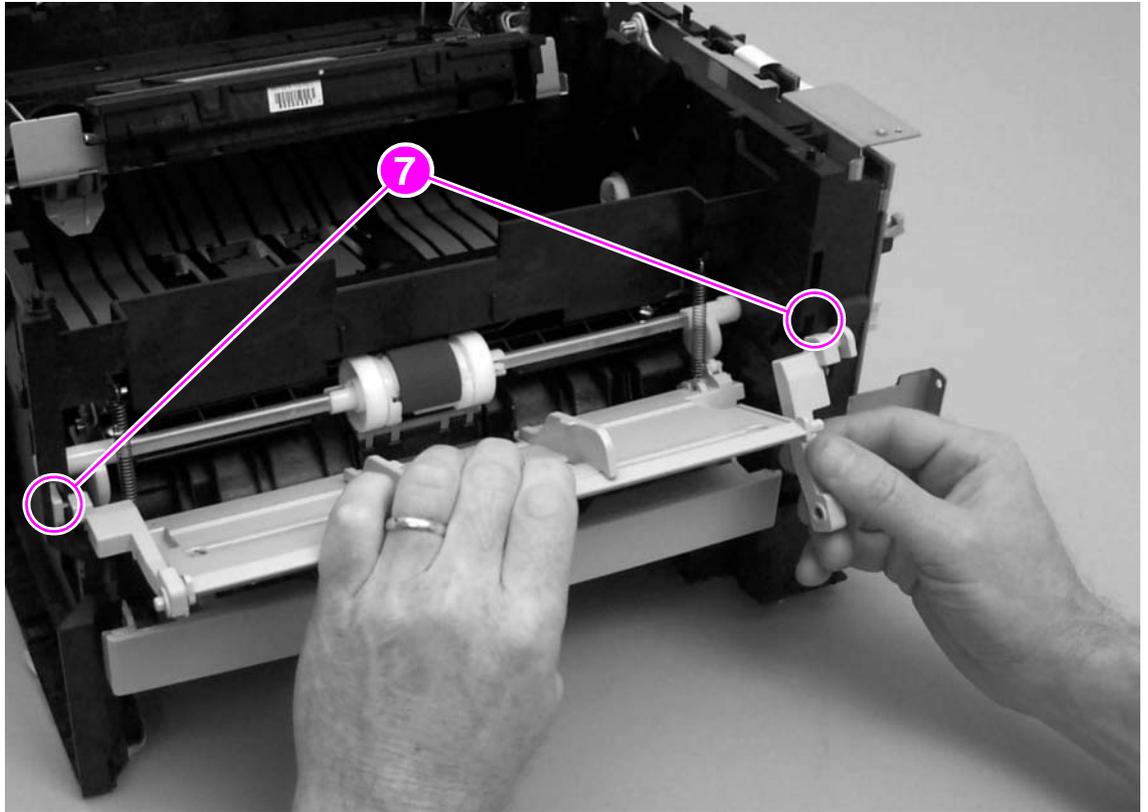
Figure 53. **Removing the tray 1 assembly (3 of 4)**

9 Use needle-nose pliers to unhook two springs (callout 8)—one at each side of the printer frame—and then lift the tray 1 guide away from the printer.
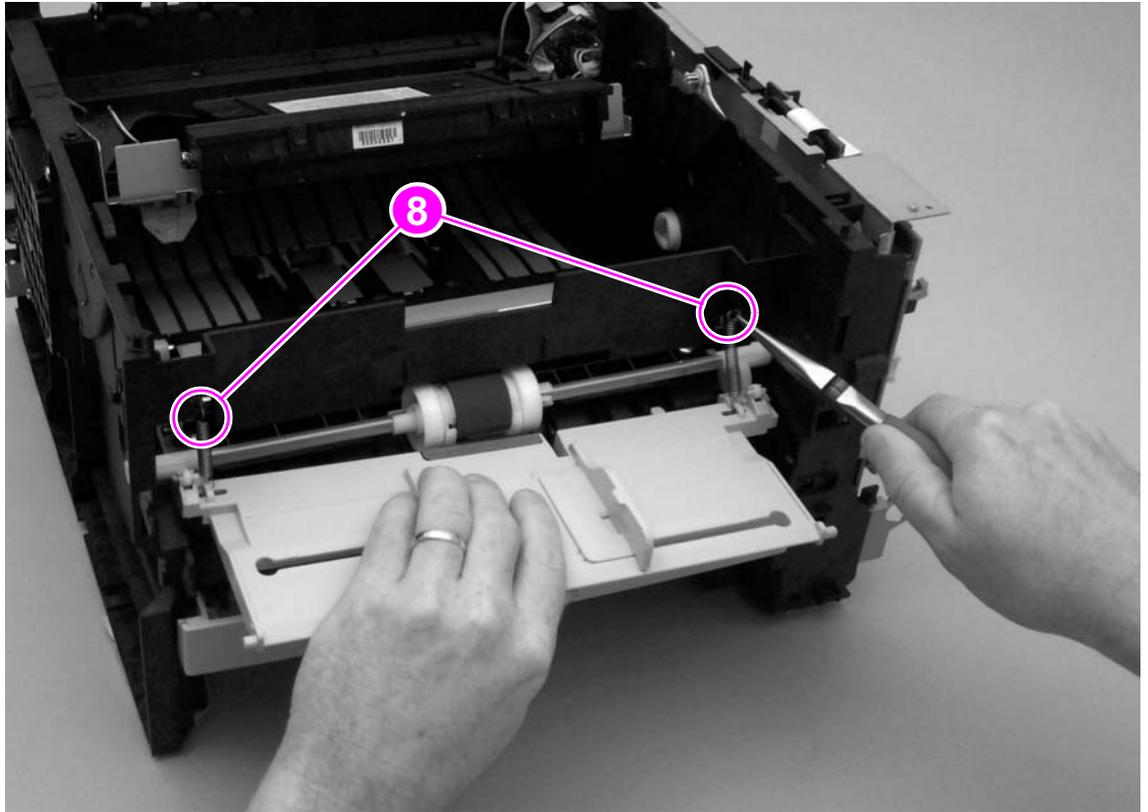
Figure 54.   **Removing the tray 1 assembly (4 of 4)**

Internal assemblies

Tray 1 pickup roller

1   Remove the following covers

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)

2   Use a flatblade screwdriver to release the tab on the cam at the right side of the pickup roller.

3   Slide the cam and the white, plastic roller toward the right side of the printer to release the pickup roller.
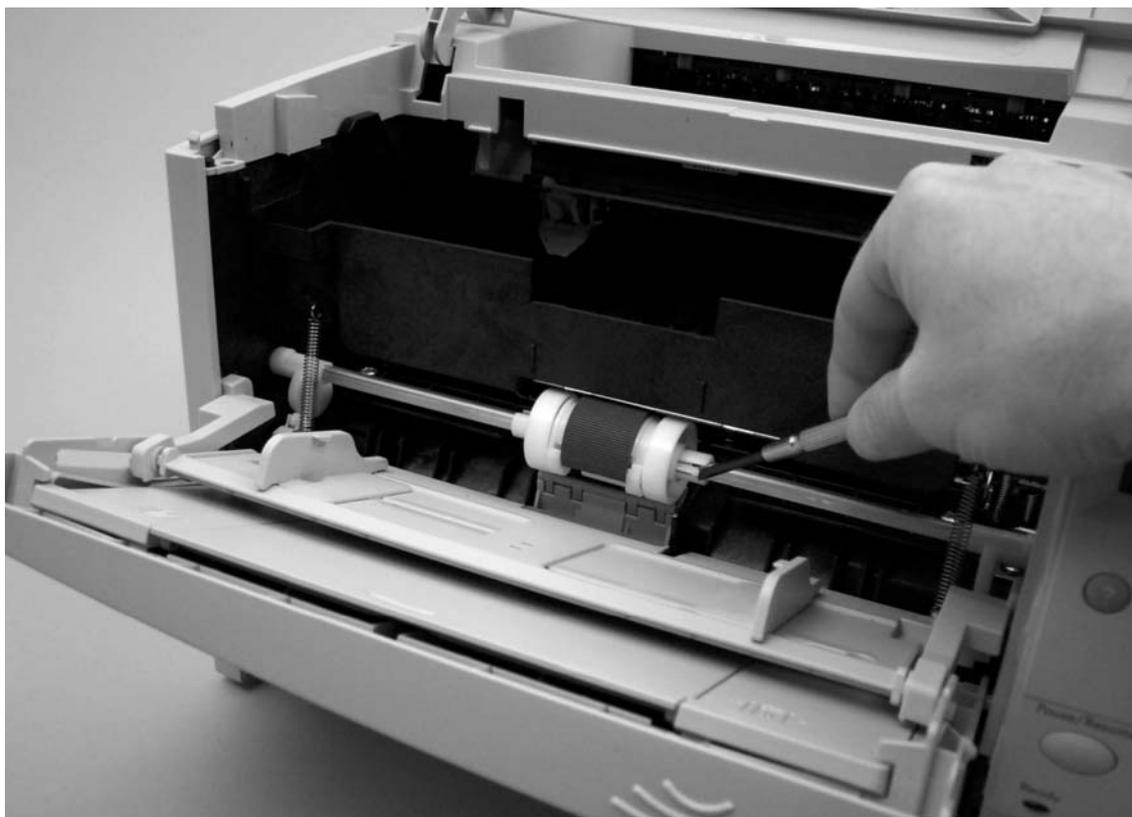
Figure 55.   **Removing the tray 1 pickup roller (1 of 2)**

4 Rotate the pickup roller and lift it off of the pickup roller shaft.

Figure 56. **Removing the tray 1 pickup roller (2 of 2)**

Pickup sensor flag

1   Remove all of the covers and the control-panel assembly (see pages 113 through 124).

2   Use a flatblade screwdriver to pry up the sensor flag.

3   Before you remove the pickup sensor flag, examine the position of the torsion spring and the motion of the sensor flag. At reinstallation, the spring must be reinstalled correctly to ensure that the flag's motion is correct.
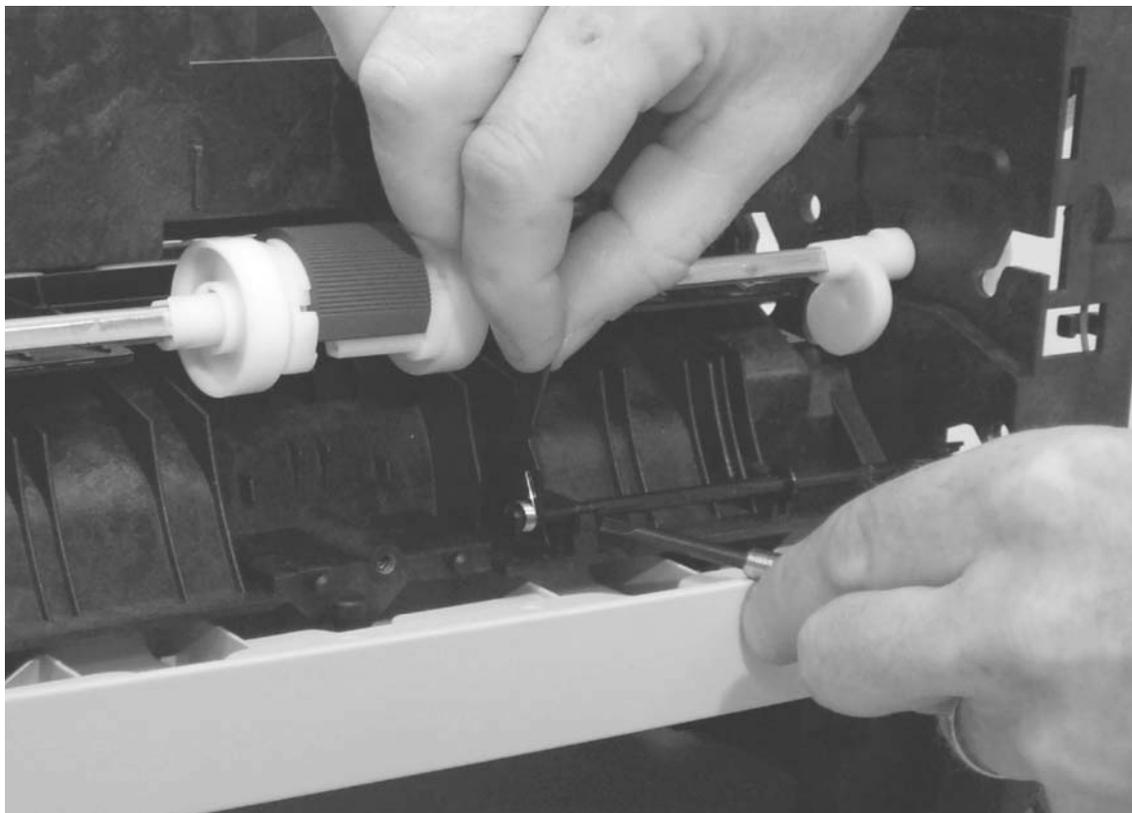
Removing the pickup sensor flag
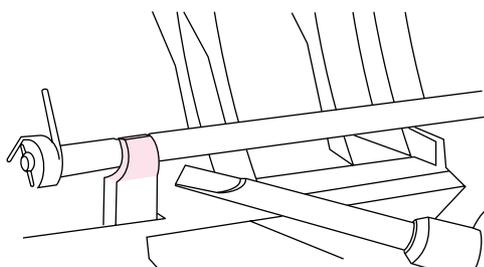
CAUTION   Be very careful not to break the part that holds the pickup sensor flag in place.

4   Rotate the pickup sensor flag and slide the flag to the left, clearing the hole in the printer frame.

Tray 1 separation pad

1 Remove the following covers and assemblies

   • all covers and the control-panel assembly (see pages 113 through 124)

   • tray 1 assembly (page 126)

2 Remove one screw (callout 1) from the tray 1 separation-pad assembly.
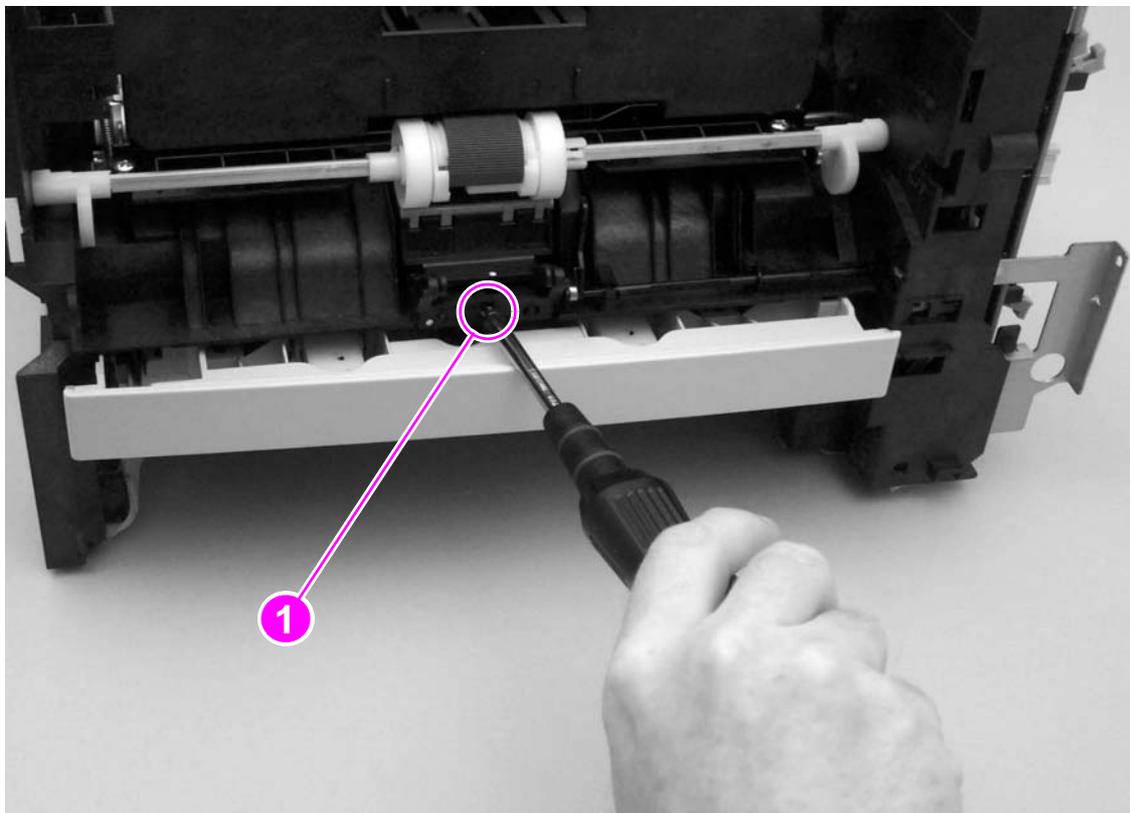
Figure 58.   **Removing the tray 1 separation pad (1 of 3)**

3 Pull the tray 1 separation-pad assembly out of the printer.
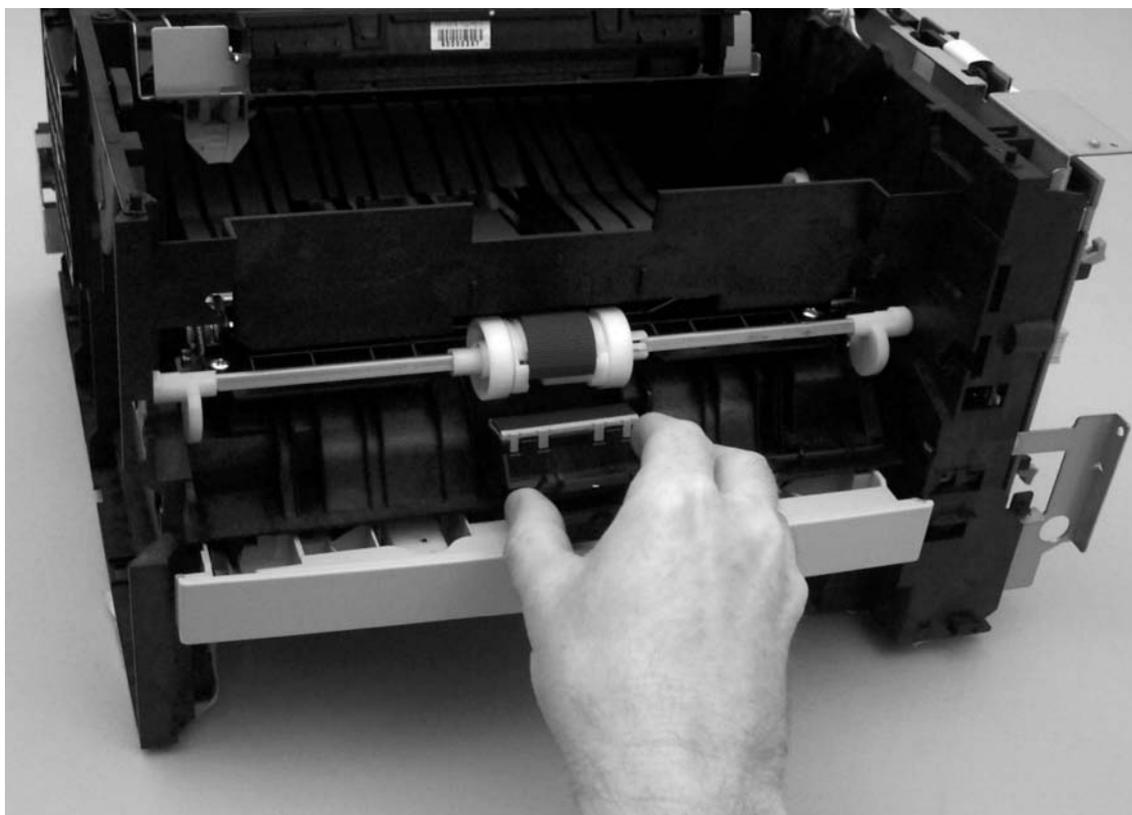
Figure 59. **Removing the tray 1 separation pad (2 of 3)**

4 Use a flatblade screwdriver to pry the separation pad off of the assembly.
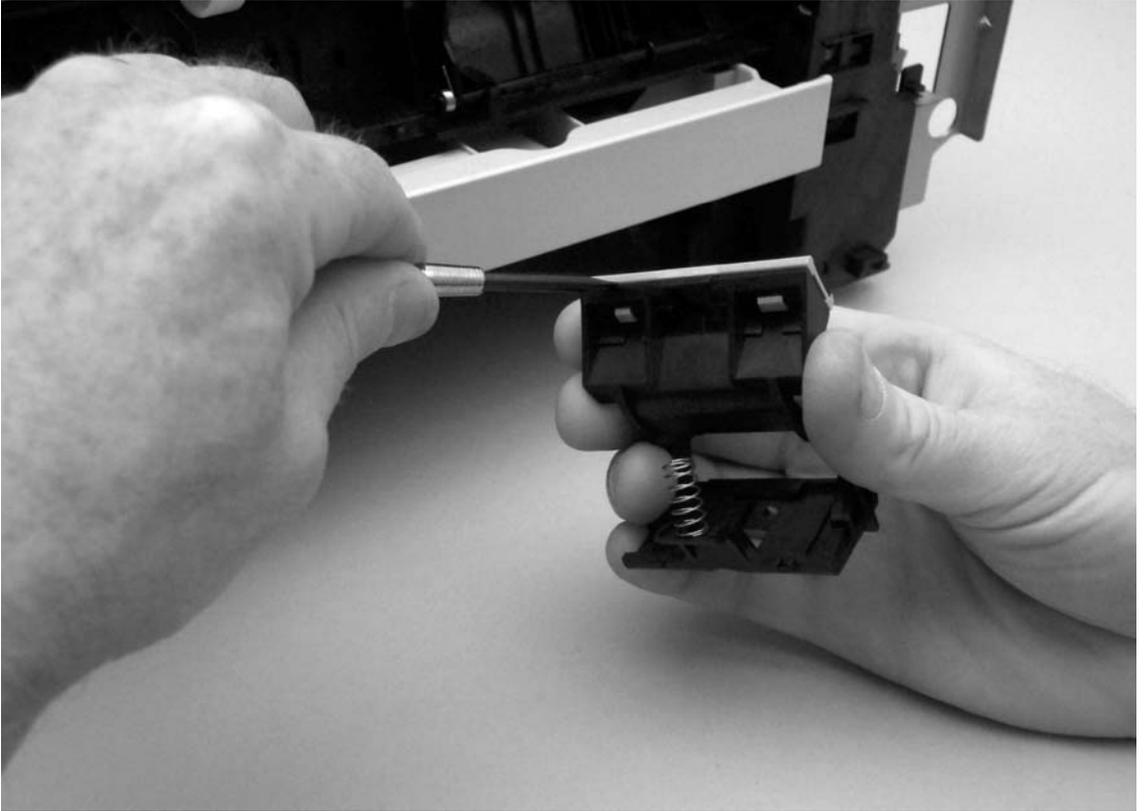
Figure 60.   **Removing the tray 1 separation pad (3 of 3)**

Tray 2 pickup roller

1 Remove tray 2 and place the printer so that it rests on its rear cover.

2 Use a flatblade screwdriver to release the tab on the white, plastic lever (callout 1) at the left side of the tray 2 pickup roller, and then rotate the lever to a position perpendicular to its original position.
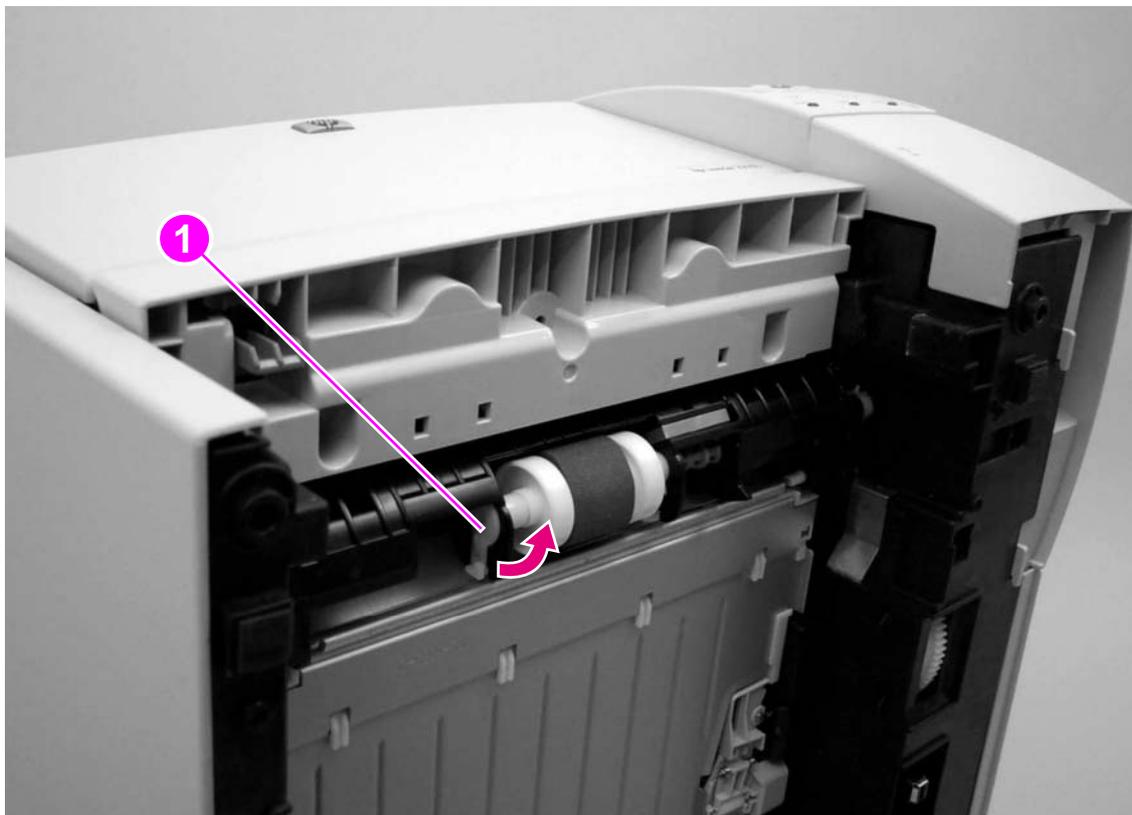
Figure 61.   **Removing the tray 2 pickup roller (1 of 3)**

3   Slide the lever toward the left side of the printer and through the hole to remove it.

4   Slide the pickup roller toward the left side of the printer.
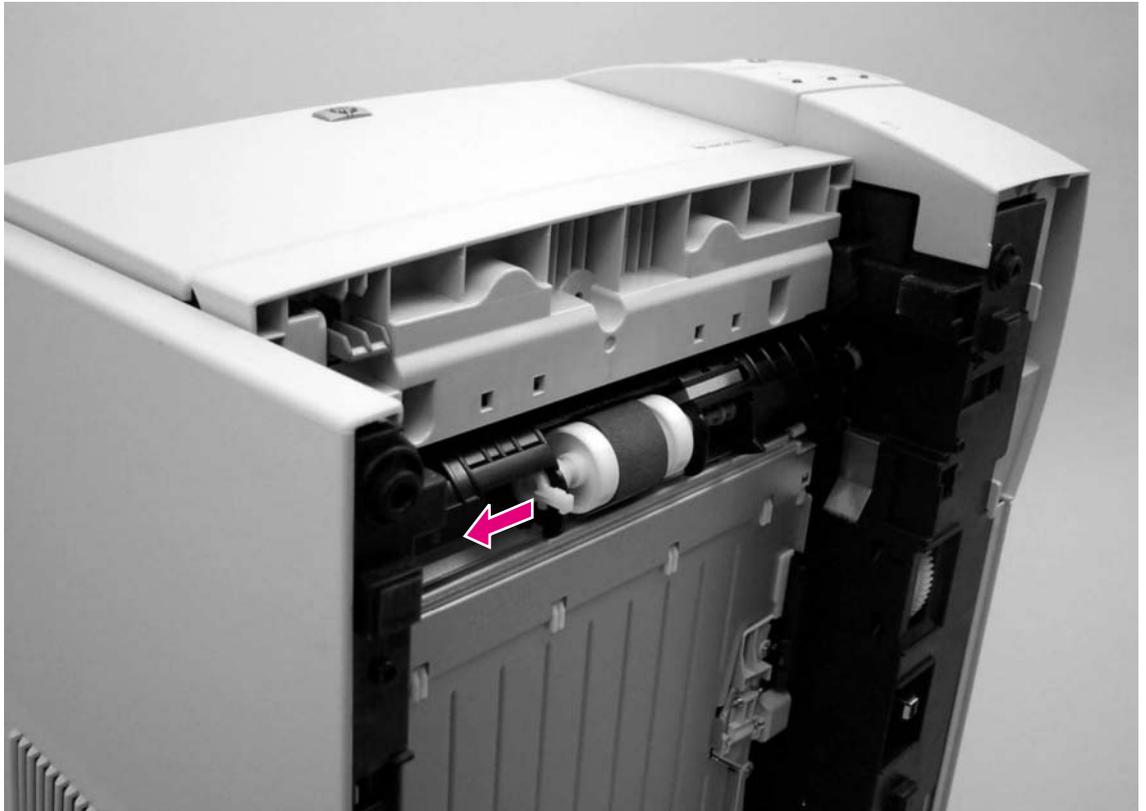
Figure 62.   **Removing the tray 2 pickup roller (2 of 3)**

5 Use a flatblade screwdriver to release the tab on the lever (callout 2) at the right side of the pickup roller

6 Rotate the lever and slide it toward the right side of the printer in the same manner as the lever on the left side. Sliding the right-side lever releases the pickup roller shaft.
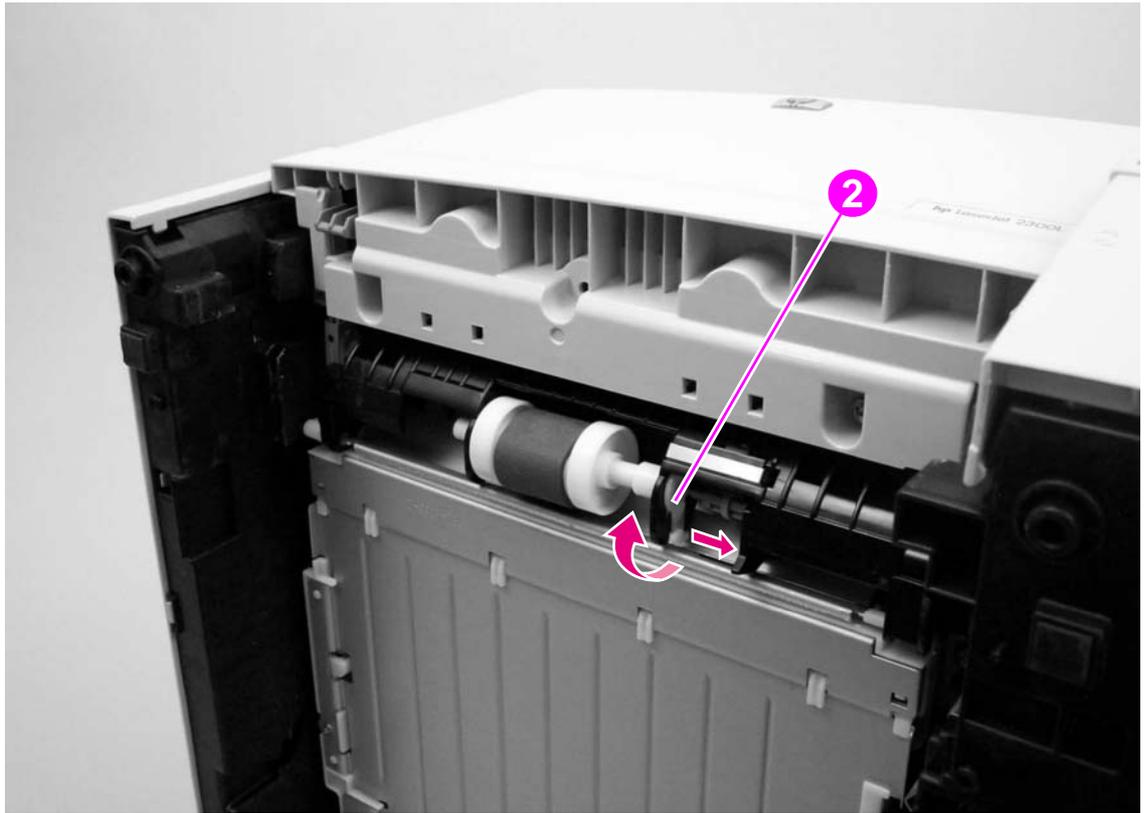
Figure 63. **Removing the tray 2 pickup roller (3 of 3)**

7 Lift the pickup roller out of the printer.

Tray 2 and 250-sheet feeder separation pad

1 Slide tray 2 or the media tray of a 250-sheet feeder out of the printer.

2 Press down the lift plate to lock it in place.

3 Use a flatblade screwdriver to press two tabs (callout 2), releasing the separation pad.

4 Slide the separation pad straight up and out of the tray.
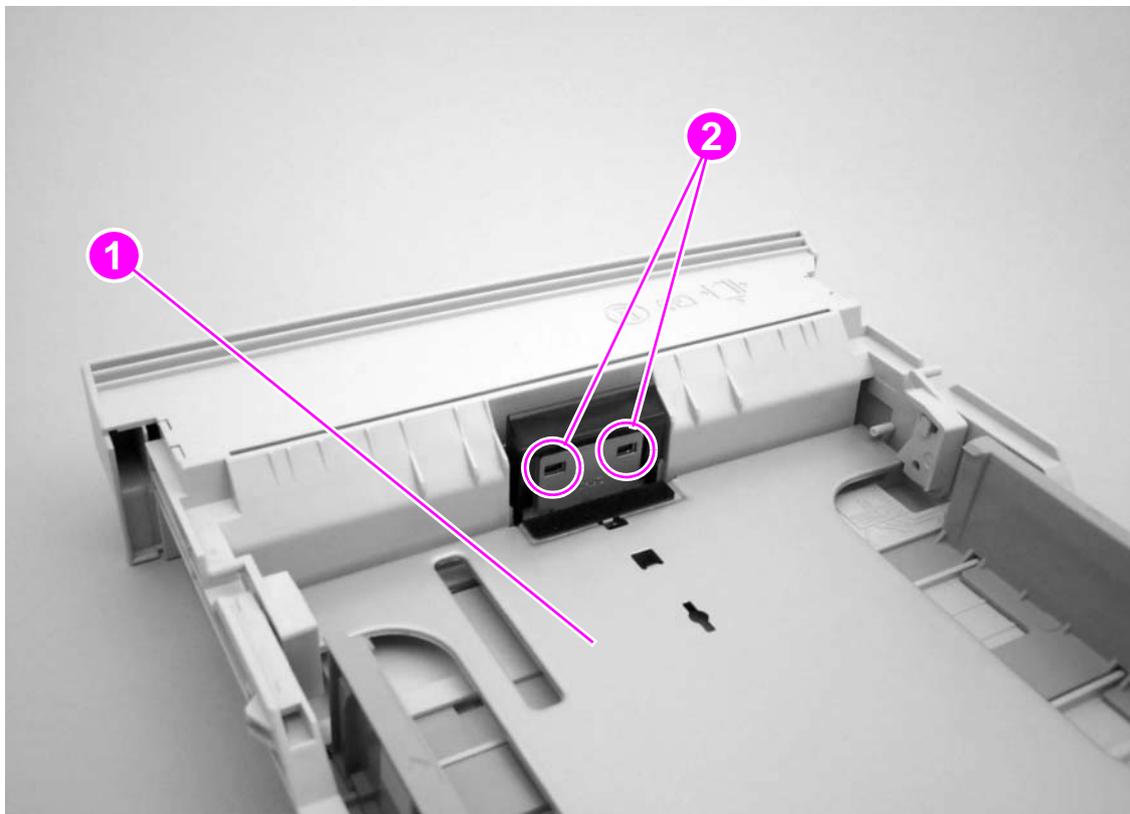
Figure 64.　　　　　**Removing the tray 2 and 250-sheet feeder separation pad**

Fan

1 Remove all of the covers and the control-panel assembly (see pages 113 through 124).

2 Unplug the fan cable connector (callout 1) from the engine controller PCA.

3 Remove two screws (callout 2) from the fan.
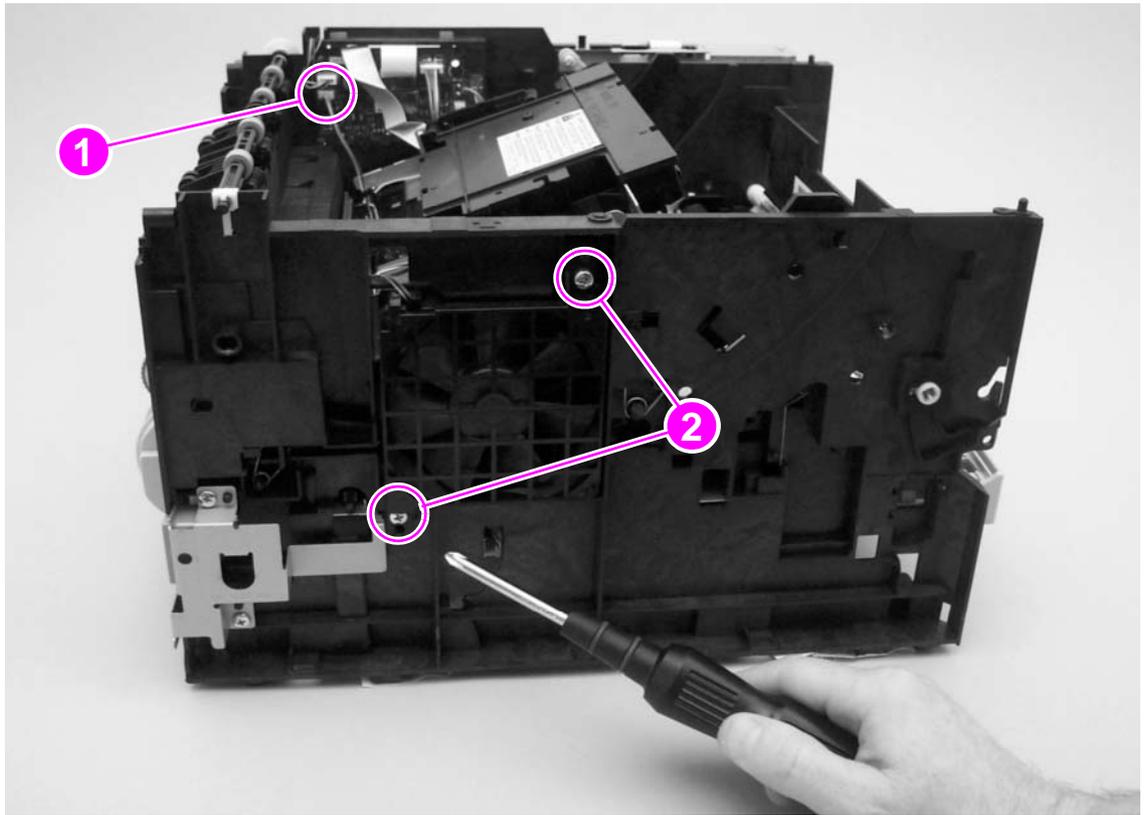
Figure 65.   **Removing the fan**

4 Unthread the fan cable from the cable harness, and then lift the fan away from the printer.

Fuser

1   Remove the following covers:

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)

2   Remove two screws (callout 1) from the fuser cover and then lift the fuser cover away from the printer.
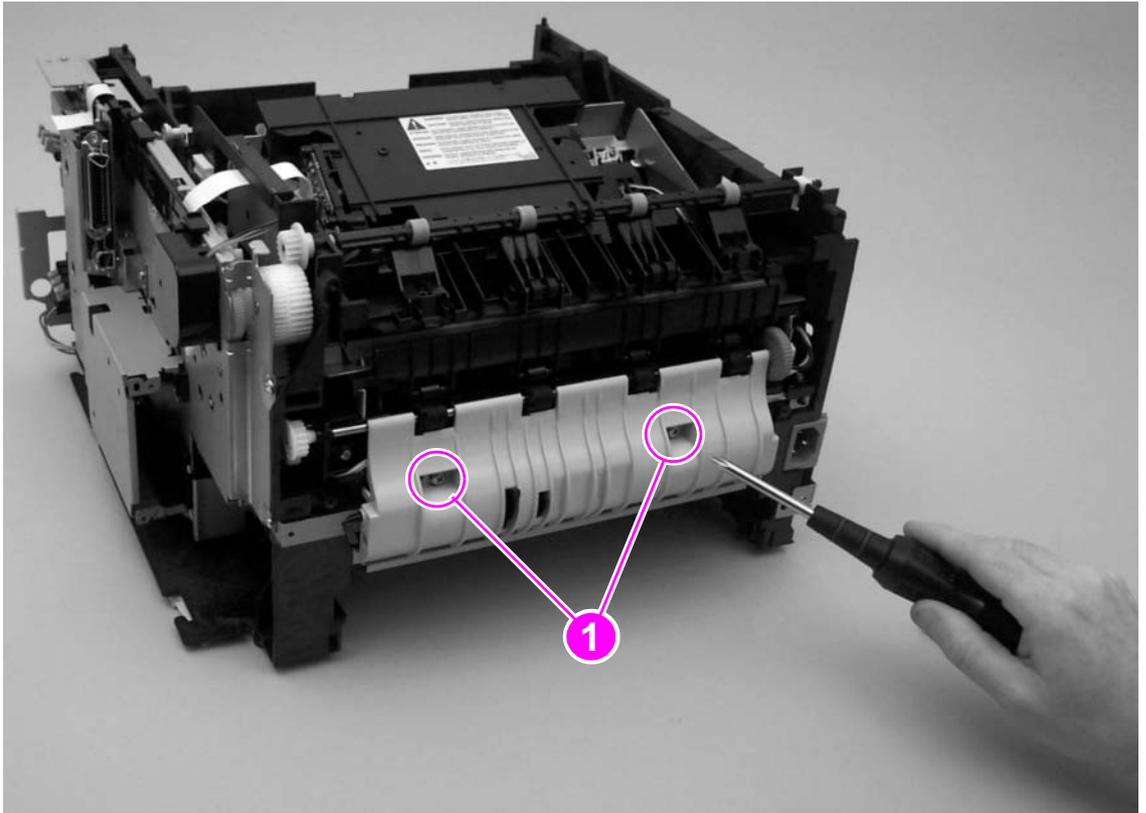
Figure 66.   **Removing the fuser (1 of 2)**

3 Use a small flatblade screwdriver to disengage the tab on one connector (callout 2) and then unplug the connector.

4 Unplug two connectors (callout 3).

5 Remove two screws (callout 4 and 5).
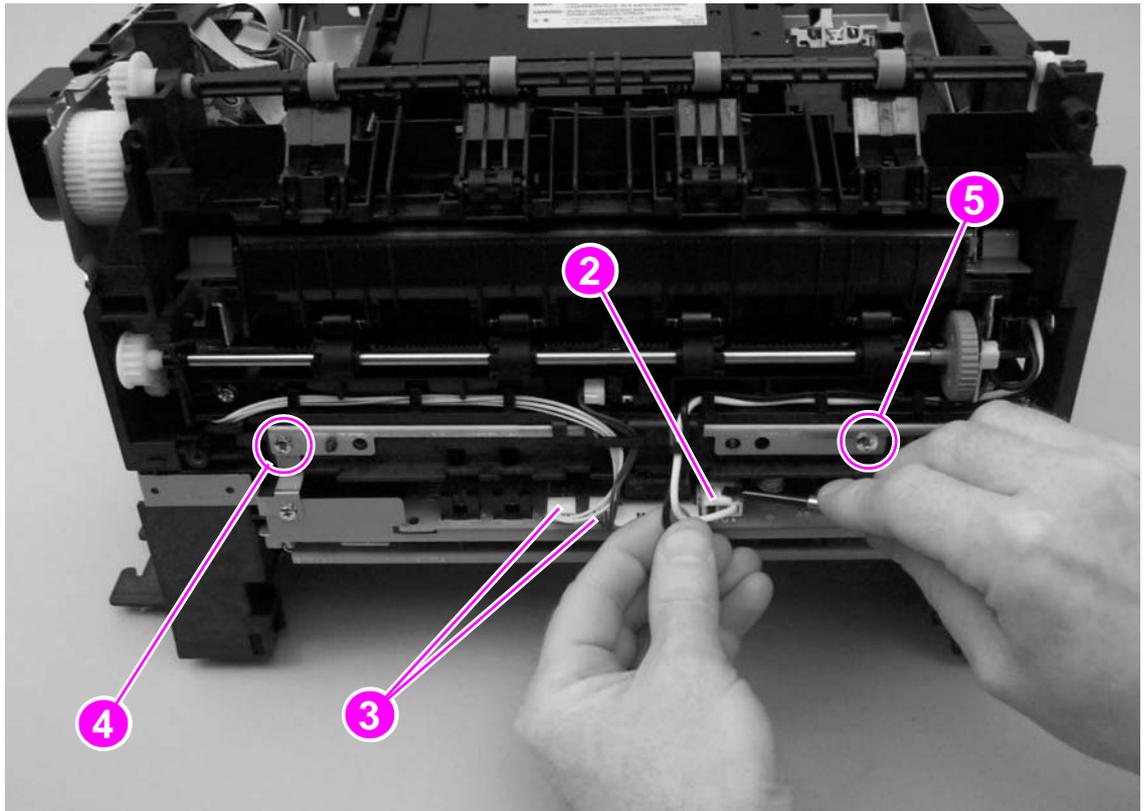
Figure 67. **Removing the fuser (2 of 2)**

6 Pull the fuser straight out and away from the printer.

Laser/scanner

1   Remove all of the covers and the control-panel assembly (see pages 113 through 124).

2   Unplug one cable connector (callout 1) from the engine controller PCA.

3   Unplug the flat, flexible cable (callout 2) from the laser/scanner.

4   Remove four screws (callout 3).

Figure 68.   **Removing the laser/scanner**

5   Lift the laser/scanner off of the laser/scanner plate.

Reinstall note

Reattaching the flat, flexible cable to the laser/scanner *before* reseating the laser/scanner might be easier than reattaching it afterwards.

Laser/scanner plate

1 Remove all of the covers and the control-panel assembly (see pages 113 through 124).

2 Unplug the fan connector (callout 1; see callout 1 on page 140 for another view of the fan connector) from the engine controller PCA and then unwind the fan cable from the cable holders that are on top of the laser/scanner plate.

3 Unplug the flat, flexible cable (callout 2) from the laser/scanner.

4 Unplug two connectors (callout 3) from the engine controller PCA.

5 Remove one grounding screw (callout 4).

6 Remove four screws (callout 4), and then lift the laser/scanner plate out of the printer.
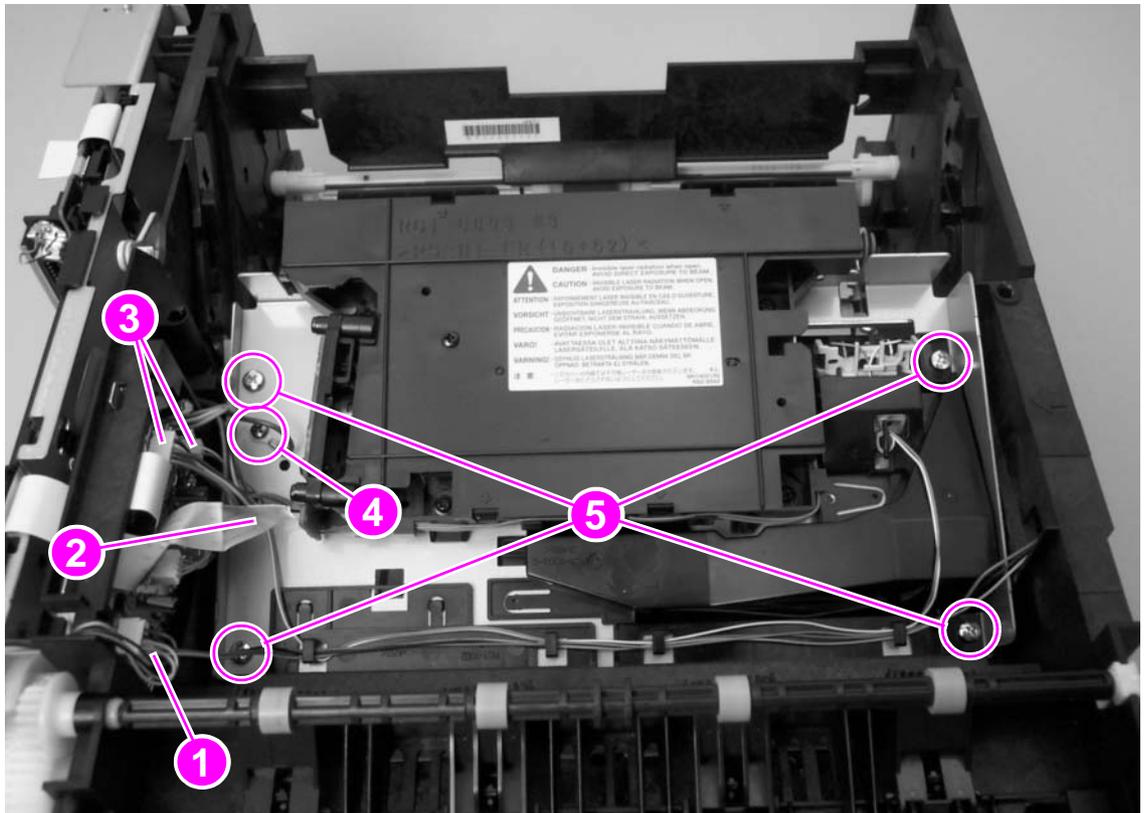
Figure 69.   **Removing the e-label reader (1 of 3)**

E-label reader

1. Remove all of the covers and the control-panel assembly (see pages 113 through 124).

2. Remove the laser/scanner plate (page 144).

3. Unwind the e-label reader cable (callout 5) from the cable holders that are on top of the laser/scanner plate.

Note   Examine the cable routing. Make sure that you loop the cable around the vertical cable holder (callout 6) when you reinstall the e-label reader.
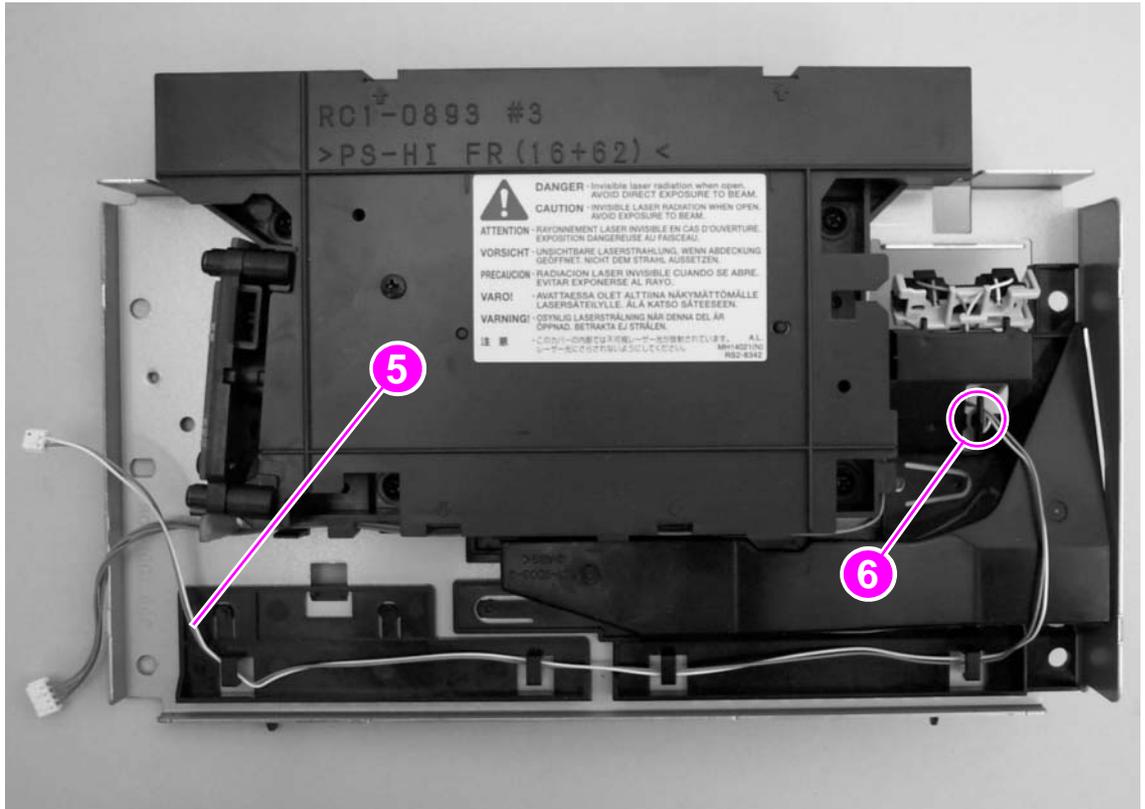
Figure 70.   **Removing the e-label reader (2 of 3)**

4 Turn the laser/scanner plate over and then use a flatblade screwdriver to pry the e-label reader out of its assembly on the laser/scanner plate.
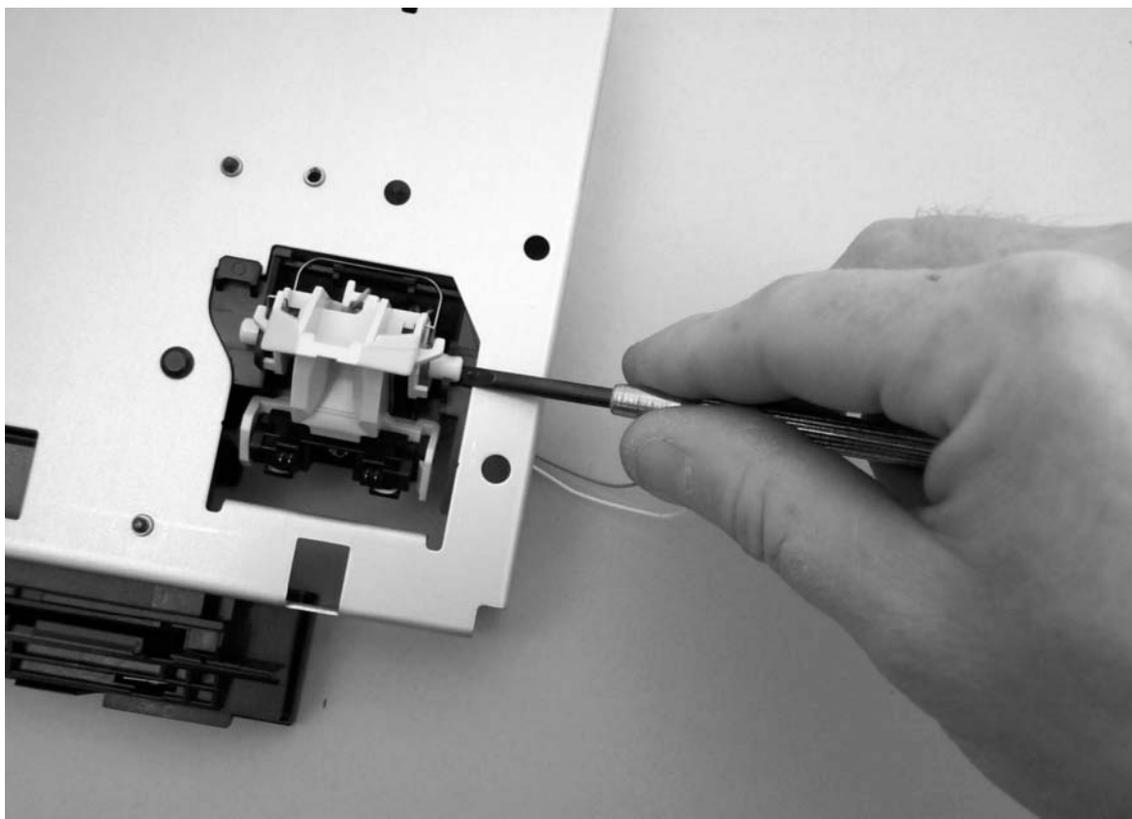
Figure 71.   **Removing the e-label reader (3 of 3)**

Formatter

1 Remove the following covers and assemblies:

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)
- control panel (page 120)
- top cover assembly (page 121)

2 Use a flatblade screwdriver to press down the tab at the top of one connector (callout 1) and then unplug the connector.

3 Unplug the flat, flexible cable (callout 2) from the formatter.

4 Remove five screws (callout 3).
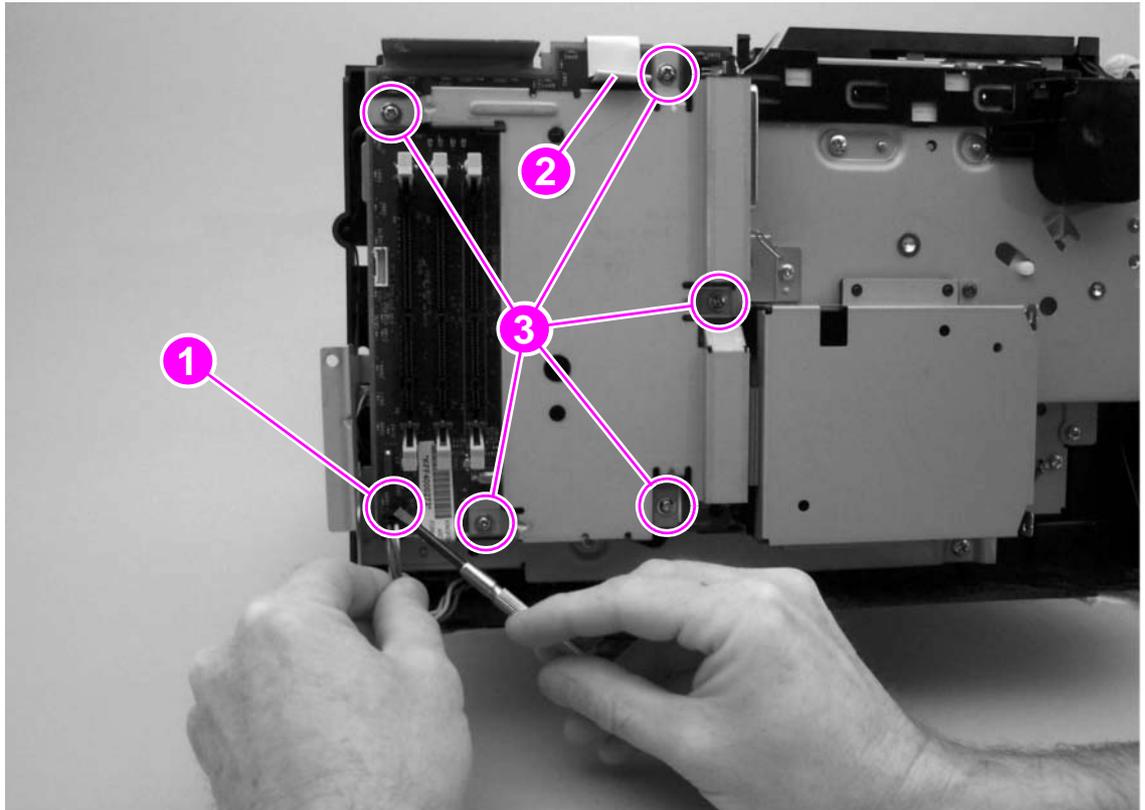
Figure 72.   **Removing the formatter**

5 Lift the formatter off of the printer.

Reinstall note

Use the locator pin at the lower edge of the formatter plate (toward the back of the printer) to place the plate correctly.

Drive assembly

1 Remove the following covers and assemblies:

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)
- control panel (page 120)
- top cover assembly (page 121)
- formatter (page 147)

2 Unplug two connectors (callout 1).

3 Unplug one flat, flexible cable (callout 2) from the engine controller PCA.

4 Remove one grounding screw (callout 3).
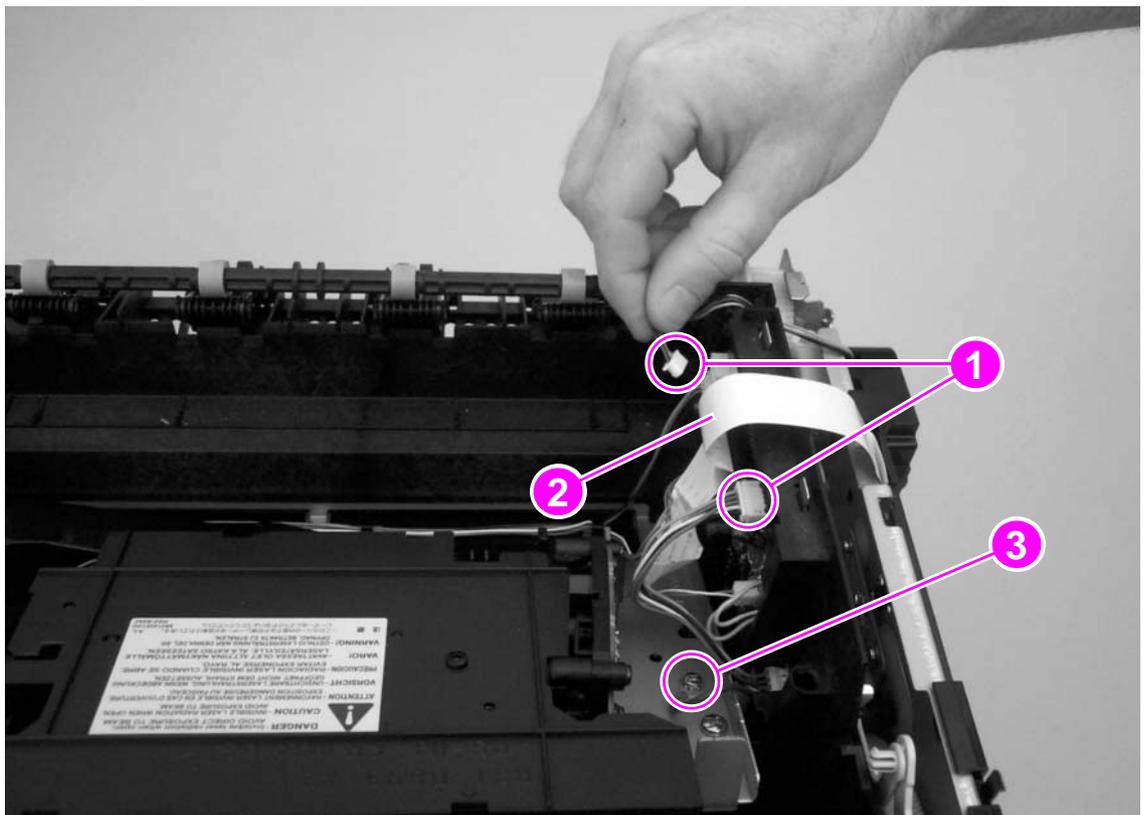
Figure 73.   **Removing the drive assembly (1 of 3)**

5   Remove eight screws (callout 4).
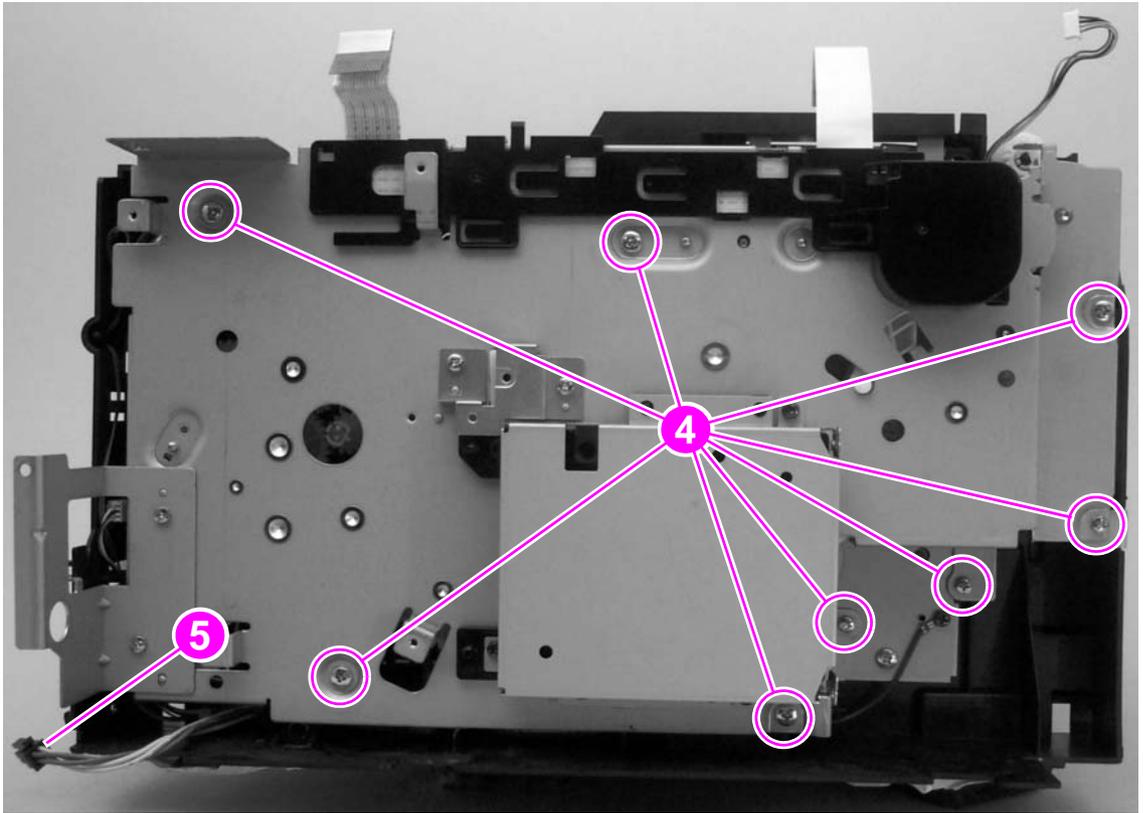
Figure 74.   **Removing the drive assembly (2 of 3)**

Reinstall note

Before replacing the screws, make sure that the connector (callout 5) is routed below the drive assembly plate. Do not thread the cable through the holes in the plate.

6 Guide the cables through the hole in the printer frame and then gently rotate the top of the drive assembly away from the printer.
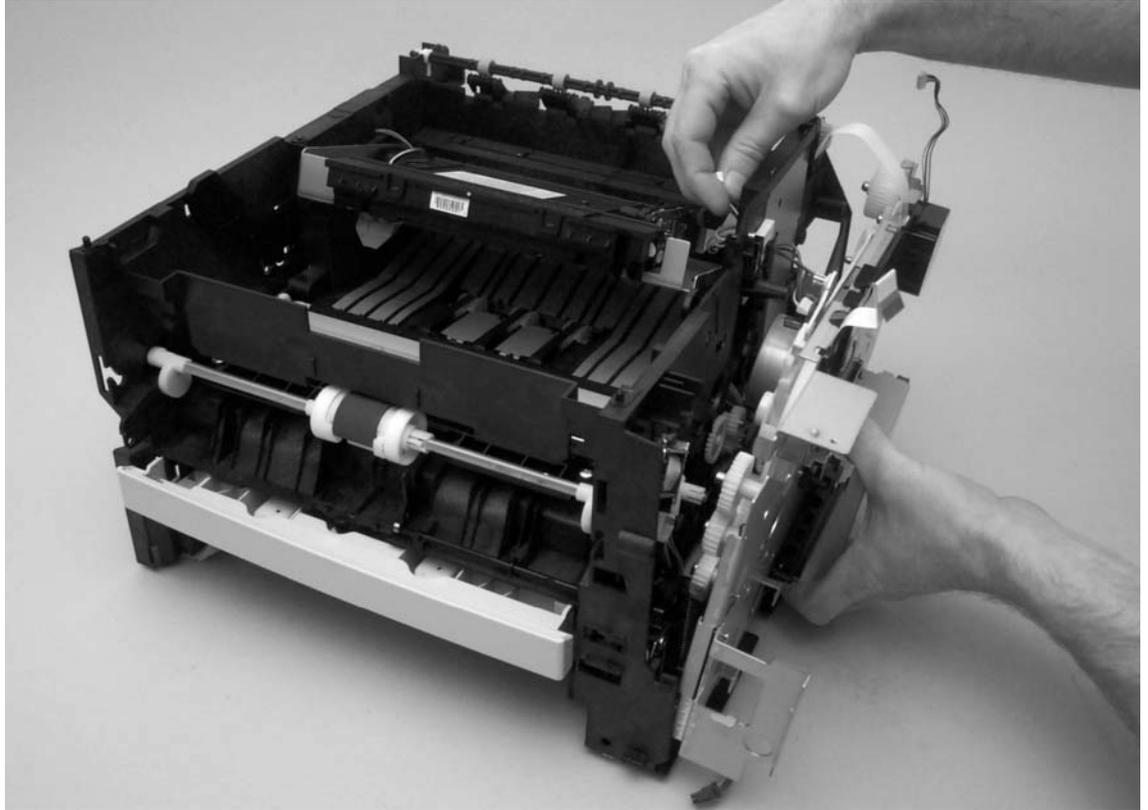
Figure 75. **Removing the drive assembly (3 of 3)**

7 Lift the assembly away from the printer.

Main motor

1   Remove the following covers and assemblies:
    - I/O cover (see page 113)
    - DIMM cover (page 115)
    - rear cover (page 116)
    - front cover (page 119)
    - control panel (page 120)
    - top cover assembly (page 121)
    - formatter (page 147)
    - drive assembly (page 148)

2   Remove three screws (callout 1).

3   Lift the main motor off of the drive assembly.
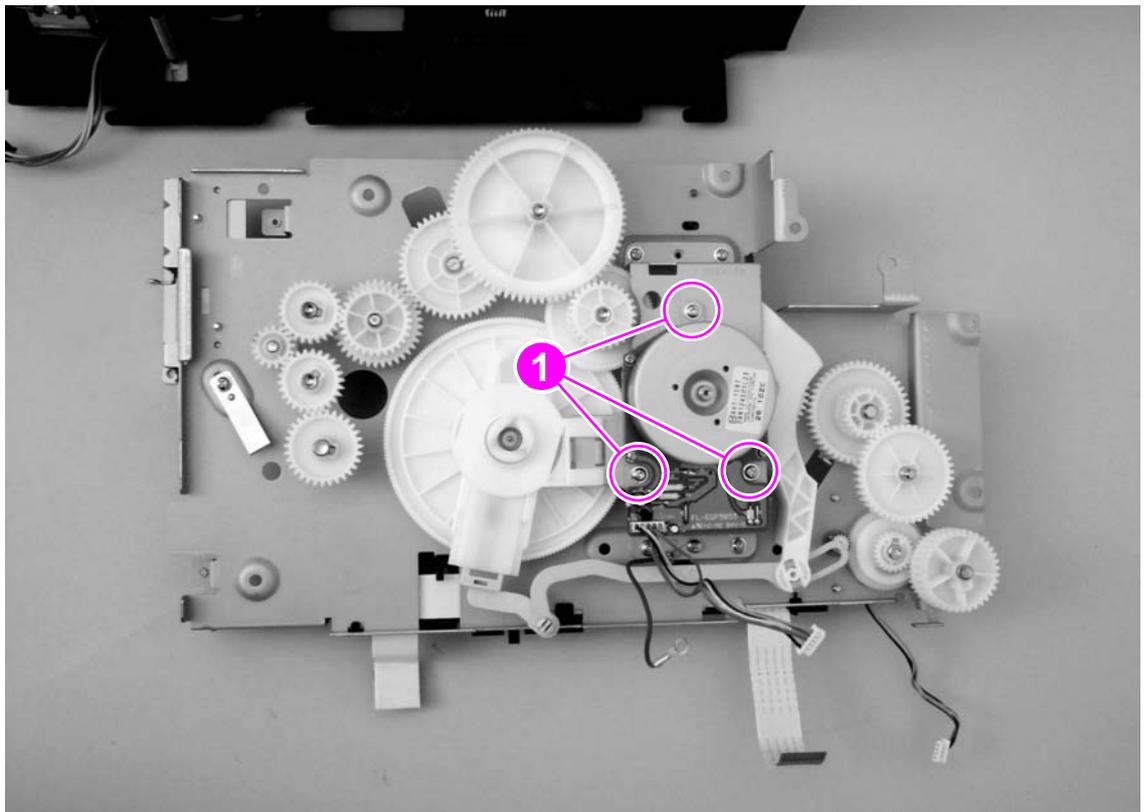
Figure 76.   **Removing the main motor**

Flat, flexible cable

1 Remove the following covers and assemblies:

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)
- control panel (page 120)
- top cover assembly (page 121)
- formatter (page 147)

2 Use a flatblade screwdriver to release two tabs (callout 1) on the cable guide.

3 Slide the guide toward the back of the printer and then lift the guide and the flat, flexible cable off of the drive assembly plate.

Note   The flat, flexible cable is pre-folded to match the locations of its connectors. To take advantage of the folds, make sure that the cable is situated correctly before reinstalling the cable guide.
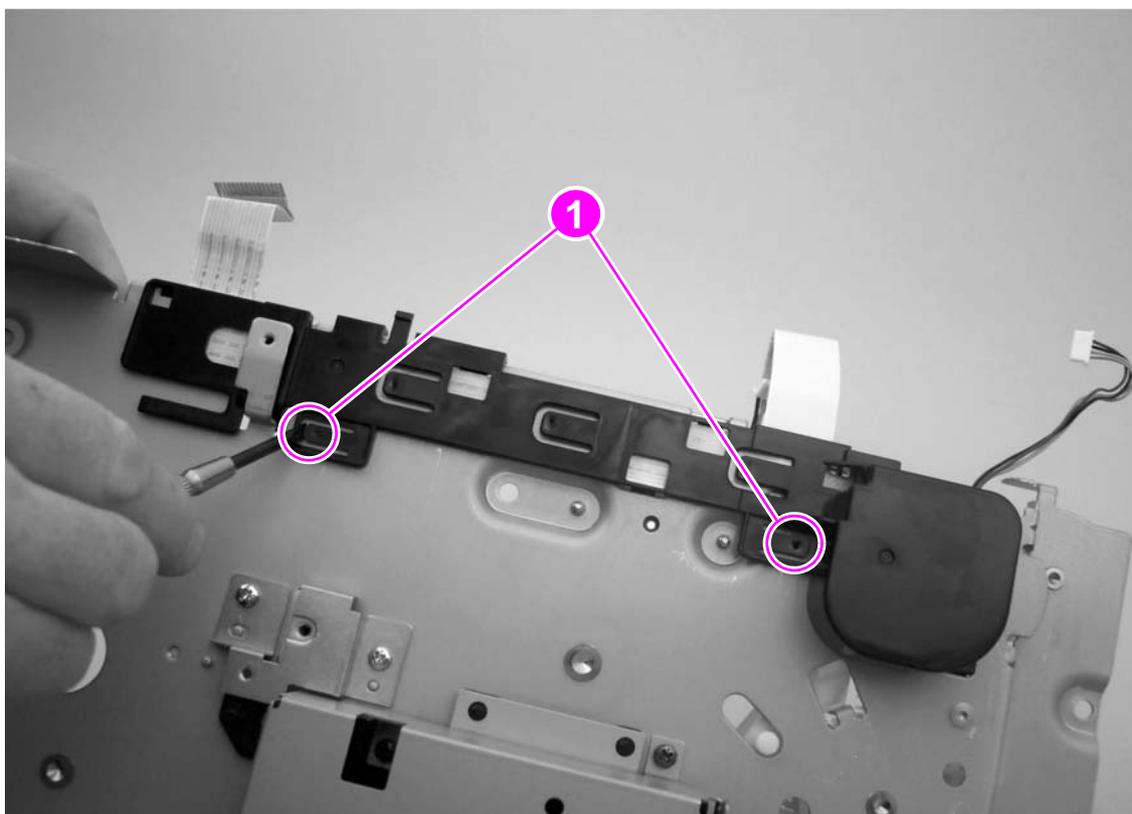
Figure 77.   **Removing the flat, flexible cable**

Engine controller PCA
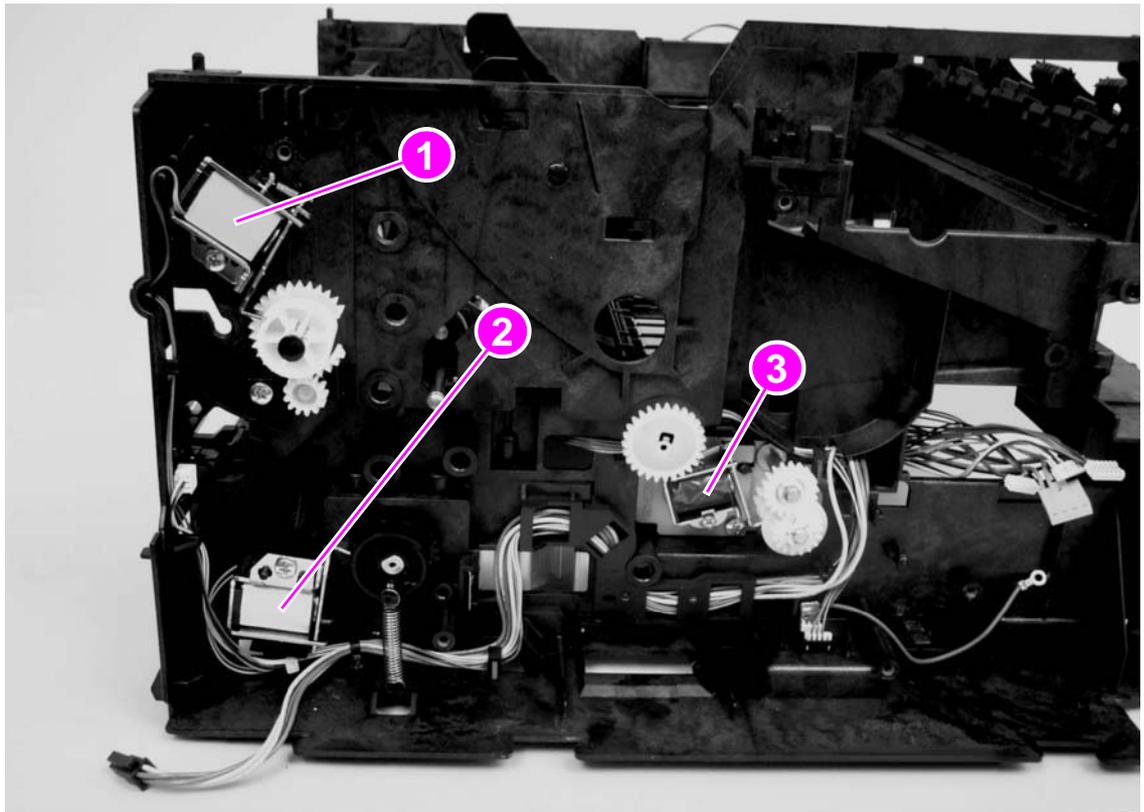
1   Remove the following covers and assemblies:
- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)
- control panel (page 120)
- top cover assembly (page 121)
- formatter (page 147)
- drive assembly (page 148)

2   Use a flatblade screwdriver to pry one connector (callout 1) off of the switch (callout 2).

Note   After the connector and the switch are separated, the switch can easily fall out of its place in the printer frame. Make sure that you do not lose the switch.
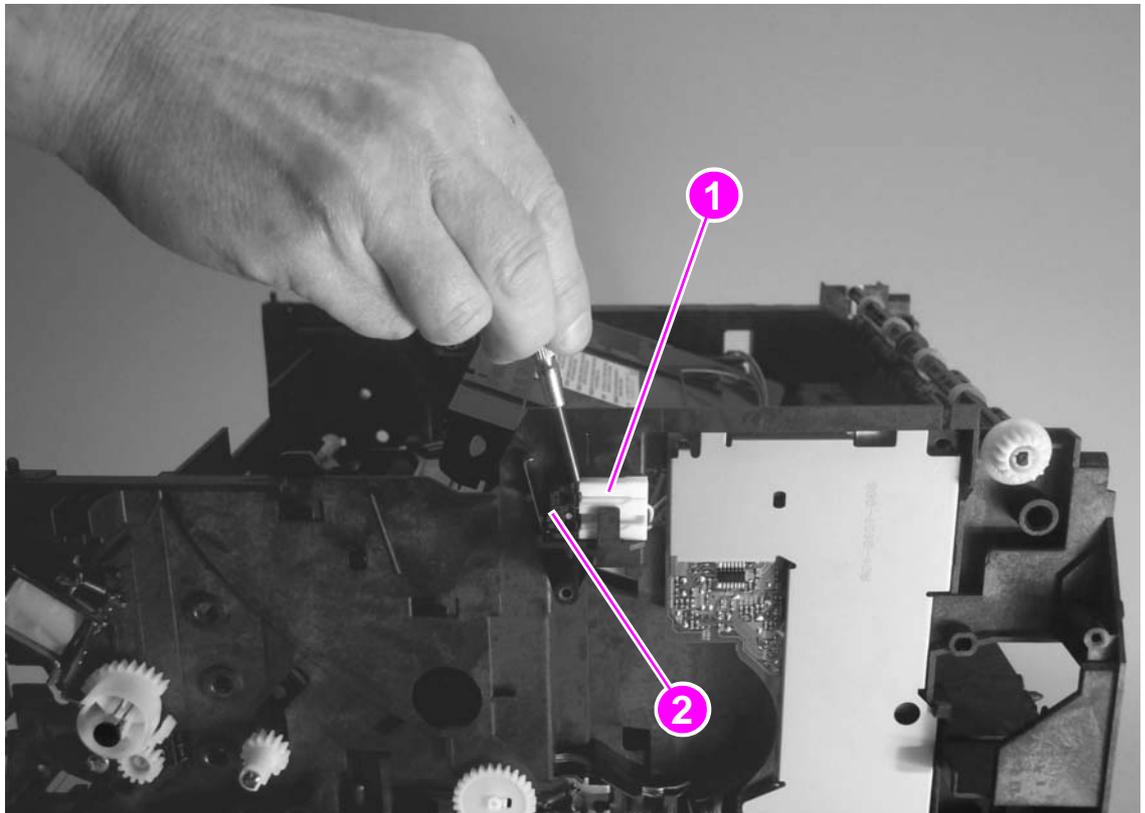
Figure 78.   **Removing the engine controller PCA (1 of 5)**

3 Unplug two connectors (callout 3).

4 Unplug the flat, flexible cable (callout 4) from the laser/scanner.
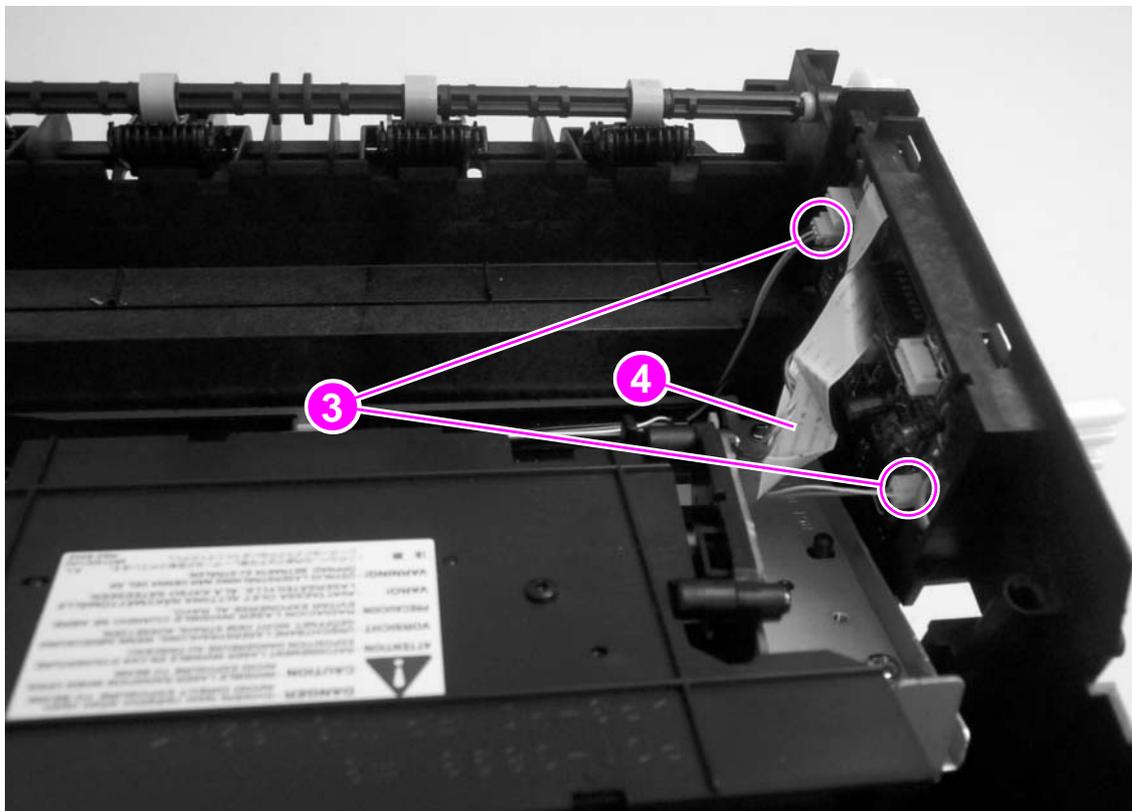
Figure 79.   **Removing the engine controller PCA (2 of 5)**

5 Remove two screws (callouts 5 and 6; callout 6 indicates a grounding screw).

6 Rotate the bottom of the assembly away from the printer to clear two tabs (callout 7) at the top of the assembly and then rotate the top of the assembly away from the printer.
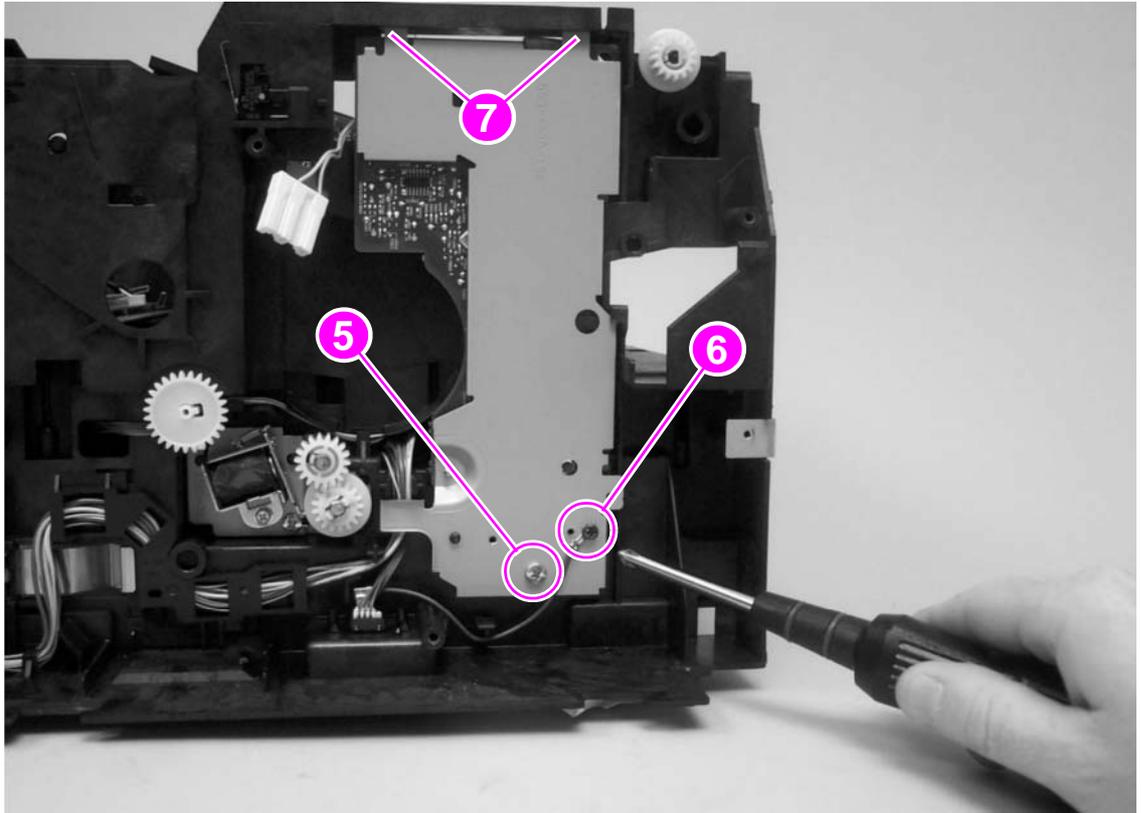
Figure 80. Removing the engine controller PCA (3 of 5)

Reinstall note

Make sure that you insert the two tabs (callout 7 in figure 80) into the slots in the printer frame before replacing the screws.

7 Unplug the remaining four connectors and the flat, flexible cable from the engine controller PCA.
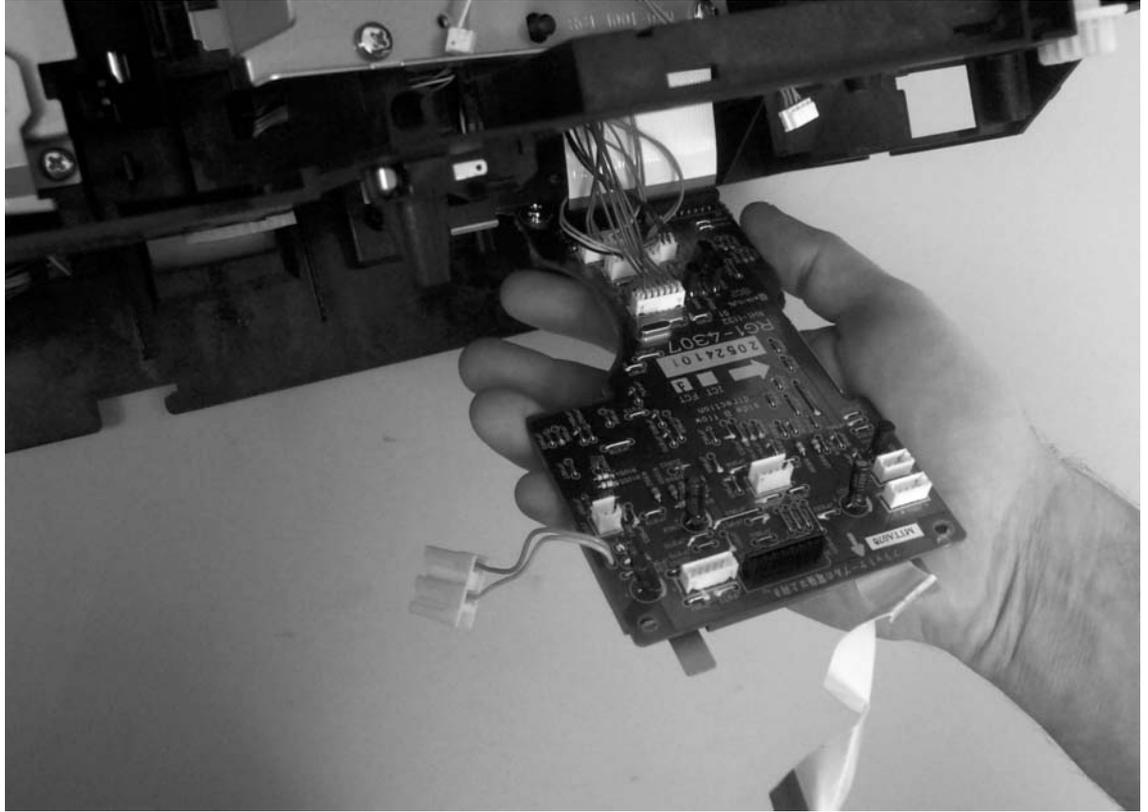
Figure 81. Removing the engine controller PCA (4 of 5)

8 Remove one screw (callout 7) from the engine controller PCA.
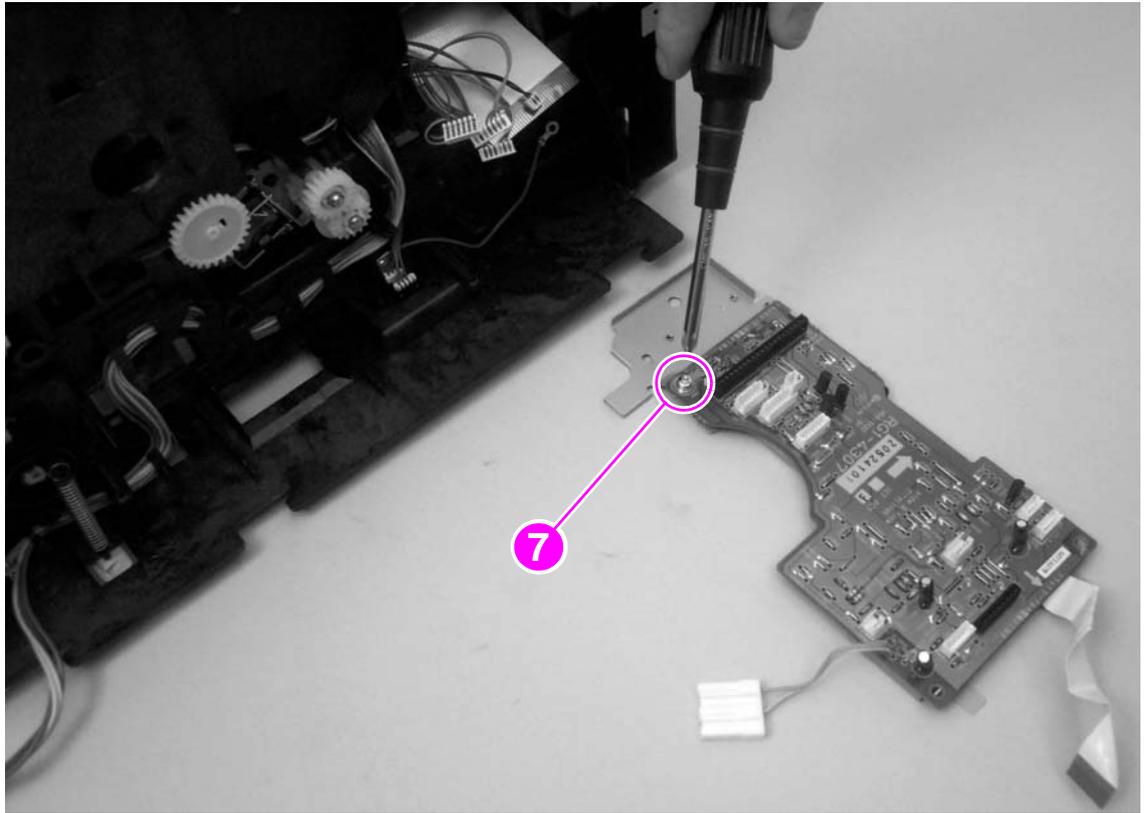
Figure 82. Removing the engine controller PCA (5 of 5)

9 Lift the engine controller PCA off of the metal plate.

Solenoid

The three solenoids can be removed by removing one screw from each solenoid. Figure 83 shows each of the solenoids:

- tray 1 pickup solenoid (callout 1)
- tray 2 pickup solenoid (callout 2)
- automatic duplexer solenoid (callout 3)

1   Remove the following covers and assemblies:

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)
- control panel (page 120)
- top cover assembly (page 121)
- formatter (page 147)
- drive assembly (page 148)
- engine controller PCA

2   Remove one screw and then lift the solenoid out of the printer.

Note   Pay close attention to the cable routing for the solenoid as you remove it.

Figure 83.   **Removing the solenoid**

Access plate

1 Remove the following covers and assemblies:
   - I/O cover (see page 113)
   - DIMM cover (page 115)
   - rear cover (page 116)
   - front cover (page 119)
   - control panel (page 120)
   - top cover assembly (page 121)
   - formatter (page 147)
   - drive assembly (page 148)

2 Turn the printer so that the bottom of the printer faces up.

3 Pull the green access-plate release lever (callout 1) and then lift up the access plate slightly.
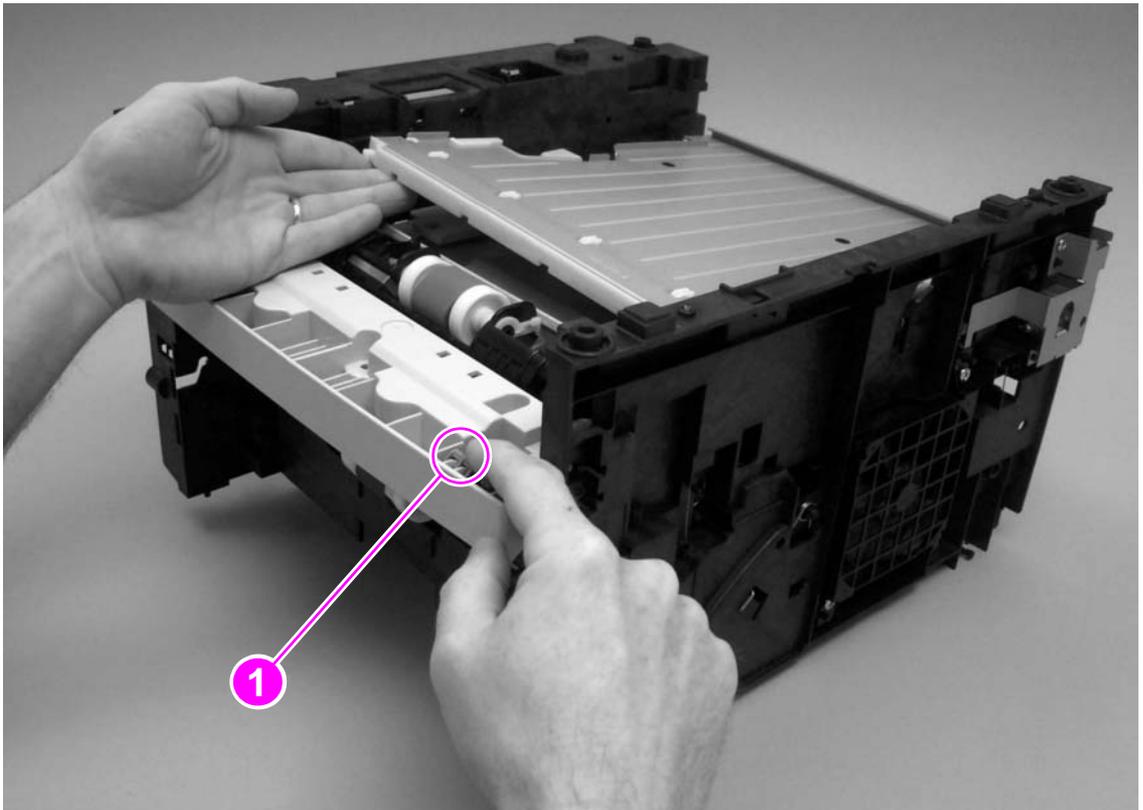
Figure 84.   **Removing the access plate (1 of 3)**

4 Press the spring (callout 2) while rotating the access plate to release the access plate from the printer frame.
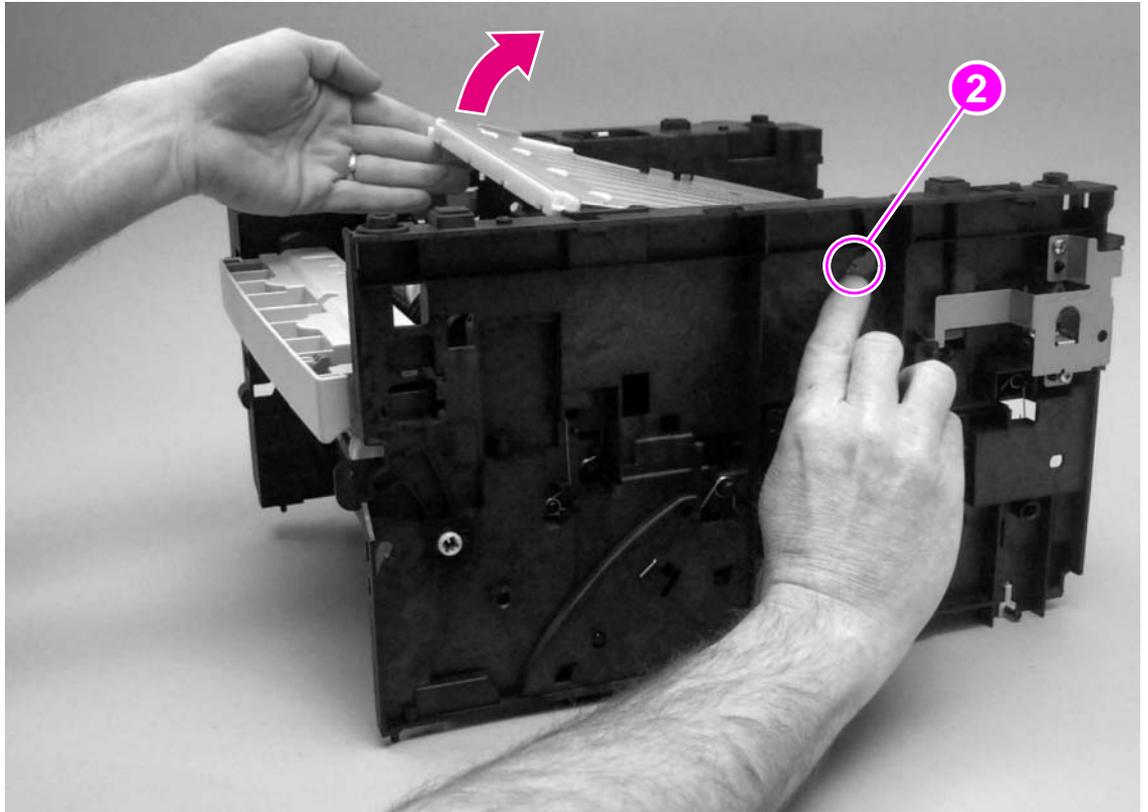
Figure 85. **Removing the access plate (2 of 3)**

5 Lift one corner of the access plate off of the pin (callout 3) and then slide the access plate off of the pin (callout 4) at the opposite side.
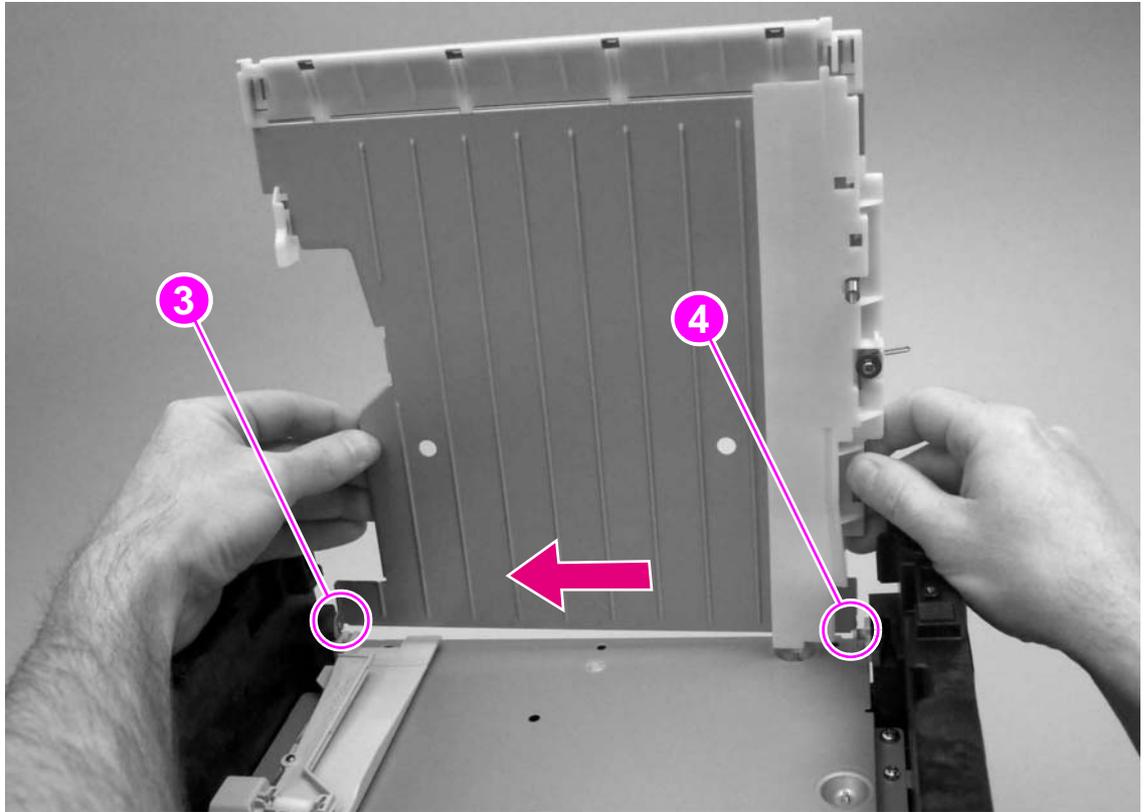
Figure 86. **Removing the access plate (3 of 3)**

Power supply

1   Remove the following covers and assemblies:

- I/O cover (see page 113)
- DIMM cover (page 115)
- rear cover (page 116)
- front cover (page 119)
- control panel (page 120)
- top cover assembly (page 121)
- formatter (page 147)
- drive assembly (page 148)
- access plate (page 159)

2   Remove two screws (callout 1) from the media guide and then lift the media guide off of the bottom plate.
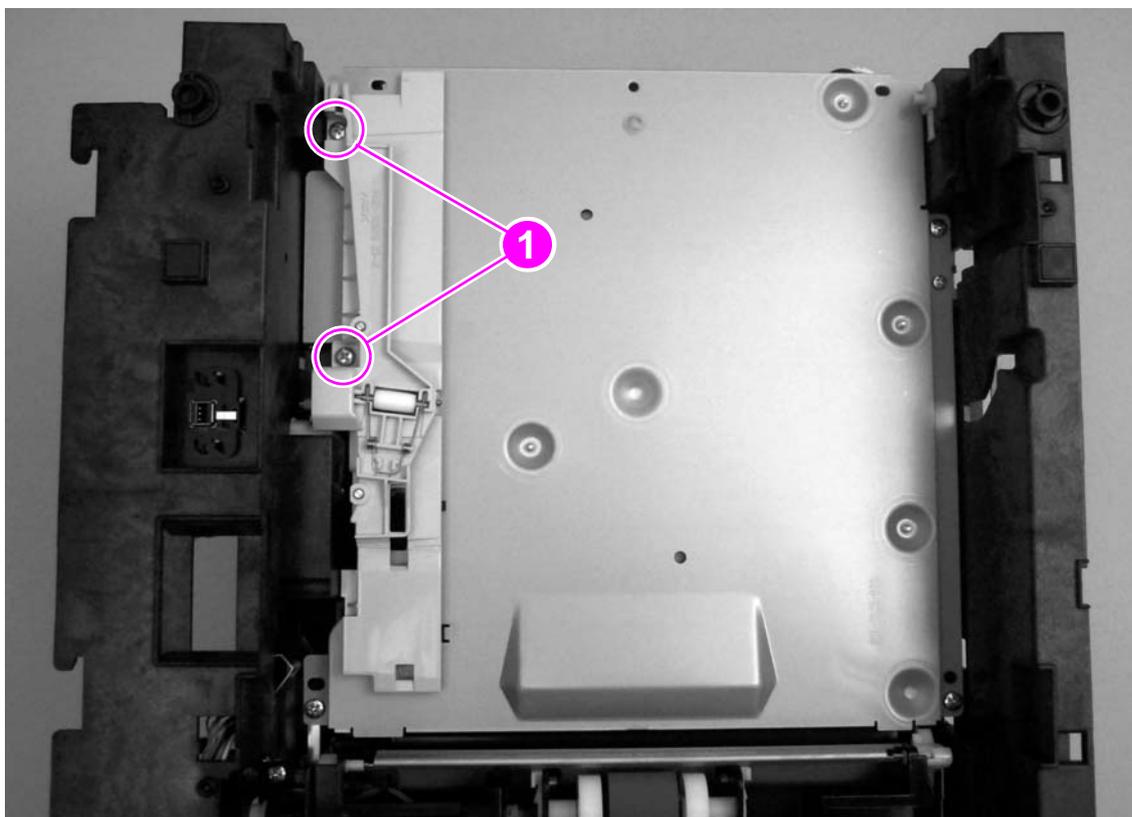
Figure 87.   **Removing the power supply (1 of 6)**

3 Use a small, flatblade screwdriver to release the tab on one connector (callout 2) and then unplug the connector.

Note In figure 88, the fuser has been removed. To remove the power supply from a printer in which the fuser is present, see page 142 for instructions to unplug the three additional connectors.
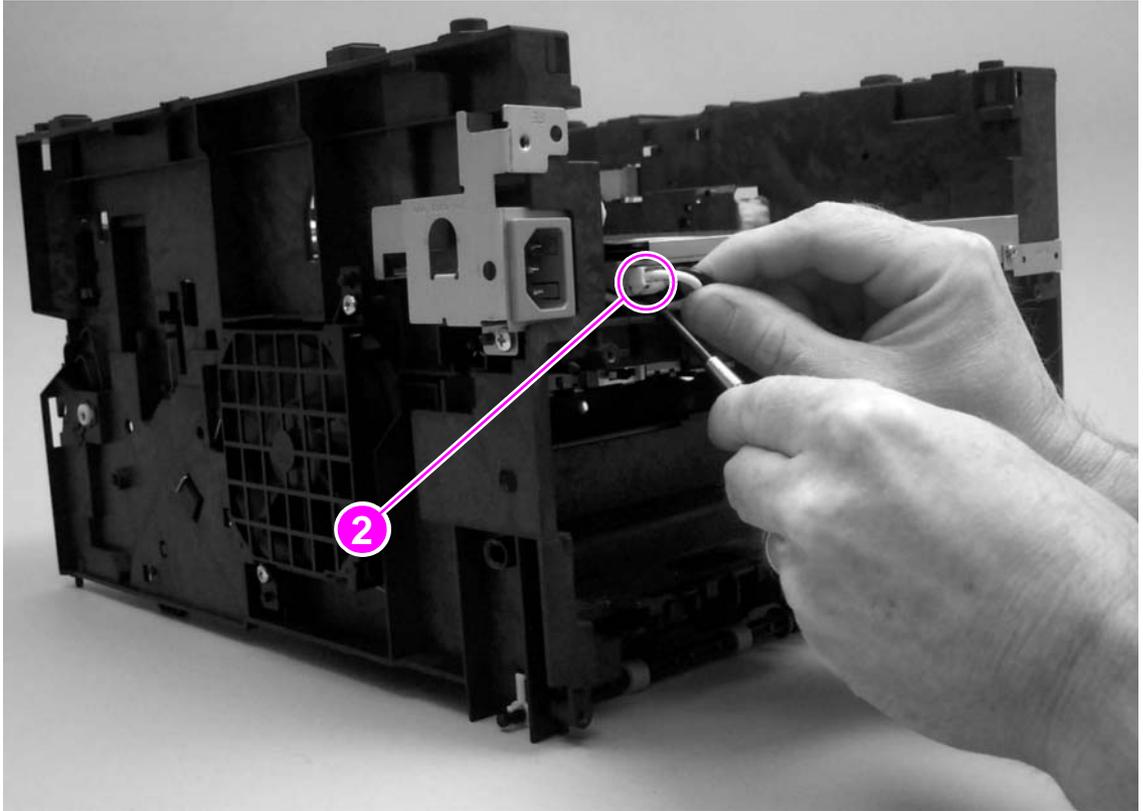
Figure 88. **Removing the power supply (2 of 6)**

4   Remove four screws (callout 3) from the bottom plate.

5   Remove one screw (callout 4) from the grounding plate.

Note   If the fuser has already been removed, then the grounding plate might fall off of the printer when the screw is removed from the grounding plate.
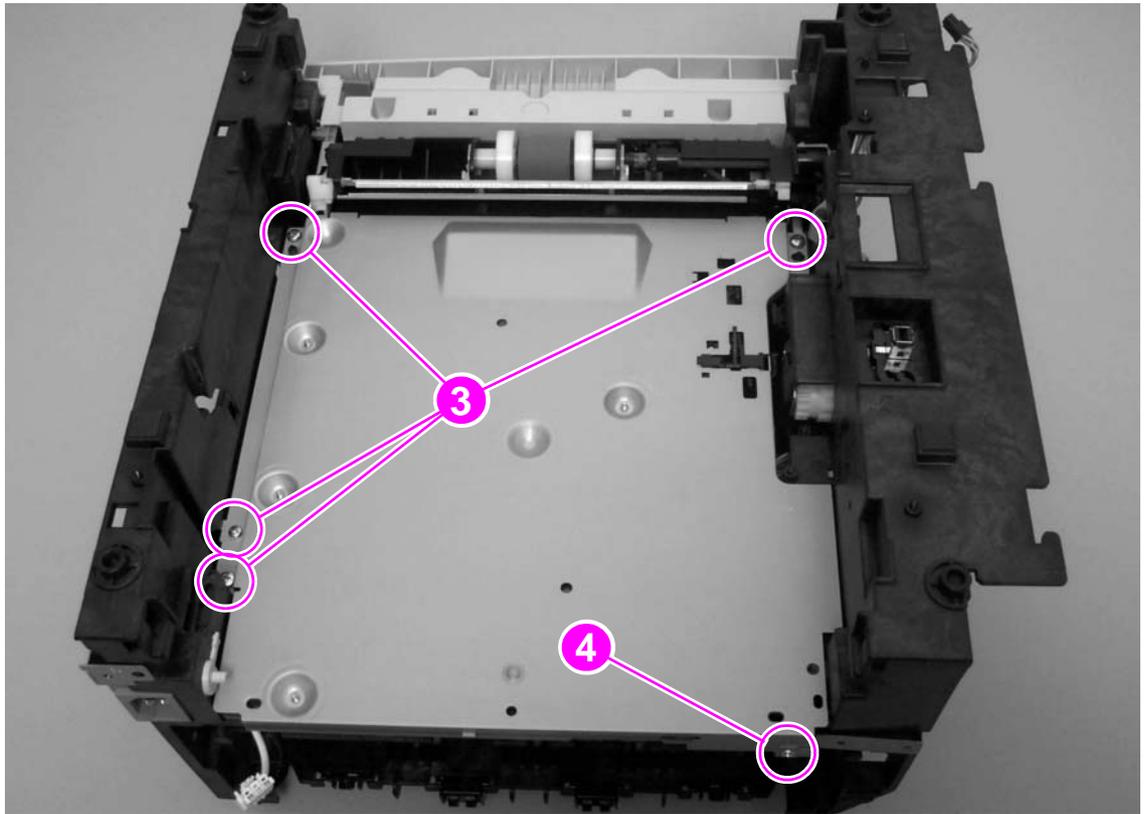
Figure 89.   **Removing the power supply (3 of 6)**

6 Lift the bottom plate slightly to reveal the power-supply PCA.

7 Release the tab on one connector (callout 5) and then unplug the connector.
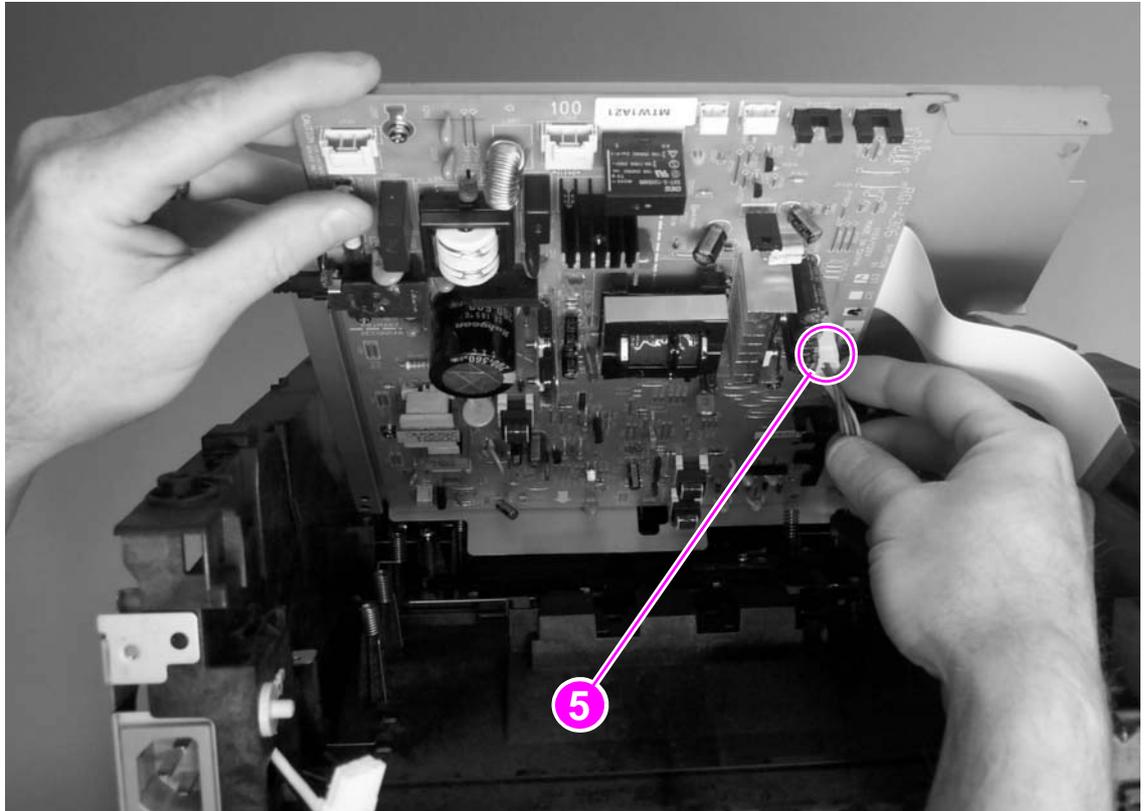
Figure 90.   **Removing the power supply (4 of 6)**

8 Remove four screws (callout 6) from the power-supply PCA.
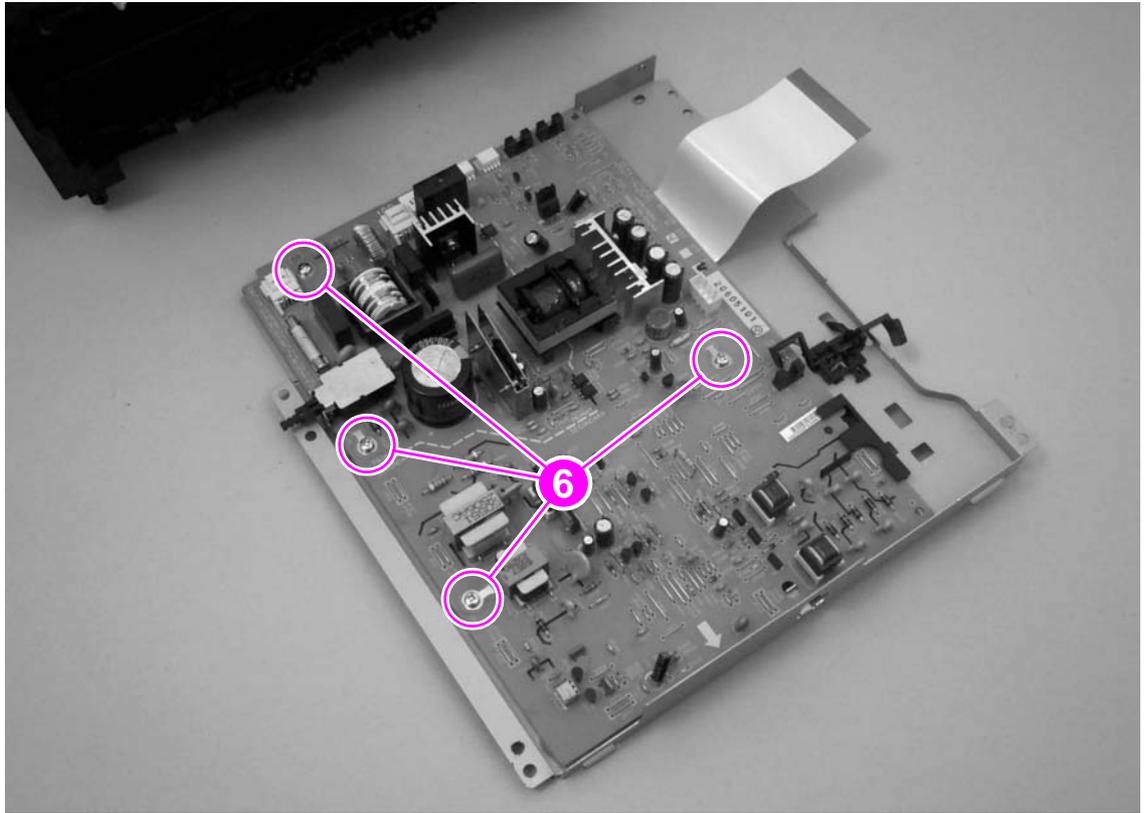
Figure 91.   **Removing the power supply (5 of 6)**

9 Use needle-nose pliers to pinch the plastic pin (callout 7) and lift the power-supply PCA off of the bottom plate.
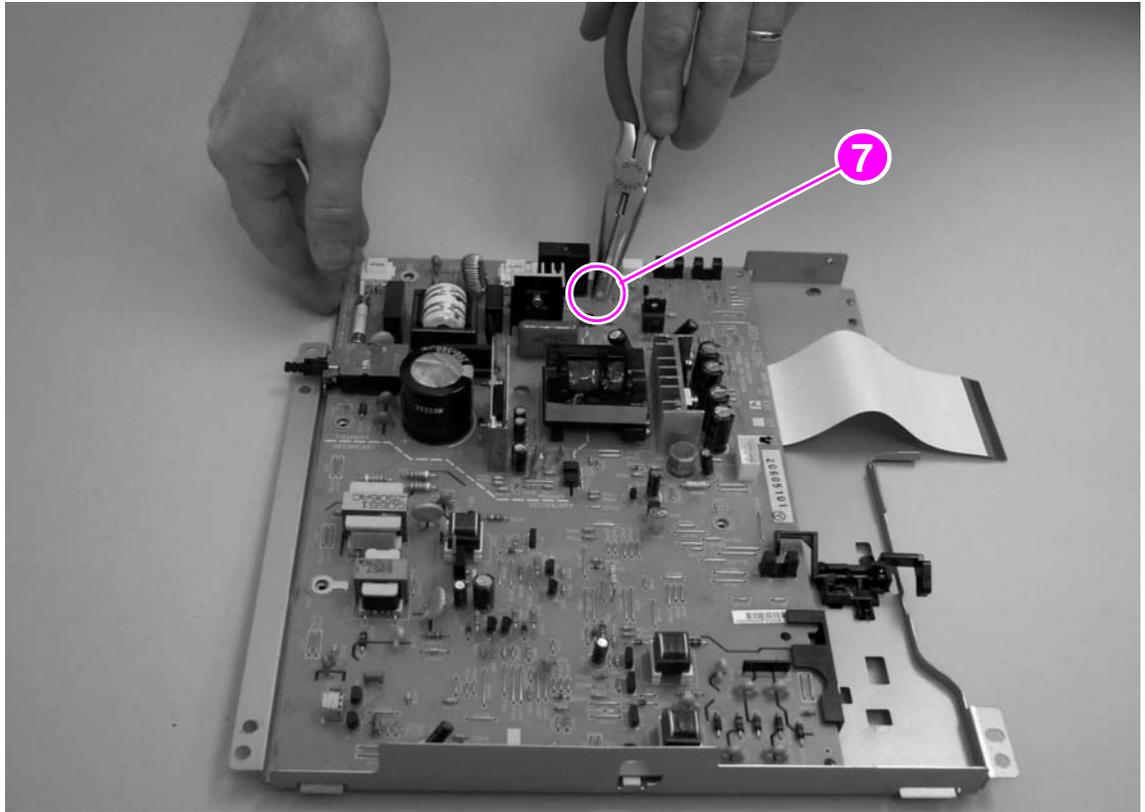
Figure 92. **Removing the power supply (6 of 6)**

Reinstall notes

Before reinstalling the power-supply PCA, make sure that the six spring-contacts (callout 7) are in place.
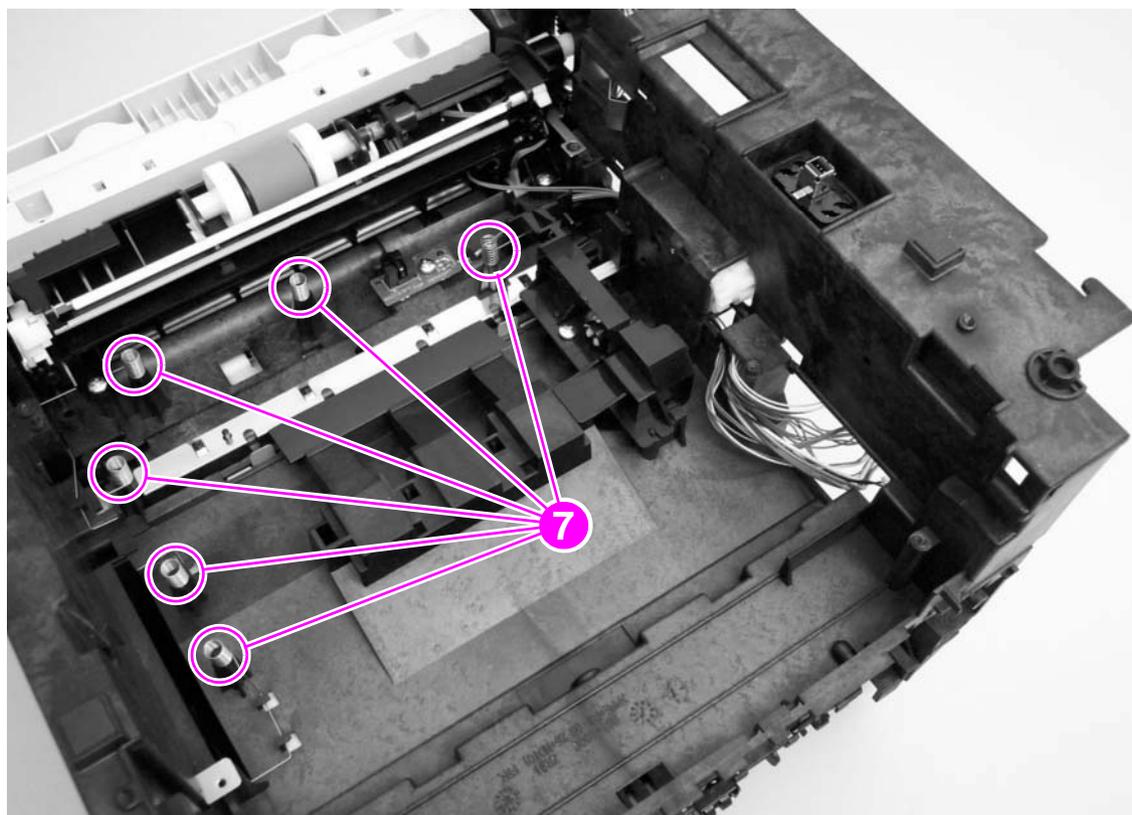
Figure 93.   **Power-supply PCA spring-contacts**

Top-output-bin delivery assembly

1   Remove the following covers and assemblies:

- all covers and the control-panel assembly (see pages 113 through 124)
- formatter (page 147)
- drive assembly (page 148)

2   Use a flatblade screwdriver to press the tab on the gear at the right side of the printer, and then slide the gear off of its shaft.
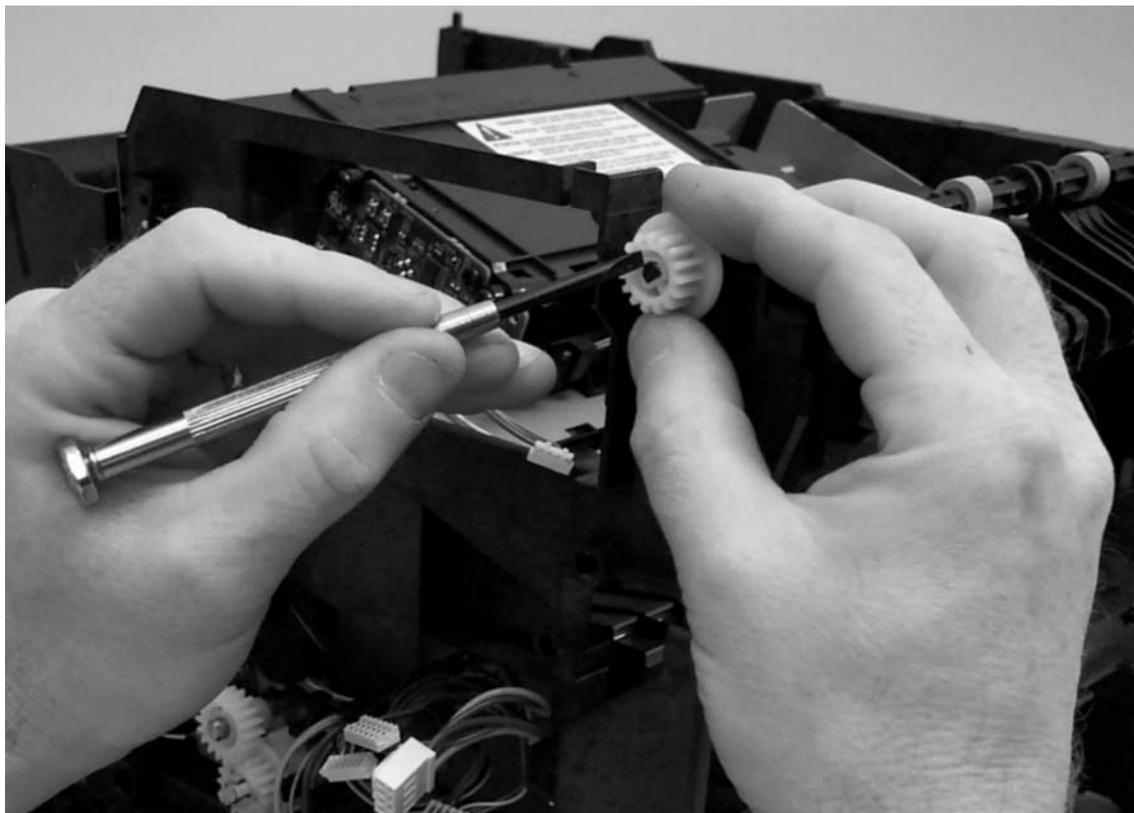
Figure 94.   **Removing the top-output-bin-delivery assembly (1 of 3)**

3   Separate the tabs that secure the bushing to the frame at the left side of the printer.
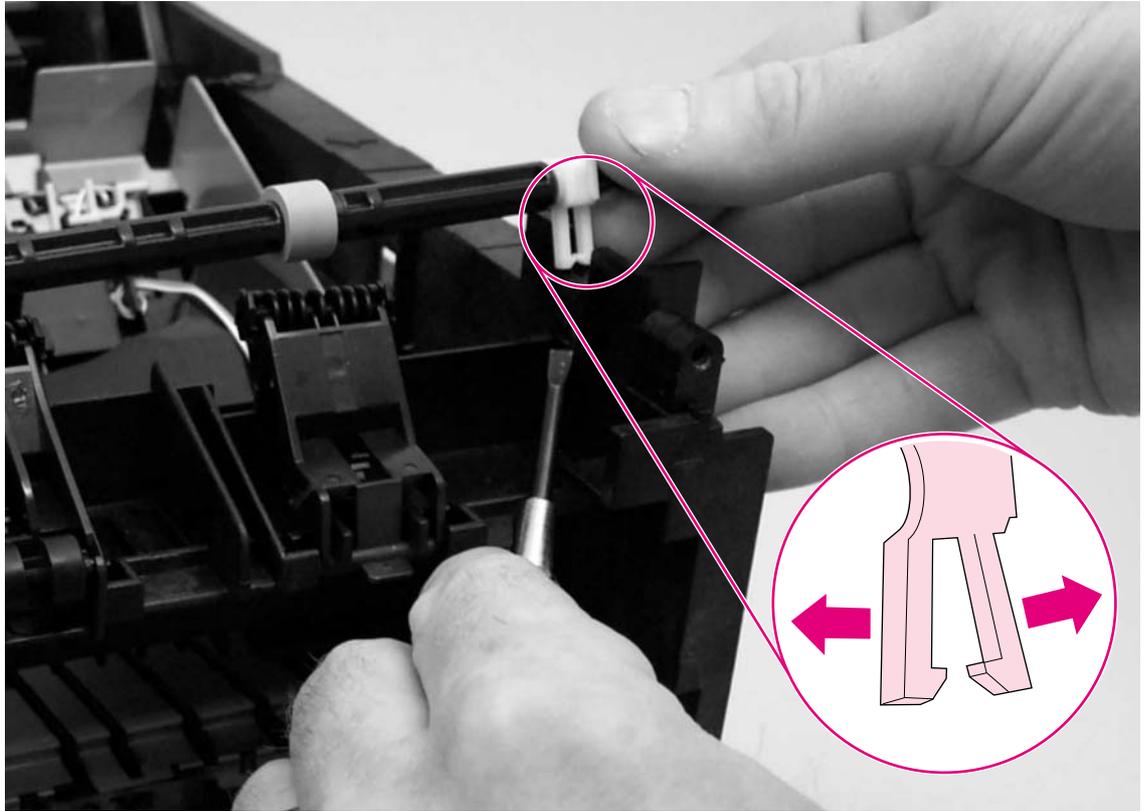
Figure 95.   **Removing the top-output-bin delivery assembly (2 of 3)**

4   Slide the shaft toward the left side of the printer to clear the hole in the printer frame at the right side.

CAUTION   Lifting the shaft before the shaft clears the hole at the right side of the printer frame can damage the shaft.

5   Lift the shaft out of the printer.

6   To remove the small rollers, rotate the roller holders toward the back of the printer until the hinges are clear of obstruction, and then lift the holders off of the printer.

Note   Each roller holder should have a spring attached. Make sure that the springs are in place before reinstalling a roller holder.

7   Use a flatblade screwdriver to pry the small rollers out of the holders.
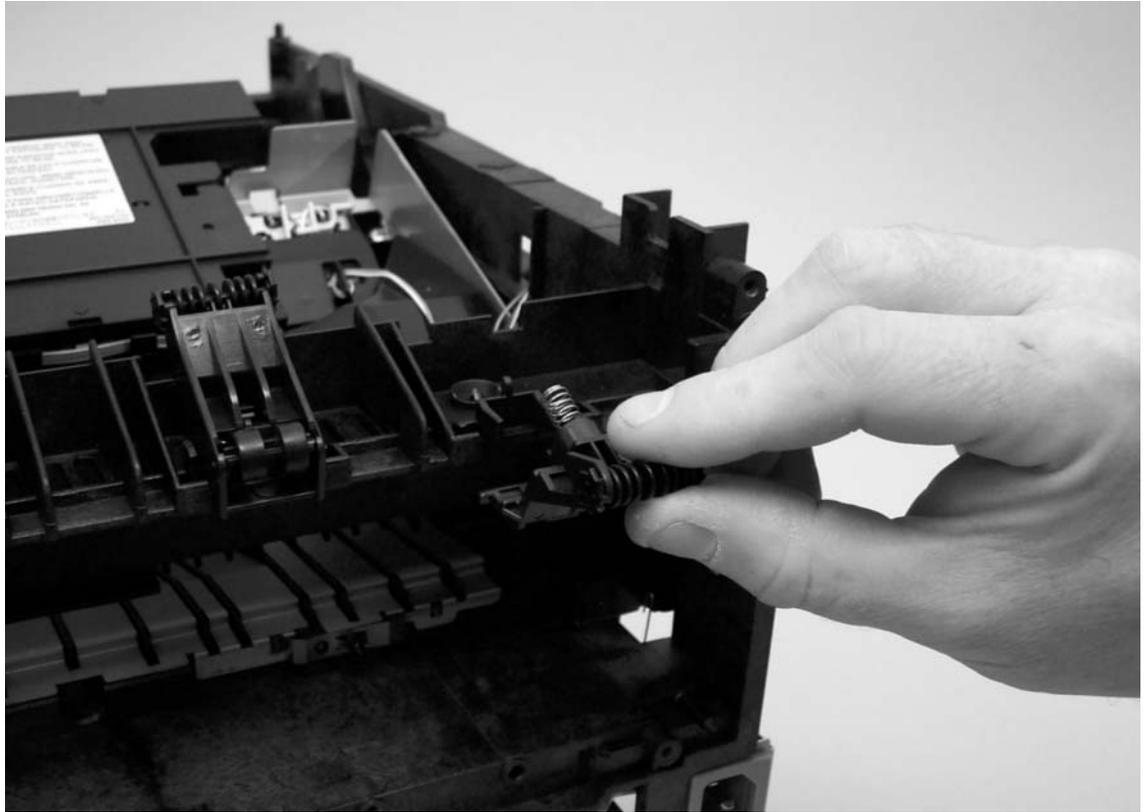
Figure 96.   **Removing the top-output-bin delivery assembly (3 of 3)**

Reinstall note

Two types of small roller holders are installed on the printer, and they are *not* interchangeable. Make sure you replace the roller holders in their correct positions on the printer.

Registration-roller assembly

1   Remove all of the covers and the control-panel assembly (see pages 113 through 124).
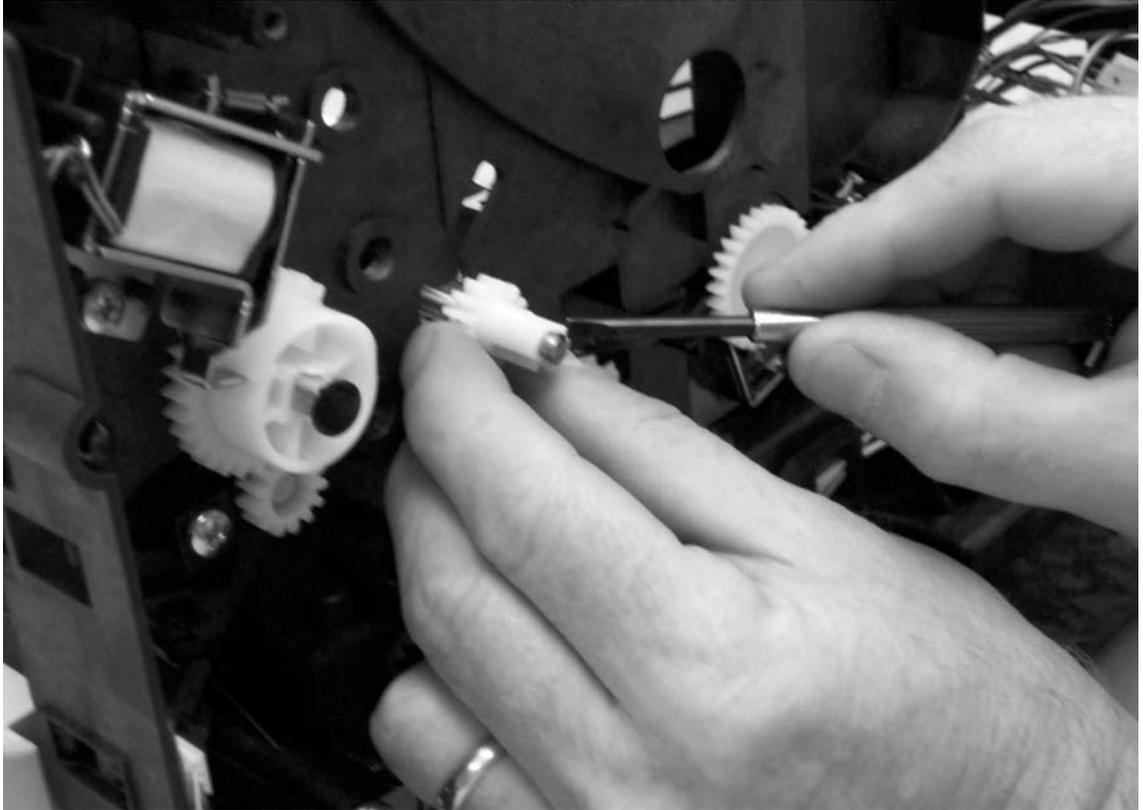
2   Remove six screws (callout 1).
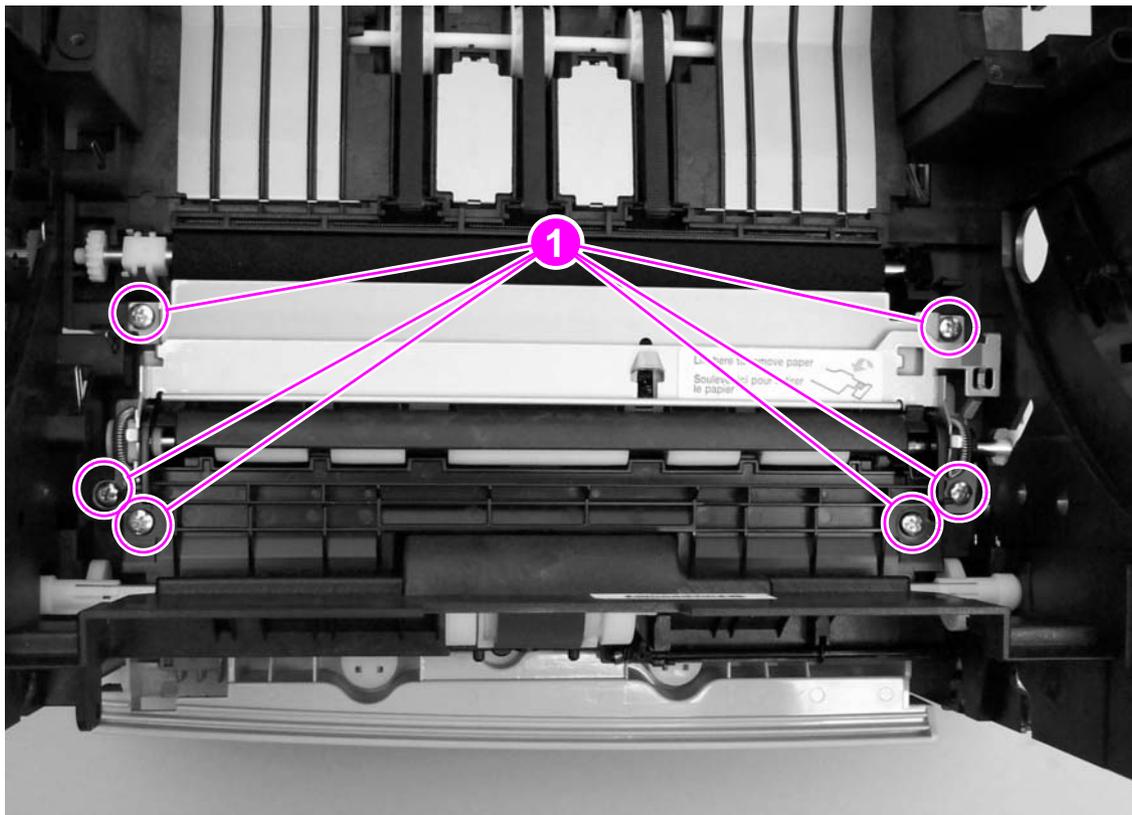
Figure 97.   **Removing the registration-roller assembly (1 of 2)**

3 Use a flatblade screwdriver to press the tab on the registration roller gear at the right side of the printer, and then slide the gear off of the shaft.


Figure 98.   **Removing the registration-roller assembly (2 of 2)**

4 Remove the assembly from the printer by lifting the left side of the assembly up and then sliding the assembly toward the left side of the printer so that the shaft clears the hole in the printer frame.

Transfer roller

1 Remove all of the covers and the control-panel assembly (see pages 113 through 124).

2 Remove the laser/scanner plate (page 144).

3 Use needle-nose pliers to pinch the tabs on the transfer roller bushings, one at each side of the transfer roller.
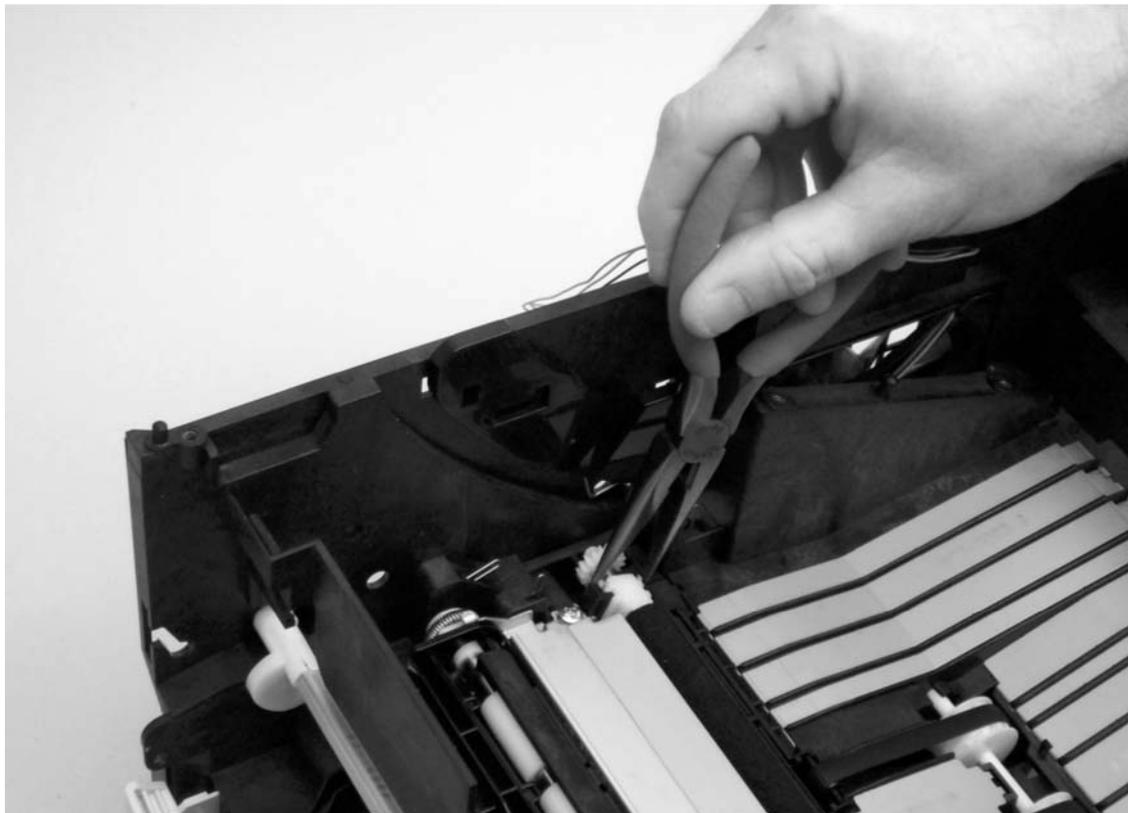
Figure 99.   **Removing the transfer roller**

4 Lift the transfer roller out of the printer.

Reinstall note

The spring at the left side of the transfer roller should remain attached to the bushing. Before you reinstall the roller, make sure that the spring is attached. The spring at the right side should remain in the printer.

Feed belts

1 Remove all of the covers and the control-panel assembly (see pages 113 through 124).

2 Remove the laser/scanner plate (page 144).

3 Use a flatblade screwdriver to pry the left end of the paper feed shaft (callout 1) out of the printer.

4 Slide the paper-feed shaft to the left to disengage the right end of the shaft.

5 When the paper-feed shaft is free from its position in the printer, lift the pulleys (callout 2) and slide the feed belts off of the paper-feed shaft.

Note   After removing the feed belts, the pulleys can fall out of the printer. Make sure that you don't lose any of the pulleys.
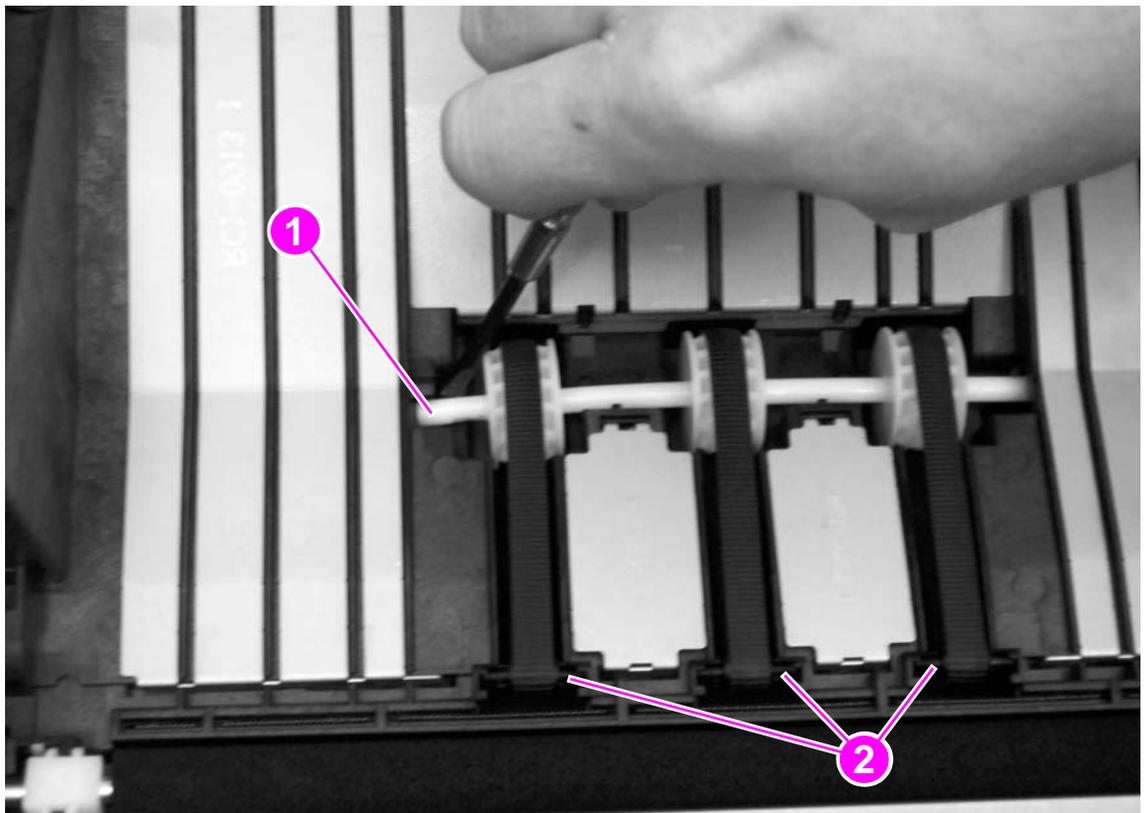
Figure 100.   **Removing the feed belts**

Trays

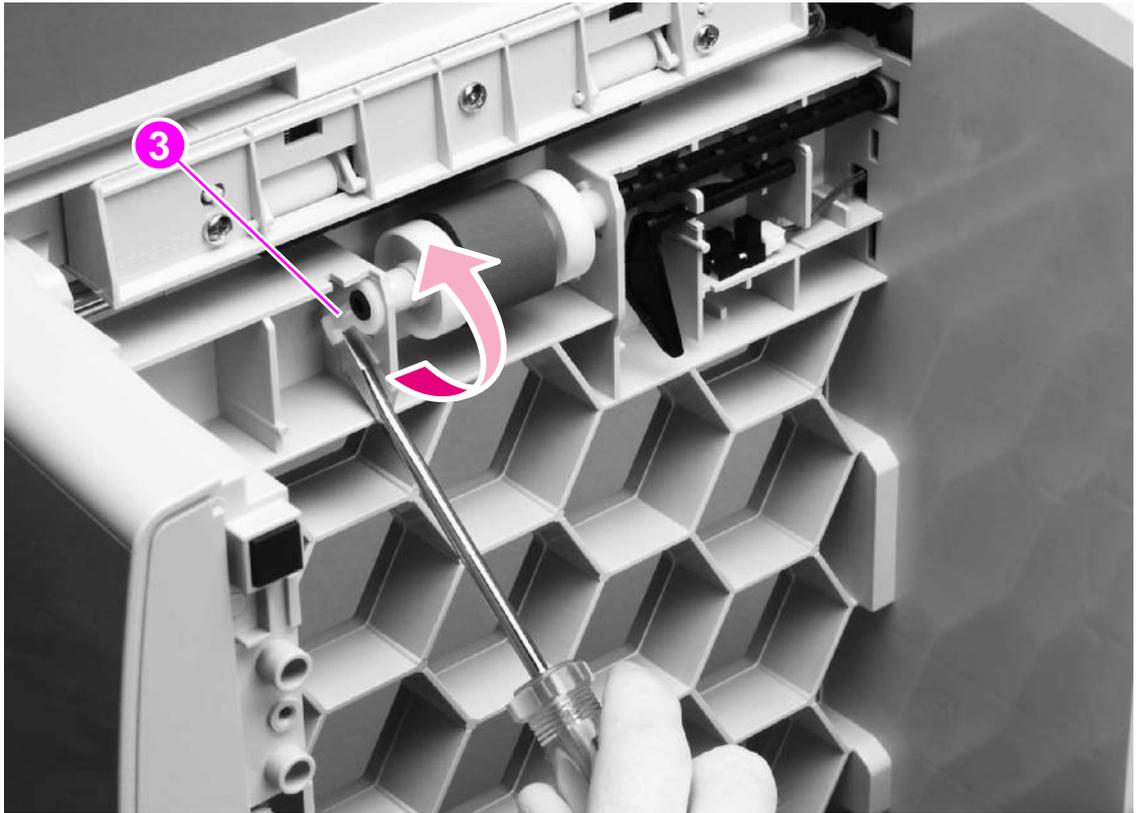### 250-sheet feeder and 500-sheet feeder pickup roller

Note

Procedures for removing the pickup roller from a 250-sheet feeder are identical to the procedures for removing the pickup roller from a 500-sheet feeder. In the photographs for these procedures, a 500-sheet feeder is shown.

1   Lift the printer off of the feeder and then remove all of the paper from the feeder.

2   Press down the lift plate and pull the tray out of the feeder.

3   Turn the feeder so that it rests on its back side.

4   Insert the flatblade screwdriver into the slot on the right roller-shaft cover (callout 1) and then pry the cover off of the feeder.

5   Insert the flatblade screwdriver into the slot (callout 2) on the left roller-shaft cover and then pry the cover off of the feeder.
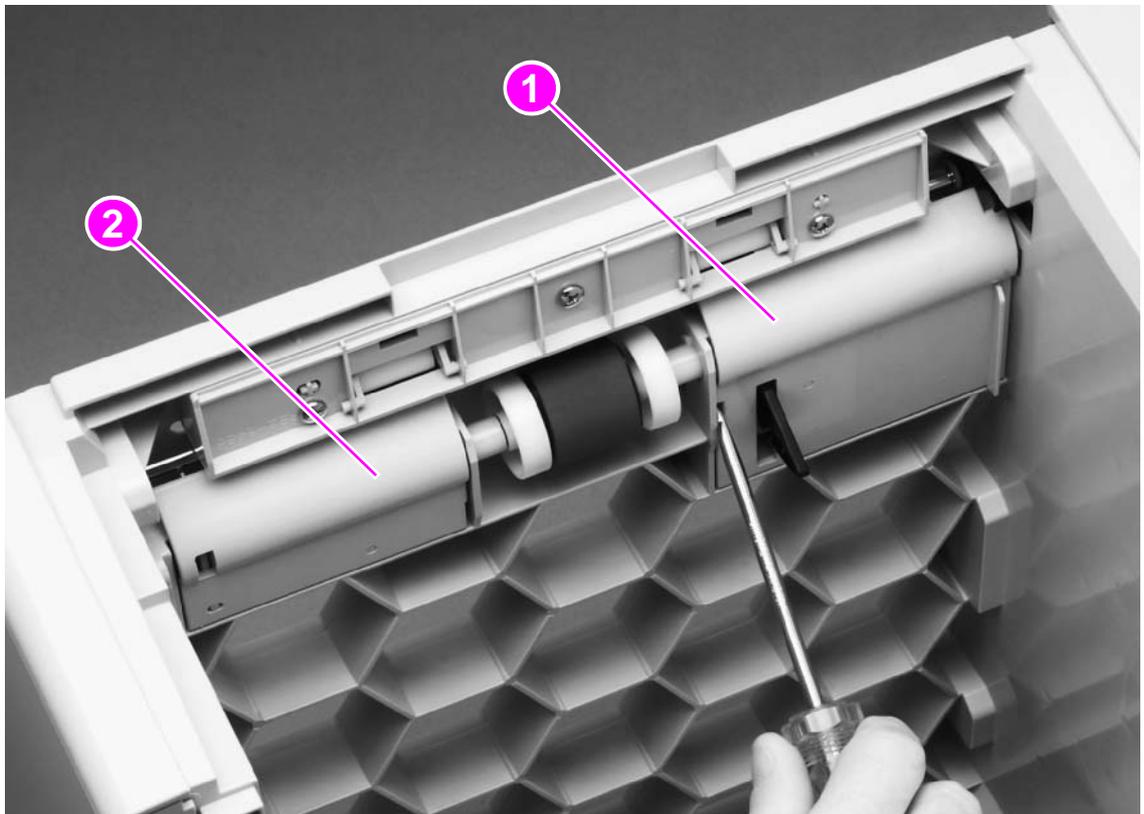
Figure 101.   **Removing the pickup roller from a 250-sheet or 500-sheet feeder (1 of 2)**

6 Use the flatblade screwdriver to disengage the white, plastic lever (callout 3), and then rotate the tab towards the front of the tray to release the roller shaft.

7 Slide the lever toward the left side of the tray to remove it. Also slide the pickup roller shaft toward the left side of the tray.

Figure 102.   **Removing the pickup roller from a 250-sheet or 500-sheet feeder (2 of 2)**

8 Rotate the plastic lever on the right side of the pickup roller shaft and then slide the lever toward the right side of the tray.

9 When the right-side lever clears the pickup roller shaft, lift up the pickup roller to remove it.

500-sheet feeder separation pad

1   Slide the media tray out of the 500-sheet feeder and remove media from the feeder.

2   Press down the lift plate (callout 1)

Note   The lift plate on 500-sheet feeders does not lock.

3   Use a flatblade screwdriver to release two tabs (callout 2) on the separation pad.

4   Slide the separation pad straight up and off of the feeder.
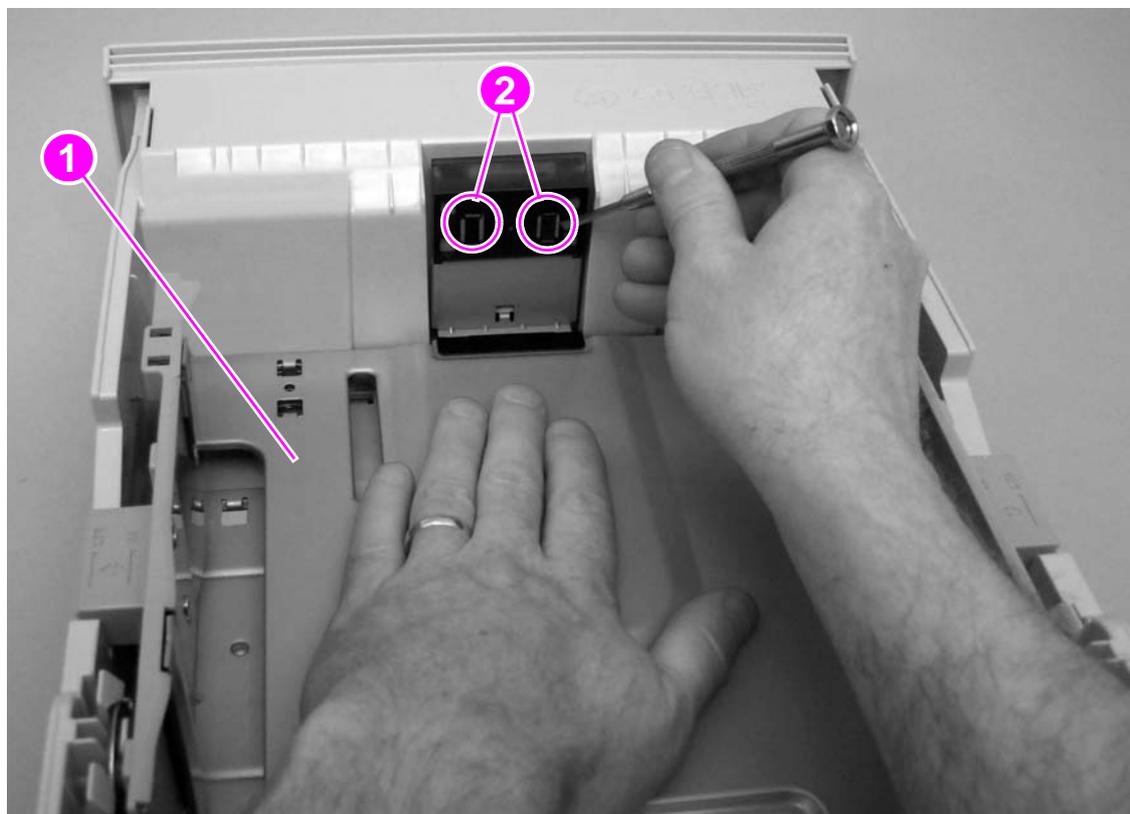
Figure 103.   **Removing the 500-sheet feeder separation pad**

7 Troubleshooting

Chapter contents

Troubleshooting process

Preliminary operating checks

Make sure that the following conditions are met before troubleshooting a specific printer problem:

- The printer is plugged in and power is delivered to the outlet as specified on the power rating label. (See figure 2 on page 19 for a sample identification label and see page 20 for power specifications.)
- The selected tray contains media that has been correctly loaded. (See the getting started guide for information about loading trays.)
- The print cartridge is installed correctly. (See the getting started guide for information about installing print cartridges.)
- The printer is receiving maintenance on a regular basis. (See chapter 4 for information about maintaining the printer.)
- Any I/O devices are correctly installed. (See the getting started guide for information about setting up the printer.)
- The customer is using acceptable print media. (See chapter 1 for information about media.)
- The printer is positioned on a solid, level surface. (See the getting started guide for information about setting up the printer.)
- The line voltage does not vary more than 10 percent from the nominal rated value specified on the power rating label. (See figure 2 on page 19 for a sample identification label and see page 20 for power specifications.)
- The operating environment for the printer is within the temperature and humidity specifications. (See page 21 for information about the operating environment.)
- The printer is never exposed to ammonia fumes such as those produced by diazo copiers or office cleaning materials. (See the getting started guide for information about setting up the computer.)
- The printer is not exposed to direct sunlight. (See the getting started guide for information about setting up the computer.)
- Non-HP components (such as refilled print cartridges, font cartridges, and memory boards) are removed from the printer.

Note Sudden changes in the printer's environment can cause image defects and media-handling problems. Always make sure the printer is not exposed to direct sunlight or to heating or cooling vents. Allow time for the printer and media to acclimate whenever changing environments (for example, moving from a cold environment to a warm one). Acclimation can take anywhere from 3 to 24 hours depending on the ambient conditions.

Basic fault isolation

The troubleshooting process is a systematic approach that first addresses the major problems first and then other problems to discover the causes for printer malfunctions and errors. The "Troubleshooting process flow" page 182 illustrates the major steps for troubleshooting the printing system. Each heading depicts a major troubleshooting step. A "YES" answer to the questions allows troubleshooting to proceed to the next major step.

A "NO" answer indicates that additional testing and correction is needed. Proceed to the referenced location in the chapter and follow the directions there. After completing the additional testing and correcting the problem, proceed to the next major step.

Note It is important to always follow this process in sequence. Failure to do so can result in increased repair time, difficulty, and expense.

This list describes the basic questions for the customer to answer and the corresponding troubleshooting section to help quickly define the problem(s).

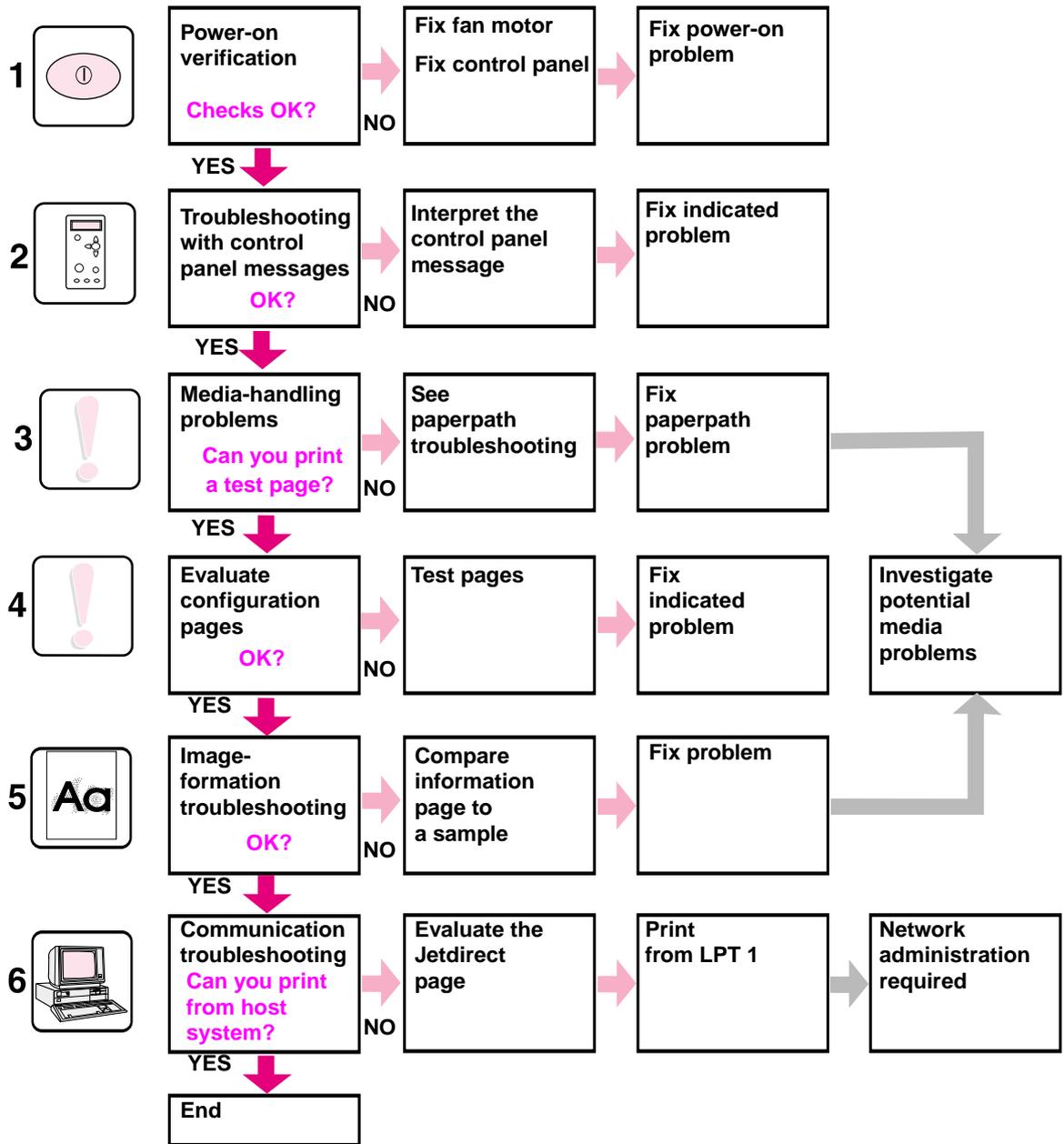| "Power-on" on page 183	Does the printer perform the initialization and power-on sequence? This section contains the procedures for correcting power supply problems.
"Troubleshooting with control-panel messages" on page 184	Does the control-panel message indicate an error condition? This section contains the procedures for clearing control panel messages.
"Media-handling problems" on page 199	Is it possible to print a test page? This section contains information about troubleshooting paper-path and print-media problems and contains the procedures for printing the information pages and evaluating and correcting the printer's configuration.
"Image-formation troubleshooting" on page 210	Does the print quality meet the customer's expectations? This section contains print cartridge checks, information about EconoMode, image defect examples, and the repetitive-defect ruler.
"Media troubleshooting" on page 218	This section contains information about how to determine print-media problems and correct them.
"Communication troubleshooting" on page 226	Can the customer print from the host system successfully? This section describes how to determine whether the printer is communicating correctly with the host system.

Troubleshooting process flow

1 | **Power-on verification** | → **NO** | **Fix fan motor** **Fix control panel** | → | **Fix power-on problem**
Checks OK?

YES ↓

2 | **Troubleshooting with control panel messages** | → **NO** | **Interpret the control panel message** | → | **Fix indicated problem**
OK?

YES ↓

3 | **Media-handling problems** | → **NO** | **See paperpath troubleshooting** | → | **Fix paperpath problem**
Can you print a test page?

YES ↓

4 | **Evaluate configuration pages** | → **NO** | **Test pages** | → | **Fix indicated problem** | → | **Investigate potential media problems**
OK?

YES ↓

5 | **Image-formation troubleshooting** | → **NO** | **Compare information page to a sample** | → | **Fix problem**
OK?

YES ↓

6 | **Communication troubleshooting** **Can you print from host system?** | → **NO** | **Evaluate the Jetdirect page** | → | **Print from LPT 1** | → | **Network administration required**

YES ↓

End

Figure 104.   **Troubleshooting process flow**

Power-on

It is important to have the printer control panel functional as soon as possible in the troubleshooting process so that the printer's diagnostics can assist in locating printing errors.

Follow these steps to pinpoint power problems quickly.

Step 1   Verify that the printer is plugged in to a reliable power source and the power switch is on.

Step 2   Verify that the fan and motors rotate.

Step 3   Verify that the formatter cables are connected correctly.

Step 4   Verify that the control panel connectors are connected.

Step 5   Verify that the DIMM cover is installed correctly.

Step 6   Verify that all connections to the power supply assembly are intact and the assembly is not damaged. If the connections are damaged, replace them.

Step 7   Check that connections to the engine controller assembly are intact and not damaged. If necessary, replace the engine controller assembly.

Troubleshooting with control-panel messages

Printer messages appear on the printer control panel display to relay the normal status of the printer (such as `Processing job`) or an error condition (such as `CLOSE FRONT DOOR`) that needs attention. "Interpreting control-panel messages" on page 186 lists the most common messages that require attention or that might raise questions. Messages are listed in alphabetical order first, with numeric messages at the end of the list.

Using the printer online Help system

This printer features an online Help system on the control panel that provides instructions for resolving most printer errors. Certain control panel messages alternate with instructions about gaining access to the online Help system.

Whenever a message alternates with `FOR HELP PRESS ?`, press **?** (HELP) to view the help and use ▲ (UP arrow) and ▼ (DOWN arrow) to scroll through the message.

To exit the online Help system, press **?** (HELP). For more information on control panel features, see "Control panel" on page 52.

Resolving persistent messages

Some messages (for example, requests to load a tray or a message that a previous print job is still in the printer memory) allow you to press ✓ (SELECT) to print, or to press CANCEL JOB to clear the job and eliminate the message.

If a message persists after performing all of the recommended actions, contact an HP-authorized service or support provider. (See "Ordering parts and supplies and getting support" on page 242 or go to http://www.hp.com/support/lj2300.)

Troubleshooting the control-panel display

Try to fix common problems before replacing the control-panel display.

No display. If power-on is normal, but the control panel does not work, then try disconnecting and then reconnecting the control panel connectors.

Poor display. If the control panel is working, but the display is illegible or shows poor contrast, then check the contrast label (callout 1) on the back of the control panel.
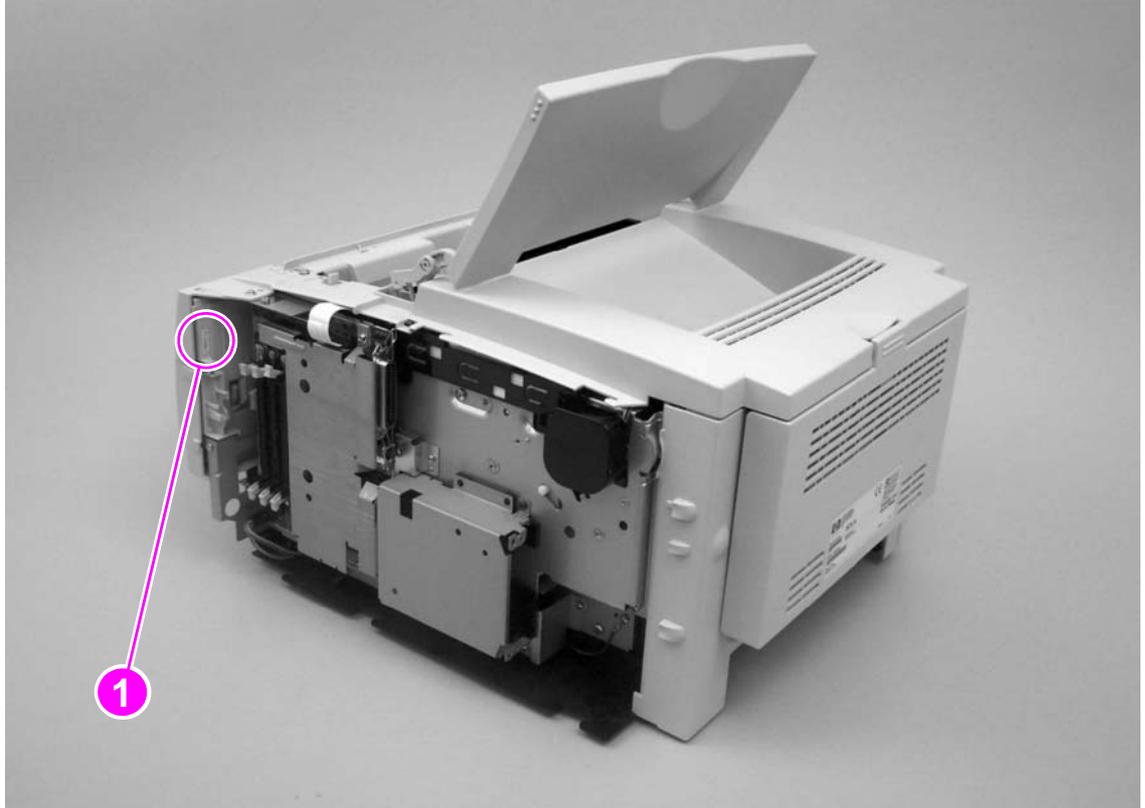
Figure 105. **Control panel contrast label**

The contrast label contains a number that corresponds to an optimum display-brightness setting. Change the brightness setting in the control-panel menus to the number shown on the label (see page 65).

If the control panel display is so poor that it is impossible to use the control-panel menus, then change the brightness after using a "bootup" key-sequence.

To use the "bootup" key-sequence

1   Turn the printer off.

2   Hold the BACK button down and turn on the printer. Continue to hold the BACK button until all three LEDs are lit.

3   Press ✓ (SELECT) to enter the control panel contrast settings.

4   Press ✓ (SELECT) to advance to the LCD set.

5   Press ✓ (SELECT) to advance to the brightness settings.

6   Use the ▲ (UP arrow) or ▼ (DOWN arrow) to scroll through the numbered settings.

7   Press ✓ (SELECT) to save the setting.

Interpreting control-panel messages

Message	Description	Recommended action
Access denied menus locked	The printer control panel function you are trying to use has been locked to prevent unauthorized access.	See your network administrator.
Canceling... [JOBNAME]	The printer is canceling a job. The message continues while the job is stopped, the paper path is cleared, and any remaining incoming data on the active data channel is received and discarded.	No action necessary.
CANNOT DUPLEX CLOSE REAR BIN	The printer is unable to print a duplexed print job because the rear bin is open.	Shut the rear bin door.
CANNOT DUPLEX CLOSE REAR BIN alternates with CANNOT DUPLEX CHECK PAPER	The printer is unable to print a duplexed print job because either the rear bin is open or the engine detects a size that cannot be duplexed.	Shut the rear bin door or load paper of the correct size.
Cartridge installed	This message appears for approximately 10 seconds after you install a new, genuine HP cartridge.	No action necessary.
CARTRIDGE FAILURE For help press ? alternates with RETURN FOR REPLACEMENT	The cartridge is inserted and the shipping protection strip cannot be fully removed.	Return the cartridge for replacement and replace the cartridge.
Checking paper path	The printer is checking for possible jams or paper that was not cleared from the printer.	No action necessary.
Checking printer	The printer is checking for possible jams or paper that was not cleared from the printer.	No action necessary.
CHOSEN PERSONALITY NOT AVAILABLE alternates with To continue press ✔	The printer received a request for a personality (printer language) that does not exist in the printer. The print job is canceled.	Print the job using a printer driver for a different printer language, or add the requested language to the printer (if available). To see a list of available personalities, print a configuration page. (See "Printing a configuration page" on page 199.)
Clearing paper path	The printer jammed or the printer was turned on and media was detected in a wrong location. The printer is automatically attempting to eject the pages.	Wait for the printer to finish trying to clear the pages. If it cannot, a jam message appears on the control panel display.
Cleaning...	The cleaning page is being processed.	No action necessary.
Clearing event log	The printer is clearing the event log.	No action necessary.
CLOSE TOP COVER	The printer detects that the top cover is not closed.	Close the top cover.

Message	Description	Recommended action
`Creating... CLEANING PAGE`	The printer is generating a cleaning page.	No action necessary.
`DATA RECEIVED`	One of the following conditions exists: ● The printer received data and is waiting for a form feed. ● The printer is paused and there is a job waiting to print.	No action necessary unless the printer is paused. If the printer is paused, the user can press PAUSE/RESUME to process the print job.
`Deleting... <JOB NAME>`	The printer is deleting the stored print job.	No action necessary.
`Event log empty`	You are attempting to view an empty event log by selecting `SHOW EVENT LOG` from the control panel.	No action necessary.
`[FS] FILE OPERATION FAILED`	The printer received a PJL file system command that attempted to perform an illogical operation, such as downloading a file to a non-existent directory.	Press ✓ (SELECT button) to clear the error.
`[FS] IS WRITE PROTECTED`	The file system device is protected, and the printer cannot write new files to it.	Press ✓ (SELECT button) to clear the error.
`Incorrect`	The user entered the wrong PIN.	Wait for printer to return to previous screen, re-enter PIN, and press ✓ (SELECT button).
`Initializing...`	This message appears when the printer is turned on.	No action necessary.
`Initializing permanent storage.`	This message appears when the printer is turned on and begins to initialize the permanent storage.	No action necessary.
`INSTALL CARTRIDGE` alternates with `For help press` **?**	The print cartridge is missing and must be reinstalled for printing to continue.	Replace or correctly reinstall the print cartridge.
`LOAD TRAY [XX] [TYPE] [SIZE]`	The tray that is indicated is configured for a specific type and size of media needed by a print job, but either the tray is empty or the tray is not closed correctly. All other trays are also empty.	Load the requested media in the tray that is indicated. If there is media in the tray, close the tray correctly and press PAUSE/RESUME.
`LOAD TRAY [XX] [TYPE] [SIZE]` alternates with `To use another tray press` ✓ or `For help press` **?** or `To continue press` ✓	A job is sent that requires a specific type and size that is not available in the tray that is indicated.	Perform one of these steps: ● Load the requested media into the indicated tray and press ✓ (SELECT button). ● Press ✓ to use a type and size that are available in another tray.

Message	Description	Recommended action
MANUALLY FEED [TYPE] [SIZE] alternates with To use another tray press ✓ or For help press ? or To continue press ✓	The printer is waiting for media to be loaded in tray 1 for manual feed.	Perform one of these steps: ● Load the requested media into the tray 1 and press ✓ (SELECT button). ● Press ✓ (SELECT button) to use a type and size that are available in another tray.
No job to cancel	The CANCEL JOB button was pressed, but there is no active job or buffered data to cancel. The message is displayed for approximately 2 seconds before the printer returns to the ready state.	No action necessary.
NON HP CARTRIDGE DETECTED	A new cartridge has been installed and the printer has determined that the cartridge is not made by HP.	No action necessary.
ORDER CARTRIDGE LESS THAN [XXXX] PAGES	This message appears when the CARTRIDGE LOW setting in the System Setup submenu is set to CONTINUE and the cartridge has approximately 8 percent of its toner remaining.	Make sure that you have a new cartridge ready (see "Ordering parts and supplies and getting support" on page 242).
Paused alternates with To return to ready press RESUME key	The printer is paused but continues to receive data until the memory is full. The printer is not experiencing an error.	Press Pause/Resume.
Performing... PAPER PATH TEST	This message appears when the printer tests the paper path.	No action necessary.
Please wait	The printer is busy.	No action necessary.
Powersave on	The printer is in Powersave mode.	Any key press, error condition, or receipt of printable data clears this message.
Printing... <X>	This message appears when the printer is printing. The variable <X> can represent any of the following: ● CONFIGURATION ● EVENT LOG ● FILE DIRECTORY ● FONT LIST ● MENU MAP ● REGISTRATION PAGE ● SUPPLIES STATUS ● USAGE PAGE	No action necessary.
Processing duplex job	The printer is printing a duplex job.	No action necessary.
Processing... <JOB NAME>	The printer is processing the current job but has not begun to transfer pages.	No action necessary.

Message	Description	Recommended action
`Processing... <JOB NAME> copy <X> of <Y>`	The printer is processing the current job. The message indicates that copy number X of the total number of copies (Y) is currently being processed.	No action necessary.
`Processing... <JOB NAME> from tray [XX]`	The printer is processing the current job and has begun to transfer pages.	No action necessary.
`Ready`	The printer is online and ready for data and no status or device attendance messages are pending.	No action necessary.
`Ready Diagnostics mode`	The printer is online and ready for data.	No action necessary.
`REPLACE CARTRIDGE`	The cartridge has reached the "out" level and `CARTRIDGE OUT` is set to `CONTINUE` in the menus. Printing continues until the drum life reaches zero. If `CARTRIDGE OUT` is set to `STOP`, this message becomes an error and printing does not continue until the menu item `CARTRIDGE OUT` is set to `CONTINUE`.	Replace the cartridge.
`Request accepted please wait`	A request to print an internal page has been accepted, but cannot be printed now. The user must wait for the current job to finish printing before the internal page prints.	No action necessary.
`Resetting factory settings`	The printer is executing a `RESTORE FACTORY SETTINGS` command and a cold reset.	No action necessary.
`Restoring...`	The printer is executing one of the following commands. ● `RESTORE LAST SAVED STATE` ● `RESTORE PRINT MODES` ● `RESTORE OPTIMIZATION` ● `RESTORE COLOR VALUES`	No action necessary.

`SIZE MISMATCH TRAY [XX]= [SIZE]`
alternates with
`Ready`
`For help press ?`
	The tray indicated is loaded with a different size of paper than the size configured for the tray.	Load the tray with the size configured for the tray.
		Make sure that the guides are positioned correctly in the tray, and then make sure that the switch in the tray is set correctly to Custom or Standard.

`TRAY [XX] [TYPE] [SIZE]`	A tray is closed, but the user did not change the position switch when the tray was opened and closed.	User can select appropriate size or type.

`TRAY [XX] EMPTY [TYPE] [SIZE]`
alternates with
`Ready`
`For menus press ✓`
	The tray is out of media.	Load paper in the empty tray to clear the message.
		If you do not load the specified tray, the printer continues printing from the next available tray with the same paper size and type, and the message continues to appear.

Message	Description	Recommended action
TYPE MISMATCH TRAY [XX]=[TYPE] alternates with Ready For help press **?**	The system detected a different type of media from the type specified for the tray in the paper path coming from tray XX.	**1** Verify that the correct media is loaded in the tray. **2** Check the driver settings to make sure that the expected media type is selected. **3** Check the media-type settings on the printer control panel to make sure that the printer is set for the media type that is in the tray. **4** Refer to the printer software online Help for more information.
USE TRAY [XX] [TYPE] [SIZE] alternates with To change press ▲/▼ To continue press ✓	The printer did not detect the type and size of media requested. The message shows the most likely type and size available and the tray in which they are available.	Press ✓ (Select button) to accept the values in the message, or use ▲ (Up button) and ▼ (Down button) to scroll through the available choices.
Wait for printer to reinitialize	The printer is reinitializing in one of the following situations: ● The user has changed the RAM DISK settings before the printer is automatically rebooted. ● The printer is auto power cycling after changing external device modes. ● The user has exited Diagnostics.	No action necessary.
Warming up	The printer is coming out of Powersave mode. Printing continues as soon as the printer has warmed up.	No action necessary.
10.XX.YY SUPPLIES MEMORY ERROR For help press **?**	An error has occurred in one or more of the printer's supplies. Values of XX and YY are listed below: XX 00 = memory is defective 01 = memory is missing YY 00 = black print cartridge	**1** Turn the printer power off, and then turn the printer power on to clear the message. **2** If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

Message	Description	Recommended action
`13.XX.YZ JAM IN [LOCATION]` alternates with `For help press ?`	A jam has occurred in the specified location. XX is the jam code, Y is the device number, and Z is the device type. Possible locations include: ● `TRAY 1` ● `TRAY 2` ● `TRAY 3`	Remove jammed media from the specified location. (See "Jam causes" on page 205.) **Note** This jam error message also occurs when the media pickup system fails to feed media into the printer (known as a "mis-pick"). If there is no jammed media, check the pickup roller and separation pad in the appropriate tray. If the message persists after all jams have been cleared, a sensor might be stuck or broken. Check all sensors and replace broken sensors.
`13.XX.YZ JAM INSIDE [LOCATION]` alternates with `For help press ?`	A jam has occurred in the specified location. XX is the jam code, Y is the device number, and Z is the device type. Possible locations include: ● `REAR DOOR` ● `TOP COVER`	Remove jammed media from the specified location. (See "Jam causes" on page 205.) If the message persists after all jams have been cleared, a sensor might be stuck or broken. Contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).
`13.XX.YZ JAM REMOVE TRAY 2` alternates with `For help press ?`	A jam has occurred in the duplexer (tray 2). XX is the jam code, Y is the device number, and Z is the device type.	Remove jammed media from tray 2. (See "Jam causes" on page 205.) If the message persists after all jams have been cleared, a sensor might be stuck or broken. Contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).
`14.X FEED ROLLER< ERROR`	The rollers in tray X have worn out. X is the number of the tray: 2 = tray 2 3 = tray 3.	Replace the rollers.
`20 INSUFFICIENT MEMORY` alternates with `To continue press ✓`	The printer received more data than can fit in its available memory. You might have tried to transfer too many macros, soft fonts, or complex graphics.	Press ✓ (SELECT button) to print the transferred data (some data might be lost), and then simplify the print job or install additional memory.
`21 PAGE TOO COMPLEX` alternates with `To continue press ✓`	The data (dense text, rules, raster or vector graphics) sent to the printer was too complex.	1 Press ✓ (SELECT button) to print the transferred data. (Some data might be lost.) 2 If this message appears often, simplify the print job or install additional memory.

Message	Description	Recommended action

`22 EIO [X]`
`BUFFER OVERFLOW`
alternates with
`To continue press ✓`
	Too much data was sent to the EIO card in the specified slot `[X]`. An incorrect communications protocol might be in use.	1 Press ✓ (SELECT button) to clear the message. (The job will not be printed.)
		2 Check the host configuration. If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

`22 PARALLEL I/O`
`BUFFER OVERFLOW`
alternates with
`To continue press ✓`
	Too much data was sent to the parallel port.	1 Check for a loose cable connection and be sure to use a high-quality cable. Some non-HP parallel cables might be missing pin connections or might otherwise not conform to the IEEE-1284 specification. (See "Ordering parts and supplies and getting support" on page 242.)
		2 This error can occur if the driver you are using is not IEEE-1284 compliant. For best results, use an HP driver that came with the printer.
		3 Press ✓ (SELECT button) to clear the error message. (The job will not be printed.)
		4 If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

`22 SERIAL I/O`
`BUFFER OVERFLOW`
alternates with
`To continue press ✓`
	Too much data was sent to the serial port.	Press ✓ (SELECT button) to clear the error message. (The job will not be printed.)

`22 USB I/O` `BUFFER OVERFLOW`	Too much data was sent to the USB port.	Press ✓ (SELECT button) to clear the error message. (The job will not be printed.)

`40 EIO BAD SERIAL`
`TRANSMISSION`
alternates with
`To continue press ✓`
	The printer detects a serial data error (parity, framing, or line overrun) while receiving data from the computer.	Press ✓ (SELECT button) to clear the error message and continue printing.

`40 EIO [X] BAD`
`TRANSMISSION`
alternates with
`To continue press ✓`
	The connection has been broken between the printer and the EIO card in the specified slot `[X]`.	Press ✓ (SELECT button) to clear the error message and continue printing.

Message	Description	Recommended action
41.X PRINTER ERROR alternates with To continue press ✓	A temporary printing error occurred. X can equal one of the following: 1 = Unknown misprint error 2 = Beam detect misprint error 3 = Media feed error (size) 4 = No VSYNC error 5 = Media feed error (type) 6 = ITB detection error 7 = Feed delay error 9 = Noise VSREQ error	**1** Press ✓ (SELECT button). The page containing the error automatically reprints if jam recovery is enabled. **2** Turn the printer power off, and then turn the printer power on. **3** If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).
41.3 UNEXPECTED SIZE IN TRAY [XX] alternates with LOAD TRAY [XX]: [TYPE] [SIZE]	This is typically caused if two or more sheets stick together in the printer or if the tray is not correctly adjusted.	**1** Reload the tray with the correct paper size. **2** Press ✓ (SELECT button) to scroll to TRAY XX SIZE=. Reconfigure the size in a tray so that the printer will use a tray that contains the size required for the print job. **3** If the error does not clear, turn the printer power off, then turn the printer power on. **4** If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).
41.5 UNEXPECTED TYPE IN TRAY XX alternates with LOAD TRAY [XX]: [TYPE] [SIZE]	The printer detected a paper type different than what it was expecting.	**1** Reload the tray with the correct paper type. **2** Press ✓ (SELECT button) to scroll to TRAY XX TYPE=. Reconfigure the size in a tray so that the printer uses a tray that contains the type required for the print job. **3** If the error does not clear, turn the printer power off, and then turn the printer power on. **4** If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

Message	Description	Recommended action
49.XXYY PRINTER ERROR alternates with To continue turn off then on	A critical firmware error has occurred. XX represents a component code, and YY represents a component-specific error code.	Perform a cold reset (see page 230 for information about cold resets). If the error persists, then try the following actions: **1** Press CANCEL JOB to clear the print job from the printer memory. Turn the printer power off, and then turn the printer power on. **2** Try printing a job from a different program. If the job prints, go back to the first program and try printing a different file. (If the message appears only with a certain program or print job, contact the software vendor for assistance. If the message persists with different programs and print jobs, try these steps. **1** Turn the printer power off. **2** Disconnect all cables to the printer that connect it to the network or computer. **3** Remove all memory DIMMs or third-party DIMMs from the printer. **4** Remove all EIO devices from the printer. **5** Turn the printer power on. If the error no longer exists, follow these steps. **1** Install each DIMM and EIO device one at a time, making sure to turn the printer power off and back on as you install each device. **2** Replace a DIMM or EIO device if you determine that it causes the error. **3** Reconnect all cables that connect the printer to the network or computer.
50.X FUSER ERROR For help press **?**	A fuser error has occurred. X can equal one of the following: 1 = Low fuser temperature 2 = Fuser warm up service 3 = High fuser temperature 4 = Faulty fuser 5 = Inconsistent fuser 6 = Open fuser 7 = Fuser pressure release mechanism failure	**1** Turn the printer power off and then turn the printer power on. **2** If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

Message	Description	Recommended action

`51.X`
`PRINTER ERROR`
alternates with
`To continue`
`turn off then on`
	A temporary printing error occurred. X can equal one of the following:
	1 = Beam detect error
	2 = Laser error
		1 Turn the printer power off, and then turn the printer power on.
		2 If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

`52.X`
`PRINTER ERROR`
alternates with
`To continue`
`turn off then on`
	A temporary printing error occurred. X can equal one of the following:
	0 = Scanner error
	1 = Scanner startup error
	2 = Scanner rotation error
	This error can also indicate a problem with the shutter tab on the print cartridge.
		1 Turn the printer power off, and then turn the printer power on.
		2 If the message persists, check the print cartridge for damage or try a different print cartridge.
		3 If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

`53.XY.ZZ CHECK` `RAM/ROM MEMORY`	There is a problem with the printer memory. The DIMM that caused the error is not used. X signifies the DIMM type and can equal one of the following: 0 = ROM 1 = RAM Y signifies the device location and can equal one of the following: 0 = On board RAM/ROM 1 = DIMM Slot 1 2 = DIMM Slot 2 3 = DIMM Slot 3 ZZ signifies the error number and can equal one of the following: 0 = Unsupported memory (e.g., presence detect bad) 1 = Unrecognized memory (e.g., presence detect bad) 2 = Unsupported memory size 3 = Failed RAM test 4 = Exceeded maximum RAM size 5 = Exceeded maximum ROM size 6 = Invalid DIMM speed	1 You might need to reseat or replace the specified DIMM. Turn the printer power off and then reseat the DIMM that caused the error. 2 Try using a different printer driver or printing a smaller file. 3 If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

`55.X`
`PRINTER ERROR`
alternates with
`To continue`
`turn off then on`
	A temporary printing error occurred. X can equal one of the following:
	0 = NO_RESET_REPORT
	1 = NO_ENGINE_RESPONSE
	2 = EXCESSIVE_GLITCHES
	3 = LOST_PPRDY_SIGNAL
	4 = COMMUNICATION_TIMEOUT
	5 = BAD_TRAY_BIN_REPORTS
	6 = ECC7_COMMAND_ERROR
	7 = INCOMING_PARITY_ERROR
	8 = OUTGOING_PARITY_ERROR
	9 = MISSED_INTERRUPT
	A = HUNG_COMMUNICATIONS
	B = LOST_XISR_ERROR
	C = INVALID_BUS_TIMEOUT
	D = VERY_LATE_ECOMM_ISR
		1 Turn the printer power off and then turn the printer power on.
		2 Try using a different printer driver or printing a smaller file.
		3 If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

Message	Description	Recommended action
56.X PRINTER ERROR alternates with To continue turn off then on	A temporary printing error occurred as a result of an incorrect input or output request. X can equal one of the following: 1 = Illegal input 2 = Illegal output	1 Turn the printer power off, and then turn the printer power on. 2 If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).
57.X PRINTER ERROR alternates with To continue turn off then on	A temporary printing error occurred in one of the printer fans. X represents the fan motor number associated with the error. For example, 1 = fan motor 1.	1 Turn the printer power off, and then turn the printer power on. 2 If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).
58.X PRINTER ERROR alternates with To continue turn off then on	A printer error has occurred where a memory tag CPU error was detected, or there is a problem with the air sensor or power supply. X can equal one of the following: 2 = Air Temp Sensor 3 = CPU 4 = Power supply	To resolve problems with the power supply: 1 Remove the printer from any UPS supplies, additional power supplies, or power strips. Plug the printer into a wall outlet and see if this resolves the problem. 2 If the printer is already plugged into a wall outlet, try another power source in the building that is independent of the one currently being used. The line voltage and current source at the printer location might need to be inspected to ensure that they meet the electrical specifications for the printer. (See "Electrical specifications" on page 20.) If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).
59.X PRINTER ERROR alternates with To continue turn off then on	A temporary motor error occurred. X can equal one of the following: 0 = Motor error 1 = Motor startup error 2 = Motor rotation error 3 = Fuser motor startup error 4 = Fuser motor rotation error 5 = Print cartridge motor startup error 6 = Print cartridge motor rotation error 7 = Image drum motor startup error 8 = Image drum motor rotation error 9 = ETB/ITB motor startup error A = ETB/ITB motor rotation error B = Alienation motor startup error C = Alienation motor rotation error D = Registration motor starting error E = Registration motor rotation error	1 Turn the printer power off, and then turn the printer power on. 2 If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

Message	Description	Recommended action
`62 NO SYSTEM`	This message indicates that no system was found. The printer software system is corrupt.	1. Turn the printer power off, and then turn the printer power on. 2. If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

`64 PRINTER ERROR`
alternates with
`To continue`
`turn off then on`
	A temporary printing error occurred in the scan buffer.	1. Turn the printer power off, and then turn the printer power on.
		
		2. If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

`68.X STORAGE ERROR`
`SETTINGS CHANGED`
alternates with
`To continue press` ✓
	One or more printer settings saved to storage device X is invalid and has been reset to its factory default. X can equal one of the following:
	0 = onboard NVRAM
	1 = removable disk (flash or hard)
		Press ✓ (SELECT button) to clear the error and continue printing. Printing can continue, but the user may experience unexpected behavior because an error occurred in permanent storage.

`68.X PERMANENT`
`STORAGE FULL`
alternates with
`To continue press` ✓
	Storage device X is full.
	X can equal one of the following:
	0 = onboard NVRAM
	1 = removable disk (flash or hard)
		Press ✓ (SELECT button) to clear the error and continue printing. Printing can continue, but the user may experience unexpected behavior because an error occurred in permanent storage.

`68.X PERMANENT`
`STORAGE WRITE FAIL`
alternates with
`To continue press` ✓
	Storage device X is failing to write.
	X can equal one of the following:
	0 = onboard NVRAM
	1 = removable disk (flash or hard)
		Press ✓ (SELECT button) to clear the error and continue printing. Printing can continue, but the user may experience unexpected behavior because an error occurred in permanent storage.

`69.X`
`PRINTER ERROR`
alternates with
`To continue`
`turn off then on`
	A duplexing error has occured. X represents the type of duplexing error and can equal one of the following:
	0 = Duplex mechanism failure
	1 = Duplex slide adjust failure
		1. Turn the printer power off, and then turn the printer power on.
		2. If the message persists, contact an HP-authorized service or support provider (see "Ordering parts and supplies and getting support" on page 242).

Message	Description	Recommended action
79.XXYY PRINTER ERROR alternates with To continue turn off then on	The printer detected a critical hardware error. XX represents the component ID, and YY represents a component-specific error code.	**1** Press CANCEL JOB to clear the print job from the printer memory. Turn the printer power off, and then turn the printer power on. **2** Try printing a job from a different program. If the job prints, go back to the first program and try printing a different file. (If the message appears only with a certain program or print job, contact the software vendor for assistance. If the message persists with different programs and print jobs, try these steps. **1** Turn the printer power off. **2** Disconnect all cables to the printer that connect it to the network or computer. **3** Remove all memory DIMMs or third-party DIMMs from the printer. **4** Remove all EIO devices from the printer. **5** Turn the printer power on. If the error no longer exists, follow these steps. **1** Install each DIMM and EIO device one at a time, making sure to turn the printer power off and back on as you install each device. **2** Replace a DIMM or EIO device if you determine that it causes the error. **3** Reconnect all cables that connect the printer to the network or computer.
8X.YYYY EIO ERROR	The EIO accessory card has encountered a critical error. X represnets the error location and can equal one of the following: 1 = Slot number 1 2 = Slot number 2 3 = Slot number 3 6 = Card in slot number 1 7 = Card in slot number 2 8 = Card in slot number 3 YYYY represents the error code.	**1** Turn the printer power off, and then turn the printer power on. **2** Turn the printer power off, reseat the EIO accessory in slot [X], and then turn the printer power on. **3** Turn the printer power off, remove the EIO accessory from slot [X], install it in a different EIO slot, and then turn the printer power on. **4** Replace the EIO accessory in slot [X].

Media-handling problems

Printing a configuration page

The configuration page lists many of the printer's current settings and properties. To print the configuration page:

1   Press ✓ (SELECT).

2   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to INFORMATION, and then press ✓ (SELECT).

3   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to PRINT CONFIGURATION, and then press ✓ (SELECT). The printer produces a configuration page.

If you have an EIO print-server card installed, a second page, the Jetdirect page, prints, listing all of the HP Jetdirect information (see "Printing a Jetdirect configuration page" on page 200).

The configuration page can also be printed from the HP LaserJet device configuration reports page.
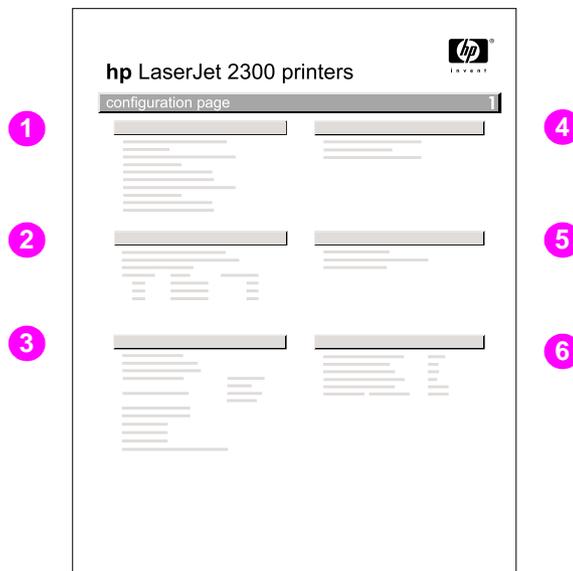
Figure 106.　　　　**Configuration page**

Configuration-page elements

1   **Printer information** lists the name, printer number, serial number, formatter number, firmware datecode, service ID, PS wait timeout, and total pages printed.

2   **Event log** lists the number of entries in use, the maximum number of entries, and the three most recent entries.

3   **Installed personalities and options** lists the installed printer languages (PCL, PCL 6, and PS), DIMM slot information, EIO slot information, and RAM disk storage.

4   **Memory** lists total memory and available memory.

5   **Security** lists the control panel lock status, the control panel password status, and the write protect status.

6   **Paper trays and options** lists the default paper size and the media sizes and types assigned to each tray.

Printing a Jetdirect configuration page

The printer produces a Jetdirect configuration page when you print a standard configuration page on a printer that has an EIO print-server card installed (see "Printing a configuration page" on page 199).
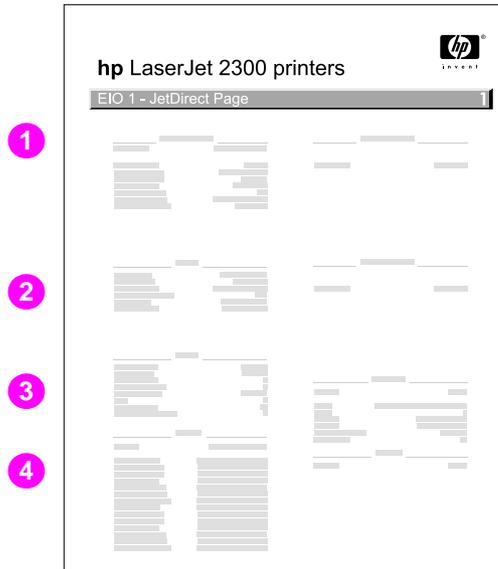
Figure 107.   **Jetdirect configuration page**

Jetdirect configuration-page elements

1   **General information** lists the HP Jetdirect number, firmware revision, LAN hardware address, selected port, and manufacturing ID.

2   **Security settings** lists administrative password, SSL/TLS, cert expiration date, SNMP versions, SNMP set CMTY name, and access list.

3   **Network statistics** lists total packets received, unicast packets received, bad packets received, framing errors received, total packets received, unsendable packets, transmit collisions, and transmit late collisions.

4   **Protocol information** lists TCP/IP status and configuration, the HP Web JetAdmin server name, Novell NetWare status and configuration, AppleTalk status and configuration, and DLC/LLC status.

Printing a usage page

A usage page provides details of the number of pages printed since the printer's installation and an estimated toner coverage percentage.

1   Press ✓ (SELECT).

2   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to INFORMATION, and then press ✓ (SELECT).

3   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to PRINT USAGE PAGE, and then press ✓ (SELECT). The printer produces a usage page.

Printing a supplies status page

A supplies status page provides data on your printer supplies, including:

●   Print cartridge toner level

●   Estimated pages remaining

●   Cartridge serial number

●   Pages printed on the current cartridge

●   Pages printed by paper size

●   Number of jobs processed

●   Installation date

●   Date cartridge was last used

To print a supplies status page, complete the following steps:

1   Press ✓ (SELECT).

2   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to INFORMATION, and then press ✓ (SELECT).

3   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to PRINT SUPPLIES STATUS PAGE, and then press ✓ (SELECT). The printer produces a supplies status page.

Printing an engine test

The engine test verifies that the print engine is functioning correctly. This test is very useful for isolating printer problems, because it does not involve the formatter. Because the engine test prints a full page of lines across the entire printable area, it is also useful for checking and adjusting registration.

The engine test prints from the first tray found that contains media and can be activated with the formatter installed or removed.

Note   Make sure that the print cartridge is installed in the printer. Also, the print motor must be idle and the printer must be in standby mode.

In order to produce an engine test print, media must be loaded into the printer. The printer prints the engine test page on media from the same tray as the previous engine test. If the engine test fails to print the engine test page, turn the printer off and then turn it back on. After a power-cycle, the system checks for media in tray 2, then in tray 1, and finally in tray 3 (if installed).

1 Open the I/O cover.

2 Press the engine test button (callout 1).
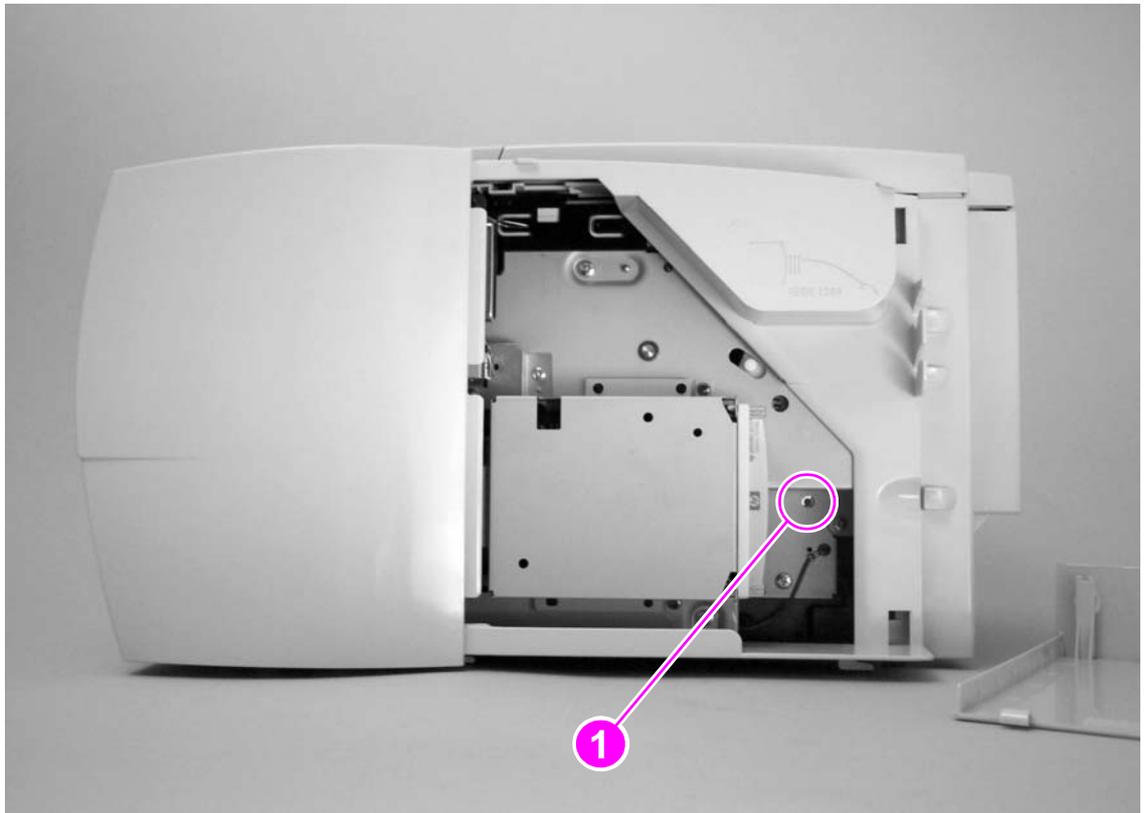
Figure 108.   **Engine test button**

The printer prints an engine test page, like the page shown below.
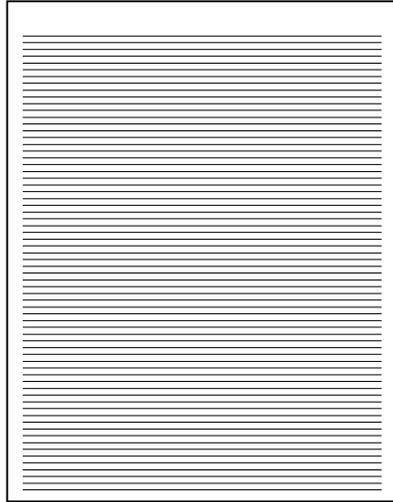
Figure 109.   **Engine test page**

Jam troubleshooting

Jams occur in the printer when print media does not reach or clear a photosensor along the printer paper path within a specific amount of time. The following table contains general questions and topics to explore before troubleshooting.

Problem	Action
What is the frequency of the jams (for example: continuous, one jam per 100 pages, one jam per 1000 pages)?	Verify with the customer. See "Troubleshooting with control-panel messages" on page 184. Check the event log.
Do jams occur with a specific type of media?	Try using media that you know is of good quality. See "Media troubleshooting" on page 218.
Where does the leading edge of the first sheet of media in the printer paper path stop when a jam occurs? Are any sheets damaged or torn?	Attempt to duplicate the problem. Inspect the paper path and all paper path mechanical assemblies located before the leading edge of the jam.
Is the customer loading the trays or cassettes correctly?	Observe the customer loading media. Instruct the customer to break the ream, and not to fan the media. See "Media troubleshooting" on page 218.
Is the customer overfilling the trays or cassettes?	Observe the customer loading media in the trays or cassettes. Make sure that the media is not over the maximum fill marks in the trays or cassettes.
Are the tray guides set correctly?	Make sure all front and rear tray 2 and optional 250-sheet or 500-sheet feeder guides are set correctly.
Does the printer need cleaning?	Inspect the paper path and paper-path rollers.

Frequency of jams

Jams in the paper path that occur intermittently are most often related to a deficiency in the media or environment. See "Media troubleshooting" on page 218 for information about these defects.

Paper-path jams that occur frequently, and in the same location of the printer, are most likely the result of a hardware problem.

Jam causes

Occasionally, media can become jammed during a print job. The following are some of the causes:

- Trays are loaded incorrectly or overfilled.
- Tray 2 or tray 3 is removed during a print job.
- The top cover is opened during a print job.
- The media that is being used does not meet HP specifications (see "Media specifications" on page 34).
- The media that is being used is outside of the supported size range (see "Media specifications" on page 34.)

Typical jam locations

Frequently occurring jams can be further categorized by their location in the printer. The four major areas of the printer are the input area, the print-cartridge area, the paper access area, and the output area. Because the pick-and-feed operation is almost identical for trays 1, 2, and 3, jams in the input area follow the same pattern.

Jams can occur at four locations:
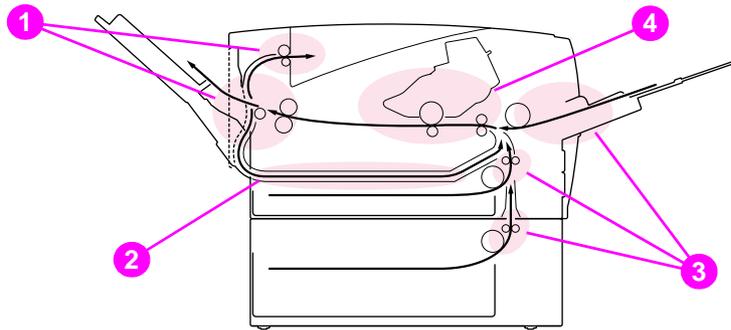
1 Output-bin areas (see "Output areas" on page 206)

2 Paper-access areas (applies only to the HP LaserJet 2300d printer, HP LaserJet 2300dn printer, and HP LaserJet 2300dtn printer) (see "Paper-access area" on page 207)

3 Input-tray areas (see "Tray 2 or tray 3 input area" on page 208)

4 Print-cartridge area (see "Print-cartridge area" on page 209)

Note   Find and remove the jammed media by using the instructions provided in this section. If the location of the jam is not obvious, look first in the print-cartridge area.

If possible, avoid tearing the jammed media. Be sure to remove all torn pieces of media that remain in the printer.

Loose toner might remain in the printer after a jam. This should clear after a few sheets have been printed.
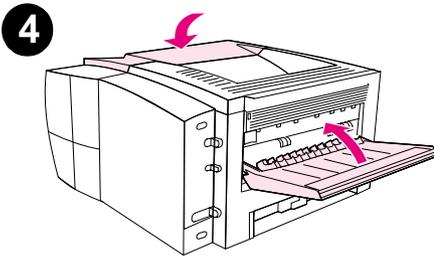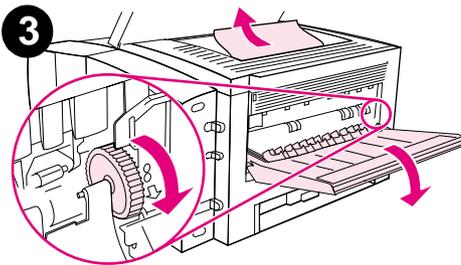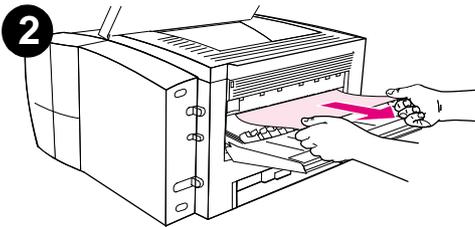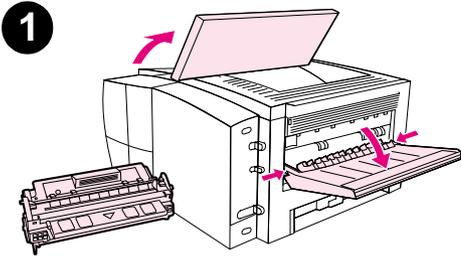
Output areas

Jams in this area might result in loose toner on the page. If you get any toner on your clothes or hands, wash them in cold water. (Hot water sets toner into the fabric.)

1   Open the top cover and remove the print cartridge. Open the rear output bin.

Note
It is necessary to open the top cover in order to release the rear output gearing and remove the media easily.

2   If the media is visible from the rear output opening, carefully use both hands to pull the leading edge out of the printer. Carefully remove the rest of the jammed media from the printer.

3   If the paper is almost completely visible from the top output bin, pull the remaining paper carefully out of the printer.

    If the leading edge is not visible or barely visible in the print-cartridge area, open the rear output bin all the way. To do this, push the bin door slightly forward and use your finger to disengage the grill at the base. Turn the jam-clearing wheel to move the media out of the printer.

4   Reinstall the print cartridge. Close the top cover and the rear output bin.

Note
If the print cartridge is difficult to reinstall, make sure that the registration plate has been flipped back down into position and that you have pushed the print cartridge firmly in place.

If the Attention light does not go out, jammed media remains inside the printer. Check the paper-feed and rear-output areas for jams. For printers that include a built-in duplexer (HP LaserJet 2300d printer, HP LaserJet 2300dn printer, and HP LaserJet 2300dtn printer), check the duplexer area.

Table 20. Output area jams recommended actions

Possible cause	Recommended action
Fuser is defective	Replace the fuser.
Upper/lower face-down delivery rollers	Replace the appropriate delivery rollers.
Engine controller PCA	Replace the engine controller PCA.
Power supply assembly	Replace the power supply.
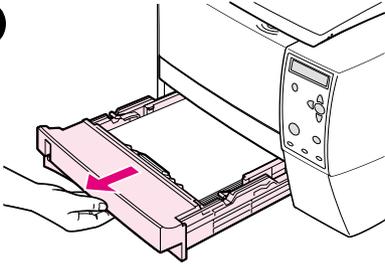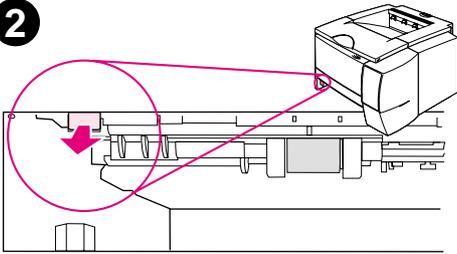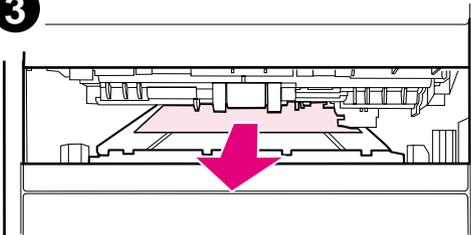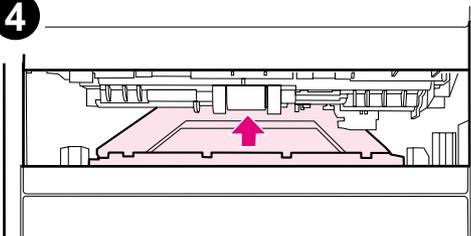
Paper-access area

Jams in the paper access area can occur only when using the two-sided printing capabilities of the HP LaserJet 2300d printer, HP LaserJet 2300dn printer, or HP LaserJet 2300dtn printer.

1   Remove tray 2 from the printer.

2   Pull the green lever on the left front of the tray 2 opening to open the paper access plate.

3   Reach in and pull out the jammed paper.

4   Push the bottom of the paper access plate back up until it clicks into place on both sides (both sides need to be engaged).

5   Reinstall tray 2.

6   To reset the printer and continue printing, open the top cover all the way and then close it.

Note
If the Attention light does not go out, jammed media remains inside the printer. Check the paper-feed and rear-output areas for jams.

Table 21. Paper access area jams—recommended actions

Possible cause	Recommended action
Unlatched paper access plate	Latch paper access plate.
Reverse-paper sensor is defective.	Replace the reverse-paper sensor.
Automatic duplexer pickup paper sensor	Replace the automatic duplexer pickup paper sensor.
Position guide assembly	Replace the position guide assembly.
Engine controller PCA	Replace the engine controller PCA.
Power supply assembly	Replace the power supply.

1

2

3

4
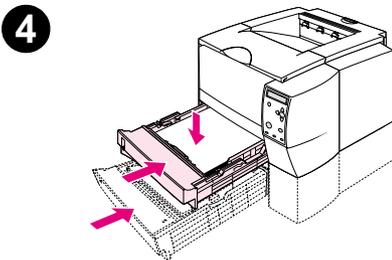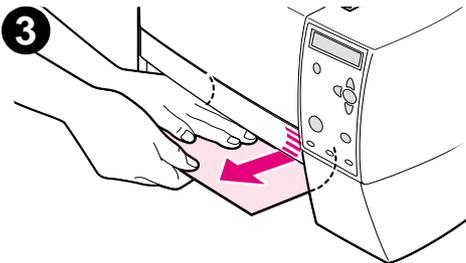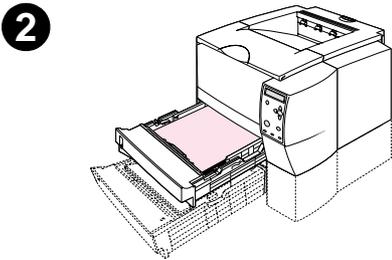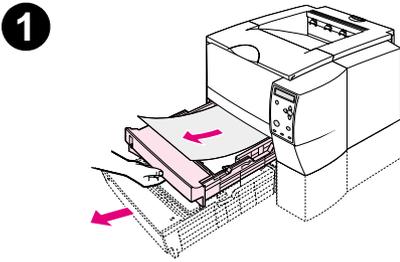
Tray 2 or tray 3 input area

Note
If paper has entered the print-cartridge area, follow the instructions in "Print-cartridge area" on page 209. It is easier to remove paper from the print-cartridge area than from the paper-feed area.

1   Slide out tray 2 or tray 3 to expose the jam.

2   Remove any misfed paper by pulling it out by the visible edge. Make sure that all of the paper is aligned in the tray. If tray 3 is installed, remove any misfed paper and make sure that all of the paper is aligned in that tray.

3   If the paper is jammed in the paper-feed area and cannot be accessed from the print-cartridge area, grasp the paper and carefully pull it free from the printer.

4   For tray 2, push the paper down to lock the metal paper-lift plate into place. For both trays, slide the tray back into the printer.

5   To reset the printer and continue printing, open the top cover all the way and then close it.

Note
If the Attention light does not go out, jammed media remains inside the printer. Check the paper-feed and rear-output areas for jams. For printers that include a built-in duplexer (HP LaserJet 2300d printer, HP LaserJet 2300dn printer, and HP LaserJet 2300dtn printer), check the duplexer area.

Table 22. Input-area jams

Possible cause	Recommended action
Tray photo sensors are blocked or inoperative	Inspect photosensors in all trays and replace trays as needed.
Pickup roller is dirty or inoperative	Inspect the pickup rollers in all trays and clean or replace the pickup rollers as needed.
Pickup assembly is defective	Replace the tray with the defective pickup assembly.
Separation pad	Inspect the separation pads in all trays and replace pads as needed.
Feed rollers	Inspect the feed rollers and replace rollers as needed.
Solenoid	Inspect the solenoid in all trays and replace trays as needed.
Paper feeder PCA in tray 3 is defective	Replace tray 3.
Engine controller PCA	Replace the engine controller PCA.
Power supply assembly	Replace the power supply.

1
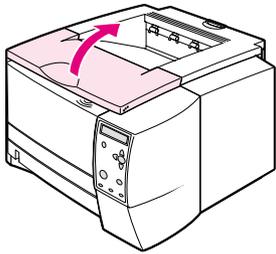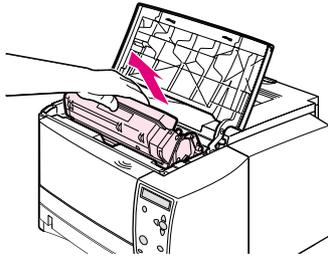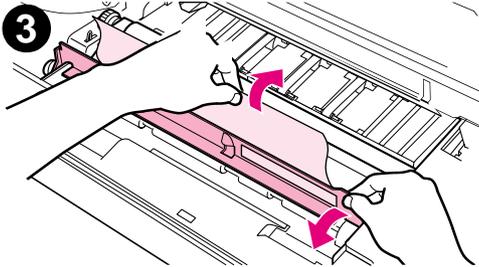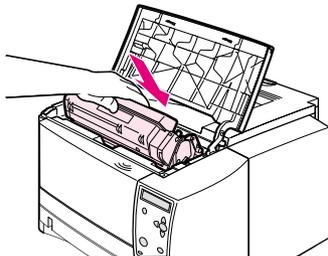
Print-cartridge area

Jams in this area might result in loose toner on the page. If you get any toner on your clothes or hands, wash them in cold water. (Hot water sets toner into the fabric.)

1 Open the top cover.

2 Remove the print cartridge.

2

CAUTION
To prevent damage, do not expose the print cartridge to light for more than a few minutes. Place a piece of paper over the top of the print cartridge to shield it while it is out of the printer.

3 Carefully lift up the registration plate. If the leading edge of the print media is visible, gently pull the media toward the rear of the printer to remove it from the printer.

3

4 If the media is difficult to remove or has already entered the output area, remove the jam as described in "Output areas" on page 206.

5 When the jammed media has been removed, gently flip down the registration plate. Reinstall the print cartridge and shut the top cover.

Note
If the print cartridge is difficult to reinstall, make sure that the registration plate has been flipped back down into position and that you have pushed the print cartridge firmly into place.

4

If the Attention light does not go out, jammed media remains inside the printer. Check the paper-feed and rear-output areas for jams. For printers that include a built-in duplexer (the HP LaserJet 2300d printer, HP LaserJet 2300dn printer, and HP LaserJet 2300dtn printer), check the duplexer area.

Table 23. Possible causes of frequent jams in the cartridge area

Possible cause	Recommended action
Tray photosensors are blocked or inoperative	Inspect photosensors in all trays and replace trays as needed.
Registration assembly is defective	Replace the registration assembly.
Transfer roller assembly is defective	Replace the transfer roller.
Print cartridge is defective	Inspect and replace the print cartridge if needed.
Transport assembly is defective	Inspect the transport belts and replace the belts as needed.
Engine controller PCB	Replace the engine controller.
Power supply assembly	Replace the power supply.
Fuser is defective	Replace the fuser.
Media sticks to the cartridge	Turn on "more separation" (see page 62)

Image-formation troubleshooting

When you are working with customers, obtain a print sample before troubleshooting the printer. Ask the customer to describe the quality expected from the printer. The print sample also helps clarify the customer's description of the problem.

Often an image-formation problem can be linked to media that is outside the specifications that Hewlett-Packard has established for optimum printer performance. See "Media troubleshooting" on page 218 for help with persistent image-formation problems.

Image-quality checks	Action
Does the problem repeat on the page?	Use the "Repetitive defect ruler" on page 227 to determine the source of the problem.
Is the print cartridge full and is it manufactured by HP?	See "Check the print cartridge" on page 211 for information about the print cartridge.
Is the customer using print media that meets all HP specification standards?	See chapter 2, beginning on page 34, for information about media specifications.
Is the print sample similar to those in the image-defect tables?	Compare the sample to the tables and perform the actions recommended in the "Image-defect tables" on page 212.
Is the problem on the print cartridge or the transfer roller?	Perform a half-self-test functional check (see page 228) to determine the location of the defect. If a dark and distinct toner image is present on the drum surface, assume that the first four functions of the electrophotographic process—cleaning, conditioning, writing, and developing—are functioning correctly, and troubleshoot the failure as a transfer or fusing problem. (See chapter 5 for information about the the electrophotographic process.)
Is the customer using a media type that is recommended for this product?	See "Media troubleshooting" on page 218.

Check the print cartridge

Image-formation defects are often the result of problems with the print cartridge. Use the following list to verify that the print cartridge is still operating correctly.

Non-HP print cartridges can cause many types of image-formation defects. When the customer experiences image defects, check the print cartridges to verify that they are HP products.

Perform all of the following checks before replacing the print cartridge.

● Check the print cartridge to see if it has been disassembled or refilled.

● Verify that the print cartridge is seated correctly in the printer cavity.

● Inspect the cartridge for toner leaking through worn seals. (Manual rotation of the drum can cause internal damage, and toner spills can result.)

● White areas on the page can indicate that the drum has been exposed to light for too long.

Note The print cartridge is rated for 6,000 images at 5-percent coverage. Check the surface of the photosensitive drum in the cartridge to see if it has been damaged or scratched. Touching the drum contaminates the photosensitive surface, which can cause spotting and defects during printing.

EconoMode

EconoMode creates draft-quality printing by reducing the amount of toner on the printed page. Advise the customer to turn EconoMode on or off, either from the printer driver or a software application.

CAUTION Hewlett-Packard does not recommend full-time use of EconoMode. If EconoMode is used full-time, then the toner supply might outlast the mechanical parts in the print cartridge.

Image defects unique to the HP LaserJet 2300 series printers

Ashley's ghost

Ashley's ghost can appear on images in conditions of low humidity and low temperature. Images with high coverage of grayscale at the leading edge experience ghosting from the leading edge.

Toner explosion

Toner explosion can appear as stray toner on the horizontal lines in conditions of high humidity in images on labels and recycled media. To combat toner explosion, try turning on the "line detail" setting in the control-panel menus (see page 62).

Halo

Halo can appear as stray toner around printed characters in conditions of high humidity and high temperature on the second side of a duplexed print job, especially when using a higher-gloss media. To combat halo, try turning on the "high transfer" setting in the control-panel menus (see page 62).

Image-defect tables

Judgments about print quality are subjective. This section of the manual helps define print-quality defects and the factors that affect print quality.

The print samples shown in the following figures illustrate some print-quality defects. Keep copies of print-quality defects that you encounter in the field and explanations of their causes. You can use these samples for future reference.

Non-HP print cartridges can cause many of the problems that are illustrated here. When the customer experiences image defects, check the print cartridges to verify that they are HP products.

Light print or fade	Toner specks	Dropouts	Vertical lines
Gray background	Toner smear	Loose toner	Repetitive defect
Misformed characters	Page skew	Curl or wave	Wrinkles or creases
Toner scatter outline	Ghosting (light)	Ghosting (dark)	White or missing image
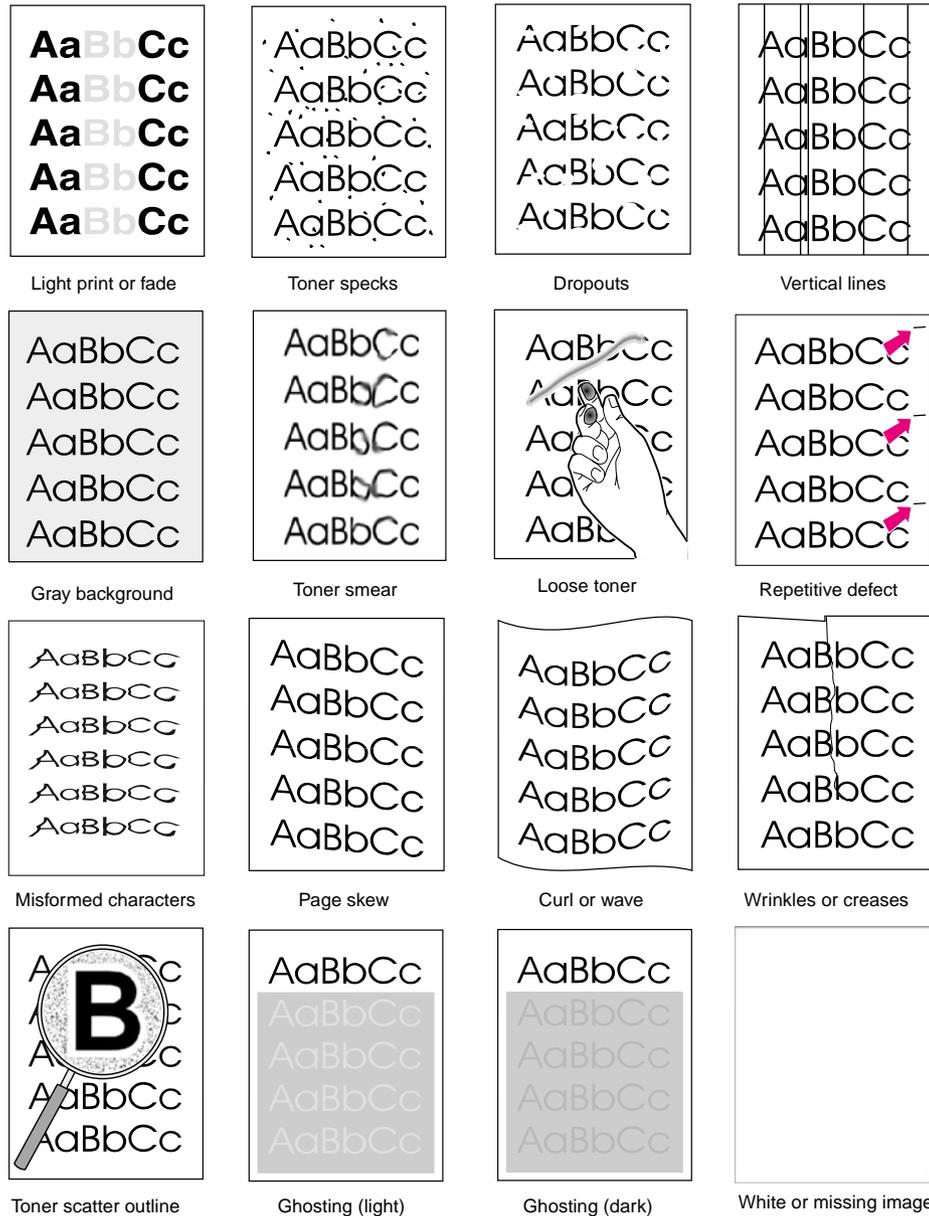
Figure 110.   **Image defects examples**

Table 24. Image defects

Problem	Cause	Solution
Light print or fade AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	Wrong toner-density setting is in use.	● Through the software, adjust the toner density setting. Make sure EconoMode is off.
	The print media does not meet printer specifications or is stored incorrectly.	● Print a few more pages to see if the problem corrects itself. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet HP specifications, replace the media and advise the customer to use the recommended print media and to store it correctly.
	The toner supply is low	● Temporarily extend the print cartridge life by redistributing the toner. ● If this does not improve the print quality, install a new print cartridge.
Toner specks AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	The transfer roller is dirty.	● Clean the inside of the printer or use the printer's cleaning page.
	The print media does not meet printer specifications or is stored incorrectly.	● Print a few more pages to see if the problem corrects itself. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet HP specifications, replace the media and advise the customer to use the recommended print media and to store it correctly.
	The paper path is dirty.	● Clean the inside of the printer or use the printer's cleaning page.
	The fuser setting is incorrect for the paper type.	● At the control panel, change the fuser mode setting or choose another paper type in the printer driver.
Dropouts AaBbCc AaBbCc AaBbCc AcBbCc AaBbCc	A single sheet of paper is defective.	● Try to reprint the job.
	The moisture content of the paper is uneven or the paper has moist spots on it.	● Try paper from a different source.
	The paper lot is bad.	● Try a different kind or brand of paper.
	The print cartridge might be defective.	● Check for vertical repetitive defects. ● Replace the print cartridge.
	The fuser setting is incorrect for the paper type.	● At the control panel, change the fuser mode setting or choose another paper type in the printer driver.
Vertical lines AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	The print cartridge is defective.	● Replace the print cartridge.
	The fuser entrance guide is dirty.	● Clean the guide.
	The fuser is scratched.	● Replace the fuser.

Table 24. Image defects (continued)

Problem	Cause	Solution
Gray background AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	The print media does not meet printer specifications or is stored incorrectly.	● Print a few more pages to see if the problem corrects itself. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet HP specifications, replace the media, and advise the customer to use the recommended print media and to store it correctly.
	The printer's operating environment does not meet specifications.	● Make sure the printer's operating environment meets specifications.
	The wrong toner density setting is in use.	● Through the software, adjust the toner density setting. Make sure EconoMode is off.
	The print cartridge is defective.	● Replace the print cartridge.
Toner smear AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	The printer interior is dirty.	● Print a few more pages to see if the problem corrects itself. ● Clean the inside of the printer or use the printer cleaning page.
	The print media might be too smooth.	● Check the print media type and quality.
	The print cartridge is defective.	● Replace the print cartridge.
	The fuser setting is incorrect for the paper type.	● At the control panel, change the fuser mode setting or choose another paper type in the printer driver.
Loose toner AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	The printer interior is dirty.	● Print a few more pages to see if the problem corrects itself. ● Clean the inside of the printer, or use the printer cleaning page.
	The print cartridge is defective.	● Replace the print cartridge.
	The print media might be too smooth.	● Check the print media type and quality.
	The fuser is defective.	● Replace the fuser.
	The fuser setting is incorrect for the paper type.	● At the control panel, change the fuser mode setting or choose another paper type in the printer driver.
Repetitive defects AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	The internal parts are dirty or defective.	● Print a few more pages to see if the problem corrects itself. ● Clean the inside of the printer or use the printer cleaning page.
	The print cartridge is damaged.	● See the "Repetitive defect ruler" on page 228. ● Replace the print cartridge.
	The fuser is defective.	● Replace the fuser.

Table 24. Image defects (continued)

Problem	Cause	Solution
Misformed characters AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	Maintenance is due.	● Print a few more pages to see if the problem corrects itself. ● Make sure that the printer operating environment meets specifications. ● Print a demo page to verify that the problem persists. ● Perform maintenance actions as required.
	The print media might be too smooth.	● Check the print media type and quality.
Page skew AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	The print media does not meet printer specifications or is stored incorrectly.	● Print a few more pages to see if the problem corrects itself. ● Verify that there are no torn pieces of media inside the printer. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet HP specifications, replace the media.
	The print media is not loaded correctly or trays are not adjusted correctly.	● Make sure print media is loaded correctly and that the guides fit correctly against the media stack.
	Registration assembly is incorrectly installed.	● Be sure that the registration assembly is installed correctly.
Curl or wave AaBbCC AaBbCC AaBbCC AaBbCC AaBbCC	The print media does not meet printer specifications or is stored incorrectly.	● Print a few more pages to see if the problem corrects itself. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet HP specifications, replace the media.
	Printer's operating environment does not meet specifications.	● Make sure the printer's operating environment meets specifications.
	Wrong output bin.	● Print to a different output bin (top or rear output bin).
Wrinkles or creases AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	The print media does not meet printer specifications or is stored incorrectly.	● Print a few more pages to see if the problem corrects itself. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet hp specifications, replace the paper.
	The print media is loaded incorrectly.	● Make sure print media is loaded correctly and that the guides fit correctly against the media stack.
	Wrong tray.	● Print from a different tray (such as tray 1).
	Wrong output bin for print media type.	● Print to a different output bin (top or rear output bin).
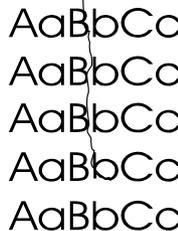
Table 24. Image defects (continued)

Problem	Cause	Solution
Toner scatter outline AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	The print media does not meet printer specifications or is stored incorrectly.	● Print a few more pages to see if the problem corrects itself. ● Turn over the stack of media in the tray. Also try rotating the media 180 degrees. ● If the print media does not meet HP specifications, replace the paper.
	Maintenance due.	● Print a few more pages to see if the problem corrects itself. ● Print a demo page to verify problem persists. ● Perform maintenance actions as required.
Ghosting (light) AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	This type of defect might occur when using preprinted forms, a large quantity of narrow media, or a fuser mode that is set too high for your media.	● Print a few more pages and see if the problem corrects itself. ● Make sure that print media type and quality meet HP specifications. ● If the defect occurs later in a print job, turn the printer off for ten minutes, and then turn the printer on to restart the print job. ● Check your fuser mode.
Ghosting (dark) AaBbCc AaBbCc AaBbCc AaBbCc AaBbCc	This type of defect might occur when using preprinted forms, a large quantity of narrow media, or a fuser mode that is set too high for your media.	● Print a few more pages and see if the problem corrects itself. ● Make sure that print media type and quality meet HP specifications. ● If the defect occurs later in a print job, turn the printer off for ten minutes, and then turn the printer on to restart the print job. ● Check your fuser mode.

Table 24. Image defects (continued)

Problem	Cause	Solution
White or missing image/blank page	No toner is available for print.	● Remove sealing tape or replace the print cartridge. Look for the REPLACE CARTRIDGE message on the control panel display.
	Defective laser shutter.	● Check that the laser shutter operates freely when the print cartridge is installed.
	Toner cartridge guide damaged, incorrectly positioned, or missing.	● Make sure the guide is installed correctly above the print cartridge.
	No transfer roller voltage.	● Without transfer roller voltage, toner cannot be attracted from the surface of the drum to the print media. Perform the half-self-test functional check to check all other electrophotographic processes. See "Half-self-test functional check" on page 228. Replace the transfer roller if necessary.
	No developing bias.	● Clean the high-voltage power supply contacts. With no developing bias charge, toner is not attracted to the drum. ● Replace the power supply.
	No drum ground path.	● With no ground path, the drum cannot discharge. The negative charge on the drum repels toner, and leaves a white page with bubble print. ● Check the drum ground spring and reconnect it, if necessary. ● Replace the power supply PCB.
	Defective laser scanner cable assembly.	● Low-level signals exchanged between the laser/scanner assembly and the engine controller PCB might be affecting laser output. Replace the laser/scanner cable assembly.

Media troubleshooting

Media defects can cause jams and image defects. If the previously described conditions are corrected and do not eliminate the printing problem, continue to investigate the media as the source of the defect.

Problems with print media are sometimes difficult to detect. Follow a standard troubleshooting procedure to help isolate media-related problems. The steps to follow are:

- "Determine the problem source: print media or printer" on page 218.
- "Isolate a paper path" on page 218.
- "Isolate a media brand" on page 219.
- "Isolate a media type" on page 220.
- "Evaluate media use practices" on page 224.
- "Evaluate environmental conditions" on page 224.

Determine the problem source: print media or printer

When determining the cause of a printer failure, a distinction must be made between problems that relate to the printer itself and those that involve print media. Often a problem that seems to be related to the printer is actually a matter of poor print-media selection or handling. To determine if a problem is caused by the printer or by the media, try a few simple steps to remedy the situation:

- Turn media over in the tray to print on the reverse side.
- Rotate sheets 180 degrees (end to end) to feed with a different leading edge.

If the symptoms cease, or change in some way, it can be assumed that the problems are caused by the print media.

Isolate a paper path

Try using the straightest paper path

Some problems can be avoided by using the straightest available paper path. Usually this means paper feeds from the upper paper tray or manual feeder, and exits into the rear output bin. This path is recommended for envelopes and media with a heavy basis weight.

Determine if the problem is caused by duplexing

Paper that has just made a pass through the printer can show increased media curl. Media curl increases image dropout, and creates pickup and stacking problems. When the second pass is made, print media might not meet the specifications for moisture and curl. Dry paper can hold static charges that affect print quality and stacking of the duplexed page. Media shrinkage resulting from a second pass through the printer can cause image misalignment on the duplexed page.

Isolate the source of the jam

Define the source of the media that is jamming:

- tray 1
- tray 2
- tray 3 (250-sheet or 500-sheet)
- paper access area

Determine where media jams occur

Check where media stops when a jam occurs. Types of jams include:

- input paper jams
- internal paper-path jams
- paper access plate
- output-bin jams

Determine whether the printer is experiencing misfeeds or multifeed jams

The following are some possible causes of misfeeds or multifeed jams:

- The media might be too stiff. Check basis weight and measure caliper. (See pages 44 through 48 for information about testing media.)
- The paper might be too smooth. Check the finish.
- The paper might be too heavy or too light. Check basis weight. (See pages 44 through 48 for information about testing media.)
- The customer might be attempting to print embossed paper, pre printed forms, or perforated paper that does not meet HP specifications. See "Isolate a media brand" on page 219 below or details about issues involved in printing on embossed paper.
- The paper might be loaded incorrectly. Turn over the sheets in the paper tray to determine if in-ream curl is causing misfeeds.
- The customer might be fanning media before loading it into the tray.
- The customer might be adding media in small amounts. Do not add small amounts of media or mix types of media in the tray.
- The printer or media storage environment might be too humid or too dry. (As a result, media might be too moist or too dry.) Determine if this is the case and advise the customer.

Isolate a media brand

If the printer jams with only one brand of media:

- Try switching media brands.
- If the paper ream in use appears to be old, open a fresh ream of the same paper and load it correctly into the printer. If the problem disappears, investigate storage and handling conditions.

Isolate a media type

When jams and other problems occur frequently, it is often because the customer is using a special paper. Customers must only use print media that conforms to all Hewlett-Packard specifications, and should always test media before purchasing large quantities. Media should be tested before storage to verify quality printing results. Then, if problems arise, storage or handling conditions can isolate the most likely cause. Some types of media that might cause problems are:

● preprinted forms and special letterhead

● embossed paper

● perforated paper

● adhesive labels

● envelopes

● transparencies

● chemically treated paper

● synthetic paper

● coated paper

● other special media

Preprinted forms and special letterhead

Many preprinted forms and special letterhead papers perform well in HP LaserJet printers. However, these papers undergo processes that alter their original characteristics, and care must be taken to ensure they conform to HP specifications. All special papers should be wrapped in moisture-proof wrapping when purchased from the paper converter or printing house.

Forms and letterhead must be printed with inks that conform to the following specifications:

● Only use ink that is heat-resistant, and that does not melt, scorch, or release hazardous emissions when subjected to 200 degrees C (392 degrees F) for 0.1 second.

● Inks must have resistance to silicon oils, and must not be affected by resin components in toner.

● Inks must not be flammable.

● Inks must not "offset" (transfer from the printed paper onto the printer, contaminating internal printer components). The principle cause of offset is ink that is not fully dried or that cannot withstand the printer fusing temperature.

Note Do not use low-temperature inks (the kind used with thermography).

Note Do not purchase more media than can be easily used in a short time (about 3 months). Media stored for long periods experiences heat and moisture extremes that can be damaging. Planning is important to prevent damage to a large supply of media.

Hewlett-Packard neither warrants nor recommends the use of a particular brand of paper or print media. Media properties are subject to manufacturing changes, and Hewllett-Packard has no control over such changes. The customer assumes all responsibility for the quality and performance of media. Although testing media helps to characterize its performance, process quality control by the manufacturer.

Embossed media

Embossed media is not recommended for use in HP LaserJet printers. Media is embossed by stamping an image into the media by compressing the media fibers together at approximately 200 degrees C (392 degrees F), and sometimes by applying a thin metal foil to the surface. The printer fusing process can loosen the foil; loose foil can interfere with the mechanical and electronic operation of the printer.

Embossed paper, with or without foil, can also cause multifeed jams. Multiple embossed print media sheets tend to stick to one another.

Media with cutouts or perforations

Avoid media with cutouts or perforations for these reasons:

- Cut fibers absorb more moisture and can increase waviness and media curl. This decreases the print quality near the cutout or perforated area.
- The cutting knife leaves a sharp edge on the cutout or perforation. If this sharp edge is facing the print cartridge drum during printing it can scratch the drum surface.
- If printing occurs over a cutout hole the transfer roller is contaminated with unused toner. Light streaks can result on the paper from the contaminated roller.

Adhesive labels

Labels are defined as media with a pressure-sensitive adhesive backing. Label stock includes the top sheet, the adhesive, and the carrier sheet (also referred to as the backing). To prevent media jams and feed problems, always use the rear output tray when printing on labels. You must use the following guide lines when using labels:

- Labels must be cut long grain (as opposed to short grain).
- Labels must totally cover the carrier sheet (no spaces between the labels).
- Labels must contain only acrylic-based adhesives.
- Labels must contain no excessive adhesive. (Adhesive from some labels can cause jamming resulting from buildup in the printer mechanism. The adhesive should not come into direct contact with the printer at any time.)
- Labels must meet Hewlett-Packard specifications for fusing compatibility.
- Labels must meet Hewlett-Packard specifications for caliper.
- Labels must have a carrier sheet that is not too smooth (which can cause the feed rollers to slip).

Table 25. Adhesive label construction

Labels cover entire page	Carrier sheet exposed only in vertical columns	Carrier sheet exposed in perimeter margins
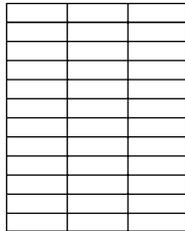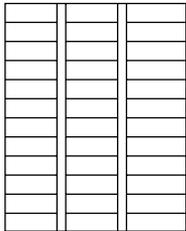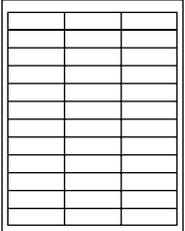
Envelopes

Because of the variety of folds and cuts available, it is difficult to specify the types of envelopes that perform well with HP LaserJet printers. It is very important to test a sample envelope before purchasing a large quantity. The specifications for media also apply to envelopes. Avoid envelopes that contain contact adhesives.

Following are a few recommendations for feeding envelopes:

● Closely inspect the leading edge of the envelopes before feeding them into the printer. Verify the leading edge is flat. Watch for envelope curl and loose folds. If necessary, flatten the leading edge of the envelope before feeding.

● Be patient! In manual-feed mode, the printer displays a message when prepared to accept the next envelope. Always wait for this message to appear before loading or feeding envelopes into the printer.

● Do not allow a large quantity of envelopes to accumulate in the output tray. If too many envelopes accumulate, they can interfere with the output path.

● Use the rear output tray when printing envelopes.

The main causes of problems with envelopes on HP LaserJet printers are:

● folds (two or more thicknesses of paper)
● edge creases (sharp or rounded)
● glued edges (sealing when fused)
● uneven printing surfaces

For fewer problems, follow these guidelines:

● Corner folds must be well-creased, and contain no more than two thicknesses of paper.
● Envelopes must lie flat.
● Paper grain should be diagonal.
● Adhesives must meet HP specifications for fusing compatibility.
● Basis weight must not exceed 11 kg (28 lb).
● Under no circumstances should envelopes have clasps, snaps, or windows, or use synthetic materials. Severe damage to the printer can result.

Table 26. Envelope construction

Good construction	Poor construction
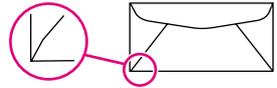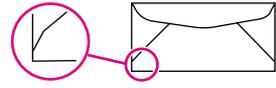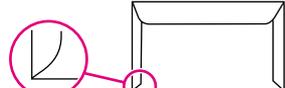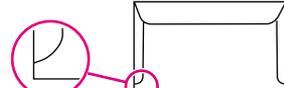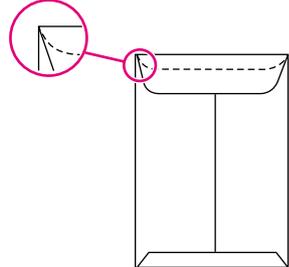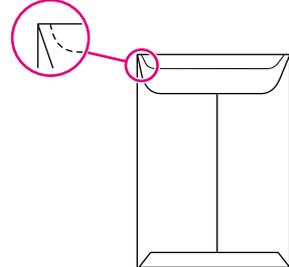
Transparencies

Printing on transparencies presents a special set of challenges. The surface resistance of a transparency can be infinite, causing the transparency to act like paper with 0 percent moisture content. This can result in streaks and smudging. Static charges can accumulate on some transparent stock and cause multifeed jams. Also, certain brands and types of transparencies do not tolerate exposure to the fuser.

The user should only select transparencies that meet HP specifications. Among the common precautions are:

● Print transparencies to the top output bin to avoid jams.

● Transparencies must have correct resistivity (not built-up static charge).

● Transparencies must meet HP specifications for fusing compatibility.

● Each sheet should be removed from the tray and placed on a flat surface before printing the next sheet. This keeps the toner form rubbing off from the one sheet to the sheet before it has had time to cool.

Chemically treated media

Coatings such as lacquers, polymers, laminations, or other chemicals protect the paper but can cause problems in the fuser and transfer areas of Hewlett-Packard LaserJet printers. The surface resistivity and moisture content can be greatly altered, resulting in print-quality problems. Hard surface coatings increase wear on the rollers and media guides. All chemically treated media must meet Hewlett-Packard specifications for fusing compatibility.

Synthetic media

Synthetic medias (those manufactured from man-made fibers) do not perform as well as bond media in any printer, especially Hewlett-Packard LaserJet printers. All synthetic media must meet Hewlett-Packard specifications, especially for caliper and fusing compatibility.

Coated media

Do not use coated media. Most coated media does not meet specifications for fusing compatibility and other specifications for HP LaserJet printers.

Other special media

1   Odd sizes. Check minimum and maximum supported sizes in chapter 2.

2   Carbonless media. No carbon required (NCR) media is not supported by HP LaserJet printers.

3   Recycled media. Choose recycled media that meets Hewlett-Packard specifications. Note that recycled media might not be as bright as indicated in the specifications. Hewlett-Packard recommends that recycled media contain no more than 5 percent groundwood. See chapter 2 for testing information.

Evaluate media use practices

Handling and loading

Often differences in techniques, missed steps, or media-handling methods are responsible for problems. Be sure the media is loaded correctly in the printer.

Make sure that all printer users are observing these guidelines.

Printer maintenance

General cleanliness of the printer is the most important part of printer maintenance. Printers using media that creates a lot of dust and debris might require an aggressive maintenance schedule. Media dust accumulates in the following areas:

● pickup rollers

● media guides

Take extra time to clean and inspect the paper path. If problems continue after cleaning, inspect for wear or damage.

Media stacking

Consider the following guidelines when advising the customer about stacking media:

● Do not store cartons of reams directly on the floor; cartons should be placed on a pallet or on shelves.

● Do not stack cartons more than six on top of one another.

● Stack each carton squarely on top of the other.

● Stack each carton upright.

● Do not store individual reams in such a manner that they will curl or warp along the edges.

● Do not place anything on top of stored media.

● Do not place the media close to heating or air conditioning vents or open windows.

Evaluate environmental conditions

Printing environment

Ideally, the printing environment should be at room temperature and not too dry or too humid. Print media absorbs and loses moisture rapidly.

Temperature extremes and excessive humidity can damage print media. Heat causes the moisture in the media to evaporate. Cold causes the moisture in the media to condense. Heating systems and air conditioners remove most humidity. When media loses moisture, streaks and smudging result. When paper absorbs moisture, light print and dropouts result.

Media storage environment

Media storage environmental conditions directly affect the feed operation.

Note   Do not purchase more media than can be easily used in a short time (about 3 months). Media stored for long periods experiences heat and moisture extremes that can be damaging. Planning is important to prevent damage to a large supply of media.

Hewlett-Packard neither warrants nor recommends the use of a particular brand of paper or print media. Media properties are subject to manufacturing changes Hewllett-Packard has no control over such changes. The customer assumes all responsibility for the quality and performance of media. Although testing media helps to characterize its performance, process quality control by the manufacturer.

Unconverted media in sealed reams can remain stable for several months before use. Converted media has greater potential for environmental damage, especially if it is not wrapped with a moisture-proof barrier.

The media storage environment should be maintained to ensure optimum printer performance. The required condition is 20 degrees to 24 degrees C (68 degrees to 75 degrees F), with a relative humidity of 45 percent to 55 percent. The following guidelines should be considered when evaluating the customer's media storage environment:

- Media should be stored at or near room temperature.
- The air should not be too dry or too humid.
- The best way to store an opened ream of paper is to rewrap it tightly in its moisture-proof wrapping. If the printer environment is subject to extremes, unwrap only the amount of media to be used during the day's operation to prevent unwanted moisture changes.

Communication troubleshooting

Communications check

Communication problems are normally the customer's responsibility. Time spent attempting to resolve these problems might not be covered by the Hewlett-Packard warranty.

Refer the customer to the network administrator for assistance in troubleshooting network problems.

Test message

After the printer is installed, verify communications between the printer and the IBM-compatible computer. Enter the following at the DOS prompt:

`C:\DIR>LPT1` ENTER (for printing to parallel port #1)

The printer should print a directory listing of the C: \ directory.

Some Windows operating systems do not run true DOS. Consequently, printing the directory may not accomplish a true test of the communication between the printer and the computer.

EIO troubleshooting

If the printer has been turned on for at least 10 minutes, it will not recognize a LAN cable plugged into the Jetdirect server until you turn off the printer and then turn it on again.

Before attempting to troubleshoot a network problem or notifying the network consultant of a problem, always print a configuration page.

See the *HP Jetdirect Print Server Software Installation Guide* for detailed explanations of network issues (go to http://www.hp.com/go/Jetdirect).

Jetdirect configuration

- If the EIO Jetdirect card has started successfully and completed its internal diagnostics, the `I/O CARD READY` message appears on the Jetdirect configuration page. If communication is lost, an `I/O NOT READY` message appears followed by a two-digit error code. See the *HP Jetdirect Network Interface Configuration Guide* for further details and recommended action (go to http://www.hp.com/go/Jetdirect).

- The "Network Statistics" column indicates that network activity has been occurring. Bad packets, framing errors, unsendable packets, and collisions should be minimal. If a high percentage (greater than one percent) of these occur, contact the network administrator. All of the statistics are set to zero when the printer is turned off.

- The "Novell Status" block should state the Novell printer server name to which the printer is connected. If the node name reads "NPIxxxxxx" (xxxxxx=last six digits of the EIO's LAN address), the EIO card has not been configured for a Novell server. This could indicate that the card is operating under an IPX protocol other than Novell. Consult with the network administrator if the node name is not present.

- In the TCP/IP protocol block, the default IP address is "0.0.0.0." It is acceptable to operate the printer with this default address. The error message "ARP DUPLICATE ADDRESS" might appear in this block. This is also an acceptable error code if the TCP/IP protocol is not being used. Check with the network administrator to determine the correct IP address for the printer.

Troubleshooting tools

Repetitive defect ruler

Repetitive print defects are usually caused by a specific roller in the printer or the print cartridge. Use the figure below to isolate the cause of repetitive print defects. Align the first occurrence of the defect with the top of the "ruler" (at the top or bottom of the misprinted page), and measure to the next occurrence of the defect to determine the roller in question. When the defect pattern matches the pattern of the ruler, replace the indicated roller.

Initial occurrence of defect ─────────────────▶

Primary charging roller—38 mm (1.50 inches) ─────────────▶
Transfer charging roller—44 mm (1.73 inches) ───────────▶
Developing roller—47 mm (1.85 inches) ──────────────▶

Pressure roller—63 mm (2.48 inches) ─────────────▶

Fuser film—75 mm (2.95 inches) ─────────────▶

Photosensitive drum—95 mm (3.74 inches) ─────────────▶
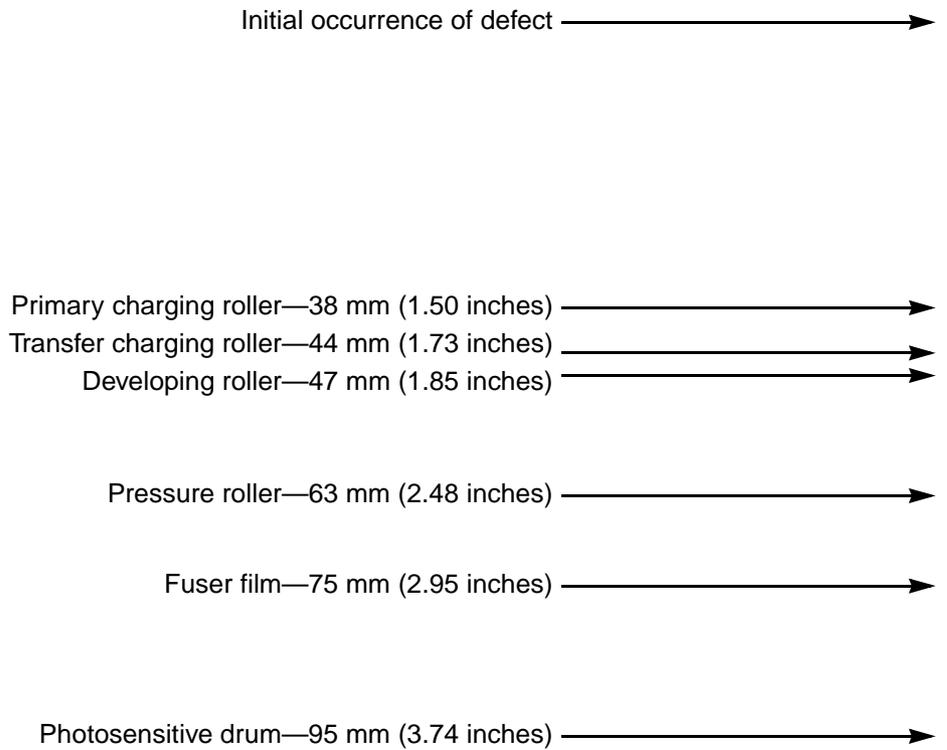
Figure 111. **Repetitive defect ruler**

Half-self-test functional check

The electrophotographic process can be subdivided into the following stages:

● Cleaning (removes excess toner from drum surface)

● Conditioning (places a uniform electrical charge on drum)

● Writing (laser strikes surface of drum to create latent image)

● Developing (forms the toner image on drum)

● Transferring (charges transfer the image to paper)

● Fusing (heat and pressure produces a permanent image)

The purpose of the half-self-test check is to determine which process is malfunctioning.

Performing a half-self-test functional check

1   Print a configuration page from tray 1.

2   Open the top cover after the trailing edge of the paper enters the printer. At this point, the leading edge of the paper should have advanced beyond the print cartridge.

3   Remove the print cartridge.

4   Open the print cartridge drum shield to view the drum surface.

Interpreting the functional check

If a dark and distinct toner image is present on the drum's surface, assume that the first four functions of the electrophotographic process are functioning (cleaning, conditioning, writing, and developing) and troubleshoot the failure as a transfer or fusing problem.

If no image is present on the photosensitive drum, perform the drum rotation functional check.

Performing a self test

To initiate a self test:

1 Turn off the printer.

2 Press ✓ (SELECT) and hold it while turning on the printer.

3 Release ✓ (SELECT) when all three status lights are lit.

4 Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to SELF TEST, and then press ✓ (SELECT). The status lights cycle, the printer initializes, and then the printer prints a configuration page.

Performing a paper path test

To initiate a paper path test:

1 Press ✓ (SELECT).

2 Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to DIAGNOSTICS, and then press ✓ (SELECT).

3 Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to PAPER PATH TEST, and then press ✓ (SELECT).

4 Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to PRINT TEST PAGE, and then press ✓ (SELECT). The printer produces a test page.

Drum-rotation functional check

The photosensitive drum, located in the print cartridge, must rotate for the print process to work. The photosensitive drum receives its drive from the main drive assembly. To verify whether the drum is rotating, perform a drum-rotation functional check.

To perform a drum-rotation functional check

1 Open the top cover.

2 Remove the print cartridge.

3 Mark the cartridge drive gear with a felt-tipped marker. Note the position of the mark.

4 Install the print cartridge and close the top cover. The start-up sequence should rotate the drum enough to move the mark.

5 Open the printer and inspect the gear that was marked in step 3. Verify that the mark moved. If the mark did not move, inspect the main drive assembly to make sure it is meshing with the print cartridge gears. If the drive gears function and the drum does not move, replace the print cartridge.

Note   This test is especially important when the customer is using refilled print cartridges.

Resetting the printer

Cold reset

A cold reset returns the control panel settings to the default factory settings.

Note A cold reset also resets EIO. To retain EIO settings, remove the EIO card before performing a cold reset.

To perform a cold reset, complete the following steps:

1   Turn off the printer.

2   Press and hold ✓ (SELECT), and turn on the printer.

3   When all three status lights are lit, release ✓ (SELECT).

4   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to COLD RESET, and press ✓ (SELECT).

NVRAM initialization

Note Before performing a hard-disk initialization, print a menu map and a configuration page. Use the information on the configuration page to reset any customer-set printer configuration values that the hard disk initialization procedure changes.

Performing an NVRAM initialization clears the NVRAM of all control panel settings *including* the following:

- Model number
- Serial number
- Service ID
- Usage data (such as page counts, number of copies count, maintenance counts),
- Event log

To perform an NVRAM initialization, complete the following steps:

1   Turn off the printer.

2   Press and hold ▼ (DOWN arrow), and turn on the printer.

3   When all three status lights are lit, release ▼ (DOWN arrow) and press ▲ (UP arrow).

4   Press PAUSE/RELEASE. The first item of a menu appears.

5   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to NVRAM INIT, and press ✓ (SELECT).

Setting the language

To set the printer control panel display language, perform the following steps:

1   Turn off the printer.

2   Press ✓ (SELECT) and hold it while turning on the printer.

3   Release ✓ (SELECT) when all three status lights are lit. The lights cycle and the HP logo appears on the control panel display. The message INITIALIZING appears, and then a menu appears.

4   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to SELECT LANGUAGE, and then press ✓ (SELECT). The control panel displays a list of available languages.

5   Use ▲ (UP arrow) or ▼ (DOWN arrow) to scroll to the correct language, and then press ✓ (SELECT) to save the selection.

Reference diagrams
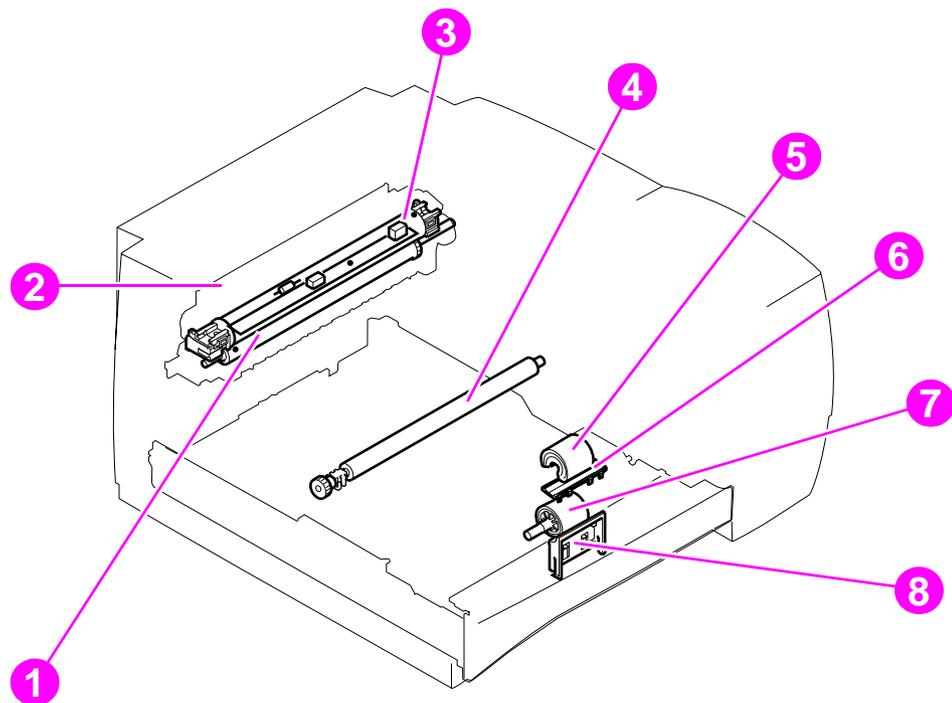
Figure 112.   **General printer-component locations**

1   Pressure roller

2   Fuser

3   Fuser film

4   Transfer roller

5   Tray 1 pickup roller

6   Tray 1 separation pad

7   Tray 2 pickup roller

8   Tray 2 separation pad
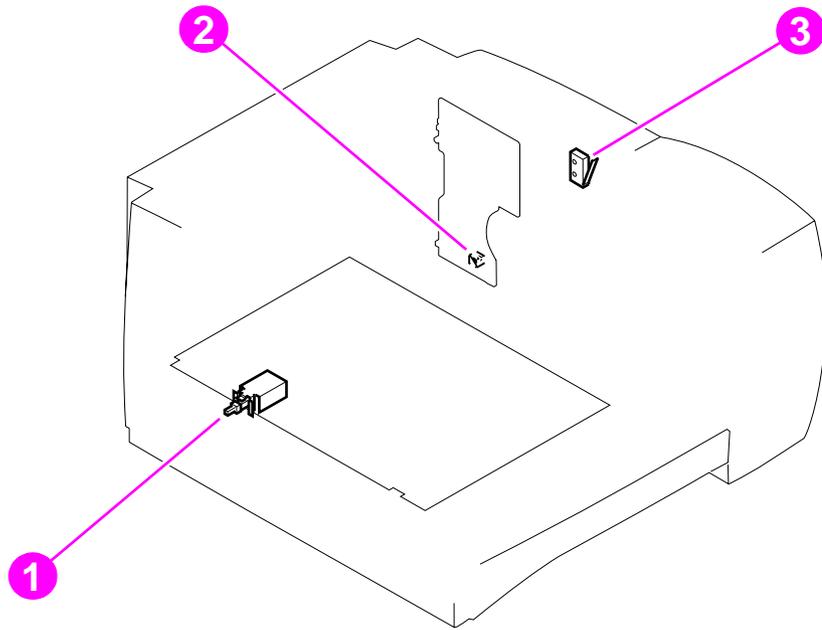
Figure 113. **Locations of switches**

1   Power switch

2   Engine test button

3   Interlock (SW1)
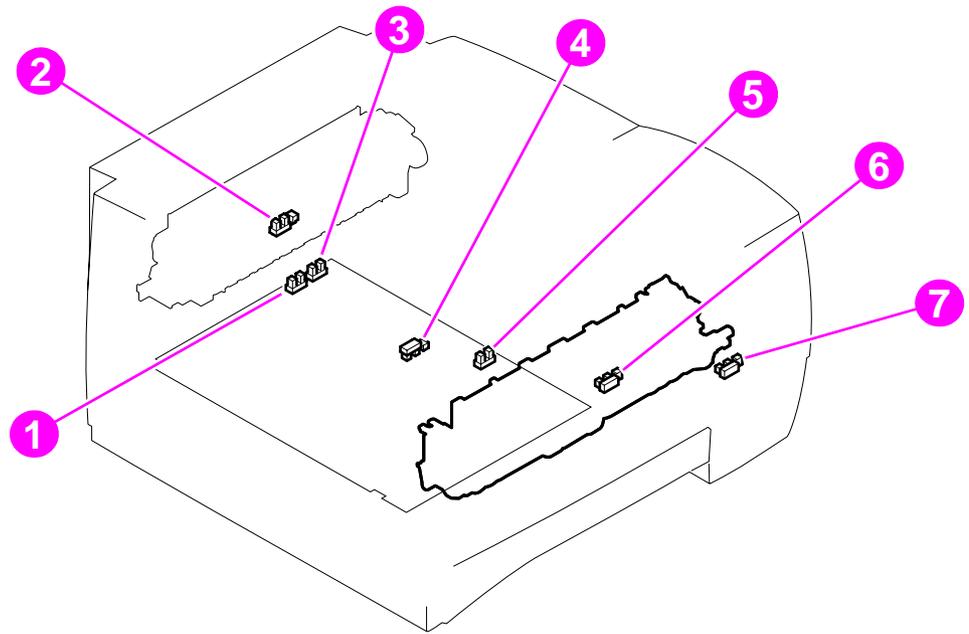
Figure 114. **Locations of sensors**

1 Rear output bin sensor (PS502)

2 Delivery sensor (PS2301)

3 Reversed media sensor (PS501)

4 Top-of-page sensor (PS2305)

5 Automatic duplexer pickup sensor (PS503)

6 Tray 2 media sensor (PS1305)

7 Tray 1 media sensor (PS3908)
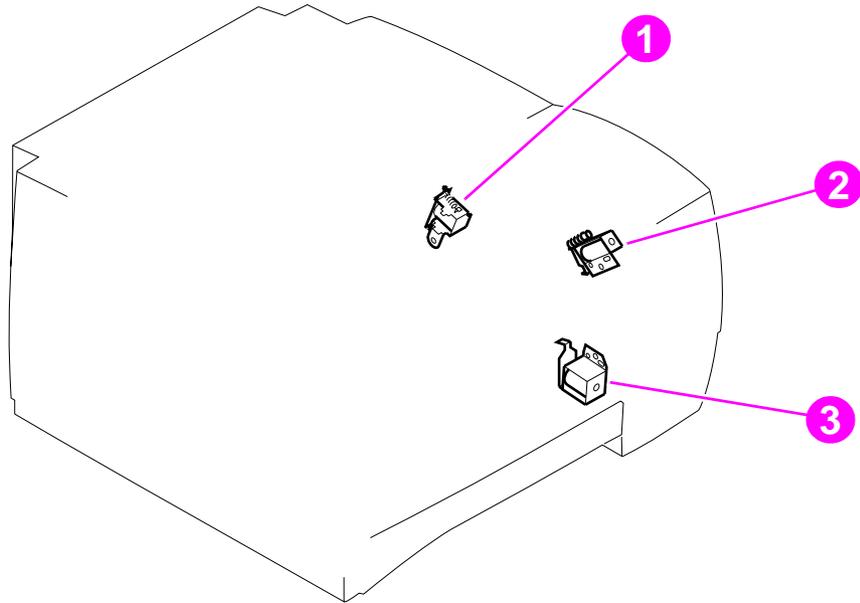
Figure 115. **Locations of solenoid**

1 Automatic duplexer solenoid (SL3)

2 Tray 1 pickup solenoid (SL2)

3 Tray 2 pickup solenoid (SL1)
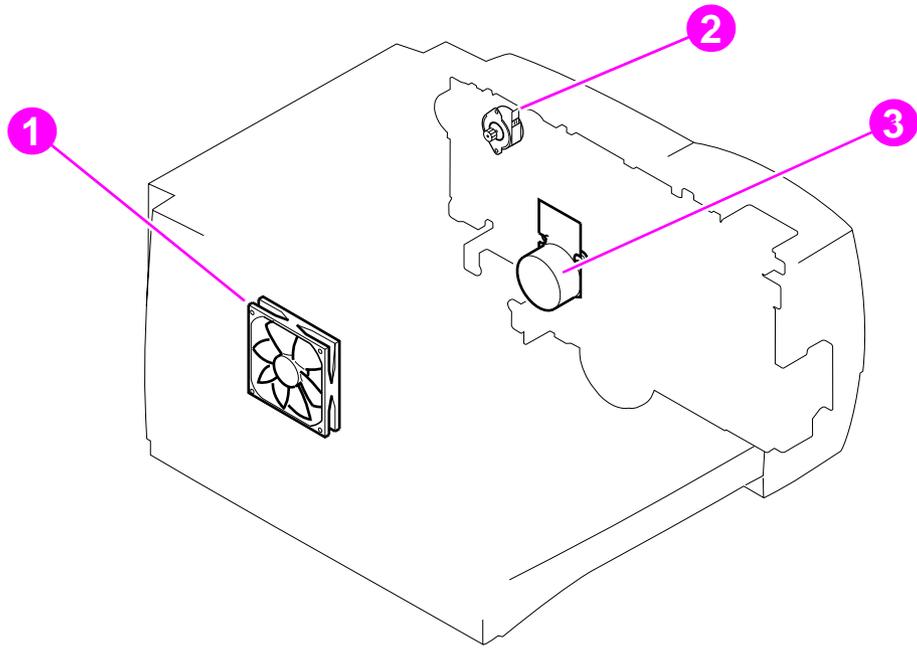
Figure 116.   **Location of motors and fans**

1   Fan (FM1)

2   Reversing motor (M2)

3   Main motor (M1)
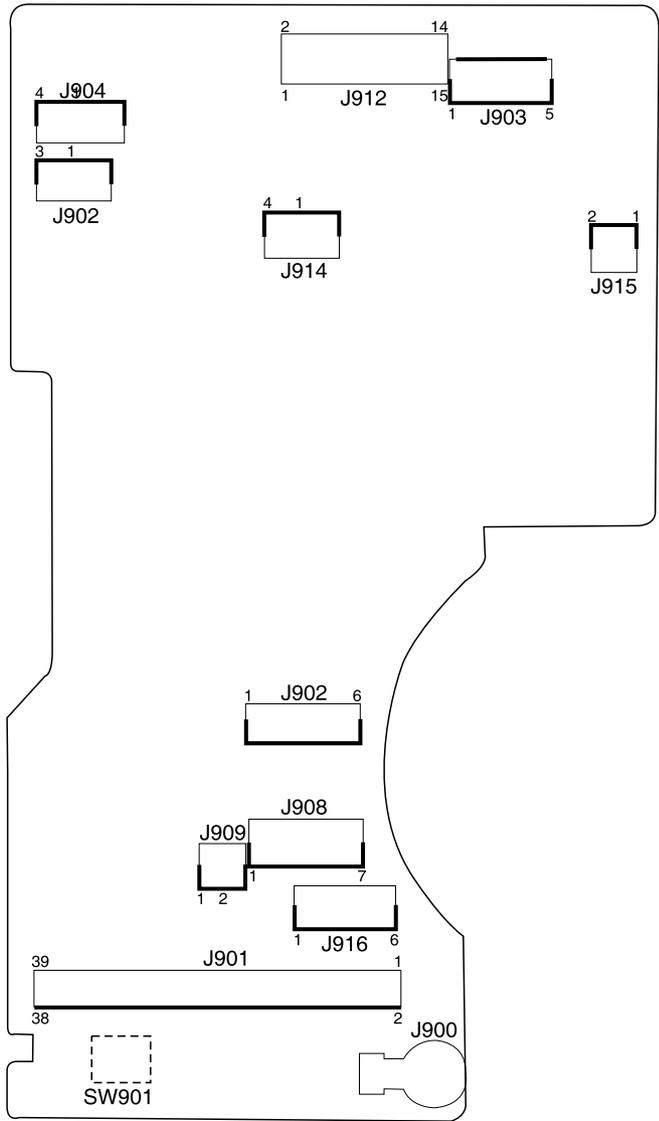
Figure 117. Engine controller PCB
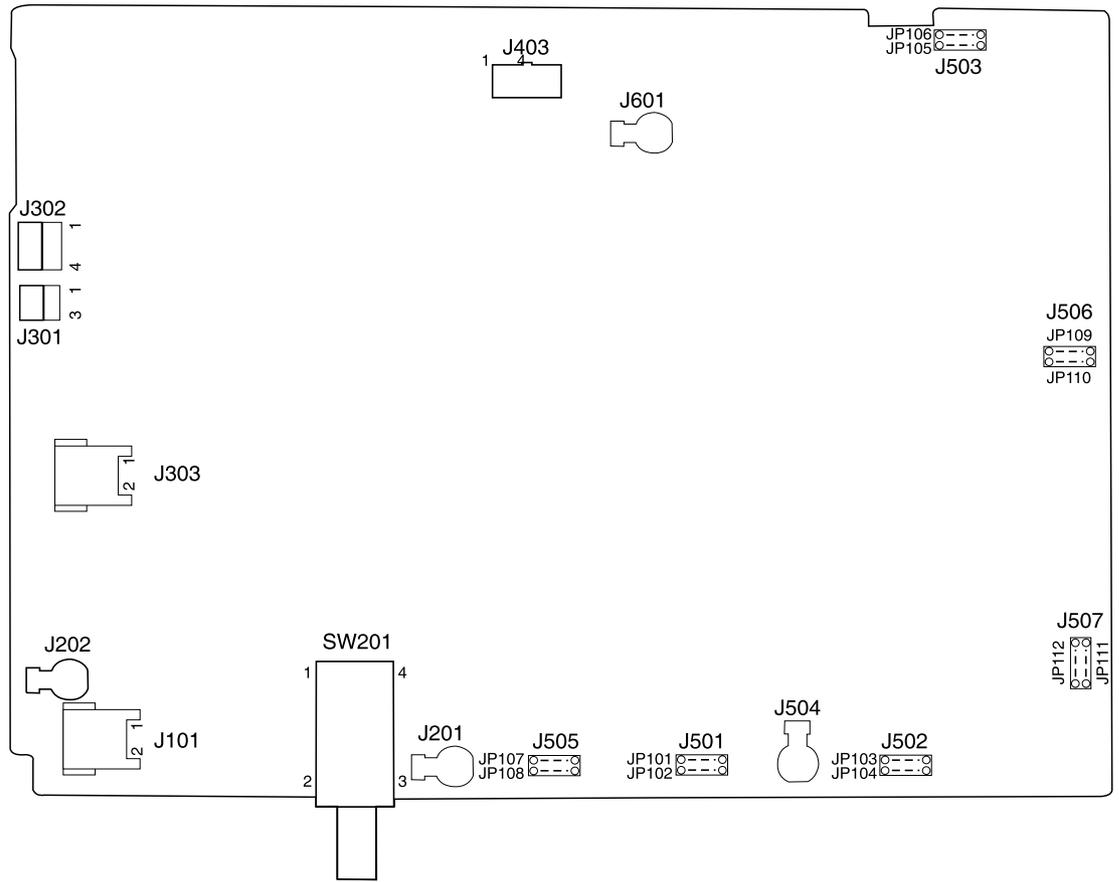
Figure 118. **Power supply PCB**
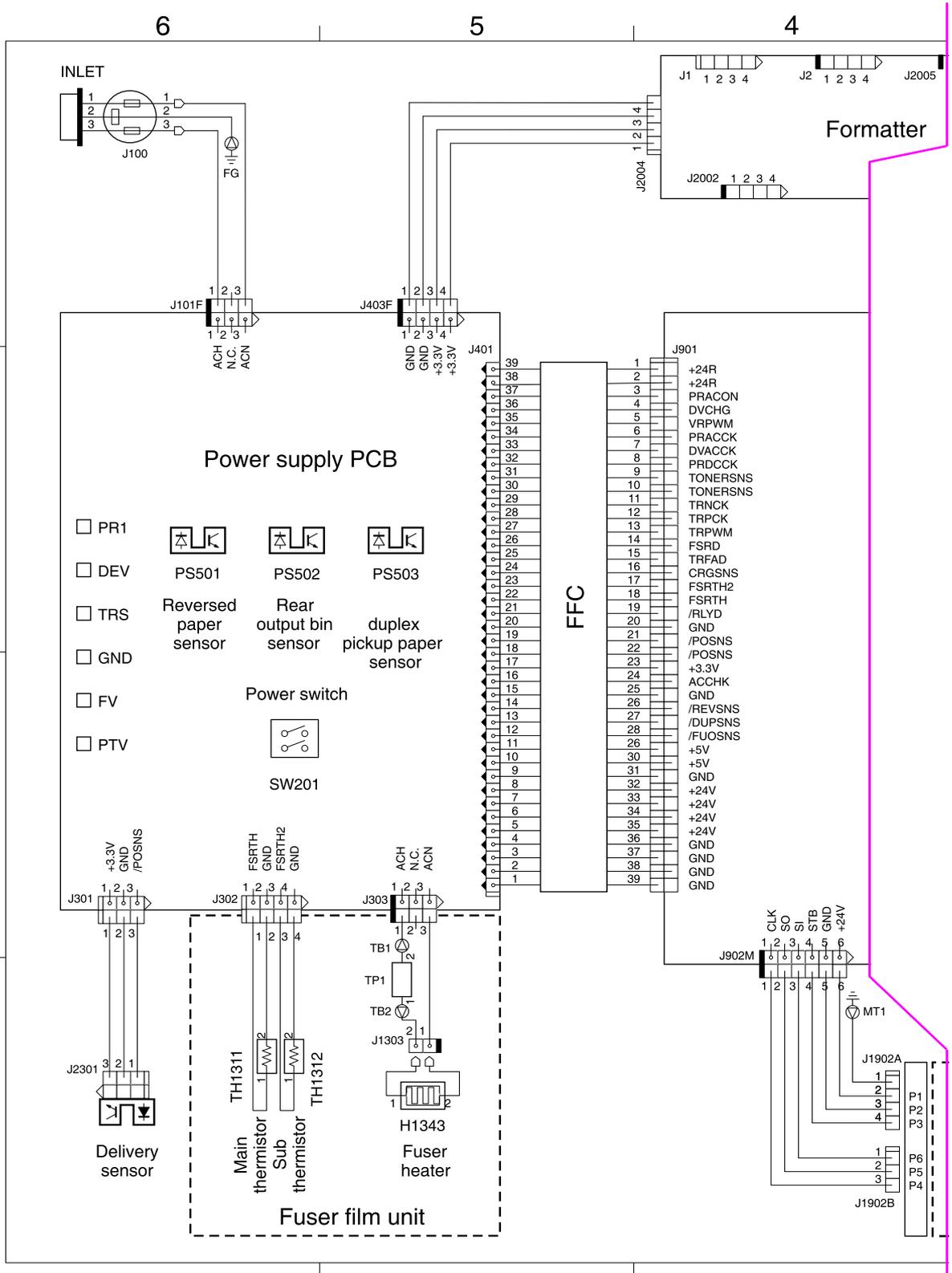
Figure 119. General circuit diagram (1 of 2)
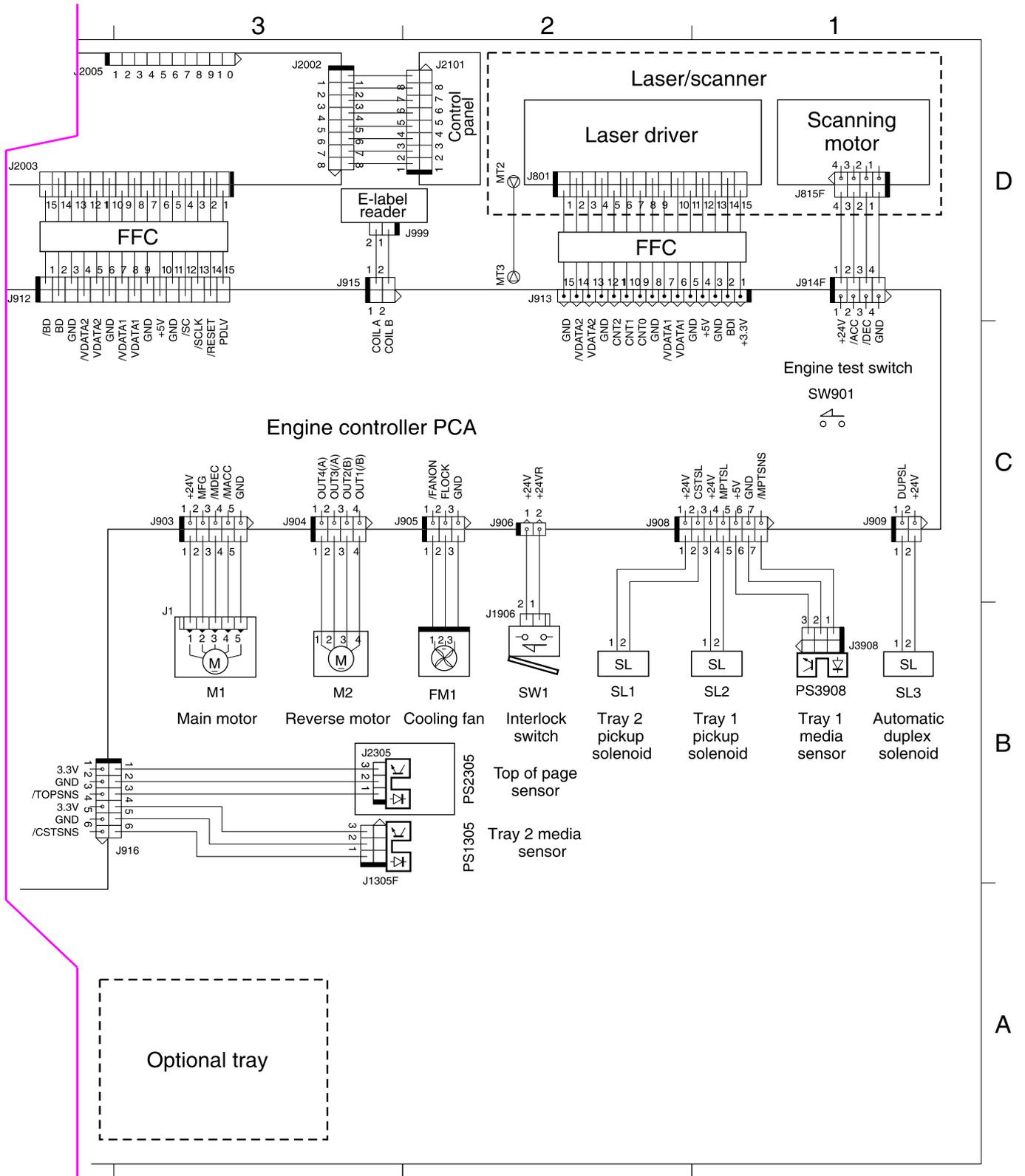
Figure 120. General circuit diagram (2 of 2)

(Unit: Seconds)

| | WAIT | STBY | INTR | PRINT | LSTR | STBY |

| Operation |

1 Print start command

2 /VDO and VDO signals

3 Main motor (M1)

4 Cooling fan (FM1)

5 Scanner motor

6 Tray 2 solenoid (SL1)

7 Tray 1 solenoid (SL2)

8 Paper feeder pick-up solenoid

9 Top-of-page sensor (PS2305)

10 Primary voltage (ac)

11 Primary voltage (dc)

12 Developing bias (ac)

13 Developing bias (dc)

14 Transfer voltage (plus)

15 Transfer voltage (minus)

16 Delivery sensor (PS2301)

17 Fuser heater

18

Normal scanner speed

30

0.015
0.72

About 0.016
About 0.016
About 1.44

About 1.84
1.3
0.77

About 0.85

About 1.22
0.8

0.51

About 0.09
About 0.02
About 0.09
About 0.02

About 0.18
About 0.18
About 0.3

About 0.3
About 0.23
About 0.23
About 0.67

3.63
1.15
0.45

0.2
5

Figure 121. **General timing chart**

8 Parts and diagrams

Chapter contents

Ordering parts and supplies and getting support

Parts

How to use the parts lists and diagrams

The figures in this chapter illustrate the major subassemblies in the printer and their component parts. A table accompanies each exploded-view diagram. Each table lists reference numbers for the field-replaceable units (FRU) that appear in the diagram, along with their part numbers and names. Parts for which no part numbers are listed are not FRUs and cannot be ordered.

Note | When looking for an electrical part, pay careful attention to the voltage listed in the description column to ensure that the part number is correct for your printer model.

Ordering

Order replacement parts from HP Services. Go to http://www.hp.com/go/parts/ for information about ordering service parts in your area. Go to http://www.hp.com/go/partsinfo/ for the online HP service parts identification tool (HP partSurfer).All standard part numbers listed are stocked and can be ordered from HP's Customer Services and Support Center.

Support

In addition to the technical support websites listed below, the following website contains answers to frequently asked questions:

http://www.hp.com/support/lj2300

Table 27. Technical support websites

HP Connect Online (for HP partners)	http://www.connect-online.hp.com Hp Connect Online is an Internet site that is created exclusively for our partners. Partners can easily find all of the HP information needed for daily business.
HP Customer Care Online (software drivers, support documentation, and answers to frequently asked questions)	http://www.hp.com Select your country/region in the "select a country or region" field located on the web page.
HP Technical Training (classes and schedules)	U.S.: http://www.partner.americas.hp.com Canada: http://www.canada.hp.com Asia and Pacific countries/regions: http://partnercare.asiapac.hp.com Latin America: http://www.conecta.latinamerica.hp.com
Parts (parts information)	http://www.hp.com/go/parts/ http://www.hp.com/go/partsinfo/ http://www.partsurfer.hp.com
Supplies/paper (ordering information)	U.S. http://www.hp.com/go/orderssupplies-na Canada: http://www.hp.ca/catalog/supplies Europe: http://www.hp.com/go/supplies Asia and Pacific countries/regions: http://www.hp.com/paper

Consumables, accessories, and supplies

Table 28. Consumables, accessories, and supplies

Product number	Part number	Description
Consumable items		
Q2610A	Q2610-60001	Smart print cartridge
Cables		
C2950A		2 m (5 ft) parallel cable (IEEE-1284)
C2951A		3 m (9 ft) parallel cable (IEEE-1284)
C6518A CPC		USB
100-pin memory (DIMMS)		
C7842A		8 MB
C7843A		16 MB
C7845A		32 MB
	Q2651-67902	DIMM kit, HP LaserJet 2300L printer
	Q2651-67903	DIMM kit, HP LaserJet 2300 printer
	Q2677-67902	DIMM kit, HP LaserJet 2300n printer
	Q2677-67903	DIMM kit, HP LaserJet 2300d, 2300dn, and 2300 dtn printers
Network connectivity		
J4169A	J4169-69001	HP JetDirect 615N Fast Ethernet (10/100 Base-TX [RJ-45])
J4135A		USB
Media handling		
	RM1-0350-000CN	Tray 2 or 250-sheet feeder media tray replacement
	C4793-67901	250-sheet feeder and tray assembly
	C7065-67901	500-sheet feeder and tray assembly
Reference materials		
	Q2472-90908	HP LaserJet 2300 series printer service manual
	5851-1468	HP LaserJet Printer Family Print Media Guide
	5021-0377	HP PCL/PJL Reference Set
	5969-6818	HP JetDirect Print Server Administrator's Guide
	5969-3412	HP JetDirect Print Server JetAdmin Setup Guide
Miscellaneous		
	Q2472-67901	Packaging kit

Common fasteners

Table 29. Common fasteners

Example	Description	Sizes	Uses
	Screw	M3 by 6 mm M4 by 8 mm	To hold plastic to plastic
	Screw, tapping	M3 by 4 mm M3 by 6 mm M4 by 6 mm M4 by 12 mm	To hold plastic to metal (excluding the control panel)
	Screw, pan head	M4 by 10 mm	To hold plastic to plastic
	Screw, w/washer	M3 by 6 mm M3 by 8 mm M3 by 7 mm M4 by 6 mm M4 by 12 mm	To hold plastic to metal (excluding the covers)
	Screw, truss head	M3 by 6 mm M3 by 8 mm M4 by 8 mm M4 by 20 mm	To hold sheet metal to metal (excluding the formatter)
	E-ring		To hold gears in place
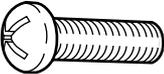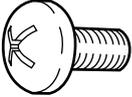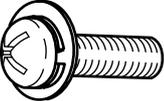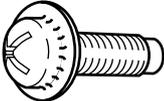
Illustrations and parts lists

Assembly locations

Top cover assembly

Power supply assembly

Engine controller assembly

Drive assembly

Fuser

Registration assembly

Tray 2
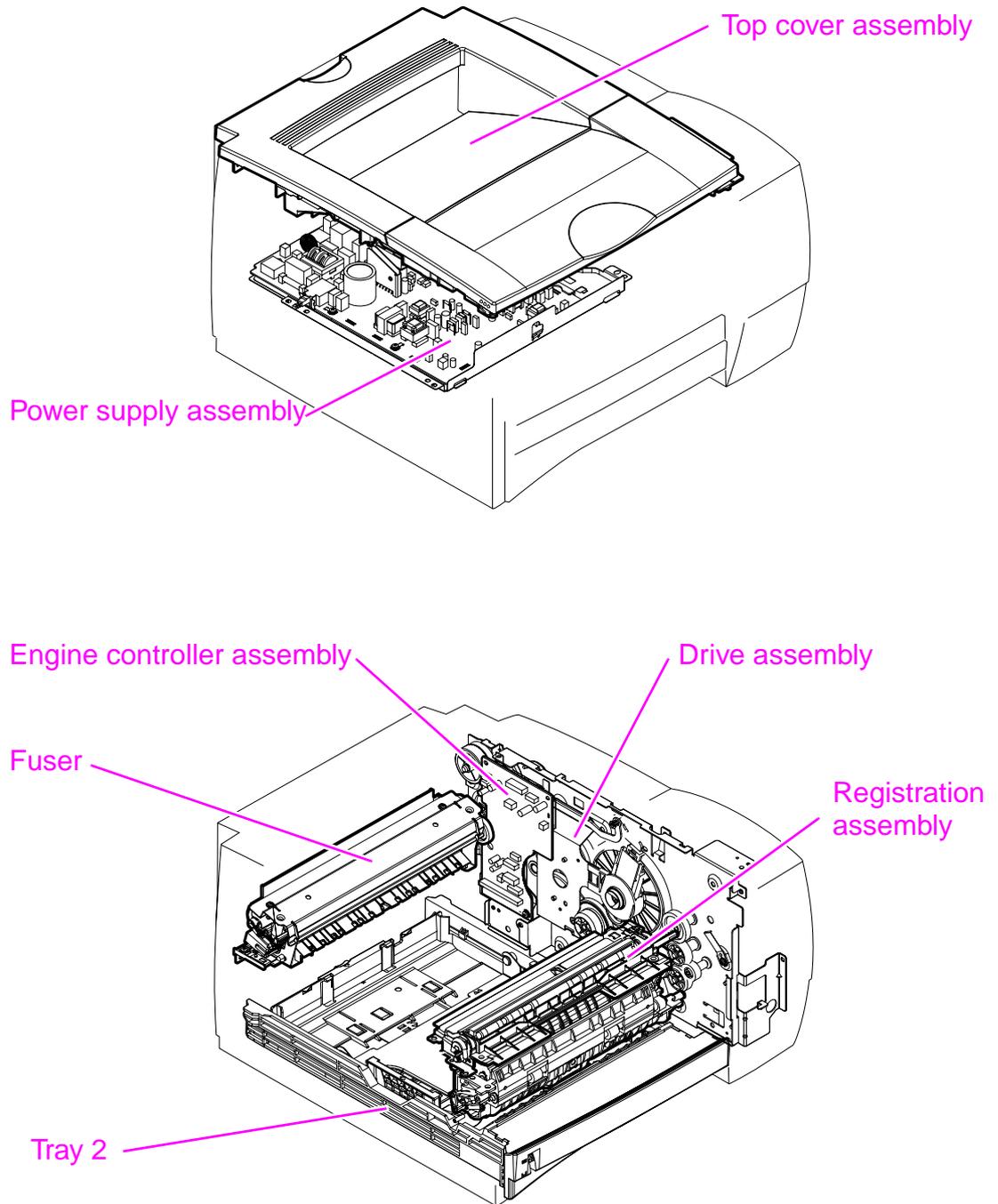
Figure 122.   **Assembly locations**

Covers

Covers and panels
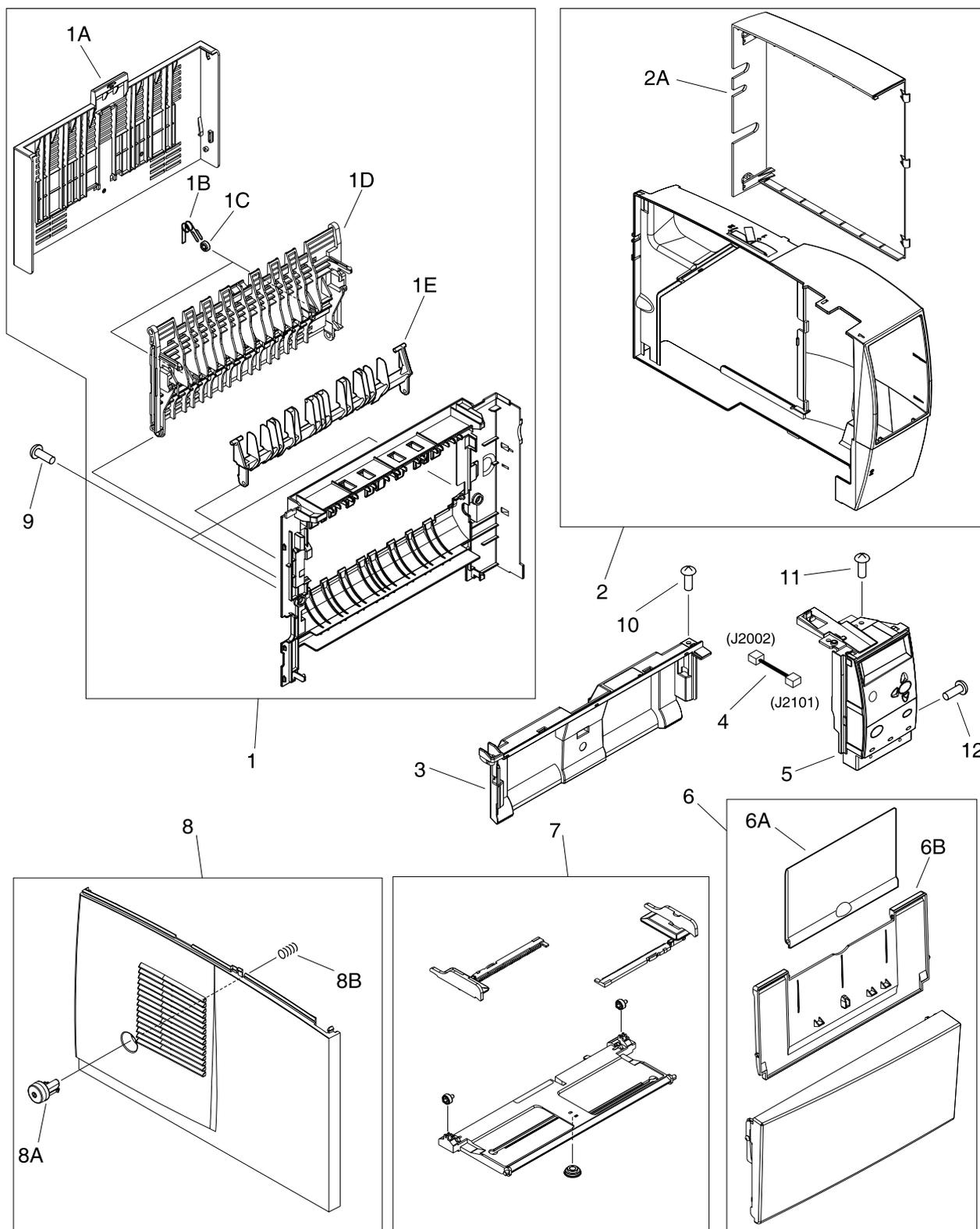
Figure 123. Covers and panels

Table 30. Covers and panels

Ref	Description	Part number	Quantity
1	Rear cover assembly	RM1-0367-000CN	1
1A	Bin extension	RB2-6286-000CN	1
1B	Spring, torsion	RC1-0999-000CN	2
1C	Roller, guide	RB2-6288-000CN	2
1D	Rear output bin	RB2-6287-000CN	1
1E	Guide, rear output	RB2-6401-000CN	1
2	Cover, DIMM	RM1-0329-000CN	1
2A	Cover, I/O	RB2-6283-000CN	1
3	Cover, front	RC1-1013-000CN	1
4	Cable, panel	RG1-4314-000CN	1
5	Control panel	RH6-0226-000CN	1
6	Tray 1 cover assembly	RG5-5575-000CN	1
6A	Tray 1 extension 1	RB2-6404-000CN	1
6B	Tray 1 extension 2	RB2-3036-000CN	1
7	Tray 1 assembly	RM1-0353-000CN	1
8	Left cover assembly	RG5-5549-000CN	1
8A	Button, power switch	RB2-6294-000CN	1
8B	Spring, compression	RB2-2860-000CN	1
9	Screw, tapping, pan head, M4x10	XB4-7401-007CN	2
10	Screw, tapping, truss head, M4x14	XB4-7401-407CN	2
11	Screw, TP, M3x6	XA9-1223-000CN	1
12	Screw, w/washer, M3x6	XB6-7300-607CN	1

Top cover assembly
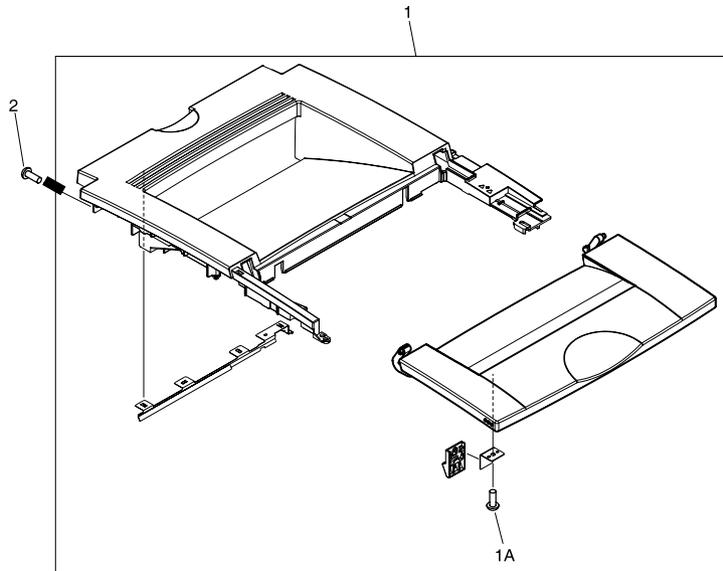
Figure 124. **Top cover assembly**

Table 31. Top cover assembly

Ref	Description	Part number	Quantity
1	Top cover assembly	RM1-0328-000CN	1
1A	Screw, tapping, pan head, M4x10	XB4-7401-007CN	1
2	Screw, tapping, pan head, M4x10	XB4-7401-007CN	2

Internal components (1 of 4)
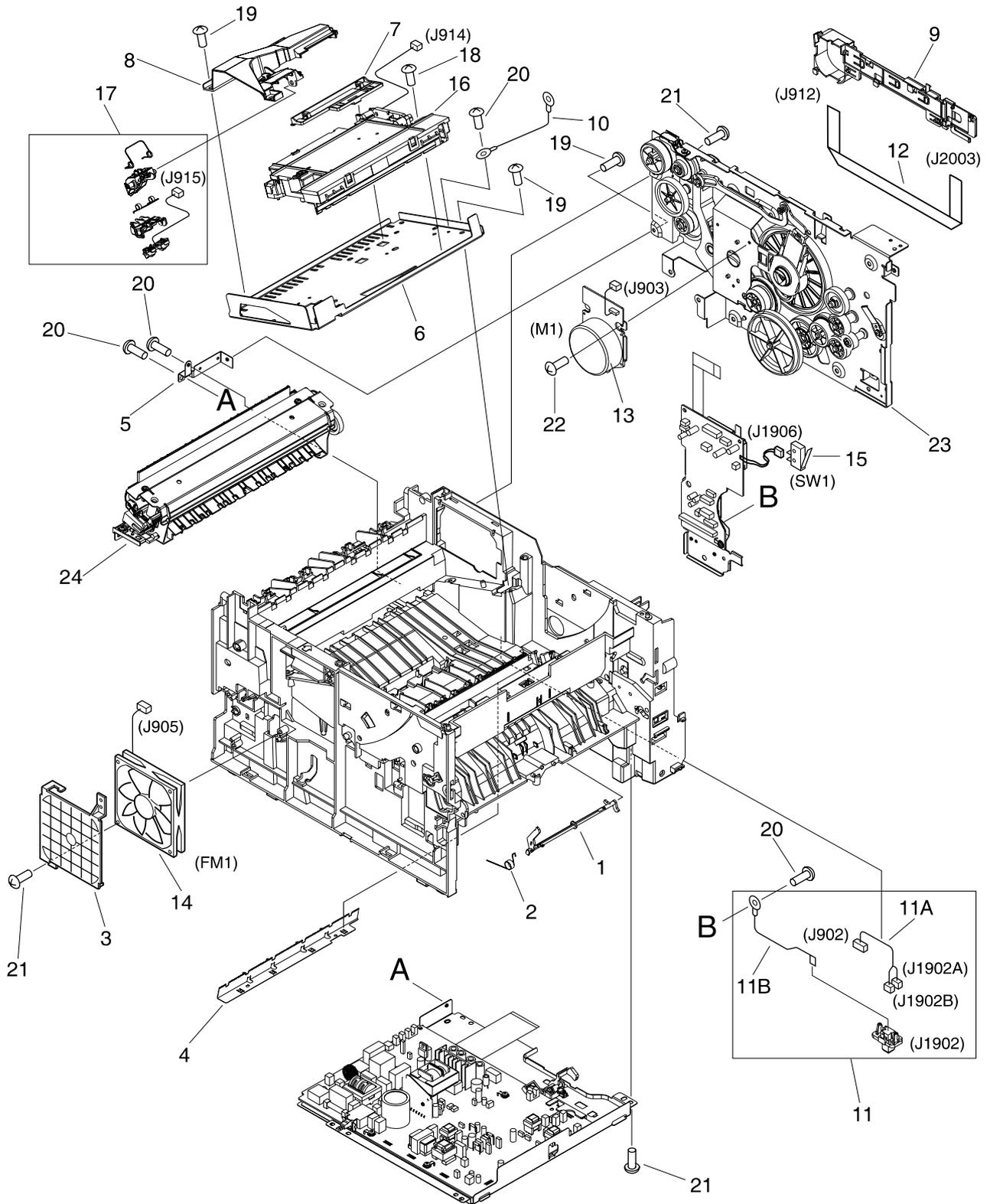
Figure 125. **Internal components (1 of 4)**

Table 32. Internal components (1 of 4)

Ref	Description	Part number	Quantity
1	Lever, sensor	RB2-2836-000CN	1
2	Spring, torsion	RB2-2837-000CN	1
3	Mount, fan	RB2-6255-000CN	1
4	Static charge eliminator	RC1-0911-000CN	1
5	Plate, grounding	RC1-0917-000CN	1
6	Mount, laser/scanner	RC1-1001-000CN	1
7	Guide, cable	RC1-1002-000CN	1
8	Duct	RC1-1003-000CN	1
9	Guide, flat cable	RC1-1019-000CN	1
10	FG cable assembly	RG1-4310-000CN	1
11	Paper feeder cable	RG5-5598-000CN	1
11A	I/F cable	RG5-5599-000CN	1
11B	Grounding cable	RG5-5600-000CN	1
12	Flat cable, I/F	RH2-5578-000CN	1
13	Motor, dc (M1)	RH7-1587-000CN	1
14	Fan	RH7-1591-000CN	1
15	Switch (SW1)	RH7-6051-000CN	1
16	Laser/scanner	RM1-0313-000CN	1
17	E-label reader assembly	RM1-0335-000CN	1
18	Screw, TP, M3x8	XA9-1160-000CN	4
19	Screw, TP, M4x12	XA9-1273-000CN	4
20	Screw, w/washer, M3x6	XB2-7300-607CN	8
21	Screw, tapping, pan head, M4x10	XB4-7401-007CN	13
22	Screw, PH M3x4	XB6-7300-407CN	3
23	Drive assembly	RM1-0334-000CN	1
24	Fuser (110-127V)	RM1-0354-000CN	1
	Fuser (220-240V)	RM1-0355-000CN	1
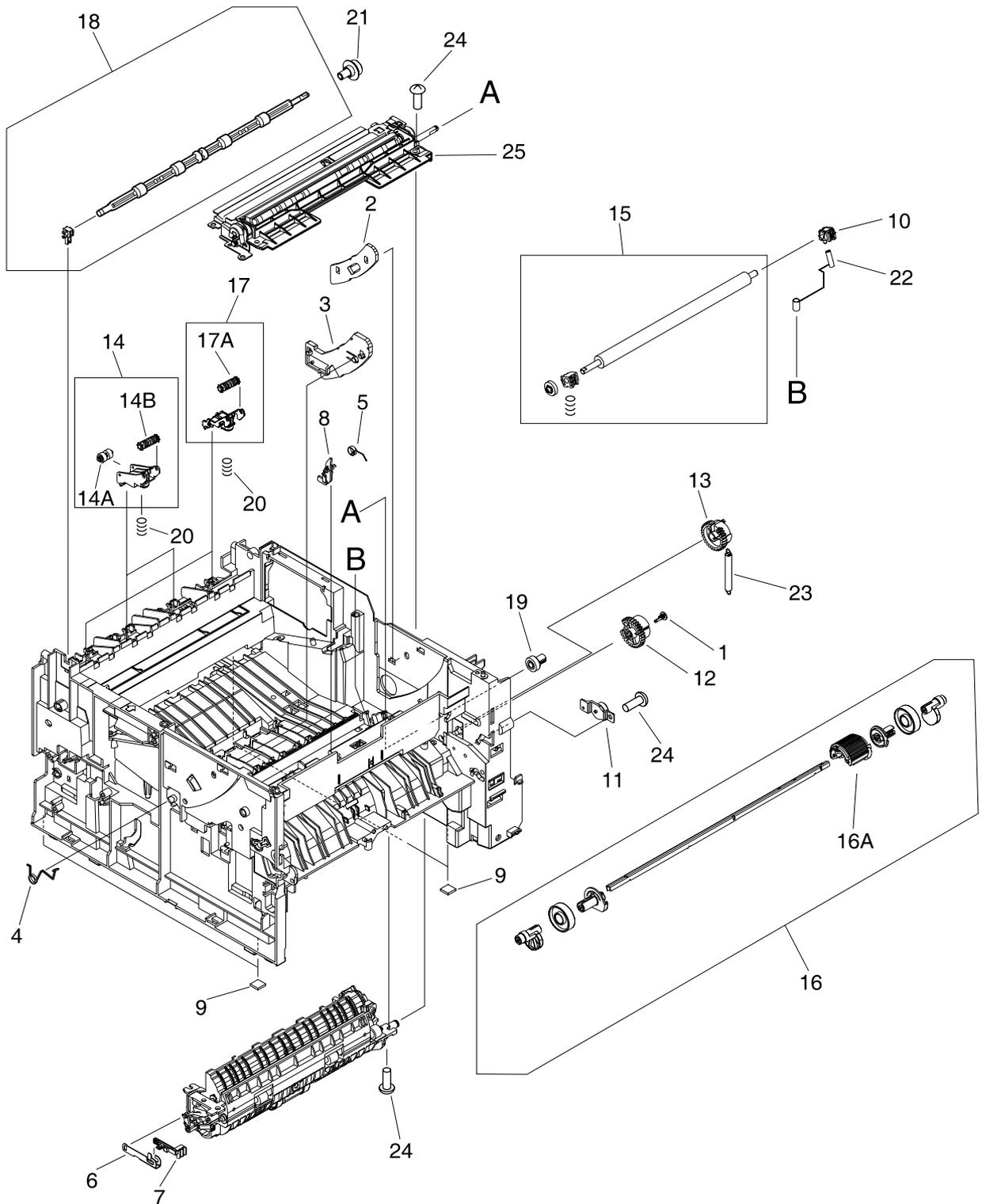
Figure 126. Internal components (2 of 4)

Table 33. Internal components (2 of 4)

Ref	Description	Part number	Quantity
1	Cap, continuity	RA0-1068-000CN	1
2	Guide, cartridge, right	RB2-2830-020CN	1
3	Guide, cartridge, left	RB2-2831-020CN	1
4	Spring, compression	RB2-2832-000CN	1
5	Spring, torsion	RB2-2843-000CN	1
6	Rod, jam clearing	RB2-6250-000CN	1
7	Lever, jam clearing	RB2-6251-000CN	1
8	Arm, sensor	RB2-6264-000CN	1
9	Foot, rubber	RB2-6297-000CN	4
10	Bushing, transfer, right	RC1-0922-000CN	1
11	Tray 1 damper assembly	RC1-1038-000CN	1
12	Gear, 26T	RC1-1039-000CN	1
13	Gear, 29T	RC1-1040-000CN	1
14	Top output bin delivery roller assembly	RG5-5542-050CN	2
14A	Roller, top output bin, lower 2	RB2-6277-000CN	1
14B	Roller, top output bin, lower 1	RB2-6400-000CN	1
15	Transfer roller assembly	RM1-0338-000CN	1
16	Tray 1 pickup assembly	RM1-0346-000CN	1
16A	Roller, pickup	RC1-0945-000CN	1
17	Top output bin delivery roller assembly	RM1-0370-000CN	2
17A	Roller, face-down lower 1	RB2-6400-000CN	1
18	Top output bin delivery roller assembly	RM1-0371-000CN	1
19	Gear, 14T	RS6-0445-000CN	1
20	Spring, compression	RS6-2375-000CN	4
21	Gear, 15T	RU5-0168-000CN	1
22	Spring, compression	RU5-2109-000CN	1
23	Spring, tension	RU5-2112-000CN	1
24	Screw, tapping, pan head, M4x10	XB4-7401-007CN	12
25	Registration assembly	RM1-0347-000CN	1
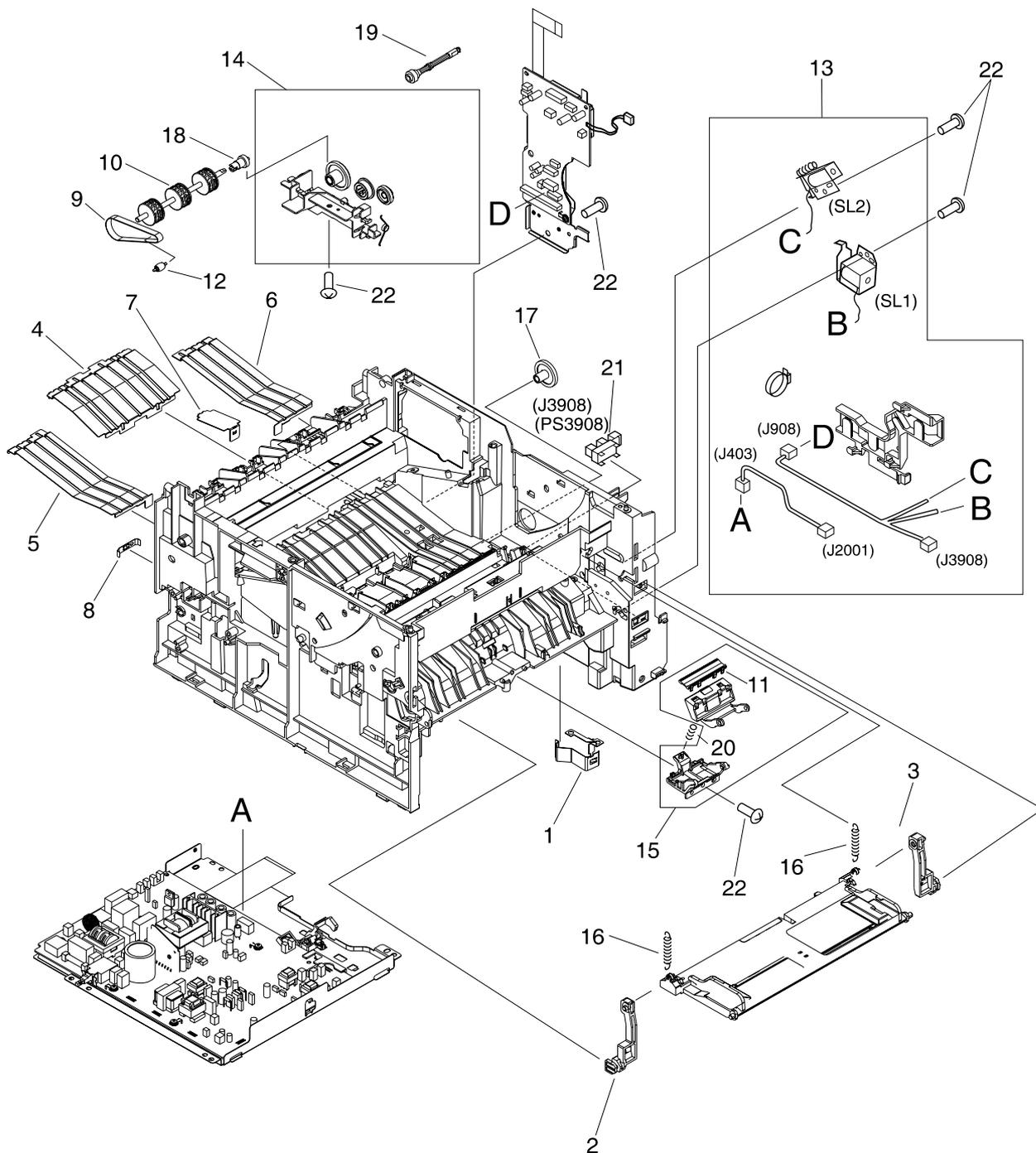
Figure 127. Internal components (3 of 4)

Table 34. Internal components (3 of 4)

Ref	Description	Part number	Quantity
1	Spring, leaf	RB2-6266-000CN	1
2	Hinge, left	RB2-6405-000CN	1
3	Hinge, right	RB2-6406-000CN	1
4	Plate, feeding, center	RC1-0912-000CN	1
5	Plate, feeding, left	RC1-0913-000CN	1
6	Plate, feeding, right	RC1-0914-000CN	1
7	Plate, feeding, front	RC1-0915-000CN	2
8	Plate, grounding	RC1-0916-000CN	1
9	Belt, paper feed	RC1-0918-000CN	3
10	Shaft, paper feed	RC1-0920-000CN	1
11	Pad, separation	RC1-0939-000CN	1
12	Pulley	RC1-0933-000CN	3
13	Cable guide assembly	RM1-0324-000CN	1
14	Gear assembly	RM1-0337-000CN	1
15	Separation pad assembly	RM1-0345-000CN	1
16	Spring, tension	RS6-2030-000CN	2
17	Gear, 27T	RU5-0155-000CN	1
18	Gear, 14T	RU5-0156-000CN	1
19	Shaft, paper feed	RU5-0158-000CN	1
20	Spring, compression	RU5-2113-000CN	1
21	Photosensor TLP1242	WG8-5382-000CN	1
22	Screw, tapping, pan head, M4x10	XB4-7401-007CN	5
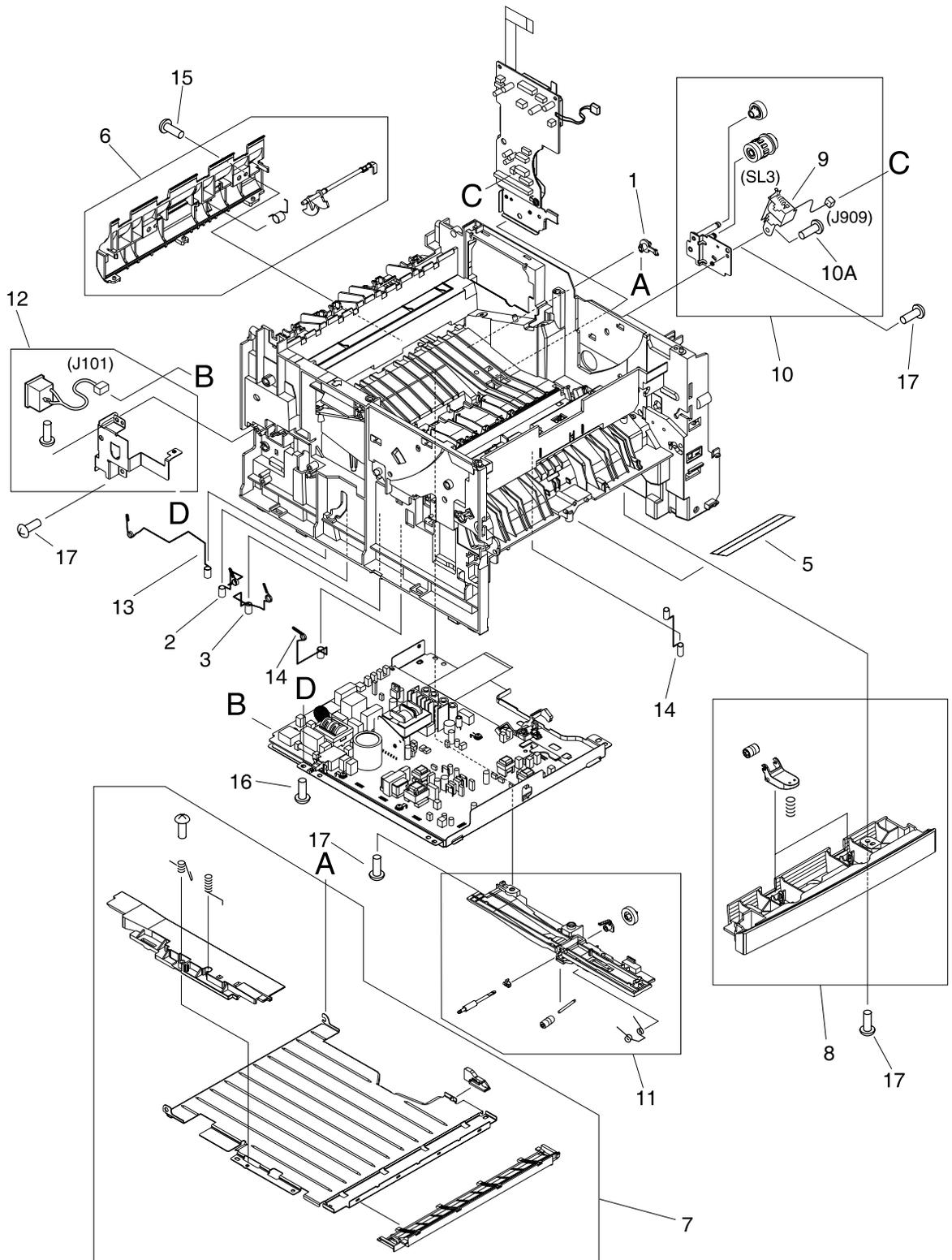
Figure 128. Internal components (4 of 4)

Table 35. Internal components (4 of 4)

Ref	Description	Part number	Quantity
1	Hinge, feed guide	RB2-6249-000CN	1
2	Spring, compression	RB2-6262-000CN	1
3	Spring, compression	RB2-6263-000CN	1
4	Spring, compression	RB2-6271-000CN	1
5	Sheet, leakage-prevention	RC1-0919-000CN	1
6	Reverse guide assembly	RG5-5548-000CN	1
7	Access plate feed guide assembly	RG5-5559-000CN	1
8	Feed roller assembly	RG5-5555-000CN	1
9	Solenoid	RH7-5279-000CN	1
10	Access plate solenoid assembly	RM1-0331-000CN	1
10A	Screw, RS, M3x6	XA9-0686-000CN	1
11	Position guide assembly	RM1-0333-000CN	1
12	Inlet cable assembly	RM1-0342-000CN	1
13	Spring, compression	RU5-2107-000CN	1
14	Spring, compression	RU5-2108-000CN	1
15	Screw, w/washer, M4x12	XA9-1206-000CN	2
16	Screw, w/washer, M3x6	XB2-7300-607CN	1
17	Screw, tapping, pan head, M4x10	XB4-7401-007CN	7

Power-supply assembly
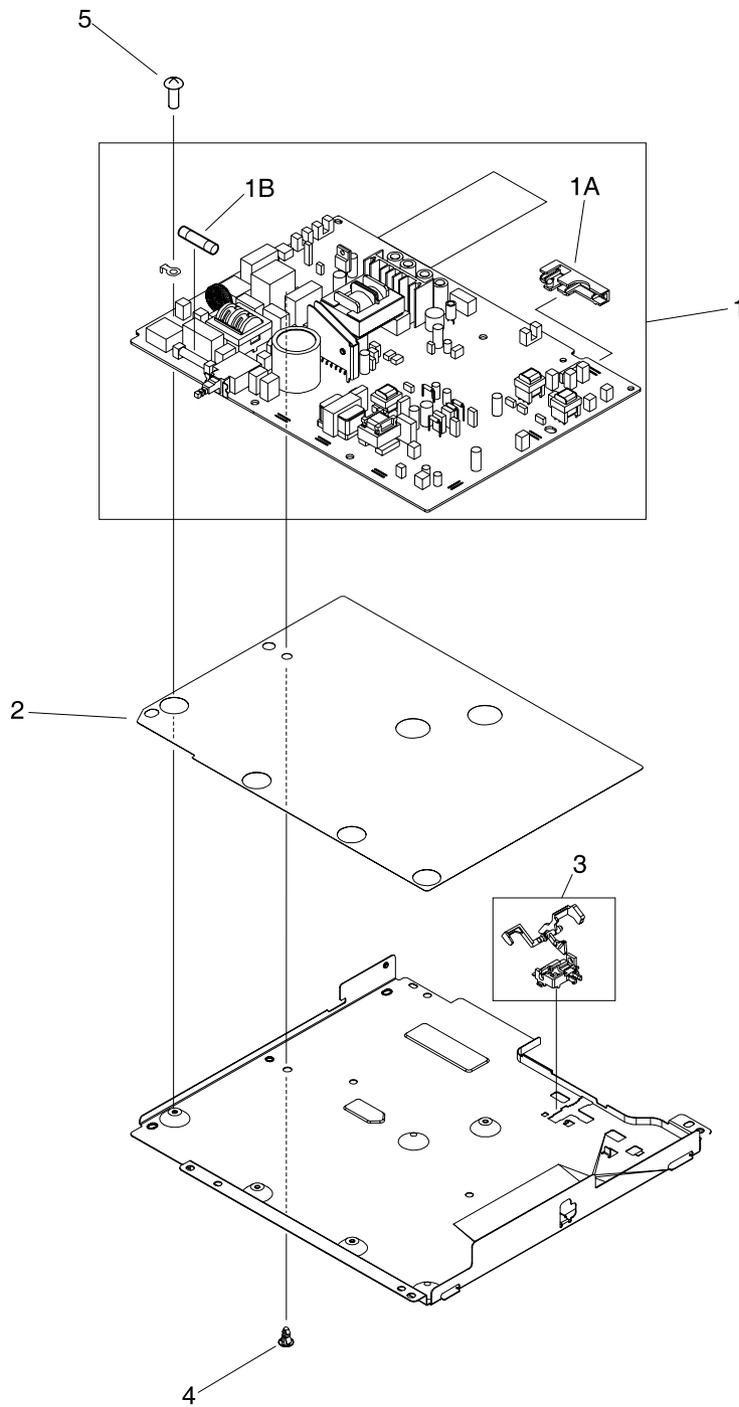
Figure 129.   **Power-supply assembly**

Table 36. Power-supply assembly

Ref	Description	Part number	Qty
	Power supply assembly (110-127V)	RM1-0340-000CN	1
	Power supply assembly (220-240V)	RM1-0341-000CN	1
1	Power supply PCA (110-127V)	RG1-4306-000CN	1
	Power supply PCA (220-240V)	RG1-4329-000CN	1
1A	Spacer, PCA	RC1-0931-000CN	1
1B	Fuse (110-127V)	WD1-0268-000CN	1
	Fuse (220-240V)	RH3-8006-000CN	1
2	Sheet, insulation	RC1-0930-000CN	1
3	Holder, sensor, lever	RL1-0158-000CN	1
4	PCA	VT2-0012-005CN	1
5	Screw, w/washer, M3x8	XA9-1226-000CN	4

Pickup assembly
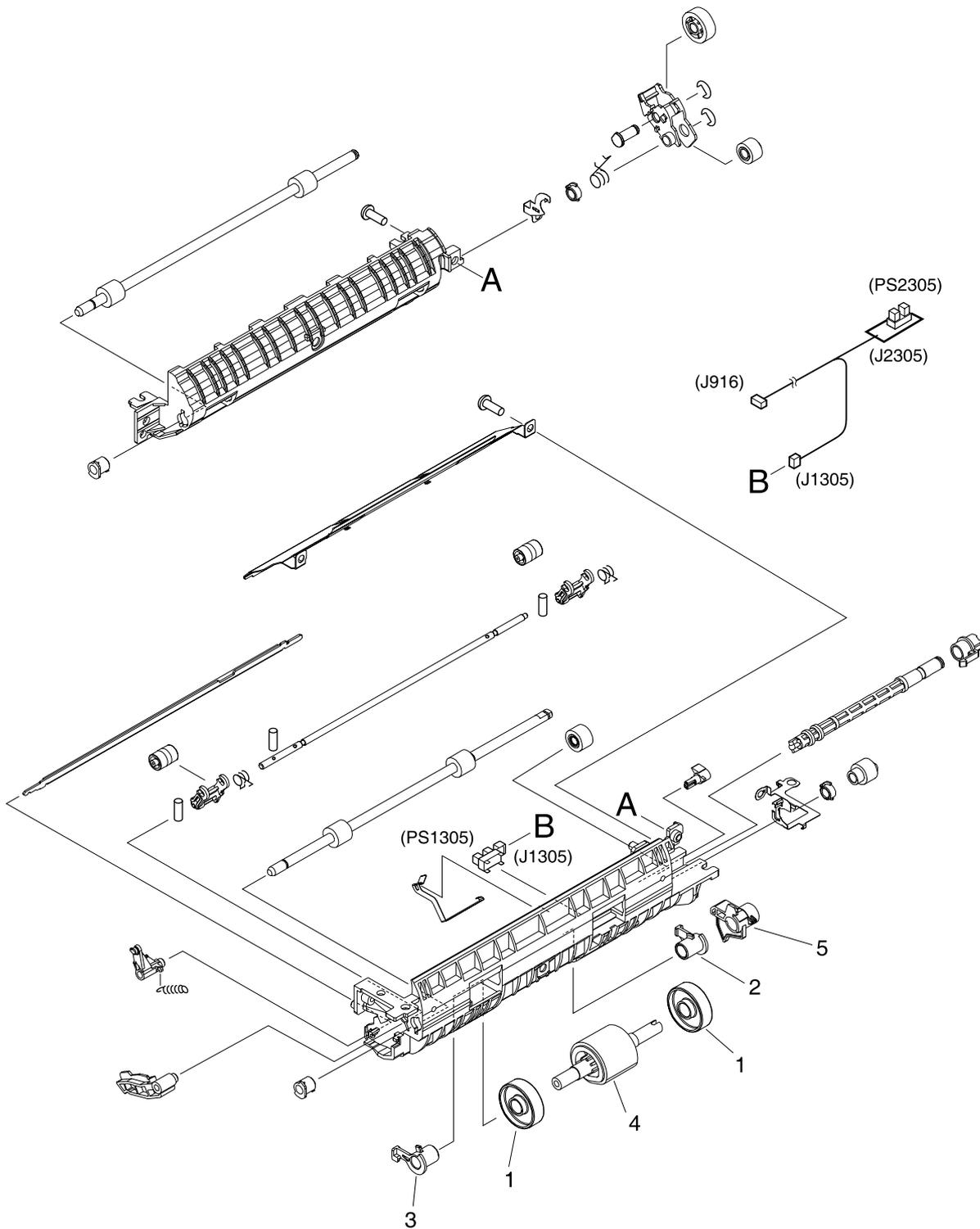
Figure 130. Pickup assembly

Table 37. Pickup assembly

Ref	Description	Part number	Quantity
	Pickup assembly	RM1-0332-000CN	1
1	Roller	RB2-2892-000CN	2
2	Bushing, right	RB2-2895-000CN	1
3	Bushing, left	RB2-2896-000CN	1
4	Pickup roller	RB2-6304-000CN	1
5	Arm, paper sensor	RB2-6310-000CN	1

Engine controller
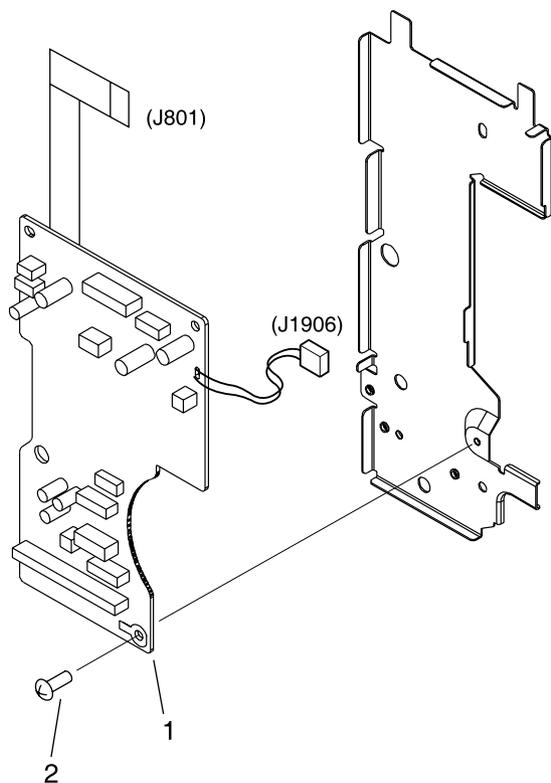
Figure 131.   Engine controller

Table 38. Engine controller

Ref	Description	Part number	Qty
	Engine controller assembly	RM1-0339-000CN	1
1	Engine controller PCA	RG1-4307-000CN	1
2	Screw, w/washer, M3x8	XA9-1226-000CN	1

PCA locations
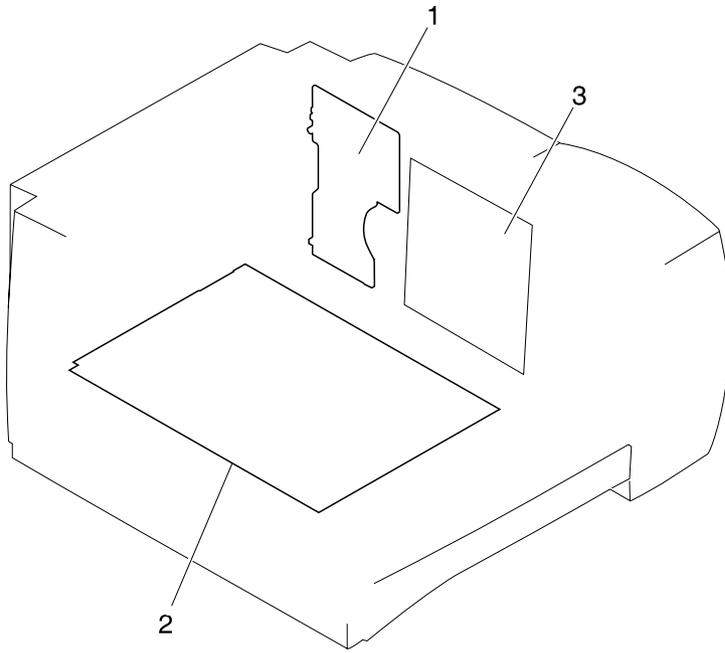
Figure 132.   **PCA locations**

Table 39. PCA locations

Ref	Description	Part number	Quantity
1	Engine controller PCA	RG1-4307-000CN	1
2	Power supply PCA (110-127V)	RG1-4306-000CN	1
	Power supply PCA (220-240V)	RG1-4329-000CN	1
3	Formatter	Q1395-60001	1

Trays
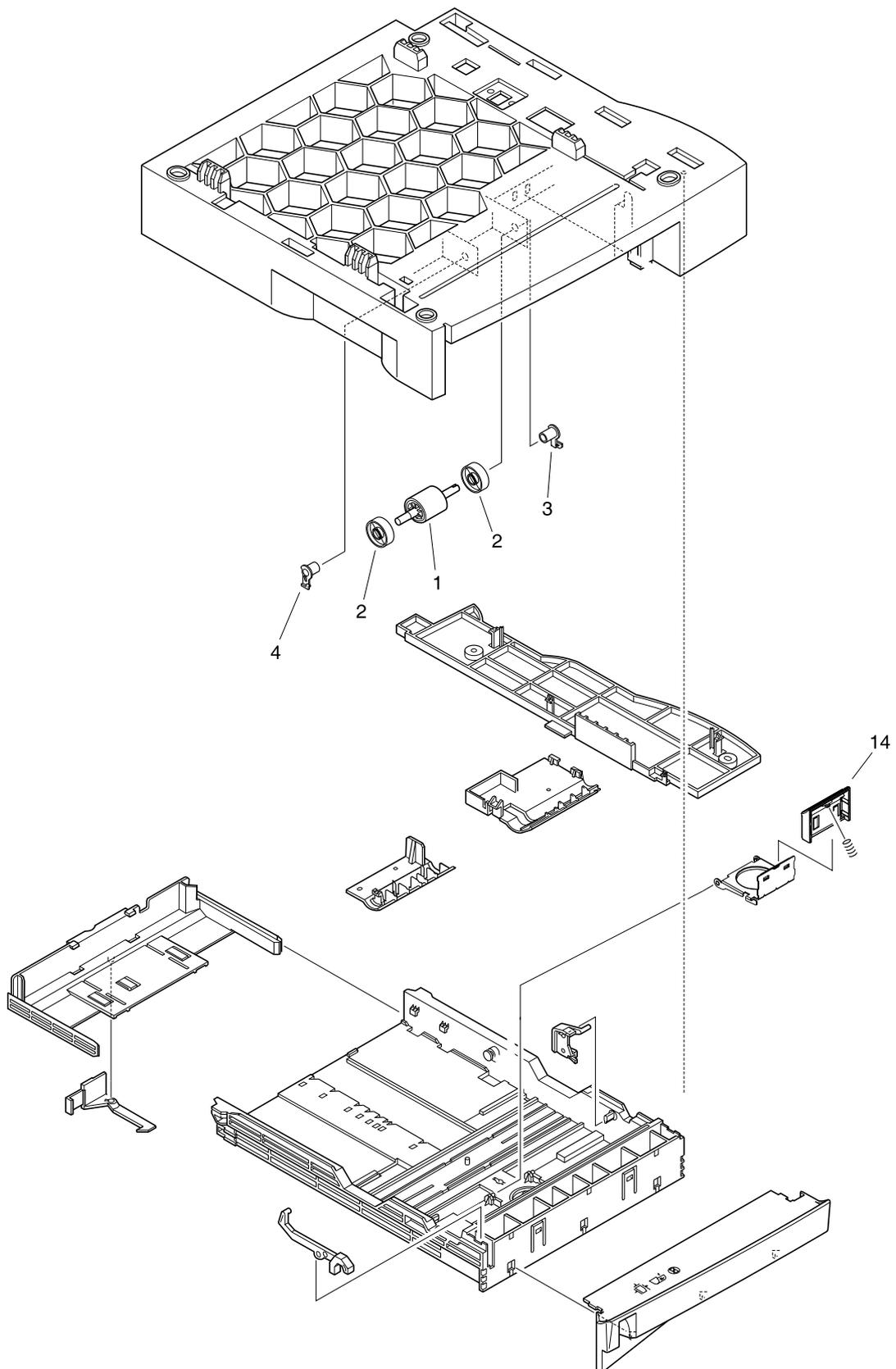
250-sheet feeder

Figure 133. **250-sheet feeder**

Table 40. 250-sheet feeder

Ref	Description	Part number	Qty
	250-sheet feeder	C4793-67901	1
	Tray 2 or 250-sheet feeder (media tray only)	RM1-0350-000CN	1
1	Pickup roller	RB2-6304-000CN	1
2	Roller	RB2-2892-000CN	2
3	Bushing, right	RB2-2895-000CN	1
4	Bushing, left	RB2-2896-000CN	1
14	Separation pad	RC1-0954-000CN	1

500-sheet feeder
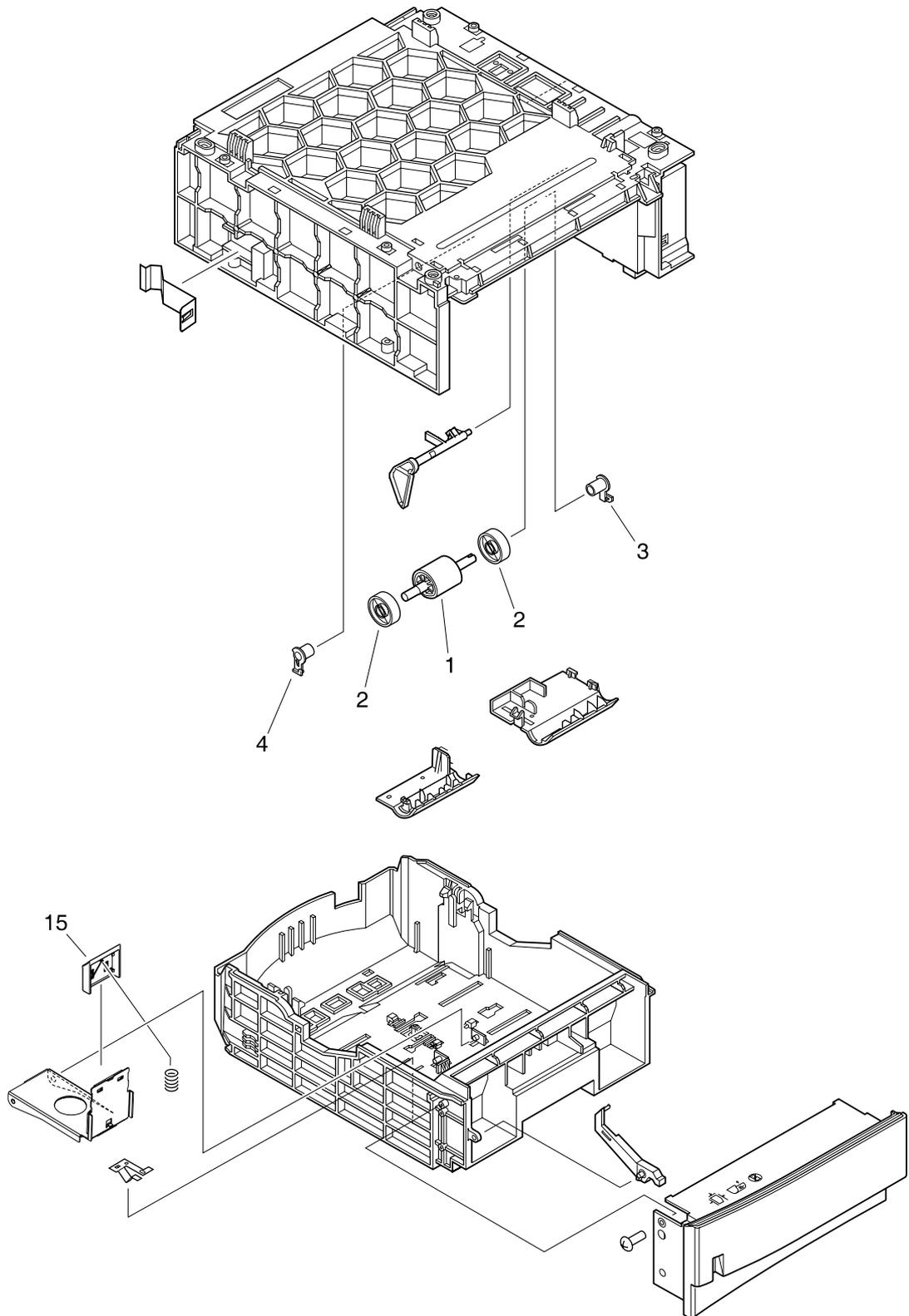
Figure 134. **500-sheet feeder**

Table 41. 500-sheet feeder

Ref	Description	Part number	Qty
	500-sheet feeder	C7065-67901	1
1	Pickup roller	RB2-6304-000CN	1
2	Roller	RB2-2892-000CN	2
3	Bushing, right	RB2-2895-000CN	1
4	Bushing, left	RB2-2896-000CN	1
15	Pad, separation	RB2-9960-000CN	1

Alphabetical parts list

Table 42. Alphabetical parts list

Description	Part number	Quantity	Figure	Ref.
250-sheet feeder	C4793-67901	1	133	
500-sheet feeder	C7065-67901	1	134	
Access plate feed guide assembly	RG5-5559-000CN	1	128	7
Access plate solenoid assembly	RM1-0331-000CN	1	128	10
Arm, paper sensor	RB2-6310-000CN	1	130	5
Arm, sensor	RB2-6264-000CN	1	126	8
Belt, paper feed	RC1-0918-000CN	3	127	9
Bin extension	RB2-6286-000CN	1	123	1A
Bushing, left	RB2-2896-000CN	1	130	3
Bushing, left	RB2-2896-000CN	1	133	4
Bushing, left	RB2-2896-000CN	1	134	4
Bushing, right	RB2-2895-000CN	1	130	2
Bushing, right	RB2-2895-000CN	1	133	3
Bushing, right	RB2-2895-000CN	1	134	3
Bushing, transfer, right	RC1-0922-000CN	1	126	10
Button, power switch	RB2-6294-000CN	1	123	8A
Cable guide assembly	RM1-0324-000CN	1	127	13
Cable, panel	RG1-4314-000CN	1	123	4
Cap, continuity	RA0-1068-000CN	1	126	1
Control panel	RH6-0226-000CN	1	123	5
Cover, DIMM	RM1-0329-000CN	1	123	2
Cover, front	RC1-1013-000CN	1	123	3
Cover, I/O	RB2-6283-000CN	1	123	2A
Drive assembly	RM1-0334-000CN	1	125	23
Duct	RC1-1003-000CN	1	125	8
E-label reader assembly	RM1-0335-000CN	1	125	17
Engine controller assembly	RM1-0339-000CN	1	131	
Engine controller PCA	RG1-4307-000CN	1	131	1
Engine controller PCA	RG1-4307-000CN	1	132	1
Fan	RH7-1591-000CN	1	125	14
Feed roller assembly	RG5-5555-000CN	1	128	8
FG cable assembly	RG1-4310-000CN	1	125	10
Flat cable, I/F	RH2-5578-000CN	1	125	12
Foot, rubber	RB2-6297-000CN	4	126	9
Formatter	Q1395-60001	1	132	3
Fuse (110-127V)	WD1-0268-000CN	1	129	1B

Table 42. Alphabetical parts list (continued)

Description	Part number	Quantity	Figure	Ref.
Fuse (220-240V)	RH3-8006-000CN	1	129	1B
Fuser (110-127V)	RM1-0354-000CN	1	125	24
Fuser (220-240V)	RM1-0355-000CN	1	125	24
Gear assembly	RM1-0337-000CN	1	127	14
Gear, 14T	RS6-0445-000CN	1	126	19
Gear, 14T	RU5-0156-000CN	1	127	18
Gear, 15T	RU5-0168-000CN	1	126	21
Gear, 26T	RC1-1039-000CN	1	126	12
Gear, 27T	RU5-0155-000CN	1	127	17
Gear, 29T	RC1-1040-000CN	1	126	13
Grounding cable	RG5-5600-000CN	1	125	11B
Guide, cable	RC1-1002-000CN	1	125	7
Guide, cartridge, left	RB2-2831-020CN	1	126	3
Guide, cartridge, right	RB2-2830-020CN	1	126	2
Guide, flat cable	RC1-1019-000CN	1	125	9
Guide, rear output	RB2-6401-000CN	1	123	1E
Hinge, feed guide	RB2-6249-000CN	1	128	1
Hinge, left	RB2-6405-000CN	1	127	2
Hinge, right	RB2-6406-000CN	1	127	3
Holder, sensor, lever	RL1-0158-000CN	1	129	3
I/F cable	RG5-5599-000CN	1	125	11A
Inlet cable assembly	RM1-0342-000CN	1	128	12
Laser/scanner	RM1-0313-000CN	1	125	16
Left cover assembly	RG5-5549-000CN	1	123	8
Lever, jam clearing	RB2-6251-000CN	1	126	7
Lever, sensor	RB2-2836-000CN	1	125	1
Motor, dc (M1)	RH7-1587-000CN	1	125	13
Mount, fan	RB2-6255-000CN	1	125	3
Mount, laser/scanner	RC1-1001-000CN	1	125	6
Pad, separation	RB2-9960-000CN	1	134	15
Pad, separation	RC1-0939-000CN	1	127	11
Paper feeder cable	RG5-5598-000CN	1	125	11
PCA	VT2-0012-005CN	1	129	4
Photosensor TLP1242	WG8-5382-000CN	1	127	21
Pickup assembly	RM1-0332-000CN	1	130	
Pickup roller	RB2-6304-000CN	1	130	4
Pickup roller	RB2-6304-000CN	1	133	1
Pickup roller	RB2-6304-000CN	1	134	1
Plate, feeding, center	RC1-0912-000CN	1	127	4
Plate, feeding, front	RC1-0915-000CN	2	127	7

Table 42. Alphabetical parts list (continued)

Description	Part number	Quantity	Figure	Ref.
Plate, feeding, left	RC1-0913-000CN	1	127	5
Plate, feeding, right	RC1-0914-000CN	1	127	6
Plate, grounding	RC1-0916-000CN	1	127	8
Plate, grounding	RC1-0917-000CN	1	125	5
Position guide assembly	RM1-0333-000CN	1	128	11
Power supply assembly (110-127V)	RM1-0340-000CN	1	129	
Power supply assembly (220-240V)	RM1-0341-000CN	1	129	
Power supply PCA (110-127V)	RG1-4306-000CN	1	129	1
Power supply PCA (110-127V)	RG1-4306-000CN	1	132	2
Power supply PCA (220-240V)	RG1-4329-000CN	1	129	1
Power supply PCA (220-240V)	RG1-4329-000CN	1	132	2
Pulley	RC1-0933-000CN	3	127	12
Rear cover assembly	RM1-0367-000CN	1	123	1
Rear output bin	RB2-6287-000CN	1	123	1D
Registration assembly	RM1-0347-000CN	1	126	25
Reverse guide assembly	RG5-5548-000CN	1	128	6
Rod, jam clearing	RB2-6250-000CN	1	126	6
Roller	RB2-2892-000CN	2	130	1
Roller	RB2-2892-000CN	2	133	2
Roller	RB2-2892-000CN	2	134	2
Roller, face-down lower 1	RB2-6400-000CN	1	126	17A
Roller, guide	RB2-6288-000CN	2	123	1C
Roller, pickup	RC1-0945-000CN	1	126	16A
Roller, top output bin, lower 1	RB2-6400-000CN	1	126	14B
Roller, top output bin, lower 2	RB2-6277-000CN	1	126	14A
Screw, PH M3x4	XB6-7300-407CN	3	125	22
Screw, RS, M3x6	XA9-0686-000CN	1	128	10A
Screw, tapping, pan head, M4x10	XB4-7401-007CN	2	123	9
Screw, tapping, pan head, M4x10	XB4-7401-007CN	1	124	1A
Screw, tapping, pan head, M4x10	XB4-7401-007CN	2	124	2
Screw, tapping, pan head, M4x10	XB4-7401-007CN	13	125	21
Screw, tapping, pan head, M4x10	XB4-7401-007CN	12	126	24
Screw, tapping, pan head, M4x10	XB4-7401-007CN	5	127	22
Screw, tapping, pan head, M4x10	XB4-7401-007CN	7	128	17
Screw, tapping, truss head, M4x14	XB4-7401-407CN	2	123	10
Screw, TP, M3x6	XA9-1223-000CN	1	123	11
Screw, TP, M3x8	XA9-1160-000CN	4	125	18
Screw, TP, M4x12	XA9-1273-000CN	4	125	19
Screw, w/washer, M3x6	XB2-7300-607CN	8	125	20
Screw, w/washer, M3x6	XB2-7300-607CN	1	128	16

Table 42. Alphabetical parts list (continued)

Description	Part number	Quantity	Figure	Ref.
Screw, w/washer, M3x6	XB6-7300-607CN	1	123	12
Screw, w/washer, M3x8	XA9-1226-000CN	4	129	5
Screw, w/washer, M3x8	XA9-1226-000CN	1	131	2
Screw, w/washer, M4x12	XA9-1206-000CN	2	128	15
Separation pad	RC1-0954-000CN	1	133	14
Separation pad assembly	RM1-0345-000CN	1	127	15
Shaft, paper feed	RC1-0920-000CN	1	127	10
Shaft, paper feed	RU5-0158-000CN	1	127	19
Sheet, insulation	RC1-0930-000CN	1	129	2
Sheet, leakage-prevention	RC1-0919-000CN	1	128	5
Solenoid	RH7-5279-000CN	1	128	9
Spacer, PCA	RC1-0931-000CN	1	129	1A
Spring, compression	RB2-2832-000CN	1	126	4
Spring, compression	RB2-2860-000CN	1	123	8B
Spring, compression	RB2-6262-000CN	1	128	2
Spring, compression	RB2-6263-000CN	1	128	3
Spring, compression	RB2-6271-000CN	1	128	4
Spring, compression	RS6-2375-000CN	4	126	20
Spring, compression	RU5-2107-000CN	1	128	13
Spring, compression	RU5-2108-000CN	1	128	14
Spring, compression	RU5-2109-000CN	1	126	22
Spring, compression	RU5-2113-000CN	1	127	20
Spring, leaf	RB2-6266-000CN	1	127	1
Spring, tension	RS6-2030-000CN	2	127	16
Spring, tension	RU5-2112-000CN	1	126	23.
Spring, torsion	RB2-2837-000CN	1	125	2
Spring, torsion	RB2-2843-000CN	1	126	5
Spring, torsion	RC1-0999-000CN	2	123	1B
Static charge eliminator	RC1-0911-000CN	1	125	4
Switch (SW1)	RH7-6051-000CN	1	125	15
Top cover assembly	RM1-0328-000CN	1	124	1
Top output bin delivery roller assembly	RG5-5542-050CN	2	126	14
Top output bin delivery roller assembly	RM1-0370-000CN	2	126	17
Top output bin delivery roller assembly	RM1-0371-000CN	1	126	18
Transfer roller assembly	RM1-0338-000CN	1	126	15
Tray 1 assembly	RM1-0353-000CN	1	123	7
Tray 1 cover assembly	RG5-5575-000CN	1	123	6
Tray 1 damper assembly	RC1-1038-000CN	1	126	11
Tray 1 extension 1	RB2-6404-000CN	1	123	6A
Tray 1 extension 2	RB2-3036-000CN	1	123	6B

Table 42. Alphabetical parts list (continued)

Description	Part number	Quantity	Figure	Ref.
Tray 1 pickup assembly	RM1-0346-000CN	1	126	16
Tray 2 or 250-sheet feeder (media tray only)	RM1-0350-000CN	1		

Numerical parts list

Table 43. Numerical parts list

Part number	Description	Quantity	Figure	Ref.
C4793-67901	250-sheet feeder	1	133	
C7065-67901	500-sheet feeder	1	134	
Q1395-60001	Formatter	1	132	3
RA0-1068-000CN	Cap, continuity	1	126	1
RB2-2830-020CN	Guide, cartridge, right	1	126	2
RB2-2831-020CN	Guide, cartridge, left	1	126	3
RB2-2832-000CN	Spring, compression	1	126	4
RB2-2836-000CN	Lever, sensor	1	125	1
RB2-2837-000CN	Spring, torsion	1	125	2
RB2-2843-000CN	Spring, torsion	1	126	5
RB2-2860-000CN	Spring, compression	1	123	8B
RB2-2892-000CN	Roller	2	130	1
RB2-2892-000CN	Roller	2	133	2
RB2-2892-000CN	Roller	2	134	2
RB2-2895-000CN	Bushing, right	1	130	2
RB2-2895-000CN	Bushing, right	1	133	3
RB2-2895-000CN	Bushing, right	1	134	3
RB2-2896-000CN	Bushing, left	1	130	3
RB2-2896-000CN	Bushing, left	1	133	4
RB2-2896-000CN	Bushing, left	1	134	4
RB2-3036-000CN	Tray 1 extension 2	1	123	6B
RB2-6249-000CN	Hinge, feed guide	1	128	1
RB2-6250-000CN	Rod, jam clearing	1	126	6
RB2-6251-000CN	Lever, jam clearing	1	126	7
RB2-6255-000CN	Mount, fan	1	125	3
RB2-6262-000CN	Spring, compression	1	128	2
RB2-6263-000CN	Spring, compression	1	128	3
RB2-6264-000CN	Arm, sensor	1	126	8
RB2-6266-000CN	Spring, leaf	1	127	1
RB2-6271-000CN	Spring, compression	1	128	4
RB2-6277-000CN	Roller, top output bin, lower 2	1	126	14A
RB2-6283-000CN	Cover, I/O	1	123	2A
RB2-6286-000CN	Bin extension	1	123	1A
RB2-6287-000CN	Rear output bin	1	123	1D
RB2-6288-000CN	Roller, guide	2	123	1C
RB2-6294-000CN	Button, power switch	1	123	8A

Table 43. Numerical parts list (continued)

Part number	Description	Quantity	Figure	Ref.
RB2-6297-000CN	Foot, rubber	4	126	9
RB2-6304-000CN	Pickup roller	1	130	4
RB2-6304-000CN	Pickup roller	1	133	1
RB2-6304-000CN	Pickup roller	1	134	1
RB2-6310-000CN	Arm, paper sensor	1	130	5
RB2-6400-000CN	Roller, face-down lower 1	1	126	17A
RB2-6400-000CN	Roller, top output bin, lower 1	1	126	14B
RB2-6401-000CN	Guide, rear output	1	123	1E
RB2-6404-000CN	Tray 1 extension 1	1	123	6A
RB2-6405-000CN	Hinge, left	1	127	2
RB2-6406-000CN	Hinge, right	1	127	3
RB2-9960-000CN	Pad, separation	1	134	15
RC1-0911-000CN	Static charge eliminator	1	125	4
RC1-0912-000CN	Plate, feeding, center	1	127	4
RC1-0913-000CN	Plate, feeding, left	1	127	5
RC1-0914-000CN	Plate, feeding, right	1	127	6
RC1-0915-000CN	Plate, feeding, front	2	127	7
RC1-0916-000CN	Plate, grounding	1	127	8
RC1-0917-000CN	Plate, grounding	1	125	5
RC1-0918-000CN	Belt, paper feed	3	127	9
RC1-0919-000CN	Sheet, leakage-prevention	1	128	5
RC1-0920-000CN	Shaft, paper feed	1	127	10
RC1-0922-000CN	Bushing, transfer, right	1	126	10
RC1-0930-000CN	Sheet, insulation	1	129	2
RC1-0931-000CN	Spacer, PCA	1	129	1A
RC1-0933-000CN	Pulley	3	127	12
RC1-0939-000CN	Pad, separation	1	127	11
RC1-0945-000CN	Roller, pickup	1	126	16A
RC1-0954-000CN	Separation pad	1	133	14
RC1-0999-000CN	Spring, torsion	2	123	1B
RC1-1001-000CN	Mount, laser/scanner	1	125	6
RC1-1002-000CN	Guide, cable	1	125	7
RC1-1003-000CN	Duct	1	125	8
RC1-1013-000CN	Cover, front	1	123	3
RC1-1019-000CN	Guide, flat cable	1	125	9
RC1-1038-000CN	Tray 1 damper assembly	1	126	11
RC1-1039-000CN	Gear, 26T	1	126	12
RC1-1040-000CN	Gear, 29T	1	126	13
RG1-4306-000CN	Power supply PCA (110-127V)	1	129	1
RG1-4306-000CN	Power supply PCA (110-127V)	1	132	2

Table 43. Numerical parts list (continued)

Part number	Description	Quantity	Figure	Ref.
RG1-4307-000CN	Engine controller PCA	1	131	1
RG1-4307-000CN	Engine controller PCA	1	132	1
RG1-4310-000CN	FG cable assembly	1	125	10
RG1-4314-000CN	Cable, panel	1	123	4
RG1-4329-000CN	Power supply PCA (220-240V)	1	129	1
RG1-4329-000CN	Power supply PCA (220-240V)	1	132	2
RG5-5542-050CN	Top output bin delivery roller assembly	2	126	14
RG5-5548-000CN	Reverse guide assembly	1	128	6
RG5-5549-000CN	Left cover assembly	1	123	8
RG5-5559-000CN	Access plate feed guide assembly	1	128	7
RG5-5555-000CN	Feed roller assembly	1	128	8
RG5-5575-000CN	Tray 1 cover assembly	1	123	6
RG5-5598-000CN	Paper feeder cable	1	125	11
RG5-5599-000CN	I/F cable	1	125	11A
RG5-5600-000CN	Grounding cable	1	125	11B
RH2-5578-000CN	Flat cable, I/F	1	125	12
RH3-8006-000CN	Fuse (220-240V)	1	129	1B
RH6-0226-000CN	Control panel	1	123	5
RH7-1587-000CN	Motor, dc (M1)	1	125	13
RH7-1591-000CN	Fan	1	125	14
RH7-5279-000CN	Solenoid	1	128	9
RH7-6051-000CN	Switch (SW1)	1	125	15
RL1-0158-000CN	Holder, sensor, lever	1	129	3
RM1-0313-000CN	Laser/scanner	1	125	16
RM1-0324-000CN	Cable guide assembly	1	127	13
RM1-0328-000CN	Top cover assembly	1	124	1
RM1-0329-000CN	Cover, DIMM	1	123	2
RM1-0331-000CN	Access plate solenoid assembly	1	128	10
RM1-0332-000CN	Pickup assembly	1	130	
RM1-0333-000CN	Position guide assembly	1	128	11
RM1-0334-000CN	Drive assembly	1	125	23
RM1-0335-000CN	E-label reader assembly	1	125	17
RM1-0337-000CN	Gear assembly	1	127	14
RM1-0338-000CN	Transfer roller assembly	1	126	15
RM1-0339-000CN	Engine controller assembly	1	131	
RM1-0340-000CN	Power supply assembly (110-127V)	1	129	
RM1-0341-000CN	Power supply assembly (220-240V)	1	129	
RM1-0342-000CN	Inlet cable assembly	1	128	12
RM1-0345-000CN	Separation pad assembly	1	127	15
RM1-0346-000CN	Tray 1 pickup assembly	1	126	16

Table 43. Numerical parts list (continued)

Part number	Description	Quantity	Figure	Ref.
RM1-0347-000CN	Registration assembly	1	126	25
RM1-0350-000CN	Tray 2 or 250-sheet feeder (media tray only)	1		
RM1-0353-000CN	Tray 1 assembly	1	123	7
RM1-0354-000CN	Fuser (110-127V)	1	125	24
RM1-0355-000CN	Fuser (220-240V)	1	125	24
RM1-0367-000CN	Rear cover assembly	1	123	1
RM1-0370-000CN	Top output bin delivery roller assembly	2	126	17
RM1-0371-000CN	Top output bin delivery roller assembly	1	126	18
RS6-0445-000CN	Gear, 14T	1	126	19
RS6-2030-000CN	Spring, tension	2	127	16
RS6-2375-000CN	Spring, compression	4	126	20
RU5-0155-000CN	Gear, 27T	1	127	17
RU5-0156-000CN	Gear, 14T	1	127	18
RU5-0158-000CN	Shaft, paper feed	1	127	19
RU5-0168-000CN	Gear, 15T	1	126	21
RU5-2107-000CN	Spring, compression	1	128	13
RU5-2108-000CN	Spring, compression	1	128	14
RU5-2109-000CN	Spring, compression	1	126	22
RU5-2112-000CN	Spring, tension	1	126	23
RU5-2113-000CN	Spring, compression	1	127	20
VT2-0012-005CN	PCA	1	129	4
WD1-0268-000CN	Fuse (110-127V)	1	129	1B
WG8-5382-000CN	Photosensor TLP1242	1	127	21
XA9-0686-000CN	Screw, RS, M3x6	1	128	10A
XA9-1160-000CN	Screw, TP, M3x8	4	125	18
XA9-1206-000CN	Screw, w/washer, M4x12	2	128	15
XA9-1223-000CN	Screw, TP, M3x6	1	123	11
XA9-1226-000CN	Screw, w/washer, M3x8	4	129	5
XA9-1226-000CN	Screw, w/washer, M3x8	1	131	2
XA9-1273-000CN	Screw, TP, M4x12	4	125	19
XB2-7300-607CN	Screw, w/washer, M3x6	8	125	20
XB2-7300-607CN	Screw, w/washer, M3x6	1	128	16
XB4-7401-007CN	Screw, tapping, pan head, M4x10	1	124	1A
XB4-7401-007CN	Screw, tapping, pan head, M4x10	13	125	21
XB4-7401-007CN	Screw, tapping, pan head, M4x10	12	126	24
XB4-7401-007CN	Screw, tapping, pan head, M4x10	2	123	9
XB4-7401-007CN	Screw, tapping, pan head, M4x10	2	124	2
XB4-7401-007CN	Screw, tapping, pan head, M4x10	5	127	22
XB4-7401-007CN	Screw, tapping, pan head, M4x10	7	128	17
XB4-7401-407CN	Screw, tapping, truss head, M4x14	2	123	10

Table 43. Numerical parts list (continued)

Part number	Description	Quantity	Figure	Ref.
XB6-7300-407CN	Screw, PH M3x4	3	125	22
XB6-7300-607CN	Screw, w/washer, M3x6	1	123	12

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