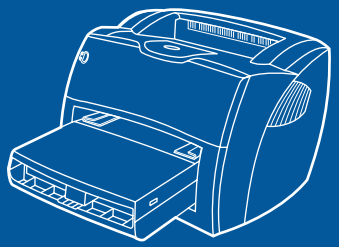

hp LaserJet 1200 series

invent

service

HP LaserJet 1200 Series

Service

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Safety Information

WARNING!

Potential Shock Hazard

Always follow basic safety precautions when using this product to reduce risk of injury from fire or electric shock.

1. Read and understand all instructions in the user guide.
2. Observe all warnings and instructions marked on the product.
3. Use only a grounded electrical outlet when connecting the HP LaserJet 1200 printer to a power source. If you don’t know whether the outlet is grounded, check with a qualified electrician.
4. Do not touch the contacts on the end of any of the sockets on the HP LaserJet 1200 printer. Replace damaged cords immediately.
5. Unplug this product from wall outlets before cleaning.
6. Do not install or use this product near water or when you are wet.
7. Install the product securely on a stable surface.
8. Install the product in a protected location where no one can step on or trip over the power cord and the power cord will not be damaged.
9. If the product does not operate normally, see the online user guide.
10. Refer all servicing questions to qualified personnel.

Information regarding FCC Class B, Parts 15 and 68 requirements can be found in the user guide.

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Introduction

The HP LaserJet 1200 printer is designed to:

- **Print**—Print documents easily with the laser-quality you have come to expect from an HP LaserJet printer.

With the optional copier/scanner, you can:

- **Copy**—Make superior laser-quality copies. With the software, you can make up to 99 copies of a 30-page original. You can also enlarge, reduce, adjust contrast, and collate.
- **Scan**—Scan important documents to create electronic files.

Hardware description

The printer provides 1200 dot-per-inch (dpi) printing. The optional copier/scanner scans at 600 dpi/ 24-bits per pixel (bpp) and contains a document feeder that holds up to 30 pages.

The printer prints 15 pages per minute (ppm) on letter-size paper or 14 ppm on A4. With 1200 dpi printing resolution, the printer has exceptional text and graphics print quality. The simple control panel and improved paper handling make this product very easy to use.

The printer's main input tray has a 250-sheet capacity for continuous, multiple-page printing. Manual, single-sheet printing is possible through the priority input tray. Both trays are center-justified for all supported paper sizes. The printer output bin holds up to 125 sheets.

The printer has a very fast first-page-out, at less than 10 seconds. The formatter board contains 8 MB of ROM, 8 MB of RAM, and an embedded 32-bit Coldfire V3 processor. There is one DIMM slot available for DIMM expansion (supporting an 8 MB, 16 MB, 32 MB, or 64 MB DIMM).

The printer engine has a 1,000 average (10,000 peak) page-per-month duty cycle. For the printer, the standard toner life is 2,500 pages, and the high capacity toner life is 3,500 pages.

Firmware description

The firmware in the printer includes:

- Enhanced PCL 6 with status readback
- 80 TrueType™ fonts, plus Cyrillic, Greek, Hebrew, and Arabic
- Pixel placement, mosaic characters
- Memory Enhancement technology (MEt) with hardware compression and decompression

The printer firmware also has REt and EconoMode functionality. Scan capability includes 600 dpi and 24-bit color.

Product specifications

Table 1. Physical specifications

Category	Specification
Height	253 mm (10 inches) without optional copier/scanner 416 mm (16.4 inches) with optional copier/scanner
Depth	486 mm (19.1 inches)
Width	415 mm (16.3 inches)
Weight (cartridge installed)	7.3 kg (16.1 lb) without optional copier/scanner 8.7 kg (19.2 lb) with optional copier/scanner

Table 2. Environmental specifications

Category	Specification
Operating environment (printer plugged into an AC outlet)	• Temperature: 15° to 32.5° C (59° to 90.5° F) • Humidity: 20% to 80% relative humidity (no condensation)
Storage environment (printer not plugged into an AC outlet)	• Temperature: 0° to 40° C (32° to 104° F) • Humidity: 10% to 90% relative humidity (no condensation)

Table 3. Power specifications

Category	Specification
Power requirements	• 110 Vac (± 12%), 60 (± 3) Hz; 127 Vac (± 12%), 60 (± 3) Hz -Or- • 220 Vac (± 12%), 50/60 (± 3) Hz • 240 Vac (± 12%), 50 (± 3) Hz **Note** Power sources are not interchangeable.
Power consumption (in continuous copy mode)	285 W
Power consumption (idle)	7 W
Power consumption (off)	0 W
Minimum recommended circuit capacity	4.5 A at 115 V 2.3 A at 230 V

Table 4. Performance of HP LaserJet 1200 printer

Category	Specification
Print resolution	1200 dpi
Print speed	15 ppm (Letter) 14 ppm (A4)

Table 5. Performance of optional copier/scanner

Category	Specification
Scan resolution	600 dpi optical, with 256 levels of gray and 24-bit color
Copy speed	12 ppm

Table 6. Print operating acoustical emissions specifications

Category	Specification
Sound Power Level, L_{WAd} (1 bel = 10 decibels)	6.1 B(A)
Sound Pressure Level, L_{pAm} (operator position)	56 dB(A)
Sound Pressure Level, L_{pAm} (bystander position)	48 dB(A)

Table 7. Copy operating acoustical emissions specifications

Category	Specification
Sound Power Level, L_{WAd} (1 bel = 10 decibels)	6.4 B(A)
Sound Pressure Level, L_{pAm} (operator position)	60 dB(A)
Sound Pressure Level, L_{pAm} (bystander position)	50 dB(A)

Table 8. Skew specifications

Category	Specification
Print skew—left	0.8% (2 mm over 250 mm in length) for cut-sheet media) 1.5% (3.3 mm over 220 mm in length) for cut-sheet media 0.87 (1.65 mm over 190 mm in width) for cut-sheet media
Print skew—right	1.5% (3.3 mm over 220 mm in width) for envelopes, postcards, A5, and cut-sheet media
Cut-sheet leading edge skew	0.87% (1.6 mm over 190 mm in width)
Scan skew	1.2%

Model and serial numbers

The model number and serial number are listed on an identification label located on the inside of the toner cartridge door.

The serial number contains information about the country of origin, revision level, production code, and production number of the printer.

The label also contains power rating and regulatory information.

Figure 1. **Model and serial number labels**

Overview of printer

Front and side view

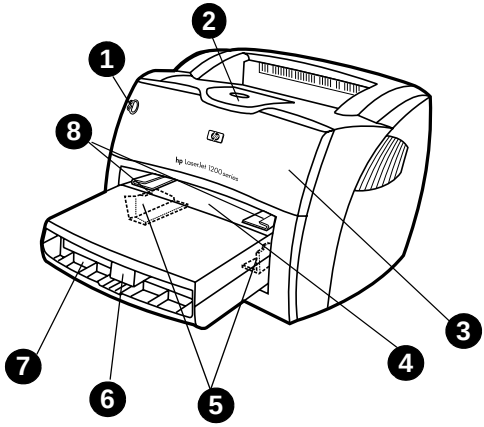

Figure 2. **Front and side view**

1 Printer control panel

2 Long media extension (output bin)

3 Toner cartridge door

4 Priority input tray

5 Side media guides for the main input tray

6 Media support for the main input tray

7 Main input tray

8 Side media guides for the priority input tray

Back and side view

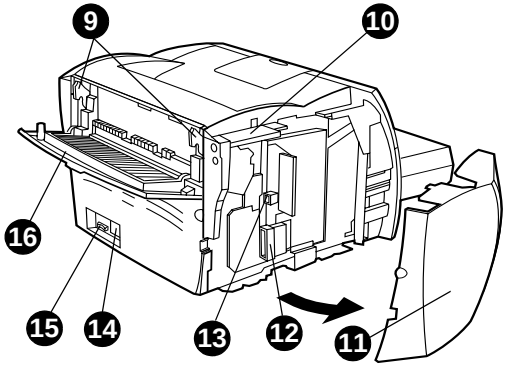

Figure 3. **Back and side view**

9 Fuser pressure release levers

10 Connection to optional copier/scanner

11 Left side cover

12 Parallel port

13 USB port

14 Power receptacle

15 Power switch (220-240 volt printers)

16 Straight-through output door

Overview of optional copier/scanner

Top view

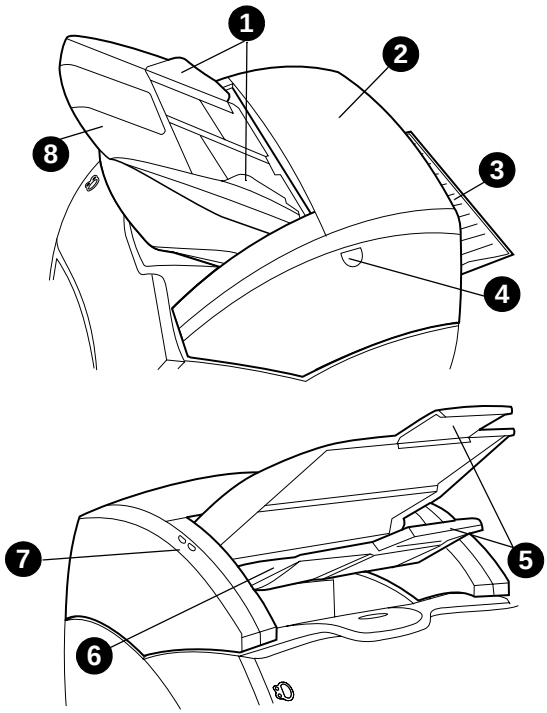

Figure 4. **Top view**

1 Media input tray guides

2 Copier/scanner door

3 Straight-through output door

4 Copier/scanner door release button

5 Long media extensions

6 Media output bin

7 Copier/scanner control panel

8 Media input tray

Note See “Optional copier/scanner” on page 81 for more information about removing the optional copier/scanner from the printer.

Warranty statement

DURATION OF WARRANTY: One year from date of purchase.

1 HP warrants to you, the end-user customer, that HP hardware, accessories, and supplies, will be free from defects in materials and workmanship after the date of purchase, for the period specified above. If HP receives notice of such defects during the warranty period, HP will, at its option, either repair or replace products which prove to be defective. Replacement products may be either new or like-new.

2 HP warrants to you that HP software will not fail to execute its programming instructions after the date of purchase, for the period specified above, due to defects in material and workmanship when properly installed and used. If HP receives notice of such defects during the warranty period, HP will replace software media which does not execute its programming instructions due to such defects.

3 HP does not warrant that the operation of HP products will be uninterrupted or error free. If HP is unable, within a reasonable time, to repair or replace any product to a condition as warranted, you will be entitled to a refund of the purchase price upon prompt return of the product.

4 HP products may contain remanufactured parts equivalent to new in performance or may have been subject to incidental use.

5 Warranty does not apply to defects resulting from (a) improper or inadequate maintenance or calibration, (b) software, interfacing, parts, or supplies not supplied by HP, (c) unauthorized modification or misuse, (d) operation outside of the published environmental specifications for the product, or (d) improper site preparation or maintenance.

6 HP MAKES NO OTHER EXPRESS WARRANTY OR CONDITION WHETHER WRITTEN OR ORAL. TO THE EXTENT ALLOWED BY LOCAL LAW, ANY IMPLIED WARRANTY OR CONDITION OR MERCHANTABILITY, SATISFACTORY QUALITY, OR FITNESS FOR A PARTICULAR PURPOSE IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY SET FORTH ABOVE. Some countries, states, or provinces do not allow limitations on the duration of an implied warranty, so the above limitation or exclusion might not apply to you. This warranty gives you specific legal rights and you might also have other rights that vary from country to country, state to state, or province to province.

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FOR CONSUMER TRANSACTIONS IN AUSTRALIA AND NEW ZEALAND, THE WARRANTY TERMS CONTAINED IN THIS STATEMENT, EXCEPT TO THE EXTENT LAWFULLY PERMITTED, DO NOT EXCLUDE, RESTRICT OR MODIFY AND ARE IN ADDITION TO THE MANDATORY STATUTORY RIGHTS APPLICABLE TO THE SALE OF THIS PRODUCT TO YOU.

Extended warranty

HP SupportPack provides coverage for the HP hardware product and all HP-supplied internal components. The hardware maintenance warranty covers a three-year period from the date of the HP product purchase. The customer must purchase the HP SupportPack within 90 days of the HP product purchase. The document number is 9036. Customers can contact the nearest HP-authorized dealer about this service.

Toner cartridge information

The toner cartridge is designed to simplify replacement of the major consumable parts. The toner cartridge contains the printing mechanism and a supply of toner.

At five percent page coverage, a toner cartridge will print approximately 2,500 pages. However, a toner cartridge should print more pages if it regularly prints pages with less coverage, such as short memos. The cartridge might print fewer pages if heavy or bold print is used.

For best results, always use a toner cartridge before the expiration date stamped on the toner cartridge box.

Refilled toner cartridges

While Hewlett-Packard does not prohibit the use of refilled toner cartridges during the warranty period or while the printer is under a maintenance contract, it is not recommended for the following reasons:

- Repairs resulting from the use of refilled toner cartridges are not covered under Hewlett-Packard warranty or maintenance contracts.
- Hewlett-Packard has no control or process to ensure that a refilled toner cartridge functions at the high level of reliability of a new HP LaserJet toner cartridge. Hewlett-Packard also cannot predict the long term reliability effect on the printer from using different toner formulations found in refilled cartridges.
- The print quality of HP LaserJet toner cartridges influences the customer's perception of the printer. Hewlett-Packard has no control over the actual print quality of a refilled toner cartridge.

Recycling toner cartridges

In order to reduce waste, Hewlett-Packard offers a recycling program. Cartridge components that do not wear out are recycled. Plastics and other materials are recycled. Hewlett-Packard pays the shipping costs from the user to the recycling plant (within the United States). To join this recycling effort, follow the instructions inside the toner cartridge box.

2 Installation and operation

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Operating environment

Place the printer on a sturdy, level surface in a well-ventilated area that meets the following environmental requirements:

- temperature: 10° to 32.5° C (50° to 90.5° F)
- humidity: 20% to 80% relative humidity (no condensation)
- away from direct sunlight, open flames, and ammonia fumes
- sufficient space around the printer to allow for proper access and ventilation

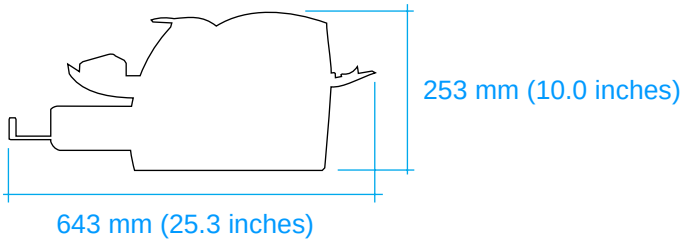


Figure 5. **Dimensions of printer**

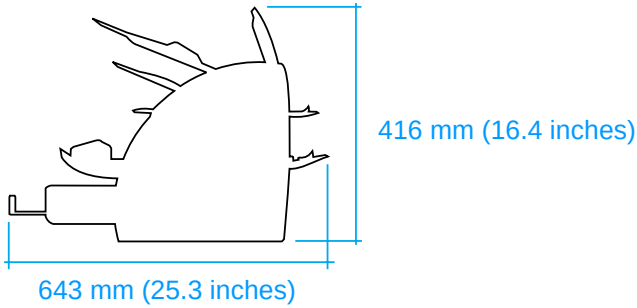


Figure 6. **Dimensions of printer with optional copier/scanner**

Identifying printer components

Printer control panel

The printer control panel has two lights and one lighted button. These lights produce patterns that identify the printer status.

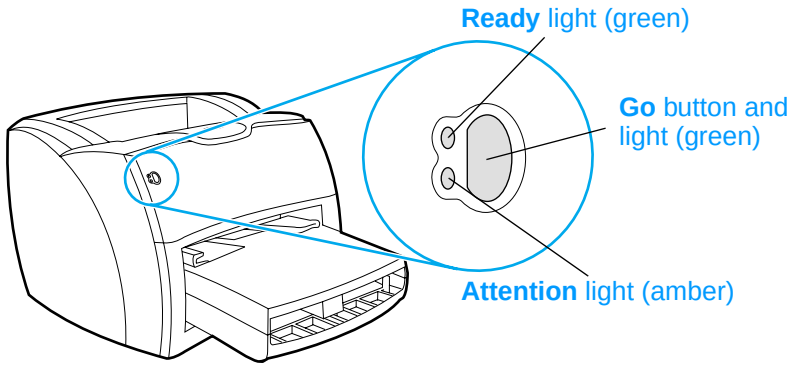


Figure 7. **Printer control panel**

- Go **button and light—**Prints self-test pages. (To print a self-test page or to continue printing while in manual feed mode, press and release the Go button.)
- **Ready light—**Indicates that the printer is ready to print.
- **Attention light—**Indicates that the main input tray is empty, toner cartridge door is open, toner cartridge is missing, or other errors.

Control panel light patterns

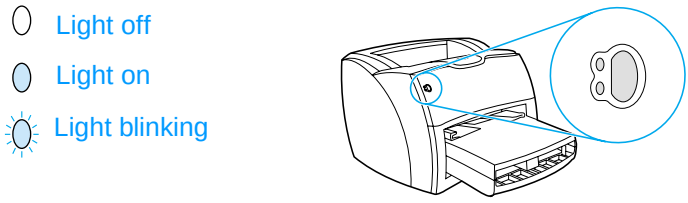


Figure 8. **Light status legend**

Table 9. Control panel light messages

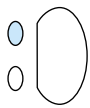
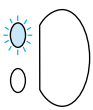
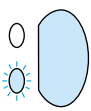
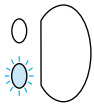
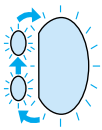
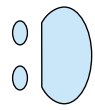
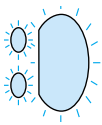
Light status	Condition of the printer	Action
	**Ready** The printer is ready to print.	No action is necessary. To print a self-test page, press and release the Go button on the printer control panel.
	**Processing** The printer is receiving or processing data.	Wait for the job to print.
	**Manual feed or out of memory** The printer is in manual feed mode or out of memory. You can continue printing.	Make sure that you have loaded the correct media. To continue printing, press and release the Go button. The software controls manual feed. If you do not want the printer to be in manual feed mode, change the setting from the printer properties. See the printer software for more information. The page being printed might be too complex for the printer memory capacity. • To continue printing, press and release the Go button. • Reduce the resolution. See the user guide for more information. • Add more memory. See the user guide for more information.

Table 9. Control panel light messages (continued)

Light status	Condition of the printer	Action
	**Door open, media out, no toner cartridge, or paper jam** The printer is in an error state that requires operator intervention or help.	• Make sure that the toner cartridge door is completely closed. • Make sure that the media is loaded correctly. See the user guide for instructions. • Make sure that the toner cartridge is correctly installed in the printer. See the user guide for instructions. • If the printer still has an error, there is a paper jam. See the user guide for instructions.
	**Printer initialization/Cancel Job/Cleaning Mode** A printer initialization is taking place. If all lights blink for half of a second or longer in a sequence: the printer is initializing all previously sent print jobs are being purged a cleaning page is being printed	No action is necessary.
	**Fatal error** All lights are on.	• Turn the printer off and then back on. • Unplug the printer for five minutes, and then plug it back in. • If the printer still has an error, see chapter 6, “Troubleshooting.”
	**Accessory error** All lights are blinking.	• Remove the DIMMs and reseat. See the user guide for instructions. • If the printer still has an error, replace the DIMMs.

Copier/scanner control panel

The control panel on the optional copier/scanner has two buttons, COPY and SCAN.

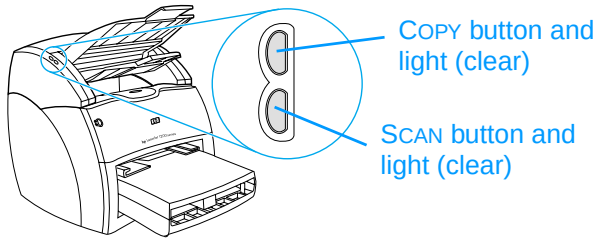


Figure 9. **Copier/scanner control panel**

- **Copy—**To perform Quick Copies, even if your computer is turned off, press the COPY button.
- **Scan—**To launch HP LaserJet Director, press the SCAN button. If HP LaserJet Director is configured correctly, you can perform the following tasks:
  - Scan documents to e-mail
  - Store documents electronically
  - Edit text with Optical Character Recognition (OCR)
  - Make multiple, customized, and color copies

Note To cancel a scan or copy job from the control panel, simultaneously press both buttons.

Selecting media to print

You can use paper with up to 100 percent recycled fiber content if it meets specifications. To order HP paper or the *Print Media Guide* for the HP LaserJet printer family, see the user guide.

Highly textured stock might not print evenly. Very glossy paper might jam or repel toner. Multipart forms can wrinkle or get jammed in the printer. And paper in poor condition, such as paper with tears, wrinkles, or bent edges, can jam.

Avoid envelopes that have a very slick finish, ones that have self-stick adhesives, or those with clasps or windows. Also avoid envelopes with thick, irregular, or curled edges, or areas that are wrinkled, torn, or otherwise damaged.

Use a sturdy envelope of approximately 60 to 90 g/m^2 (16 to 24 lb) weight. Use tightly constructed envelopes, and make sure that the folds are sharply creased.

The main input tray can hold up to 250 sheets of 75 g/m^2 (20 lb) print media. The priority input tray can hold up to 10 sheets, one envelope, or one piece of heavy media. Both can be adjusted to hold media measuring from 76.2 by 127 mm (3 by 5 inches) to 216 by 356 mm (8.5 by 14 inches). This includes, but is not limited to, the following paper and envelope sizes:

Table 10. Media types

Paper type	Metric	English
Letter	216 by 279 mm	8.5 by 11 in
Legal	216 by 356 mm	8.5 by 14 inches
Executive	184 by 267 mm	7.25 by 10.5 inches
A4	210 by 297 mm	8.25 by 11.75 inches
COM10 Envelopes	105 by 241 mm	4.13 by 9.5 inches
DL Envelopes	110 by 220 mm	4.33 by 8.67 inches
C5 Envelopes	162 by 229 mm	6.4 by 9 inches
B5 Envelopes	176 by 250 mm	6.9 by 9.85 inches
Monarch Envelopes	98.5 by 191 mm	3.88 by 7.5 inches
Custom size media	custom	custom

Note Narrow and heavy media can cause the printer to print slower.

Selecting media to copy or scan

The copier/scanner for the printer can handle a broader range of media sizes and types than the printer itself can. The following are the supported media sizes:

- **Minimum:** 45 by 89 mm (1.7 by 3.5 inches)
- **Maximum:** 216 by 356 mm (8.5 by 14 inches)

In addition, you can scan and copy many different types of media that are typically not used for printing, such as newsprint, photographs, business receipts, and business cards.

Note You must use a carrier sheet to feed small or delicate originals, such as newsprint, through the copier/scanner without causing a jam. To make a carrier sheet, use a piece of paper and a transparency, tape the leading edges together, and load your original between the sheets.

Note You must feed business cards and any media that is smaller than 76.2 by 27 mm (3 by 5 inches) through the straight-through output path. You can also tape them to the leading edge of a carrier sheet and feed them to the straight-through output bin.

Perform the following actions to minimize the possibility of jams:

- Remove self-stick notes.
- Remove staples and paper clips.
- Straighten any curls or wrinkles in documents before putting them into the document feeder tray.
- Do not insert any document with glue, correction fluid, or wet ink on it.
- Do not insert gum-backed paper or labels.
- Place documents with tears, perforations, or punch holes in a carrier sheet, which you can buy or make. (See the user guide.)
- Avoid multiple-copy forms.
- Do not scan originals that are larger or smaller than supported size limitations. See the user guide for more information.

Note To obtain good results, it is important that you use the correct resolution and color settings for your job. See the user guide for more information.

Loading media

Loading media to print

Main input tray

The main input tray holds up to 250 sheets of 75 g/m^2 (20 lb) paper or a 25 mm (0.98 inches) stack of heavier media. Load media with the top forward and the side to be printed facing up. To prevent jams and skew, always adjust the side media guides.

Priority input tray

The priority input tray holds up to ten pages of 75 g/m^2 (20 lb) paper or one envelope, transparency, or card. Load media with the top forward and the side to be printed facing up. To prevent jams and skew, always adjust the side media guides.

CAUTION If you try to print on media that is wrinkled, folded, or damaged in any way, a jam might occur. See the user guide for more information.

Note When you add new media, make sure that you remove all of the media from the input tray and straighten the stack of new media. This helps prevent multiple sheets of media from feeding through the printer at one time, reducing paper jams.

Specific types of media

- **Transparencies and labels:** Load transparencies and labels with the top forward and the side to be printed facing up. See the user guide for more information.
- **Envelopes:** Load envelopes with the narrow, stamp side forward and the side to be printed facing up. See the user guide for more information.
- **Letterhead or preprinted forms:** Load with the top forward and the side to be printed facing up. See the user guide for more information.
- **Cards and custom-sized media:** Load with the narrow side forward and the side to be printed facing up. See the user guide for more information.

Loading media to copy or scan

To load originals in the optional copier/scanner:

1. Load the original with the side to be scanned facing up.

   If you scan a business card:

   a. Load it with the long side (callout 1) facing forward and the text facing up.

   b. Use the straight-through output path. See the user guide for more information.

2. Adjust the media guides.
3. Press SCAN to scan or press COPY for a copy.

Note When you add new originals, always remove the originals from the input tray and straighten the stack.

CAUTION Small originals will cause a jam if they are not loaded correctly.

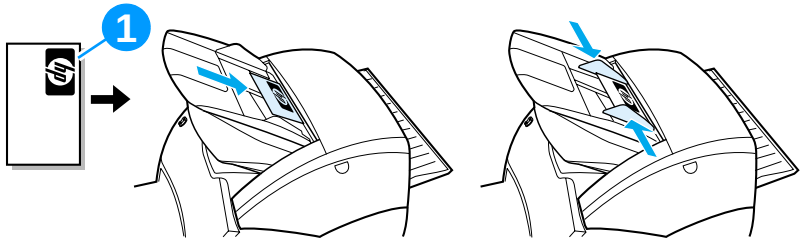


Figure 10. **Scanning a business card**

Note If you are editing text (OCR), make sure that the top edge of the original is the leading edge, and make sure that the text is facing up. For more information, see the user guide.

Printer output paths

Output bin

The output bin is located on the top of the printer. Printed media is collected here in the correct sequence when the straight-through output door is closed. Use the output bin when printing normal and large, collated documents.

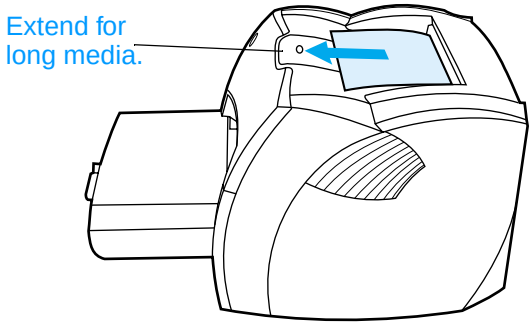


Figure 11. **Output bin**

Straight-through output path

The straight-through output path is useful when you are printing envelopes, transparencies, heavy media, or any media that tends to curl when printed. Printed media exits in reverse order when the straight-through output door is open.

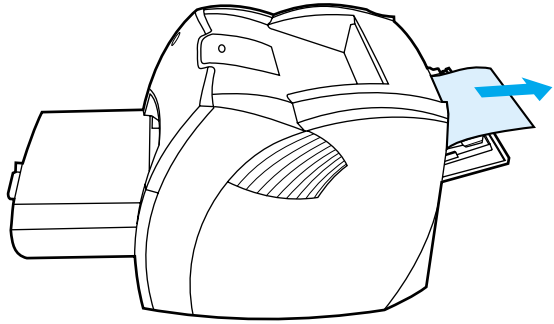


Figure 12. **Straight-through output door**

Note Printed media does not stack when you use the straight-through output path. The media drops to the surface below unless you remove each sheet as it exits the printer.

3 Maintenance

Chapter contents

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User-replaceable parts 40
Replacing the printer pickup roller 41
Replacing the printer separation pad 43
Replacing the copier/scanner separation pad 45
Cleaning the equipment 46
Cleaning the print path 47
Cleaning the toner cartridge area 48
Cleaning the printer pickup roller 49
Cleaning the printer separation pad 50
Cleaning and recalibrating the copier/scanner 51
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Life expectancies of consumables

Inspect consumables when servicing the printer. Replace consumables as needed, based on failure or wear, rather than on usage.

The following table lists approximate schedules for replacing consumables.

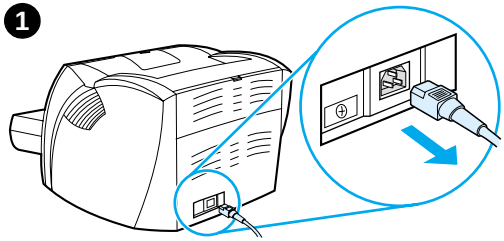
Table 11. Life expectancies of consumables

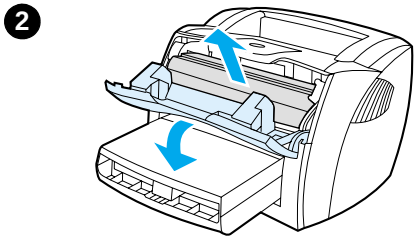
Description	Part number	Estimated life (pages)	Remarks
Toner cartridge (user replaceable)	C7115A	2,500	When print becomes faint, redistribute toner in the cartridge by gently shaking the cartridge from side to side.
	C7115X	3,500	
Printer transfer roller	RG9-1483-000CN	25,000	Can affect print quality and/or paper movement.
Printer pickup roller	RF0-1008-000CN	25,000	Look for glazing and/or cracks.
Printer separation pad	RF0-1014-000CN	25,000	Can affect paper movement.
Printer subpads	RA0-1065-000CN	25,000	Can affect paper movement.
Fuser assembly (100-127 V)	RG9-1493-000CN	25,000	Can affect print quality and paper movement.
Fuser assembly (220-240 V)	RG9-1494-000CN	25,000	Can affect print quality and paper movement.
Copier/scanner separation pad kit	RY7-5055-000CN	10,000	Can affect document movement.
Copier/scanner	R37-5020-000CN	10,000	Can affect document movement.

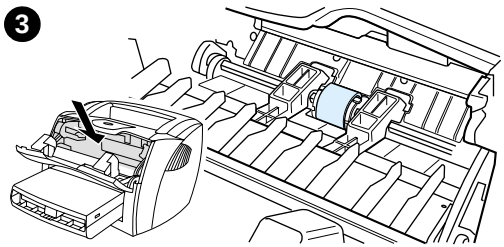
* The estimated toner cartridge life is based on letter- or A4-sized paper with an average of five percent toner coverage and a medium density setting. Toner cartridge life can be extended further by conserving toner using draft mode settings.

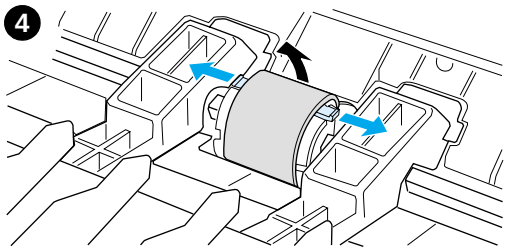
User-replaceable parts

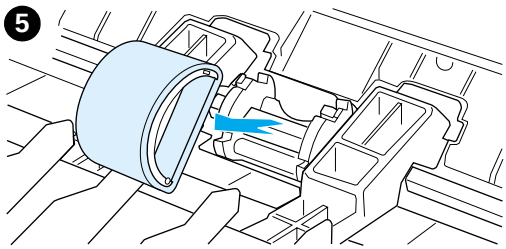
Replace the copier/scanner separation pad, the printer pickup roller, and the printer separation pad when the parts are near the end of their life expectancies or if media frequently misfeeds.









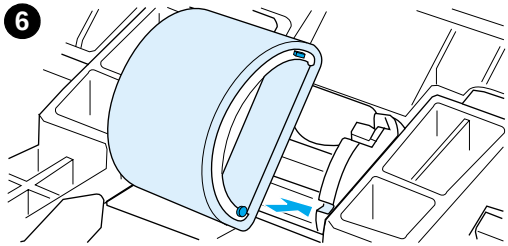


Replacing the printer pickup roller

If the printer regularly misfeeds (no media feeds through), you might have to replace or clean the pickup roller.

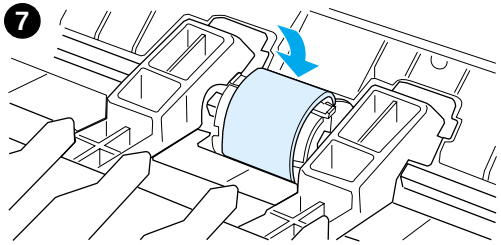
CAUTION
Failure to complete this procedure might damage the printer.

1. Unplug the power cord from the printer, and allow the printer to cool.
2. Open the toner cartridge door, and remove the toner cartridge.
3. Locate the pickup roller.
4. Release the small, white tabs on each side of the pickup roller by pushing them away from the roller, and then rotate the pickup roller toward the front.
5. Gently pull the pickup roller up and out.



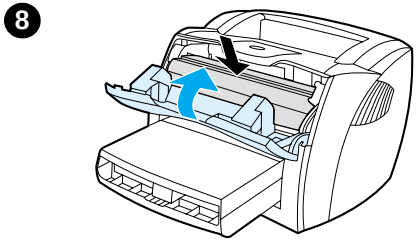
6 Position the new pickup roller in the slot of the previous pickup roller.

Note
Circular and rectangular pegs on each side prevent you from incorrectly positioning the pickup roller.

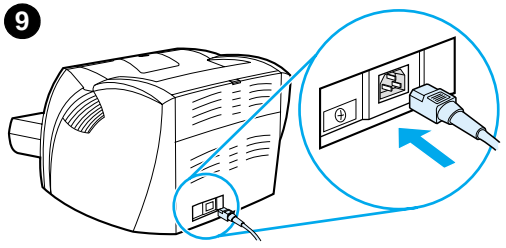


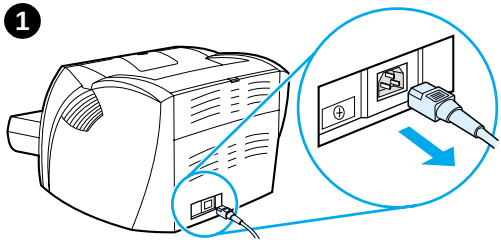
7 Rotate the top of the new pickup roller into position until the white tabs on each side of the roller snap the roller into place.

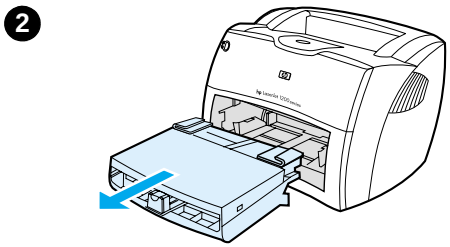
8 Reinstall the toner cartridge, and close the toner cartridge door.

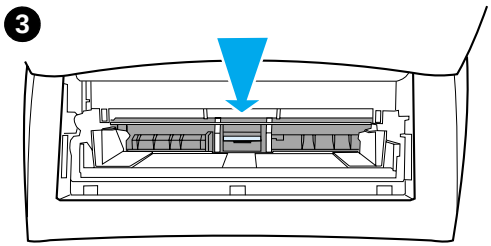


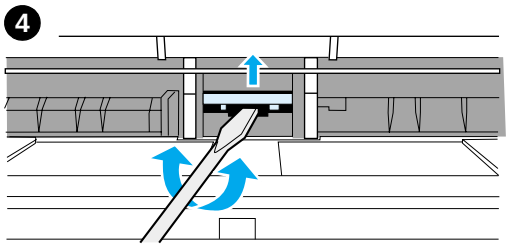
9 Plug the printer in to turn it back on.

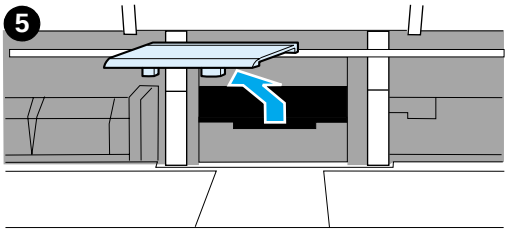










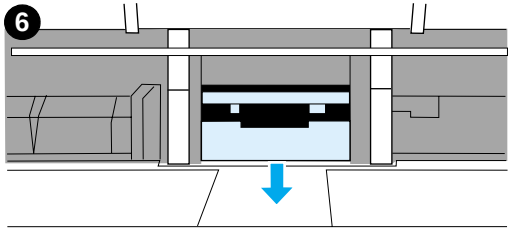


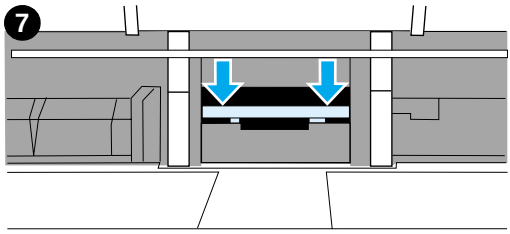
Replacing the printer separation pad

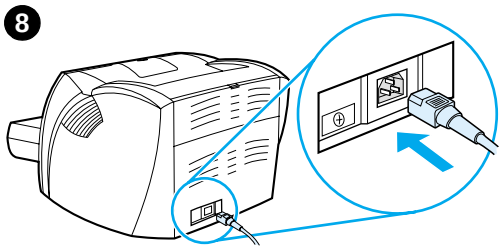
Note
Before you change the separation pad, clean the pickup roller. See “Cleaning the printer pickup roller” on page 49 for instructions.

If the input tray feeds more than one page at a time, you might have to replace the printer separation pad. Recurring feed problems indicate that the printer separation pad is worn.

1. Unplug the power cord from the printer, and allow the printer to cool.
2. Remove the input trays.
3. Locate the blue separation pad.
4. To pry the separation pad up from the spring-loaded base, insert a flat-edged screwdriver in the slot under the separation pad and twist until the tabs are free.
5. Reach in through the input tray opening, push the spring-loaded base down with one hand, and pull the separation pad up with the other hand.







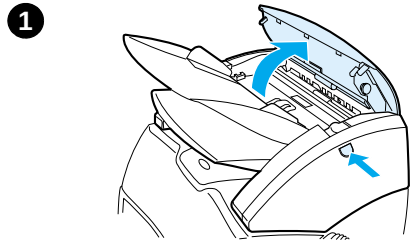
6 With one hand, reach through the input tray opening, and push the spring-loaded base down. With the other hand, position the new separation pad in the slot of the previous separation pad.

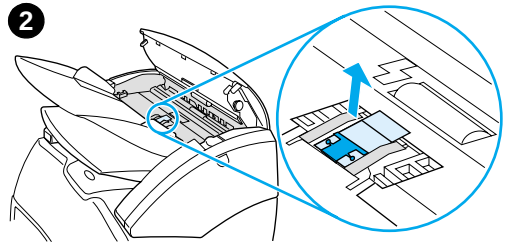
Note
The tab on the right is larger to help you position the separation pad correctly.

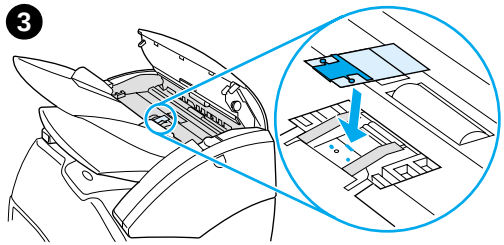
7 Snap both sides of the separation pad firmly into place.

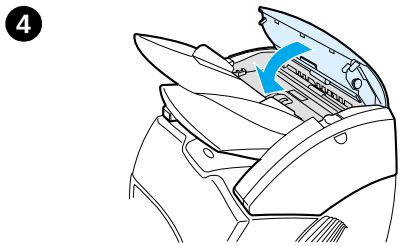
CAUTION
Make sure that the separation pad is straight and that there is no space between the separation pad and the spring-loaded base. If the separation pad is not straight or you see space on one side, remove the separation pad, make sure that the larger tab is on the right, reinsert the separation pad, and snap both sides into place.

8 Reinstall the input trays, and then plug the printer in to turn it back on.









Replacing the copier/ scanner separation pad

If the optional copier/scanner feeds more than one page at a time, you might have to replace the copier/scanner separation pad. Recurring feed problems indicate that the pad is worn.

1. Unplug the printer to turn the power off, and wait for the copier/scanner to cool.
2. Press the copier/scanner door release button and open the copier/ scanner door.
3. Locate the copier/scanner separation pad and lift it straight up.
4. Press the new pad into place.
5. Close the copier/scanner door.

Cleaning the equipment

WARNING! Before you perform these steps, unplug the printer to avoid shock hazard.

To maintain quality, thoroughly clean the printer:

- Any time a new toner cartridge is installed.
- After printing approximately 2,500 pages.
- Whenever print quality problems appear.

Clean the outside of the printer with a water-dampened cloth. Clean the inside with only a dry, lint-free cloth (such as a lens tissue).

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

WARNING! Avoid touching the heating element in the fuser. It might be very hot and can cause burns.

CAUTION Do not touch the surface of the black sponge transfer roller. Contaminants on the roller can cause print quality problems.

Cleaning the print path

Use this process if you discover toner specks or dots on printouts. This process produces a transparency with toner debris, which should be discarded.

Note

This process requires a transparency to remove dust and toner from the print paper path. Do not use bond or rough paper.

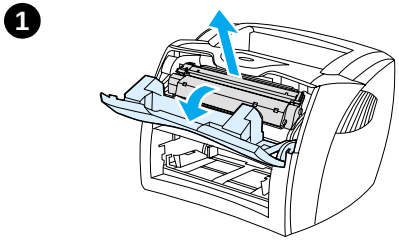
Make sure the transparency you use meets media requirements for the printer.

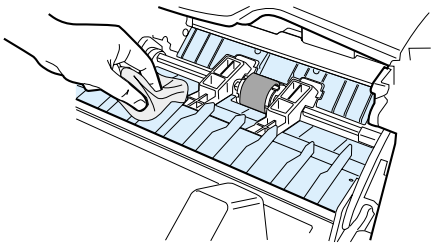
If transparency film is unavailable, you can use paper. If you must use paper, perform the procedure two or three times to ensure proper cleaning.

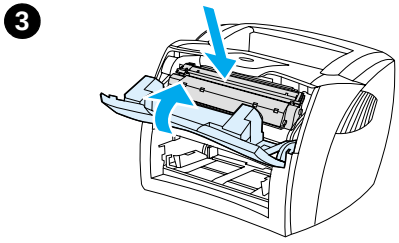
1. Load a transparency in the priority input tray.
2. Make sure that the printer is in the Ready state.
3. Press and hold the Go button for 10 seconds. The transparency feeds through the printer slowly. Discard the transparency.

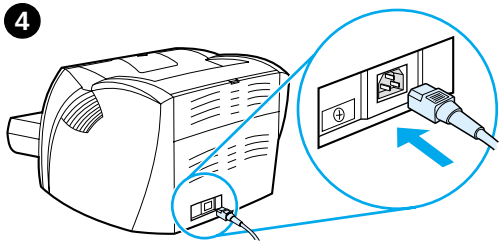
Note

After you press and hold the Go button, the three printer lights blink until the cleaning process is complete.









Cleaning the toner cartridge area

Cleaning the toner cartridge area can improve the quality of your printed sheets.

WARNING!
Before cleaning the printer, disconnect it from the power source and wait for the printer to cool.

1 Open the toner cartridge door, and remove the toner cartridge.

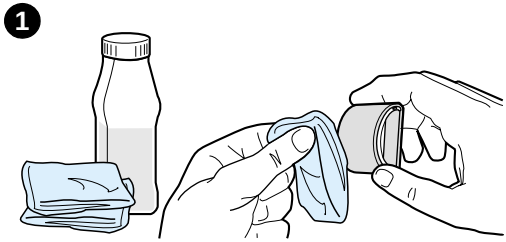
CAUTION
To prevent damage, do not expose the toner cartridge to light. Cover the toner cartridge if necessary. Also, do not touch the black sponge transfer roller inside the printer. Touching it can reduce the print quality of output.

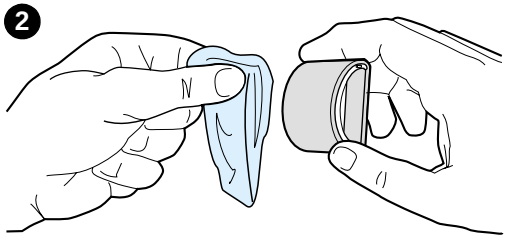
2 Wipe the media path area and the toner cartridge cavity with a dry, lint-free cloth.

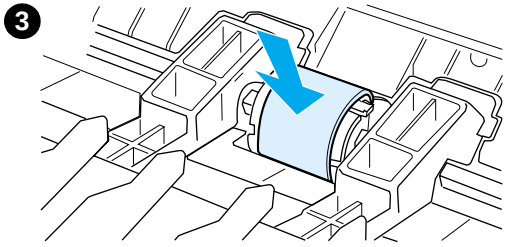
Note
Use only a dry, lint-free cloth to remove dust and toner. Using a vacuum or other device to clean inside the product can damage it.

3 Replace the toner cartridge, and close the toner cartridge door.

4 Plug the power cord back into the printer.







Cleaning the printer pickup roller

If you want to clean the pickup roller rather than replace it, follow the instructions below:

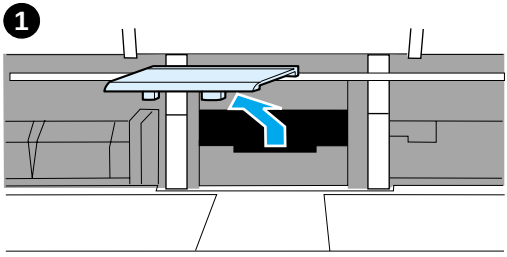
Remove the pickup roller as described in steps 1 through 5 of “Replacing the printer pickup roller” on page 41.

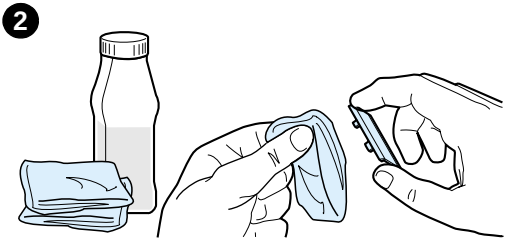
1 Dampen a lint-free cloth in isopropyl alcohol, and scrub the roller.

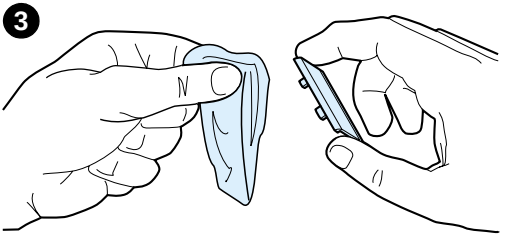
WARNING!
Alcohol is flammable. Keep the alcohol and cloth away from an open flame. Before you close the printer and plug in the power cord, allow the alcohol to dry completely.

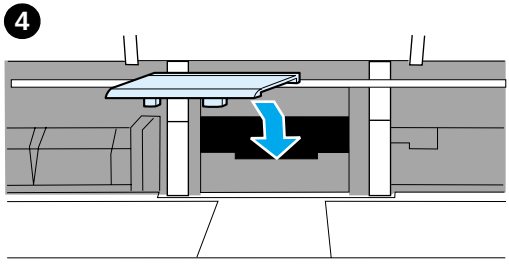
2 Using a dry, lint-free cloth, wipe the pickup roller to remove loosened dirt.

3 Allow the pickup roller to dry completely before you reinstall it in the printer. To reinstall the pickup roller, see steps 6 through 9 of "Replacing the printer pickup roller" on page 42.









Cleaning the printer separation pad

If you want to clean the separation pad rather than replacing it, follow the instructions below:

1. Remove the separation pad as described in steps 1 through 5 of “Replacing the printer separation pad” on page 43.
2. Dab a lint-free cloth in isopropyl alcohol, and scrub the pad.

WARNING!
Alcohol is flammable. Keep the alcohol and cloth away from an open flame. Before you close the printer and plug in the power cord, allow the alcohol to dry completely.

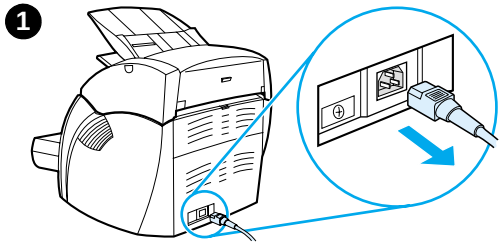
3. Using a dry, lint-free cloth, wipe the pad to remove loosened dirt.
4. Allow the pad to dry completely before you reinstall it in the printer. To reinstall the pad, see steps 6 through 8 of “Replacing the printer separation pad” on page 43.

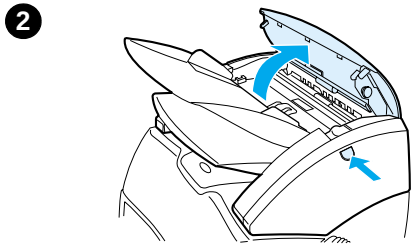
Cleaning and recalibrating the copier/scanner

Recalibrating the copier/scanner

The optional copier/scanner automatically calibrates to the white sheet opposite the image sensor at the beginning of each scan or copy job.

Keep the white sheet clean to make sure the optional copier/scanner calibrates correctly. See “Cleaning the scanner path” on page 51 for information about cleaning the white sheet.





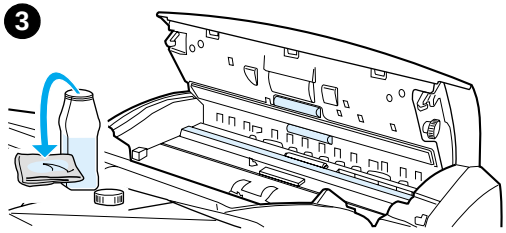
Cleaning the scanner path

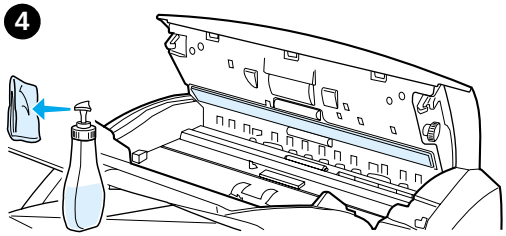
You might have to clean the copier/scanner if:

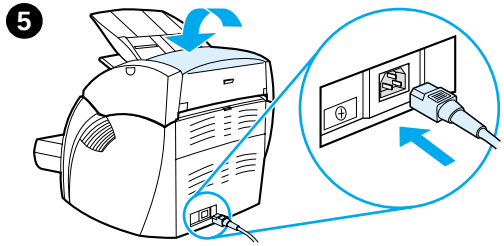
- You can smudge the ink on documents you scan.
- The documents have excessive amounts of dust or dirt on them.
- There are smudges or other marks on documents or scans of documents.
- The scanned output has lines or defects that were not on the original.

Note
Be careful not to touch the glass surface of the image sensor. If you inadvertently touch the glass, clean it according to the instructions below.

1. Unplug the printer to turn the power off, and wait for the copier/scanner to cool.
2. Open the scanner door.







3 Dampen a clean cotton cloth with isopropyl alcohol (pH7 or neutral pH). With the damp cloth, gently rub back and forth on the white sheet. Also, use the damp cloth to gently rub the rollers.

WARNING!
Alcohol is flammable. Keep the alcohol and cloth away from an open flame. Allow the alcohol to dry completely before you plug in the power cord.

4 Spray glass cleaner on another piece of clean cotton cloth, and carefully clean the glass on the image sensor.

WARNING!
Make sure that the scanner is completely dry before you plug in the printer power cord.

5 Plug the printer in to turn it back on.

4 Operational overview

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Basic functions

This chapter presents a functional overview of the printer's processes. The following systems are discussed:

- formatter
- printer functions
  - engine control unit (ECU) system/power system
  - image formation system
  - paper-feed system (printer) and
- optical system (optional copier/scanner)

The printer has an optional copier/scanner. Operation sequences of the printer are controlled by the ECU. Operation sequences of the optional copier/scanner are controlled by the formatter.

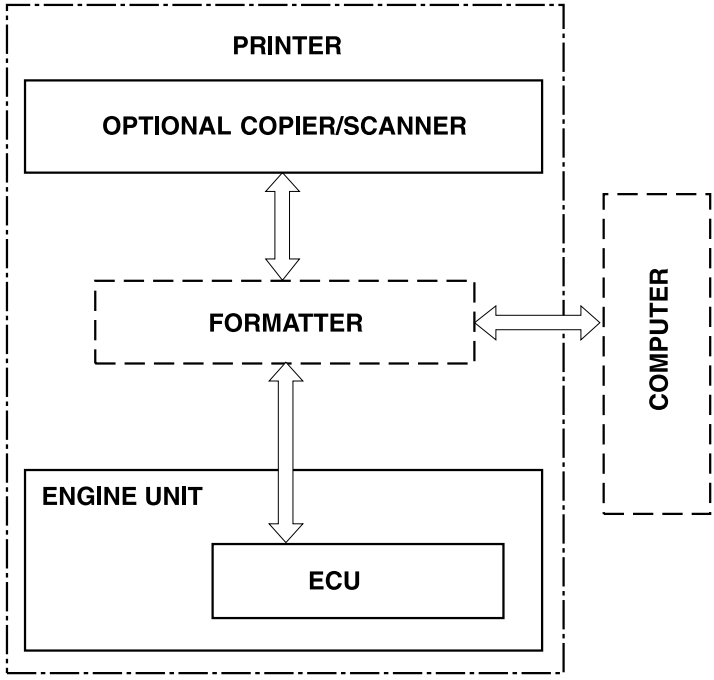


Figure 13. **Basic configuration**

Formatter system

The formatter is responsible for the following:

- controlling the optional copier/scanner
- formatting and controlling copies
- receiving and processing print data from the printer interface
- monitoring the control panel and relaying printer status information
- developing and coordinating data placement and timing with the print engine
- communicating with the host computer through the bidirectional interface

The formatter receives print data from the bidirectional Extended Capabilities Port (ECP) mode interface or Universal Serial Bus (USB) interface and converts it into a dot image. The ECU 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.

Central processing unit

The formatter incorporates an embedded Coldfire V3 microprocessor operating at 90 MHz.

RAM

- One bank of Non-Volatile RAM (NVRAM) stores parameters.
- Dynamic random access memory (DRAM) provides temporary storage of copy, scan, and print data.

Parallel interface or Universal Serial Bus interface

The formatter receives incoming data through its bidirectional ECP or USB interface. This interface provides high-speed, two-way communication between the printer and the host, allowing you to change printer settings and monitor printer status from the host computer.

Control panel

- three front panel status lights (one contained in the Go button)
- Go button

Draft mode

Depending on which printer driver is used, selecting draft or EconoMode from the printer driver allows the printer to use approximately fifty percent less toner, extending the life of the toner cartridge.

MEt

HP MEt effectively doubles the standard memory through a variety of font and data-compression methods.

Enhanced I/O

The Enhanced I/O feature allows printer memory to be used for storing data received from the host computer. When Enhanced I/O is enabled, you can send more data to the printer in shorter amounts of time, which allows you to return to your application sooner. Enhanced I/O has the following options:

- **Auto**—allows the printer to use Enhanced I/O memory allocation to increase the speed of data transfer from the host computer to the printer, if necessary. The default setting is Auto.
- **Off**—uses the minimum amount of printer memory for storing data sent from the host computer.
- **Page Protect**—allows the formatter to create the entire page image in page buffer memory before physically moving the media through the printer. This process ensures that the entire page will be printed. The default setting is Auto.

  Page complexity (ruling lines, complex graphics, or dense text) can exceed the printer's ability to create the page image fast enough to keep pace with the image formation process. If Page Protect is disabled and a page is too complex, the page might print in parts (for example, the top half on one page and the bottom half on the next page). Some print-data loss is likely in these instances, and the printer will display an error message.

PJL overview

Printer Job Language (PJL) is an integral part of configuration, in addition to the standard Printer Command Language (PCL). With standard ECP cabling, PJL allows the printer to perform functions such as:

- **Two-way communication** with the host computer through a bidirectional parallel or USB connection. The printer can tell the host such things as the control panel status.
- **Isolation of print environment settings** from one print job to the next. For example, if a print job is sent to the printer in landscape mode, the subsequent print jobs print in landscape only if they are formatted for landscape printing.

Printer functions

Printer functions are divided into five groups:

- engine control
- formatter
- image formation
- laser/scanner
- pickup and feed

The following figure is a block diagram of the printer unit:

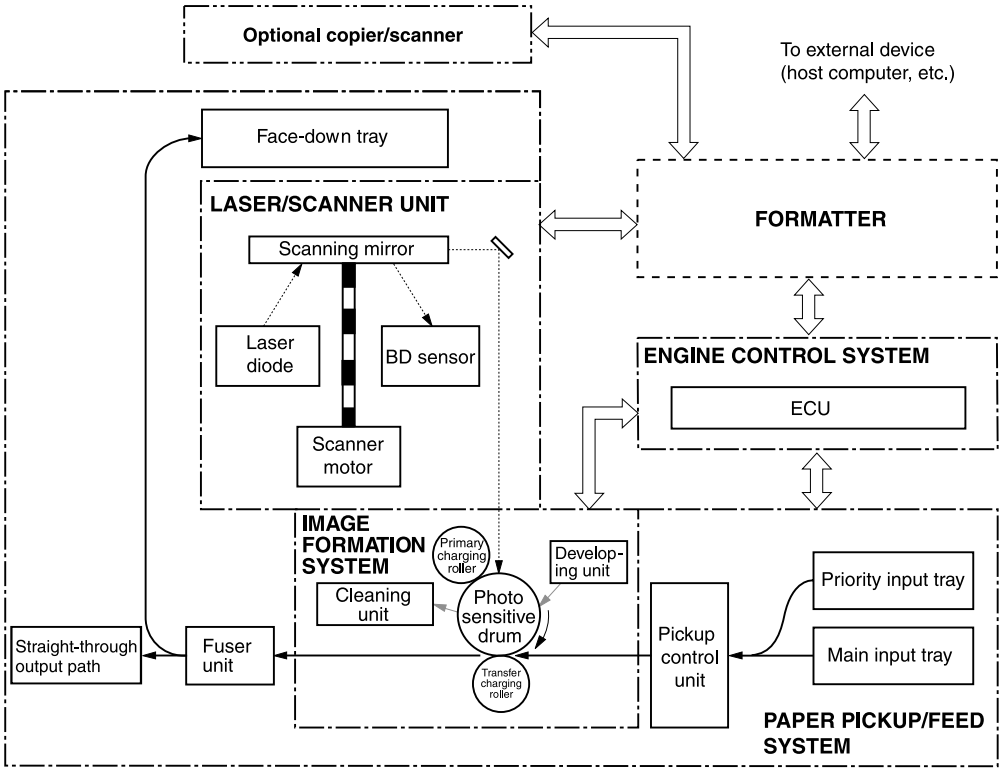


Figure 14. **Printer unit functional block diagram**

Engine control unit/power system

The engine control unit (ECU) coordinates all print engine activities, drives the laser, and coordinates print data from the formatter with the image formation process. The ECU also includes power supply and distribution circuitry.

Note

In several other HP LaserJet products, the ECU is also known as the controller PCA or the DC controller PCA.

The ECU controls the following systems and functions:

- **Printer engine control**
  - paper motion monitoring and control (printing)
  - motor
- **Printer laser/scanner**
- **Power system**
  - AC power distribution
  - DC power distribution
  - overcurrent/overvoltage protection
  - high-voltage power distribution

The following figure shows the various ECU loads:

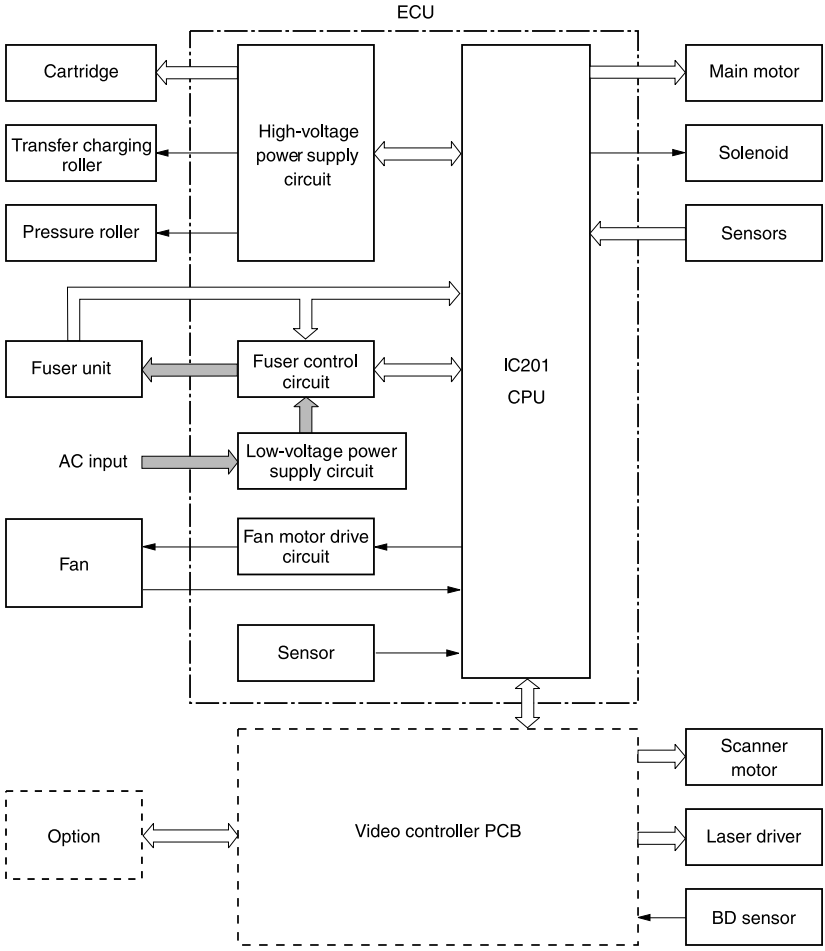


Figure 15. ECU loads

Printer engine control system

Paper motion monitoring and control

The ECU controls paper motion in the printer by continuously monitoring the various paper sensors and coordinating the timing with the other print processes.

For a detailed explanation of paper movement and the interaction of the photosensors and solenoid with the paper movement process, see “Printer paper-feed system” on page 67.

Motor

The motor is controlled by the ECU. The motor provides all of the printer paper movement.

Printer laser/scanner drive

The ECU sends signals to the laser/scanner assembly to modulate the laser diode “on” and “off” and to drive the laser/scanner motor.

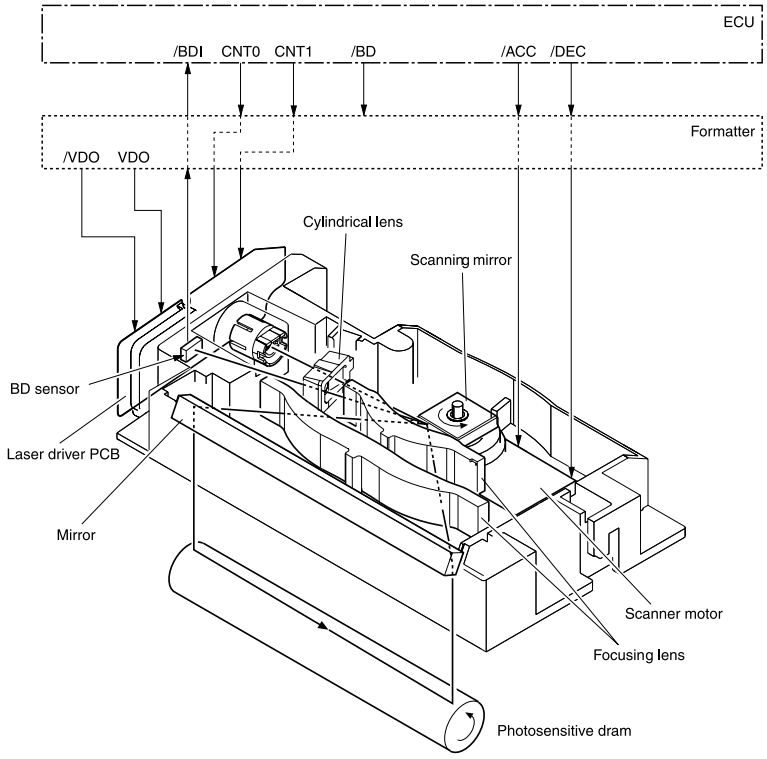


Figure 16. Overview of laser/scanner operation

Power system on ECU

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

AC power distribution

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

DC power distribution

The DC power distribution circuitry, located on the ECU, distributes +3.3 Vdc, +5 Vdc, and +24 Vdc as follows:

- +3.3 Vdc:
  - Formatter
  - Laser/beam detect circuitry ECU
  - Photosensors
- +5 Vdc:
  - Formatter
  - ECU
  - Laser/beam detect circuitry
- +24 Vdc:
  - Motor
  - Exhaust fan
  - Laser/scanner motor
  - Document scanner motor
  - Solenoid
  - Formatter (routing only)
  - High voltage power supply
  - Fuser safety circuit

Overcurrent/overvoltage

There are two overvoltage devices in this printer:

- Fuse F101 provides overcurrent protection for the fusing system circuitry. Checking or replacing the fuse requires the removal of the ECU. Fuse F102 provides overcurrent protection to the printer DC power supply circuitry.
- In addition, the +24 Vdc and +3.3 Vdc power circuitry contains an overcurrent protection circuit that automatically shuts off the output voltage when an overcurrent condition occurs as a result of a short or an abnormal voltage on the load side.

High-voltage power distribution

The high-voltage power supply applies an overlap of DC and AC voltage to the primary charging roller and the developing roller. This circuit also applies a positive or negative DC voltage to the transfer roller according to the instructions from the engine control unit.

This circuit also controls the image density by changing the primary AC voltage and the developing AC bias according to the print density setting.

High voltage is disabled when the printer door is open.

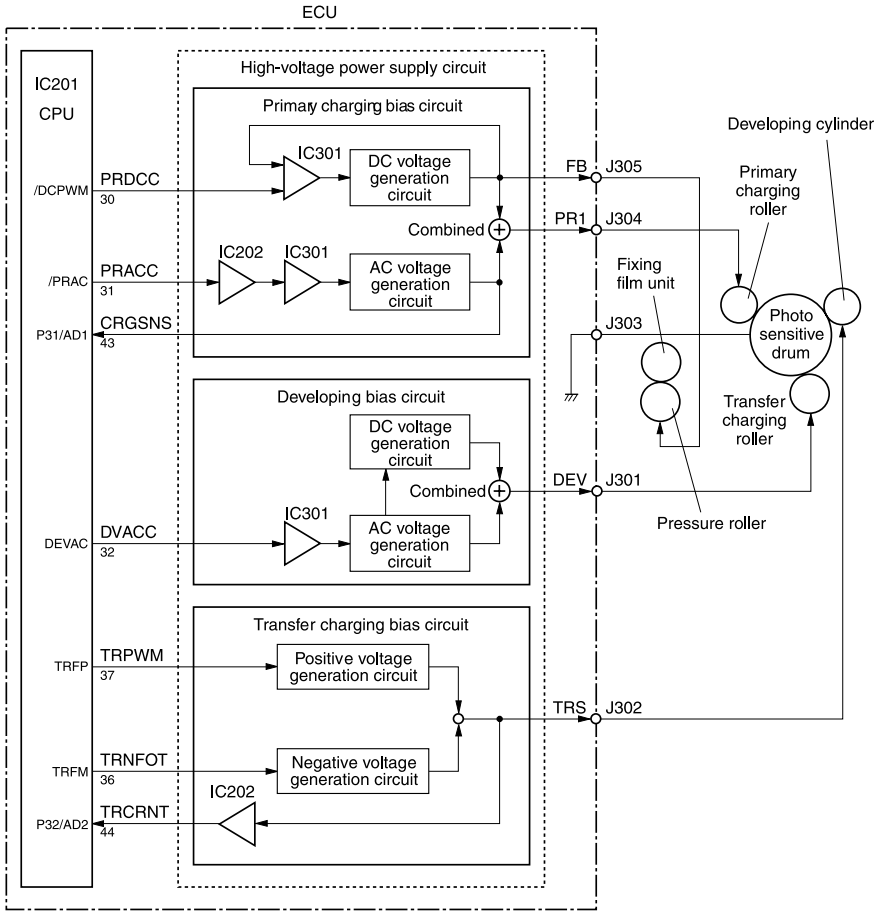


Figure 17. **High-voltage power supply circuit**

Image formation system

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 seven processes:

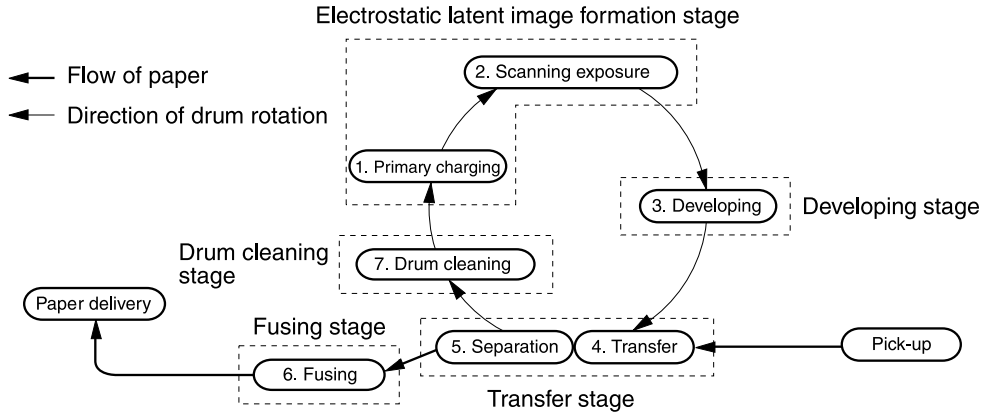


Figure 18. **Image formation block diagram**

Toner cartridge

As the focal point of the image formation system, the toner cartridge houses the cleaning, conditioning, and developing stages of the process. The toner cartridge contains the photosensitive drum primary charging roller, developing station, toner cavity, and cleaning station. By including these components (which wear, degrade, or are consumed) in the replaceable toner cartridge, the need for many service calls is eliminated. The special photosensitive properties of the drum form an image on the drum surface and then transfer the image to media.

CAUTION The printer toner cartridge does not include a light-blocking shutter. Do not expose the drum to light, which can permanently damage the drum. Protect the toner cartridge whenever removing it from the printer.

Breakdown of the seven image formation processes

1 **Conditioning stage (primary charging)—**This process applies a uniform negative charge to the surface of the drum with the primary charging roller, which is located in the toner cartridge. The primary charging roller is coated with conductive rubber. An AC bias is applied to the roller to erase any residual charges from any previous image. In addition, the primary charging roller applies a negative DC bias to create a uniform negative potential on the drum surface. The print density setting modifies the DC voltage.

2 **Writing stage (scanning exposure)—**During this process, a modulated laser diode projects the beam onto a rotating scanning mirror. As the mirror rotates, the beam reflects off the mirror, first through a set of focusing lenses, then off a mirror, and finally through a slot in the top of the toner cartridge, and onto the photosensitive drum. The beam sweeps the drum from left to right, discharging the negative potential wherever the beam strikes the surface. This creates a latent electrostatic image, which later is developed into a visible image.

   Because the beam sweeps the entire length of the drum while the drum rotates, the entire surface area of the drum can be covered. At the end of each sweep, the beam strikes the beam detect lens, generating the beam detect signal (BD signal). The BD signal is sent to the ECU where it is converted to an electrical signal used to synchronize the output of the next scan line of data.

3 **Developing stage—**During this process, the latent electrostatic image is present on the drum. The toner particles obtain a negative surface charge by rubbing against the developing cylinder, which is connected to a negative DC supply. The negatively charged toner is attracted to the discharged (exposed, grounded) areas of the drum, and it is repelled from the negatively charged (unexposed) areas.

4 **Transfer stage—**During this process, the toner image on the drum surface is transferred to the media. The transfer roller applies a positive charge to the back of the media, which attracts the negatively charged toner on the drum surface to the media. After separation, the drum is cleaned and conditioned for the next image.

5 **Separation stage—**During this process, the media separates from the drum. To stabilize the feed system and prevent toner dropouts on the printed image at low temperature and humidity, the static eliminator reduces the charge on the back of the media.

6 **Fusing stage—**During this process, the heat and pressure fuse the toner into the media to produce a permanent image. The media passes between a heated fusing element and a soft pressure roller, which melt the toner and press it into the media.

7 **Drum cleaning stage—**During this process, the cleaning blade is in contact with the surface of the drum at all times. As the drum rotates during printing, it wipes excess toner off the drum and stores it in the waste toner receptacle.

Printer paper-feed system

Step 1 The main input tray and the priority input tray merge into one, main input area. Media placed in any of these areas enables the paper-out sensor (PS201), which informs the ECU that media is present. The following steps occur when the printer receives a print job:

Step 2 The ECU enables the laser/scanner assembly and the motor. Paper motion begins when the ECU energizes the solenoid (SL001).

Step 3 The paper pickup roller rotates once. The paper lift plate pushes the media against the pickup roller.

Step 4 The pickup roller grabs the top sheet and advances it to the feed assembly drive rollers. To ensure that only one sheet is fed, a main separation pad and two subpads hold the remainder of the stack in place.

Step 5 The feed assembly drive rollers advance the media to the paper top sensor (PS402). This sensor informs the ECU of the exact location of the leading edge of media, so that the image being written on the photosensitive drum can be precisely positioned on the page.

Step 6 The feed assembly drive rollers then advance the media to the transfer area where the toner image on the photosensitive drum is transferred to media.

Step 7 After the image is transferred, the media enters the fuser assembly where heat from the fuser and pressure from the pressure roller permanently bond the toner image to media. The paper delivery sensor (PS401) determines that media has successfully moved out of the fusing area.

Step 8 The fuser assembly exit rollers deliver media to either the paper output bin or the straight-through output path, depending upon the position of the straight-through output path door.

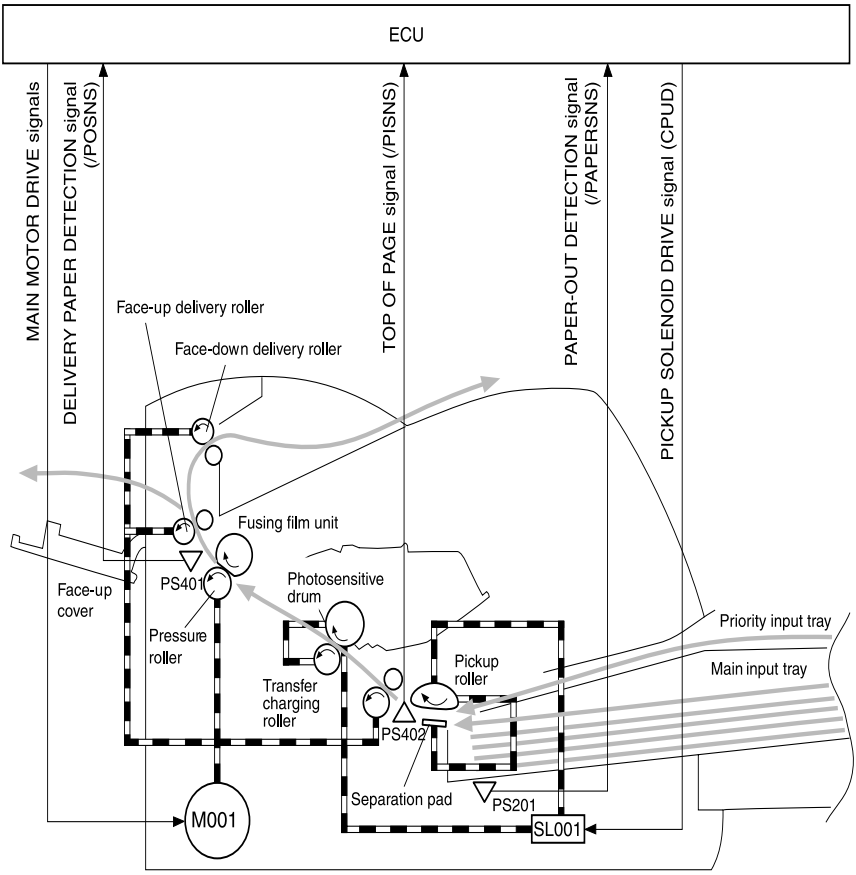


Figure 19. **Printer path**

Jam detection

The paper-out sensor (PS201) detects the presence of media in either the priority input tray or the main input tray. The paper top sensor (PS402) and the paper delivery sensor (PS401) detect media moving through the printer. If a jam is detected, the ECU immediately stops the printing process and displays a jam message on the control panel.

A jam can be detected under any of the following conditions:

- **Pickup delay jam—**Media does not reach the paper top sensor (PS402) after the pickup solenoid (SL001) has been turned on twice (the original pickup plus a retry) within 2.8 seconds.
- **Pickup stationary jam—**The paper top sensor (PS402) does not detect the trailing edge of media within 4.6 seconds of detecting the leading edge.
- **Delivery-delay jam—**The paper delivery sensor (PS401) does not detect the leading edge of media within 2.1 seconds after the paper top sensor (PS402) detects the leading edge.
- **Wrapping jam—**The paper delivery sensor (PS401) does not detect the trailing edge of the media within 1.5 seconds after the paper top sensor (PS402) detects the leading edge and within ten seconds after the paper delivery sensor (PS401) detects the leading edge.
- **Delivery-stationary jam—**The paper delivery sensor (PS401) does not detect the leading edge of media within 2.2 seconds after the paper top sensor (PS402) detects the trailing edge.
- **Residual paper jam—**The paper top sensor (PS402) or the paper delivery sensor (PS401) detect media in the initial rotation period.

Solenoid, photosensors, and switches

The following figure shows the locations of the solenoid, photosensors, and switches.

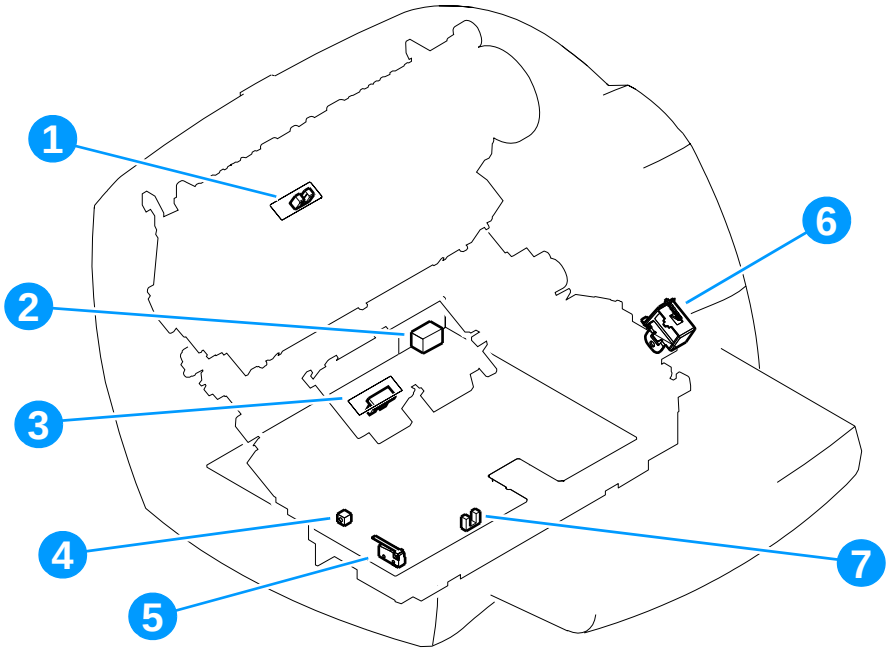


Figure 20. **Solenoid, photosensors, and switches**

1 Paper delivery sensor (PS401) senses when paper has successfully moved out of the fusing area.

2 Power switch.

Note Products sold in North America do not have power switches.

3 Paper top sensor (PS402) detects the leading and trailing edges of the paper. It synchronizes the photosenstive drum and the top of the paper.

4 Engine test switch (SW201); see “Engine test” on page 149 for an explanation of the switch.

5 Door-open switch (SW301) detects whether or not the printer door is closed and the toner cartridge is present. Printing cannot continue until the printer door is closed and the toner cartridge is in its correct position.

6 Solenoid (SL001) enables the pickup roller.

7 Paper-out sensor (PS201) senses when paper is in the main input tray or the priority input tray.

Optional copier/scanner

The optional copier/scanner consists of the optical system and the document pickup and feed systems.

Optical system

The optical system, also known as the contact image sensor, contains the following:

- light-emitting diode (LED) array
- contact glass
- rod lens array
- sensor array

The light source has three LEDs and is controlled by the formatter. Light reflected from documents passes through the rod lens array and focuses on the sensor array.

The sensor array consists of 5,160 phototransistors: 15 driver circuits amplify the light reception output in units of 344 phototransistors. The image data is converted and sent from the driver circuits to the formatter.

Document pickup and feed systems

The document pickup and feed systems contain a pickup roller, feed roller, and delivery roller, all of which are driven by the copier/scanner motor (M1).

The document top sensor (U20) detects the top and bottom edges of the document.

Copier/scanner path

The following figure shows the copier/scanner path.

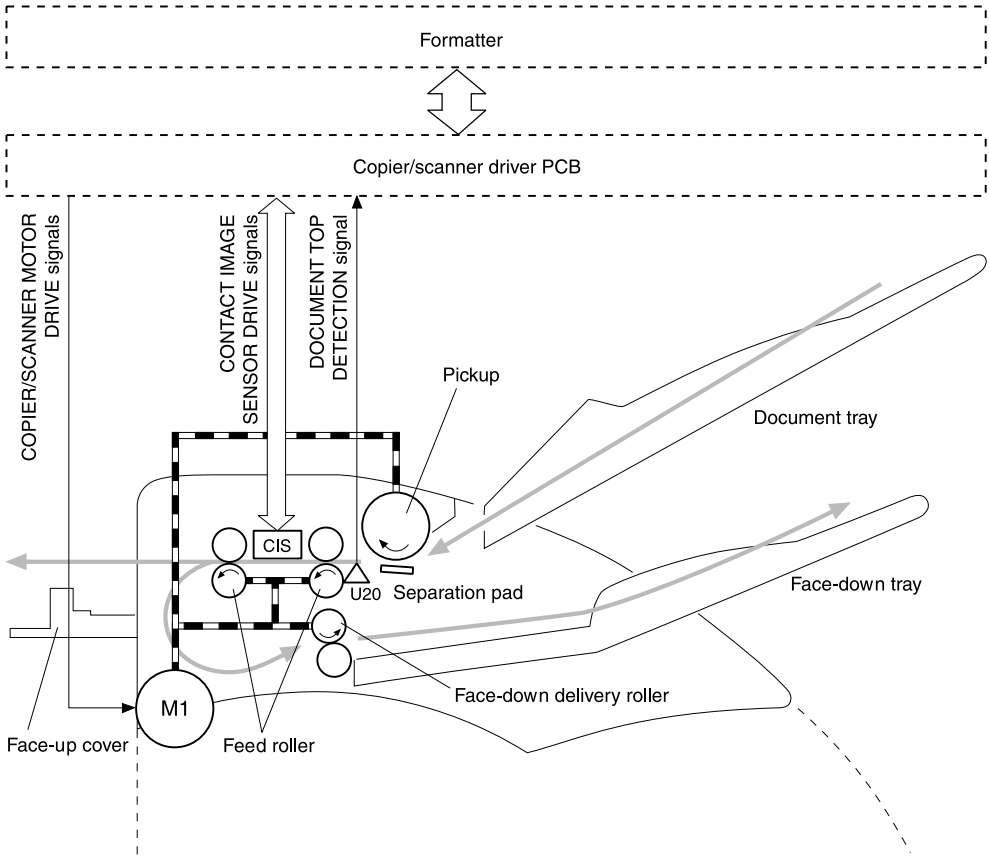


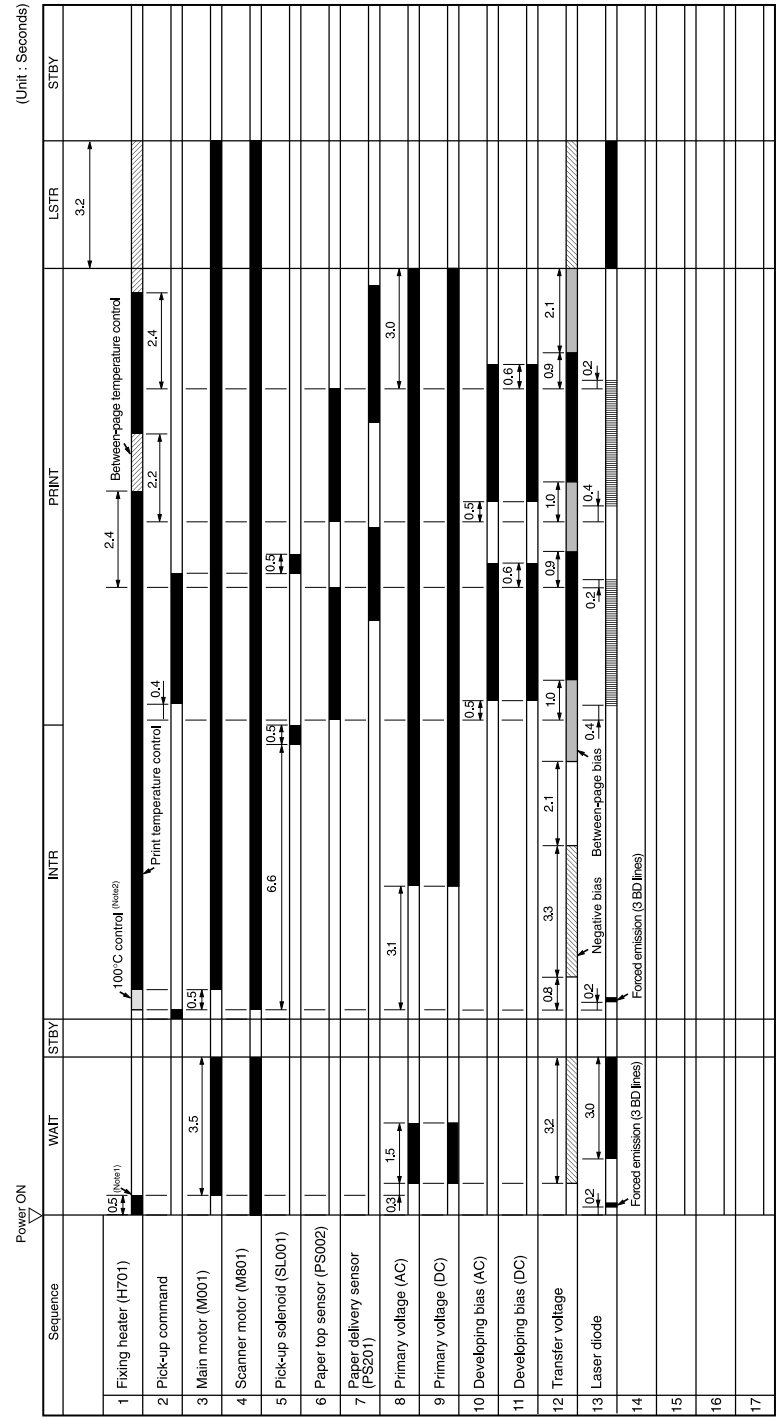
Figure 21. **Copier/scanner path**

Basic sequence of operation (formatter-to-printer)

The operation sequence of the printer is controlled by the microprocessor (CPU) on the ECU. The following events take place during normal printer operation:

Table 12. Basic sequence of operation

Period	Purpose	Remarks
WAIT After the printer is turned on until the end of the initial rotation of the main motor.	To clear the drum surface of potential and to clean the primary charging roller.	Detects whether or not the cartridge is installed.
STBY (Standby) From the end of the WAIT period or the LSTR period until the pickup command is input from the formatter. Or, from the end of the LSTR period until the printer is turned off.	To keep the printer ready to print.	
INTR (Initial Rotation Period) After the pickup command has been input from the formatter until the media reaches the paper top sensor (PS402).	To stabilize the photosensitive drum sensitivity in preparation for printing. Also to clean the primary charging roller.	
PRINT (Print) From the end of the initial rotation until the primary voltage goes OFF.	To form images on the photosensitive drum based on the VIDEO signals (/VDO, VDO) input from the formatter and to transfer the toner image onto the media.	
LSTR (Last Rotation Period) After the primary voltage goes OFF until the main motor stops rotating.	To deliver the last page. Also to clean the primary charging roller.	When the pickup command is input from the video controller, the printer enters the INTR period immediately after the end of the LSTR period.



Note1 : The heater is turned OFF when the thermistor temperature reaches 100°C.
Note2 : 100°C control is not executed when thermistor temperature is already 100°C.

Figure 22. General timing diagram

5 Removal and replacement

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Removal and replacement strategy

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

Replacement is generally the reverse of removal. Occasionally, notes are included to provide directions for difficult or critical replacement procedures.

WARNING! Unplug the power cord from the power outlet before attempting to service the printer. If this warning is not followed, severe injury can result. Certain functional checks during troubleshooting must be performed with power supplied to the printer. However, the power supply should be disconnected during removal.

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

The sheet metal edges of the printer can be sharp. Use caution when working on the printer.

CAUTION Some printer parts are electrostatic discharge (ESD) sensitive. Always perform service work at an ESD-protected workstation.

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

Always remove the toner cartridge before removing or replacing parts. See “Toner cartridge” on page 78.

Required tools

- #2 Phillips-head screwdriver with magnetic tip
- Small flatblade screwdriver
- Needle nose pliers
- ESD mat
- Penlight

CAUTION A PoziDriv screwdriver will damage screw heads on the printer. Use a #2 Phillips-head screwdriver.

Before performing service

- Remove all media from the printer.
- Unplug the power cable.
- Place the printer on an ESD mat.
- Remove the main input tray.
- If the optional copier/scanner is attached, remove the copier/scanner media input tray and the copier/scanner output bin.
- Remove the toner cartridge (see page 78).

Toner cartridge

Note You will feel resistance when you open the toner cartridge door.

1. Open the toner cartridge door, which lifts the toner cartridge toward you.
2. Remove the toner cartridge.

CAUTION To prevent damage, do not expose the toner cartridge to light. Cover it with a piece of paper.

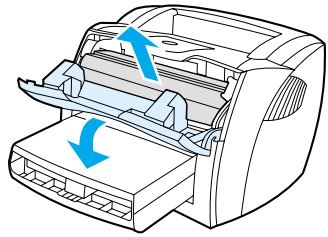
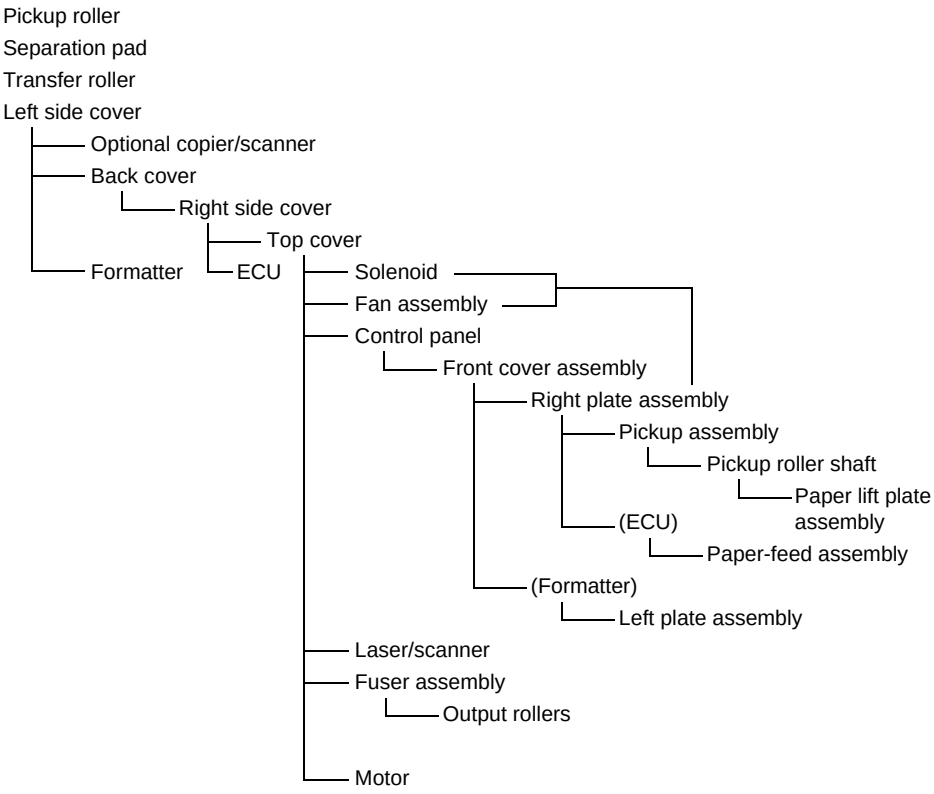


Figure 23. Removing the toner cartridge

Parts removal order

Use the following diagram to determine which parts must be removed before removing other parts:



Note

The ECU and the formatter are listed twice.

The ECU must be removed to gain access to the paper-feed assembly. To remove the ECU only, remove the right side cover.

The formatter must be removed to gain access to the left plate assembly. To remove the formatter only, remove the left side cover.

Left side cover

1. Open the toner cartridge door.
2. Pull out on the notch (callout 1) on the back of the cover.
3. Rotate the cover away from the printer.

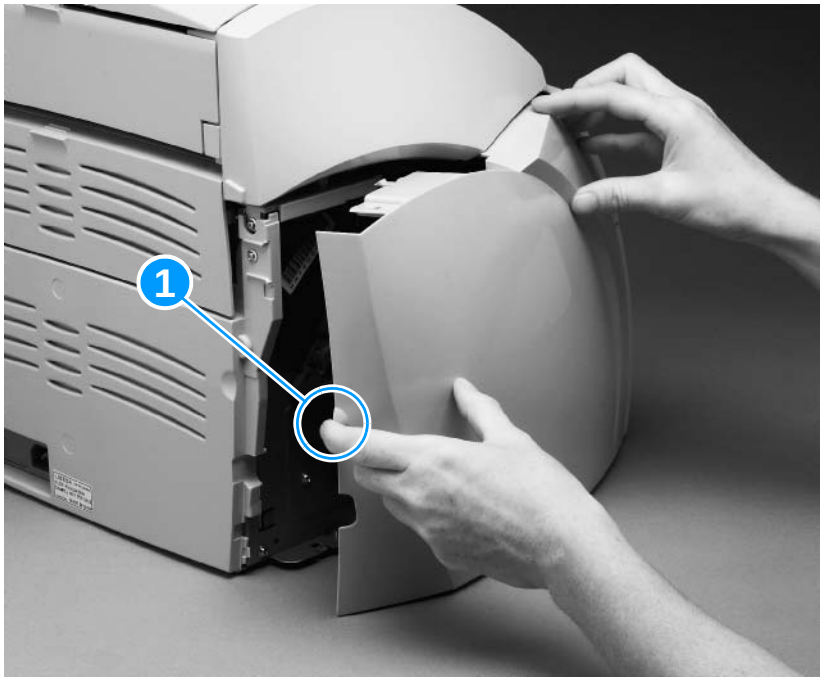


Figure 24. **Removing the left side cover**

Optional copier/scanner

CAUTION You must unplug the printer before removing or reinstalling the optional copier/scanner, or you might damage both the printer and the optional copier/scanner.

1. Remove the left side cover (see page 80).
2. Pull up on the ribbon cable to disconnect it from the connector (callout 1) on the formatter.

Note The optional copier/scanner has two tabs that hook into the underside of the printer output bin. Another tab and a pin stabilize the optional copier/scanner in the back. Use care so that you do not bend or break the three tabs or the pin.

3. Pull the optional copier/scanner forward (callout 2), and lift it up (callout 3) to remove it.

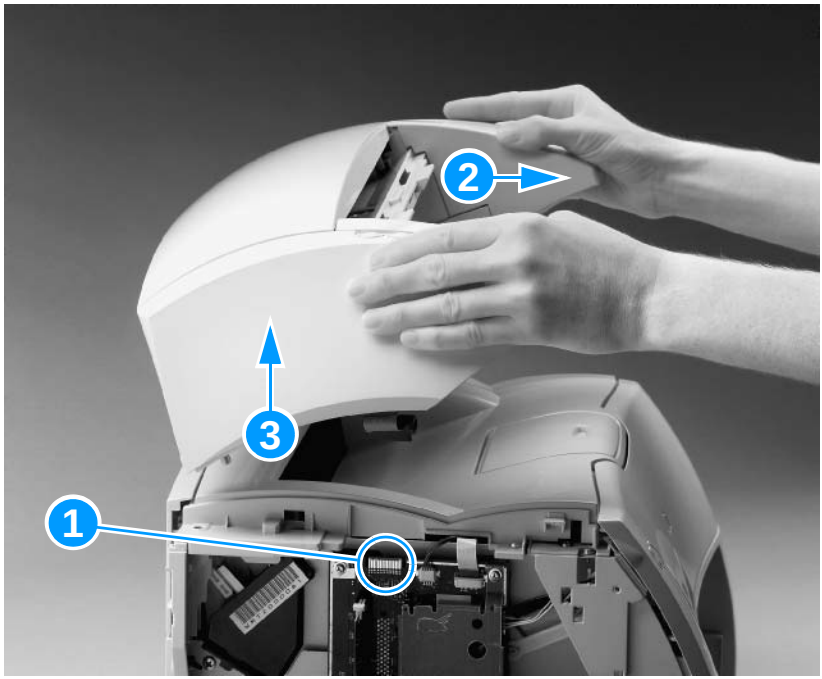


Figure 25. **Removing the optional copier/scanner**

Back cover

1 Remove the left side cover (see page 80).

2 Open the straight-through output door.

3 Remove two screws (callout 1) from the back of the printer.

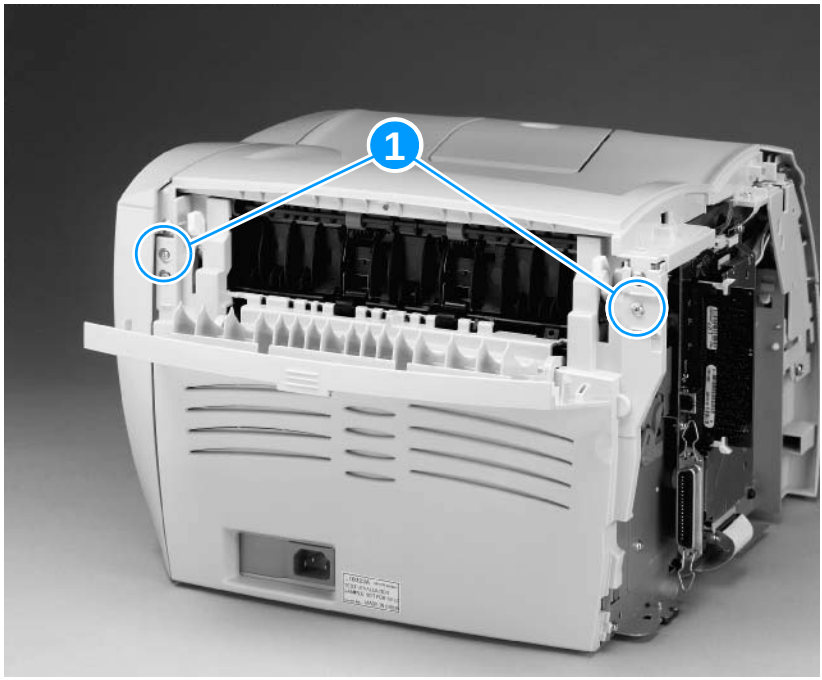


Figure 26. **Removing the back cover (1 of 2)**

4 Press down and hold the two release levers (callout 1) and pull the cover off of the printer.

Note The back cover has two tabs (not shown), one on each side of the printer. Step 4 releases these two tabs.

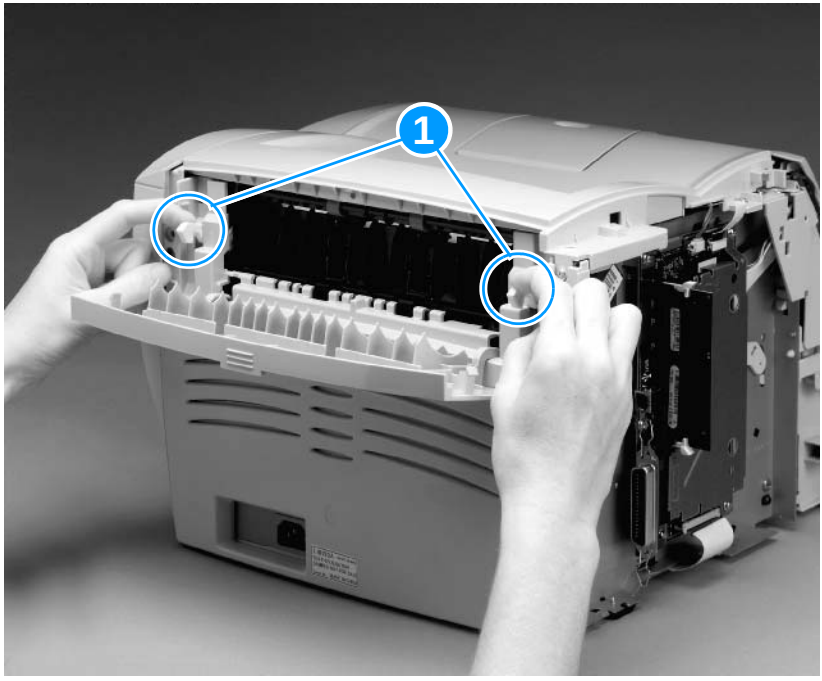


Figure 27. Removing the back cover (2 of 2)

Right side cover

1 Open the toner cartridge door.

2 Remove the back cover (see page 82).

3 Remove one screw (callout 1) on the back of the printer.

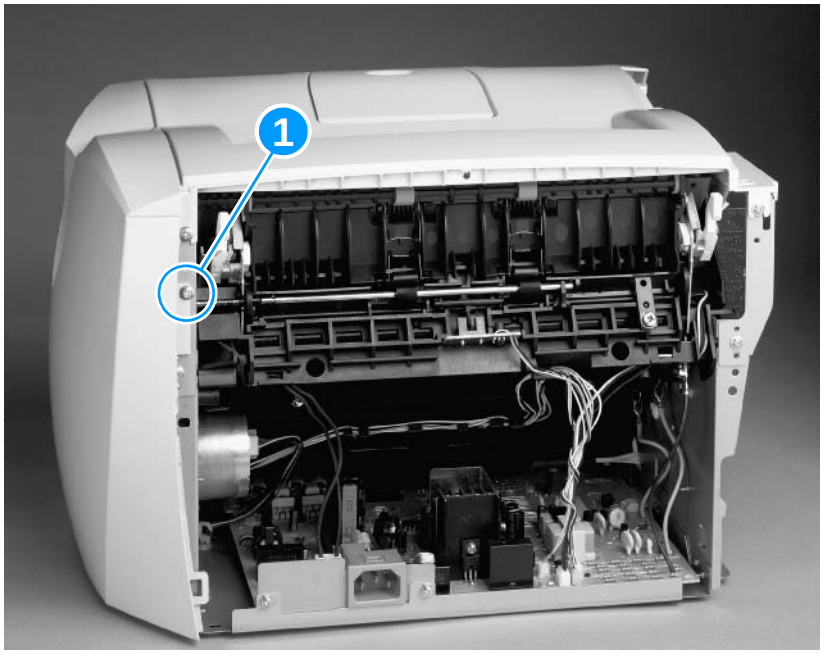


Figure 28. **Removing the right side cover (1 of 3)**

4 Lift the right side of the printer and release the tab (callout 1) on the bottom of the cover.

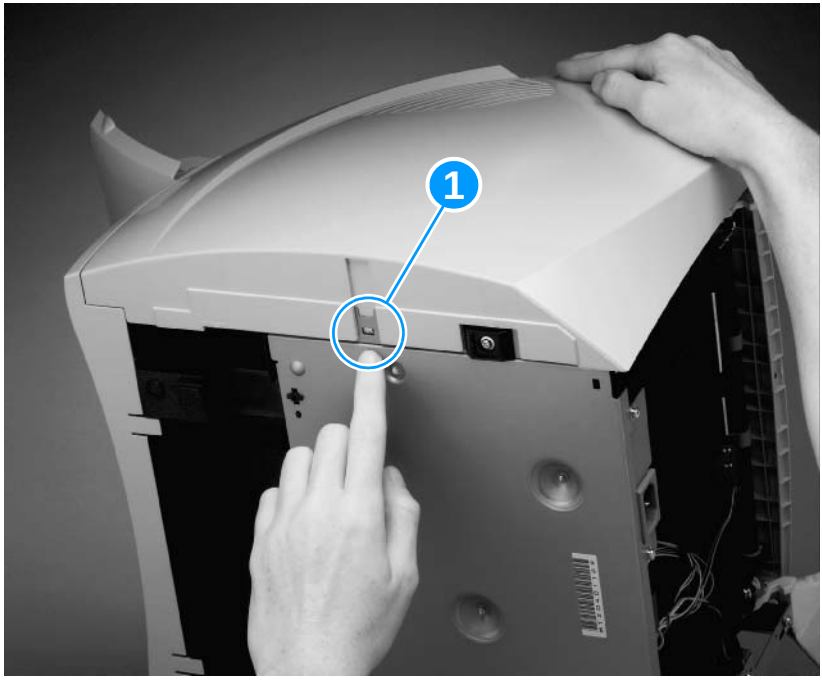


Figure 29. **Removing the right side cover (2 of 3)**

5 While continuing to press the release tab, grasp the top of the cover and rotate it away from the printer.

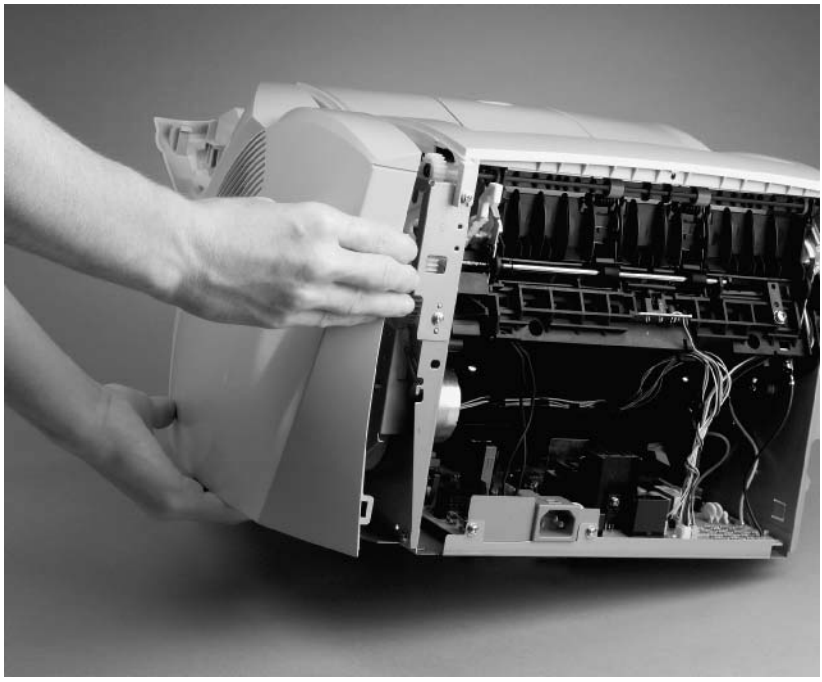


Figure 30. **Removing the right side cover (3 of 3)**

Top cover

1. If the printer has the optional copier/scanner attached, remove it (see page 81).
2. Remove the left side, back, and right side covers (see pages 80 through 86), and open the toner cartridge door.
3. Loosen two screws (callout 1) on the back of the printer.
4. Remove two screws (callout 2) on the top of the printer.
5. Lift the cover off of the printer.

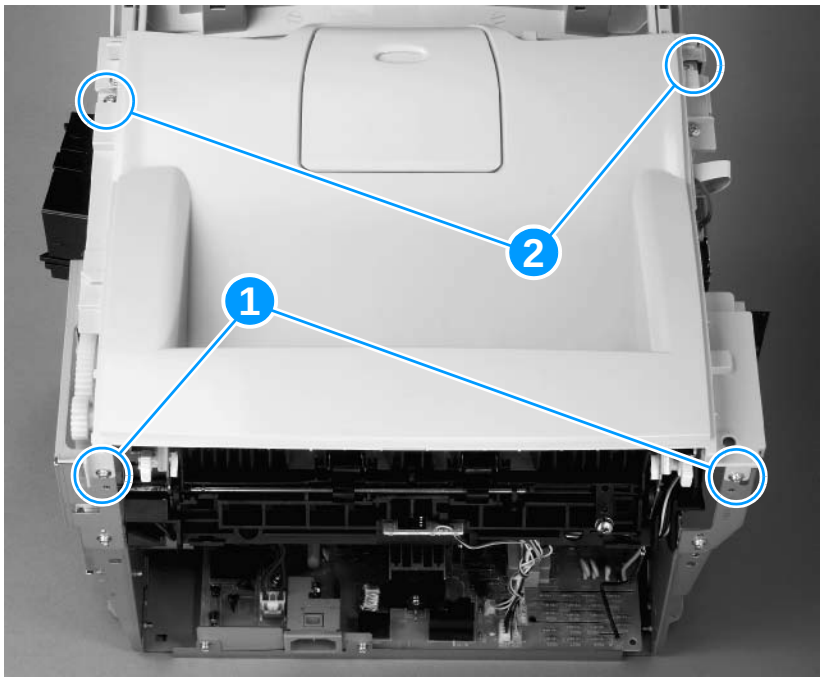


Figure 31. **Removing the top cover**

Control panel assembly

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Disconnect the control panel cable (callout 1) from the formatter.
3. Remove two screws (callout 2 and callout 3) from the top of the control panel assembly.

Note The first screw (callout 2) secures the control panel casing, and the second screw (callout 3) secures the internal bracket. Be sure to hold the assembly together as you remove it.

Rotate the control panel assembly toward the front of the printer to release the tab (callout 4).

4. Remove the control panel assembly.

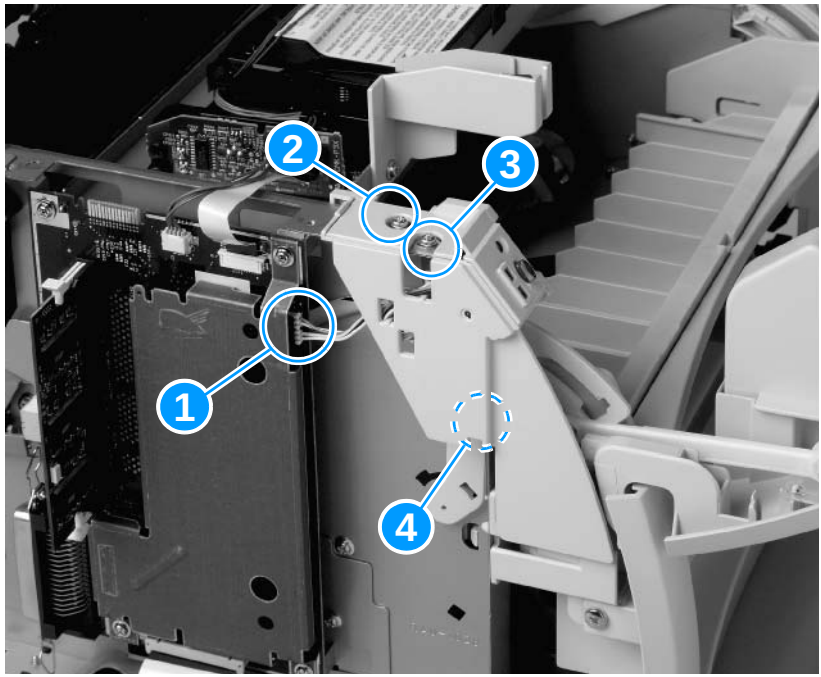


Figure 32. **Removing the control panel**

Front cover assembly

The front cover assembly is composed of three pieces:

- front cover (the frame that surrounds the main input tray)
- toner cartridge door
- front guide assembly (the internal shelf that attaches the front cover and the toner cartridge door to the printer)

Front cover

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Close the toner cartridge door.
3. Loosen two screws (one shown, callout 1), one on each side of the cover.

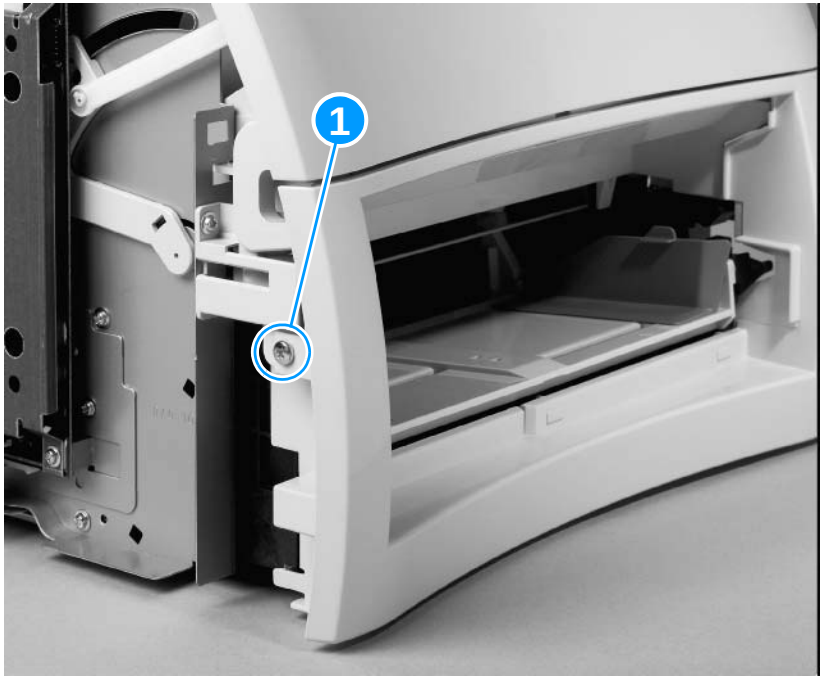


Figure 33. **Removing the front cover (1 of 2)**

4 Pull the top of the front cover away from the printer to release the three tabs (callout 1).

5 Lift the front of the printer to release the tabs on the bottom of the front cover.

6 Remove the front cover.

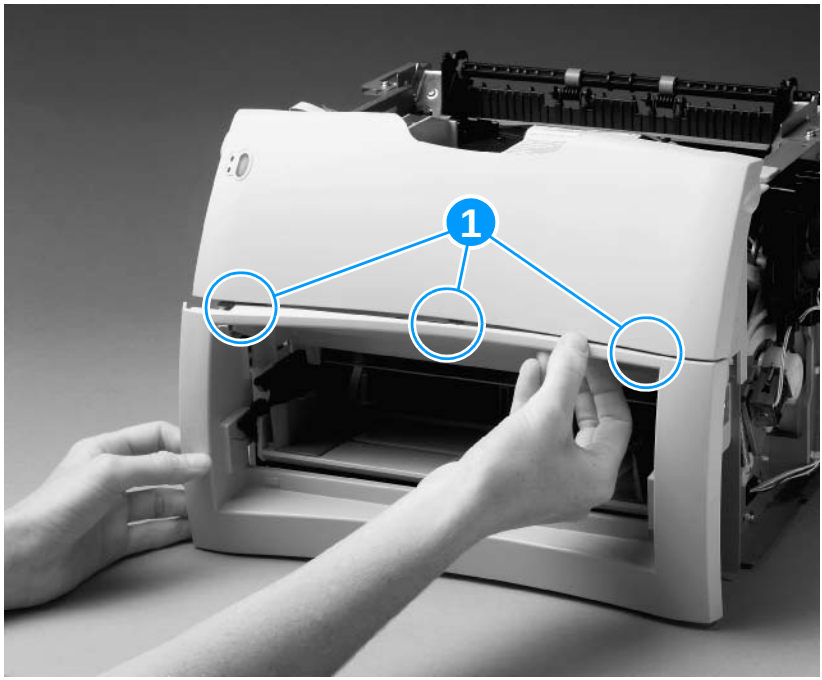


Figure 34. **Removing the front cover (2 of 2)**

Toner cartridge door

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Remove the control panel assembly (see page 88).
3. Remove the front cover (see page 89).
4. Open the toner cartridge door.
5. Remove one screw (callout 1) from the bracket on the right side of the printer, and remove the bracket.
6. At the right side, press the two small tabs (callout 2) on the inside of the connecting link to release it.
7. Repeat on the left side.

Note After the toner cartridge door is removed, it is easy to remove the two connecting links.

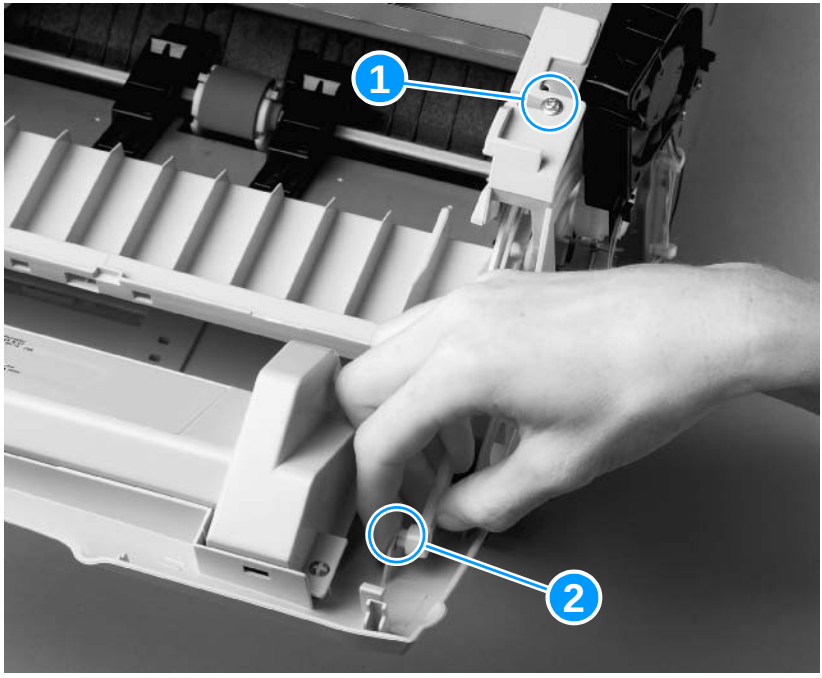


Figure 35. **Removing the toner cartridge door (1 of 2)**

8 Unhook the toner cartridge door hinge on the right side, and slide the toner cartridge door toward the left to remove it.

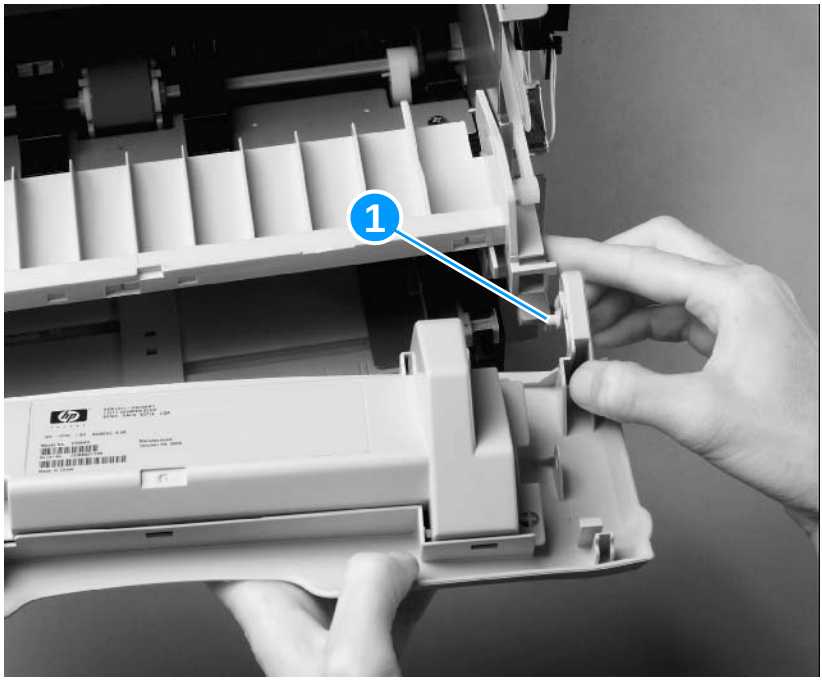


Figure 36. **Removing the toner cartridge door (2 of 2)**

To reinstall

Lift the toner cartridge door hinge above the stop (callout 1). Otherwise, the toner cartridge door will not close.

Front guide assembly

1 From the front of the printer, remove two screws (callout 1).

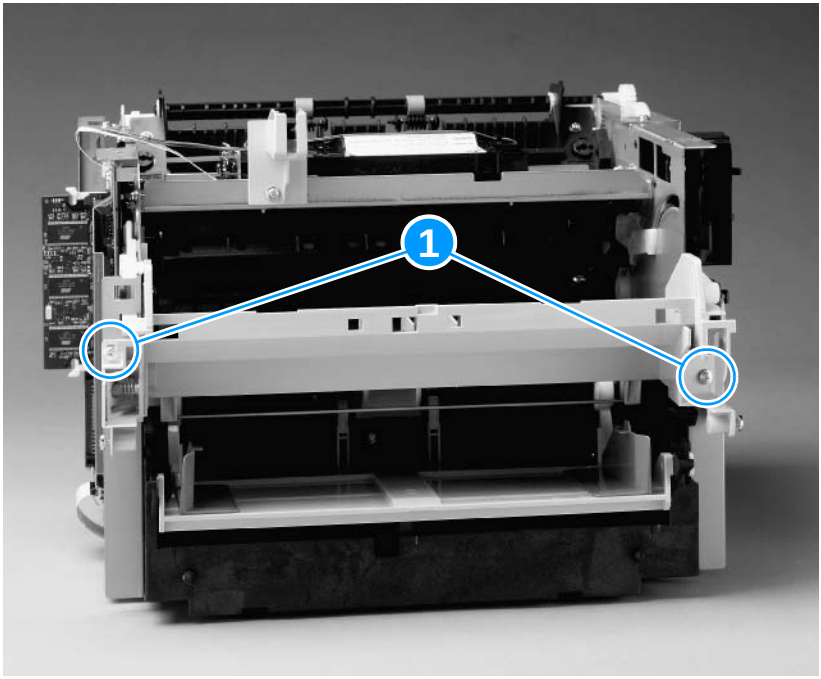


Figure 37. **Removing the front guide assembly (1 of 3)**

2 On the right side, release the lower tab (callout 1) and the upper tab (callout 2).

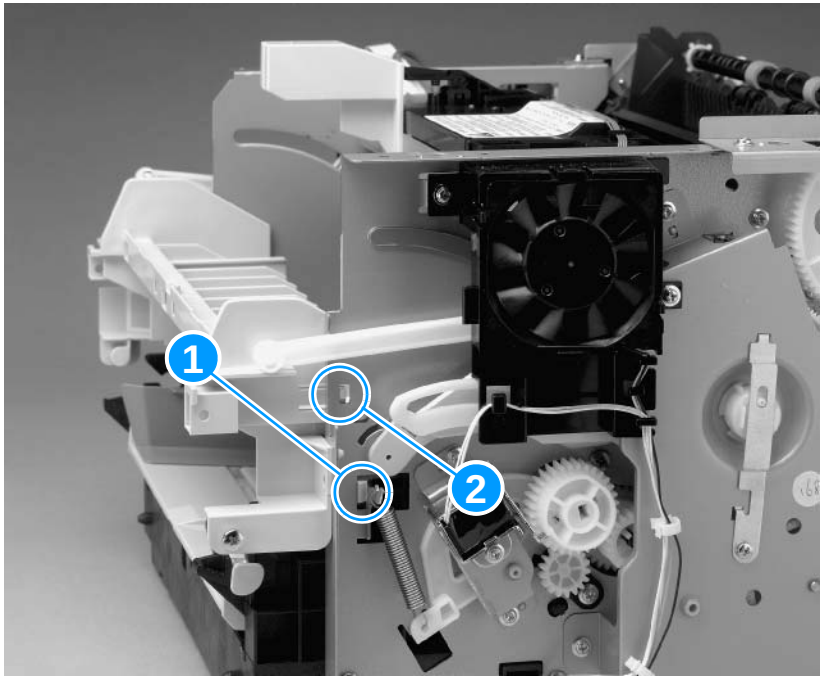


Figure 38. **Removing the front guide assembly (2 of 3)**

3 On the left side, release the upper tab (callout 1) and the lower tab (callout 2).

4 Remove the front guide assembly.

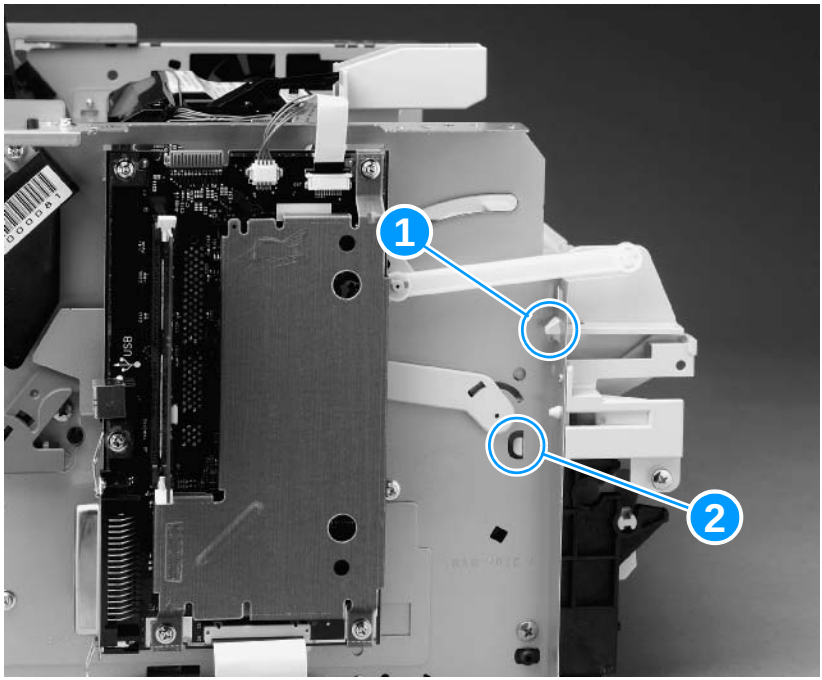


Figure 39. **Removing the front guide assembly (3 of 3)**

Transfer roller

1. Open the toner cartridge door and remove the toner cartridge (see page 78).
2. Use needle nose pliers to gently squeeze the two small tabs on the transfer roller.
3. Lift the transfer roller up, slide it to the right, and lift it out of the printer.

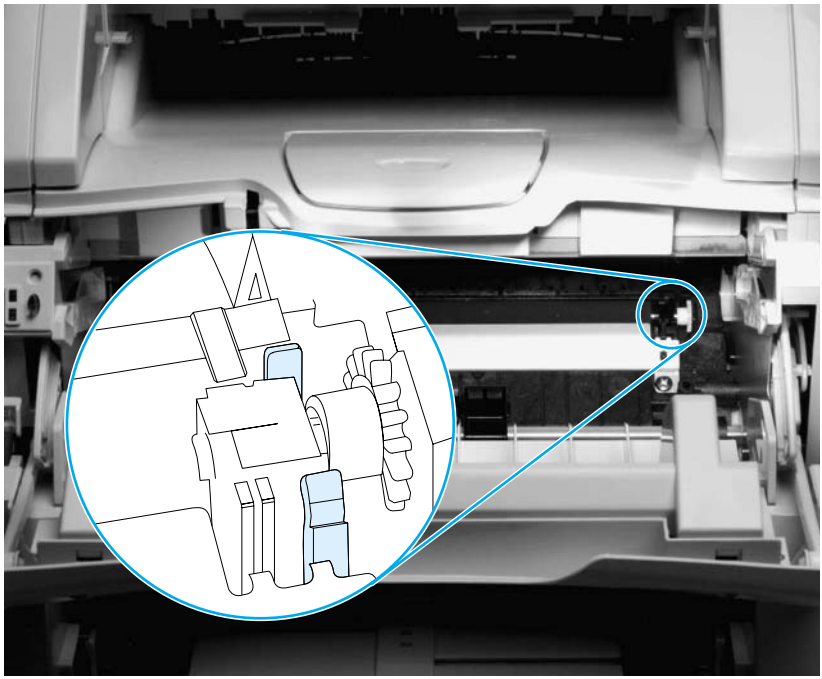


Figure 40. **Removing the transfer roller**

Note Do not misplace the small grounding spring that is underneath the right side of the transfer roller.

CAUTION Do not touch the black sponge portion of the transfer roller.

Formatter

1. Remove the left side cover (see page 80).
2. If the optional copier/scanner assembly is attached to the printer, disconnect the copier/scanner cable (callout 1) from the formatter.
3. Disconnect the two flat flexible cables (callout 2) from the zero insertion force (ZIF) connectors on the formatter.
4. Unplug the laser/scanner cable (callout 3) and the control panel cable (callout 4) from the formatter.

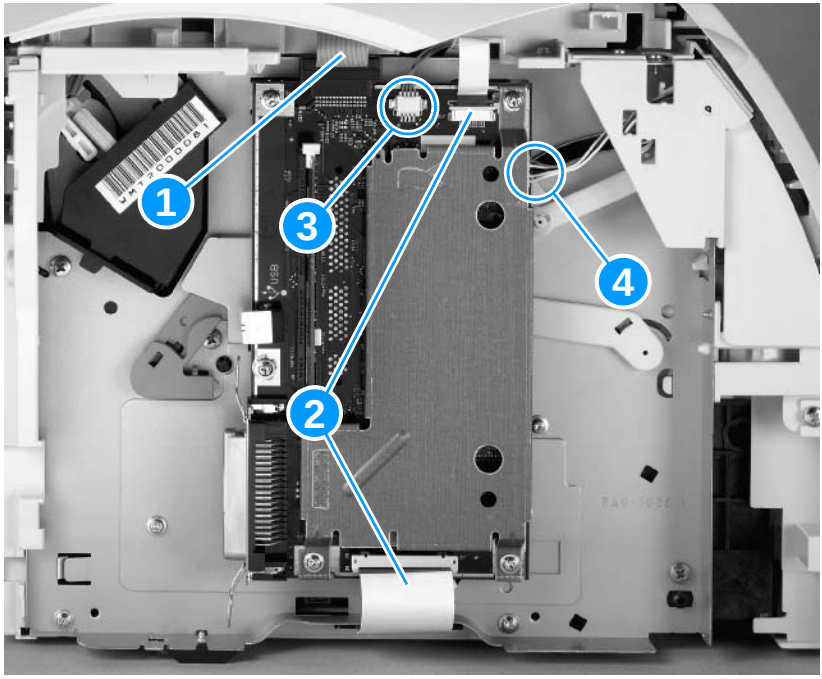


Figure 41. **Removing the formatter (1 of 2)**

5 Remove five screws (callout 1).

6 Rotate the formatter up and off of the hooks on the chassis and remove it from the printer.

7 Disconnect and remove the formatter shield.

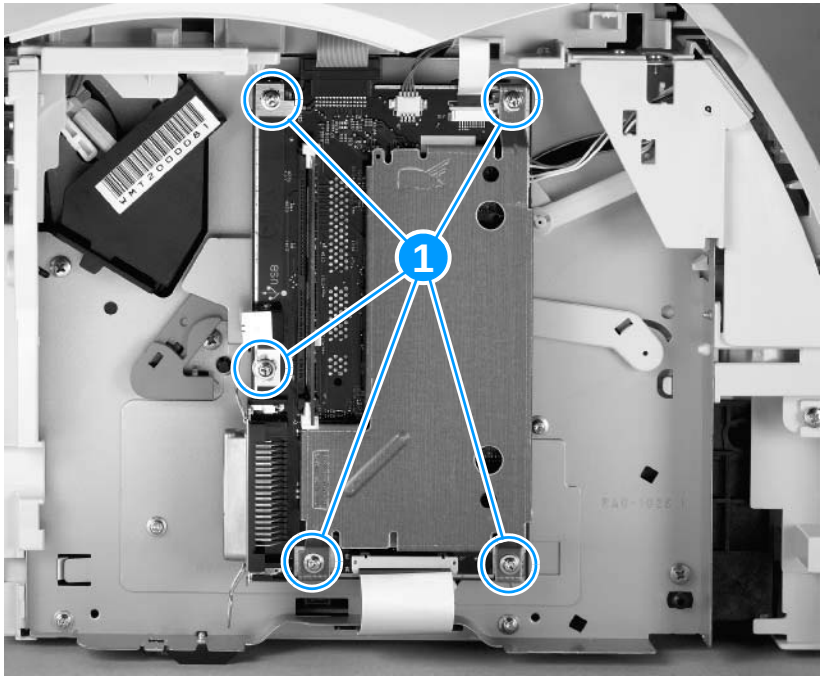


Figure 42. **Removing the formatter (2 of 2)**

To reinstall

When you reconnect the cable, make sure you lock the ZIF connectors back into place.

Laser/scanner assembly

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Disconnect the flat flexible cable from its socket (callout 1) on the laser/scanner.
3. Disconnect the cable connector (callout 2) from the formatter.

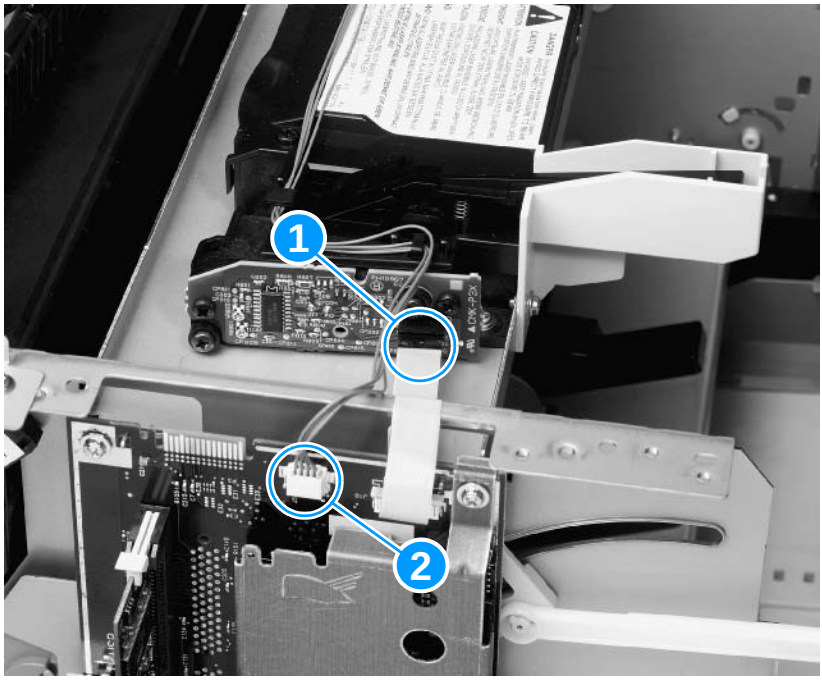


Figure 43. **Removing the laser/scanner (1 of 2)**

4 Release the two tabs (callout 1), one on each side of the shutter lever, and lift the shutter lever straight up to remove it.

Note

Make sure you do not misplace the small spring that is under the shutter lever.

5 Remove four screws (callout 2) and then lift the assembly off of the printer.

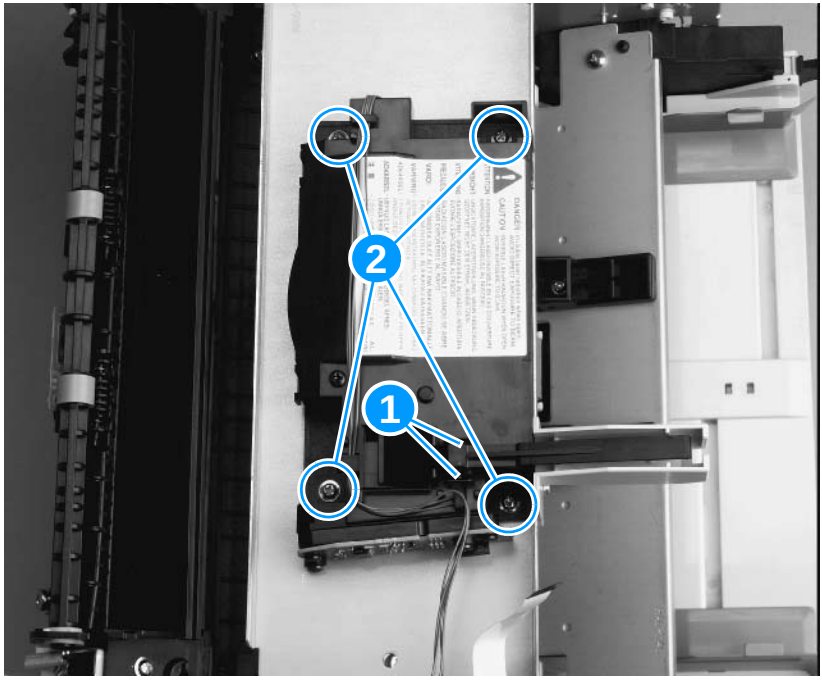


Figure 44. **Removing the laser/scanner (2 of 2)**

To reinstall

Insert the spring into the hole on the laser/scanner before you snap the shutter lever back into place.

Fuser assembly

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Remove two screws (callout 1) from the right fuser plate.
3. Remove a third screw (callout 2) from behind the large gear on the right fuser plate.

Note

You can access the third screw through the holes in the 69Tgear.

If you need to realign the 69T gear, you must first remove the pressure roller gear. Release the tab (callout 3) and remove the pressure roller gear from the printer.

4. Remove the bracket.

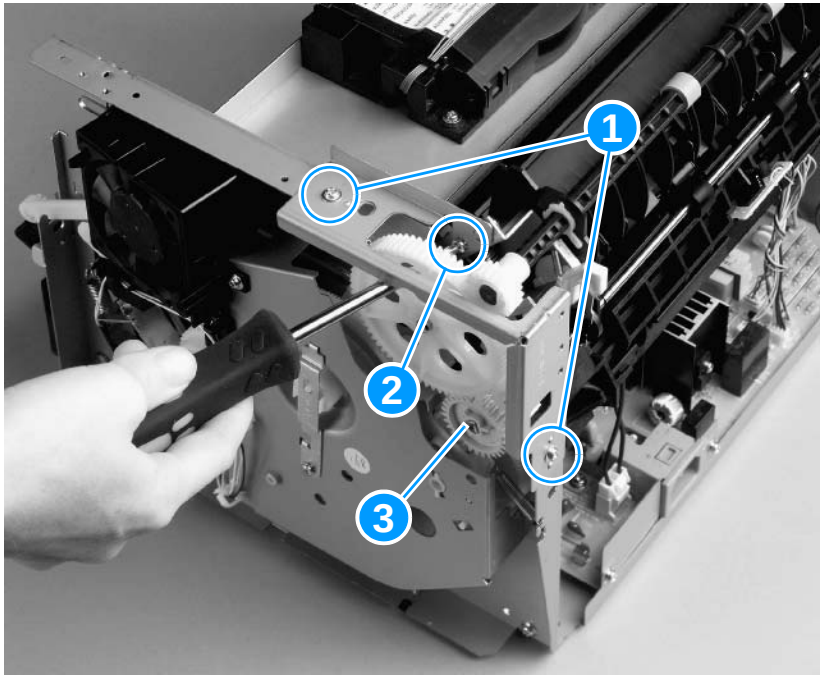


Figure 45. **Removing the fuser assembly (1 of 4)**

5 Remove three screws (callout 1) from the left fuser plate.

6 Remove the bracket.

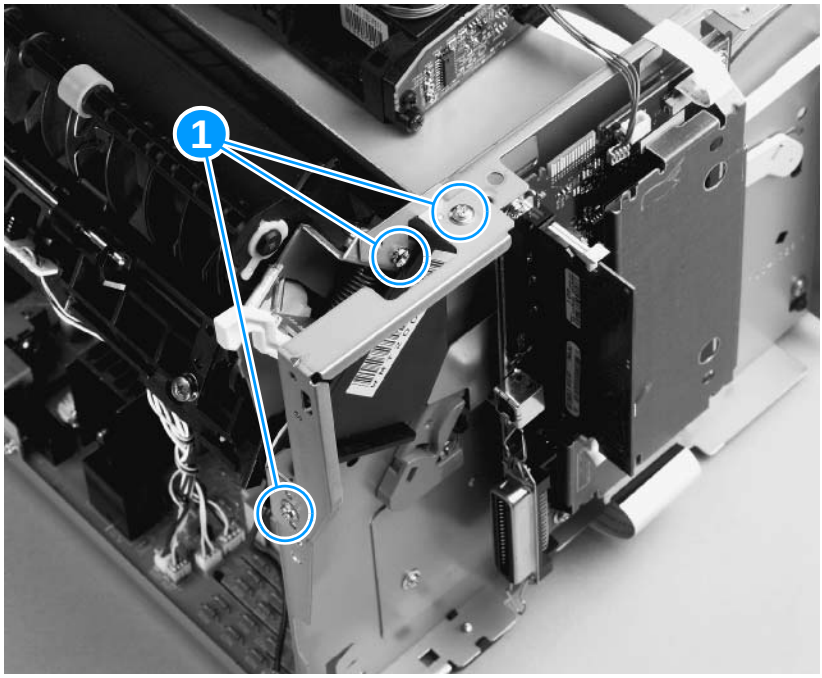


Figure 46. **Removing the fuser assembly (2 of 4)**

7 Remove two screws (callout 1), one from each side of the printer.

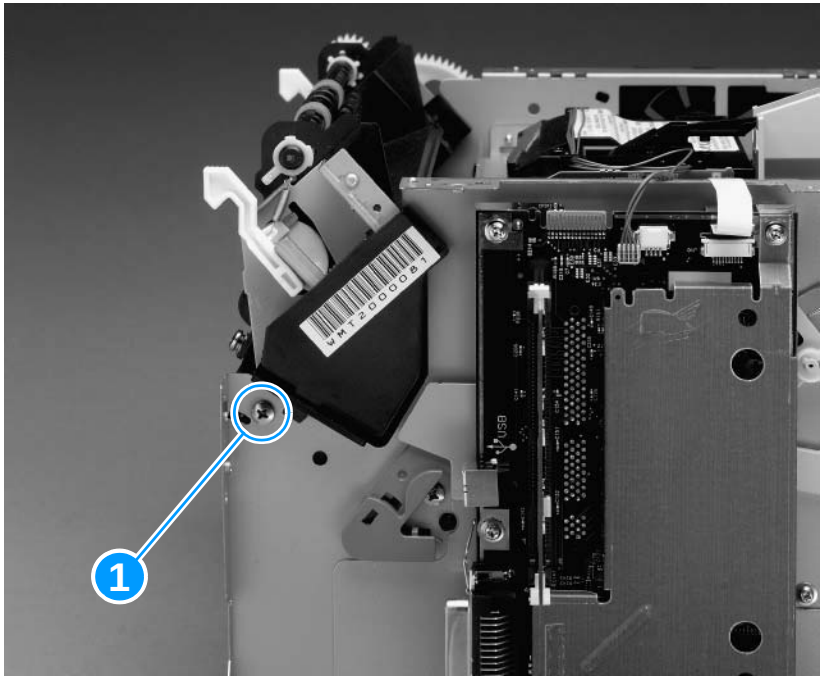


Figure 47. **Removing the fuser assembly (3 of 4)**

8 Unplug the fuser cable connector (callout 1) by pressing and releasing the tab on the back of the connector.

9 Unplug five smaller cable connectors (callout 2) from the ECU and unwind the cables from the fuser assembly.

10 Unplug the spade connector (callout 3).

11 Remove one screw (callout 4) from the paper delivery sensor, and lift the paper delivery sensor out of the printer.

12 Lift the fuser assembly gently out of the printer.

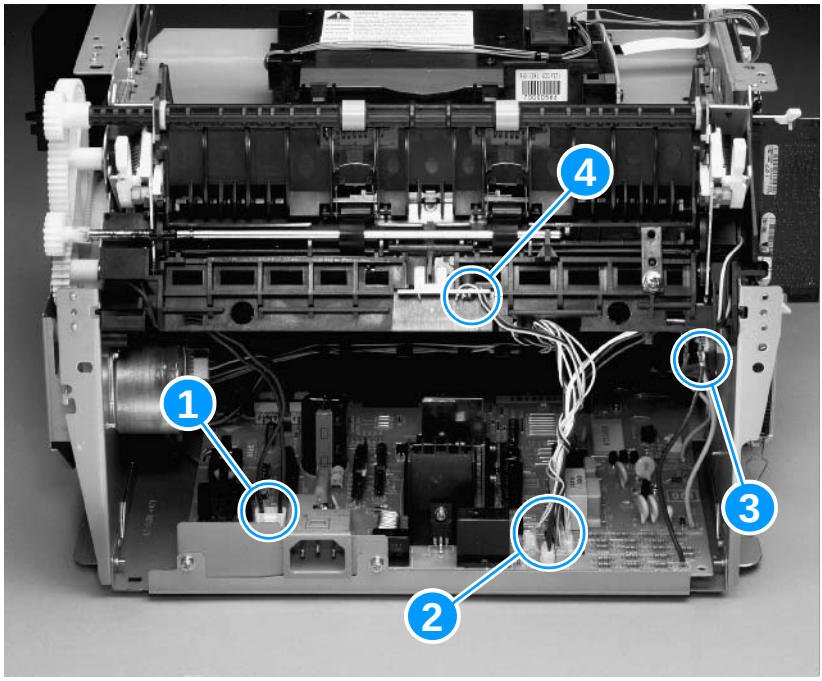


Figure 48. **Removing the fuser assembly (4 of 4)**

To reinstall

Remove the large gear from the end of the fuser assembly, return the fuser assembly to the chassis, and replace the large gear.

Output rollers

Face-down delivery assembly

1. Remove the fuser assembly (see page 101).
2. Remove two screws (callout 1) and lift the face-down delivery assembly away from the fuser assembly.

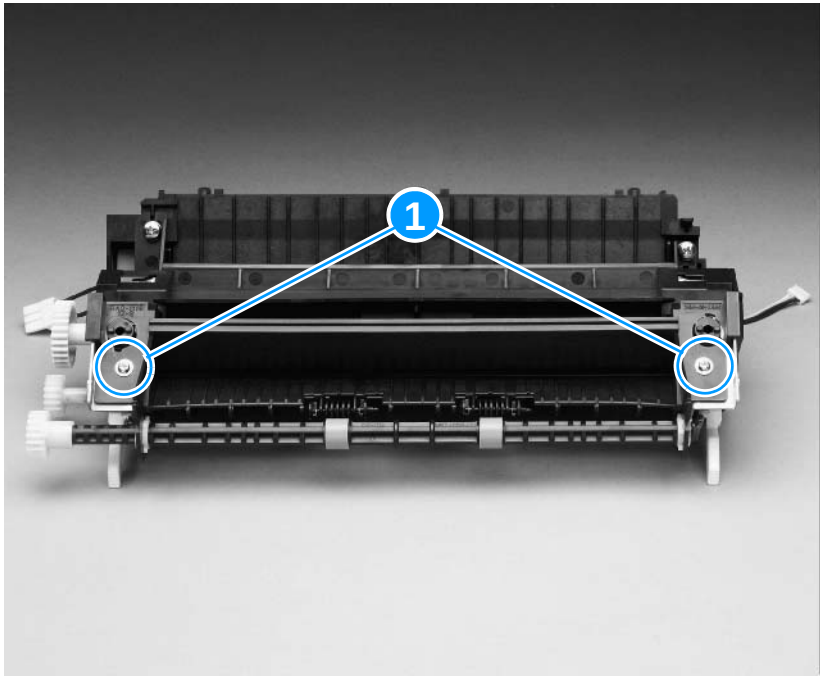


Figure 49. **Removing the output rollers (1 of 2)**

Face-up roller

1. Turn the fuser assembly over.
2. Remove the gear (callout 1) from the face-up roller and release the tab (callout 2) on the face-up roller bushing.
3. Rotate the face-up roller bushing forward until the pin releases.
4. Slide the face-up roller away from the gear side, and lift it out of the fuser assembly.

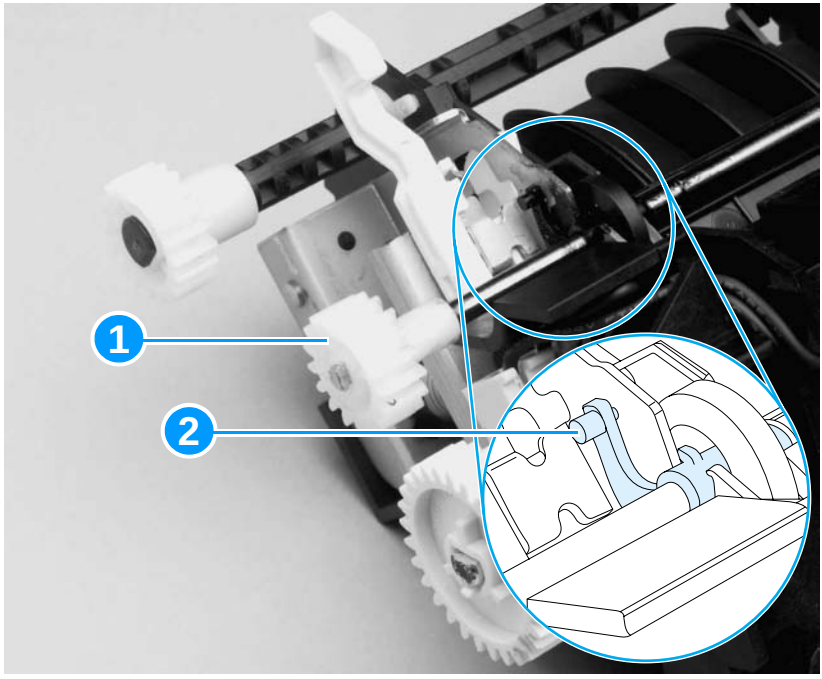


Figure 50. **Removing the output rollers (2 of 2)**

Reinstall note

Flex the face-up roller bushing to pop the pin back into place.

Motor

Note You might find it easier to remove the ECU pan (see page 120) before you remove the motor.

Remove the left side, back, and right side covers (see pages 80 through 86).

1. Remove the fuser assembly (see page 101).
2. Disconnect the motor cable connector (callout 1) on the side of the motor.
3. Remove the two screws (callout 2) from the motor and lift the motor out of the printer.

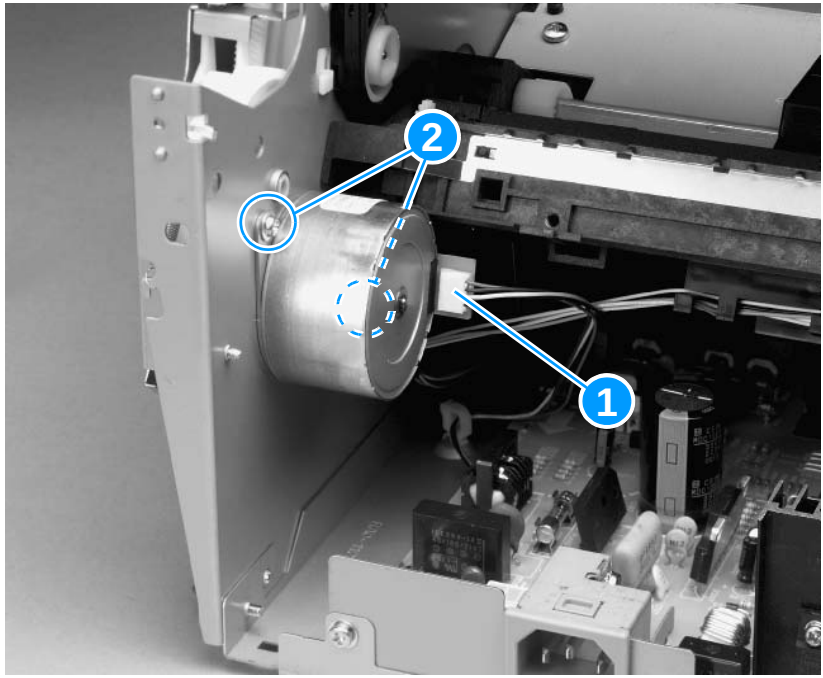


Figure 51. **Removing the motor**

To reinstall

Make sure that the motor is in the correct position. The connector should face the inside of the printer.

Solenoid

1. Remove the left side, back, and right side covers (see pages 80 through 86).
2. Unplug five cable connectors (callout 1) from the ECU and separate the solenoid cable from the other four cables.
3. Carefully unwind the solenoid cable from the cable guides (callout 2).

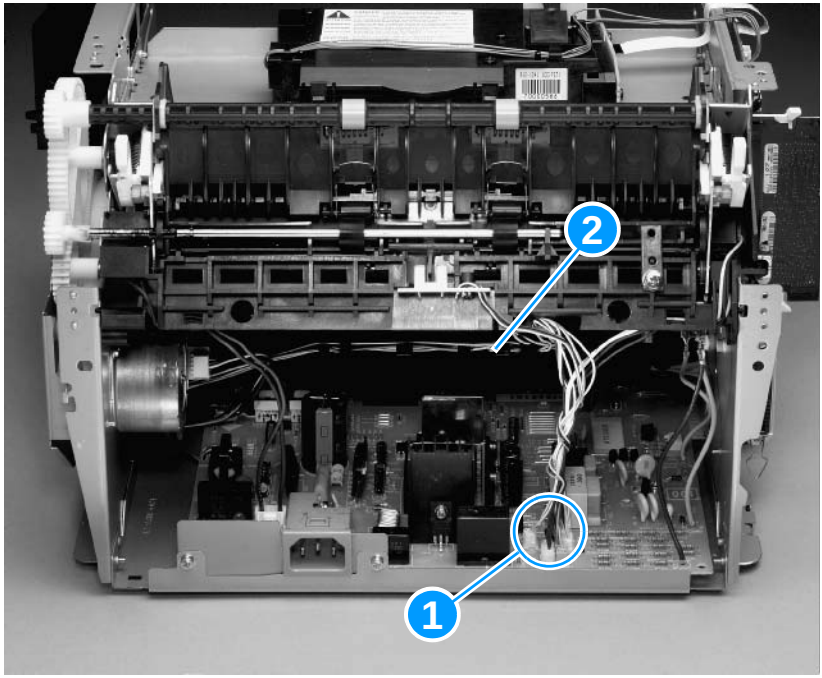


Figure 52. **Removing the solenoid (1 of 2)**

4 Remove the screw (callout 1) on the solenoid.

5 Gently thread the solenoid cable through the hole (callout 2) in the right side plate.

6 Lift the solenoid off of the printer.

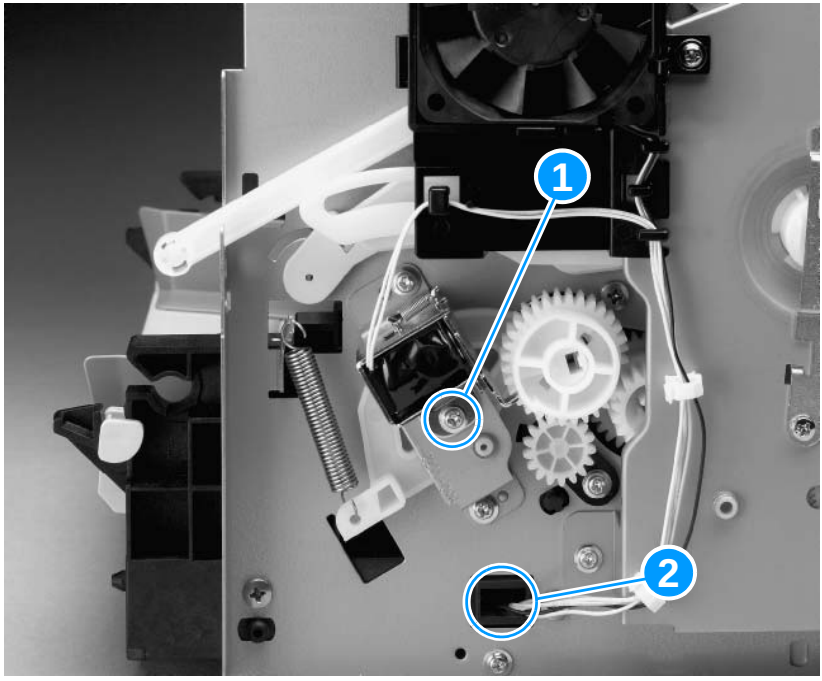


Figure 53. **Removing the solenoid (2 of 2)**

To reinstall

It might be easier to remove the ECU pan (see page 120) before rerouting the cables through the hole (callout 2) in the right side plate.

Fan assembly

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Unplug the five cable connectors (callout 1) from the ECU and separate the fan cable from the other four cables.
3. Carefully unwind the fan cable from the cable guides (callout 2).

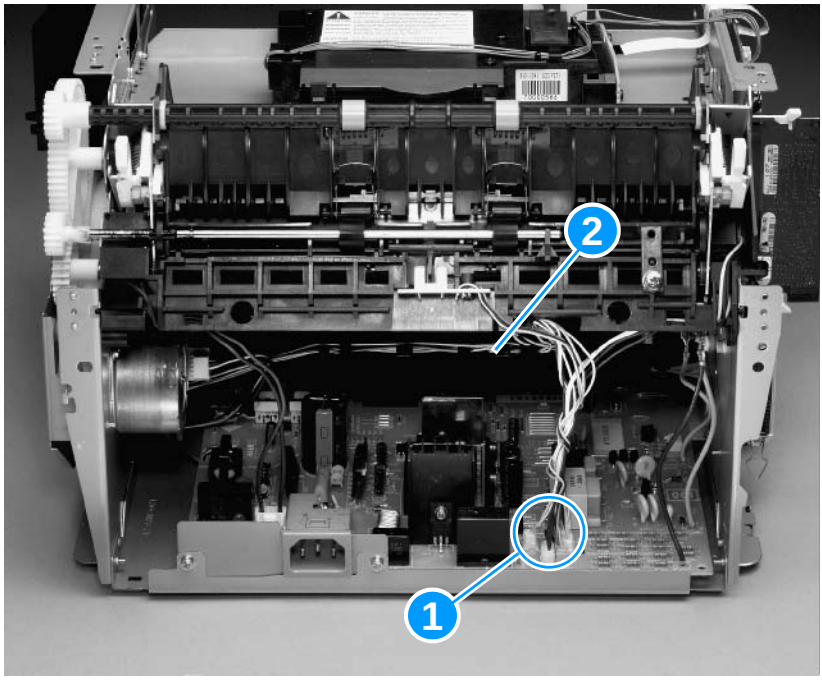


Figure 54. **Removing the fan (1 of 2)**

4 Remove two screws (callout 1).

5 Remove the fan assembly.

6 Gently thread the fan cable through the hole (callout 2) in the right side plate.

7 Lift the fan assembly off of the printer.

.

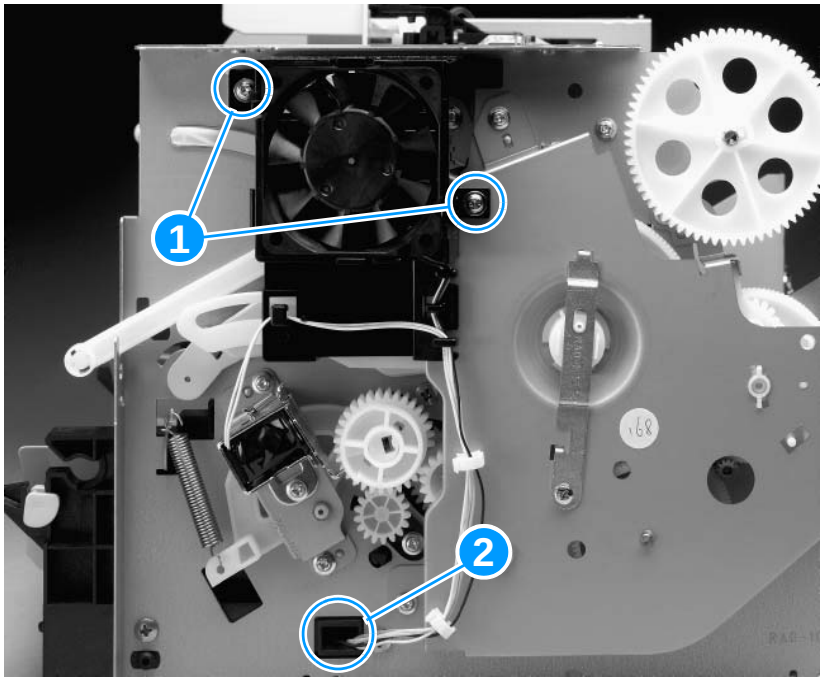


Figure 55. **Removing the fan (2 of 2)**

To reinstall

It might be easier to remove the ECU pan (see page 120) before rerouting the cables through the hole (callout 2) in the right side plate.

Right plate assembly

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Remove the front cover, toner cartridge door, and front guide assembly (see pages 89 through 95).
3. Remove the solenoid (see page 108).
4. Remove the fan assembly (see page 110).
5. Press the small white tab to release the clutch (callout 1), and slide the clutch to the left (toward the pickup roller).

Note Make sure that the two halves of the clutch stay together. If they separate, you might lose the clutch spring.

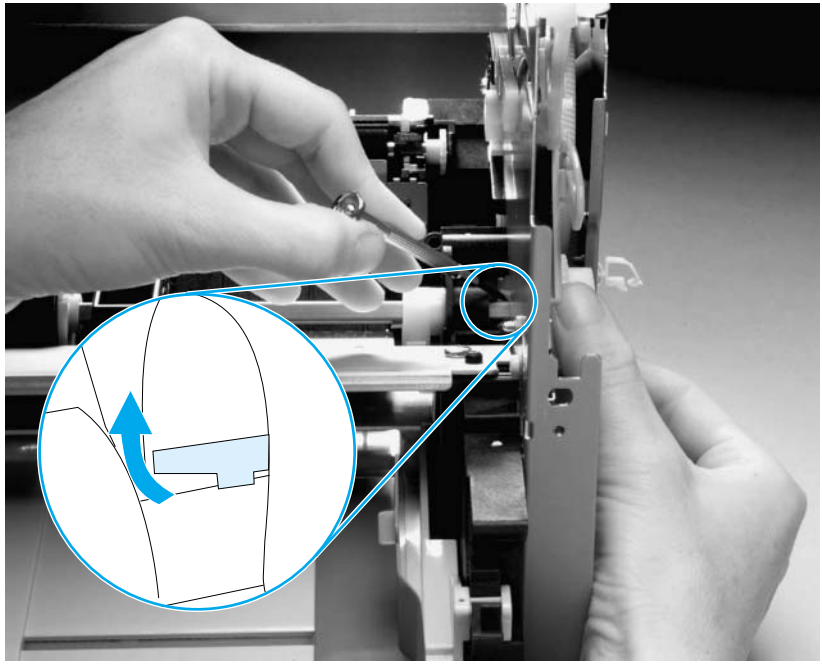


Figure 56. Removing the right plate assembly (1 of 2)

6 Remove seven screws (callout 1). If you have not already removed the fuser, remove the fuser screw (callout 2).

7 Lift the right plate assembly off of the printer.

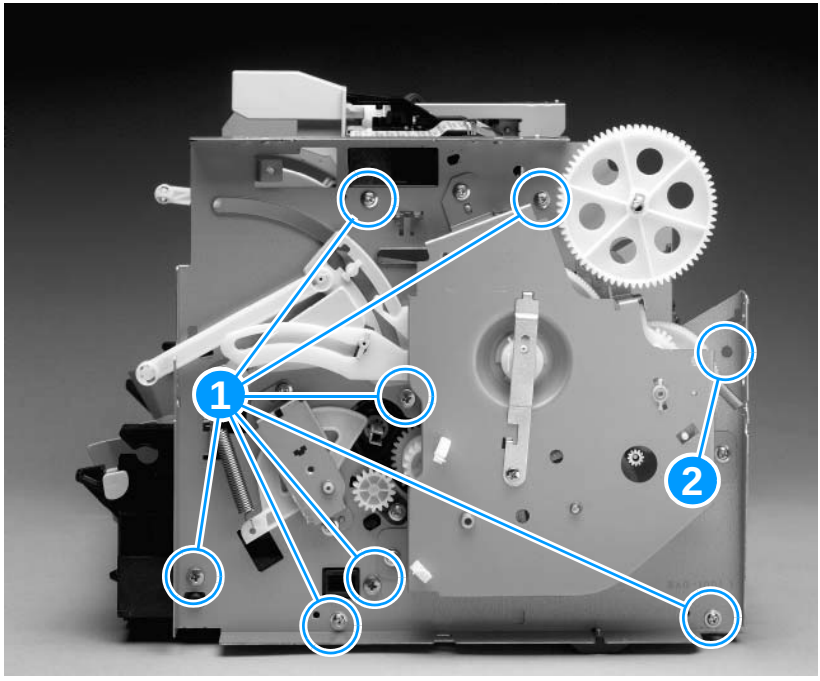


Figure 57. Removing the right plate assembly (2 of 2)

Pickup assembly

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Remove the front cover, toner cartridge door, and front guide assembly (see pages 89 through 95).
3. Remove the right plate assembly (see page 112).
4. Remove one screw (callout 1).

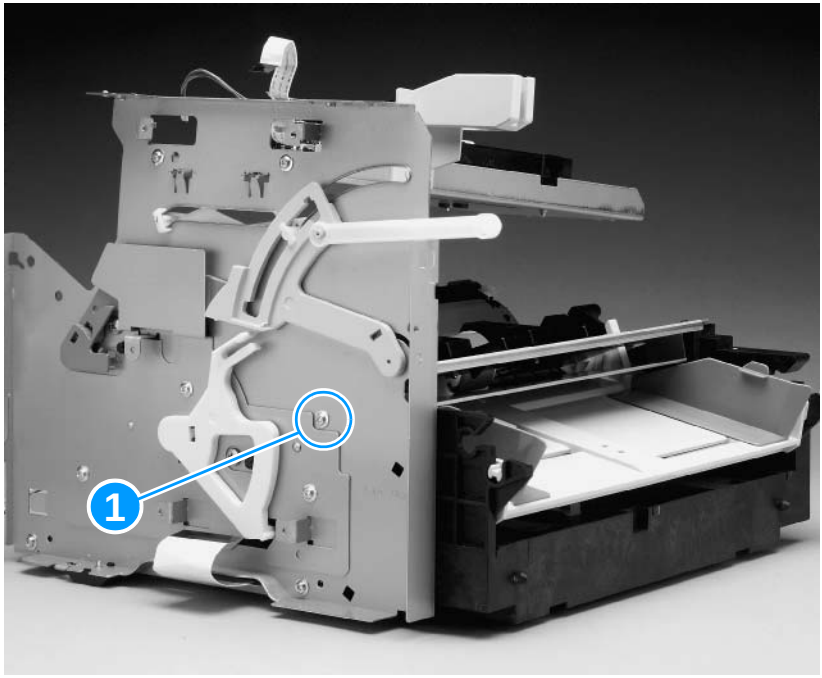


Figure 58. **Removing the pickup assembly (1 of 3)**

5 Remove two screws (figure 1) on the top of the assembly.

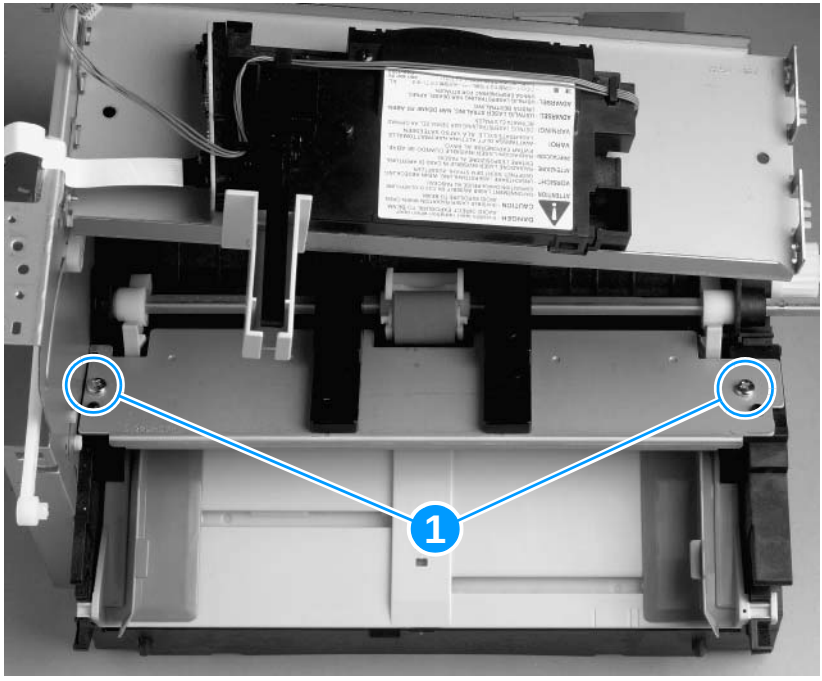


Figure 59. **Removing the pickup assembly (2 of 3)**

6 Lift the upper metal shield (callout 1) straight up and remove it from the printer.

7 Lift the lower metal shield (callout 2) straight up and remove it from the printer.

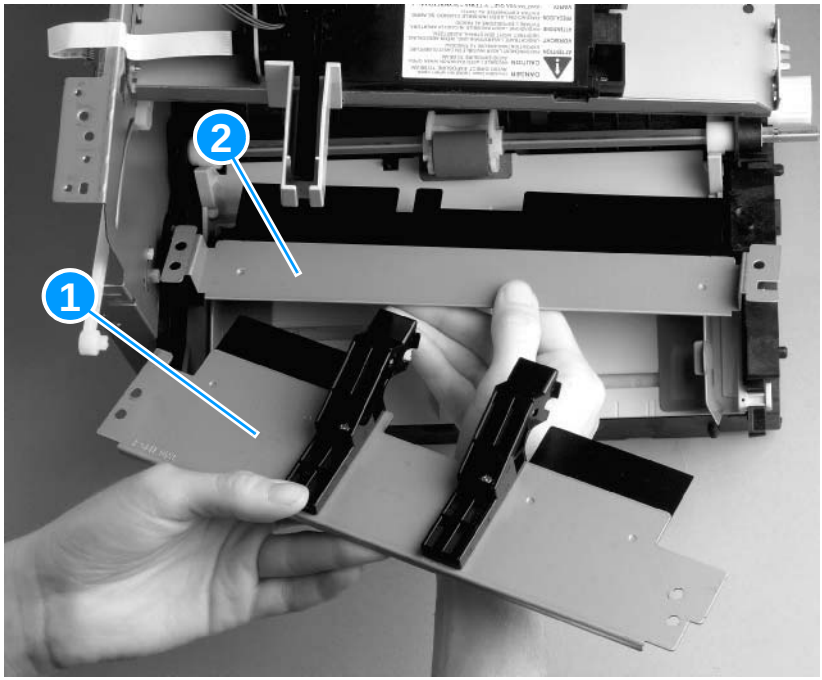


Figure 60. **Removing the pickup assembly (3 of 3)**

Pickup roller shaft

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Remove the front cover, toner cartridge door, and front guide assembly (see pages 89 through 95).
3. Remove the right plate assembly (see page 112).
4. Remove the pickup assembly (see page 114).
5. Slide the shaft toward the right until the left end (callout 1) releases.
6. Carefully pull the left end of the shaft toward you until it clears the left side of the chassis.
7. Pull the shaft to the left and out of the printer.

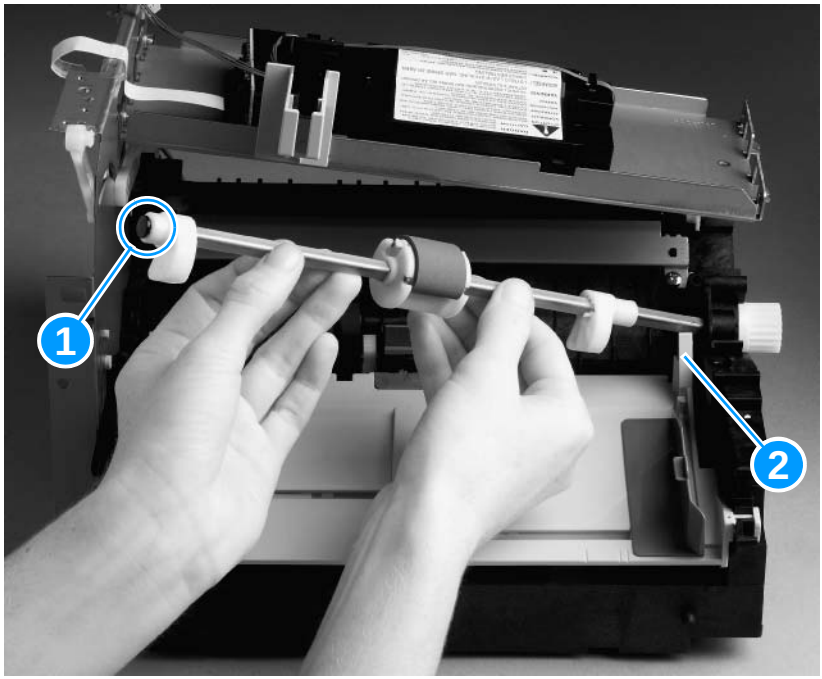


Figure 61. **Removing the pickup roller shaft**

To reinstall

Be sure to align the clutch on the pickup roller shaft with the follower (large plastic tab) (callout 2) on the paper lift plate.

Paper lift plate assembly

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Remove the front cover, toner cartridge door, and front guide assembly (see pages 89 through 95).
3. Remove the right plate assembly (see page 112), the pickup assembly (see page 114), and the pickup roller shaft (see page 117).
4. Grasp the large plastic tabs (callout 1) on each side of the paper lift plate and rotate it forward.

Note

Do not pull on the paper guides.

Make sure you do not misplace the two large springs (callout 2) that are under the lift plate or the small spring that is under the separation pad arm.

5. Lift the paper lift plate straight up and out of the bushings (callout 3).

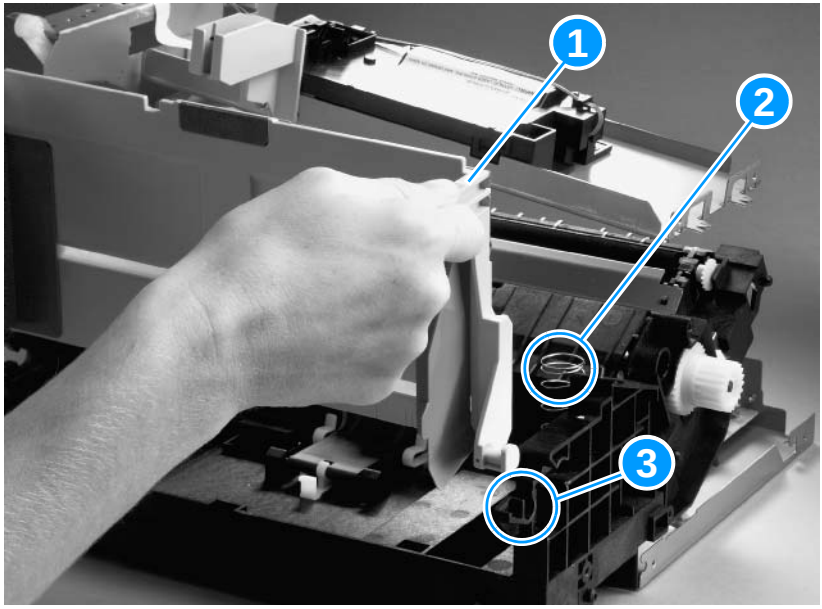


Figure 62. **Removing the paper lift plate assembly**

To reinstall

Make sure that the vertical paper sensor (the narrow black plastic piece to the left of the separation pad arm) is in an upright position and that the lift plate springs are positioned properly.

Left plate assembly

1. Remove the left side, back, right side, and top covers (see pages 80 through 87).
2. Remove the front cover, toner cartridge door, and front guide assembly (see pages 89 through 95).
3. Remove the formatter (see page 97).
4. Remove six screws (callout 1). If you have not already removed the fuser, remove the fuser screw (callout 2).
5. Lift the left plate assembly off of the printer.

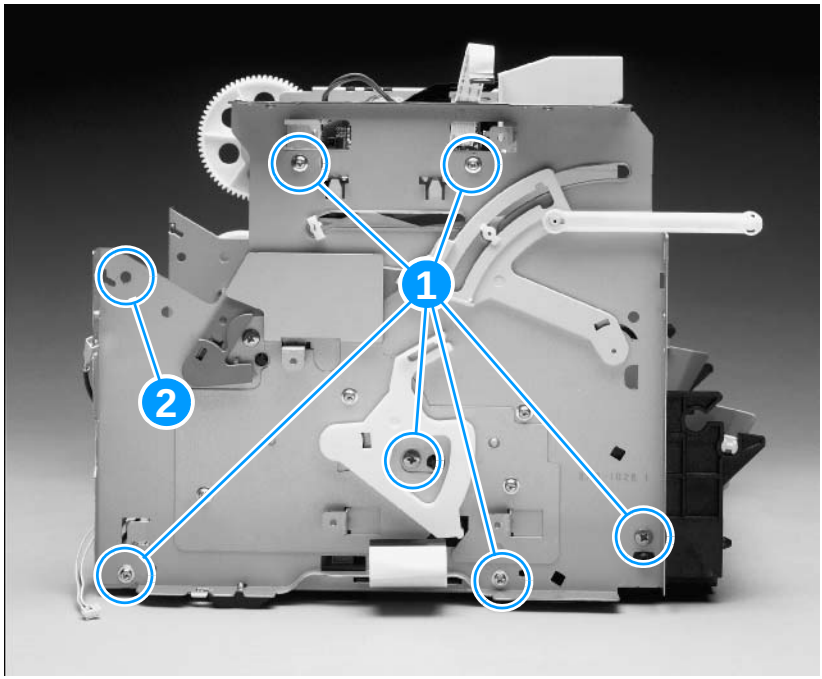


Figure 63. **Removing the left plate assembly**

ECU pan

Remove the left side, back, and right side covers (see pages 80 through 86).

1. Unplug the three spade connectors (callout 1).
2. Disconnect the motor cable connector (callout 2) on the side of the motor.
3. Unplug the fuser cable connector (callout 3) by pressing and releasing the tab on the back of the connector.
4. Unplug all other cable connectors (callout 4) from the ECU.

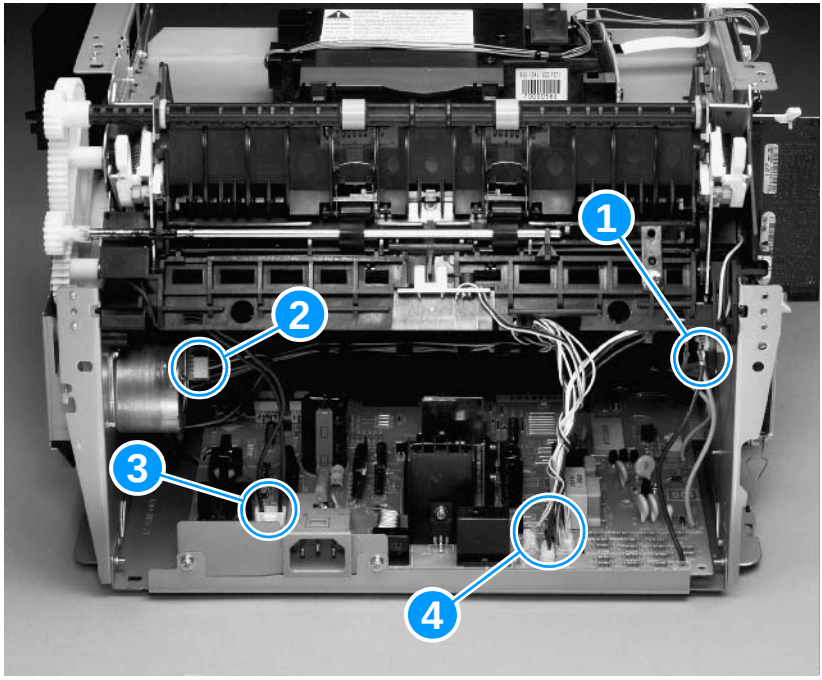


Figure 64. **Removing the ECU pan (1 of 4)**

5 Unplug the flat flexible cable from the ZIF connector (callout 1) on the formatter.

6 Remove two screws (callout 2) on each side of the printer.

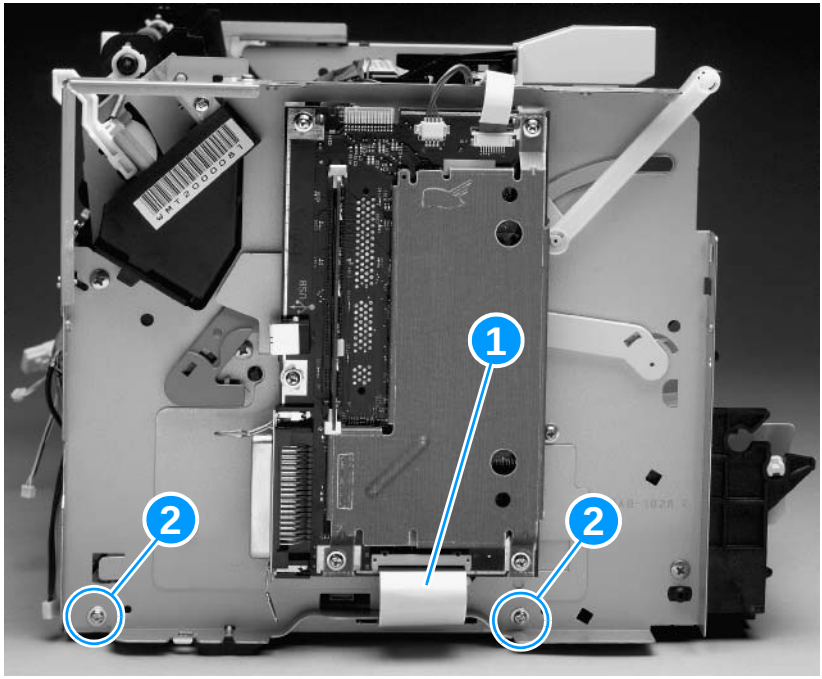


Figure 65. **Removing the ECU pan (2 of 4)**

7 Gently pull the two sides of the printer away from the ECU pan to release the ECU pan.

8 Slide the ECU pan out and away from the printer.

Note The entire ECU board can be replaced as a single unit. (Only soldered cables ship with the replacement board; if other cables are damaged during removal, you will have to purchase new ones.)

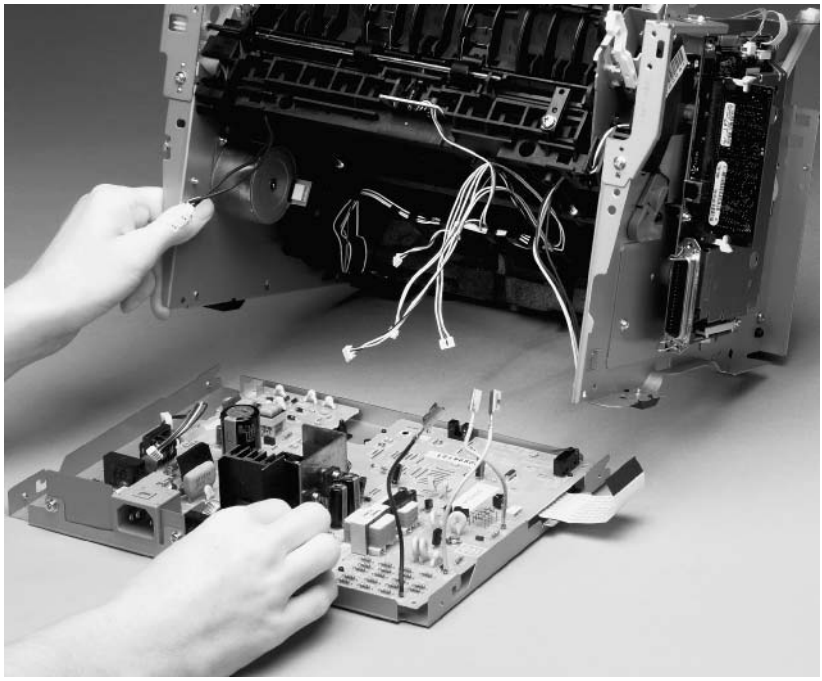


Figure 66. Removing the ECU pan (3 of 4)

9 Remove five screws (callout 1).

10 Lift the ECU out of the ECU pan.

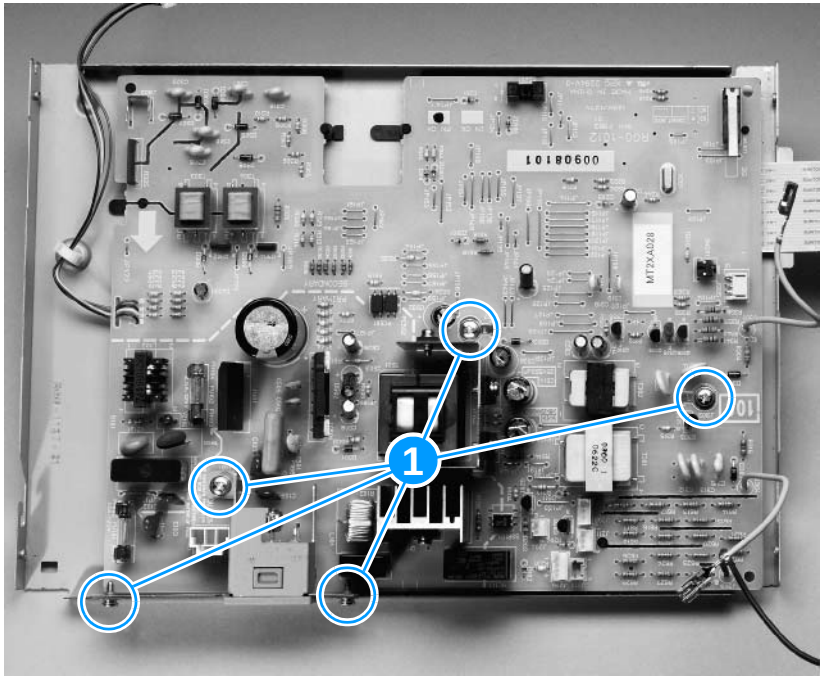


Figure 67. **Removing the ECU pan (4 of 4)**

Paper-feed assembly

1. Remove the left side, back, and right side covers (see pages 80 through 86).
2. Remove the right plate assembly (see page 112).
3. Remove the ECU pan (see page 120).
4. Unwind the fan and solenoid cables from the cable guides (callout 1) on the paper-feed mechanism.
5. Remove two screws (callout 2) from the paper-feed mechanism.
6. Remove one screw (callout 3) from the paper sensor PCB assembly.

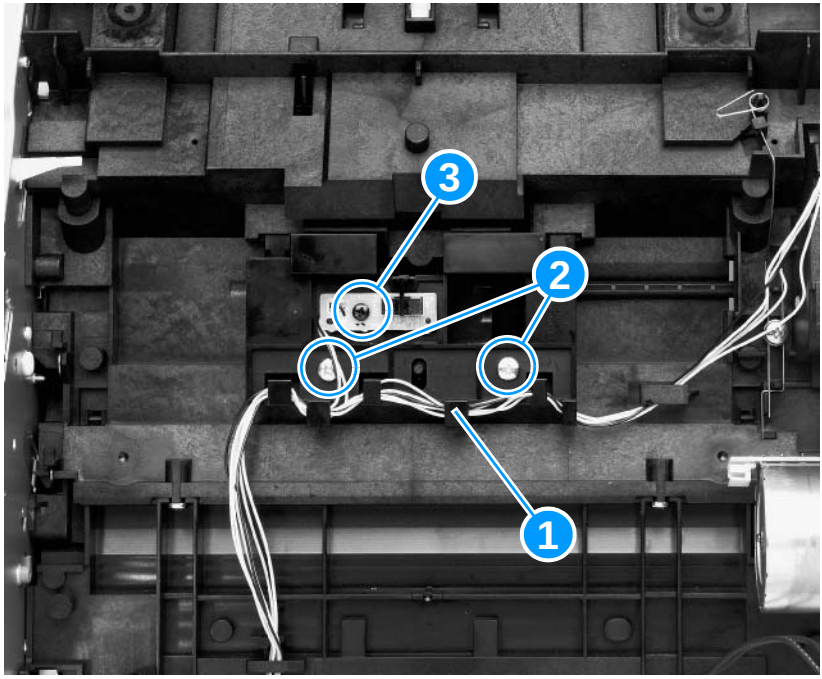


Figure 68. **Removing the paper-feed assembly (1 of 4)**

7 Separate two bushings (on the bottom of the paper-feed mechanism) from the paper-feed roller shaft (callout 1), and lift the paper-feed mechanism up and out of the printer.

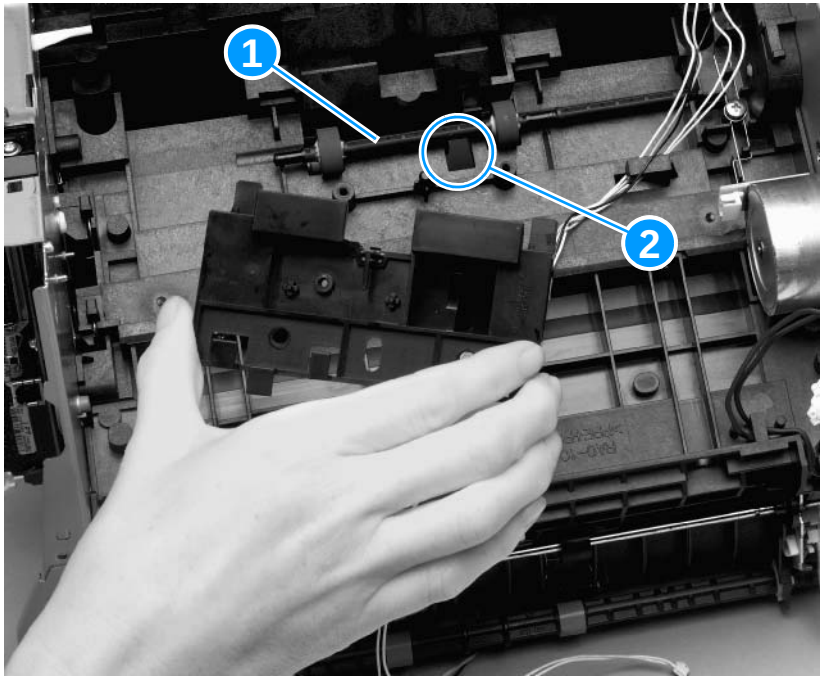


Figure 69. **Removing the paper-feed assembly (2 of 4)**

To reinstall

Insert the bottom of the sensor flag into the hole (callout 2) in front of the paper-feed roller shaft.

(See page 127 for more reinstallation notes.)

8 Use needle nose pliers to push the two tabs away from the end of the paper-feed roller shaft.

Note

You might find it easier to first remove the right plate assembly (see page 112).

Do not remove the gear shield, because the gears and springs can easily separate and become misplaced.

9 Pull the paper-feed roller shaft toward the left side of the printer and remove it.

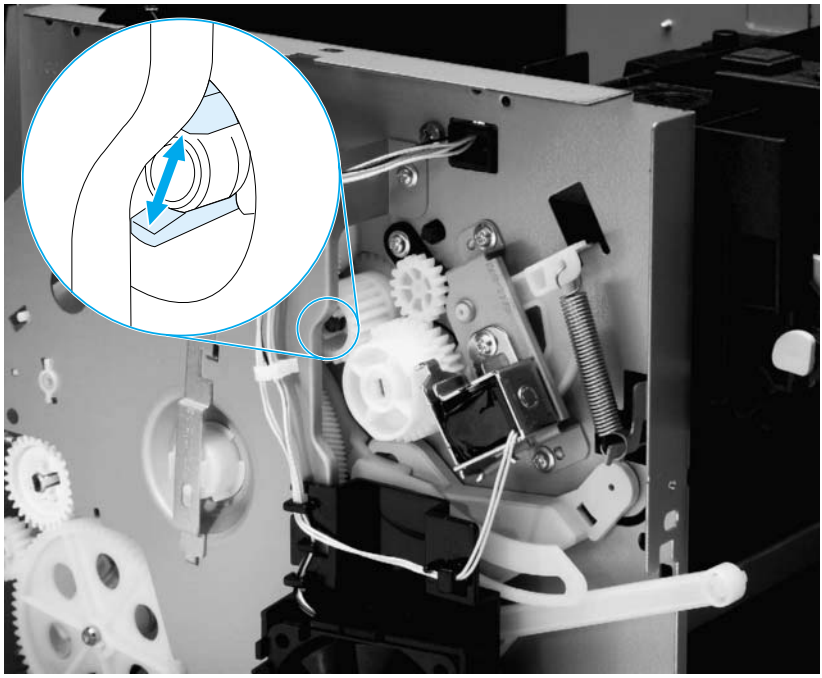


Figure 70. Removing the paper-feed mechanism (3 of 4)

To reinstall

Insert the two tabs (callout 1) on the paper-feed assembly into the two recesses on the printer.

Insert the bottom of the sensor flag into the hole in front of the paper-feed roller shaft (see callout 2 on page 125). The top of the sensor flag (callout 2) should move freely.

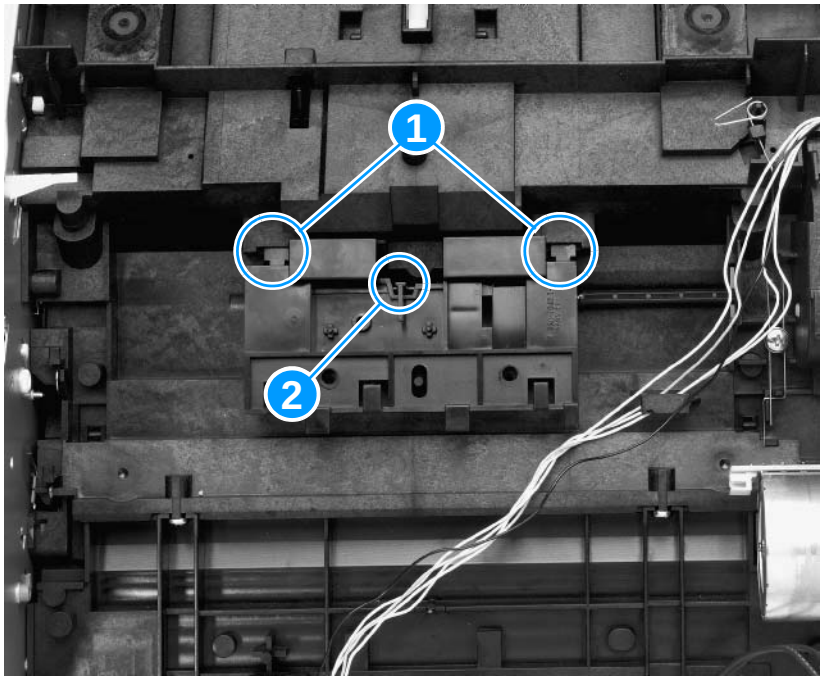


Figure 71. **Removing the paper-feed mechanism (4 of 4)**

6 Troubleshooting

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Basic troubleshooting

Table 13. Basic troubleshooting

#	Verification steps	Possible problems	Solutions
1	**Does the printer turn on successfully?** When the product is connected to a grounded power source, the printer motor should rotate for approximately five seconds.	No power.	1. Verify that the product is plugged in. 2. Verify that the power cable is functional and that the power switch is on (220v only). 3. Verify that FU102 on the ECU is not open. 4. If all of these conditions are correct, replace the ECU.
		Printer motor does not rotate.	1. Verify that the toner cartridge is present. (See “Toner cartridge” on page 78 for more information.) 2. Verify that the printer door is closed. 3. Verify that media is loaded in the main input tray. 4. Verify that the printer paper path and door sensors are functional. 5. Verify that the motor connector is seated into the ECU. 6. Verify that the motor is correctly mounted on the printer chassis. 7. If all of these conditions are correct, replace the ECU. 8. If, after replacing the ECU, the printer motor still does not rotate, replace the motor.
2	**Is the product ready?** The control panel should function without error light patterns.	Control panel displays an error light pattern.	Consult the list of control panel light patterns later in this chapter to identify and correct the error.
		Control panel is not functional.	1. Verify that the control panel cable is seated in the formatter. 2. If the cable is connected correctly, replace the control panel.
3	**Do engine tests and self-test pages print?** Print an engine test. (See page 149.)The engine test should print without paper-feed problems or print-quality problems.	**Note**	The formatter must be connected to perform an engine test.
		Engine test is not successful.	Replace the ECU.
		Control panel displays an error light pattern.	Consult the list of control panel light patterns in this chapter to identify and correct the error.
		Media does not move smoothly through the printer paper path.	Isolate printer paper-path problems by performing a paper-path check, which is discussed later in this chapter.
		Poor print quality.	See “Solving image-quality problems” on page 138.

Table 13. Basic troubleshooting (continued)

#	Verification steps	Possible problems	Solutions
4	**Is the software installed correctly?**	Software is not installed, or an error occurred during software installation.	Uninstall and then reload the product software. Make sure you use the correct installation procedure and the correct port setting.
5	**Does the product print from the computer?** Connect the parallel cable or USB cable to the product and the computer. Use a word-processing application to send a print job to the printer.	The cable is not connected correctly.	Reconnect the cable.
		An incorrect printer driver is selected.	Select the correct printer driver.
		Other devices are connected to the parallel port.	Disconnect the other devices and try again to print.
		There is an LPT port driver problem.	Reset the computer port settings. See your computer user guide for instructions.
		The formatter has failed.	Replace the formatter
6	**If the optional copier/scanner is installed, is the copy function operational?** Place the self-test page into the media input tray and copy it to the printer. The report should feed smoothly through the copier/scanner path and copies should print without print-quality problems.	Copier/scanner motor does not rotate.	1. Run a self-test page, and verify that the optional copier/scanner is present. (See “To print a self-test page” on page 159.) 2. Unplug the printer, verify that the copier/scanner connector is seated in the formatter, and plug the printer back in. 3. If the printer still has an error, replace the copier/scanner.
		Poor copy quality.	1. If the print quality from the internal tests was acceptable, but the print quality of the copies is not, clean the contact image sensor and the white sheet. 2. If the print defect persists, replace the copier/scanner assembly.
		Media does not move smoothly through the copier/scanner path.	1. Clear the copier/scanner path of obstructions. 2. Check the photosensor to make sure that it operates correctly. 3. If the problem persists, replace the copier/scanner assembly.
7	**If the optional copier/scanner is installed, does it scan to the computer?**	Other devices are connected to the parallel port.	Disconnect the other devices, and try to scan again.
		The computer parallel-port hardware is not bidirectional.	Check hardware documentation to see if the port configuration can be changed.
		The BIOS settings for the parallel port are set incorrectly.	Reset the computer port settings. If the problem persists, reset the BIOS settings in CMOS.
		Polling is turned off in HP LaserJet Director or HP LaserJet Director is not running.	Start HP LaserJet Director and turn on polling.

Control panel light messages

Each control panel light message is listed, along with possible causes and steps to resolve identified errors.

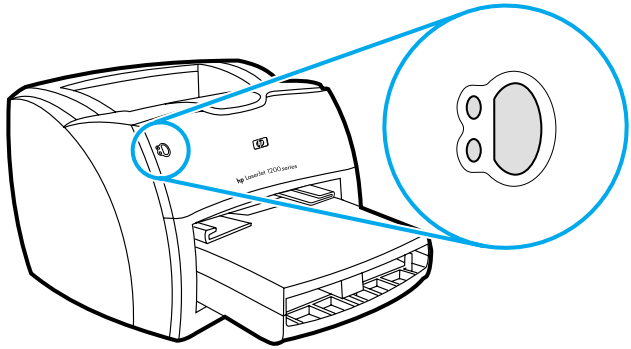


Figure 72. **Control panel location**

Table 14. Control panel lights legend

Light symbol	Meaning of symbol
	Light off
	Light on
	Light blinking

Table 15. Control panel light messages

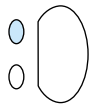
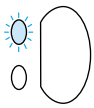
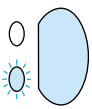
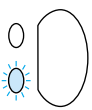
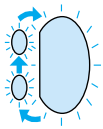
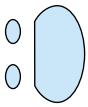
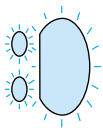
Message	Possible causes	Solutions
	The printer is ready to print.	No action is needed. To print a self-test page, press and release the Go button on the control panel.
	The printer is receiving or processing data.	Wait for the job to print.
	The printer is in manual feed mode.	To turn off the manual feed mode, change the printer property setting. See the “Printer properties” section in the user guide for more information.
	The printer is out of memory.	1. The page currently printing might be too complex for the printer memory. To continue printing, press and release the Go button. The printer might print a partial page, or the quality might be lower than normal. 2. Lower the resolution. See the “Understanding print quality settings” section in the user guide. 3. Add more memory. See the “Memory” section in the user guide.
	The printer has an error. The door is open, the media is out, the toner cartridge is installed incorrectly, or the paper is jammed.	1. Check that the toner cartridge door is completely closed. 2. Load media into the correct input tray. 3. Check that the toner cartridge is correctly installed in the printer. (See “Toner cartridge” on page 78 for more information.) 4. There is a paper jam. (See “Functional checks” on page 149 for more information.) 5. Check that the door and toner cartridge interlocks are operating correctly. (See "Paper path check" on page 155 for more information about the door interlock.

Table 15. Control panel light messages (continued)

Message	Possible causes	Solutions
	A printer initialization is taking place. If all lights blink for a half second or longer in a sequence: • The printing is initializing. • All previously sent print jobs are being deleted from the printer memory. • A cleaning page is printing.	No action is necessary.
	The printer has a fatal error. All lights are on.	1. Turn the printer off and back on. 2. Unplug the printer for 5 minutes, plug it back in, and turn it on. 3. If the printer still has an error, press the Go button, and see table 16, “Fatal error secondary messages,” on page 135.
	The printer has an accessory error. All lights are blinking.	1. Remove the DIMM and reseat it. 2. If the printer still has an error, replace the DIMM.

Fatal error secondary messages

If the printer has a fatal error, press and hold the Go button to see the secondary error message.

Table 16. Fatal error secondary messages

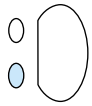
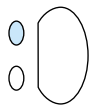
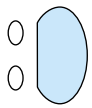
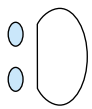
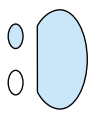
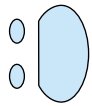
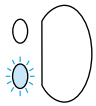
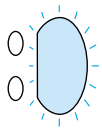
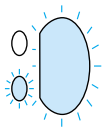
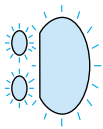
Message	Cause	Solution
	**Engine error.** The formatter and engine are not communicating.	1. Unplug the printer and plug it back in. 2. Reseat the formatter to ECU cable. 3. Replace the formatter PCA. 4. Replace the ECU. (See “ECU pan” on page 120.)
	**Laser/scanner error.** The laser/scanner has a malfunction.	1. Check the laser/scanner cable connections. 2. Replace the laser/scanner.
	**Beam error.**	1. Check the laser/scanner cable connections. 2. Replace the laser/scanner. (See “Laser/scanner assembly” on page 99.)
	**Motor error.**	1. Check the motor cable connections. 2. Replace the motor. (See “Motor” on page 107.)
	**Fuser error.** The fuser has a malfunction.	1. Unplug the printer and do not plug it back in for at least ten minutes. 2. Verify that the fuser connector and the thermistor connector are both firmly seated in the ECU. 3. Perform a heating element resistance check. (See “Heating element check” on page 152.) 4. If the resistance readings are correct and the error persists, replace the fuser. (See “Fuser assembly” on page 101.)

Table 16. Fatal error secondary messages (continued)

Message	Cause	Solution
	**Formatter internal RAM or ROM error.** The RAM or ROM has an error.	1. Unplug the printer and plug it back in. 2. Unplug the printer, remove any optional memory, and turn the printer back on. 3.Check the formatter cable connections. 3. Replace the formatter PCA. (See “Formatter” on page 97.)
	**Fan error**.	1. Check the fan cable connections. 2. Replace the fan. (See “Fan assembly” on page 110.)
	**Scan buffer error.**	1. Unplug the printer, remove and reattach the optional copier/scanner, and then plug the printer back in. 2. Replace the optional copier/scanner. (See “Optional copier/scanner” on page 81.)
	**Miscellaneous interface error**	1. Unplug the printer, remove and reattach the optional copier/scanner, and then plug the printer back in. 2. Replace the optional copier/scanner. (See “Optional copier/scanner” on page 81.)
	**General fatal error**	1. Unplug the printer and plug it back in. 2. Disconnect the I/O cable and print a self-test page. If the self-test is successful, reconnect the I/O cable. 3. If the error persists, replace the formatter PCA. (See “Formatter” on page 97.)

Checking the toner cartridge

Image formation defects are many times the result of problems in the toner cartridge. If there is any doubt, always replace the toner cartridge before troubleshooting image defects.

Use the following checklist to make sure that the toner cartridge is still operable.

- ☐ Make sure that the toner cartridge is seated properly.
- ☐ Inspect the toner cartridge for toner level.
- ☐ Check the expiration date stamped on the toner cartridge box.
- ☐ Check the toner cartridge to see if it has been disassembled or refilled.
- ☐ Inspect the toner cartridge to see if toner is leaking through worn seals.
- ☐ 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 and can cause spotting and image defects.
- ☐ Blurred areas on printed pages indicate that the photosensitive drum in the cartridge has been overexposed to light. Because overexposure to light causes permanent damage to the photosensitive drum, the cartridge should be replaced.

Note A toner cartridge weighs approximately 863 grams (30.5 oz) when it is full, approximately 766 grams (27.0 oz) when it first fades, and approximately 742 grams (26.2 oz) when it is empty.

To redistribute toner in the cartridge

Before installing a new cartridge or when toner begins to run low, redistribute the toner by rotating the cartridge back and forth five or six times.

Solving image-quality problems

Use the following tables to help solve problems with printed pages.

If the problem occurs when printing, see table 17, “Solving print image-quality problems,” on page 138.

If the problem occurs when copying or scanning (and if the printer has the optional copier/scanner assembly attached), see table 18, “Solving copying and scanning image-quality problems,” on page 143.

Also, see table 19, “Solving print paper-feed problems,” on page 146 and “Solving copying and scanning paper-feed problems” on page 148.

Solving print image-quality problems

Table 17. Solving print image-quality problems

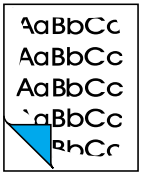
Problem	Cause	Solution
Pages do not print.	The printer is not plugged in.	Make sure that the printer is plugged into a live wall outlet or power strip.
	The computer cable is loose.	Check that the parallel cable between the printer and the computer is securely connected.
	The tape was not removed from the toner cartridge.	Remove the toner cartridge, remove the tape, and return the toner cartridge. See “Toner cartridge” on page 78.
	The toner cartridge is out of toner.	Replace the toner cartridge. (See “Toner cartridge” on page 78.)
	The media you are using does not meet HP’s specifications (for example, it is too moist or too rough).	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
Parts of the page around the edges are not printing. 	The printer cannot print to the edge of the paper. The printer has minimum margins on each edge of 4.23 mm (0.167 inches.	To get the image to fit into this printable area, slightly reduce the size of the image.
	The reduction setting is set incorrectly.	Check the reduction setting in the “Print” or “Setup” window from within the program you are using.

Table 17. Solving print image-quality problems (continued)

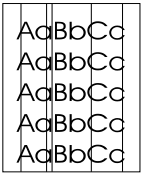
Problem	Cause	Solution
Toner specks appear on the printed page.	The media you are using does not meet HP's specifications (for example, it is too moist or too rough).	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	The printer needs to be cleaned.	Clean the printer. (See "Cleaning the print path" on page 47.)
Characters are only partially printed (also referred to as dropouts).	A single sheet of paper is defective.	Try reprinting the job.
	The print density needs to be adjusted.	Adjust the print density from the device configuration utility.
	The moisture content of the paper is inconsistent, or the paper has moist or wet spots on the surface.	Make sure that the media meets HP's specifications.
	The paper was damaged by inconsistent manufacturing processes.	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	A draft mode or economy mode is selected in the software.	Try the normal or best setting.
	The toner cartridge is defective.	Replace the toner cartridge.
Vertical lines appear on the printed page. 	The priority input tray is not in place.	Adjust the priority input tray.
	The photosenstive drum inside the toner cartridge is scratched.	Replace the toner cartridge.
	The fuser is damaged or has an obstruction.	Replace the fuser.

Table 17. Solving print image-quality problems (continued)

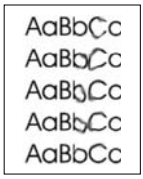
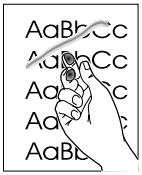
Problem	Cause	Solution
The printed page has a gray background. 	The priority input tray is not in place.	Adjust the priority input tray.
	The print density setting is set too high.	Decrease the amount of background shading through the device configuration utility.
	The media basis weight is too high.	Change the media to a lower basis weight.
	The humidity level is too low.	Very low humidity can increase the amount of background shading. Move the printer to a different location, or decrease the background shading through the device configuration utility.
	The toner cartridge needs to be replaced.	Replace the toner cartridge.
Toner smears appear on the printed page. 	If the toner smears appear on the leading edge of the media, the media guides are dirty.	Wipe the media guides with a dry, lint-free cloth.
	The media you are using does not meet HP's specifications (for example, it is too moist or too rough).	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	The toner cartridge needs to be replaced.	Replace the toner cartridge.
	The fuser temperature is too low.	Select **Optimize for:** in the **Paper** tab of the printer driver. Make sure that it is set for the appropriate media.
The toner is loose, and it does not stay attached to the printed page. 	The inside of the printer is dirty.	Clean the printer. (See "Cleaning the print path" on page 47.)
	The media you are using does not meet HP's specifications (for example, it is too moist or too rough).	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	The toner cartridge needs to be replaced.	Replace the toner cartridge.
	The printer driver is not set for the correct media.	1. Select **Optimize for:** in the **Paper** tab of the printer driver. Select the correct media. 2. Select the correct media through the device configuration utility.
	The power strip is not working correctly.	Plug the printer directly into an AC outlet.

Table 17. Solving print image-quality problems (continued)

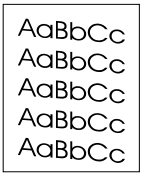
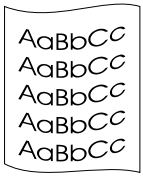
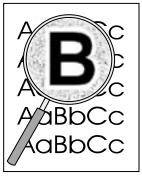
Problem	Cause	Solution
Repetitive vertical defects appear on the printed page. 	If the repetitive mark occurs at equal distance between marks, either the toner cartridge or a printer roller is damaged.	Use the defect ruler to identify the spacing. Check the appropriate component and replace if necessary. (See “Repetitive image defect ruler” on page 161.)
	The internal parts have toner on them.	If the defects occur on the back of the page, the problem will probably correct itself after a few more printed pages. Otherwise, clean the printer. (See “Cleaning the print path” on page 47.)
	The printer driver is not set for the correct media.	1. Select **Optimize for:** in the **Paper** tab of the printer driver. Select the correct media. (This affects the current print job only.) 2. Select the correct media through the device configuration utility.
Characters are misformed and are producing hollow images. 	The media is too slick.	Try a different media. Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	The printer driver is not set for the correct media.	1. Select **Optimize for:** in the **Paper** tab of the printer driver. Select the correct media. (This affects the current print job only.) 2. Select the correct media through the device configuration utility.
Pages are skewed. 	The media is loaded incorrectly.	Reload the media, and make sure that the media guides are not too tight or too loose against the media stack.
	The input tray is too full.	Remove some of the sheets. The main input tray can hold up to 250 sheets of 20-lb (75 g/m^2) bond weight paper (less for heavier paper) or from 20 to 30 envelopes. The priority input tray can hold up to ten sheets of 20-lb (75 g/m^2) bond weight paper (one sheet of heavier paper) or one envelope.
	The type and quality of media you are using does not meet HP’s specifications.	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.

Table 17. Solving print image-quality problems (continued)

Problem	Cause	Solution
The printed page has curls or waves. 	The environment is too warm or too humid.	1. Both high temperatures and high humidity levels cause media to curl. Move the printer to a different environment. 2. Use a different media. Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	The media was in the input tray too long.	Turn the stack of media over and put it back in the tray. Rotate the media 180° and put it back in the tray.
	The standard paper path is not working correctly.	Open the straight-through output door on the back of the printer and use this paper path.
	The fuser temperature is too high.	Select **Optimize for:** in the **Paper** tab of the printer driver. Make sure that it is set for the appropriate media.
Large amounts of toner are scattered around the characters. 	The media is resisting the toner.	1. Use a different media. Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family. 2. Turn the stack of media over and put it back in the tray. 3. Use media that is designed for laser printers.

Solving copying and scanning image-quality problems

Table 18. Solving copying and scanning image-quality problems

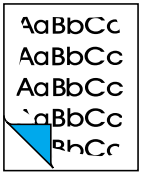
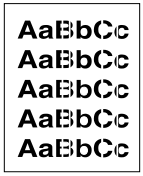
Problem	Cause	Solution
Pages do not print.	The printer is not plugged in.	Make sure that the printer is plugged into a live wall outlet or power strip.
	The computer cable is loose.	Check that the cable between the printer and the computer is securely connected.
	The tape was not removed from the toner cartridge.	Remove the toner cartridge, remove the tape, and return the toner cartridge. (See “Toner cartridge” on page 78.)
	The toner cartridge is out of toner.	Replace the toner cartridge. (See “Toner cartridge” on page 78.)
	The media you are using does not meet HP’s specifications (for example, it is too moist or too rough).	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	The original was loaded upside-down.	Load the original with the side to be scanned facing up.
Parts of the page around the edges are not printing. 	The printer cannot print to the edge of the paper. The printer has minimum margins on each edge of 4.23 mm (0.167 inches.	To get the image to fit into this printable area, slightly reduce the size of the image.
	If copying, the reduction setting is set incorrectly.	Copied images will be clipped if the image on the original is too close to the edge of the original.
Vertical white stripes appear. 	The media you are using does not meet HP’s specifications (for example, it is too moist or too rough).	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	The toner is low.	Gently shake the toner cartridge back and forth to redistribute the toner.
	The platen has dirty spots.	Clean the platen. (See “Cleaning the scanner path” on page 51.)

Table 18. Solving copying and scanning image-quality problems (continued)

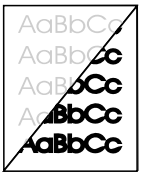
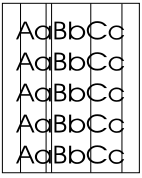
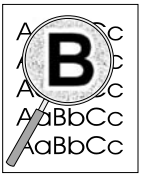
Problem	Cause	Solution
Copies or scanned images are too light or too dark. 	The contrast is not set correctly.	1. Adjust the contrast and resolution settings from the HP LaserJet Copier software. 2. Adjust the Quick Copy settings. 3. Check that the contrast and resolution settings are correct. See the user guide for more information.
	The original image is very light or very dark.	Adjust the resolution and contrast setting(s) from the toolbox on the HP LaserJet Director or HP Document Manager.
	The scanned image is too light or too dark because the original was on colored paper.	If the original was on a colored paper, including brown recycled paper, the text might not be clear. Adjust the resolution, contrast, and brightness settings from the toolbox on the HP LaserJet Director or HP Document Manager.
Vertically-aligned black streaks or smears appear on successive pages. 	The printer needs to be cleaned.	Clean the printer. (See “Cleaning the print path” on page 47.)
	There is ink, glue, white-out, or some other substance on the contact image sensor.	Clean the copier/scanner assembly. (See “Cleaning the scanner path” on page 51.)
	A component is damaged. (For example, the photosenstive drum inside the toner cartridge is scratched.)	1. Use the defect ruler to identify the spacing. Check the appropriate component and replace if necessary. (See “Repetitive image defect ruler” on page 161.) 2. Replace the toner cartridge if it is damaged and maintenance procedures do not improve print quality.
Scanned images have black dots or streaks. 	There is ink, glue, correction fluid, or some other substance on the contact image sensor.	Clean the scanner path. (See “Cleaning the scanner path” on page 51.)
	There is a problem in the contact image sensor.	Replace the copier/scanner assembly.

Table 18. Solving copying and scanning image-quality problems (continued)

Problem	Cause	Solution
Scanned text is not clear. 	The contrast, resolution, or brightness needs to be adjusted before scanning.	1. Adjust the contrast and resolution settings from the HP LaserJet Copier. 2. Adjust the Quick Copy settings. 3. Check that the contrast and resolution settings are correct. See the user guide section for more information.
	The original is on colored paper.	If the original is on colored paper, including brown recycled paper, the text might not be clear. Try adjusting the resolution, contrast, and brightness settings from the toolbox on the HP LaserJet Director or HP Document Manager.
	There is a problem in the contact image sensor.	Replace the copier/scanner assembly.
Images are scanning at a reduced size. 	The HP software settings are set to reduce the scanned image.	1. Adjust the settings in the HP LaserJet Director or HP Document Manager. 2. Adjust the Quick Copy settings. 3. Adjust the settings in the HP LaserJet Copier software.
Large amounts of toner are scattered around the characters. 	The media is resisting the toner.	1. Use a different media type. Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family. 2. Turn the stack of media over and put it back in the tray. 3. Use media that is designed for laser printers.

Solving paper-feed problems

Use the following tables to solve problems related to moving paper or documents through the printer.

If the problem occurs when copying or scanning (and if the printer has the optional copier/scanner assembly attached), see table 20, “Solving copying and scanning paper-feed problems,” on page 148.

Otherwise, see table 19, “Solving print paper-feed problems,” on page 146.

Solving print paper-feed problems

Table 19. Solving print paper-feed problems

Problem	Cause	Solution
Pages are coming out curled or wrinkled.	Paper curl is inherent to the laser printing processes, and occurs when paper is subjected to heat. Paper curl tends to relax as the paper cools while resting on a flat surface.	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	Paper is curled or wrinkled when using the paper output bin.	Open the straight-through output door on the back of the printer and use this paper path. Reset the fuser mode to the default.
	Paper is not stored properly.	Whenever possible, store paper in its sealed ream at room temperature.
	The media is too long for the printer output bin.	Use the long media extension.
	The fuser temperature is too high.	Select **Optimize for:** in the **Paper** tab of the printer driver. Make sure that it is set for the appropriate media.
Print is misaligned on the page (skewed pages).	The main input tray is overfilled.	Remove some of the media.
	The paper guides are not set correctly, are broken, or are missing.	Be sure to center the paper with the side media guides. Verify that the guides are not adjusted too tightly or too loosely against the paper. Check for broken or missing guides and replace as necessary.
	The paper’s weight or surface finish does not meet HP’s specifications.	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.

Table 19. Solving print paper-feed problems (continued)

Problem	Cause	Solution
The printer feeds multiple sheets or jams frequently from the main input tray or priority input tray.	Paper guides are not adjusted properly.	Slide the guides against the sides of the stack in the main input tray or the priority input tray to center the paper. Make sure the guides are not adjusted too tightly.
	Paper was not removed from the main input tray before refilling the tray.	Always remove paper from the main input tray before refilling it.
	The main input tray is overfilled.	Remove some of the sheets. The main input tray can hold up to 250 sheets of 20-lb (75 g75 g/m^2) bond weight paper (less for heavier paper) or from 20 to 30 envelopes.
	The priority input tray is overfilled.	Remove some of the sheets. The priority input tray can hold up to ten sheets of 20-lb (75 g/m^2) bond weight paper (one sheet of heavier paper) or one envelope.
	The paper was poorly cut by the manufacturer and is sticking together.	“Break” the ream of paper by curving it into an upside-down u-shape; this can effectively decrease multifeeds. Also try turning the paper around to feed the opposite end first, or use a different type of paper.
	The paper does not meet HP’s specifications for print media.	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	The output capacity was exceeded in the paper output bin.	Do not allow more than 125 sheets of 20-lb (75 g/m^2) bond weight paper (less for heavier paper) to fill the paper output bin.
	The pickup roller is dirty.	Clean the pickup roller. See “Cleaning the printer pickup roller” on page 49.
	The pickup roller is damaged.	Replace the pickup roller. (See “Replacing the printer pickup roller” on page 41.)
	The separation pad is dirty.	Clean the separation pad. (See “Cleaning the printer separation pad” on page 50.)
	The separation pad is damaged.	Replace the separation pad. (See “Replacing the printer separation pad” on page 43.)
	A sensor is not operating properly.	Check the sensors to make sure that none of them are jammed. If a sensor cannot be “unjammed,” replace the sensor.

Solving copying and scanning paper-feed problems

Table 20. Solving copying and scanning paper-feed problems

Problem	Cause	Solution
Long pages stop feeding through the copier/ scanner.	The document is too long.	The maximum document length is 889 mm (35 inches). If your document is too long, copy each segment of it and scan the copies.
	The paper delivery sensor is damaged.	Free the paper delivery sensor. If you cannot free it, replace it.
Scanned items are crooked.	The media input tray guides are not set correctly, are broken, or are missing.	Be sure to center the paper with the media input tray guides. Verify that the guides are not adjusted too tightly or too loosely against the paper. Check for broken or missing guides and replace as necessary.
The copier/ scanner feeds multiple sheets or jams frequently from the media input tray.	The media input tray guides are not adjusted properly.	Remove the document from the media input tray. Straighten the item, then reinsert it. Slide the guides against the sides of the item to center it. Make sure the guides are not adjusted too tightly.
	The media input tray is overfilled.	Remove some of the sheets. The media input tray can hold up to 30 pages, depending on the thickness of the pages.
	The item was too thick, too slick, or otherwise did not meet specifications.	Make sure that the media meets specifications detailed in the *Print Media Guide* for the HP LaserJet printer family.
	The copier/scanner pickup roller is dirty.	Clean the copier/scanner pickup roller. (See the user guide.)
	The copier/scanner pickup roller is damaged or worn.	Replace the copier/scanner pickup roller. (See the user guide).
	The copier/scanner separation pad is dirty, damaged, or worn.	Replace the copier/scanner separation pad. (See “Replacing the copier/scanner separation pad” on page 45.)
	The sensor is not operating properly.	Check the sensor to make sure it is not jammed. If a sensor cannot be corrected, replace the copier/scanner assembly.
	There is a problem in the copier/scanner path.	Check the path for obstructions. Readjust as necessary or replace the copier/scanner assembly.

Engine test

The engine test is used to verify that the print engine is functioning correctly. The formatter is bypassed during an engine test, so the engine test is useful for isolating printer problems. The engine test prints horizontal lines down the entire printable area of a page and is also useful for checking and adjusting registration.

Printing an engine test

The engine test switch is inside the left cover, below the formatter.

To print an engine test, remove the left side cover. See “Left side cover” on page 80 and depress the engine test switch. A single test page will print.

Note

The formatter must be connected to the ECU to perform an engine test. (See callout 1 in figure 65 on page 121.) Otherwise, the printer does not print.

When you remove the left side cover, you must override the door interlock (SW 301). (See “Paper path check” on page 155.)

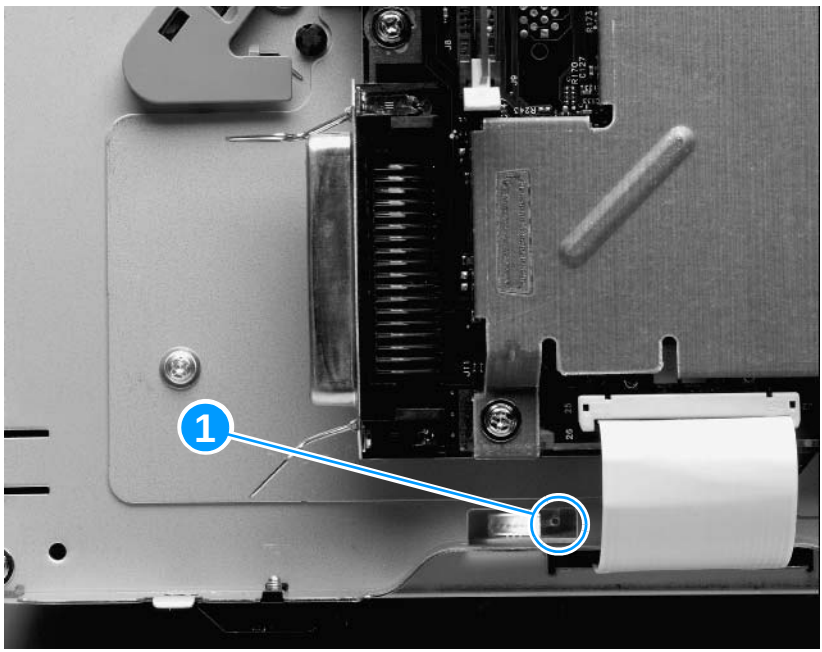


Figure 73. **Engine test switch**

Half self-test functional check

The electrophotographic process can be subdivided into the following stages:

- image formation stage (charges the drum and writes a latent image to the drum with the laser)
- development stage (forms a toner image on the drum)
- transfer stage (transfers the image to paper)
- cleaning stage (removes excess toner from the drum)
- fusing stage (applies heat and pressure to make the image on paper permanent)

To perform a half self-test check

The purpose of the half self-test check is to determine which process is malfunctioning.

1. Print a self-test page. (See “To print a self-test page” on page 159.)
2. Open the printer door after the paper advances half-way through the printer (about five seconds after the motor begins rotation). The leading edge of the paper should have advanced past the toner cartridge.
3. Remove the toner cartridge.
4. Open the toner cartridge drum shield to view the drum surface. If a dark and distinct toner image is present on the drum surface, assume that the first two functions of the electrophotographic process are functioning (image formation and development). Troubleshoot the failure as a transfer or fusing problem.

To perform other checks

If there is no image on the photosensitive drum, perform these checks:

1. Make sure you removed the entire length of the sealing tape from the toner cartridge before you installed the cartridge.
2. Perform a drum rotation functional check. (See “Drum rotation functional check” on page 151.)
3. Perform a high-voltage power supply check. (See “High-voltage power supply check” on page 153.)

Drum rotation functional check

The photosensitive drum, located in the toner cartridge, must rotate for the print process to work. The photosensitive drum receives its drive from the main drive assembly.

Note This test is especially important if refilled toner cartridges have been used.

1. Open the printer door.
2. Remove the toner cartridge.
3. Mark the drive gear on the cartridge with a felt-tipped marker. Note the position of the mark.
4. Install the toner cartridge and close the printer door. 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 that it is meshing with the toner cartridge gears. If the drive gears appear functional and the drum does not move, replace the toner cartridge.

Heating element check

Paper passes between the heating element and a soft pressure roller to fuse toner to the paper.

1. Unplug the printer for at least ten minutes.
2. Verify that the thermistor connector is seated into both the printer chassis and the ECU.
3. Remove the heating element connector (callout 1) from the ECU. To measure the continuity of the heating element, measure the resistance between the two pins at the end of the cable.

Note Normal resistance is 25 ohms +/- 10 ohms for the 110V printer and 80 ohms +/- 20 ohms for the 220V printer.

If no resistance is measured, replace the fuser.

4. Remove the thermistor connector (callout 2), and measure the resistance between J206 pins one and two and between J206 pins three and four.

Note Normal resistance between both pairs of pins is 370K ohms +/- 50K ohms at 20° C (68° F).

5. If no resistance is measured, replace the fuser.

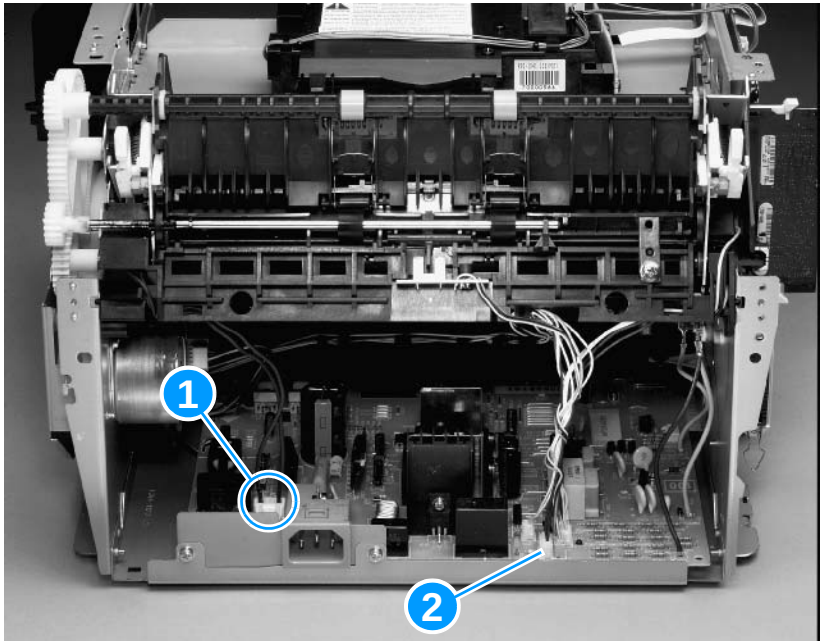


Figure 74. Locating connectors for the heating element check

High-voltage power supply check

The high-voltage power supply PCA provides the necessary voltages for the electrophotographic processes.

To check the toner cartridge connection points

Turn the toner cartridge over and visually inspect the three connection points on the ends of the toner cartridge: drum ground (callout 1), charging (callout 2), and developing roller (callout 3). If they are dirty or corroded, clean the connection. If they are damaged, replace the toner cartridge.

Note Use only isopropyl alcohol to clean the connections.

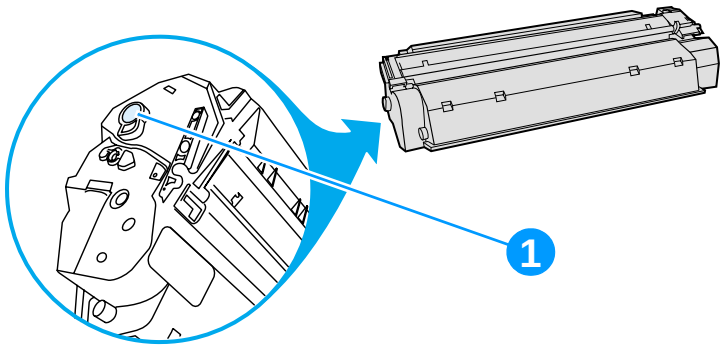


Figure 75. Toner cartridge high-voltage connection points (right side)

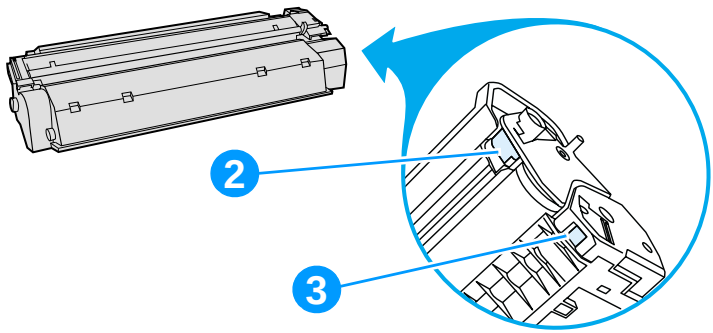


Figure 76. Toner cartridge high-voltage connection points (left side)

To check the high-voltage connector assembly

The assembly uses three spring-loaded pins to contact the toner cartridge: drum ground (callout 1), charging (callout 2), and developing roller (callout 3). Verify that the pins are not dirty or corroded and that the spring-loading action is functional. If the pins are dirty, clean them using isopropyl alcohol only. If they are damaged, replace the high voltage connector assembly.

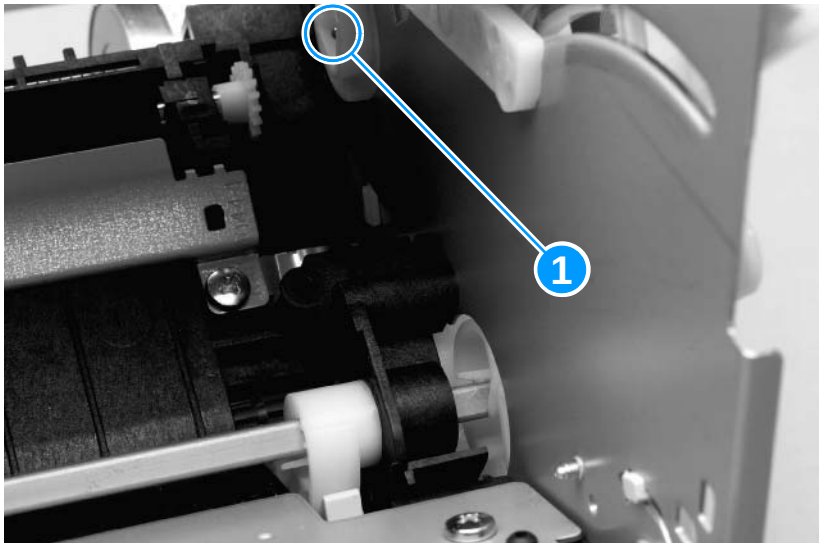


Figure 77. **High-voltage connector assembly (right side)**

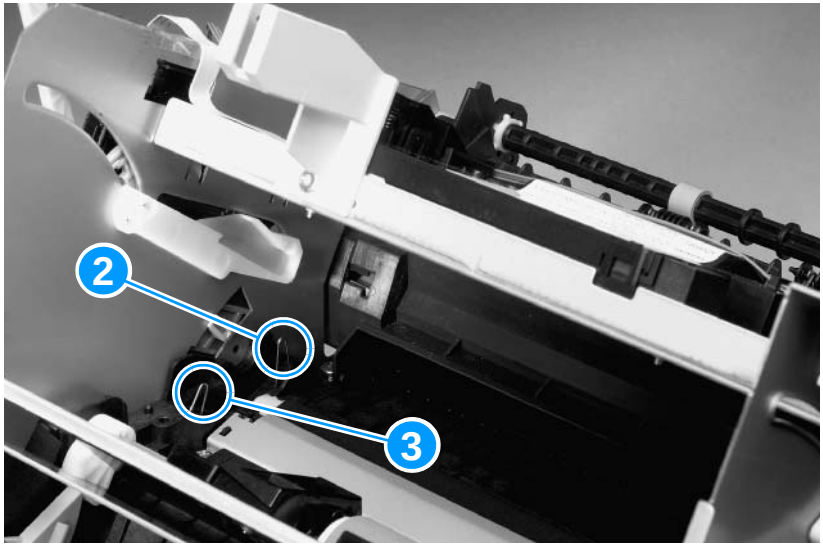


Figure 78. **High-voltage connector assembly (left side)**

Paper path check

If paper is not being picked up or is not moving through the paper path, you might want to observe all of the paper motion activities. Overriding the door interlock (SW301) allows you to observe:

- motor rotation
- solenoid action
- kick plate motion
- paper pickup roller motion
- drive roller, transfer roller, fuser roller and gear, and delivery roller motion

To override SW301

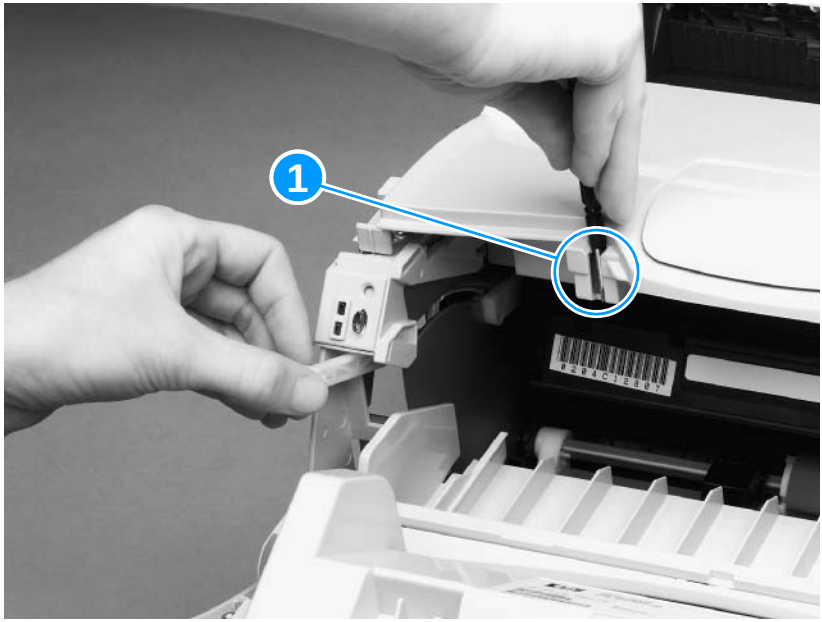


Figure 79. **Overriding SW301**

1. Remove the left side cover. (See “Left side cover” on page 80.)
2. Install the toner cartridge, which will press SW301.
3. Press the laser/scanner interlock switch (callout 1) on the laser/scanner.
4. While SW301 and the laser/scanner interlock are engaged, perform an engine test or self-test to observe paper motion. (See procedures elsewhere in this chapter.)

Service mode functions

NVRAM initialization/cold reset

NVRAM initializer sets all default variables stored in NVRAM back to factory default values or to a default ROM value, depending on the variable. It also performs a system reset.

NVRAM initializer resets the following:

- all menu settings to factory default values
- factory settings such as formatter number, page counts, factory paper settings

To perform NVRAM initialization

1. Turn the printer off.
2. Press and hold down the Go button.
3. Turn the printer on and continue to hold the Go button for at least 20 seconds. During this process, the Go button, Attention, and Ready LEDs will each turn on.
4. Release the Go button.
5. The printer LEDs will begin cycling. The NVRAM-unit process will run until the printer is in the ready state.

PJL software commands

To set the following NVRAM variables:

Factory printer DEFAULT PAPER and copier/scanner factory default paper size will be set to the same value automatically.

Factory printer DEFAULT LPARM:PCL SYMSET

Factory DEFAULT OEM bit

Factory DEFAULT PRINTPAGECOUNT

Factory DEFAULT SCANPAGECOUNT

Factory DEFAULT COPYPAGECOUNT

Default Quick Copy paper size is also stored in scanner NVRAM but is changed only through the software or when set back to factory default with a NVRAMINIT. Only Quick Copy image type and contrast have a default value stored in NVRAM; they can only be changed through the software or by NVRAMINIT, which returns them to a ROM default value.

The table below provides a more detailed description of the NVRAM PJL factory variables and commands and shows possible settings for each.

Table 21. NVRAM PJL factory variables

NVRAM PJL variable or command	Possible settings
DEFAULT PAPER	LETTER, LEGAL, A4, EXECUTIVE, COM10, MONARCH, DL, C5, B5, CUSTOM, JISB5, ISOB5, JPOST, JPOSTTD, A5, FOOLSCAP
DEFAULT LPARM: PCL SYMSET	ROMAN8, ISOLI, ISOL2, ISOL5, PC8, PCS8DN, PC850, PC852, PC8TK, WINL1, WINL2, WINL5, DESKTOP, PSTEXT, WNINTL, VNUS, MSPUBL, MATH8, PSMATH, WNMATH, PIFONT, LEGAL, ISO4, ISO6, ISO11, ISO15, ISO17, ISO21, ISO60, ISO69, WIN30
DEFAULT OEM	ON,OFF
DEFAULT PRINTPAGECOUNT	0-2147483647
DEFAULT SCANPAGECOUNT	0-2147483647
DEFAULT COPYPAGECOUNT	0-2147483647
CLEARNVRAM	None - Command
NVRAMINIT	None - Command

NVRAM PJL factory variables

To use these commands, you need some method to send PJL commands to the printer, either with a software tool or by copying a binary file that contains the commands from the host using a DOS box. For example, from the DOS prompt:

```
copy /b filename lpt1
```

Here is an example of a file that uses one of the commands:

```
ESC%-12345X@PJL SET SERVICEMODE=HPBOISEID
@PJL ‘command’
@PJL RESET
```

Here is an example of using the NVRAMINIT command:

```
ESC%-12345X@PJL SET SERVICEMODE=HPBOISEID
@PJL NVRAMINIT
@PJL RESET
```

Note Set SERVICEMODE before trying to set the variable or you will not get the desired result. Also reset the PJL and print a report to verify that the SERVICEMODE status is cleared.

To create these files, you need an editor that can insert the ESC character or is able to copy it in from a existing file. If a software tool is used, simply send the same strings in the same order as given for the example files.

Troubleshooting tools

Internal reports

Use the control panel to print self-test pages, which show the print settings.

To print a self-test page

1 When the printer is in the ready state, press the Go button.

2 A self-test page will print.

Information found on the self-test page

The self-test page has the following fields: Product Information, Memory, Installed Personalities and Options, Print Settings, and Page Counts (including pages jammed in printer, pages mispicked in printer, and total pages printed).

If the optional copier/scanner is installed, the self-test page has a Copy Settings field, and it has additional page count information (pages jammed in scanner, pages scanned to copy, pages printed from copy, and pages scanned to host).

To view a sample self-test page, see figure 80 on page 160.

To print a continuous self-test page

1 Turn the printer off.

2 Press and hold the Go button.

3 Turn the printer on and continue to hold the Go button for approximately 5 seconds. Do not hold the Go button for more than 15 seconds, or you might initialize NVRAM.

Note During this process the Attention LED will turn on. If the Ready LED also turns on before you release the Go button, you must start again with step 1.

4 Release the Go button, and the printer LEDs will begin cycling and will run until the printer is in the ready state.

To stop a continuous self-test page

Press the Go button.

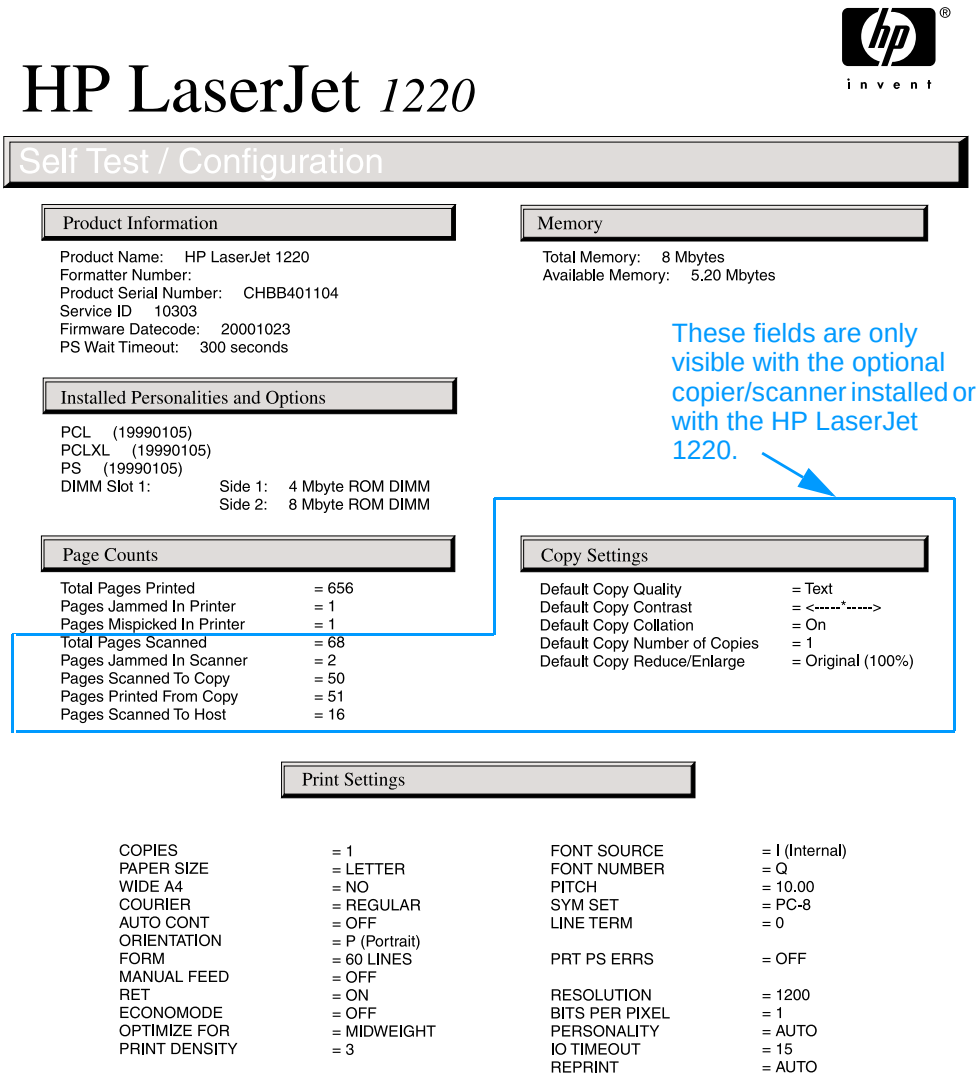


Figure 80. Self-test page

Repetitive image defect ruler

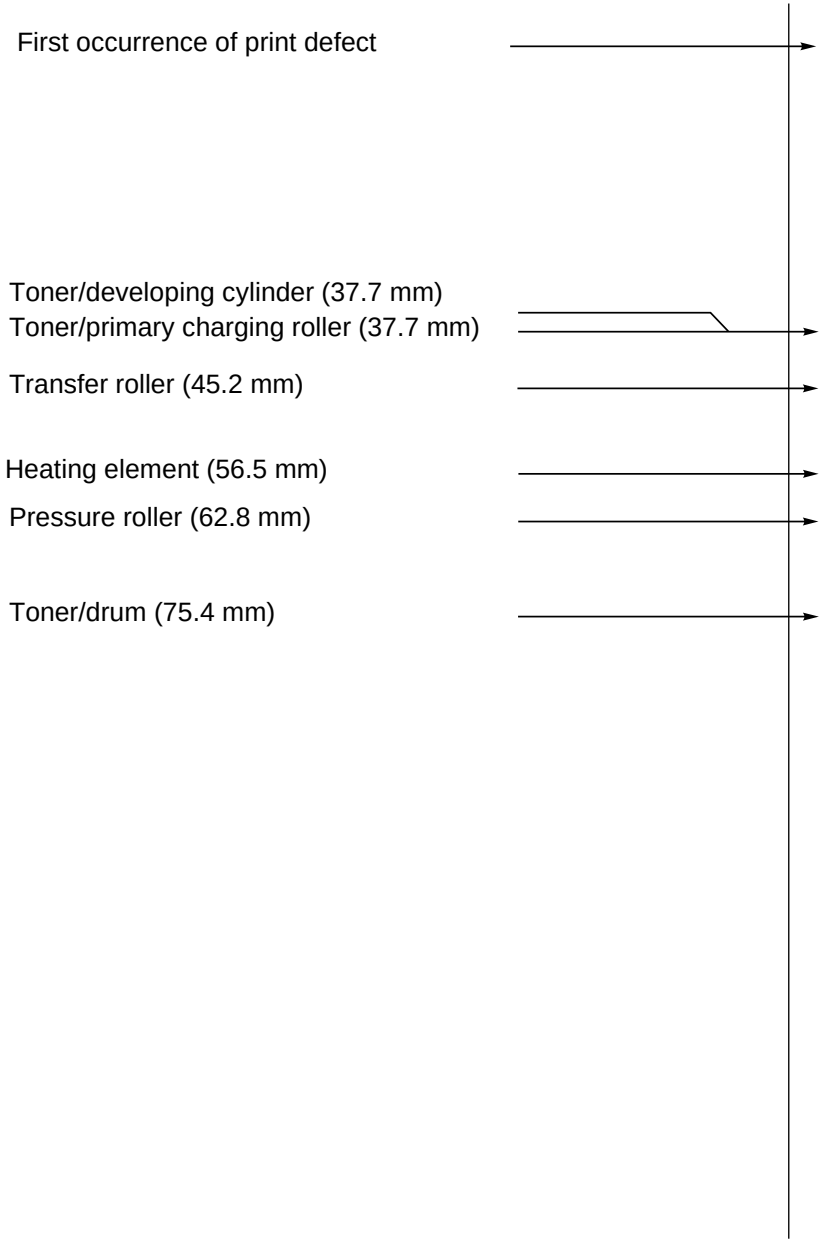


Figure 81. **Repetitive image defect ruler**

Main wiring

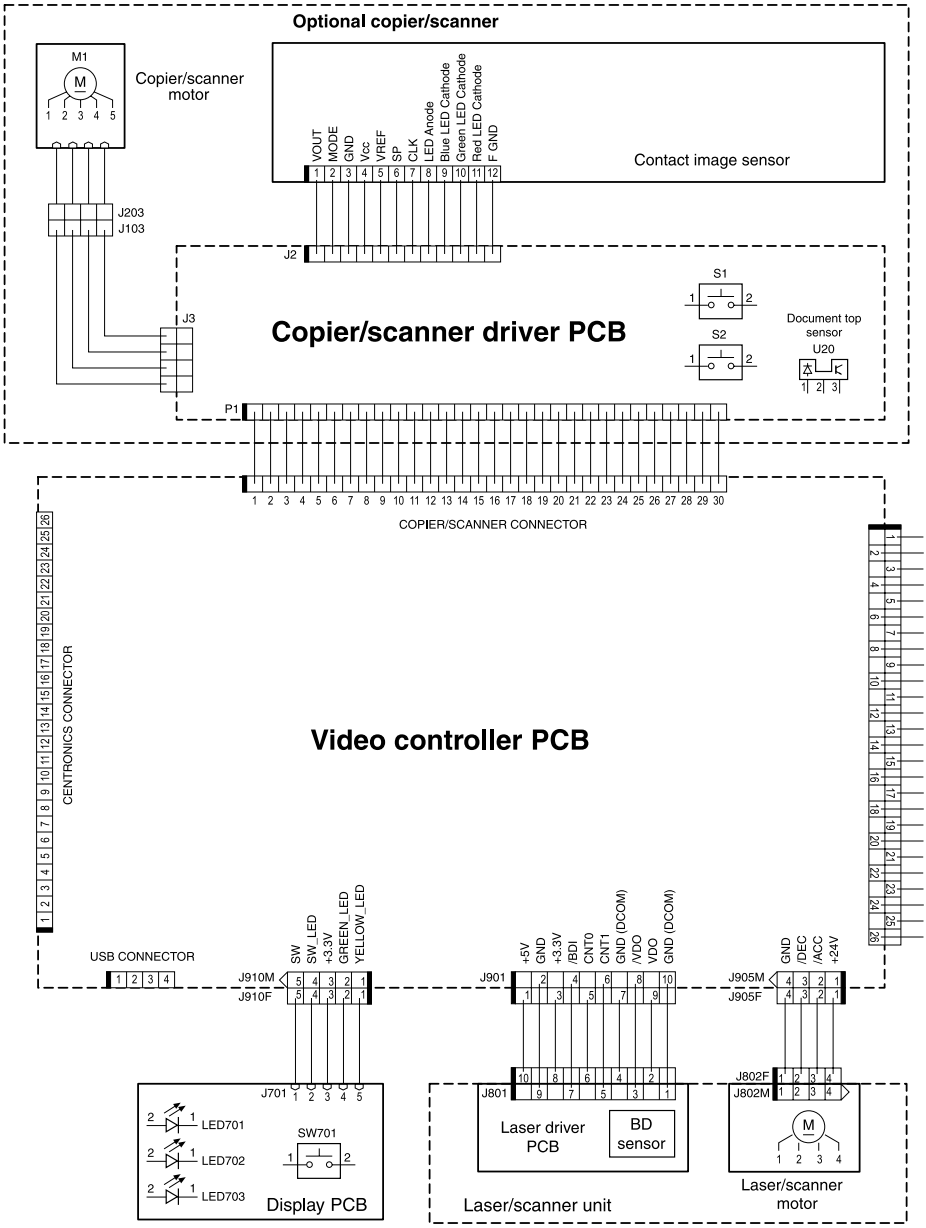


Figure 82. **Main wiring (1 of 2)**

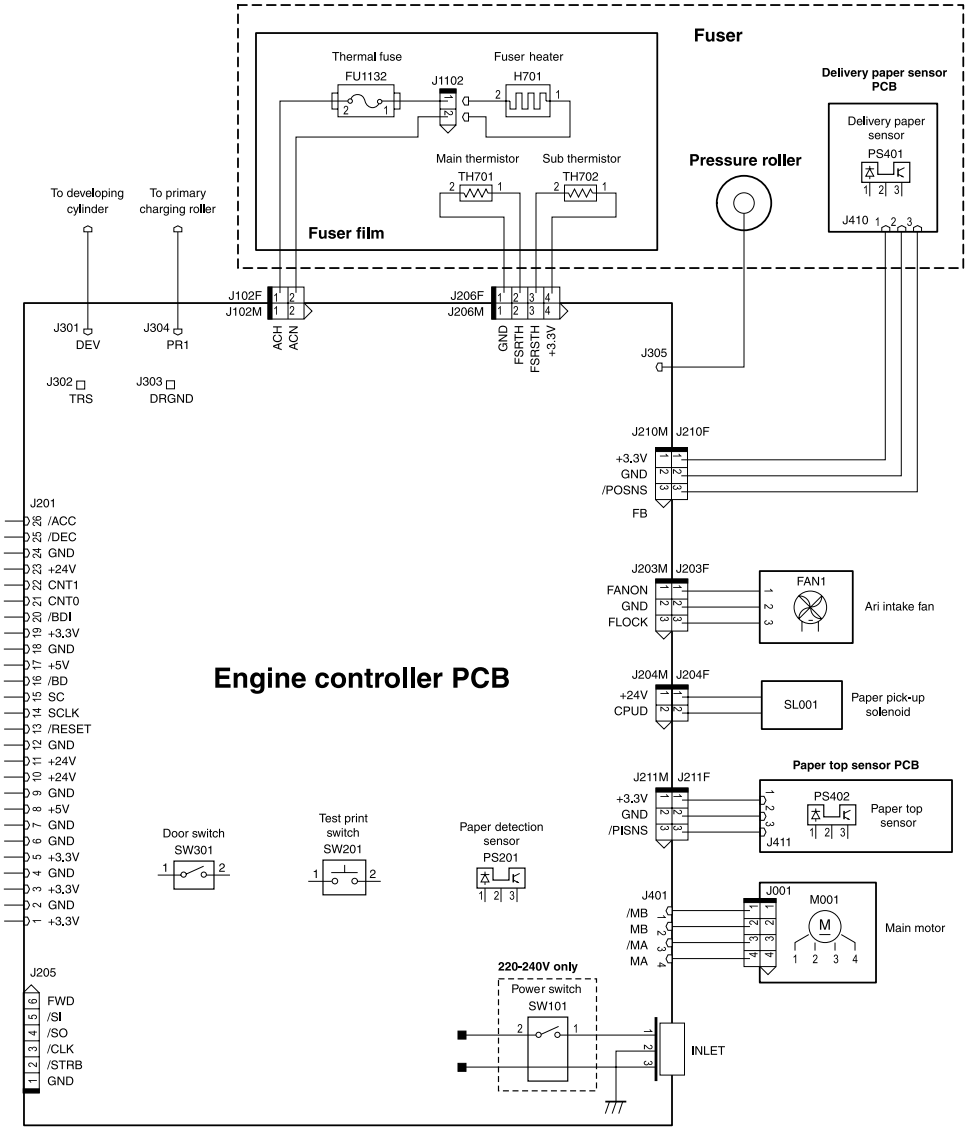


Figure 83. **Main wiring (2 of 2)**

Locations of connectors

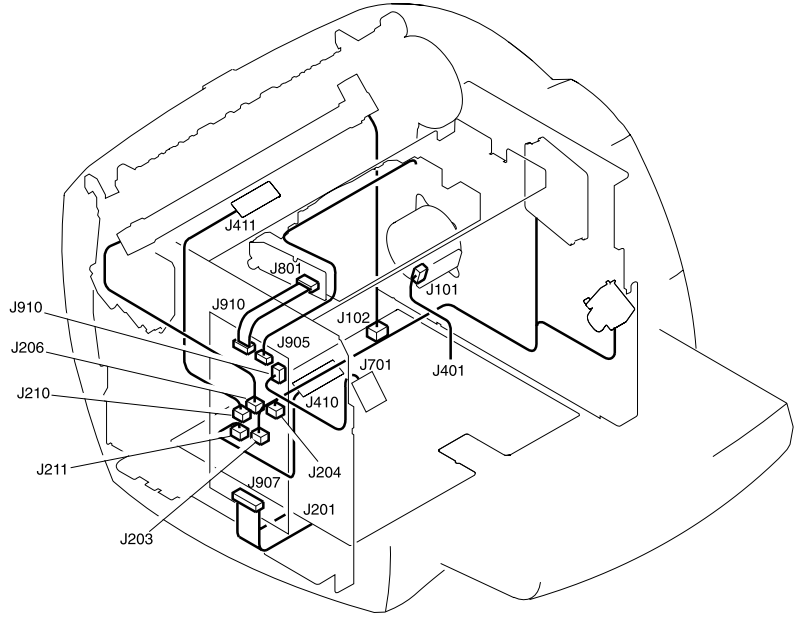


Figure 84. **Locations of printer connectors**

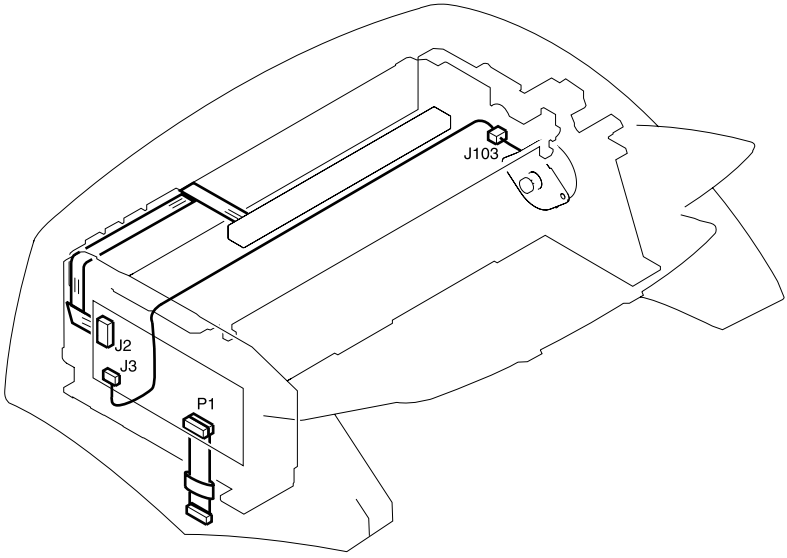


Figure 85. **Locations of copier/scanner connectors**

Locations of LEDs, jumpers, and switches

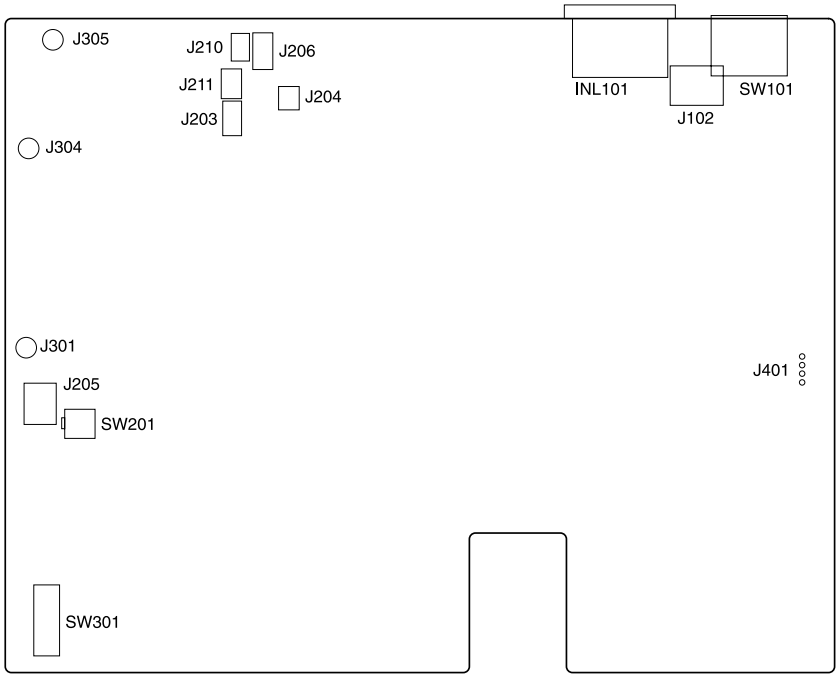


Figure 86. **Locations of LEDs, jumpers, and switches**

Table 22. Switch functions

SW number	Function	Remarks
SW101	Power switch	220-240V only
SW201	Switch for test print	
SW301	Switch for detection of open door	

7 Parts and diagrams

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Ordering parts and supplies

Parts

Order replacement parts from the following website:
http://www.hp.com/ssg/parts/direct_order.html

Related documentation and software

Order documentation and software from the companies listed in table 23; some documentation and software is available at the following websites:

Table 23. Technical support websites

HP Customer Care Online Software drivers, support documentation, and answers to frequently asked questions	http://www.hp.com/go/support
HP Technical Training (North America) Classes and schedules	http://www.hp.com/go/resellertraining
Parts Parts information	http://outfield.external.hp.com/spi/welcome.htm

Consumables

Printer consumables are listed in chapter 3, “Maintenance,” in table 11 on page 40. Consumables are available directly from Hewlett-Packard at the following numbers:

- US: (800) 538-8787
- Canada: (800) 387-3154
  in Toronto: (416) 671-8383
- United Kingdom: 0734-441212
- Germany: 0130-3322

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

Accessories

Table 24. Accessories

Item	Description	Part number
Dual in-line memory modules (DIMMs)	8 MB	C7842A
	16 MB	C7843A
	32 MB	C7845A
	64 MB	C7846A
Toner cartridge	2,500 page cartridge	C7115A
	3,500 page cartridge	C7115X
Cables and interface accessories	2-meter IEEE-1284 parallel cable	C2950A
	3-meter IEEE-1284 parallel cable	C2951A
	2-meter USB cable	8121-0539
	2-feet USB cable	8121-0549
	Power cord, US/Canada	8120-6812
	Power cord, Europe	8120-6811
	Power cord, Switzerland	8120-6815
	Power cord, UK	8120-6809
	Power cord, Danish	8120-6814
	Power cord, SA	8120-6813
	Power cord, Israel	8120-6800
HP JetDirect print servers	175X	J6035-60001
Power modules (NOTE: If two parts are listed for one country or region, you can use either part regardless of the output rating.)	Australia, New Zealand, and Argentina INPUT: 240 Vac 50 Hz OUTPUT: 13 VDC @ 300 ma	0950-3172
	Australia, New Zealand, and Argentina INPUT: 240 Vac 50 Hz OUTPUT: 13 VDC @ 800 ma	0950-3358
	China INPUT: 220 Vac 50 Hz OUTPUT: 13 VDC @ 300 ma	0950-2806
	China INPUT: 220 Vac 50 Hz OUTPUT: 13 VDC @ 800 ma	0950-3347
	Continental Europe INPUT: 230 Vac 50 Hz OUTPUT: 13 VDC @ 300 ma	0950-3170
	Continental Europe INPUT: 230 Vac 50 Hz OUTPUT: 13 VDC @ 800 ma	0950-3349

Table 24. Accessories (continued)

Power modules (continued)	Japan INPUT: 100 Vac 50 Hz OUTPUT: 13 VDC @ 300 ma	0950-3173
	Japan INPUT: 100 Vac 50 Hz OUTPUT: 13 VDC @ 800 ma	0950-3352
	South Korea INPUT: 220-240 Vac 50 Hz OUTPUT: 13 VDC @ 625 ma	9100-5168
	South Korea INPUT: 220 Vac 50 Hz OUTPUT: 13 VDC @800 ma	0950-3351
	South Africa and India INPUT: 220-250 Vac 50 Hz OUTPUT: 13 VDC @ 625 ma	9100-5171
	South Africa and India INPUT: 220-250 Vac 50 Hz OUTPUT: 13 VDC @ 800 ma	0950-3354
	United Kingdom, Singapore, Ireland, and Hong Kong INPUT: 220-240 Vac 50 Hz OUTPUT: 13 VDC @ 300 ma	0950-3171
	United Kingdom, Singapore, Ireland, and Hong Kong INPUT: 220-240 Vac 50 Hz OUTPUT: 13 VDC @ 800 ma	0950-3350
	USA, Canada, Latin America, and Taiwan INPUT: 110-127 Vac 60 Hz OUTPUT: 13 VDC @ 300 ma	0950-3169
	USA, Canada, Latin America, and Taiwan INPUT: 110-127 Vac 60 Hz OUTPUT: 13 VDC @ 800 ma	0950-3348
Toner cloth		5090-3379

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 (material list) follows each exploded assembly diagram. Each table lists the reference designator, the associated part number for the item, and a description of the part.

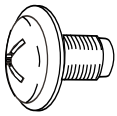
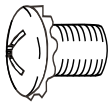
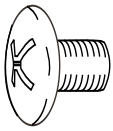
Parts that have no reference designator or part number are not field-replaceable units and cannot be ordered.

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

Common hardware

The printer has three common fasteners. See table 25 for a description of these screw types.

Table 25. Common fasteners

Example	Description
	Screw, machine, truss head
	Screw, star
	Screw, self-tapping

Assembly locations

Printer trays & optional copier/scanner

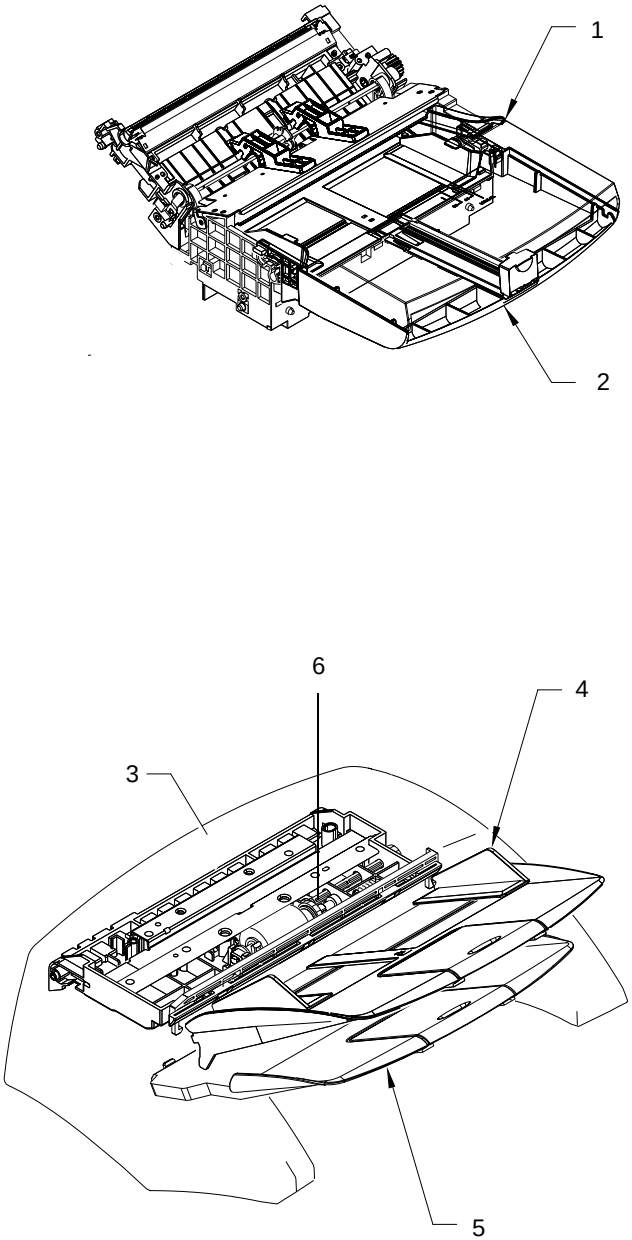


Figure 87. **Assembly locations**

Part numbers

Table 26. Printer trays and optional copier/scanner

Ref.	Part number	Description	Qty.
1	RG0-1013-000CN	Printer pickup tray assembly	1
2	RG0-1014-000CN	Paper pickup cover assembly	1
3	R37-5020-000CN	Optional copier/scanner	1
4	RG0-1069-000CN	Copier/scanner pickup tray assembly	1
5	RG0-1070-000CN	Face-down tray assembly	1
6	RY7-5055-000CN	Copier/scanner separation pad	1

Covers

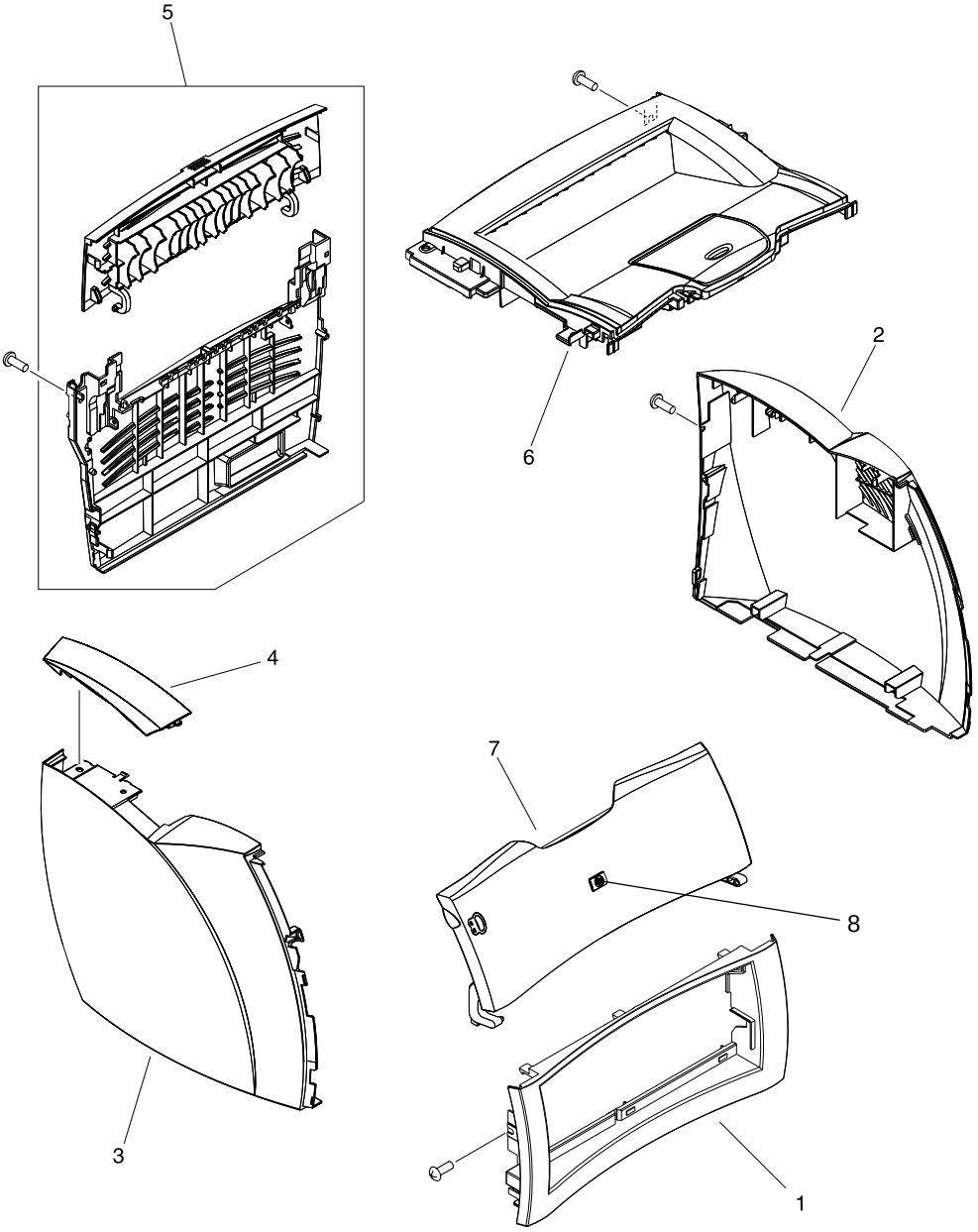


Figure 88. **Covers**

Part numbers

Table 27. Covers

Ref.	Part number	Description	Qty.
1	RA0-1177-000CN	Cover, front	1
2	RA0-1178-000CN	Cover, right side	1
3	RA0-1179-000CN	Cover, left side	1
4	RA0-1183-000CN	Cover, connector	1
5	RA0-1016-000CN	Back cover assembly	1
6	RG0-1017-000CN	Top cover assembly	1
7	RG0-1015-000CN	Toner cartridge door assembly	1
8	7121-8042	HP Jewel	1
	RY7-5082-000CN	Screw kit (contains a full set of screws for the LaserJet 1200 product)	1

Internal assemblies

Internal components (1 of 2)

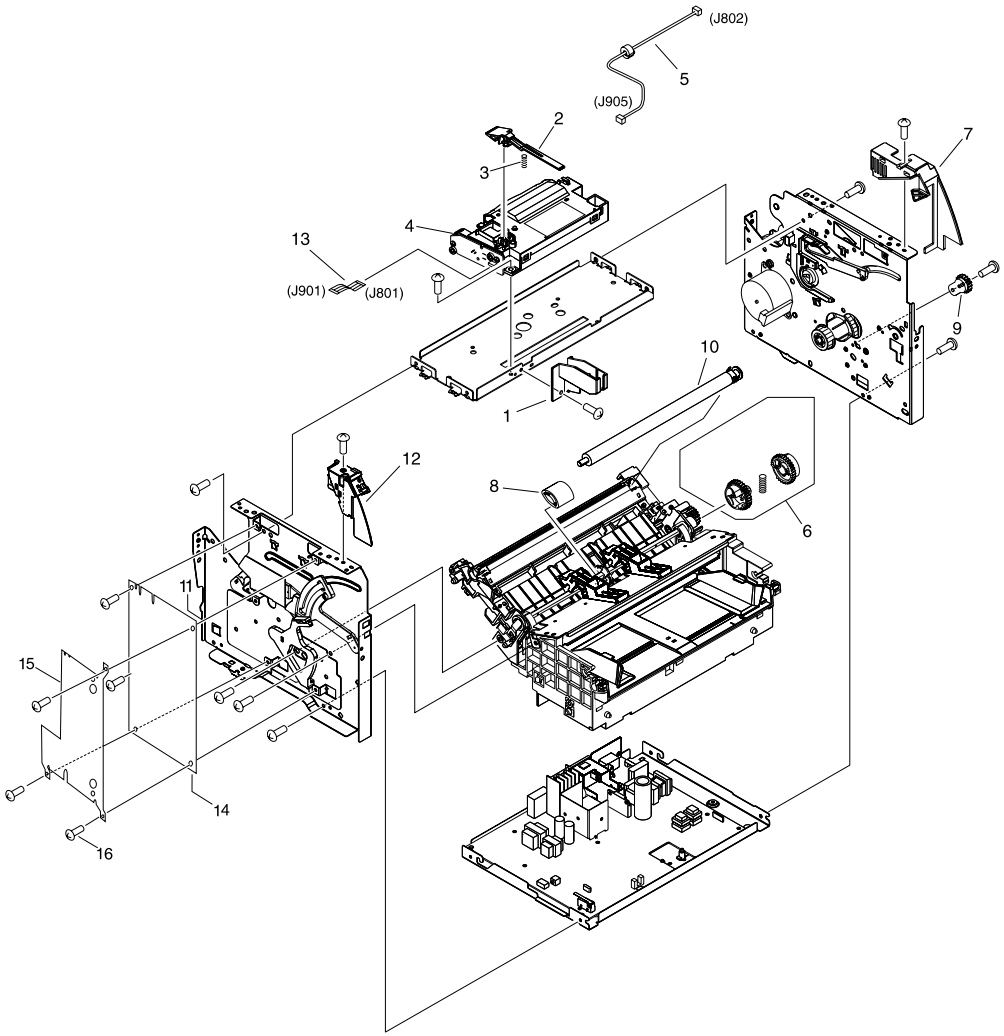


Figure 89. **Internal components (1 of 2)**

Part numbers

Table 28. Internal components (1 of 2)

Ref.	Part number	Description	Qty.
1	RA0-1181-000CN	Shutter guide	1
2	RA0-1182-000CN	Shutter lever	1
3	RA0-1169-000CN	Compression spring	1
4	RG9-1486-000CN	Laser/scanner assembly	1
5	RG0-1074-000CN	Cable, laser/scanner	1
6	RG0-1020-000CN	Pickup gear assembly	1
7	RA0-1184-000CN	Cover, right support	1
8	RF0-1008-000CN	Pickup roller	1
9	RA0-1172-000CN	Gear, 17T	1
10	RG9-1483-000CN	Transfer roller	1
11	RG0-1002-000CN	Left plate assembly	1
12	RG0-1024-000CN	Control panel assembly	1
13	RH2-5440-000CN	Cable, laser/scanner flat flexible	1
14	C7857-60001	Formatter	1
15	C7044-00001	Formatter shield	1
16	0515-2672	Formatter screws	5

Internal components (2 of 2)

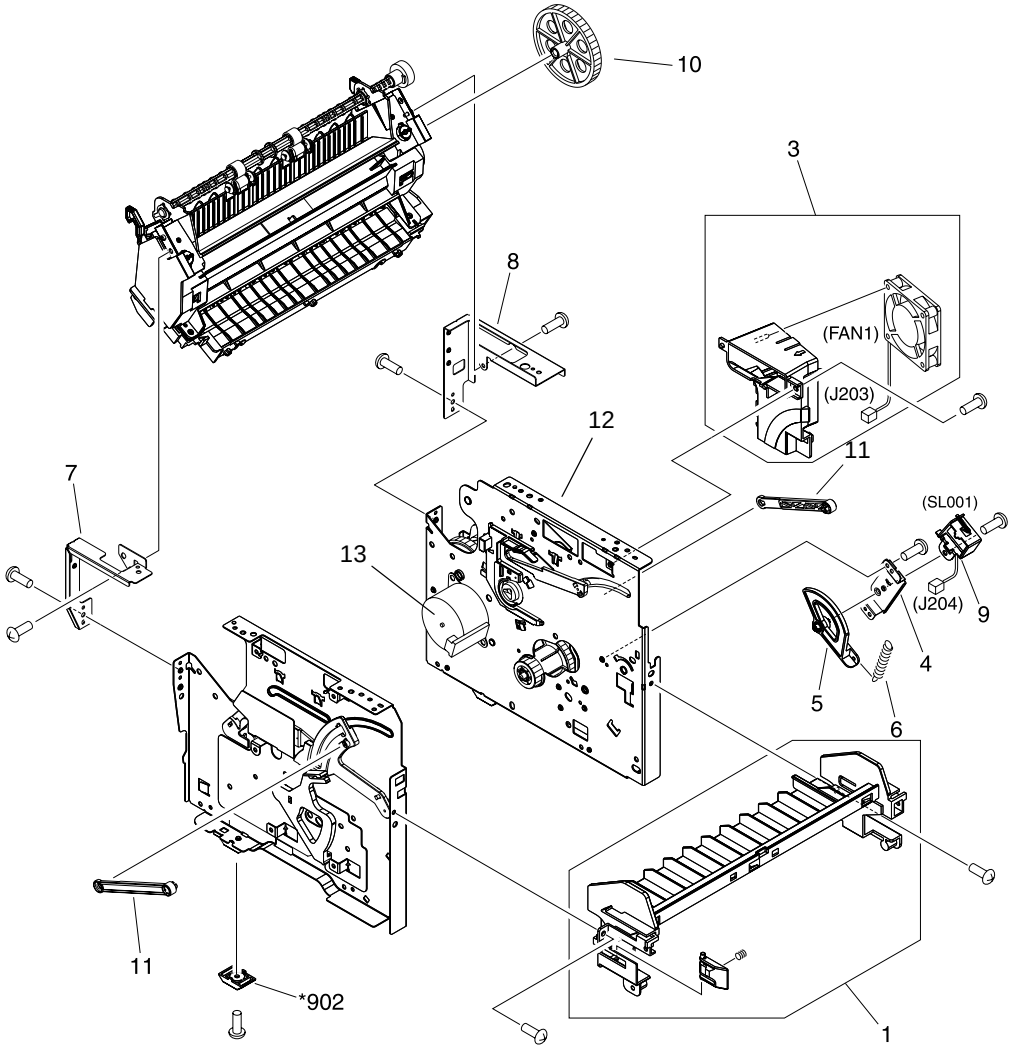


Figure 90. **Internal components (2 of 2)**

Part numbers

Table 29. Internal components (2 of 2)

Ref.	Part number	Description	Qty.
1	RG0-1022-000CN	Front guide assembly	1
3	RG0-1030-000CN	Fan assembly	1
4	RA0-1173-000CN	Lever holder	1
5	RA0-1174-000CN	Lever	1
6	RA0-1175-000CN	Tension spring	1
7	RA0-1185-000CN	Fuser plate, left	1
8	RA0-1186-000CN	Fuser plate, right	1
9	RH7-5284-000CN	Solenoid, DC24V	1
10	RA0-1176-000CN	Gear, 69T	1
11	RA0-1023-000CN	Connecting Link	2
12	RG0-1001-000CN	Right plate assembly	1
13	RH7-1473-000CN	Motor	1
902	RA0-1197-000CN	Foot, rubber (plate assemblies)	2

Electrical components

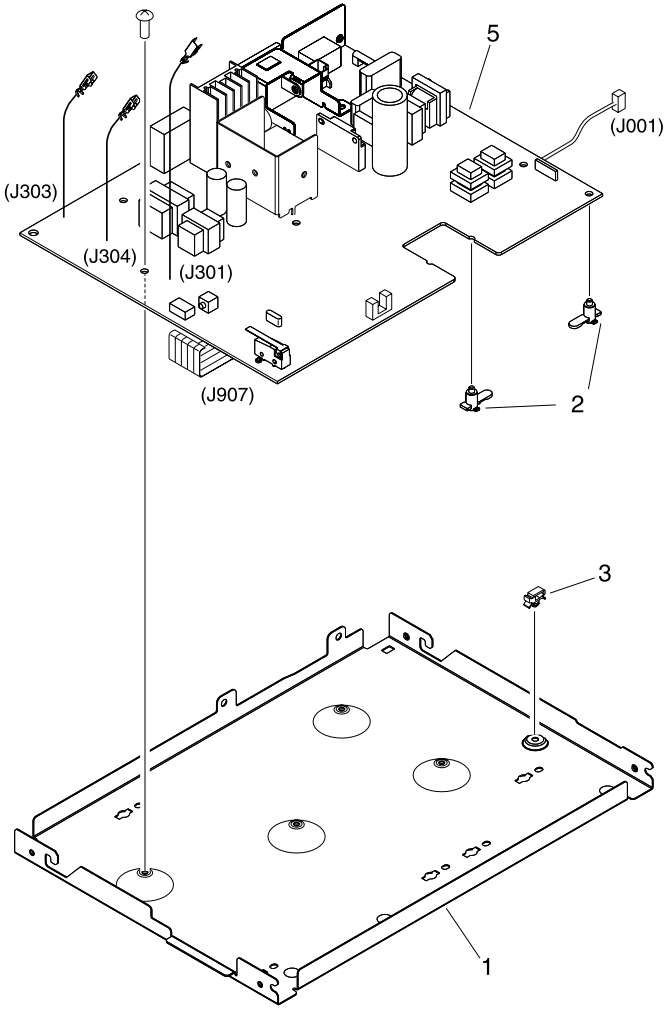


Figure 91. **Electrical components**

Part numbers

Table 30. Electrical components

Ref.	Part number	Description	Qty.
1	RA0-1127-000CN	Engine controller case	1
2	RA0-1128-000CN	PCB spacer	6
3	WT2-5694-000CN	Clamp, cable	1
5	RG0-1012-000CN	Engine controller PCB assembly, 110-127V	1
	RG0-1029-000CN	Engine controller PCB assembly, 220-240V	1

Paper pickup assembly (1 of 2)

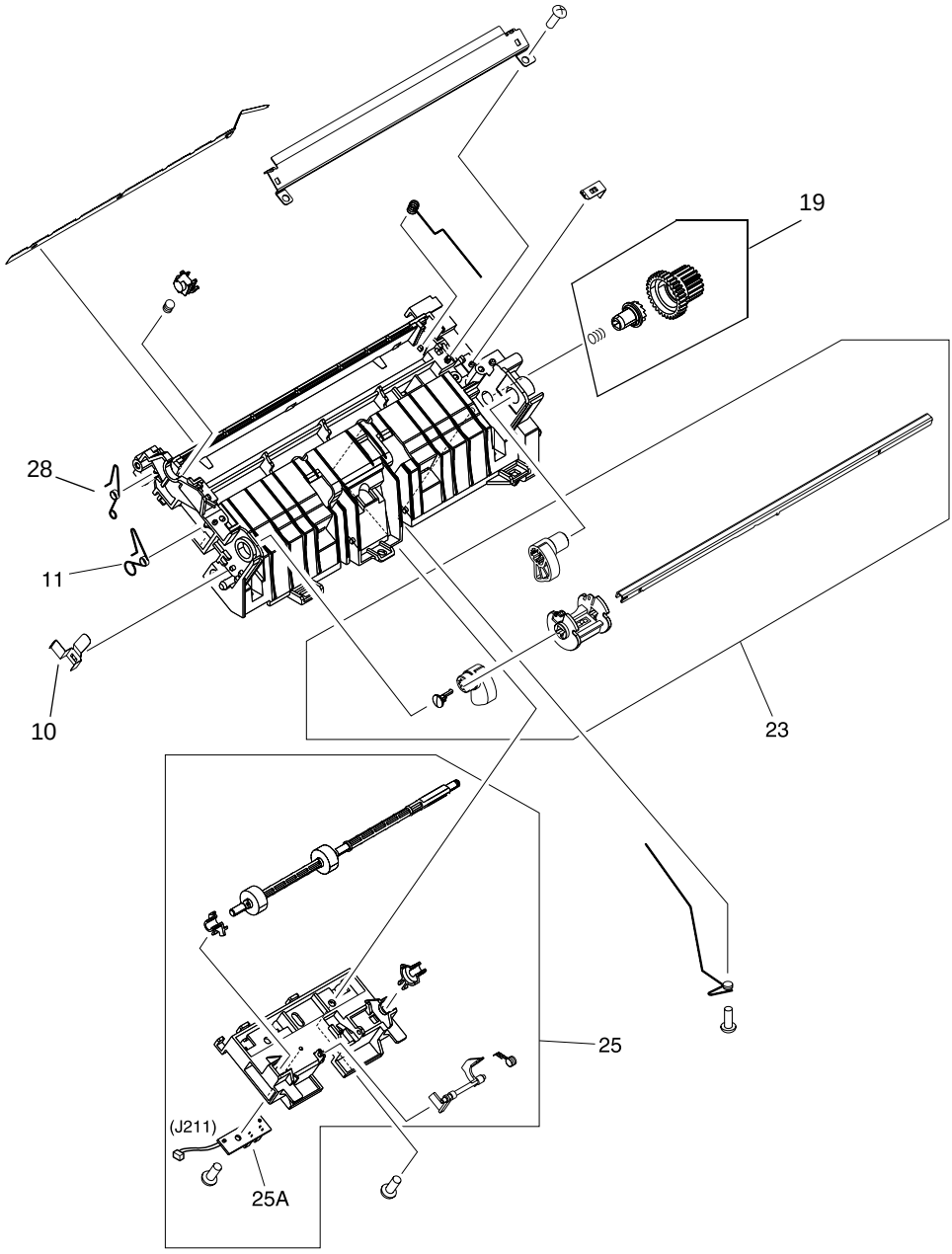


Figure 92. **Paper pickup assembly (1 of 2)**

Part numbers

Table 31. Paper pickup assembly (1 of 2)

Ref.	Part number	Description	Qty.
	RG0-1003-000CN	Paper pickup assembly	1
10	RA0-1072-000CN	Grounding plate	1
11	RA0-1035-000CN	Torsion spring	1
19	RY7-5081-000CN	Clutch kit	1
23	RG0-1007-000CN	Paper pickup shaft assembly	1
25	RG0-1005-000CN	Feed roller holder assembly	1
25A	RG0-1072-000CN	Paper sensor PCB assembly	1
28	RA0-1200-000CN	Torsion spring	1

Paper pickup assembly (2 of 2)

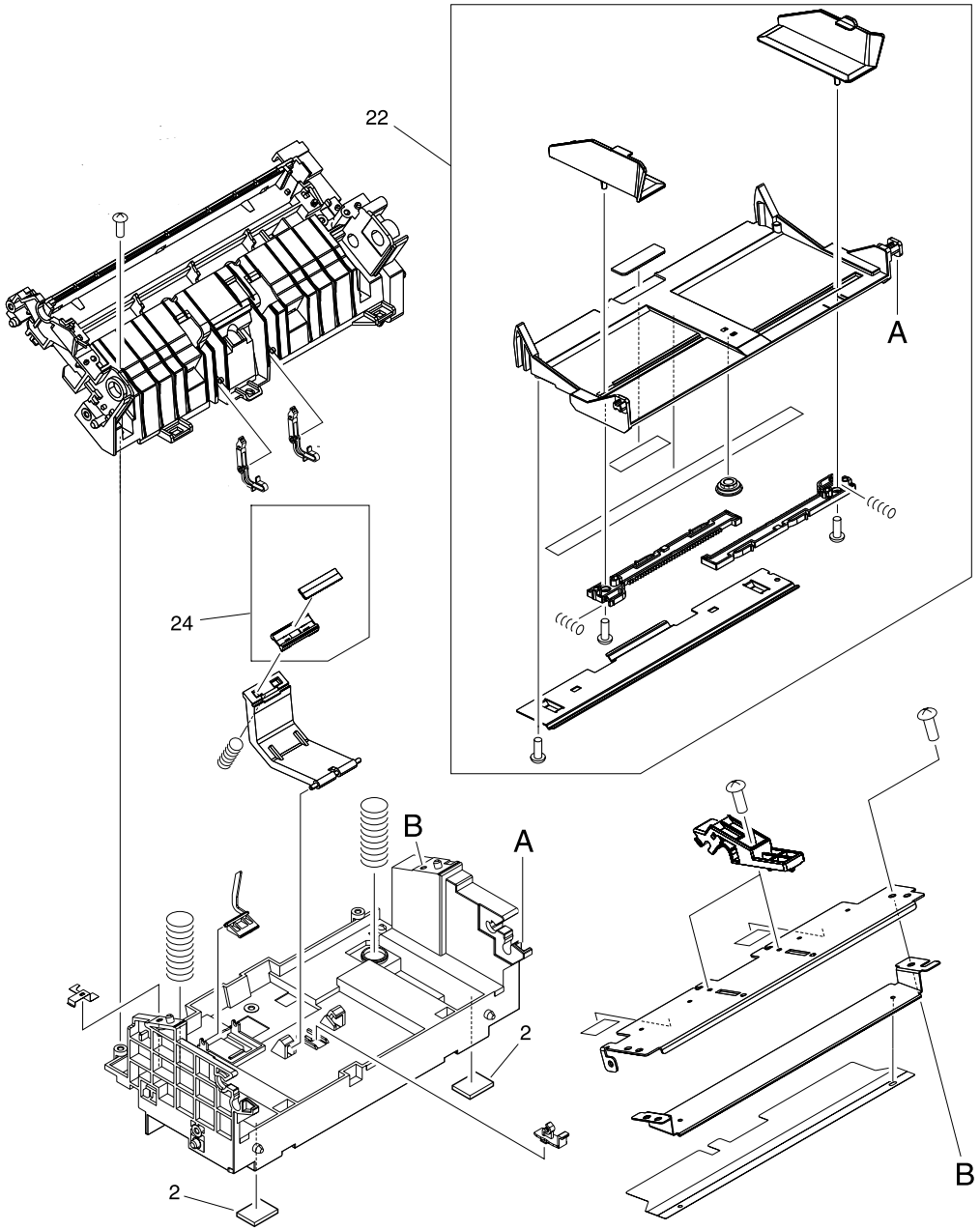


Figure 93. **Paper pickup assembly (2 of 2)**

Table 32. Paper pickup assembly (2 of 2)

Ref.	Part number	Description	Qty.
2	RA0-1003-000CN	Foot, rubber (paper pickup assembly)	2
22	RG0-1006-000CN	Paper lift plate assembly	1
24	RF0-1014-000CN	Separation pad	1

Fuser assembly

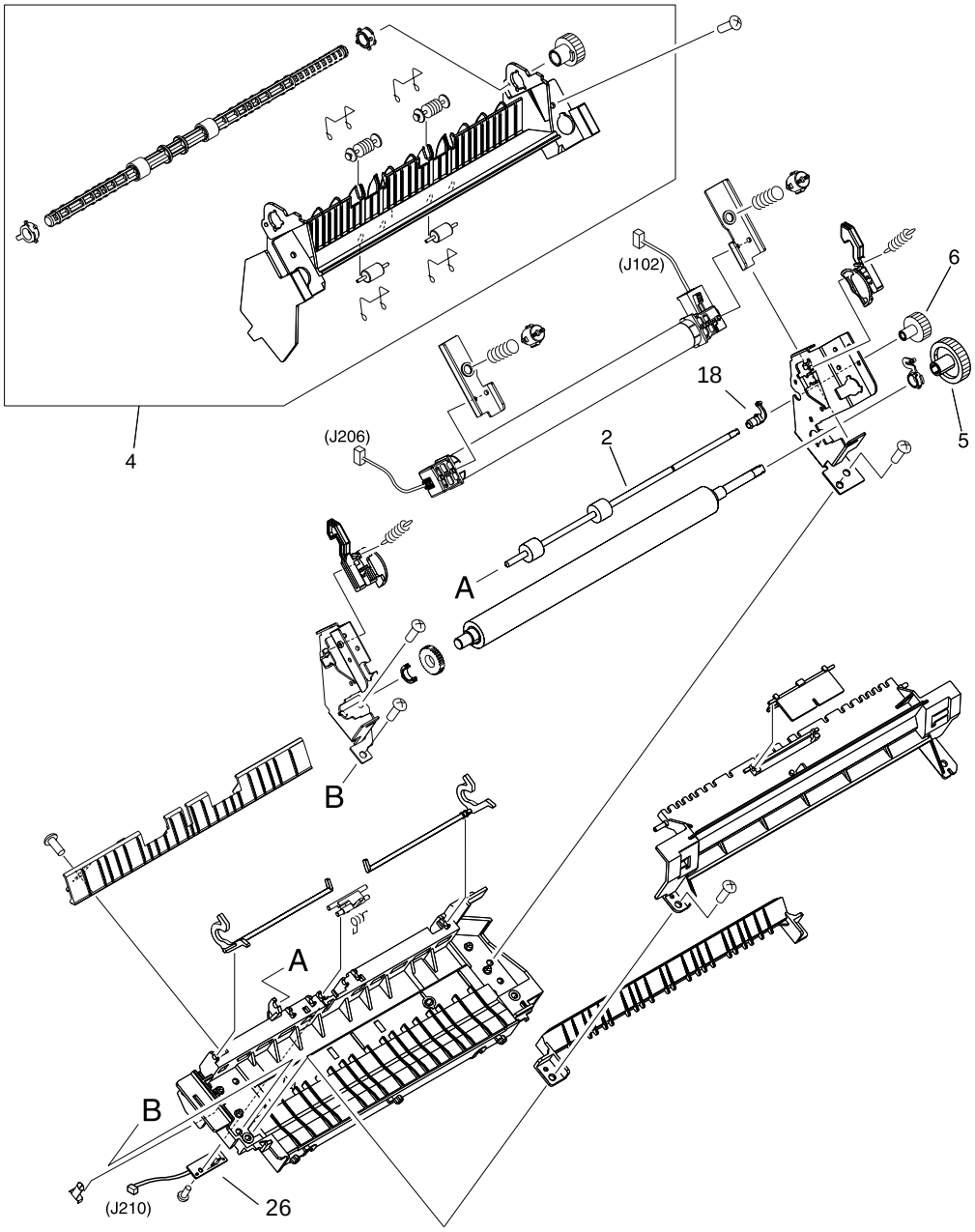


Figure 94. **Fuser assembly**

Part numbers

Table 33. Fuser assembly

Ref.	Part number	Description	
	RG0-1008-000CN	Fuser assembly, 110V	1
	RG0-1026-000CN	Fuser assembly, 220V	1
2	RF0-1003-000CN	Face-up roller	1
4	RG0-1010-000CN	Face-down delivery assembly	1
5	RA0-1088-000CN	Gear, 29T	1
6	RA0-1089-000CN	Gear, 17T (fuser assembly)	1
18	RA0-1104-000CN	Bushing	1
26	RG0-1082-000CN	Delivery sensor PCB assembly	1

Alphabetical parts list

Table 34. Alphabetical parts list

Description	Part number	Ref.	Figure
Back cover assembly	RA0-1016-000CN	5	88
Bushing	RA0-1104-000CN	18	94
Cable, laser/scanner	RG0-1074-000CN	5	89
Cable, laser/scanner flat flexible	RH2-5440-000CN	13	89
Clamp, cable	WT2-5694-000CN	3	91
Clutch kit	RY7-5081-000CN	19	92
Compression spring	RA0-1169-000CN	3	89
Connecting Link	RA0-1023-000CN	11	90
Control panel assembly	RG0-1024-000CN	12	89
Copier/scanner pickup tray assembly	RG0-1069-000CN	4	87
Copier/scanner separation pad	RY7-5055-000CN	6	87
Cover, connector	RA0-1183-000CN	4	88
Cover, front	RA0-1177-000CN	1	88
Cover, left side	RA0-1179-000CN	3	88
Cover, right side	RA0-1178-000CN	2	88
Cover, right support	RA0-1184-000CN	7	89
Delivery sensor PCB assembly	RG0-1082-000CN	26	94
Engine controller case	RA0-1127-000CN	1	91
Engine controller PCB assembly, 110-127V	RG0-1012-000CN	5	91
Engine controller PCB assembly, 220-240V	RG0-1029-000CN	5	91
Face-down delivery assembly	RG0-1010-000CN	4	94
Face-down tray assembly	RG0-1070-000CN	5	87
Face-up roller	RF0-1003-000CN	2	94
Fan assembly	RG0-1030-000CN	3	90
Feed roller holder assembly	RG0-1005-000CN	25	92
Foot, rubber (paper pickup assembly)	RA0-1003-000CN	2	93
Foot, rubber (plate assemblies)	RA0-1197-000CN	902	90
Formatter	C7857-60001	14	89
Formatter screws	C515-2672	16	89
Formatter shield	C7044-0001	15	89

Table 34. Alphabetical parts list (continued)

Description	Part number	Ref.	Figure
Front guide assembly	RG0-1022-000CN	1	90
Fuser assembly, 110V	RG0-1008-000CN		94
Fuser assembly, 220V	RG0-1026-000CN		94
Fuser plate, left	RA0-1185-000CN	7	90
Fuser plate, right	RA0-1186-000CN	8	90
Gear, 17T	RA0-1172-000CN	9	89
Gear, 17T (fuser assembly)	RA0-1089-000CN	6	94
Gear, 29T	RA0-1088-000CN	5	94
Gear, 69T	RA0-1176-000CN	10	90
Grounding plate	RA0-1072-000CN	10	92
HP jewel	7121-8042	8	88
Laser/scanner assembly	RG9-1486-000CN	4	89
Left plate assembly	RG0-1002-000CN	11	89
Lever	RA0-1174-000CN	5	90
Lever holder	RA0-1173-000CN	4	90
Motor	RH7-1473-000CN	13	90
Optional copier/scanner	R37-5020-000CN	3	87
Paper lift plate assembly	RG0-1006-000CN	22	93
Paper pickup assembly	RG0-1003-000CN		92
Paper pickup cover assembly	RG0-1014-000CN	2	87
Paper pickup shaft assembly	RG0-1007-000CN	23	92
Paper sensor PCB assembly	RG0-1072-000CN	25A	92
PCB spacer	RA0-1128-000CN	2	91
Pickup gear assembly	RG0-1020-000CN	6	89
Pickup roller	RF0-1008-000CN	8	89
Printer pickup tray assembly	RG0-1013-000CN	1	87
RFI shield	C7044-00001		
Right plate assembly	RG0-1001-000CN	12	90
Screw kit (contains a full set of screws for the LaserJet 1200 product)	RY7-5082-000CN		
Separation pad	RF0-1014-000CN	24	93
Shutter guide	RA0-1181-000CN	1	89
Shutter lever	RA0-1182-000CN	2	89
Solenoid, DC24V	RH7-5284-000CN	9	90
Tension spring	RA0-1175-000CN	6	90

Table 34. Alphabetical parts list (continued)

Description	Part number	Ref.	Figure
Toner cartridge door assembly	RG0-1015-000CN	7	88
Top cover assembly	RG0-1017-000CN	6	88
Torsion spring	RA0-1035-000CN	11	92
Torsion spring	RA0-1200-000CN	28	92
Transfer roller	RG9-1483-000CN	10	89

Numerical parts list

Table 35. Numerical parts list

Part Number	Description	Ref.	Figure
7121-8042	HP jewel	8	88
C515-2672	Formatter screws	16	89
C7044-00001	RFI shield		
C7044-0001	Formatter shield	15	89
C7857-60001	Formatter	14	89
R37-5020-000CN	Optional copier/scanner	3	87
RA0-1003-000CN	Foot, rubber (paper pickup assembly)	2	93
RA0-1016-000CN	Back cover assembly	5	88
RA0-1023-000CN	Connecting Link	11	90
RA0-1035-000CN	Torsion spring	11	92
RA0-1072-000CN	Grounding plate	10	92
RA0-1088-000CN	Gear, 29T	5	94
RA0-1089-000CN	Gear, 17T (fuser assembly)	6	94
RA0-1104-000CN	Bushing	18	94
RA0-1127-000CN	Engine controller case	1	91
RA0-1128-000CN	PCB spacer	2	91
RA0-1169-000CN	Compression spring	3	89
RA0-1172-000CN	Gear, 17T	9	89
RA0-1173-000CN	Lever holder	4	90
RA0-1174-000CN	Lever	5	90
RA0-1175-000CN	Tension spring	6	90
RA0-1176-000CN	Gear, 69T	10	90
RA0-1177-000CN	Cover, front	1	88
RA0-1178-000CN	Cover, right side	2	88
RA0-1179-000CN	Cover, left side	3	88
RA0-1181-000CN	Shutter guide	1	89
RA0-1182-000CN	Shutter lever	2	89
RA0-1183-000CN	Cover, connector	4	88
RA0-1184-000CN	Cover, right support	7	89
RA0-1185-000CN	Fuser plate, left	7	90
RA0-1186-000CN	Fuser plate, right	8	90
RA0-1197-000CN	Foot, rubber (plate assemblies)	902	90

Table 35. Numerical parts list (continued)

Part Number	Description	Ref.	Figure
RA0-1200-000CN	Torsion spring	28	92
RF0-1003-000CN	Face-up roller	2	94
RF0-1008-000CN	Pickup roller	8	89
RF0-1014-000CN	Separation pad	24	93
RG0-1001-000CN	Right plate assembly	12	90
RG0-1002-000CN	Left plate assembly	11	89
RG0-1003-000CN	Paper pickup assembly		92
RG0-1005-000CN	Feed roller holder assembly	25	92
RG0-1006-000CN	Paper lift plate assembly	22	93
RG0-1007-000CN	Paper pickup shaft assembly	23	92
RG0-1008-000CN	Fuser assembly, 110V		94
RG0-1010-000CN	Face-down delivery assembly	4	94
RG0-1012-000CN	Engine controller PCB assembly, 110-127V	5	91
RG0-1013-000CN	Printer pickup tray assembly	1	87
RG0-1014-000CN	Paper pickup cover assembly	2	87
RG0-1015-000CN	Toner cartridge door assembly	7	88
RG0-1017-000CN	Top cover assembly	6	88
RG0-1020-000CN	Pickup gear assembly	6	89
RG0-1022-000CN	Front guide assembly	1	90
RG0-1024-000CN	Control panel assembly	12	89
RG0-1026-000CN	Fuser assembly, 220V		94
RG0-1029-000CN	Engine controller PCB assembly, 220-240V	5	91
RG0-1030-000CN	Fan assembly	3	90
RG0-1069-000CN	Copier/scanner pickup tray assembly	4	87
RG0-1070-000CN	Face-down tray assembly	5	87
RG0-1072-000CN	Paper sensor PCB assembly	25A	92
RG0-1074-000CN	Cable, laser/scanner	5	89
RG0-1082-000CN	Delivery sensor PCB assembly	26	94
RG9-1483-000CN	Transfer roller	10	89
RG9-1486-000CN	Laser/scanner assembly	4	89
RH2-5440-000CN	Cable, laser/scanner flat flexible	13	89
RH7-1473-000CN	Motor	13	90
RH7-5284-000CN	Solenoid, DC24V	9	90
RY7-5055-000CN	Copier/scanner separation pad	6	87

Table 35. Numerical parts list (continued)

Part Number	Description	Ref.	Figure
RY7-5081-000CN	Clutch kit	19	92
RY7-5082-000CN	Screw kit (contains a full set of screws for the LaserJet 1200 product)		
WT2-5694-000CN	Clamp, cable	3	91

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