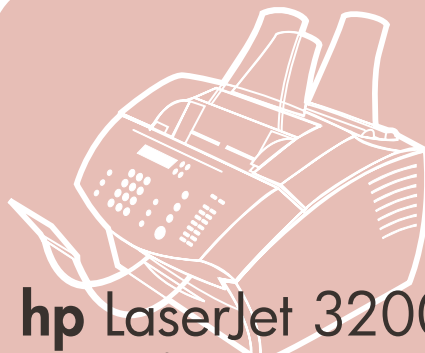




i n v e n t



**hp LaserJet 3200**  
printer • fax • copier • scanner

**service  
manual**

**LaserJet  
all-in-one**





HP LaserJet 3200 product

**Service manual**

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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 3200 product 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 the telephone cord or any of the sockets on the HP LaserJet 3200 product. Replace damaged cords immediately.
- 5 Never install telephone wiring during a lightning storm.
- 6 Unplug this product from wall outlets and telephone jacks before cleaning.
- 7 Do not install or use this product near water or when you are wet.
- 8 Install the product securely on a stable surface.
- 9 Install the product in a protected location where no one can step on or trip over the line cord and the line cord will not be damaged.
- 10 If the product does not operate normally, see the online user guide.
- 11 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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# 1

# Product information

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# Introduction

The HP LaserJet 3200 product is a powerful business tool with the capabilities of a full range of office equipment. With the HP LaserJet 3200 product, you can:

- **Print**—Print documents easily with the laser quality you have come to expect from an HP LaserJet printer.
- **Fax**—Use the HP LaserJet 3200 product as a standalone fax machine to send and receive faxes, as well as perform advanced tasks such as forwarding faxes to other locations. Use the software to send faxes from and receive them to your computer.
- **Copy**—Make superior laser-quality copies. 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.
- **Use software**—Use the software to print, fax, copy, or scan. Also use the software to store and organize scanned documents.

## Hardware description

The HP LaserJet 3200 product provides 1200 dot-per-inch (dpi) printing, plus scanning capabilities. The scanner scans at 600 dpi/ 24 bits per pixel (bpp) and contains a document feeder that holds up to 30 pages.

The HP LaserJet 3200 product prints nine pages per minute (ppm). It provides an excellent Windows printing solution, ease of use, and higher performance. With 1200 dpi printing resolution, the HP LaserJet 3200 product has exceptional text and graphics print quality. The simplified control panel and improved paper handling make this product very simple to use.

There is one main media input tray with a 125-sheet capacity for continuous, multiple-page printing. Manual, single-sheet printing is possible through the single-sheet input tray. Both trays are center-justified for all supported paper sizes. The output tray holds up to 100 sheets.

The HP LaserJet 3200 product has a very fast first-page-out, at less than eighteen seconds. The formatter board contains 12 MB of ROM, 8 MB of RAM, and a 32-bit MCF5202 chip. There is one DIMM slot available for DIMM expansion (supporting an 8 MB, 16 MB, 32 MB, or



64 MB DIMM). The HP LaserJet 3200 product engine has a 1,000 average (10,000 peak) page-per-month duty cycle and has no fan. The toner life for the HP LaserJet 3200 product is 2,500 pages.

## **Firmware description**

The firmware in the HP LaserJet 3200 product includes:

- Enhanced PCL 6 with status readback
- 45 fonts in Intellifont format, plus Cyrillic
- Full-page 600 dpi bitmap
- Pixel placement, mosaic characters
- Memory Enhancement technology (MEt) with hardware compression/decompression

The HP LaserJet 3200 product 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	272 mm (10.71 inches) without supports attached; 404 mm (15.91 inches) with supports attached
Depth	390 mm (15.36 inches) without supports attached; 598 mm (23.55 inches) with supports attached
Width	384 mm (15.12 inches)
Weight (cartridge installed)	10.6 kilograms (23.37 pounds)

**Table 2. Environmental specifications**

Category	Specification
Operating environment	Printer plugged into an AC outlet: <ul style="list-style-type: none"><li>● Temperature: 15 to 32.5 degrees Celsius (C); 59 to 90.5 degrees Fahrenheit (F)</li><li>● Humidity: 20 to 80 percent relative humidity (no condensation)</li></ul>
Storage environment	Printer unplugged from an AC outlet: <ul style="list-style-type: none"><li>● Temperature: 0 to 40 degrees C (32 to 104 degrees F)</li><li>● Humidity: 10 to 90 percent relative humidity (no condensation)</li></ul>

**Table 3. Power specifications**

<b>Category</b>	<b>Specification</b>
<b>Power requirements</b>	100 to 120 Volts alternating current (Vac), 50/60 Hz ( $\pm 2\%$ ; 127 Vac, 60 Hz NOM)
<b>Power consumption (in continuous copy mode)</b>	200 watts
<b>Power consumption (idle)</b>	6 watts
<b>Minimum recommended circuit capacity</b>	4.5 amps at 115 V 2.5 amps at 230 V

**Table 4. Performance**

<b>Category</b>	<b>Specification</b>
<b>Print resolution</b>	1200 dpi
<b>Scan resolution</b>	600 dpi optical, with 256 levels of gray and 24-bit color
<b>Fax resolution</b>	Standard: 203 by 98 dpi Fine: 203 by 196 dpi Superfine: 300 by 300 dpi (no halftone) Photo: 300 by 300 dpi (halftone enabled)
<b>Print speed</b>	9 ppm
<b>Copy speed</b>	9 ppm

**Table 5. Operating acoustical emissions (per ISO 9296) specifications**

<b>Category</b>	<b>Specification</b>
Sound Power Level, $L_{WA,d}$ (1 bel = 10 decibels)	6.3 bels (B)
Sound Pressure Level, $L_{pAm}$ (operator position)	57 decibels (dB)
Sound Pressure Level, $L_{pAm}$ (bystander position)	48 dB

**Table 6. Skew specifications**

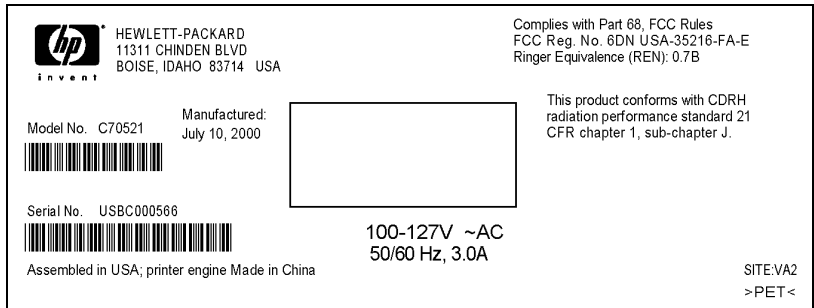
<b>Category</b>	<b>Specification</b>
Print skew—left	0.6% (1.5 mm over 250 mm in length)
Print skew—right angle accuracy	0.64% (1.2 mm over 190 mm in width)
Scan skew	1.2%

# Model and serial numbers

The model number and serial number are listed on an identification label located on the back of the printer.

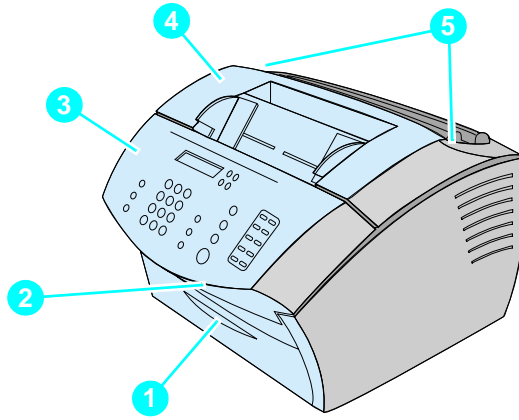
The serial number contains information about the country of origin, the revision level, the production code, and production number of the HP LaserJet 3200 product.

The label also contains power rating and regulatory information.



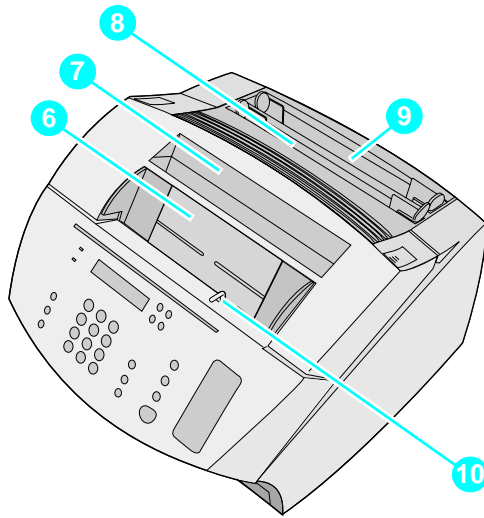
**Figure 1. Model and serial number label**

## Product overview



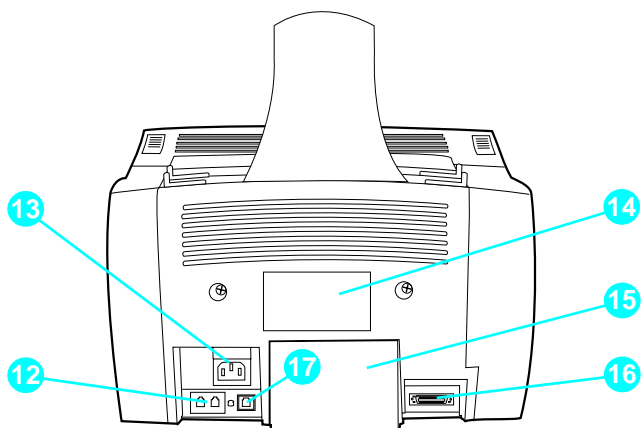
**Figure 2.** Front and side view

- 1 Front paper path door
- 2 Document output slot
- 3 Control panel/document release door
- 4 Printer door
- 5 Printer door release latches



**Figure 3.** Top view

- 6** Document feeder tray
- 7** Paper output bin
- 8** Single-sheet input tray
- 9** Paper input tray
- 10** Special media lever



**Figure 4.**

**Rear view**

- 11 Phone line connectors
- 12 Power cable connector
- 13 Model and serial number label
- 14 Memory door
- 15 Parallel cable connector
- 16 USB connector



# Warranty statement

This warranty gives specific legal rights. There may also be other rights which vary from area to area. See the user guide for further warranty information or see the warranty card included with the printer.

## Hewlett-Packard limited warranty statement

HP LaserJet 3200 product                      ONE-YEAR LIMITED WARRANTY

- 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 a 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**

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# Declaration of Conformity

Declaration of Conformity  
according to ISO/IEC Guide 22 and EN 45014

Manufacturer's Name: Hewlett-Packard Company  
Manufacturer's Address: 11311 Chinden Boulevard  
Boise, Idaho 83714-1021, USA

declares, that the product

Product Name: HP LaserJet 3200 product  
Model Number: C7052A, 7053A, 7055A (Printer/Fax/Scanner/Copier)  
Product Options: ALL

conforms to the following Product Specifications:

Safety: IEC 950:1991+A1+A2+A3+A4/EN 60950:1992+A1+A2+A3+A4+A11  
IEC60825-1:1993+A1/EN 60825-1:1994+A11 Class 1 Laser/LED Product

EMC: CISPR 22:1997/EN 55022:1998 Class B<sup>1</sup>  
CISPR 24:1997/EN 55024:1998  
IEC 61000-3-2:1995/EN61000-3-2:1995  
IEC61000-3-3:1994/EN61000-3-3:1995  
FCC Title 47 CFR, Part 15 Class B<sup>2</sup> / ICES-003, Issue 2  
AS / NZS 3548:1995

**Supplementary Information:**

The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC, the EMC Directive 89/336/EEC, and the R&TTE Directive 1999/5/EC (Annex II) and carries the CE-marking accordingly.

- 1) The product was tested in a typical configuration with Hewlett-Packard Personal Computer Systems.
- 2) This Device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

April 18, 2000

For Compliance Information ONLY, contact:

Product Regulations Manager, Hewlett-Packard Company, PO Box 15, Mail Stop 160, Boise ID, 83707-0015 (Phone: 208-396-6000)

# 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 5% 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.

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## Note

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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. To join this recycling effort, follow the instructions inside the toner cartridge box.

# Additional product stewardship

## Environmental conformity

### **The design of this HP LaserJet product facilitates the recycling of:**

#### **Printer and parts**

Design for recycling has been incorporated into this printer and its accessories. The number of materials has been kept to a minimum while ensuring proper functionality and high product reliability. Dissimilar materials have been designed to separate easily. Fasteners and other connections are easy to locate, access, and remove with common tools. High-priority parts have been designed to be accessed quickly for efficient disassembly and repair. Plastic parts have been primarily designed in two colors to enhance recycling options. A few small parts are colored specifically to highlight customer access points. The plastics used in the printer housing and chassis are technically recyclable.



# 2 Installation and operation

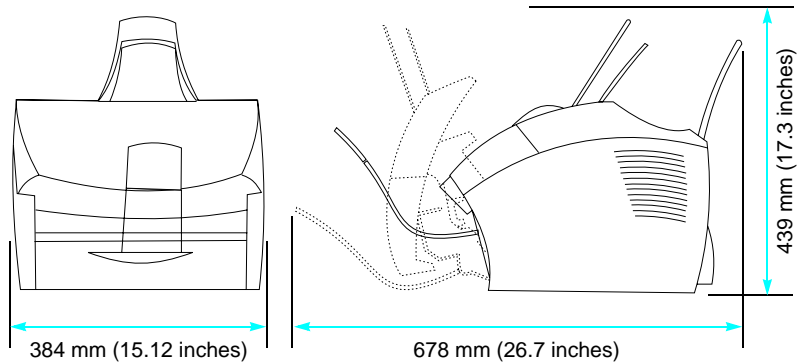
## Chapter contents

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# Operating environment

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

- temperature: 15 to 32.5 degrees C (59 to 90.5 degrees F)
- humidity: 20 to 80 percent relative humidity (no condensation)
- away from direct sunlight, open flames, and ammonia fumes
- sufficient space around the product to allow for proper access and ventilation, as shown in the figure below:



**Figure 5.** Product dimensions



# Identifying product components

## Control panel lights and keys

The lights on the control panel provide status of the product and the keys are used to fax paper-based documents, make copies, scan documents, and adjust settings for the product. See “Using the control panel menu structure” on page 33 for more information about menu settings.

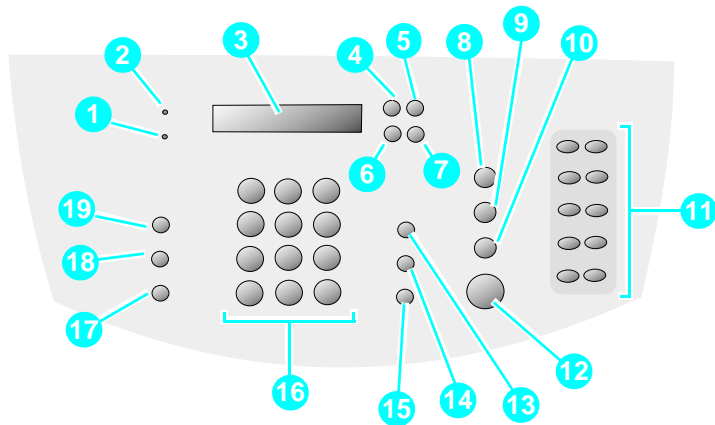


Figure 6.

### Control panel

- 1 **Error light**—when solid, indicates an error condition.
- 2 **Ready light**—when solid, indicates the product is ready and has no error conditions; when blinking, indicates that the product is processing a job.
- 3 **Control panel display**—displays messages or Menu settings.
- 4 **Enter/Menu**—use to gain access to the Menu, save a selection, or go down one level in the Menu settings.
- 5 **Back space**—use to go up one level in the Menu settings or to backspace when typing text.
- 6 **< (back arrow)**—use to scroll back through items at the same Menu level, move back through text.
- 7 **> (forward arrow)**—use to scroll forward through items at the same Menu level; also use to insert a space when typing text or scroll forward.

- 8 **Stop/Clear**—stops or clears any action in progress or exits the Menu settings.
- 9 **Scan**—starts scanning documents loaded in the document feeder.
- 10 **Copy**—starts the copy function.
- 11 **One-touch keypad**—use the keys on the one-touch keypad to store frequently dialed fax numbers.
- 12 **Fax/Send**—use to start sending paper faxes.
- 13 **Volume**—use to adjust the line monitor volume for incoming and outgoing fax connection sounds.
- 14 **Speed-Dial**—press this key, plus a one-, two- or three-digit code to fax to previously stored fax numbers.
- 15 **Redial/Pause**—press to redial the last fax number or use to insert a pause into a fax number.
- 16 **Numeric keys**—use to enter fax numbers. Also use to add letters when typing a name in the fax header or for speed-dials.
- 17 **Reduce/Enlarge**—use to adjust the size of the current copy job.
- 18 **Resolution**—use to adjust the resolution, or sharpness, for the current fax or copy job.
- 19 **Contrast**—use to adjust the contrast, or difference between light and dark areas, for the current fax or copy job.

## Using the control panel menu structure

What follows is a hierarchical diagram of the control panel menu structure. Refer to this menu structure when you make changes to settings and features.

To print a copy of the menu structure, see “Internal reports” on page 181. To see which settings are currently selected, print a configuration report. See “Internal reports” on page 181 for instructions. The following is a general procedure for using the control panel menu.

To use the control panel keys:

- 1 Press **ENTER/MENU** to begin.
- 2 Use the **<** or **>** key to select one of the choices from the main Menu, and then press **ENTER/MENU**.
- 3 Use the **<** or **>** key to select one of the choices from the Submenu and press **ENTER/MENU**.
- 4 If applicable, use the **<** or **>** key to select one of the choices from the second Submenu and press **ENTER/MENU**.

### To print the control panel menu structure

- 1 Press **ENTER/MENU**.
- 2 Use the **<** or **>** key to select **REPORTS** and then press **ENTER/MENU**.
- 3 Use the **<** or **>** key to select **MENU STRUCTURE** and then press **ENTER/MENU**. The product exits the Menu settings and prints the report.

<b>Main Menu</b>	<b>Submenu</b>
Fax job status	
Fax functions	Send fax later Stop receive to PC Reprint last faxes Polling receive Clear stored faxes
Time/date, header	Time/date Fax header
Copy setup	Default quality Default contrast Default collation Default # of copies Default reduce/enlarge
Reports	Demo page Fax activity log Fax call report Speed dial report Menu structure Configuration report Block fax list PCL font list All fax reports
Fax setup	Speed dials Fax send setup Fax receive setup All faxes
Common settings	Default paper size Print density Volume settings
Service	Scan calibration Print T.30 trace Restore defaults Cleaning mode

# Control panel error messages

These control panel error messages are listed alphabetically. Messages are accompanied by the cause of the message and steps to resolve the problem.

**Table 7. Control panel error messages**

Message	Cause	Solution
###: [GROUP NAME] ONE-TOUCH/SPEED DIAL	The product is waiting for you to press a programmed one-touch key or enter a speed-dial code to a group-dial code.	Begin adding fax numbers to the group-dial code. See "Programming group-dial codes" in the online user guide.
### NOT PROGRAMMED [ENTER] TO PROGRAM	The one-touch key or speed-dial code has not been programmed and therefore cannot be added to a group.	Press <b>ENTER/MENU</b> to program the one-touch or speed-dial. If you want to program a group-dial, press <b>STOP/CLEAR</b> and use the control panel menu to create a new group. Press <b>STOP/CLEAR</b> if you do not want to program the one-touch or speed-dial.
50 FUSER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."
51 LASER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."
52 SCANNER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."
53 PRINTER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."

**Table 7. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
54 PRINTER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."
55 DC CONTROLLER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."
62.X PRINTER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."
79 SERVICE (####)	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."
80 SERVICE (####)	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."
81 SERVICE (####)	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message does not clear, see chapter 6, "Troubleshooting."
CANCELED COPY. CLEAR DOCUMENT FEEDER	The <b>STOP/CLEAR</b> key was pressed to cancel the current job while pages were feeding from the document feeder. The cancel process will not automatically clear the document feeder.	Pull the document release door open, remove the jammed item, and close the door. Then, clear the items in the document feeder tray and start over.

**Table 7. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
CANCELED FAX. CLEAR DOCUMENT FEEDER.	The <b>STOP/CLEAR</b> key was pressed to cancel the current job while pages were feeding from the document feeder tray. The cancel process will not automatically clear the document feeder.	Pull the document release door open, remove the jammed item, and close the door. Then, clear the items in the document feeder tray and start over.
CANCELED SCAN. CLEAR DOCUMENT FEEDER	The <b>STOP/CLEAR</b> key was pressed to cancel the current job while pages were feeding from the document feeder. The cancel process will not automatically clear the document feeder.	Pull the document release door open, remove the jammed item, and close the door. Then, clear the items in the document feeder tray and start over.
COMMUNICATION ERROR	Fax communication error occurred between the product and the sender or receiver.	Allow the product to retry sending the fax. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. See chapter 6, "Troubleshooting."
COPY COUNT SET TO 1	The product does not have enough memory to complete the collated copy job.	Continue completing the collated copy job.
DEVICE BUSY. TRY AGAIN LATER	The product is currently in use.	Wait for the product to finish the current job.
DEVICE ERROR. PRESS [ENTER] TO RESUME	There was an internal error in the product.	Press <b>ENTER/MENU</b> to resume the job.
DOCUMENT FEEDER JAM	A piece of media is jammed in the document feeder tray.	Open the document release door, clear the jam, close the document release door, and reload the paper into the document feeder tray.
DOCUMENT FEEDER MISPICK. RELOAD MEDIA	Media in the document feeder tray was not picked up.	Remove and reload the media into the document feeder tray.

**Table 7. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
FAX DOES NOT ANSWER CANCELED SEND	Attempts to redial a fax number failed or the redial on no answer option was turned off.	Call the recipient to ensure that fax machine is on and ready. Check that you are dialing the correct fax number. Check that the redial option is enabled. Unplug the telephone cord from both the product and the wall and replug the cord. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. See chapter 6, "Troubleshooting."
FAX DOES NOT ANSWER REDIAL PENDING	You tried to send a fax, but the receiving fax line did not answer. The product attempts to redial after a few minutes.	Allow the product to retry sending the fax. Call the recipient to ensure that fax machine is on and ready. Check that you are dialing the correct fax number. Check that the redial on no answer option is enabled. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. See chapter 6, "Troubleshooting."
FAX MEMORY FULL CANCELING RECEIVE	During the fax transmission, the product ran out of memory. Only the pages that fit into memory will be printed.	Print all of the faxes and have the sender resend the fax. Cancel all fax jobs or clear the faxes from memory (see "Clearing faxes from memory" in the online user guide).
FAX MEMORY FULL CANCELING SEND	During the fax job, the memory filled. All pages of the fax have to be in memory for a fax job to work correctly. Only the pages that fit into memory were sent.	Print all received faxes or wait until all pending faxes are sent. Cancel all fax jobs or clear the faxes from memory (see "Clearing faxes from memory" in the online user guide).



**Table 7. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
FAX RECEIVE ERROR	An error occurred while trying to receive a fax.	Ask the sender to resend the fax. Try faxing back to sender or another fax machine. Check that the telephone cord is securely connected by unplugging and replugging the cord. Check for a dial tone on the phone line by pressing <b>FAX/SEND</b> . Make sure the phone is working by disconnecting the product, plugging in a telephone to the phone line, and making a voice call. Connect the product to a different phone line.
FAX SEND ERROR	An error occurred while trying to send a fax.	Try resending the fax. Try faxing to another fax number. Check that the telephone cord is securely connected by unplugging and replugging the cord. Check for a dial tone on the phone line by pressing <b>FAX/SEND</b> . Make sure the phone is working by disconnecting the product, plugging in a telephone to the phone line, and making a voice call. Connect the product to a different phone line.
GROUP DIAL NOT ALLOWED IN GROUP	The speed-dial code you entered is programmed for a group. Adding a group-dial to another group-dial is not allowed.	Enter one-touch keys (programmed as an individual speed dial) or speed-dial codes to a group-dial
GROUP IS FULL. [FAX] TO START	The maximum number of fax numbers that can be added to an ad hoc group is 20.	Resend to the ad hoc group using less fax numbers.
IN CLEANING MODE. PLEASE WAIT 1-3 MIN.	The product is running an internal cleaning cycle.	Wait for the product to finish the cleaning cycle. The message will clear when the cycle is finished.
INVALID DATE	An invalid date was entered, such as June 35.	Reenter the date.
INVALID TIME	An invalid time was entered, such as 25:99 PM.	Reenter the time.
JOB SETTINGS CLEARED	The product has cleared job settings.	Reenter any desired job settings.

**Table 7. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
MEMORY LOW. ONLY 1 COPY. PRESS [STOP]	The product completed making one copy. The remaining copies have been canceled because of low product memory.	Press <b>ENTER/MENU</b> to clear the error. Use the HP LaserJet Director to make multiple copies of large documents, or break the job into smaller jobs containing fewer pages.
MEMORY LOW. [STOP] TO CANCEL.	The product memory has been almost completely filled.	Allow the product to finish the job or press <b>STOP/CLEAR</b> to cancel the job.
NO DIAL TONE.	The product could not detect a dial tone.	Unplug the telephone cord from both the product and the wall and replug the cord. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. See "Changing the detect dial tone setting" in the online user guide. Also see chapter 6, "Troubleshooting."
NO DOCUMENT SENT	The fax forwarding setting is on and the product unsuccessfully received a fax because of low memory or some other reason. The product deleted the incomplete received data before attempting to forward the deleted data.	Print the faxes in memory and have the sender resend the missing page(s) of the document.
NO FAX DETECTED	The product answered the incoming call but could not determine that the caller was a fax machine.	Allow the product to retry sending the fax. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. See chapter 6, "Troubleshooting."
NO FAX PAGES IN MEMORY TO REPRINT	The product attempted to execute "Reprint Last Fax" when nothing was in memory.	Receive a fax before attempting to use this option.
NOT ENOUGH MEMORY. TRY AGAIN LATER	There is not enough memory to start a new job.	Wait until the current job is finished before starting a new job.

**Table 7. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
POWER FAIL RECOVERY. CHECKING SYSTEM	The product has detected a power failure and is performing a self-test.	The product should go back to the ready state on its own. If this message does not go away in a couple of minutes, disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize.
POWER FAIL RECOVERY. FAX SETTING RESET	The product has detected a power failure and the last update to the fax settings was corrupted. The product is resetting all fax settings to the factory default settings.	Press <b>ENTER/MENU</b> to clear the error. The product should return to the ready state.
POWER FAIL RECOVERY. PRINTING FAXES	The product has detected a power failure and is printing all of the faxes that it did not previously print.	The product prints all of the received faxes that it did not previously print. Once the faxes are printed, the product will return to the ready state.
POWER FAIL RECOVERY. SEND:[FAX NUMBER]	The product has detected a power failure and has also detected unsent faxes and will try to resend them.	The product resents the unsent faxes. Once the faxes are sent, the product will return to the ready state.
POWER OFF. CHECK DIMM #[1-3]	The DIMM in the indicated slot has failed.	Turn off the product and check the indicated DIMM.
PRINTER PAPER JAM CLEAR PAPER PATH	The product has detected that a jam has occurred.	Clear the jam. The job should continue to print. If it does not, try reprinting the job.
PRINTER DOOR OPEN OR NO TONER CARTRIDGE	The printer door is open or the toner cartridge is not installed properly.	Make sure the printer door is closed. Check the toner cartridge for proper installation.
PRINTER PAPER TRAY IS EMPTY. ADD PAPER	The paper input tray is empty.	Load media. If media is already loaded, remove it. Check for and remove any jam, and then reload the stack of media in the paper input tray.
PRINTER TRAY MISPICK. [ENTER] TO RESUME	The print engine has failed to pick up a piece of media.	Reload the paper in the paper input tray and press <b>ENTER/MENU</b> to continue the job.

**Table 7. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
RECEIVING FAX BUSY CANCELED FAX	The fax line to which you were sending a fax was busy. The product has cancelled sending the fax.	Call the recipient to ensure that fax machine is on and ready. Check that you are dialing the correct fax number. Check that the redial on busy option is enabled. Press and hold <b>STOP/CLEAR</b> for seven seconds to check for a dial tone. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. See chapter 6, "Troubleshooting."
RECEIVING FAX BUSY REDIAL PENDING	The fax line to which you were sending a fax was busy. The product automatically redials the busy number. (See "Changing how the product redials" in the online user guide.)	Allow the product to retry sending the fax. Call the recipient to ensure that fax machine is on and ready. Check that you are dialing the correct fax number. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. See chapter 6, "Troubleshooting."
SCANNER RESERVED FOR PC SCAN	The product is being used to create a scan by a computer.	Wait until the PC scan has finished, or cancel the scan from the computer software, or press <b>STOP/CLEAR</b> .
SCANNING ERROR. CANNOT CONNECT TO PC	The product cannot transmit scan information to a computer.	Check the connection cable and try the scan again.

# Selecting media

## Selecting media to print

You can use paper with up to 100% recycled fiber content if it meets HP's specifications. To order HP paper or the *Print Media Guide* for HP LaserJet printers, see "Ordering parts and supplies" on page 200.

Highly textured stock might not print evenly. Very glossy papers might jam or repel toner. Multipart forms can wrinkle or get jammed in the product. 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 16- to 27-pound (7.25 to 12.25 kg) weight. Use tightly constructed envelopes and make sure the folds are sharply creased.

The paper input tray can hold up to 125 sheets of 20 lb (75 g/m<sup>2</sup>) print media. The single-sheet input tray is designed for one sheet. Both can be adjusted to hold media measuring from 3 by 5 inches (76.2 by 127 mm) to 8.5 by 14 inches (216 by 356 mm). This includes, but is not limited to, the following paper and envelope sizes:

**Table 8. 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 in
Executive	184 by 267 mm	7.25 by 10.5 in
A4	210 by 297 mm	8.25 by 11.75 in
COM10 Envelopes	105 by 241 mm	4.125 by 9.5 in
DL Envelopes	110 by 220 mm	4.33 by 8.67 in
C5 Envelopes	162 by 229 mm	6.4 by 9 in
B5 Envelopes	176 by 250 mm	6.9 by 9.85 in
Monarch Envelopes	98.5 by 190.5 mm	3.875 by 7.5 in
Other custom size media	custom	custom

## Selecting media to fax, copy, or scan

The product can scan items of various sizes, from 2 by 3.5 inches (51 by 89 mm) (the size of a business card) to 8.5 by 14 inches (215 by 356 mm). The product can fax and copy items ranging from 2 by 3.5 inches (51 by 89 mm) to 8.5 by 35 inches (215 by 889 mm).

The product accepts bond paper, onionskin paper, newspaper pages, magazine pages, recycled paper, transparencies, and photographs, and accepts other items in carrier sheets. Coarse papers scan more easily than smooth items. Slick papers can go through the product, although they can be more difficult to feed through. For best results, feed slick sheets one at a time, and set the special media lever correctly.

Perform the following actions to minimize the possibility of jams:

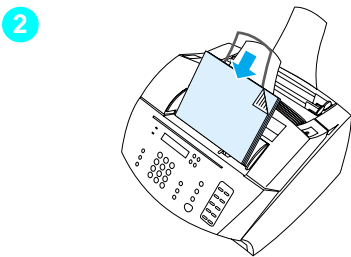
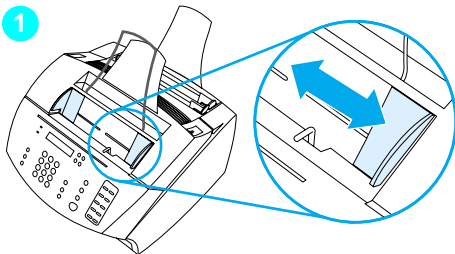
- Remove self-stick notes.
- Remove staples and paper clips.
- Straighten any curls or wrinkles in documents before putting them into the document feeder tray.
- Do not insert any document with glue, correction fluid, or wet ink on it.
- Do not insert gum-backed paper or labels.
- Place documents with tears, perforations, or punch holes in a carrier sheet, which you can buy or make. (See “To load special items” on page 46.)
- Avoid multiple-copy forms.

# Loading media

The following sections explain how to load media for sending and receiving faxes, copying, scanning, and printing.

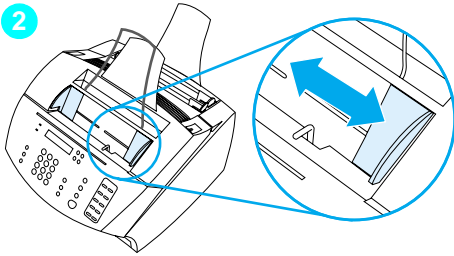
## Loading media to fax, copy, or scan

Whether you want to fax, copy, or scan, the procedure for loading the document is the same. If your document is on a regular-weight paper (from 12 to 28 lb, or 46 to 105 g/m<sup>2</sup>), see "To load normal media" below. If your document is a transparency, is in a carrier sheet, or is not on regular-weight paper, use the directions for "To load special items" on page 46.



### To load normal media

- 1 Adjust the guides in the document feeder tray to fit the size of the item you are loading.
- 2 Place up to 30 pages leading edge first, face down, into the document feeder tray.



## To load special items

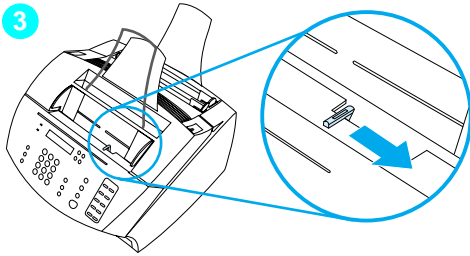
When loading items to be faxed, copied, or scanned, you need to protect small, fragile, lightweight (less than 12 lb. or 46 g/m<sup>2</sup>), or irregularly sized items such as receipts, newspaper clippings, photographs, and old or worn documents.

### 1 Do one of the following:

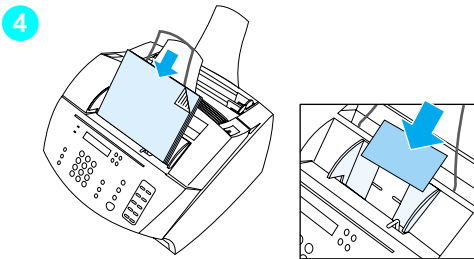
- Place the item in a carrier sheet. You can buy a carrier sheet, or you can make one by taping a transparency and piece of paper together along one of the short sides. Insert the item to be faxed, copied, or scanned into the carrier, and insert the carrier into the document feeder tray, taped edge first.
  - Or -
- Using clear tape, tape the leading and trailing edges of the item to a sheet of letter- or A4-size paper. If the item is not square or rectangular, tape all edges of the item to the paper.
  - Or -
- If you have use of a full-size copier, copy the item first and then send the copy through the scanner.

### 2 Adjust the guides in the document feeder tray to fit the size of the item you are loading.





- 3 Locate the special media lever (see figure 3 on page 21) on the top edge of the control panel and move it to the right. The special media lever opens the document feeder mechanism, allowing you to feed thick items, one at a time, into the document scanner.



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#### Note

Move the special media lever back to the left after special items have been fed. A stack of regular pages sent with the lever to the right feed in multiples and cause jams.

---

---

#### CAUTION

Do not move the lever after the product has begun sending the page.

---

- 4 Load only one sheet at a time, leading edge first, face down, into the document feeder tray.

---

#### Note

If you are loading a business card, load it **long** edge first.

---

# Loading media to be printed

## Loading the paper input tray

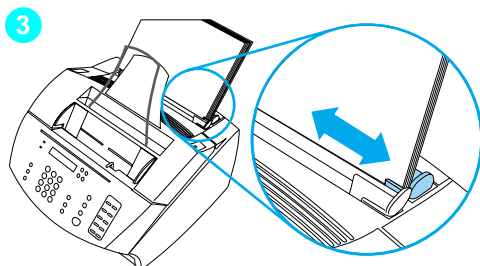
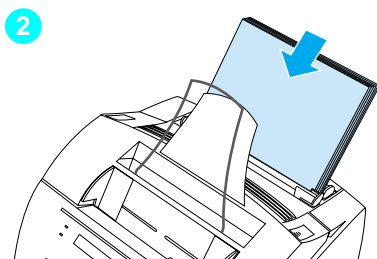
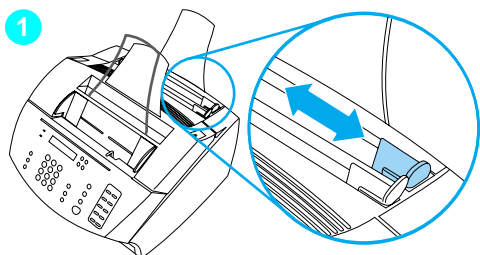
You can load up to 125 sheets of 20 lb (75 g/m<sup>2</sup>) media into the paper input tray or feed one sheet at a time into the single-sheet input tray.

---

### Note

Insert all media vertically (portrait orientation) into the paper input tray or single-sheet input tray. If you want to print horizontally (landscape orientation), make this selection through your software. Do not print on paper smaller than 3 by 5 inches (76.2 by 127 mm).

---



## To load the paper input tray

The product prints, copies, and prints received faxes using media from the paper input tray (or the single-sheet input tray).

- 1 Adjust the guides on the paper input tray to fit the size of media you are loading.
- 2 Insert up to 125 sheets of paper into the paper input tray. Be careful not to overfill the bin.

---

### Note

When adding media to an existing stack in the paper input tray, always remove the existing media and realign it with the new media before loading to reduce multiple feeds or jams.

---

---

### Note

If you have loaded special media, make sure to choose the lower paper output path. See "To select the output path" on page 50

---

- 3 Readjust the guides to center the stack.

## Using the single-sheet input tray

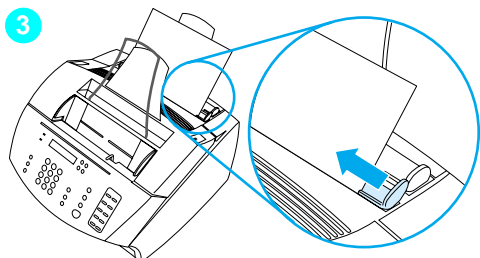
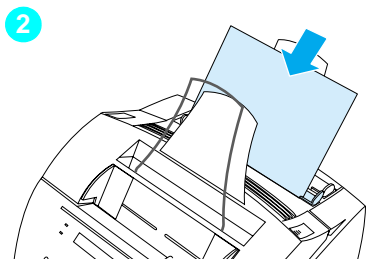
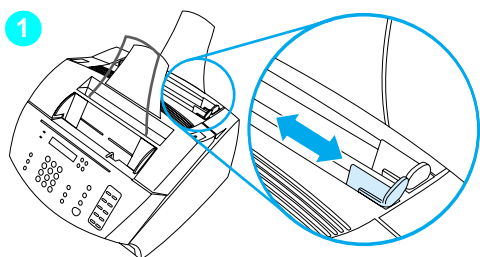
Using the single-sheet input tray, you can print one sheet of media at a time without using the paper input tray. The product takes media loaded in the single-sheet input tray before it takes from the paper input tray.

---

### Note

The single-sheet input tray is helpful when the first page of your job is different from the rest. For example, you might want the first page of your print job on letterhead, or you may want to print an envelope first.

---



## To print using the single-sheet input tray

- 1 Adjust the guides to the approximate size of the sheet you are using.
- 2 Insert one sheet of media into the single-sheet input tray. If loading special media or letterhead, insert media top first, facing forward.
- 3 Readjust the guides to center the sheet.

---

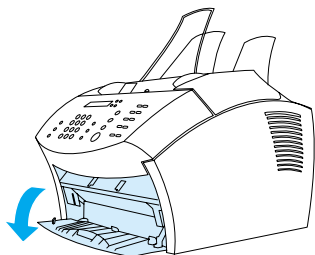
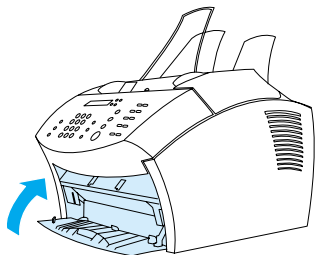
### Note

If you have loaded special media, make sure to choose the lower paper output path. See “To select the output path” on page 50.

---

## Selecting the output path

Use this procedure to determine if printed pages should come out of the paper output bin or the front paper output slot. Choose the front paper output slot if you are printing on special media, such as 28 lb (100 g/m<sup>2</sup>) or heavier weight paper, envelopes, transparencies, or labels. This prevents wrinkling and paper curl.



### To select the output path

- To use the paper output bin, make sure that the front paper path door is closed.  
- Or -
- To use the front paper output slot, open the front paper path door. All printed media coming out of the front paper output slot will be in reverse order. If you open the front paper path door and media does not go through the front paper output slot, make sure the front paper path door is all the way open.

---

#### Note

Keep the area in front of the front paper output slot clear so that media can easily exit the slot.

---

# 3 Maintenance

## Chapter contents

Life expectancies of consumables . . . . .	52
Cleaning and maintaining the equipment . . . . .	53
Cleaning the product . . . . .	54
Cleaning the scanner path . . . . .	57
Recalibrating the scanner . . . . .	59
User-replaceable parts . . . . .	60

# Life expectancies of consumables

Inspect the consumables when servicing the HP LaserJet 3200 product. Replace consumables as needed, based on failures or wear, not strictly on usage.

The following table lists approximate schedules for replacing consumables.

**Table 9. Life expectancies of consumables**

Description	Part number	Estimated life (pages)	Remarks
Toner cartridge (user replaceable)	C4092A	2,500*	When print becomes faint, redistribute toner in the cartridge by gently shaking the cartridge from side to side.
Printer transfer roller	RB5-4657-000CN	25,000	Can affect print quality and/or paper movement.
Printer pickup roller	RG2-4026-000CN	25,000	Look for glazing and/or cracks.
Printer separation pad	RF5-2886-000CN	25,000	Can affect paper movement.
Printer subpads	RY7-5050-000CN	25,000	Can affect paper movement.
Fusing element	RG5-4589-000CN (110V)	25,000	Can affect print quality and paper movement.
Pressure roller	RF5-2823-020CN	25,000	Can affect print quality and paper movement.
Document scanner pickup roller assembly	RG5-5401-000CN	10,000	Look for glazing or cracks.
Document scanner separation pad kit	RY7-5055-000CN	10,000	Can affect document movement.
Document scanner feed roller and document scanner delivery roller	RG5-5399-000CN (Document scanner assembly)	10,000	Can affect document movement.

\* The estimated toner cartridge life is based on letter- or A4-sized paper with an average of 5% toner coverage and a medium density setting. Toner cartridge life can be extended further by conserving toner using draft mode settings.

# Cleaning and maintaining the equipment

---

**WARNING!**

---

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

To maintain quality, thoroughly clean the HP LaserJet 3200 product:

- 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 lens tissues).

To avoid permanent damage to the toner cartridge, do not use ammonia-based cleaners on or around the HP LaserJet 3200 product.

---

**WARNING!**

---

When cleaning around the printer door area, avoid touching the heating element. It might be very hot and can cause burns.

---

**CAUTION**

---

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

---

**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 on the following pages.

# Cleaning the product

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

## To clean the print path

---

### Note

---

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

- 1 Place the copier grade paper into the document feeder tray.
- 2 Ensure that the product is in the `READY` state, and then press `ENTER/MENU`.
- 3 Use the `<` or `>` key to select `SERVICE`, and then press `ENTER/MENU`.
- 4 Use the `<` or `>` key to select `CLEANING MODE`, and then press `ENTER/MENU`.
- 5 Press `ENTER/MENU` to start the cleaning mode.

The device displays the message `IN CLEANING MODE` until this process is completed.



---

**Note**

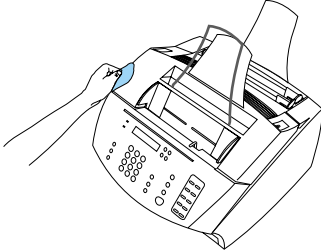
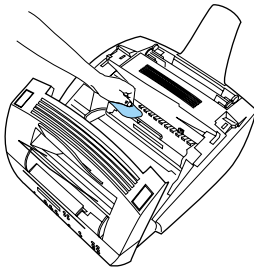
If toner spills on carpets or upholstery, remove it using a clean cloth dipped in cold water. Hot water can set toner into fabric.

---

**WARNING!**

Before cleaning the HP LaserJet 3200 product and replacing the pickup roller, disconnect it from the power source.

---

**1****2****To clean the product and replace the pickup roller**

- 1 Clean the outside of the device with a slightly damp cloth (use only water).

---

**CAUTION**

Using ammonia-based cleaners on or around the HP LaserJet 3200 product can cause damage to it. Also, do not touch the long black sponge roller in the bottom. Touching it can reduce the print quality of output.

---

- 2 Use the two latches on the printer door to open it. Clean the inside of the HP LaserJet 3200 product with a dry, lint-free cloth. Remove all dust, spilled toner, and particles of paper.

---

**Note**

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

---

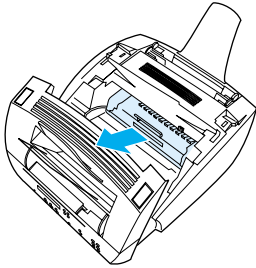
---

**Note**

If toner gets on your clothing, wipe it off with a dry cloth and wash clothing in cold water. Hot water and the heat of the dryer sets toner into the fabric.

---

3



3 Remove the toner cartridge.

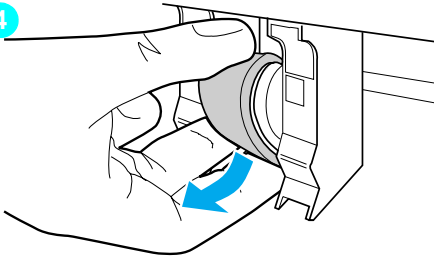
---

**Note**

If you notice excessive amounts of toner inside the HP LaserJet 3200 product, the toner cartridge might be defective. Use HP LaserJet toner cartridges to ensure high quality printing and to reduce incidents of excessive toner.

---

4



4 Locate the light gray pickup roller near the center in the opening and then rotate the bottom of the pickup roller towards the front of the printer.

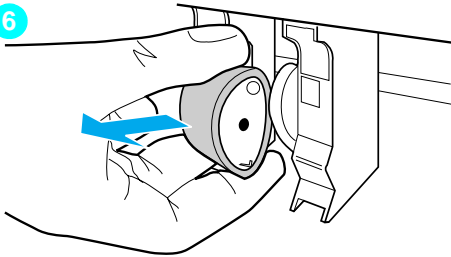
---

**CAUTION**

Do not touch the long black sponge roller inside the product. Touching it can reduce the print quality of output.

---

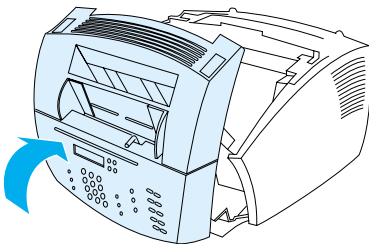
6



5 Gently pull the pickup roller straight out.

6 Replace the pickup roller with a new roller (part number RG2-4026-000CN).

7



7 Replace the toner cartridge and close the printer door.

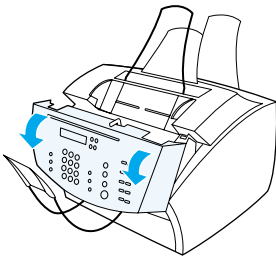
# Cleaning the scanner path

You might have to clean parts of the scanner if the ink on items you are scanning can be smudged with your hand or if the items have excessive amounts of dust or dirt on them. You might also have to clean parts if there are smudges or other marks on documents or scans of documents.

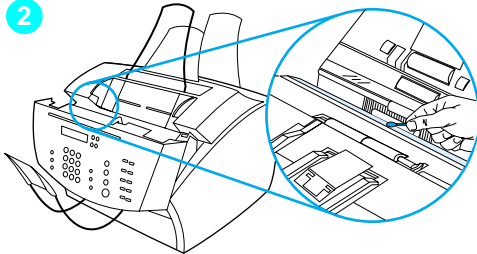
## WARNING!

Before cleaning the HP LaserJet 3200 product, disconnect it from the power source.

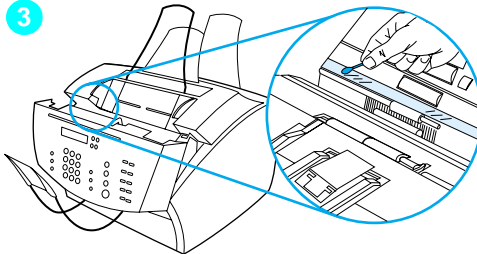
1



2



3



## To clean the scanner path

- 1 Press the two printer door release latches and open the printer door.
- 2 If the long, white strip on the inside of the document release door is dirty, clean it with a dry cotton swab. If there is still something on the strip, dab a swab in a small amount of isopropyl alcohol and gently clean the strip.

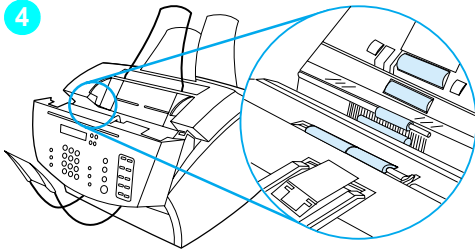
## WARNING!

Alcohol is flammable. Keep it away from open flame. Allow the alcohol to dry completely before closing the printer and plugging in the power cord.

## CAUTION

If you must use alcohol, only use a very small amount. Exposing internal parts to dripping alcohol can damage them.

- 3 If the long strip of glass opposite the long, white strip is dirty, clean it with a dry cotton swab. If there is still something on the glass strip, dab a swab in a small amount of isopropyl alcohol and gently clean the glass.



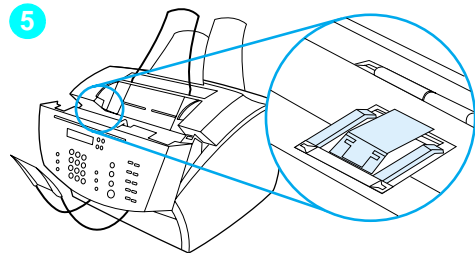
- 4 Inspect each of the six rollers in the scanner area for dirt or debris. Clean any dirty rollers with a lint-free cloth (such as lens tissues) dampened with a small amount of isopropyl alcohol.

---

**CAUTION**

Do not spray alcohol or any other liquid directly into the HP LaserJet 3200 product. Doing so can damage the product.

---

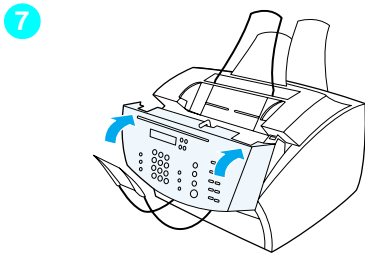


---

**CAUTION**

As much as possible, avoid touching the white strip and glass strip with alcohol.

---



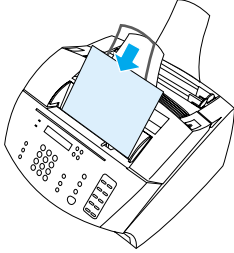
- 5 Near the top, inside edge of the document release door, inspect the two pressure feet and pad for dirt or debris. If they are dirty, clean them with a lint-free cloth sprayed with a small amount of alcohol.
- 6 Using a dry, lint-free cloth, wipe rollers, pads, and feet in a side-to-side motion to remove loosened dirt.
- 7 After alcohol inside the scanner area has dried completely, close the document release door.

Every time you clean the scanner path, you should recalibrate the scanner. See “Recalibrating the scanner” on page 59.

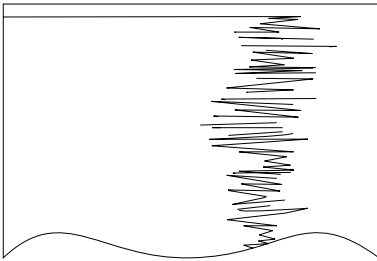
# Recalibrating the scanner

The HP LaserJet 3200 product was calibrated at the factory. However, you might have to recalibrate the scanner if you notice that sent faxes, copies, or items scanned to the computer have black or white lines running through them.

5



7



## To recalibrate the scanner

- 1 Clean the HP LaserJet 3200 product before recalibrating it. (See “Cleaning the product” on page 54 and “Cleaning the scanner path” on page 57.)
- 2 On the control panel, press **ENTER/MENU**.
- 3 Press the **<** button once to display **SERVICE** and press **ENTER/MENU**.
- 4 Use the **<** and **>** buttons to select **SCAN CALIBRATION** and press **ENTER/MENU**.
- 5 Insert a blank, bright white piece of letter (8.5 by 11 inches or 216 by 279 mm) or A4 (8.3 by 11.7 inches or 210 by 297 mm) paper into the document feeder tray.
- 6 Press **ENTER/MENU** to begin the recalibration.
- 7 The product pulls the piece of paper through and then prints a recalibration test page. Discard this page. The recalibration procedure is complete.
- 8 For information about interpreting the recalibration test page, see “Document scanner recalibration” on page 192.

## User-replaceable parts

End-users can replace the printer pickup roller, printer separation pad, and document scanner separation pad when the parts near the end of their life expectancies or when users notice an increase in misfeeds in the printer path or document scanner path.

Instructions for replacing the printer pickup roller and document scanner appear in chapter 5, "Removal and replacement."

- For instructions about replacing the printer pickup roller, see "Pickup roller" on page 131.
- For instructions about replacing the document scanner separation pad, see "Document scanner separation pad" on page 106.

Instructions for installing a new printer separation pad are contained with the pad itself. When you receive a new separation pad (part number RF5-2886-000CN), you also receive an HP Separation Pad Installation Guide.

# 4 Operational overview

## Chapter contents

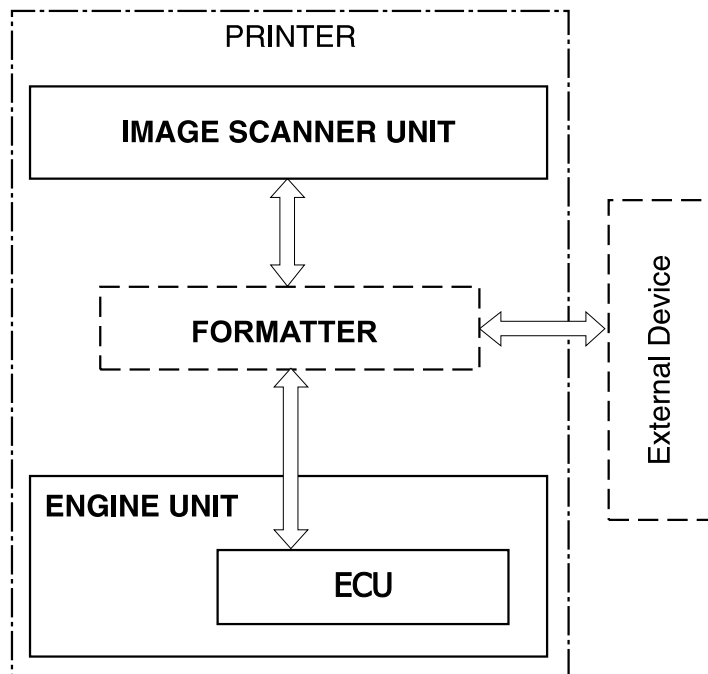
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# Basic functions

This chapter presents a functional overview of the HP LaserJet 3200 product's processes. The following systems are discussed:

- optical system (document scanner)
- formatter
- printer functions
  - ECU (engine controller unit) system/power system
  - image formation system
  - paper-feed system (printer) and document-feed system (document scanner)

The HP LaserJet 3200 product consists of the printer and the document scanner. Operation sequences of the printer are controlled by the ECU. Operation sequences of the document scanner are controlled by the formatter.



**Figure 7.** Basic configuration



# Optical system

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

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

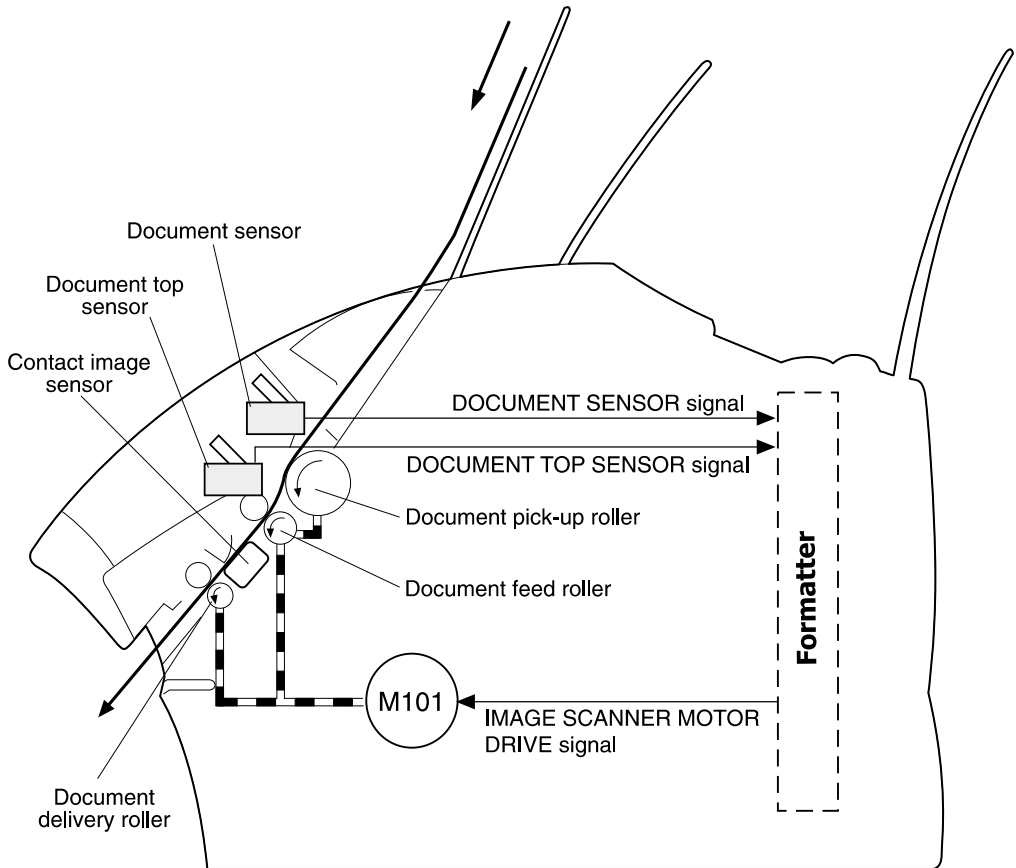
- light-emitting diode (LED) array
- contact glass
- rod lens array
- sensor array

The light source has three LEDs (red, green, and blue) 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.

The document pickup and feed systems contain a pickup roller, feed roller, and delivery roller, all of which are driven by the document scanner motor (M101).

The following figure shows the document scanner path.



**Figure 8.** Document scanner path

# Formatter system

The formatter is responsible for the following:

- controlling the document scanner
- formatting and controlling faxes
- 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 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 MCF5202 custom microprocessor operating at 35 megahertz (MHz).

## RAM

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

## Parallel interface or Universal Serial Bus (USB) interface

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

## Control panel

- two front panel status lights
- control panel keyboard
- control panel display

## Draft mode

Depending on which printer driver is used, selecting draft or EconoMode from the printer driver allows the HP LaserJet 3200 product to use approximately 50% less toner, extending the life of the toner cartridge.

## MEt

The Hewlett-Packard Memory Enhancement technology 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.
- **Off**—uses the minimum amount of printer memory for storing data sent from the host computer.

## Page Protect

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.

Page Protect allows the formatter to create the entire page image in page buffer memory before physically moving the paper through the printer. This process ensures that the entire page will be printed. The default setting is Auto.

## 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:

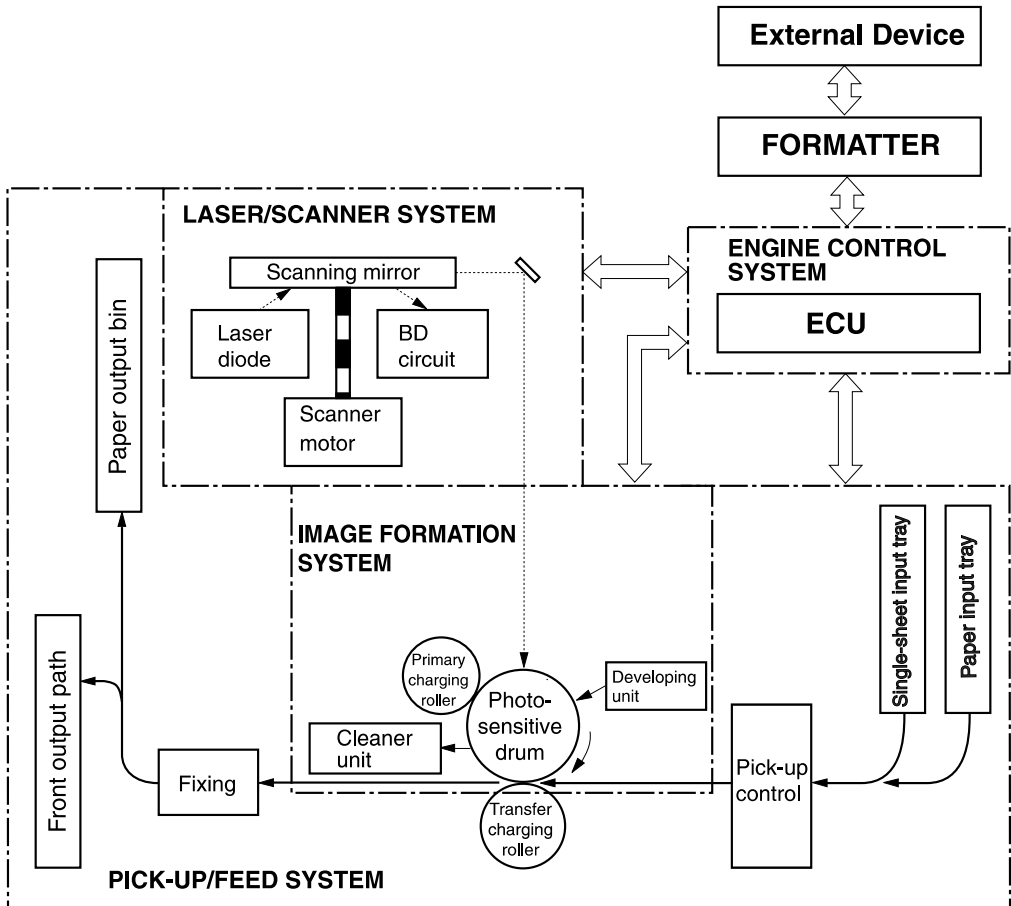
- **Two-way communication** with the host computer through a bidirectional parallel or USB connection. The printer can tell the host such things as the control panel status.
- **Isolation of print environment settings** from one print job to the next. For example, if a print job is sent to the printer 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 three groups:

- engine control
- image formation
- pickup and feed

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



**Figure 9.** Printer unit functional block diagram

## Engine control unit/power system

The 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

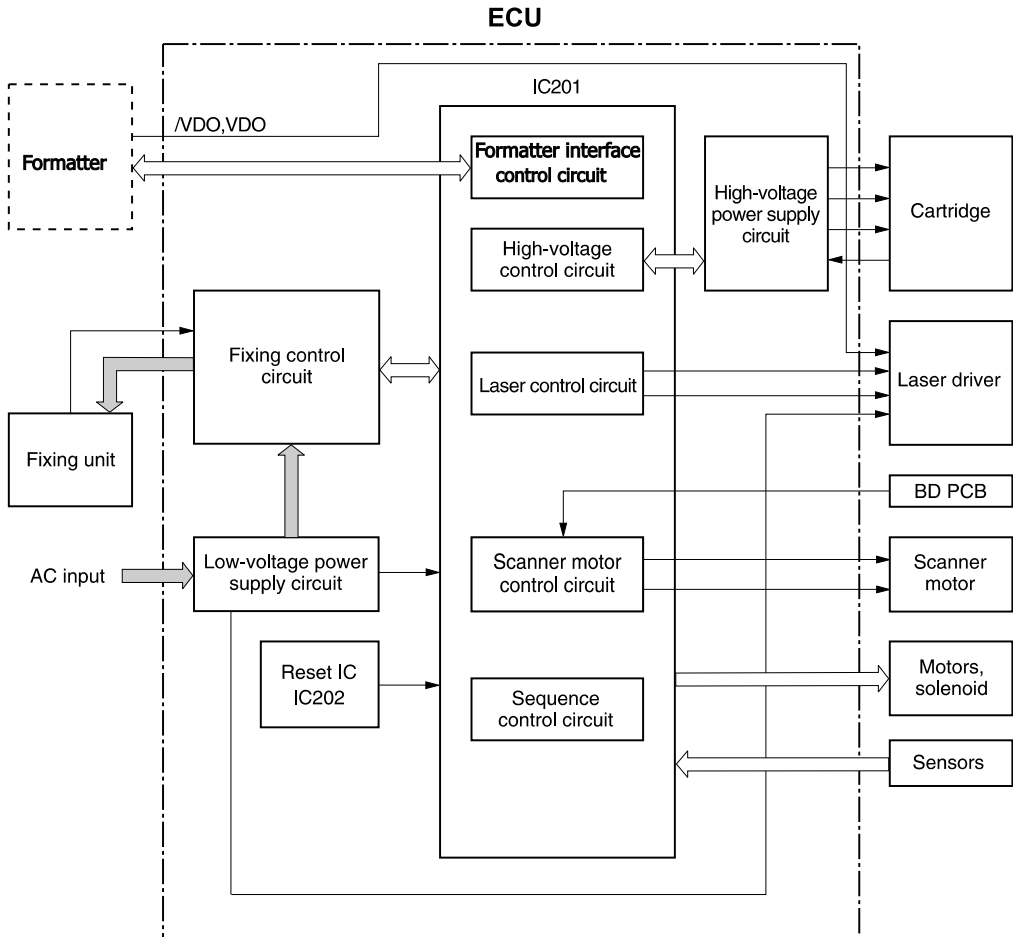
---

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
  - overvoltage/undervoltage protection
  - high-voltage power distribution

The following figure shows the various ECU loads:



**Figure 10. ECU loads**



## Printer engine control system

### Paper motion monitoring and control (printing)

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

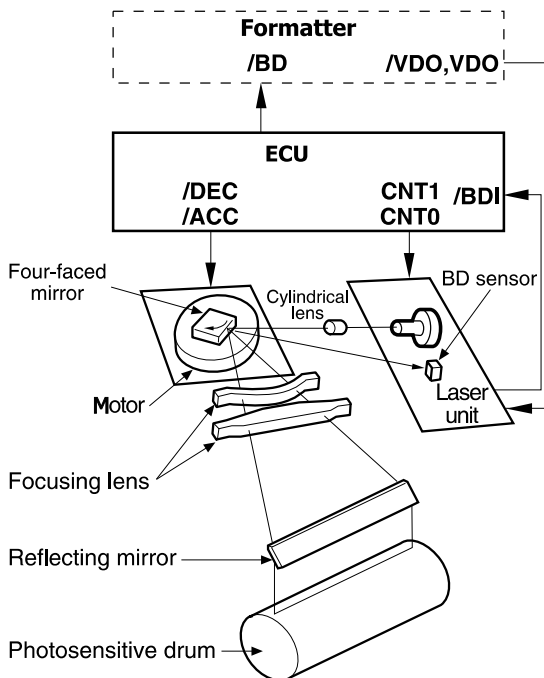
For a detailed explanation of paper movement and the interaction of photosensors and solenoid with the paper movement process, see “Printer paper feed system” on page 77.

### Motor

The motor is controlled by the ECU. The motor provides all of the printer's 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 11.** 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 fusing assembly's 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
- +5 Vdc:             Formatter  
                          Photosensors  
                          ECU  
                          Laser/beam detect circuitry
- +24 Vdc:            Motor  
                          Laser scanner motor  
                          Document scanner motor  
                          Solenoid  
                          Formatter
- +24VAdc:           High voltage power supply

### Overcurrent/overvoltage

There are two overvoltage devices in this printer:

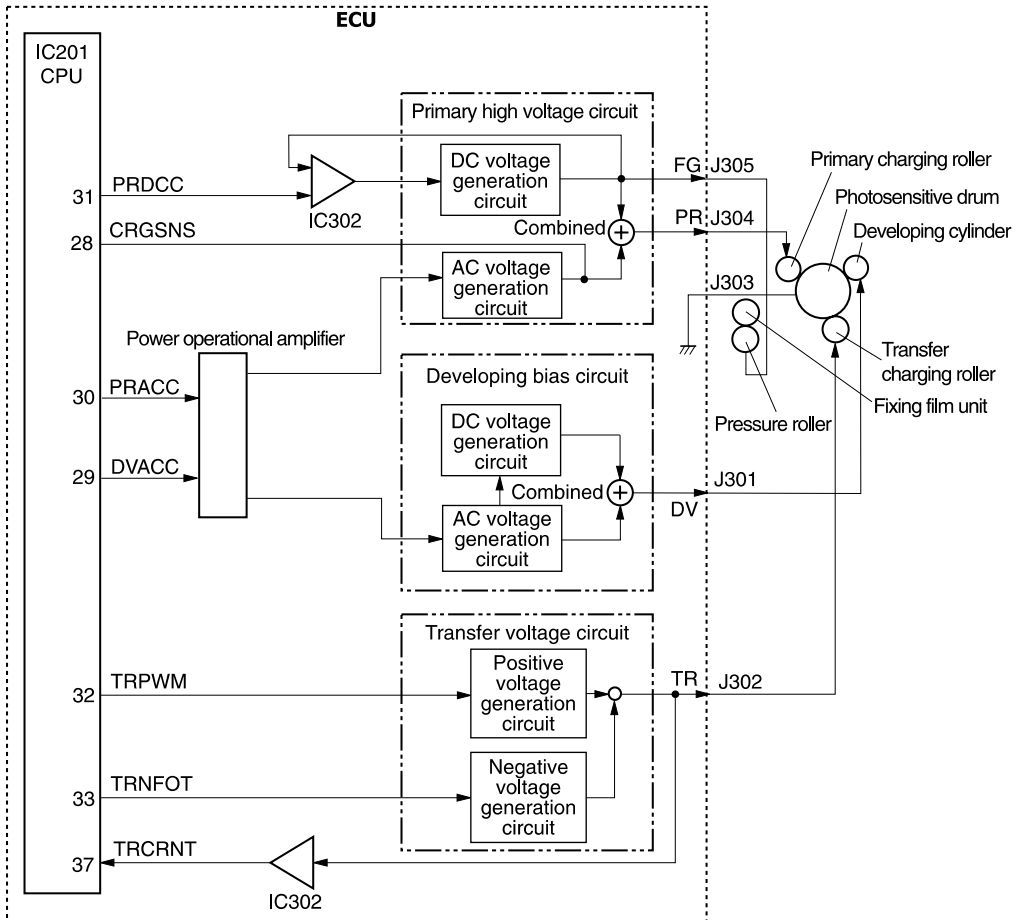
- Fuse F101 provides overcurrent protection for the fusing system circuitry. Checking or replacing the fuse requires the removal of the ECU. Fuse F102 (found only on 110V units) provides overcurrent protection to the printer DC power supply circuitry.
- In addition, the +24Vdc, +3.3 Vdc, and +5Vdc power 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 PCA 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 ECU.

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

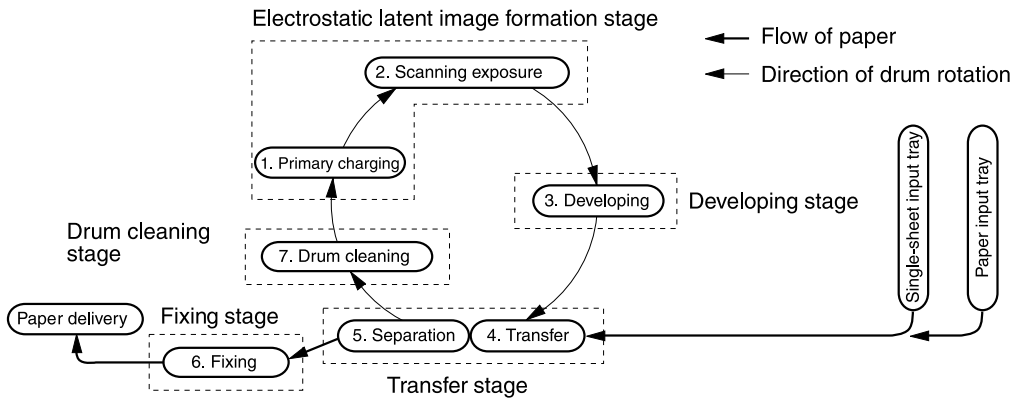
High voltage is disabled when the printer door is open.



**Figure 12.** 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 13. Image formation block diagram**

## Toner cartridge

As the heart of the image formation system, the toner cartridge houses the cleaning, conditioning, and developing steps of the process. The toner cartridge contains the photosensitive primary charging roller, developing station, toner cavity, and cleaning station. Including these components (which wear, degrade, or are consumed) in the replaceable toner cartridge eliminates the need for a service call when replacement is required. The special photosensitive properties of the drum allow an image to be formed on the drum surface and then transferred to paper.

### CAUTION

The printer's toner cartridge does not include a light-blocking shutter. Be careful to avoid exposing the drum to light, which can permanently damage the drum. Protect the toner cartridge whenever removing it from the printer.

## **Breakdown of the six image formation processes**

- Step 1** Conditioning stage (primary charging). This process consists of applying a uniform negative charge to the surface of the drum with the primary charging roller 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, a negative DC bias is applied by the charging roller to create a uniform negative potential on the drum surface. The amount of DC voltage is modified by the print density setting.
- Step 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 is sweeping the entire length of the drum and the drum is rotating, 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.

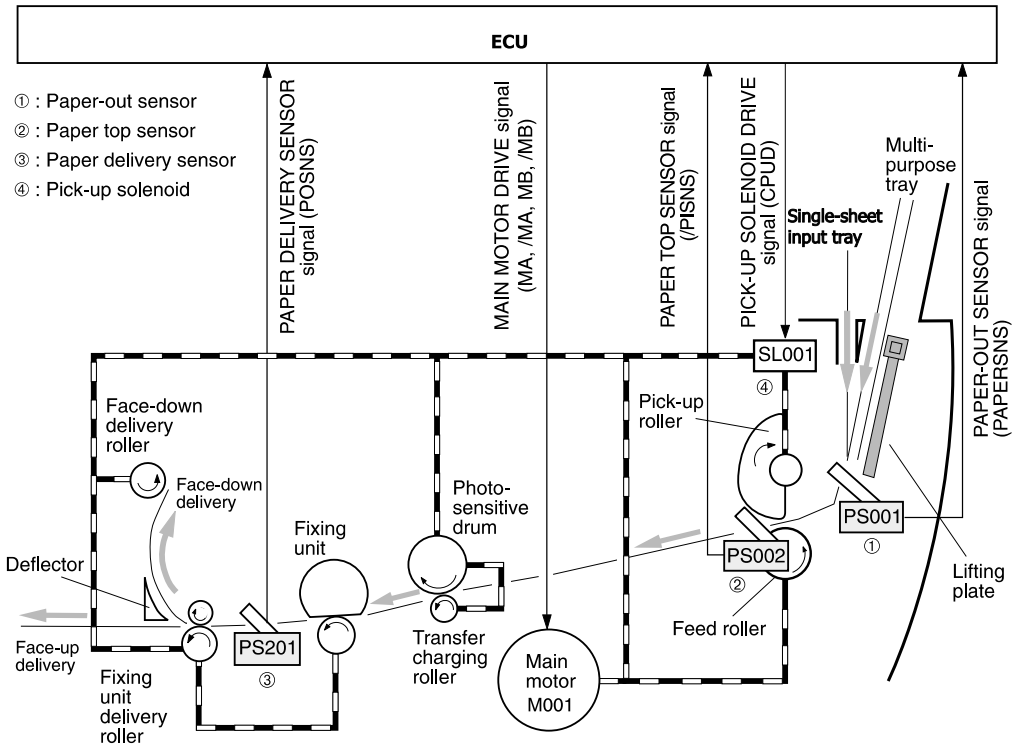
- Step 3** Developing stage. At this stage of the process, the latent electrostatic image is present on the drum. The toner particles obtain a negative surface charge by rubbing against the developing cylinder which is connected to a negative DC supply. The negatively charged toner is attracted to the discharged (exposed, grounded) areas of the drum, and repelled from the negatively charged (unexposed) areas.
- Step 4** Transfer stage. During the transferring process, the toner image on the drum surface is transferred to the paper. A positive charge applied to the back of the paper by the transfer roller causes the negatively charged toner on the drum surface to be attracted to the paper. After separation, the drum is cleaned and conditioned for the next image.

- Step 5** Separation stage. During the separating process, the paper separates from the drum. To stabilize the feed system and prevent dropouts on the printed image at low temperature and humidity, the charge on the back of the paper is reduced by the static charge eliminator.
- Step 6** Fixing stage. During the fixing process, the toner is fused into the paper by heat and pressure to produce a permanent image. The paper passes between a heated fusing element and a soft pressure roller. This melts the toner and presses it into the paper.
- Step 7** Drum cleaning stage. The cleaning blade is in contact with the surface of the drum at all times. As the drum rotates during printing, excess toner is wiped off and stored in the waste toner receptacle.

## Printer paper feed system

The paper input tray and the single-sheet input tray merge into one, main input area. Paper placed in either of these areas enables the paper-out sensor (PS001), which informs the ECU that paper is present. The following steps occur when the printer receives a print job:

- Step 1** The ECU enables the laser/scanner assembly and the motor. Paper motion begins when the ECU energizes the solenoid (SL001).
- Step 2** The paper pickup roller rotates once. The paper kick plate pushes the paper against the pickup roller.
- Step 3** 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 4** The feed assembly drive rollers advance the paper to the paper top photosensor (PS002). This sensor informs the ECU of the exact location of the paper's leading edge, so that the image being written on the photosensitive drum can be precisely positioned on the page.
- Step 5** The feed assembly drive rollers then advance the paper to the transfer area where the toner image on the photosensitive drum is transferred to paper.
- Step 6** After the image is transferred, the paper enters the fusing assembly where heat from the fuser and pressure from the pressure roller permanently bond the toner image to paper. The paper exit sensor (PS201) determines that paper has successfully moved out of the fusing area.
- Step 7** The fusing assembly exit rollers deliver paper to either the paper output bin or the front paper output slot, depending upon the position of the front paper path door.



**Figure 14. Printer path**



## Jam detection

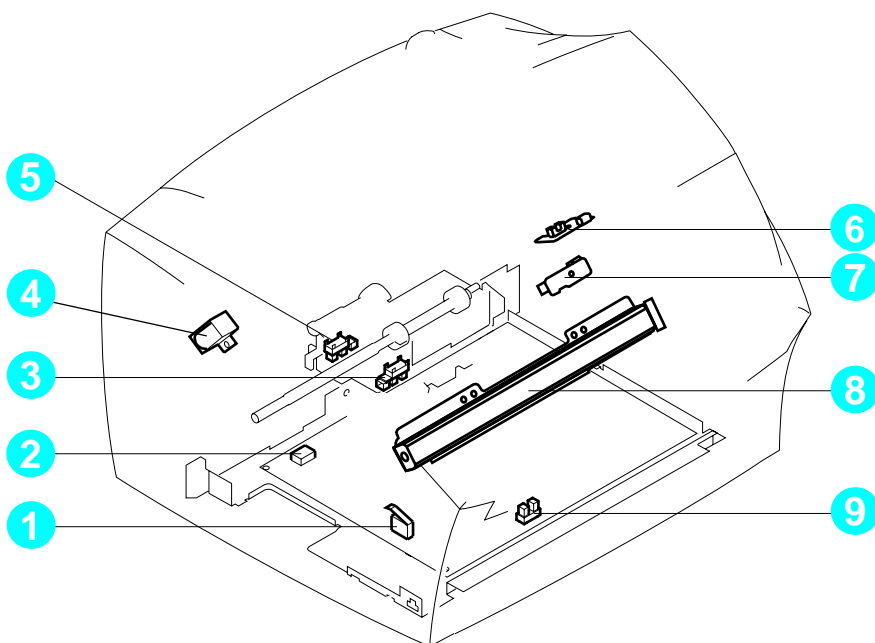
The paper-out sensor (PS001) detects the presence of media in either the single-sheet input tray or the paper input tray. The paper top sensor (PS002) and the paper delivery sensor (PS201) detect media moving through the HP LaserJet 3200 product. If a jam is detected, the ECU immediately stops the printing 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 after the pickup solenoid (SL001) has been turned on three times (the initial pickup attempt plus two retries) within 7.9 seconds.
- Pickup stationary jam. The paper top sensor does not detect the trailing edge of media within 7.8 seconds of detecting the leading edge.
- Delivery-delay jam. The paper delivery sensor does not detect the leading edge of media within 3.2 seconds after the paper top sensor detects the leading edge.
- Wrapping jam. The paper delivery sensor does not detect the trailing edge of media within 2.4 seconds after the paper top sensor detects the trailing edge.
- Delivery-stationary jam. The paper delivery sensor detects media for three seconds after the paper top sensor detects the trailing edge of the media.
- Initial residual-paper jam. The paper delivery sensor or the paper top sensor detect media in the initial rotation period.

## Solenoid, photosensors, and switches

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



**Figure 15.** Solenoid, photosensors, and switches

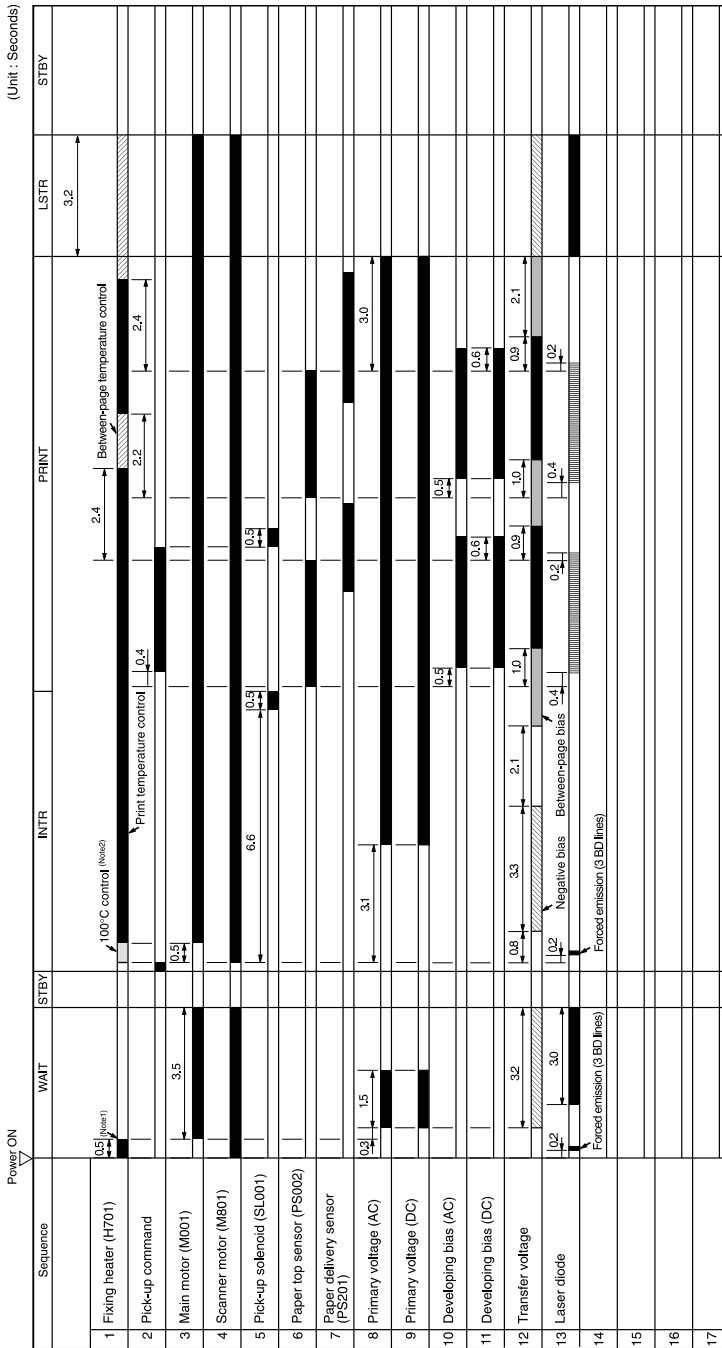
- 1 Door-open switch (SW301) detects whether or not the printer door is closed and the toner cartridge is present. Printing cannot continue until the printer door is closed and the toner cartridge is in its correct position.
- 2 Engine-test switch (SW201); see “Engine test” on page 167 for an explanation of the switch.
- 3 Paper-top sensor (SL001) detects the leading and trailing edges of the paper. Synchronizes the photosensitive drum and the top of the paper.
- 4 Pickup solenoid (SL001) enables the pickup roller.

- 5** Paper-out sensor (PS001) senses whether or not media is loaded in the paper input tray. Paper must be loaded before printing can resume.
- 6** Document sensor (PS1) detects the presence of a document in the document feeder.
- 7** Document-top sensor detects the leading edge of a document in the document path.
- 8** Contact image sensor.
- 9** Paper-delivery sensor (PS201) senses when paper has successfully moved out of the fusing area.

## Basic sequence of operation (formatter-to-printer)

The formatter and the ECU share information during printer operation. The ECU-to-formatter connector (J201) forms a link that operates as a serial data bus. This allows printer status, command information, and dot-image data to be passed between the two. The following events take place during normal printer operation:

Period	Purpose	Remarks
<b>WAIT</b> From the power-ON until the end of the main motor initial rotation.	To clear the drum surface of potential and to clean the transfer charging roller.	Detects whether or not the cartridge is installed.
<b>STBY (Standby)</b> 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 power-OFF.	To keep the printer ready to print.	
<b>INTR (Initial Rotation Period)</b> After the pickup command has been input from the formatter until the paper reaches the paper top sensor.	To stabilize the photosensitive drum sensitivity in preparation for printing. Also to clean the transfer charging roller.	
<b>PRINT (Print)</b> 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 paper.	
<b>LSTR (Last Rotation Period)</b> After the primary voltage goes OFF until the main motor stops rotating.	To delivery the last page. Also to clean the transfer charging roller.	When the pickup command is input from the formatter, 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 16. General timing diagram



# 5 Removal and replacement

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# Removal and replacement strategy

This chapter documents 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 HP LaserJet 3200 Product. If this warning is not followed, severe injury can result. Certain functional checks during troubleshooting must be performed with power supplied to the product. However, the power supply should be disconnected during removal.

Never operate or service the HP LaserJet 3200 Product 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 HP LaserJet 3200 Product can be sharp. Use caution when working on the HP LaserJet 3200 Product.

---

## CAUTION

The HP LaserJet 3200 Product contains parts that are electrostatic discharge (ESD) sensitive. Always perform service work at an ESD-protected workstation.

---

## Note

To install a self-tapping screw, first turn it counterclockwise to align it with the existing thread pattern, then carefully turn 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.

## Required tools

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

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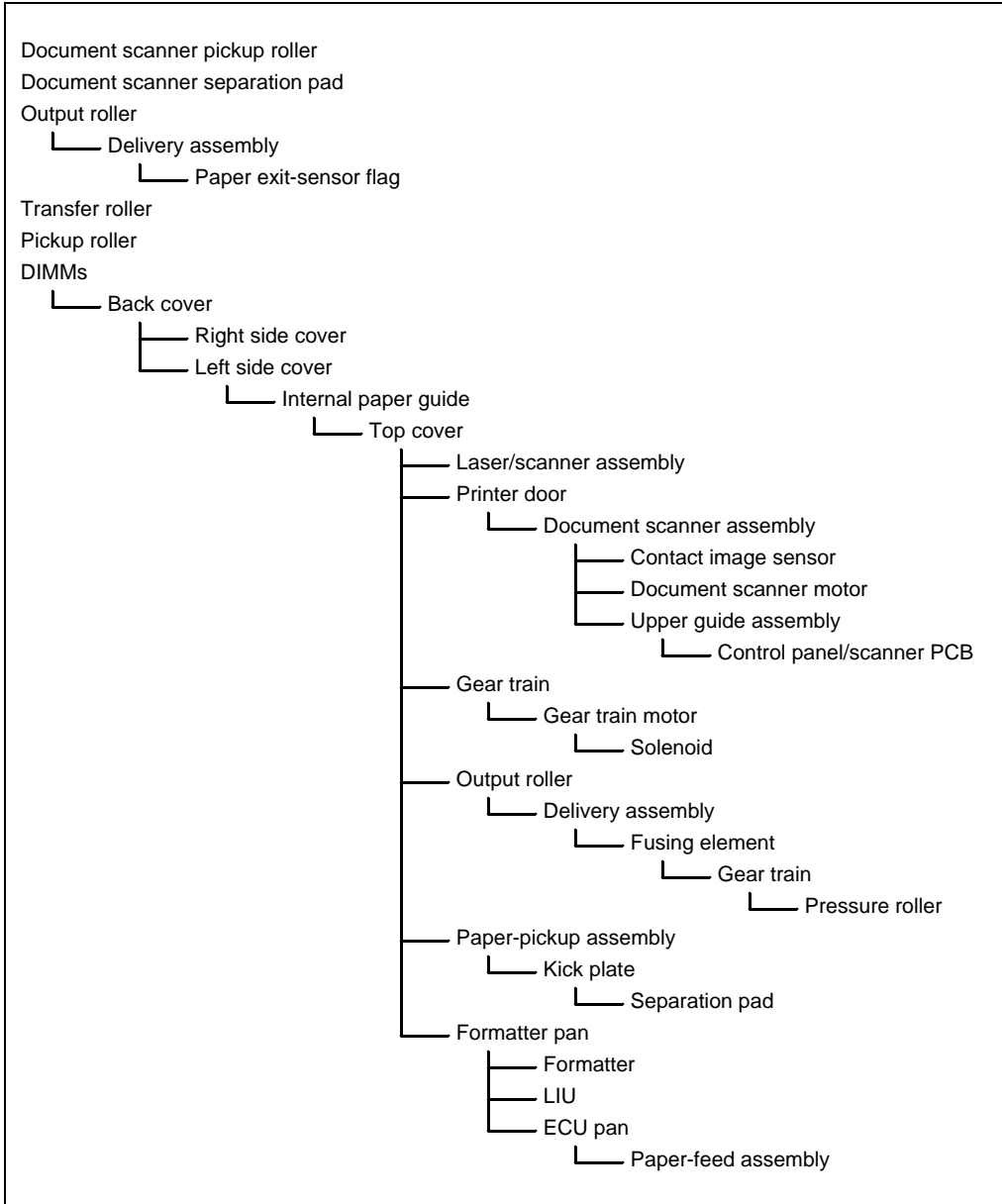
## CAUTION

A Posidriv screwdriver will damage screw heads on the HP LaserJet 3200 Product. Use Phillips screwdriver only.

---

# Parts removal order

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



## DIMMs

- 1 Turn the HP LaserJet 3200 product so that you face the back of the product.
- 2 Lift open the door at the back of the product.
- 3 Push the anchors on each side away from the DIMMs.



**Figure 17.** DIMMs removal

- 4 If there is a DIMM in slot 1, lift it straight up to remove it, and then place it on an ESD mat.
- 5 Repeat step 4 for the DIMM in slot 2 (memory DIMM) and slot 3 (ROM DIMM).

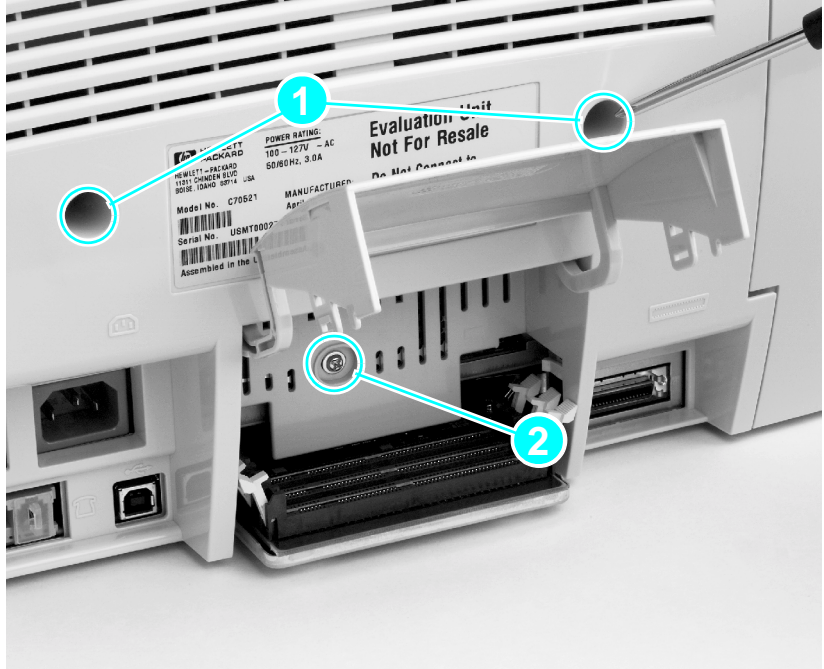
### Note

When reinstalling DIMMs, they must be reinstalled to the slots from which they were removed.

- 6 After you remove the DIMMs, press the anchors back to their closed position. If the anchors remain in the open position, they can interfere with smooth removal of the back cover.

## Back cover

- 1 Remove the DIMMs (see page 89).
- 2 Remove two screws from the deep holes (callout 1) in the back cover.
- 3 Remove a third screw (callout 2) from inside the door on the rear of the product.

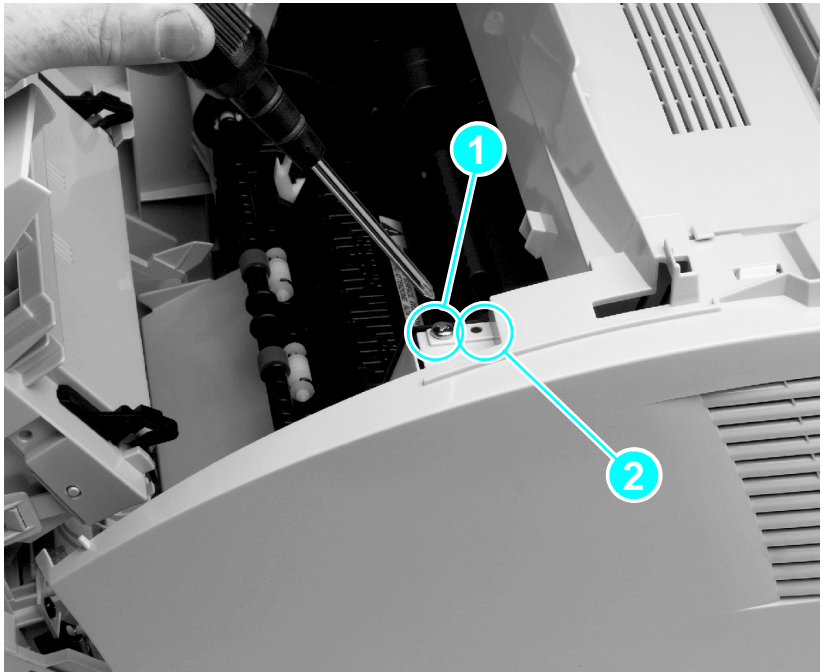


**Figure 18.** Back cover removal

- 4 In one motion, lift the back cover up and pull it away from the product.

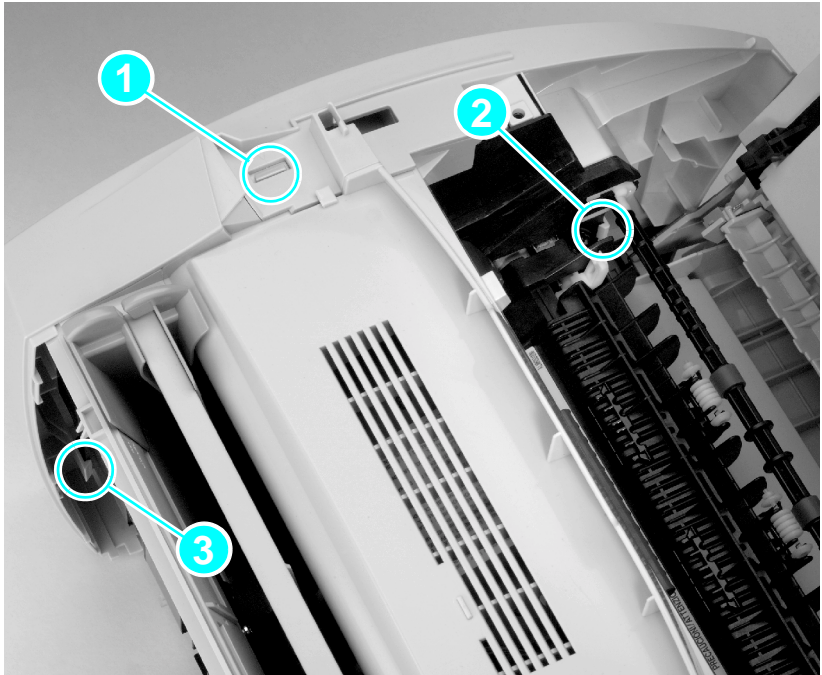
## Right side cover

- 1 Remove the DIMMs and the back cover (see pages 89 and 90).
- 2 Turn the HP LaserJet 3200 product so that you face its right side.
- 3 Press the printer door release latches and open the printer door.
- 4 Remove one screw (callout 1) from the top of the right side cover.
- 5 Use a flatblade screwdriver to pop the latch (callout 2) at the top of the cover.



**Figure 19.** Right side cover removal (1 of 2)

- 6 Release three latches:
- at the top (callout 1)
  - at the front (callout 2)
  - at the back (callout 3)



**Figure 20.** Right side cover removal (2 of 2)

- 7 Rotate the top of the cover away from the product, and then lift the cover off.

---

**Note**

You might have to lift the right side of the product slightly to remove the cover.

## Left side cover

Removal of the left side cover is similar to that of the right side cover.

- 1 Remove the DIMMs and the back cover (see pages 89 and 90).
- 2 Turn the HP LaserJet 3200 product so that you face its left side.
- 3 Remove one screw from the top of the left side cover.
- 4 Use a flatblade screwdriver to pop the latch at the top of the cover.
- 5 Release three latches:
  - at the top
  - at the front
  - at the back
- 6 Rotate the top of the cover away from the product, and then lift the cover off.

---

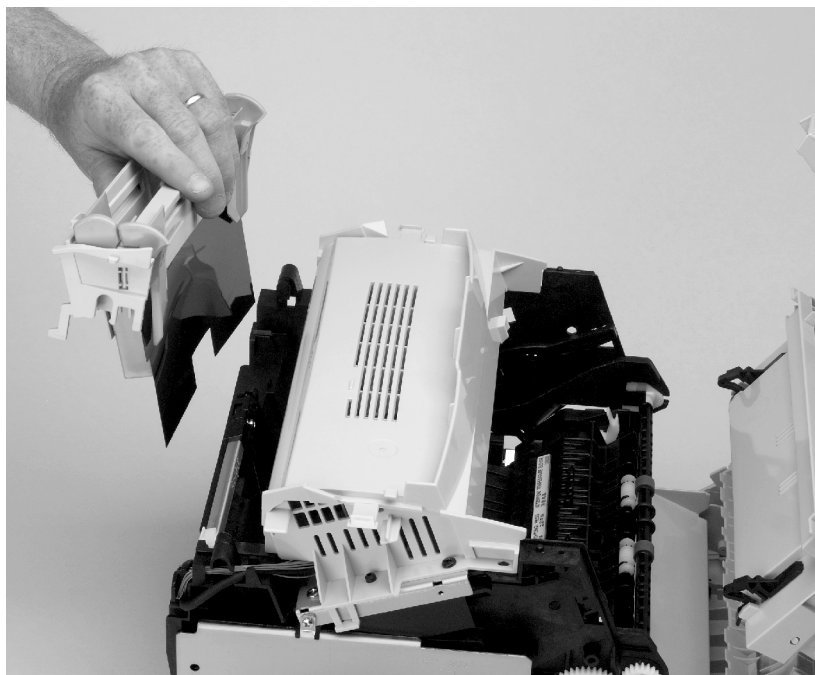
### Note

---

You might have to lift the left side of the product slightly to remove the cover.

## Internal paper guide

- 1 Remove the DIMMs and the back, right, and left covers (see pages 89 through 93).
- 2 There are no screws securing the paper guide. Remove it by pulling it up and out (two small snaps will release as you pull on the paper guide).

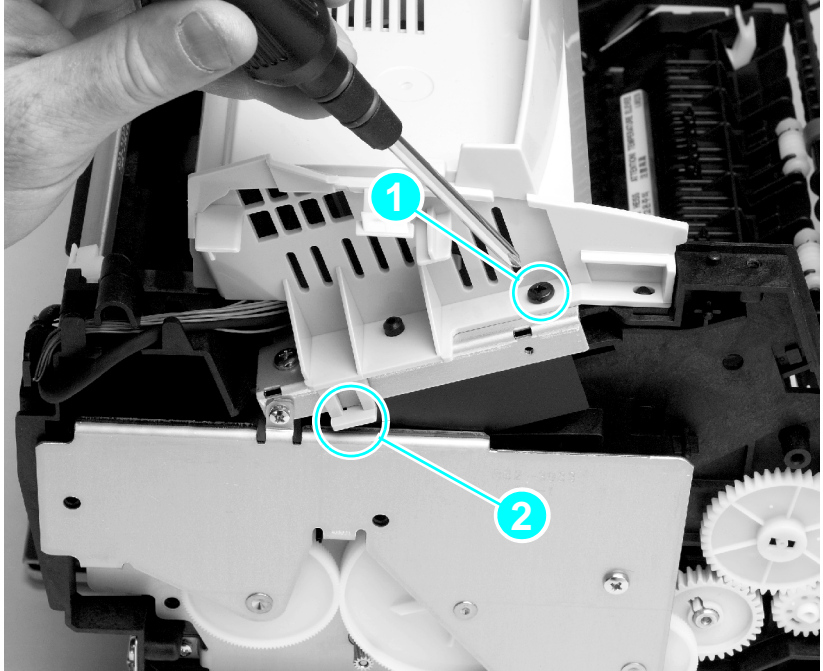


**Figure 21.** Internal paper guide removal



## Top cover

- 1 Remove the DIMMs, the back, right, and left covers, and the internal paper guide (see pages 89 through 94).
- 2 Remove two screws (callout 1), one from each side of the top cover.
- 3 Release two latches (callout 2), one at each side of the cover.



**Figure 22.** Top cover removal

- 4 Lift the cover straight up and off of the product.

# Document scanner assemblies

## Printer door

Removal of the printer door begins at the bottom of the product. Cables that control the control panel, scanner, and document feeder are attached to the formatter at the bottom of the product.

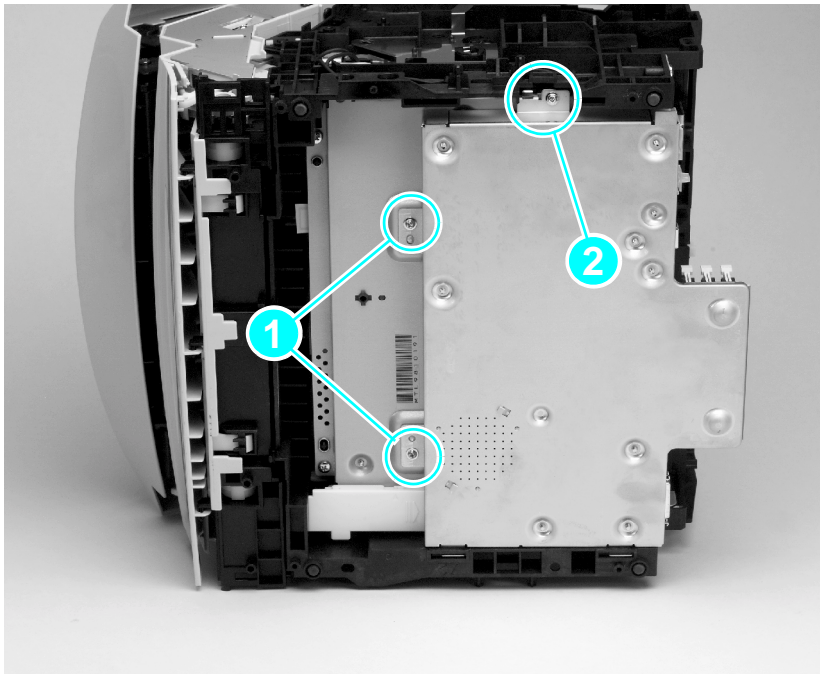
- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).
- 2 Close the printer door.
- 3 Turn the HP LaserJet 3200 product so that you face its right side, and then tip the product up so that it rests on its left side.
- 4 Remove two screws (callout 1) from the bottom of the formatter pan.
- 5 Remove a third screw from the bottom of the pan (callout 2).

---

### Note

Callout 2 also shows a metal clip that helps to hold the formatter pan on the ECU pan.

---



**Figure 23.** Printer door removal (1 of 4)

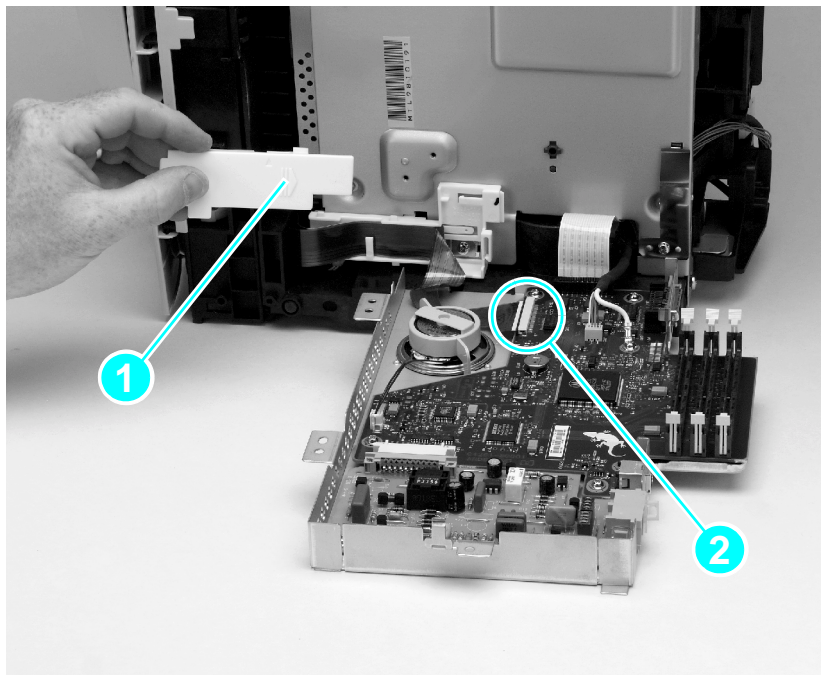
- 6 Lift the formatter pan up slightly, toward the right side of the product, and then rotate the formatter pan down so that it rests on the ESD mat.
- 7 Release the scanner cable cover (callout 1) by pushing it in the direction of the arrow, and then lift the cover away from the product.
- 8 Release the connector stay, and then pull the flat, flexible cable (callout 2) out of its connector on the formatter.

---

**Note**

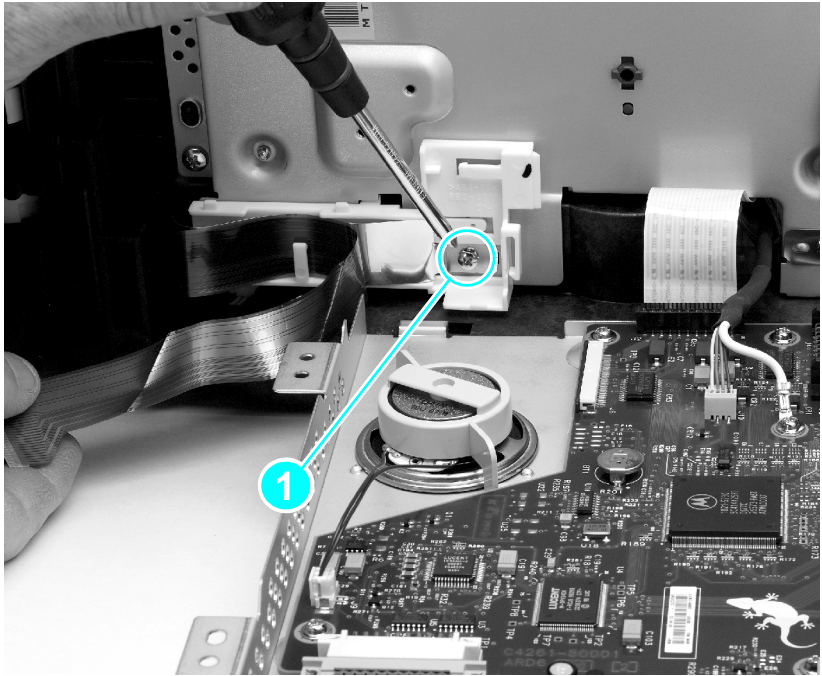
The cable is “notched” so that it clears the speaker. Make sure the cable is reattached in the correct orientation when you reassemble the product.

---



**Figure 24.** Printer door removal (2 of 4)

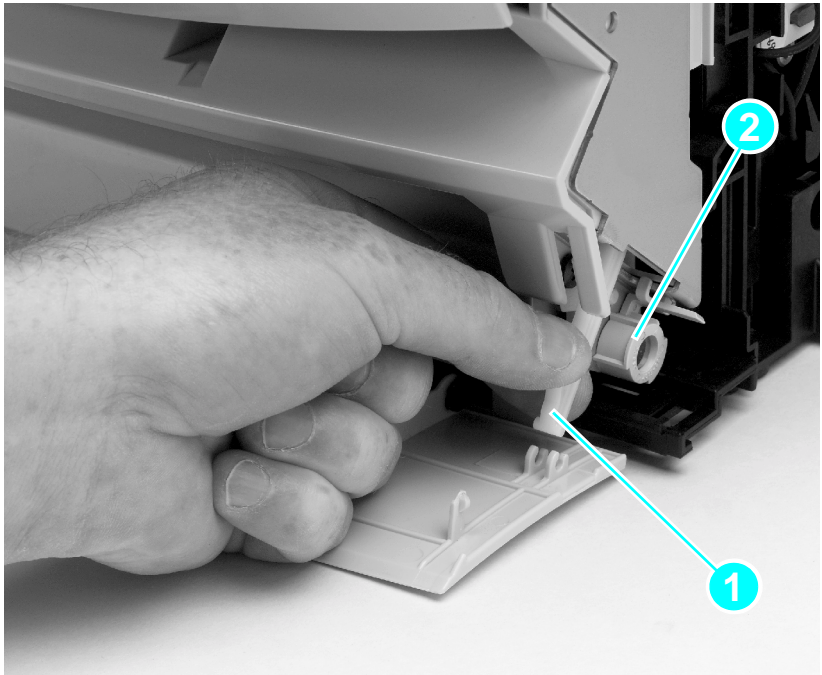
- 9 Remove the grounding screw (callout 1) from the flat metal grounding strap.



**Figure 25.** Printer door removal (3 of 4)

- 10 Release the flat cable and the strap together from the cable guide.
- 11 Lift the formatter pan back into place.
- 12 Replace the three screws in the formatter pan.

- 13 Tip the product back down so that it rests on its feet.
- 14 On the right side of the printer door, pull up on the front output door arm (callout 1) to separate it from the front output door.
- 15 On each side of the printer door, release the tab securing the hinge clip (callout 2) to the hinge, and pull the clip away from the printer door.



**Figure 26.** Printer door removal (4 of 4)

- 16 Open the printer door approximately halfway, and then lift the printer door off of its hinges.

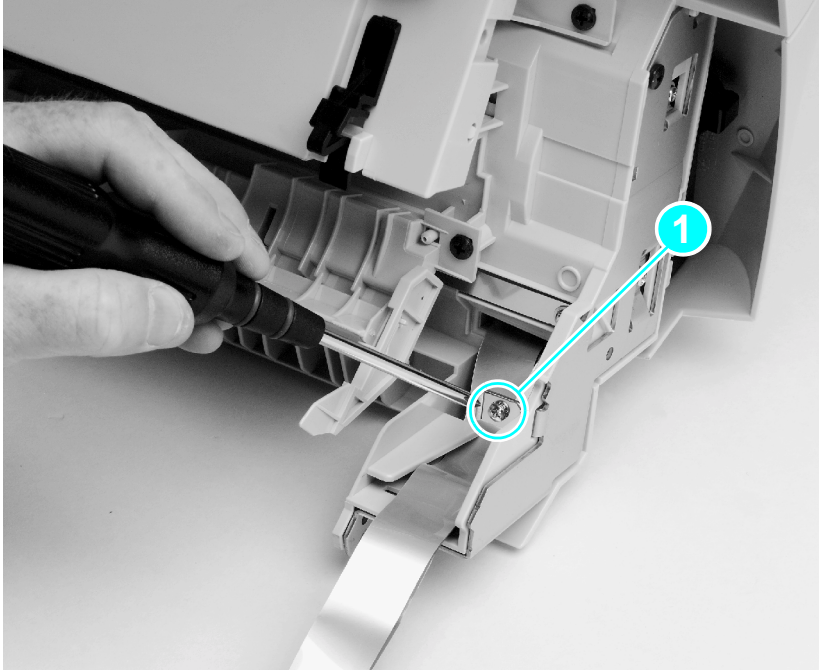
---

**Note**

As you lift the printer door away from the product, make sure that the flat, flexible cable moves smoothly through the slot in the product.

## Document scanner assembly

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, the top cover, and the printer door (see pages 89 through 99).
- 2 On the back, towards the left side, of the printer door, remove one grounding screw (callout 1) to release the grounding strap.



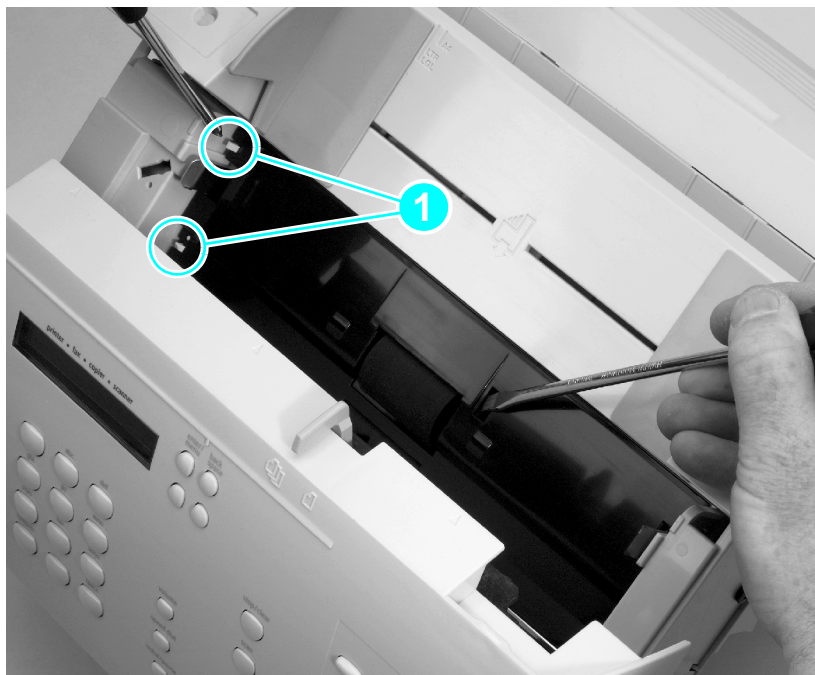
**Figure 27.** Document scanner assembly removal (1 of 3)

- 3 Open the document release door.
- 4 Rotate the plastic strap at the left side of the printer door clockwise to release the strap.

### To reinstall

Make sure you rethread the grounding strap and cable correctly. Failure to do so can damage the cable.

- 5 Remove the document scanner guide by lifting it up while pressing the two tabs (callout 1) at the left side of the assembly.



**Figure 28.** Document scanner assembly removal (2 of 3)

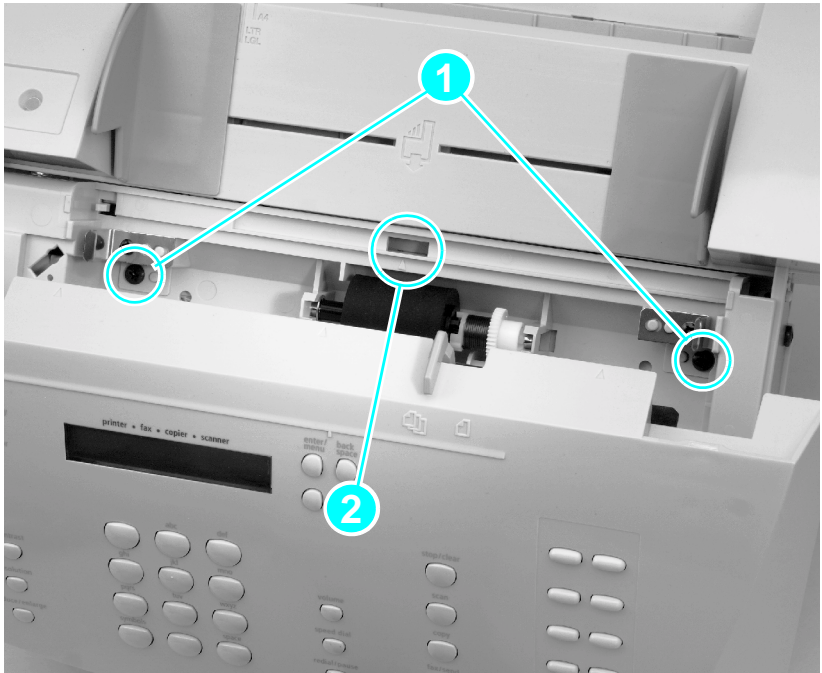
- 6 Remove two screws (callout 1) from the document scanner assembly.
- 7 Use a flatblade screwdriver to press the tab (callout 2) at the center of the assembly, and lift the assembly off of the printer door.

---

**Note**

---

Make sure the contact image sensor cable, at the left side of the product, moves smoothly through the slot as you remove the document scanner assembly.



**Figure 29.** Document scanner assembly removal (3 of 3)



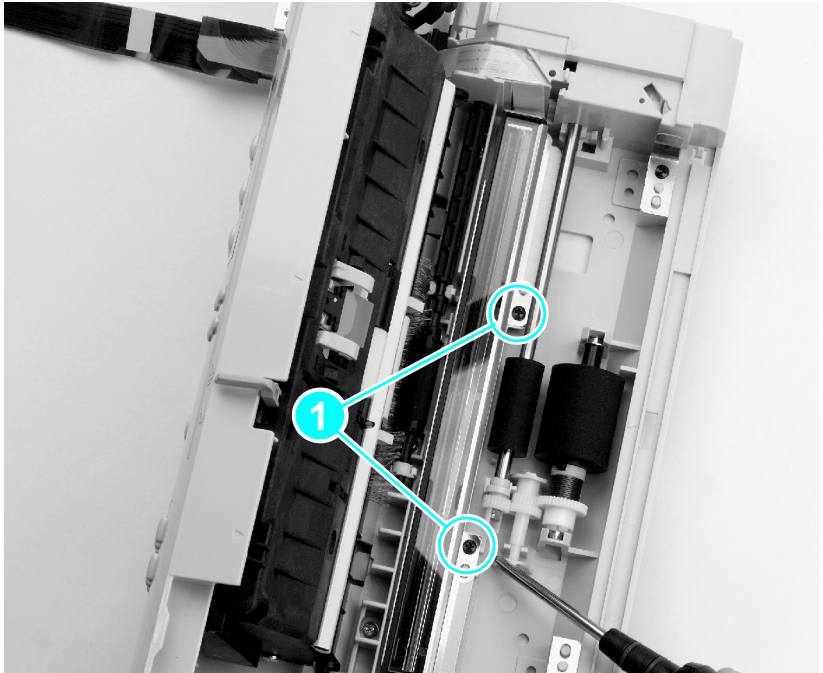
## Contact image sensor

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, the top cover, the printer door, and the document scanner assembly (see pages 89 through 102).
- 2 Use a flatblade screwdriver to pry the two tabs (callout 1) on the cable cover, releasing the cable cover, and then lift the cable cover off of the document scanner assembly.



**Figure 30.** Contact image sensor removal (1 of 2)

- 3 Release the contact image sensor with its mounting plate and cover by removing the two screws (callout 1) from the mounting plate and cover.



**Figure 31.** Contact image sensor removal (2 of 2)

- 4 Lift up the contact image sensor together with its mounting plate and cover.
- 5 Disconnect the cable from the bottom of the contact image sensor.

---

**Note**

Clean the scanner glass after the contact image sensor is reinstalled.

## Document scanner pickup roller

The document scanner pickup roller can be removed and replaced without removing any other parts.

- 1 Open the document release door.
- 2 Use the small flatblade screwdriver to pry the right end of the pickup roller shaft from its plastic mounting.



**Figure 32.** Document scanner pickup roller removal

- 3 Lift the right end of the pickup roller shaft out of its mounting; the left end should follow easily.

---

### Note

Once the pickup roller shaft has been removed, parts can easily fall off of the shaft. Upon reinstallation, make sure that all of the parts have been replaced on the shaft in the correct order.

---

## Document scanner separation pad

The document scanner pickup roller can be removed and replaced without removing any other parts.

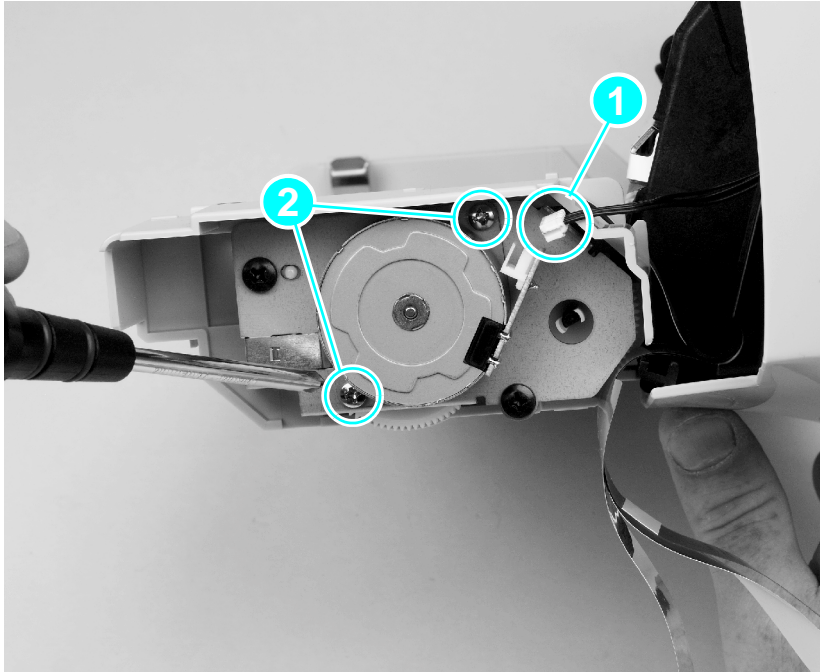
- 1 Open the document release door.
- 2 Pull the separation pad straight up to separate it and the separation pad holder from the document release door.



**Figure 33.** Document scanner separation pad removal

## Document scanner motor

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, the top cover, the printer door, and the document scanner assembly (see pages 89 through 102).
- 2 On the left side of the document scanner assembly, disconnect the motor cable (callout 1).
- 3 Remove two screws (callout 2) to release the motor.

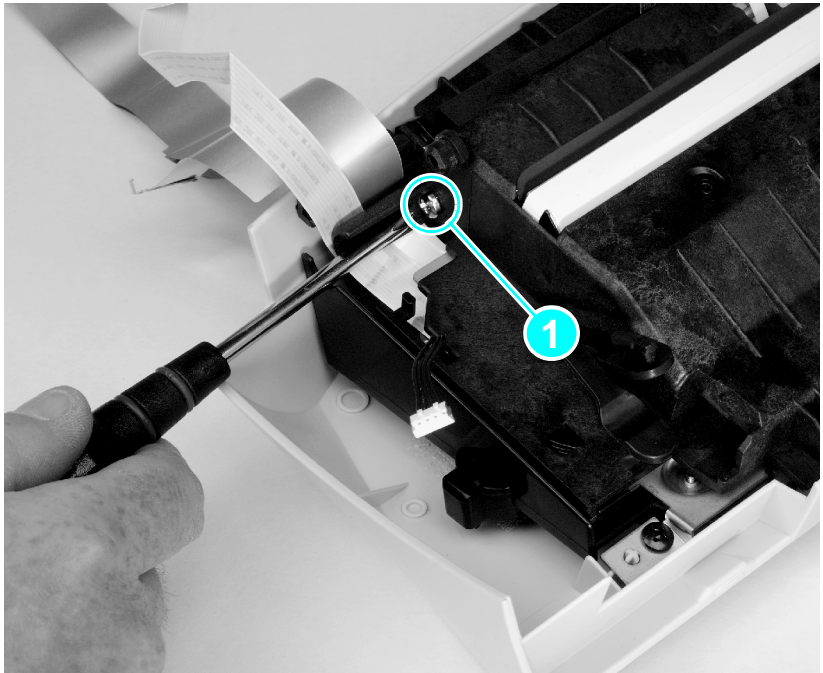


**Figure 34.** Document scanner motor

- 4 Lift the motor away from the product.

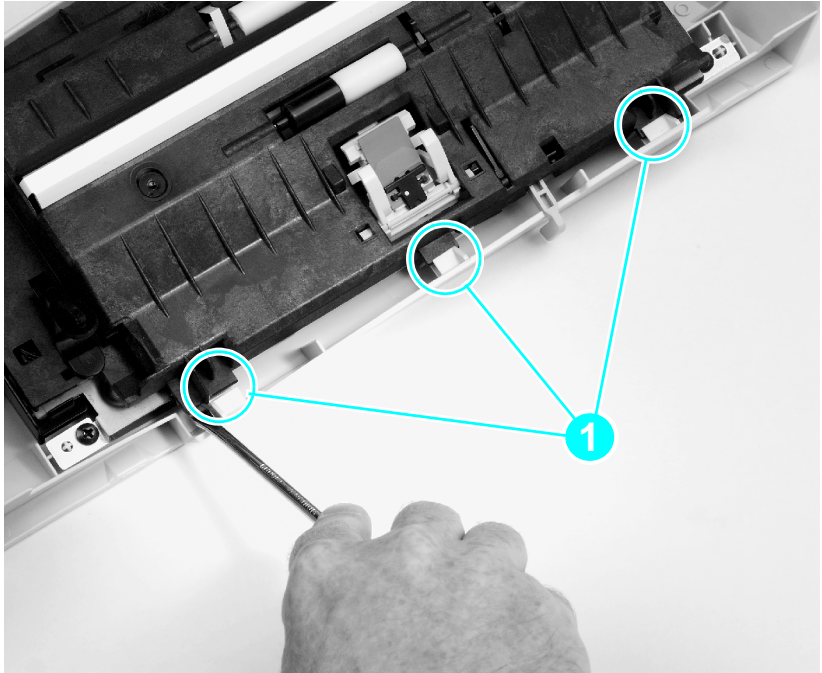
## Upper guide assembly

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, the top cover, the printer door, and the document scanner assembly (see pages 89 through 102).
- 2 If you have not already done so, disconnect the motor cable.
- 3 Place the upper guide assembly and contact image sensor assembly at approximately a 90-degree angle, and then lift the upper guide assembly off of its hinges.
- 4 Remove two screws (callout 1), one on each side of the upper guide assembly.



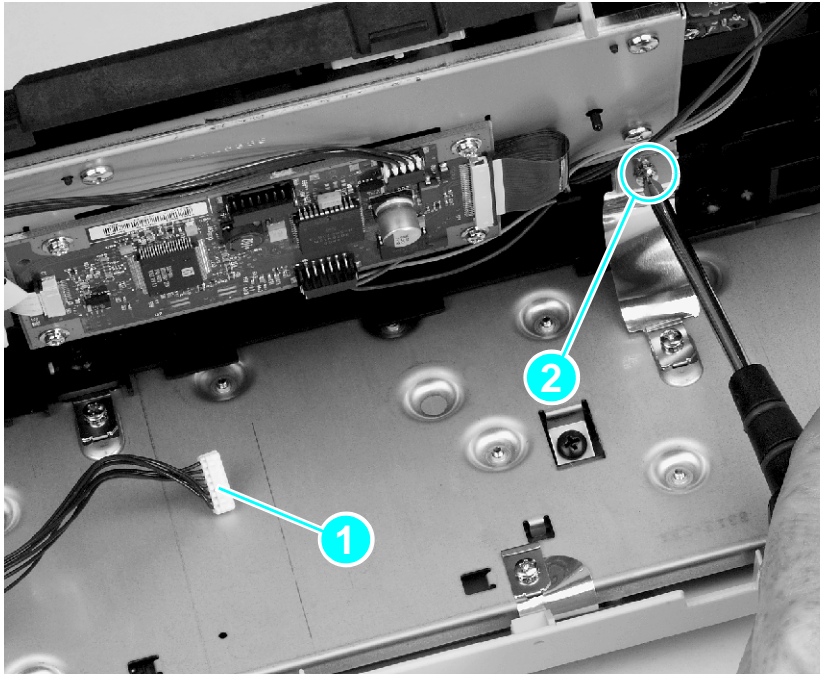
**Figure 35.** Upper guide assembly removal (1 of 4)

- 5 Place the upper guide assembly on the ESD mat so that the assembly rests on the control panel.
- 6 Use a flatblade screwdriver to release three tabs (callout 1) on the control panel cover, and then rotate the upper guide assembly up and away from the tabs to separate it from the control panel cover.



**Figure 36.** Upper guide assembly removal (2 of 4)

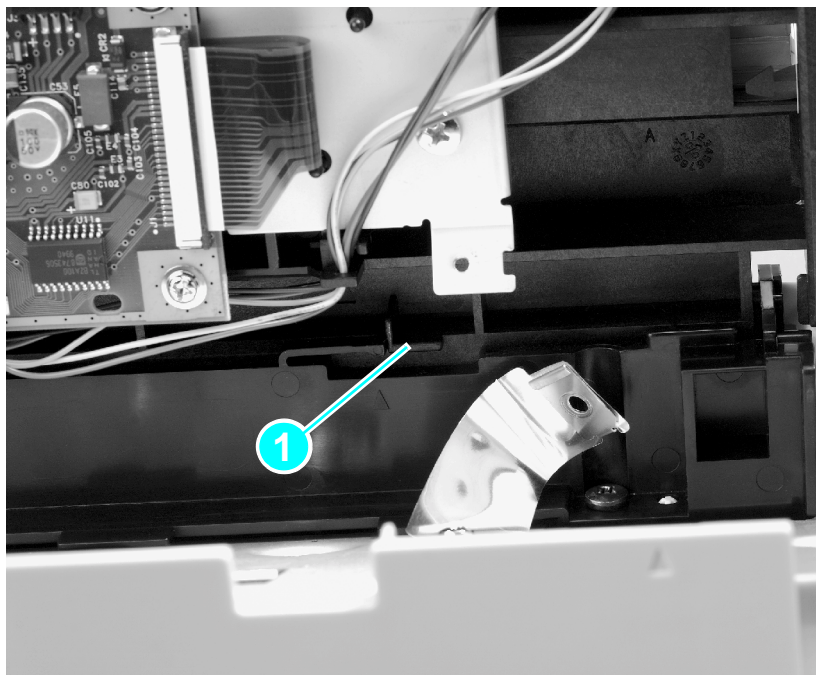
- 7 Disconnect one cable (callout 1) from the control panel PCB.
- 8 Remove one screw (callout 2) to release the ground strap.



**Figure 37.** Upper guide assembly removal (3 of 4)



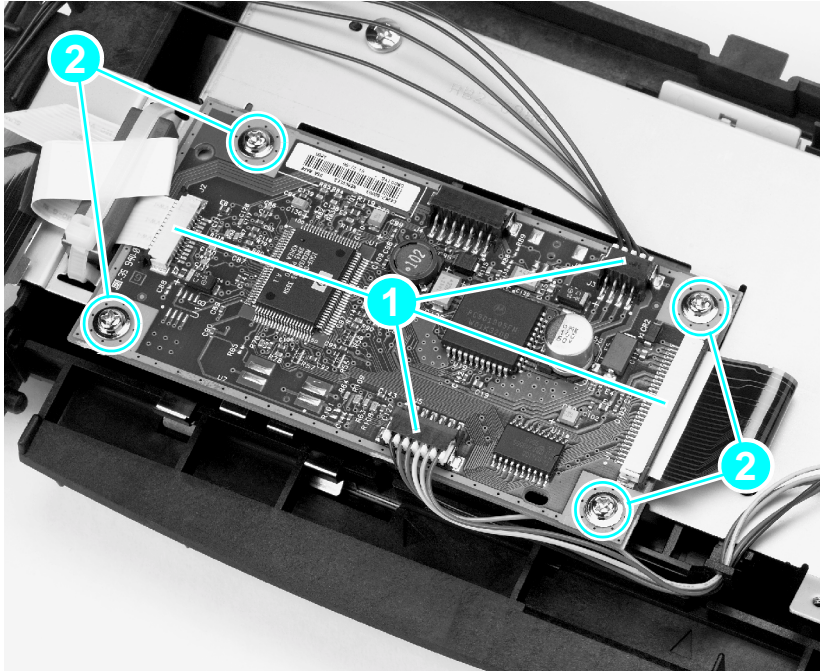
- 9 Press the tab (callout 1) down, and then slide the upper guide assembly to the right to release it from the control panel assembly.



**Figure 38.** Upper guide assembly removal (4 of 4)

## Control panel/scanner board

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, the top cover, the printer door, the document scanner assembly (see pages 89 through 102), and the upper guide assembly (see pages 108 through 111).
- 2 Disconnect the four remaining cables (callout 1) from the control panel/scanner board.
- 3 Remove the four screws (callout 2) from the board.



**Figure 39.** Control panel/scanner board

- 4 Lift the board off of the upper guide assembly.

---

### Note

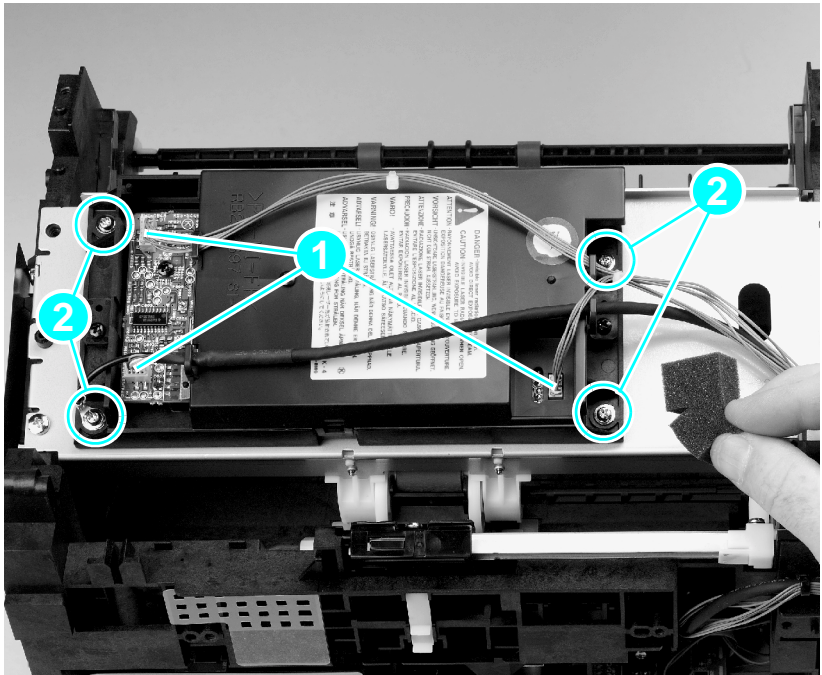
New control panel/scanner boards are not shipped with cables attached. Make sure you keep your cables with the product.

---

# Internal assemblies

## Laser/scanner assembly

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).
- 2 Open the printer door.
- 3 Remove the small foam cover over the small cable connector (callout 1) and then release the cable.
- 4 Disconnect two cables and then release the cables from their cable guides.
- 5 Remove four screws (callout 2) and then lift the assembly free of the printer.



**Figure 40.** Laser/scanner assembly removal

## Output roller

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### Note

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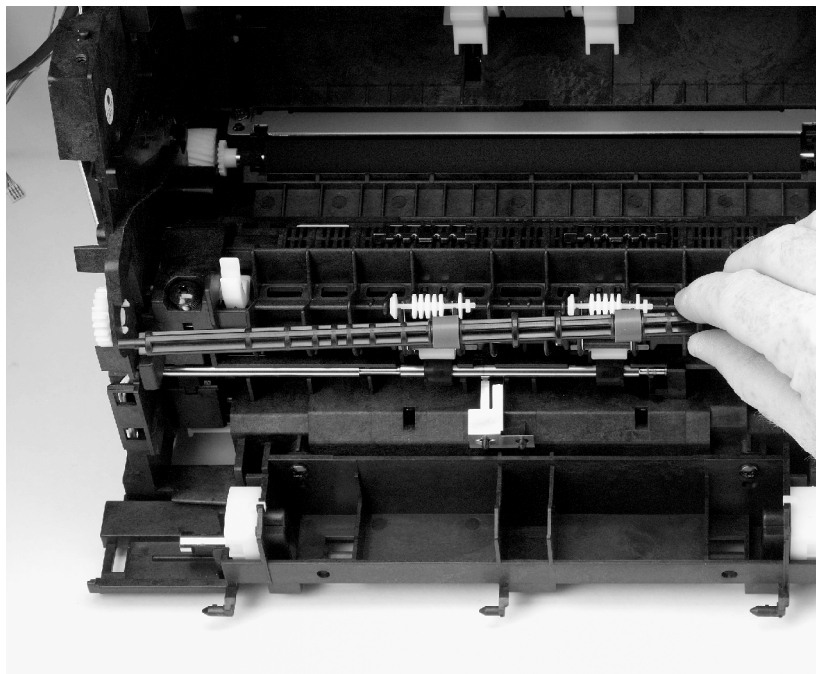
This part can be removed without disassembling any other product parts.

- 1 Open the printer door.
- 2 Using a small flatblade screwdriver, release the plastic snap on the right end of the output roller.



**Figure 41.** Output roller removal (1 of 2)

- 3 Slide the roller to the right, releasing it from the gear on the left.
- 4 Lift the roller out of the printer.



**Figure 42.** Output roller removal (2 of 2)

## Delivery assembly

- 1 Remove the output roller (see pages 114 and 115).

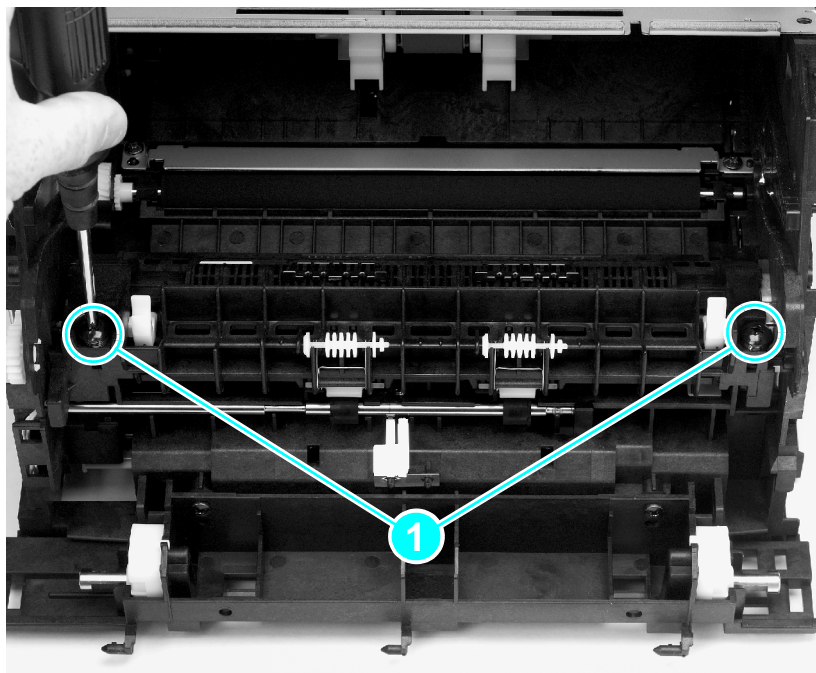
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### Note

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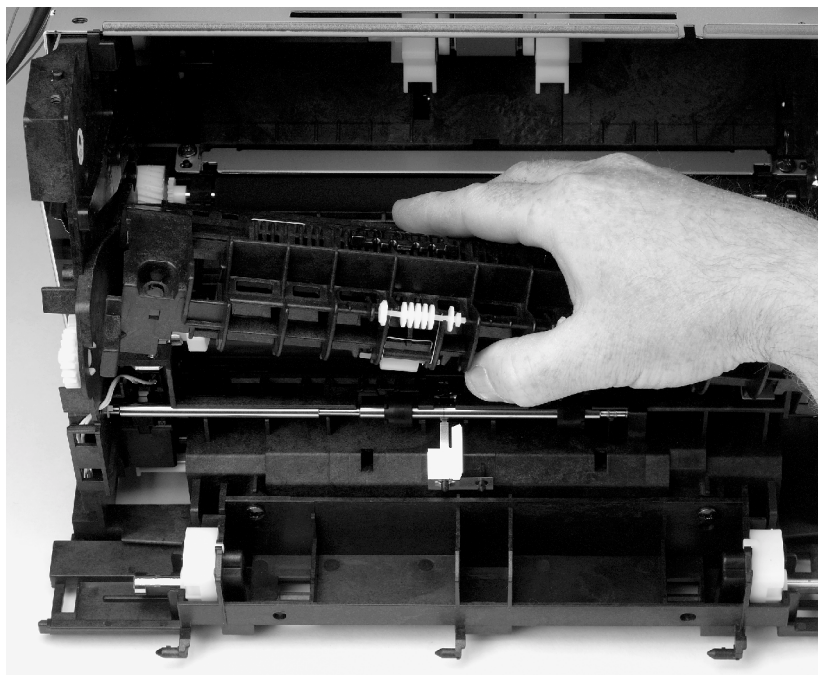
The springs underneath the torsion screws are not attached and can come loose during removal.

- 2 Remove the two screws (callout 1) in the front of the assembly.



**Figure 43.** Delivery assembly removal (1 of 2)

- 3 Gently slide the assembly to the right, and lift it out of the printer.



**Figure 44.** Delivery assembly removal (2 of 2)

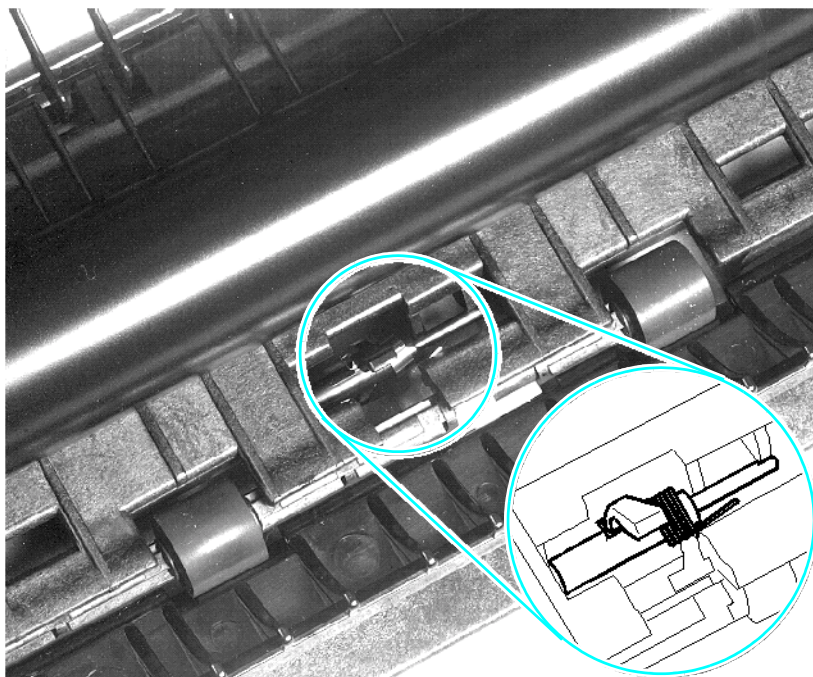
## Paper exit-sensor flag

- 1 Remove the output roller and the delivery assembly (see pages 114 through 117).

### Note

Before proceeding, examine the paper exit-sensor flag. It is important to note the position of the spring mechanism on the flag. The spring must be reinstalled to exactly this position, because installing it incorrectly will cause a control panel error message.

- 2 Remove the paper exit-sensor flag by pressing down on the left side and pulling up on the right side.



**Figure 45.** Paper exit-sensor flag removal

### To reinstall

Place the left side of the flag in the correct position first, then slide the right side into place, making certain the spring is on top of the flag. If the spring exerts no pressure on the flag, it might have to be resprung by giving the spring an extra turn before reinstalling. The flag should fit snugly in place.



## Fusing element

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).
- 2 Also remove the output roller and the delivery assembly (see pages 114 through 117).

---

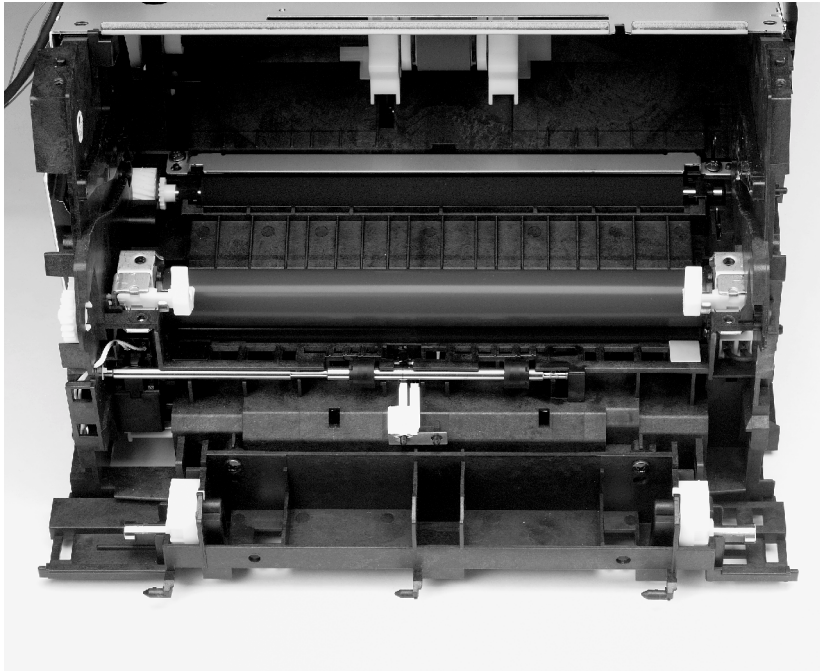
### Note

---

Pay special attention to the way these metal clips are attached to the printer chassis before you remove them. This will make reassembly easier.

The fusing element is held in place on each end by two metal spring-loaded clips. Each clip has a small white lever next to it. These levers must be in the “up” position.

- 3 Push each clip down and back, releasing it from the printer chassis.



**Figure 46.** Fusing element removal (1 of 4)

## To reinstall the fusing element metal clips



**Figure 47.** Fusing element metal clips reinstallation

---

### Note

During reassembly, make sure the metal clips are seated properly.

The front of the metal clip has a small threaded hole. There is a corresponding hole on the printer chassis.

Slide the front of the metal clip underneath the threaded tab on the printer chassis so that the two holes line up.

Push down on the metal clip (you will feel the tension springs pushing against the clip) until the small metal tab on the back of the clip snaps into place.

---

The fusing element has electronic cable connections on both the left and right ends, outside the printer.

- 4 Disconnect the small cable on the left side of the product.



**Figure 48.** Fusing element removal (2 of 4)

The larger double cable on the right end is held in place by a plastic snap.

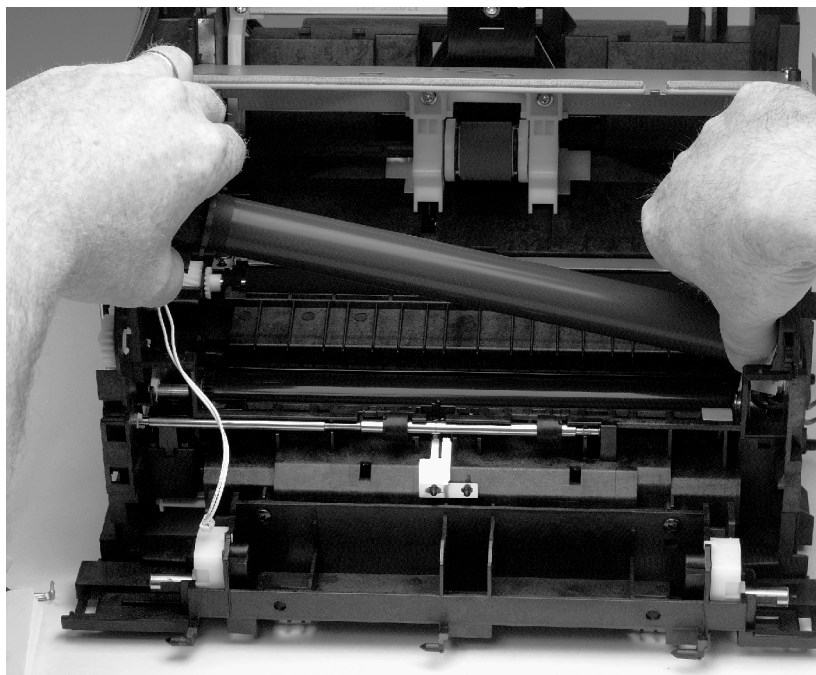
- 5 Press down on the top of the plastic snap with a flatblade screwdriver.



**Figure 49.** Fusing element removal (3 of 4)

- 6 Unwind the cable from the cable guides along the side of the printer.

- 7 After the two cables are disconnected from the right and left sides of the printer, lift the element gently out of the printer.



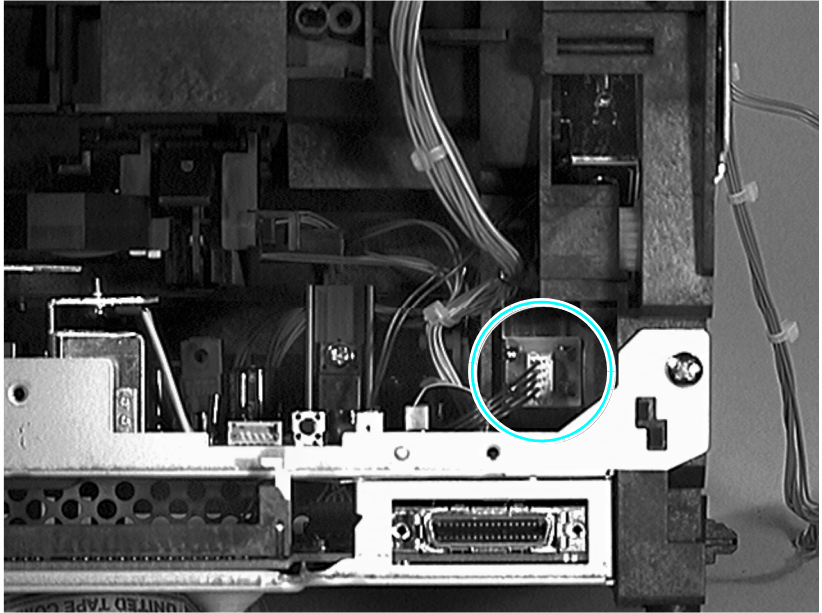
**Figure 50.** Fusing element removal (4 of 4)

## Gear train motor

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).

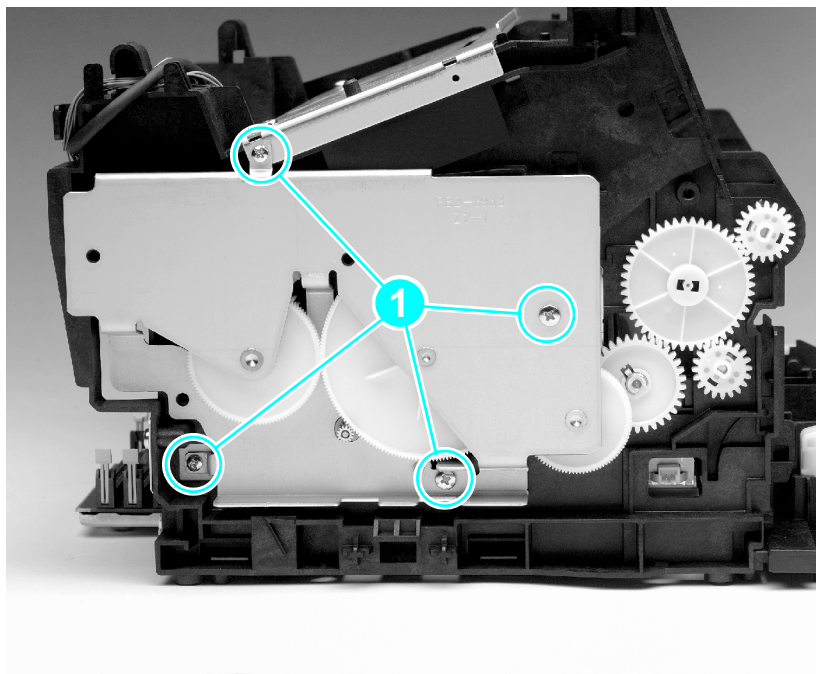
The gear train, located behind the metal plate (gear train cover) on the left side of the printer, must be removed to gain access to the pressure roller.

- 2 Disconnect the motor cable connection at the back of the printer.



**Figure 51.** Gear train motor (1 of 3)

- 3 Remove the four screws (callout 1) securing the metal plate over the gear train, and very gently release it.



**Figure 52.** Gear train motor (2 of 3)

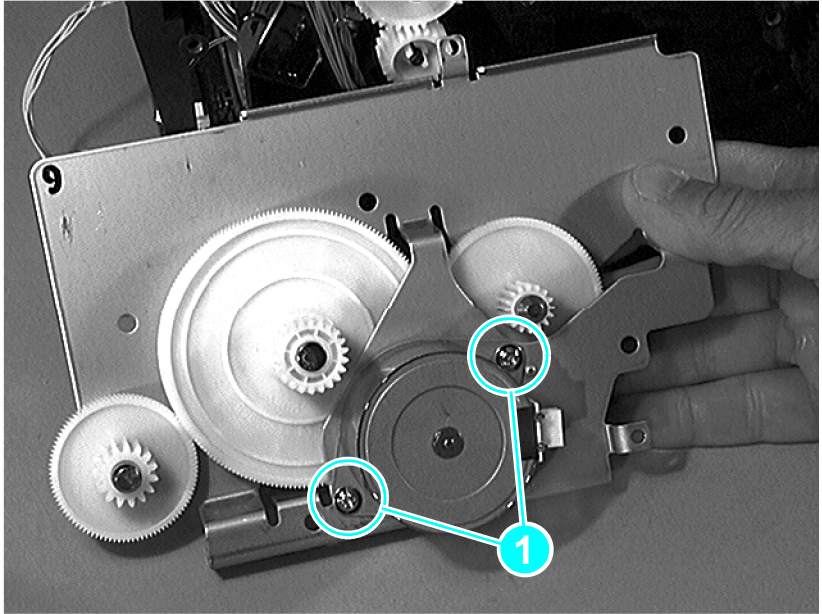
---

**Note**

---

Some gears are not all held in place and can come apart during removal.

- 4 Remove the two screws (callout 1) holding the gear motor to the gear-plate cover.



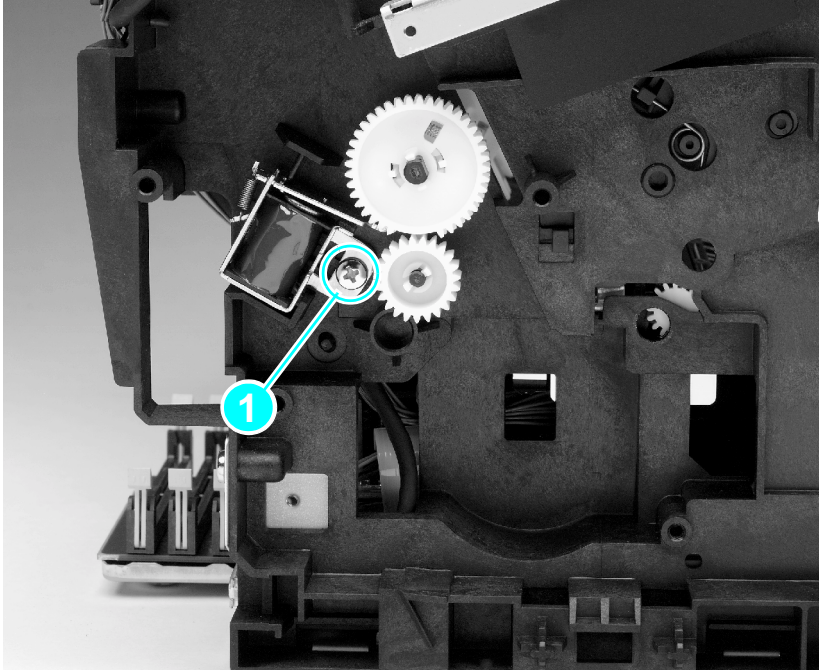
**Figure 53.** Gear train motor (3 of 3)

- 5 Pull the gear motor out of the gear-plate cover.



## Solenoid

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, the top cover (see pages 89 through 95), and the gear train (see pages 124 and 125).
- 2 Remove the single screw (callout 1) securing the solenoid to the printer chassis.



**Figure 54.** Solenoid removal

- 3 Release the solenoid.

---

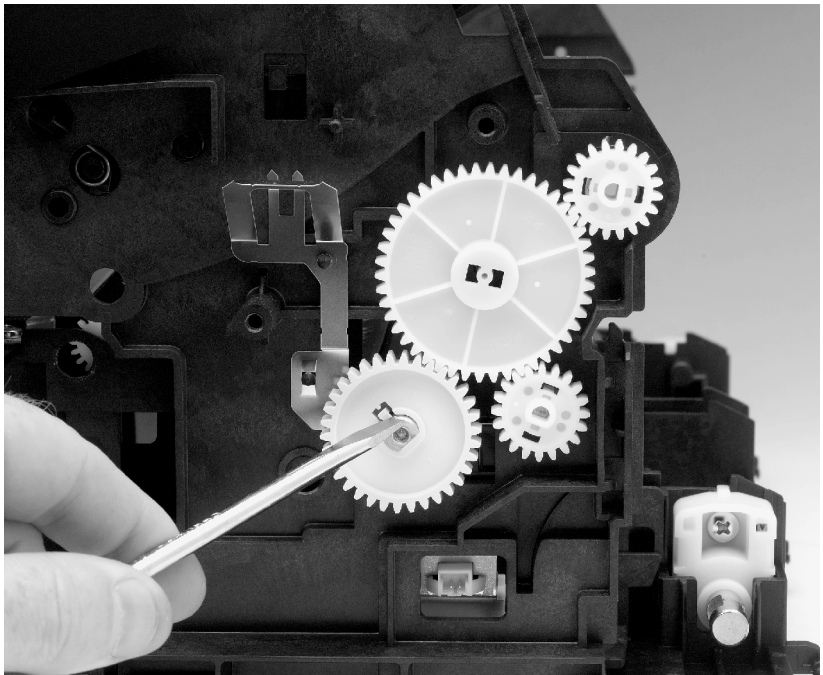
### Note

---

During reassembly, rotate the clutch so that the flat spot on the clutch allows the feed roller (gear) to turn freely.

## Pressure roller

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).
- 2 Remove the output roller and the delivery assembly (see pages 114 through 117), and then remove the fusing element and the gear train (see pages 119 through 125).
- 3 Using a flatblade screwdriver, remove the gear from the end of the pressure roller by gently prying the small plastic tab up from the slot in the end of the roller axes.



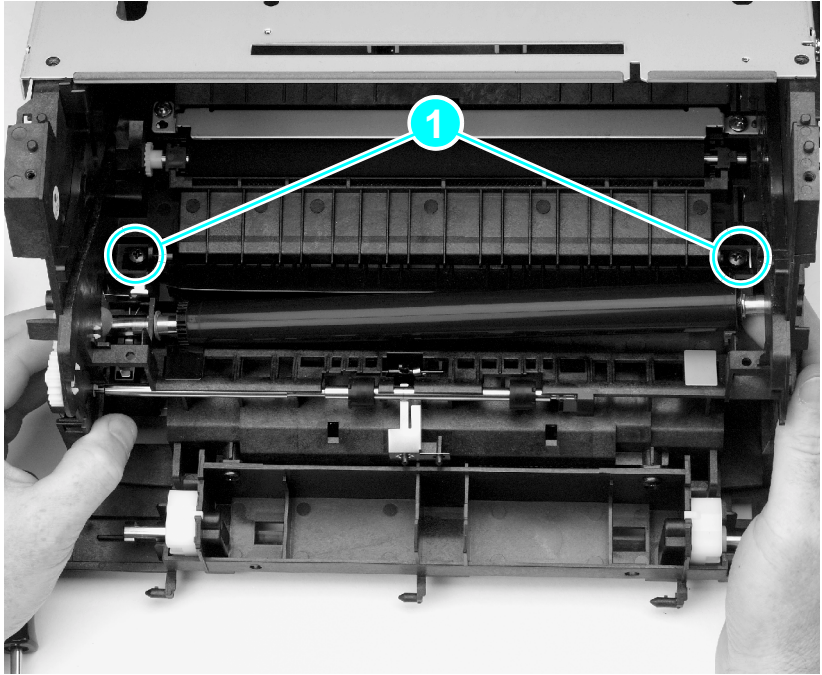
**Figure 55.** Pressure roller removal (1 of 2)

- 4 Slide the gear off the end of the roller.

### CAUTION

The pressure roller is covered with light contact grease. Do not get it on your clothes. See chapter 7, "Parts and diagrams," for information about ordering pressure roller grease.

- 5 Loosen the two screws in the fusing guide (callout 1).



**Figure 56.** Pressure roller removal (2 of 2)

- 6 Lift the right end of the pressure roller out of the half-bushing and slowly move the roller to the right, pulling the left end of the roller axle out of the opening on the left side of the printer.

---

**Note**

The bushings are not connected to the printer chassis and can come loose during removal.

## Transfer roller

The transfer roller can be removed without first removing any other product parts.

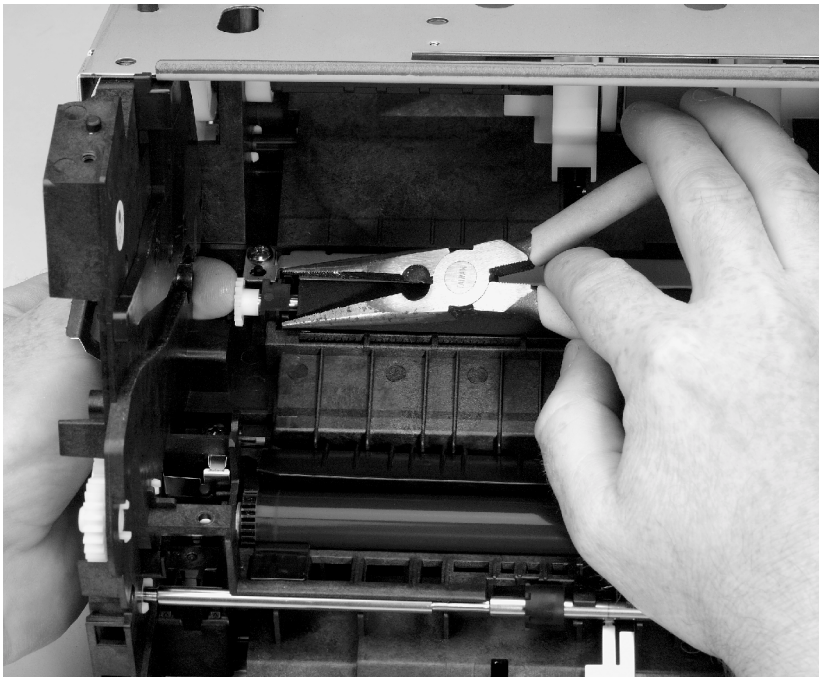
### CAUTION

Do not touch the black portion of the transfer roller.

### Note

A grounding spring is attached to the bottom of the left end of the transfer roller. This spring can come loose during assembly or removal.

- 1 Open the printer door.
- 2 Using needle nose pliers, release the transfer roller by gently squeezing the small plastic snaps on the left end of the roller.



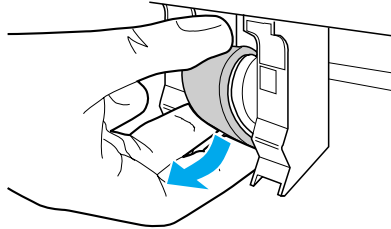
**Figure 57.** Transfer roller removal

- 3 Lift the transfer roller up and out.

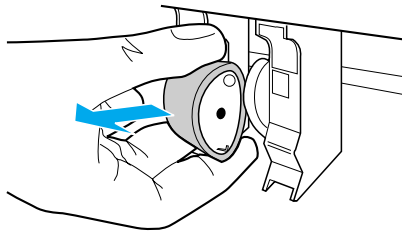
## Pickup roller

The pickup roller can be removed without first removing any other product parts.

- 1 Open the printer door.
- 2 Rotate the bottom of the pickup roller towards the front of the printer.



- 3 Gently pull the pickup roller straight out.

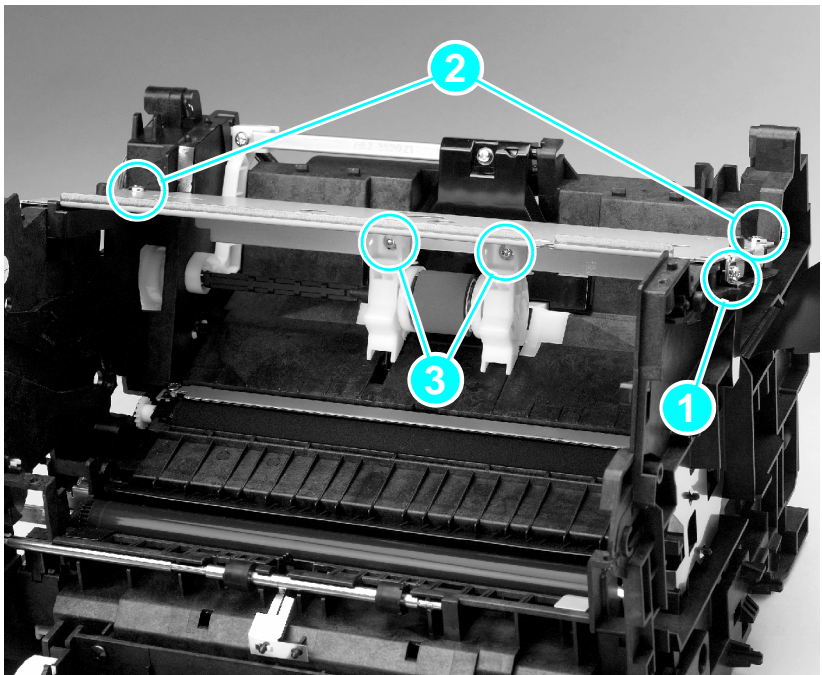


### To reinstall

It is possible to reinstall the pickup roller upside-down. However, for correct operation of the pickup assembly, make sure you reinstall the pickup roller to its correct position. The more rounded portion of the pickup roller should face the front of the product; the circle tab on the blue plastic should be on top, with the straight tab on the blue plastic on the bottom.

## Paper-pickup assembly

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).
- 2 Disconnect the laser/scanner.
- 3 Remove the screw attached to a bracket at the right end of the cover plate (callout 1).
- 4 Remove the two top screws attached to the right and left of the plate (callout 2).
- 5 Remove the two screws located underneath the plate, securing it to the paper-pickup assembly (callout 3).



**Figure 58.** Paper-pickup assembly removal (1 of 2)

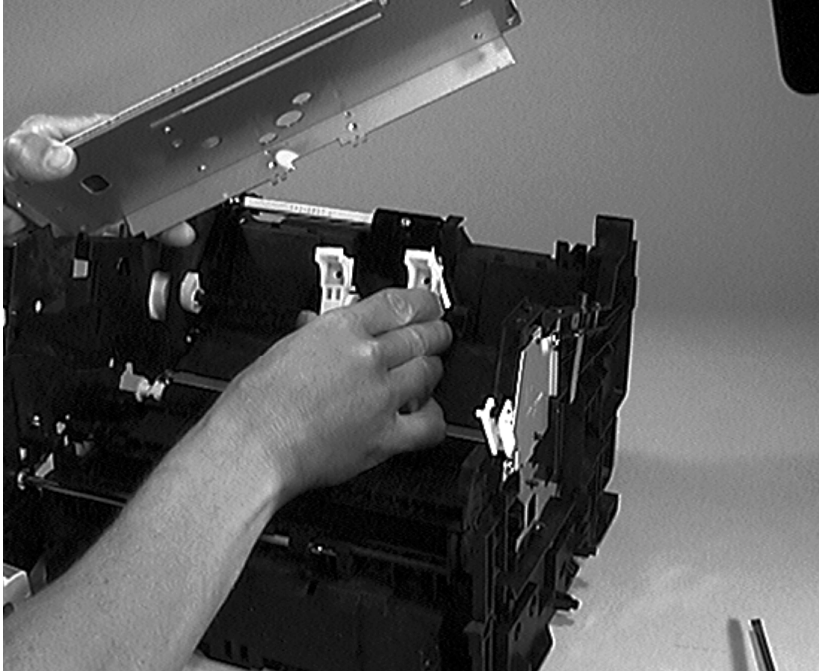
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**Note**

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The pickup assembly is in several pieces; these pieces should be kept together. Pay close attention to how the assembly is aligned before removing it (see reassembly note on this page).

- 6 Lift the metal plate clear of the printer.
- 7 Remove the paper-pickup assembly.



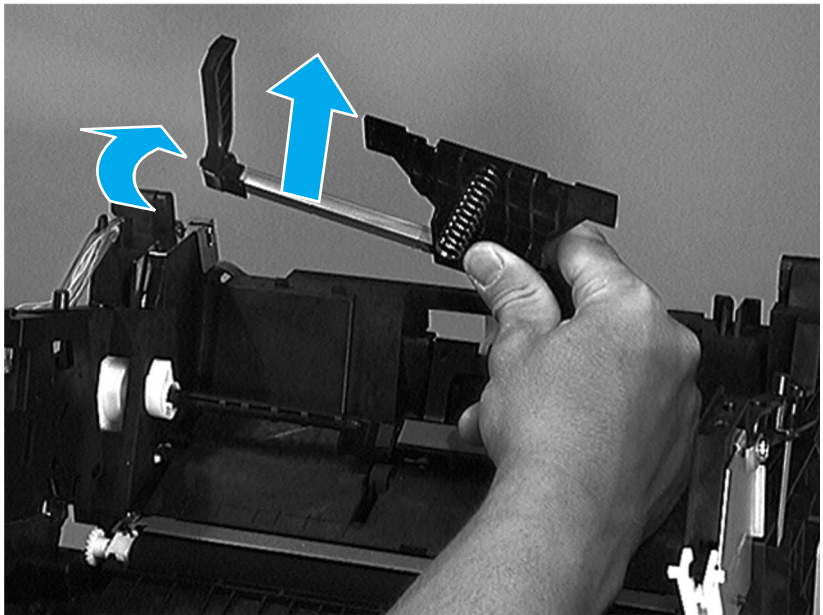
**Figure 59.** Paper-pickup assembly removal (2 of 2)

### **To reinstall**

When reassembling this part, you must correctly align and attach the section of the clutch without teeth to the gear.

## Kick plate

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).
- 2 Also remove the paper pickup assembly (see pages 132 and 133).
- 3 Disconnect the laser/scanner.
- 4 Rotate the cam to free the kick plate.
- 5 Rotate the kick plate arm up approximately 45 degrees and lift the left end up and out of the collar shaft that secures it.

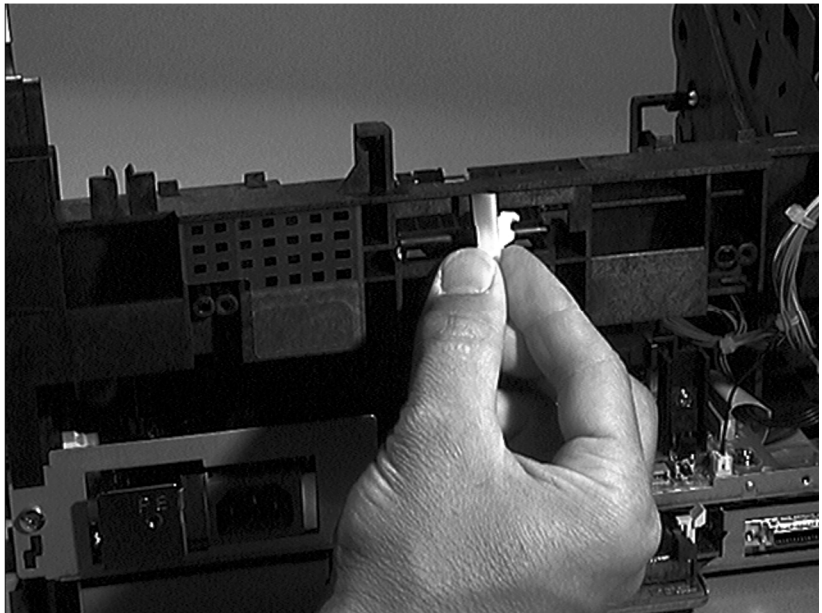


**Figure 60.** Kick plate removal



## Separation pad

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).
- 2 Also remove the paper pickup assembly and the kick plate (see pages 132 through 134).
- 3 Disconnect the laser/scanner.
- 4 Lift the bottom of the white plastic tab (callout 1) on the rear of the paper-feed frame up slightly and slide it up, toward the top of the paper-feed frame. This will release the separation pad.



**Figure 61.** Separation pad removal (1 of 2)

- 5 Slide the separation pad out through the brackets that secure it.



**Figure 62.** Separation pad removal (2 of 2)

# Bottom assemblies

## Formatter pan

### Note

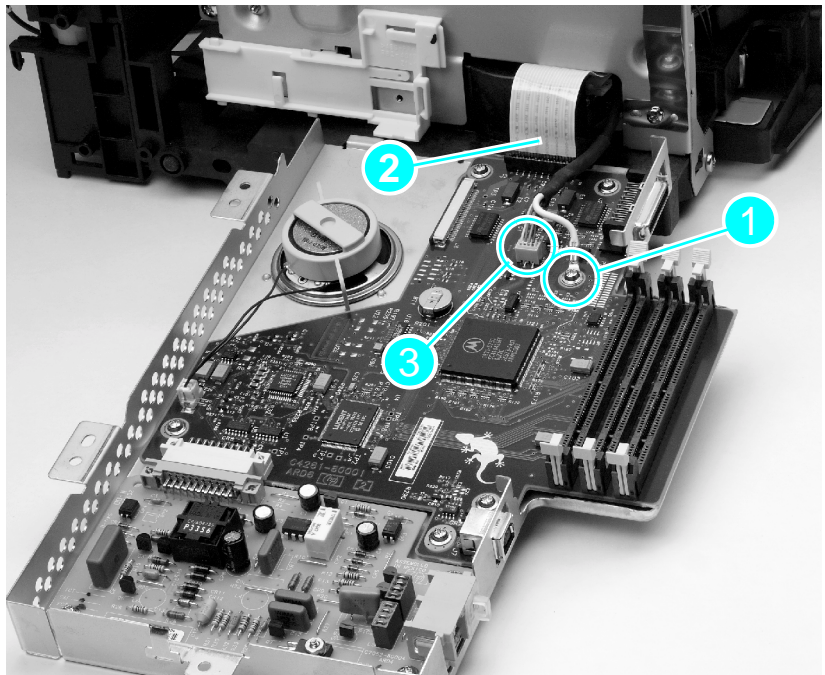
The formatter pan, which contains the formatter and the LIU, can be removed without first removing any other product parts.

- 1 Follow steps 1 through 8 on pages 96 and 97.

### Note

Be careful not to damage or break the electronic cables and connections underneath the formatter.

- 2 Remove one grounding screw (callout 1).
- 3 Pull the flat flexible cable (callout 2) and the small cable (callout 3) out of their connectors.



**Figure 63.** Formatter pan removal

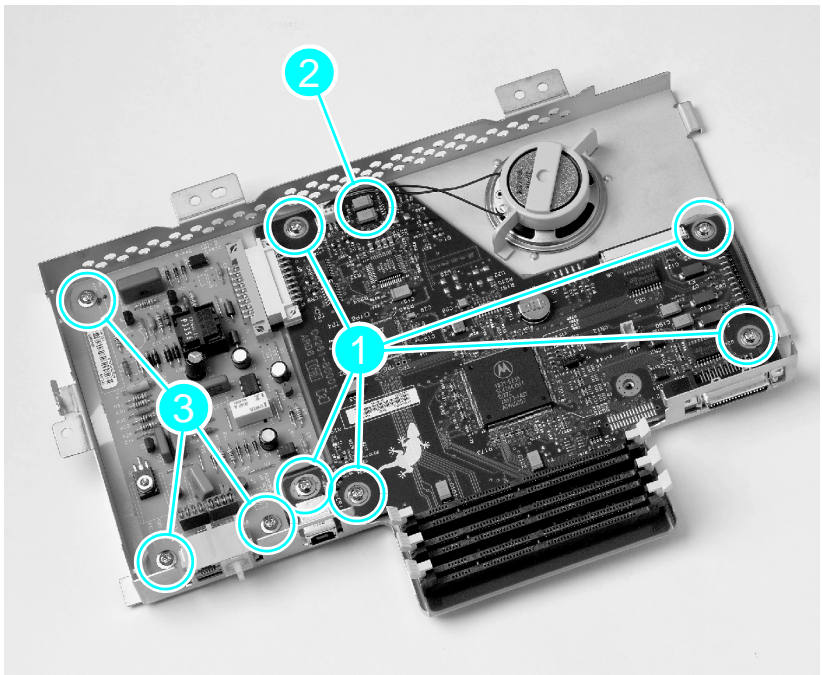
- 4 Slide the formatter pan free of the metal brackets.

### Note

During reassembly, make sure the pan is reseated in the brackets.

## Formatter and LIU

- 1 Remove the formatter pan (see page 137).
- 2 To remove the formatter from the formatter pan, remove the five screws (callout 1) securing the formatter.
- 3 Pull the speaker cable (callout 2) from its connector on the formatter.
- 4 Gently slide the formatter away from the LIU to unplug the connector between the formatter and the LIU.
- 5 To remove the LIU from the formatter pan, remove the three screws (callout 3) securing the LIU.



**Figure 64.** Formatter and LIU

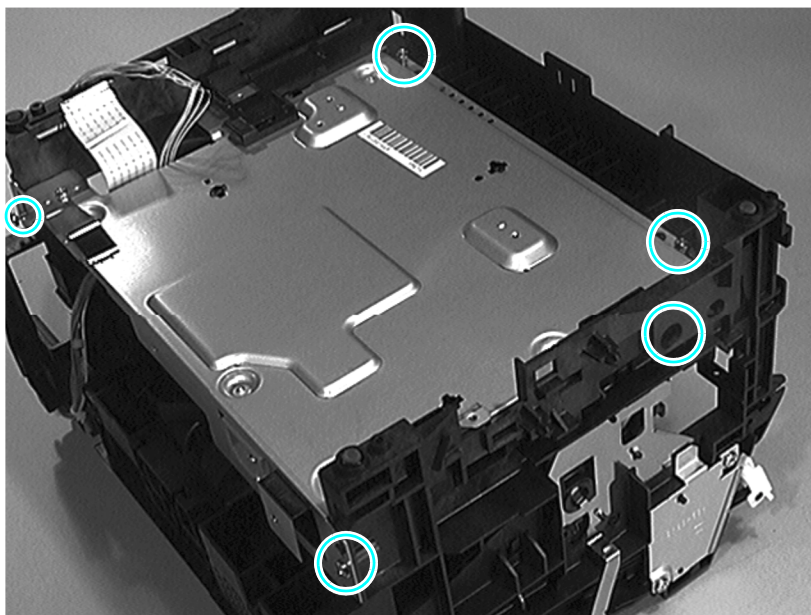
## ECU pan

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).
- 2 Remove the printer door (see pages 96 through 99), and the formatter pan (see page 137).
- 3 Disconnect the ECU cable.

### Note

If the fusing element cables are connected, disconnect them before removing the ECU pan.

- 4 Remove the two screws fastened to the brackets on the sides of the pan.
- 5 Remove the two screws reached through openings in the side of the black plastic printer chassis.



**Figure 65.** ECU pan removal (1 of 2)

- 6 Disconnect the small solenoid connection from the back of the ECU.

- 7 Slowly lift the ECU plate away from the printer chassis.

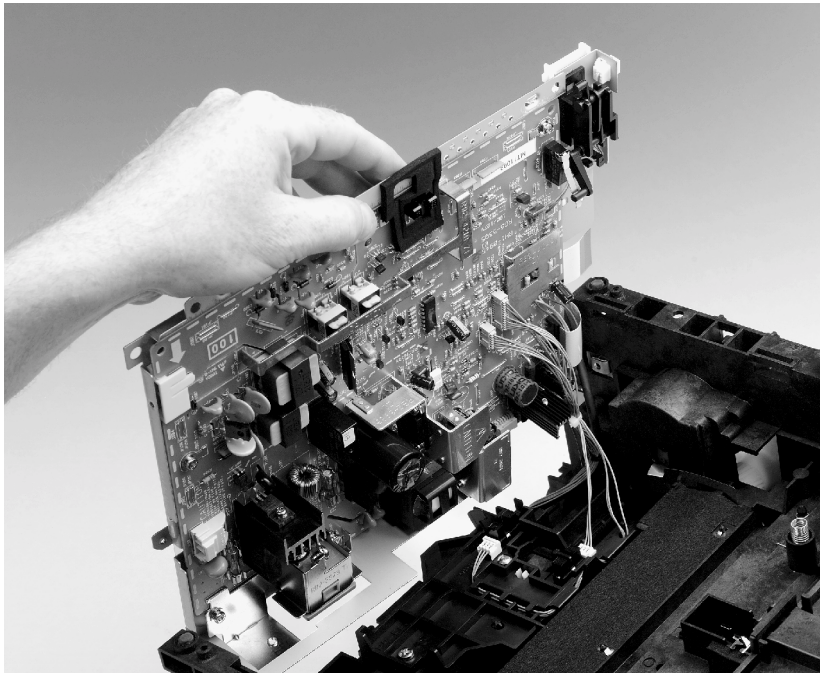
---

**CAUTION**

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Be very careful not to damage or break the connectors underneath the ECU plate as you lift it from the printer chassis.

- 8 Reach between the plate and the chassis and unwind the cables from their cable guides until there is enough slack in the cables to allow access to the bottom of the ECU plate.
- 9 Unwind and disconnect all cables until the ECU board is separated from the chassis.



**Figure 66.** ECU pan removal (2 of 2)

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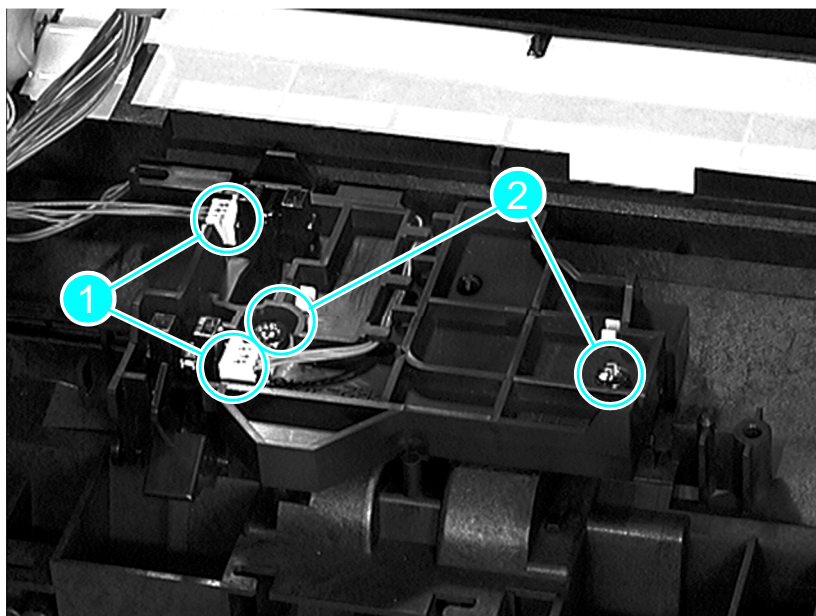
**Note**

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The entire ECU board can be replaced as a single unit (cables do not ship with the replacement board; if cables are damaged during removal, you will have to purchase new ones).

## Paper-feed assembly

- 1 Remove the DIMMs, the back, right, and left covers, the internal paper guide, and the top cover (see pages 89 through 95).
- 2 Remove the printer door (see pages 96 through 99), the formatter pan (see page 137) and the ECU pan (see pages 139 and 140).
- 3 Disconnect the two cable connections (callout 1).
- 4 Partially unwind the cables from their cable guides.
- 5 Remove the two screws (callout 2) securing the assembly to the printer chassis.



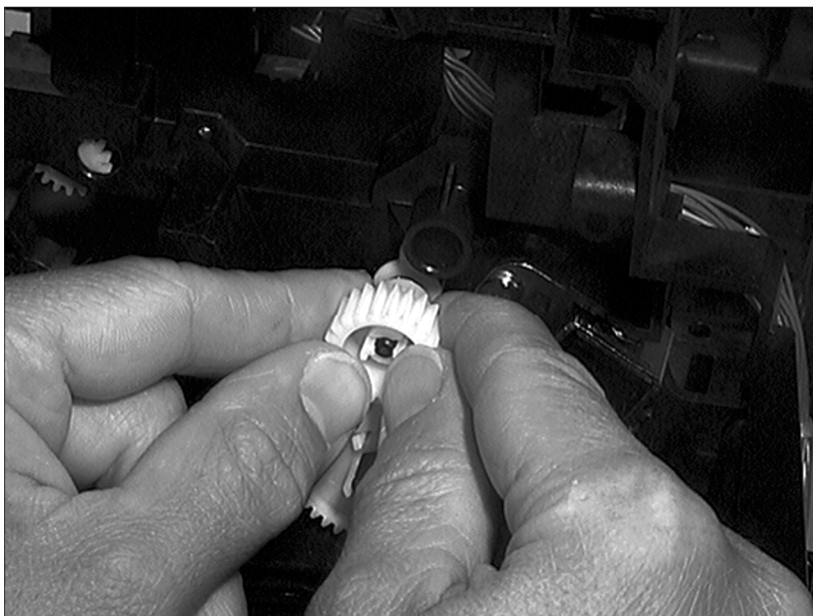
**Figure 67.** Paper-feed assembly removal (1 of 3)

- 6 Lift the paper-feed frame away from the chassis, being careful not to damage sensor flags.

### To reinstall

Be sure to seat the tab into the frame.

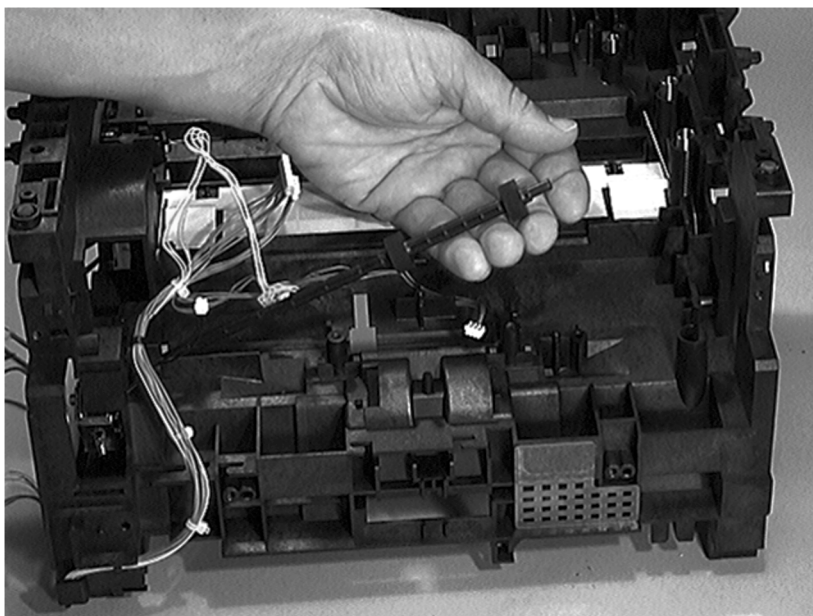
- 7 Release the snap catches inside the gear on the left end of the paper-feed roller shaft.



**Figure 68.** Paper-feed assembly removal (2 of 3)



- 8 Slide the paper-feed roller to the right, and remove it from the printer chassis.



**Figure 69.** Paper-feed assembly removal (3 of 3)



# 6 Troubleshooting

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# Basic troubleshooting

**Table 10. Basic troubleshooting**

#	Verification steps	Possible problems	Solutions
<b>1</b>	<b>Is Power On successful?</b> When the product is connected to a grounded power source, the printer motor should rotate for approximately six seconds and the document scanner motor should rotate for approximately two seconds.	No power.	<ol style="list-style-type: none"> <li>1. Verify that the product is plugged in.</li> <li>2. Verify that the power cable is functional.</li> <li>3. Verify that FU102 on the ECU is not open.</li> <li>4. If all of these conditions are correct, replace the ECU.</li> </ol>
		Printer motor does not rotate.	<ol style="list-style-type: none"> <li>1. Verify that the toner cartridge is present.</li> <li>2. Verify that the printer door is closed.</li> <li>3. Verify that paper is loaded in the paper input tray.</li> <li>4. Verify that printer path paper sensors are functional.</li> <li>5. Verify that the motor connector J1 is seated into the ECU.</li> <li>6. Verify that the motor is correctly mounted to the printer chassis.</li> <li>7. If all of these conditions are correct, replace the ECU.</li> <li>8. If, after replacing the ECU, the printer motor still does not rotate, replace the motor.</li> </ol>
		Document scanner motor does not rotate.	<ol style="list-style-type: none"> <li>1. Verify that the document scanner connector is seated in the formatter.</li> <li>2. Verify that the document scanner motor is correctly mounted in the document scanner assembly.</li> <li>3. If these conditions are met, replace the document scanner motor.</li> <li>4. If, after replacing the motor, the document scanner motor still does not rotate, replace the formatter.</li> <li>5. If, after replacing the formatter, the document scanner motor still does not rotate, replace the ECU.</li> </ol>
<b>2</b>	<b>Is the product ready?</b> The control panel should function without error messages.	Control panel displays an error.	Consult the list of common messages later in this chapter to correct the error.
		Control panel is not functional.	Verify that the control panel cable is seated into both the control panel and the formatter. If the cable is connected correctly, replace the control panel.

**Table 10. Basic troubleshooting**

#	Verification steps	Possible problems	Solutions
<b>3</b>	<b>Do engine tests and self-tests print?</b> Print an engine test, which is explained on page 167. The engine test should print without paper-feed problems or print-quality problems. Also print a configuration report (See “Internal reports” on page 181.).	<b>Note</b>	The formatter must be connected to perform an engine test.
		Engine test is not successful.	Replace the ECU.
		Control panel displays an error message.	Consult the list of common messages in chapter 3 or the list of error messages in this chapter to 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.
<b>4</b>	Place the configuration report into the document feeder tray and copy it to the printer. The report should feed smoothly through the document scanner path and copies should print without print-quality problems.	Poor copy quality.	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 roller, and then recalibrate the document scanner. If, after performing the maintenance, the problem persists, replace the contact image sensor or document scanner.
		Media does not move smoothly through the document scanner path.	Clear the document scanner path of obstructions. Check photosensor to make sure that it operates correctly. If the problem persists, replace the document scanner assembly.
<b>5</b>	<b>Does the product send a fax?</b> Connect the phone line and verify the dial tone (using a hand set, if necessary). Attempt to send a fax.	The telephone line is not operational or the product is not plugged into the telephone line.	Make sure that the product is plugged into a telephone line that you know works.
		The telephone cable is plugged into the wrong connector.	Try plugging the phone cord into the other connector.
		The product's fax settings are set incorrectly.	Review and reset the product's fax settings.
		The LIU is not operational.	Replace the LIU.
<b>6</b>	Use another fax machine to send a fax to the product.	Too many telephone devices are plugged in, or telephone devices are not connected in the correct order	Make sure that the product is the only device on the telephone line and try again to receive the fax.
		The product's fax settings are set incorrectly.	Review and reset the product's fax settings.
		The LIU is not operational.	Replace the LIU.

**Table 10. Basic troubleshooting**

#	Verification steps	Possible problems	Solutions
<b>7</b>	<b>Is the software installed correctly?</b>	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.
<b>8</b>	<b>Does the product print from the computer?</b> 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.	Reset the 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 in Windows 95/NT.	Reset the computer's port settings.
<b>9</b>	<b>Does the product scan to the computer?</b> Initiate a scan from either the computer's basic desktop software or from the product.	The formatter has failed.	Replace the formatter
		Other devices are connected to the parallel port.	Disconnect the other devices and try again to scan.
		The computer's 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. Polling is turned off in HP LaserJet Director or HP LaserJet Director is not running.	Reset the computer's port settings. If the problem persists, reset the BIOS settings in CMOS. Start HP LaserJet Director and turn on polling.

# Errors

These control panel error messages are listed alphabetically. Messages are accompanied by the cause of the message and steps to resolve the error.

**Table 11. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
50 FUSER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. Check the cabling connections to the heating element. Perform the heating element check (see page 170). If the error persists, replace the heating element. If, after replacing the heating element, the error persists, replace the ECU.
51 LASER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. Check the cabling connections to the laser/scanner. Try connecting the product to a different power source or surge protector. If the error persists, replace the laser/scanner.
52 SCANNER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. Try connecting the product to a different power source or surge protector. If the error persists, replace the contact image sensor. If, after replacing the contact image sensor, the error persists, replace the formatter.

**Table 11. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
53 PRINTER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the error persists, replace the formatter.
54 PRINTER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the error persists, replace the formatter.
55 DC CONTROLLER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. Check the cabling to the ECU. If the error persists, replace the ECU.
62.X PRINTER ERROR	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the error persists, replace the formatter.
79 SERVICE (####)	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the error persists, replace the formatter.
80 SERVICE (####)	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the error persists, replace the formatter.
81 SERVICE (####)	The product has experienced an internal hardware error.	Disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the error persists, replace the formatter.



**Table 11. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
COMMUNICATION ERROR	Fax communication error occurred between the product and the sender or receiver. For brief descriptions of communication errors see table 12, "Communication errors," on page 155.	Allow the product to retry sending the fax. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. If the error persists, replace the LIU.
DOCUMENT FEEDER JAM	A piece of media is jammed in the document feeder tray.	Open the document release door, clear the jam, close the document release door, and reload the paper into the document feeder tray. If the error persists, replace the document scanner separation pad and document scanner pickup roller.
DOCUMENT FEEDER MISPICK. RELOAD MEDIA	Media in the document feeder tray was not picked up.	Remove and reload the media into the document feeder tray. If the error persists, replace the document scanner pickup roller.
FAX DOES NOT ANSWER CANCELED SEND	Attempts to redial a fax number failed or the redial on no answer option was turned off.	Call the recipient to ensure that fax machine is on and ready. Check that you are dialing the correct fax number. Check that the redial option is enabled. Unplug the telephone cord from both the product and the wall and replug the cord. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. If the error persists, replace the LIU.

**Table 11. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
FAX DOES NOT ANSWER REDIAL PENDING	You tried to send a fax, but the receiving fax line did not answer. The product attempts to redial after a few minutes.	Allow the product to retry sending the fax. Call the recipient to ensure that fax machine is on and ready. Check that you are dialing the correct fax number. Check that the redial on no answer option is enabled. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. If the error persists, replace the LIU.
NO DIAL TONE.	The product could not detect a dial tone.	Unplug the telephone cord from both the product and the wall and replug the cord. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. See "Changing the detect dial tone setting" in the online user guide. If the error persists, replace the LIU. If, after replacing the LIU, the error persists, replace the formatter.
NO FAX DETECTED	The product answered the incoming call but could not determine that the caller was a fax machine.	Allow the product to retry sending the fax. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. If the error persists, replace the LIU.

**Table 11. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
POWER FAIL RECOVERY. CHECKING SYSTEM	The product has detected a power failure and is performing a self-test.	The product should go back to the ready state on its own. If this message does not go away in a couple of minutes, disconnect the power cable from the product, wait at least 30 seconds, then reconnect the power cable and wait for the product to initialize. If the message reappears frequently, troubleshoot the product by following the steps in “Basic troubleshooting” on page 146.
POWER OFF. CHECK DIMM #[1-3]	The DIMM in the indicated slot has failed.	Unplug the product and check the indicated DIMM.
PRINTER PAPER JAM CLEAR PAPER PATH	The product has detected that a jam has occurred.	Clear the jam. The job should continue to print. If it does not, try reprinting the job. If media jams frequently, see chapter 3, “Maintenance.”
PRINTER TRAY MISPICK. [ENTER] TO RESUME	The print engine has failed to pick up a piece of media.	Reload the paper in the paper input tray and press <b>ENTER/MENU</b> to continue the job. If the error persists, replace the printer pickup roller.
RECEIVING FAX BUSY CANCELED FAX	The fax line to which you were sending a fax was busy. The product has cancelled sending the fax.	Call the recipient to ensure that fax machine is on and ready. Check that you are dialing the correct fax number. Check that the redial on busy option is enabled. Press and hold <b>STOP/CLEAR</b> for seven seconds to check for a dial tone. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. If the error persists, replace the LIU.

**Table 11. Control panel error messages**

<b>Message</b>	<b>Cause</b>	<b>Solution</b>
RECEIVING FAX BUSY REDIAL PENDING	The fax line to which you were sending a fax was busy. The product automatically redials the busy number. (See "Changing how the product redials" in the online user guide.)	Allow the product to retry sending the fax. Call the recipient to ensure that fax machine is on and ready. Check that you are dialing the correct fax number. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Plug the product phone cord into a jack for another phone line. If the error persists, replace the LIU.

**Table 12. Communication errors**

200	T30 result recv success	343	T30 result fail unexpected frame EA BZT
221	T30 result recv stopped	344	T30 result fail no frame received D
222	T30 result fail no caller R	345	T30 result fail no frame received IIA
223	T30 result fail Errored block IX	346	T30 result fail no frame received IIB
224	T30 result fail Page quality III	347	T30 result fail no frame received IIC
225	T30 result fail incompatible RDIAG disabled FA	348	T30 result fail no frame received TA
226	T30 result fail incompatible RDIAG versions FA	349	T30 result fail no frame received VA
227	T30 result fail incompatible modulation FA	350	T30 result fail no frame received VB
228	T30 result fail incompatible polling disabled FA	351	T30 result fail no frame received VC
229	T30 result fail incompatible password FA	352	T30 result fail no frame received VD
230	T30 result fail incompatible ECM required FA	353	T30 result fail no frame received VI
231	T30 result fail incompatible RECV disabled FA	354	T30 result fail no frame received EA BZT
232	T30 result fail no frame received F	355	T30 result fail no frame received EB BZT
233	T30 result fail no frame received RA	356	T30 result fail premature DCN T
234	T30 result fail no frame received RB	357	T30 result fail premature DCN TA
235	T30 result fail no frame received VIIIA	358	T30 result fail premature DCN D
236	T30 result fail no frame received IXA	359	T30 result fail premature DCN IIA
237	T30 result fail no frame received F BZT	360	T30 result fail premature DCN IIB
238	T30 result fail unexpected frame III	361	T30 result fail premature DCN IIC
239	T30 result fail unexpected frame VIIIA	362	T30 result fail premature DCN VA
240	T30 result fail unexpected frame IXA	363	T30 result fail premature DCN VB
241	T30 result fail unexpected frame X	364	T30 result fail premature DCN VC
242	T30 result fail DIS after DIS FA	365	T30 result fail premature DCN VD
243	T30 result fail premature DCN R	366	T30 result fail premature DCN VI
244	T30 result fail premature DCN FA	367	T30 result fail fatal response T
245	T30 result fail premature DCN VIIIA	368	T30 result fail fatal response TA
246	T30 result fail premature DCN IXA	369	T30 result fail fatal response D
247	T30 result fail fatal response R	370	T30 result fail fatal response IIA
248	T30 result fail fatal response FA	371	T30 result fail fatal response IIB
249	T30 result fail fatal response VIIIA	372	T30 result fail fatal response IIC
250	T30 result fail fatal response IXA	373	T30 result fail fatal response VA
251	T30 result fail fatal response X	374	T30 result fail fatal response VB
252	T30 result fail fallback FA	375	T30 result fail fatal response VC
253	T30 result fail incompatible page width FA	376	T30 result fail fatal response VD
281	FAXDATA result no EOL timeout	377	T30 result fail fatal response VI
282	FAXDATA result no frame timeout	378	T30 result fail fatal response EA BZT
283	FAXDATA result line drop	379	T30 result fail fatal response EB BZT
284	FAXDATA result no EOL timeout after data	380	T30 result fail unexpected response to CTC
285	FAXDATA result no frame timeout after data	381	T30 result fail no response to CTC
286	FAXDATA result bad block count	382	T30 result fail receiver not ready
290	FAXCTRL result fail ECM non-ECM change	383	T30 result fail no response to RR
291	FAXCTRL result fail file open write	384	T30 result fail non JPEG remote
292	FAXCTRL result fail non JPEG to JPEG	385	T30 result fail non color remote
300	T30 result XMIT success	386	T30 result fail V8 timeout T
311	T30 result XMIT stopped	387	T30 result fail V8 error T
312	T30 result fail no answer T	388	T30 result fail no frame received T
313	T30 result fail busy detected T	389	T30 result fail V8 retry timeout T
314	T30 result fail incompatible RDIAG disabled A	390	FAXDATA result send ECM block timeout
315	T30 result fail incompatible RDIAG versions A	391	FAXDATA result send non ECM page timeout
316	T30 result fail incompatible RECV disabled A	392	T30 result fail no frame received R
317	T30 result fail incompatible modulation A	393	T30 result fail V8 timeout R
318	T30 result fail incompatible page width A	394	T30 result fail V8 error R
319	T30 result fail incompatible BFT disabled A	395	T30 result fail unexpected frame VII
320	T30 result fail incompatible polling disabled A	396	T30 result fail XMIT failure IIA
321	T30 result fail third DIS or DTC D	397	T30 result fail XMIT failure IIB
322	T30 result fail fallback D	398	T30 result fail XMIT failure IIC
323	T30 result fail fallback IIB	399	T30 result fail XMIT failure IID
324	T30 result fail fallback IIC	400	T30 result fail XMIT failure D
325	T30 result fail errored block VA	401	T30 result fail XMIT failure C
326	T30 result fail errored block VB	402	T30 result fail XMIT failure VA
327	T30 result fail errored block VC	403	T30 result fail XMIT failure VB
328	T30 result fail errored block VD	405	T30 result fail XMIT failure VC
329	T30 result fail page quality IIA	406	T30 result fail XMIT failure VD
330	T30 result fail page quality IIB	407	T30 result fail XMIT failure VE
331	T30 result fail page quality IIC	408	T30 result fail XMIT failure VI
332	T30 result fail unexpected frame T	409	T30 result fail XMIT failure VII
333	T30 result fail unexpected frame TA	410	T30 result fail XMIT failure R
334	T30 result fail unexpected frame D	411	T30 result fail XMIT failure RA
335	T30 result fail unexpected frame IIA	412	T30 result fail XMIT failure RB
336	T30 result fail unexpected frame IIB	413	T30 result fail XMIT failure FA
337	T30 result fail unexpected frame IIC	414	T30 result fail XMIT failure VIII
338	T30 result fail unexpected frame VA	415	T30 result fail XMIT failure VIIIA
339	T30 result fail unexpected frame VB	416	T30 result fail XMIT failure IX
340	T30 result fail unexpected frame VC	417	T30 result fail XMIT failure IXA
341	T30 result fail unexpected frame VD	418	T30 result fail XMIT failure RR
342	T30 result fail unexpected frame VI	419	T30 result fail XMIT failure CTC

# Image formation troubleshooting

## 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 remaining toner.
- 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 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.

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### Note

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A toner cartridge weighs approximately 702 grams (24.7 ounces) when it is full and approximately 594 grams (20.9 ounces) when it is empty.

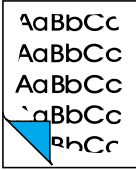
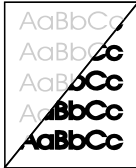
## To redistribute toner in the cartridge

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.

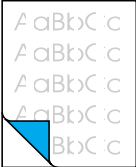
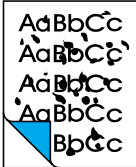
## Solving image-quality problems

Use the following table to help solve problems with printed pages. See “Solving paper feed problems” in this chapter.

**Table 13. Solving image-quality problems**

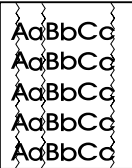
Problem	Cause	Solution
<b>Parts of the page around the edges aren't printing.</b> 	<p>The HP LaserJet 3200 product cannot print to the edge of the paper. The HP LaserJet 3200 product has minimum margins on each edge of 0.25 in (6.4 mm).</p>	<p>To get the image to fit into this printable area, slightly reduce the size of the image.</p>
	<p>If printing or copying, the reduction setting is set incorrectly.</p>	<p>For printing, check the reduction setting in the “Print” or “Setup” window from within the program you are using. Copied images will be clipped if the image on the original is too close to edge of the original.</p>
<b>Images will not print.</b>	<p>The HP LaserJet 3200 product is not plugged in.</p>	<p>Make sure that the HP LaserJet 3200 product is plugged into a live wall outlet or power strip.</p>
	<p>The parallel cable is loose.</p>	<p>Check that the parallel cable is securely connected between the HP LaserJet 3200 product and the computer.</p>
<b>Copies or scanned images are too light or too dark.</b> 	<p>The contrast is not set correctly.</p>	<p>Adjust the contrast and resolution settings from the HP LaserJet Director.</p>
	<p>The HP LaserJet 3200 product needs to be recalibrated.</p>	<p>Recalibrate the product.</p>
	<p>The original image is very light or very dark.</p>	<p>Adjust the resolution and contrast setting(s) from the toolbox on the HP LaserJet Director.</p>
	<p>The scanned image is too light or too dark because the original was on a colored paper.</p>	<p>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.</p>

**Table 13. Solving image-quality problems**

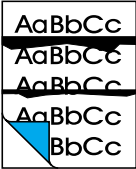

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<p><b>Print is faded or you notice a block of vertically aligned white streaks,</b></p> 	The toner cartridge is getting low on toner.	Redistribute the toner or replace the toner cartridge.
	The HP LaserJet 3200 product needs to be cleaned.	See chapter 3, "Maintenance."
	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 HP's media specifications guide.
	The toner density setting is not adjusted correctly.	Adjust the setting from the control panel.
	A part of the HP LaserJet 3200 product is damaged.	Follow the steps in "Basic troubleshooting" on page 146 to isolate the problem.
	The internal mirror or optics are damaged.	Clean the mirror by blowing air through the laser/scanner to remove any dust particles.
	The laser/scanner is damaged.	Replace the laser/scanner.
	There is a problem in the contact image sensor.	Follow the instructions in chapter 3, "Maintenance," to recalibrate the document scanner.
	The document scanner needs to be recalibrated.	Replace the contact image sensor.
	There is a problem in the formatter.	Replace the formatter.
<p><b>Stains or smudges appear as small, round, black dots on the front or back of a page. Sometimes inconsistent stains appear.</b></p> 	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 HP's media specifications guide.
	You are printing on the wrong side of the paper.	Remove the paper from the paper input tray and turn it over. (The wrapper on many reams of paper has an arrow indicating the print side.)
	The HP LaserJet 3200 product needs to be cleaned.	See chapter 3, "Maintenance," for instructions on cleaning the product and using a cleaning page.
	The toner cartridge is damaged.	Replace the toner cartridge if maintenance procedures do not improve print quality.





**Table 13. Solving image-quality problems**

Problem	Cause	Solution
<p><b>Vertically-aligned black streaks or smears appear on successive pages.</b></p> 	The HP LaserJet 3200 product needs to be cleaned.	See chapter 3, "Maintenance."
	The toner cartridge is damaged.	Replace the toner cartridge if maintenance procedures do not improve print quality.
	There is a problem in the heating element.	Perform the heating element check (see page 170).
	<b>If scanned images have unwanted lines through them:</b>	
	There is ink, glue, white-out, or some other substance on the contact image sensor.	See chapter 3, "Maintenance."
Slick paper caused the document scanner trouble in scanning.	Use a carrier sheet to send the item.	
The HP LaserJet 3200 product needs to be recalibrated.	Recalibrate the product.	

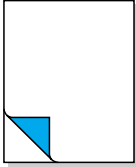
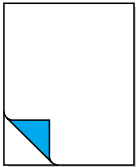
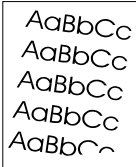
**Table 13. Solving image-quality problems**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<p><b>Horizontally aligned black streaks or smears appear.</b></p> 	The toner cartridge was improperly installed.	Make sure you removed the entire length of the sealing tape from the toner cartridge before you installed it.
	The toner cartridge is defective.	Replace the toner cartridge.
	The HP LaserJet 3200 product needs to be cleaned.	See chapter 3, "Maintenance."
	There is a problem in the heating element.	Perform the heating element check (see page 170).
	A gear is damaged.	Perform the drum rotation functional check (see page 169).
	There is a problem in the laser/scanner.	Replace the laser/scanner.
	The HP LaserJet 3200 product needs to be cleaned.	See chapter 3, "Maintenance."
	There is a problem in the contact image sensor.	Replace the contact image sensor.
	A roller is damaged.	Use the repetitive image defect ruler (see page 191) to determine which roller is damaged. Replace the roller.
	The HP LaserJet 3200 product needs to be cleaned.	See chapter 3, "Maintenance."
	If you are using transparencies, they do not meet HP's specifications.	Make sure that the media meets specifications detailed in HP's media specifications guide.
	The paper's texture is too coarse.	Try changing to a paper with a smoother finish.
	The toner cartridge is damaged, causing a repetitive black flaw on every printout.	Replace the toner cartridge.
	The toner cartridge's photosensitive drum has been overexposed to bright light, causing repetitive defects (usually a fuzzy black area).	Replace the toner cartridge.
	<p><b>Character voids appear (white areas within the parts of characters that should be solid black).</b></p> 	The paper or transparencies do not meet HP's specifications.
You are printing on the wrong surface of the paper.		Remove the paper and turn it over. (The wrapper on many reams of paper has an arrow indicating the print side.)
Poor fusing.		Check for a wrap jam in the fuser.

**Table 13. Solving image-quality problems**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>Background scatter appears on a printed page.</b>	Bits of toner distributed on the front or back of a printed page can cause background scatter. Background scatter often is isolated to a specific area of the page.	Try changing the print density setting. If that doesn't work, change the paper type, weight, or surface finish. If background scatter occurs on an envelope, try moving the text to an area with no seams. Printing on seams can cause this problem.
	Background scatter can be caused by toner buildup on the pressure roller.	See "To clean the print path" on page 54.
	Toner has spilled inside the product.	See "Cleaning the product" on page 54.
	The pickup roller is dirty.	See "To clean the product and replace the pickup roller" on page 55.
<b>The page is completely black.</b> 	An engine test was performed when the formatter was disconnected.	Reconnect the formatter. The formatter must be connected during an engine test.
	The toner cartridge was improperly installed.	Remove the cartridge and reinstall it.
	The toner cartridge is defective.	Replace the toner cartridge.
	Continuity in the high-voltage contact points is interrupted.	Perform the "high-voltage power supply check" (see page 171).
	There is a problem in the ECU or the laser/scanner.	Follow the steps in "Basic troubleshooting" on page 146 to isolate the problem. Replace the ECU or the laser/scanner, as needed.
<b>Characters are only partially printed (also referred to as dropouts).</b> 	A single sheet of paper is defective.	Try reprinting the job.
	The print density needs to be adjusted.	Adjust the print density from the control panel.
	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 HP's media specifications guide.
	A "draft mode" or "economy mode" is selected in the software.	Try a "normal" or "best" setting.

**Table 13. Solving image-quality problems**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<p><b>Blank pages print occasionally.</b></p> 	<p>Page length and margins are not set correctly for the paper size.</p>	<p>If you are printing on small-sized paper and the page is blank, try printing on larger paper to see where the image is printing. Adjust the margins accordingly.</p>
	<p>Your HP LaserJet 3200 product is feeding two or more sheets of paper at a time because the paper is difficult to separate.</p>	<p>Remove the paper from the paper input bin and align the edges of the paper. "Break" the ream of paper by curving it into an upside-down u-shape. Try turning the paper around to feed the other end first, or use a different type of paper.</p> <p>Clean the pickup roller and the separation pad. If the problem persists, replace the separation pad or subpads.</p>
	<p>Your software application is sending an extra page-eject command.</p>	<p>Check your software's printing configuration information. If you are using a word-processing program, check for a natural page break and a forced page break that are close to each other.</p>
<p><b>Blank pages are always printing.</b></p> 	<p>The toner cartridge was improperly installed.</p>	<p>Make sure you removed the entire length of the sealing tape from the toner cartridge before you installed it.</p>
	<p>The toner cartridge is completely out of toner.</p>	<p>Replace the toner cartridge.</p>
	<p>Discontinuity exists in the high-voltage contact points.</p> <p>There is a problem in a part of the product.</p>	<p>Perform the high-voltage power supply check (see page 171).</p> <p>Print a self-test page. If the page is blank, follow the steps in "Basic troubleshooting" on page 146 to isolate the problem. Replace the laser/scanner or the ECU as needed.</p>
<p><b>Print is misaligned on the page (skewed pages).</b></p> 	<p>The paper input tray is overfilled.</p>	<p>Remove some of the media.</p>
	<p>The guides are adjusted improperly.</p>	<p>Be sure to center the media with the paper guides. Also, verify that the paper guides are not adjusted too tightly or too loosely against the media.</p>
	<p>The paper's weight or surface finish does not meet HP's specifications.</p>	<p>Make sure that the media meets HP's specifications.</p>

**Table 13. Solving image-quality problems**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>Scanned images have black dots or streaks in top and bottom margins.</b>	There is ink, glue, white-out, or some other substance on the contact image sensor.	See chapter 3, "Maintenance."
	There is a problem in the contact image sensor.	Replace the contact image sensor.
<b>Scanned text is not clear.</b>	The contrast, resolution, or brightness needs to be adjusted before scanning.	Adjust the resolution, contrast and brightness setting(s) from the toolbox on the Document Manager.
	The original is on colored paper.	If the original was 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 Document Manager.
	There is a problem in the contact image sensor.	Replace the contact image sensor.

# Solving paper feed problems

Use the following table to solve problems related to moving paper or documents through the HP LaserJet 3200 product.

**Table 14. Solving paper feed problems**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>Pages are coming out curled or wrinkled.</b>	Paper is curled or wrinkled when using the paper output bin.	Use the front paper output slot by opening the front paper path door. Reset the fuser mode to the default.
	Paper is not stored properly.	Whenever possible, store paper in its sealed ream at room temperature.
<b>Long pages stop feeding through the document scanner.</b>	The document feeder tray guides are not set correctly, are broken, or are missing.	Check for broken or missing document feeder tray guides and replace as necessary.
	The maximum scannable page length is 889 mm (35 inches). If the page is longer, scanning stops at 889 mm (30 inches).	Do not try to pull the page out because you can damage the document scanner. To remove the page, open the document release door and remove the jammed media.
<b>Print is misaligned on the page (skewed pages).</b>	The paper 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 guides. Verify that the guides are not adjusted too tightly or too loosely against the paper. Check for broken or missing paper guides and replace scanner as necessary.
	The paper's weight or surface finish does not meet HP's specifications.	Make sure that the media meets specifications detailed in HP's media specifications guide.
<b>Scanned items are crooked.</b>	The document feeder tray guides are not adjusted properly.	Be sure to center the paper with the guides. Also, verify that the guides are not adjusted too tightly or too loosely against the paper. Check for broken or missing document feeder tray guides and replace scanner as necessary.

**Table 14. Solving paper feed problems**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>The product feeds multiple sheets or jams frequently from the paper input bin or single-sheet input slot.</b>	Paper guides are not adjusted properly.	Slide the guides against the sides of the stack in the paper input tray or against the single sheet in the single-sheet input tray to center the paper. Make sure the guides are not adjusted too tightly.
	The special media lever is in the wrong position.	Slide the special media lever back to the normal position. Only slide the special media lever to the right when copying or scanning special media.
	Paper was not removed from the paper input tray before refilling the tray.	Always remove paper from the paper input tray before refilling it.
	The paper input tray is overfilled.	Remove some of the sheets. The paper input tray can hold up to 125 sheets of 20-lb. (75g/m <sup>2</sup> ) bond weight paper (less for heavier paper) or from 7 to 10 envelopes.
	More than one sheet was placed in the single-sheet input slot.	Place only one sheet at a time in the single-sheet input slot.
	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 HP’s media specifications guide.
	The output capacity was exceeded in the paper output bin or front paper output slot.	Do not allow more than 100 sheets of 20-lb (75g/m <sup>2</sup> ) bond weight paper (less for heavier paper) to fill the paper output bin.
	The pickup roller is dirty.	See chapter 3, “Maintenance.”
	The pickup roller is damaged.	Replace the pickup roller.
	The separation pad is dirty.	Clean the separation pad.
	The separation pad is damaged.	Replace the separation pad.
	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.
There is a problem in the paper path.	Perform the “paper path check” (see page 173) to determine which parts should be replaced.	

**Table 14. Solving paper feed problems**

<b>Problem</b>	<b>Cause</b>	<b>Solution</b>
<b>The product feeds multiple sheets or jams frequently from the document feeder tray.</b>	Guides are not adjusted properly.	Remove the document from the document feeder 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 document feeder tray is overfilled.	Remove some of the sheets. The document feeder tray can hold up to 10 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 HP's media specifications guide.
	The document scanner pickup roller or separation pad is dirty and cannot feed the document.	See chapter 3, "Maintenance."
	The document scanner pickup roller or separation pad is damaged or worn.	Replace the scanner.
	The sensor is not operating properly.	Check the sensor to make sure it is not jammed. If a sensor cannot be "unjammed," replace the scanner.
	There is a problem in the document scanner path.	Check the path for obstructions. Readjust as necessary or replace the scanner.
<b>Items loaded in the document feeder tray fall forward out of the tray.</b>	The item is on a very lightweight media.	Do not try to pull the page out because you may damage the document scanner. Open the document release door and remove the jammed media. Then, curl or roll the item in the direction of the printed side, unroll it, and reload the item.



# Functional checks

## 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 vertical 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 can be reached without removing the covers. It is located on the back of the HP LaserJet 3200 product under the memory door.

To print an engine test, lift the memory door on the back of the printer and depress the engine test switch. A single test page will print.

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### Note

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The formatter must be connected to the ECU to perform an engine test (see callouts 1, 2, and 3 in figure 63 on page 137). If it is not, the product prints a black page.



**Figure 70.** 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)

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

- 1 Print a demonstration page (see “To print a demonstration page” on page 181).
- 2 Open the printer door after the paper advances half-way through the printer (about 8 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 fixing problem.

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

- 1 Make sure you have removed the entire length of the sealing tape from the toner cartridge before you installed the cartridge.
- 2 Perform a drum rotation functional check.
- 3 Perform a high-voltage power supply check.

## 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. To verify that the drum is rotating:

- 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.

---

### Note

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

## Heating element check

Paper passes between the heating element and a soft pressure roller to fuse toner to the paper. To verify that the heating element is functioning correctly:

- 1 Unplug the HP LaserJet 3200 product for at least ten minutes.
- 2 Verify that the thermistor connector is seated into both the printer chassis and the ECU (see figure 48 on page 121).
- 3 Remove the heating element connector from the ECU (see figure 49 on page 122). 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 30 ohms +/- 10 ohms.

- 4 If no resistance is measured, replace the heating element.
- 5 Remove the thermistor connector (see figure 48 on page 121) and measure the resistance between pins one and two.

---

### Note

Normal resistance is 440K ohms +/- 30K ohms at 68° F (20° C).

- 6 If no resistance is measured, replace the heating element.

## Paper curl

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. The specification for maximum paper curl when the paper is lying flat before print is 0.2 inches (5 mm).

## High-voltage power supply check

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

### Checking the toner cartridge connection points

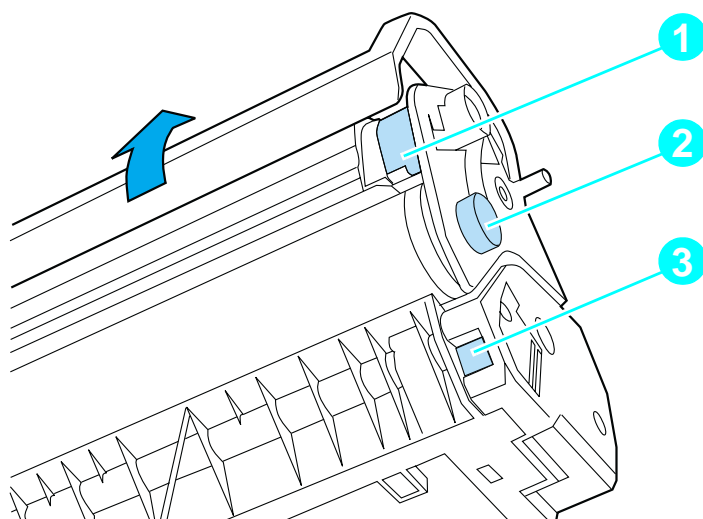
Visually inspect the three connection points on the underside, right end of the toner cartridge: charging (callout 1), drum ground (callout 2), and developing roller (callout 3). If they are dirty or corroded, clean the connections, or, if they are damaged, replace the toner cartridge.

---

**Note**

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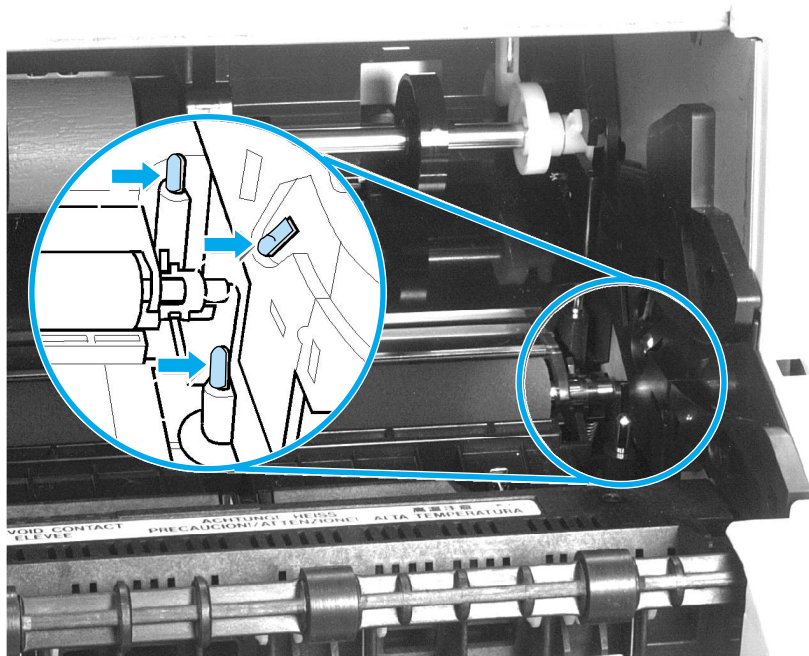
Use only alcohol to clean the connections.



**Figure 71.** Toner cartridge high-voltage connection points

## Checking the high-voltage connector assembly

The assembly uses three spring-loaded pins to contact the toner cartridge: charging (callout 1), drum ground (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 alcohol only. If they are damaged, replace the high voltage connector assembly.



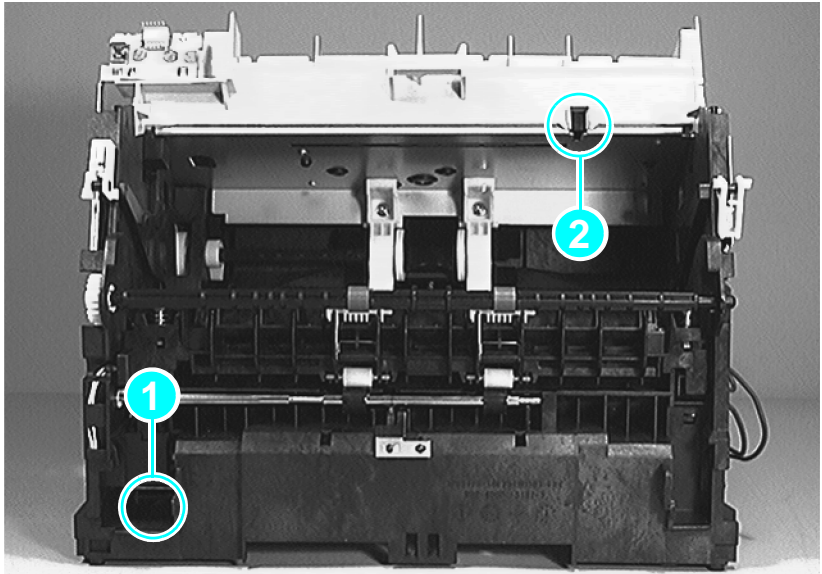
**Figure 72.** High-voltage connector assembly

## Paper path check

If paper is not being picked up or is not moving through the paper path, you may want to observe all of the paper motion activities. Overriding 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 73.** Overriding SW301

- 1 Remove the printer covers
- 2 Install the toner cartridge.
- 3 Make sure the fuser levers on the delivery assembly are closed.
- 4 Press SW301- front door interlock (callout 1).
- 5 Press laser/scanner interlock switch on laser/scanner (callout 2)
- 6 While SW301 and laser/scanner interlock is engaged, perform an engine test to observe paper motion. (See procedures earlier in this chapter.)

# Service mode functions

## Secondary service menu

Use the secondary service menu to perform various tests and print service reports. Below is a hierarchical diagram of the secondary service menu:

Main menu	Submenu	Submenu
Secondary service	Secondary reports	Continuous self-test Data store report Translations Ext keypad map
	Scanline data	Red-corrected Blue-corrected Green-corrected Red-uncorrected Blue-uncorrected Green-uncorrected

### To gain access to the secondary service menu

- 1 Make sure that the control panel display reads **READY**.
- 2 Press **ENTER/MENU**.
- 3 Press **1** on the one-touch keypad.
- 4 Use the **<** and **>** keys to navigate to the secondary service menu.



## Developer's menu

Use the developer's menu to adjust fax data store parameters and to run various tests. Below is a hierarchical diagram of the developer's menu:

Main menu	Submenu	Submenu
Developer's menu	R/W parameter	
	Monitor test	Onhook monitor Offhook monitor Eavesdrop monitor Signal pwr monitor
	LIU test	LIU inputs LIU ID OIU outputs
	Loopback test	
	Data store report	
	Transmit test	

### To gain access to the developer's menu:

- 1 Make sure that the control panel display reads `READY`.
- 2 Press `ENTER/MENU`.
- 3 Press `*` and `#` simultaneously and then release both keys.
- 4 Use the `<` and `>` keys to navigate to the developer's menu.

After you enter the developer's menu, the control panel display should read `R/W PARAMETER`.

### To adjust a fax data store parameter

#### CAUTION

When you adjust fax data store parameters, the product does not alert you to incorrect input values. Changing fax data store parameters can render the product illegal or inoperable.

- 1 Enter the parameter ID number or use the `<` and `>` keys to locate the parameter you want to change. The control panel display shows the current setting.
- 2 Enter the new value for the fax data store parameter.

See the HP LaserJet 3200 product software technical reference for a complete list of fax data store parameters.

## Diagnostic mode

Use diagnostic mode to check the functionality of LEDs, the control panel display LCDs, and to check the firmware version.

### Note

Diagnostic mode is available for firmware version 2.2 or higher.

### To gain access to diagnostic mode

- 1 Unplug the product from the power source.
- 2 Press and hold down **VOLUME**, **STOP/CLEAR**, and **1** on the one-touch keypad simultaneously.
- 3 Continue to hold down the keys while you plug back in the product, through the entire power-on sequence.

The table below shows the tests and key sequences to perform in diagnostic mode:

**Table 15. Diagnostic mode key sequences**

To perform this test . . .	Press these keys . . .
Toggle LED1 on/off	<b>1</b> or <b>5</b> on the one-touch keypad
Toggle LED2 on/off	<b>2</b> or <b>6</b> on the one-touch keypad
Access LCD pattern 1 (solid fill)	<b>1</b> on the numeric keypad, <b>&lt;</b> , or <b>&gt;</b>
Access LCD pattern 2 (empty fill)	<b>2</b> or <b>8</b> on the numeric keypad
Access LCD pattern 3 (> fill)	<b>3</b> or <b>9</b> on the numeric keypad, or <b>REDUCE/ENLARGE</b>
Access LCD pattern 4 (H fill)	<b>4</b> on the numeric keypad or <b>3</b> or <b>7</b> on the one-touch keypad
Access LCD pattern 5 (frame fill)	<b>5</b> or <b>0</b> on the numeric keypad, or <b>RESOLUTION</b>
Access LCD pattern 6 (check fill)	<b>6</b> on the numeric keypad
Access LCD pattern 7 (ROM check)	<b>7</b> on the numeric keypad or <b>REDIAL/PAUSE</b>
Access firmware version number	<b>#</b> , <b>*</b> , or <b>10</b> on the one-touch keypad

## To check keys in diagnostic mode

- 1 Press **9** on the one-touch keypad.
- 2 Press all of the keys on the control panel.
- 3 Press an extra key.

For each key pressed during the test, a "+" character appears on the LCD (initially, five "+" characters appear on the screen to account for the 9 on the one-touch keypad and for four other spaces that have no key correspondence).

When all of the keys have been pressed, the display fills with "+" characters. Pressing any other key after the display is full results in the message "OK" on the control panel display also causes both LEDs to toggle on and off.

## To exit diagnostic mode

- 1 Press **VOLUME**, **ENTER/MENU**, and **1** on the one-touch keypad simultaneously.
- 2 Release the keys.

## NVRAM init

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

NVRAM init resets the following:

- all menu settings to factory default values including fax header and company name
- factory settings such as formatter number, page counts, and factory paper settings
- fax memory—all faxes in memory are erased

### To perform NVRAM init

- 1 Unplug the product from the power source.
- 2 Press and hold down the **SYMBOLS** key and **ENTER/MENU**.
- 3 Continue to hold down the keys while you plug back in the product, through the entire power on sequence.
- 4 When both of the control panel LEDs light up, release the keys. **PERMANENT STORAGE INITIALIZE** should appear on the control panel display.

## PJL software commands

To set the following NVRAM variables:

Factory printer **DEFAULT PAPER**, 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**

---

### Note

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.

<b>NVRAM PjL Variable or Command</b>	<b>Possible settings</b>
<b>DEFAULT PAPER</b>	"LETTER", "LEGAL", "A4", "EXECUTIVE", "COM10", "MONARCH", "DL", "C5", "B5", "CUSTOM"
<b>DEFAULT LPARM:PCL SYMSET</b>	"ROMAN8", "ISOL1", "ISOL2", "ISOL5", "PC8", "PC8DN", "PC850", "PC852", "PC8TK", "WINL1", "WINL2", "WINL5", "DESKTOP", "PSTEXT", "VNINTL", "VNUS", "MSPUBL", "MATH8", "PSMATH", "VNMATH", "PIFONT", "LEGAL", "ISO4", "ISO6", "ISO11", "ISO15", "ISO17", "ISO21", "ISO60", "ISO69", "WIN30"
<b>DEFAULT OEM</b>	"ON", "OFF"
<b>DEFAULT PRINTPAGECOUNT</b>	0-2147483647
<b>DEFAULT SCANPAGECOUNT</b>	0-2147483647
<b>DEFAULT COPYPAGECOUNT</b>	0-2147483647
<b>CLEARNVRAM</b>	None - Command
<b>NVRAMINIT</b>	None - Command

**Figure 74. NVRAM PjL factory variables**

To use these commands, you need some method to send PJJ 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@PJJ SET SERVICEMODE=HPBOISEID
@PJJ 'command'
@PJJ RESET
```

Here is an example of using the NVRAMINIT command:

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

---

**Note**

---

Set SERVICEMODE before trying to set the variable or you will not get the desired result. Also reset the PJJ to be sure 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 an 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 configuration reports and demonstration pages. The configuration report shows the settings selected from the control panel. The control panel menu structure might be a useful reference as you alter settings in the menu.

### To print a configuration report

- 1 Press **ENTER/MENU**.
- 2 Use the **<** or **>** key to select **REPORTS** and then press **ENTER/MENU**.
- 3 Use the **<** or **>** key to select **CONFIGURATION REPORT** and then press **ENTER/MENU**. The product exits the Menu settings and prints the report.

### To print a demonstration page

- 1 Press **ENTER/MENU**.
- 2 Use the **<** or **>** key to select **REPORTS** and then press **ENTER/MENU**.
- 3 Use the **<** or **>** key to select **DEMO PAGE** and then press **ENTER/MENU**. The product exits the Menu settings and prints the report.

## Printing all fax reports at once

When you print all reports at once, the following reports are printed:

- **Fax activity log**—recent faxes sent and received, and status
- **Billing log** (if enabled)—prints by billing code
- **Block fax list** (if enabled)—fax numbers you have blocked
- **Configuration report**—current control panel settings, including the following sections:
  - System information
  - Reports
  - Fax settings
  - User defaults
  - Service
  - Softswitch settings
  - Page counts
- **Speed-dial report**—one-touch, speed dial, and group dial report

### To print all fax reports at once

- 1 Press **ENTER/MENU**.
- 2 Use the **<** and **>** keys to select **REPORTS** and press **ENTER/MENU**.
- 3 Use the **<** and **>** keys to select **ALL FAX REPORTS** and press **ENTER/MENU**.



## T.30 protocol trace

Use a T.30 protocol trace report to troubleshoot fax transmission issues.

### To print a T.30 protocol trace report

- 1 Press **ENTER/MENU**.
- 2 Use the **<** or **>** key to select **SERVICE** and press **ENTER/MENU**.
- 3 Use the **<** or **>** key to select **PRINT T.30 TRACE** and press **ENTER/MENU**.
- 4 Use the **<** or **>** key to select **NOW** and press **ENTER/MENU**. The product exits the Menu settings and prints the reports.

### To set when the T.30 protocol trace reports prints

- 1 Press **ENTER/MENU**.
- 2 Use the **<** or **>** key to select **SERVICE** and press **ENTER/MENU**.
- 3 Use the **<** or **>** key to select **PRINT T.30 TRACE** and press **ENTER/MENU**.
- 4 Use the **<** or **>** key to select the option for when you want the T.30 protocol trace report to print.
- 5 Press **ENTER/MENU** to save the selection.

Use the control panel service menu to choose T.30 Protocol Trace and then select At the end of each call. Configure another fax machine, preferably another HP LaserJet 3200 product, to the same (or similar) settings.

Send a fax from the product or receive a fax to the product from the other fax machine. The fax trace report prints after the fax prints.

Explanations of some of the report's column heading follow:

- **Start time** is the time the fax begins. Match it with the fax log of errors.
- **Type** is the type of fax activity, send or receive.
- **Mode** is the transmission mode. If it begins with "EC," error correction was turned on. The set of three numbers is the BAUD rate divided by 100. For example, "EC144" in the mode column means that error correction was on and the transmission speed was 14,400 bps.
- **Status** explains the status of the fax:
  - "Completed" means that the fax was successful.
  - "Pending" faxes are in memory or are printing.
  - Error numbers and their meanings appear in the user guide.

## Translating the fax trace report

Print a fax log report (see the user guide for instructions). The fax log report contains information about the product's interpretation of the problem.

Read the time sequences, looking for abnormal activity on the fax trace report. See Table 20, Fax phase sequence, and Table 21, Appropriate responses, to separate normal from abnormal activity. Fax abbreviations appear in Table 22.

Identify the phase in which the error occurred.

---

### Note

??? is an unidentified command.

Examples of a successfully sent fax and a successfully received fax appear after the tables.

**Table 16. Fax phase sequence**

Sequence	Calling station	Called station
<b>Phase A—Call setup sequence</b>		
1	Ring signal	
2	CNG tone beep, 1100Hz 1 second	
3		Transmit CED, 3 seconds, 2100 Hz
4		Transmit NSF
5		Transmit CSI
6		Transmit DIS
7	DIS detected	
<b>Phase B—Pre-message procedure (negotiate compatible format/protocol)</b>		
8	Transmit TSI	
9	Transmit DCS, select mode	
10		DCS detected
11	Transmit TCF/training	
12	Transmit FSK	
13		Training (synchronize signals), check for errors
14		Transmit CFR
15	Detect CFR	
<b>Phase C—Message transmission (page/scan transmission)</b>		
16	Transmit message (FSK, followed by date)	
17		Receive message (SCAN), check for errors
18	Transmit FSK	
19	At end of message, send one of the following: <ul style="list-style-type: none"> <li>● EOM</li> <li>● EOP</li> <li>● MPS</li> <li>● PRI-Q</li> <li>● PPS-NULL</li> <li>● PPS-MPS</li> <li>● PPS-EOM</li> <li>● PPS-EOP</li> <li>● PPS-PRI-Q</li> </ul>	
<b>Phase D—Post-message transmission (next page/end of transmission)</b>		
20		Detect EOM, EOP, MPS, PRI-Q, PPS-NULL, PPS-MPS, PPS-EOM, PPS-EOP, or PPS-PRI-Q
21		Transmit MCF response to confirmation signals of post-message responses
<b>Phase E—Call release (hangup sequence)</b>		
21	Transmit DCN	
22		Station hangs up

**Table 17. Appropriate responses**

<b>Commands</b>	<b>Comments</b>	<b>Appropriate responses</b>
(NSF) (CSI) DIS	Identifying capabilities: from a manual receiver or an auto-answer unit	(NSC) (CIG) DTC (TSI) DCS (NSF) (CSI) DIS (CRP) (TSI) (NSS) (PWD) (SEP) (CIG) DTC (PWD) (SUB) (TSI) DCS
(NSC) (CIG) DTC	Mode setting command: from calling unit	(TSI) DCS (NSF) (CSI) DIS
(PWD) (SEP) (CIG) DTC	Poll operation	(CRP) (TSI) (NSS)
(TSI) DCS (TSI) (NSS)	Mode setting command: from manual transmitter or automatic receiver	CFR FTT (NSC) (CIG) DTC
(PWD) (SUB) (TSI) DCS	This command is always followed by phasing/training.	(NSC) (CIG) DTC
CTC	Mode setting command: from the transmitter to the receiver	(CTR) (CRP)
(EOR-NULL)	Indicates the next block transmission from the transmitter to the receiver	(ERR) (RNR) (CRP)
Any one of the following: ● (EOR-EOP) ● (EOR-EOM) ● (EOR-PRI-MPS) ● (EOR-PRI-EOP) ● (EOR-PRI-EOM)	The receiver	(ERR) (RNR) PIN (CRP)
Any one of the following: ● MPS ● EOP ● EOM ● (PRI-MPS) ● (PRI-EOP) ● (PRI-EOM)	Post-message commands	MCF RTP RTN PIP PIN (CRP)
(PPS-NULL)	Post-message command for a partial page from the transmitter to the receiver	(PPR) MCF (RNR) (CRP)
Any one of the following: ● (PPS-MPS) ● (PPS-EOP) ● (PPS-EOM) ● (PPS-PRI-MPS) ● (PPS-PRI-EOP) ● (PPS-PRI-EOM)	Post-message commands for a complete page from the transmitter to the receiver	(PPR) MCF (RNR) PIP PIN (CRP)
(RR)	Ask for the status of the receiver: from the transmitter to the receiver	(RNR) (ERR) MCF PIP PIN (CRP)
DCN	Phase E command	None

**Table 18. Fax abbreviations**

<b>Abbreviation</b>	<b>Function</b>	<b>Signal format ("X"= any #)</b>
CED	Called station identification	2100 Hz
CFR	Confirmation to receive	X010 0001 1850 or 1650 Hz for 3 seconds
CIG	Calling subscriber identification	1000 0010
CNG	Calling tone	1100 Hz for 500 ms
CRP	Command repeat	X101 1000
CSI	Called subscriber identification	0000 0010
CTC	Continue to correct	X100 1000
CTR	Response to continue to correct	X010 0011
DBM	-dBm signal strength detected from sending station (number is deviation from average value)	Range in -10 to -43 (-43 is a weak signal; see explanation below Figure 85, Example of a successfully received fax)
DCN	Disconnect	X101 1111
DCS	Digital command signal	X100 0001
DIS	Digital identification signal	0000 0001
DTC	Digital transmit command	1000 0001
DOM	End of message	X111 0001 1100 Hz
EOP	End of procedure	X111 0100
EOR	End of retransmission	X111 0011
EQM	Eye quality monitor—a measure of the modem signal quality, lower numbers indicate better signals	0-99
ERR	Response for end of retransmission	X011 1000
ECD	Facsimile coded date	0110 0000
FCF	Facsimile	
FCS	Frame check sequence	
FDM	File diagnostics message	X011 1111
FIF	Facsimile information field	
FSK	Frequency shift key. Low-speed command identifier separating commands/scans; precedes command mode.	
FTT	Failure to train. The 1.5 seconds of the Training Check Frame (TCF) indicates line conditions are not good enough for this modulation.	X010 0010
GC	Group command	1300 Hz for 1.5 to 100 seconds 2100 Hz for 1.5 to 100 seconds
GI	Group identification	1650 or 1850 Hz
HDLC	High-level data link control	
LCS	Line conditioning signals	1100 Hz

**Table 18. Fax abbreviations**

<b>Abbreviation</b>	<b>Function</b>	<b>Signal format ("X"= any #)</b>
MCF	Message confirmation	X011 0001 1650 or 1850 Hz
MSG	Message received high speed data	
MPS	Multi-page signal	X111 0010
NSF	Non-standard facilities command	1000 0100
NSF	Non-standard facilities	0000 0100
NSS	Non-standard setup	X100 0100
PID	Procedure interrupt disconnect	X011 0110
PIN	Procedural interrupt negative	X011 0100
PIP	Procedural interrupt positive	X011 0101
PIS	Procedural interrupt signal	462 Hz for 3 seconds
PPS	Partial page signal	X111 1101
PPS-EOM	Partial page signal—end of message	X111 1101
PPS-EOP	Partial page signal—end of procedure	X111 1101
PPS-MPS	Partial page signal—multi-page signal	X111 1101
PPS-NULL	Partial page signal—null	X111 1101
PPR	Partial page request	X011 1101
PRI-EOM	Procedure interrupt—end of message	X111 1001
PRI-EOP	Procedure interrupt—end of procedure	X111 1100
PRI-MPS	Procedure interrupt—multi-page signal	X111 1010
RCP	Return to control for partial page	0110 0001
RNR	Receive not ready	X011 0111
RR	Receive ready	X111 0110
RTC	Return to control mode	Six EOLs
RTN	Retrain negative	X011 0010
RTP	Retrain positive	X011 0011
TCF	Training check	Zeroes for 1 5 5
TSI	Transmitting subscriber identification	X100 0010
PWD	Password (for polling)	1000 0011
PWD	Password (for transmission)	X100 0101
SCAN	Data packets or scan line count	
SEP	Selective polling	1000 0101
SUB	Sub-address	X100 0011
V.xx	Protocol version used (Group 3 only)	V.27 = 4800/2400 V.29 = 9600/7200 V.33 = 14400/12000 V.17 = 14400/12000/9600/7200
XID	Exchange identification procedure	
???	Unidentified command sequence	

# HP LaserJet 3200

HP LASERJET 3200

Aug-24-2000 9:31AM



## T.30 Protocol Trace

Job	Date	Time	Type	Identification	Duration	Pages	Result
5	8/24/2000	9:31:01AM	Send	555- <del>nnnn</del>	0:36	1	OK
0000.00	xmt	CNG					
0007.73	rcv	NSF					
0008.42	rcv	CSI	-07 dBm v21	ff0320ad0036200045000cd31f27ba007f			
0008.87	rcv	DIS	-07 dBm v21	ff034033333637203639332038302020202020202020			
0009.38	xmt	DCS		ff138000eeF8c4809200			
0012.52	xmt	ICF	v17 14.4				
0015.51	rcv	CFR	-08 dBm v21	ff1384			
0025.26	xmt	MSG	v17 14.4				
0025.33	xmt	PPS_EOP	v21	ff13bf2f000037			
0030.01	rcv	MCF	-07 dBm v21	ff138c			
0030.08	xmt	DCN	v21	ff13fb			

**Figure 75.** Example of a successfully sent fax

### Note

Phase A, call establishment, does not show up on a trace report. Phase C is the phase in which faxed pages are transferred.

# HP LaserJet 3200

HP LASERJET 3200

Aug-23-2000 5:29PM



## T.30 Protocol Trace

Job	Date	Time	Type	Identification	Duration	Pages	Result
3	8/23/2000	5:27:22PM	Receive		0:35	1	OK
0000.00	rcv	V8					
0001.31	xmt	NSF	v34	ff0320ad00360400000000			
0001.31	xmt	DIS	v34	ff138020c2f8c4809280808000			
0001.97	rcv	DCS	-10 dBm v34	ff13830042f8c4808080808000			
0002.00	xmt	CFR	v34	ff1384			
0002.00	rcv	PC	10 dBm v34 33.6	sybm 3429			
0020.20	rcv	MSG	-12 dBm v34 33.6	256 frames, 0 err. rcp. eqm=30			
0020.87	rcv	PPS_NUL	-10 dBm v34	ff13bf000000ff			
0020.87	xmt	MCF	v34	ff138c			
0020.88	rcv	PC	-10 dBm v34 33.6	sybm 3429			
0025.84	rcv	MSG	-12 dBm v34 33.6	50 frames, 0 err. rcp. eqm=29			
0026.51	rcv	PPS_EOP	-10 dBm v34	ff13bf2f000131			
0026.52	xmt	MCF	v34	ff138c			
0026.91	rcv	DCN	-10 dBm v34	ff131fb			

**Figure 76.** Example of a successfully received fax

### Explanation of DBM

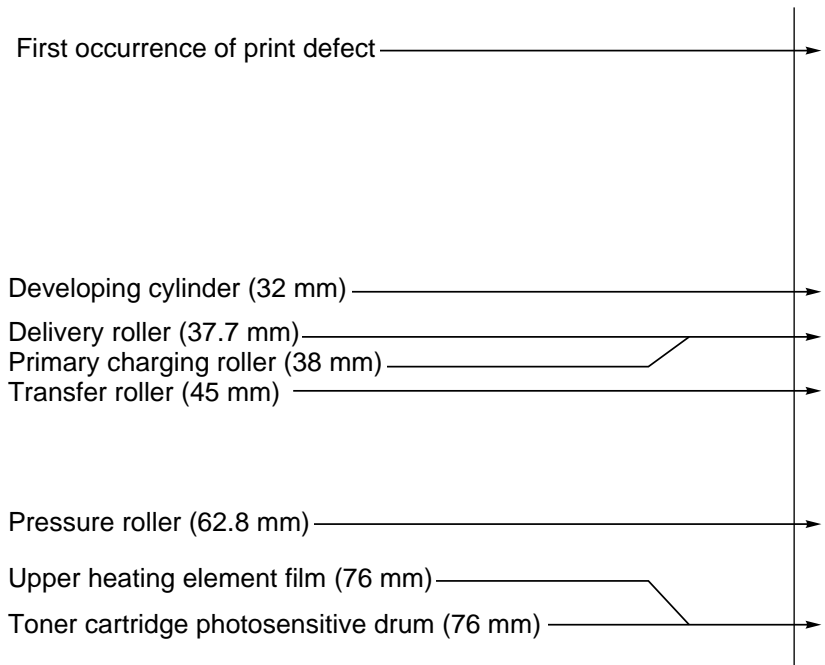
-dBm values shown on the fax trace report are hexadecimal numbers. Convert the value to a base-10 number and then divide by 5 to check signal strength. Using the example above, where DBM=34:

$$34 \text{ (hex)} = 52 \text{ (decimal)} \quad \text{and} \quad 52/5 = 10.4$$

Assuming a negative value, -10.4 falls into the range of -10 to -43 (with -43 being a weak signal). -10.4 is, therefore, a strong signal.



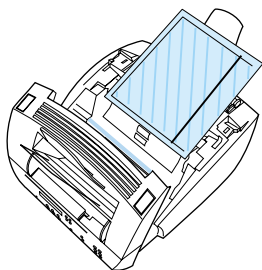
## Repetitive image defect ruler



**Figure 77.** Repetitive image defect ruler

## Document scanner recalibration

2



If copies, items scanned to the computer, or faxes you send have vertical black or white lines running through them, recalibration might be necessary.

Recalibrating the document scanner produces a calibration graph. Successful interpretation of the calibration graph is key to solving the problem of vertical black or white lines on scanned images.

### To recalibrate the document scanner and interpret the calibration graph

- 1 Clean the HP LaserJet 3200 product as described in chapter 3, “Maintenance.”
- 2 Before recalibrating the document scanner, open the document scanner and place a page that contains the black or white lines between the guides, just above the contact image sensor glass. The black or white line points to a portion of the glass that requires extra attention.
- 3 Clean the contact image sensor glass at the point indicated by the black or white line.

---

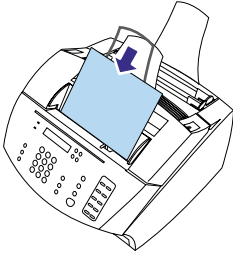
#### Note

If toner is the contaminant, you might have to scrape it off of the glass. Be careful not to scratch the glass.

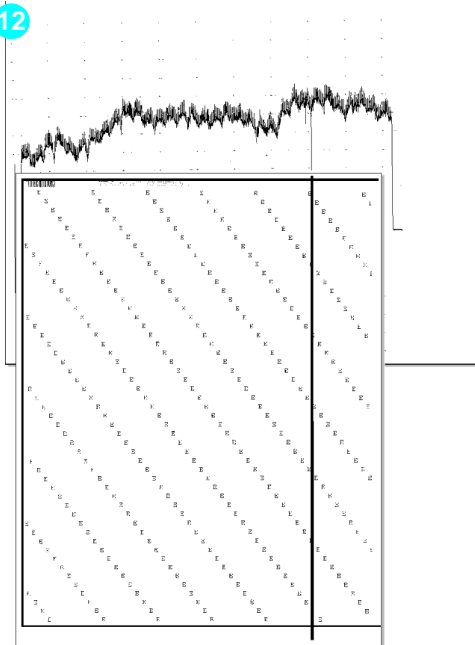
---

- 4 At the product control panel, press the 10 on the one-touch keypad to print the demonstration page.
- 5 Copy the demonstration page.

10



12



- 6 If the vertical black or white line appears on the copy of the demonstration page, continue with steps 7 through 13 below.
- 7 On the control panel, press **ENTER/MENU**.
- 8 Press **<** once to display **SERVICE** and press **ENTER/MENU**.
- 9 Use the **<** and **>** keys to select **SCAN CALIBRATION** and press **ENTER/MENU**.
- 10 Insert a blank, white piece of letter-sized paper into the document feeder tray.
- 11 Press **ENTER/MENU** to begin the scan calibration. The HP LaserJet 3200 product pulls the piece of paper through and then prints a calibration graph.
- 12 Examine the calibration graph. A dip in the calibration graph can indicate an image defect.

---

#### Note

Dips at the ends of the calibration graph are normal.

---

- 13 Line up the calibration graph with a newly copied page. If the dip in the calibration graph corresponds to the black or white line, the contaminant is likely internal and the contact image sensor assembly should be replaced.

# Main wiring

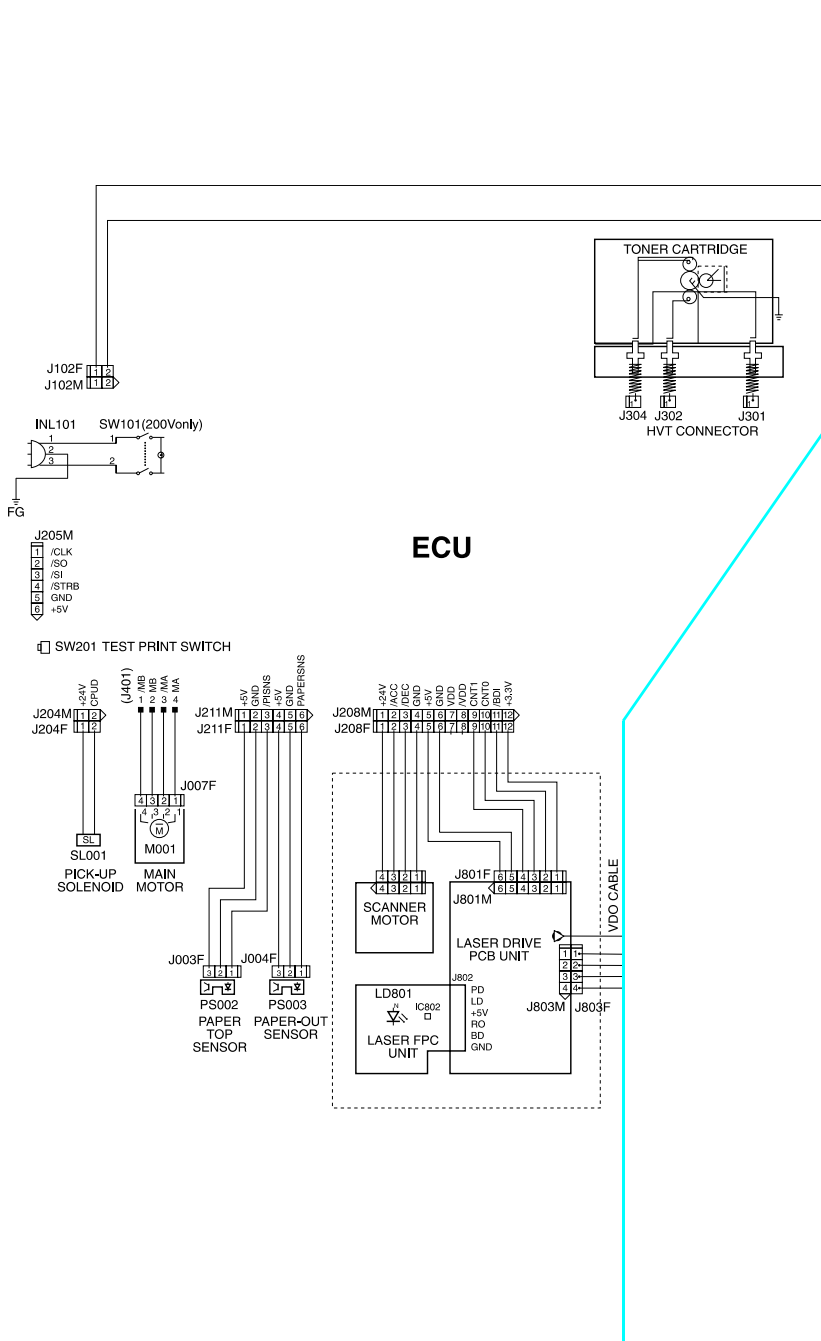


Figure 78. Main wiring (1 of 2)

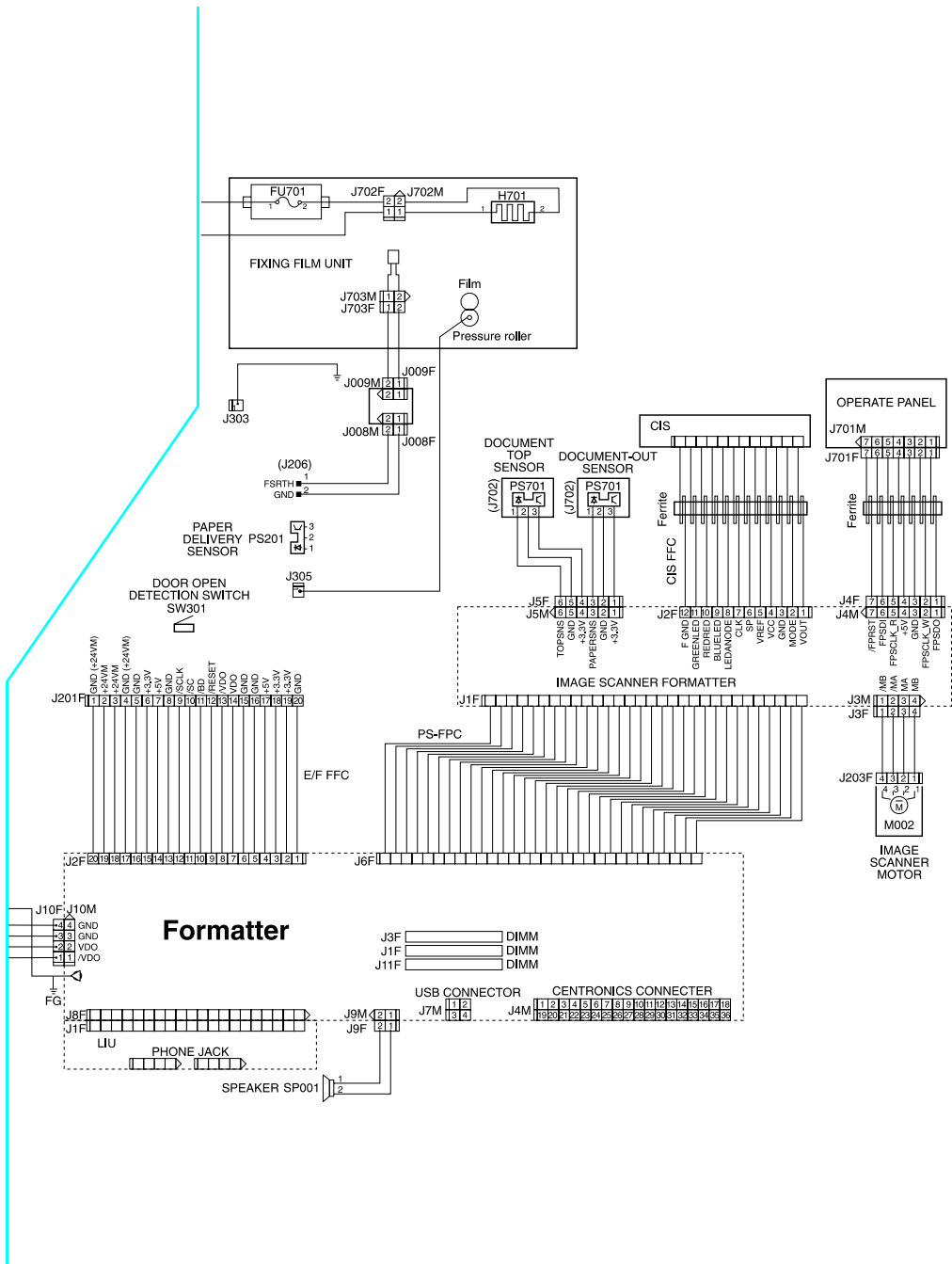
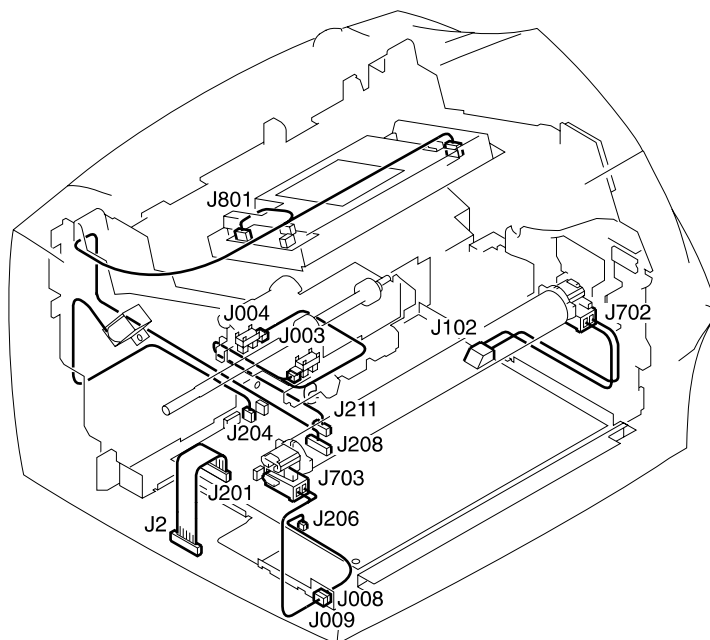
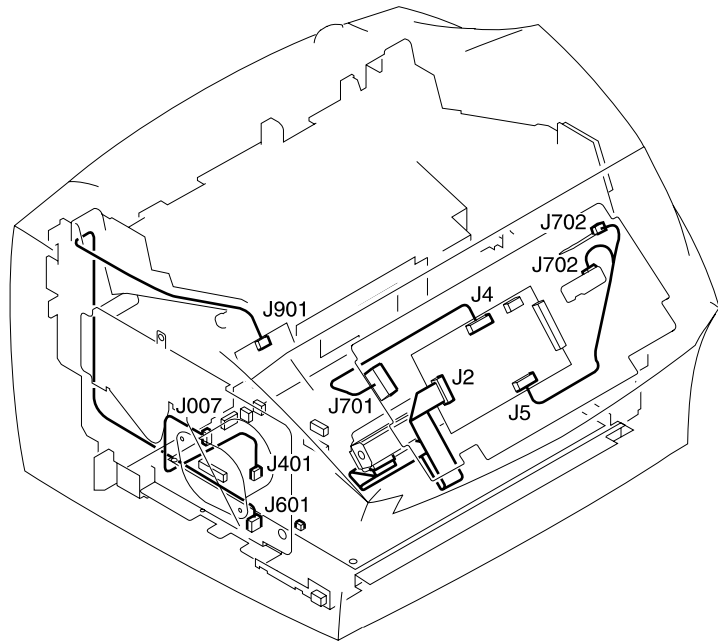


Figure 79. Main wiring (2 of 2)

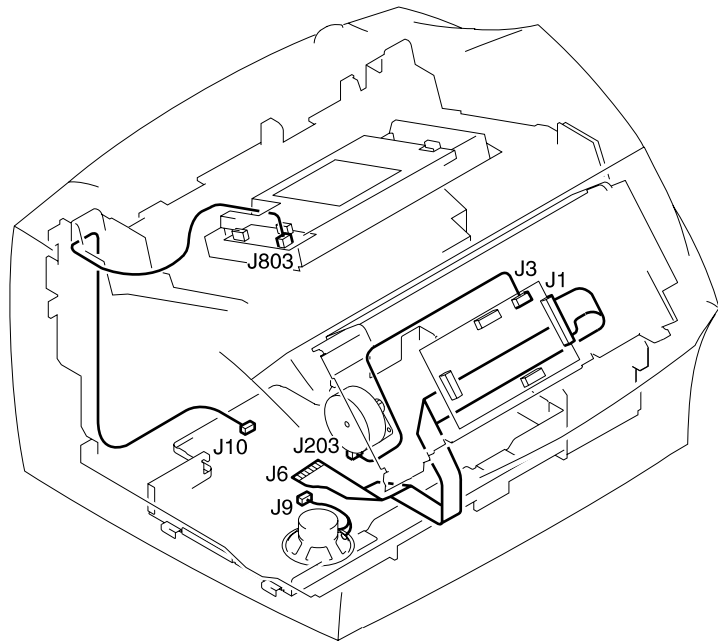
## Locations of connectors



**Figure 80.** Locations of connectors (1 of 3)



**Figure 81.** Locations of connectors (2 of 3)



**Figure 82.** Locations of connectors (3 of 3)





# 7 Parts and diagrams

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# Ordering parts and supplies

## Parts

Order replacement parts from the companies listed in table 19 below:

**Table 19. Authorized parts resellers in the United States**

<b>Company name and address</b>	<b>Contact information</b>	<b>URL</b>
<b>Computer Parts Unlimited Inc.</b> 3949 Heritage Oak Court Simi Valley, CA 93063	Phone: 805-306-2500 Fax: 805-306-2597 Toll free: 800-817-5957	www.cpumart.com
<b>CHA (C. Hoelzle Associates)</b> 17321 Eastman Street, Irvine, CA 92614-5523	Phone: (949) 251-9000 Toll free: 800-959-9601	www.chainc.com
<b>Copylite Products Corp.</b> New Town Commerce Centre, 4061 SW 47th Avenue Fort Lauderdale, FL 33314	Phone: (954) 581-2470	
<b>Parts Now! Inc.</b> Headquarters 3517 W. Beltline Hwy. Madison, WI 53713  Southeast Office 1085 SW 15th Ave. #5 Delray Beach, FL 33444	Phone: 608-276-8688 Fax: 608-276-9593 Toll free 800-886-6688  Phone: 561-279-9280 FAX: 561-279-9122 Toll free 800-RG1-0939	www.partsnowinc.com
<b>The Printer Works, Inc.</b> 3481 Arden Road Hayward, CA 94545	(800) 832-1400	www.PrinterWorks.com
<b>Vance Baldwin Electronics</b> 2701 West McNab Road Pompano Beach, FL 33069	Phone: 954-969-1811 Fax: 954-969-0226 Toll free: 800-432-8542	

### Note

The companies listed in table 19 are current as of the publication date of this manual. Updated lists are available at the following website:  
[http://www.hp.com/ssg/parts/direct\\_order.html](http://www.hp.com/ssg/parts/direct_order.html)

## Related documentation and software

Order documentation and software from the companies listed on the previous page; some documentation and software is available on the World Wide Web at the following websites:

**Table 20. Technical support Web sites**

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

## Consumables

HP LaserJet 3200 product consumables are listed in chapter 3, “Maintenance,” in table 9 on page 52. Consumables are available directly from Hewlett-Packard at (800) 538-8787.

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

# Accessories

**Table 21. Accessories**

Item	Description	Part number
Dual in-line memory modules (DIMM)	8 MB	C4141A
	16 MB	C4142A
	32 MB	C4143A
	64 MB	C3913A
Toner cartridge		C4092A
Cables and interface accessories	3-meter size C IEEE-1284 parallel cable	C2946A
	10-meter size C IEEE-1284 parallel cable	C2947A
	USB cable	C6518A
	Power cable	8120-8382
	Telephone cable	5040-9078
HP JetDirect Print Servers	70X	J4155A
	170X	J3258B
	300X	J3263
	500X (for a Token Ring network connection)	J3264
	500X (for a BNC, 10Base-T, or 10/100Base-TX network connection)	J3265

## Parts exchange program

HP offers remanufactured assemblies for some selected parts.

## How to use the parts lists and diagrams

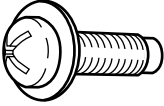
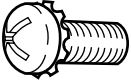
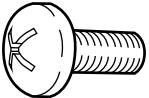
The figures in this chapter illustrate the major subassemblies in the printer and their component parts. A table (material list) follows each exploded assembly diagram. Each table lists the reference designator, the associated part number for the item, and a description of the part.

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

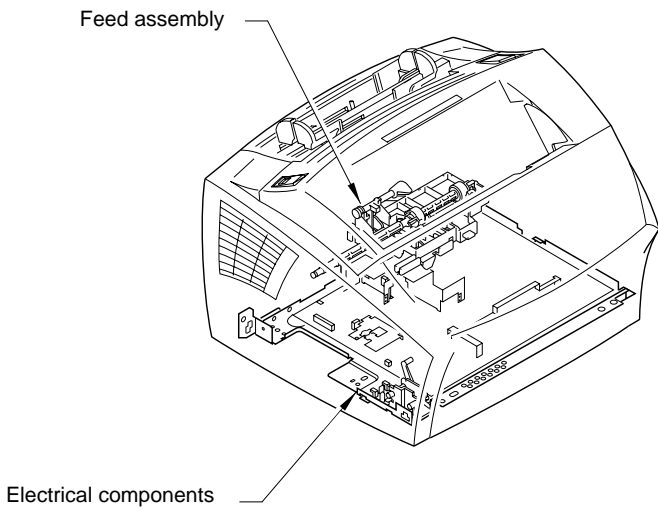
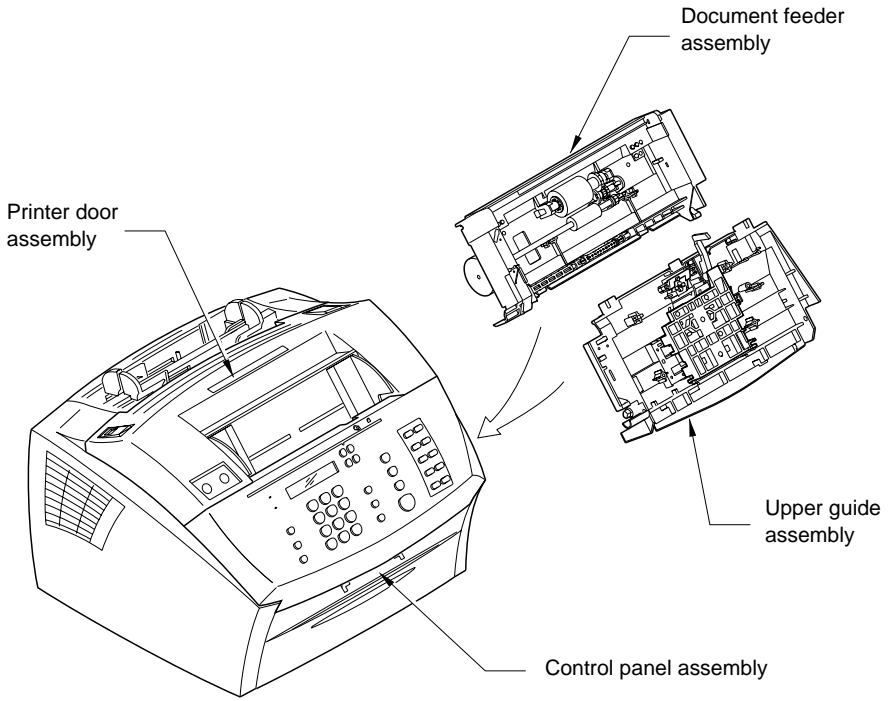
While looking for a part number, pay careful attention to the voltage listed in the description column to make sure that the part number selected is for the correct model of printer.

# Common hardware

**Table 22. Common fasteners**

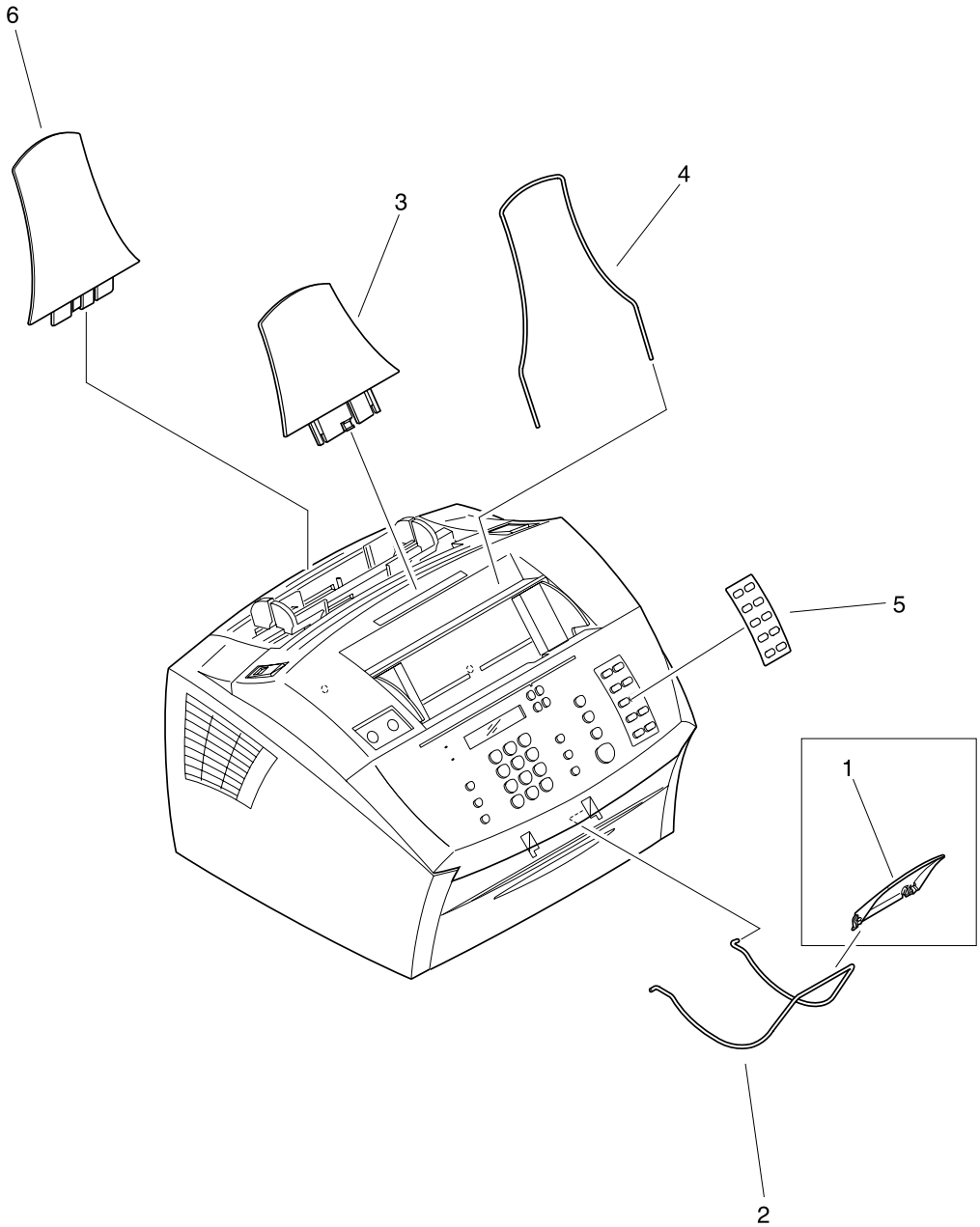
Example	Description
	Screw, machine, truss head
	Screw, star
	Screw, self-tapping

# Assembly locations



**Figure 83.** Assembly locations

# Covers



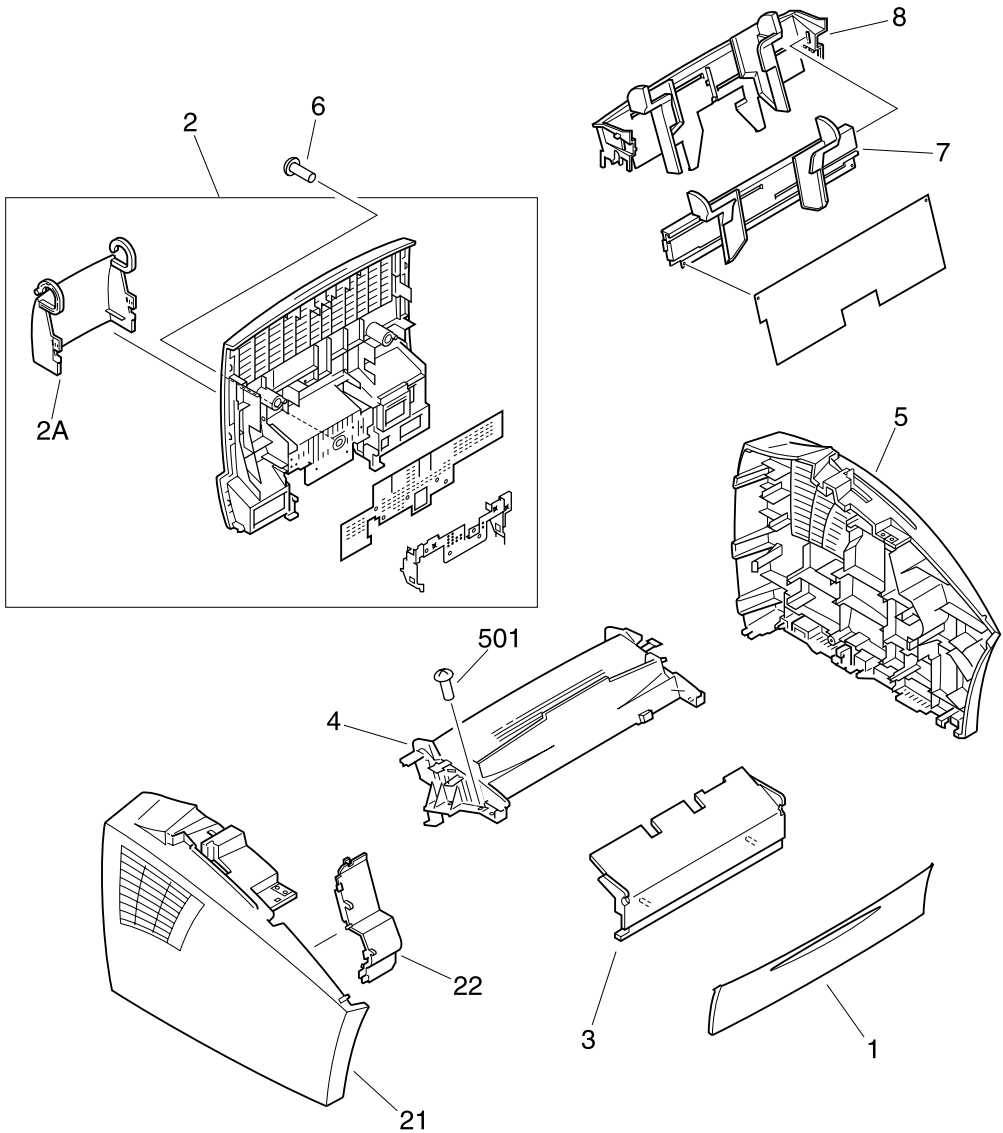
**Figure 84.** Trays and bins



## Trays and bins

**Table 23. Trays and bins**

<b>Reference</b>	<b>Part number</b>	<b>Description</b>
1	RB2-5407-000CN	Support extension, document output
2	RB2-5412-000CN	Support, document output
3	RB2-5423-000CN	Support, paper output
4	RB2-5437-000CN	Support, document feeder
5	RB2-5471-000CN	Overlay (speed-dial template)
6	RB2-5493-000CN	Support, paper input



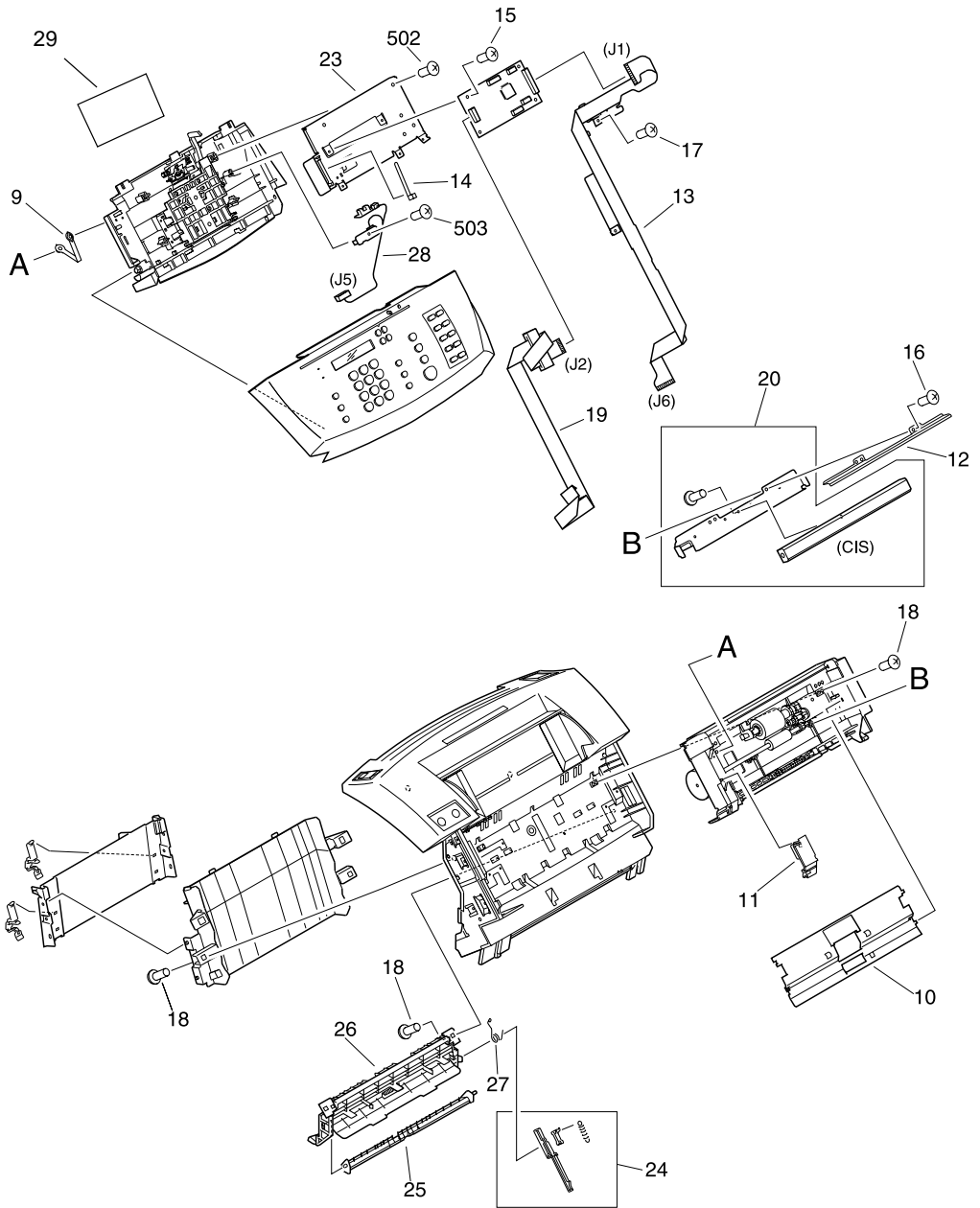
**Figure 85.** External covers and panels

## External covers and panels

**Table 24. External covers and panels**

<b>Reference</b>	<b>Part number</b>	<b>Description</b>
1	RB2-5434-000CN	Cover, face-up
2	RF5-3232-000CN	Cover, rear
2A	RB2-5485-000CN	Cover, DIMM
3	RB2-5488-000CN	Cover, front
4	RB2-5489-000CN	Cover, top
5	RB2-5490-000CN	Cover, right
6	XA9-0302-000CN	Screw, TP, M3x8
7	RG5-4601-020CN	Single-sheet input tray assembly
8	RG5-5391-000CN	Paper input tray assembly
21	RB2-5491-000CN	Cover, left
22	RB2-5498-000CN	Cover, blanking
501	XB4-7401-209CN	Screw, tapping, truss head, M4X12

# Document scanner assemblies

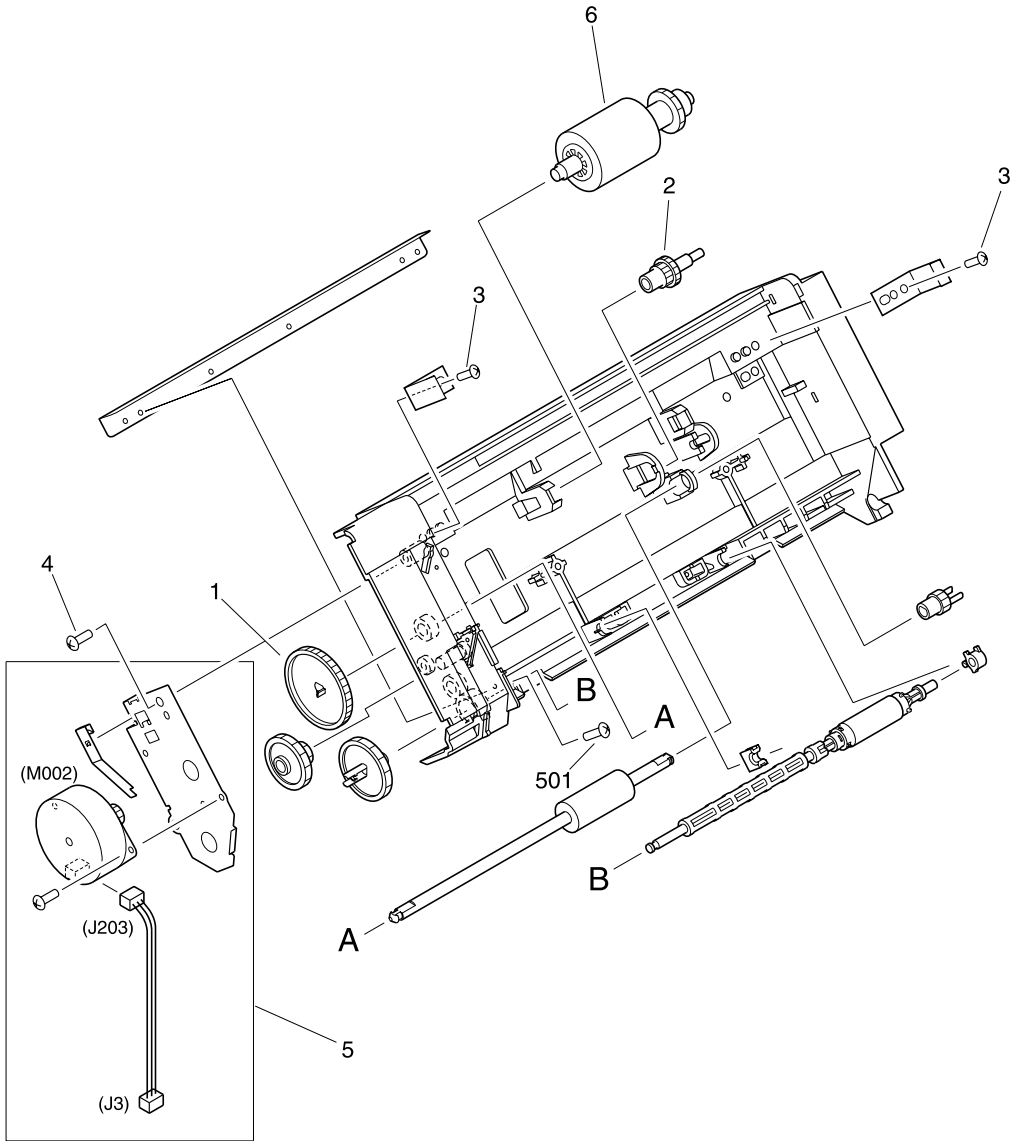


**Figure 86.** Document scanner assemblies

# Document scanner assemblies

**Table 25. Document scanner assemblies**

<b>Reference</b>	<b>Part number</b>	<b>Description</b>
9	RB2-3354-000CN	Strap, plastic
10	RB2-5405-000CN	Guide, document scanner
11	RB2-5406-000CN	Cover, cable
12	RB2-5410-000CN	Cover, contact image sensor
13	RF5-3236-000CN	Cable, flat
14	WT2-0307-000CN	Cable tie
15	XA9-0267-000CN	Screw, TP, M3X6
16	XA9-0591-000CN	Screw, M3X8
17	XA9-0779-000CN	Screw, w/washer, M3X6
18	XA9-0870-000CN	Screw, M4X10
19	RG5-5405-000CN	Cable, flat
20	RG5-5410-000CN	Contact image sensor assembly
22	RB2-5498-000CN	Cover, blanking
23	RB2-5388-000CN	Plate, shield
24	RG5-5412-000CN	Deflector link assembly
25	RB2-4006-000CN	Deflector
26	RB2-5421-000CN	Guide, paper delivery
27	RS6-2276-000CN	Spring, torsion
28	RG5-5464-000CN	Image scanner sensor, PCB assembly
29	C4262A	Control panel PCB
502	XB4-7401-007CN	Screw, tapping, pan head, M4X10
503	XB4-7300-807CN	Screw, tapping, truss, head, M3X8

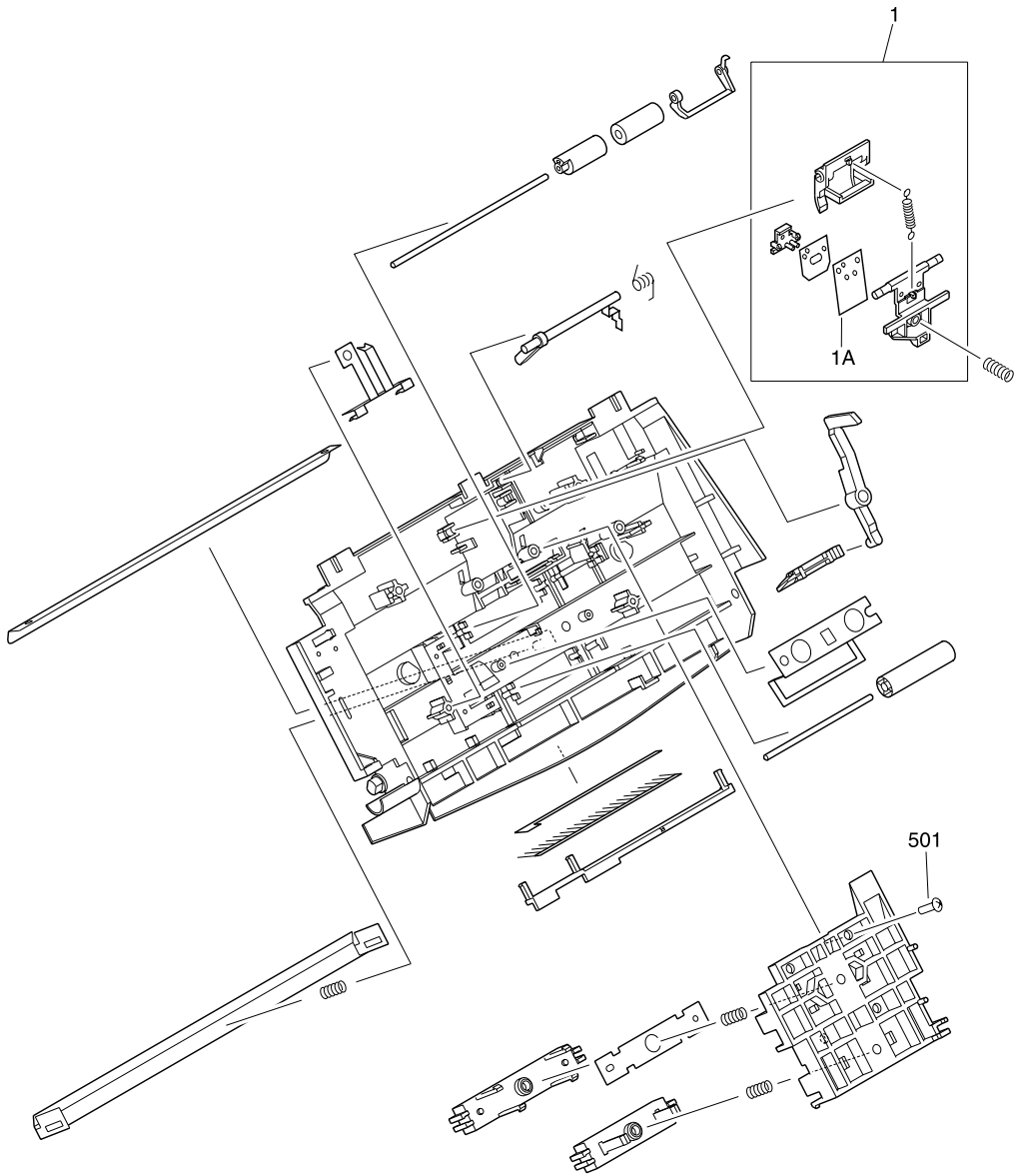


**Figure 87.** Document feeder

# Document feeder

**Table 26. Document feeder**

<b>Reference</b>	<b>Part number</b>	<b>Description</b>
1	HS5-0250-000CN	Gear, 82T
2	HS5-0253-000CN	Gear, 21T/28T
3	XA9-0591-000CN	Screw, M3X8
4	XA9-0870-000CN	Screw, M4X10
5	RG5-5400-000CN	Motor assembly
6	RG5-5401-000CN	Pickup roller assembly
501	XB2-8301-007CN	Screw, w/washer, M3X10



**Figure 88.** Upper guide assembly

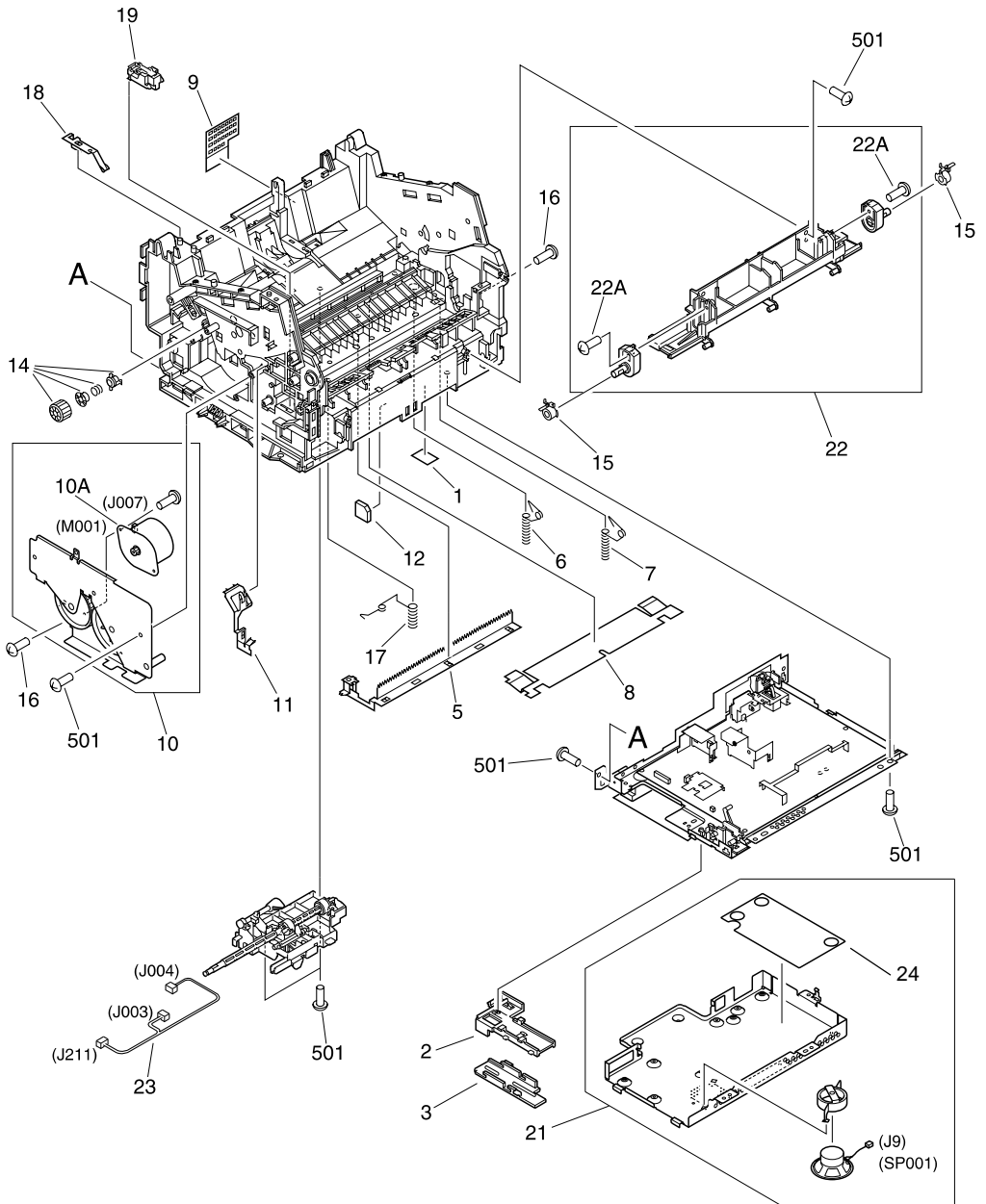


## Upper guide assembly

**Table 27. Upper guide assembly**

<b>Reference</b>	<b>Part number</b>	<b>Description</b>
1	RG5-5404-000CN	Separation assembly
1A	HB1-3035-000CN	Separation pad
501	XB4-7401-007CN	Screw, tapping, pan head, M4X10

# Internal assemblies

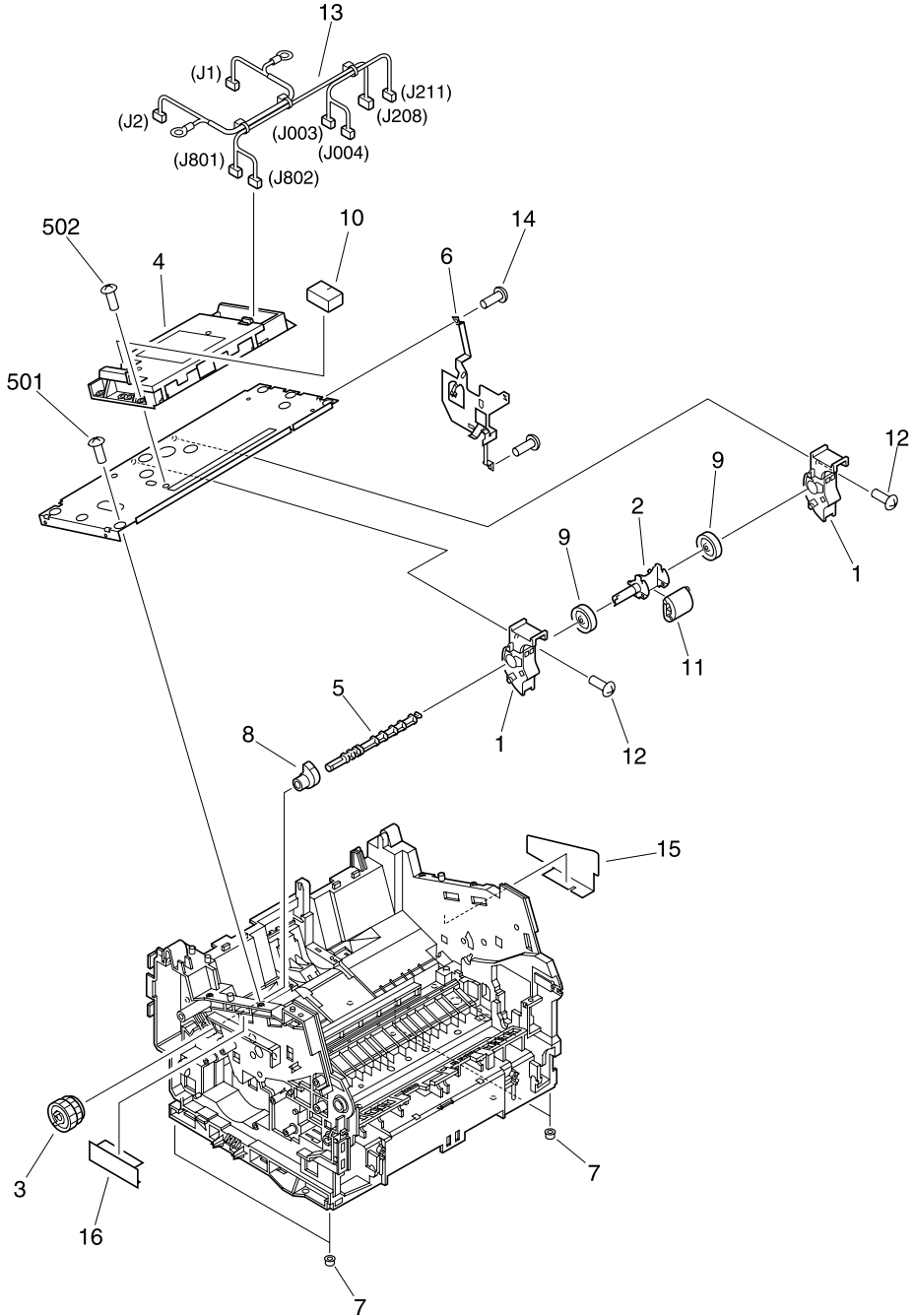


**Figure 89.** Internal components (1 of 4)

## Internal components (1 of 4)

**Table 28. Internal components (1 of 4)**

Reference	Part number	Description
1	RB2-4324-000CN	Sheet
2	RB2-4017-000CN	Cable holder
3	RB2-4030-000CN	Scanner cable cover
5	RB2-3951-000CN	Static charge eliminator
6	RB2-3952-000CN	Spring, torsion
7	RB2-3953-000CN	Spring, torsion
8	RB2-4054-000CN	Sheet, transfer
9	RB2-4055-000CN	Safety cover
10	RG5-4586-000CN	Drive assembly
10A	RH7-1404-000CN	Motor, stepping
11	RB2-3959-000CN	Spring, leaf, left
12	RB2-4329-000CN	Seal, frame, 2
14	RY7-5051-000CN	Clutch kit
15	RB2-5497-000CN	Hinge clip
16	XA9-0779-000CN	Screw, w/washer, M3X6
17	RB2-4042-000CN	Spring, torsion
18	RB9-0538-000CN	Plate, grounding
19	RF5-2880-000CN	Holder, fixing
21	RG5-5393-000CN	Formatter case assembly
22	RG5-5392-000CN	Hinge support assembly
22A	XB4-7401-007CN	Screw, tapping, pan head, M4X10
23	RG5-4617-000CN	Sensor cable
24	C7052-60004	Line interface unit (LIU)
	C4261A	Formatter (not pictured; see figure 64 on page 138)
501	XB4-7401-007CN	Screw, tapping, pan head, M4X10

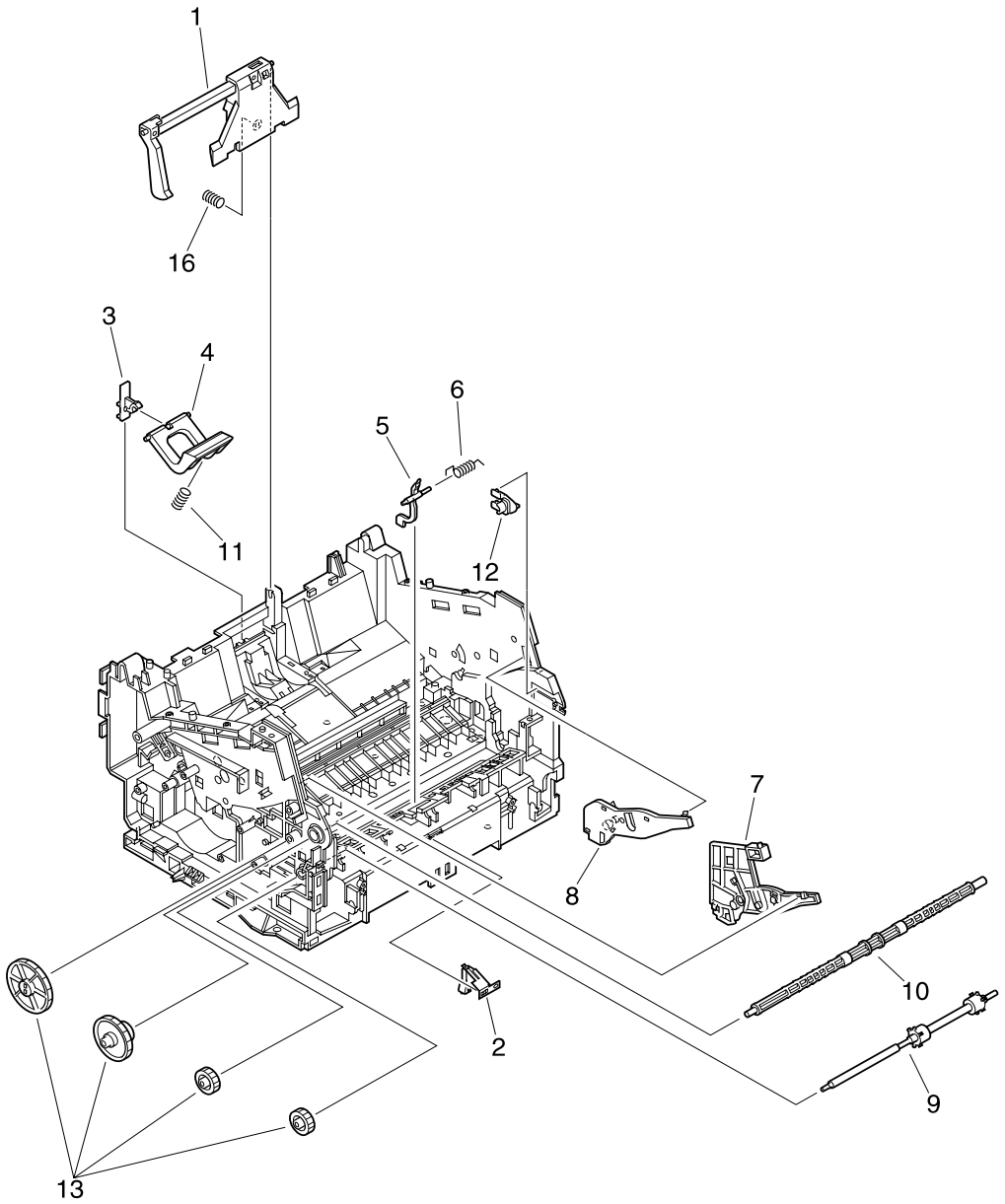


**Figure 90.** Internal components (2 of 4)

## Internal components (2 of 4)

**Table 29. Internal components (2 of 4)**

<b>Reference</b>	<b>Part number</b>	<b>Description</b>
1	RG5-4584-000CN	Roller holder assembly
2	RB2-3930-000CN	Shaft, pickup roller
3	RG5-4585-020CN	Gear assembly
4	RG5-5421-000CN	Laser/scanner assembly
5	RB2-3943-000CN	Shaft
6	RB2-3944-000CN	Spring, leaf
7	RB2-3945-000CN	Foot
8	RB2-3949-000CN	Cam
9	RB2-3931-000CN	Roller
10	RB2-3904-000CN	Cover, foamy
11	RB2-4026-000CN	Roller, pickup
12	XA9-0267-000CN	Screw, TP, M3X6
13	RG5-5415-000CN	Scanner cable
14	XA9-0653-000CN	Screw, w/star washer, M3X6
15	RB2-5501-000CN	Sheet, light-blocking
16	RB2-5500-000CN	Sheet, light-blocking
501	XB4-7401-007CN	Screw
502	XB6-7300-807CN	Screw

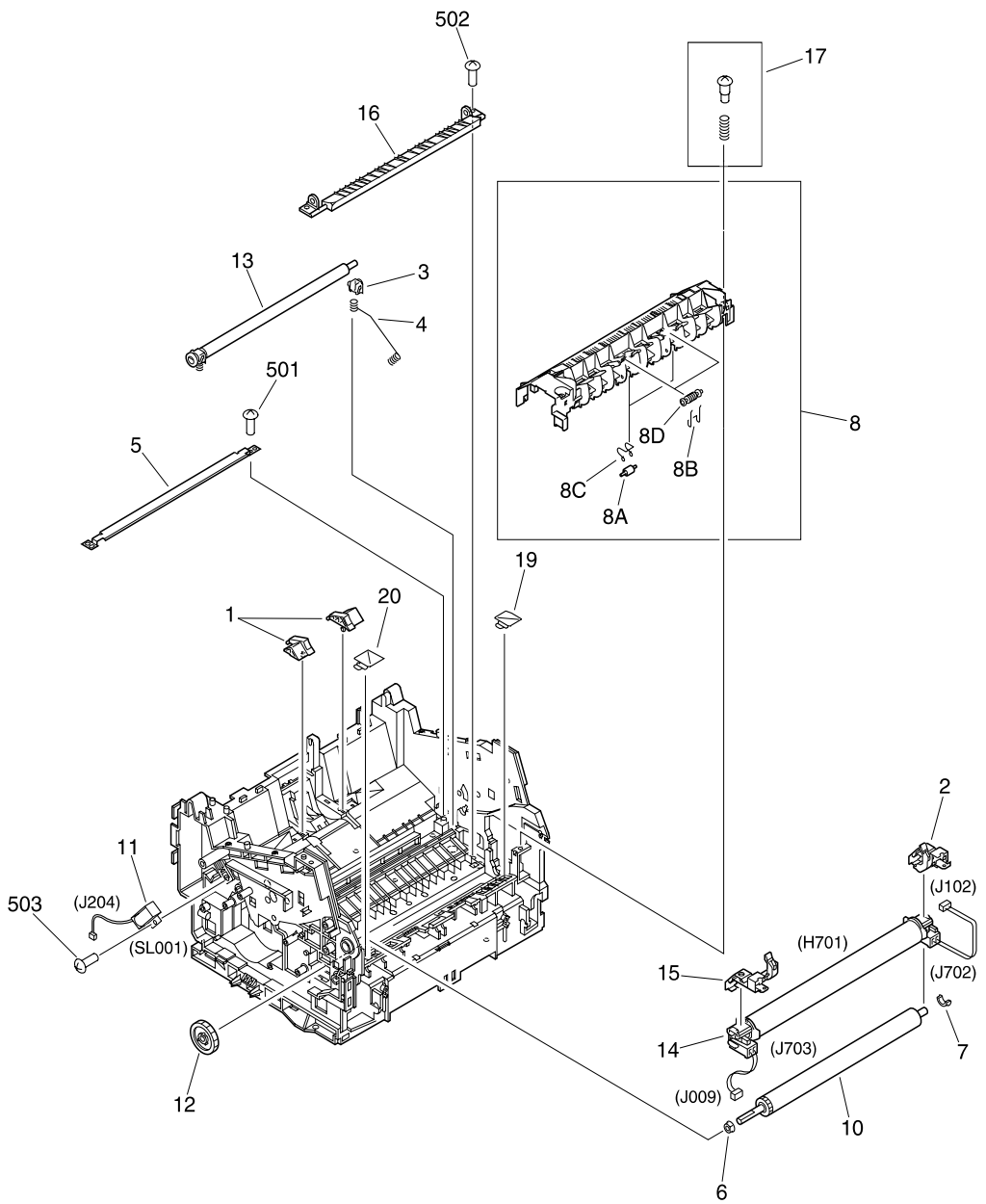


**Figure 91.** Internal components (3 of 4)

## Internal components (3 of 4)

**Table 30. Internal components (3 of 4)**

<b>Reference</b>	<b>Part number</b>	<b>Description</b>
1	RG5-4582-060CN	Paper guide plate assembly
2	RB2-4219-000CN	Plate, grounding
3	RB2-3947-000CN	Holder, pad
4	RF5-2832-000CN	Arm, pad
5	RB2-3960-000CN	Flag, sensor
6	RB2-3961-000CN	Spring, torsion
7	RF5-2818-000CN	Guide, cartridge, left
8	RF5-2819-000CN	Guide, cartridge, right
9	RF5-2822-000CN	Roller, face-up
10	RF5-2830-000CN	Roller, face-down
11	RS5-2502-000CN	Spring, compression
12	RB2-4016-020CN	Stop, slide
13	RY7-5049-000CN	Gear kit
16	RS6-2122-000CN	Spring, compression



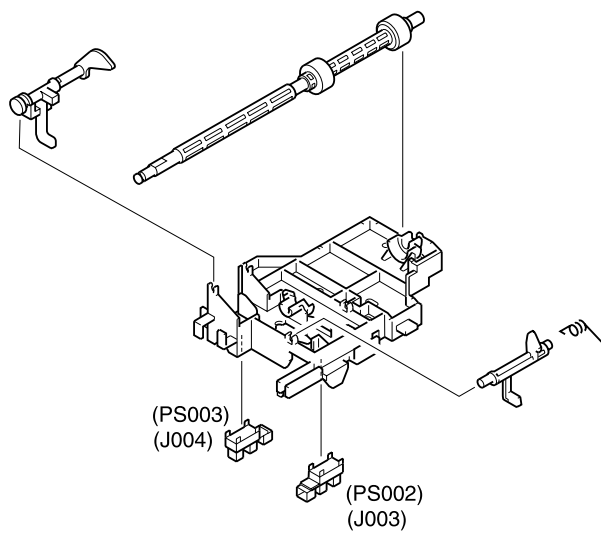
**Figure 92. Internal components (4 of 4)**



## Internal components (4 of 4)

**Table 31. Internal components (4 of 4)**

Reference	Part number	Description
1	RY7-5050-020CN	Subpad kit (includes left and right)
2	RG5-5388-000CN	Metal clip, fusing element (right)
3	RB2-3939-020CN	Bushing, right
4	RB2-3940-000CN	Spring, compression
5	RB2-3950-000CN	Guide, transfer
6	RB2-3956-000CN	Bushing, left
7	RB2-3957-060CN	Bushing, right
8	RG5-4593-000CN	Delivery assembly
8A	RB2-4222-000CN	Roller, face up
8B	RB1-7286-000CN	Spring, wire
8C	RB1-7287-000CN	Spring, wire
8D	RB2-4223-000CN	Roller, face down
10	RF5-2823-020CN	Roller, pressure
11	RH7-5227-000CN	Solenoid
12	Part of gear kit, part number RY7-5049-000CN on page 221.	
13	RG5-4657-020CN	Transfer assembly
14	RG5-4589-040CN	Fusing element
15	RG5-5387-000CN	Metal clip, fusing element (left)
16	RB2-3958-030CN	Guide, fusing element
17	RY7-5060-000CN	Screw kit, delivery assembly
19	RB2-4432-000CN	Sub guide, right
20	RB2-4431-000CN	Sub guide, left
501	XB4-7400-805CN	Screw, tapping, truss head, M4x
502	XB4-7401-209CN	Screw, tapping, truss head, M4x12
503	XB4-7401-007CN	Screw, tapping, pan head, M4X10

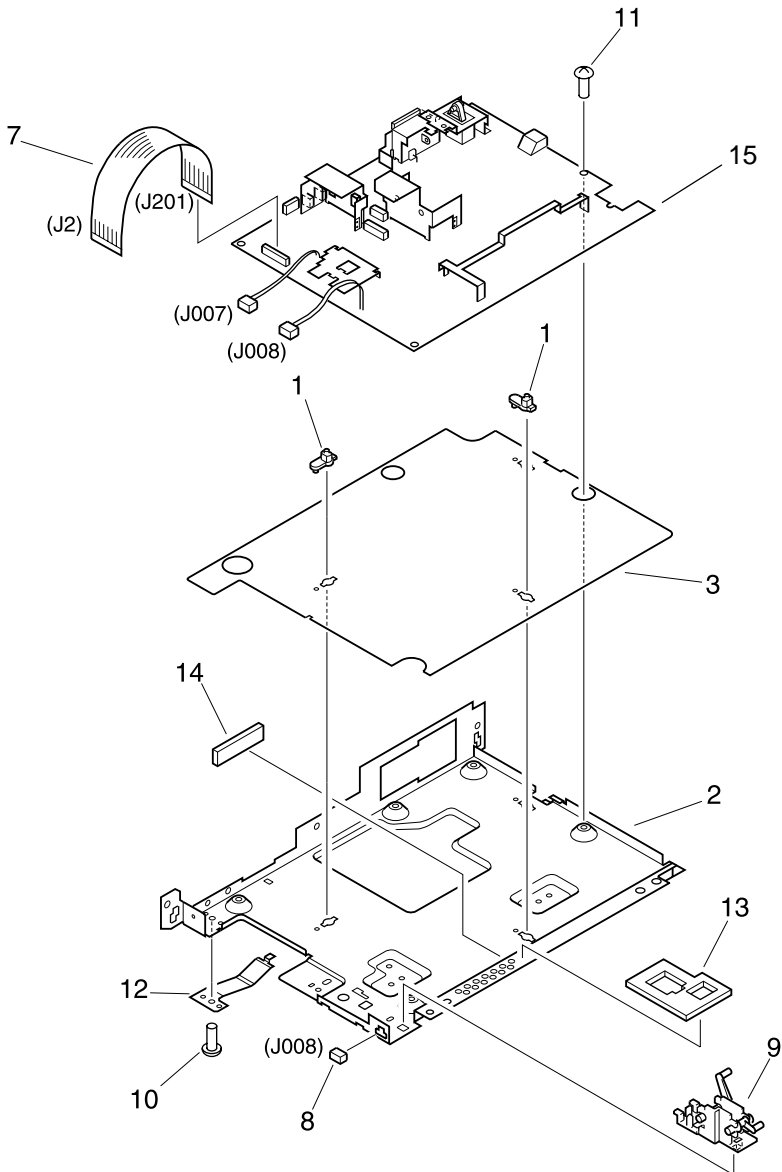


**Figure 93.** Feeder assembly

## Feeder assembly

**Table 32. Feeder assembly**

<b>Reference</b>	<b>Part number</b>	<b>Description</b>
	RG5-4581-000CN	Feeder assembly



**Figure 94. Electrical components**

## Electrical components

**Table 33. Electrical components**

<b>Reference</b>	<b>Part number</b>	<b>Description</b>
1	RB1-7303-000CN	Spacer
2	RB2-3984-000CN	ECU pan
3	RB2-3985-000CN	Sheet, insulating
7	RH2-5381-000CN	Cable, flat
8	VS1-5057-002CN	Connector, 2P
9	RG5-4599-030CN	Door sensor assembly
10	XA9-0653-000CN	Screw, w/star washer, M3X6
11	XA9-0951-000CN	Screw, w/washer, M3X8
12	RB2-4049-000CN	Plate, grounding
13	RB2-4327-000CN	Seal, sensor, 1
14	RB2-4328-000CN	Seal, sensor, 2
15	RG5-5395-000CN	ECU

# Alphabetical parts list

**Table 34. Alphabetical parts list**

<b>Description</b>	<b>Part number</b>	<b>Ref.</b>	<b>Figure</b>
Arm, pad	RF5-2832-000CN	4	91
Bushing, left	RB2-3956-000CN	6	92
Bushing, right	RB2-3939-020CN	3	92
Bushing, right	RB2-3957-060CN	7	92
Cable holder	RB2-4017-000CN	2	89
Cable tie	WT2-0307-000CN	14	86
Cable, flat	RF5-3236-000CN	13	86
Cable, flat	RG5-5405-000CN	19	86
Cable, flat	RH2-5381-000CN	7	94
Cam	RB2-3949-000CN	8	90
Clutch kit	RY7-5051-000CN	14	89
Connector, 2P	VS1-5057-002CN	8	94
Contact image sensor assembly	RG5-5410-000CN	20	86
Control panel PCB	C4262A	29	86
Cover, blanking	RB2-5498-000CN	22	85
Cover, blanking	RB2-5498-000CN	22	86
Cover, cable	RB2-5406-000CN	11	86
Cover, contact image sensor	RB2-5410-000CN	12	86
Cover, DIMM	RB2-5485-000CN	2A	85
Cover, face-up	RB2-5434-000CN	1	85
Cover, foamy	RB2-3904-000CN	10	90
Cover, front	RB2-5488-000CN	3	85
Cover, left	RB2-5491-000CN	21	85
Cover, rear	RF5-3232-000CN	2	85
Cover, right	RB2-5490-000CN	5	85
Cover, top	RB2-5489-000CN	4	85
Deflector	RB2-4006-000CN	25	86
Deflector link assembly	RG5-5412-000CN	24	86
Delivery assembly	RG5-4593-000CN	8	92
Door sensor assembly	RG5-4599-030CN	9	94
Drive assembly	RG5-4586-000CN	10	89
ECU	RG5-5395-000CN	15	94

**Table 34. Alphabetical parts list**

<b>Description</b>	<b>Part number</b>	<b>Ref.</b>	<b>Figure</b>
ECU pan	RB2-3984-000CN	2	94
Feeder assembly	RG5-4581-000CN		93
Flag, sensor	RB2-3960-000CN	5	91
Foot	RB2-3945-000CN	7	90
Formatter	C4261A		89
Formatter case assembly	RG5-5393-000CN	21	89
Fusing element	RG5-4589-040CN	14	92
Gear	(see gear kit)	12	92
Gear assembly	RG5-4585-020CN	3	90
Gear kit	RY7-5049-000CN	13	91
Gear, 21T/28T	HS5-0253-000CN	2	87
Gear, 82T	HS5-0250-000CN	1	87
Guide, cartridge, left	RF5-2818-000CN	7	91
Guide, cartridge, right	RF5-2819-000CN	8	91
Guide, document scanner	RB2-5405-000CN	10	86
Guide, fusing element	RB2-3958-030CN	16	92
Guide, paper delivery	RB2-5421-000CN	26	86
Guide, transfer	RB2-3950-000CN	5	92
Hinge clip	RB2-5497-000CN	15	89
Hinge support assembly	RG5-5392-000CN	22	89
Holder, fixing	RF5-2880-000CN	19	89
Holder, pad	RB2-3947-000CN	3	91
Image scanner sensor, PCB assembly	RG5-5464-000CN	28	86
Laser/scanner assembly	RG5-5421-000CN	4	90
Line interface unit (LIU)	C7052-60004	24	89
Metal clip, fusing element (left)	RG5-5387-000CN	15	92
Metal clip, fusing element (right)	RG5-5388-000CN	2	92
Motor assembly	RG5-5400-000CN	5	87
Motor, stepping	RH7-1404-000CN	10A	89
Overlay (speed-dial template)	RB2-5471-000CN	5	84
Paper guide plate assembly	RG5-4582-060CN	1	91
Paper input tray assembly	RG5-5391-000CN	8	85
Pickup roller assembly	RG5-5401-000CN	6	87
Plate, grounding	RB9-0538-000CN	18	89
Plate, grounding	RB2-4219-000CN	2	91

**Table 34. Alphabetical parts list**

<b>Description</b>	<b>Part number</b>	<b>Ref.</b>	<b>Figure</b>
Plate, grounding	RB2-4049-000CN	12	94
Plate, shield	RB2-5388-000CN	23	86
Roller	RB2-3931-000CN	9	90
Roller holder assembly	RG5-4584-000CN	1	90
Roller, face down	RB2-4223-000CN	8D	92
Roller, face up	RB2-4222-000CN	8A	92
Roller, face-down	RF5-2830-000CN	10	91
Roller, face-up	RF5-2822-000CN	9	91
Roller, pickup	RB2-4026-000CN	11	90
Roller, pressure	RF5-2823-020CN	10	92
Safety cover	RB2-4055-000CN	9	89
Scanner cable	RG5-5415-000CN	13	90
Scanner cable cover	RB2-4030-000CN	3	89
Screw	XB4-7401-007CN	501	90
Screw	XB6-7300-807CN	502	90
Screw kit, delivery assembly	RY7-5060-000CN	17	92
Screw, M3X8	XA9-0591-000CN	16	86
Screw, M3X8	XA9-0591-000CN	3	87
Screw, M4X10	XA9-0870-000CN	18	86
Screw, M4X10	XA9-0870-000CN	4	87
Screw, tapping, pan head, M4X10	XB4-7401-007CN	502	86
Screw, tapping, pan head, M4X10	XB4-7401-007CN	501	88
Screw, tapping, pan head, M4X10	XB4-7401-007CN	501	89
Screw, tapping, pan head, M4X10	XB4-7401-007CN	22A	89
Screw, tapping, pan head, M4X10	XB4-7401-007CN	503	92
Screw, tapping, truss head, M4x	XB4-7400-805CN	501	92
Screw, tapping, truss head, M4x12	XB4-7401-209CN	502	92
Screw, tapping, truss head, M4X12	XB4-7401-209CN	501	85
Screw, tapping, truss, head, M3X8	XB4-7300-807CN	503	86
Screw, TP, M3X6	XA9-0267-000CN	15	86
Screw, TP, M3X6	XA9-0267-000CN	12	90
Screw, TP, M3x8	XA9-0302-000CN	6	85
Screw, w/star washer, M3X6	XA9-0653-000CN	14	90
Screw, w/star washer, M3X6	XA9-0653-000CN	10	94
Screw, w/washer, M3X10	XB2-8301-007CN	501	87



**Table 34. Alphabetical parts list**

<b>Description</b>	<b>Part number</b>	<b>Ref.</b>	<b>Figure</b>
Screw, w/washer, M3X6	XA9-0779-000CN	17	86
Screw, w/washer, M3X6	XA9-0779-000CN	16	89
Screw, w/washer, M3X8	XA9-0951-000CN	11	94
Seal, frame, 2	RB2-4329-000CN	12	89
Seal, sensor, 1	RB2-4327-000CN	13	94
Seal, sensor, 2	RB2-4328-000CN	14	94
Sensor cable	RG5-4617-000CN	23	89
Separation assembly	RG5-5404-000CN	1	88
Separation pad	HB1-3035-000CN	1A	88
Shaft	RB2-3943-000CN	5	90
Shaft, pickup roller	RB2-3930-000CN	2	90
Sheet	RB2-4324-000CN	1	89
Sheet, insulating	RB2-3985-000CN	3	94
Sheet, light-blocking	RB2-5501-000CN	15	90
Sheet, light-blocking	RB2-5500-000CN	16	90
Sheet, transfer	RB2-4054-000CN	8	89
Single-sheet input tray assembly	RG5-4601-020CN	7	85
Solenoid	RH7-5227-000CN	11	92
Spacer	RB1-7303-000CN	1	94
Spring, compression	RS5-2502-000CN	11	91
Spring, compression	RS6-2122-000CN	16	91
Spring, compression	RB2-3940-000CN	4	92
Spring, leaf	RB2-3944-000CN	6	90
Spring, leaf, left	RB2-3959-000CN	11	89
Spring, torsion	RS6-2276-000CN	27	86
Spring, torsion	RB2-3952-000CN	6	89
Spring, torsion	RB2-3953-000CN	7	89
Spring, torsion	RB2-4042-000CN	17	89
Spring, torsion	RB2-3961-000CN	6	91
Spring, wire	RB1-7286-000CN	8B	92
Spring, wire	RB1-7287-000CN	8C	92
Static charge eliminator	RB2-3951-000CN	5	89
Stop, slide	RB2-4016-020CN	12	91
Strap, plastic	RB2-3354-000CN	9	86
Sub guide, left	RB2-4431-000CN	20	92

**Table 34. Alphabetical parts list**

<b>Description</b>	<b>Part number</b>	<b>Ref.</b>	<b>Figure</b>
Sub guide, right	RB2-4432-000CN	19	92
Subpad kit (includes left and right)	RY7-5050-020CN	1	92
Support extension, document output	RB2-5407-000CN	1	84
Support, document feeder	RB2-5437-000CN	4	84
Support, document output	RB2-5412-000CN	2	84
Support, paper input	RB2-5493-000CN	6	84
Support, paper output	RB2-5423-000CN	3	84
Transfer assembly	RG5-4657-020CN	13	92

# Numerical parts list

**Table 35. Numerical parts list**

Part number	Description	Ref.	Figure
C4261A	Formatter		89
C4262A	Control panel PCB	29	86
C7052-60004	Line interface unit (LIU)	24	89
HB1-3035-000CN	Separation pad	1A	88
HS5-0250-000CN	Gear, 82T	1	87
HS5-0253-000CN	Gear, 21T/28T	2	87
RB1-7286-000CN	Spring, wire	8B	92
RB1-7287-000CN	Spring, wire	8C	92
RB1-7303-000CN	Spacer	1	94
RB2-3354-000CN	Strap, plastic	9	86
RB2-3904-000CN	Cover, foamy	10	90
RB2-3930-000CN	Shaft, pickup roller	2	90
RB2-3931-000CN	Roller	9	90
RB2-3939-020CN	Bushing, right	3	92
RB2-3940-000CN	Spring, compression	4	92
RB2-3943-000CN	Shaft	5	90
RB2-3944-000CN	Spring, leaf	6	90
RB2-3945-000CN	Foot	7	90
RB2-3947-000CN	Holder, pad	3	91
RB2-3949-000CN	Cam	8	90
RB2-3950-000CN	Guide, transfer	5	92
RB2-3951-000CN	Static charge eliminator	5	89
RB2-3952-000CN	Spring, torsion	6	89
RB2-3953-000CN	Spring, torsion	7	89
RB2-3956-000CN	Bushing, left	6	92
RB2-3957-060CN	Bushing, right	7	92
RB2-3958-030CN	Guide, fusing element	16	92
RB2-3959-000CN	Spring, leaf, left	11	89
RB2-3960-000CN	Flag, sensor	5	91
RB2-3961-000CN	Spring, torsion	6	91
RB2-3984-000CN	ECU pan	2	94
RB2-3985-000CN	Sheet, insulating	3	94

**Table 35. Numerical parts list**

<b>Part number</b>	<b>Description</b>	<b>Ref.</b>	<b>Figure</b>
RB2-4006-000CN	Deflector	25	86
RB2-4016-020CN	Stop, slide	12	91
RB2-4017-000CN	Cable holder	2	89
RB2-4026-000CN	Roller, pickup	11	90
RB2-4030-000CN	Scanner cable cover	3	89
RB2-4042-000CN	Spring, torsion	17	89
RB2-4049-000CN	Plate, grounding	12	94
RB2-4054-000CN	Sheet, transfer	8	89
RB2-4055-000CN	Safety cover	9	89
RB2-4219-000CN	Plate, grounding	2	91
RB2-4222-000CN	Roller, face up	8A	92
RB2-4223-000CN	Roller, face down	8D	92
RB2-4324-000CN	Sheet	1	89
RB2-4327-000CN	Seal, sensor, 1	13	94
RB2-4328-000CN	Seal, sensor, 2	14	94
RB2-4329-000CN	Seal, frame, 2	12	89
RB2-4431-000CN	Sub guide, left	20	92
RB2-4432-000CN	Sub guide, right	19	92
RB2-5388-000CN	Plate, shield	23	86
RB2-5405-000CN	Guide, document scanner	10	86
RB2-5406-000CN	Cover, cable	11	86
RB2-5407-000CN	Support extension, document output	1	84
RB2-5410-000CN	Cover, contact image sensor	12	86
RB2-5412-000CN	Support, document output	2	84
RB2-5421-000CN	Guide, paper delivery	26	86
RB2-5423-000CN	Support, paper output	3	84
RB2-5434-000CN	Cover, face-up	1	85
RB2-5437-000CN	Support, document feeder	4	84
RB2-5471-000CN	Overlay (speed-dial template)	5	84
RB2-5485-000CN	Cover, DIMM	2A	85
RB2-5488-000CN	Cover, front	3	85
RB2-5489-000CN	Cover, top	4	85
RB2-5490-000CN	Cover, right	5	85
RB2-5491-000CN	Cover, left	21	85
RB2-5493-000CN	Support, paper input	6	84

**Table 35. Numerical parts list**

<b>Part number</b>	<b>Description</b>	<b>Ref.</b>	<b>Figure</b>
RB2-5497-000CN	Hinge clip	15	89
RB2-5498-000CN	Cover, blanking	22	85
RB2-5498-000CN	Cover, blanking	22	86
RB2-5500-000CN	Sheet, light-blocking	16	90
RB2-5501-000CN	Sheet, light-blocking	15	90
RB9-0538-000CN	Plate, grounding	18	89
RF5-2818-000CN	Guide, cartridge, left	7	91
RF5-2819-000CN	Guide, cartridge, right	8	91
RF5-2822-000CN	Roller, face-up	9	91
RF5-2823-020CN	Roller, pressure	10	92
RF5-2830-000CN	Roller, face-down	10	91
RF5-2832-000CN	Arm, pad	4	91
RF5-2880-000CN	Holder, fixing	19	89
RF5-3232-000CN	Cover, rear	2	85
RF5-3236-000CN	Cable, flat	13	86
RG5-4581-000CN	Feeder assembly		93
RG5-4582-060CN	Paper guide plate assembly	1	91
RG5-4584-000CN	Roller holder assembly	1	90
RG5-4585-020CN	Gear assembly	3	90
RG5-4586-000CN	Drive assembly	10	89
RG5-4589-040CN	Fusing element	14	92
RG5-4593-000CN	Delivery assembly	8	92
RG5-4599-030CN	Door sensor assembly	9	94
RG5-4601-020CN	Single-sheet input tray assembly	7	85
RG5-4617-000CN	Sensor cable	23	89
RG5-4657-020CN	Transfer assembly	13	92
RG5-5387-000CN	Metal clip, fusing element (left)	15	92
RG5-5388-000CN	Metal clip, fusing element (right)	2	92
RG5-5391-000CN	Paper input tray assembly	8	85
RG5-5392-000CN	Hinge support assembly	22	89
RG5-5393-000CN	Formatter case assembly	21	89
RG5-5395-000CN	ECU	15	94
RG5-5400-000CN	Motor assembly	5	87
RG5-5401-000CN	Pickup roller assembly	6	87
RG5-5404-000CN	Separation assembly	1	88

**Table 35. Numerical parts list**

<b>Part number</b>	<b>Description</b>	<b>Ref.</b>	<b>Figure</b>
RG5-5405-000CN	Cable, flat	19	86
RG5-5410-000CN	Contact image sensor assembly	20	86
RG5-5412-000CN	Deflector link assembly	24	86
RG5-5415-000CN	Scanner cable	13	90
RG5-5421-000CN	Laser/scanner assembly	4	90
RG5-5464-000CN	Image scanner sensor, PCB assembly	28	86
RH2-5381-000CN	Cable, flat	7	94
RH7-1404-000CN	Motor, stepping	10A	89
RH7-5227-000CN	Solenoid	11	92
RS5-2502-000CN	Spring, compression	11	91
RS6-2122-000CN	Spring, compression	16	91
RS6-2276-000CN	Spring, torsion	27	86
RY7-5049-000CN	Gear kit	13	91
RY7-5050-020CN	Subpad kit (includes left and right)	1	92
RY7-5051-000CN	Clutch kit	14	89
RY7-5060-000CN	Screw kit, delivery assembly	17	92
VS1-5057-002CN	Connector, 2P	8	94
WT2-0307-000CN	Cable tie	14	86
XA9-0267-000CN	Screw, TP, M3X6	15	86
XA9-0267-000CN	Screw, TP, M3X6	12	90
XA9-0302-000CN	Screw, TP, M3x8	6	85
XA9-0591-000CN	Screw, M3X8	16	86
XA9-0591-000CN	Screw, M3X8	3	87
XA9-0653-000CN	Screw, w/star washer, M3X6	14	90
XA9-0653-000CN	Screw, w/star washer, M3X6	10	94
XA9-0779-000CN	Screw, w/washer, M3X6	17	86
XA9-0779-000CN	Screw, w/washer, M3X6	16	89
XA9-0870-000CN	Screw, M4X10	18	86
XA9-0870-000CN	Screw, M4X10	4	87
XA9-0951-000CN	Screw, w/washer, M3X8	11	94
XB2-8301-007CN	Screw, w/washer, M3X10	501	87
XB4-7300-807CN	Screw, tapping, truss, head, M3X8	503	86
XB4-7400-805CN	Screw, tapping, truss head, M4x	501	92
XB4-7401-007CN	Screw, tapping, pan head, M4X10	502	86
XB4-7401-007CN	Screw, tapping, pan head, M4X10	501	88

**Table 35. Numerical parts list**

<b>Part number</b>	<b>Description</b>	<b>Ref.</b>	<b>Figure</b>
XB4-7401-007CN	Screw, tapping, pan head, M4X10	501	89
XB4-7401-007CN	Screw, tapping, pan head, M4X10	22A	89
XB4-7401-007CN	Screw	501	90
XB4-7401-007CN	Screw, tapping, pan head, M4X10	503	92
XB4-7401-209CN	Screw, tapping, truss head, M4X12	501	85
XB4-7401-209CN	Screw, tapping, truss head, M4x12	502	92
XB6-7300-807CN	Screw	502	90





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English

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