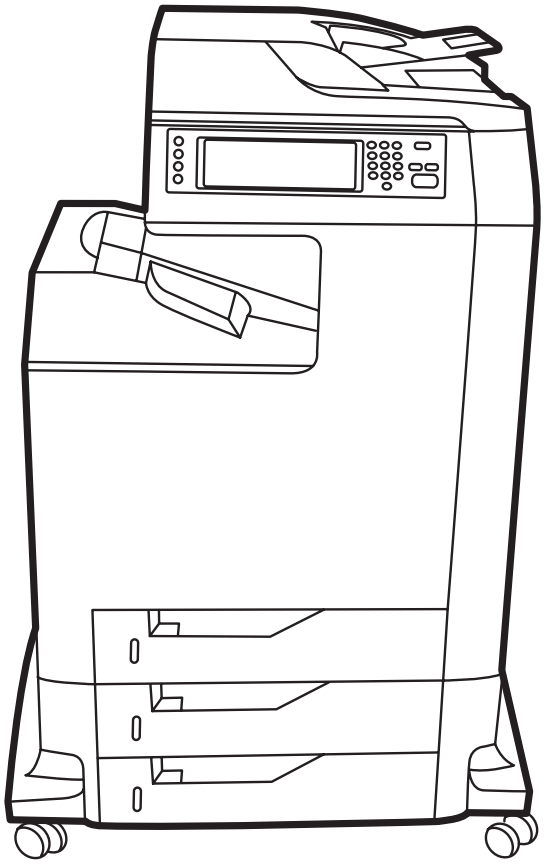
HP Color LaserJet CM4730 MFP
Service Manual



HP Color LaserJet CM4730 MFP

Service Manual



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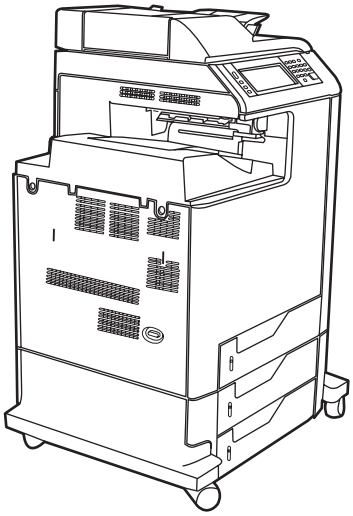
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Product comparison

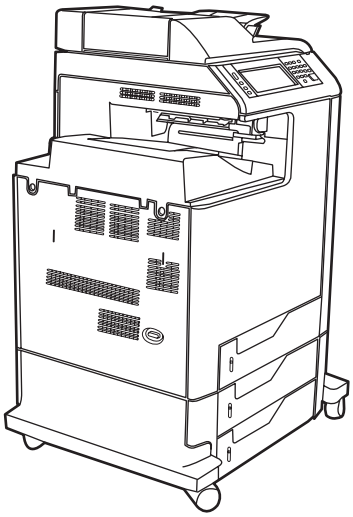
HP Color LaserJet CM4730 MFP



The HP Color LaserJet CM4730 MFP is the base model, and comes standard with the following items:

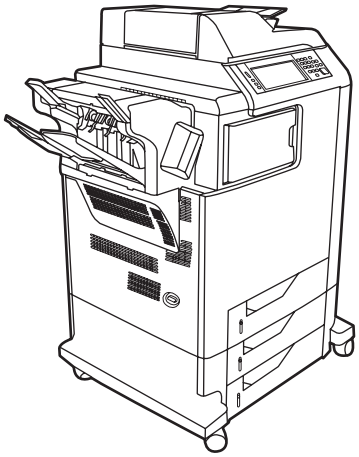
- 100-sheet multipurpose input tray (tray 1)
- Three 500-sheet input trays
- Automatic document feeder (ADF) that holds up to 50 pages
- HP Jetdirect embedded print server for connecting to a 10/100Base-TX network
- 384 megabytes (MB) of random access memory (RAM)
- Duplexer
- Hard drive

HP Color LaserJet CM4730f MFP



The HP Color LaserJet CM4730f MFP has the same features as the base model and includes an analog fax accessory.

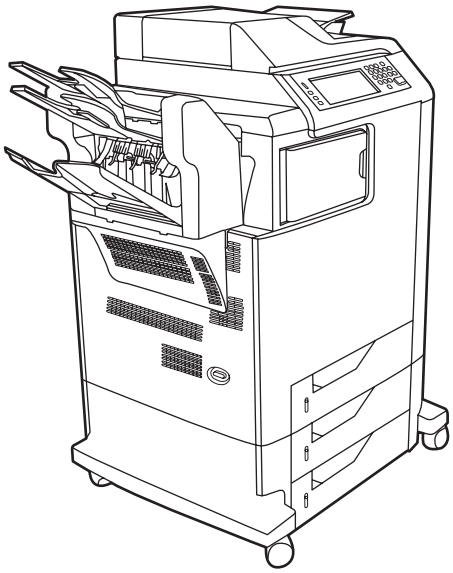
HP Color LaserJet CM4730fsk MFP



The HP Color LaserJet CM4730fsk MFP has the same features as the base model and includes the following items:

- Analog fax accessory
- Output accessory bridge
- Stapler/stacker accessory

HP Color LaserJet CM4730fm MFP



The HP Color LaserJet CM4730fm MFP has the same features as the base model and includes the following items:

- Analog fax accessory
- Output accessory bridge
- 3-bin mailbox accessory

Product features

Functions

- Two-sided copying (duplexing)
- Color digital sending
- Color access control
- Network printing

Speed and throughput

- 31 pages per minute (ppm) when copying and printing on letter-size paper; 30 ppm when copying and printing on A4-size paper
- 25% to 400% scalability when using the scanner glass
- 25% to 200% scalability when using the ADF
- Less than 10 seconds to print the first page
- Transmit Once, Raster Image Processing (RIP) ONCE technology
- Recommended maximum monthly print volume of 85,000 pages
- A 533 megahertz (MHz) microprocessor

Resolution

- 600 dots per inch (dpi) with Resolution Enhancement technology (REt)
- The product features HP FastRes and HP Resolution Enhancement technology (REt) for 1200 x 1200 effective dpi at full engine speed.

Memory

- 384 MB of random-access memory (RAM), expandable to 512 MB by using industry standard 200-pin double data rate dual inline memory modules (DDR DIMMs)
- Memory Enhancement technology (MEt) that automatically compresses data to use RAM more efficiently

User interface

- HP Easy Select Control Panel
- An embedded Web server to gain access to support and order supplies (for network-connected products)
- HP Easy Printer Care software (a Web-based status and troubleshooting tool)
- Internet-enabled supply-ordering capabilities through HP Easy Printer Care software

Languages and fonts

- HP Printer Command Language (PCL) 6
- HP PCL 5
- Printer Management Language
- XHTML
- 80 scalable TrueType typefaces
- HP PostScript® 3 emulation (PS)

Copying and sending

- Modes for text, graphics, and mixed text and graphics formats
- Job-interrupt feature (at copy boundaries)
- Multiple pages per sheet
- Operator attendance animations (for example, jam recovery)
- Scan and send to e-mail
  - Local address book for e-mail and fax
  - LDAP addressing
- Send to folder
- Automatic duplex (two-sided) scanning

Print cartridges (4)

- Print up to 12,000 pages at 5% coverage
- No-shake cartridge design
- Authentic HP print cartridge detection
- Automatic toner-strip remover

Paper-handling

- **Input**
  - **Tray 1 (multipurpose tray):** A multipurpose tray for paper, transparencies, labels, and envelopes. Holds up to 100 sheets of paper or 20 envelopes.
  - **Tray 2, 3, and 4:** 500-sheet trays. These trays automatically detect standard paper sizes up to legal and allow printing on custom-size paper.
  - **Automatic document feeder (ADF):** Holds up to 50 sheets of paper.

- **Duplex printing and copying:** Provides two-sided printing and copying (printing on both sides of the paper).
- **ADF duplex scanning:** The ADF has an automatic duplexer for scanning two-sided documents.

- **Output**
  - **Standard output bin:** The standard output bin is located on the left side of the MFP. This bin can hold up to 500 sheets of paper.
  - **ADF output bin:** The ADF output bin is underneath the ADF input tray. The bin holds up to 50 sheets of paper, and the MFP automatically stops when this bin is full.
  - **Optional stapler/stacker (standard on the CM4730fm MFP):** The stapler/stacker staples up to a 30-sheet document and stacks up to 500 sheets.
  - **Optional 3-bin mailbox (standard on the CM4730fsk MFP):** One bin stacks up to 500 sheets, and two bins stack up to 100 sheets each for a total capacity of 700 sheets.

Connectivity

- IEEE 1284C-compliant parallel connection
- A Foreign Interface Harness (FIH) connection (AUX) for connecting other devices
- Local area network (LAN) connector (RJ-45) for the embedded HP Jetdirect print server
- Optional analog fax card (standard on the CM4730f, CM4730fm, and CM4730fsk MFP models)
- Optional HP Digital Sending Software (DSS)
- Optional enhanced input/output (EIO) cards
- USB 2.0
- ACC port (accessory port with USB host capabilities)
- Accessory port (for connecting third-party devices)

Environmental features

- Sleep setting saves energy (meets ENERGY STAR® guidelines, Version 1.0).

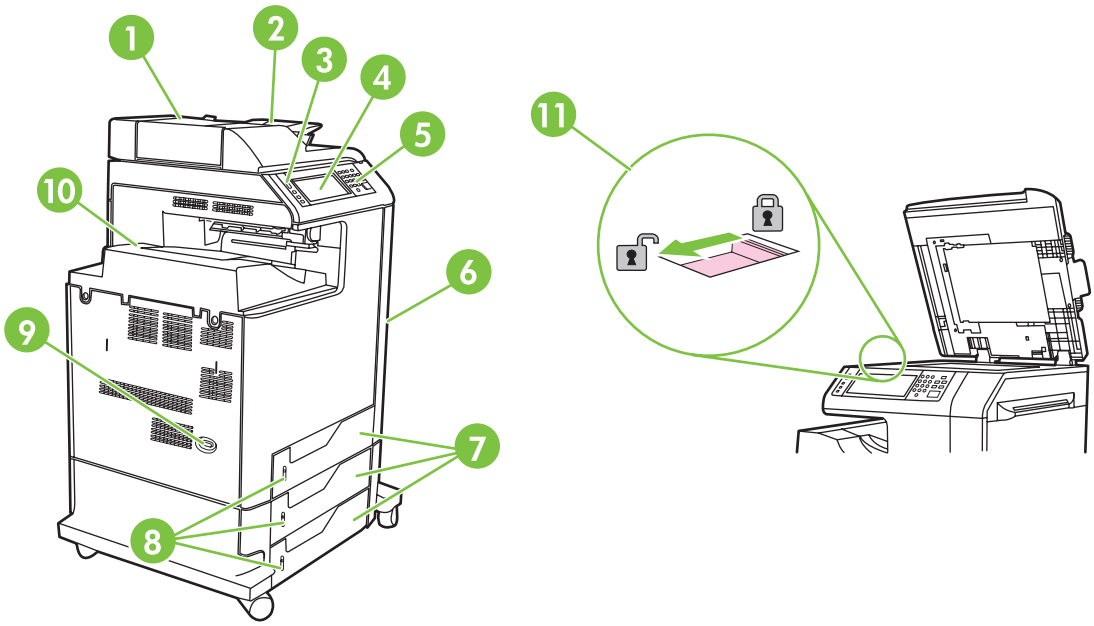
Security features

- FIH
- Secure Disk Erase
- Security lock
- Job retention
- DSS authentication
- Windows® user authentication
- LDAP authentication

- Group PIN authentication (Group 1 and Group 2)
- User PIN authentication

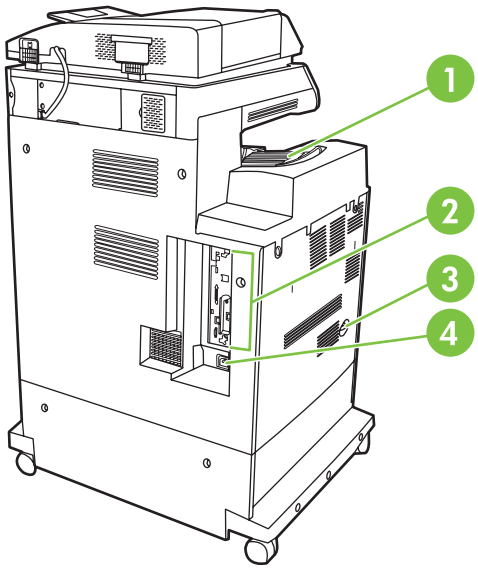
Product walkaround

Front view



1	ADF top cover
2	Automatic document feeder (ADF) input tray for copy/scan/fax originals
3	Control-panel status lights
4	Control-panel display with touchscreen functionality
5	Control-panel keypad
6	Right-side covers (provides access to the print cartridges and other consumables)
7	Tray 2, 3, and 4
8	Paper-level indicators
9	On/Off switch
10	Output bin
11	Scanner lock

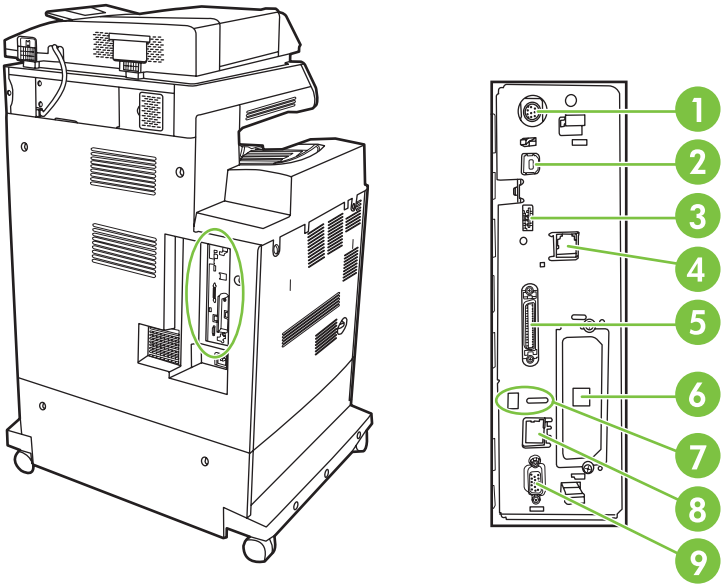
Back view



1	Output bin
2	Interface ports
3	On/off switch
4	Power connection

Interface ports

The MFP has five ports for connecting to a computer or a network. The ports are at the left, rear corner of the MFP.



1	Foreign interface harness (FIH)
2	USB 2.0
3	ACC port
4	Fax connection (for connecting to an optional analog fax accessory)
5	Parallel port
6	EIO interface expansion slot
7	Access port for Kensington lock
8	Network connection (embedded HP Jetdirect print server)
9	AUX port

Serial number and model number location

The model number and serial number are listed on identification labels located on the rear of the printer. The serial number contains information about the country/region of origin, the printer version, the production code, and the production number of the printer.

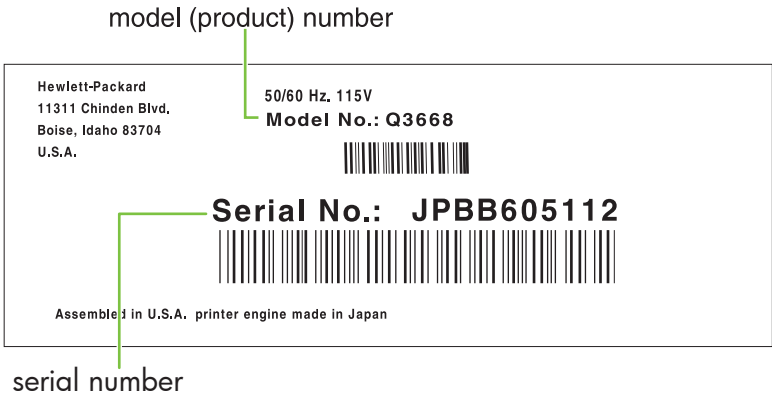


Figure 1-1 Sample model and serial number label

Model name	Model number
HP Color LaserJet CM4730 MFP	CB480A
HP Color LaserJet CM4730f MFP	CB481A
HP Color LaserJet CM4730fsk MFP	CB482A
HP Color LaserJet CM4730fm MFP	CB483A

Media specifications

Understand paper and print media use

This product supports a variety of paper and other print media in accordance with the guidelines in this user guide. Paper or print media that does not meet these guidelines might cause the following problems:

- Poor print quality
- Increased jams
- Premature wear on the product, requiring repair

For best results, use only HP-brand paper and print media designed for laserjets or multiuse. Do not use paper or print media made for inkjet printers. Hewlett-Packard Company cannot recommend the use of other brands of media because HP cannot control their quality.

It is possible for paper to meet all of the guidelines in this user guide and still not produce satisfactory results. This might be the result of improper handling, unacceptable temperature and/or humidity levels, or other variables over which Hewlett-Packard has no control.

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

Supported paper and print media sizes

This product supports a number of paper sizes, and it adapts to various media.

NOTE: To obtain best print results, select the appropriate paper size and type in your print driver before printing.

Table 1-1 Supported paper and print media sizes

Size	Dimensions	Tray 1, mailbox, stacker	Trays 2, 3, 4	Stapler
Letter	216 x 279 mm (8.5 x 11 in.)	✔	✔	✔
Legal	216 x 356 mm (8.5 x 14 in.)	✔	✔	
A4	210 x 297 mm (8.27 x 11.69 in.)	✔	✔	✔
Executive	184 x 267 mm (7.24 x 10.51 in.)	✔	✔	
Executive (JIS)	216 x 330 mm (8.5 x 13 in.)			
A3	297 x 420 mm (11.69 x 16.54 in.)			
A5	148 x 210 mm (5.83 x 8.27 in.)			
A6	105 x 148 mm (4.13 x 5.83 in.)			
Statement	140 x 216 mm (5.5 x 8.5 in.)	✔		
11 x 17	279 x 432 mm (11 x 17 in.)			
12 x 18	305 x 457 mm (12 x 18 in.)			

Table 1-1 Supported paper and print media sizes (continued)

Size	Dimensions	Tray 1, mailbox, stacker	Trays 2, 3, 4	Stapler
B4 (ISO)	250 x 353 mm (9.84 x 13.90 in.)			
B4 (JIS)	257 x 364 mm (10.12 x 14.33 in.)			
RA3	305 x 430 mm (12.01 x 16.93 in.)			
B5 (JIS)	182 x 257 mm (7.17 x 10.12 in.)	✔	✔	
B5 (ISO)	176 x 250 mm (6.93 x 9.84 in.)			
8k	270 x390 mm (10.63 x 15.35 in.)			
16k	197 x 273 mm (7.75 x 10.75 in.)	✔		

Table 1-2 Supported envelopes and postcards

Size	Dimensions	Tray 1, mailbox, stacker	Trays 2, 3, 4	Stapler
Envelope #10	105 x 241 mm (4.13 x 9.49 in.)	✔		
Envelope DL	110 x 220 mm (4.33 x 8.66 in.)	✔		
Envelope C5	162 x 229 mm (6.93 x 9.84 in.)	✔		
Envelope B5	176 x 250 mm (6.7 x 9.8 in.)	✔		
Envelope Monarch	98 x 191 mm (3.9 x 7.5 in.)	✔		
Post Card	100 x 148 mm (3.94 x 5.83 in.)	✔		
Double Post Card	148 x 200 mm (5.83 x 7.87 in.)	✔		
Postcard (US)	88.9 x 139.7 mm (3.5 x 5.5 in.)	✔		
Postcard (European)	105 x 148 mm (4.13 x 5.83 in.)	✔		

Custom paper sizes

This product supports a variety of custom paper sizes. Supported custom sizes are sizes that are within the minimum- and maximum-size guidelines for the product but are not listed in the supported paper sizes table. When using a supported custom size, specify the custom size in the print driver, and load the paper in a tray that supports custom sizes.

Special paper or print media guidelines

This product supports printing on special media. Use the following guidelines to obtain satisfactory results. When using special paper or print media, be sure to set the type and size in your print driver to obtain the best print results.

CAUTION: HP LaserJet printers use fusers to bond dry toner particles to the paper in very precise dots. HP laser paper is designed to withstand this extreme heat. Using inkjet paper not designed for this technology could damage your printer.

Media type	Do	Do not
Envelopes	• Store envelopes flat. • Use envelopes where the seam extends all the way to the corner of the envelope. • Use peel-off adhesive strips that are approved for use in laser printers.	• Do not use envelopes that are wrinkled, nicked, stuck together, or otherwise damaged. • Do not use envelopes that have clasps, snaps, windows, or coated linings. • Do not use self-stick adhesives or other synthetic materials.
Labels	• Use only labels that have no exposed backing between them. • Use Labels that lie flat. • Use only full sheets of labels.	• Do not use labels that have wrinkles or bubbles, or are damaged. • Do not print partial sheets of labels.
Transparencies	• Use only transparencies that are approved for use in laser printers. • Place transparencies on a flat surface after removing them from the product.	• Do not use transparent print media not approved for laser printers.
Letterhead or preprinted forms	• Use only letterhead or forms approved for use in laser printers.	• Do not use raised or metallic letterhead.
Heavy paper	• Use only heavy paper that is approved for use in laser printers and meets the weight specifications for this product.	• Do not use paper that is heavier than the recommended media specification for this product unless it is HP paper that has been approved for use in this product.
Glossy or coated paper	• Use only glossy or coated paper that is approved for use in laser printers.	• Do not use glossy or coated paper designed for use in inkjet products.

Information pages

Information pages provide details about the device and its current configuration. The following table provides the instructions for printing the information pages.

Page description	How to print the page from the MFP control panel
Menu map Shows the control-panel menus and available settings.	1. From the Home screen, scroll to and touch Administration. 2. Touch Information. 3. Touch Configuration/Status Pages. 4. Touch Administration Menu Map. 5. Touch Print. The content of the menu map varies, depending on the options currently installed in the device. For a complete list of control panel menus and possible values, see Use the control panel on page 64.
Configuration page Shows device settings and installed accessories.	1. From the Home screen, scroll to and touch Administration. 2. Touch Information. 3. Touch Configuration/Status Pages. 4. Touch Configuration Page. 5. Touch Print. **NOTE:** If the device contains an HP Jetdirect print server or an optional hard disk drive, additional configuration pages print that provide information about those devices.
Supplies status page Shows print-cartridge toner levels.	1. From the Home screen, scroll to and touch Administration. 2. Touch Information. 3. Touch Configuration/Status Pages. 4. Touch Supplies Status Page. 5. Touch Print. **NOTE:** If you are using non-HP supplies, the supplies status page might not show the remaining life for those supplies.
Usage page Shows a page count for each size of paper printed, the number of one-sided (simplexed) or two-sided (duplexed) pages, and the average percentage of coverage.	1. From the Home screen, scroll to and touch Administration. 2. Touch Information. 3. Touch Configuration/Status Pages. 4. Touch Usage Page. 5. Touch Print.
File directory	1. From the Home screen, scroll to and touch Administration. 2. Touch Information.

Page description	How to print the page from the MFP control panel
Contains information for any mass storage devices, such as flash drives, memory cards, or hard disks, that are installed in the device.	3. Touch Configuration/Status Pages. 4. Scroll to and touch File Directory. 5. Touch Print.
Fax reports Five reports show fax activity, fax calls, billing codes, blocked fax numbers, and speed-dial numbers. **NOTE:** Fax reports are available only on models that have fax capabilities.	1. From the Home screen, scroll to and touch Administration. 2. Touch Information. 3. Touch Fax Reports. 4. Touch one of the following buttons to print the corresponding report: • Fax Activity Log • Fax Call Report • Billing Codes Report • Blocked Fax List • Speed Dial List 5. Touch Print. For more information, see the fax guide that came with the device.
Font lists Shows which fonts are currently installed in the device.	1. From the Home screen, scroll to and touch Administration. 2. Touch Information. 3. Touch Sample Pages/Fonts. 4. Touch either PCL Font List or PS Font List. 5. Touch Print. **NOTE:** The font lists also show which fonts reside on a hard disk accessory or DIMM.

2 Installation

- Installation checklist
- Unpacking the MFP
- Connecting power
- Installing print cartridges
- Installing a new control panel overlay
- Install memory and print server cards
- Test the MFP operation
- Sleep and wake
- Connecting to a computer or network
- Printer software
- Network configuration
- Security features
- Optional output and input devices

Installation checklist

When setting up the MFP for the first time, perform the following tasks to ensure that the MFP is installed correctly.

Table 2-1 HP Color LaserJet CM4730 MFP installation

✔	Item	Details
	Verify that the MFP is connected to an adequate power source.	A minimum of 10A (110V) or 5A (220V) circuit required. Uninterruptible Power Supplies (UPS) are not recommended. Do *not* use a power strip. Any devices attached to the same power source can lead to intermittent problems.
	Verify that MFP resides in an adequate space.	Adequate space so that the MFP may be accessed from all sides. Tight space makes the system difficult to access for jam clearing and service.
	Verify that surface has adequate, level support.	Ensure the MFP is on a level and stable surface. Ensure wheel locks are engaged.
	Verify that all orange tape and packaging materials have been removed.	See details in the *HP Color LaserJet CM4730 MFP series Getting Started Guide*.
	Verify that the print cartridges and paper have been installed in the MFP.	Use known good quality paper.
	Verify the I/O cable, such as a LAN, USB, or parallel cable, has been connected to the corresponding I/O port on the MFP.	See details in the *HP Color LaserJet CM4730 MFP series Getting Started Guide*.
	Verify the scanner shipping lock has been moved to the unlocked position.	See details in the *HP Color LaserJet CM4730 MFP series Getting Started Guide*.
	Verify the correct language and date/time are set.	See details in the *HP Color LaserJet CM4730 MFP series Getting Started Guide*.
	Configure the e-mail gateways.	Scroll to and touch **Administration**, **Initial Setup**, **E-mail Setup**, and **Find Send Gateways**. If auto-discovery does not find the e-mail gateways, obtain the addresses from your network administrator and manually configure these on the MFP.
	If the fax accessory is installed, ensure it is properly configured.	Scroll to and touch **Administration**, **Initial Setup**, **Fax Setup**, and **Required Settings**. Fill in the date/time, location and fax header information. See details in the *HP LaserJet Analog Fax Accessory 300 User Guide*.
	Print the configuration pages.	Scroll to and touch **Administration**, **Information**, **Configuration/Status Pages**, **Configuration Page**, and **Print**.
	On the configuration page printouts, verify the following: • LDAP gateway address displays. • SMTP gateway address displays.	The HP Color LaserJet CM4730 MFP information and training CD provides detailed information on how to read the configuration page.

Table 2-1 HP Color LaserJet CM4730 MFP installation (continued)

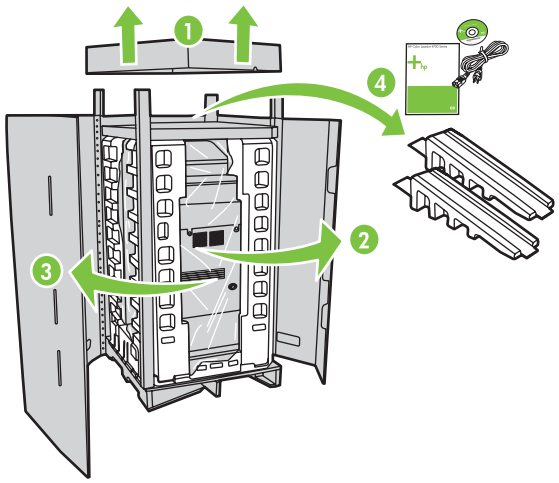
✔	Item	Details
	• All optional devices display (for example, the stapler/stacker or the 3-bin mailbox). • If the fax accessory is installed, the modem status reads *Operational/Enabled*. • On the Embedded Jetdirect Page, verify that the status reads *I/O Card Ready* and that you have a valid IP address.	
	Verify you can copy from the copier glass of the MFP.	Place configuration page face down on copier glass and press Start.
	Verify you can copy from the Automatic Document Feeder (ADF).	Place configuration page face up in ADF and press Start.
	Verify you can send a fax from the MFP, if the fax accessory is installed.	Place document face-up in the ADF and use the keypad to send to a known functioning fax number.
	Verify you can send an e-mail.	Place document face-up in the ADF, and use the keypad to enter an e-mail address (LDAP must be configured for this to function).
	Verify you can print to the MFP.	After loading the printing system software on a networked computer, print a test page from the driver.
	Verify that all users have access to the User Training.	http://www.hp.com/go/usemymfp

Unpacking the MFP

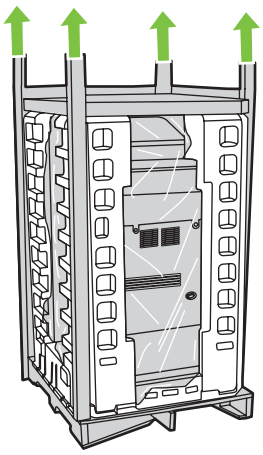
NOTE: Save all the packing materials in case you need to repack and transport the MFP at a later date.

WARNING! The HP Color LaserJet CM4730 MFP weighs approximately 124 kg (273 lb). HP recommends having three or more people move or position the MFP.

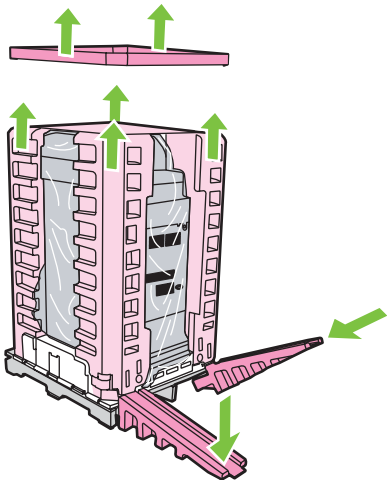
1. Remove the top of the box and remove the outer cardboard wrapping from the sides of the MFP. Remove the ramps, power supply cord, CD-ROM, and user documentation from the top of the packing box.



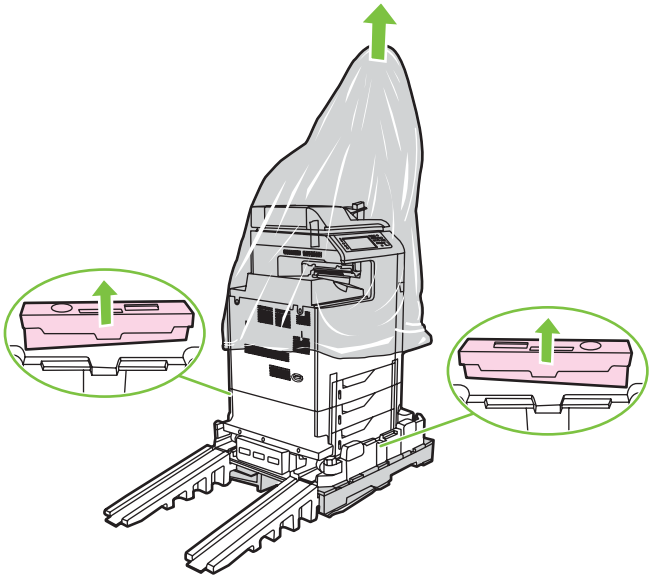
2. Remove the corner brackets.



3. Remove the inner cardboard frame and foam corner packaging, and install the ramps.



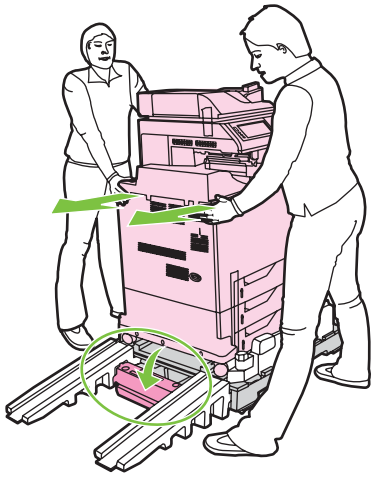
4. Remove the shipping blocks and plastic bag that surround the MFP.



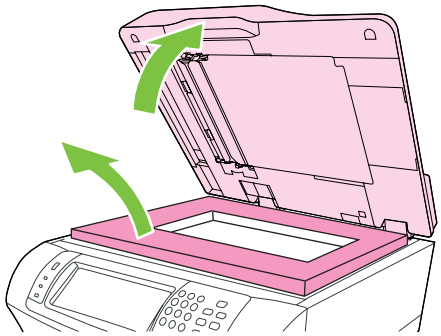
5. Roll the MFP down the ramps into the prepared location.



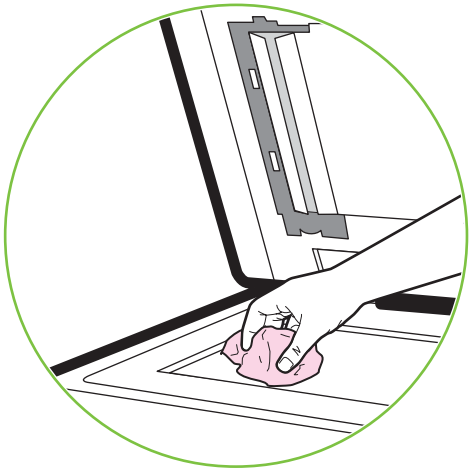
CAUTION: Do not attempt to move the MFP by yourself. At least two people must move the MFP into the prepared location. While two people can move the MFP, using three or four people to unpack and install the MFP is easier and safer.



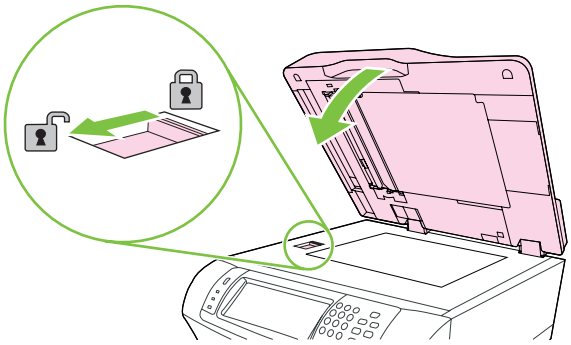
6. Remove the packing tape from the front and rear of the MFP.
7. Open the scanner glass and remove the foam packaging.



8. Clean the scanner glass by wiping it gently with a clean, slightly damp, lint-free cloth.



9. Unlock the scanner.



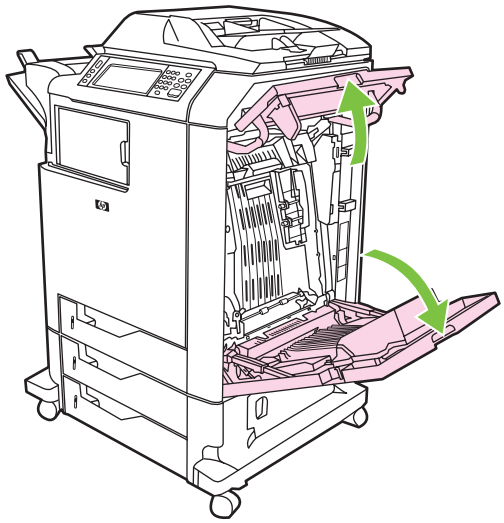
Connecting power

1. Plug the AC power cord into the MFP and into the power outlet.
2. Turn the MFP on.

Installing print cartridges

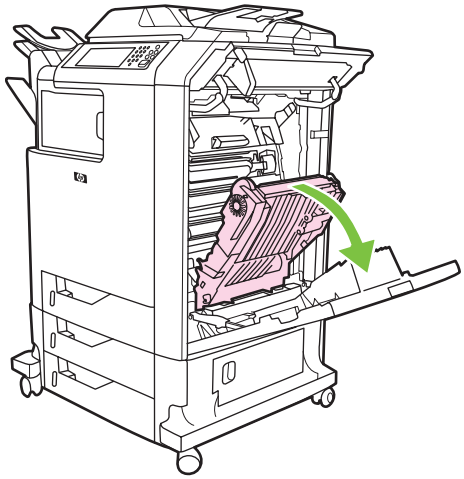
For additional information on installing and managing print cartridges, see Managing print cartridges on page 114.

1. Open the covers on the right side of the MFP.



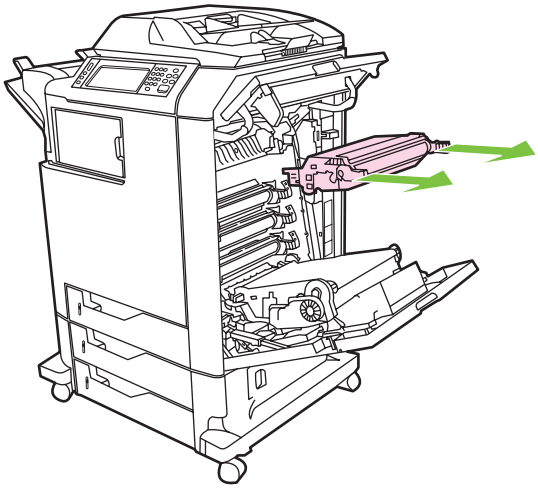
CAUTION: The fuser might be hot.

2. Grasp the green handle and pull down the ETB.



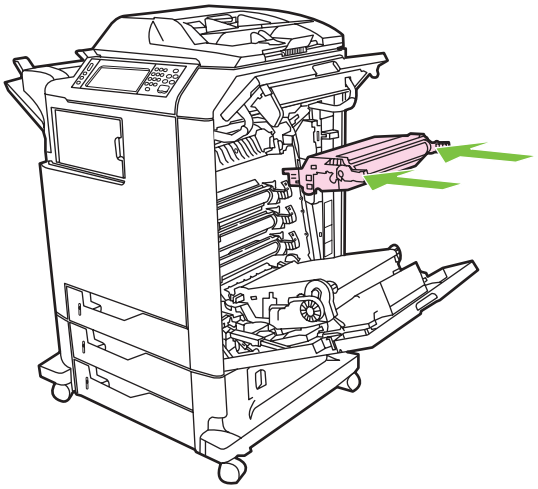
CAUTION: Do not place any item on the transfer belt while it is open. If the belt is punctured, print quality problems could result.

3. Remove the used print cartridge from the MFP.



4. Remove the new print cartridge from the bag. Place the used print cartridge in the bag for recycling.

5. Align the print cartridge with the tracks inside the MFP and insert the cartridge until it is completely seated.



NOTE: The print cartridge tape seal is removed automatically when the print cartridge is installed in the MFP.

6. Close the front cover and then close the top cover. After a short while, the product control panel should display **Ready**.

7. Installation is complete. Place the used print cartridge in the box in which the new cartridge arrived. See the enclosed recycling guide for recycling instructions.

8. If a non-HP print cartridge was installed, check the product control panel for further instructions.

For additional help, go to http://www.hp.com/support/ljcm4730mfp.

Installing a new control panel overlay

Some MFP models are shipped without the product control panel overlay installed or a different overlay may be used from the one that is installed. Overlays are available for several languages. If setting up an MFP for a language other than English, follow this procedure.

1. Turn the MFP off.
2. Remove the backing from the adhesive side of the overlay.
3. Position the new overlay over the top of the product control panel.
4. Press the label firmly down onto the control panel.



NOTE: When applying the overlay, start at the center and press the overlay into place towards the edges of the control panel.

5. Press and hold the 6 key on the control panel.
6. Turn the MFP on.
7. When the three status LEDs illuminate, release the 6 key.
8. After the MFP finishes the boot process, it prompts you to choose a language.
9. Scroll to and touch the desired language.

Install memory and print server cards

The MFP has two 200-pin DDR SDRAM slots on the front side of the formatter board. One slot contains a 256 MB DIMM, and the other contains a 128 MB DIMM. These DIMMS are used for print functionality. The back of the formatter contains a 256 MB DIMM that is used for copy functionality.

The MFP also has three flash memory card slots for MFP firmware, fonts, and other solutions.

- The first flash memory card is reserved for MFP firmware. The slot is marked "Firmware Slot".
- The two additional flash memory card slots are for font cards or third-party solutions, such as signatures and personalities. The slots are marked "Slot 2" and "Slot 3."

CAUTION: Do not insert a flash memory card that is designed for use with a digital camera. The MFP does not support photo printing directly from a flash memory card. If you install a camera-type flash memory card, the control panel displays a message asking if you want to reformat the flash memory card. If you choose to reformat the card, all data on the card will be lost.

You might want to add more memory to the MFP if you print complex graphics or PS documents, or if you use many downloaded fonts. Additional memory also allows the MFP to print multiple collated copies at the maximum speed.

NOTE: Single in-line memory modules (SIMMs) / dual in-line memory modules (DIMMs) used on previous HP LaserJet printers are not compatible with the MFP.

Before ordering additional memory, see how much memory is currently installed by printing a configuration page.

Install memory and fonts

You can install more memory for the MFP, and you can also install a font card to allow the MFP to print characters for languages such as Chinese or the Cyrillic alphabet.

CAUTION: Static electricity can damage DIMMs. When handling DIMMs, either wear an antistatic wrist strap, or frequently touch the surface of the DIMM antistatic package and then touch bare metal on the MFP.

Install DDR memory DIMMs

See DIMMs on page 300 for removal and replacement instructions for DIMMs. After installing a memory DIMM, see Enabling memory on page 31.

Install a flash memory card

See Flash memory card (firmware) on page 306 for removal and replacement instructions for flash memory cards.

Enabling memory

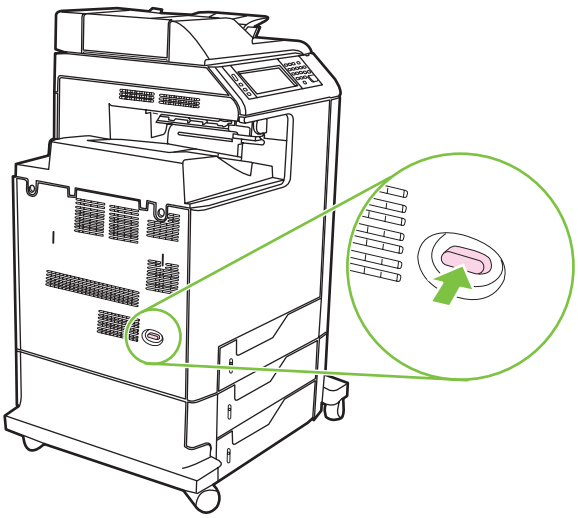
If you installed a memory DIMM, set the MFP driver to recognize the newly added memory.

1. On the **Start** menu, point to **Settings**, and click **Printers** or **Printers and Faxes**.
2. Right-click the printer and select **Properties**.
3. On the **Device Settings** tab, click **Printer Memory** (in the **Installable Options** section).
4. Select the total amount of memory that is now installed.
5. Click **OK**.

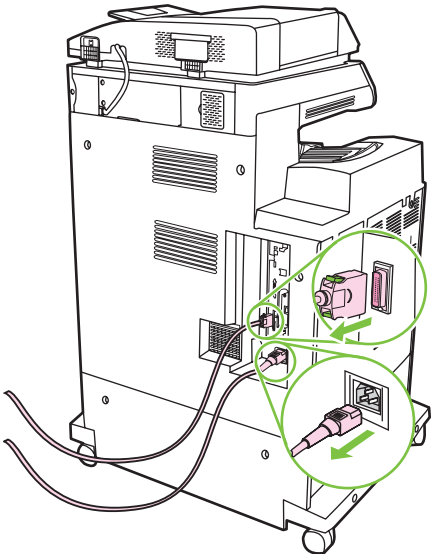
Install an HP Jetdirect or EIO print server card

The HP Color LaserJet CM4730 MFP is equipped with an embedded HP Jetdirect print server port. If desired, you can install an additional I/O card in the available EIO slot.

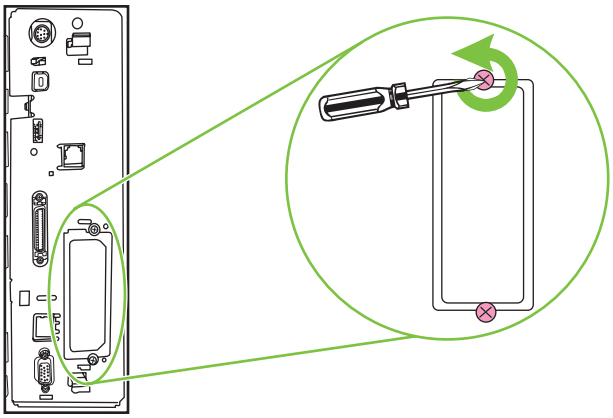
1. Turn the MFP off.



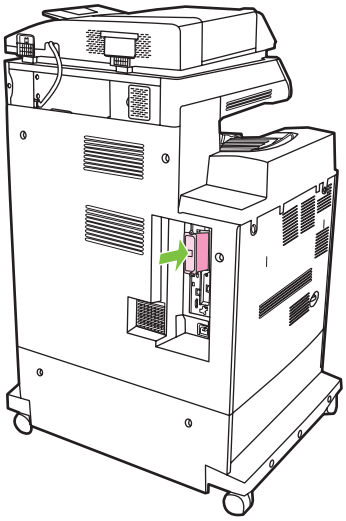
2. Disconnect all power and interface cables.



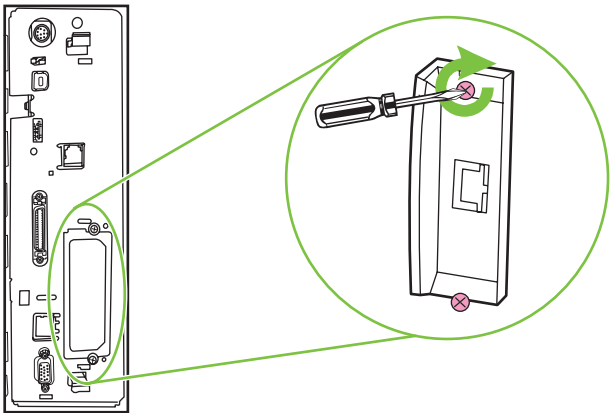
3. Locate an open EIO slot. Loosen and remove the two retaining screws holding the cover for the EIO slot, and then remove the cover. You will not need these screws and the cover again. They can be discarded.



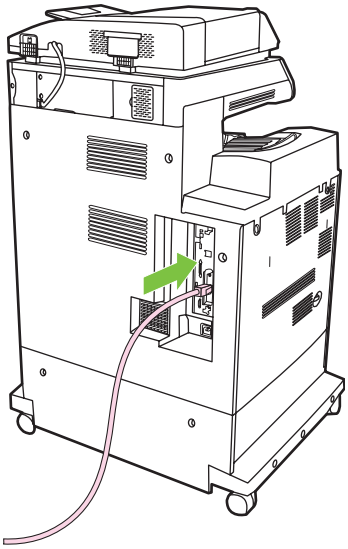
4. Firmly insert the HP Jetdirect print server card into the EIO slot.



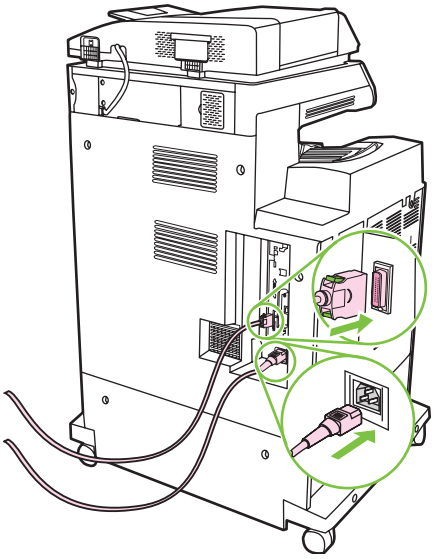
5. Insert and tighten the retaining screws that came with the print server card.



6. Connect the network cable.



7. Reconnect the power cable, and turn the MFP on.



8. Print a configuration page. In addition to an MFP configuration page and a Supplies Status page, an HP Jetdirect configuration page that contains network configuration and status information should also print.

   If it does not print, uninstall and reinstall the print server card to ensure that it is completely seated in the slot.

9. Perform one of these steps:

   - Choose the correct port. See the computer or operating system documentation for instructions.
   - Reinstall the software, choosing the network installation this time.

Test the MFP operation

Print a configuration page to ensure that the MFP is working correctly. See Information pages on page 16 for instructions.

Sleep and wake

Set the sleep delay

Use the sleep-delay feature to set the period of time that the MFP must be idle before it enters the sleep mode. The default setting is 30 minutes.

1. Scroll to and touch Administration.
2. Touch Time/Scheduling.
3. Touch Sleep Delay.
4. Touch the sleep-delay setting that you want.

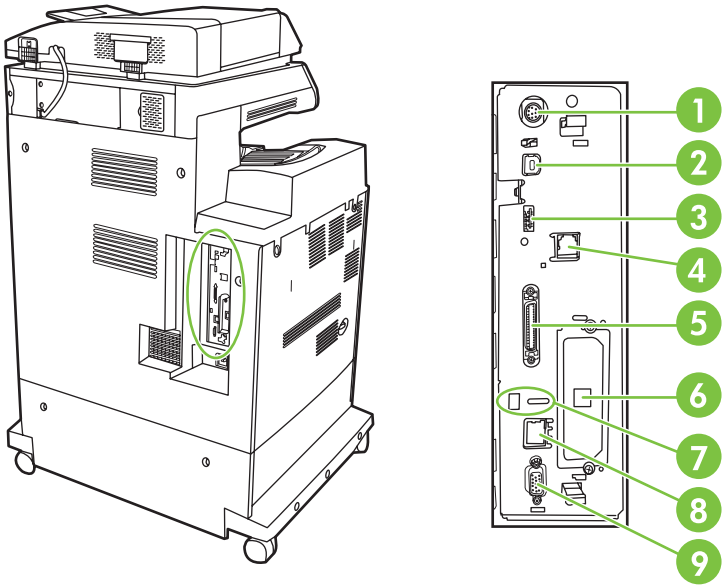
Set the wake time

Use the wake time feature to wake the MFP at a set time each day.

1. Scroll to and touch Administration.
2. Touch Time/Scheduling.
3. Touch Wake Time.
4. Touch the day of the week for the wake time.
5. Touch Custom.
6. Touch Save.
7. Touch the appropriate options to set the correct hour, minute, and AM/PM setting.
8. If you want to wake the MFP at the same time each day, on the **Apply To All Days** screen, touch Yes. If you want to set the time for individual days, touch No, and repeat the procedure for each day.

Connecting to a computer or network

The MFP has eight ports for connecting to a computer or a network. The ports are at the right rear corner of the MFP.



1	Foreign interface harness (FIH)
2	USB 2.0
3	ACC port
4	Fax connection (for connecting to an optional analog fax accessory)
5	Parallel port
6	EIO interface expansion slot
7	Kensington lock
8	Network connection (embedded HP Jetdirect print server)
9	Accessory port

Parallel connection

Establish a parallel connection by connecting the MFP to the computer with a bidirectional parallel cable (IEEE-1284C compliant) that has a c-connector. The cable can be a maximum of 10 meters (30 feet) long.

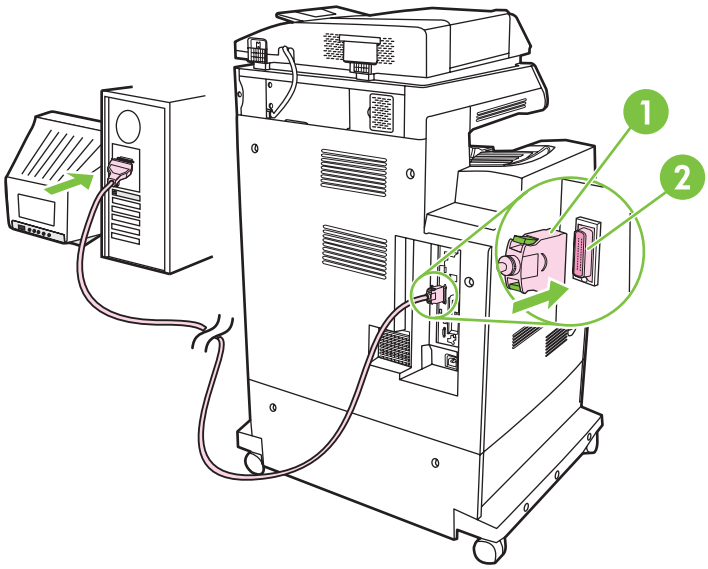


Figure 2-1 Parallel port connection

1	C-connector
2	Parallel port

NOTE: To use the enhanced capabilities of the bidirectional parallel interface, ensure that the most recent printer driver is installed.

Factory settings support automatic switching between the parallel port and one or more network connections on the MFP.

USB connection

This MFP supports USB 2.0 device connections. The USB ports are located on the back of the MFP. You must use an A-to-B type USB cable that is no longer than 2 meters (6.56 feet)

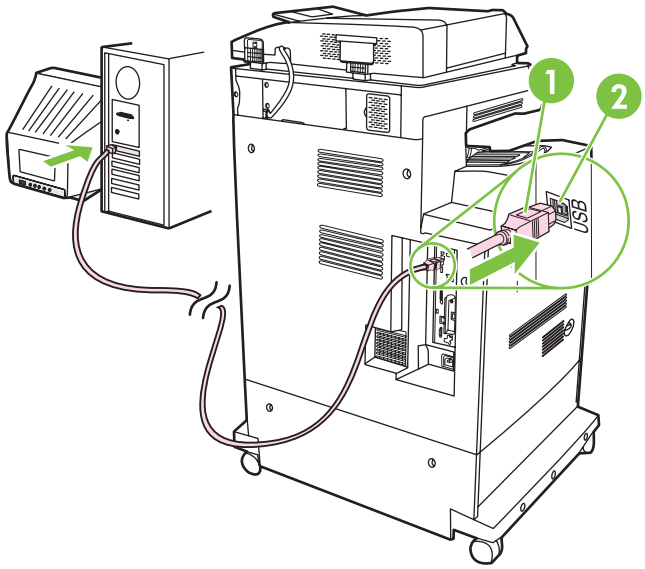


Figure 2-2 USB connection

1	USB connector
2	USB port

Auxiliary connection

This MFP supports an auxiliary connection for paper-handling input devices. The port is located on the back of the MFP.

NOTE: This connector cannot be used by the 3-bin mailbox or stapler/stacker accessories.

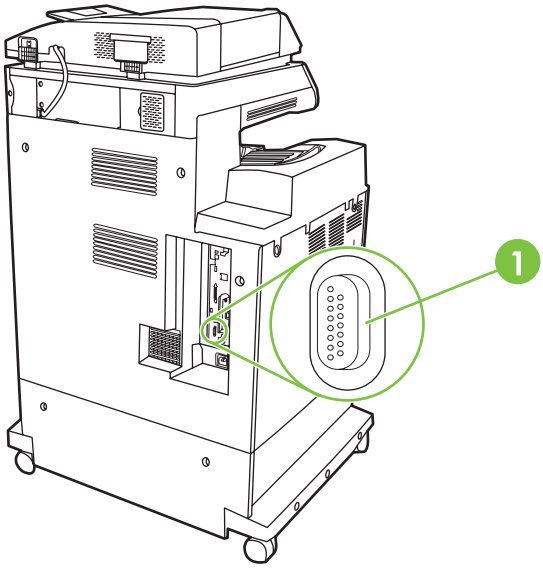


Figure 2-3 Auxiliary connection

1	Auxiliary connection port (Jetlink)

Fax connection

The HP Color LaserJet CM4730f MFP, HP Color LaserJet CM4730fsk MFP, and HP Color LaserJet CM4730fm MFP models are equipped with an HP LaserJet analog fax accessory already installed. Windows users can also install the optional HP Digital Sending Software (HP DSS), which provides digital faxing services.

For complete instructions for configuring the fax accessory and for using the fax features, see the *HP LaserJet Analog Fax Accessory 300 User Guide*. A printed copy of this guide is provided with the HP Color LaserJet CM4730f MFP, HP Color LaserJet CM4730fsk MFP, and HP Color LaserJet CM4730fm MFP.

Analog faxing

When the analog fax accessory is installed, the MFP can function as a standalone fax machine.

The HP Color LaserJet CM4730f MFP, HP Color LaserJet CM4730fsk MFP, and HP Color LaserJet CM4730fm MFP models are equipped with an HP LaserJet analog fax accessory already installed. For the HP Color LaserJet CM4730 MFP (base model), this accessory can be ordered as an option.

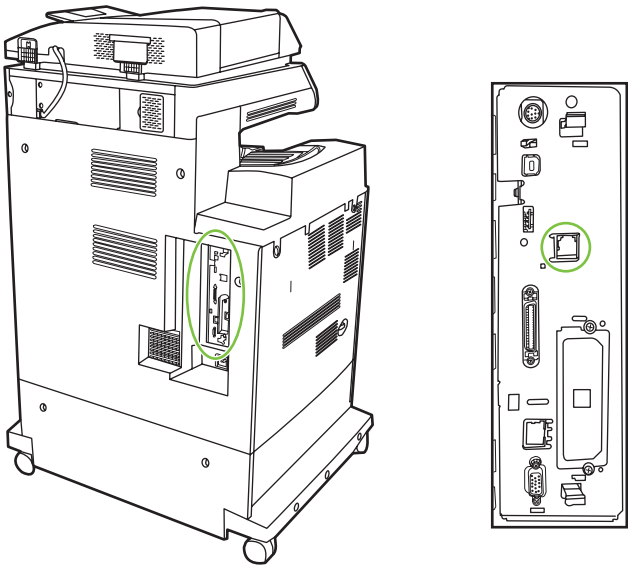
Connecting the fax accessory to a phone line

When connecting the fax accessory to a phone line, ensure that the phone line being used for the fax accessory is a dedicated line that is not used by any other devices. Also, this line should be an analog line because the fax will not function correctly if it is connected to some digital PBX systems. If unsure whether an analog or digital phone line is to be used, contact your telecom provider.

NOTE: HP recommends using the phone cord that comes with the fax accessory to ensure that the accessory functions correctly.

Follow these instructions to connect the fax accessory to a phone jack.

1. Locate the phone cord that is included with the fax accessory kit. Connect one end of the phone cord into the fax accessory phone jack that is on the formatter. Push the connector until it clicks.



CAUTION: Be sure to connect the phone line to the fax accessory port, which is located in the center of the formatter. Do not connect the phone line to the HP Jetdirect port, which is nearer the bottom of the formatter.

2. Connect the other end of the phone cord into the phone jack on the wall. Push the connector until it clicks.

Configuring and using the fax features

Before the fax features can be used, configure them in the product control panel menus. For complete information about configuring and using the fax accessory and for information about troubleshooting problems with the fax accessory, see the *HP LaserJet Analog Fax Accessory 300 User Guide* provided with the fax accessory.

Digital faxing

Digital faxing is available when installing the optional HP Digital Sending Software. For information about ordering this software, go to http://www.hp.com/go/digitalsending.

With digital faxing, the MFP does *not* need to be connected directly to a phone line. Instead, the MFP can send a fax in one of three ways:

- **LAN fax** sends faxes through a third-party fax provider.
- **Microsoft® Windows 2000 fax** is a fax modem and Digital Sender Module on a computer that allows the computer to operate as a turnkey gateway fax.
- **Internet fax** uses an Internet fax provider to process faxes, and the fax is delivered on a traditional fax machine or sent to the user's e-mail.

For complete information about using digital faxing, see the documentation that is provided with the HP Digital Sending Software.

Printer software

Software for Windows

Supported Windows versions

Software	Windows 2000®/XP®/Server 2003®/Vista™
Windows Installer	x
PCL 5 driver software[1]	x
PCL 6 driver software (black only)	x
PCL 6 driver software	x
PostScript emulation	x
HP Easy Printer Care[1]	x
HP Web Jetadmin[1]	x
Universal Print Driver	x

[1] Available only on the World Wide Web.

You can also purchase the optional HP Digital Sending Software, which provides the following advanced functionality:

- LAN fax
- Internet fax
- Windows fax
- Workflow with OCR
- Compatibility with Novell environments (authentication, folder access, etc.)
- User authentication

For more information about HP Digital Sending Software and a free trial version, go to http://www.hp.com/go/digitalsending.

Install the printing-system software

The MFP comes with a CD that contains printer driver and installation software for Windows and Macintosh operating systems. Install the printing system software to take full advantage of the MFP features.

If you do not have access to a CD-ROM drive, download the printing-system software from the Internet at http://www.hp.com/support/ljcm4730mfp.

Install Windows printing-system software for direct connections (USB or parallel)

This section explains how to install the printing-system software for the following Microsoft operating systems:

- Windows 2000
- Windows Server 2003
- Windows XP
- Windows Vista



NOTE: Do not connect the parallel or USB cable until the software prompts you to do so. If the parallel or USB cable was connected before the software installation, see Install the software after the parallel or USB cable has been connected on page 44.

1. Close all software programs that are open or running.
2. Insert the MFP CD into the CD-ROM drive. If the welcome screen does not open, use the following procedure:
   - On the **Start** menu, click **Run**.
   - Type `X:\setup` (where X is the letter of the CD-ROM drive).
   - Click **OK**.
3. When prompted, click **Install** and follow the instructions on the computer screen.
4. Click **Finish** when the installation is complete. You might need to restart the computer.
5. Print a Test Page or a page from any software program to make sure that the software is correctly installed.

If installation fails, reinstall the software. If this fails, check the installation notes and Readme files on the MFP CD or go to http://www.hp.com/support/ljcm4730mfp for help or more information.

Install Windows printing-system software for networks

The software on the MFP CD supports Microsoft network installation. For information about network installation on other operating systems, go to http://www.hp.com/support/ljcm4730mfp.

The HP Jetdirect embedded print server includes a 10/100 Base-TX network port. If you need an HP Jetdirect print server with another type of network port, go to http://www.hp.com/support/ljcm4730mfp.

The installer does not support MFP installation or MFP object creation on Novell servers. To install your MFP and create objects on a Novell server, use an HP utility (such as HP Web Jetadmin) or a Novell utility (such as NWAdmin).

You must have administrator privileges to install software in Windows 2000, Windows Server 2003, Windows XP, or Windows Vista.

1. Before installation, print a configuration page. On the last page, locate the MFP IP address. You will need this address to complete the network installation.
2. Quit all unnecessary software programs.

3. Insert the MFP CD into the CD-ROM drive. If the welcome screen does not open, use the following procedure:
    - On the **Start** menu, click **Run**.
    - Type `X:\setup` (where X is the letter of the CD-ROM drive).
    - Click **OK**.
4. When prompted, click **Install** and follow the onscreen instructions. Click **Finish** when installation is complete. You might need to restart the computer.
5. Print a test page or a page from any software program to make sure that the software is correctly installed. If installation fails, reinstall the software. If this fails, check the installation notes and Readme files on the MFP CD or the flyer that came in the MFP box, or go to http://www.hp.com/support/ljcm4730mfp.

Use Windows-sharing on a network

If the computer will print directly to the MFP, you can share the MFP on the network so that other network users can print to it. See your Microsoft Windows documentation to enable Windows-sharing. Then install the MFP software on all computers that share the MFP.

Install the software after the parallel or USB cable has been connected

If you have already connected a parallel or USB cable to a Windows computer, the **New Hardware Found** dialog box appears when you turn on the computer.

1. In the **New Hardware Found** dialog box, click **Search**.
2. On the **Locate Driver Files** screen, select the **Specify a Location** check box, clear all other check boxes, and then click **Next**.
3. Type the letter for the root directory. For example, X:\ (where "X" is the letter of the root directory on the CD-ROM drive).
4. Click **Next**.
5. Follow the instructions on the computer screen.
6. Click **Finish** when installation is complete.
7. Select a language and follow the instructions on the computer screen.
8. Print a test page or a page from any software program to make sure that the software is correctly installed.

    If installation fails, reinstall the software. If this fails, check the installation notes and readme files on the MFP CD or the flyer that came in the MFP box, or go to http://www.hp.com/support/ljcm4730mfp.

Supported printer drivers

Operating system	PCL 5	PCL 6	PS level 3 emulation
Windows	✔	✔	✔
Mac OS X V10.2 and later			✔

Operating system	PCL 5	PCL 6	PS level 3 emulation
Linux[1]			✔

[1] For Linux, download the postscript level 3 emulation driver from www.hp.com/go/linuxprinting.

The printer drivers include online Help that has instructions for common printing tasks and also describes the buttons, checkboxes, and drop-down lists that are in the printer driver.

Remove software for Windows

1. Click the Windows **Start** menu, and then click **Settings** and **Control Panel**.
2. Double-click **Add or Remove Programs**.
3. Click the software you want to remove.
4. Click **Remove**.
5. Follow any onscreen instructions to complete the uninstallation.

Select the correct printer driver

Printer drivers provide access to the device features and allow the computer to communicate with the MFP by using a printer language.

- **HP PCL 5 driver**. Recommended for general office Windows monochrome and color printing. Backward compatible with previous PCL versions or older LaserJet printers. Best choice for third-party/custom solutions (forms, fonts, SAP programs) or mixed environments (UNIX, Linux, mainframe).
- **HP PCL 6 driver**. Recommended for printing in all-Windows environments. Provides the overall best performance, print quality, and printer-feature support for most users. Developed to align with Windows Graphic Device Interface (GDI) for best performance in Windows environments. May not be fully compatible with third-party and custom solutions based on PCL 5. A monochrome (black-only) version of the HP PCL 6 driver is also available.
- **HP PostScript driver**. Recommended for printing with Adobe applications or other highly graphics-intensive applications. Best for PS level 3 needs and PS font support. Slight performance benefit over PCL 6 when using Adobe applications.

The printer drivers include online Help that has instructions for common printing tasks and describes the buttons, check boxes, and drop-down lists that the driver contains.

Universal printer drivers

The HP Universal Print Driver Series for Windows includes separate HP postscript level 3 emulation and HP PCL 5 versions of a single driver that provides access to almost any HP device while providing system administrator with tools to manage devices more effectively. The Universal Print Driver is included on the device CD, under the Optional Software section. For more information, go to www.hp.com/go/universalprintdriver.

Driver Autoconfiguration

The HP LaserJet PCL 5, PCL 6, and PS level 3 emulation drivers for Windows 2000, Windows XP, and Microsoft Vista feature automatic discovery and driver configuration for device accessories at the

time of installation. Some accessories that the Driver Autoconfiguration supports are the duplexing unit, optional paper trays, and dual inline memory modules (DIMMs).

Update Now

If you have modified the device configuration since installation, the driver can be automatically updated with the new configuration.

1. Open the printer driver. See Open the printer drivers on page 48.
2. Click the **Device Settings** tab.
3. In the drop-down list next to **Automatic Configuration**, select **Update Now**.

Priority for print settings

Changes to print settings are prioritized depending on where the changes are made:



NOTE: The names of commands and dialog boxes might vary depending on your software program.

- **Page Setup dialog box**: Click **Page Setup** or a similar command on the **File** menu of the program you are working in to open this dialog box. Settings changed here override settings changed anywhere else.
- **Print dialog box**: Click **Print**, **Print Setup**, or a similar command on the **File** menu of the program you are working in to open this dialog box. Settings changed in the **Print** dialog box have a lower priority and do *not* override changes made in the **Page Setup** dialog box.
- **Printer Properties dialog box (printer driver)**: Click **Properties** in the **Print** dialog box to open the printer driver. Settings changed in the **Printer Properties** dialog box do not override settings anywhere else in the printing software.
- **Default printer driver settings**: The default printer driver settings determine the settings used in all print jobs, *unless* settings are changed in the **Page Setup**, **Print**, or **Printer Properties** dialog boxes.
- **Printer control panel settings**: Settings changed at the printer control panel have a lower priority than changes made anywhere else.

Open the printer drivers

Operating System	To change the settings for all print jobs until the software program is closed	To change the default settings for all print jobs	To change the device configuration settings
Windows 2000, XP, Server 2003, and Vista	1. On the **File** menu in the software program, click **Print**. 2. Select the driver, and then click **Properties** or **Preferences**. The steps can vary; this procedure is most common.	1. Click **Start**, click **Settings**, and then click **Printers** (Windows 2000) or **Printers and Faxes** (Windows XP Professional and Server 2003) or **Printers and Other Hardware Devices** (Windows XP Home). For Windows Vista, click **Start**, click **Control Panel**, and then click **Printer**. 2. Right-click the driver icon, and then select **Printing Preferences**.	1. Click **Start**, click **Settings**, and then click **Printers** (Windows 2000) or **Printers and Faxes** (Windows XP Professional and Server 2003) or **Printers and Other Hardware Devices** (Windows XP Home). For Windows Vista, click **Start**, click **Control Panel**, and then click **Printer**. 2. Right-click the driver icon, and then select **Properties**. 3. Click the **Device Settings** tab.
Mac OS X V10.2.8, V10.3, V10.4 and later	1. On the **File** menu, click **Print**. 2. Change the settings that you want on the various pop-up menus.	1. On the **File** menu, click **Print**. 2. Change the settings that you want on the various pop-up menus. 3. On the **Presets** pop-up menu, click **Save as** and type a name for the preset. These settings are saved in the **Presets** menu. To use the new settings, you must select the saved preset option every time you open a program and print.	1. In the Finder, on the **Go** menu, click **Applications**. 2. Open **Utilities**, and then open **Print Center** (Mac OS X V10.2) **Printer Setup Utility** (Mac OS X V10.3 or Mac OS X V10.4). 3. Click on the print queue. 4. On the **Printers** menu, click **Show Info**. 5. Click the **Installable Options** menu. **NOTE:** Configuration settings might not be available in Classic mode.

Software for Macintosh

Software for Macintosh computers

The HP installer provides PostScript® Printer Description (PPD) files, Printer Dialog Extensions (PDEs), and the HP Printer Utility for use with Macintosh computers.

For network connections, use the embedded Web server (EWS) to configure the device. See Embedded Web server on page 104.

The printing system software includes the following components:

- **PostScript Printer Description (PPD) files**

  The PPDs, in combination with the Apple PostScript printer drivers, provide access to device features. Use the Apple PostScript printer driver that comes with the computer.

- **HP Printer Utility**

  Use the HP Printer Utility to set up device features that are not available in the printer driver:

  - Name the device.
  - Assign the device to a zone on the network.
  - Assign an internet protocol (IP) address to the device.
  - Download files and fonts.
  - Configure the device for IP or AppleTalk printing.

  You can use the HP Printer Utility when your device uses a universal serial bus (USB) cable or is connected to a TCP/IP-based network. For more information, see HP Printer Utility for Macintosh on page 107.

  NOTE: The HP Printer Utility is supported for Mac OSX V10.2 or later.

Install software for Macintosh

Install Macintosh software for direct connections (USB)



NOTE: Macintosh computers do *not* support parallel port connections.

The Apple PostScript driver must be installed in order to use the PPD files. Use the Apple PostScript driver that came with your Macintosh computer.

1. Connect a USB cable between the device USB port and the computer USB port. Use a standard 2-meter (6.56-foot) USB cable.
2. Insert the device CD into the CD-ROM drive and run the installer. If the CD menu not run automatically, double-click the CD icon on the desktop.
3. Double-click the **Installer** icon in the HP LaserJet Installer folder.
4. Follow the instructions on the computer screen.

   USB queues are created automatically when the device is attached to the computer. However, the queue will use a generic PPD if the installer has not been run before the USB cable is connected. Complete the following steps to change the queue PPD.

5. Open the Print Center or Printer Setup Utility.
6. Select the correct printer queue, and then click **Show Info** to open the **Printer Info** dialog box.

7. In the pop-up menu, select **Printer Model**, and then, in the pop-up menu in which **Generic** is selected, select the correct PPD for the device.
8. Print a test page from any software program to make sure that the software is correctly installed.

   If installation fails, reinstall the software. If this fails, see the installation notes or late-breaking readme files on the device CD or the flyer that came in the box for help.

Install Macintosh software for networks

1. Connect the network cable between the HP Jetdirect print server and a network port.
2. Insert the CD into the CD-ROM drive. If the CD does not run automatically, double-click the CD icon on the desktop.
3. Double-click the **Installer** icon in the HP LaserJet Installer folder.
4. Follow the instructions on the computer screen.
5. On the computer hard drive, open **Applications**, open **Utilities**, and then open **Print Center** or **Printer Setup Utility**.

   NOTE: If you are using Mac OS X V10.3 or Mac OS X V10.4, then the **Printer Setup Utility** has replaced the **Print Center**.
6. Click **Add Printer**.
7. Select **Rendezvous** or **Bonjour** as the connection type.
8. Select the device from the list.
9. Click **Add Printer**.
10. Close the Print Center or the Printer Setup Utility.

Remove software from Macintosh operating systems

To remove the software from a Macintosh computer, drag the PPD files to the trash can.

Software for other operating systems

HP Web Jetadmin

Use HP Web Jetadmin to manage HP Jetdirect-connected printers within your intranet. HP Web Jetadmin is a browser-based management tool that can be installed on the following systems:

- Fedora Core and SuSE Linux
- Windows 2000 Professional, Server, and Advanced Server
- Windows Server 2003
- Windows XP Professional

When installed on a host server, any client can access HP Web Jetadmin through a supported Web browser, such as Microsoft Internet Explorer 5.5 and 6.0 or Netscape Navigator 7.0.

HP Web Jetadmin has the following features:

- The task-oriented user interface provides configurable views, saving network managers significant time.
- The customizable user profiles let network administrators include only the function viewed or used.
- Instant e-mail notification of hardware failure, low supplies, and other MFP problems.
- Installation and management can be conducted from anywhere through a standard Web browser.
- Advanced autodiscovery locates peripherals on the network, without manually entering each printer into a database.
- Integration into enterprise management packages is easy.
- Quickly find peripherals based on parameters such as IP address, color capability, and model name.
- Easily organize peripherals into logical groups, with virtual office maps for easy navigation.
- Manage and configure multiple printers simultaneously.

To download a current version of HP Web Jetadmin and to see the latest list of supported host systems, visit HP Customer Care Online at http://www.hp.com/go/webjetadmin.

UNIX

The HP Jetdirect Printer Installer for UNIX is a simple printer installation utility for HP-UX and Solaris networks. It is available for download from HP Customer Care Online at http://www.hp.com/support/net_printing.



NOTE: Sample model scripts for UNIX (HP-UX, Sun Solaris) are available at http://www.hp.com/go/unixmodelscripts. Sample model scripts for Linux networks are available at http://linuxprinting.org.

Network utilities

The device is equipped with several utilities that make it easy to monitor and manage the device on a network.

HP Web Jetadmin

HP Web Jetadmin is a browser-based management tool for HP Jetdirect-connected printers within your intranet, and it should be installed only on the network administrator's computer.

To download a current version of HP Web Jetadmin and for the latest list of supported host systems, visit www.hp.com/go/webjetadmin.

When installed on a host server, a Windows client can gain access to HP Web Jetadmin by using a supported Web browser (such as Microsoft® Internet Explorer 4.x or Netscape Navigator 4.x or later) by navigating to the HP Web Jetadmin host.

Embedded Web server

The device is equipped with an embedded Web server, which provides access to information about device and network activities. This information appears in a Web browser, such as Microsoft Internet Explorer, Netscape Navigator, Apple Safari, or Firefox.

The embedded Web server resides on the device. It is not loaded on a network server.

The embedded Web server provides an interface to the device that anyone who has a network-connected computer and a standard Web browser can use. No special software is installed or configured, but you must have a supported Web browser on your computer. To gain access to the embedded Web server, type the IP address for the device in the address line of the browser. (To find the IP address, print a configuration page. For more information about printing a configuration page, see Information pages on page 16.)

For a complete explanation of the features and functionality of the embedded Web server, see Embedded Web server on page 104.

HP Easy Printer Care software

The HP Easy Printer Care software is a program that you can use for the following tasks:

- Discovering printers on the network and checking the status of each device
- Setting and viewing device and supplies alerts for multiple printers at the same time
- Shopping online for supplies
- Using HP online troubleshooting and maintenance tools

You can use the HP Easy Printer Care software when the device is directly connected to your computer or a network running Windows. Macintosh is not supported. To download the HP Easy Printer Care software, go to www.hp.com/go/easyprintercare.

Other components and utilities

Windows	Macintosh OS
• Software installer — automates the printing system installation • Online Web registration	• The HP Printer Utility — change device settings, view status, and set up printer-event notification from a Mac. This utility is supported for Mac OS X V10.2 and later.

Network configuration

You might need to configure certain network parameters on the device. You can configure these parameters in the following locations:

- Installation software
- Device control panel
- Embedded Web server
- Management software (HP Web Jetadmin or HP LaserJet Utility for Macintosh)



NOTE: For more information about using the embedded Web server, see Embedded Web server on page 104

For more information on supported networks and network configuration tools, see the *HP Jetdirect Print Server Administrator's Guide*. The guide comes with printers in which an HP Jetdirect print server is installed.

This section contains the following information about configuring network parameters:

- Configure TCP/IPv4 parameters
- Configure TCP/IPv6 parameters
- Disable network protocols (optional)
- HP Jetdirect EIO print servers

Configure TCP/IPv4 parameters

If your network doesn't provide automatic IP addressing through DHCP, BOOTP, RARP, or another method, you might need to enter the following parameters manually before you can print over the network:

- IP address (4 bytes)
- Subnet mask (4 bytes)
- Default gateway (4 bytes)

Change the IP address

You can view the current IP address of the device from the control-panel Home screen by touching Network Address.

Use the following procedure to change the IP address manually.

1. Scroll to and touch Administration.
2. Scroll to and touch Initial Setup.
3. Touch Networking and I/O.
4. Touch Embedded Jetdirect.
5. Touch TCP/IP.

6. Touch IPV4 Settings.
7. Touch Config Method.
8. Touch Manual.
9. Touch Save.
10. Touch Manual Settings.
11. Touch IP Address.
12. Touch the IP Address text box.
13. Use the touchscreen keypad to type the IP address.
14. Touch OK.
15. Touch Save.

Set the subnet mask

1. Scroll to and touch Administration.
2. Scroll to and touch Initial Setup.
3. Touch Networking and I/O.
4. Touch Embedded Jetdirect.
5. Touch TCP/IP.
6. Touch IPV4 Settings.
7. Touch Config Method.
8. Touch Manual.
9. Touch Save.
10. Touch Manual Settings.
11. Touch Subnet Mask.
12. Touch the Subnet Mask text box.
13. Use the touchscreen keypad to type the subnet mask.
14. Touch OK.
15. Touch Save.

Set the default gateway

1. Scroll to and touch Administration.
2. Scroll to and touch Initial Setup.
3. Touch Networking and I/O.

4. Touch Embedded Jetdirect.
5. Touch TCP/IP.
6. Touch IPV4 Settings.
7. Touch Config Method.
8. Touch Manual.
9. Touch Save.
10. Touch Manual Settings.
11. Touch Default Gateway.
12. Touch the Default Gateway text box.
13. Use the touchscreen keyboard to type the default gateway.
14. Touch OK.
15. Touch Save.

Configure TCP/IPv6 parameters

For information about configuring the device for a TCP/IPv6 network, see the *HP Jetdirect Print Server Administrator's Guide*.

Disable network protocols (optional)

By factory default, all supported network protocols are enabled. Disabling unused protocols has the following benefits:

- It decreases device-generated network traffic.
- It prevents unauthorized users from printing to the device.
- It provides only pertinent information on the configuration page.
- It allows the device control panel to display protocol-specific error and warning messages.

Disable IPX/SPX



NOTE: Do not disable this protocol in Windows-based systems that print to the printer through IPX/SPX.

1. Scroll to and touch Administration.
2. Scroll to and touch Initial Setup.
3. Touch Networking and I/O.
4. Touch Embedded Jetdirect.
5. Touch IPX/SPX.
6. Touch Enable.

7. Touch Off.
8. Touch Save.

Disable AppleTalk

1. Scroll to and touch Administration.
2. Scroll to and touch Initial Setup.
3. Touch Networking and I/O.
4. Touch Embedded Jetdirect.
5. Touch AppleTalk.
6. Touch Enable.
7. Touch Off.
8. Touch Save.

Disable DLC/LLC

1. Scroll to and touch Administration.
2. Scroll to and touch Initial Setup.
3. Touch Networking and I/O.
4. Touch Embedded Jetdirect.
5. Touch DLC/LLC.
6. Touch Enable.
7. Touch Off.
8. Touch Save.

HP Jetdirect EIO print servers

HP Jetdirect print servers (network cards) can be installed in the EIO slot. Supported networking features depend on the print server model. For available HP Jetdirect EIO print server models, go to http://www.hp.com/go/jetdirect.



NOTE: Configure the card through the control panel, the printer installation software, or HP Web Jetadmin. Refer to the HP Jetdirect print server documentation for more information.

Security features

Several important security features are available for the MFP. Use the information in this section to configure these features to meet the user's needs.

Secure the embedded Web server

Assign a password for access to the embedded Web server so that unauthorized users cannot change the MFP settings.

1. Open the embedded Web server by typing the IP address.
2. Click the **Settings** tab.
3. On the left side of the window, click **Security**.
4. Type the password next to **New Password**, and type it again next to **Verify Password**.
5. Click **Apply**. Make note of the password, and store it in a safe place.

Foreign Interface Harness (FIH)

The Foreign Interface Harness (FIH) provides a portal on the MFP. By using the FIH and third-party equipment, information about copies that are made on the MFP can be tracked.

Requirements

- Windows 2000, Windows Server 2003, Windows XP, or Windows Vista
- Access to third-party accounting hardware solutions, such as Equitrac or Copitrak devices

Using the FIH

To use the FIH, download and install the FIH software. The software is available from http://www.hp.com/support/ljcm4730mfp_software. The software is used to enable or disable the FIH portal. Use the software to set and change the administrator personal identification number (PIN).

Administrators can use the PIN option to configure the FIH to prevent any unauthorized changes. Changes can be made only with the correct PIN authentication.



NOTE: It is important to remember the PIN that is assigned to the FIH administration software. The PIN is required to make any changes to the FIH.

Enable the FIH portal

1. Double-click the FIH.EXE file. The **Foreign Interface Harness** dialog box appears.
2. Click **OK**.
3. Click **Enable**.
4. If a PIN has not been previously entered, click **No**. If a PIN was entered previously, click **Yes**. If clicking **No**, type and confirm the PIN, and then click **OK**. If clicking **Yes**, type the PIN and click **OK**.



NOTE: The PIN must be numeric.

5. Click the appropriate button for the type of connection: **Direct** or **Network**. If selecting **Direct**, type the MFP port. If selecting **Network**, type the IP address and port for the MFP.



NOTE: The IP address for the MFP appears on the configuration page.

If an incorrect IP address is typed, an error message will display. Otherwise, the portal is enabled.

Disable the FIH portal

1. Double-click the FIH.EXE file. The **Foreign Interface Harness** dialog box appears.
2. Click **OK**.
3. Click **Disable**.
4. Type the PIN and click **OK**.
5. Click the appropriate button for the type of connection: **Direct** or **Network**. If **Direct** is selected, type the MFP port and click **OK**. If **Network** is selected, type the IP address and port for the MFP, and then click **OK**. The portal is disabled.



NOTE: If the PIN number is lost and the portal needs to be disabled, try using the default PIN that is listed to disable it. For assistance, use the HP Instant Support service, which is available through the embedded Web server or at http://instantsupport.hp.com.

Secure Disk Erase

To protect deleted data from unauthorized access on the MFP hard drive, use Secure Disk Erase. Secure Disk Erase is a security feature that securely erases print and copy jobs from the hard drive.

Secure Disk Erase offers the following levels of disk security:

- **Non-Secure Fast Erase**. This is a simple file-table erase function. Access to the file is removed, but actual data is retained on the disk until it is overwritten by subsequent data-storage operations. This is the fastest mode. Non-Secure Fast Erase is the default erase mode.
- **Secure Fast Erase**. Access to the file is removed, and the data is overwritten with a fixed identical character pattern. This is slower than Non-Secure Fast Erase, but all data is overwritten. Secure Fast Erase meets the U.S. Department of Defense 5220-22.M requirements for the clearing of disk media.
- **Secure Sanitizing Erase**. This level is similar to the Secure Fast Erase mode. In addition, data is repetitively overwritten by using an algorithm that prevents any residual data persistence. This mode will impact performance. Secure Sanitizing Erase meets the U.S. Department of Defense 5220-22.M requirements for the sanitization of disk media.

Data affected

Data affected (covered) by the Secure Disk Erase feature includes stored jobs, proof and hold jobs, disk-based fonts, disk-based macros (forms), and temporary files that are created during the print and copying process.



NOTE: Stored jobs will be securely overwritten only when they have been deleted through the **Retrieve Job** menu on the MFP after the appropriate erase mode has been set.

This feature will not impact data that is stored on flash-based product non-volatile RAM (NVRAM) that is used to store default settings, page counts, and similar data. This feature does not affect data that is stored on a system RAM disk (if one is used). This feature does not impact data that is stored on the flash-based system boot RAM.

Changing the Secure Disk Erase mode does not overwrite previous data on the disk, nor does it immediately perform a full-disk sanitization. Changing the Secure Disk Erase mode changes how the MFP cleans up temporary data for jobs after the erase mode has been changed.

Gaining access to Secure Disk Erase

Use HP Web Jetadmin to gain access to and set the Secure Disk Erase feature.

Additional Information

For additional information about the HP Secure Disk Erase feature, see the HP support flyer or go to http://www.hp.com/go/webjetadmin/.

Job storage features

Several job storage features are available for this MFP. These features include printing private jobs, storing print jobs, quick-copying jobs, and proofing and holding jobs.

For more information about job storage features, see Job storage features on page 60.

DSS authentication

Optional Digital Sending Software (DSS) for the MFP is available for purchase separately. The software provides an advanced sending program that contains an authentication process. This process requires users to type a user identification and a password before they can use any of the DSS features that require authentication.

Locking the control panel menus

To prevent someone from changing MFP configuration, the control panel menus can be locked. This prevents unauthorized users from changing the configuration settings such as the SMTP server. The following procedure describes how to restrict access to the control panel menus by using the HP Web Jetadmin software. (See HP Web Jetadmin software on page 107.)

1. Open the HP Web Jetadmin program.
2. Open the **DEVICE MANAGEMENT** folder in the drop-down list in the **Navigation** panel. Navigate to the **DEVICE LISTS** folder.
3. Select the MFP.
4. In the **Device Tools** drop-down list, select **Configure**.
5. Select **Security** from the **Configuration Categories** list.

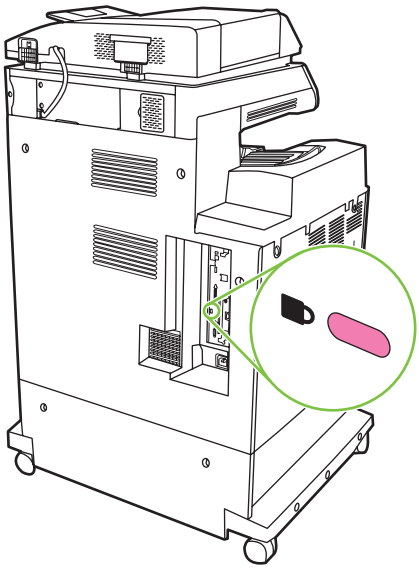
6. Type a **Device Password**.

7. In the **Control Panel Access** section, select **Maximum Lock**. This prevents unauthorized users from gaining access to configuration settings.

Locking the formatter cage

A Kensington lock can be placed on the formatter cage to prevent unauthorized access to components on the formatter. If interested in purchasing a Kensington locking accessory for the formatter cage on an HP Color LaserJet CM4730 MFP, please contact HP at http://www.hp.com/support/ljcm4730mfp.

The following figure indicates where the lock should be placed.



Optional output and input devices

Optional paper-handling devices are available for the MFP.

- 3-bin mailbox with output accessory bridge
- Stapler/stacker with output accessory bridge

Each of these accessories comes with an installation guide that explains how to install it. After installing an accessory, print a configuration page to verify that the accessory was installed successfully. If the accessory is installed correctly, it is listed on the configuration page in the section for **Paper trays and options**.

3 Manage and maintain

This chapter contains information about the following topics:

- Control-panel menus
- Management tools
- Approximate replacement intervals for supplies
- ETB life under different circumstances
- Managing print cartridges
- Replacing supplies
- Using the cleaning page
- Clean the MFP
- Performing preventive maintenance
- Calibrate the scanner
- Set the real-time clock

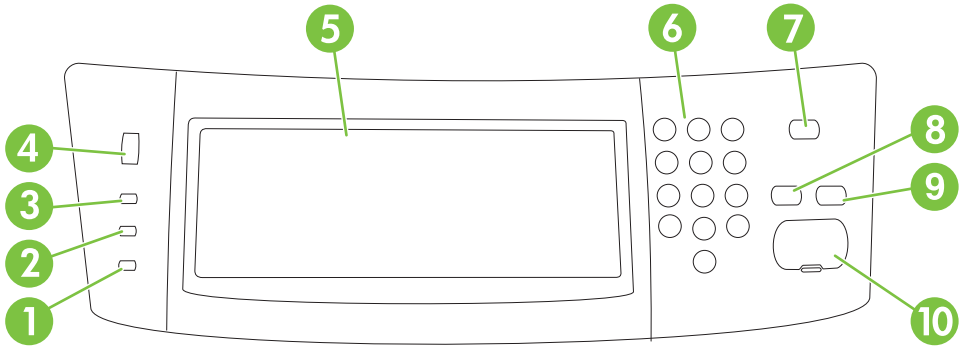
Control-panel menus

Use the control panel

The control panel has a VGA touchscreen that provides access to all device functions. Use the buttons and numeric keypad to control jobs and the device status. The LEDs indicate overall device status.

Control-panel layout

The control panel includes a touchscreen graphical display, job-control buttons, a numeric keypad, and three light-emitting diode (LED) status lights.

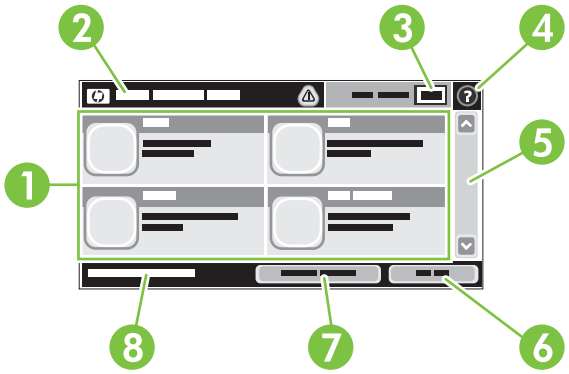


1	**Attention** light	The Attention light indicates that the device has a condition that requires intervention. Examples include an empty paper tray or an error message on the touchscreen.
2	**Data** light	The Data light indicates that the device is receiving data.
3	**Ready** light	The Ready light indicates that the device is ready to begin processing any job.
4	Brightness-adjustment dial	Turn the dial to control the brightness of the touchscreen.
5	Touchscreen graphical display	Use the touchscreen to open and set up all device functions.
6	Numeric keypad	Allows you to type numeric values for number of copies required and other numeric values.
7	Sleep button	If the device is inactive for a long period of time, it automatically enters a sleep mode. To place the device into sleep mode or to reactivate the device, press the Sleep button.
8	Reset button	Resets the job settings to factory or user-defined default values.
9	Stop button	Stops the active job. While stopped, the control panel shows the options for the stopped job (for example, if you press the Stop button while the device is processing a print job, the control panel message prompts you to cancel or resume the print job).
10	Start button	Begins a copy job, starts digital sending, or continues a job that has been interrupted.

Home screen

The home screen provides access to the device features, and it indicates the current status of the device.

NOTE: Depending on how the device has been configured, the features that appear on the home screen can vary.



1	Features	Depending on how the system administrator has configured the device, the features that appear in this area can include any of the following items: • Copy • Fax • E-mail • Secondary E-mail • Network Folder • Job Storage • Workflow • Supplies Status • Administration
2	Device status line	The status line provides information about the overall device status. Various buttons appear in this area, depending on the current status. For a description of each button that can appear in the status line, see Buttons on the touchscreen on page 66.
3	Copy count	The copy count box indicates the number of copies that the device is set to make.
4	Help button	Touch the Help button to open the embedded help system.
5	Scroll bar	Touch the up or down arrows on the scroll bar to see the complete list of available features.
6	Sign Out	Touch Sign Out to sign out of the device if you have signed in for access to restricted features. After you sign out, the device restores all options to the default settings.
7	Network Address	Touch Network Address to find information about the network connection.
8	Date and time	The current date and time appear here. The system administrator can select the format that the device uses to show the date and time, for example 12-hour format or 24-hour format.

Buttons on the touchscreen

The status line on the touchscreen provides information about the status of the device. Various buttons can appear in this area. The following table describes each button.

	**Home button**. Touch the home button to go to the Home screen from any other screen.
	**Start button**. Touch the Start button to begin the action for the feature that you are using.  **NOTE:** The name of this button changes for each feature. For example, in the Copy feature, the button is named Start Copy.
	**Stop button**. If the device is processing a print or fax job, the Stop button appears instead of the Start button. Touch the Stop button to halt the current job. The device prompts you to cancel the job or to resume it.
	**Error button**. The error button appears whenever the device has an error that requires attention before it can continue. Touch the error button to see a message that describes the error. The message also has instructions for solving the problem.
	**Warning button**. The warning button appears when the device has a problem but can continue functioning. Touch the warning button to see a message that describes the problem. The message also has instructions for solving the problem.
	**Help button**. Touch the help button to open the built-in online Help system. For more information, see Control-panel help system on page 66.

Control-panel help system

The device has a built-in Help system that explains how to use each screen. To open the Help system, touch the Help button () in the upper-right corner of the screen.

For some screens, the Help opens to a global menu where you can search for specific topics. You can browse through the menu structure by touching the buttons in the menu.

For screens that contain settings for individual jobs, the Help opens to a topic that explains the options for that screen.

If the device alerts you of an error or warning, touch the error () or warning () button to open a message that describes the problem. The message also contains instructions to help solve the problem.

Navigate the Administration menu

From the Home screen, touch Administration to open the menu structure. You might need to scroll to the bottom of the Home screen to see this feature.

The Administration menu has several sub-menus, which are listed on the left side of the screen. Touch the name of a menu to expand the structure. A plus sign (+) next to a menu name means that it contains sub-menus. Continue opening the structure until you reach the option that you want to configure. To return to the previous level, touch Back.

To exit the Administration menu, touch the Home button ( ) in the upper-left corner of the screen.

The device has built-in Help that explains each of the features that are available through the menus. Help is available for many menus on the right-hand side of the touchscreen. Or, to open the global Help system, touch the Help button ( ) in the upper-right corner of the screen.

The tables in the sections that follow indicate the overall structure of each menu under the Administration menu.

Information menu

Administration > Information

Use this menu to print information pages and reports that are stored internally on the device.

Table 3-1 Information menu

Menu item	Sub-menu item	Sub-menu item	Values	Description
Configuration/Status Pages	Administration Menu Map		Print	Shows the basic structure of the Administration menu and current administration settings.
	Configuration Page		Print	A set of configuration pages that show the current device settings.
	Supplies Status Page		Print	Shows the status of supplies such as cartridges, maintenance kits, and staples.
	Usage Page		Print	Shows information about the number of pages that have been printed on each paper type and size.
	File Directory		Print	A directory page that contains information for any mass-storage devices, such as flash drives, memory cards, or hard disks, that are installed in this device.
	Color Usage Job Log		Print	A directory page that contains job-by-job color usage information. Page content includes the user name, application name, and number of black-only pages and color pages.

Table 3-1 Information menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
Fax Reports	Fax Activity Log		Print	Contains a list of the faxes that have been sent from or received by this device.
	Fax Call Report	Fax Call Report	Print	A detailed report of the last fax operation, either sent or received.
		Thumbnail on Report	Yes No (default)	Choose whether or not to include a thumbnail of the first page of the fax on the report.
		When to Print Report	Never auto print Print after any fax job Print after fax send jobs Print after any fax error (default) Print after send errors only Print after receive errors only	
	Billing Codes Report		Print	A list of billing codes that have been used for outgoing faxes. This report shows how many sent faxes were billed to each code.
	Blocked Fax List		Print	A list of phone numbers that are blocked from sending faxes to this device.
	Speed Dial List		Print	Shows the speed dials that have been set up for this device.
Sample Pages/Fonts	Demonstration Page		Print	A demonstration page that displays the highest print quality possible for this MFP.
	RGB Samples		Print	Printout of color samples for different RGB values. The samples act as a guide for color matching.
	CMYK Samples		Print	Printout of color samples for different CMYK values. The samples act as a guide for color matching.
	PCL Font List		Print	A list of printer control language (PCL) fonts that are currently available on the device.
	PS Font List		Print	A list of PostScript (PS) fonts that are currently available on the device.

Default Job Options menu

Administration > Default Job Options

Use this menu to define the default job options for each function. These are used if the user does not specify other options when creating the job.

The Default Job Options menu contains the following sub-menus:

- Default Options for Originals
- Image adjustment

- Default Copy Options
- Default Fax Options
- Default E-mail Options
- Default Send to Folder Options
- Default Print Options

Default Options for Originals

Administration > Default Job Options > Default Options For Originals

Table 3-2 Default Options for Originals menu

Menu item	Values	Description
Paper Size	Select a paper size from the list.	Select the paper size that is most often used for copy or scan originals.
Number of Sides	1	Select whether copy or scan originals are most often single-sided or double-sided.
	2	
Orientation	Portrait	Select the orientation that is most often used for copy or scan originals. Select Portrait if the short edge is at the top or select Landscape if the long edge is at the top.
	Landscape	
Optimize Text/Picture	Manually Adjust	Optimize the output for a particular type of original: text, pictures, or a mixture of both. If you select Manually Adjust, specify the mix of text and pictures that is used most often.
	Text	
	Printed Picture	
	Photograph	

Image adjustment

Administration > Default Job Options > Image Adjustment

Table 3-3 Image Adjustment menu

Menu item	Values	Description
Darkness	Select a value.	Select the level of density (darkness) for the output.
Background Cleanup	Adjust the value within the range.	Increase the Background Removal setting to remove faint images from the background or to remove a light background color.
Sharpness	Adjust the value within the range.	Adjust the Sharpness setting to clarify or soften the image.

Default Copy Options

Administration > Default Job Options > Default Copy Options

Table 3-4 Default Copy Options menu

Menu item	Sub-menu item	Values	Description
Number of Copies		Type the number of copies. The factory default setting is 1.	Set the default number of copies for a copy job.
Number of Sides		1 2	Set the default number of sides for copies.
Color/Black		Color (default) Black	Choose whether the default copy mode is color or black.
Auto Include Margins		Off (default) On	This feature automatically reduces the image size during scanning so the margins are included.
Staple/Collate	Staple	None (default) One left angled	Set up options for stapling and collating sets of copies. If **Collate** is selected, the device prints a complete copy before starting on the next copy. Otherwise, the device prints the first page of all copies before printing the second page, and so on.
	Collate	Off On (default)	
Output Bin		<Binname>	Select the default output bin for copies.

Default Fax Options

Administration > Default Job Options > Default Fax Options

Table 3-5 Fax Send menu

Menu item	Sub-menu item	Values	Description
Resolution		Standard (100x200dpi) (default) Fine (200x200dpi) Superfine (300x300dpi)	Set the resolution for sent documents. Higher resolution images have more dots per inch (dpi), so they show more detail. Lower resolution images have fewer dots per inch and show less detail, but the file size is smaller.
Fax Header		Prepend (default) Overlay	Select the position of the fax header on the page. Select Prepend to print the fax header above the fax content and move the fax content down on the page. Select Overlay to print the fax header over the top of the fax contents without moving the contents down. Using this option could prevent a single-page fax from flowing onto another page.

Table 3-6 Fax Receive menu

Menu item	Values	Description
Forward Fax	Fax Forwarding Change PIN	To forward received faxes to another fax device, select Fax Forwarding and Custom. Then type the number of the other fax device into the Fax Forwarding Number field. When you select this menu item for the first time, you are prompted to set up a PIN. Type that PIN every time you use this menu. This is the same PIN that is used to access the Fax Printing menu.
Stamp Received Faxes	Enabled Disabled (default)	Add the date, time, senders phone number, and page number to each page of the faxes that this device receives.
Fit to Page	Enabled (default) Disabled	Shrink faxes that are larger than Letter-size or A4-size so that they can fit onto a Letter-size or A4-size page. If it this feature set to Disabled, faxes larger than Letter or A4 will flow across multiple pages.
Fax Paper Tray	Select from the list of trays.	Select the tray that holds the size and type of paper that you want to use for incoming faxes.
Output Bin	<Binname>	Select the default output bin, if applicable, to use for faxes.

Default E-mail Options

Administration > Default Job Options > Default E-mail Options

Menu item	Values	Description
Document File Type	PDF (default) JPEG TIFF M-TIFF	Select the file format for the e-mail.
Output Quality	High (large file) Medium (default) Low (small file)	Selecting higher quality for output increases the size of the output file.
Resolution	300 DPI 200 DPI 150 DPI (default) 75 DPI	Select the resolution. Use a lower setting to create smaller files.
Color/Black	Color scan (default) Black/white scan	Specify whether the e-mail will be in black or in color.
TIFF Version	TIFF 6.0 (default) TIFF (Post 6.0)	Specify the TIFF version to use when saving scanned files.

Default Send to Folder Options

Administration > Default Job Options > Default Send To Folder Options

Menu item	Values	Description
Color/Black	Color scan	Specify whether the file will be in black or in color.
	Black/white scan (default)	
Document File Type	PDF (default)	Select the file format for the file.
	M-TIFF	
	TIFF	
	JPEG	
TIFF version	TIFF 6.0 (default)	Specify the TIFF version to use when saving scanned files.
	TIFF (post 6.0)	
Output Quality	High (large file)	Selecting higher quality for output increases the size of the output file.
	Medium (default)	
	Low (small file)	
Resolution	75 DPI	Select the resolution. Use a lower setting to create smaller files.
	150 DPI (default)	
	200 DPI	
	300 DPI	

Default Print Options

Administration > Default Job Options > Default Print Options

Table 3-7 Default Print Options menu

Menu item	Sub-menu item	Values	Description
Copies Per Job		Type a value.	Set the default number of copies for print jobs.
Default Paper Size		(List of supported sizes)	Select a paper size.
Default Custom Paper Size	Unit of measure	Millimeters Inches	Configure the default paper size that is used when the user selects Custom as the paper size for a print job.
	X Dimension		Configure the width measurement for the Default Custom Paper Size.
	Y Dimension		Configure the height measurement for the Default Custom Paper Size.
Output Bin		<binname>	Select the default output bin for print jobs. If optional trays are installed, output bin options vary.
Print Sides		1-sided 2-sided	Select whether print jobs are single-sided or double-sided by default.
2-Sided Format		Book style Flip style	Use this feature to configure the default style for 2-sided print jobs. If Book style is selected, the placement of the back side of the page is the same as the front. This option is for print jobs that are bound along the left edge. If Flip style is selected, the back side of the page is printed upside-down. This option is for print jobs that are bound along the top edge.

Time/Scheduling menu

Administration > Time/Scheduling

Use this menu to set options for setting the time and for setting the device to enter and exit sleep mode.

NOTE: Values shown with "(default)" are the factory-default values. Some menu items have no default.

Table 3-8 Time/Scheduling menu

Menu item	Sub-menu item	Sub-menu item	Values	Description
Date/Time	Date Format		YYYY/MMM/DD (default) MMM/DD/YYYY DD/MMM/YYYY	Use this feature to set the current date and time, and to set the date format and time format that are used to time-stamp outgoing faxes.
	Date	Month Day Year		
	Time Format		12 hour (AM/PM) (default) 24 hour	
	Time	Hour Minute AM PM		
Sleep Delay			1 Minute 20 minutes 30 minutes (default) 45 minutes 1 hour (60 minutes) 90 minutes 2 hours 4 hours	Use this feature to select the time interval that the device should remain inactive before entering Sleep Mode.
Wake Time	Monday Tuesday Wednesday Thursday Friday Saturday Sunday		Off (default) Custom	Select Custom to set a wake time for each day of the week. The device exits sleep mode according to this schedule. Using a sleep schedule helps conserve energy and prepares the device for use so that users do not have to wait for it to warm up.

Table 3-8 Time/Scheduling menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
Fax Printing	Fax Printing Mode		Store all received faxes Print all received faxes (default) Use Fax Printing Schedule	If you have concerns about the security of private faxes, use this feature to store faxes rather than having them automatically print by creating a printing schedule. For the fax printing schedule, the control panel prompts you to select days and times to print faxes.
	Change PIN			Select Change PIN to change the PIN number that users must provide to print faxes.

Management menu

Administration > Management

Use this menu to set up global device-management options.

NOTE: Values shown with "(default)" are the factory-default values. Some menu items have no default.

Table 3-9 Management menu

Menu item	Sub-menu item	Values	Description
Stored Job Management	Quick Copy Job Storage Limit	Select the maximum number of jobs to store	Use this menu to view and manage any jobs that are stored on the device.
	Quick Copy Job Held Timeout	Off 1 Hour 4 Hours 1 Day 1 Week	
Sleep mode		Disable Use Sleep Delay (default)	Use this feature to customize the sleep mode settings for this device. Select Use Sleep Delay to set the device to enter sleep mode after the delay that is specified in the Time/Scheduling menu.

Table 3-9 Management menu (continued)

Menu item	Sub-menu item	Values	Description
Manage Supplies	Replace Supplies	Stop at low Stop at out (default) Override at out	This menu sets the MFP behavior for when a print cartridge, fuser kit, or transfer kit is low. Choose Stop at low to stop printing when a supply reaches a low condition. Choose Stop at out to allow the MFP to continue printing until a color print cartridge is empty. Choose Override at out to allow printing to continue when a color print cartridge is out; however, a control-panel warning will state that override is in use and that a color supply must be replaced.
	Supply Low/Order Threshold	Select a value in the range.	Use this menu to carry out administrative supply management tasks such as changing the threshold when supplies should be ordered.
	Color Supply Out	Auto-continue black Stop	This menu sets the MFP behavior when a color supply is empty. When Auto-continue black is selected, the MFP will continue printing using black toner only.
Restrict Color Use	Color printing access	Enable Color (default) Color If Allowed Disable Color	This item allows the administrator to disable or restrict color printing. To use the Color If Allowed setting, set up user permissions and/or application permissions in the embedded Web server, HP Easy Printer Care, or Web Jetadmin.
	Color copying access	Enable Color (default) Disable Color	This item allows the administrator to disable or restrict color copying.
Color/Black Mix		Auto (default) Mostly color pages Mostly black pages	This item controls how the engine switches from color mode to monochrome mode for maximum performance and print cartridge life. Choose Auto to reset the MFP to the factory default setting. Choose Mostly color pages if nearly all of your print jobs are color with high page coverage. Choose Mostly black pages if you print mostly monochrome jobs or a combination of color and monochrome jobs.

Initial Setup menu

Administration > Initial Setup

The Initial Setup menu contains the sub-menus shown:

- Networking and I/O menu
- Fax Setup menu
- E-mail Setup menu



NOTE: Values shown with "(default)" are the factory-default values. Some menu items have no default.

Networking and I/O

Administration > Initial Setup > Networking and I/O

Table 3-10 Networking and I/O

Menu item	Sub-menu item	Values	Description
I/O Timeout		Select a value in the range. The factory default setting is 15 seconds.	I/O timeout refers to the elapsed time before a print job fails. If the stream of data that the device receives for a print job gets interrupted, this setting indicates how long the device will wait before it reports that the job has failed.
Parallel Input **NOTE:** This item appears only if an EIO accessory is installed.	High Speed	No Yes (default)	Use the High Speed setting to configure the speed that the parallel port uses to communicate with the host.
	Advanced Functions	Enabled (default) Disabled	Use the Advanced Functions setting to enable or disable bidirectional parallel communication.
Embedded Jetdirect	See Table 3-11 Jetdirect menus on page 79 for the list of options.		
EIO <X> Jetdirect			

Table 3-11 Jetdirect menus

Menu item	Sub-menu item	Sub-menu item	Values and Description
TCP/IP	Enable		Off: Disable the TCP/IP protocol. On (default): Enable the TCP/IP protocol.
	Host Name		An alphanumeric string, up to 32 characters, used to identify the device. This name is listed on the HP Jetdirect configuration page. The default host name is NPIxxxxxx, where xxxxxx is the last six digits of the LAN hardware (MAC) address.
	IPV4 Settings	Config Method	Specifies the method that TCP/IPv4 parameters will be configured on the HP Jetdirect print server. Bootp: Use BootP (Bootstrap Protocol) for automatic configuration from a BootP server. DHCP: Use DHCP (Dynamic Host Configuration Protocol) for automatic configuration from a DHCPv4 server. If selected and a DHCP lease exists, DHCP Release and DHCP Renew menus are available to set DHCP lease options. Auto IP: Use automatic link-local IPv4 addressing. An address in the form 169.254.x.x is assigned automatically. Manual: Use the Manual Settings menu to configure TCP/IPv4 parameters.
		Default IP	Specify the IP address to default to when the print server is unable to obtain an IP address from the network during a forced TCP/IP reconfiguration (for

Table 3-11 Jetdirect menus (continued)

Menu item	Sub-menu item	Sub-menu item	Values and Description
			example, when manually configured to use BootP or DHCP). Auto IP: A link-local IP address 169.254.x.x is set. Legacy: The address 192.0.0.192 is set, consistent with older HP Jetdirect devices.
		DHCP Release	This menu appears if Config Method was set to DHCP and a DHCP lease for the print server exists. No (default): The current DHCP lease is saved. Yes: The current DHCP lease and the leased IP address are released.
		DHCP Renew	This menu appears if Config Method was set to DHCP and a DHCP lease for the print server exists. No (default): The print server does not request to renew the DHCP lease. Yes: The print server requests to renew the current DHCP lease.
		Manual Settings	(Available only if Config Method is set to Manual) Configure parameters directly from the printer control panel: IP Address: The unique IP address of the printer (n.n.n.n), where n is a value from 0 to 255. Subnet Mask: The subnet mask for the printer (m.m.m.m), where m is a value from 0 to 255. Syslog Server: The IP address of the syslog server used to receive and log syslog messages. Default Gateway: The IP address of the gateway or router used for communications with other networks. Idle Timeout: The time period, in seconds, after which an idle TCP print data connection is closed (default is 270 seconds, 0 disables the timeout).
		Primary DNS	Specify the IP address (n.n.n.n) of a Primary DNS Server.
		Secondary DNS	Specify the IP address (n.n.n.n) of a Secondary Domain Name System (DNS) Server.
	IPV6 Settings	Enable	Use this item to enable or disable IPv6 operation on the print server. Off (default): IPv6 is disabled. On: IPv6 is enabled.
		Address	Manual Settings: Use this item to manually set IPv6 addresses on the print server.

Table 3-11 Jetdirect menus (continued)

Menu item	Sub-menu item	Sub-menu item	Values and Description
			Enable: Select this item and choose On to enable manual configuration, or Off to disable manual configuration. Address: Use this item to type a 32 hexadecimal digit IPv6 node address that uses the colon hexadecimal syntax.
		DHCPV6 Policy	Router Specified: The stateful auto-configuration method to be used by the print server is determined by a router. The router specifies whether the print server obtains its address, its configuration information, or both from a DHCPv6 server. Router Unavailable: If a router is not available, the print server should attempt to obtain its stateful configuration from a DHCPv6 server. Always: Whether or not a router is available, the print server always attempts to obtain its stateful configuration from a DHCPv6 server.
		Primary DNS	Use this item to specify an IPv6 address for a primary DNS server that the print server should use.
		Secondary DNS	Use this item to specify an IPv6 address for a secondary DNS server that the print server should use.
	Proxy Server		Specifies the proxy server to be used by embedded applications in the device. A proxy server is typically used by network clients for Internet access. It caches Web pages, and provides a degree of Internet security, for those clients. To specify a proxy server, enter its IPv4 address or fully-qualified domain name. The name can be up to 255 octets. For some networks, you may need to contact your Independent Service Provider (ISP) for the proxy server address.
	Proxy Port		Type the port number used by the proxy server for client support. The port number identifies the port reserved for proxy activity on your network, and can be a value from 0 to 65535.
IPX/SPX	Enable		Off: Disable the IPX/SPX protocol. On (default): Enable the IPX/SPX protocol.
	Frame Type		Selects the frame-type setting for your network. Auto: Automatically sets and limits the frame type to the first one detected. EN_8023, EN_II, EN_8022, and EN_SNAP: Frame-type selections for Ethernet networks.
AppleTalk	Enable		Off: Disable the AppleTalk protocol. On (default): Enable the AppleTalk protocol.

Table 3-11 Jetdirect menus (continued)

Menu item	Sub-menu item	Sub-menu item	Values and Description
DLC/LLC	Enable		Off: Disable the DLC/LLC protocol. On (default): Enable the DLC/LLC protocol.
Security	Print Sec Page		Yes (default): Prints a page that contains the current security settings on the HP Jetdirect print server. No: A security settings page is not printed.
	Secure Web		For configuration management, specify whether the embedded Web server will accept communications using HTTPS (Secure HTTP) only, or both HTTP and HTTPS. HTTPS Required: For secure, encrypted communications, only HTTPS access is accepted. The print server will appear as a secure site. HTTP/HTTPS optional: Access using either HTTP or HTTPS is permitted.
	Firewall		Specify the Firewall status on the print server. Keep: Firewall status remains the same as currently configured. Disable: Firewall operation on the print server is disabled.
	Reset Security		Specify whether the current security settings on the print server will be saved or reset to factory defaults. No*: The current security settings are maintained. Yes: Security settings are reset to factory defaults.
Diagnostics	Embedded Tests		This menu provides tests to help diagnose network hardware or TCP/IP network connection problems. Embedded tests help to identify whether a network fault is internal or external to the device. Use an embedded test to check hardware and communication paths on the print server. After you select and enable a test and set the execution time, you must select Execute to initiate the test. Depending on the execution time, a selected test runs continuously until either the device is turned off, or an error occurs and a diagnostic page is printed.
		LAN HW Test	**CAUTION:** Running this embedded test will erase your TCP/IP configuration. This test performs an internal loopback test. An internal loopback test will send and receive packets only on the internal network hardware. There are no external transmissions on your network. Select Yes to choose this test, or No to not choose it.
		HTTP Test	This test checks operation of HTTP by retrieving predefined pages from the device, and tests the embedded Web server.

Table 3-11 Jetdirect menus (continued)

Menu item	Sub-menu item	Sub-menu item	Values and Description
			Select Yes to choose this test, or No to not choose it.
		SNMP Test	This test checks operation of SNMP communications by accessing predefined SNMP objects on the device. Select Yes to choose this test, or No to not choose it.
		Data Path Test	This test helps to identify data path and corruption problems on an HP postscript level 3 emulation device. It sends a predefined PS file to the device, However, the test is paperless; the file will not print. Select Yes to choose this test, or No to not choose it.
		Select All Tests	Use this item to select all available embedded tests. Select Yesto choose all tests. Select No to select individual tests.
		Execution Time [H]	Use this item to specify the length of time (in hours) that an embedded test will be run. You can select a value from 1 to 60 hours. If you select zero (0), the test runs indefinitely until an error occurs or device is turned off. Data gathered from the HTTP, SNMP, and Data Path tests is printed after the tests have completed.
		Execute	No*: Do not initiate the selected tests. Yes: Initiate the selected tests.
	Ping Test		This test is used to check network communications. This test sends link-level packets to a remote network host, then waits for an appropriate response. To run a ping test, set the following items:
		Dest Type	Specify whether the target device is an IPv4 or IPv6 node.
		Dest IP4	IPV4: Type the IPv4 address.
		Dest IP6	IPV6: Type the IPv6 address.
		Packet Size	Specify the size of each packet, in bytes, to be sent to the remote host. The minimum is 64 (default) and the maximum is 2048.
		Timeout	Specify the length of time, in seconds, to wait for a response from the remote host. The default is 1 and the maximum is 100.
		Count	Specify the number of ping test packets to send for this test. Select a value from 1 to 100. To configure the test to run continuously, select 0.
		Print Results	If the ping test was not set for continuous operation, you can choose to print the test results. Select Yes to print results. If you select No (default), results are not printed.
		Execute	Specify whether to initiate the ping test. Select Yes to initiate the test, or No to not run the test.

Table 3-11 Jetdirect menus (continued)

Menu item	Sub-menu item	Sub-menu item	Values and Description
	Ping Results		Use this item to view the ping test status and results using the control panel display. You can select the following items:
		Packets Sent	Shows the number of packets (0 - 65535) sent to the remote host since the most recent test was initiated or completed.
		Packets Received	Shows the number of packets (0 - 65535) received from the remote host since the most recent test was initiated or completed.
		Percent Lost	Shows the percent of ping test packets that were sent with no response from the remote host since the most recent test was initiated or completed.
		RTT Min	Shows the minimum detected roundtrip- time (RTT), from 0 to 4096 milliseconds, for packet transmission and response.
		RTT Max	Shows the maximum detected roundtrip- time (RTT), from 0 to 4096 milliseconds, for packet transmission and response.
		RTT Average	Shows the average round-trip-time (RTT), from 0 to 4096 milliseconds, for packet transmission and response.
		Ping In Progress	Shows whether a ping test is in progress. Yes indicates a test in progress, and No indicates that a test completed or was not run.
		Refresh	When viewing the ping test results, this item updates the ping test data with current results. Select Yes to update the data, or No to maintain the existing data. However, a refresh automatically occurs when the menu times out or you manually return to the main menu.
Link Speed			The link speed and communication mode of the print server must match the network. The available settings depend on the device and installed print server. Select one of the following link configuration settings: **CAUTION:** If you change the link setting, network communications with the print server and network device might be lost. Auto (default): The print server uses auto-negotiation to configure itself with the highest link speed and communication mode allowed. If auto-negotiation fails, either 100TX HALF or 10TX HALF is set depending on the detected link speed of the hub/ switch port. (A 1000T half-duplex selection is not supported.) 10T Half: 10 Mbps, half-duplex operation. 10T Full: 10 Mbps, Full-duplex operation. 100TX Half: 100 Mbps, half-duplex operation.

Table 3-11 Jetdirect menus (continued)

Menu item	Sub-menu item	Sub-menu item	Values and Description
			100TX Full: 100 Mbps, full-duplex operation. 100TX Auto: Limits auto-negotiation to a maximum link speed of 100 Mbps. 1000TX Full: 1000 Mbps, full-duplex operation.
Print Protocols			Use this item to print a page that lists the configuration of the following protocols: IPX/SPX, Novell NetWare, AppleTalk, DLC/LLC.

Fax Setup

Administration > Initial Setup > Fax Setup

Table 3-12 Fax Setup menu

Menu item	Sub-menu item	Sub-menu item	Values	Description
Required Settings	Country/Region		(Countries/regions listed)	Configure the settings that are legally required for outgoing faxes.
	Date/Time			
	Fax Header Information	Phone Number		
		Company Name		
PC Fax Send			Disabled Enabled (default)	Use this feature to enable or disable PC Fax Send. PC Fax Send enables users to send faxes through the device from their computers if they have the Send Fax driver installed.

Table 3-12 Fax Setup menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
Fax Send Settings	Fax Dial Volume		Off Low (default) High	Use this feature to set the volume of the tones that you hear while the device dials the fax number.
	Error Correction Mode		Enabled (default) Disabled	When Error Correction Mode is enabled and an error occurs during fax transmission, the device sends or receives the error portion again.
	JBIG Compression		Enabled (default) Disabled	JBIG compression reduces fax-transmission time, which can result in lower phone charges. However, using JBIG compression sometimes causes compatibility problems with older fax machines. If this occurs, turn off JBIG compression.
	Maximum Baud Rate		Select a value from the list. The default is 33.6K.	Use this feature to set the maximum baud rate for receiving faxes. This can be used as a diagnostic tool for troubleshooting fax problems.
	TCF T.30 Delay Timer		Default (default) Custom	This setting should be left at the default value and only changed when directed by an HP technical support agent. Adjustment procedures associated with this setting are beyond the scope of this guide.
	TCF Extend		Default (default) Custom	This setting should be left at the default value and only changed when directed by an HP technical support agent. Adjustment procedures associated with this setting are beyond the scope of this guide.
	Dialing Mode		Tone (default) Pulse	Select whether the device should use tone or pulse dialing.
	Redial On Busy		The range is between 0 and 9. The factory default is 3 times.	Type the number of times the device should attempt to redial if the line is busy.
	Redial On No Answer		Never (default) Once Twice	Use this feature to specify the number of times the device should attempt to dial if the recipient fax number does not answer. **NOTE:** Twice is available in locations other than the United States and Canada.

Table 3-12 Fax Setup menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
	Redial Interval		The range is between 1 and 5 minutes. The factory default is 5 minutes.	Use this feature to specify the number of minutes between dialing attempts if the recipient number is busy or not answering.
	Detect Dial Tone		Enabled Disabled (default)	Use this feature to specify whether the device should check for a dial tone before sending a fax.
	Dialing Prefix		Off (default) Custom	Use this feature to specify a prefix number that must be dialed when sending faxes from the device.
	Billing Codes		Off (default) Custom	When billing codes are enabled, a prompt appears that asks the user to enter the billing code for an outgoing fax. The range is between 1 and 16 digits. The default is 1 digit.
Fax Receive Settings	Rings To Answer		The range varies by location. The factory default is 2 rings.	Use this feature to specify the number of rings that must occur before the fax modem answers.
	Ring Interval		Default (default) Custom	This setting is used to adjust for some PBX ring signals. Change this setting only when directed by an HP technical support agent.
	Ring Frequency		Default (default) Custom	This setting should be left at the default value and only changed when directed by an HP technical support agent. Adjustment procedures associated with this setting are beyond the scope of this guide.
	Ringer Volume		Off Low (default) High	Set the volume for the fax ring-tone.
	Blocked Fax Numbers	Add Blocked Numbers	Type the fax number to add.	Use this feature to add or delete numbers from the blocked fax list. The blocked fax list can contain up to 30 numbers. When the device receives a call from one of the blocked fax numbers, it deletes the incoming fax. It also logs the blocked fax in the activity log along with job-accounting information.
		Remove Blocked Numbers	Select a fax number to remove.	
		Clear All Blocked Numbers	No (default) Yes	

E-mail Setup

Administration > Initial Setup > E-mail Setup

Use this menu to enable the e-mail feature and to configure basic e-mail settings.

NOTE: To configure advanced e-mail settings, use the embedded Web server. For more information, see Embedded Web server on page 104.

Table 3-13 E-mail Setup menu

Menu item	Values	Description
Address Validation	On (default) Off	This option enables the device to check e-mail syntax when you type an e-mail address. Valid e-mail addresses require the "@" sign and a ".".
Find Send Gateways		Search the network for SMTP gateways that the device can use to send e-mail.
SMTP Gateway	Enter a value.	Specify the IP address of the SMTP gateway that is used to send e-mail from the device.
Test Send Gateway		Test the configured SMTP gateway to see if it is functional.

Send Setup menu

Administration > Initial Setup > Send Setup

Table 3-14 Send Setup menu

Menu item	Values	Description
Replicate MFP	Enter a value (IP Address).	Copy the local Send settings from one device to another.
Allow Transfer to New DSS	Off On (default)	Use this feature to allow the transfer of the device from one HP Digital Sending Software (DSS) server to another. HP DSS is a software package that handles digital sending tasks such as faxing, e-mail, and sending a scanned document to a network folder.
Allow Use of Digital Send Service	Off On (default)	This feature allows you to configure the device for use with an HP Digital Sending Software (DSS) server.
Fax Number Confirmation	Disable (default) Enable	When fax number confirmation is enabled, you are prompted to enter the fax number twice to verify that it has been typed correctly.

Device Behavior menu

Administration > Device Behavior

Table 3-15 Device Behavior menu

Menu item	Sub-menu item	Sub-menu item	Values	Description
Language			Select the language from the list.	Select a different language for control-panel messages. When you select a new

Table 3-15 Device Behavior menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
				language, the keyboard layout might also change.
Key Press Sound			On (default) Off	Use this feature to specify whether you hear a sound when you touch the screen or press buttons on the control panel.
Inactivity Timeout			Type a value between 10 and 300 seconds. The factory default is 60 seconds.	Specify the amount of time that elapses between any activity on the control panel and the device resetting to the default settings.
Warning/Error Behavior	Clearable Warnings		On Job (default)	Set the amount of time that a clearable warning appears on the control panel.
	Continuable Events		Auto continue (10 seconds) (default) Touch OK to continue	Configure the device behavior when the device encounters certain errors.
	Jam Recovery		Auto (default) Off On	Configure how the device handles pages that are lost during a jam.

Table 3-15 Device Behavior menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
Tray Behavior	Use Requested Tray		Exclusively (default) First	Control how the device handles jobs that have specified a specific input tray.
	Manually Feed Prompt		Always (default) Unless Loaded	Specify how a prompt should appear when the type or size for a job does not match the specified tray and the device pulls from the multipurpose tray instead.
	PS Defer Media		Enabled (default) Disabled	Select either the PostScript (PS) or HP paper-handling model.
	Use Another Tray		Enabled (default) Disabled	Turn on or off the control-panel prompt to select another tray when the specified tray is empty.
	Size/Type Prompt		Display (default) Do not display	Control whether the tray configuration message appears whenever a tray is opened or closed.
	Duplex Blank Pages		Auto (default) Yes	Control how the device handles two-sided jobs (duplexing).
	Image Rotation		Standard (default) Alternate	Image rotation allows users to put paper in the input tray using the same orientation regardless of whether there is a finisher installed. Select Standard to match the loading orientation of other devices that have a finisher. Select Alternate to use a different loading orientation that might work better with preprinted forms that are used on legacy products.
Stapler/Stacker	Staple		None One	If the optional stapler/stacker is installed, use this feature to set stapling characteristics for the device.
	Staples Out		Continue (default) Stop	
MBM-3 Configuration	Operation Mode		Function Separator Mailbox Stacker	Configure the optional 3–bin mailbox accessory.

Table 3-15 Device Behavior menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
General Copy Behavior	Scan Ahead		Enabled (default) Disabled	Turn on no-wait scanning. With Scan Ahead enabled, the pages in the original document are scanned to disk and held until the device becomes available.
	Auto Print Interrupt		Enabled Disabled (default)	When this feature is enabled, copy jobs can interrupt print jobs that are set to print multiple copies. The copy job is inserted into the print queue at the end of one copy of the print job. After the copy job is complete, the device continues printing the remaining copies of the print job.
	Copy Interrupt		Enabled Disabled (default)	When this feature is enabled, a copy job that is currently printing can be interrupted when a new copy job is started. You are prompted to confirm that you want to interrupt the current job.
	First Copy Speed		No early warm up (default) Early warm up	
	Alternative Letterhead Mode		No (default) Yes	

Table 3-15 Device Behavior menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
General Printing Behavior	Override A4/Letter		No Yes (default)	When this feature is enabled, the job prints on letter-size paper when an A4 job is sent but no A4-size paper is loaded in the device (or prints on A4 paper when a letter-size job is sent but no letter-size paper is loaded). This option also overrides A3 with ledger-size paper and ledger with A3-size paper.
	Manual Feed		Enabled Disabled (default)	When this feature is enabled, the user can select manual feed from the control panel as the paper source for a job.
	Courier Font		Regular (default) Dark	Select which version of the Courier font you want to use.
	Wide A4		Enabled Disabled (default)	Change the printable area of A4-size paper. If you enable this option, eighty 10-pitch characters can be printed on a single line of A4 paper.
	Print PS Errors		Enabled Disabled (default)	Select whether a PostScript (PS) error page is printed when the device encounters a PS error.
	Print PDF Errors		Enabled Disabled (default)	Select whether a PDF error page is printed when the device encounters a PDF error.
	Personality		Auto (default) PCL PDF PS	Select the printer language that the device should use. *Normally, you should not change the language.* If you change the setting to a specific language, the device does not automatically switch from one language to another unless specific software commands are sent to the device.

Table 3-15 Device Behavior menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
	PCL	Form Length	Type a value between 5 and 128 lines. The factory default is 60 lines.	PCL is a set of printer commands that Hewlett-Packard developed to provide access to printer features.
		Orientation	Portrait (default) Landscape	Select the orientation that is most often used for print jobs. Select Portrait if the short edge is at the top or Landscape if the long edge is at the top.
		Font Source	Select the source from the list.	Select the font source for the user-soft default font.
		Font Number	Type the font number. The range is between 0 and 999. The factory default is 0.	Specify the font number for the user soft default font by using the source that is specified in the Font Source menu item. The device assigns a number to each font and lists it on the PCL font list (available from the Administration menu).
		Font Pitch	Type a value between 0.44 and 99.99. The factory default is 10.00.	If Font Source and Font Number indicate a contour font, use this feature to select a default pitch (for a fixed-spaced font).
		Font Point Size	Type a value between 4.00 and 999.75. The factory default is 12.00.	If Font Source and Font Number indicate a contour font, use this feature to select a default point size (for a proportional-spaced font).
		Symbol Set	PC-8 (default) (50 additional symbol sets from which to choose)	Select any one of several available symbol sets from the control panel. A symbol set is a unique grouping of all the characters in a font.
		Append CR to LF	No (default) Yes	Configure whether a carriage return (CR) is appended to each line feed (LF) encountered in backwards-compatible PCL jobs (pure text, no job control).
		Suppress Blank Pages	No (default) Yes	This option is for users who are generating their own PCL, which could include extra form feeds that cause blank pages to be printed. When Yes is selected, form feeds are ignored if the page is blank.
		Media Source Mapping	Standard (default) Classic	Select and maintain input trays by number when you are not using the device driver, or when the software program has no option for tray selection.

Print Quality menu

Administration > Print Quality

Table 3-16 Print Quality menu

Menu item	Sub-menu item	Values	Description
Adjust Color	Highlights	Cyan Density. Magenta Density. Yellow Density. Black Density **+5** to **–5**. Default is **0**.	Adjust the darkness or lightness of highlights on a printed page. Lower values represent lighter highlights on a printed page, and higher values represent darker highlights on a printed page.
	Midtones	Cyan Density. Magenta Density. Yellow Density. Black Density **+5** to **–5**. Default is **0**.	Adjust the darkness or lightness of midtones on a printed page. Lower values represent lighter midtones on a printed page, and higher values represent darker midtones on a printed page.
	Shadows	Cyan Density. Magenta Density. Yellow Density. Black Density **+5** to **–5**. Default is **0**.	Adjust the darkness or lightness of shadows on a printed page. Lower values represent lighter shadows on a printed page, and higher values represent darker shadows on a printed page.
Set Registration	Test Page	Print	Shift the margin alignment to center the image on the page from top to bottom and from left to right. You can also align the image on the front with the image printed on the back. Print a test page for setting the registration.
	Source	All trays Tray <X>: <contents> (choose a tray)	Select the source input tray for printing the Set Registration page.
	Adjust Tray <X>	Shift from -20 to 20 along the X or Y axes. 0 is the default.	Perform the alignment procedure for each tray. When it creates an image, the device *scans* across the page from side to side as the sheet *feeds* from top to bottom into the device. The scan direction is referred to as X. X1 is the scan direction for the first side of a 2-sided page. X2 is the scan direction for the second side of a 2-sided page. The feed direction is referred to as Y.
Print Modes	<Paper Type>		Configure which mode is associated with which paper type.
Auto Sense Mode	Tray 1 Autosense	Full Sensing (default) Expanded Sensing Transparency Only	When Expanded Sensing is selected, the device recognizes normal paper, overhead transparencies, glossy paper, and tough paper. When Transparency Only is selected, the device recognizes only overhead transparency and non-overhead transparency types.
	Tray 2–4 Sensing	Expanded Sensing Transparency Only (default)	When Expanded Sensing is selected, the device recognizes normal paper, overhead transparencies, glossy paper, and tough paper. When Transparency Only is selected, the device recognizes only overhead transparency and non-overhead transparency types.

Table 3-16 Print Quality menu (continued)

Menu item	Sub-menu item	Values	Description
Optimize	CACO3		In countries/regions where paper is expensive, this compound is added to paper to make it less expensive to produce. This compound makes the paper dusty, which affects print quality.
	Background1		
	Background2		
	Registration		
	Long Paper		
	Pre-rotation		
	Re-transfer		
	Tray 1		
	Belt Contact		
	Restore Optimize		
Color REt		Enabled (default) Disabled	Enable or disable Resolution Enhancement technology (REt), which produces print output with smooth angles, curves, and edges.
Calibration/Cleaning	Auto Cleaning	Enabled Disabled (default)	When auto-cleaning is on, the device prints a cleaning page when the page count reaches the value that is set in Cleaning Interval.
	Cleaning Interval	1000 (default) 2000 5000 10000 20000	Set the interval when the cleaning page should be printed. The interval is measured by the number of pages printed.
	Auto Cleaning Size	Letter A4	Select the size of paper to use for the cleaning page.
	Process Cleaning Page	Process	Use this feature to create and process a cleaning page for cleaning excess toner off the pressure roller in the fuser. The process takes up to 2.5 minutes.
	Quick Calibration	Calibrate	Performs partial MFP calibrations.
	Full Calibration	Calibrate	Performs all MFP calibrations.

Troubleshooting menu

Administration > Troubleshooting



NOTE: Many of the menu items under the Troubleshooting menu are for advanced troubleshooting purposes.

Table 3-17 Troubleshooting menu

Menu item	Sub-menu item	Sub-menu item	Values	Description
Event Log			Print	This shows the event codes and their corresponding engine cycles on the control-panel display.
Calibrate Scanner			Calibrate	Use this feature to compensate for offsets in the scanner imaging system (carriage head) for ADF and flatbed scans. You might need to calibrate the scanner if it is not capturing the correct sections of scanned documents.
PQ Troubleshooting			Print	Print various diagnostic pages that help solve print-quality problems.
Fax T.30 Trace	Print T.30 Report			Print or configure the fax T.30 trace report. T.30 is the standard that specifies handshaking, protocols, and error correction between fax machines.
	When to Print Report		Never auto print (default) Print after any fax job Print after fax send jobs Print after any fax error Print after send errors only Print after receive errors only	
Fax Transmit Signal Loss			A value between 0 and 30. The default is 0.	Set loss levels to compensate for phone-line signal loss. Do not modify this setting unless requested to do so by an HP service representative because it could cause the fax to stop functioning.
Fax V.34			Normal (default) Off	Disable V.34 modulations if several fax failures have occurred or if phone line conditions require it.
Fax Speaker Mode			Normal (default) Diagnostic	A technician can use this feature technician to evaluate and diagnose fax issues by listening to the sounds of fax modulations.
Paper Path Sensors				Initiate a test of the paper-path sensors.
Diagnostic Page			Print	Print a diagnostic page that includes color swatches and the EP parameters table.
Disable Cartridge Check				Use this item to enter a mode where a cartridge can be removed to determine which particular color is the source of a problem. In this mode, all consumable-related errors are ignored.

Table 3-17 Troubleshooting menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
Paper Path Test	Test Page		Print	Generate a test page for testing the paper-handling features. Define the path for the test in order to test specific paper paths.
	Source		All trays Tray 1 Tray 2 (Additional trays are shown, if applicable.)	Specify whether the test page is printed from all trays or from a specific tray.
	Destination		All bins Stacker Bin Standard Output Bin	Select the output option for the test page. Send the test page to all output bins or only to a specific bin.
	Duplex		Off (default) On	Select whether the duplexer should be included in the test.
	Copies		Range: 2-30, Default=2	Select how many pages should be sent from the specified source as part of the test.

Table 3-17 Troubleshooting menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
Finishing Paper Path Test	Staples	Finishing Options	Choose from a list of available options.	Test the paper-handling features on the finisher. Select the option that you want to test.
		Media Size	Letter A4	Select the paper size for the test.
		Media Type	Select from a list of types.	Select the paper type for the test.
		Copies	Range: 2-30, Default=2	Select the number of copies to include in the test.
		Duplex	Off On	Select whether to use the duplexer in the test.
		Test Page	Print	Print a test page to use for the test.
	Stack	Media Size	Letter Legal A4 Executive (JIS) 8.5 x 13	Select the options that you want to use to test the stacker.
		Media Type	Select from a list of types.	Select the type of media to use for the Finishing Paper Path Test.
		Copies	1 10 50 100 500	Select the number of copies to include in the Finishing Paper Path Test.
		Duplex	Off On	Select whether to use the duplexer in the Finishing Paper Path Test.
		Test Page	Print	Print a test page to use for the Finishing Paper Path Test.
Manual Sensor Test				This item performs tests to determine whether the paper-path sensors are operating correctly.
Component Test				Exercise individual parts independently to isolate noise, leaking, or other issues. To start the test, select one of the components. The test runs the number of times specified in the Repeat option. You might be prompted to remove parts from the device during the test. Press the Stop button to abort the test.

Table 3-17 Troubleshooting menu (continued)

Menu item	Sub-menu item	Sub-menu item	Values	Description
Print/Stop Test			Continuous value from 0 to 60,000 milliseconds. Default: 0	Isolate faults by stopping the device during the print cycle and observing where in the process the image degrades. To run the test, specify a stop time. The next job that is sent to the device stops at the specified time in the process.
Color Band Test	Test Page		Print	Prints a page that helps identify arcing in the high-voltage power supplies.
	Copies			Specify the number of copies to print for the Color Band test
Scanner Tests				A service technician can use this menu item to diagnose potential problems with the device scanner.
Control Panel	LEDs			Verify that the components of the control panel are functioning correctly.
	Display			
	Buttons			
	Touchscreen			

Resets menu

Administration > Resets

Table 3-18 Resets menu

Menu item	Values	Description
Clear Local Address Book	Clear	Use this feature to clear all addresses from the address books that are stored on the device.
Clear Fax Activity Log	Yes No (default)	Use this feature to clear all events from the Fax Activity Log.
Restore Factory Telecom Setting	Restore	Use this option to restore the following settings to their factory default settings: Transmit Signal Loss, V34, Maximum Baud Rate, Speaker Mode.
Restore Factory Settings	Restore	Use this feature to restore all device settings to their factory defaults.
Clear Document Feeder Message	Clear	Use this feature to clear the Order Document Feeder Kit and Replace Document Feeder Kit warning messages.
Reset Supplies	New Document Feeder Kit (Yes/No)	Notify the device that a new document-feeder kit has been installed.

Service menu

The Service menu is locked and requires a PIN for access. The PIN code for this MFP is 05473007.

Table 3-19 Service menu

Menu item	Description
Clear Event Log	Select this item to clear (reset to zero) the internal event log.
Refurbish Cycle Count	Select this item to set the page count for a refurbished unit. This page count is stored in memory so that the correct Service ID can be restored after the MFP is refurbished.
Mono Engine Cycle Count	Select this item to set the number of mono pages that have been printed.
Color Engine Cycle Count	Select this item to set the number of color pages that have been printed.
Document Feeder Kit Count	Select this item to set a) the number of pages that have been printed since the last document-feeder kit was installed, or b) the total number of pages that have been printed on this MFP if a document-feeder kit has not yet been installed (during the first 90,000 pages).
Document Feeder Kit Interval	Select this item to specify the number of pages that can be printed before a Replace Document Feeder Kit messages appears on the control-panel display to indicate that a document-feeder kit is necessary.
ADF count	Select this item to specify the number of pages that have been fed through the document feeder.
Flatbed Count	Select this item to specify the number of pages that have been scanned on the flatbed glass.
ADF Simplex Count	Select this item to set the number of simplex pages that have been fed through the document feeder.
ADF Duplex Count	Select this item to set the number of duplex pages that have been fed through the document feeder.
Copy Scan Count	Select this item to set the number of copy pages that have been scanned.
Send Scan Count	Select this item to set the number of scanned pages that have been sent to e-mail.
Copy Pages Count	Select this item to set the number of pages that have been copied.
Scanner Settings	**CAUTION:** The scanner settings are used for factory adjustments and should not be used by service personnel. Use the scanner calibration routine to adjust the scanner settings if necessary.
Serial Number	Select this item to update the serial number if you replace the formatter.
Service ID	Select this item to specify the date when the MFP was first used, rather than the date when a replacement formatter was installed.
Cold Reset Paper	Select this item to reset the default paper size when you replace the formatter or restore factory settings. For example, when you replace a formatter or restore factory settings in a country/region that uses A4 as the standard paper size, use this item to reset the default paper size to A4. Letter and A4 are the only cold-reset values available.
Media Sensor Value	Select this item to specify the media-sensor value that is located on the paper-feed assembly when it is replaced.

Management tools

Information pages

Information pages provide details about the device and its current configuration. See Information pages on page 16 for more information.

HP Easy Printer Care software

HP Easy Printer Care software is a software program that you can use for the following tasks:

- Check the printer status.
- Check supplies status.
- Set up alerts.
- Gain access to troubleshooting and maintenance tools.

You can use the HP Easy Printer Care software when the printer is directly connected to your computer or when it is connected to a network. You must perform a complete software installation to use the HP Easy Printer Care software.

NOTE: You do not have to have Internet access to open and use the HP Easy Printer Care software. However, if you click a Web-based link, you must have Internet access to go to the site associated with the link.

For more information on HP Easy Printer Care software, visit http://www.hp.com/go/easyprintercare.

Supported operating systems

The HP Easy Printer Care software is supported for Windows 2000 and Windows XP.

Open HP Easy Printer Care software

Use one of the following methods to open HP Easy Printer Care software:

- In the Windows system tray/taskbar (in the lower right-hand corner of the desktop), select **HP Easy Printer Care software**.
- Double-click the HP Easy Printer Care software desktop icon.

HP Easy Printer Care software sections

The HP Easy Printer Care software contains the sections described in the following table.

Section	Description
Overview tab Contains basic status information for the printer.	• **Devices** list: Shows the printers that you can select. • **Device Status** section: Shows printer status information. This section indicates printer alert conditions, such as an empty print cartridge. It also shows device-identification information, control-panel messages, and print-cartridge levels. After you correct a problem with the printer, click the (Refresh) button to update the section.

Section	Description
	• **Supplies Status** section: Shows detailed supplies status, such as the percentage of toner remaining in the print cartridges and the status of the media that is loaded in each tray. • **Supplies Details** link: Opens the supplies status page to view more detailed information about printer supplies, ordering information, and recycling information.
Support tab Provides help information and links.	• Provides device information, including alerts for items needing attention. • Provides links to troubleshooting information and tools. • Provides links to the HP Web site for registration, support, and for ordering supplies. **NOTE:** If you use a dial-up connection and did not connect to the Internet when you first opened the HP Easy Printer Care software, you must connect before you can visit these Web sites.
Supplies Ordering window Provides access to online or e-mail supplies ordering.	• Ordering list: Shows the supplies that you can order for each printer. If you want to order a certain item, click the **Order** check box for that item in the supplies list. • **Shop Online for Supplies** button: Opens the HP supplies Web site in a new browser window. If you have checked the **Order** check box for any items, the information about those items can be transferred to the Web site. • **Print Shopping List** button: Prints the information for the supplies that have the **Order** check box selected. • **Email Shopping List** button: Creates a text list of items that have the **Order** check box selected. The list can be copied into an e-mail message that you send to your supplier.
Alert Settings window Allows you to configure the printer to automatically notify you of printer issues.	• Alerts on or off: Activates or deactivates the alerts feature for a certain printer. • When alerts appear: Sets when you want alerts to appear—either when you are printing to that particular printer, or anytime there is a printer event. • Alert event type: Sets whether you want alerts for only critical errors, or for any error, including continuable errors. • Notification type: Sets what type of alert should appear (pop-up message or system tray alert, and e-mail message).
Device List tab Shows information about each printer in the **Devices** list.	• Printer information, including printer name, make, and model • An icon (if the **View as** drop-down box is set to **Tiles**, which is the default setting) • Any current alerts for the printer If you click a printer in the list, the HP Easy Printer Care software opens the **Overview** tab for that printer. **Device List** tab information includes the following:
Find Other Printers window Allows you to add more printers to your printer list.	Clicking the **Find Other Printers** link in the **Devices** list opens the **Find Other Printers** window. The **Find Other Printers** window provides a utility that detects other network printers so that you can add them to the **Devices** list and then monitor those printers from your computer.

Embedded Web server

Use the embedded Web server to view MFP and network status and to manage printing functions from your computer instead of from the MFP control panel. The following are examples of what you can do using the embedded Web server:



NOTE: When the printer is directly connected to a computer, use the HP Easy Printer Care software to view the printer status.

- View MFP status information.
- Set the type of media that is loaded in each tray.
- Determine the remaining life for all supplies and order new ones.
- View and change tray configurations.
- View and change the MFP control-panel menu configuration.
- View and print internal pages.
- Receive notification of MFP and supplies events.
- View and change network configuration.

To use the embedded Web server, you must have Microsoft Internet Explorer 5.01 or later or Netscape 6.2 or later for Windows, Mac OS, and Linux (Netscape only). Netscape Navigator 4.7 is required for HP-UX 10 and HP-UX 11. The embedded Web server works when the MFP is connected to an IP-based network. The embedded Web server does not support IPX-based MFP connections. You do not have to have Internet access to open and use the embedded Web server.

When the MFP is connected to the network, the embedded Web server is automatically available.



NOTE: For complete information about using the embedded Web server, see the *Embedded Web Server User Guide*, which is on the HP Color LaserJet CM4730 MFP series software CD.

Open the embedded Web server

To open the embedded Web server, type the IP address or host name of the MFP in a supported Web browser. If you do not know the IP address or host name, print a configuration page.

The embedded Web server has four tabs:

- **Information** tab
- **Settings** tab
- **Digital Sending** tab
- **Networking** tab

The embedded Web server also has other links that lead to external Web sites.

Information tab

The Information pages group consists of the following pages.

- **Device Status**. This page shows the MFP status and shows the life remaining of HP supplies, with 0% representing that a supply is empty. The page also shows the type and size of print media set for each tray. To change the default settings, click **Change Settings**.
- **Configuration page**. This page shows the information that is found on the MFP configuration page.
- **Supplies Status**. This page shows the life remaining of HP supplies, with 0% representing that a supply is empty. This page also provides supplies part numbers. To order new supplies, click **Order Supplies** in the **Other Links** area of the window. To visit any Web site, you must have Internet access.
- **Event log**. This page shows a list of all MFP events and errors.
- **Usage page**. This page details the total usage of the MFP.
- **Device information**. This page shows the MFP network name, address, and model information. To change these entries, click **Device Information** on the **Settings** tab.
- **Control panel**. View the current status of the MFP control panel.
- **Print**. Select a file on your network or on the Web, and send it to the MFP to be printed. The document must be a print-ready document, such as a .PS, .PDF, .PCL, or .TXT file.

Settings tab

Use this tab to configure the MFP from your computer. The **Settings** tab can be password protected. If this MFP is networked, always consult with the system administrator before changing settings on this tab.

The **Settings** tab contains the following pages.

- **Configure Device**. Configure all MFP settings from this page. This page contains the traditional menus found on the control-panel display. These menus include **Information**, **Paper Handling**, **Configure Device**, and **Diagnostics**.
- **e-mail Server**. Use this page to set up the SMTP server that will be used to send MFP e-mail alerts (set up on the **Alerts** page).
- **Alerts**. Network only. Set up to receive e-mail alerts for various MFP and supplies events. These alerts can be sent to a list of up to 20 e-mail, mobile-device, or Web-site destinations.
- **AutoSend**. Use the AutoSend screen to send product-configuration and usage information periodically to your service provider. This feature establishes a relationship with Hewlett-Packard Company or another service provider to provide you with services that include support agreements and usage tracking.
- **Security**. Set a password that must be typed in order to gain access to the **Settings**, **Digital Sending**, and **Networking** tabs. Turn on and off certain features of the EWS.
- **Edit Other Links**. Add or customize a link to another Web site. This link is shown in the **Other Links** area on all embedded Web server pages. These permanent links always appear in the **Other Links** area: **HP Instant Support**, **Order Supplies**, and **Product Support**.

- **Device Information**. Name the MFP and assign an asset number to it. Type the name of the primary contact who will receive information about the MFP.
- **Language**. Determine the language in which to show the embedded Web server information.
- **Date & Time**. Use this page to set the correct date and time for the device. Once the time is set, the device's real-time clock maintains the accurate time.
- **Wake Time page**. Wake Time can be set to wake the MFP at a certain time on a daily basis. Only one wake time can be set per day; however, each day can have a different wake time. You can also set the time delay for Sleep Mode on this page.

Digital Sending tab

Use the pages on the **Digital Sending** tab to configure the digital-sending features.



NOTE: If the MFP is configured to use the optional HP Digital Sending Software, the options on these tabs are not available. Instead, all digital-sending configuration is performed by using the HP Digital Sending Software.

- **General page**. Set up contact information for the system administrator.
- **Send to e-mail page**. Configure the e-mail settings for digital sending. You can specify the SMTP server, the default "From" address, and the default subject. You can also set the maximum file size that is allowed for attachments.
- **Addressing page**. Configure the LDAP server settings for digital sending. The LDAP server can be used to retrieve e-mail addresses for digital sending. Select the check box at the top of this page to enable this feature. Click **Find Server** to find the LDAP server on your network, then click **Test** near the bottom of the page to test access to the server. Contact your network administrator for more information about using the LDAP server.
- **Address Book page**. Use this page to import e-mail addresses, in the form of a Comma-Separated Value (CSV) file into the MFP internal address book. This process is necessary only if you are not using an LDAP server to find e-mail addresses.
- **Activity Log page**. View the digital-sending activity log for the MFP. The log contains digital-sending job information, including any errors that occur.
- **Preferences page**. Configure digital-sending defaults such as the default page-size and the default settings-reset delay. You can also configure these settings by using the MFP control-panel menus.

Networking tab

The network administrator can use this tab to control network-related settings for the MFP when it is connected to an IP-based network. This tab does not appear if the MFP is directly connected to a computer, or if the MFP is connected to a network with anything other than an HP Jetdirect print server.

Other links

This section contains links that connect you to the Internet. You must have Internet access in order to use any of these links. If you use a dial-up connection and did not connect when you first opened

the embedded Web server, you must connect before you can visit these Web sites. Connecting might require that you close the embedded Web server and reopen it.

- **HP Instant Support**. Connects to the HP Web site to help you find solutions. This service analyzes your MFP error log and configuration information to provide diagnostic and support information specific to your MFP.
- **Order Supplies**. Connect to a Web site where you can order genuine HP supplies such as print cartridges and media.
- **Product Support**. Connects to the support site for the HP Color LaserJet CM4730 MFP series.

HP Web Jetadmin software

HP Web Jetadmin is a Web-based software solution for remotely installing, monitoring, and troubleshooting network-connected peripherals. The intuitive browser interface simplifies cross-platform management of a wide range of devices, including HP and non-HP printers. Management is proactive, allowing network administrators the ability to resolve printer issues before users are affected. Download this free, enhanced-management software at http://www.hp.com/go/webjetadmin_software.

To obtain plug-ins to HP Web Jetadmin, click **plug-ins**, and then click the **download** link that is next to the name of the plug-in that you want. The HP Web Jetadmin software can automatically notify you when new plug-ins are available. On the **Product Update** page, follow the directions to automatically connect to the HP Web site.

If installed on a host server, HP Web Jetadmin is available to any client through a supported Web browser, such as Microsoft Internet Explorer 6.0 for Windows or Netscape Navigator 7.1 for Linux. Browse to the HP Web Jetadmin host.



NOTE: Browsers must be Java-enabled. Browsing from an Apple Macintosh computer is not supported.

HP Printer Utility for Macintosh

Use the HP Printer Utility to configure and maintain a printer from a Mac OS X V10.2, V10.3, or V10.4 computer. This section describes several functions that you can perform through the HP Printer Utility.

Open the HP Printer Utility

The process that you use to start the HP Printer Utility depends on the Macintosh operating system that you are using.

Open the HP Printer Utility in Mac OS X V10.2

1. Open the Finder, and then click **Applications**.
2. Click **Library**, and then click **Printers**.
3. Click **hp**, and then click **Utilities**.
4. Double-click **HP Printer Selector** to open the HP Printer Selector.
5. Select the printer that you want to configure, and then click **Utilities**.

Open the HP Printer Utility in Mac OS X V10.3 or Mac OS X V10.4

1. In the Dock, click the **Printer Setup Utility** icon.

   NOTE: If the **Printer Setup Utility** icon does not appear in the Dock, open the Finder, click **Applications**, click **Utilities**, and then double-click **Printer Setup Utility**.

2. Select the printer that you want to configure, and then click **Utilities**.

Print a cleaning page

Print a cleaning page if the printer is not printing jobs at the expected quality level.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **Color Cleaning**.
3. Click **Print Cleaning Page** to print the cleaning page.

Print a configuration page

Print a configuration page to view the printer settings.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **Configuration Page**.
3. Click **Print Configuration Page** to print the configuration page.

View supplies status

View the status of the printer supplies (such as print cartridges, imaging drum, or print media) from a computer.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **Supplies Status**.
3. Click the **Supplies** tab to view the status of various replaceable supplies, and click the **Media** tab to view the status of print media.
   - To view a more detailed status list, click **Detailed Supplies Information**. The Supplies Information dialog box appears.
   - To order supplies online, click **Order HP Supplies**. You must have Internet access in order to use the online ordering Web page. For more information about online ordering, see Order supplies online and use other support features on page 109.

Order supplies online and use other support features

Use the HP Web site to order printer supplies, register the printer, get customer support, or learn about recycling printer supplies. You must have Internet access in order to use the supplies and support Web pages.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **HP Support**.
3. Click one of the following buttons:
   - **Instant Support**: Opens a Web page that you can use to seek technical assistance.
   - **Order Supplies Online**: Opens a Web page that you can use to order printer supplies.
   - **Online Registration**: Opens a Web page that you can use to register the printer.
   - **Return & Recycle**: Opens a Web page that you can use to find information about recycling used supplies.

Upload a file to the printer

Send a file from the computer to the printer. The action that the printer takes depends on the type of file that is being sent to it. For example, when a print-ready file (such as a .PS or .PCL file) is sent, the printer prints the file.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **File Upload**.
3. Click **Choose**, navigate to the file that you want to upload, and then click **OK**.
4. Click **Upload** to load the file.

Update the firmware

Update the printer firmware by loading the new firmware file from the computer. You can find new firmware files for your printer at http://www.hp.com/support/ljcm4730mfp.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **Firmware Update**.
3. Click **Choose**, navigate to the firmware file that you want to upload, and then click **OK**.
4. Click **Upload** to load the firmware file.

Activate the two-sided printing (duplexing) mode

Turn on the two-sided printing feature on printers equipped with automatic duplexers.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **Duplex mode**.
3. Select **Enable Duplex Mode** to activate the two-sided printing mode, and then click **Apply Now**.

Lock or unlock printer storage devices

Manage access to printer storage devices from the computer.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **Lock Resources**.
3. On the **Control Panel Access Level** pop-up menu, select the access level that you want to set for the printer control panel.
4. Select the devices that you want to lock, and clear any devices that you want to unlock.
5. Click **Apply Now**.

Save or print stored jobs

Turn on the printer job-storing function, or print a stored job from the computer. You also can delete a stored print job.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **Stored Jobs**.
3. Perform any of the following tasks:
   - To turn on the job-storing function, select **Enable Job Storing**, and then click **Apply Now**.
   - To print a stored job, select a stored job in the list, type the necessary personal identification number (PIN) in the **Enter Secure Job PIN** box, type the number of copies that you want in the **Copies To Print** box, and then click **Print**.
   - To delete a stored job, select a stored job in the list, and then click **Delete**.

Configure trays

Change the default printer tray settings from the computer.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **Tray Configuration**.
3. In the **Trays** list, select the tray to be configured.



NOTE: To make the selected tray the default tray for printing, click **Make Default**.

4. In the **Default Media Size** pop-up menu, select the default media size for the tray.
5. In the **Default Media Type** pop-up menu, select the default media type for the tray.
6. Click **Apply Now**.

Change network settings

Change the network internet protocol (IP) settings from the computer. You also can open the embedded Web server to change additional settings. For more information, see Embedded Web server on page 104.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **IP Settings**.
3. Change any of the settings in the following pop-up menus or fields:
   - **Configuration**
   - **Host Name**
   - **IP Address**
   - **Subnet Mask**
   - **Default Gateway**

   If you want to change more settings in the embedded Web server, click **Additional Network Settings**. The embedded Web server opens with the **Networking** tab selected.
4. Click **Apply Now**.

Open the embedded Web server

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **Additional Settings**.
3. Click **Open Embedded Web Server**.

Set up e-mail alerts

Set up e-mail messages that alert you to certain events that occur with the printer, such as a low toner level in a print cartridge.

1. Open the HP Printer Utility.
2. In the **Configuration Settings** list, select **E-mail Alerts**.
3. Click the **Server** tab, and, in the **SMTP Server** box, type the server name.
4. Click the **Destination** tab, click the add (**+**) button, and then type the e-mail addresses, mobile device numbers, or Web site URLs to which you want the e-mail alerts sent.

   NOTE: If your printer supports e-mail lists, you can make alerts lists for specific events the same way that you added e-mail addresses.
5. Click the **Events** tab, and, in the list, define the events for which an e-mail alert should be sent.
6. To test the alerts setup, click the **Server** tab, and then click **Test**. A sample message is sent to the defined e-mail addresses if the configuration is correct.
7. Click **Apply Now**.

Approximate replacement intervals for supplies

The following table lists the estimated replacement intervals for supplies and the control panel messages that prompt when to replace each item. Usage conditions and print patterns may cause results to vary.

Item	Printer message	Page count	Approximate time period
Black cartridges	**Replace Black Cartridge**	12,000 pages[1]	3 months
Color cartridges	**Replace <color> Cartridge**	12,000 pages[1]	3 months
Image transfer kit	**Replace Transfer Kit**	120,000 pages[2]	40 months
Image fuser kit	**Replace Fuser Kit**	150,000 pages	50 months
Stapler cartridge	**Replace Stapler Cartridge**	5000 pages	
ADF maintenance kit	**Replace Document Feeder Kit**	90000 pages	

[1] Approximate average A4-/letter-size page count based on 5% coverage of individual colors.

[2] Approximate life is based on 4,000 pages per month.

ETB life under different circumstances

Depending on the MFP workload, the customer will need to replace the ETB once or twice in the life of the MFP. In order to help plan supplies purchases, the HP Color LaserJet CM4730 MFP calculates an estimated remaining number of pages that can be printed with the ETB.

The number of pages the ETB can print is a function of two factors:

- The number of times the belt goes from a stationary to a rotating state (spins up)
- The number of pages that have been printed on the belt

Unless print jobs are queued back to back, each print job requires the belt to spin up.

Think of the ETB as having a limited number of wear units. It has 200,000 wear units when it is new. Each time the belt spins up, it uses two wear units. Each time it prints a page, the belt uses one wear unit.

Because most print jobs are not queued, the average number of pages per job, or job length, is a factor in how fast the ETB will wear out. The shorter the average job, the more quickly the ETB will wear out.

The following figure shows how many pages an ETB can print, given various average job lengths.

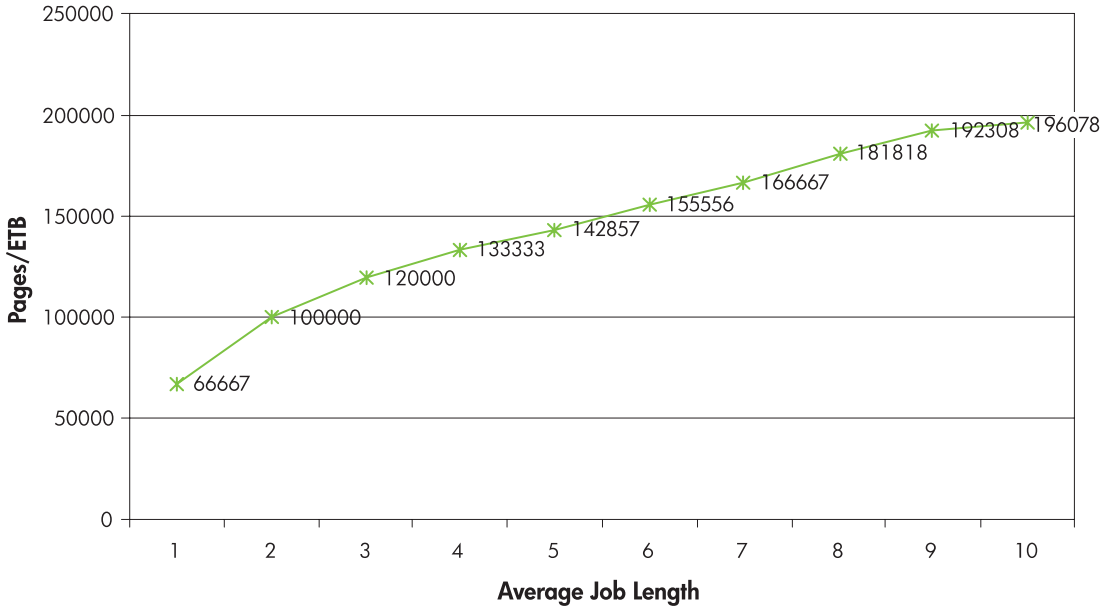


Figure 3-1 ETB total page count according to average job length

The MFP assumes an average print job length of three pages to estimate how many pages are remaining on the ETB. With an average job length of three pages, the ETB will print 120,000 pages.

If all print jobs are exactly three pages long, for each page printed the number of estimated pages remaining would decrease by one, beginning with the maximum 120,000 pages. If the job length is less than three pages, the estimated-pages-remaining number decreases more quickly than the rate at which the number of pages actually printed increases. If the job length is greater than three pages, the number of pages remaining decreases less quickly than the rate at which the actual number of pages printed increases.

Managing print cartridges

This section provides information about HP print cartridges, their life expectancies, how to store them, and how to identify genuine HP supplies. Information also appears about non-HP print cartridges.

HP print cartridges

When a genuine HP print cartridge is used, several types of information are available, such as the following:

- Amount of toner remaining
- Estimated number of pages remaining
- Number of pages printed

Change print cartridges

When a print cartridge approaches the end of its useful life, the control panel displays a message recommending that you order a replacement. The MFP can continue to print using the current print cartridge until the control panel displays a message instructing you to replace the cartridge.

The MFP uses four colors and has a different print cartridge for each color: black (K), magenta (M), cyan (C), and yellow (Y).

Replace a print cartridge when the MFP control panel displays a **Replace <color> Cartridge** message. The control panel display will also indicate the color that should be replaced (if a genuine HP cartridge is currently installed). Replacement instructions are included in the print-cartridge box.

CAUTION: If toner gets on clothing, wipe it off with a dry cloth and wash the clothes in cold water. Hot water sets toner into fabric.

NOTE: For information about recycling used print cartridges, go to http://www.hp.com/go/recycle.

Non-HP print cartridges

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

When a non-HP print cartridge is used, certain features, such as remaining toner volume data may not be available.

Using genuine HP supplies ensures the availability of all HP printing features.

Print cartridge authentication

The MFP will let users know if a print cartridge is not a genuine HP print cartridge when the cartridge is inserted into the MFP. If you believe that you purchased a genuine HP supply, go to http://www.hp.com/go/anticounterfeit.

Print cartridge storage

Do not remove the print cartridge from its package until you are ready to use it.

Always store the print cartridge in the proper environment. The storage temperature should be between -20°C and 40°C (-4°F to 104°F). The relative humidity should be between 10% and 90%.

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

Print cartridge life expectancy

The life of the print cartridge depends on the amount of toner that print jobs require and the length of life for the components inside the cartridge. When printing text at approximately 5% coverage (typical for a business letter), the HP print cartridge lasts an average of 12,000 pages. The page-yield specification that HP provides is a general guideline. Actual yield can vary according to usage conditions.

At any time, you can verify life expectancy by checking the supply level, as described below.

Checking the supply level

Check the supply (toner) level by using the product control panel, embedded Web server, or HP Web Jetadmin, or by printing a supplies status page.

Using the product control panel

1. From the Home screen, touch Administration.
2. Touch Information.
3. Touch Configuration/Status Pages.
4. Touch Supplies Status Page.
5. Touch Print.

NOTE: If you are using non-HP supplies, the supplies status page might not show the remaining life for those supplies.

Using the embedded Web server

1. In a browser, enter the IP address for the MFP home page. This goes to the MFP status page.
2. On the left side of the screen, click **Supplies Status**. This goes to the supplies status page, which provides print cartridge information.

Using HP Web Jetadmin

In HP Web Jetadmin, select the MFP. The device status page shows print cartridge information.

Replacing supplies

When using genuine HP supplies, the MFP automatically notifies you when supplies are nearly depleted. The notification to order supplies allows ample time to order new supplies before they need to be replaced.

Locate supplies

The following figure illustrates the location of each supply item.

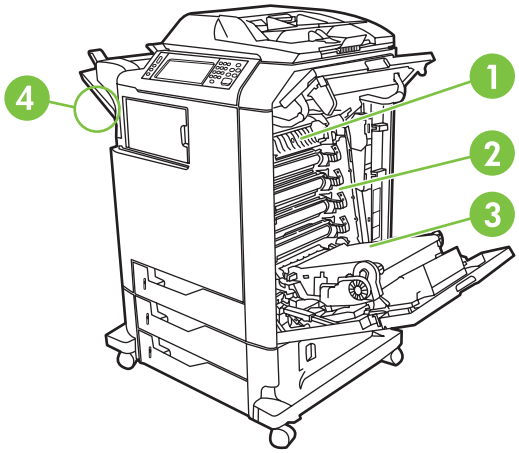


Figure 3-2 Supply item locations

1	Fuser
2	Print cartridges
3	ETB

Supply replacement guidelines

To facilitate the replacement of supplies, keep the following guidelines in mind when setting up the MFP.

- Allow sufficient space above and in the front of the MFP for removing supplies.
- The MFP should be located on a flat, sturdy surface.

For instructions on installing supplies, see the installation guides provided with each supply item or see more information at http://www.hp.com/support/ljcm4730mfp. When you connect, select **Solve a Problem**.

CAUTION: Hewlett-Packard recommends the use of genuine HP products in this MFP. Use of non-HP products may cause problems requiring service that is not covered by the Hewlett-Packard extended warranty or service agreements.

Making room around the MFP for replacing supplies

The following illustration shows the clearance necessary in front of, above, and to the side of the MFP for replacing supplies.

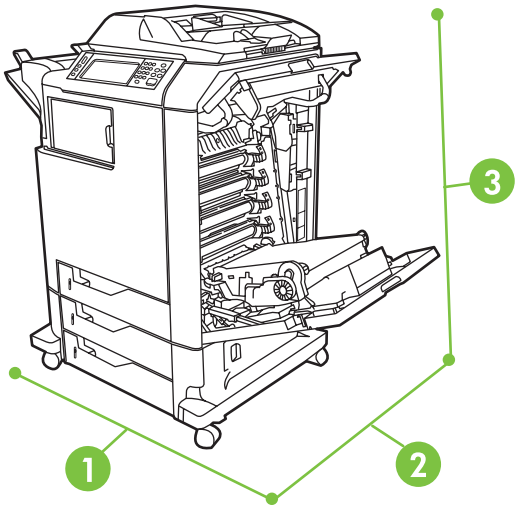


Figure 3-3 Supplies replacement clearance diagram

1	1160 mm (45.7 inches); if stapler/stacker or 3-bin mailbox is installed: 1460 mm (47.5 inches)
2	980 mm (38.6 inches)
3	1050 mm (41.4 inches)

Replacing the ETB

Replace the ETB when a **Replace Transfer Kit** message appears on the product control panel display.

1. Turn the MFP off.
2. Open the right upper and lower covers.
3. Lower the ETB by pulling the green handle at the top of the unit downward.
4. Press the small blue latches located on either side of the bottom of the ETB and lift the unit out of the MFP.
5. Install the new ETB.
6. Close the right upper and lower covers.

Supplies ordering information is also available from the embedded Web server.

Replacing the fuser

Replace the fuser when a **Replace Fuser Kit** message appears on the product control panel display.

1. Turn the MFP off.
2. Open the right upper cover.
3. Grasp the purple handles on the fuser.
4. Remove the old fuser from the MFP.

5. Install the new fuser.

6. Close the right upper cover.

Supplies ordering information is also available from the embedded Web server.

Replacing the stapler cartridge

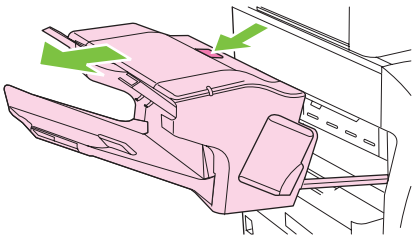
The stapler cartridge contains 5,000 staples.

Replace the stapler cartridge if the MFP control panel display prompts users with a **Stapler Low On Staples** message (at this point, 20 to 50 staples remain in the cartridge) or a **Stapler Out Of Staples** message. If the stapler runs out of staples and the stapler/stacker is configured to continue, jobs continue to print to the stapler/stacker but they are not stapled. If the stapler/stacker is configured to stop, printing stops until a new stapler cartridge is loaded.

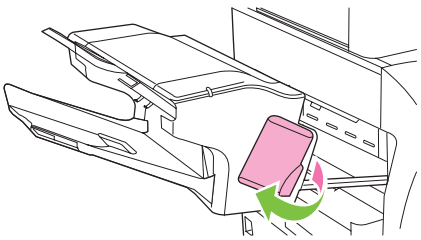
NOTE: HP recommends replacing the stapler cartridge as soon as the **Stapler Out Of Staples** message appears. Although some usable staples remain in the cartridge, they could fall into the stapler mechanism and cause product failure.

Load a new stapler cartridge

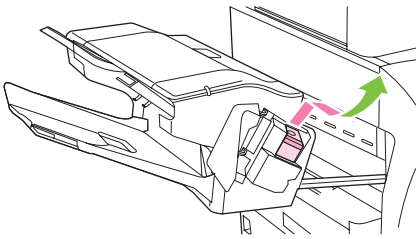
1. Press and hold the release button on the top of the stapler/stacker. Pull the stapler/stacker away from the MFP.



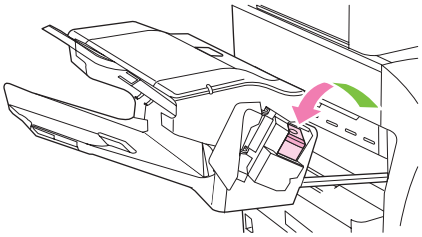
2. Open the staple cartridge cover.



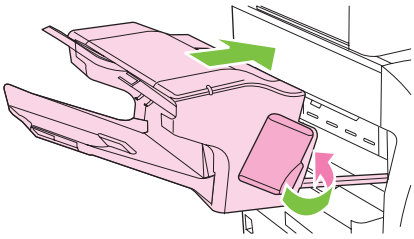
3. Grasp the green staple cartridge handle and pull the old staple cartridge out of the stapler unit.



4. Insert the new staple cartridge into the stapler unit and push down on the green handle until the unit snaps into place.

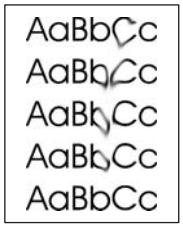


5. Close the staple cartridge cover, and slide the stapler/stacker into the MFP.



Using the cleaning page

During printing, toner and dust particles can accumulate inside the MFP. Over time, this buildup can cause print quality problems, such as toner specks or smearing. This MFP has a cleaning mode that can correct and prevent these problems.





Process a cleaning page

1. From the Home screen, touch Administration.
2. Touch Print Quality.
3. Touch Calibration/Cleaning.
4. Touch Process Cleaning Page.

   The device prints a cleaning page.
5. Follow the instructions printed on the cleaning page.

Clean the MFP

To maintain print quality, clean the MFP thoroughly every time you replace the print cartridge and whenever print-quality problems occur.

WARNING! Avoid touching the fusing area when cleaning the MFP. It can be hot.

CAUTION: To avoid permanent damage to the print cartridge, do not use ammonia-based cleaners on or around the MFP except as directed.

Clean the outside of the MFP

- Clean the outside of the MFP if it is visibly marked.
- Use a soft, lint-free cloth dampened with water, or water and a mild detergent.

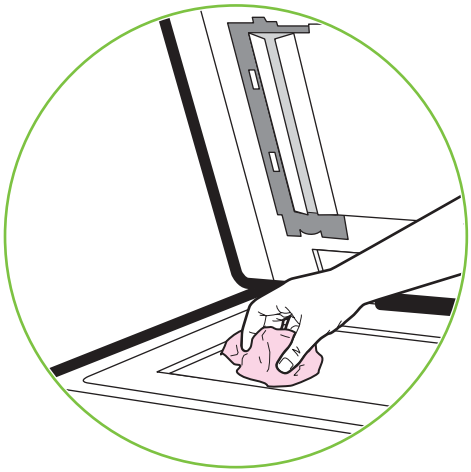
Clean the touchscreen

Clean the touchscreen whenever it is necessary to remove fingerprints or dust. Wipe the touchscreen gently with a clean, water-dampened, lint-free cloth.

CAUTION: Use water only. Solvents or cleaners can damage the touchscreen. Do not pour or spray water directly onto the touchscreen.

Clean the scanner glass

- Clean the scanner glass only if dirt is visible, or if you are experiencing a decrease in copy quality, such as streaking.
- Clean the scanner glass by wiping it gently with a clean, slightly damp, lint-free cloth. Use an ammonia-based surface cleaner only when a water-dampened cloth does not clean the scanner glass.



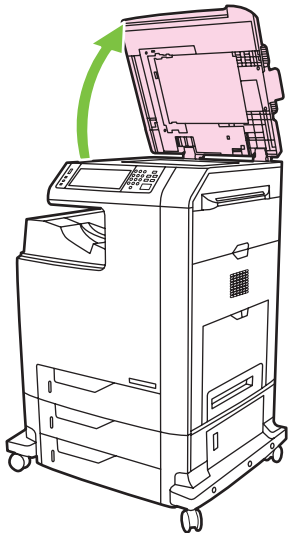
CAUTION: Do not pour or spray liquids directly onto the scanner glass. Do not press hard on the glass surface. (You could break the glass).

Cleaning the ADF delivery system

Clean the ADF only if it is visibly marked or dirty, or if you are experiencing a decrease in copy quality (such as streaking).

Clean the ADF delivery system

1. Open the scanner lid.



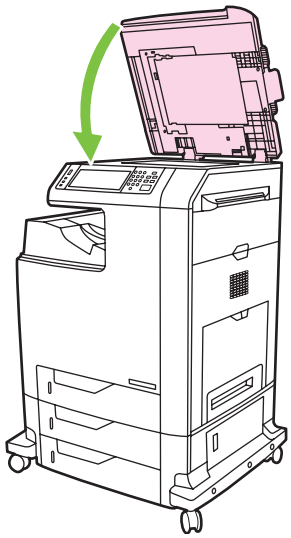
2. Locate the white, vinyl ADF backing.



3. Clean the ADF backing by wiping them with a clean, damp, lint-free cloth. Use an ammonia-based surface cleaner only when a water-dampened cloth does not clean the ADF components.

4. Clean the scanner glass by wiping it gently with a clean, slightly damp, lint-free cloth. Use an ammonia-based surface cleaner only when a water-dampened cloth does not clean the scanner glass.

5. Close the scanner lid.

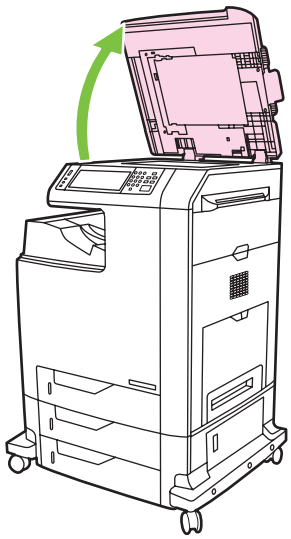


Clean the ADF rollers

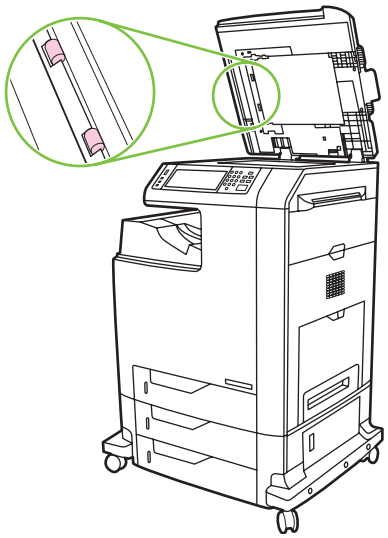
You should clean the rollers in the ADF if you are experiencing misfeeds or if your originals show marks as they exit the ADF.

CAUTION: Clean the rollers only if you experience misfeeds or marks on the originals, and you notice dust on the rollers. Cleaning the rollers frequently could introduce dust into the device.

1. Open the scanner lid.



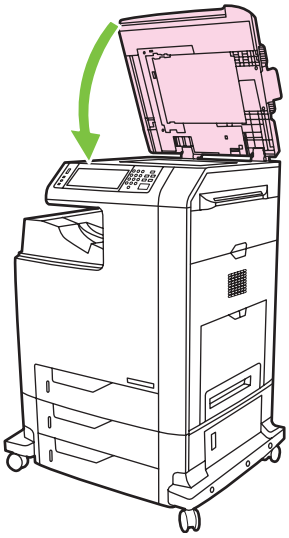
2. Locate the rollers near the white vinyl ADF backing.



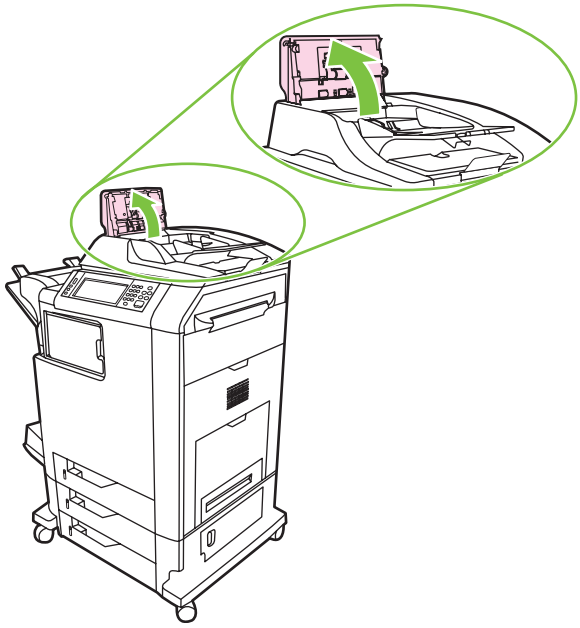
3. Wipe the rollers gently with a clean, water-dampened, lint-free cloth.

> **CAUTION:** Do not pour water directly onto the rollers. Doing so might damage the device.

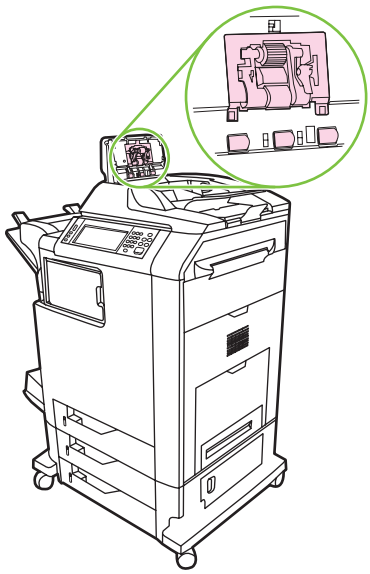
4. Close the scanner lid.



5. Pull the release lever to open the ADF cover.



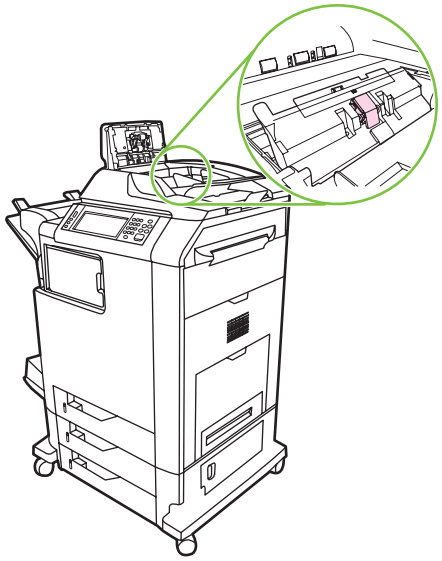
6. Locate the rollers.



7. Wipe the rollers with a clean, water-dampened, lint-free cloth.

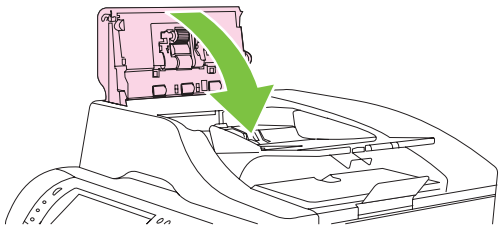
CAUTION: Do not pour water directly onto the rollers. Doing so might damage the device.

8. Locate the separation pad.



9. Wipe the pad with a clean, water-dampened, lint-free cloth.

10. Close the ADF cover.

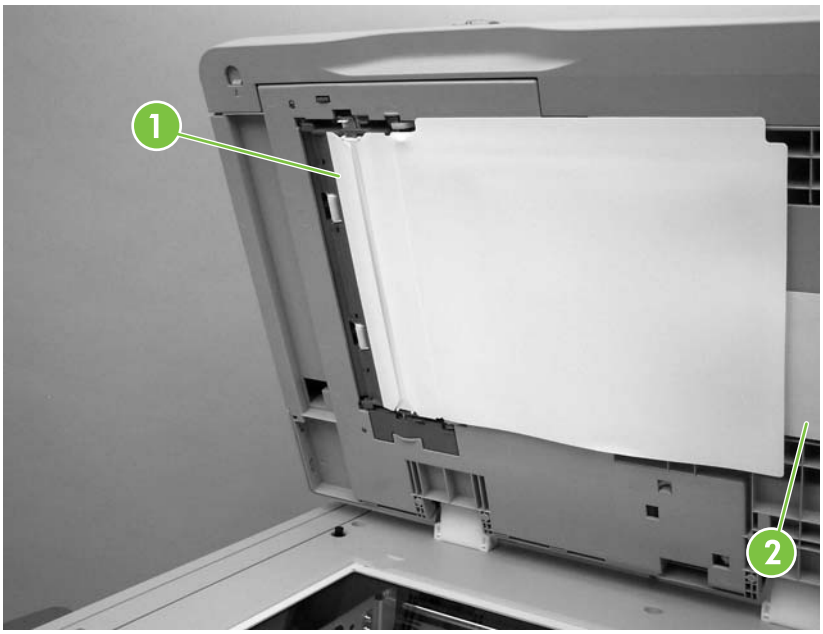


Clean the mylar strip

Clean the mylar strips on the underside of the scanner lid only if you are experiencing a decrease in copy quality (such as vertical lines) when copying using the ADF.

1. Open the scanner lid.

2. Locate the mylar strip (1).



NOTE: Replacement mylar strips are stored in an envelope (2) that is underneath the white vinyl ADF backing. Follow the instructions that are in the envelope.

3. Clean the mylar strip with a clean, damp, lint-free cloth.
4. Close the scanner lid.

Performing preventive maintenance

The MFP requires periodic maintenance to maintain optimum performance. A product control panel message alerts you when it is time to purchase the preventive maintenance kit.

ADF maintenance kit

After feeding 90,000 pages through the ADF, a **Replace Document Feeder Kit** message appears on the product control panel display. This message appears approximately one month before the kit needs to be replaced. Order a new kit when this message appears.

The ADF maintenance kit includes the following items:

- One pickup roller assembly
- One separation pad
- One mylar sheet kit
- An instruction sheet

Follow the instructions that come with the kit to install it.

After replacing the kit, reset the ADF maintenance kit count.

Reset the ADF maintenance kit count

1. Scroll to and touch **Administration**.
2. Scroll to and touch **Resets**.
3. Scroll to and touch **Reset Supplies**.
4. Touch **New Document Feeder Kit**.
5. Touch **Yes**.
6. Touch **Save**.

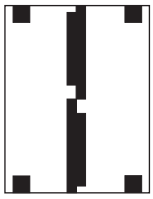
Calibrate the scanner

Calibrate the scanner to compensate for offsets in the scanner imaging system (carriage head) for ADF and flatbed scans. Because of mechanical tolerances, the scanner's carriage head might not read the position of the image accurately. During the calibration procedure, scanner offset values are calculated and stored. The offset values are then used when producing scans so that the correct portion of the document is captured.

Scanner calibration should be carried out only if you notice offset problems with the scanned images. The scanner is calibrated before it leaves the factory. It needs to be calibrated again only rarely.

Before calibrating the scanner, print the calibration target.

1. Place letter- or A4-size paper in tray 1, and adjust the side guides.
2. On the control-panel Home screen, scroll to and touch Administration.
3. Touch Troubleshooting.
4. Touch Calibrate Scanner.
5. Touch Calibrate to print the first pass of the calibration target.
6. Place the first pass of the calibration target face-down in tray 1 so that the arrows are facing into the MFP.
7. Touch Start to print the second pass. The final calibration target *must* look like the following figure.



CAUTION: If the calibration target does not look like the figure shown here, the calibration process will fail and the quality of scans will be degraded. *The black areas must extend completely to the short edges of the page. If they do not, use a black marker to extend the black areas to the edge of the page.* Ensure that the paper is loaded properly.

8. Place the calibration target face-up into the ADF, and adjust the side guides.
9. After the calibration target has passed through the ADF once, reposition it face down in the ADF and touch Start.
10. Place the calibration target face-down on the scanner glass, touch Start, and scan the page. After this pass, the calibration is complete.

Set the real-time clock

Use the real-time clock feature to set the date and time settings. The date and time information is attached to stored print, fax, and digital-send jobs, so you can identify the most recent versions of stored print jobs.

Set the date format

1. On the control panel, scroll to and touch Administration.
2. Touch Time/Scheduling.
3. Touch Date/Time.
4. Touch Date Format.
5. Touch the desired format.
6. Touch Save.

Set the date

1. On the control panel, scroll to and touch Administration.
2. Touch Time/Scheduling.
3. Touch Date/Time.
4. Touch Date.
5. Touch the appropriate options to set the correct month, date of the month, and the year.
6. Touch Save.

Set the time format

1. On the control panel, scroll to and touch Administration.
2. Touch Time/Scheduling.
3. Touch Date/Time.
4. Touch Time Format.
5. Touch the appropriate format.
6. Touch Save.

Set the time

1. On the control panel, scroll to and touch Administration.
2. Touch Time/Scheduling.
3. Touch Date/Time.
4. Touch Time.

5. Touch the appropriate options to set the correct hour, minute, and AM/PM setting.
6. Touch Save.

4 Theory of operation

This chapter provides information about the following topics:

- Basic operation
- Formatter system
- Engine control system
- Laser/scanner system
- Image formation system
- Pickup/feed system
- Scanner system
- 2 X 500-sheet paper feeder
- Output devices

Basic operation

The HP Color LaserJet CM4730 MFP functions are divided into the following systems:

- Engine control system
- Laser/scanner system
- Image formation system
- Pickup/feed system
- Scanner system
- 2 X 500-sheet paper feeder
- Output devices

The engine control system controls the laser/scanner system, the image formation system, and the pickup/feed system. The engine control system performs the printing operation after receiving a print command from the external device through the formatter. The engine control system also receives status from each system and sends necessary information back to the formatter.

This chapter describes each of these four systems thoroughly.

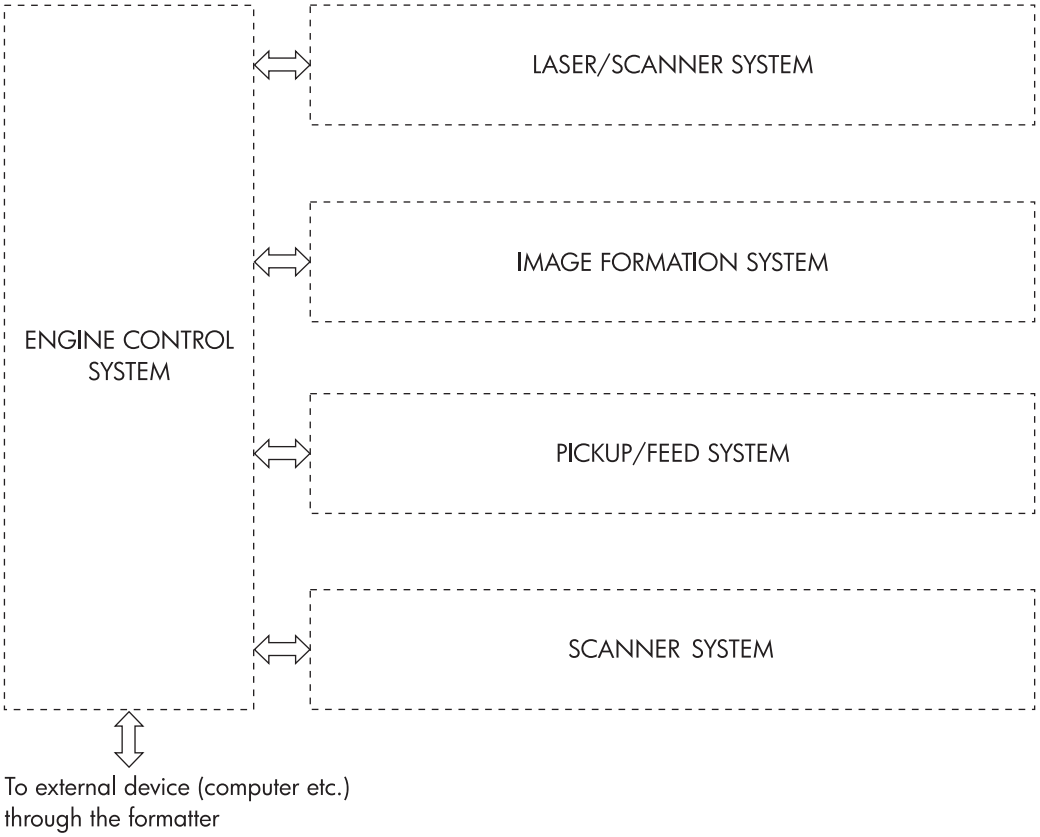


Figure 4-1 Basic system operation

Operation sequence

A microcomputer in the engine control system controls the operation sequence for the MFP. The basic operation sequence (see Table 4-1 Basic operation sequence on page 135) describes the main operational periods from the point when the MFP is turned on until a print operation is completed and each motor stops rotating.



NOTE: In the following table, “ETB” stands for “electrostatic transfer/transport belt.”

Table 4-1 Basic operation sequence

Period		Purpose	Remark
WAIT (wait period)	From the time the power switch is turned on until the ETB cleaning is completed.	To clear a potential on the drum surface and to clean the ETB.	During this period, the MFP checks the toner level and detects whether the cartridges are present. The MFP also executes the pulse width modulation adjustment, color registration adjustment, and image density calibration control as required.
STBY (standby period)	From the end of the WAIT or LSTR period or last rotation until the formatter inputs a print command or until the power is turned off.	To keep the MFP ready to print.	When the formatter sends a Sleep command, the MFP enters Sleep mode.
INTR (initial rotation period)	From immediately after the formatter inputs a print command until the TOP signal is sent to the formatter.	To stabilize the photosensitive drum sensitivity in preparation for a print operation.	When the formatter sends a print command in preparation for printing.
PRINT (print period)	From the end of the INTR period until the leading edge detection sensor detects paper and then turns off the transfer positive bias.	To form an image on the photosensitive drum according to the video signal input from the formatter and to transfer the toner image to the paper.	After the power is turned on, the cartridge is cleaned every 35 pages and the ETB is cleaned every 100 pages.
LSTR (last rotation period)	From the end of the PRINT period until the drum motor stops.	To deliver the paper out of the MFP and to clean the ETB.	The last rotation period lasts until the instant the formatter sends a print command. Then the initial rotation period starts again.

Operation sequence (scanner)

Period (sequence)	Description
Power on	During this time, the scanner motors rotate, the MFP checks the status of all the sensors, the scanner lamp is illuminated, the optical scan head moves from its home position, the scanner calibrates, and then the optical scan head returns to its home position.
Initialization	The period of time after the initial power-on sequence and before the MFP is ready to scan or copy. During this time, the scanner and ADF initialization is completed, scanner calibration is performed, and the ADF checks for media in the input tray.

Period (sequence)	Description
Standby	The period of time from the end of the initialization sequence until a request for a scan. During this time, the MFP might go into Sleep mode and the scan carriage rests in its home position.
Scan	The period of time immediately following a request for a scan. The scanner fan turns on, the scan start position is adjusted, the MFP performs the scan, and data is sent to the formatter.

Power on sequence

The power on sequence initializes the MFP and checks for possible malfunctions or paper jams. Figure 4-2 Power on sequence on page 137 shows the MFP status from power on to standby mode.

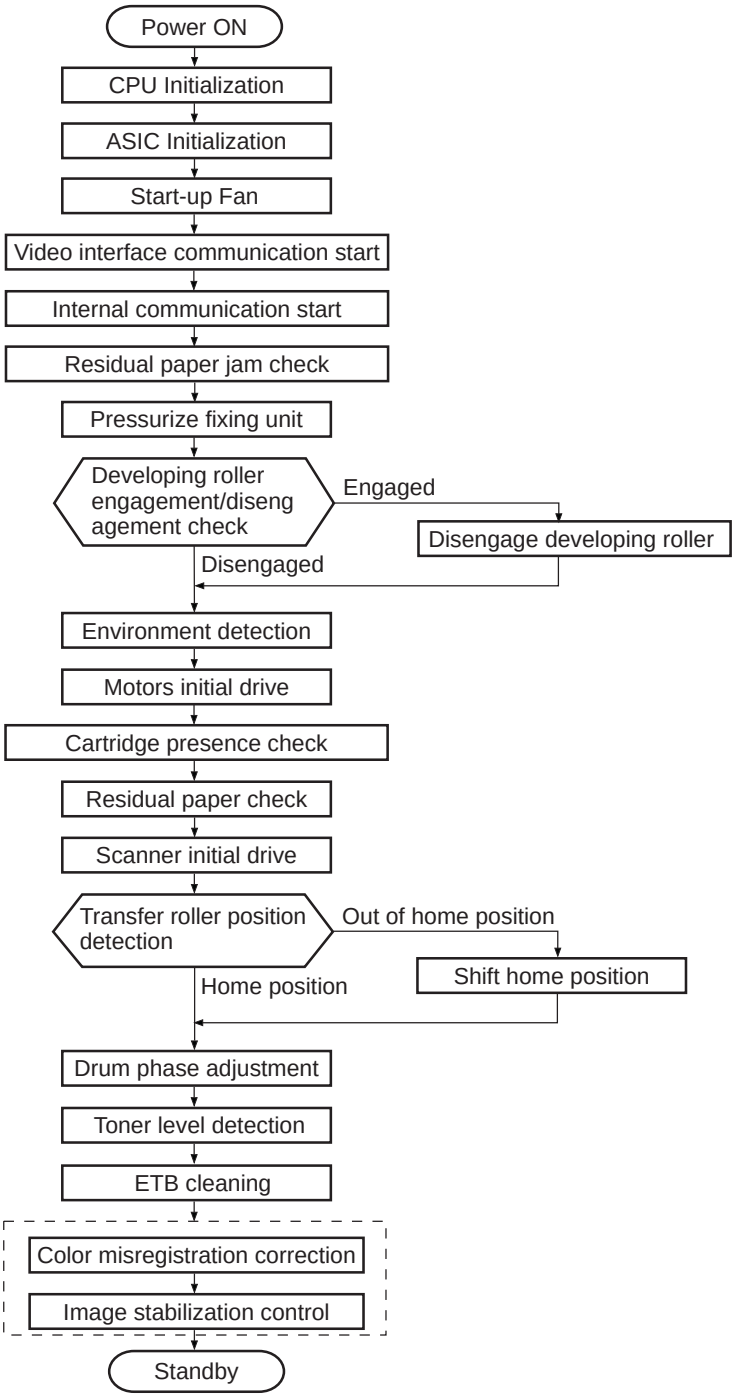


Figure 4-2 Power on sequence

Formatter system

The formatter PCB is responsible for the following actions:

- Receiving and processing print data from the various MFP interfaces
- Monitoring control panel inputs and relaying MFP status information (through the product control panel and the bidirectional I/O)
- Developing and coordinating data placement and timing with the print engine
- Storing font information
- Communicating with the host computer through the bidirectional interface
- Controlling the Sleep mode

The formatter monitors the MFP continuously through the video interface. When the MFP is ready to print, the formatter sends a signal to the DC controller, which turns the laser on or off based on the signal. Figure 4-3 Formatter system on page 138 shows the formatter system.

The formatter also provides the electrical interface and mounting locations for an EIO card, two memory DIMMs, two additional flash memory cards (a third slot is reserved for firmware), hard disk, and optional analog fax accessory.

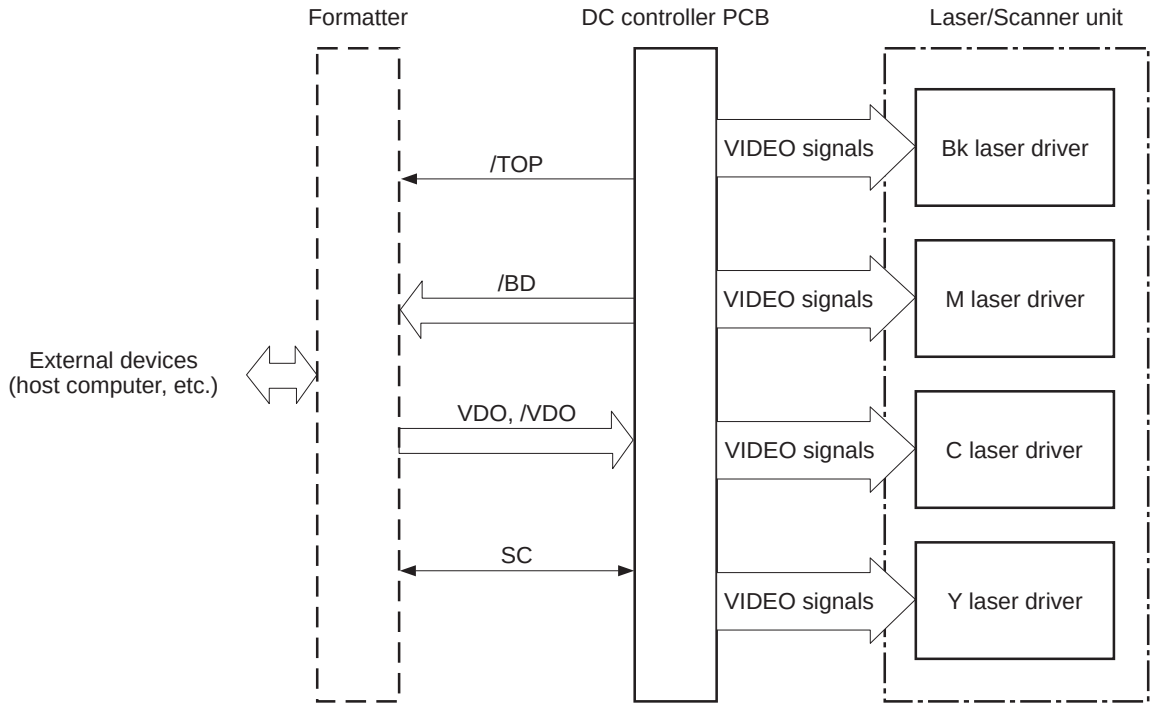


Figure 4-3 Formatter system

Sleep mode

This feature conserves power after the MFP has been idle for an adjustable length of time. Set the time length in the **Administration** menu, under **Time/Scheduling**, **Sleep Delay**. When the MFP is in Sleep mode, the product control panel backlight is turned off, but the MFP retains all printer settings,

downloadable fonts, and macros. The default setting is **30 minutes**. You can turn Sleep mode off in the **Administration** menu, under **Management**, **Sleep mode**.

The MFP exits Sleep mode and enters the warm-up cycle when any of the following occurs:

- A print job, valid data, or a PML or PJL command is received at the parallel port, EIO card, or USB 2.0 connector.
- A product control panel button is pressed.
- The right upper and lower covers are opened.
- The engine test button is pressed.



NOTE: MFP error messages override the **Sleep Mode On** message. The MFP enters Sleep mode at the appropriate time, but the error message continues to appear.

Image Resolution Enhancement technology (REt)

The formatter contains circuitry for Image Resolution Enhancement technology (REt), which modifies the standard video dot data on its way to the DC controller PCB to produce “smoothed” line edges. The REt can be turned on or off from the product control panel or from some software programs. The default setting is medium.



NOTE: The REt settings that are sent from software programs or printer drivers override the control panel settings.

Input/Output

This section explains the MFP input/output (I/O) capabilities.

Parallel interface

The formatter receives incoming data through its bidirectional interface (IEEE-1284). The I/O provides high-speed and two-way communication between the MFP and the host, allowing the user to change MFP settings and monitor MFP status from the host computer. The user can configure the HIGH SPEED item on the control panel menu. (This item is found by touching **Administration**, navigating to the **Networking and I/O** menu, and selecting **Parallel Input**.) The default setting, **Yes**, allows the I/O to run at the higher speeds supported by most newer computers. When set to **No**, the parallel interface runs at the slower mode that is compatible with older computers. The user can also configure the **Advanced Functions** item. The default setting, ON, allows for two-way parallel communications. The OFF mode disables the advanced functionality. The I/O is compatible with the bidirectional parallel interface standard.

USB 2.0 connector

The HP Color LaserJet CM4730 MFP supports a USB 2.0 connector on the back of the MFP. You must use an A-to-B type USB cable.

ACC accessory port

This MFP also includes a third-party accessory (ACC) port that uses USB host protocol.

Flash

Optional flash is available in 4 MB flash memory DIMMs for storing forms, fonts, and signatures.

Hard disk

The hard disk is mounted in an EIO slot on the formatter. The hard disk is used to create multiple original prints (mopies) and store forms, fonts, and signatures.

CPU

The HP LaserJet CM4730 MFP formatter incorporates a 533 MHz RISC processor.

FIH (foreign interface harness)

The FIH allows connection to third-party devices, such as copy counters and biometric security devices.

MFP memory

If the MFP encounters difficulty managing available memory, a clearable warning message will appear on the product control panel.

Some MFP messages are affected by the auto-continue and clearable warning settings from the **Administration** menu, under **Device Behavior**, **Clearable Warnings**. If **Job** is set on the product control panel, warning messages appear on the control panel display until the end of the job from which they were generated. If **On** is set, warning messages appear on the control panel until **OK** is pressed. If an error occurs that prevents printing and **Autocontinue Off** is set, the message appears until IGNORE is touched.

Read-only memory

Besides storing microprocessor control programs, the read-only memory (ROM) stores dot patterns of internal character sets (fonts).

Random-access memory

The random-access memory (RAM) contains the page, I/O buffers, and the font storage area. It stores printing and font information received from the host system, and can also serve to temporarily store a full page of print-image data before the data is sent to the print engine. Memory capacity can be increased by adding DIMMs to the formatter. Note that adding memory (DIMMs) might also increase the print speed for complex graphics.

DIMM slots

The DIMM slots can be used to add memory, fonts, or firmware upgrades.

Flash memory

To upgrade MFP firmware, upload a new firmware image to the MFP.

Nonvolatile memory

The MFP uses nonvolatile memory (NVRAM) to store I/O and information about the print environment configuration. The contents of NVRAM are retained when the MFP is turned off or disconnected.

PJL overview

Printer job language (PJL) is an integral part of configuration, in addition to the standard printer command language (PCL). With standard cabling, PJL allows the MFP to perform the following functions:

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

PML

The printer management language (PML) allows remote configuration and status readback through the I/O ports.

Control panel

The formatter sends and receives MFP status and command data to and from a control panel board.

Scanner interface

The formatter receives data from the scanner to produce copies and to send scanned data in e-mail format.

Engine control system

The engine control system is the brain of the HP Color LaserJet CM4730 MFP. It controls all the other systems according to commands from the formatter. The engine control system consists of the following:

- DC controller PCB
- High-voltage PCB
- Low-voltage power supply PCB
- Formatter

Each of these components is described in this chapter.

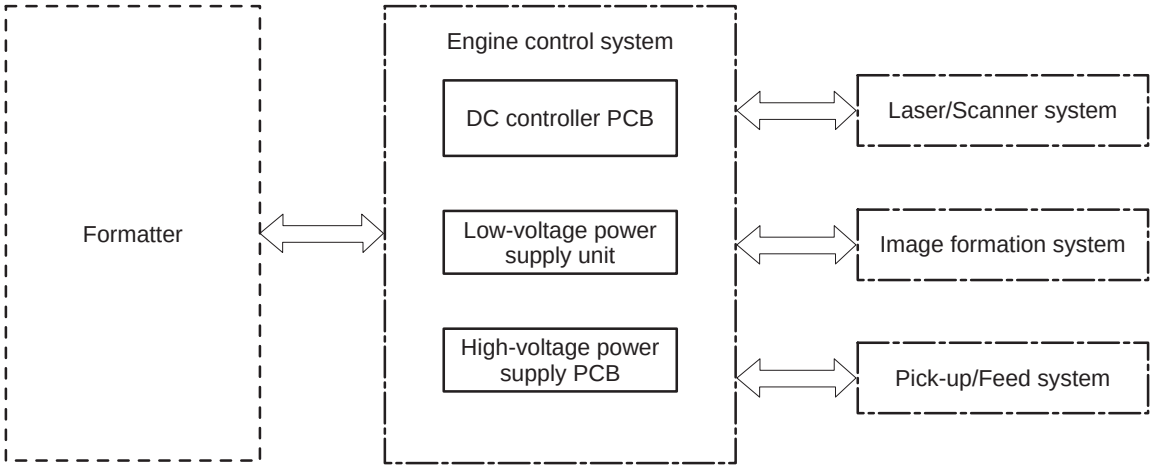


Figure 4-4 Engine control system

NOTE: In this manual, the abbreviation "PCB" stands for "printed circuit board". Components described as a PCB can consist of a single circuit board or a circuit board plus other parts, such as cables and sensors.

DC controller PCB

The DC controller controls the print operation sequence for the MFP. The sequence of events is as follows:

1. Power is turned on.
2. The low-voltage power supply PCB supplies DC power to the DC controller.
3. The CPU in the DC controller starts to control MFP operations.
4. The MFP enters the standby period.
5. Based on the print command and the image data input from the formatter, the CPU sends a signal to drive the laser diode, the motors, and the solenoids.

NOTE: See the general circuit diagram for detailed information about the MFP circuitry.

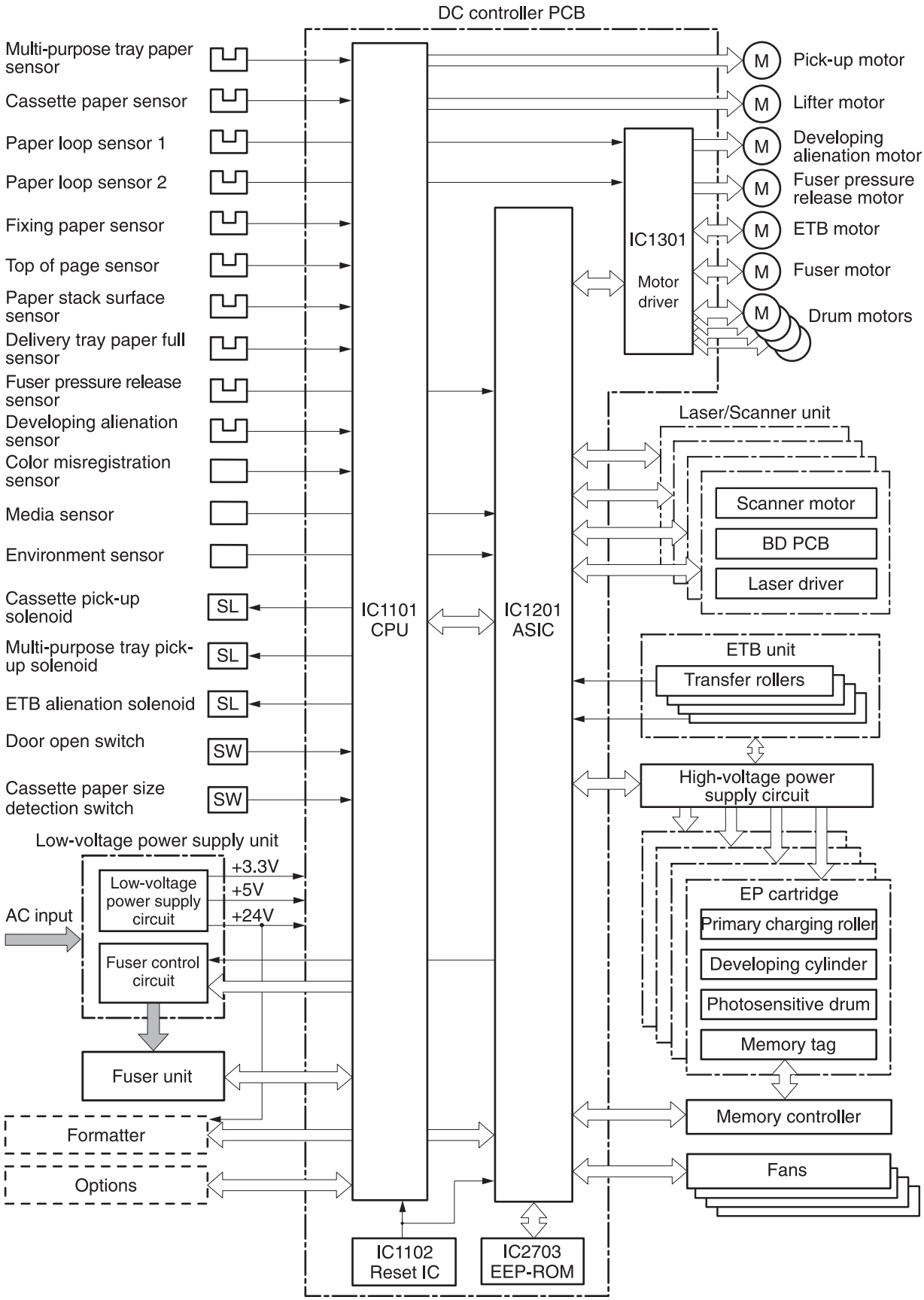


Figure 4-5 DC controller PCB

Block operation

The blocks that make up the DC controller PCB include:

- CPU. The CPU is a single-chip microcomputer with built-in ROM and RAM. It controls the MFP engine sequence, ASIC, fuser, pickup motor and lifter motor, solenoids, sensors, and switches.
- ASIC. Interfaces with the IC, memory, and external devices.
- Motor driver ASIC. Controls each motor in response to commands from the CPU.
- Reset IC. Monitors voltage and resets the CPU and ASIC when the power is turned on.
- EEPROM. Stores backup data.

Motors, fans, and environment sensor

The MFP has ten motors, ten fans, and one environment sensor. Seven of the motors are DC motors; the other three are stepping motors. Figure 4-6 Motors and fans on page 145 shows the locations of the motors and fans. Table 4-2 Function of motors, fans, and environment sensor on page 146 explains the function of each component.

Two of the stepping motors and six of the seven DC motors are used for paper feeding and image formation. The remaining stepping motor is the developing disengaging motor. The remaining two DC motors are fan motors.

Since the MFP transfers an image in four colors in line onto the media, small changes in the rotational speed of the motor are likely to cause color misalignment. The DC motors used for image formation are precisely controlled to account for rotational speed fluctuation.

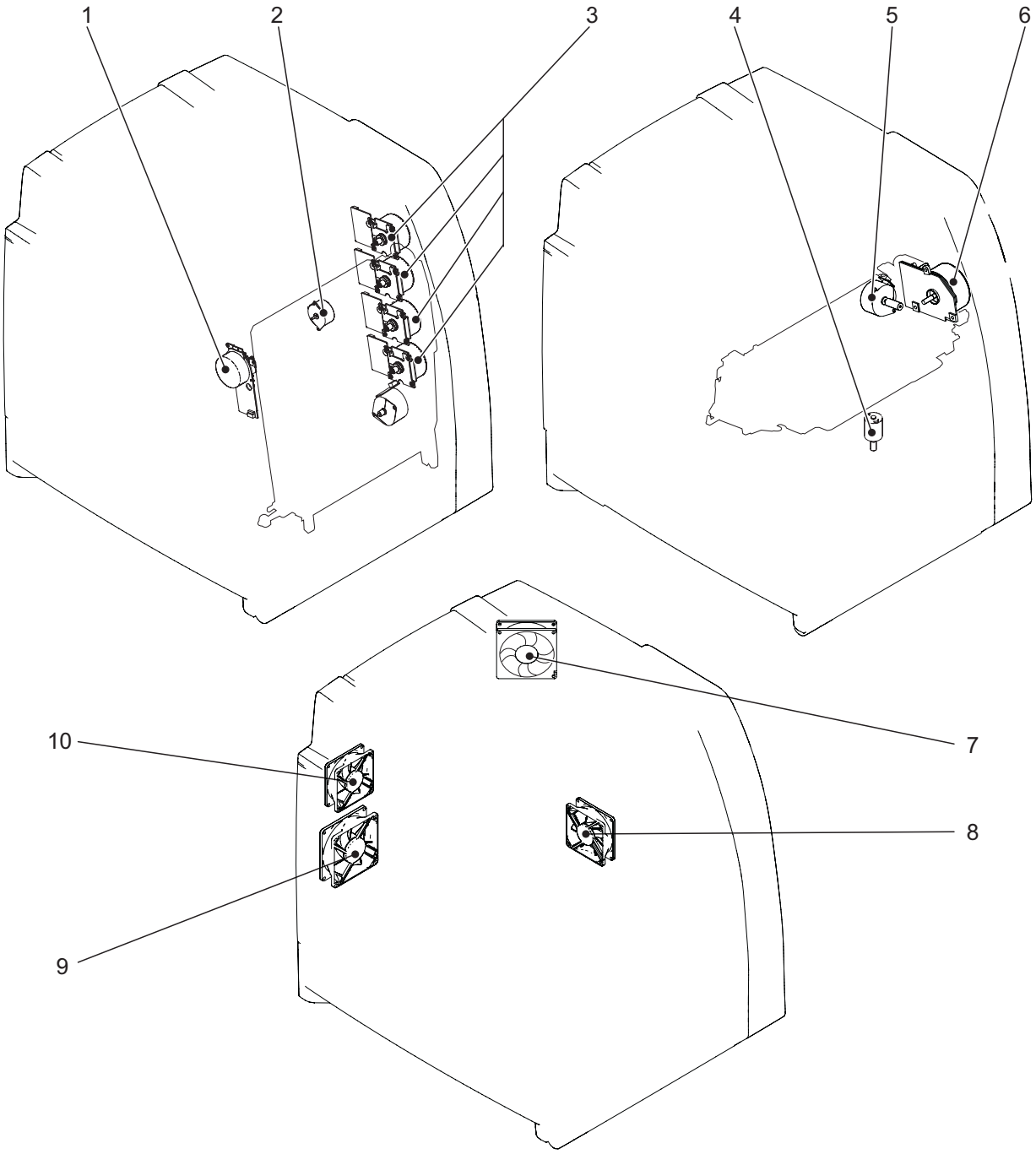


Figure 4-6 Motors and fans

Table 4-2 Function of motors, fans, and environment sensor

Name	Function	Type	Failure detection
M1: Yellow (Y) cartridge motor	Drives the photosensitive drum, developing cylinder, and stirrer plate	DC motor	Yes
M2: Cyan (C) cartridge motor			
M3: Magenta (M) cartridge motor			
M4: Black (K) cartridge motor			
M5: Fuser motor	Drives the fuser pressure roller and delivery roller	DC motor	Yes
M6: Fuser pressure release motor	Drives the fuser pressure release mechanism	Stepping motor	No
M7: ETB motor	Drives the ETB	DC motor	Yes
M8: Developing alienation motor	Disengages the photosensitive drums from the developing cylinder	Stepping motor	No
M9: Pickup motor	Drives the pickup roller and feed roller	Stepping motor	No
M10: Lifter motor	Moves the lifters	DC motor	No
FAN1: Rear exhaust fan	Exhausts heat around the ETB, drum motors, and formatter	DC motor	Yes
FAN2: Cartridge fan	Exhausts heat around the fuser and cartridges	DC motor	Yes
FAN3: Delivery fan	Exhausts heat around fuser and delivery unit	DC motor	Yes
FAN4: Power supply fan	Exhausts heat around the pickup motor and low-voltage power supply	DC motor	Yes
Duplexer fan	Exhausts heat around the duplexer	DC motor	Yes
ETB fan	Exhausts heat around the ETB assembly	DC motor	Yes
Fuser fan	Exhausts heat around the fuser	DC motor	Yes
Control fan #1	Exhausts heat around the formatter and DC controller	DC motor	Yes
Control fan #2	Exhausts heat around the formatter and DC controller	DC motor	Yes
Sub power supply fan	Exhausts heat around the sub power assembly	DC motor	Yes
Environment sensor	Detects the temperature and humidity levels inside the MFP	NA	Yes

Failure detection

The DC controller can detect motor and fan failures as described below.

Drum motor failure detection

The DC controller determines the drum motor failure and notifies the formatter of an error status when it encounters the following conditions.



NOTE: The drum motor failure detection operates in the same manner for each color separately.

- **Drum motor start-up abnormality**. The interval of the drum motor speed detection signal does not reach the specified interval after 1.5 seconds of the drum motor drive start.
- **Drum motor rotation abnormality**. The interval of the drum motor speed detection signal stays at an irregular interval for two seconds and longer after it has reached the specified interval.

Fuser motor failure detection

The DC controller determines the fuser motor failure and notifies the formatter of an error status when it encounters the following conditions.

- **Fuser motor start-up abnormality**. The interval of the fuser motor speed detection signal does not reach the specified interval after 1.5 seconds of the fuser motor drive start.
- **Fuser motor rotation abnormality**. The interval of the fuser motor speed detection signal stays at an irregular interval for two seconds and longer after it has reached the specified interval.

ETB motor failure detection

The DC controller determines the ETB motor failure and notifies the formatter of an error status when it encounters the following conditions.

- **ETB motor start-up abnormality**. The interval of the ETB motor speed detection signal does not reach the specified interval after 1.5 seconds of the ETB motor drive start.
- **ETB motor rotation abnormality**. The interval of the ETB motor speed detection signal stays at an irregular interval for two seconds and longer after it has reached the specified interval.

Rear exhaust fan failure detection

The DC controller detects a rear exhaust fan failure and notifies the formatter of an error status when the rear exhaust fan lock detection signal is input for ten seconds continuously.

Cartridge fan failure detection

The DC controller detects a cartridge fan failure and notifies the formatter of an error status when the cartridge fan lock detection signal is input for ten seconds continuously.

Delivery fan failure detection

The DC controller detects a temporary locked status when the delivery fan lock detection signal is input for 0.5 seconds continuously after 0.1 seconds of delivery fan drive start. The DC controller starts the drive delivery fan for four seconds at the time of temporary locked status determination. If

the delivery fan lock detection signal is input for four seconds, it detects a delivery fan failure and notifies the formatter of an error status.

Power supply fan failure detection

The DC controller detects a power supply fan failure and notifies the formatter of an error status when the power supply fan lock detection signal is input for ten seconds continuously.

Scanner fan failure detection

The DC controller detects a scanner fan failure and notifies the formatter of an error status when the scanner fan lock detection signal is input.

ADF fan failure detection

The DC controller detects a ADF fan failure and notifies the formatter of an error status when the ADF fan lock detection signal is input.

Control fans #1 and #2 failure detection

The DC controller detects a control fan failure and notifies the formatter of an error status when the control fan lock detection signal.

Sub power supply fan failure detection

The DC controller detects a sub power supply fan failure and notifies the formatter of an error status when the sub power supply fan lock detection signal is input.

ETB fan failure detection

The DC controller detects an ETB fan failure and notifies the formatter of an error status when the ETB fan lock detection signal is input.

Other fan failures can also be detected.

Low-voltage power supply

The low voltage power supply unit generates DC power and controls the fuser. The low voltage power supply unit consists of the following circuits:

- **Fuser control circuit**. Controls the fuser heater temperature in the fuser.
- **Low-voltage power supply circuit**. Generates the DC power required in the MFP.

Figure 4-7 Low-voltage power supply circuits on page 149 shows each circuit of the low voltage power supply unit.

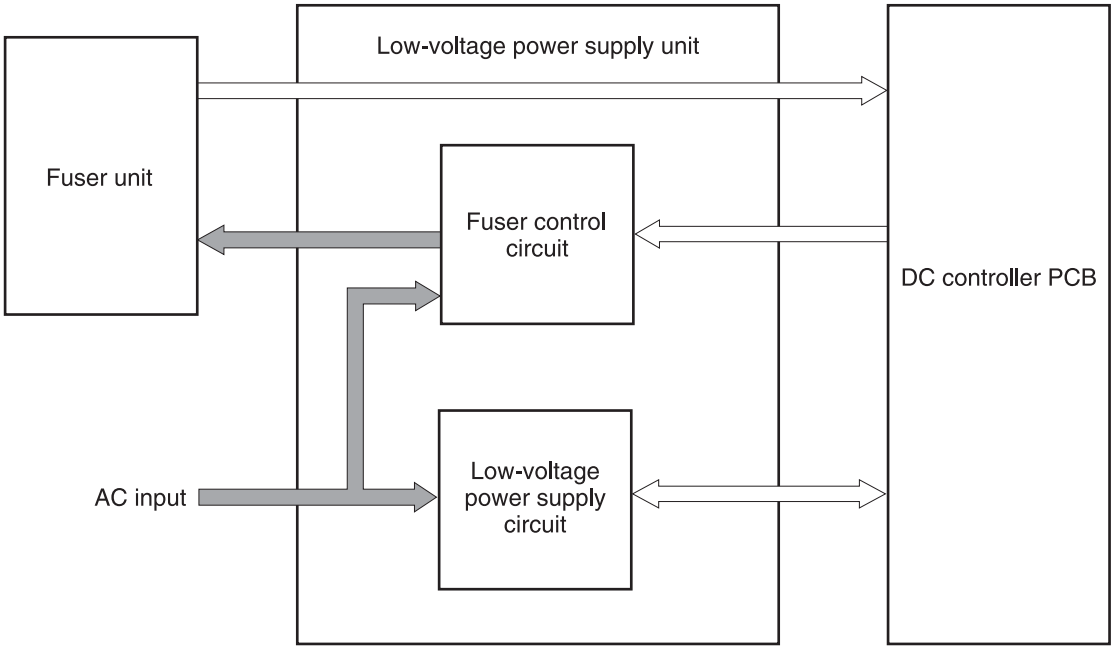


Figure 4-7 Low-voltage power supply circuits

Fuser control circuit

This MFP uses a ceramic heating method to heat the fuser. Figure 4-8 Fuser power supply circuit on page 149 shows the configuration of the fuser power supply.

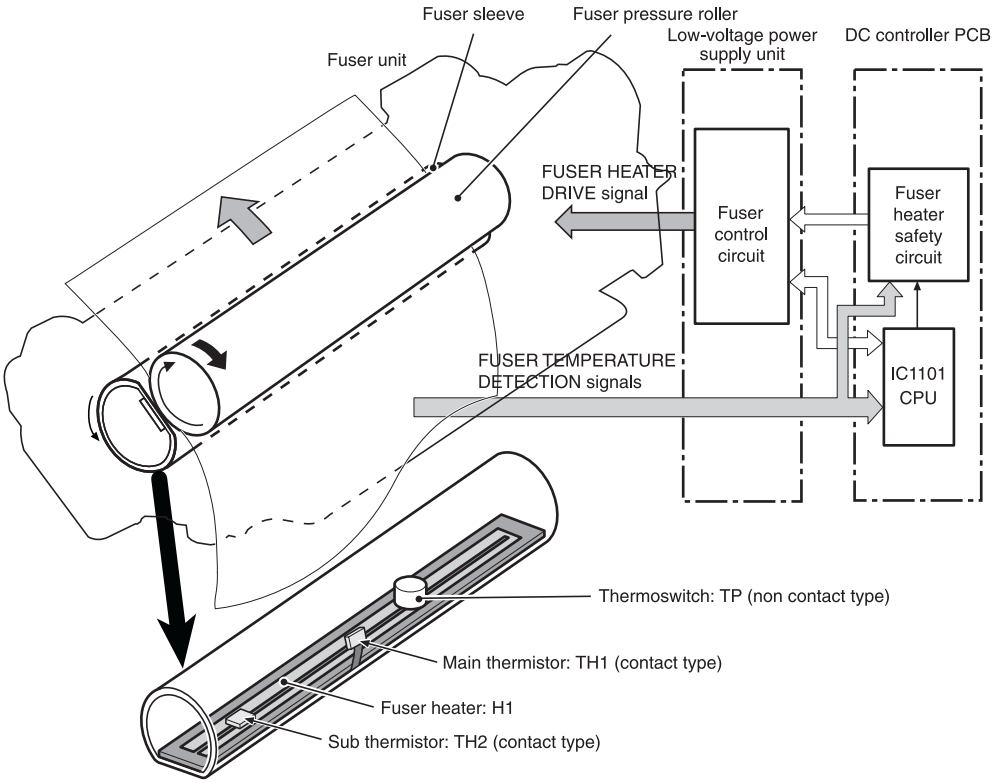


Figure 4-8 Fuser power supply circuit

The fuser power supply system has three main components:

- **Fuser heater.** A ceramic heater heats the fuser sleeve. The heater has a U-shaped heating element on its surface.
- **Thermistors.** Two thermistors are in the fuser sleeve: one in the center, and the other at the end. Each thermistor monitors the temperature in the fuser sleeve.
    - **Main thermistor**. The main thermistor controls print temperature and between-sheets temperature. It contacts the inside surface of the fuser sleeve at the center and detects the fuser sleeve temperature.
    - **Sub thermistor**. The sub thermistor detects the one-sided temperature rise of the fuser heater, the initial rotation temperature control, and the start-up temperature control. It contacts the one side of the fuser heater and detects the fuser heater temperature.
- **Thermoswitch.** The thermoswitch prevents the fuser heater temperature from rising abnormally high. It is located above the center of the fuser sleeve. If the fuser heater temperature rises abnormally high, the contact is broken to cut off the power supply to the heater.

  These temperature controls are performed by the fuser control circuit and the fuser heater safety circuit according to the commands from the CPU in the DC controller.

Table 4-3 Fuser temperatures

Media	Temperature	Engine speed
Any	Auto	Auto
Plain	Auto	Auto
Preprinted	~ 195°C (383°F)	Full
Letterhead	~ 195°C (383°F)	Full
Overhead transparencies	~ 180°C (356°F)	1/3
Prepunched	~ 195°C (383°F)	Full
Labels	~ 180°C (356°F)	1/2
Bond	~ 195°C (383°F)	Full
Recycled	~ 195°C (383°F)	Full
Color	~ 195°C (383°F)	Full
Light	~ 175°C (347°F)	Full
Intermediate	~ 180°C (356°F)	1/2
Heavy	~ 180°C (356°F)	1/2
Extra heavy	~ 170°C (338°F)	1/2
Cardstock	~ 170°C (338°F)	1/2
Rough	~ 180°C (356°F)	1/2
Glossy	~ 180°C (356°F)	1/2
Heavy glossy	~ 165°C (329°F)	1/3
Extra heavy glossy	~ 180°C (356°F)	1/3

Table 4-3 Fuser temperatures (continued)

Media	Temperature	Engine speed
Tough paper	~ 180°C (356°F)	1/3
Envelopes	~ 180°C (356°F)	1/2

Low-voltage power supply circuit

The low-voltage power supply circuit converts AC power from the wall receptacle into DC power to cover the DC loads.

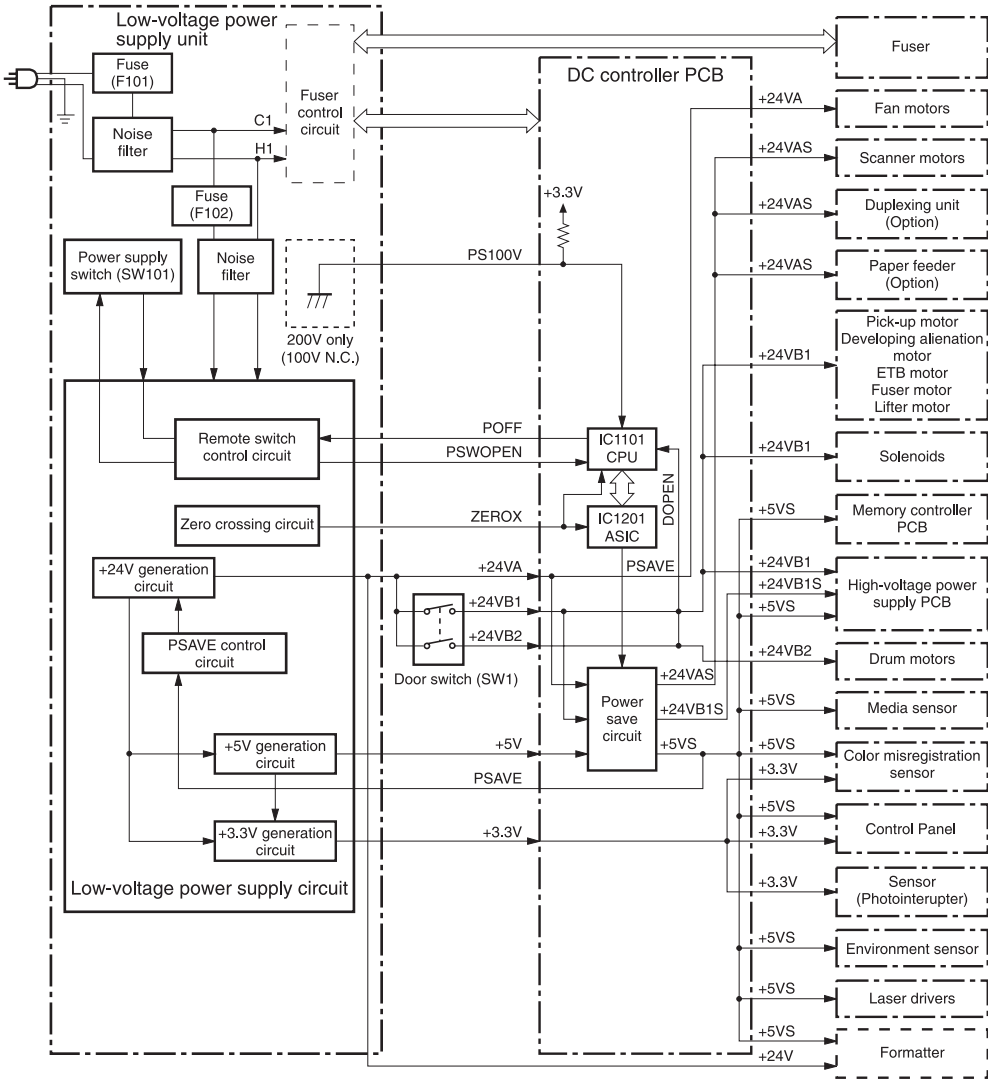


Figure 4-9 Low-voltage power supply circuit

The AC power is supplied to the low-voltage power supply circuit by turning on the power switch (SW101). The AC power is then converted into +24V, +5V and +3.3V to serve the DC power load requirements.

Protective functions

Two fuses, FU101 and FU102, protect against overcurrent and overvoltage to prevent failures in the power supply circuit. If there is a supply error, such as a short-circuit or overvoltage, the low-voltage system automatically cuts off the output voltage. The fuses blow and cut off the AC power, once AC overcurrent flows into the AC line.

If DC voltage is not being supplied from the low-voltage power supply circuit, turn off the power switch (SW101). Do not turn the power on again until the root cause is found. If the cause is not at the load side, the protective function may still work.

NOTE: If the low-voltage power supply is shut down for protection, turn the power off (by switching off or unplugging the MFP) and leave the MFP off for approximately three minutes. Then turn the MFP on.

Safety

For safety, the +24V is divided into two: +24VA and +24VB (+24VB1 and +24VB2). The +24VA is supplied from the DC controller, whereas +24VB stops when the door switch (SW1) is cut off. The high-voltage power supply PCB and motors are supplied with the +24VB. They stop when the front cover is opened. This is to protect users and service technicians from injury. The +24VB also functions as the DOOR OPEN DETECTION signal (DOPEN). The CPU determines that the door is open when the +24VB supply stops.

Sleep mode

Sleep mode reduces power consumption during periods of inactivity. When the DC controller receives a Sleep command from the formatter, the controller stops the supply of +24V and +5V power by operating the power-save circuit. At the same time, it sends a POWER SAVE MODE signal (PSAVE) to the low-voltage power supply circuit. The low-voltage power supply circuit implements PSAVE upon receiving the /PSAVE signal. The MFP returns to the WAIT period once it receives a command from the formatter ending Sleep mode.

Power supply recognition

The low-voltage power supply circuit recognizes the voltage specification (100V or 200V) that the MFP uses and the CPU switches the temperature control firmware for the fuser accordingly. The CPU monitors the 100V POWER SUPPLY DETECTION signal (PS100V). When the MFP is connected to the 100V power source, the temperature control firmware is switched for the 100V specification. In the same way, when the MFP is connected to the 200V power source, it is switched for the 200V specification.

Heater temperature control

The heater temperature control detects the surface temperature of the fuser sleeve and controls the current flowing to the induction heating coil. The heater temperature control circuit is shown in Figure 4-10 Heater temperature control circuit on page 153.

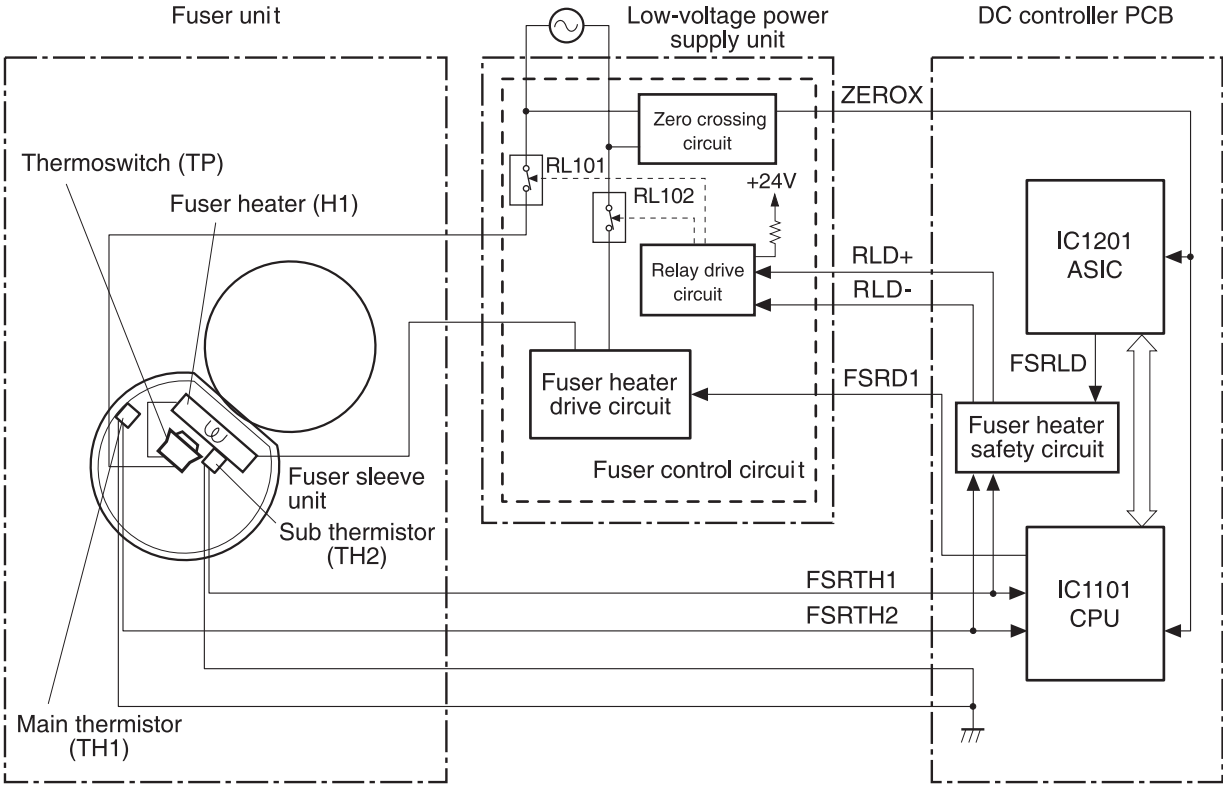


Figure 4-10 Heater temperature control circuit

The fuser heater temperature is monitored by two thermistors: the main thermistor (TH1) and the sub thermistor (TH2). The main thermistor controls the print temperature and the between-sheets temperature. The sub thermistor detects the one-sided temperature rise of the fuser heater, and controls the initial rotation temperature and the start-up temperature.

The CPU (IC1101) on the DC controller monitors the voltage of the fuser heater temperature signals. The CPU sends the fuser heater drive signal (FSRD1) according to the voltage level. The fuser heater control circuit controls the fuser temperature so the heater remains at the target temperature.

The fuser temperature control is divided into the following four sequences.

NOTE: During standby, the fuser temperature is maintained at about 76.7°C (170°F) to accommodate a first-print time of less than 15 seconds.

Initial rotation temperature control

This control melts the grease inside the fuser sleeve and lubricates the sleeve when the power is turned on to prevent sleeve damage. If the sub thermistor detects the temperature of below 50°C (122°F) at power-on, the CPU turns on the fuser heater for a prescribed time period before it drives the fuser motor.

Start-up temperature control

This control determines the start-up power provided to the fuser heater according to the temperature detected by the sub thermistor at heater energization. If the heater is energized within 30 seconds after the previous print completion, the heater control starts at this temperature point.

Print temperature control

This control maintains the temperature of the fuser sleeve at its targeted temperature during the printing operation. The CPU gradually raises the targeted temperature in one printing process. This prevents the fuser temperature from falling while the media goes through the fuser roller. The targeted temperature also varies according to the number of prints when continuous printing. The targeted temperature varies depending on the media types.

Between-sheets temperature control

This control maintains the temperature of the fuser heater below its normally targeted temperature during continuous printing. This prevents the excessive temperature rise of the fuser pressure roller while uncovering the paper portion of between-sheets with low-speed mode. The targeted temperature varies according to the between-sheets intervals and the media types.

Temperature protective function

This function detects an abnormal temperature rise of the fuser and interrupts power supply to the fuser heater. The following three protective components prevent an abnormal temperature rise of the fuser heater.

- CPU
- Fuser heater safety circuit
- Thermoswitch

Protective function by the CPU

The CPU always monitors the output voltage of the main and sub thermistors (FSRTH1, FSRTH2). If the voltage of the FSRTH1 is approximately 0.9V and lower (equivalent to 230°C (446°F) and higher), or the voltage of the FSRTH2 is approximately 0.46V and higher (equivalent to 285°C (545° F) and higher), the CPU detects a fuser failure and then performs the following sequence:

1. The CPU sets the fuser heater drive signal (FSRD1) to inactive and turns the heater off.
2. The CPU sets the relay drive signal (FSRLD) to stop through the ASIC.
3. The fuser heater safety circuit sets the main thermistor relay drive signal (RLD-) to inactive.
4. The fuser heater safety circuit sets the sub thermistor relay drive signal (RLD+) to inactive.
5. The relay drive circuit releases the relays (RL101 and RL102) to interrupt power supply to the fuser heater.

Protective function by the fuser heater safety circuit

The fuser heater safety circuit monitors the output voltage of the main and sub thermistors (FSRTH1, FSRTH2). If the voltage of the FSRTH1 is approximately 0.8V and lower (equivalent to 240°C (464° F) and higher), or the voltage of the FSRTH2 is approximately 0.41V and higher (equivalent to 293°C (559°F) and higher), the circuit detects a fuser failure and performs the following sequence:

1. The fuser heater safety circuit makes the main thermistor relay drive signal (RLD-) inactive.
2. The fuser heater safety circuit makes the sub thermistor relay drive signal (RLD+) inactive.
3. The relay drive circuit releases the relays (RL101 and RL102) to interrupt power supply to the fuser heater.

Protective function by the thermoswitch

When the temperature of the fuser heater rises abnormally high and the detected temperature of the thermoswitch (TP) exceeds approximately 250°C (482°F), the thermoswitch is disconnected and the power supply to the fuser heater is immediately cut off.



NOTE: The actual temperature of the fuser heater is about 30° higher than the thermoswitch, as the thermoswitch is not contact with the fuser heater.

Temperature failure detection

The CPU determines the fuser failure, stops the MFP engine, and notifies the formatter of an fuser failure when it encounters the following conditions:

Start-up failure (warm-up failure)

The CPU determines a start-up failure:

- If the detected temperature of the main thermistor does not reach 185°C (365°F) within 30 seconds of heater energization during the wait period.
- If the heater does not enter the **Ready** mode within 30 seconds of heater energization during the initial rotation period.

Abnormal low temperature of main thermistor (no conduction)

The CPU presumes the main thermistor has no conduction:

- If the detected temperature of the main thermistor is kept 40°C (104°F) or lower for four seconds continuously, from heater energization until the heater is turned off during the wait period.
- If the detected temperature of the main thermistor is kept 70°C (158°F) or lower for four seconds continuously, from initial rotation start until the media reaches the fuser during the initial rotation period.
- If the detected temperature of the main thermistor is kept 130°C (266°F) or lower for 0.5 seconds continuously, from when the media reaches the fuser until the heater is turned off during the print period.

Abnormal high temperature of main thermistor

The CPU presumes an abnormal high temperature of the main thermistor if the detected temperature of the main thermistor is kept 230°C (446°F) and higher for 0.1 seconds continuously.

Abnormal low temperature of sub thermistor (no conduction)

The CPU presumes the sub thermistor has no conduction:

- If the detected temperature of the sub thermistor is kept 60°C (140°F) or lower for four seconds continuously, from heater energization until the heater is turned off during the wait period.
- If the detected temperature of the main thermistor is kept 90°C (194°F) or lower for 2.5 seconds continuously, from initial rotation start until the media reaches the fuser during the initial rotation period.

- If the detected temperature of the main thermistor is kept 120°C (248°F) or lower for 0.5 seconds continuously, from when the media reaches the fuser until the heater is turned off during the print period.
- If the detected temperature of sub thermistor is kept 50°C (122°F) or lower for 0.5 seconds continuously during the standby period.

Abnormal high temperature of sub thermistor

The CPU determines the abnormal high temperature of sub thermistor if the detected temperature of the sub thermistor is kept 285°C (545°F) and higher for 0.1 seconds continuously.

Drive circuit abnormality

The CPU determines the drive circuit abnormality if the ZERO CROSSING signal (ZEROX) is not detected for the specified time period.

High-voltage power supply

The high-voltage power supply PCB produces the voltage biases that are applied to the primary charging roller, developing cylinder, developing blade, attraction roller, and transfer roller. There are two types of biases: DC positive bias and DC negative bias. The high-voltage power supply PCB is controlled by the DC controller.

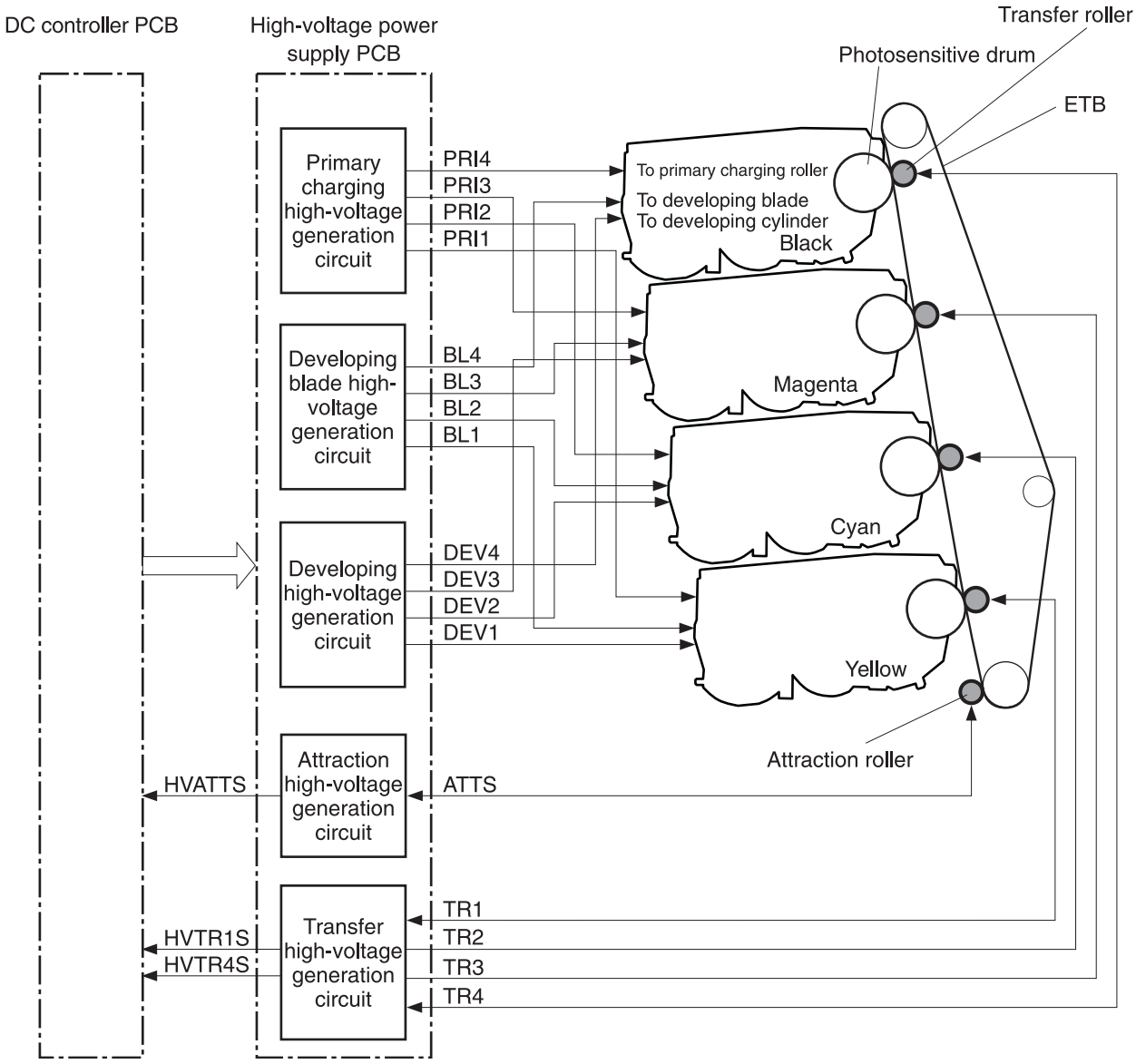


Figure 4-11 High-voltage power supply block diagram

Generation of biases

Generation of primary charging bias: The primary charging bias is the DC negative bias that is generated to apply negative potential to the photosensitive drum in preparation for image formation. This bias is generated for each color (Y, C, M, K) in the primary charging high-voltage power supply circuit. The high-voltage power supply PCB applies the primary charging bias (PRI1, PRI2, PRI3, PRI4) to the primary charging rollers in each cartridge at the specified timing. The value of the primary charging bias varies in response to commands from the DC controller.

Generation of developing bias: The developing bias is the DC negative bias that is generated to adhere toner to an electrostatic latent image formed on the photosensitive drum. This bias is generated for each color. The high-voltage power supply PCB applies the developing biases (DEV1, DEV2, DEV3, DEV4) to the developing cylinders in each cartridge at the specified timing. The value of the developing bias varies in response to commands from the DC controller.

The developing voltage (bias) causes the toner to adhere to the electrostatic image that the laser/scanner assembly created on the photosensitive drum. Two types of developing biases are used: the developing DC negative bias and the developing AC bias. The high-voltage circuit on the power supply generates both biases. These biases are superimposed on one another and then applied to the primary charging roller, which transfers the biases to the drum. The biased developing cylinder picks up toner particles and deposits them onto the electrostatic image on the photosensitive drum. The image is now visible on the drum.

Generation of developing blade bias: The developing blade bias (BL) is the DC negative bias that is generated to charge the toner. This bias is generated for each color in the developing blade high-voltage power supply circuit in the high-voltage power supply PCB. The high-voltage power supply PCB applies the developing blade biases (BL1, BL2, BL3, BL4) to the developing blade in each cartridge at specified timing. The value of the developing blade bias varies in response to the command from the DC controller.

Generation of attraction bias: The attraction bias is generated to attract paper to the ETB and to transfer toner onto the paper efficiently. Both DC positive and DC negative biases are generated when attracting paper and cleaning the ETB. The high-voltage power supply PCB applies the attraction biases (ATTS) to the attraction roller in the ETB unit at the specified timing. The value of the attraction bias varies in response to the command from the DC controller. The DC controller changes the value of the attraction bias and regulates it in constant current control in response to the ATTRACTION CURRENT VALUE RETURN signal (HVATTS) sent from the high-voltage power supply PCB. The following are the printing sequences.

- **Attraction charging bias**: This bias charges the paper positively or negatively and makes the negatively charged toner transfer easily.
- **Between-sheets bias**: This bias prevents the residual toner on the ETB from adhering to the attraction roller in the between-sheets during continuous printing.
- **Cleaning bias**: This bias prevents the residual toner on the ETB from adhering to the attraction roller during ETB cleaning.

Generation of transfer bias: The transfer bias is generated to transfer toner onto the paper. Both DC positive and DC negative biases are generated in the transfer high-voltage power supply circuit in the high-voltage power supply PCB. The DC positive bias is generated when transferring toner, and the DC negative bias is generated when cleaning the ETB. The high-voltage power supply PCB applies the transfer biases (TR1, TR2, TR3, TR4) to the transfer roller in the ETB unit according to the print sequences. The value of the transfer bias varies in response to the command from the DC controller. The DC controller changes the value of the transfer bias and regulates it in constant current control in response to the TRANSFER CURRENT VALUE RETURN signals (HVTR1S, HVTR4S) and the HVATTS signal sent from the high-voltage power supply PCB. The following are the printing sequences.

- **Print bias**: This bias transfers toner on the photosensitive drum surface onto the paper during printing. The transfer roller is applied with the DC positive bias.
- **Between-sheets bias**: This bias prevents the residual toner on the ETB from adhering to the attraction roller in the between-sheets during continuous printing.
- **Cleaning bias**: This bias cleans the ETB by returning any toner remaining on the ETB surface to the photosensitive drum. The transfer rollers in the yellow and magenta cartridges (first and third colors) are applied with DC negative bias. The rollers in cyan and black cartridges (second and fourth colors) are applied with DC positive bias.

Sub power supply assembly

The sub power assembly provides power to the ADF and the image scanner. It is connected to the low-voltage power supply and the DC controller.

Video interface control

The video interface allows communication between the formatter and the DC controller. The formatter always monitors the status of the MFP by using the video interface. It sends the VIDEO signals to the DC controller through the video interface when the MFP is ready to print. The DC controller turns the laser on or off based on the signals it receives.

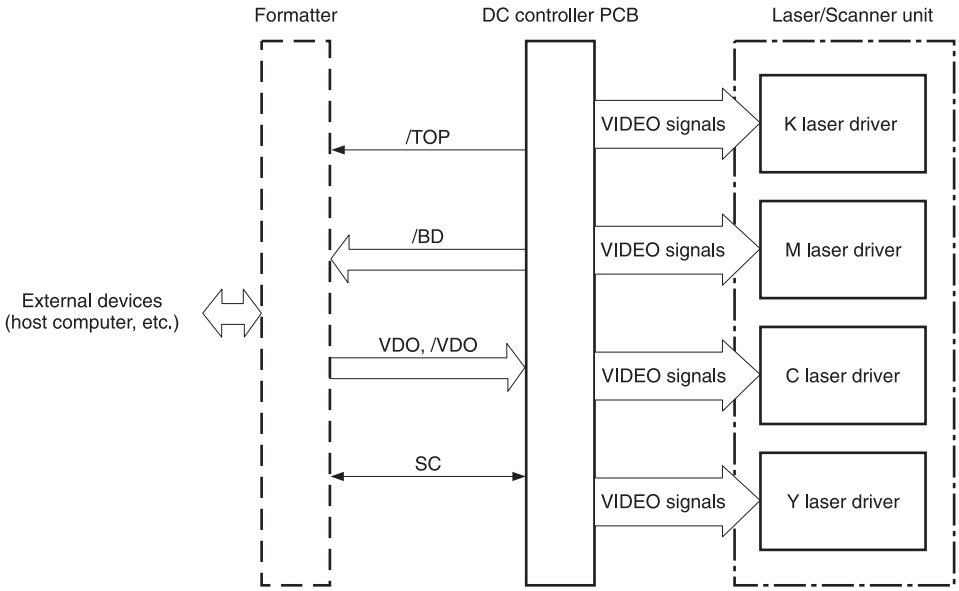


Figure 4-12 Video interface control

The VIDEO INTERFACE signal is exchanged during printing operations, as described below.

1. When the MFP engine is ready to print, the DC controller notifies the formatter using the STATUS COMMAND signal (SC).
2. The formatter sends a print command as a SC signal to the DC controller when the MFP engine and the data for one page are ready.
3. The DC controller drives the scanner motor and sends the HORIZONTAL SYNCHRONOUS signals to the formatter after receiving the print command.
4. The printer engine starts a pickup operation. When the paper arrives at the top of page sensor (SR12), the DC controller sends the VERTICAL SYNCHRONOUS signal (/TOP) to the formatter.
5. The formatter sends VIDEO signals in synchronization with the HORIZONTAL SYNCHRONOUS signals to the DC controller upon a reception of the /TOP signal.
6. The DC controller controls each color's laser driver circuit and turns the laser on and off according to the VIDEO signals. This forms an electrostatic latent image on the photosensitive drums of each color.

7. The latent images on the photosensitive drums are developed by toner and transferred onto paper in this order: Y (yellow), C (cyan), M (magenta), and K (black).

8. The toner is fused to the paper in the fuser and the paper is delivered to the delivery tray. Printing continues if the DC controller receives another print command from the formatter during the printing operation.

Laser/scanner system

The laser/scanner system forms the latent electrostatic image on the photosensitive drum according to video signals sent from the formatter. The main components of each laser/scanner assembly are the laser driver, scanner motor, mirrors, and focusing lenses. Each color has its own laser/scanner assembly unit, which is controlled by the DC controller.

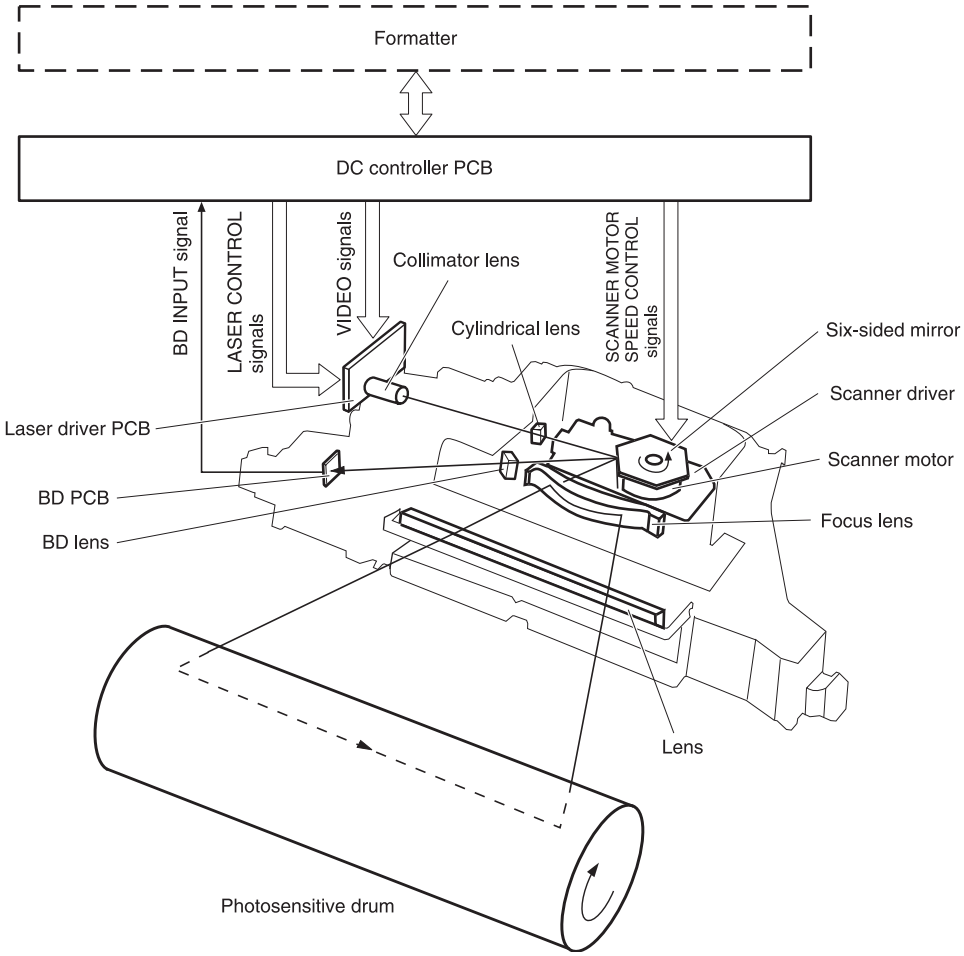


Figure 4-13 Laser/scanner assembly

The laser/scanner system uses two laser diodes in one scanning operation to write two lines simultaneously for high-speed laser scanning. The process is summarized below:

1. After receiving the print command from the formatter, the DC controller activates the scanner motor to rotate the six-faced scanner mirror.
2. When the scanner motor starts to rotate, the DC controller allows the laser to emit light and maintains the scanner motor rotation at a constant speed.
3. When the scanner motor reaches its specified speed, the formatter sends video signals to the laser driver PCB through the DC controller. The laser driver emits two laser diodes according to these signals.
4. The laser beams pass through the collimator lens and the cylindrical lens, and enter the six-faced mirror that is rotating at a constant speed.

5. The laser beams are reflected by the six-faced mirror, pass through the focusing lens and the reflecting mirror that is in front of the six-faced mirror, and focus the photosensitive drum.
6. While the six-faced mirror rotates at a constant speed, the laser beams on the photosensitive drum scan the drum.
7. As the photosensitive drum rotates and the laser beams scan on the photosensitive drum, both at a constant speed, a latent image is formed the drum.

Laser control

The laser control circuit allows the laser driver IC to turn the laser diodes LD1 and LD2 on and off according to the image data signals sent by the DC controller.

The DC controller sends video signals (VDODAT11, /VDODAT11, VDODAT12, and /VDODAT12) and laser control signals (LDCTRL10, (LDCTRL11, and (LDCTRL12) to the logic circuit on the laser driver IC. The laser driver IC controls the laser according to the combination of the laser control signals.

Figure 4-14 Laser control circuit block diagram on page 163 illustrates the laser control system.

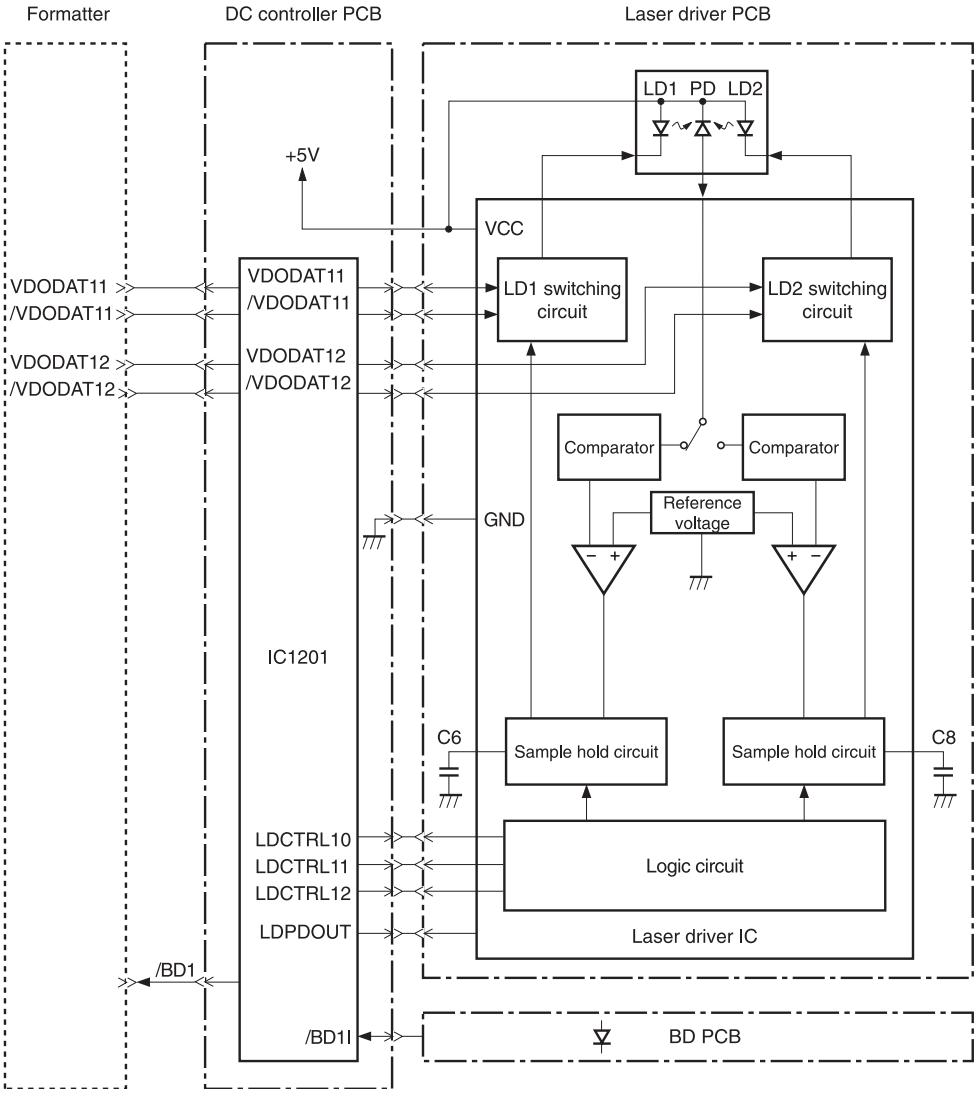


Figure 4-14 Laser control circuit block diagram

The laser control circuit manages the following control and detection functions:

- Laser emission control. Allows the laser diodes to turn on and off according to the video signals sent by the formatter.
- Automatic power control (APC). Allows the laser diodes to emit light at a constant intensity.
- Horizontal synchronous control. Aligns the starting position in the horizontal direction.
- Image masking control. Regulates laser beam emission in non-image area except during the unblanking interval.
- Failure detection. Detects failures in the laser diodes.

Scanner control

The scanner motor control rotates the scanner motor in order to strike the laser beam at the correct position on the photosensitive drum.

The DC controller divides the oscillation frequency of the oscillator (X1201) and generates the reference clock signal. It compares the intervals between the reference clock signal and the BD input signal (/BD1I) with the frequency comparator, and monitors the rotational count of the scanner motor. The DC controller controls rotational speed by sending an acceleration signal (/SCNACC1) or deceleration signal (/SCNDEC1) to the scanner motor driver based on the detected rotational speed. Figure 4-15 Scanner motor circuit diagram on page 164 illustrates the scanner motor control system.

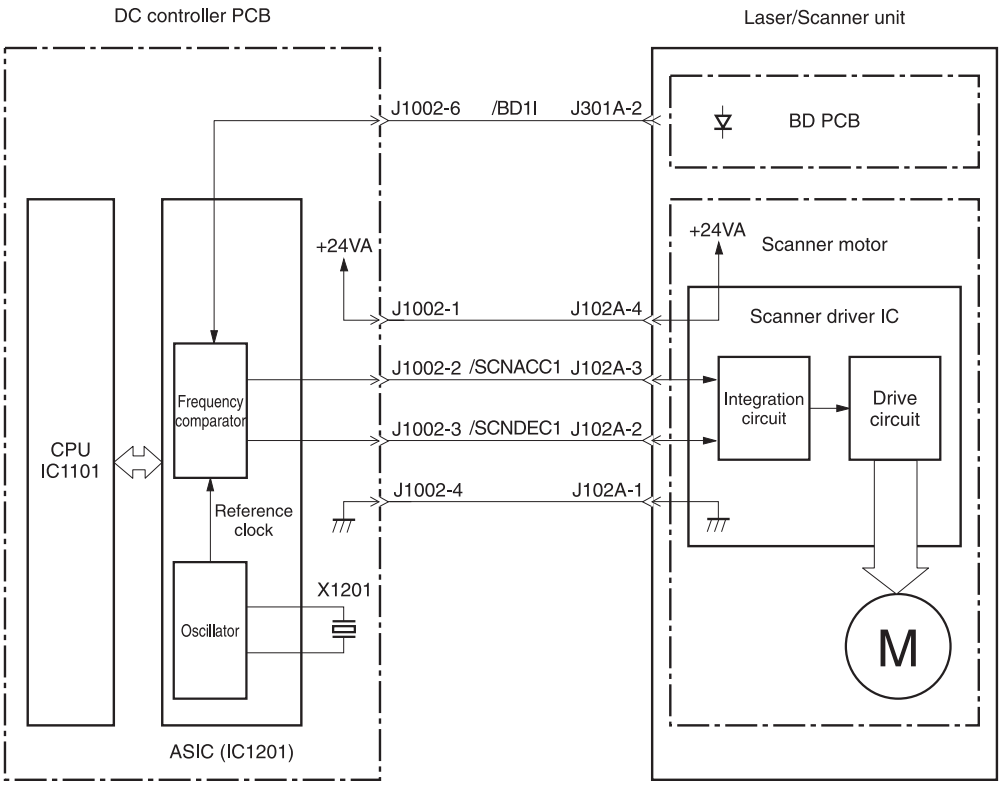


Figure 4-15 Scanner motor circuit diagram

The scanner motor control circuit manages the following control and detection functions:

- Speed control. Maintains the rotational speed of the scanner motor at a constant speed.
- Phase control. Prevents color misregistration by eliminating rotational variations in each color's scanner motor and adjusts the phase of the scanner motor.
- Failure detection. Monitors the frequency comparator in the ASIC and determines whether the scanner motor is rotating at its specified rotational count.

Image formation system

The image formation system is the central hub of the MFP. It also forms the toner image on the media.

The image formation system consists of four cartridges, the ETB, and the fuser, which are controlled by the DC controller. Figure 4-16 Image formation system on page 165 shows the image formation system.

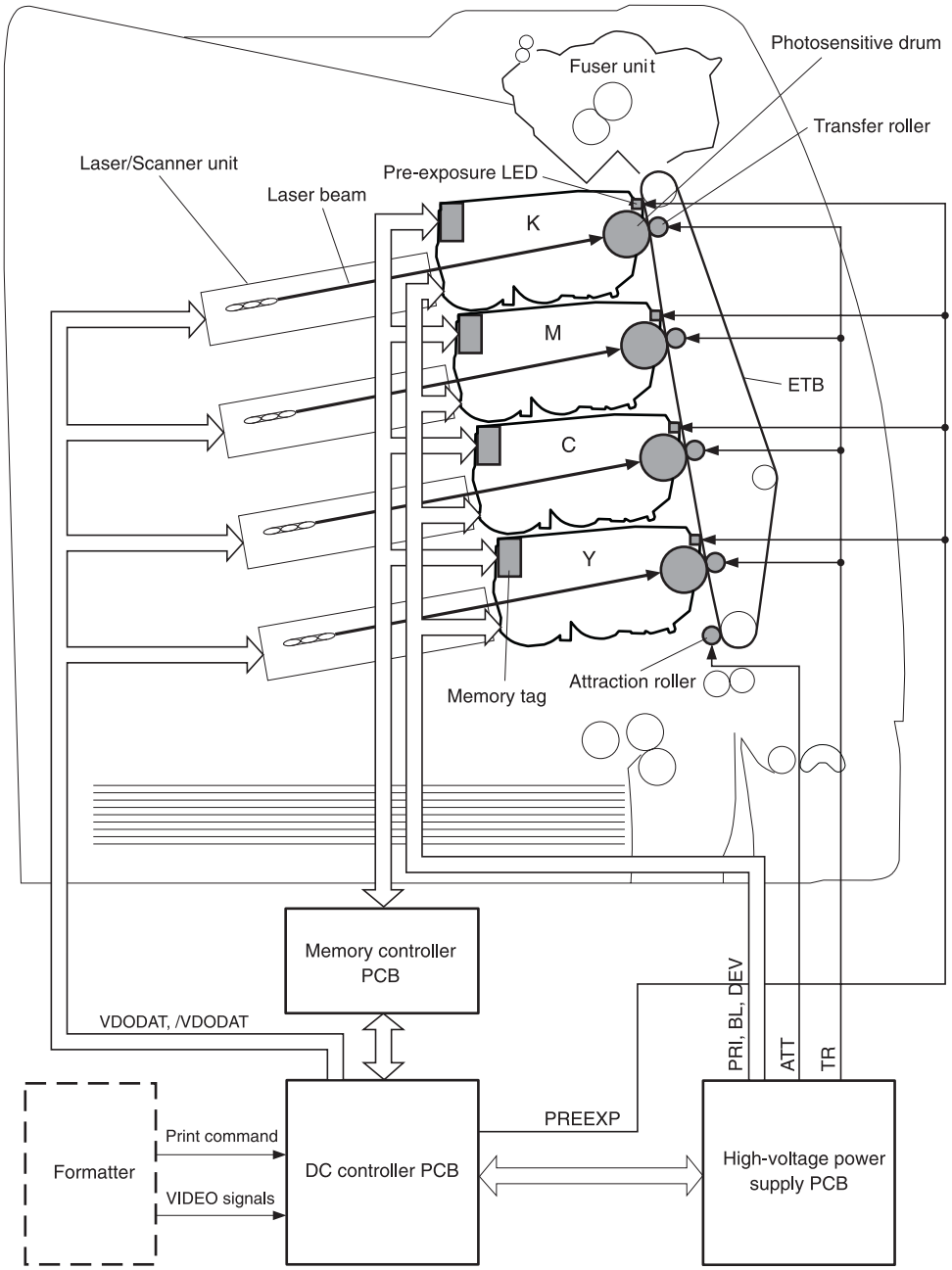


Figure 4-16 Image formation system

Image formation process

The image formation process consists of nine steps divided among five functional blocks:

1. **Electrostatic latent image formation block**. Forms an electrostatic latent image on the photosensitive drum.

   Step 1: Pre-exposure

   Step 2: Primary charging

   Step 3: Laser beam exposure

2. **Development block**. Makes the electrostatic latent image on the photosensitive drum surface visible by applying toner.

   Step 4: Development

3. **Transfer block**. Transfers toner image on the photosensitive drum onto the media.

   Step 5: Attraction

   Step 6: Transfer

   NOTE: Toner is transferred onto a sheet of media in the order of yellow (Y), cyan (C), magenta (M), and black (K) in one printing operation.

   Step 7: Separation

4. **Fusing block**. Fuses the toner image on the media.

   Step 8: Fusing

5. **Cleaning block**. Cleans the residual toner on the photosensitive drum.

   Step 9: Drum cleaning

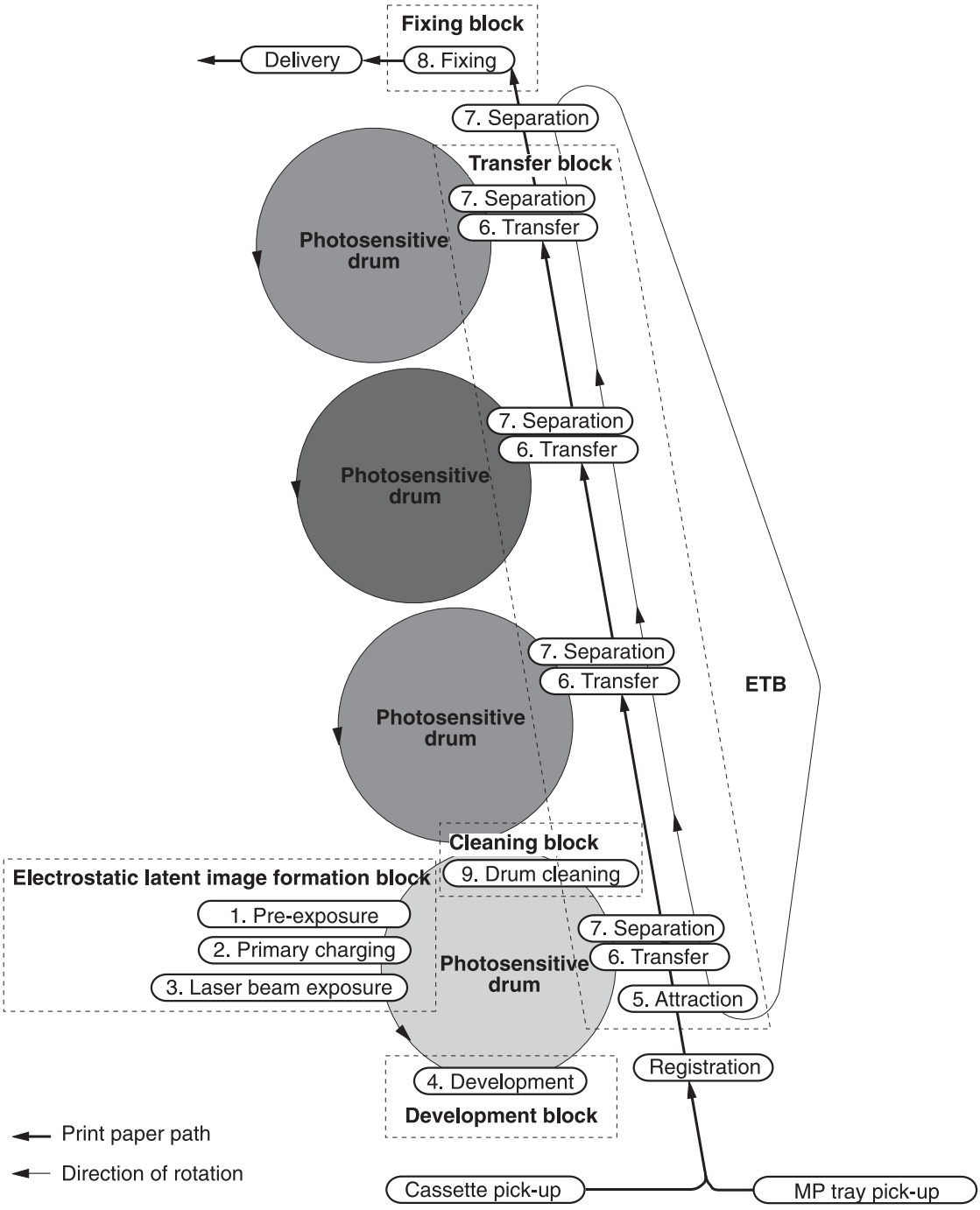


Figure 4-17 Image formation process

Electrostatic latent image formation block

The image formation process begins in the electrostatic latent image formation block. This block consists of three steps that results in forming an electrostatic latent image on the photosensitive drum:

- Pre-exposure
- Primary charging
- Laser beam exposure

When the last step in this block is complete, areas of the drum surface that have not been exposed to the laser beam retain a negative charge. The areas that have been exposed to the laser are neutralized. This neutralized image is called an electrostatic latent image because it is invisible to the eye.

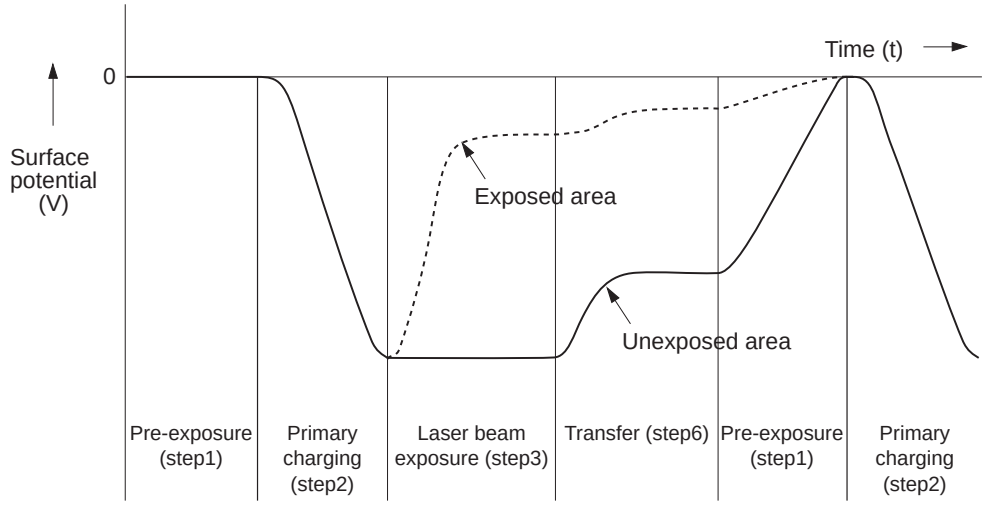


Figure 4-18 Electrostatic latent image formation block

Step 1: Pre-exposure

To prepare for primary charging, light from the pre-exposure LED strikes the photosensitive drum surface. This eliminates any residual charge on the drum surface to avoid density unevenness.

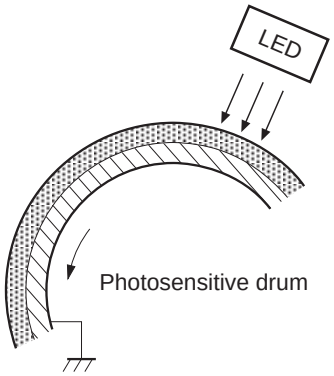


Figure 4-19 Pre-exposure

Step 2: Primary charging

To prepare for latent image formation, the surface of the photosensitive drum is charged with a uniform negative potential.

The charging method of this MFP is to charge directly to the photosensitive drum surface from the primary charging roller, which is interlocked with the drum. The primary charging roller is made of a conductive rubber. To charge the drum surface negatively, the DC bias is applied to the primary charging roller.

Step 3: Laser beam exposure

In this step, the latent image is formed on the photosensitive drum by the laser beam. As the laser beam scans on the negatively charged photosensitive drum, the potential on the exposed area is neutralized and the negative potential is removed from the drum surface. This area forms an electrostatic latent image.

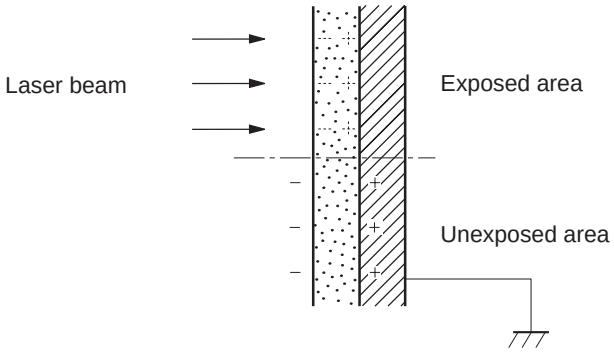


Figure 4-20 Laser beam exposure

Development block

The second part of the image formation process is the development block, where toner is transferred onto the electrostatic latent image on the surface of the photosensitive drum to create a visible image. This MFP uses a contact development method that keeps the developing cylinder in contact with the drum, pushing the toner against the drum surface for development. The toner is non-magnetic and consists of resins.

Step 4: Development

In this step, the toner adheres to the electrostatic latent image on the photosensitive drum surface. The toner (developing material) has an insulating property and is charged with a negative potential by the friction force with the rotating developing cylinder and the developing blade surface. This negatively charged toner contacts with the photosensitive drum, after the potential is adjusted to be uniform. As the area of the drum surface where the laser beam exposed has higher potential than the developing cylinder, the toner charged with almost the same potential with the developing cylinder adheres to this area. This phenomenon is called contact development and it visualizes the electrostatic latent image on the drum surface.

Transfer block

The third part of the image formation process is the transfer block, in which the toner image is transferred from the photosensitive drum to the media. This block consists of three steps:

- Attraction
- Transfer
- Separation

Step 5: Attraction

To feed the media vertically, it is necessary to push the media against the ETB. The picked up media is fed as it is pushed against the ETB by the attraction roller. The positive DC bias is applied to the attraction roller, which charges the media positively to make the negatively charged toner easier to transfer onto the media during the transfer operation.

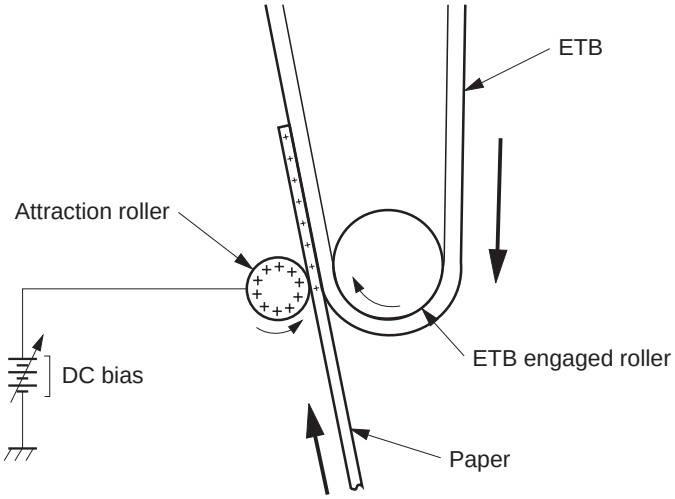


Figure 4-21 Attaching the media to the ETB

Step 6: Transfer

A positive bias is applied to the transfer charging roller, which is directly opposite the photosensitive drum. As the ETB passes the transfer charging roller, it picks up a positive charge. The negatively charged toner on the photosensitive drum is transferred to the positively charged print media. Figure 4-22 Toner transfer on page 171 illustrates this step. This process is repeated for each color as the ETB carries the media from the bottom cartridge to the top (C, Y, M, K).

In full-color printing, as four colors of toner are piled up on the media, the holding force of the toner weakens as the transfer process progresses. To counteract this effect, the DC controller increases the positive DC bias that is applied to the transfer charging roller for each successive color.

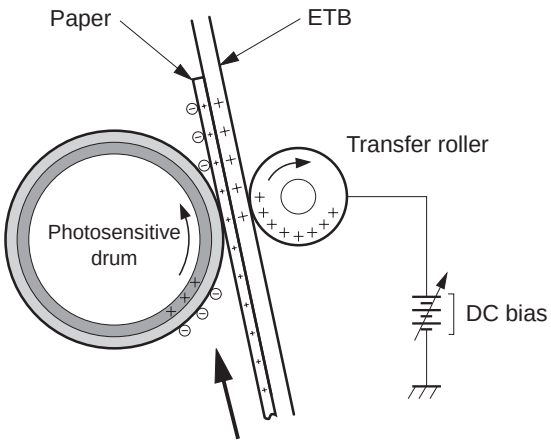


Figure 4-22 Toner transfer

Step 7: Separation

The elasticity of media separates the media from the photosensitive drum and the ETB.

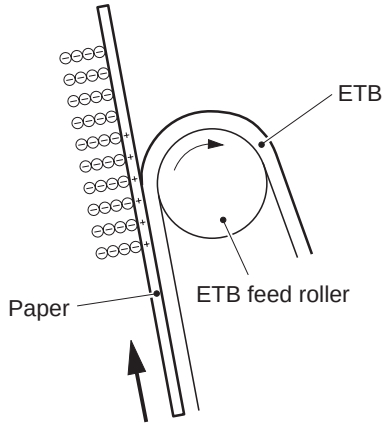


Figure 4-23 Separation

Fusing block

The fourth part of the image formation process is the fusing block, in which the toner image is fused to the media, making a permanent image that cannot be smeared. This block consists of one step: fusing.

Step 8: Fusing

This MFP uses the ceramic heater with lower heat capacity to fuse the toner to the media. This method warms up quickly and does not require the power supply during standby period, resulting in shortened wait time and reduced power consumption.

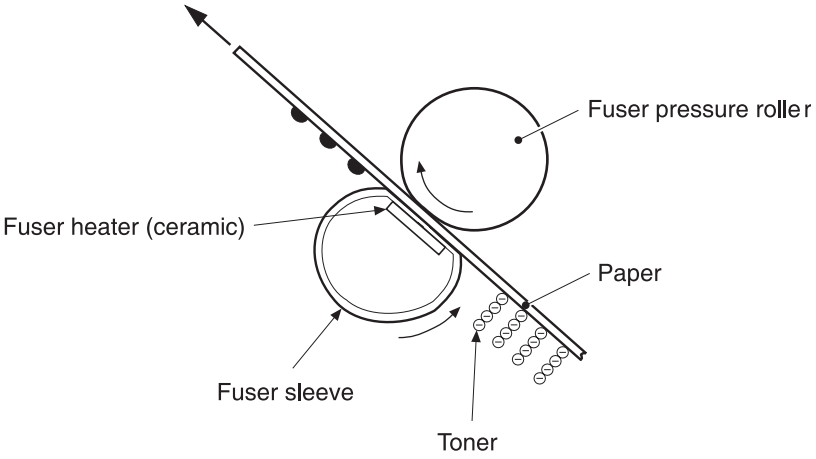


Figure 4-24 Fusing

Cleaning block

The fifth and final part of the image formation process is the cleaning block, in which the photosensitive drums are cleaned, preparing them for the next print. In the transfer block, not all of the toner is transferred from the photosensitive drum onto the media, but some remains on the drum surface. This remaining toner is called residual toner or waste toner. The cleaning block cleans the photosensitive drum surface to keep a clear image in the next print.

Step 9: Drum cleaning

The cleaning blade scrapes off the leftover toner on the drum surface. The residual (waste) toner is collected in the waste toner container by the waste toner feed plate.

Print cartridges

The MFP has four different print cartridges, one for each color. However, they share the same structure, shown in Figure 4-25 Print cartridge on page 173.

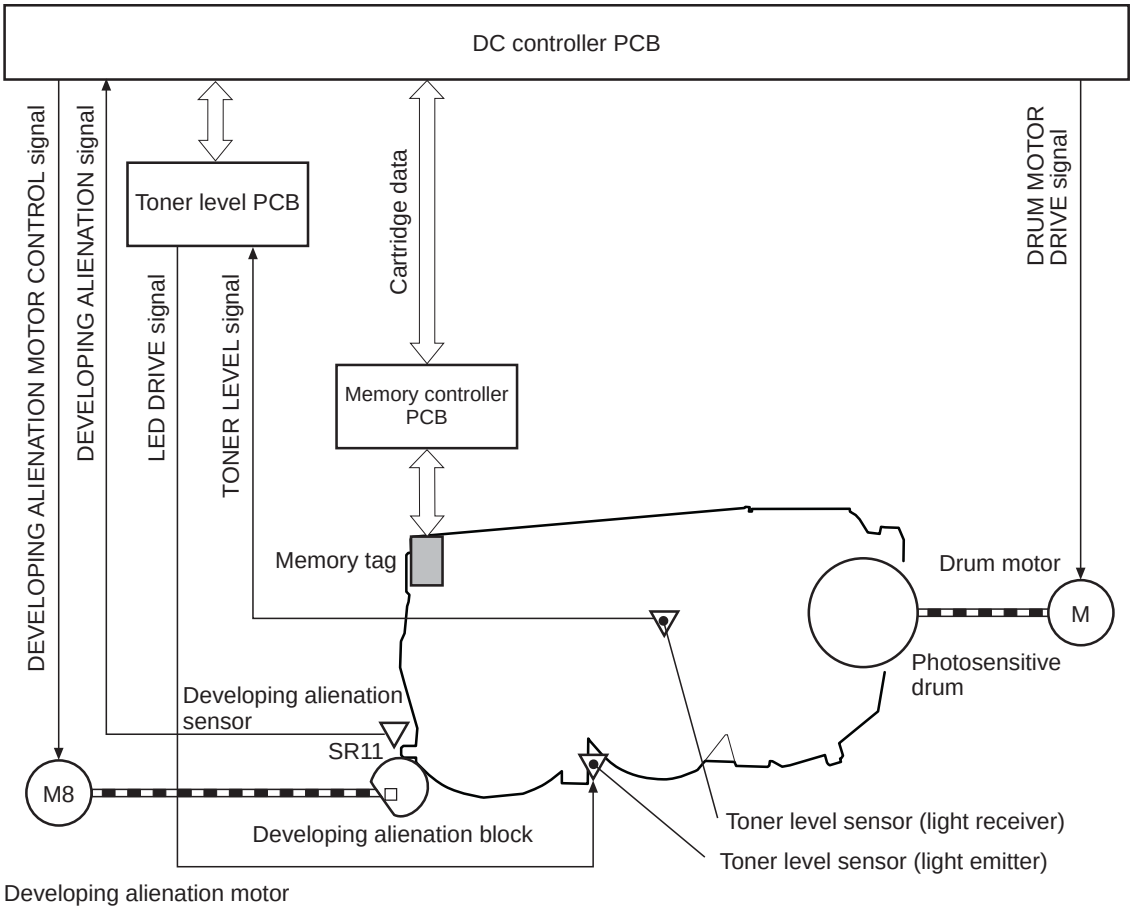


Figure 4-25 Print cartridge

The following are the physical components inside the print cartridge:

- Photosensitive drum
- Primary charging roller
- Developing cylinder
- Toner charging roller
- Stirrers
- Waste-toner transfer plate

The photosensitive drum rotation drives the primary charging roller. All other components are driven by the drum motor.

The developing disengaging motor drives the developing disengaging block, which causes the developing cylinder to engage with or disengage from the photosensitive drum.

The DC controller uses an LED and a photo diode to monitor the level of toner inside the cartridge. It stores this information on a memory tag that is built into each cartridge.

Memory tag

The memory tag is a nonvolatile memory that is built into the print cartridge. It stores information about the amount of toner in the cartridge and estimates the remaining life. Figure 4-26 Memory tag on page 174 illustrates how the memory tag operates.

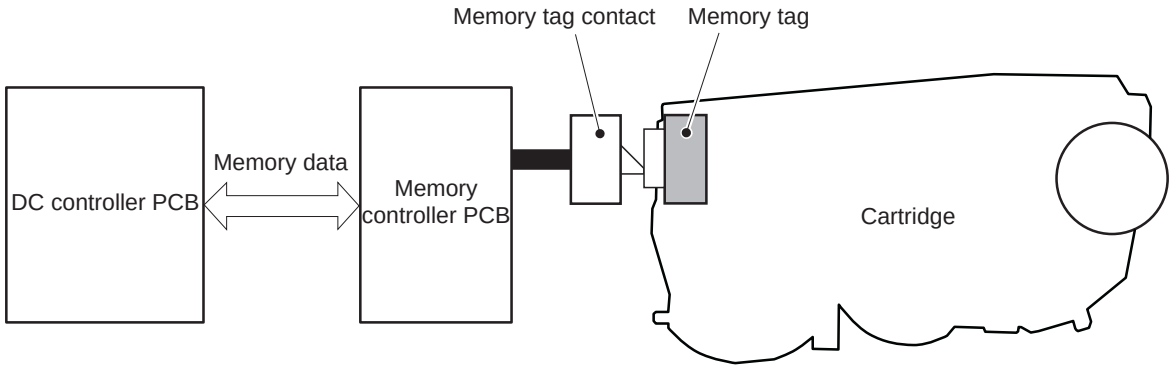


Figure 4-26 Memory tag

The DC controller reads information from the memory tag whenever the MFP is turned on, whenever the top cover is closed, and whenever it receives a read command from the formatter.

The DC controller writes information to the memory tag at specified times during a print operation, whenever it receives a write command from the formatter, and after print completion.

If the DC controller is unable to either read to or write from the memory tag four times in a row, the DC controller alerts the formatter of a memory tag abnormality.

Cartridge presence detection

The MFP detects the presence of print cartridges when the power is turned on or the door is closed. There are two procedures to the cartridge presence detection:

- Memory tag detection
- Photosensitive drum detection

Memory tag detection

The DC controller reads the data in the memory tag and determines the cartridge presence. If the reading fails, the DC controller goes to the next procedure, photosensitive drum detection.

Photosensitive drum detection

The DC controller measures the torque of the photosensitive drum. The DC controller stops the drum motor after driving it for the prescribed period of time. If the motor stops rotating within the specified period after the stoppage command is sent, the DC controller detects the cartridge presence based on the large load torque. If it takes more than the prescribed period of time for the motor to stop, the DC controller detects the cartridge absence based on the small load torque.

When the DC controller detects the cartridge absence, it stops the engine and notifies the formatter. Figure 4-27 Photosensitive drum detection on page 175 illustrates the drum detection procedure.

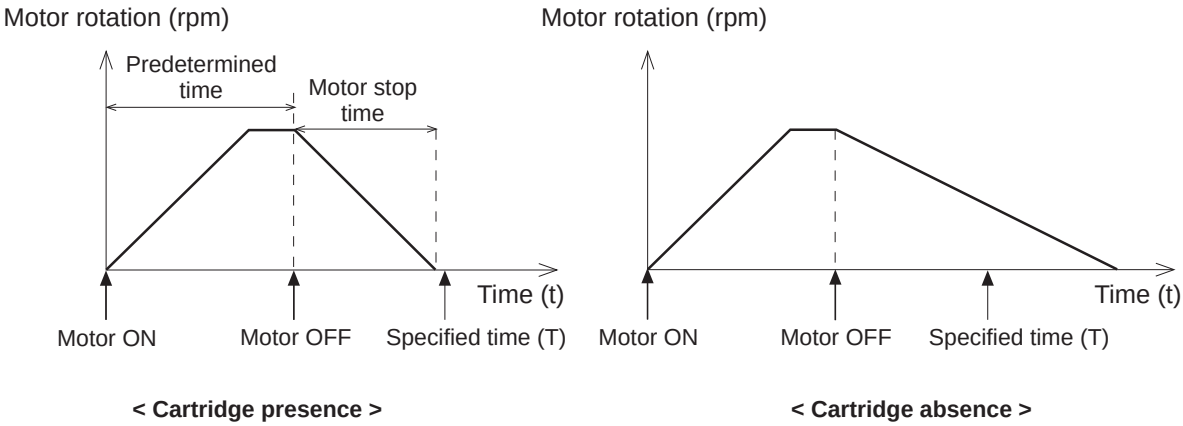


Figure 4-27 Photosensitive drum detection

Developing cylinder disengaging control

The developing cylinder is engaged or disengaged when the DC controller drives the developing alienation motor. When the developing motor rotates clockwise by a command from the DC controller during power on, printing operation stopped, cleaning cartridges, and monochrome print, the developing alienation cam rotates. Accordingly, the rear bottom of the cartridge is raised and the developing cylinder is disengaged from the photosensitive drum with a principle of leverage. The developing alienation sensor (SR11) detects the position of the developing alienation block.

NOTE: Only the developing cylinders in the color cartridges (C, Y, M) are disengaged in monochrome print, and all of the developing cylinders in any other case.

If the cam stays at its home position for the prescribed period of time or longer during the developing cylinder disengagement operation, or it does not return to the home position within the prescribed period of time after alienation is completed, the DC controller detects the developing alienation motor abnormality, stops the printer engine, and notifies the formatter of the developing alienation motor abnormality.

ETB (electrostatic transfer/transport belt)

The ETB feeds the media through the MFP and helps transfer toner onto the media. Figure 4-28 ETB on page 176 illustrates the ETB.

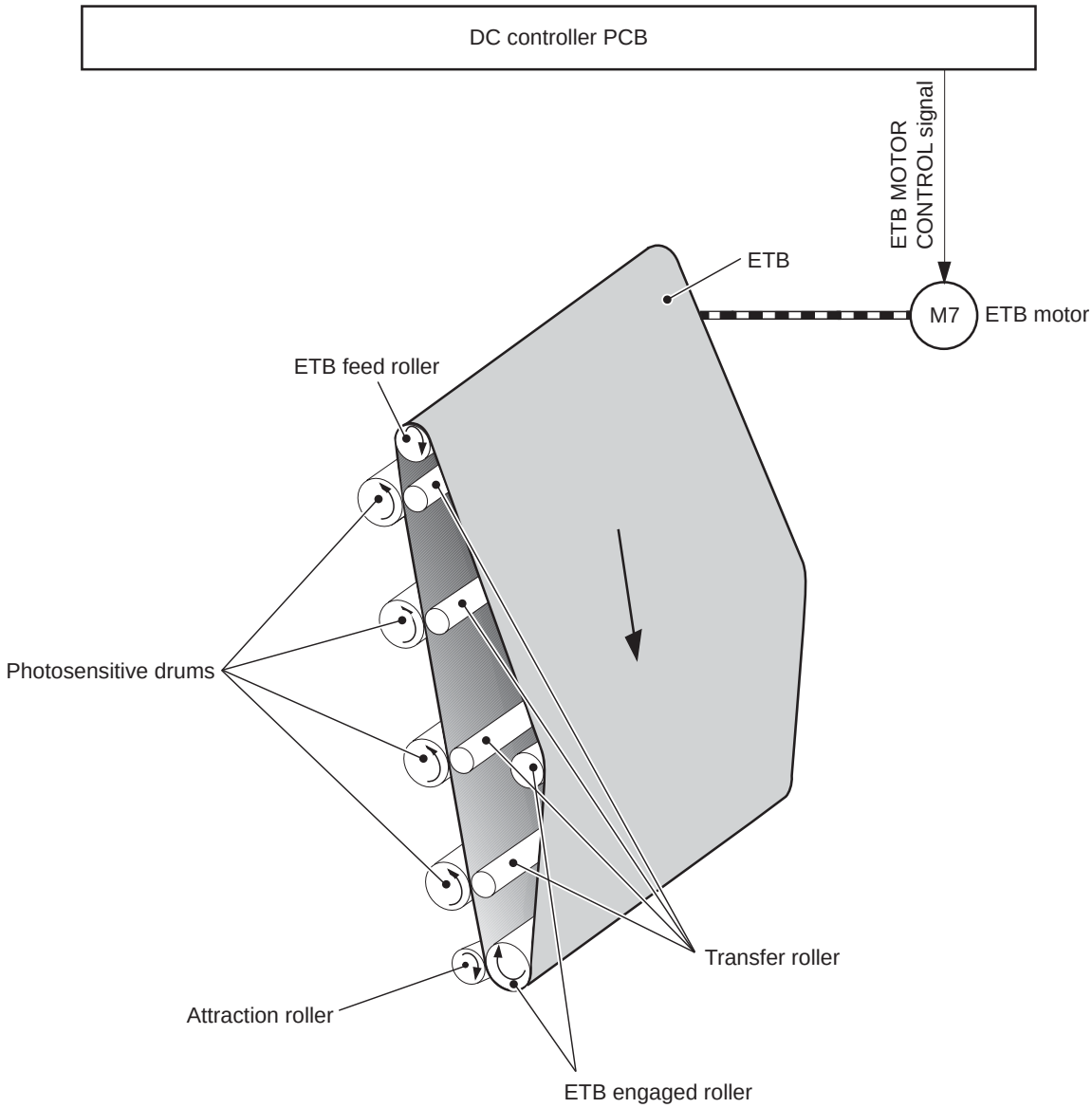


Figure 4-28 ETB

The following are the components of the ETB:

- ETB belt
- ETB feed roller
- ETB engaged roller
- Attraction roller
- Transfer roller

The ETB motor drives the ETB feed roller, causing the belt to rotate. All other rollers are driven by the belt rotation.

During the printing operation, the picked up media is conveyed between the ETB and the photosensitive drum. Simultaneously the toner image is transferred onto the media. The ETB is also

used for the color misregistration and image stabilization control. The pattern image for the color misregistration or image density determination is transferred onto the ETB.

The ETB also controls the following:

- Transfer roller (Y, C, M) engagement/disengagement detection
- Transfer roller alienation
- ETB cleaning

Transfer roller (Y, C, M) engagement/disengagement detection

When the power is turned on, the DC controller applies biases to the transfers roller for yellow and black, and detects the value of current flown through the ETB according to the current return signals. The DC controller obtains information on the transfer roller (Y, M, C) engagement and disengagement. Accordingly, the DC controller executes the transfer roller engage or disengage control depending on the situation and engages the transfer rollers (Y, M, C).

Transfer roller engagement/disengagement control

This control disengages the transfer rollers (Y, M, C) from the photosensitive drums so that only black toner is transferred onto the ETB during monochrome printing. The ETB motor (M7) performs this control by driving the ETB alienation solenoid (SL3) while the motor is rotating according to a command from the DC controller.

The following is the operational sequence of the transfer roller engagement/disengagement control.

1. The transfer roller engaging/disengaging cam inside the ETB holds up the transfer roller holder that contains the Y, M, and C transfer rollers. This brings the ETB into contact with the photosensitive drums.
2. When a monochrome print starts, the DC controller turns on the ETB alienation solenoid (SL3) to rotate the transfer roller engaging/disengaging cam.
3. The rotation of the transfer roller engaging/disengaging cam pushes the Y, M, and C transfer rollers down, disengaging the ETB from the photosensitive drums.

When allowing the ETB to engage back with the photosensitive drums, the DC controller turns on the ETB alienation solenoid (SL3) again. The transfer roller engaging/disengaging cam rotates and pushes the transfer roller holder. Accordingly, the transfer rollers push the ETB into contact with the photosensitive drums.

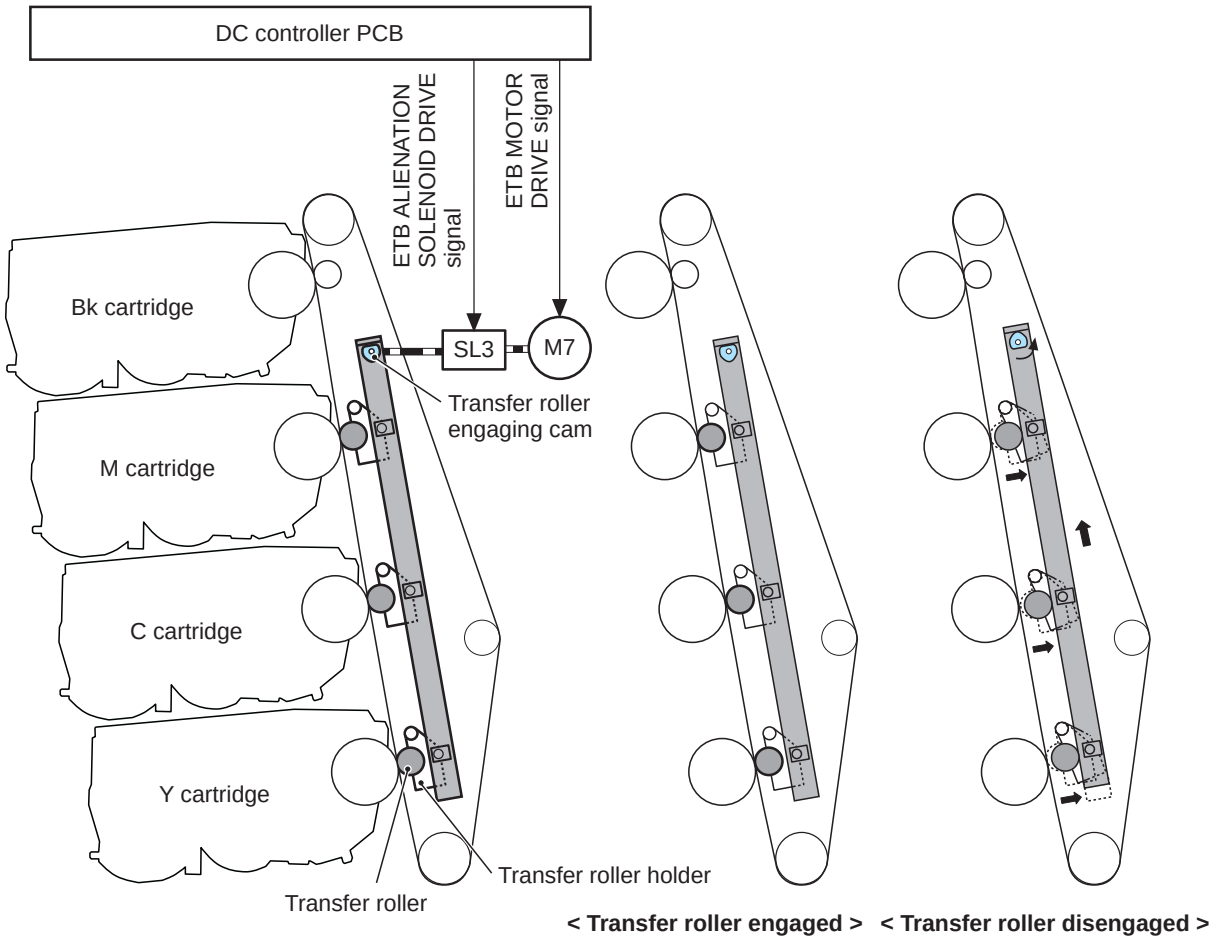


Figure 4-29 Transfer roller engagement/disengagement control

NOTE: The Y, M, and C photosensitive drums opposite the transfer rollers stop rotating when the rollers are disengaged.

Calibration and cleaning

The MFP automatically calibrates and cleans itself at various times to maintain the best print quality. You can also force the MFP to calibrate by selecting **Quick Calibration** or **Full Calibration** from the **Administration**, **Print Quality**, **Calibration/Cleaning** menu.

While the MFP is calibrating or cleaning, it pauses printing. For most calibrations and cleaning, the MFP does not interrupt a print job, but waits for the job to complete before calibrating or cleaning. Table 4-4 Calibration timing and duration on page 178 shows when the MFP calibrates, the duration of the calibration, and the type of calibration that occurs. Table 4-5 Cleaning timing and duration on page 179 shows when the MFP cleans and the duration of the cleaning. The sections that follow discuss calibration and cleaning in more detail.

Table 4-4 Calibration timing and duration

Calibration occurrence	Duration	Type of calibration
When you turn the MFP on.	75 seconds for calibration, but because of other initialization activities, the MFP takes a total of 2 minutes to be ready for printing	DMAX, DHALF

Table 4-4 Calibration timing and duration (continued)

Calibration occurrence	Duration	Type of calibration
When you install one or more print cartridges that have not previously been installed in the MFP.	150 seconds (2 minutes, 30 seconds)	DMAX, DHALF, color-plane registration (CPR)
When 50 pages have been printed since installing a print cartridge. The MFP will finish printing the current job before calibrating.	75 seconds	DMAX, DHALF
When 1,000 pages have printed since the last calibration. The MFP will finish printing the current job before calibrating.	75 seconds	DMAX, DHALF
When eight hours have passed since the last calibration, but not while the MFP is in Sleep mode. Typically, this calibration occurs during the first job or any control panel interaction after an overnight idle period.	75 seconds	DMAX, DHALF
When you request calibration from the control panel (**Quick Calibration** and **Full Calibration**).	280 seconds (4 minutes, 40 seconds)	DMAX, DHALF, CPR, drum phase

Table 4-5 Cleaning timing and duration

Cleaning occurrence	Duration	Type of cleaning
When the MFP continuously prints (with no idle period or spin down) for 51 pages.	either 5 seconds or 21 seconds (5 seconds is the most common)	primary and toner charging rollers
At intervals of 90 and 140 pages. The MFP will finish printing the current job before cleaning.	16 seconds	ETB

ETB cleaning

During this step, all toner particles that remain on the ETB are returned to the photosensitive drums in each print cartridge. Figure 4-30 ETB cleaning on page 180 illustrates this step.

This control is performed by the DC controller under the following conditions:

- The power is turned on
- During operation of the color misregistration corrective control
- During operation of the image stabilization control
- The door is closed
- After completion in every prescribed number of printings
- During pickup operation specified by universal size

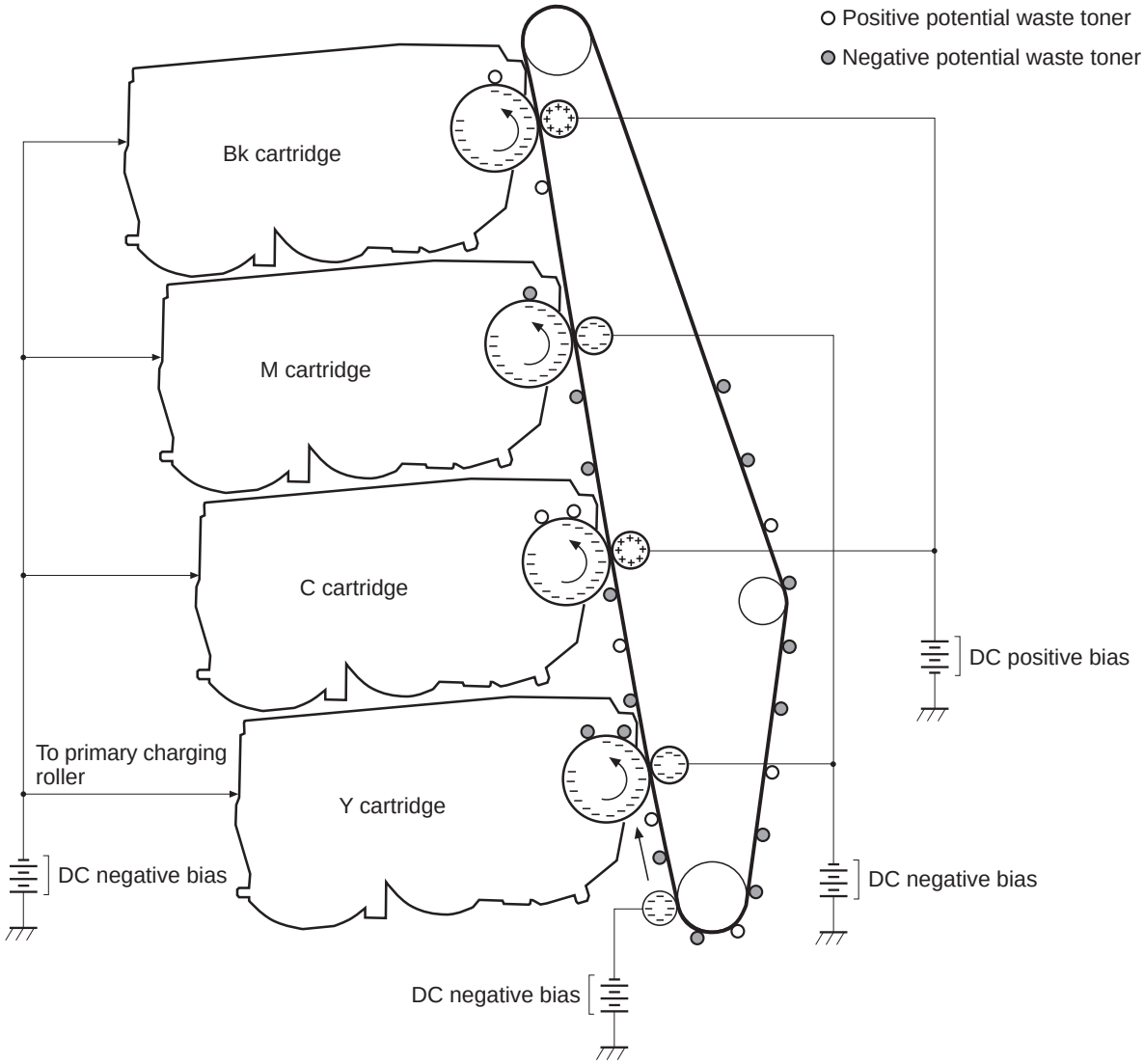


Figure 4-30 ETB cleaning

The DC controller applies negative bias to the photosensitive drum and both negative and positive biases to each of the four color transfer rollers. This brings a potential difference between the photosensitive drum and the ETB, so that both positive and negative charged residual toner on the ETB is returned to the photosensitive drum at once. The developing cylinder is disengaged from the photosensitive drum during the cleaning operation to prevent toner in the toner container from transferring onto the ETB.

Color misregistration corrective control

This control corrects a color misregistration caused by the variation inherent in the laser/scanner unit and each cartridge. The color misregistration corrective control corrects the horizontal scanning magnification, the horizontal scanning start position, and the vertical scanning start position.

The DC controller controls the color misregistration unit under the following conditions:

- At power on or door close after cartridge replacement
- After job completion in every specified number of printings
- At a command from the formatter

The following is the operational sequence of the color misregistration corrective control:

1. The DC controller forms two pattern images for color misregistration detection with four colors on the ETB when the color misregistration corrective control starts. The two pattern images are the same pattern, one formed on the left side and the other on the right side.
2. The DC controller measures the position of each pattern image and calculates the misregistration amount of each color by controlling the color misregistration unit.
3. The calculated misregistration information of each color is sent to the formatter.
4. The formatter controls each color's video signals according to this information and optimizes the main-scanning start position, the main-scanning scale, and the sub-scanning start position.

The color misregistration in sub-scanning direction is corrected at printer engine side by the DC controller controlling the speed of the scanner motor.



NOTE: Horizontal magnification is the size of the image in the horizontal direction. Every color has its own photosensitive drum in each cartridge in this MFP. The positions of each drum differ and the laser beam lengths vary because of the variations among the cartridges, so the horizontal scanning area depends on the color. This causes a color misregistration at the edge of image.

Color misregistration detection

In this MFP, the positions of each color's misregistration pattern images formed on the ETB are detected to measure the misregistration amount. The DC controller controls the color misregistration unit during the foregoing color misregistration corrective control. The color misregistration unit is placed under the ETB and consists of two detection sensors, each one having a light emitter (LED) and a light receiver (PD).

The following is the operational sequence of the color misregistration detection.

1. The DC controller allows the LED to emit light by sending the LED DRIVE signal when the color misregistration detection starts.
2. The ETB reflects the light from the LED and the PD in the color misregistration sensor receives the light. This reflected light intensity differs depending on whether the light is reflected from the area of toner.
3. The light receiver converts the received light intensity into voltage and sends it in the form of the color misregistration signal to the DC controller.
4. The DC controller detects the positions of the pattern images according to the timing of the color misregistration signal.

Figure 4-31 Color misregistration detection on page 182 illustrates this process.

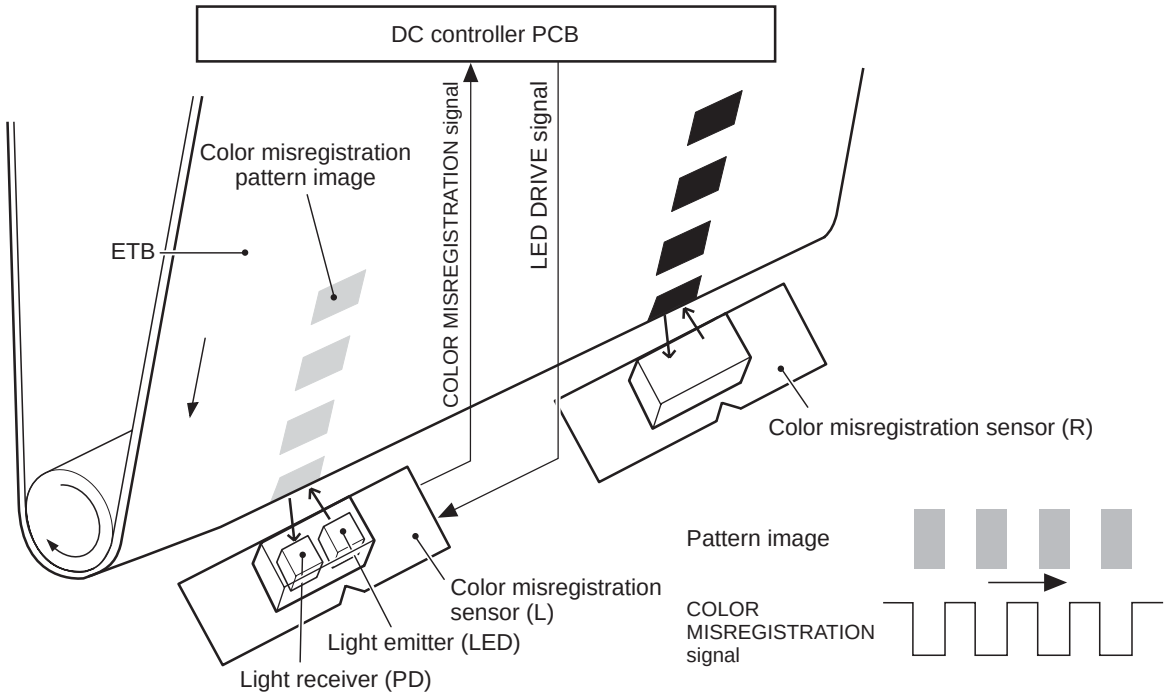


Figure 4-31 Color misregistration detection

The DC controller notifies the formatter of each error when the following errors are found during the color misregistration detection. The initial value is reset to the new color misregistration correction value whenever an error occurs.

- Color misregistration sensor abnormality warning: The light receiver does not receive light at all.
- Color misregistration measurement out of range warning: The measurement value is out of specified range.

Image stabilization control

This controls the variation of the image density caused by an environmental change or deterioration of the photosensitive drum, toner, etc.

There are three types of image stabilization control. These controls operate when necessary.

- **Environmental change control.** The environment condition sensor controls the bias according to the environment conditions.
- **Image density control (D-max)**. The color misregistration sensor (PS12) calibrates the bias value when the image density is at max.
- **Image halftone control (D-half).** The color misregistration sensor (PS12) calibrates the halftone data in the formatter.

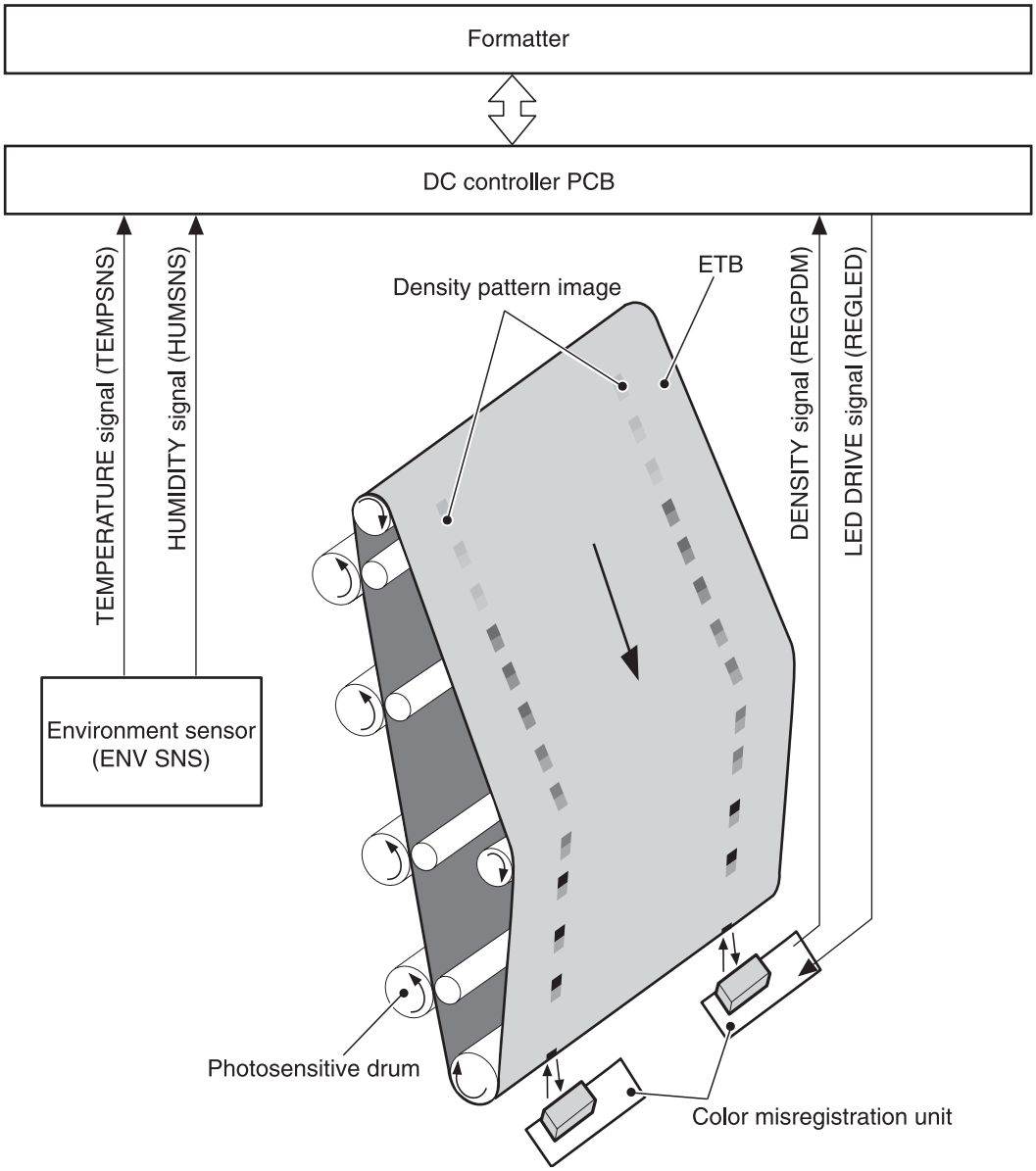


Figure 4-32 Image stabilization control

Environmental change control

This control calibrates each bias to obtain the best image possible according to environmental changes.

The environmental sensor detects the temperature and the humidity. The sensor sends this information to the DC controller in the form of the temperature detection signal (TEMSNS) and the humidity detection signal (HUMSNS).

The DC controller monitors the environmental conditions of the MFP based on these two signals.

The DC controller controls the following biases to prevent image defects when it detects an environmental change:

- Developing bias
- Primary transfer bias
- Secondary transfer bias

If the environment sensor detects a temperature of below -30ºC (22ºF) or over 80ºC (176ºF), the DC controller determines this is an "environment sensor abnormality" and sends an error message to the formatter.

Image density calibration control (DMAX)

This control stabilizes image density by calibrating the values of the developing bias whenever one of the following events occurs:

- The detected temperature of the sub thermistor is below 50ºC (122ºF) when the MFP is turned on.
- The door is closed after a print cartridge or ETB is replaced.
- A set number of pages is printed.
- The specified value of environmental conditions has changed since the last image density corrective control.
- The formatter sends an operation command.

Image halftone calibration control (DHALF)

This control measures halftone density output from the formatter and returns the measurements to the formatter so it can perform halftone calibration. Image density calibration must always be performed before image halftone calibration.

Image halftone calibration control consists of three steps:

1. The DC controller forms density patterns on the photosensitive drum in each color using the optimum developing bias determined during image density calibration.
2. These density patterns are transferred to the ETB, and the color-registration detection unit measures the image density of these patterns. Image data is returned to the formatter.
3. The formatter uses the image data to perform a halftone calibration to obtain an ideal halftone image.

Image density detection

Each of the image stabilization controls uses the color registration unit at the top of the ETB to measure image density. The image density detection is performed by the DC controller, which controls the color misregistration unit during the D-half control. The color misregistration unit is placed under the ETB and consists of two detection sensors, each having one light emitter (LED) and one light receiver (PD). Figure 4-33 Image density detection on page 185 illustrates this process.

The following is the operational sequence of the image density control:

1. The DC controller allows the LED to emit light by sending the LED drive signal. The image density detection control starts.
2. The density pattern images on the ETB reflect the light from the LED and the PD in the sensor receives the light. This reflected light intensity differs depending on the toner density.
3. The light receiver converts the received light intensity into voltage and sends it as a toner density signal to the DC controller.
4. The DC controller converts the toner density signal (analog) into a density value (digital) and stores it.

The DC controller notifies the formatter of each error when the following errors are found during the image density detection. When it fails to detect image density, it zeros the density data and notifies the formatter.

- Image density sensor abnormality warning: detected ETB surface density is improper.
- Failed image density detection warning: detected density is improper.

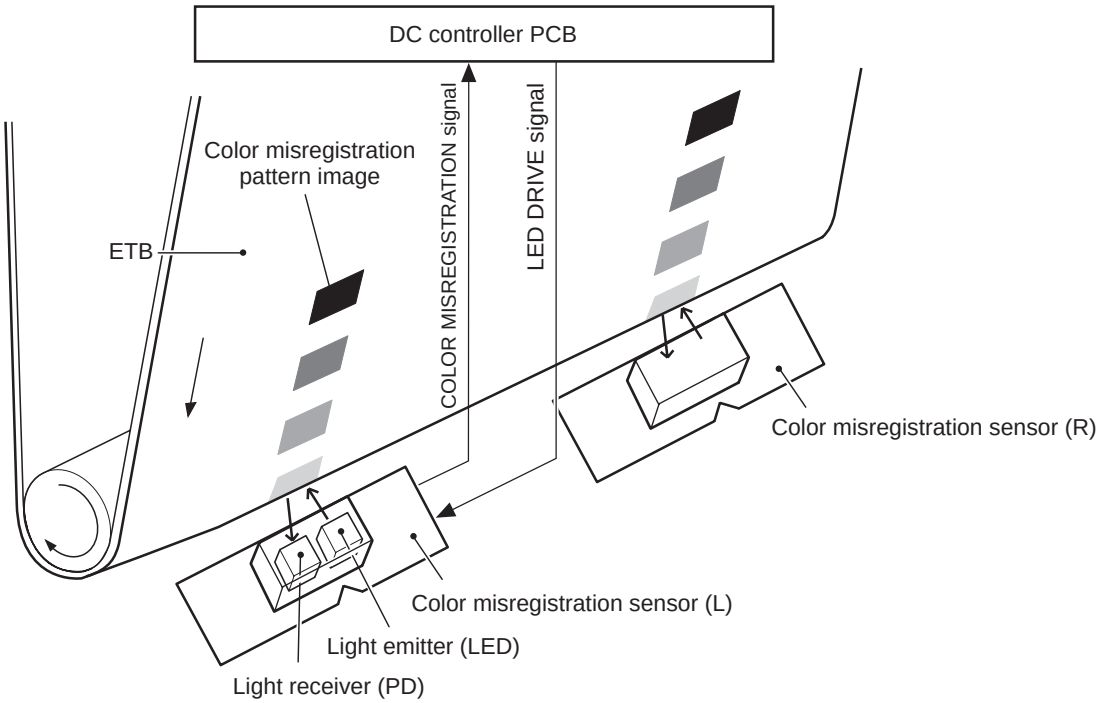


Figure 4-33 Image density detection

Pickup/feed system

The pickup/feed system consists of various feed rollers that pick up and feed media. This MFP has four pickup sources: the MP tray, tray 2, and the two trays of the 2 X 500-sheet paper feeder. The primary delivery source is the face-down tray. The IPTU and stapler/stacker or 3-bin mailbox can also be used for output.

The multipurpose tray paper sensor (SR4) detects the media presence in the multipurpose tray, and the cassette paper sensor (SR9) detects the media presence in the cassette. The paper stack surface sensor (SR10) in the cassette monitors the pickup position of the media stack surface. When the SR10 detects that the pickup position lowers to a certain level, the DC controller lifts the lifting plate up to maintain the media stack surface at a specified height. Figure 4-34 Pickup/feed system (1 of 2) on page 187 illustrates this system.

The media size in the cassette and presence of the cassette installed in the MFP are detected by the cassette paper size detection switch (CSIZE SW). The cassette paper size detection switch consists of three switches.

The DC controller controls ten motors: pickup motor, ETB motor, four drum motors, fuser motor, fuser pressure release motor, reversing motor, and lifter motor. There are three solenoids: cassette pickup solenoid, MP tray pickup solenoid, and duplexing solenoid, for the pickup operation.

There are five photo interrupters: top of page sensor, fuser paper sensor, paper loop sensor 1, paper loop sensor 2, and paper reversing sensor, on the paper transport path to detect media arrival and passage. If the media does not reach or pass these sensors within the specified period of time, the microcomputer (CPU) on the DC controller determines the paper jam and notifies the formatter.

Figure 4-34 Pickup/feed system (1 of 2) on page 187 and Figure 4-35 Pickup/feed system (2 of 2) on page 189 illustrate this system.

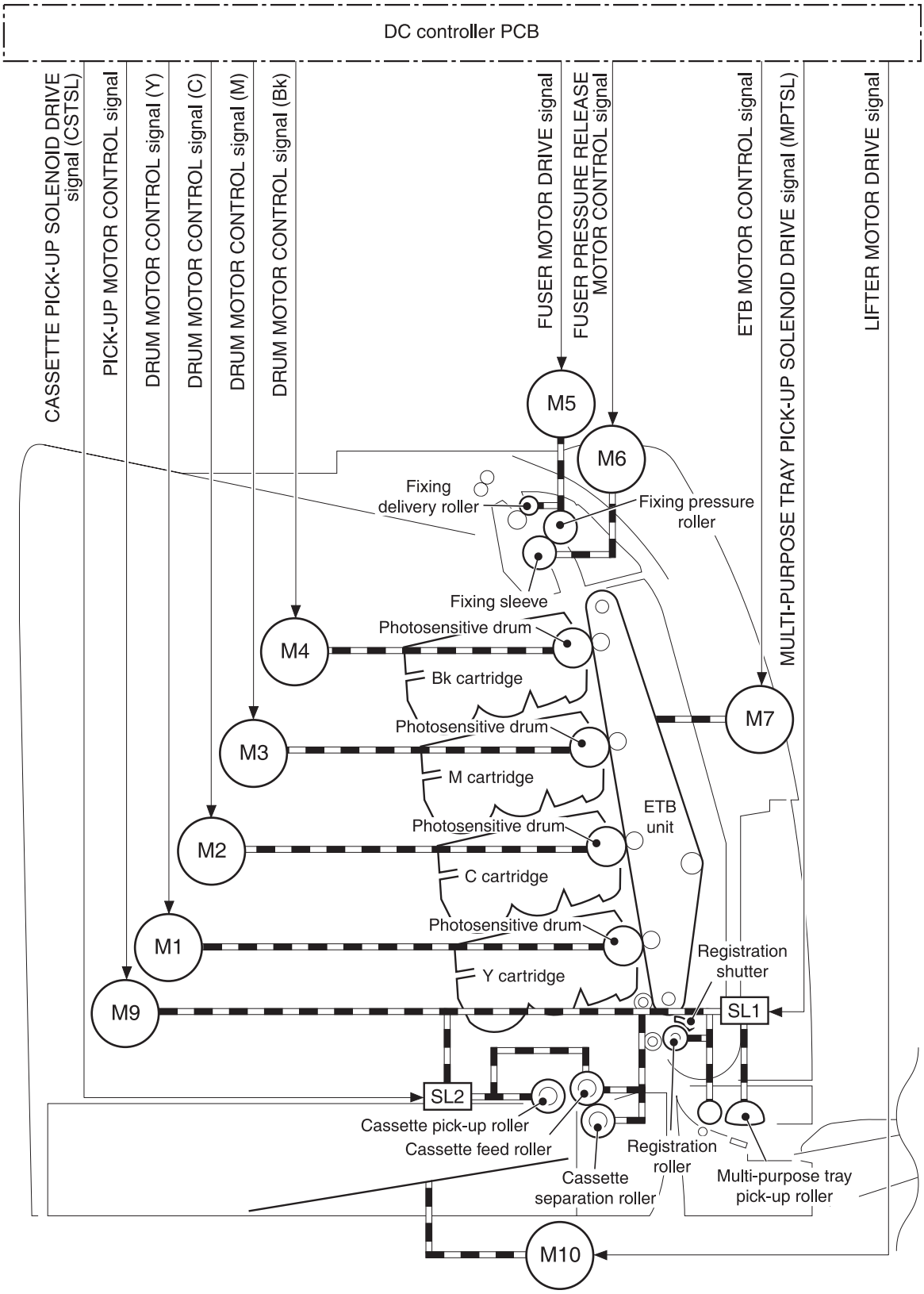


Figure 4-34 Pickup/feed system (1 of 2)

The pickup/feed system consists of the following motors and solenoids:

- M1: Yellow (Y) drum motor
- M2: Cyan (C) drum motor
- M3: Magenta (M) drum motor
- M4: Black (K) drum motor
- M5: Fuser motor
- M6: Fuser pressure release motor
- M7: ETB motor
- M9: Pickup motor
- M10: Lifter motor
- M8001: Reversing motor
- SL1: Multipurpose tray pickup solenoid
- SL2: Cassette pickup solenoid
- SL8001: Duplexing solenoid

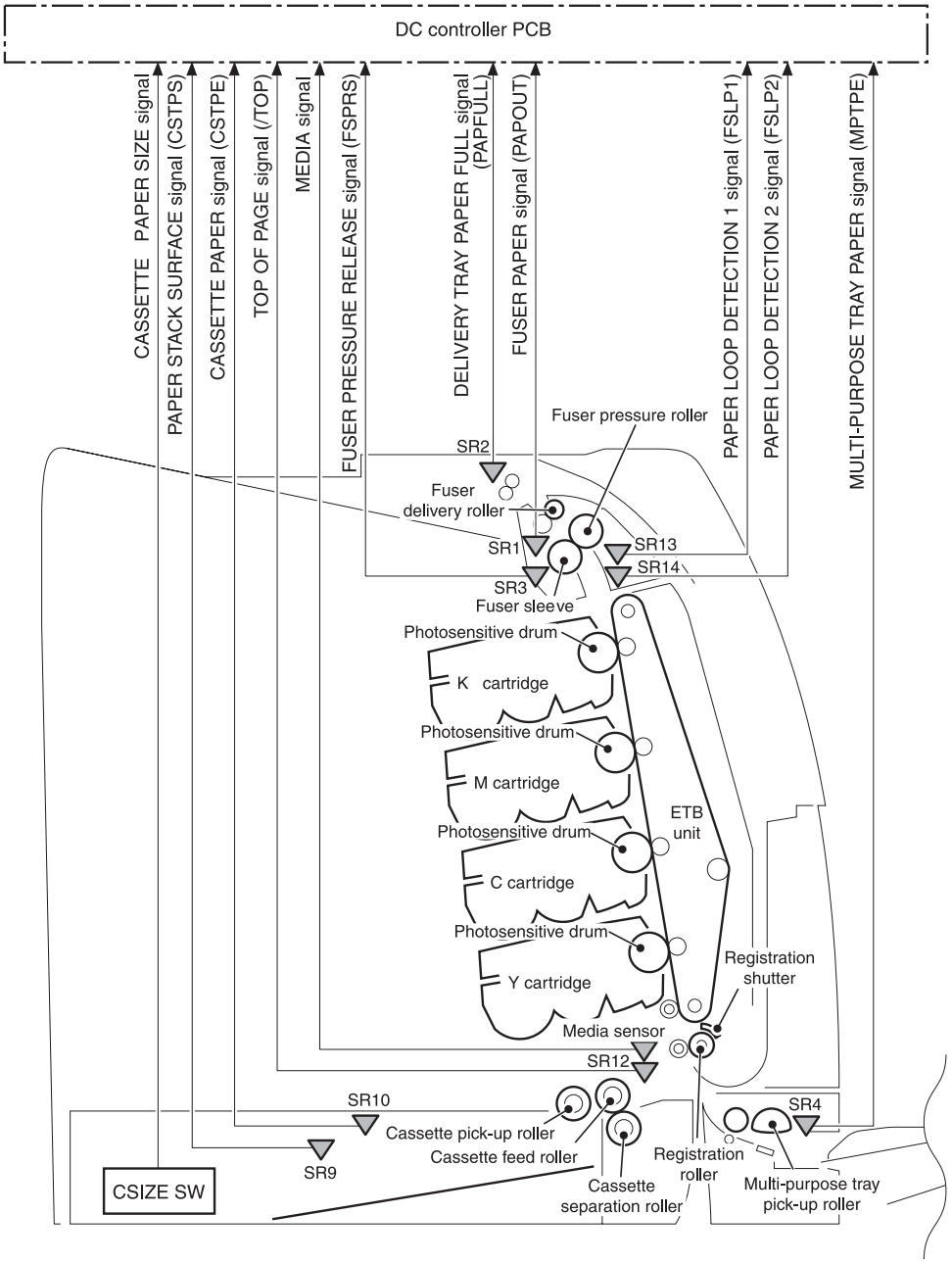


Figure 4-35 Pickup/feed system (2 of 2)

The pickup/feed system consists of the following sensors and switches:

- SR1: Fuser paper sensor
- SR2: Delivery tray paper full sensor
- SR3: Fuser pressure release sensor
- SR4: Multipurpose tray paper sensor
- SR9: Cassette paper sensor
- SR10: Paper stack surface sensor

- SR12: Top of page sensor
- SR13: Paper loop sensor 1
- SR14: Paper loop sensor 2
- SR8001: Paper reversing sensor
- Media sensor
- CNT0: Cassette paper size detection switch
- CNT1: Cassette paper size detection switch
- CNT2: Cassette paper size detection switch

Figure 4-36 Pickup/feed system on page 190 illustrates the pickup/feed system, which can be divided into three units:

- **Pickup/feed unit**. From the point the media is picked from the tray until it reaches the fuser.
- **Fuser/delivery unit**. From the fuser to the face-down tray or other output device.
- **Duplex feed unit**. From the duplexing reverse inlet unit to the registration roller.

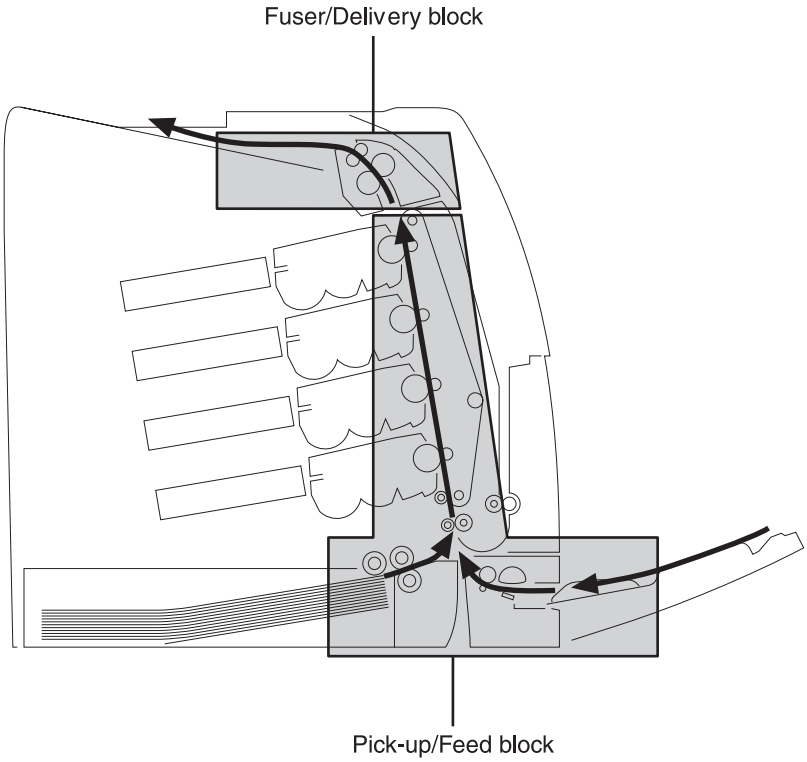


Figure 4-36 Pickup/feed system

Pickup/feed unit

The pickup/feed block is structured with two blocks. One is the pickup block, which picks up media from the cassette or the multipurpose tray into the MFP one by one. The other one is the feed block, which feeds the picked-up media to the fuser. The following sequence of events occurs:

1. The DC controller rotates the pickup motor (M9), drum motors (M1, M2, M3, M4), ETB motor (M7), and fuser motor (M5) after receiving a print command from the formatter.
2. The feed roller and the registration roller rotate as the pickup motor starts to rotate. The cassette separation roller also begins to rotate. However, the separation roller does not rotate.
3. Media is picked from the cassette. The cassette pickup solenoid (SL2) is turned on after a specified time after 'scanner ready'. This rotates the cassette pickup roller and cassette feed roller to pick up media in the cassette.

   Media is picked from the MP tray. The MP pickup solenoid (SL1) is turned on after a specified time after 'scanner ready'. This rotates the MP tray pickup roller to pick up media in the tray.
4. Any multiple-fed media is removed by the cassette paper separation roller (paper separation pad for the MP tray) and a single sheet is fed to the registration roller.
5. The skew of the media is corrected by the registration shutter. The media is then fed at its prescribed speed. The formatter specifies the feed speed depending on the media type.
6. Toner is transferred to the media on the ETB, and the media is fed to the fuser/delivery block.

Cassette detection and cassette media size detection

The MFP can sense whether a cassette is installed correctly, and it can sense the size of the media in the cassette. Paper-size detection switches at the back of the cassette send this information to the DC controller. The DC controller determines which size is loaded by reading various switches.

Table 4-6 Paper tray media size detection

Paper size	Paper-size detection switch		
	CNT0	CNT1	CNT2
A4	on	off	off
B5	on	on	off
A5	off	on	off
Letter	on	off	on
Legal	off	on	on
Executive	off	off	on
Custom	on	on	on
No paper tray	off	off	off

Although the cassette determines the media size by reading the switches, the user could select a different size from what is loaded, creating an error in media-size detection.

The paper leading-edge sensor detects when the leading edge and the trailing edge of a sheet pass it. By measuring the time between the passing of the leading edge and trailing edge, the sensor can

determine the actual size of the sheet. If this measured size differs from the size specified by the formatter or the switch combination, the DC controller determines a mismatch. The sheet is ejected from the MFP, and the MFP stops.

Cassette pickup operation

This MFP uses the pickup arm method for high-speed media pickup. The pickup arm presses the pickup roller down on the media stack to feed the media one by one. The pickup roller is attached to the pickup arm and it is normally held at the original position by the pickup arm. When the pickup solenoid (SL2) is turned on, the pickup cam rotates and lowers the pickup roller onto the media.

The following is the operational sequence of the cassette pickup mechanism.

1. When the DC controller turns the cassette pickup solenoid (SL2) on during the cassette pickup operation, the driving force of the pickup motor (M9) causes the cassette pickup roller and the pickup cam to rotate.
2. As the pickup cam rotates, the pickup arm goes down and the rotating cassette pickup roller touches the media surface. The media in the cassette is fed into the MFP one sheet at a time.
3. The pickup cam rotation allows the pickup arm to go up and the cassette pickup roller disengages from the media surface.
4. The cassette pickup roller stops rotating.

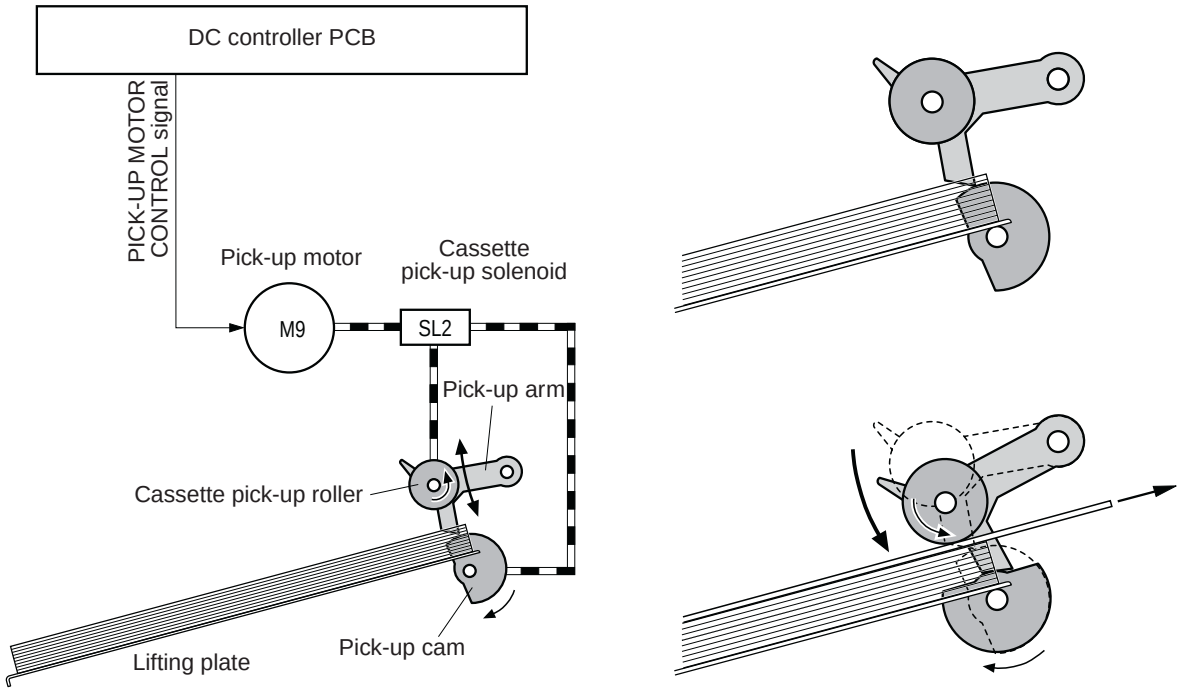


Figure 4-37 Cassette pickup

Media lifting operation

This operation maintains the position of the media stack surface at a specified height for a stable pickup operation. The DC controller rotates the lifter motor (M10) and raises the lifting plate on which the media stack is loaded. The DC controller monitors the cassette paper sensor (SR9) and the media stack surface sensor (SR10) when the MFP is turned on, the cassette is installed, and during the printing operation.

The media lifting operation is divided into two procedures:

- Initial lift
- Lifting during printing

Initial lift

The initial lift begins when the cassette is installed in the MFP and the lifting plate remains in the bottom of the cassette. The DC controller continues driving the M10 until the SR10 detects media. The SR10 lifts the stack surface up to the pickup position under the following conditions:

- The SR9 and SR10 detect no media when the power is turned on.
- The SR10 detects no media when the cassette is installed.

The DC controller stops this operation when the SR10 detects media before the SR9 detects media.

Lift-up during printing

The lifting during printing starts when the stack level reaches a specified level according to the pickup operation. The DC controller drives the M10 when the SR10 detects no media during the printing operation. The SR10 then lifts the stack surface up to the pickup position. Figure 4-38 Media lifting on page 194 illustrates this process.



NOTE: The paper lifting operation is also available for the 2 X 500-sheet paper feeders. The initial lift for the cassette and paper feeders does not occur at the same time because of the DC power supply limit. The operation starts from the bottom paper feeder and moves upwards.

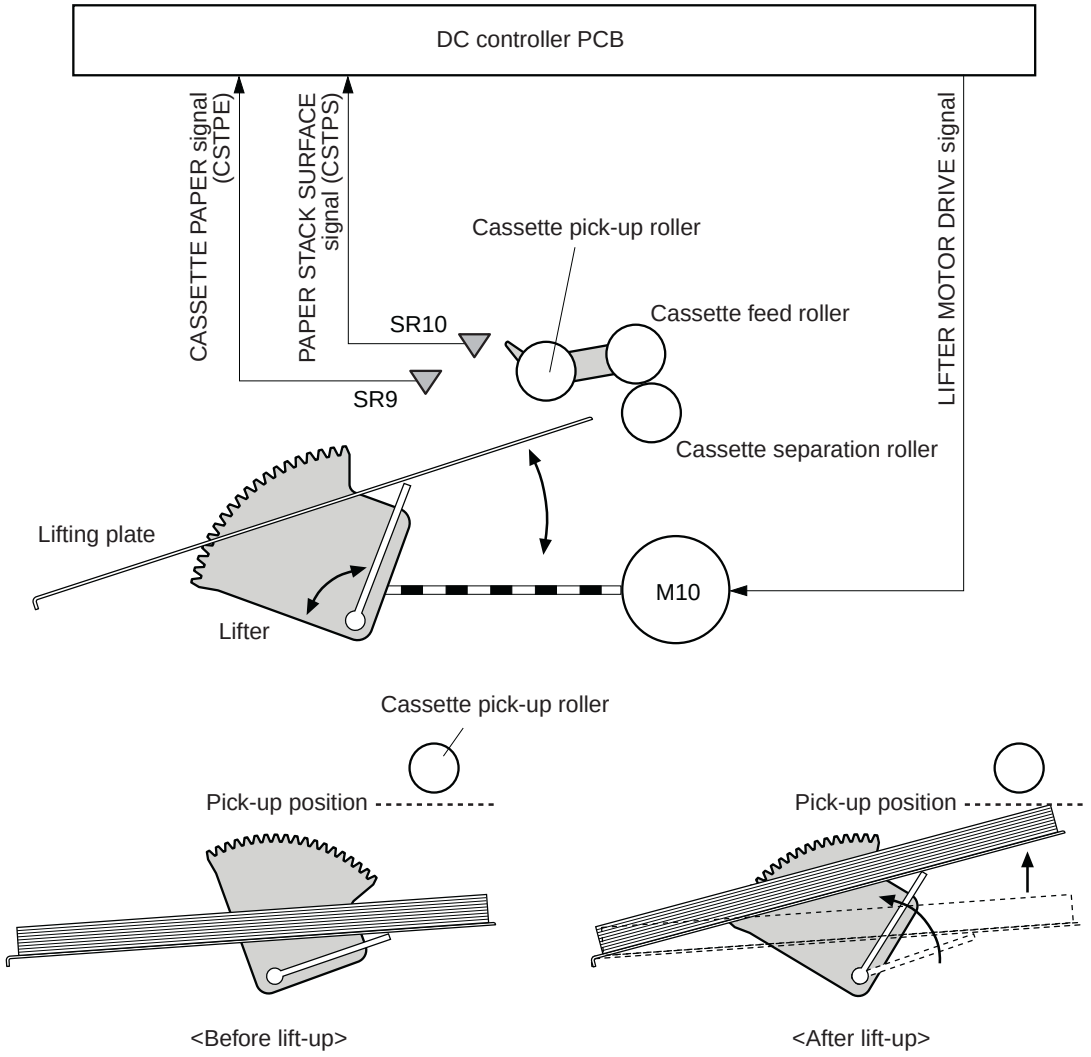


Figure 4-38 Media lifting

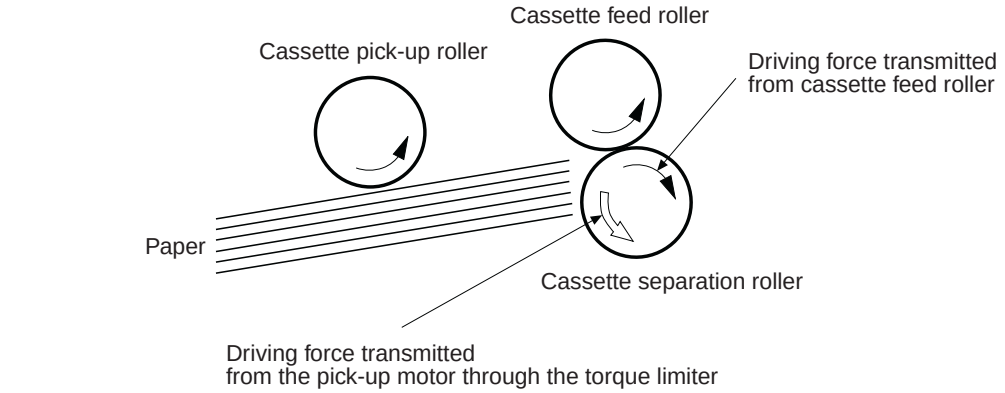
Multiple-feed prevention

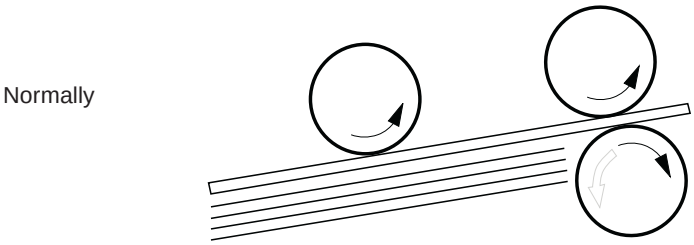
This MFP uses the paper separation roller method to prevent multiple feeds. The cassette paper separation roller rotates in the same direction as the cassette feed roller. The paper separation roller is imparted with a rotational force, transmitted through the torque limiter. If a multiple feed occurs, the second paper is pushed back to the cassette and only one sheet is fed into the MFP.

Normally, the cassette paper separation roller is imparted with a rotational force in the same direction to the cassette feed roller. However, since the paper separation roller touches the feed roller, driving torque from the feed roller brings the torque limiter functions. The torque limiter shuts the rotational force from the separation roller. The paper separation roller follows the rotational direction of the feed roller, in the opposite direction. When the paper is not multiple-fed, the driving force from the feed roller transmits through the single paper and allows the paper separation roller to rotate in the opposite direction.

During a multi-feed, the rotational force of the cassette feed roller transmitted to the cassette paper separation roller becomes weak because of the low friction between the sheets. The torque limiter does not function and the paper separation roller rotates in the direction of the drive gear, causing

the multiple-fed media to be separated and pushed back to the cassette. Figure 4-39 Media lifting on page 195 illustrates this process.





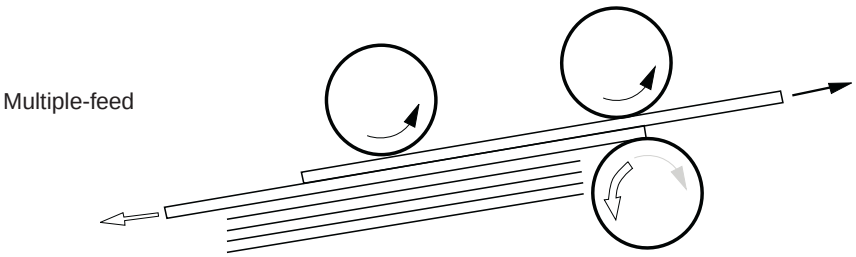


Figure 4-39 Media lifting

Skew correction

The skew correction mechanism compensates for the skew of feeding media. This MFP uses the registration shutter method to avoid decreasing throughput.

1. When the media is fed to the registration roller, the leading edge of the media hits the registration shutter to compensate for the skew feeding.
2. The media is warped as the feed roller keeps pushing the media with the condition that the media hit the registration shutter.
3. The stiffness of the media being warped lifts up the registration shutter and the media goes through the shutter. The skew-feed is corrected without decreasing throughput.

Figure 4-40 Skew correction on page 196 illustrates this process.

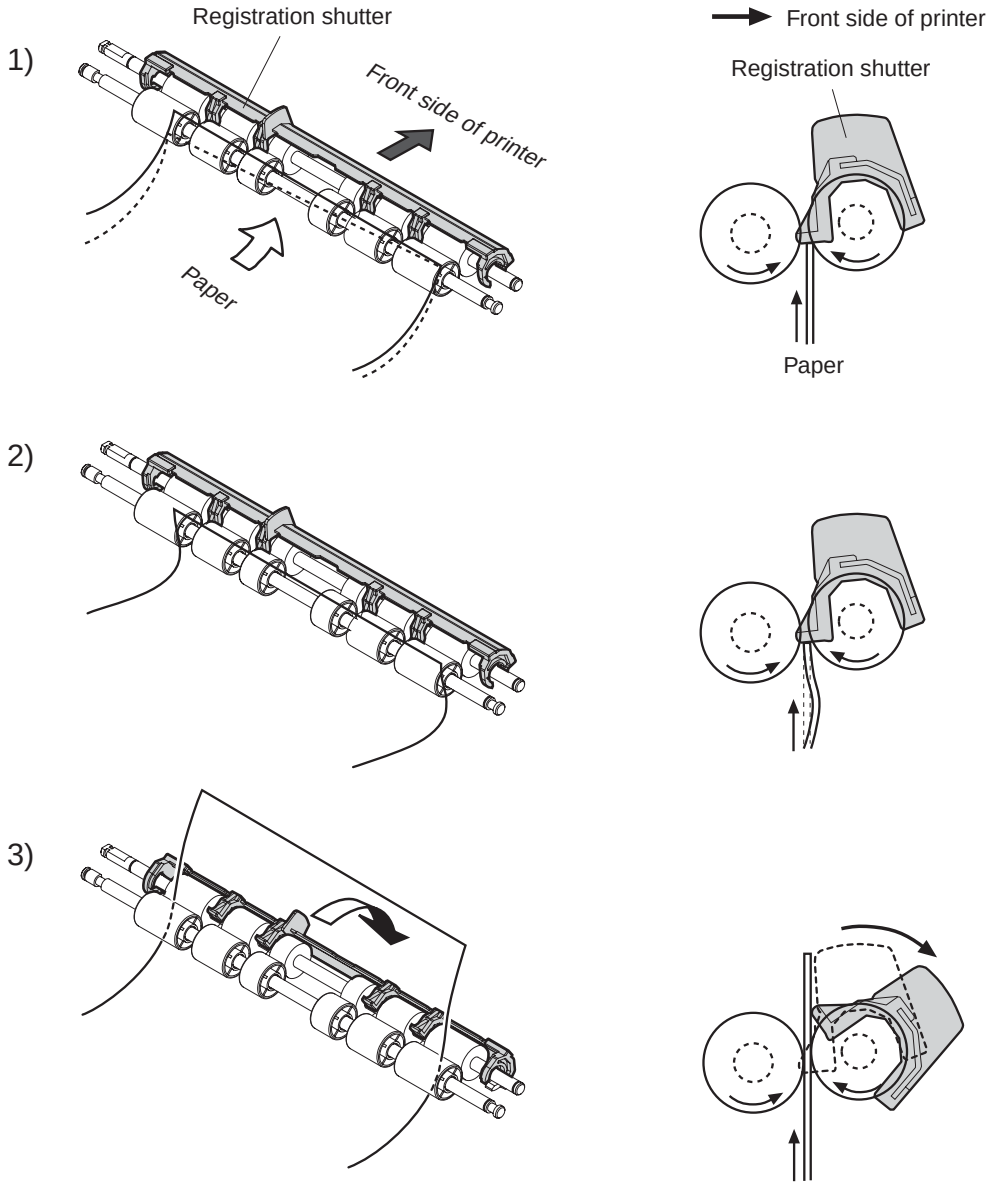


Figure 4-40 Skew correction

Media detection

This MFP detects the media types to select the optimum print mode automatically. The DC controller controls the media sensor during the printing operation for this detection. The media sensor contains a light emitter (LED) and a light receiver. The light from the emitter is reflected off the media surface or transmitted through the media. Each light is received at the light receiver.

NOTE: The light receiver can detect even a slight difference in the light intensity because the high-density pixels are integrated in a very small area.

The DC controller turns the media sensor on when the picked-up media passes through the registration roller. Then it detects the roughness of the media surface, transmitted light intensity, and thickness according to the patterns (luminance distribution within specified area) of the detected light

by the receiver. Accordingly, the DC controller identifies the media type: either plain paper, thin paper, thick paper, gloss paper, gloss film, or overhead transparency, and notifies the formatter. Figure 4-41 Media detection on page 197 illustrates this process.

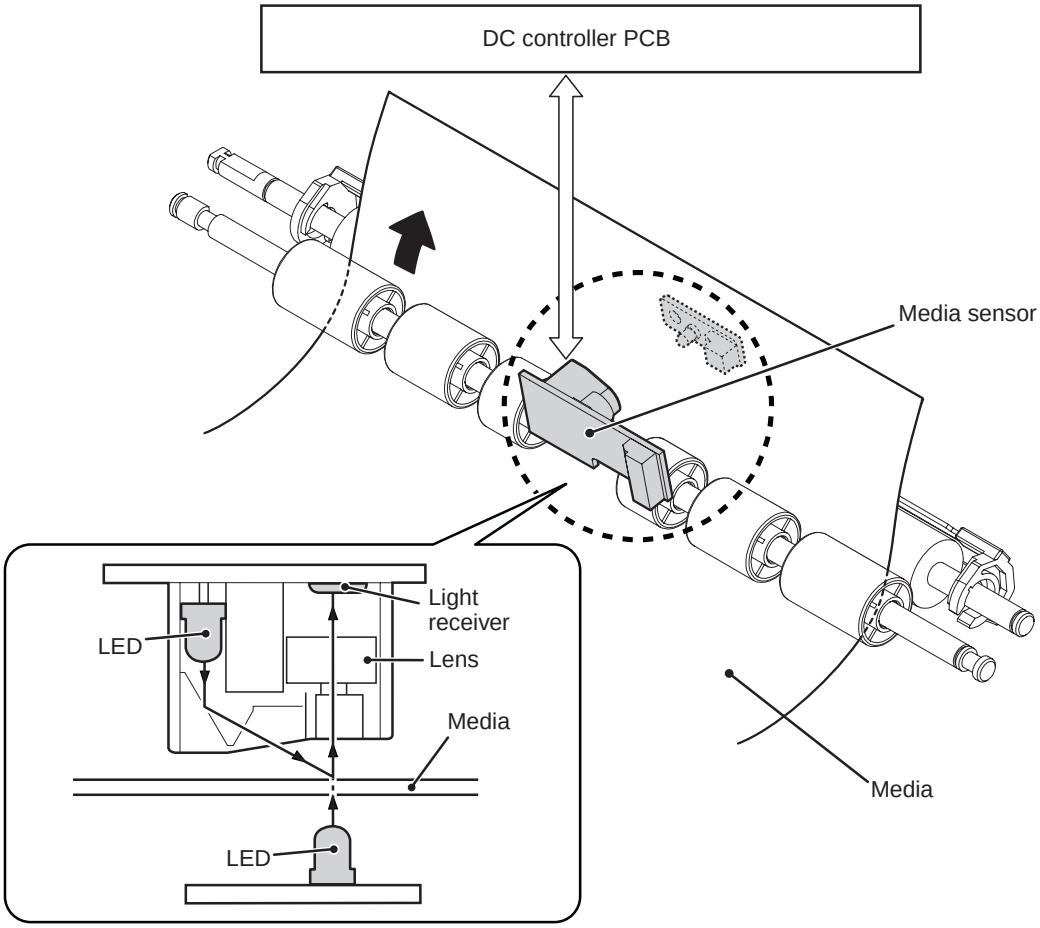


Figure 4-41 Media detection

The DC controller switches the media feeding speed according to the detected media type when the detected media type does not match the selected print mode.

If the DC controller fails to communicate with the media sensor during the media detection, it detects a media sensor failure and outputs a media sensor abnormality warning to the formatter.

Feed speed control

The type of media in the paper path dictates the speed at which it is fed. The DC controller can change the feed speed according to type of media. Table 4-7 Paper size detection switch settings on page 197 shows the relationship between media type and feed speed.

Table 4-7 Paper size detection switch settings

Print mode	Media type	Feed speed
Normal	Plain paper	Normal speed
Normal gloss	Plain paper	1/2 speed
Rough	Rough paper	1/2 speed

Table 4-7 **Paper size detection switch settings (continued)**

Print mode	Media type	Feed speed
Thin	Plain paper	Normal speed
Thin rough	Rough paper	1/2 speed
Envelope	Envelope	1/2 speed
Label	Label	1/2 speed
Thick 1	Thick card/postcard	1/2 speed
Thick 2	Thick paper	1/3 speed
Gloss 1	Gloss paper	1/2 speed
Gloss 2 and 3	Gloss paper	1/3 speed
Overhead transparency	OHT film	1/3 speed
Gloss film	Gloss film	1/3 speed
Automatic	Plain paper, thin paper, thick paper, gloss paper, gloss film, overhead transparency	N/A

The DC controller performs the following controls depending on the specified print mode.

- **OHT mode**. If plain paper, other than OHT is detected, the DC controller determines a media misprint. The DC controller lets the printing operation continue under the OHT mode only when it detects the OHT. The same applies to the following sheets in a continuous printing. When the DC controller outputs the wrong media, it notifies the formatter, cuts off the secondary transfer bias, delivers the media, and then stops the printer engine.
- **Automatic mode**. When automatic mode is selected, the MFP starts the printing operation in the normal mode. If plain paper, thin paper, thick paper, gloss paper, gloss film, or OHT is detected, the DC controller switches the print mode to the appropriate mode and executes the printing operation. In continuous printing, the print mode will not change from the one selected for the first sheet. However, if the DC controller detects media different from the first page, it outputs a media misprint.
- **All other print modes**. If media other than OHT is detected, the DC controller continues the printing operation with the selected print mode. It outputs a media misprint only when it detects OHT. The same applies to the following sheets in the continuous printing.

Fusing and delivery block

The fuser/delivery unit is structured with two blocks. One is the fuser block that fuses toner on the media. The other is the delivery block, which delivers the fused media to the face-down tray or output device. The following is the operational sequence of the fuser/delivery unit.

1. The media with toner transferred on the ETB is fed to the fuser.
2. The paper warp is adjusted with the fuser motor speed control. The feeding speed differs between the ETB and the fuser, as different motors are used to drive them. This control keeps the media with a specified warp to prevent image defects and media transport defects.

3. The fusing sleeve and the fusing pressure roller fuse the toner onto the media. The media is then delivered from the fuser.

4. The image fusing media sensor (SR1) detects the media delivered from the fuser, and then delivers the media to the face-down tray or other output device.

NOTE: If the face-down tray is full of media, the delivery tray paper-full sensor (SR2) detects that it is full. The DC controller determines the face-down tray media is full, notifies the formatter, delivers the media currently printing from the MFP, and stops the printer engine. When the stack of media on the face-down tray is removed, the SR2 detects the media absence and the printing operation resumes.

Loop control

The media is delivered from the ETB to the fusing pressure roller maintaining the specified warp for the media type, to prevent image and media transport defects.

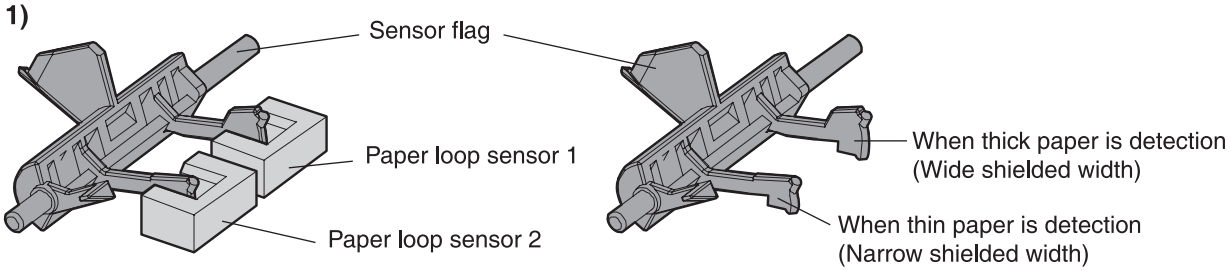
The feeding speed of the fusing pressure roller and the ETB are not exactly the same. The following problems might occur when the media is fed into the fuser.

- If the rotational speed of the fusing pressure roller is slower than that of the ETB, the media warp increases and an image defect or media crease might occur.
- If the rotational speed of the fusing pressure roller is faster than that of the ETB, the media warp decreases and a color misregistration in the sub-scanning direction occurs as the fusing pressure roller pulls the media.

To resolve these issues, two sensors are used depending on the media type specified by the formatter. The sensors bifurcate the warp amount for thick paper and thin paper. The DC controller monitors the paper loop sensor 1 (SR13) and the paper loop sensor 2 (SR14) to maintain the paper warp at specified amount by changing the rotational speed of the fusing pressure roller.

Figure 4-42 Loop control on page 200 illustrates this process.

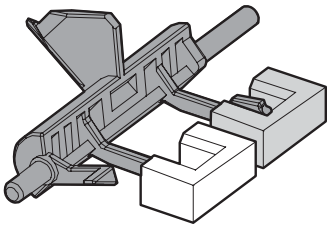
1)



Home position

Slow down the rotation of fuser pressure roller

2)



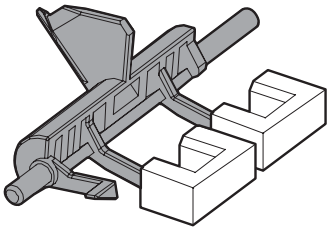
(At thick paper feeding)

Slow down the rotation of fuser pressure roller

(At thin paper feeding)

Speed up the rotation of fuser pressure roller

3)



Speed up the rotation of fuser pressure roller

Figure 4-42 Loop control

Fusing pressure release mechanism

This mechanism automatically releases the fusing pressure to improve media removal and prevent fusing pressure roller deformation.

The DC controller rotates the cam driven by the fuser pressure release motor (M6) at the prescribed timing. The lifting plate is pushed down and the fusing pressure roller is released. The fusing pressure is released under the following conditions:

- When a paper jam occurs
- When the power is turned off
- When Sleep mode is ON/OFF

Figure 4-43 Fusing pressure release on page 201 illustrates this process.

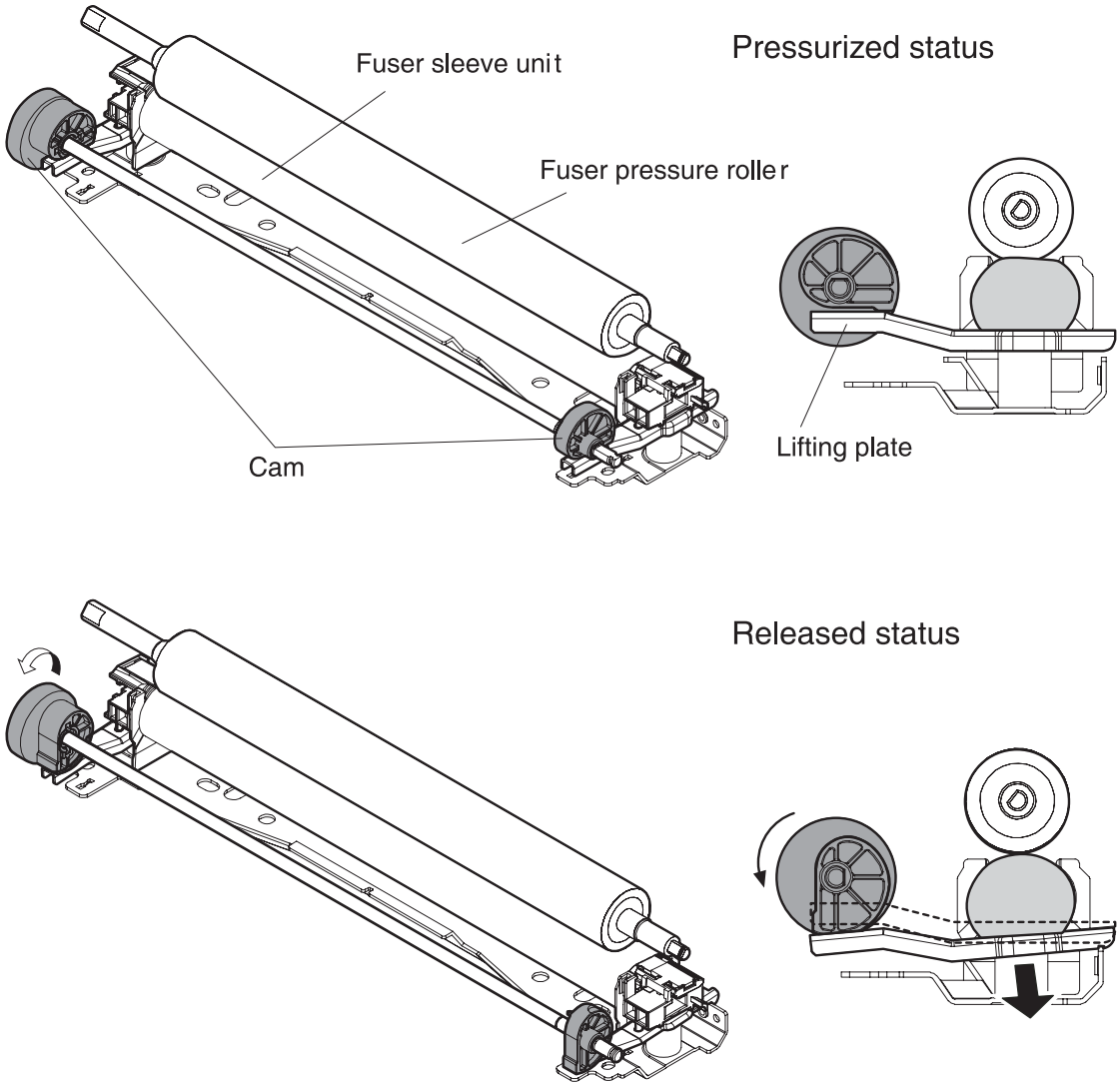


Figure 4-43 Fusing pressure release

Duplex feed unit

This MFP is equipped with an integrated duplexing unit. The duplexing reverse/duplexing feed unit is structured into two blocks.

One is the duplexing reverse block, that reverses paper in preparation for duplex printing. The second is the duplexing feed block, which delivers the reversed paper to the registration roller.

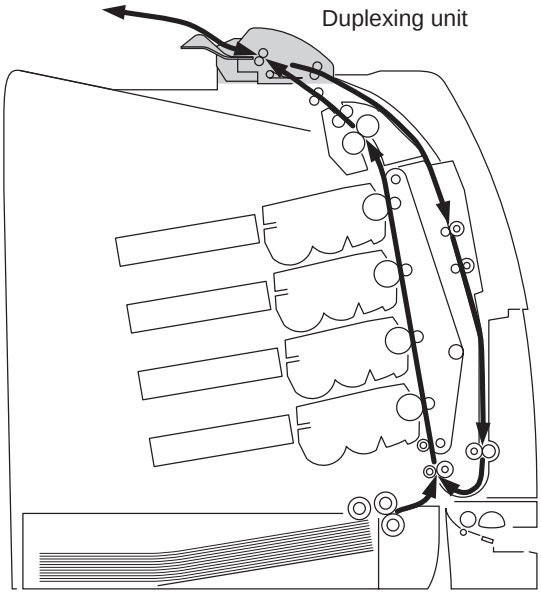


Figure 4-44 Duplex feed unit

The duplexing driver PCB controls the duplexing unit. An 8-bit microcomputer in the duplexing driver PCB controls the sequences of the duplexing unit and serial communication with the DC controller.

The DC controller sends a command to the duplexing driver PCB at the necessary time. The duplexing driver PCB drives each load, such as motors and solenoids, depending on these commands. The duplexing driver PCB relays the status information of the duplexing unit to the DC controller.

The MFP supplies +24VDC to the duplexing unit. The +3.3VDC is generated by +24V DC in the duplexing driver PCB, which works for the component devices such as sensors and ICs. Figure 4-45 Duplexing driver PCB signal flow on page 202 shows the signal flow in the duplexing driver PCB.

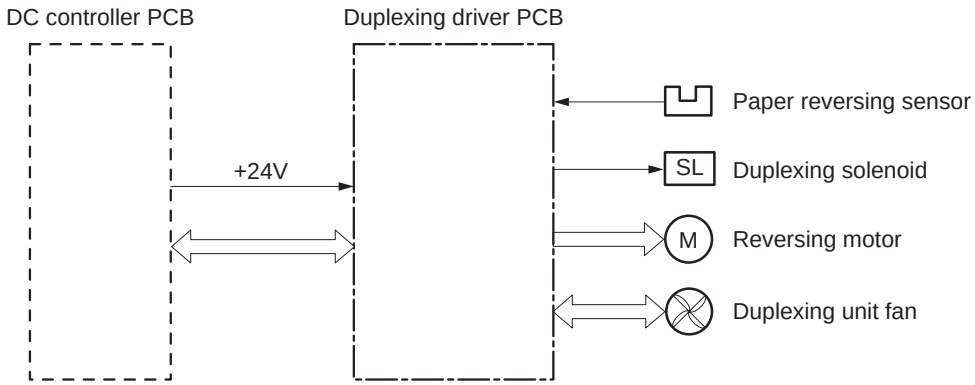


Figure 4-45 Duplexing driver PCB signal flow

Duplexing reverse/duplexing feed operation

The media fed to the duplexing unit goes to the opposite direction and proceeds hitting along the right plate by the oblique roller. This corrects the paper skew and the media is fed into the MFP. The operational sequence of the duplexing feed is described in Figure 4-46 Duplexing feed on page 203.

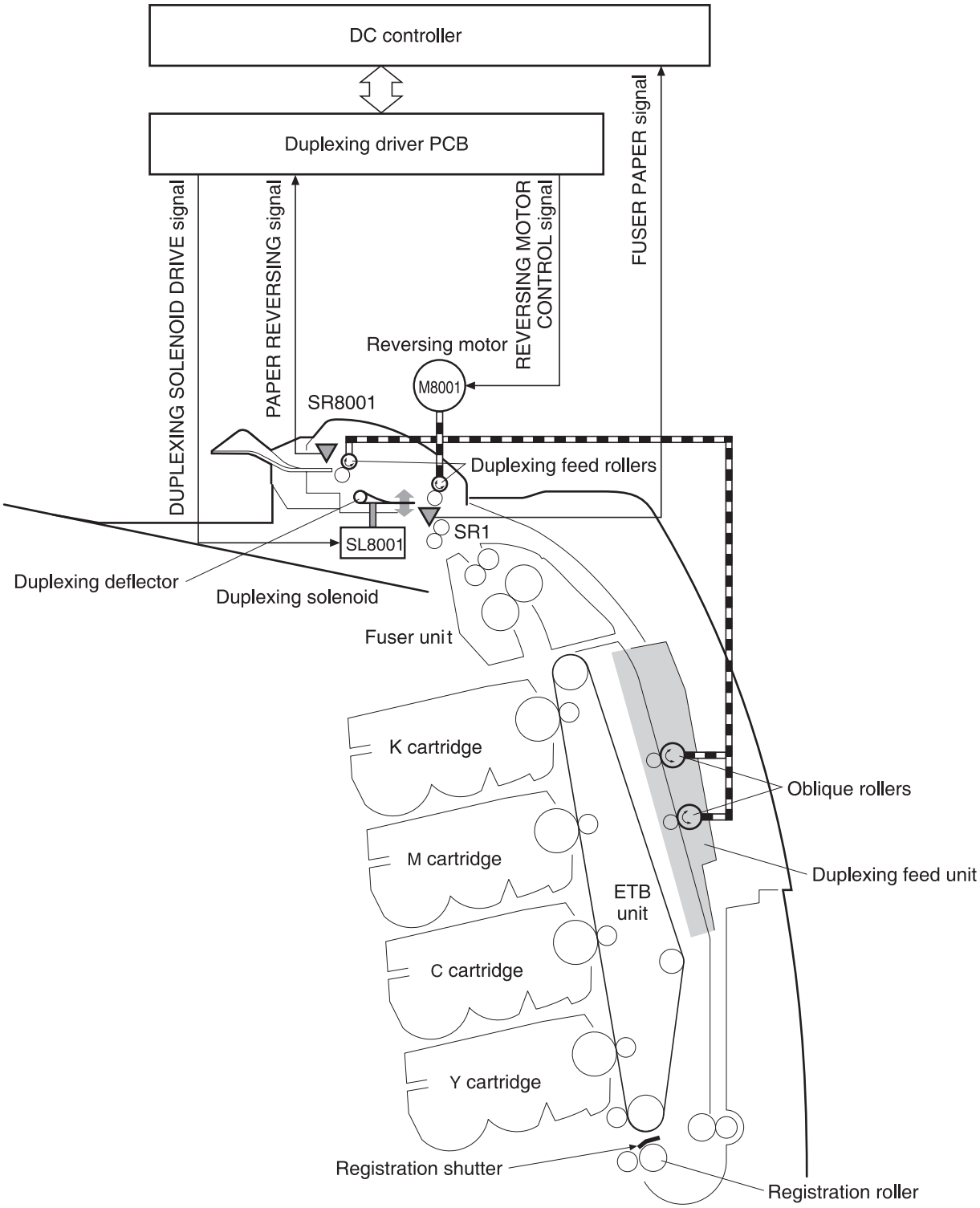


Figure 4-46 Duplexing feed

1. Media that has been printed on one side passes through the fuser.
2. The DC controller sends the reversing command to the duplexing driver at the specified time after the top of page sensor (SR12) detects the leading edge of paper. The prescribed time is when the media arrives at the fuser.

3. When the duplexing driver receives the reversing command, it turns on the duplexing solenoid (SL8001) to move the duplexing deflector. The duplexing driver also rotates the reversing motor (M8001) clockwise to feed the media to the duplexing unit.

4. The DC controller sends the duplexing pickup command to the duplexing driver after the prescribed time from when the fuser paper sensor (SR1) detected the trailing edge of paper. The prescribed time is when the media passes through the duplexing deflector.

5. The duplexing driver rotates the reversing motor (M8001) counter clockwise (CCW) to reverse the media and feed it to the duplexing feed unit when it receives the duplexing pickup command.

6. The media is fed while hitting its edge to the right guide by the oblique roller in the duplexing feed unit. Consequently, the paper skew is corrected and the starting position of the image in main-scanning is determined.

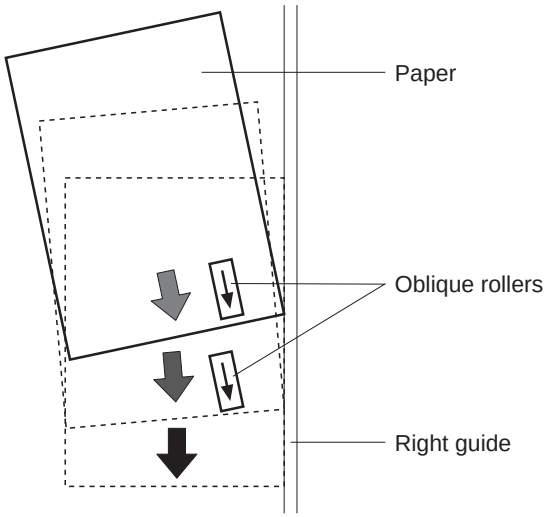


Figure 4-47 Paper skew correction

7. The paper skew is again corrected by the registration shutter. Then the media is printed on the other side and fed to the face-down tray or other output device.

The MFP can use the following three duplexing modes depending on the paper size and the print mode. The formatter specifies each duplexing print operation. However, it cannot specify the operation other than the printable size (LTR, legal, executive, A4, B5-JIS) and the print mode (normal, thick paper, thin paper, gloss paper, gloss film) for the duplexing print.

1. **Single sheet mode**. Duplexing of one sheet at a time (all paper sizes).

2. **Dual sheet mode**. Duplexing of two sheets moving at once (all paper sizes print except legal).

3. **Alternating complex mode**. Duplexing of three sheets moving at once (all paper sizes print except legal).

Jam detection

The MFP uses the following sensors to detect the presence of media and to check whether media is being fed correctly or has jammed:

- Top-of-page sensor (SR12)
- Fuser paper sensor (SR1)

- Delivery tray paper-full sensor (SR2)
- Reversing paper sensor (SR8001)

The microprocessor on the DC controller checks for jams by timing the media as it moves past these sensors. If the media does not pass the sensor in a specific period of time, the transport process is stopped (the motors are turned off and the rollers no longer rotate) and a jam message displays on the product control panel display.

Pickup delay jam

If the top-of-page sensor (SR12) does not detect the leading edge of the media within a specific period of time after the media is picked up, the microprocessor on the DC controller PCB determines that a pickup jam has occurred.



NOTE: The MFP attempts to pick up the media several times before determining that a pickup jam exists. The number of pickup attempts depends on the source (for example, four attempts occur if tray 1 is the source).

The transport process stops and a jam message appears on the product control panel display.

Pickup stationary jam

If the top-of-page sensor (SR12) continues to detect the leading edge of the media after a specific period of time has elapsed, the microprocessor on the DC controller PCB determines that a pickup stationary jam has occurred.

The transport process stops and a jam message appears on the product control panel display.

Delivery delay jam

If the fuser paper sensor (SR1) does not detect the leading edge of the media within a specific period of time after the top-of-page sensor detects the media, the microprocessor on the DC controller PCB determines that a delivery delay jam has occurred.

The transport process stops and a jam message appears on the product control panel display.

Door open jam

If the upper right cover, ETB cover, tray 1, IPTU door, or the 2 x 500-sheet paper deck door is opened during printing, the microprocessor on the DC controller PCB determines that a door open jam has occurred.

The transport process stops and a jam message appears on the product control panel display.

Residual paper jam

If the fuser paper sensor (SR1) detects paper during the WAIT or INTR period, or if the top-of-page sensor or fuser paper sensor detect paper during the automatic delivery period, the microprocessor on the DC controller PCB determines that a residual paper jam has occurred.

The transport process stops and a jam message appears on the product control panel display.

Reversing unit jam 1

If the paper reversing sensor (SR8001) does not detect the leading edge of the media within a specified period after the duplexing driver receives a reversing command from the MFP, the microprocessor on the DC controller PCB determines that a reversing unit jam 1 has occurred.

The transport process stops and a jam message appears on the product control panel display.

Reversing unit jam 2

If the paper reversing sensor (SR8001) continues to detect media for a specified period after it initially detects the media, the microprocessor on the DC controller PCB determines that a reversing unit jam 2 has occurred.

The transport process stops and a jam message appears on the product control panel display.

Duplexing pickup unit jam 1

If the top-of-page sensor (SR12) fails to detect the leading edge of media within the specified period after the duplexing driver receives a duplexing pickup command from the MFP, the microprocessor on the DC controller PCB determines that a duplexing pickup unit jam 1 has occurred.

The transport process stops and a jam message appears on the product control panel display.

Automatic delivery function

Any residual paper within the MFP is automatically delivered when the power is turned on or when printing starts. If the top-of-page sensor (SR12) detects paper during the WAIT period, the DC controller PCB detects that residual paper is present, notifies to the formatter, and stops printing. The controller drives the motors and delivers the residual paper to the MFP when it receives an automatic delivery command from the formatter.

Scanner system

The scanner system adds copying and sending functions to the standard MFP printing function. The scanner assembly consists of an automatic document feeder (ADF) and a flatbed scanner glass surface.

Original documents that are fed through the ADF are delivered to the ADF output bin, which is underneath the ADF input tray. Printed copies are delivered to the output device that is attached to the print engine.

The scanner unit has built-in duplexing capability for scanning two-sided documents.

Figure 4-48 ADF mechanical structure on page 207 shows a cross-section of the ADF.

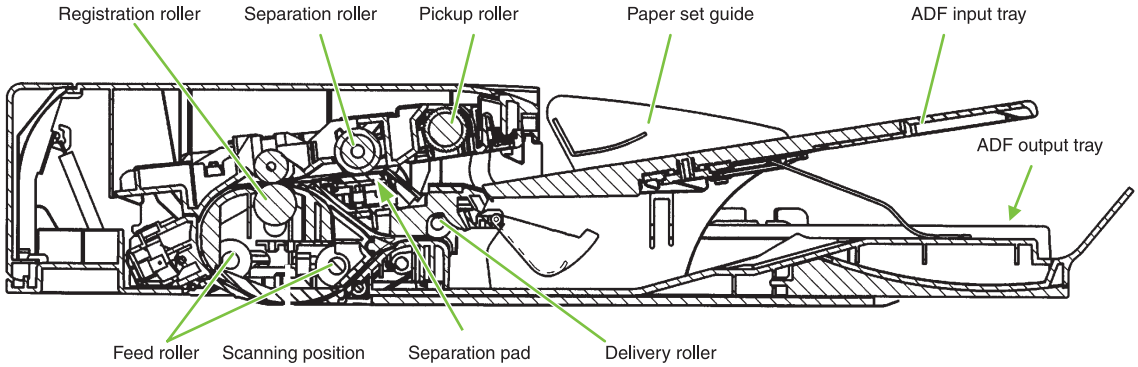


Figure 4-48 ADF mechanical structure

Electrical system

The scanner assembly electrical system consists of the following components:

- Charged coupled device (CCD) PCB
- Inverter PCB
- Scanner PCB
- ADF PCB
- ADF LED PCB

The scanner assembly is connected to the print engine formatter through a flat, flexible cable.

Figure 4-49 Scanner assembly electrical structure on page 208 shows the scanner assembly electrical structure.

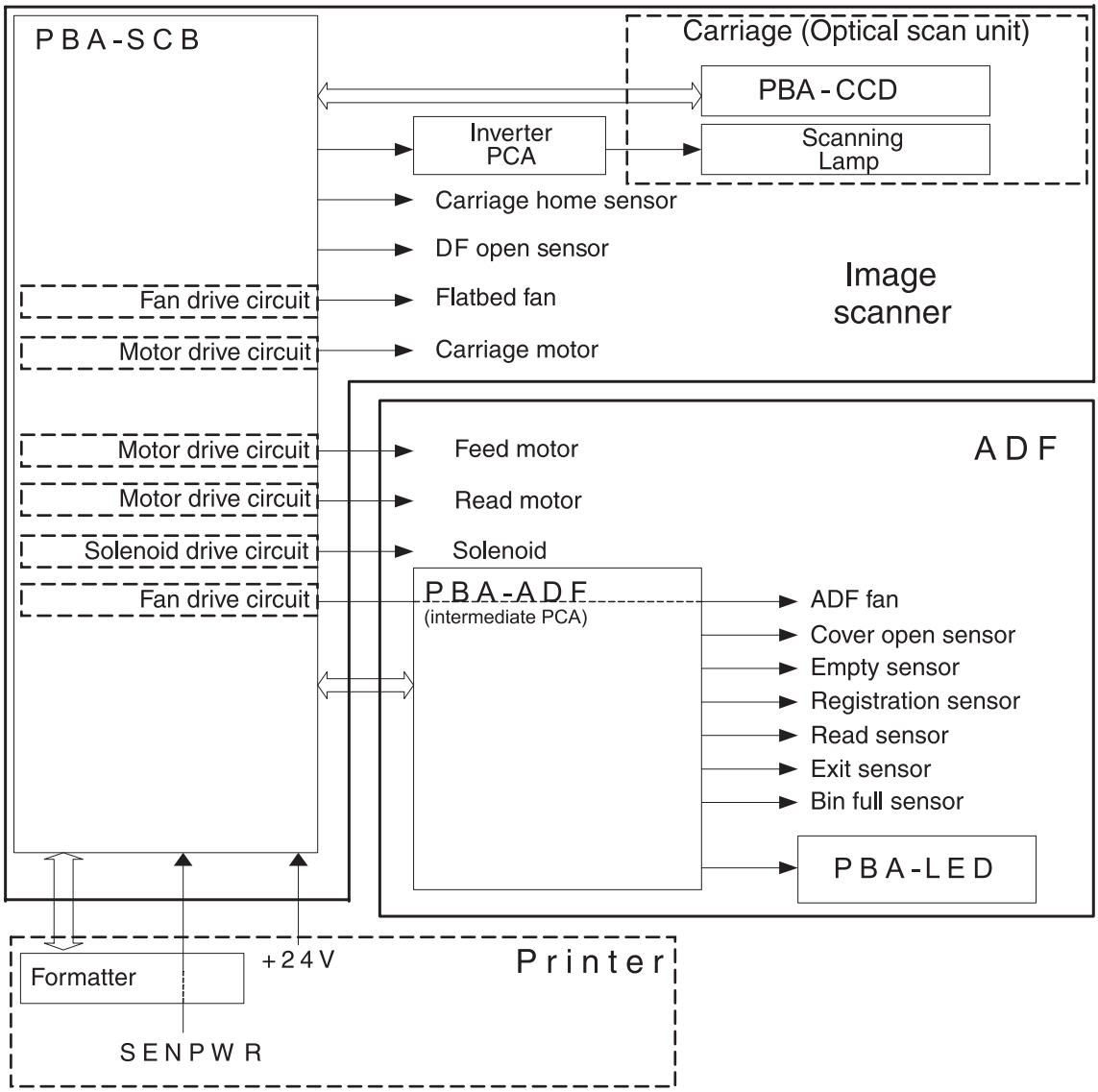


Figure 4-49 Scanner assembly electrical structure

Motors and fans

The scanner assembly has five motors and two fans. Three of the motors are stepping motors, which drive the components inside the scanner assembly. The remaining two motors are DC motors, which drive the two fans.

Name	Purpose	Type	Rotation	Failure detection
Carriage motor	Drives the carriage unit	Stepping motor	Varies	No
Feed motor	Drives the pickup, separation, and registration rollers	Stepping motor	Varies	No
Read motor	Drives the feed and delivery rollers	Stepping motor	Counterclockwise	No

Name	Purpose	Type	Rotation	Failure detection
Flatbed fan	Cools the scanner lamp and the CCD	DC motor	Clockwise	Yes
ADF fan	Cools the motors	DC motor	Clockwise	Yes

Optical assembly

The optical assembly contains the scan carriage and the scanner glass. The scan carriage contains the lamp, five mirrors, a lens, and the CCD.

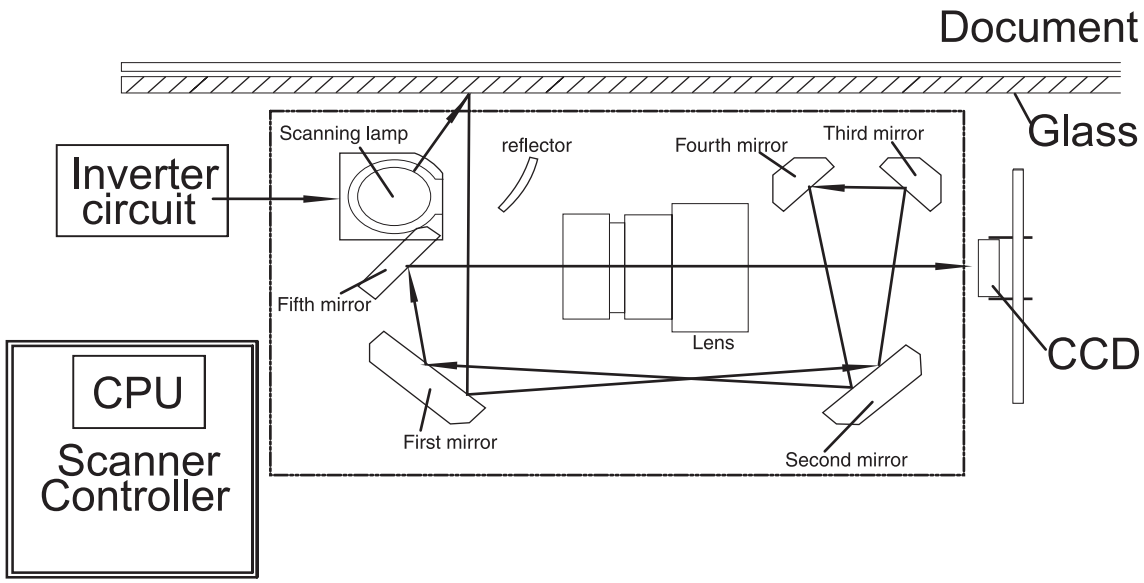


Figure 4-50 Scan carriage components

The scanner lamp illuminates a small strip of the document (called the raster line). The mirrors direct the light through the lens to the CCD. The CCD senses and records the light, creating an analog representation of the raster line. If the ADF is being used, the document then advances in the ADF to the next raster line. If the flatbed is being used, the carriage advances to the next raster line. This advancing and collection process continues to the end of the sheet.

The image data is collected on the scanner controller PCB, where it is processed and sent to the formatter.

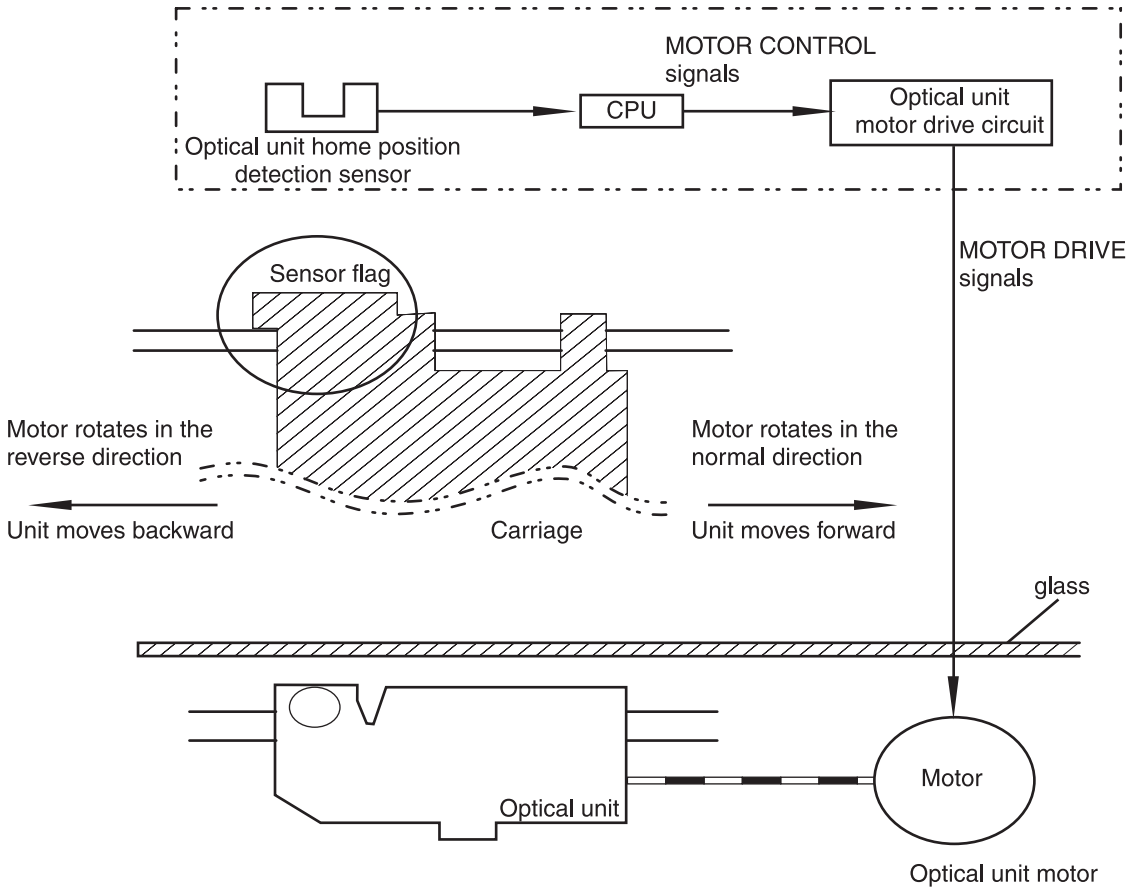


Figure 4-51 Scan carriage movement

ADF feed system

Pages from the original document enter the ADF from the ADF input tray. A separation roller and separation pad work together to separate the top sheet from the stack. The page passes through a set of registration rollers and two sets of feed rollers that advance the page. A set of delivery rollers delivers the page to the ADF output bin. A bin-full sensor detects when the ADF output bin is full, and stops the feed mechanism until the bin is emptied.

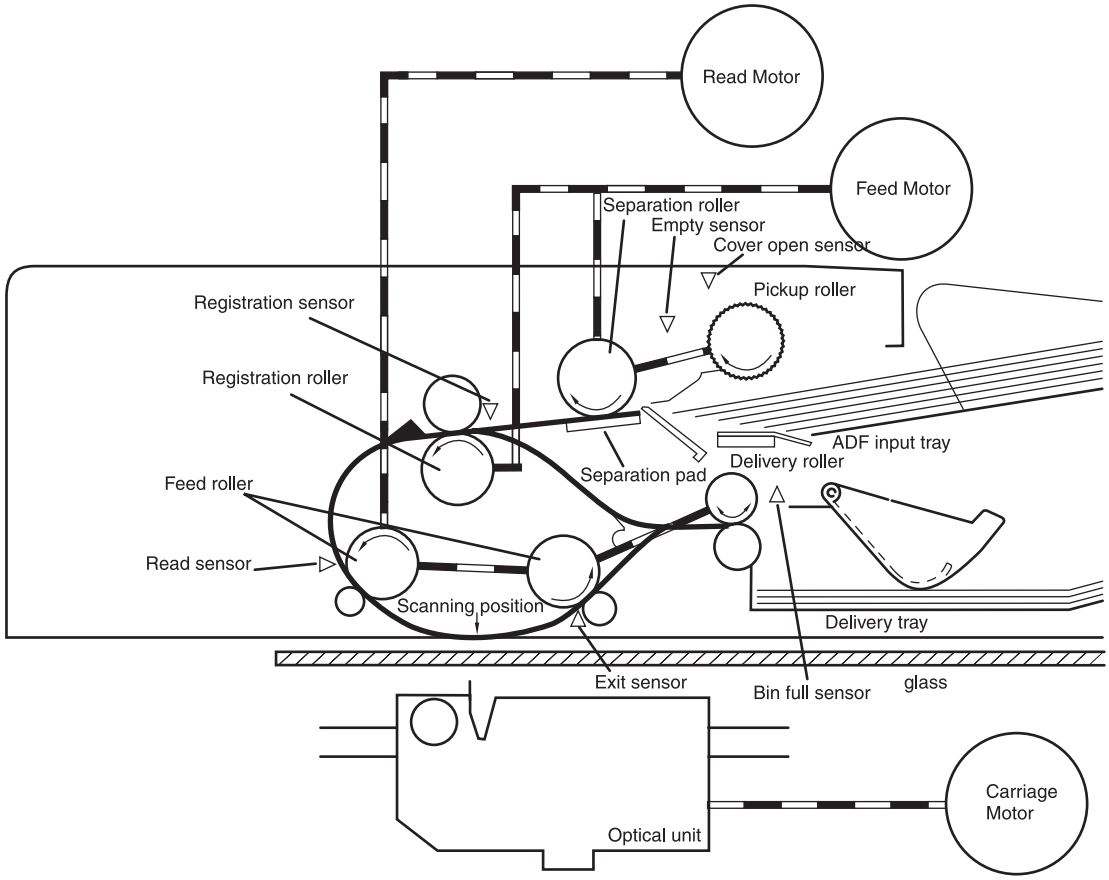


Figure 4-52 ADF paper path and sensors

ADF jam detection

When the sensors inside the ADF detect a jam, the feed and read motors immediately stop and send a signal to the scanner controller PCB, which notifies the formatter. An **ADF Paper Jam** message displays on the product control panel display.

To clear a jam, open the jam access cover and remove the media. If no sensors detect media after the jam access cover is closed, the jam message is cleared from the product control panel display.

Residual media jam

During the initialization sequence or after the ADF jam cover has been opened and closed, the registration sensor, read sensor, and exit sensor are checked for residual media jams. If a sensor detects the presence of media, the scanner controller PCB detects a residual media jam.

ADF pickup jam

If the leading edge of the media did not reach the registration sensor within a specific period of time, the scanner controller PCB determines that an ADF pickup jam has occurred.

ADF jam

Jams can occur in three places inside the ADF: at the registration sensor, read sensor, and exit sensor.

Registration sensor jam

If the registration sensor does not detect the trailing edge of the media after the leading edge reaches the scan ready position, the scanner controller PCB determines that an ADF paper jam has occurred.

Also, when the scanner duplexer is being used, if the registration sensor does not detect the leading edge of the media after a specific period of time after media enters the duplexer, the scanner controller PCB determines that a jam has occurred.

Read sensor jam

If the read sensor does not detect the leading edge of the media within a specific period of time, or if the read sensor does not detect the trailing edge of the media within a specific period of time after it detects the leading edge, the scanner controller PCB determines that a jam has occurred.

Exit sensor jam

If the exit sensor does not detect the leading edge of the media within a specific period of time after the leading edge reaches the read sensor, or if the exit sensor does not detect the trailing edge of the media within a specific period of time after the read sensor detects the trailing edge, the scanner controller PCB determines that a jam has occurred.

ADF cover-open jam

If the ADF jam access cover is opened while media is feeding through the ADF, a jam occurs.

ADF open jam

If the ADF is opened while media is feeding through the ADF, a jam occurs.

2 X 500-sheet paper feeder

The MFP includes a 500-sheet paper tray (tray 2) and a larger paper deck that contains two 500-sheet feeders (trays 3 and 4). The paper path is shown below.

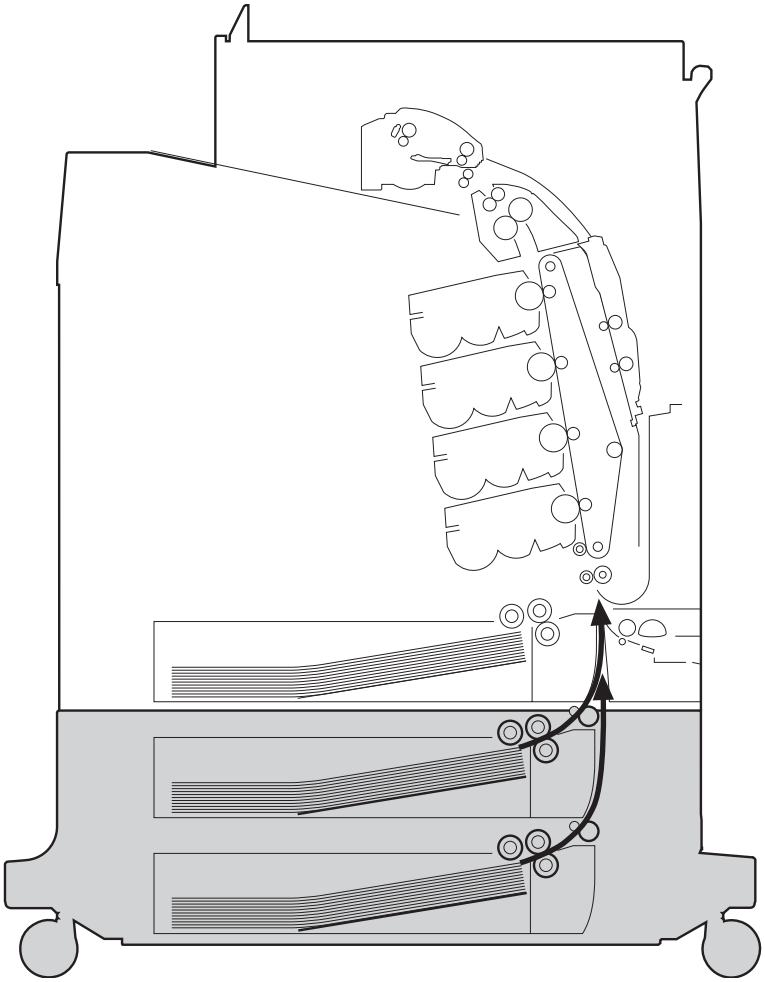


Figure 4-53 2 X 500-sheet feeder paper path

The paper feeder driver PCB controls the 2 X 500-sheet feeder operation sequences. The microprocessor in the paper feeder driver controls the 2 X 500-sheet feeder sequences and the communication with the DC controller PCB.

The paper feeder driver drives the solenoid in response to the pickup command. The paper feeder driver also reports the paper feeder status to the DC controller PCB.

The MFP delivers a charge of +24 V to the paper feeder, which then generates +3.3 V for the integrated circuits.

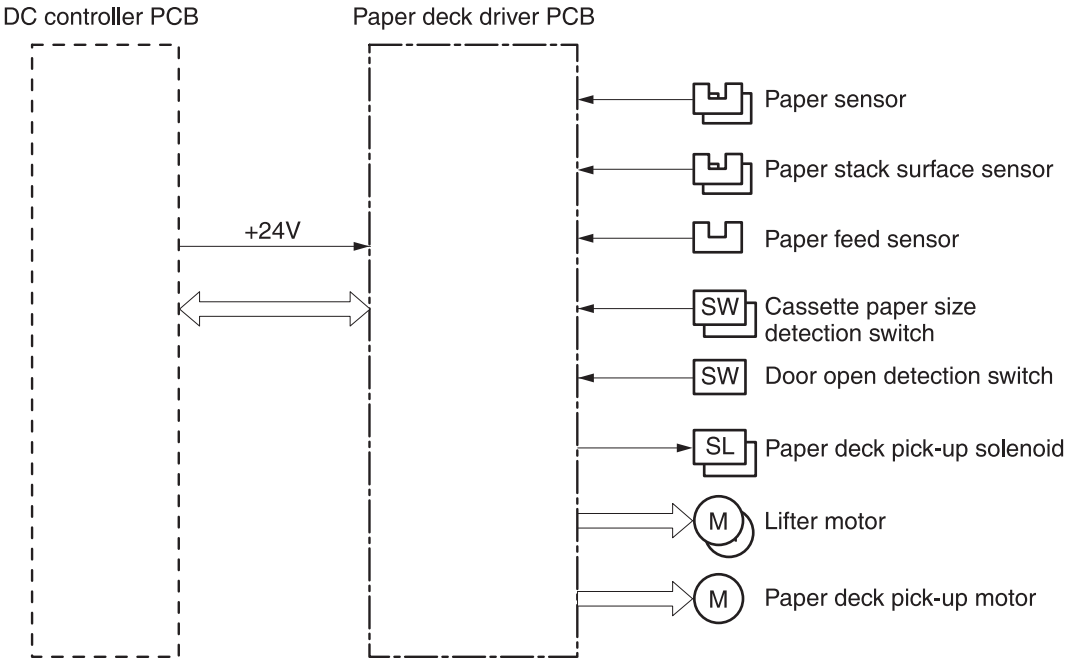


Figure 4-54 2 X 500-sheet feeder I/O block diagram

Pickup and feed operations

The paper pickup and feeding processes for the 2 X 500-sheet feeder are identical to the processes used for tray 2. See Figure 4-54 2 X 500-sheet feeder I/O block diagram on page 214. The Figure 4-55 2 X 500-sheet feeder pickup and feed diagram on page 215 identifies the components of the 2 X 500-sheet feeder.

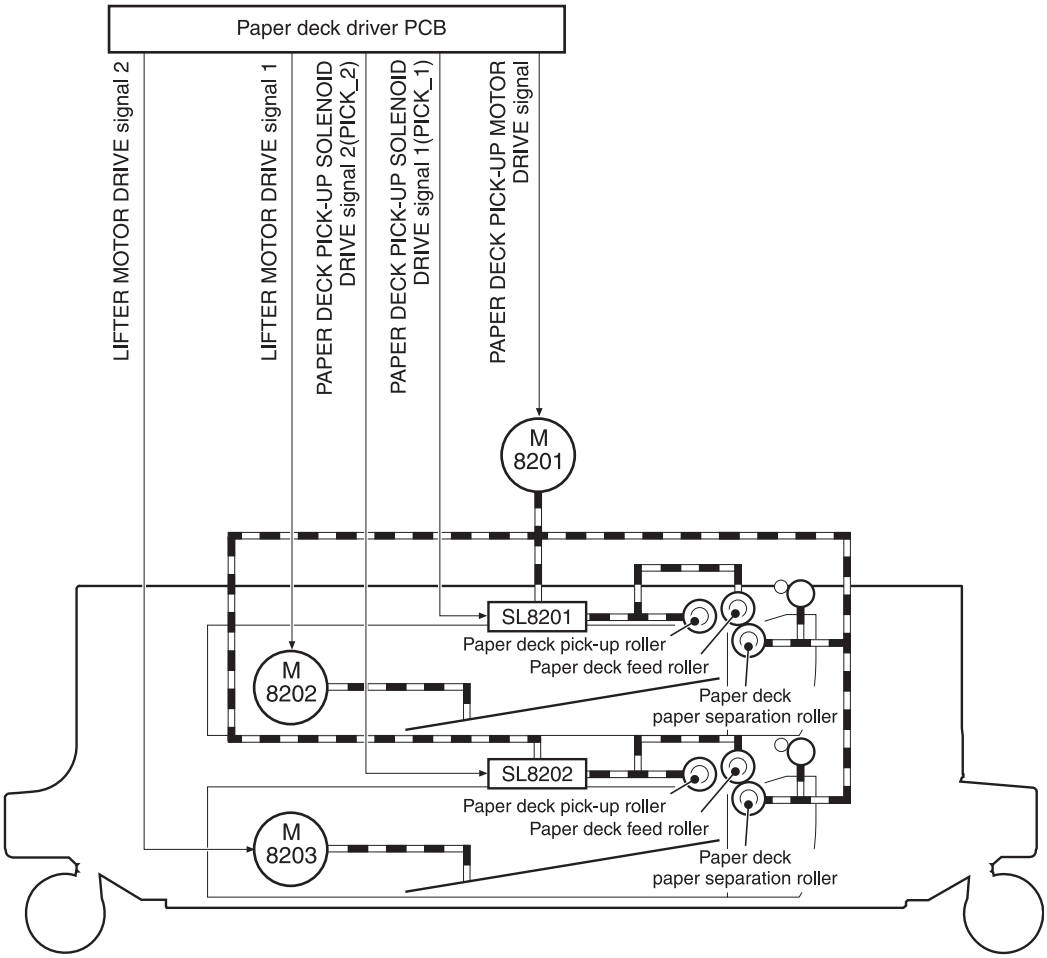


Figure 4-55 2 X 500-sheet feeder pickup and feed diagram

1. The DC controller receives a print command from the formatter and sends a pickup command to the paper feeder driver.
2. The paper feeder driver rotates the pickup motor (M8101) in the paper feeder, and the feed roller and the paper feeder separation roller start to rotate.
3. The DC controller sends the paper feeder pickup start command to the paper deck driver PCB after the scanner is ready.
4. The paper deck driver PCB then rotates the paper deck pickup motor (M8201) clockwise to rotate the paper deck feed roller.
5. The paper deck driver PCB turns on the paper feeder pickup solenoids (SL8201 and SL8202) to rotate the paper deck pickup roller and the paper feeder feed roller. At the same time, the PCB lowers the paper feeder pickup roller. As the pickup roller lowers, it contacts the media surface and media in the cassette is fed into the MFP.
6. The separation roller eliminates extra sheets, and a single piece of media enters the feed path.
7. If the paper stack level goes down to the specified level according to the pickup operation, the paper lifting operation is performed.



NOTE: Paper-size detection, multiple-feed prevention, and jam detection for the 2 X 500-sheet feeder function in the same manner as the rest of the MFP.

NOTE: Paper lifting operation for the 2 X 500-sheet feeder is the same as that of tray 2, except that the paper feeder driver PCB controls this operation instead of the DC controller.

2 X 500-sheet jam detection

The paper feed sensor (SR8201) detects abnormal feed operation in the 500-sheet paper feeder. These jams can occur:

- **Paper deck pickup delay jam**: If the paper feed sensor (SR8201) does not detect the leading edge of the media within a specified period after the paper is picked up, the microprocessor on the DC controller PCB determines that a pickup jam has occurred.
- **Paper deck pickup stationary jam**: If the paper feed sensor (SR8201) continues to detect paper after a specific period of time has elapsed, the microprocessor on the DC controller PCB determines that a paper deck pickup stationary jam has occurred.

For other jams, see Jam detection on page 204.

Output devices

This section describes the theory of operation for these components:

- IPTU
- 3-bin mailbox system
- Stapler/stacker system

IPTU

The IPTU (intermediate paper transfer unit) is installed at the face-down delivery area of the MFP. Its function is to transfer paper to the installed output device, such as the stapler/stacker and the 3-bin mailbox. The standard face-down tray should be removed when installing the IPTU. Paper flow is illustrated in Figure 4-56 IPTU paper path on page 217.

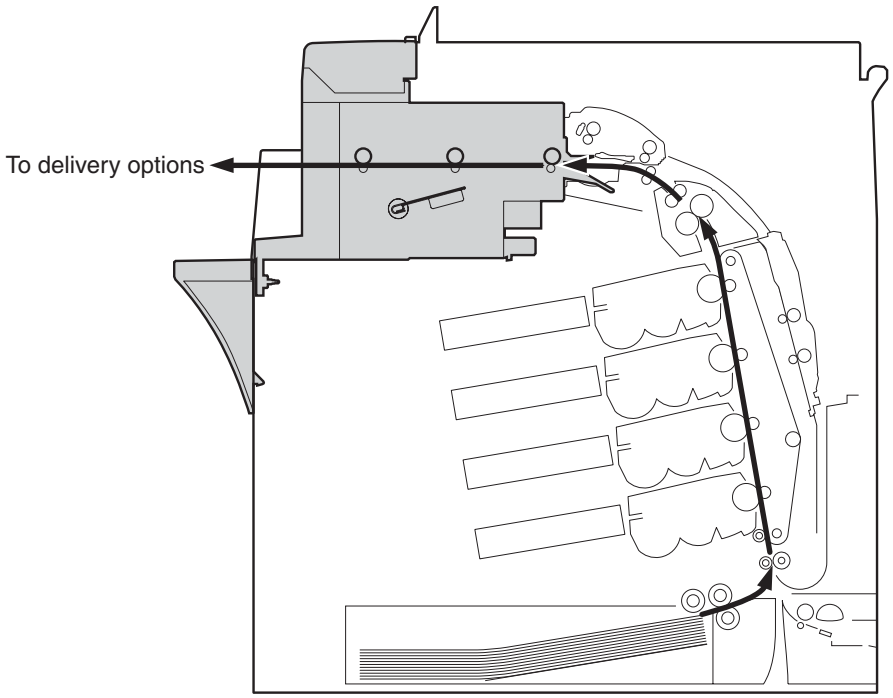


Figure 4-56 IPTU paper path

The IPTU is controlled by the intermediate paper transfer driver PCB (IPTD PCB). The IPTD PCB controls the IPTU sequencing and communicates with the DC controller. The DC controller sends commands to the IPTD PCB at appropriate points in the printing process and the IPTD PCB drives motors in response to these commands. The IPTD PCB submits status information to the DC controller.

The MFP supplies +24VDC to the IPTU. The +3.3V for IC is generated by +24V in the IPTD PCB. Figure 4-57 IPTU PCB flow on page 218 shows the signal flow in the IPTD PCB.

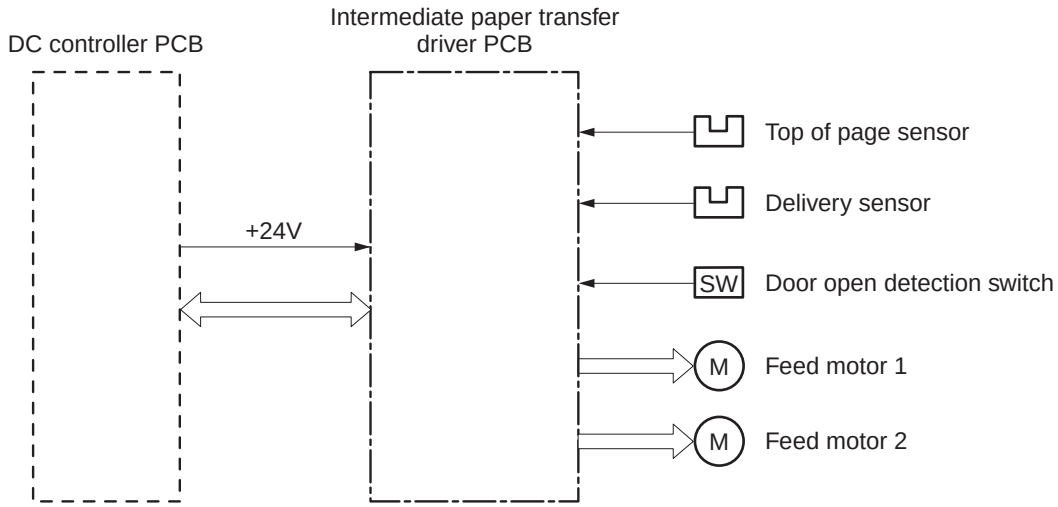


Figure 4-57 IPTU PCB flow

IPTU transfer operation

The IPTU delivers the fused paper to the output device in the operation shown in Figure 4-58 IPTU transfer operation on page 219.

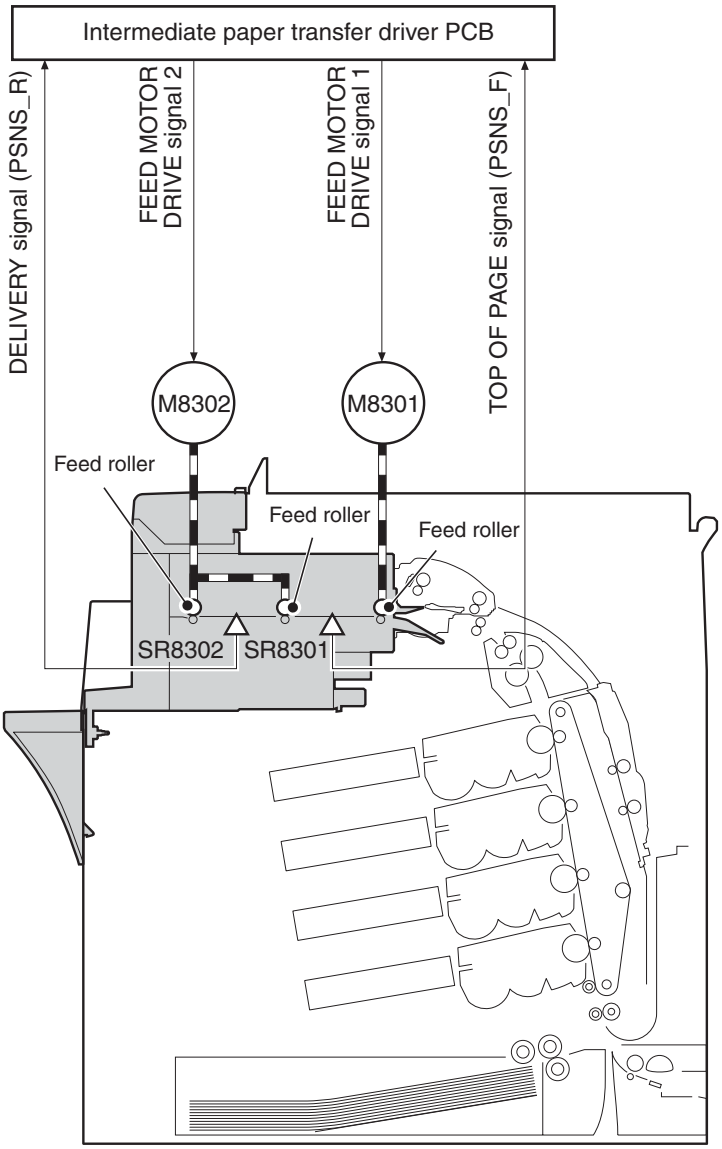


Figure 4-58 IPTU transfer operation

1. The paper, which has completed the fusing operation, is transferred to the IPTU.
2. The DC controller sends the drive start command to the IPTD when the fusing paper sensor (SR1) detects the leading edge of the paper.
3. The IPTD turns feed motor 1 (M8301) and feed motor 2 (M8302) ON to rotate the feed rollers upon receiving the drive start command.
4. The feed rollers deliver the paper to the output device.

IPTU jam detection

The IPTU is equipped with paper detection sensors to detect the presence of paper and to determine operational status:

- Top of page sensor (SR8301)
- Delivery sensor (SR8302)

The CPU on the IPTD PCB determines a paper jam by checking whether paper is present at the sensors at the checking timing. The checking timing is stored in the memory of the CPU. If the CPU determines a jam, it stops the intermediate paper transfer operation and notifies the MFP of the jam.

Pickup delay jam

The CPU determines a pickup delay jam when the top-of-page sensor (SR8301) does not detect the paper within the specified period after the cassette pickup solenoid (SL2) or the MP tray pickup solenoid (SL1) is turned ON.

Pickup stationary jam

The CPU determines a pickup stationary jam when the top-of-page sensor (SR8301) does not detect the trailing edge of the paper within the specified period after the top-of-page sensor (SR8301) detects the leading edge.

Delivery delay jam

The CPU determines a delivery delay jam when the delivery sensor (SR8302) does not detect the leading edge of the paper within the specified period after the top-of-page sensor (SR8301) detects the trailing edge.

Delivery stationary jam

The CPU determines a delivery stationary jam when the delivery sensor (SR8302) does not detect the trailing edge of the paper within the specified period after the top-of-page sensor (SR8301) detects the trailing edge.

3-bin mailbox system

When the 3-bin mailbox (MBM) is installed, it receives print media from the print engine and delivers it to one of its three bins. The 3-bin mailbox has the following components:

- One feed motor that drives the rollers
- Two solenoids that operate the inlet deflector and the bin deflector
- Six sensors that detect the presence of print media and the stack height in the output bins
- One switch that determines whether the 3-bin mailbox is attached to the MFP correctly
- One fan that cools components inside the 3-bin mailbox

The 3-bin mailbox has three operating modes: stacker mode, mailbox mode, and function-separator mode.

The MBM-driver PCA controls all functions in the 3-bin mailbox. To deliver media to the different bins, the inlet deflector and the bin deflector change position as required.

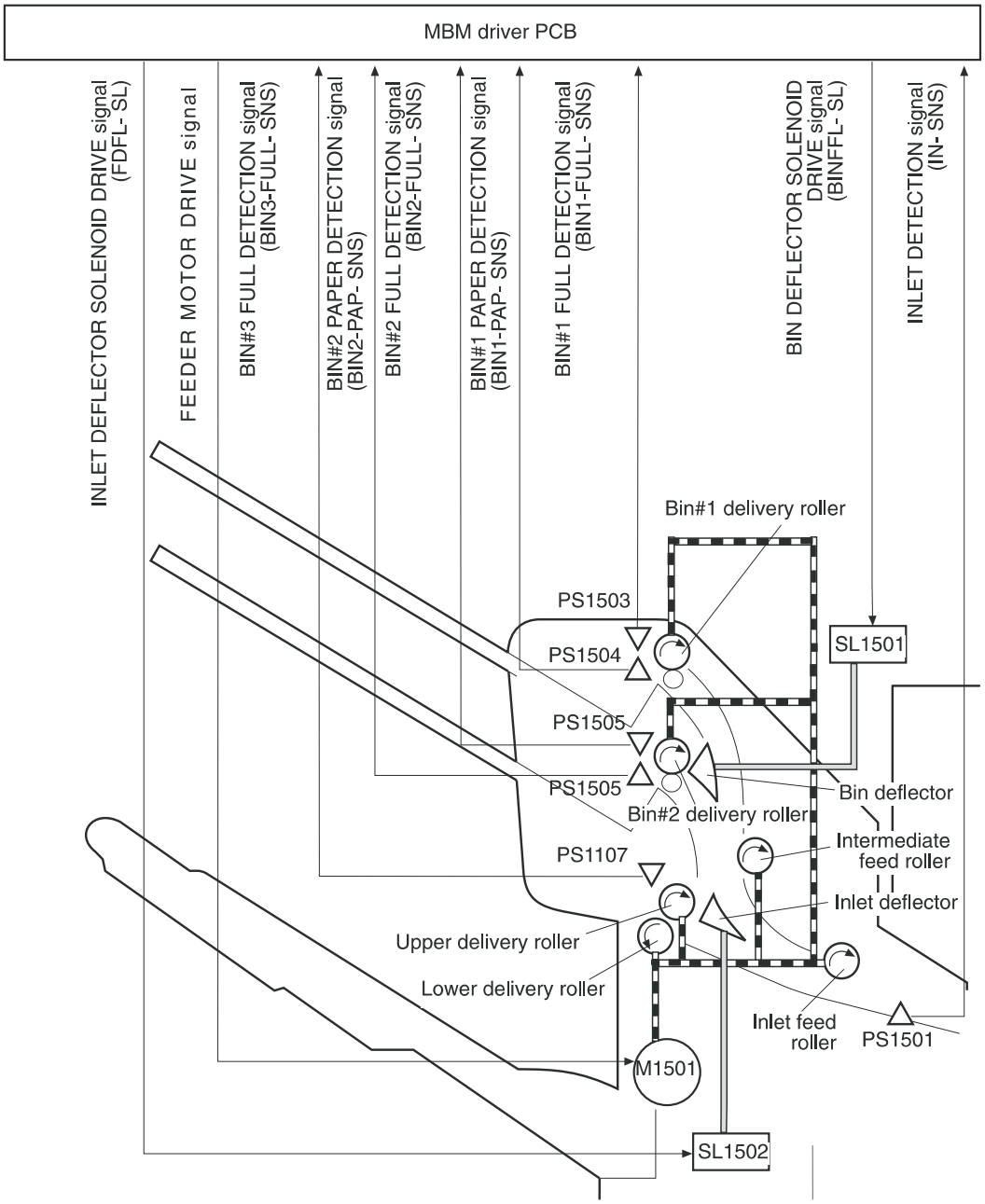


Figure 4-59 3-bin mailbox operation

Stacker mode

When configured for stacker mode, the 3-bin mailbox fills the bottom output bin (bin 3) first and then fills the next highest bin.

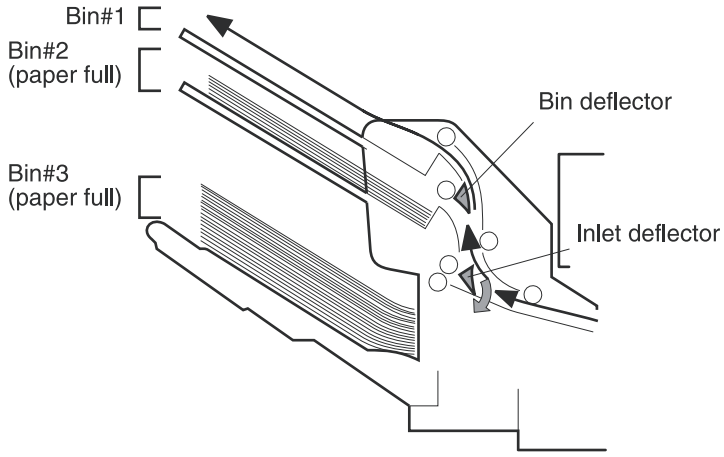


Figure 4-60 Media flow when using the stacker mode

Mailbox mode

When configured for mailbox mode, the 3-bin mailbox stacks print media in each bin as determined by the print job specifications. For example, one user might have all jobs delivered to the bottom bin, and another user might have all jobs delivered to the top bin.

<Mailbox Mode>
<Original Job Selection Mode>

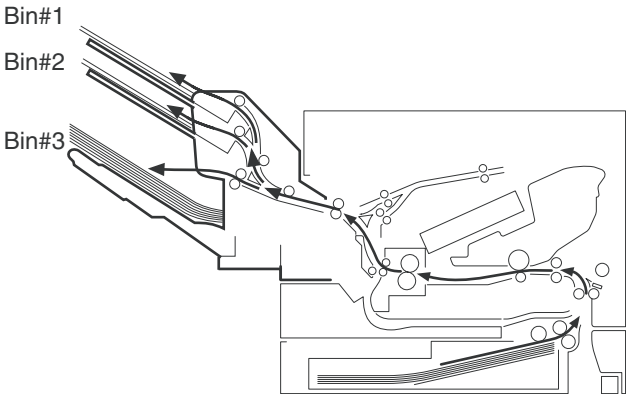


Figure 4-61 Media flow when using the mailbox mode

Function-separator mode

When configured for function-separator mode, the 3-bin mailbox delivers print media to each bin as specified by the job type. For example, all copy jobs might be delivered to the top bin, and all faxes might be delivered to the middle bin.

Jam detection

The 3-bin mailbox uses the inlet sensor (PS1501) to detect jams. The microprocessor on the MBM-driver PCA determines a jam situation if the sensor indicates that media is present at an unexpected

time or that media is not present at the expected time. The microprocessor on the MBM-driver PCA notifies the formatter that a jam has occurred.

When a jam is detected, the transport process stops and a **13.XX.YY JAM** message appears on the control-panel display.

Feed-delay jam

If the inlet sensor (PS1501) does not detect the leading edge of the media within a specific time period after receiving a delivery-notice command, the microprocessor on the MBM-driver PCA determines that a feed-delay jam has occurred. The time interval is longer for face-up delivery than for face-down delivery.

Feed-stationary jam

If the inlet sensor (PS1501) does not detect the trailing edge of the media within a specific time period after it detects the leading edge, the microprocessor on the MBM-driver PCA determines that a feed-stationary jam has occurred.

Residual-media jam

If the inlet sensor (PS1501) detects the presence of media during the initial WAIT period, the microprocessor on the MBM-driver PCA determines that a residual-media jam has occurred.

Power-on sequence

The following figure illustrates the operational sequence of the MBM from power-on to standby.

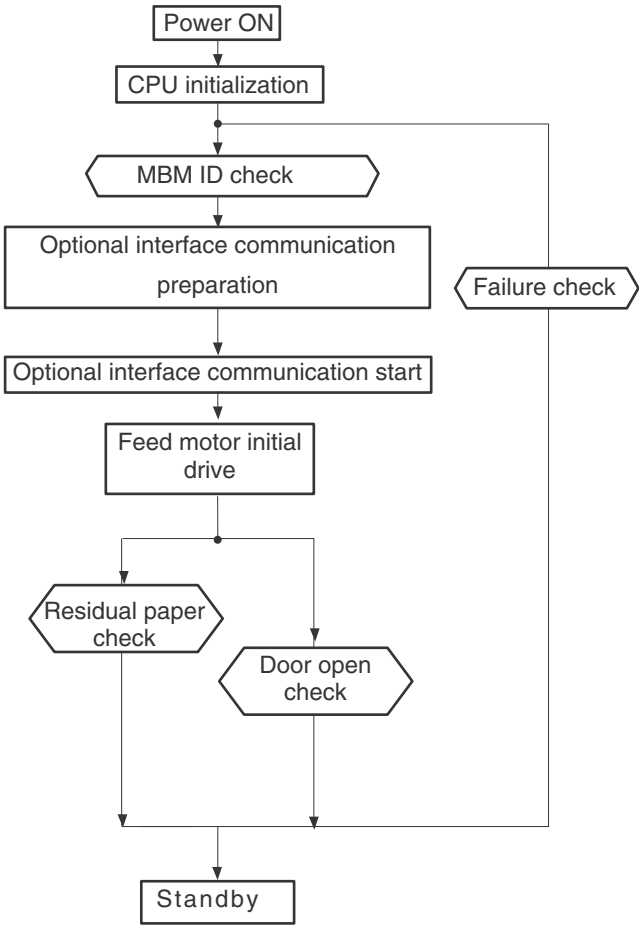


Figure 4-62 Power-on sequence

MBM driver

The MBM driver controls the operational sequence of the MBM. When the MFP is turned on and DC power is supplied to the MBM driver, the MBM driver communicates with the formatter to start an operational control. Then the MBM enters standby mode and the MBM driver outputs the signals to drive motors and solenoids in response to the command input from the MFP.

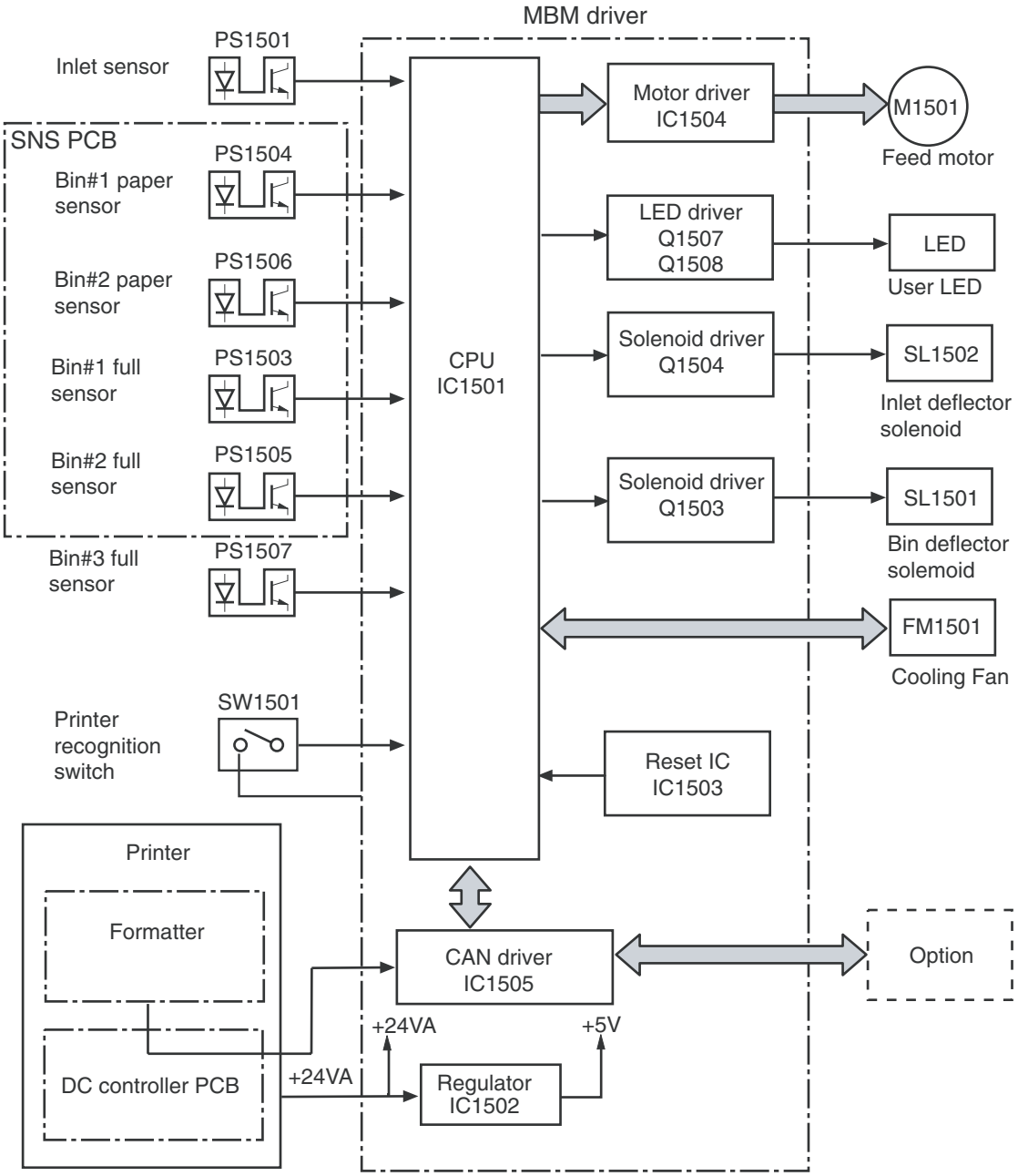


Figure 4-63 MBM driver

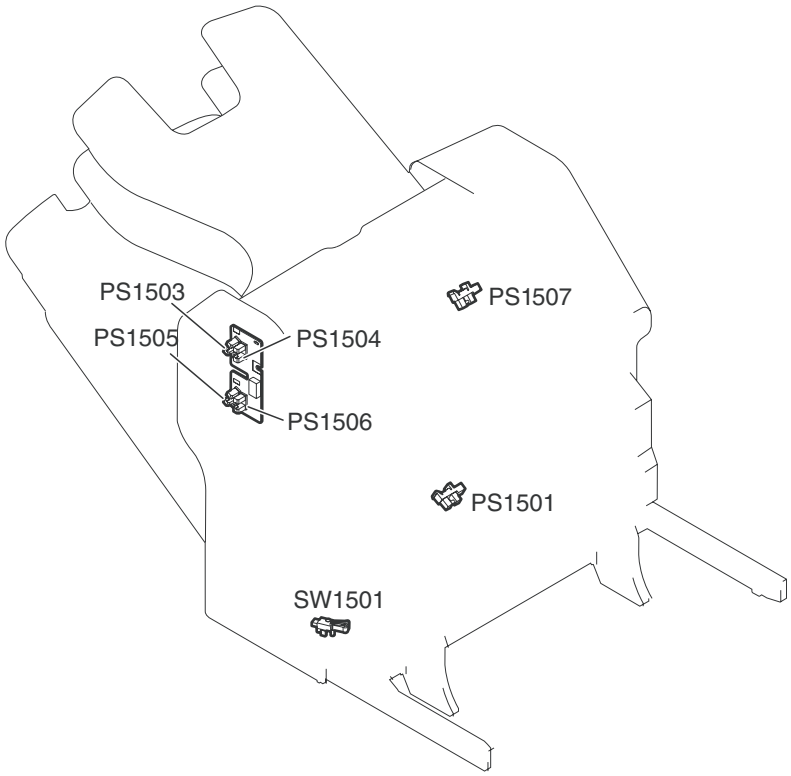
Table 4-8 MBM driver components

Part		Purpose
Motor	Feed motor (M1501)	Drives the inlet roller and delivery roller
Solenoids	Inlet-deflector solenoid (SL1502)	Shifts the inlet deflector
	Bin-deflector solenoid (SL1501)	Shifts the bin deflector

Table 4-8 MBM driver components (continued)

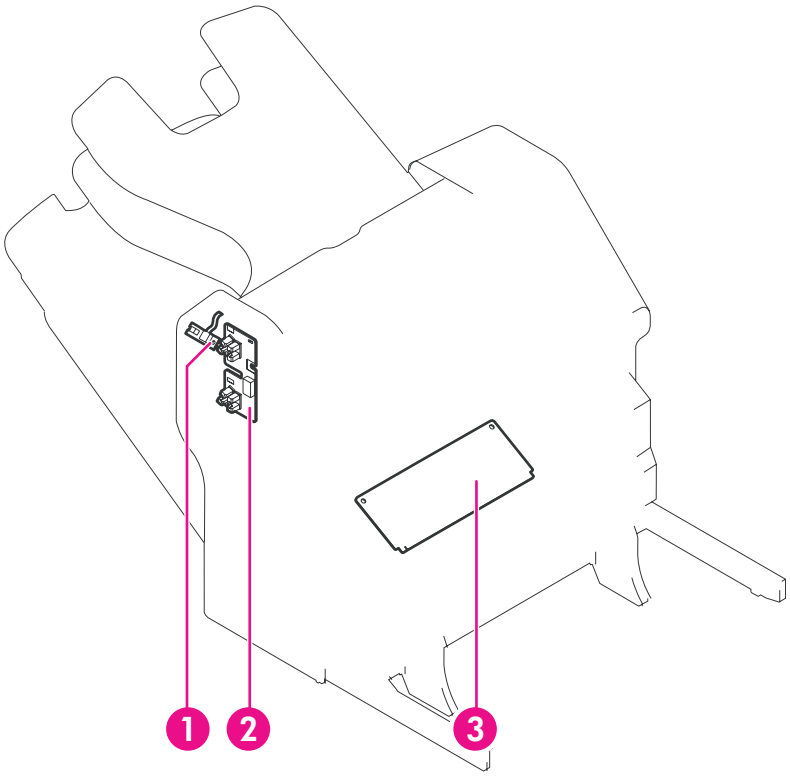
Part		Purpose
Sensors	Inlet sensor (PS1501)	Detects paper jams
	Bin 1 paper sensor (PS1504)	Detects whether bin 1 contains paper
	Bin 2 paper sensor (PS1506)	Detects whether bin 2 contains paper
	Bin-1-full sensor (PS1503)	Detects whether bin 1 is full
	Bin-2-full sensor (PS1505)	Detects whether bin 2 is full
	Bin-3-full sensor (PS1507)	Detects whether bin 3 is full
Switch	Printer-recognition switch (SW1501)	Detects whether the MBM and the engine are properly connected (interruption of +5V)
Fan	Cooling fan (FM1501)	Cools the electrical parts under the paper delivery

MBM switches and sensors



PS1501	Inlet sensor
PS1503	Bin 1 paper-full sensor
PS1504	Bin 1 paper sensor
PS1505	Bin 2 paper-full sensor
PS1506	Bin 2 paper sensor
PS1507	Bin 3 paper-full sensor
SW1501	Engine connection switch

MBM PCBs



1	LED PCB
2	Sensor PCB
3	MBM driver PCB

MBM list of signals

Table 4-9 List of signals for the MBM driver PCB

Connector	PIN	Abbreviation	I/O	Logic	Signal name
J1501	1	+24VA			
	2	+24VA			
	3	PWRON	I	L	POWER-ON DETECTION signal
	4	GND			
	5	GND			
	6	CAN-L	I/O		CAN-RECEIVE signal
	7	CAN-H	I/O		CAN-RECEIVE signal
	8	SPD-UP	I	L	SPEED-UP DETECTION signal
	9	+24VA			
	10	GND			
	11	GND			
J1502	1	+5V			
	2	BIN1–FULL	I	H	BIN1 PAPER-FULL signal
	3	BIN1-PAP	I	H	BIN1 PAPER DETECTION signal
	4	BIN2-FULL	I	H	BIN2 PAPER-FULL signal
	5	BIN2-PAP	I	H	BIN2 PAPER DETECTION signal
	6	GND			
	7	ULED-O	O	H	USER LED DRIVE signal (Orange)
	8	ULED-G	O	H	USER LED DRIVE signal (Green)
	9	GND			
	10	JOINT-SW	I	H	PRINTER-RECOGNITION SWITCH signal
J1503	1	+5V			
	2	GND			
	3	IN-SUS	I	H	INLET-DETECTION signal
J1504	1	+5V			
	2	GND			
	3	BIN3–FULL	I	H	BIN3 TRAY PAPER-FULL signal
	4	+24V			
		BINFL-SL	O	H	BIN-DEFLECTOR SOLENOID DRIVE signal

Table 4-9 List of signals for the MBM driver PCB (continued)

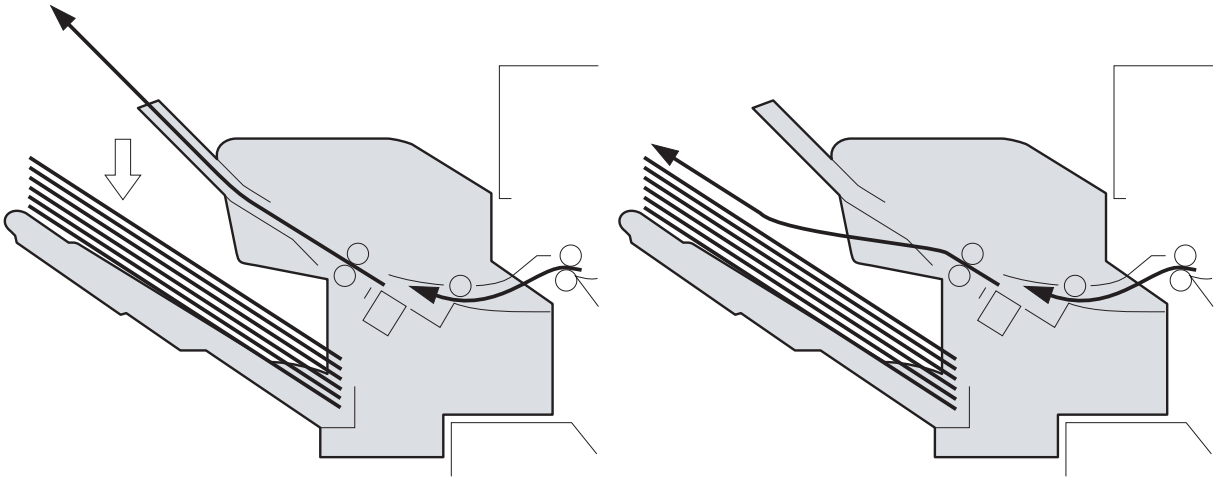
Connector	PIN	Abbreviation	I/O	Logic	Signal name
J1505	1	FD-AD	O	Pulse	FEED-MOTOR DRIVE signal
	2	FD-AND	O	Pulse	FEED-MOTOR DRIVE signal
	3	FD-BD	O	Pulse	FEED-MOTOR DRIVE signal
	4	FD-BND	O	Pulse	FEED-MOTOR DRIVE signal
J1506	1	GND			
	2	PWRON-OUT	O	H	POWER-ON OUTPUT signal
	3	CAN-L-OUT	I/O		CAN-SEND signal
	4	CAN-H-OUT	I/O		CAN-SEND signal
J1507	1	GND			
	2	FLASH-OUT	O		FLASH ROM RECORD signal
	3	FLASH-MD0	I	L	OPERATION ROM RECORD signal
	4	FLASH-CLK-SW4	I		FLASH ROM RECORD signal
	5	FLASH-MD2	I	H	OPERATION-MODE SPECIFYING signal
	6	FLASH-SW3	I		FLASH ROM RECORD signal
	7	FLASH-ACT0–SW1	I		FLASH ROM RECORD signal
	8	+5V			
	9	RCT-CTRL	I	L	RESET signal
	10	GND			
	11	FLASH-ACT1–SW2	I		FLASH ROM RECORD signal
J1508	1	+24V			
	2	FD-SL	O	H	INLET-DEFLECTOR SOLENOID DRIVE signal
J1509	1	FAN-DRV	I/O	L	FAN-DRIVE SIGNAL
	2	FAN-LCK	I	L	FAN-LOCK signal
	3	GND			

Stapler/stacker system

The stapler/stacker is a paper-handling accessory that can function in the following modes:

- Stacker mode. Printed paper is directed to the delivery tray. The stacker holds up to 500 sheets of paper (75 g/m^2 or 20 lb Bond).
- Stapler/stacker mode. Printed paper is stapled and then directed to the delivery tray. Up to 30 sheets of paper can be stapled, and up to 15 sets of stapled sheets can be stacked.

The following diagram shows the paper flow.



< Stapler/Stacker > **< Stacker >**

Figure 4-64 Stapler/stacker paper flow

Power-on sequence

The following diagram shows the operational sequence of the stapler/stacker from power-on to standby mode.

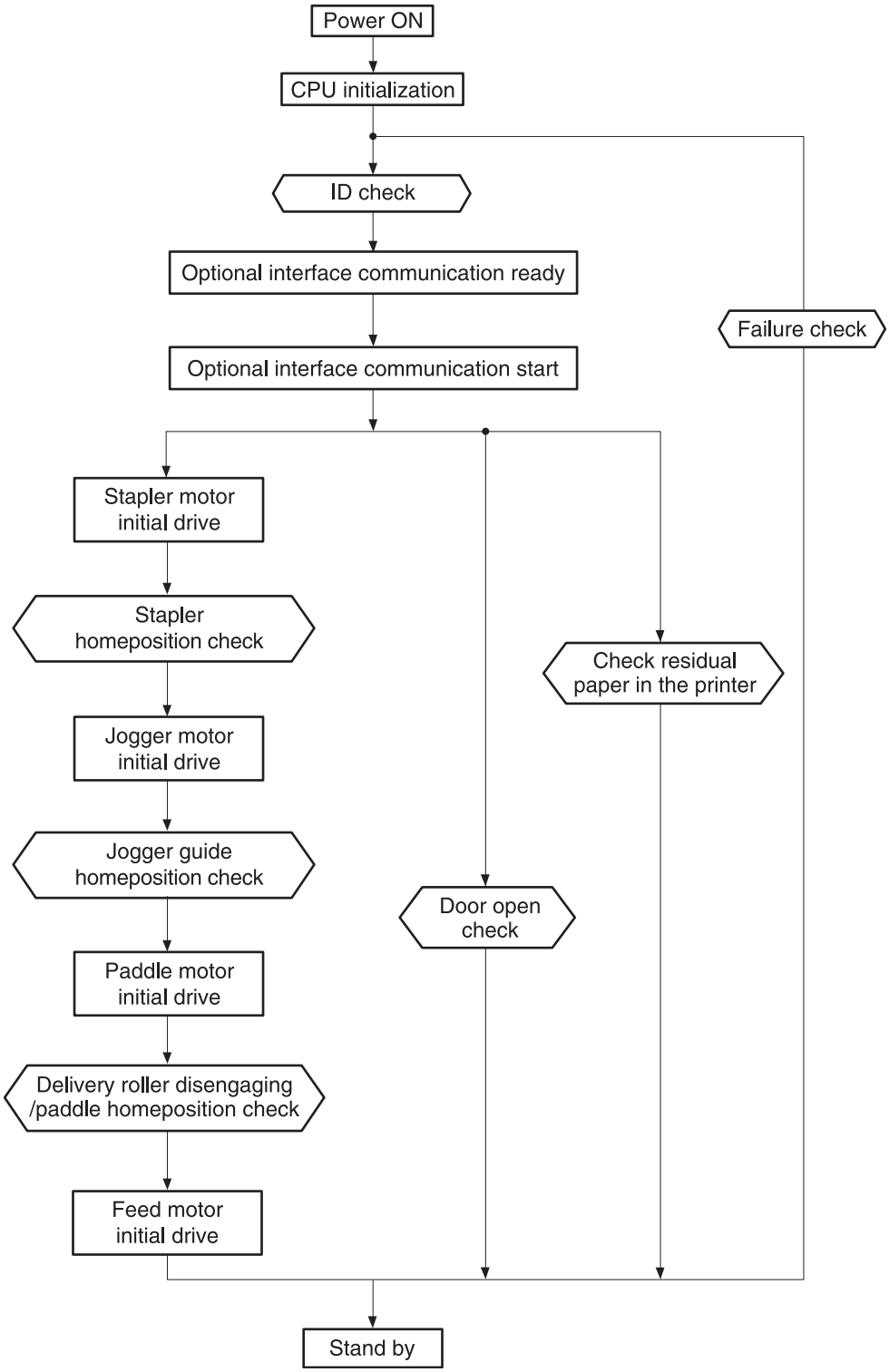


Figure 4-65 Stapler/stacker power-on sequence

Staple mode

In this mode, up to 30 sheets are stapled in one set and are then stacked in the delivery tray.

The feed operation of this mode is described in the following procedure.

1. The printer engine sends a paper-delivery signal to the formatter when the leading edge of the print paper reaches the fixing-delivery sensor.
2. When the formatter receives the signal, it sends a delivery-notice command to the stapler/stacker driver.
3. The stapler/stacker driver causes the paddle motor (M1301) to rotate counter-clockwise and allows the upper and the lower delivery rollers to be disengaged by the paper-delivery roller engaging operation.

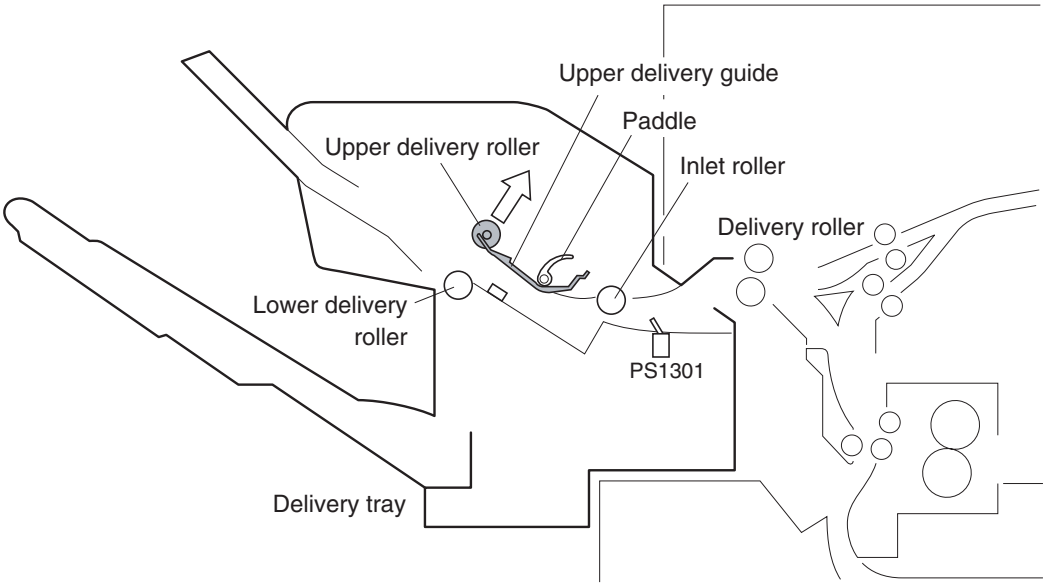


Figure 4-66 Staple-mode feed operation

4. After a prescribed period of time, the stapler/stacker driver causes the feed motor (M1303) to drive at the same feed speed as the printer engine. This allows the inlet roller, the upper delivery roller, and the lower delivery roller to rotate, which feeds the paper to the stapler/stacker.

5. After the disengaging operation of the feed rollers is normal, the stapler/stacker driver drives the jogger motor (M1302) and shifts the jogger guide from the turn-out position to the waiting position.

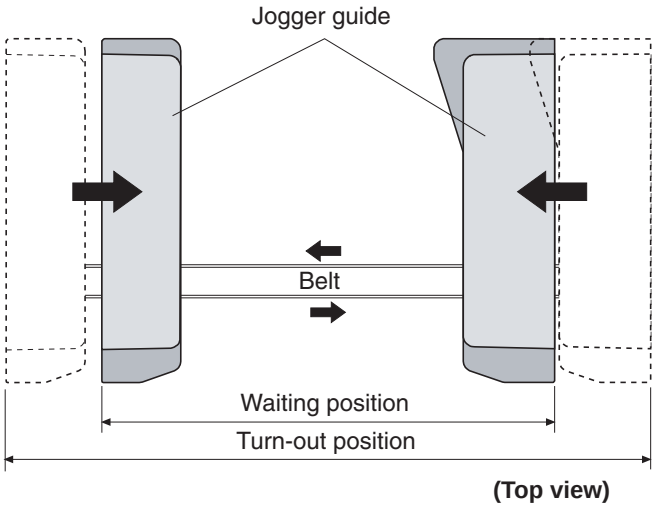


Figure 4-67 Jogger guide

6. When the jogger guide is shifted to the waiting position, the stapler/stacker driver rotates M1301 counter-clockwise again to engage the upper and the lower delivery rollers.

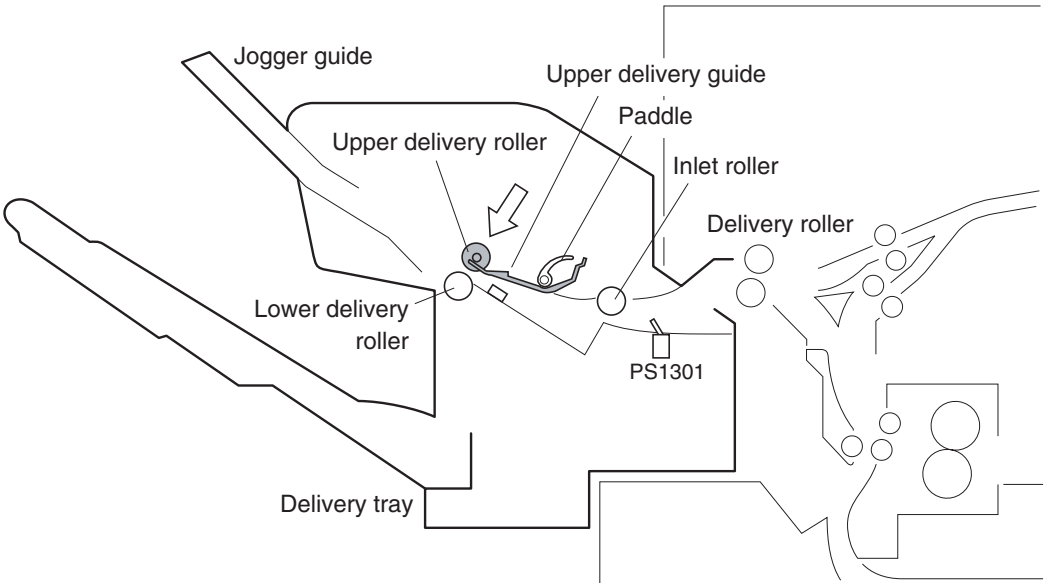


Figure 4-68 Staple-mode feed operation

7. After the leading edge of the paper reaches the paper inlet sensor (PS1301), the stapler/stacker driver changes the feed speed of the M1303 to synchronize it with that of the stapler/stacker.

8. After the feed speed of the stapler/stacker is changed, the stapler/stacker driver rotates M1301 counter-clockwise again to disengage the upper and the lower disengagement rollers.

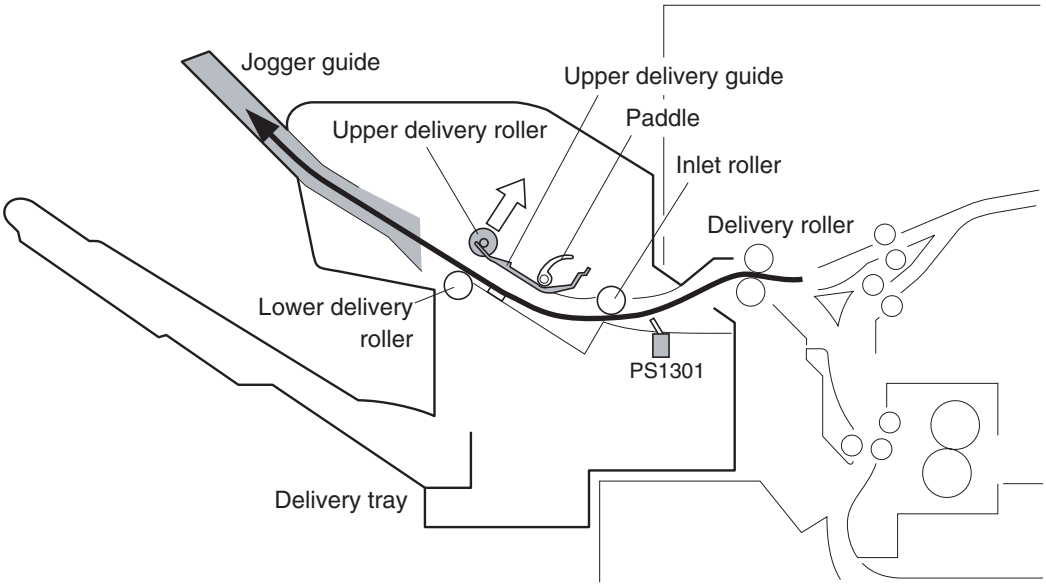


Figure 4-69 Staple-mode feed operation

9. After the trailing edge of the paper passes the inlet sensor (PS1301), the stapler/stacker driver activates the clamp solenoid (SL1301). During the clamp-disengagement operation, the stamp is disengaged from the paper so the paper becomes unattached.

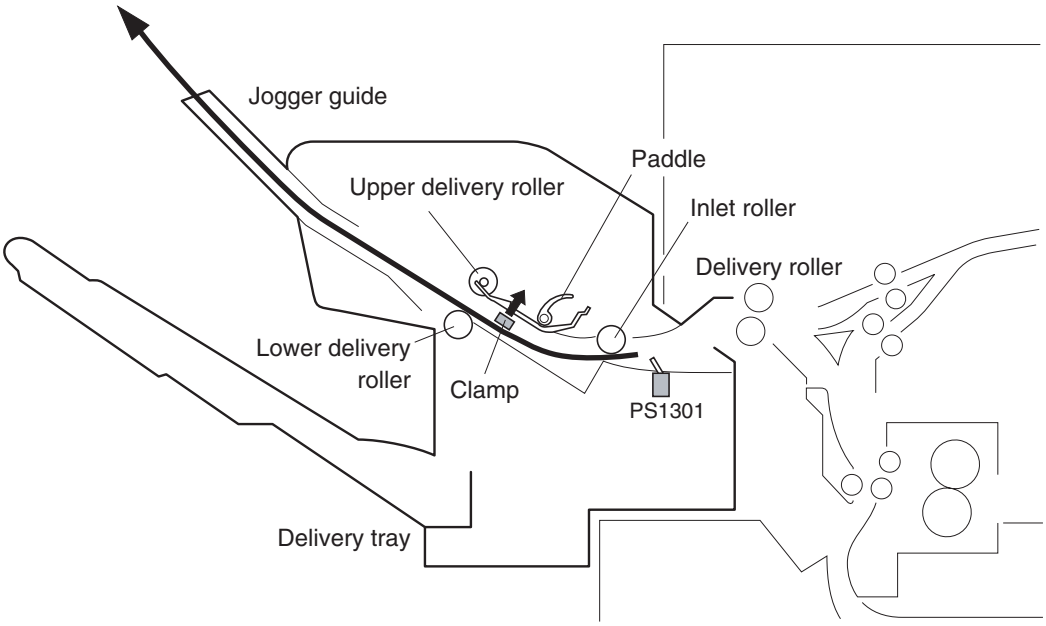


Figure 4-70 Staple-mode feed operation

10. The stapler/stacker driver changes its control depending on whether the paper that was fed is the last sheet of the job or not.

    - If it is not the last sheet of paper, go to steps 11 and 12, and then go back to step 7.
    - If it is the last paper, go to step 11.

11. The stapler/stacker driver changes the speed of the feed motor (M1303).
    - If it is not the last sheet of paper, the driver drives the feed motor at the printer speed.
    - If it is the last sheet of paper, the driver stops the feed motor.
12. The stapler/stacker driver drives the motors to perform the alignment operation.
    - Horizontal alignment: Drives M1302 and performs the jogger operation.
    - Vertical alignment: Drives M1301 and performs the paddle operation.

    Through these alignments, the paper is correctly positioned on the jogger tray.

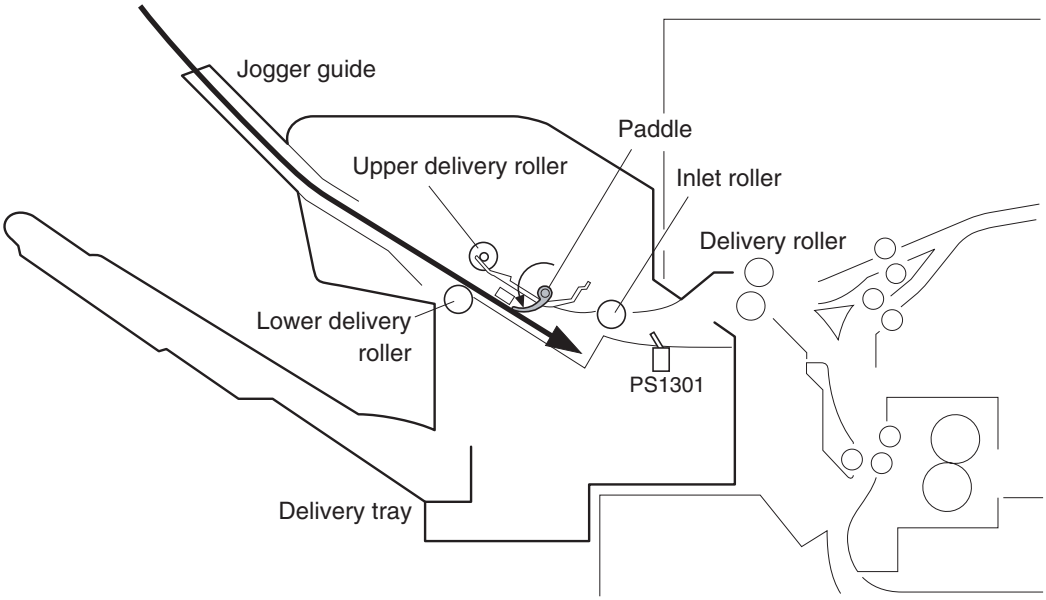


Figure 4-71 Staple-mode feed operation

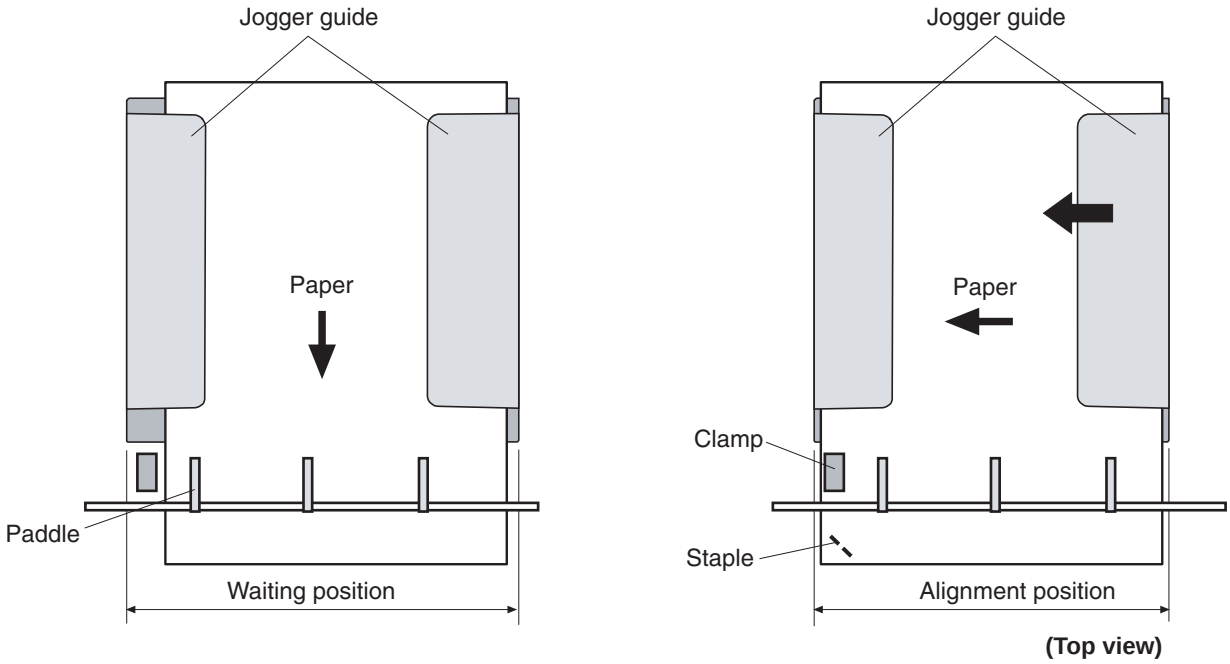


Figure 4-72 Staple-mode feed operation

13. The stapler/stacker driver performs the staple operation.
14. After the completion of the staple operation, the stapler/stacker driver rotates the paddle motor (M1303) counter-clockwise to engage the upper and the lower delivery rollers.
15. The stapler/stacker driver drives the feed motor (M1303) and feeds the stapled piles of paper.

16. The stapler/stacker driver shifts the jogger guide to the turn-out position. This allows the paper pile on the jogger guide to fall onto the delivery tray.

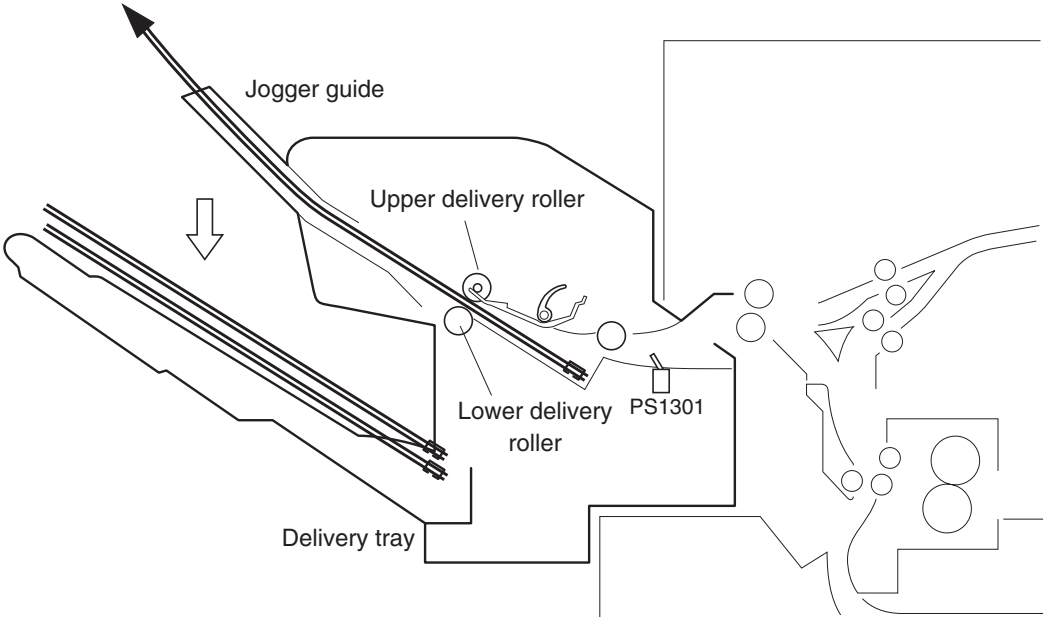


Figure 4-73 Staple-mode feed operation

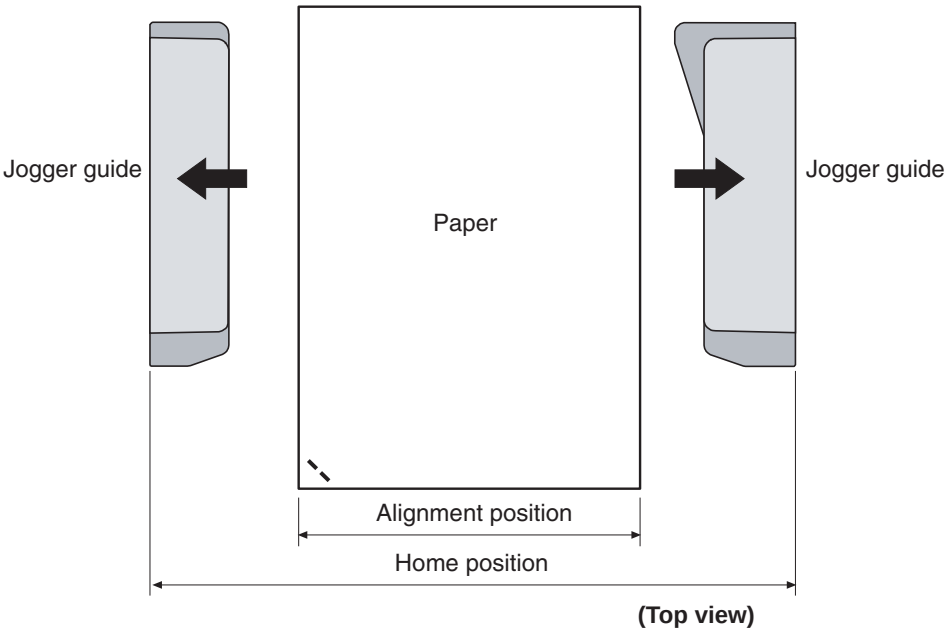


Figure 4-74 Staple-mode feed operation

When the delivery tray is full of paper, this status is detected by the delivery paper-full sensor (PS1306). When this sensor continuously detects paper presence over a prescribed time interval, the stapler/stacker driver notifies the formatter of this condition.

Jogger operation

The jogger aligns the edge of the paper in the horizontal direction.

The stapler/stacker driver controls the jogger motor (M1302), which allows the jogger guide to move so it can align the edge of the paper.

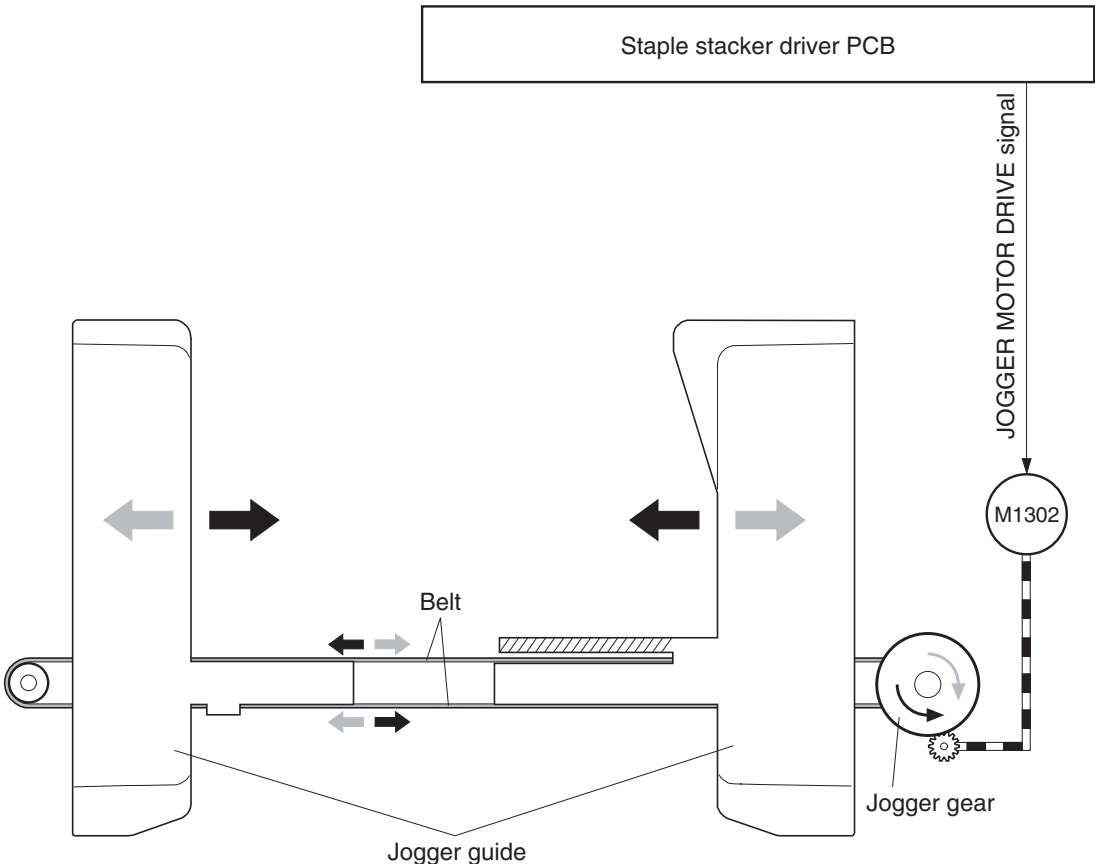


Figure 4-75 Jogger operation

The jogger operation is explained in the following procedure.

1. Before the start of the operation, the jogger guide is stationed at the home position (turn-out position).

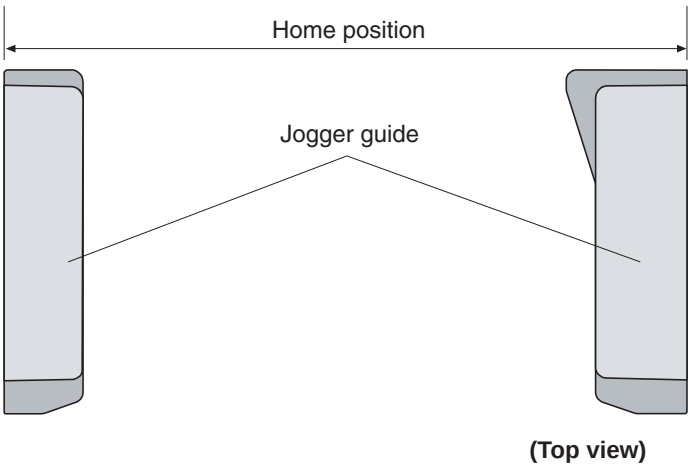


Figure 4-76 Jogger operation

2. At the start of the feeding process in staple mode, the stapler/stacker driver rotates M1302 counter-clockwise after it detects that the upper deliver roller is disengaged. It then moves the jogger guide to the waiting position.

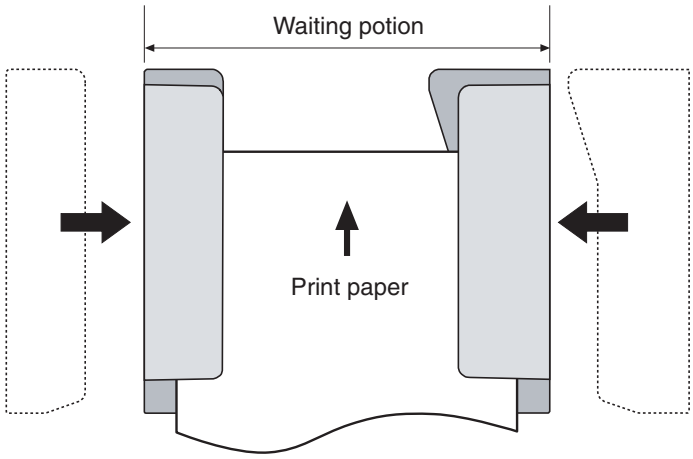


Figure 4-77 Jogger operation

3. Within a prescribed period of time after the trailing edge of the paper passes the paper-inlet sensor (PS1301) (when the paper covers the entire jogger guide), the stapler/stacker driver rotates M1302 counter-clockwise to move the jogger guide to the aligned position (adjusted to the width of the paper). The edge of the paper is aligned in the horizontal direction.

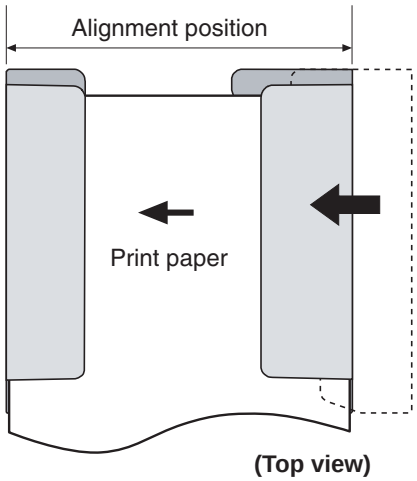


Figure 4-78 Jogger operation

4. The stapler/stacker driver rotates M1302 clockwise and moves the jogger guide 3 mm out from the aligned position (loosen alignment).

   The stapler/stacker driver performs the paddle operation during the loosen alignment.

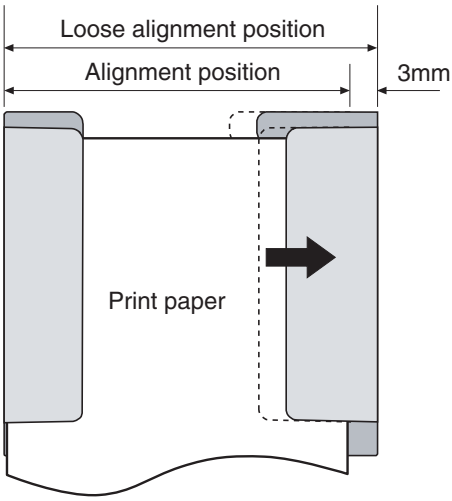


Figure 4-79 Paddle operation

5. After the completion of the paddle operation, the stapler/stacker driver changes its controls depending on whether the fed paper is the last paper of the job or not.

   - If it is not the last sheet of paper, go to step 2.
   - If it is the last sheet of paper, go to step 6.

6. After the completion of the staple operation, the stapler/stacker driver rotates M1302 clockwise and moves the jogger guide to its home position. This allows the paper pile on the jogger guide to fall into the delivery tray.

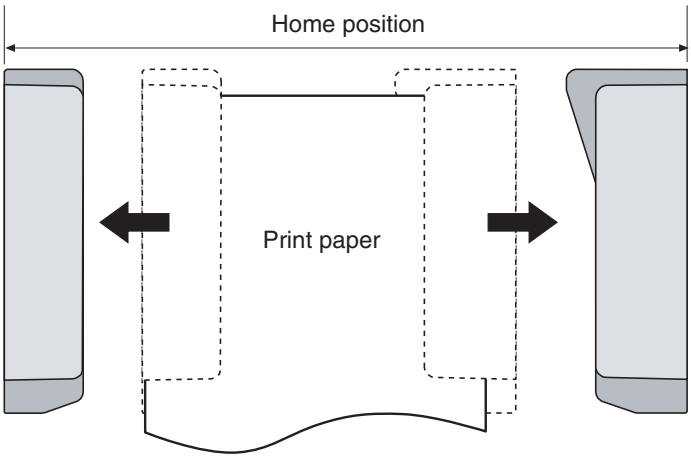


Figure 4-80 Jogger operation

The home position of the jogger guide is monitored by the stapler/stacker driver and the jogger home-position sensor.

NOTE: Whether the fed paper is the last sheet of the job or not is determined by the page information sent from the formatter. If it is the last sheet, the EOJ (End Of Job) is recorded in its page information.

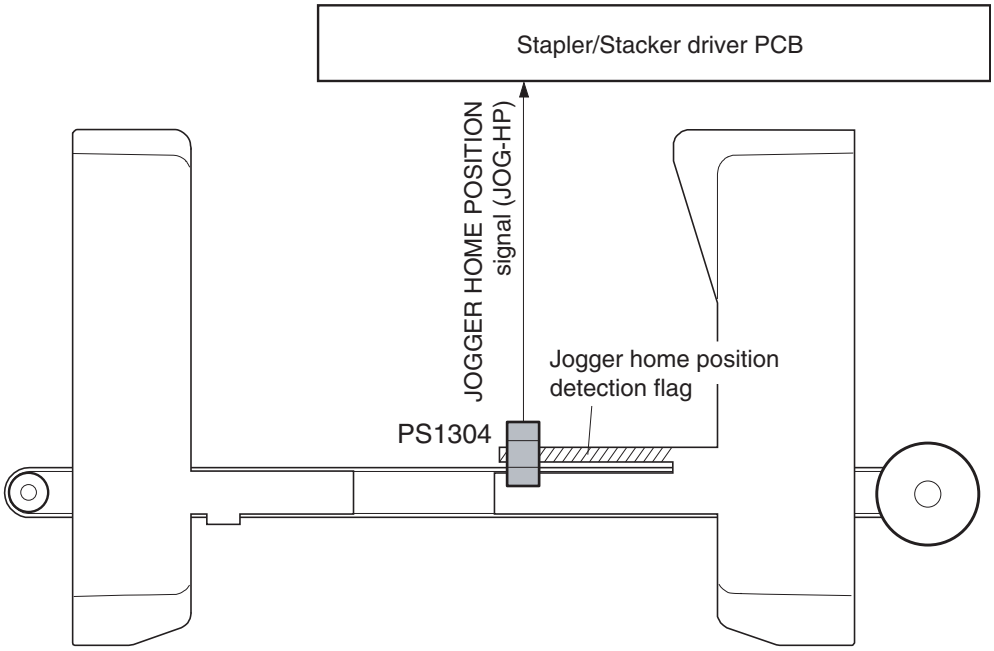
Jogger home-position detection

The stapler/stacker detects the home position of the jogger guide by monitoring the jogger home-position signal (JOG-HP) sent from the jogger home-position sensor (PS1304).

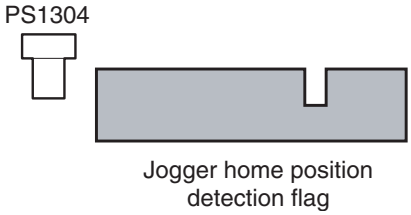
A rib-shaped jogger home-position flag is attached to the jogger guide. The flag has a notch, and the position of the jogger guide is detected by PS1304 passing the notch.

During the jogger-guide operation, PS1304 is interrupted by the jogger home-position flag and the JOG-HP indicates “H”. However, PS1304 is not interrupted by the jogger home-position flag during the jogger home-position detection. The JOG-HP becomes “L” and the stapler/stacker driver determines that jogger guide is at its home position.

During the jogger home-position detection, the stapler/stacker driver rotates the jogger motor (M1302) clockwise for a specified period of time. If JOG-HP does not change from “L” to “H”, the driver detects a jogger-motor failure and stops the loads. Then it notifies the formatter of the failure.



< Jogger home position >



< During jogger operation >

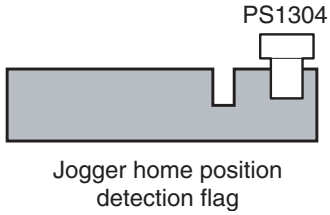
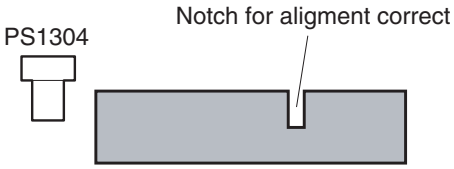


Figure 4-81 Jogger home position

NOTE: At the start of the detection, the stapler/stacker driver rotates the jogger motor (M1302) clockwise to detect its home position. It does this even when the jogger guide is already set at the home position.

NOTE: In addition to the notch that detects the home position, the jogger home-position flag also has a notch to correct the alignment position. During the alignment operation, alignment failure might be detected if the jogger motor loses synchronization during rotation. Therefore, a notch for correcting the alignment position is made near the paper-alignment position. When the alignment operation is performed, the alignment operation is corrected after checking the alignment position so that synchronization loss is avoided.

< Jogger home position >



< Alignment position >

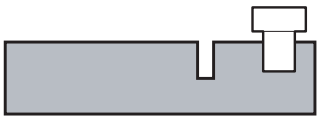


Figure 4-82 Jogger home position

Stacker mode

In stacker mode, the paper is stacked in the paper delivery tray without being stapled. The feed operation in the stacker mode is explained in the following procedure.

1. The printer engine sends a paper-delivery signal to the formatter after the leading edge of the paper reaches the fixing-delivery sensor.
2. The formatter sends a paper-delivery notifying command to the stapler/stacker driver.
3. The stapler/stacker driver causes the feed motor (M1303) to drive at the same feed speed as the printer engine on order to feed the paper to the stapler/stacker.
4. After a prescribed period of time upon receiving the signal, the stacker driver drives the feed motor (M1303) at the same feed speed as the printer engine to rotate the inlet roller, the upper delivery roller, and the lower delivery roller. Through this process, the paper is fed into the stapler/stacker.
5. After the leading edge of the paper passes the inlet sensor (PS1301) (when the leading edge passes the upper and the lower disengagement rollers), the stapler/stacker driver rotates M1303 at the feed speed of the stapler/stacker.
6. The stapler/stacker driver changes the feed-motor drive depending on whether the paper that was fed is the last sheet of the job or not.
    - If it is not the last sheet of paper, the driver changes the feed-motor speed to the printer speed and returns to step 2.
    - If it is the last sheet of paper, the driver does not change the feed-motor speed.

When the delivery tray is full of paper for a specified period of time, the delivery paper-full sensor (PS1306) detects this status and notifies the formatter.

Jam detection

The stapler/stacker has sensors that detect whether the print paper is fed correctly.

- Paper-inlet sensor (PS1301)
- Paper-delivery sensor (PS1302)

A jam is detected when paper is present at the sensor unit during check timings conducted by the CPU.

If the CPU determines that a jam has occurred, it stops the print operation and notifies the formatter.

- **Feed-delay jam**

  If the paper-inlet sensor (PS1301) does not detect the leading edge of the paper within a prescribed period of time after it has received a paper-delivery notification command, the CPU detects a feed-delay jam.

- **Feed stationary jam**

  If PS1301 does not detect the trailing edge of the paper within a prescribed period of time after the paper inlet sensor (PS1301) detects the leading edge of the paper, the CPU detects a feed stationary jam.

- **Delivery stationary jam**

If the paper-delivery sensor (PS1302) does not detect the trailing edge of the paper within a prescribed period of time after the feed motor has started its drive after the staple operation, the CPU detects a delivery stationary jam.

- **Residual-paper jam**

  If the paper inlet sensor (PS1301) detects paper during the initial drive period, the CPU detects a residual-paper jam.

Stapler unit

The stapler motor (M1304) is installed in the stapler unit. The staple operation is performed by the stapler/stacker driver controlling M1304. In addition, the stapler unit has three sensors to detect the condition of the stapler unit.

NOTE: The staple cartridge holds a maximum of 5,000 staples.

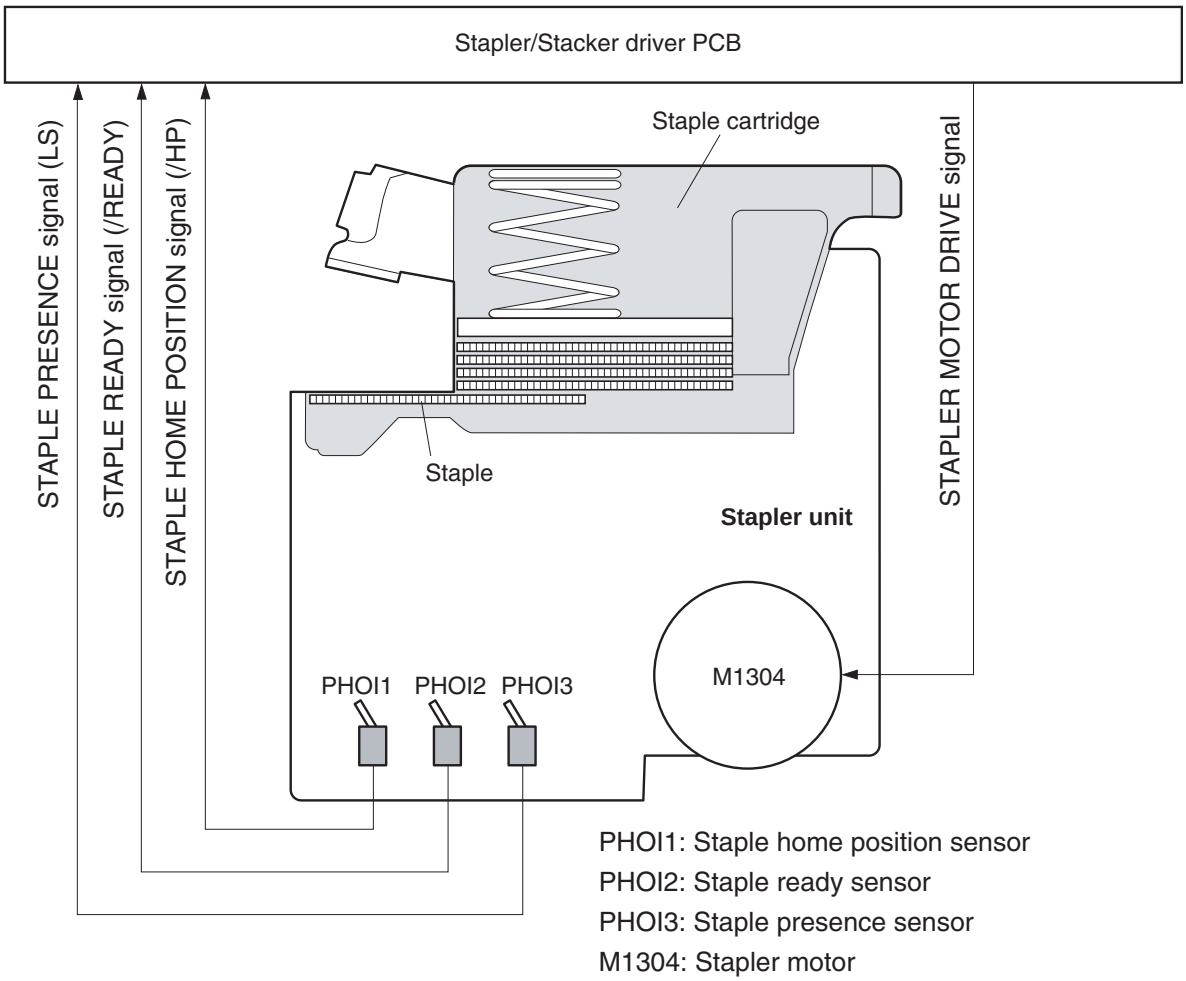


Figure 4-83 Stapler unit

Staple home position detection

The staple home position is detected by the stapler/stacker driver as it monitors the staple home-position signal (/HP) from the staple home-position sensor (PHO11).

During the detection, the stapler/stacker driver rotates the staple motor (M1304) clockwise for a prescribed period of time. If the /HP signal does not change from "H" to "L" to "H", the driver detects a stapler failure, stops the loads, and notifies formatter.



NOTE: If the /HP signal does not indicate "H" after it changes from "H" to "L", the stapler/stacker driver rotates M1304 counter-clockwise once. If the /HP signal changes from "L" to "H" during the counter-clockwise rotation, the stapler/stacker driver detects a staple jam and notifies the formatter.

Self-priming detection

The stapler/stacker self-primes when a new staple cartridge is inserted.

The stapler/stacker driver monitors the staple-ready signal (/READY) from the staple-ready sensor (PHOI2). Self-priming is initiated when the stapler/stacker driver detects a Staple Presence signal (LS) of "H" (meaning the staple cartridge has been replaced) after the driver has detected a LS signal of "L".

When the stapler/stacker driver detects the /READY signal "H", it performs the staple operation until the /READY signal becomes "L". However, if the /READY signal still indicates "H" after 11 repetitive staple operations, the stapler/stacker driver detects a self-priming failure, stops the loads, and notifies the formatter.

Staple level detection

The staple level is detected by the stapler/stacker driver as it monitors the Staple Presence signal (LS) from the staple-presence sensor (PHOI3).

When the stapler/stacker driver detects an LS signal of "L", it determines that 20 staples remain and sends a warning to the formatter. If the stapler staples 20 more times using the same stapler cartridge, the stapler/stacker driver notifies the formatter that the stapler cartridge is empty.

Stapler/stacker switches and sensors

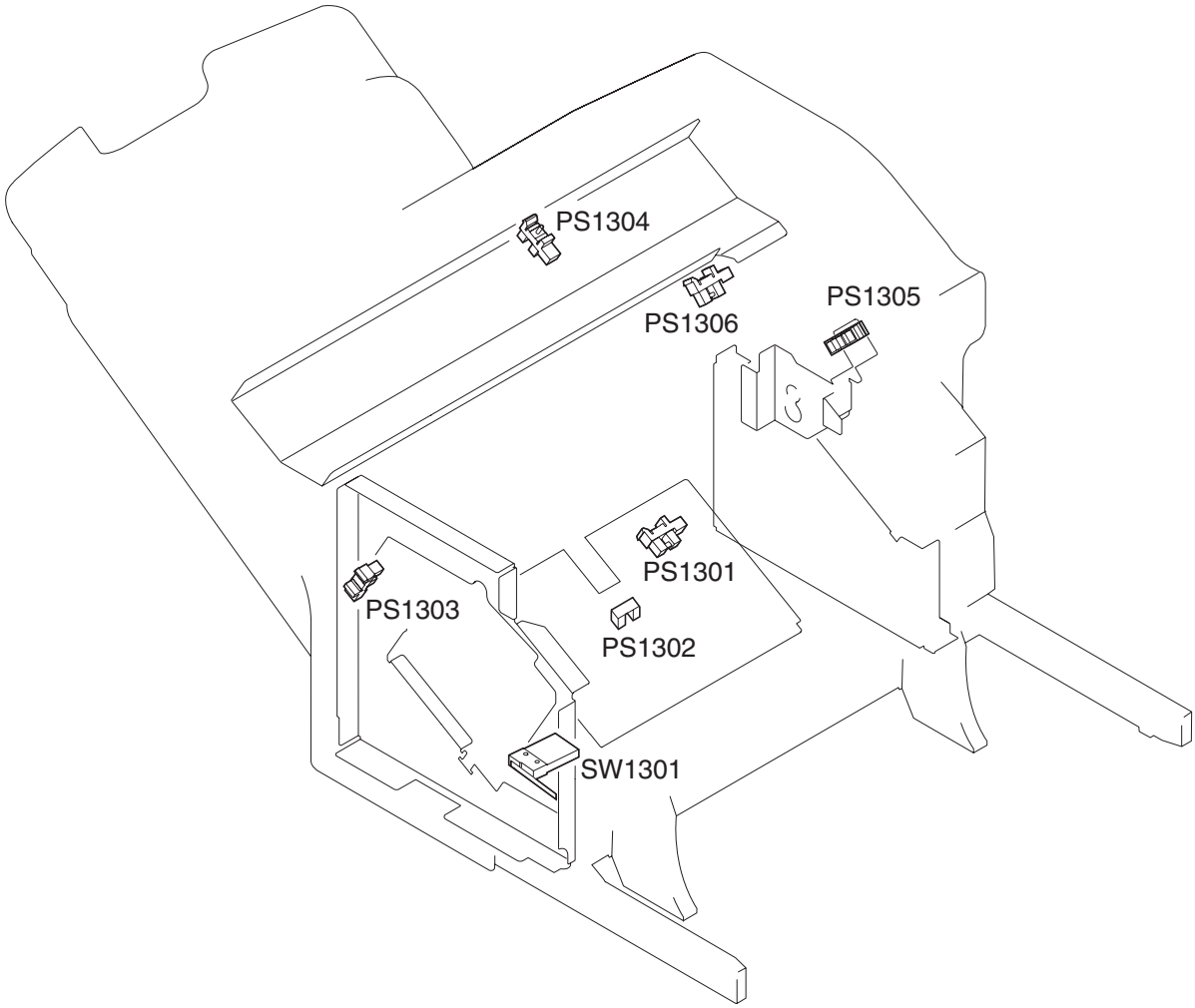


Figure 4-84 Switches and sensors

Table 4-10 Switches and sensors (part 1)

SW1301	Door-open switch
PS1301	Paper-inlet sensor
PS1302	Paper-delivery sensor
PS1303	Delivery-roller disengaging sensor
PS1304	Jogger home-position sensor
PS1305	Paddle home-position sensor
PS1306	Paper-delivery-full sensor

Table 4-11 Switches and sensors (part 2)

Name		Purpose
Motors	Paddle motor (M1301)	Rotates the paddle (clockwise); disengages the delivery rollers (counter-clockwise)
	Jogger motor (M1302)	Shifts the jogger guide (clockwise: open; counterclockwise: close)
	Feed motor (M1303)	Rotates the inlet roller / delivery roller
	Stapler motor (M1304)	Staple operation (rotation of staple cam)
Solenoids	Clamp solenoid (SL1301)	Drives the clamp
Sensors	Paper-inlet sensor (PS1301)	Detects jams
	Paper-delivery sensor (PS1302)	Detects jams
	Delivery-roller disengaging sensor (PS1303)	Detects the disengagement of the delivery roller
	Jogger home-position sensor (PS1304)	Detects the home position of the jogger guide
	Paddle home-position sensor (PS1305)	Detects the paddle home position
	Delivery paper-full sensor (PS1306)	Detects when the delivery tray is full
	Staple home-position detection sensor (PHOI1)	Detects the home position of the staple cam
	Staple-ready detection sensor (PHOI2)	Detects self-priming
	Staple detection sensor (PHOI3)	Detects the presence of the staples
Switch	Door-open detection switch (SW1301)	Detects if the door is open

Stapler/stacker motors, solenoid, and fan

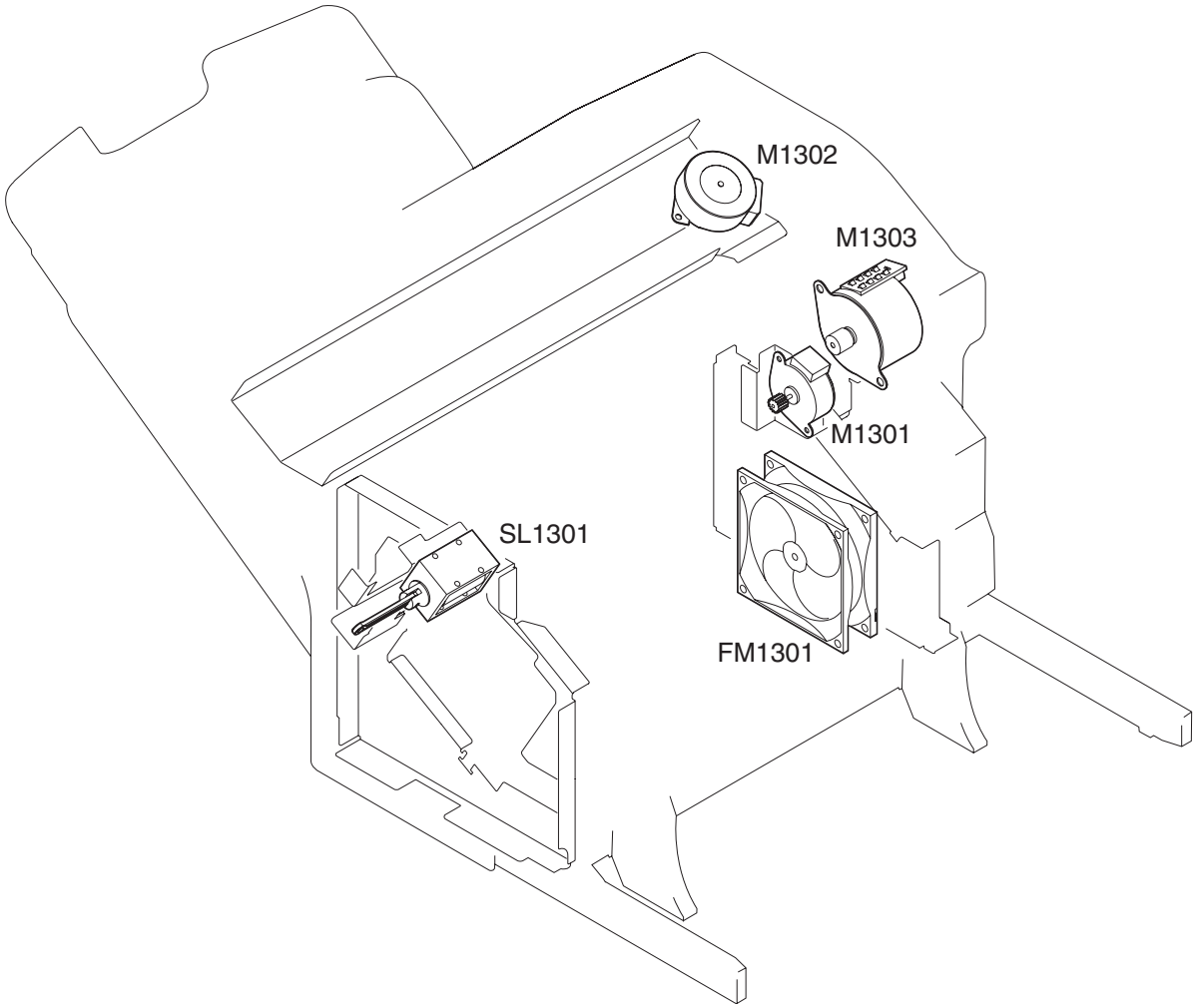


Figure 4-85 Motors, solenoid, fan

Table 4-12 Motors, solenoid, fan

M1301	Paddle motor
M1302	Jogger motor
M1303	Feed motor
SL1301	Clamp solenoid
FM1301	Cooling fan

Stapler/stacker PCBs

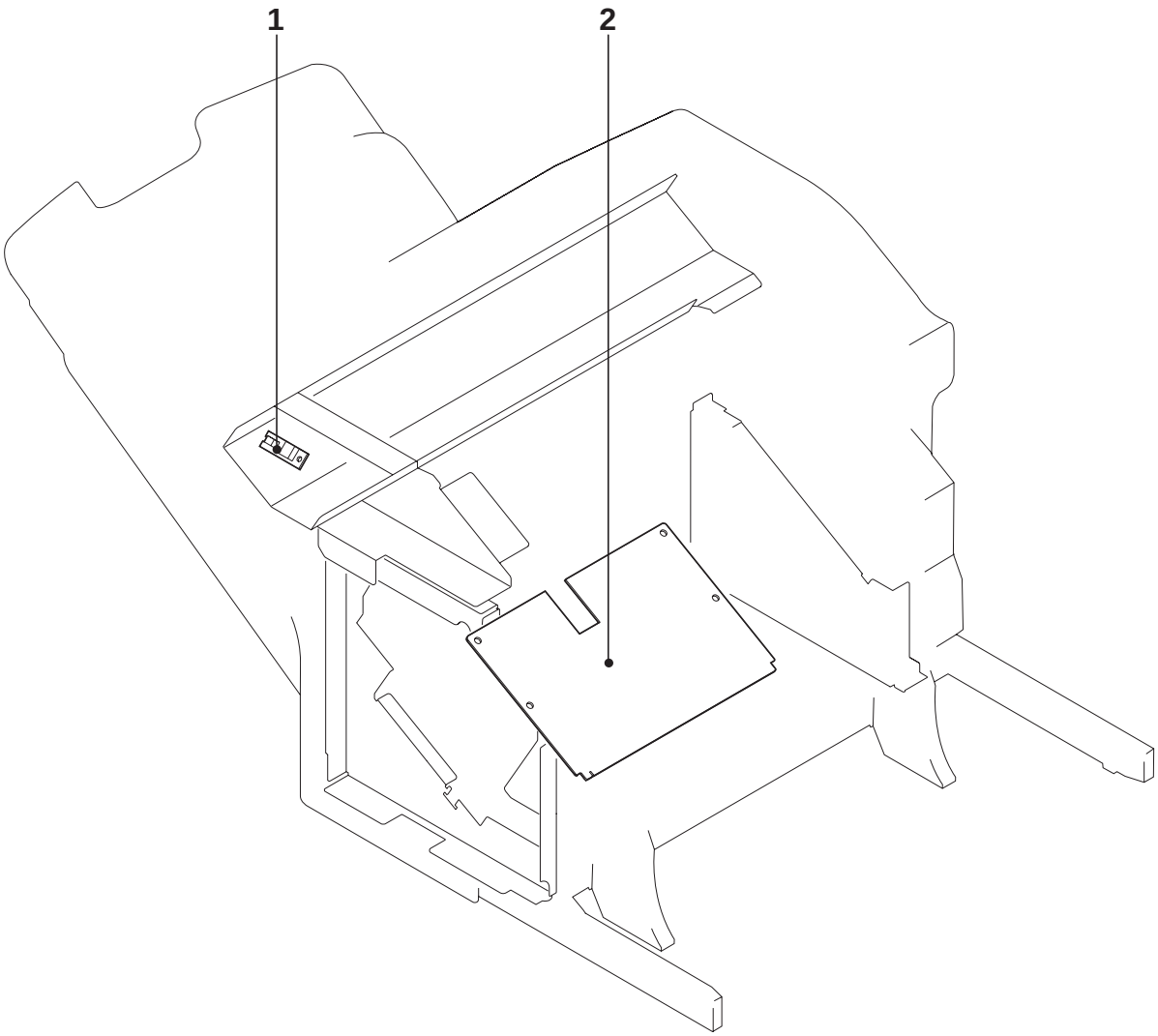


Figure 4-86 PCBs

Table 4-13 PCBs

1	LED PCB
2	Staple stacker driver PCB

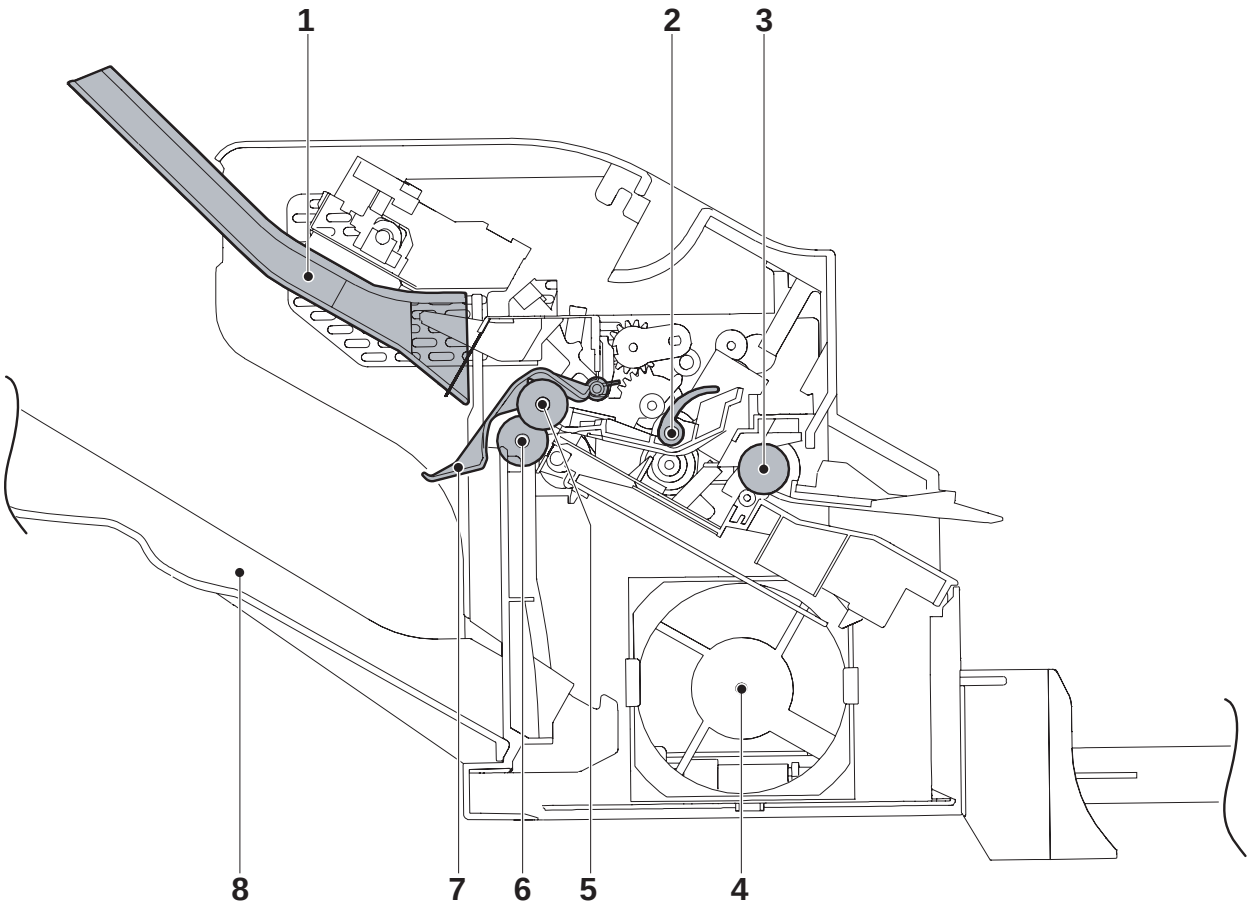


Figure 4-87 Cross-sectional view (part 1)

Table 4-14 Cross-sectional view (part 1)

1	Jogger guide
2	Paddle
3	Inlet roller
4	Cooling fan
5	Upper delivery roller
6	Lower delivery roller
7	Delivery tray paper-full sensor
8	Paper delivery tray

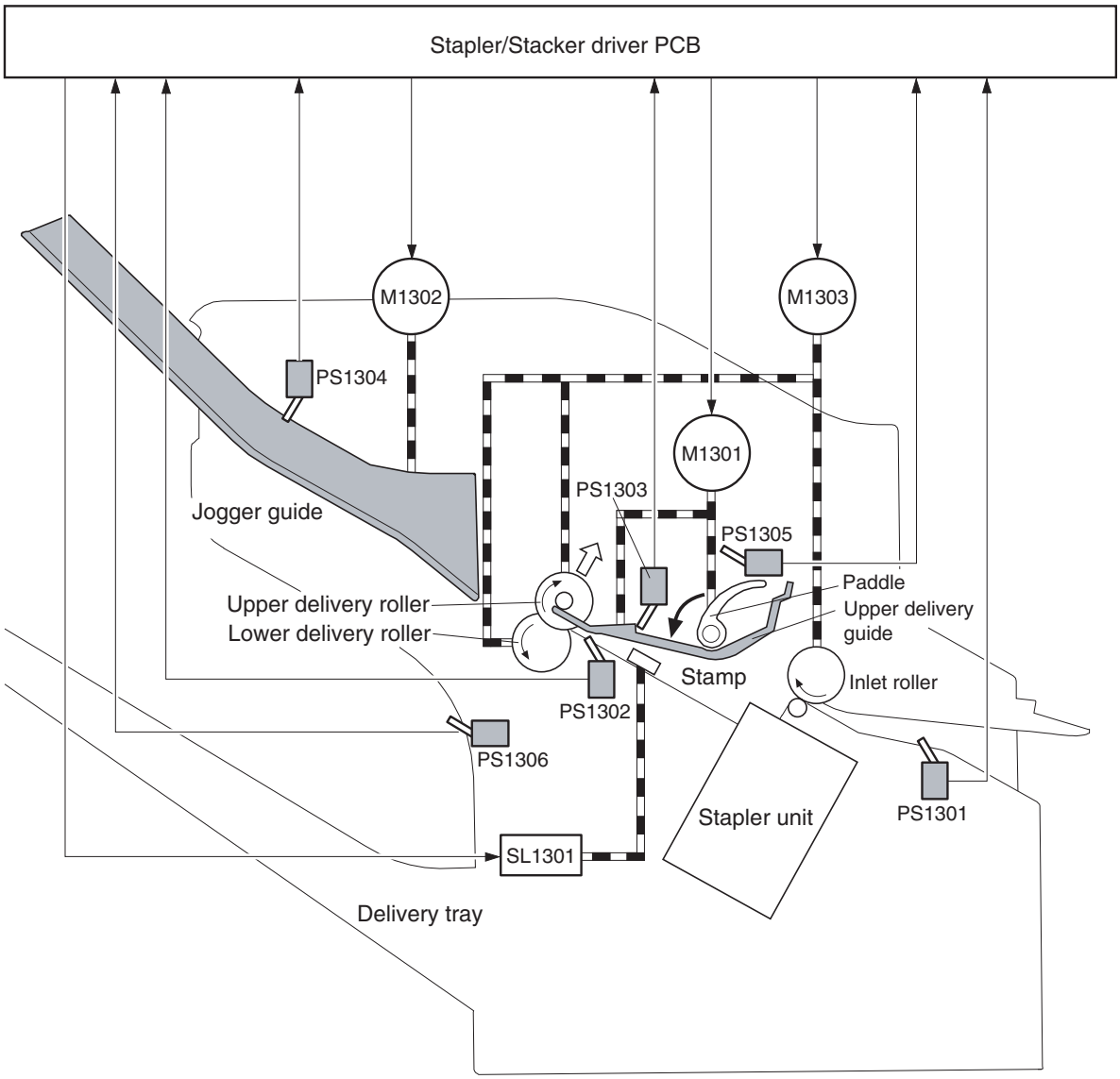


Figure 4-88 Cross-sectional view (part 2)

Table 4-15 Cross-sectional view (part 2)

M1301	Paddle motor
M1302	Jogger motor
M1303	Feed motor
SL1301	Clamp solenoid
PS1301	Paper inlet sensor
PS1302	Delivery sensor
PS1303	Delivery-roller disengaging sensor
PS1304	Jogger home-position sensor
PS1305	Paddle home-position sensor
PS1306	Delivery-full sensor

Stapler/stacker driver PCB

The stapler/stacker driver controls the operational sequence of the stapler/stacker.

When the MFP is turned on and DC power is supplied to the stapler/stacker driver from the printer, the stapler/stacker driver communicates with the formatter to start operational control. Then the stapler/stacker enters stand-by mode and the stapler/stacker driver sends signals to drive loads, such as motors and solenoids, in response to the command submitted from the printer.

The block diagram of the circuit is shown in the following figure.

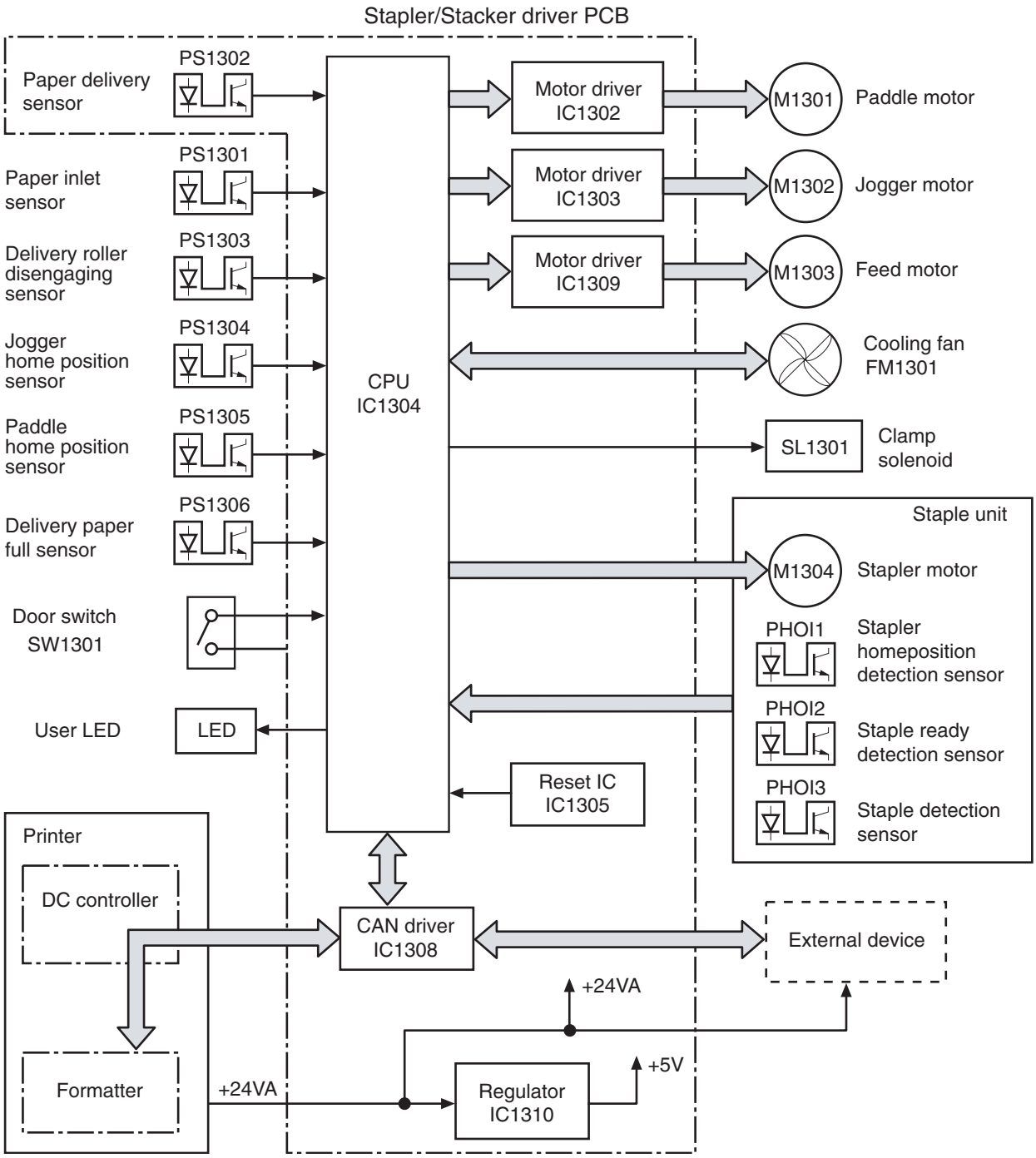


Figure 4-89 Stapler/stacker driver PCB

Stapler/stacker driver list of signals

Table 4-16 Stapler/stacker driver list of signals

Connector	PIN	Abbreviation	I/O	Logic	Signal name
J1301	1	+24V	I	A	+24V supply
	2	+24V	I	A	+24V supply
	3	POWERON	I	H	POWER ON signal
	4	GND			
	5	GND			
	6	CAN-L	I	H	CAN RECEIVE signal
	7	CAN-H	I	L	CAN RECEIVE signal
	8	/SP-UP	I	H	SPEED UP signal
	9	+24V	I	A	+24V supply
	10	GND			
	11	GND			
J1302	1	ULED-G	O	H	USER LED DRIVE signal (Green)
	2	ULED-O	O	H	USER LED DRIVE signal (Orange)
	3	GND			
	4	NC			
	5	+5V	O		+5V supply
	6	GND			
	7	JOG-HP	I		JOGGER HOME POSITION DETECTION signal
J1303	1	+5V	O	A	+5V supply
	2	GND			
	3	IN-SNS	I	L	INLET PAPER DETECTION signal
J1304	1	+24V	O	A	+24V supply
	2	+24U	I	A	+24V supply
J1305	1	FD-AD	O	P	FEED MOTOR DRIVE signal
	2	FD-AND	O	P	FEED MOTOR DRIVE signal
	3	FD-BD	O	P	FEED MOTOR DRIVE signal
	4	FD-BND	O	P	FEED MOTOR DRIVE signal
J1306	1	GND			
	2	PWRON-OUT	O	H	POWER ON OUTPUT signal
	3	CAN-L-OUT	O	L	CAN SEND signal
	4	CAN-H-OUT	O	H	CAN SEND signal

Table 4-16 Stapler/stacker driver list of signals (continued)

Connector	PIN	Abbreviation	I/O	Logic	Signal name
J1307	1	GND			
	2	FLASH-OUT	O	H	FLASH ROM RECORD signal
	3	FLASH-MD0	I	L	OPERATION MODE SPECIFYING signal
	4	FLASH-CLK	O	L	FLASH ROM RECORD signal
	5	FLASH-MD2	O	H	OPERATION MODE SPECIFYING signal
	6	FLASH-IN	I	L	FLASH ROM RECORD signal
	7	FLASH-ACT0	I		FLASH ROM RECORD signal
	8	+5V	O	A	+5V supply
	9	RCT	I	H	RESET signal
	10	GND			
	11	FLASH-ACT1	I	L	FLASH ROM RECORD signal
J1308	1	+5V	O	A	+5V supply
	2	GND			
	3	SWNG-HP	I	H	DELIVERY ROLLER DISENGAGING DETECTION signal
J1309	1	FAMDRV	I	A	FAN MOTOR DRIVE signal
	2	/FANLOCk	O	L	FAN LOCK DETECTION signal
	3	GND			
J1310	1	+24U	O	A	+24V supply
	2	STMP-SL	O	H	CLAMP DRIVE signal
J1311	1	JOG-BND	O	P	JOGGER MOTOR DRIVE signal
	2	JOG-BD	O	P	JOGGER MOTOR DRIVE signal
	3	JOG-AND	O	P	JOGGER MOTOR DRIVE signal
	4	JOG-BD	O	P	JOGGER MOTOR DRIVE signal
J1312	1	+5V	O	A	+5V supply
	2	/HP	I	L	STAPLE HOME POSITION DETECTION signal
	3	/READY	I	L	STAPLER READY signal
	4	LS	I	H	STAPLE DECELERATION signal
	5	GND			
	6	MTR-	O	H	STAPLER MOTOR DRIVE signal
	7	MTR-	O	H	STAPLER MOTOR DRIVE signal
	8	MTR+	O	H	STAPLER MOTOR DRIVE signal
	9	MTR+	O	H	STAPLER MOTOR DRIVE signal

Table 4-16 Stapler/stacker driver list of signals (continued)

Connector	PIN	Abbreviation	I/O	Logic	Signal name
J1313	1	+5V	O	A	+5V supply
	2	GND			
	3	PDL-HP	I	H	PADDLE HOME POSITION DETECTION signal
	4	+5V	O	A	+5V supply
	5	GND			
	6	FULL	I	H	DELIVERY TRAY PAPER FULL signal
J1314	1	NC			
	2	PDL-BND	O	P	PADDLE MOTOR DRIVE signal
	3	PDL-BD	O	P	PADDLE MOTOR DRIVE signal
	4	PDL-AND	O	P	PADDLE MOTOR DRIVE signal
	5	PDL-AD	O	P	PADDLE MOTOR DRIVE signal

5 Removal and replacement

This chapter contains information about the following topics:

- Removal and replacement strategy
- Service approach
- User-replaceable parts
- Covers, doors, and external panels
- Main assembly (internal assemblies)
- Motors and fans
- PCBs
- Switches, contacts, and sensors
- ADF and scanner components
- ADF components
- 2 X 500-sheet paper input assembly components
- Intermediate paper transfer unit (IPTU)
- Stapler/stacker components
- 3-bin mailbox components

Removal and replacement strategy

This chapter describes how to remove, replace, and reassemble the major assemblies of the MFP. Replacement is generally the reverse of removal. Notes are provided to assist with any difficult replacement procedures.

To identify the left side and right side of the MFP, face the product control panel.

WARNING! Unplug the power cord from the power outlet (at the wall receptacle) before attempting to service the MFP. If you do not follow this warning, severe injury can result. Certain functional checks during troubleshooting might require power to be supplied to the MFP. However, all power should be turned off and the MFP should be unplugged when you remove any MFP assemblies or components. Never operate or service the MFP when the protective cover is removed from the laser/scanner assembly. The reflected beams, although invisible, can damage your eyes.

CAUTION: The MFP contains components that are sensitive to electrostatic discharge (ESD). Always perform service work at an ESD-protected workstation. If an ESD-protected workstation is not available, discharge body static by grasping the MFP chassis before touching an ESD-sensitive component. Ground the MFP chassis before servicing the MFP.

Required tools

- #2 Phillips screwdriver (shaft length of at least 152.4 mm (6 inches) and a shaft diameter of no more than 6.25 mm (0.25 inches))
- Short #2 Phillips screwdriver (shaft length of 76 mm (3 inches))
- Right-angle #2 Phillips screwdriver
- Small flat-blade screwdriver
- Stubby Phillips screwdriver (shaft length of 38 mm (1.5 inches))
- Needle-nose pliers
- ESD mat (if available; see the preceding ESD caution)
- Penlight (optional)
- Clear tape (optional)

CAUTION: Use a #2 Phillips screwdriver. A Pozidriv screwdriver can damage screw heads on the MFP.

Before performing service

- If possible, print a menu map and configuration page.
- Remove all of the accessories and print media, the print cartridges, and tray 2 from the MFP.
- Unplug the power cord from the power outlet at the wall receptacle.
- Perform the work at an ESD-protected workstation, if one is available. If an ESD-protected workstation is not available, discharge body static by grasping the MFP chassis before touching an ESD-sensitive component. Ground the MFP chassis before servicing the MFP.

After completing service

- Reinstall the print cartridges.

  CAUTION: Do not transport the MFP while the print cartridges are installed.

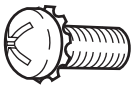
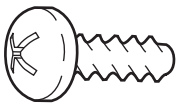
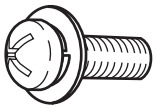
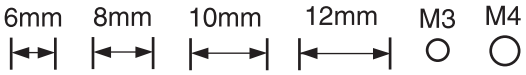
- Reconnect all cables to the MFP.
- Replace all of the accessories and load the media.
- Print a configuration page and verify that the latest firmware is installed on the MFP.

Screws used in the MFP

The following table describes the screws that are used in the MFP and provides guidelines to help determine where each type of screw is used. The screws can vary in length depending on the thickness of the material that is being fastened. Always note where each type of screw is located and replace each one in its original location.

NOTE: When you are disassembling the MFP, place the screws into the chassis holes from which they were removed. This prevents their loss, and ensures that the correct type and length of screw for each location is used when the MFP is reassembled.

Table 5-1 Common fasteners used in this MFP

Drawing and description	Purpose
 Phillips-head machine screw with captive star washer	This screw is used to fasten metal to metal when good electrical contact is needed. This screw also provides high resistance to loosening.
 Phillips-head screw with self-tapping threads	This screw is used to fasten sheet metal or plastic to plastic frames (the deep, coarsely spaced threads provide an increased holding capability while decreasing the possibility of stripping the target hole). **NOTE:** To install a self-tapping screw, first turn it counterclockwise to align it with the existing thread pattern, and then carefully turn it clockwise to tighten it. You will feel resistance and hear the screw click when it engages the existing threads in the hole. Do not overtighten the screw. If a self-tapping screw-hole becomes stripped, repair the screw-hole or replace the affected assembly.
 Phillips washer-head machine screw with a broad, flat washer attached to the screw head	This screw is used to fasten sheet metal parts to the sheet metal chassis. It spans large clearance holes and distributes the load by increasing the bearing surface.
Screw measurement guide 	

Service approach

MFP repair normally begins by using the MFP internal diagnostics and the following three-step process.

1. Isolate the problem to the major system (for example, the host computer, the network or server, or the MFP system).
2. Determine if the problem is located in the accessories, the scanner assembly, or in the MFP engine.
3. Troubleshoot the problem using the procedures in Chapter 6.

After a faulty part is located, the MFP can usually be repaired at the assembly level by replacing field replaceable units (FRUs). Some mechanical assemblies might need to be repaired at the subassembly level. Hewlett-Packard does not support replacement of components on the printed circuit assembles.

User-replaceable parts

The procedures in this section describe the removal and replacement of the following user-replaceable parts:

- Print cartridges
- Control panel overlays
- Control panel
- Intermediate paper transfer unit (IPTU)
- Stapler/stacker
- Staple cartridge
- 3-bin mailbox
- ETB assembly, removing
- MP tray pickup assembly
- Trays 2, 3, and 4
- ADF input tray
- ADF pickup and feed rollers
- ADF separation pad
- ADF delivery guide (clear mylar sheet)
- Face-down tray assembly
- Fuser
- Tray 2, 3, or 4 pickup and feed rollers
- MP tray pickup roller
- Tray 2 separation roller
- Tray 3 or 4 separation rollers
- Scanner filter cover and scanner filter
- ADF hinge flap
- Formatter board
- Hard drive
- DIMMs
- Flash memory card (firmware)
- Fax accessory

Print cartridges

1. Open the right lower cover.



Figure 5-1 Remove the print cartridges (1 of 3)

2. Open the ETB.



Figure 5-2 Remove the print cartridges (2 of 3)

3. Grasp each print cartridge by the blue handles, and remove it from the MFP.



Figure 5-3 Remove the print cartridges (3 of 3)

Control panel overlays

Use a small, flat-blade screwdriver to release the two product control panel overlays (callout 1).



Figure 5-4 Remove the control panel overlays

Control panel

1. Remove the control panel overlays. See Control panel overlays on page 267.
2. Use a flat-blade screwdriver to remove the product control panel. Insert the blade of the screwdriver into the tabs (callout 1) and twist gently to release the top of the control panel. Lift the control panel upward to release it from the MFP.



Figure 5-5 Remove the control panel (1 of 3)

3. Disconnect one connector (callout 2).

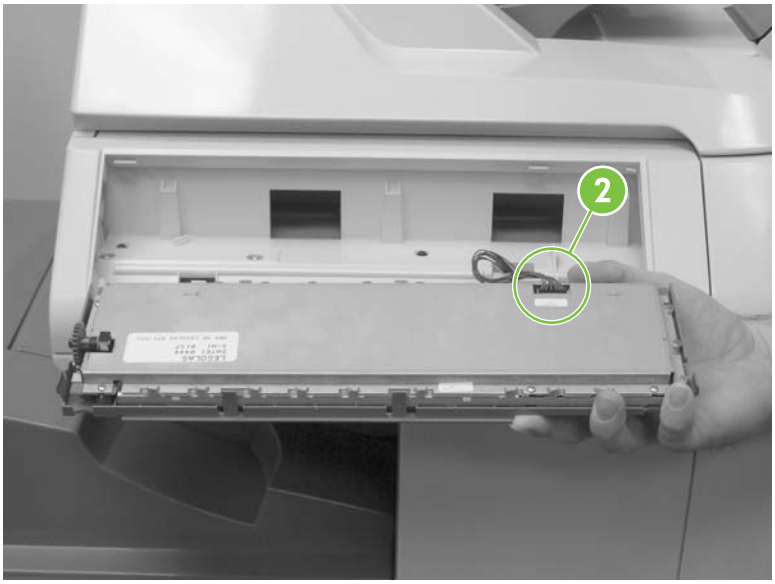


Figure 5-6 Remove the control panel (2 of 3)

4. Grasp the control panel surround and lift it toward you.



Figure 5-7 Remove the control panel (3 of 3)

Intermediate paper transfer unit (IPTU)

1. Lift the handle on the IPTU.



Figure 5-8 Remove the IPTU (1 of 3)

2. Slide the IPTU outward.



Figure 5-9 Remove the IPTU (2 of 3)

3. Lift the IPTU upward and remove it from the MFP.



Figure 5-10 Remove the IPTU (3 of 3)

Stapler/stacker

1. Press and hold the release button on the top of the stapler/stacker.



Figure 5-11 Remove the stapler/stacker (1 of 5)

2. Pull the stapler/stacker outward.



Figure 5-12 Remove the stapler/stacker (2 of 5)

3. Disconnect the connector (callout 1) from the MFP.

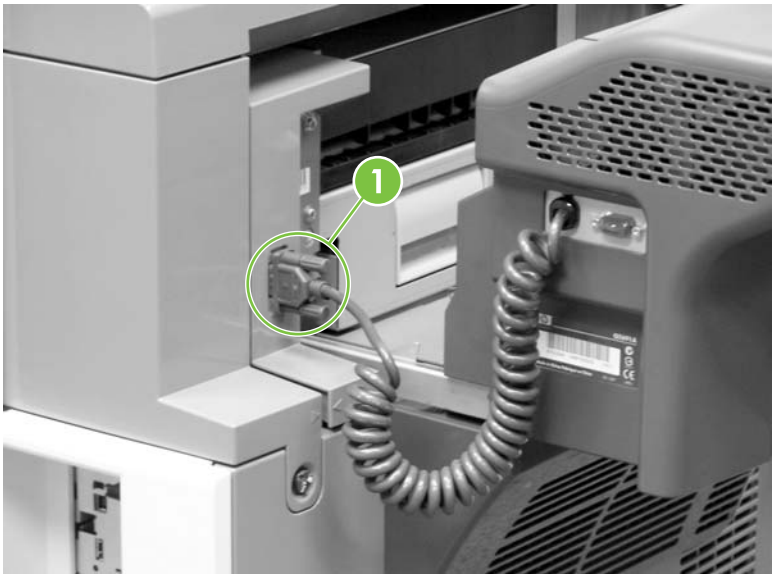


Figure 5-13 Remove the stapler/stacker (3 of 5)

4. Lift the stapler/stacker slightly and remove it from the MFP.



Figure 5-14 Remove the stapler/stacker (4 of 5)

5. The IPTU remains in place.



Figure 5-15 Remove the stapler/stacker (5 of 5)

Staple cartridge

1. Press down the release button on the stapler/stacker and pull the assembly outward. See Stapler/stacker on page 270.

2. Open the staple cartridge cover.



Figure 5-16 Replace the staple cartridge (1 of 3)

3. Grasp the green staple cartridge handle and pull the old staple cartridge upward.



Figure 5-17 Replace the staple cartridge (2 of 3)

4. Pull the old staple cartridge out of the stapler assembly. Insert the new staple cartridge into the stapler assembly and push down on the green handle until the assembly snaps into place. Close the staple cartridge cover, and slide the stapler/stacker into the MFP.



Figure 5-18 Replace the staple cartridge (3 of 3)

3-bin mailbox

1. Slide the assembly outward.



Figure 5-19 Remove the 3-bin mailbox (1 of 3)

2. Disconnect the cable (callout 1).

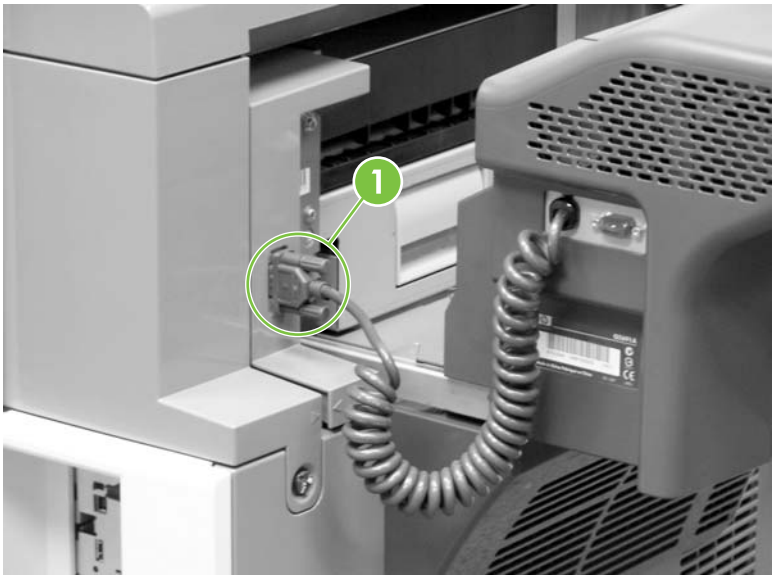


Figure 5-20 Remove the 3-bin mailbox (2 of 3)

3. Lift the 3-bin mailbox, tilt it upward, and pull to remove it from the MFP.

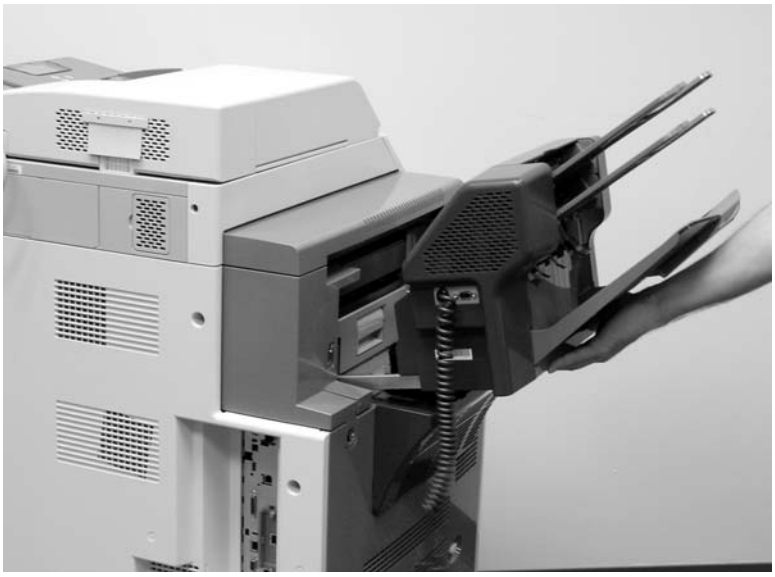


Figure 5-21 Remove the 3-bin mailbox (3 of 3)

ETB assembly, removing

1. Open the right lower cover.

2. Open the ETB assembly by pulling the green handle.



Figure 5-22 Remove the ETB assembly (1 of 4)

3. Depress the blue tabs on the right and left sides of the ETB (callout 2), and then lift the ETB (callout 1) out of the MFP.

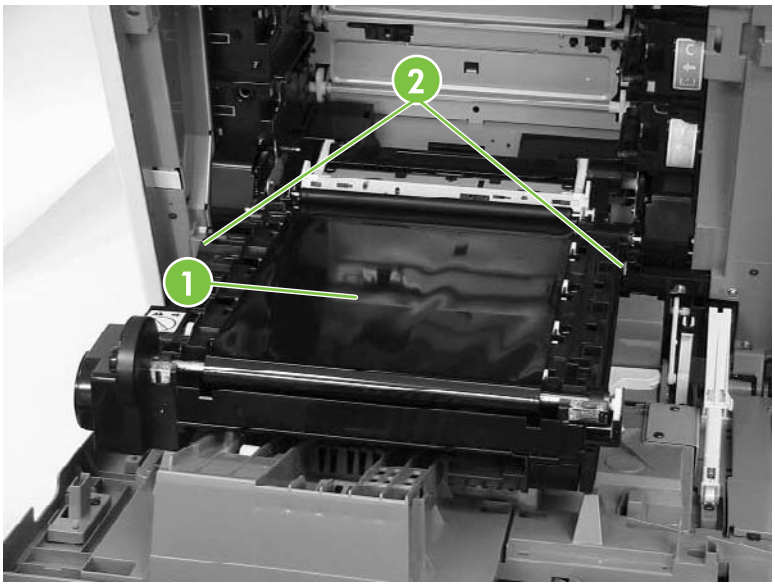


Figure 5-23 Remove the ETB assembly (2 of 4)

4. Detail of right lever (callout 3).

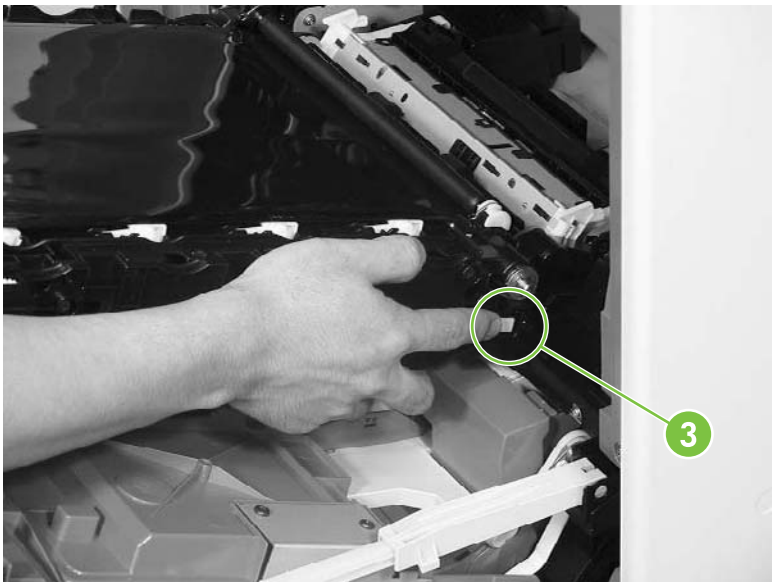


Figure 5-24 Remove the ETB assembly (3 of 4) — right lever

5. Detail of left lever (callout 4).

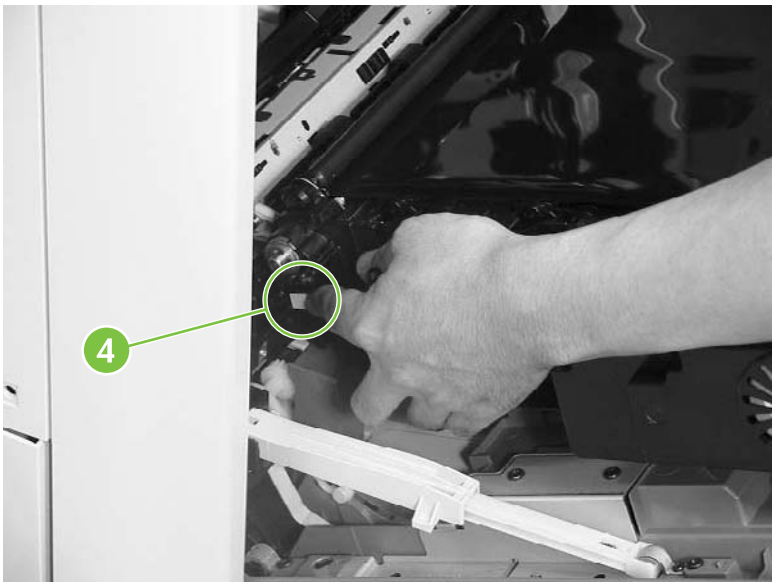


Figure 5-25 Remove the ETB assembly (4 of 4) — left lever

MP tray pickup assembly

1. Open the MP tray pickup assembly.
2. Press the two metal tabs on either side to unlock the tray.

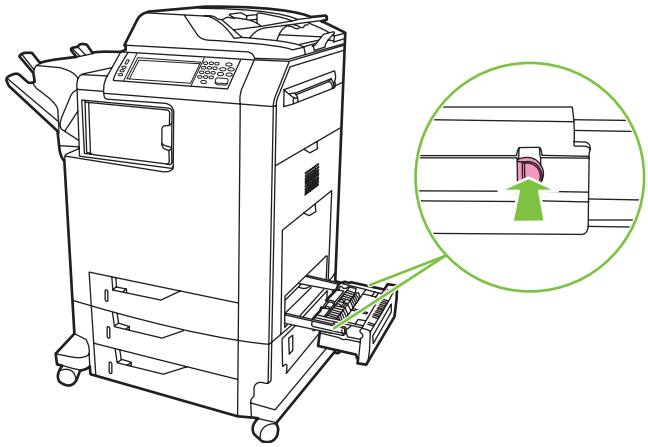


Figure 5-26 Remove the MP tray pickup assembly (1 of 2)

3. Slide the assembly off the rails.

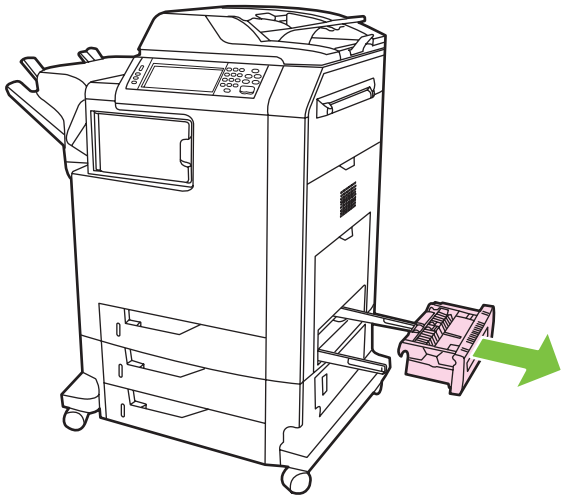


Figure 5-27 Remove the MP tray pickup assembly (2 of 2)

Trays 2, 3, and 4

1. Open the tray until it stops.
2. Tilt the front of the tray up. The tray rails automatically retract to free the tray.

ADF input tray

1. Open the ADF top cover.



Figure 5-28 Remove the ADF input tray (1 of 3)

2. Flex the pivot pin (near the control panel) away from the mounting hole in the ADF chassis.

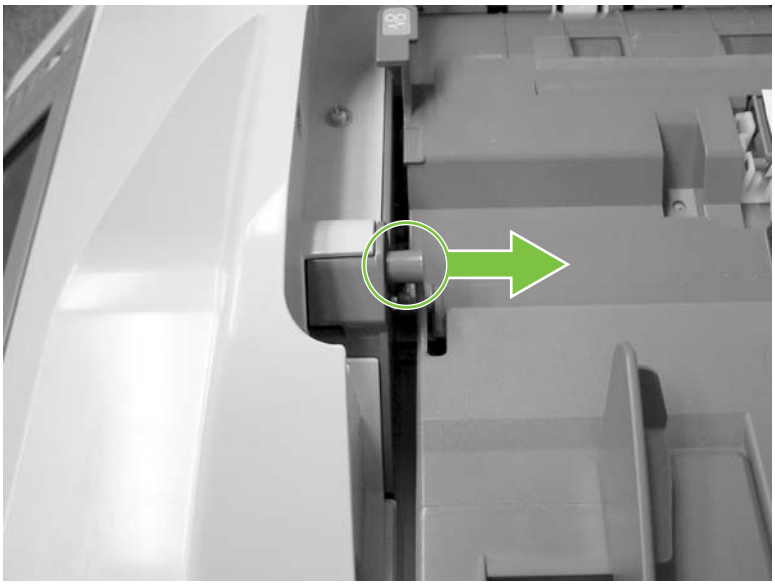


Figure 5-29 Remove the ADF input tray (2 of 3)

3. Pull the tray away from the pivot pin at the right side of the input tray, and remove the ADF input tray.



Figure 5-30 Remove the ADF input tray (3 of 3)

TIP: When reinstalling the ADF input tray, insert the rear pin first, as shown in the following photograph. Be sure that the pin goes under the black panel.

ADF pickup and feed rollers

1. Open the ADF top cover.



Figure 5-31 Remove the ADF pickup and feed rollers (1 of 3)

2. Push down on the locking tab (callout 1), and rotate the top of the assembly away from the ADF.

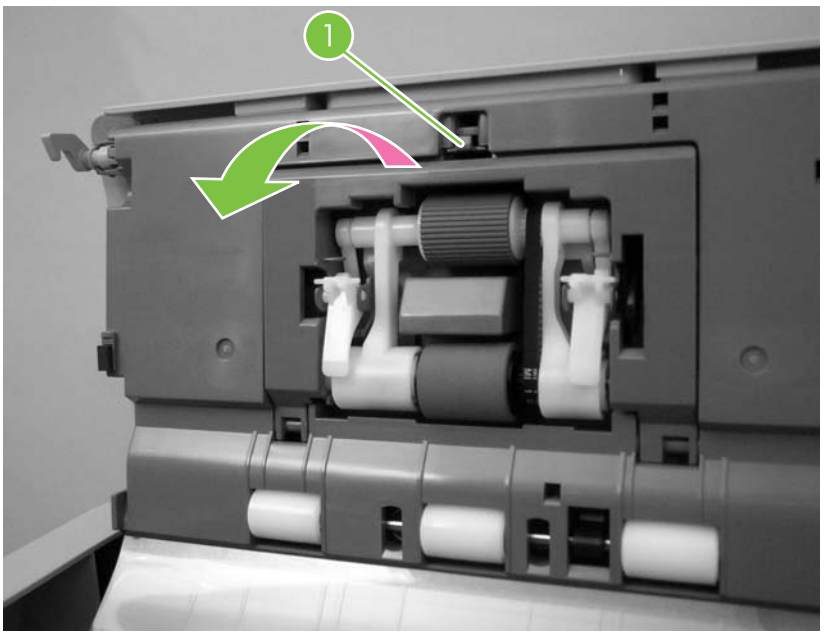


Figure 5-32 Remove the ADF pickup and feed rollers (2 of 3)

3. Release the front (gear end) of the roller assembly drive shaft (callout 2), and slide (callout 3) the assembly toward the front of the MFP to remove it.

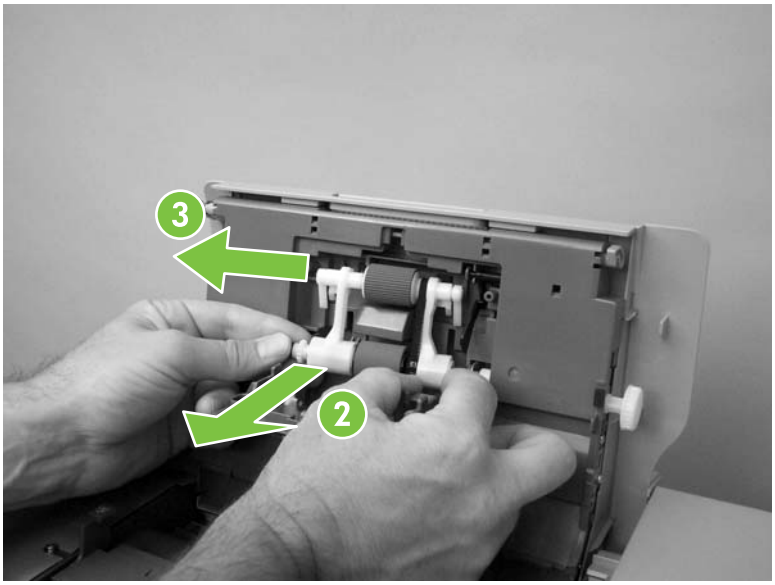


Figure 5-33 Remove the ADF pickup and feed rollers (3 of 3)

ADF separation pad

1. Open the ADF top cover.



Figure 5-34 Remove the ADF separation pad (1 of 4)

2. Locate the ADF separation pad (callout 1).



Figure 5-35 Remove the ADF separation pad (2 of 4)

3. Raise the separation pad frame assembly using the green lever, and push the bottom edge (white plastic) of the separation pad away from the frame.



Figure 5-36 Remove the ADF separation pad (3 of 4)

4. Push the separation pad out of the frame.



Figure 5-37 Remove the ADF separation pad (4 of 4)

ADF delivery guide (clear mylar sheet)

NOTE: Replacement ADF delivery guide mylar sheets are located in an envelope behind the white mylar sheet.

1. Open the ADF/scanner assembly and release the two tabs at the top and bottom of the ADF delivery guide cover.

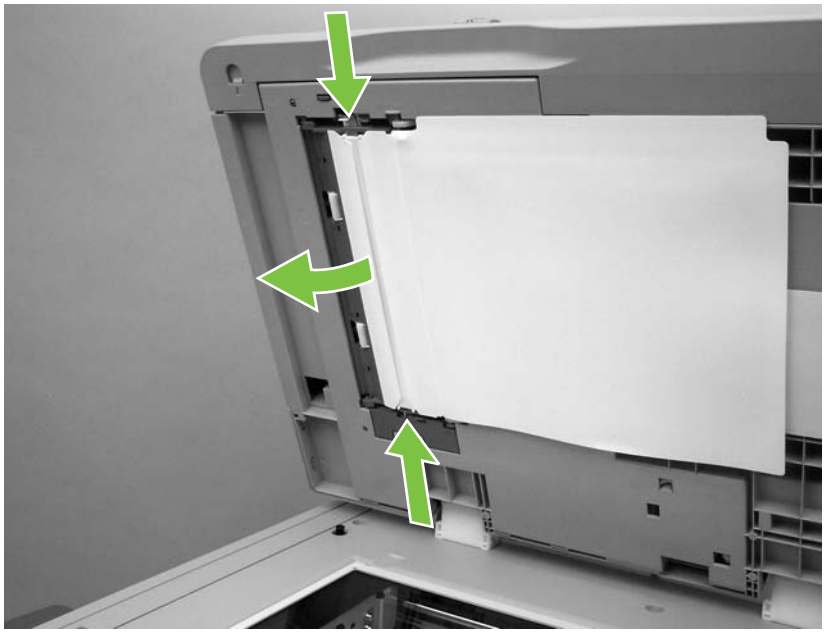


Figure 5-38 Remove the ADF delivery guide (1 of 3)

2. Carefully unhook the clear mylar sheet from the four tabs on the ADF delivery guide cover (callout 1), and then remove the mylar sheet.

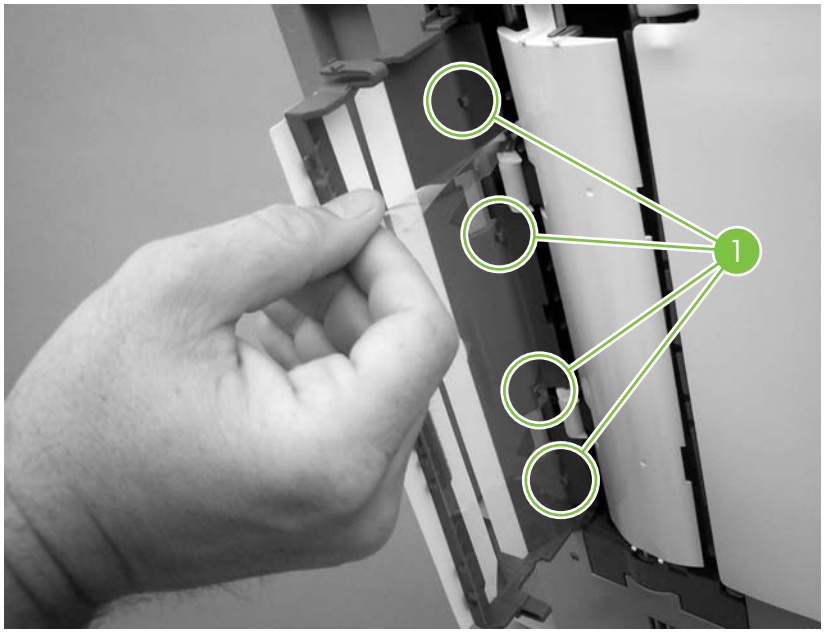


Figure 5-39 Remove the ADF delivery guide (2 of 3)

3. If it is difficult to replace the mylar strips, pull the ADF delivery guide cover hinges off the hinge pins (callout 2) to remove the cover.

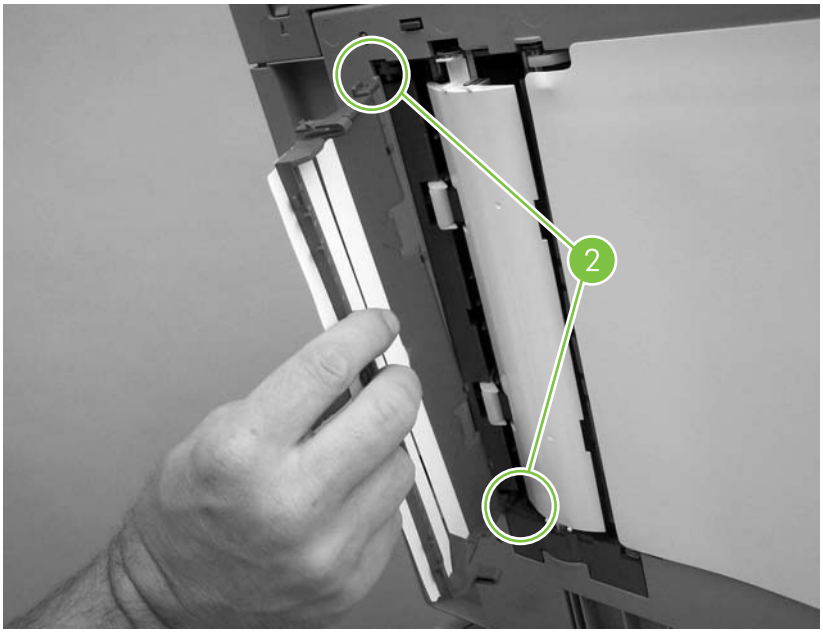


Figure 5-40 Remove the ADF delivery guide (3 of 3)

4. **Reinstallation tip:** The clear mylar sheet is keyed with a small notch at the top. Be sure to align the notch with the round pin that is on the holder.

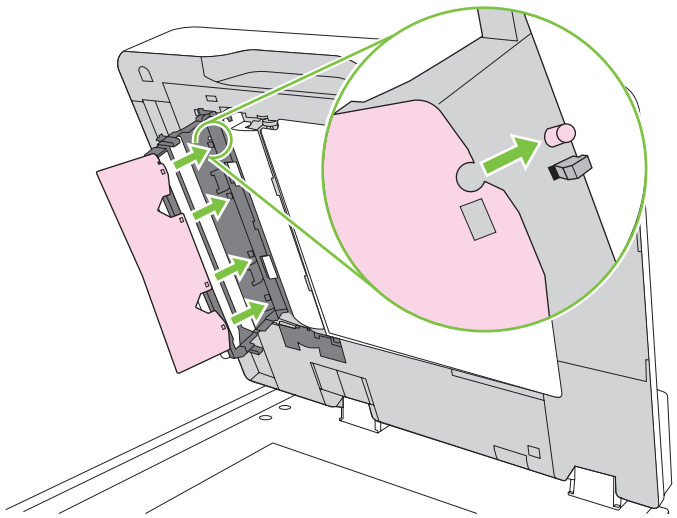


Figure 5-41 Reinstall the clear mylar sheet

Face-down tray assembly

Loosen the two captive screws (callout 1) and remove the face-down tray (callout 2).

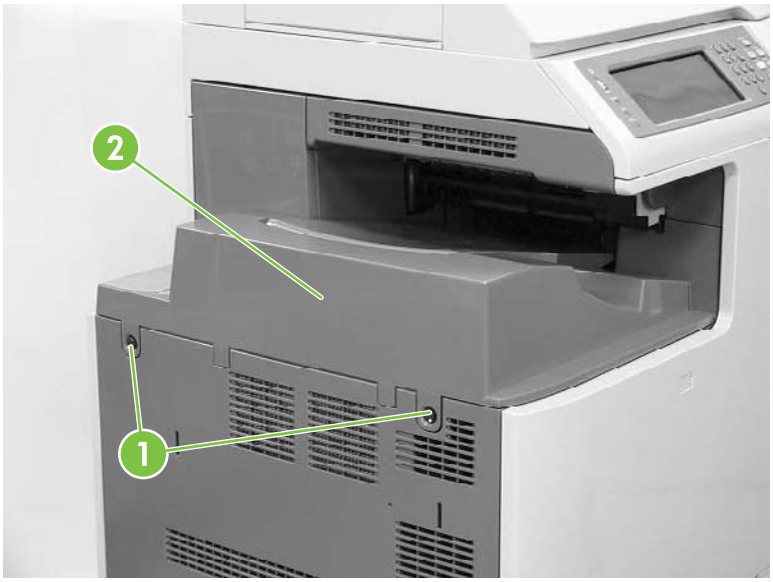


Figure 5-42 Remove the face-down tray assembly

Fuser

NOTE: Do not attempt to disassemble the fuser sleeve assembly. This part cannot be serviced in the field.

1. Open the right top cover (callout 1) and the fuser cover (callout 2).

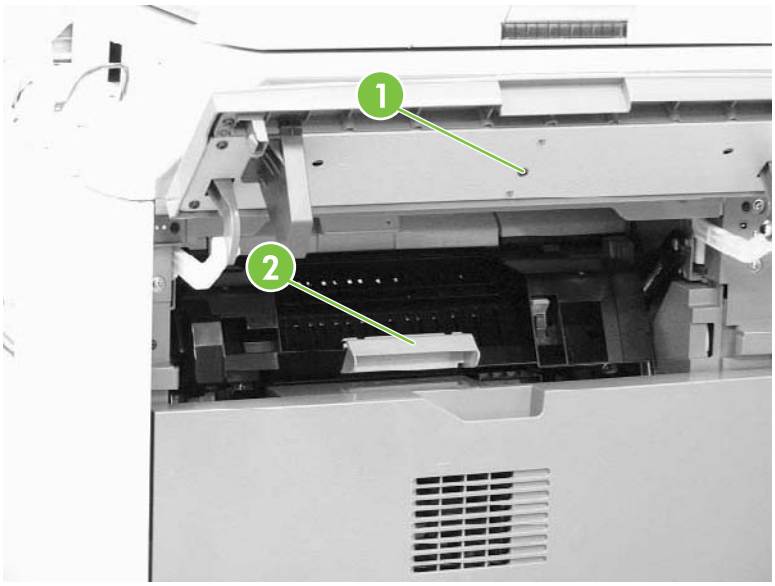


Figure 5-43 Remove the fuser (1 of 2)

2. Gently lift the two purple handles (callout 3). Then pull the fuser (callout 4) out of the MFP.

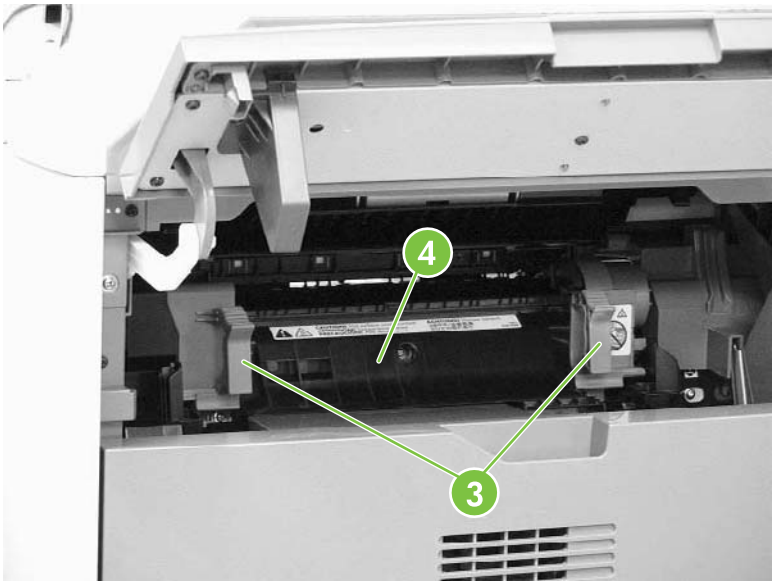


Figure 5-44 Remove the fuser (2 of 2)

Tray 2, 3, or 4 pickup and feed rollers

1. Remove the paper tray. See Trays 2, 3, and 4 on page 278.



Figure 5-45 Remove the tray 2, 3, or 4 pickup and feed rollers (1 of 2)

2. Squeeze the tabs to release the pickup roller (left) and feed roller (right).



Figure 5-46 Remove the tray 2, 3, or 4 pickup and feed rollers (2 of 2)

3. Slide the rollers off the shaft.

MP tray pickup roller

1. Remove the MP tray pickup assembly. See MP tray pickup assembly on page 278.
2. Slide the white tabs to the middle.

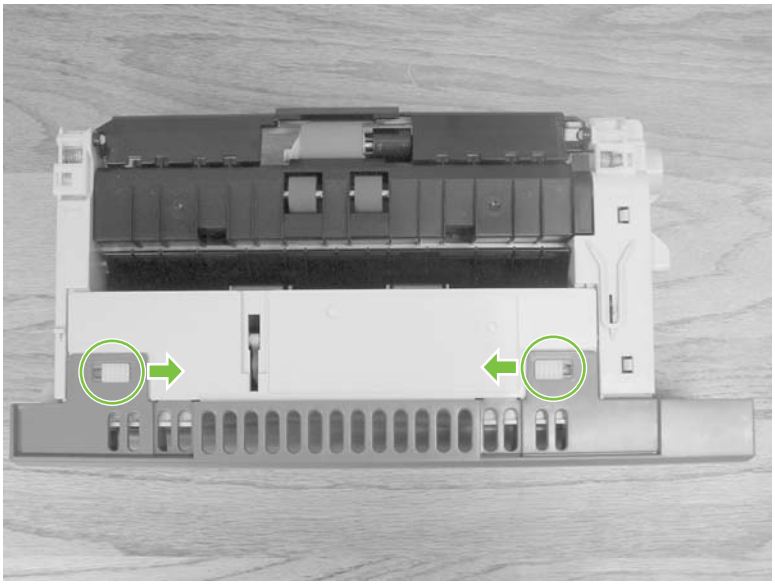


Figure 5-47 Remove the MP tray pickup roller (1 of 3)

3. Rotate the front cover away from the tray.

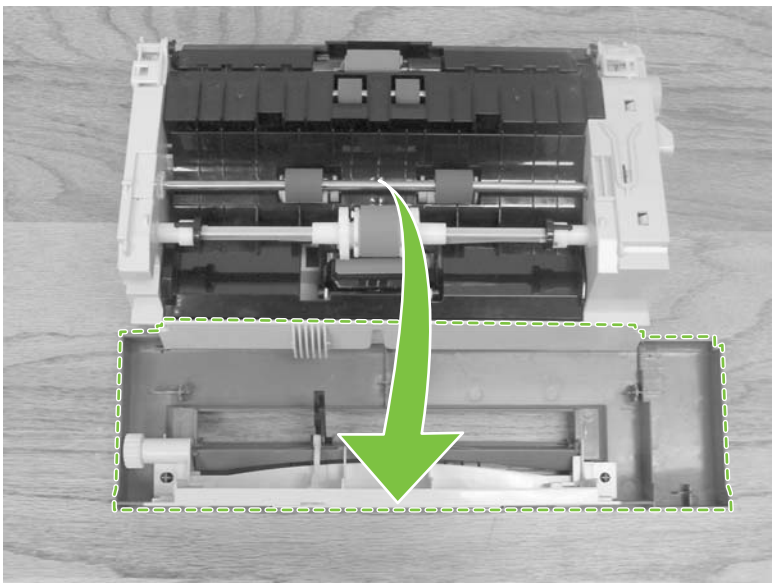


Figure 5-48 Remove the MP tray pickup roller (2 of 3)

4. Remove the pickup roller by pulling the tabs outward and lifting the roller from the shaft.

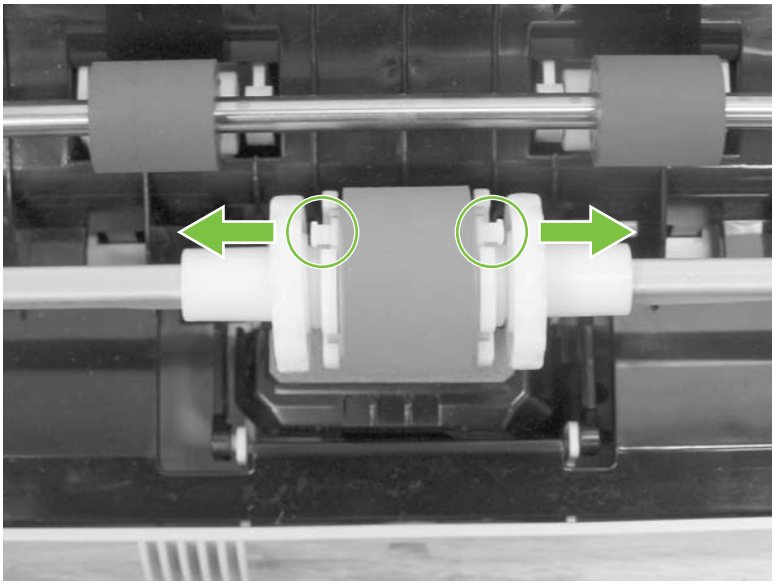


Figure 5-49 Remove the MP tray pickup roller (3 of 3)

TIP: When reinstalling the MP tray pickup roller, insert the round tabs toward the front of the tray.

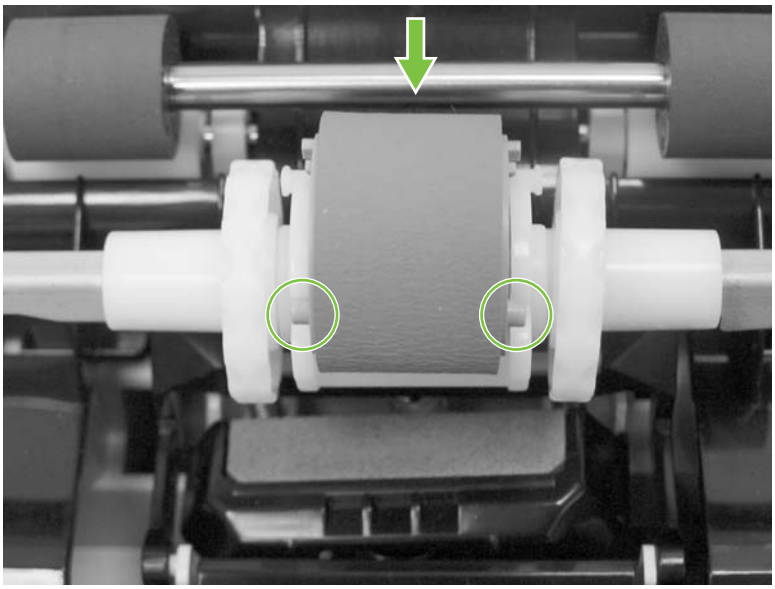


Figure 5-50 Replace the MP tray pickup roller

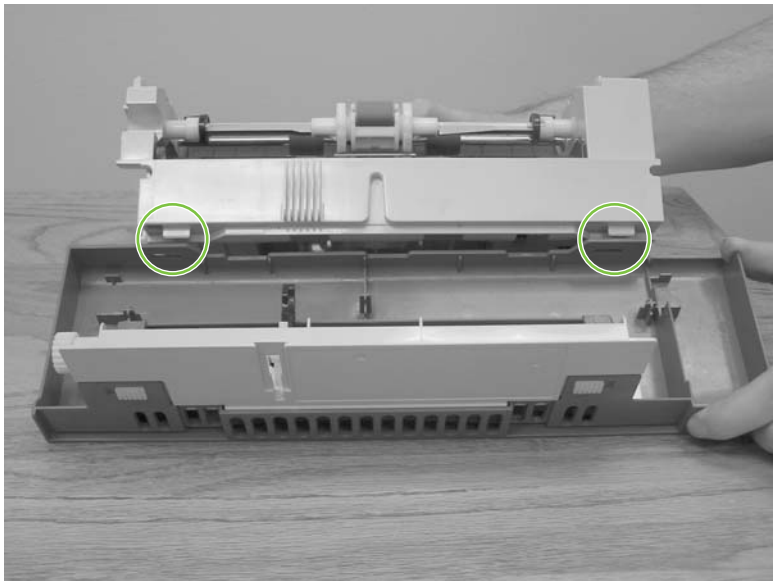


Figure 5-51 Replace the tray cover

TIP: When reinstalling the tray front cover, insert the slots into the tabs, rotate the cover upward, and snap it into place.

Tray 2 separation roller

1. Remove the MP tray pickup assembly. See MP tray pickup assembly on page 278.
2. Release the two locking tabs on the MP tray pickup assembly and open the tray 2 separation roller cover.

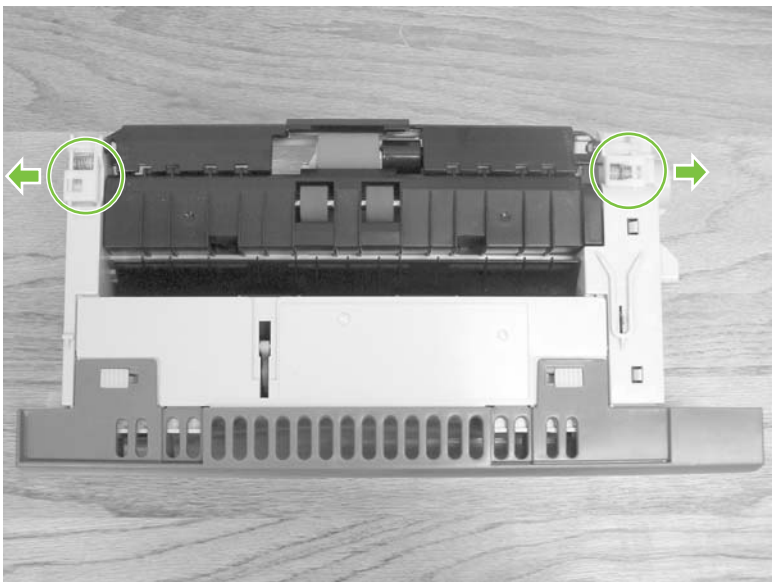


Figure 5-52 Remove the tray 2 separation roller (1 of 3)

3. Remove the tray 2 separation roller by depressing the blue tab and removing it from the shaft. Replace the tray 2 separation roller.

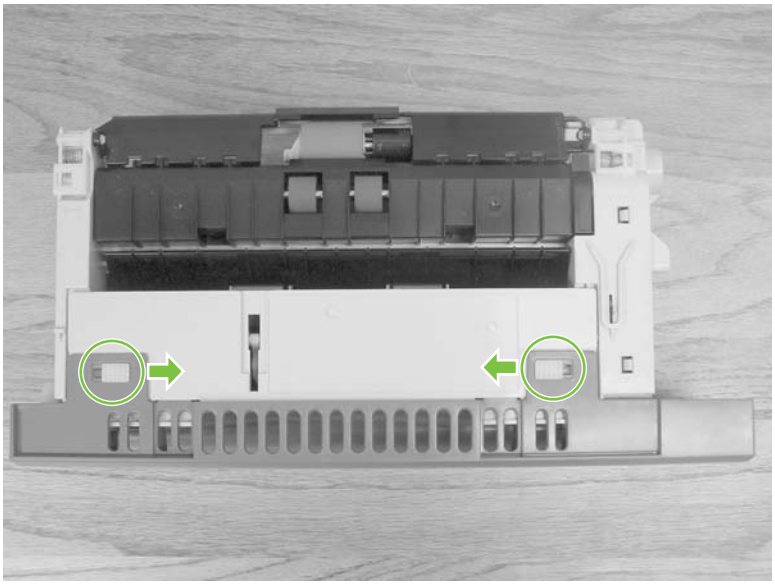


Figure 5-53 Remove the tray 2 separation roller (2 of 3)

4. Close the separation roller cover by sliding the tabs outward before closing the cover.

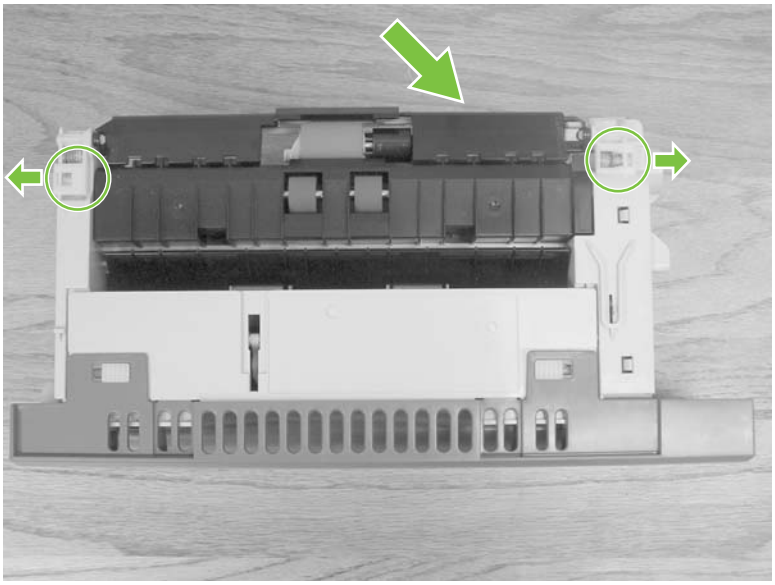


Figure 5-54 Remove the tray 2 separation roller (3 of 3)

Tray 3 or 4 separation rollers

1. Open tray 3 or 4.
2. Open the lower jam access door.

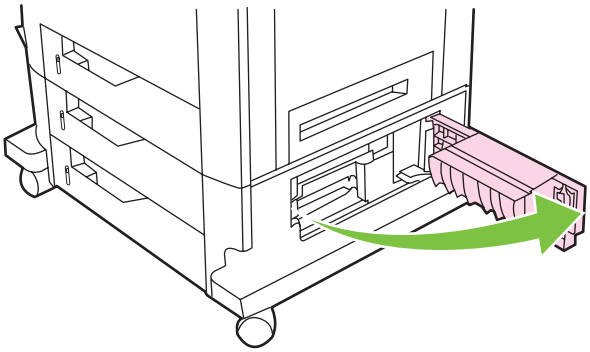


Figure 5-55 Remove the tray 3 or 4 separation rollers (1 of 2)

3. Remove the separation roller by depressing the blue tab and removing the roller from the shaft.

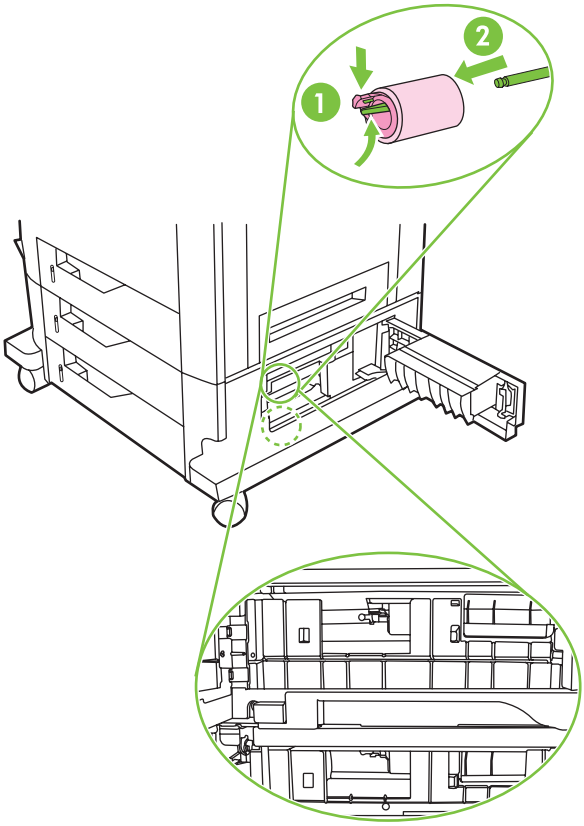


Figure 5-56 Remove the tray 3 or 4 separation rollers (2 of 2)

Scanner filter cover and scanner filter

1. Using the thumb notch at the top of the filter cover plate, remove the scanner filter cover at the rear of the MFP.



Figure 5-57 Remove the scanner filter (1 of 2)

2. Remove the filter.



Figure 5-58 Remove the scanner filter (2 of 2)

3. Clean the filter and replace it in the frame. Snap the filter cover into place.

NOTE: The filter can be cleaned by tapping it against a hard surface, vacuuming, or rinsing with clean water. If it is rinsed, be sure it is completely dry before reinstalling it in the frame.

ADF hinge flap

1. Use a small, flat-blade screwdriver to release the six locking tabs along the top of the ADF hinge flap.

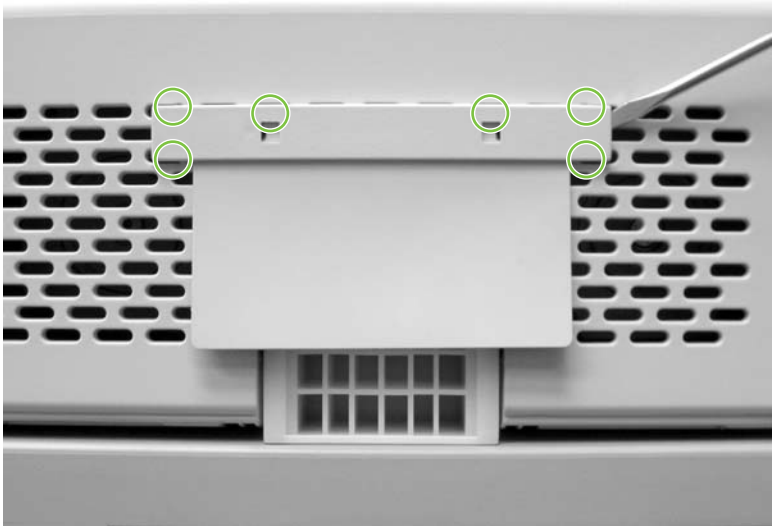


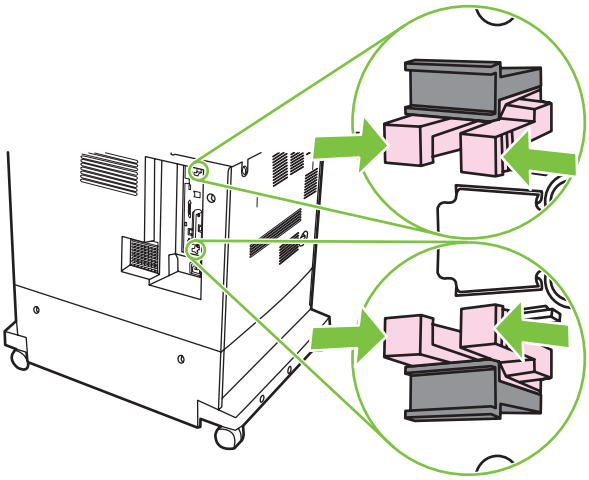
Figure 5-59 Remove the ADF hinge flap

2. Pull the ADF hinge flap away from the MFP to remove it.

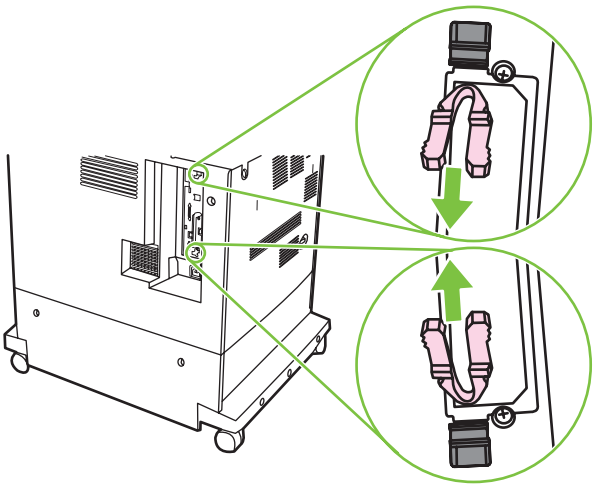
NOTE: To position the ADF hinge flap correctly when reinstalling it, insert the locator pins situated in the middle of the plastic mounting bracket into the first row of slots above the ADF hinge.

Formatter board

1. Locate the gray formatter pressure release tabs on the formatter board in the rear of the MFP.



2. Gently squeeze the tabs and pull them out of the formatter.



3. Gently pull on the black tabs at the top and bottom of the formatter board to pull the board from the MFP.

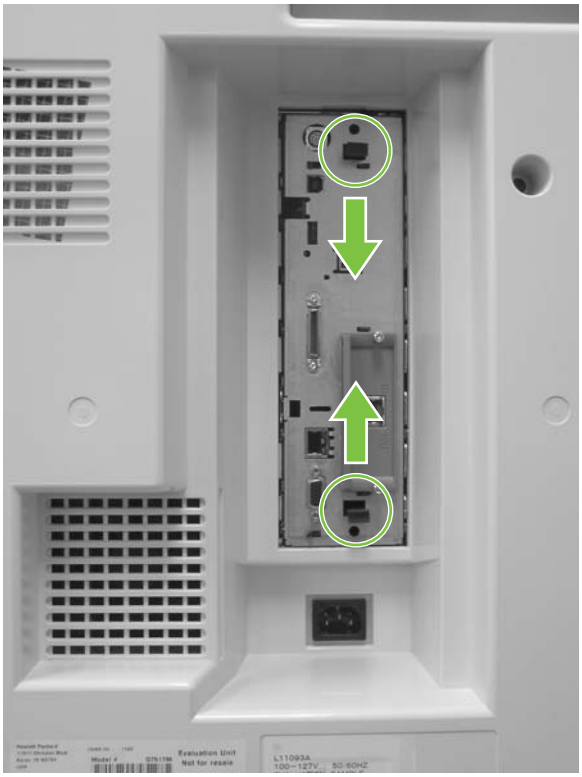


Figure 5-60 Remove the formatter (1 of 2)

4. Place the formatter board on a clean, flat, grounded surface.



Figure 5-61 Remove the formatter (2 of 2)

Hard drive

WARNING! he MFP contains components that are sensitive to electrostatic discharge (ESD). Always perform service work at an ESD-protected workstation. If an ESD-protected workstation is not available, discharge body static by grasping the MFP chassis before touching an ESD-sensitive component. Ground the MFP chassis before servicing the MFP.

1. Remove the formatter board from the MFP. See Formatter board on page 297.
2. Push the two black tabs toward each other and slide the hard drive toward the rear of the formatter.

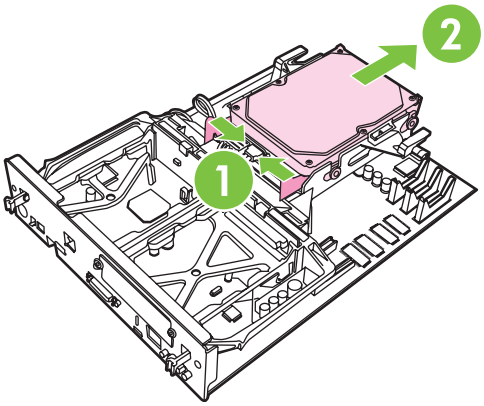


Figure 5-62 Remove the hard drive (1 of 2)

3. Disconnect the cable and remove the hard drive.

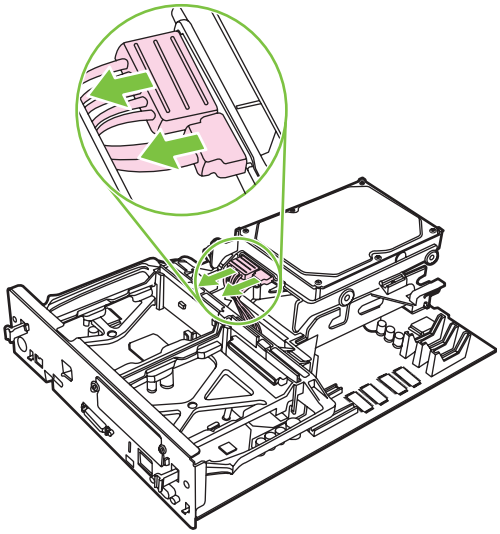


Figure 5-63 Remove the hard drive (2 of 2)

DIMMs

The formatter board contains three DIMMs that can be removed and replaced.

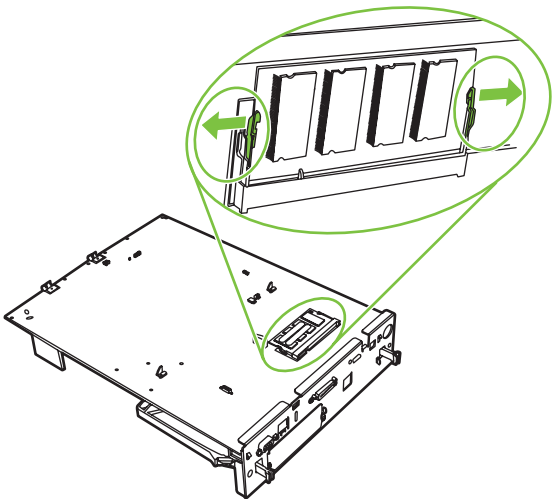
WARNING! The MFP contains components that are sensitive to electrostatic discharge (ESD). Always perform service work at an ESD-protected workstation. If an ESD-protected workstation is not available, discharge body static by grasping the MFP chassis before touching an ESD-sensitive component. Ground the MFP chassis before servicing the MFP.

NOTE: If possible, print a menu map and a configuration page. Use the information on the these pages to restore any user-set MFP configuration options after you install the replacement DIMMs.

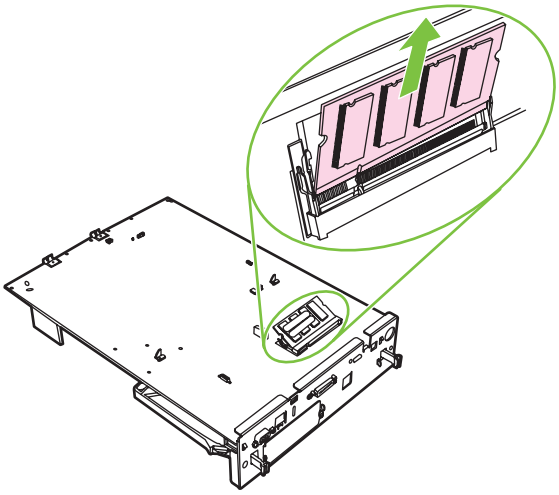
Rear DIMM

One DIMM is located on the rear of the formatter board. This 256 MB DIMM is utilized for copy functions.

1. Remove the formatter board from the MFP. See Formatter board on page 297.
2. Spread the latches on either side of the DIMM slot apart.



3. Lift the DDR DIMM at an angle, and pull it out.

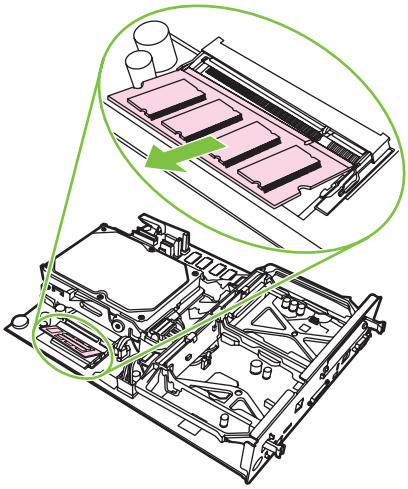


4. Holding the new DIMM by the edges, align the notch on the DIMM with the bar in the DIMM slot at an angle and firmly press the DIMM into the slot until it is fully seated. When installed correctly, the metal contacts are not visible.

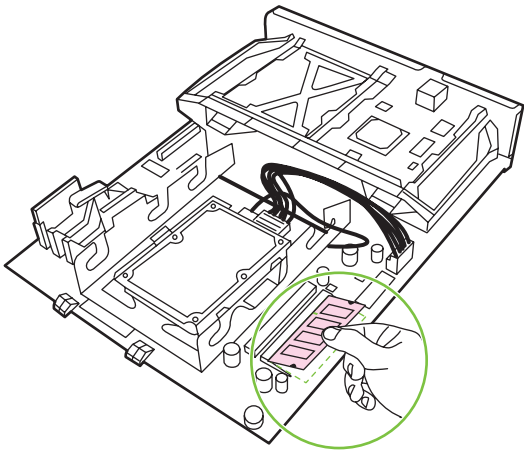
Front Exposed DIMM

One front-side DIMM is exposed near the hard-drive cage. This DIMM is utilized for print functions.

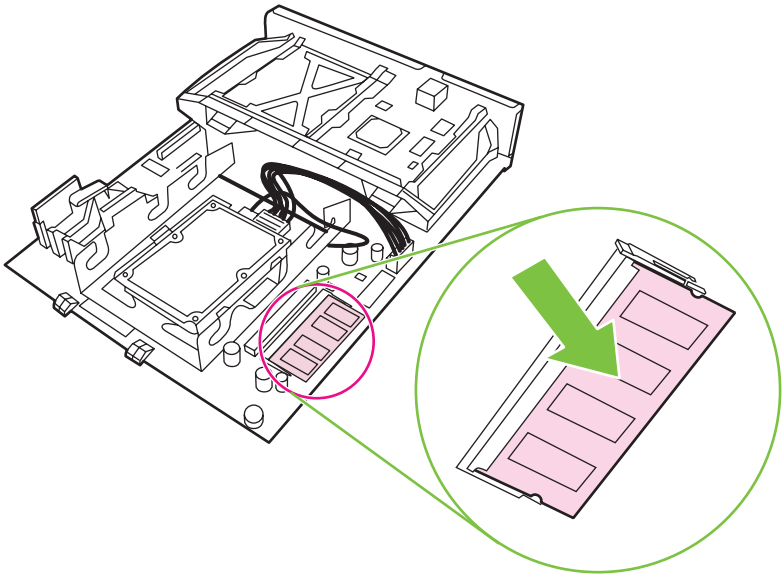
1. Remove the formatter board from the MFP. See Formatter board on page 297.
2. Spread the latches on either side of the DIMM slot apart. Lift the DIMM up at an angle, and pull it out.



3. Holding the new DIMM by the edges, align the notch on the DIMM with the bar in the DIMM slot at an angle and firmly press the DIMM into the slot until it is fully seated. When installed correctly, the metal contacts are not visible.



4. Push down on the DIMM until both latches engage the DIMM.



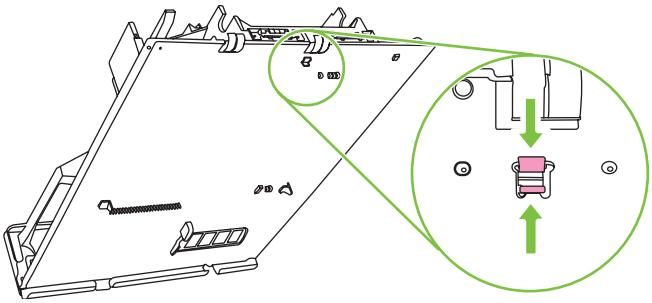
NOTE: If you have difficulty inserting the DIMM, make sure the notch on the bottom of the DIMM is aligned with the bar in the slot. If the DIMM still does not go in, make sure you are using the correct type of DIMM.

Front Covered DIMM

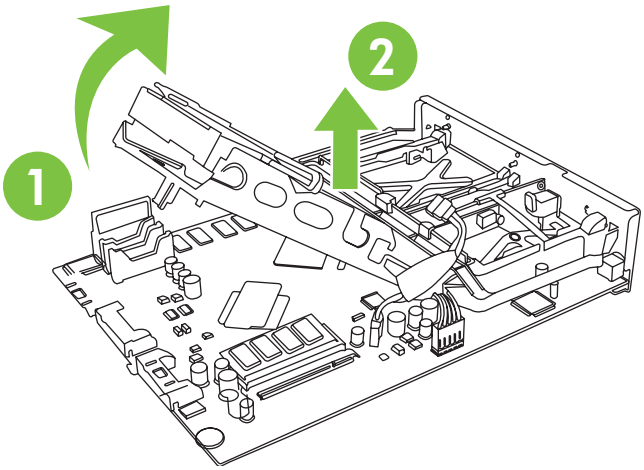
One front-side DIMM is located underneath the hard-drive cage. This DIMM is utilized for print functions.

1. Remove the formatter board from the MFP. See Formatter board on page 297.

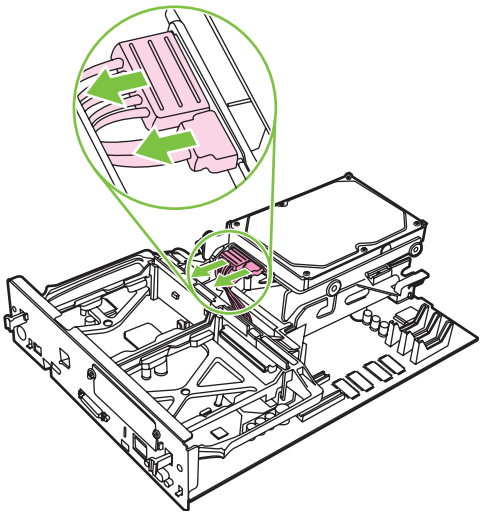
2. Squeeze the small black tabs on the rear of the formatter board to disengage the hard-drive cage.



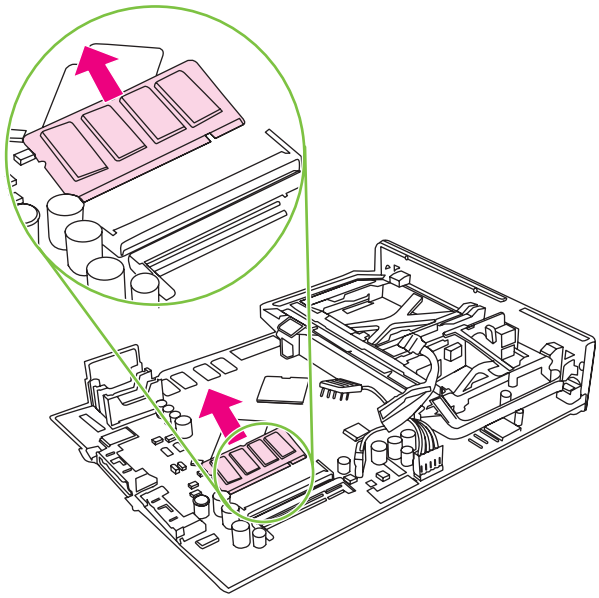
3. Swing the hard drive cage up 90 degrees and then lift the hard-drive cage from the formatter. Note how the curved pieces at the bottom the hard-drive cage engage the anchor slots on the accessory-card cage.



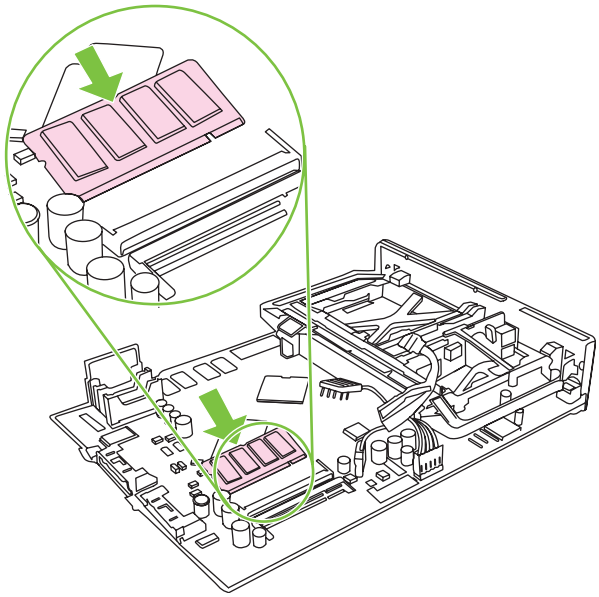
4. Unplug the two cables from the bottom of the hard drive and set the hard-drive cage aside.



5. Spread the latches on either side of the DIMM slot apart. Lift the DIMM up at an angle, and pull it out.



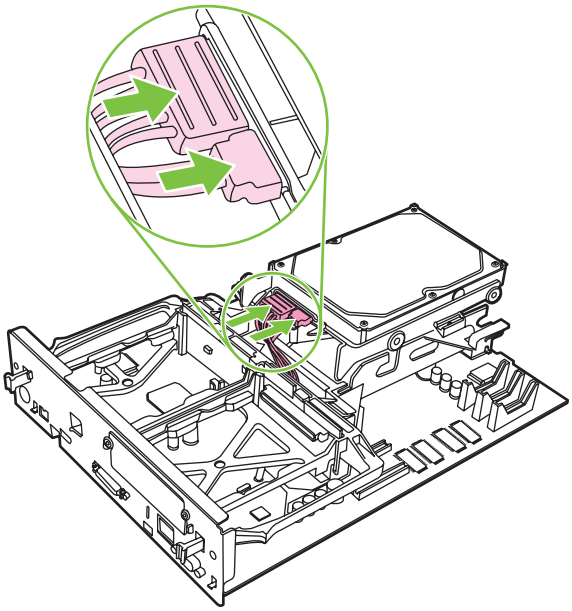
6. Holding the new DIMM by the edges, align the notch on the DIMM with the bar in the DIMM slot at an angle and firmly press the DIMM into the slot until it is fully seated. When installed correctly, the metal contacts are not visible.



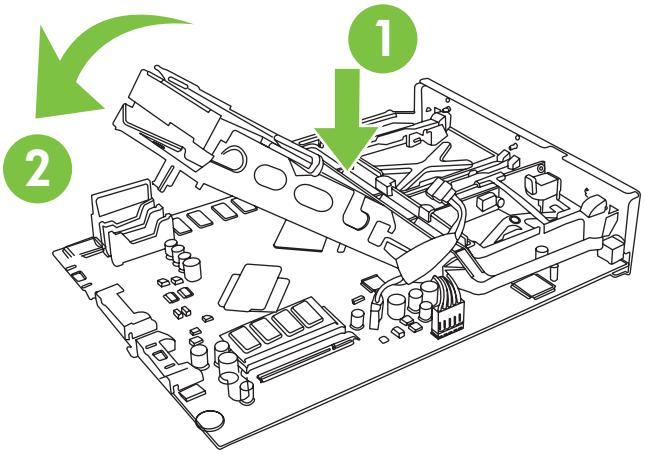
7. Push down on the DIMM until both latches engage the DIMM.

NOTE: If you have difficulty inserting the DIMM, make sure the notch on the bottom of the DIMM is aligned with the bar in the slot. If the DIMM still does not go in, make sure you are using the correct type of DIMM.

8. Reconnect both cables to the hard drive.



9. Insert the curved pieces at the bottom the hard-drive cage into the anchor slots on the accessory-card cage, and then swing the hard-drive cage down onto the formatter board until the hard-drive-cage anchor pokes through the hole in the formatter and locks.



Flash memory card (firmware)

WARNING! The MFP contains components that are sensitive to electrostatic discharge (ESD). Always perform service work at an ESD-protected workstation. If an ESD-protected workstation is not available, discharge body static by grasping the MFP chassis before touching an ESD-sensitive component. Ground the MFP chassis before servicing the MFP.

1. Remove the formatter board from the MFP. See Formatter board on page 297.

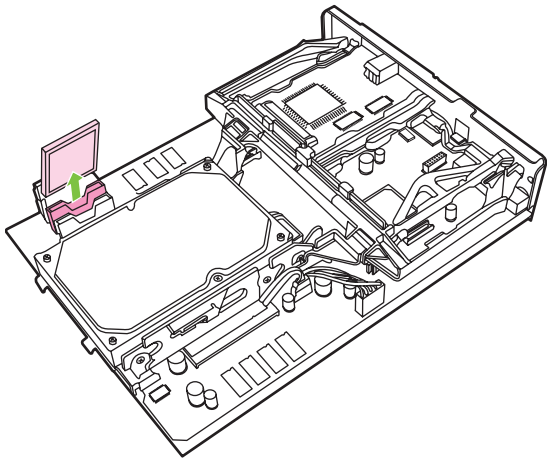


Figure 5-64 Remove the flash memory card (1 of 2)

2. Grasp the flash memory card, and then pull it out of the formatter cage.

NOTE: When reinstalling the firmware flash memory card, it *must* be installed in the slot marked *FIRMWARE SLOT*.

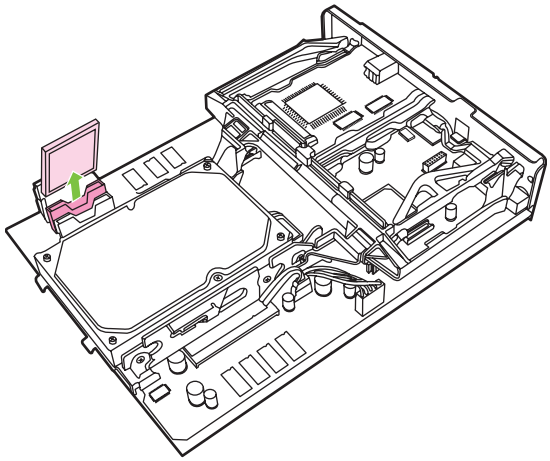


Figure 5-65 Remove the flash memory card (2 of 2)

Fax accessory

WARNING! The MFP contains components that are sensitive to electrostatic discharge (ESD). Always perform service work at an ESD-protected workstation. If an ESD-protected workstation is not available, discharge body static by grasping the MFP chassis before touching an ESD-sensitive component. Ground the MFP chassis before servicing the MFP.

Use this procedure to install or replace the analog fax accessory.

1. Turn off the MFP, and disconnect all cables.
2. Remove the formatter board from the MFP. See Formatter board on page 297.
3. If a fax accessory is in place, unhook the restraining strap and set it aside.

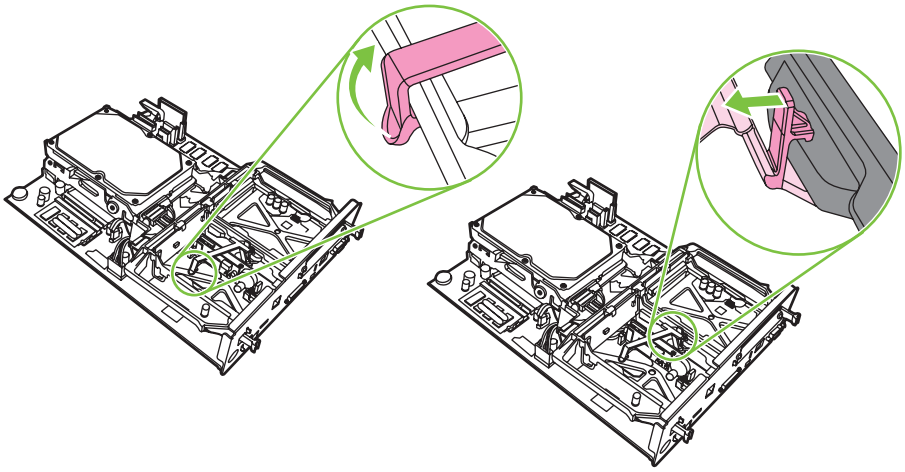


Figure 5-66 Remove the fax accessory (1 of 5)

4. Grasp the card and pull upward to remove it from the formatter board.

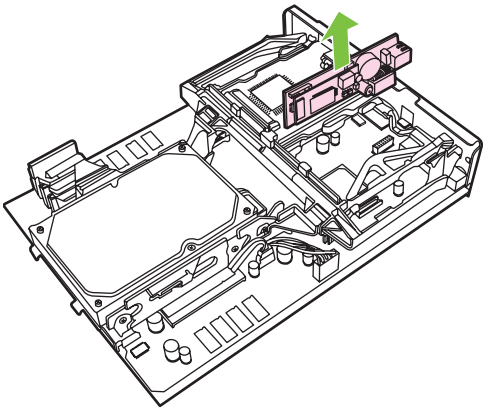


Figure 5-67 Remove the fax accessory (2 of 5)

5. Remove the fax accessory from its antistatic pouch.

6. Push the fax accessory into place, and make sure that the fax accessory is securely connected to the formatter.

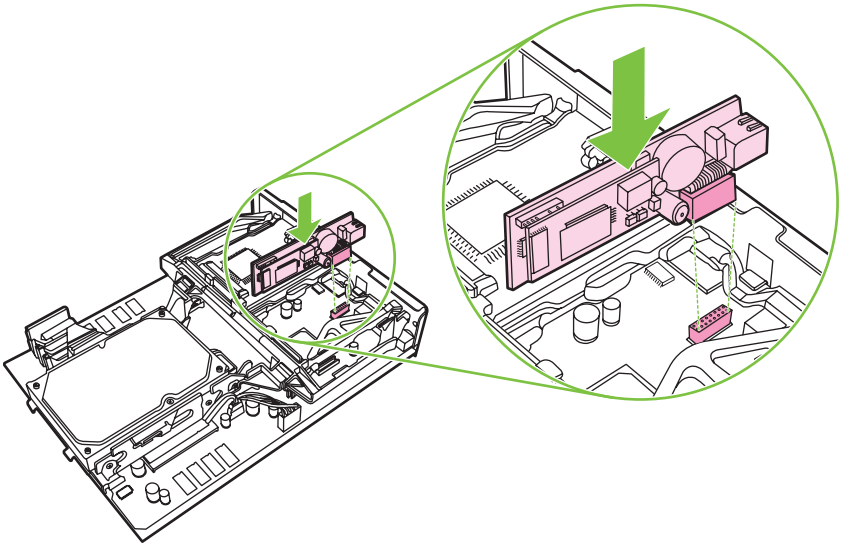


Figure 5-68 Remove the fax accessory (3 of 5)

7. Reinstall the fax restraining strap.

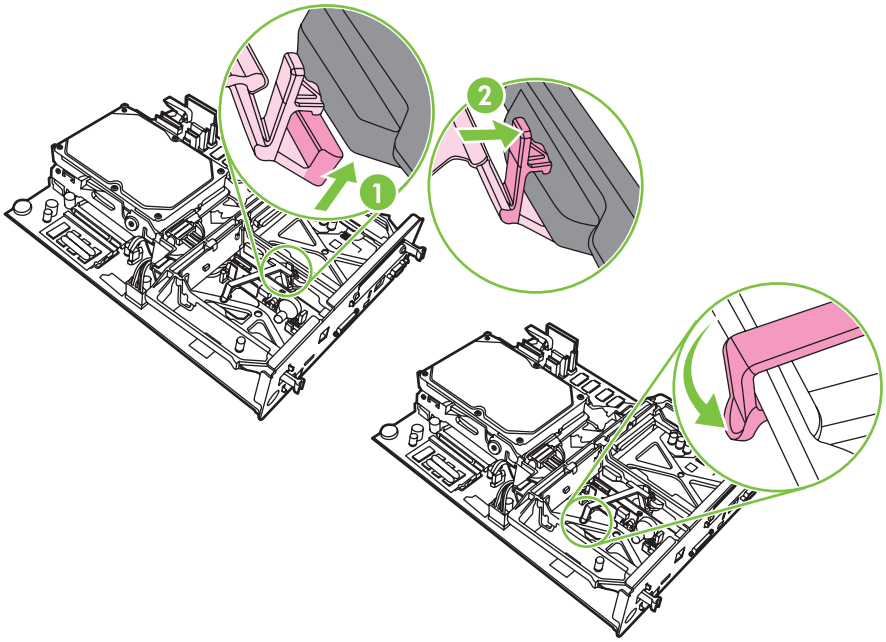


Figure 5-69 Remove the fax accessory (4 of 5)

8. Align the formatter board in the tracks at the top and bottom, and slide the board back into the MFP.

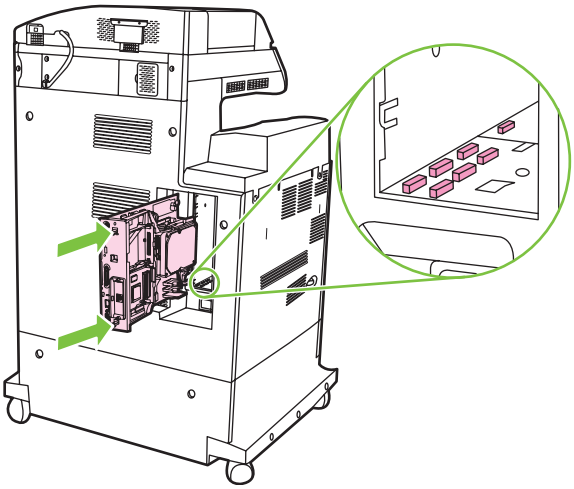


Figure 5-70 Remove the fax accessory (5 of 5)

Covers, doors, and external panels

The procedures in this section describe the removal and replacement of the following components:

- Face-down tray assembly
- Delivery cover assembly
- Rear cover assembly
- Left cover assembly
- Front cover assembly
- Tray 1
- Right lower cover assembly
- Delivery upper cover assembly
- Right front inner lower cover assembly
- Left rear inner cover assembly
- Right front inner upper cover assembly
- Right rear inner cover assembly

The covers, doors, and panels are located as shown in the figures below.



Figure 5-71 Cover, door, and panel locations (1 of 2)

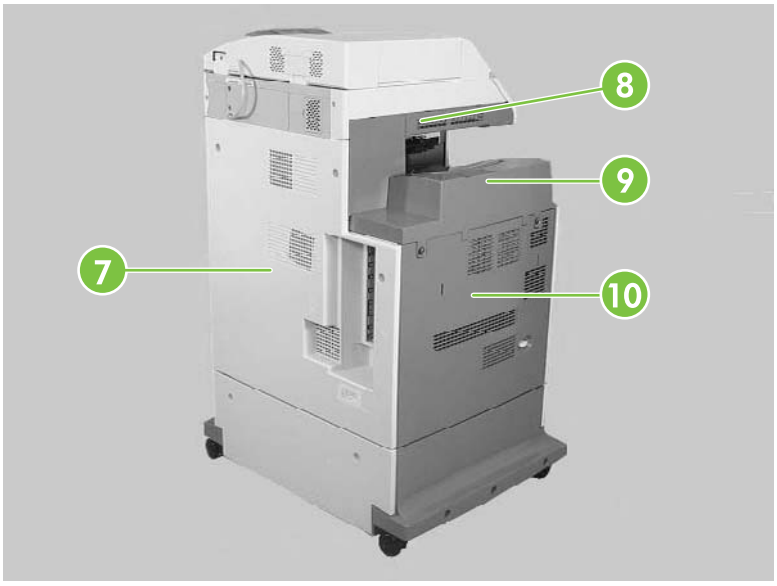


Figure 5-72 Cover, door, and panel locations (2 of 2)

1	Front cover
2	Upper right cover
3	Right upper door
4	Right lower cover
5	Multipurpose tray
6	Multipurpose pickup unit
7	Rear cover
8	Delivery upper cover
9	Face-down tray assembly
10	Left cover

Face-down tray assembly

- Loosen the two captive screws (callout 1) and remove the face-down tray (callout 2).

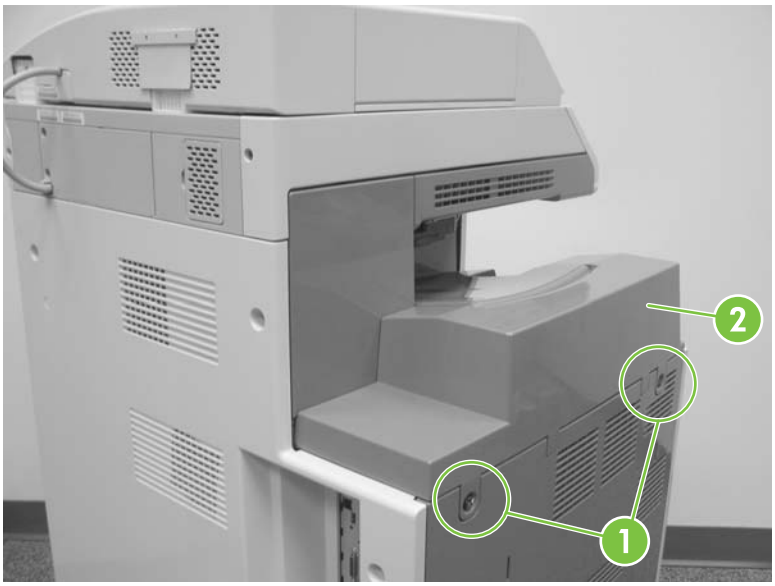


Figure 5-73 Remove the face-down tray assembly

Delivery cover assembly

1. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
2. Pinch the projection (callout 1) and slide the delivery cover assembly (callout 2) forward.

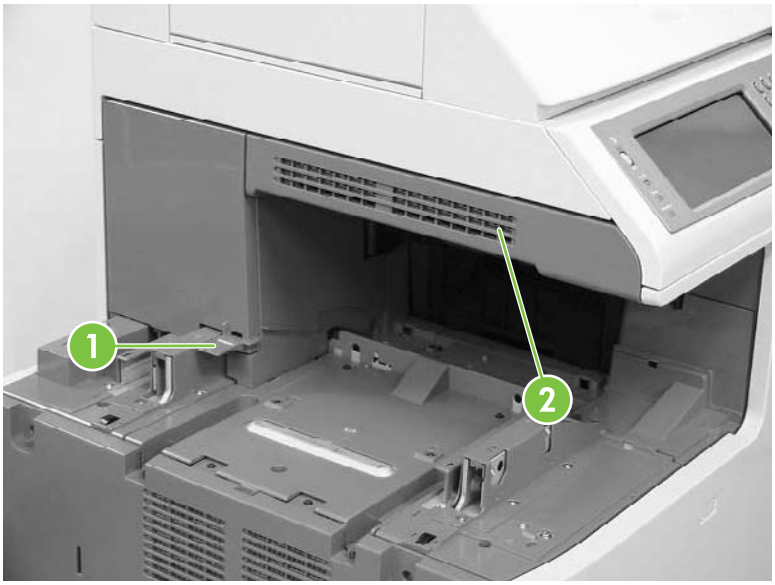


Figure 5-74 Remove the delivery cover assembly

Rear cover assembly

1. Remove the three screws (callout 1).

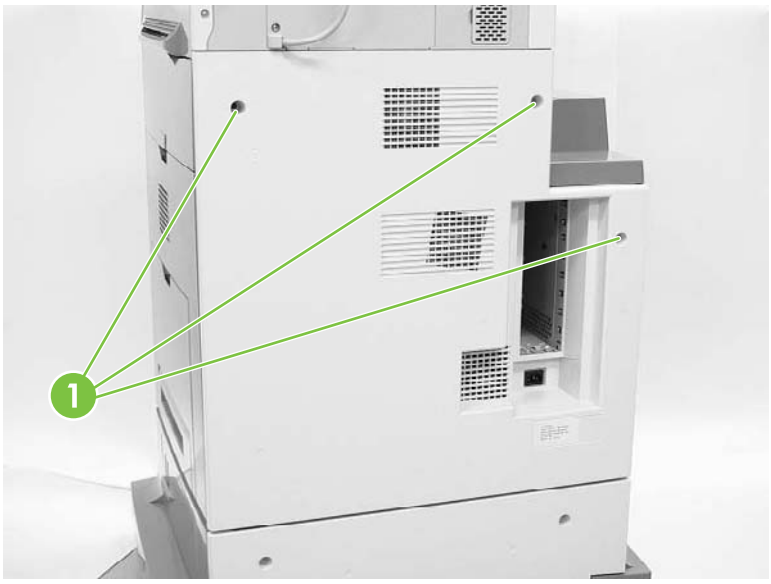


Figure 5-75 Remove the rear cover assembly (1 of 4)

2. Unhook the three claws (callout 2).

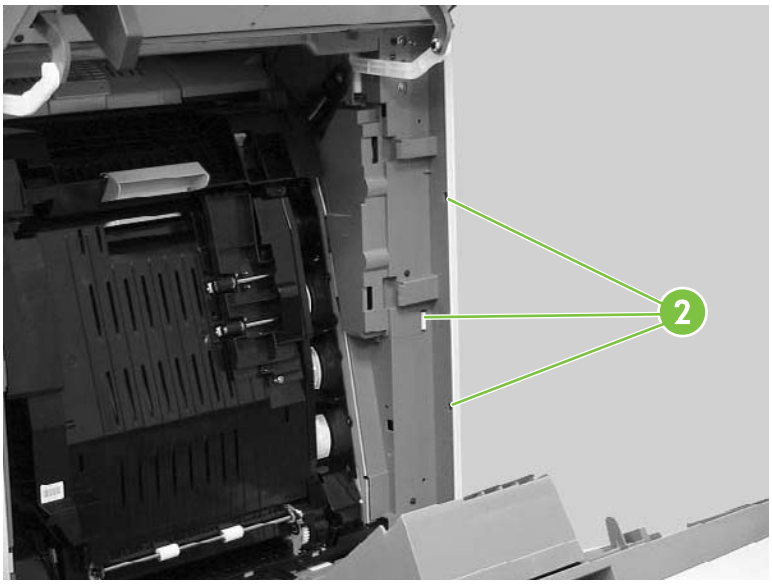


Figure 5-76 Remove the rear cover assembly (2 of 4)

3. Unhook the claws (callout 3), and then remove the rear cover assembly (callout 4).

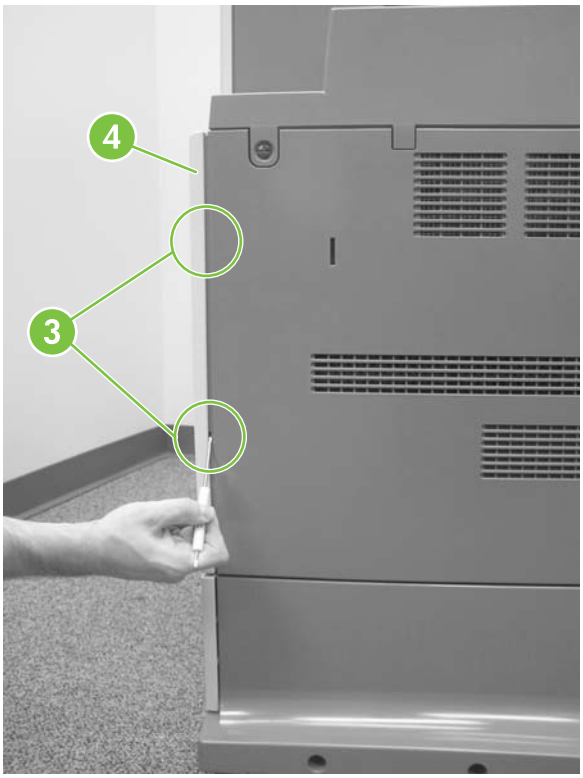


Figure 5-77 Remove the rear cover assembly (3 of 4)

Orientation view of rear of MFP with rear cover removed and side covers open.

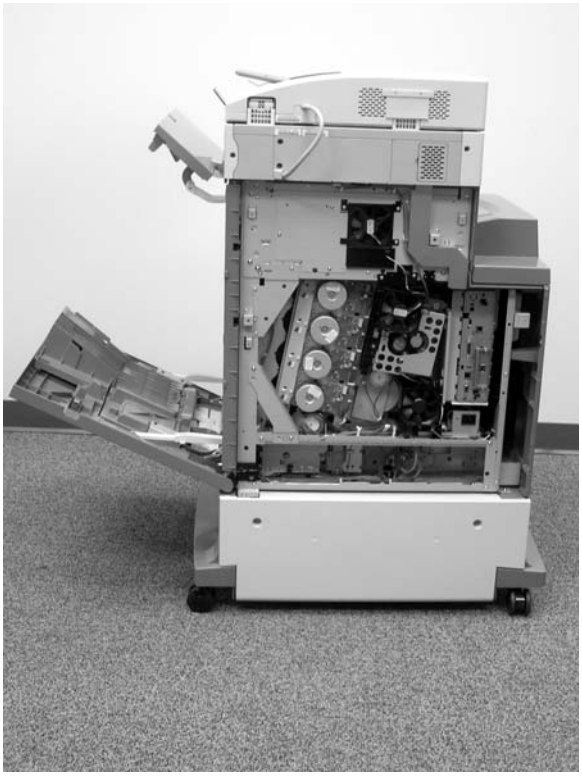


Figure 5-78 Remove the rear cover assembly (4 of 4)

Left cover assembly

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the two screws (callout 1).
4. Unhook the claw (callout 2), and remove the left cover assembly (callout 3).

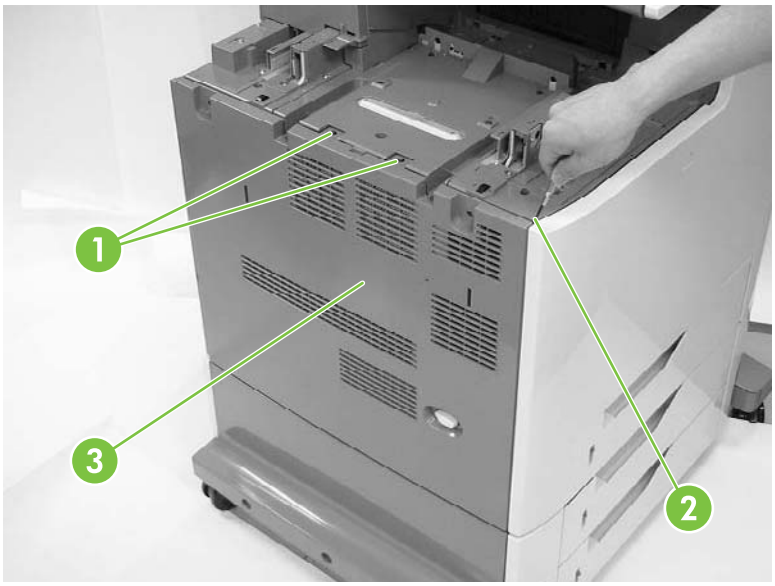


Figure 5-79 Remove the left cover

Front cover assembly

1. Remove the following assemblies.
   - Rear cover assembly. See Rear cover assembly on page 313.
   - Face-down tray assembly. See Face-down tray assembly on page 312.
   - Left cover assembly. See Left cover assembly on page 315.
   - Control panel. See Control panel on page 267.
2. Open the right upper and lower covers.
3. Remove the three screws (callout 1).

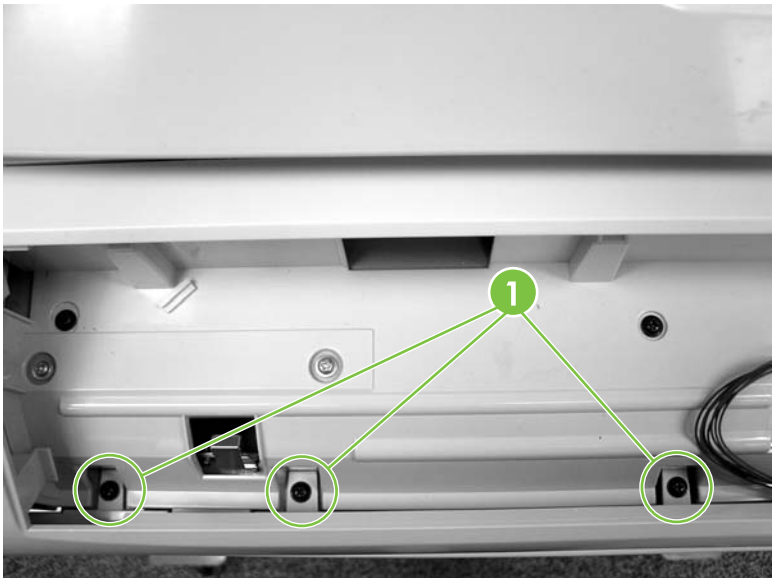


Figure 5-80 Remove the front cover (1 of 5)

4. Remove one screw (callout 2) and unhook the two claws (callout 3) from the right side of the MFP.

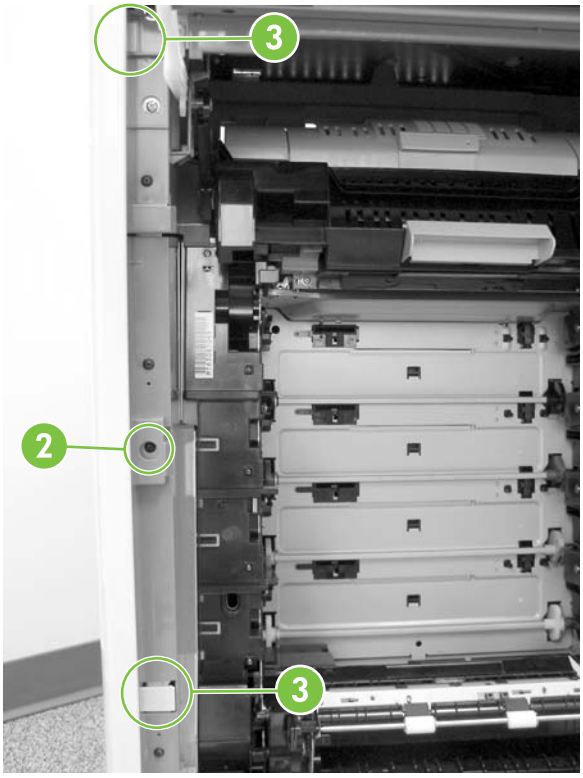


Figure 5-81 Remove the front cover (2 of 5)

5. Unhook the two claws (callout 4) on the left side of the MFP.

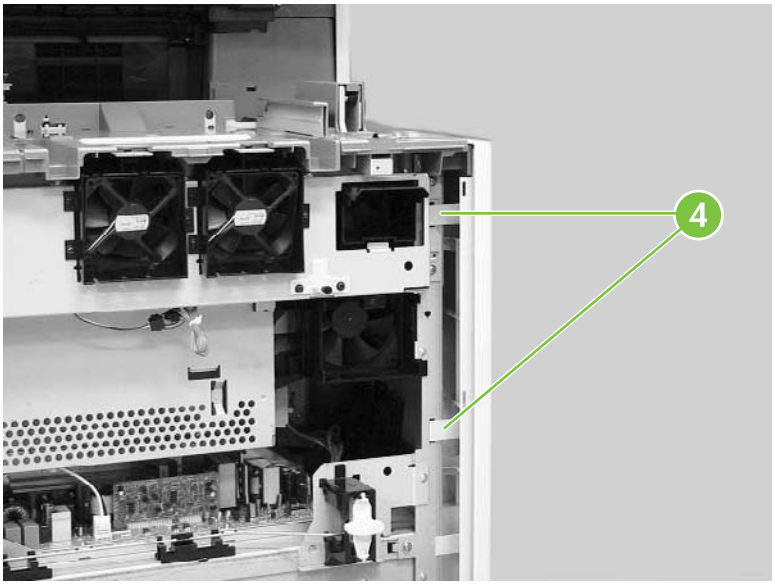


Figure 5-82 Remove the front cover (3 of 5)

6. Unhook the claw by inserting the blade of a small screwdriver into the hole (callout 5) and pushing to the right. Unhook the second claw (callout 6) and remove the cover (callout 7).

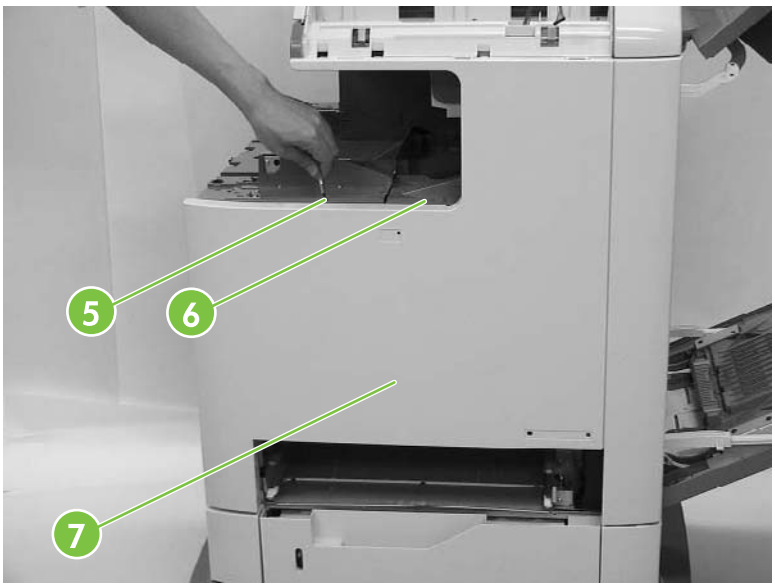


Figure 5-83 Remove the front cover (4 of 5)

Detail of claw (callout 5).

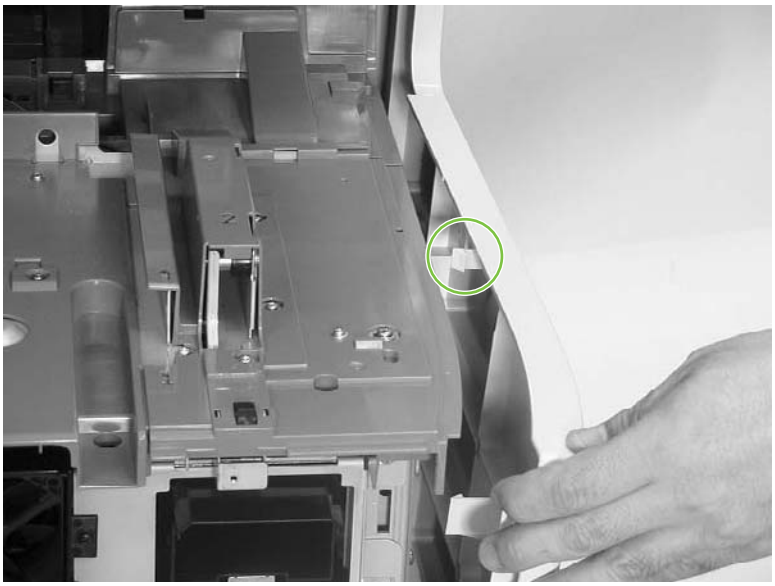


Figure 5-84 Remove the front cover (5 of 5)

Tray 1

1. Remove the MP tray pickup assembly. See MP tray pickup assembly on page 278.
2. Push the slip rails (callout 1) back into the MFP.

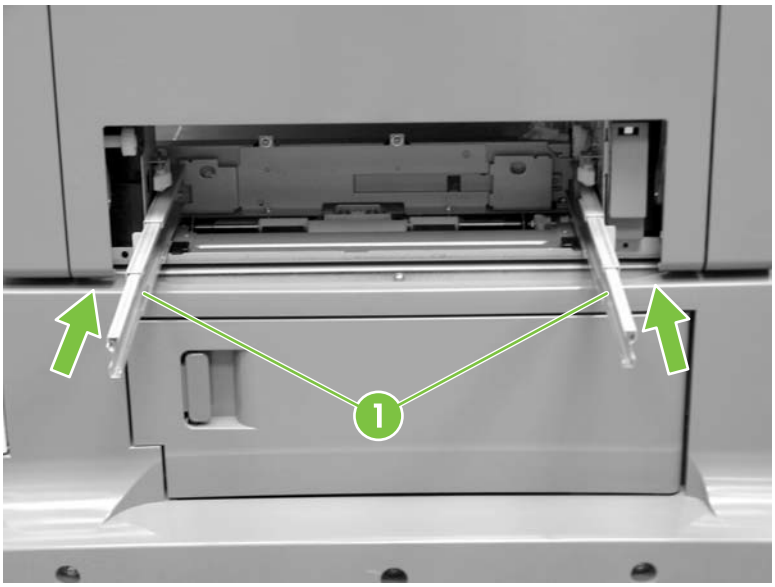


Figure 5-85 Remove tray 1 (1 of 7)

3. Open tray 1.
4. Stretch the left and right sides of the tray guide (callout 2) outward to unhook the two bosses (callout 3).

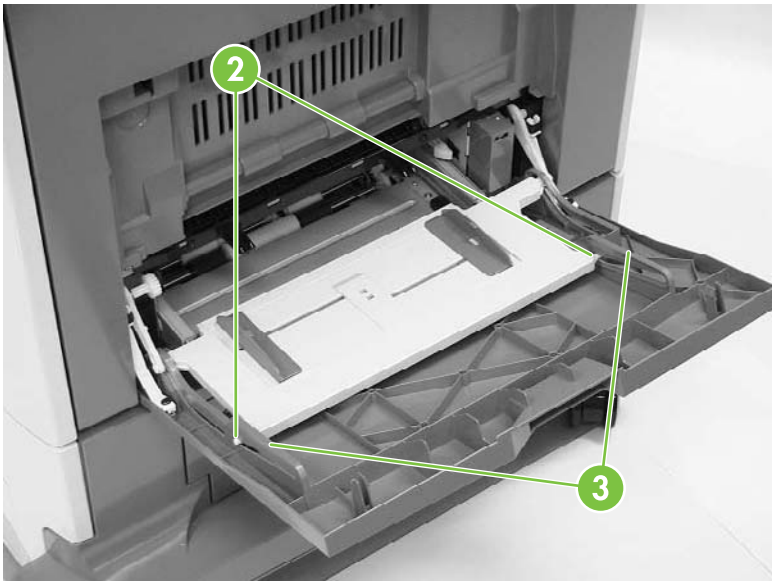


Figure 5-86 Remove tray 1 (2 of 7)

5. Lift the MP tray (callout 4) upward slightly and slide the tray back into the MFP while holding the MP tray guide (callout 5).

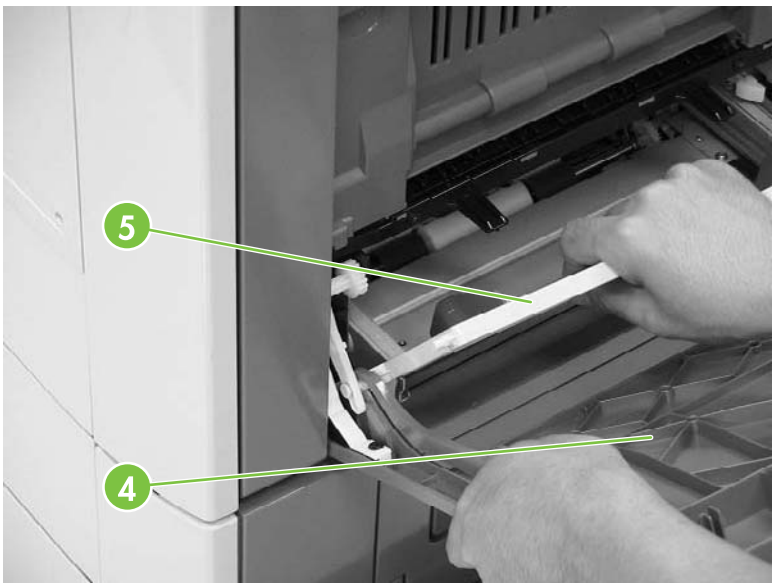


Figure 5-87 Remove tray 1 (3 of 7)

6. Warp the link arm (callout 6) outward to unhook the left boss (callout 7).

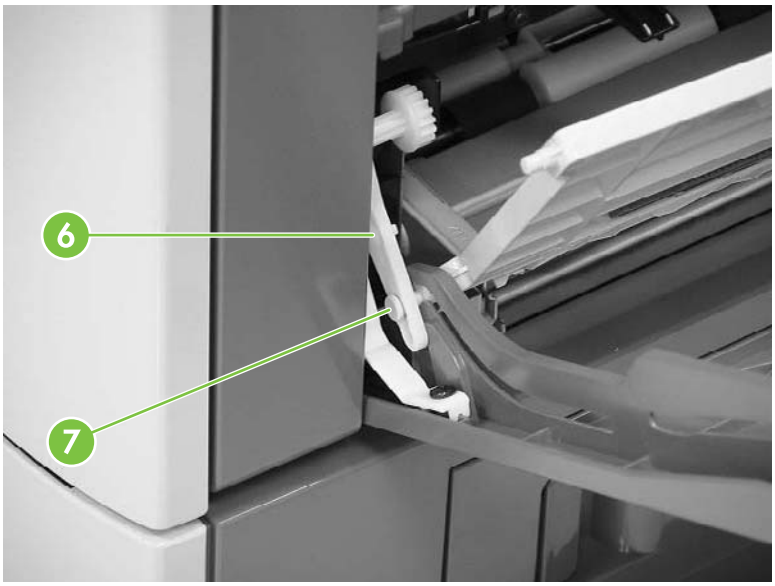


Figure 5-88 Remove tray 1 (4 of 7)

7. Lift the MP tray (callout 8) upward slightly and slide the tray back into the MFP while holding the MP tray guide (callout 9).

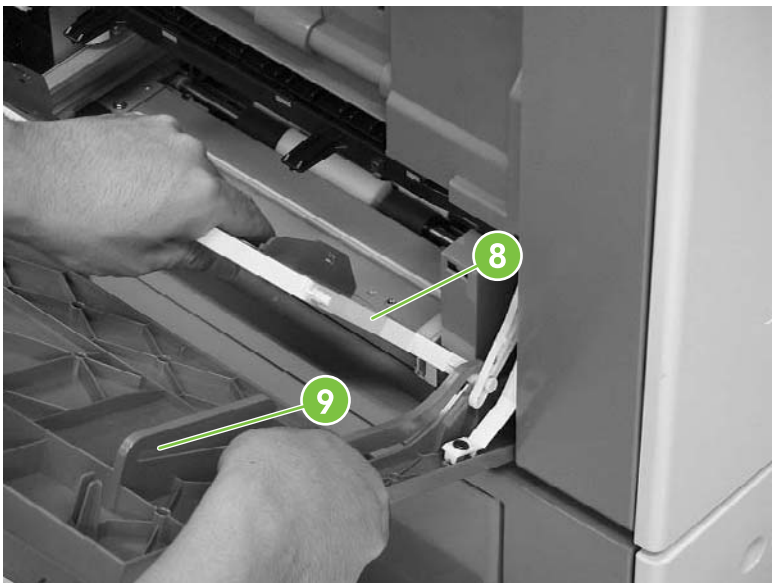


Figure 5-89 Remove tray 1 (5 of 7)

8. Warp the link arm (callout 10) outward to unhook the right boss (callout 11).

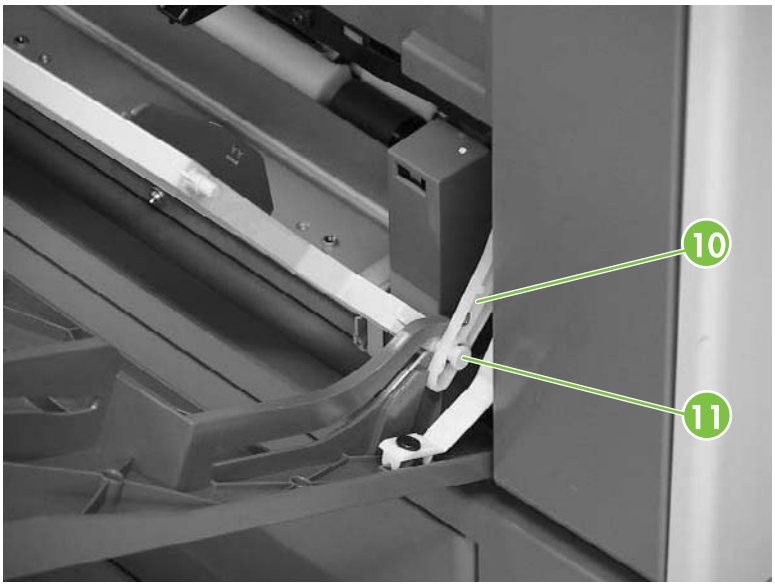


Figure 5-90 Remove tray 1 (6 of 7)

9. Pinch and release the two tabs (callout 12) on the end of each retaining strap to release the strap ends.

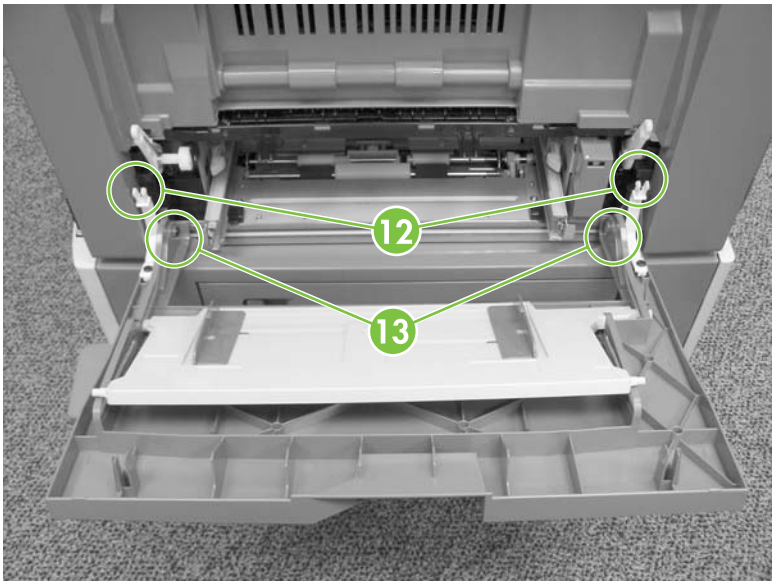


Figure 5-91 Remove tray 1 (7 of 7)

10. Lift up the tray slightly and push the hinges inward to unhook them from the bosses (callout 13).

Right lower cover assembly

1. Remove tray 1. See Tray 1 on page 319.
2. Open the lower right cover (callout 1). Unhook the three claws (callout 2), and then remove the cable cover (callout 3).

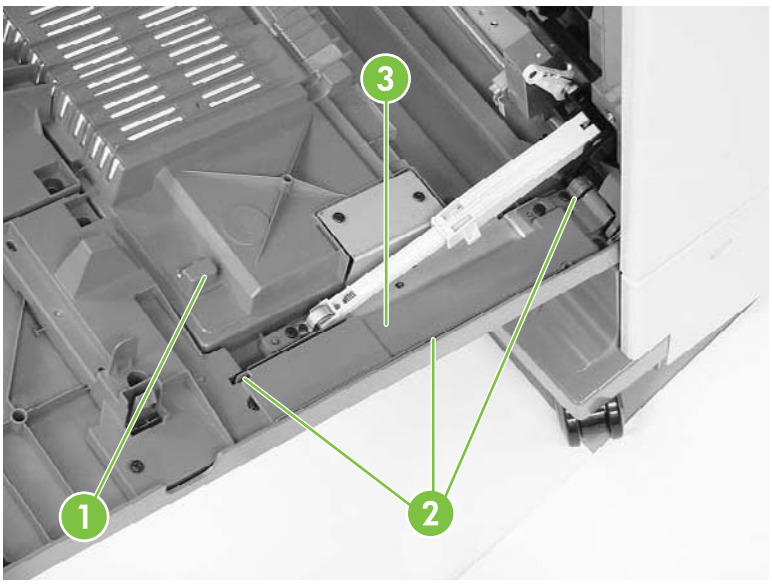


Figure 5-92 Remove the right lower cover assembly (1 of 5)

3. Disconnect the connector (callout 4) and remove the cable (callout 5) from the cable guide (callout 6).

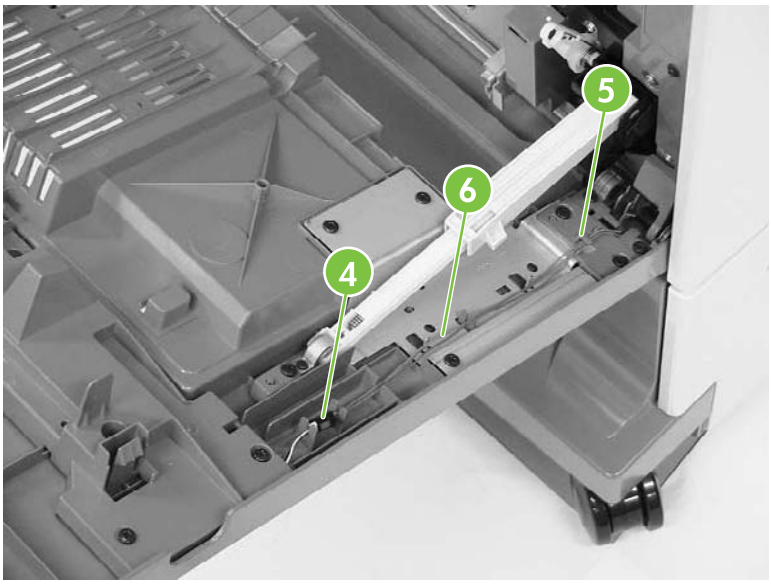


Figure 5-93 Remove the right lower cover assembly (2 of 5)

4. Open the shaft holder (callout 7) on the right side and rotate it counterclockwise to release the arm (callout 8).

NOTE: The arm is spring-loaded.

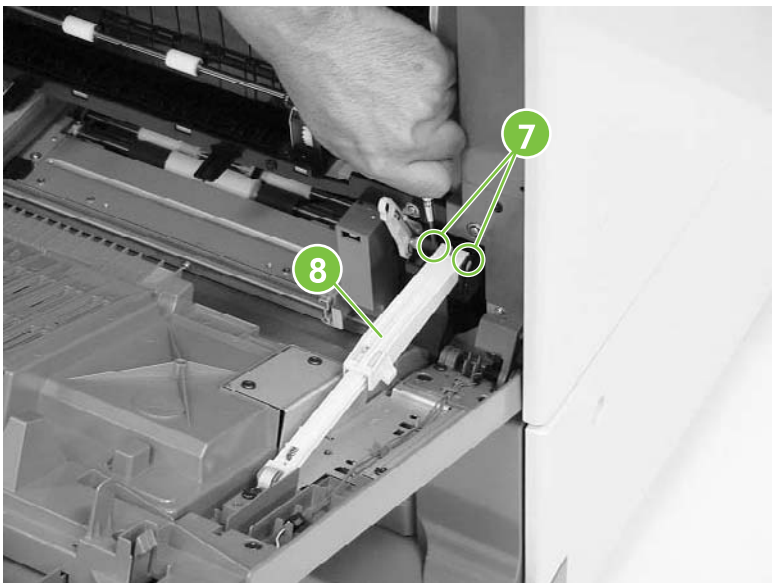


Figure 5-94 Remove the right lower cover assembly (3 of 5)

5. Open the shaft holder (callout 9) on the left side and rotate it clockwise to remove the arm (callout 10).

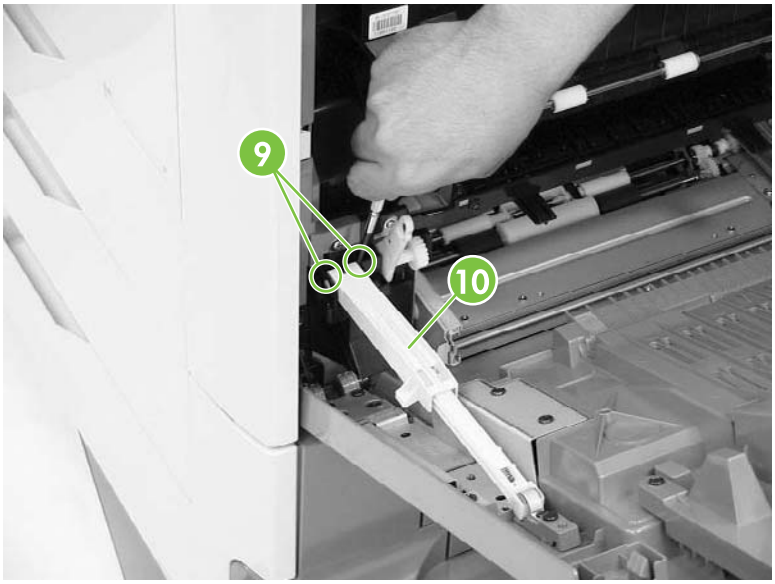


Figure 5-95 Remove the right lower cover assembly (4 of 5)

6. Pull the right lower cover (callout 11) out of the MFP toward you.

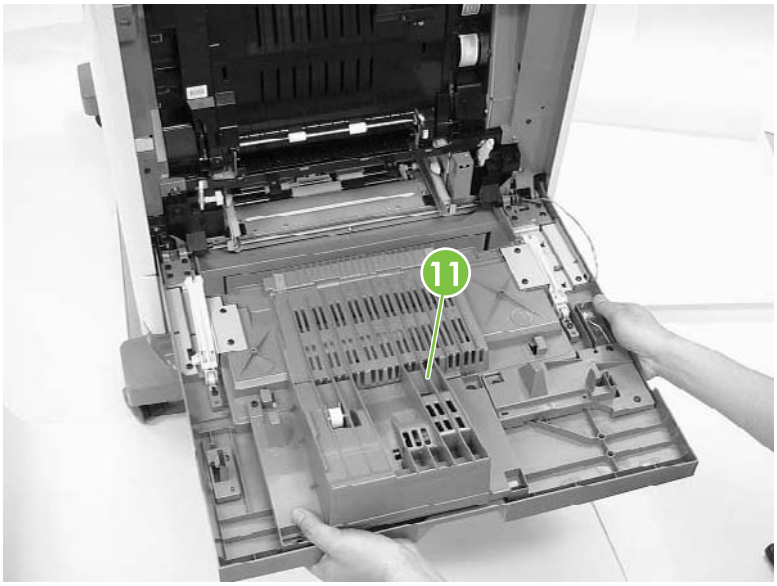


Figure 5-96 Remove the right lower cover assembly (5 of 5)

Delivery upper cover assembly

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the left cover. See Left cover assembly on page 315.
3. Remove the front cover. See Front cover assembly on page 316.
4. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
5. Remove the delivery cover assembly. See Delivery cover assembly on page 312.
6. Remove the two screws (callout 1) and the delivery upper cover (callout 2).

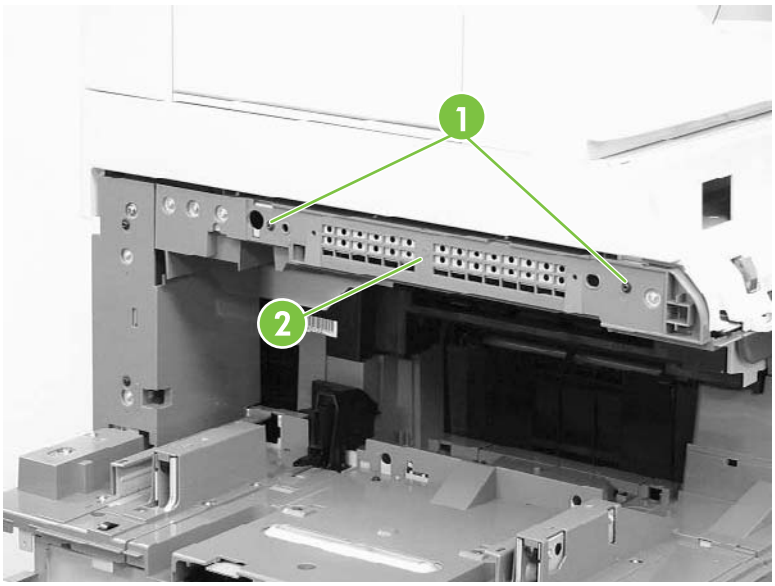


Figure 5-97 Remove the delivery upper cover assembly

Right front inner lower cover assembly

1. Remove the front cover. See Front cover assembly on page 316.
2. Remove the two black screws (callout 1) and the right front inner lower cover (callout 2).

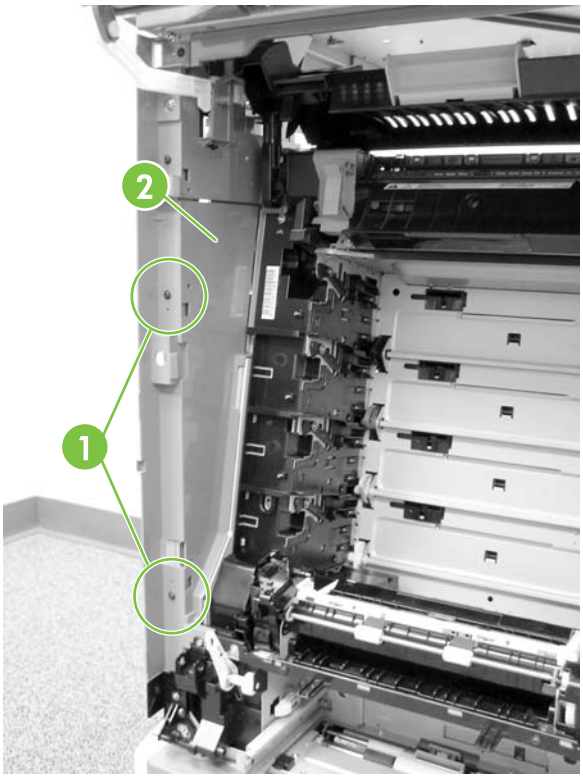


Figure 5-98 Remove the right front lower inner cover

Left rear inner cover assembly

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the left cover. See Left cover assembly on page 315.
3. Remove the front cover. See Front cover assembly on page 316.
4. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
5. Remove the delivery cover assembly. See Delivery cover assembly on page 312.

6. Remove the two black screws (callout 1) and the left rear inner cover (callout 2).

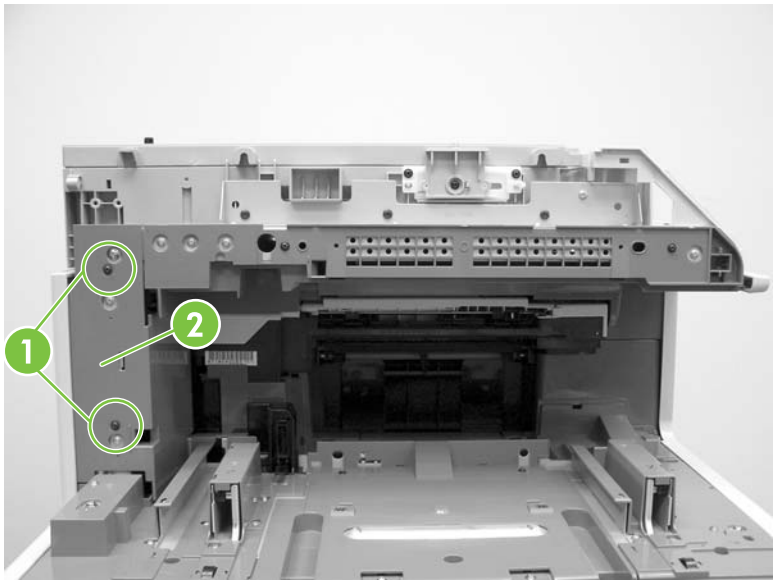


Figure 5-99 Remove the left rear inner cover

NOTE: Unclip the tab at the front below the control panel.

Right front inner upper cover assembly

1. Remove the front cover assembly. See Front cover assembly on page 316.
2. Remove the right front inner lower cover assembly. See Right front inner lower cover assembly on page 326.
3. Open the right upper door.

4. Unhook the claw (callout 1) and release the door link (callout 2).

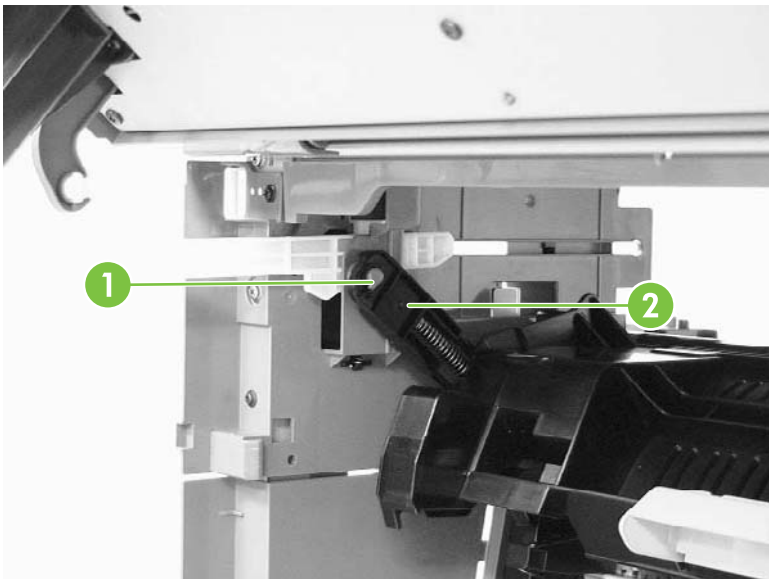


Figure 5-100 Remove the right front inner cover assembly (1 of 3)

5. Unhook the arm and push it back toward the MFP.

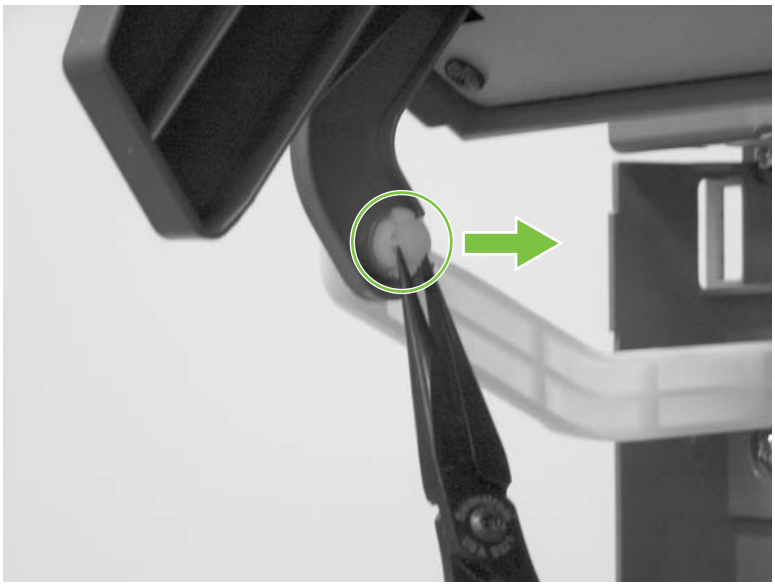


Figure 5-101 Remove the right front inner cover assembly (2 of 3)

6. Remove the two screws (callout 3). Then lift up the right front inner upper cover (callout 4) and shift it gently to remove it.

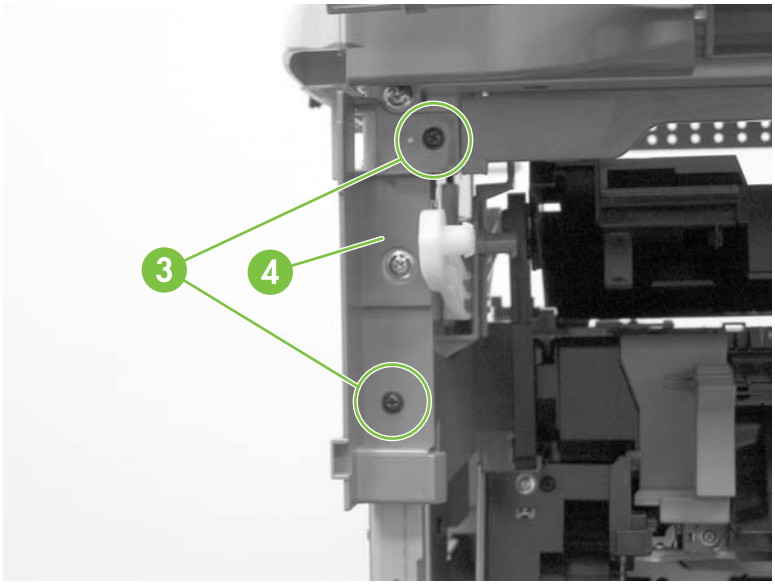


Figure 5-102 Remove the right front inner cover assembly (3 of 3)

Right rear inner cover assembly

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Open the right upper door.
3. Remove the right lower cover assembly. See Right lower cover assembly on page 322.
4. Unhook the claw (callout 1) and release the door link (callout 2).

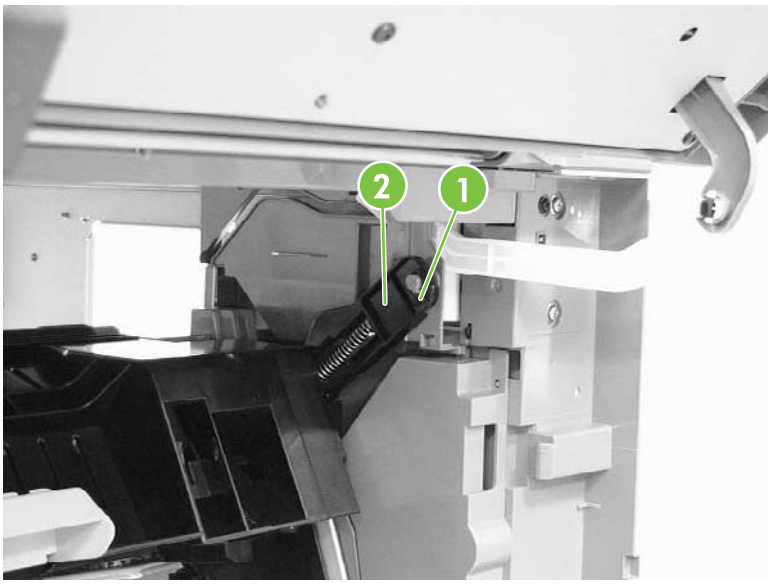


Figure 5-103 Remove the right rear inner cover assembly (1 of 4)

5. Push the link arm (callout 3) backwards by pressing the tabs (callout 4).

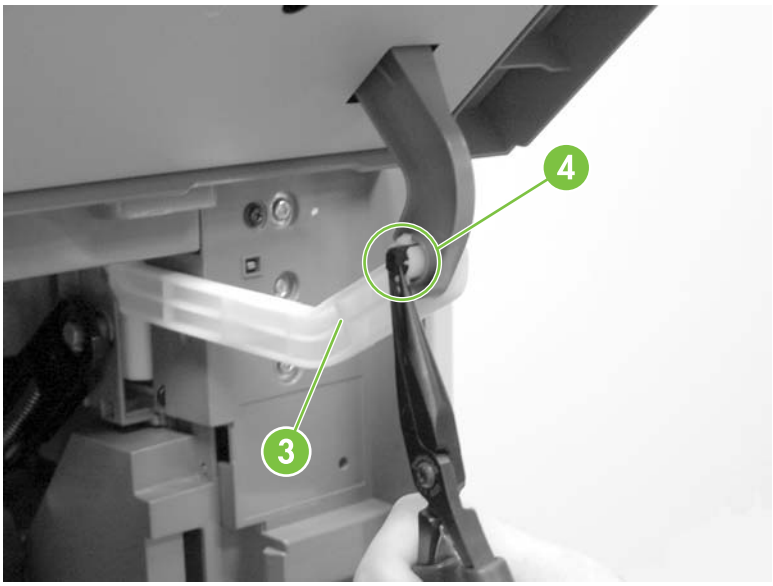


Figure 5-104 Remove the right rear inner cover assembly (2 of 4)

6. Remove the three screws (callout 5).

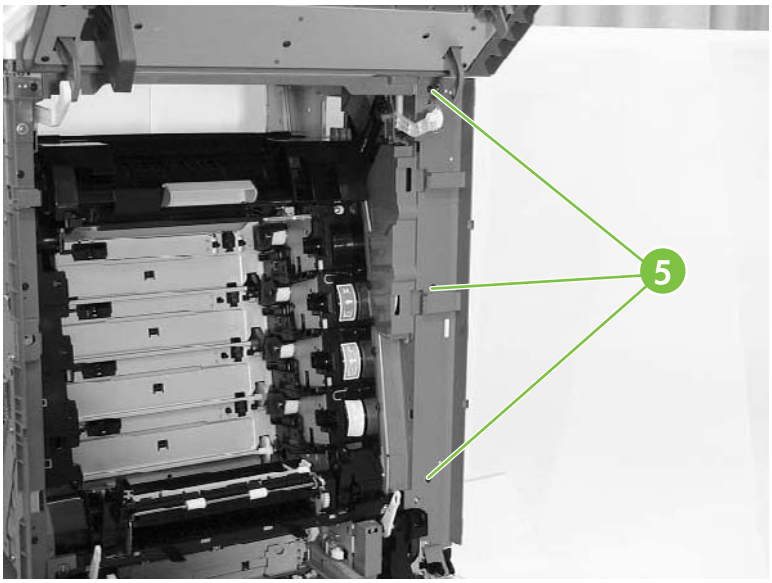


Figure 5-105 Remove the right rear inner cover assembly (3 of 4)

7. Push the right rear inner cover assembly from the back (callout 6) and then remove the right rear inner cover (callout 7).

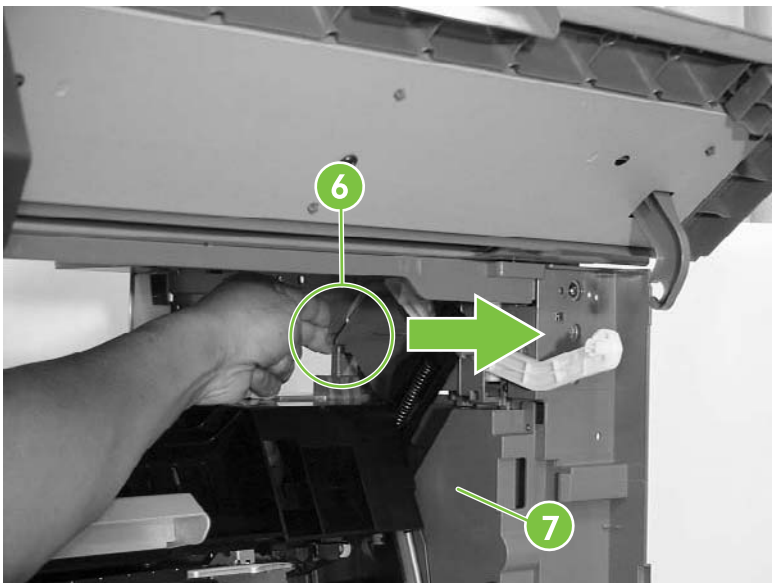


Figure 5-106 Remove the right rear inner cover assembly (4 of 4)

Main assembly (internal assemblies)

The figures below identify the names and locations of the MFP main assemblies.

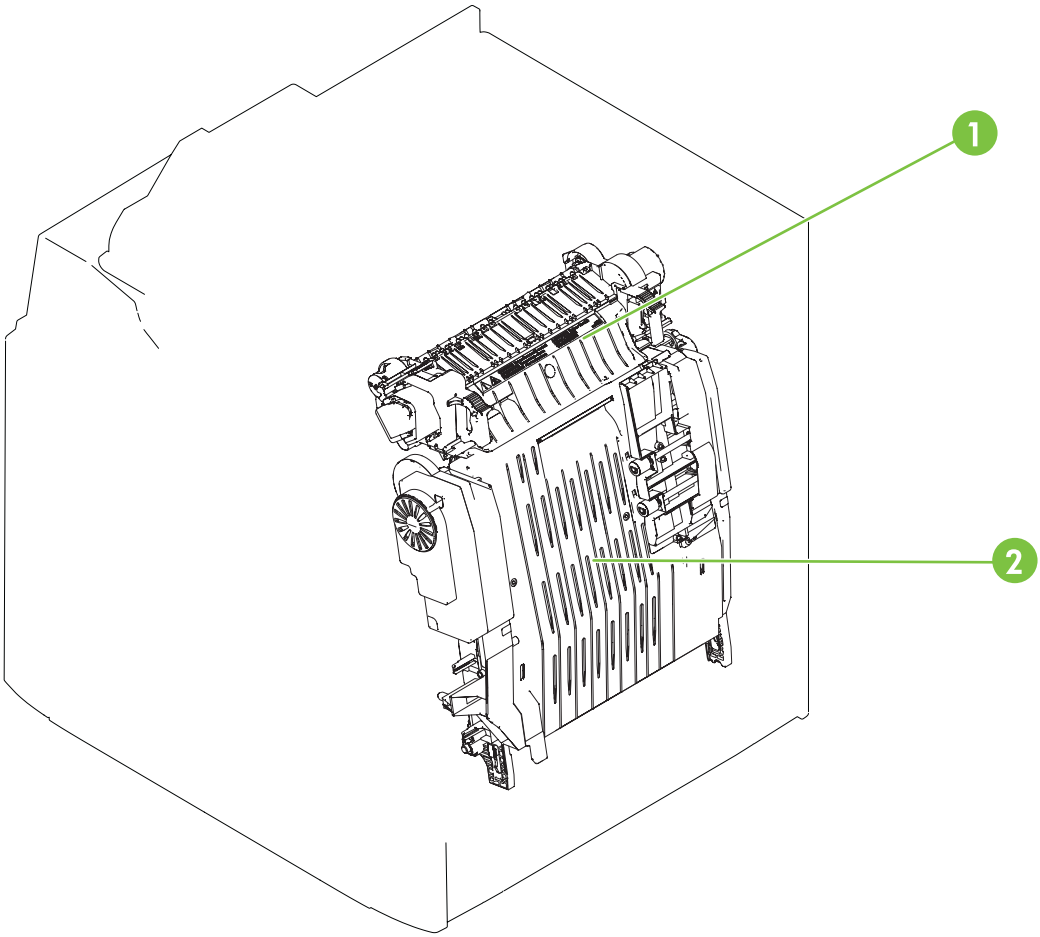


Figure 5-107 Locations of main assemblies (1 of 3)

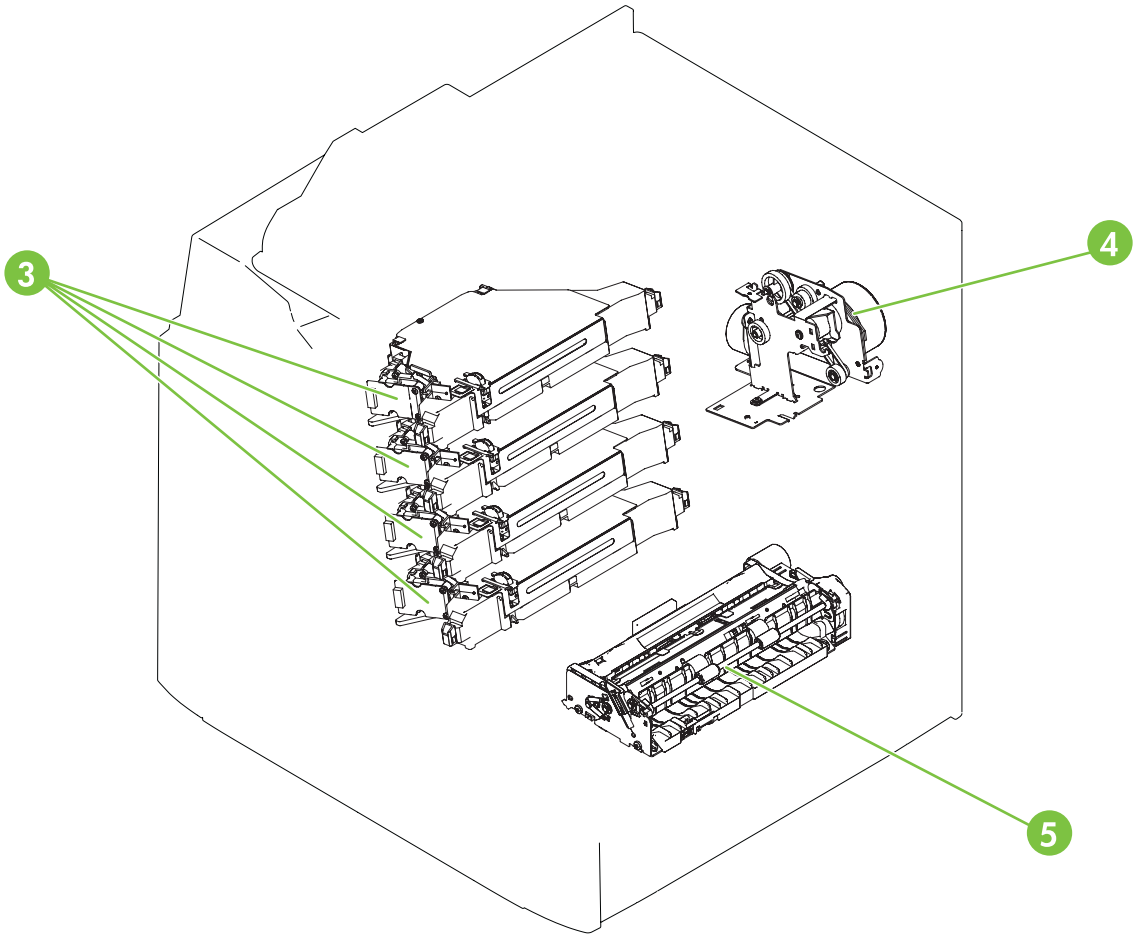


Figure 5-108 Locations of main assemblies (2 of 3)

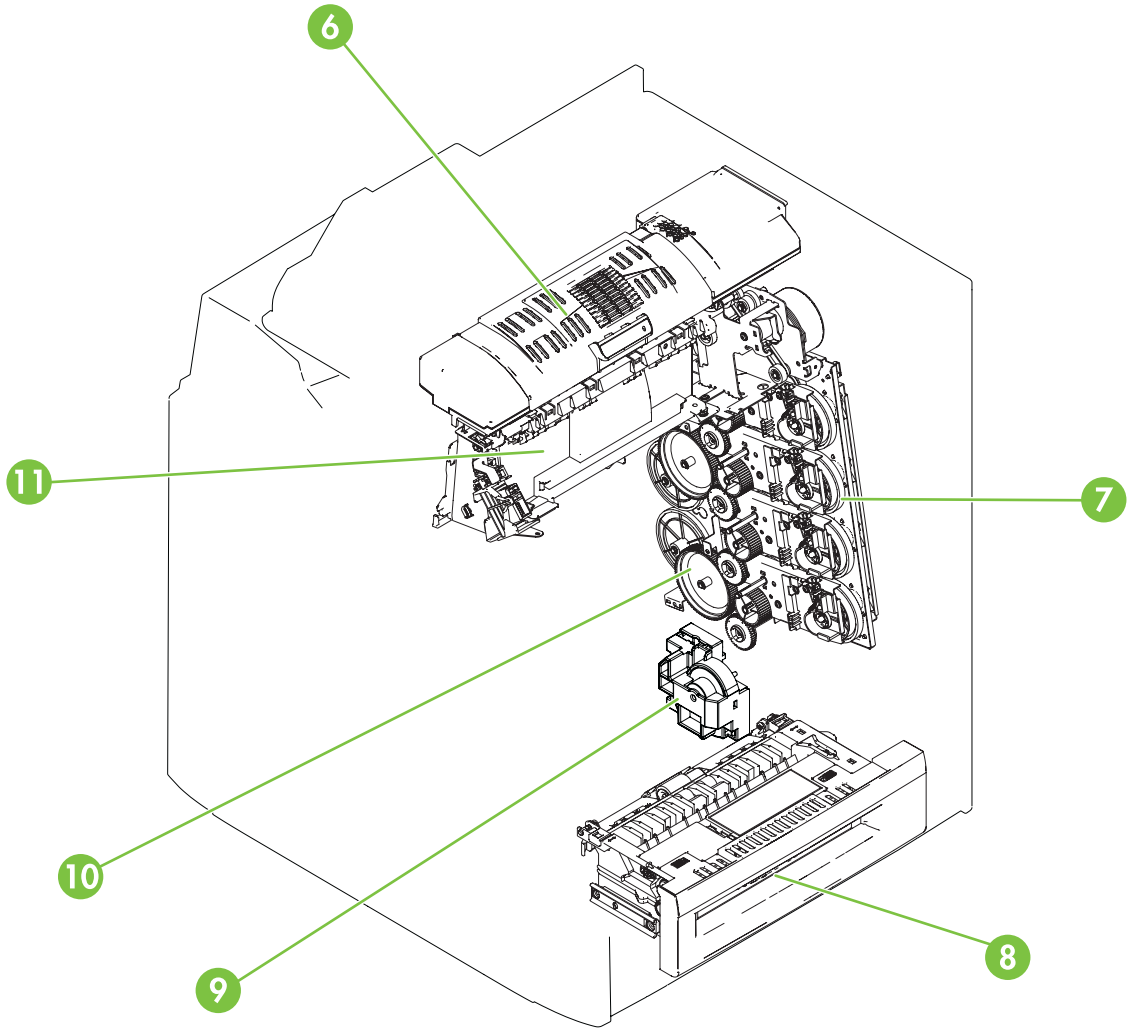


Figure 5-109 Locations of main assemblies (3 of 3)

1	Fuser
2	ETB
3	Laser/scanner assembly
4	Fuser drive assembly
5	Paper feed assembly
6	Duplexing assembly
7	Main drive assembly
8	MP tray pickup assembly
9	Lifter drive assembly
10	Developing alienation drive assembly
11	Delivery assembly

The procedures in this section describe the removal and replacement of the following components:

- Paper feed assembly
- Pickup drive assembly
- Lifter drive assembly
- Disengaging drive assembly
- Main drive assembly
- Rail holder assembly
- Rail guide assembly
- Formatter case assembly
- Laser/scanner components
- Duplexing assembly
- Delivery assembly
- Fuser drive assembly

Paper feed assembly

NOTE: Do not disassemble the paper feed assembly (callout 1). It contains an integral media sensor (callout 2) that is adjusted at the factory. It cannot be adjusted in the field.

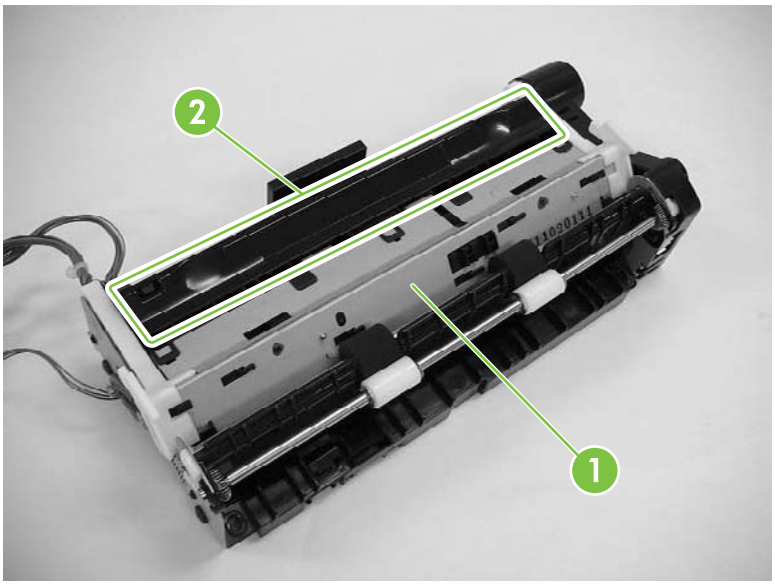


Figure 5-110 Paper feed assembly sensor

1. Open the right lower cover. See Right lower cover assembly on page 468.
2. Remove the print cartridges.
3. Remove the ETB. See ETB assembly, removing on page 275.

4. Unhook the two claws (callout 3), and then remove the cable cover (callout 4).

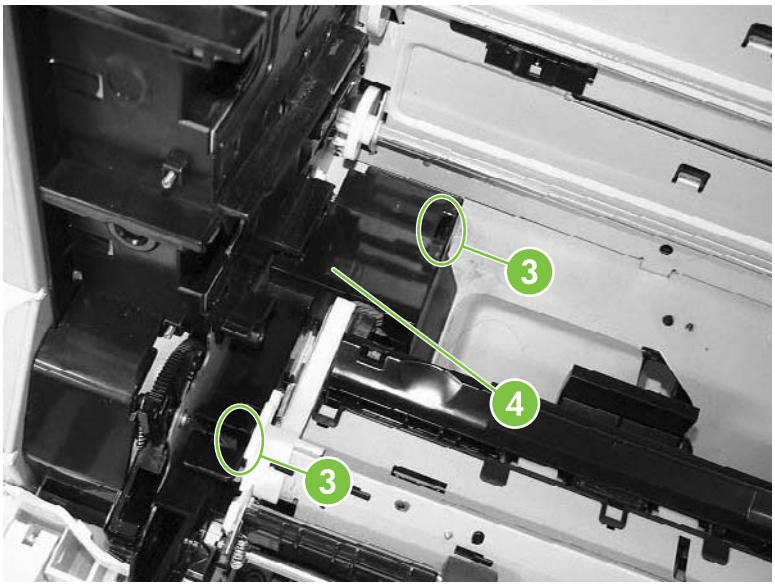


Figure 5-111 Remove the paper feed assembly (1 of 6)

5. Detail of cable cover front claw 1 of 2 (callout 3).

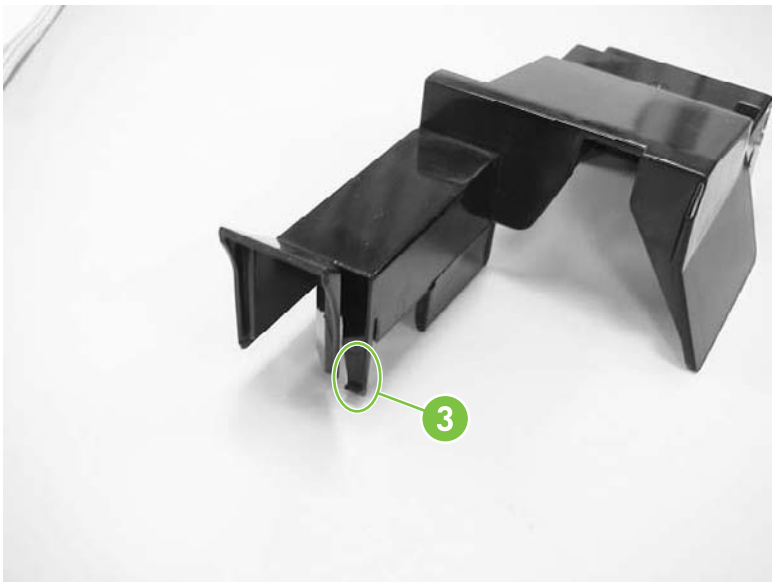


Figure 5-112 Remove the paper feed assembly (2 of 6)

6. Detail of cable cover rear claw (callout 3).

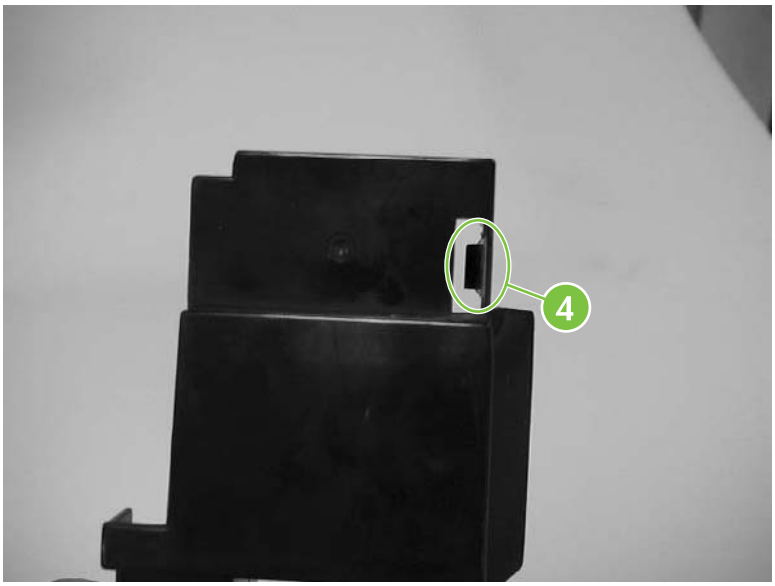


Figure 5-113 Remove the paper feed assembly (3 of 6)

7. Disconnect the three connectors (callout 5).

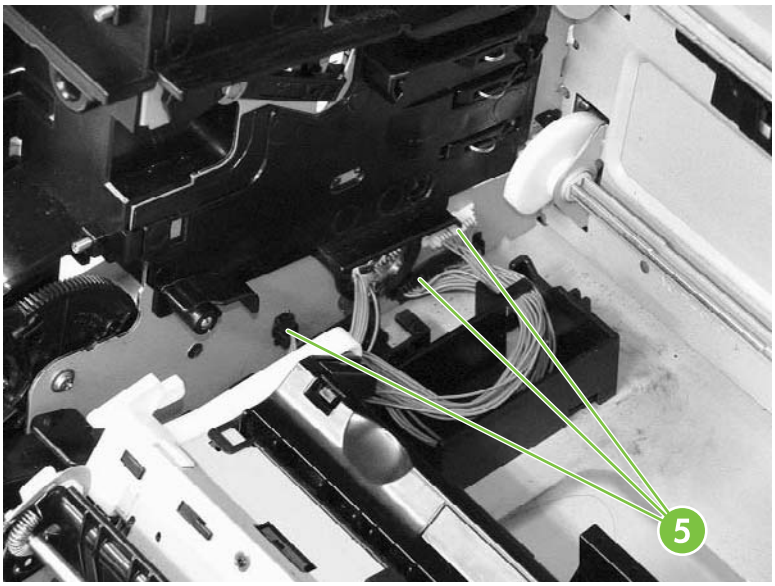


Figure 5-114 Remove the paper feed assembly (4 of 6)

8. Remove the two screws (callout 6), and then remove the paper feed assembly (callout 7).

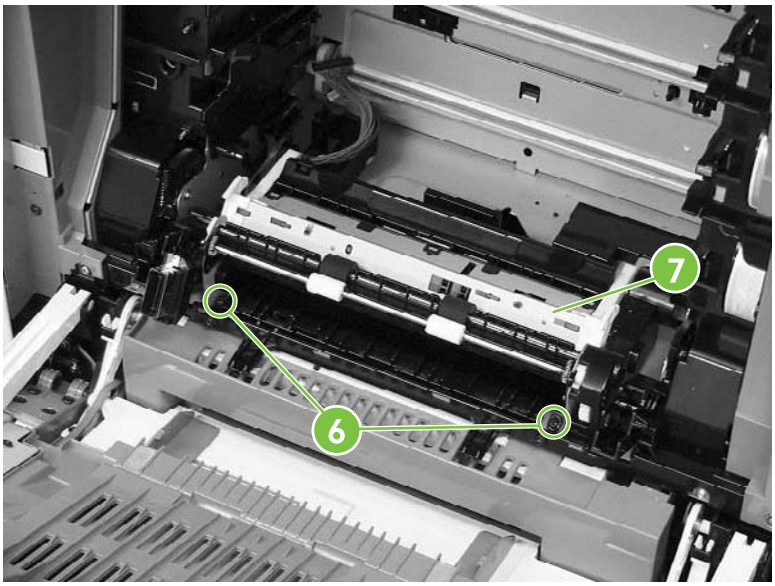


Figure 5-115 Remove the paper feed assembly (5 of 6)

9. The paper feed assembly contains a media sensor that is calibrated at the factory. When replacing the paper feed assembly, you must enter the new media sensor value into the MFP control panel. The media sensor value is located on the label attached to the paper feed assembly (callout 8). After replacing the paper feed assembly, turn on the MFP, touch Administration, scroll to and touch Service. Enter the service password and touch OK. Scroll to and touch Media Sensor Value, enter the new value shown on the label, and touch Save.

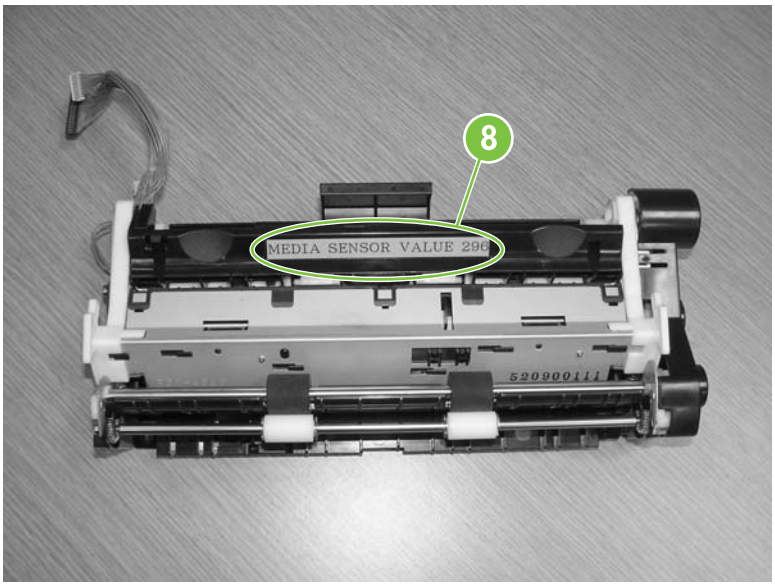


Figure 5-116 Remove the paper feed assembly (6 of 6)

Pickup drive assembly

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Disconnect the two connectors (callout 1) and remove the cable (callout 2) from the cable guides (callout 3).

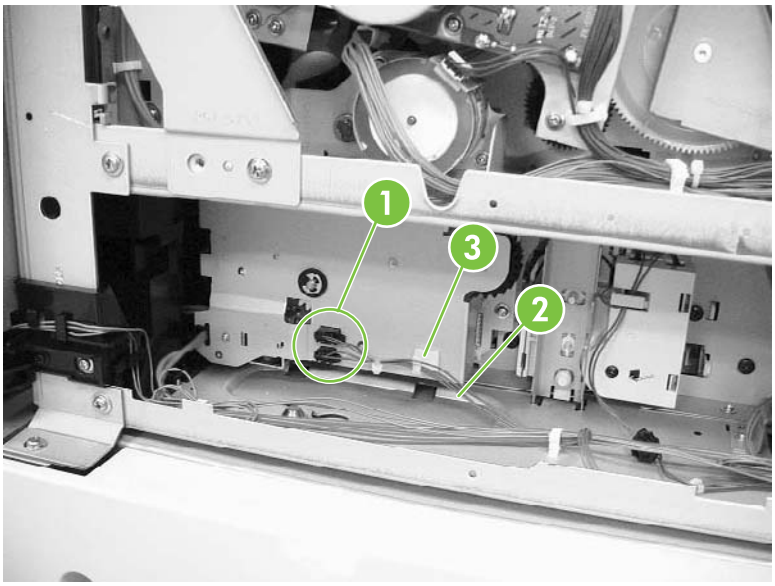


Figure 5-117 Remove the pickup drive assembly (1 of 2)

3. Remove the three screws (callout 4) and unhook the cable from the cable stay (callout 5). Then remove the pickup drive assembly (callout 6).

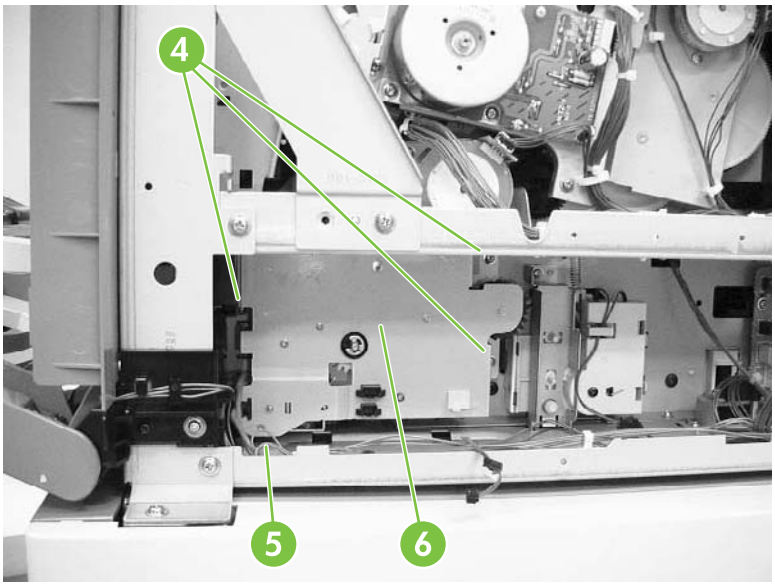


Figure 5-118 Remove the pickup drive assembly (2 of 2)

Lifter drive assembly

1. Remove the paper trays.
2. Remove the rear cover assembly. See Rear cover assembly on page 313.
3. Remove two screws (callout 1). Remove the spring (callout 2) and disconnect the connector (callout 3).

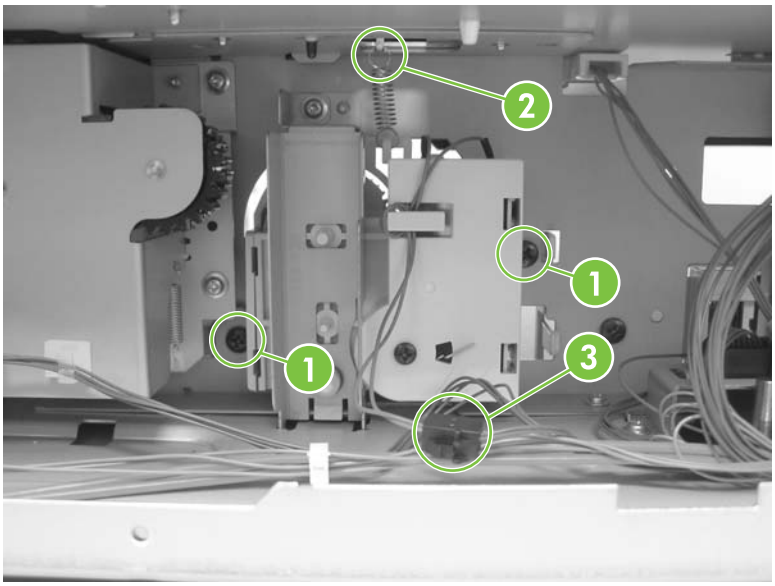


Figure 5-119 Remove the lifter drive assembly (1 of 3)

4. Remove the paper tray rear bracket, which is located inside the paper tray.

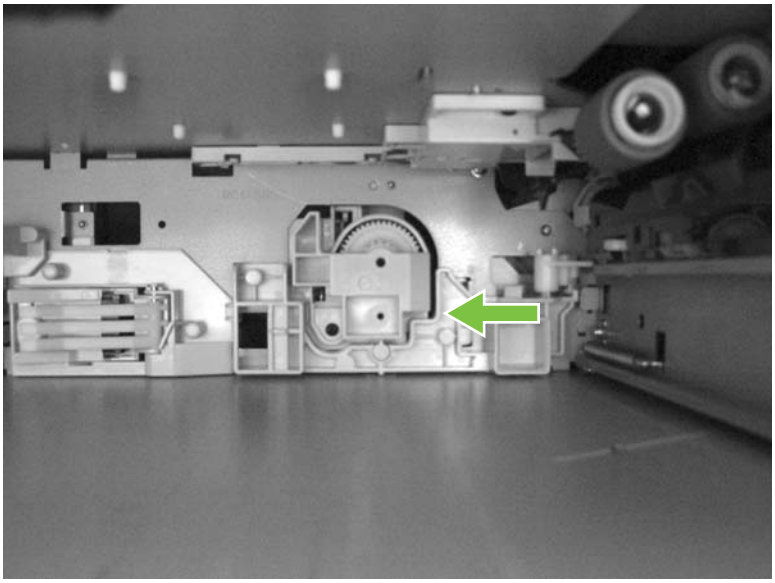


Figure 5-120 Remove the lifter drive assembly (2 of 3)

5. Remove one screw (callout 4) and remove the lifter drive bracket (callout 5) and the lifter drive assembly (callout 6).

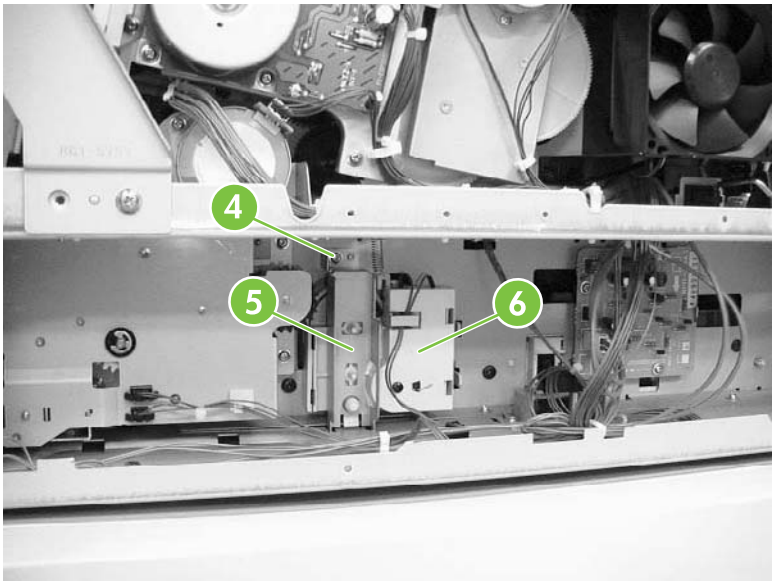


Figure 5-121 Remove the lifter drive assembly (3 of 3)

Disengaging drive assembly

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the developing disengaging motor. See Developing disengaging motor on page 395.
3. Remove the cable (callout 1) from the cable guides (callout 2).

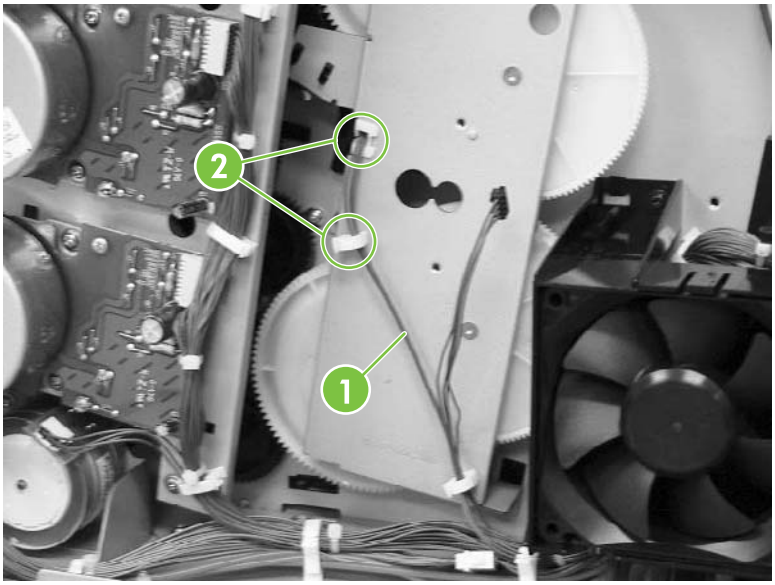


Figure 5-122 Remove the disengaging drive assembly (1 of 3)

4. Remove four screws (callout 3). Tilt the developing alienation drive assembly (callout 4) and the cable (callout 5) forward together.

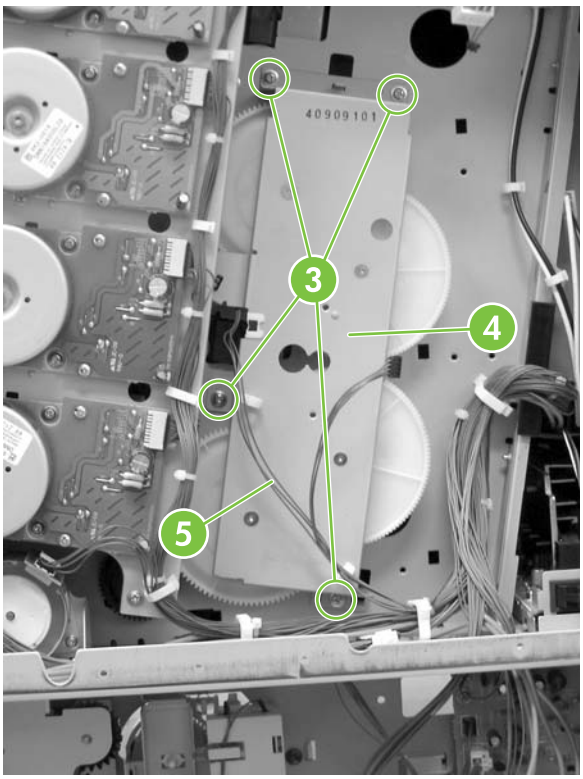


Figure 5-123 Remove the disengaging drive assembly (2 of 3)

5. Disconnect the connector (callout 6) from the developing alienation drive assembly (callout 7).

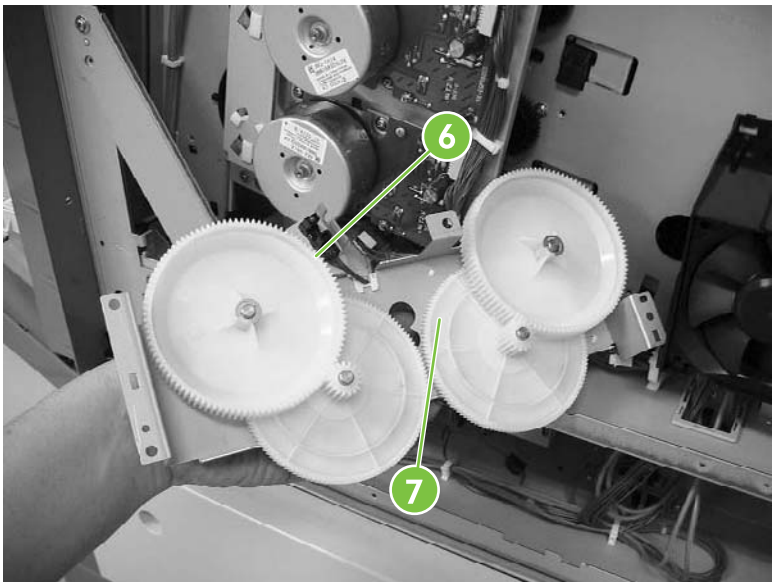


Figure 5-124 Remove the disengaging drive assembly (3 of 3)

Main drive assembly

1. Remove the following assemblies:
   - ETB
   - All four print cartridges
   - Rear cover
   - Sub power supply fan
   - Sub power supply PCB
   - Power supply fan
   - Disengaging drive assembly
   - Drum drive motors
2. Grasp the middle of the cartridge upper guide unit (callout 2) while unhooking the two tabs (callout 1). Then slide the cartridge upper guide unit toward you to remove it from the printer.

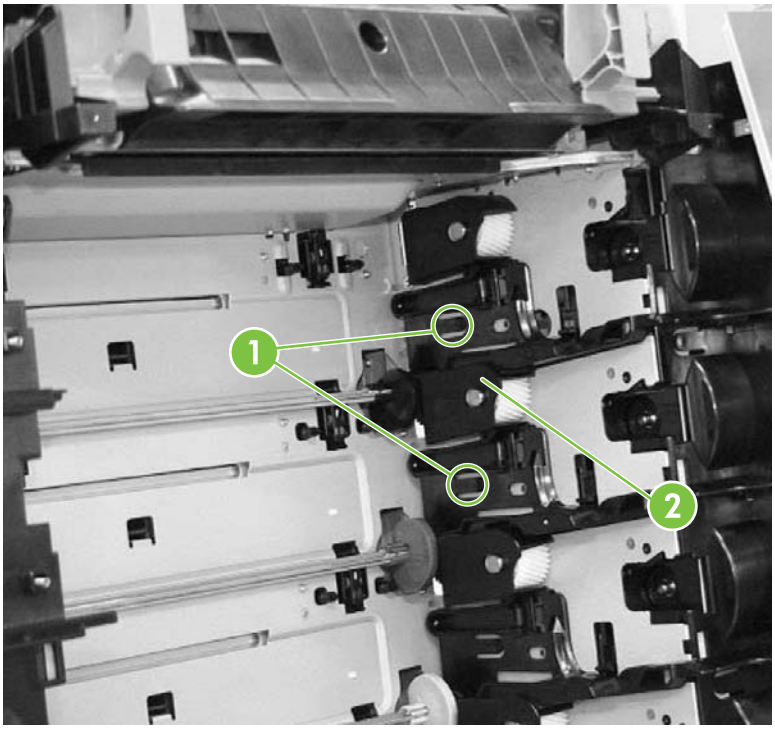


Figure 5-125 Remove the main drive assembly (1 of 8)

3. Grasp the middle of the cartridge lower guide unit (callout 4) while unhooking the two tabs (callout 3). Then slide the cartridge lower guide unit toward you to remove it from the printer.

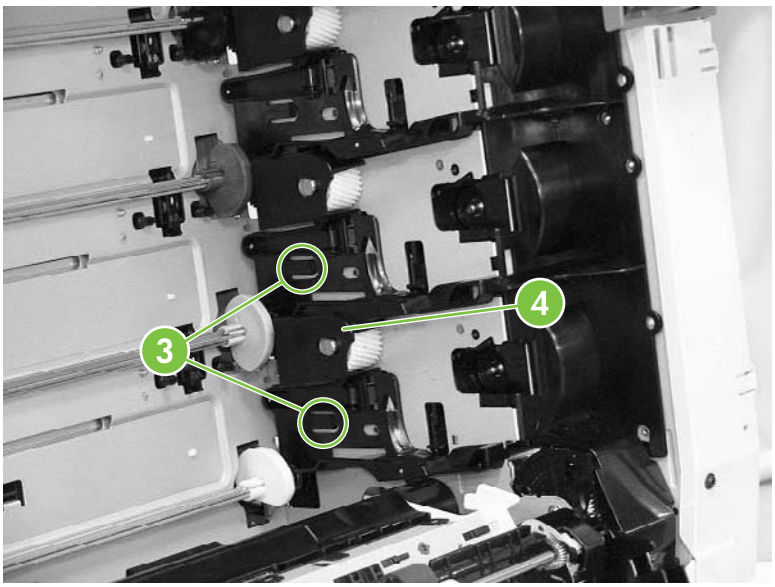


Figure 5-126 Remove the main drive assembly (2 of 8)

CAUTION: Be careful reassembling the upper and lower cartridge guides. They guides are similar to each other; if reassembled incorrectly, the ETB cannot be positioned correctly. The cartridge upper guide unit (callout 5) has two projections (callout 6). The cartridge lower guide unit (callout 7) has one projection (callout 8).

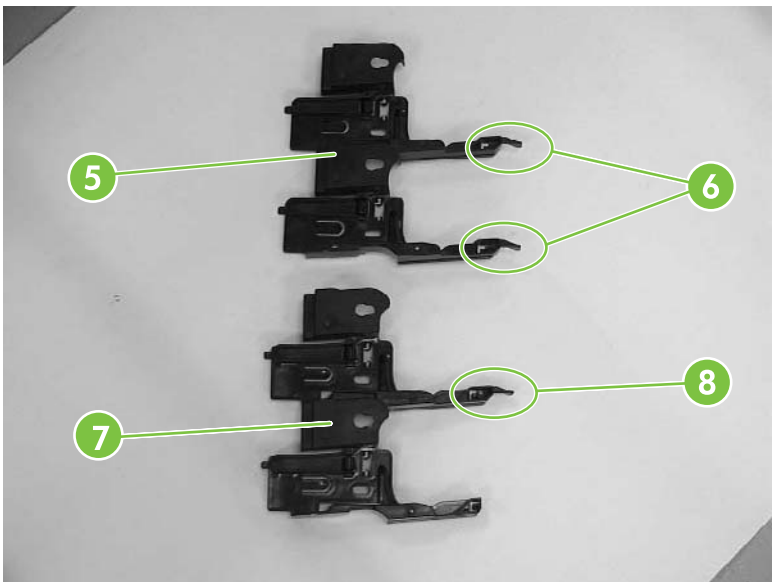


Figure 5-127 Remove the main drive assembly (3 of 8)

4. Remove the four front gears (callout 9). Then remove the four back gears (callout 10).

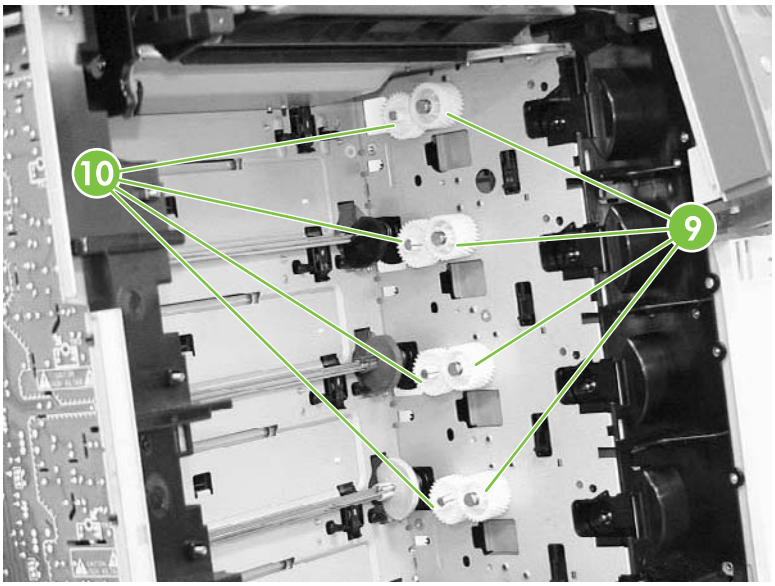


Figure 5-128 Remove the main drive assembly (4 of 8)

5. Remove the four bushings (callout 11).

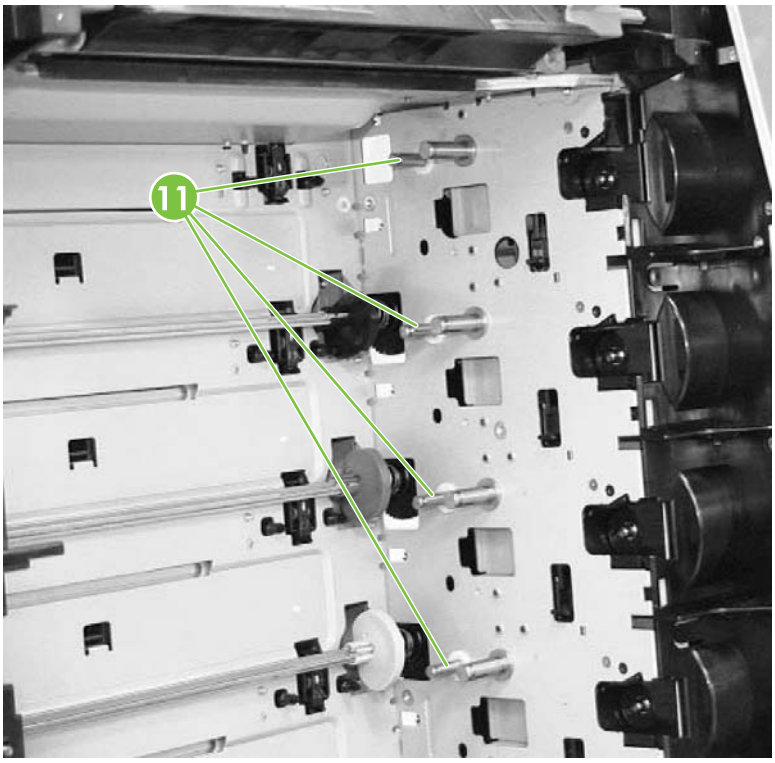


Figure 5-129 Remove the main drive assembly (5 of 8)

6. Remove the two screws (callout 12) and the plate (callout 13). Remove the cable (callout 14) from the cable guides (callout 15) and disconnect one connector (callout 16).

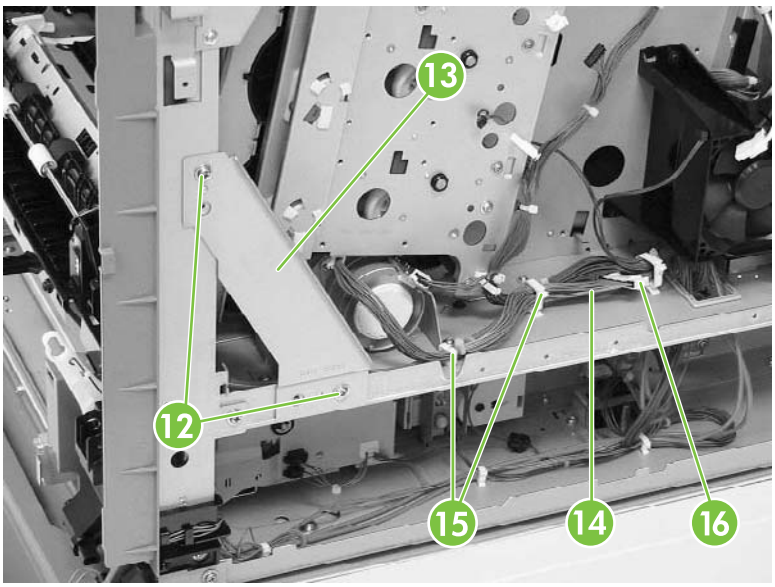


Figure 5-130 Remove the main drive assembly (6 of 8)

7. Remove the five screws (callout 17), and then remove the main drive assembly (callout 18). Note that the uppermost screw is recessed.

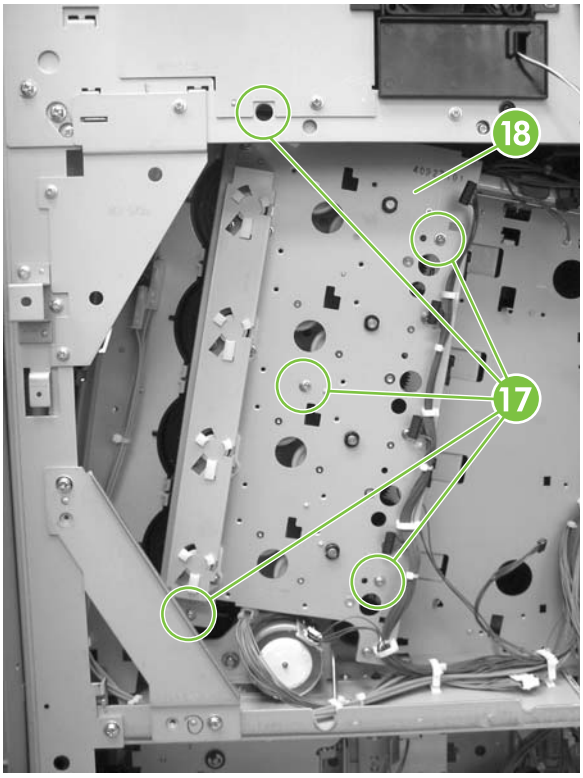


Figure 5-131 Remove the main drive assembly (7 of 8)

NOTE: Remove only the screws indicated in the figure. Do not remove any other screws.

8. Disconnect the eight connectors (callout 19) and unroute the cable (callout 20) from the cable guide (callout 21). *Do not remove the black plastic covers*. Then remove the main drive assembly.

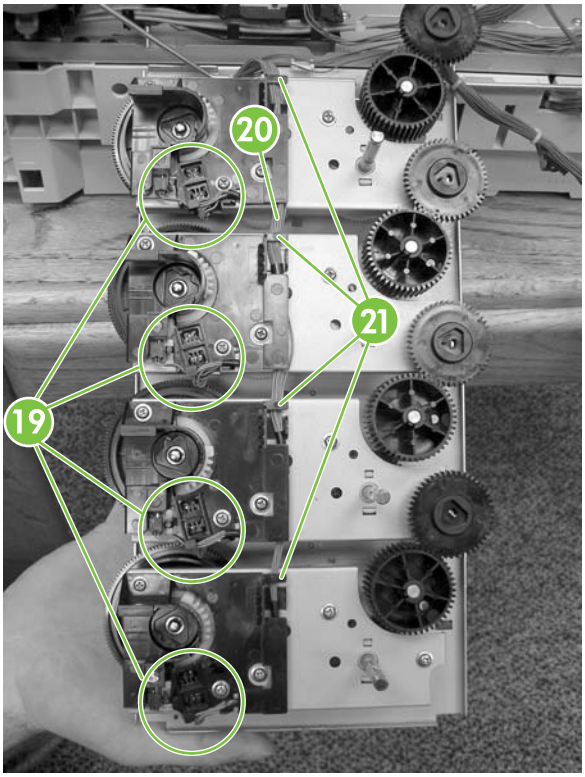


Figure 5-132 Remove the main drive assembly (8 of 8)

WARNING! Make sure to review the following reinstallation tips before continuing with the main drive assembly reinstallation procedure.

Reinstall main drive assembly

1. Reroute the cable through the cable guide.

NOTE: When reconnecting the cable, start at the K (black) cartridge and route from there (callout 1).

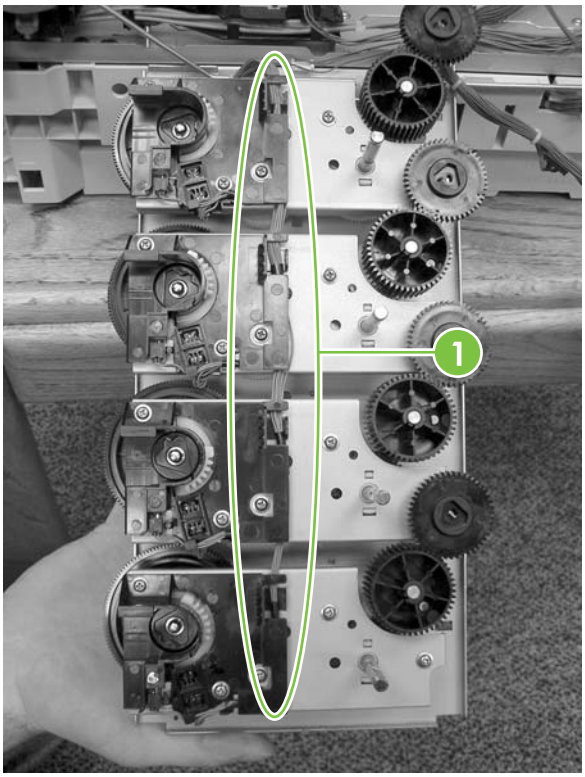


Figure 5-133 Reinstall the main drive assembly (1 of 16)

2. Reconnect the eight connectors. There are two connectors for each cartridge (callout 2). Begin with the black (K) connectors and then connect the magenta (M), cyan (C), and yellow (Y) connectors.

CAUTION: Be very careful not to dislodge sensors when reconnecting cables.

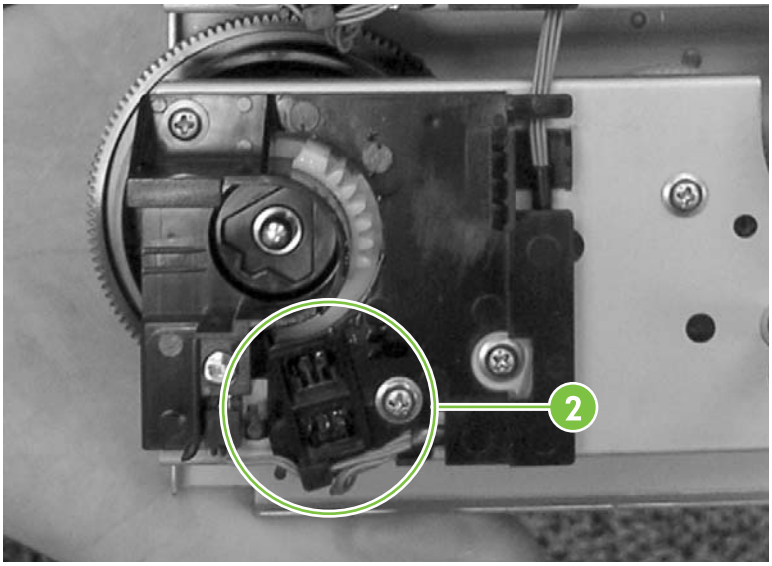


Figure 5-134 Reinstall the main drive assembly (2 of 16)

3. Rotate the four white gears as shown below.

NOTE: The white gears should be rotated clockwise until they stop at 6 o'clock position, then rotated slightly counterclockwise about 2 mm until you feel resistance. If this is not done correctly, the cartridge couplings will not engage properly (won't extend into the cartridge atrium to connect with the cartridges) and will require removal and reinstallation of the main drive assembly.

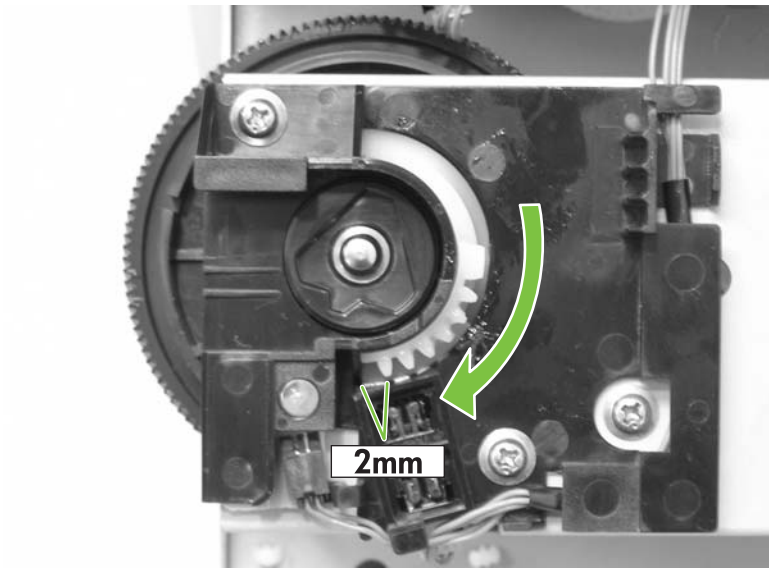


Figure 5-135 Reinstall the main drive assembly (3 of 16)

4. Align the four positioning dent marks (callout 3) of the developing clutch gears (callout 4) and the developing alienation gear (callout 5). Do this for all four gear pairs.

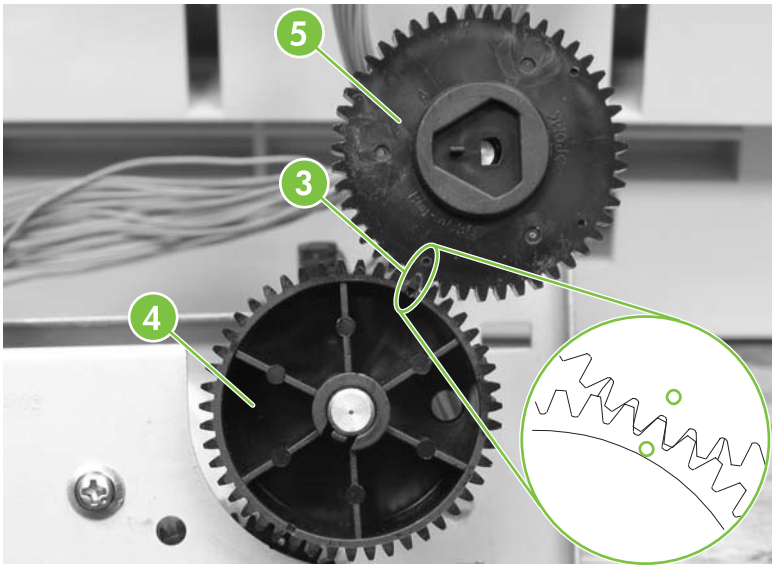


Figure 5-136 Reinstall the main drive assembly (4 of 16)

5. On the printer chassis, align all four developing clutch gears (callout 6) with the corresponding arrows stamped on the sheet metal.

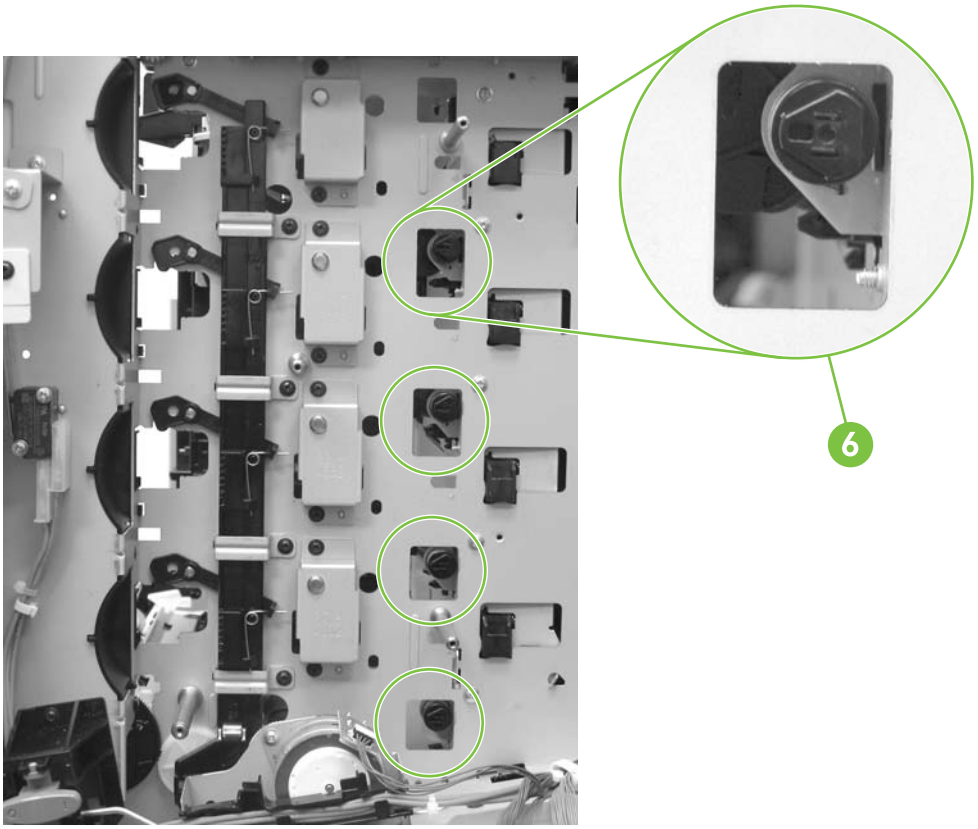


Figure 5-137 Reinstall the main drive assembly (5 of 16)

6. Make sure that the cartridge interlock rod is in the up position (callout 7). The guide is located just above and to the right of the ETB guide.

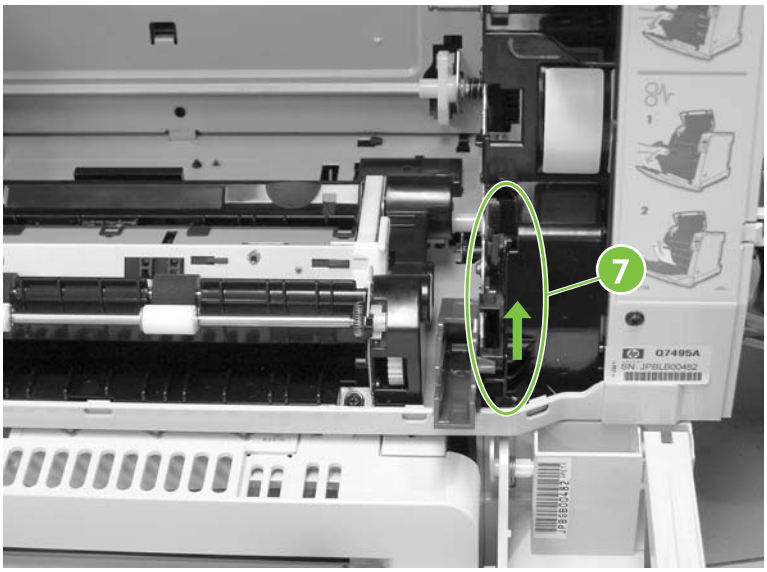


Figure 5-138 Reinstall the main drive assembly (6 of 16)

7. Mount the main drive assembly on the printer chassis

NOTE: Before reinstalling five screws, verify that the metal shafts / posts are perfectly in line and seated with screw holes on main drive assembly sheet metal. The ends of each shaft have a “shoulder” on them that should be flush with the main drive assembly sheet metal before screwing.

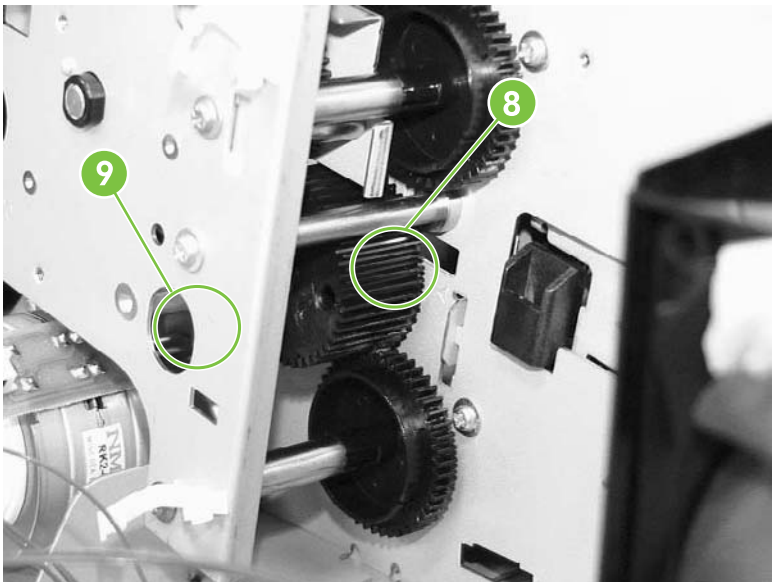


Figure 5-139 Reinstall the main drive assembly (7 of 16)

8. Reinstall five screws (callout 10) being careful to keep shafts seated properly on sheet metal

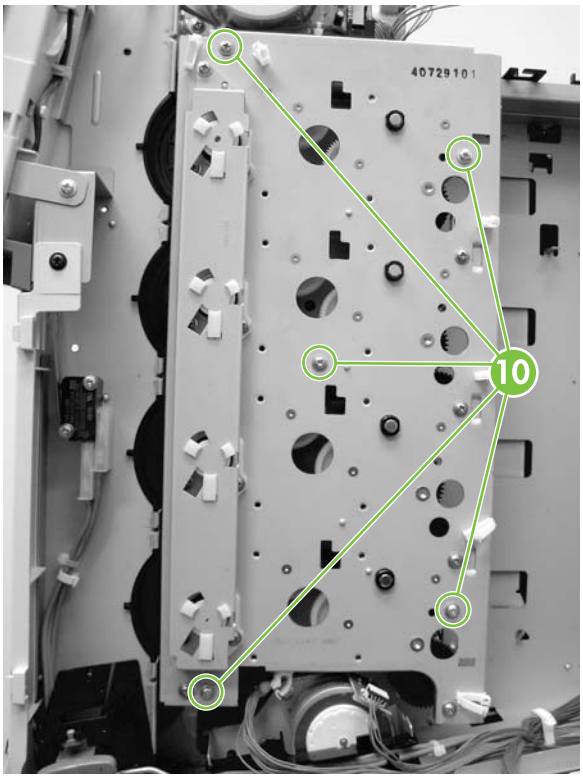


Figure 5-140 Reinstall the main drive assembly (8 of 16)

9. Reinstall the disengaging drive assembly.

10. Verify the following before proceeding:

    - Make sure the positioning marks (callout 11) of the developing alienation gears are aligned with the arrow marks (callout 12) stamped into the printer sheet metal. To do this, peer through the holes in the main drive assembly at the developing disengaging gears. There is a little dimple toward the outer edge of the gear which needs to be aligned with the arrow stamped in the sheet metal. Do this for all four gears.

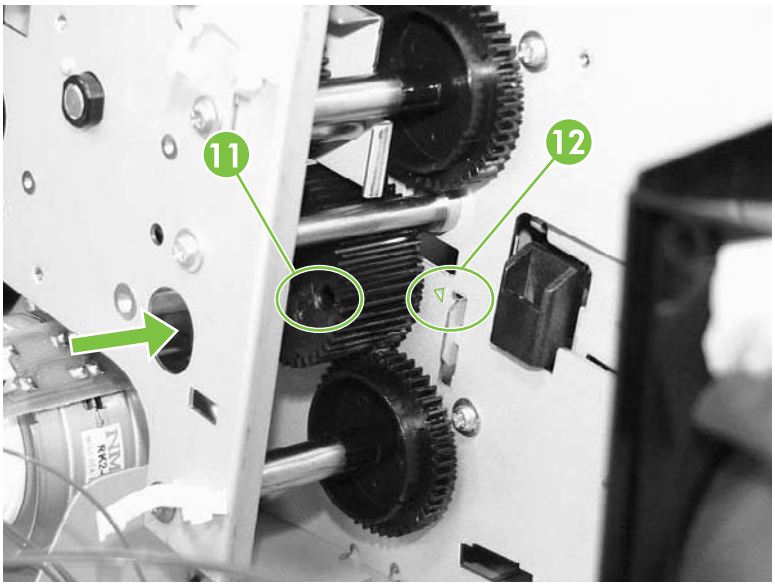


Figure 5-141 Reinstall the main drive assembly (9 of 16)

- Look inside the cartridge atrium and verify that all of the cartridge couplers are fully extended through the main drive assembly into the cartridge atrium. If not all couplers are fully extended into the cartridge atrium, go back to step 3 of “reinstalling the main drive assembly” and try again.

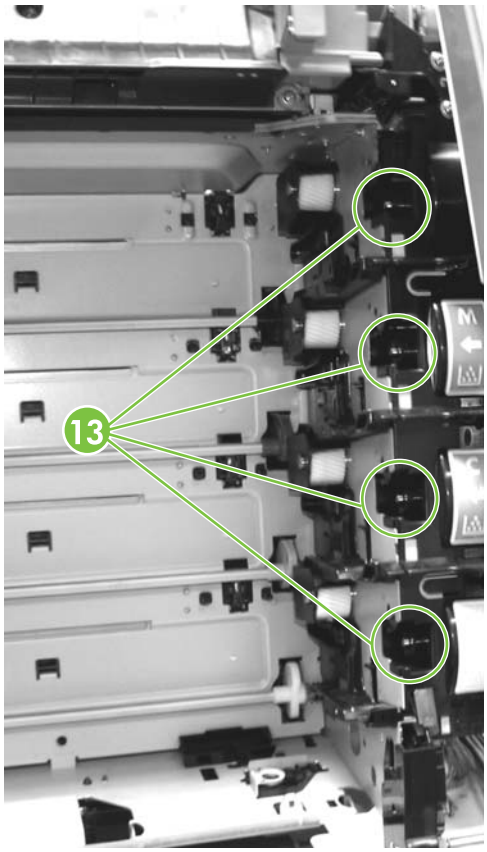


Figure 5-142 Reinstall the main drive assembly (10 of 16)

- Cycle the cartridge interlock lever down and up to verify that all four cartridge couplers move in/out (engage / disengage) properly. If not all couplers move in/out of the cartridge atrium when cycling the interlock lever, the white gear shown in step 3 is not properly aligned with corresponding gear. Go back to step 3 of the Reinstalling the main drive assembly section and try again.



NOTE: The interlock lever is the black plastic piece to right of the right purple ETB guide, and looks like half a gear when flipped down and a lever when flipped up.

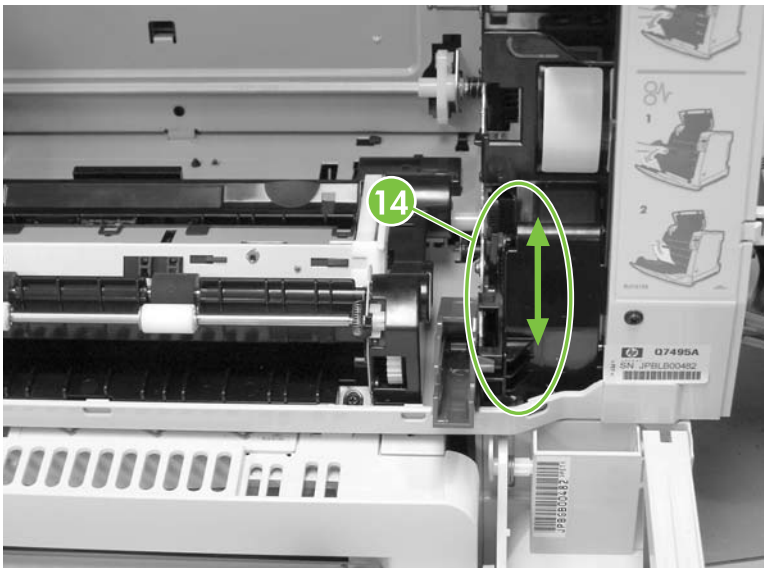


Figure 5-143 Reinstall the main drive assembly (11 of 16)

- Verify that the alienation bar couplers are meshed with corresponding gears on the main drive assembly.

11. Reinstall the bushings (callout 15).

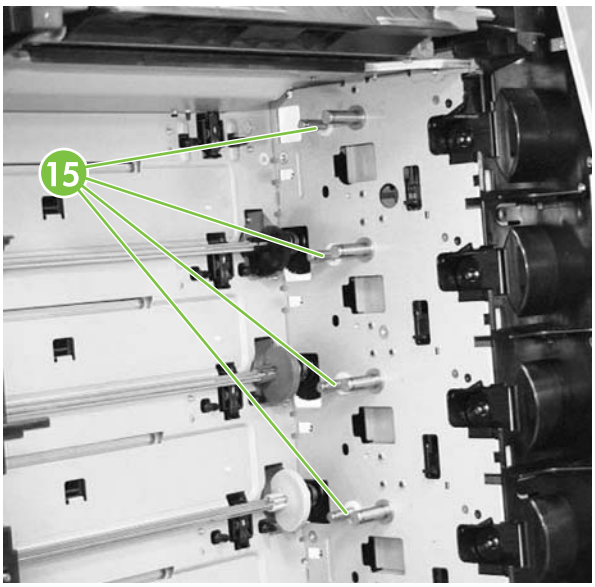


Figure 5-144 Reinstall the main drive assembly (12 of 16)

12. Install the four back gears (callout 16). Then install the four front gears (callout 17).

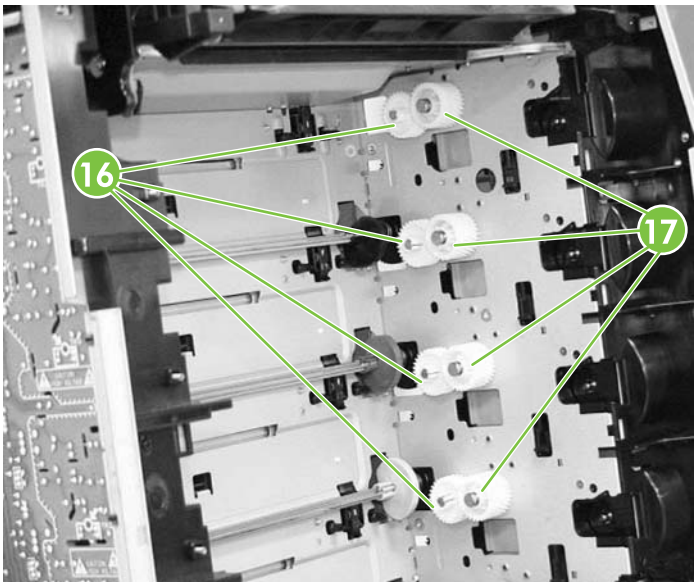


Figure 5-145 Reinstall the main drive assembly (13 of 16)

13. Reinstall the cartridge guides, beginning with the lower cartridge guide. The upper cartridge guide (callout 18) has two projections (callout 19) while the lower cartridge guide (callout 20) has only one projection (callout 21).

CAUTION: Be careful reassembling the upper and lower cartridge guides. They are similar to each other; if reassembled incorrectly, the ETB will not position correctly. The cartridge upper guide unit (callout 18) has two projections (callout 19). The cartridge lower guide unit (callout 20) has one projection (callout 21).

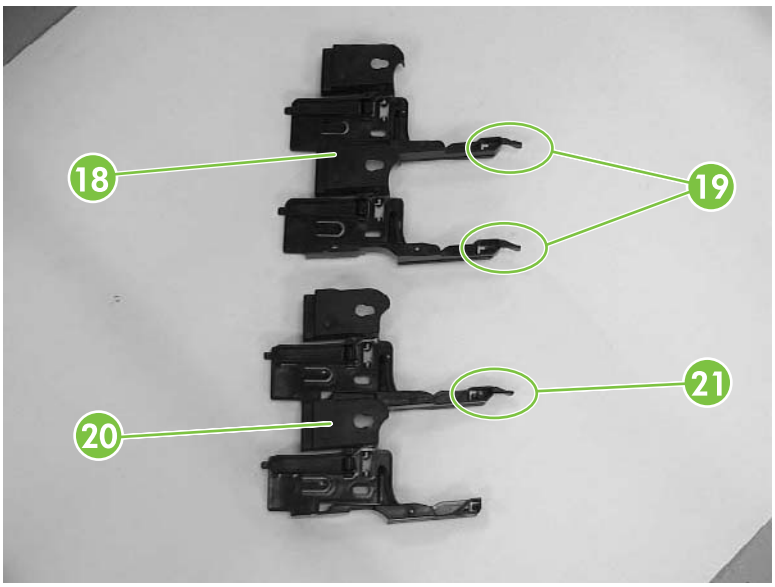


Figure 5-146 Reinstall the main drive assembly (14 of 16)

NOTE: There are 6 points of alignment on these guides. Four tabs – two front and two rear – which hook into the chassis sheet metal, and two horizontal keyholes which key onto the shafts of the two larger gears they cover.

To align: using one hand, try inserting the rear tabs of the cartridge guide into the sheet metal, then the front tabs, and when the gear shafts poke through both horizontal keyholes, slide the cartridge guide back towards the rear of the printer. You should hear a couple of “snaps” as the two retaining tabs click into position on the chassis, and you should see the gear shafts properly keyed through the horizontal keyholes on the cartridge guide.

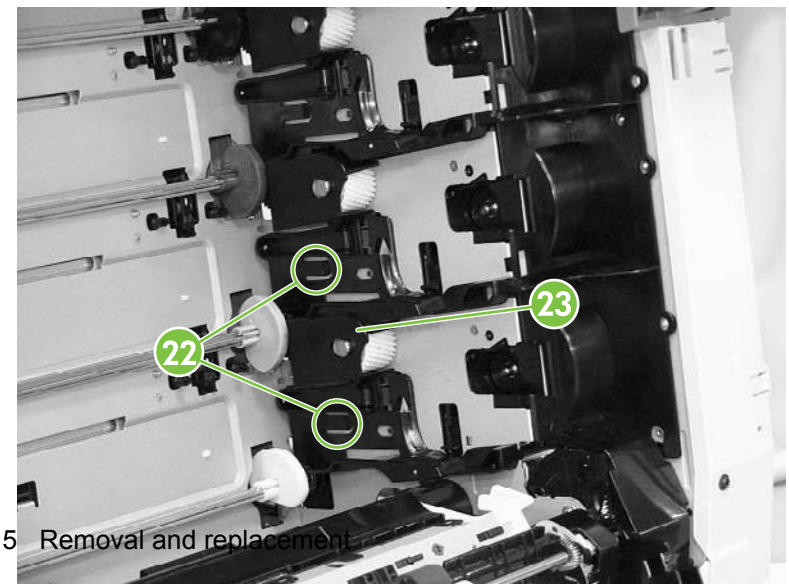


Figure 5-147 Reinstall the main drive assembly (15 of 16)

14. Reinstall drum drive motors.



NOTE: When reinstalling drum drive motors, be certain to reinstall each drum drive motor with the corresponding color before removing. An easy way to guarantee this is to mark each motor's color with pen or marker on the sticker.

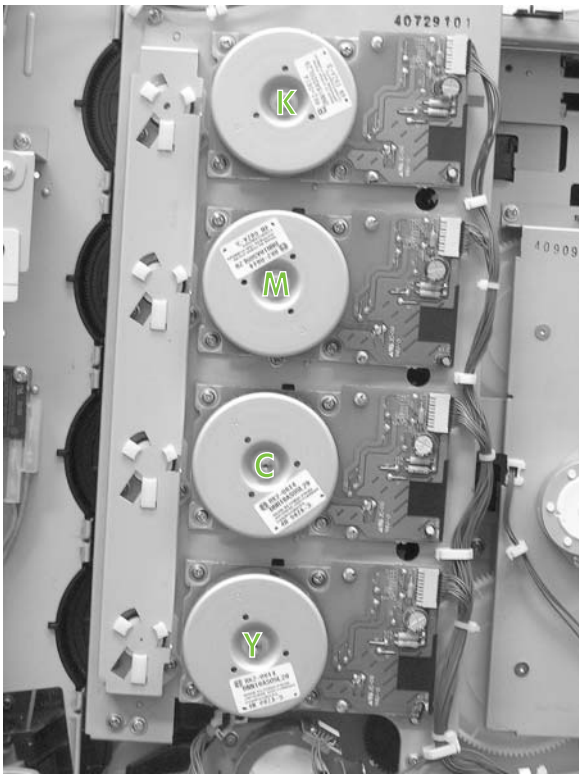


Figure 5-148 Reinstall the main drive assembly (16 of 16)

15. Install remaining components.



CAUTION: Be sure to reinstall the disengaging drive assembly before putting the gears and the cartridge guides back together inside the printer.

Rail holder assembly

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover assembly. See Left cover assembly on page 315.

4. Disconnect the two connectors (callout 1). Remove one screw (callout 2) and the fan duct (callout 3).

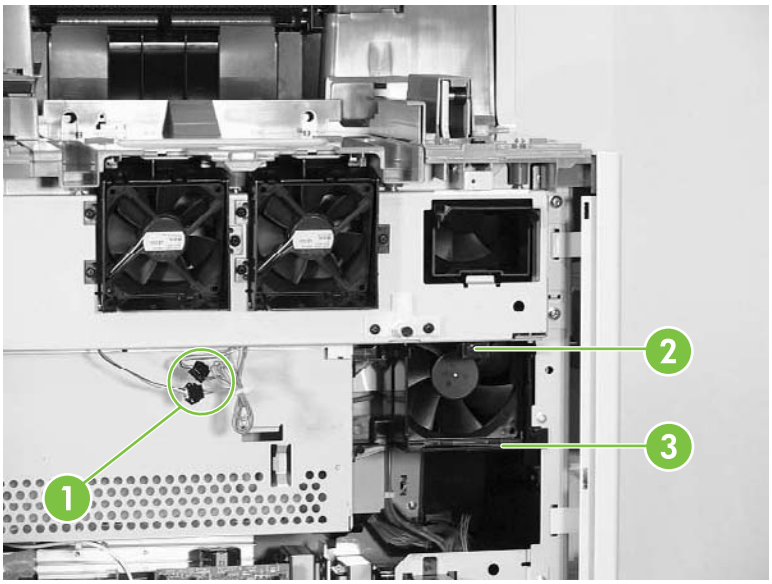


Figure 5-149 Remove the rail holder assembly (1 of 3)

5. Remove the five screws (callout 4).

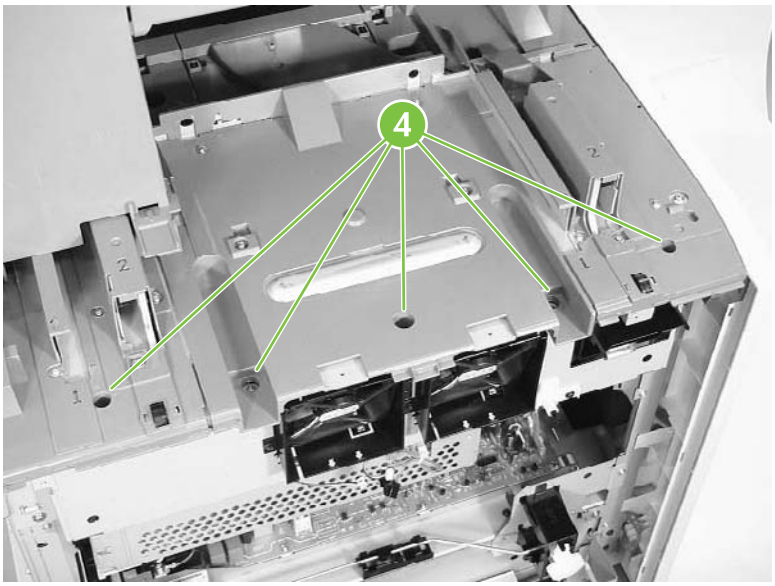


Figure 5-150 Remove the rail holder assembly (2 of 3)

6. Remove the four screws (callout 5) and the rail holder assembly (callout 6).

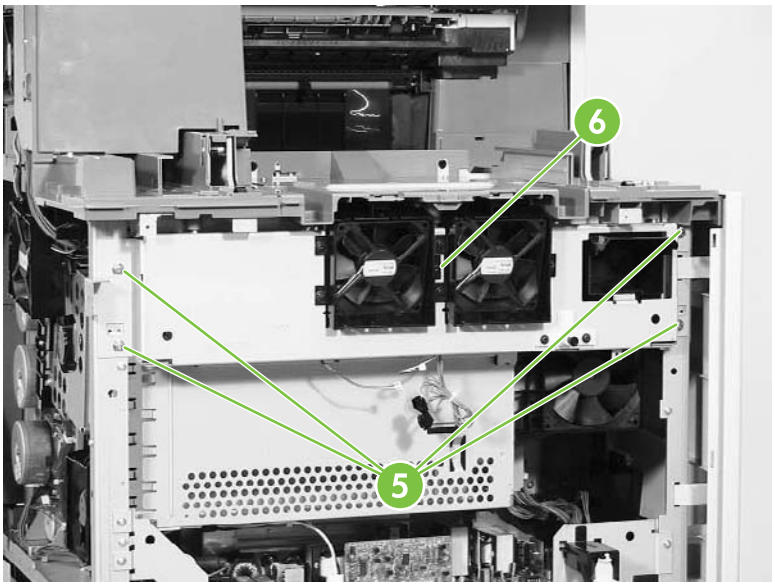


Figure 5-151 Remove the rail holder assembly (3 of 3)

Rail guide assembly

1. Remove the rail holder assembly. See Rail holder assembly on page 359.
2. Remove the two screws (callout 1), and then remove the front guide cover (callout 2).

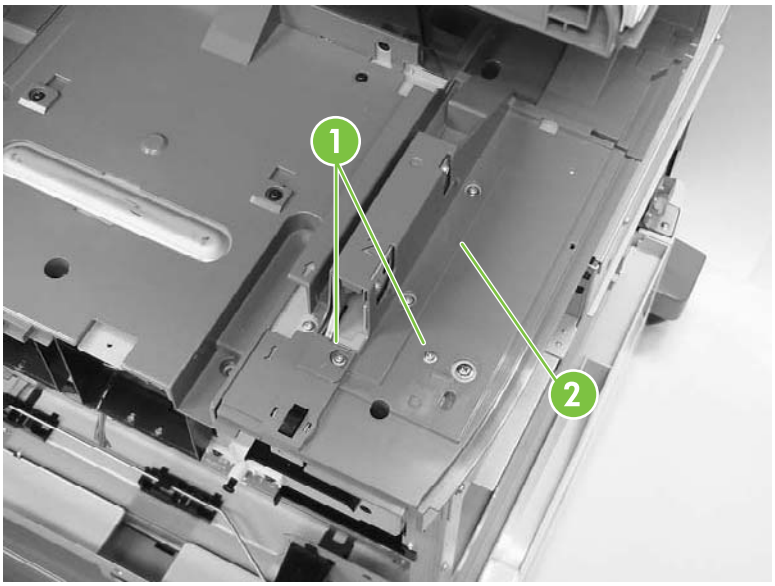


Figure 5-152 Remove the rail guide assembly (1 of 7)

3. Remove the left rear inner cover assembly. See Left rear inner cover assembly on page 326.

4. Remove the two screws (callout 3), and then remove the rear guide cover (callout 4).

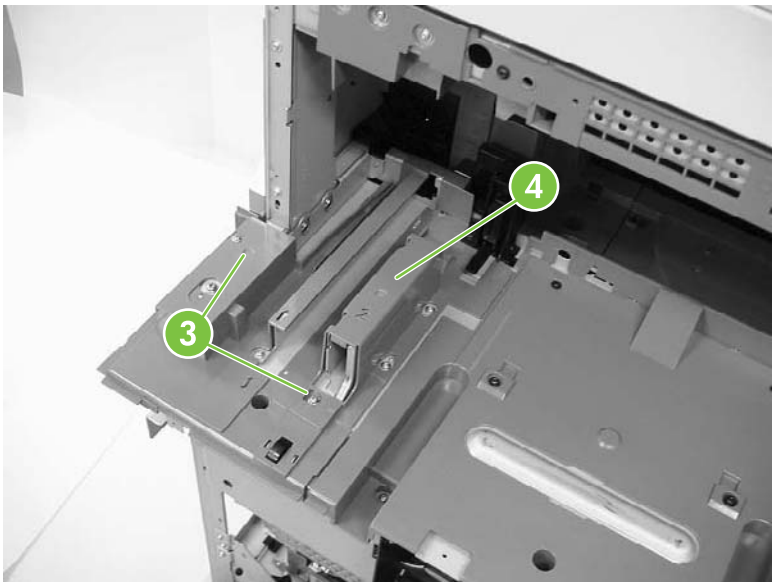


Figure 5-153 Remove the rail guide assembly (2 of 7)

5. Remove the four screws (callout 5), and then remove the center guide cover (callout 6).

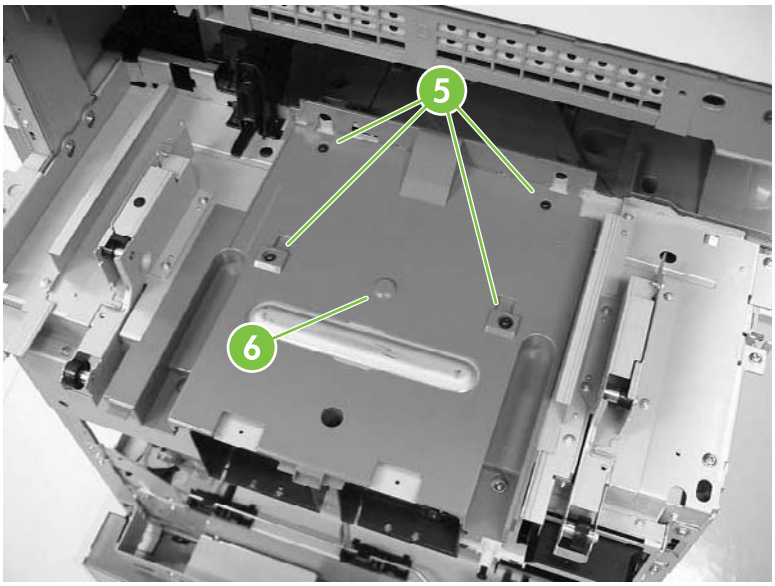


Figure 5-154 Remove the rail guide assembly (3 of 7)

6. Unhook the two claws (callout 7), and then remove the connector cover (callout 8).

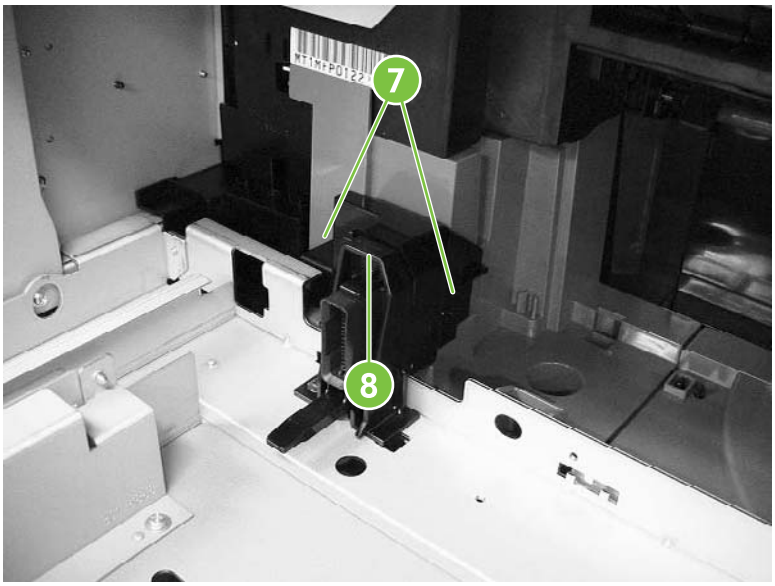


Figure 5-155 Remove the rail guide assembly (4 of 7)

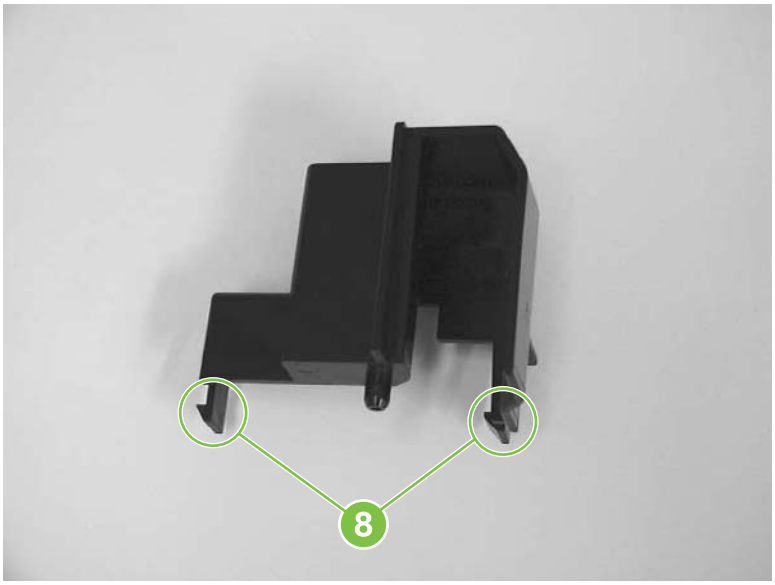


Figure 5-156 Remove the rail guide assembly, connector cover claw detail (5 of 7)

7. Disconnect the connector (callout 9).

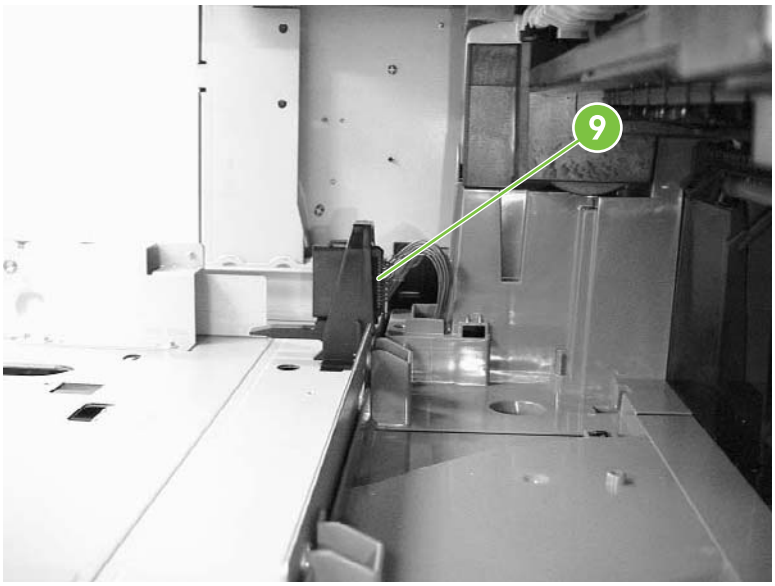


Figure 5-157 Remove the rail guide assembly (6 of 7)

8. Remove the four screws (callout 10), and then remove the rail guide assembly (callout 11).

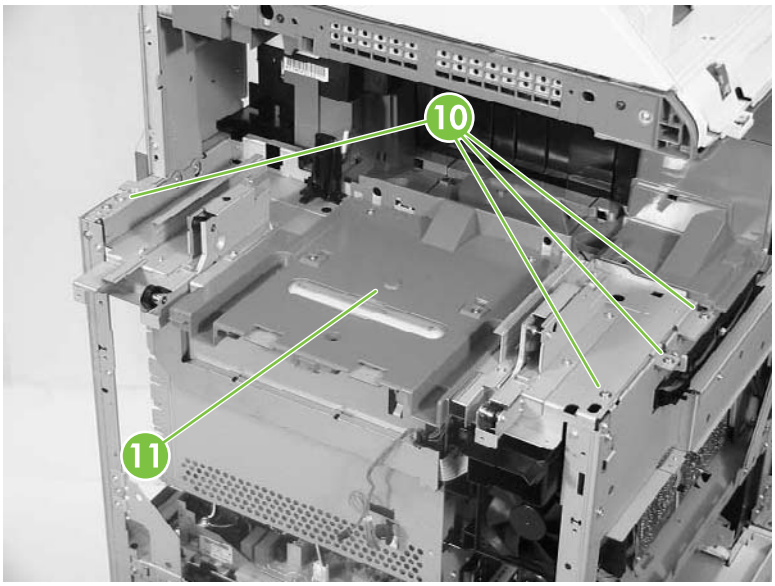


Figure 5-158 Remove the rail guide assembly (7 of 7)

Formatter case assembly

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the rail guide assembly. See Rail guide assembly on page 361.
5. Remove the low-voltage power supply PCB. See Low-voltage power supply PCB on page 421.

6. Remove the cable (callout 1) from the cable guide (callout 2).

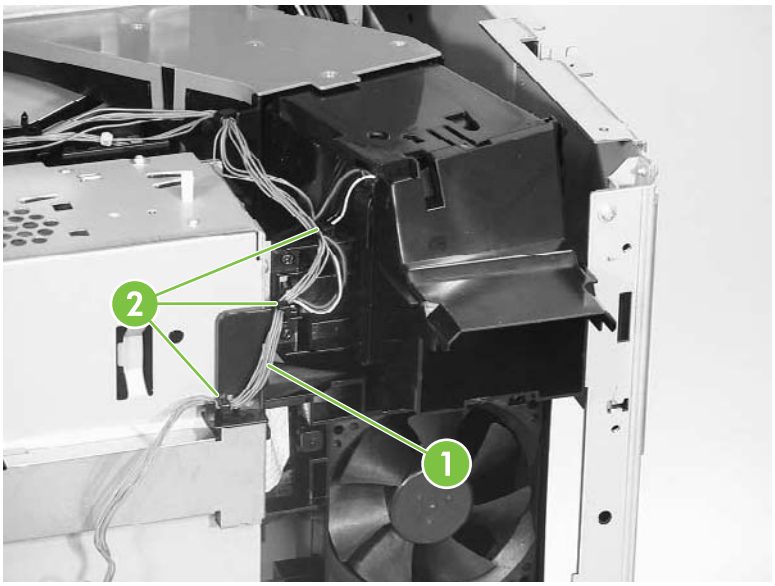


Figure 5-159 Remove the formatter case (1 of 10)

7. Remove the delivery fan. See Delivery fan on page 402.

8. Disconnect the purple connector (callout 3) from the fan, and remove the cable from the cable guide (callout 4).

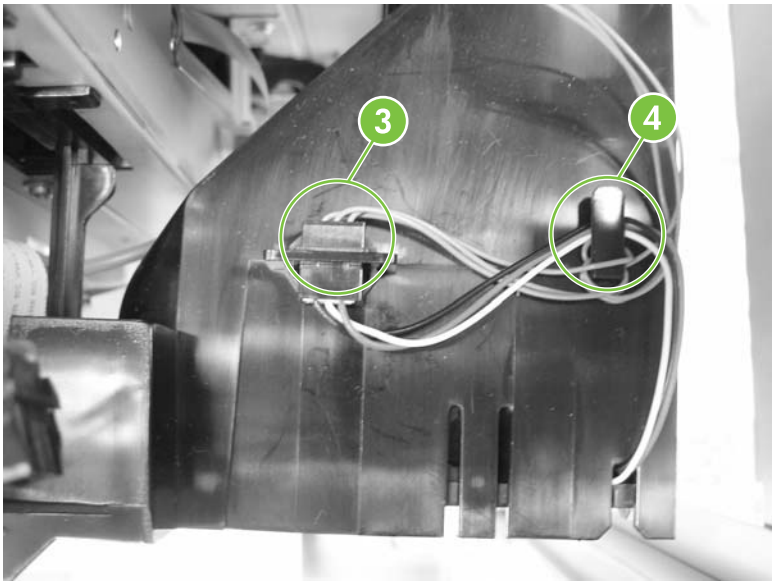


Figure 5-160 Remove the formatter case (2 of 10)

9. Remove the test print pin (callout 5) from the fan holder (callout 6) by pushing it to the left.

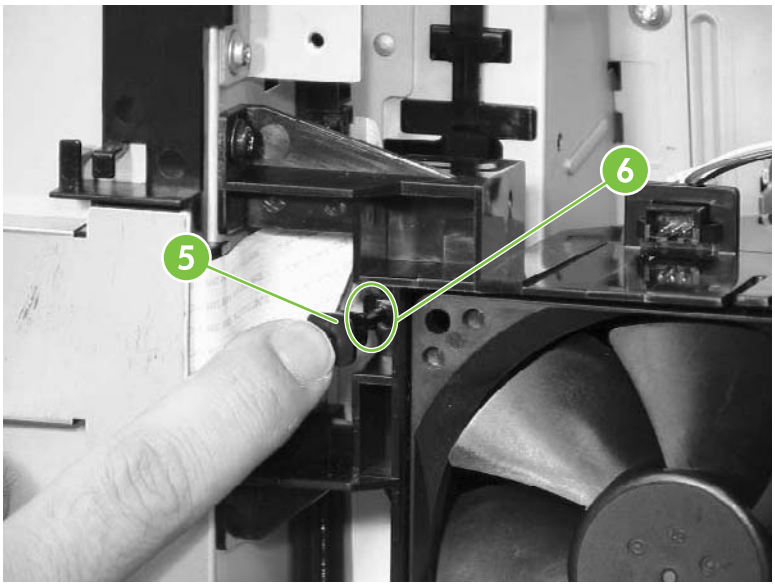


Figure 5-161 Remove the formatter case (3 of 10)

10. Remove the two screws (callout 7), and then remove the fan holder (callout 8) and the cartridge fan (callout 9) together.

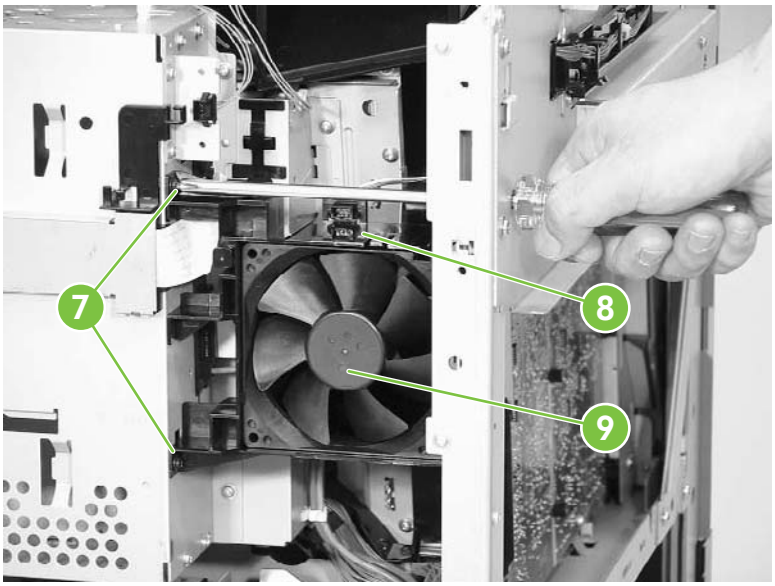


Figure 5-162 Remove the formatter case (4 of 10)

11. Disconnect the upper flat cable (callout 10) and remove one screw (callout 11).

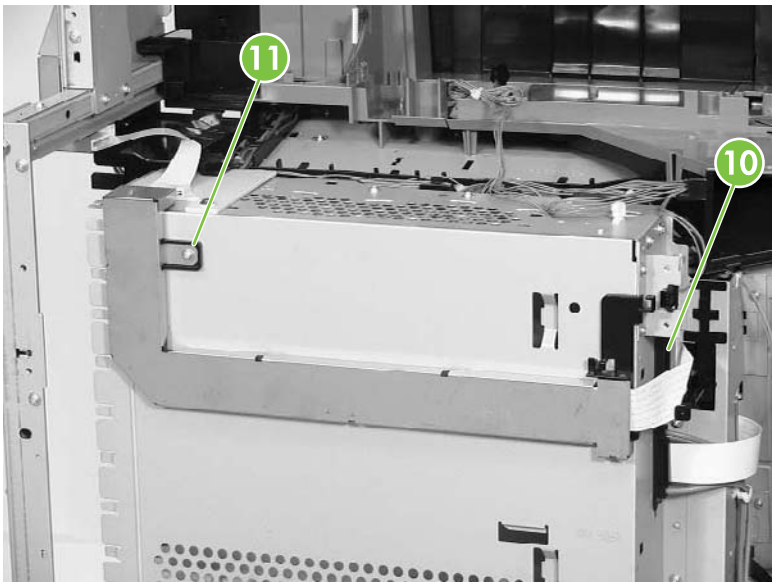


Figure 5-163 Remove the formatter case (5 of 10)

12. Unhook the five tabs (callout 12) in the order shown to release the shield cover. Two tabs are located on the underside of the shield cover.

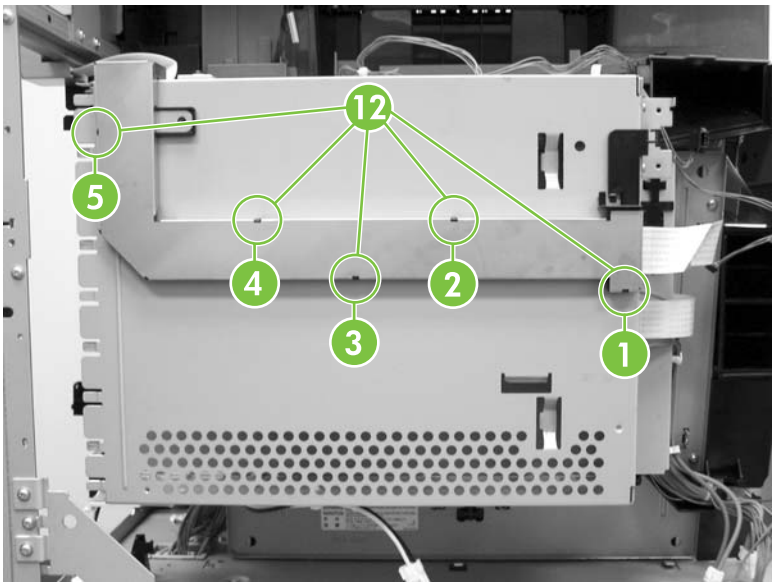


Figure 5-164 Remove the formatter case (6 of 10)

13. Remove the cable (callout 13) from the cable guide (callout 14).

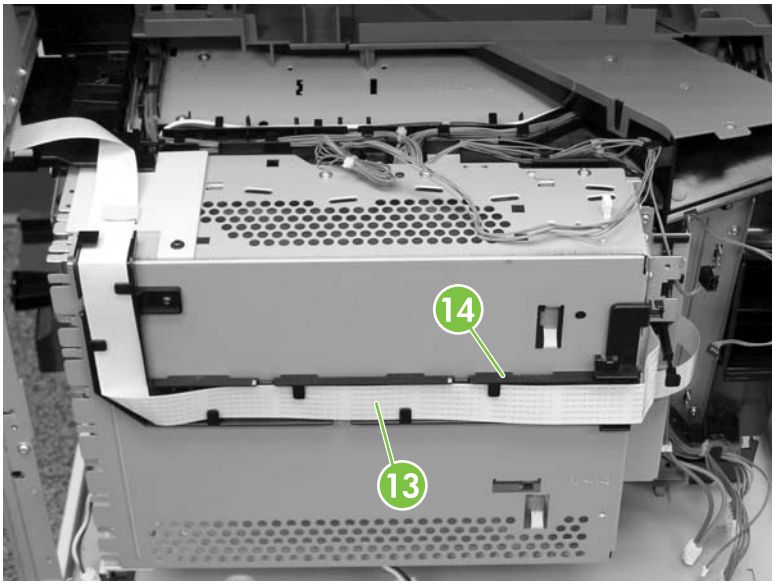


Figure 5-165 Remove the formatter case (7 of 10)

14. Remove the formatter. See Formatter board on page 297.

15. Remove the connector (callout 15) and then unhook the cables (callout 16) from the cable guides (callout 17).

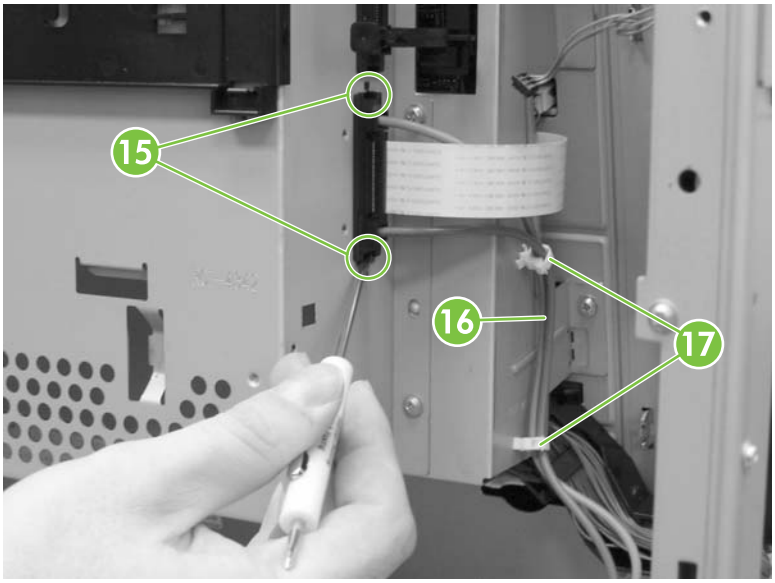


Figure 5-166 Remove the formatter case (8 of 10)

16. Remove the cables (callout 18) from the cable guide (callout 19). Remove the two screws (callout 20).

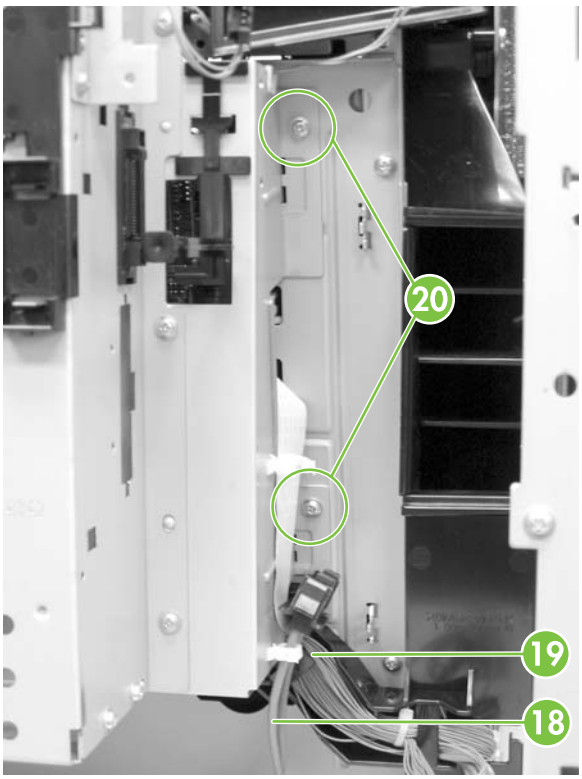


Figure 5-167 Remove the formatter case (9 of 10)

17. Remove the four screws (callout 21), and then remove the formatter case assembly (callout 22).

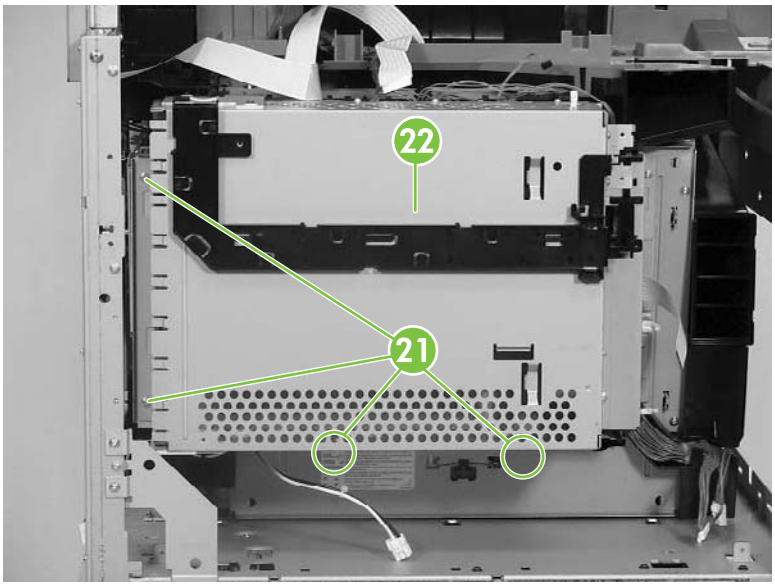


Figure 5-168 Remove the formatter case (10 of 10)

Laser/scanner components

NOTE: Before removing the laser/scanner assembly, remove the screws on the four corners (callout 1) that join the MFP and the 2 X 500 sheet paper deck. Otherwise, the frame might become twisted, which could distort the flatness of the laser mounting. Replace the screws after the laser/scanner assembly has been replaced.

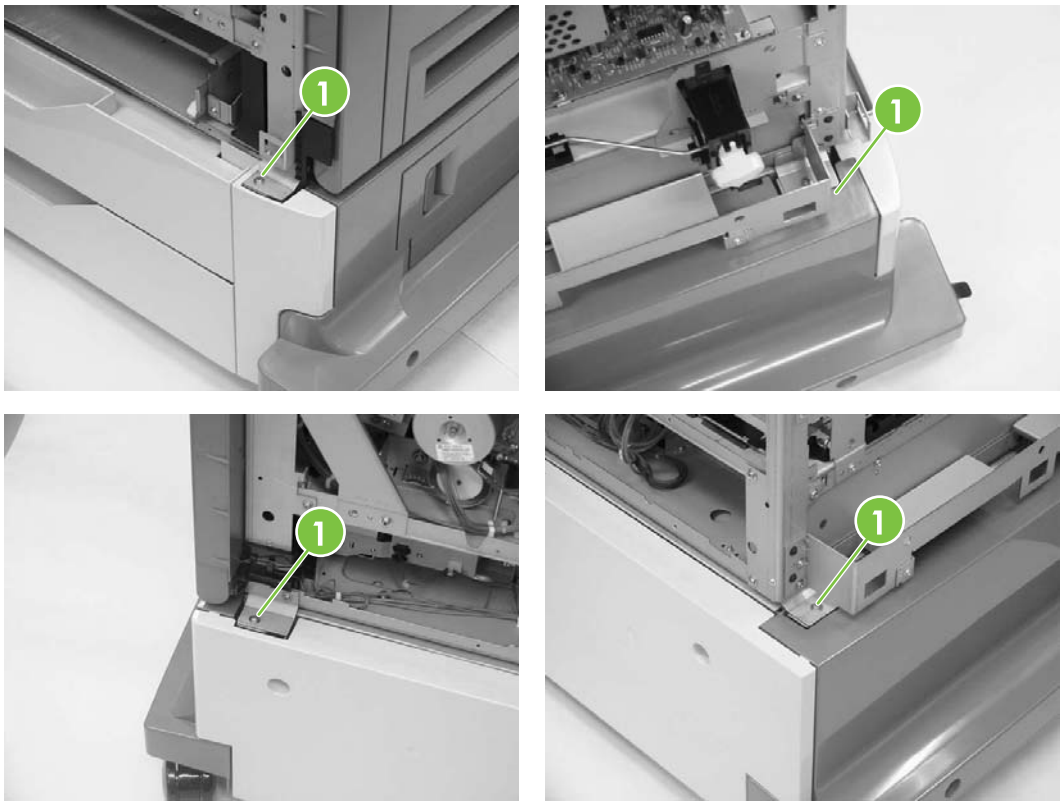


Figure 5-169 Remove screws at corners of MFP

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover. See Front cover assembly on page 316.
5. Remove the delivery fan. See Delivery fan on page 402.
6. Remove the cartridge fan. See Cartridge fan on page 399.
7. Remove the DC controller PCB. See DC controller PCB on page 410.

8. Remove all cables from the cable guides. Remove two screws (callout 2) and the formatter plate (callout 3).

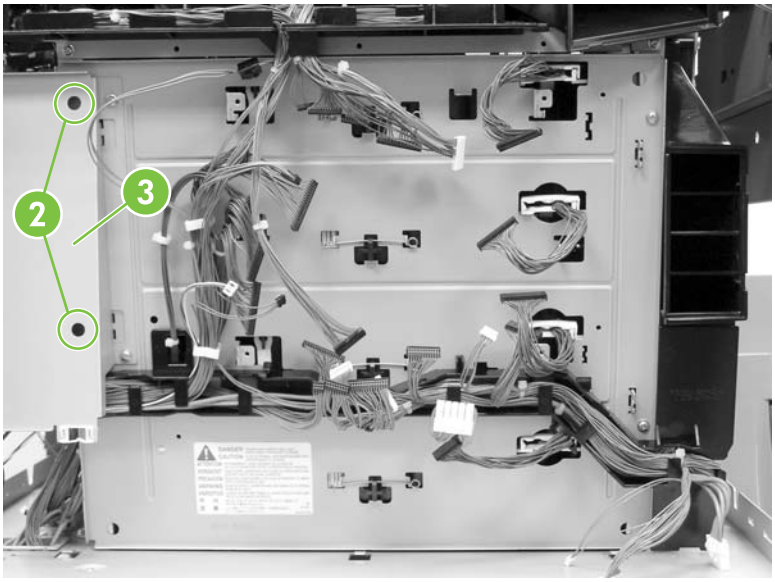


Figure 5-170 Remove laser/scanner components (1 of 12)

9. Remove the springs (callout 4).

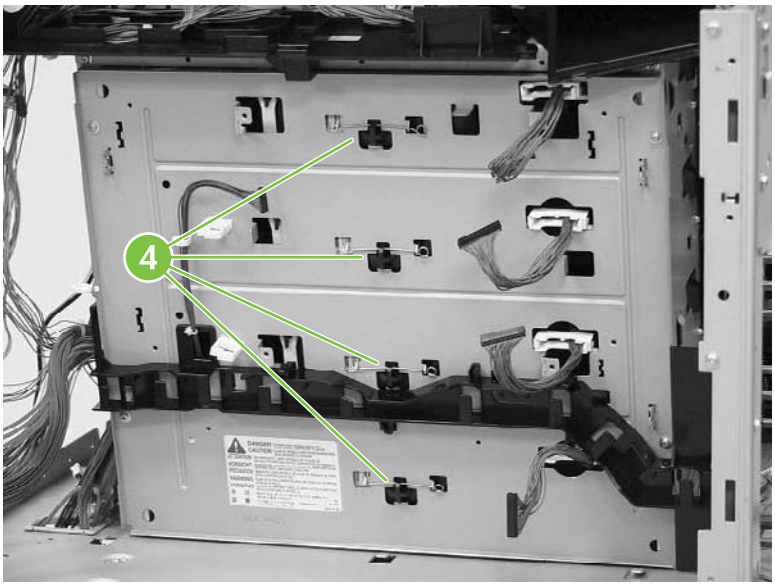


Figure 5-171 Remove the laser/scanner components (2 of 12)

10. Remove the four screws (callout 5), and then remove the rear plate assembly (callout 6).

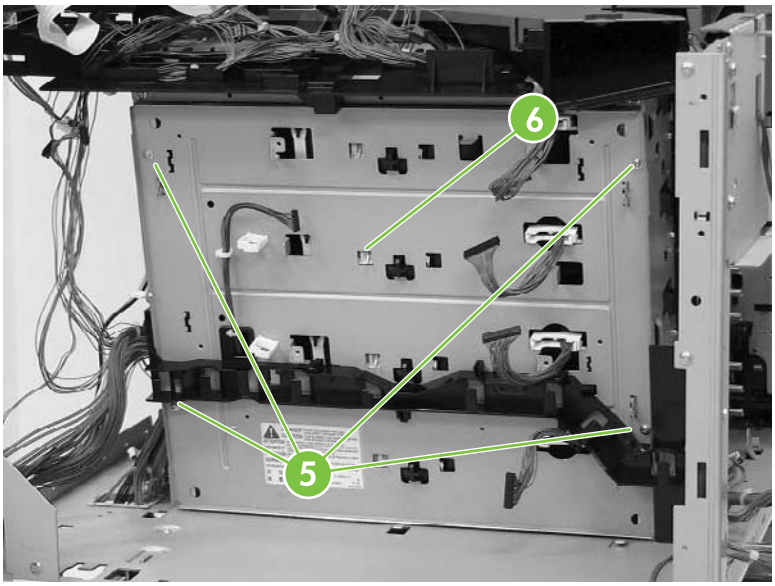


Figure 5-172 Remove the laser/scanner components (3 of 12)

11. Remove the cable (callout 7) from the cable guide (callout 8).

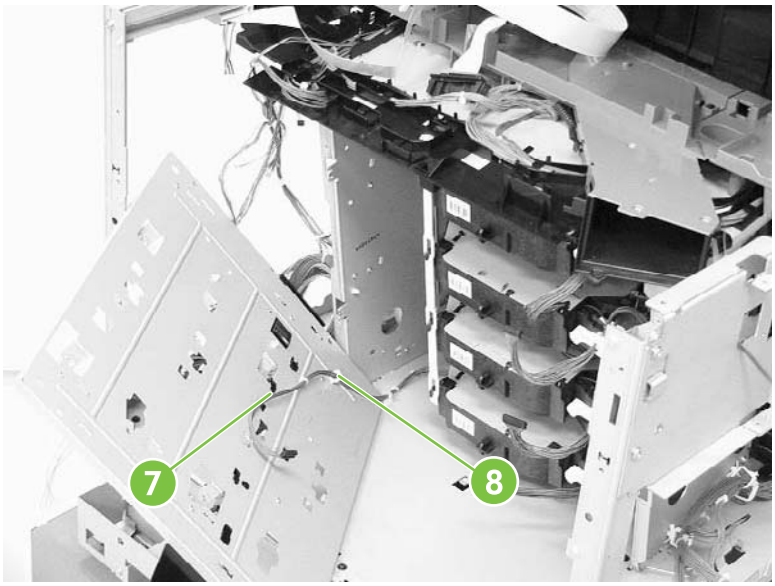


Figure 5-173 Remove the laser/scanner components (4 of 12)

12. Remove one screw (callout 9).

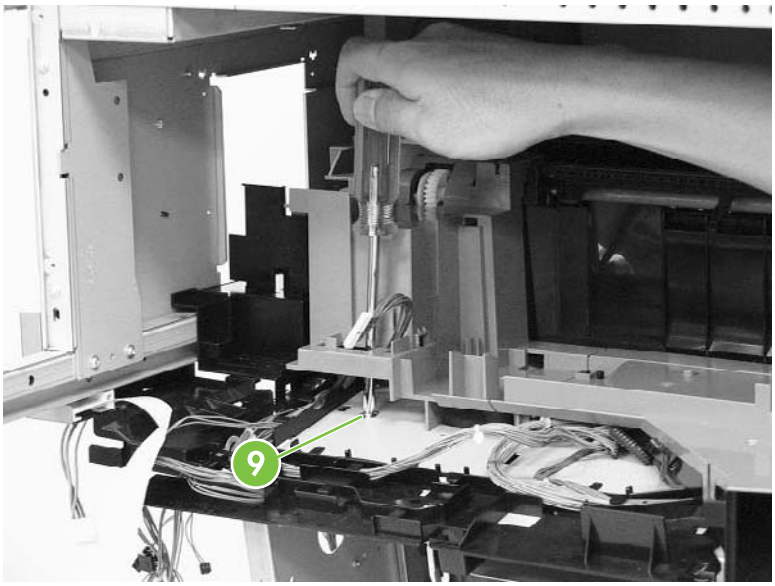


Figure 5-174 Remove the laser/scanner components (5 of 12)

13. Push the knob (callout 10) in and to the right. Then remove the scanner holder assembly (callout 11) by pushing it from the side.

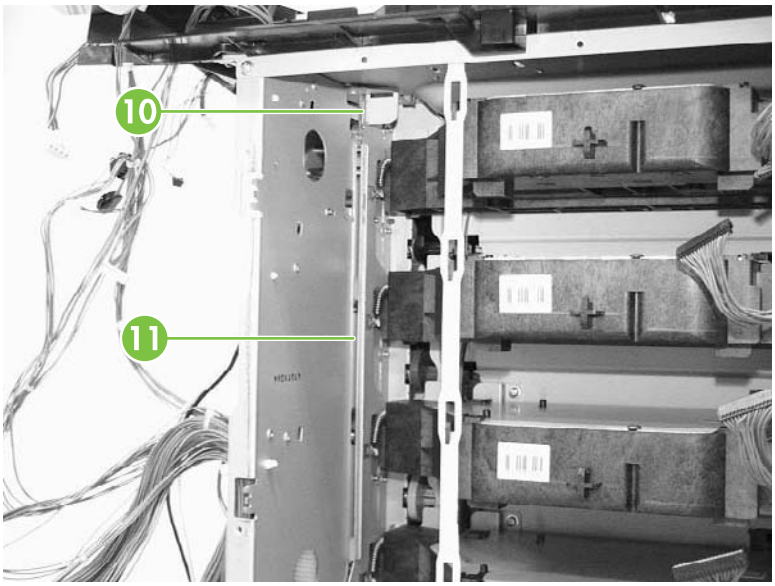


Figure 5-175 Remove the laser/scanner components (6 of 12)

14. Pull out the laser/scanner retaining arm (callout 12).

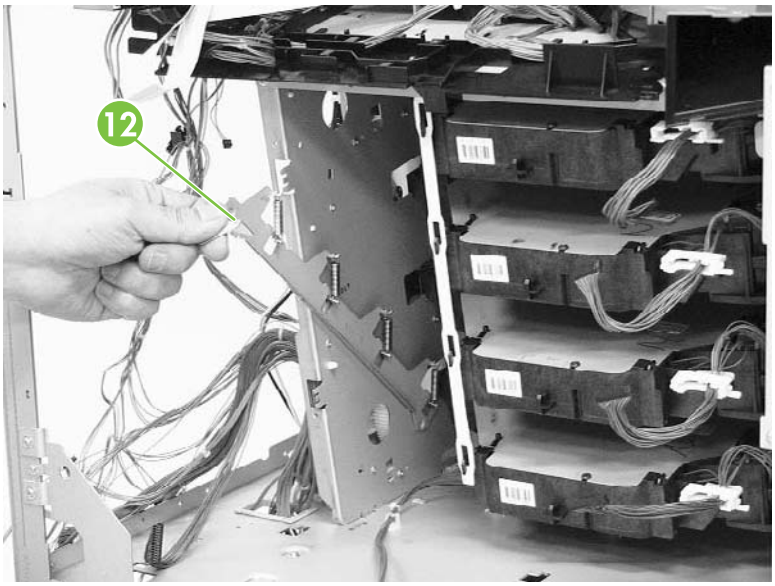


Figure 5-176 Remove the laser/scanner components (7 of 12)

15. Remove the recessed screw (callout 13).

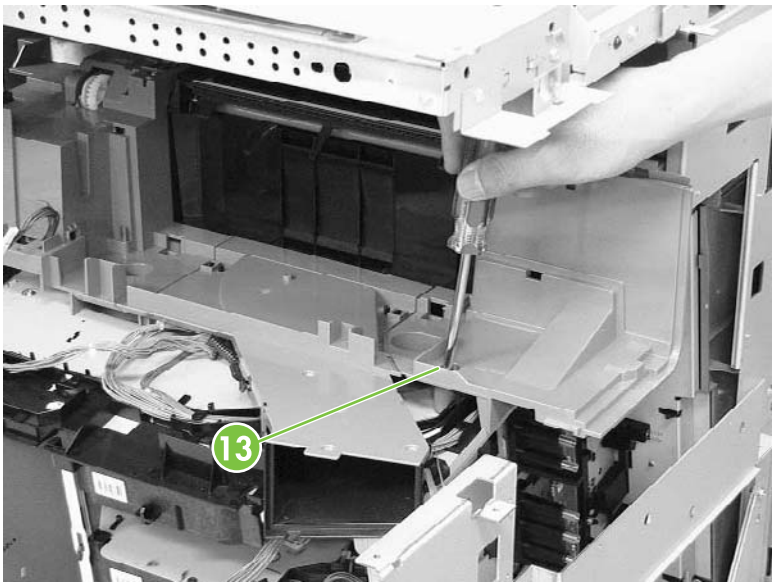


Figure 5-177 Remove the laser/scanner components (8 of 12)

16. Push the knob (callout 14) in and to the left and remove the rear scanner holder assembly (callout 15) by sliding if toward the front (callouts 16 and 17).

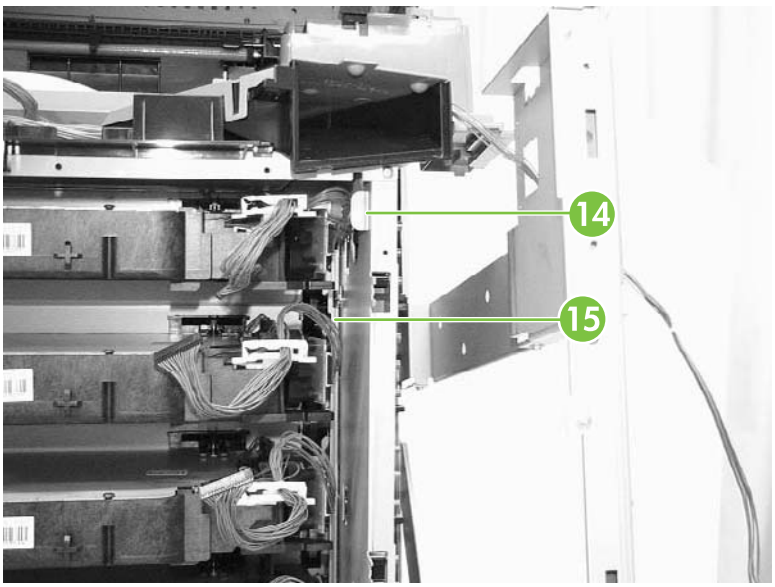


Figure 5-178 Remove the laser/scanner components (9 of 12)

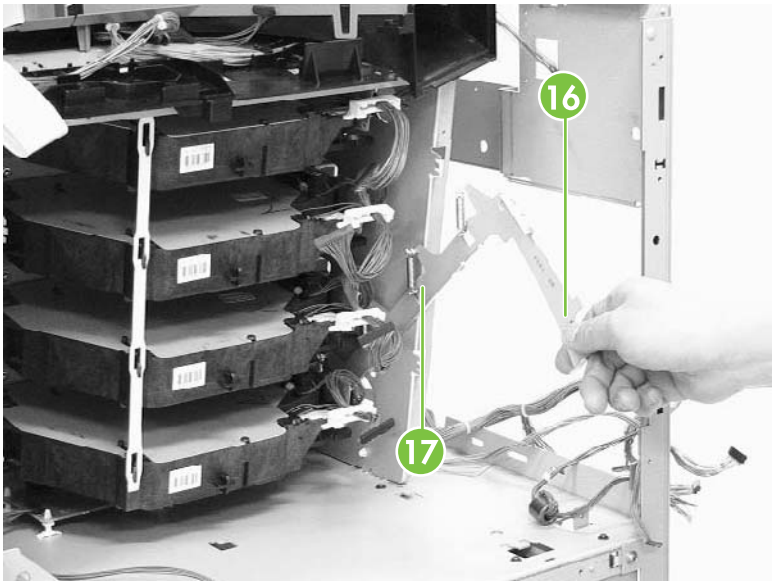


Figure 5-179 Remove the laser/scanner components (10 of 12)

17. Unhook the laser/scanner assemblies from the white retaining strip (callout 18).

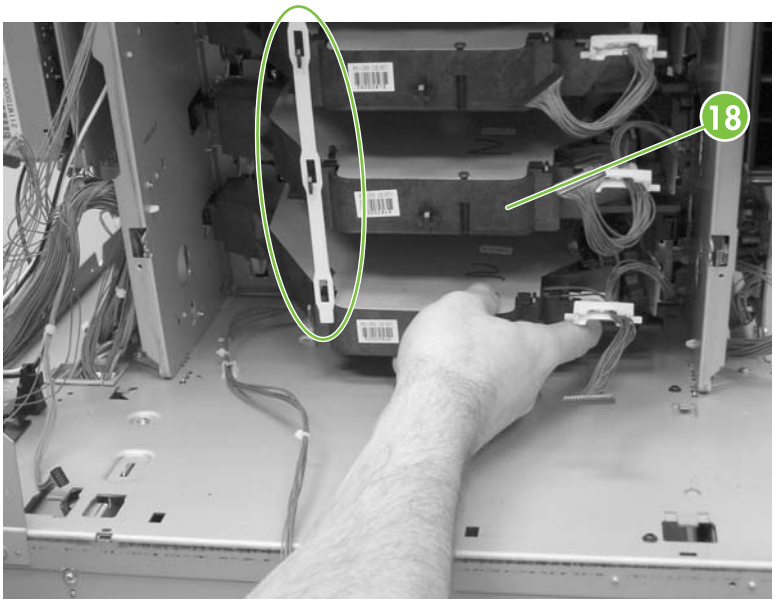


Figure 5-180 Remove the laser/scanner components (11 of 12)

18. Remove the laser/scanner assemblies (callout 19) by lifting and sliding them to the left and rotating them outward.

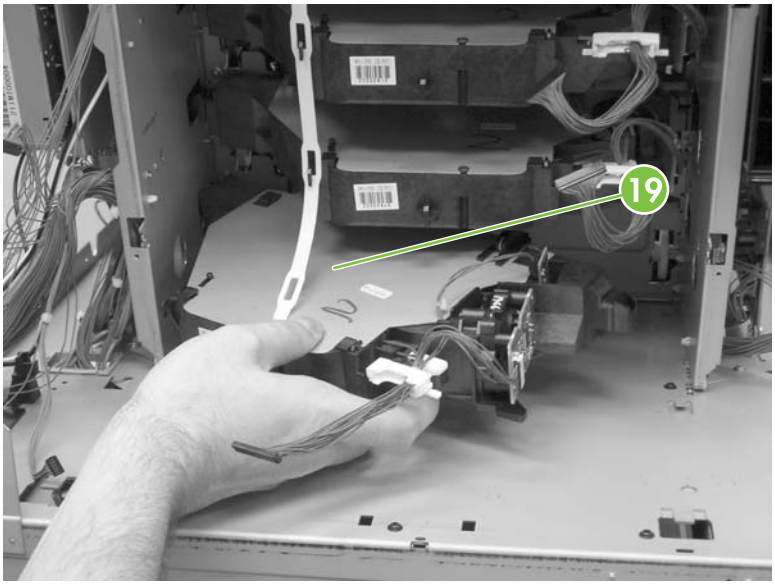


Figure 5-181 Remove laser/scanner components (12 of 12)

Duplexing assembly

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover. See Front cover assembly on page 316.
5. Remove the delivery upper cover. See Delivery upper cover assembly on page 325.
6. Remove the left rear inner cover. See Left rear inner cover assembly on page 326.
7. Open the duplexing door (callout 1).

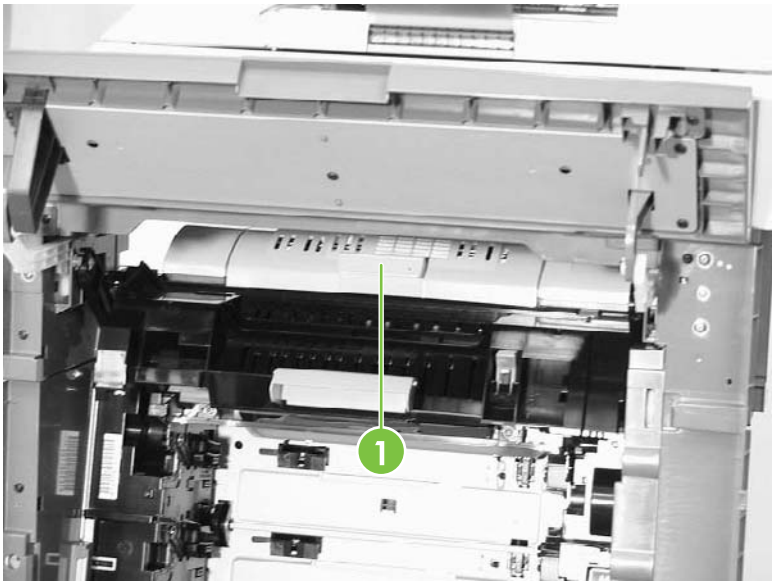


Figure 5-182 Remove the duplexing assembly (1 of 5)

8. Slide the right and left duplexing locks (callout 2) backward.

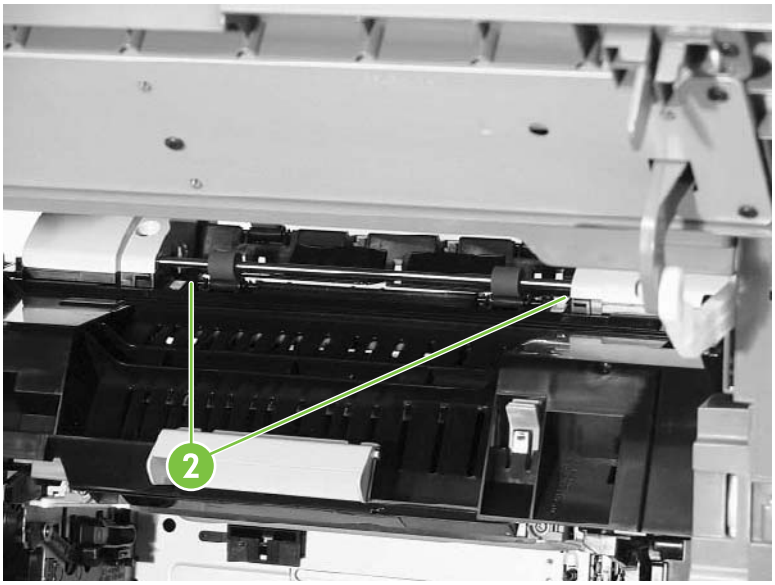


Figure 5-183 Remove the duplexing assembly (2 of 5)

9. Detail of left duplexing lock.

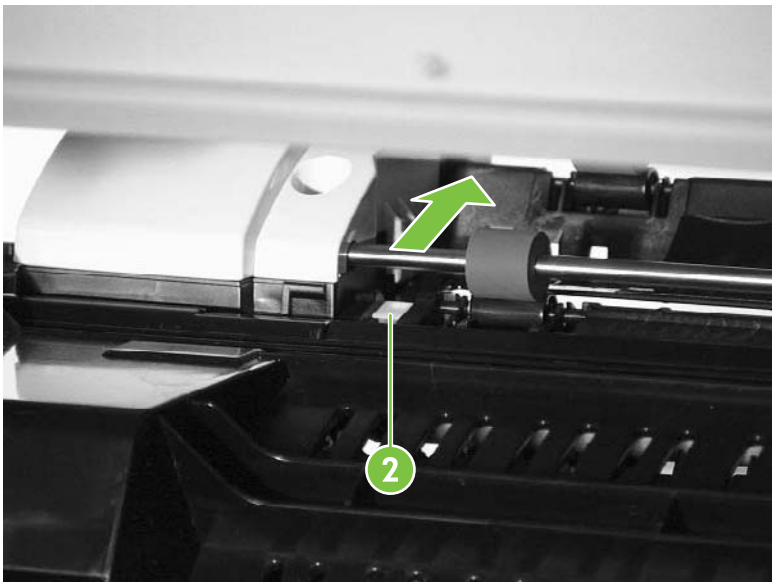


Figure 5-184 Remove the duplexing assembly (3 of 5)

10. Detail of right duplexing lock.

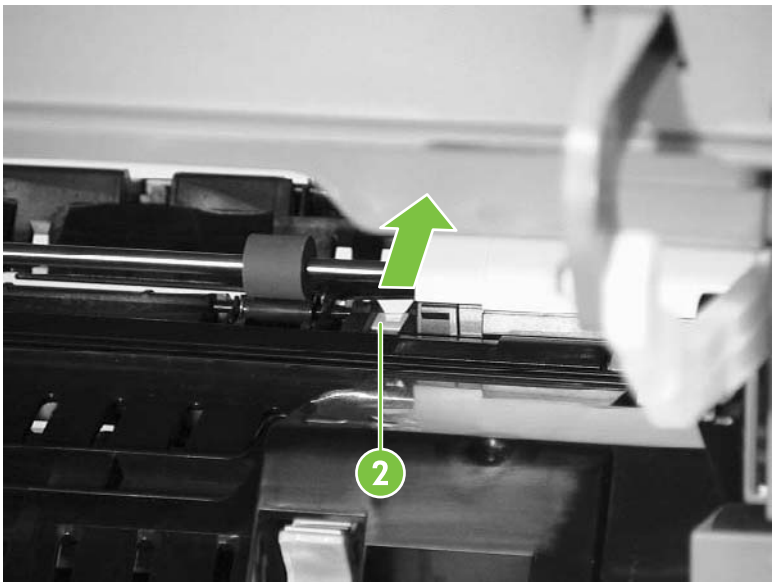


Figure 5-185 Remove the duplexing assembly (4 of 5)

11. From the left side of the MFP, lift up the duplexer. Disconnect the connector (callout 3) while supporting the duplexing assembly (callout 4).

12. Remove the duplexing assembly (callout 4).

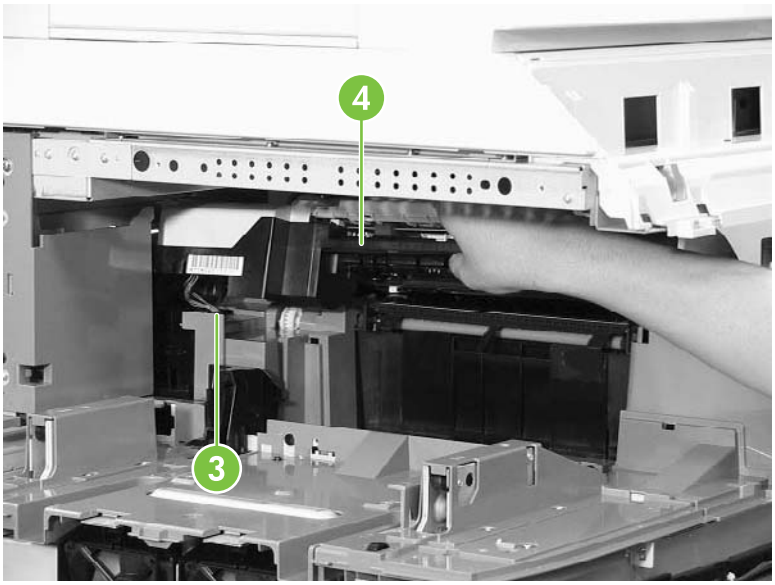


Figure 5-186 Remove the duplexing assembly (5 of 5)

Delivery assembly

1. Remove the rail guide assembly. See Rail guide assembly on page 361.

2. Remove the right front inner upper cover assembly. See Right front inner upper cover assembly on page 327.

3. Remove the right rear inner cover assembly. See Right rear inner cover assembly on page 329.

4. Remove the duplexing assembly. See Duplexing assembly on page 377.
5. Remove the sub power supply. See Sub power supply PCB on page 427.
6. Remove the rear exhaust fan. See Rear exhaust fan on page 405.
7. Remove the three screws (callout 1) and remove the metal side access cover plate.

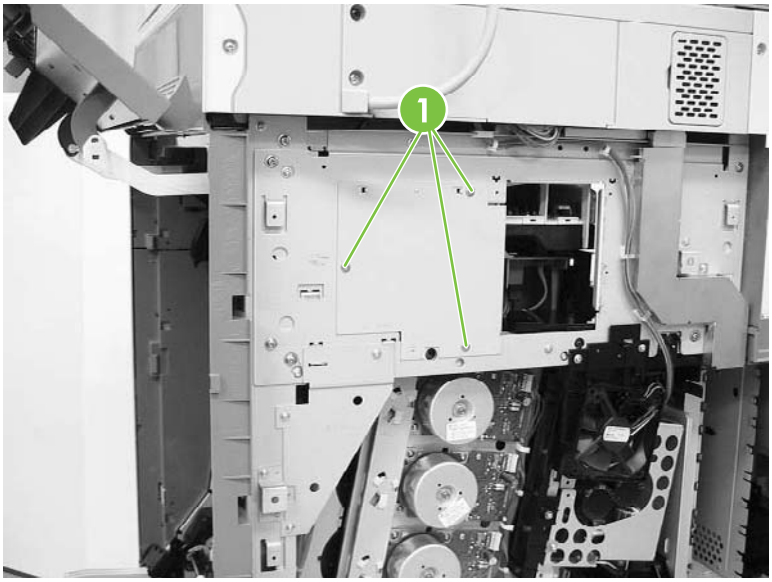


Figure 5-187 Remove the delivery assembly (1 of 15)

8. Remove the three connectors (callout 2).

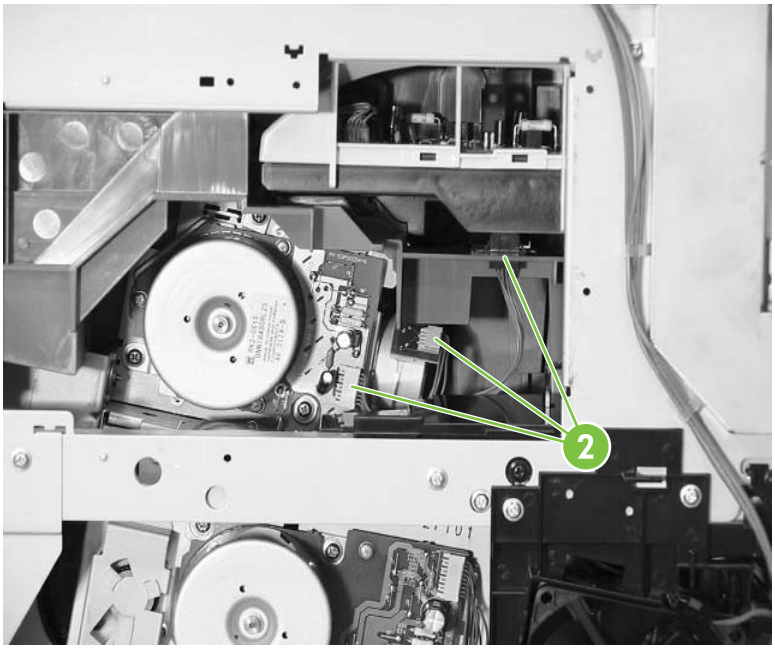


Figure 5-188 Remove the delivery assembly (2 of 15)

9. Remove the two screws (callout 3) at the front of the MFP.

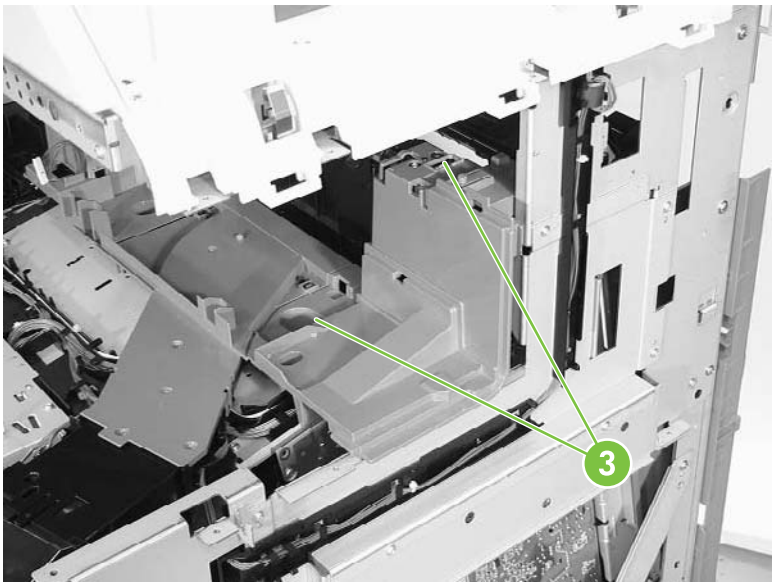


Figure 5-189 Remove the delivery assembly (3 of 15)

10. Remove the fuser door assembly (callout 4) and the front upper inner cover (callout 5).

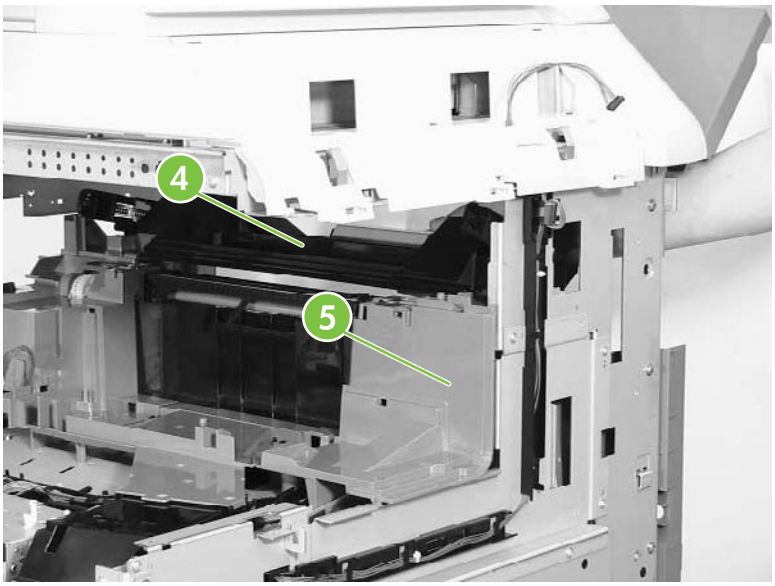


Figure 5-190 Remove the delivery assembly (4 of 15)

11. Remove the two screws (callout 6), and then remove the front upper inner cover (callout 7).

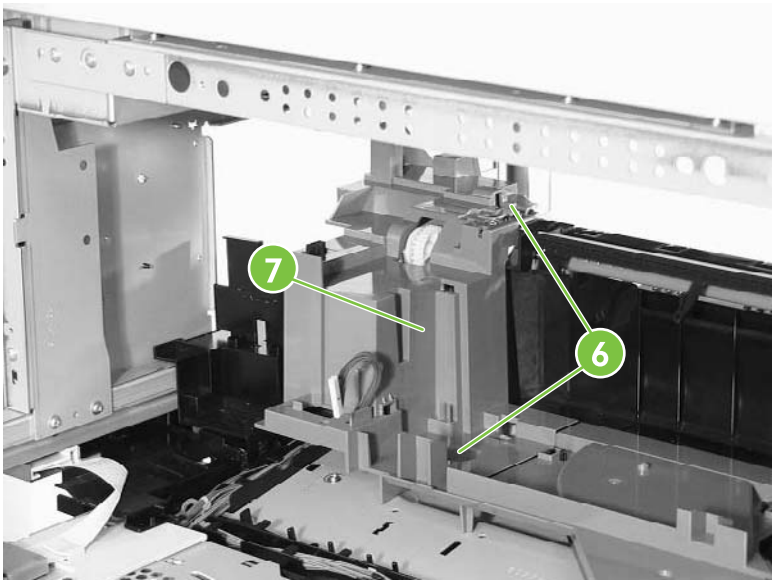


Figure 5-191 Remove the delivery assembly (5 of 15)

12. Unhook the four claws (callout 8) and then remove the fan duct (callout 9).

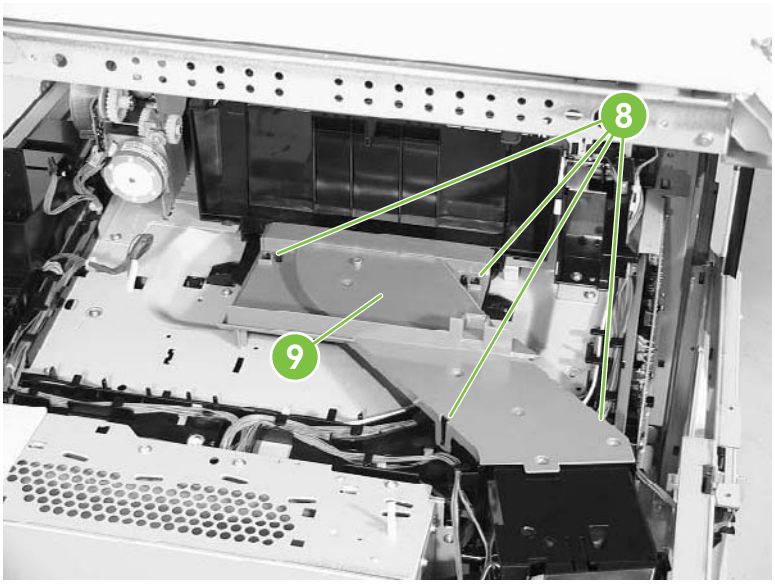


Figure 5-192 Remove the delivery assembly (6 of 15)

13. Remove the cable (callout 10) from the cable guides (callout 11) and disconnect the connector (callout 12). Then remove the two screws (callout 13) and the delivery fan assembly (callout 14).

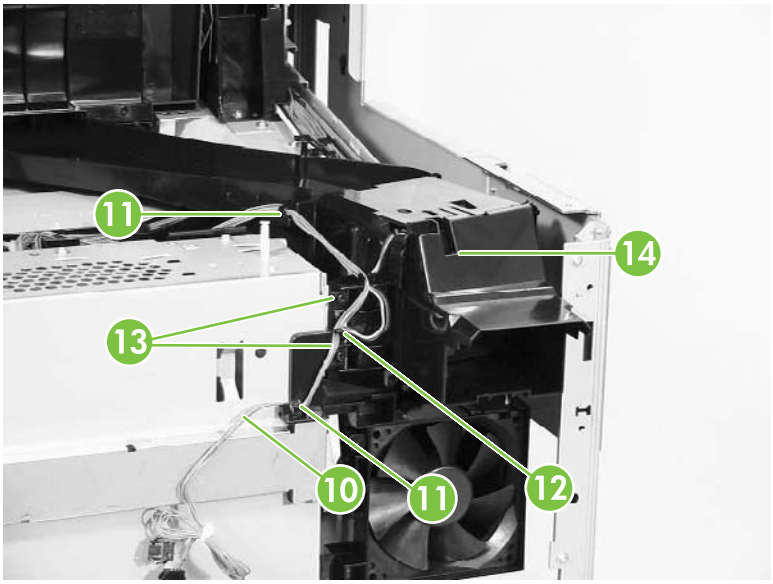


Figure 5-193 Remove the delivery assembly (7 of 15)

14. Remove the three screws (callout 15), remove the cable from the cable guides (callout 16), and then remove the fan duct (callout 17).

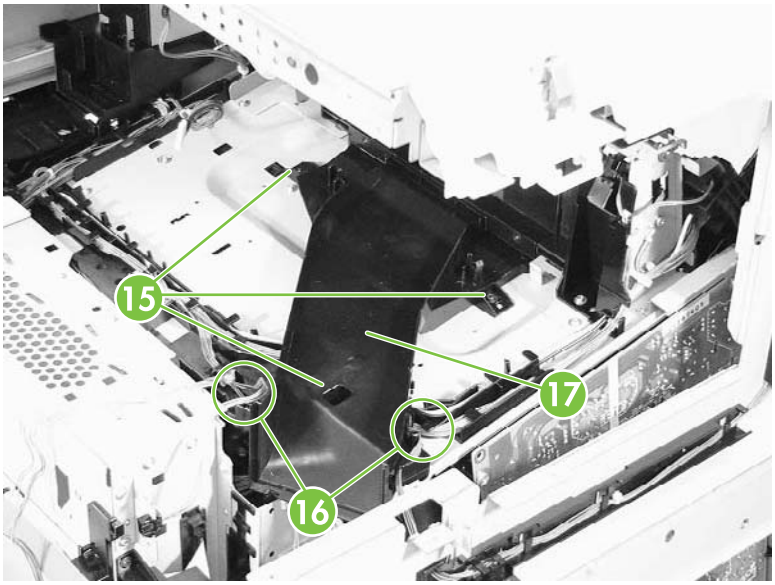


Figure 5-194 Remove the delivery assembly (8 of 15)

15. Disconnect the connector (callout 18). Remove the cable (callout 19) from the cable guide (callout 20).

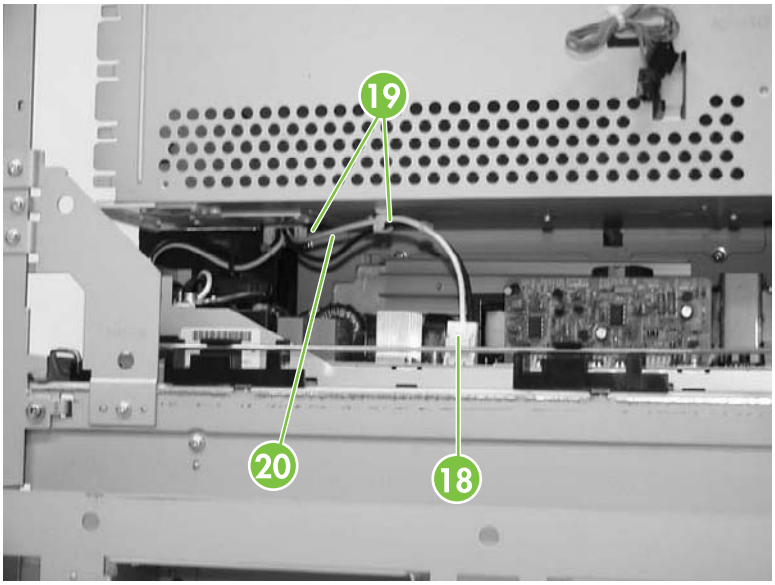


Figure 5-195 Remove the delivery assembly (9 of 15)

16. Remove the cable (callout 21) from the cable guide (callout 22).

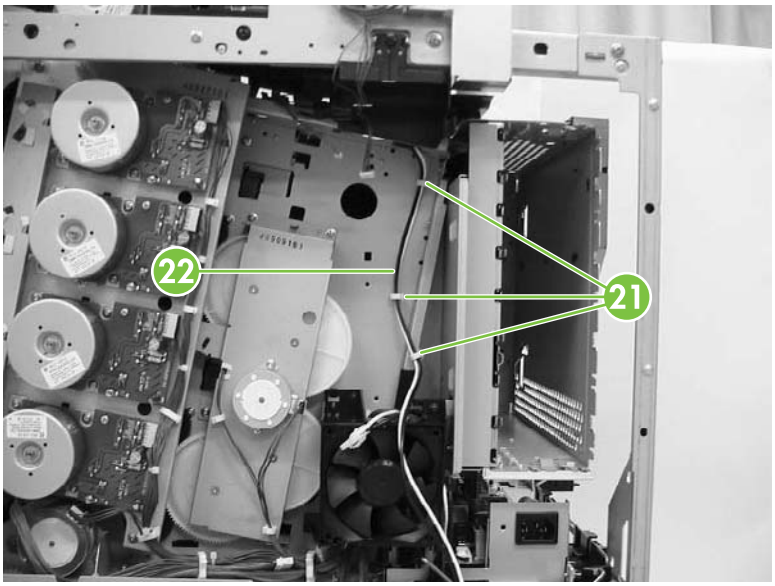


Figure 5-196 Remove the delivery assembly (10 of 15)

17. Remove the cable (callout 23) from the cable guides (callout 24).

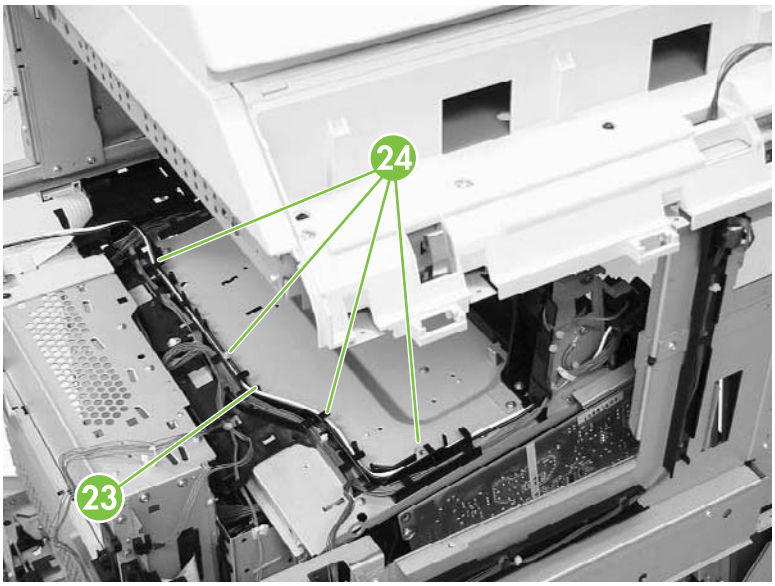


Figure 5-197 Remove the delivery assembly (11 of 15)

18. Remove the cable (callout 25) from the cable guide (callout 26). Disconnect the connectors (callouts 27 and 28). Note that callout 27 includes two connectors.

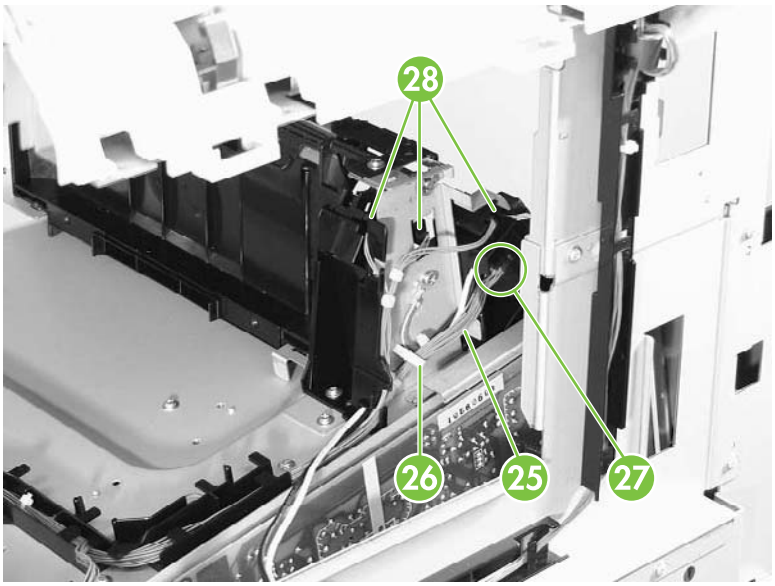


Figure 5-198 Remove the delivery assembly (12 of 15)

19. Remove one screw (callout 29).



Figure 5-199 Remove the delivery assembly (13 of 15)

20. Remove the two screws (callout 30).

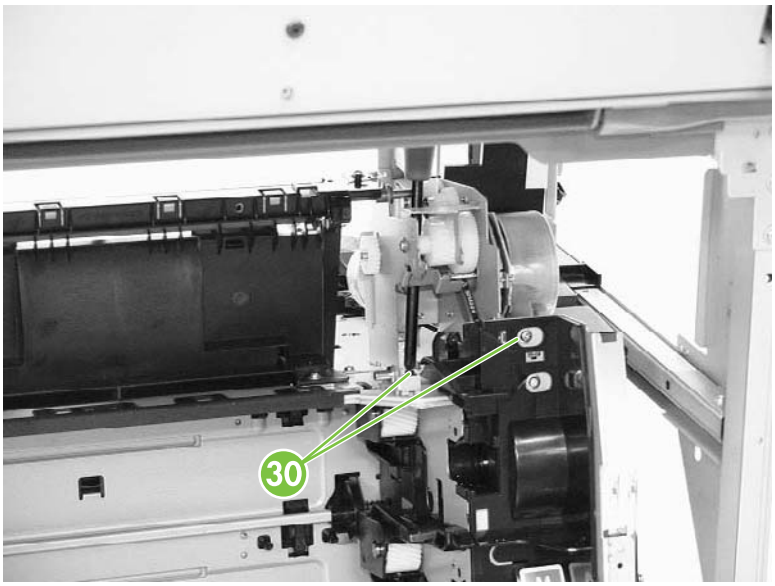


Figure 5-200 Remove the delivery assembly (14 of 15)

21. Remove the two screws (callout 31), and then remove the delivery assembly (callout 32).

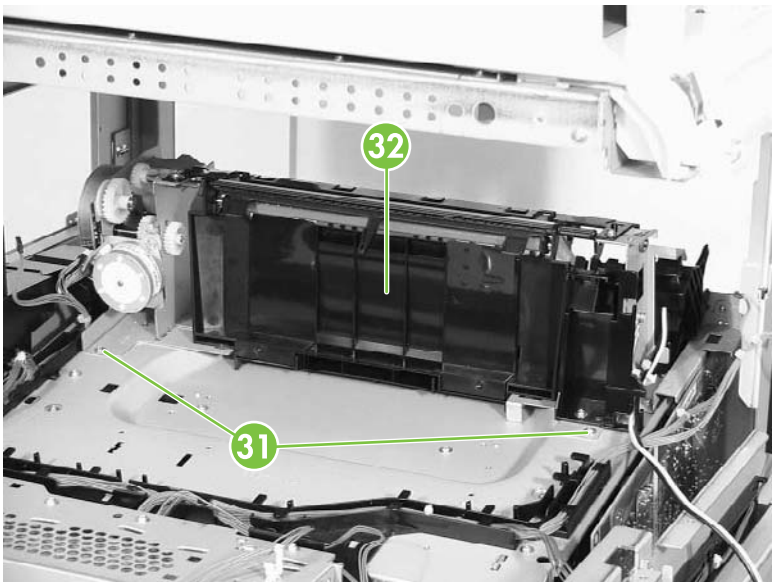


Figure 5-201 Remove the delivery assembly (15 of 15)

Fuser drive assembly

1. Remove the delivery assembly. See Delivery assembly on page 379.
2. Remove the E-ring (callout 1).

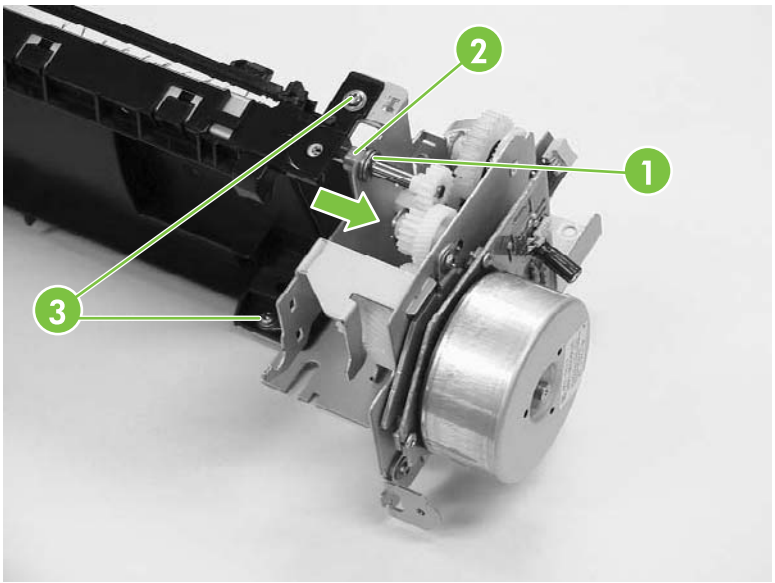


Figure 5-202 Remove the fuser drive assembly

3. Slide the bushing (callout 2) in the direction of the arrow.
4. Remove the two screws (callout 3), and then remove the fuser drive assembly.

Motors and fans

The procedures in this section describe the removal and replacement of the following components:

- Drum motors
- Fuser motor
- Fuser pressure release motor
- Developing disengaging motor
- Pickup motor assembly
- Power supply fan
- Cartridge fan
- Sub power supply fan
- Delivery fan
- Control fan 1
- Control fan 2
- Rear exhaust fan
- ETB fan

Drum motors

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Disconnect the connector (callout 1). Remove the four screws (callout 2), and then remove the drum motor (callout 3).

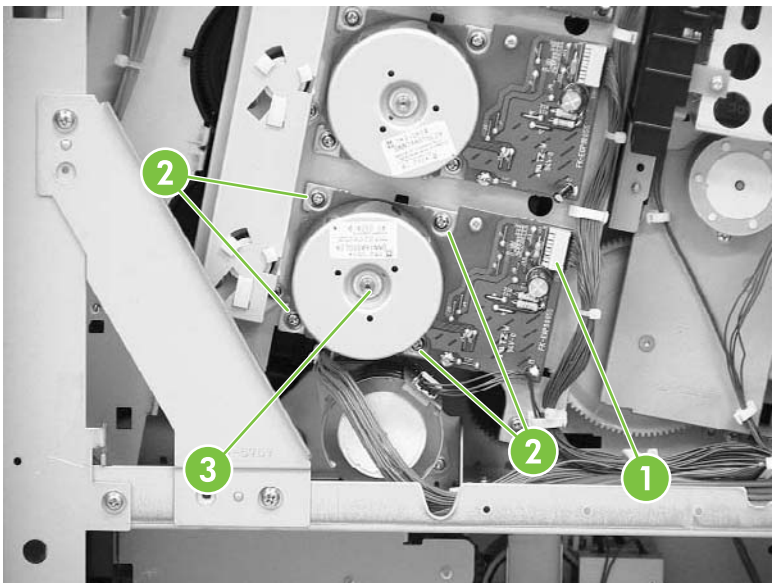


Figure 5-203 Remove drum motor

Fuser motor

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Remove the rear exhaust fan. See Rear exhaust fan on page 405.
3. Remove the three screws (callout 1) and the plate (callout 2).

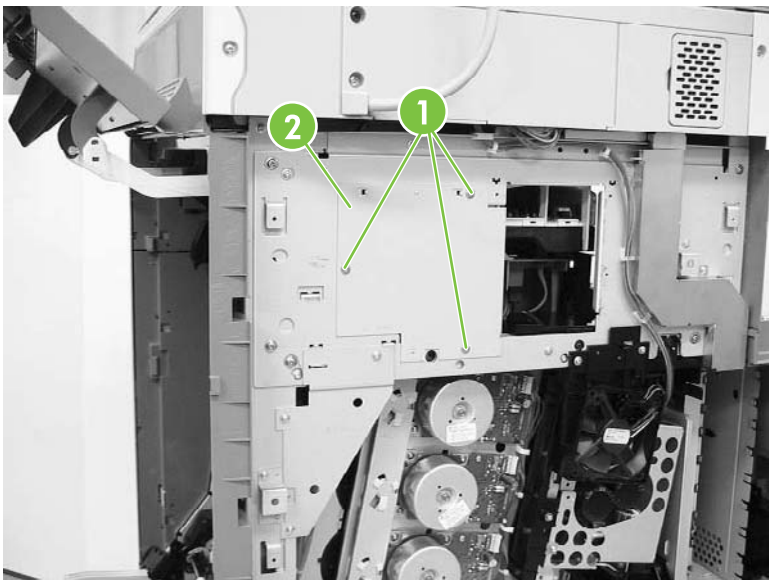


Figure 5-204 Remove the fuser motor (1 of 2)

4. Disconnect the connector (callout 3).
5. Remove the three screws (callout 4) and then remove the fuser motor (callout 5).

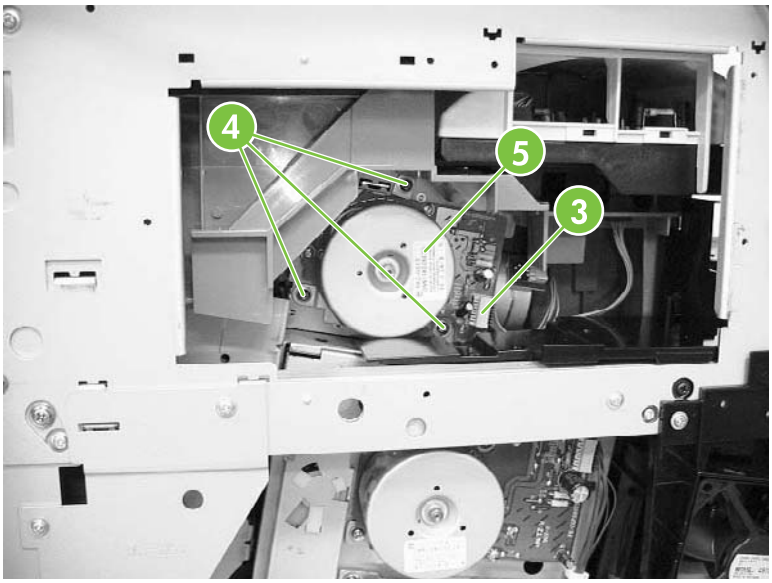


Figure 5-205 Remove the fuser motor (2 of 2)

Fuser pressure release motor

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover. See Front cover assembly on page 316.
5. Remove the delivery upper cover. See Delivery upper cover assembly on page 325.
6. Remove the left rear inner cover. See Left rear inner cover assembly on page 326.
7. Remove the duplexer. See Duplexing assembly on page 377.
8. Remove the right front and right rear inner upper covers. See Right front inner upper cover assembly on page 327 and Right rear inner cover assembly on page 329.
9. Remove the two screws (callout 1), and then remove the rear guide cover (callout 2).

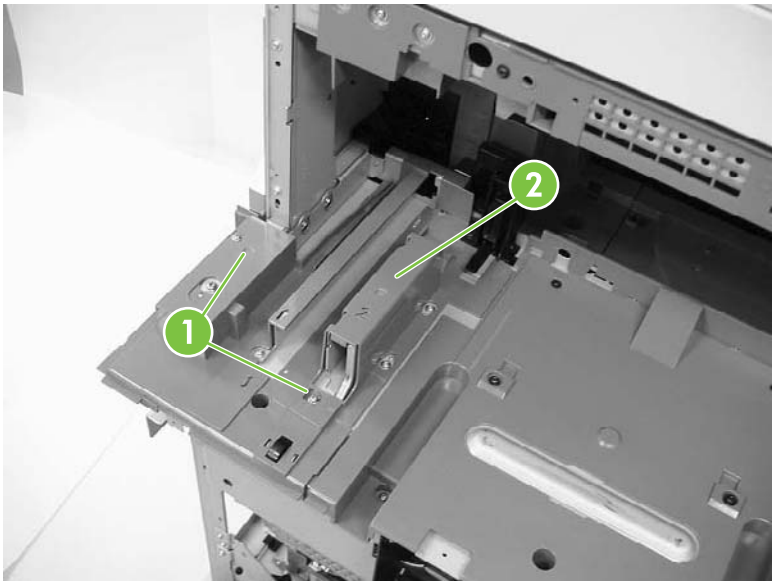


Figure 5-206 Remove the fuser pressure release motor (1 of 8)

10. Remove two screws (callout 3) and then remove the front guide cover (callout 4).

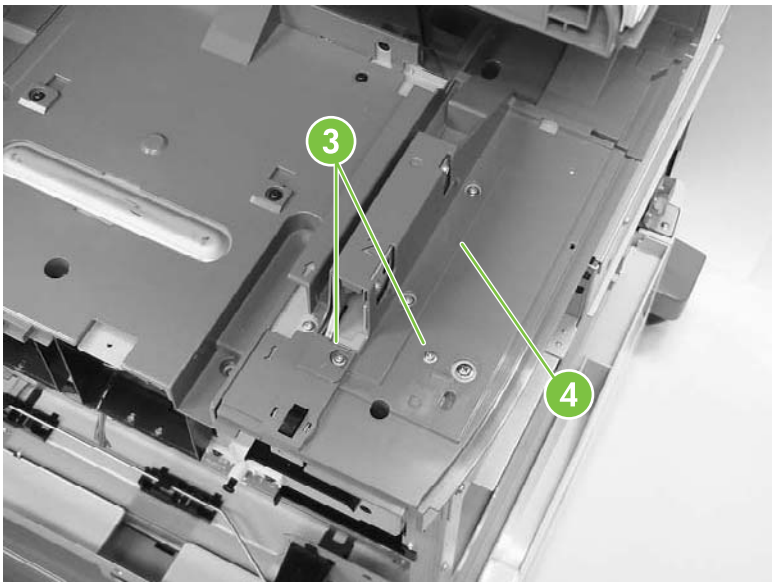


Figure 5-207 Remove the fuser pressure release motor (2 of 8)

11. Remove two screws (callout 5) at the front of the MFP and remove the cover.

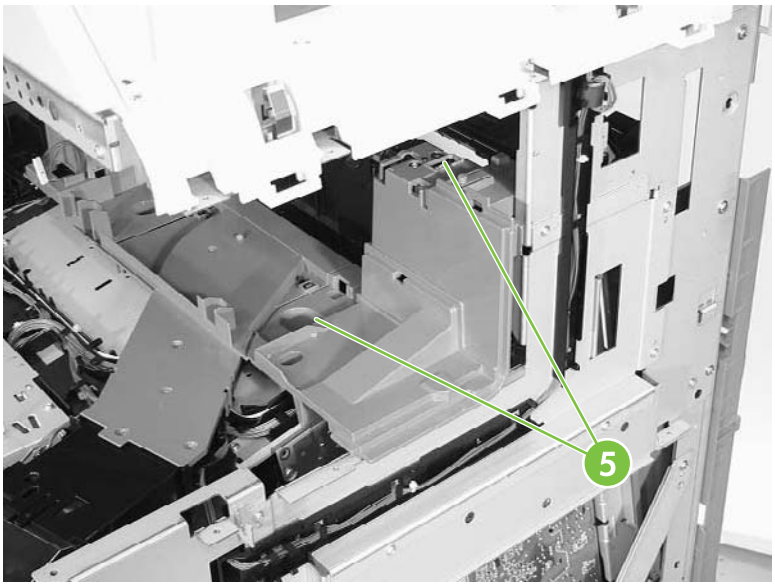


Figure 5-208 Remove the fuser pressure release motor (3 of 8)

12. Unhook the two claws (callout 6), and then remove the connector cover (callout 7).

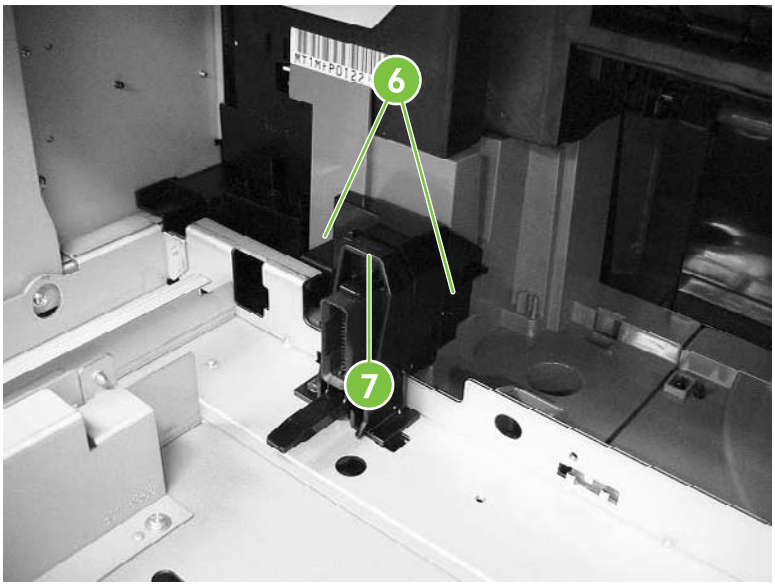


Figure 5-209 Remove the fuser pressure release motor (4 of 8)

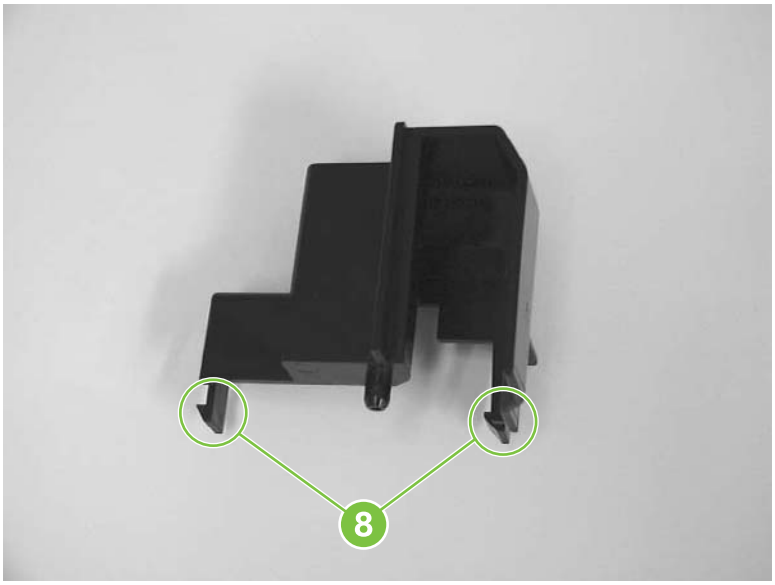


Figure 5-210 Remove the fuser pressure release motor, connector cover claw detail (5 of 8)

13. Disconnect the connector (callout 9).

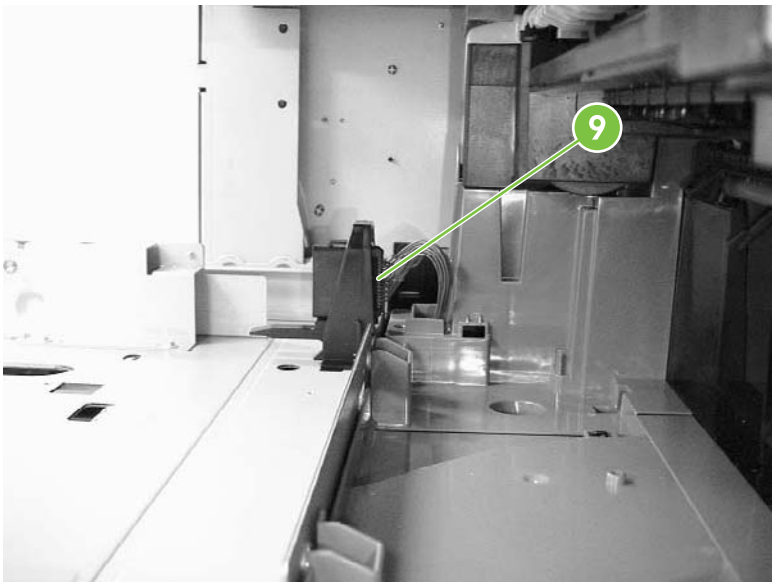


Figure 5-211 Remove the fuser pressure release motor (6 of 8)

14. Remove two screws (callout 10) and lift off the plastic fuser drive assembly cover (callout 11).

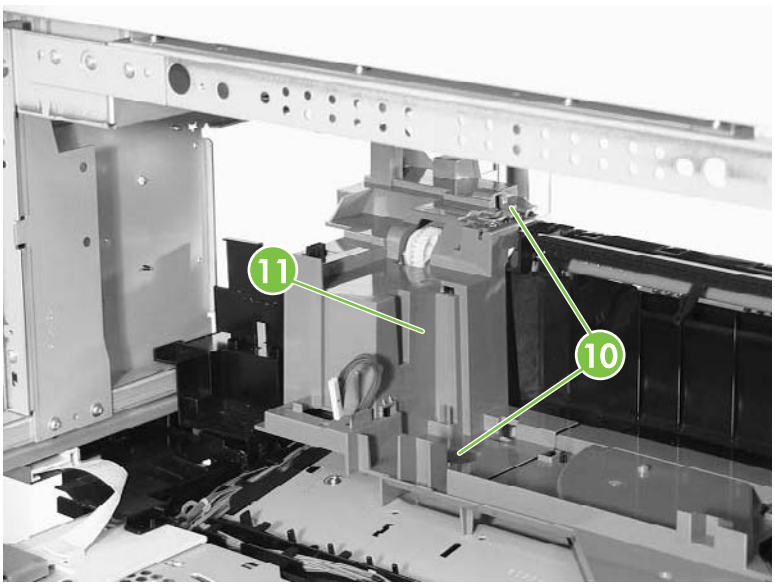


Figure 5-212 Remove the fuser pressure release motor (7 of 8)

15. Disconnect one connector (callout 12), remove the two screws (callout 13), and then remove the fuser pressure release motor (callout 14).

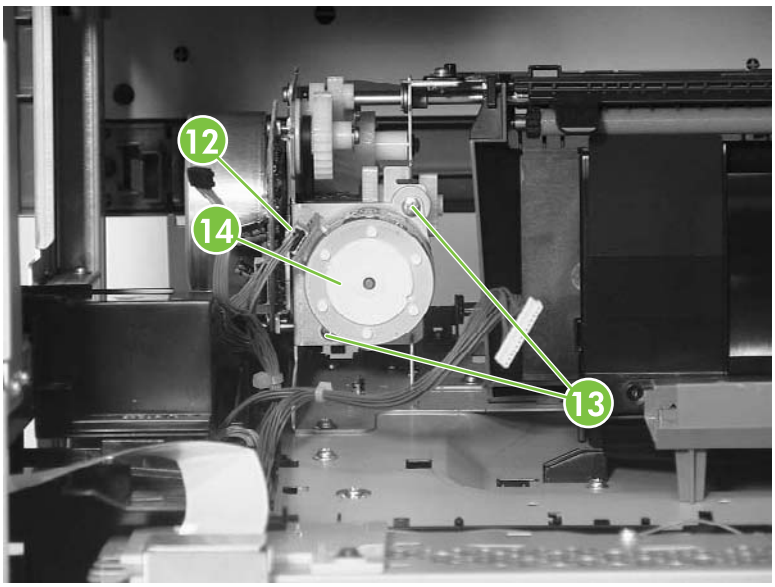


Figure 5-213 Remove the fuser pressure release motor (8 of 8)

NOTE: After reinstalling the fuser pressure release motor, rotate the pressure release gears to ensure that they engage with the worm gear on the motor.

Developing disengaging motor

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the sub power supply PCB. See Sub power supply PCB on page 427.
3. Disconnect the connector (callout 1).
4. Remove the two screws (callout 2), and then remove the developing disengaging motor (callout 3).

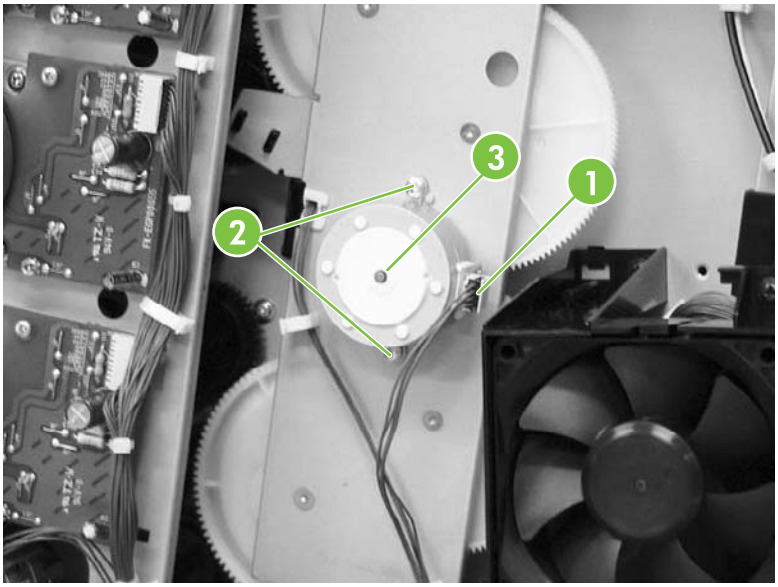


Figure 5-214 Remove the developing disengaging motor

Pickup motor assembly

1. Remove the paper feed assembly. See Paper feed assembly on page 335.
2. Using a small flat-blade screwdriver, pinch the tab (callout 1) and slide the gear (callout 2), cylinder (callout 3), and bushing (callout 4) off the shaft.

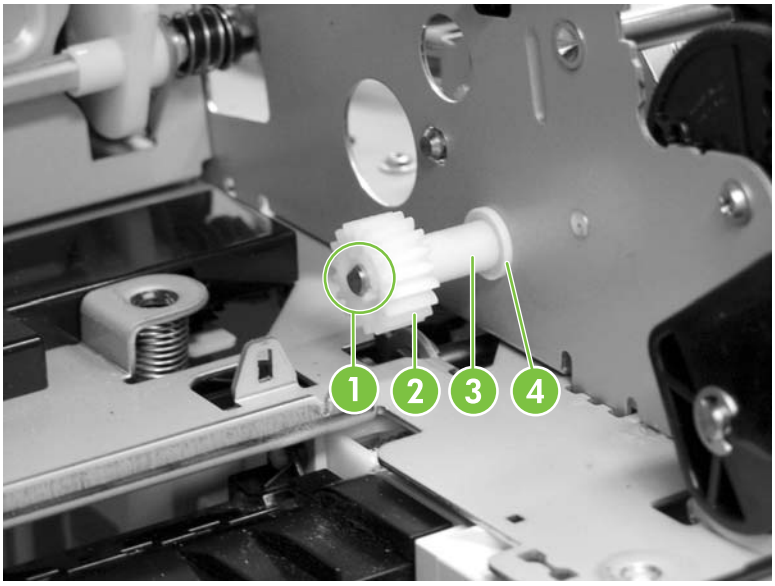


Figure 5-215 Remove the pickup motor assembly (1 of 3)

Gear removed.



Figure 5-216 Remove the pickup motor assembly (2 of 3)

3. Disconnect the connector (callout 5), remove the two screws, and then remove the pickup motor by angling it around the main drive assembly.

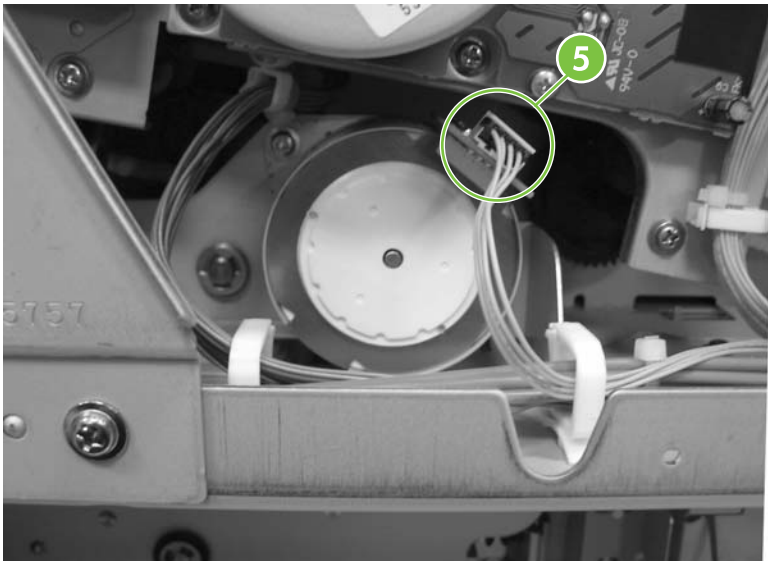


Figure 5-217 Remove the pickup motor assembly (3 of 3)

Power supply fan

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the three screws (callout 1) and remove the power supply fan (callout 2).

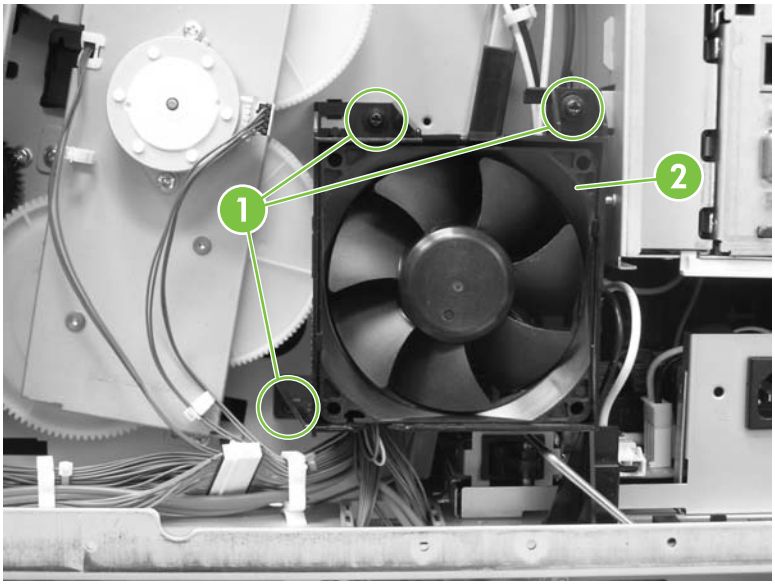


Figure 5-218 Remove the power supply fan (1 of 2)

3. Disconnect the connector. (Currently this disconnects at the DC controller. Changes will be implemented prior to product introduction.)

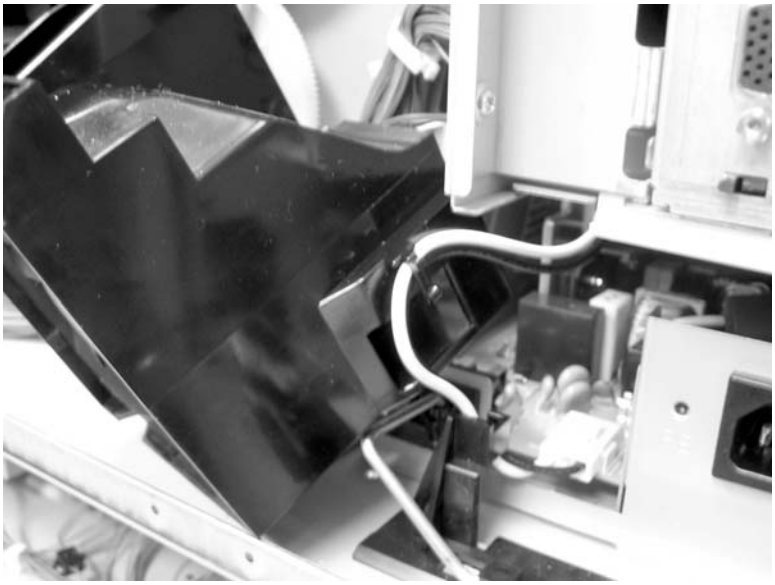


Figure 5-219 Remove the power supply fan (2 of 2)

NOTE: When installing the power supply fan, install the fan so that the label (callout 3) faces into the MFP. Install the cable (callout 4) as shown in the figure.

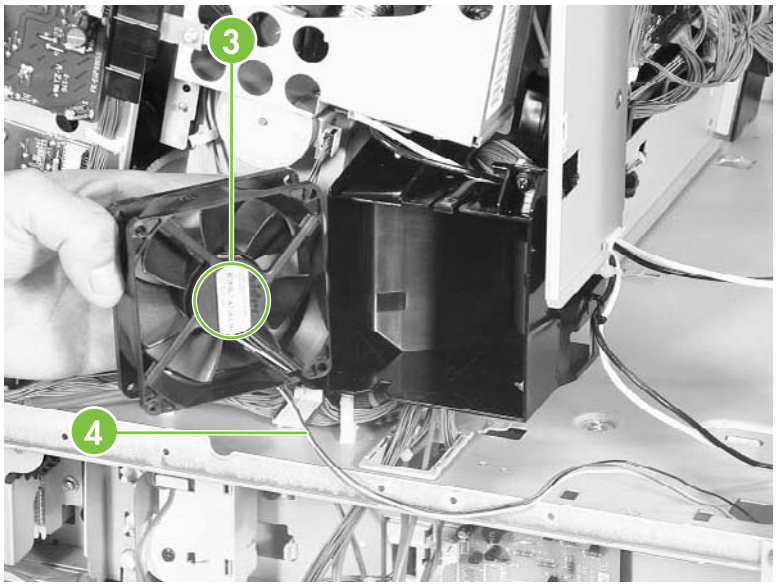


Figure 5-220 Reinstall the power supply fan

Cartridge fan

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover and the control panel. See Front cover assembly on page 316 and Control panel on page 267.
5. Remove the rail guide assembly. See Rail guide assembly on page 361.
6. Remove the delivery fan. See Delivery fan on page 402.
7. Disconnect the connector (callout 1).
8. Unhook the three claws (callout 2) and remove the cartridge fan (callout 3).

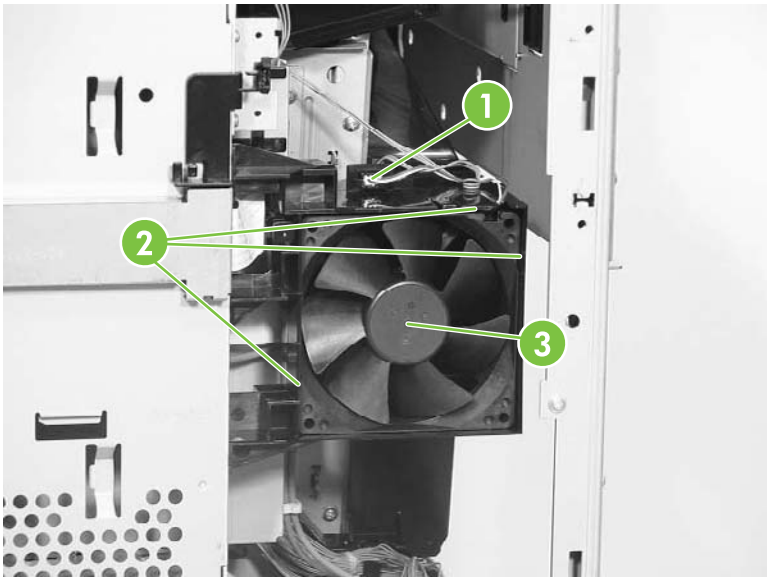


Figure 5-221 Remove the cartridge fan

NOTE: When installing the cartridge fan, install the fan so that the label (callout 4) faces into the MFP. Install the cable (callout 5) as shown in the figure.

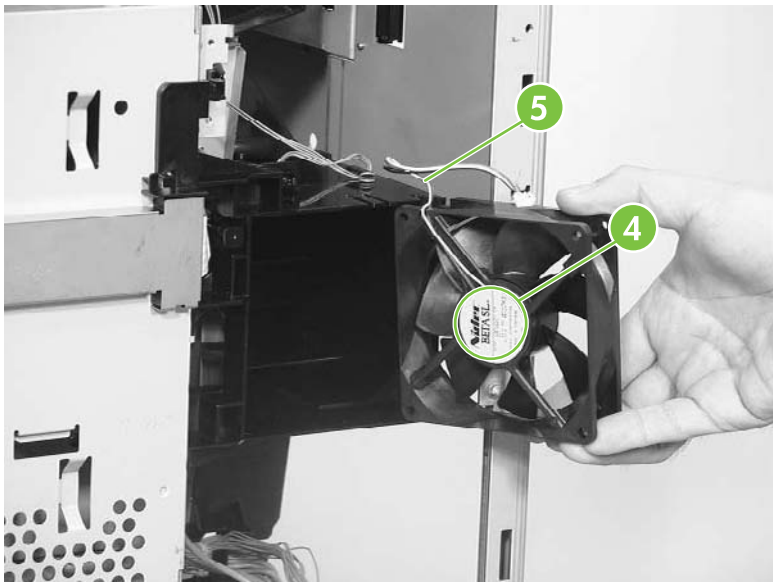


Figure 5-222 Installation guidelines

Sub power supply fan

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Unhook the cable from the cable guide (callout 1) and remove the three screws (callout 2).

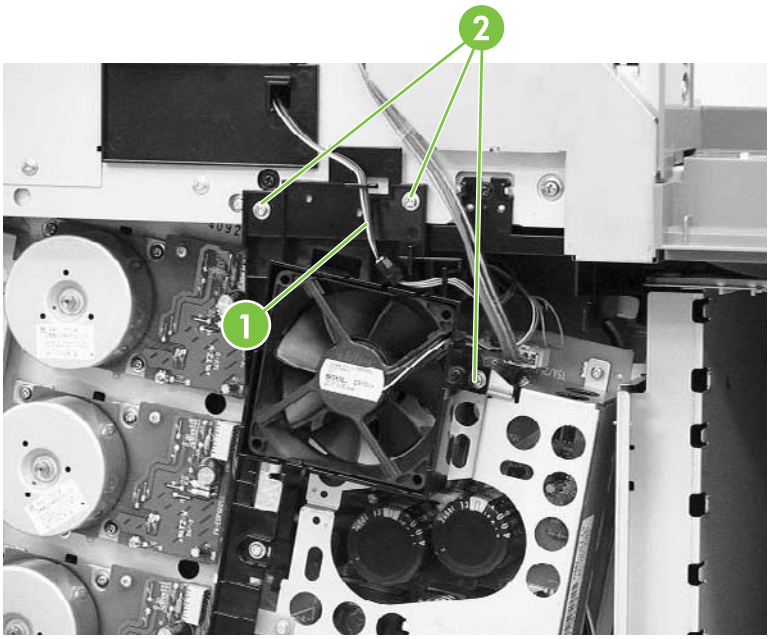


Figure 5-223 Remove the sub power supply fan (1 of 3)

3. Remove the fan holder (callout 3) and the sub power supply fan together. Disconnect the connector (callout 4).

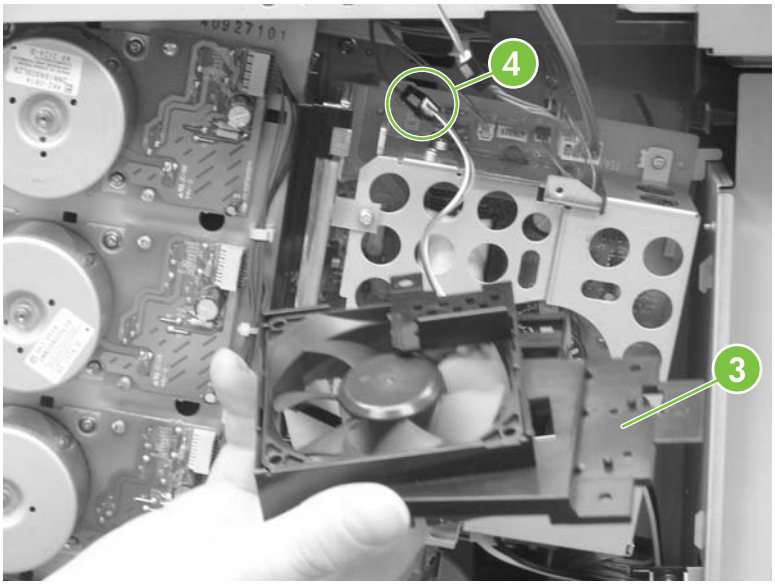


Figure 5-224 Remove the sub power supply fan (2 of 3)

4. Unhook the three claws (callout 5), and then remove the sub power supply fan (callout 6) from the fan holder (callout 7).

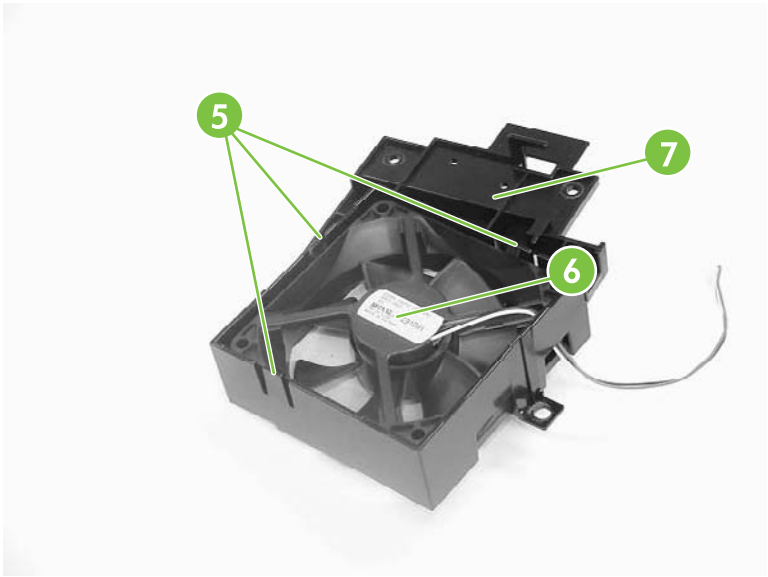


Figure 5-225 Remove the sub power supply fan (3 of 3)

NOTE: When installing the sub power supply fan, install the fan so that the label (callout 8) faces into the MFP. Install the cable (callout 9) as shown in the figure.

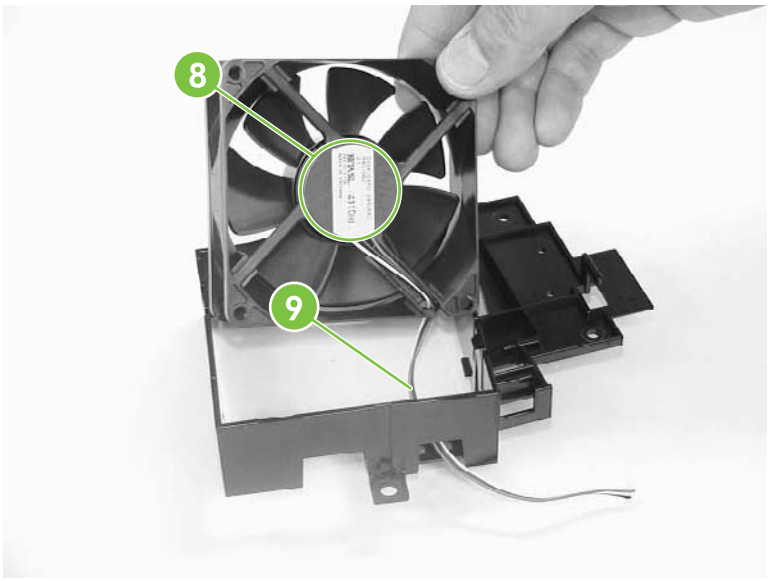


Figure 5-226 Installation guidelines

Delivery fan

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover and the control panel. See Front cover assembly on page 316 and Control panel on page 267.
5. Remove the rail guide assembly. See Rail guide assembly on page 361.
6. Remove the cable (callout 1) from the cable guides (callout 2).

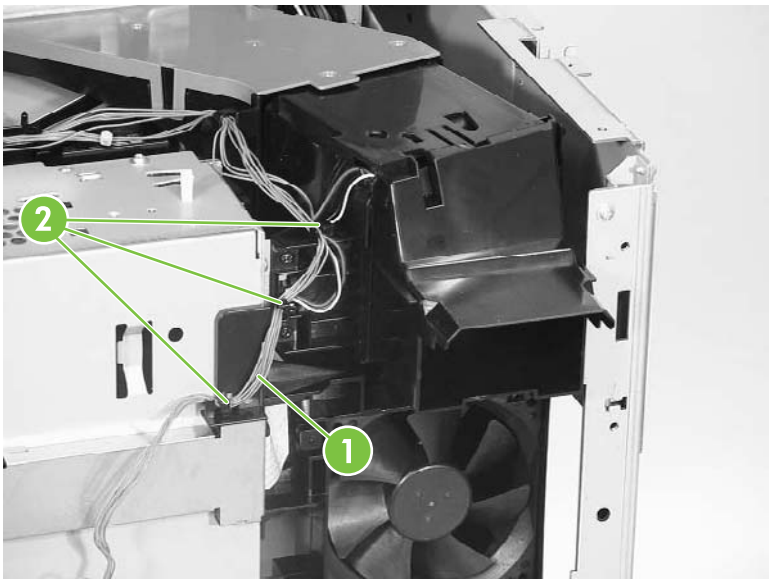


Figure 5-227 Remove the delivery fan (1 of 2)

7. Disconnect the connector (callout 3) and remove the two screws (callout 4). Then remove the delivery fan assembly (callout 5).

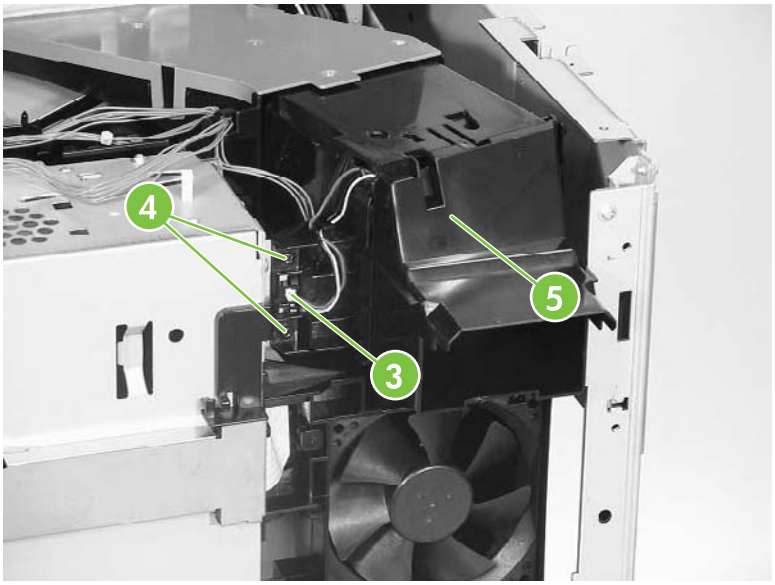


Figure 5-228 Remove the delivery fan (2 of 2)

Control fan 1

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover assembly. See Left cover assembly on page 315.
4. Disconnect the connector (callout 1). Unhook the three claws (callout 2) and remove control fan #1 (callout 3).

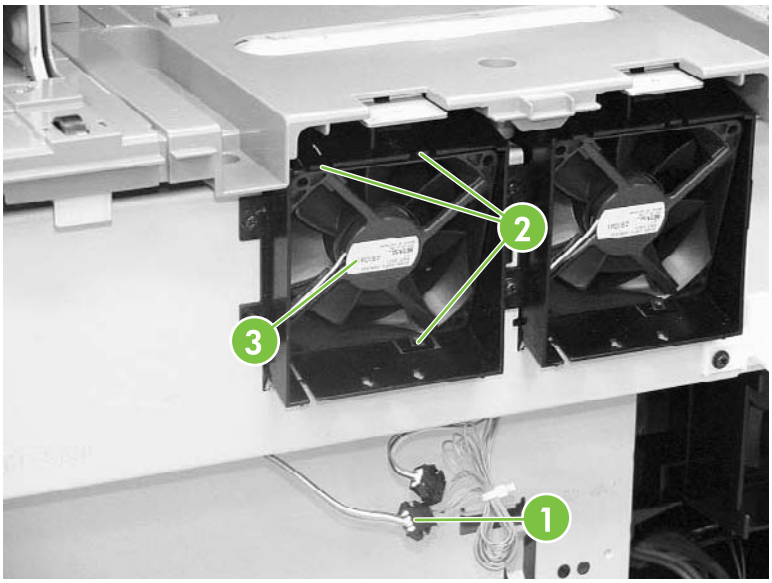


Figure 5-229 Remove control fan #1

NOTE: When installing the control fan, install the fan so that the label (callout 4) faces outward. Install the cable (callout 5) as shown in the figure.

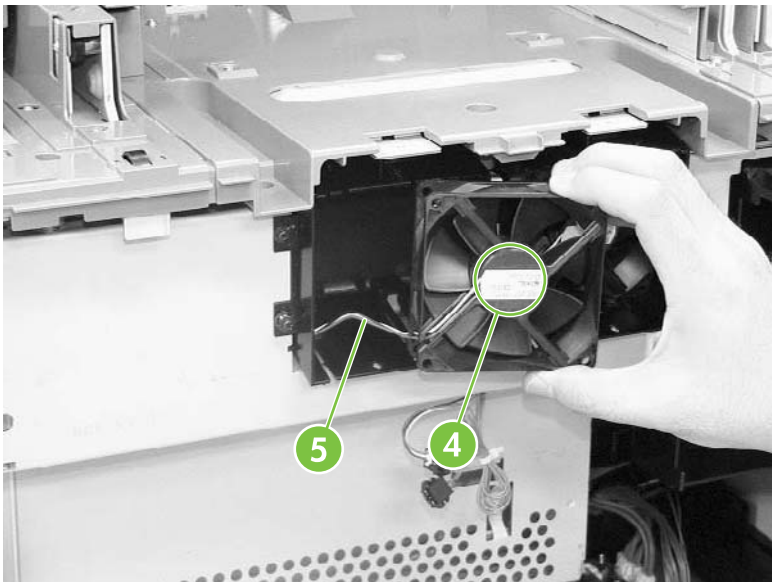


Figure 5-230 Installation guidelines

Control fan 2

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover assembly. See Left cover assembly on page 315.
4. Disconnect the connector (callout 1). Unhook the three claws (callout 2) and remove control fan #2 (callout 3).

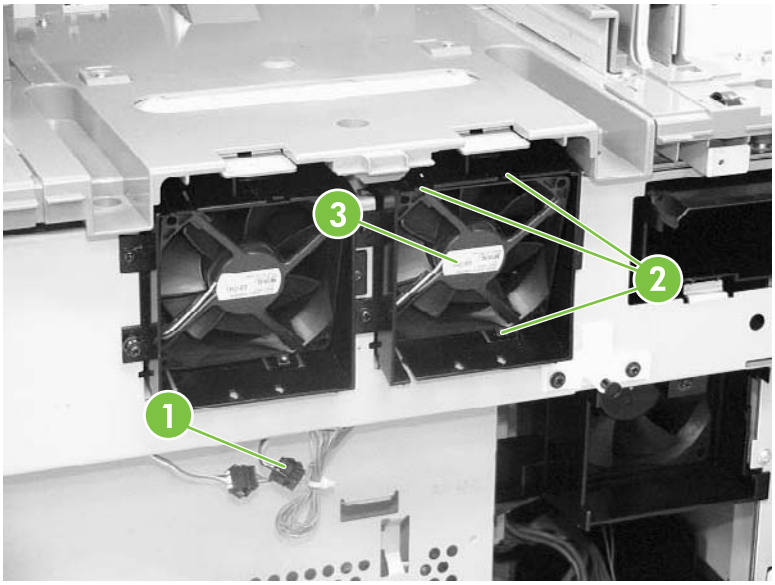


Figure 5-231 Remove control fan #2

NOTE: When installing the control fan, install the fan so that the label (callout 4) faces outward. Install the cable (callout 5) as shown in the figure.

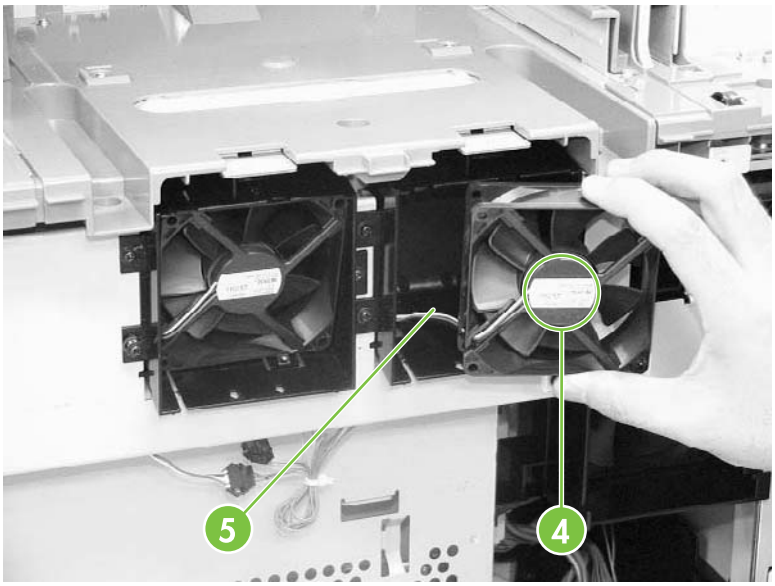


Figure 5-232 Installation guidelines

Rear exhaust fan

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Disconnect the connector (callout 1). Remove the three screws (callout 2), and then remove the fan holder (callout 3) and the fuser fan (callout 4) together.

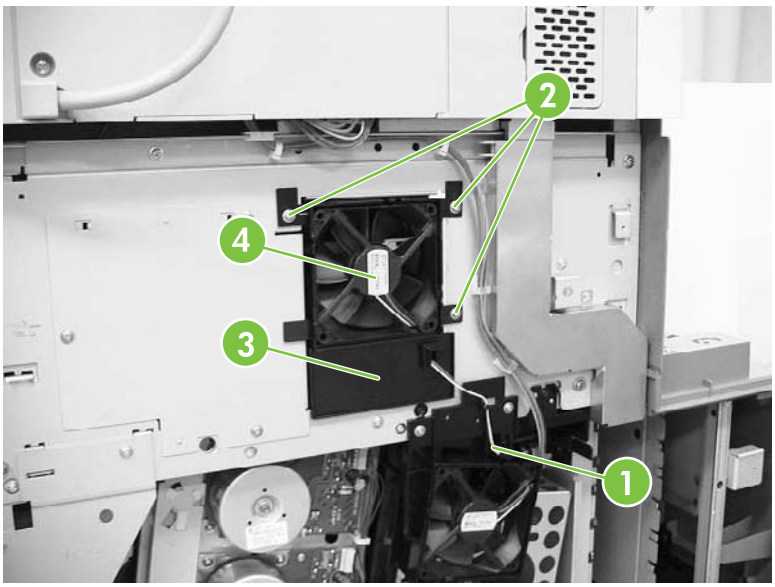


Figure 5-233 Remove the rear exhaust fan (1 of 2)

3. Unhook the three claws (callout 5) and remove the rear exhaust fan (callout 6) from the fan holder (callout 7).

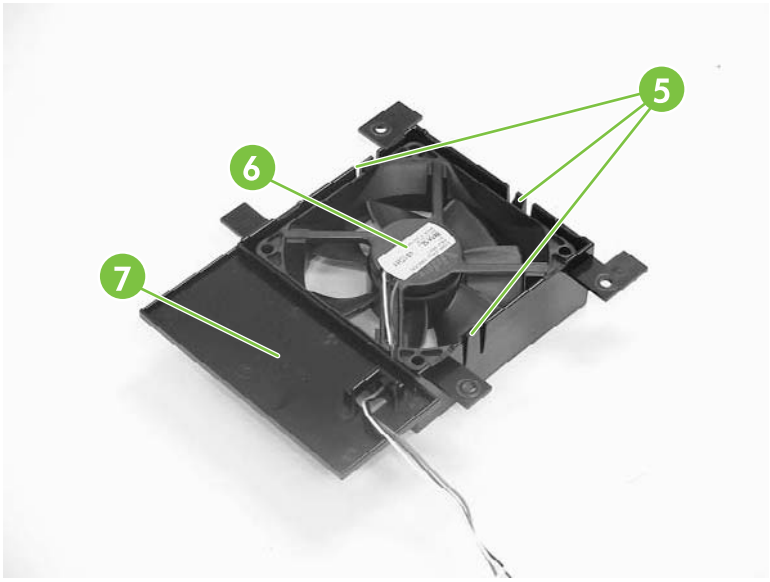


Figure 5-234 Remove the rear exhaust fan (2 of 2)

NOTE: When installing the sub power supply fan, install the fan so that the label (callout 8) faces outward. Install the cable (callout 9) as shown in the figure.

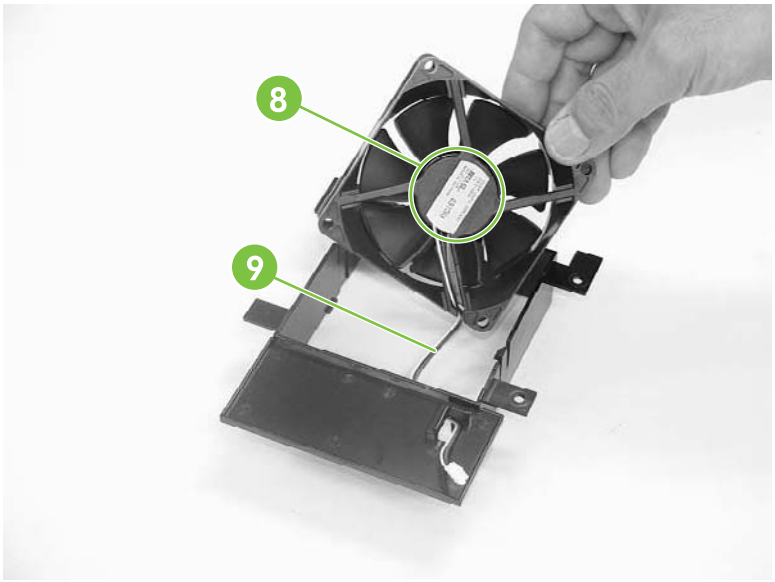


Figure 5-235 Installation guidelines

ETB fan

1. Open the right lower cover.

2. Unhook the three claws (callout 1) and remove the cable cover (callout 2).

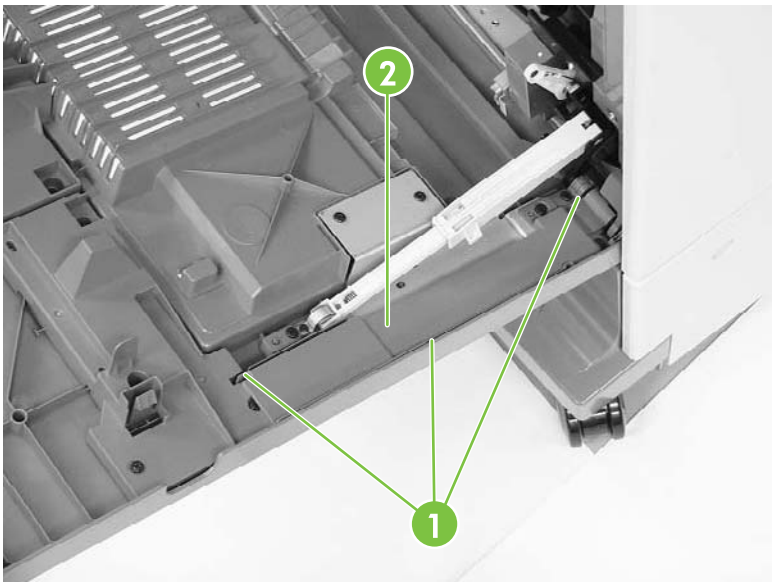


Figure 5-236 Remove the ETB fan (1 of 4)

3. Disconnect the connector (callout 3) for the red, white, and black cable. Remove the three screws (callout 4) and the cable cover (callout 5).

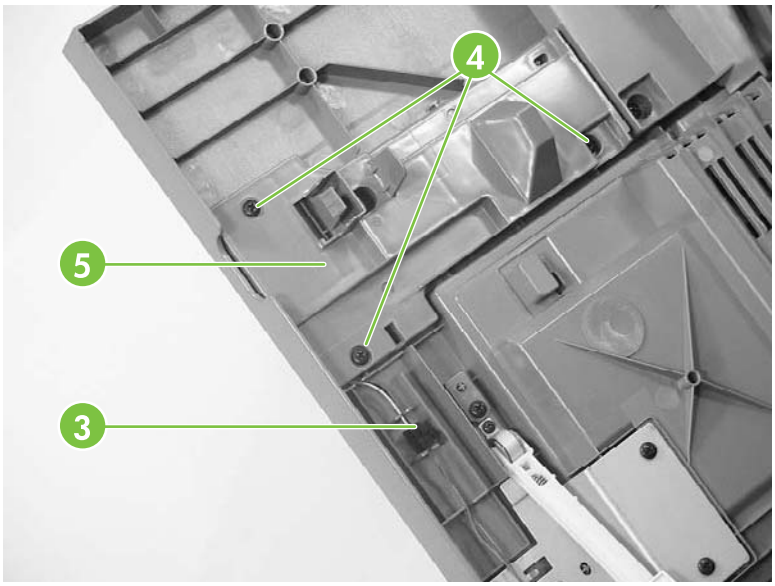


Figure 5-237 Remove the ETB fan (2 of 4)

4. Remove the four screws (callout 6) and the duplexing feed guide assembly (callout 7).

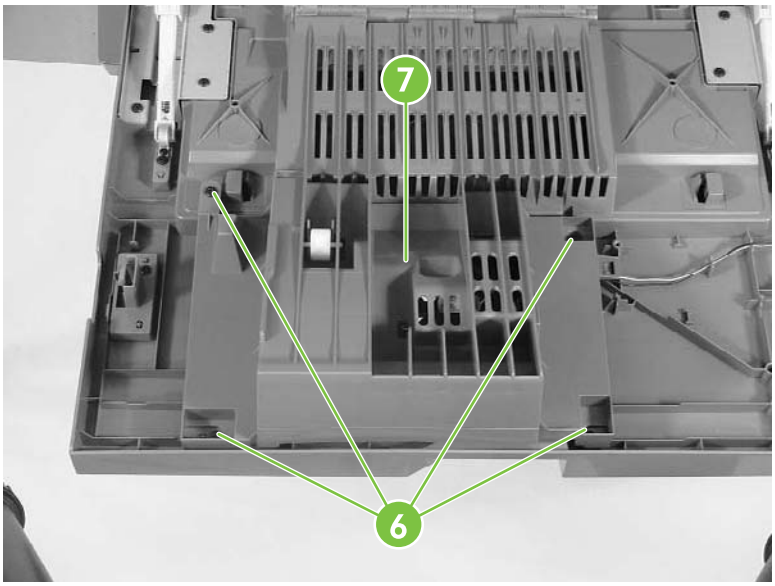


Figure 5-238 Remove the ETB fan (3 of 4)

5. Unhook the two claws (callout 8) and remove the ETB fan (callout 9).

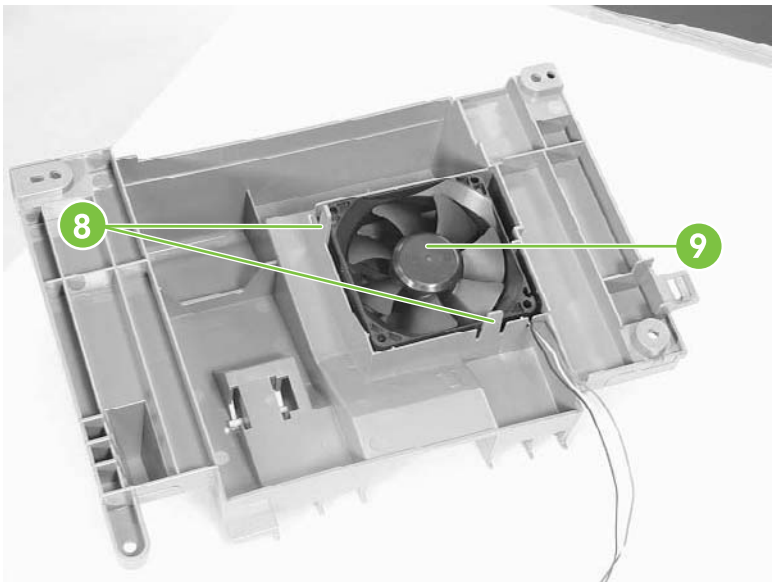


Figure 5-239 Remove the ETB fan (4 of 4)

NOTE: When installing the ETB fan, install the fan so that the label (callout 10) faces into the duplexing feed guide assembly. Install the cable (callout 11) as shown in the figure.

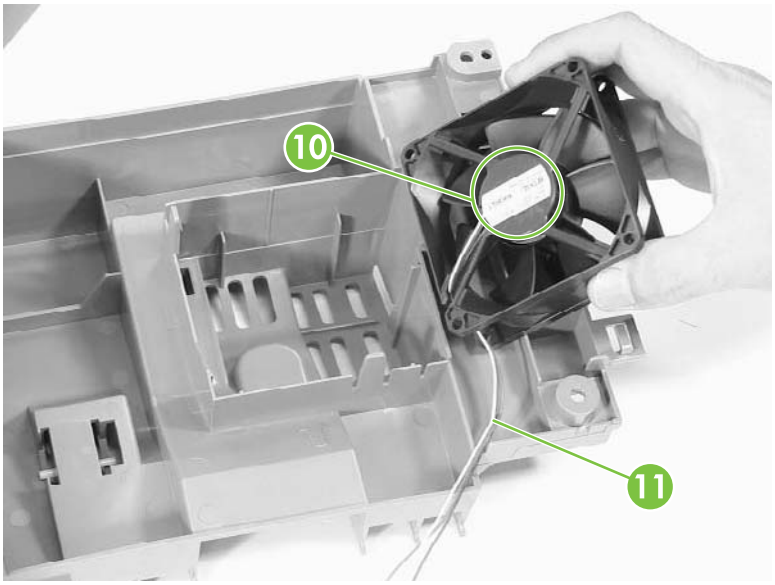


Figure 5-240 Installation guidelines

TIP: When reinstalling the ETB fan, install the cable in the cable guides first to avoid pinching the cables during later steps.

PCBs

The procedures in this section describe the removal and replacement of the following components:

- DC controller PCB
- Toner level PCB
- High-voltage power supply PCB
- Low-voltage power supply PCB
- Memory controller PCB
- Sub power supply PCB
- Fan drive PCB

DC controller PCB



NOTE: The DC controller has flashable firmware. To upgrade the controller, flashing might be sufficient.

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover and the control panel. See Front cover assembly on page 316 and Control panel on page 267.
5. Remove the delivery fan. See Delivery fan on page 402.
6. Remove the cartridge fan. See Cartridge fan on page 399.
7. Remove the formatter case. See Formatter case assembly on page 364.

8. Disconnect all connectors and remove the flat connector from the DC controller (callout 1). Remove four screws (callout 2), and then remove the DC controller PCB (callout 3).

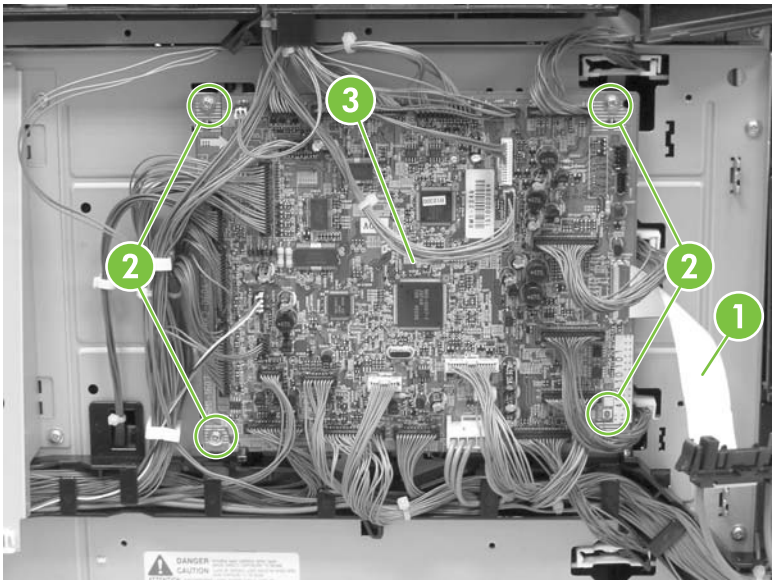


Figure 5-241 Remove the DC controller (1 of 2)

9. DC controller removed.

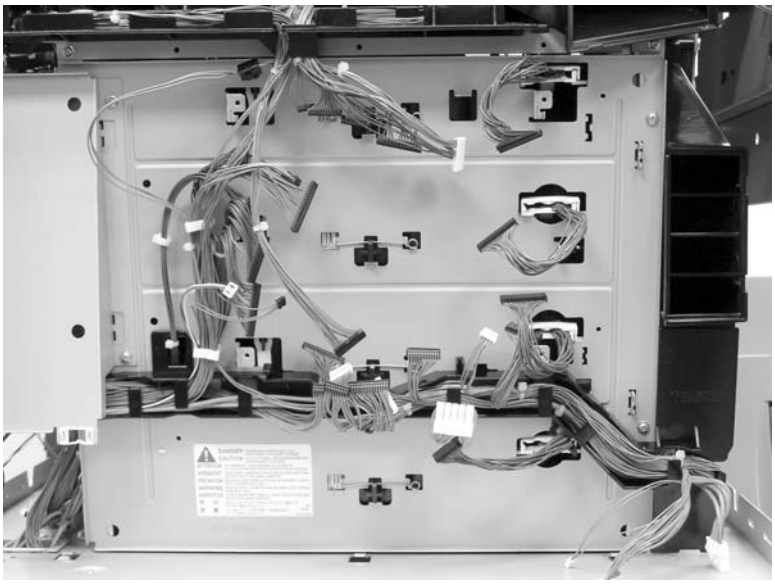


Figure 5-242 Remove the DC controller (2 of 2)

The locations of the DC controller connections are shown on the following figure.

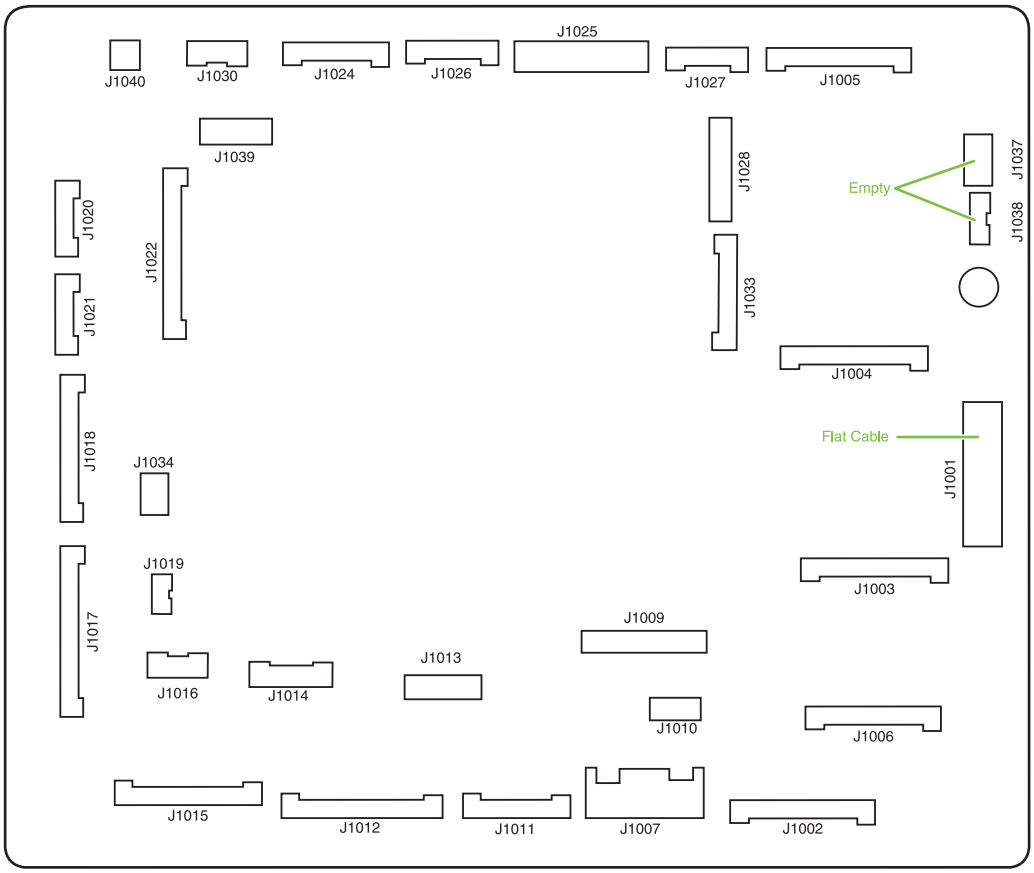


Figure 5-243 DC controller component connections

Connector	Pins	Component
J1002	17	Laser scanner Y
J1003	17	Laser scanner C
J1004	17	Scanner motor M
J1005	17	Scanner motor K
J1024	12	Fusing motor (M5)
		Fuser pressure release motor (M6)
J1026	10	Fuser paper sensor (SR1)
		Delivery tray full sensor (SR2)
		Fuser pressure release sensor (SR3)
J1037	4	Not connected
J1038	5	Not connected
J1034	3	Power supply fan
J1006	16	High-voltage power supply
J1010	4	Environmental sensor

Connector	Pins	Component
J1014	9	Toner level PCB
		MP tray paper sensor
J1022	20	Drum home position sensor
J1016	6	Cassette paper sensor (SR9)
		Paper stack surface sensor (SR10)
J1012	19	Color misregistration sensor
		Transmission LED
		Top of page sensor (SR12)
J1013	10	Media sensor
J1019	3	Developing disengaging sensor (SR11)
J1015	17	MP tray pickup motor solenoid (SL1)
		Cassette pickup solenoid (SL2)
		Lifter motor (M10)
		Cassette paper size detection switch
		Additional trays
J1018	18	M and K drum motors (M3 and M4)
J1017	20	Y and C motors (M1 and M2)
J1020	8	Pickup motor (M9)
		Developing disengaging motor (M8)
J1021	9	Memory controller PCB
J1025	12	Paper loop sensors (SR13 and SR14)
		Fuser unit
J1009	17	Low-voltage power supply PCB
J1001	45	Formatter
J1011	12	ETB unit
		ETB motor (M7)
		ETB separation solenoid (SL3)
J1027	9	Control panel
J1033	13	Cartridge fan
		Delivery fan
		Right exhaust fan
J1039	6	Fan driver PCB
		Sub power supply assembly fan

Connector	Pins	Component
		Control fans 1 and 2
		ETB fan
J1007	5	Door switch
J1028	14	IPTU
		Jet Link (stapler/stacker and 3-bin mailbox)
		Sub power supply PCB
		ADF/scanner

Toner level PCB

1. Remove the high-voltage power supply PCB. See High-voltage power supply PCB on page 415.
2. Disconnect the connector (callout 1).
3. Remove the three screws (callout 2), and then remove the toner level PCB (callout 3).

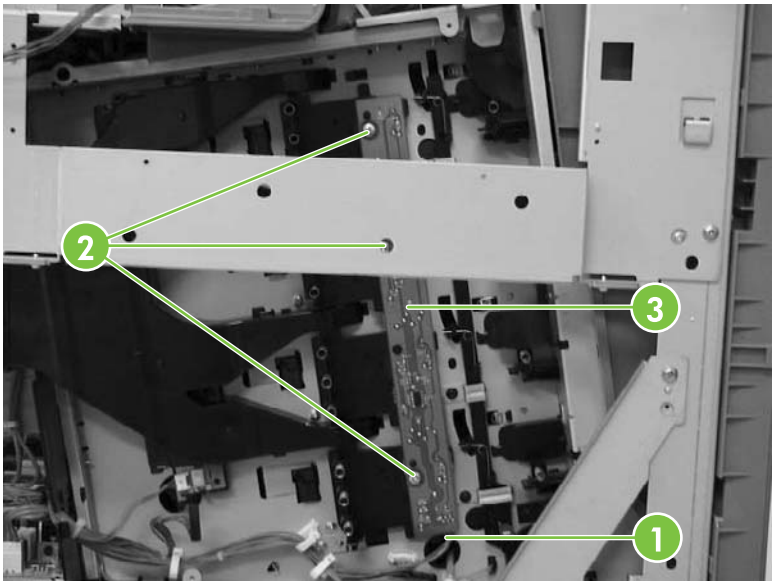


Figure 5-244 Remove the toner level PCB

High-voltage power supply PCB

1. Remove the following assemblies:
   - Rear cover. See Rear cover assembly on page 313.
   - Face-down tray assembly. See Face-down tray assembly on page 312.
   - Left cover assembly. See Left cover assembly on page 315.
   - Front cover assembly. See Front cover assembly on page 316.
   - Control panel. See Control panel on page 267.

2. Remove the control panel cover by prying up both sides of the cover.

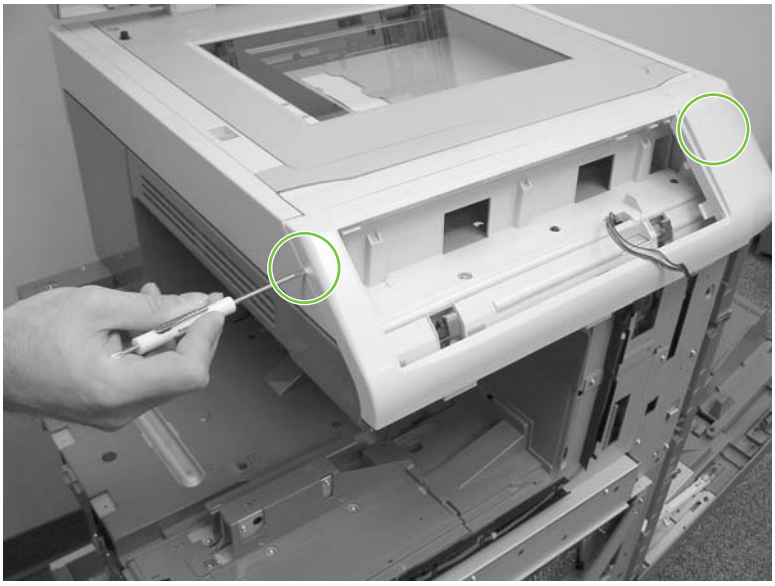


Figure 5-245 Remove the high-voltage power supply PCB (1 of 9)

3. Remove the inner cover by prying up at the tabs (callout 1) with a flat-blade screwdriver.
4. Remove the three screws (callout 2) and then remove the panel holder (callout 3).

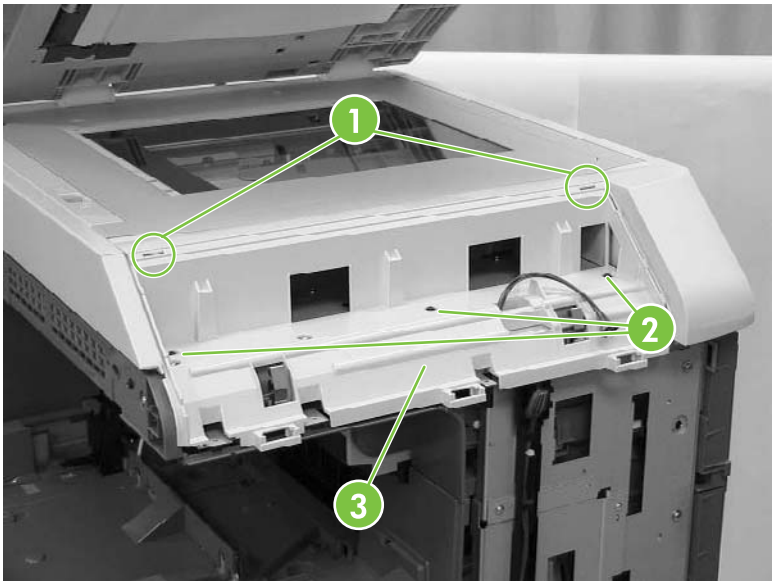


Figure 5-246 Remove the high-voltage power supply PCB (2 of 9)

5. Remove the cable (callout 4) from the cable guides (callout 5).

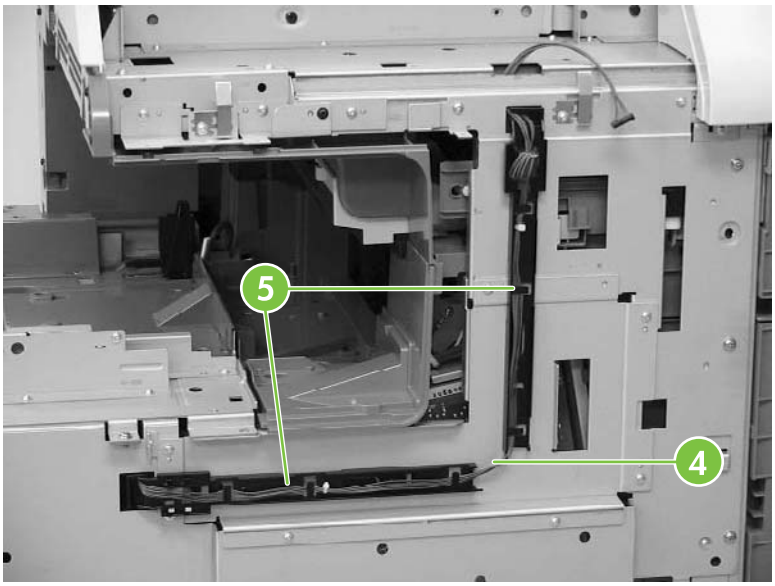


Figure 5-247 Remove the high-voltage power supply PCB (3 of 9)

6. Unhook the claw (callout 6) and slide the cable guide down to remove it (callout 7).

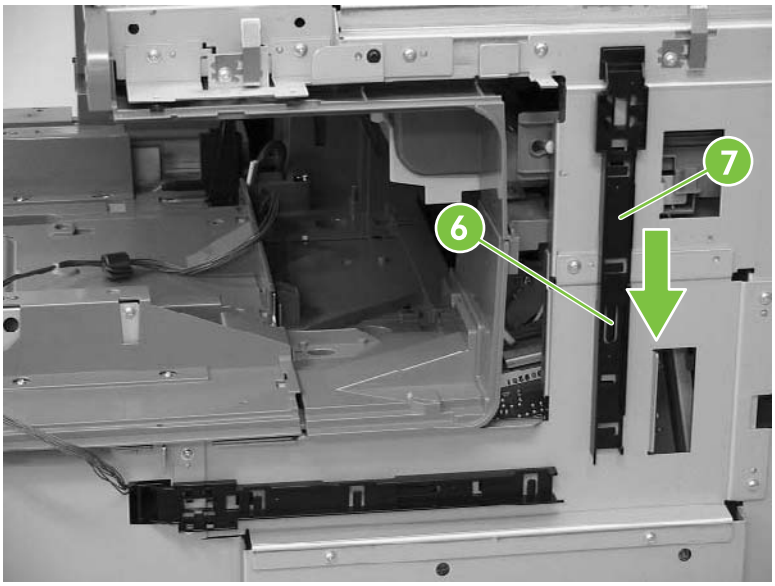


Figure 5-248 Remove the high-voltage power supply PCB (4 of 9)

7. Unhook the claw (callout 8) and slide the cable guide to the right to remove it (callout 9).

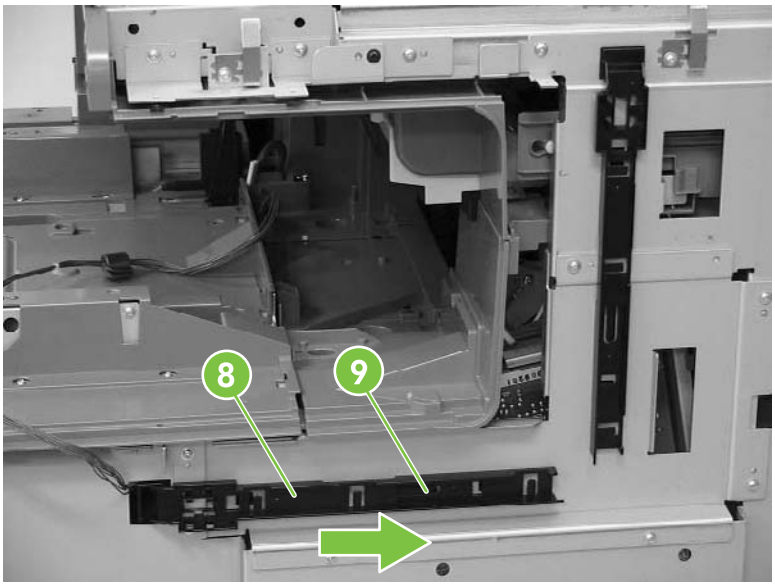


Figure 5-249 Remove the high-voltage power supply PCB (5 of 9)

8. Remove the two screws (callout 10), and then remove the front guide cover (callout 11).

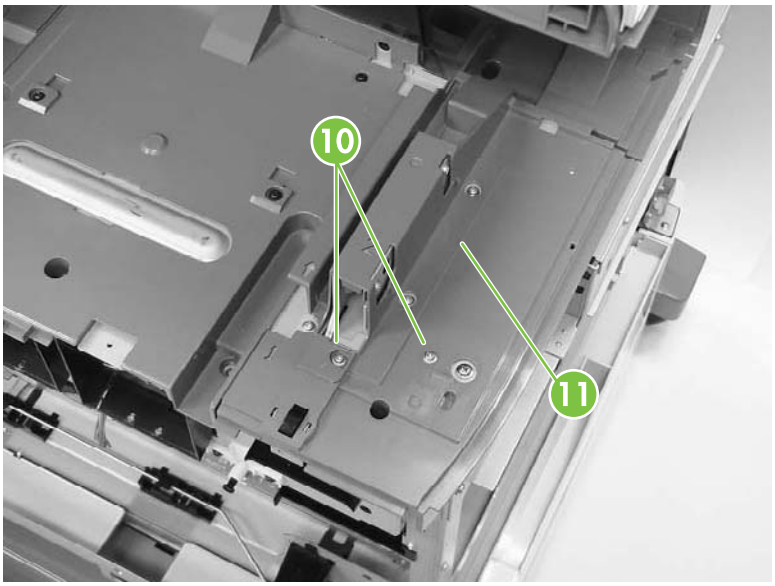


Figure 5-250 Remove the high-voltage power supply PCB (6 of 9)

9. Remove one M4 screw (callout 12) and the seven M3 screws (callout 13). Then remove the plate (callout 14).

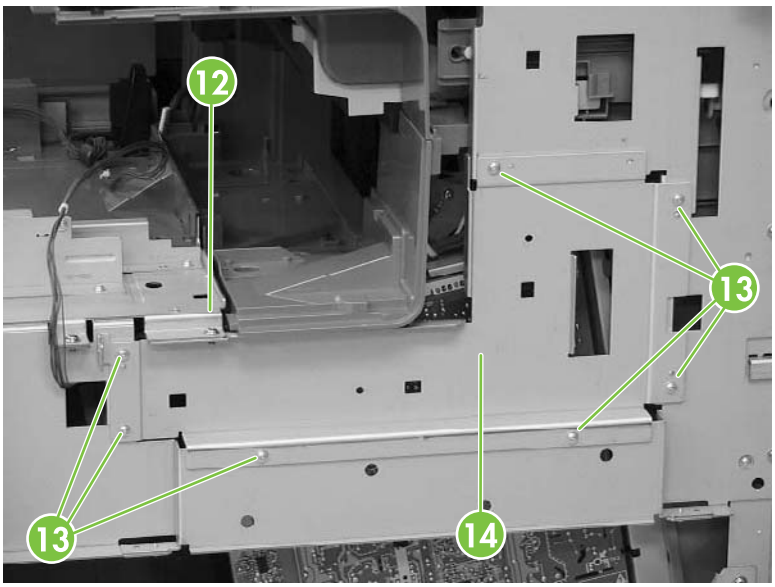


Figure 5-251 Remove the high-voltage power supply PCB (7 of 9)

TIP: When reinstalling the high-voltage power supply PCB, be sure to replace the M4 screw.

10. Disconnect the connector (callout 15). Remove the three M3 screws (callout 16) and the single M4 screw (callout 17). Then unhook the four claws (callout 18). Pinch the four clips to release the high-voltage power supply.

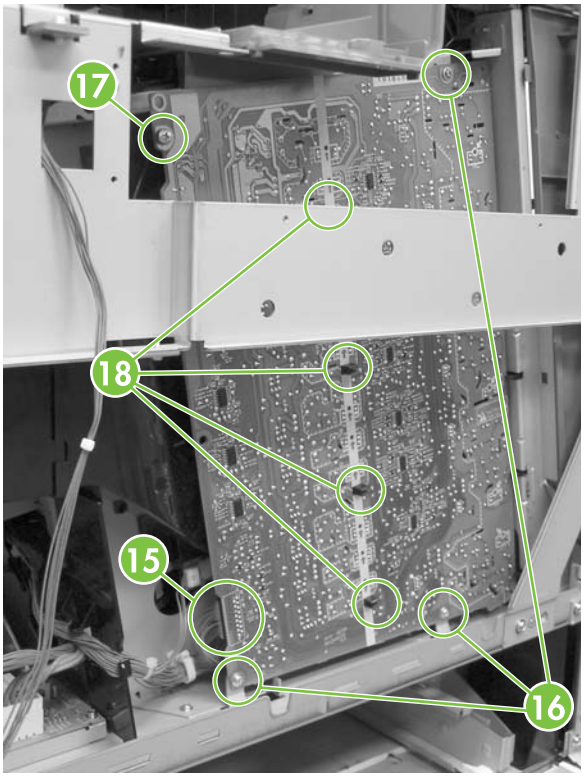


Figure 5-252 Remove the high-voltage power supply PCB (8 of 9)

11. Shift the high-voltage power supply PCB (callout 19) to the right, and then shift it to the left (callout 20) to remove it.

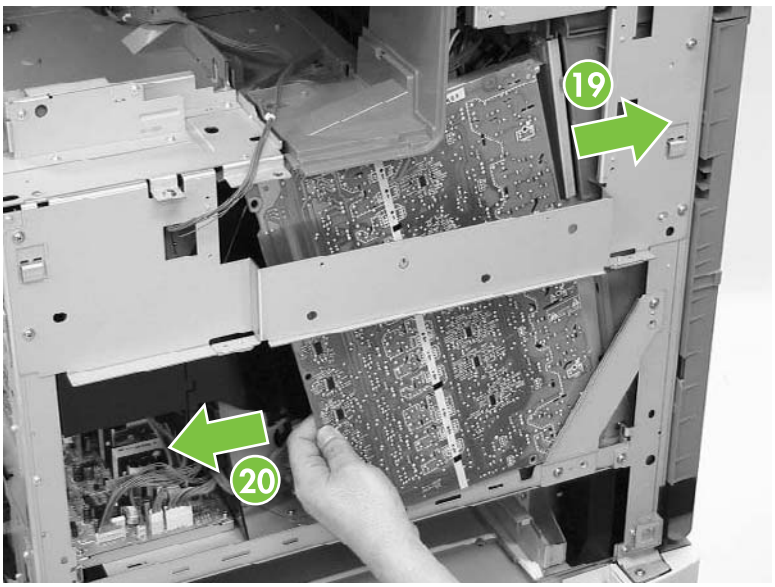


Figure 5-253 Remove the high-voltage power supply PCB (9 of 9)

Low-voltage power supply PCB

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the left cover. See Left cover assembly on page 315.
3. Remove the power supply fan. See Power supply fan on page 397.

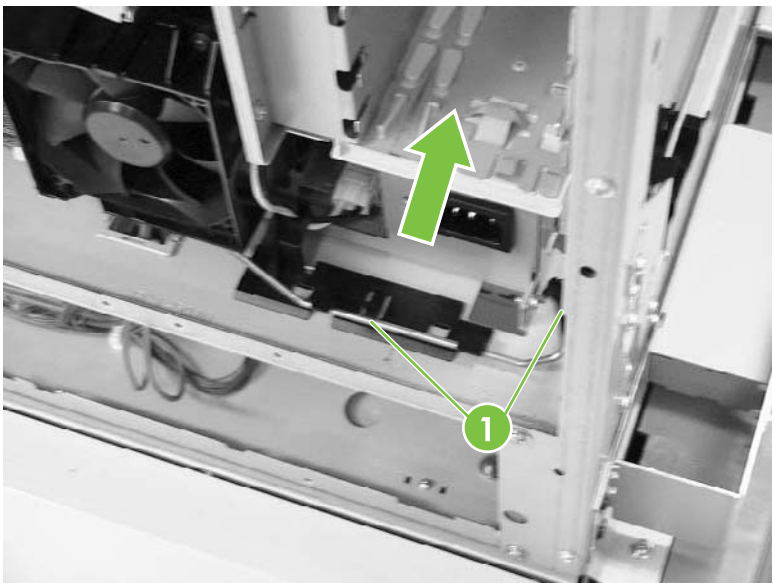


Figure 5-254 Remove the low-voltage power supply PCB (1 of 9)

4. Lift the rod arm (callout 1) to detach it from the power switch, and unhook the cable from the cable guide. Disconnect the connector (callout 2).

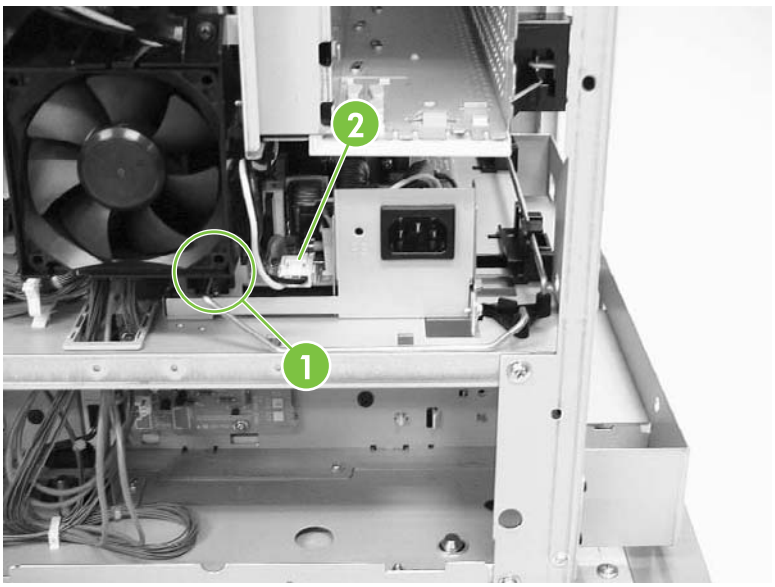


Figure 5-255 Remove the low-voltage power supply PCB (2 of 9)

5. Disconnect the connector (callout 3) at the left of the MFP.

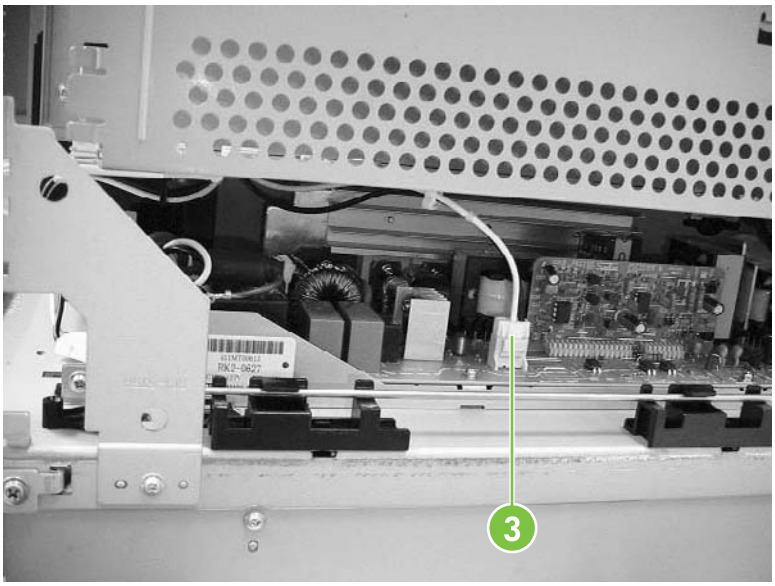


Figure 5-256 Remove the low-voltage power supply PCB (3 of 9)

6. Remove the two screws (callout 4). Then remove the power switch assembly (callout 5) and the rod arm (callout 6) together.

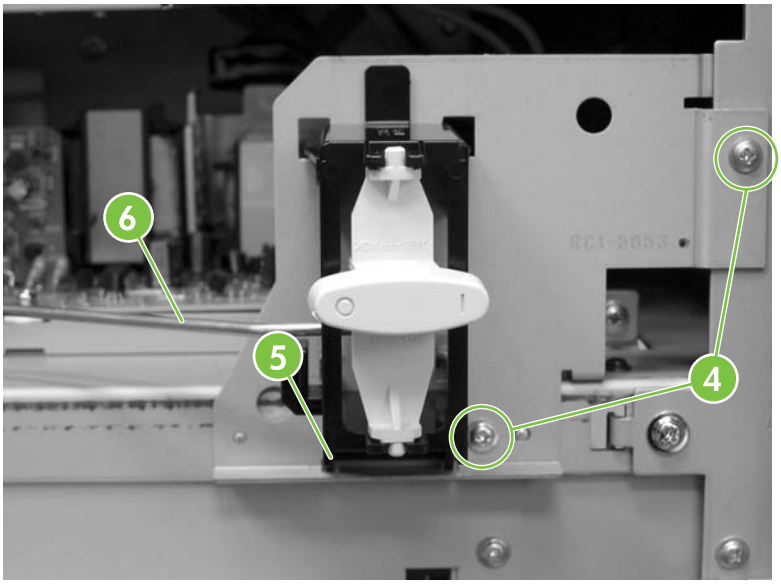


Figure 5-257 Remove the low-voltage power supply PCB (4 of 9)

7. Unhook the claws (callout 7), and remove the rod guides (callout 8).

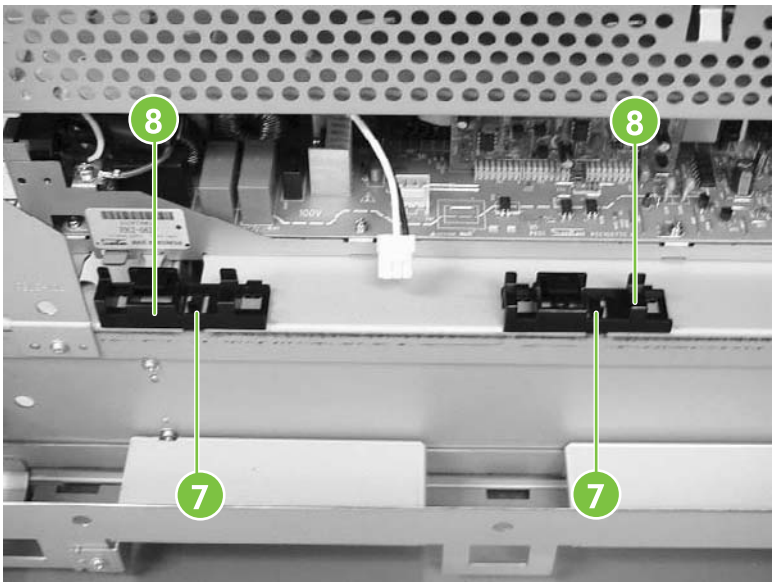


Figure 5-258 Remove the low-voltage power supply PCB (5 of 9)

8. Remove the link (callout 9) by turning it clockwise and lifting it up and out.

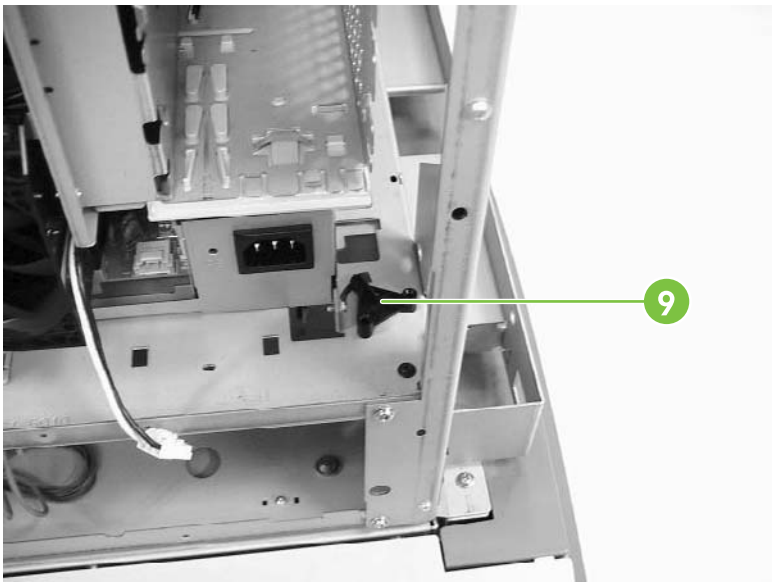


Figure 5-259 Remove the low-voltage power supply PCB (6 of 9)

9. Remove the rear link arm (callout 10), unhook the cable (callout 11), and remove the rod guide (callout 12).

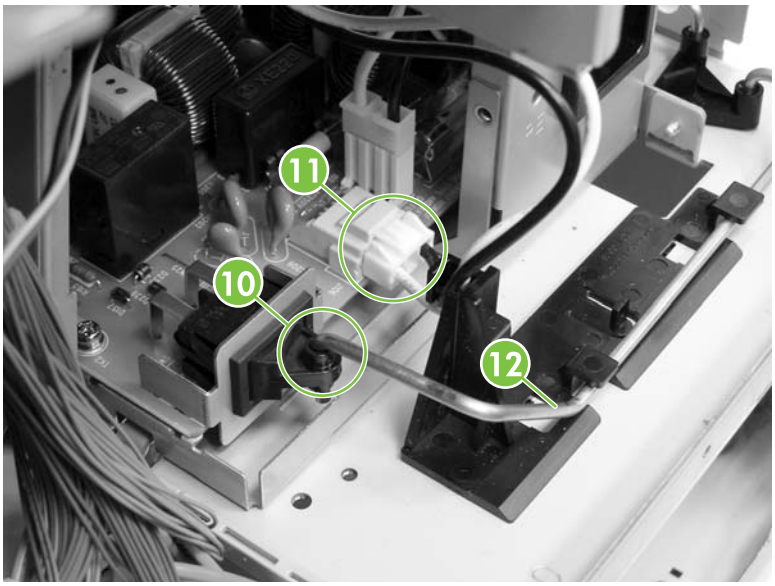


Figure 5-260 Remove the low-voltage power supply PCB (7 of 9)

10. Disconnect the four connectors (callout 13).

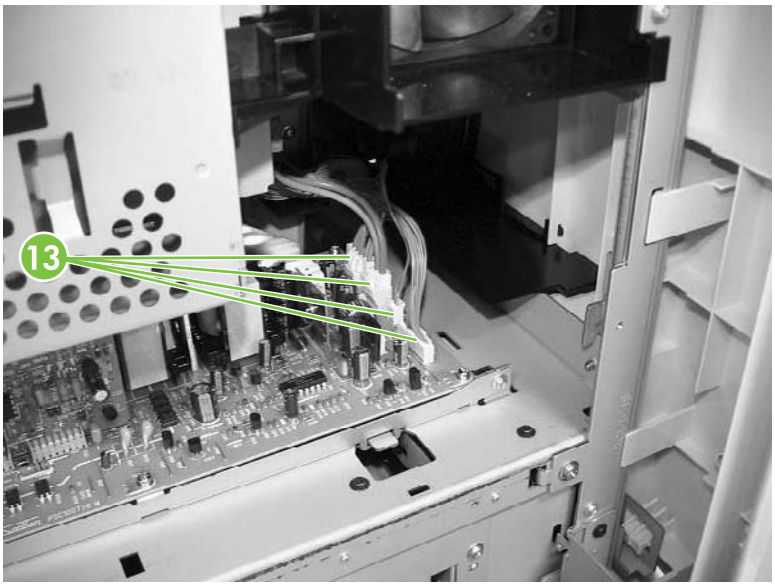


Figure 5-261 Remove the low-voltage power supply PCB (8 of 9)

11. Remove the two screws (callout 14), and then remove the low-voltage power supply PCB (callout 15) through the left side of the MFP.

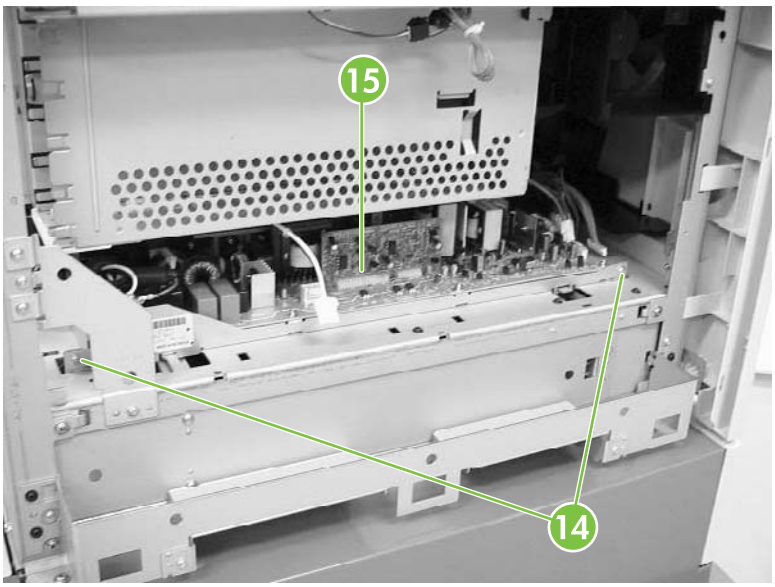


Figure 5-262 Remove the low-voltage power supply PCB (9 of 9)

Memory controller PCB

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 312.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover. See Front cover assembly on page 316.
5. Remove the delivery fan. See Delivery fan on page 402.
6. Remove the cartridge fan. See Cartridge fan on page 399.
7. Remove the DC controller PCB. See DC controller PCB on page 410.
8. Remove the laser scanner assembly. See Laser/scanner components on page 370.
9. Disconnect the two connectors (callout 1).
10. Remove the four PCB holding pins (callout 2), and then remove the memory controller PCB (callout 3).

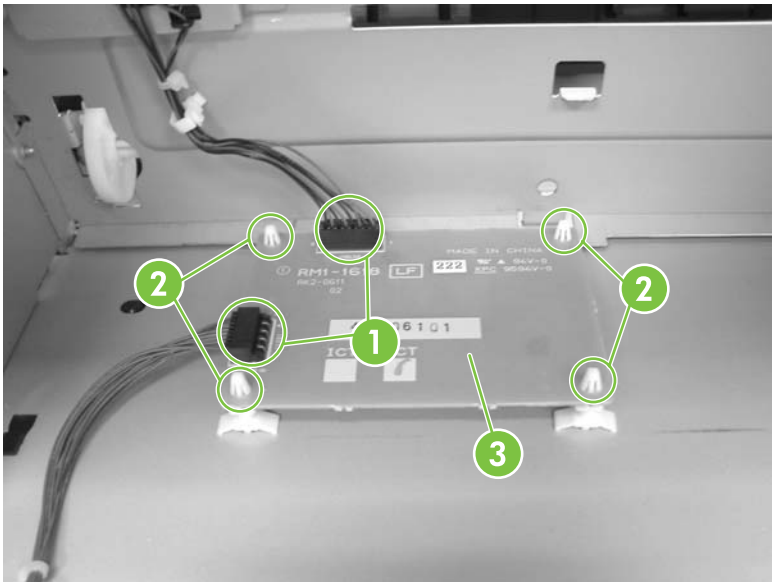


Figure 5-263 Remove the memory controller PCB

Sub power supply PCB

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Remove the sub power supply fan. See Sub power supply fan on page 400.
3. Disconnect the four connectors (callout 1).

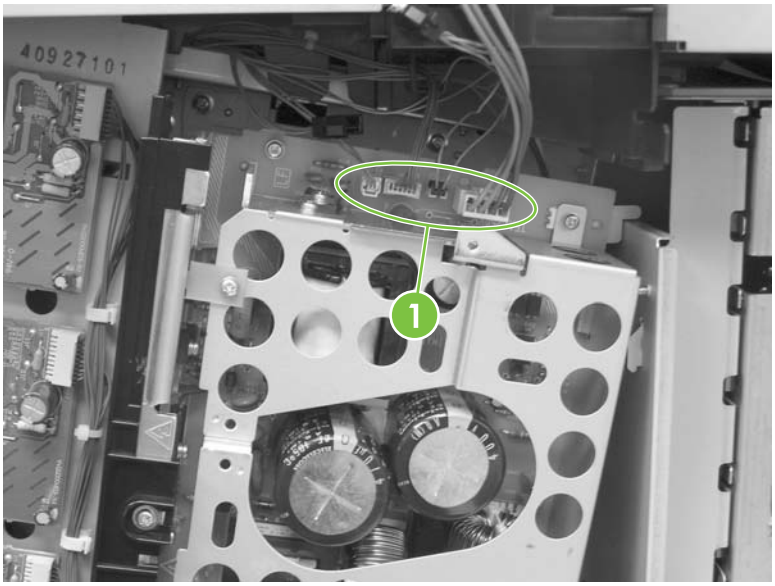


Figure 5-264 Remove the sub power supply PCB (1 of 4)

4. Disconnect the connector (callout 2).

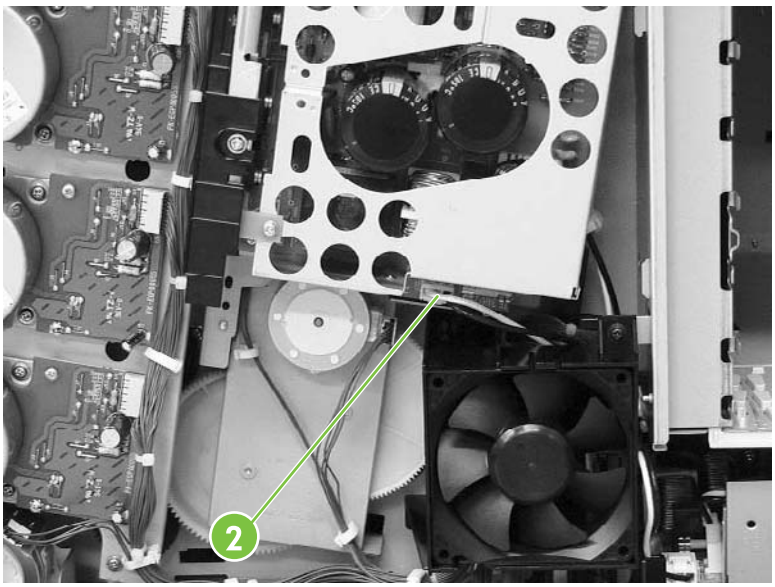


Figure 5-265 Remove the sub power supply PCB (2 of 4)

5. Remove the lower screw (callout 3). Note that this screw is recessed.

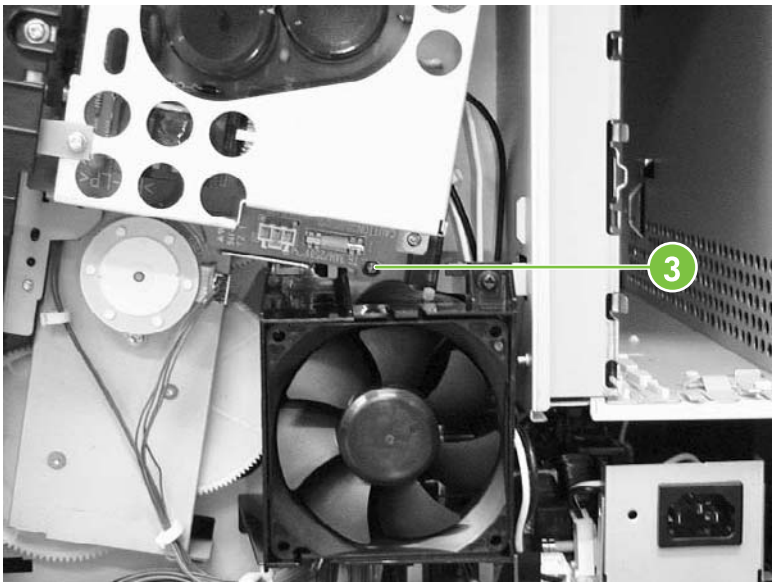


Figure 5-266 Remove the sub power supply PCB (3 of 4)

6. Remove the upper two screws (callout 4), and then remove the sub power supply PCB assembly (callout 5).

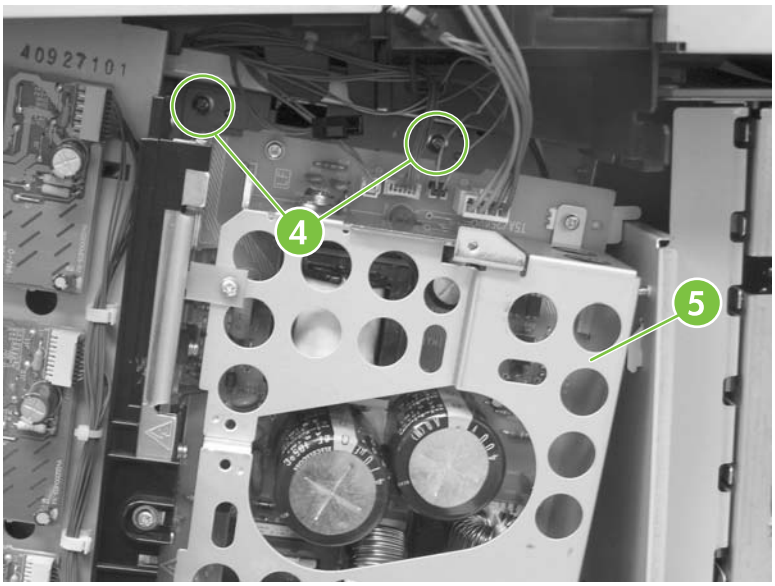


Figure 5-267 Remove the sub power supply PCB (4 of 4)

NOTE: Do not remove the screws on the PCB itself.

Fan drive PCB

1. Remove the rear cover assembly. See Rear cover assembly on page 313.
2. Disconnect the four connectors (callout 1). Remove the three screws (callout 2), and then remove the fan drive PCB (callout 3).

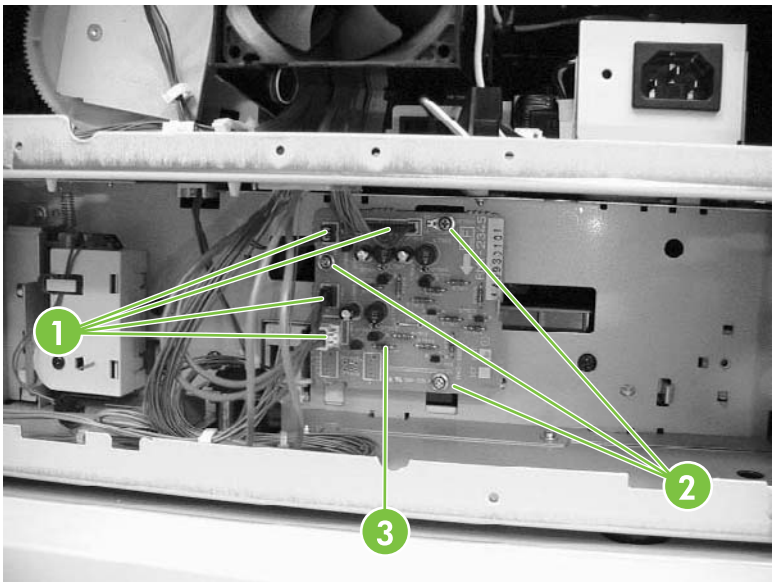


Figure 5-268 Remove the fan drive PCB

Switches, contacts, and sensors

The procedures in this section describe the removal and replacement of the following components:

- High-voltage contacts
- E-label memory contacts and cable
- Power switch assembly
- Door-open switch assembly
- Environment sensor

High-voltage contacts

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 287.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover. See Front cover assembly on page 316.
5. Remove the high-voltage supply PCB. See High-voltage power supply PCB on page 415.
6. Remove the toner level PCB. See Toner level PCB on page 415.
7. Remove one screw (callout 1) for the high-voltage contact to be removed. There are four sets of high-voltage contacts, one for each color. Remove the contact (callout 2).

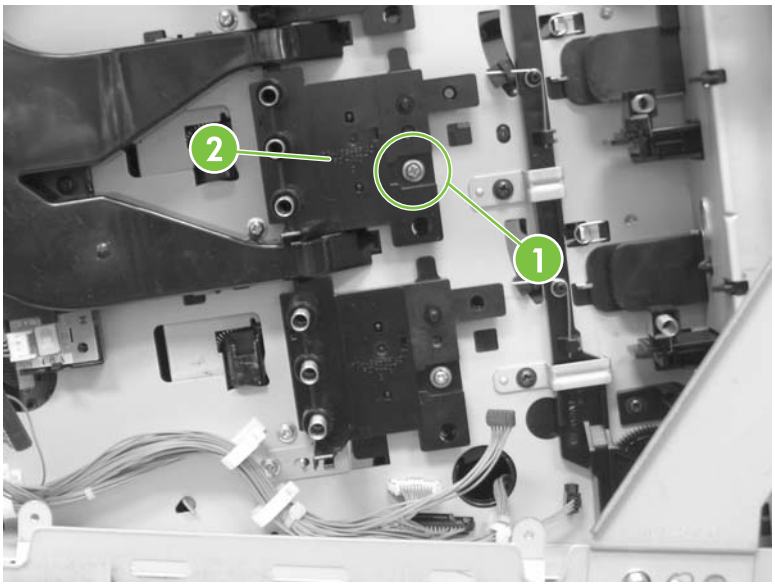


Figure 5-269 Remove the high-voltage contacts

E-label memory contacts and cable

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 287.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover. See Front cover assembly on page 316.
5. Remove the delivery fan. See Delivery fan on page 402.
6. Remove the cartridge fan. See Cartridge fan on page 399.
7. Remove the DC controller PCB. See DC controller PCB on page 410.
8. Remove the power supply fan. See Power supply fan on page 397.
9. Remove the low-voltage supply PCB. See Low-voltage power supply PCB on page 421.
10. Remove the laser/scanner assembly. See Laser/scanner components on page 370.
11. Disconnect the connectors (callout 1) and remove the eight screws (callout 2).

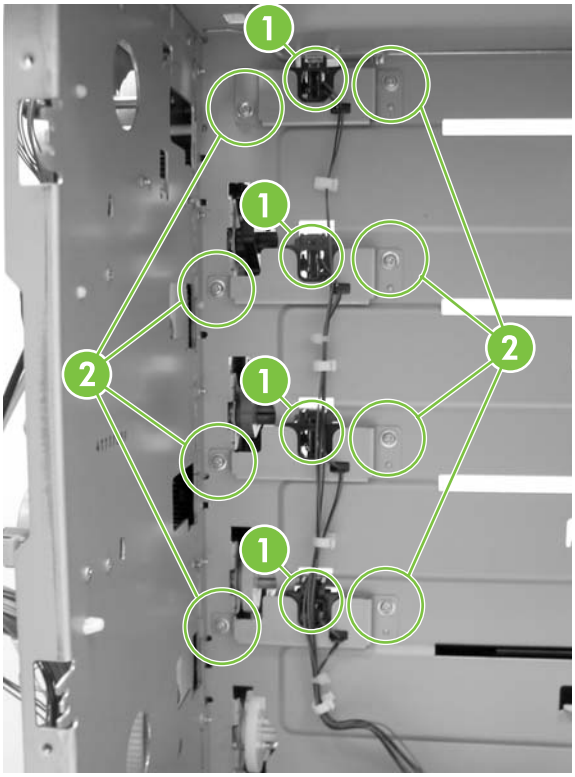


Figure 5-270 Remove the E-label contacts (1 of 2)

12. Lift the metal stay up and out (callout 3).

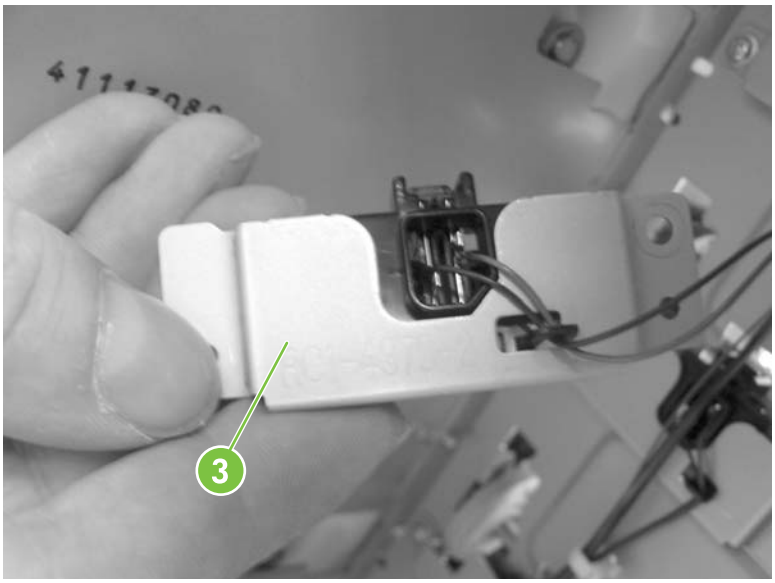


Figure 5-271 Remove the E-label contacts (2 of 2)

13. Remove the contact and cable from all four metal stays and cable guides.

Power switch assembly

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 287.
3. Remove the left cover. See Left cover assembly on page 315.
4. Using a flat-blade screwdriver, pry the switch assembly loose as shown.

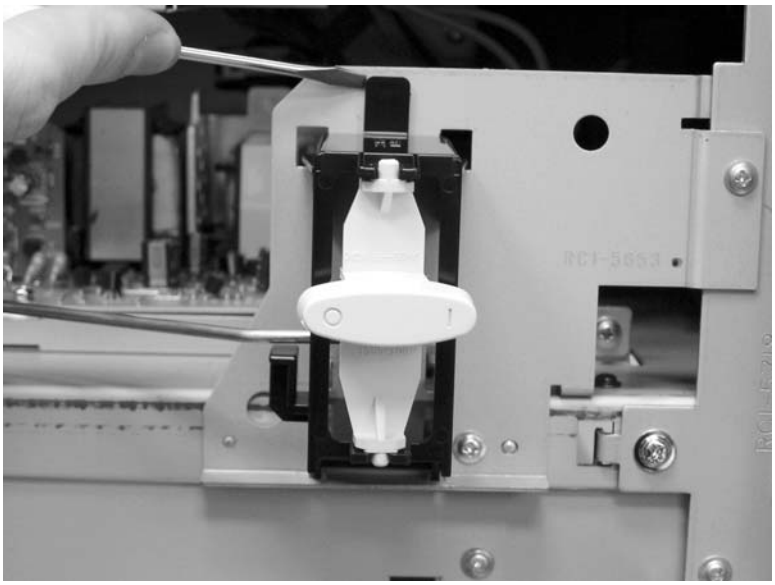


Figure 5-272 Remove the power switch (1 of 3)

5. Lift the power switch assembly up and rotate it outward.

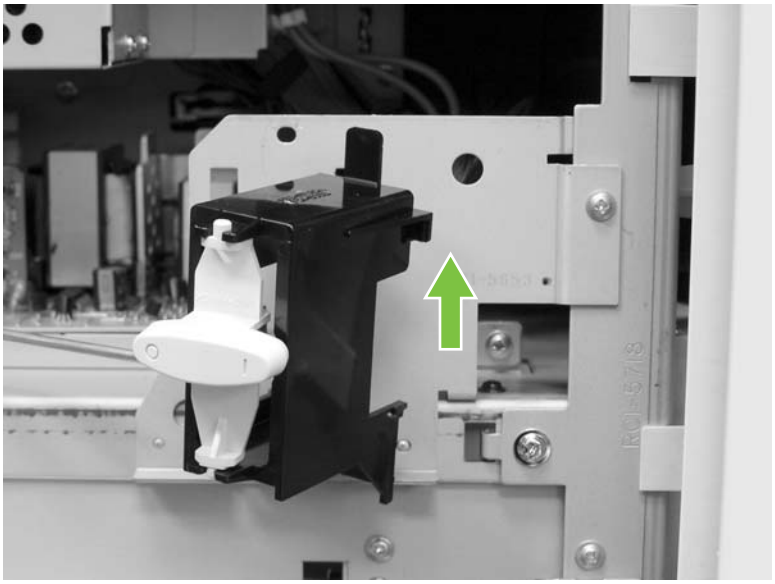


Figure 5-273 Remove the power switch (2 of 3)

6. Remove the rod from the switch assembly.

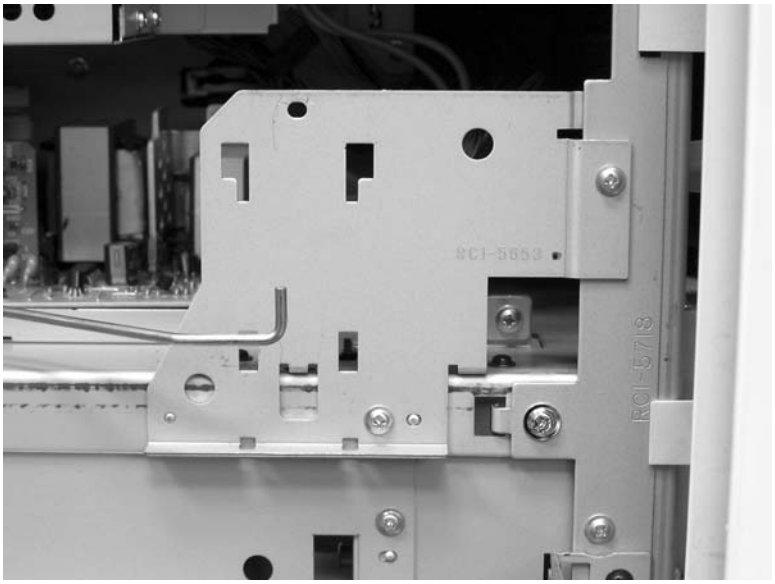


Figure 5-274 Remove the power switch (3 of 3)

NOTE: During reassembly, be sure to route the metal rod through the guides and hook the two tabs on the assembly back onto the MFP.

Door-open switch assembly

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove three screws (callout 1) and remove the corner plate.

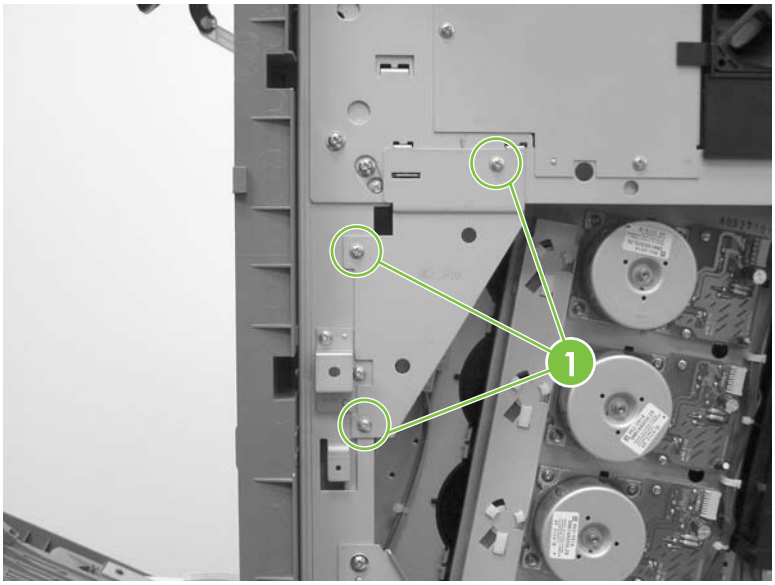


Figure 5-275 Remove the door-open switch assembly (1 of 3)

3. Remove two screws (callout 2) to release the door-open switch.

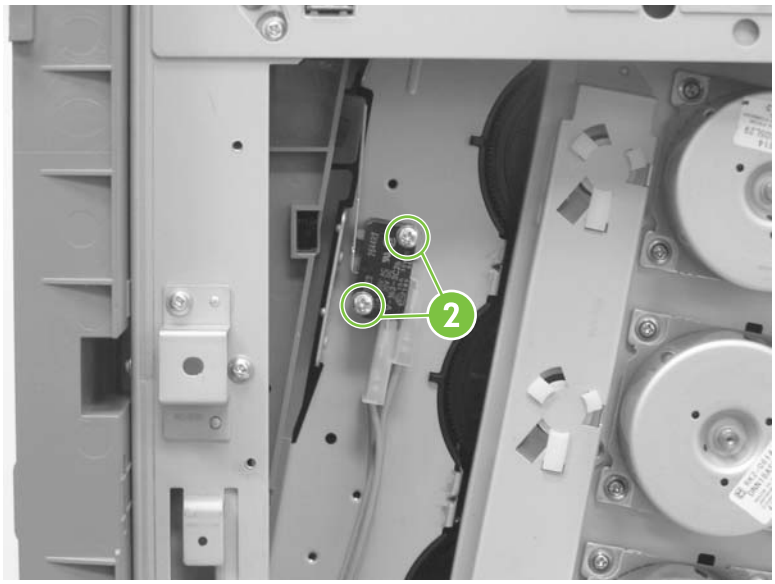


Figure 5-276 Remove the door-open switch assembly (2 of 3)

4. Disconnect four connectors callout 3).



Figure 5-277 Remove the door-open switch assembly (3 of 3)

Environment sensor

1. Remove the rear cover. See Rear cover assembly on page 313.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 287.
3. Remove the left cover. See Left cover assembly on page 315.
4. Remove the front cover. See Front cover assembly on page 316.
5. Remove the high-voltage supply PCB. See High-voltage power supply PCB on page 415.

NOTE: The environment sensor is located under the fan duct on the left side of the MFP. You will be able to locate the sensor after the high-voltage power supply PCB is removed.

6. Disconnect one connector (callout 1).

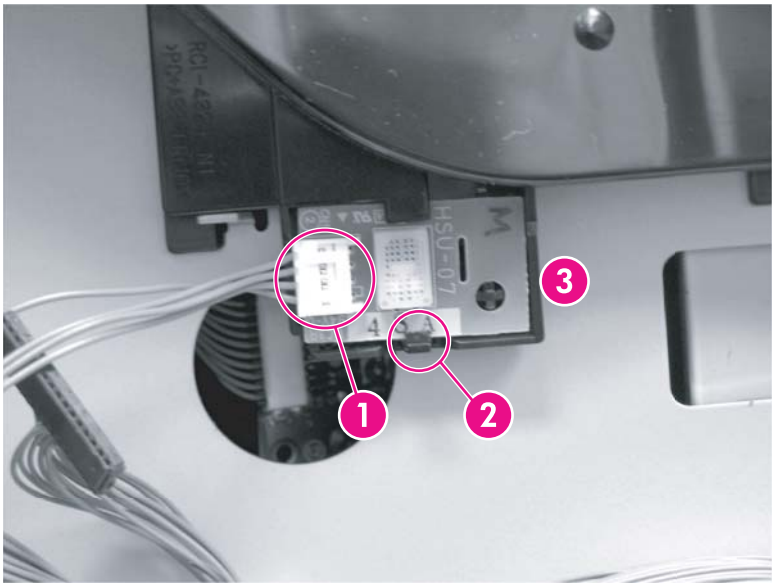


Figure 5-278 Remove the environment sensor

7. Push down on (callout 2) with your finger while inserting a flat-blade screwdriver to release the sensor (callout 3).

8. Lift out the environment sensor using the screwdriver.

ADF and scanner components

The procedures in this section describe the removal and replacement of the following components:

- ADF assembly
- Top covers
- Scanner assembly
- Scanner left cover
- Scanner right cover
- Scanner controller PCB

ADF assembly

CAUTION: When you remove the ADF assembly, do not use the ADF cable to lift or move the ADF assembly.

1. Remove two screws (callout 1), and then remove the scanner controller cover (callout 2).

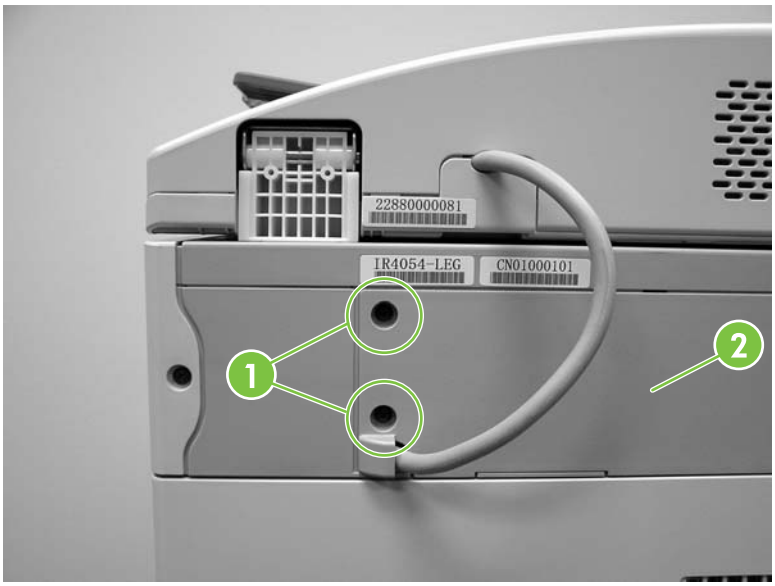


Figure 5-279 Remove the ADF assembly (1 of 3)

2. Remove one grounding screw (callout 3), disconnect two cables (callout 4), and remove the cable (callout 5) from the cable stays.

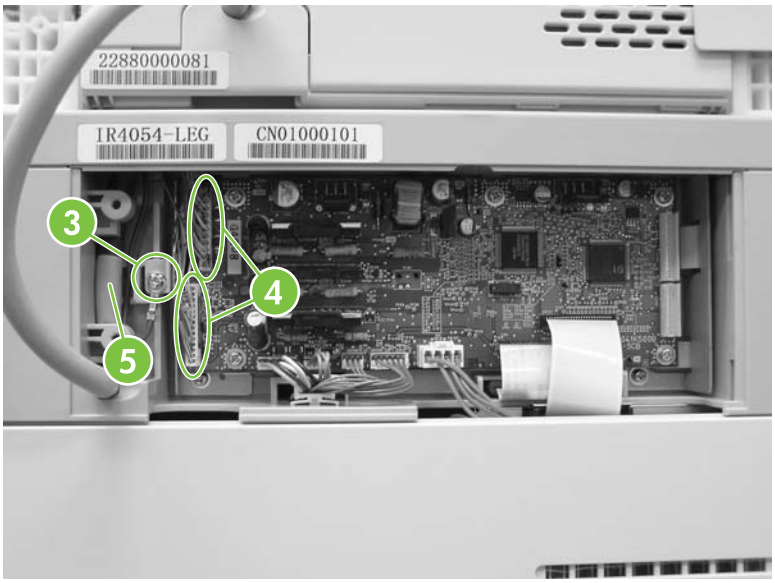


Figure 5-280 Remove the ADF assembly (2 of 3)

NOTE: When reinstalling the ADF, make sure that the ADF cable is correctly routed through the cable holder into the scanner bed.

3. Open the ADF assembly, and lift it up and off of the scanner.



Figure 5-281 Remove the ADF assembly (3 of 3)

CAUTION: The ADF assembly is calibrated to work with the scanner on which it is installed. If the ADF is installed on another scanner, that scanner needs to be calibrated to work correctly with the ADF.

Top covers

1. Remove the ADF assembly. See ADF assembly on page 437.
2. Remove the control panel. See Control panel on page 267.
3. Use a flat-blade screwdriver to pry off the outer frame.

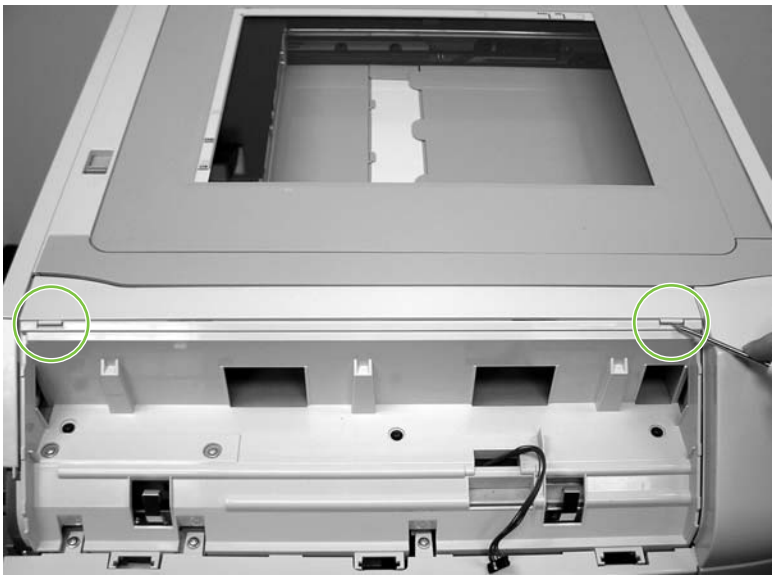


Figure 5-282 Remove the top covers (1 of 2)

4. Use a flat-blade screwdriver to pry off the inner frame.

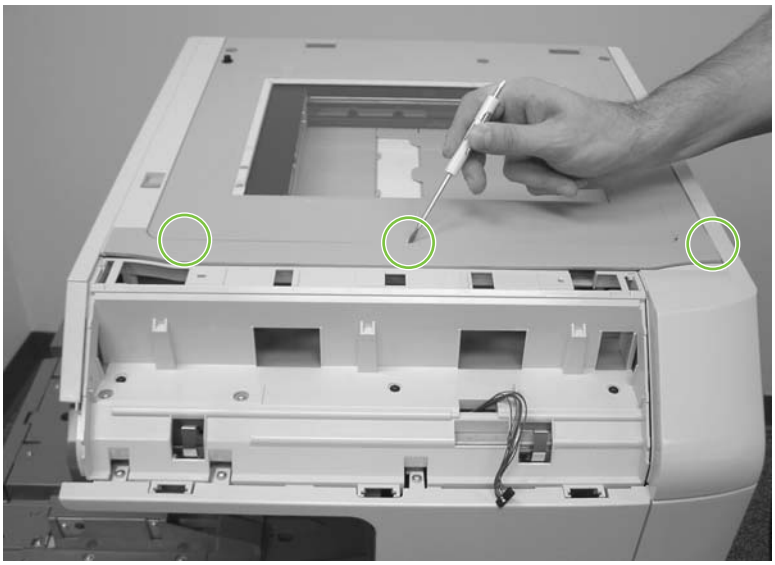


Figure 5-283 Remove the top covers (2 of 2)

Scanner assembly

1. Remove the ADF assembly. See ADF assembly on page 437.
2. Remove the control panel. See Control panel on page 267.
3. Remove one screw (callout 1), and remove the right scanner cover.

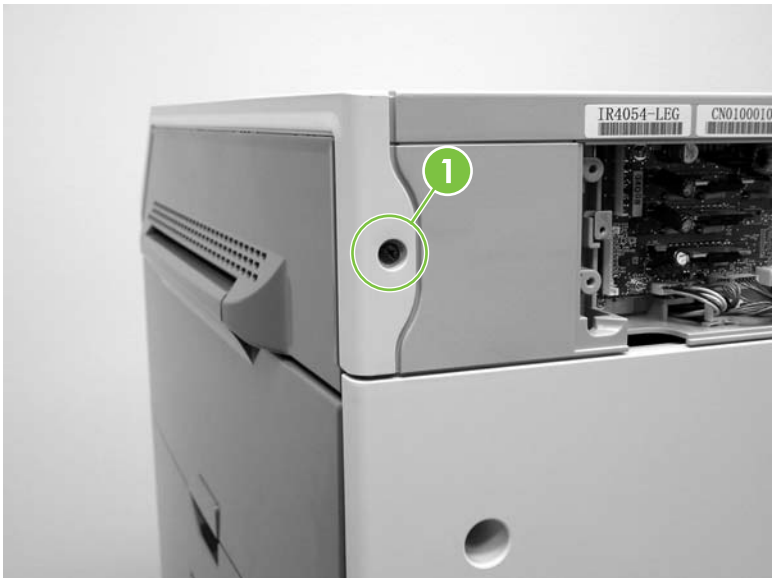


Figure 5-284 Remove the scanner assembly (1 of 5)

4. Remove two screws (callout 2) and remove the left scanner cover.

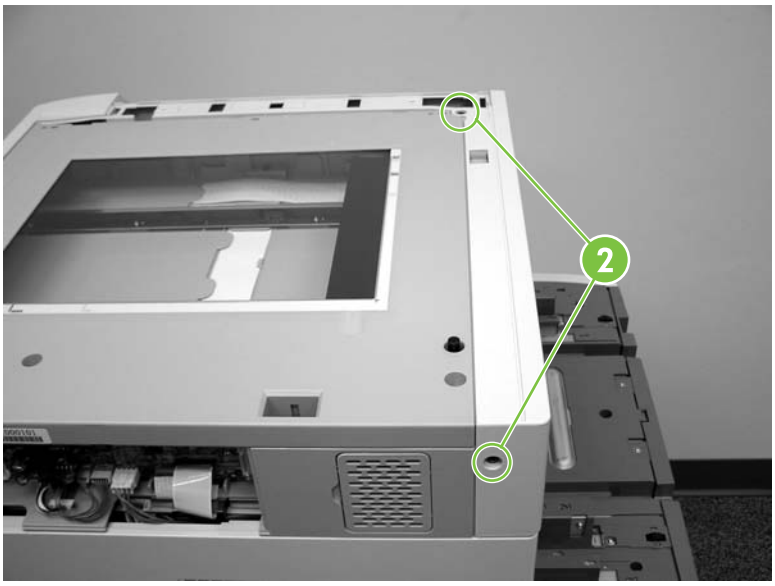


Figure 5-285 Remove the scanner assembly (2 of 5)

5. Disconnect one flat cable (callout 3) and one connector (callout 4).

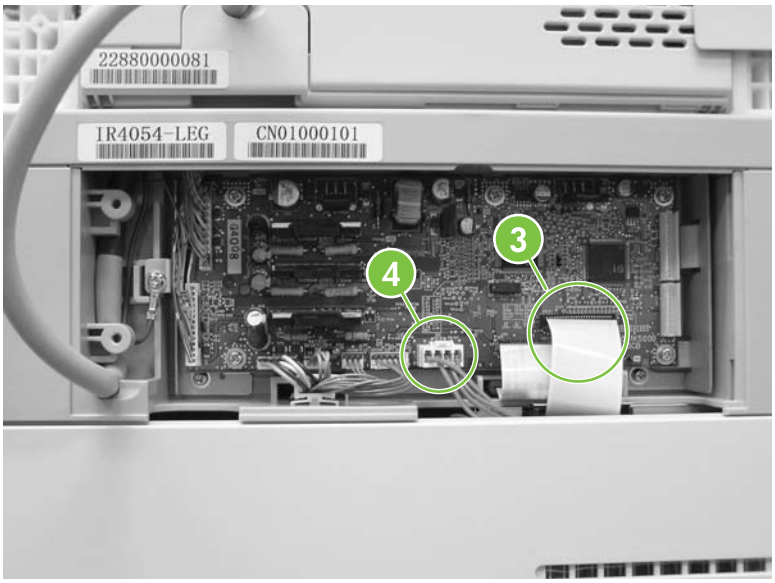


Figure 5-286 Remove the scanner assembly (3 of 5)

6. Remove three screws from the left side of the scanner (callout 5).

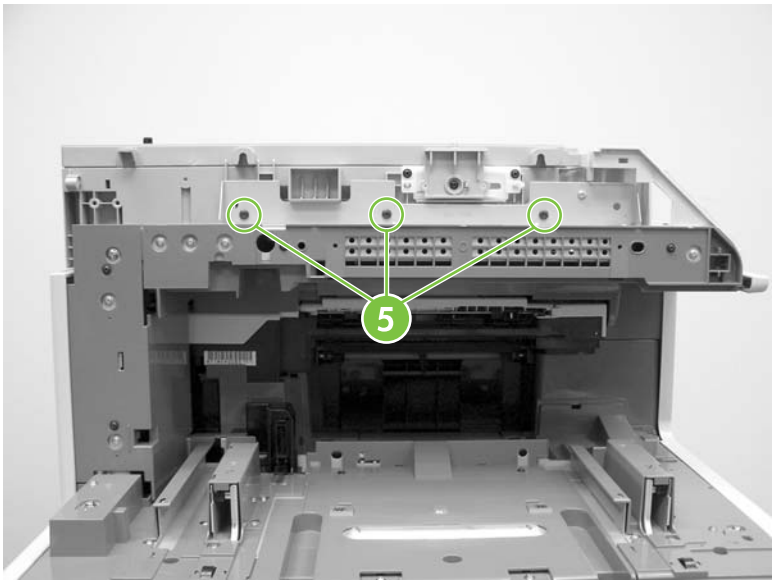


Figure 5-287 Remove the scanner assembly (4 of 5)

7. Slide the scanner to the right and lift it up and off the MFP.

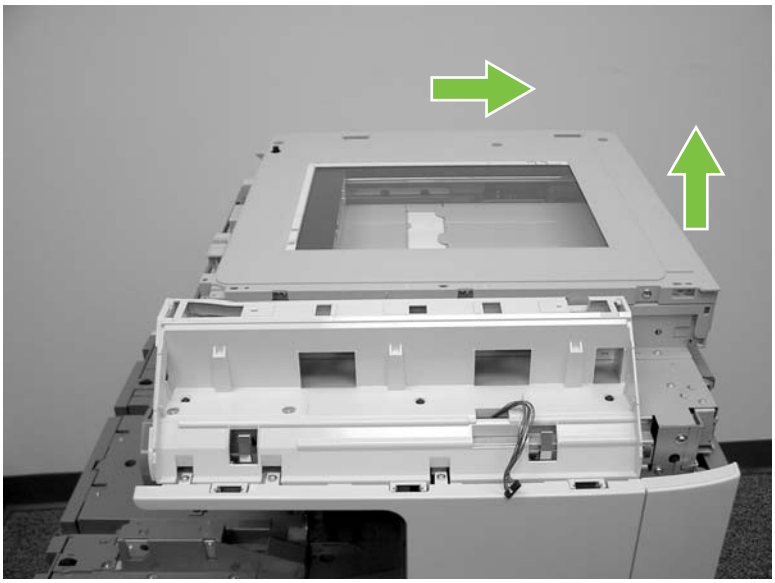


Figure 5-288 Remove the scanner assembly (5 of 5)

Scanner left cover

1. Remove the ADF assembly. See ADF assembly on page 437.
2. Remove the control panel and cover. See Control panel on page 267.
3. Remove the scanner top covers. See Top covers on page 439.
4. Move the scanner lock switch into the locked position.



Figure 5-289 Remove the scanner left cover (1 of 2)

5. Remove two screws.

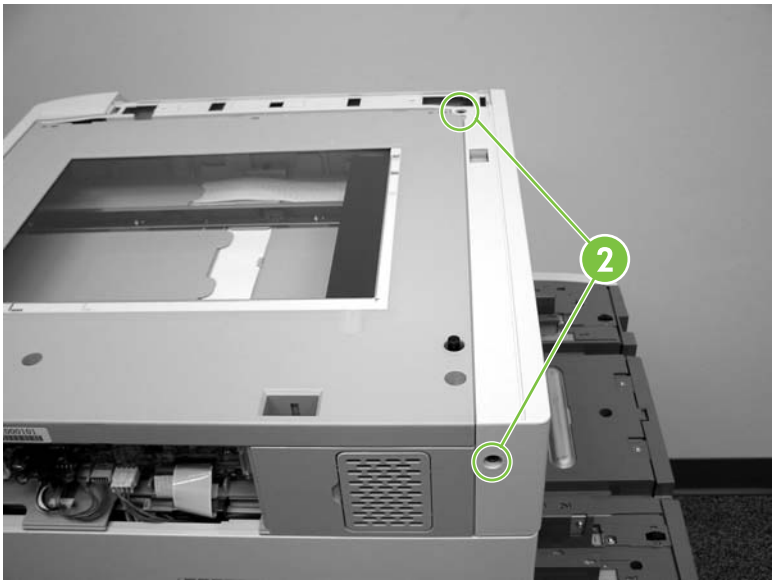


Figure 5-290 Remove the scanner left cover (2 of 2)

6. Lift off the ADF left top cover.

Scanner right cover

1. Remove the ADF assembly. See ADF assembly on page 437.
2. Remove the control panel and cover. See Control panel on page 267.
3. Remove the scanner frames. See Top covers on page 439.
4. Move the scanner lock switch into the locked position.



Figure 5-291 Remove the scanner right cover (1 of 2)

5. Remove one screw (callout 1).

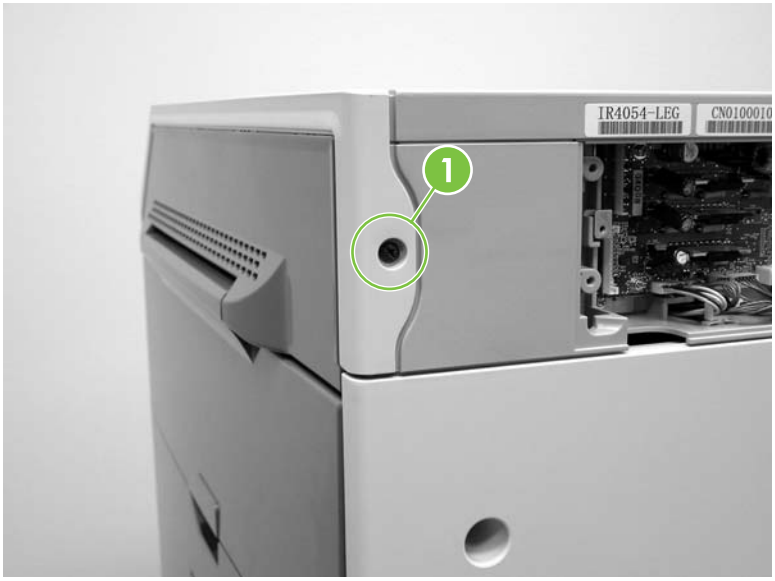


Figure 5-292 Remove the scanner right cover (2 of 2)

6. Pull toward the front of the MFP and lift off the scanner right cover.

Scanner controller PCB

1. Remove two screws (callout 1), and then remove the scanner controller PCB cover.

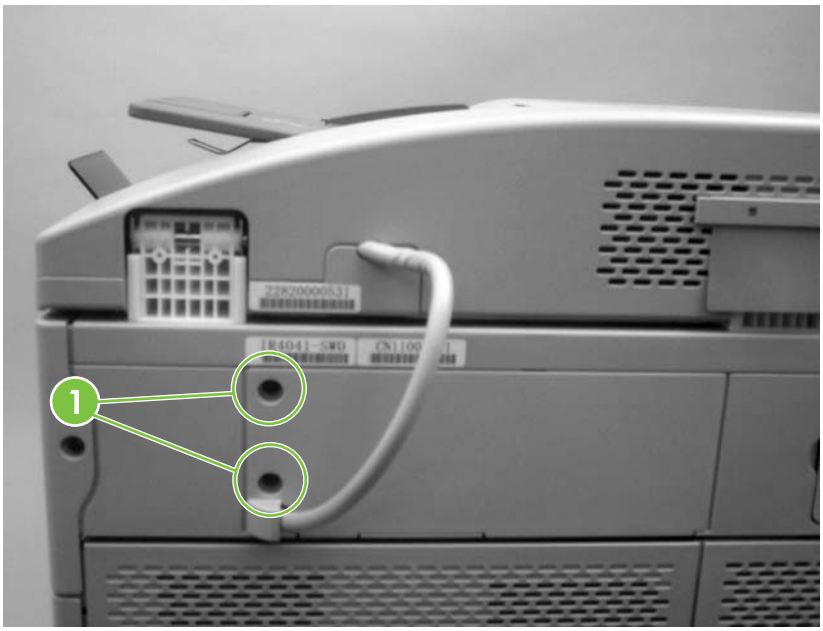


Figure 5-293 Remove the scanner controller PCB (1 of 2)

2. Disconnect seven scanner controller PCB connectors (callout 2) and two flat cables (callout 3), and then remove five screws. Remove the scanner controller PCB.

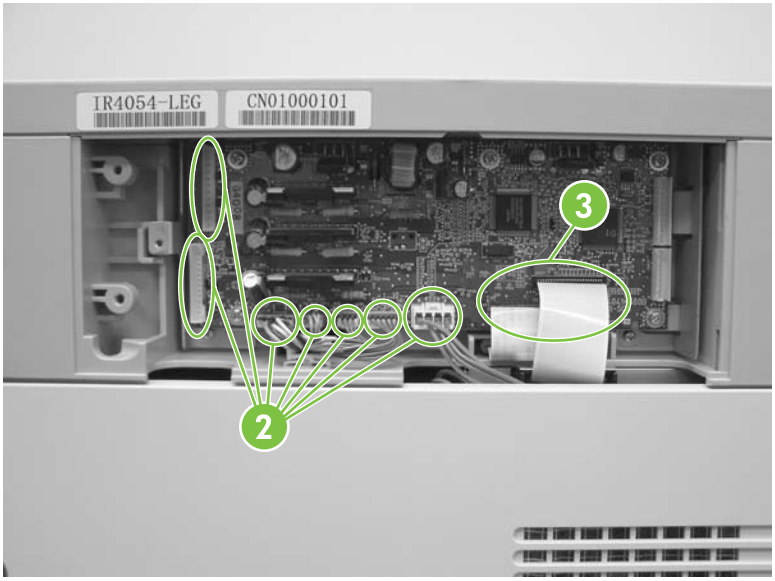


Figure 5-294 Remove the scanner controller PCB (2 of 2)

TIP: The scanner controller PCB has two empty connectors.

ADF components

The procedures in this section describe the removal and replacement of the following components:

- ADF output bin extension
- ADF white mylar backing
- ADF front cover
- ADF rear cover
- ADF left side cover
- ADF jam access cover and latch
- ADF leading-edge and paper-present sensors
- ADF hinges

ADF output bin extension

1. Open the ADF and remove two screws.



Figure 5-295 Remove the ADF output bin extension (1 of 2)

NOTE: Make sure that you store the envelope that contains the clear mylar sheets beneath the ADF white vinyl scan background after you install the replacement ADF output bin extension.

2. Peel back the ADF white vinyl scan background, and then remove the ADF output bin extension.

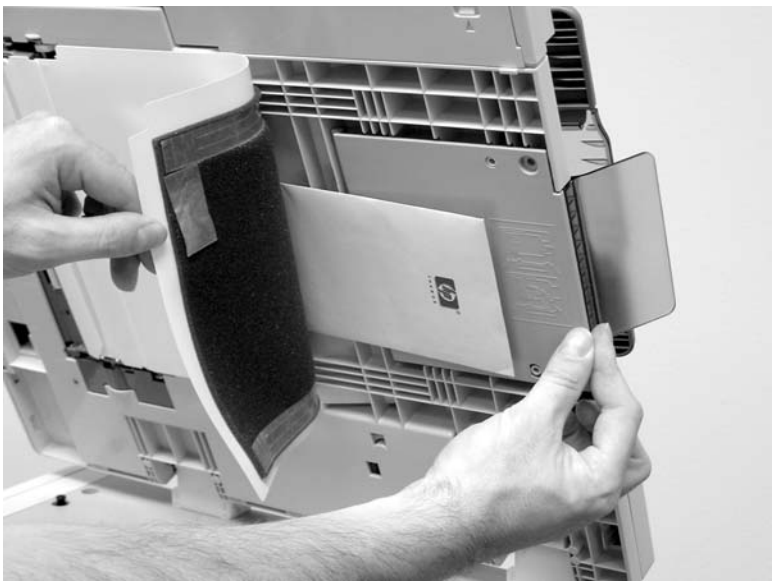


Figure 5-296 Remove the ADF output bin extension (2 of 2)

NOTE: When the two screws are removed, the ADF output bin extension is not captive. Make sure that you support the ADF output bin extension as you peel back the ADF white vinyl scan background.

ADF white mylar backing

1. Open the ADF, release two locking tabs and then open the mylar holder assembly.

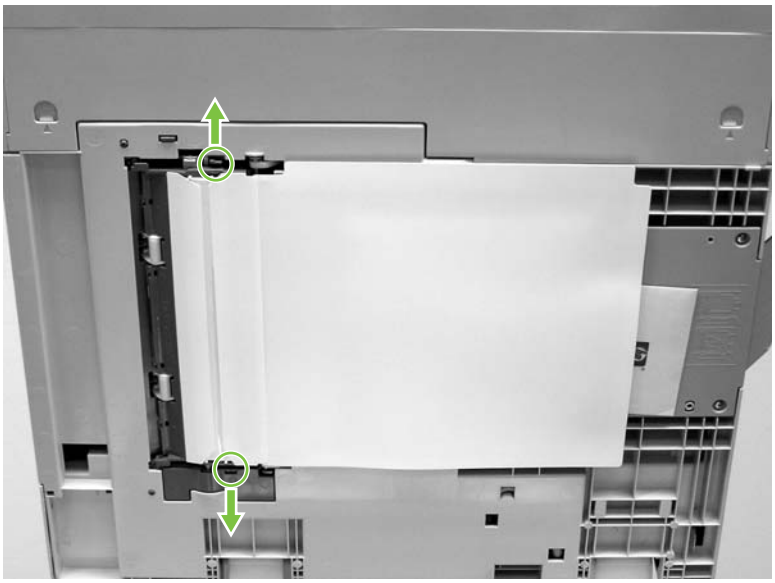


Figure 5-297 Remove the ADF white mylar backing (1 of 3)

2. Unsnap the mylar holder assembly hinges from the hinge pins.



Figure 5-298 Remove the ADF white mylar backing (2 of 3)

3. Release the ADF white mylar backing locking tab, and lift the assembly up and out of the ADF.

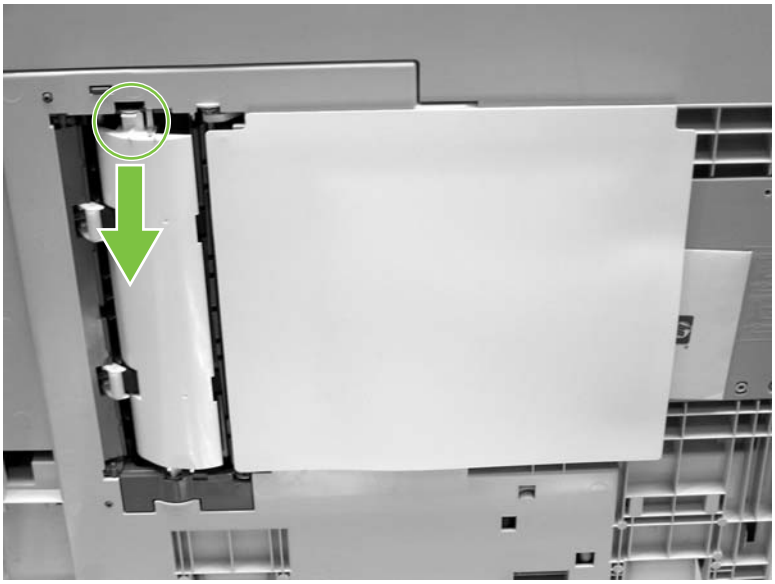


Figure 5-299 Remove the ADF white mylar backing (3 of 3)

NOTE: The springs behind the ADF white mylar backing assembly are not captive. Do not lose the springs when you remove the ADF white mylar backing assembly.

4. **Reinstallation tip:** When reinstalling the ADF white mylar backing assembly, compress and twist the springs to make sure that they grip the pedestals on the back of the assembly.

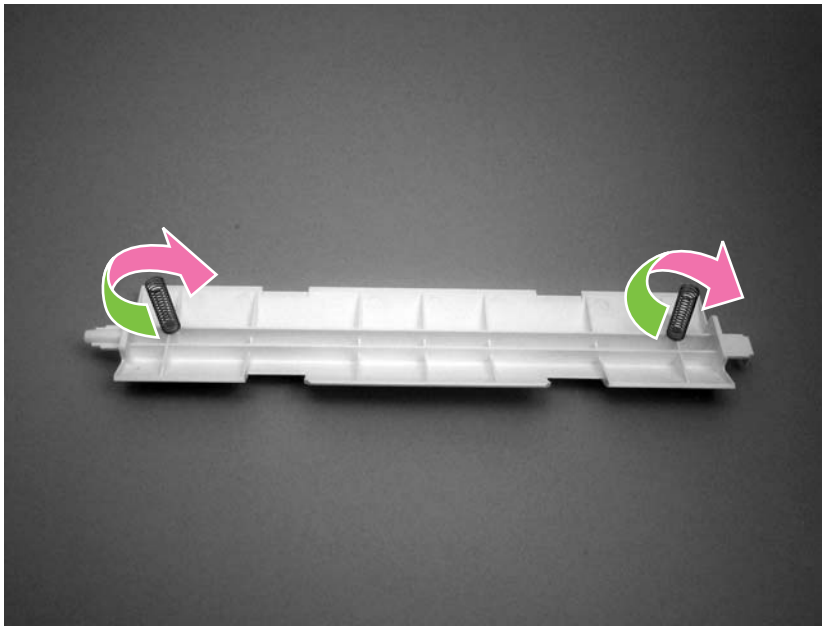


Figure 5-300 Reinstall the ADF white mylar backing springs (1 of 2)

5. **Reinstallation tip:** Place the springs over the pins when replacing the backing assembly.

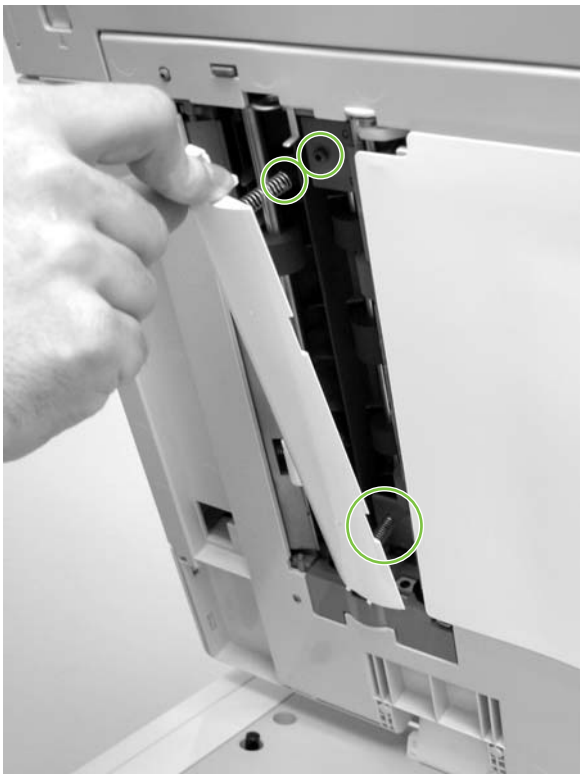


Figure 5-301 Reinstall the ADF white mylar backing springs (2 of 2)

ADF front cover

1. Remove the ADF input tray. See ADF input tray on page 279.
2. Open the ADF top cover and remove one screw.



Figure 5-302 Remove the ADF front cover (1 of 2)

3. Open the scanner cover.
4. Release the two ADF front cover locking buttons, and then remove the ADF front cover.

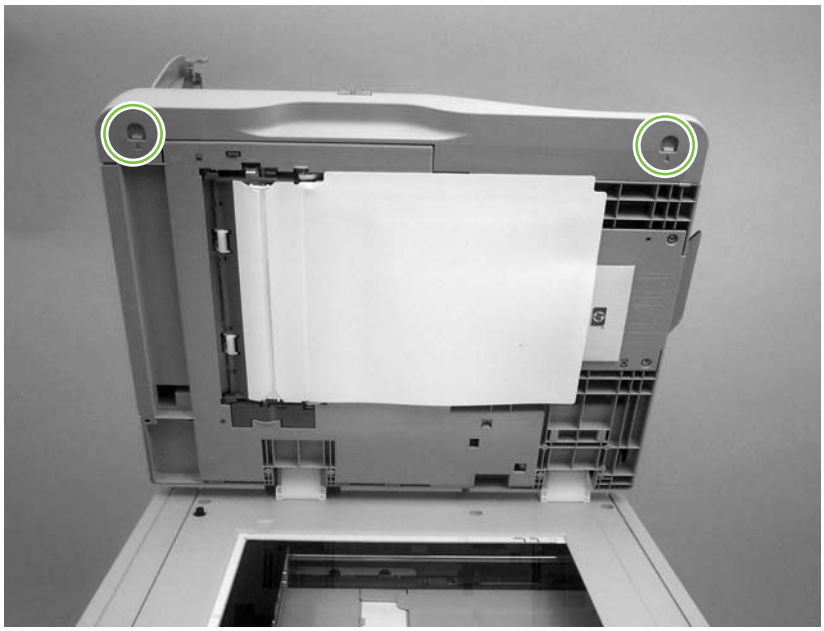


Figure 5-303 Remove the ADF front cover (2 of 2)

ADF rear cover

1. Open the ADF top cover.



Figure 5-304 Remove the ADF rear cover (1 of 3)

2. Remove one screw.



Figure 5-305 Remove the ADF rear cover (2 of 3)

3. Holding it by the front, lift the ADF rear cover off the ADF.



Figure 5-306 Remove the ADF rear cover (3 of 3)

TIP: Reinstall the ADF rear cover by inserting the tabs of the back of the cover into the slots and pressing downward.

ADF left side cover

1. Remove the following assemblies:
   - ADF front cover. See ADF front cover on page 451.
   - ADF rear cover. See ADF rear cover on page 452.
2. Release two springs.

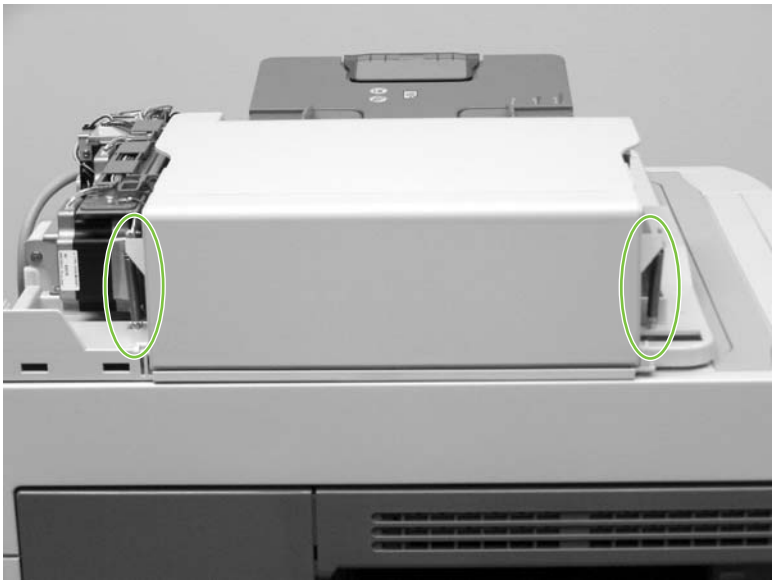


Figure 5-307 Remove the ADF left cover (1 of 2)

NOTE: The left cover tension springs are not captive. Do not lose the springs when you remove the ADF left cover.

3. Flex the locking tab on the hinge at the control panel end of the cover to release the hinge. Remove the ADF left cover.



Figure 5-308 Remove the ADF left cover (2 of 2)

ADF jam access cover and latch

1. Remove the following assemblies:
   - ADF front cover. See ADF front cover on page 451.
   - ADF rear cover. See ADF rear cover on page 452.
   - ADF left side cover. See ADF left side cover on page 454.
2. Pull up on the left side of the cover to release it, and then remove the ADF jam access cover.

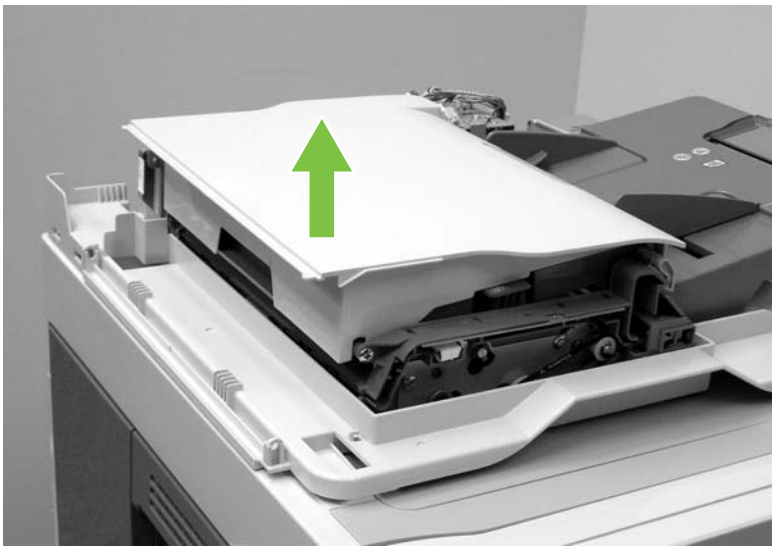


Figure 5-309 Remove the ADF jam access cover and latch (1 of 3)

3. To remove the latch, spread the two clips, and slide the latch rod toward the rear of the ADF.

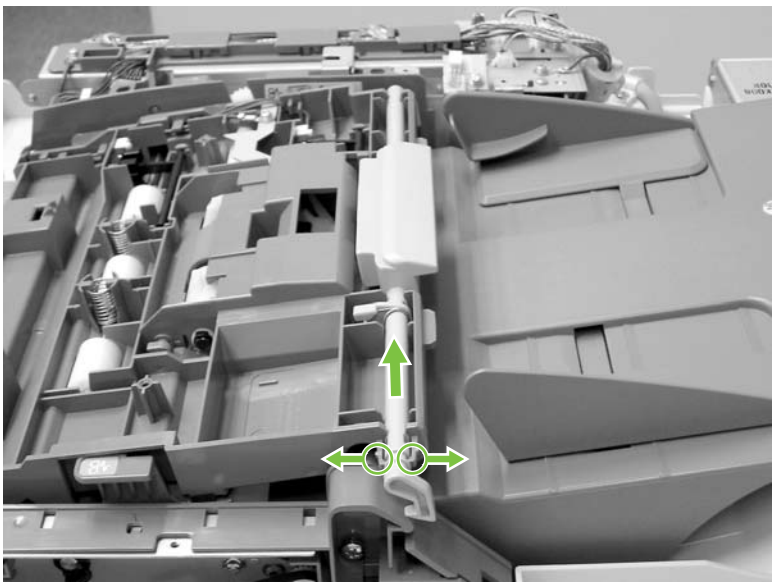


Figure 5-310 Remove the ADF jam access cover and latch (2 of 3)

4. Lift the rod out of the ADF assembly.

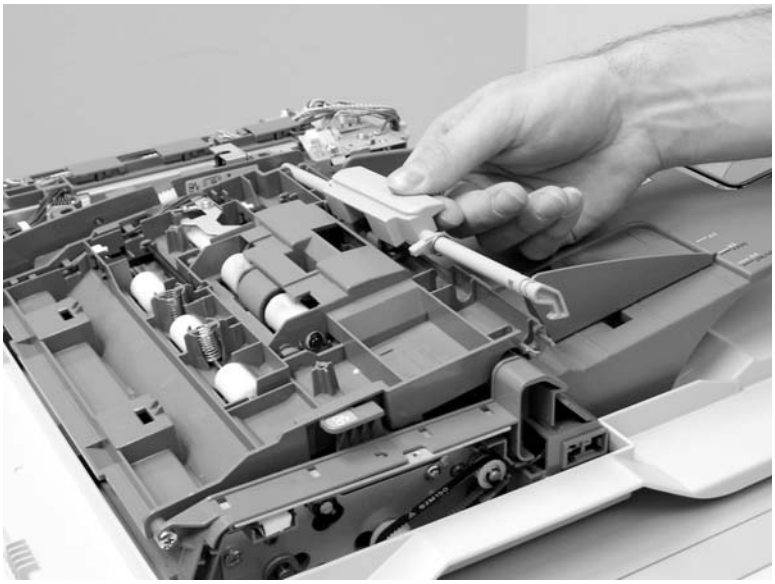
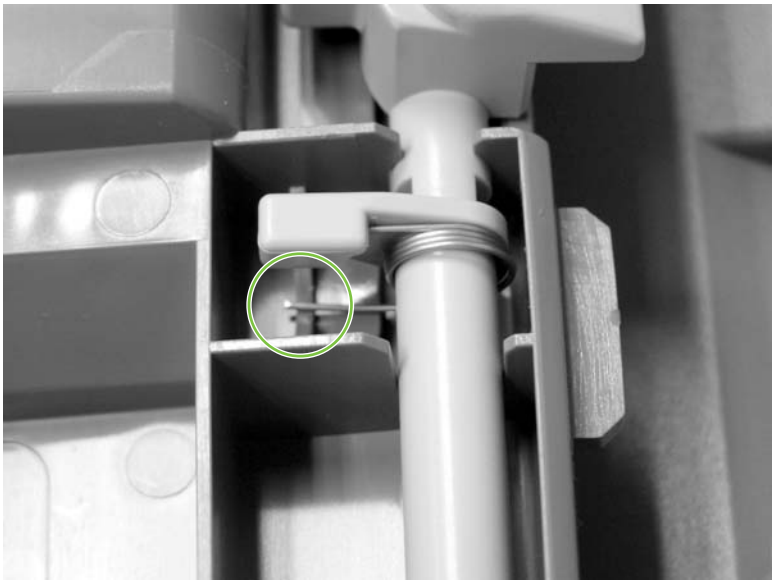


Figure 5-311 Remove the ADF jam access cover and latch (3 of 3)

5. **Reinstallation tip:** Make sure that you wind the spring around the latch rod and hold it in place until the rod snaps into place.



ADF leading-edge and paper-present sensors

1. Remove the ADF front cover. See ADF front cover on page 451.
2. Remove the ADF rear cover. See ADF rear cover on page 452.
3. Remove the ADF left side cover. See ADF left side cover on page 454.
4. Remove the ADF jam access cover. See ADF jam access cover and latch on page 455.
5. Locate the ADF leading-edge sensor (callout 1) and the ADF paper-present sensor (callout 2).

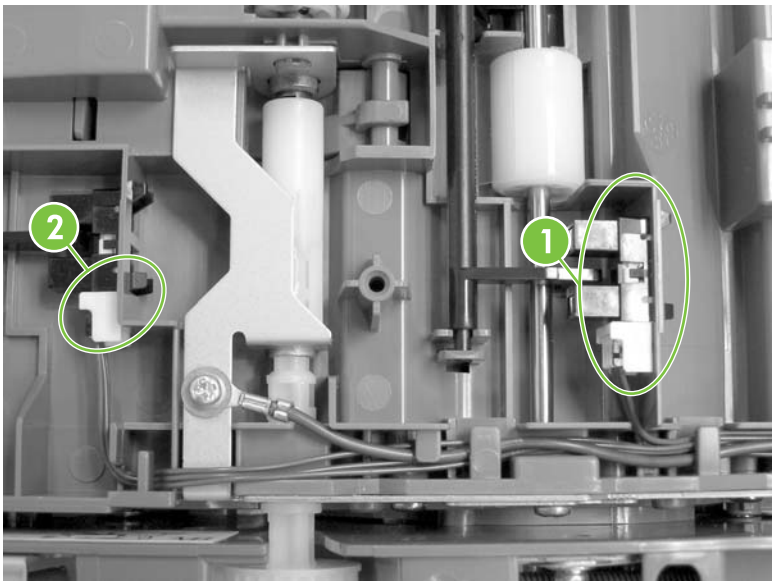


Figure 5-312 Remove the ADF leading-edge and paper-present sensors (1 of 2)

6. Squeeze the retainer tabs, and push the sensor out of the mounting frame. Disconnect the connector, and then remove the sensors.

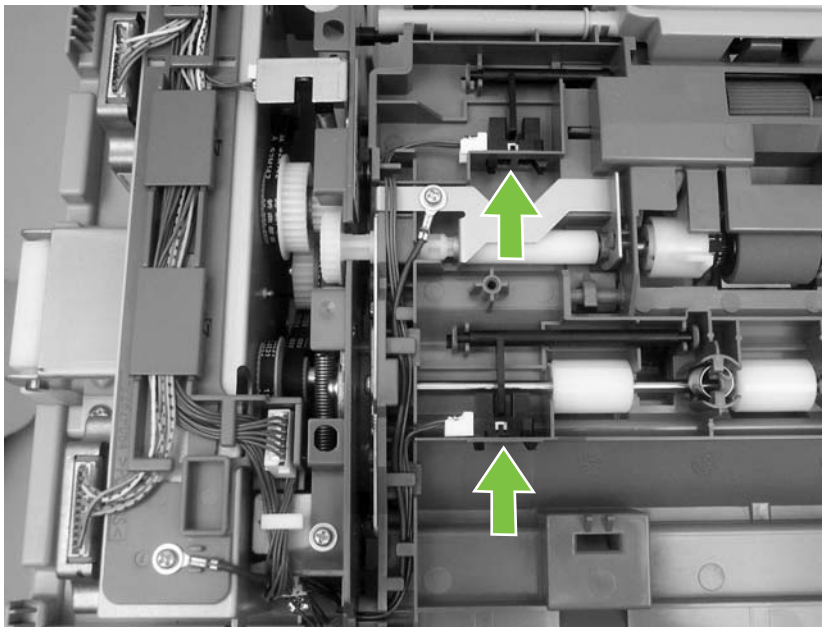


Figure 5-313 Remove the ADF leading-edge and paper-present sensors (2 of 2)

ADF hinges

1. Remove the following assemblies:
   - ADF front cover. See ADF front cover on page 451.
   - ADF rear cover. See ADF rear cover on page 452.
2. Lift the ADF assembly and unhook the hinges from the scanner assembly.

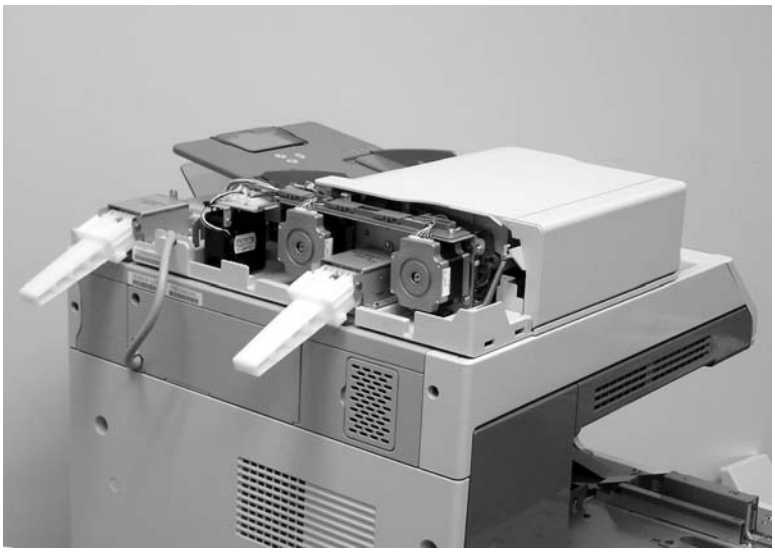


Figure 5-314 Remove the ADF hinges (1 of 3)

3. Remove two screws from the left-side hinge, and then remove the left-side hinge.

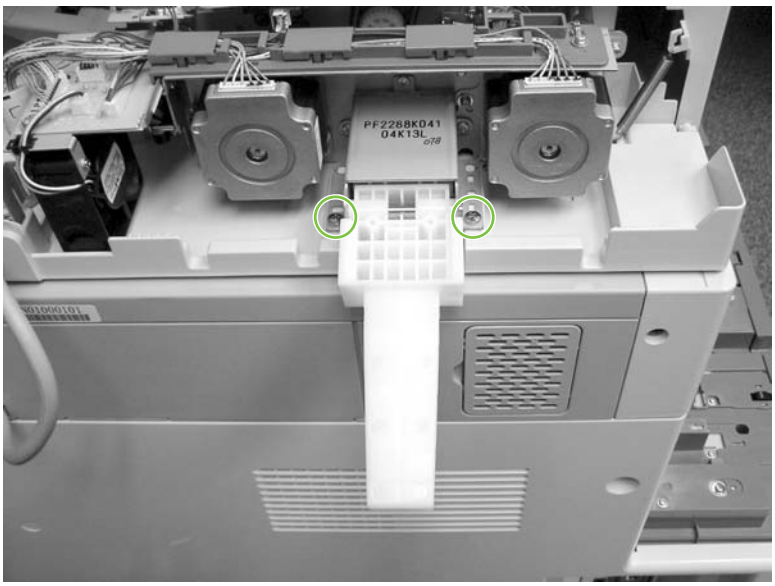


Figure 5-315 Remove the ADF hinges (2 of 3)

4. Remove four screws from the right-side hinge, and then remove the right-side hinge.

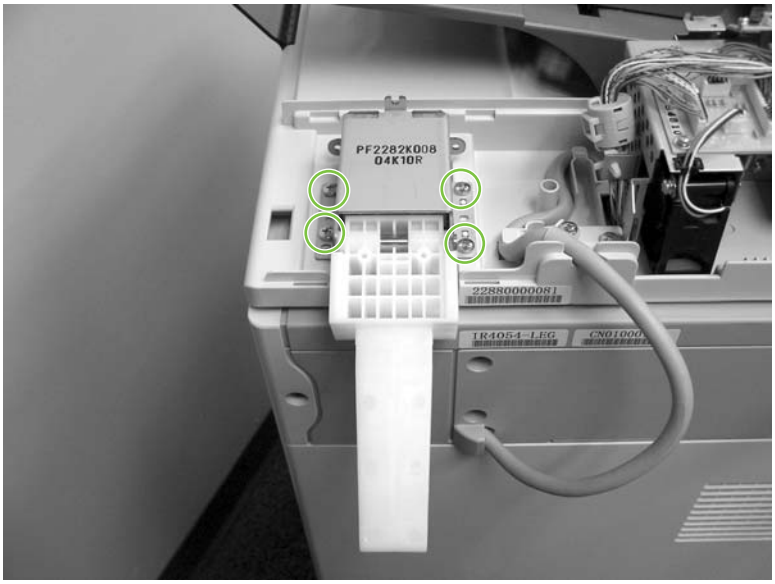


Figure 5-316 Remove the ADF hinges (3 of 3)

2 X 500-sheet paper input assembly components

The procedures in this section describe the removal and replacement of the following components:

- Rear cover
- Right front cover
- Left front cover
- Right cover
- Left cover
- Right lower cover assembly
- Pickup motor assembly
- Upper lifter drive assembly
- Lower lifter drive assembly
- Upper pickup drive assembly
- Lower pickup drive assembly
- Upper pickup assembly
- Lower pickup assembly
- Paper feeder door-open switch
- Paper feeder driver PCB

Rear cover

1. Remove all paper trays.
2. Remove two screws (callout 1) and then remove the rear cover (callout 2).

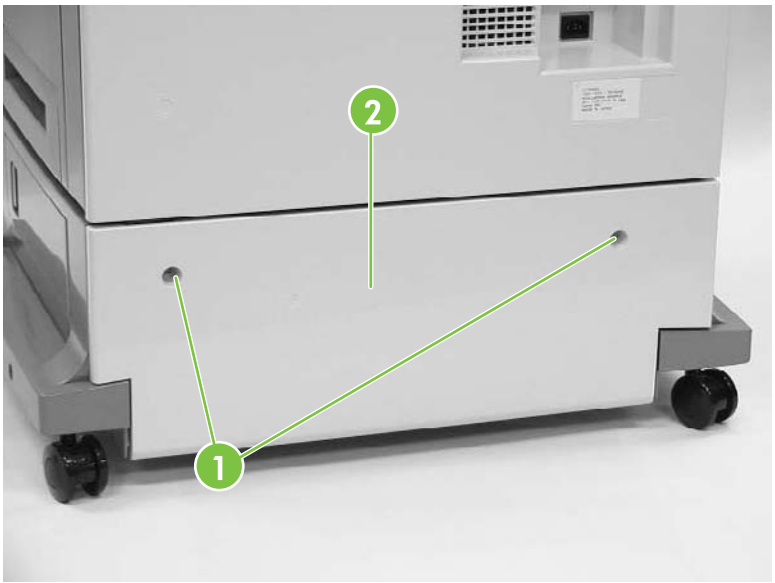


Figure 5-317 Remove the 2 X 500-sheet paper input assembly rear cover

Right front cover

1. Remove all paper trays.
2. Unhook the two claws (callout 1) and remove one screw (callout 2).

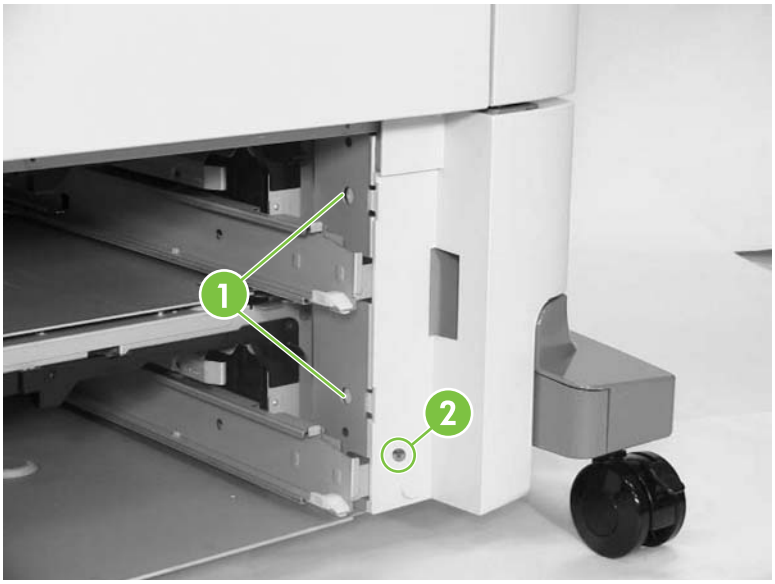


Figure 5-318 Remove the 500-sheet feeder right front cover (1 of 2)

3. Unhook the three claws (callout 3), and then remove the right front cover.

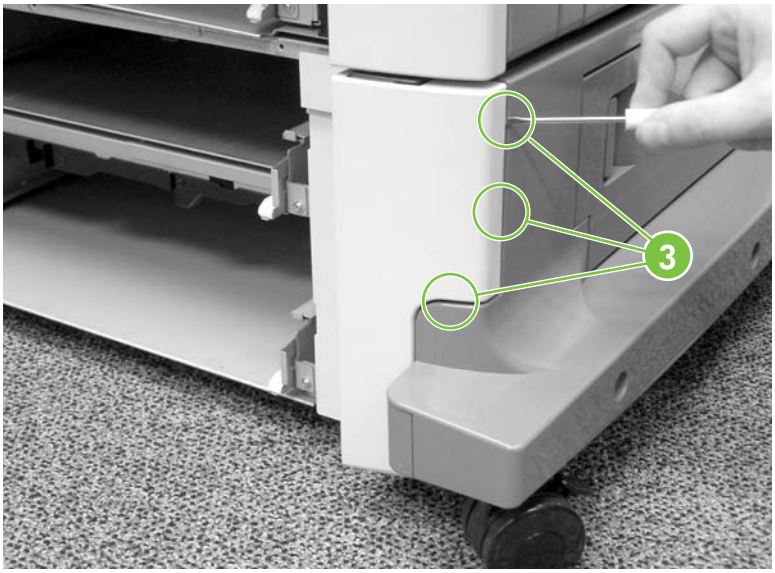


Figure 5-319 Remove the 500-sheet feeder right front cover (2 of 2)

Left front cover

1. Remove all paper trays.
2. Unhook the two claws (callout 1).

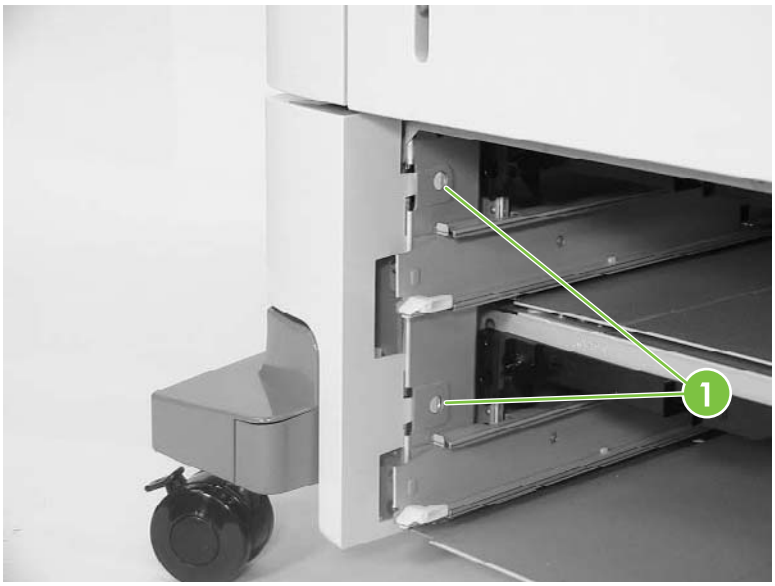


Figure 5-320 Remove the 500-sheet feeder left front cover (1 of 2)

3. Unhook the three claws (callout 2), and remove the left front cover.

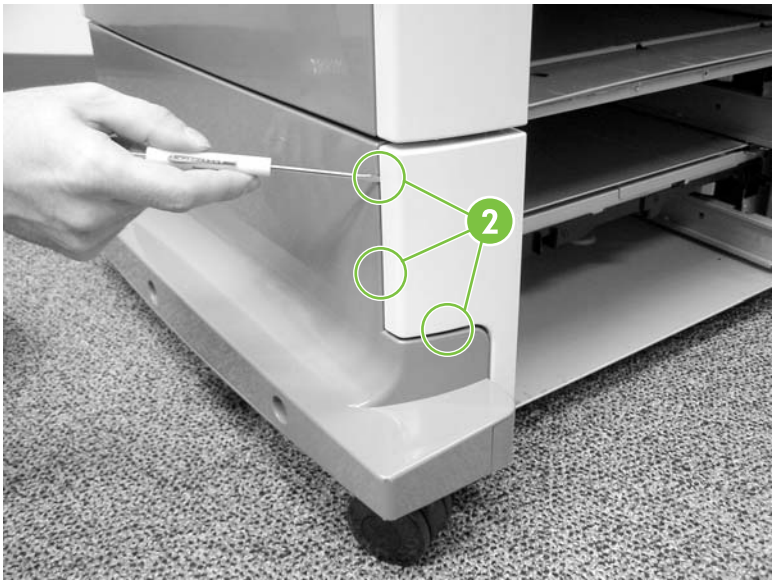


Figure 5-321 Remove the 500-sheet feeder left front cover (2 of 2)

Right cover

1. Remove all paper trays.
2. Remove the feeder rear cover. See Rear cover on page 461.
3. Remove the right front cover. See Right front cover on page 462.
4. Remove one screw (callout 1).

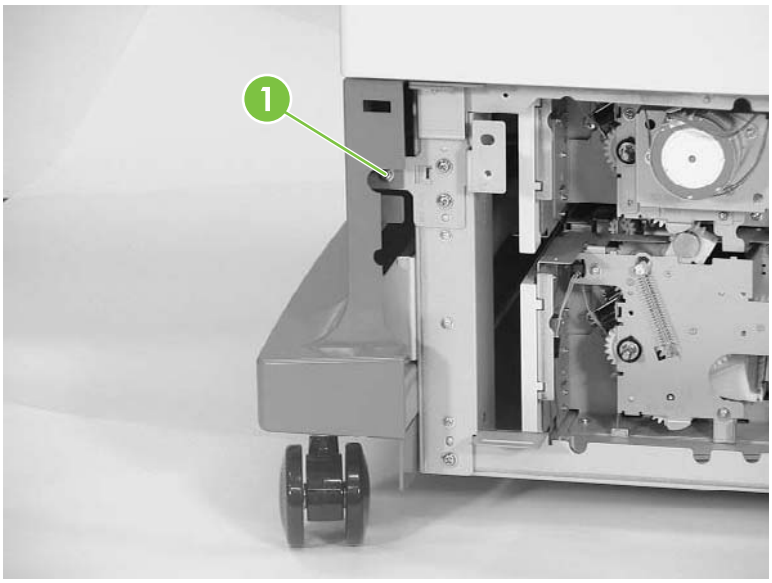


Figure 5-322 Remove the right cover (1 of 3)

5. Remove one screw (callout 2).

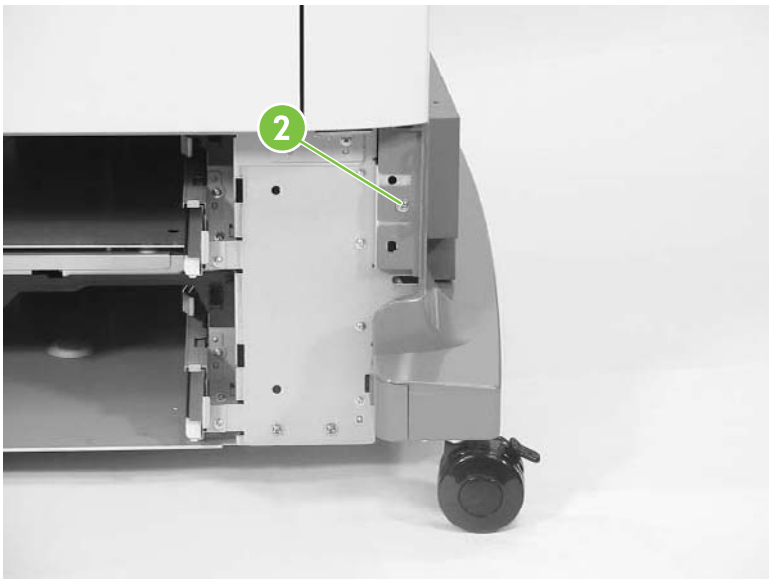


Figure 5-323 Remove the right cover (2 of 3)

6. Remove the three screws (callout 3) and the right cover (callout 4).

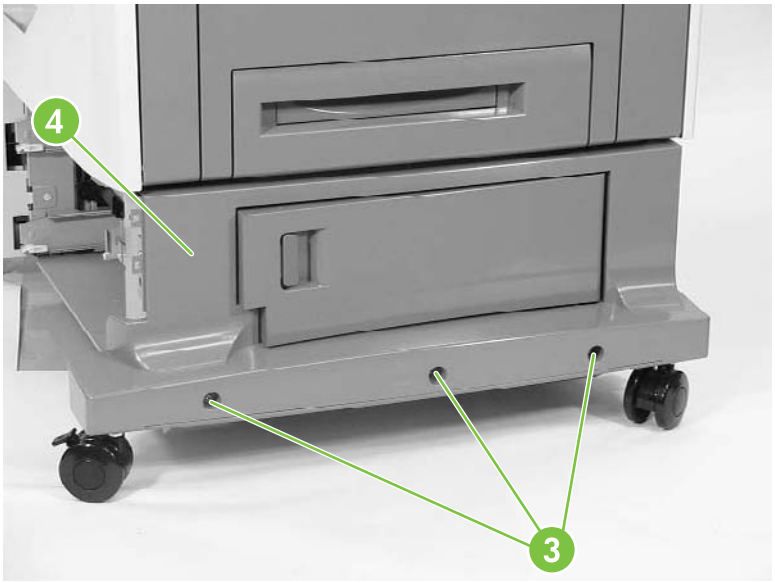


Figure 5-324 Remove the right cover (3 of 3)

Left cover

1. Remove all paper trays.
2. Remove the rear cover. See Rear cover on page 461.
3. Remove the left front cover. See Left front cover on page 463.
4. Remove one screw (callout 1).

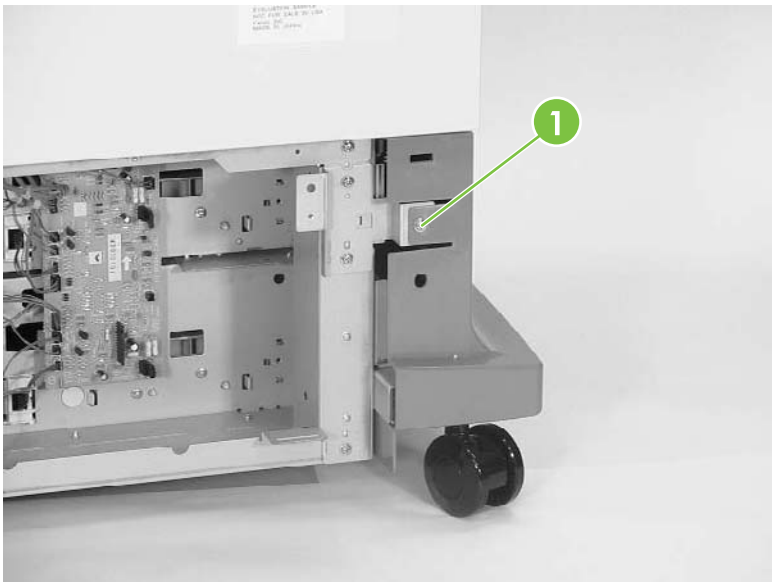


Figure 5-325 Remove the left cover (1 of 3)

5. Remove one screw (callout 2).

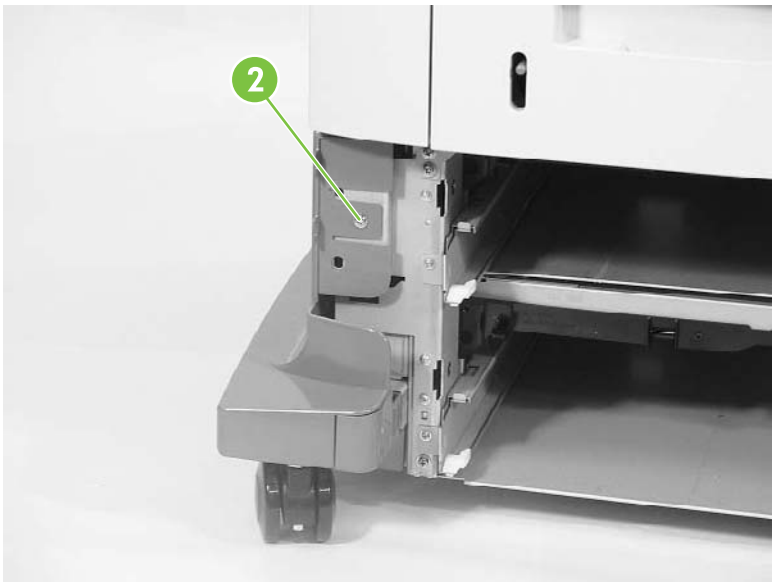


Figure 5-326 Remove the left cover (2 of 3)

6. Remove three screws (callout 3), and then remove the left cover (callout 4).

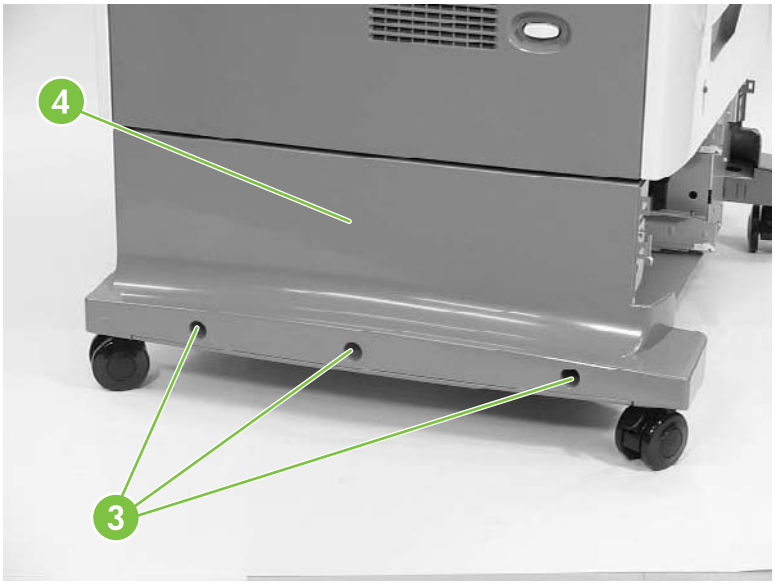


Figure 5-327 Remove the left cover (3 of 3)

Right lower cover assembly

1. Remove all paper trays.
2. Remove the following assemblies:
   - Rear cover. See Rear cover on page 461.
   - Right cover. See Right cover on page 464.
3. Open the right lower cover.
4. While holding the right lower cover assembly (callout 1), lift up on the hinges to remove the assembly.

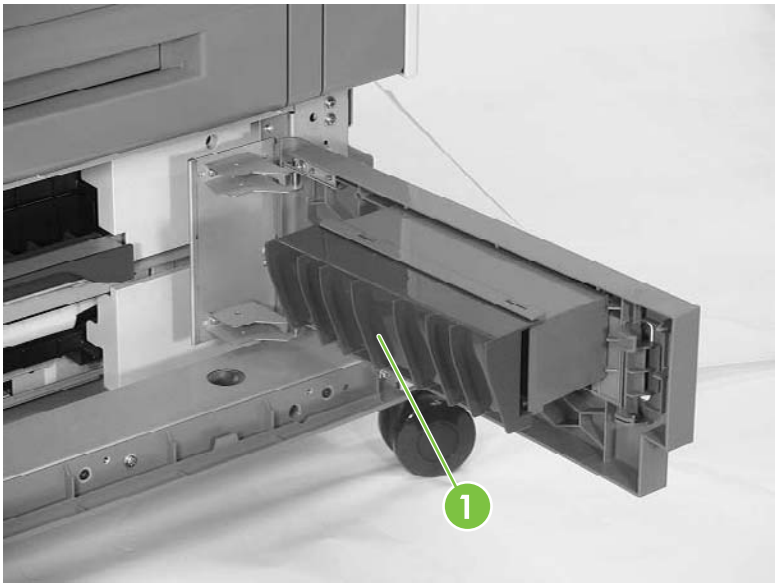


Figure 5-328 Remove the right lower cover assembly

Pickup motor assembly

1. Remove the 500-sheet feeder rear cover. See Rear cover on page 461.
2. Disconnect one connector (callout 1).
3. Remove three screws (callout 2), and then remove the pickup motor assembly (callout 3).

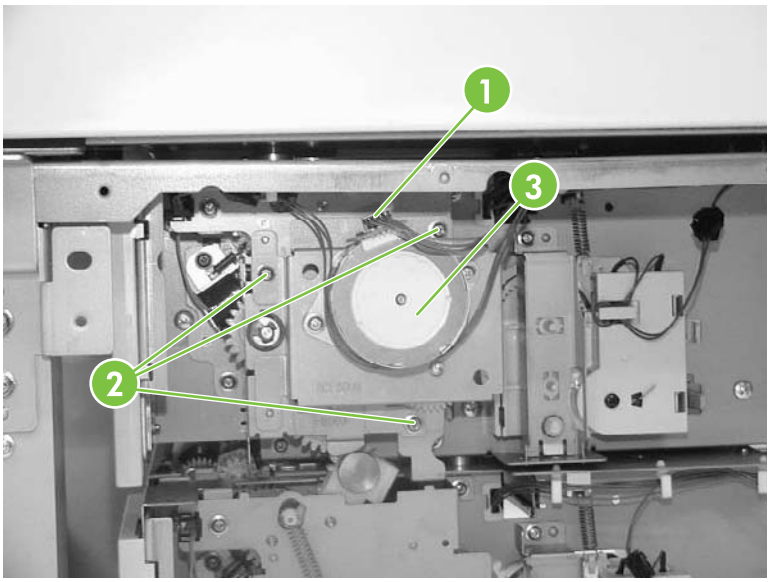


Figure 5-329 Remove the pickup motor assembly

Upper lifter drive assembly

1. Remove the 2 X 500-sheet feeder rear cover. See Rear cover on page 461.
2. Remove the spring (callout 1) and disconnect the connector (callout 2). Remove two screws (callout 3).

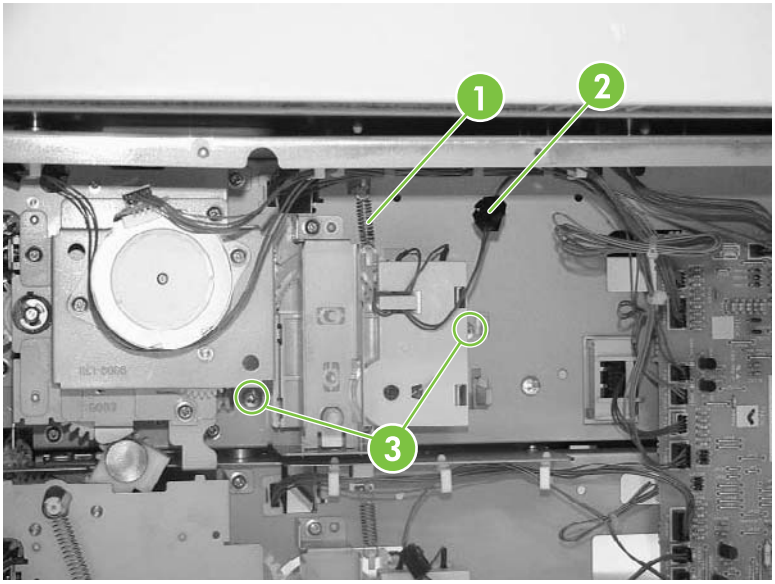


Figure 5-330 Remove the upper lifter drive assembly (1 of 3)

3. Remove the paper tray rear bracket, which is located inside the paper tray.

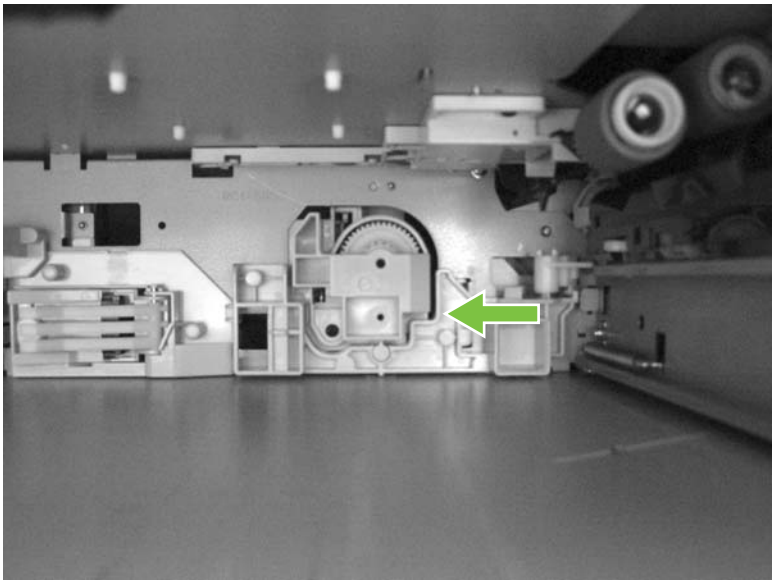


Figure 5-331 Remove the upper lifter drive assembly (2 of 3)

4. Remove one screw (callout 4) and then remove the upper lifter drive bracket (callout 5). Remove the upper lifter drive assembly (callout 6).

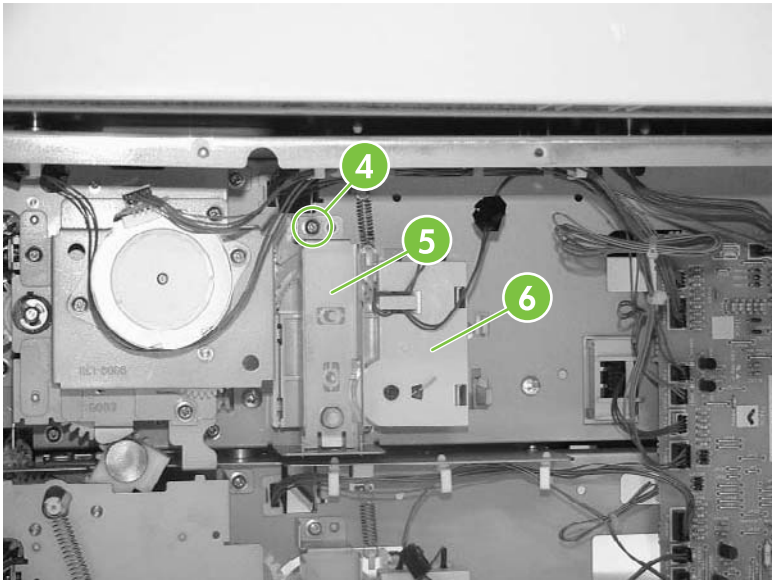


Figure 5-332 Remove the upper lifter drive assembly (3 of 3)

Lower lifter drive assembly

1. Remove the 500-sheet feeder rear cover. See Rear cover on page 461.
2. Remove two screws (callout 1). Remove the spring (callout 2) and disconnect one connector (callout 3).

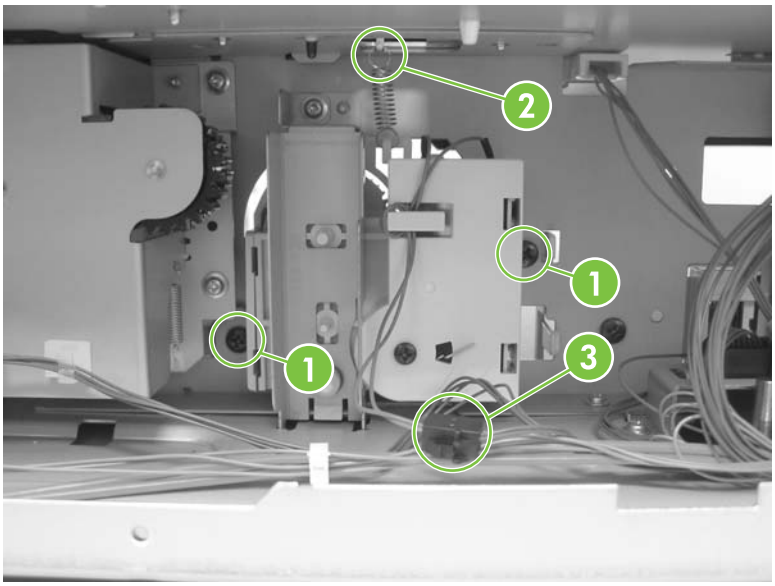


Figure 5-333 Remove the lower lifter drive assembly (1 of 3)

3. Remove the paper tray rear bracket, which is located inside the paper tray.

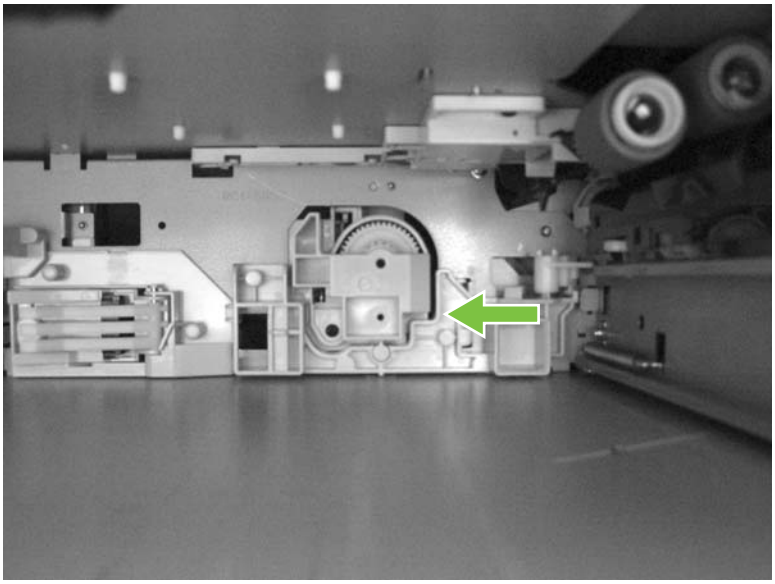


Figure 5-334 Remove the lower lifter drive assembly (2 of 3)

4. Remove one screw (callout 4. Remove the lower lifter drive bracket (callout 5) and the lower lifter drive assembly (callout 6).

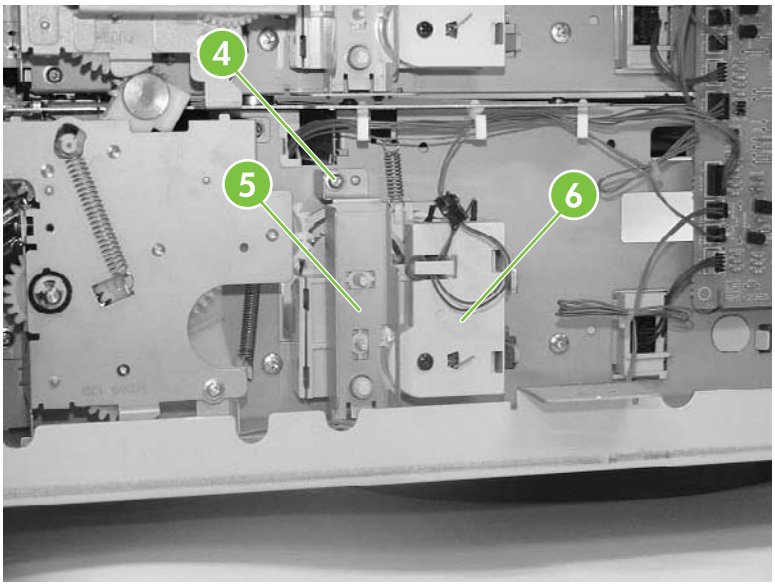


Figure 5-335 Remove the lower lifter drive assembly (3 of 3)

Upper pickup drive assembly

1. Remove the 2 X 500-sheet feeder rear cover. See Rear cover on page 461.
2. Remove the pickup motor assembly. See Pickup motor assembly on page 469.
3. Disconnect the connector (callout 1).
4. Remove four screws (callout 2), and then remove the upper pickup drive assembly (callout 3).

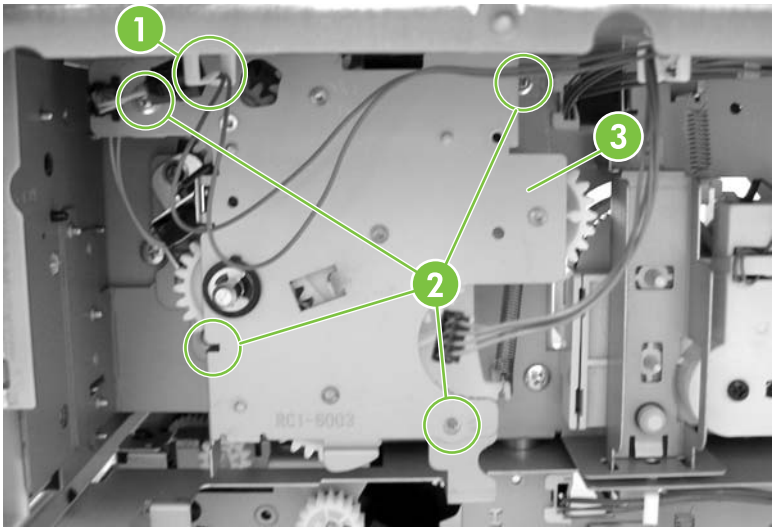


Figure 5-336 Remove the upper pickup drive assembly

TIP: When reinstalling the upper pickup drive assembly, align the D-shaped shaft on the assembly to fit through the hole in the chassis.

To allow the black arm on the assembly to lift, install tray 3 (filled with paper). As you install the tray, manually lift the bin-full flag up over the tray.

Lower pickup drive assembly

1. Remove the 2 X 500-sheet feeder rear cover. See Rear cover on page 461.
2. Disconnect one connector (callout 1).

3. Remove the five screws (callout 2), and then remove the lower pickup drive assembly (callout 3).

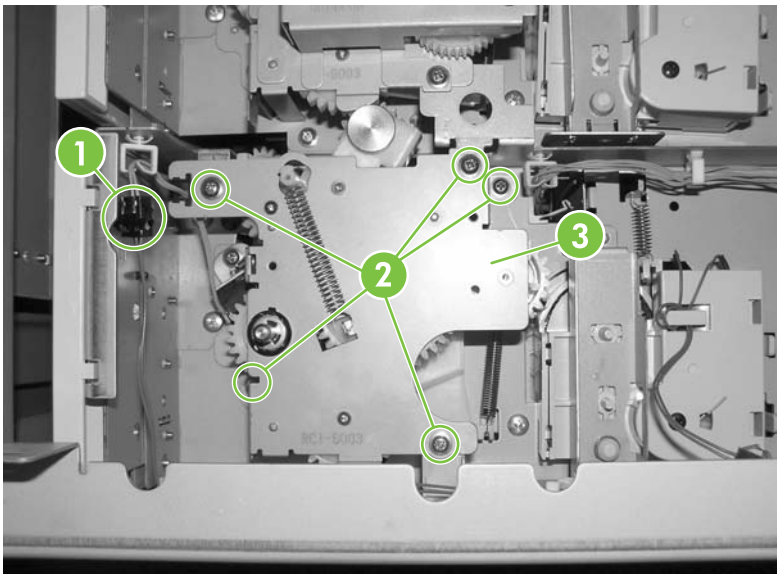


Figure 5-337 Remove the lower pickup drive assembly

Upper pickup assembly

1. Remove the 2 X 500-sheet feeder rear cover. See Rear cover on page 461.
2. Remove the pickup motor assembly. See Pickup motor assembly on page 469.
3. Remove the upper pickup drive assembly. See Upper pickup drive assembly on page 473.
4. Remove the door-open switch. See Paper feeder door-open switch on page 483.
5. Disconnect three connectors (callout 1).

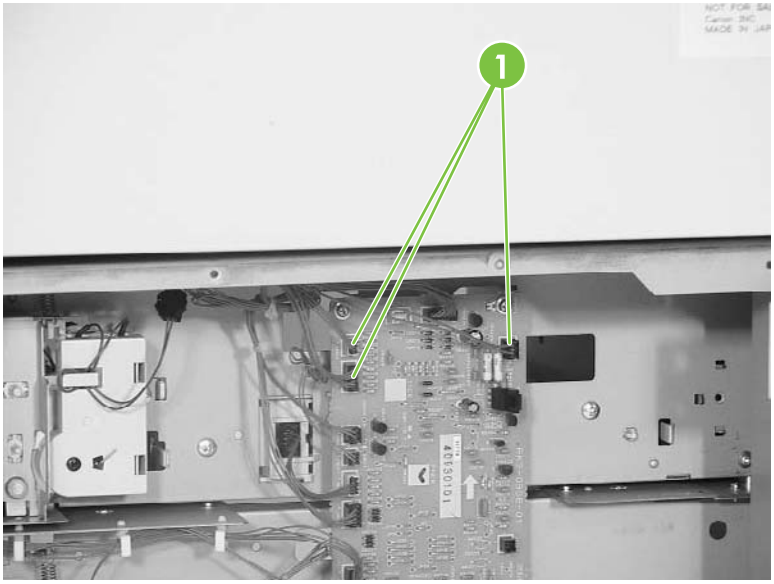


Figure 5-338 Remove the upper pickup assembly (1 of 10)

6. Remove one cable (callout 2) from the cable guides (callout 3).

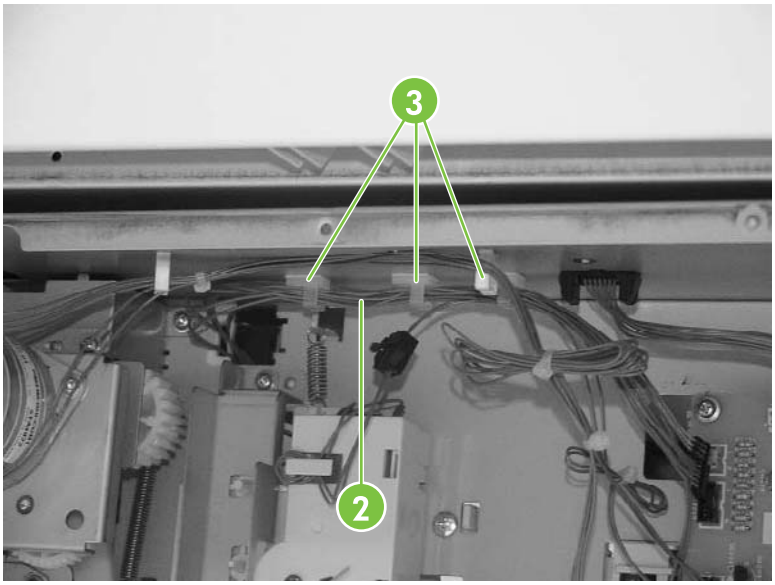


Figure 5-339 Remove the upper pickup assembly (2 of 10)

7. Remove two screws (callout 4) and the right cassette rail assembly (callout 5).

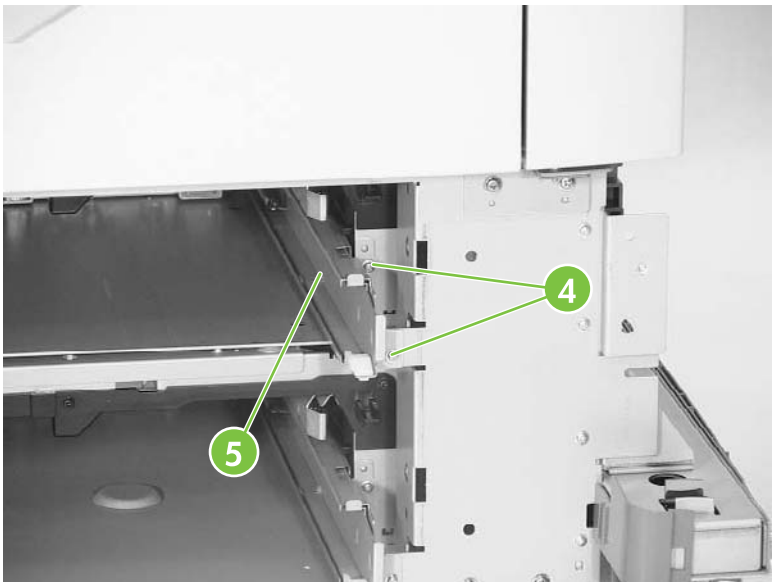


Figure 5-340 Remove the upper pickup assembly (3 of 10)

8. Remove the two screws (callout 6) and the hinge plate (callout 7).

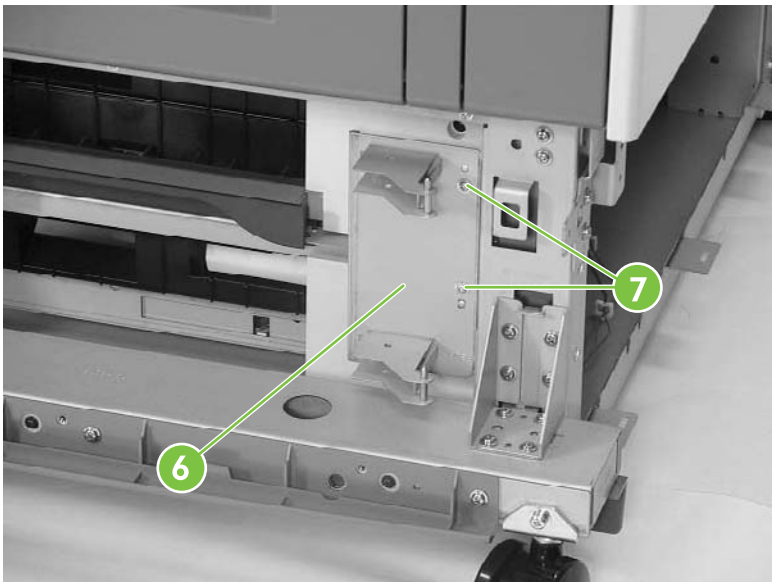


Figure 5-341 Remove the upper pickup assembly (4 of 10)

9. Remove three screws (callout 8) and remove the crossmember (callout 9).

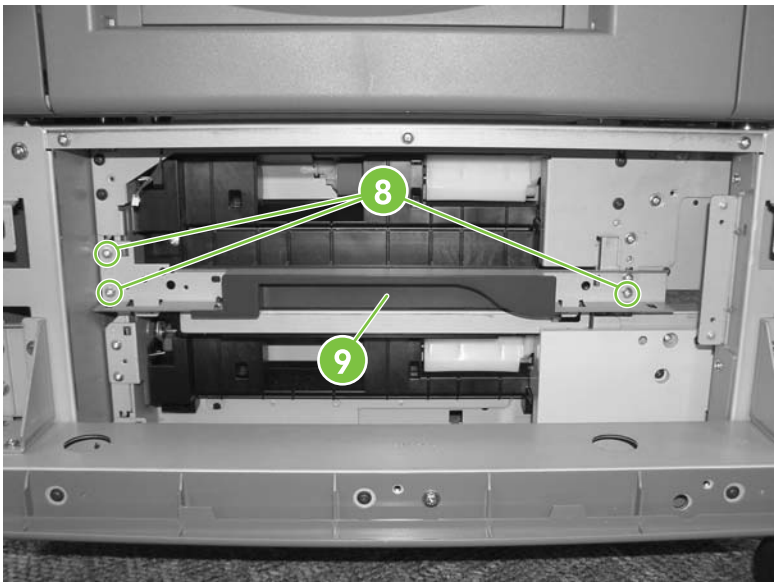


Figure 5-342 Remove the upper pickup assembly (5 of 10)

10. Loosen one screw situated behind the frame and inside the black foot.

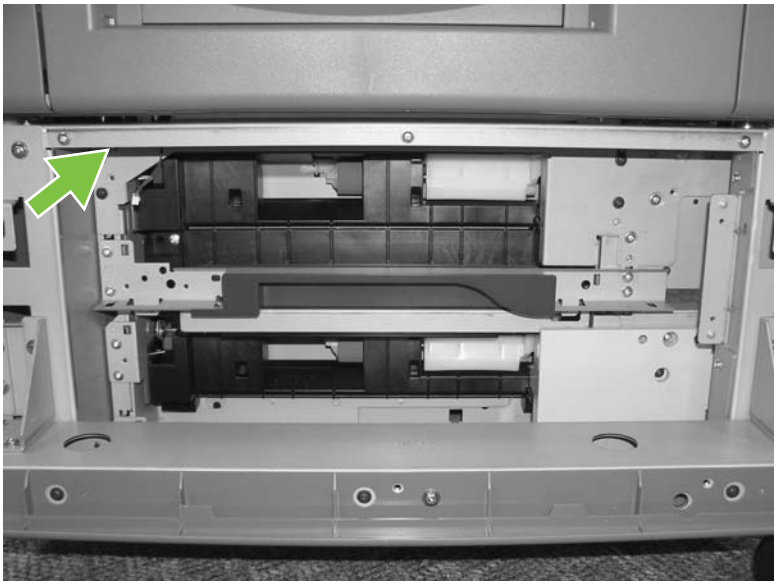


Figure 5-343 Remove the upper pickup assembly (6 of 10)

11. Remove eight screws (callout 10) and remove both metal brackets.

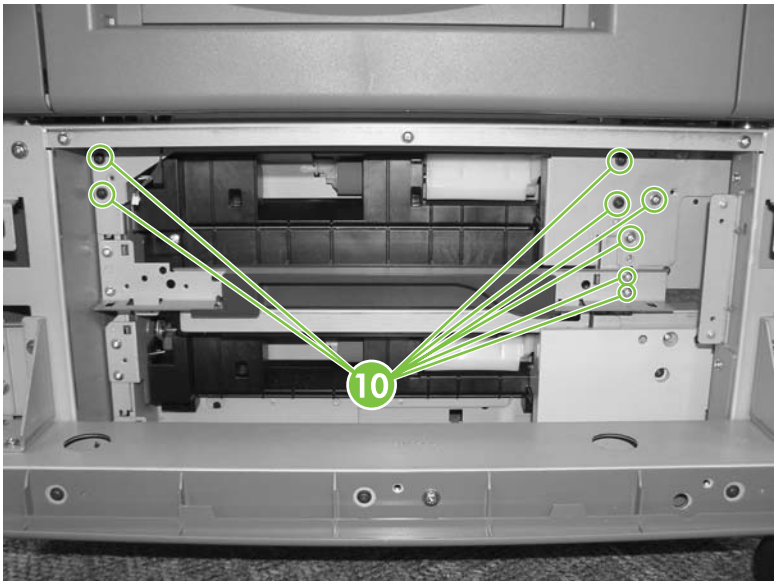


Figure 5-344 Remove the upper pickup assembly (7 of 10)

12. Remove two screws (callout 11) and the lower pickup guide (callout 12).

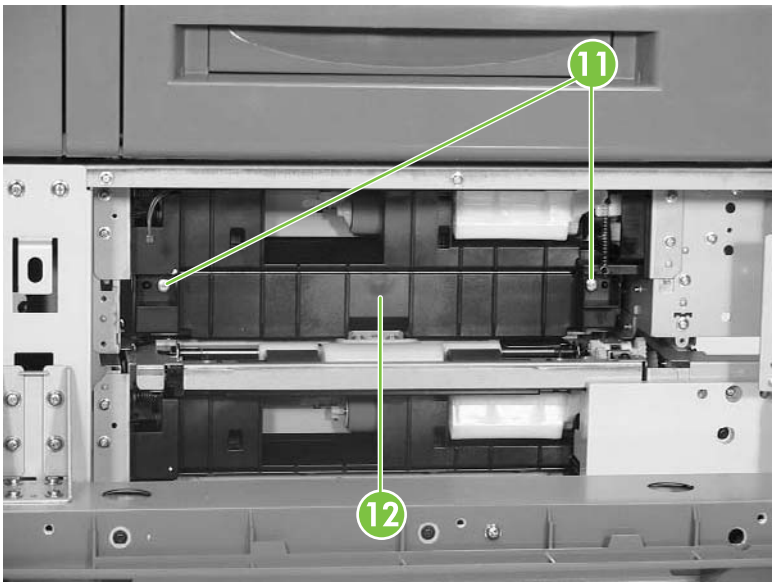


Figure 5-345 Remove the upper pickup assembly (8 of 10)

13. Pull the upper pickup assembly (callout 13) out. Be sure to guide the cables through the hole in the rear of the chassis.

NOTE: The gear can easily be removed from the pickup assembly (callout 13). Before reinstalling the pickup assembly, be sure the gear is present.

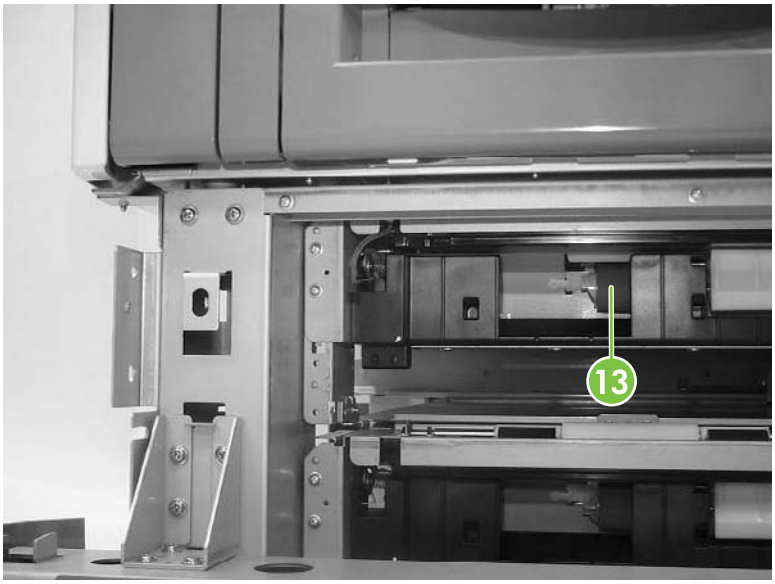


Figure 5-346 Remove the upper pickup assembly (9 of 10)

TIP: When reinstalling the upper pickup assembly, use the alignment pins on either side as a guide to align the assembly with the holes in the frame. Be sure that the gears on the right side of the upper pickup assembly align properly.

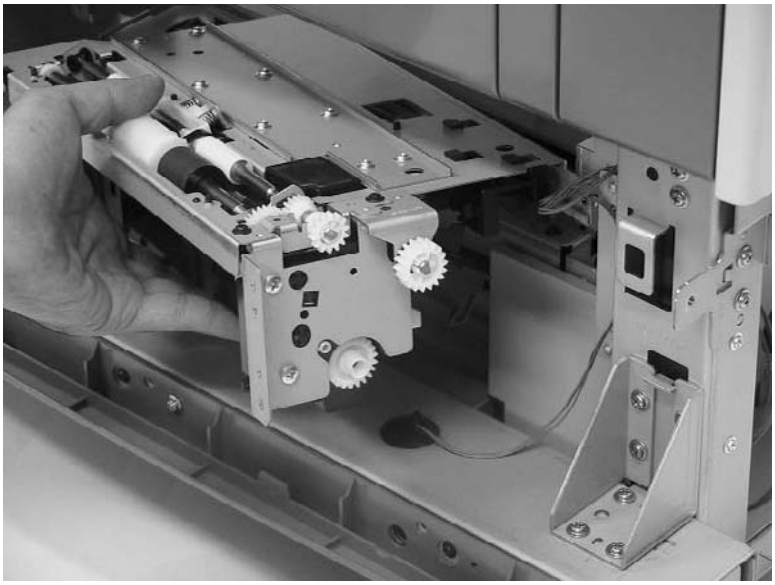


Figure 5-347 Remove the upper pickup assembly (10 of 10)

Lower pickup assembly

1. Remove the rear cover. See Rear cover on page 461.
2. Remove the upper pickup drive assembly. See Upper pickup drive assembly on page 473.
3. Remove the upper pickup assembly. See Upper pickup assembly on page 474.
4. Disconnect the connector (callout 1), and remove the cable (callout 3) from the cable guides (callout 2).

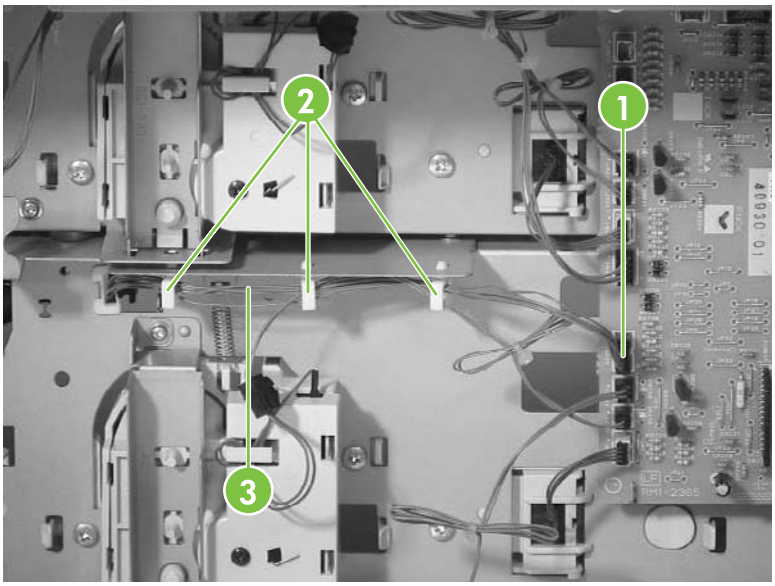


Figure 5-348 Remove the lower pickup assembly (1 of 7)

5. Remove the two screws (callout 4) and the right lower cassette rail assembly (callout 5).

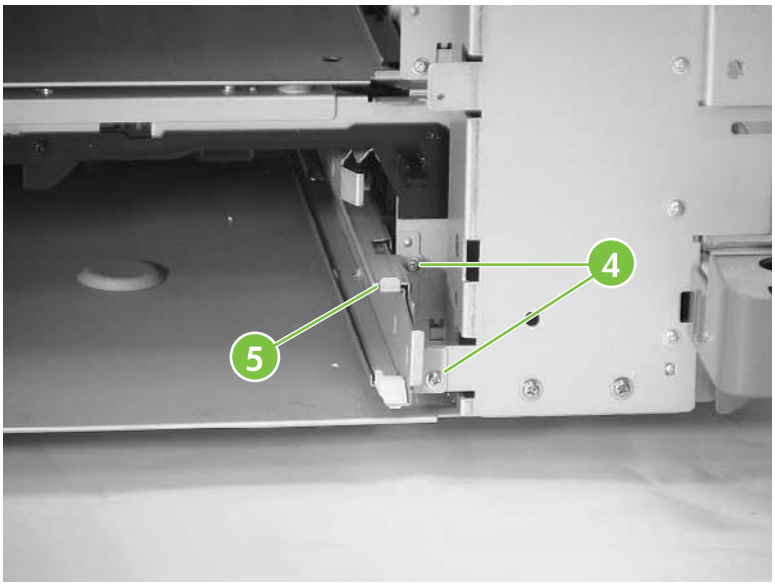


Figure 5-349 Remove the lower pickup assembly (2 of 7)

6. Remove one screw (callout 6) and the jam inner cover (callout 7).

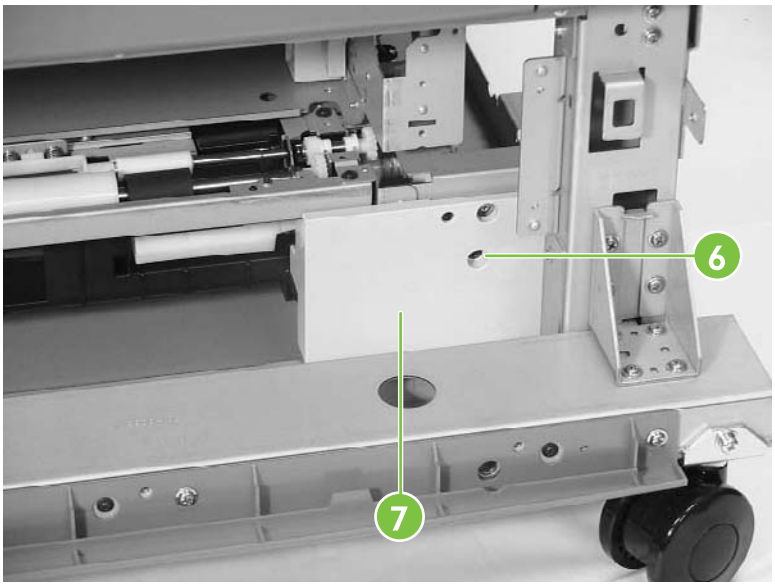


Figure 5-350 Remove the lower pickup assembly (3 of 7)

7. Remove the three screws (callout 8) and the right crossmember (callout 9).

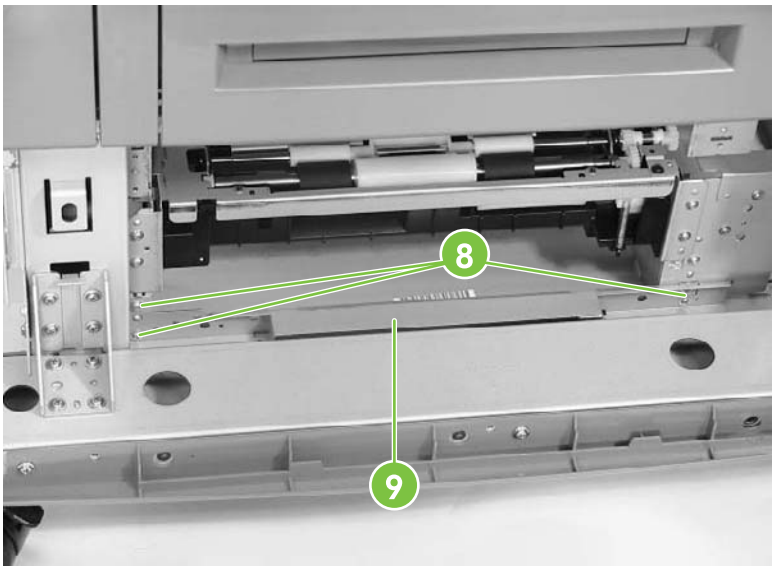


Figure 5-351 Remove the lower pickup assembly (4 of 7)

8. Remove the six screws (callout 10) and the plate (callout 11).

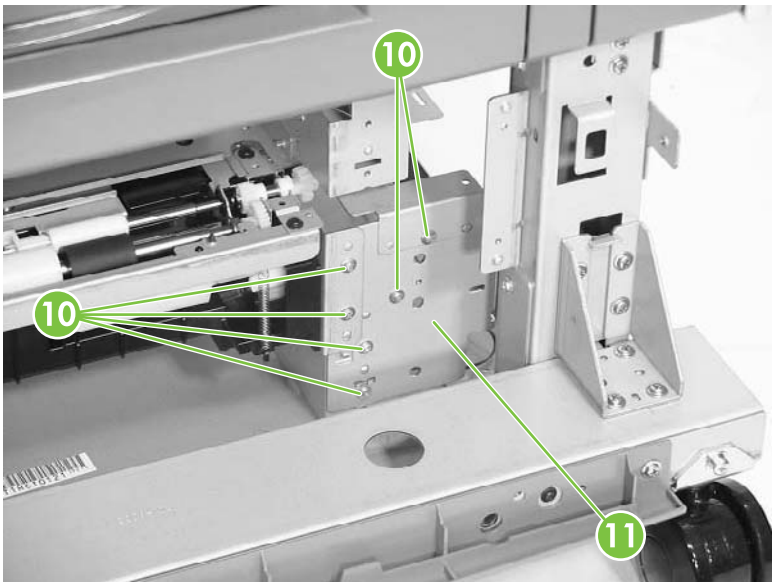


Figure 5-352 Remove the lower pickup assembly (5 of 7)

9. Remove the two screws (callout 12) and pull out the lower pickup assembly (callout 13).

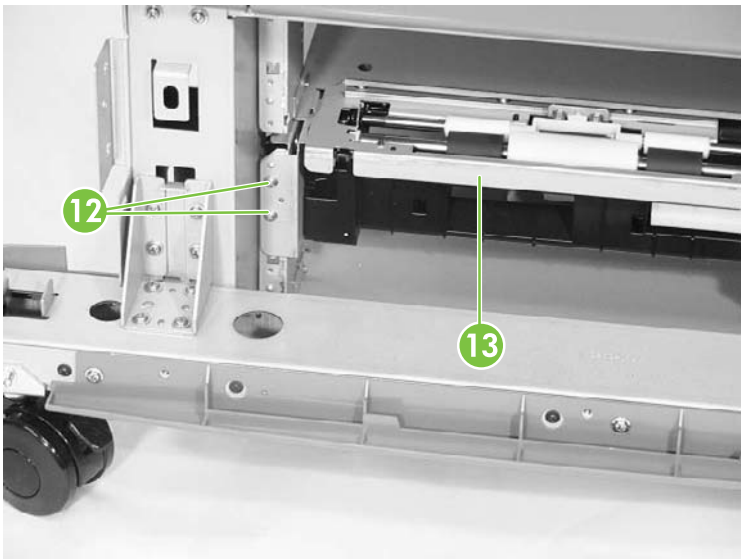


Figure 5-353 Remove the lower pickup assembly (6 of 7)

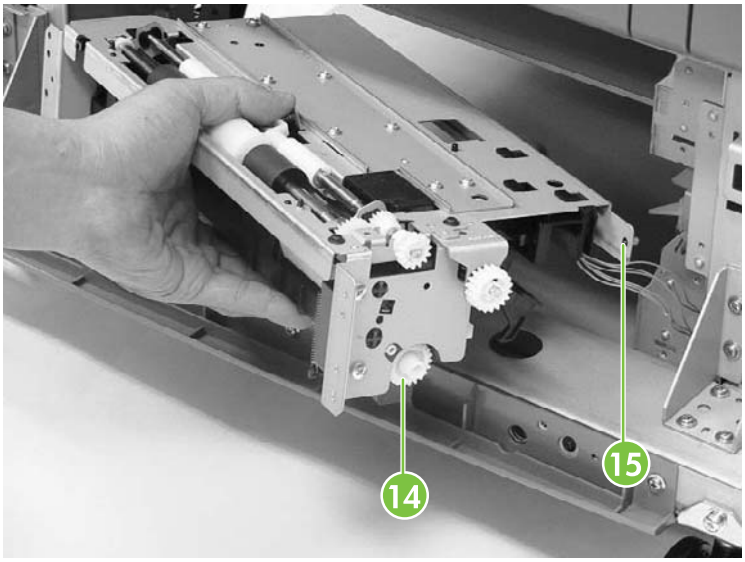


Figure 5-354 Remove the lower pickup assembly (7 of 7)

NOTE: The gear (callout 14) can easily be removed from the pickup assembly. Before installing the pickup assembly, be sure the gear is present.

TIP: When reinstalling the lower pickup assembly, use the alignment pins (callout 15) on either side as a guide to align the assembly with the holes in the frame. Be sure that the gears on the right side of the lower pickup assembly align properly.

Paper feeder door-open switch

1. Remove the rear cover. See Rear cover on page 461.
2. Remove the right front cover. See Right front cover on page 462.
3. Remove the right cover. See Right cover on page 464.
4. Remove the right lower cover assembly. See Right lower cover assembly on page 468.

5. Remove three screws (callout 1) and lift out the door-open switch.

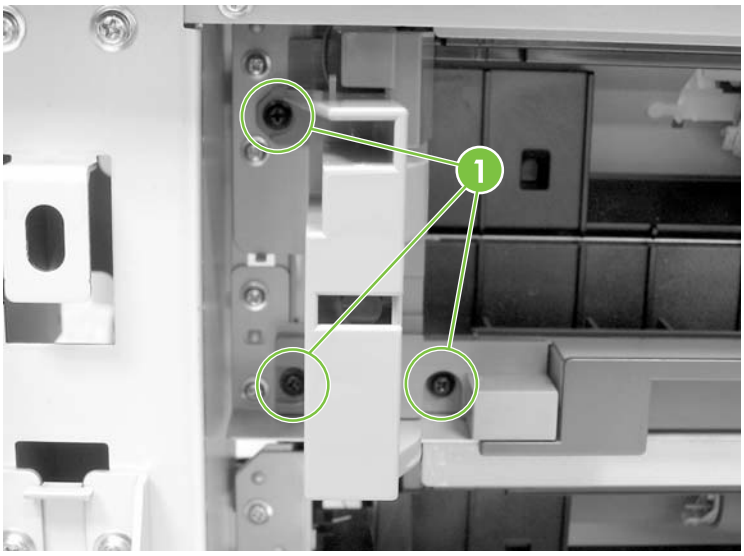


Figure 5-355 Remove the paper feeder door-open switch (1 of 2)

6. Disconnect the connector (callout 2) and remove the door-open switch.

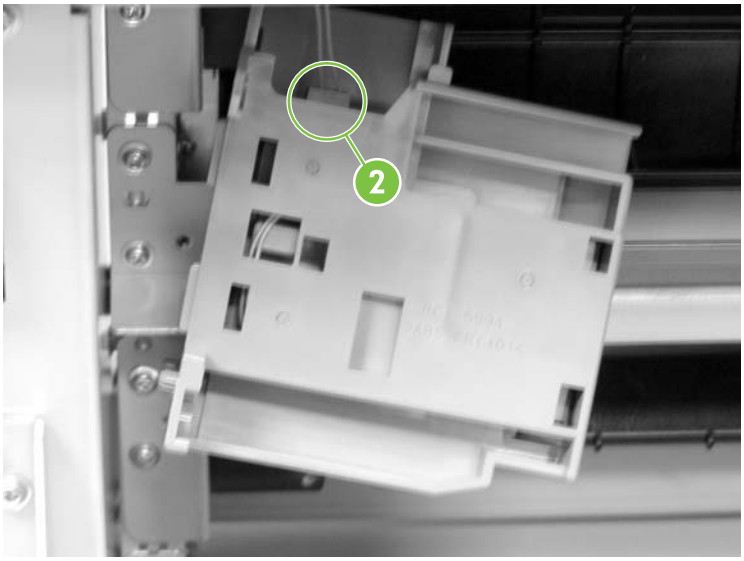


Figure 5-356 Remove the paper feeder door-open switch (2 of 2)

Paper feeder driver PCB

1. Remove the rear cover. See Rear cover on page 461.
2. Disconnect twelve connectors (callout 1). Remove two screws (callout 2) and lift out the 2 X 500-sheet feeder driver PCB (callout 3).

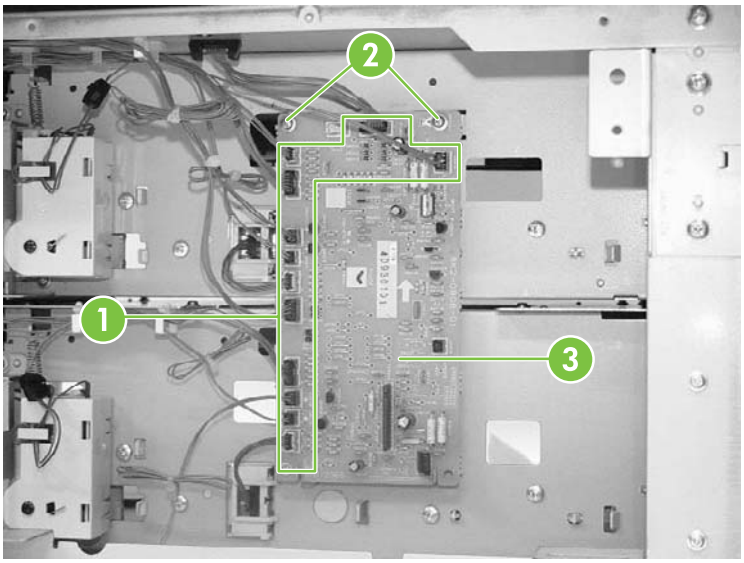


Figure 5-357 Remove the 2 X 500-sheet feeder driver PCB

Intermediate paper transfer unit (IPTU)

The optional intermediate paper transfer unit (IPTU) allows the MFP to deliver printed copies to the optional stapler/stacker or the 3-bin mailbox. This section addresses the following IPTU components:

- Front cover and front door
- IPTU rear cover
- Connector cover assembly
- IPTU driver PCB
- IPTU driver motors

Front cover and front door

1. Open the front door (callout 1) of the IPTU.
2. Remove the M4 screw (callout 2) and the M3 screw (callout 3), and then remove the plate (callout 4).

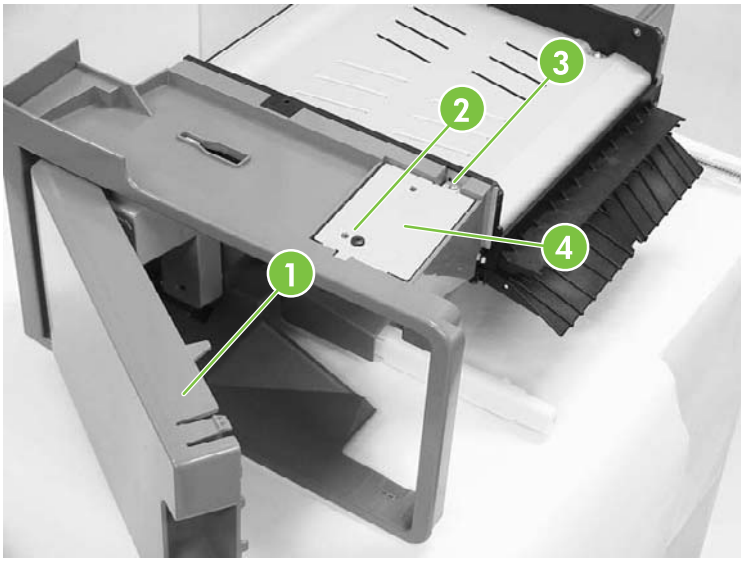


Figure 5-358 Remove the IPTU front cover and front door (1 of 6)

3. Disconnect the connector (callout 5).

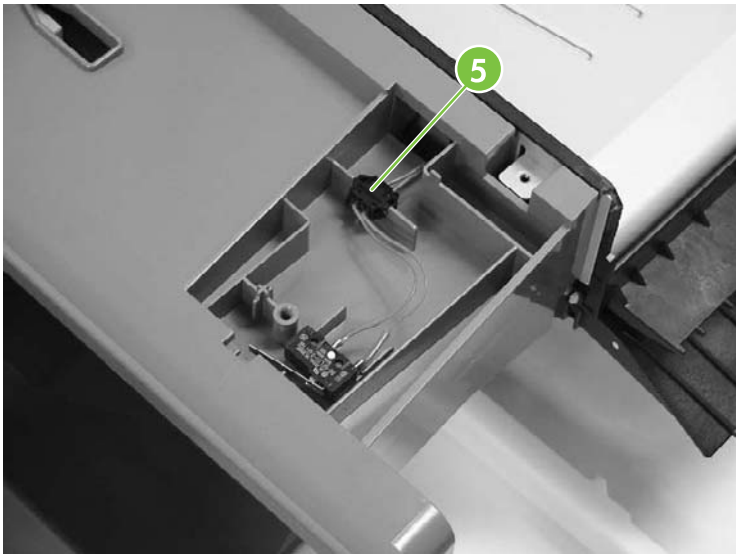


Figure 5-359 Remove the IPTU front cover and front door (2 of 6)

4. Remove one screw (callout 6).

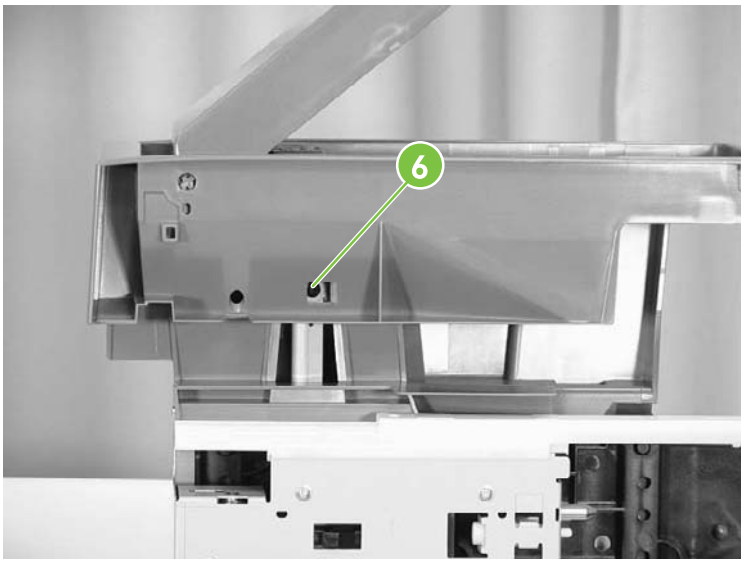


Figure 5-360 Remove the IPTU front cover and front door (3 of 6)

5. Unhook the claw (callout 7) and remove the jam lever (callout 8).



Figure 5-361 Remove the IPTU front cover and front door (4 of 6)

6. Remove the two screws (callout 9) inside the front door.

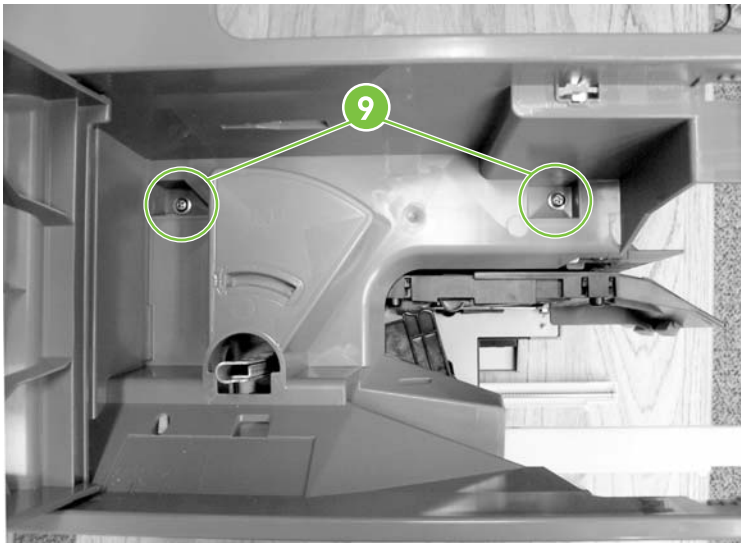


Figure 5-362 Remove the IPTU front cover and front door (5 of 6)

7. Push on the tab through the small hole (callout 10). Then remove the front cover (callout 11) and the front door (callout 12) together.

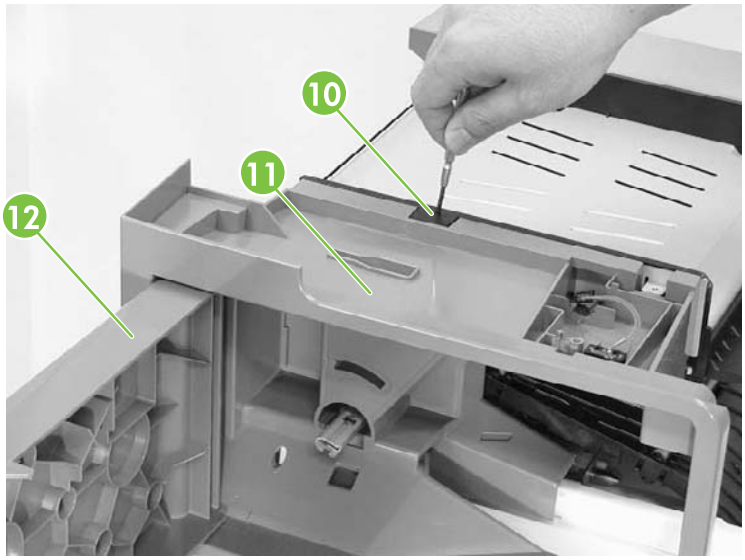


Figure 5-363 Remove the IPTU front cover and front door (6 of 6)

IPTU rear cover

▲ Remove the two screws (callout 1) and the rear cover (callout 2).

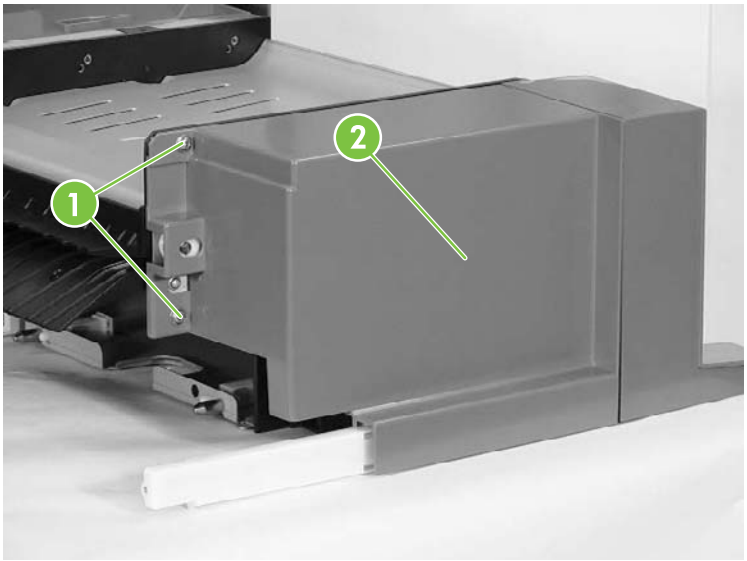


Figure 5-364 Remove the IPTU rear cover

Connector cover assembly

1. Remove the IPTU rear cover. See IPTU rear cover on page 489.
2. Remove the two screws (callout 1).

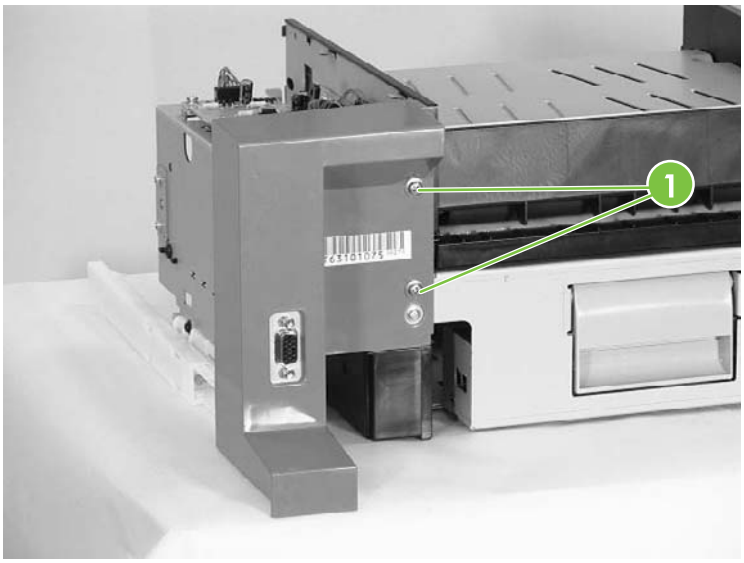


Figure 5-365 Remove the IPTU connector cover (1 of 3)

3. Remove one screw (callout 2).

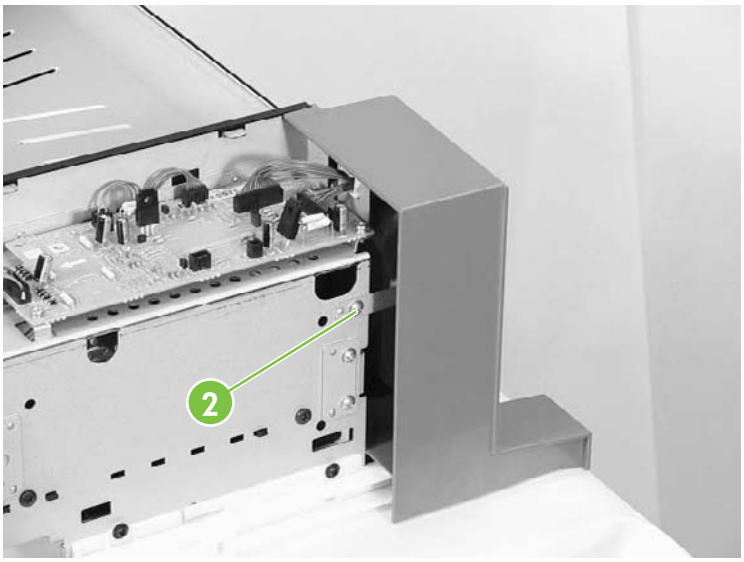


Figure 5-366 Remove the IPTU connector cover (2 of 3)

4. Disconnect the connector (callout 3).

5. Remove the connector cover assembly (callout 4).

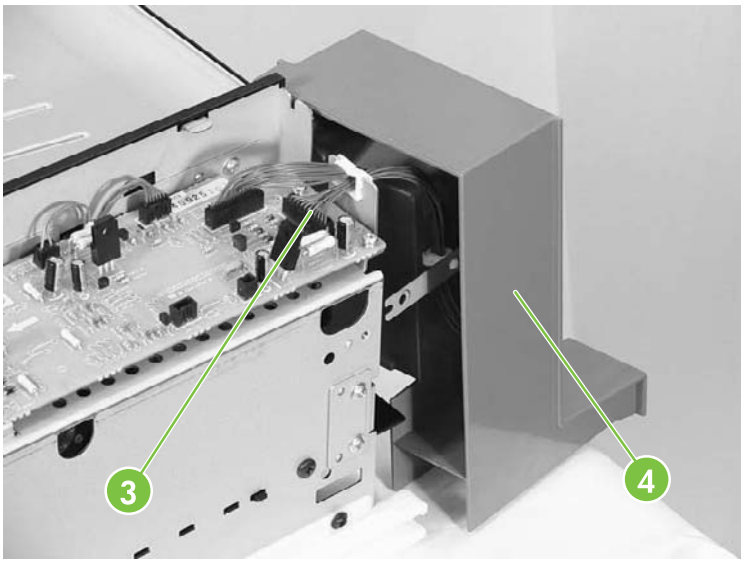


Figure 5-367 Remove the IPTU connector cover (3 of 3)

IPTU driver PCB

1. Remove the rear cover. See IPTU rear cover on page 489.
2. Remove the connector cover assembly. See Connector cover assembly on page 490.
3. Disconnect the four connectors (callout 1).
4. Remove the three screws (callout 2), and then remove the IPTU driver PCB (callout 3).

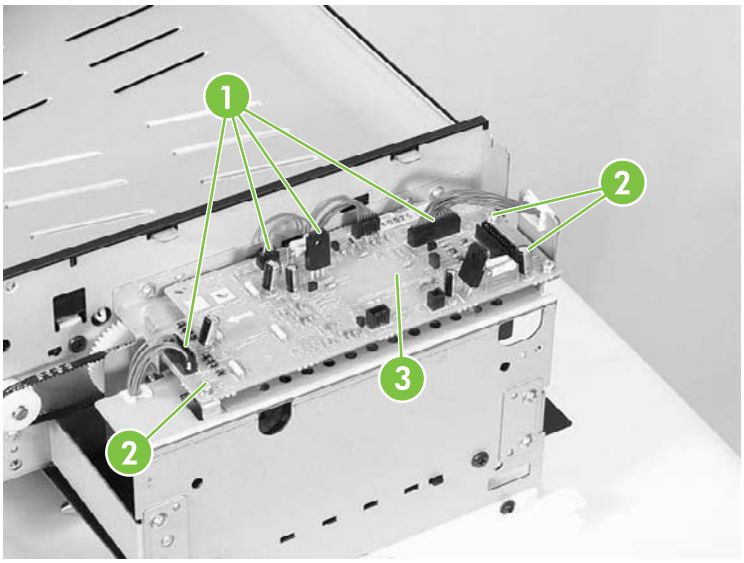


Figure 5-368 Remove the IPTU driver PCB

IPTU driver motors

1. Remove the IPTU. See Intermediate paper transfer unit (IPTU) on page 269.
2. Remove the rear cover. See IPTU rear cover on page 489.
3. Remove the connector cover assembly. See Connector cover assembly on page 490.
4. Remove the IPTU driver PCB. See IPTU driver PCB on page 491.
5. Remove the six screws (callout 1) and remove the cover.

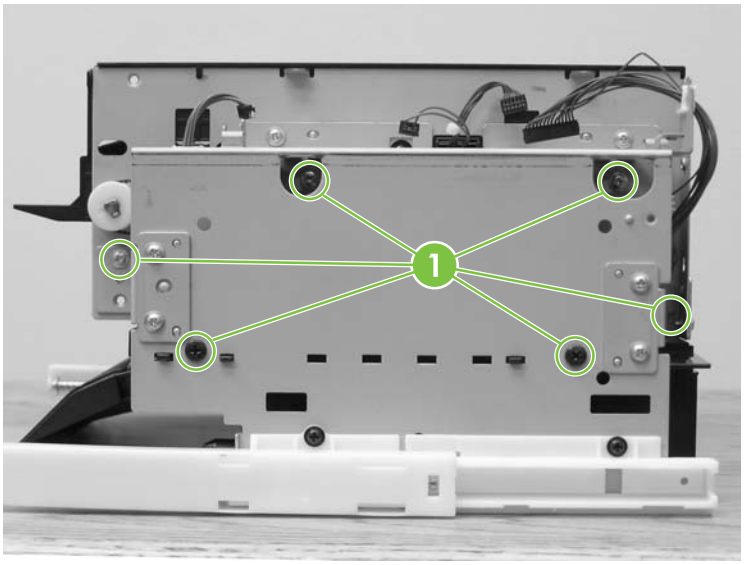


Figure 5-369 Remove the IPTU driver motors (1 of 3)

6. Remove the connectors (callout 2) from each motor.

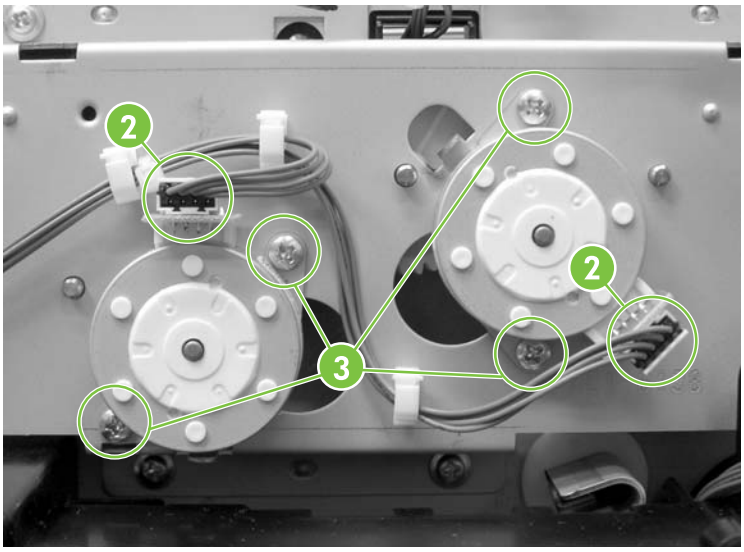


Figure 5-370 Remove the IPTU driver motors (2 of 3)

TIP: To remove the right motor, remove two screws and loosen the cover.

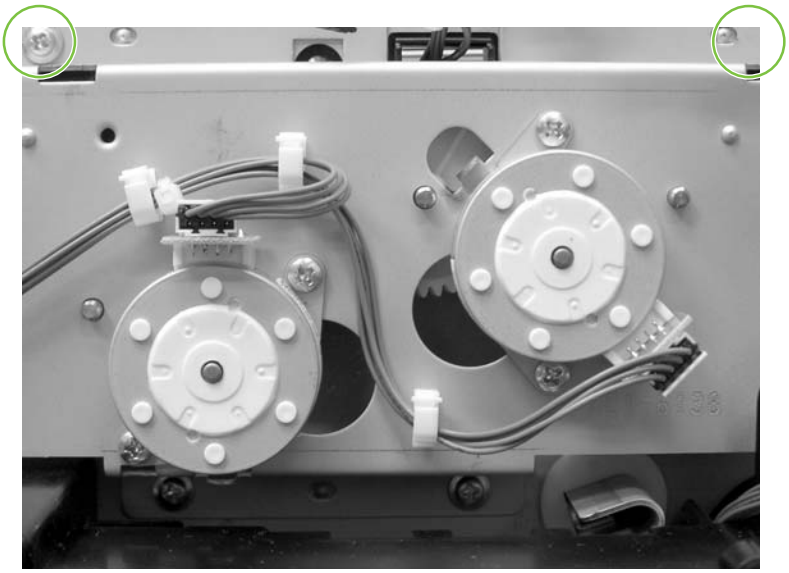


Figure 5-371 Remove the IPTU driver motors (3 of 3)

7. Remove two screws (callout 3) for each motor and remove the motors.

Stapler/stacker components

CAUTION: Disconnect the MFP power cord from the electrical outlet before disassembling and reassembling the stapler/stacker. After the device is plugged back in for testing purposes, do not touch the low-voltage power supply unit because this can cause electrical shock.

Delivery tray

Lift the delivery tray (callout 1) upward (callout 2), then pull it outward (callout 3) and remove.

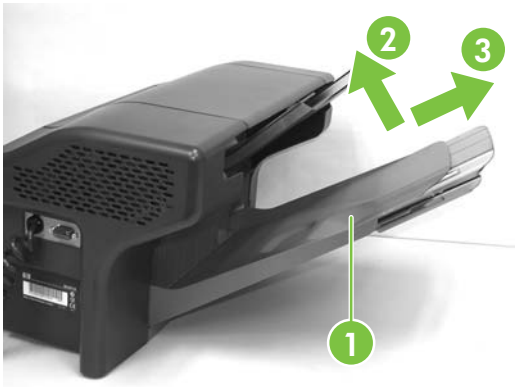


Figure 5-372 Remove the delivery tray

Front cover

1. Remove the delivery tray.
2. Carefully pry off the front cover using a flat-blade screwdriver. Insert the screwdriver blade and slightly lift the cover at the five points (callout 1) shown in the following figure.

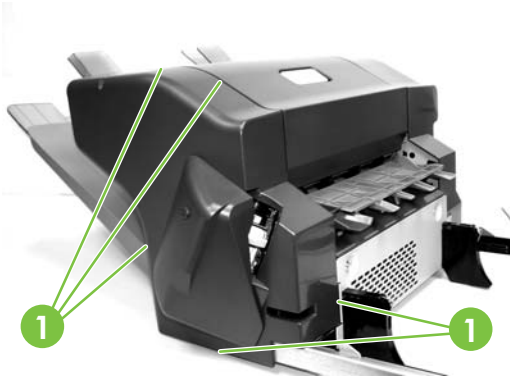


Figure 5-373 Claw locations on front cover

Rear cover

1. Remove the delivery tray.

2. Carefully pry off the rear cover using a flat-blade screwdriver. Insert the screwdriver blade and slightly lift the cover at the five points (callout 1) shown in the following figure.



Figure 5-374 Claw locations on rear cover

Left cover

1. Remove the delivery tray.
2. Remove the front cover.
3. Remove the rear cover.
4. Unhook two claws (callout 1) and remove the left cover (callout 2).

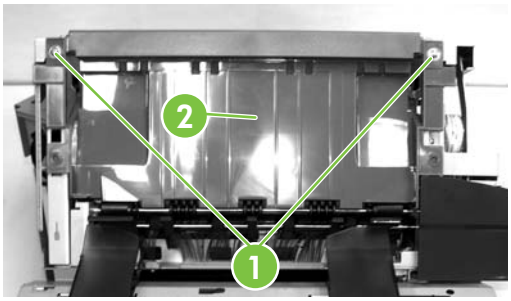


Figure 5-375 Remove the left cover

Top cover

1. Remove the delivery tray.
2. Remove the front cover.
3. Remove the rear cover.

4. Remove one screw (callout 1).

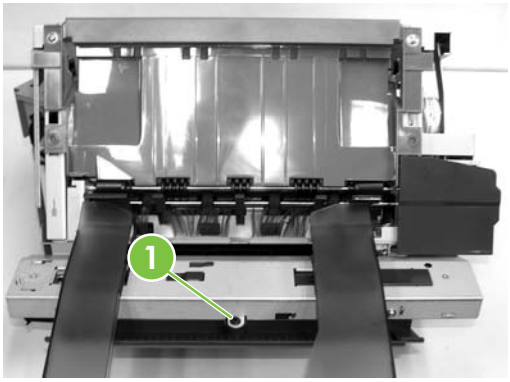


Figure 5-376 Remove the top cover (1 of 2)

5. Unhook the two claws (callout 1) and remove the top cover (callout 2).

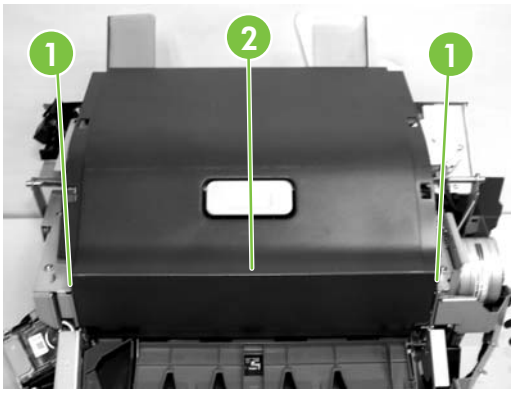


Figure 5-377 Remove the top cover (2 of 2)

Bottom cover

1. Remove the delivery tray.
2. Remove five screws (callout 1) and then the bottom-cover unit (callout 2).

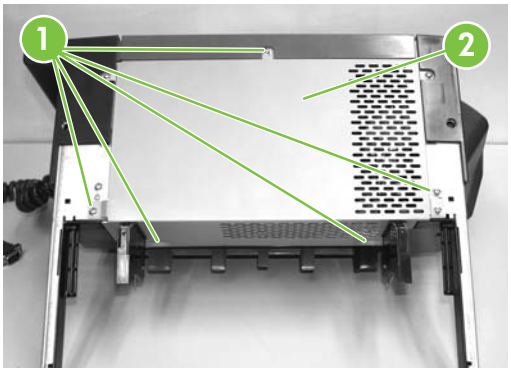


Figure 5-378 Remove the bottom cover

Stapler unit

1. Remove the delivery tray.
2. Remove the front cover.
3. Disconnect the two electrical connectors (callout 1) on the front of the stapler unit.

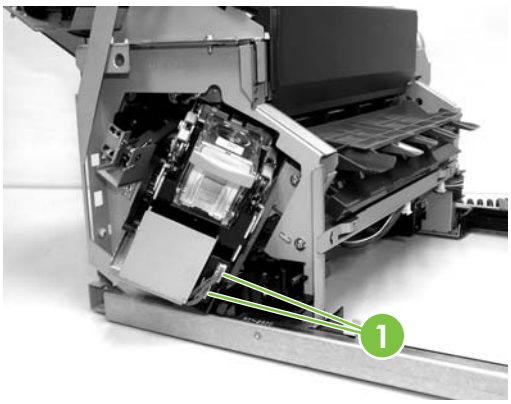


Figure 5-379 Remove the stapler unit (1 of 3)

4. Remove two securing screws (callout 1).

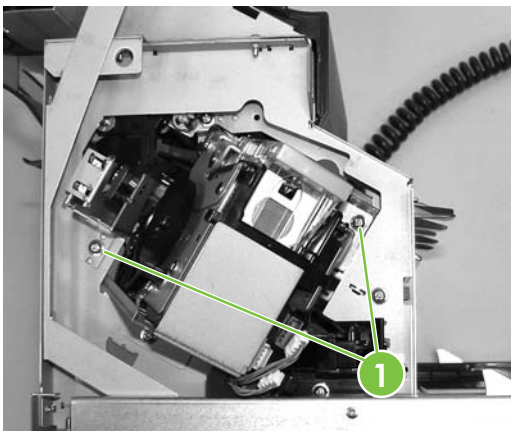


Figure 5-380 Remove the stapler unit (2 of 3)

5. Remove two screws (1) that attach the stapler unit.

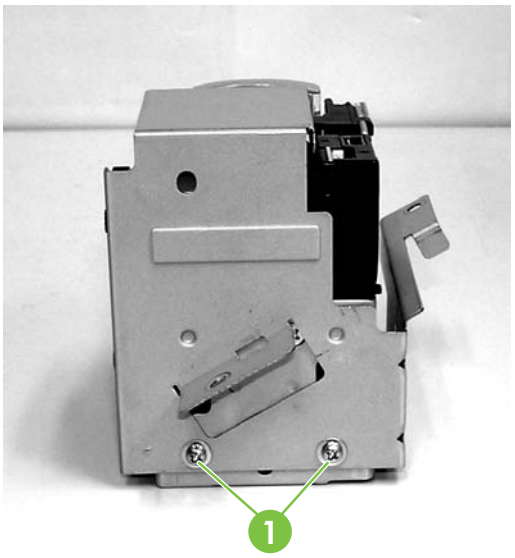


Figure 5-381 Remove the stapler unit (3 of 3)

Jogger unit

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the top cover.
4. Remove the bottom cover.
5. Remove the small plastic cover attached to the right side of the interface cable plate. Use your thumb to pop the tabs out, then slide the cover off.

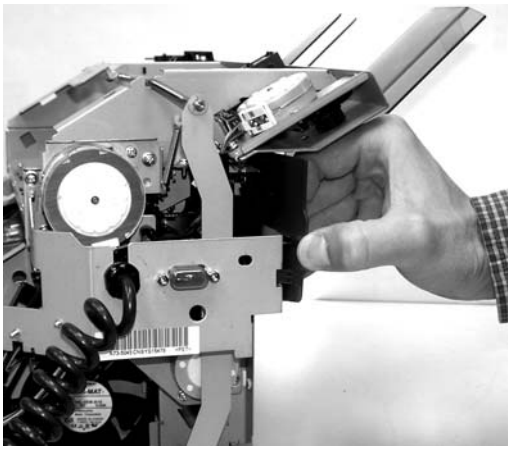


Figure 5-382 Remove the jogger unit (1 of 7)

6. Remove three screws from the interface-cable plate, and then unhinge the plate and unthread the wires from the wire guide.

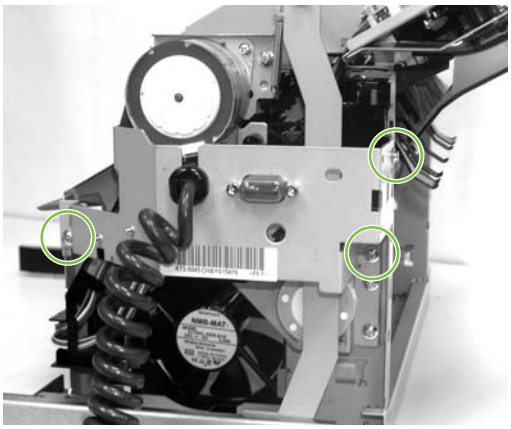


Figure 5-383 Remove the jogger unit (2 of 7)

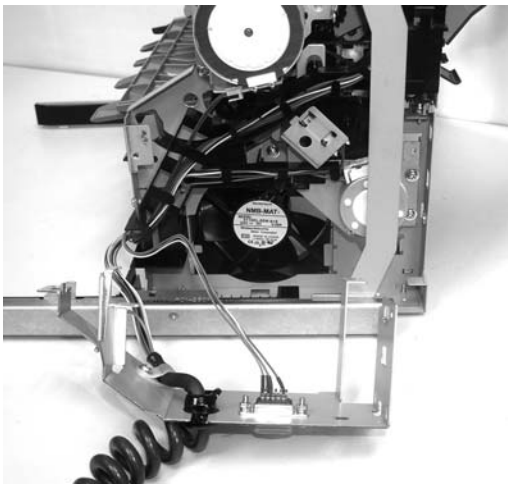


Figure 5-384 Remove the jogger unit (3 of 7)

7. Disconnect connector J1311 on the stapler/stacker control board and remove this wiring from the cable guide leading to the jogger assembly.

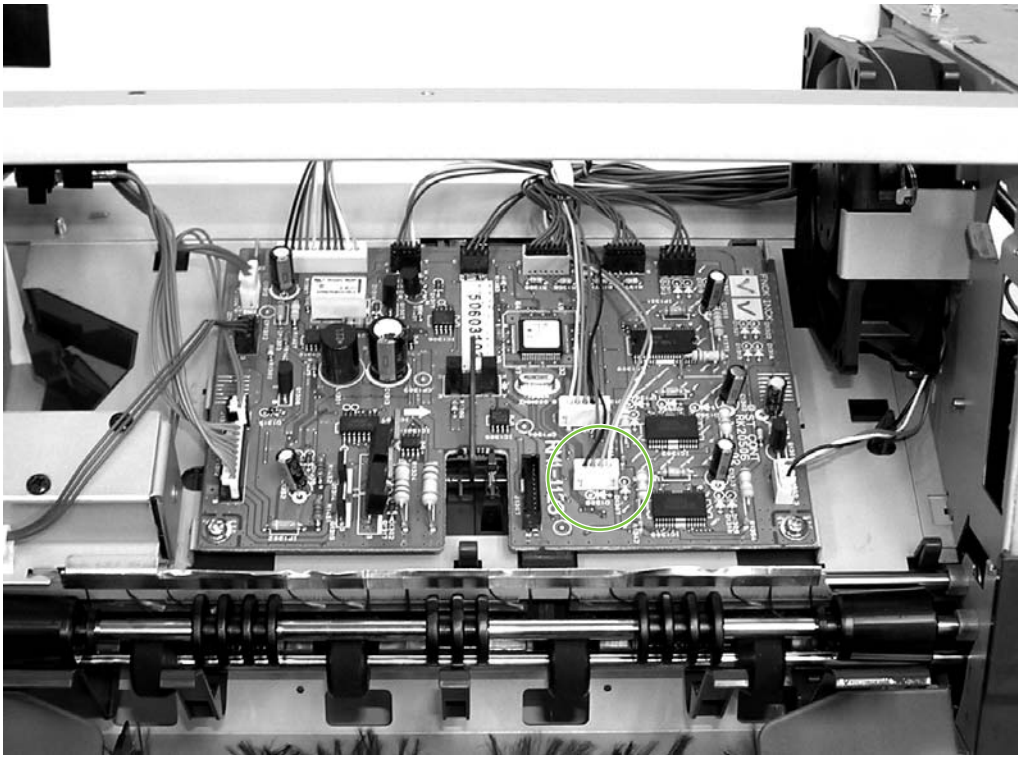


Figure 5-385 Remove the jogger unit (4 of 7)

8. Disconnect the wires from the jogger home-position sensor PS1304 (1), the LED PCB (2), and sensor PS1306 (3), and then remove these wires from the cable guide.

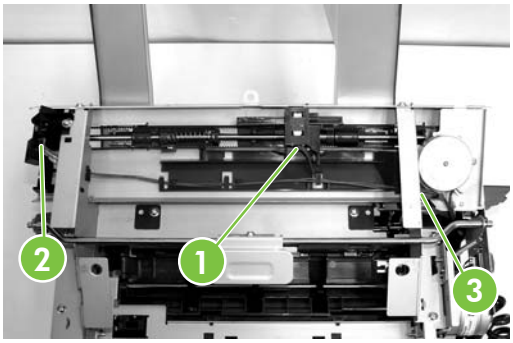


Figure 5-386 Remove the jogger unit (5 of 7)

9. Remove four screws.

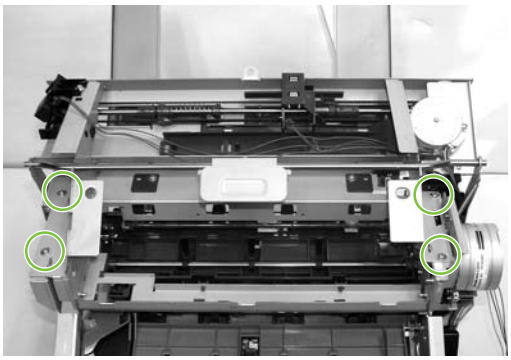


Figure 5-387 Remove the jogger unit (6 of 7)

10. Remove the jogger assembly carefully from under the link arm (1), under the cable guide (2), and around sensor PS1306 (3).

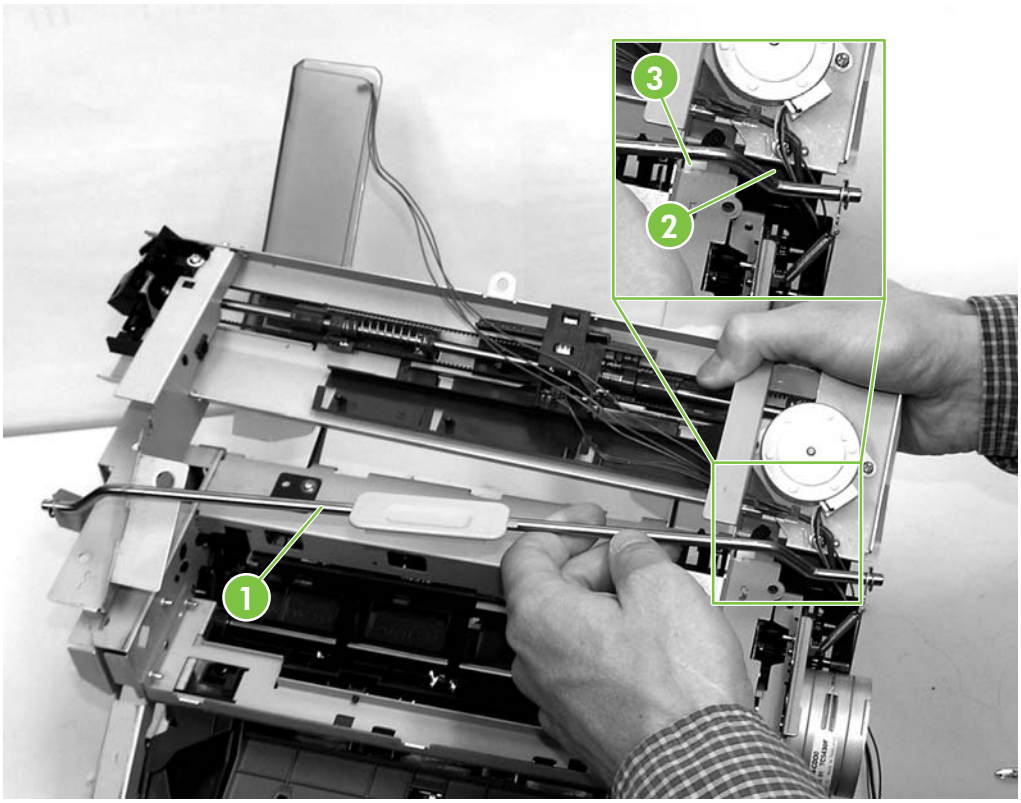


Figure 5-388 Remove the jogger unit (7 of 7)

NOTE: When installing the new jogger-unit assembly, be sure to align the ridges on the sides of the PS1306 cable with the grooves on the inside of the PS1306 connector.

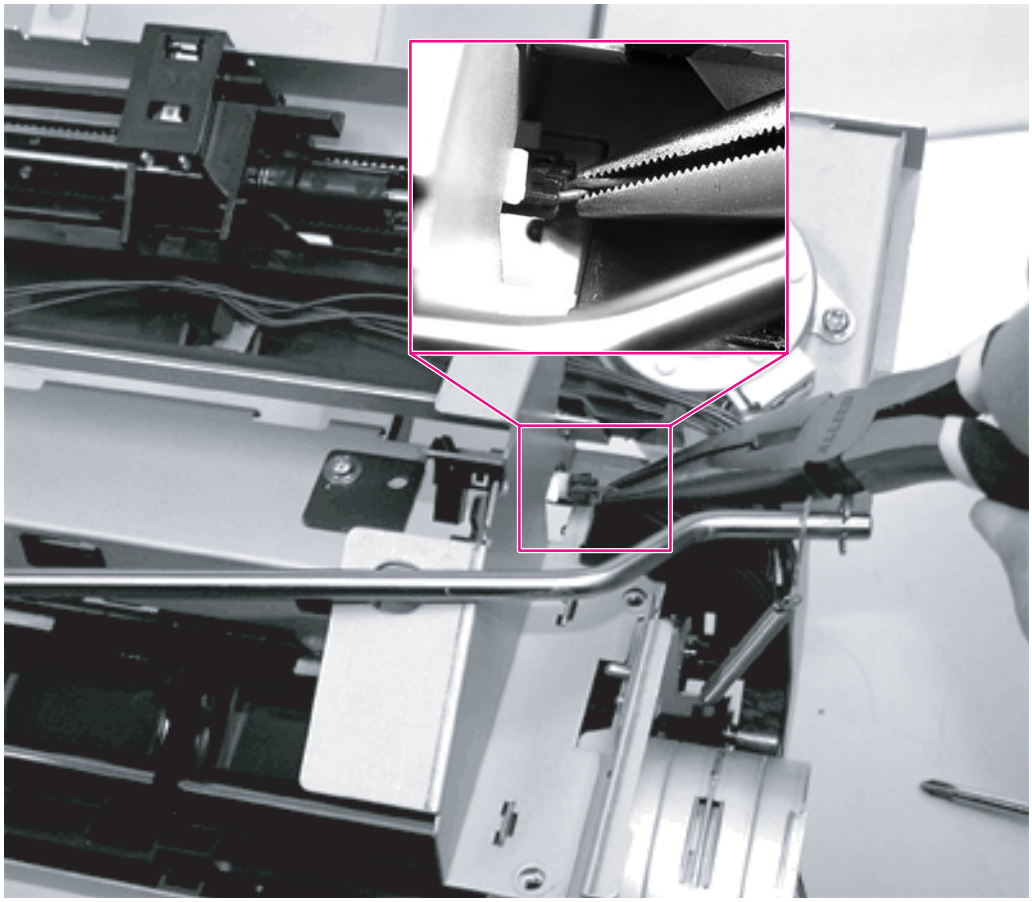


Figure 5-389 Re-connecting PS1306

Stapler/stacker driver PCB

1. Remove the front cover.
2. Remove the rear cover.
3. Remove the left cover.
4. Remove the bottom cover.

5. On the stapler/stacker PCB (callout 1), disconnect all the connectors (callout 2) and remove two screws (callout 3).

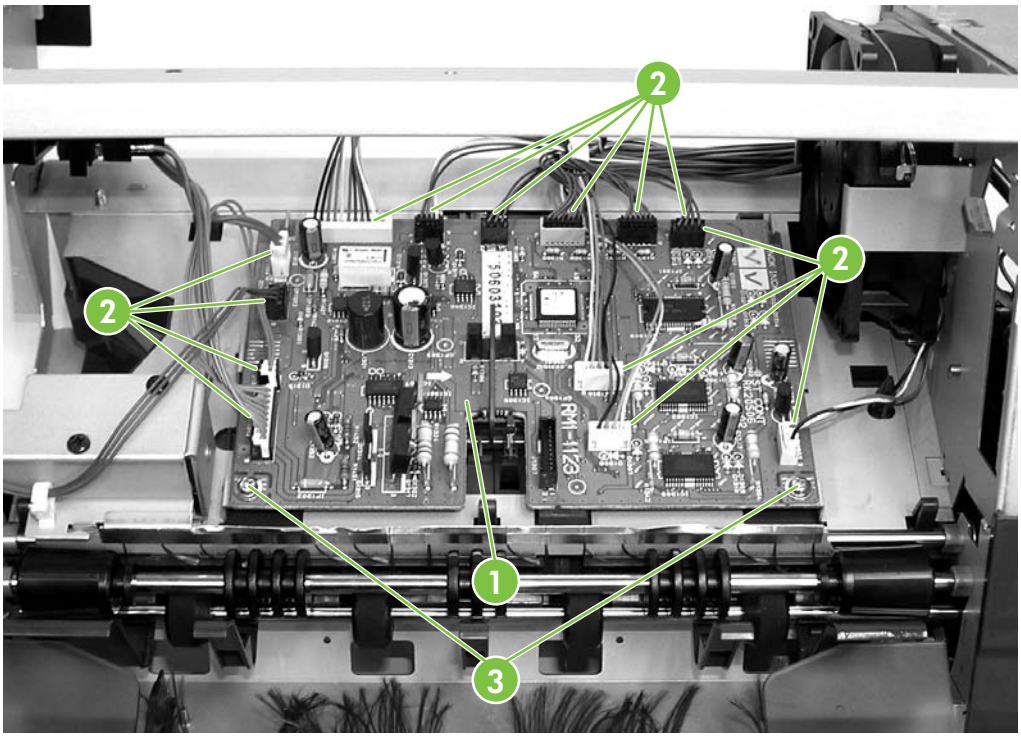


Figure 5-390 Remove the stapler/stacker driver PCB

CAUTION: The stapler/stacker PCB is easily damaged by electrostatic discharge. Before handling the stapler/stacker PCB, always wear an ESD grounding device or discharge yourself by touching the metal frame of the MFP.

3-bin mailbox components

CAUTION: Disconnect the MFP power cord from the electrical outlet before disassembling and reassembling the 3-bin mailbox. After the device is plugged back in for testing purposes, do not touch the low-voltage power supply unit because this can cause electrical shock.

Rear cover

Insert a flat-blade screwdriver head and slightly lift the cover at the five points (callout 1) shown in the following figure. Then remove the rear cover (callout 2).

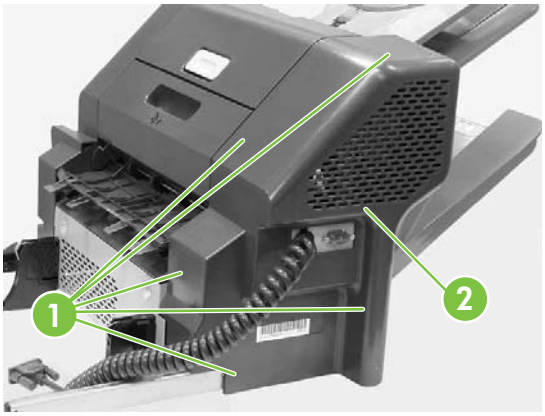


Figure 5-391 Claw locations on rear cover

Front cover

Insert a flat-blade screwdriver head and slightly lift the cover at the five points (callout 1) shown in the following figure. Then remove the front cover (callout 2).

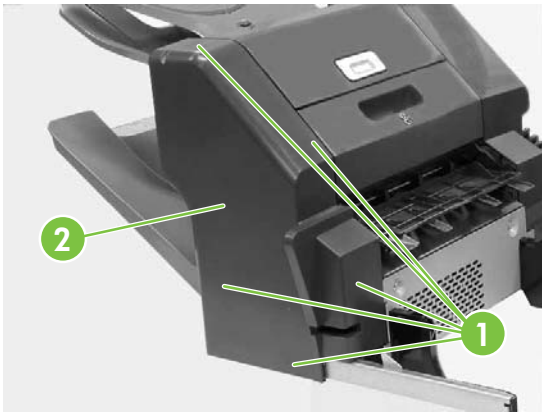
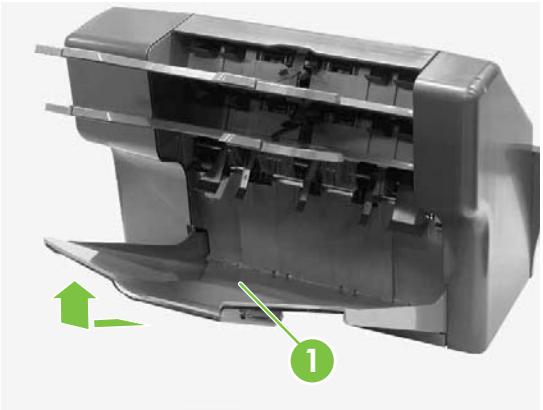


Figure 5-392 Claw locations on front cover

Delivery tray

Lift the delivery tray (callout 1) and remove it.



Left cover

1. Remove the rear cover.
2. Unhook two claws (callout 1). Pull the left cover (callout 2) in the direction indicated by the arrow.

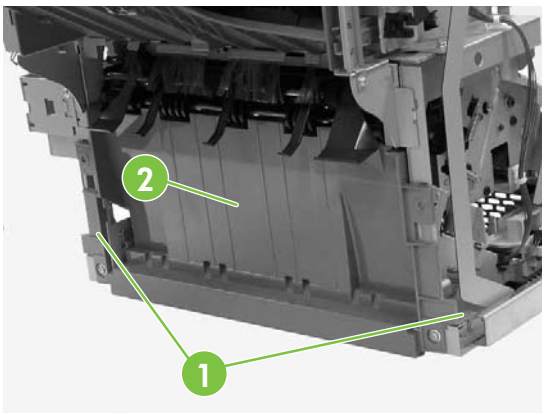


Figure 5-393 Remove the left cover

Upper cover

1. Remove the rear cover.
2. Remove the front cover.
3. Remove the delivery tray.

4. Unhook two claws (callout 1).

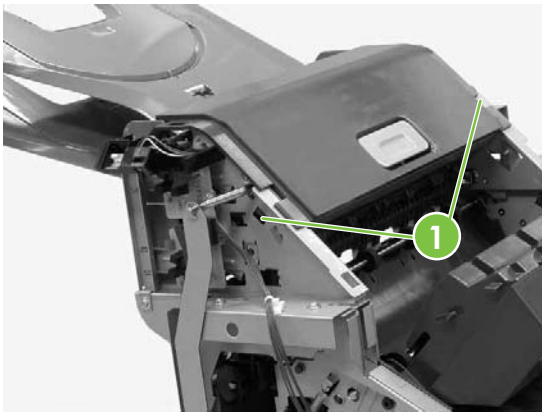


Figure 5-394 Remove the upper cover (1 of 2)

5. Remove four bosses (callout 1) and then the upper cover (callout 2).

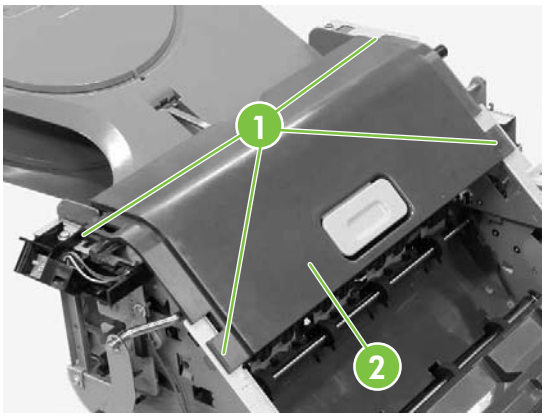


Figure 5-395 Remove the upper cover (1 of 2)

Right-door unit

1. Remove the rear cover.
2. Remove the front cover.
3. Remove the delivery tray.

4. Displace the boss (callout 1) to the right and remove it from the MBM.

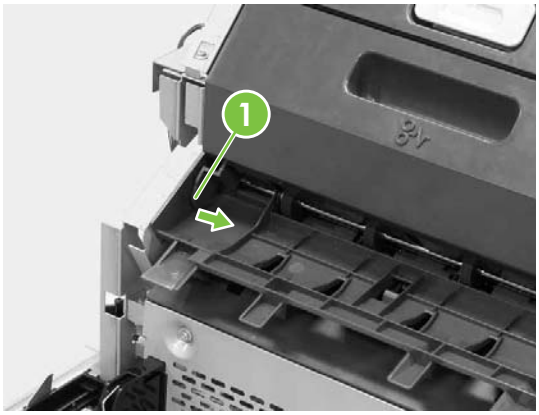


Figure 5-396 Remove the right-door unit (1 of 4)

5. Open the right-door unit. The following figure shows that the boss (callout 2) of the right-door unit (callout 1) is removed from the MBM

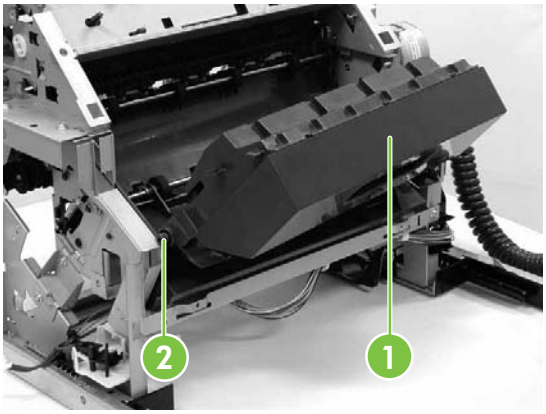


Figure 5-397 Remove the right-door unit (2 of 4)

6. Displace the right-door unit (callout 1) to the left and remove the boss (callout 2) from the MBM.

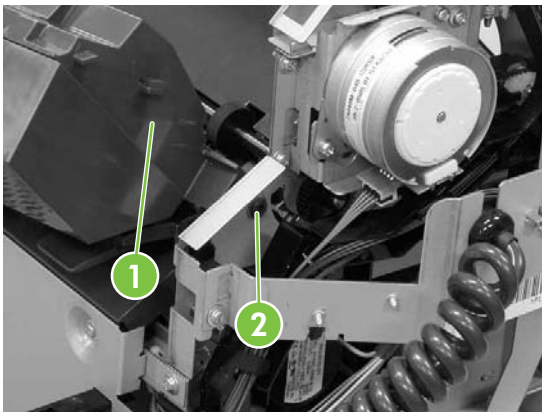


Figure 5-398 Remove the right-door unit (3 of 4)

7. Remove the spring (callout 1) from the link shaft (callout 2), and then remove the right-door unit (callout 3).

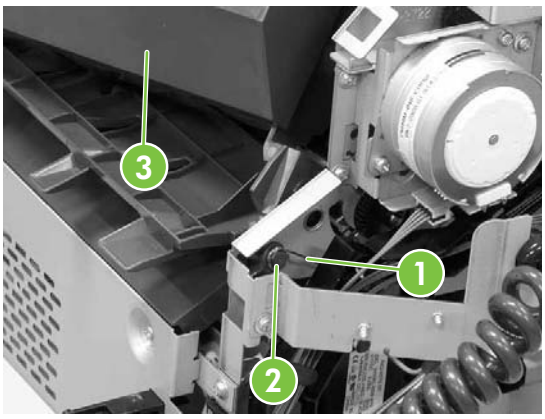


Figure 5-399 Remove the right-door unit (4 of 4)

Bottom cover

1. Remove the left cover.
2. Remove two screws (callout 1).

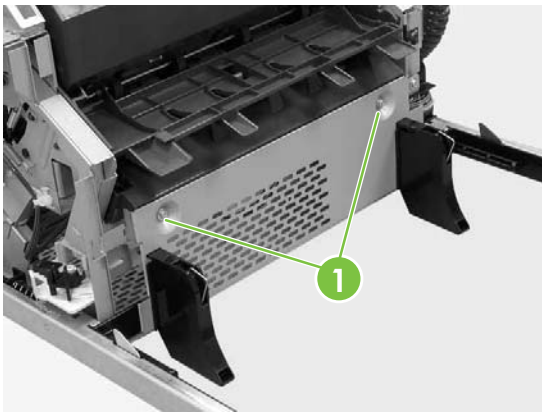


Figure 5-400 Remove the bottom cover (1 of 2)

3. Remove three screws (callout 1), and then remove the bottom cover (callout 2).

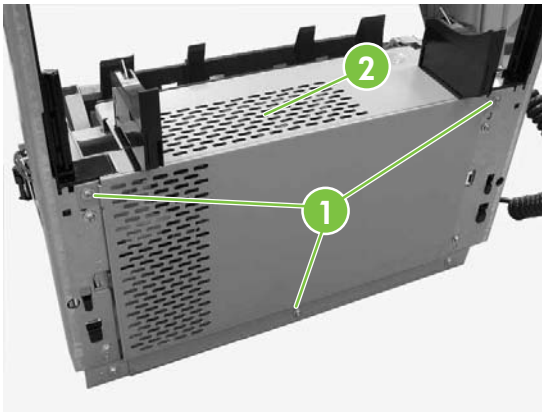


Figure 5-401 Remove the bottom cover (2 of 2)

MBM driver PCB

1. Remove the rear cover.
2. Remove the front cover.
3. Remove the delivery tray.
4. Remove the left cover.
5. Remove the bottom cover.
6. Disconnect the eight connectors (callout 1) and remove two screws (callout 2). Then remove the MBM driver PCB.

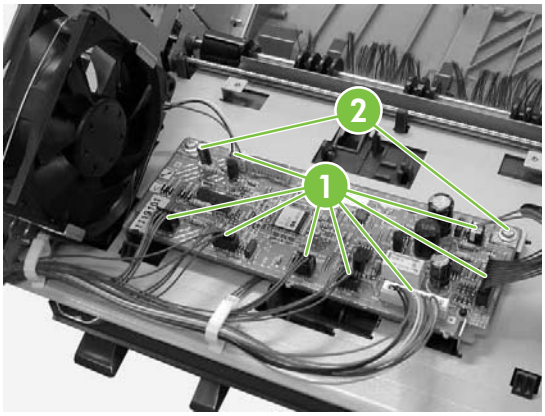


Figure 5-402 Remove the MBM driver PCB

CAUTION: The MBM driver PCB is easily damaged by electrostatic discharge. Before handling the MBM driver PCB, always wear an ESD grounding device or discharge yourself by touching the metal frame of the MFP.

6 Problem solving

- Problem-solving process
- Control-panel messages
- Understand accessory lights for the 3-bin mailbox and stapler/stacker
- Understand lights on the formatter
- Replacement parts configuration
- Paper path troubleshooting
- Correct print quality and copy quality problems
- Manage color
- Media transport problems
- Solve e-mail problems
- Solve fax problems
- Network connectivity problems
- Functional checks
- MFP resets
- Tools for troubleshooting
- Diagrams for troubleshooting
- Upgrade the firmware

Problem-solving process

When the MFP malfunctions or encounters an unexpected situation, information on the control panel alerts you to the situation. This section contains an initial troubleshooting checklist that helps to eliminate many possible causes of the problem. The subsequent troubleshooting flowchart helps you to diagnose the cause of the problem. The remainder of the chapter provides steps for correcting the problems that have been identified.

- Use the initial troubleshooting checklist to evaluate the source of the problem and to reduce the number of steps that are required to fix the problem.
- Use the troubleshooting flowchart to pinpoint the cause of malfunctions. The flowchart lists the section within this chapter that provides steps for correcting the malfunction.

Before beginning any troubleshooting procedure, check the following:

- Are supply items (for example, the print cartridge, fuser, and rollers) within their rated life?
- Does the configuration page reveal any configuration problems?



NOTE: The customer is responsible for checking and maintaining supplies, and for using supplies that are in good condition. The customer is responsible for media and print-cartridge supplies. The customer is also responsible for replacing the fuser, transfer roller, and all paper pickup, feed, and separation rollers (tray 1 has a separation pad instead of a roller) that are at or near the end of their 225,000-page rated life.

Problem-solving checklist

If the MFP is not responding correctly, complete the steps in the following checklist, in order. If the MFP does not pass a step, follow the corresponding troubleshooting suggestions. If a step resolves the problem, you can stop without performing the other steps on the checklist.

1. Make sure the MFP Ready light is on and the display says **Ready**. If no lights are on, see Power-on checks on page 516.
2. Check the cabling.
   a. Check the cable connection between the MFP and the computer or network port. Make sure that the connection is secure.
   b. Make sure that the cable itself is not faulty by using a different cable, if possible.
   c. Check the network connection. See Network connectivity problems on page 615.
3. Ensure that the print media that you are using meets specifications. See Media specifications on page 13.
4. Print a configuration page. If the MFP is connected to a network, an HP Jetdirect page also prints.
   a. If the pages do not print, check that at least one tray contains print media.
   b. If the page jams in the MFP, see Paper path troubleshooting on page 554.

5. If the configuration page prints, check the following items.

   a. If the page prints correctly, then the MFP hardware is working. The problem is with the computer that you are using, with the printer driver, or with the program.

   b. If the page does not print correctly, the problem is with the MFP hardware. See Functional checks on page 617.

6. Does the image quality meet the user's requirements? If yes, go to step 7. If no, check the following items:

   - Print the print quality troubleshooting pages. See Print quality troubleshooting pages on page 585.
   - Solve the print quality problems, and then go to step 7.

7. At the computer, check to see if the print queue is stopped, paused, or set to print offline.

   Windows: Click **Start**, click **Settings**, and then click **Printers** or **Printers and Faxes**. Double-click **HP Color LaserJet CM4730 MFP**.

   -or-

   Mac OS X: Open **Print Center** (or **Printer Setup Utility** for Mac OS X V10.2), and double-click the line for the **HP Color LaserJet CM4730 MFP**.

8. Verify that you have installed the HP Color LaserJet CM4730 MFP series printer driver. Check the program to make sure that you are using an HP Color LaserJet CM4730 MFP series printer driver.

9. Print a short document from a different program that has worked in the past. If this solution works, then the problem is with the program that you are using. If this solution does not work (the document does not print) complete these steps:

   a. Try printing the job from another computer that has the MFP software installed.

   b. If you connected the MFP to the network, connect the MFP directly to a computer with a parallel cable. Redirect the MFP to the correct port, or reinstall the software, selecting the new connection type that you are using.

Problem-solving flowchart

This flowchart highlights the general processes that you can follow to quickly isolate and solve MFP hardware problems.

Each row depicts a major troubleshooting step. A “yes” answer to a question allows you to proceed to the next major step. A “no” answer indicates that additional testing is needed. Proceed to the appropriate section in this chapter, and follow the instructions there.

After completing the instructions, proceed to the next major step in this troubleshooting flowchart.

Table 6-1 Troubleshooting flowchart

1 **Power on**	Is the MFP on and does a readable message appear?		Follow the power-on troubleshooting checks. See Power-on checks on page 516. After the control panel display is functional, go to step 2.
	Yes ↓	No →	
2 **control panel messages**	Does the message **Ready** appear on the control panel display?		If an error message appears, see Control-panel messages on page 517. After the errors have been corrected, go to step 3.
	Yes ↓	No →	
3 **Event log**	Open the **Troubleshooting** menu and print an event log to see the history of errors with this MFP. Does the event log print?		If the event log does not print, see Engine test on page 617. If paper jams inside the MFP, see Paper path troubleshooting on page 554. If error messages appear on the control panel display when you try to print an event log, see Control-panel messages on page 517. After successfully printing and evaluating the event log, go to step 4.
	Yes ↓	No →	
4 **Information pages**	Open the Information menu and print the configuration pages to verify that all of the accessories are installed. Are all of the accessories installed?		If accessories that are installed are not listed on the configuration page, remove the accessory and reinstall it. For more information about optional output devices, see Understand accessory lights for the 3-bin mailbox and stapler/ stacker on page 550. After evaluating the configuration pages, go to step 5.
	Yes ↓	No →	
5 **Copy/scan**	Can you successfully make a copy from both the ADF and the scanner glass?		If paper jams inside the ADF, see Paper path troubleshooting on page 554. If you cannot make a copy from the scanner glass, see Using the scanner tests on page 581. After you can successfully copy, go to step 6.
	Yes ↓	No →	
6 **Image quality**	Does the print quality meet the customer's requirements?		Compare the images with the sample defects in the image defect tables. See Image defect examples on page 585. After the print quality is acceptable, go to step 7.
	Yes ↓	No →	

Table 6-1 Troubleshooting flowchart (continued)

7 **Interface**	Can the customer print successfully from the host computer?		Verify that all I/O cables are connected correctly and that a valid IP address is listed on the Jetdirect configuration page. See Network connectivity problems on page 615. If error messages appear on the control panel display, see Control-panel messages on page 517. When the customer can print from the host computer, this is the end of the troubleshooting process.
	Yes. This is the end of the troubleshooting process.	No →	

Power-on checks

The basic MFP functions should start up as soon as the MFP is plugged into an electrical outlet and the power switch is pushed to the *on* position. If the MFP does not start, use the information in this section to isolate and solve the problem.

First, turn on the MFP power. If the control-panel display remains blank, random patterns appear, or asterisks remain on the display, perform power-on checks to locate the cause of the problem.

During normal operation, the main cooling fan begins to spin briefly after the MFP power is turned on. Place your hand over the holes in the rear cover, above the formatter. If the fan is operating, you will feel a slight vibration and feel air passing into the MFP. You can also lean close to the MFP and hear the fan operating. When this fan is operational, the DC side of the power supply is functioning correctly.

After the fan is operating, the main motor turns on (unless the top cover is open, a jam condition is sensed, or the paper-path sensors are damaged). You should be able to visually and audibly determine if the main motor is turned on.

If the fan and main motor are operating correctly, the next troubleshooting step is to isolate print engine, formatter, and control panel problems. Perform an engine test (see Engine test on page 617). If the formatter is damaged, it might interfere with the engine test. If the engine test page does not print, try removing the formatter and then performing the engine test again. If the engine test is then successful, the problem is almost certainly with the formatter, the control panel, or the cable that connects them.

If the control panel is blank when you turn on the MFP, check the following items.

1. Make sure that the MFP is plugged into an active electrical outlet that delivers the correct voltage.
2. Make sure that the power switch is in the *on* position.
3. Make sure that the fan runs briefly, which indicates that the power supply is operational.
4. Make sure that the formatter is seated properly.
5. Make sure that the control panel display wire harness is connected. See Control panel on page 267.
6. Make sure that the firmware flash memory card and the formatter are seated and operating correctly. See Flash memory card (firmware) on page 306.
7. Remove any HP Jetdirect or other EIO cards, and then try to turn the MFP on again.



NOTE: If the control panel display is blank, but the main cooling fan runs briefly after the MFP power is turned on, try printing an engine test page to determine whether the problem is with the control panel display, formatter, or other MFP components. See Engine test on page 617.

Control-panel messages

Table 6-2 Control-panel messages

Control panel message	Description	Recommended action
	No power to the MBM. **NOTE:** The MBM is powered by the printer through the communication cable connecting the two devices.	Check the communication cable between the MBM and the printer for a loose connection or damage. Make sure that the connector is securely attached. If the cable is damaged, replace the MBM unit.
	No power to the stapler/stacker. **NOTE:** The stapler/stacker is powered by the printer through the communication cable connecting the two devices.	Check the communication cable between the stapler/stacker and the printer for a loose connection or damage. Make sure that the connector is securely attached. If the cable is damaged, replace the stapler/stacker unit.
10.XX.YY Supplies Error	A **10.XX.YY Supplies Error** indicates either an error with one of the print cartridges or a notification of **Override at out** or **Color Supply Out** settings. The values of XX are: • 00 = memory error on supply • 10 = memory tag missing • 30 = non-HP supply in use • 32 = unauthorized supply in use • 70 = cartridge-out override activated (Override In Use) • 71 = monochrome printing after color cartridge out activated (**Printing Black Only**) • 80 = cartridge-out override deactivated because user limit reached (**Override Not In Use**) • 81 = monochrome printing after color cartridge out deactivated (**Not Printing Black Only**) • 88 = cartridge-out override deactivated because maximum use/wear limit reached (**Override Not In Use**) • 89 = cartridge-out override deactivated because cartridge out of toner (**Override Not In Use**) • 90 = replace cartridge (**Replace <color> Cartridge**) • 92 = cartridge not engaged	**10.00.YY** / **10.10.YY** / **10.30.YY** / **10.32.YY** messages 1. Turn the MFP off and then back on. 2. Swap the color cartridge indicated with a cartridge in another slot to determine whether the error follows the cartridge or stays with the slot. If the error follows the cartridge, replace that cartridge. Otherwise, proceed to step 3. 3. Reset the connectors between the memory PCB (J4001) and the DC controller (J1021). 4. Replace the memory PCB. 5. Replace the DC controller PCB. Calibrate the printer after replacing the DC controller. **10.70.YY** / **10.80.YY** / **10.88.YY** / **10.89.YY** messages • When **Override at out** is selected in the **Replace Supplies** menu AND a print cartridge reaches an out state, a **10.70.YY** message is posted in the event log and the MFP continues to print. • When the print cartridge subsequently reaches one of the three thresholds set for override, one of the following

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
	For errors 70 through 92, the main description appears only in the event log and is not posted on the control panel. The control-panel message is indicated in parentheses. The values of YY are: ● 00 = black print cartridge ● 01 = cyan print cartridge ● 02 = magenta print cartridge ● 03 = yellow print cartridge	errors is posted to the event log and the MFP will not continue to print. ● **10.80.YY** = user limit ● **10.88.YY** = HP predefined maximum use/wear. ● **10.89.YY** = out of toner **10.71.YY** / **10.81.YY** messages ● When **Autocontinue black** is selected in the **Color Supply Out** menu and a color print cartridge reaches an out state, a **10.71.YY** message is posted in the event log and the MFP continues to print in black-only mode. ● When the black cartridge subsequently reaches the out state, a **10.81.YY** message is posted to the event log and the MFP will not continue to print unless **Override at out** is set. **10.90.YY** / **10.92.YY** messages 1. Turn the MFP off and then on. 2. Reseat the print cartridge. 3. Replace the indicated print cartridge.
11.XX Internal clock error To continue touch OK	This message is displayed when there is a problem with the real-time clock on the formatter board. 11.01 = Dead clock battery 11.02 = Dead real-time clock	Replace the formatter assembly.
13.01.00 JAM IN TRAY 1	Paper is jammed in tray 1.	1. Use Help to see step-by-step information. 2. Clean the pickup roller. If it is worn or damaged, replace it. 3. Clean or replace the separation pad. 4. Upgrade formatter and DC controller firmware, which can be found in a single .RFU file from http://www.hp.com/support/ljcm4730mfp. 5. Check all cable connections to/from DC controller. 6. Replace the paper pickup drive assembly. 7. Replace the paper feed assembly.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
13.01.11 JAM INSIDE LOWER RIGHT DOOR	There is a paper jam inside the lower right door, or the paper did not feed from the paper tray.	1. Follow the onscreen help to clear the jam. 2. It might be a no-pick jam. Check the tray 3 and 4 paper pickup and paper feed rollers. Reseat the rollers if necessary. Replace the rollers if they are worn or damaged. 3. Ensure that paper is loaded correctly in the paper tray. 4. Try exchanging paper trays to isolate the problem.
13.02.00 JAM INSIDE RIGHT DOORS	Paper is jammed inside the right doors. The trailing edge was not detected by sensor SR12 after the specified time.	1. Follow the onscreen help to clear the jam. Touch OK to continue. 2. Check for obstructions in the paper feed assembly. 3. Ensure that paper is loaded correctly in the paper tray. 4. Try exchanging paper trays to isolate the problem. 5. If paper jams in the paper feed assembly, replace the assembly after checking for any obstruction.
13.05.00 JAM INSIDE RIGHT DOORS	Paper is jammed inside the right doors. The trailing edge was not detected by sensor SR12 after the specified time.	1. Follow the onscreen help to clear the jam. 2. Check for obstructions in the paper feed assembly. 3. Ensure that paper is loaded correctly in the paper tray. 4. Try exchanging paper trays to isolate the problem. 5. If paper jams in the paper feed assembly, replace the assembly after checking for any obstruction.
13.06.00 JAM INSIDE UPPER RIGHT DOOR	There is a paper jam inside the right doors.	Follow the onscreen instructions to find and remove the jammed media.
13.09.00 JAM INSIDE FRONT SMALL DOOR	Paper is jammed inside the front small door.	1. Follow the onscreen help to clear the jam. 2. Check for obstructions inside the output accessory bridge. 3. Try printing a simplex job to isolate the issue. 4. Remove and reinstall the output accessory bridge. Check for paper after removal.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
13.11.00 JAM INSIDE UPPER RIGHT DOOR	Paper is jammed inside the upper right door. There is a jam in the oblique roller area between sensor SR8001 (paper reversing sensor) and SR12 (top of page sensor), or in the fuser.	1. Follow the onscreen help to clear the jam. 2. Check for obstructions in the fuser. 3. Check for obstructions in the duplexer. 4. Ensure that media meets specifications. 5. Ensure that the ETB rollers roll freely. 6. Ensure that there is no obstruction at the bottom of the ETB.
13.12.07 Jam In Stapler	The stapler could not finish its cycle but was able to return to the home position If the stapler drive does not return to home position (HP) during the normal cycle, the stapler/stacker driver signals M1304 (stapler motor) to rotate once in reverse. If the HP signal is now detected, the stapler/stacker driver sends a signal to the formatter that a staple jam is present.	1. Remove the staple cartridge and any loose staples or staples that might be obstructing stapler movement. 2. Remove one sheet of staples from staple cartridge and try again. 3. Inspect the staple cartridge for damage. Replace the staple cartridge if it is damaged. 4. Verify that genuine HP staples are being used. **NOTE:** Staples come pre-loaded in the staple cartridge and cannot be ordered separately as a refill from HP. 5. If none of the above corrects problem, replace the stapler/stacker unit.
13.12.08 Jam In Left Accessory	Stay jam in accumulator. Paper sensor PS 1302 stayed activated longer than expected. This signal is generated by sensor PS1302 (delivery sensor). PS1302 is located just before the delivery rollers. In order to reach or see the sensor arm, lift the upper delivery rollers and upper paper-path guide plate. You will now be able to see and toggle the sensor arm activating PS1302.	1. Remove any jammed paper obstructing the paper path to the delivery rollers. 2. Turn the MFP off then on. 3. If the error persists, replace the stapler/stacker unit.
13.12.09 Jam In Left Accessory (multi-bin mailbox only)	Stay jam. Inlet-paper sensor PS1501 remained activated longer than expected. This signal is generated by sensor PS1501 (paper-inlet sensor). PS1501 is located under the lower entrance guide plate with the sensor arm extending up through the guide plate and into the paper path.	1. Slide the mailbox device away from the MFP and remove any paper found entering the mailbox device or exiting the MFP. 2. Slide the mailbox back into the MFP and check for an error. 3. If the error persists, turn the MFP off then on. 4. If none of the above corrects the problem, replace the MBM unit.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
13.12.09 Jam In Left Accessory (stapler/stacker only)	Stay jam at the entrance to the stapler/stacker. Sensor PS1301 stayed activated longer than expected. This signal is generated by sensor PS1301 (paper-inlet sensor). PS1301 is located under the lower-entrance guide plate with the sensor arm extending up through the guide plate and into the paper path.	1. Slide the stapler/stacker away from the MFP and remove any paper found entering the stapler/stacker or exiting the MFP. 2. Slide the stapler/stacker back into the unit and check for an error. 3. If the error persists, turn the MFP off then on. 4. If none of the above corrects the problem, replace the stapler/stacker unit.
13.12.10 Jam In Left Accessory (multi-bin mailbox only)	Delay jam. Paper did not arrive at the paper-inlet sensor PS1501 within the expected time. This signal is generated from sensor PS1501 (paper-inlet sensor). PS1501 is located under the lower entrance guide plate with the sensor arm extending up through the guide plate and into the paper path.	1. Remove the paper jam. 2. Open a new ream of paper and replace the paper in the paper tray. Try running the job again. If jamming stops, the problem is most likely excessive paper curl leaving the fuser. This is caused by damp paper from high humidity or poor-quality paper. 3. If the error persists with the new ream of paper, replace the MBM unit.
13.12.10 Jam In Left Accessory (stapler/stacker only)	Delay jam in entry. Paper did not arrive at the paper-inlet sensor PS1301 within the expected time. This signal is generated from sensor PS1301 (paper-inlet sensor). PS1301 is located under the lower entrance guide plate with the sensor arm extending up through the guide plate and into the paper path.	1. Remove the paper jam. 2. Open a new ream of paper and replace the paper in the paper tray. Try running the job again. If jamming stops, the problem is most likely excessive paper curl leaving the fuser. This is caused by damp paper from high humidity or poor-quality paper. 3. If the error persists with the new ream of paper, replace the stapler/stacker unit.
13.12.11 Jam In Left Accessory (multi-bin mailbox only)	Initial jam. At power on, paper was present at the entrance of the MBM at sensor PS1501. This signal is generated by sensor PS1501 (paper-inlet sensor). PS1501 is located under the lower entrance guide plate with the sensor arm extending up through the guide plate and into the paper path.	1. Remove any paper found in the entrance guides of the MBM that might be activating PS1501. 2. Turn the MFP off then on. 3. If the error persists, replace the MBM unit.
13.12.11 Jam In Left Accessory (stapler/stacker only)	Initial jam. At power on, paper was present at the entrance of the stapler/stacker at sensor PS1301. This signal is generated by sensor PS1301 (paper-inlet sensor). PS1301 is located under the lower entrance guide plate with the sensor arm extending up through the guide plate and into the paper path.	1. Remove any paper found in the entrance guides. 2. Turn the MFP off then on. 3. If the error persists, replace the stapler/stacker unit.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
13.13.00 JAM INSIDE RIGHT DOORS	Paper is jammed inside the right doors. The front edge did not reach sensor SR1 within the specified time after reaching sensor SR12.	1. Follow the onscreen help to clear the jam. 2. Check for obstructions near the fuser inlet. 3. Ensure that paper is loaded correctly in the paper tray. 4. Try exchanging paper trays to isolate the problem. 5. Replace the fuser.
13.21.00 JAM IN TRAY X	There is a paper jam inside the upper right door or inside the fusing unit.	Follow the onscreen instructions to find and remove the jammed media.
13.30.00 JAM INSIDE DRAWER BELOW TRAY 1	Paper is jammed inside the drawer.	1. Follow the onscreen help to clear the jam. 2. It might be a no-pick jam. Check the tray 3 and 4 paper pickup and paper feed rollers. Reseat the rollers if necessary. Replace the rollers if they are worn or damaged. 3. Ensure that paper is loaded correctly in the paper tray. 4. Try exchanging paper trays to isolate the problem.
13.31.00 JAM INSIDE UPPER RIGHT DOOR	Paper is jammed inside the upper right door. There is a jam in the oblique roller area between sensor SR8001 (paper reversing sensor) and SR12 (top of page sensor).	1. Follow the onscreen help to clear the jam. 2. Ensure that media meets specifications. 3. Ensure that the ETB rollers roll freely. 4. Ensure that there is no obstruction at the bottom of the ETB.
13.XX.YY JAM IN OUTPUT AREA	There is a paper jam in the output area.	Follow the onscreen instructions to find and remove the jammed media.
13.XX.YY Jam In Paper Path	There is a jam in the paper path. 13.12.00 = jam in paper path 13.20.00 = jam in paper path 13.21.00 = jam in paper path	1. Step through the onscreen instructions. 2. If paper is folding into an accordion shape, make sure the shutter on each print cartridge opens as you close the ETB and each cartridge is turning correctly. Replace defective print cartridges or drive motors. 3. Clean the attaching roller at the bottom of the ETB and make sure that the spring is holding it in place. 4. Upgrade formatter and DC controller firmware, which can be found in a single .RFU file from http://www.hp.com/support/ljcm4730mfp.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
		5. Replace the paper pickup PCB. 6. Check all cable connections to/from the DC controller. 7. Replace the ETB if it is not moving paper correctly. Calibrate the printer.
13.XX.YY JAM INSIDE OUTPUT ACCESSORY BRIDGE	Paper is jammed inside the output accessory bridge.	1. Follow the onscreen help to clear the jam. 2. Check for obstructions inside the output accessory bridge. 3. Try printing a simplex job to isolate the issue. 4. Remove and reinstall the output accessory bridge. Check for paper after removal.
20 INSUFFICIENT MEMORY To continue touch OK	The MFP received more data than can fit in the available memory. You might have tried to transfer too many macros, soft fonts, or complex graphics.	Touch **OK** to print the transferred data (some data might be lost), and then simplify the print job or install additional memory.
21 PAGE TOO COMPLEX To continue touch OK	The page formatting process was not fast enough for the MFP.	Touch **OK** to print the transferred data (some data might be lost). If this message appears often, simplify the print job.
22 EIO X BUFFER OVERFLOW To continue touch OK	Too much data was sent to the EIO card in the specified slot (x). An incorrect communications protocol might be in use.	1. Touch OK to continue printing. 2. Power cycle the MFP. 3. Resend the print job. 4. If the error still occurs, replace the EIO card in slot X.
22 EMBEDDED I/O BUFFER OVERFLOW To continue touch OK	Too much data was sent to the embedded HP Jetdirect print server.	1. Touch OK to continue printing. 2. Power cycle the MFP. 3. Resend the print job. 4. If the error still occurs, replace the formatter.
30.00.01	Scanner communication error. The formatter is unable to communicate with the scanner.	1. Reseat the 256 MB memory DIMM on the back side of the formatter. 2. Reseat the flat cable from the formatter to connector CN101 on the scanner controller PCB. 3. Replace the 256 MB memory DIMM on the back side of the formatter. 4. Replace the flat cable from the formatter to connector CN101 on the scanner controller PCB. 5. Replace the formatter. 6. Replace the scanner controller PCB.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
30.01.01	The flatbed scanner cover is open. This is a status message only.	1. Ensure the flatbed cover is closed. 2. If the message persists, check that the scanner-open sensor at the left-rear of the scanner moves up and down correctly. If not, replace the scanner-open-sensor holder assembly. 3. Replace the scanner-open sensor.
30.01.02	A paper jam has occurred in the ADF paper path.	1. Open the scanner jam-release cover and check all areas for jammed paper or labels that might be blocking a sensor. 2. Check that the mylar strip and holder are installed correctly. 3. Use the ADF sensor tests to ensure the ADF paper-present and ADF top-of-page sensor flags move freely and the sensors are working properly. 4. If the jams persist, reseat the ADF pickup roller assembly. 5. Replace the ADF assembly.
30.01.03	The ADF could not pick up the paper. If the paper does not pass the paper-presence sensor, it will be reported as an ADF paper-pick error.	1. Check that the ADF jam-access door is fully seated. 2. Check the movement of the ADF driver gear on the ADF jam-access door to make sure it engages with the ADF input motor. A grinding noise can sometimes be heard when the paper is initially picked; this indicates the gear is not fully seated against the motor. In this case, replace the ADF pickup gear.
30.01.06	The scanner fan, located at the base of the scanner assembly, has failed. It operates whenever the scanner lamp is illuminated or whenever the scanner flatbed motor is rotating. The fan also operates during the MFP initialization sequence.	1. During the MFP initialization sequence, listen to the fan to determine if it is operating. 2. Verify that the connector CN108 on the scanner controller PCB is firmly seated. Also make sure that the connection for the fan in the base of the scanner assembly is firmly seated. 3. If all the connections are secure but the fan is not operating, replace the fan. 4. If the error persists, replace the scan control board.
30.01.07	A communication error has occurred in the scanner.	1. Reseat the 256 MB memory DIMM on the back side of the formatter. 2. Reseat the flat cable from the formatter to connector CN101 on the scanner controller PCB.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
		3. Replace the 256 MB memory DIMM on the back side of the formatter. 4. Replace the flat cable from the formatter to connector CN101 in the scanner controller PCB. 5. Replace the formatter. 6. Replace the scanner controller PCB.
30.01.08	Carriage home-position error. The carriage did not pass the home-position sensor within the allotted amount of time.	1. Ensure that the customer is not pressing on the glass while copying. The can occur when someone places a book on the surface of the glass and presses on the ADF cover with more than 33 pounds of pressure. 2. If the error persists, replace the scanner flatbed unit assembly. The most common cause for this error is a loose belt. The belt cannot be accurately tensioned in the field, thus requiring the scanner flatbed unit to be replaced.
30.01.10	The ADF fan is not operating. This fan operates only during the ADF scan process.	1. Remove the ADF rear cover and watch the fan during a scan from the ADF. 2. Verify that the fan connection CN304 on the ADF intermediate PCB is firmly seated. 3. If the fan does not rotate, replace the ADF assembly.
30.01.15	The scanner initialization failed.	1. Verify that all covers are installed correctly and that the ADF and ADF jam cover are closed. 2. Check all sensors on the scanner to ensure they are not blocked. 3. Replace the scanner optical assembly. 4. If the error persists, replace the scanner flatbed assembly.
30.01.18	An error occurred on the scanner PCB.	1. Ensure all connectors on the scan control board are seated fully. 2. Ensure the MFP has at least version 26 of the scan control board firmware. 3. Replace the scan control board.
30.01.19	An error has occurred in the scanner lamp.	1. Test the lower lamp using the scanner test located in the Diagnostics menu. 2. Replace the scanner flatbed assembly.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
30.01.22	A fatal hardware error has occurred in the scanner.	1. Ensure the MFP is connected to a working power source. 2. Ensure all connectors on the scan control board are firmly seated. 3. Ensure the flat cable from the formatter to the scanner is firmly seated. 4. Replace the scanner flatbed assembly.
30.01.23	A scanner calibration error has occurred.	1. Print a calibration target from the Diagnostics menu and calibrate the scanner. 2. If the error continues, replace the scanner flatbed assembly.
30.01.24	The ADF jam-access door is open.	1. Ensure the ADF jam-access door is closed. 2. If the error persists, ensure the sensor connector CN302 on the ADF intermediate PCB is firmly seated. 3. Ensure connectors CN301 on the ADF intermediate PCB and CN105 on the scan control board are firmly seated. 4. Replace the ADF assembly. 5. Replace the scan control board.
30.01.25	A general error has occurred in the scanner ADF. This error is most likely a memory corruption error.	1. Reseat the 256 MB memory DIMM on the back side of the formatter. 2. Replace the 256 MB memory DIMM on the back side of the formatter. 3. Replace the formatter.
30.01.29	The ADF output bin is full.	1. Remove all media from the ADF output bin. 2. If the message persists, ensure the sensor connector CN303 on the ADF intermediate PCB is firmly seated. 3. Ensure connectors CN301 on the ADF intermediate PCB and CN105 on the scan control board are firmly seated. 4. Replace the ADF assembly. 5. Replace the scan control board.
30.01.36	The scanning firmware upgrade failed. The MFP automatically tires to upgrade the firmware again the next time the MFP is power cycled.	1. Turn the MFP off and then on to try to clear the message. 2. If the error persists, resend the firmware upgrade. 3. If the error continues, replace the scan control board.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
40 BAD EIO X TRANSMISSION To continue touch OK	The connection between the MFP and the EIO card in the specified slot has been broken.	1. Touch OK to continue printing. 2. Power cycle the MFP. 3. Resend the print job. 4. If the error still occurs, replace the EIO card in slot X.
40 BAD SERIAL TRANSMISSION To continue touch OK	A serial data error (parity, framing, or line overrun) occurred as data was being sent by the computer.	Touch **OK** to clear the error message. (Data will be lost.)
40 EMBEDDED I/O BAD TRANSMISSION To continue touch OK	A connection with the embedded Jetdirect print server has been broken.	1. Touch OK to continue printing. 2. Power cycle the MFP. 3. Resend the print job. 4. If the error still occurs, replace the formatter.
41.3 LOAD TRAY XX <TYPE> <SIZE>	This is typically caused if two or more sheets of media stick together in the MFP or if the tray is not adjusted correctly.	1. Make sure the correct settings are set for the trays. 2. Run a paper path diagnostic test to determine if all sensors are working correctly. 3. Replace the paper feed assembly.
41.3 LOAD TRAY XX <TYPE> <SIZE> To use another tray touch OK	The specified tray is loaded with media that is longer or shorter in the feed direction than the size adjusted for the tray.	1. Make sure the correct settings are set for the trays. 2. Run a paper path diagnostic test to determine if all sensors are working correctly. 3. Replace the paper feed assembly.
41.5 Unexpected Type In Tray <X>	The printer senses a different media type in the media path than configured in the tray.	1. Make sure the correct settings are set for the trays. 2. Run a paper path diagnostic test to determine if all sensors are working correctly. 3. Replace the paper feed assembly.
49.XXXXX ERROR To continue turn off then on	A critical firmware error has occurred that caused the processor on the formatter to abort operation. This type of error can be caused by invalid print commands, corrupt data, or invalid operations. In some cases, electrical noise in the cable can corrupt data during transmission to the printer. Other causes include poor-quality parallel cables, poor-connections, or home-grown programs. On rare occasions, the formatter is at fault.	1. Turn the MFP off and then on. 2. Press Stop to clear the print job from the printer memory. 3. Turn the MFP off and then on. 4. Try printing a job from a different software program. If the job prints, go back to the first program and try printing a different file. If the message appears only with a certain software program or print job, contact the software vendor for assistance.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
		5. If the message persists with different software programs and print jobs, disconnect all of the cables to the printer that connect it to the network or computer. 6. Turn the MFP off. 7. Remove all memory DIMMs or third-party DIMMs from the printer. (Do not remove the firmware Compact Flash.) 8. Ensure that the formatter is securely seated. 9. Remove all EIO devices from the printer. 10. Turn the MFP on. 11. If the error no longer exists, install each DIMM and EIO device one at a time, making sure to turn the printer off and on again as you install each device. 12. Replace a DIMM or EIO device if you determine that it causes the error. 13. Remember to reconnect all of the cables that connect the printer to the network or computer. 14. Upgrade formatter and DC controller firmware, which can be found in a single .RFU file from http://www.hp.com/support/ljcm4730mfp. 15. If the error persists, upgrade the firmware compact flash card. 16. Replace the formatter and calibrate the printer. **NOTE:** Formatter failures producing 49 errors are extremely rare. Formatter replacement is probably not required.
50.X FUSER ERROR	A fuser error has occurred. The following are specific fuser errors: 50.1: A low fuser temperature error has occurred in the main thermistor. 50.2: A fuser warmup service error has occurred. 50.3: A high fuser temperature error has occurred in the main thermistor.	1. Turn the MFP off and allow it to cool down. 2. Reinstall the fuser, and check the connector (J5001) that connects the fuser and the printer. Replace the connector if it is damaged. 3. Replace the fuser.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
	50.6: An open fuser error has occurred. 50.7: A fuser pressure release mechanism failure has occurred. 50.8: Low fuser sub-thermistor temperature 50.9: High fuser sub-thermistor temperature The error might be due to an inadequate power supply, inadequate line voltage, or a problem with the fuser.	4. Check all cable connections to/from the DC controller. 5. Replace the low-voltage power supply PCB.
51.1Y Printer Error	A laser error has occurred. 51.10 = Black 51.11 = Cyan 51.12 = Magenta 51.13 =Yellow	1. Turn the MFP off and then on. 2. If possible, run the scanner test diagnostic for the laser scanner indicated. 3. Reseat the connectors (J1002 - Y, J1003 - C, J1004 - M, J1005 - K) between the laser/scanner and DC controller PCB. 4. Upgrade formatter and DC controller firmware, which can be found in a single .RFU file from http://www.hp.com/support/ljcm4730mfp. 5. Replace the defective laser/scanner assembly. See Laser/scanner components on page 370. Calibrate the printer after replacing the laser/scanner.
51.2Y Printer Error	A laser beam error has occurred. 51.20 = Black 51.21 = Cyan 51.22 = Magenta 51.23 = Yellow	1. Turn the MFP off and then on. 2. If possible, run the scanner test diagnostic for the laser scanner indicated. 3. Upgrade formatter and DC controller firmware, which can be found in a single .RFU file from http://www.hp.com/support/ljcm4730mfp. 4. Reseat the connectors (J1002 - Y, J1003 - C, J1004 - M, J1005 - K) between the laser/scanner and DC controller PCB. 5. Replace the defective laser/scanner assembly. See Laser/scanner components on page 370. Calibrate the printer after replacing the laser/scanner.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
52.XY ERROR To continue turn off then on	A printer error has occurred. **X Description** 00 = Scanner error 01 = Scanner startup error 02 = Scanner rotation error **Y Description** 0 = Black 1 = Cyan 2 = Magenta 3 = Yellow	1. Turn the MFP off and then on. 2. Upgrade formatter and DC controller firmware, which can be found in a single .RFU file from http://www.hp.com/support/ljcm4730mfp. 3. Reseat the connectors between the laser/scanner and DC controller PCB. 4. Replace the defective laser/scanner assembly. See Laser/scanner components on page 370. Calibrate the printer after replacing the laser/scanner.
53.XY.ZZ CHECK RAM DIMM SLOT <X> To continue touch OK	A memory error has occurred. **X DIMM Type** 1 = RAM **Y Device Location** 1 = DIMM Slot 1 2 = DIMM Slot 2 **ZZ Error Number** 00 = Unsupported memory 01 = Unrecognized memory 02 = Unsupported memory size 03 = Failed RAM test 04 = Exceeded maximum RAM size 05 = Invalid DIMM speed	If prompted to do so, press OK to continue. The printer should come to the ready state, but will not make full use of all memory installed. Otherwise: 1. Turn the MFP off. 2. Verify that all memory meets specifications and is correctly seated. 3. Turn the MFP on. 4. If the problem persists, replace the DIMM card in the slot indicated. See Install DDR memory DIMMs on page 30.
54.XX Printer Error	54 errors indicate sensor abnormalities. Sensor abnormalities are caused by failed or black sensors, or sensors that report results outside of an expected range. **NOTE:** Some 54 errors do not stop the printing process and are noted on the event log but *not* on the control panel. 54.01 = environmental temperature sensor output is abnormal (appears only in the event log) 54.05 = Media sensor failure (appears only in the event log)	**54.01 procedure:** 1. Check that all of the environmental requirements are met. 2. Turn the MFP off and then on. 3. Check connector J5201 on the environmental sensor and connector J1010 on the DC controller. 4. Replace the environmental sensor. 5. Replace the DC controller.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
	54.07 = yellow drum phase (home) position sensor 54.08 = magenta drum phase (home) position sensor 54.09 = cyan drum phase (home) position sensor 54.0A = black drum phase (home) position sensor 54.0B = Density Sensor Out of Range 54.0C = Halftone Calibration 54.0D = Halftone Calibration Diffusion 54.0F = CPR Out of Range **NOTE:** Errors 07 through 0F appear only in the event log and printing continues.	**54.05 procedure:** 1. Check connector J4201 on the paper feed assembly and connector J1013 on the DC controller. 2. Replace the paper feed assembly. 3. Replace the DC controller. **54.07, 54.08, 54.09, 54.0A procedure:** 1. Check connector J1022 on the DC controller to the drum home position sensor for the color indicated. 2. Replace the main drive assembly. 3. Replace the DC controller. **54.0B, 54.0C, 54.0D, 54.0F procedure:** The last two digits indicate the color (00 = black, 01 = cyan, 02 = magenta, 03 = yellow) 1. Check for correct formation of the calibration swatches on the ETB. If the swatches are light or missing a color, check the primary transfer components (cartridge, main drive assembly, HVPS) for the missing or light color. 2. Check the cartridge and replace if necessary. 3. Check connectors J4401A/J4401B on the color misregistration sensor to J1012 on the DC controller. 4. Replace the paper feed assembly. 5. Replace the DC controller.
55.XX.YY DC CONTROLLER ERROR To continue turn off then on	A printer command error has occurred. Values of XX are: 01 - DC controller memory error 02 - DC controller memory error 03 - No engine response 04 - Communication error 05 - RFU error	**01 – 02 errors** Replace the DC controller. **03 – 04 errors** 1. Reseat formatter 2. Check all connectors on the DC controller. 3. Upgrade formatter and DC controller firmware, which can be found in a single .RFU file from http://www.hp.com/support/ljcm4730mfp. 4. Replace the DC controller PCB.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
		05 errors 1. Upgrade the DC controller PCB firmware. 2. Replace the DC controller PCB firmware.
56.XX ERROR To continue turn off then on	A printer error has occurred. 56.01 = Input device 56.02 = Output device	1. Turn the MFP off and then on. 2. Remove all input and output devices and reinstall them. 3. Check all connectors to the input/output devices that are installed. Replace any damaged connectors.
57.XX ERROR To continue turn off then on	A printer fan error has occurred. 57.01 = Delivery fan 57.03 = Sub power supply fan 57.04 = Cartridge fan 57.05 = Duplex fan 57.06 = Control fan 2 57.07 = Control fan 1 57.08 = ETB fan 57.0A = Power supply fan 57.09 = Fuser fan	1. Turn the MFP off and then on. 2. Check the fan for obstructions. 3. Ensure the fan rotates. 4. Ensure the fan connector is seated properly. 5. Replace the indicated fan.
58.XX ERROR To continue turn off then on	A memory tag error was detected. **XX Description** 58.03 = Memory controller PCB 58.04 = Memory controller PCB power supply	1. Turn the MFP off and then on. 2. Check the connectors on the memory controller (J4001, J9630) and the DC controller PCB (J1021). 3. Replace the memory PCB. 4. Replace the E label contacts.
59.XY ERROR To continue turn off then on	A printer motor error has occurred. **X Description** 0 = Motor error 1 = Motor startup error 2 = Motor rotation error 3 = Fuser motor startup error 4 = Fuser motor rotation error 5 = Image drum motor startup error 6 = Image drum motor rotation error	1. Turn the MFP off and then on. 2. Note: This message might also display if the transfer unit is missing or incorrectly installed. Ensure that the transfer unit is correctly installed. **ETB motor error** 1. Run the component test to verify that the ETB is working correctly. 2. Clean the ETB unit intermediate connector J4613.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
	9 = ETB motor startup error A = ETB motor rotation error B = Developing disengaging motor startup error C = Developing disengaging motor rotation error **Y Description** 0 = Black or N/A 1 = Cyan 2 = Magenta 3 = Yellow	3. Reconnect the connector J4613 between the ETB and the printer, and J1011 on the DC controller PCB. 4. Replace the ETB. **Fuser motor error** 1. Reconnect the connectors J4605 for the fuser motor and J1024 on the DC controller PCB. 2. Run the component test to verify that the fuser motor is working correctly. 3. Replace the fuser motor. **Print cartridge motor error** 1. Run the component test to verify that the print cartridge motor is working correctly. 2. Reconnect the print cartridge connector on the DC controller PCB (J1018 for magenta and black, J1017 for cyan and yellow). On the motor itself, reconnect the connectors (J4603 for magenta, J4604 for black, J4601 for yellow, and J4602 for cyan). 3. Replace the drum drive assembly for the indicated print cartridge. **Developing disengaging motor error** 1. Run the component test to verify that the print developing disengaging motor is working correctly. 2. Reconnect the connectors J468 and J1020 between the developing disengaging motor and the DC controller PCB. 3. Replace the developing disengaging motor.
60.X ERROR To continue turn off then on	A tray lifting error has occurred, where X is the number of the tray. This typically happens when a tray is overfilled or the media is not properly aligned. 60.2 = tray 2 60.3 = tray 3 60.4 = tray 4	1. Turn the MFP off and then on. 2. Verify that the tray is not overfilled and that media is aligned in the tray properly. 3. For tray 2, verify that connector J93 on the DC controller is firmly seated. This connector is for the lift motor. 4. Verify that connector J4618 is securely connected, and then check connector J1015 on the DC controller.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
		5. For trays 3 and 4, verify that connectors J8226 and 8211 on the paper deck driver PCB are securely connected. 6. If a loud clicking sound is heard while the MFP restarts, reinstall the lifter motor assembly and ensure that the gears are seated properly. Also ensure that the cassette pickup roller is properly installed. If the lifter motor assembly is damaged, replace the assembly and check for any obstruction.
62 NO SYSTEM To continue turn off then on	No system was found.	1. Turn the MFP off and then on. 2. Reseat the firmware compact flash, making sure that it is in the first slot. 3. Replace the firmware compact flash (see Install a flash memory card on page 30) and the formatter.
64 ERROR To continue turn off then on	A scan buffer error occurred.	Turn the MFP off, and then turn the MFP on.
65.00.15 Output Device Failure	After the MFP boot process, the external device requested a new boot process. This can happen during an upgrade; the 24 V power goes off momentarily, which makes the stapler/stacker think it is initializing again. **NOTE:** During an upgrade of the external device, if the connection with the device is lost for 9 minutes, the firmware crashes with a 66.00.15 error and forces the user to reboot. It will then display a **Resend external accessory firmware** message.	1. Turn off the MFP. 2. Disconnect the communication cable between the output device and the MFP. 3. Check the connection pins for damage. 4. Reconnect the communication cable to the MFP, making sure the connector is properly screwed down in. 5. Turn on the printer. 6. Reload the latest firmware bundle. 7. If none of the above corrects the problem, replace the stapler/stacker unit.
65.12.01 Output Device Failure	The paddle (retainer) motor M1301 was not able to move the sensor flag to the home position detected by sensor PS1305. This signal is generated by sensor PS1305 (paddle home-position sensor). Sensor PS1305 is located on the rear frame of the stapler/stacker, between the two DC motors: M1301 Paddle motor, and M1303 Feed Motor.	1. Turn the MFP off then on. 2. Reinstall the stapler/stacker. 3. If none of the above corrects the problem, replace the stapler/stacker unit.
65.12.02 Output Device Failure	Jogger-motor malfunction. The jogger home position could not be sensed by sensor PS1304. This signal is generated by sensor PS1304 (jogger home-position sensor). Sensor	1. Check for anything that might be obstructing or restricting the movement of the jogger guides. 2. Turn the MFP off then on.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
	PS1304 is located on the jogger assembly and can be accessed after removing the front, rear, and top covers of the stapler/ stacker.	3. Reinstall the stapler/stacker. 4. If none of the above corrects the problem, replace the stapler/stacker unit.
65.12.03 Output Device Failure	Staple-motor malfunction. The staple motor was unable to return to the home position as read by sensor PHOI1. This signal is generated by sensor PHOI1 (stapler home-position sensor). PHOI1 is located in the stapler assembly and cannot be serviced. If the stapler drive does not return to home position (HP) during the normal cycle, the stapler/stacker driver signals M1304 (stapler motor) to rotate once in reverse. If the HP signal is not detected, the stapler/stacker driver sends a signal to the formatter that the staple motor has malfunctioned.	1. Check for a staple jam in the stapler; remove any jammed staples. 2. Turn the MFP off then on. 3. If none of the above corrects the problem, replace the stapler/stacker unit.
65.12.34 Output Device Failure (multi-bin mailbox only)	Cooling fan failure. This failure is detected by the MBM driver board. If the rotation speed of the cooling fan is not normal for 5 seconds or longer, the MBM control board notifies the formatter of the problem.	1. Turn the MFP off then on. 2. Reinstall the MBM. 3. If none of the above corrects the problem, replace the MBM unit.
65.12.34 Output Device Failure (stapler/stacker only)	Cooling fan failure. This failure is detected by the stapler/ stacker control board. If the rotation speed of the cooling fan is not normal for 5 seconds or longer, the stapler/stacker control board notifies the formatter of the problem.	1. Turn the MFP off then on. 2. Reinstall the stapler/stacker. 3. If none of the above corrects the problem, replace the stapler/stacker unit.
65.12.35 Output Device Failure	Stapler malfunction. The stapler self-prime sensor PHOI2 did not activate. This signal is generated by sensor PHOI2 (staple-ready sensor). Sensor PHOI2 is located in the stapler assembly and cannot be serviced. When a new staple cartridge is installed, the stapler goes through the stapling motion 11 times in order to advance the first staple to the proper stapling position. If the staples are not advanced after 11 attempts, the control board notifies the formatter that self-priming has failed.	1. Verify that genuine HP staples are being used and that the staples are the correct type for this stapler. **NOTE:** Staples come pre-loaded in the staple cartridge and cannot be ordered separately as a refill from HP. 2. Replace the staple cartridge. 3. If none of the above corrects the problem, replace the stapler/stacker unit.
65.12.99 Output Device Disconnected (multi-bin mailbox only)	When the printer was turned on, the MBM lost communication with the MFP.	1. Turn off the MFP. 2. Disconnect the communication cable between the output device and the MFP.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
		3. Reconnect the communication cable to the MFP, making sure that the connector is properly. 4. Turn on the MFP. If the problem persists, replace the MBM.
65.12.99 Output Device Disconnected (stapler/stacker only)	When the printer was turned on, the stapler/stacker lost communication with the MFP.	1. Turn off the MFP. 2. Disconnect the communication cable between the output device and the MFP. 3. Reconnect the communication cable to the MFP, making sure that the connector is properly attached. 4. Turn on the MFP. If the problem persists, replace the stapler/stacker.
66.12.33 Output Device Failure	The delivery-roller lift motor could not reach the home position as detected by sensor PS1303. This signal is generated by sensor PS1303 (delivery-roller disengaging sensor). PS 1303 is located behind the front cover and to the left of the stapler assembly.	1. Turn the MFP off then on. 2. Reinstall the stapler/stacker. 3. If none of the above corrects the problem, replace the stapler/stacker unit.
68.X PERMANENT STORAGE FULL To continue touch OK	A non-volatile storage device is full. Touch OK to clear the message. Printing can continue, but there may be unexpected behavior. **X Description** 68.0 = onboard NVRAM 68.1 = removable disk (flash or hard)	1. Touch OK to continue. 2. For **68.0** errors, turn the printer off then on. 3. If a **68.0** error persists, perform an NVRAM initialization. 4. For **68.1** errors, use the HP Web Jetadmin software to delete files from the disk drive or flash card. 5. For **68.1** errors that persist, reinitialize the hard disk or flash card.
68.X PERMANENT STORAGE WRITE FAIL To continue touch OK	A non-volatile storage device is full. Touch OK to clear the message. Printing can continue, but there may be unexpected behavior. **X Description** 68.0 = onboard NVRAM 68.1 = removable disk (flash or hard)	1. Touch OK to continue. 2. For **68.0** errors, turn the printer off then on. 3. If a **68.0** error persists, perform an NVRAM initialization. 4. For **68.1** errors, use the HP Web Jetadmin software to delete files from the disk drive or flash card. 5. For **68.1** errors that persist, reinitialize the hard disk or flash card.
68.X STORAGE ERROR SETTINGS CHANGED To continue touch OK	One or more printer settings saved in the non-volatile storage device is invalid and has been reset to its factory default. Touch OK to clear the message. Printing can	1. Touch OK to continue. 2. For a **68.0** error, turn the printer off then on.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
	continue, but there may be unexpected behavior. 86.0 = onboard NVRAM 86.1 = removable disk (flash or hard)	3. If a **68.0** error persists, perform an NVRAM initialization. 4. For **68.1** errors, use the HP Web Jetadmin software to delete files from the disk drive or flash card. 5. For **68.1** errors that persist, reinitialize the hard disk or flash card.
69.X ERROR To continue turn off then on	A printer error has occurred. 69.0 = duplexer not functioning 69.1 = duplexer not functioning	1. Check if the duplexer connector (J2003) is connected to the duplexer. 2. Check the connector (J1030) on the DC controller PCB. 3. Replace the duplexer.
8X.YYYY EIO ERROR	The EIO accessory card has encountered a critical error, as specified by **YYYY**.	Try the following actions to clear the message. 1. Turn the MFP off, and then turn the MFP on. 2. Turn the MFP off, reseat the EIO accessory, and then turn the MFP on. 3. Replace the EIO accessory.
8X.YYYY EMBEDDED JETDIRECT ERROR	This message is generated by a failure of the embedded Jetdirect print server.	Turn the MFP off and then on. Press ? for more information. If the message persists, see Troubleshooting the embedded HP Jetdirect print server on page 632.
99.XX.YY	This error occurs during a Remote Firmware Upgrade (RFU). The upgrade might have failed due to a failing component or because the existing firmware is the same as the firmware in the RFU.	1. Turn the MFP off and then on. 2. Try to perform an RFU on the MFP again. 3. If the RFU fails, check the description in the engine event log. The event log identifies the type of 99 error. If it is failing due to the firmware being the latest available, no upgrade is necessary and the error should be ignored. 4. Ensure the connections are secure at the formatter and the output devices.
Access denied MENUS LOCKED	An attempt has been made to modify a menu item while the control panel security mechanism is enabled by the MFP administrator. The message will disappear shortly, and the MFP will return to the ready state.	Use PJL commands or HP Web Jetadmin to unlock the control panel.
ACTION NOT CURRENTLY AVAILABLE FOR TRAY X TRAY SIZE CANNOT BE ANY SIZE/ANY CUSTOM	A duplexed (2-sided) document was requested from a tray that is set to **Any Size** or **Any Custom**. Duplexing is not allowed from a tray configured to **Any Size** or **Any Custom**.	Select another tray or reconfigure the tray.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
Authentication information is incorrect. Please re-enter information.	A user name or password is incorrect.	Type the information again.
Authentication required	Authentication has been enabled for this feature or destination. A username and password are required.	Type the user name and password, or contact the network administrator.
Authentication required to use this feature	A user name and password are required.	Type the user name and password, or contact the network administrator.
Bad duplexer connection To continue turn off then on	The duplexer is not connected properly and must be reinserted before printing can continue.	1. Turn the MFP off and then on. 2. Reconnect the duplexer and ensure that the connector is not damaged. If necessary, replace the duplexer.
Calibrating	The MFP is calibrating.	No action is necessary.
Check output device	An error has occurred with the output device.	Remove and reinstall the output device. Observe the LED on the device. If it is flashing or is amber, see Understand accessory lights for the 3-bin mailbox and stapler/stacker on page 550.
Chosen personality not available. To continue touch OK.	PJL encountered a request for a personality that did not exist in the MFP. The job is aborted and no pages will be printed.	1. Use the scroll bar to step through the help instructions. 2. Reprint using the correct driver for the device. 3. Reprint using a printer driver for a different printer language, or add the requested printer language to the MFP if possible. To see a list of available personalities, print a configuration page.
Close drawer below Tray 1	This message is displayed when the drawer situated below tray 1 is open.	1. Close the drawer. 2. Check the switch. Replace the switch if necessary.
Close right doors	This message is displayed when the right-upper or right-middle door is open.	1. Close the door. 2. Check the switch. Replace the switch if necessary.
Close small front door	The small front door of the IPTU is open.	1. Close the door. 2. Check the switch. Replace the switch if necessary.
Corrupt Firmware In External Accessory	An error has been detected in the external accessory firmware.	Update the firmware or resend the firmware RFU file.
Corrupt Firmware In External Device (multi-bin mailbox only)	The MBM needs a firmware upgrade.	1. Go to http://www.hp.com/support to download the latest firmware and review the upgrade procedure. 2. Install the latest firmware on the device. 3. If the new firmware does not correct the problem, replace the MBM unit.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
Corrupt Firmware In External Device (stapler/stacker only)	The stapler/stacker needs a firmware upgrade.	1. Go to http://www.hp.com/support to download the latest firmware and review the upgrade procedure. 2. Install the latest firmware on the device. 3. If the new firmware does not correct the problem, replace the stapler/stacker unit.
Digital Send Communication Error	An error has occurred during a digital send task.	Contact the network administrator.
Digital Send server is not responding Contact administrator	The MFP cannot communicate with the server.	Verify the network connection. Contact the network administrator.
Document feeder bin full	The ADF output bin holds 50 sheets of paper. The MFP stops when the bin is full.	This message usually clears when the output bin is emptied. If the message persists, check the following: 1. Verify that the ADF output-bin-full sensor flag can move freely. 2. Verify that the connector for the sensor flag is seated correctly. Use the **Scanner Tests** in the **Troubleshooting** menu to test this sensor. See Scanner tests on page 628. Lift up on the sensor to simulate the output bin being full. Observe whether the status changes on the control panel display. If the status does not change, ensure that the connectors are firmly seated. Clean or replace the sensor if necessary.
Document feeder cover open	The document-feeder (ADF) cover is open.	The ADF cover-open sensor is located directly above the ADF feed motor. See ADF and scanner sensors on page 646. When the ADF jam access cover is closed, a plastic protrusion on the bottom of this cover blocks the sensor, and the scanner controller PCB detects that the cover is closed. If you recently disassembled the ADF, ensure that all of the covers are installed correctly and that the wiring to the sensor is firmly seated. Verify that CN105 on the scanner controller PCB is firmly seated. Open the **Troubleshooting** menu, and touch **Scanner Tests** and then **Sensors**. Open and close the ADF jam-access covers and observe whether the status changes on the control panel display. If the status does not change, ensure that the connectors are firmly seated. Clean or replace the sensor if necessary.
Document feeder pick error	The ADF experienced an error while picking paper.	Clear the jam. See Jams in the ADF on page 578. Also see Solving repeated jams on page 571.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
		If the message persists, ensure that the ADF mylar sheet, ADF pickup roller assembly, and ADF separation pad are installed correctly. If any of these components is dirty or worn, replace the component. The ADF input motor might be defective. Observe the motor to see if it is rotating or attempting to pull paper through the paper path. See Figure 6-14 ADF motors, fans, and solenoids on page 647. You can use the **Scanner Tests** in the **Troubleshooting** menu to test this motor. See Scanner tests on page 628. Run the **ADF Input Motor** test and the **ADF Input Motor Reverse** test. If the motor does not rotate, verify that the connector CN103 is seated correctly on the scanner controller PCB and that the connector on the motor is seated correctly. If the motor is defective, replace the ADF. See ADF assembly on page 437.
E-mail Gateway did not accept the job because the attachment was too large.	The scanned documents have exceeded the size limit of the server.	Send the job again using a lower resolution, smaller file size setting, or fewer pages. Contact the network administrator to enable sending the scanned documents by using multiple e-mails.
E-mail Gateway did not respond. Job failed.	A gateway has exceeded the time out value.	Validate the SMTP IP address.
E-mail Gateway rejected the job because of the addressing information. Job failed.	One or more of the e-mail addresses is incorrect.	Send the job again with the correct addresses.
Error executing Digital Send job. Job failed.	A digital send job has failed and cannot be delivered.	Try to send the job again.
Folder list is full. To add a folder, you must first delete a folder.	The MFP limits the number of folders that can be established.	Delete an unused folder to add a new folder.
HP Digital Sending: Delivery Error	A digital send job has failed and cannot be delivered.	Try to send the job again.
Incorrect <color> Cartridge	A cartridge is installed in the wrong slot and the cover is closed. <color> = Black, Cyan, Magenta, or Yellow	1. Open the top and front covers. **CAUTION:** The ETB can be easily damaged. 2. Open the ETB. 3. Remove the incorrect print cartridge. 4. Install the correct print cartridge. 5. Close ETB and then close the top and front covers.
Incorrect Supplies	At least one supply item is incorrectly positioned in the MFP and another supply item is missing, incorrectly placed, out, or low.	1. Touch **OK** to access the **Supplies Status** menu. 2. Use the scroll bar to highlight the specific supply that has a problem.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
		3. Touch **Help** to view help for the supply. 4. Use the scroll bar to step through the instructions.
Insert or close tray XX	Tray X must be inserted or closed before the current job can be printed.	1. Close the tray indicated. 2. Verify that the paper size detection sensors are functioning properly. 3. Verify that the cassette paper size levers are functioning properly. 4. Replace the cassette or paper size detection sensor.
Install <color> cartridge	The specified cartridge is not installed.	1. Install the specified cartridge. 2. Ensure that the cartridge guide is installed correctly. 3. Ensure that the e-label contact is making proper contact. 4. Replace the cartridge. 5. Replace the e-label contact. 6. Replace the memory PCB.
Install Fuser	The fuser is not installed or is not installed correctly.	1. Turn the MFP off and then on. 2. Confirm that the fuser is installed in the MFP and is fully seated. 3. Confirm that the fuser connector J5001 is intact. Replace if damaged. 4. Check the DC controller connector J1025. 5. Replace the fuser.
Install supplies	At least one supply item is missing, incorrectly placed, out, or low.	Insert the supply item or make sure the installed supply item is fully seated.
Install Transfer Unit	The transfer unit is not installed or is not installed correctly.	1. Use the scroll bar to access the **Supplies Status** menu. 2. Scroll to and select the transfer unit. 3. Touch Help to view help. 4. Use the scroll bar to step through the instructions. 5. Replace the ETB.
Insufficient memory to load fonts/data <device> To continue touch OK	The device does not have enough memory to load the data, such as fonts or macros from the location specified. **Device X:** can be one of the following:	1. To use the device without the data, touch OK. 2. To solve the problem, add more memory to the device.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
	INTERNAL = ROM directly on the formatter board CARD SLOT X = font card in slot X DIMMs Internal disk = Non-removable hard disk (other than EIO) EIO X DISK = removable hard disk installed in EIO slot X External source # or USB device X - USB fonts	
JAM IN DOCUMENT FEEDER	Media is jammed in the ADF.	Clear the jam. For more information, see Paper path troubleshooting on page 554. Also see Persistent jams on page 572. The ADF-read motor might be defective. Observe the motor to see if it is rotating or attempting to pull paper through the paper path. See Figure 6-6 Scanner controller PCB component connections on page 636. You can use the **Scanner Tests** in the **Troubleshooting** menu to test this motor. See Scanner tests on page 628. Run the **ADF Read Motor** test and the **ADF Read Motor Reverse** test. If the motor does not rotate, verify that connector CN103 is seated correctly on the scanner controller PCB and that the connector on the motor is seated correctly. If the motor is defective, replace the ADF. See ADF assembly on page 437. The ADF paper-present sensor might be defective. See Figure 6-11 Main assembly PCBs on page 645. Make sure that the sensor flag can move freely. You can use the **Scanner Tests** in the **Troubleshooting** menu to test this sensor. See Scanner tests on page 628. Manually move the flag and observe whether the status changes on the control panel display. If the status does not change, make sure that the wiring for the sensor is firmly seated. Clean or replace the sensor if necessary.
LDAP Server is not responding Contact administrator	The LDAP server has exceeded the time out value for an address request.	Verify the LDAP server address. Contact the network administrator.
Left Output Bin Full (stapler/stacker only)	The control panel indicates that the output bin is full; however, there is no paper in the output tray. The signal is generated by sensor PS1306 (delivery-full sensor). Sensor PS1306 is located on left side of stapler/stacker, above the delivery rollers. The sensor is activated by paper exiting the output device lifting the delivery flappers.	1. Remove all paper from the output trays. 2. Turn the device off then on to see if the error persists. 3. If none of the above corrects the problem, replace the stapler/stacker unit.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
Load Tray 1 <type> <size>	The tray is empty or configured for a different size than the size requested.	1. If the correct paper is loaded, touch **OK**. 2. Otherwise, remove the incorrect paper and load tray 1 with the specified paper. 3. If prompted, confirm the size and type of paper loaded. 4. Confirm that the media guides are in the correct position. 5. To use another tray, remove paper from tray 1 and then touch OK.
Manually feed <type> <size>	The specified job requires manual feed from tray 1.	Load the requested media into tray 1. To override the message, touch **OK** to use a type and size of media that is available in another tray.
Network connection required for Digital Sending. Contact administrator.	A digital-sending feature has been configured, but a network connection is not detected.	Verify the network connection. See Troubleshooting network printing problems on page 615. Contact the network administrator.
Non-HP supply installed	A refilled color or a cloned color/mono cartridge has been installed, and the printer previously used all genuine HP supplies. It can also appear when an unauthorized cartridge has been installed and the printer previously used all genuine supplies.	Install a genuine HP cartridge, or touch **OK** to override the condition.
Novel login required	Novell authentication has been enabled for this destination.	Enter Novell network credentials to access the requested feature.
Order <color> Cartridge	The identified print cartridge is nearing the end of its useful life. The MFP is ready and will continue for the estimated number of pages indicated. Estimated pages remaining is based upon the historical page coverage of this MFP. Printing will continue until a supply needs to be replaced.	Order a replacement print cartridge.
Order Fuser Kit	The fuser is near end of life. The MFP is ready and will continue for the estimated number of pages indicated. Printing will continue until a supply needs to be replaced.	Order a replacement fuser kit.
Order staple cartridge	The staple cartridge needs to be replaced.	Replace the staple cartridge.
Order Supplies	One or more supplies needs to be replaced.	Replace the supply.
Order Transfer Kit	The transfer kit is near end of life. Printing can continue.	Order a replacement transfer kit.
Output Accessory Bridge Attached	The IPTU is attached.	No action required.
Output Accessory Bridge Disconnected	The IPTU is disconnected.	Verify that the IPTU connection is secure. If necessary, remove and then reinstall the IPTU.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
Output Accessory Bridge Failure	The IPTU has failed.	Turn the MFP off, verify that the IPTU connection is secure, and turn the MFP on. If necessary, remove and then reinstall the IPTU.
Output Bin <X> Full (multi-bin mailbox only)	The control panel indicates that the output bin is full; however, there is no paper in the output tray. The signal is generated by sensor PS1503 (bin 1 delivery-full sensor), PS1505 (bin 2 delivery-full sensor), or PS1507 (bin 3 delivery-full sensor). Sensors PS1503 and PS1505 are located behind the front cover of the MBM. Sensor PS1507 is located above the bin 3 delivery rollers, close to the MBM rear frame.	1. Remove all paper from all output trays. 2. Turn the MFP off and then on to see if the error persists. 3. If none of the above corrects the problem, replace the MBM unit.
Output bin <x> full	The specified output bin is full and printing cannot continue.	Empty the bin to continue printing.
Output paper path open (multi-bin mailbox only)	The control panel indicates that the MBM is not latched to the MFP; however, it is physically attached to the MFP. This signal is generated by switch SW1501 (engine-connection switch). Switch SW1501 is located behind the front cover, near the bottom of the MBM. This switch is actuated by a tab on the MFP that engages the actuation arm on the MBM when the MBM is moved against the MFP and they become latched together.	1. Verify that the mailbox device is securely in place: release the mailbox, slide the mailbox away from the MFP, and then slide the mailbox back against the MFP. Verify that the mailbox is locked in place before retesting. 2. Turn the MFP off then on. 3. If none of the above corrects the problem, replace the MBM unit.
Output paper path open (stapler/stacker only)	The stapler door is open, or the stapler/stacker is not fully latched to the MFP. This signal is generated by switch SW1301 (door switch). Switch SW1301 is located behind the front cover and is actuated by a tab on the stapler door and a tab on the engine.	1. Verify that the stapler door is securely closed by opening and closing the door. 2. Verify that the stapler/stacker is properly seated against the printer by sliding the stapler/stacker away from the MFP and then sliding it back against the MFP. Make sure it is locked into position before retesting. 3. Turn the MFP off then on. 4. If none of the above corrects the problem, replace the stapler/stacker unit.
Password or name is incorrect. Please enter correct login.	The user name or password was typed incorrectly.	Retype the user name and password.
Performing Color Band Test	The color-band test is being performed.	No action is necessary.
PIN is incorrect. Please re-enter PIN.	The PIN was typed incorrectly.	Retype the PIN.
Please turn device off and install hard disk.	The requested job requires a hard disk, but the MFP does not have a hard disk installed.	Turn the MFP off and install a hard disk.
Printing CMYK Samples	The CMYK-samples page is being generated. The device will return to the ready state upon completion of the page	No action is necessary.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
Printing Color Usage Log	The color-usage-log page is being generated. The printer will return to the ready state upon completion of the page.	No action is necessary.
Printing Demo Page	This message displays while the demo page is being generated. The device will return to the ready state upon completion of the page.	No action is necessary.
Printing Diagnostics Page	This message displays while the diagnostics page is being generated. The device will return to the ready state upon completion of the page.	No action is necessary.
Printing PQ Troubleshooting	This message is displayed while the print quality troubleshooting test is being generated. The device will return to the ready state upon completion of the test.	No action is necessary.
Printing RGB Samples	This message displays while the print-quality troubleshooting test is being generated. The device will return to the ready state upon completion of the page	No action is necessary.
Reattach output bin	The standard output bin was detached when the MFP was turned on, or the cable on the stapler/stacker or the 3-bin mailbox is not connected to the MFP.	Turn the MFP off. If you are using the stapler/stacker or the 3-bin mailbox, make sure that the cable is connected to the MFP. Reattach the output bin, and then turn the MFP on. Observe the LED on the output device. If it is flashing or amber, see the Problem Solving chapter of this document.
Reinstall Output Device	The output-bin-detection switch, SW103, has detected that no output device is installed.	Make sure the output bin, 3-bin mailbox, or stapler/stacker is correctly installed on the MFP. Turn the MFP off. If you are using the stapler/stacker or the 3-bin mailbox, make sure that the cable is connected to the MFP. Reattach the output bin, and then turn the MFP on. Observe the LED on the output device. If it is flashing or amber, see Understand accessory lights for the 3-bin mailbox and stapler/stacker on page 550.
Remove All Print Cartridges	The MFP is executing a component test and the component selected is Belt Only.	Remove all print cartridges.
Remove At Least One Print Cartridge	The MFP is executing a disable-cartridge check or component test where the component selected is the cartridge motor.	Remove one print cartridge.
Replace <color> Cartridge	The identified print cartridge has reached the end of life. Printing can continue.	Replace the specified color cartridge.
REPLACE DIMM <X> MEM TEST FAILURE	The listed DIMM is not functioning properly and must be replaced.	Replace the DIMM.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
Replace Fuser Kit	The fuser is nearing the end of its useful life. Printing can continue.	Replace the fuser kit. 1. Open the right-side covers. 2. Use the green handle to lift the fuser cover. 3. Grasp the purple handles on the fuser unit. 4. Remove the old fuser unit from the MFP. 5. Install the new fuser unit. 6. Close the top cover.
Replace Staple Cartridge	The control panel indicates that the stapler is out of staples; however, after putting in a new cartridge, the message remains. The signal is generated by sensor PHOI2 (staple-ready sensor) or sensor PHOI3 (staple-level sensor). Both are located in the stapler assembly and cannot be cleaned or serviced.	1. Make sure that a genuine HP staple cartridge is being used. 2. Replace the staple cartridge. **NOTE:** Staples come pre-loaded in the staple cartridge and cannot be ordered separately as a refill from HP. 3. Turn the MFP off then on. 4. If none of the above corrects the problem, replace the stapler/stacker unit.
Replace Supplies	If the device is configured to stop at out and multiple print cartridges are out, this message is displayed.	Replace the empty cartridges.
Replace Supplies - Override in use	The MFP is set to continue printing even though a print cartridge has reached end of life.	From the control-panel Home screen, touch **Supplies Status** and then touch the **Supplies** tab so you can see which supplies are out. Replace the necessary print cartridge.
Replace Supplies - Using black	A color supply (or supplies) has reached the out condition and the **Color Supply Out** menu item is set to **Autocontinue black**.	No user input is required for printing to continue. Printing continues in black.
Replace Transfer Kit	The transfer unit is at end of life. Printing can continue, but print quality might be reduced.	Replace the transfer kit. 1. Open the right-side covers. 2. Lower the transfer unit by pulling downward on the green handle at the top of the unit. 3. Depress the small blue latches located on either side of the bottom of the transfer unit and lift the unit out of the MFP. 4. Install the new transfer unit. 5. Close the right-side covers.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
Rotating <color> Motor	A component test is in progress; the component selected is the <color> cartridge motor.	Press **Stop** when ready to stop this test.
Rotating Motor - To exit press STOP	The MFP is executing a component test and the component selected is a motor.	Press **Stop** when ready to stop this test.
SANITIZING DISK <X>% COMPLETE Do not power off	The hard disk is being cleaned.	Contact the network administrator.
SCAN FAILURE Press 'Start' to rescan	The scan was unsuccessful and the document needs to be rescanned.	If necessary, reposition the document to rescan it, and then press Start.
Size mismatch in tray XX	The tray is loaded with paper that is longer or shorter in the feed direction than the size configured for the tray.	1. Adjust the side and rear media guides against the paper. 2. If necessary, touch **OK** after the tray is closed to change the paper size or type configuration to match the size or type of paper loaded in the tray. 3. Exchange the tray with a different tray. If the error persists, check the paper size sensor. 4. Replace the paper size sensor if it is damaged. 5. Replace the DC controller.
SMTP Gateway	The SMTP gateway has exceeded a time out value.	Verify the e-mail server address. Contact the network administrator.
Stapler Low On Staples	The control panel indicates that the stapler is low on staples or the staple cartridge is missing; however, after putting in a new cartridge, the message remains. The signal is generated by sensor PHOI3 (staple-level sensor). Sensor PHOI3 is located in the stapler assembly and cannot be cleaned or serviced.	1. Make sure that a genuine HP staple cartridge is being used. 2. Replace the staple cartridge. **NOTE:** Staples come pre-loaded in the staple cartridge and cannot be ordered separately as a refill from HP. 3. Turn the MFP off then on. 4. If none of the above corrects the problem, replace the stapler/stacker unit.
The Digital Sending Service at <IP Address> does not service this MFP. Contact administrator.	The MFP cannot communicate with the specified IP address.	Verify the IP address. Contact the network administrator.
The Digital Sending Service must be upgraded to support this version of the MFP firmware. Contact administrator.	The Digital Sending Service is not supported by the version of the firmware that is currently installed for the MFP.	Check the firmware version. Contact the network administrator.
The folder you have entered is not a valid folder.	The folder name was entered incorrectly, or the folder does not exist.	Re-enter the folder name correctly, or add the folder.
There might be a document on the glass. If there is, remove it, then press "Start".	A digital send or copy job has been performed from the scanner glass, but the original document needs to be removed.	Remove the original document from the scanner glass and press Start.

Table 6-2 Control-panel messages (continued)

Control panel message	Description	Recommended action
TOO MANY PAGES IN JOB TO STAPLE	When the firmware detects that the job is attempting to staple more than the maximum 30 pages, the firmware signals the jogger guides to open, dropping the unstapled stack of paper into the output tray below. The remainder of the copies will print out and be directed to the output tray without being stapled.	Do not attempt to staple more than 30 pages of 20 lb bond (75g/m^2) paper. For heavier paper, the maximum stack height that can be stapled is 3 mm.
Tray <X> Empty	The specified tray is empty and the current job does not need this tray to print.	1. Refill the tray at a convenient time. 2. Check the paper stack sensor. Replace the sensor if necessary.
Tray <X> Open	The specified tray is open or not closed completely.	1. Close the tray. 2. Check the paper size sensors and the paper tray sensor. Replace the sensors if necessary. 3. If possible, install a different paper tray and check performance. 4. Replace the cassette tray.
Type Mismatch In Tray <XX>	The paper type loaded in the tray does not match the paper type configured for the tray.	1. Reinsert the tray. 2. If necessary, touch **OK** after the tray is closed to change the paper type configuration to match the paper loaded in the tray. 3. Replace the paper feed unit.
Unable to connect	The MFP was unable to connect.	To temporarily hide this message in order to fax or send to e-mail, touch **IGNORE**. If this message persists, make sure that the cable between the print engine and the scanner assembly is connected correctly. Replace the scanner assembly if necessary. See Scanner assembly on page 440.
UNABLE TO COPY	The MFP was unable to copy the document.	To temporarily hide this message in order to fax or send to e-mail, touch **IGNORE**. If this message persists, make sure that the cable between the print engine and the scanner assembly is connected correctly. Replace the scanner assembly if necessary. See Scanner assembly on page 440.
UNABLE TO SEND	The MFP was unable to send the fax.	To temporarily hide this message in order to fax or send to e-mail, touch **IGNORE**.
Unable to send Fax. Please check fax configuration.	The MFP was unable to send the fax.	Contact the network administrator.
UNABLE TO SEND JOB	The MFP was unable to send the fax.	To temporarily hide this message in order to fax or send to e-mail, touch **IGNORE**.
Unauthorized supply in use	The MFP is using a non-HP supply.	If you believe you purchased a genuine HP supply, go to http://www.hp.com/go/

Table 6-2 Control-panel messages (continued)

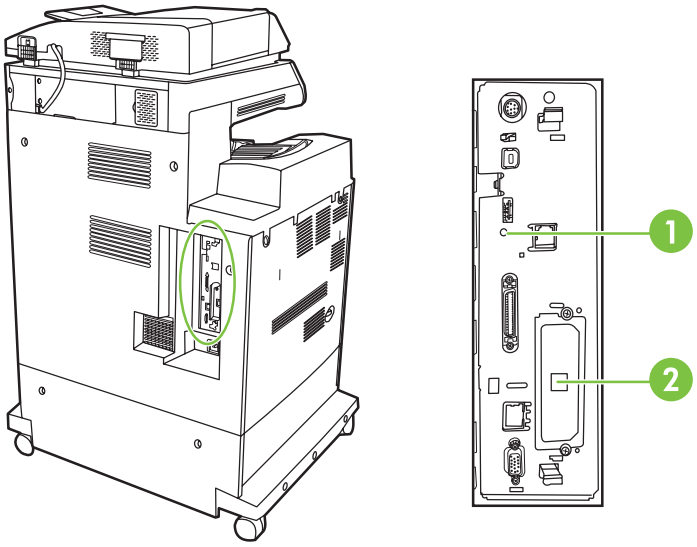
Control panel message	Description	Recommended action
		anticounterfeit. Any printer repair required as a result of using non-HP or unauthorized supplies is not covered under warranty. HP cannot ensure the accuracy or the availability of certain features.
User name or password is incorrect. Please re-enter.	The user name or password was typed incorrectly.	Retype the user name and password.
User Name, Job Name, or PIN is missing.	One or more of the required items has not been selected or typed.	Select the correct user name and job name, and type the correct PIN.

Understand accessory lights for the 3-bin mailbox and stapler/stacker

Light	Explanation and solution
Solid green	• The accessory is receiving power and is ready. • The stapler is low on staples. **Stapler Low On Staples** appears on the control-panel display. Fewer than 20 staples remain in the staple cartridge. Replace the staple cartridge. • The number of pages in the job exceeds the 30-page limit for stapling. **TOO MANY PAGES IN JOB TO STAPLE** appears on the MFP control-panel display. For jobs that have more than 30 pages, staple the pages manually.
Solid amber	• The accessory is experiencing a hardware malfunction. **66.X.X OUTPUT DEVICE FAILURE** appears on the control-panel display.
Blinking amber	• The accessory has a staple jam. **Stapler Jam** appears on the control-panel display. • The accessory has a paper jam, or a sheet needs to be removed from the unit, even if the sheet is not jammed. **13.XX.YY JAM IN TOP OUTPUT BIN** appears on the control-panel display. • The bin is full. **Stacker Bin Full** appears on the control-panel display. • The stapler is out of staples. **Replace Stapler Cartridge** appears on the control-panel display. • The jam-access cover is open. **Output paper path open** appears on the control-panel display. • The stapler unit is open. **Output paper path open** appears on the control-panel display. Make sure the staple-cartridge cover is completely closed. • The firmware is corrupt. **Corrupt Firmware In External Accessory** appears on the control-panel display.
Off	• The MFP might be in sleep mode. Press any button on the control panel. • The accessory is not receiving power. Turn the MFP power off. Check that the accessory is properly seated on and connected to the MFP, without any gaps between the MFP and the accessory. Turn the MFP power on. • The accessory might have been disconnected and reconnected while the MFP power was on. **Reinstall Output Device** appears on the control-panel display. Reconnect the cable on the accessory. • The job might have stalled between the MFP and the accessory. **Processing...** appears on the control-panel display. Turn the MFP power off and then on.

Understand lights on the formatter

Three LEDs on the formatter indicate that the MFP is functioning correctly.



1	Heartbeat LED
2	HP Jetdirect LEDs (This LED exists only if HP Jetdirect is installed.)

HP Jetdirect LEDs

The embedded HP Jetdirect print server has two LEDs. The yellow LED indicates network activity, and the green LED indicates the link status. A blinking yellow LED indicates network traffic. If the green LED is off, a link has failed.

For link failures, check all of the network cable connections. In addition, you can try to manually configure the link settings on the embedded print server by using the MFP control-panel menus.

1. Scroll to and touch Administration.
2. Touch Initial Setup.
3. Touch Networking and I/O.
4. Touch Embedded Jetdirect or EIO <X> Jetdirect.
5. Touch Link Speed.
6. Select the appropriate link speed.
7. Touch Save.

Heartbeat LED

The heartbeat LED indicates that the formatter is functioning correctly. While the MFP is initializing after you turn it on, the LED blinks rapidly, and then turns off. When the MFP has finished the initialization sequence, the heartbeat LED pulses on and off.

If the heartbeat LED is off, the formatter might have a problem.

Replacement parts configuration

When the following parts are replaced, perform the procedures in this section.

- Formatter *and* DC controller
- Formatter (new or previously installed in another MFP)
- DC controller (new or previously installed in another MFP)

NOTE: The HP Color LaserJet CM4730 MFP stores MFP configuration information in the compact flash memory. Always print a configuration page before and after (wait five minutes after the MFP power is turned on) installing the parts in the above list to verify that the MFP configuration information is restored from the compact flash memory to the NVRAM.

Formatter *and* DC controller

WARNING! Do *not* replace the formatter and the DC controller at the same time. If the formatter and DC controller must both be replaced, install a replacement formatter first and make sure that you install the compact flash memory from the removed formatter on the replacement formatter *before* you turn the MFP power on.

If the formatter and DC controller need to be replaced, install a replacement formatter first. The HP Color LaserJet CM4730 MFP stores MFP configuration information in the compact flash memory. The compact flash memory from the removed formatter *must* be installed on the replacement formatter, so that MFP configuration information (for example, the duplexing option, page counts, and serial number) can be restored to the formatter and DC controller. After replacing the formatter and installing the compact flash, turn the MFP power on. When the **Ready** message appears on the control panel display, you *must* wait five minutes before using the MFP so that the MFP configuration information can be restored from the compact flash memory to the NVRAM.

Turn the MFP power off, and replace the DC controller. Turn the MFP power on. When the **Ready** message appears on the control panel display, wait five minutes before using the MFP so that the MFP configuration information can be restored from the compact flash memory to the NVRAM.

After installing the replacement formatter and DC controller, perform a full calibration procedure three times. See Calibrate the MFP on page 604.

Formatter (new or previously installed in another MFP)

The HP Color LaserJet CM4730 MFP stores MFP configuration information in the compact flash memory. The compact flash memory from the removed formatter *must* be installed on the replacement formatter, so that MFP configuration information (for example, the duplexing option, page counts, and serial number) can be restored to the formatter and DC controller. After replacing the formatter and installing the compact flash, turn the MFP power on. When the **Ready** message appears on the control panel display, you *must* wait five minutes before using the MFP so that the MFP configuration information can be restored from the compact flash memory to the NVRAM.

After installing the replacement formatter, perform a full calibration procedure three times. See Calibrate the MFP on page 604.

DC controller (new or previously installed in another MFP)

After replacing the DC controller, turn the MFP power on. When the **Ready** message appears on the control panel display, you *must* wait five minutes before using the MFP so that the MFP configuration

information (for example, the duplexing option, page counts, and serial number) can be restored from the compact flash memory to the NVRAM.

After installing the replacement DC controller, perform a quick calibration procedure three times. See Calibrate the MFP on page 604.

Paper path troubleshooting

Use this information in this section to troubleshoot errors in the paper path.

Jam error messages occur if media fails to arrive at or clear the paper path sensors in the allowed time. Dedicated paper sensors detect whether media is present in the sensor and whether media is feeding normally. When the DC controller detects a jam, it immediately stops the printing process and the appropriate jam message appears for the sensor that detects the jam.

Jam locations

If a jam message appears on the control panel display, look for jammed paper or other print media in the locations that are indicated in the following figure.

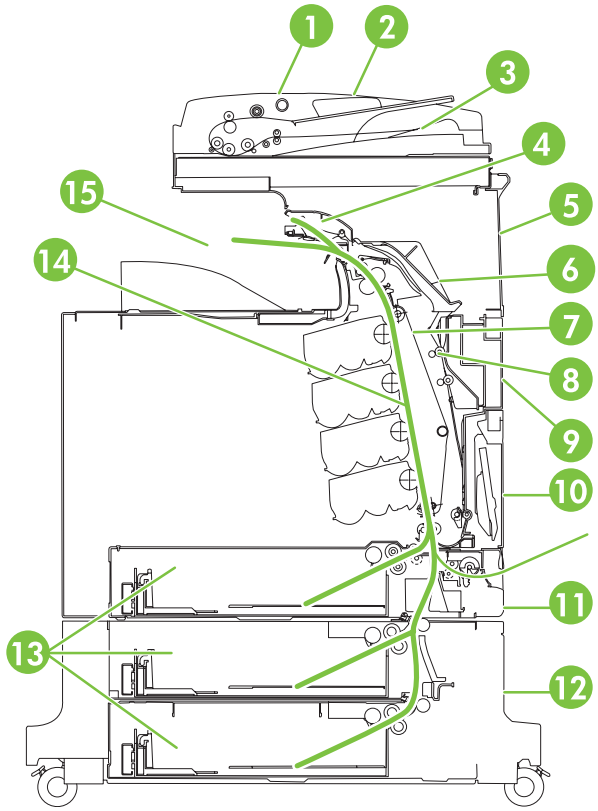


Figure 6-1 Paper jam locations

1	ADF access cover
2	ADF input tray
3	ADF output tray
4	Duplexer cover
5	Upper right door
6	Fuser cover
7	Transfer unit
8	Duplex paper path

9	Middle right door
10	Paper tray 1 (multipurpose tray)
11	Drawer below tray 1
12	Lower right door
13	Paper trays 2, 3, and 4
14	Paper path
15	Output area

Jam recovery

This MFP automatically provides jam recovery, a feature that you can use to automatically reprint jammed pages. The following options are available:

- **Auto** — The MFP attempts to reprint jammed pages.
- **Off** — The MFP does not attempt to reprint jammed pages.



NOTE: During the recovery process, the MFP might reprint several good pages that were printed before the paper jam occurred. Be sure to remove any duplicated pages.

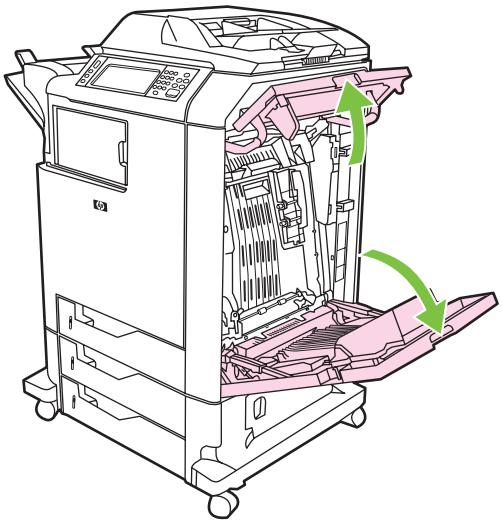
To improve print speed and increase memory resources, you might want to disable paper jam recovery. If paper jam recovery is disabled, the pages involved in a jam will not be reprinted.

Disable paper jam recovery

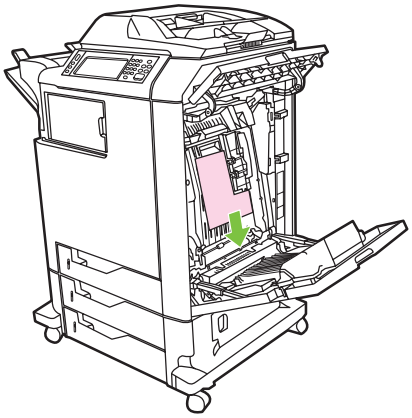
1. Scroll to and touch Administration.
2. Touch Device Behavior.
3. Touch Warning/Error Behavior.
4. Touch Jam Recovery.
5. Touch Off.
6. Touch Save.

Clearing jams in the right covers

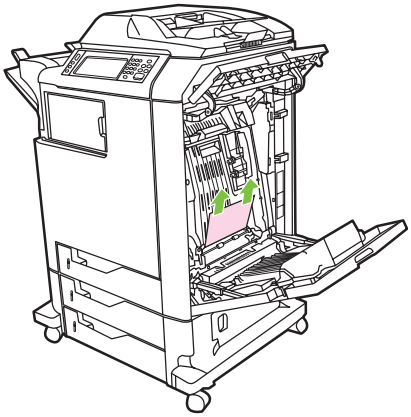
1. Using the handles, open the covers on the right side of the MFP.



2. If media is present in the upper area, grasp the media by both corners and pull down.

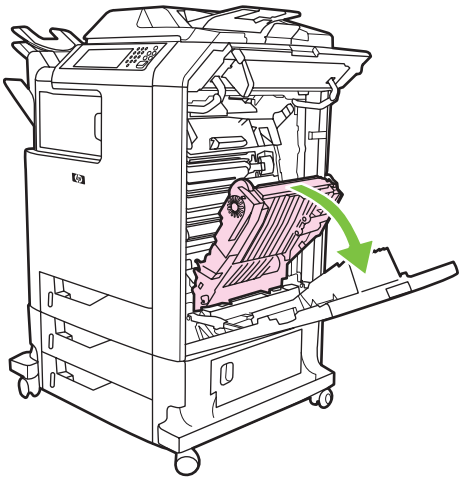


3. If media is present in the lower area, grasp the media by both corners and pull up.

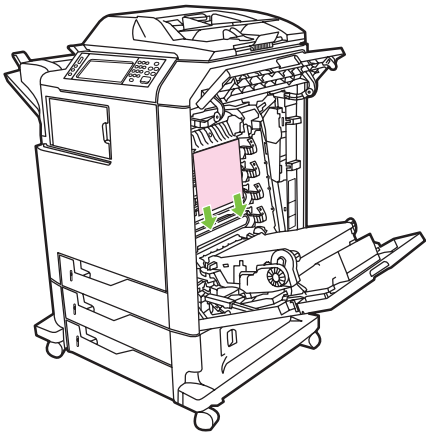


NOTE: If no media is present at these locations, continue to the next step.

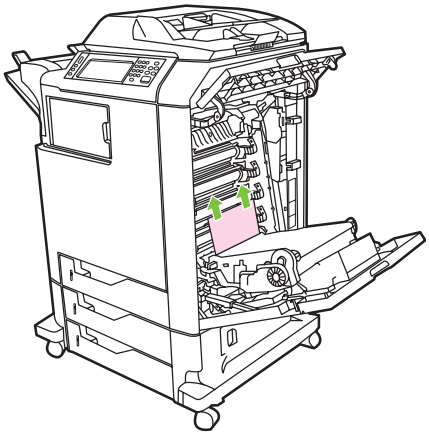
4. Grasp the green handle on the transfer unit and pull down to open it.



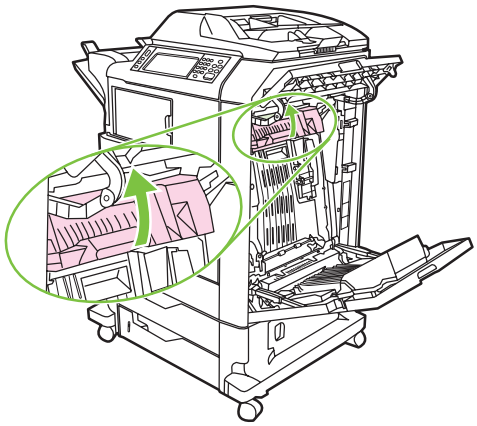
5. If media is present in the upper area, grasp the media by both corners and pull down.



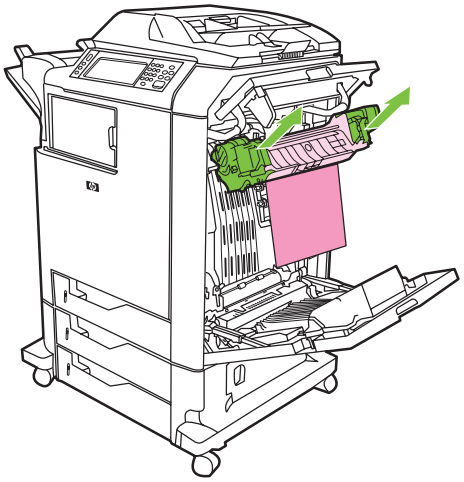
6. If media is present in the lower area, grasp the media by both corners and pull up.

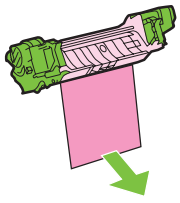


7. Lift the green handle on the fuser cover to open the cover.

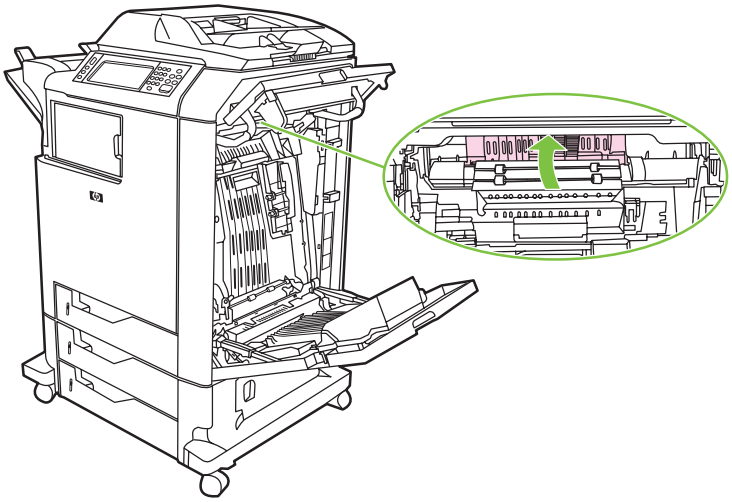


8. Pull the fuser upward to remove any paper.

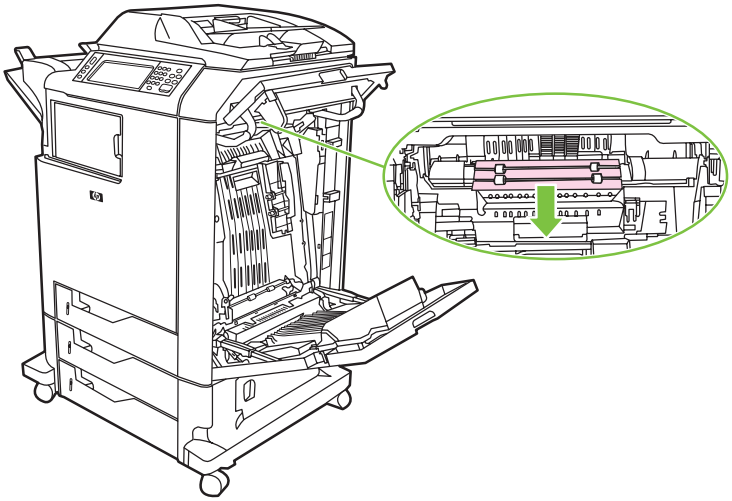




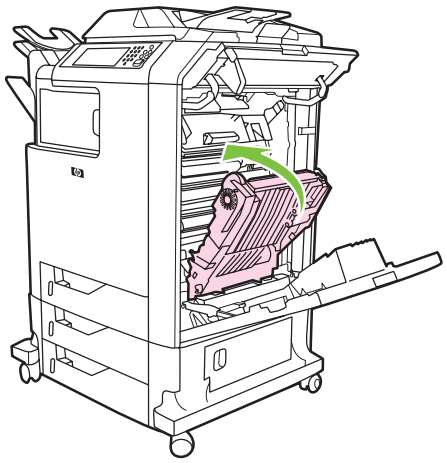
9. Lift the green handle on the duplexer cover to open it.



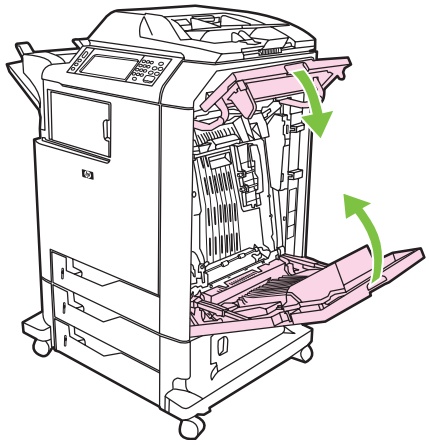
10. Remove any jammed paper.



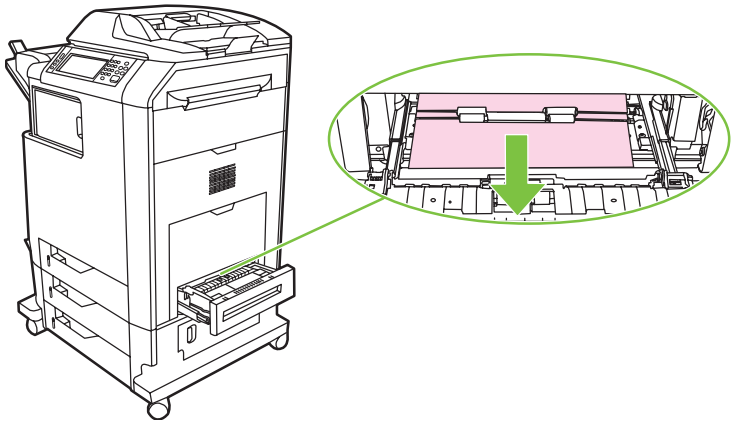
11. Close the transfer unit.



12. Close the covers on the right side of the MFP.

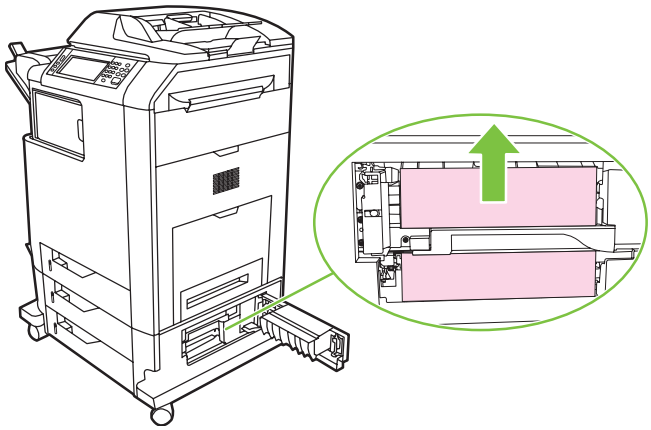


13. If the jam has not cleared, open the drawer below Tray 1 and remove any jammed paper.



14. Close the drawer.

15. If the jam still has not cleared, open the lower access door and remove any jammed paper.



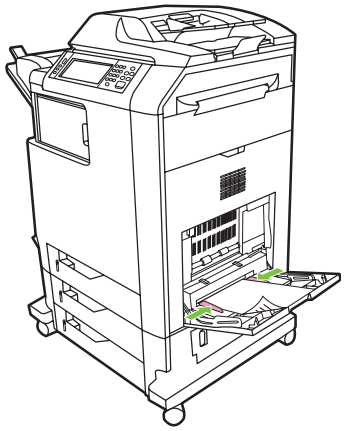
16. Close the lower access door. If the jam has cleared, the print job will continue.

17. If the jam is still not cleared and you are printing from Tray 1, see Jam in Tray 2, 3, or 4 on page 561.

Jam in Tray 1

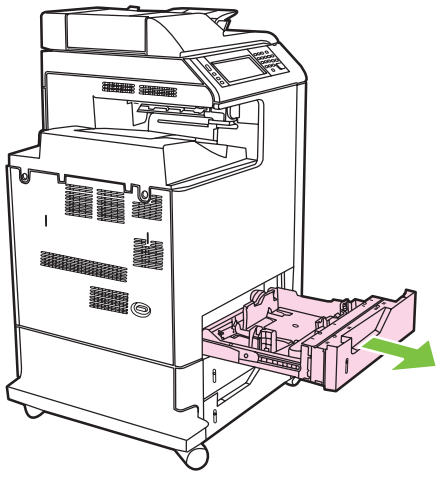
NOTE: If the protective insert does not eject properly when the MFP is first installed, follow this procedure to clear the jam.

1. Perform the steps in Clearing jams in the right covers on page 556.
2. Remove loaded media.
3. Remove any jammed paper from the tray.
4. Reload the media.
5. Verify that the media is located correctly and is not above the fill tabs.
6. Confirm that the guides are in the correct position.



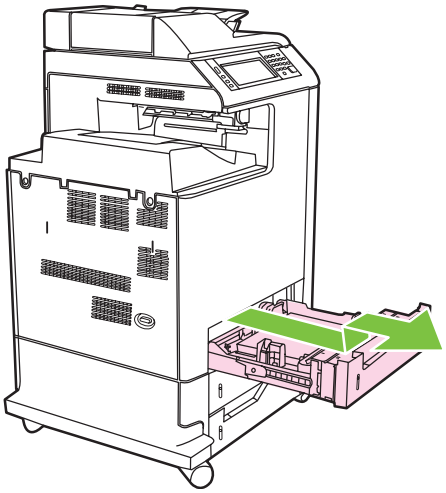
Jam in Tray 2, 3, or 4

1. Perform the steps in Clearing jams in the right covers on page 556.
2. Slide the indicated tray out and remove any jammed paper.

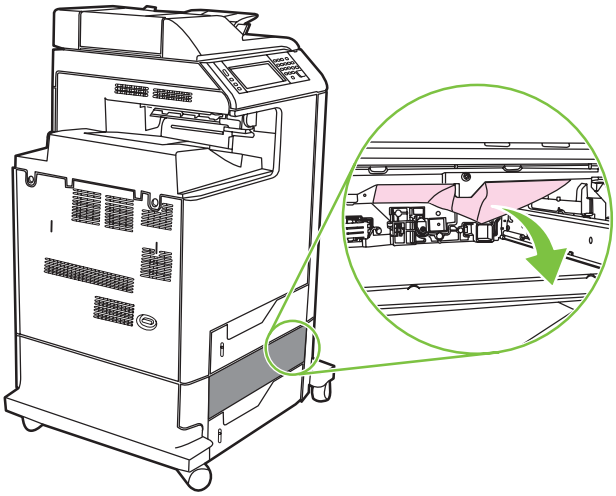


3. Close the tray. If the jam is cleared, the print job will continue.

4. If the paper jam still does not clear, lift the tray and remove it from the MFP. The following diagram shows an example of removing Tray 2.



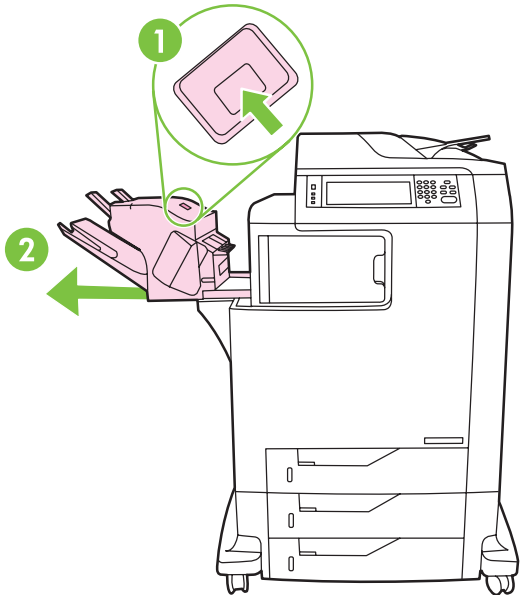
5. Remove any paper jam behind the tray. The following diagram shows a possible paper jam behind Tray 2. Remove jams in Trays 3 and 4 following the same procedure.



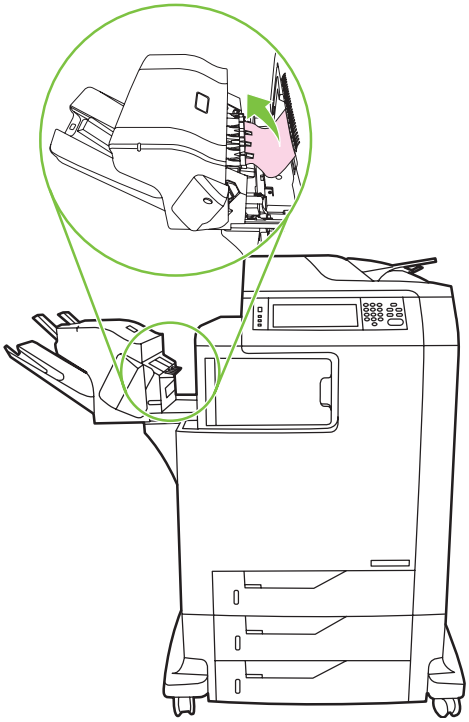
6. Insert the paper tray.

Jam in the stapler/stacker

1. Push the release lever on the top of the stapler/stacker.
2. Slide the stapler/stacker out.



3. Remove any media between the stapler/stacker and the MFP.



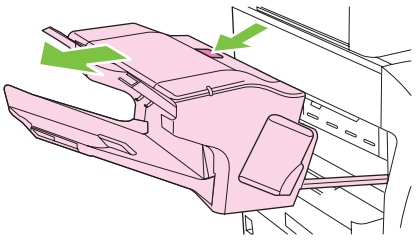
4. If the jam does not clear, see Other jams in the output accessory bridge on page 567.

To clear staple jams, see Staple jams on page 564.

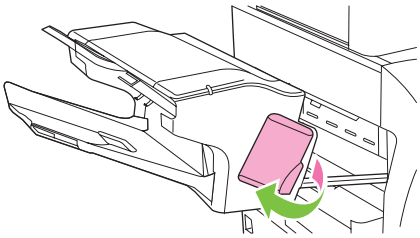
Staple jams

Occasionally, staples become jammed in the stapler/stacker. If jobs are not being stapled correctly or are not being stapled at all, use this procedure to clear staple jams.

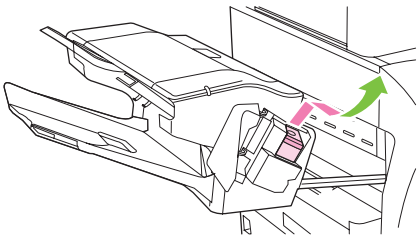
1. Turn off the MFP.
2. Press and hold the release button on the top of the stapler/stacker. Pull the stapler/stacker away from the MFP.



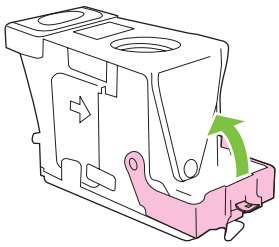
3. Open the staple cartridge cover.



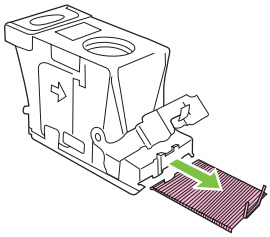
4. To remove the staple cartridge, pull up on the green handle and pull out the staple cartridge.



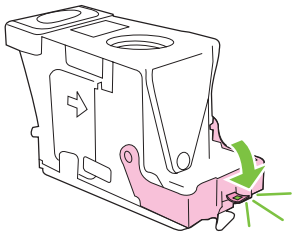
5. Lift up on the small lever at the back of the staple cartridge.



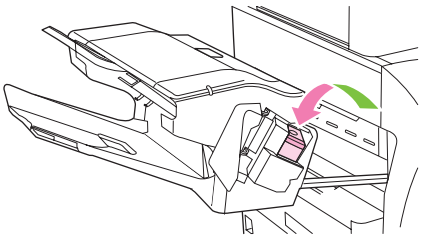
6. Remove the staples that protrude from the staple cartridge.



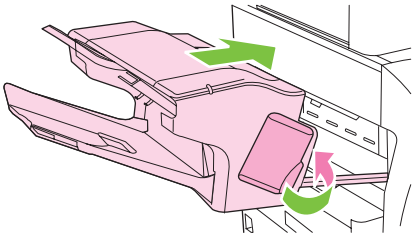
7. Close the lever at the back of the staple cartridge. Be sure that it snaps into place.



8. Reinsert the staple cartridge into the staple cartridge holder, and push down on the green handle until it snaps into place.

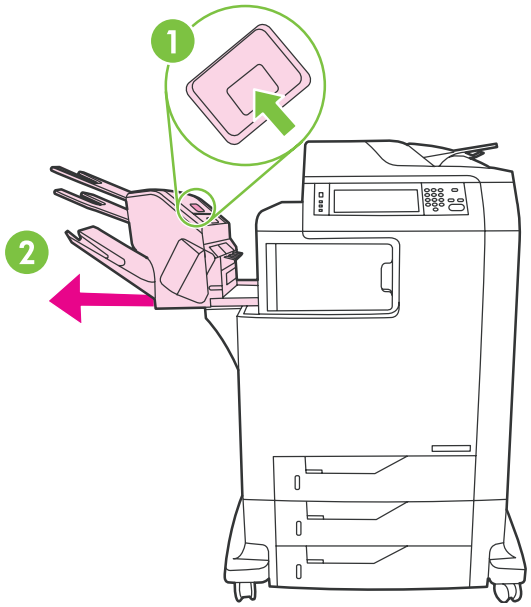


9. Close the staple cartridge cover, and slide the stapler/stacker into the MFP.

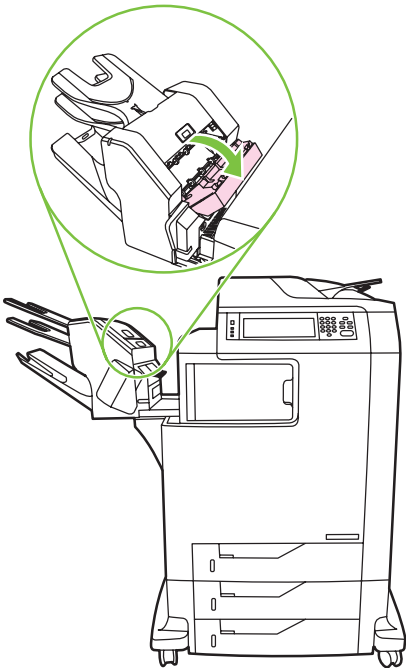


Jam in the 3-bin mailbox

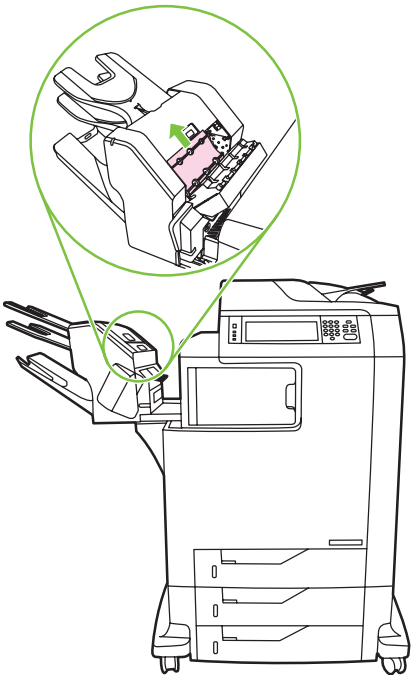
1. Push the release button on the top of the 3-bin mailbox.
2. Slide the 3-bin mailbox out from the MFP.



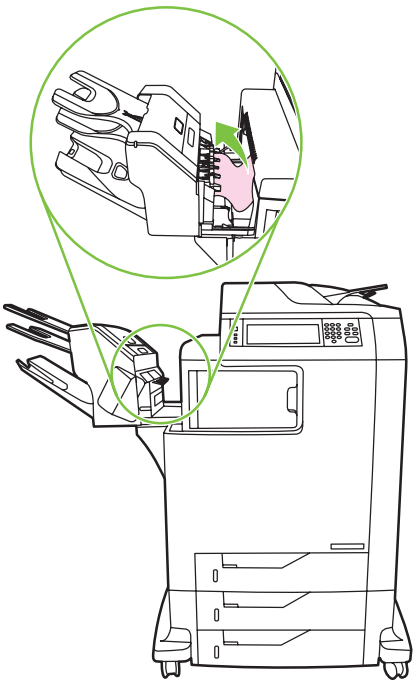
3. Open the cover on the top of the 3-bin mailbox.



4. Remove any media inside the cover.



5. Close the door and remove any media between the MFP and the 3-bin mailbox.

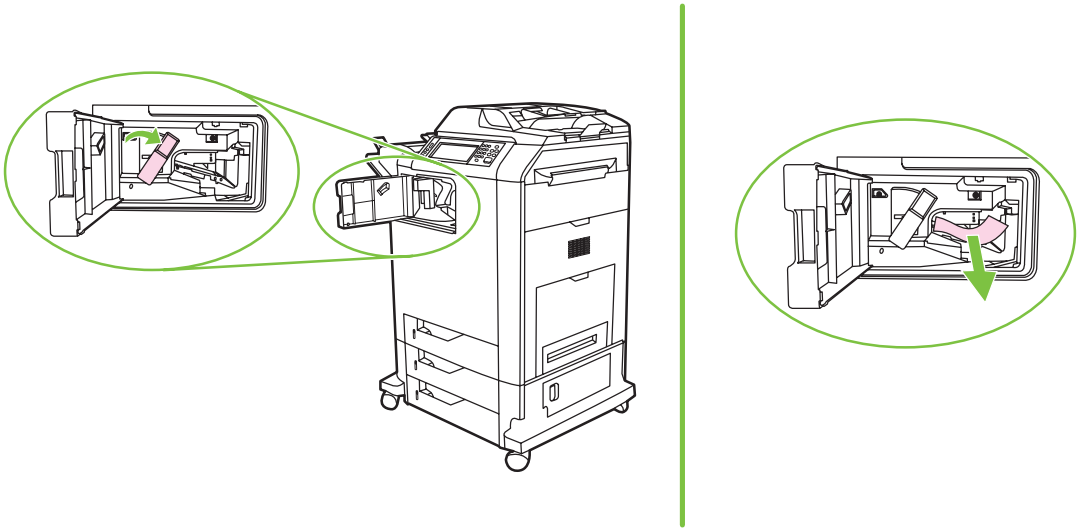


Other jams in the output accessory bridge

If a 3-bin mailbox or a stapler/stacker is installed on the MFP, complete the following procedure to clear a jam in the output accessory bridge.

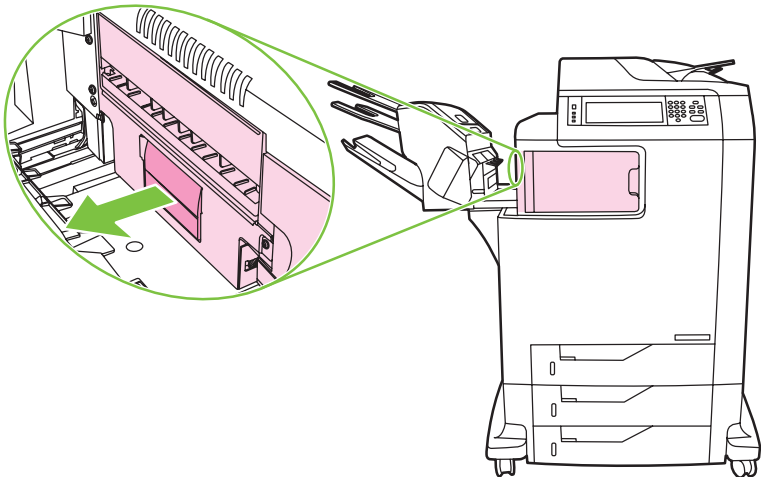
1. Open the cover to the output accessory bridge.

2. Push down on the green lever, remove any media inside the output accessory bridge, and push the green lever up.

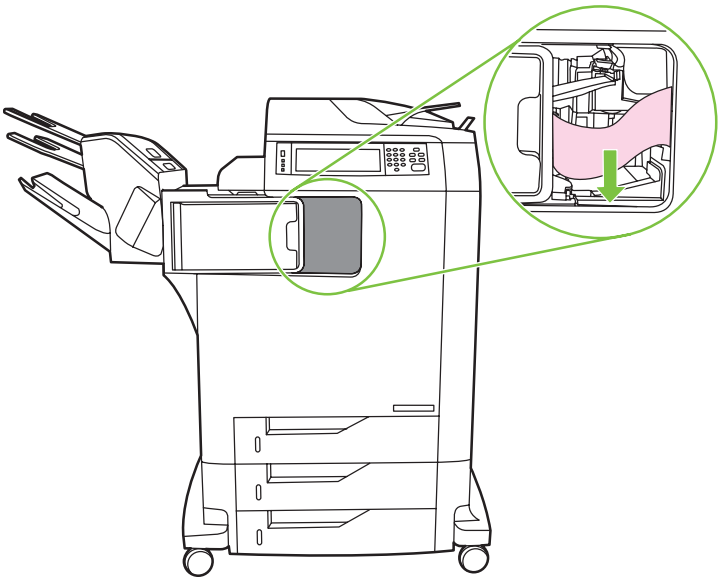


3. Close the cover to the output accessory bridge.

4. If the jam still does not clear, grasp the handle on the output accessory bridge and slide the output accessory bridge away from the MFP.



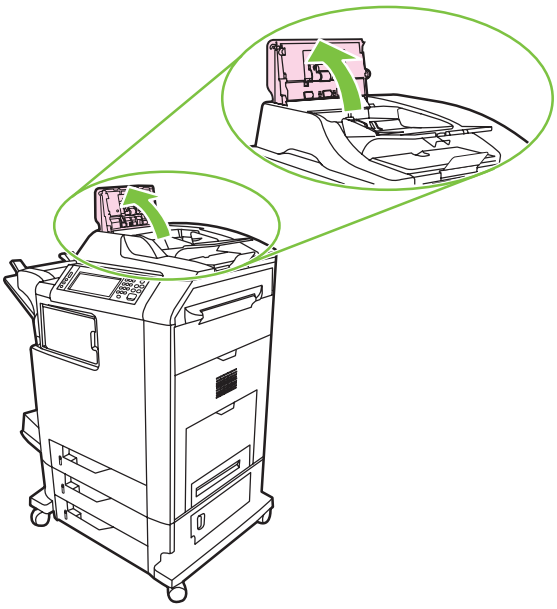
5. Look for paper on top of the output accessory bridge.



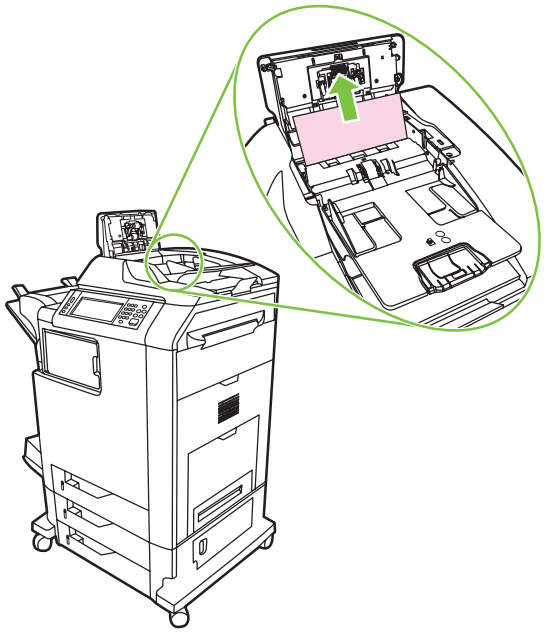
6. Slide the output accessory bridge back into the MFP.
7. Slide the 3-bin mailbox or stapler/stacker back into the MFP.

Jam in the ADF

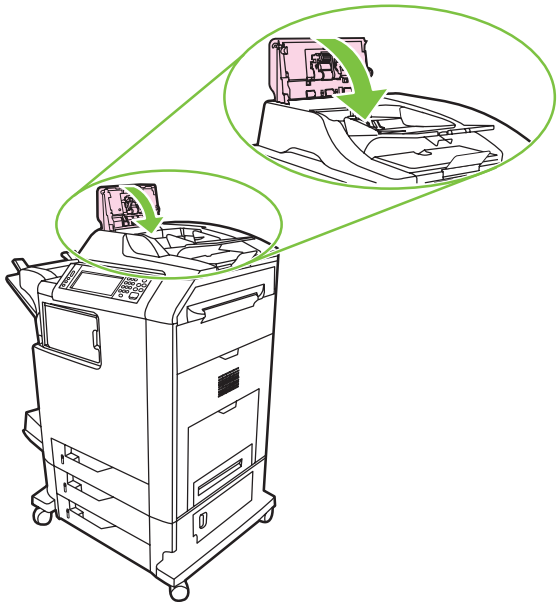
1. Open the ADF cover.



2. Remove any jammed media.



3. Close the ADF cover.



Solving repeated jams

Situation	Solution
General repeated jam problems	1. Make sure that the media is loaded correctly in the trays and that all width guides are set correctly. 2. Make sure that the tray is set for the size of media that is installed and that the tray is not overloaded. 3. Try turning over the stack of media in the tray. If you are using prepunched or letterhead paper, try printing from tray 1. 4. Do not use media that has been printed on previously or torn, worn, or irregular media. See Media specifications on page 13. 5. Check the media specifications. (See Media specifications on page 13.) If media is outside of the recommended specifications, problems can occur. 6. The MFP might be dirty. Clean the MFP. 7. Check that all damaged or jammed media is removed from MFP.
Repeated jams in the ADF	1. The ADF might be dirty. Clean the ADF. 2. Make sure that the media is loaded squarely and that the media-width guides are adjusted to the sides of the media stack. 3. Make sure that no more than 50 sheets of 75 g/m^2 (20 lb) bond paper are loaded in the ADF. 4. Make sure that the paper is within the range of supported weight for the ADF: 60–120 g/m^2 (16–32 lb). 5. If the original document that is being copied has been folded or stapled, flatten it as much as you can and smooth any wrinkles. Make sure the pages are not stuck together where the staple was. 6. Media that has been pre-punched or perforated in any way might be difficult to feed through the ADF. If the leading edge of the document is excessively worn or frayed, try rotating the document 180 degrees before copying. 7. Make sure that the media is being stored correctly. If the media is too dry, the sheets might stick together. See Media specifications on page 13.

Persistent jams

If jams occur repeatedly, use the information in this section to diagnose the root cause of the problem. The tables in this section list possible causes and recommended solutions for jams in each area of the paper path. Items are listed in the order that you should use to investigate. In general, items at the beginning of the list are relatively minor repairs. Items at the end of the list are more complex repairs.

Basic troubleshooting for jams

Use the following basic troubleshooting process for jams:

1. Gather data.
2. Identify the cause of the problem.
3. Fix the problem.

Data collection

To troubleshoot jams, gather the following information:

- The exact jam error code that appears on the control panel display
- The location of the leading edge of the media that is in the paper path
- Whether media is in the paper path when the jam occurs or in the input tray
- Whether the jam occurs at power-up or while media is moving
- Whether the media is damaged and, if it is, where the damage occurs on the paper and where in the paper path the sheet stops
- Whether the jam occurs when feeding from one particular tray
- Whether the jam occurs only when using duplex printing
- Whether a particular type of media is jamming or not jamming
- Whether any of the supplies are non-HP (non-HP supplies are known to cause jams)
- Whether the customer is storing the media correctly, overloading the trays, damaging the edge of the media during loading, or using media that has already been fed through the MFP

General paper path troubleshooting

Use the following suggestions to isolate the cause of the problem. After you have identified the cause, use the tables in this section to find a recommended solution.



NOTE: Use the paper path test in the **Troubleshooting** menu to print pages while troubleshooting.

- View or print the event log and determine if a particular jam error occurs more often than others. Try to identify a pattern.
- Use the event log to determine the frequency of a particular jam. If a jam occurs repeatedly at approximately the same page count, consider it a single jam that the customer tried to clear.

- Try printing from all available input trays to identify whether the problem is isolated to one tray.
- Print the job in both simplex and duplex modes to identify whether the problem occurs only in one mode or the other.
- Try printing on media from an unopened ream that has been stored correctly. If the jam does not occur with this media, then the customer's media might be causing the problem.
- If the jam occurs from when the MFP is turned on, check the paper path for small, torn pieces of media. Also check for broken sensors or flags, and check for loose or defective connections.
- If the media is torn, folded, or wrinkled (typically along the leading edge), inspect the paper path for items that could be causing the damage.
- If the user is using non-HP supplies, try replacing those supplies with genuine HP supplies to see if the problem goes away.
- If necessary, instruct the user about proper media storage, correct loading technique, and MFP operation. Make sure the user knows not to grab paper in the output bin during duplex printing.

Paper path checklist

- Verify that media is correctly loaded in the input trays and that all length and width guides are set correctly.
- Clean the MFP. Toner and paper dust in the paper path can inhibit the free movement of media through the MFP and can block the sensors.
- Use the Paper Path Test and Finishing Paper Path Test in the **Troubleshooting** menu to vary the input selections of the MFP to determine if the problem is associated with a particular area of the MFP.
- Worn rollers or separation pads can cause multifeeds. Check the condition of the pickup rollers and separation pads. Bent separation tabs (on the front corners of the input trays) can cause misfeeds and multifeeds. Replace the tray if necessary.
- Defective paper-tray switches can cause jams by communicating the wrong paper size to the formatter.
- Defective paper sensors along the paper path might falsely signal a jam.
- Scraps of media that remain in the paper path can cause intermittent jams. Always check that the paper path is clear when cleaning the MFP and when clearing jams. Also, remove the fuser and carefully check it for debris from jams.

Jams in Tray 1

The following table describes the cause of and solution for jams in Tray 1.

Table 6-3 Causes for jams in Tray 1

Cause	Solution
The pickup roller is dirty, worn, or damaged.	Clean the pickup roller. If it is still dirty after cleaning, or if it is worn or damaged, replace the pickup roller.
The separation pad is defective.	Clean the separation pad. If it is still dirty after cleaning, or if it is worn or damaged, replace the separation pad.

Table 6-3 Causes for jams in Tray 1 (continued)

Cause	Solution
The drive gears are damaged.	Check the drive gears in the paper pickup unit. Replace the pickup drive assembly if the gears are damaged.
The MP tray paper sensor (SR4) or the sensor lever is defective.	Replace the MP tray pickup unit.
The MP tray pickup solenoid (SL1) is defective.	1. Run the component test to verify that the solenoid is functioning correctly. If the solenoid does not activate during the test, replace it. 2. Disconnect the connector J1015 for the MP tray pickup solenoid from the DC controller PCB. 3. Measure the resistance between the cable-side connectors J1015–1 and J1015–2. 4. If the measured resistance is *not* about 160 ohms, replace the MP tray pickup solenoid.
The pickup motor is defective.	Replace the pickup motor assembly.
The MP tray pickup assembly is defective.	Replace the MP tray pickup assembly.
The DC controller PCB is defective.	1. Upgrade the DC controller firmware by using the RFU process. 2. If necessary, replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrate the MFP on page 604.

Jams in tray 2

The following table describes the cause of and solutions for jams in tray 2, 3, or 4.

Table 6-4 Causes for jams in Tray 2

Cause	Solution
The separation roller is worn or damaged.	Clean the separation tab or replace if it is worn.
The pickup roller is worn or damaged.	Replace the pickup roller.
The feed roller is dirty, worn, or damaged.	Clean the feed roller. If it is still dirty after cleaning, or if it is worn or damaged, replace the feed roller.
The gears in the paper pickup drive assembly might be damaged.	Check the drive gears in the paper pickup drive assembly. Replace the pickup drive assembly if the gears are damaged.
The tray 2 pickup solenoid (SL2) is damaged.	1. Run the component test to verify that the solenoid is functioning correctly. If the solenoid does not activate during the test, replace it. 2. Disconnect the connector for the pickup solenoid (J1015) from the DC controller PCB. 3. Measure the resistance between the cable-side connectors J1015–3 and J1015–4. 4. If the measured resistance is *not* about 160 ohms, replace the cassette pickup solenoid.
The pickup motor is defective.	Replace the paper pickup drive assembly.

Table 6-4 Causes for jams in Tray 2 (continued)

Cause	Solution
The paper pickup assembly is defective.	Replace the paper pickup assembly.
The lifter drive assembly might be defective.	Replace the lifter drive assembly.
The DC controller PCB is defective.	1. Upgrade the DC controller firmware by using the RFU process. 2. If necessary, replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrate the MFP on page 604.

Jams in Tray 3

The following table describes the cause of and solutions for jams in Tray 3.

Table 6-5 Causes for jams in Tray 3

Cause	Solution
The separation roller is worn or damaged.	Clean the separation tab or replace if it is worn.
The pickup roller is worn or damaged.	Replace the pickup roller.
The feed roller is dirty, worn, or damaged.	Clean the feed roller. If it is still dirty after cleaning, or if it is worn or damaged, replace the feed roller.
The gears in the upper pickup drive assembly might be damaged.	Check the drive gears in the upper pickup drive assembly. Replace the upper pickup drive assembly if the gears are damaged.
The tray 3 pickup solenoid is damaged.	1. Run the component test to verify that the solenoid is functioning correctly. If the solenoid does not activate during the test, replace it. 2. Disconnect the connector for the pickup solenoid (J1015) from the paper deck delivery PCB. 3. Measure the resistance between the cable-side connectors J8206–1 and J8206–2. 4. If the measured resistance is *not* about 160 ohms, replace the cassette pickup solenoid.
The tray 3 pickup motor assembly is defective.	Replace the tray 3 pickup motor assembly.
The tray 3 pickup motor assembly is defective.	Replace the tray 3 pickup motor assembly.
The upper paper pickup assembly is defective.	Replace the upper paper pickup assembly.
The DC controller PCB is defective.	1. Upgrade the DC controller firmware by using the RFU process. 2. If necessary, replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrate the MFP on page 604.

Jams in Tray 4

The following table describes the cause of and solutions for jams in Tray 4.

Table 6-6 Causes for jams in Tray 4

Cause	Solution
The separation roller is worn or damaged.	Clean the separation tab or replace if it is worn.
The pickup roller is worn or damaged.	Replace the pickup roller.
The feed roller is dirty, worn, or damaged.	Clean the feed roller. If it is still dirty after cleaning, or if it is worn or damaged, replace the feed roller.
The gears in the lower pickup drive assembly might be damaged.	Check the drive gears in the lower pickup drive assembly. Replace the lower pickup drive assembly if the gears are damaged.
The tray 4 pickup solenoid (SL8201) is damaged.	1. Run the component test to verify that the solenoid is functioning correctly. If the solenoid does not activate during the test, replace it. 2. Disconnect the connector for the pickup solenoid (J8210) from the paper deck delivery PCB. 3. Measure the resistance between the cable-side connectors J8210–1 and J8210–2. 4. If the measured resistance is *not* about 160 ohms, replace the cassette pickup solenoid.
The tray 4 pickup motor assembly is defective.	Replace the tray 4 pickup motor assembly.
The tray 4 pickup motor assembly is defective.	Replace the tray 4 pickup motor assembly.
The lower paper pickup assembly is defective.	Replace the lower paper pickup assembly.
The DC controller PCB is defective.	1. Upgrade the DC controller firmware by using the RFU process. 2. If necessary, replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrate the MFP on page 604.

Jams in the paper path

The following table describes the cause of and solution for jams in the paper path.

Table 6-7 Causes for jams in the paper path

Cause	Solution
The drive gears are damaged. (This applies to jams that occur in advance of the registration roller.)	Check the drive gears in the paper pickup unit. Replace the pickup drive assembly if the gears are damaged.
The registration roller and registration sub roller are dirty, worn, or damaged. (This applies to jams that occur in advance of the registration roller.)	Clean the registration roller or registration sub-roller if it is dirty. If it is still dirty after cleaning, or if it is worn or damaged, replace the paper feed assembly.
The media attaching roller (MAR) is damaged. (This applies to jams in which media is crumpled into an accordion when it enters the ETB.)	Make sure that the MAR is clean and undamaged. If it is damaged, replace the ETB. Calibrate the MFP after replacing the ETB. See Calibrate the MFP on page 604.

Table 6-7 Causes for jams in the paper path (continued)

Cause	Solution
The cartridge shutter open/close mechanism is damaged. (This applies to jams in which media is crumpled into an accordion fold somewhere on the ETB belt.)	The shutters in each print cartridge should open as you close the ETB. If a shutter does not open, replace that print cartridge. Also check for a damaged shutter mechanism in the MFP.
The cartridge drive motor assembly is damaged.	1. Run the component test to verify that all cartridge motors are functioning correctly. Replace any defective drum drive motors. 2. Inspect the main drive assembly. If it is damaged, replace it.
The top of page sensor (SR12) is defective.	Replace the paper feed assembly.
The DC controller PCB is defective.	1. Upgrade the DC controller firmware by using the RFU process. 2. Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrate the MFP on page 604.

Jams in the right upper cover

The following table describes the causes of and solutions for jams in the right upper cover.

Table 6-8 Causes for jams in the right upper cover

Cause	Solution
The fuser paper sensor (SR1) or sensor lever is defective.	1. Make sure that the fuser paper sensor lever moves smoothly and is in place. 2. Run the component test. 3. Replace the sensor if it is defective.
The fuser sleeve or pressure roller does not rotate smoothly.	If the fuser drive gears are worn or damaged, replace the fuser.
The fuser inlet guide is dirty or is covered with toner.	Clean the fuser inlet guide.
The fuser sleeve or pressure roller is dirty, worn, or damaged.	Clean the fuser sleeve or pressure roller. If it is damaged, replace the fuser.
The fuser pressure release motor is damaged.	Run the component test. If the motor fails, replace it.
The delivery tray paper-full sensor (SR2) or sensor lever is defective.	1. Make sure that the delivery paper-full sensor lever moves smoothly and is set in place. Replace the lever if it is damaged. 2. Run the component test. 3. Replace the sensor if it is defective.
The fuser delivery roller is worn.	Replace the fuser.
The fuser delivery roller drive gears are worn or damaged.	Replace the fuser.
The face-down delivery roller is defective.	Replace the fuser.

Table 6-8 Causes for jams in the right upper cover (continued)

Cause	Solution
The paper loop sensors (SR13 and SR14) might be defective.	1. Make sure that the sensor levers move smoothly. 2. Run the component test. 3. Replace the sensor if it is defective.
The DC controller PCB is defective.	1. Upgrade the DC controller firmware by using the RFU process. 2. Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrate the MFP on page 604.

Jams in the duplex path

The following table describes the causes of and solution for jams in the duplex path.

Table 6-9 Causes for jams in the duplex path

Cause	Solution
The oblique rollers are worn or damaged.	Replace the ETB.
The oblique roller drive gears are worn or damaged.	Replace the ETB. Calibrate the MFP after replacing the ETB. See Calibrate the MFP on page 604.
The duplex feed guide is damaged.	Replace the ETB. Calibrate the MFP after replacing the ETB. See Calibrate the MFP on page 604.
The reversing sensor (SR8001) or the sensor lever is defective.	1. Run the component test. 2. Replace the duplexer assembly if it is defective.
The duplexer connector is unplugged or not seated properly.	Reseat the connector.

Jams in the ADF

Table 6-10 Causes of jams in the ADF

Cause	Solution
The clear mylar sheet in the ADF might be installed incorrectly.	Make sure that all four alignment holes on the mylar sheet are secured over the tabs. The small notch on the sheet should be aligned with the round pin at the top of the mylar sheet holder. See the instructions that came with the mylar sheet replacement kit.
The ADF pickup roller assembly might be installed incorrectly.	Make sure the roller assembly is correctly seated and that the paper-present flag and the registration flag can move freely.

Table 6-10 Causes of jams in the ADF (continued)

Cause	Solution
The ADF separation pad might be installed incorrectly.	Make sure the ADF separation pad is seated correctly. If it is excessively dirty or worn, replace it.
Specific components inside the ADF might not be functioning correctly.	From the **Troubleshooting** menu, run the **Scanner Tests** to verify that each of these components is functioning correctly: • ADF input motor (forward and reverse) • ADF read motor (forward and reverse) • ADF duplex solenoid • ADF input-tray-empty sensor • ADF registration sensor If the MFP passes all of the diagnostic tests but ADF jams still persist, replace the ADF. See ADF assembly on page 437.

Jams in the IPTU

The following table describes the cause of and solutions for jams in the IPTU.

Table 6-11 Causes for jams in the IPTU

Cause	Solution
The IPTU might be improperly installed and seated.	Reinstall or reseat the IPTU if necessary.
The top of page sensor (SR8301) or sensor lever is defective.	1. Make sure that the sensor lever moves smoothly. 2. Run the component test. 3. Replace the IPTU sensor if it is defective.
The delivery sensor (SR8302) or sensor lever is defective.	1. Make sure that the sensor lever moves smoothly. 2. Run the component test. 3. Replace the IPTU sensor if it is defective.
One of the feed motors (M8301 and M8302) is defective.	1. Run the component test. 2. If the motor fails, replace it.

Jams in the stapler/stacker

The following table describes the cause of and solutions for jams in the stapler/stacker.

Table 6-12 Causes for jams in the stapler/stacker

Cause	Solution
The stapler/stacker might be improperly installed and seated.	Reinstall or reseat the stapler/stacker if necessary.

Table 6-12 Causes for jams in the stapler/stacker (continued)

Cause	Solution
The top of page sensor (SR12) or sensor lever is defective.	1. Make sure that the sensor lever moves smoothly. 2. Run the component test. 3. Replace the stapler/stacker sensor if it is defective.
The delivery sensor (SR8302) or sensor lever is defective.	1. Make sure that the sensor lever moves smoothly. 2. Run the component test. 3. Replace the stapler/stacker delivery sensor if it is defective.

Jams in the 3-bin mailbox

The following table describes the cause of and solutions for jams in the 3-bin mailbox.

Table 6-13 Causes for jams in the 3-bin mailbox

Cause	Solution
The 3-bin mailbox might be improperly installed and seated.	Reinstall or reseat the 3-bin mailbox if necessary.
The top of page sensor (SRxxxx) or sensor lever is defective.	1. Make sure that the sensor lever moves smoothly. 2. Run the component test. 3. Replace the 3-bin mailbox sensor if it is defective.
The delivery sensor (SRxxxx) or sensor lever is defective.	1. Make sure that the sensor lever moves smoothly. 2. Run the component test. 3. Replace the 3-bin mailbox delivery sensor if it is defective.

Using the paper path test

The paper-path test can be used to verify that various paper paths are working correctly or to troubleshoot problems with tray configuration.

1. Scroll to and touch Administration.
2. Scroll to and touch Troubleshooting.
3. Scroll to and touch Paper Path Test.
4. Touch Test Page.

Using the scanner tests

The scanner test can be used to verify that various scanner components are working correctly.

1. Scroll to and touch Administration.
2. Scroll to and touch Troubleshooting.
3. Scroll to and touch Scanner Tests.
4. Select the scanner component that you want to test, and follow the instructions on the control panel display.

Correct print quality and copy quality problems

This section helps you define print quality problems and what to do to correct them. Often print quality problems can be handled easily by making sure that the MFP is properly maintained, using print media that meets HP specifications, or running a cleaning page.

Print quality problems associated with media

Some print quality problems arise from use of inappropriate media.

- Use paper that meets HP paper specifications.
- The surface of the media is too smooth. Use media that meets HP paper specifications.
- The printer driver setting might be incorrect. Be sure that you have selected the correct driver setting for the paper that you are using.
- The print mode might be set incorrectly, or the paper might not meet recommended specifications.
- The transparencies you are using are not designed for proper toner adhesion. Use only transparencies designed for HP Color LaserJet printers.
- The moisture content of the paper is uneven, too high, or too low. Use paper from a different source or from an unopened ream of paper.
- Some areas of the paper reject toner. Use paper from a different source or from an unopened ream of paper.
- The letterhead you are using is printed on rough paper. Use a smoother, xerographic paper. If this solves your problem, consult with the printer of your letterhead to verify that the paper used meets the specifications for this MFP.

Color printing problems

Printout color error

Table 6-14 Printing black instead of color

cause and solution

Cause	Solution
Color mode is not selected in the software program or printer driver.	Select **Color** mode instead of **Grayscale** or **Monochrome** mode in the software program or printer driver.
The correct printer driver is not selected in your software program.	Select the correct printer driver.
No color appears on the configuration page.	Consult your service representative.

Incorrect shade

Table 6-15 Incorrect shade

cause and solution

Cause	Solution
The media does not meet the specifications for this MFP.	Use media that meets HP media specifications.
You are operating the MFP in excessively humid conditions.	Verify that the MFP's environment is within humidity specifications.

Missing color

Table 6-16 Missing color

cause and solution

Cause	Solution
Defective HP print cartridge.	Replace the cartridge.
A non-HP cartridge might be installed.	Ensure that you are using a genuine HP print cartridge.

Cartridge error

Table 6-17 Inconsistent colors after installing a print cartridge

cause and solution

Cause	Solution
Another print cartridge might be low.	Check the supplies gauge on the control panel or print a supplies status page.
Print cartridges might be improperly installed.	Verify that each print cartridge is installed properly.
A non-HP cartridge might be installed.	Ensure that you are using a genuine HP print cartridge.

Color match error

Table 6-18 Printed colors do not match screen colors

cause and solution

Cause	Solution
Extremely light screen colors are not being printed.	The software program might interpret extremely light colors as white. If so, avoid using extremely light colors.
Extremely dark screen colors are being printed in black.	The software program might interpret extremely dark colors as black. If so, avoid using extremely dark colors.
The colors on the computer screen differ from the MFP output.	On the printer driver's **Color Control** tab, select **Screen Match**.

cause and solution

Cause	Solution
	NOTE: Several factors can influence your ability to match printed colors to those on your screen. These factors include print media, overhead lighting, software programs, operating system palettes, monitors, and video cards and drivers.

Overhead transparency defects

Overhead transparencies might display any of the image quality problems that any other type of media could display, as well as defects specific to transparencies. In addition, because transparencies are pliable while in the print path, they are subject to being marked by the media-handling components.

NOTE: Allow transparencies to cool at least 30 seconds before handling them.

- On the printer driver's **Paper** tab, select **Transparency** as the media type. Also, make sure that the tray is correctly configured for transparencies.
- Check that the transparencies meet the specifications for this MFP.
- Handle transparencies by the edges. Skin oil on the surface of transparencies can cause spots and smudges.
- Small, random dark areas on the trailing edge of solid fill pages might be caused by transparencies sticking together in the output bin. Try printing the job in smaller batches.
- The selected colors are undesirable when printed. Select different colors in the software program or printer driver.
- If you are using a reflective overhead projector, use a standard overhead projector instead.

Print quality problems associated with the environment

The MFP is operating in excessively humid or dry conditions. Verify that the printing environment is within specifications. See Environmental specifications on page 826.

Print quality problems associated with jams

- Make sure that all media is cleared from the paper path.
- The MFP recently jammed. Print two to three pages to clean the MFP.
- The media does not pass through the fuser causing image defects to appear on subsequent documents. Print two to three pages to clean the MFP. However, if the problem persists see the next section.

Print quality troubleshooting pages

The print quality troubleshooting pages provide information on aspects of the MFP that affect print quality.

1. Scroll to and touch Administration.
2. Scroll to and touch Troubleshooting.
3. Touch PQ Troubleshooting.
4. Touch Print.

The message **Printing PQ Troubleshooting** appears on the display until the MFP finishes printing the print quality troubleshooting information. The MFP returns to the **Ready** state after printing the print quality troubleshooting information.

The print quality troubleshooting information includes one page for each color (black, magenta, cyan, and yellow), MFP statistics related to print quality, instructions on interpreting the information, and procedures to solve print quality problems.

If following the procedures recommended by the print quality troubleshooting pages do not improve print quality, go to http://www.hp.com/support/ljcm4730mfp.

Print quality troubleshooting tool

The print quality troubleshooting tool helps you identify and troubleshoot print quality issues for the HP Color LaserJet CM4730 MFP. The tool includes solutions for many print quality issues, using standard images to provide a common diagnostic environment. It is designed to provide intuitive, step-by-step directions for printing troubleshooting pages that are used to isolate print quality problems and provide possible solutions.

To find the print quality troubleshooting tool, go to the following quick URL: http://www.hp.com/go/printquality/ljcm4730mfp

Image defect examples

Horizontal lines or streaks



Defect description

Horizontal lines or streaks appear on the page.

Possible causes

The device needs to be cleaned. Operating environment or media in use does not meet HP specifications.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Print the Print Quality Troubleshooting Pages and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.

Misaligned color



Defect description

Color does not appear in the correct area on the page.

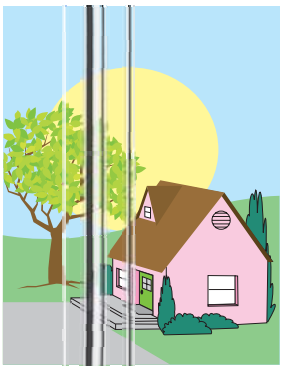
Possible causes

The device needs to be calibrated.

Troubleshooting and suggestions

Calibrate the MFP.

Vertical lines



Defect description

Vertical lines appear on the page.

Possible causes

The device needs to be cleaned. Operating environment or media in use does not meet HP specifications.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Print the Print Quality Troubleshooting Pages and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.

Repetitive defects



Defect description

Defect appear at regular intervals on the page.

Possible causes

The device needs to be cleaned. Operating environment or media in use does not meet HP specifications.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Print the Print Quality Troubleshooting Pages and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.

Color fade in all colors



Defect description

All colors are faded in one or more locations on the page.

Possible causes

The device needs to be calibrated. Operating environment or media in use does not meet HP specifications.

Troubleshooting and suggestions

1. Calibrate the MFP.
2. Make sure that the environmental specifications for the device are being met.

Color fade in one color



Defect description

One color is faded in one or more locations on the page.

Possible causes

The device needs to be calibrated. Operating environment or media in use does not meet HP specifications.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Calibrate the MFP.
3. Print the Print Quality Troubleshooting Pages and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.

Fingerprints and media dents



Defect description

Fingerprints or media dents appear on the page.

Possible causes

Operating environment or media in use does not meet HP specifications. Dents or wrinkles are from handling.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Make sure that the media you are using does not have any wrinkles or dents from handling, and that the media is not contaminated with visible fingerprints or other foreign substances.
3. Print the Print Quality Troubleshooting Pages and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.

Loose toner



Defect description

Toner can be rubbed off the page.

Possible causes

Operating environment or media in use does not meet HP specifications.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Make sure that type and quality of the media you are using meet HP specifications.
3. Make sure that the media type and size for the tray are set correctly in the control panel for the media that you are using.
4. Make sure that the media is loaded correctly and that the size guides are touching the edges of the stack of media.
5. Make sure that the media you are using does not have any wrinkles or dents from handling, and that the media is not contaminated with visible fingerprints or other foreign substances.

Smeared toner



Defect description

Toner smears on the page.

Possible causes

Media in use does not meet HP specifications.

Troubleshooting and suggestions

Make sure that type and quality of the media you are using meet HP specifications.

White areas on page



Defect description

White areas (dropouts) appear on the page.

Possible causes

Operating environment or media in use does not meet HP specifications.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Make sure that type and quality of the media you are using meet HP specifications.
3. Make sure that the media you are using does not have any wrinkles or dents from handling, and that the media is not contaminated with visible fingerprints or other foreign substances.
4. Make sure that the media type and size for the tray are set correctly in the control panel for the media that you are using.

Media damage



Defect description

The media has wrinkles, curls, creases, or tears.

Possible causes

Operating environment or media in use does not meet HP specifications. Trays are not configured properly, or settings are not correct for media in use. There are undetected jams.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Make sure that type and quality of the media you are using meet HP specifications.
3. Make sure that the media is loaded correctly.
4. Make sure that the media type and size for the tray are set correctly in the control panel for the media that you are using.
5. Make sure that the media you are using does not have any wrinkles or dents from handling, and that the media is not contaminated with visible fingerprints or other foreign substances.
6. Make sure that the fuser and transfer belt are seated correctly.
7. Inspect the jam areas and remove any undetected jammed or torn media.

Specs or stray toner



Defect description

Toner specs or stray toner appear on the page.

Possible causes

Operating environment or media in use does not meet HP specifications. Trays are not configured properly, or settings are not correct for media in use. There are undetected jams.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Make sure that type and quality of the media you are using meet HP specifications.
3. Make sure that the media type and size for the tray are set correctly in the control panel for the media that you are using.
4. Calibrate the MFP.
5. Print the Print Quality Troubleshooting Pages and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.

Skewed, stretched, or off-center page



Defect description

The image is skewed, stretched, or off-center on the page.

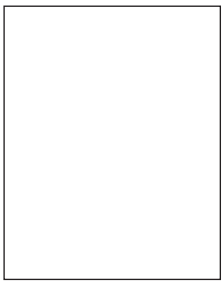
Possible causes

Operating environment or media in use does not meet HP specifications. Media is not loaded correctly.

Troubleshooting and suggestions

1. Make sure that the environmental specifications for the device are being met.
2. Make sure that type and quality of the media you are using meet HP specifications.
3. Make sure that the media is loaded correctly.
4. For problems with page skew, turn over the stack of media and rotate the stack 180 degrees.
5. Make sure that the fuser and transfer belt are seated correctly.
6. Inspect the jam areas and remove any undetected jammed or torn media.
7. If printing from the multipurpose tray, make sure that the side guides are set correctly.

Blank page



Defect description

The printed page is blank.

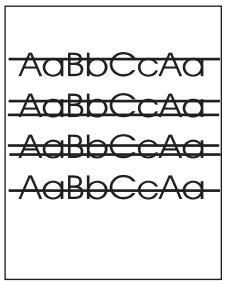
Possible causes

The page was not inserted into the ADF properly. The ADF separation pad is not functioning properly.

Troubleshooting and suggestions

1. Remove and then reinsert the original page into the ADF, making sure it is placed face-up.
2. If several pages are feeding at the same time, check the ADF separation pad and rollers for damage. If the rollers are dirty, clean them. If the ADF separation pad or rollers are worn, replace them.

Horizontal lines



Defect description

Horizontal lines appear on the page.

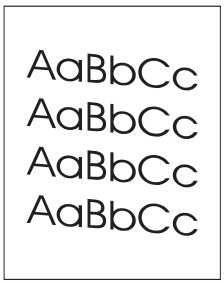
Possible causes

The ADF is dirty. Paper is stuck to the scanner glass or lid. The mylar strip is dirty.

Troubleshooting and suggestions

1. Clean the ADF.
2. Verify that no paper is on top of the scanner glass or stuck to the bottom of the scanner lid.
3. If the mylar strip is dirty or worn, replace it. Replacement mylar strips are stored in an envelope that is underneath the white, vinyl ADF backing. Follow the instructions that are in the envelope.

Page skew



Defect description

The printing is skewed on the page.

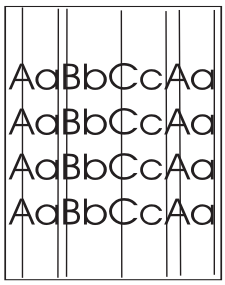
Possible causes

The ADF tray guides are not adjusted properly. The mylar strip is dislodged, folded, misinstalled, or worn. The ADF rollers are dirty.

Troubleshooting and suggestions

1. Make sure the ADF input tray guides are adjusted so that they are lightly touching the sides of the paper stack.
2. If the mylar strip is dislodged, folded, or misinstalled, verify it is correctly installed. If the mylar strip is worn, replace it. Replacement mylar strips are stored in an envelope that is underneath the white, vinyl ADF backing. Follow the instructions that are in the envelope.
3. Clean the ADF rollers.
4. If the problem persists, calibrate the scanner.

Vertical lines



Defect description

Vertical lines appear on the page.

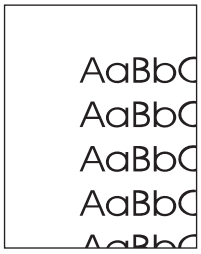
Possible causes

The ADF is dirty. Paper is stuck to the scanner glass or lid. The mylar strip is dirty.

Troubleshooting and suggestions

1. Clean the ADF.
2. Verify that no paper is on top of the scanner glass or stuck to the bottom of the scanner lid.
3. If the mylar strip is dirty or worn, replace it. Replacement mylar strips are stored in an envelope that is underneath the white, vinyl ADF backing. Follow the instructions that are in the envelope.

Image shifted



Defect description

The printed image is shifted horizontally, vertically, or both ways.

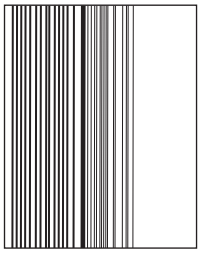
Possible causes

The scanner is not calibrated properly.

Troubleshooting and suggestions

Calibrate the scanner.

Unexpected image



Defect description

The copy does not look like the original document.

Possible causes

There is media on the flatbed glass from a previous copy job.

Troubleshooting and suggestions

Remove any media from the flatbed glass.

Calibrate the MFP

The MFP automatically calibrates and cleans at various times to maintain the highest level of print quality. The user might also request the MFP to calibrate via the MFP's control panel, using **Quick Calibration** or **Full Calibration** located in the **Print Quality** > **Calibration/Cleaning** menu. **Quick Calibration** is used for D-Half color tone calibration. If color density or tone seems wrong, Quick Calibration can be run. Full Calibration includes the Quick Calibrate routines and adds Drum Phase Calibration, Color Plane Registration (CPR), and copy parameter calibration routines. If color layers (black, magenta, cyan, and yellow) on the printed page seem to be shifted from one another, **Full Calibration** should be run.

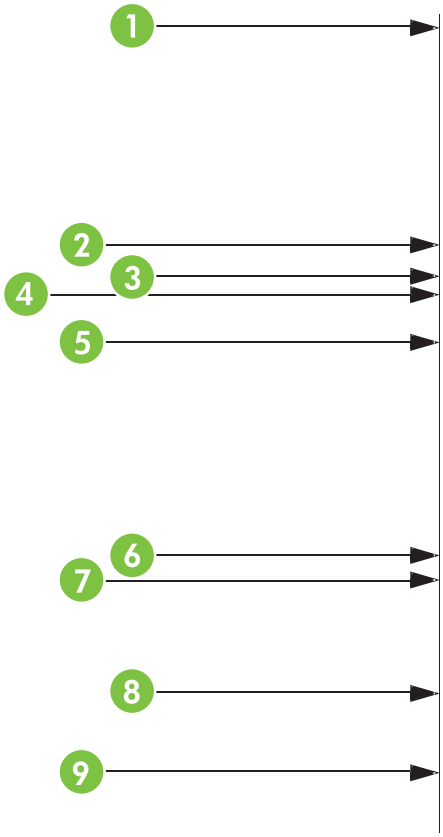
The HP Color LaserJet CM4730 MFP incorporates a new feature to skip calibration when appropriate, thereby making the MFP available more quickly. For example, if the MFP is powered off and on quickly (within 20 seconds), calibration is not needed and will be skipped. In this case, the MFP will reach the ready state approximately one minute sooner.

While the MFP is calibrating and cleaning, the MFP will pause printing for the amount of time it takes to complete the calibration or cleaning. For most calibrations and cleaning, the MFP will not interrupt a print job, but will wait for the job to complete before calibrating or cleaning.

1. Scroll to and touch Administration.
2. Scroll to and touch Troubleshooting.
3. Touch Quick Calibration, or touch Full Calibration.
4. Touch Calibrate.

Repetitive defect ruler

If defects repeat at regular intervals on the page, use this ruler to identify the cause of the defect. Place the top of the ruler at the first defect. The marking that is beside the next occurrence of the defect indicates which component needs to be replaced.



1	First occurrence of the defect (the distance from the top of the page to the defect) might vary.
2	Black print cartridge 34.3 mm (1.35 inches)
3	Print cartridge or transfer roller (if the defect occurs in only one color, the defective part is the print cartridge; if the defect occurs in all colors, the defective part is the ETB) 37.7 mm (1.48 inches)
4	Cyan, magenta, and yellow print cartridges 38.5 mm (1.52 inches)
5	Print cartridge 42.7 mm (1.68 inches)
6	ETB 75 mm (2.95 inches)
7	Fuser 76.0 mm (2.99 inches)
8	Fuser 81.0 mm (3.19 inches)
9	Print cartridge 94.2 mm (3.71 inches)

To identify if the print cartridge is the problem, insert a print cartridge from another HP Color LaserJet CM4730 MFP series, if one is available, before ordering a new print cartridge.

If the defect repeats at 94.0 mm (3.75 inch) intervals, try replacing the print cartridge before replacing the fuser.

Manage color

Understand color variations

The printed output might not match the computer screen, and the colors printed on successive pages might not match. While color variations are inherent in this printing method, they can indicate changes in the printing environment, print media, or MFP components.

The following list outlines the major causes of color variations between computers, programs, and output devices.

- Halftone patterns that are produced on monitors and the types of patterns that are used in the print jobs are different and might cause variations in the printed output.
- The printed output differs from the image on the monitor because the monitor and the print media have different reference values of black and white. The monitor screen has charcoal gray for the black level, and the white on the monitor screen is actually blue. Black on the print media is limited only by the fill capability of the printer, and most good-quality paper has a very high white level. In addition, phosphor (used in color monitors) and toner have entirely different spectra characteristics and different color-rendering capabilities. Differences between output are common. Blues generally match better than reds.
- The color of the ambient light changes the perception of color. Fluorescent light lacks many colors that are present in incandescent light, and the color range of natural light is broader than any artificial light. When comparing color, choose a standard light source for reference and understand that the perceived color will change as the light changes.
- Long-term color variations occur as paper ages. Use high-quality paper and protect the paper from sunlight to help minimize discoloration.
- Environmental changes can cause color variation. The development process places a high potential across an air gap to attract toner to the imaging drum. Changes in relative humidity vary the point at which the toner travels to the imaging drum.
- All consumable components have a finite life span. As these components reach the end of their useful life, their ability to produce consistent print quality diminishes.
- Paper roughness can cause colors to look different. Use standard paper.

Use color

HP ImageREt 3600

HP ImageREt 3600 print technology is a system that HP developed to deliver superior print quality and technological innovation. The HP ImageREt system incorporates technology that optimizes each element of the print system.

Several categories of HP ImageREt have been developed that meet a variety of user needs. The system is comprised of key laser technologies for color printing, including image enhancements, smart supplies, and high-resolution imaging. The ImageREt core technologies are refined in higher level systems for more advanced system users, and additional technologies are integrated.

The HP ImageREt 3600 is a complete HP proprietary printing solution. HP now offers superior image enhancements for general office and marketing documents. HP ImageREt 3600 performs well in

different environmental conditions and with a variety of media, and the image mode is optimized for printing on HP High Gloss Laser Paper.

Paper selection

For the best color and image quality, select the appropriate media type from the MFP menu or the MFP control panel.

sRGB

Standard red-green-blue (sRGB) is a world-wide color standard originally developed by HP and Microsoft as a common color language for monitors, input devices (scanners, digital cameras), and output devices (printers, plotters). It is the default color space used for HP products, Microsoft operating systems, the World Wide Web, and most office software that is sold today. sRGB is representative of the typical Windows computer monitor today and the convergence standard for high-definition television.



NOTE: Factors such as the type of monitor you use and the room's lighting can affect the appearance of colors on your screen. For more information, see Matching colors on page 610.

The latest versions of Adobe® Photoshop®, CorelDRAW, Microsoft Office, and many other programs use sRGB to communicate color. Most importantly, as the default color space in Microsoft operating systems, sRGB has gained broad adoption as a means to exchange color information between programs and devices using a common definition that assures typical users will experience greatly improved color matching. sRGB improves your ability to match colors among the printer, the computer monitor and other input devices (scanner, digital camera) automatically, without the need to become a color expert.

Color options

Color options enable optimal color output automatically for diverse types of documents.

Color options use object tagging, which allows optimal color and halftone settings to be used for different objects (text, graphics, and photos) on a page. The printer driver determines which objects are used on a page and uses halftone and color settings that provide the best print quality for each object. Object tagging, combined with optimized default settings, produces great color out of the box.

In the Windows environment, the **Automatic** and **Manual** color options are on the **Color** tab in the printer driver.

Setting color options to **Automatic** will typically produce the best possible print quality for color documents. However, situations might occur when you want to print a color document in grayscale (black and white) or want to change one of the color options.

- Using Windows, print in grayscale or change the color options by using settings on the **Color** tab in the printer driver.
- Using a Macintosh computer, print in grayscale or change the color options by using the **Color Matching** pop-up menu in the **Print** dialog box.

Restrict color use

The HP Color LaserJet CM4730 MFP Series includes a Restrict Color setting. A network administrator can use the setting to restrict user access to the color printing and copying features in order to conserve color toner. If you are unable to print in color, see your network administrator.

Restrict color printing

1. Scroll to and touch Administration.
2. Touch Management.
3. Touch Restrict Color Use.
4. Touch Color printing access.
5. Select one of the following options:
   - Disable Color. This setting denies color-printing capabilities to all users.
   - Enable Color (default). This setting allows color-printing capabilities for all users.
   - Color If Allowed. The setting allows the network administrator to allow color use for select users and/or applications. Use the embedded Web server to designate which users and/or applications can print in color.
6. Touch Save.

For more information about restricting and reporting color usage, go to http://www.hp.com/go/coloraccess.

Restrict color copying

1. Scroll to and touch Administration.
2. Touch Management.
3. Touch Restrict Color Use.
4. Touch Color copying access.
5. Select one of the following options:
   - Enable Color (default). This setting allows color-copying capabilities for all users.
   - Disable Color. This setting denies color-copying capabilities to all users.
6. Touch Save.

For more information about restricting and reporting color usage, go to http://www.hp.com/go/coloraccess.

Print in grayscale

Selecting the **Print in Grayscale** option from the printer driver prints a document by using black toner. This option is useful for previewing preliminary copies of slides and hardcopy output, or for printing color documents that will be photocopied or faxed.

Automatic or manual color adjustment

The **Automatic** color adjustment option optimizes the neutral gray color treatment, halftones, and edge enhancements used for each element in a document. For more information, see your printer driver online Help.



NOTE: Automatic is the default setting and is recommended for printing all color documents.

Use the **Manual** color adjustment option to adjust the neutral gray color treatment, halftones, and edge enhancements for text, graphics and photographs. To gain access the Manual color options, on the **Color** tab, select **Manual**, and then select **Settings**.

Manual color options

Use manual color adjustment to adjust the Color (or Color Map) and Halftone options individually for text, graphics, and photographs.



NOTE: Some programs convert text or graphics to raster images. In these cases, the **Photographs** settings also controls text and graphics.

Halftone options

Halftone options affect the resolution and clarity of your color output. You can select halftone settings for text, graphics, and photographs independently. The two halftone options are **Smooth** and **Detail**.

- The **Smooth** option provides better results for large, solid-filled print areas. It also enhances photographs by smoothing out fine color gradations. Choose this option when uniform and smooth area fills are top priority.
- The **Detail** option is useful for text and graphics that require sharp distinctions among lines or colors, or images that contain a pattern or a high level of detail. Choose this option when sharp edges and details are top priority.

Neutral grays

The **Neutral grays** setting determines the method used for creating gray colors used in text, graphics, and photographs.

Two values are available for the **Neutral grays** setting:

- **Black Only** generates neutral colors (grays and black) using only black toner. This guarantees neutral colors without a color cast.
- **4-Color** generates neutral colors (grays and black) by combining all four toner colors. This method produces smoother gradients and transitions to non-neutral colors, and it produces the darkest black.

Edge control

The **Edge Control** setting determines how edges are rendered. Edge control has two components: adaptive halftoning and trapping. Adaptive halftoning increases edge sharpness. Trapping reduces the effect of incorrect color plane registration by overlapping the edges of adjacent objects slightly.

Four levels of edge control are available:

- **Maximum** is the most aggressive trapping setting. Adaptive halftoning is on for this setting.
- **Normal** is the default trapping setting. Trapping is at a medium level and adaptive halftoning is on.

- **Light** sets trapping at a minimal level, and adaptive halftoning is on.
- **Off** turns off both trapping and adaptive halftoning.

RGB color

Two values are available for the **RGB Color** setting:

- **Default** instructs the printer to interpret RGB color as sRGB. sRGB is the accepted standard of Microsoft and the World Wide Web Organization (www).
- **Vivid** instructs the printer to increase the color saturation in the midtones. Less colorful objects are rendered more colorfully. This value is recommended for the printing business graphics.
- **Device** instructs the printer to print RGB data in raw device mode. To render photographs properly with this selection, you must manage image color in the program or operating system.

Adjusting color balance

This MFP features automatic color calibration to provide high-quality color output. In situations that require critical color control, you can manually adjust the density balance of the four toner colors. The available range for each color is from -5 to +5. The default value is 0.

CAUTION: This procedure should only be performed by your network administrator. Performing this procedure changes the color balance of the MFP by altering halftones, and affects all print jobs.

1. Scroll to and touch Administration.
2. Scroll to and touch Print Quality.
3. Scroll to and touch Adjust Color.
4. Touch Highlights Midtones, or Shadows.
5. Scroll to and touch the correct density setting.
6. After setting the density for each color, touch Exit.

Color selection process

The user selects the color in the program, but the operating system might convert or modify some characteristics of the color before sending the information to the printer driver. The printer driver might also modify color characteristics depending upon the selected output mode.

Any color characteristics that the printer driver or programs do not address are set to the printer default. The default color might not match the color the user selected.

Matching colors

PANTONE color matching

PANTONE has multiple color-matching systems. PANTONE Matching System is very popular and uses solid inks to generate a wide range of color hues and tints. See http://www.hp.com for details about how to use PANTONE Matching System with this printer.

Swatch book color matching

The process for matching printer output to preprinted swatch books and standard color references is complex. In general, you can obtain a reasonably good match to a swatch book if the inks that are used to create the swatch book are cyan, magenta, yellow, and black. These are usually referred to as process color swatch books.

Some swatch books are created from spot colors. Spot colors are specially created colorants. Many of these spot colors are outside of the gamut of the printer. Most spot color swatch books have companion process swatch books that provide CMYK approximations to the spot color.

Most process swatch books have a note about what process standards were used to print the swatch book. In most cases they will be SWOP, EURO, or DIC. To get optimal color matching to the process swatch book, select the corresponding ink emulation from the printer menu. If you cannot identify the process standard, use SWOP ink emulation.

Media transport problems

The following issues can cause media transport problems

Multiple pages feed.

Cause	Solution
The tray 1 separation pad is worn.	Replace the separation pad assembly.
Too much media (particularly envelopes) is loaded in tray 1.	Remove some of the media and resend the print job.
The separation and feed rollers in the tray are worn or damaged	Replace the rollers.
The media edges are locked together.	Flex the media stack before loading it into the MFP. Do *not* fan the media.

The media is wrinkled or folded.

Cause	Solution
The feed rollers or registration rollers are dirty or defective.	Replace the affected rollers.
The paper path contains foreign substances or dirt.	Remove any foreign substances or dirt from the paper path.
The cartridge shutter open/close mechanism is damaged. (This can cause jams in which the media is crumpled into an accordion fold under the print cartridge.)	The shutter in the print cartridge should open as you insert the cartridge. If a shutter does not open, replace the print cartridge. **NOTE:** To diagnose the cause of wrinkled or folded media, use the Print/Stop test in the **Troubleshooting** menu. Adjust the stop time to stop the media before it enters the fuser.

The media is skewed.

Cause	Solution
The paper dust or dirt has accumulated in the cassette feed roller or registration roller.	Clean the rollers.
The cassette feed roller and registration roller are worn irregularly.	Replace the paper pickup assembly.
The separation roller is worn or damaged (Tray 2 or 2 X 500-sheet feeder)	Clean or replace the separation roller. If necessary, replace the paper cassette.
The registration shutter is defective.	Clean or replace the separation roller. If necessary, replace the paper cassette.

The top margin is misaligned.

Cause	Solution
Make sure that the registration shutter moves smoothly, its spring is in place, and it is clean. If the registration shutter is damaged, replace the paper pickup assembly.	1. Press the test print switch, and make several test prints. See Engine test on page 617. 2. On each test print, measure the distance from the leading edge of the paper to the print pattern. Calculate the average distance. The optimal distance is 5 mm (0.2 inches). 3. On the DC controller PCB, adjust the variable resistor VR830 clockwise to increase the distance, or turn it counterclockwise to decrease the distance. 4. Repeat the procedure until the distance measures 5 mm (0.2 inches).

The pages feed incorrectly through the ADF.

Cause	Solution
The media guides are not adjusted correctly.	Make sure that the guides in the ADF input tray gently touch the sides of the original document.

Solve e-mail problems

If you are unable to send e-mails by using the digital send feature, you might need to reconfigure the SMTP gateway address or the LDAP gateway address. Print a configuration page to find the current SMTP and LDAP gateway addresses. Use the following procedures to check if the SMTP and LDAP gateway addresses are valid.

Validate the SMTP gateway address



NOTE: This procedure is for Windows operating systems.

1. Open an MS-DOS command prompt: click **Start**, click **Run**, and then type `cmd`.
2. Type `telnet` followed by the SMTP gateway address and then the number 25, which is the port over which the MFP is communicating. For example, type `telnet 123.123.123.123 25` where "123.123.123.123" represents the SMTP gateway address.
3. Press Enter. If the SMTP gateway address is *not* valid, the response contains the message **Could not open connection to the host on port 25: Connect Failed.**
4. If the SMTP gateway address is not valid, contact the network administrator.

Validate the LDAP gateway address



NOTE: This procedure is for Windows operating systems.

1. Open Windows Explorer. In the address bar, type `LDAP://` immediately followed by the LDAP gateway address. For example, type `LDAP://12.12.12.12` where "12.12.12.12" represents the LDAP gateway address.
2. Press Enter. If the LDAP gateway address is valid, the **Find People** dialog box opens.
3. If the LDAP gateway address is not valid, contact the network administrator.

Solve fax problems

For help solving fax problems, go to http://www.hp.com/go/mfpfaxaccessory300.

You can also refer to the *Analog Fax Accessory 300 Fax Guide* and the *Analog Fax Accessory 300 Send Fax Driver Guide*, which are included on the MFP software CD.

Network connectivity problems

Troubleshooting network printing problems

NOTE: HP recommends that you use the MFP CD-ROM to install and set up the MFP on a network.

1. Make sure that the network cable is securely seated into the MFP's RJ45 connector.
2. Make sure that the Jetdirect LED on the formatter is lit. See Understand lights on the formatter on page 551.
3. Make sure that the I/O card is ready. Print a configuration page. If an HP Jetdirect print server is installed, printing a configuration page also prints a second page that shows the network settings and status.

   NOTE: The HP Jetdirect embedded print server supports various network protocols (TCP/IP, IPX/SPX, Novell/Netware, AppleTalk, and DCL/LLC). Make sure that the correct protocol is enabled for your network.

4. On the HP Jetdirect configuration page, verify the following items for your protocol:
   a. Under HP Jetdirect Configuration, the status is "I/O Card Ready".
   b. The status is "Ready".
   c. An IP address is listed.
   d. The configuration method (Config by:) is listed correctly. See the network administrator if you are not sure which method is correct.
   e. The domain name is correct.
5. Perform a loopback test to verify that the firmware is functioning correctly and that the hardware that is on the formatter is functioning correctly. See Loopback test on page 616.
6. Perform a ping test to verify that the MFP is communicating with other devices on the network. See Ping test on page 616.
7. Try printing the job from another computer.
8. To verify that an MFP works with a computer, use a parallel cable to connect it directly to a computer. You will have to reinstall the printing software. Print a document from a program that has printed correctly in the past. If this works, a problem with the network might exist.

Loopback test

Use the loopback test to verify that the firmware is functioning correctly and that the hardware that is on the formatter is functioning correctly. This test causes the formatter to send data to itself.

1. Disconnect the network cable.
2. Scroll to and touch Administration.
3. Touch Initial Setup.
4. Touch Networking and I/O.
5. Touch Diagnostics.
6. Touch Embedded Tests.
7. Touch LAN HW Test.
8. Let the test run for several hours or overnight.
9. If the test fails, an error message appears on the control panel display. Replace the formatter. See Formatter board on page 297.

To stop the test at any time, turn the MFP off and then on. When finished with the test, make sure that you reconnect the network cable.

Ping test

Use the ping test to verify that the MFP is communicating over the network. Before performing the ping test, obtain the IP address for a target destination, such as a computer, that is on the same network as the MFP. Consult the network administrator for help with obtaining the IP address.

1. Scroll to and touch Administration.
2. Touch Initial Setup.
3. Touch Networking and I/O.
4. Touch Diagnostics.
5. Touch Ping Test.
6. Touch Execute.
7. Touch Yes. The ping test starts automatically. If you selected to print the results, a page prints that lists the ping statistics. If the page prints, the test was successful.

Functional checks

Use the following procedures to help diagnose and solve problems that occur in the print engine.

Engine test

To verify that the print engine (all components except the formatter, formatter DIMMs, EIO products, and the stacker or stapler/stacker) is functioning, print an engine test page. Use a small, non-metallic, pointed object to depress the engine-test switch, which is located on the back of the MFP.

NOTE: The standard output bin must be installed in order for the engine-test page to print. If either the stapler/stacker or the 3-bin mailbox is installed, a jam occurs.

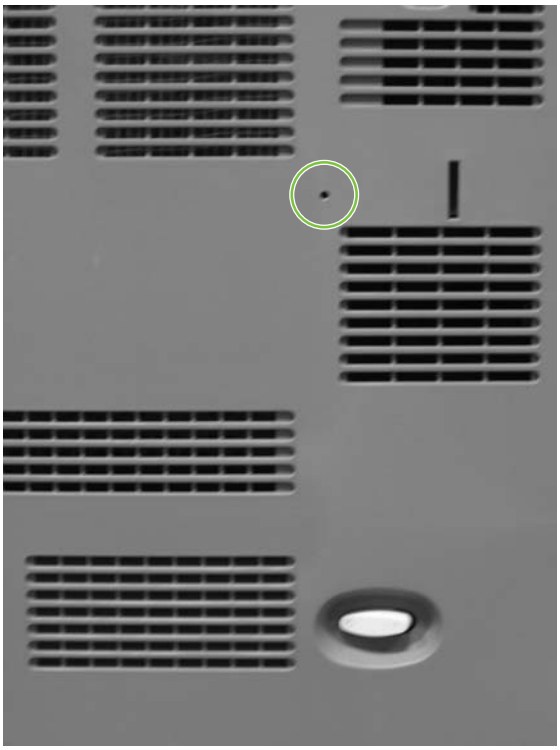


Figure 6-2 Engine test print switch

The test page should have a series of vertical lines. The test page prints from the last tray that you used. However, if the MFP has been turned off and then on since the most recent print job, the page prints from tray 2. The MFP continuously prints test pages as long as the test-page switch is depressed. The MFP cannot print a test page if it is in Sleep mode.

NOTE: A damaged formatter might interfere with the engine test. If the engine-test page does not print, try removing the formatter and performing the engine test again. If the engine test is then successful, the problem is almost certainly with the formatter, the control panel, or the cable that connects them.

Formatter test

To verify that the formatter is functioning correctly, print a configuration page. If the page prints, the formatter is functioning.

The heartbeat LED on the formatter also indicates whether the formatter is functioning. See Understand lights on the formatter on page 551.

MFP resets

Use the following information to perform system-wide reset procedures. Customers do not have access to this information.

Cold reset

A cold reset unlocks menus that have been previously locked and resets all control panel menu items to the factory defaults. A cold reset does not clear the values in the service menu, such as the serial number and the page counts.

NOTE: Before performing a cold reset, print a menu map and a configuration page. Use the information on these pages to reset customer-specific settings.

CAUTION: All HP Jetdirect settings are also reset. Be sure to print a configuration page before performing a cold reset. Make note of the IP address that is listed on the Jetdirect configuration page. You will need to restore the IP address after performing a cold reset.

To perform a cold reset

1. Turn the MFP off and then on.
2. When the memory count appears on the control panel display, press and hold 6 until all three LEDs flash once and then stay on. This might take up to 20 seconds.
3. Press 3 four times until **COLD RESET** appears on the control panel display.
4. Press 6 one time. The MFP continues its initialization sequence.

NVRAM initialization

NOTE: If an analog fax accessory is installed, performing an NVRAM initialization can cause the MFP to violate local telephone regulations. Reset the language and country/region after performing NVRAM initialization. For more information, see the *HP LaserJet Analog Fax Accessory 300 User Guide*.

Before performing an NVRAM initialization, print a menu map and a configuration page. Use the information on these pages to reset any customer-specific settings.

CAUTION: All HP Jetdirect settings are also reset. Be sure to print a configuration page before performing a cold reset. Make note of the IP address that is listed on the Jetdirect configuration page. You will need to restore the IP address after performing a cold reset.

Performing an NVRAM initialization resets the following settings and information:

- All menu settings are reset to factory default values, including the fax header and company name.
- All faxes in memory are erased.
- All speed-dials, group-dials, and phonebook entries are erased.
- All localization settings, including language and country/region, are reset.

After performing an NVRAM initialization, reconfigure any computers that print to this MFP so that the computers can recognize the MFP.

To perform an NVRAM initialization

1. Turn the MFP off and then on.
2. When the memory count appears on the control panel display, press and hold 9 until all three LEDs flash once and then stay on. This might take up to 20 seconds.
3. Press 3 one time, and then press Start.
4. Press 3 two times until **NVRAM INIT** appears on the control panel display.

Tools for troubleshooting

The MFP has built-in tools that can help diagnose problems.

Individual component diagnostics

From the diagnostics menu, you can run tests to check the status of various components in the MFP. During many of the diagnostic tests, the MFP enters a special diagnostics mode, which allows you to send print jobs and interact with the menus. The MFP stays in this mode until you press Stop and then touch Exit Diagnostics at the top of the **Troubleshooting** menu. In some cases, the MFP must re-initialize after performing a component-level diagnostic test.

LED diagnostics

Use the following procedure to help identify the cause of high-level printer problems. These problems are indicated by abnormalities in the printer's power-on sequence. The LED that the procedure refers to is on the formatter. This is a “heartbeat” LED that blinks on and off when the formatter is operating correctly. Use Figure 6-3 Formatter LED on page 623 to locate the formatter LED.

1. Does the LED blink with four fast bursts at power on? If no, then perform the following checks.
   - Check the firmware.
   - Check the memory.
   - Check the formatter.
2. Does the LED blink at a fast, steady rate during memory testing (one blink per 8 MB)? If no, then perform the following checks.
   - Check the control panel display for an error code.
   - Check the memory.
   - Check the formatter.
3. Is the LED off for about eight seconds, while the boot code is decompressing, before the display turns on? If no, then perform the following checks.
   - Check the firmware.
   - Check the control panel display for correct connections and operation.
   - Check the control panel display for an error code.
4. Does the LED blink at a steady rate of one blink per second? If no, then perform the following checks.
   - Check the firmware.
   - Check the formatter.
   - Check the control panel display for an error code.
5. If the control panel display does not illuminate, perform an engine test to check the engine. You must have paper loaded in Tray 2 for the engine test.

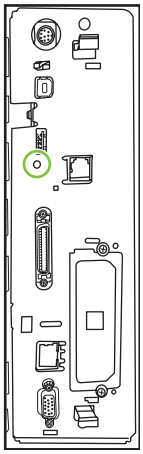


Figure 6-3 Formatter LED

Engine diagnostics

This section provides an overview of the engine diagnostics that are available in the HP Color LaserJet 4730mfp series MFP. The MFP contains extensive internal diagnostics that help in troubleshooting print quality, paper path, noise, component, and timing issues.

Diagnostics mode

Some of the diagnostic tests automatically put the MFP into a special diagnostics mode. During the special diagnostics mode the MFP can perform actions that would normally cause the MFP to enter an error state. Always follow the control panel directions in the **Troubleshooting** menu to exit the special diagnostics mode correctly and return the MFP to a normal state.

Diagnostics that put the engine into the special diagnostics mode

Four diagnostic tests put the engine into a special state:

- Disable cartridge check
- Sensor test
- Manual sensor test
- Component test

While the MFP is in the special diagnostics mode, the following message should appear:

Ready Diagnostics Mode

To Exit Press Stop

When the MFP is in the special diagnostics mode, these four tests appear in the menu and are available to be run. To gain access into other diagnostic tests or to leave the special state, press Stop, and then select **Exit Diagnostics**. The MFP will reset itself, and then return to the normal state.

NOTE: You need to have a good understanding of how the MFP operates in order to use the engine diagnostics successfully. Before proceeding with these diagnostic tests, make sure that you understand the information in chapter 5, *Theory of operation* of the English Service Manual.

Diagnostic tests

Different tests can be used to isolate different types of issues. For component or noise isolation, you can run the diagnostic test after removing the covers. Removing the covers provides a better view of the areas that are being tested. To operate the MFP with the covers removed, the door switch (SW4, callout 1) lever must be depressed (this is the door-closed position).

WARNING! Be careful when performing MFP diagnostics to avoid risk of injury. Only trained service personnel should open and run the diagnostics with the covers removed. Never touch any of the power supplies when the MFP is turned on.

NOTE: Any time a cartridge is installed or removed while the covers are removed, the door interlock must be cycled to simulate opening and closing the top cover in order for the engine to recognize the change. The ETB must be closed and its connector must be depressed before cycling the door switch, or the MFP will generate a 59.90 Printer Error. When the covers are installed, the door switch and ETB connector are automatically operated. When the covers are removed, you must perform these steps manually.

Paper path sensor test

The paper path sensor test checks for the presence of media at each of the sensors along the paper path. After you have selected this test from the **Troubleshooting** menu, you can print internal pages or send a print job from a computer. As the media passes each sensor, the sensor's state is updated. On the control panel display, each sensor is represented by a string of alphabetic letters followed by a corresponding status for each sensor. Use Table 6-20 Manual sensor test letter designations on page 626 to associate the letters that are shown on the control panel display with the sensor that they represent. A “0” next to the letter indicates that no media is present. A “1” indicates that media is present. Press Stop to stop the job, and then touch Exit Diagnostics to exit the special diagnostics mode.

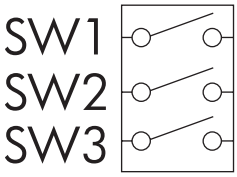


Figure 6-4 Tray 2 paper size switch arrangement

Table 6-19 Tray 2 paper size codes

Size code	Switch state			Paper size
	SW1	SW2	SW3	
0	On	On	On	Custom (see note below)
1	On	Off	On	Letter
2	Off	On	Off	A5
3	Off	On	On	Legal
4	On	On	Off	B5 (JIS)
5	Off	Off	On	Executive
6	On	Off	Off	A4
7	Off	Off	Off	tray not installed

NOTE: Depressing all three switches of the Tray 2 paper size levers causes the **Custom Paper** menu to appear on the control panel display. Touch Back to return to the sensor diagnostic screen.

Manual sensor test

The manual sensor test indicates the status of the sensors and switches in the MFP. On the control panel display, each sensor is represented by a string of letters followed by a corresponding status for each sensor. Except for the paper size switches, a “0” next to the letter indicates that no media is present or the switch is open. A “1” indicates that media is present or the switch is closed. For the paper size switches, the number ranges from 0 to 7 to indicate the state of the three switches. Use Table 6-20 Manual sensor test letter designations on page 626 to associate the letters that appear on the control panel display with the switch or sensor that they represent. Note that both uppercase and lowercase letters are used.

Table 6-20 Manual sensor test letter designations

Letter	Component	Letter	Component
A	Top sensor	O	Tray 2 size sensors 1, 2, 3
B	Fuser inlet sensor 1	P	Tray 3 paper sensor
C	Fuser inlet sensor 2	Q	Tray 3 paper surface sensor
D	Delivery sensor	R	Tray 3 paper size sensors 1, 2, 3
E	Duplexer switchback sensor	S	Tray 4 paper sensor
F	Output bin full sensor	T	Tray 4 paper surface sensor
G	Developing alienation sensor	U	Tray 4 paper size sensors 1, 2, 3
H	Fuser pressure release sensor	V	IPTU1 sensor
I	Media sensor (see Values for I (media sensor) on page 626)	W	IPTU2 sensor
J	Media type misprint sensor		
K	Door sensor		
L	Tray 1 paper sensor		
M	Tray 2 paper sensor		
N	Tray 2 paper surface sensor		

Manual Sensor Test operates sensors A, B, C, D, E, F, G, H, I, J, K, L, M, N, P, Q, R, S, T, U, V, and W.

Paper Path Sensor Test operates sensors A, B, C, D, E, F, G, H, I, J, V, and W.

Values for I (media sensor)

- 0 = unknown
- 1 = normal
- 3 = recommended overhead transparency
- 4 = glossy media
- 5 = gloss film
- 7 = heavy

- 8 = light
- A = extra heavy glossy

Scanner tests

Use the scanner tests to verify that specific components in the scanner assembly are operating correctly. For most of the components, you must observe or listen to the component in order to verify that it is functioning as stated on the control panel display. For the scanner sensors, you must activate the sensor and watch the condition indicator on the control panel display to see if it changes.

Component tests

Use the component tests to exercise individual parts one at a time, so that you can determine the cause of noise inside the MFP. For most of the components, you must observe or listen to the component in order to verify that it is functioning as stated on the control panel display.

Print event log

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Touch Print Event Log.

View event log from control panel

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Touch Show Event Log.

Print the print quality troubleshooting pages

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Touch PQ Troubleshooting.

Disable cartridge check

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Touch Disable Cartridge Check.

Paper path sensors

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Touch Paper Path Sensors.

Paper path test

1. Touch Administration.
2. Scroll to and touch Troubleshooting.

3. Touch Paper Path Test.
4. Select **Source**, **Duplex** (On or Off), and **Copies**.
5. Touch Test Page.

Finishing paper path test

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Touch Finishing Paper Path Test.
4. Select **Finishing Options**, **Media Size**, **Media Type**, **Copies**, and **Duplex**.
5. Touch Test Page.

Manual sensor test

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Scroll to and touch Manual Sensor Test.

Component test

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Scroll to and touch Component Test.
4. Select the appropriate test (transfer motors, belt only, cartridge motors, black laser scanner, cyan laser scanner, magenta laser scanner, yellow laser scanner, fuser motor, fuser pressure release motor, alienation motor, ETB contact/alienation, MP tray pickup solenoid, Tray 2 pickup motor, Tray 2 pickup solenoid, Tray 3 pickup motor, Tray 3 pickup solenoid, Tray 4 pickup motor, Tray 4 pickup solenoid, duplexer pickup motor, paper transport motor, repeat).

Print/stop test

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Scroll to and touch Print/Stop Test.
4. Select the appropriate number of milliseconds and then touch Ok.

Color band test

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Scroll to and touch Color Band Test.
4. Select the number of copies and touch Test Page.

Scanner tests

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Scroll to and touch Scanner Tests.
4. Select the appropriate test (lower lamp, sensors, ADF input motor, ADF input reverse, flatbed motor, ADF read motor, ADF read motor reverse, ADF duplex solenoid, and ADF LED indicator).

Component test

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Scroll to and touch Component Test.
4. Select the appropriate test (transfer motors, belt only, cartridge motors, black laser scanner, cyan laser scanner, magenta laser scanner, yellow laser scanner, fuser motor, fuser pressure release motor, alienation motor, ETB contact/alienation, MP tray pickup solenoid, Tray 2 pickup motor, Tray 2 pickup solenoid, Tray 3 pickup motor, Tray 3 pickup solenoid, Tray 4 pickup motor, Tray 4 pickup solenoid, duplexer pickup motor, paper transport motor, repeat).

Control panel test

1. Touch Administration.
2. Scroll to and touch Troubleshooting.
3. Scroll to and touch Control Panel.
4. Select the appropriate test (LEDs, display, buttons, and touchscreen).

Service ID

This information appears on the configuration page, which eliminates the need for customers to keep paper receipts for proof of the warranty.

Converting the service ID to an actual date

You can use the MFP Service ID number to determine whether the MFP is still under warranty. Use the following procedure to convert the Service ID into the installation date.

1. Add 1990 to YY to determine the actual year that the MFP was installed.
2. Divide DDD by 30, and add 1 to the whole-number part of the quotient. The total is the month.
3. The remainder from the calculation in step 2 is the day of the month.

Using the Service ID 12287 as an example, the date conversion is as follows:

1. 12 + 1990 = 2002, so the year is 2002.
2. 287 divided by 30 = 9 with a remainder of 17. Add 1 to 9 to get 10, so the month is October.
3. The remainder (from the above calculation) is 17, so that is the day of the month.
4. The complete date is 17-October-2002.

Troubleshooting the embedded HP Jetdirect print server

If network-connection errors occur, you can disable the HP Jetdirect print server in order to determine if the problem is with the print server or with the network. This procedure requires that you temporarily install an optional EIO HP Jetdirect print server card while disabling the embedded HP Jetdirect print server.

To disable the embedded HP Jetdirect print server

1. Turn the MFP off and then on.
2. When the memory count appears on the control panel display, press and hold 6 until all three LEDs flash once and then stay on. This might take up to 20 seconds.
3. Release 6, and then press and release 3 until **Embedded LAN Disable** appears on the control panel display.
4. Press 6 one time, and wait for the MFP to complete its initialization sequence.



NOTE: To enable the HP Jetdirect print server again, perform this same procedure. **Embedded LAN Enable** appears on the control panel display instead of **Embedded LAN Disable**.

Firmware-stack trace

In rare instances, you might need to work with a call-center escalation agent to find the source of a **49.XX.XX Printer Error**. Use the firmware-stack trace procedure to collect data that the agent might need. A firmware-stack trace indicates which firmware commands were executing at the time of the error. The firmware-stack trace procedure does not produce a report. Instead, you must write down the firmware instructions that appear on the control panel display and relay them to the agent.

To perform a firmware-stack trace

1. When the error message appears on the control panel display, press 6 and then press 5.
2. Press 9 to scroll through each line of the firmware-stack trace.

Diagrams for troubleshooting

Use the diagrams in this section to identify MFP components.

DC controller connections

Each of the connections on the DC controller PCB is indicated in the following figure.

NOTE: See also the photo of the DC controller in Figure 5-241 Remove the DC controller (1 of 2) on page 411.

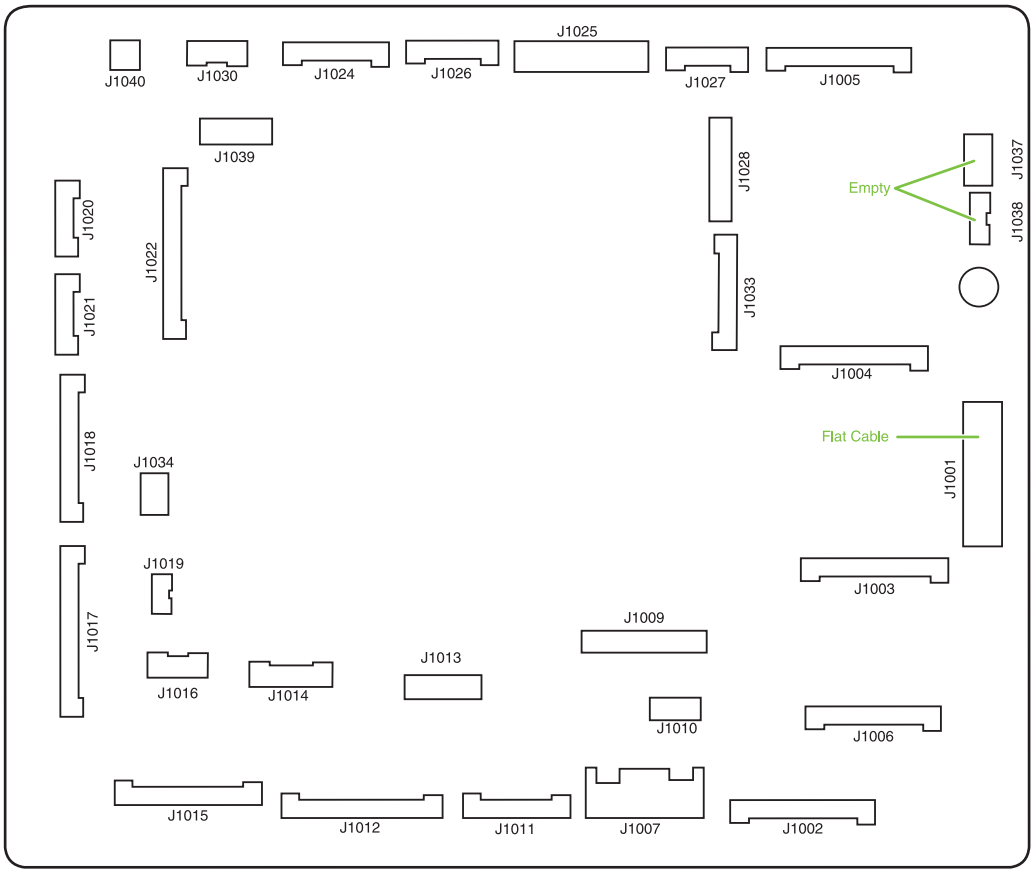


Figure 6-5 DC controller component connections

Connector	Pins	Component
J1002	17	Laser scanner Y
J1003	17	Laser scanner C
J1004	17	Scanner motor M
J1005	17	Scanner motor K
J1024	12	Fusing motor (M5) Fuser pressure release motor (M6)
J1026	10	Fuser paper sensor (SR1)

Connector	Pins	Component
		Delivery tray full sensor (SR2)
		Fuser pressure release sensor (SR3)
J1037	4	Not connected
J1038	5	Not connected
J1034	3	Power supply fan
J1006	16	High-voltage power supply
J1010	4	Environmental sensor
J1014	9	Toner level PCB
		MP tray paper sensor
J1022	20	Drum home position sensor
J1016	6	Cassette paper sensor (SR9)
		Paper stack surface sensor (SR10)
J1012	19	Color misregistration sensor
		Transmission LED
		Top of page sensor (SR12)
J1013	10	Media sensor
J1019	3	Developing disengaging sensor (SR11)
J1015	17	MP tray pickup motor solenoid (SL1)
		Cassette pickup solenoid (SL2)
		Lifter motor (M10)
		Cassette paper size detection switch
		Additional trays
J1018	18	M and K drum motors (M3 and M4)
J1017	20	Y and C motors (M1 and M2)
J1020	8	Pickup motor (M9)
		Developing disengaging motor (M8)
J1021	9	Memory controller PCB
J1025	12	Paper loop sensors (SR13 and SR14)
		Fuser unit
J1009	17	Low-voltage power supply PCB
J1001	45	Formatter
J1011	12	ETB unit
		ETB motor (M7)
		ETB separation solenoid (SL3)

Connector	Pins	Component
J1027	9	Control panel
J1033	13	Cartridge fan
		Delivery fan
		Right exhaust fan
J1039	6	Fan driver PCB
		Sub power supply assembly fan
		Control fans 1 and 2
		ETB fan
J1007	5	Door switch
J1028	14	IPTU
		Jet Link (stapler/stacker and 3-bin mailbox)
		Sub power supply PCB
		ADF/scanner

Scanner controller PCB connections

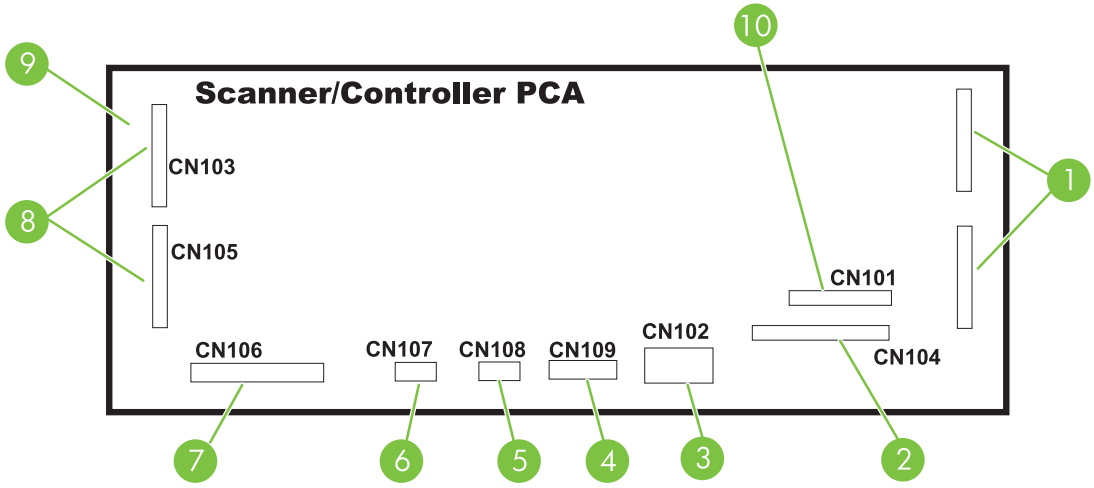


Figure 6-6 Scanner controller PCB component connections

Item	Component
1	Not used
2	Optical head assembly
3	Power supply
4	Cover-closed switch and home-position sensor
5	Scanner fan
6	Inverter PCB
7	Flatbed motor
8	To ADF
9	To ADF feed and read motors
10	Formatter PCB

Locations of major components

The diagrams in this section identify the locations of major components in the MFP.

Component	Figure
SR1 - fuser paper sensor	See Figure 6-7 Sensors and switches on page 639.
SR2 - delivery tray paper full sensor	See Figure 6-7 Sensors and switches on page 639.
SR3 - fuser pressure release sensor	See Figure 6-7 Sensors and switches on page 639.
SR4 - multipurpose tray paper sensor	See Figure 6-7 Sensors and switches on page 639.
SR9 - cassette paper sensor	See Figure 6-7 Sensors and switches on page 639.
SR10 - paper stack surface sensor	See Figure 6-7 Sensors and switches on page 639.
SR11 - developing disengaging sensor	See Figure 6-7 Sensors and switches on page 639.
SR12 - top of page sensor	See Figure 6-7 Sensors and switches on page 639.
SR13 - paper loop sensor 1	See Figure 6-7 Sensors and switches on page 639.
SR14 - paper loop sensor 2	See Figure 6-7 Sensors and switches on page 639.
Media sensor	See Figure 6-7 Sensors and switches on page 639.
SR8001 - paper reversing sensor	See Figure 6-7 Sensors and switches on page 639.
Environmental sensor	See Figure 6-7 Sensors and switches on page 639.
Drum home position sensor	See Figure 6-7 Sensors and switches on page 639.
CNT0 - cassette paper size detection switch	See Figure 6-7 Sensors and switches on page 639.
CNT1 - cassette paper size detection switch	See Figure 6-7 Sensors and switches on page 639.
CNT2 - cassette paper size detection switch	See Figure 6-7 Sensors and switches on page 639.
M1 - Yellow (Y) drum motor	See Figure 6-8 Motors on page 642.
M2 - Cyan (C) drum motor	See Figure 6-8 Motors on page 642.
M3 - Magenta (M) drum motor	See Figure 6-8 Motors on page 642.
M4 - Black (K) drum motor	See Figure 6-8 Motors on page 642.
M5 - Fuser motor	See Figure 6-8 Motors on page 642.
M6 - Fuser pressure release motor	See Figure 6-8 Motors on page 642.
M7 - ETB motor	See Figure 6-8 Motors on page 642.
M8 - Developing disengaging motor	See Figure 6-8 Motors on page 642.
M9 - Pickup motor	See Figure 6-8 Motors on page 642.
M10 -Lifter motor	See Figure 6-8 Motors on page 642.
M8001 - Reversing motor	See Figure 6-8 Motors on page 642.
SL1 - Multipurpose tray pickup solenoid	See Figure 6-9 Solenoids on page 643.
SL2 - Cassette pickup solenoid	See Figure 6-9 Solenoids on page 643.
SL3 - ETB separation solenoid	See Figure 6-9 Solenoids on page 643.

Component	Figure
SL8001 - Duplexing solenoid	See Figure 6-9 Solenoids on page 643.
FM 1 - Power supply fan	See Figure 6-10 Fans on page 644.
FM 2 - Cartridge fan	See Figure 6-10 Fans on page 644.
FM 4 - Delivery fan	See Figure 6-10 Fans on page 644.
FM 7 - Fuser fan/right exhaust fan	See Figure 6-10 Fans on page 644.
FM 3 - Sub power supply fan	See Figure 6-10 Fans on page 644.
FM 5 and FM 6 - Control fans 1 and 2	See Figure 6-10 Fans on page 644.
FM 8 - ETB fan	See Figure 6-10 Fans on page 644.
ADF bin-full flag	See Figure 6-12 ADF output bin-full sensor on page 646.
ADF pickup assembly	See Figure 6-13 ADF pickup sensors on page 647.
ADF paper-present sensor	See Figure 6-13 ADF pickup sensors on page 647.
ADF top-of-page sensor	See Figure 6-13 ADF pickup sensors on page 647.
ADF fan	See Figure 6-14 ADF motors, fans, and solenoids on page 647.
Scanner controller PCB	See Figure 6-14 ADF motors, fans, and solenoids on page 647.
ADF LED PCB	See Figure 6-14 ADF motors, fans, and solenoids on page 647.
ADF solenoid	See Figure 6-14 ADF motors, fans, and solenoids on page 647.
ADF motors	See Figure 6-14 ADF motors, fans, and solenoids on page 647.

Sensors and switches

The diagrams in this section show the locations of the sensors and switches in the MFP print engine.

Sensors and switches

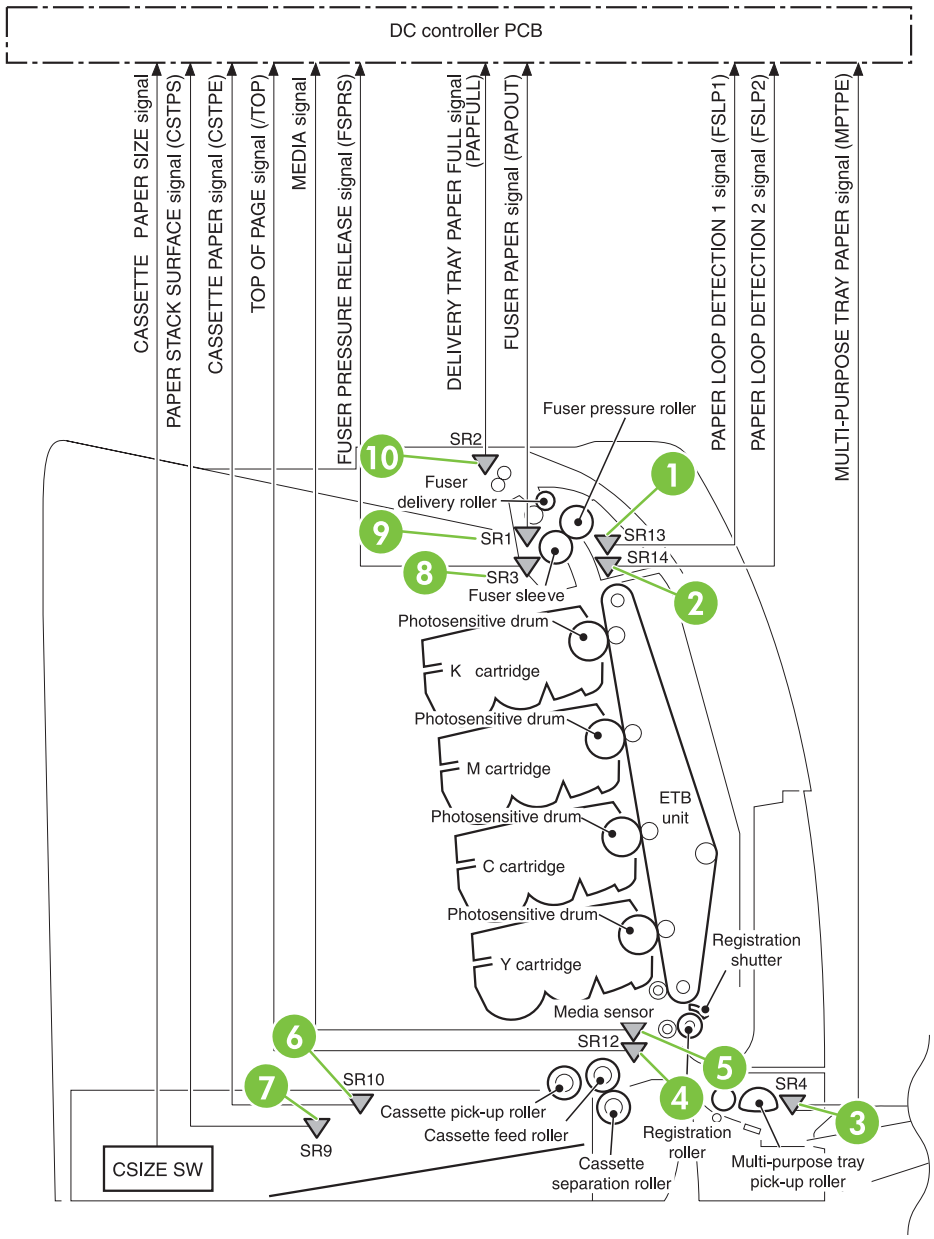


Figure 6-7 Sensors and switches

1	SR13 - Paper loop sensor
2	SR14 - Paper loop sensor
3	SR4 - multipurpose tray paper sensor
4	Paper inlet sensor
5	Media sensor

6	SR10 - paper stack surface sensor
7	SR9 - cassette paper sensor
8	SR3 - fuser pressure release sensor
9	SR1 - fuser paper sensor
10	SR2 - delivery tray paper-full sensor

Motors, fans, and solenoids

The diagrams in this section show the locations of the motors, fans, and solenoids in the MFP print engine.

Motors and solenoids

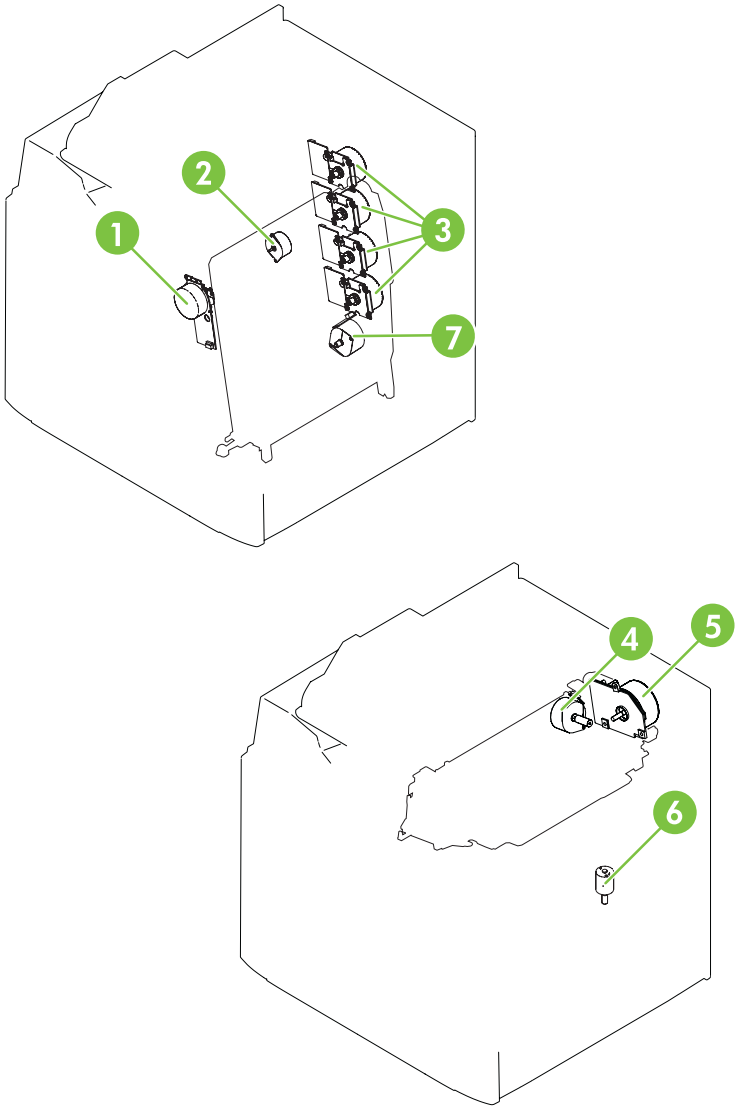


Figure 6-8 Motors

1	M7: ETB motor
2	M8: Developing disengaging motor
3	M1, M2, M3, M4: Drum motors (Y/C/M/K)
4	M6: Fuser pressure release motor
5	M5: Fuser motor
6	M10: Lifter motor
7	M9: Pickup motor

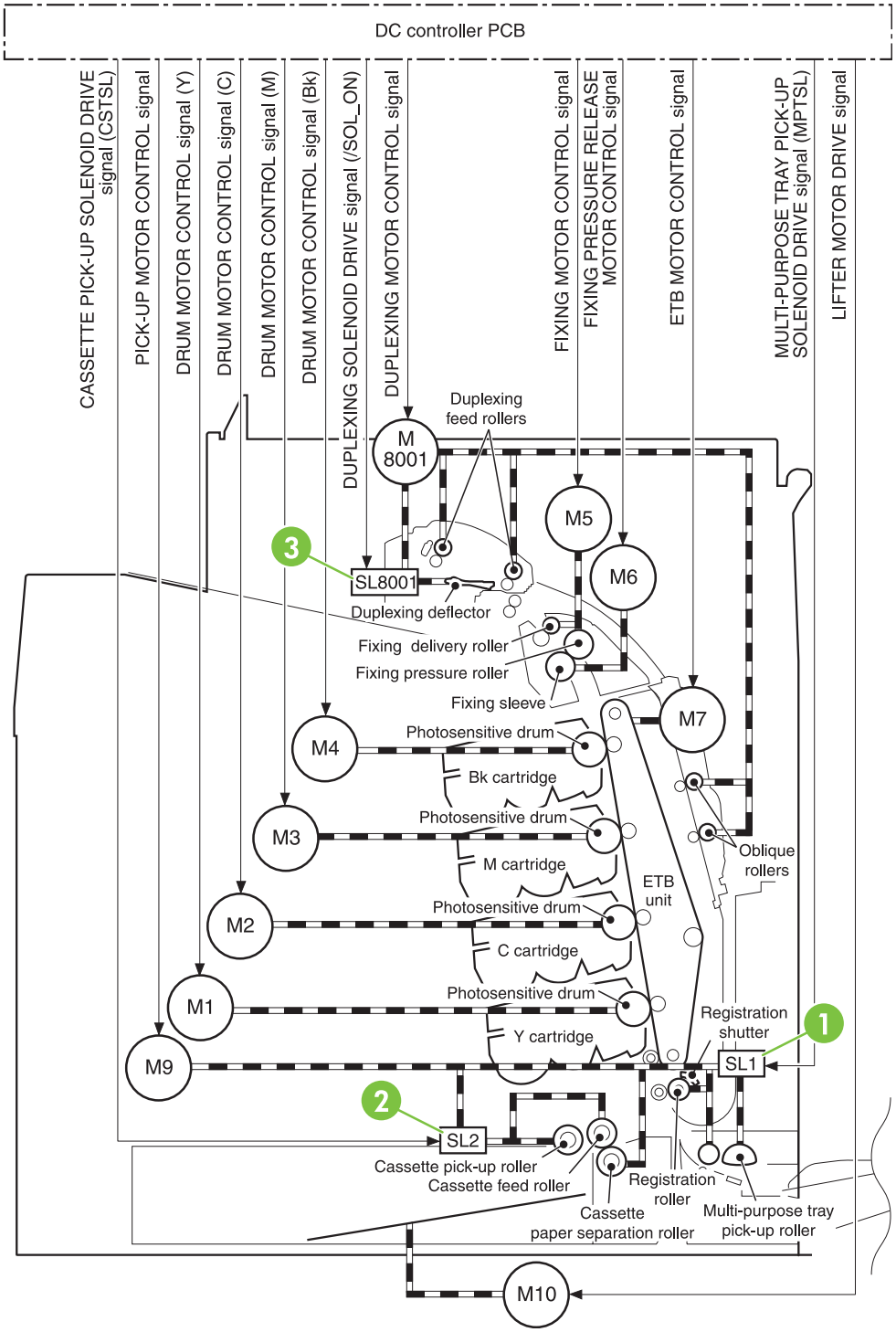


Figure 6-9 Solenoids

1	SL1 - Multipurpose tray pickup solenoid
2	SL2 - Cassette tray pickup solenoid
3	SL8001 - Duplexing solenoid

Fans

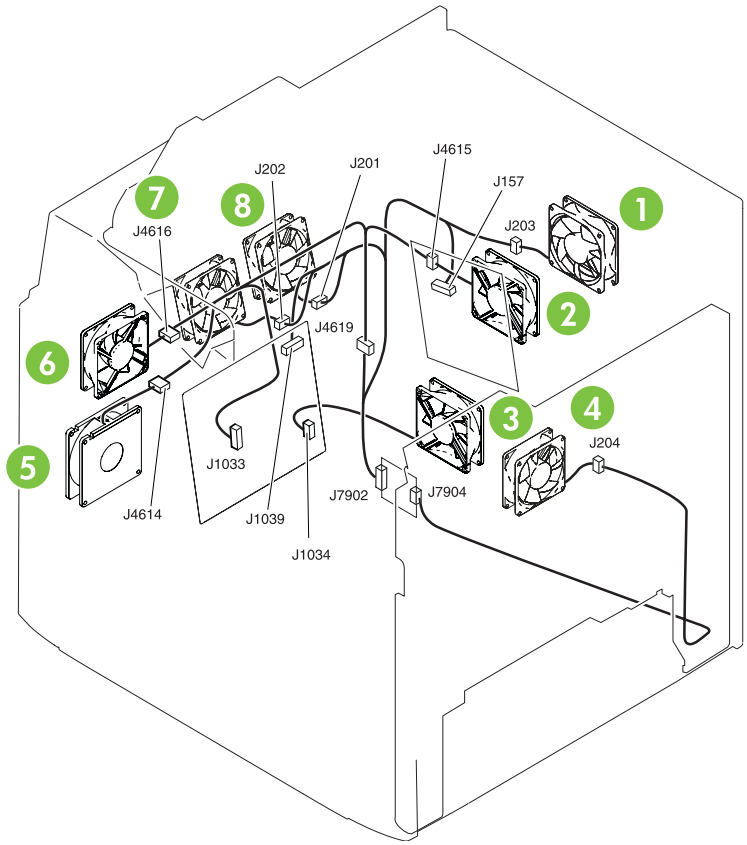


Figure 6-10 Fans

1	FM7: Fuser fan
2	FM3: Sub power supply fan
3	FM1: Power supply fan
4	FM8: ETB fan
5	FM2: Cartridge fan
6	FM4: Delivery fan
7	FM6: Control fan #2
8	FM5: Control fan #1

PCBs

The diagram in this section shows the locations of the main assembly PCBs.

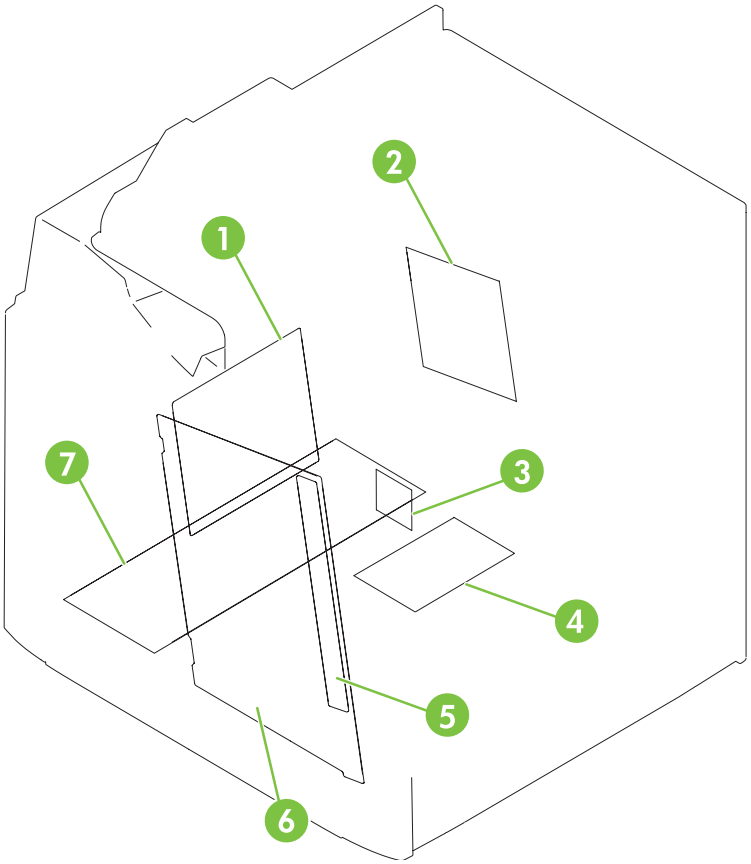


Figure 6-11 Main assembly PCBs

1	DC controller PCB
2	Sub power supply PCB
3	Fan driver PCB
4	Memory controller PCB
5	Toner sensor PCB
6	High-voltage power supply PCB
7	Low-voltage power supply PCB

Scanner and ADF components

The diagrams and photos in this section show the locations of the scanner and ADF components.

ADF and scanner sensors

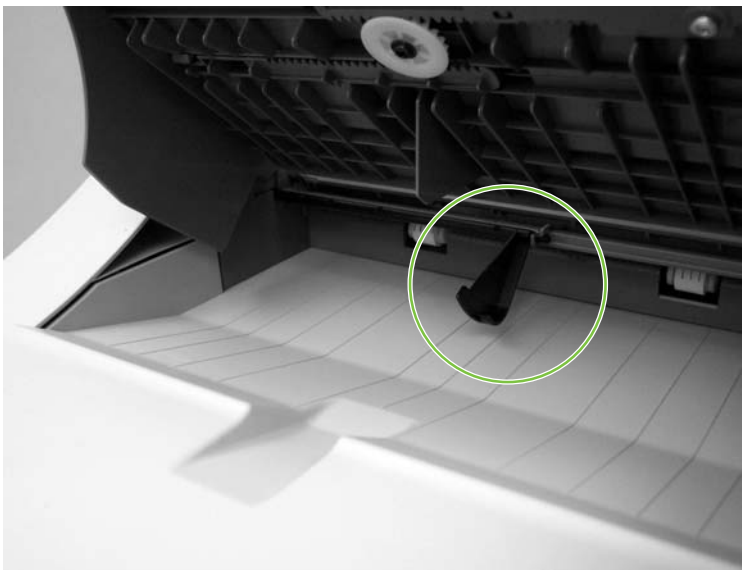


Figure 6-12 ADF output bin-full sensor

ADF pickup assembly sensors

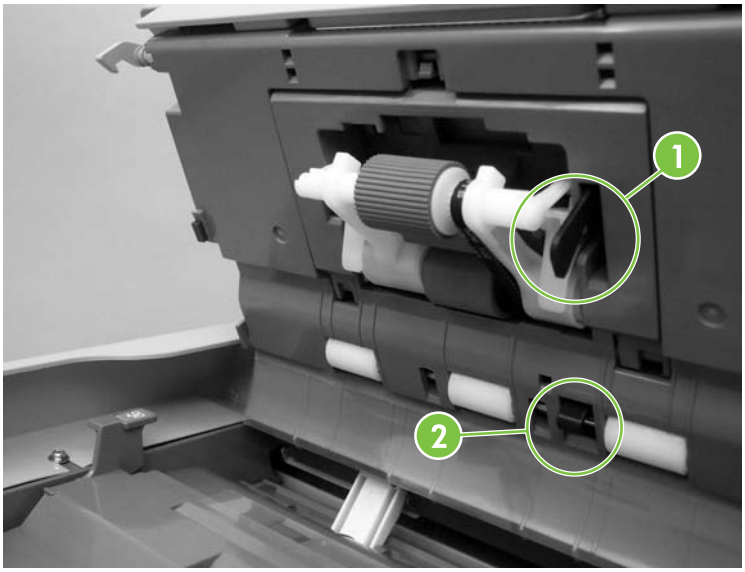


Figure 6-13 ADF pickup sensors

1	ADF paper-present sensor
2	ADF top-of-page sensor

ADF motors, fans, and solenoids

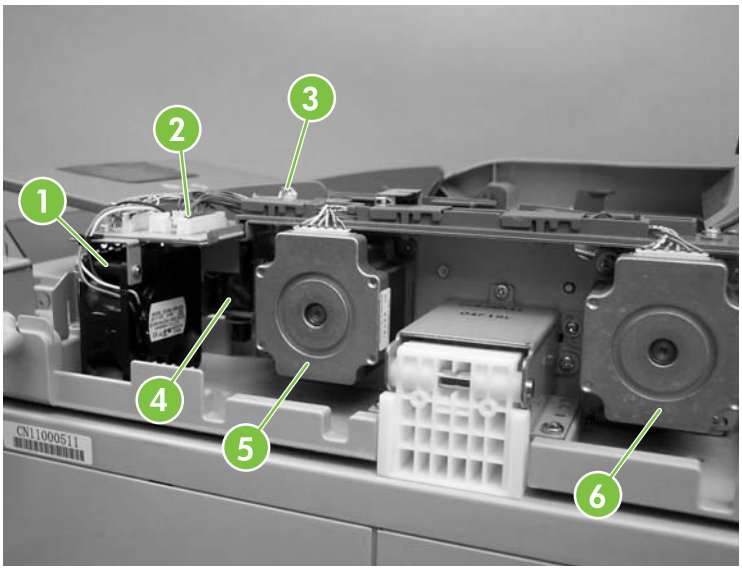


Figure 6-14 ADF motors, fans, and solenoids

1	ADF fan
2	Scanner controller PCB
3	ADF LED PCB
4	Solenoid

5	Pickup motor
6	Feed motor

2 X 500-sheet feeder

The diagram in this section shows the locations of the 2 X 500-sheet feeder components.

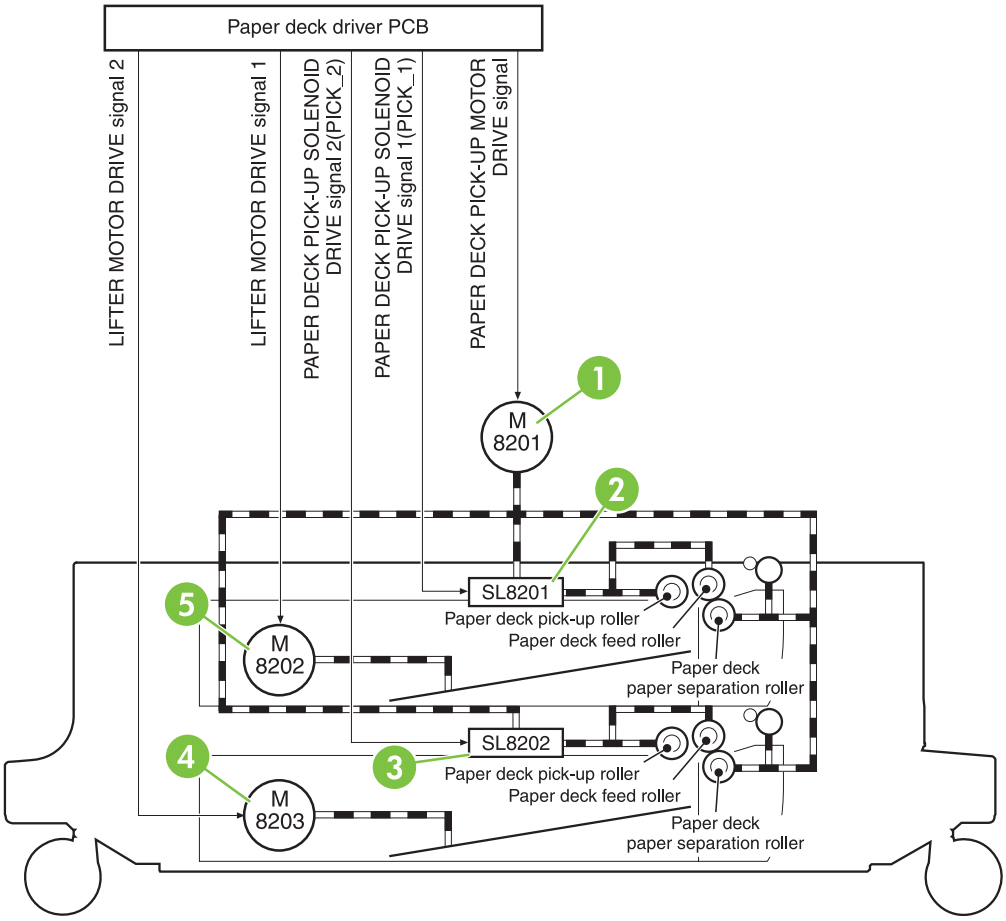


Figure 6-15 2 X 500-sheet feeder components

1	M8201 - Paper deck pickup motor
2	SL8201 - Paper deck pickup solenoid
3	SL8202 - Paper deck pickup solenoid
4	M8203 - Lifter motor
5	M8202 - Lifter motor

IPTU

The diagram in this section shows the locations of the IPTU components.

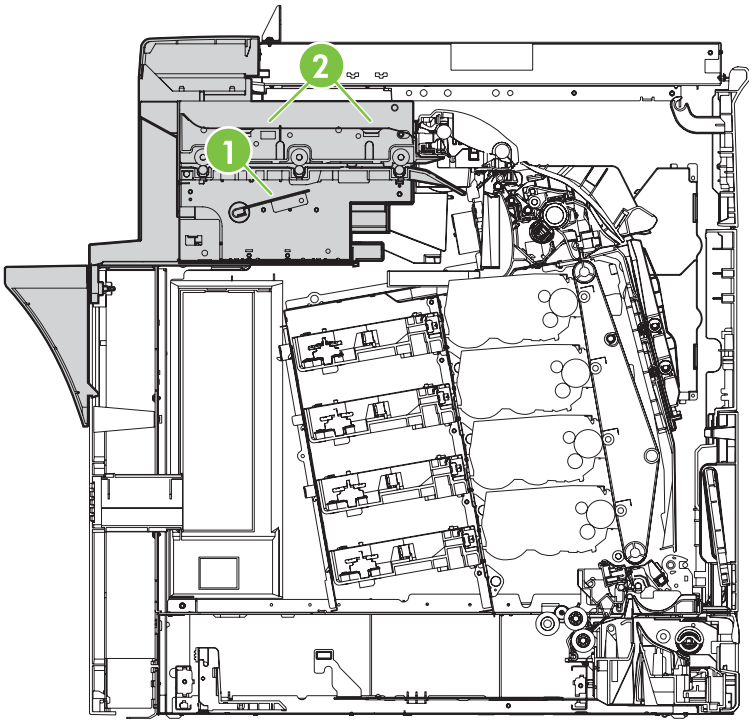


Figure 6-16 IPTU components

1	IPTU PCB
2	IPTU motors

General timing chart

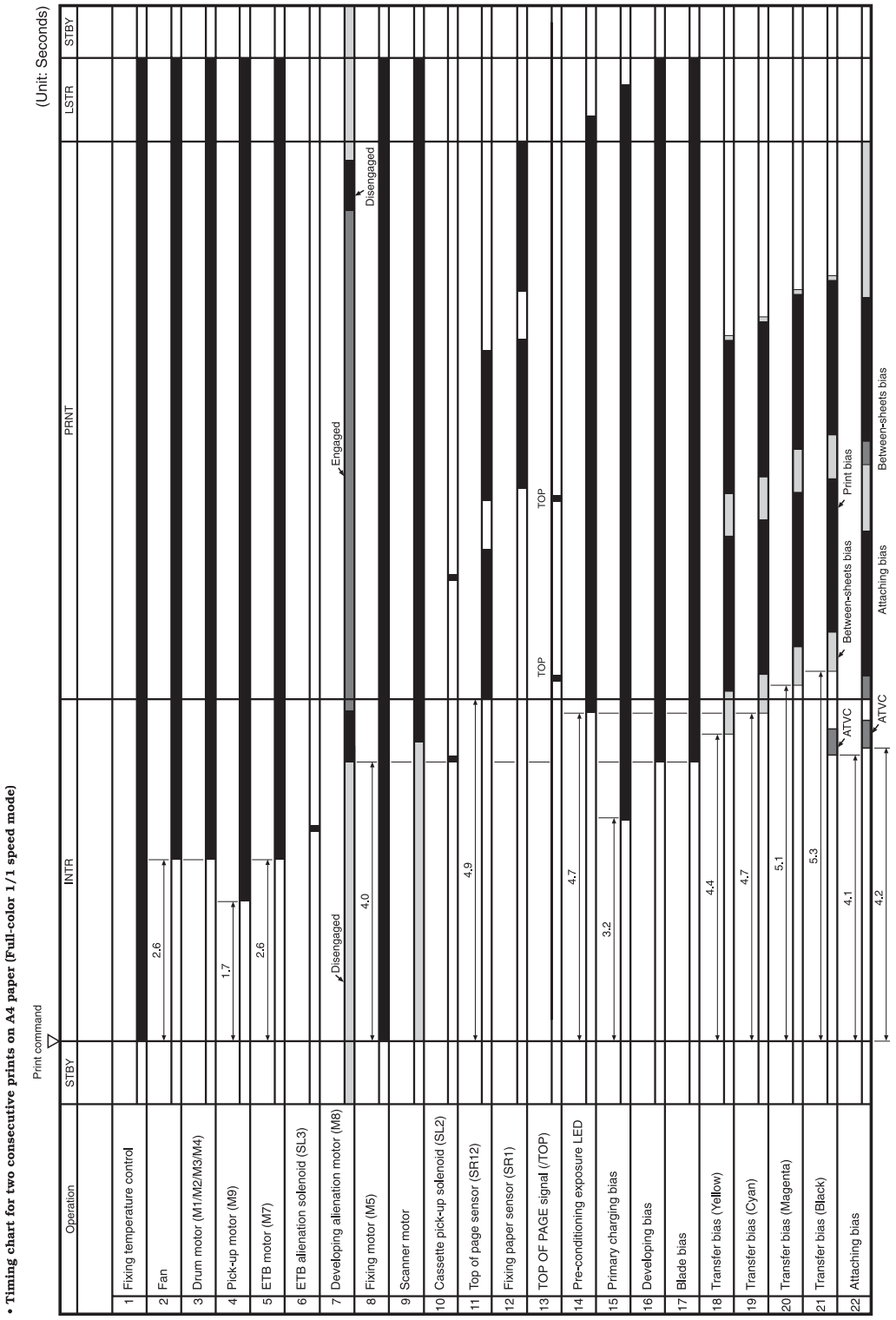


Figure 6-17 General timing chart

General circuit diagrams

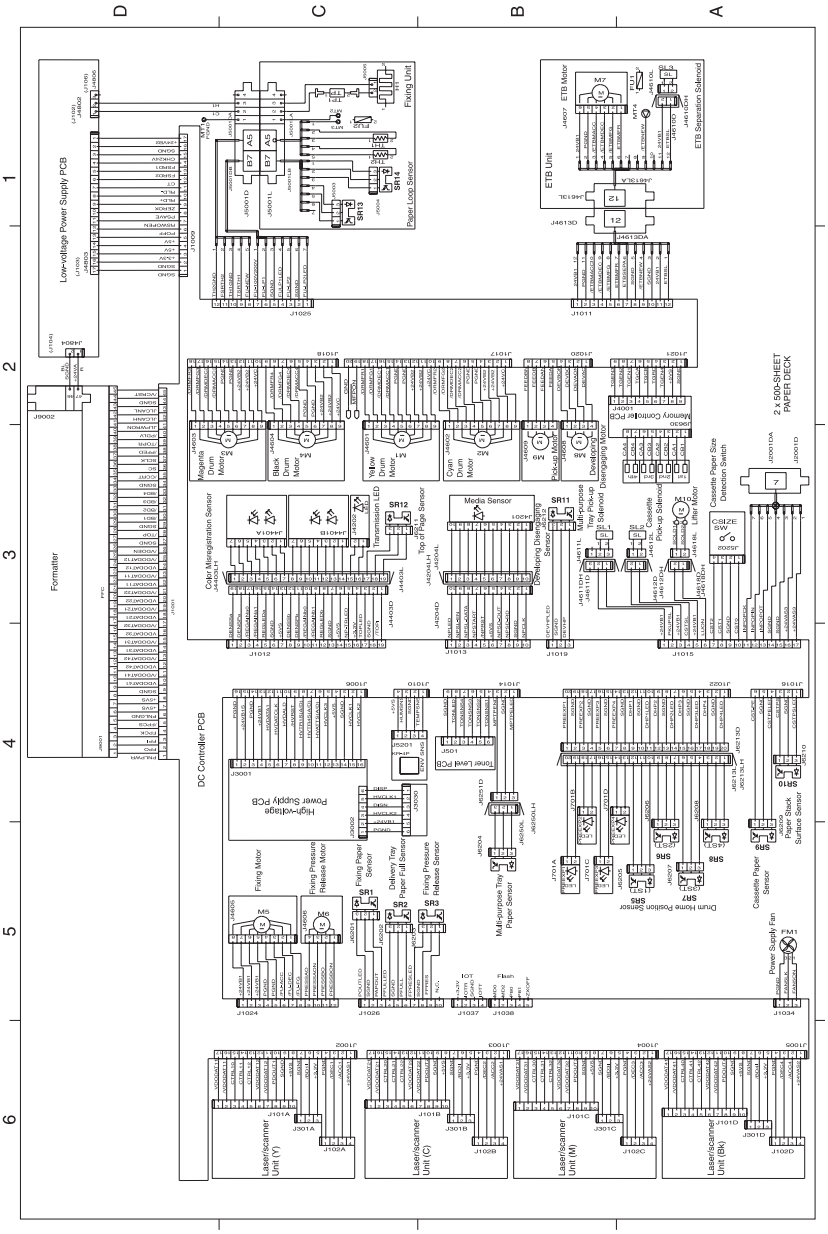


Figure 6-18 General circuit diagram (1 of 2)

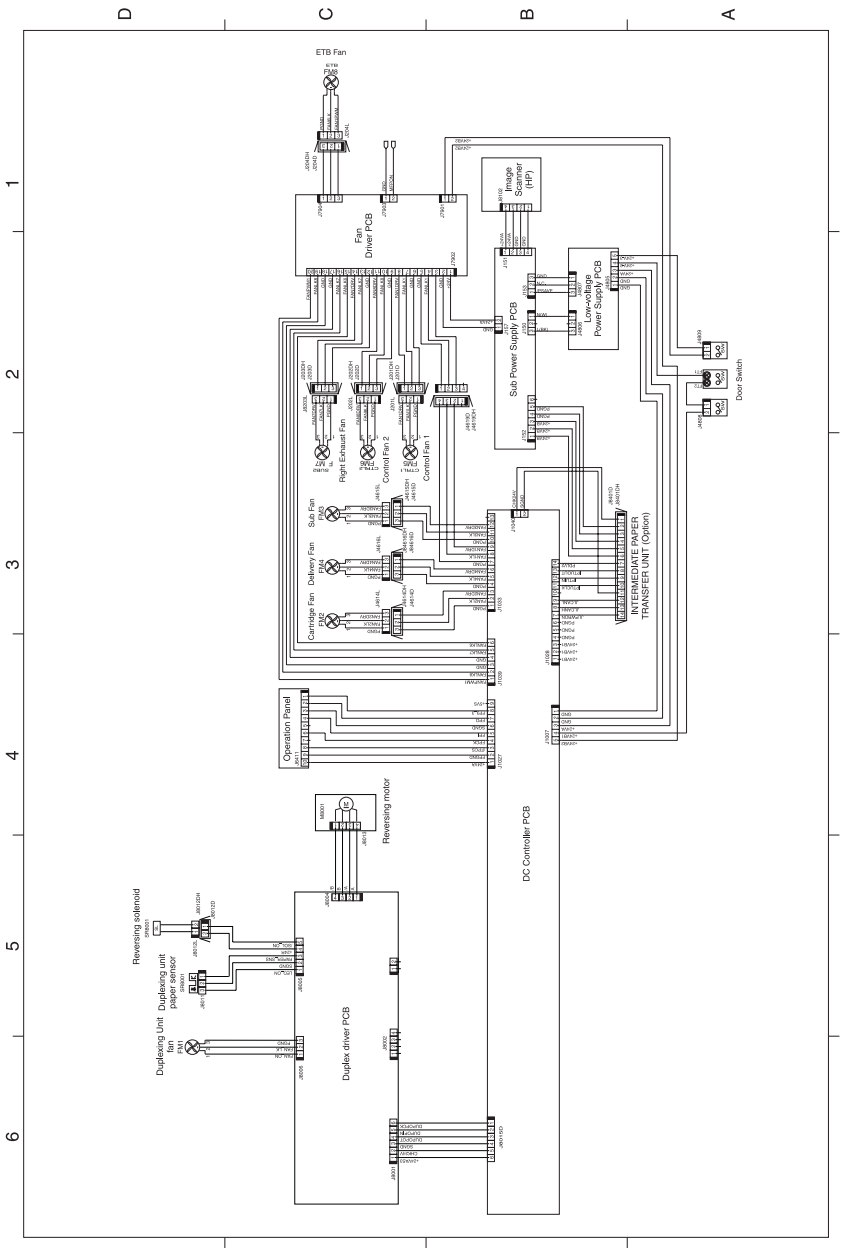


Figure 6-19 General circuit diagram (2 of 2)

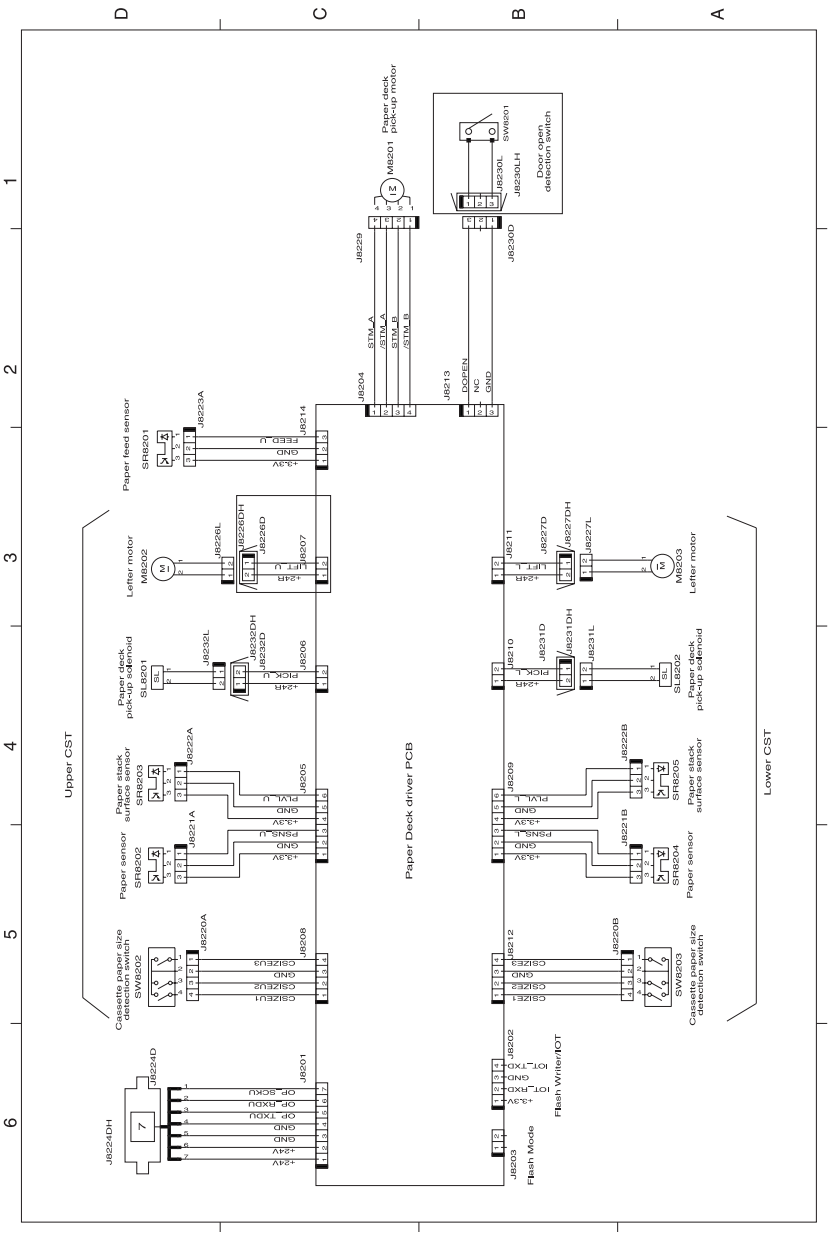


Figure 6-20 Circuit diagram for the 2 X 500-sheet feeder

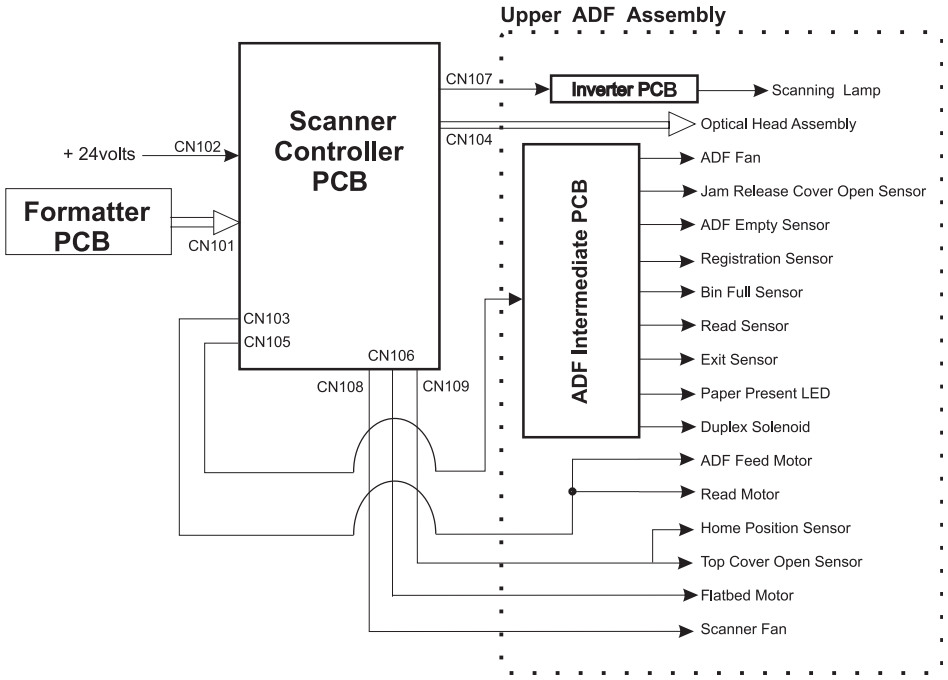


Figure 6-21 Circuit diagram for the scanner

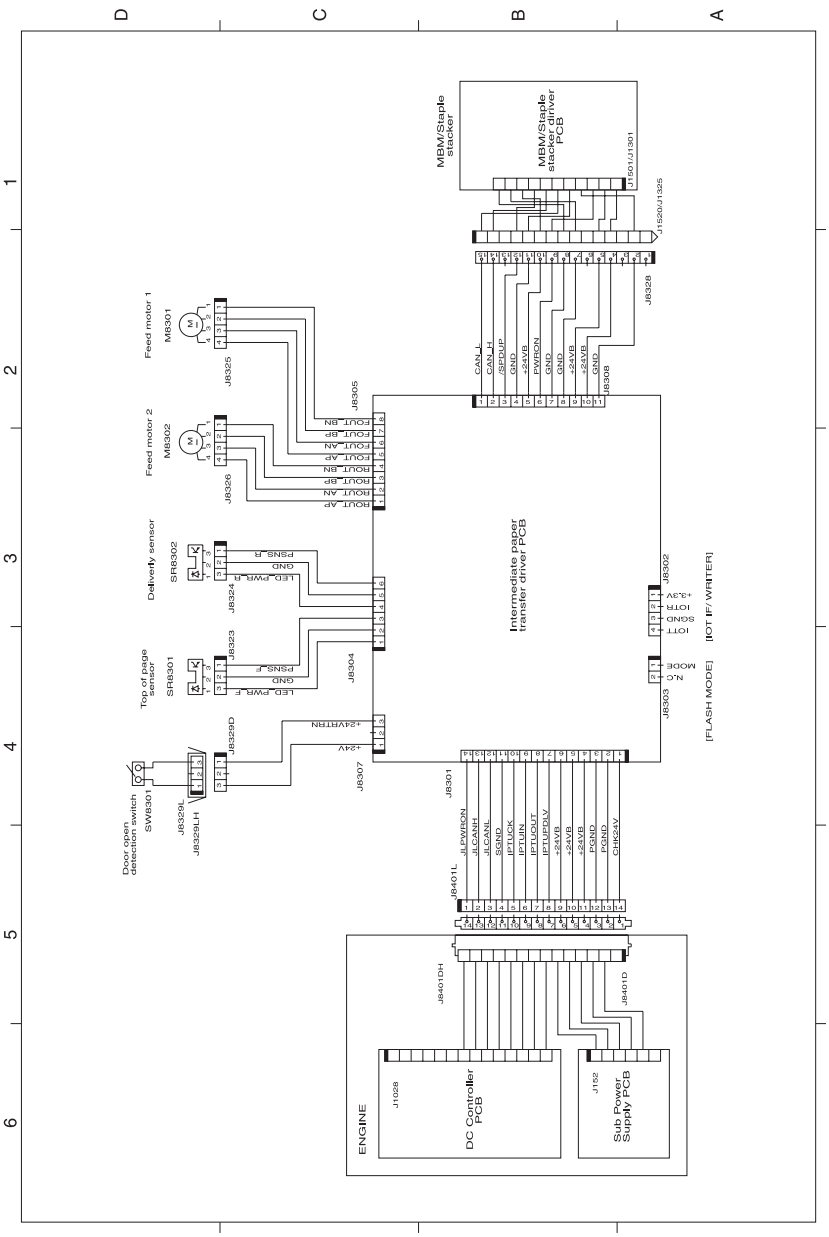


Figure 6-22 Circuit diagram for the IPTU

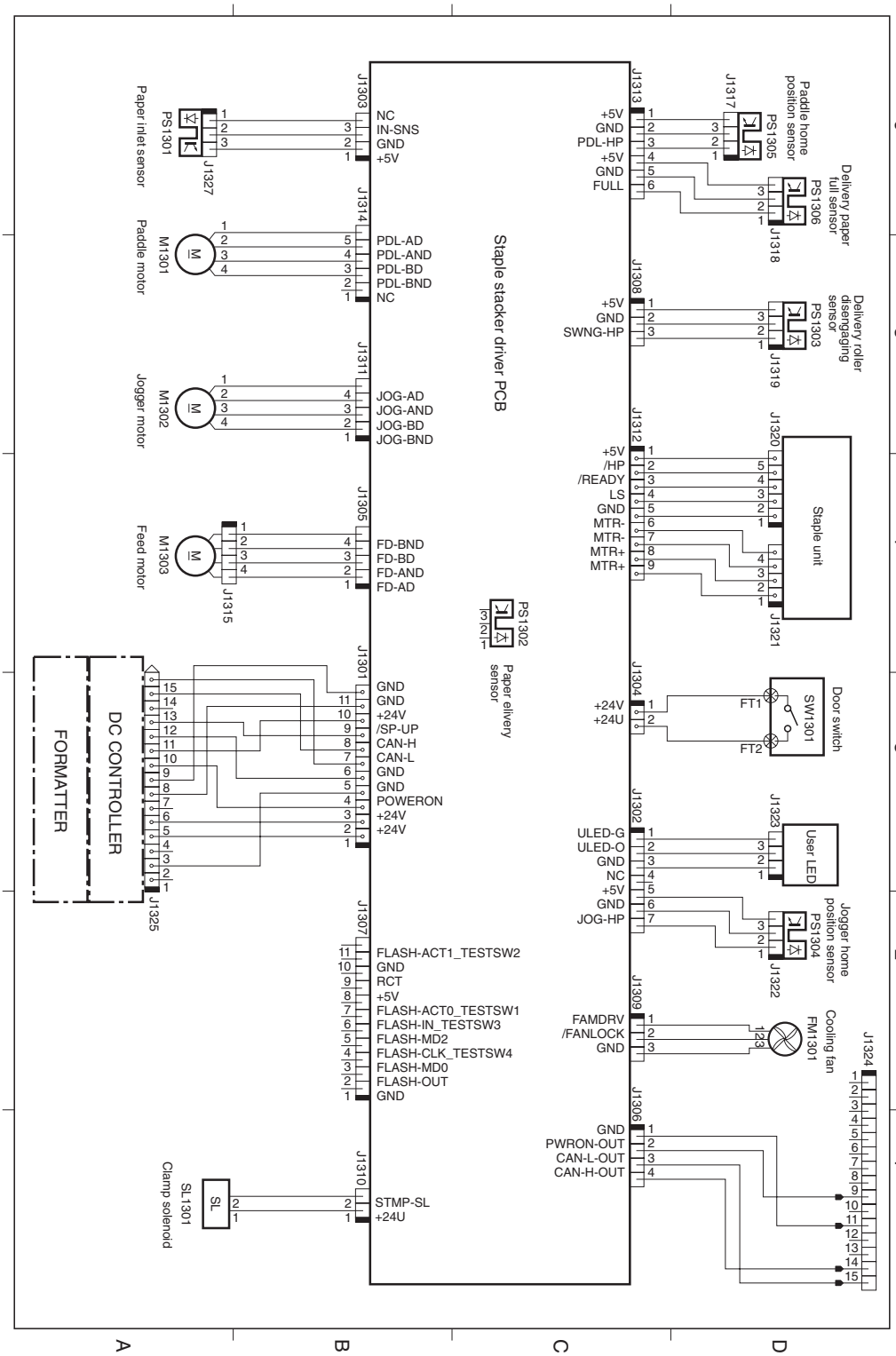


Figure 6-23 Circuit diagram for the stapler/stacker

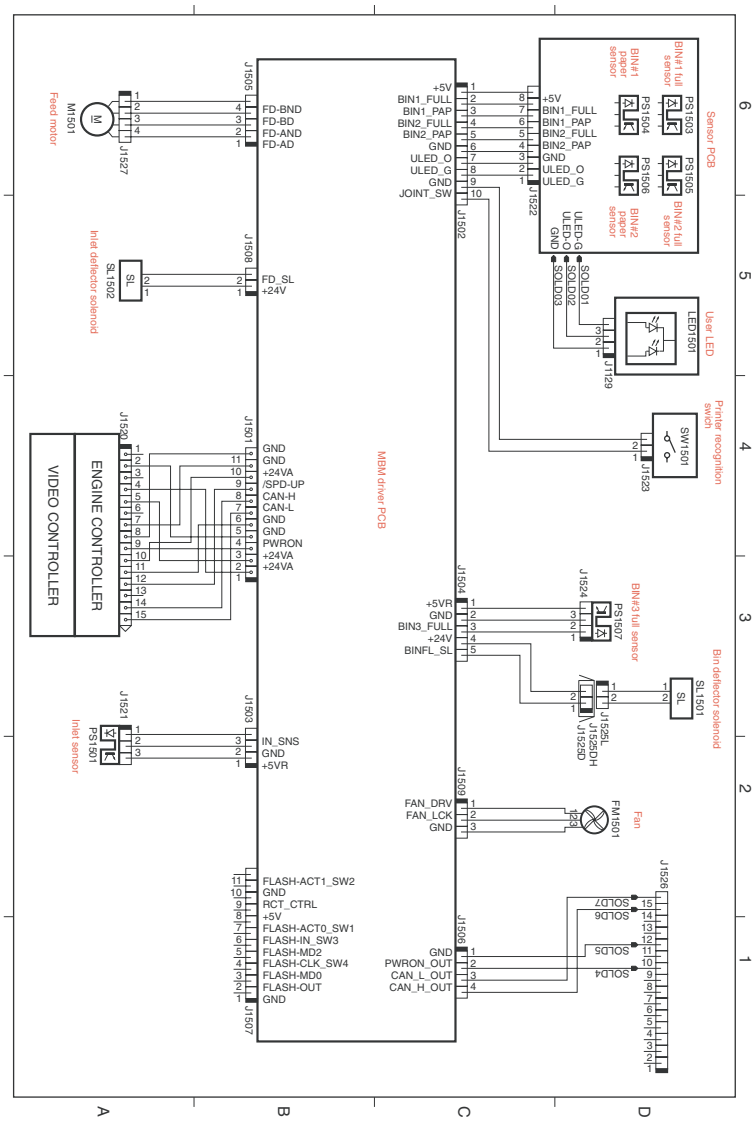


Figure 6-24 Circuit diagram for the 3–bin mailbox

Upgrade the firmware

The MFP has remote firmware update (RFU) capability. Use the information in this section to upgrade the MFP firmware.

Determine the current firmware version

1. From the control panel Home screen, scroll to and touch Administration.
2. Touch Information.
3. Touch Configuration/Status Pages.
4. Touch Configuration Page.
5. Touch Print.

The firmware datecode is listed on the Configuration page in the section called **Device Information**. The firmware datecode has this format: YYYYMMDD XX.XXX.X. The first string of numbers is the date, where YYYY represents the year, MM represents the month, and DD represents the date. For example, a firmware datecode of that begins with `20061125` represents November 25, 2006.

Download new firmware from the HP Web site

To find the most recent firmware upgrade for the MFP, go to http://www.hp.com/go/ljcm4730mfp_software. This page provides instructions for downloading the new firmware version.

Transfer the new firmware to the MFP



NOTE: The MFP can receive an .RFU file update when it is in a "ready" state.

The elapsed time for an update depends on the I/O transfer time, as well as the time that it takes for the MFP to re-initialize. The I/O transfer time depends on a number of things, including the speed of the host computer that is sending the update. If the remote firmware update process is interrupted before the firmware is downloaded (while **Receiving Upgrade** appears on the control-panel display), the firmware file must be sent again. If power is lost during the flash DIMM update (while the **Performing Upgrade** message appears on the control-panel display), the update is interrupted and the message **Resend Upgrade** appears (in English only) on the control-panel display. In this case, you must send the upgrade by using the parallel port. Finally, any jobs that are ahead of the RFU job in the queue are completed before the update is processed.

Use FTP to upload the firmware through a browser



NOTE: The firmware update involves a change in the format of nonvolatile random-access memory (NVRAM). Any menu settings that are changed from the default settings might return to default settings and must be changed again if you want settings that are different from the defaults.

1. Print a configuration page and note the TCP/IP address shown on the EIO Jetdirect page.
2. Open a browser window.

3. In the address line of the browser, type `ftp://<ADDRESS>`, where <ADDRESS> is the address of the MFP. For example, if the TCP/IP address is 192.168.0.90, type `ftp://192.168.0.90`.
4. Locate the downloaded .RFU file for the MFP.
5. Drag and drop the .RFU file onto the **PORT1** icon in the browser window.



NOTE: The MFP turns off and then on automatically to activate the update. When the update process is complete, a **Ready** message displays on the MFP control panel.

Use FTP to upgrade the firmware on a network connection



NOTE: The firmware update involves a change in the format of nonvolatile random-access memory (NVRAM). Any menu settings that are changed from the default settings might return to default settings and must be changed again if you want settings that are different from the defaults.

1. Take note of the IP address on the HP Jetdirect page. The HP Jetdirect page is the second page that prints when you print the configuration page.



NOTE: Before upgrading the firmware, make sure that the MFP is not in Sleep mode. Also make sure that any error messages are cleared from the control-panel display.

2. Open an MS-DOS command prompt on your computer.
3. Type: `ftp TCP/IP ADDRESS>`. For example, if the TCP/IP address is 192.168.0.90, type `ftp 192.168.0.90`.
4. Go to the folder where the firmware file is stored.
5. Press Enter on the keyboard.
6. When prompted for the user name, press Enter.
7. When prompted for the password, press Enter.
8. Type `bin` at the command prompt.
9. Press Enter. The message **200 Types set to I, Using binary mode to transfer files** appears in the command window.
10. Type `put` and then the file name (for example, if the file name is CM4730mfp.efn, type `CM4730mfp.efn`).
11. The download process begins and the firmware is updated on the MFP. This can take approximately five minutes. Let the process finish without further interaction with the MFP or computer.



NOTE: The MFP automatically turns off and then on again after processing the upgrade.

12. At the command prompt, type: `bye` to exit the ftp command.
13. At the command prompt, type: `exit` to return to the Windows interface.

Use HP Web Jetadmin to upgrade the firmware

This procedure requires that you install HP Web Jetadmin Version 7.0 or later on your computer. See HP Web Jetadmin software on page 107. Complete the following steps to update a single device through HP Web Jetadmin after downloading the .RFU file from the HP Web site.

1. Start HP Web Jetadmin.
2. Open the **Device Management** folder in the drop-down list in the **Navigation** panel. Navigate to the **Device Lists** folder.
3. Expand the **Device Lists** folder and select **All Devices**. Locate the MFP in the list of devices, and then click to select it.

   If you need to upgrade the firmware for multiple HP Color LaserJet CM4730 MFP series MFPs, select all of them by pressing the Ctrl key as you click the name of each MFP.
4. Locate the drop-down box for **Device Tools** in the upper-right corner of the window. Select **Update Printer Firmware** from the action list.
5. If the name of the .RFU file is not listed in the **All Available Images** box, click **Browse** in the **Upload New Firmware Image** dialog box and navigate to the location of the .RFU file that you downloaded from the Web at the start of this procedure. If the filename is listed, select it.
6. Click **Upload** to move the .RFU file from your hard drive to the HP Web Jetadmin server. After the upload is complete, the browser window refreshes.
7. Select the .RFU file from the **Printer Firmware Update** drop-down menu.
8. Click **Update Firmware**. HP Web Jetadmin sends the selected .RFU file to the MFP. The control panel shows messages that indicate the progress of the upgrade. At the end of the upgrade process, the control panel shows the **Ready** message.

Use MS-DOS commands to upgrade the firmware

To update the firmware by using a network connection, follow these instructions.

1. From a command prompt or in an MS-DOS window, type the following: `copy /B FILENAME> \\COMPUTERNAME>\SHARENAME>`, where <FILENAME> is the name of the .RFU file (including the path), <COMPUTERNAME> is the name of the computer from which the MFP is being shared, and <SHARENAME> is the MFP share name. For example: `C:\>copy /b C:\9200fW.RFU \\YOUR_SERVER\YOUR_COMPUTER`.

   NOTE: If the file name or path includes a space, you must enclose the file name or path in quotation marks. For example, type: `C:\>copy /b "C:\MY DOCUMENTS \3500FW.RFU" \\YOUR_SERVER\YOUR_COMPUTER`.
2. Press Enter on the keyboard. The control panel shows a message that indicates the progress of the firmware upgrade. At the end of the upgrade process, the control panel shows the **Ready** message . The message **One File Copied** appears on the computer screen.

Use the HP Jetdirect firmware

The HP Jetdirect network interface in the MFP has firmware that can be upgraded separately from the MFP firmware. This procedure requires that you install HP Web Jetadmin Version 7.0 or later on

your computer. See HP Web Jetadmin software on page 107. Complete the following steps to update the HP Jetdirect firmware by using HP Web Jetadmin.

1. Open the HP Web Jetadmin program.
2. Open the **Device Management** folder in the drop-down list in the **Navigation** panel. Navigate to the **Device Lists** folder.
3. Select the device that you want to update.
4. In the **Device Tools** drop-down list, select **Jetdirect Firmware Update**.
5. Under **Jetdirect firmware version** the HP Jetdirect model number and current firmware version are listed. Make a note of these.
6. Go to http://www.hp.com/go/wja_firmware.
7. Scroll down to the list of HP Jetdirect model numbers and find the model number you wrote down.
8. Look at the current firmware version for the model, and see if it is later than the version you wrote down. If it is, right-click on the firmware link, and follow the instructions on the Web page to download the new firmware file. The file must be saved into the <drive>:\PROGRAM FILES \HP WEB JETADMIN\DOC\PLUGINS\HPWJA\FIRMWARE\JETDIRECT folder on the computer that is running the HP Web Jetadmin software.
9. In HP Web Jetadmin, return to the main device list and select the digital sender again.
10. In the **Device Tools** drop-down list, select **Jetdirect Firmware Update** again.
11. On the HP Jetdirect firmware page, the new firmware version is listed under **Jetdirect Firmware Available on HP Web Jetadmin**. Click the **Update Firmware Now** button to update the Jetdirect firmware.

7 Parts and diagrams

This chapter contains information about ordering parts, supplies, and accessories. It includes diagrams of the major subassemblies of the MFP and includes the part numbers for replaceable parts.

- Introduction
- Ordering parts and supplies
- Assembly locations
- External covers and panels
- Internal components
- ADF components
- Scanner components
- 2 X 500-sheet feeder components
- Optional devices
- Alphabetical parts list
- Numerical parts list

Introduction

The figures in this chapter illustrate the major field replaceable unit (FRU) assemblies and subassemblies in the MFP. A table (parts number list) follows each assembly diagram. The tables list a reference number for each specific part, the part number, and a brief description of the part.

NOTE: In this manual, the abbreviation "PCB" stands for "printed circuit board." Components described as a PCB may consist of a single circuit board or a circuit board plus other parts, such as cables and sensors.

NOTE: Parts that do not have a reference number or part number are not FRUs, and cannot be ordered as individual replacement parts. However, all serviceable parts should be available as part of a larger operable subassembly.

The following lists of supplies and accessories were current at the time of printing. Availability of accessories might change during the life of the MFP.

CAUTION: When looking for an electrical part, pay careful attention to the voltage that is listed in the part description column to ensure that the component part number that you select is for the correct MFP model.

Ordering parts and supplies

Parts that wear

The parts on the product that need replacement at regular intervals are listed in Approximate replacement intervals for supplies on page 112. Parts are available directly from HP at the following Web site: http://www.hp.com/buy/parts.

Parts

Order replacement parts from the following Web site: http://www.hp.com/go/HPparts.

Customer support

Product documentation and software support can be found at the Web sites listed in the table below.

HP Connect Online (for HP partners)	Go to http://www.connect-online.hp.com
HP Customer Care Call Centers Information about contacting HP call centers in specific countries/regions.	Go to http://www.hp.com/support/callcenters
HP Online Technical Support (for HP partners) Software drivers, support documentation, and answers to frequently asked questions	Go to http://www.hp.com/support
HP Technical Training (North America) Classes and schedules	Go to http://www.compaq.com/training **NOTE:** Select your country/region in the "select a country or region" field at the top, right corner of the page.
HP Parts Parts information	Go to http://www.partsurfer.hp.com (parts ordering) Go to http://www.hp.com/go/HPparts (parts reference guide)

Supplies and accessories

Use the following table to order supplies and accessories for the product.

Table 7-1 Supplies and accessories

Product number	Part number	Description
Accessories		
J7960A	J7960-61011	HP Jetdirect 625n Gigabit Ethernet (10/100/1000Base-T) print server (EIO card)
Q5692A	Q5692-67901	3-bin mailbox
Q5691A	Q5691-67901	Stapler/stacker

Table 7-1 Supplies and accessories (continued)

Product number	Part number	Description
Q3701A	CB480-69001	HP LaserJet analog fax accessory 300
Cables		
C2946A		IEEE-1284 compliant parallel cable, 3 meters (approximately 10 feet) long, with 25-pin male/ micro 36-pin male (c-type) connector
92215S		Macintosh DIN-8 printer cable
92215N		HP LocalTalk cable kit
	8121-0539	2-meter USB cable
	8121-0549	2-foot USB cable
Media		
C2934A		HP Color LaserJet Transparencies (letter) 50 sheets
C2936A		HP Color LaserJet Transparencies (A4) 50 sheets
C4179A		HP LaserJet Soft Gloss paper (letter) 200 sheets
C4179B		HP LaserJet Soft Gloss paper (A4) 200 sheets
Q1298A		HP LaserJet Tough paper (letter)
Q1298B		HP LaserJet Tough paper (A4)
HPU1132		HP Premium Choice LaserJet paper (letter)
CHP410		HP Premium Choice LaserJet paper (A4)
HPJ1124		HP LaserJet paper (letter)
CHP310		HP LaserJet paper (A4)
Memory		
Q7517A	Q7517–67907	Printer hard drive
Q7721A	Q7721-67951	200-pin DDR memory DIMM (dual inline memory module), 128 MB
Q7722A	Q7722-67951	200-pin DDR memory DIMM, 256 MB
Q7723A	Q7723-67951	200-pin DDR memory DIMM, 512 MB
CC501AA	CC501-67907	Firmware Compact flash
Control panel and labels		
	CB480-60126	Control panel
	CB480-60102	English label
	CB480-60103	French label
	CB480-60104	Italian label
	CB480-60105	German label
	CB480-60106	Spanish (MAS) label
	CB480-60107	Dutch label

Table 7-1 Supplies and accessories (continued)

Product number	Part number	Description
	CB480-60108	Portuguese (Brazilian) label
	CB480-60109	Norwegian label
	CB480-60110	Swedish label
	CB480-60111	Finnish label
	CB480-60112	Danish label
	CB480-60113	Polish label
	CB480-60114	Russian label
	CB480-60115	Czech label
	CB480-60116	Hungarian label
	CB480-60117	Traditional Chinese label
	CB480-60118	Simplified Chinese label
	CB480-60119	Korean label
	CB480-60120	Japanese label
	CB480-60121	Turkish label
	CB480-60122	Hebrew label
	CB480-60123	Greek label
	CB480-60124	Arabic label
	CB480-60125	Thai label
	CB480-60129	Croatian label
	CB480-60130	Romanian label
	CB480-60131	Slovak label
	CB480-60132	Slovenian label
Reference materials		
	5963-7863	*HP LaserJet Printer Family Paper Specifications Guide*
	5021-0330	PCL/PJL Technical Reference Package
	CB480-91008	HP Color LaserJet CM4730 series printer service manual
	Q7517-60127	HP Color LaserJet CM4730 MFP series software CD, Americas
	Q7517-60128	HP Color LaserJet CM4730 MFP series software CD, Western Europe
	Q7517-60129	HP Color LaserJet CM4730 MFP series software CD, Northern Europe
	Q7517-60130	HP Color LaserJet CM4730 MFP series software CD, Eastern Europe

Table 7-1 Supplies and accessories (continued)

Product number	Part number	Description
	Q7517-60131	HP Color LaserJet CM4730 MFP series software CD, Asia
	MKTNG-00473	Customer in-box training CD, English only
	CB480-60133	Service and support training CD
	MKTNG-00472	HP Digital Sending Software CD (trial version)
Supplies		
Q6460A	Q6460-67901	Black print cartridge
Q6461A	Q6461-67901	Cyan print cartridge
Q6462A	Q6462-67901	Yellow print cartridge
Q6463A	Q6463-67901	Magenta print cartridge
Q8091A	C8085-60541	5,000-staple cartridge
Replacement kits		
Q7504A	RM1-3161-000CN	Image transfer (ETB) kit
Q7502A	RM1-3131-000CN	Image fuser kit (110 volt)
Q7503A	RM1-3146-000CN	Image fuser kit (220 volt)
Q3999A	Q7517-69004 (exchange) Q7517-67909 (new)	Formatter
	Q7517-67904	MP pickup rollers
	CB480-67904	MP pickup unit replacement
Q5997A	Q5997-67901	ADF maintenance kit
Q6496A	Q6496-67901	ADF mylar replacement kit
	Q7517-67905	Cassette pickup roller replacement kit
	Q7491-67905	Formatter pressure release tab kit
	CB480-67901	Control panel replacement

Assembly locations

The following illustrations and parts tables list the field replaceable units (FRU) for the HP Color LaserJet CM4730 MFP series. The end of this chapter contains an alphabetical and numerical master parts list.

Major components

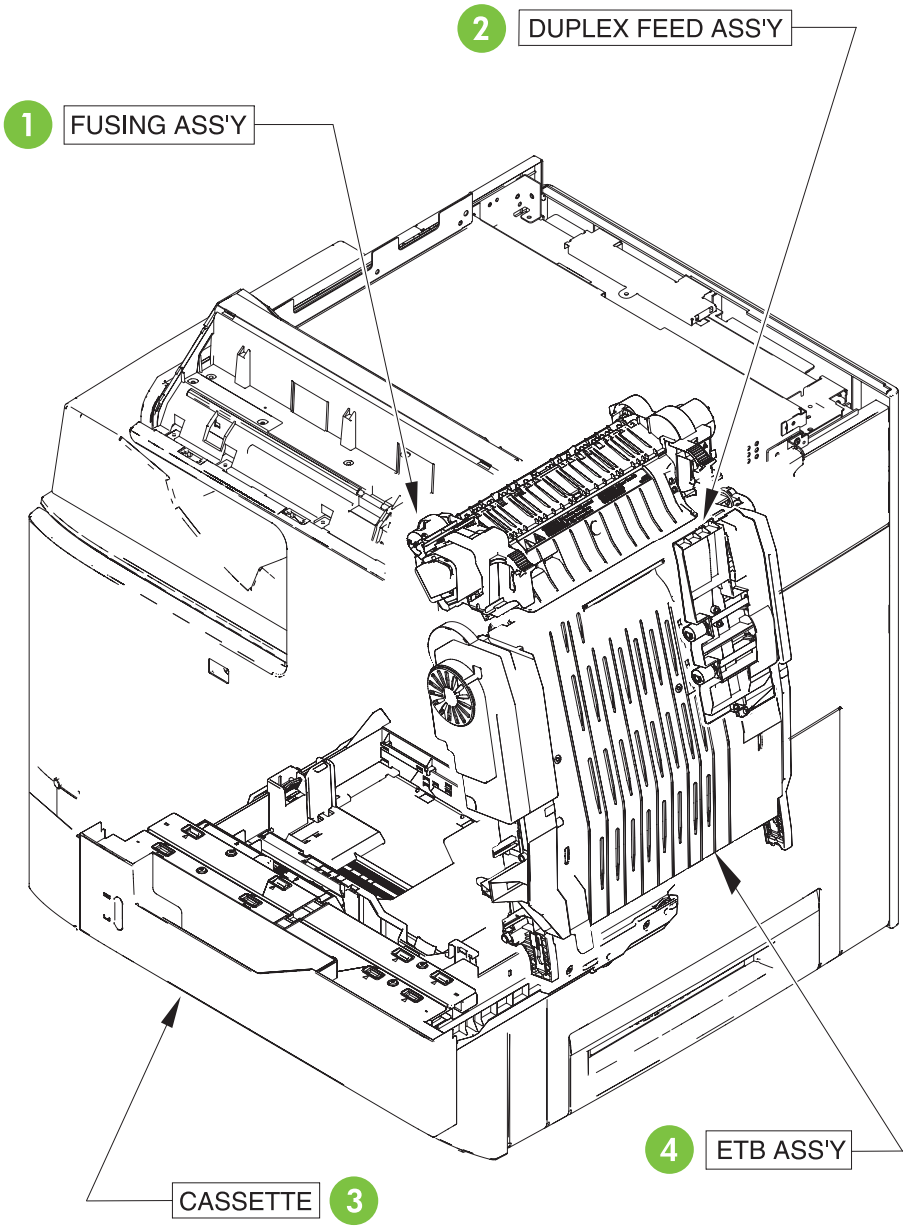


Figure 7-1 HP Color LaserJet CM4730 MFP major components (1 of 2)

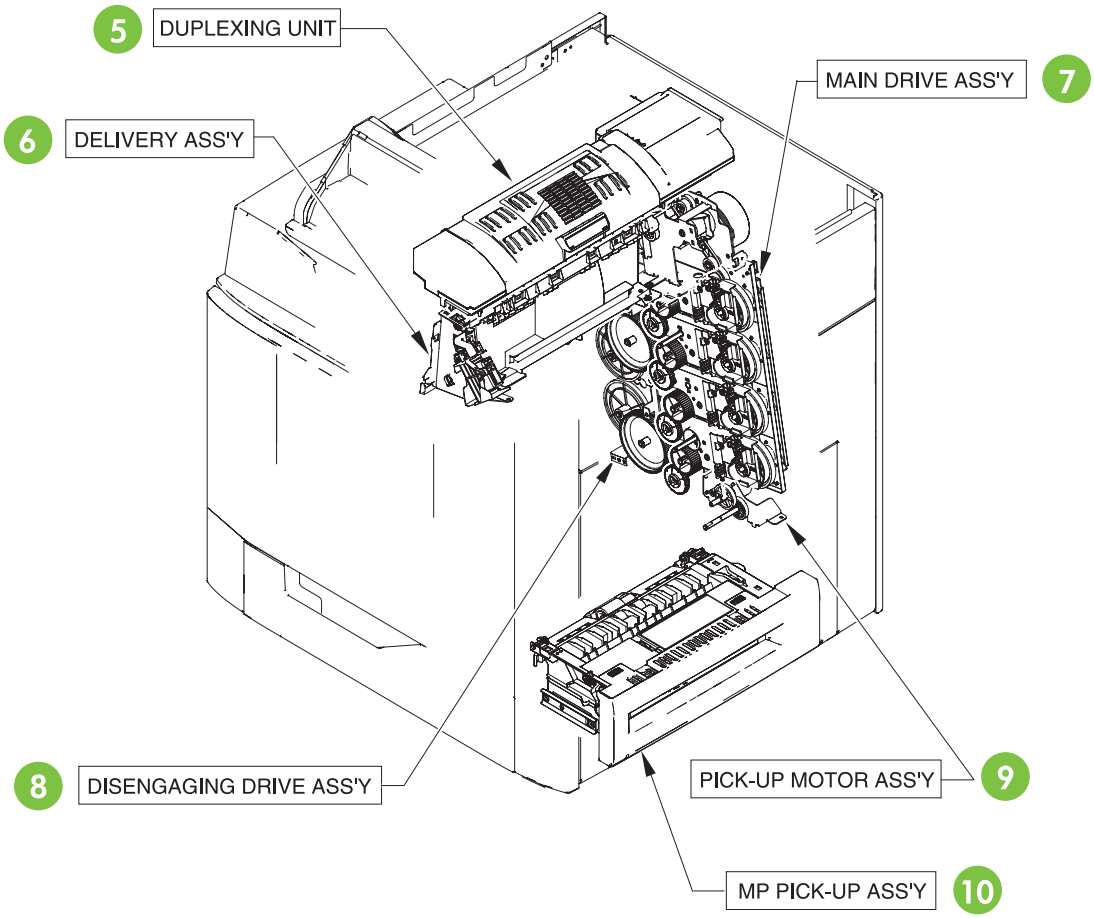


Figure 7-2 HP Color LaserJet CM4730 MFP major components (2 of 2)

Table 7-2 Major components

Reference number	Description	Details
1	Fuser assembly	See Figure 7-29 Fuser assembly on page 726.
2	Duplex feed assembly	See Figure 7-28 Duplex feed assembly on page 724.
3	Cassette	See Figure 7-21 Cassette on page 710.
4	ETB assembly	See Figure 7-23 ETB assembly on page 714.
5	Duplexing unit	See Figure 7-26 Duplexing unit (1 of 2) on page 720 and Figure 7-27 Duplexing unit (2 of 2) on page 722.
6	Delivery assembly	See Figure 7-24 Delivery assembly on page 716.
7	Main drive assembly	See Internal components on page 686.
8	Disengaging drive assembly	See Figure 7-19 Disengaging drive assembly on page 706.

Table 7-2 Major components (continued)

Reference number	Description	Details
9	pickup motor assembly	See Figure 7-18 Pickup motor assembly on page 704.
10	Multipurpose pickup assembly	See Figure 7-22 Multipurpose pickup assembly on page 712.

External covers and panels

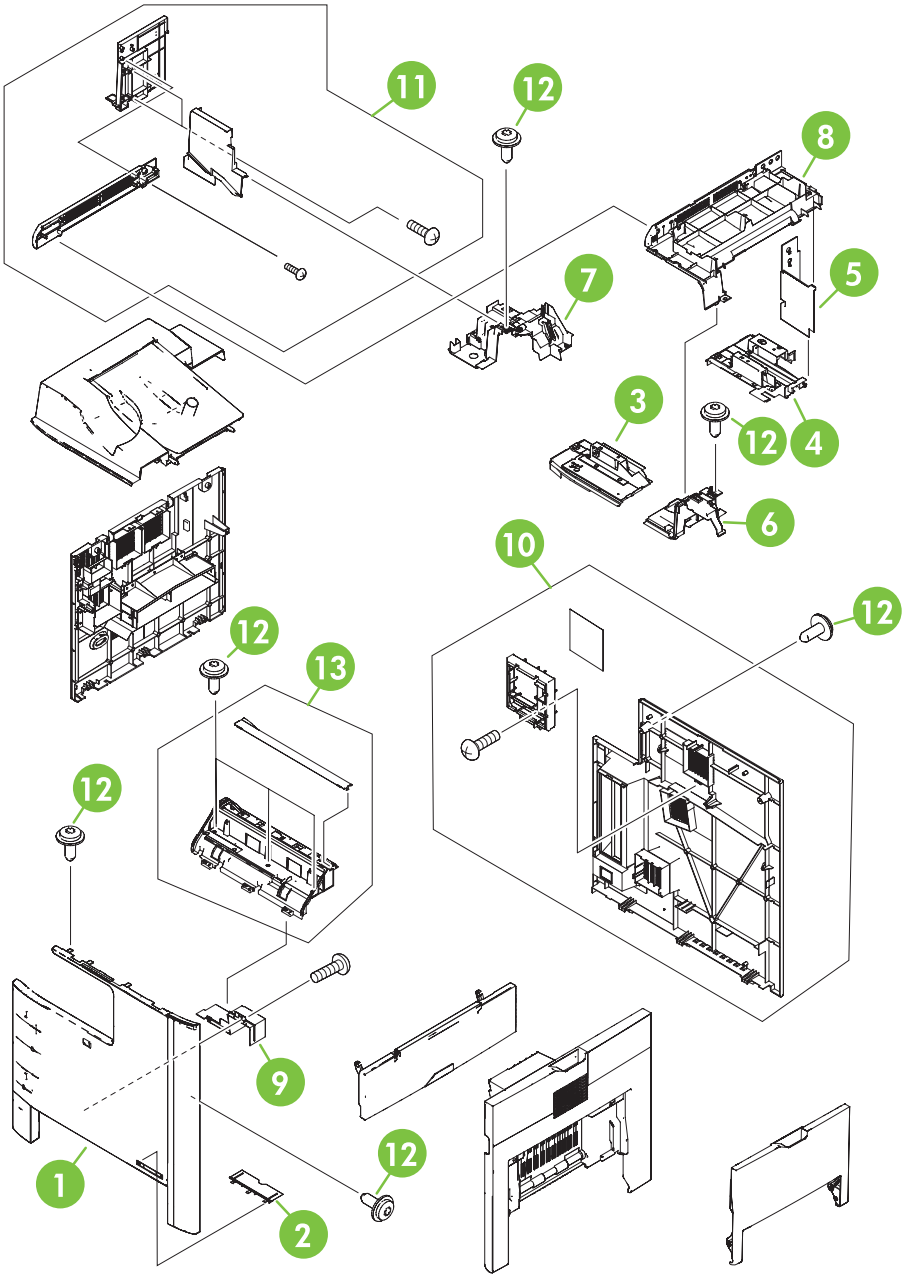


Figure 7-3 External covers and panels

Table 7-3 External covers and panels

Ref	Description	Part number	Qty
1	Front cover	RC1-5694-000CN	1
2	Front cover plate	RC1-5695-000CN	1
3	Face-down front guide	RC1-5865-000CN	1
4	Face-down rear guide	RC1-5866-000CN	1
5	Inner rear cover	RC1-5873-000CN	1
6	Inner top cover	RC1-5877-000CN	1
7	Inner top, rear cover	RC1-5878-000CN	1
8	Paper delivery upper cover	RC1-5880-000CN	1
9	Front cover plate	RC1-5696-000CN	1
10	Rear cover assembly	RM1-2118-000CN	1
11	Paper delivery cover assembly	RM1-2179-000CN	1
12	Screw, RS M3X8	XA9-1504-000CN	12
13	Operation panel holder assembly	RM1-2117-000CN	1

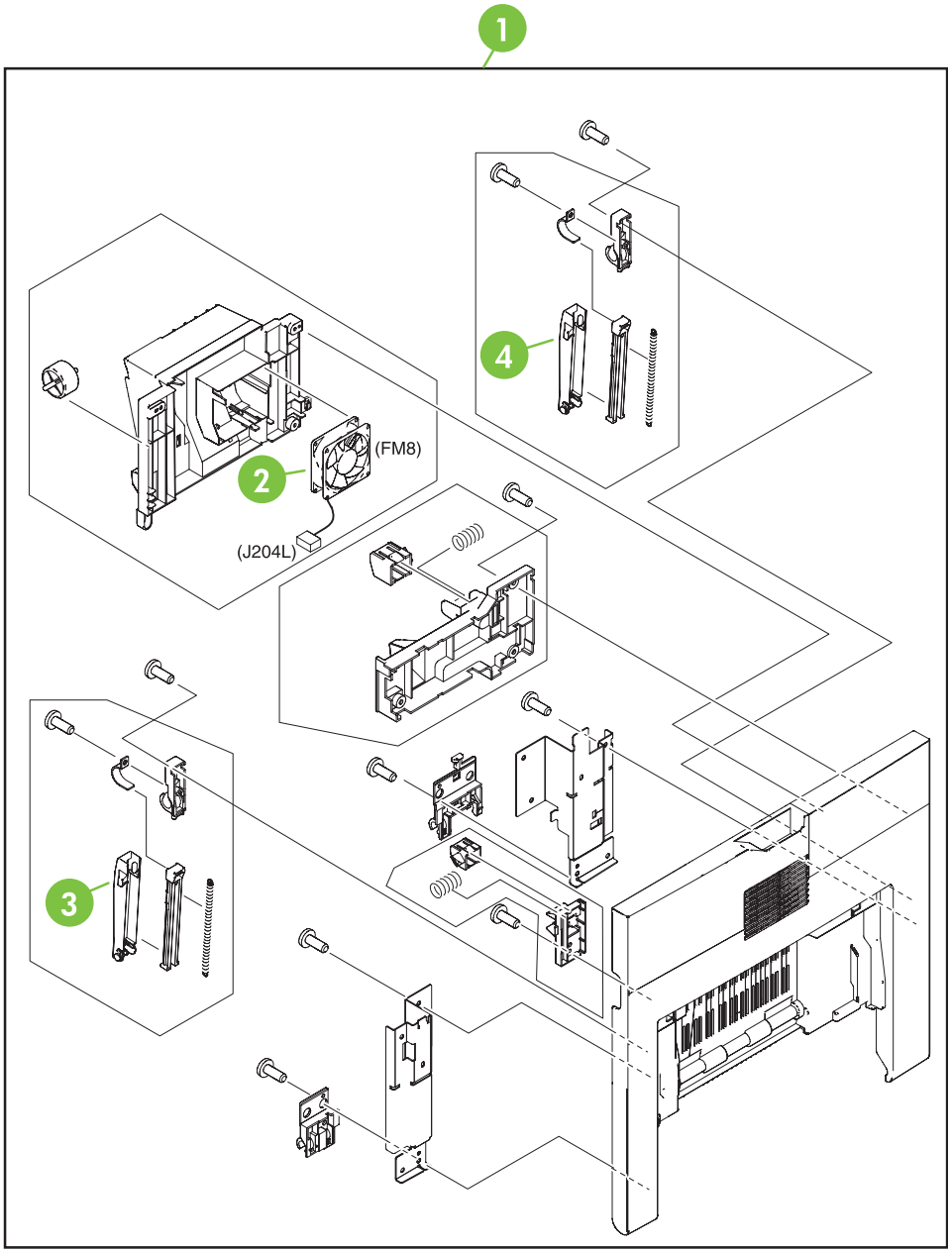


Figure 7-4 Right lower cover assembly

Table 7-4 Right lower cover assembly

Ref	Description	Part number	Qty
1	Right lower cover assembly	RM1-2105-000CN	1
2	Fan	RK2-0622-000CN	1
3	Cover arm	RC1-4846-000CN	1
4	Cover arm	RC1-4864-000CN	1

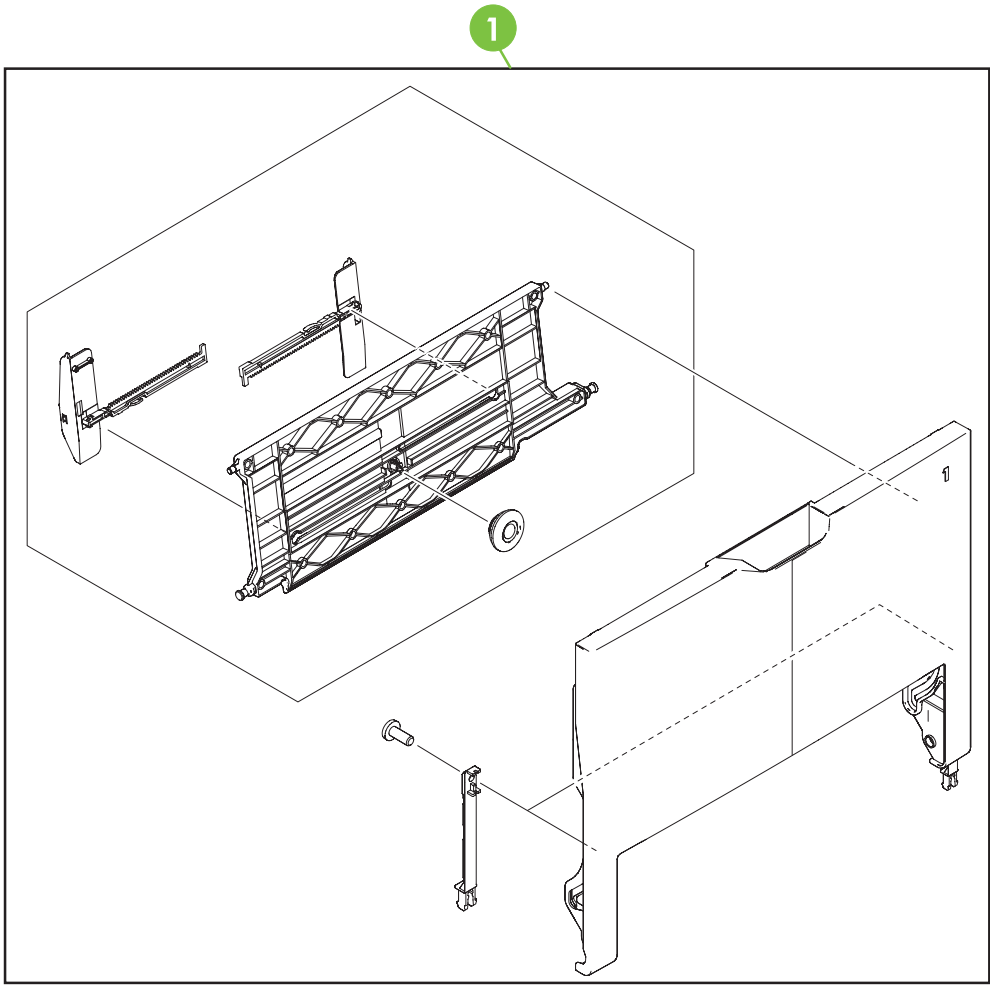


Figure 7-5 Multipurpose tray assembly

Table 7-5 Multipurpose tray assembly

Ref	Description	Part number	Qty
1	Multipurpose tray assembly	RM1-2109-000CN	1

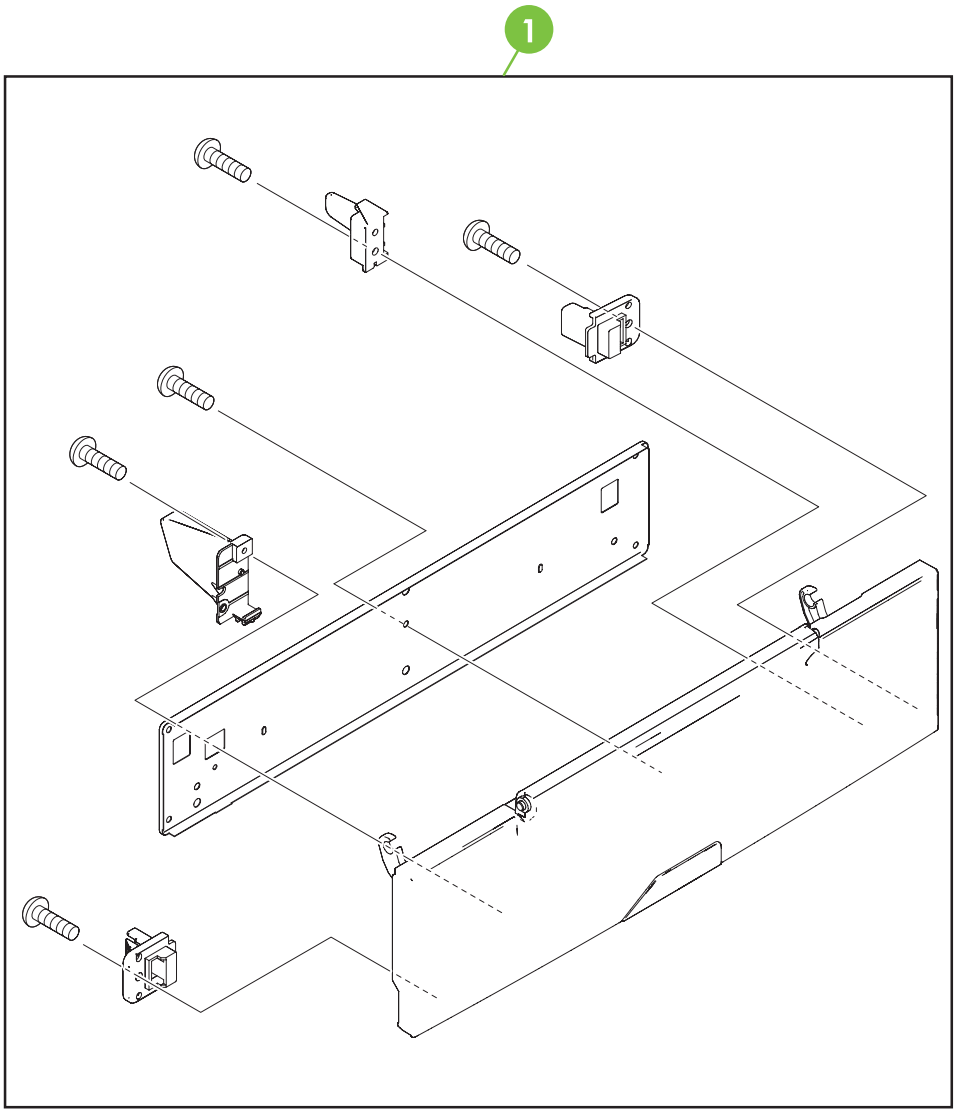


Figure 7-6 Right upper door assembly

Table 7-6 Right upper door assembly

Ref	Description	Part number	Qty
1	Right upper door assembly	RM1-2111-000CN	1

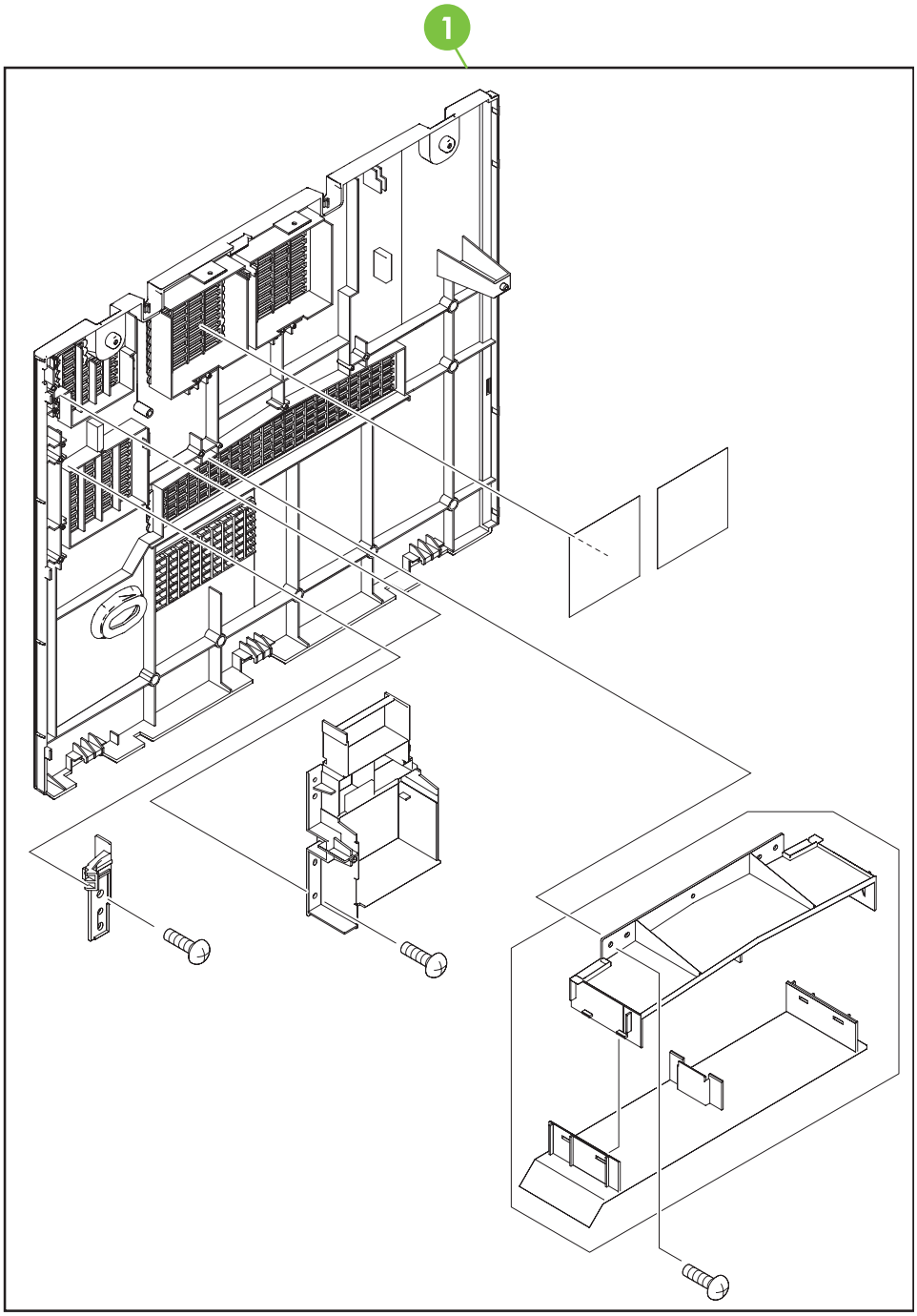


Figure 7-7 Left cover assembly

Table 7-7 Left cover assembly

Ref	Description	Part number	Qty
	Left cover assembly	RM1-2115-000CN	1

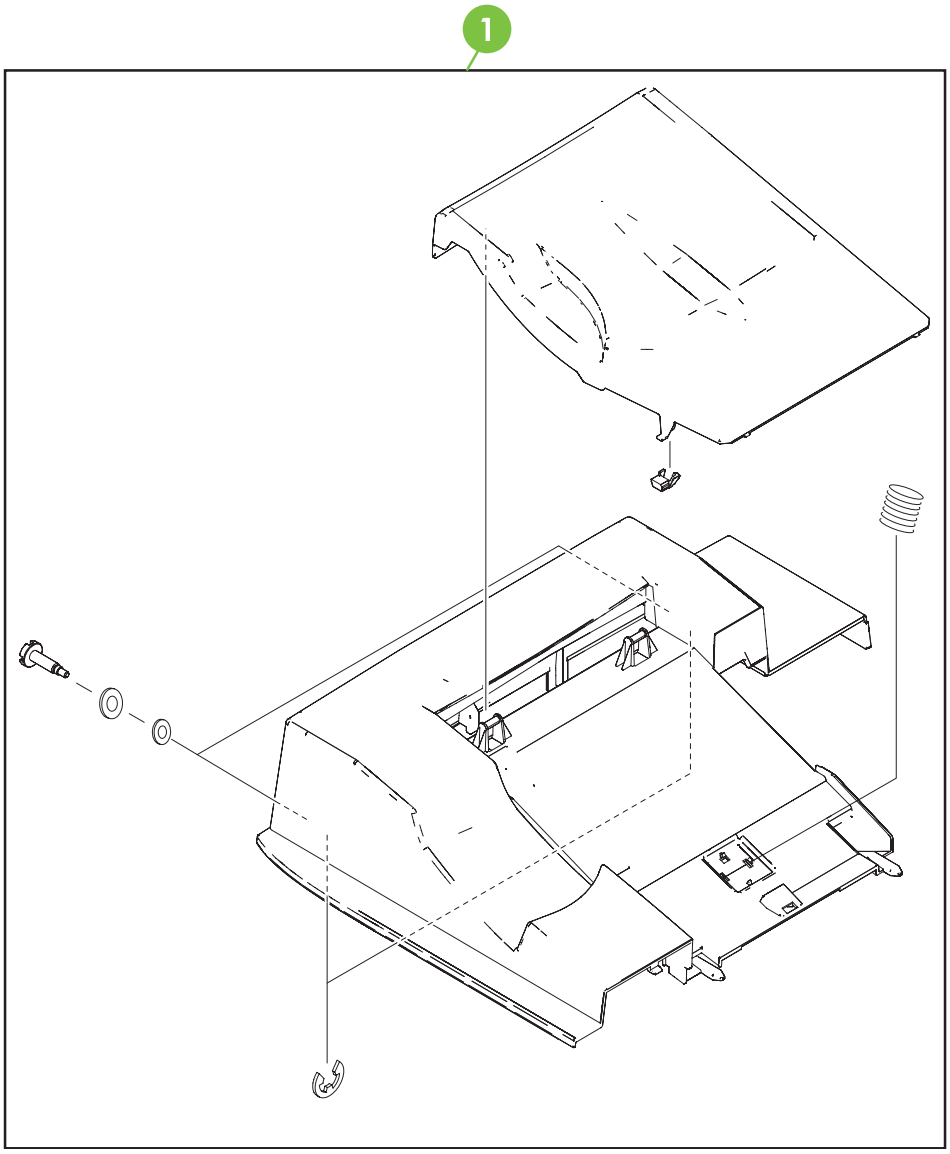


Figure 7-8 Face-down tray assembly

Table 7-8 Face-down tray assembly

Ref	Description	Part number	Qty
	Face-down tray assembly	RM1-2180-000CN	1

Internal components

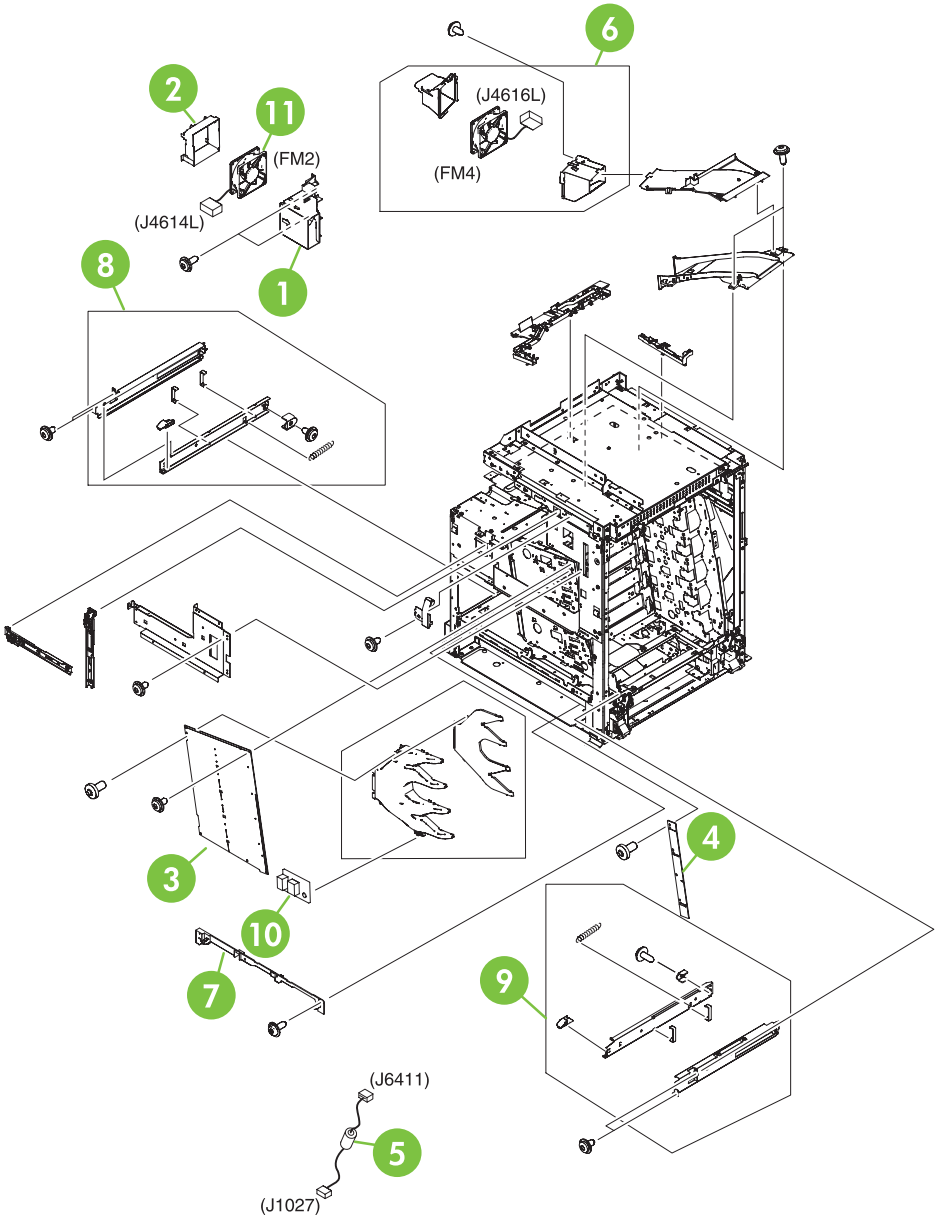


Figure 7-9 Internal components (1 of 8)

Table 7-9 Internal components (1 of 8)

Ref	Description	Part number	Qty
1	Fan holder	RC1-4314-000CN	1
2	Fan duct	RC1-5711-000CN	1
3	High-voltage power supply PCB	RM1-1608-000CN	1
4	Toner sensor PCB assembly	RM1-1609-000CN	1
5	Control panel cable assembly	RM1-2354-000CN	1
6	Fan assembly	RM1-2178-000CN	1
7	Inner front cover	RC1-5988-000CN	1
8	Left rail assembly	RM1-2227-000CN	1
9	Right rail assembly	RM1-2228-000CN	1
10	Humidity sensor unit	WP2-5187-000CN	1
11	Fan	RK2-0623-000CN	1

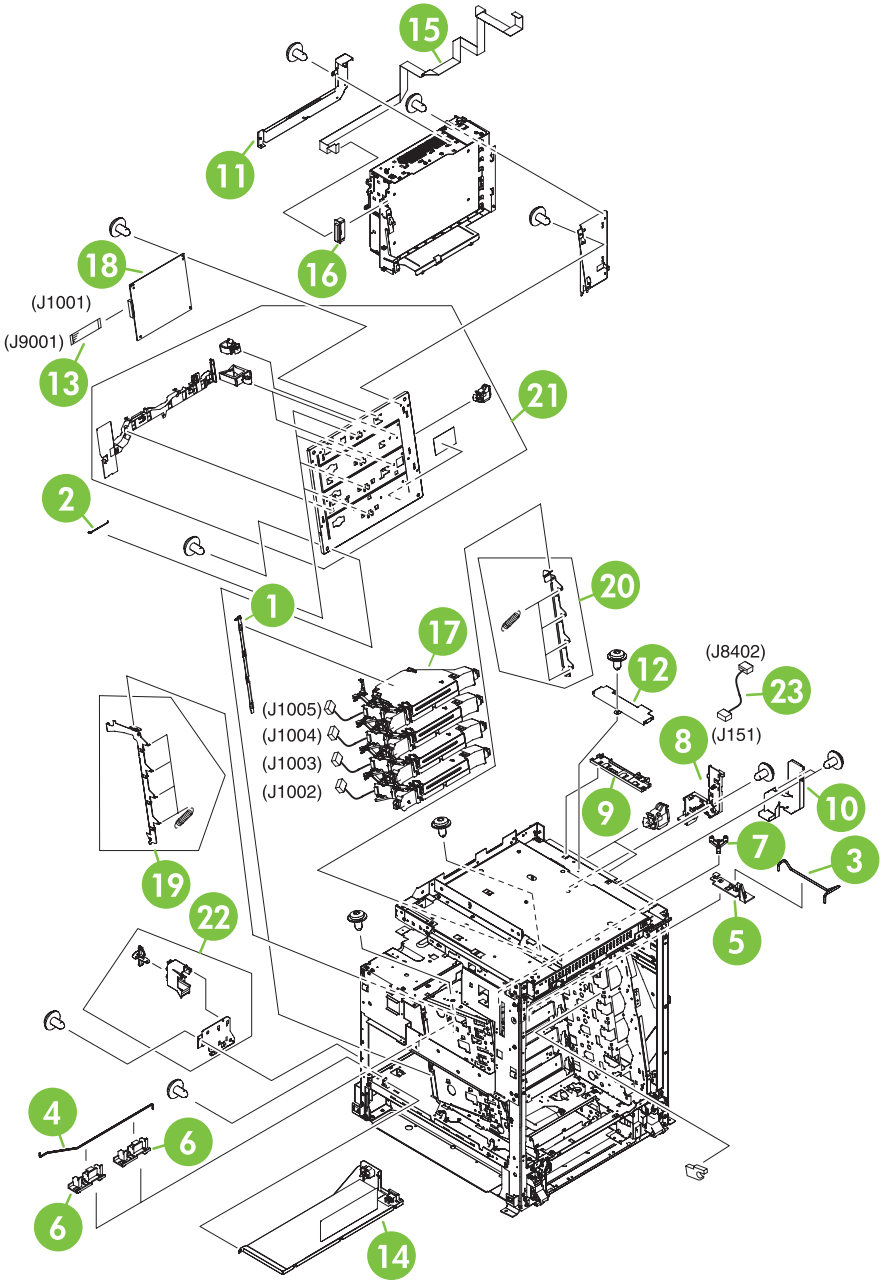


Figure 7-10 Internal components (2 of 8)

Table 7-10 Internal components (2 of 8)

Ref	Description	Part number	Qty
1	Scanner support	RC1-4312-000CN	1
2	Scanner support spring	RC1-4313-000CN	4
3	Switching arm	RC1-5646-000CN	1
4	Switching arm	RC1-5647-000CN	1
5	Switching arm guide	RC1-5648-000CN	2
6	Switching arm guide	RC1-5649-000CN	1
7	Switching arm link	RC1-5650-000CN	1
8	Cable holder	RC1-5771-000CN	1
9	Cable holder	RC1-5773-000CN	1
10	Shield cover	RC1-5776-000CN	1
11	Shield cover	RC1-5778-000CN	1
12	Shield cover	RC1-5779-000CN	1
13	Flat cable	RK2-1171-000CN	1
14	Low–voltage power PCB assembly 110V	RK2-0627-000CN	1
14	Low–voltage power PCB assembly 220V	RK2-0628-000CN	1
15	Flat cable	RK2-0802-000CN	1
16	Flat cable connection 23P	RK2-0816-000CN	1
17	Laser/Scanner assembly	RM1-1591-000CN	4
18	DC controller assembly	RM1-2346-000CN	1
19	Left scanner retaining assembly	RM1-1664-000CN	1
20	Right scanner retaining assembly	RM1-1665-000CN	1
21	Rear plate assembly	RM1-1679-000CN	1
22	Power supply switch assembly	RM1-2099-000CN	1
23	Power cable assembly	RM1-2353-000CN	1

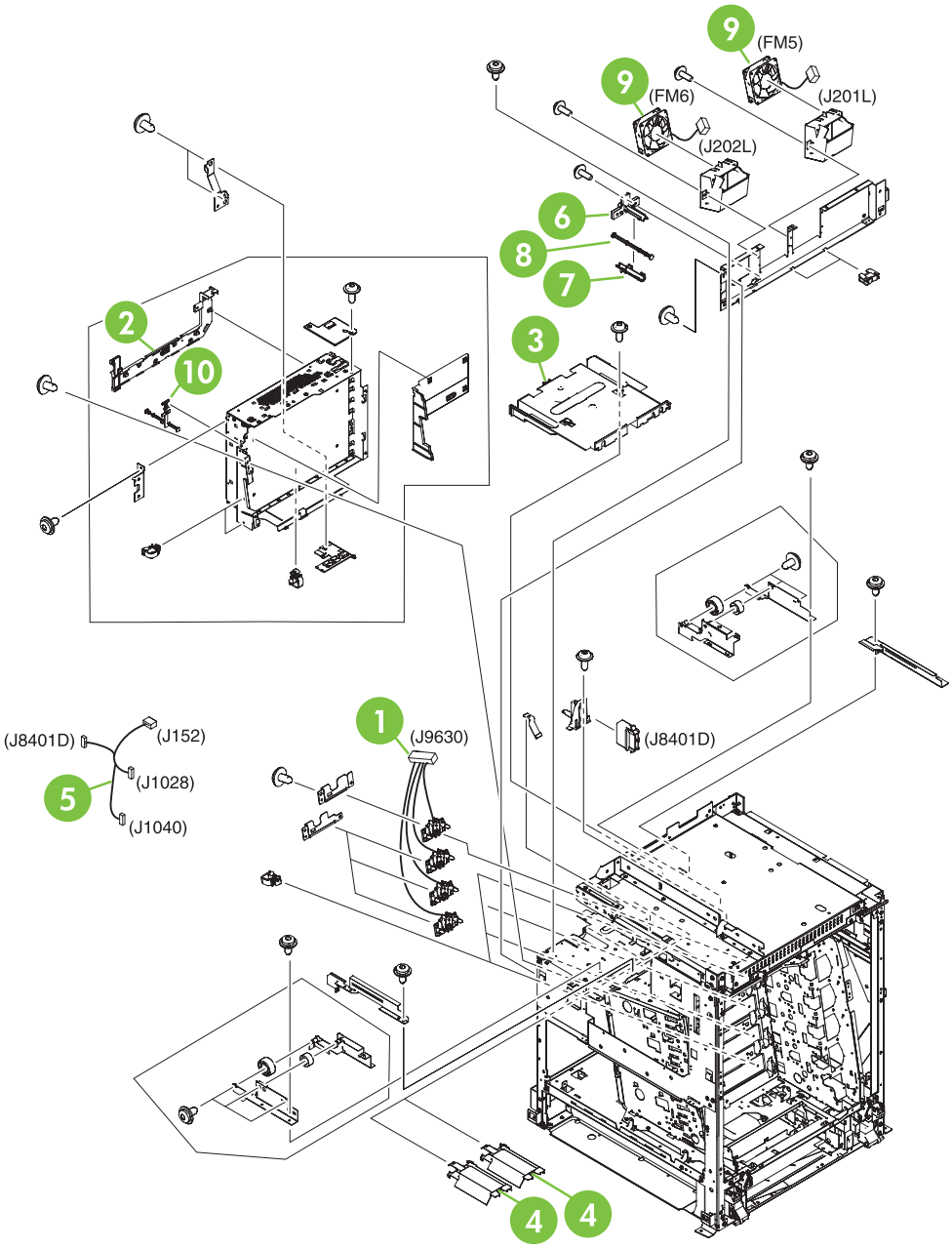


Figure 7-11 Internal components (3 of 8)

Table 7-11 Internal components (3 of 8)

Ref	Description	Part number	Qty
1	Memory contact cable	RM1-1653-000CN	1
2	Cable holder	RC1-5772-000CN	1
3	Face down center guide	RC1-5864-000CN	1
4	Fan duct	RC1-5867-000CN	2
5	Feed unit connect cable assembly	RM1-2355-000CN	1
6	Test print upper guide	RC1-5728-000CN	1
7	Test print lower guide	RC1-5759-000CN	1
8	Test print rod	RC1-5760-000CN	1
9	Fan	RK2-0621-000CN	2
10	Test print button	RC1-4345-000CN	1

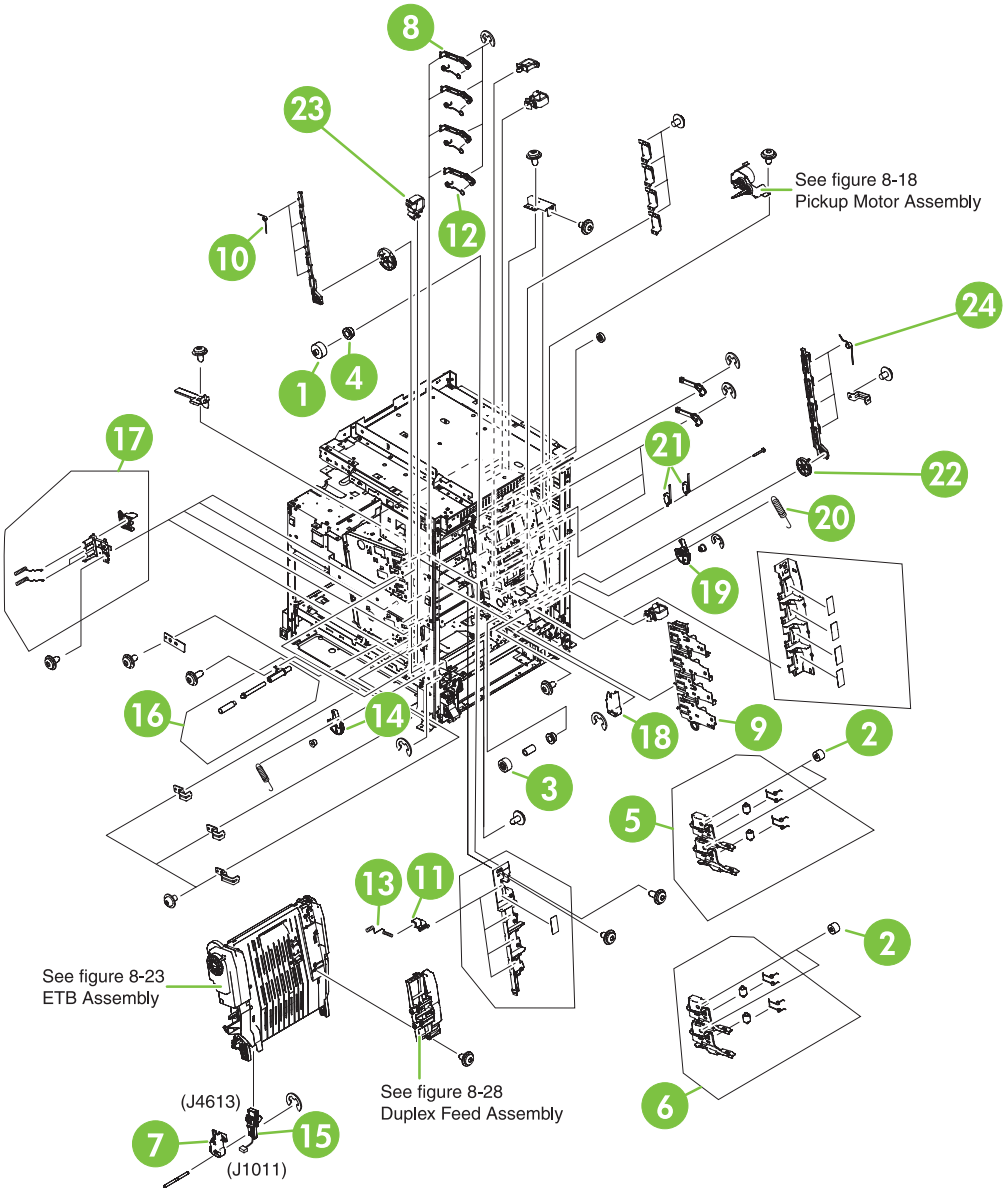


Figure 7-12 Internal components (4 of 8)

Table 7-12 Internal components (4 of 8)

Ref	Description	Part number	Qty
1	30T gear	RC1-4309-000CN	4
2	29T gear	RC1-4310-000CN	4
3	18T gear	RC1-4324-000CN	1
4	Bushing	RC1-4325-000CN	5
5	Cartridge guide assembly, right upper	RM1-2142-000CN	1
6	Cartridge guide assembly, right lower	RM1-2143-000CN	1
7	Left cap	RC1-4386-000CN	1
8	Cartridge pressure left lever	RC1-4387-000CN	4
9	Cartridge left guide	RC1-5766-000CN	1
10	Tension spring	RC1-4393-000CN	4
11	HV terminal block	RC1-4394-000CN	4
12	Tension spring	RC1-4395-000CN	4
13	Compression spring	RC1-4396-000CN	4
14	Pressure plate	RC1-4397-000CN	1
15	Connector guide assembly	RM1-1675-000CN	1
16	Attraction contact assembly	RM1-1676-000CN	1
17	HV terminal mount assembly	RM1-2144-000CN	4
18	Right cap	RC1-4352-000CN	1
19	Pressure plate	RC1-4360-000CN	1
20	Tension spring	RC1-4423-000CN	1
21	Switch	WC4-5188-000CN	2
22	70T gear	RC1-4356-000CN	1
23	70T gear	RC1-4392-000CN	1
24	Tension spring	RC1-4357-000CN	4

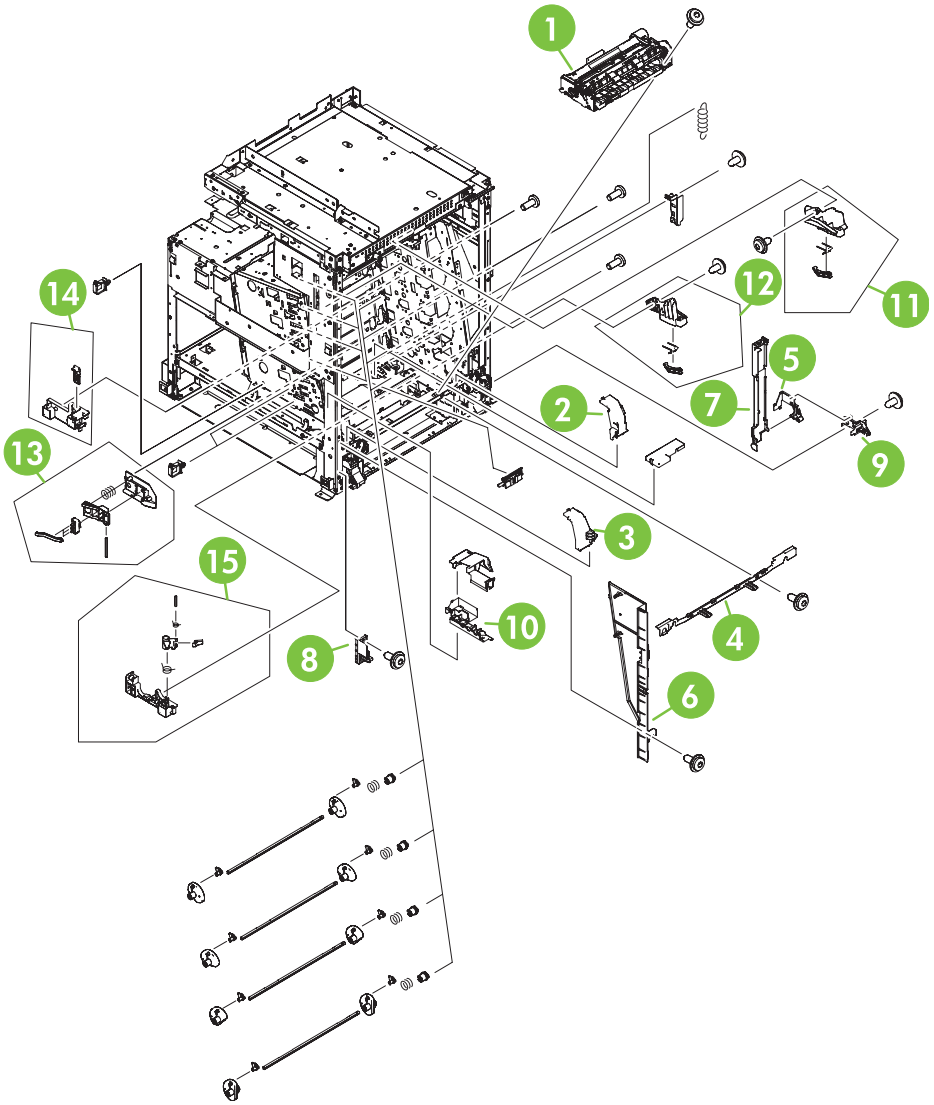


Figure 7-13 Internal components (5 of 8)

Table 7-13 Internal components (5 of 8)

Ref	Description	Part number	Qty
1	Paper feed assembly	RM1-1756-000CN	1
2	Lower right cover	RC1-4322-000CN	1
3	Lower left cover	RC1-4323-000CN	1
4	Base plate edge cover	RC1-5644-000CN	1
5	Cable guide	RC1-5645-000CN	1
6	Inner cover	RC1-5658-000CN	1
7	Door cable cover	RC1-5677-000CN	1
8	Front door hinge shaft	RC1-5692-000CN	1
9	Rear door hinge shaft	RC1-5693-000CN	1
10	Cable guide	RC1-5904-000CN	1
11	Right ETB lever assembly	RM1-1662-000CN	1
12	Left ETB lever assembly	RM1-1663-000CN	1
13	Size sensing assembly	RM1-0041-020CN	1
14	Left reg. adjustment assembly	RM1-1007-000CN	1
15	Kicker assembly	RM1-1008-000CN	1

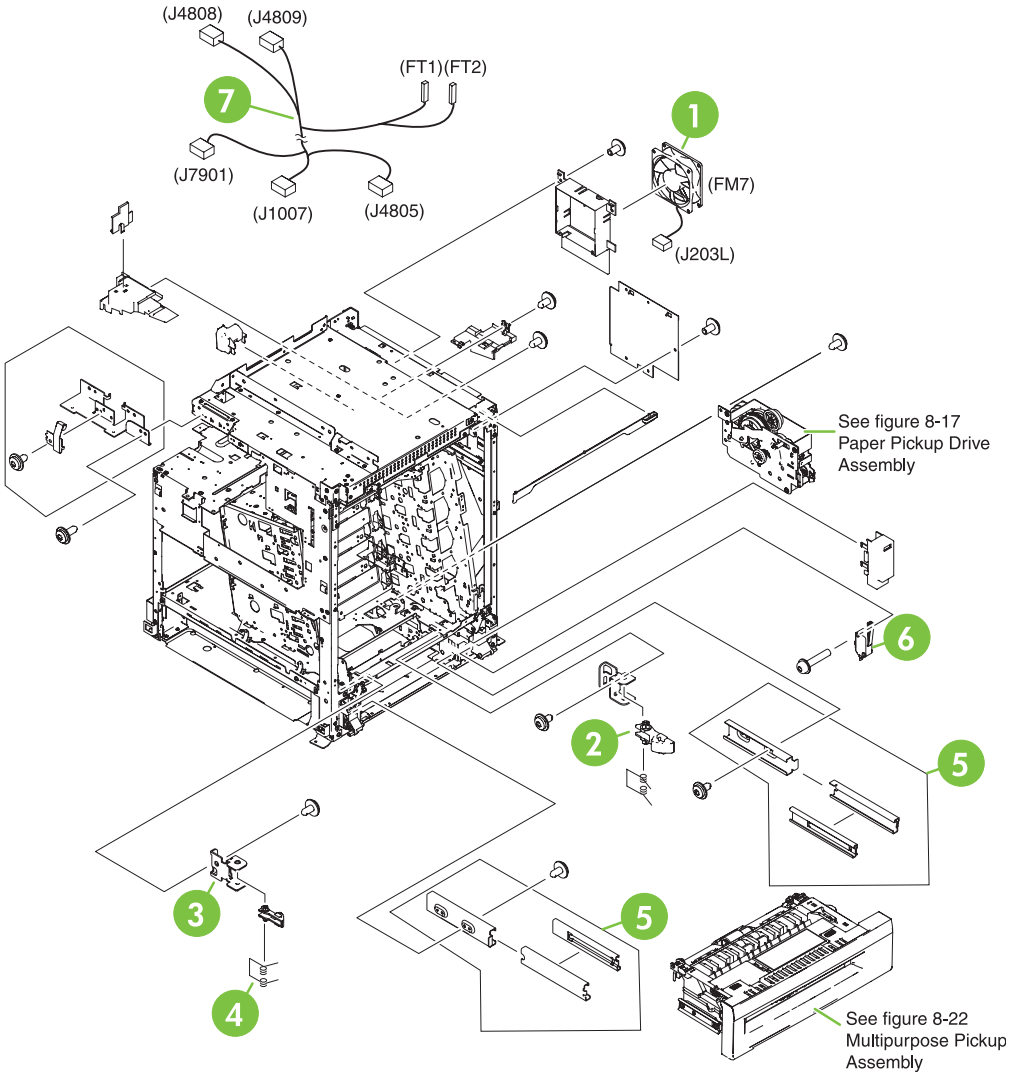


Figure 7-14 Internal components (6 of 8)

Table 7-14 Internal components (6 of 8)

Ref	Description	Part number	Qty
1	Fan	RK2-0621-000CN	1
2	Lock lever	RC1-5926-000CN	2
3	Lock plate	RC1-5927-000CN	2
4	Torsion spring	RC1-5953-000CN	2
5	MPU rail assembly	RM1-2203-000CN	2
6	Microswitch	RK2-0804-000CN	1
7	Door cable assembly	RM1-2356-000CN	1

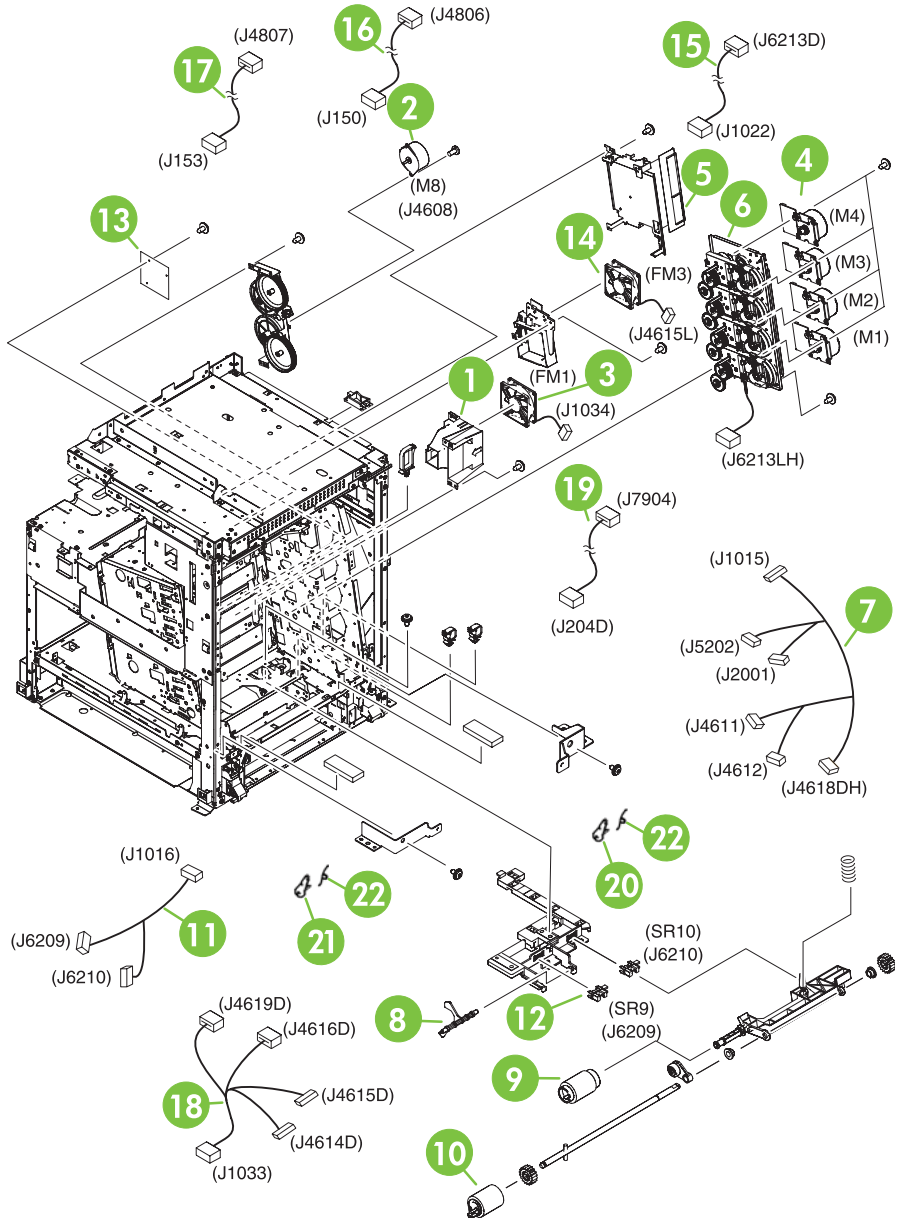


Figure 7-15 Internal components (7 of 8)

Table 7-15 Internal components (7 of 8)

Ref	Description	Part number	Qty
1	Fan holder	RC1-4316-000CN	1
2	DC stepping motor	RK2-0618-000CN	1
3	Fan	RK2-0622-000CN	1
4	Drum motor assembly	RM1-1659-000CN	4
5	Sub power supply assembly	RM1-2119-000CN	1
6	Main drive assembly	RM1-2137-000CN	1
7	Pickup cable assembly	RM1-2361-000CN	1
8	Sensor lever	RC1-6013-000CN	1
9	Paper pickup roller assembly	RM1-0036-020CN	1
10	Paper feed roller assembly	RM1-0037-020CN	1
11	Paper sensor cable assembly	RM1-2350-000CN	1
12	Photo interrupter, TLP1243	WG8-5696-000CN	2
13	Fan driver PCB assembly	RM1-2345-000CN	1
14	Fan	RK2-0621-000CN	1
15	Drive sensor cable assembly	RM1-2349-000CN	1
16	MFP power cable assembly	RM1-2351-000CN	1
17	Power save cable assembly	RM1-2352-000CN	1
18	Fan connecting cable assembly	RM1-2357-000CN	1
19	Fan connecting cable assembly	RM1-2358-000CN	1
20	M.P. link, right arm	RC1-4439-000CN	1
21	M.P. link, left arm	RC1-4441-000CN	1
22	Torsion spring	RC1-4440-000CN	2

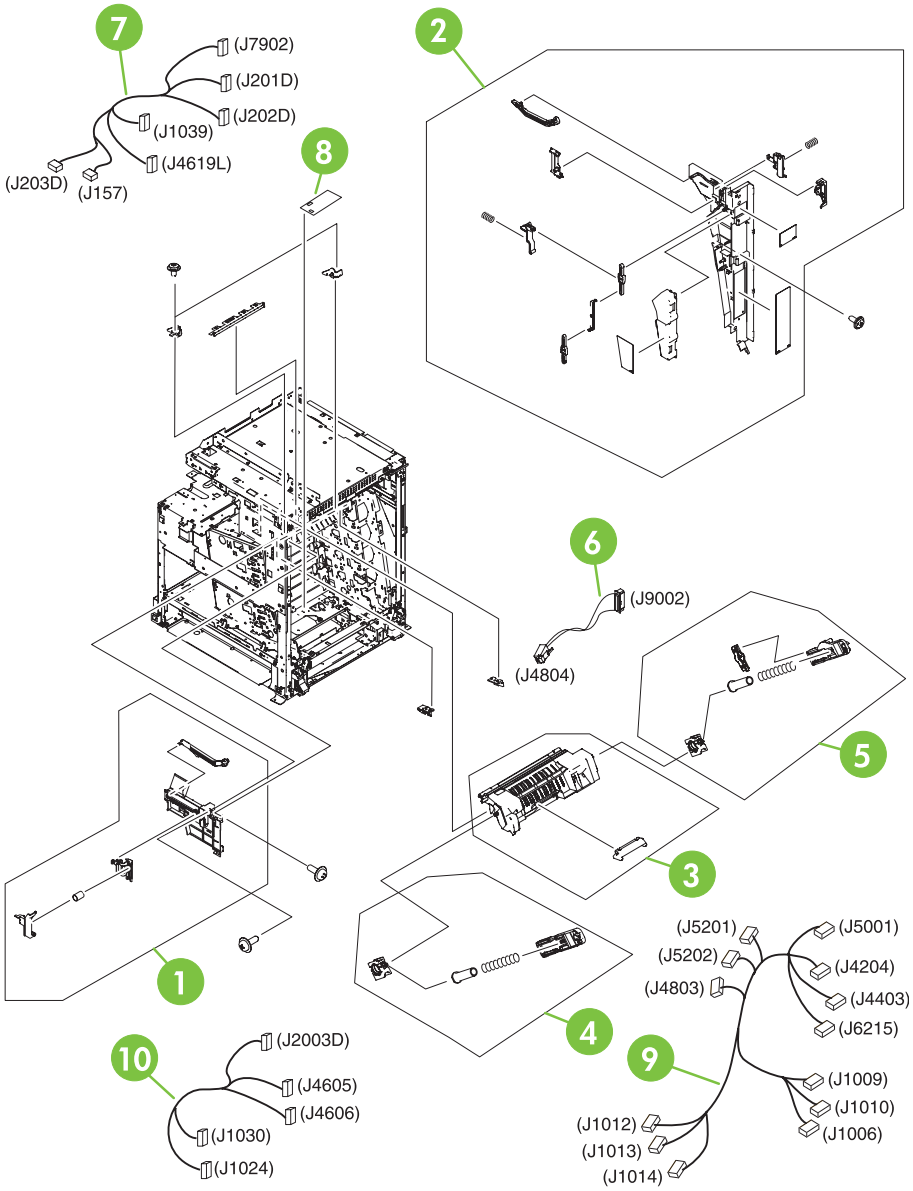


Figure 7-16 Internal components (8 of 8)

Table 7-16 Internal components (8 of 8)

Ref	Description	Part number	Qty
1	Front inner cover assembly	RM1-2100-000CN	1
2	Rear inner cover assembly	RM1-2101-000CN	1
3	Fuser door assembly	RM1-2102-000CN	1
4	Front fuser door link assembly	RM1-2103-000CN	1
5	Rear fuser door link assembly	RM1-2104-000CN	1
6	Formatter power cable assembly	RM1-1642-000CN	1
7	Fan connecting cable assembly	RM1-2360-000CN	1
8	Memory PCB assembly	RM1-1618-000CN	1
9	Main cable assembly	RM1-1627-000CN	1
10	Fuser motor cable assembly	RM1-1631-000CN	1

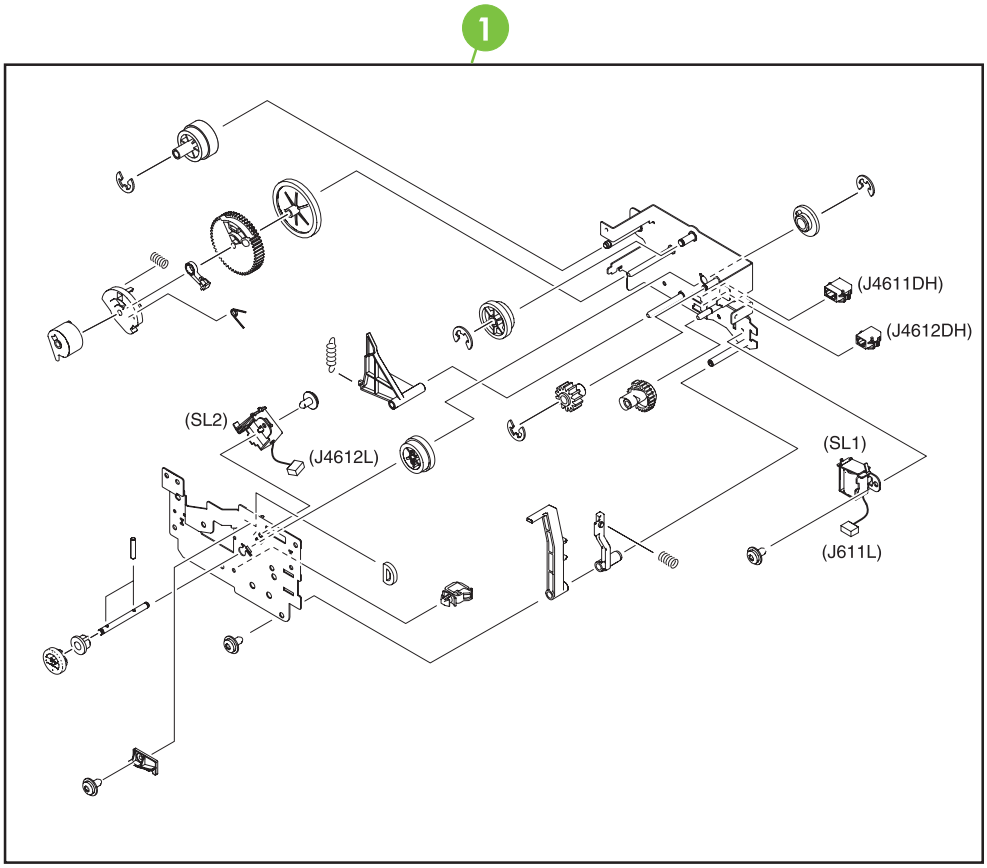


Figure 7-17 Paper pickup drive assembly

Table 7-17 Paper pickup drive assembly

Ref	Description	Part number	Qty
1	Paper pickup drive assembly	RM1-2198-000CN	1

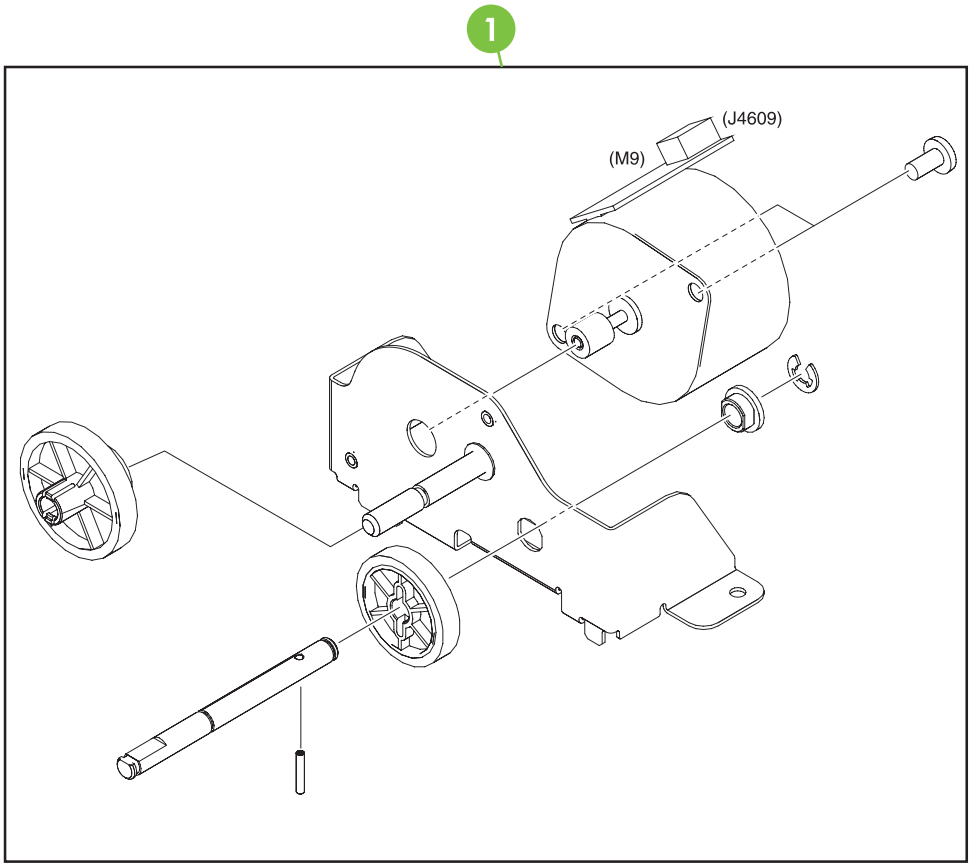


Figure 7-18 Pickup motor assembly

Table 7-18 Pickup motor assembly

Ref	Description	Part number	Qty
1	pickup motor assembly	RM1-2189-000CN	1

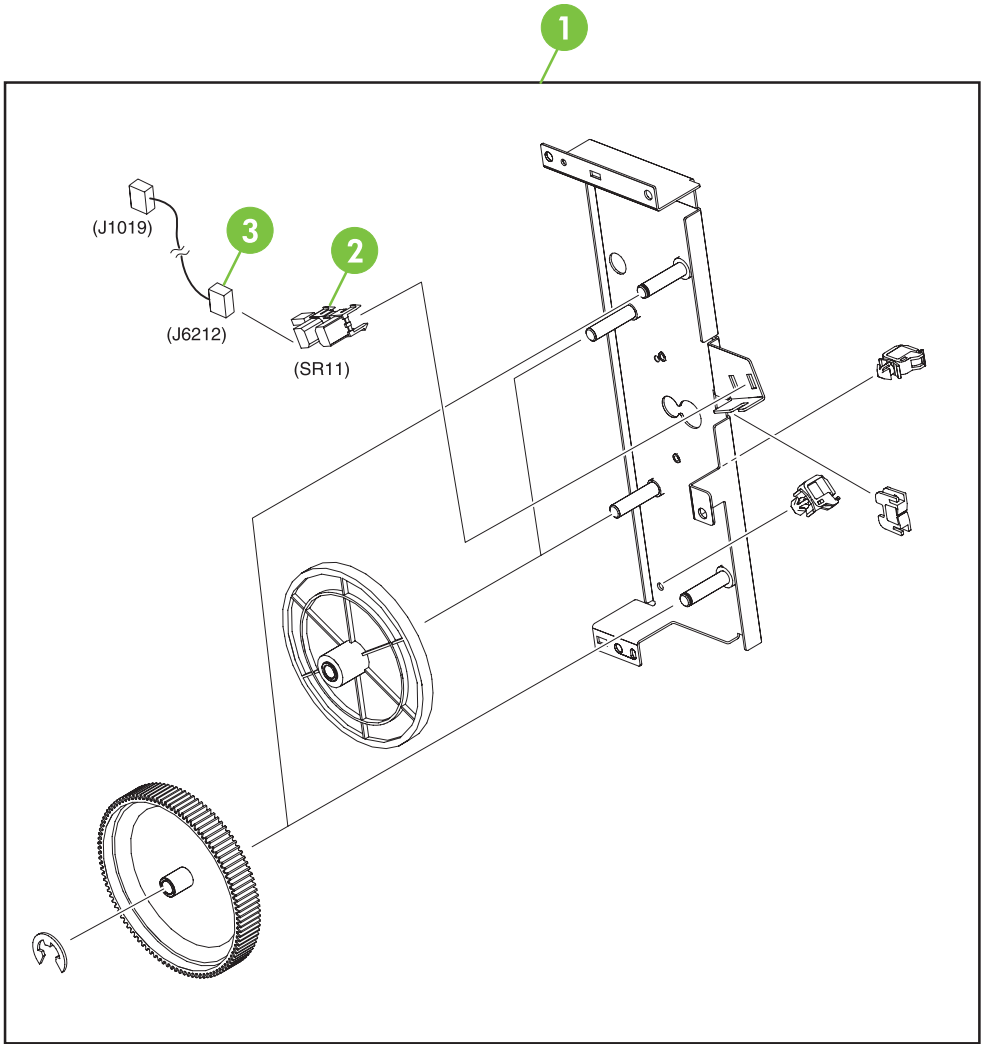


Figure 7-19 Disengaging drive assembly

Table 7-19 Disengaging drive assembly

Ref	Description	Part number	Qty
1	Disengaging Drive Assembly	RM1-1717-000CN	1
2	Photo Interrupter TLP1243	WG8-5696-000CN	1
3	Developing disengaging sensor cable	RM1-1644-000CN	1

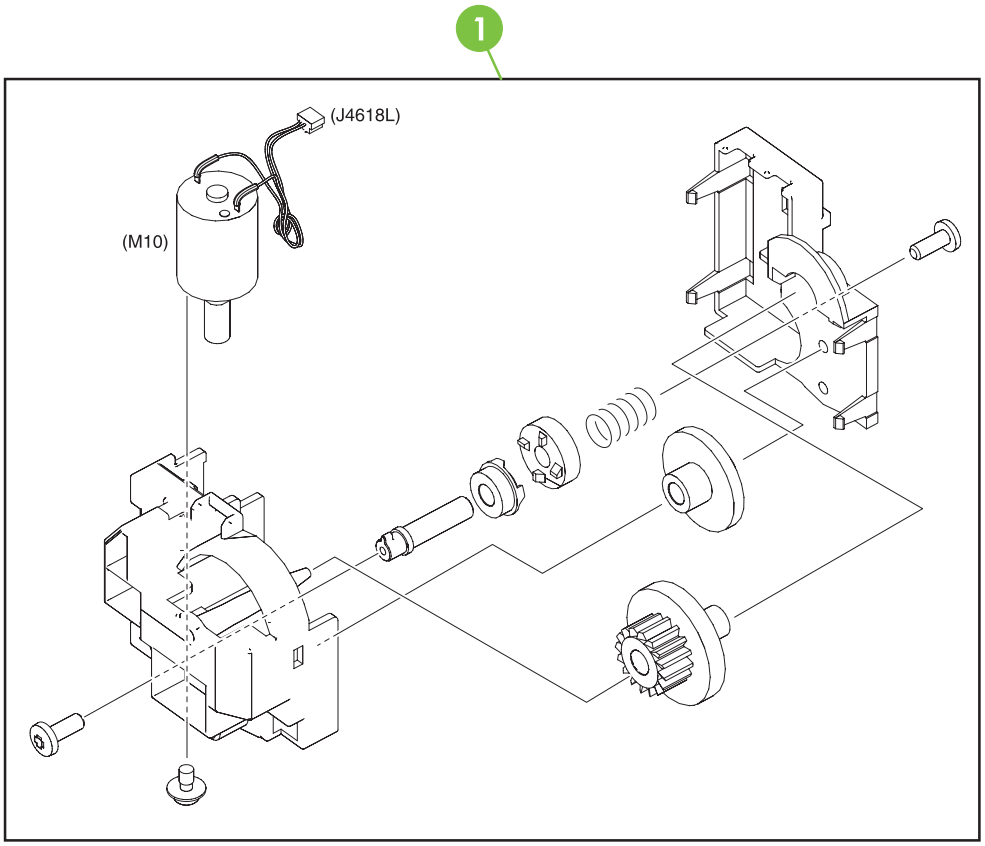


Figure 7-20 Lifter drive assembly

Table 7-20 Lifter drive assembly

Ref	Description	Part number	Qty
1	Lifter drive assembly	RM1-1750-000CN	1

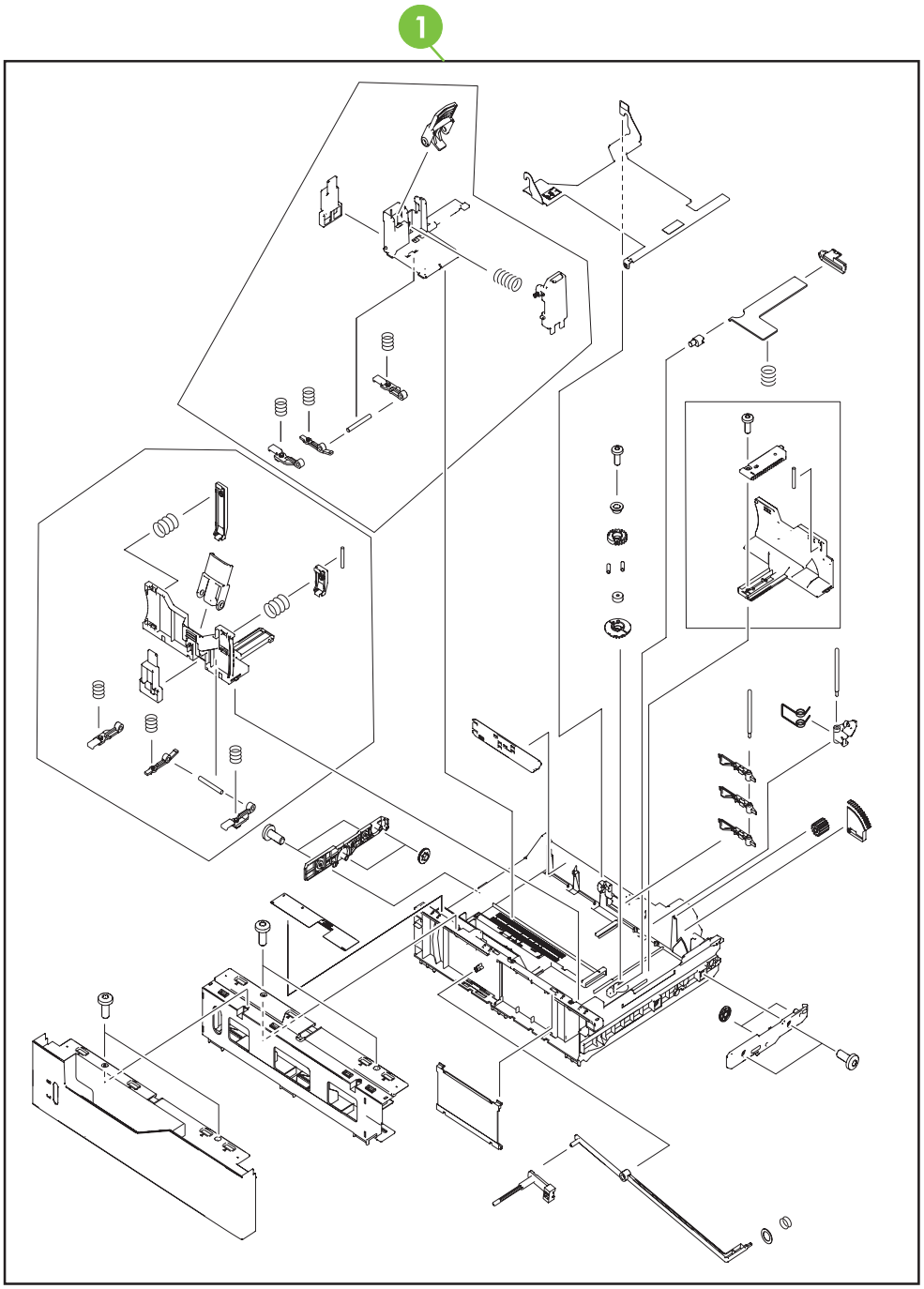


Figure 7-21 Cassette

Table 7-21 Cassette

Ref	Description	Part number	Qty
1	Cassette	RM1-2219-000CN	1

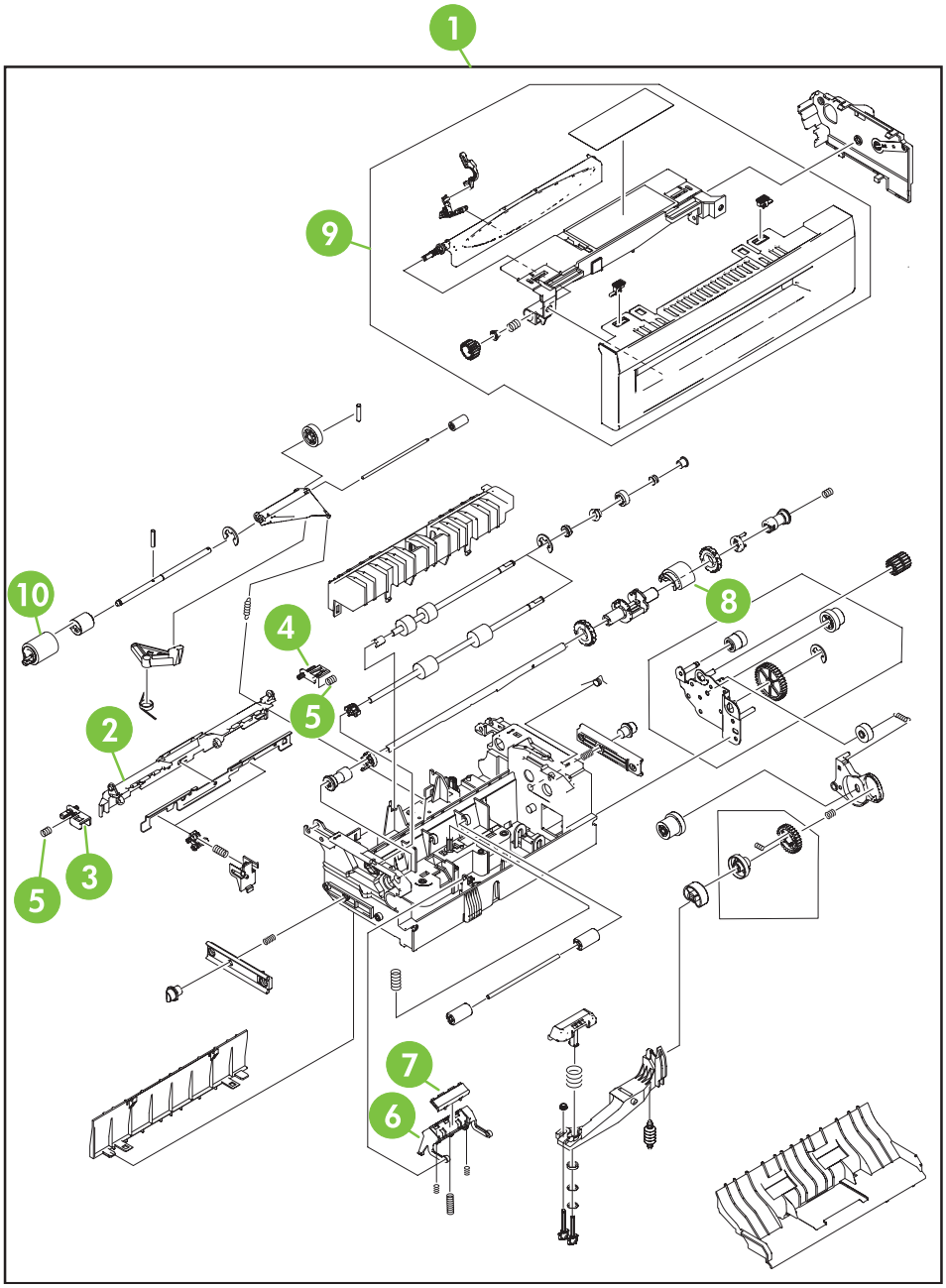


Figure 7-22 Multipurpose pickup assembly

Table 7-22 Multipurpose pickup assembly

Ref	Description	Part number	Qty
1	Multipurpose pickup assembly	RM1-2199-000CN	1
2	Retard guide	RC1-5940-000CN	1
3	Retard guide pin	RC1-5938-000CN	1
4	Retard guide pin	RC1-5939-000CN	1
5	Compression spring	RU5-2514-000CN	2
6	Base separation pad	RB2-8386-000CN	1
7	Separation pad	RF5-3750-020CN	1
8	pickup roller	RL1-0019-000CN	1
9	Cst. Cover assembly, B	RM1-2200-000CN	1
10	Paper feed roller assembly	RM1-0037-020CN	1

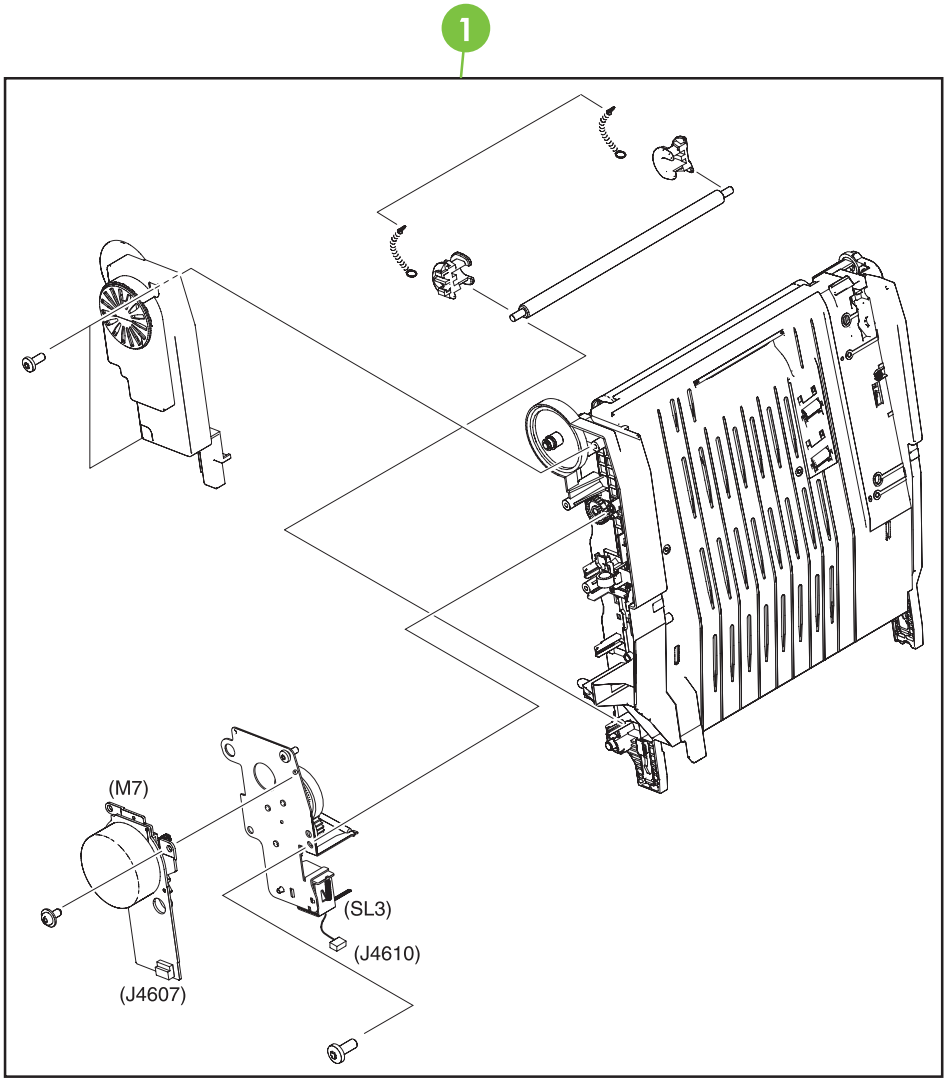


Figure 7-23 ETB assembly

Table 7-23 ETB assembly

Ref	Description	Part number	Qty
1	ETB assembly	RM1-3161-080CN	1

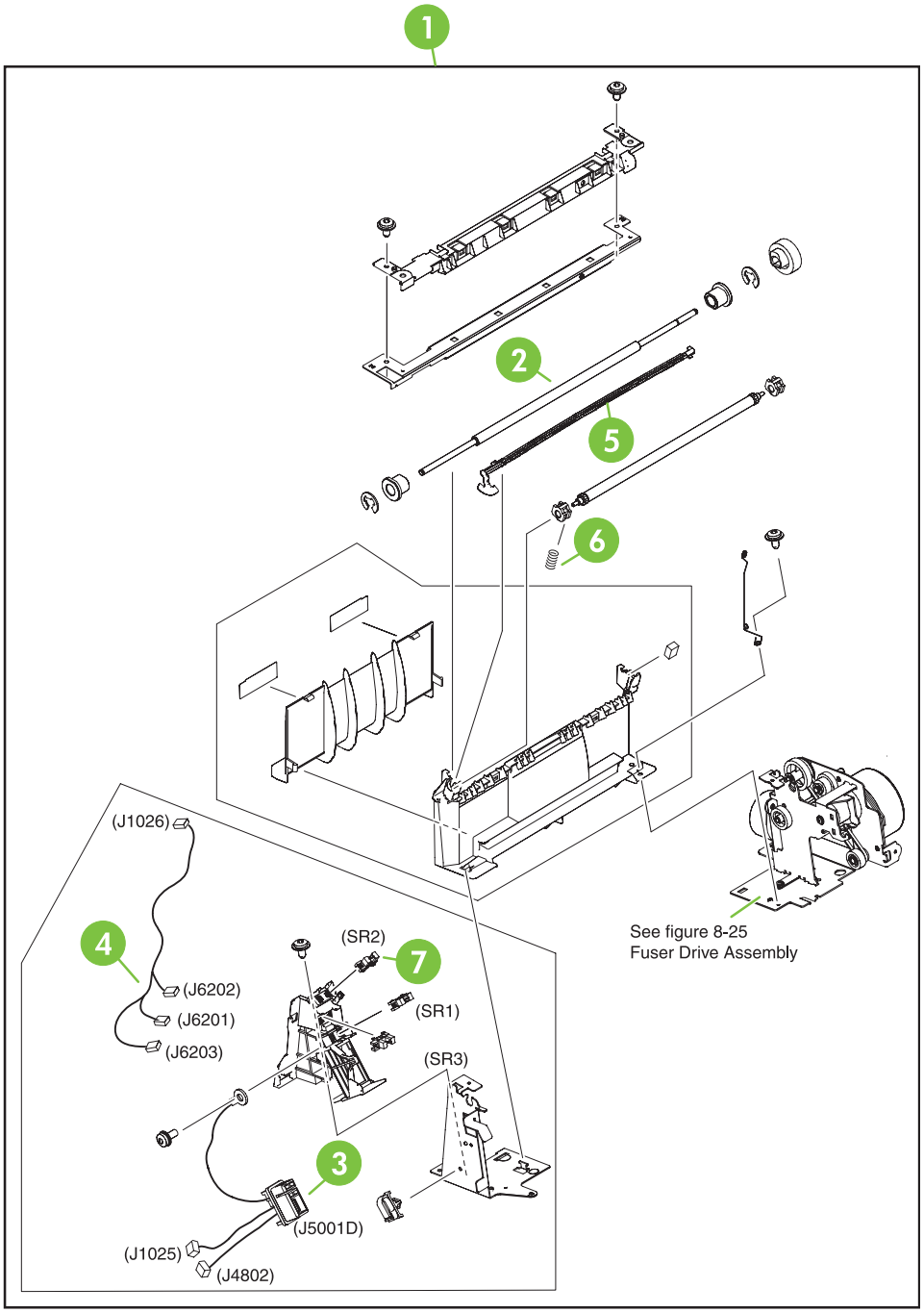


Figure 7-24 Delivery assembly

Table 7-24 Delivery assembly

Ref	Description	Part number	Qty
1	Delivery assembly 110-127V (new)	RM1-1730-030CN	1
1	Delivery assembly 220-240V (new)	RM1-1737-030CN	1
2	Delivery roller 110-127V	RC1-4874-000CN	1
2	Delivery roller 220-240V	RC1-4875-000CN	1
3	Fuser drive cable assembly	RM1-1634-000CN	1
4	Fuser drive cable assembly	RM1-1638-000CN	1
5	Full sensor flag	RL1-0612-000CN	1
6	Compression spring	RC1-4803-000CN	1
7	Photo interrupter, TLP1243	WG8-5696-000CN	3

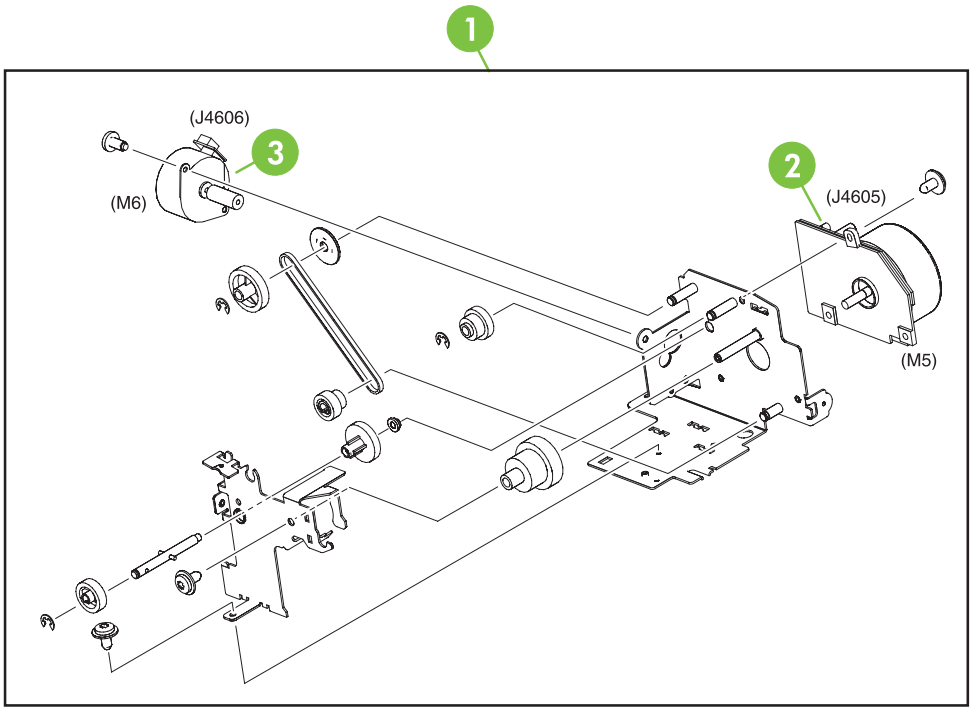


Figure 7-25 Fuser drive assembly

Table 7-25 Fuser drive assembly

Ref	Description	Part number	Qty
1	Fuser drive assembly	RM1-1729-000CN	1
2	DC motor	RK2-0615-000CN	1
3	DC stepping motor	RK2-0619-000CN	1

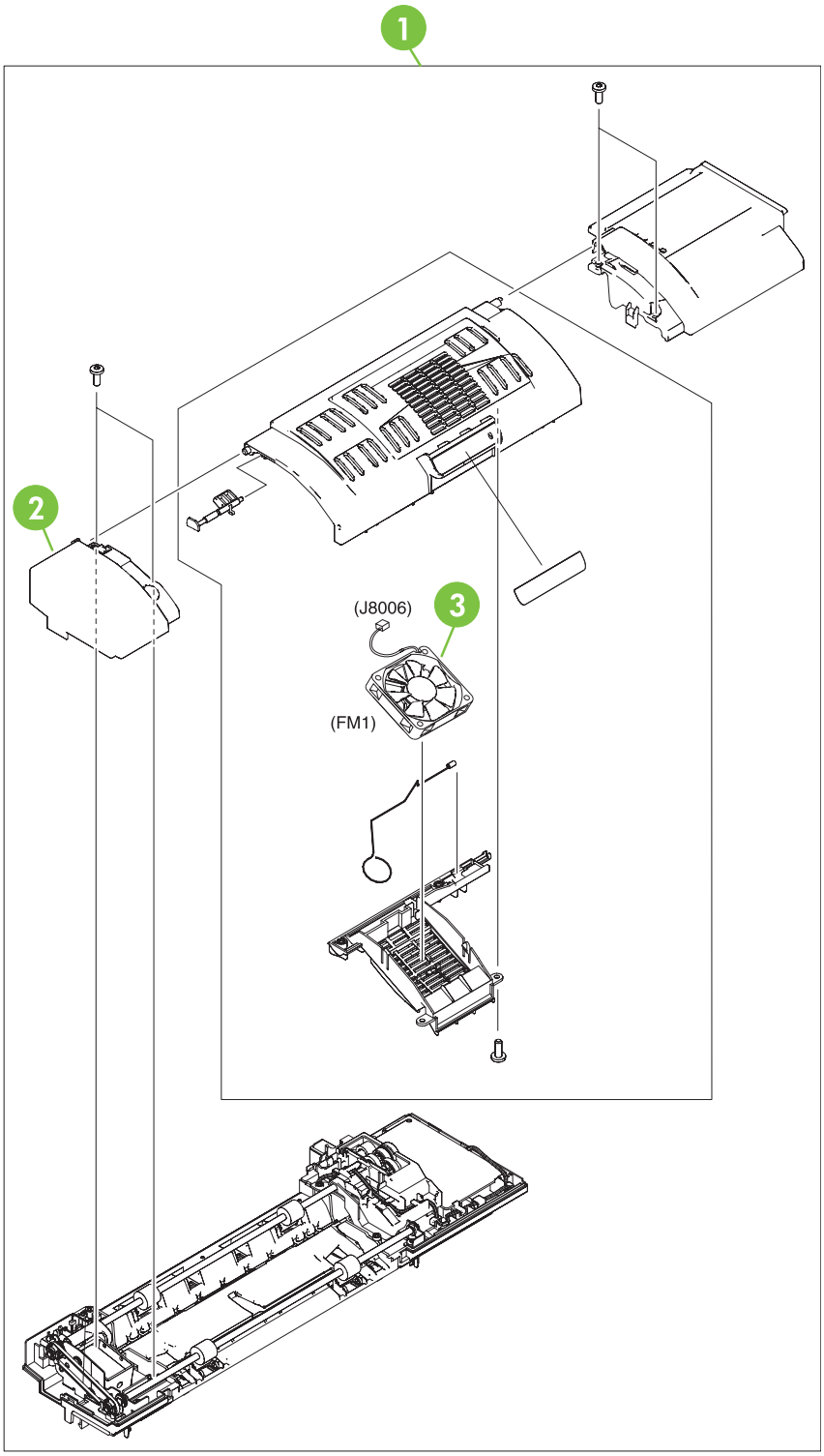


Figure 7-26 Duplexing unit (1 of 2)

Table 7-26 Duplexing unit (1 of 2)

Ref	Description	Part number	Qty
1	Duplexing unit	RM1-2112-000CN	1
2	Solenoid cover	RL1-0654-000CN	1
3	Fan	RK2-0648-000CN	1

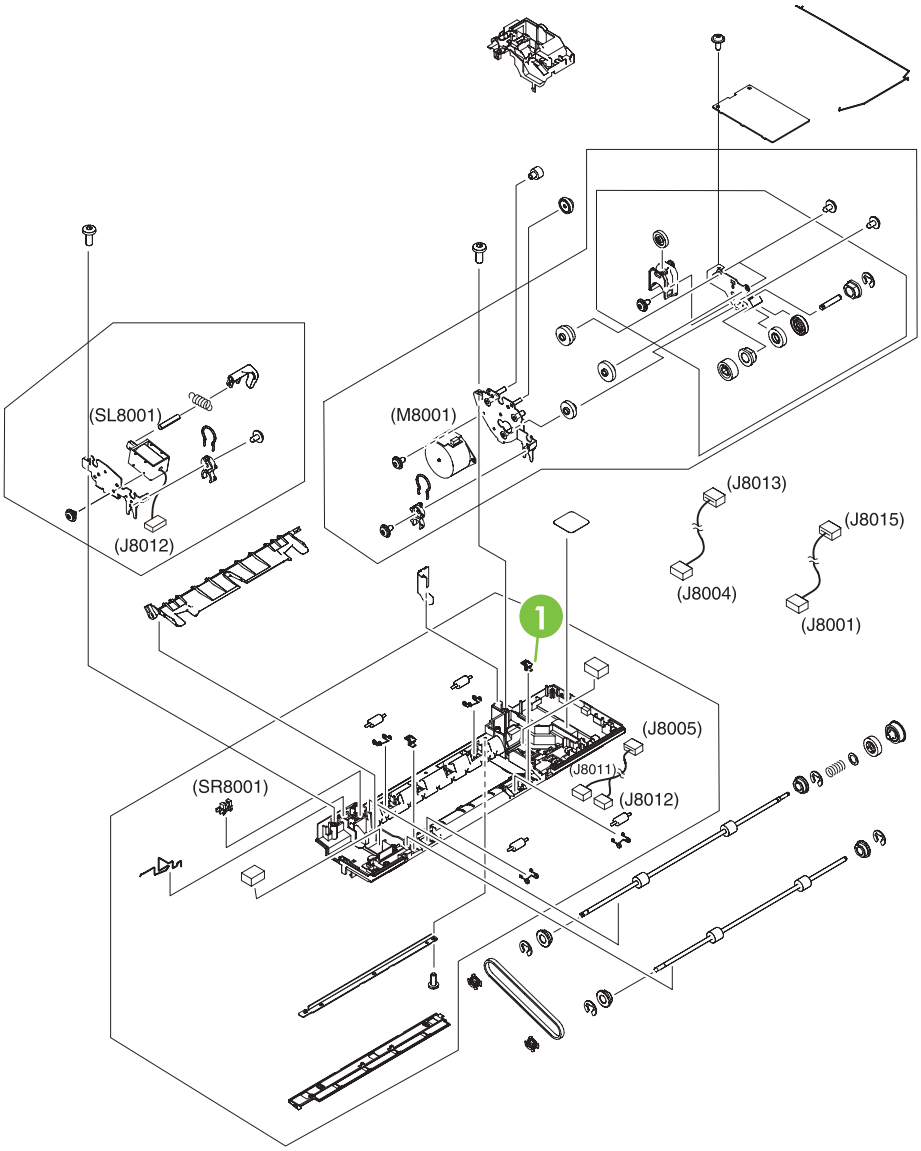


Figure 7-27 Duplexing unit (2 of 2)

Table 7-27 Duplexing unit (2 of 2)

Ref	Description	Part number	Qty
1	Duplex lock	RC1-5020-000CN	2

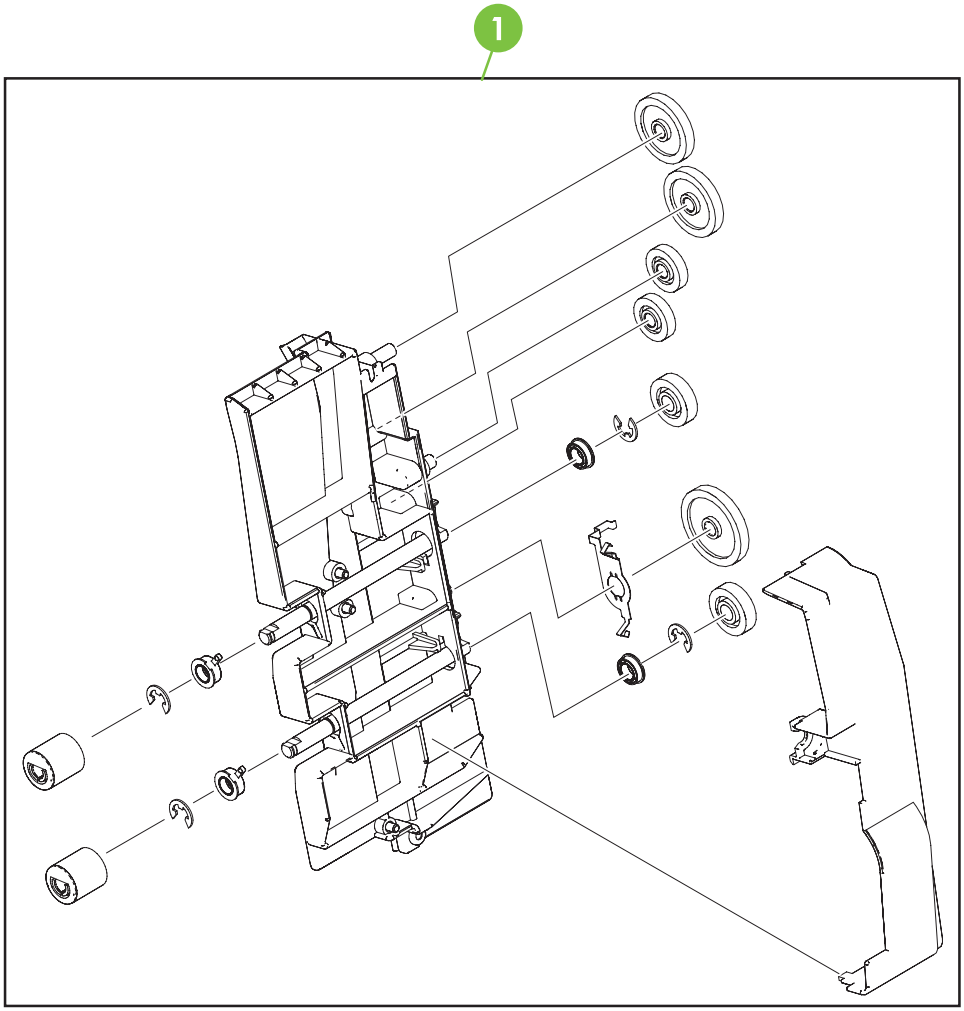


Figure 7-28 Duplex feed assembly

Table 7-28 Duplex feed assembly

Ref	Description	Part number	Qty
1	Duplex feed assembly	RM1-1785-000CN	1

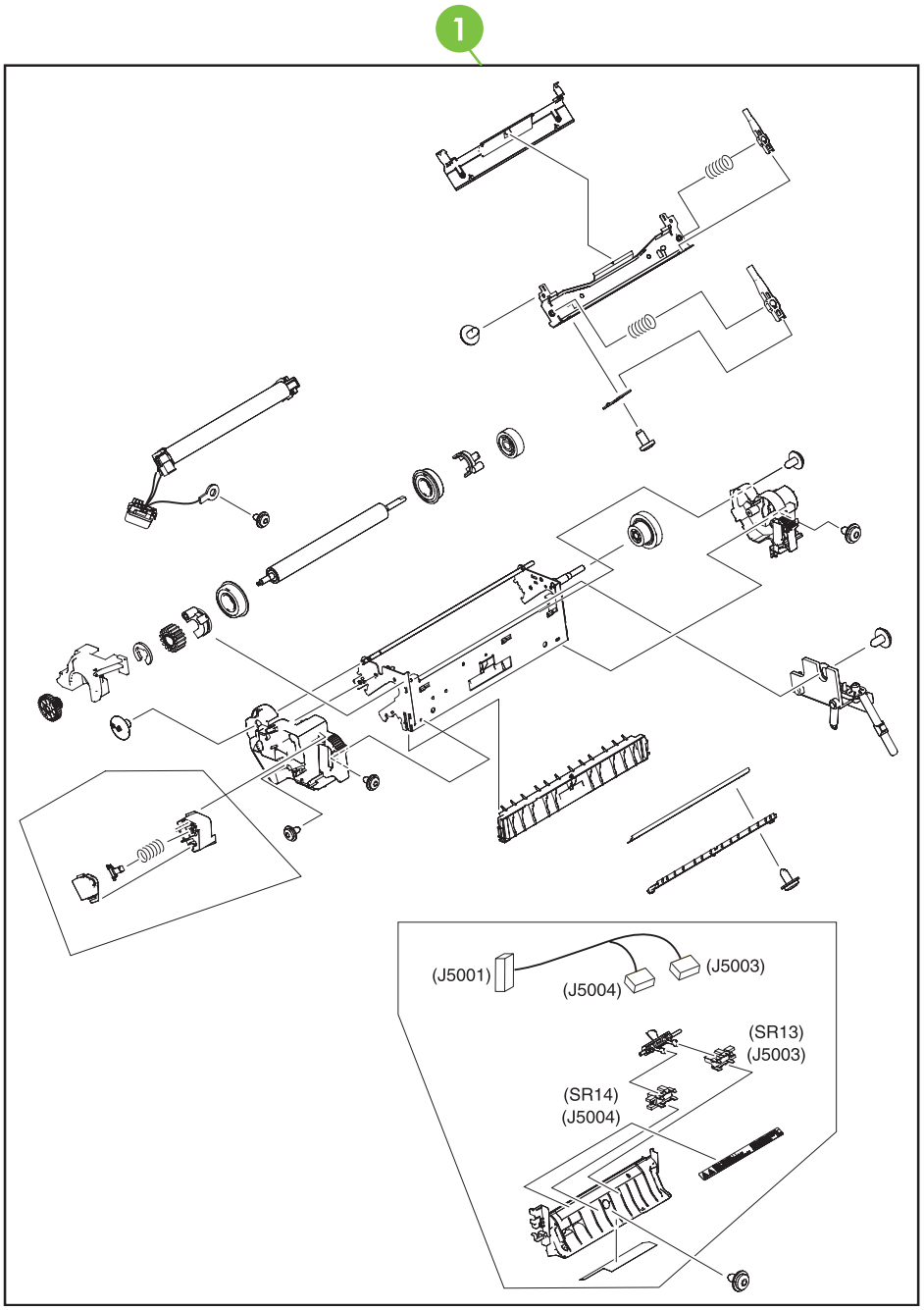


Figure 7-29 Fuser assembly

Table 7-29 Fuser assembly

Ref	Description	Part number	Qty
1	Fuser assembly (110-127V)	RM1-3131-060CN	1
1	Fuser assembly (220-240V)	RM1-3146-060CN	1

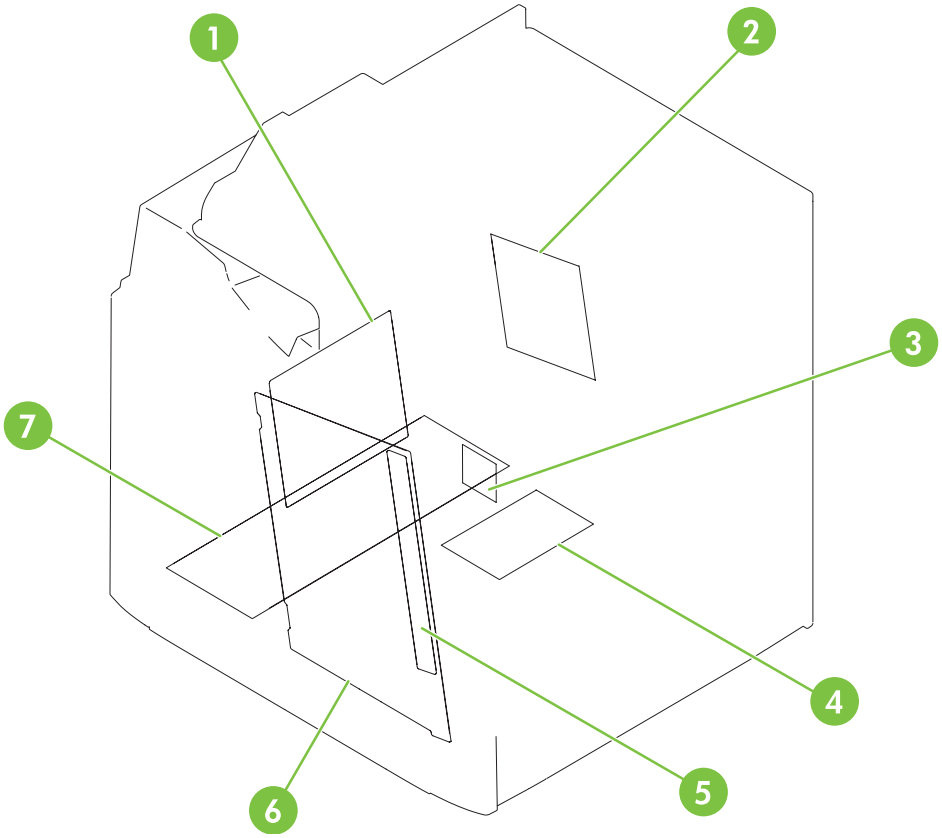


Figure 7-30 PCB assembly

Table 7-30 PCB assembly

Ref	Description	Part number	Qty
1	DC controller PCB assembly	RM1-2346-080CN	1
2	Sub power supply assembly	RM1-2119-000CN	1
3	Fan driver PCB assembly	RM1-2345-000CN	1
4	Memory PCB assembly	RM1-1618-000CN	1
5	Toner sensor PCB assembly	RM1-1609-000CN	1
6	High-voltage power PCB assembly	RM1-1608-000CN	1
7	Low-voltage power PCB assembly 110-127V	RK2-0627-000CN	1
7	Low-voltage power PCB assembly 220-240V	RK2-0628-000CN	1

ADF components

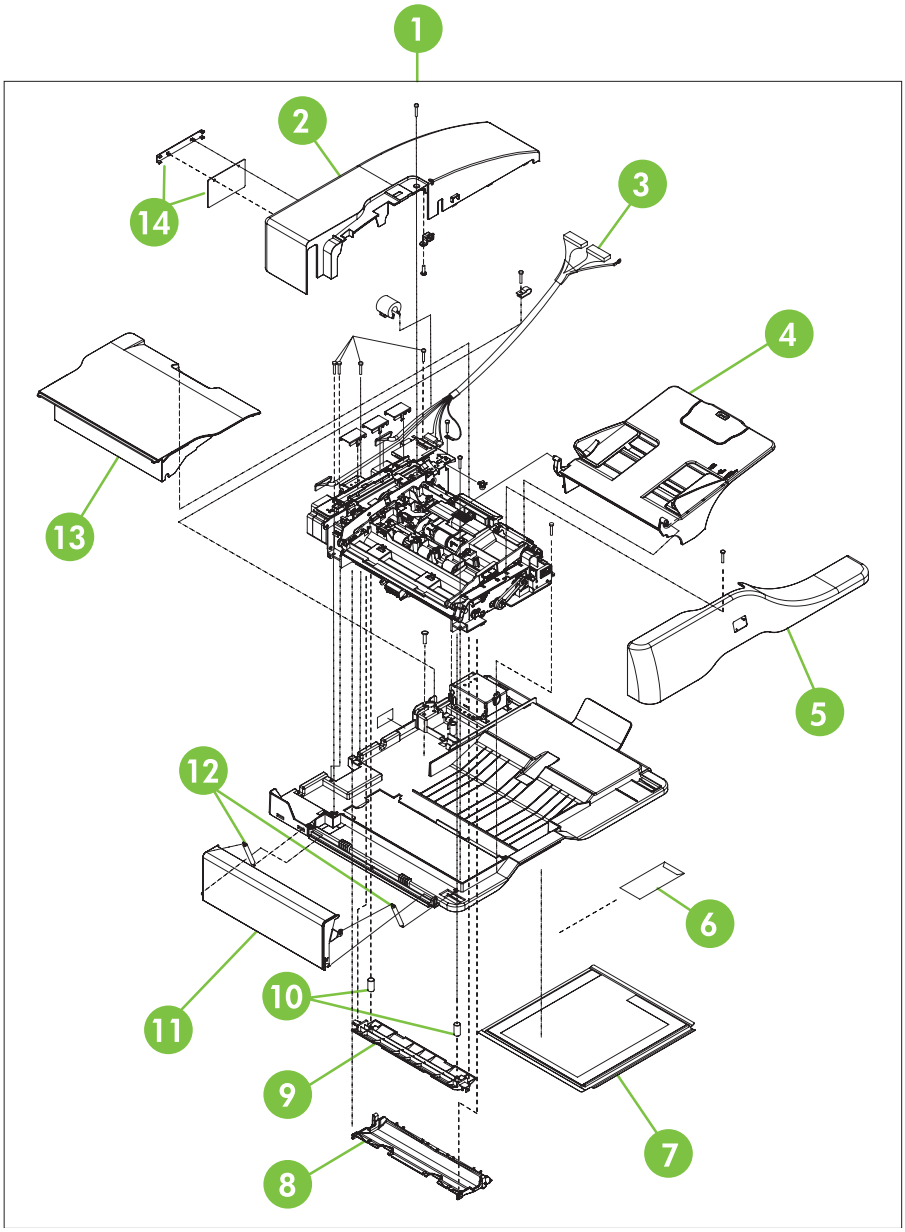


Figure 7-31 ADF assembly

Table 7-31 ADF assembly

Ref	Description	Part number	Qty
1	ADF assembly (without skins)	PF2288-SVPNI	1
2	ADF rear cover	PF2288P044NI	1
3	ADF to SCB cable	PF2282K165NI	1
4	ADF input tray	PF2282K042NI	1
5	ADF front cover assembly	PF2288K001NI	1
6	ADF mylar replacement kit	Q6496-67901	1
7	ADF white scan background	PF2282P339NI	1
8	ADF mylar holder assembly	PF2282K043NI	1
9	ADF window background	PF2282P025NI	1
10	ADF spring for window background	PF2282P343NI	2
11	ADF left cover	PF2288P058NI	1
12	ADF springs for left cover	PF2282P352NI	2
13	ADF jam-access cover	PF2282P041NI	1
14	ADF mud flap assembly	PF2282K166NI	1

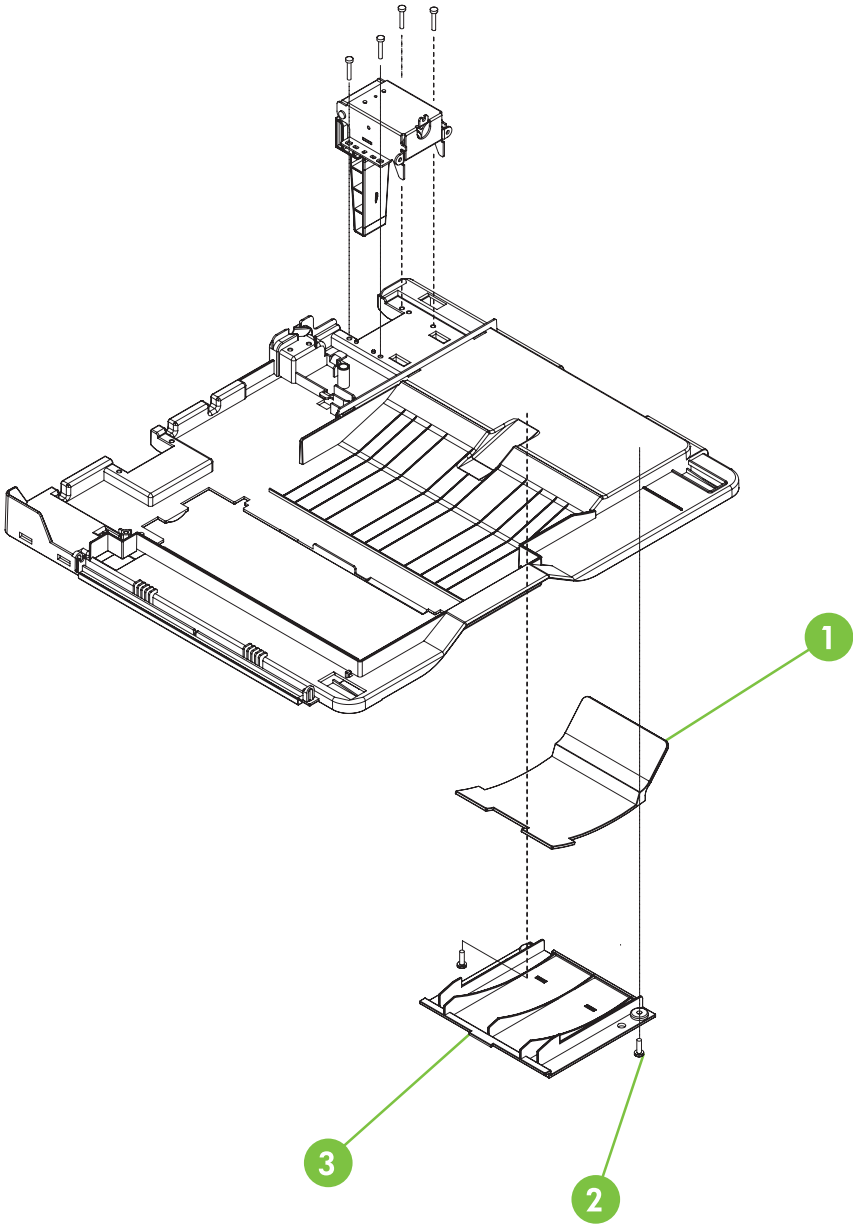


Figure 7-32 ADF internal components (1 of 3)

Table 7-32 ADF internal components (1 of 3)

Ref	Description	Part number	Qty
1	ADF output bin paper stop	PF2282P061NI	1
2	ADF screw, M3X8	IR4041P021NI	7
3	ADF output bin base cover	PF2282P060NI	1

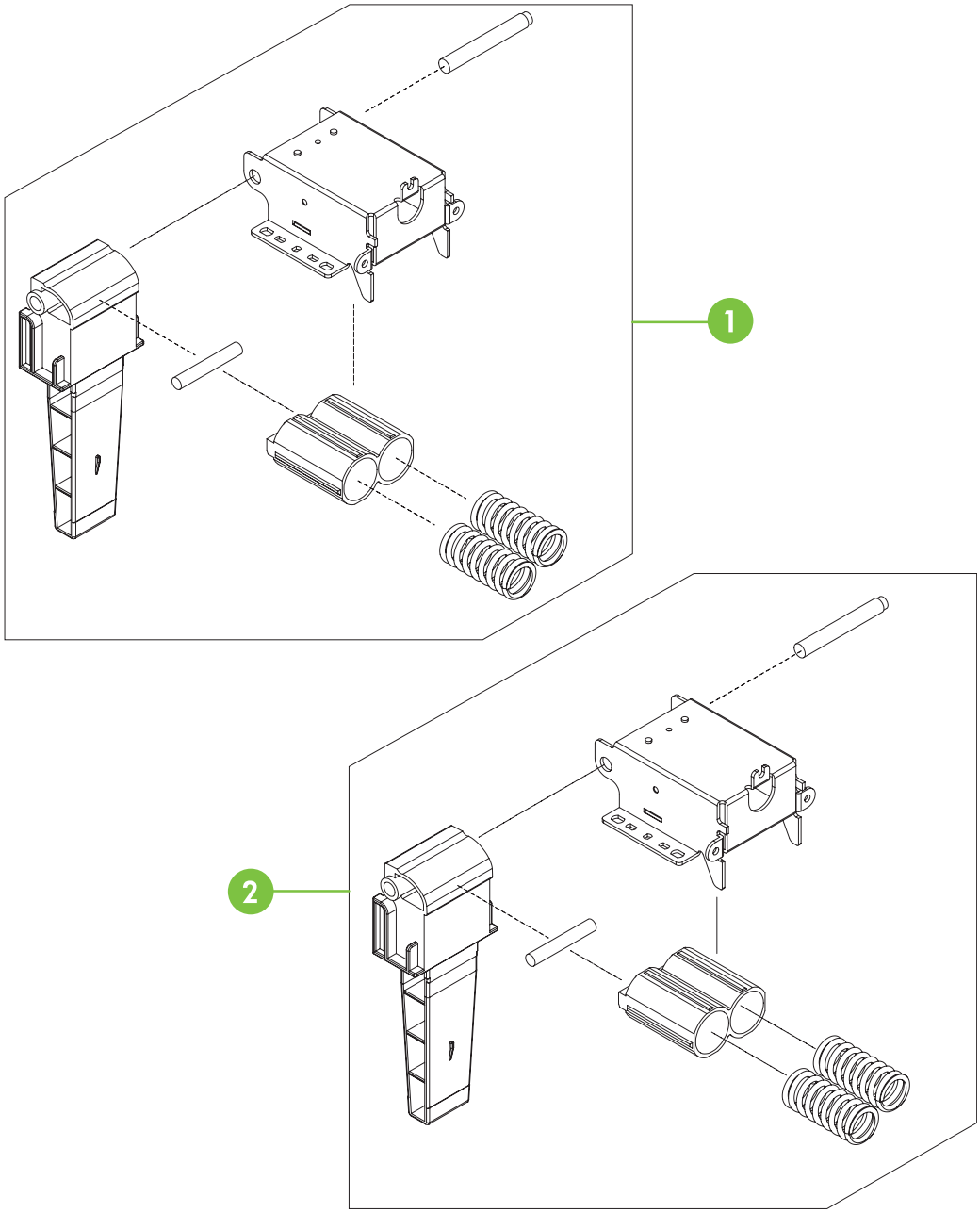


Figure 7-33 ADF internal components (2 of 3)

Table 7-33 ADF internal components (2 of 3)

Ref	Description	Part number	Qty
1	ADF left hinge assembly	PF2288K041NI	1
2	ADF right hinge assembly	PF2282K008NI	1

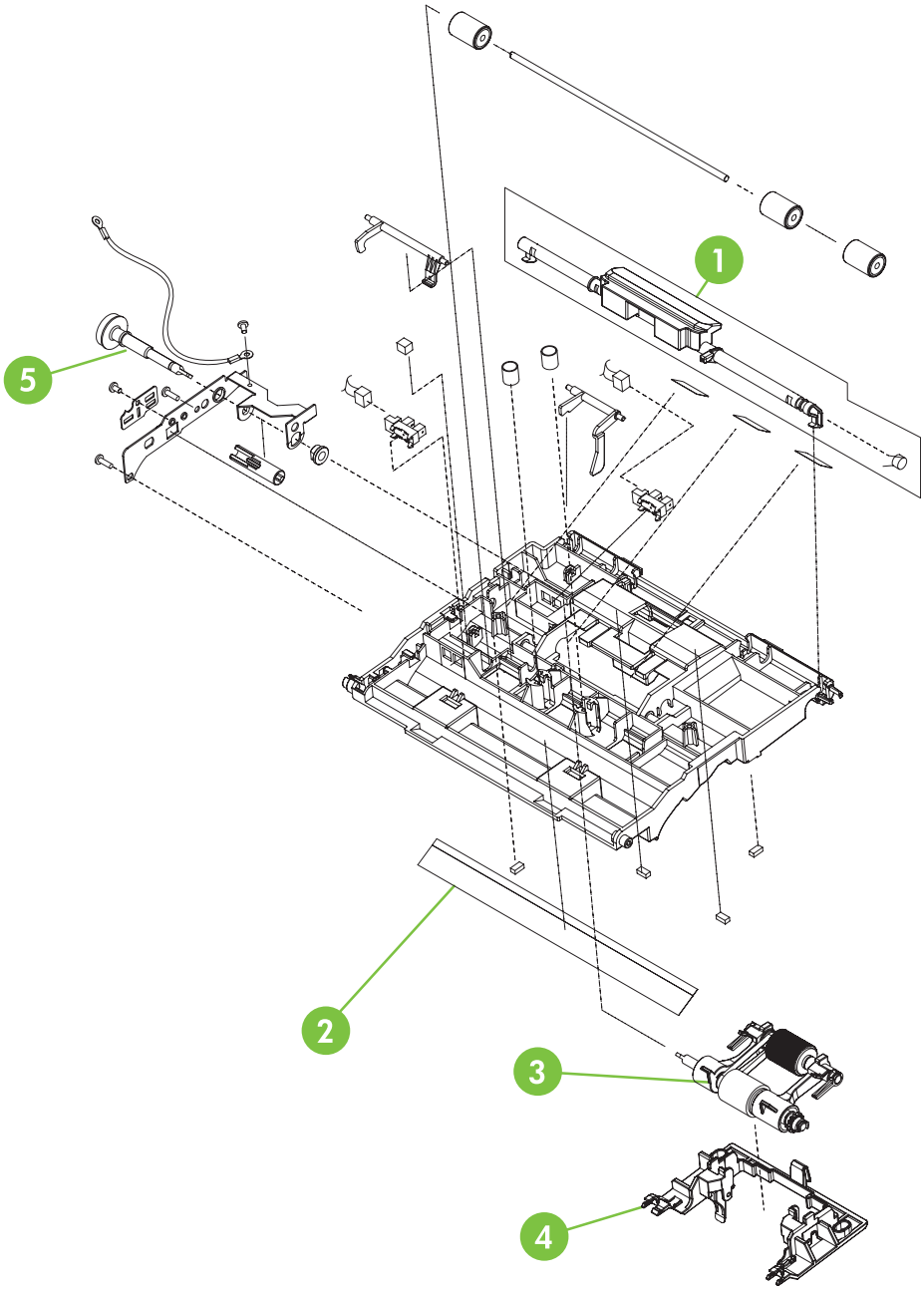


Figure 7-34 ADF internal components (3 of 3)

Table 7-34 ADF internal components (3 of 3)

Ref	Description	Part number	Qty
1	ADF jam access latch	PF2282K164NI	1
2	ADF duplex path mylar	PF2282P353NI	1
3	ADF pickup roller assembly	PF2282K039NI	1
4	ADF pickup roller holder assembly	PF2282K040NI	1
5	ADF pickup gear	PF2282P039NI	1

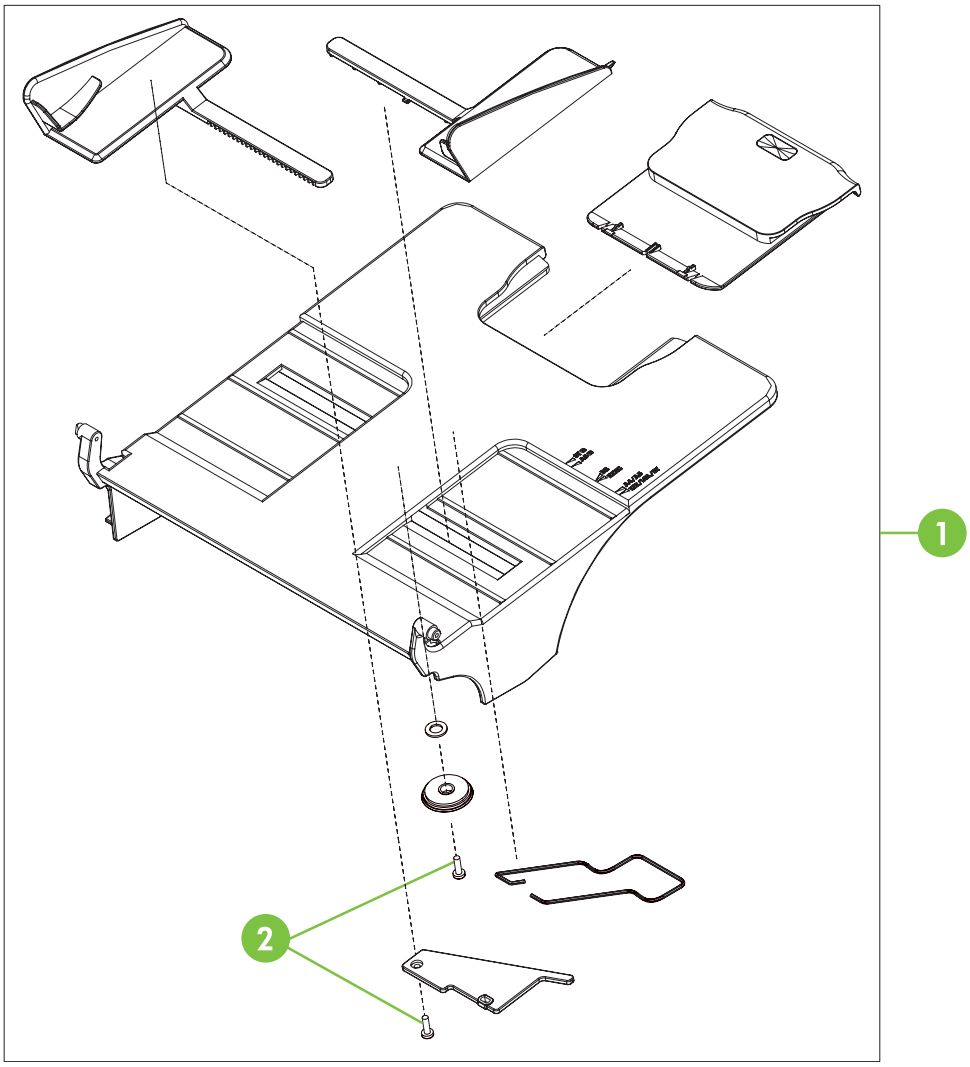


Figure 7-35 ADF input tray

Table 7-35 ADF input tray

Ref	Description	Part number	Qty
1	ADF input tray assembly	PF2282K042NI	1
2	ADF button screw M3x8	IR4041P021NI	2

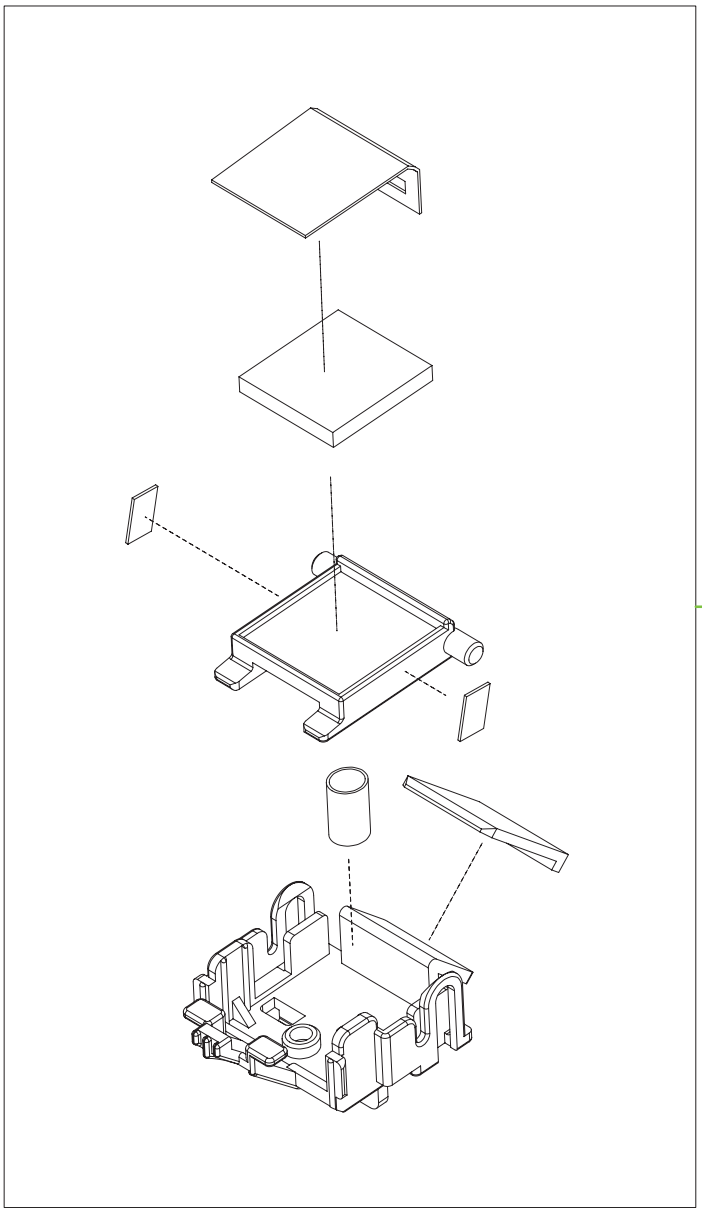


Figure 7-36 ADF separation pad

Table 7-36 ADF separation pad

Ref	Description	Part number	Qty
1	ADF separation pad assembly	PF2282K035NI	1

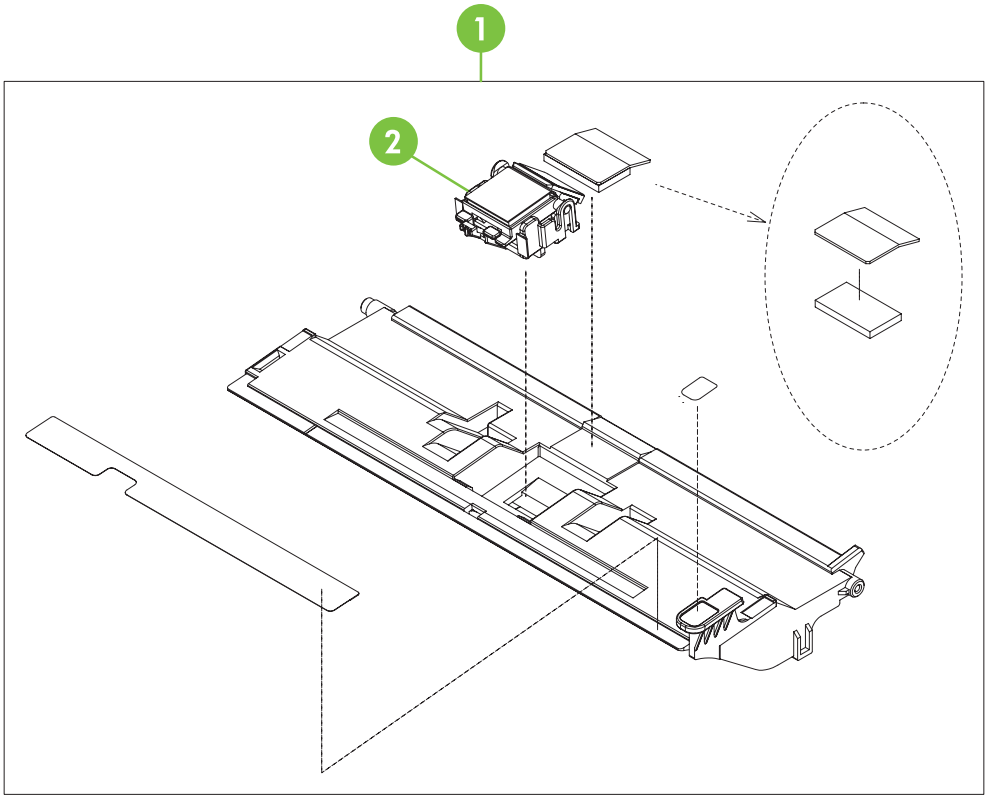


Figure 7-37 ADF separation pad case

Table 7-37 ADF separation pad case

Ref	Description	Part number	Qty
1	ADF upper paper path assembly	PF2282K034NI	1
2	ADF separation pad assembly	PF2282K035NI	1

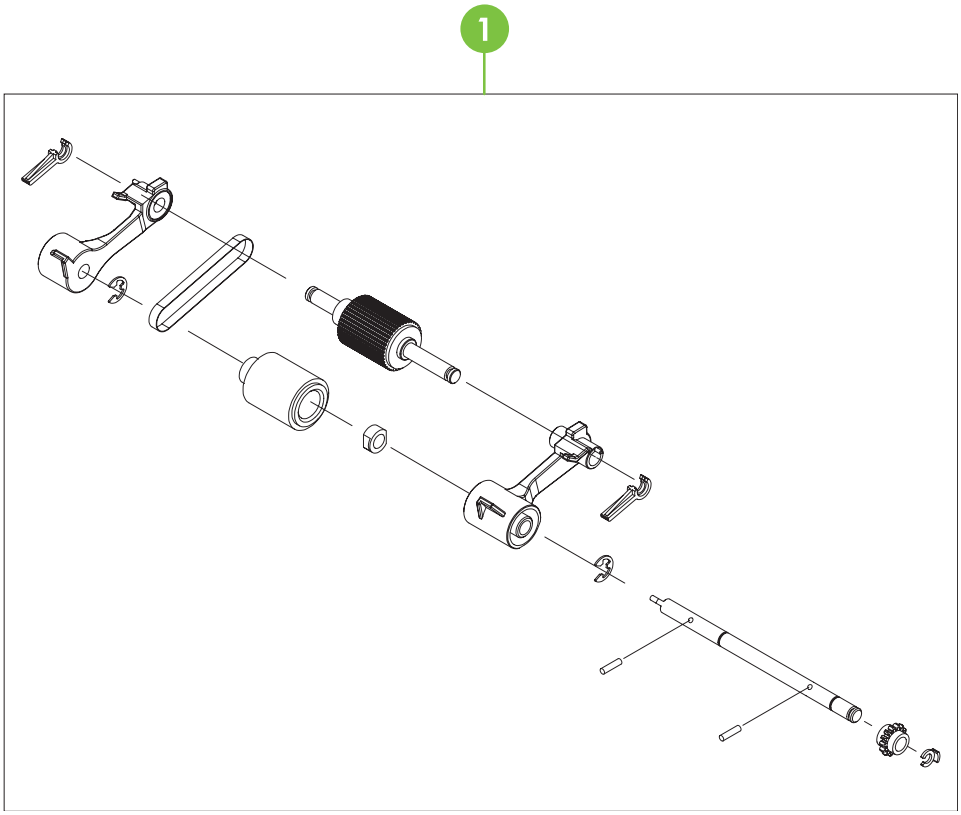


Figure 7-38 ADF pickup-roller assembly

Table 7-38 ADF pickup-roller assembly

Ref	Description	Part number	Qty
1	ADF pickup roller assembly	PF2282K039NI	1

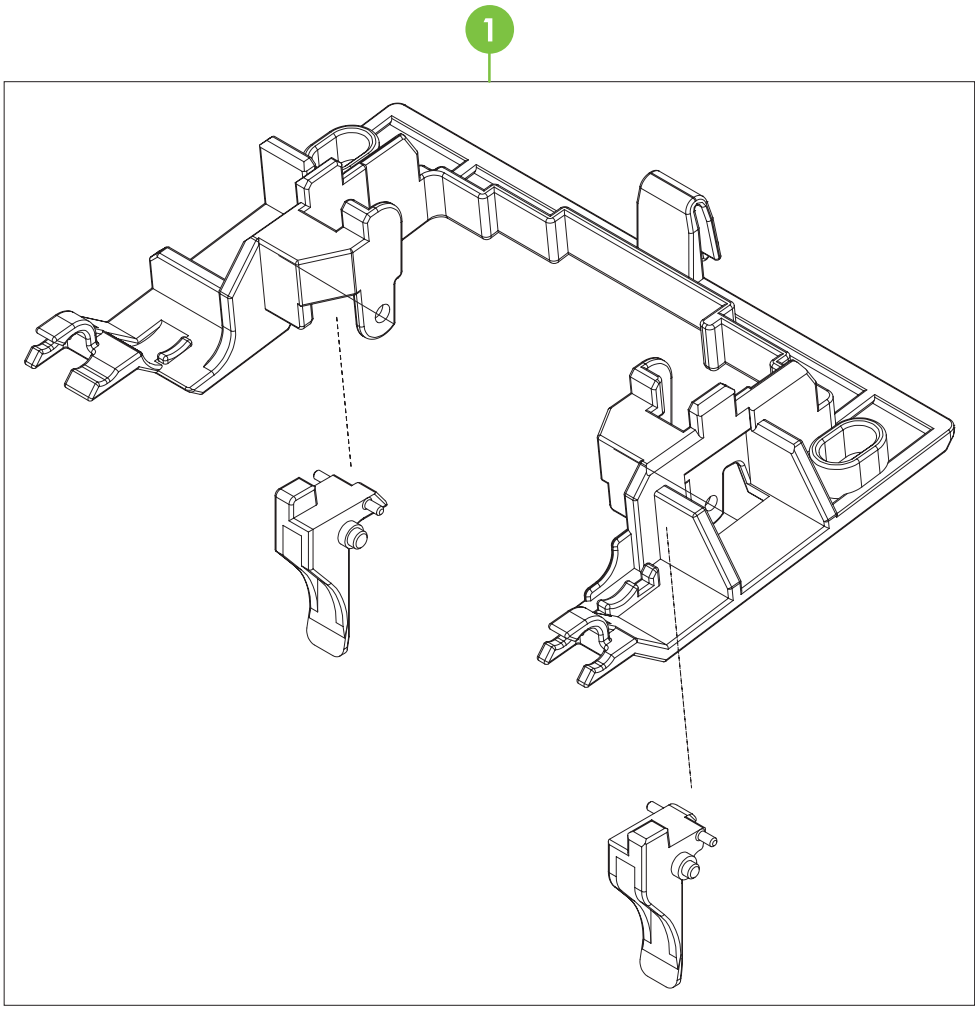


Figure 7-39 ADF pickup-roller cover

Table 7-39 ADF pickup-roller cover

Ref	Description	Part number	Qty
1	ADF pickup roller cover assembly	PF2282K040NI	1

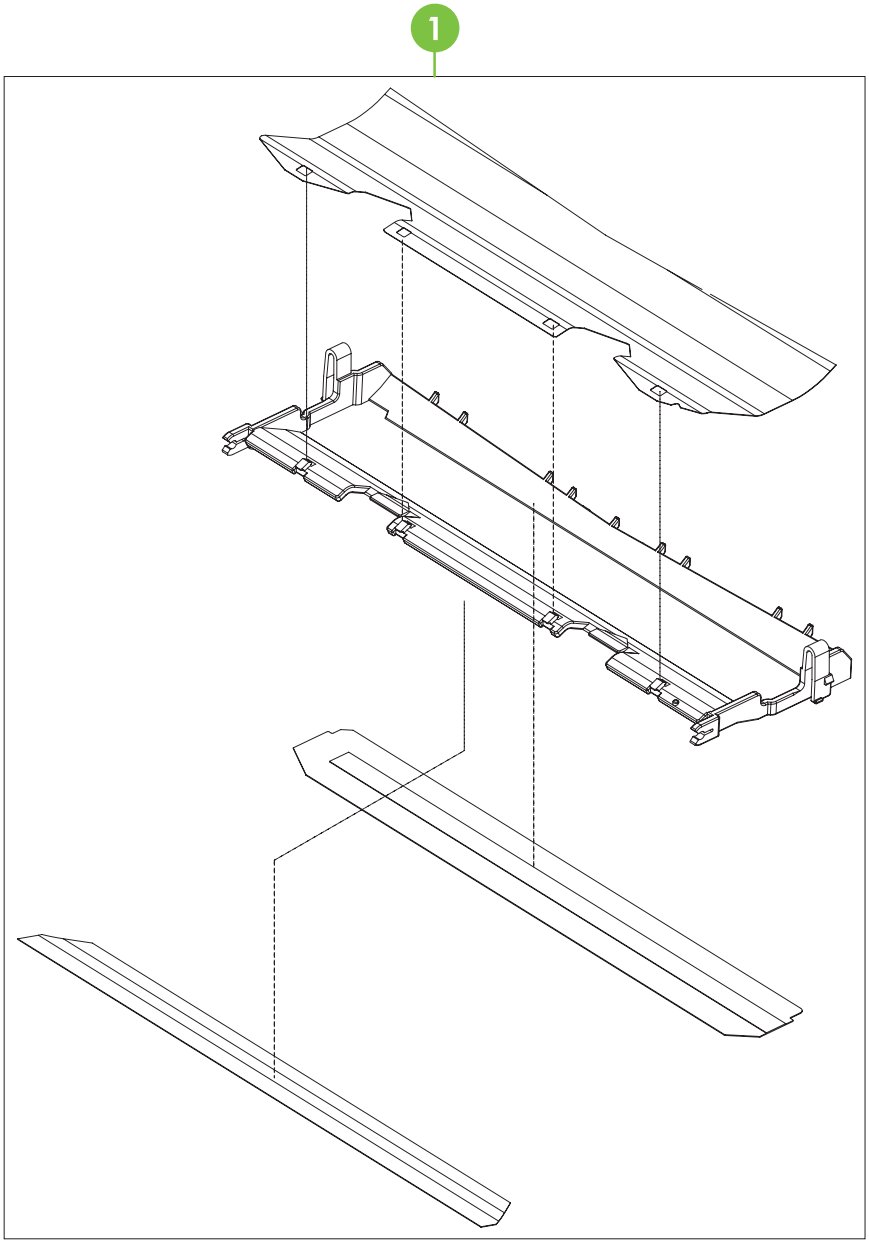


Figure 7-40 ADF mylar holder assembly

Table 7-40 ADF mylar holder assembly

Ref	Description	Part number	Qty
1	ADF mylar holder assembly	PF2282K043NI	1

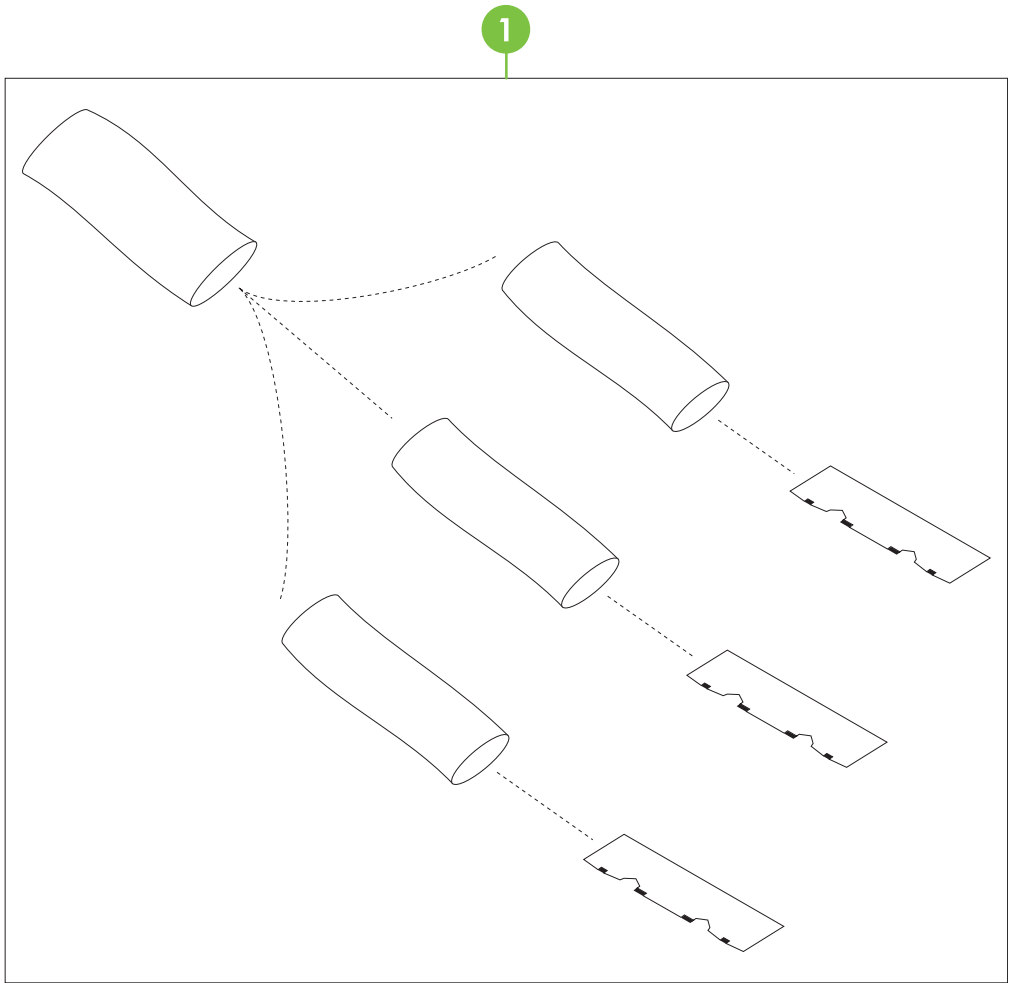


Figure 7-41 ADF mylar replacement kit

Table 7-41 ADF mylar replacement kit

Ref	Description	Part number	Qty
1	ADF mylar replacement kit	Q6496-67901	1

Scanner components

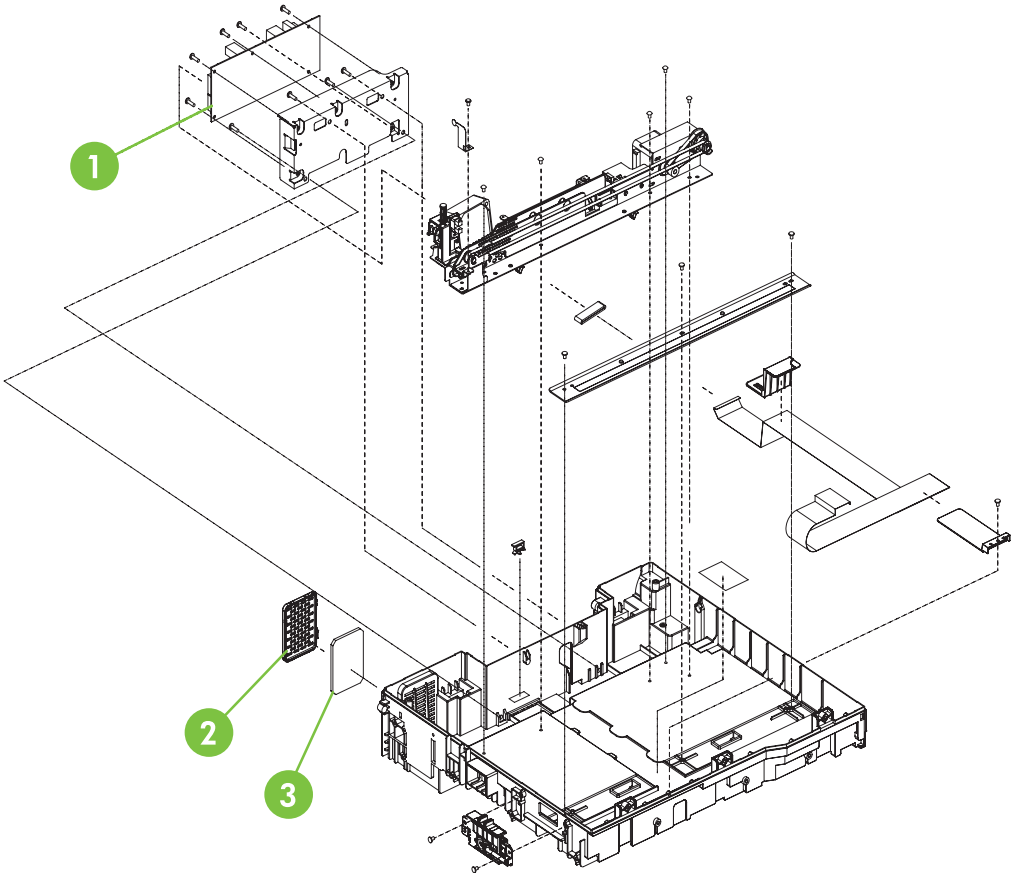


Figure 7-42 Scanner base components

Table 7-42 Scanner base components

Ref	Description	Part number	Qty
1	Scanner controller PCB	IR4041K512NI	1
2	Scanner fan filter cover	IR4054P217NI	1
3	Scanner fan filter	IR4041P007NI	1

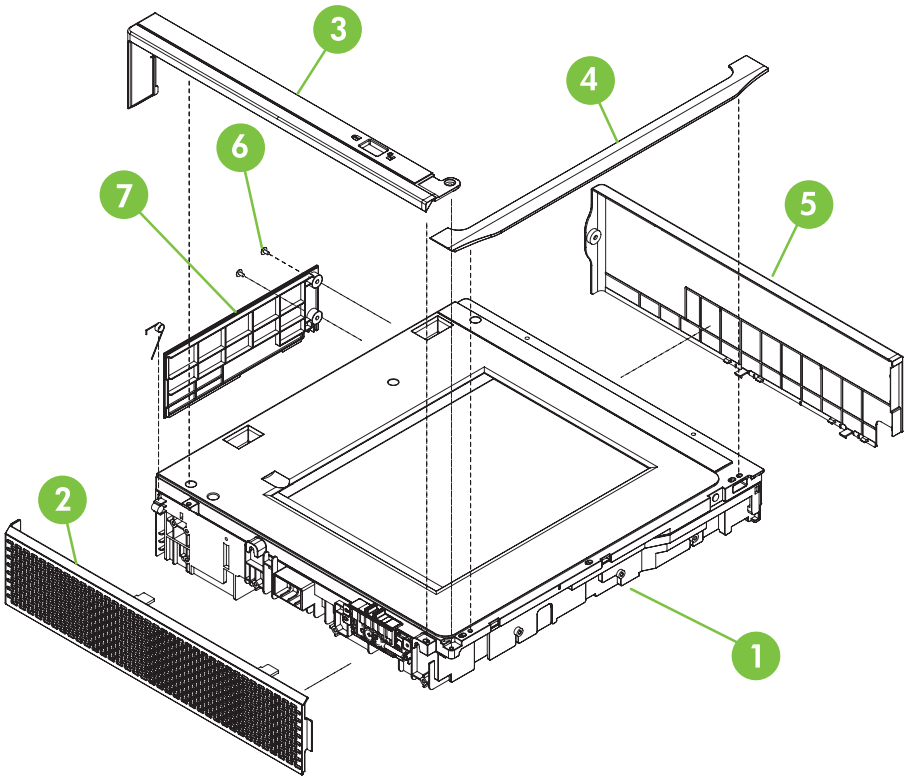


Figure 7-43 Scanner covers

Table 7-43 Scanner covers

Ref	Description	Part number	Qty
1	Scanner flatbed unit assembly	IR4054-SVPNI	1
2	Scanner left cover	IR4054P226NI	1
3	Scanner cartridge lock cover	IR4041P214NI	1
4	Scanner top cover flatbed flange	IR4054P215NI	1
5	Scanner right cover assembly	IR4054K100NI	1
6	Scanner screw flatbed	040100FNBBNI	1
7	Scanner rear cover	IR4054P216NI	1

2 X 500-sheet feeder components

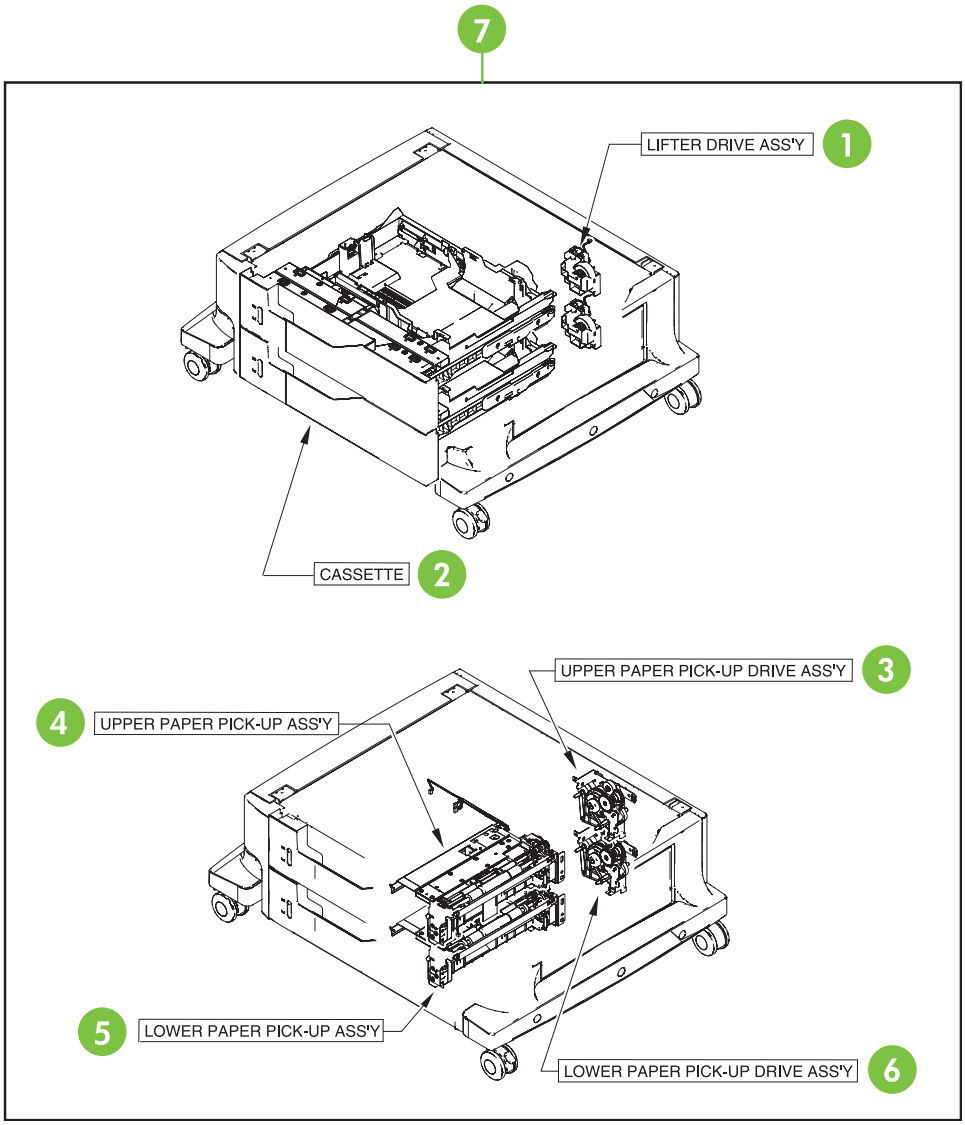


Figure 7-44 2 X 500-sheet paper feeder assembly locations

Table 7-44 2 X 500-sheet paper feeder assemblies

Item	Assembly name	Details	Part number
1	Lifter-drive assembly	See Figure 7-48 2 X 500-paper feeder lifter drive assembly on page 764.	RM1–1750–000CN
2	Cassette	See Figure 7-51 2 X 500-sheet paper feeder on page 770.	RM1–2219–000CN
3	Upper paper pickup assembly	See Figure 7-52 Upper paper pickup assembly on page 772.	RM1–2232–000CN
4	Upper paper pickup drive assembly	See Figure 7-49 Upper paper pickup drive assembly on page 766.	RM1–2229–000CN

Table 7-44 2 X 500-sheet paper feeder assemblies (continued)

Item	Assembly name	Details	Part number
5	Lower paper pickup assembly	See Figure 7-53 Lower paper pickup assembly on page 774.	RM1–2240–000CN
6	Lower paper pickup drive assembly	See Figure 7-50 Lower paper pickup drive assembly on page 768.	RM1–2238–000CN
7	2 X 500-sheet paper feeder assembly (complete assembly)	See Figure 7-44 2 X 500-sheet paper feeder assembly locations on page 756.	R96–5062–000CN

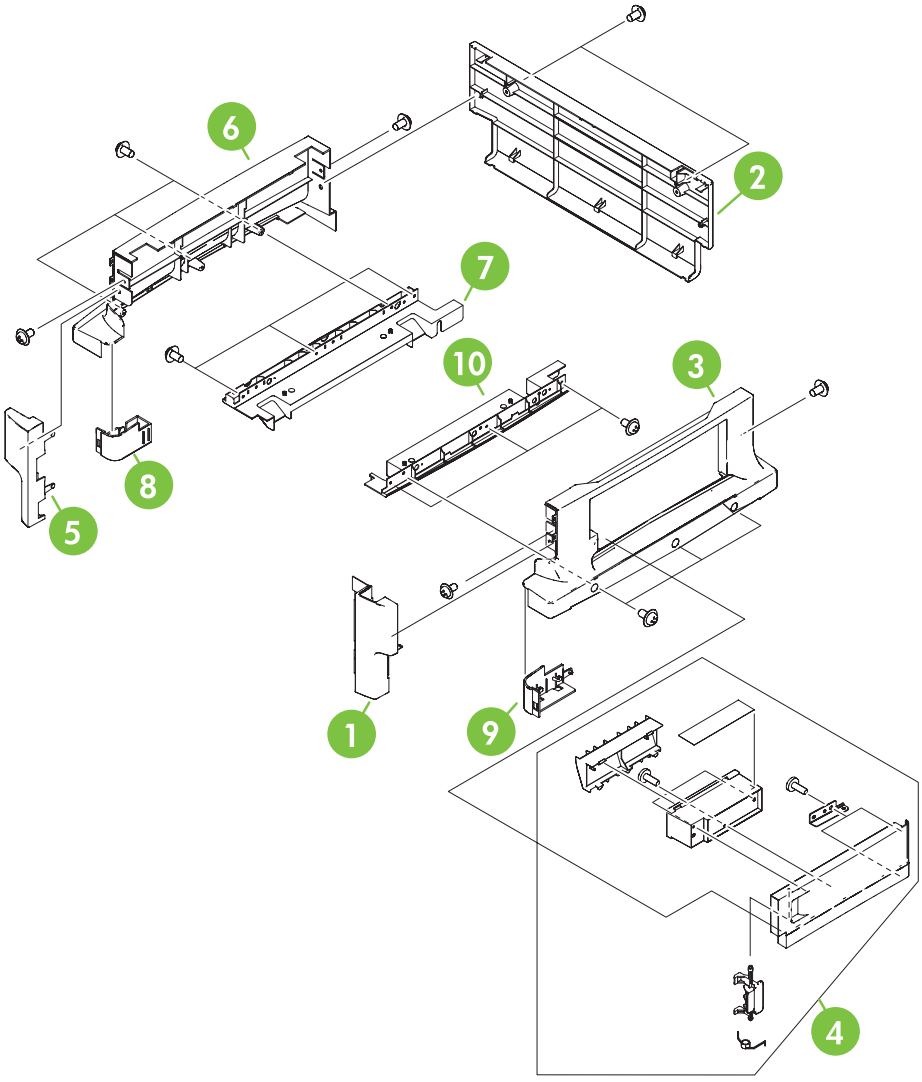


Figure 7-45 2 X 500-sheet feeder external components

Table 7-45 2 X 500-sheet feeder external components

Ref	Description	Part number	Qty
1	Right front cover	RC1-6047-000CN	1
2	Rear cover	RC1-6048-000CN	1
3	Right cover	RC1-6044-000CN	1
4	Right lower cover assembly	RM1-2241-000CN	1
5	Left front cover	RC1-6046-000CN	1
6	Left cover	RC1-6042-000CN	1
7	Left lower cover	RC1-6043-000CN	1
8	Left caster cover	RC1-6067-000CN	1
9	Right caster cover	RC1-6068-000CN	1
10	Right lower cover	RC1-6045-000CN	1

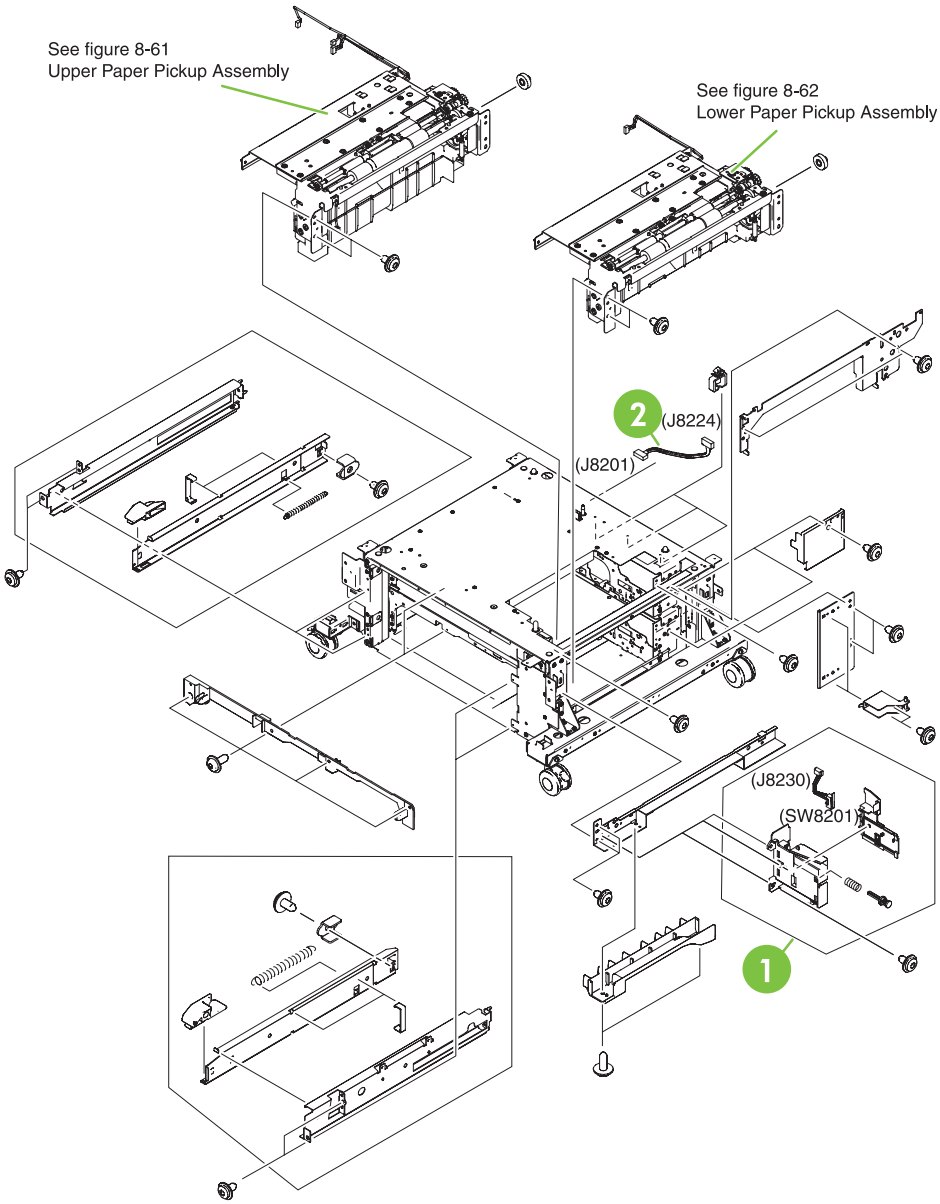


Figure 7-46 2 X 500-sheet paper feeder internal components (1 of 2)

Table 7-46 2 X 500-sheet paper feeder internal components (1 of 2)

Ref	Description	Part number	Qty
1	Right switch assembly	RM1-2226-000CN	1
2	Cable interface	RM1-2373-000CN	1

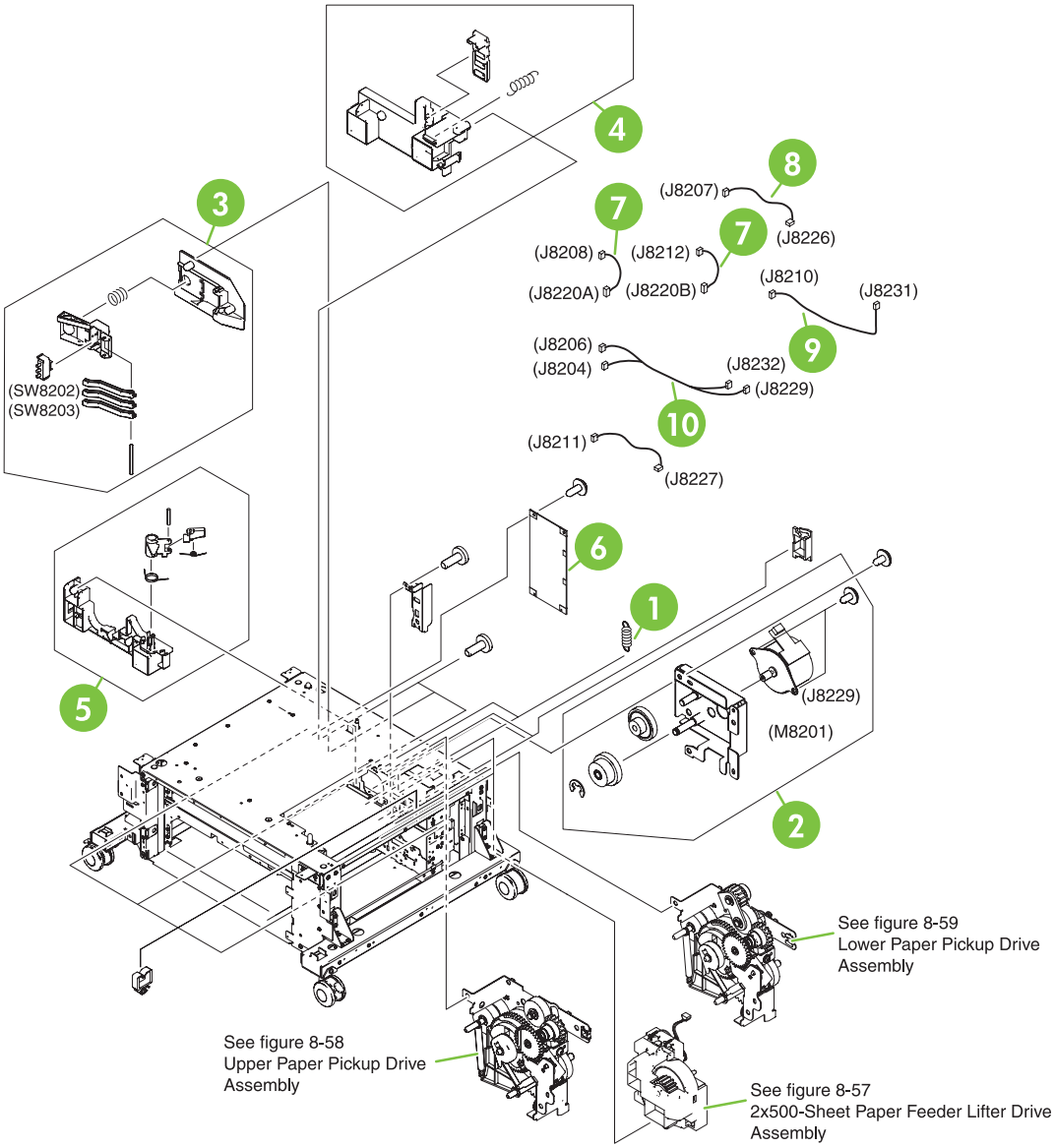


Figure 7-47 2 X 500-sheet paper feeder internal components (2 of 2)

Table 7-47 2 X 500-sheet paper feeder internal components (2 of 2)

Ref	Description	Part number	Qty
1	Spring tension	RC1-0198-000CN	2
2	Motor assembly	RM1-2231-000CN	1
3	Size sensing assembly	RM1-0041-000CN	2
4	Left reg. adjustment assembly	RM1-1007-000CN	2
5	Kicker assembly	RM1-1008-000CN	2
6	Paper feeder driver PCB assembly	RM1-2365-000CN	1
7	Cassette size cable	RM1-2366-000CN	2
8	Motor cable	RM1-2369-000CN	2
9	Solenoid cable	RM1-2368-000CN	1
10	Solenoid cable	RM1-2371-000CN	1

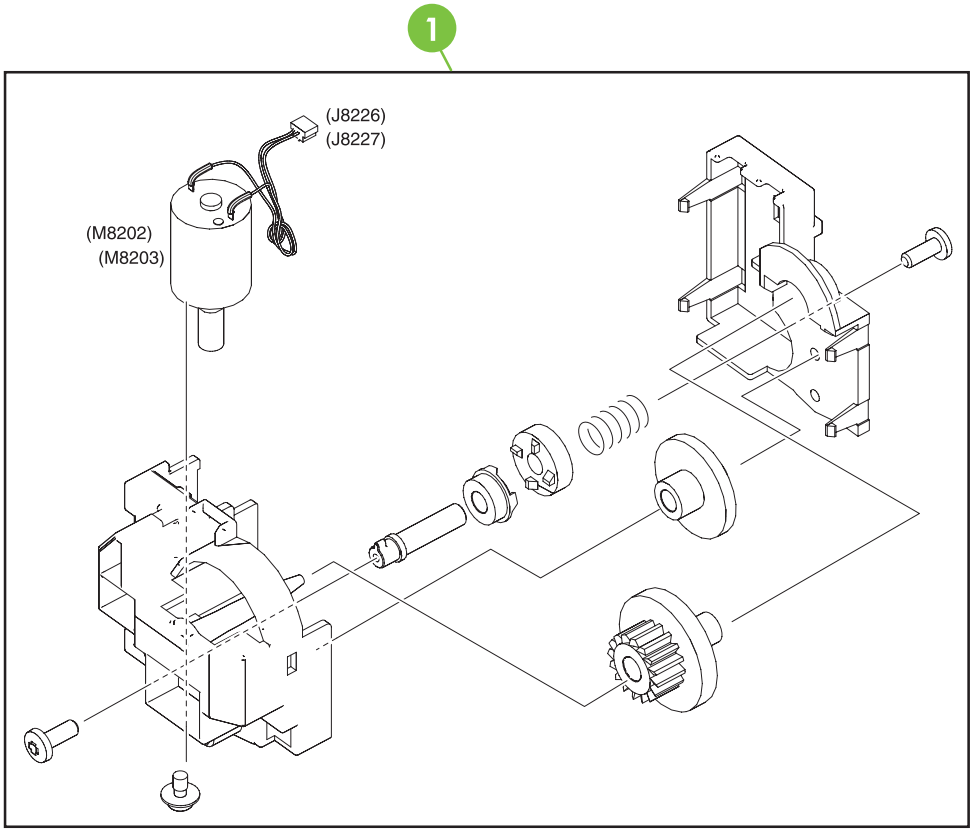


Figure 7-48 2 X 500-paper feeder lifter drive assembly

Table 7-48 500-sheet feeder lifter drive assembly

Ref	Description	Part number	Qty
1	Lifter-drive assembly	RM1-1750-000CN	2

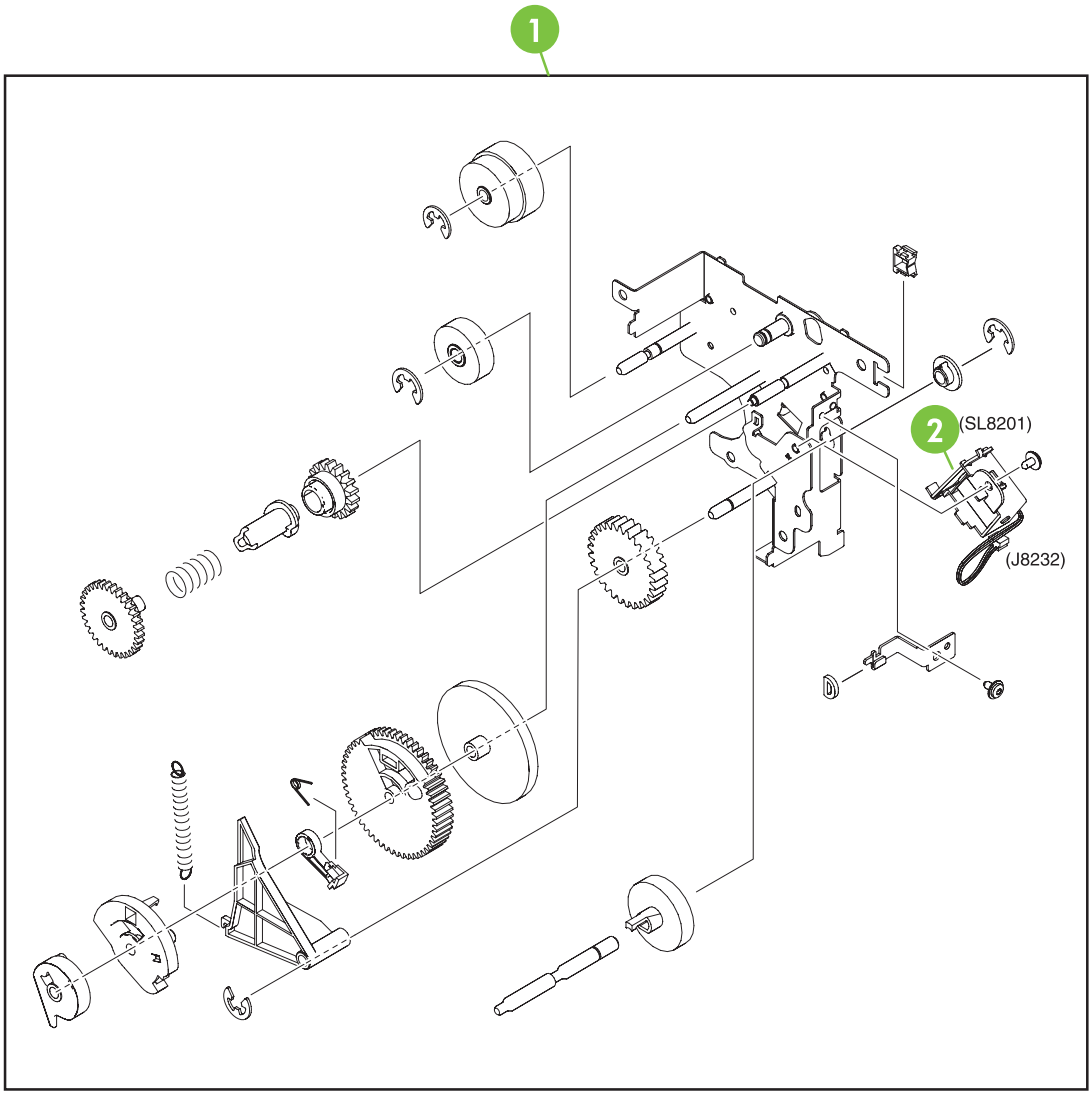


Figure 7-49 Upper paper pickup drive assembly

Table 7-49 Upper paper pickup drive assembly

Ref	Description	Part number	Qty
1	Upper paper pickup drive assembly	RM1-2229-000CN	1
2	Solenoid	RK2-0624-000CN	1

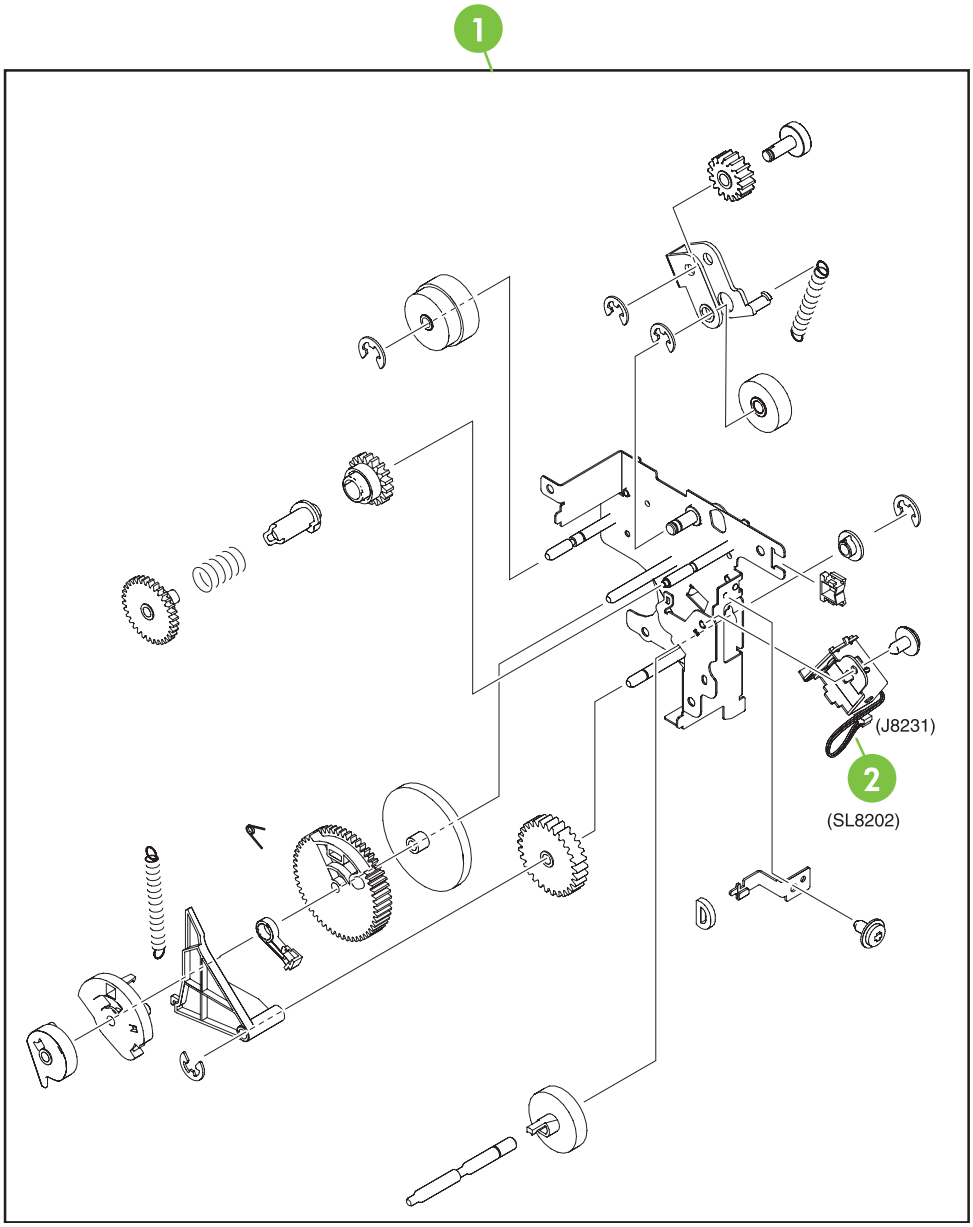


Figure 7-50 Lower paper pickup drive assembly

Table 7-50 Lower paper pickup drive assembly

Ref	Description	Part number	Qty
1	Lower pickup drive assembly	RM1-2238-000CN	1
2	Solenoid	RK2-0624-000CN	1

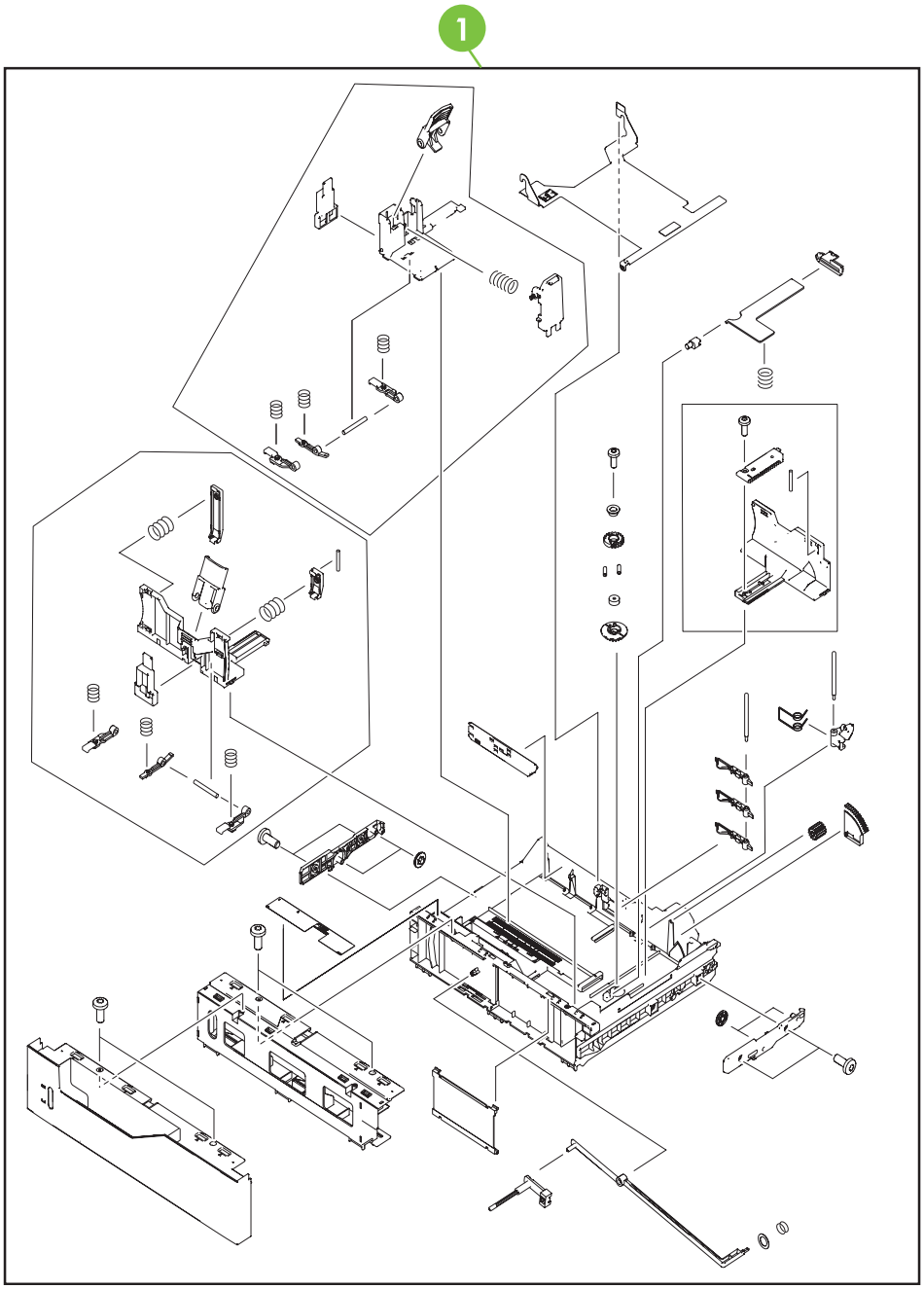


Figure 7-51 2 X 500-sheet paper feeder

Table 7-51 2 X 500-sheet paper feeder cassette

Ref	Description	Part number	Qty
1	2 X 500-sheet paper feeder cassette case unit	RM1-2219-000CN	1

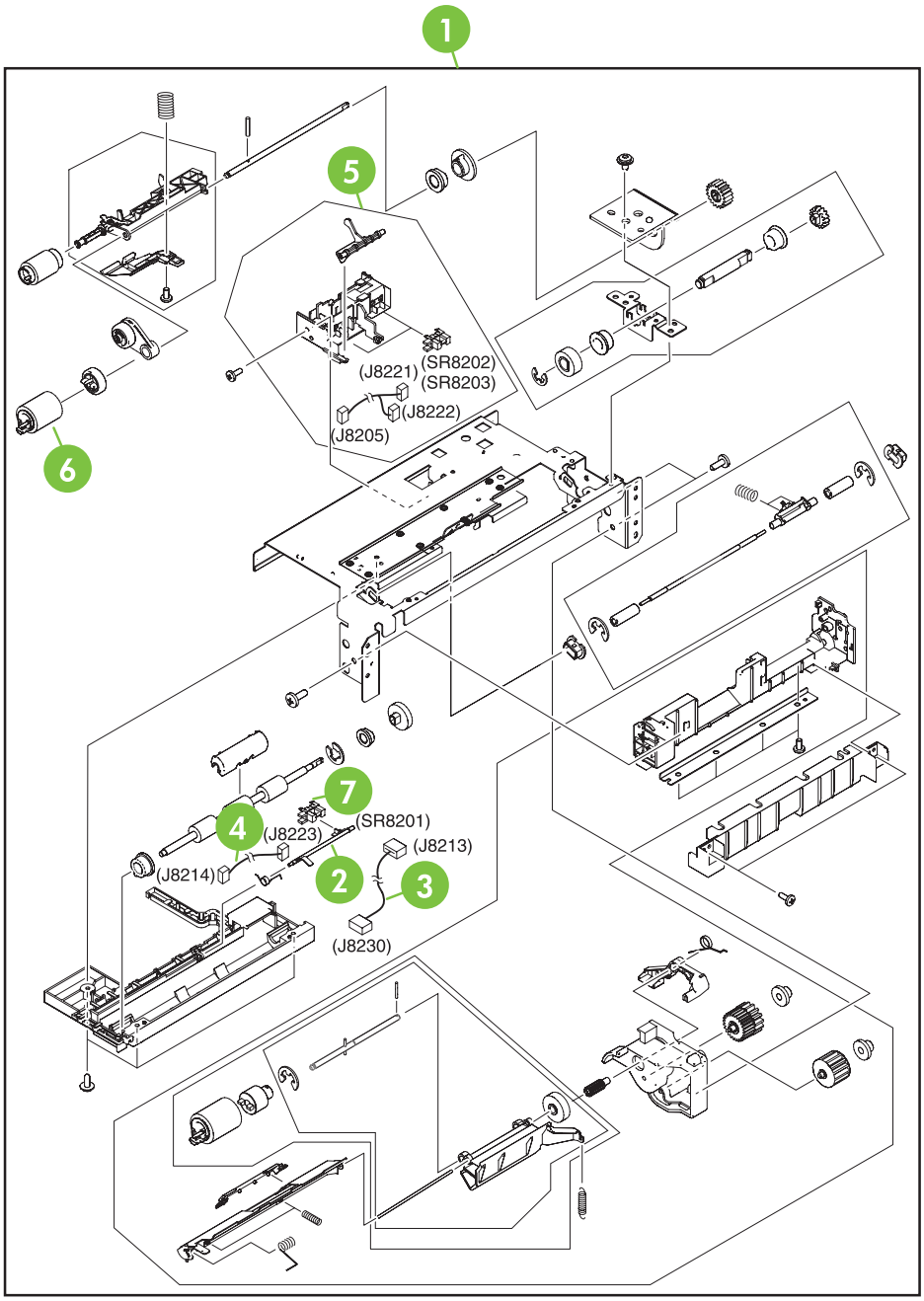


Figure 7-52 Upper paper pickup assembly

Table 7-52 Upper paper pickup assembly

Ref	Description	Part number	Qty
1	Upper paper pickup assembly	RM1-2232-000CN	1
2	Jam sensor flag	RC1-6012-000CN	1
3	Door switch cable	RM1-2370-000CN	1
4	Paper feed sensor cable	RM1-2372-000CN	1
5	Paper sensor unit	RM1-2249-000CN	1
6	Paper feed roller assembly	RM1-0037-020CN	1
7	Photo interrupter, TLP1243	WG8-5696-000CN	1

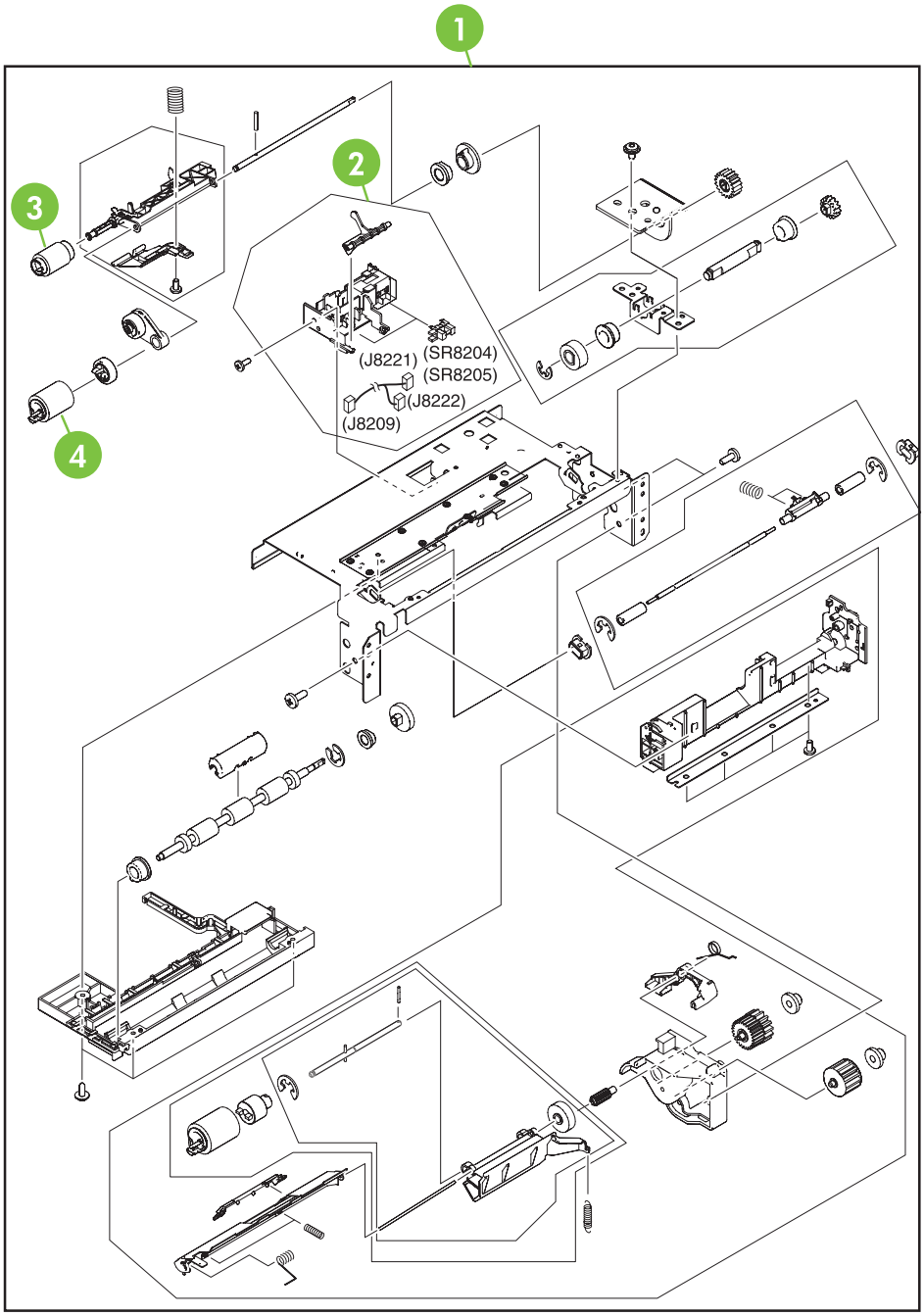


Figure 7-53 Lower paper pickup assembly

Table 7-53 Lower paper pickup assembly

Ref	Description	Part number	Qty
1	Lower paper pickup assembly	RM1-2240-000CN	1
2	Paper sensor unit	RM1-2249-000CN	1
3	Paper pickup roller assembly	RM1-0036-020CN	1
4	Paper feed roller assembly	RM1-0037-020CN	1

Optional devices

Stapler/stacker

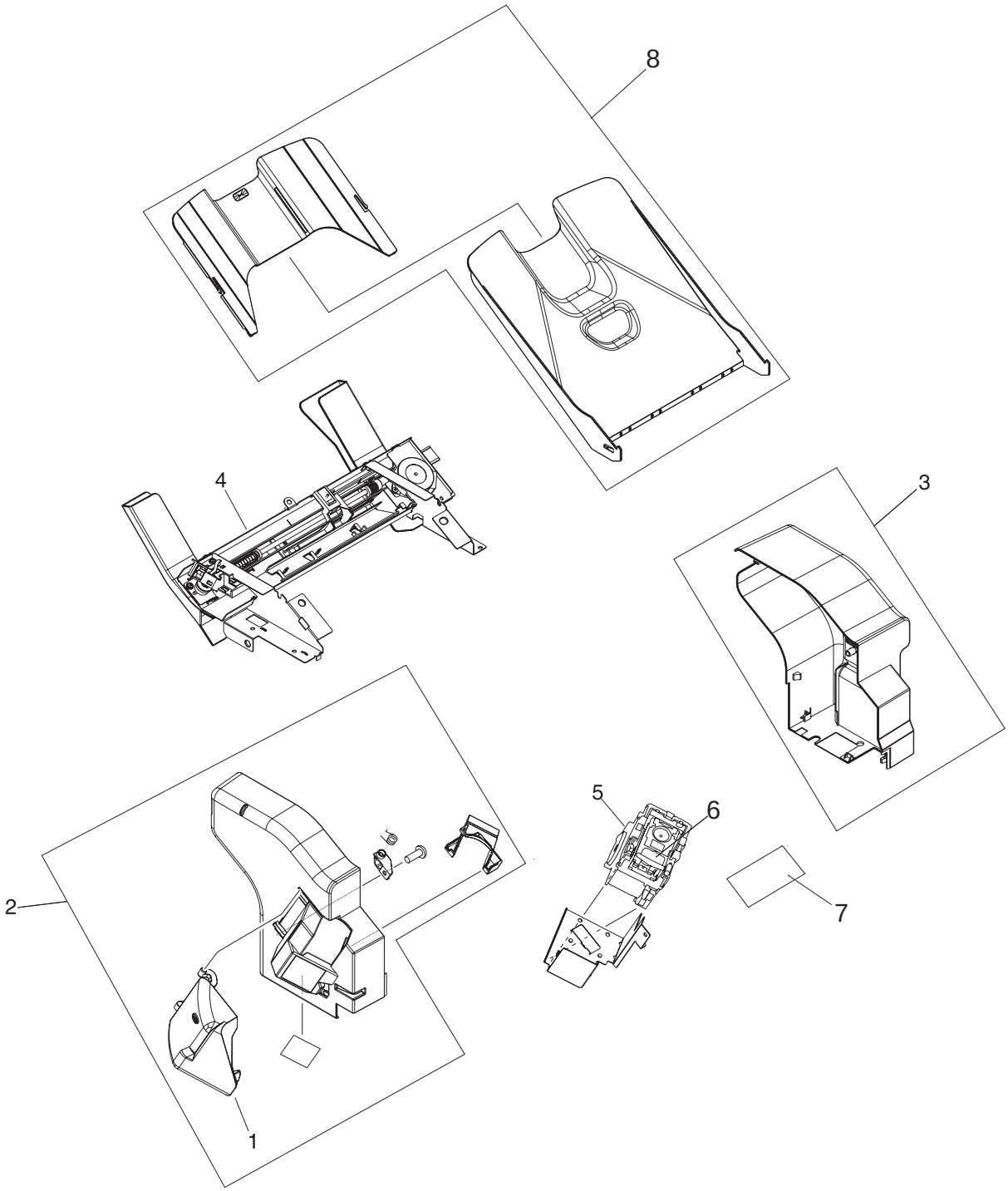


Figure 7-54 Stapler/stacker accessory

Table 7-54 Stapler/stacker accessory

Reference	Description	Part number	Quantity
	500 sheet stapler/stacker replacement unit	Q5691-67901	1
1	Door, jam access	RC1-2597-000CN	1
2	Front cover	RM1-0942-000CN	1
3	Rear cover	RC1-2598-000CN	1
4	Jog guide assembly	RM1-0947-000CN	1
5	Stapler unit	RK2-0507-000CN	1
6	Staple cartridge	C8085-60541	1
7	Stapler/stacker driver board	RM1-1123-000CN	1
8	Paper delivery tray assembly	RM1-0940-000CN	1

3-bin mailbox

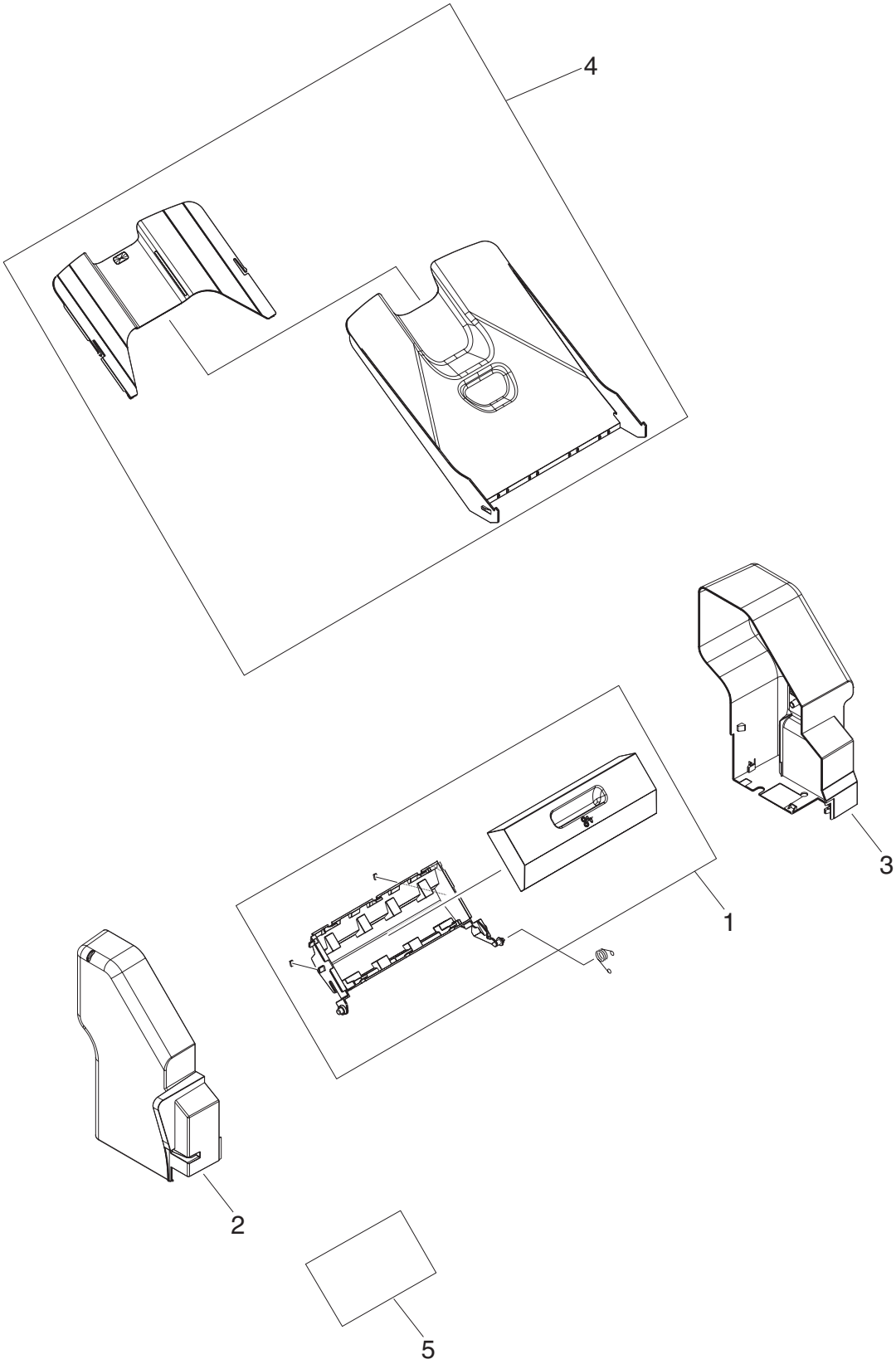


Figure 7-55 3-bin mailbox accessory

Table 7-55 3-bin mailbox accessory

Reference	Description	Part number	Quantity
	3-bin mailbox replacement unit	Q5692-67901	1
1	Jam-access door, 3-bin mailbox	RM1-0981-000CN	1
2	Front cover	RM1-0985-000CN	1
3	Rear cover	RC1-2691-000CN	1
4	Paper delivery tray assembly	RM1-0940-000CN	1
5	MBM driver board	RM1-1124-000CN	1

Intermediate paper transfer unit (IPTU)

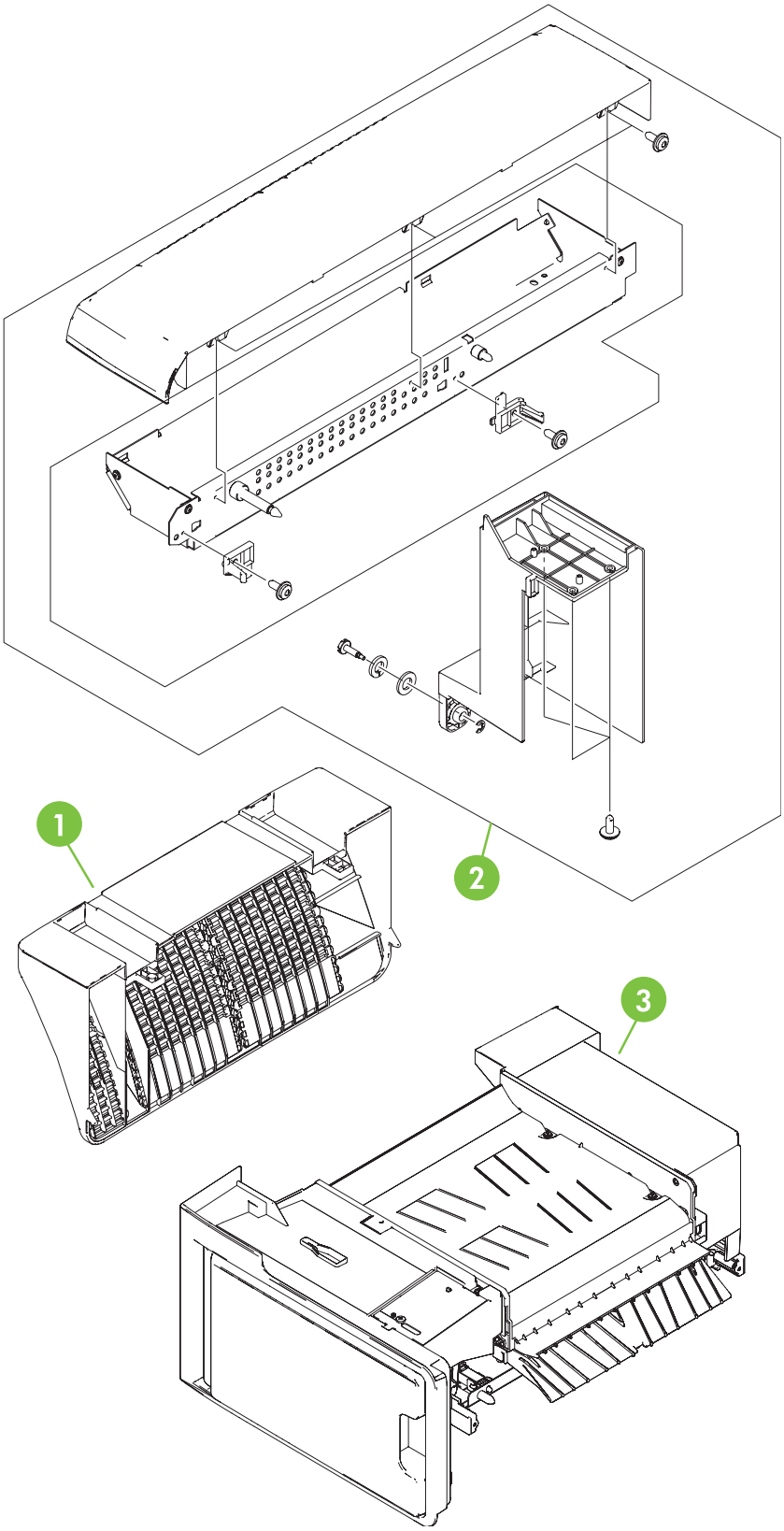


Figure 7-56 External covers and panels

Table 7-56 External covers and panels

Ref	Description	Part number	Qty
1	Lower cover	RL1-0891-000CN	1
2	Top cover assembly	RM1-2295-000CN	1
3	Intermediate feed assembly	RM1-2279-000CN	1

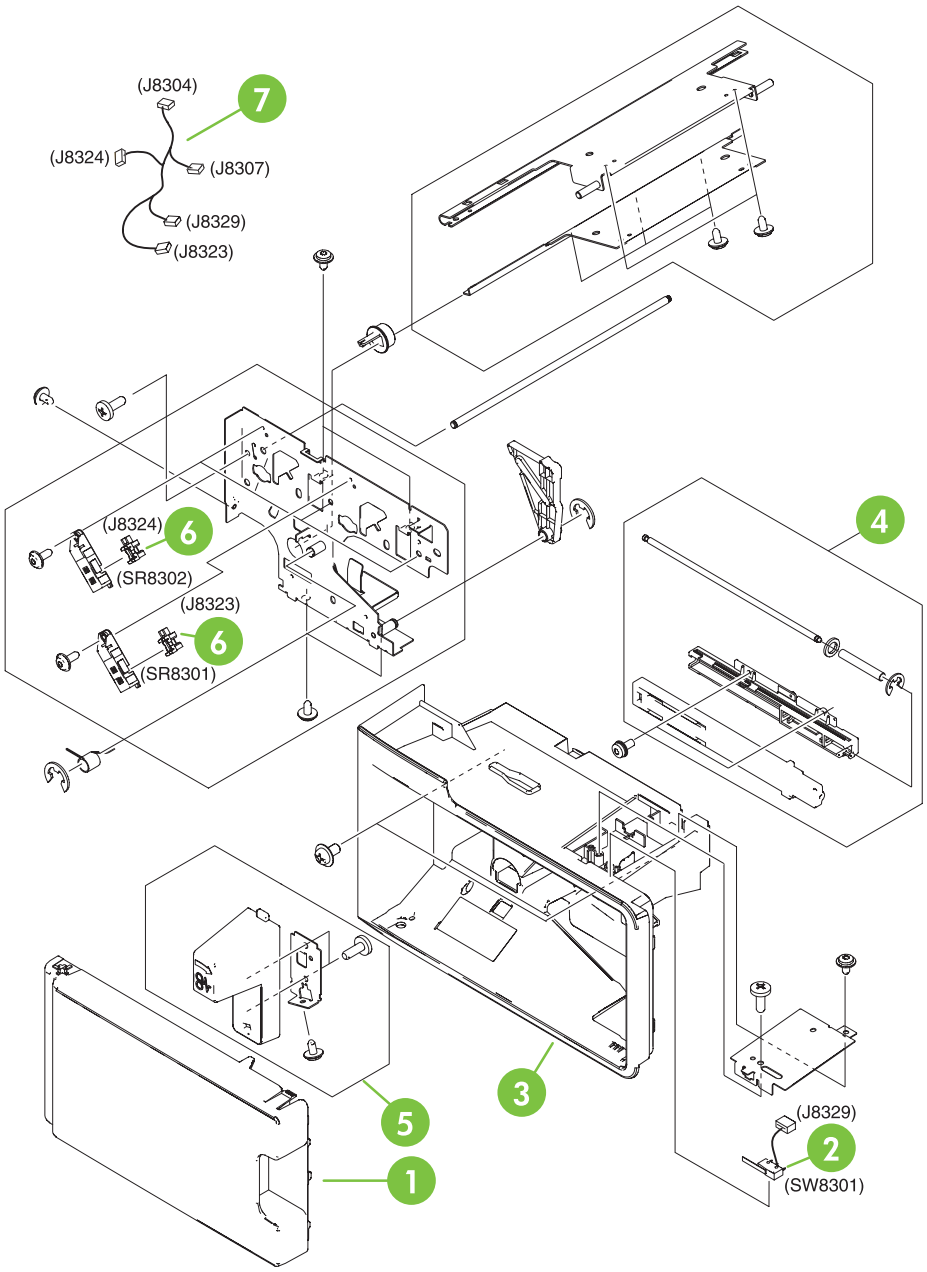


Figure 7-57 Internal components (1 of 2)

Table 7-57 Internal components (1 of 2)

Ref	Description	Part number	Qty
1	Front door	RC1-6158-000CN	1
2	Door switch	RK2-0807-000CN	1
3	Front cover	RL1-0892-000CN	1
4	Front rail assembly	RM1-2291-000CN	1
5	Jam clearing lever assembly	RM1-2294-000CN	1
6	Photo interrupter	WG8-5696-000CN	2
7	Paper sensor cable assembly	RM1-2382-000CN	2

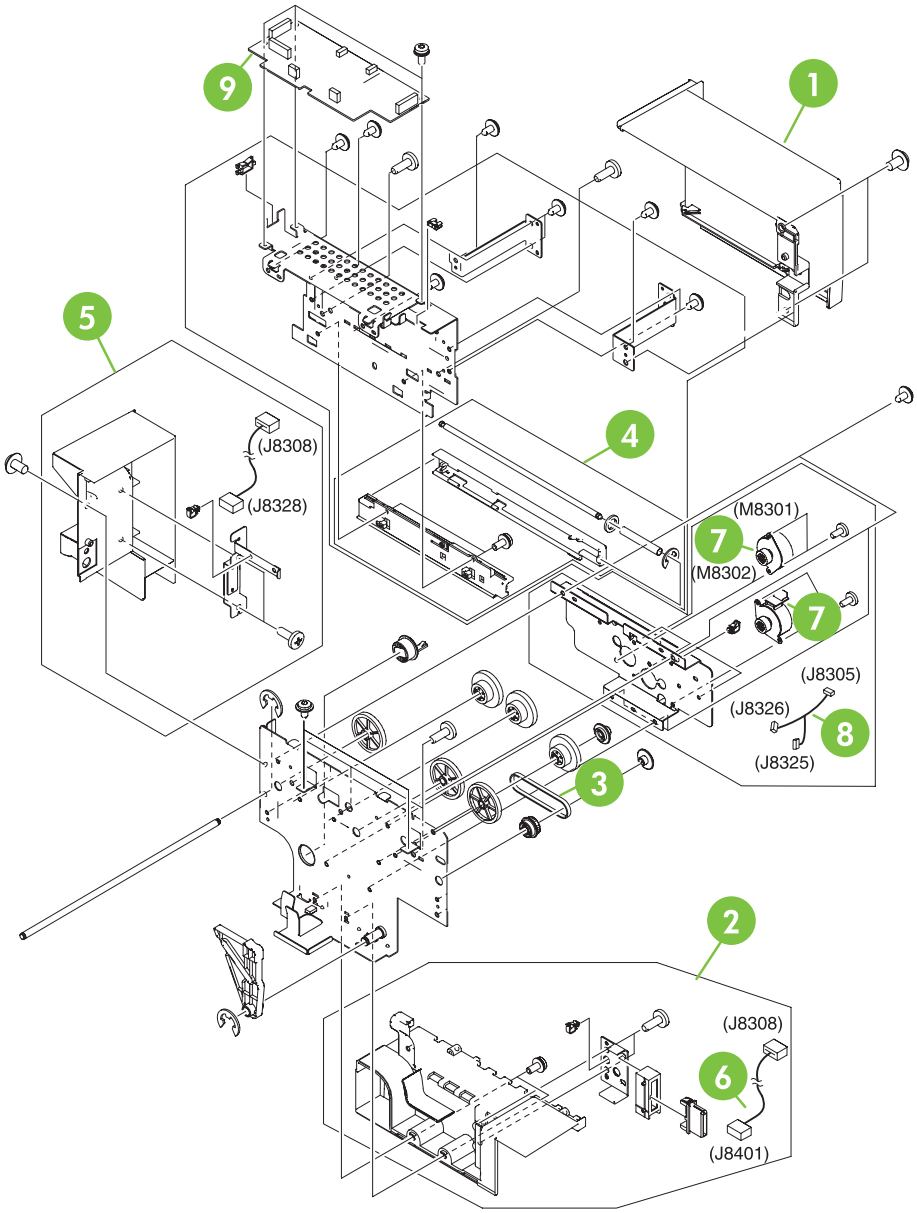


Figure 7-58 Internal components (2 of 2)

Table 7-58 Internal components (2 of 2)

Ref	Description	Part number	Qty
1	Rear cover	RC1-6154-000CN	1
2	Drawer connector assembly	RM1-2288-000CN	1
3	Timing belt	XF2-1108-440CN	1
4	Rear rail assembly	RM1-2290-000CN	1
5	Connector cover assembly	RM1-2293-000CN	1
6	Drawer connector cable assembly	RM1-2384-000CN	1
7	DC stepping motor	RK2-0812-000CN	2
8	Motor cable assembly	RM1-2381-000CN	1
9	IPTU driver PCB assembly	RM1-2380-000CN	1

Alphabetical parts list

Table 7-59 Alphabetical parts list

Description	Part number	Table and page
18T gear	RC1-4324-000CN	Internal components (4 of 8) on page 693
29T gear	RC1-4310-000CN	Internal components (4 of 8) on page 693
2 X 500-sheet paper feeder cassette case unit	RM1-2219-000CN	2 X 500-sheet paper feeder cassette on page 771
3-bin mailbox replacement unit	Q5692-67901	3-bin mailbox accessory on page 779
30T gear	RC1-4309-000CN	Internal components (4 of 8) on page 693
500 sheet stapler/stacker replacement unit	Q5691-67901	Stapler/stacker accessory on page 777
70T gear	RC1-4356-000CN	Internal components (4 of 8) on page 693
70T gear	RC1-4392-000CN	Internal components (4 of 8) on page 693
ADF assembly (without skins)	PF2288-SVPNI	ADF assembly on page 731
ADF button screw M3x8	IR4041P021NI	ADF input tray on page 739
ADF duplex path mylar	PF2282P353NI	ADF internal components (3 of 3) on page 737
ADF front cover assembly	PF2288K001NI	ADF assembly on page 731
ADF input tray	PF2282K042NI	ADF assembly on page 731
ADF input tray assembly	PF2282K042NI	ADF input tray on page 739
ADF jam access latch	PF2282K164NI	ADF internal components (3 of 3) on page 737
ADF jam-access cover	PF2282P041NI	ADF assembly on page 731
ADF left cover	PF2288P058NI	ADF assembly on page 731
ADF left hinge assembly	PF2288K041NI	ADF internal components (2 of 3) on page 735
ADF mud flap assembly	PF2282K166NI	ADF assembly on page 731
ADF mylar holder assembly	PF2282K043NI	ADF assembly on page 731
ADF mylar holder assembly	PF2282K043NI	ADF mylar holder assembly on page 749
ADF mylar replacement kit	Q6496-67901	ADF assembly on page 731
ADF mylar replacement kit	Q6496-67901	ADF mylar replacement kit on page 751
ADF output bin base cover	PF2282P060NI	ADF internal components (1 of 3) on page 733

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
ADF output bin paper stop	PF2282P061NI	ADF internal components (1 of 3) on page 733
ADF pickup gear	PF2282P039NI	ADF internal components (3 of 3) on page 737
ADF pickup roller assembly	PF2282K039NI	ADF internal components (3 of 3) on page 737
ADF pickup roller assembly	PF2282K039NI	ADF pickup-roller assembly on page 745
ADF pickup roller cover assembly	PF2282K040NI	ADF pickup-roller cover on page 747
ADF pickup roller holder assembly	PF2282K040NI	ADF internal components (3 of 3) on page 737
ADF rear cover	PF2288P044NI	ADF assembly on page 731
ADF right hinge assembly	PF2282K008NI	ADF internal components (2 of 3) on page 735
ADF screw, M3X8	IR4041P021NI	ADF internal components (1 of 3) on page 733
ADF separation pad assembly	PF2282K035NI	ADF separation pad on page 741
ADF separation pad assembly	PF2282K035NI	ADF separation pad case on page 743
ADF spring for window background	PF2282P343NI	ADF assembly on page 731
ADF springs for left cover	PF2282P352NI	ADF assembly on page 731
ADF to SCB cable	PF2282K165NI	ADF assembly on page 731
ADF upper paper path assembly	PF2282K034NI	ADF separation pad case on page 743
ADF white scan background	PF2282P339NI	ADF assembly on page 731
ADF window background	PF2282P025NI	ADF assembly on page 731
Attraction contact assembly	RM1-1676-000CN	Internal components (4 of 8) on page 693
Base plate edge cover	RC1-5644-000CN	Internal components (5 of 8) on page 695
Base separation pad	RB2-8386-000CN	Multipurpose pickup assembly on page 713
Bushing	RC1-4325-000CN	Internal components (4 of 8) on page 693
Cable guide	RC1-5645-000CN	Internal components (5 of 8) on page 695
Cable guide	RC1-5904-000CN	Internal components (5 of 8) on page 695
Cable holder	RC1-5771-000CN	Internal components (2 of 8) on page 689

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
Cable holder	RC1-5773-000CN	Internal components (2 of 8) on page 689
Cable holder	RC1-5772-000CN	Internal components (3 of 8) on page 691
Cable interface	RM1-2373-000CN	2 X 500-sheet paper feeder internal components (1 of 2) on page 761
Cartridge guide assembly, right lower	RM1-2143-000CN	Internal components (4 of 8) on page 693
Cartridge guide assembly, right upper	RM1-2142-000CN	Internal components (4 of 8) on page 693
Cartridge left guide	RC1-5766-000CN	Internal components (4 of 8) on page 693
Cartridge pressure left lever	RC1-4387-000CN	Internal components (4 of 8) on page 693
Cassette	RM1-2219-000CN	Cassette on page 711
Cassette size cable	RM1-2366-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
Compression spring	RC1-4396-000CN	Internal components (4 of 8) on page 693
Compression spring	RU5-2514-000CN	Multipurpose pickup assembly on page 713
Compression spring	RC1-4803-000CN	Delivery assembly on page 717
Connector cover assembly	RM1-2293-000CN	Internal components (2 of 2) on page 785
Connector guide assembly	RM1-1675-000CN	Internal components (4 of 8) on page 693
Control panel cable assembly	RM1-2354-000CN	Internal components (1 of 8) on page 687
Cover arm	RC1-4846-000CN	Right lower cover assembly on page 677
Cover arm	RC1-4864-000CN	Right lower cover assembly on page 677
Cst. Cover assembly, B	RM1-2200-000CN	Multipurpose pickup assembly on page 713
DC controller assembly	RM1-2346-000CN	Internal components (2 of 8) on page 689
DC controller PCB assembly	RM1-2346-080CN	PCB assembly on page 729
DC motor	RK2-0615-000CN	Fuser drive assembly on page 719
DC stepping motor	RK2-0618-000CN	Internal components (7 of 8) on page 699

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
DC stepping motor	RK2-0619-000CN	Fuser drive assembly on page 719
DC stepping motor	RK2-0812-000CN	Internal components (2 of 2) on page 785
Delivery assembly 110-127V (new)	RM1-1730-030CN	Delivery assembly on page 717
Delivery assembly 220-240V (new)	RM1-1737-030CN	Delivery assembly on page 717
Delivery roller 110-127V	RC1-4874-000CN	Delivery assembly on page 717
Delivery roller 220-240V	RC1-4875-000CN	Delivery assembly on page 717
Developing disengaging sensor cable	RM1-1644-000CN	Disengaging drive assembly on page 707
Disengaging Drive Assembly	RM1-1717-000CN	Disengaging drive assembly on page 707
Door cable assembly	RM1-2356-000CN	Internal components (6 of 8) on page 697
Door cable cover	RC1-5677-000CN	Internal components (5 of 8) on page 695
Door switch	RK2-0807-000CN	Internal components (1 of 2) on page 783
Door switch cable	RM1-2370-000CN	Upper paper pickup assembly on page 773
Door, jam access	RC1-2597-000CN	Stapler/stacker accessory on page 777
Drawer connector assembly	RM1-2288-000CN	Internal components (2 of 2) on page 785
Drawer connector cable assembly	RM1-2384-000CN	Internal components (2 of 2) on page 785
Drive sensor cable assembly	RM1-2349-000CN	Internal components (7 of 8) on page 699
Drum motor assembly	RM1-1659-000CN	Internal components (7 of 8) on page 699
Duplex feed assembly	RM1-1785-000CN	Duplex feed assembly on page 725
Duplex lock	RC1-5020-000CN	Duplexing unit (2 of 2) on page 723
Duplexing unit	RM1-2112-000CN	Duplexing unit (1 of 2) on page 721
ETB assembly	RM1-3161-080CN	ETB assembly on page 715
Face down center guide	RC1-5864-000CN	Internal components (3 of 8) on page 691
Face-down front guide	RC1-5865-000CN	External covers and panels on page 675
Face-down rear guide	RC1-5866-000CN	External covers and panels on page 675

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
Face-down tray assembly	RM1-2180-000CN	Face-down tray assembly on page 685
Fan	RK2-0622-000CN	Right lower cover assembly on page 677
Fan	RK2-0623-000CN	Internal components (1 of 8) on page 687
Fan	RK2-0621-000CN	Internal components (3 of 8) on page 691
Fan	RK2-0621-000CN	Internal components (6 of 8) on page 697
Fan	RK2-0622-000CN	Internal components (7 of 8) on page 699
Fan	RK2-0621-000CN	Internal components (7 of 8) on page 699
Fan	RK2-0648-000CN	Duplexing unit (1 of 2) on page 721
Fan assembly	RM1-2178-000CN	Internal components (1 of 8) on page 687
Fan connecting cable assembly	RM1-2357-000CN	Internal components (7 of 8) on page 699
Fan connecting cable assembly	RM1-2358-000CN	Internal components (7 of 8) on page 699
Fan connecting cable assembly	RM1-2360-000CN	Internal components (8 of 8) on page 701
Fan driver PCB assembly	RM1-2345-000CN	Internal components (7 of 8) on page 699
Fan driver PCB assembly	RM1-2345-000CN	PCB assembly on page 729
Fan duct	RC1-5711-000CN	Internal components (1 of 8) on page 687
Fan duct	RC1-5867-000CN	Internal components (3 of 8) on page 691
Fan holder	RC1-4314-000CN	Internal components (1 of 8) on page 687
Fan holder	RC1-4316-000CN	Internal components (7 of 8) on page 699
Feed unit connect cable assembly	RM1-2355-000CN	Internal components (3 of 8) on page 691
Flat cable	RK2-1171-000CN	Internal components (2 of 8) on page 689
Flat cable	RK2-0802-000CN	Internal components (2 of 8) on page 689
Flat cable connection 23P	RK2-0816-000CN	Internal components (2 of 8) on page 689

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
Formatter power cable assembly	RM1-1642-000CN	Internal components (8 of 8) on page 701
Front cover	RC1-5694-000CN	External covers and panels on page 675
Front cover	RM1-0942-000CN	Stapler/stacker accessory on page 777
Front cover	RM1-0985-000CN	3-bin mailbox accessory on page 779
Front cover	RL1-0892-000CN	Internal components (1 of 2) on page 783
Front cover plate	RC1-5695-000CN	External covers and panels on page 675
Front cover plate	RC1-5696-000CN	External covers and panels on page 675
Front door	RC1-6158-000CN	Internal components (1 of 2) on page 783
Front door hinge shaft	RC1-5692-000CN	Internal components (5 of 8) on page 695
Front fuser door link assembly	RM1-2103-000CN	Internal components (8 of 8) on page 701
Front inner cover assembly	RM1-2100-000CN	Internal components (8 of 8) on page 701
Front rail assembly	RM1-2291-000CN	Internal components (1 of 2) on page 783
Full sensor flag	RL1-0612-000CN	Delivery assembly on page 717
Fuser assembly (110-127V)	RM1-3131-060CN	Fuser assembly on page 727
Fuser assembly (220-240V)	RM1-3146-060CN	Fuser assembly on page 727
Fuser door assembly	RM1-2102-000CN	Internal components (8 of 8) on page 701
Fuser drive assembly	RM1-1729-000CN	Fuser drive assembly on page 719
Fuser drive cable assembly	RM1-1634-000CN	Delivery assembly on page 717
Fuser drive cable assembly	RM1-1638-000CN	Delivery assembly on page 717
Fuser motor cable assembly	RM1-1631-000CN	Internal components (8 of 8) on page 701
High-voltage power PCB assembly	RM1-1608-000CN	PCB assembly on page 729
High-voltage power supply PCB	RM1-1608-000CN	Internal components (1 of 8) on page 687
Humidity sensor unit	WP2-5187-000CN	Internal components (1 of 8) on page 687
HV terminal block	RC1-4394-000CN	Internal components (4 of 8) on page 693

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
HV terminal mount assembly	RM1-2144-000CN	Internal components (4 of 8) on page 693
Inner cover	RC1-5658-000CN	Internal components (5 of 8) on page 695
Inner front cover	RC1-5988-000CN	Internal components (1 of 8) on page 687
Inner rear cover	RC1-5873-000CN	External covers and panels on page 675
Inner top cover	RC1-5877-000CN	External covers and panels on page 675
Inner top, rear cover	RC1-5878-000CN	External covers and panels on page 675
Intermediate feed assembly	RM1-2279-000CN	External covers and panels on page 781
IPTU driver PCB assembly	RM1-2380-000CN	Internal components (2 of 2) on page 785
Jam clearing lever assembly	RM1-2294-000CN	Internal components (1 of 2) on page 783
Jam sensor flag	RC1-6012-000CN	Upper paper pickup assembly on page 773
Jam-access door, 3-bin mailbox	RM1-0981-000CN	3-bin mailbox accessory on page 779
Jog guide assembly	RM1-0947-000CN	Stapler/stacker accessory on page 777
Kicker assembly	RM1-1008-000CN	Internal components (5 of 8) on page 695
Kicker assembly	RM1-1008-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
Laser/Scanner assembly	RM1-1591-000CN	Internal components (2 of 8) on page 689
Left cap	RC1-4386-000CN	Internal components (4 of 8) on page 693
Left caster cover	RC1-6067-000CN	2 X 500-sheet feeder external components on page 759
Left cover	RC1-6042-000CN	2 X 500-sheet feeder external components on page 759
Left cover assembly	RM1-2115-000CN	Left cover assembly on page 683
Left ETB lever assembly	RM1-1663-000CN	Internal components (5 of 8) on page 695
Left front cover	RC1-6046-000CN	2 X 500-sheet feeder external components on page 759

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
Left lower cover	RC1-6043-000CN	2 X 500-sheet feeder external components on page 759
Left rail assembly	RM1-2227-000CN	Internal components (1 of 8) on page 687
Left reg. adjustment assembly	RM1-1007-000CN	Internal components (5 of 8) on page 695
Left reg. adjustment assembly	RM1-1007-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
Left scanner retaining assembly	RM1-1664-000CN	Internal components (2 of 8) on page 689
Lifter drive assembly	RM1-1750-000CN	Lifter drive assembly on page 709
Lifter-drive assembly	RM1-1750-000CN	500-sheet feeder lifter drive assembly on page 765
Lock lever	RC1-5926-000CN	Internal components (6 of 8) on page 697
Lock plate	RC1-5927-000CN	Internal components (6 of 8) on page 697
Low-voltage power PCB assembly 110-127V	RK2-0627-000CN	PCB assembly on page 729
Low-voltage power PCB assembly 220-240V	RK2-0628-000CN	PCB assembly on page 729
Lower cover	RL1-0891-000CN	External covers and panels on page 781
Lower left cover	RC1-4323-000CN	Internal components (5 of 8) on page 695
Lower paper pickup assembly	RM1-2240-000CN	Lower paper pickup assembly on page 775
Lower pickup drive assembly	RM1-2238-000CN	Lower paper pickup drive assembly on page 769
Lower right cover	RC1-4322-000CN	Internal components (5 of 8) on page 695
Low–voltage power PCB assembly 110V	RK2-0627-000CN	Internal components (2 of 8) on page 689
Low–voltage power PCB assembly 220V	RK2-0628-000CN	Internal components (2 of 8) on page 689
M.P. link, left arm	RC1-4441-000CN	Internal components (7 of 8) on page 699
M.P. link, right arm	RC1-4439-000CN	Internal components (7 of 8) on page 699
Main cable assembly	RM1-1627-000CN	Internal components (8 of 8) on page 701
Main drive assembly	RM1-2137-000CN	Internal components (7 of 8) on page 699

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
MBM driver board	RM1-1124-000CN	3-bin mailbox accessory on page 779
Memory contact cable	RM1-1653-000CN	Internal components (3 of 8) on page 691
Memory PCB assembly	RM1-1618-000CN	Internal components (8 of 8) on page 701
Memory PCB assembly	RM1-1618-000CN	PCB assembly on page 729
MFP power cable assembly	RM1-2351-000CN	Internal components (7 of 8) on page 699
Microswitch	RK2-0804-000CN	Internal components (6 of 8) on page 697
Motor assembly	RM1-2231-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
Motor cable	RM1-2369-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
Motor cable assembly	RM1-2381-000CN	Internal components (2 of 2) on page 785
MPU rail assembly	RM1-2203-000CN	Internal components (6 of 8) on page 697
Multipurpose pickup assembly	RM1-2199-000CN	Multipurpose pickup assembly on page 713
Multipurpose tray assembly	RM1-2109-000CN	Multipurpose tray assembly on page 679
Operation panel holder assembly	RM1-2117-000CN	External covers and panels on page 675
Paper delivery cover assembly	RM1-2179-000CN	External covers and panels on page 675
Paper delivery tray assembly	RM1-0940-000CN	Stapler/stacker accessory on page 777
Paper delivery tray assembly	RM1-0940-000CN	3-bin mailbox accessory on page 779
Paper delivery upper cover	RC1-5880-000CN	External covers and panels on page 675
Paper feed assembly	RM1-1756-000CN	Internal components (5 of 8) on page 695
Paper feed roller assembly	RM1-0037-020CN	Internal components (7 of 8) on page 699
Paper feed roller assembly	RM1-0037-020CN	Multipurpose pickup assembly on page 713
Paper feed roller assembly	RM1-0037-020CN	Upper paper pickup assembly on page 773

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
Paper feed roller assembly	RM1-0037-020CN	Lower paper pickup assembly on page 775
Paper feed sensor cable	RM1-2372-000CN	Upper paper pickup assembly on page 773
Paper feeder driver PCB assembly	RM1-2365-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
Paper pickup drive assembly	RM1-2198-000CN	Paper pickup drive assembly on page 703
Paper pickup roller assembly	RM1-0036-020CN	Internal components (7 of 8) on page 699
Paper pickup roller assembly	RM1-0036-020CN	Lower paper pickup assembly on page 775
Paper sensor cable assembly	RM1-2350-000CN	Internal components (7 of 8) on page 699
Paper sensor cable assembly	RM1-2382-000CN	Internal components (1 of 2) on page 783
Paper sensor unit	RM1-2249-000CN	Upper paper pickup assembly on page 773
Paper sensor unit	RM1-2249-000CN	Lower paper pickup assembly on page 775
Photo interrupter	WG8-5696-000CN	Internal components (1 of 2) on page 783
Photo Interrupter TLP1243	WG8-5696-000CN	Disengaging drive assembly on page 707
Photo interrupter, TLP1243	WG8-5696-000CN	Internal components (7 of 8) on page 699
Photo interrupter, TLP1243	WG8-5696-000CN	Delivery assembly on page 717
Photo interrupter, TLP1243	WG8-5696-000CN	Upper paper pickup assembly on page 773
Pickup cable assembly	RM1-2361-000CN	Internal components (7 of 8) on page 699
pickup motor assembly	RM1-2189-000CN	Pickup motor assembly on page 705
pickup roller	RL1-0019-000CN	Multipurpose pickup assembly on page 713
Power cable assembly	RM1-2353-000CN	Internal components (2 of 8) on page 689
Power save cable assembly	RM1-2352-000CN	Internal components (7 of 8) on page 699
Power supply switch assembly	RM1-2099-000CN	Internal components (2 of 8) on page 689
Pressure plate	RC1-4397-000CN	Internal components (4 of 8) on page 693

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
Pressure plate	RC1-4360-000CN	Internal components (4 of 8) on page 693
Rear cover	RC1-6048-000CN	2 X 500-sheet feeder external components on page 759
Rear cover	RC1-2598-000CN	Stapler/stacker accessory on page 777
Rear cover	RC1-2691-000CN	3-bin mailbox accessory on page 779
Rear cover	RC1-6154-000CN	Internal components (2 of 2) on page 785
Rear cover assembly	RM1-2118-000CN	External covers and panels on page 675
Rear door hinge shaft	RC1-5693-000CN	Internal components (5 of 8) on page 695
Rear fuser door link assembly	RM1-2104-000CN	Internal components (8 of 8) on page 701
Rear inner cover assembly	RM1-2101-000CN	Internal components (8 of 8) on page 701
Rear plate assembly	RM1-1679-000CN	Internal components (2 of 8) on page 689
Rear rail assembly	RM1-2290-000CN	Internal components (2 of 2) on page 785
Retard guide	RC1-5940-000CN	Multipurpose pickup assembly on page 713
Retard guide pin	RC1-5938-000CN	Multipurpose pickup assembly on page 713
Retard guide pin	RC1-5939-000CN	Multipurpose pickup assembly on page 713
Right cap	RC1-4352-000CN	Internal components (4 of 8) on page 693
Right caster cover	RC1-6068-000CN	2 X 500-sheet feeder external components on page 759
Right cover	RC1-6044-000CN	2 X 500-sheet feeder external components on page 759
Right ETB lever assembly	RM1-1662-000CN	Internal components (5 of 8) on page 695
Right front cover	RC1-6047-000CN	2 X 500-sheet feeder external components on page 759
Right lower cover	RC1-6045-000CN	2 X 500-sheet feeder external components on page 759
Right lower cover assembly	RM1-2105-000CN	Right lower cover assembly on page 677
Right lower cover assembly	RM1-2241-000CN	2 X 500-sheet feeder external components on page 759

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
Right rail assembly	RM1-2228-000CN	Internal components (1 of 8) on page 687
Right scanner retaining assembly	RM1-1665-000CN	Internal components (2 of 8) on page 689
Right switch assembly	RM1-2226-000CN	2 X 500-sheet paper feeder internal components (1 of 2) on page 761
Right upper door assembly	RM1-2111-000CN	Right upper door assembly on page 681
Scanner cartridge lock cover	IR4041P214NI	Scanner covers on page 755
Scanner controller PCB	IR4041K512NI	Scanner base components on page 753
Scanner fan filter	IR4041P007NI	Scanner base components on page 753
Scanner fan filter cover	IR4054P217NI	Scanner base components on page 753
Scanner flatbed unit assembly	IR4054-SVPNI	Scanner covers on page 755
Scanner left cover	IR4054P226NI	Scanner covers on page 755
Scanner rear cover	IR4054P216NI	Scanner covers on page 755
Scanner right cover assembly	IR4054K100NI	Scanner covers on page 755
Scanner screw flatbed	040100FNBBNI	Scanner covers on page 755
Scanner support	RC1-4312-000CN	Internal components (2 of 8) on page 689
Scanner support spring	RC1-4313-000CN	Internal components (2 of 8) on page 689
Scanner top cover flatbed flange	IR4054P215NI	Scanner covers on page 755
Screw, RS M3X8	XA9-1504-000CN	External covers and panels on page 675
Sensor lever	RC1-6013-000CN	Internal components (7 of 8) on page 699
Separation pad	RF5-3750-020CN	Multipurpose pickup assembly on page 713
Shield cover	RC1-5776-000CN	Internal components (2 of 8) on page 689
Shield cover	RC1-5778-000CN	Internal components (2 of 8) on page 689
Shield cover	RC1-5779-000CN	Internal components (2 of 8) on page 689
Size sensing assembly	RM1-0041-020CN	Internal components (5 of 8) on page 695
Size sensing assembly	RM1-0041-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
Solenoid	RK2-0624-000CN	Upper paper pickup drive assembly on page 767
Solenoid	RK2-0624-000CN	Lower paper pickup drive assembly on page 769
Solenoid cable	RM1-2368-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
Solenoid cable	RM1-2371-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
Solenoid cover	RL1-0654-000CN	Duplexing unit (1 of 2) on page 721
Spring tension	RC1-0198-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
Staple cartridge	C8085-60541	Stapler/stacker accessory on page 777
Stapler unit	RK2-0507-000CN	Stapler/stacker accessory on page 777
Stapler/stacker driver board	RM1-1123-000CN	Stapler/stacker accessory on page 777
Sub power supply assembly	RM1-2119-000CN	Internal components (7 of 8) on page 699
Sub power supply assembly	RM1-2119-000CN	PCB assembly on page 729
Switch	WC4-5188-000CN	Internal components (4 of 8) on page 693
Switching arm	RC1-5646-000CN	Internal components (2 of 8) on page 689
Switching arm	RC1-5647-000CN	Internal components (2 of 8) on page 689
Switching arm guide	RC1-5648-000CN	Internal components (2 of 8) on page 689
Switching arm guide	RC1-5649-000CN	Internal components (2 of 8) on page 689
Switching arm link	RC1-5650-000CN	Internal components (2 of 8) on page 689
Tension spring	RC1-4393-000CN	Internal components (4 of 8) on page 693
Tension spring	RC1-4395-000CN	Internal components (4 of 8) on page 693
Tension spring	RC1-4423-000CN	Internal components (4 of 8) on page 693
Tension spring	RC1-4357-000CN	Internal components (4 of 8) on page 693

Table 7-59 Alphabetical parts list (continued)

Description	Part number	Table and page
Test print button	RC1-4345-000CN	Internal components (3 of 8) on page 691
Test print lower guide	RC1-5759-000CN	Internal components (3 of 8) on page 691
Test print rod	RC1-5760-000CN	Internal components (3 of 8) on page 691
Test print upper guide	RC1-5728-000CN	Internal components (3 of 8) on page 691
Timing belt	XF2-1108-440CN	Internal components (2 of 2) on page 785
Toner sensor PCB assembly	RM1-1609-000CN	Internal components (1 of 8) on page 687
Toner sensor PCB assembly	RM1-1609-000CN	PCB assembly on page 729
Top cover assembly	RM1-2295-000CN	External covers and panels on page 781
Torsion spring	RC1-5953-000CN	Internal components (6 of 8) on page 697
Torsion spring	RC1-4440-000CN	Internal components (7 of 8) on page 699
Upper paper pickup assembly	RM1-2232-000CN	Upper paper pickup assembly on page 773
Upper paper pickup drive assembly	RM1-2229-000CN	Upper paper pickup drive assembly on page 767

Numerical parts list

Table 7-60 Numerical parts list

Part number	Description	Table and page
040100FNBBNI	Scanner screw flatbed	Scanner covers on page 755
C8085-60541	Staple cartridge	Stapler/stacker accessory on page 777
IR4041K512NI	Scanner controller PCB	Scanner base components on page 753
IR4041P007NI	Scanner fan filter	Scanner base components on page 753
IR4041P021NI	ADF screw, M3X8	ADF internal components (1 of 3) on page 733
IR4041P021NI	ADF button screw M3x8	ADF input tray on page 739
IR4041P214NI	Scanner cartridge lock cover	Scanner covers on page 755
IR4054-SVPNI	Scanner flatbed unit assembly	Scanner covers on page 755
IR4054K100NI	Scanner right cover assembly	Scanner covers on page 755
IR4054P215NI	Scanner top cover flatbed flange	Scanner covers on page 755
IR4054P216NI	Scanner rear cover	Scanner covers on page 755
IR4054P217NI	Scanner fan filter cover	Scanner base components on page 753
IR4054P226NI	Scanner left cover	Scanner covers on page 755
PF2282K008NI	ADF right hinge assembly	ADF internal components (2 of 3) on page 735
PF2282K034NI	ADF upper paper path assembly	ADF separation pad case on page 743
PF2282K035NI	ADF separation pad assembly	ADF separation pad on page 741
PF2282K035NI	ADF separation pad assembly	ADF separation pad case on page 743
PF2282K039NI	ADF pickup roller assembly	ADF internal components (3 of 3) on page 737
PF2282K039NI	ADF pickup roller assembly	ADF pickup-roller assembly on page 745
PF2282K040NI	ADF pickup roller holder assembly	ADF internal components (3 of 3) on page 737
PF2282K040NI	ADF pickup roller cover assembly	ADF pickup-roller cover on page 747
PF2282K042NI	ADF input tray	ADF assembly on page 731
PF2282K042NI	ADF input tray assembly	ADF input tray on page 739
PF2282K043NI	ADF mylar holder assembly	ADF assembly on page 731

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
PF2282K043NI	ADF mylar holder assembly	ADF mylar holder assembly on page 749
PF2282K164NI	ADF jam access latch	ADF internal components (3 of 3) on page 737
PF2282K165NI	ADF to SCB cable	ADF assembly on page 731
PF2282K166NI	ADF mud flap assembly	ADF assembly on page 731
PF2282P025NI	ADF window background	ADF assembly on page 731
PF2282P039NI	ADF pickup gear	ADF internal components (3 of 3) on page 737
PF2282P041NI	ADF jam-access cover	ADF assembly on page 731
PF2282P060NI	ADF output bin base cover	ADF internal components (1 of 3) on page 733
PF2282P061NI	ADF output bin paper stop	ADF internal components (1 of 3) on page 733
PF2282P339NI	ADF white scan background	ADF assembly on page 731
PF2282P343NI	ADF spring for window background	ADF assembly on page 731
PF2282P352NI	ADF springs for left cover	ADF assembly on page 731
PF2282P353NI	ADF duplex path mylar	ADF internal components (3 of 3) on page 737
PF2288-SVPNI	ADF assembly (without skins)	ADF assembly on page 731
PF2288K001NI	ADF front cover assembly	ADF assembly on page 731
PF2288K041NI	ADF left hinge assembly	ADF internal components (2 of 3) on page 735
PF2288P044NI	ADF rear cover	ADF assembly on page 731
PF2288P058NI	ADF left cover	ADF assembly on page 731
Q5691-67901	500 sheet stapler/stacker replacement unit	Stapler/stacker accessory on page 777
Q5692-67901	3-bin mailbox replacement unit	3-bin mailbox accessory on page 779
Q6496-67901	ADF mylar replacement kit	ADF assembly on page 731
Q6496-67901	ADF mylar replacement kit	ADF mylar replacement kit on page 751
RB2-8386-000CN	Base separation pad	Multipurpose pickup assembly on page 713
RC1-0198-000CN	Spring tension	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
RC1-2597-000CN	Door, jam access	Stapler/stacker accessory on page 777
RC1-2598-000CN	Rear cover	Stapler/stacker accessory on page 777

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RC1-2691-000CN	Rear cover	3-bin mailbox accessory on page 779
RC1-4309-000CN	30T gear	Internal components (4 of 8) on page 693
RC1-4310-000CN	29T gear	Internal components (4 of 8) on page 693
RC1-4312-000CN	Scanner support	Internal components (2 of 8) on page 689
RC1-4313-000CN	Scanner support spring	Internal components (2 of 8) on page 689
RC1-4314-000CN	Fan holder	Internal components (1 of 8) on page 687
RC1-4316-000CN	Fan holder	Internal components (7 of 8) on page 699
RC1-4322-000CN	Lower right cover	Internal components (5 of 8) on page 695
RC1-4323-000CN	Lower left cover	Internal components (5 of 8) on page 695
RC1-4324-000CN	18T gear	Internal components (4 of 8) on page 693
RC1-4325-000CN	Bushing	Internal components (4 of 8) on page 693
RC1-4345-000CN	Test print button	Internal components (3 of 8) on page 691
RC1-4352-000CN	Right cap	Internal components (4 of 8) on page 693
RC1-4356-000CN	70T gear	Internal components (4 of 8) on page 693
RC1-4357-000CN	Tension spring	Internal components (4 of 8) on page 693
RC1-4360-000CN	Pressure plate	Internal components (4 of 8) on page 693
RC1-4386-000CN	Left cap	Internal components (4 of 8) on page 693
RC1-4387-000CN	Cartridge pressure left lever	Internal components (4 of 8) on page 693
RC1-4392-000CN	70T gear	Internal components (4 of 8) on page 693
RC1-4393-000CN	Tension spring	Internal components (4 of 8) on page 693
RC1-4394-000CN	HV terminal block	Internal components (4 of 8) on page 693
RC1-4395-000CN	Tension spring	Internal components (4 of 8) on page 693

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RC1-4396-000CN	Compression spring	Internal components (4 of 8) on page 693
RC1-4397-000CN	Pressure plate	Internal components (4 of 8) on page 693
RC1-4423-000CN	Tension spring	Internal components (4 of 8) on page 693
RC1-4439-000CN	M.P. link, right arm	Internal components (7 of 8) on page 699
RC1-4440-000CN	Torsion spring	Internal components (7 of 8) on page 699
RC1-4441-000CN	M.P. link, left arm	Internal components (7 of 8) on page 699
RC1-4803-000CN	Compression spring	Delivery assembly on page 717
RC1-4846-000CN	Cover arm	Right lower cover assembly on page 677
RC1-4864-000CN	Cover arm	Right lower cover assembly on page 677
RC1-4874-000CN	Delivery roller 110-127V	Delivery assembly on page 717
RC1-4875-000CN	Delivery roller 220-240V	Delivery assembly on page 717
RC1-5020-000CN	Duplex lock	Duplexing unit (2 of 2) on page 723
RC1-5644-000CN	Base plate edge cover	Internal components (5 of 8) on page 695
RC1-5645-000CN	Cable guide	Internal components (5 of 8) on page 695
RC1-5646-000CN	Switching arm	Internal components (2 of 8) on page 689
RC1-5647-000CN	Switching arm	Internal components (2 of 8) on page 689
RC1-5648-000CN	Switching arm guide	Internal components (2 of 8) on page 689
RC1-5649-000CN	Switching arm guide	Internal components (2 of 8) on page 689
RC1-5650-000CN	Switching arm link	Internal components (2 of 8) on page 689
RC1-5658-000CN	Inner cover	Internal components (5 of 8) on page 695
RC1-5677-000CN	Door cable cover	Internal components (5 of 8) on page 695
RC1-5692-000CN	Front door hinge shaft	Internal components (5 of 8) on page 695
RC1-5693-000CN	Rear door hinge shaft	Internal components (5 of 8) on page 695

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RC1-5694-000CN	Front cover	External covers and panels on page 675
RC1-5695-000CN	Front cover plate	External covers and panels on page 675
RC1-5696-000CN	Front cover plate	External covers and panels on page 675
RC1-5711-000CN	Fan duct	Internal components (1 of 8) on page 687
RC1-5728-000CN	Test print upper guide	Internal components (3 of 8) on page 691
RC1-5759-000CN	Test print lower guide	Internal components (3 of 8) on page 691
RC1-5760-000CN	Test print rod	Internal components (3 of 8) on page 691
RC1-5766-000CN	Cartridge left guide	Internal components (4 of 8) on page 693
RC1-5771-000CN	Cable holder	Internal components (2 of 8) on page 689
RC1-5772-000CN	Cable holder	Internal components (3 of 8) on page 691
RC1-5773-000CN	Cable holder	Internal components (2 of 8) on page 689
RC1-5776-000CN	Shield cover	Internal components (2 of 8) on page 689
RC1-5778-000CN	Shield cover	Internal components (2 of 8) on page 689
RC1-5779-000CN	Shield cover	Internal components (2 of 8) on page 689
RC1-5864-000CN	Face down center guide	Internal components (3 of 8) on page 691
RC1-5865-000CN	Face-down front guide	External covers and panels on page 675
RC1-5866-000CN	Face-down rear guide	External covers and panels on page 675
RC1-5867-000CN	Fan duct	Internal components (3 of 8) on page 691
RC1-5873-000CN	Inner rear cover	External covers and panels on page 675
RC1-5877-000CN	Inner top cover	External covers and panels on page 675
RC1-5878-000CN	Inner top, rear cover	External covers and panels on page 675
RC1-5880-000CN	Paper delivery upper cover	External covers and panels on page 675

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RC1-5904-000CN	Cable guide	Internal components (5 of 8) on page 695
RC1-5926-000CN	Lock lever	Internal components (6 of 8) on page 697
RC1-5927-000CN	Lock plate	Internal components (6 of 8) on page 697
RC1-5938-000CN	Retard guide pin	Multipurpose pickup assembly on page 713
RC1-5939-000CN	Retard guide pin	Multipurpose pickup assembly on page 713
RC1-5940-000CN	Retard guide	Multipurpose pickup assembly on page 713
RC1-5953-000CN	Torsion spring	Internal components (6 of 8) on page 697
RC1-5988-000CN	Inner front cover	Internal components (1 of 8) on page 687
RC1-6012-000CN	Jam sensor flag	Upper paper pickup assembly on page 773
RC1-6013-000CN	Sensor lever	Internal components (7 of 8) on page 699
RC1-6042-000CN	Left cover	2 X 500-sheet feeder external components on page 759
RC1-6043-000CN	Left lower cover	2 X 500-sheet feeder external components on page 759
RC1-6044-000CN	Right cover	2 X 500-sheet feeder external components on page 759
RC1-6045-000CN	Right lower cover	2 X 500-sheet feeder external components on page 759
RC1-6046-000CN	Left front cover	2 X 500-sheet feeder external components on page 759
RC1-6047-000CN	Right front cover	2 X 500-sheet feeder external components on page 759
RC1-6048-000CN	Rear cover	2 X 500-sheet feeder external components on page 759
RC1-6067-000CN	Left caster cover	2 X 500-sheet feeder external components on page 759
RC1-6068-000CN	Right caster cover	2 X 500-sheet feeder external components on page 759
RC1-6154-000CN	Rear cover	Internal components (2 of 2) on page 785
RC1-6158-000CN	Front door	Internal components (1 of 2) on page 783
RF5-3750-020CN	Separation pad	Multipurpose pickup assembly on page 713

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RK2-0507-000CN	Stapler unit	Stapler/stacker accessory on page 777
RK2-0615-000CN	DC motor	Fuser drive assembly on page 719
RK2-0618-000CN	DC stepping motor	Internal components (7 of 8) on page 699
RK2-0619-000CN	DC stepping motor	Fuser drive assembly on page 719
RK2-0621-000CN	Fan	Internal components (3 of 8) on page 691
RK2-0621-000CN	Fan	Internal components (6 of 8) on page 697
RK2-0621-000CN	Fan	Internal components (7 of 8) on page 699
RK2-0622-000CN	Fan	Right lower cover assembly on page 677
RK2-0622-000CN	Fan	Internal components (7 of 8) on page 699
RK2-0623-000CN	Fan	Internal components (1 of 8) on page 687
RK2-0624-000CN	Solenoid	Upper paper pickup drive assembly on page 767
RK2-0624-000CN	Solenoid	Lower paper pickup drive assembly on page 769
RK2-0627-000CN	Low–voltage power PCB assembly 110V	Internal components (2 of 8) on page 689
RK2-0627-000CN	Low-voltage power PCB assembly 110-127V	PCB assembly on page 729
RK2-0628-000CN	Low–voltage power PCB assembly 220V	Internal components (2 of 8) on page 689
RK2-0628-000CN	Low-voltage power PCB assembly 220-240V	PCB assembly on page 729
RK2-0648-000CN	Fan	Duplexing unit (1 of 2) on page 721
RK2-0802-000CN	Flat cable	Internal components (2 of 8) on page 689
RK2-0804-000CN	Microswitch	Internal components (6 of 8) on page 697
RK2-0807-000CN	Door switch	Internal components (1 of 2) on page 783
RK2-0812-000CN	DC stepping motor	Internal components (2 of 2) on page 785
RK2-0816-000CN	Flat cable connection 23P	Internal components (2 of 8) on page 689
RK2-1171-000CN	Flat cable	Internal components (2 of 8) on page 689

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RL1-0019-000CN	pickup roller	Multipurpose pickup assembly on page 713
RL1-0612-000CN	Full sensor flag	Delivery assembly on page 717
RL1-0654-000CN	Solenoid cover	Duplexing unit (1 of 2) on page 721
RL1-0891-000CN	Lower cover	External covers and panels on page 781
RL1-0892-000CN	Front cover	Internal components (1 of 2) on page 783
RM1-0036-020CN	Paper pickup roller assembly	Internal components (7 of 8) on page 699
RM1-0036-020CN	Paper pickup roller assembly	Lower paper pickup assembly on page 775
RM1-0037-020CN	Paper feed roller assembly	Internal components (7 of 8) on page 699
RM1-0037-020CN	Paper feed roller assembly	Multipurpose pickup assembly on page 713
RM1-0037-020CN	Paper feed roller assembly	Upper paper pickup assembly on page 773
RM1-0037-020CN	Paper feed roller assembly	Lower paper pickup assembly on page 775
RM1-0041-000CN	Size sensing assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
RM1-0041-020CN	Size sensing assembly	Internal components (5 of 8) on page 695
RM1-0940-000CN	Paper delivery tray assembly	Stapler/stacker accessory on page 777
RM1-0940-000CN	Paper delivery tray assembly	3-bin mailbox accessory on page 779
RM1-0942-000CN	Front cover	Stapler/stacker accessory on page 777
RM1-0947-000CN	Jog guide assembly	Stapler/stacker accessory on page 777
RM1-0981-000CN	Jam-access door, 3-bin mailbox	3-bin mailbox accessory on page 779
RM1-0985-000CN	Front cover	3-bin mailbox accessory on page 779
RM1-1007-000CN	Left reg. adjustment assembly	Internal components (5 of 8) on page 695
RM1-1007-000CN	Left reg. adjustment assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 763

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RM1-1008-000CN	Kicker assembly	Internal components (5 of 8) on page 695
RM1-1008-000CN	Kicker assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
RM1-1123-000CN	Stapler/stacker driver board	Stapler/stacker accessory on page 777
RM1-1124-000CN	MBM driver board	3-bin mailbox accessory on page 779
RM1-1591-000CN	Laser/Scanner assembly	Internal components (2 of 8) on page 689
RM1-1608-000CN	High-voltage power supply PCB	Internal components (1 of 8) on page 687
RM1-1608-000CN	High-voltage power PCB assembly	PCB assembly on page 729
RM1-1609-000CN	Toner sensor PCB assembly	Internal components (1 of 8) on page 687
RM1-1609-000CN	Toner sensor PCB assembly	PCB assembly on page 729
RM1-1618-000CN	Memory PCB assembly	Internal components (8 of 8) on page 701
RM1-1618-000CN	Memory PCB assembly	PCB assembly on page 729
RM1-1627-000CN	Main cable assembly	Internal components (8 of 8) on page 701
RM1-1631-000CN	Fuser motor cable assembly	Internal components (8 of 8) on page 701
RM1-1634-000CN	Fuser drive cable assembly	Delivery assembly on page 717
RM1-1638-000CN	Fuser drive cable assembly	Delivery assembly on page 717
RM1-1642-000CN	Formatter power cable assembly	Internal components (8 of 8) on page 701
RM1-1644-000CN	Developing disengaging sensor cable	Disengaging drive assembly on page 707
RM1-1653-000CN	Memory contact cable	Internal components (3 of 8) on page 691
RM1-1659-000CN	Drum motor assembly	Internal components (7 of 8) on page 699
RM1-1662-000CN	Right ETB lever assembly	Internal components (5 of 8) on page 695
RM1-1663-000CN	Left ETB lever assembly	Internal components (5 of 8) on page 695
RM1-1664-000CN	Left scanner retaining assembly	Internal components (2 of 8) on page 689
RM1-1665-000CN	Right scanner retaining assembly	Internal components (2 of 8) on page 689

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RM1-1675-000CN	Connector guide assembly	Internal components (4 of 8) on page 693
RM1-1676-000CN	Attraction contact assembly	Internal components (4 of 8) on page 693
RM1-1679-000CN	Rear plate assembly	Internal components (2 of 8) on page 689
RM1-1717-000CN	Disengaging Drive Assembly	Disengaging drive assembly on page 707
RM1-1729-000CN	Fuser drive assembly	Fuser drive assembly on page 719
RM1-1730-030CN	Delivery assembly 110-127V (new)	Delivery assembly on page 717
RM1-1737-030CN	Delivery assembly 220-240V (new)	Delivery assembly on page 717
RM1-1750-000CN	Lifter drive assembly	Lifter drive assembly on page 709
RM1-1750-000CN	Lifter-drive assembly	500-sheet feeder lifter drive assembly on page 765
RM1-1756-000CN	Paper feed assembly	Internal components (5 of 8) on page 695
RM1-1785-000CN	Duplex feed assembly	Duplex feed assembly on page 725
RM1-2099-000CN	Power supply switch assembly	Internal components (2 of 8) on page 689
RM1-2100-000CN	Front inner cover assembly	Internal components (8 of 8) on page 701
RM1-2101-000CN	Rear inner cover assembly	Internal components (8 of 8) on page 701
RM1-2102-000CN	Fuser door assembly	Internal components (8 of 8) on page 701
RM1-2103-000CN	Front fuser door link assembly	Internal components (8 of 8) on page 701
RM1-2104-000CN	Rear fuser door link assembly	Internal components (8 of 8) on page 701
RM1-2105-000CN	Right lower cover assembly	Right lower cover assembly on page 677
RM1-2109-000CN	Multipurpose tray assembly	Multipurpose tray assembly on page 679
RM1-2111-000CN	Right upper door assembly	Right upper door assembly on page 681
RM1-2112-000CN	Duplexing unit	Duplexing unit (1 of 2) on page 721
RM1-2115-000CN	Left cover assembly	Left cover assembly on page 683
RM1-2117-000CN	Operation panel holder assembly	External covers and panels on page 675

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RM1-2118-000CN	Rear cover assembly	External covers and panels on page 675
RM1-2119-000CN	Sub power supply assembly	Internal components (7 of 8) on page 699
RM1-2119-000CN	Sub power supply assembly	PCB assembly on page 729
RM1-2137-000CN	Main drive assembly	Internal components (7 of 8) on page 699
RM1-2142-000CN	Cartridge guide assembly, right upper	Internal components (4 of 8) on page 693
RM1-2143-000CN	Cartridge guide assembly, right lower	Internal components (4 of 8) on page 693
RM1-2144-000CN	HV terminal mount assembly	Internal components (4 of 8) on page 693
RM1-2178-000CN	Fan assembly	Internal components (1 of 8) on page 687
RM1-2179-000CN	Paper delivery cover assembly	External covers and panels on page 675
RM1-2180-000CN	Face-down tray assembly	Face-down tray assembly on page 685
RM1-2189-000CN	pickup motor assembly	Pickup motor assembly on page 705
RM1-2198-000CN	Paper pickup drive assembly	Paper pickup drive assembly on page 703
RM1-2199-000CN	Multipurpose pickup assembly	Multipurpose pickup assembly on page 713
RM1-2200-000CN	Cst. Cover assembly, B	Multipurpose pickup assembly on page 713
RM1-2203-000CN	MPU rail assembly	Internal components (6 of 8) on page 697
RM1-2219-000CN	Cassette	Cassette on page 711
RM1-2219-000CN	2 X 500-sheet paper feeder cassette case unit	2 X 500-sheet paper feeder cassette on page 771
RM1-2226-000CN	Right switch assembly	2 X 500-sheet paper feeder internal components (1 of 2) on page 761
RM1-2227-000CN	Left rail assembly	Internal components (1 of 8) on page 687
RM1-2228-000CN	Right rail assembly	Internal components (1 of 8) on page 687
RM1-2229-000CN	Upper paper pickup drive assembly	Upper paper pickup drive assembly on page 767
RM1-2231-000CN	Motor assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 763

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RM1-2232-000CN	Upper paper pickup assembly	Upper paper pickup assembly on page 773
RM1-2238-000CN	Lower pickup drive assembly	Lower paper pickup drive assembly on page 769
RM1-2240-000CN	Lower paper pickup assembly	Lower paper pickup assembly on page 775
RM1-2241-000CN	Right lower cover assembly	2 X 500-sheet feeder external components on page 759
RM1-2249-000CN	Paper sensor unit	Upper paper pickup assembly on page 773
RM1-2249-000CN	Paper sensor unit	Lower paper pickup assembly on page 775
RM1-2279-000CN	Intermediate feed assembly	External covers and panels on page 781
RM1-2288-000CN	Drawer connector assembly	Internal components (2 of 2) on page 785
RM1-2290-000CN	Rear rail assembly	Internal components (2 of 2) on page 785
RM1-2291-000CN	Front rail assembly	Internal components (1 of 2) on page 783
RM1-2293-000CN	Connector cover assembly	Internal components (2 of 2) on page 785
RM1-2294-000CN	Jam clearing lever assembly	Internal components (1 of 2) on page 783
RM1-2295-000CN	Top cover assembly	External covers and panels on page 781
RM1-2345-000CN	Fan driver PCB assembly	Internal components (7 of 8) on page 699
RM1-2345-000CN	Fan driver PCB assembly	PCB assembly on page 729
RM1-2346-000CN	DC controller assembly	Internal components (2 of 8) on page 689
RM1-2346-080CN	DC controller PCB assembly	PCB assembly on page 729
RM1-2349-000CN	Drive sensor cable assembly	Internal components (7 of 8) on page 699
RM1-2350-000CN	Paper sensor cable assembly	Internal components (7 of 8) on page 699
RM1-2351-000CN	MFP power cable assembly	Internal components (7 of 8) on page 699
RM1-2352-000CN	Power save cable assembly	Internal components (7 of 8) on page 699
RM1-2353-000CN	Power cable assembly	Internal components (2 of 8) on page 689
RM1-2354-000CN	Control panel cable assembly	Internal components (1 of 8) on page 687

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RM1-2355-000CN	Feed unit connect cable assembly	Internal components (3 of 8) on page 691
RM1-2356-000CN	Door cable assembly	Internal components (6 of 8) on page 697
RM1-2357-000CN	Fan connecting cable assembly	Internal components (7 of 8) on page 699
RM1-2358-000CN	Fan connecting cable assembly	Internal components (7 of 8) on page 699
RM1-2360-000CN	Fan connecting cable assembly	Internal components (8 of 8) on page 701
RM1-2361-000CN	Pickup cable assembly	Internal components (7 of 8) on page 699
RM1-2365-000CN	Paper feeder driver PCB assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
RM1-2366-000CN	Cassette size cable	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
RM1-2368-000CN	Solenoid cable	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
RM1-2369-000CN	Motor cable	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
RM1-2370-000CN	Door switch cable	Upper paper pickup assembly on page 773
RM1-2371-000CN	Solenoid cable	2 X 500-sheet paper feeder internal components (2 of 2) on page 763
RM1-2372-000CN	Paper feed sensor cable	Upper paper pickup assembly on page 773
RM1-2373-000CN	Cable interface	2 X 500-sheet paper feeder internal components (1 of 2) on page 761
RM1-2380-000CN	IPTU driver PCB assembly	Internal components (2 of 2) on page 785
RM1-2381-000CN	Motor cable assembly	Internal components (2 of 2) on page 785
RM1-2382-000CN	Paper sensor cable assembly	Internal components (1 of 2) on page 783
RM1-2384-000CN	Drawer connector cable assembly	Internal components (2 of 2) on page 785
RM1-3131-060CN	Fuser assembly (110-127V)	Fuser assembly on page 727
RM1-3146-060CN	Fuser assembly (220-240V)	Fuser assembly on page 727
RM1-3161-080CN	ETB assembly	ETB assembly on page 715

Table 7-60 Numerical parts list (continued)

Part number	Description	Table and page
RU5-2514-000CN	Compression spring	Multipurpose pickup assembly on page 713
WC4-5188-000CN	Switch	Internal components (4 of 8) on page 693
WG8-5696-000CN	Photo interrupter, TLP1243	Internal components (7 of 8) on page 699
WG8-5696-000CN	Photo Interrupter TLP1243	Disengaging drive assembly on page 707
WG8-5696-000CN	Photo interrupter, TLP1243	Delivery assembly on page 717
WG8-5696-000CN	Photo interrupter, TLP1243	Upper paper pickup assembly on page 773
WG8-5696-000CN	Photo interrupter	Internal components (1 of 2) on page 783
WP2-5187-000CN	Humidity sensor unit	Internal components (1 of 8) on page 687
XA9-1504-000CN	Screw, RS M3X8	External covers and panels on page 675
XF2-1108-440CN	Timing belt	Internal components (2 of 2) on page 785

A Supplies and accessories

This section provides information about ordering parts, supplies, and accessories. Use only parts and accessories that are specifically designed for this MFP.

- Order parts, accessories, and supplies
- Optional output devices
- Part numbers

Order parts, accessories, and supplies

- Order directly from HP
- Order through service or support providers
- Order directly through the embedded Web server

Order directly from HP

You can obtain the following directly from HP:

- **Replacement parts**. To order replacement parts in the U.S. see http://www.hp.com/buy/parts. Outside the United States, order parts by contacting your local authorized HP service center.
- **Supplies and accessories**. To order supplies in the U.S., see http://www.hp.com/go/ljsupplies. To order supplies worldwide, see http://www.hp.com/ghp/buyonline.html. To order accessories, see http://www.hp.com/support/cljcm4730mfp.

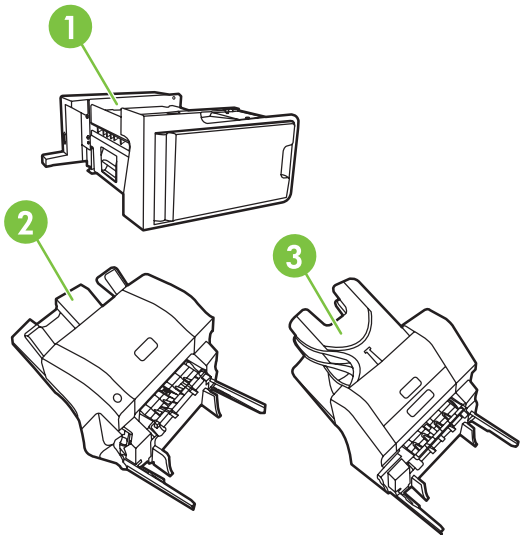
Order through service or support providers

To order a part or accessory, contact an HP-authorized service or support provider.

Order directly through the embedded Web server

1. In the Web browser on the computer, type the IP address for the MFP. The MFP status window appears.
2. In the **Other links** area, double-click **Order Supplies**. This provides a URL from which to purchase consumables. Supplies information with part numbers and MFP information is provided.
3. Select the part numbers that you want to order and follow the instructions on the screen.

Optional output devices



1	Output accessory bridge
2	Stapler/stacker
3	3-bin mailbox

Output accessory bridge

The output accessory bridge is required if a 3-bin mailbox or a stapler/stacker is installed on the MFP. The output accessory bridge is a pathway between the MFP and the output device. For more information about installing the output accessory bridge, see the installation guide that comes with the product.

3-bin mailbox

The optional 3-bin mailbox has one bin that stacks up to 500 sheets and two bins that stack up to 100 sheets each, for a total capacity of 700 sheets.

The 3-bin mailbox has three operating modes:

- **Mailbox mode**. The bins can be assigned to a user or to a group of users. All print, copy, and fax jobs that an assigned user or group of users sends are delivered to the designated bin. Each user can select the bin in the printer driver or at the control panel.

  When the designated bin is full, the MFP stops printing. Printing continues only when you empty the bin.

- **Stacker mode**. The 3-bin mailbox can combine the bins to act as a stacker. It can stack up to 700 sheets of 75 g/m^2 (20 lb bond) paper. Jobs are sent to the bottom bin first, then to the middle bin, and then to the top bin. Print jobs that require more than 500 sheets fill the bottom bin and continue stacking into the middle and top bins.

  When all three bins are full, the MFP stops printing. Printing continues only when you remove paper from the top bin. The MFP does not resume printing if you remove paper from the bottom bin or the middle bin before you remove paper from the top bin.

  When the 3-bin mailbox is in stacker mode, you cannot designate that a job be sent to a particular bin.

  NOTE: Do not remove paper from the top bin and then attempt to put it in place again. This causes the pages to stack in the incorrect order.

- **Function-separator mode**. You can configure the bins to receive jobs that come from a specific MFP function, such as printed jobs, copy jobs, or faxes. For instance, you can specify that all copy jobs are sent to the top bin.

  The MFP stops functioning when the designated bin is full. Printing, copying, or faxing can continue only when you empty the bin.

See Optional output and input devices on page 62 for information about configuring and using the optional 3-bin mailbox.

Stapler/stacker

The optional stapler/stacker provides automatic stapling and stacking functionality for printed or copied jobs. See Optional output and input devices on page 62 for information about configuring and using the optional stapler/stacker.

Part numbers

Ordering information and availability might change during the life of the MFP.

Accessories

Item	Description	Part number
3-bin mailbox	Provides three output bins that hold a total of 700 sheets. It is included with the HP Color LaserJet CM4730fm MFP. **NOTE:** The 3–bin mailbox comes with an output accessory bridge.	Q7520A
500-sheet stapler/stacker	Allows for high-volume output with automatic job finishing. Staples up to 30 sheets of paper. It is included with the HP Color LaserJet CM4730fsk MFP. **NOTE:** The stapler/stacker comes with an output accessory bridge.	Q7519A
5,000-staple cartridge	Provides one staple cartridge.	C8091A
HP LaserJet analog fax accessory 300	Provides fax capability for the MFP. This is included with the HP Color LaserJet CM4730f MFP, CM4730fsk MFP, and CM4730fm MFP models.	Q3701A

Print cartridges

Item	Description	Part number
HP LaserJet black print cartridge	12,000-page black cartridge	Q6460A
HP LaserJet cyan print cartridge	12,000-page cyan cartridge	Q6461A
HP LaserJet yellow print cartridge	12,000-page yellow cartridge	Q6462A
HP LaserJet magenta print cartridge	12,000-page magenta cartridge	Q6463A

Maintenance kits

Item	Description	Part number
Image transfer (ETB) kit		Q7504A
Image fuser kit	110 volt	Q7502A
Image fuser kit	220 volt	Q7503A
ADF mylar maintenance kit		Q4696–67901
ADF maintenance kit		Q5997A

Customer replaceable units

Item	Description	Part number
Cassette pick-up roller replacement kit		Q7517–67905
Control panel replacement kit		CB480-67901
Formatter replacement kit		Q7517–67909
MP pick-up roller kit		Q7517–67904
MP pick-up unit replacement kit		CB480-67904

Memory

Item	Description	Part number
200-pin DDR memory DIMM (dual inline memory module) Boosts the ability of the MFP to handle large or complex print jobs.	128 MB	Q7721A
	256 MB	Q7722A
	512 MB	Q7723A

Cables and interfaces

Item	Description	Part number
Enhanced I/O (EIO) card	HP Jetdirect 635n IPv6/IPsec Print Server	J7961G
Parallel cable	2 meter IEEE 1284-C cable	C2950A
	3 meter IEEE 1284-C cable	C2951A
USB cable	2-meter standard USB-compatible device connector	C6518A

B MFP specifications

This section provides the following specifications:

- Physical specifications
- Electrical specifications
- Acoustic specifications
- Environmental specifications
- Image area
- Skew specifications

Specifications for the Analog Fax Accessory are available in the *HP LaserJet Analog Fax Accessory 300 User Guide*. An electronic version of this guide is located on the CD that comes with the HP Color LaserJet CM4730f MFP, HP Color LaserJet CM4730fsk MFP, and HP Color LaserJet CM4730fm MFP.

Physical specifications

Table B-1 Product dimensions

Product	Height	Depth	Width	Weight[1]
HP Color LaserJet CM4730 MFP	1153 mm (45.4 inches)	639 mm (25.2 inches)	788 mm (31 inches)	124 kg (273 lb)
HP Color LaserJet CM4730f MFP	1153 mm (45.4 inches)	639 mm (25.2 inches)	788 mm (31 inches)	124 kg (298 lb)
HP Color LaserJet CM4730fsk MFP	1153 mm (45.4 inches)	639 mm (25.2 inches)	1106 mm (43.5 inches)	136 kg (298 lb)
HP Color LaserJet CM4730fm MFP	1153 mm (45.4 inches)	639 mm (25.2 inches)	1106 mm (43.5 inches)	136 kg (298 lb)

1 Without print cartridge

Table B-2 Product dimensions, with all doors and trays fully opened

Product	Height	Depth	Width
HP Color LaserJet CM4730 MFP	1580 mm (62.2 inches)	980 mm (38.6 inches)	1160 mm (45.7 inches)
HP Color LaserJet CM4730f MFP	1580 mm (62.2 inches)	980 mm (38.6 inches)	1160 mm (45.7 inches)
HP Color LaserJet CM4730fsk MFP	1580 mm (62.2 inches)	980 mm (38.6 inches)	1588 mm (62.5 inches)
HP Color LaserJet CM4730fm MFP	1580 mm (62.2 inches)	980 mm (38.6 inches)	1588 mm (62.5 inches)

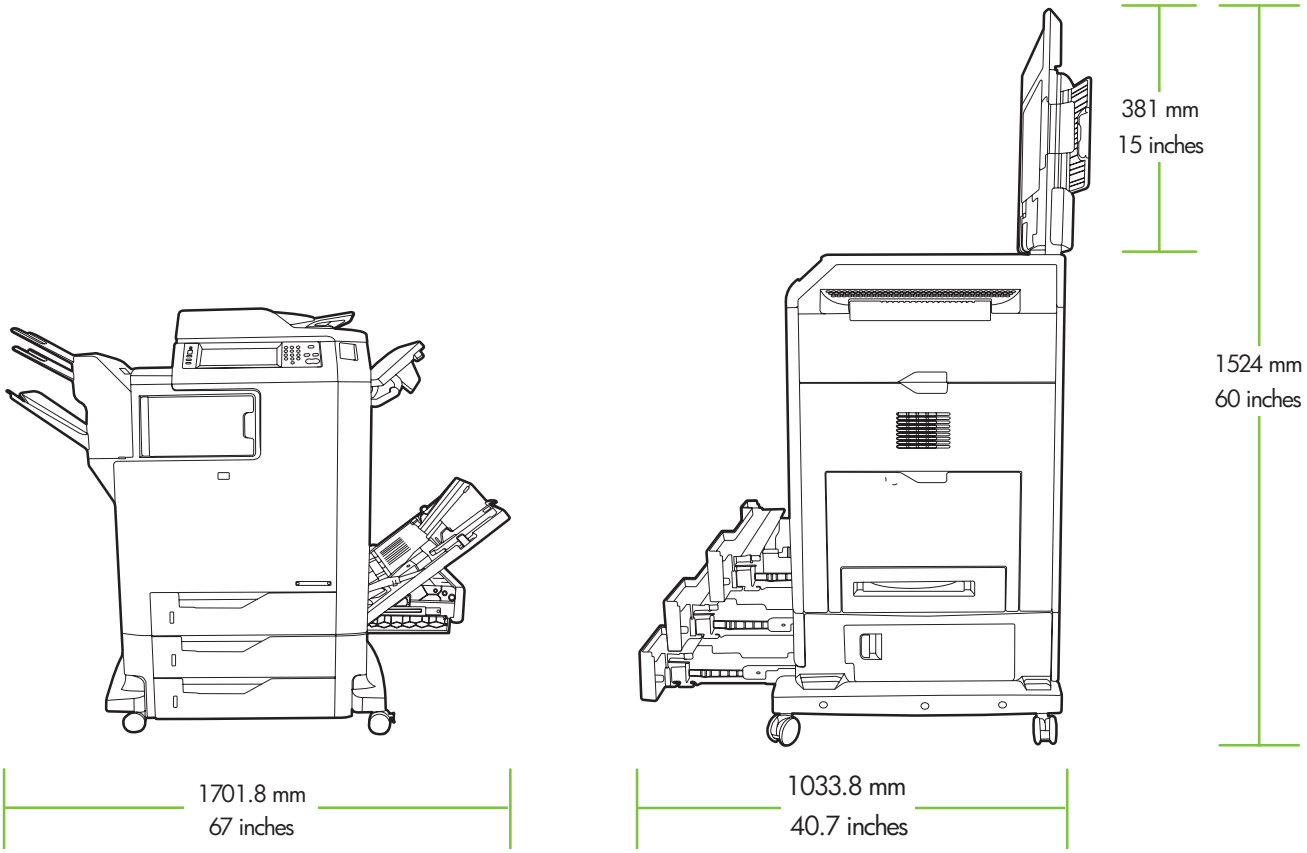


Figure B-1 Clearance requirements

Electrical specifications

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

Table B-3 Power requirements (HP LaserJet CM4730 MFP series)

Specification	110-volt models	230-volt models
Power requirements	100 to 127 volts (± 10%)	220 to 240 volts (± 10%)
	50/60 Hz (± 2 Hz)	50/60 Hz (± 2 Hz)
Rated current	9.0 Amps	4.5 Amps

Table B-4 Power consumption HP LaserJet CM4730 MFP series (average, in watts)[1, 2]

Product model	Copying[3]	Printing[3]	Ready[4]	Sleep[5, 6]	Off
HP Color LaserJet CM4730 MFP	615	604	83	24	0.5
HP Color LaserJet CM4730f MFP	615	604	83	24	0.5
HP Color LaserJet CM4730fsk MFP	615	604	83	24	0.5
HP Color LaserJet CM4730fm MFP	640	626	86	25	0.5

1 Values subject to change. See http://www.hp.com/support/ljcm4730mfp for current information.

2 Power numbers are the highest values measured using all standard voltages.

3 HP Color LaserJet CM4730 MFP series printing and copying speeds are 31 ppm Letter size and 30 ppm A4 size.

4 Heat dissipation in Ready mode = 288 BTU/hour.

5 Default time from Ready mode to Sleep mode = 45 minutes.

6 Recovery time from Sleep mode = less than 20 seconds

Acoustic specifications

Table B-5 Sound power and pressure level[1] (HP LaserJet CM4730 MFP series)

Sound power level	Declared per ISO 9296
Printing[2]	L_{WAd}= 6.7 Bels (A) [67 dB(A)]
Copying[3]	L_{WAd}= 6.8 Bels (A) [68 dB(A)]
Ready	L_{WAd}= 5.8 Bels (A) [58 dB(A)]
Sound pressure level	**Declared per ISO 9296**
Printing[2]	L_{pAm}=50 dB (A)
Copying[3]	L_{pAm}=52 dB (A)
Ready	L_{pAm}=37 dB (A)

1 Values subject to change. See http://www.hp.com/support/ljcm4730mfp for current information.

2 HP Color LaserJet CM4730 MFP series speed is 30 ppm A4 size. Configuration tested (HP Color LaserJet CM4730 MFP): Base model, simplex printing with A4 paper size.

3 Configuration tested (HP Color LaserJet CM4730 MFP) Base model, simplex copying from ADF with A4 paper size.)

Environmental specifications

These environmental specifications must be met to ensure that the printer operates properly. Consider the following points before installing the printer:

- Install the printer in a well-ventilated, dust-free area.
- Install the printer on a level, flat surface that can support its size and weight. Do not install on carpet or on other soft surfaces. Make sure that all four printer feet are level.
- Install the printer where temperature and humidity are stable, with no abrupt changes (away from water sources, humidifiers, air conditioners, refrigerators, or other major appliances).
- Install the printer away from direct sunlight, areas that experience vibration, open flames, ammonia fumes, ultrasonic heaters, and devices that emit a magnetic field. If the printer is placed near a window, make sure that the window has a curtain or blind to block direct sunlight.
- Maintain enough space around the printer for proper access and ventilation.

Environmental condition	Recommended	Allowed	Storage/standby
Temperature (MFP and print cartridge)	17° to 25°C (62.6° to 77°F)	15° to 30°C (59° to 86°F)	-20° to 40°C (-4° to 104°F)
Relative humidity	30% to 70% relative humidity (RH)	10% to 80% RH	10% to 90%
Altitude	N/A	0 meters (0 feet) to 2600 meters (8530 feet)	N/A

Image area

The MFP can place printed or copied images on the page within the following margins:

- **Printing**: 4.23 mm (0.17 inches) from each edge
- **Copying** (standard): 4.23 mm (0.17 inches) from each edge



NOTE: Margins vary when using digital sending. The margins depend on the type of file being sent and its dpi resolution.

Skew specifications

The MFP has the following skew specifications:

- **Print engine** (cut-sheet paper; simplex and duplex): less than 1.5 mm (0.06 inches) over a 260 mm (10.24 inches) length
- **Print engine** (envelopes): less than 3.3 mm (0.13 inches) over a 220 mm (8.66 inches) length
- **ADF simplex**: less than or equal to 1.0%
- **ADF duplex**: less than or equal to 1.0%
- **Glass**: less than or equal to 0.6%

C Regulatory information

Compliance with FCC regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Declaration of Conformity

Declaration of Conformity
according to ISO/IEC 17050–1 and EN 17050–1

Manufacturer's Name:	Hewlett-Packard Company DoC#: BOISB-0503–00–rel. 2.0
Manufacturer's Address:	11311 Chinden Boulevard, Boise, Idaho 83714-1021, USA

declares that the product

Product Name:	HP Color LaserJet CM4730 MFP series
Accessories	Q7521A, Q7522A, Q7523A, BOISB-0308–00[3)]
Regulatory Model Number:[2)]	BOISB-0503-00
Product Options:	ALL
	Toner Cartridges: Q6460A, Q6461A, Q6462A, Q6463A, Q7504A, Q7503A, Q7502A

conforms to the following Product Specifications:

Safety:	IEC 60950-1:2001 / EN60950-1: 2001 + A11 IEC 60825-1:1993 +A1 +A2 / EN 60825-1:1994 A1 +A2 (Class 1 Laser/LED Product) GB4943-2001
EMC:	CISPR 22:1993 A1+A2 / EN 55022:1994 +A1 +A2 – Class A[1,4)] EN 61000-3-2:2000 EN 61000-3-3:1995 + A1:2001 EN 55024:1998+A1:2001 + A2:2003 FCC Title 47 CFR, Part 15 Class A / ICES-003, Issue 4 GB9254-1998, GB17625.1–2003

Supplementary Information:

The product herewith complies with the requirements of the EMC Directive 89/336/EEC and the Low Voltage Directive 73/23/EEC, and carries the CE-Marking accordingly.

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.

1) The product was tested in a typical configuration with Hewlett-Packard Personal Computer Systems.

2) For regulatory purposes, this product is assigned a Regulatory model number. This number should not be confused with the product name or the product number(s).

3) All worldwide modular approvals for analog fax accessory obtained by Hewlett-Packard under the regulatory model number BOISB-0308–00 incorporate the Multi-Tech Systems MT5634SMI Socket Modem Module.

4) The product meets the requirements of EN55022 & CNS13438 Class A in which case the following applies: “Warning – This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures”.

Boise, Idaho , USA

October 17, 2006

For regulatory topics only:

European Contact:	Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, Department HQ-TRE / Standards Europe, Herrenberger Straße 140, D-71034 Böblingen, Germany, (FAX: +49-7031-14-3143)
USA Contact:	Product Regulations Manager, Hewlett-Packard Company, PO Box 15, Mail Stop 160, Boise, Idaho 83707-0015, USA, (Phone: 208-396-6000)

Environmental product stewardship program

Protecting the environment

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

Ozone production

This product generates no appreciable ozone gas (O_3).

Power consumption

Power usage drops significantly while in Ready/Sleep mode, which saves natural resources and saves money without affecting the high performance of this product. To determine the ENERGY STAR® qualification status for this product see the Product Data Sheet or Specifications Sheet. Qualified products are also listed at:

http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html

Toner consumption

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

Paper use

This product's manual/optional automatic duplex feature (two-sided printing) and N-up printing (multiple pages printed on one page) capability can reduce paper usage and the resulting demands on natural resources.

Plastics

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

HP LaserJet print supplies

It's easy to return and recycle your empty HP LaserJet print cartridges—free of charge—with HP Planet Partners. Multilingual program information and instructions are included in every new HP LaserJet print cartridge and supplies package. You help reduce the toll on the environment further when you return multiple cartridges together rather than separately.

HP is committed to providing inventive, high-quality products and services that are environmentally sound, from product design and manufacturing to distribution, customer use and recycling. When you participate in the HP Planet Partners program, we ensure your HP LaserJet print cartridges are recycled properly, processing them to recover plastics and metals for new products and diverting millions of tons of waste from landfills. Since this cartridge is being recycled and used in new materials, it will not be returned to you. Thank you for being environmentally responsible!

NOTE: Use the return label to return original HP LaserJet print cartridges only. Please do not use this label for HP inkjet cartridges, non-HP cartridges, refilled or remanufactured cartridges or warranty returns. For information about recycling your HP inkjet cartridges please go to http://www.hp.com/recycle.

Return and recycling instructions

United States and Puerto Rico

The enclosed label in the HP LaserJet toner cartridge box is for the return and recycling of one or more HP LaserJet print cartridges after use. Please follow the applicable instructions below.

Multiple returns (two to eight cartridges)

1. Package each HP LaserJet print cartridge in its original box and bag.
2. Tape up to eight single boxes together using strapping or packaging tape (up to 70 lbs).
3. Use a single pre-paid shipping label.

OR

1. Use your own suitable box, or request a free bulk collection box from the http://www.hp.com/recycle or 1-800-340-2445 (holds up to eight HP LaserJet print cartridges).
2. Use a single pre-paid shipping label.

Single returns

1. Package the HP LaserJet print cartridge in its original bag and box.
2. Place the shipping label on the front of the box.

Shipping

For all HP LaserJet print cartridge recycling returns, give the package to UPS during your next delivery or pickup, or take it to an authorized UPS drop-off center. For the location of your local UPS drop-off center, call 1-800-PICKUPS or visit http://www.ups.com. If you are returning via USPS label, give the package to a U.S. Postal Service carrier or drop off at a U.S.Postal Service Office. For more information, or to order additional labels or boxes for bulk returns, visit http://www.hp.com/recycle or call 1-800-340-2445. Requested UPS pickup will be charged normal pickup rates. Information subject to change without notice.

Non-US returns

To participate in HP Planet Partners return and recycling program, just follow the simple directions in the recycling guide (found inside the packaging of your new printer supply item) or visit http://www.hp.com/recycle. Select your country/region for information on how to return your HP LaserJet printing supplies.

Paper

This product is capable of using recycled papers when the paper meets the guidelines outlined in the *HP LaserJet Printer Family Print Media Guide*. This product is suitable for the use of recycled paper according to EN12281:2002.

Material restrictions

This HP product contains a battery that may require special handling at end-of-life.

The battery contained in this product includes:

Type	Carbon monofluoride lithium battery
Weight	0.8 grams
Location	Formatter board
User removable	No



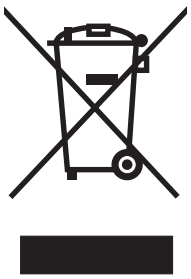


廢電池請回收

This product contains mercury in the fluorescent lamp of the control panel liquid crystal display that might require special handling at end-of-life.

For recycling information you can visit http://www.hp.com/go/recycle or contact your local authorities or the Electronics Industry Alliance (http://www.eiae.org).

Disposal of waste equipment by users in private households in the European Union



This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Material Safety Data Sheet (MSDS)

Material Safety Data Sheets (MSDS) for supplies containing chemical substances (for example, toner) can be obtained by contacting the HP Web site at www.hp.com/go/msds or www.hp.com/hpinfo/community/environment/productinfo/safety.

For more information

To obtain information about these environmental topics:

- Product environmental profile sheet for this and many related HP products
- HP's commitment to the environment
- HP's environmental management system
- HP's end-of-life product return and recycling program
- Material Safety Data Sheets

Visit www.hp.com/go/environment or www.hp.com/hpinfo/globalcitizenship/environment.

Certificate of volatility

This is a statement regarding the volatility of customer data stored in memory. It also outlines how to erase secure data from the device.

Types of memory

Volatile memory

The MFP utilizes volatile memory (64 MB on the board and 640 MB installed, for a total of 704 MB) to store customer data during the printing and copying process. When the MFP is powered off, this volatile memory is erased.

Non-volatile memory

The MFP utilizes non-volatile memory (EEPROM) to store system control data and user preference settings. No customer print or copy data is stored in non-volatile memory. This non-volatile memory can be cleared and restored to factory defaults by performing a Cold Reset or Restore Factory Defaults from the control panel.

Hard-disk-drive memory

The MFP contains an internal hard disk drive (40GB or larger) that may retain data after the MFP is powered off. The MFP also may contain additional optional compact flash storage, or an external EIO hard disk. Data stored in these devices may be from incoming/outgoing fax or email files, stored copy or print jobs, fax or email address books, or third-party solutions. Some of this data can be erased from the control panel of the MFP, but most must be erased using the Secure Storage Erase features available within HP Web Jetadmin. Secure Storage Erase features comply with U.S. Department of Defense (DOD) specification 5220–22.M.

Safety statements

Laser safety

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration has implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States. The device is certified as a “Class 1” laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. Since radiation emitted inside the device is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

WARNING! Using controls, making adjustments, or performing procedures other than those specified in this user guide may result in exposure to hazardous radiation.

Canadian DOC regulations

Complies with Canadian EMC Class A requirements.

« Conforme à la classe A des normes canadiennes de compatibilité électromagnétiques. « CEM ». »

VCCI statement (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Power cord statement (Japan)

製品には、同梱された電源コードをお使い下さい。
同梱された電源コードは、他の製品では使用出来ません。

EMI statement (Korea)

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

EMI statement (Taiwan)

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Toxic and Hazardous Substance Table

As required by China's Management Methods for Controlling Pollution by Electronic Information Products.

Part Name	Toxic and Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium [Cr (VI)]	Polybrominated biphenyls (PBB)	Polybrominated diphenyl ethers (PBDE)
Print Engine	X	O	X	X	O	O
Copier Assembly	O	O	O	O	O	O
Control Panel	O	O	O	O	O	O
Plastic Covering	X	O	O	O	O	O
Formatter Assembly	X	O	O	O	O	O
Toner Cartridge	O	O	O	O	O	O

1 0: Indicates that this toxic or hazardous substance contained in all the homogeneous materials for this part is below the limit requirement in SJ/T11363-2006.

2 X: Indicates that this toxic or hazardous substance contained in at least one of the homogeneous materials used for this part is above the limit requirement in SJ/T11363-2006.



NOTE: The referenced Environmental Protection Use Period Marking was determined according to normal operating use conditions of the product such as temperature and humidity.

General telecom statement

The HP Color LaserJet CM4730f, CM4730fsk, and CM4730fm models have the HP LaserJet Analog Fax Accessory 300 already installed to provide communication to the public switch telephone network (PSTN) for fax functionality. See the *HP LaserJet Analog Fax Accessory 300 User Guide* for all regulatory approval information and regulatory notices associated with the fax functionality and that device.

Laser statement for Finland

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

HP Color LaserJet CM4730 MFP, CM4730f MFP, CM4730fsk MFP, and CM4730fm MFP-laserkirjoitin on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalissa käytössä kirjoittimen suojakotelointi estää lasersäteen pääsyn laitteen ulkopuolelle.

Laitteen turvallisuusluokka on määritetty standardin EN 60825-1 (1994) mukaisesti.

VAROITUS!

Laitteen käyttäminen muulla kuin käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING!

Om apparaten används på annat sätt än i bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

HUOLTO

HP Color LaserJet CM4730 MFP, CM4730f MFP, CM4730fsk MFP, and CM4730fm MFP-kirjoittimen sisällä ei ole käyttäjän huollettavissa olevia kohteita. Laitteen saa avata ja huoltaa ainoastaan sen huoltamiseen koulutettu henkilö. Tällaiseksi huoltotoimenpiteeksi ei katsota väriainekasetin vaihtamista, paperiradan puhdistusta tai muita käyttäjän käsikirjassa lueteltuja, käyttäjän tehtäväksi tarkoitettuja ylläpitotoimia, jotka voidaan suorittaa ilman erikoistyökaluja.

VARO!

Mikäli kirjoittimen suojakotelo avataan, olet alttiina näkymättömälle lasersäteilylle laitteen ollessa toiminnassa. Älä katso säteeseen.

VARNING!

Om laserprinterns skyddshölje öppnas då apparaten är i funktion, utsättas användaren för osynlig laserstrålning. Betrakta ej strålen.

Tiedot laitteessa käytettävän laserdiodin säteilyominaisuuksista:

Aallonpituus 785-800 nm

Teho 5 mW

Luokan 3B laser

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