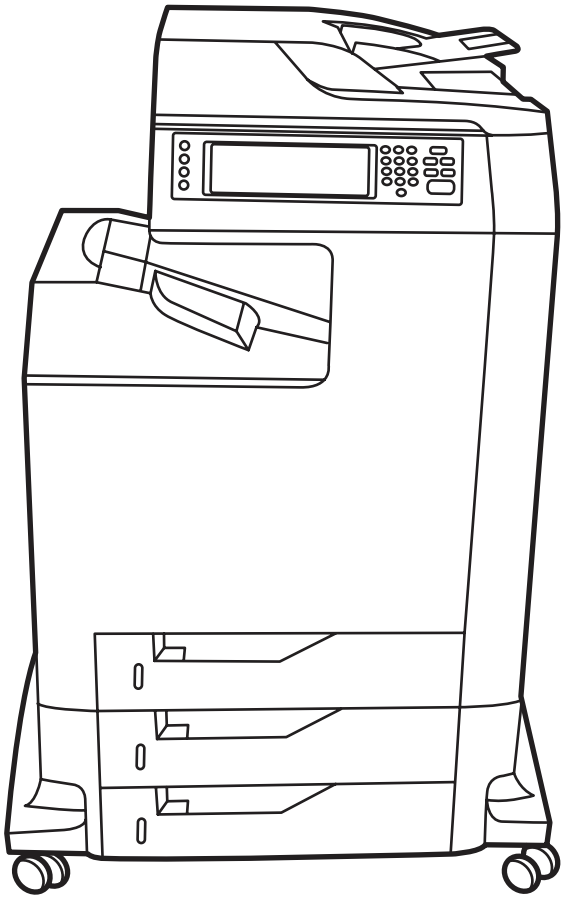
HP Color LaserJet 4730mfp
Service Manual



HP Color LaserJet 4730mfp series

Service Manual

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1 Product information

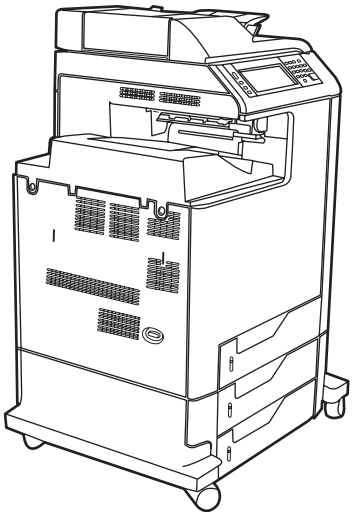
This chapter contains information about the following topics:

- HP Color LaserJet 4730mfp series configurations
- Features and benefits of the MFP
- MFP parts and accessories
- Site requirements
- MFP specifications
- Media specifications
- Printing on special media
- Regulatory information
- Declaration of conformity (HP Color LaserJet 4730mfp)

HP Color LaserJet 4730mfp series configurations

The HP Color LaserJet 4730mfp series is available in the following configurations.

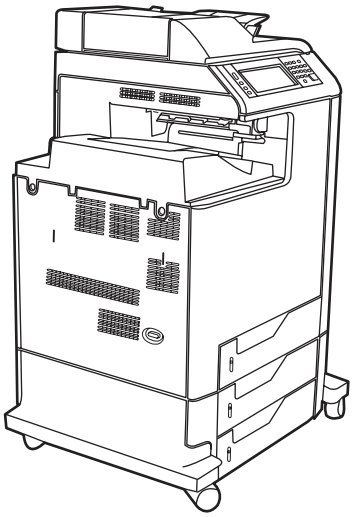
HP Color LaserJet 4730mfp (Q7517A)



The HP Color LaserJet 4730mfp comes standard with the following items:

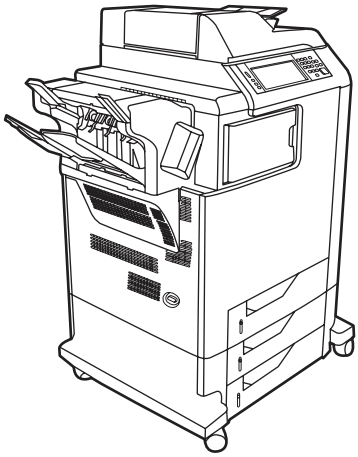
- 100-sheet multipurpose input tray (tray 1)
- Three 500-sheet input trays
- Automatic document feeder (ADF) that holds up to 50 pages
- Duplexer
- HP Jetdirect embedded print server for connecting to a 10/100Base-T network
- 256 megabytes (MB) synchronous dynamic random access memory (SDRAM)
- Hard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

HP Color LaserJet 4730x mfp (Q7518A)



The HP Color LaserJet 4730x mfp has the same features as the base model and also includes an analog fax accessory.

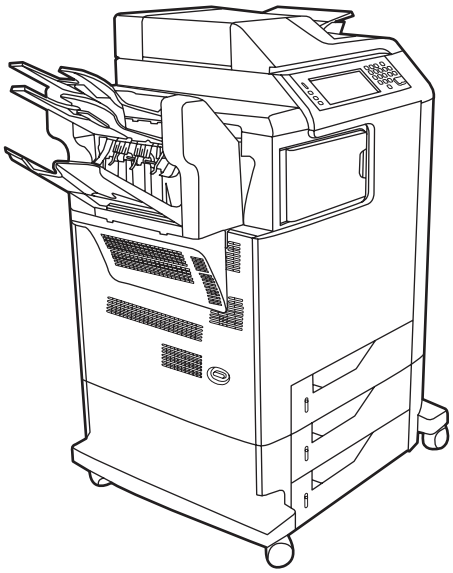
HP Color LaserJet 4730xs mfp (Q7519A)



The HP Color LaserJet 4730xs mfp has the same features as the base model and also includes the following items:

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

HP Color LaserJet 4730xm mfp (Q7520A)



The HP Color LaserJet 4730xm mfp has the same features as the base model and also includes the following items:

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

Features and benefits of the MFP

The HP Color LaserJet 4730mfp series is designed to be shared by a workgroup. Use the MFP to copy and print color and black-and-white documents or to digitally send color and black-and-white documents. The MFP is a standalone copier that does not require connection to a computer. With the optional HP LaserJet analog fax accessory 300 (included with some models), the MFP can also send and receive faxes. Digital sending can be selected from the control panel.

Functions

- Two-sided printing and copying (duplexing)
- Image modification
- Color digital sending
- Document finishing

Speed and throughput

- Up to 31 pages per minute (ppm) when printing and copying on letter-size paper; up to 30 ppm when printing and copying on A4-size paper
- 25% to 400% scalability when using the scanner glass
- 25% to 200% scalability when using the automatic document feeder (ADF)
- First page prints in less than 10 seconds
- Transmit Once, Raster Image Processing (RIP) ONCE technology
- Duty cycle of up to 85,000 pages per month
- 533-megahertz (MHz) microprocessor

Resolution

- 600 dots per inch (dpi) with Resolution Enhancement technology (REt)
- HP FastRes and HP Resolution Enhancement technology (REt) for 1200 by 1200 effective dpi at full engine speed

Memory

- 256 MB of random-access memory (RAM), expandable to 512 MB by using industry-standard 100-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

- Graphic display on the control panel
- HP Easy Printer Care software (a Web-based status and troubleshooting tool)

- Internet-enabled supply-ordering capabilities using HP Easy Printer Care software
- Embedded Web server to gain access to support and to order supplies (for network-connected products)

Language and fonts

- HP Printer Command Language (PCL) 6
- HP PCL 5e for compatibility
- Printer Management Language
- PDF
- 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)
- E-mail compatibility
- Energy-saving Sleep mode
- Automatic duplex (two-sided) scanning

Print cartridges

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

Paper handling

- **Input**
  - **Tray 1 (multipurpose tray):** A multipurpose tray for paper, transparencies, labels, and envelopes. Holds up to 100 sheets of paper or 10 envelopes.
  - **Trays 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:** 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:** The stapler/stacker staples up to 30 sheets and stacks up to 500 sheets.
  - **Optional 3-bin mailbox:** 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
- 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
- Optional HP Digital Sending Software (DSS)
- Optional enhanced input/output (EIO) cards
- USB 2.0
- ACC port (accessory port with USB host capabilities)
- AUX port (auxiliary port for connecting third-party devices)

Environmental features

- The Sleep setting saves energy (meets ENERGY STAR® guidelines, Version 1.3).

NOTE See Protecting the environment on page 33 for more information.

Security features

- Foreign Interface Harness (FIH)
- Secure Disk Erase
- Security lock
- Job retention
- DSS authentication

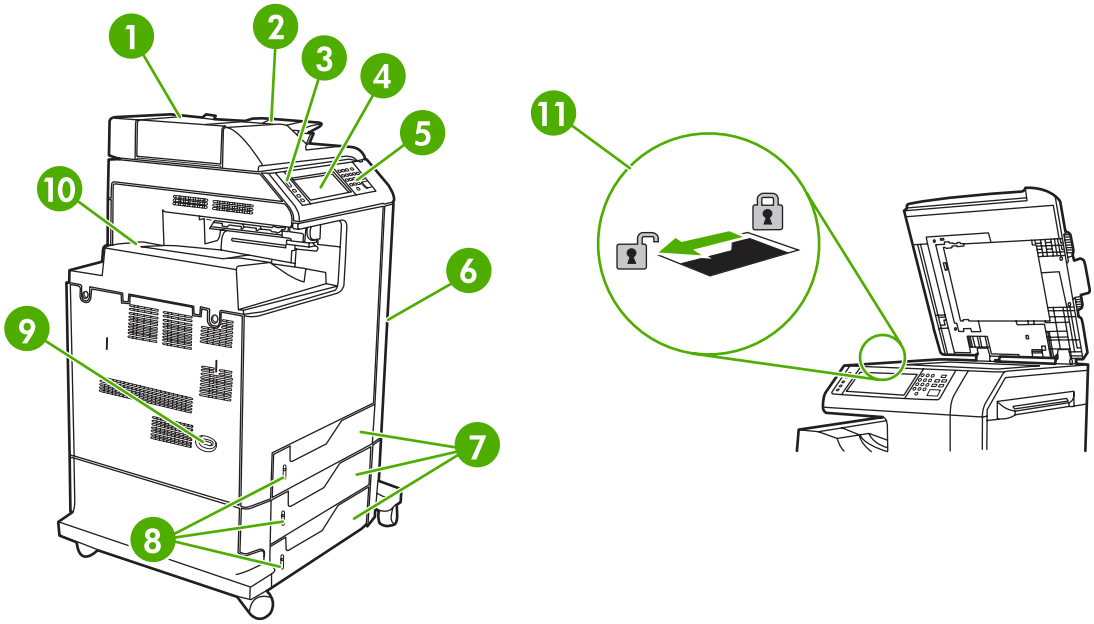
Minimum system requirements for e-mail functionality

To use the e-mail functionality, the MFP must be connected to an IP-based network that has a simple mail transfer protocol (SMTP) server. This server can either be on the local area network or at an outside Internet service provider (ISP). HP recommends that the MFP be located on the same local area network (LAN) as the SMTP server. If using an ISP, connect to the ISP by using a digital subscriber line (DSL) connection. If obtaining e-mail services from an ISP, ask the ISP to provide the correct SMTP address. Dial-up connections are not supported. If an SMTP server is not on the network, third-party software is available that allows the creation of an SMTP server. However, purchase and support of this software is the purchaser's responsibility.

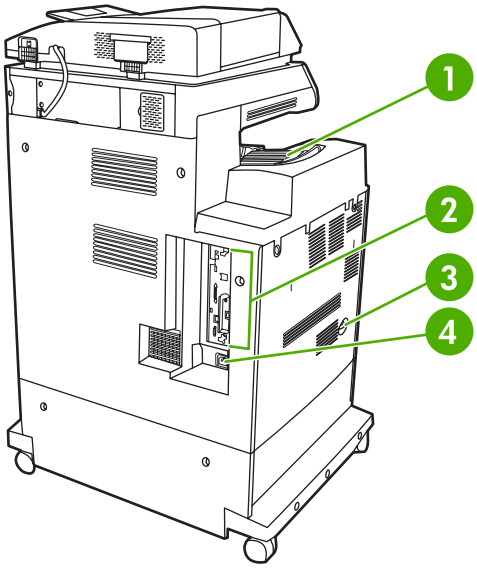
MFP parts and accessories

Before using the MFP, become familiar with the parts of the MFP.

MFP parts



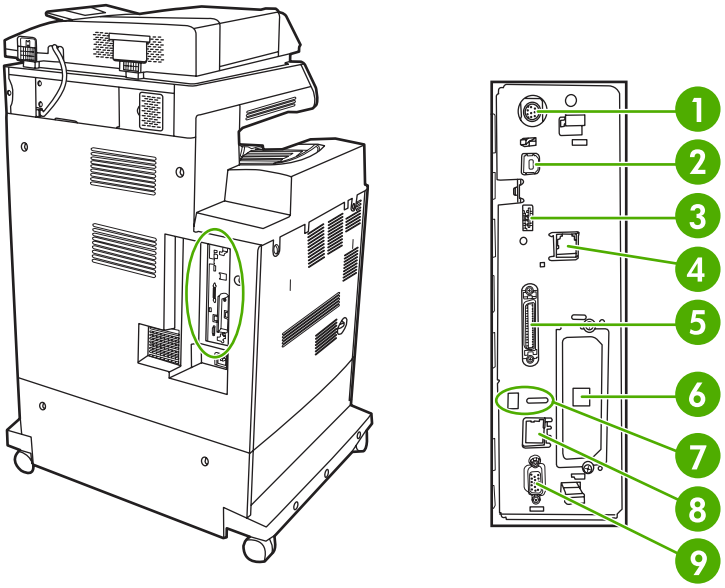
1	Automatic document feeder (ADF) top cover
2	ADF input tray for copy/scan/fax originals
3	Control panel status lights
4	Control panel display with touch-screen functionality
5	Control panel keypad
6	Right-side covers (provides access to the print cartridges and other consumables)
7	Trays 2, 3, and 4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



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

Interface ports

The MFP has eight 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 (accessory port uses host USB protocol)
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 Jetdirect print server)
9	AUX port

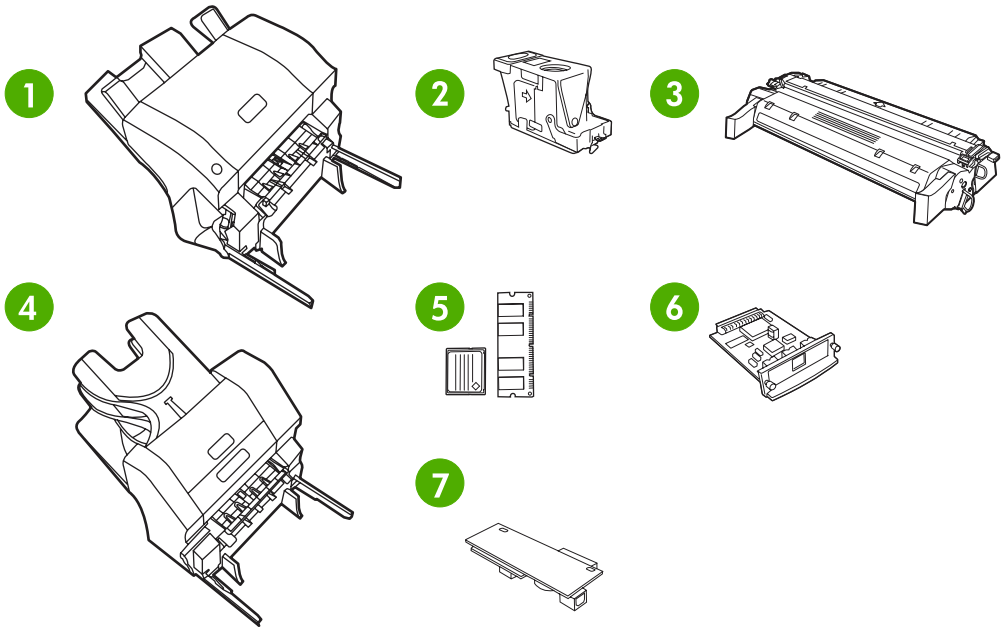
Model and serial numbers

The model numbers and serial numbers are located underneath the top cover, at the rear of the MFP.

Accessories and supplies

Increase the capabilities of the MFP by adding optional accessories. For information about ordering accessories and supplies, see Parts and supplies on page 43.

NOTE Use the accessories and supplies that have been specifically designed for the MFP in order to ensure optimum performance.



1	Stapler/stacker (Q7521A); includes an output accessory bridge
2	Staple cartridge (C8091A)
3	Print cartridge (four print cartridges) (Q6460A, Q6461A, Q6462A, and Q6463A)
4	3-bin mailbox (Q7523A); includes an output accessory bridge
5	Memory DIMMS and flash memory cards
6	HP Jetdirect print server (EIO card)
7	HP LaserJet analog fax accessory 300 (Q3701A)

Parts compatibility with other HP LaserJet products

Some parts and accessories for this MFP are compatible with the HP Color LaserJet 4700. Table 1-1 Parts compatibility on page 13 indicates which parts and accessories can be installed on other products. It also indicates which parts from other products are *not* compatible with this MFP.

Table 1-1 Parts compatibility

Part	Description	Product number	HP Color LaserJet 4700
Print cartridges	Black (12,000 pages)	Q6460A	No
	Cyan (12,000 pages)	Q6461A	No
	Yellow (12,000 pages)	Q6462A	No
	Magenta (12,000 pages)	Q6463A	No
DIMMs	128 MB DDR DIMM	Q7721A	Yes
	256 MB DDR DIMM	Q7722A	Yes
	512 MB DDR DIMM	Q7723A	Yes
HP Jetdirect EIO cards	USB, serial, and LocalTalk	J4135A	Yes
	620n Fast Ethernet 10/100Base-TX	J7934A	Yes
Hard disk		J6054B	No
Fuser kit	110 volt	Q7502A	Yes
	220 volt	Q7503A	Yes
ETB kit		Q7504A	Yes
ADF maintenance kit		Q5597A	No

Moving the MFP

Before moving the MFP, be sure to lock the scanner. The scanner lock is underneath the scanner lid, to the left of the scanner glass.

NOTE After moving the MFP, unlock the scanner. The MFP cannot initialize correctly when the scanner is locked.

Site requirements

Place the MFP on a level floor or sturdy surface, away from direct sunlight. Allow enough space around the MFP to open the doors and trays.

Physical specifications

Table 1-2 Product dimensions

Product	Height	Depth	Width	Weight[1]
HP Color LaserJet 4730mfp	1153 mm (45.4 inches)	639 mm (25.2 inches)	788 mm (31 inches)	124 kg (273 lb)
HP Color LaserJet 4730x mfp	1153 mm (45.4 inches)	639 mm (25.2 inches)	788 mm (31 inches)	124 kg (273 lb)
HP Color LaserJet 4730xs mfp	1153 mm (45.4 inches)	639 mm (25.2 inches)	1106 mm (43.5 inches)	136 kg (298 lb)
HP Color LaserJet 4730xm 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 1-3 Product dimensions

Product	Width	Depth	Height
HP Color LaserJet 4730mfp	788 mm (31 inches)	639 mm (25.2 inches)	1153 mm (45.4 inches)
HP Color LaserJet 4730x mfp	788 mm (31 inches)	639 mm (25.2 inches)	1153 mm (45.4 inches)
HP Color LaserJet 4730xs mfp	1106 mm (43.5 inches)	639 mm (25.2 inches)	1153 mm (45.4 inches)
HP Color LaserJet 4730xm mfp	1106 mm (43.5 inches)	639 mm (25.2 inches)	1153 mm (45.4 inches)

Environmental specifications

Table 1-4 Environmental specifications

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 78°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

MFP specifications

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 1-5 Power requirements

Specification	110-volt models	230-volt models
Power requirements	110 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 1-6 Power consumption (average, in watts)

Product model[1] , [2]	Copying[3]	Printing[3]	Ready[4] , [6]	On[5]	Off
HP Color LaserJet 4730mfp	615 W	604 W	83 W	24 W	0.5 W
HP Color LaserJet 4730x mfp	615 W	604 W	83 W	24 W	0.5 W
HP Color LaserJet 4730xs mfp	615 W	604 W	83 W	24 W	0.5 W
HP Color LaserJet 4730xm mfp	640 W	626 W	86 W	25 W	0.5 W

1 Values subject to change. See http://www.hp.com/support/clj4730mfp for current information.
2 Power numbers are the highest values measured using all standard voltages.
3 HP Color LaserJet 4730mfp printing and copying speeds are 31 ppm letter size and 30 ppm A4 size.
4 Default time from Ready mode to Sleep mode is 45 minutes.
5 Recovery time from Sleep mode to start of printing is less than 20 seconds.
6 Heat dissipation in Ready mode = 288 BTU/hour.

Acoustic specifications

Table 1-7 Sound power and pressure level[1] (Product Name: X)

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/clj4730mfp for current information.
2 HP Color LaserJet 4730mfp series speed is 30 ppm A4 size. Configuration tested (HP Color LaserJet 4730mfp): Base model, simplex printing with A4 paper size.
3 Configuration tested (HP Color LaserJet 4730mfp): Base model, simplex copying from ADF with A4 paper size.

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 and scanner glass** (cut-sheet paper): less than 0.6%

Media specifications

This section provides comprehensive information on supported media types.

Category	Specifications
Acid content	5.5 pH to 8.0 pH
Caliper	0.094 mm (3.0 to 7.0 mils)
Curl in ream	Flat within 5 mm (0.02 inches)
Cut edge conditions	Cut with sharp blades that create no visible fray
Fusing compatibility	Must not scorch, melt, offset, or release hazardous emissions when heated to 200°C (392°F) for 0.1 second
Grain	Long grain
Moisture content	3% to 9% by weight
Smoothness	100 to 250 Sheffield

Printing and paper storage environment

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

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

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

Care should be taken not to purchase more paper than can be easily used in a short time (about 3 months). Paper stored for long periods might experience heat and moisture extremes, which can cause damage. Planning is important to prevent damage to a large supply of paper.

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

The paper storage environment should be properly maintained to ensure optimum MFP performance. The required condition is 20° to 24°C (68° to 75°F), with a relative humidity of 45% to 55%. The following guidelines should be helpful when evaluating the paper storage environment:

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

Envelopes

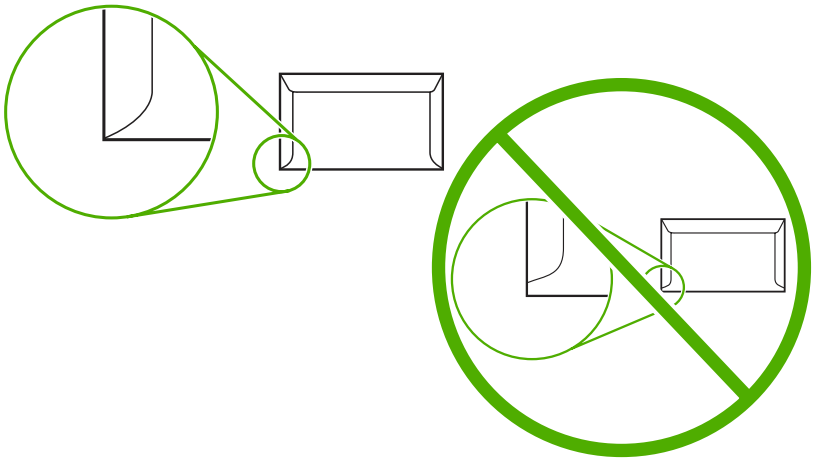
Envelope construction is critical. Envelope fold lines can vary considerably, not only between manufacturers, but also within a box from the same manufacturer. Successful printing on envelopes depends upon the quality of the envelopes. When selecting envelopes, consider the following components:

- **Weight:** The weight of the envelope paper should not exceed 105 g/m^2 (28 lb) or jamming might occur.
- **Construction:** Prior to printing, envelopes should lie flat with less than 6 mm (0.25 inches) curl, and should not contain air.
- **Condition:** Envelopes should not be wrinkled, nicked, or otherwise damaged.
- **Temperature:** Use envelopes that are compatible with the heat and pressure of the MFP.
- **Size:** Use only envelopes that are within the following size ranges:
  - **Minimum**: 76 x 127 mm (3 x 5 inches)
  - **Maximum**: 216 x 356 mm (8.5 x 14 inches)

NOTE Use only tray 1 to print on envelopes. Some jams might occur when using any media with a length less than 178 mm (7 inches). This might be caused by paper that has been affected by environmental conditions. For optimum performance, make sure to store and handle the paper correctly. Select envelopes in the printer driver.

Envelopes that have double side seams

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



Envelopes that have adhesive strips or flaps

Envelopes that have a peel-off adhesive strip or with more than one flap that folds over to seal must use adhesives that are compatible with the heat and pressure in the MFP. The extra flaps and strips might cause wrinkling, creasing, or jams, and might even damage the fuser.

Envelope margins

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

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

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

Envelope storage

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

Labels

CAUTION To avoid damaging the MFP, use only labels that are recommended for use in laser printers. Never print on the same sheet of labels more than once or print on a partial sheet of labels.

Label construction

When selecting labels, consider the quality of each component:

- **Adhesives:** The adhesive material should be stable at 200°C (392°F), the MFP's fusing temperature.
- **Arrangement:** Only use labels that have no exposed backing between them. Labels can peel off sheets that have spaces between the labels, causing serious jams.
- **Curl:** Prior to printing, labels must lie flat with no more than 13 mm (0.5 inches) of curl in any direction.
- **Condition:** Do not use sheets of labels that have wrinkles, bubbles, or other indications of separation.

NOTE Select labels in the printer driver.

Transparencies

Transparencies used in the MFP must be able to withstand 200°C (392°F), the MFP's fusing temperature.

CAUTION To avoid damaging the MFP, use only transparencies recommended for use in HP LaserJet printers, such as HP-brand transparencies.

NOTE Select transparencies in the printer driver.

Supported types and sizes of print media

The following table lists the types of media that the MFP supports.

Table 1-8 Supported types of media

Type of media	Tray 1	Trays 2, 3, and 4	Duplexer	3-bin mailbox or stacker	Stapler
Plain	X	X	X	X	X
Preprinted	X	X	X	X	X
Letterhead	X	X	X	X	X
Transparency	X	X		X	
Prepunched	X	X	X	X	X
Labels	X	X		X	
Bond	X	X	X	X	X
Recycled	X	X	X	X	X
Color	X	X	X	X	X
Cardstock	X			X[1][2]	
Rough	X	X	X	X	X
Envelope	X			X[1][2]	

[1] Face-down delivery only.

[2] If a 3-bin mailbox is installed, select the bottom bin when printing on cardstock. Media weights that are 200 g/m^2 (53 lb) or heavier are supported only in the bottom bin.

Table 1-9 Tray 1 media sizes

Tray 1	Dimensions	Weight or thickness	Capacity
Paper and cardstock, standard sizes (letter/A4, legal, executive, JIS B5, A5); custom sizes	Range: 76 x 127 mm (3 x 5 inches) to 216 x 356 mm (8.5 x 14 inches)	Range: 60 g/m^2 (16 lb) bond to 220 g/m^2 (60 lb) bond	Maximum stack height: 10 mm (0.6 inches) Equivalent to 100 sheets of 75 g/m^2 (20 lb) bond
Glossy paper (letter/A4, legal, executive, JIS B5, A5) **NOTE** Do not use inkjet papers in this MFP.	Range: 76 x 127 mm (3 x 5 inches) to 216 x 356 mm (8.5 x 14 inches)	Range: 75 g/m^2 (20 lb) bond to 220 g/m^2 (60 lb) bond	Maximum stack height: 10 mm (0.6 inches)
Transparencies (letter/A4), suitable for use in color laser printers	Letter: 216 x 279 mm (8.5 x 11 inches) A4: 210 x 297 mm (8.27 x 11.7 inches)	Minimum 0.13 mm (0.005 inches) thick	Maximum stack height: 10 mm (0.6 inches)
HP Tough paper (letter/A4)	Letter: 216 x 279 mm (8.5 x 11 inches)	0.13 mm (0.005 inches) thick	Maximum stack height: 10 mm (0.6 inches)

Table 1-9 Tray 1 media sizes (continued)

Tray 1	Dimensions	Weight or thickness	Capacity
	A4: 210 x 297 mm (8.27 x 11.7 inches)		
HP Color Laser Glossy Photo Paper (letter/A4) **NOTE** Do not use inkjet papers in this MFP.	Letter: 216 x 279 mm (8.5 x 11 inches) A4: 210 x 297 mm (8.27 x 11.7 inches)	220 g/m^2 (60 lb) bond	Maximum stack height: 10 mm (0.6 inches)
Envelopes (Com 10, Monarch, C5, DL, B5)		Range: 60 g/m^2 (16 lb) bond to 90 g/m^2 (24 lb) bond	20 envelopes
Labels (letter/A4, legal, executive, JIS B5, A5), suitable for use in color laser printers	Range: 76 x 127 mm (3 x 5 inches) to 216 x 356 mm (8.5 x 14 inches)	Maximum 0.23 mm (0.009 inches) thick	Maximum stack height: 10 mm (0.6 inches)

Table 1-10 Tray 2, 3, and 4 media sizes[1]

Trays 2, 3, and 4	Dimensions	Weight or thickness	Capacity
Paper, standard sizes (letter/A4, legal, executive, JIS B5, A5); custom sizes	Range: 148 x 210 mm (5.83 x 8.27 inches) to 216 x 356 mm (8.5 x 14 inches)	Range: 60 g/m^2 (16 lb) bond to 120 g/m^2 (32 lb) bond	Maximum stack height: 56 mm (2.2 inches) Equivalent to 530 sheets of 75 g/m^2 (20 lb) bond
Glossy paper (letter/A4, legal, executive, JIS B5, A5) **NOTE** Do not use inkjet papers in this MFP.	Range: 148 x 210 mm (5.83 x 8.27 inches) to 216 x 356 mm (8.5 x 14 inches)	Range: 75 g/m^2 (20 lb) bond to 120 g/m^2 (32 lb) bond	Maximum stack height: 56 mm (2.2 inches)
HP Color Laser Glossy Photo & Imaging Paper (letter/A4) **NOTE** Do not use inkjet papers in this MFP.	Letter: 216 x 279 mm (8.5 x 11 inches) A4: 210 x 297 mm (8.27 x 11.7 inches)	120 g/m^2 (32 lb) bond	Maximum stack height: 56 mm (2.2 inches)
Transparencies (letter/A4), suitable for use in color laser printers	Letter: 216 x 279 mm (8.5 x 11 inches) A4: 210 x 297 mm (8.27 x 11.7 inches)	Minimum: 0.13 mm (0.005 inches) thick	Maximum stack height: 56 mm (2.2 inches)
HP Tough Paper (letter/A4)	Letter: 216 x 279 mm (8.5 x 11 inches) A4: 210 x 297 mm (8.27 x 11.7 inches)	Maximum: 0.13 mm (0.005 inches) thick	Maximum stack height: 56 mm (2.2 inches)

Table 1-10 Tray 2, 3, and 4 media sizes (continued)

Trays 2, 3, and 4	Dimensions	Weight or thickness	Capacity
Labels (letter/A4 and custom sizes), suitable for use in color laser printers	Range: 148 x 210 mm (5.83 x 8.27 inches) to 216 x 356 mm (8.5 x 14 inches)	Maximum: 0.13 mm (0.005 inches) thick	Maximum stack height: 56 mm (2.2 inches)

[1] Trays 2, 3, and 4 use custom sizes specifically for B5 ISO. These trays do not support the range of custom sizes that can be used in tray 1.

Table 1-11 Automatic duplex printing (two-sided printing)

Automatic duplex printing	Dimensions	Weight or thickness
Paper	Standard sizes: Letter: 216 x 279 mm (8.5 x 11 inches) A4: 210 x 297 mm (8.27 x 11.7 inches) 8.5 x 13: 216 x 330.2 mm (8.5 x 13 inches) Legal: 216 x 356 mm (8.5 x 14 inches) Executive: 184.2 x 266.7 mm (7.25 x 10.5 inches) JIS B5: 182 x 257 mm (7.17 x 10.12 inches)	Range: 60 g/m^2 (16 lb) bond to 120 g/m^2 (32 lb) bond
Glossy paper (A4/letter, 13 x 8.5 in, legal, executive, JIS B5) **NOTE** Do not use inkjet papers in this MFP.	See above for standard sizes supported	Range: 75 g/m^2 (20 lb) bond to 120 g/m^2 (32 lb) bond
HP Color Laser Glossy Photo & Imaging Paper (A4/ letter) **NOTE** Do not use inkjet papers in this MFP.	Standard sizes: Letter: 216 x 279 mm (8.5 x 11 inches) A4: 210 x 297 mm (8.27 x 11.7 inches)	120 g/m^2 (32 lb) bond

Table 1-12 Optional 3-bin mailbox or stacker part of the stapler/stacker supported sizes

Size	Dimensions[1]	Weight	Capacity[2]
Letter	216 x 279 mm (8.5 x 11 inches)	For plain media: 60 g/m^2 (16 lb) to 120 g/m^2 (32 lb)	For the stacker on the stapler/stacker or the lower

Table 1-12 Optional 3-bin mailbox or stacker part of the stapler/stacker supported sizes (continued)

Size	Dimensions[1]	Weight	Capacity[2]
		For thick media: 128 g/m^2 (34 lb) to 199 g/m^2 (53 lb)	bin on the 3-bin mailbox: 500 sheets of 75 g/m^2 (20 lb) paper. For the top two bins on the 3-bin mailbox: each can hold 100 sheets of 75 g/m^2 (20 lb) paper.
A4	210 x 297 mm (8.27 x 11.7 inches)		
Executive	184.2 x 266.7 mm (7.25 x 10.5 inches)		
Legal	216 x 356 mm (8.5 x 14 inches)		
B5 (JIS)	182 x 257 mm (7.17 x 10.12 inches)		
A5	148 x 210 mm (5.8 x 8.3 inches)		
Statement	140 x 216 mm (5.5 x 8.5 inches)		
8.5x13	216 x 330 mm (8.5 x 13 inches)		
Executive (JIS)	216 x 330 mm (8.5 x 13 inches)		
DPostcard (JIS)	148 x 200 mm (5.8 x 7.9 inches)		
16K	197 x 273 mm (7.75 x 10.75 inches)		
Envelope #10[1]	105 x 241 mm (4.1 x 9.5 inches)		
Envelope Monarch #7[1]	98 x 191 mm (3.9 x 7.5 inches)		
Envelope C5 ISO[1]	162 x 229 mm (6.4 x 9.0 inches)		
Envelope DL ISO[1]	110 x 220 mm (4.3 x 8.7 inches)		
Envelope B5 ISO[1]	176 x 250 mm (6.7 x 9.8 inches)		
Custom	Minimum: 76 x 127 mm (3 x 5 inches) Maximum: 216 x 356 mm (8.5 x 14 inches)		

Table 1-12 Optional 3-bin mailbox or stacker part of the stapler/stacker supported sizes (continued)

Size	Dimensions[1]	Weight	Capacity[2]
Cardstock, transparencies, and labels are supported only in the third bin of the 3-bin mailbox.			

[1] The MFP supports a wide range of sizes. Check the MFP software for supported sizes.
[2] Capacity can vary depending on paper weight and thickness, as well as environmental conditions.
[3] Face-down delivery only.

Table 1-13 Stapler part of the optional stapler/stacker supported sizes

Size	Dimensions	Weight	Capacity
Letter	216 x 279 mm (8.5 x 11 inches)	For plain media: 60 g/m^2 (16 lb) to 120 g/m^2 (32 lb) For thick media: 128 g/m^2 (34 lb) to 199 g/m^2 (53 lb)	For plain media: 30 sheets of 75 g/m^2 (20 lb) paper. For glossy media: 20 sheets For thick media: the stack height must not exceed 7 mm (0.27 inches)
A4	210 x 297 mm (8.27 x 11.7 inches)		
Legal	216 x 356 mm (8.5 x 14 inches)		
8.5x13	216 x 330 mm (8.5 x 13 inches)		
Executive(JIS)	216 x 330 mm (8.5 x 13 inches)		

Printing on special media

Use these guidelines when printing on special types of media.

NOTE Special media such as envelopes, transparencies, custom-size media, or heavy media greater than 120 g/m^2 should only be used in Tray 1.

To print on any special media, use the following procedure:

1. Load the media in Tray 1.
2. When the MFP prompts you for the paper type, select the correct media type for the media loaded in the tray. For example, select **PHOTO GLOSS** when loading HP Color LaserJet Glossy Photo Paper.
3. In the software application or the printer driver, set the media type to match the media type that is loaded in the media tray.

NOTE For the best print quality, always verify that the media type selected on the MFP control panel and the media type selected in the application or printer driver match the type of media loaded in the tray.

Transparencies

When printing on transparencies, use the following guidelines:

- Handle transparencies using the edges. Oils from your fingers deposited on the transparency can cause print quality problems.
- Use only overhead transparencies recommended for use in this MFP. Hewlett-Packard recommends using HP Color LaserJet Transparencies. HP products are designed to work together for optimum printing results.
- In either the software application or the driver, select **TRANSPARENCY** as the media type, or print from a tray that is configured for transparencies.

CAUTION Transparencies not designed for HP Color LaserJet printing might melt in the printer or wrap around the fuser, causing damage to the MFP.

Glossy paper

- In either the software application or the driver, select **GLOSSY**, **HEAVY GLOSSY**, or **INTERMEDIATE90-104** as the media type, or print from a tray that is configured for glossy paper.
- Use the control panel to set the media type to **GLOSSY** for the input tray being used.
- Because this affects all print jobs, it is important to return the MFP to its original settings once the job has printed.

NOTE Hewlett-Packard recommends using HP Color LaserJet Glossy Photo Paper and soft glossy papers designed for use in HP Color LaserJet printers. HP products are designed to work together for optimum printing results. If other types of glossy media are used, print quality could be compromised.

Colored paper

- Colored paper should be of the same high quality as white xerographic paper.
- Pigments used in colored media must be able to withstand the MFP's fusing temperature of 190° C (374°F) for 0.1 second without deterioration.
- The MFP creates colors by printing patterns of dots, overlaying and varying their spacing to produce various colors. Varying the shade or color of the paper will affect the shades of the printed colors.

Envelopes

NOTE Envelopes can be printed only from Tray 1. Set the tray's media size to the specific envelope size.

Adhering to the following guidelines will help ensure proper printing on envelopes and help prevent paper jams:

- Do not load more than 20 envelopes into Tray 1.
- The weight rating of envelopes should not exceed 90 g/m^2 (24 lb bond).
- Envelopes should be flat.
- Do not use envelopes with windows or clasps.
- Envelopes must not be wrinkled, nicked, or otherwise damaged.
- Envelopes with peel-off adhesive strips must use adhesives that can withstand the heat and pressures of the MFP's fusing process.
- Envelopes should be loaded face-down and with the postage end feeding into the MFP first.

Labels

NOTE For printing labels, set the tray's media type to **LABELS** in the MFP control panel. When printing labels, use the following guidelines:

- Verify that the labels' adhesive material can tolerate temperatures of 190°C (374°F) for 0.1 second.
- Verify that there is no exposed adhesive material between the labels. Exposed areas can cause labels to peel off during printing, which can cause paper jams. Exposed adhesive can also cause damage to MFP components.
- Do not re-feed a sheet of labels.
- Verify that the labels lie flat.
- Do not use labels that are wrinkled, bubbled, or otherwise damaged.

Heavy paper

The following heavy paper types can be used with the HP Color LaserJet 4730mfp series MFP.

Table 1-14 Supported heavy paper types

Paper type	Paper weight
Heavy and extra-heavy stock	105-163 g/m^2 (28-43 lb)
Cardstock	164-220 g/m^2 (43-58 lb)
Intermediate	90-105 g/m^2 (24-28 lb)
HP Tough paper	5 mil

When printing on heavy paper types, use the following guidelines:

- Use Tray 1 for paper that is heavier than 120 g/m^2 (32 lb).
- For optimum results when printing on heavy paper, use the MFP control panel to set the media type for the tray to the appropriate paper type listed in Table 1-14 Supported heavy paper types on page 29.
- In either the software application or the driver, select the appropriate paper type as the media type, or print from a tray that is configured for heavy paper.
- Because this setting affects all print jobs, it is important to return the MFP back to its original settings once the job has printed.

CAUTION In general, do not use paper that is heavier than the media specification recommended for this MFP. Doing so can cause misfeeds, paper jams, reduced print quality, and excessive mechanical wear.

HP LaserJet Tough paper

When printing on HP LaserJet Tough paper, use the following guidelines:

- Handle HP LaserJet Tough paper only by the edges. Oils from your fingers deposited on HP LaserJet Tough paper can cause print quality problems.
- Use only HP LaserJet Tough paper with this MFP. HP products are designed to work together for optimum printing results.
- In either the software application or the driver, select **TOUGH PAPER** as the media type, or print from a tray that is configured for HP LaserJet Tough paper.

Preprinted forms and letterhead

Observe the following guidelines for best results with preprinted forms and letterhead:

- Forms and letterhead must be printed with heat-resistant inks that will not melt, vaporize, or release undesirable emissions when subjected to the MFP's fusing temperature of approximately 190°C (374°F) for 0.1 second.
- Inks must be non-flammable and should not adversely affect any printer rollers.

- Forms and letterhead should be sealed in a moisture-proof wrapping to prevent changes during storage.
- Before loading preprinted paper such as forms and letterhead, verify that the ink on the paper is dry. During the fusing process, wet ink can come off of preprinted paper.
- To load pre-printed forms and letterhead into Tray 1, load them face down with the top edge of the page facing toward you.
- To load pre-printed forms and letterhead into Tray 2 or an optional tray, load them face up with the top edge of the page facing away from you.
- When duplex printing, load pre-printed forms and letterhead into Tray 2 or an optional 500-sheet tray face down with the top edge of the page towards you.

Recycled paper

This MFP supports the use of recycled paper. Recycled paper must meet the same specifications as standard paper. Hewlett-Packard recommends that recycled paper contain no more than 5% ground wood.

Weight equivalence table

The weight equivalence table shows equivalent weights for different grades of paper. A boldface type value indicates a commonly available standard weight for that grade.

NOTE Text and book grades marked with an asterisk (*) actually calculate to 51, 61, 71, and 81 but are rounded to standard book or text weights of 50, 60, 70, and 80.

Table 1-15 Weight equivalence table

Bond weight	Text/Book weight	Cover weight	Bristol weight	Index weight	Tag weight	Metric weight
16	41	22	27	33	37	**60 g/m^2**
17	43	24	29	35	39	**64 g/m^2**
20	50*	28	34	42	46	**75 g/m^2**
21	54	30	36	44	49	**80 g/m^2**
24	**60***	33	41	50	55	**90 g/m^2**
27	68	37	45	55	61	**100 g/m^2**
28	**70***	39	49	58	65	105 g/m^2
29	74	41	50	61	68	**110 g/m^2**
32	**80***	44	55	67	74	**120 g/m^2**
36	90	**50**	62	75	83	**135 g/m^2**
39	**100**	55	**67**	82	91	148 g/m2
40	101	55	68	83	92	**150 g/m^2**
43	110	**60**	74	**90**	**100**	163 g/m2
45	115	63	77	94	104	**170 g/m^2**

Table 1-15 Weight equivalence table (continued)

Bond weight	Text/Book weight	Cover weight	Bristol weight	Index weight	Tag weight	Metric weight
47	119	**65**	80	97	108	176 g/m2
51	128	70	86	105	117	**190 g/m^2**
53	134	74	90	**110**	122	199 g/m^2
54	137	75	93	113	**125**	203 g/m^2
58	146	**80**	98	120	133	216 g/m^2
65	165	**90**	111	135	**150**	244 g/m^2
66	169	92	114	138	154	**250 g/m^2**
67	171	94	115	**140**	155	253 g/m^2
70	178	98	**120**	146	162	264 g/m^2
72	183	**100**	123	150	166	271 g/m^2

Regulatory information

FCC and Telecom regulations

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. The end user of this product should be aware that any changes or modifications made to this equipment without the approval of Hewlett-Packard could result in the product not meeting the Class A limits, in which case the FCC could void the user's authority to operate the equipment.

NOTE Any changes or modifications to the MFP that are not expressly approved by HP could void the user’s authority to operate this equipment.

Telecom

This product is intended to be connected to the analog Public Switched Telecommunication Networks (PSTN) of European Economic Area (EEA) countries/regions. It meets requirements of EU R Directive 1999/5/EC (Annex II) and carries appropriate CE conformity marking. For more details see the Declaration of conformity (HP Color LaserJet 4730mfp) on page 39 issued by the manufacturer.

However, due to differences between individual national PSTNs, the product may not guarantee unconditional assurance of successful operation on every PSTN termination point. Network compatibility depends on the correct setting being selected by the customer in preparation of its connection to the PSTN. Please follow the instructions provided in the user manual. If you experience network compatibility issues, please contact your equipment supplier or Hewlett-Packard help desk in the country/region of operation.

Connecting to a PSTN termination point may be the subject of additional requirements set out by the local PSTN operator.

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).

Energy consumption

Power usage drops significantly while in Sleep mode, which saves natural resources and saves money without affecting the high performance of this product. This product qualifies for ENERGY STAR® (Multifunctional devices, Version 3.0), which is a voluntary program to encourage the development of energy-efficient office products.

ENERGY STAR® and the ENERGY STAR mark are U.S. registered service marks. As an ENERGY STAR partner, Hewlett-Packard Company has determined that this product meets ENERGY STAR Guidelines for energy efficiency. For more information, see http://www.energystar.gov.

Paper use

This product's automatic duplex feature (two-sided printing) and n-up printing (multiple pages printed on one page) capabilities can reduce media 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 printing supplies

It is easy to return and recycle your empty HP LaserJet print cartridges—free of charge—with HP Planet Partners. HP is committed to providing inventive, high-quality products and services that are environmentally sound, from product design and manufacturing to distribution, operation and recycling processes. We ensure your returned HP LaserJet print cartridges are recycled properly, processing them to recover valuable 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. Your empty HP LaserJet print cartridges are recycled responsibly when you participate in the HP Planet Partners program. Thank you for being environmentally responsible!

HP Printing Supplies Returns and Recycling Program Information

In many countries/regions, this product’s printing supplies (print cartridges, fuser, and transfer unit) can be returned to HP through the HP Printing Supplies Returns and Recycling Program. An easy-to-use and free takeback program is available in over 35 countries/regions. Multilingual program

information and instructions are included in every new HP LaserJet print cartridge and supplies package.

Since 1992, HP has offered HP LaserJet supplies return and recycling free of charge. In 2004, HP Planet Partners for LaserJet Supplies was available in 85% of the world market where HP LaserJet supplies are sold. Postage-paid and pre-addressed labels are included within the instruction guide in most HP LaserJet print cartridge boxes. Labels and bulk boxes are also available through the Web site at http://www.hp.com/recycle.

Use the label to return empty, original HP LaserJet print cartridges only. Please do not use this label for non-HP cartridges, refilled or remanufactured cartridges, or warranty returns. Printing supplies or other objects inadvertently sent to the HP Planet Partners program cannot be returned.

More than 10 million HP LaserJet print cartridges were recycled globally in 2004 through the HP Planet Partners supplies recycling program. This record number represents 26 million pounds of print cartridge materials diverted from landfills. Worldwide, in 2004, HP recycled an average of 59% of the print cartridge by weight consisting primarily of plastic and metals. Plastics and metals are used to make new products such as HP products, plastic trays and spools. The remaining materials are disposed of in an environmentally responsible manner.

Paper

This product is capable of using recycled papers according to EN 12281:2002. HP recommends the use of recycled papers that contain not more than 5% ground wood, such as HP Office Recycled paper.

Material restrictions

This HP product contains mercury in the fluorescent lamp of the control panel liquid crystal display that might require special handling at end of life.

- **U.S. returns** For a more environmentally responsible return of used cartridges and supplies, HP encourages the use of bulk returns. Simply bundle two or more cartridges together and use the single, pre-paid, and pre-addressed UPS label that is supplied in the package. For more information in the U.S., call 1-800-340-2445 or visit the HP Web site at http://www.hp.com/recycle.
- **Non-U.S. returns** Non-U.S. customers should visit the http://www.hp.com/recycle Web site for information regarding availability of the HP Supplies Returns and Recycling Program.

This HP product contains a battery that might require special handling at end of life.

Type	Carbon monofluoride lithium battery
Weight	8 grams
Location	Formatter board
User removable	No

For recycling information, you can contact http://www.hp.com/go/recycle or contact your local authorities or the Electronics Industry Alliance at http://www.eiae.org.

廢電池請回收

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

Material Safety Data Sheets (MSDS) can be obtained by contacting the HP LaserJet Supplies Web site at http://www.hp.com/hpinfo/community/environment/productinfo/safety.htm.

For more information

To obtain information about the following environmental topics, visit http://www.hp.com/go/environment or http://www.hp.com/hpinfo/community/environment/productinfo/safety.

- 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 (MSDS)

Country/region-specific safety statements

Laser safety statement

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 MFP 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 MFP 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 statement

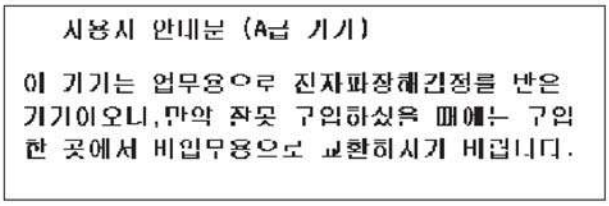
Complies with Canadian EMC Class B requirements.

«Conforme à la classe B des normes canadiennes de compatibilité électromagnétiques (CEM).»

Japanese VCCI statement

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。

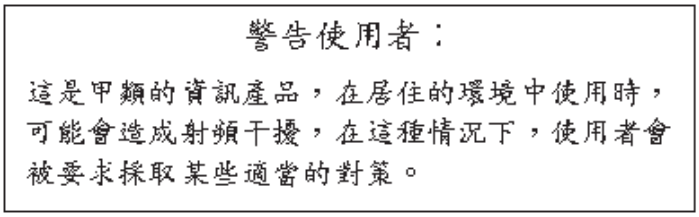
Korean EMI statement



Japanese cordset statement

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。

Taiwan safety statement



Finnish laser statement

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

HP LaserJet 4370mfp, HP LaserJet 4730x mfp, HP LaserJet 4730xs mfp, HP LaserJet 4730xm mfp -laserkirjoitin on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalissa käytössä kirjoittimen suojakotelointi estää lasersäteen pääsyn laitteen ulkopuolelle.

Laitteen turvallisuusluokka on määritetty standardin EN60825-1 (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 LaserJet 4370mfp, HP LaserJet 4730x mfp, HP LaserJet 4730xs mfp, HP LaserJet 4730xm 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 770-800 nm

Teho 5 mW

Luokan 3B laser

Australia

This equipment complies with Australian EMC requirements.

Declaration of conformity (HP Color LaserJet 4730mfp)

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

Manufacturer's Name:	Hewlett-Packard Company
Manufacturer's Address:	11311 Chinden Boulevard, Boise, Idaho 83714-1021, USA
declares that the product	
Product Name:	HP Color LaserJet 4730 MFP, 4730x MFP, 4730xs MFP, 4730xm MFP
Product Numbers:	Q7517A, Q7518A, Q7519A, Q7520A
	Including accessories: Q7521A, Q7522A, Q7523A, BOISB-0308-00
Regulatory Model Number:	BOISB-0503-00[4)]
Product Options:	ALL
	Toner Cartridge: Q6460A, Q6461A, Q6462A, Q6463A

conforms to the following Product Specifications:

Safety:	IEC 60950-1:2001 / EN60950-1: 2001 IEC 60825-1:1993 +A1 +A2 / EN 60825-1:1994 +A11 +A2 (Class 1 Laser/LED Product) GB4943-2001
EMC:	CISPR 22:1997 / EN 55022:1998 - Class A[1)] EN 61000-3-2:2000 EN 61000-3-3:1995 + A1:2001 EN 55024:1998+A1:2001 FCC Title 47 CFR, Part 15 Class A / ICES-003, Issue 4[2)] GB9254-1998
TELECOM:	TBR-21:1998; EG 201 121:1998

Supplementary Information:

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

1) The product was tested in a typical configuration with Hewlett-Packard Personal Computer Systems. Compliance testing of product to standard with exception of Clause 9.5, which is not yet in effect.

2) This Device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

3) For regulatory purposes, this product is assigned a Regulatory model number (BOISB-0503-00). This number should not be confused with the product name or the product number(s).

4) 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.

Boise, Idaho 83713, USA

21 December, 2004

For regulatory topics only:

Australia Contact:	Product Regulations Manager, Hewlett-Packard Australia Ltd.,, 31-41 Joseph Street, Blackburn, Victoria 3130, Australia
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, ID 83707-0015, USA, (Phone: 208-396-6000)

2 Service approach

This chapter contains information about the following topics:

- Service approach
- Parts and supplies
- HP available services
- Hewlett-Packard Limited Warranty Statement
- Print Cartridge Limited Warranty Statement
- HP maintenance agreements

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 7.

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.

Parts and supplies

Field-replaceable part and accessory part numbers are found in chapter 8 of this manual. Order replacement parts from Hewlett-Packard Customer Support-Americas (HPCS-A) or Hewlett-Packard Customer Support-Europe (HPCS-E).

CAUTION Use only accessories specifically designed for this MFP. Accessories can be ordered from an authorized service or support provider.

Ordering parts, supplies, and accessories over the Internet

To order supplies in the US, contact 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.

Ordering directly through the embedded Web server (for MFPs with network connections)

Use the following steps to order printing supplies 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. Or, go to the URL provided in the alert email.
2. Click **Other Links**.
3. Click **Order Supplies**. The browser opens to a page in which you can choose to send information about the MFP to HP. You also have the option to order supplies without sending the MFP information to HP.
4. Select the part numbers you want to order and follow the instructions on the screen.

Exchange program

HP offers remanufactured assemblies for some parts. These are identified in chapter 8 and can be ordered from Hewlett-Packard Customer Support-Americas (HPCS-A) or Hewlett-Packard Customer Support-Europe (HPCS-E).

Supplies

Paper and print cartridges can be ordered directly from Hewlett-Packard. See chapter 8 for ordering information.

World Wide Web

Printer drivers, updated HP printer software, and product and support information can be obtained from the following URL:

In the U.S.: http://www.hp.com/support/clj4730mfp

Printer drivers can be obtained from the following sites:

In China: ftp://www.hp.com.cn/support/clj4730mfp

In Japan: ftp://www.jpn.hp.com/support/clj4730mfp

In Korea: http://www.hp.co.kr/support/clj4730mfp

In Taiwan: http://www.hp.com.tw/support/clj4730mfp

or the local driver Web site: http://www.dds.com.tw

HP Service Parts Information

Parts identification and pricing information can also be found on the World Wide Web at http://www.hp.com/go/HPparts.

HP available services

Online services

For 24-hour access to information using a modem or Internet connection:

World Wide Web URL: for the HP Color LaserJet 4730mfp series MFPs, updated HP printer software, product and support information, and printer drivers in several languages can be obtained from http://www.hp.com/support/clj4730mfp. (Sites are in English.)

Visit: http://www.hp.com/support/net_printing for information about network printing using HP Jetdirect print servers.

HP Instant Support Professional Edition (ISPE) is a suite of Web-based troubleshooting tools for desktop computing and printing products. ISPE helps you quickly identify, diagnose, and resolve computing and printing problems. The ISPE tools may be accessed from http://instantsupport.hp.com.

Telephone support

HP provides free telephone support during the warranty period. When you call, you will be connected to a responsive team waiting to help you. For the telephone number for your country/region, see the flyer that shipped in the box with the product, or visit http://welcome.hp.com/us/en/wwcontact.html. Before calling HP have the following information ready: product name and serial number, date of purchase, and description of the problem.

You can also find support on the Internet at http://www.hp.com. Click the **support & drivers** block.

Software utilities, drivers, and electronic information

Visit: http://www.hp.com/go/clj4730mfp_software for the HP Color LaserJet 4730mfp series MFPs. The Web page for the drivers might be in English, but you can download the drivers themselves in several languages.

Call: See the flyer that shipped in the box with the MFP.

HP direct ordering for accessories or supplies

In the United States, supplies can be ordered from http://www.hp.com/sbso/product/supplies. In Canada, supplies can be ordered from http://www.hp.ca/catalog/supplies. In Europe, supplies can be ordered from http://www.hp.com/go/ljsupplies. In Asia-Pacific, supplies can be ordered from http://www.hp.com/paper/.

Accessories can be ordered from http://www.hp.com/go/accessories.

HP service information

To locate HP-authorized dealers, call 1-800-243-9816 (U.S.) or 1-800-387-3867 (Canada). For service for your product, call the customer support number for your country/region. See the flyer that shipped in the box with the MFP.

HP service agreements

Call: 1-800-835-4747 (U.S.) or 1-800-268-1221 (Canada).

Extended Service: 1-800-446-0522

HP support and information for Macintosh computers

Visit: http://www.hp.com/go/macosx for Macintosh OS X support information and HP subscription service for driver updates.

Visit: http://www.hp.com/go/mac-connect for products designed specifically for the Macintosh user.

Hewlett-Packard Limited Warranty Statement

HP product	Duration of Limited Warranty
HP Color LaserJet 4730mfp	1 year, on-site
HP Color LaserJet 4730x mfp	
HP Color LaserJet 4730xs mfp	
HP Color LaserJet 4730xm mfp	

HP warrants HP hardware, accessories, and supplies against defects in materials and workmanship for the period specified above. If HP receives notice of such defects during the warranty period, HP will, at its option, either repair or replace products which prove to be defective. Replacement products may be either new or like-new.

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

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

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

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

TO THE EXTENT ALLOWED BY LOCAL LAW, THE ABOVE WARRANTIES ARE EXCLUSIVE AND NO OTHER WARRANTY, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED AND HP SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, SATISFACTORY QUALITY, AND FITNESS FOR A PARTICULAR PURPOSE.

TO THE EXTENT ALLOWED BY LOCAL LAW, THE REMEDIES IN THIS WARRANTY STATEMENT ARE THE CUSTOMER'S SOLE AND EXCLUSIVE REMEDIES. EXCEPT AS INDICATED ABOVE, IN NO EVENT WILL HP OR ITS SUPPLIERS BE LIABLE FOR LOSS OF DATA OR FOR DIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFIT OR DATA), OR OTHER DAMAGE, WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE.

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

The warranty period begins on the date of the delivery or on the date of installation if installed by HP. If customer schedules or delays HP installation more than 30 days after delivery, warranty begins on the 31st day from delivery.

Print Cartridge Limited Warranty Statement

This HP Print Cartridge is warranted to be free from defects in materials and workmanship.

This warranty does not apply to print cartridges that (a) have been refilled, refurbished, remanufactured or tampered with in any way, (b) experience problems resulting from misuse, improper storage, or operation outside of the published environmental specifications for the printer product or (c) exhibit wear from ordinary use.

To obtain warranty service, please return the product to place of purchase (with a written description of the problem and print samples) or contact HP customer support. At HP's option, HP will either replace products that prove to be defective or refund your purchase price.

TO THE EXTENT ALLOWED BY LOCAL LAW, THE ABOVE WARRANTY IS EXCLUSIVE AND NO OTHER WARRANTY OR CONDITION, WHETHER WRITTEN OR ORAL, IS EXPRESSED OR IMPLIED AND HP SPECIFICALLY DISCLAIMS ANY IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY, SATISFACTORY QUALITY, AND FITNESS FOR A PARTICULAR PURPOSE.

TO THE EXTENT ALLOWED BY LOCAL LAW, IN NO EVENT WILL HP OR ITS SUPPLIERS BE LIABLE FOR DIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFIT OR DATA), OR OTHER DAMAGE, WHETHER BASED IN CONTRACT, TORT, OR OTHERWISE.

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

HP maintenance agreements

HP has several types of maintenance agreements that meet a wide range of support needs. Maintenance agreements are not part of the standard warranty. Support services vary by location. Contact HP Customer Care or go to http://www.hp.com/services/carepack to determine the services that are available and for more information about maintenance agreements. In general, the MFP will have the following maintenance agreements:

Priority Onsite Service

This agreement provides 4-hour service response to the customer's site for calls made during normal HP business hours.

Next business day

This agreement provides next-business-day service, Monday through Friday. This service agreement comes standard with the MFP for a period of one year. The customer can purchase an extension of this agreement.

Installation and maintenance kit replacement

An HP-authorized service or support provider will come to the customer's site to install the MFP or to replace the maintenance kits.

3 Installation and configuration

This chapter contains information about the following topics:

- Installation checklist
- Unpacking the MFP
- Loading detectable standard-sized media into Tray 2, 3, and 4
- Loading undetectable standard-sized media into Tray 2, 3, and 4
- Connecting power
- Installing print cartridges
- Installing a new control panel overlay
- Testing the MFP operation
- Sleep delay
- Connecting to a computer or network
- Printer software
- Printer drivers
- Printer drivers for Macintosh computers
- Software for Macintosh computers
- 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 3-1 HP Color LaserJet 4730mfp 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 4730mfp 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 4730mfp series Getting Started Guide*.
	Verify the scanner shipping lock has been moved to the unlocked position.	See details in the *HP Color LaserJet 4730mfp series Getting Started Guide*.
	Verify the correct language and date/time are set.	See details in the *HP Color LaserJet 4730mfp series Getting Started Guide*.
	Configure the e-mail gateways.	Press Menu, scroll to and touch Configure Device, Sending, E-MAIL, and FIND 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.	Press Menu, scroll to and touch Fax, and then FAX SETUP 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.	Press Menu, touch Information, and then touch PRINT CONFIGURATION.
	On the configuration page printouts, verify the following: • LDAP gateway address displays. • SMTP gateway address displays. • All optional devices display (for example, the stapler/stacker or the 3-bin mailbox).	The HP Color LaserJet 4730mfp information and training CD provides detailed information on how to read the configuration page.

Table 3-1 HP Color LaserJet 4730mfp installation (continued)

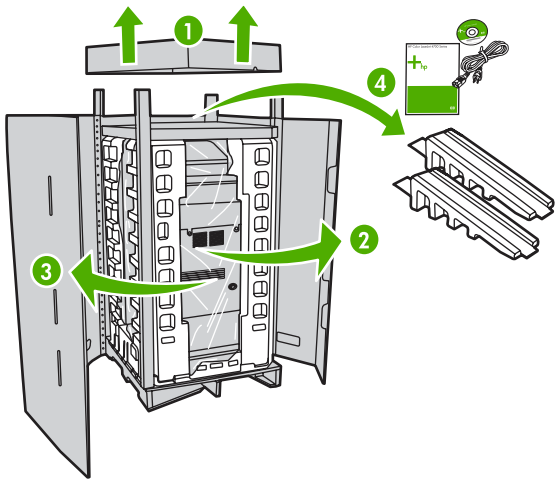
✔	Item	Details
	• If the fax accessory is installed, the modem status reads *Operational/Enabled*. • On the Embedded Jetdirect Page, verify that the status reads *I/O Card Ready* and that you have a valid IP address.	
	Verify you can copy from the copier glass of the MFP.	Place configuration page face 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

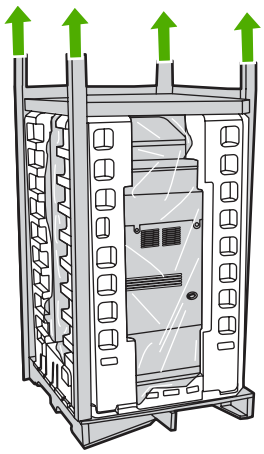
NOTE Save all the packing materials in case you need to repack and transport the MFP at a later date.

WARNING! The HP Color LaserJet 4730mfp series MFP weighs approximately 124 kg (273 lb). HP recommends having three or more people move or position the MFP.

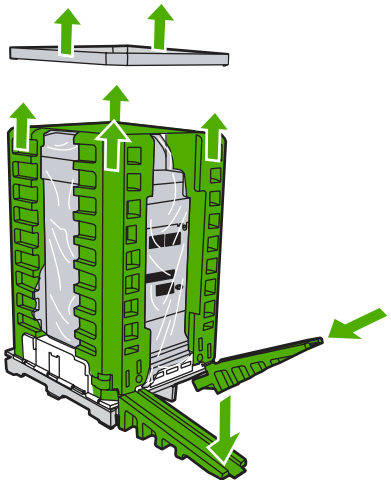
1. Remove the top of the box and remove the outer cardboard wrapping from the sides of the MFP. Remove the ramps, power supply cord, CD-ROM, and user documentation from the top of the packing box.



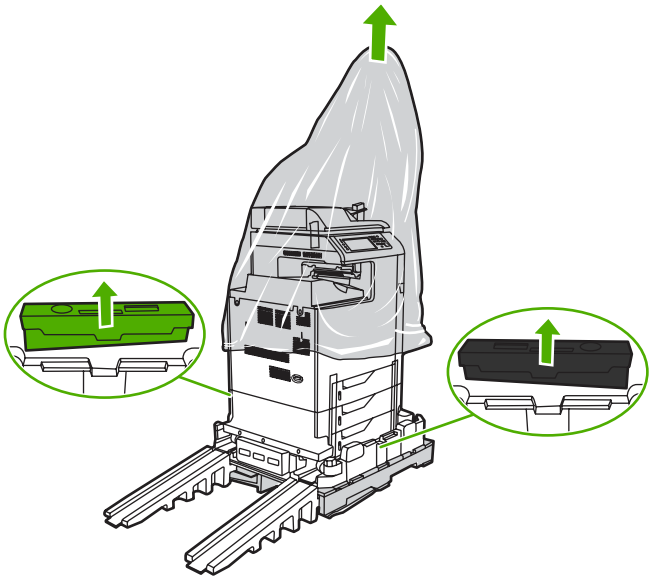
2. Remove the corner brackets.



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

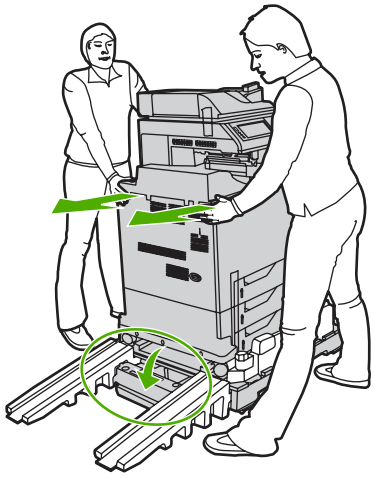


4. Remove the shipping blocks and plastic bag that surround the MFP.

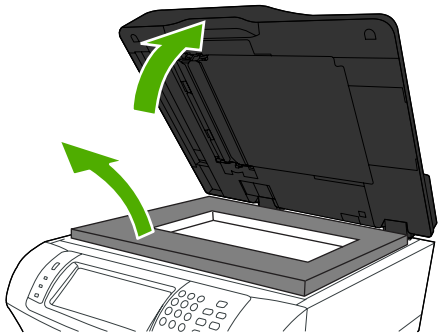


5. Roll the MFP down the ramps into the prepared location.

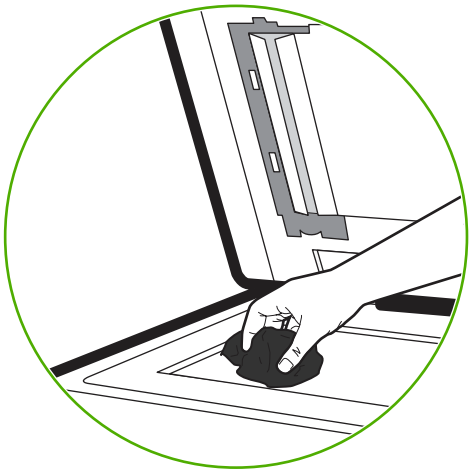
> **CAUTION** Do not attempt to move the MFP by yourself. At least two people must move the MFP into the prepared location. While two people can move the MFP, using three or four people to unpack and install the MFP is easier and safer.



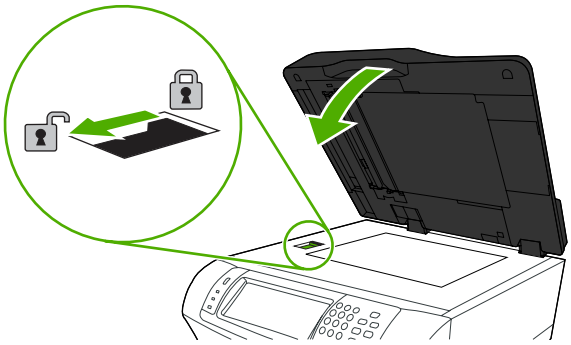
6. Remove the packing tape from the front and rear of the MFP.
7. Open the scanner glass and remove the foam packaging.



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



9. Unlock the scanner.



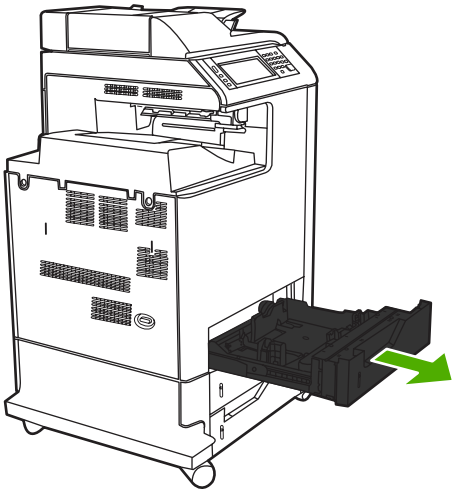
Loading detectable standard-sized media into Tray 2, 3, and 4

CAUTION If paper is loaded in Trays 2 through 4 when the MFP is in Sleep mode, the new paper will not be sensed when the MFP comes out of Sleep mode. This could cause the wrong paper to be used for a print job. Be sure to wake the MFP before loading paper in these trays.

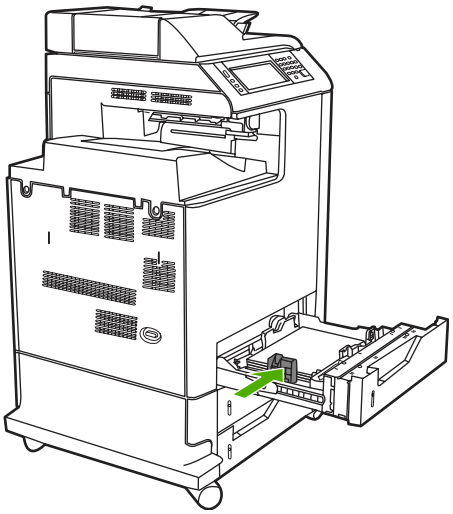
The following detectable standard-sized media is supported in Trays 2 through 4: letter, legal, executive, A4, A5, and (JIS) B5.

CAUTION Do not print cardstock, envelopes, heavy or extra-heavy paper, or unsupported sizes of media from the 500-sheet trays. Print on these types of media only from Tray 1. Do not overfill the input tray or open it while it is in use. Doing so can cause jams in the MFP.

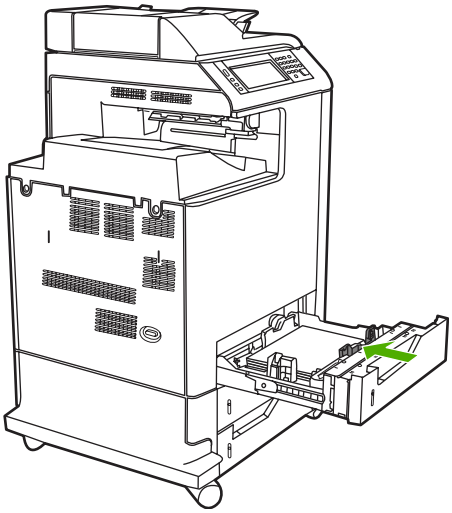
1. Slide open the tray from the MFP.



2. Adjust the rear media-length guide by squeezing the guide adjustment latch and sliding the back of the tray to the length of the media being used.



3. Slide the media-width guides open to the size for the media you are using.



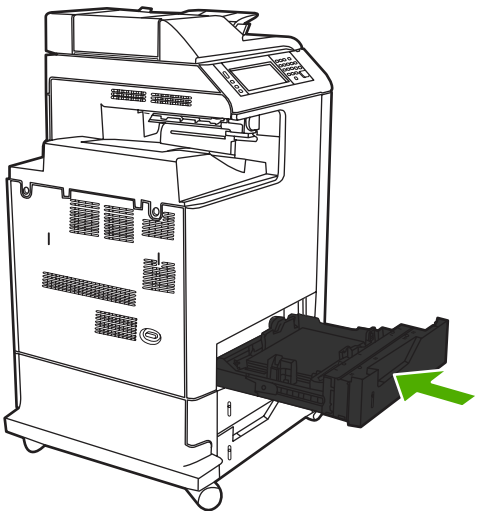
4. Load media into the tray face up.

NOTE For best performance, load the tray completely full without splitting or fanning the ream of paper. Splitting or fanning the ream might cause a multi-feed problem, which could result in a paper jam. The capacity of the paper tray can vary. For example, if using 75 g/m^2 (20 lb) paper, the tray holds a full ream of 500 sheets. If the media is heavier than 75 g/m^2 (20 lb), the tray will not hold a full ream, and the number of sheets must be reduced accordingly. Do not overfill the tray because the MFP might not pick up the paper.

NOTE If the tray is not properly adjusted, the MFP might display an error message or the media might jam.

NOTE If duplex printing, place the paper face-down.

5. Slide the tray into the MFP. The MFP will display the tray's media type and size. If the configuration is not correct, press OK on the product control panel. If the configuration is correct, touch Exit.



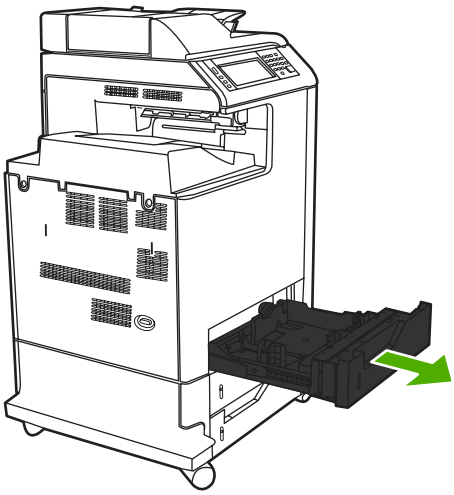
Loading undetectable standard-sized media into Tray 2, 3, and 4

Undetectable standard-sized media sizes are not marked in the tray, but are listed in the **Size** menu for the tray.

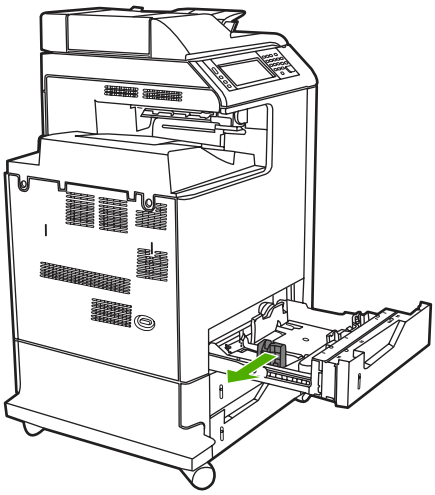
The following undetectable standard-sized media is supported in the 500-sheet trays: executive (JIS), 8.5 x 13, double Japan postcard, and 16K.

CAUTION Do not print cardstock, envelopes, heavy or extra-heavy paper, or unsupported sizes of media from the 500-sheet trays. Print on these types of media only from Tray 1. Do not overfill the input tray or open it while it is in use. Doing so can cause paper jams.

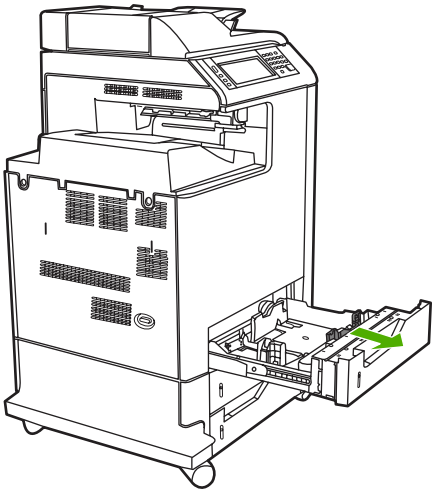
1. Slide open the tray from the MFP.



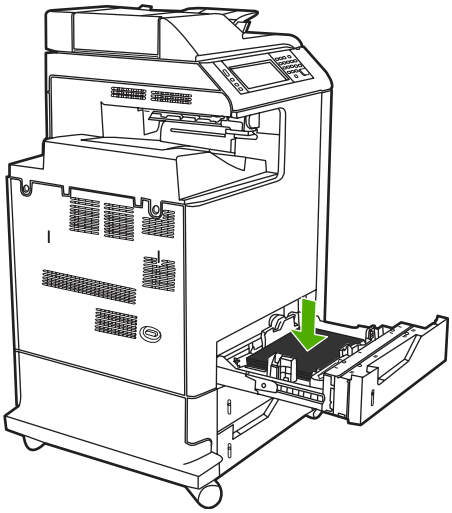
2. Adjust the rear media-length guide by squeezing the guide adjustment latch and sliding the back of the tray to the length of the media being used.



3. Slide the media-width guides open to the size for the media you are using.



4. Load media into the tray face-up.

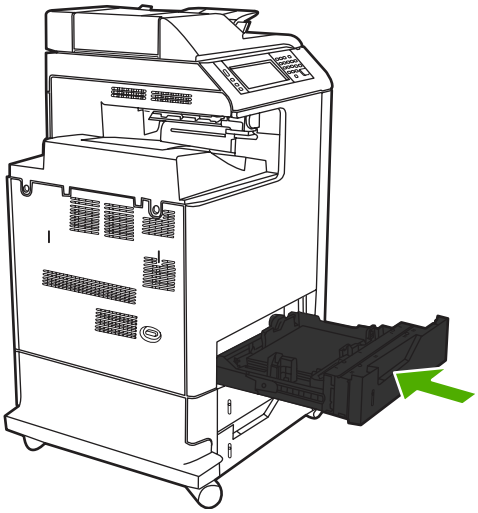


NOTE For best performance, load the tray completely full without splitting or fanning the ream of paper. Splitting or fanning the ream might cause a multi-feed problem, which could result in a paper jam. The capacity of the paper tray can vary. For example, if using 75 g/m^2 (20 lb) paper, the tray holds a full ream of 500 sheets. If the media is heavier than 75 g/m^2 (20 lb), the tray will not hold a full ream, and the number of sheets must be reduced accordingly. Do not overfill the tray because the MFP might not pick up the paper.

NOTE If the tray is not properly adjusted, the MFP might display an error message or the media might jam.

NOTE If duplex printing, place the paper face-down.

5. Slide the tray into the MFP. The MFP will display the tray's media type and size. If the configuration is not correct, touch OK on the product control panel and select the correct size.



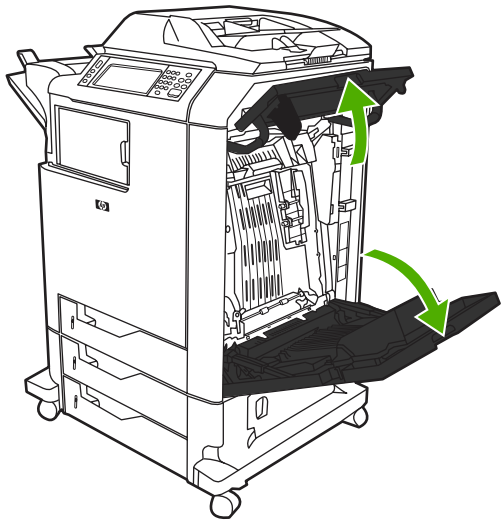
Connecting power

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

Installing print cartridges

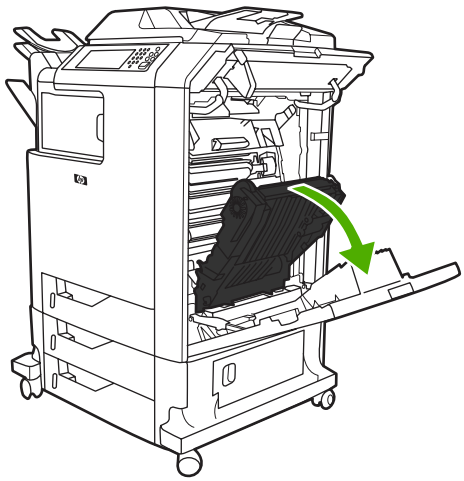
For additional information on installing and managing print cartridges, see Managing print cartridges on page 108.

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



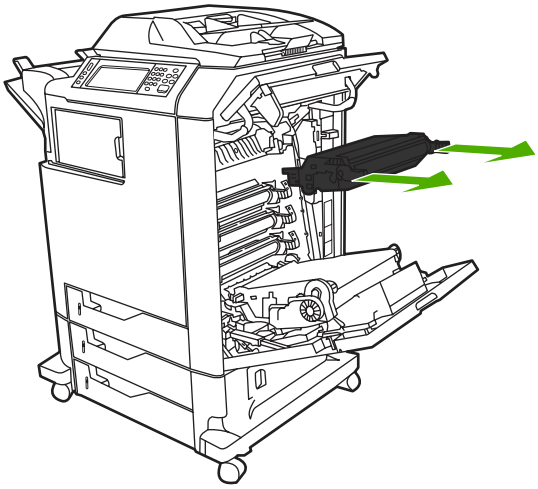
CAUTION The fuser might be hot.

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



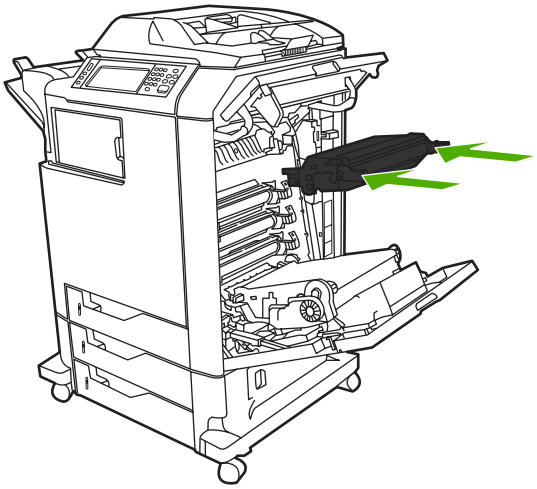
CAUTION Do not place any item on the transfer belt while it is open. If the belt is punctured, print quality problems could result.

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.

NOTE If a cartridge is in the wrong slot, the product control panel will display the message **INCORRECT [COLOR] CARTRIDGE**.

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/clj4730mfp.

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. Remove the backing from the adhesive side of the label.
2. Position the new label over the top of the product control panel.
3. 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.

4. Press Menu to enter the **MENUS**.
5. Scroll to and touch Configure Device.
6. Scroll to and touch SYSTEM SETUP.
7. Scroll to and touch LANGUAGE.
8. Scroll to and touch the desired language.
9. Press Menu.

Testing the MFP operation

Print a configuration page to ensure that the MFP is working correctly.

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Information.
3. Scroll to and touch PRINT CONFIGURATION.

The message **Printing... CONFIGURATION** appears on the display until the MFP finishes printing the configuration page. The MFP returns to the **Ready** state after printing the configuration page.

NOTE If the MFP is configured with an HP Jetdirect print server or a paper handling device, an additional configuration page will print that provides information about those devices.

Sleep delay

The adjustable Sleep mode feature reduces power consumption when the MFP has been inactive for an extended period. The length of time before the MFP enters Sleep mode can be set to **1 MINUTE**, **15 MINUTES**, **30 MINUTES**, **45 MINUTES**, **60 MINUTES**, **90 MINUTES**, **2 HOURS**, or **4 HOURS**. The default setting is **30 MINUTES**.

NOTE The MFP display dims when the MFP is in Sleep mode. This mode does not affect MFP warm-up time.

Setting Sleep delay

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch SYSTEM SETUP.
4. Scroll to and touch SLEEP DELAY.
5. Scroll to and touch the desired sleep-delay period. The settings are saved and the control panel returns to the **SYSTEM SETUP** menu.
6. Press Menu.

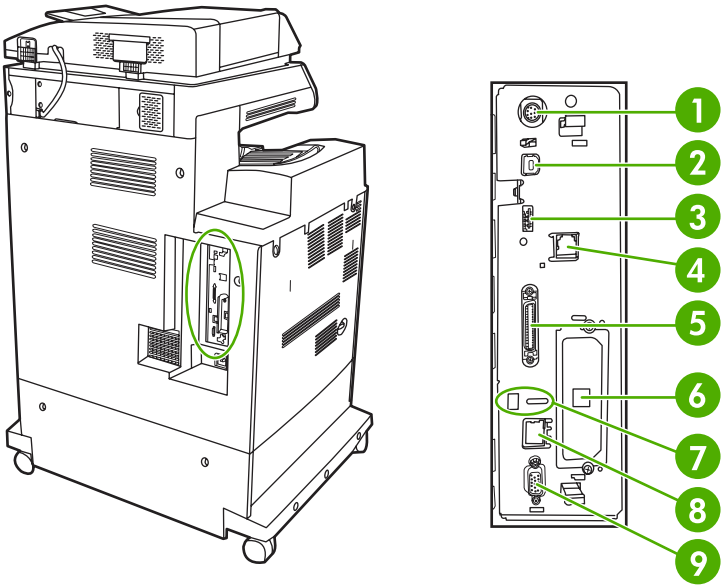
CAUTION If paper is loaded in Trays 2, 3, or 4 when the MFP is in Sleep mode, the new paper will not be sensed when the MFP comes out of Sleep mode. This could cause the wrong paper to be used for a print job. Be sure to wake the MFP before loading paper in these trays.

Disabling/enabling Sleep mode

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch RESETS.
4. Press SLEEP MODE.
5. Scroll to and touch **ON** or **OFF**. The settings are saved.
6. Press Menu.

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	Host USB (This accessory port uses host USB protocol.)
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

Network connection

When installing the MFP on a network, connect the network cable to the embedded HP Jetdirect print server before installing the MFP software.

For complete information about installing the MFP on a network, see the network installation guide that was included with the MFP.

Parallel connection

Install the MFP software before connecting the MFP directly to a computer or to a print server with a parallel cable.

For complete information about installing connecting the MFP directly to a print server, see the network installation guide that was included with the MFP.

Fax connection

The HP Color LaserJet 4730x mfp, HP Color LaserJet 4730xs mfp, and HP Color LaserJet 4730xm 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 4730x mfp, HP Color LaserJet 4730xs mfp, and HP Color LaserJet 4730xm mfp.

Analog faxing

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

The HP Color LaserJet 4730x mfp, HP Color LaserJet 4730xs mfp, and HP Color LaserJet 4730xm mfp models are equipped with an HP LaserJet analog fax accessory already installed. For the HP Color LaserJet 4730mfp (base model), this accessory can be ordered as an option.

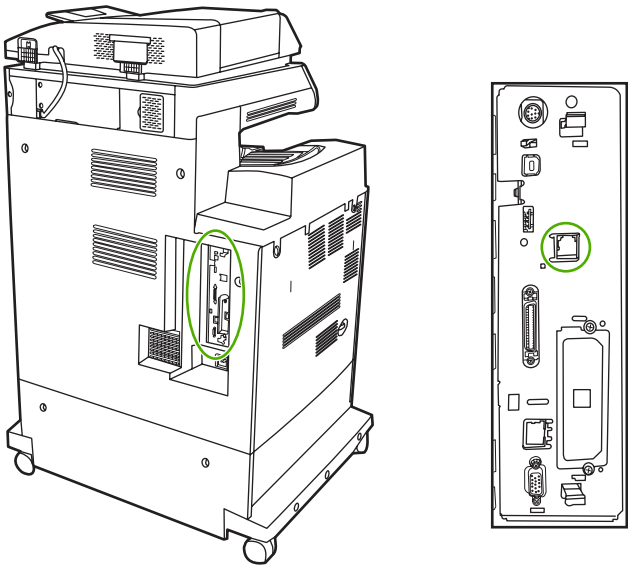
Connecting the fax accessory to a phone line

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

Included with the MFP is a CD-ROM containing the printing system software. The software components and printer drivers on this CD-ROM help to use the MFP to its fullest potential. See the Getting Started Guide for installation instructions.

NOTE For the latest information about the printing system software components, refer to the readme file on the Web at http://www.hp.com/support/clj4730mfp. For information about installing the printer software, view the Install Notes on the CD-ROM included with the MFP.

This section summarizes the software included on the CD-ROM. The printing system includes software for end users and network administrators operating in the following operating environments:

- Microsoft Windows 98 and Windows Me
- Microsoft Windows 2000, XP (32-bit), and Server 2003 (32-bit)
- Apple Mac OS 9.1 and later and Mac OS 10.2 and later

NOTE For a list of the network environments supported by the network administrator software components, see Network configuration on page 87.

NOTE For a list of printer drivers, updated HP printer software, and product support information, go to http://www.hp.com/support/clj4730mfp.

Software

Software features

Automatic Configuration, Update Now, and Preconfiguration features are available with the HP Color LaserJet 4730mfp series MFP.

Driver Autoconfiguration

The HP LaserJet PCL 6 and PCL 5c drivers for Windows and the PS drivers for Windows 2000 and Windows XP feature automatic discovery and driver configuration for MFP accessories at the time of installation. Some accessories that Driver Autoconfiguration supports are the duplexing unit, optional paper trays, and dual inline memory modules (DIMMs). If the environment supports bidirectional communication, the installer presents Driver Autoconfiguration as an installable component by default for a Typical Installation and for a Custom Installation.

Update Now

If the configuration of the HP Color LaserJet 4730mfp MFP has been modified since installation, the driver can be automatically updated with the new configuration in environments that support bidirectional communication. Click the **Update Now** button to automatically reflect the new configuration in the driver.

NOTE The Update Now feature is not supported in environments where shared Windows 2000 or Windows XP clients are connected to Windows 2000 or Windows XP hosts.

HP Driver Preconfiguration

HP Driver Preconfiguration is a software architecture and set of tools that allows HP software to be customized and distributed in managed corporate printing environments. Using HP Driver Preconfiguration, information technology (IT) administrators can preconfigure the printing and device defaults for HP printer drivers before installing the drivers in the network environment. For more information, see the *HP Driver Preconfiguration Support Guide*, which is available at http://www.hp.com/support/clj4730mfp.

Installing the printing system software

The following sections contain instructions for installing the printing system software.

The MFP comes with printing system software and printer drivers on a CD-ROM. The printing system software on the CD-ROM must be installed to take full advantage of the MFP features.

If a CD-ROM drive is not available, download the printing system software from the Internet at http://www.hp.com/support/clj4730mfp.

NOTE Obtain Model Scripts for UNIX® and Linux by downloading them from the Internet or by requesting them from an HP-authorized service or support provider. For Linux support see http://www.hp.com/go/linux. For UNIX support see http://www.hp.com/go/jetdirectunix_software.

Download the latest software free of charge at http://www.hp.com/support/clj4730mfp.

Installing Windows printing system software for direct connections

This section explains how to install the printing system software for Microsoft Windows 98, Windows Me, Windows 2000, and Windows XP.

When installing the printing software in a direct-connect environment, always install the software before connecting the parallel or USB cable. If the parallel or USB cable was connected before the software installation, see Installing the software after the parallel or USB cable has been connected on page 75.

Either a parallel or USB cable can be used for the direct connection. However, parallel and USB cables cannot be connected at the same time. Use an IEEE 1284-compatible cable or a standard 2-meter USB cable.

Installing the printing system software

1. Close all software programs that are open or running.
2. Insert the MFP CD-ROM into the CD-ROM drive.

   If the welcome screen does not open, start it by using the following procedure:

   - On the **Start** menu, click **Run**.
   - Type the following: X:\setup (where X is the letter of the CD-ROM drive).
   - Click **OK**.
3. When prompted, click **Install Printer** and follow the instructions on the computer screen.
4. Click **Finish** when the installation has completed.

5. The computer may need to be restarted.
6. 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-ROM or the flyer that came with the product, or go to http://www.hp.com/support/clj4730mfp for help or more information.

Installing Windows printing system software for networks

The software on the MFP CD-ROM supports network installation with a Microsoft network. For network installation on other operating systems, go to http://www.hp.com/support/clj4730mfp.

The HP Jetdirect embedded print server in the HP Color LaserJet 4730mfp includes a 10/100 Base-TX network port. For other available HP Jetdirect print servers, see Parts and supplies on page 43 or go to http://www.hp.com/support/clj4730mfp.

The installer does not support MFP installation or MFP object creation on Novell servers. It supports only direct-mode network installations between Windows computers and an MFP. To install the MFP and create objects on a Novell server, use an HP utility (such as HP Web Jetadmin) or a Novell utility (such as NWAdmin).

Installing the printing system software

1. If installing the software on Windows 2000 or Windows XP, administrative privileges are required.
2. Make sure that the HP Jetdirect print server and MFP are properly connected to the network. Print a configuration page (see Testing the MFP operation on page 67). On the second page of the configuration page, locate the IP address that is currently configured. This address may be needed to initially identify the MFP on the network and complete the installation.
3. Close all software programs that are open or running.
4. Insert the MFP CD-ROM into the CD-ROM drive.

   If the welcome screen does not open, start it by using the following procedure:

   - On the **Start** menu, click **Run**.
   - Type the following: X:\setup (where X is the letter of the CD-ROM drive).
   - Click **OK**.
5. When prompted, click **Install Printer** and follow the instructions on the computer screen.
6. Click **Finish** when installation has completed.
7. The computer may need to be restarted.
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-ROM or the flyer that came with the product, or go to http://www.hp.com/support/clj4730mfp for help or more information.

Setting up a Windows computer to use the network MFP with Windows-sharing

If the computer will print directly to the MFP, share the MFP on the network so that other network users can print to it.

See the Windows documentation that came with the operating system to enable Windows-sharing. After the MFP is shared, install the printer software on all computers that share the MFP.

Installing 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.

Installing the software for Windows 98 or Windows Me

1. In the **New Hardware Found** dialog box, click **Search CD-ROM drive**.
2. Click **Next**.
3. Follow the instructions on the computer screen.
4. 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-ROM or the flyer that came with the product, or go to http://www.hp.com/support/clj4730mfp for help or more information.

Installing the software for Windows 2000 or Windows XP

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 has completed.
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-ROM or the flyer that came with the product, or go to http://www.hp.com/support/clj4730mfp for help or more information.

Uninstalling the software

This section explains how to uninstall the printing system software.

Removing software from Windows operating systems

Use the Uninstaller in the HP Color LaserJet 4730mfp/Tools program group to select and remove any or all of the Windows HP printing system components.

1. Click **Start** and then click **Programs**.
2. Point to **HP Color LaserJet 4730mfp** and then click **Tools**.
3. Click **Uninstaller**.
4. Click **Yes**.
5. Follow the instructions on the computer screen to complete the uninstallation.

Software for networks

For a summary of available HP network installation and configuration software solutions, see the *HP Jetdirect Print Server Administrator's Guide*. You can find this guide on the CD-ROM included with the MFP.

HP Web Jetadmin

HP Web Jetadmin allows users to manage HP Jetdirect-connected printers within their intranet using a Web browser. HP Web Jetadmin is a browser-based management tool, and should be installed only on a single network administration server. It can be installed and run on these systems:

- Fedora Core and SuSe Linux
- Windows 2000 Professional, Server, and Advanced Server
- Windows XP Professional Service Pack 1
- Windows Server 2003

When installed on a host server, HP Web Jetadmin can be accessed by any client 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:

- Task-oriented user interface provides configurable views, saving network managers significant time.
- 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 can be routed to different people.
- Remote installation and management from anywhere using only a standard Web browser.
- Advanced autodiscovery locates peripherals on the network, without manually entering each printer into a database.
- Simple integration into enterprise management packages.
- Ability to quickly find peripherals based on parameters such as IP address, color capability, and model name.

- Ability to easily organize peripherals into logical groups, with virtual office maps for easy navigation.
- Ability to manage and configure multiple printers at once.

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/go/jetdirectunix_software.

Utilities

The HP Color LaserJet 4730mfp is equipped with several utilities, which make it easy to monitor and manage the MFP on a network.

HP Easy Printer Care Software

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

- Viewing color usage information
- Checking the printer status
- Checking the supplies status
- Setting up alerts
- Viewing printer documentation
- Gaining access to troubleshooting and maintenance tools

You can view the HP Easy Printer Care Software when the printer is directly connected to your computer or when it is connected to a network. Perform a complete software installation in order to use the HP Easy Printer Care Software.

For more information on HP Easy Printer Care Software, see Using the HP Easy Printer Care Software on page 636 or visit http://www.hp.com/go/easyprintercare.

Embedded Web server

This MFP is equipped with an embedded Web server, which allows access to information about the MFP and network activities. A Web server provides an environment in which web programs may run, much in the same way that an operating system, such as Windows, provides an environment for programs to run on your computer. The output from these programs can then be displayed by a Web browser, such as Microsoft Internet Explorer or Netscape Navigator.

When a Web server is "embedded", that means it resides on a hardware device (such as a printer) or in firmware, rather than as software that is loaded on a network server.

The advantage of an embedded Web server is that it provides an interface to the MFP that anyone can access with a network-connected computer or a standard Web browser. There is no special software to install or configure. For more information about the HP embedded Web server, see the *Embedded Web Server User Guide*. This guide is on the CD-ROM included with the MFP.

Features

The HP embedded Web server allows users to view MFP and network card status and manage printing functions from their computer. With the HP embedded Web server, users can do the following:

- View MFP status information.
- Determine the remaining life on all supplies and order new ones.
- View and change tray configurations.
- View and change the MFP product control panel menu configuration.
- View and print internal pages.
- Receive notification of MFP and supplies events.
- Add or customize links to other Web sites.
- Select the language in which to display the embedded Web server pages.
- View and change network configuration.
- Restrict access to color printing.

For a complete explanation of the features and functionality of the embedded Web server, see Embedded Web server on page 77.

Other components and utilities

Several software applications are available for Windows and Mac OS users, as well as for network administrators.

Windows	Mac OS	Network administrator
• Software installer — automates the printing system installation • Online Web registration	• PostScript Printer Description files (PPDs) — for use with the Apple PostScript drivers that come with the Mac OS • HP LaserJet Utility (available from the Internet) — a printer management utility for Mac OS users	• HP Web Jetadmin— a browser-based system management tool. See http://www.hp.com/go/webjetadmin for the latest HP Web Jetadmin software • HP Jetdirect Printer Installer for UNIX — available for download from http://www.hp.com/support/net_printing

Printer drivers

The product comes with software that allows the computer to communicate with the product (by using a printer language). This software is called a printer driver. Printer drivers provide access to product features, such as printing on custom-sized paper, resizing documents, and inserting watermarks.

Supported printer drivers

The following printer drivers are provided for the product. If the desired printer driver is not on the product CD-ROM or is not available on http://www.hp.com, contact the manufacturer or distributor of the program that is being used, and request a driver for the product.

NOTE The most recent drivers are available at http://www.hp.com. Depending on the configuration of Windows-based computers, the installation program for the product software automatically checks the computer for Internet access in order to obtain the latest drivers.

Table 3-2 Supported printer drivers

Operating system[1]	PCL 6 printer driver	PCL 5 printer driver	PS printer driver	PPD [2]printer driver
Microsoft Windows 98	X	X	X	
Windows Millennium (Me)	X	X	X	
Windows 2000	X	X	X	
Windows XP	X	X	X	
Windows Server 2003	X	X	X	
Mac OS 9.1 or later			X	X
Mac OS 10.2 or later			X	X

1 Not all product features are available from all drivers or operating systems. See the context-sensitive help in the printer driver for available features.

2 PostScript (PS) Printer Description files (PPDs)

Additional drivers

The following drivers are not included on the CD-ROM, but are available from the Internet.

- OS/2 PCL printer driver.
- OS/2 PS printer driver.
- UNIX model scripts.
- Linux drivers.
- HP OpenVMS drivers.

NOTE The OS/2 printer drivers are available from IBM.

Obtain Model Scripts for UNIX® and Linux by downloading them from the Internet or by requesting them from an HP-authorized service or support provider. For Linux support see http://www.hp.com/go/linux. For UNIX support see http://www.hp.com/go/jetdirectunix_software.

Selecting the correct printer driver

Select a printer driver based on the operating system that is being used and the way that the product is to be used. See the printer driver Help for the features that are available.

- The PCL 6 printer driver can provide the best overall performance and access to MFP features.
- The PCL 5 printer driver is recommended for general office monochrome and color printing.
- Use the PostScript (PS) driver if printing primarily from PostScript-based programs such as Adobe PhotoShop® and CorelDRAW®, for compatibility with PostScript Level 3 needs, or for PS flash font support.

NOTE The product automatically switches between PS and PCL printer languages.

Printer driver Help (Windows)

Printer driver Help is separate from program Help. The printer driver Help provides explanations for the buttons, check boxes, and drop-down lists that are in the printer driver. It also includes instructions for performing common printing tasks, such as printing on both sides, printing multiple pages on one sheet, and printing the first page or covers on different paper.

Activate the printer driver Help screens in one of the following ways:

- Click the **Help** button.
- Press the F1 key on the computer keyboard.
- Click the question-mark symbol in the upper-right corner of the printer driver.
- Right-click on any item in the driver, and then click **What's This?**.

Gaining access to Windows printer drivers

Use one of the following methods to open the printer drivers from the computer:

Table 3-3 Gaining access to Windows printer drivers

Operating System	To change the settings for all print jobs until the software program is closed	To change the print job default settings (for example, turn on Print on Both Sides by default)	To change the configuration settings (for example, add a tray or enable/disable Manual Duplexing)
Windows 98 and Windows Millennium (Me)	1. On the **File** menu in the software program, click **Print**. 2. Select the HP Color LaserJet 4730mfp, and then click **Properties**. The steps can vary; this procedure is most common.	1. Click **Start**, click **Settings**, and then click **Printers**. 2. Right-click the HP Color LaserJet 4730mfp icon, and then select **Properties** (Windows 98 and Me).	1. Click **Start**, click **Settings**, and then click **Printers**. 2. Right-click the HP Color LaserJet 4730mfp icon, and then select **Properties**. 3. Click the **Configure** tab.
Windows 2000, XP, and Server 2003	1. On the **File** menu in the software program, click **Print**. 2. Select the HP Color LaserJet 4730mfp, and then click **Properties** or **Preferences**. The steps can vary; this procedure is most common.	1. Click **Start**, click **Settings**, and then click **Printers** or **Printers and Faxes**. 2. Right-click the HP Color LaserJet 4730mfp icon, and then select **Printing Preferences**.	1. Click **Start**, click **Settings**, and then click **Printers** or **Printers and Faxes**. 2. Right-click the HP Color LaserJet 4730mfp icon, and then select **Properties**. 3. Click the **Device Settings** tab.

Printer drivers for Macintosh computers

The MFP comes with printer driver software that uses a printer language to communicate with the MFP. Printer drivers provide access to MFP features, such as printing on custom-sized paper, resizing documents, and inserting watermarks.

Supported Macintosh printer drivers

A Macintosh printer driver and the necessary PPD files are included with the MFP. If the desired printer driver is not on the MFP CD, check the installation notes and the late-breaking readme files to see if the printer driver is supported. If it is not supported, contact the manufacturer or distributor of the software program being used, and request a driver for the MFP.

NOTE The most recent drivers are available at http://www.hp.com.

Gaining access to Macintosh printer drivers

Use one of the following methods to open the printer drivers from the computer.

Table 3-4 Gaining access to Macintosh printer drivers

Operating System	To change the settings for all print jobs until the software program is closed	To change the print job default settings (for example, turn on Print on Both Sides by default)	To change the configuration settings (for example, add a physical option such as a tray, or turn on or off a driver feature such as Allow Manual Duplexing)
Mac OS v9.1 or later	1. On the **File** menu, click **Print**. 2. Change settings on the various pop-up menus.	1. On the **File** menu, click **Print**. 2. As settings are changed on the pop-up menu, click **Save Settings**.	1. Click the desktop printer icon. 2. From the **Printing** menu, click **Change Setup**.

Table 3-4 Gaining access to Macintosh printer drivers (continued)

Operating System	To change the settings for all print jobs until the software program is closed	To change the print job default settings (for example, turn on Print on Both Sides by default)	To change the configuration settings (for example, add a physical option such as a tray, or turn on or off a driver feature such as Allow Manual Duplexing)
Mac OS X v10.2	1. On the **File** menu, click **Print**. 2. Change settings on the various pop-up menus.	1. On the **File** menu, click **Print**. 2. Change the settings on the various pop-up menus, and then, 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, select the saved preset option every time a program is opened and a job is printed.	1. In the Finder, on the **Go** menu, click **Applications**. 2. Open **Utilities**, and then open **Print Center**. 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.
Mac OS X v10.3	1. On the **File** menu, click **Print**. 2. Change settings on the various pop-up menus.	1. On the **File** menu, click **Print**. 2. Change settings on the various pop-up menus, and then, 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, select the saved preset option every time you open a program and print.	1. Open **Printer Setup Utility** by selecting the hard drive, clicking **Applications**, clicking **Utilities**, and then double-clicking **Printer Setup Utility**. 2. Click on the print queue. 3. On the **Printers** menu, click **Show Info**. 4. Click the **Installable Options** menu.

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.

If both the MFP and the Macintosh computer are connected to a network, use the MFP embedded Web server (EWS) to configure the MFP. For more information, see Embedded Web server on page 77.

Installing Macintosh printing system software for networks

This section describes how to install Macintosh printing system software. The printing system software supports Mac OS v9.1 and later and Mac OS X v10.2 and later.

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 MFP features. An installation program for the PPDs and other software is provided on the compact disc (CD) that came with the MFP. Use the Apple PostScript printer driver that comes with the computer.

- **HP Printer Utility**

  The HP Printer Utility provides access to features that are not available in the printer driver. Use the illustrated screens to select MFP features and complete the following tasks with the MFP:

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

  Use the HP Printer Utility when the MFP uses a universal serial bus (USB) or is connected to a TCP/IP-based network.

NOTE The HP Printer Utility is supported for Mac OS X v10.2 or later.

For more information about using the HP Printer Utility, see Software for Macintosh computers on page 84.

To install printer drivers for Mac OS v9.1 and later

1. Connect the network cable between the HP Jetdirect print server and a network port.
2. Insert the CD into the CD-ROM drive. The CD menu runs automatically. If the CD menu 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 **Desktop Printer Utility**.
6. Double-click **Printer (AppleTalk)**.
7. Next to **AppleTalk Printer Selection**, click **Change**.
8. Select the MFP, click **Auto Setup**, and then click **Create**.

NOTE The icon on the desktop looks generic. All of the print panels appear in the print dialog box with each software program.

To install printer drivers for Mac OS X v10.2 and later

1. Connect the network cable between the HP Jetdirect print server and a network port.
2. Insert the CD into the CD-ROM drive.

   The CD menu runs automatically. If the CD menu 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, then the **Printer Setup Utility** has replaced the **Print Center**.
6. Click **Add Printer**.
7. Select **Rendezvous** as the connection type.
8. Select the MFP from the list.
9. Click **Add Printer**.
10. Close the Print Center or the Printer Setup Utility by clicking the close button in the upper-left corner.

Installing Macintosh printing system software for direct connections (USB)

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

This section explains how to install the printing system software for Mac OS v9.1 and later and Mac OS X v10.2 and later.

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.

To install the printing system software

1. Connect a USB cable between the USB port on the MFP and the USB port on the computer. Use a standard 2-meter (6.56-foot) USB cable.
2. Insert the MFP CD into the CD-ROM drive and run the installer.

   The CD menu runs automatically. If the CD menu 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. For Mac OS v9.1 and later:

   a. On the computer hard drive, open **Applications**, open **Utilities**, and then open **Print Center**.

   b. Double-click **Printer (USB)**, and then click **OK**.

   c. Next to **USB Printer Selection**, click **Change**.

   d. Select the MFP, and then click **OK**.

   e. Next to **Postscript Printer Description (PPD) File**, click **Auto Setup**, and then click **Create**.

   f. On the **Printing** menu, click **Set Default Printer**.

   For Mac OS X v10.2 and later: USB queues are created automatically when the MFP 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. To change the queue PPD, open the Print Center or Printer Setup Utility, select the correct printer queue, and then click **Show Info** to open the **Printer Info** dialog box. 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 MFP.
6. 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, see the installation notes or late-breaking readme files on the MFP CD or the flyer that came with the product, or go to http://www.hp.com/support/clj4730mfp for help or more information.

NOTE The icon on the Mac OS v9.*x* desktop looks generic. All of the print panels appear in the Print dialog box with each software program.

To remove software from Macintosh operating systems

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

Network configuration

Configure certain network parameters on the MFP as needed. Configure these parameters from installation software, the MFP product control panel, the embedded Web server, or management software, such as HP Web Jetadmin or the HP LaserJet Utility for Macintosh.

NOTE For more information about using the embedded Web server, see Embedded Web server on page 77.

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

This section contains the following instructions for configuring network parameters from the MFP product control panel:

- Configuring TCP/IP parameters.
- Disabling unused network protocols.

Configuring TCP/IP parameters

Use the MFP product control panel to configure these TCP/IP parameters:

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

To manually configure TCP/IP parameters from the MFP control panel

Use manual configuration to set an IP address, subnet mask, and default gateway.

Setting an IP address

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch I/O.
4. Scroll to and touch JETDIRECT MENU.
5. Scroll to and touch TCP/IP.
6. Scroll to and touch CONFIG METHOD.
7. Scroll to and touch MANUAL or MANUAL SETTINGS.
8. Scroll to and touch IP Address: X.
9. Use the right and left arrows to select each byte of the IP address, and then use the numeric keypad to enter the value of each byte.
10. Touch OK.

Setting the subnet mask

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch I/O.
4. Scroll to and touch JETDIRECT MENU.
5. Scroll to and touch TCP/IP.
6. Scroll to and touch CONFIG METHOD.
7. Scroll to and touch MANUAL.

   ☐ Scroll to and touch MANUAL SETTINGS.
8. Scroll to and touch SUBNET MASK

   NOTE The first three sets of numbers are highlighted.
9. Use the right and left arrows to select each byte of the subnet mask, and then use the numeric keypad to enter the value of each byte.
10. Touch OK.

Setting the default gateway

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch I/O.
4. Scroll to and touch JETDIRECT MENU.
5. Scroll to and touch TCP/IP.
6. Scroll to and touch CONFIG METHOD.
7. Scroll to and touch MANUAL or MANUAL SETTINGS.
8. Scroll to and touch DEFAULT GATEWAY.

   NOTE The first set of 3 numbers shows the default settings. If there is not a number highlighted, a highlighted empty underscore appears.
9. Use the right and left arrows to select each byte of the default gateway, and then use the numeric keypad to enter the value of each byte.
10. Touch OK.

Disabling network protocols (optional)

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

- Decreases MFP-generated network traffic.
- Prevents unauthorized users from printing to the MFP.
- Provides only pertinent information on the configuration page.
- Allows the MFP control panel to display protocol-specific error and warning messages.

NOTE TCP/IP configuration cannot be disabled on the HP Color LaserJet 4730mfp.

Disabling IPX/SPX

NOTE Do not disable this protocol if Windows 95/98, Windows NT, Me, 2000, and XP users will be printing to the MFP using direct-mode IPX/SPX.

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch I/O.
4. Scroll to and touch JETDIRECT.
5. Scroll to and touch IPX/SPX.
6. Scroll to and touch ENABLE.
7. Scroll to and touch **ON** or **OFF**.
8. Touch OK.

Disabling DLC/LLC

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch I/O.
4. Scroll to and touch JETDIRECT.
5. Scroll to and touch DLC/LLC.
6. Scroll to and touch ENABLE.
7. Scroll to and touch **ON** or **OFF**.
8. Press OK.

Disabling AppleTalk

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch I/O.
4. Scroll to and touch JETDIRECT.
5. Scroll to and touch APPLETALK.
6. Scroll to and touch ENABLE.
7. Scroll to and touch **ON** or **OFF**.
8. Press OK.

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.

Securing the embedded Web server

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

To secure the embedded Web server

1. Open the embedded Web server by entering 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 9*X*, Windows Me, Windows 2000, or Windows XP
- 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/clj4730mfp. 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.

To 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 can be found on the configuration page. Print a configuration page from the product control panel by touching Menu, touching Information, and then touching PRINT CONFIGURATION.

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

To 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 93.

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.

See Parts and supplies on page 43 for ordering information.

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 Using HP Web Jetadmin software on page 639.)

To lock the control panel menus

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**.

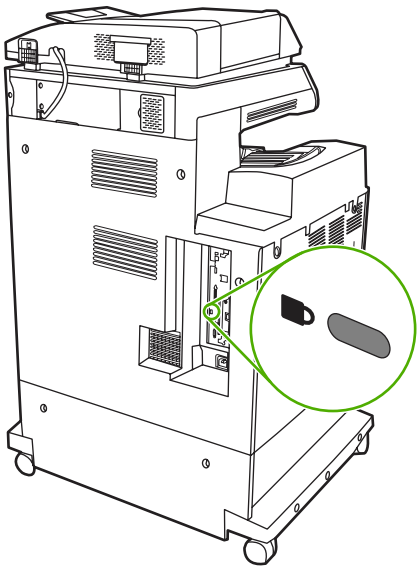
5. Select **Security** from the **Configuration Categories** list.
6. Type a **Device Password**.
7. In the **Control Panel Access** section, select **Maximum Lock**. This prevents unauthorized users from gaining access to configuration settings.

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 4730mfp, please contact HP at http://www.hp.com/support/clj4730mfp.

NOTE A Kensington lock is typically used for locking laptop computers in order to prevent theft.

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**.

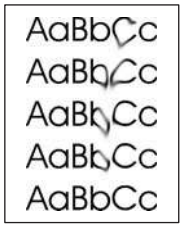
4 Maintenance

This chapter contains information about the following topics:

- Using the cleaning page
- Cleaning the MFP
- Calibrating the scanner
- Performing preventive maintenance
- Managing print cartridges
- Approximate replacement intervals for supplies
- ETB life under different circumstances
- Changing print cartridges
- Replacing supplies
- MFP memory and fonts
- Installing memory and fonts
- Setting the real-time clock
- Configuring and verifying an IP address
- Upgrading the firmware

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.



Processing a cleaning page

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch PRINT QUALITY.
4. Scroll to and touch PROCESS CLEANING PAGE.

NOTE The MFP prints a cleaning page with a pattern and provides further instructions.

Cleaning the MFP

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

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.

Cleaning 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 with water and a mild detergent.

Cleaning 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.

Cleaning the scanner glass

- Clean the scanner glass only if dirt is visible, or if 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. Spray or pour the cleaner onto the cleaning cloth. Do not spray or pour the cleaner onto the scanner glass.

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

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).

To clean the ADF delivery system

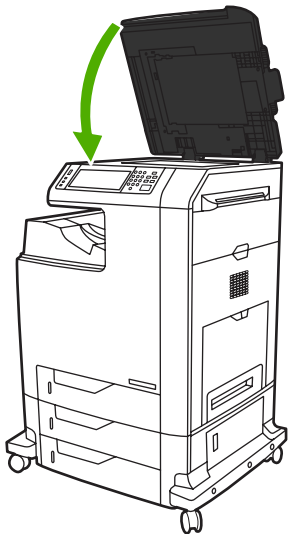
1. Open the scanner lid.

2. Locate the white vinyl ADF backing.

3. Clean the ADF backing 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.



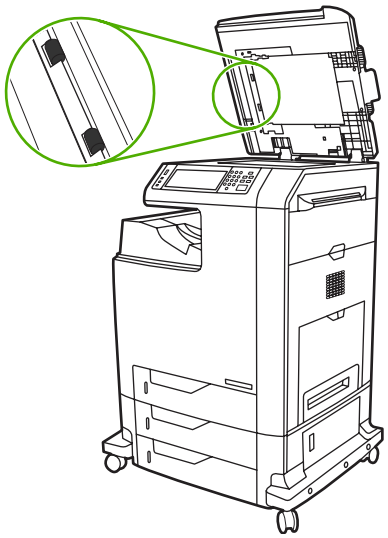
To clean the ADF rollers

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 experiencing misfeeds or marks on the originals, and dust is on the rollers. Cleaning the rollers frequently could introduce dust into the device.

1. Open the scanner lid.

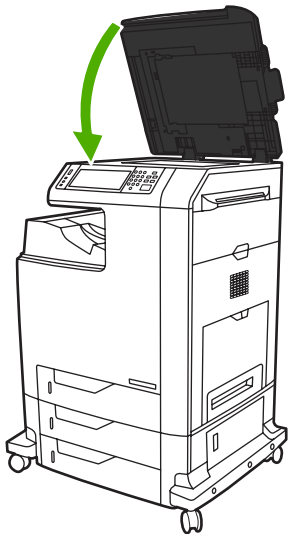
2. Locate the rollers adjacent to the white vinyl ADF backing.



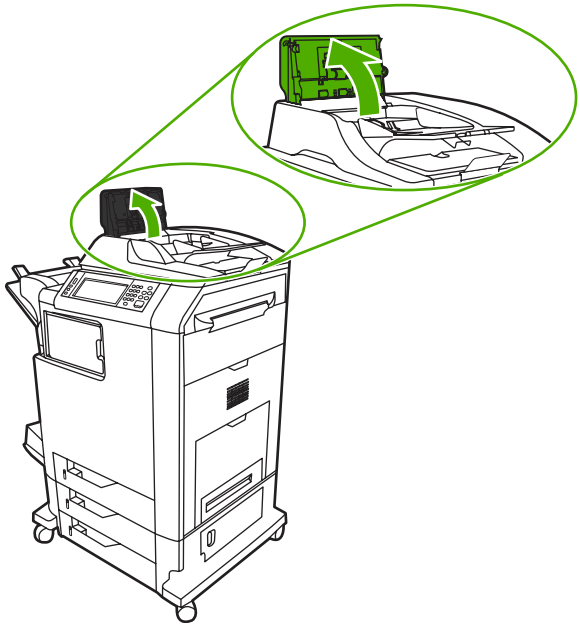
3. Wipe the rollers gently with a clean, water-dampened, lint-free cloth.

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

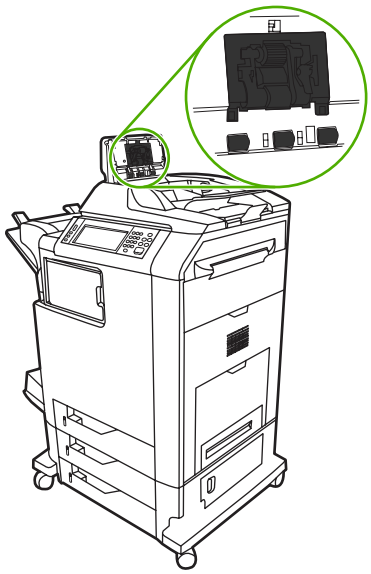
4. Close the scanner lid.



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



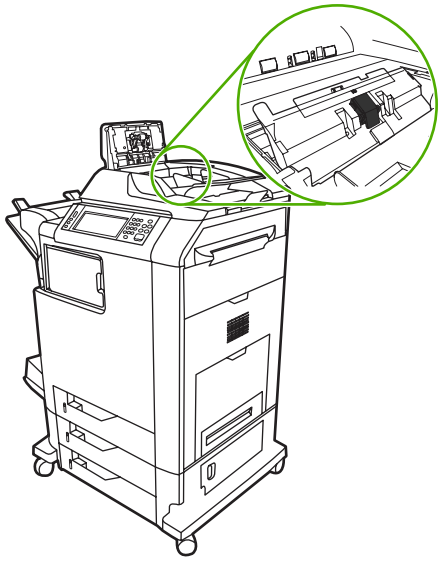
6. Locate the rollers.



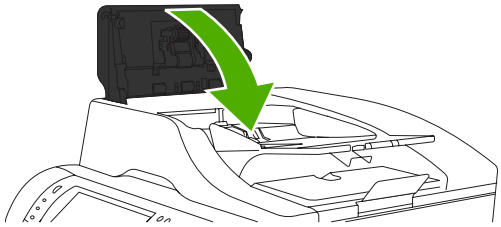
7. Wipe the rollers with a clean, water-dampened, lint-free cloth.

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.



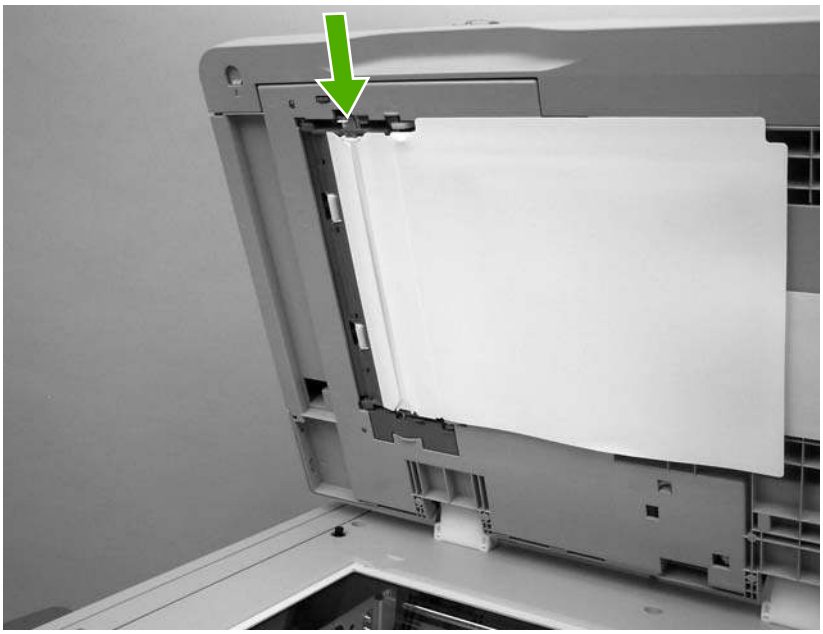
Cleaning the mylar strip

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) during copying using the ADF.

To clean the mylar strip

1. Open the scanner lid.

2. Locate the mylar strip.



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

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

Calibrating the scanner

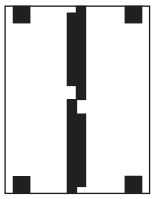
Calibrate the scanner to compensate for offsets in the scanner imaging system (carriage head) for ADF and flatbed scans. Because of mechanical tolerances, the scanner's carriage head might not read the position of the image accurately. During the calibration procedure, scanner offset values are calculated 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 experiencing 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.

To print the calibration target

1. Place letter or A4-size paper in tray 1, and adjust the side guides.
2. Press Menu to enter the **MENUS**.
3. Scroll to and touch DIAGNOSTICS.
4. Scroll to and touch CALIBRATE SCANNER.
5. Touch OK 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 OK 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.* Press Stop to cancel the calibration.

8. Place the calibration target face-up into the ADF, and adjust the side guides. Touch OK to continue.
9. After the calibration target has passed through the ADF once, place it in the ADF face down. Touch OK to continue.
10. Place the calibration target face-down on the scanner glass and touch OK. After this pass, the calibration is complete.

The product control panel displays the message **Scanner calibration successful** to indicate success or the message **Scanner calibration failed** to indicate that the calibration failed.

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.

To reset the ADF maintenance kit count

1. Turn the MFP off and then on.
2. When XXXMB appears on the product 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 3 twice.
4. Press 6 to select NEW DOCUMENT FEEDER KIT.
5. The MFP completes its initialization sequence. The ADF maintenance kit counter is automatically reset.

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

Changing print cartridges

When a print cartridge approaches the end of its useful life, the product control panel displays a message recommending that a replacement be ordered. The MFP can continue to print using the current print cartridge until the product control panel displays a message instructing the user 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 product control panel displays a **REPLACE <COLOR> CARTRIDGE** message. The product control panel display will also indicate the color that should be replaced (if a genuine HP cartridge is currently installed).

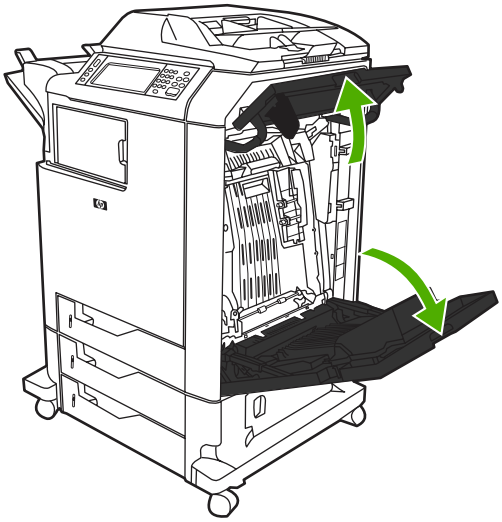
Replacing a print cartridge

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.

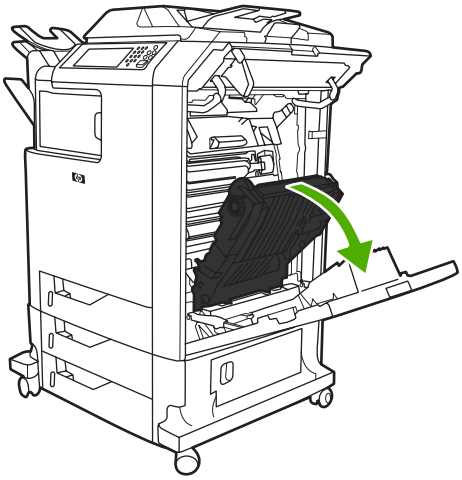
NOTE For information about recycling used print cartridges, visit the HP LaserJet Supplies Web site at http://www.hp.com/go/recycle.

To replace the print cartridge

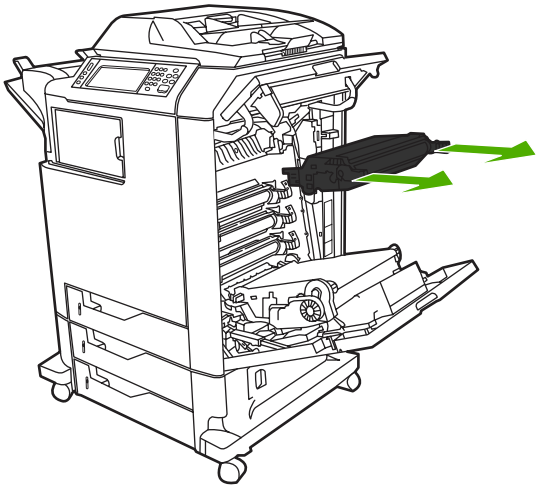
1. Using the handles, open the covers on the right side of the MFP.



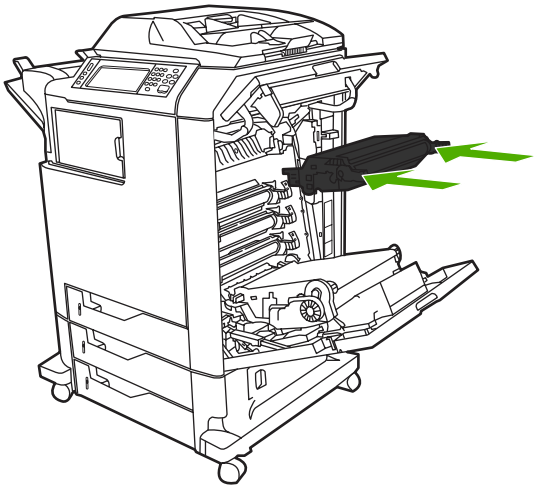
2. Grasp the green handle on the transfer unit and pull down to open it.



3. Remove the used print cartridge from the MFP.

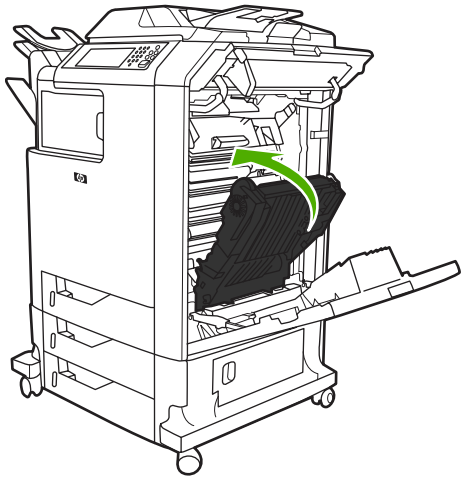


4. Remove the new print cartridge from the bag. Place the used print cartridge in the bag for recycling.

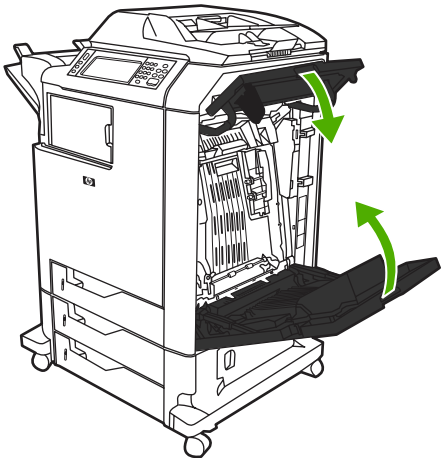


5. Align the print cartridge with the tracks inside the MPF and insert the print cartridge until it is completely seated.

6. Close the transfer unit.



7. Close the covers on the right side of the MFP. After a short while, the product control panel should display **Ready**.



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. Press Menu to enter the **MENUS**.
2. Scroll to and touch Information.
3. Scroll to and touch SUPPLIES STATUS.

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.

Printing a supplies status page

Use the supplies status page to obtain information about the print cartridge that is installed in the MFP, the amount of toner that remains in the print cartridge, and the number of pages and jobs that have been processed. The page also lets users know when they should schedule the next preventive maintenance for each maintenance kit.

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Information.

3. Scroll to and touch PRINT SUPPLIES STATUS PAGE.
4. Touch OK.

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 can cause results to vary.

Item	Control panel message	Page count	Approximate time period[2]
Black cartridges	**REPLACE BLACK CARTRIDGE**	12,000 pages[1]	3 months
Color cartridges	**REPLACE <COLOR> CARTRIDGE**	12,000 pages[1]	3 months
Transfer kit	**REPLACE TRANSFER KIT**	120,000 pages [3]	40 months
Fuser kit	**REPLACE FUSER KIT**	150,000 pages[3]	50 months

[1] Approximate average A4-/letter-size page count based on 5% coverage of individual colors.
[2] Approximate transfer unit life is based on 4,000 pages per month.
[3] Approximate fuser unit life is based on 4,000 pages per month.

Use the embedded Web server to order supplies. For more information, see Using the embedded Web server on page 112.

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 4730mfp 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.

Figure 4-1 ETB total page count according to average job length on page 115 shows how many pages an ETB can print, given various average job lengths.

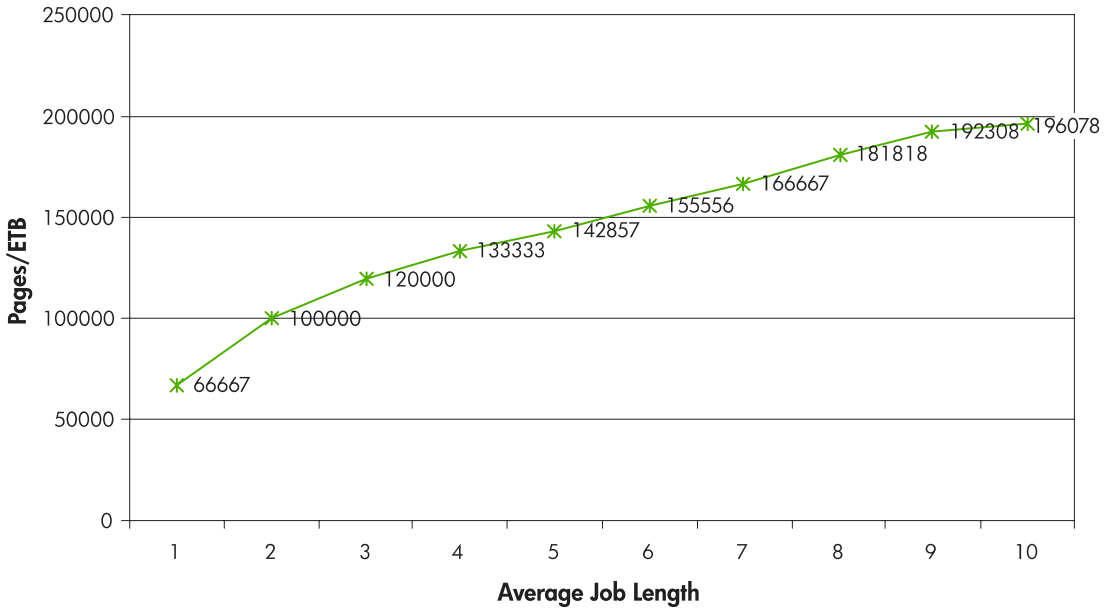


Figure 4-1 ETB total page count according to average job length

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.

Changing print cartridges

When a print cartridge approaches the end of its useful life, the product control panel displays a message recommending that a replacement be ordered. The MFP can continue to print using the current print cartridge until the product control panel displays a message instructing users 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 product control panel display will also indicate the color that should be replaced (if a genuine HP cartridge is currently installed).

Replacing print cartridges

For instructions on replacing print cartridges, see Replacing a print cartridge on page 108.

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, visit the HP LaserJet Supplies Web site at http://www.hp.com/go/recycle.

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.

Locating supplies

Supplies are identified by their labeling and their blue plastic handles.

The following figure illustrates the location of each supply item.

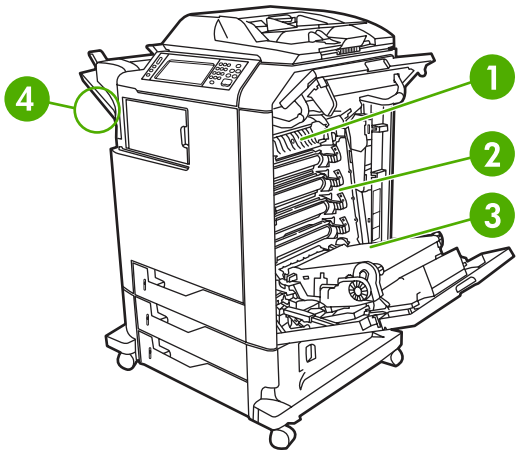


Figure 4-2 Supply item locations

1	Fuser
2	Print cartridges
3	ETB (image transfer unit)
4	Stapler cartridge

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/clj4730mfp. When you connect, select **Solve a Problem**.

CAUTION HP 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 HP 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.

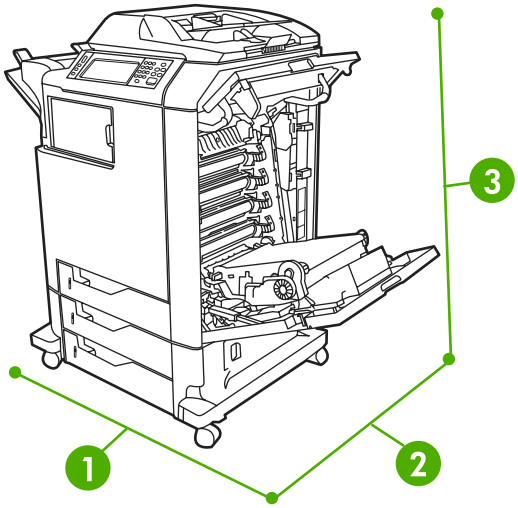


Figure 4-3 Supplies replacement clearance diagram

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.
7. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 112 for more information.

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.
7. Supplies ordering information is also available from the embedded Web server. See Parts and supplies on page 43 for more information.

Replacing the stapler cartridge

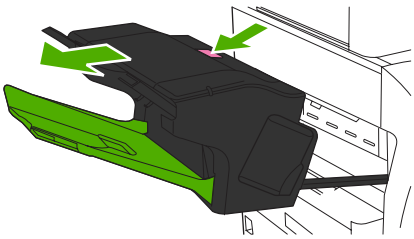
The stapler cartridge contains 5,000 staples.

Replace the stapler cartridge if the MFP control panel display prompts users with a **STAPLER LOW ON STAPLES** message (at this point, the stapler cartridge has 20 to 50 staples left) 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 is displayed. Although some usable staples remain in the cartridge, they could fall into the stapler mechanism and cause product failure.

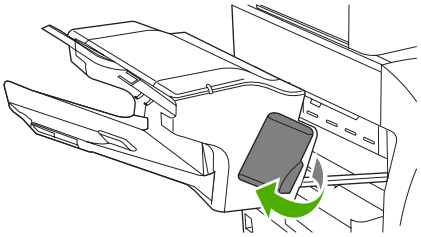
Loading a new stapler cartridge

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

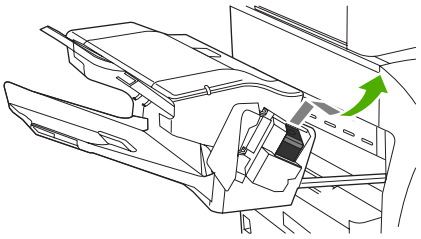


NOTE For information on ordering a new stapler cartridge (part number C8091A), see Parts and supplies on page 43.

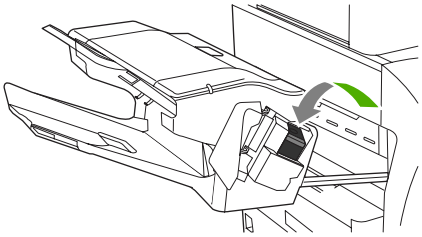
2. Open the staple cartridge cover.



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

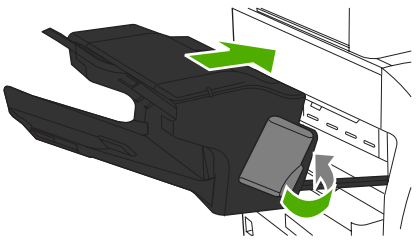


4. Insert the new staple cartridge into the stapler unit and push down on the green handle until the unit snaps into place.



NOTE To obtain a new stapler cartridge, order part number C8091A.

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



MFP memory and fonts

The MFP has 256 MB of synchronous dynamic random-access memory (RAM) expandable to 512 MB by using industry-standard 100-pin double data rate dual inline memory modules (DDR DIMMS).

NOTE Memory specification: HP Color LaserJet 4730mfp uses 100-pin small outline dual inline memory modules (SODIMM) that support 128 or 256 MB of RAM.

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.

  NOTE Use the first flash memory card slot for firmware only. The slot is marked "Firmware Slot".

- The two additional flash memory card slots enable the user to add fonts and third-party solutions, such as signatures and personalities. The slots are marked "Slot 2" and "Slot 3". For more information about types of solutions available, go to http://www.hp.com/go/gsc.

NOTE Flash memory cards adhere to Compact Flash specifications and size.

CAUTION Do not insert a flash memory card that is designed for use with a digital camera into the MFP. The MFP does not support photo printing directly from a flash memory card. If a camera-type flash memory card is installed, the product control panel displays a message asking if the flash memory card should be reformatted. If the card is reformatted, all data on the card will be lost.

Add more memory to the MFP to support printing of complex graphics or PostScript documents, or use of many downloaded fonts. Additional memory also allows the MFP to print multiple collated copies at maximum speed.

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

NOTE To order SODIMMs, see Parts and supplies on page 43.

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

Printing a configuration page

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Information.
3. Scroll to and touch PRINT CONFIGURATION.
4. Touch OK to print the configuration page.

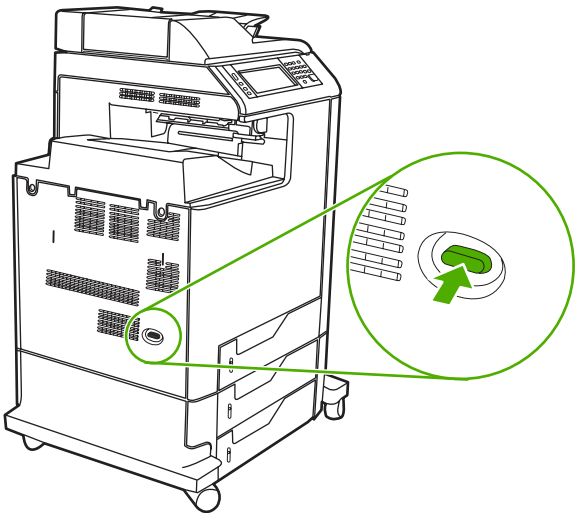
Installing memory and fonts

Additional memory can be installed in the MFP. A font card that will allow the MFP to print characters for languages such as Chinese or the Cyrillic alphabet can also be installed.

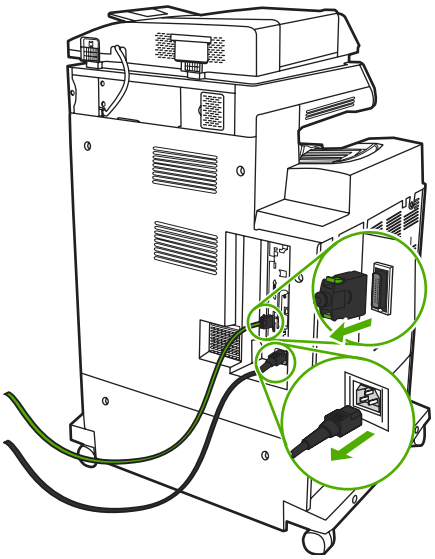
CAUTION Static electricity can damage DIMMs. When handling DIMMs, either wear an antistatic wrist strap, or frequently touch the surface of the DIMM antistatic package and then touch bare metal on the MFP.

Installing DDR memory DIMMs

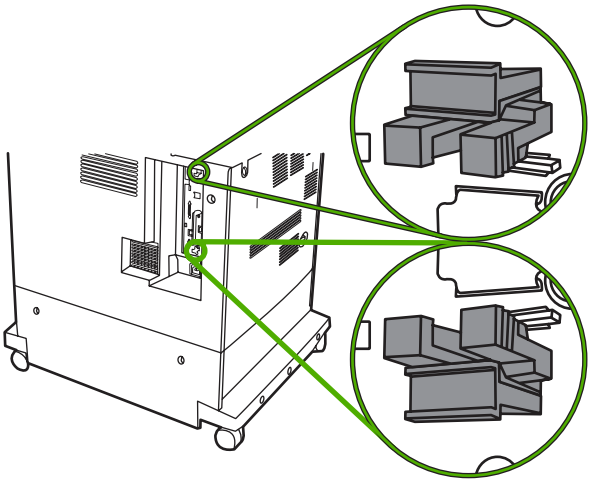
1. Turn the MFP off.



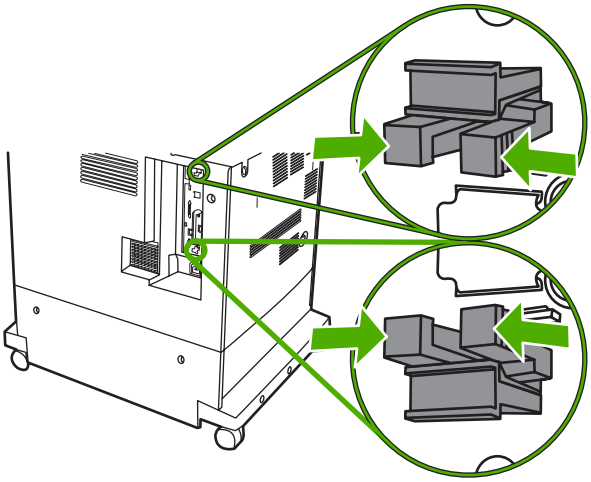
2. Disconnect all power and interface cables.



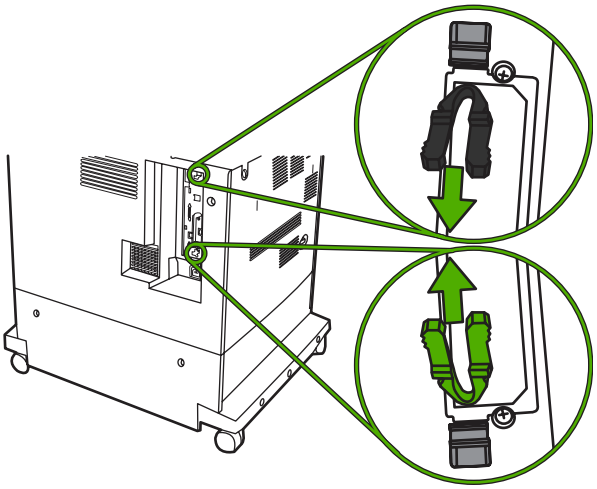
3. Locate the formatter board in the rear of the MFP.



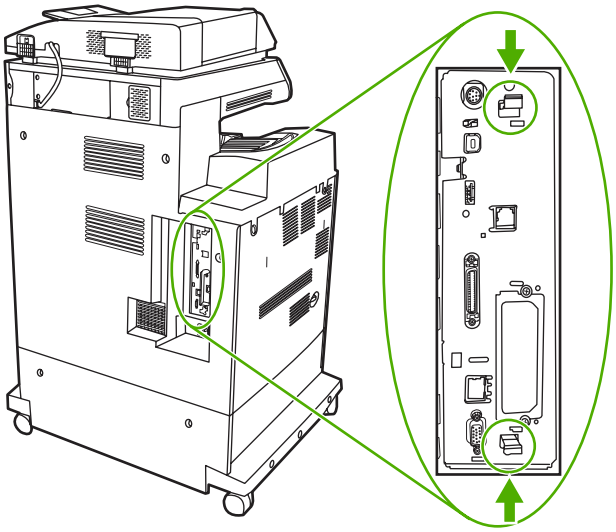
4. Locate the gray formatter pressure release tabs on the formatter board in the rear of the MFP.



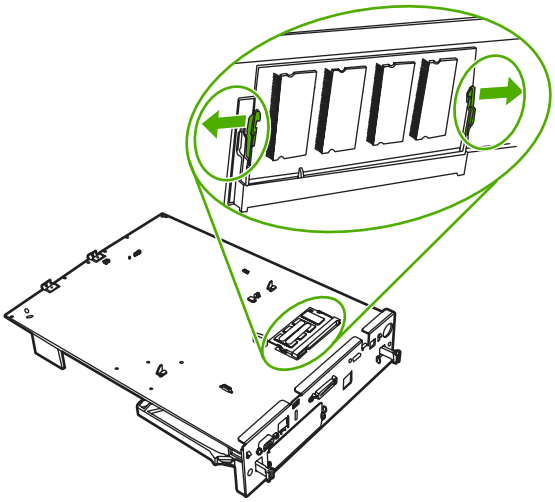
5. Gently squeeze the tabs and pull them out of the formatter.



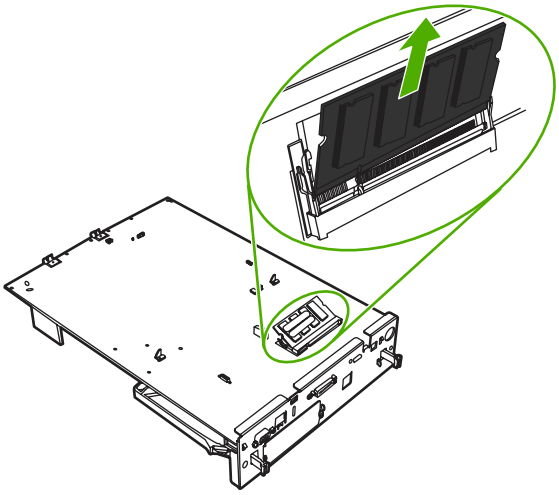
6. Gently pull on the black tabs at the top and bottom of the formatter board and pull the formatter board from the MFP. Place the formatter board on a clean, flat, grounded surface.



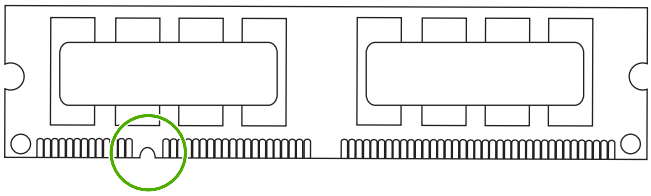
7. To replace a DDR DIMM that is currently installed, spread the latches apart on each side of the DIMM holder on the rear of the formatter.



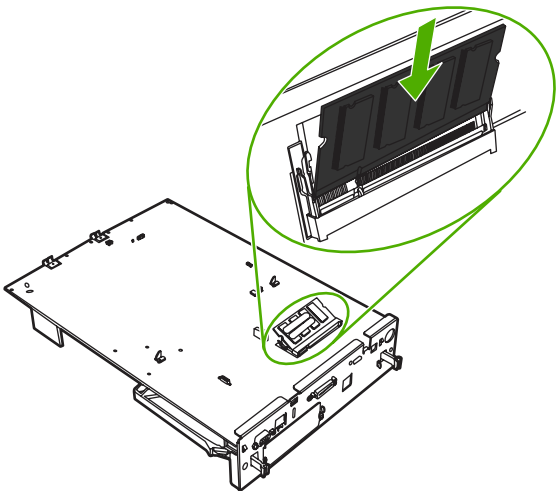
8. Lift the DDR DIMM up at an angle, and pull it out.



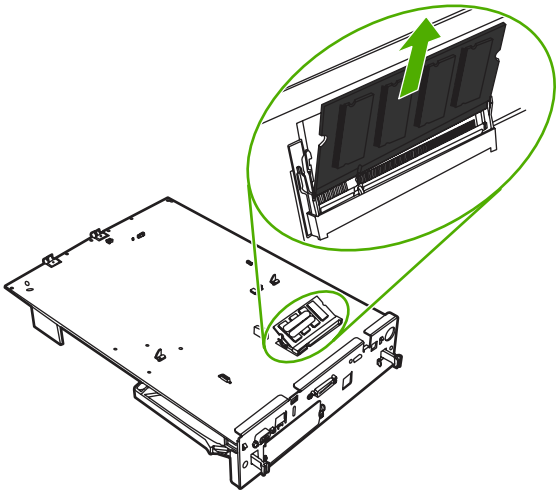
9. Remove the new DIMM from the antistatic package. Locate the alignment notch on the bottom edge of the DIMM.



10. Holding the DIMM by the edges, insert it into the DIMM holder on the rear of the formatter. When installed correctly, the metal contacts are not visible.

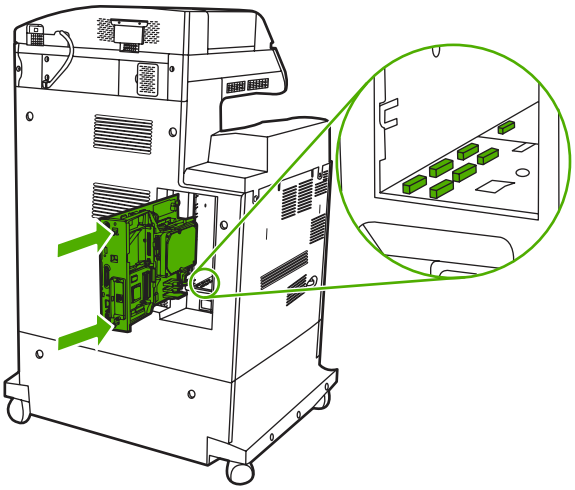


11. Push the DIMM holder flat against the back of the formatter.

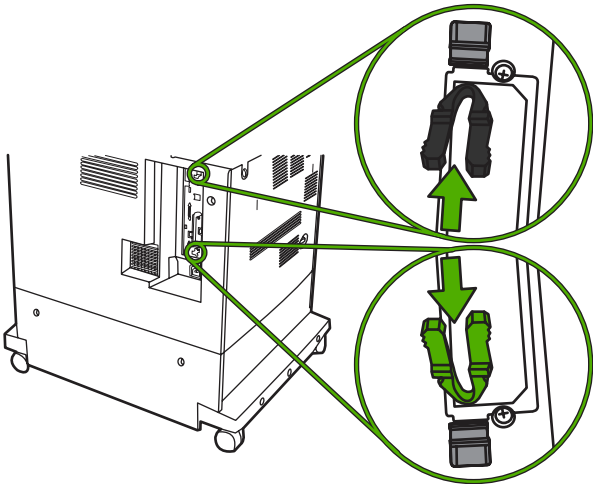


NOTE If there is difficulty when inserting the DIMM, make sure the notch on the bottom of the DIMM is aligned with the bar in the slot. If the DIMM still does not go in, confirm that the correct type of DIMM is being installed.

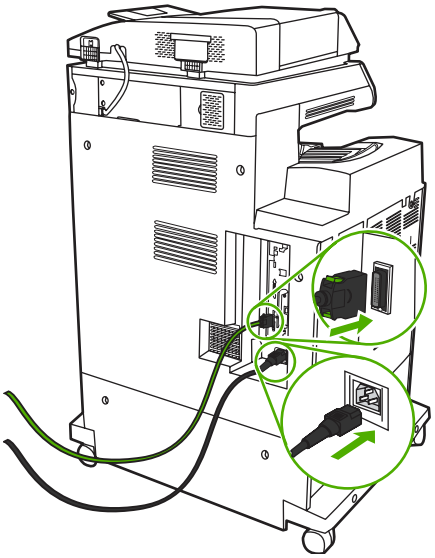
12. Align the formatter board in the tracks at the top and bottom of the slot, and then slide the board back into the MFP.



13. Reinsert the formatter pressure release tabs into the formatter.



14. Reconnect the power cable and interface cables, and turn the MFP on.

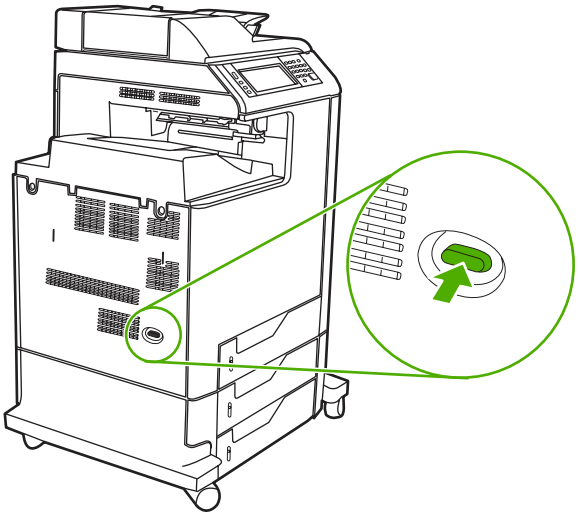


15. If a new memory DIMM was installed, go to Enabling memory on page 132.

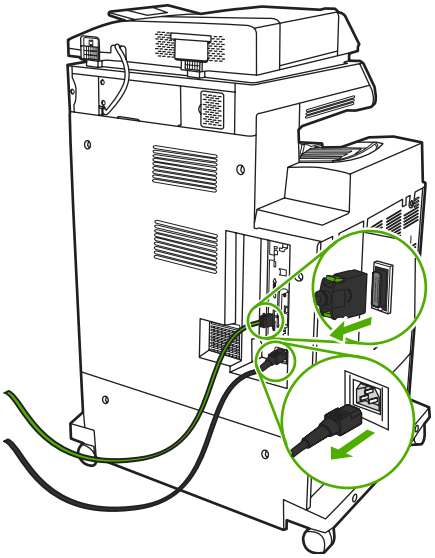
Installing a flash memory card

CAUTION Do not insert a flash memory card that is designed for use with a digital camera into the MFP. The MFP does not support photo printing directly from a flash memory card. If a camera-type flash memory card is installed, the product control panel displays a message asking if the flash memory card should be reformatted. If the card is reformatted, all data on the card will be lost.

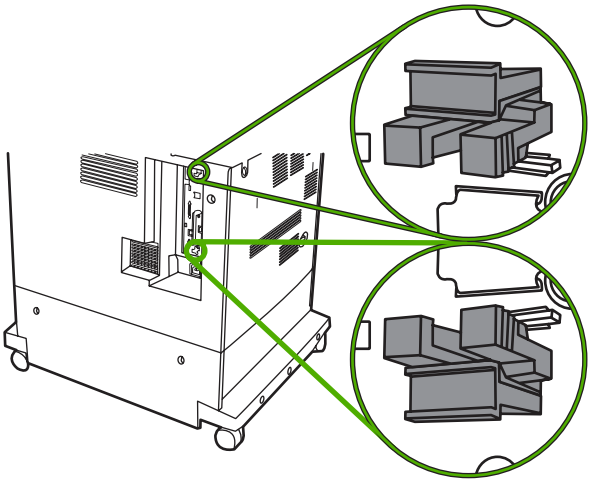
1. Turn the MFP off.



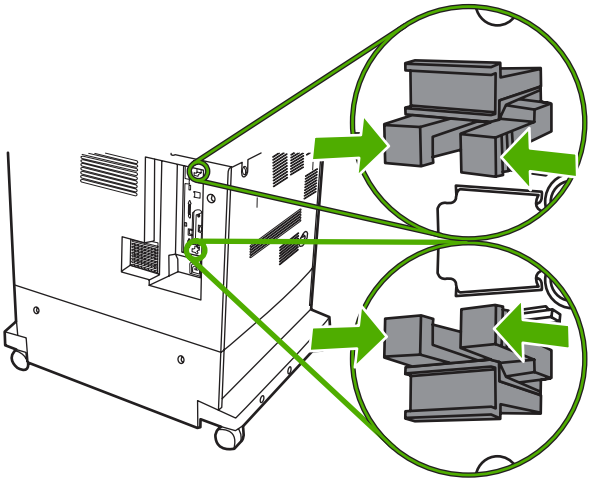
2. Disconnect all power and interface cables.



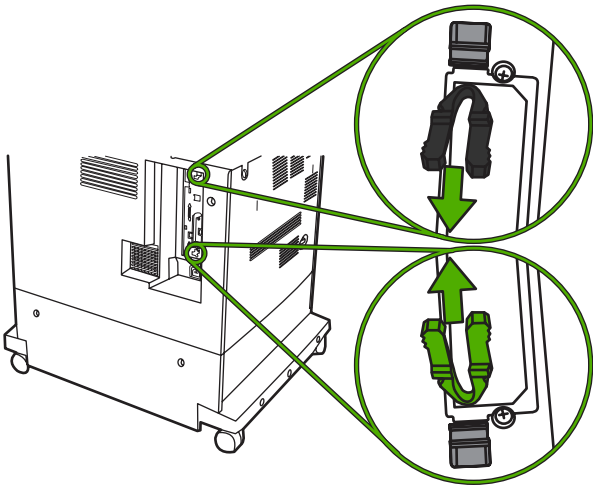
3. Locate the formatter board in the rear of the MFP.



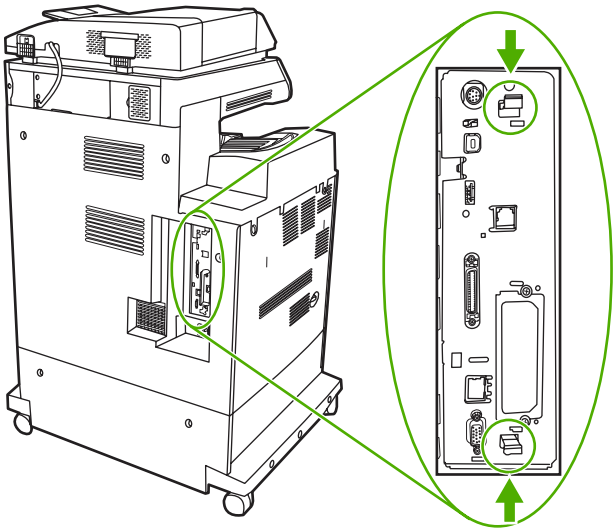
4. Locate the gray formatter pressure release tabs on the formatter board in the rear of the MFP.



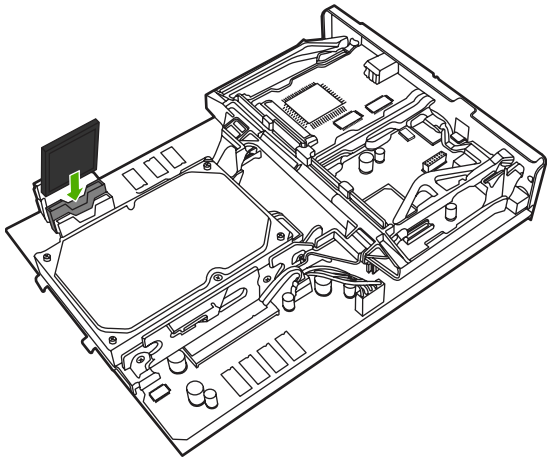
5. Gently squeeze the tabs and pull them out of the formatter.



6. Gently pull on the black tabs at the top and bottom of the formatter board and pull the formatter board from the MFP. Place the formatter board on a clean, flat, grounded surface.



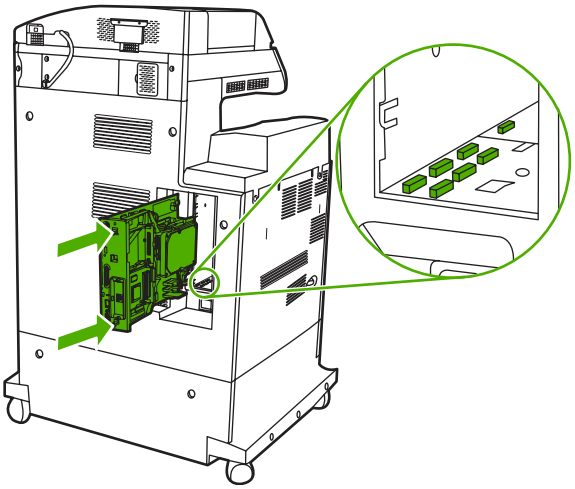
7. Align the groove on the side of the flash memory card with the notches in the connector and push it in the slot until it is fully seated.



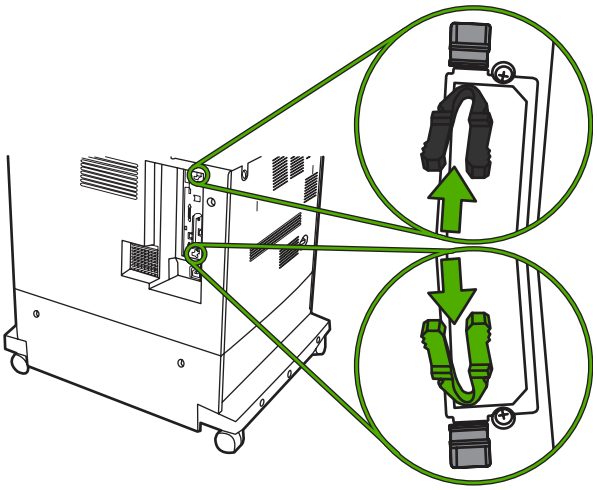
CAUTION Do not insert the flash memory card at an angle.

NOTE The first flash memory slot marked "Firmware Slot" is reserved for firmware only. Slots 2 and 3 should be used for all other solutions.

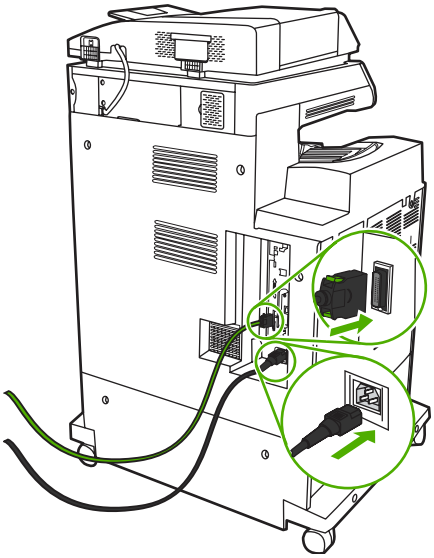
8. Align the formatter board in the tracks at the top and bottom of the slot, and then slide the board back into the MFP.



9. Reinsert the formatter pressure release tabs into the formatter.



10. Reconnect the power cable and interface cables, and turn the MFP on.



Enabling memory

After a new memory DIMM is installed, set the printer driver to recognize the newly added memory.

To enable memory for Windows 98 and Windows Me

1. On the **Start** menu, point to **Settings**, and click **Printers**.
2. Right-click the MFP and select **Properties**.
3. On the **Configure** tab, click **More**.
4. In the **Total Memory** field, type or select the total amount of memory that is now installed.
5. Click **OK**.

To enable memory for Windows 2000 and Windows XP

1. On the **Start** menu, point to **Settings**, and click **Printers** or **Printers and Faxes**.
2. Right-click the MFP 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**.

Setting 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 that the most recent versions of stored print jobs can be identified. The MFP can also be set to automatically warm up and prepare for use at a specified time each day.

Setting the date and time

When setting the date and time you can set the date format, date, time format, and time.

To set the date format

1. Press Menu.
2. Scroll to and touch Configure Device.
3. Scroll to and touch SYSTEM SETUP.
4. Scroll to and touch DATE/TIME.
5. Scroll to and touch DATE FORMAT.
6. Scroll to and touch the appropriate format. The settings are saved and the product control panel returns to the **DATE/TIME** submenu.
7. Scroll to and touch Exit to exit the menu.

To set the date

1. Press Menu.
2. Scroll to and touch Configure Device.
3. Scroll to and touch SYSTEM SETUP.
4. Scroll to and touch DATE/TIME.
5. Scroll to and touch DATE.
6. Scroll to and touch the appropriate options to set the correct month, day of the month, and the year.

   NOTE The order of modifying the month, date of the month, and year depends upon the date-format setting.

7. The settings are saved and the product control panel returns to the **DATE/TIME** submenu.
8. Touch Exit to exit the menu.

To set the time format

1. Press Menu.
2. Scroll to and touch Configure Device.
3. Scroll to and touch SYSTEM SETUP.

4. Scroll to and touch DATE/TIME.
5. Scroll to and touch TIME FORMAT.
6. Touch the appropriate format. The settings are saved and the product control panel returns to the **DATE/TIME** submenu.
7. Scroll to and touch Exit to exit the menu.

To set the time

1. Press Menu.
2. Scroll to and touch Configure Device.
3. Scroll to and touch SYSTEM SETUP.
4. Scroll to and touch DATE/TIME.
5. Scroll to and touch TIME.
6. Touch the appropriate options to set the correct hour, minute, and AM/PM setting.

NOTE The order of modifying the hour, minute, and AM/PM setting depends upon the time-format setting.

7. The settings are saved and the product control panel returns to the **DATE/TIME** submenu.
8. Touch Exit to exit the menu.

Setting the wake time

Use the wake time feature to wake the MFP at a set time each day. If a wake time is set, use an extended Sleep-delay period. See Setting the Sleep delay on page 135.

To set the wake time

1. Press Menu.
2. Scroll to and touch Configure Device.
3. Scroll to and touch SYSTEM SETUP.
4. Scroll to and touch WAKE TIME.
5. Touch the day of the week for which the wake time is being set.
6. Scroll to and touch CUSTOM.
7. Touch the appropriate options to set the correct hour, minute, and AM/PM setting.
8. To wake the MFP at the same time each day, on the **APPLY TO ALL DAYS** screen, touch YES.

   -or-

   To set the time for individual days, touch NO, and repeat steps 5 through 7 for each day.

9. The settings are saved and the product control panel returns to the **WAKE TIME** submenu.
10. Touch Exit to exit the menu.

Setting 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.

NOTE If the Sleep-delay feature is turned off in the **RESETS** menu, the MFP never enters the Sleep mode. Selecting a Sleep-delay value automatically turns the Sleep feature on. The default value for the Sleep-delay setting is 45 minutes.

To set the Sleep delay

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch SYSTEM SETUP.
4. Touch SLEEP DELAY.
5. Scroll to and touch the Sleep-delay setting that you want.
6. The settings are saved and the product control panel returns to the **SYSTEM SETUP** submenu.
7. Touch Exit to exit the menu.

Configuring and verifying an IP address

Use any of three options to assign and configure TCP/IP addresses on an HP Jetdirect print server:

- HP Web Jetadmin
- Embedded Web server
- Control panel

TCP/IP assignment

The system administrator or primary user is responsible for determining the TCP/IP address for a specific print server. To confirm the TCP/IP address or to learn how to use TCP/IP on a network, go to the HP Web site at http://www.hp.com. Click **Search** in the upper-left corner of the Web page and search for **TCP/IP Overview**.

Automatic discovery

The product is equipped with an HP Jetdirect embedded print server. If a BootP or DHCP server is available during product installation, the print server is automatically assigned an IP address for use on the network. The print server defaults to 192.0.0.192 (Legacy default) or to 169.254.x.x (Auto IP) if the print server cannot obtain an IP address over the network from a BootP or DHCP server. The default that is assigned depends on the particular network (small/private or enterprise) by using sensing algorithms.

To determine the new IP address, print a configuration page and check the TCP/IP status and address.

Dynamic host configuration protocol (DHCP)

When the product is turned on, the HP Jetdirect print server broadcasts DHCP requests. The DHCP automatically downloads an IP address from a network server. The DHCP servers maintain a fixed set of IP addresses and only loan an IP address to the print server. Consult the operating system documentation to set up a DHCP service on your network.

Verifying the TCP/IP configuration

Print a configuration page at the product control panel. Check the TCP/IP status and the TCP/IP addresses. If the information is incorrect, check the hardware connections (cables, hubs, routers, or switches) and reconfirm the validity of the IP address.

Changing an IP address

Use the following procedures to change the product TCP/IP address.

To change an IP address by using HP Web Jetadmin

Open HP Web Jetadmin. Type the TCP/IP address in the **Quick Device Search** field and click **Go**. At the top menu bar, follow this procedure for discovery options.

1. In the drop-down menu, click **Devices**.
2. In the drop-down menu, click **New Devices**. Click **Go**.

3. Click the appropriate column header (such as IP address or Device Model) to arrange the list of available devices in ascending or descending order.
4. Highlight the product to configure, and click **Open Device**.
5. From the sub-menu at the top of the HP Web Jetadmin screen, click **Configuration**.
6. Click the network link located on the left side of the configuration screen.
7. Type the new IP information. Scroll down for more options.
8. Click **Apply** to save the settings.
9. Click the **Refresh** button located next to the question mark on the right side of the screen.
10. Verify the IP information by clicking **Status Diagnostics** or by printing a configuration page.

To change an IP address by using the embedded Web server

The MFP has an embedded Web server that can be used to modify the TCP/IP parameters. In order to use the embedded Web server, the HP Jetdirect print server must have an IP address already configured. On a network, this is done automatically during initial product installation.

1. In a supported Web browser, type the current IP address of the HP Jetdirect print server as the URL. The **Device Status** page of the embedded Web server appears.
2. Click **Networking**. Use this page to modify the MFP network configuration.

To change an IP address by using the control panel

To manually configure or verify the IP address by using the product control panel, follow the instructions below.

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch I/O.
4. Scroll to and touch EMBEDDED JETDIRECT MENU.
5. Touch TCP/IP.
6. Scroll to and touch CONFIG METHOD.
7. Scroll to and touch MANUAL.
8. Scroll to and touch MANUAL SETTINGS.
9. Scroll to and touch IP Address: X.
10. Touch the left and right arrows to select each byte of the IP address.
11. Use the numeric keypad to enter the value of each byte.
12. Touch OK to save the IP address.
13. Scroll to and touch SUBNET MASK.
14. Touch the left and right arrows to select each byte of the subnet mask.

15. Use the numeric keypad to enter the value of each byte of the subnet mask.
16. Touch OK to save the subnet mask.
17. Scroll to and touch DEFAULT GATEWAY.
18. Touch the left and right arrows to select each byte of the default gateway.
19. Use the numeric keypad to enter the value of each byte of the default gateway.
20. Touch OK to save the default gateway.

Upgrading the firmware

The MFP has remote firmware update (RFU) capability. Use the information in this section to upgrade the MFP firmware. The overall process involves the following steps:

1. Determine the current level of firmware that is installed on the MFP.
2. Go to the HP Web site and find out whether a firmware update is available. If an update is available, download the latest firmware to the computer.
3. Transfer the new firmware from the computer to the MFP.

Determining the current level of firmware

To determine the current level of firmware, view the configuration information on the MFP control panel. To view the configuration information, follow these instructions.

1. Press Menu.
2. Touch Information.
3. Touch PRINT CONFIGURATION. The configuration page prints.
4. The firmware datecode is listed 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 `20040225` represents February 25, 2004.

Downloading the new firmware from the HP Web site

To find the most recent firmware upgrade for the MFP, go to http://www.hp.com/go/clj4730mfp_software. This page provides instructions for downloading the new firmware version.

Transferring the new firmware to the MFP

Use one of the following methods to update the firmware.

Using FTP to upload the firmware through a browser

Follow these steps to update the MFP firmware by using FTP through a browser.

To use a browser for firmware update

NOTE These instructions can be used for both Windows and Macintosh operating systems.

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.

Using FTP to upgrade the firmware on a network connection

NOTE The MFP can receive an .RFU file update as long as 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 reinitialize. 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 product 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.

Follow these instructions to perform the upgrade by using FTP.

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.

To upgrade the firmware on a network connection by using FTP

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 product control panel display.

2. Open an MS-DOS command prompt on your computer.
3. Go to the folder where the firmware file is stored.
4. Type: `ftp <TCP/IP address>`. For example, if the TCP/IP address is 192.168.0.90, type `ftp 192.168.0.90`.
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 4730mfp.efn, type `put 4730mfp.efn`.

11. The following series of messages appears in the command window:

    200 PORT command successful

    150 Opening BINARY mode data connection

    226 Ready

    -or-

    226 Processing Job

    -or-

    226 Transfer complete

    -or-

12. 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.

13. At the command prompt, type: `bye` to exit the ftp command.

14. At the command prompt, type: `exit` to return to the Windows interface.

Using HP Web Jetadmin to upgrade the firmware

This procedure requires that HP Web Jetadmin Version 7.0 or later be installed on the computer. See Using HP Web Jetadmin software on page 639. 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.

   To upgrade the firmware for multiple HP LaserJet 4730mfps, select all of them by pressing the **Ctrl** key while clicking 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 product 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.

Using 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 product control panel shows a message that indicates the progress of the firmware upgrade. At the end of the upgrade process, the product control panel shows the **Ready** message. The message **1 file(s) copied** displays on the computer screen.

Upgrading 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 the computer. See Using HP Web Jetadmin software on page 639. 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.

5 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 4730mfp 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.

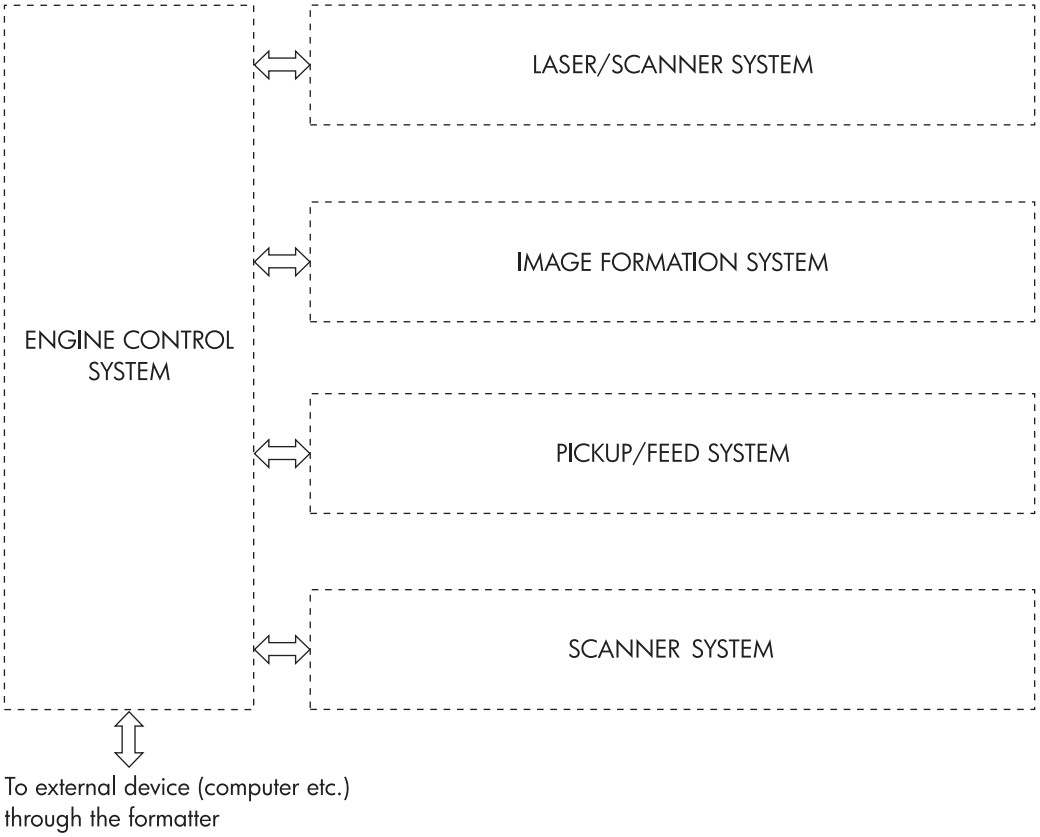


Figure 5-1 Basic system operation

Operation sequence

A microcomputer in the engine control system controls the operation sequence for the MFP. The basic operation sequence (see Table 5-1 Basic operation sequence on page 147) 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 5-1 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 5-2 Power on sequence on page 149 shows the MFP status from power on to standby mode.

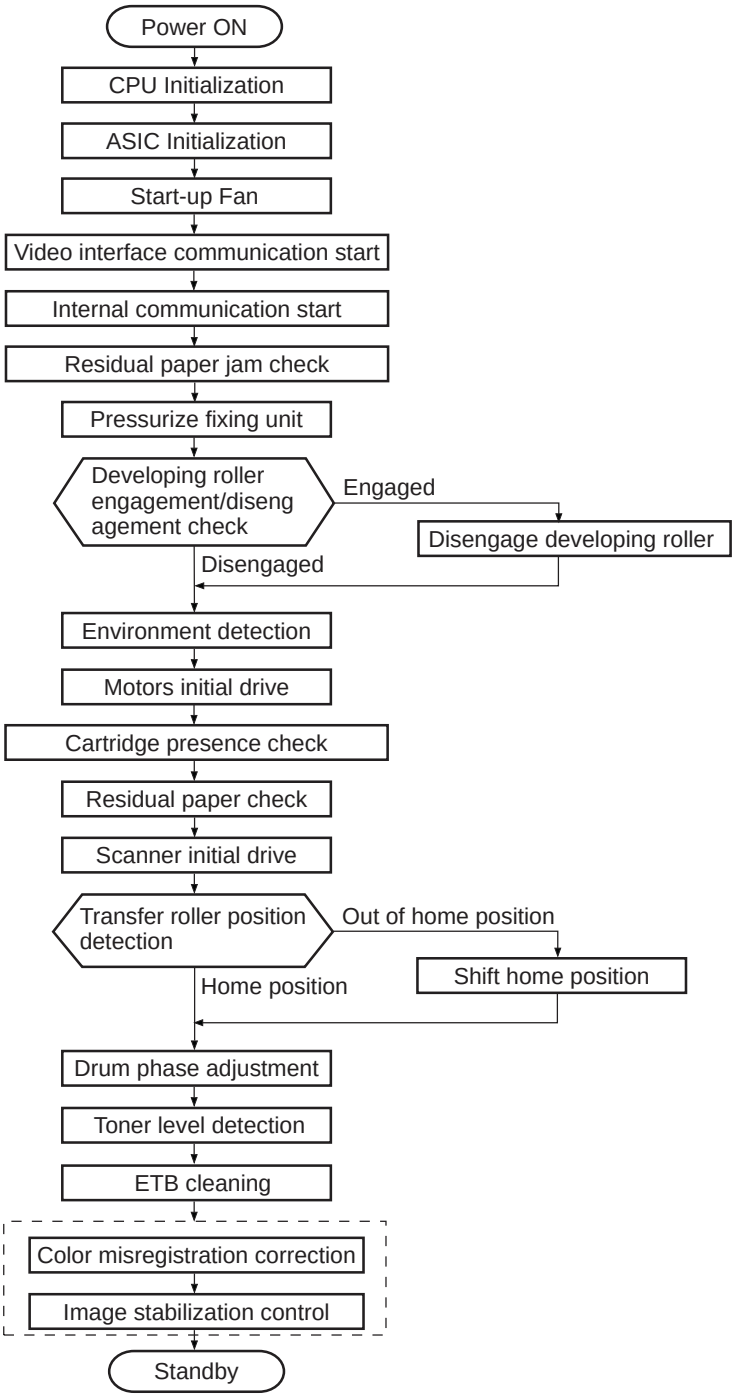


Figure 5-2 Power on sequence

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 5-3 Formatter system on page 150 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.

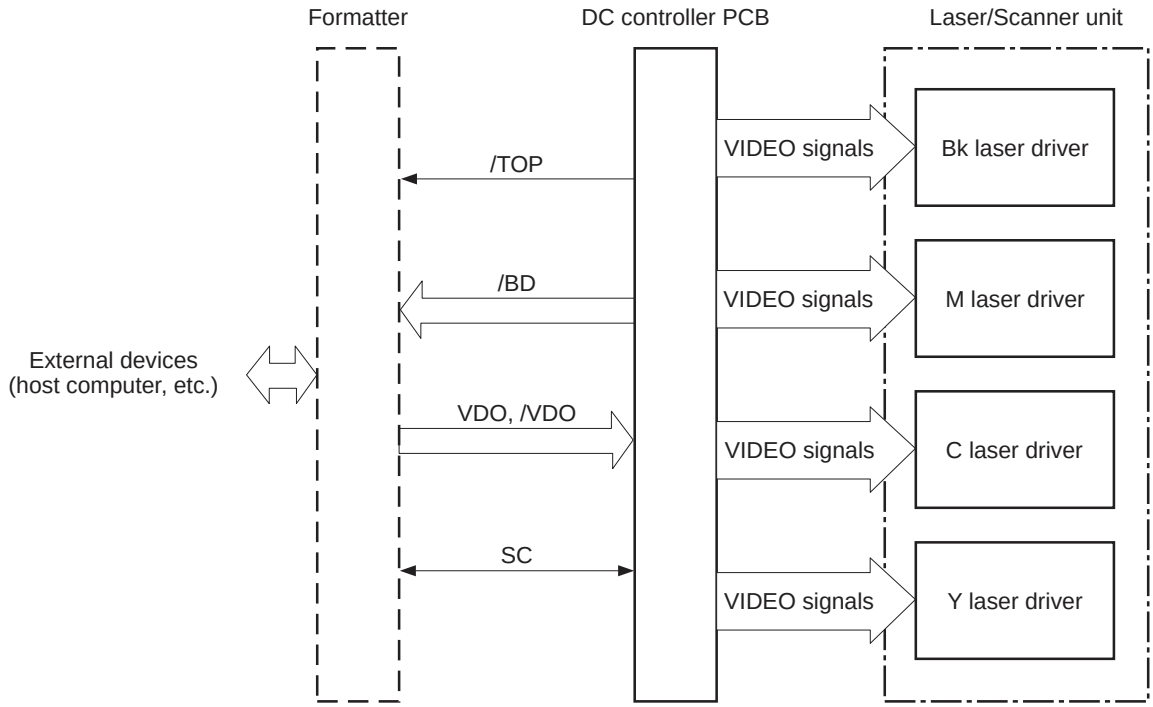


Figure 5-3 Formatter system

Sleep mode

This feature conserves power after the MFP has been idle for an adjustable length of time. Set the time length in the **Configure Device** menu, under **SYSTEM SETUP**. 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 **Configure Device** menu, under **RESETS**.

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 navigating to the **Configure Device** menu, navigating to the **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 4730mfp 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 4730mfp 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 **Configure Device** menu, under **SYSTEM SETUP**. If **Clearable Warning = 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 **Clearable Warning = On** is set, warning messages appear on the control panel until ✔ 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 4730mfp. 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.

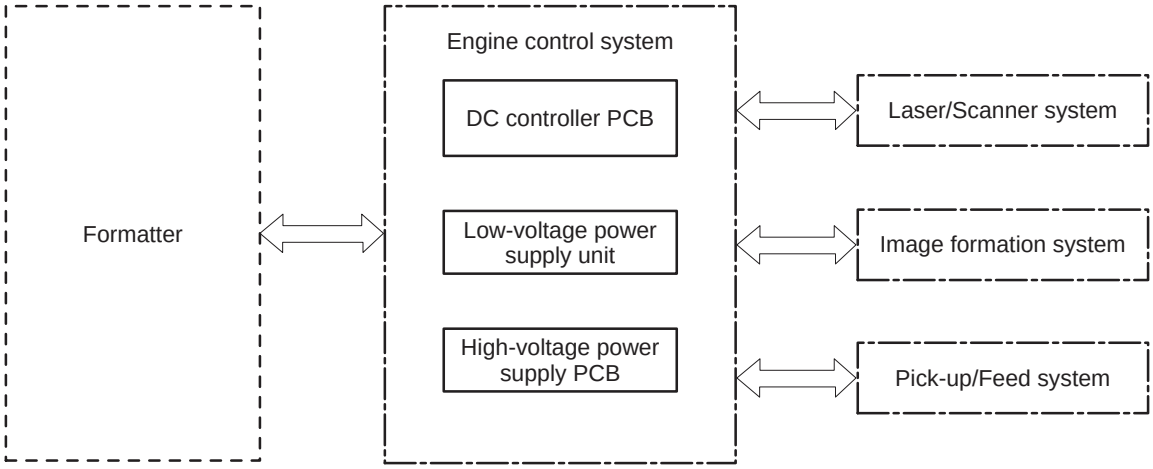


Figure 5-4 Engine control system

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.

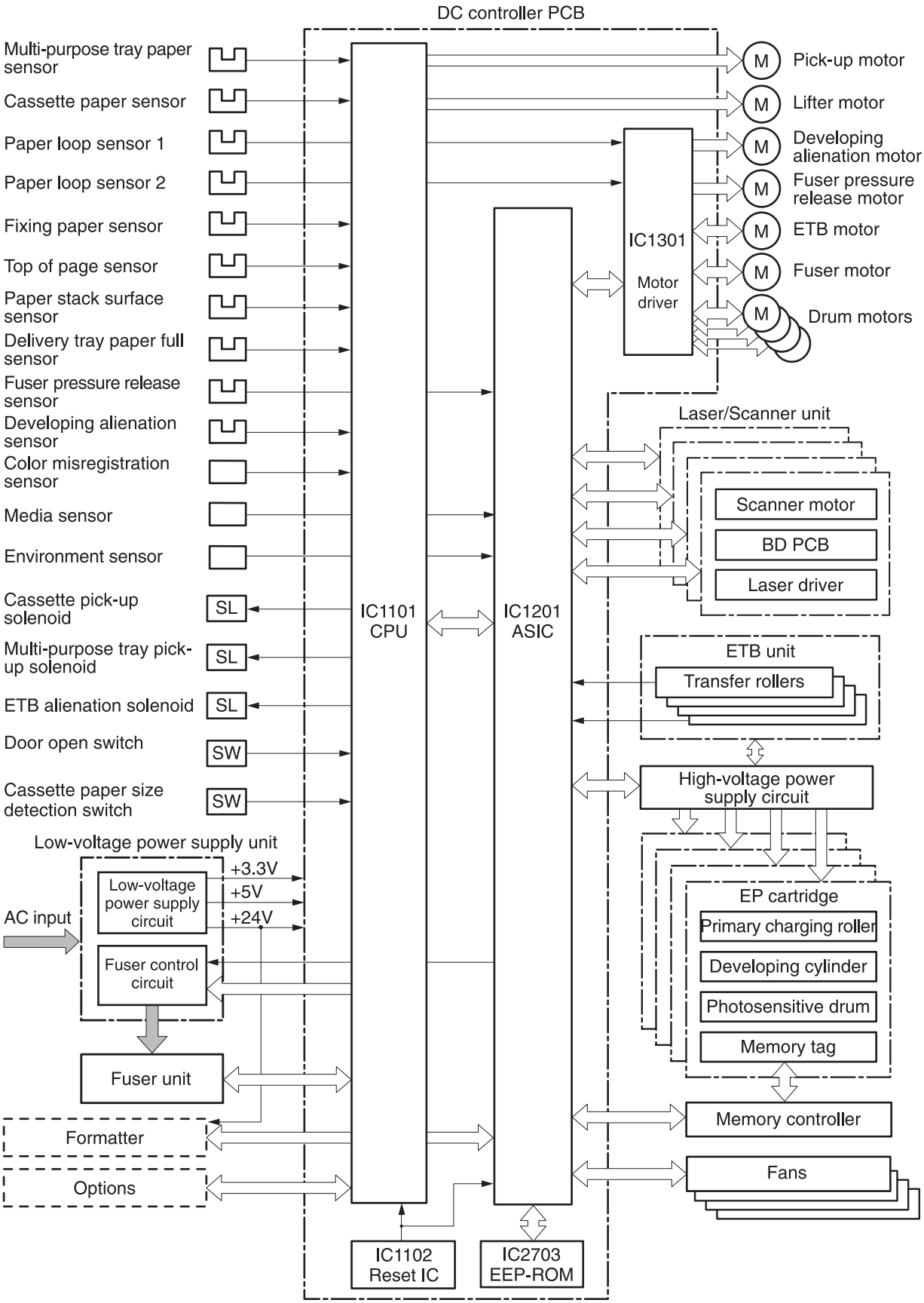


Figure 5-5 DC controller PCB

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 5-6 Motors and fans on page 157 shows the locations of the motors and fans. Table 5-2 Function of motors, fans, and environment sensor on page 157 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.

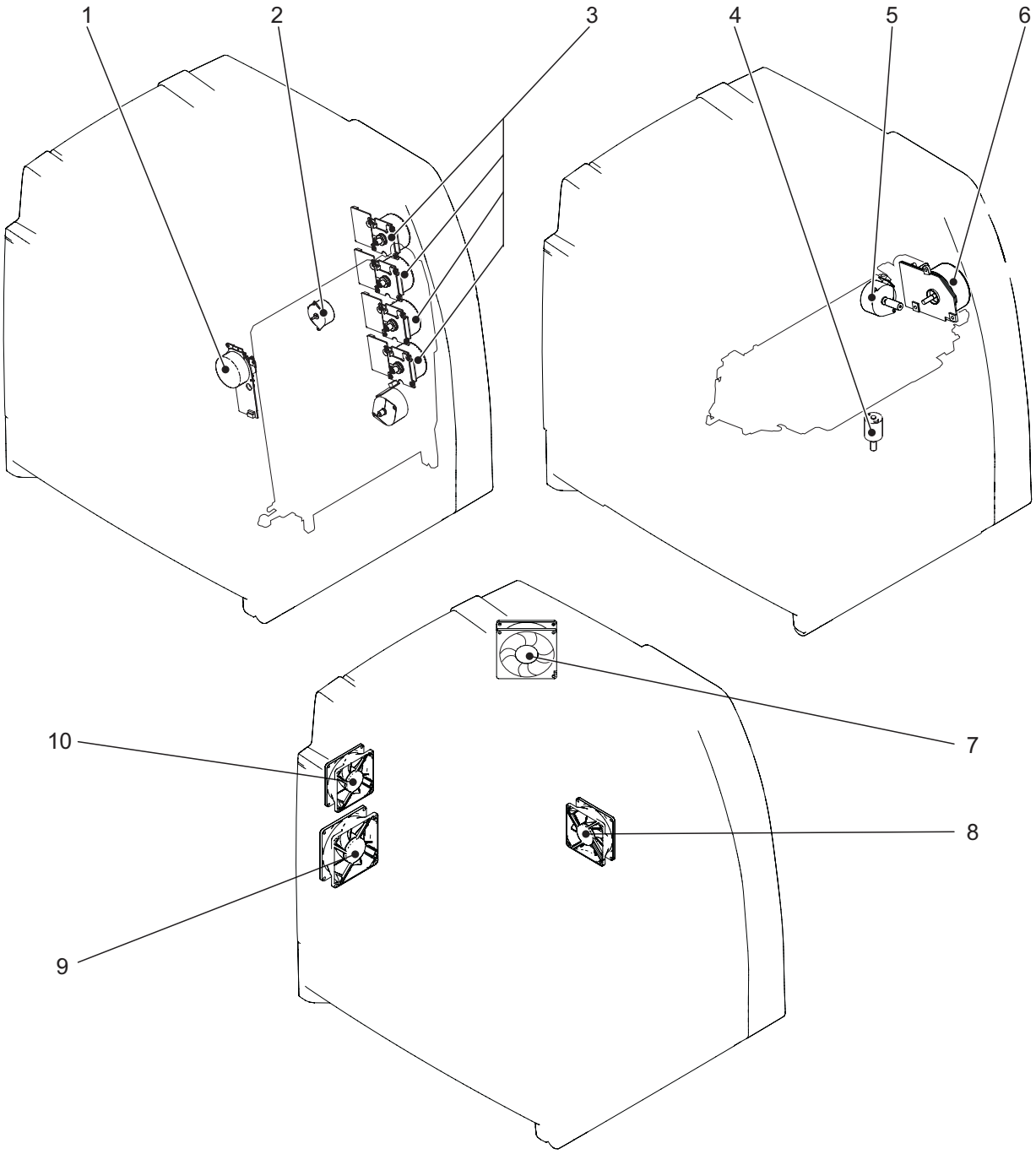


Figure 5-6 Motors and fans

Table 5-2 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			

Table 5-2 Function of motors, fans, and environment sensor (continued)

Name	Function	Type	Failure detection
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 5-7 Low-voltage power supply circuits on page 161 shows each circuit of the low voltage power supply unit.

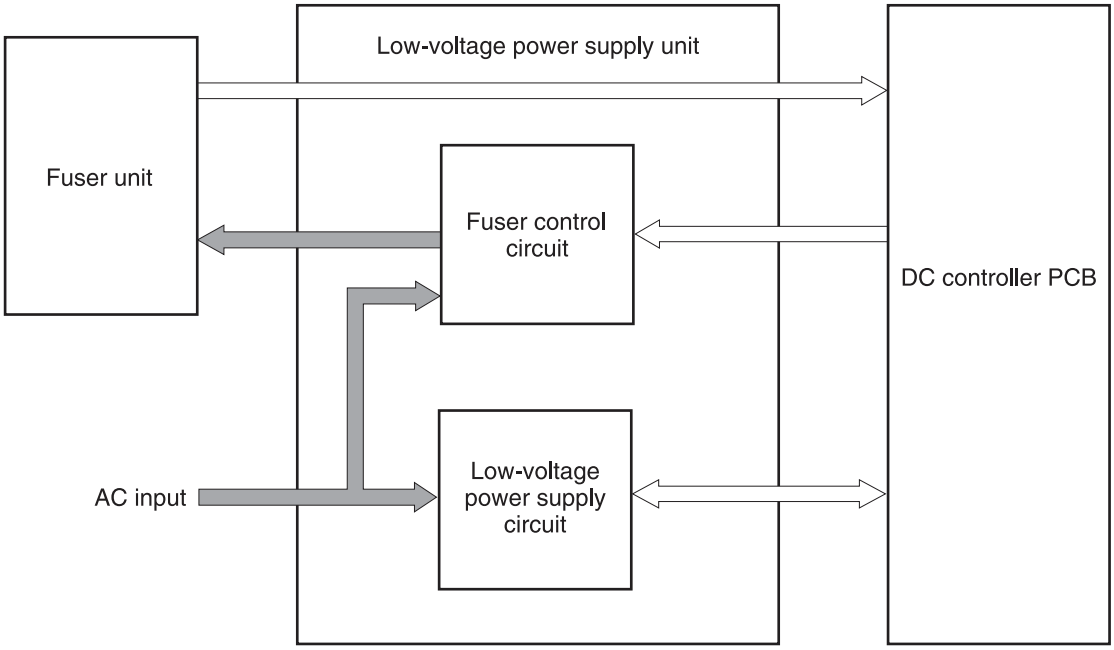


Figure 5-7 Low-voltage power supply circuits

Fuser control circuit

This MFP uses a ceramic heating method to heat the fuser. Figure 5-8 Fuser power supply circuit on page 161 shows the configuration of the fuser power supply.

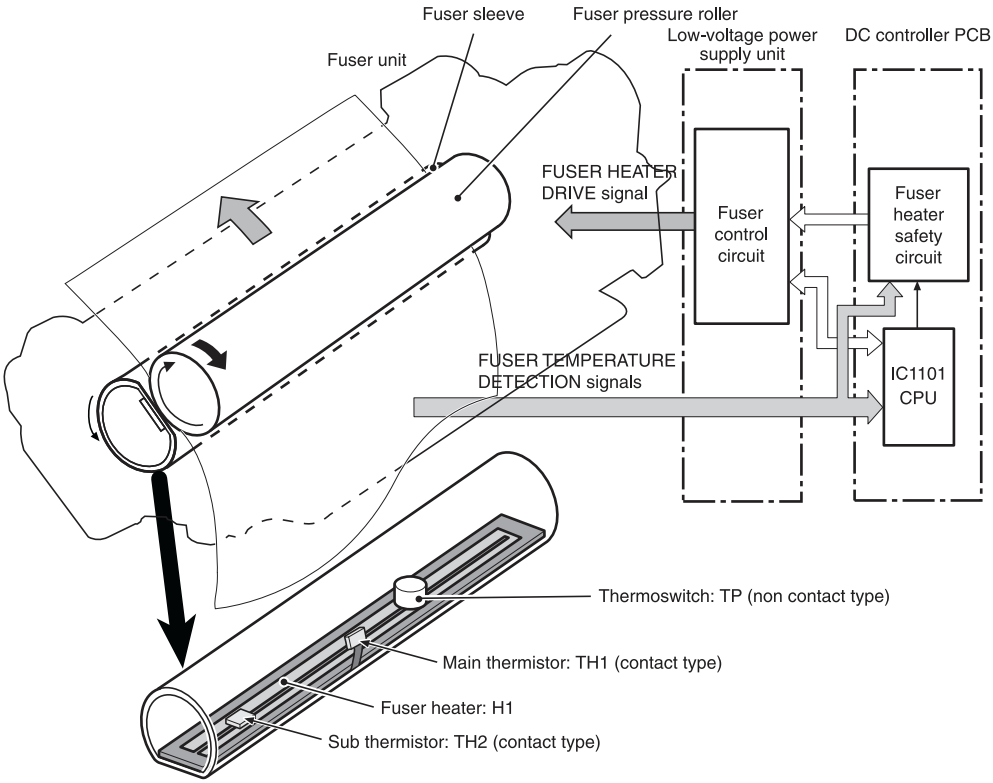


Figure 5-8 Fuser power supply circuit

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 5-3 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 5-3 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.

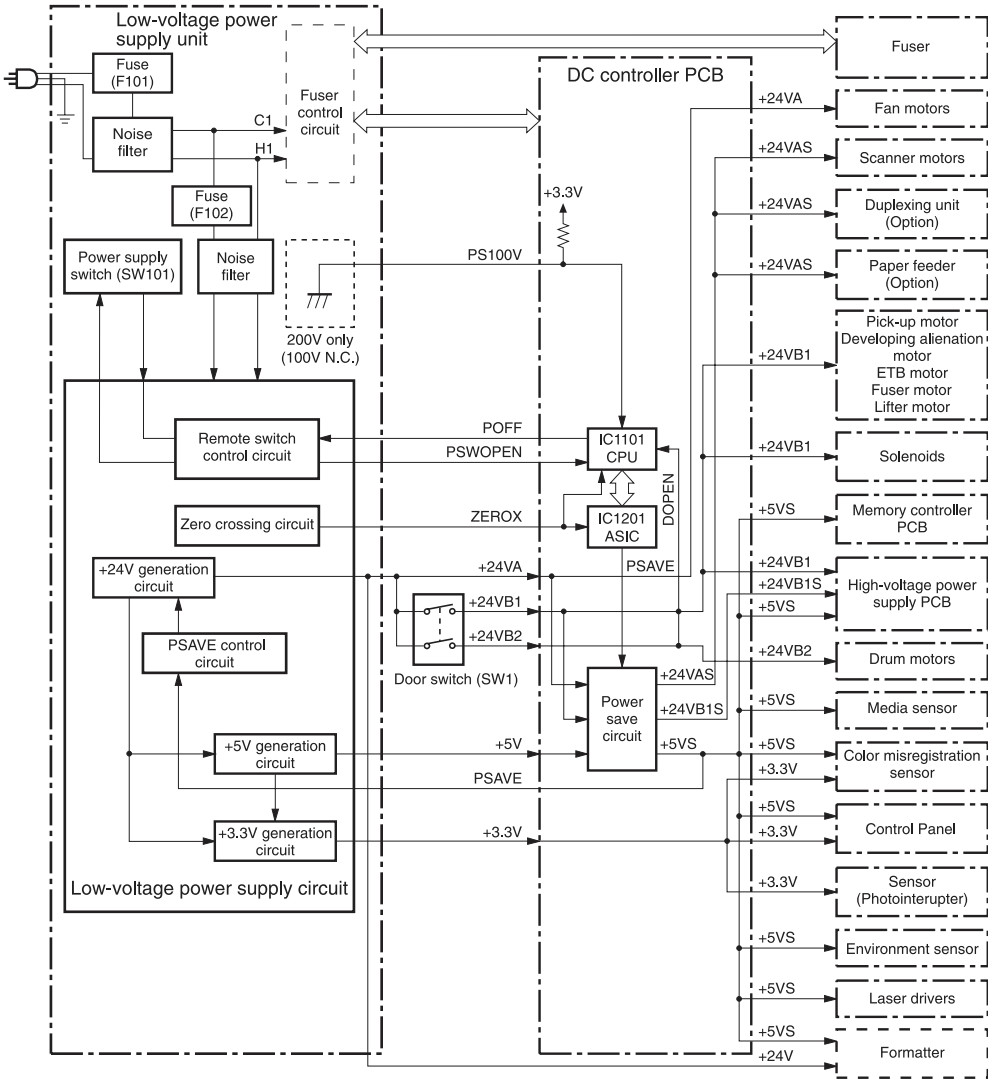


Figure 5-9 Low-voltage power supply circuit

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 5-10 Heater temperature control circuit on page 165.

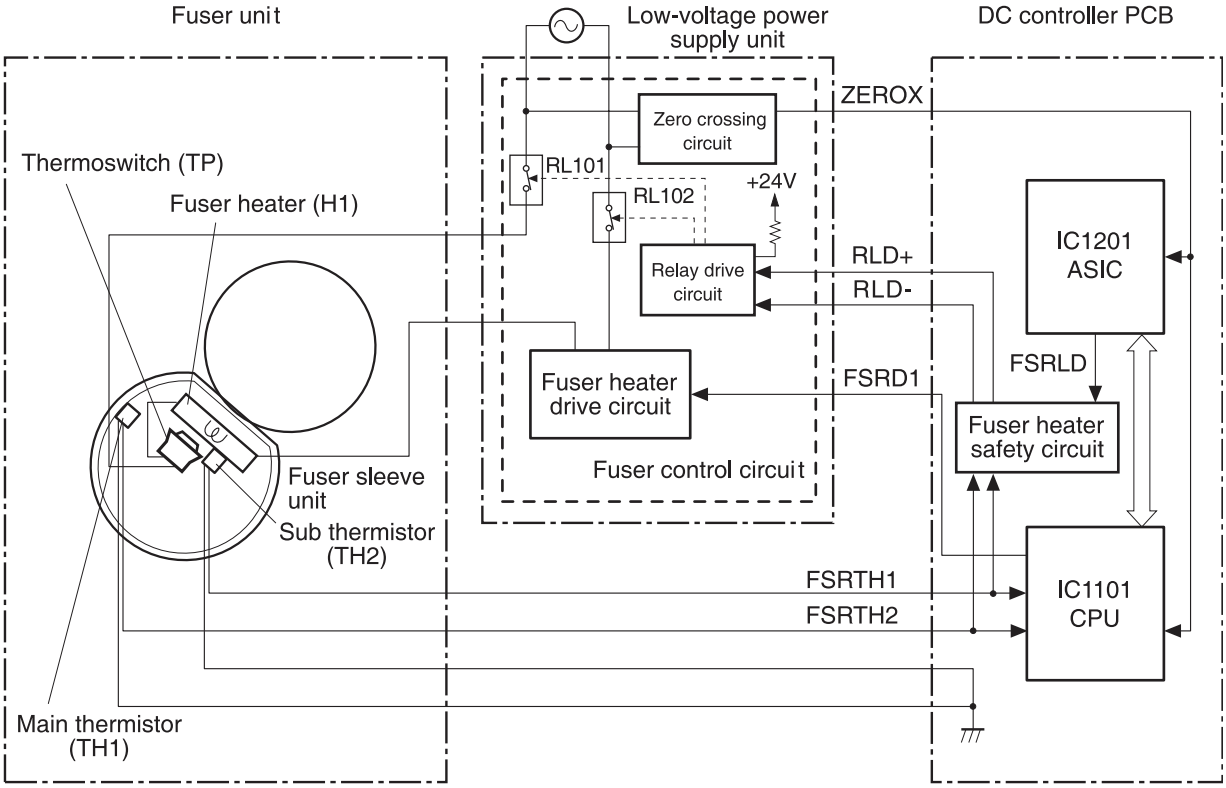


Figure 5-10 Heater temperature control circuit

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.

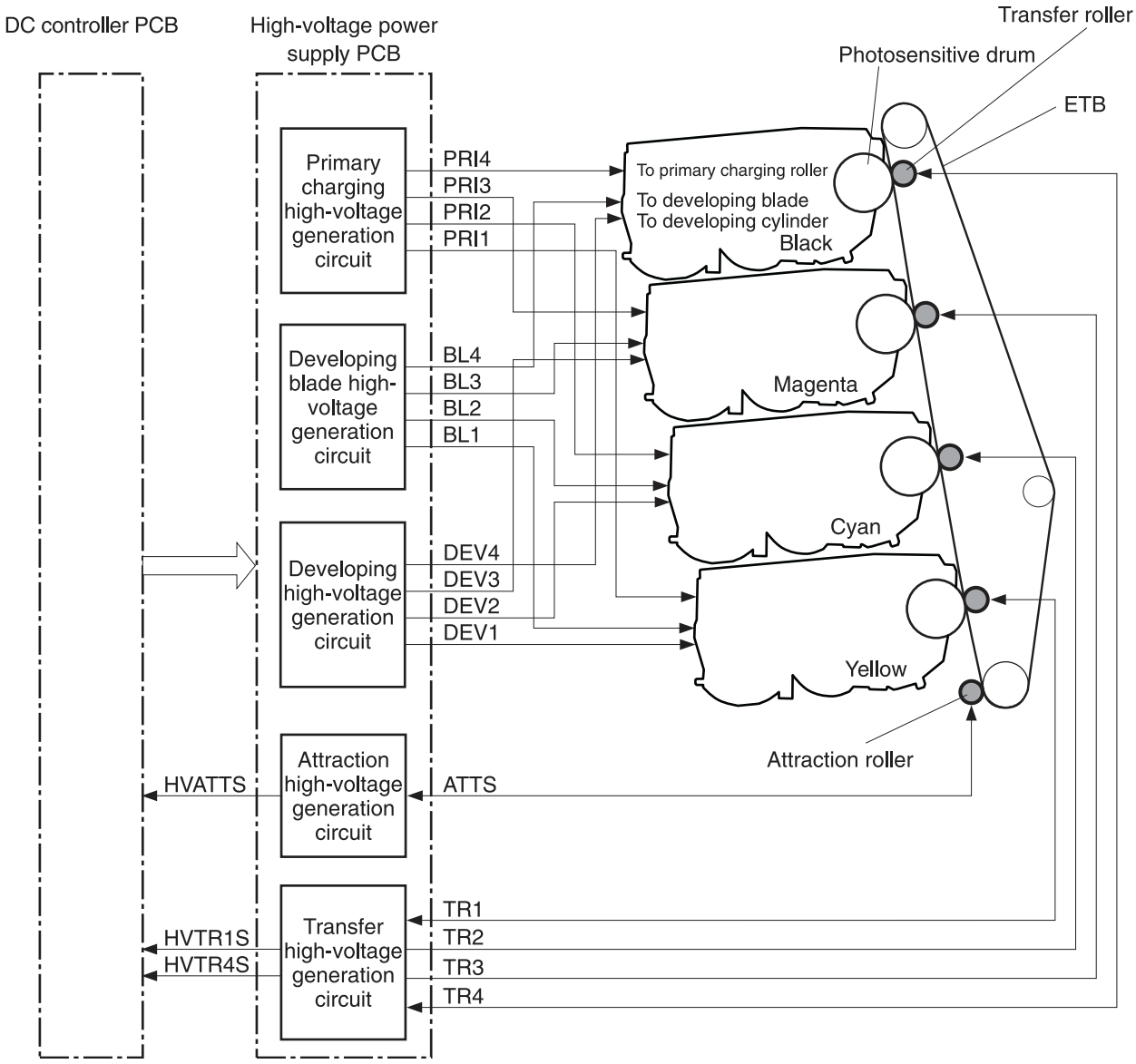


Figure 5-11 High-voltage power supply block diagram

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.

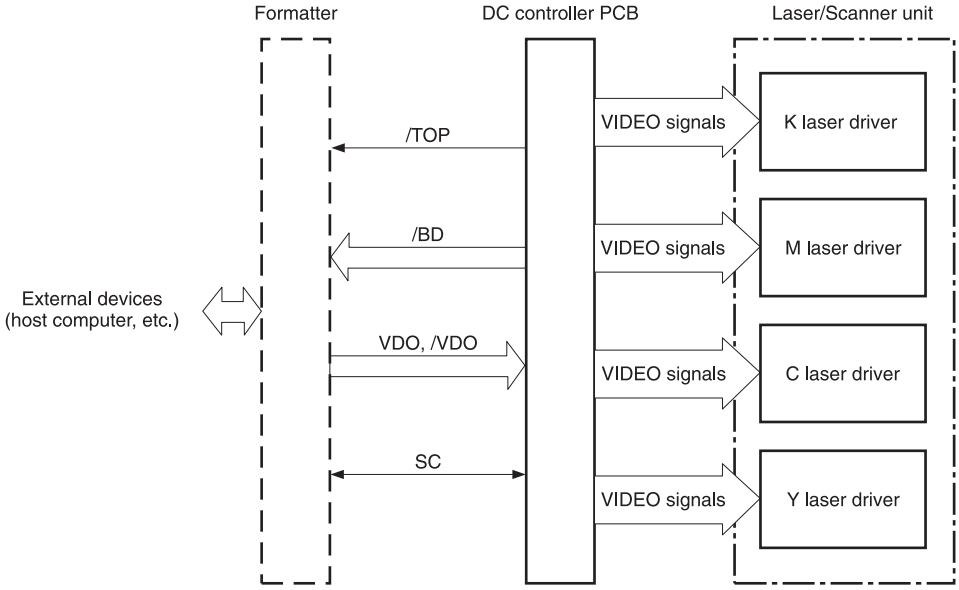


Figure 5-12 Video interface control

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.

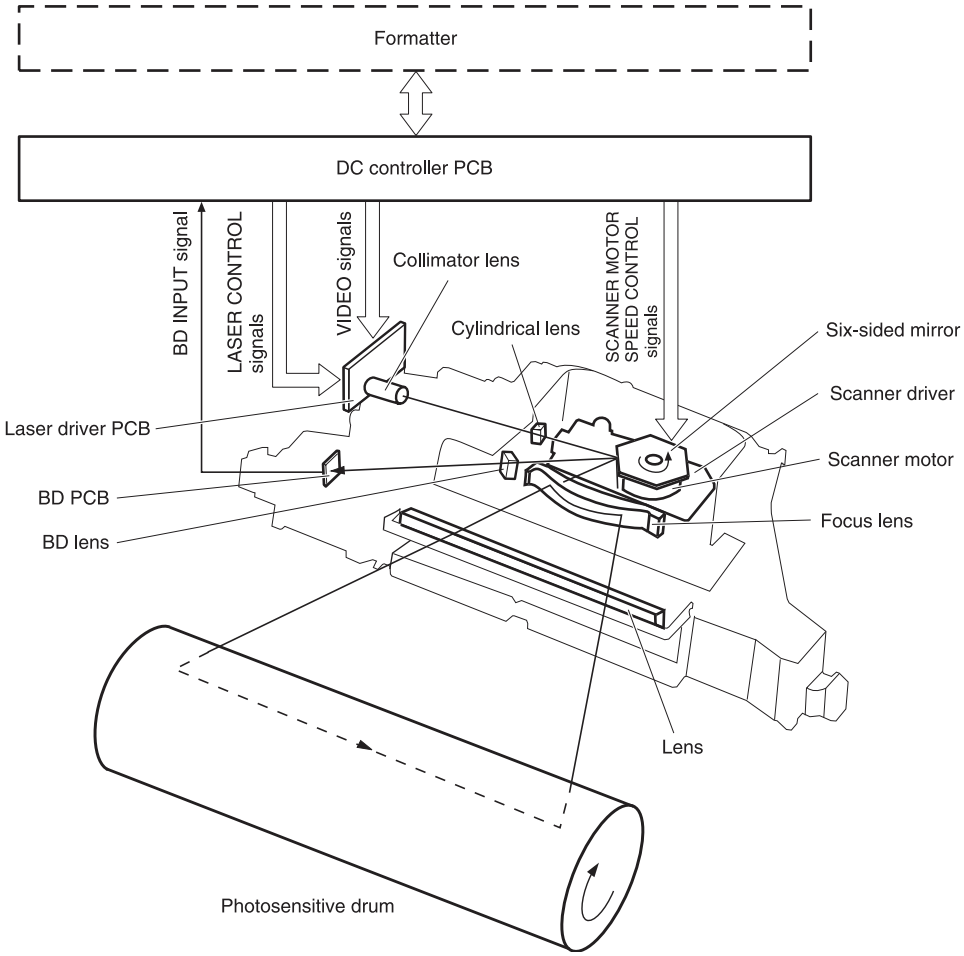


Figure 5-13 Laser/scanner assembly

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 5-14 Laser control circuit block diagram on page 175 illustrates the laser control system.

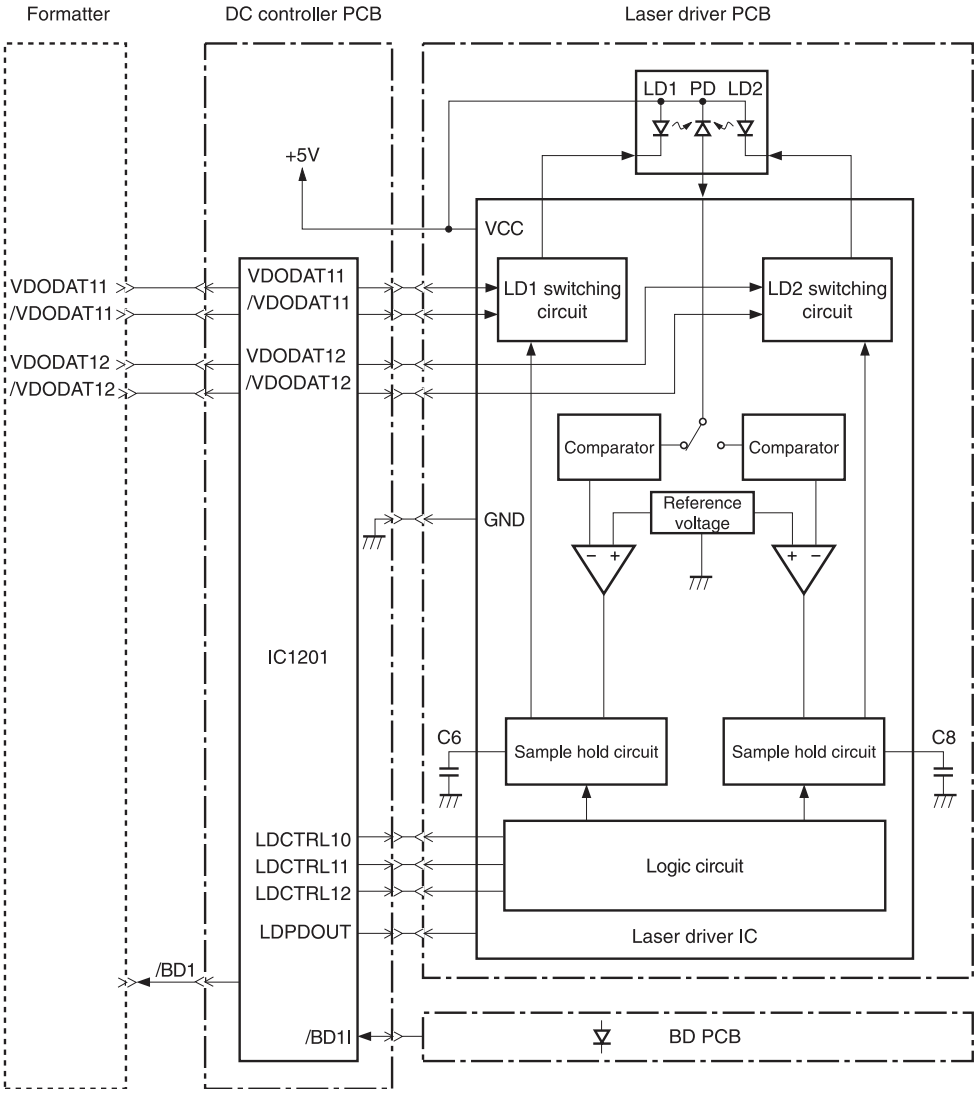


Figure 5-14 Laser control circuit block diagram

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 5-15 Scanner motor circuit diagram on page 176 illustrates the scanner motor control system.

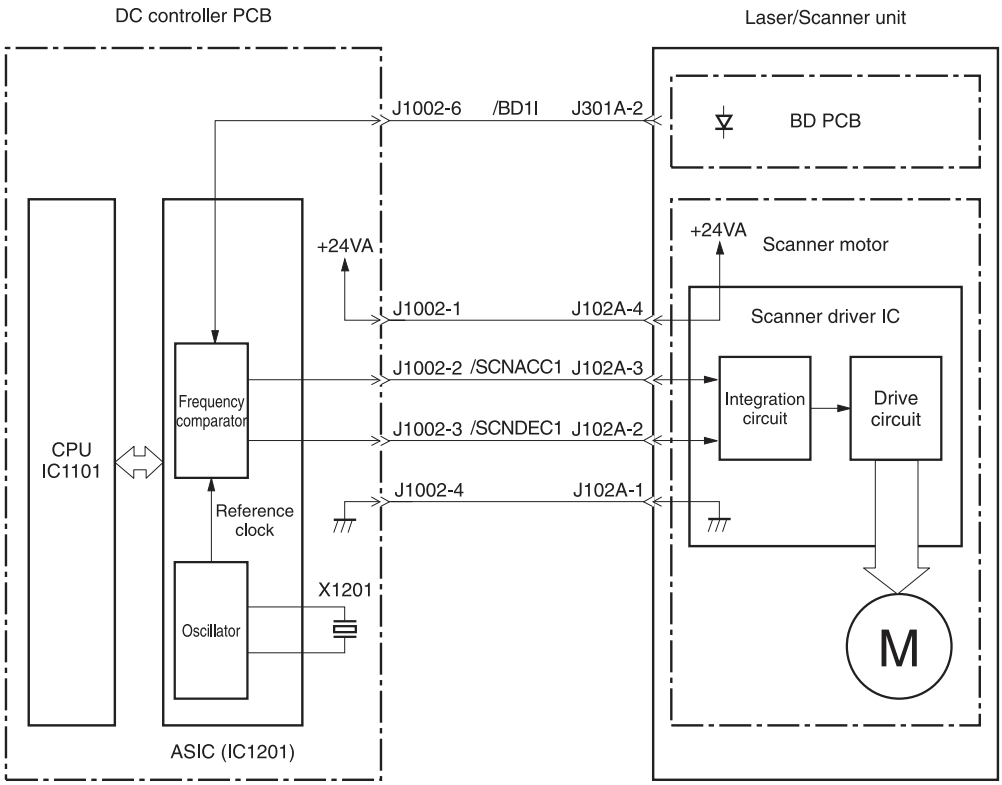


Figure 5-15 Scanner motor circuit diagram

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 5-16 Image formation system on page 177 shows the image formation system.

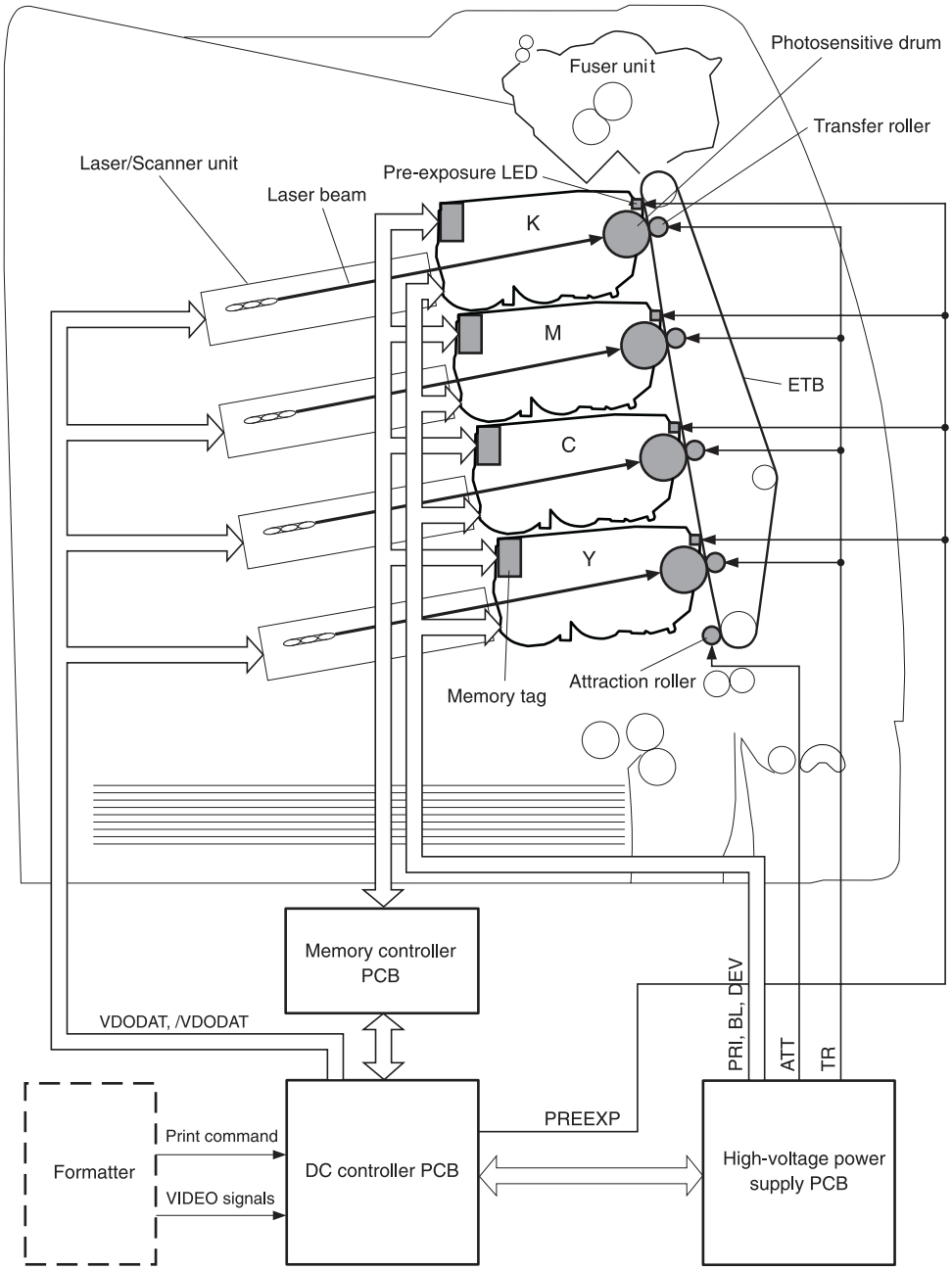


Figure 5-16 Image formation system

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

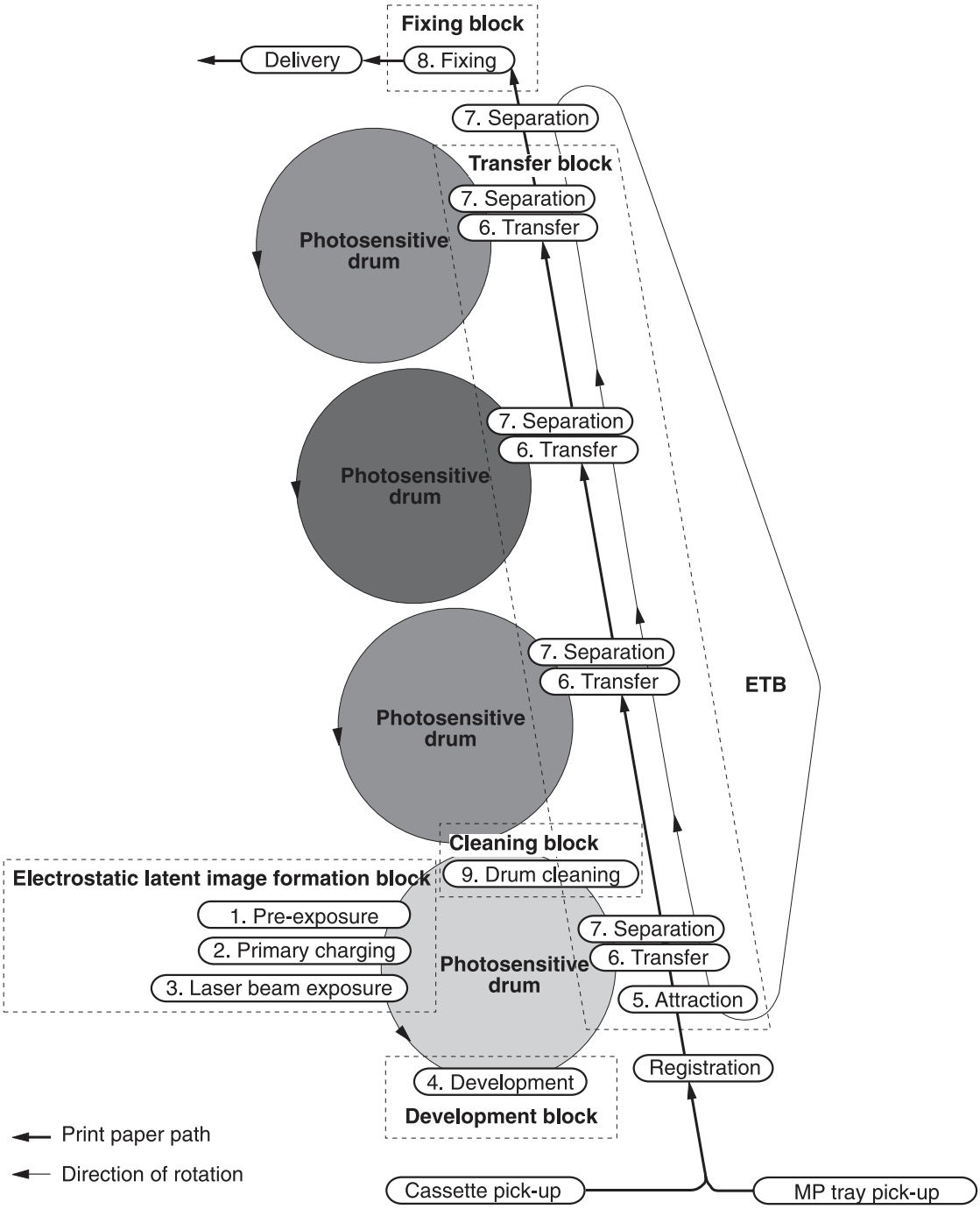


Figure 5-17 Image formation process

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.

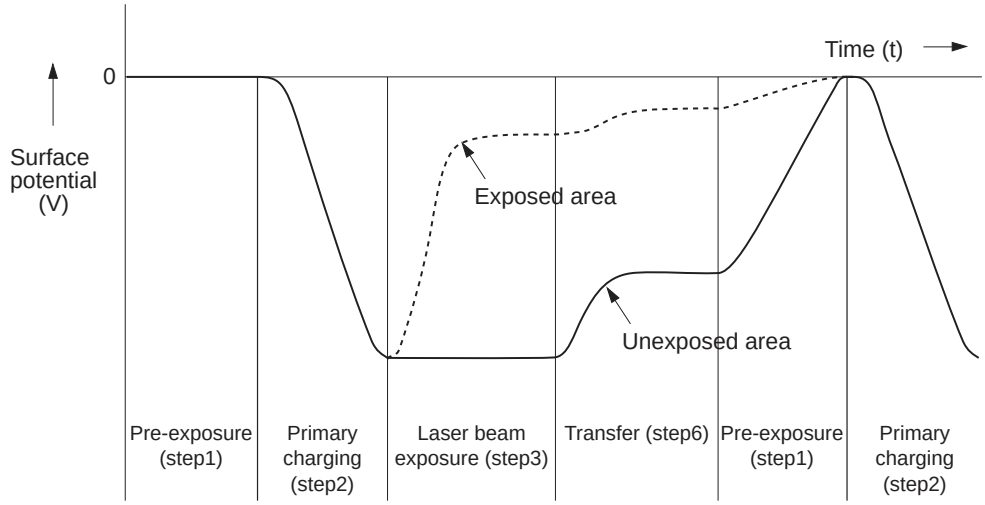


Figure 5-18 Electrostatic latent image formation block

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.

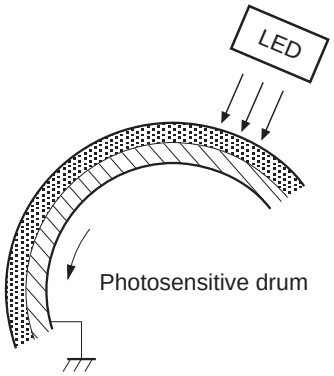


Figure 5-19 Pre-exposure

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.

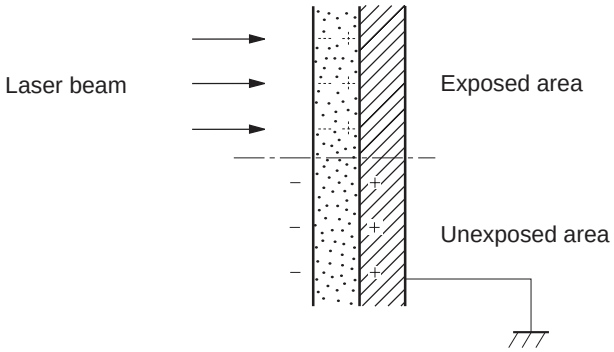


Figure 5-20 Laser beam exposure

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.

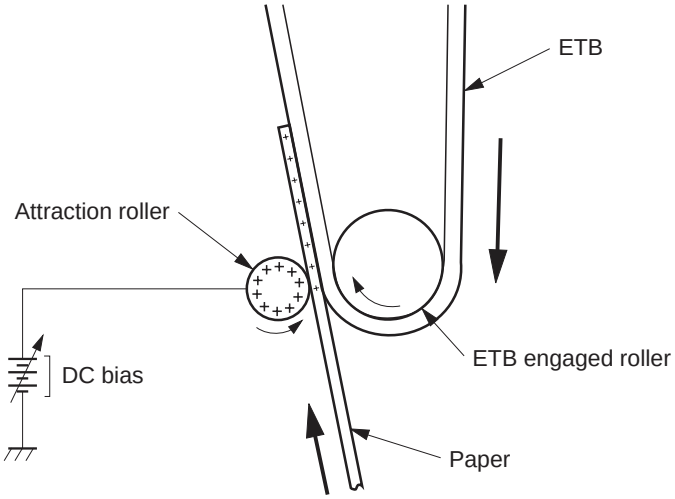


Figure 5-21 Attaching the media to the ETB

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 5-22 Toner transfer on page 183 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.

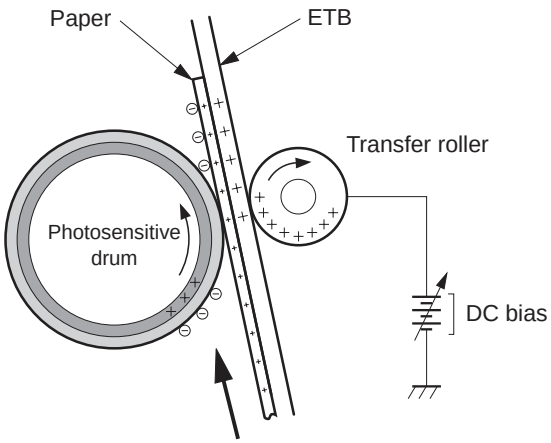


Figure 5-22 Toner transfer

Step 7: Separation

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

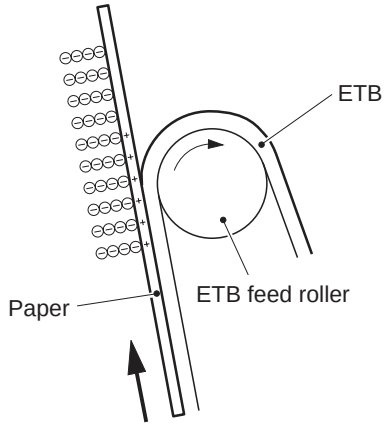


Figure 5-23 Separation

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.

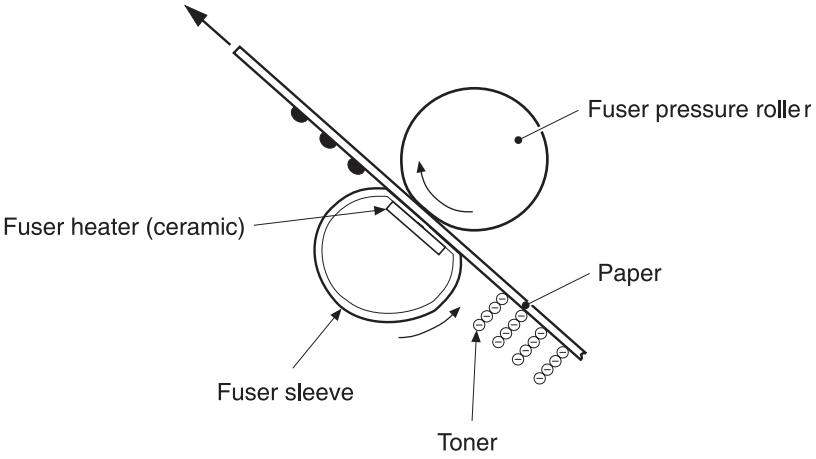


Figure 5-24 Fusing

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 5-25 Print cartridge on page 185.

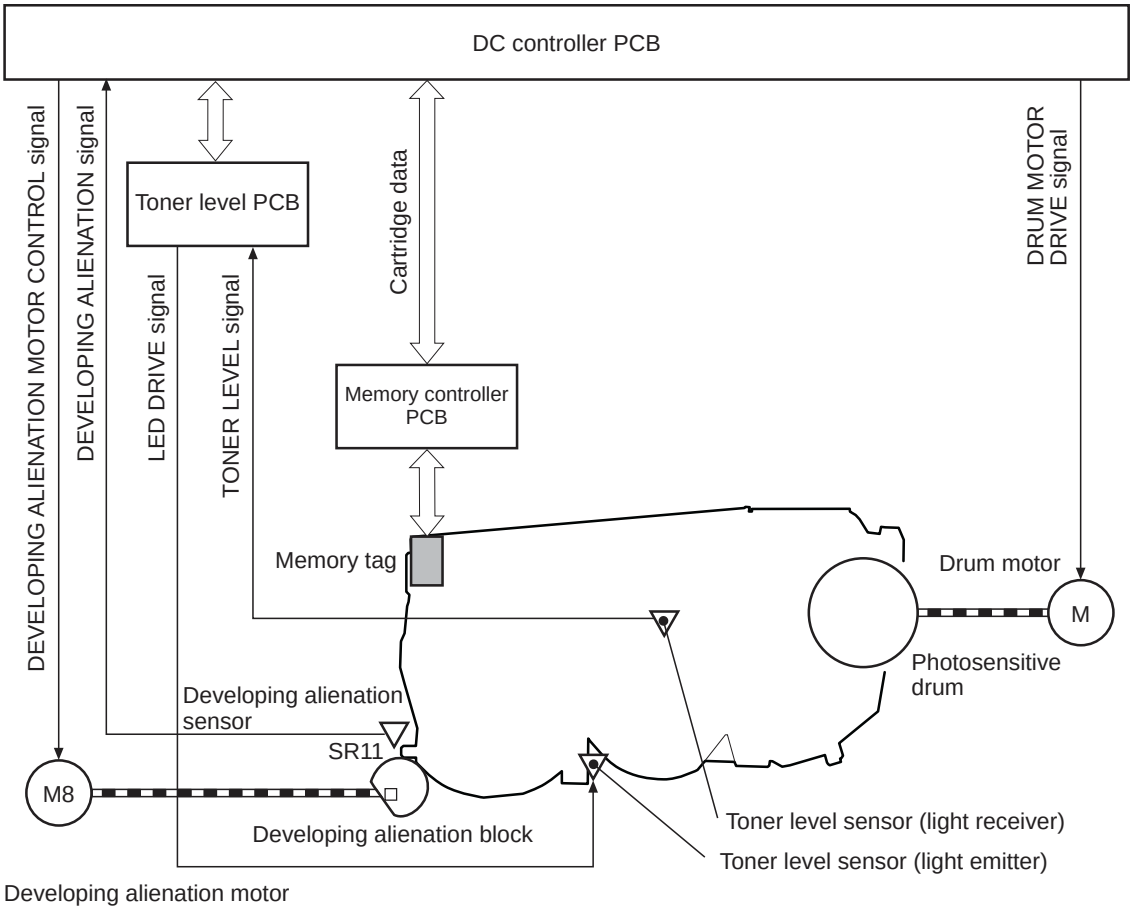


Figure 5-25 Print cartridge

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 5-26 Memory tag on page 186 illustrates how the memory tag operates.

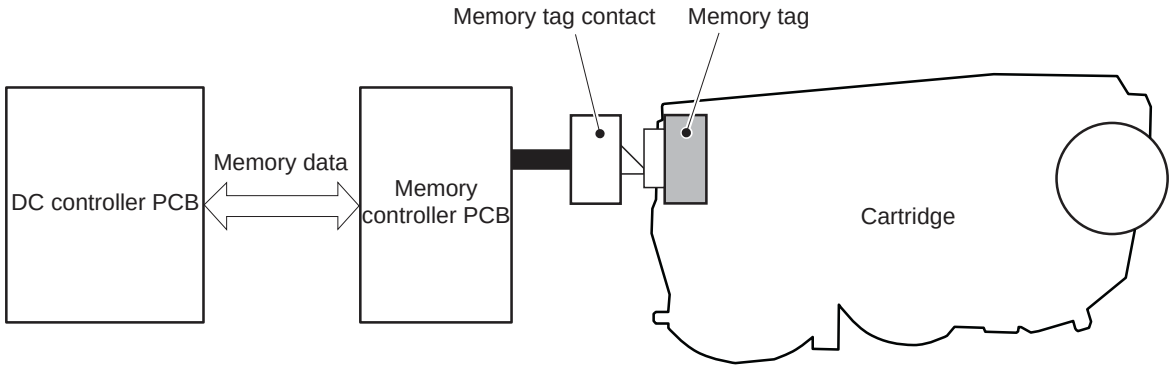


Figure 5-26 Memory tag

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 5-27 Photosensitive drum detection on page 187 illustrates the drum detection procedure.

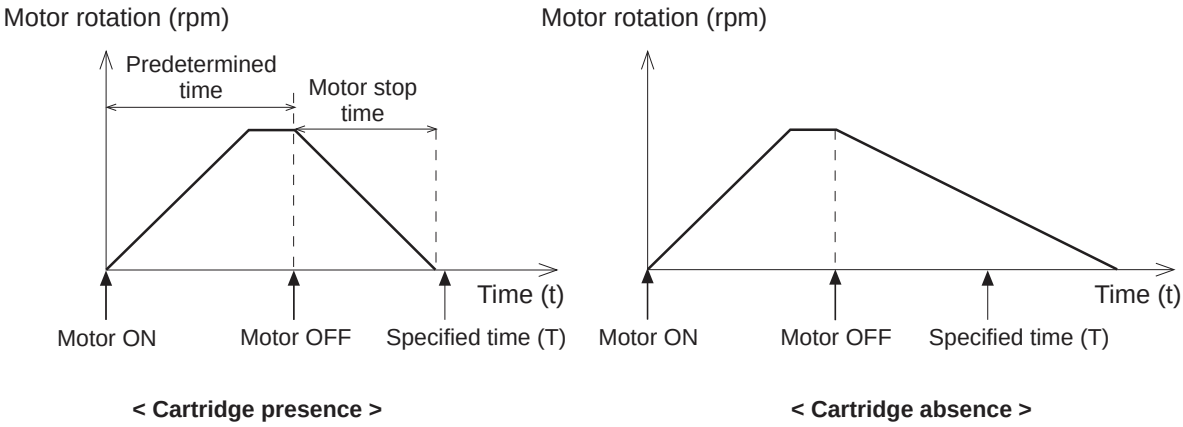


Figure 5-27 Photosensitive drum detection

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 5-28 ETB on page 188 illustrates the ETB.

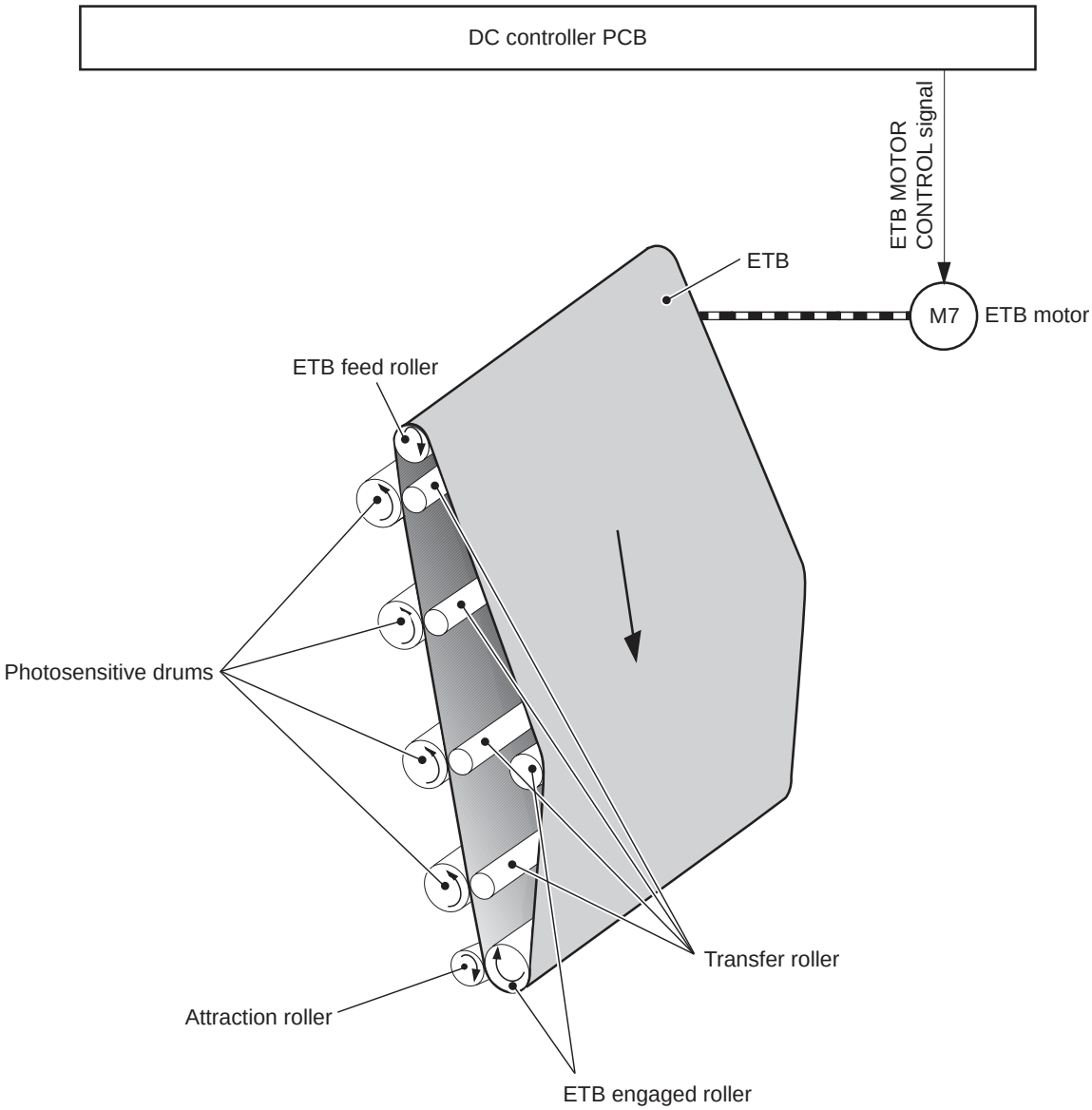


Figure 5-28 ETB

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.

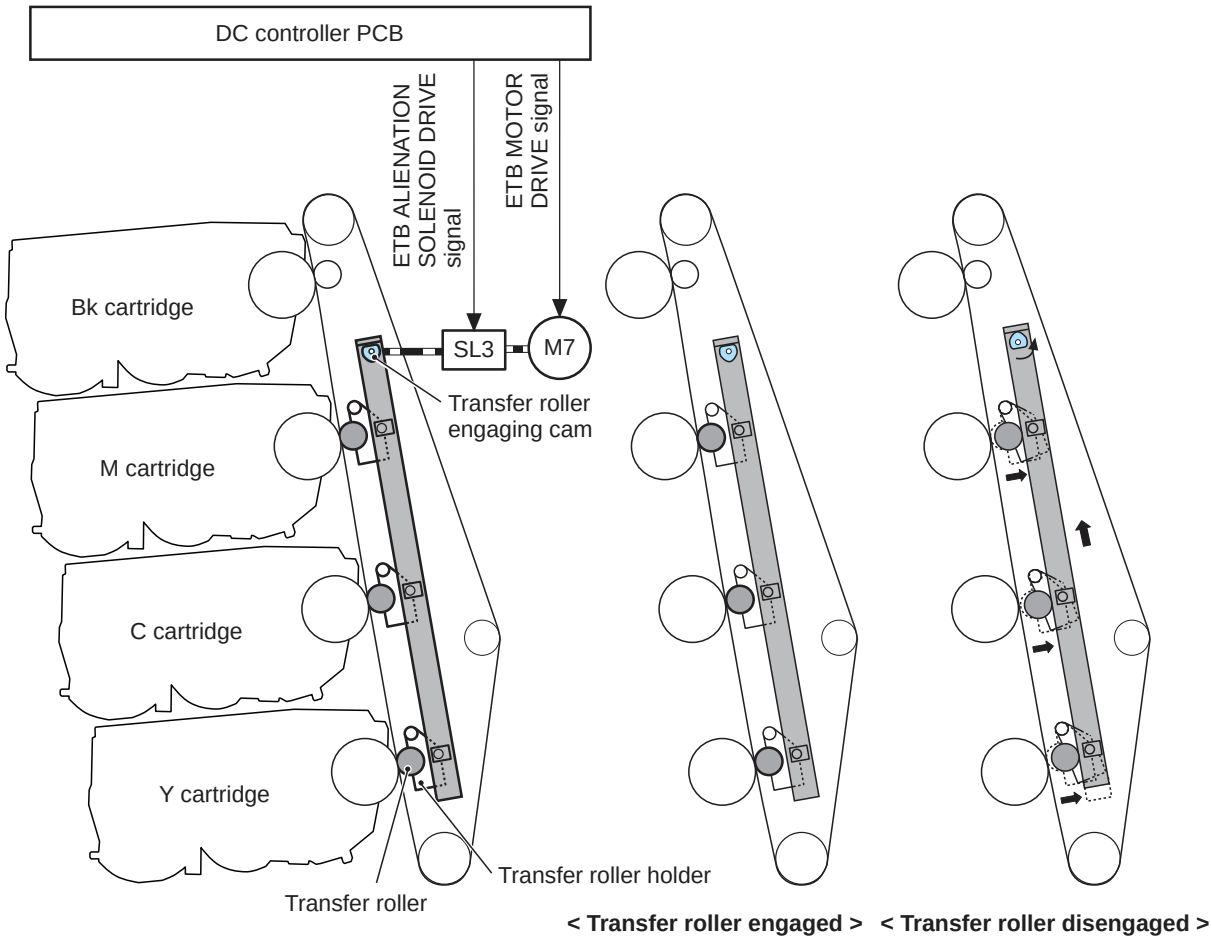


Figure 5-29 Transfer roller engagement/disengagement control

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 CALIBRATE NOW** or **CALIBRATE NOW** from the **PRINT QUALITY** menu. For information about calibrating the MFP, see Table 5-4 Calibration timing and duration on page 191 or Table 5-5 Cleaning timing and duration on page 191 for more information.

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 5-4 Calibration timing and duration on page 191 shows when the MFP calibrates, the duration of the calibration, and the type of calibration that occurs. Table 5-5 Cleaning timing and duration on page 191 shows when the MFP cleans and the duration of the cleaning. The sections that follow discuss calibration and cleaning in more detail.

Table 5-4 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
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 CALIBRATE NOW** and **CALIBRATE NOW**).	280 seconds (4 minutes, 40 seconds)	DMAX, DHALF, CPR, drum phase

Table 5-5 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 5-30 ETB cleaning on page 192 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

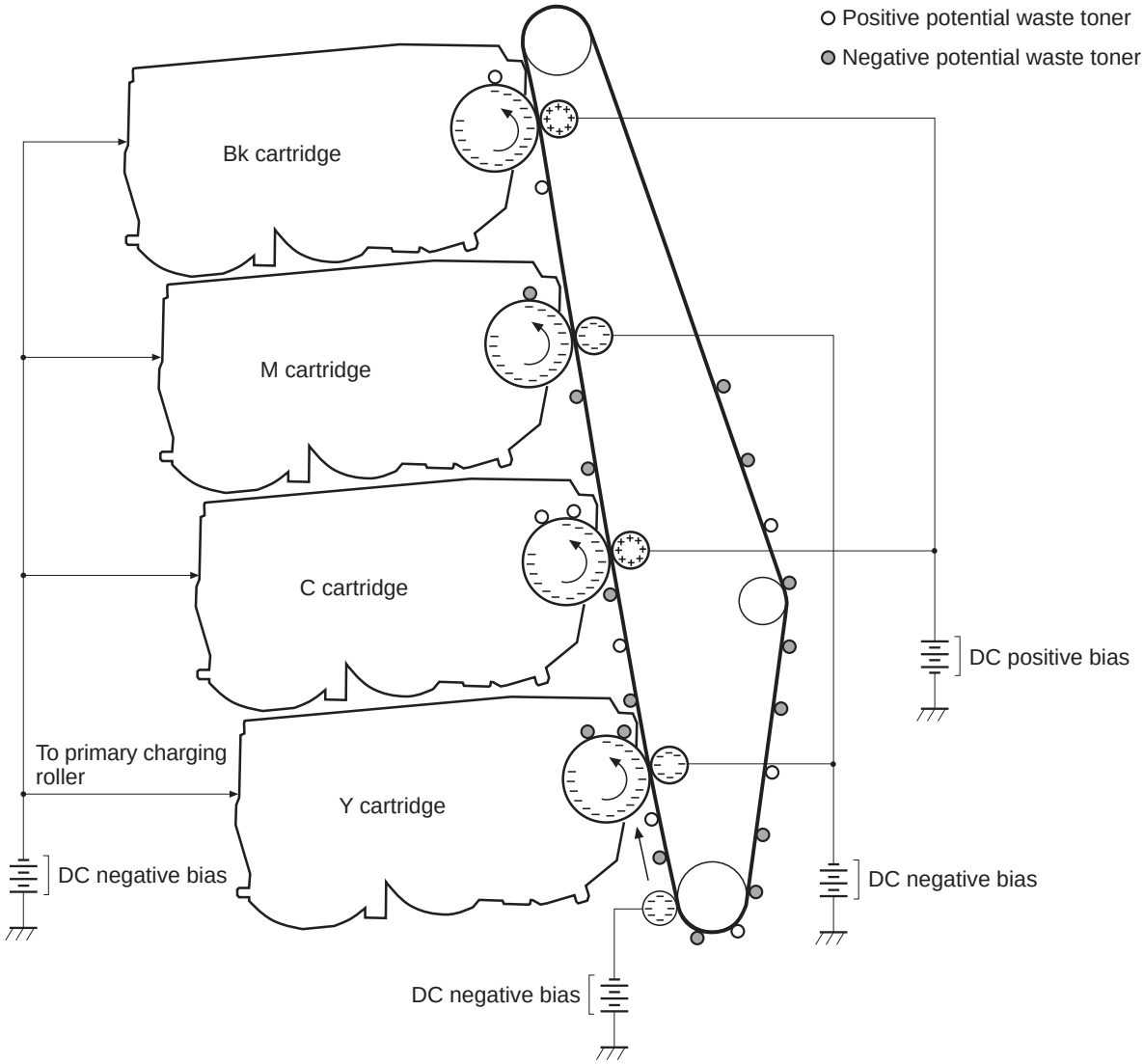


Figure 5-30 ETB cleaning

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 5-31 Color misregistration detection on page 194 illustrates this process.

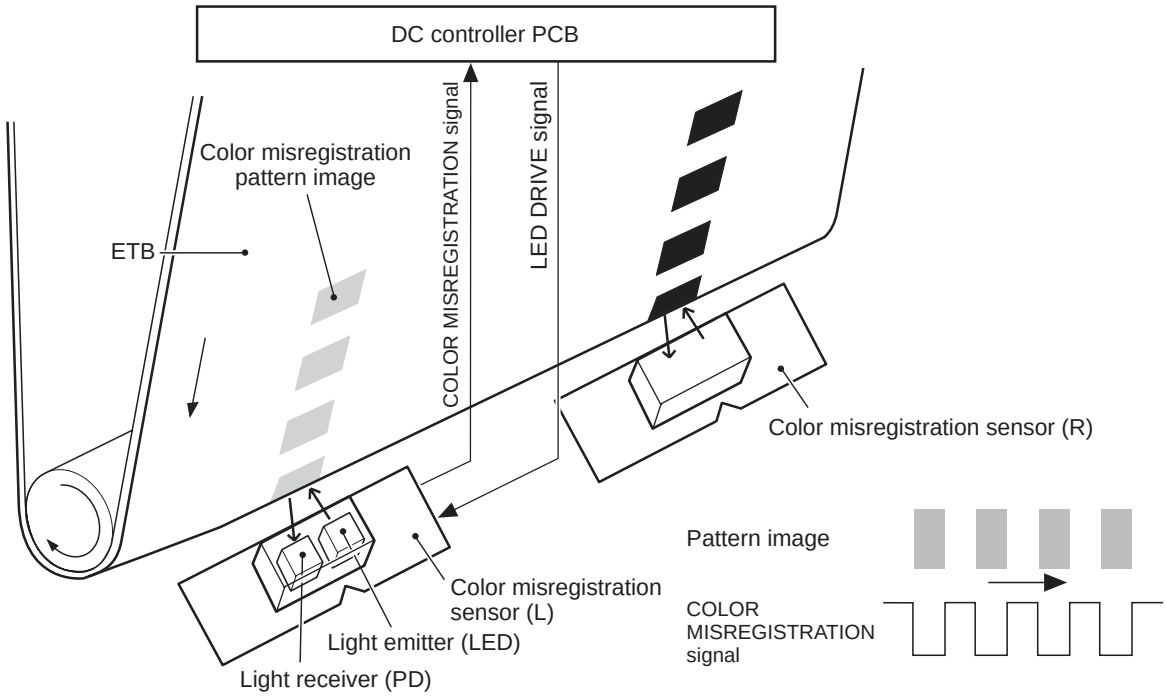


Figure 5-31 Color misregistration detection

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.

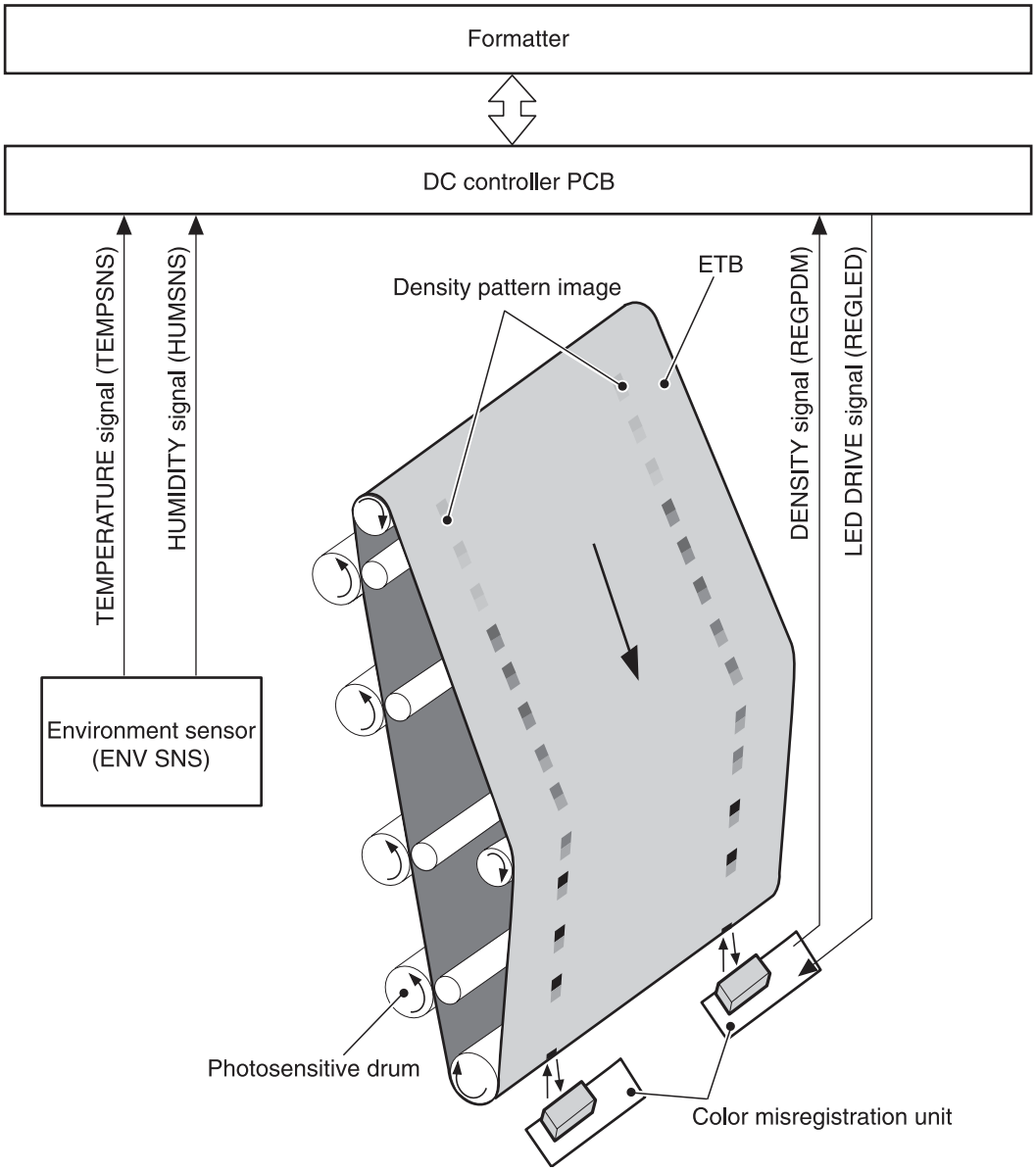


Figure 5-32 Image stabilization control

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 5-33 Image density detection on page 197 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.

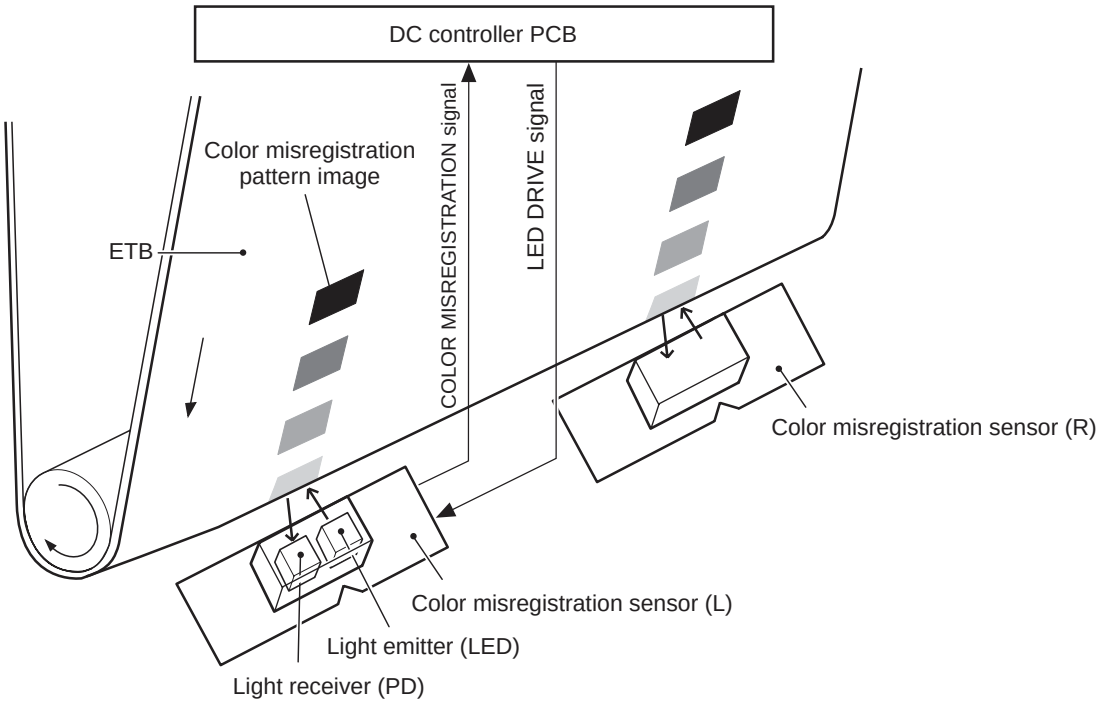


Figure 5-33 Image density detection

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 5-34 Pickup/feed system (1 of 2) on page 199 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 5-34 Pickup/feed system (1 of 2) on page 199 and Figure 5-35 Pickup/feed system (2 of 2) on page 201 illustrate this system.

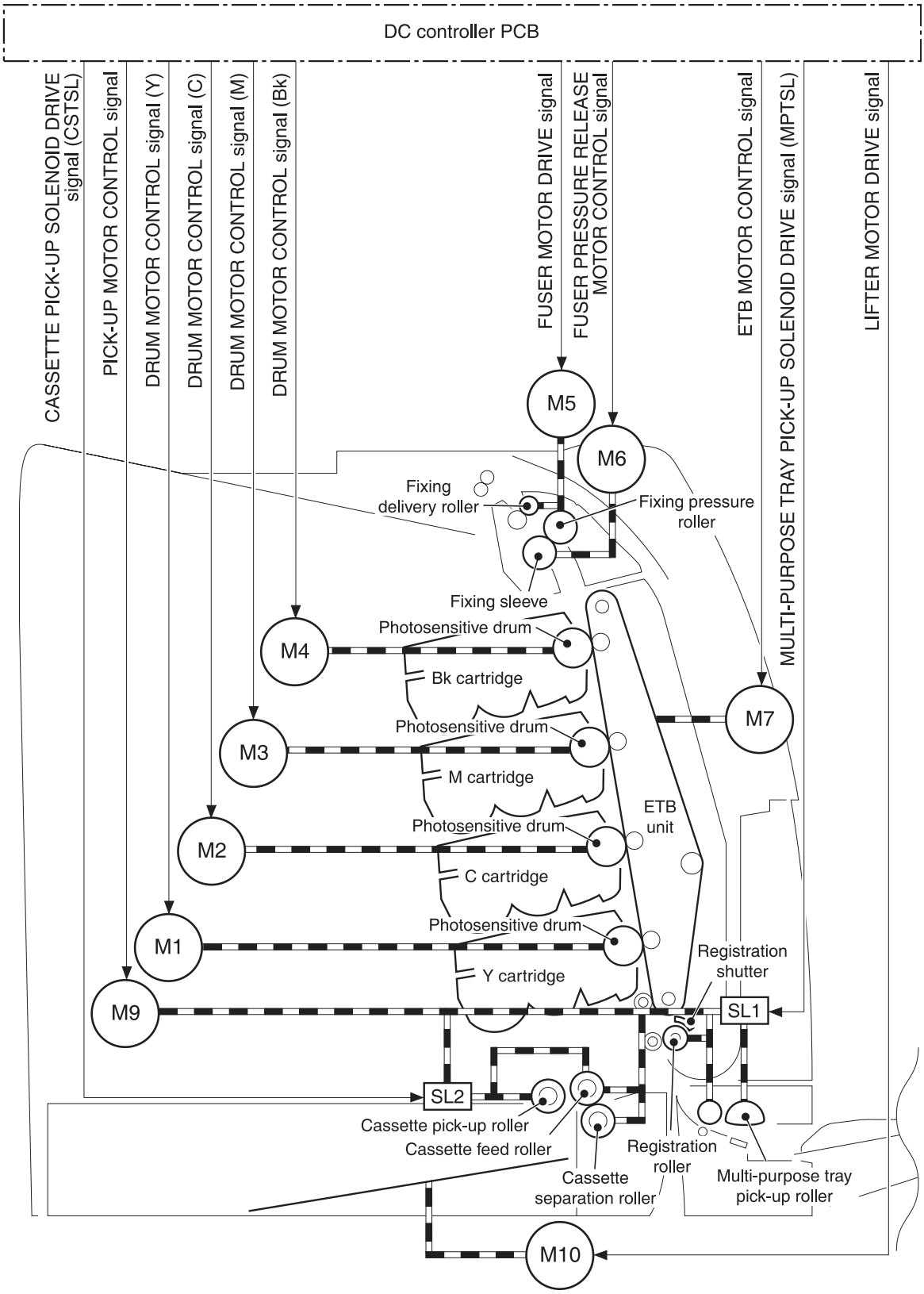


Figure 5-34 Pickup/feed system (1 of 2)

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

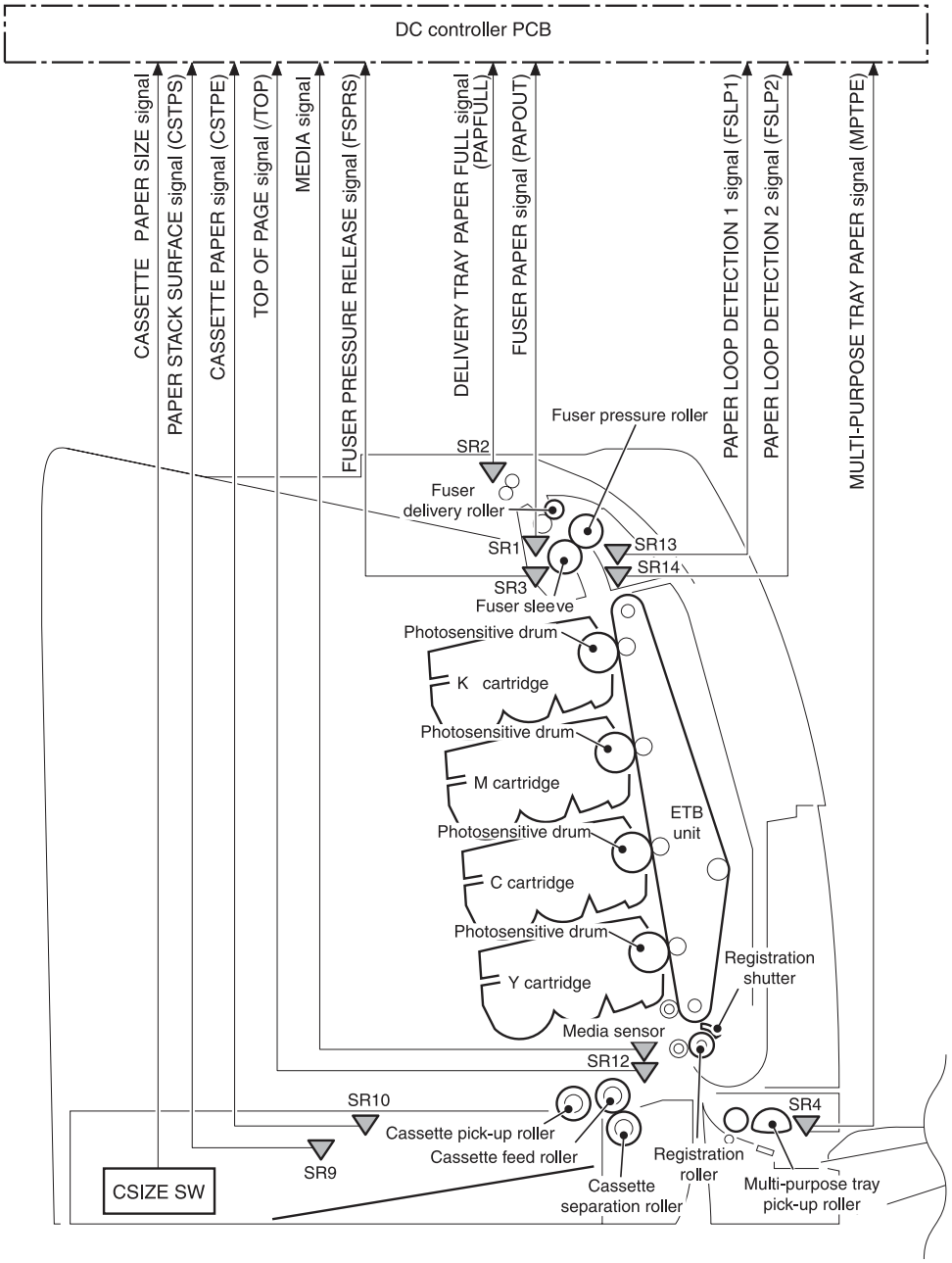


Figure 5-35 Pickup/feed system (2 of 2)

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 5-36 Pickup/feed system on page 202 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.

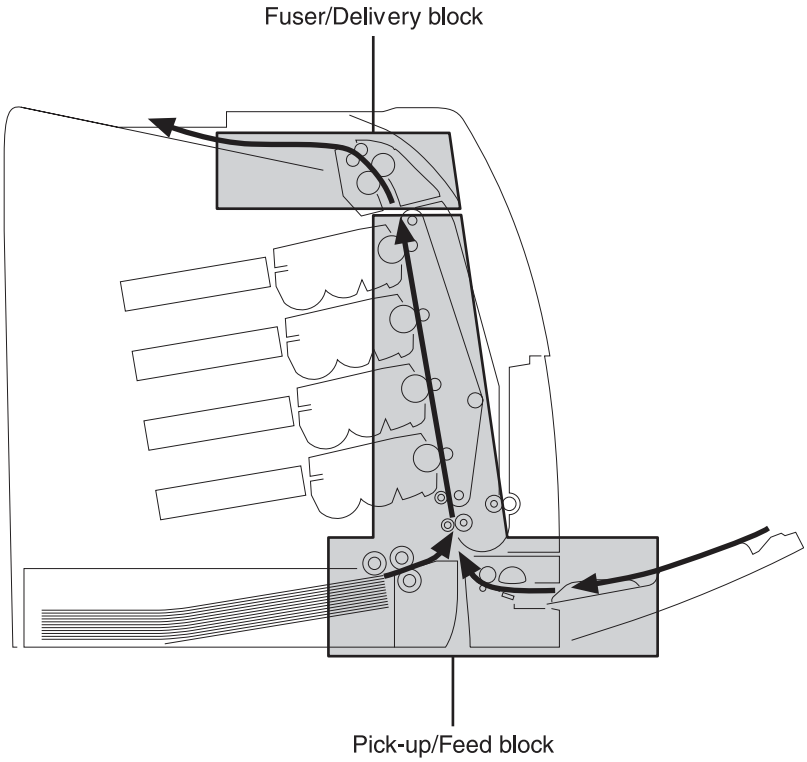


Figure 5-36 Pickup/feed system

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. See Table 5-6 Paper tray media size detection on page 203.

Table 5-6 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 5-37 Cassette pickup on page 204 illustrates this process.

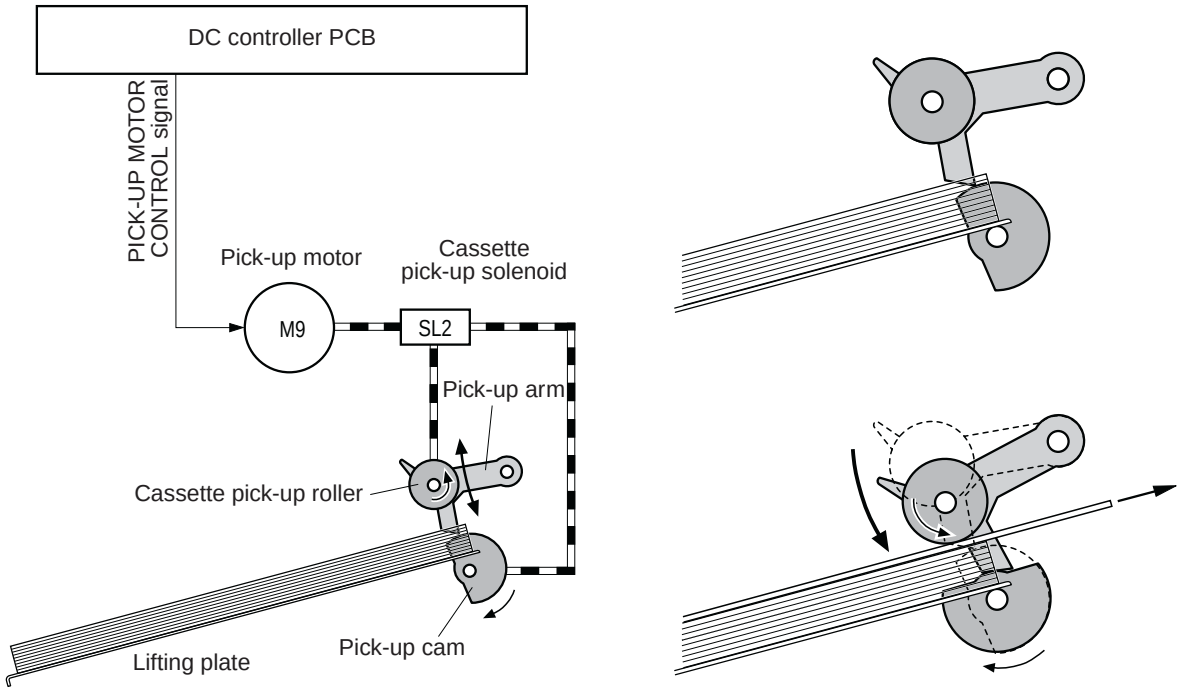


Figure 5-37 Cassette pickup

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 5-38 Media lifting on page 206 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.

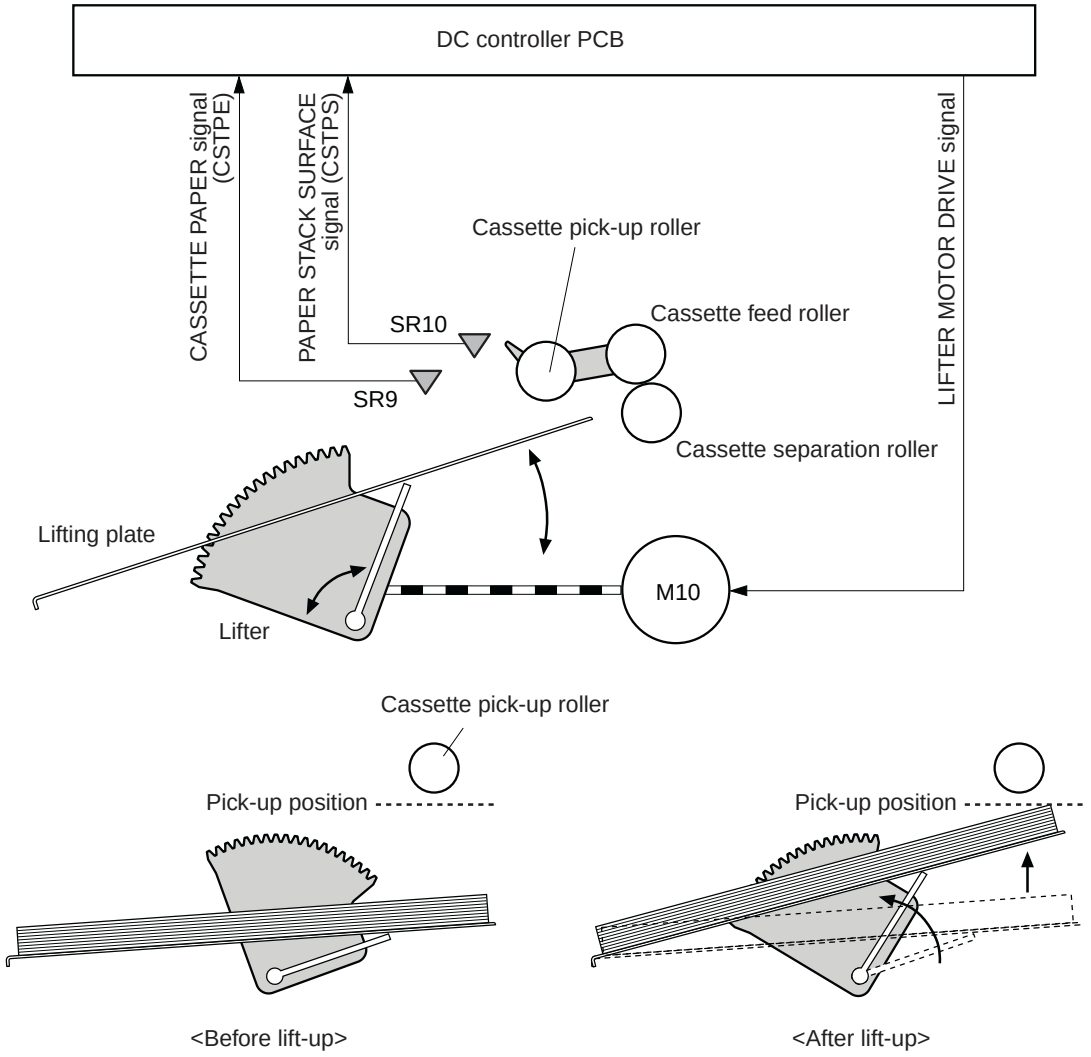


Figure 5-38 Media lifting

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 5-39 Media lifting on page 207 illustrates this process.

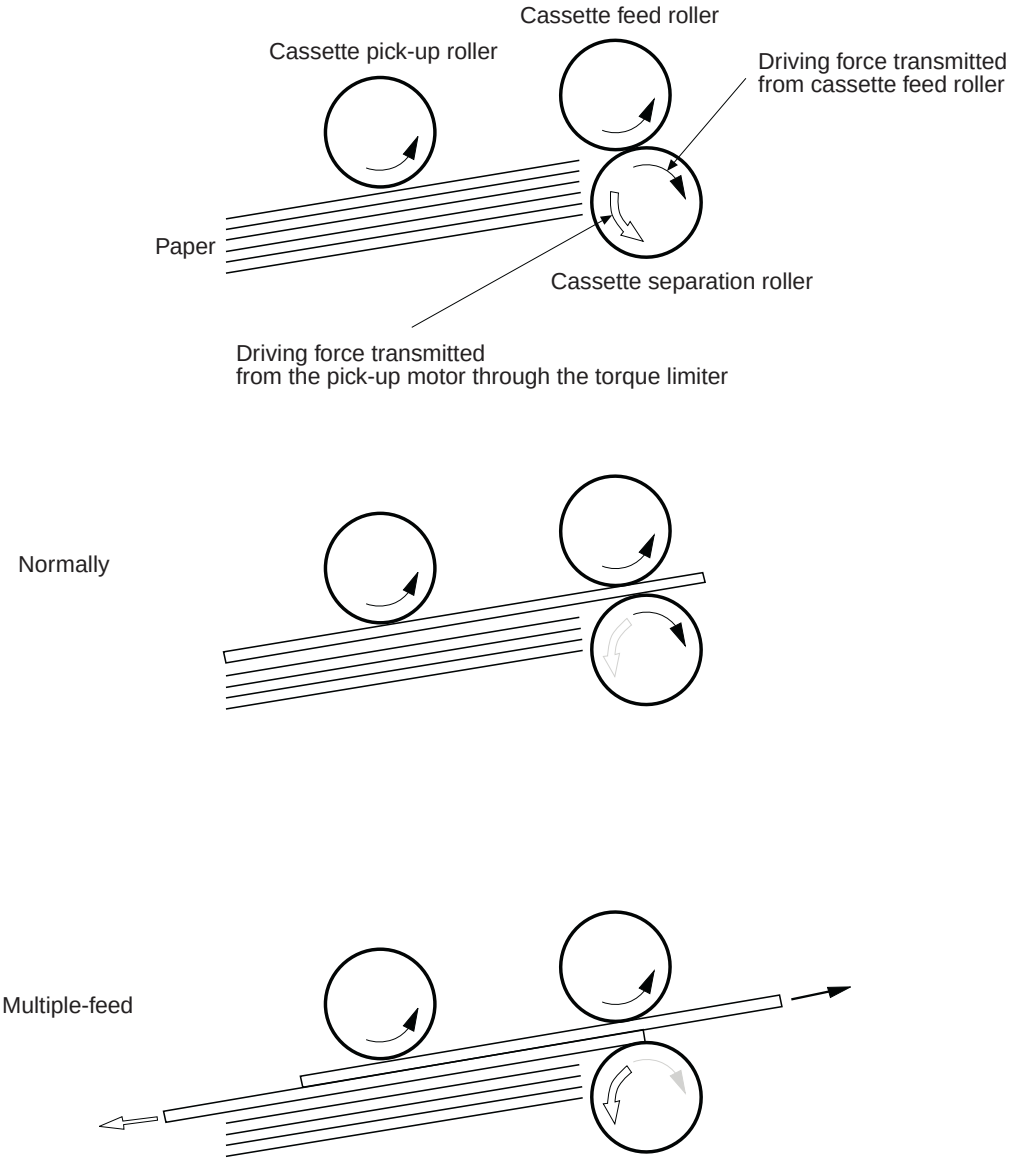


Figure 5-39 Media lifting

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 5-40 Skew correction on page 208 illustrates this process.

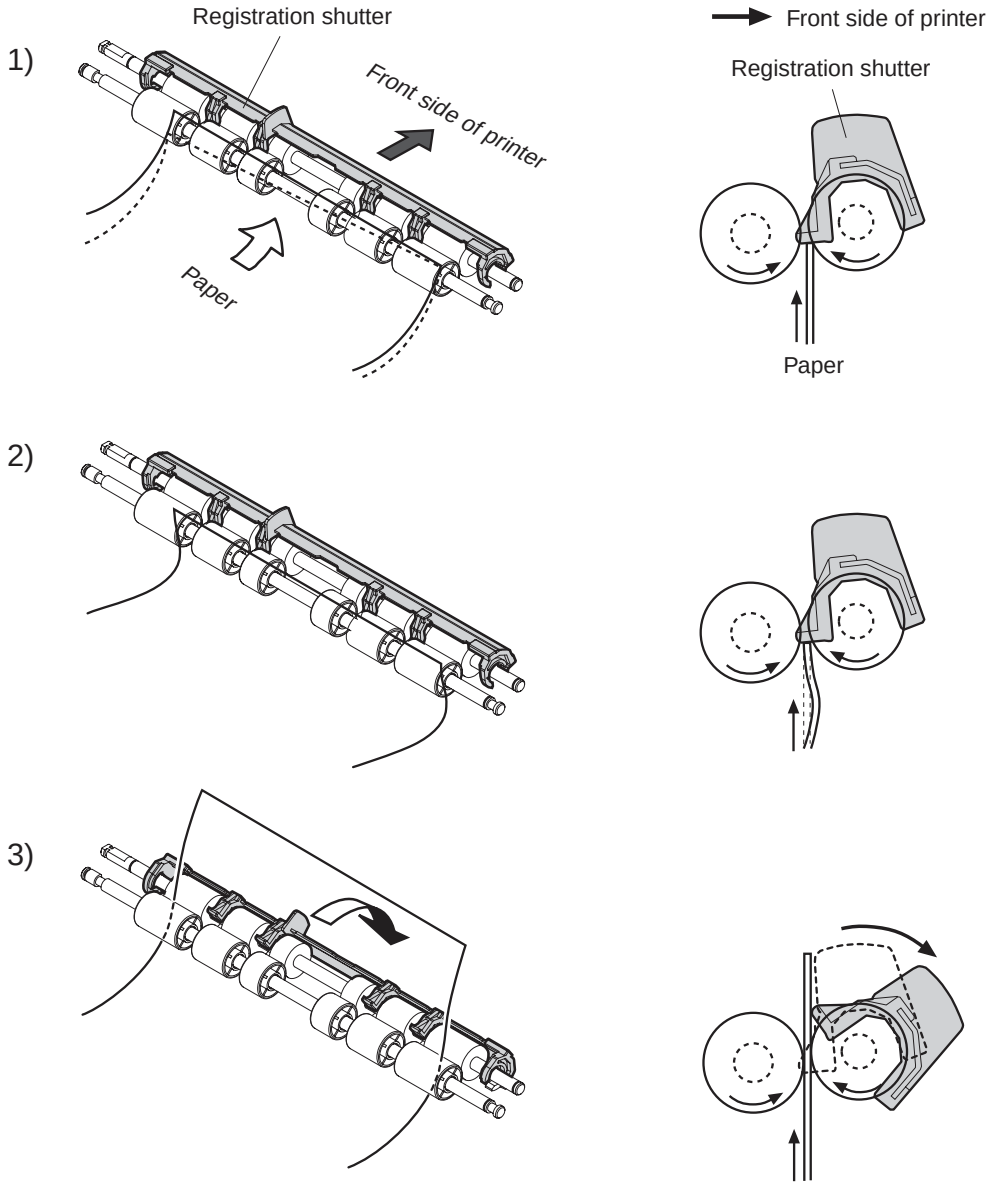


Figure 5-40 Skew correction

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 5-41 Media detection on page 209 illustrates this process.

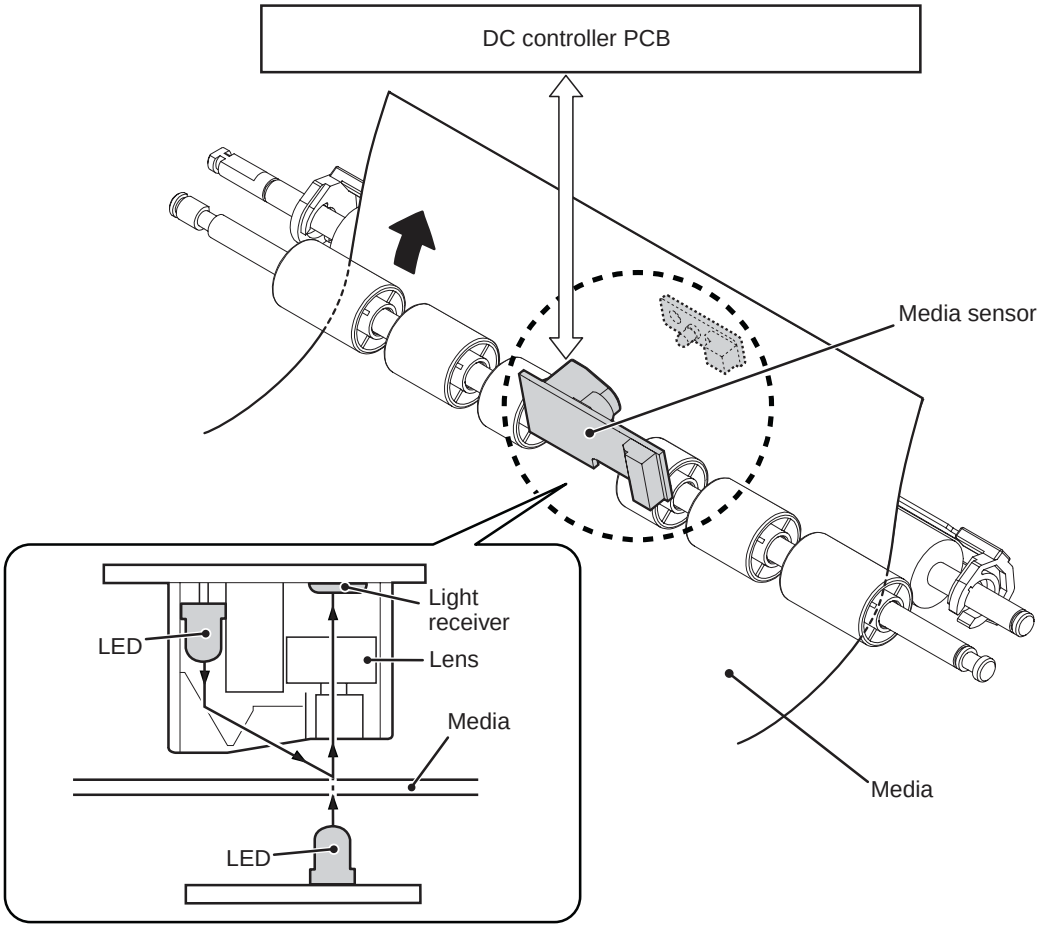


Figure 5-41 Media detection

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 5-7 Paper size detection switch settings on page 209 shows the relationship between media type and feed speed.

Table 5-7 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 5-7 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.

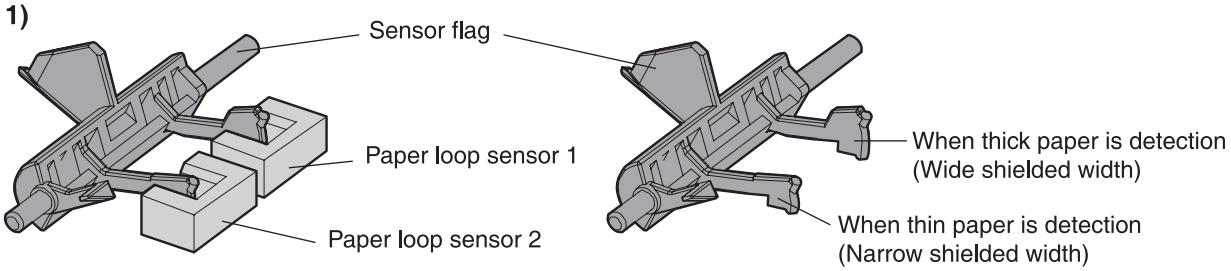
The feeding speed of the fusing pressure roller and the ETB are not exactly the same. The following problems might occur when the media is fed into the fuser.

- 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 5-42 Loop control on page 212 illustrates this process.

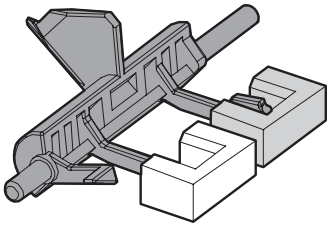
1)



Home position

Slow down the rotation of fuser pressure roller

2)



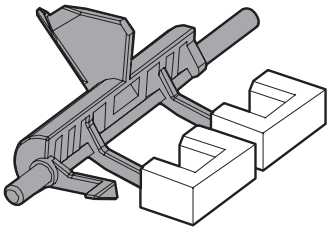
(At thick paper feeding)

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 5-42 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 5-43 Fusing pressure release on page 213 illustrates this process.

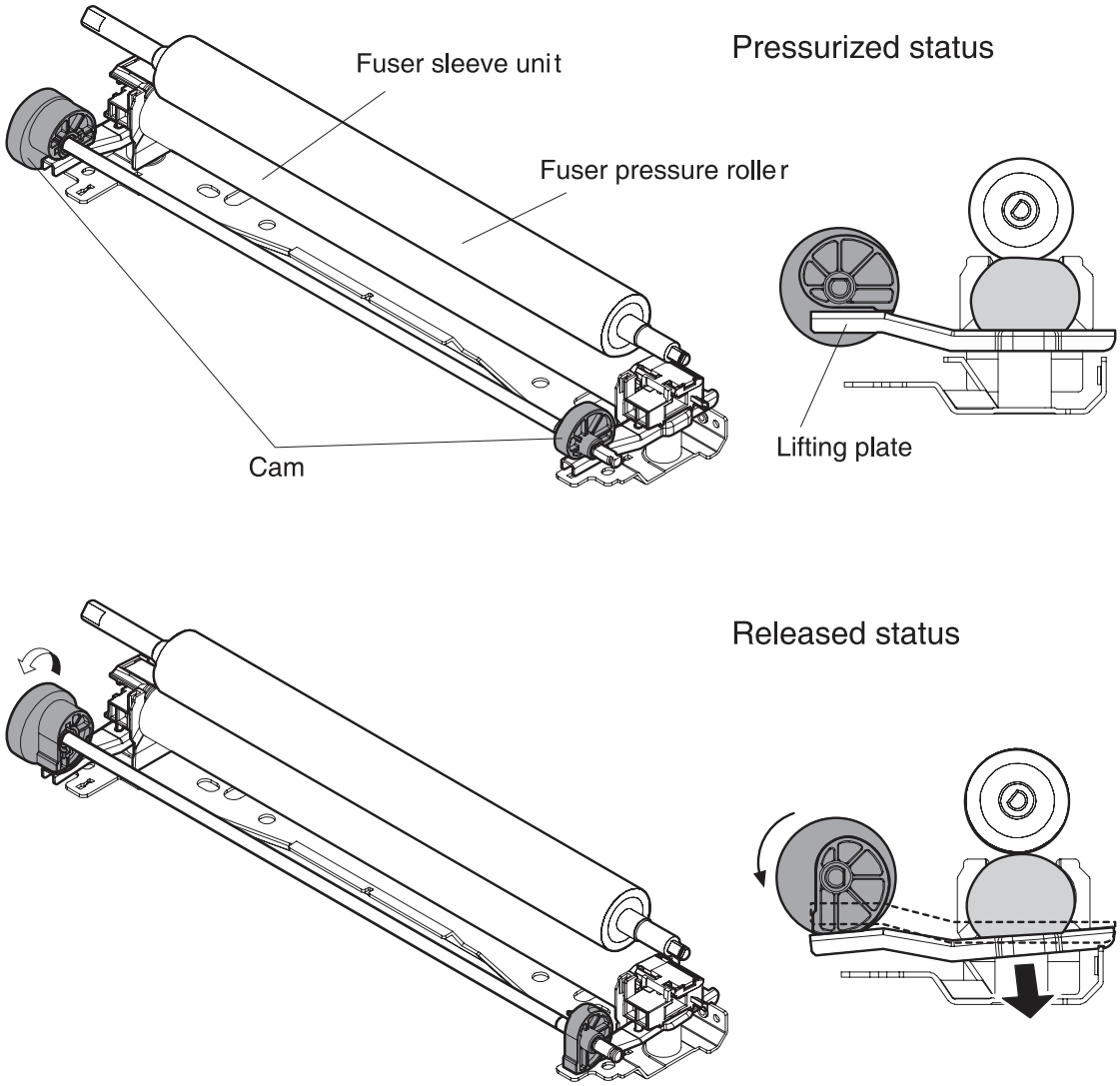


Figure 5-43 Fusing pressure release

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.

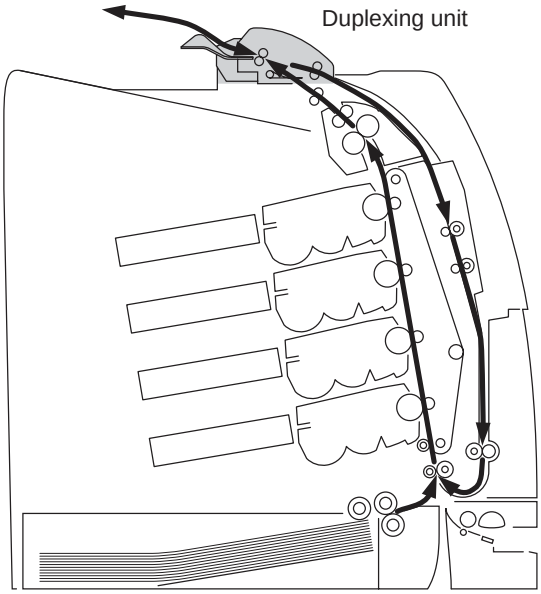


Figure 5-44 Duplex feed unit

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 5-45 Duplexing driver PCB signal flow on page 214 shows the signal flow in the duplexing driver PCB.

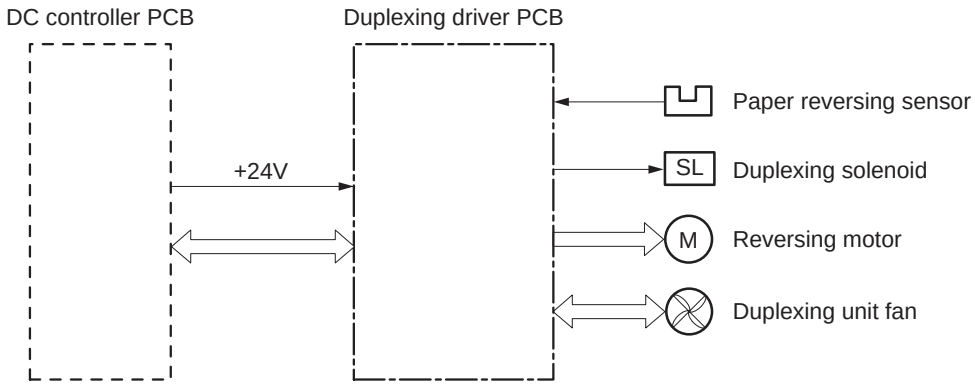


Figure 5-45 Duplexing driver PCB signal flow

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 5-46 Duplexing feed on page 215.

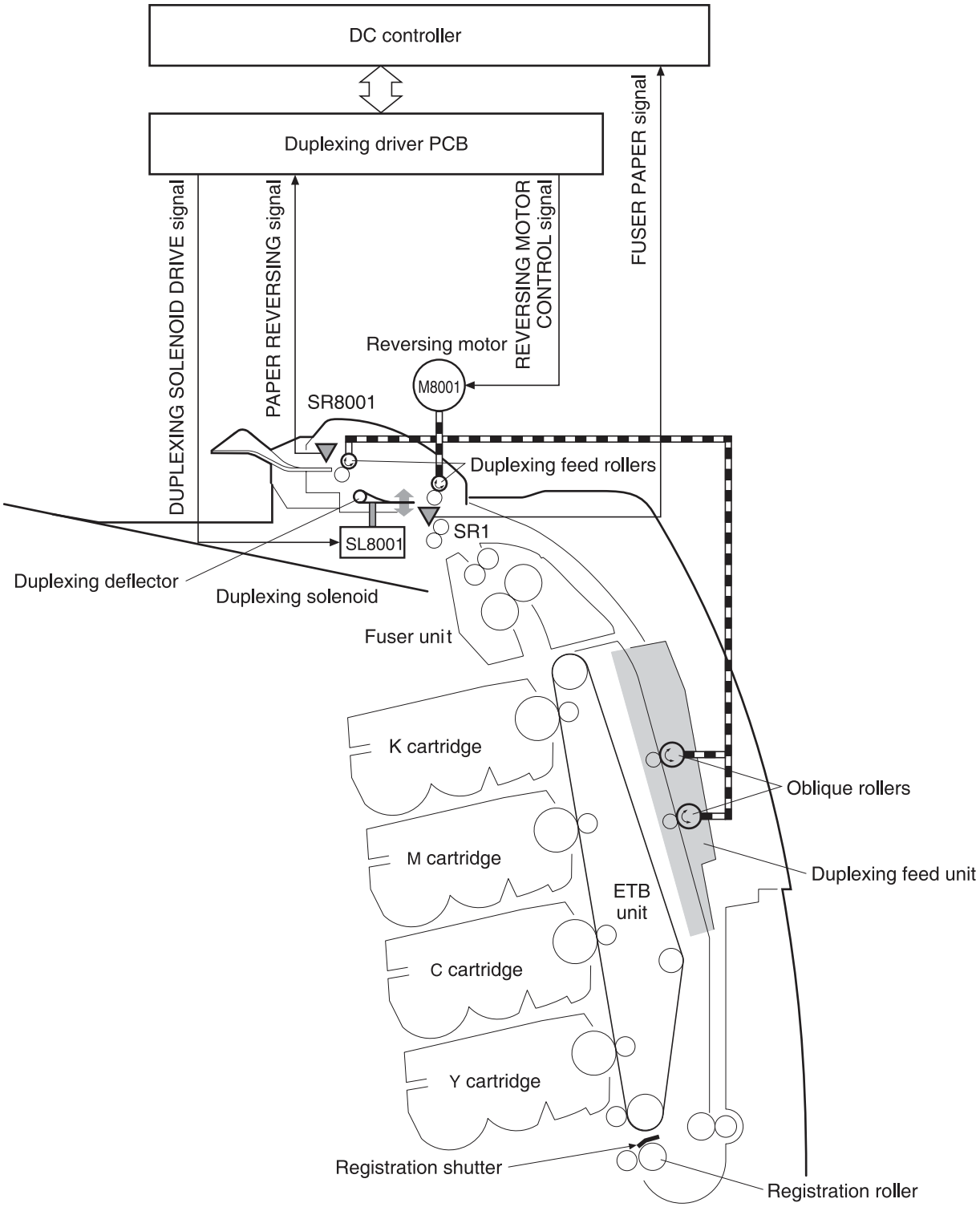


Figure 5-46 Duplexing feed

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.

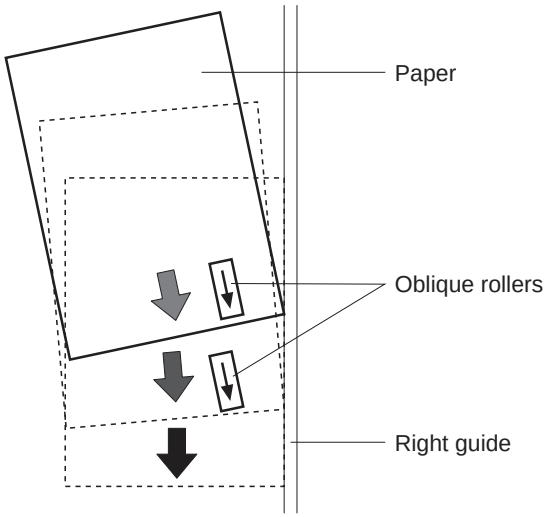


Figure 5-47 Paper skew correction

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 **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message displays on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

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 **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message displays on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

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 **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message displays on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

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 **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message appears on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

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 **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message displays on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

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 **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message displays on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

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 **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message appears on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

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 **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message displays on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

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 5-48 ADF mechanical structure on page 219 shows a cross-section of the ADF.

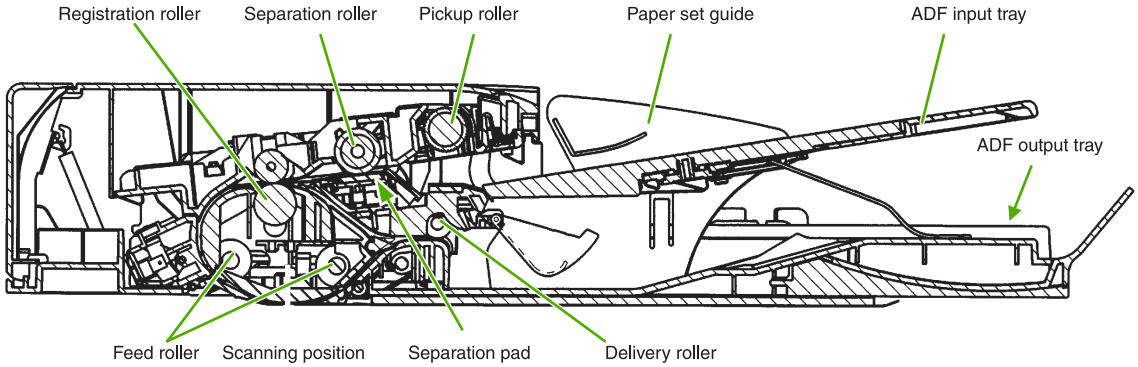


Figure 5-48 ADF mechanical structure

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 5-49 Scanner assembly electrical structure on page 220 shows the scanner assembly electrical structure.

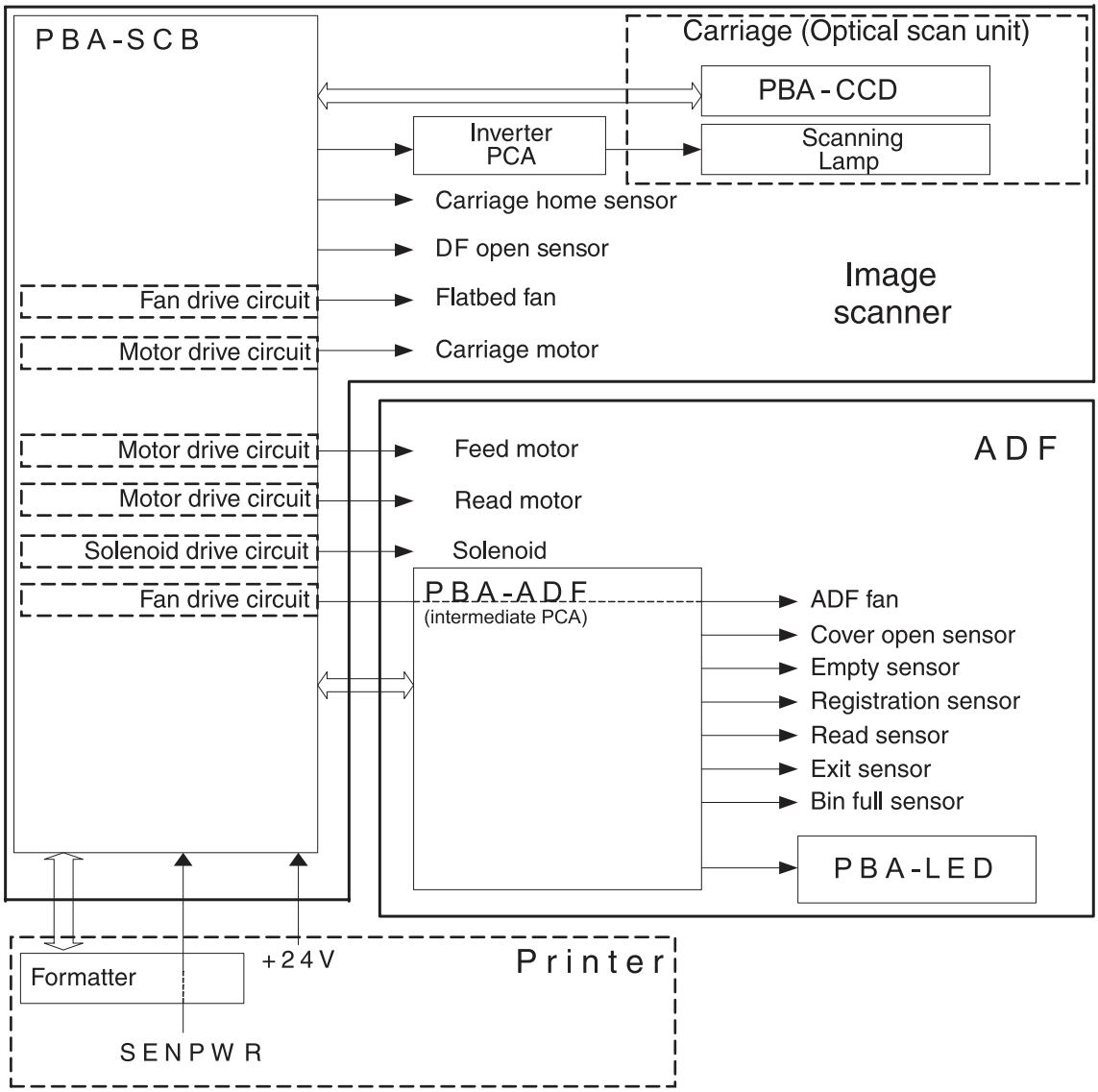


Figure 5-49 Scanner assembly electrical structure

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.

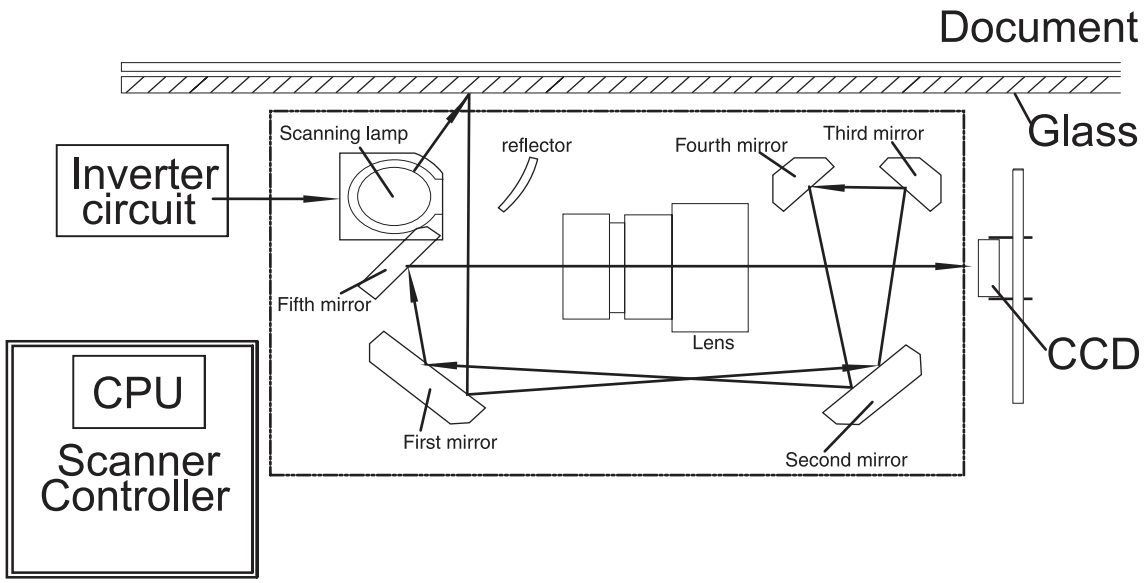


Figure 5-50 Scan carriage components

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.

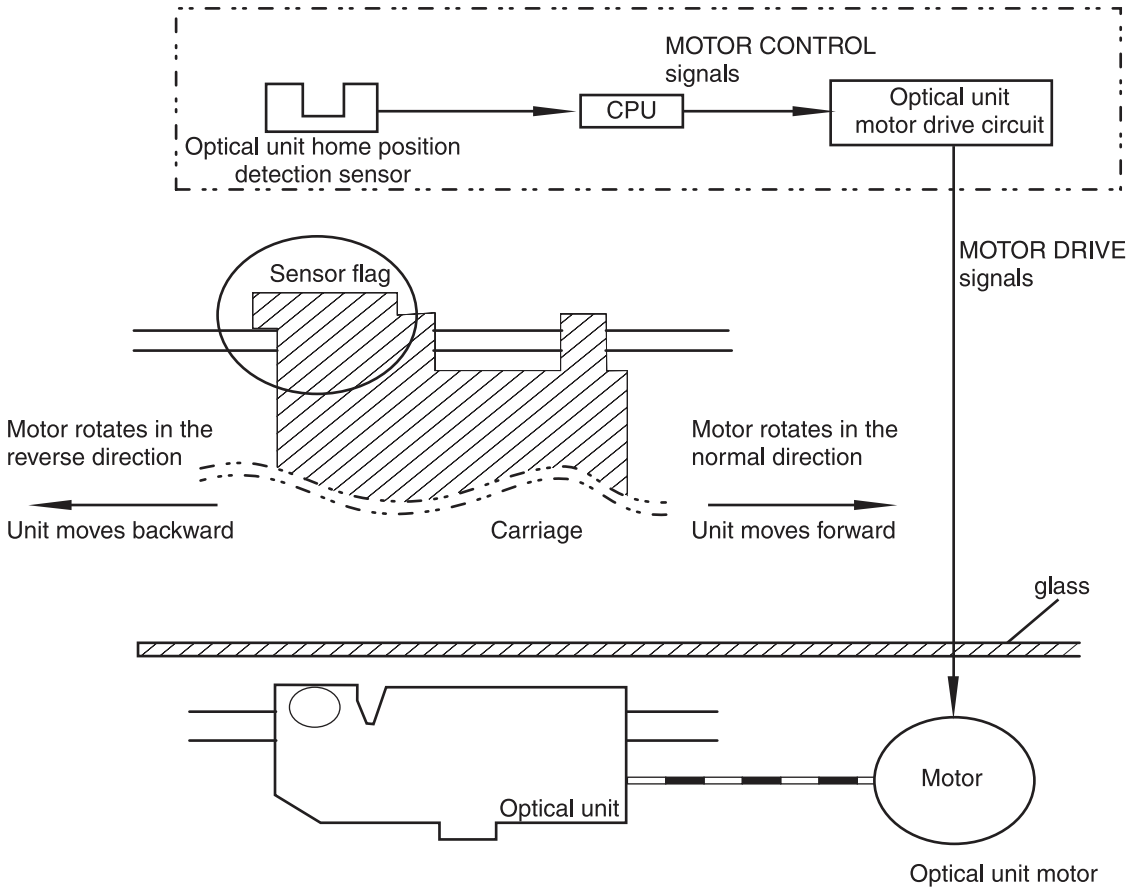


Figure 5-51 Scan carriage movement

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.

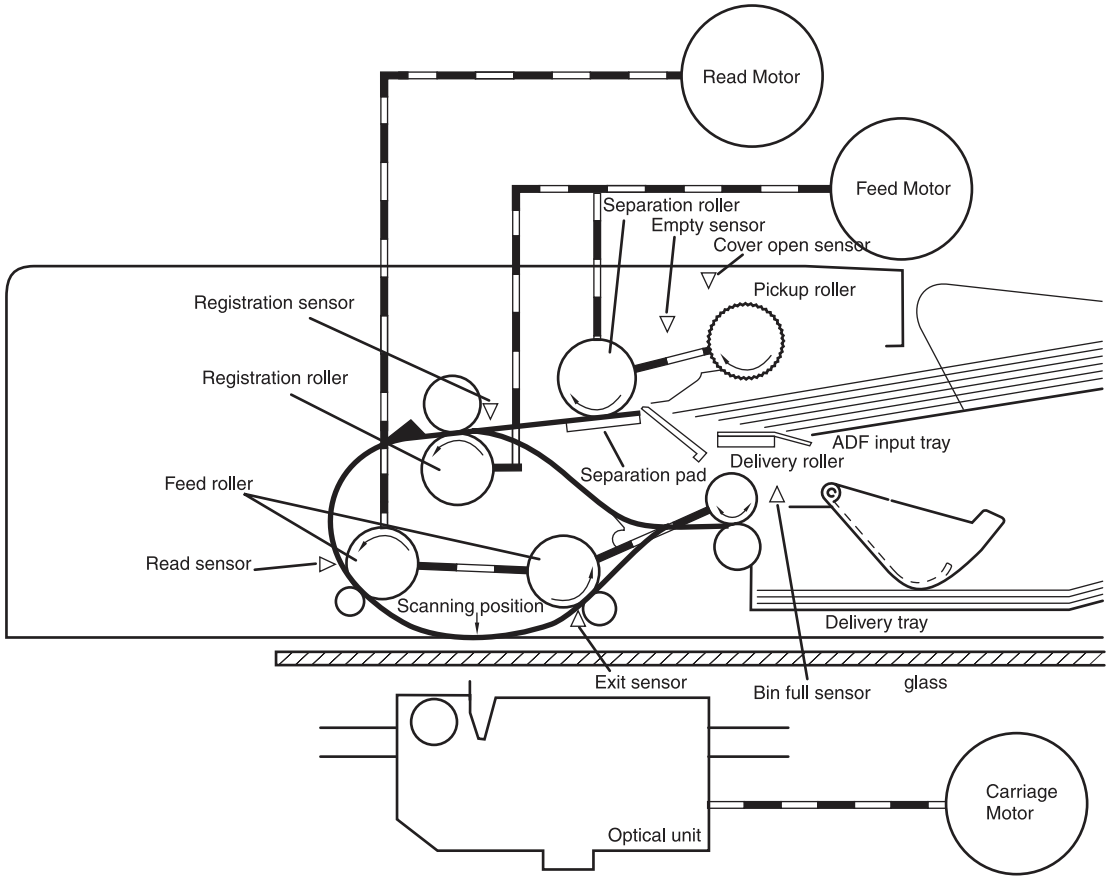


Figure 5-52 ADF paper path and sensors

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.

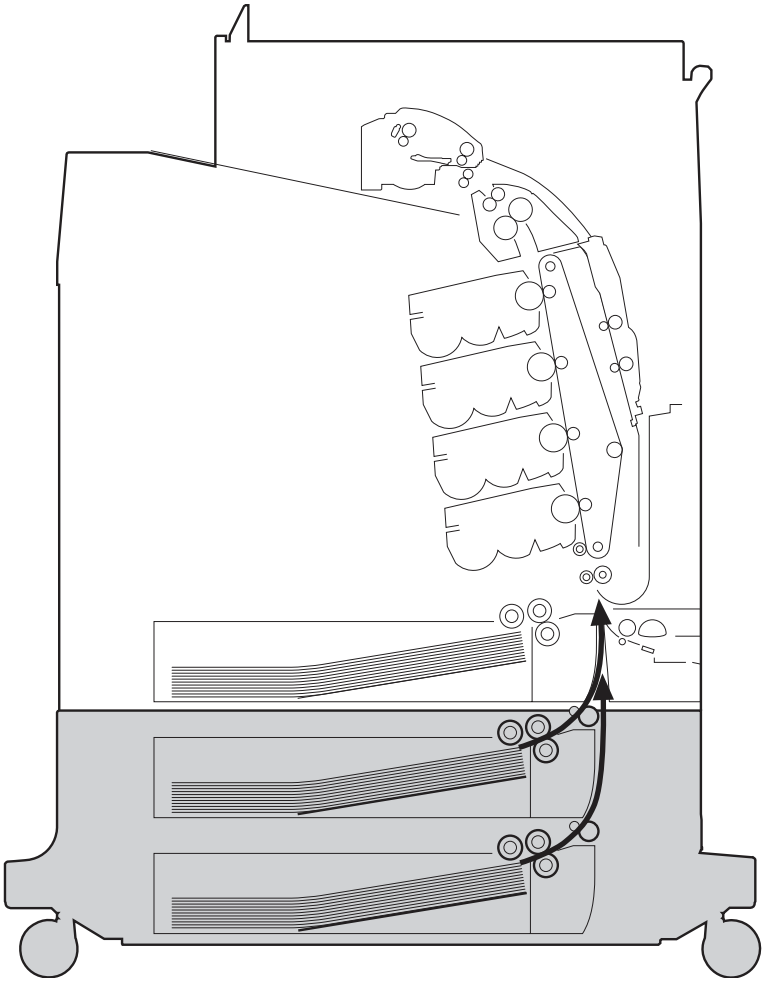


Figure 5-53 2 X 500-sheet feeder paper path

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.

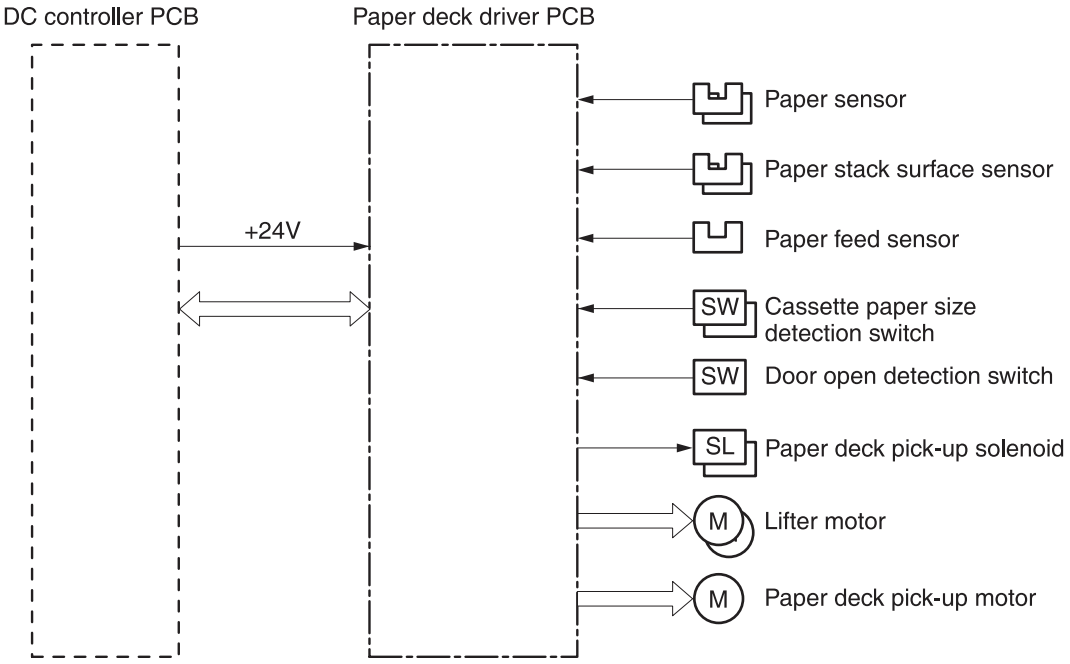


Figure 5-54 2 X 500-sheet feeder I/O block diagram

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 5-54 2 X 500-sheet feeder I/O block diagram on page 226. The Figure 5-55 2 X 500-sheet feeder pickup and feed diagram on page 227 identifies the components of the 2 X 500-sheet feeder.

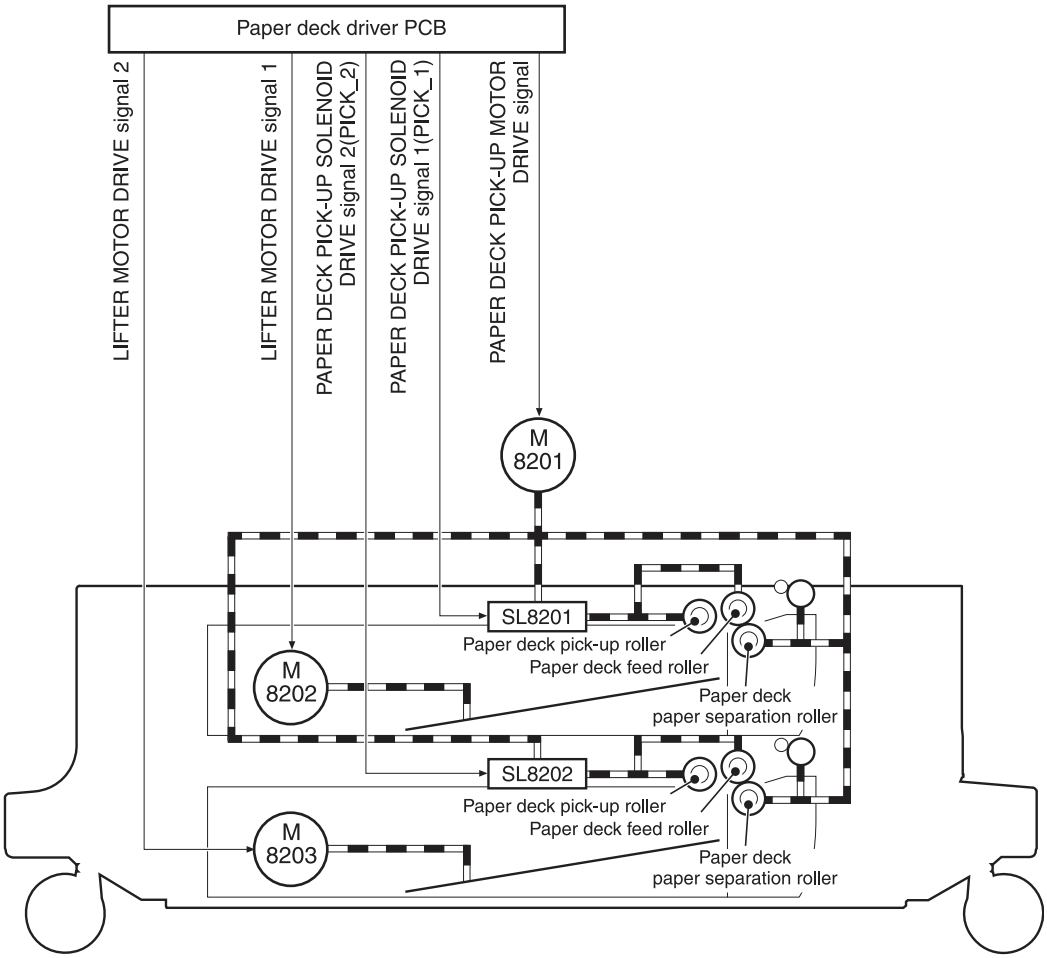


Figure 5-55 2 X 500-sheet feeder pickup and feed diagram

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 216.

Output devices

This section describes the theory of operation for these components:

- IPTU
- 3-bin mailbox
- Stapler/stacker

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 5-56 IPTU paper path on page 229.

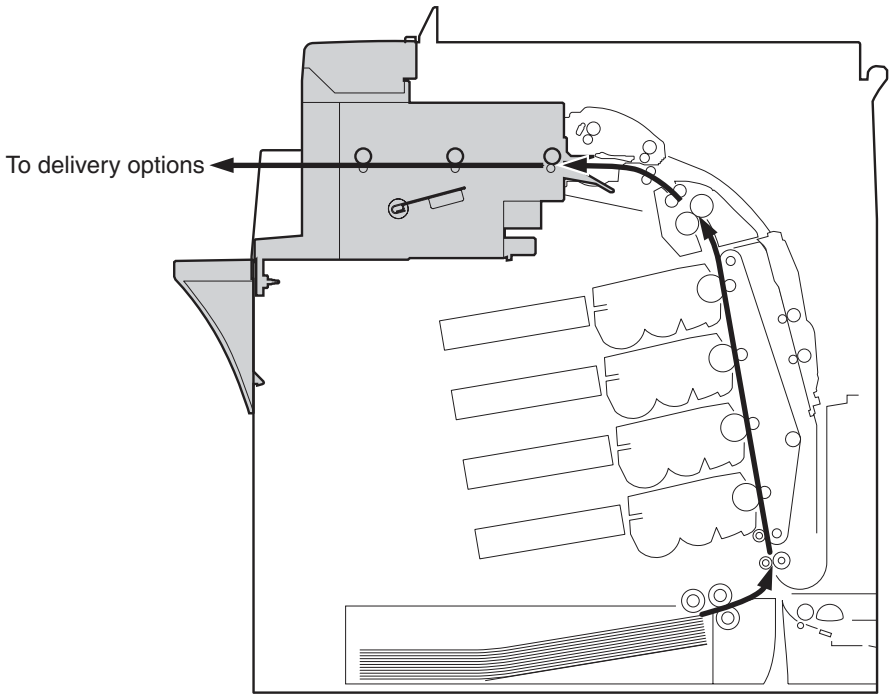


Figure 5-56 IPTU paper path

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 5-57 IPTU PCB flow on page 230 shows the signal flow in the IPTD PCB.

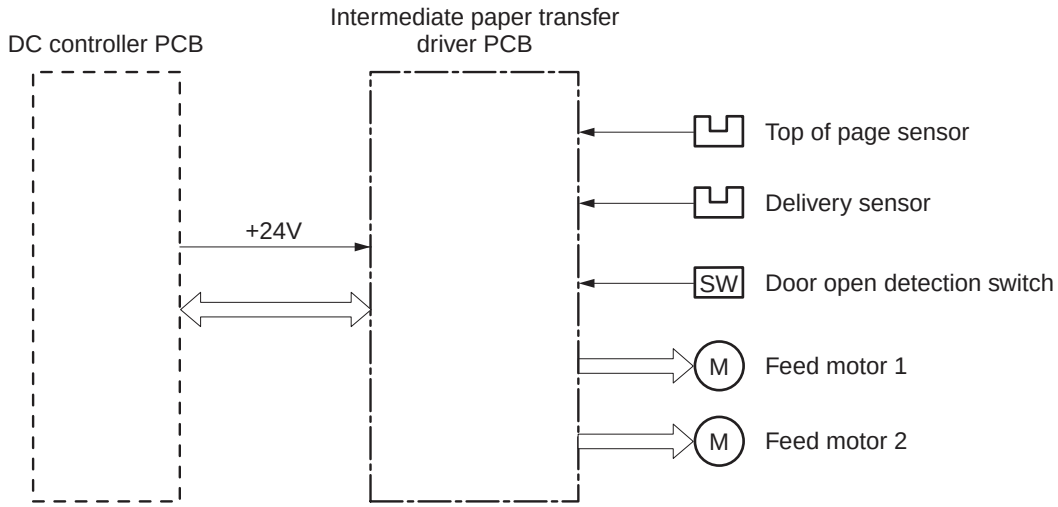


Figure 5-57 IPTU PCB flow

IPTU transfer operation

The IPTU delivers the fused paper to the output device in the operation shown in Figure 5-58 IPTU transfer operation on page 231.

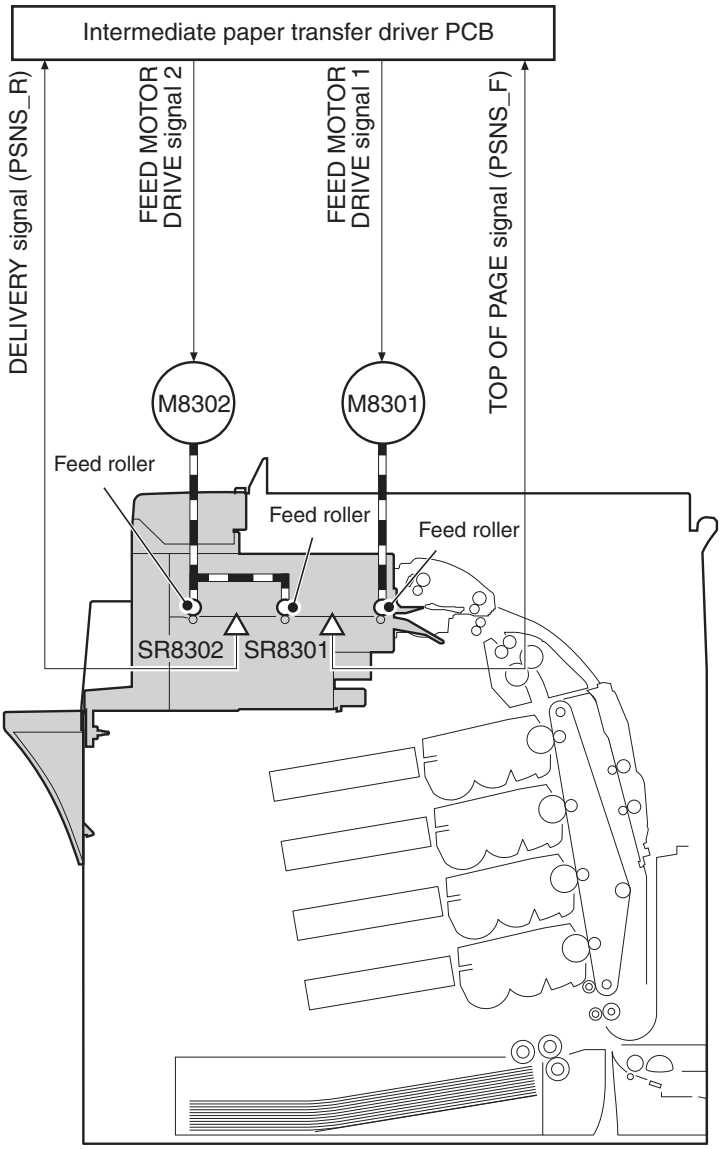


Figure 5-58 IPTU transfer operation

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

When the 3-bin mailbox (MBM) is installed, it receives printed 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 PCB 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.

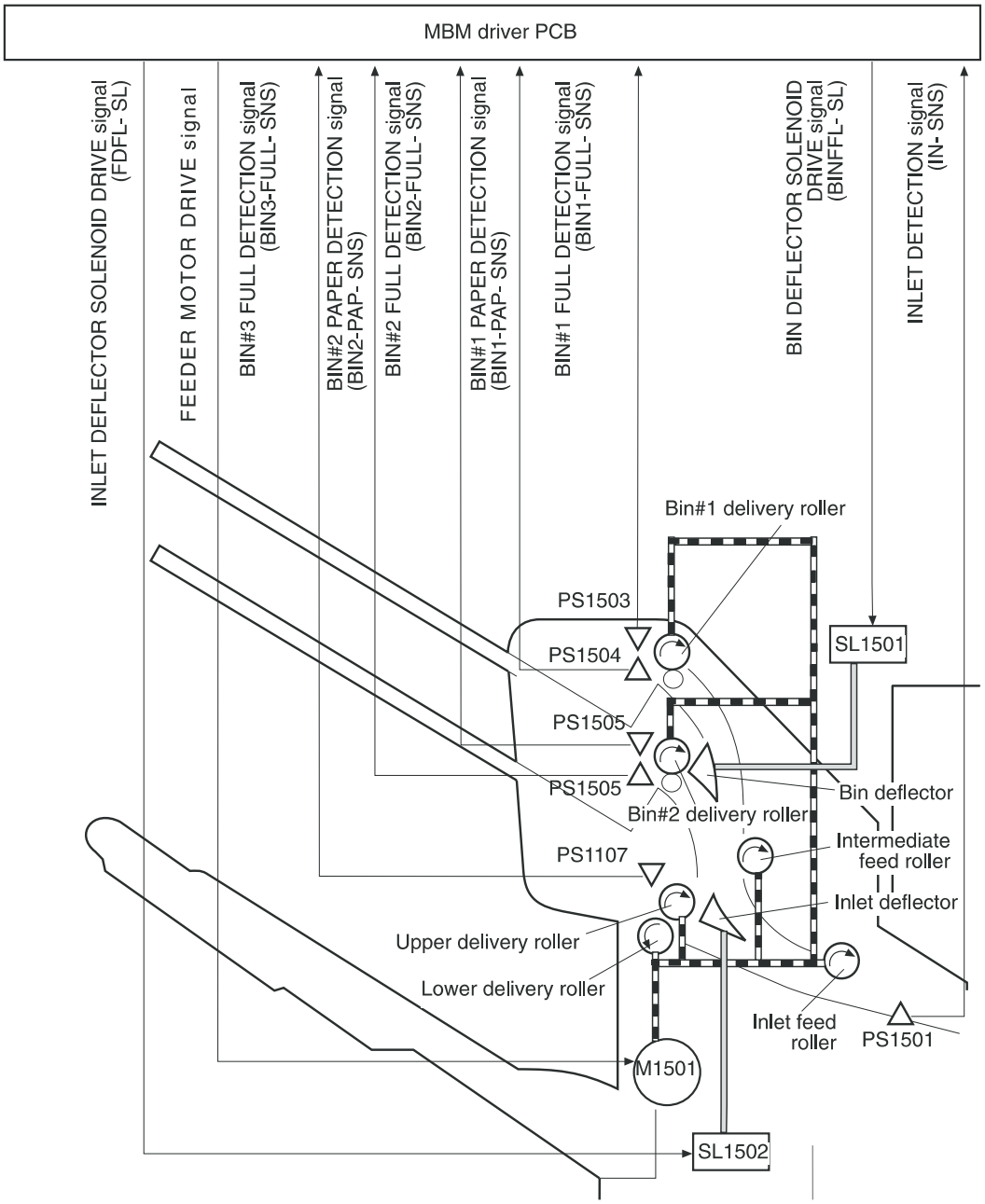


Figure 5-59 3-bin mailbox operation

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.

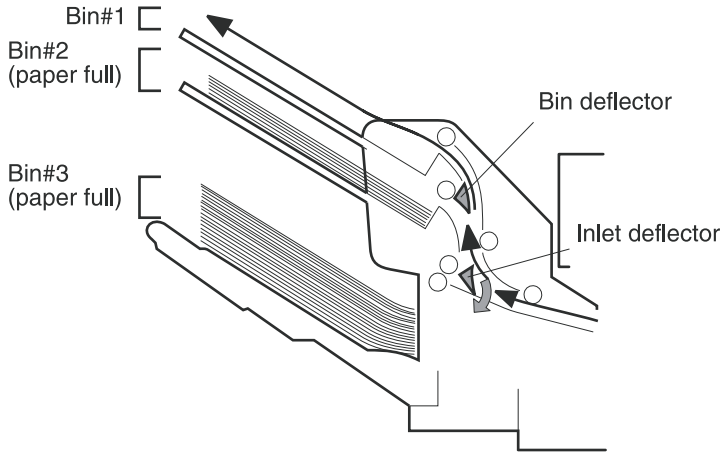


Figure 5-60 Media flow when using the stacker mode

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.

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.

3-bin mailbox jam detection

The 3-bin mailbox uses the inlet sensor (PS1501) to detect jams. The microprocessor on the MBM driver PCB 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 PCB notifies the formatter that a jam has occurred.

When a jam is detected, the transport process stops and a **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message displays on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

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 PCB 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 PCB 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 PCB determines that a residual media jam has occurred.

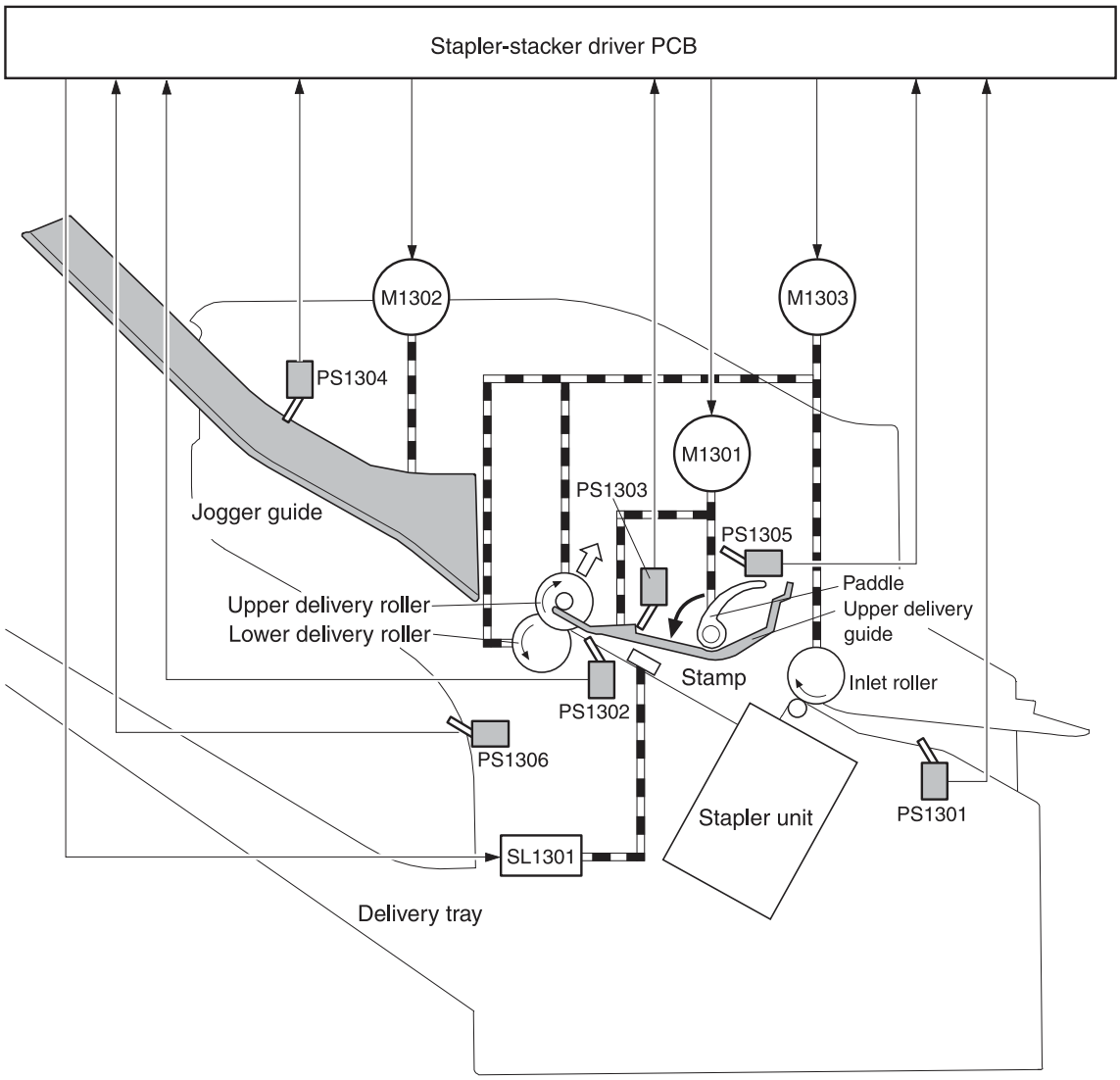
Stapler/stacker

When the stapler/stacker is installed, it receives print media from the print engine and delivers it to the stapler or stacks it in the output bin. The stapler/stacker has the following components:

- Four motors that operate the paddle, the jogger, the feed mechanism, and the stapler unit
- One clamp solenoid
- Nine sensors that detect the media position and guide positions
- One switch that detects when the stapler door is open

The stapler/stacker has two operating modes: staple mode and stacker mode.

The stapler/stacker driver PCB controls all functions in the stapler/stacker.



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

Figure 5-61 Stapler/stacker operation

Staple mode

When the print job specifications require stapling, the pages of the document are gathered inside the unit. A jogger aligns the pages horizontally, and a paddle aligns the pages vertically. When all pages of a job are gathered, a clamp compresses the stack and a staple is attached.

After the document is stapled, the jogger guides spread apart to release the stack, and the stapled document falls into the stacker bin.

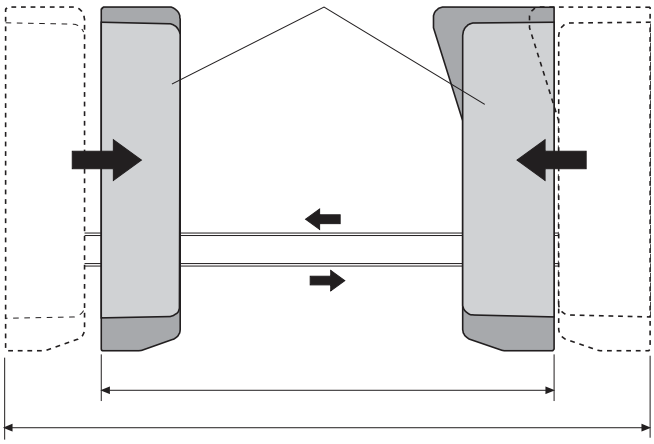


Figure 5-62 Jogger operation (top view)

Stacker mode

The stacker mode collates multiple-page print jobs without stapling them.

When the print job requires no stapling, the pages of the document are gathered inside the unit. A jogger aligns the pages horizontally, and a paddle aligns the pages vertically. When all pages of a job are gathered, the jogger guides spread apart, releasing the stack, and the document falls into the stacker bin without being stapled.

Staple jam detection

The stapler/stacker uses the inlet sensor (PS1301) and the delivery sensor (PS1302) to detect jams. The microprocessor on the stapler/stacker driver PCB determines a jam situation if the sensor indicates that paper is present at an unexpected time or that paper is not present at the expected time. The microprocessor on the stapler/stacker driver PCB notifies the formatter that a jam has occurred.

When a jam is detected, the transport process stops and a **13.%1$2:02X.%2$1:X%3$1:X FUSER JAM** message displays on the product control panel display. For more information about jam messages, see Resolving control panel messages on page 488.

Feed delay jam

If the inlet sensor (PS1301) 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 PCB determines that a feed delay jam has occurred.

Feed stationary jam

If the inlet sensor (PS1301) 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 PCB determines that a feed stationary jam has occurred.

Delivery stationary jam

If the delivery sensor (PS1302) does not detect the trailing edge of the media within a specific time period after the feed motor has begun rotating, the microprocessor on the MBM driver PCB determines that a delivery stationary jam has occurred.

Residual media jam

If the inlet sensor (PS1301) detects the presence of media during the initial WAIT period, the microprocessor on the MBM driver PCB determines that a residual media jam has occurred.

Stapler unit

The stapler unit holds the staple cartridge and the staple motor. The staple cartridge contains up to 10,000 staples. The stapler unit also has three sensors that detect the presence of staples and staple jams.

- The staple home position sensor (PHOI1) detects when the stapler is in the correct position. If the stapler is in the incorrect position, the staple/stacker driver PCB notifies the formatter that a staple jam has occurred.
- The staple ready sensor (PHOI2) detects when the stapler is self-primed after a new staple cartridge is installed. If the sensor determines that the self-priming function was unsuccessful, the staple/stacker driver PCB notifies the formatter that a staple jam has occurred.
- The staple presence sensor (PHOI3) detects the number of staples in the staple cartridge. When the number of staples in the cartridge is 20 or fewer, the stapler/stacker driver PCB notifies the formatter. A **STAPLER LOW ON STAPLES** message displays on the product control panel display.

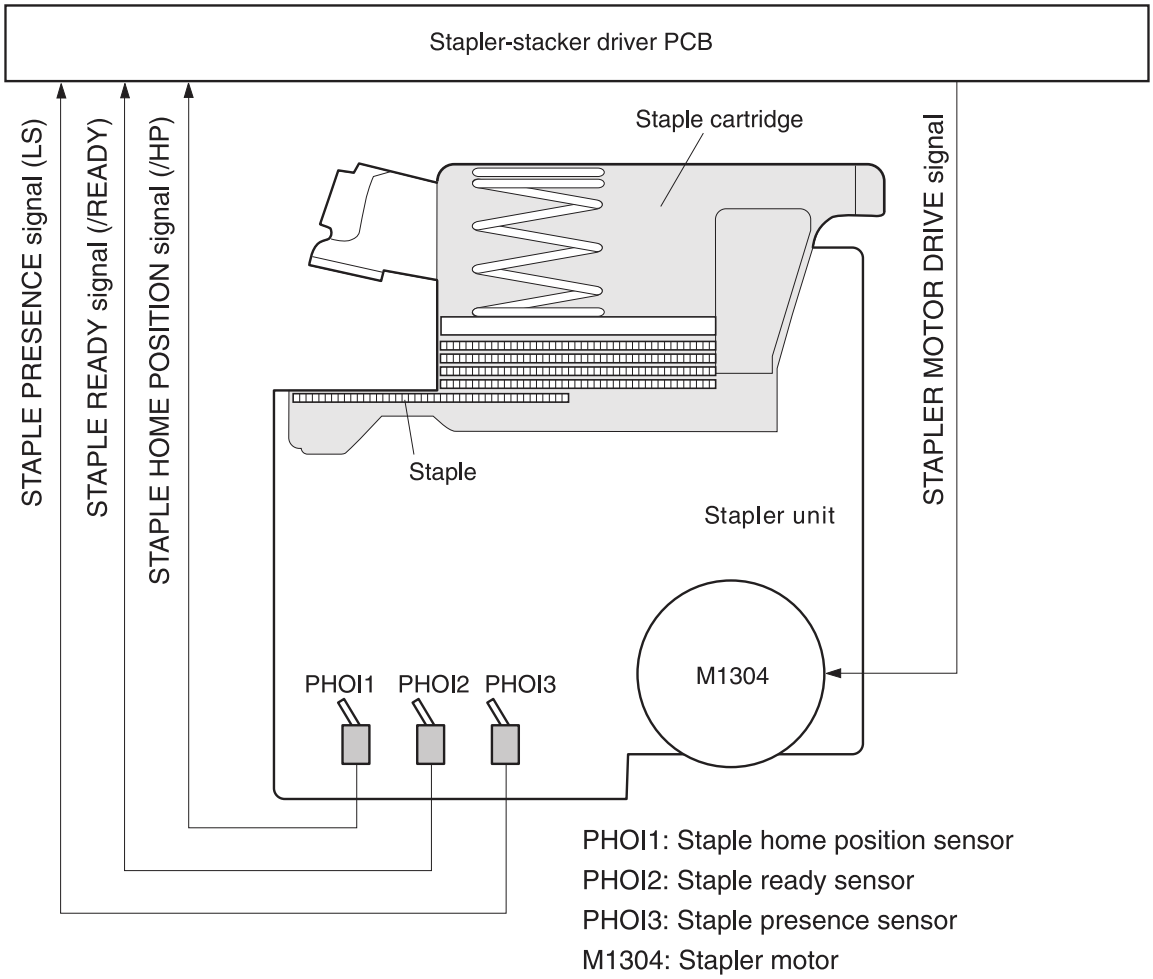


Figure 5-63 Stapler unit operation

6 Removal and replacement

This chapter contains information about the following topics:

- Removal and replacement strategy
- 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)

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 A posidrive screwdriver can damage screw heads on the MFP. Use a #2 Phillips screwdriver.

Before performing service

- If possible, print a menu map and configuration page. See Information pages on page 640.
- 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.

Removal and replacement sequencing

Use the following tree diagram to determine the prerequisite steps needed for specific removal and replacement procedures.

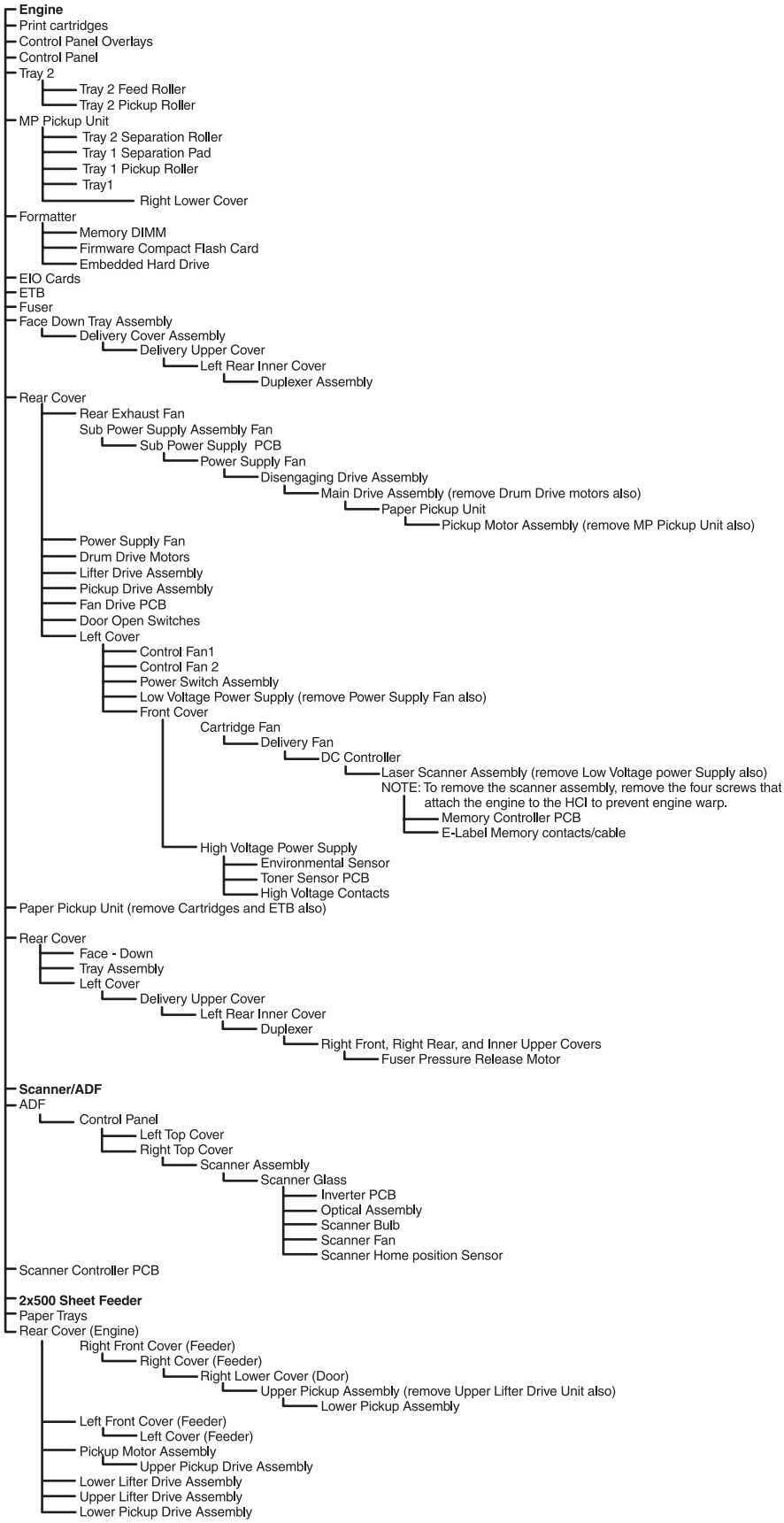


Figure 6-1 Removal and replacement sequencing tree diagram

After completing service

- Reinstall the print cartridges.

  CAUTION Do not transport the MFP while the print cartridges are installed.

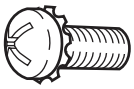
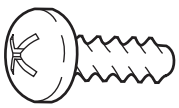
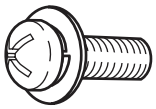
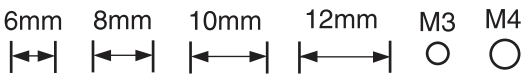
- Reconnect all cables to the MFP.
- Replace all of the accessories and load the media.
- Print a configuration page and verify that the latest firmware is installed on the MFP.

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 6-1 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 	

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 6-2 Remove the print cartridges (1 of 3)

2. Open the ETB.

Figure 6-3 Remove the print cartridges (2 of 3)

3. Grasp each print cartridge by the blue handles, and remove it from the MFP.

Figure 6-4 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 6-5 Remove the control panel overlays

Control panel

1. Remove the control panel overlays. See Control panel overlays on page 250.
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 6-6 Remove the control panel (1 of 3)

3. Disconnect one connector (callout 2).

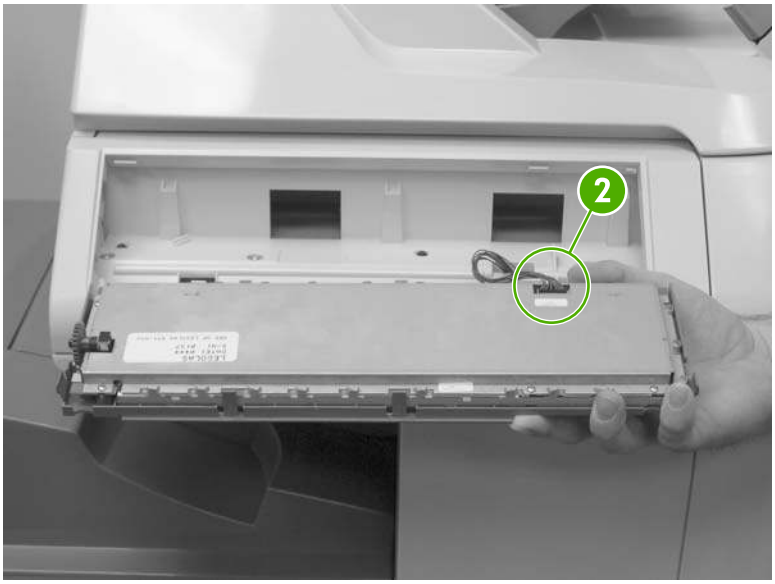


Figure 6-7 Remove the control panel (2 of 3)

4. Grasp the control panel surround and lift it toward you.

Figure 6-8 Remove the control panel (3 of 3)

Intermediate paper transfer unit (IPTU)

1. Lift the handle on the IPTU.

Figure 6-9 Remove the IPTU (1 of 3)

2. Slide the IPTU outward.

Figure 6-10 Remove the IPTU (2 of 3)

3. Lift the IPTU upward and remove it from the MFP.

Figure 6-11 Remove the IPTU (3 of 3)

Stapler/stacker

1. Press and hold the release button on the top of the stapler/stacker.

Figure 6-12 Remove the stapler/stacker (1 of 5)

2. Pull the stapler/stacker outward.

Figure 6-13 Remove the stapler/stacker (2 of 5)

3. Disconnect the connector (callout 1) from the MFP.

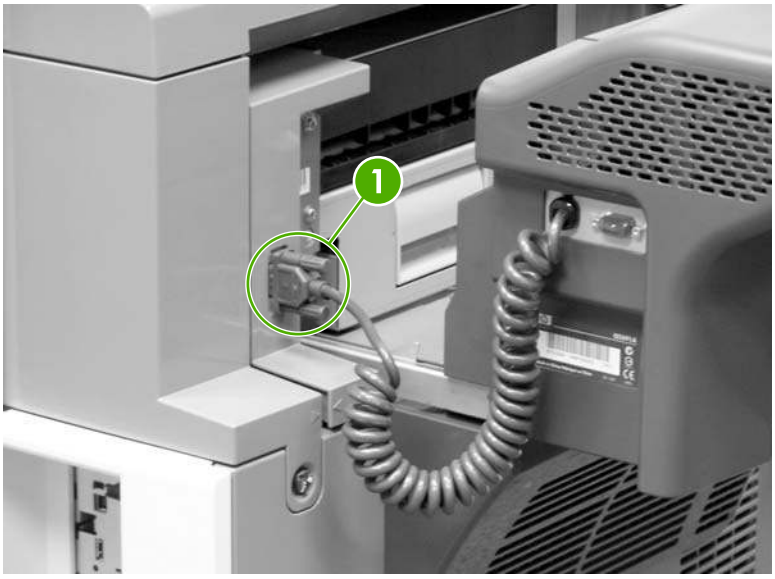


Figure 6-14 Remove the stapler/stacker (3 of 5)

4. Lift the stapler/stacker slightly and remove it from the MFP.

Figure 6-15 Remove the stapler/stacker (4 of 5)

5. The IPTU remains in place.

Figure 6-16 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 253.

2. Open the staple cartridge cover.

Figure 6-17 Replace the staple cartridge (1 of 3)

3. Grasp the green staple cartridge handle and pull the old staple cartridge upward.

Figure 6-18 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 6-19 Replace the staple cartridge (3 of 3)

3-bin mailbox

1. Slide the assembly outward.

Figure 6-20 Remove the 3-bin mailbox (1 of 3)

2. Disconnect the cable (callout 1).

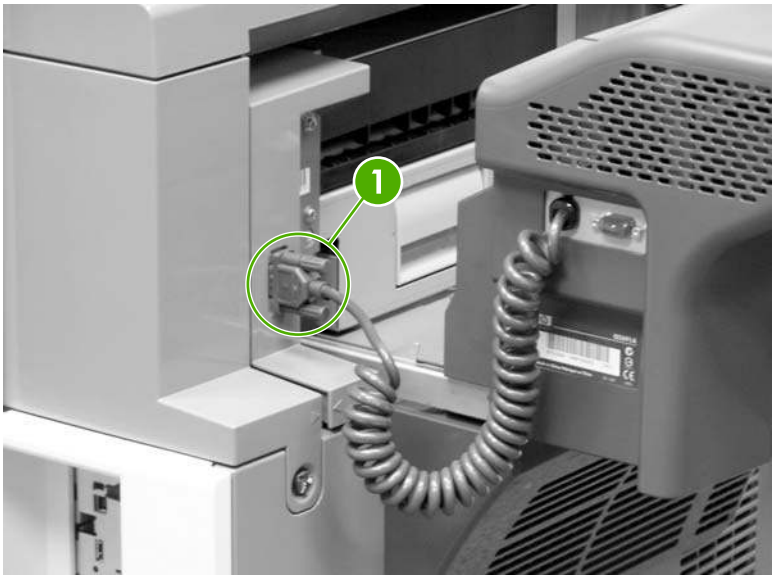


Figure 6-21 Remove the 3-bin mailbox (2 of 3)

3. Lift the 3-bin mailbox, tilt it upward, and pull to remove it from the MFP.

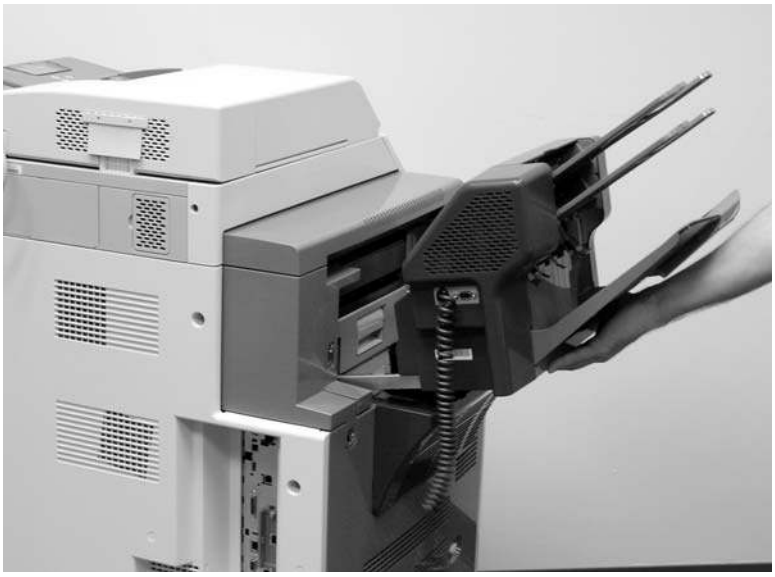


Figure 6-22 Remove the 3-bin mailbox (3 of 3)

ETB assembly, removing

1. Open the right lower cover.

2. Open the ETB assembly by pulling the green handle.

Figure 6-23 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.

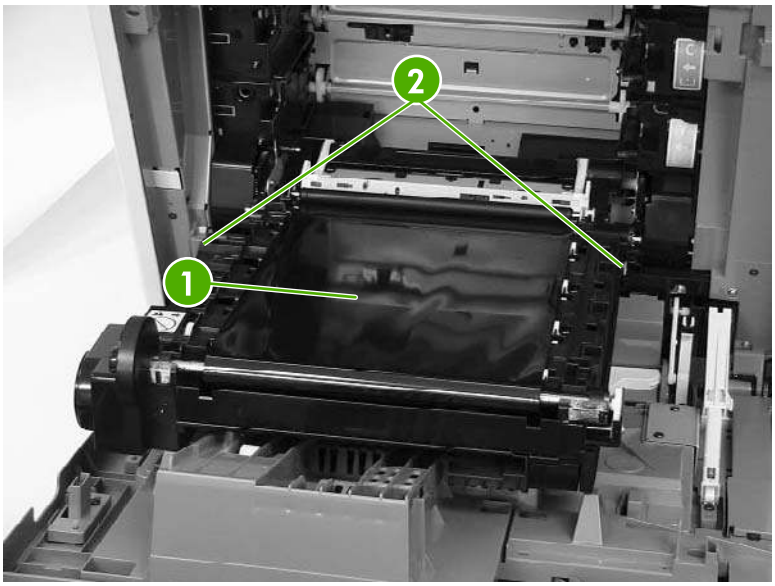


Figure 6-24 Remove the ETB assembly (2 of 4)

4. Detail of right lever (callout 3).

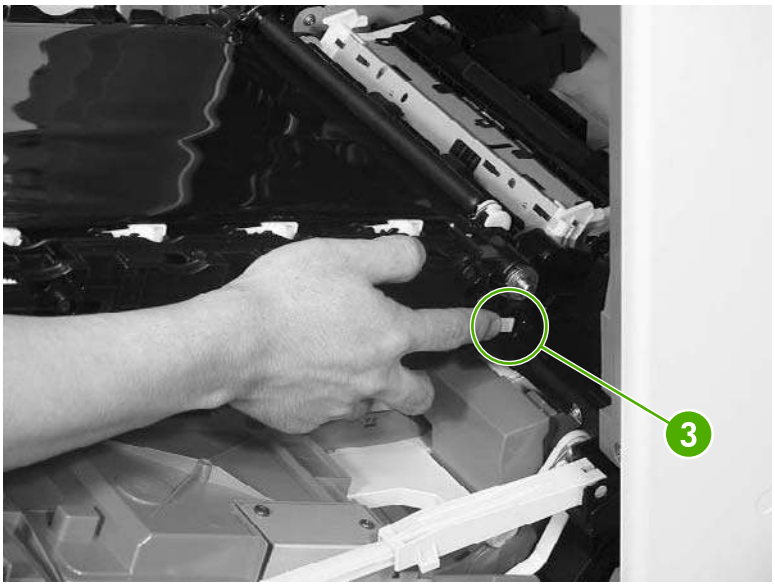


Figure 6-25 Remove the ETB assembly (3 of 4) — right lever

5. Detail of left lever (callout 4).

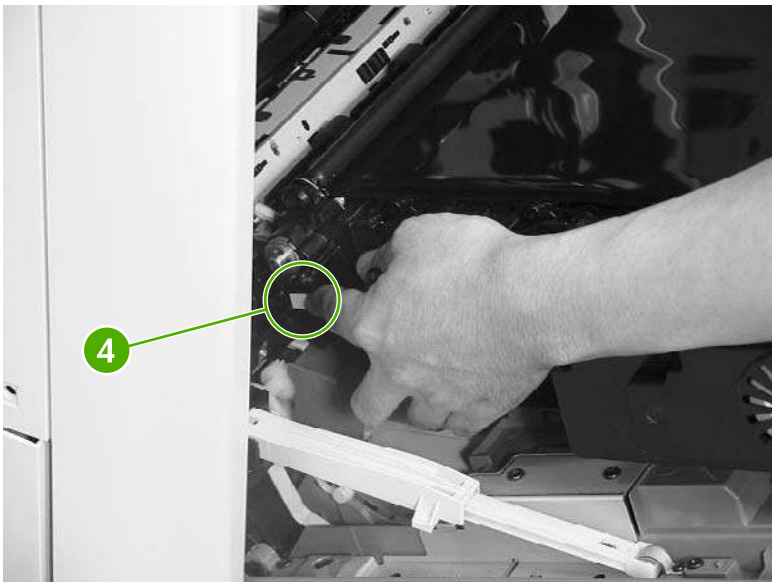


Figure 6-26 Remove the ETB assembly (4 of 4) — left lever

MP tray pickup assembly

1. Open the MP tray pickup assembly.
2. Press the two metal tabs on either side to unlock the tray.

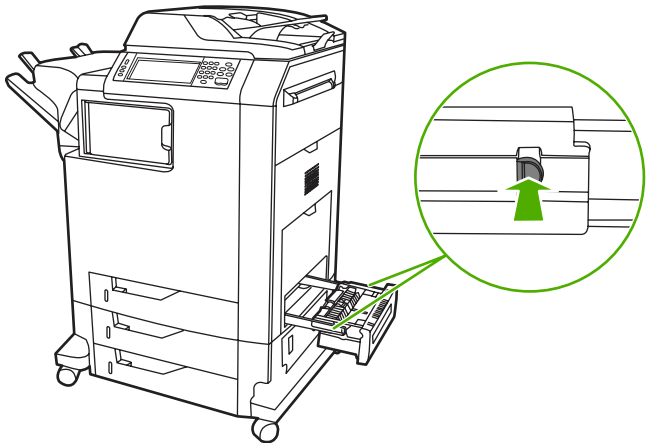


Figure 6-27 Remove the MP tray pickup assembly (1 of 2)

3. Slide the assembly off the rails.

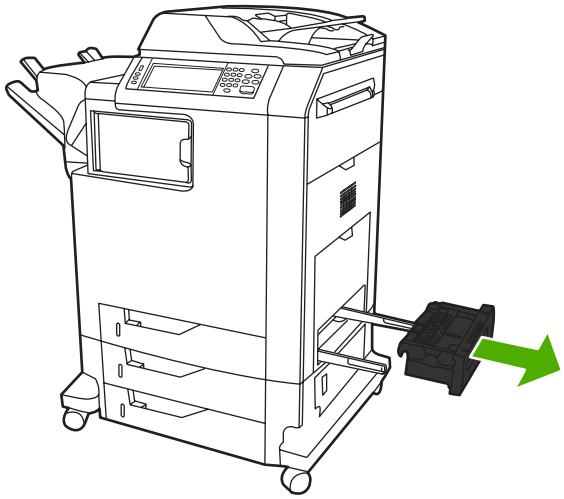


Figure 6-28 Remove the MP tray pickup assembly (2 of 2)

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 6-29 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.

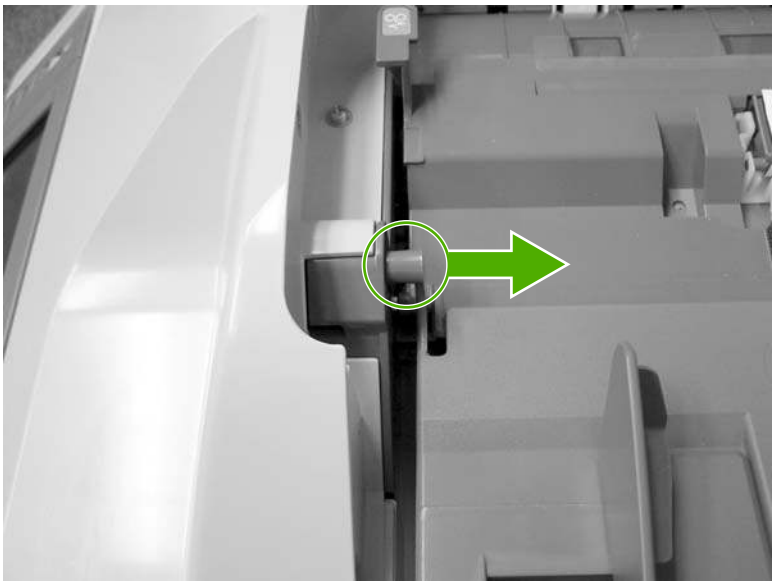


Figure 6-30 Remove the ADF input tray (2 of 3)

3. Pull the tray away from the pivot pin at the right side of the input tray, and remove the ADF input tray.

Figure 6-31 Remove the ADF input tray (3 of 3)

Hint 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 6-32 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.

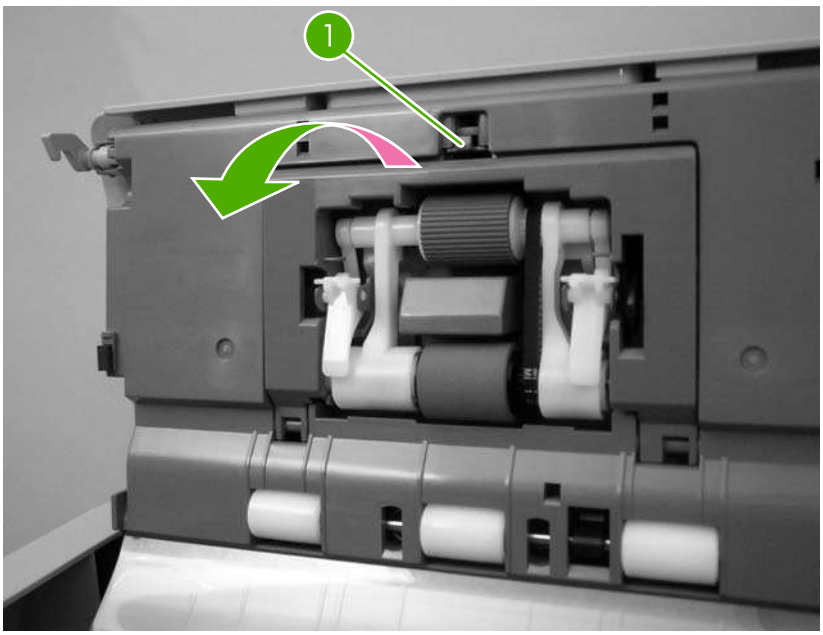


Figure 6-33 Remove the ADF pickup and feed rollers (2 of 3)

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.

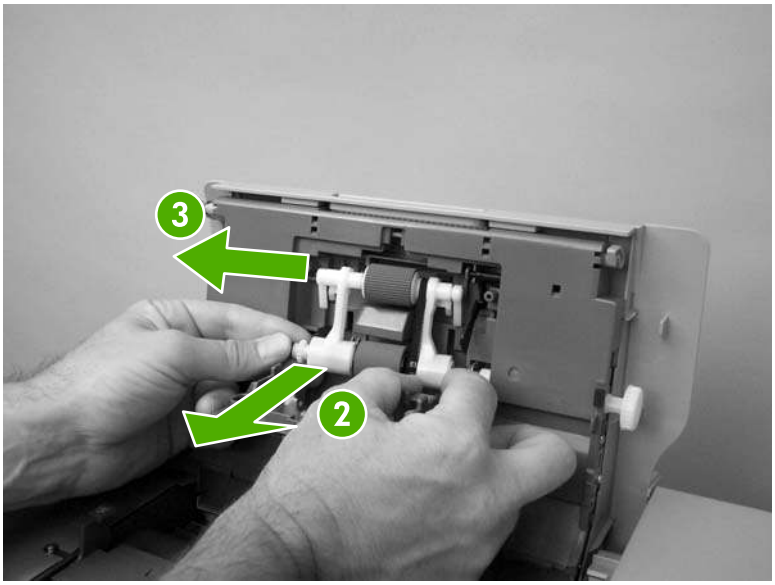


Figure 6-34 Remove the ADF pickup and feed rollers (3 of 3)

ADF separation pad

1. Open the ADF top cover.

Figure 6-35 Remove the ADF separation pad (1 of 4)

2. Locate the ADF separation pad (callout 1).

Figure 6-36 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 6-37 Remove the ADF separation pad (3 of 4)

4. Push the separation pad out of the frame.

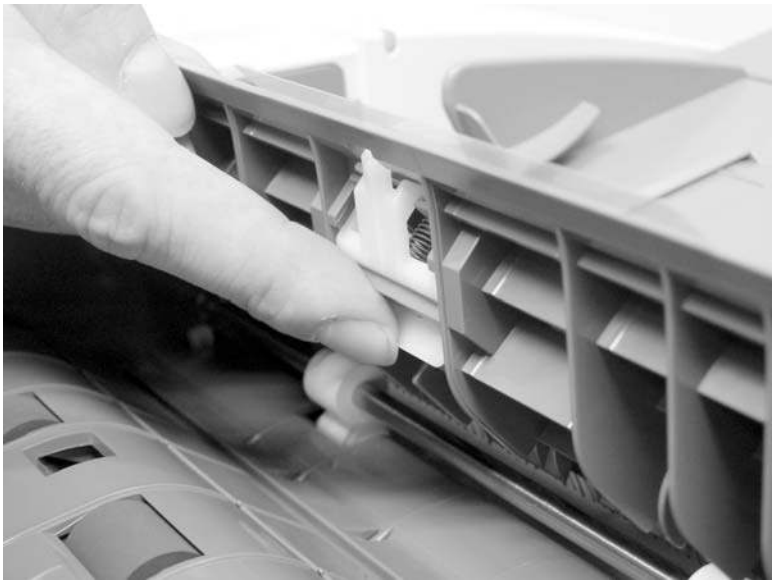


Figure 6-38 Remove the ADF separation pad (4 of 4)

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.

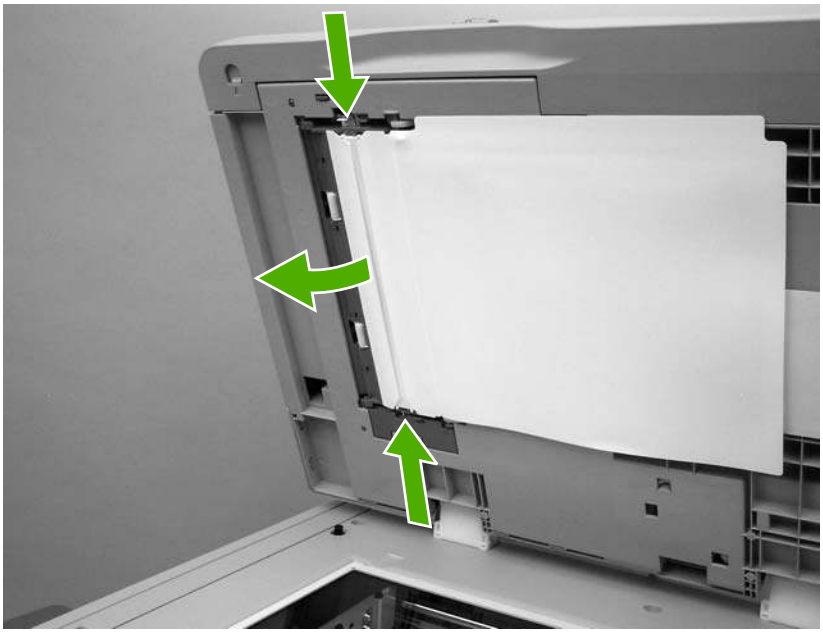


Figure 6-39 Remove the ADF delivery guide (1 of 3)

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.

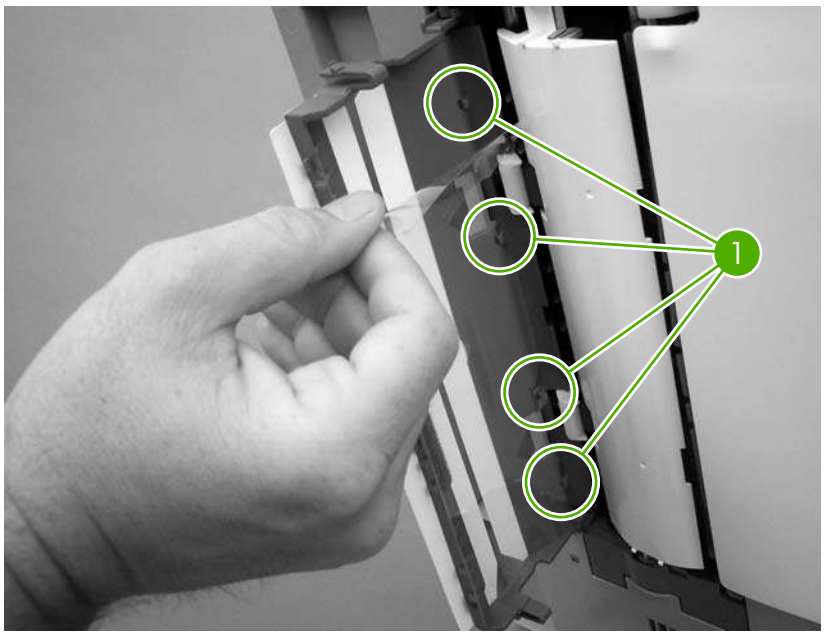


Figure 6-40 Remove the ADF delivery guide (2 of 3)

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.

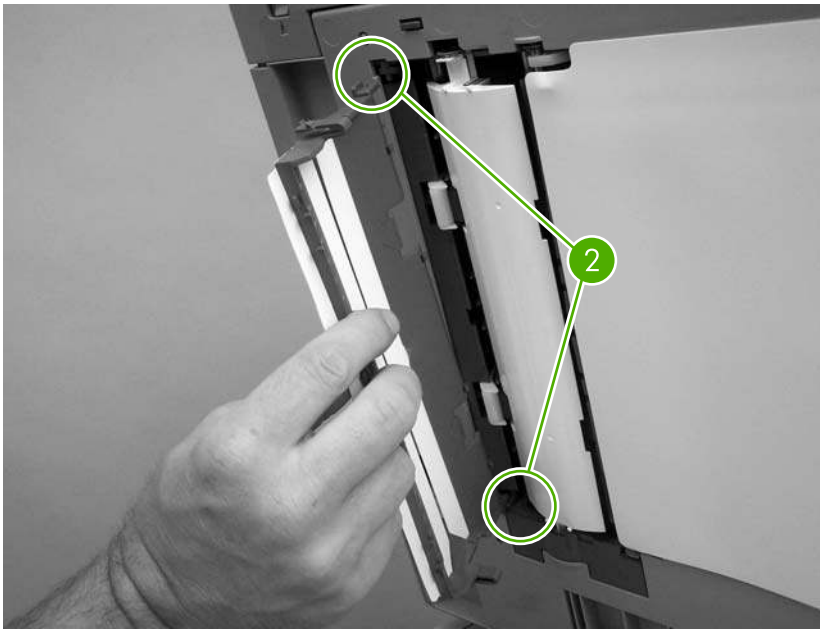


Figure 6-41 Remove the ADF delivery guide (3 of 3)

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.

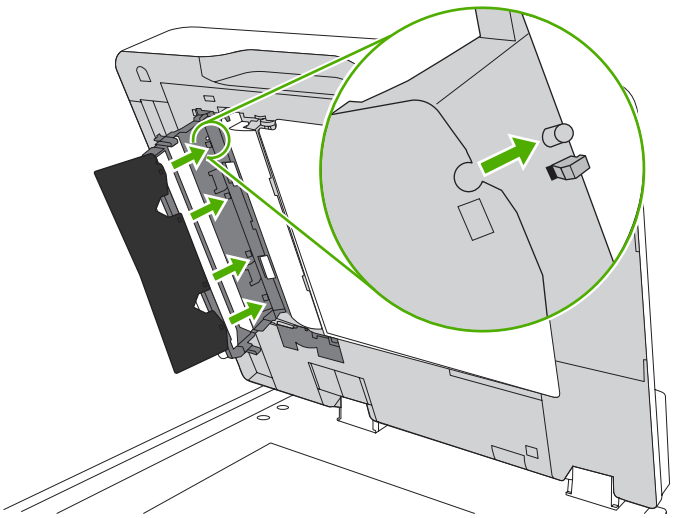


Figure 6-42 Reinstall the clear mylar sheet

Face-down tray assembly

Loosen the two captive screws (callout 1) and remove the face-down tray (callout 2).

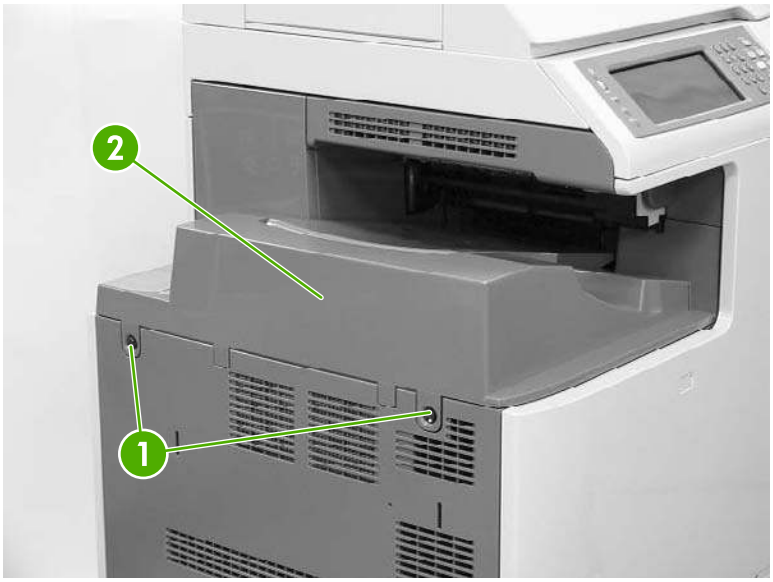


Figure 6-43 Remove the face-down tray assembly

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).

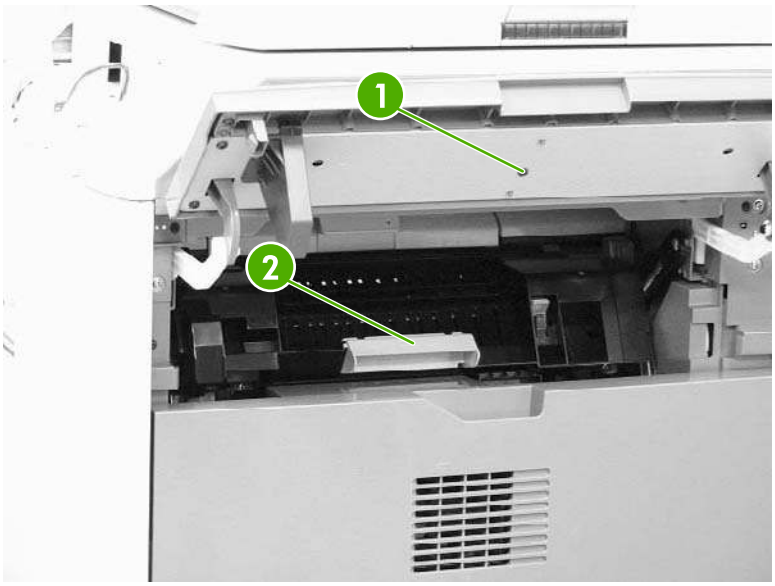


Figure 6-44 Remove the fuser (1 of 2)

2. Gently lift the two purple handles (callout 3). Then pull the fuser (callout 4) out of the MFP.

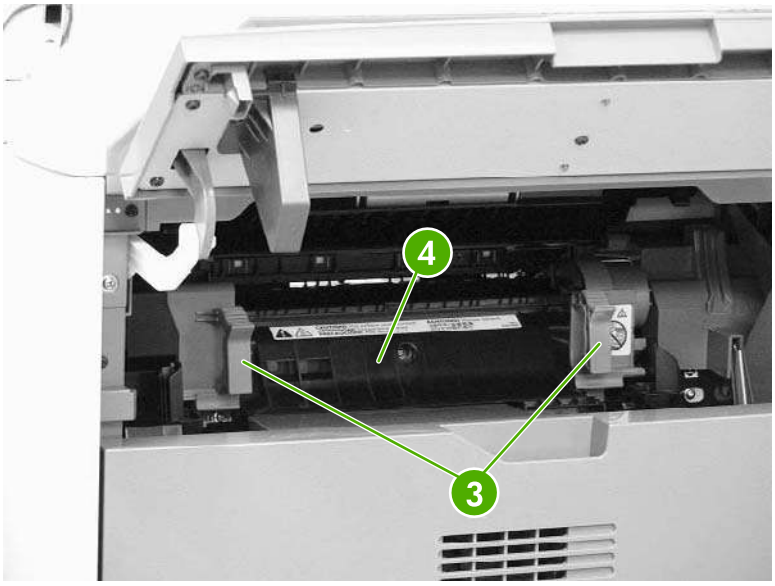


Figure 6-45 Remove the fuser (2 of 2)

Tray 2, 3, or 4 pickup and feed rollers

1. Remove the paper tray. See Trays 2, 3, and 4 on page 261.

Figure 6-46 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 6-47 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 261.
2. Slide the white tabs to the middle.

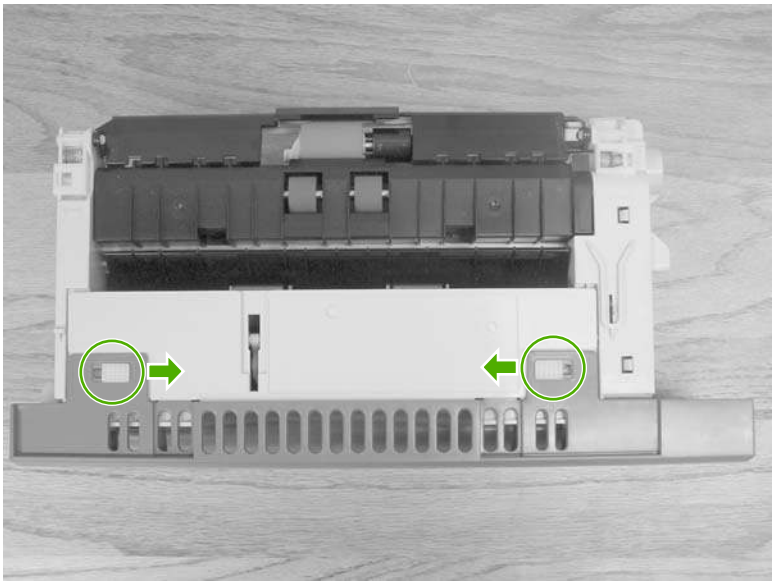


Figure 6-48 Remove the MP tray pickup roller (1 of 3)

3. Rotate the front cover away from the tray.

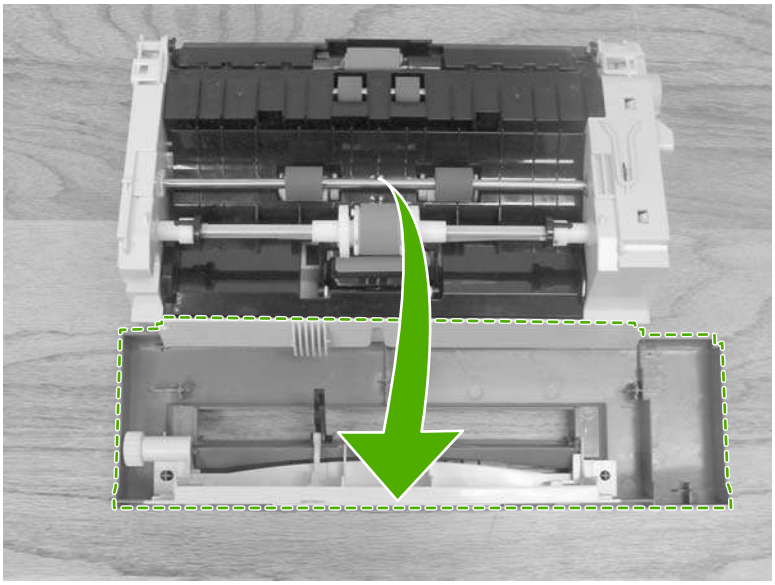


Figure 6-49 Remove the MP tray pickup roller (2 of 3)

4. Remove the pickup roller by pulling the tabs outward and lifting the roller from the shaft.

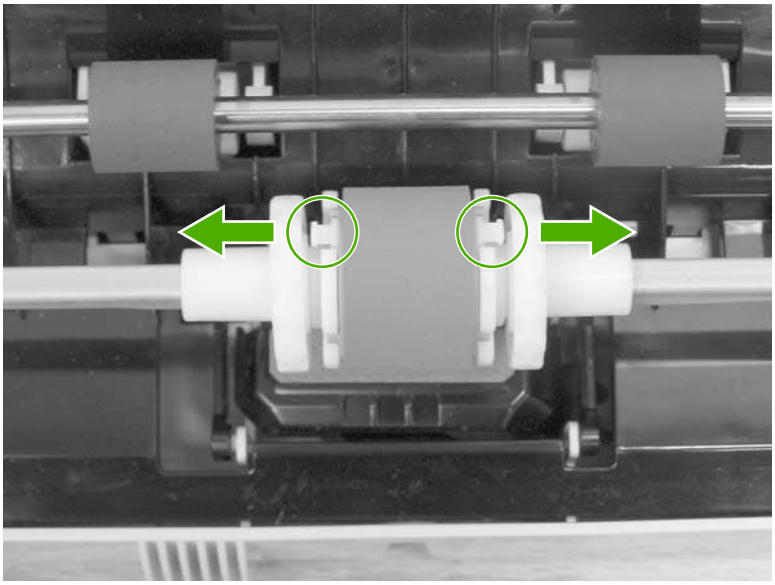


Figure 6-50 Remove the MP tray pickup roller (3 of 3)

Hint When reinstalling the MP tray pickup roller, insert the round tabs toward the front of the tray.

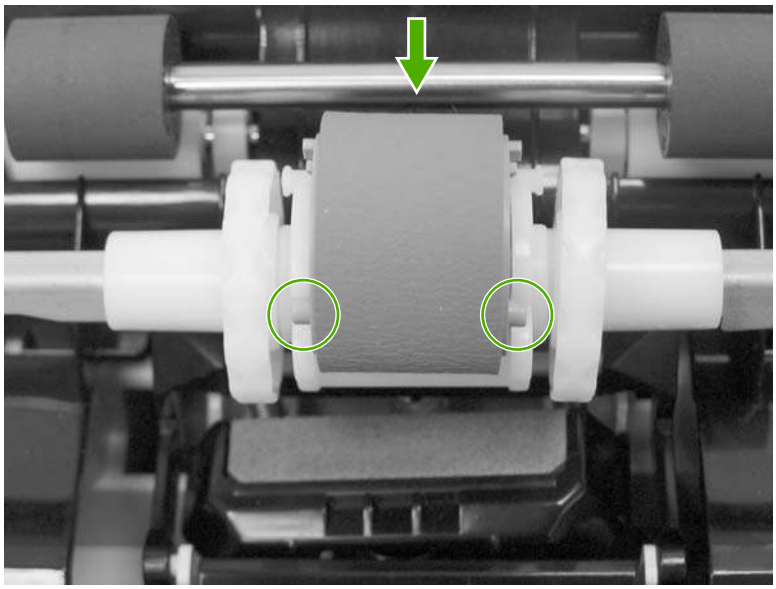


Figure 6-51 Replace the MP tray pickup roller

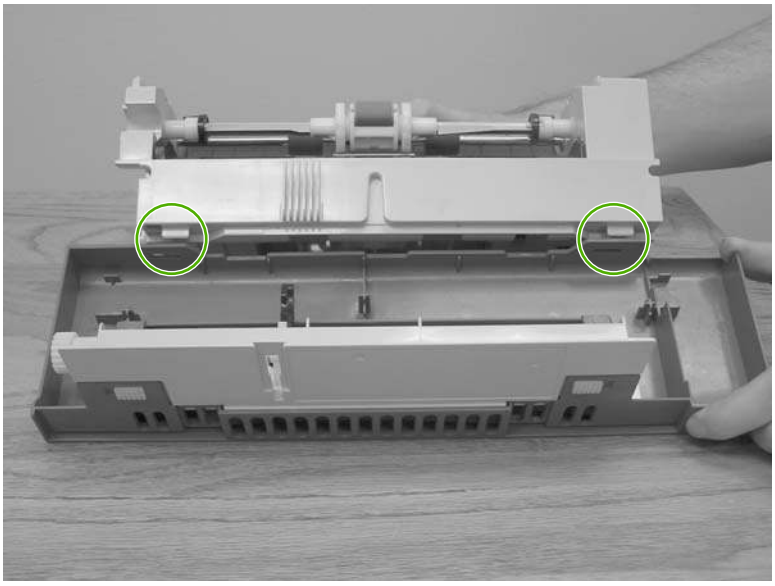


Figure 6-52 Replace the tray cover

Hint 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 261.
2. Release the two locking tabs on the MP tray pickup assembly and open the tray 2 separation roller cover.

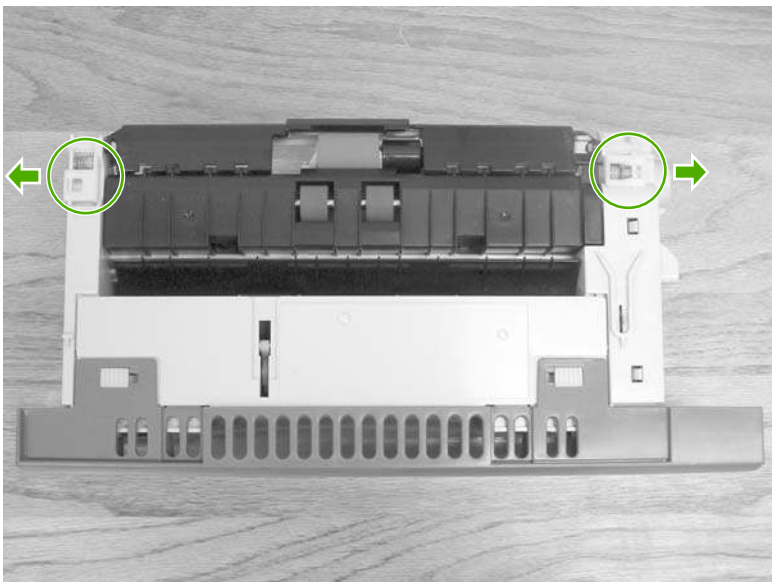


Figure 6-53 Remove the tray 2 separation roller (1 of 3)

3. Remove the tray 2 separation roller by depressing the blue tab and removing it from the shaft. Replace the tray 2 separation roller.

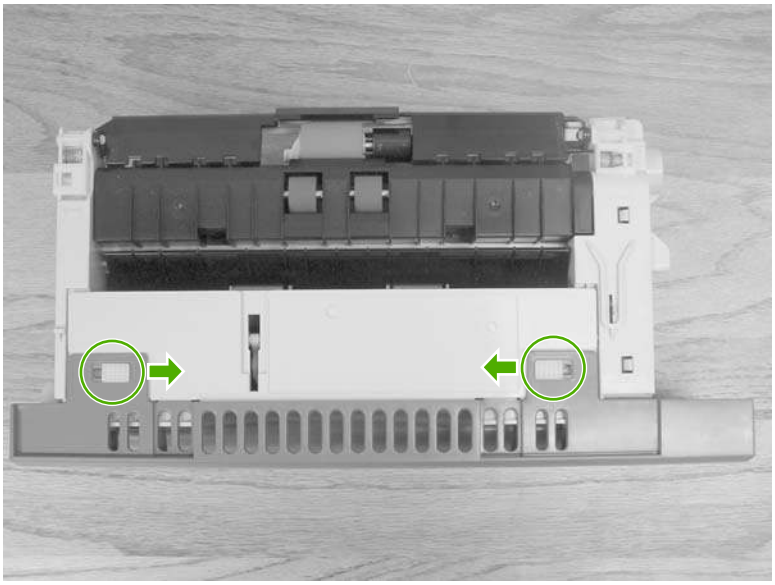


Figure 6-54 Remove the tray 2 separation roller (2 of 3)

4. Close the separation roller cover by sliding the tabs outward before closing the cover.

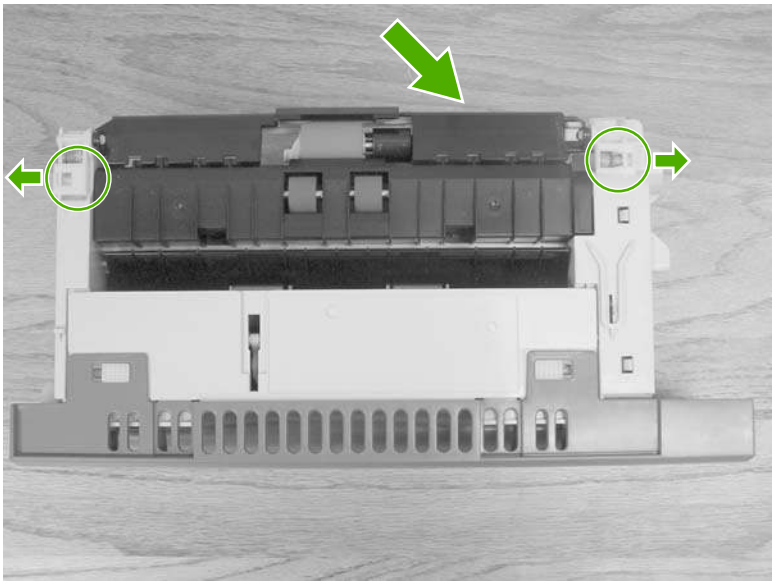


Figure 6-55 Remove the tray 2 separation roller (3 of 3)

Tray 3 or 4 separation rollers

1. Open tray 3 or 4.
2. Open the lower jam access door.

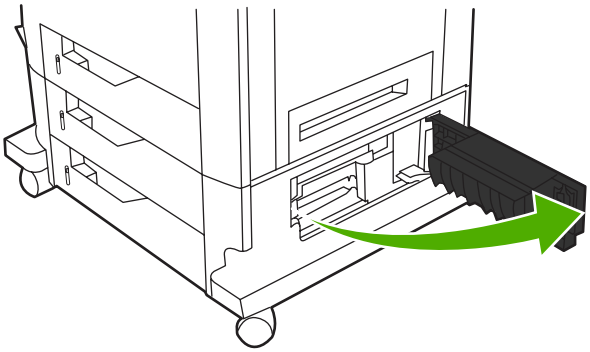


Figure 6-56 Remove the tray 3 or 4 separation rollers (1 of 2)

3. Remove the separation roller by depressing the blue tab and removing the roller from the shaft.

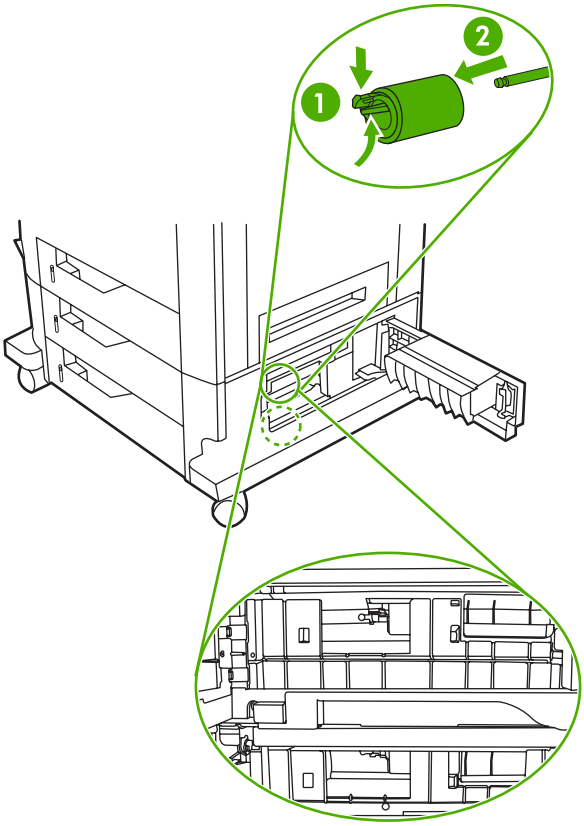


Figure 6-57 Remove the tray 3 or 4 separation rollers (2 of 2)

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 6-58 Remove the scanner filter (1 of 2)

2. Remove the filter.

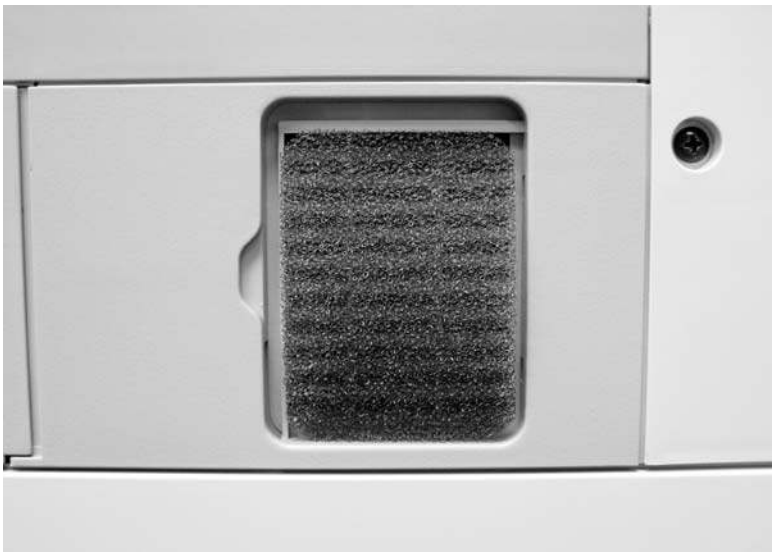


Figure 6-59 Remove the scanner filter (2 of 2)

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.

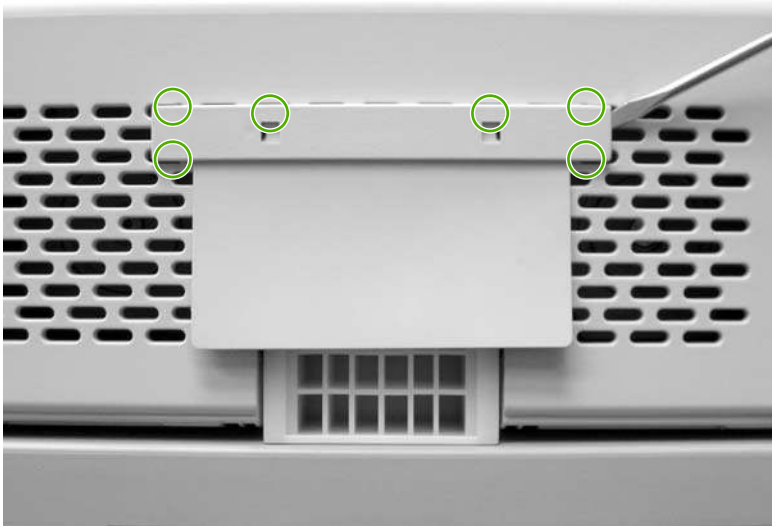


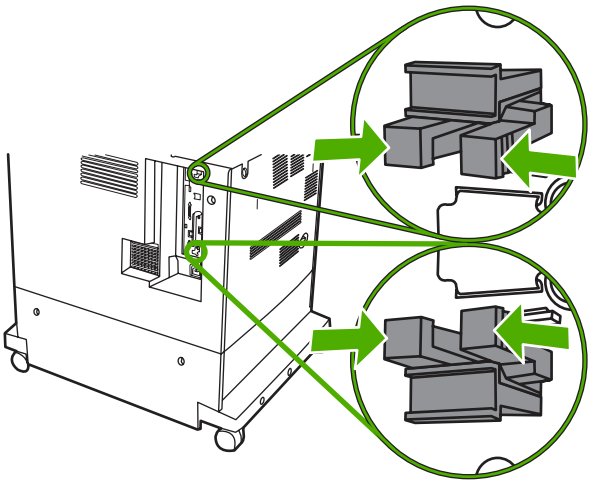
Figure 6-60 Remove the ADF hinge flap

2. Pull the ADF hinge flap away from the MFP to remove it.

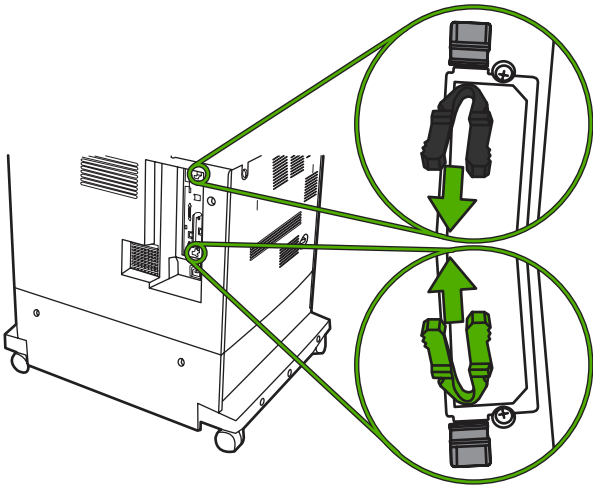
NOTE To position the ADF hinge flap correctly when reinstalling it, insert the locator pins situated in the middle of the plastic mounting bracket into the first row of slots above the ADF hinge.

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.

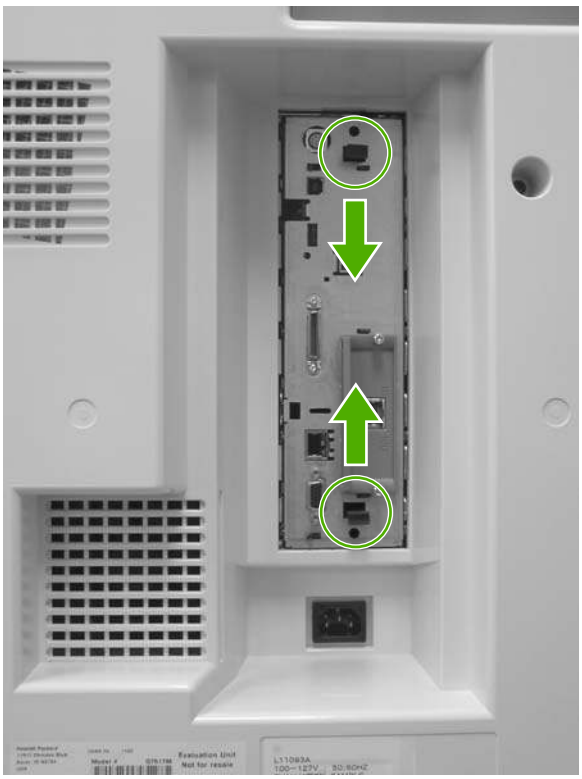


Figure 6-61 Remove the formatter (1 of 2)

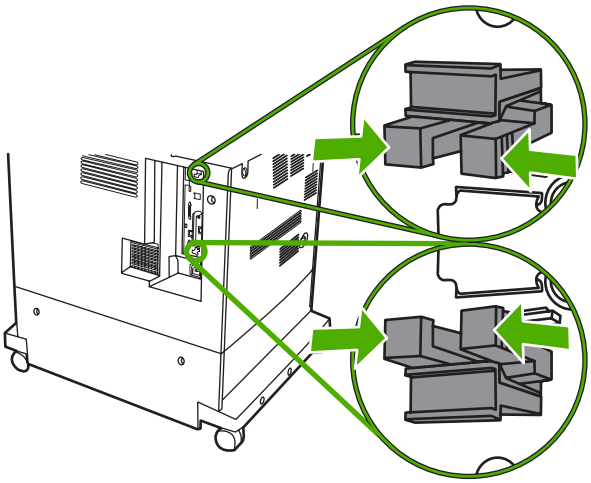
4. Place the formatter board on a clean, flat, grounded surface.

Figure 6-62 Remove the formatter (2 of 2)

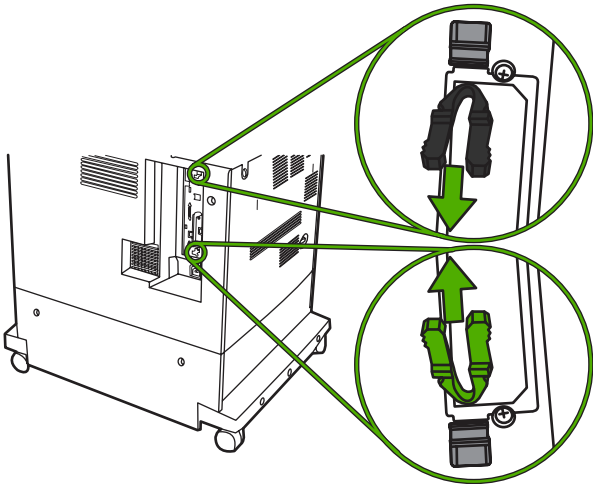
Hard drive

WARNING! DELETE EDITORIAL NOTE 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. DELETE STEP Locate the gray formatter pressure release tabs on the formatter board in the rear of the MFP.



2. DELETE STEP Gently squeeze the tabs and pull them out of the formatter.



3. Remove the formatter board from the MFP. See Formatter board on page 280.

4. Push the two black tabs toward each other and slide the hard drive toward the rear of the formatter.

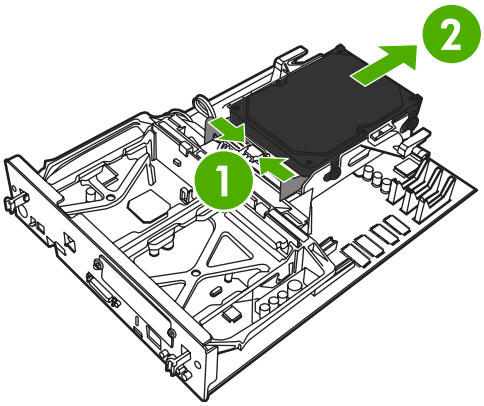


Figure 6-63 Remove the hard drive (1 of 2)

5. Disconnect the cable and remove the hard drive.

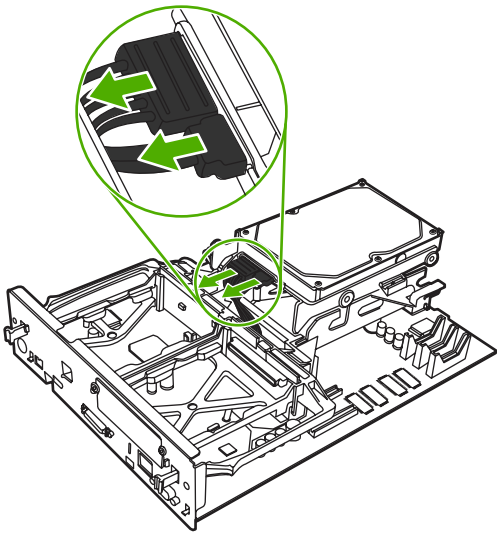


Figure 6-64 Remove the hard drive (2 of 2)

DIMMs

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. See Information pages on page 640. Use the information on the these pages to restore any user-set MFP configuration options after you install the replacement DIMMs.

1. Remove the formatter board from the MFP. See Formatter board on page 280.
2. To remove the DIMM on the rear of the formatter board, spread the latches on either side of the DIMM slot apart.

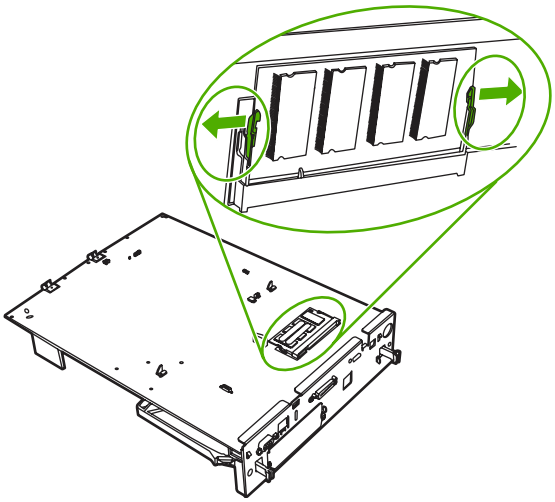


Figure 6-65 Remove the DIMM (2 of 3)

3. Lift the DDR DIMM at an angle, and pull it out.

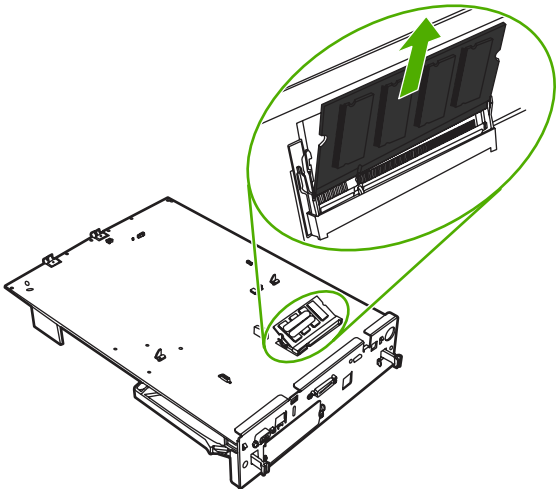


Figure 6-66 Remove the DIMM (3 of 3)

4. To remove the DIMM on the formatter board itself, spread the latches on either side of the DIMM slot apart. Lift the DIMM up at an angle, and pull it out.

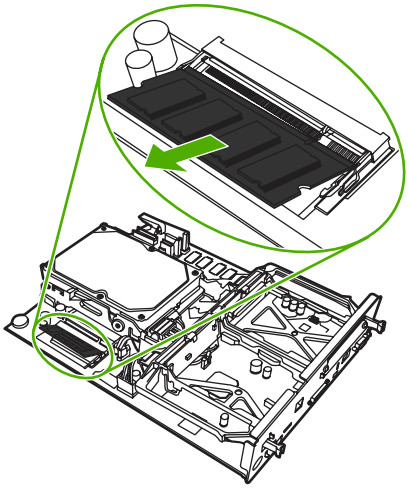
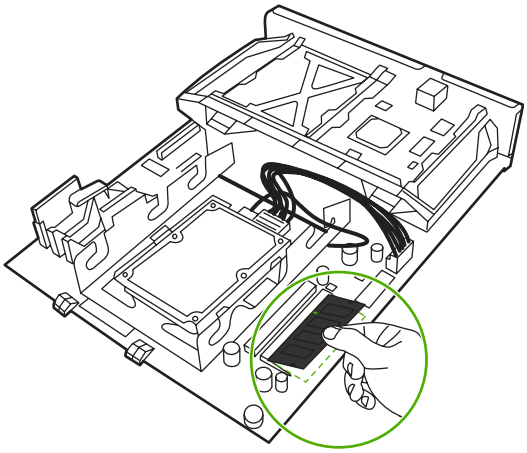
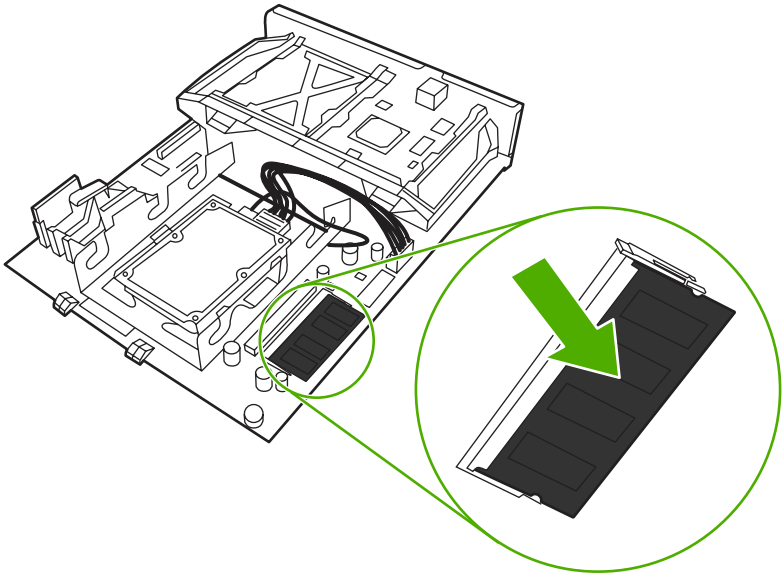


Figure 6-67 Remove the DIMM (4 of 5)

5. Holding the 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.



6. 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.

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 280.

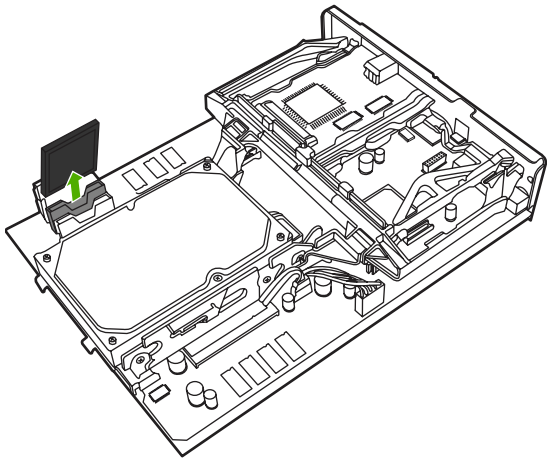


Figure 6-68 Remove the flash memory card (1 of 2)

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*.

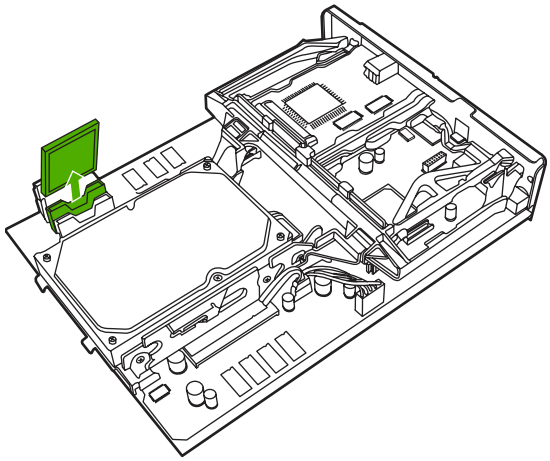


Figure 6-69 Remove the flash memory card (2 of 2)

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 280.
3. If a fax accessory is in place, unhook the restraining strap and set it aside.

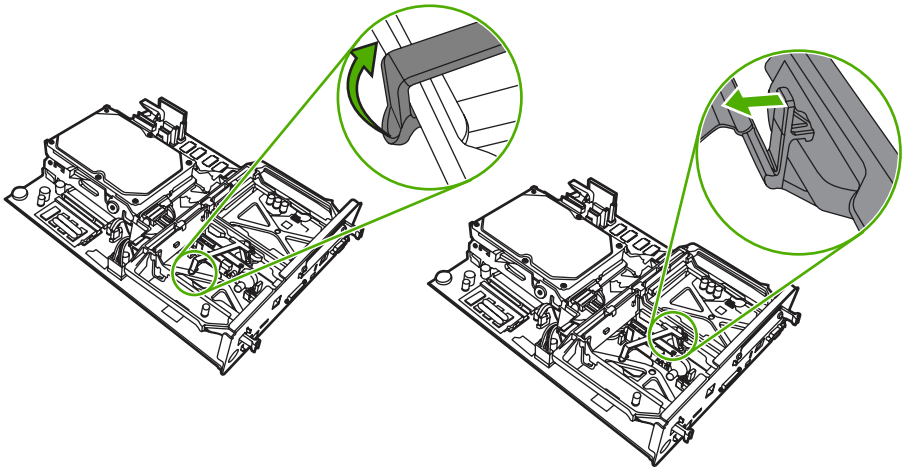


Figure 6-70 Remove the fax accessory (1 of 5)

4. Grasp the card and pull upward to remove it from the formatter board.

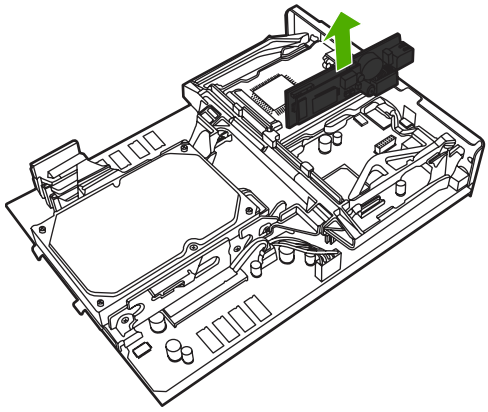


Figure 6-71 Remove the fax accessory (2 of 5)

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.

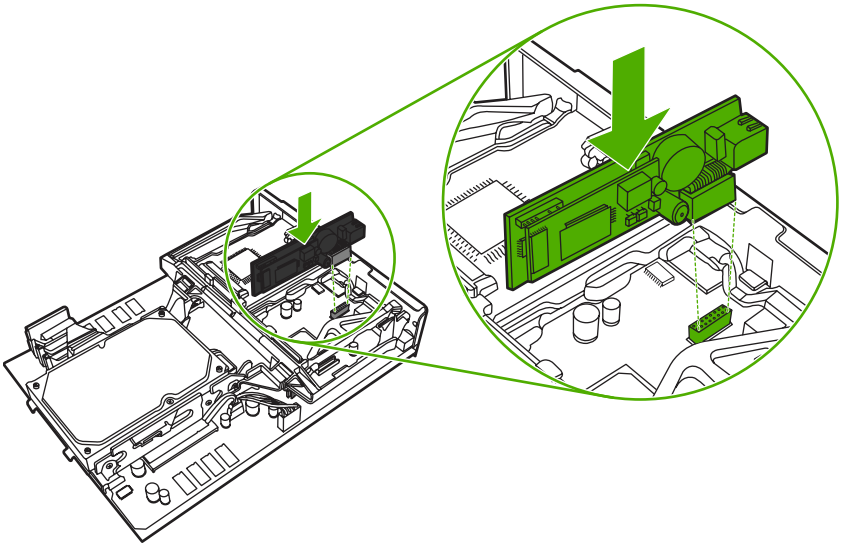


Figure 6-72 Remove the fax accessory (3 of 5)

7. Reinstall the fax restraining strap.

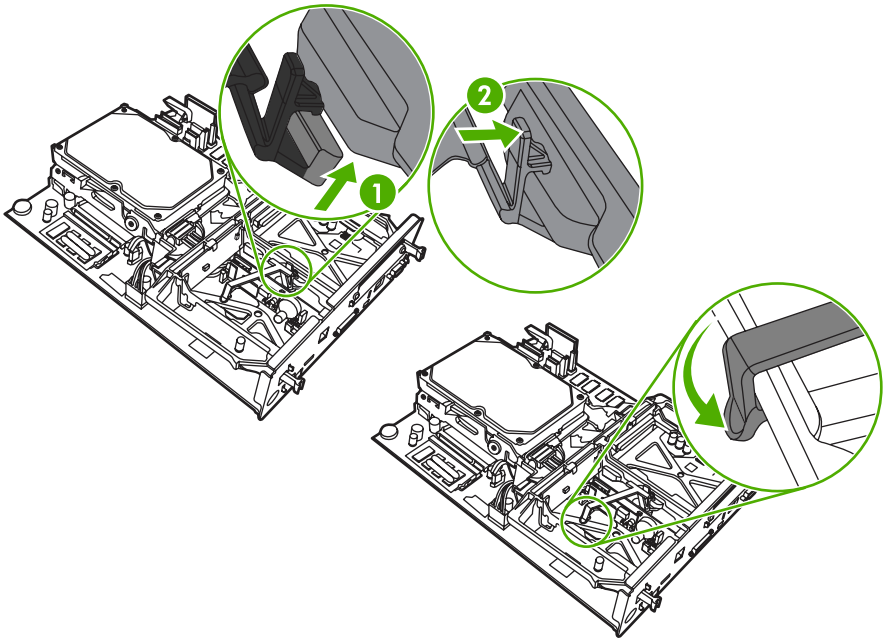


Figure 6-73 Remove the fax accessory (4 of 5)

8. Align the formatter board in the tracks at the top and bottom, and slide the board back into the MFP.

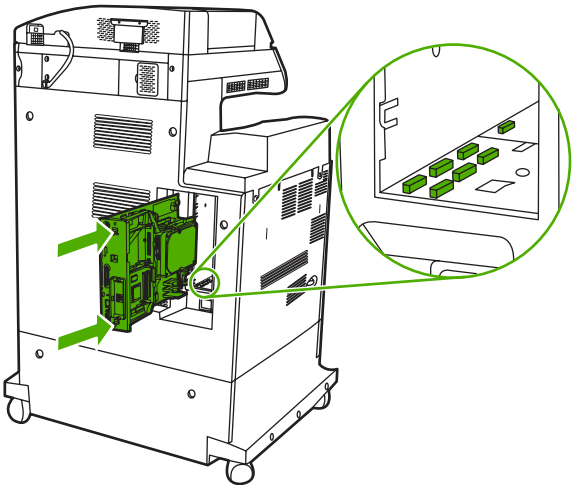


Figure 6-74 Remove the fax accessory (5 of 5)

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 6-75 Cover, door, and panel locations (1 of 2)

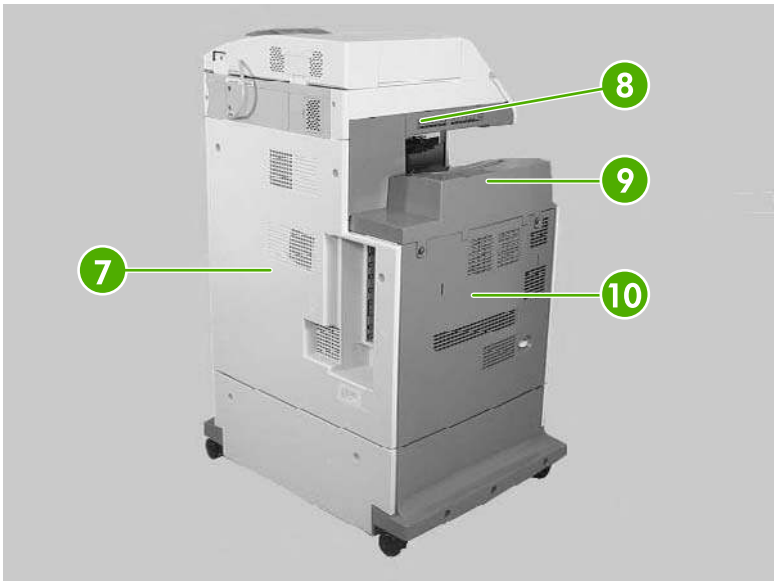


Figure 6-76 Cover, door, and panel locations (2 of 2)

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).

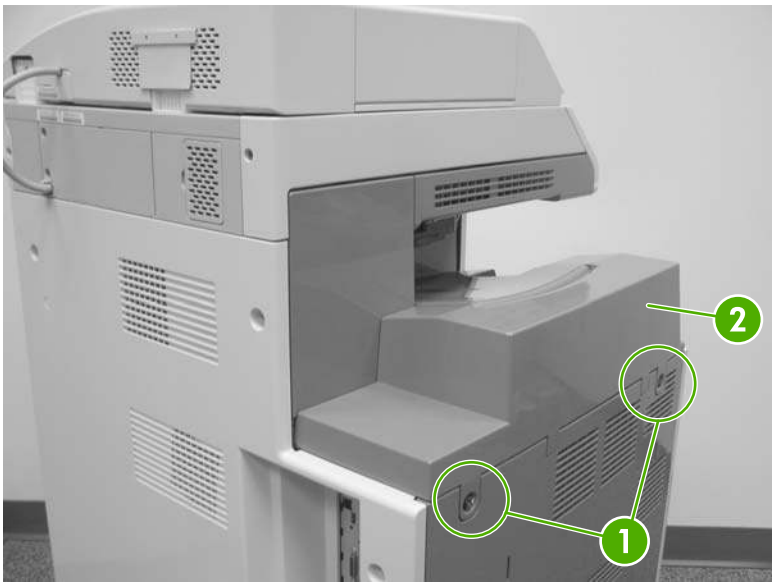


Figure 6-77 Remove the face-down tray assembly

Delivery cover assembly

1. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
2. Pinch the projection (callout 1) and slide the delivery cover assembly (callout 2) forward.

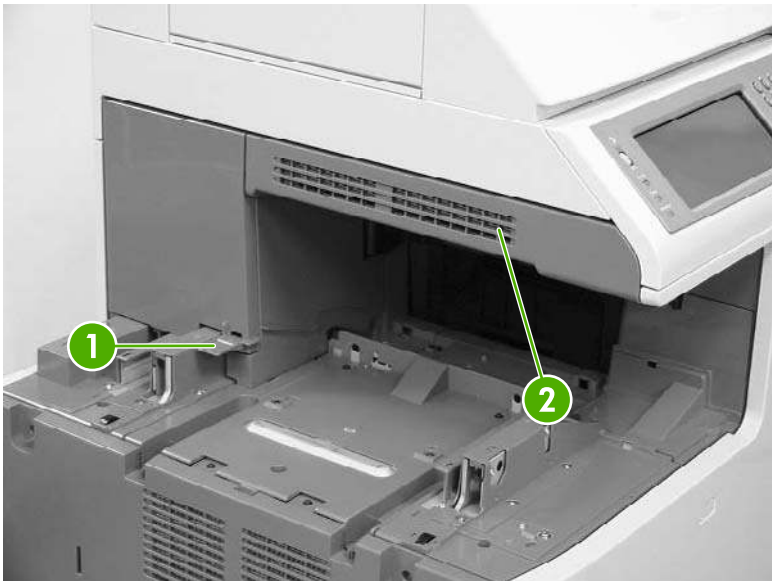


Figure 6-78 Remove the delivery cover assembly

Rear cover assembly

1. Remove the three screws (callout 1).

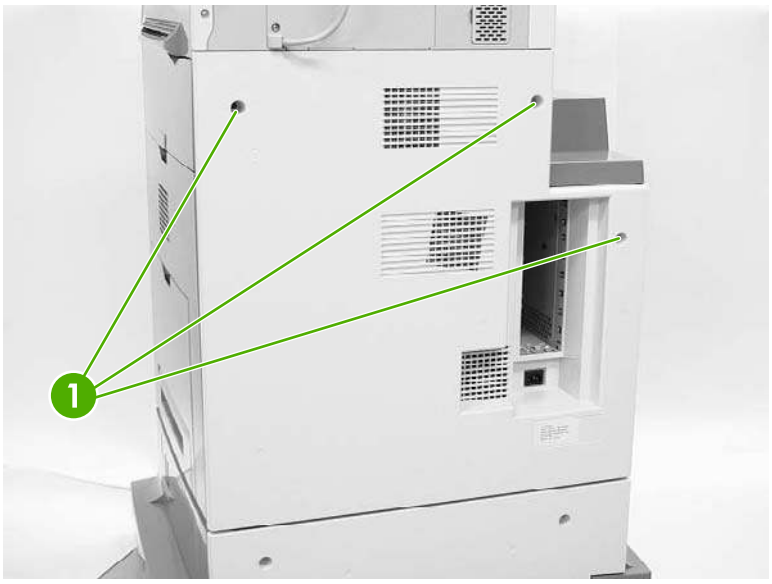


Figure 6-79 Remove the rear cover assembly (1 of 4)

2. Unhook the three claws (callout 2).

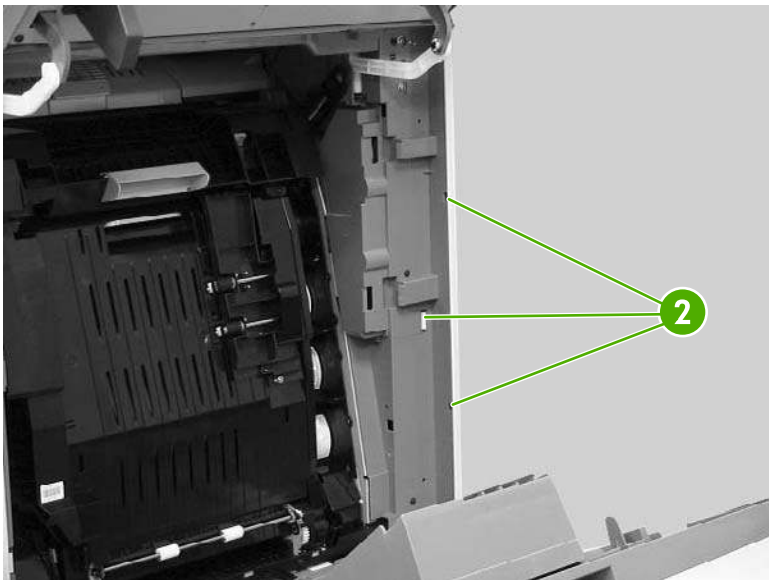


Figure 6-80 Remove the rear cover assembly (2 of 4)

3. Unhook the claws (callout 3), and then remove the rear cover assembly (callout 4).

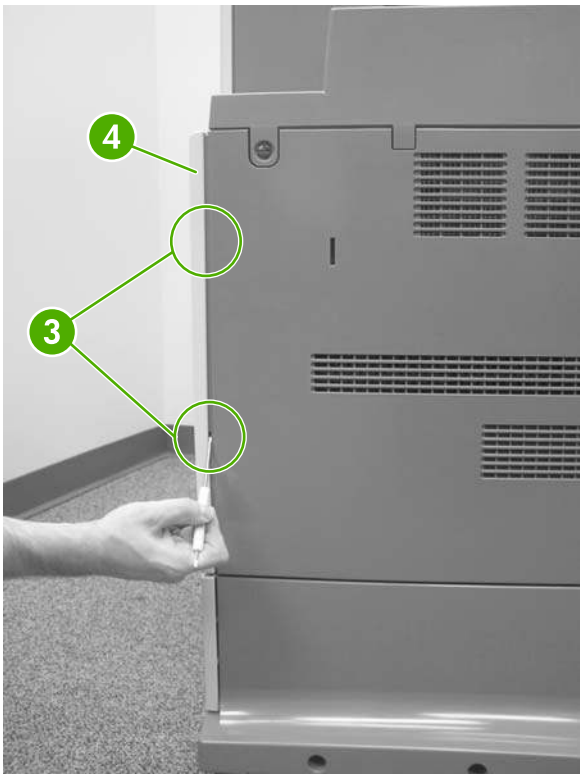


Figure 6-81 Remove the rear cover assembly (3 of 4)

Orientation view of rear of MFP with rear cover removed and side covers open.

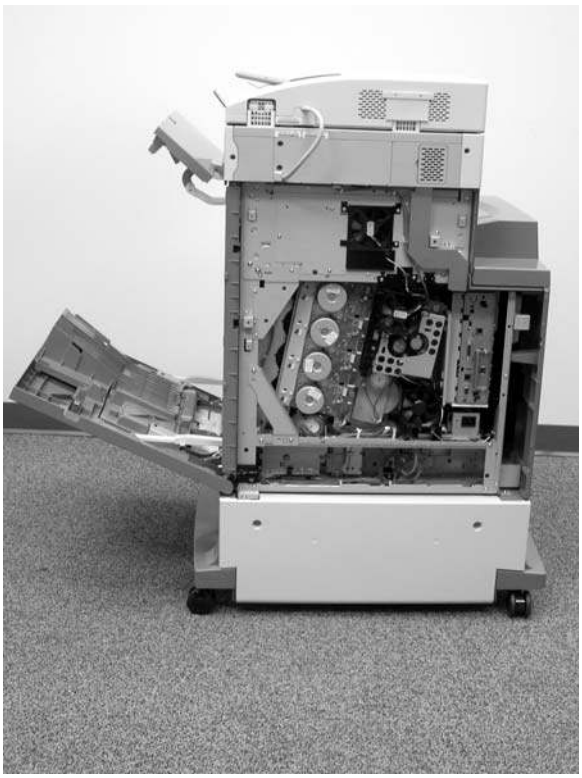


Figure 6-82 Remove the rear cover assembly (4 of 4)

Left cover assembly

1. Remove the rear cover assembly. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the two screws (callout 1).
4. Unhook the claw (callout 2), and remove the left cover assembly (callout 3).

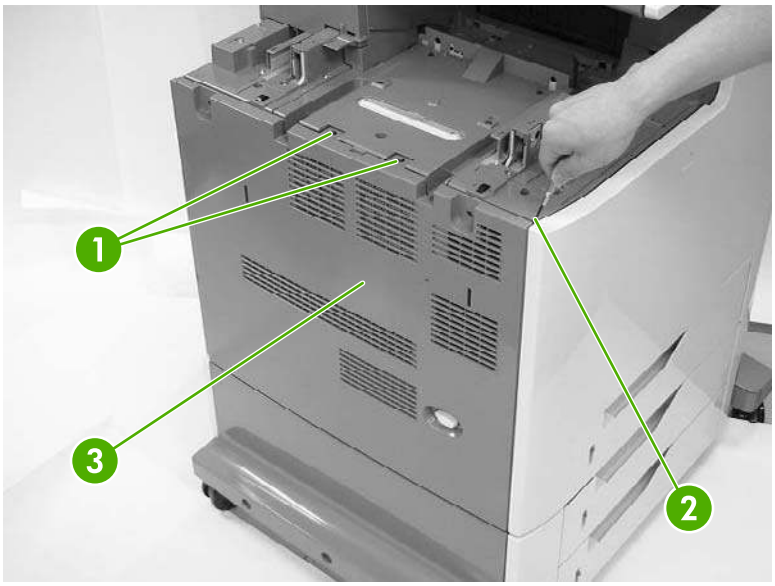


Figure 6-83 Remove the left cover

Front cover assembly

1. Remove the following assemblies.
   - Rear cover assembly. See Rear cover assembly on page 294.
   - Face-down tray assembly. See Face-down tray assembly on page 293.
   - Left cover assembly. See Left cover assembly on page 296.
   - Control panel. See Control panel on page 250.
2. Open the right upper and lower covers.
3. Remove the three screws (callout 1).

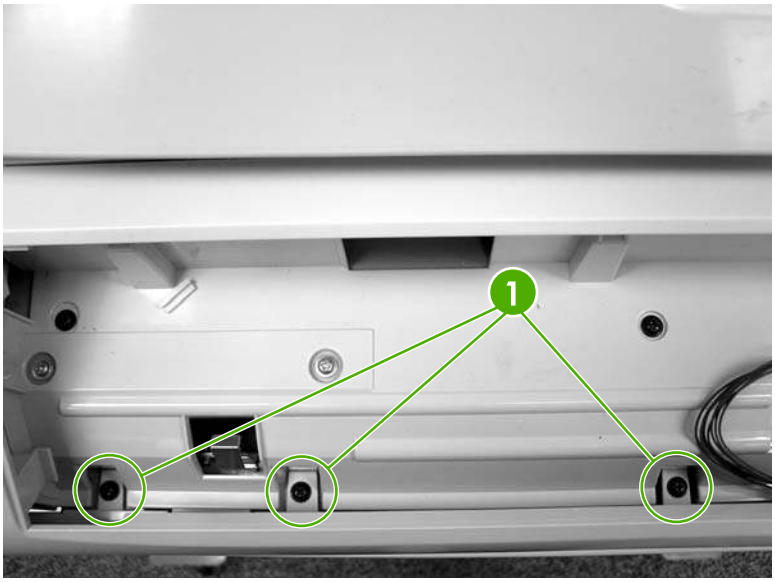


Figure 6-84 Remove the front cover (1 of 5)

4. Remove one screw (callout 2) and unhook the two claws (callout 3) from the right side of the MFP.

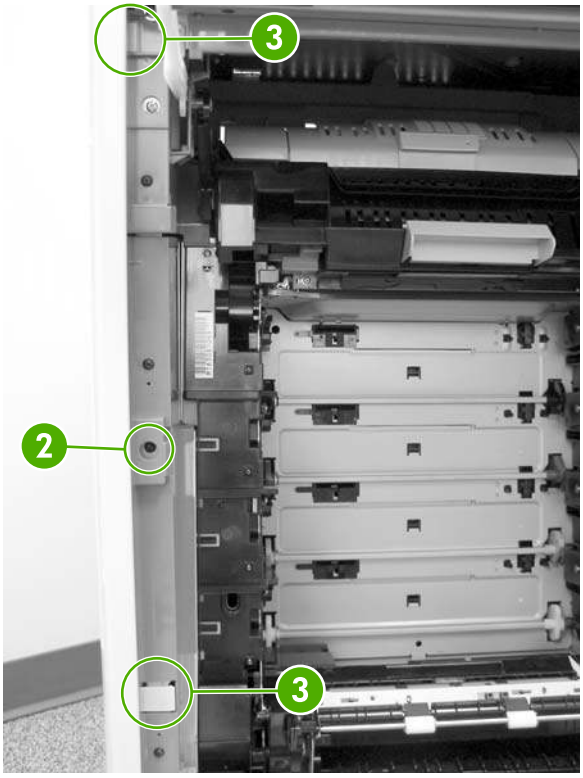


Figure 6-85 Remove the front cover (2 of 5)

5. Unhook the two claws (callout 4) on the left side of the MFP.

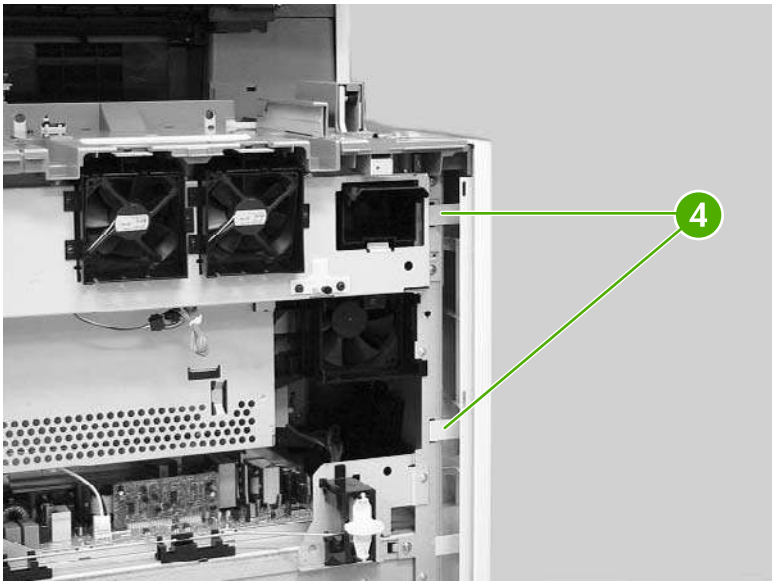


Figure 6-86 Remove the front cover (3 of 5)

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).

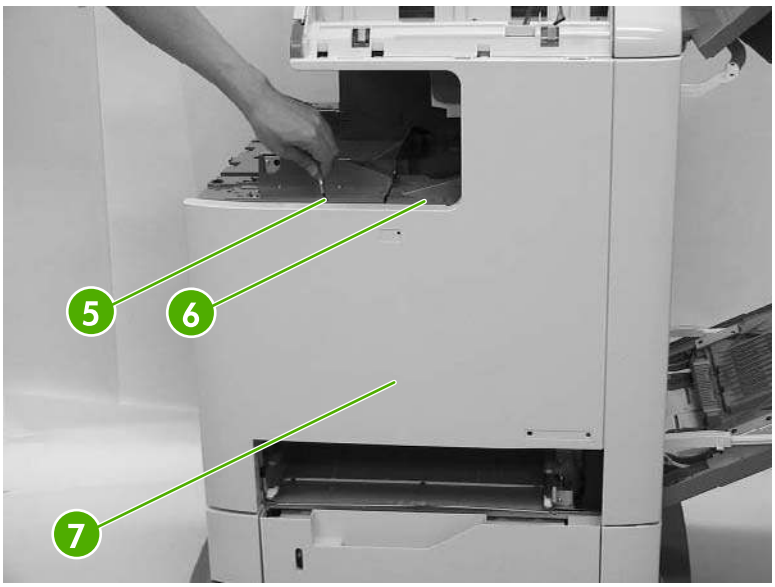


Figure 6-87 Remove the front cover (4 of 5)

Detail of claw (callout 5).

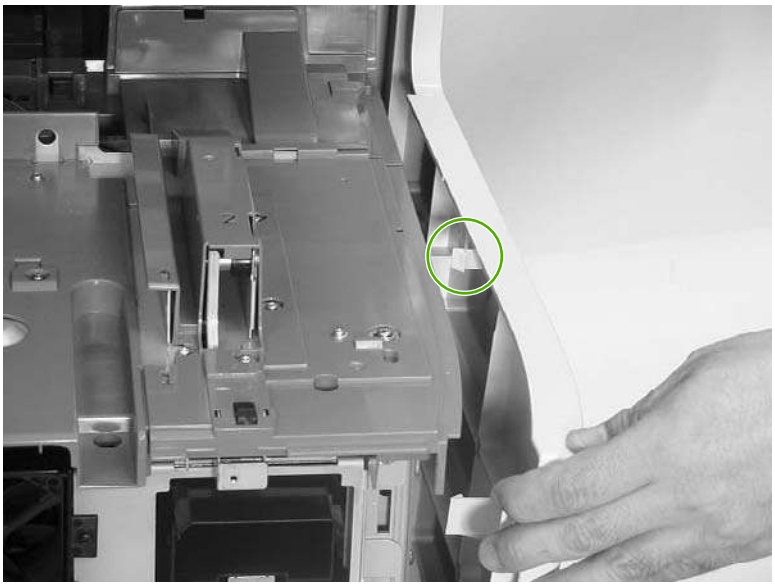


Figure 6-88 Remove the front cover (5 of 5)

Tray 1

1. Remove the MP tray pickup assembly. See MP tray pickup assembly on page 261.
2. Push the slip rails (callout 1) back into the MFP.

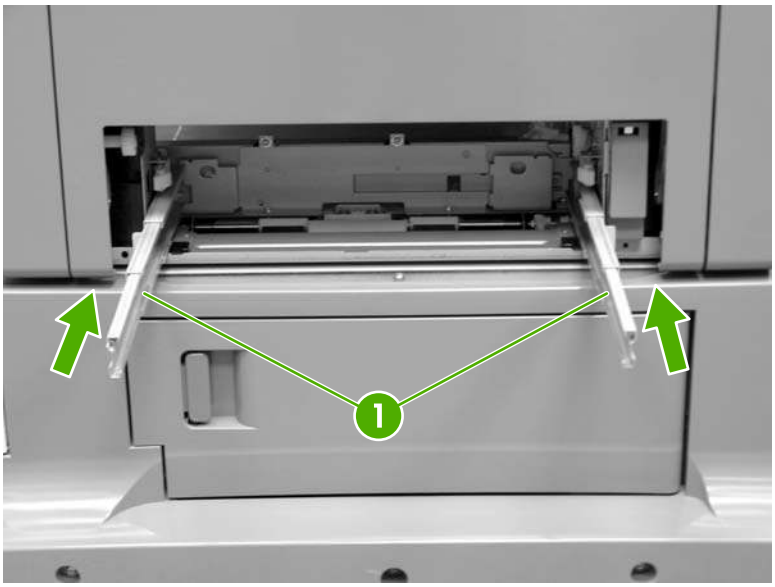


Figure 6-89 Remove tray 1 (1 of 7)

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).

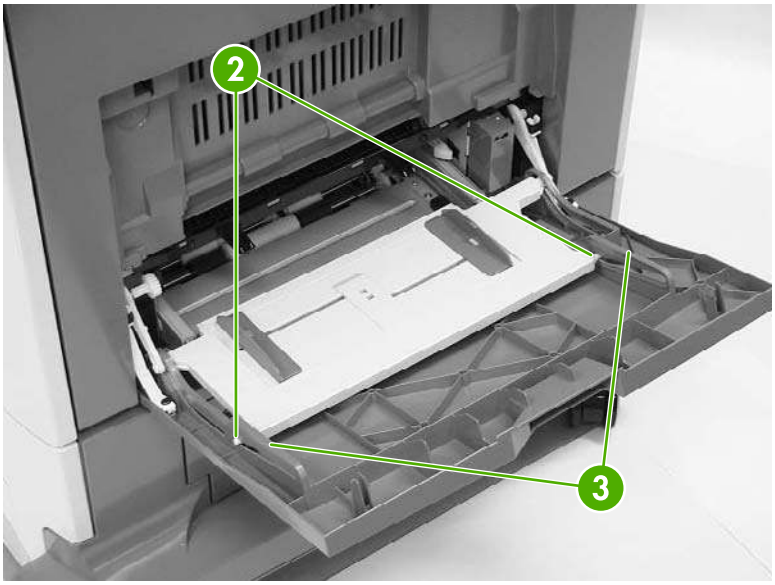


Figure 6-90 Remove tray 1 (2 of 7)

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).

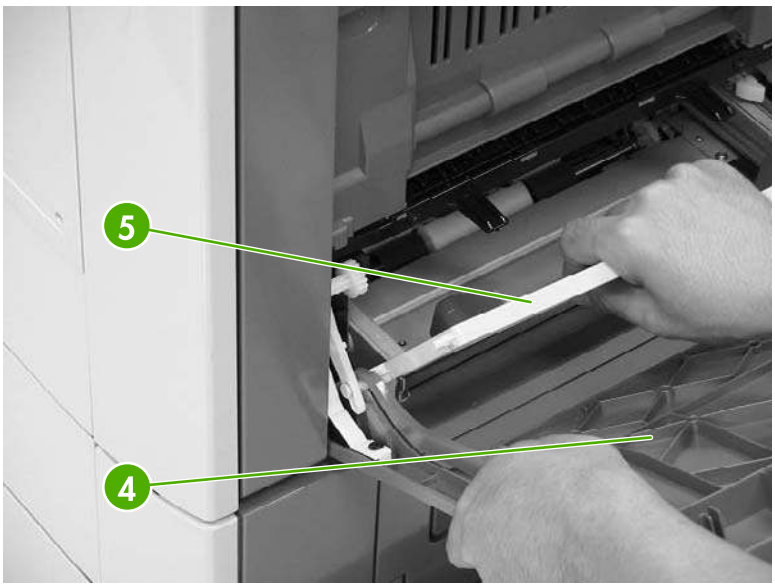


Figure 6-91 Remove tray 1 (3 of 7)

6. Warp the link arm (callout 6) outward to unhook the left boss (callout 7).

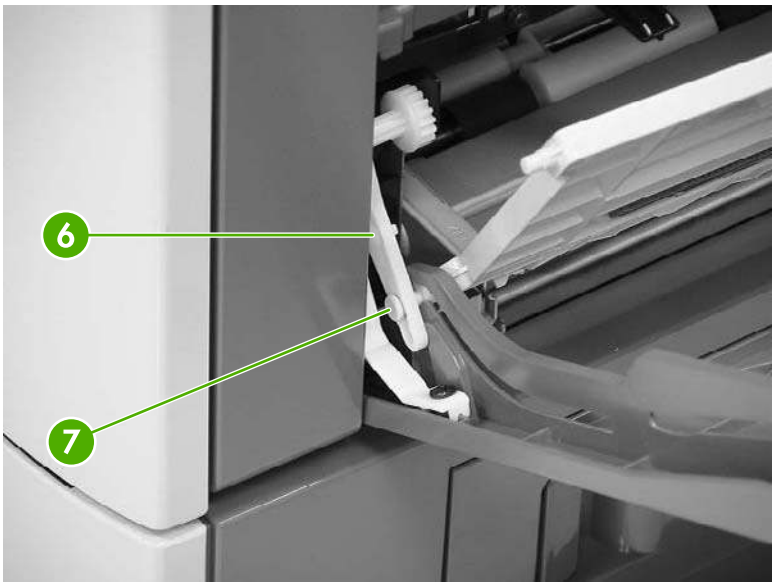


Figure 6-92 Remove tray 1 (4 of 7)

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).

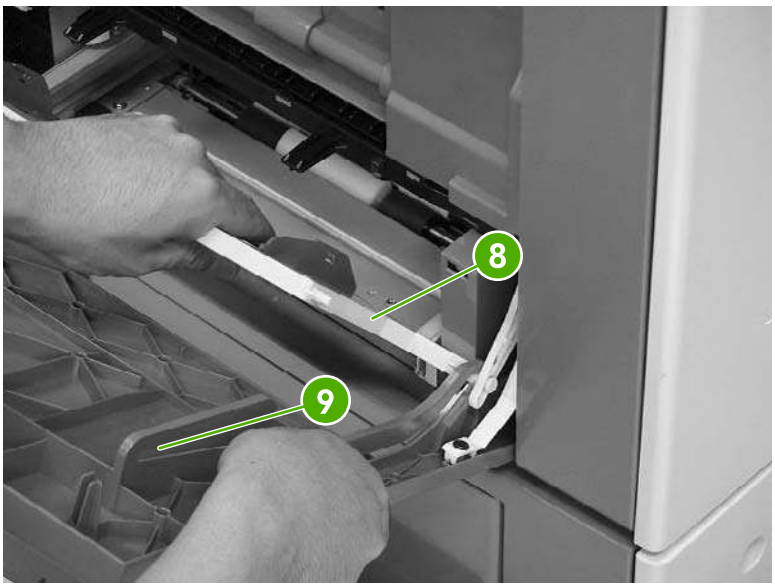


Figure 6-93 Remove tray 1 (5 of 7)

8. Warp the link arm (callout 10) outward to unhook the right boss (callout 11).

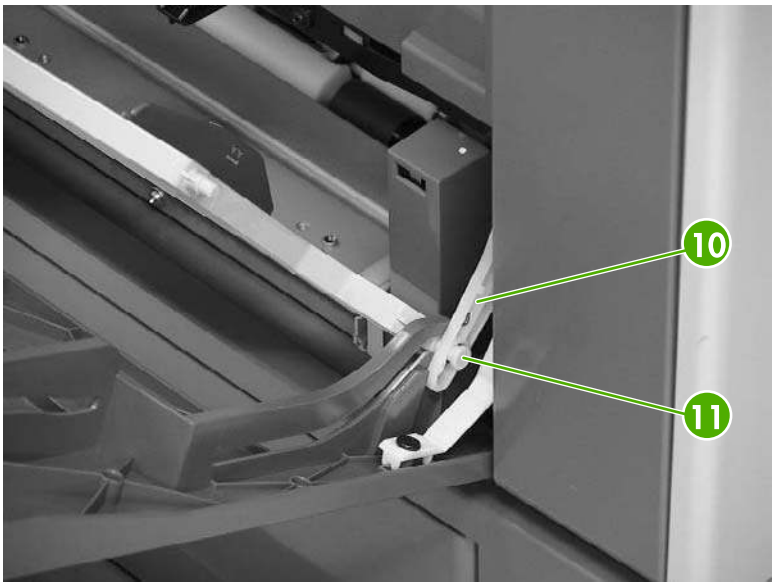


Figure 6-94 Remove tray 1 (6 of 7)

9. Pinch and release the two tabs (callout 12) on the end of each retaining strap to release the strap ends.

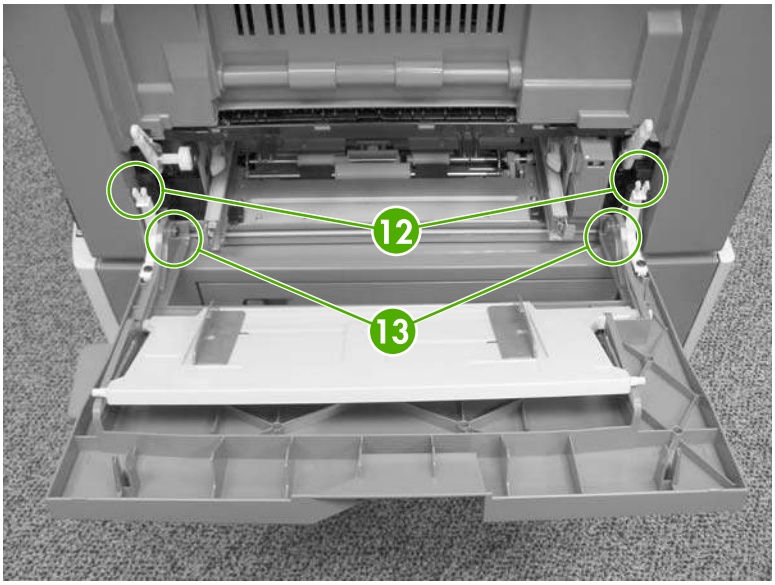


Figure 6-95 Remove tray 1 (7 of 7)

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 300.
2. Open the lower right cover (callout 1). Unhook the three claws (callout 2), and then remove the cable cover (callout 3).

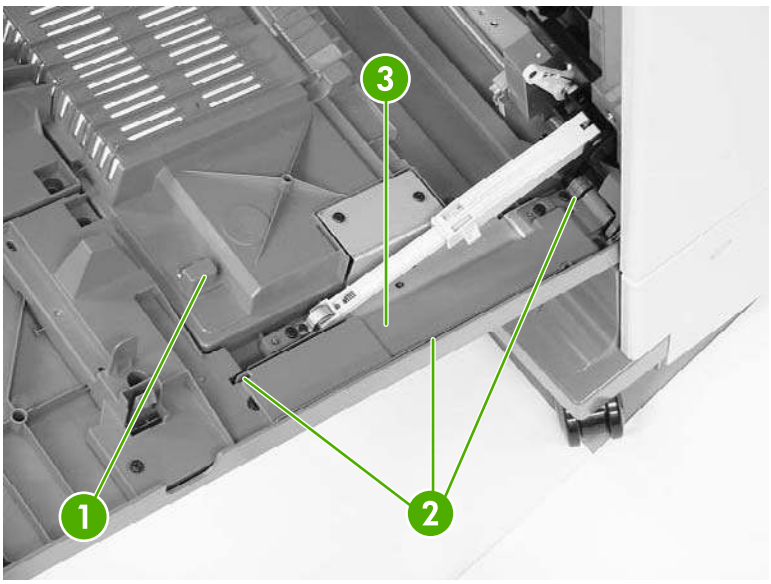


Figure 6-96 Remove the right lower cover assembly (1 of 5)

3. Disconnect the connector (callout 4) and remove the cable (callout 5) from the cable guide (callout 6).

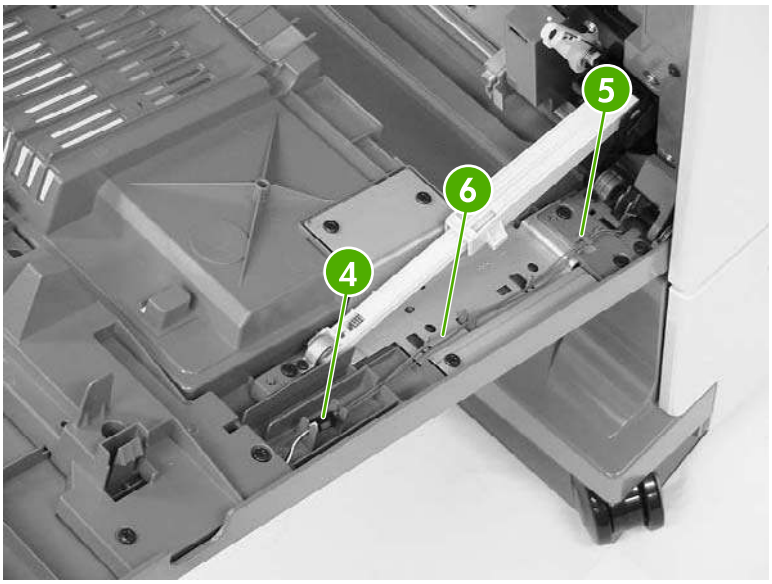


Figure 6-97 Remove the right lower cover assembly (2 of 5)

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.

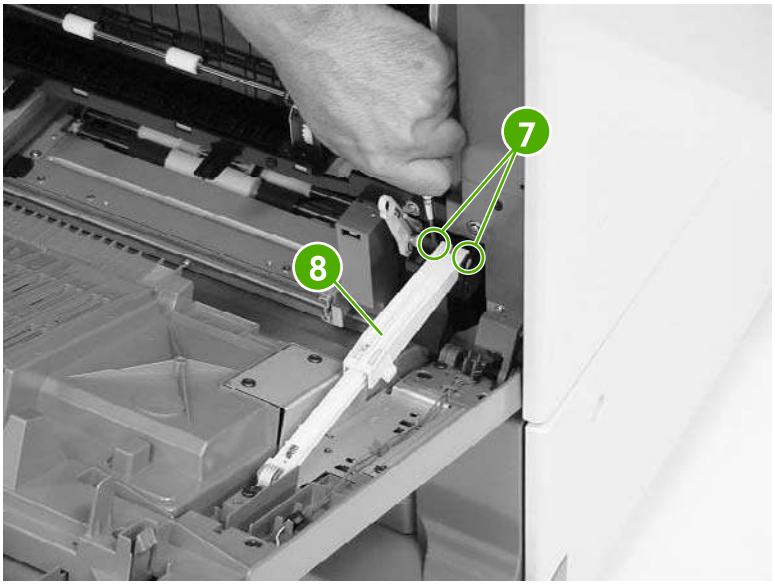


Figure 6-98 Remove the right lower cover assembly (3 of 5)

5. Open the shaft holder (callout 9) on the left side and rotate it clockwise to remove the arm (callout 10).

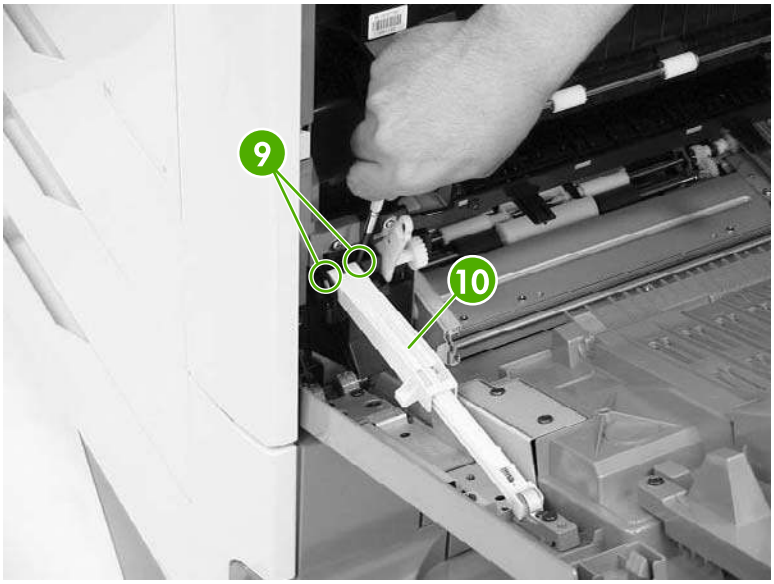


Figure 6-99 Remove the right lower cover assembly (4 of 5)

6. Pull the right lower cover (callout 11) out of the MFP toward you.

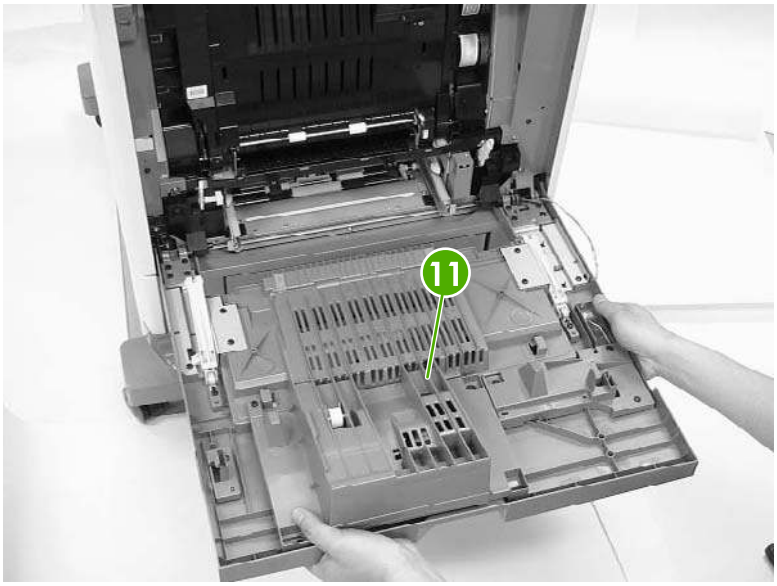


Figure 6-100 Remove the right lower cover assembly (5 of 5)

Delivery upper cover assembly

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the left cover. See Left cover assembly on page 296.
3. Remove the front cover. See Front cover assembly on page 297.
4. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
5. Remove the delivery cover assembly. See Delivery cover assembly on page 293.
6. Remove the two screws (callout 1) and the delivery upper cover (callout 2).

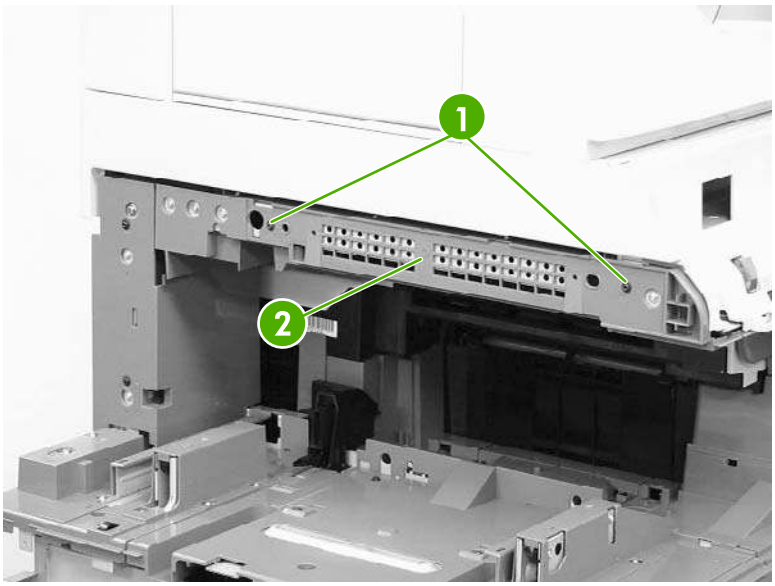


Figure 6-101 Remove the delivery upper cover assembly

Right front inner lower cover assembly

1. Remove the front cover. See Front cover assembly on page 297.
2. Remove the two black screws (callout 1) and the right front inner lower cover (callout 2).

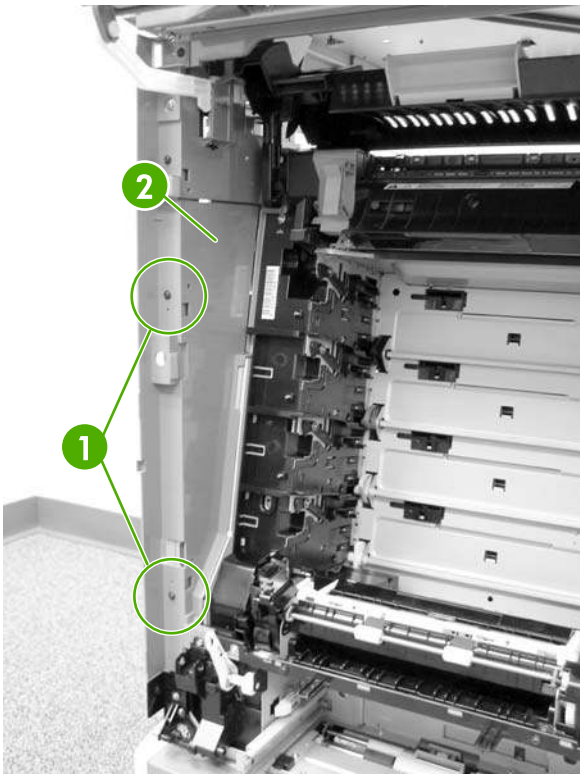


Figure 6-102 Remove the right front lower inner cover

Left rear inner cover assembly

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the left cover. See Left cover assembly on page 296.
3. Remove the front cover. See Front cover assembly on page 297.
4. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
5. Remove the delivery cover assembly. See Delivery cover assembly on page 293.

6. Remove the two black screws (callout 1) and the left rear inner cover (callout 2).

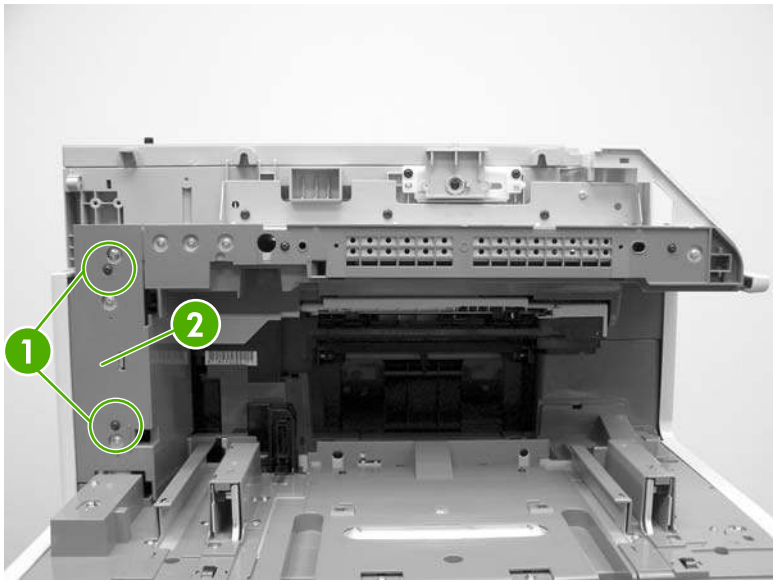


Figure 6-103 Remove the left rear inner cover

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 297.
2. Remove the right front inner lower cover assembly. See Right front inner lower cover assembly on page 307.
3. Open the right upper door.

4. Unhook the claw (callout 1) and release the door link (callout 2).

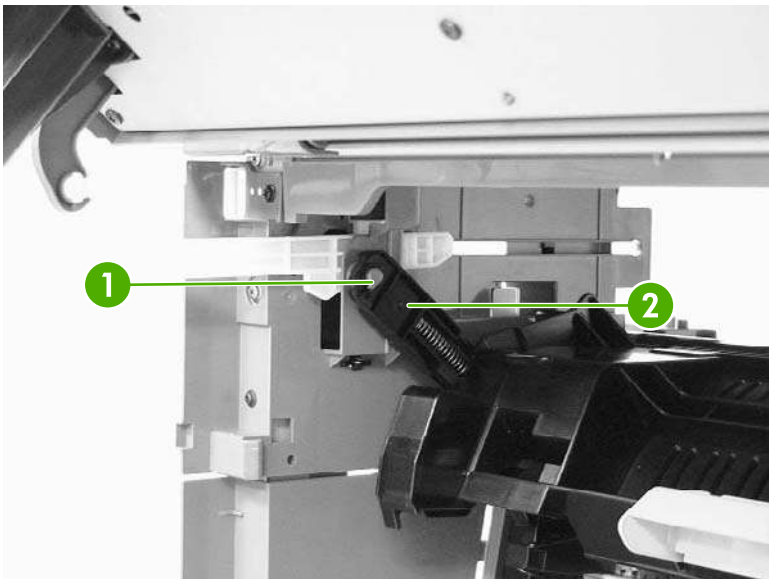


Figure 6-104 Remove the right front inner cover assembly (1 of 3)

5. Unhook the arm and push it back toward the MFP.

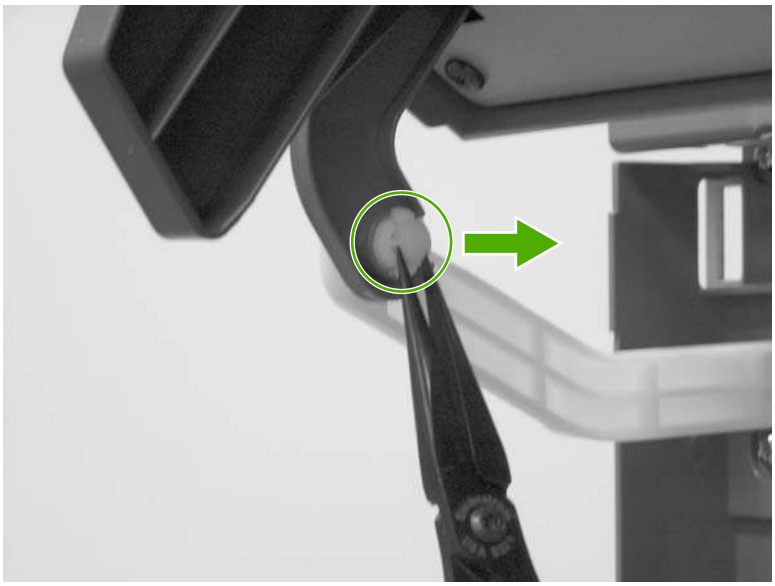


Figure 6-105 Remove the right front inner cover assembly (2 of 3)

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.

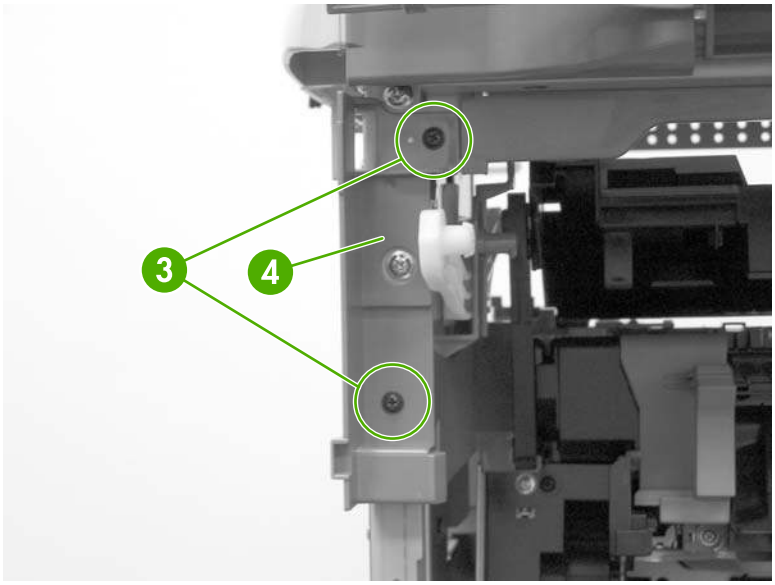


Figure 6-106 Remove the right front inner cover assembly (3 of 3)

Right rear inner cover assembly

1. Remove the rear cover assembly. See Rear cover assembly on page 294.
2. Open the right upper door.
3. Remove the right lower cover assembly. See Right lower cover assembly on page 303.
4. Unhook the claw (callout 1) and release the door link (callout 2).

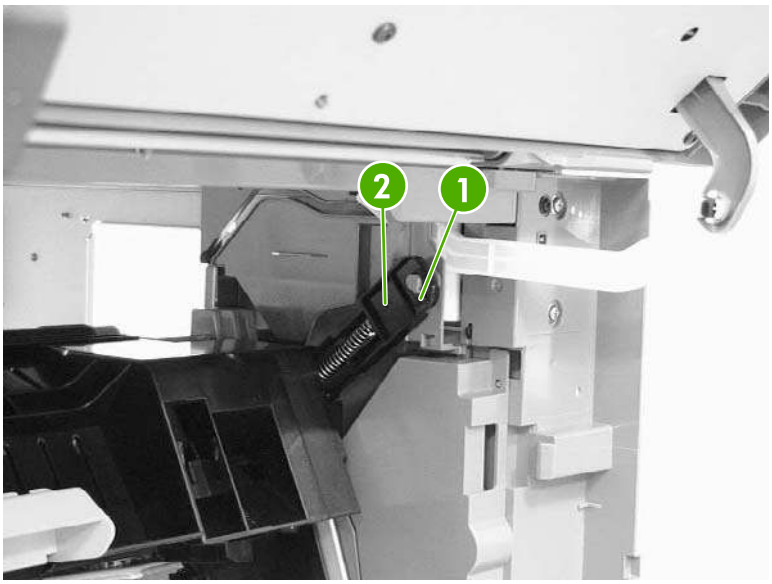


Figure 6-107 Remove the right rear inner cover assembly (1 of 4)

5. Push the link arm (callout 3) backwards by pressing the tabs (callout 4).

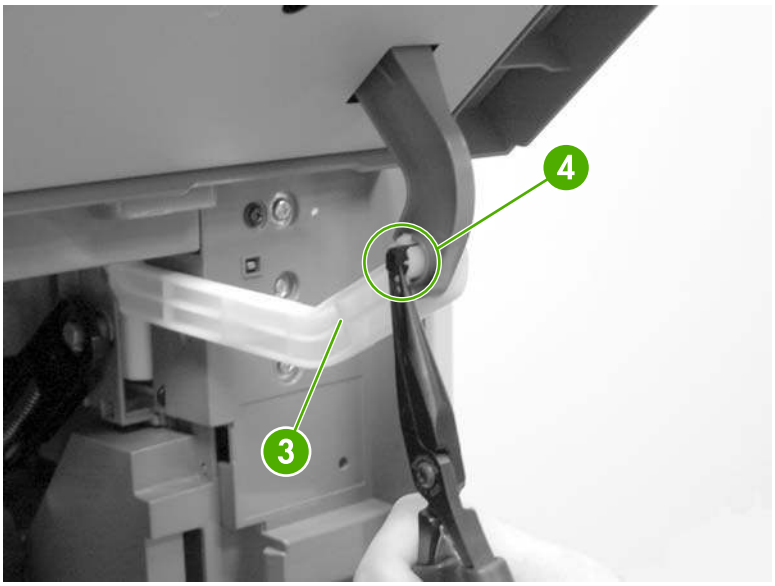


Figure 6-108 Remove the right rear inner cover assembly (2 of 4)

6. Remove the three screws (callout 5).

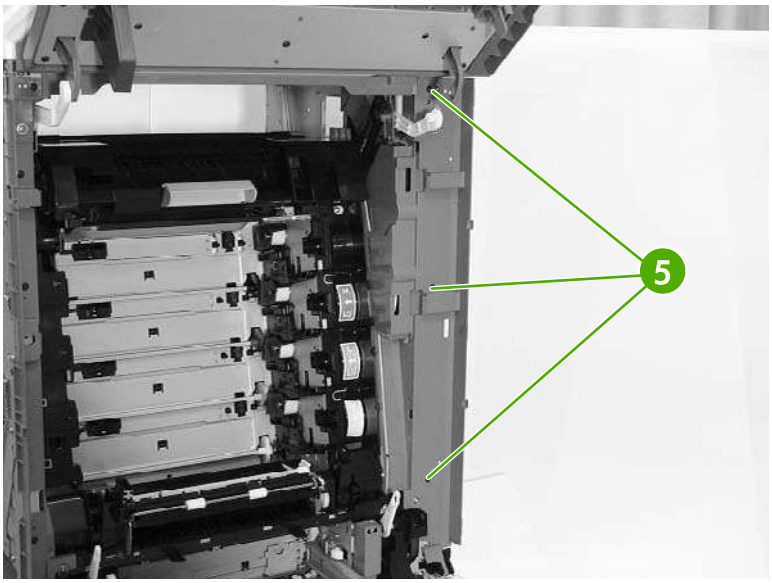


Figure 6-109 Remove the right rear inner cover assembly (3 of 4)

7. Push the right rear inner cover assembly from the back (callout 6) and then remove the right rear inner cover (callout 7).

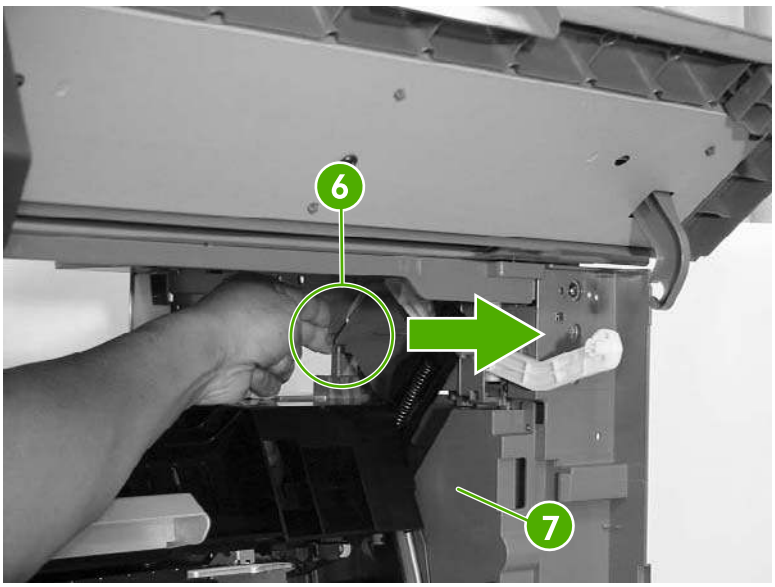


Figure 6-110 Remove the right rear inner cover assembly (4 of 4)

Main assembly (internal assemblies)

The figures below identify the names and locations of the MFP main assemblies.

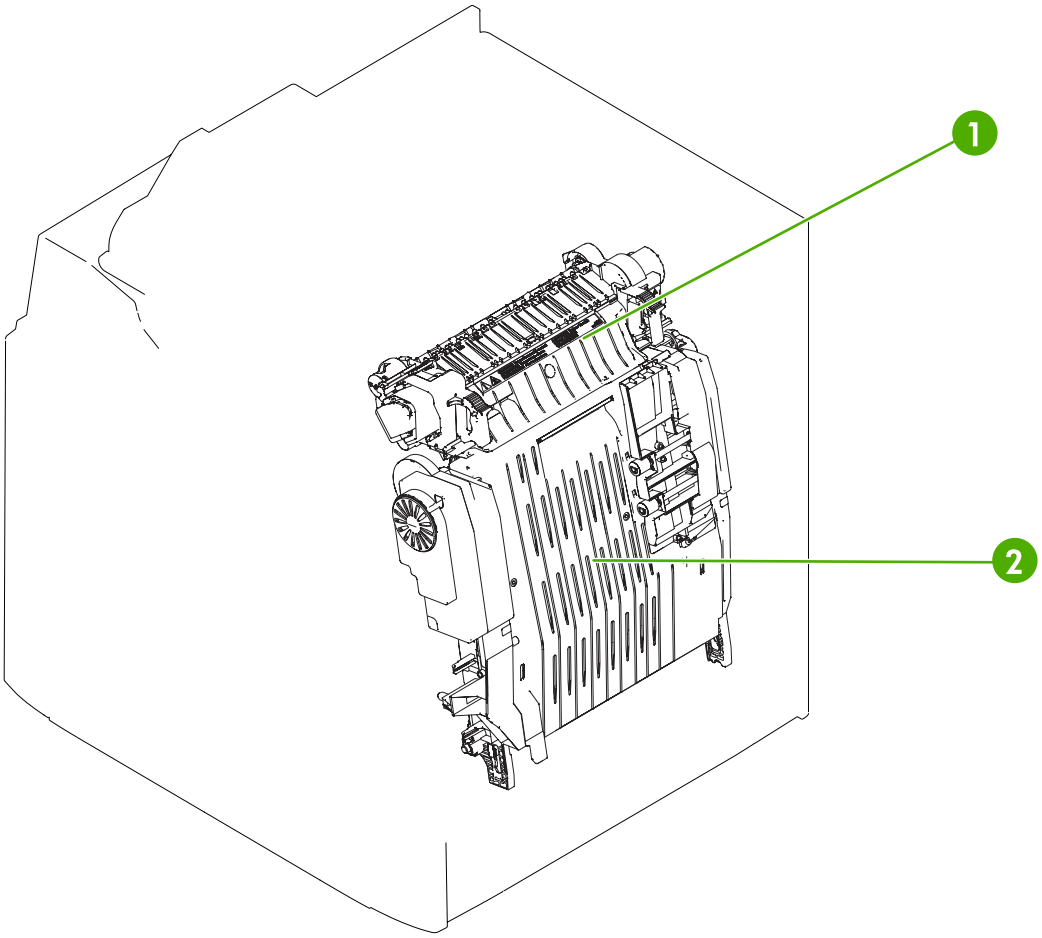


Figure 6-111 Locations of main assemblies (1 of 3)

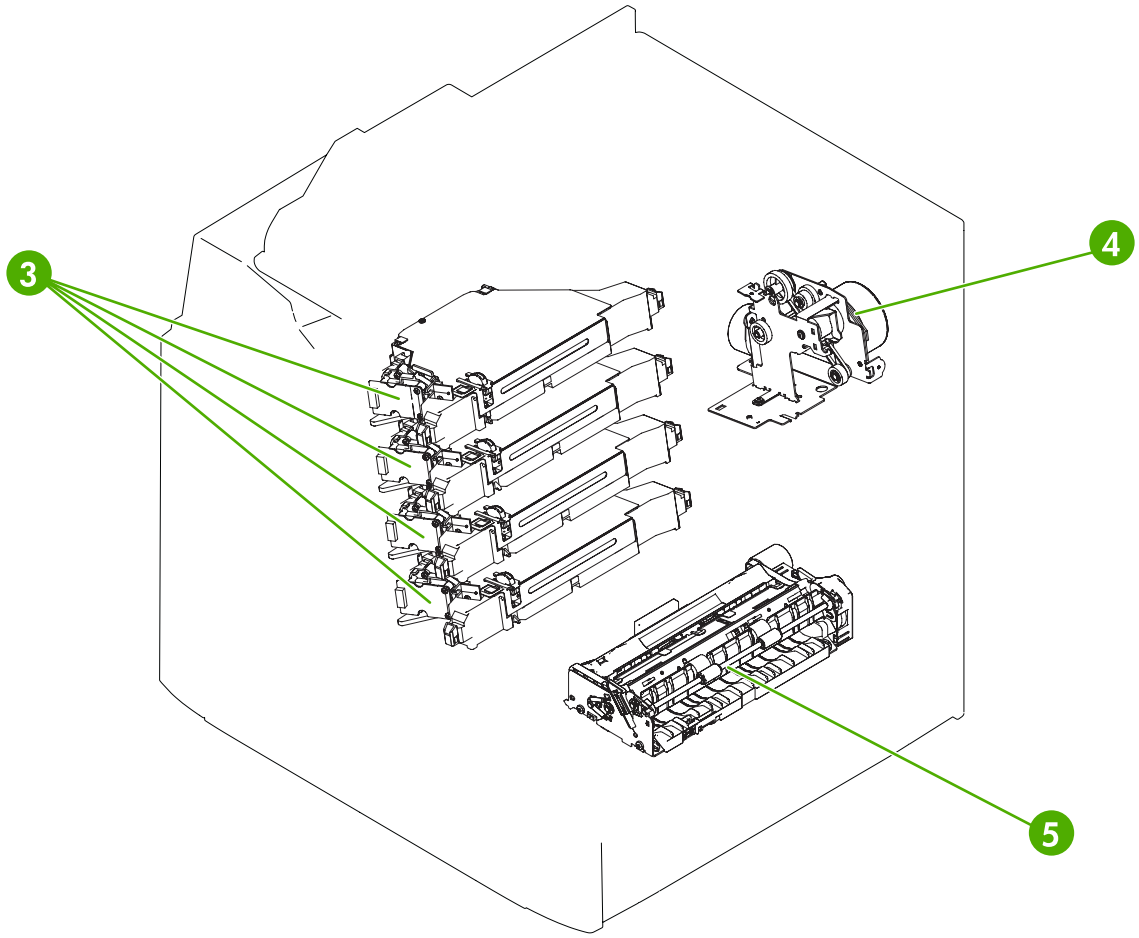


Figure 6-112 Locations of main assemblies (2 of 3)

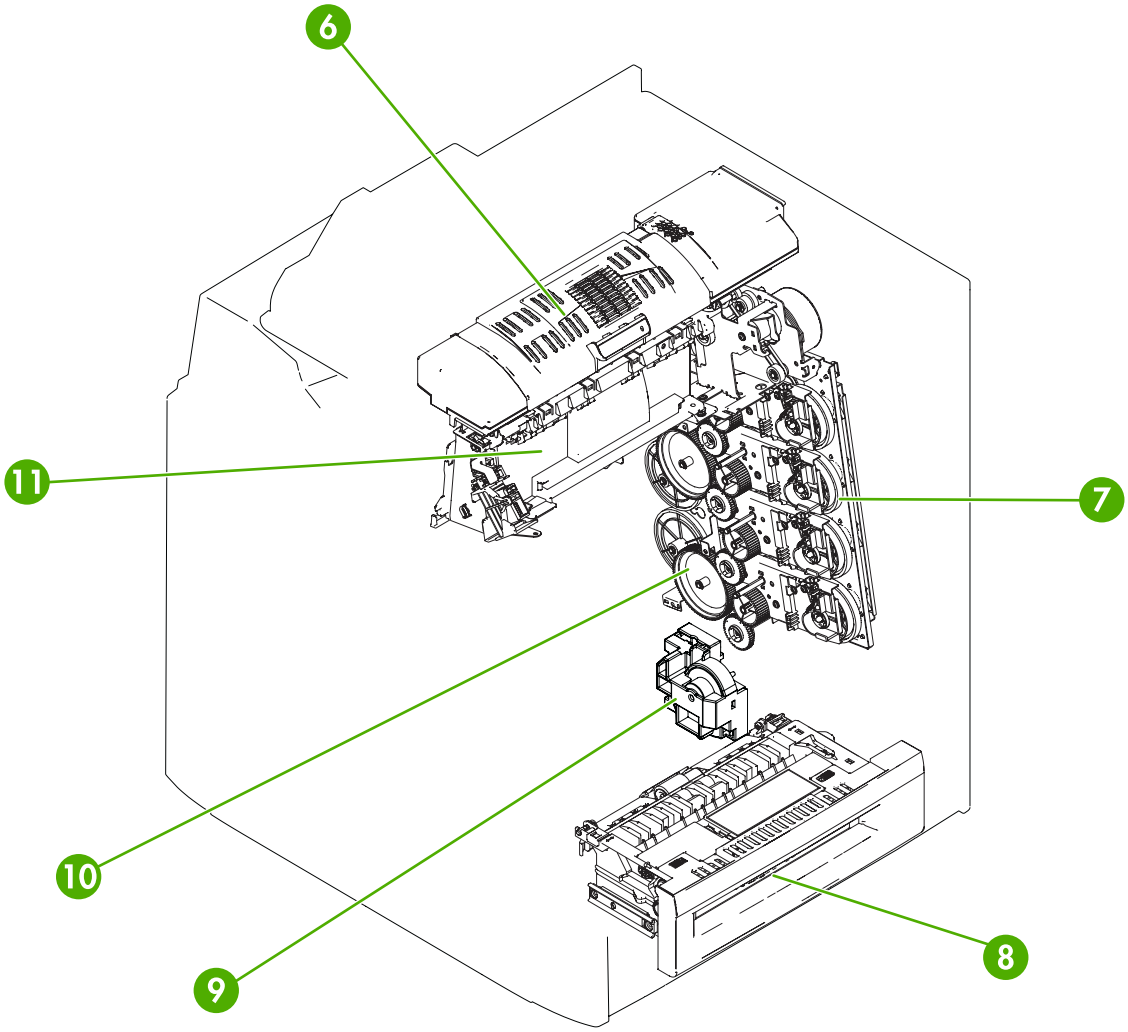


Figure 6-113 Locations of main assemblies (3 of 3)

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.

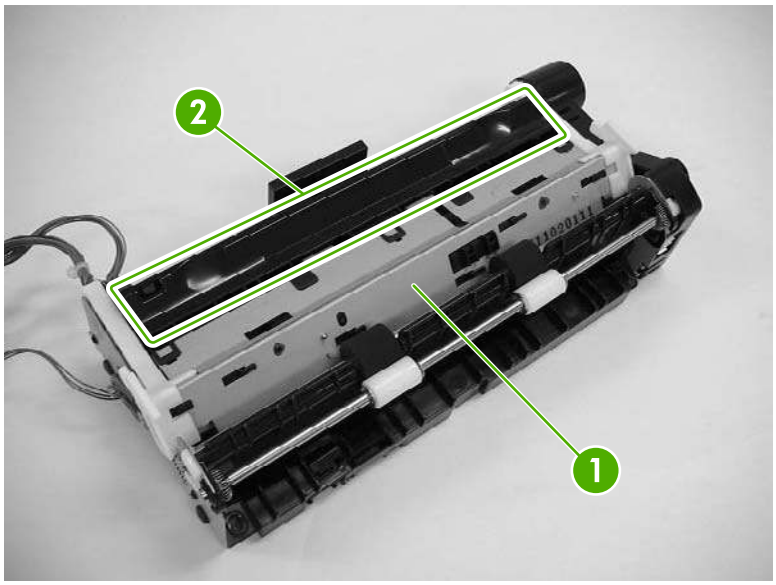


Figure 6-114 Paper feed assembly sensor

1. Open the right lower cover. See Right lower cover assembly on page 454.
2. Remove the print cartridges.
3. Remove the ETB. See ETB assembly, removing on page 258.

4. Unhook the two claws (callout 3), and then remove the cable cover (callout 4).

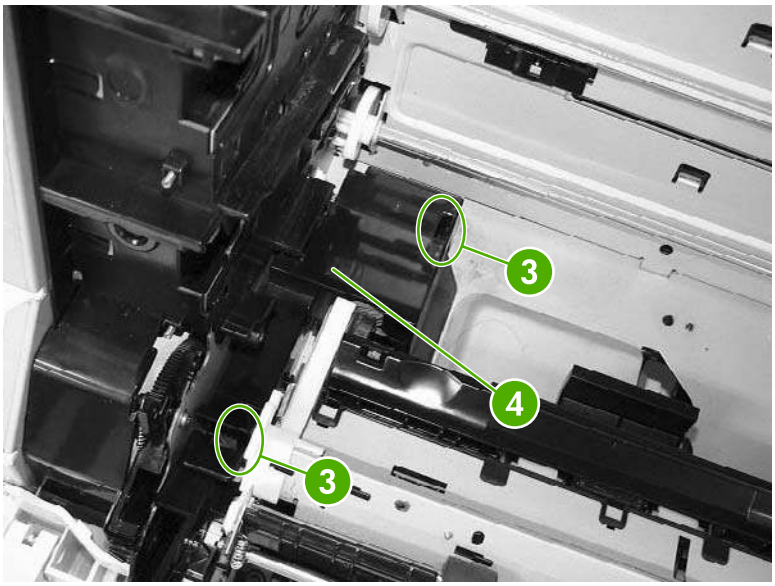


Figure 6-115 Remove the paper feed assembly (1 of 6)

5. Detail of cable cover front claw 1 of 2 (callout 3).

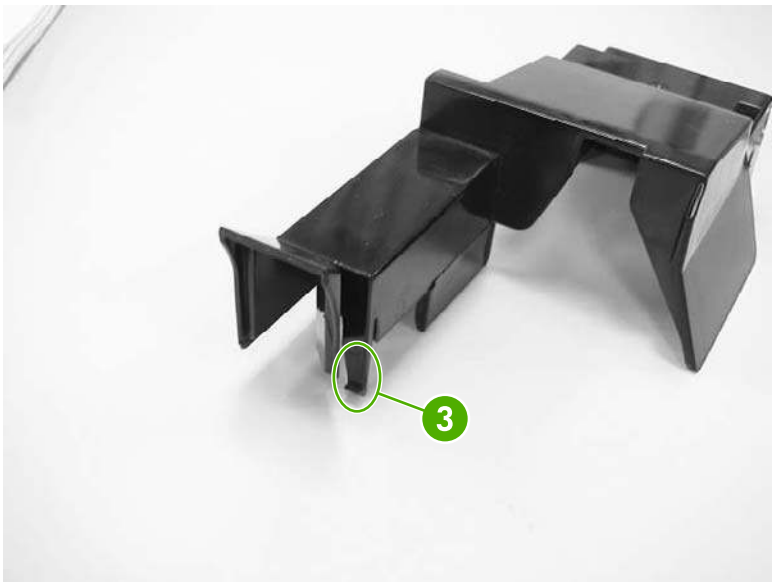


Figure 6-116 Remove the paper feed assembly (2 of 6)

6. Detail of cable cover rear claw (callout 3).

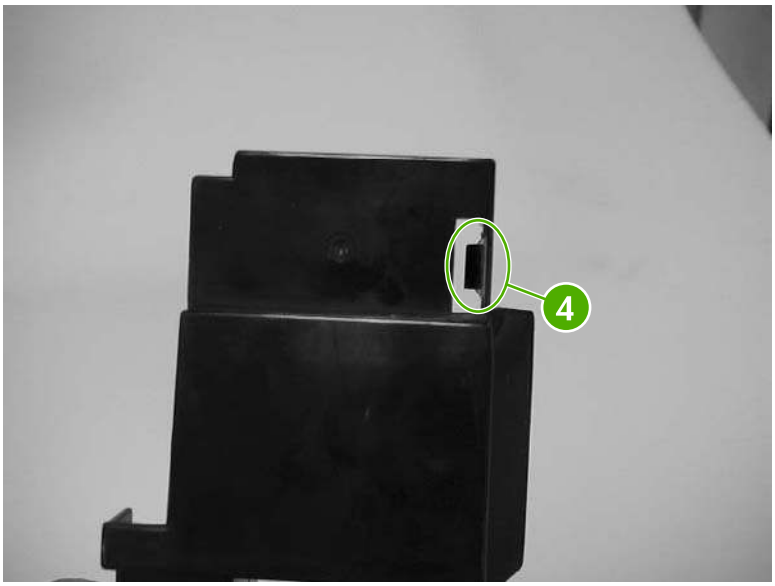


Figure 6-117 Remove the paper feed assembly (3 of 6)

7. Disconnect the three connectors (callout 5).

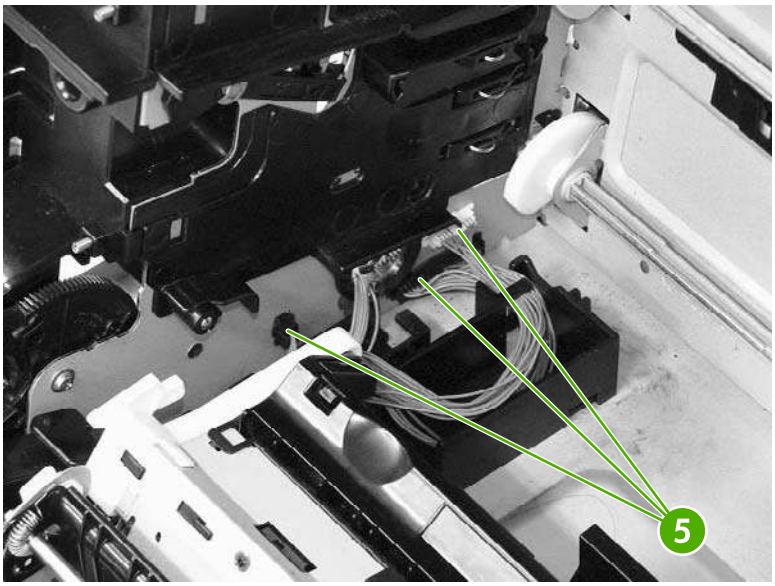


Figure 6-118 Remove the paper feed assembly (4 of 6)

8. Remove the two screws (callout 6), and then remove the paper feed assembly (callout 7).

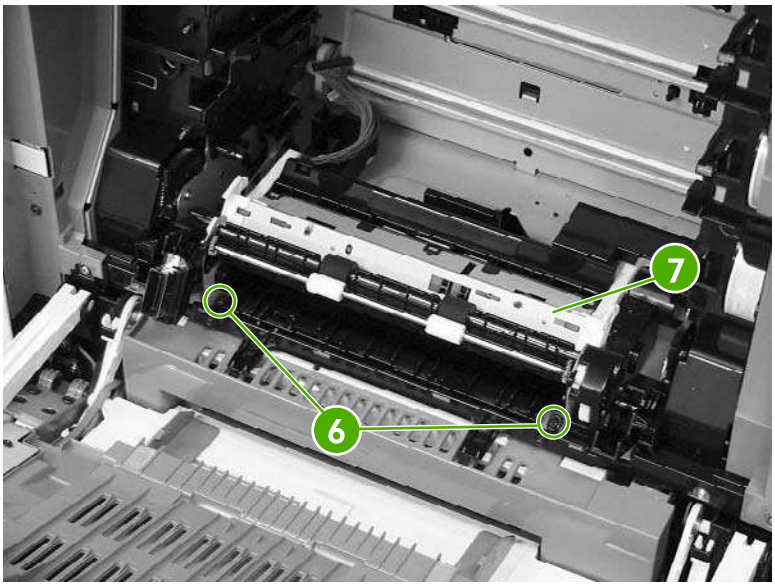


Figure 6-119 Remove the paper feed assembly (5 of 6)

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, press Menu, 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 OK.

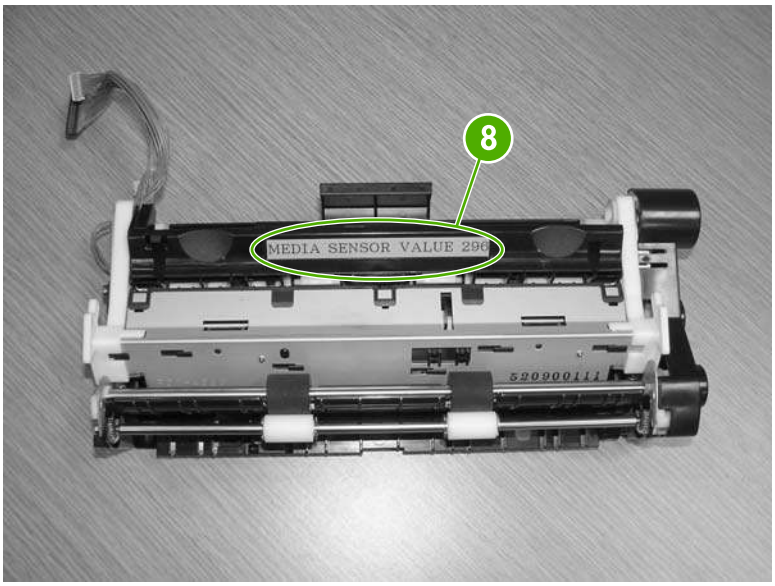


Figure 6-120 Remove the paper feed assembly (6 of 6)

Pickup drive assembly

1. Remove the rear cover assembly. See Rear cover assembly on page 294.
2. Disconnect the two connectors (callout 1) and remove the cable (callout 2) from the cable guides (callout 3).

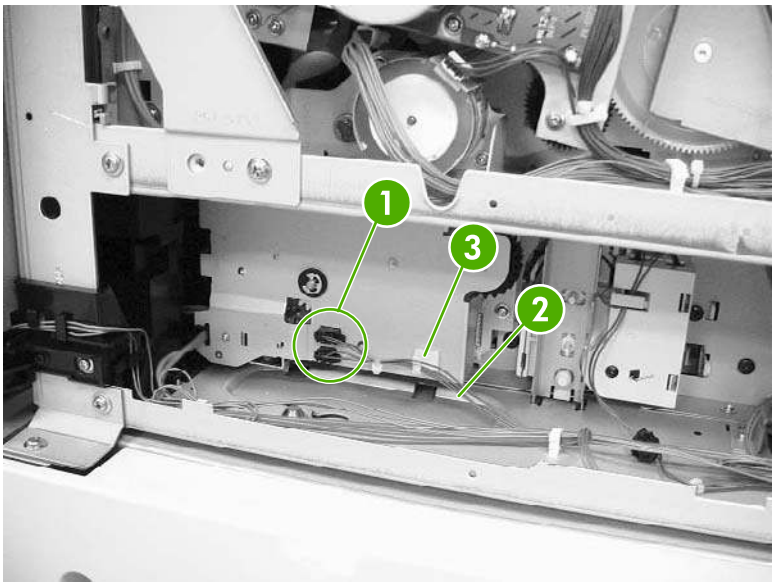


Figure 6-121 Remove the pickup drive assembly (1 of 2)

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).

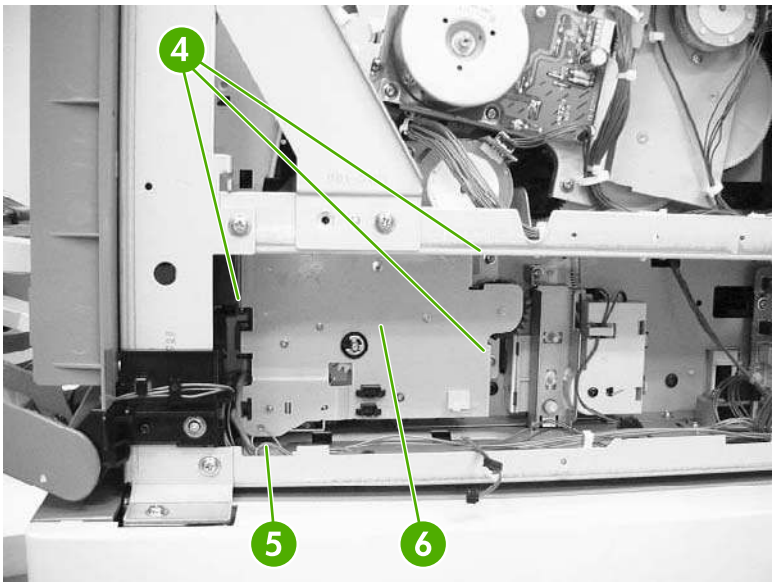


Figure 6-122 Remove the pickup drive assembly (2 of 2)

Lifter drive assembly

1. Remove the paper trays.
2. Remove the rear cover assembly. See Rear cover assembly on page 294.
3. Remove two screws (callout 1). Remove the spring (callout 2) and disconnect the connector (callout 3).

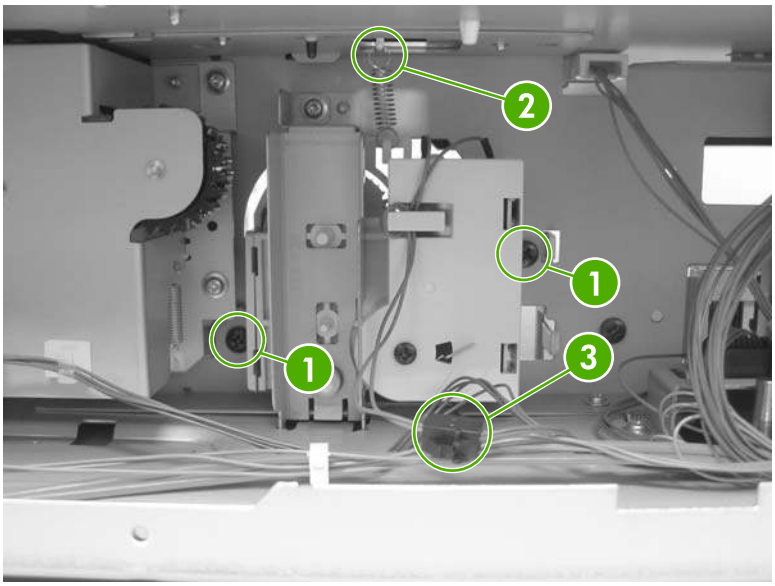


Figure 6-123 Remove the lifter drive assembly (1 of 3)

4. Remove the paper tray rear bracket, which is located inside the paper tray.

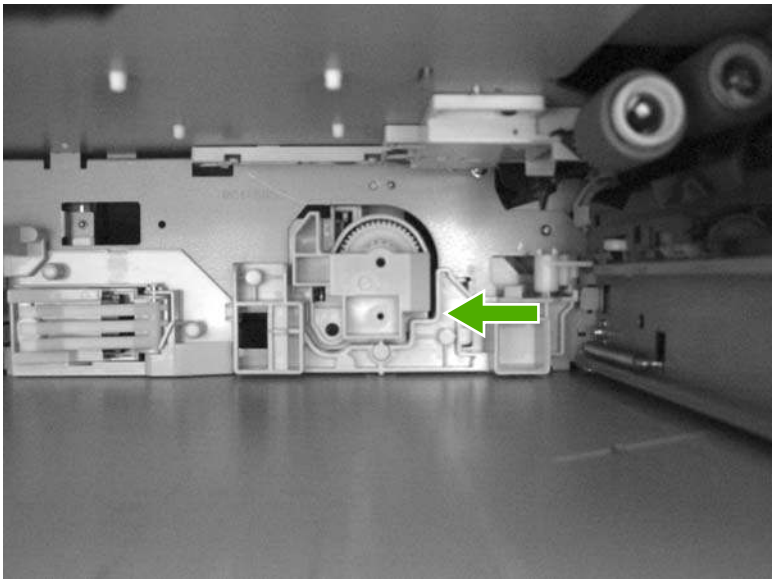


Figure 6-124 Remove the lifter drive assembly (2 of 3)

5. Remove one screw (callout 4) and remove the lifter drive bracket (callout 5) and the lifter drive assembly (callout 6).

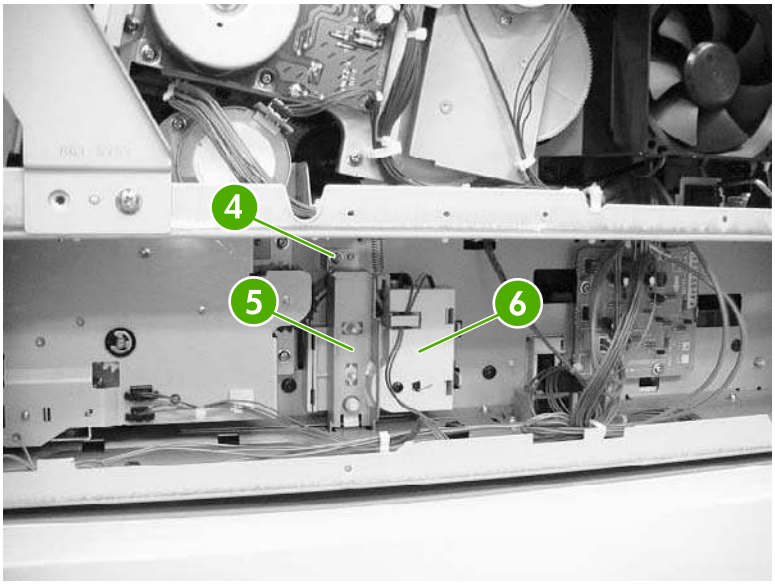


Figure 6-125 Remove the lifter drive assembly (3 of 3)

Disengaging drive assembly

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the developing disengaging motor. See Developing disengaging motor on page 369.
3. Remove the cable (callout 1) from the cable guides (callout 2).

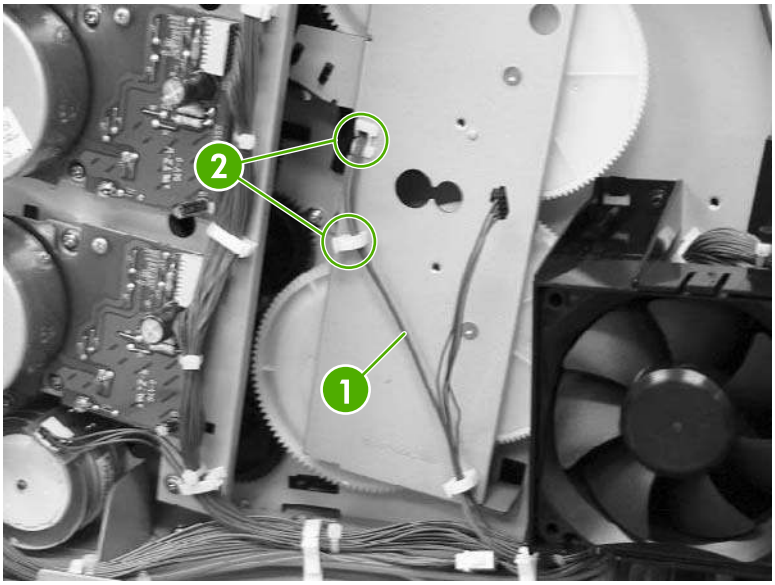


Figure 6-126 Remove the disengaging drive assembly (1 of 3)

4. Remove four screws (callout 3). Tilt the developing alienation drive assembly (callout 4) and the cable (callout 5) forward together.

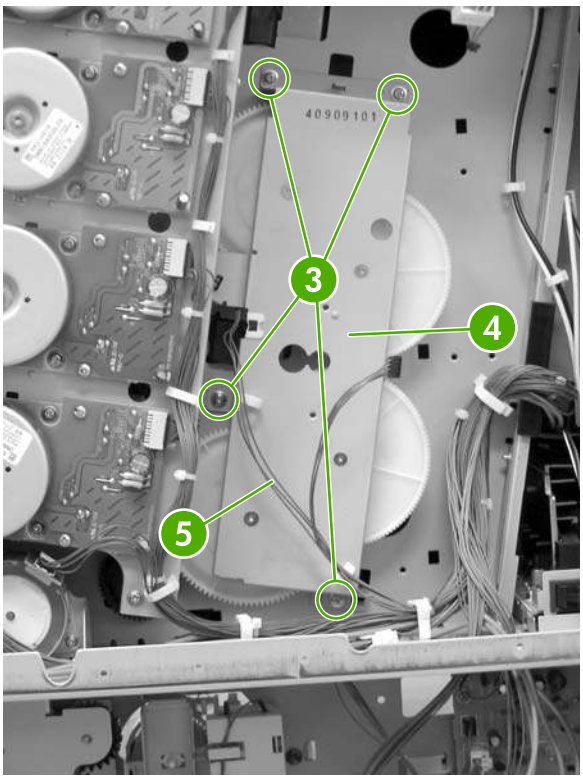


Figure 6-127 Remove the disengaging drive assembly (2 of 3)

5. Disconnect the connector (callout 6) from the developing alienation drive assembly (callout 7).

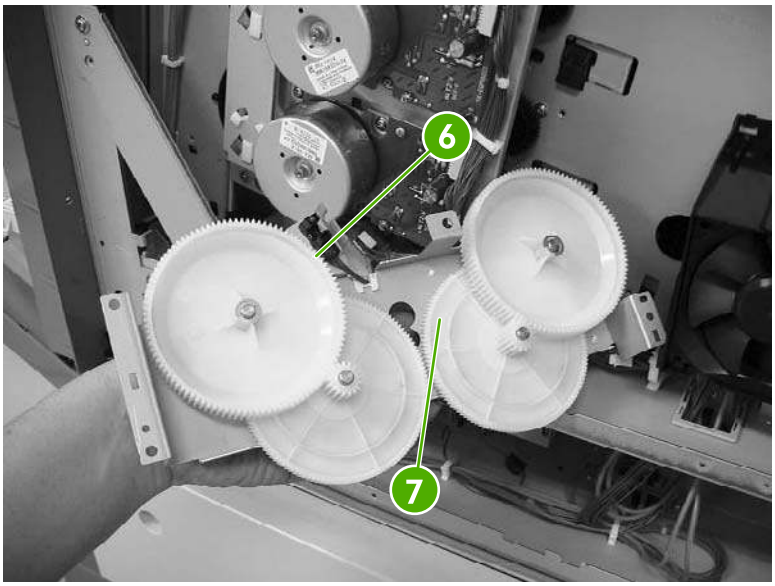


Figure 6-128 Remove the disengaging drive assembly (3 of 3)

Main drive assembly

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the sub power supply fan. See Sub power supply fan on page 374.
3. Remove the sub power supply PCB. See Sub power supply PCB on page 401.
4. Remove the power supply fan. See Power supply fan on page 371.
5. Open the right lower door.
6. Remove the print cartridges. See Print cartridges on page 248.
7. Remove the ETB. See ETB assembly, removing on page 258.
8. Using a small flat-blade screwdriver, unhook the two claws (callout 1), and then remove the cartridge lower guide assembly (callout 2) by pulling it forward.

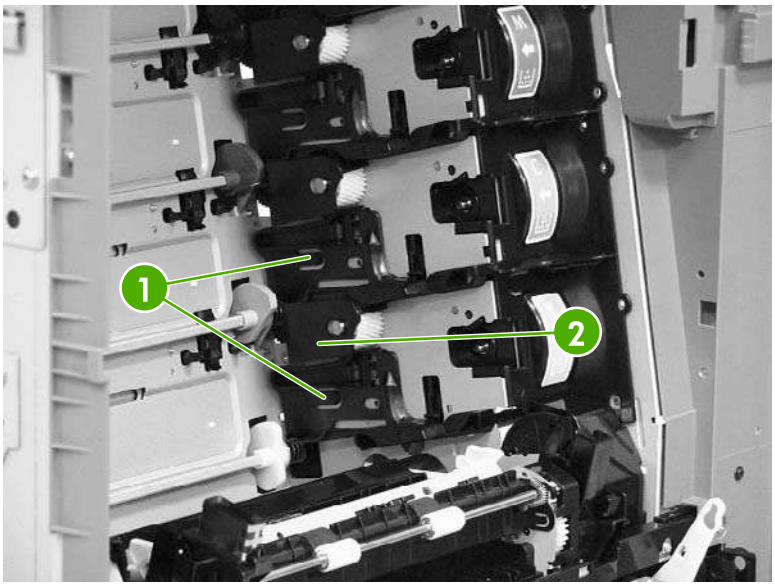


Figure 6-129 Remove the main drive assembly (1 of 9)

9. Using a small flat-blade screwdriver, unhook the two claws (callout 3), and then remove the cartridge upper guide assembly (callout 4) by pulling it forward.

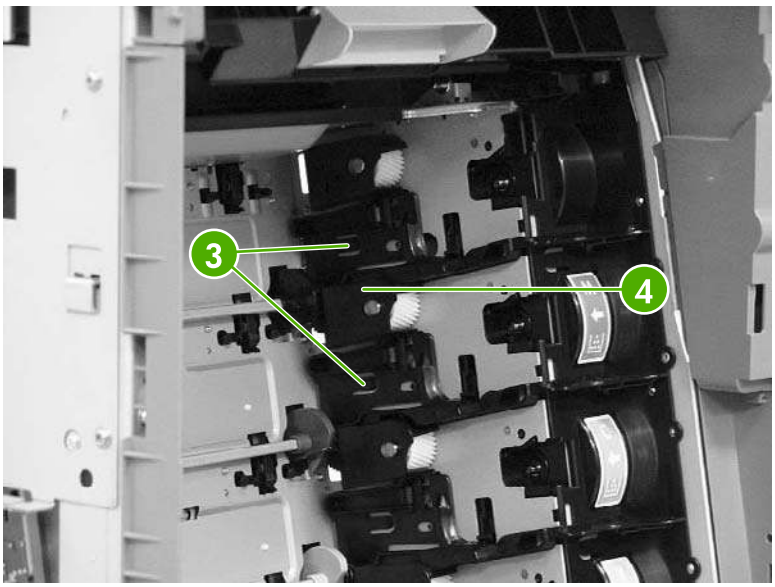


Figure 6-130 Remove the main drive assembly (2 of 9)

CAUTION Be careful when reassembling the upper and lower cartridge guides. They are very similar in appearance. If they are not assembled correctly, the ETB will not position correctly. The cartridge upper guide assembly (callout 5) has two projections (callout 6). The cartridge lower guide assembly (callout 7) has one projection (callout 8).

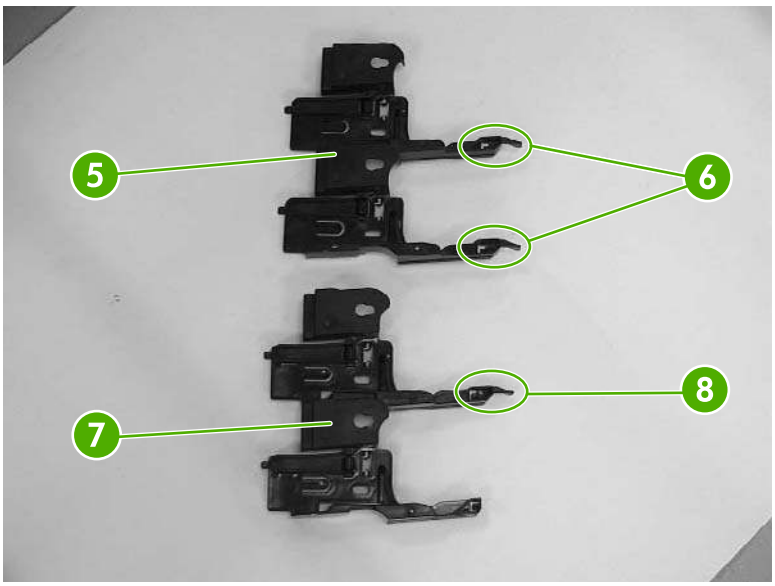


Figure 6-131 Remove the main drive assembly (3 of 9)

10. Remove the eight gears (callout 9).

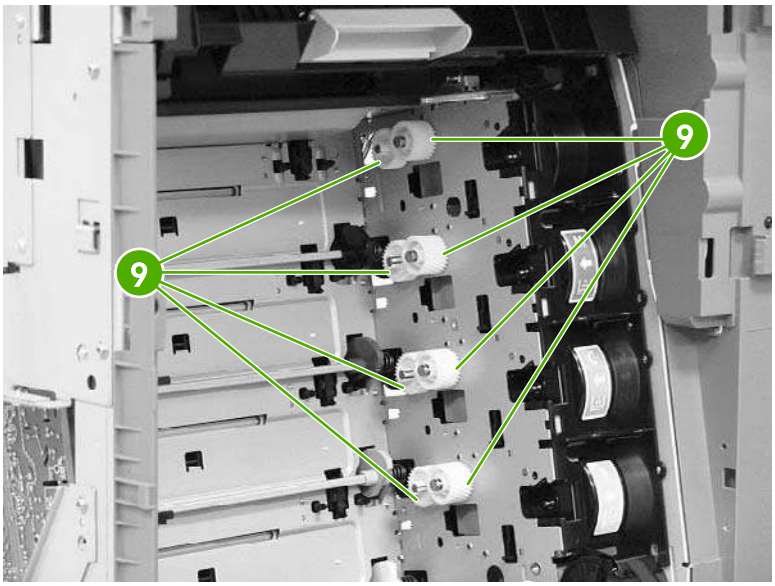


Figure 6-132 Remove the main drive assembly (4 of 9)

11. Remove the four bushings (callout 10).

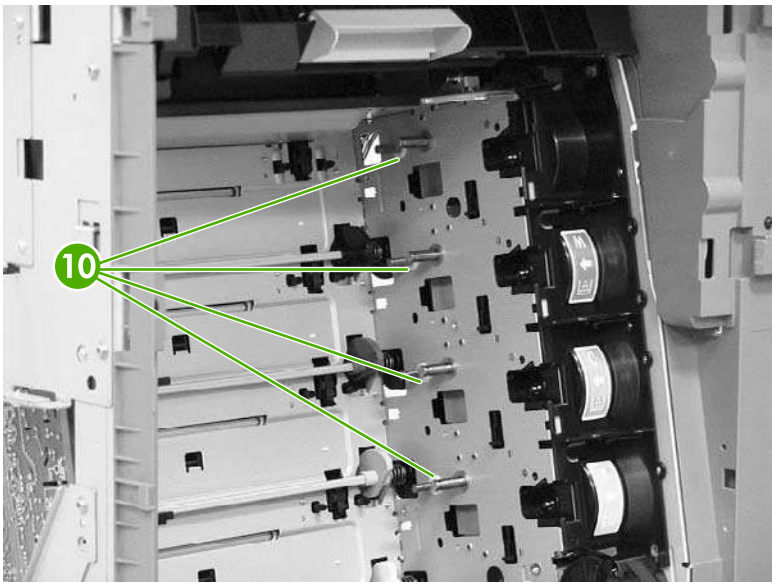


Figure 6-133 Remove the main drive assembly (5 of 9)

12. Remove the disengaging drive assembly. See Disengaging drive assembly on page 323.

13. Remove the four drum motors (Y/C/M/K). See Drum motors on page 362.

14. Remove the two screws (callout 11) and the plate (callout 12). Remove the cable (callout 13) from the cable guides (callout 14) and disconnect one connector (callout 15).

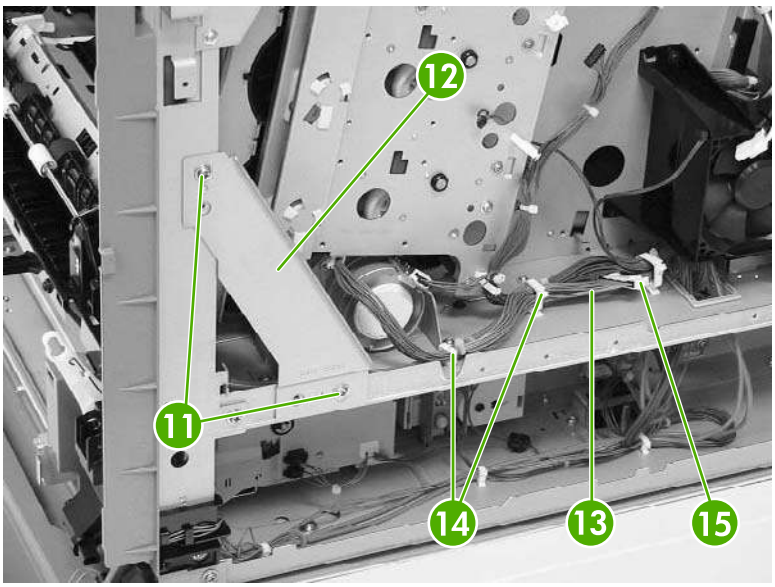


Figure 6-134 Remove the main drive assembly (6 of 9)

15. Remove the five screws (callout 16), and then remove the main drive assembly (callout 17). Note that the uppermost screw is recessed.

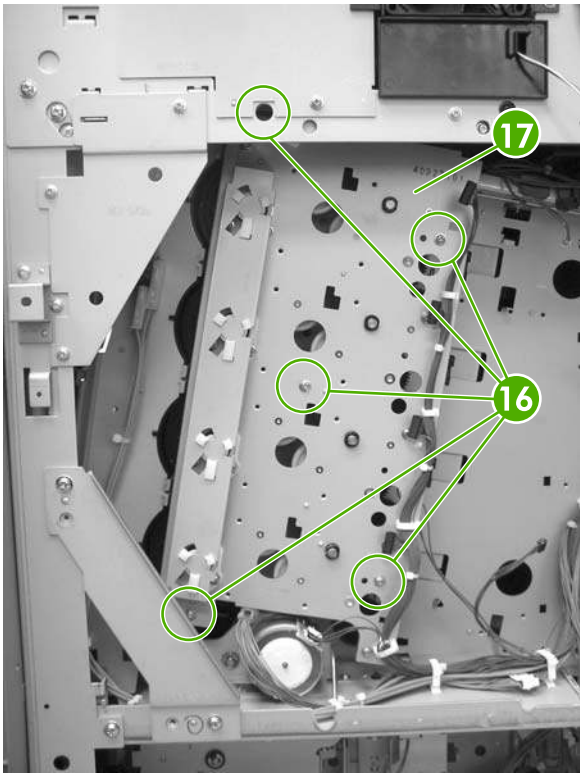


Figure 6-135 Remove the main drive assembly (7 of 9)

NOTE Remove only the screws indicated in the figure. Do not remove any other screws.

16. Disconnect eight connectors (callout 18) (two connectors per gear).

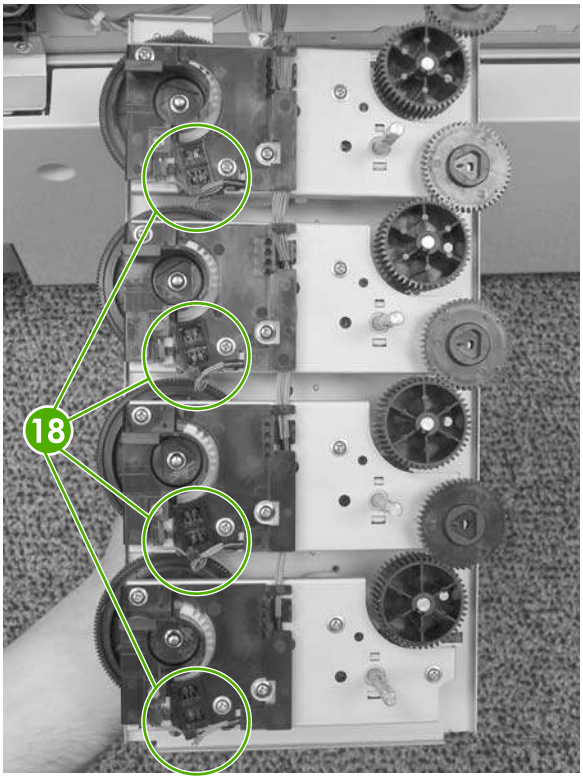


Figure 6-136 Remove the main drive assembly (8 of 9)

17. Remove the main wiring cable harness from the cable guide.

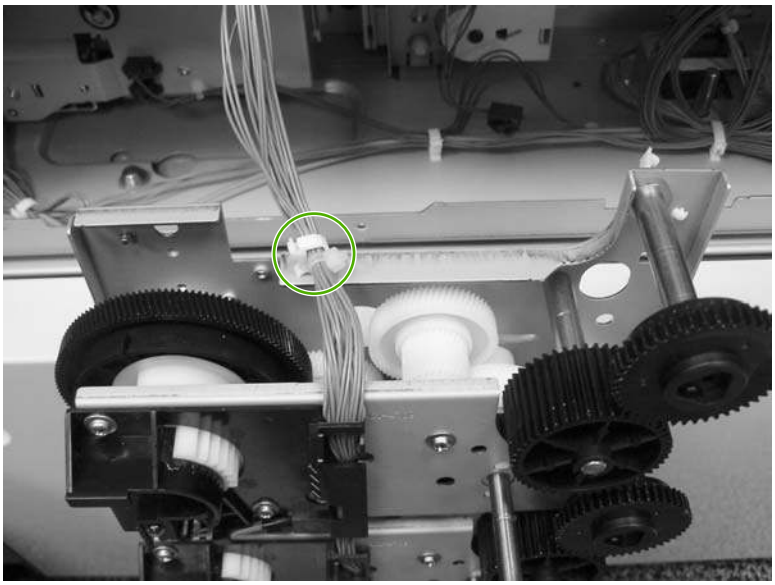


Figure 6-137 Remove the main drive assembly (9 of 9)

The following are seven reinstallation tips for the main drive assembly.

Reinstallation tips

1. When connecting or disconnecting the inside connectors of the sensors, be careful not to dislodge the sensors.
2. When reconnecting the cable, start at the K (black) cartridge and route from there.
3. Make sure that the developing clutch gears (callout 1) are aligned with the arrow on the metal sheet.

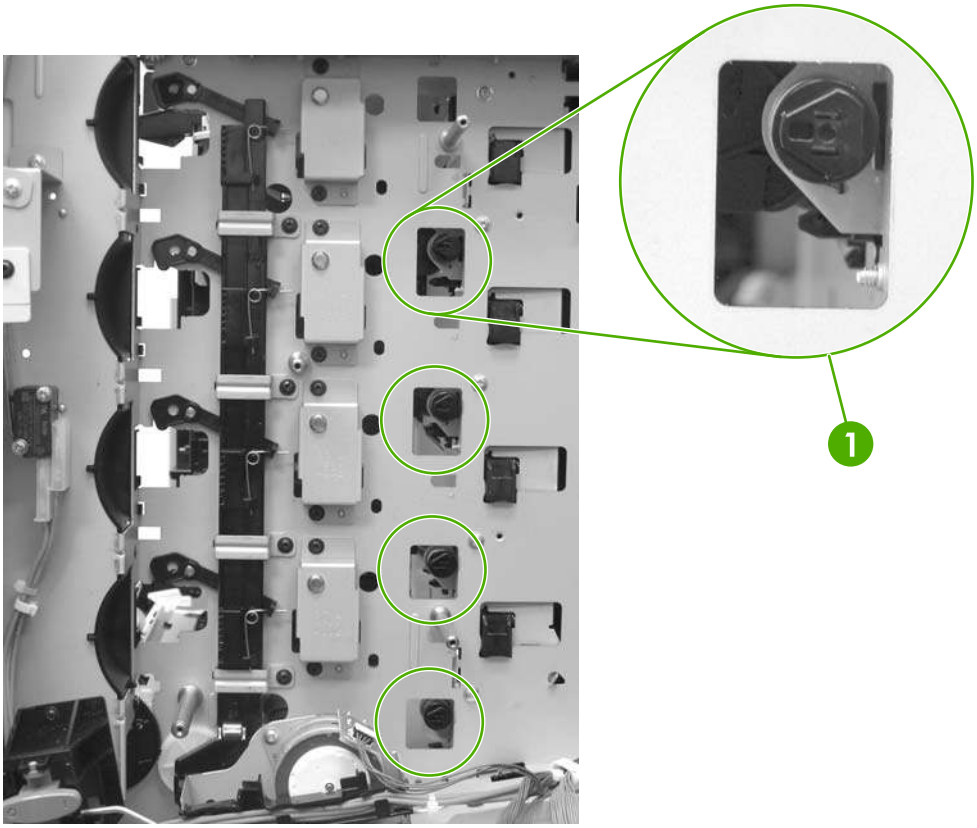


Figure 6-138 Reinstallation tips (1 of 5)

4. Align the four positioning dent marks (callout 2) of the developing clutch gears (callout 3) and the developing alienation gear (callout 4).

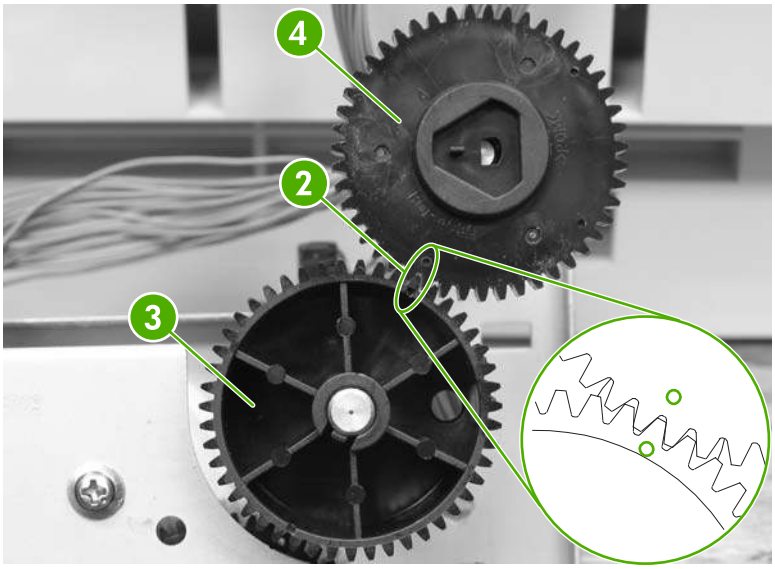


Figure 6-139 Reinstallation tips (2 of 5)

NOTE Make sure to adjust all four gears the same way.

5. Make sure that the cartridge interlock rod is in the up position (callout 5). This guide is located just above and to the right of the ETB guide.

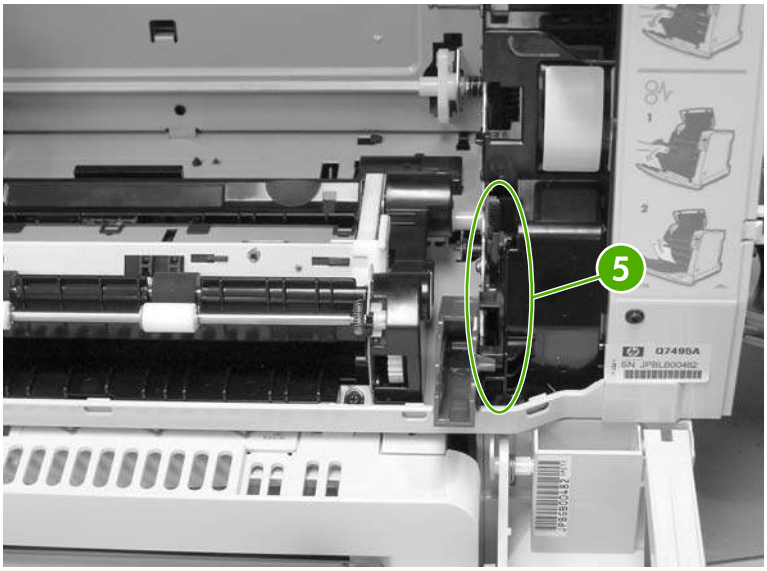


Figure 6-140 Reinstallation tips (3 of 5)

6. Make sure to rotate the white gears as shown (callout 6) before placing the main drive assembly back into position.

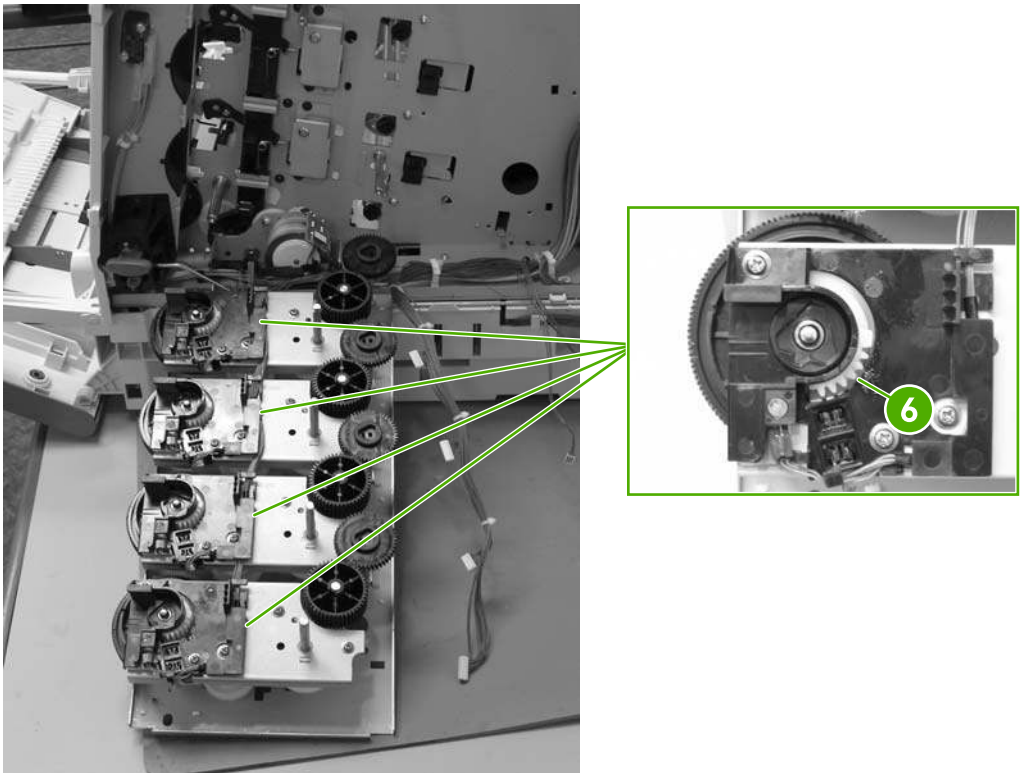


Figure 6-141 Reinstallation tips (4 of 5)

7. Make sure to align the four positioning marks (callout 7) of all developing alienation gears (callout 8) with the marks (callout 9) on the printer.

NOTE There is a little dimple on the right side of the bigger hole (callout 7). This needs to match up with the arrow in callout 9.

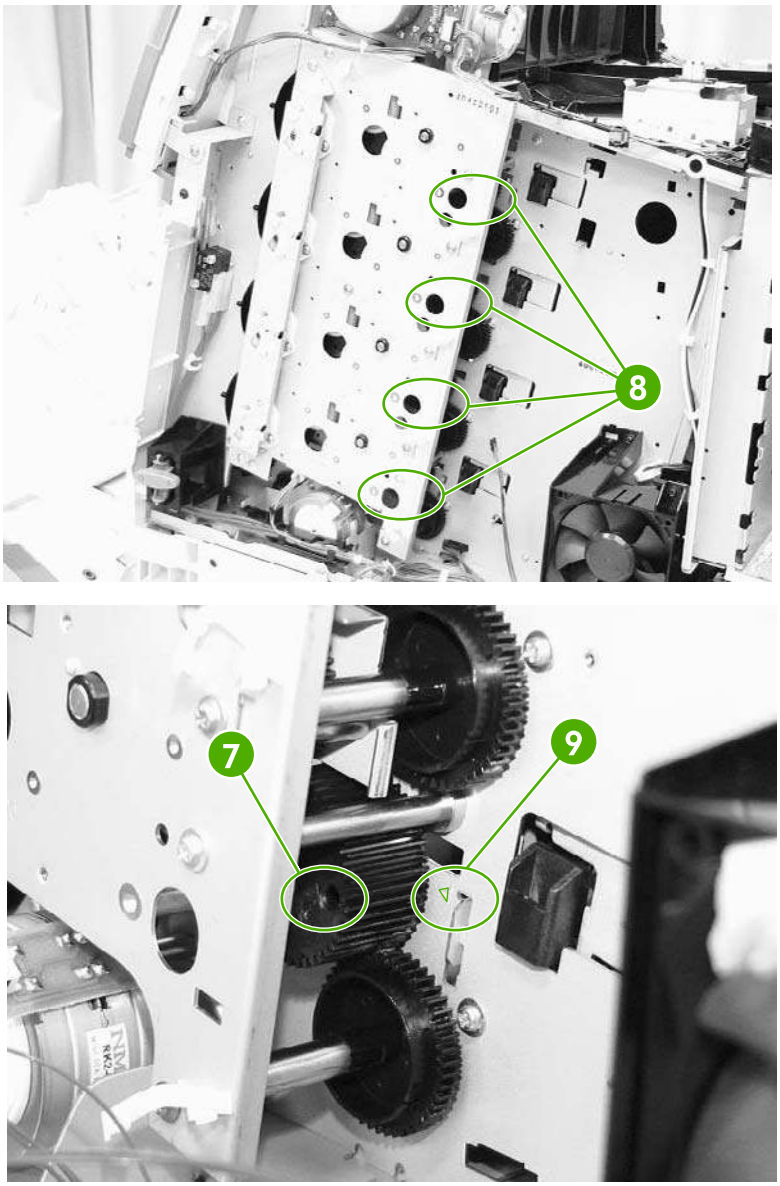


Figure 6-142 Reinstallation tips (5 of 5)

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 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.

3. Remove the left cover assembly. See Left cover assembly on page 296.

4. Disconnect the two connectors (callout 1). Remove one screw (callout 2) and the fan duct (callout 3).

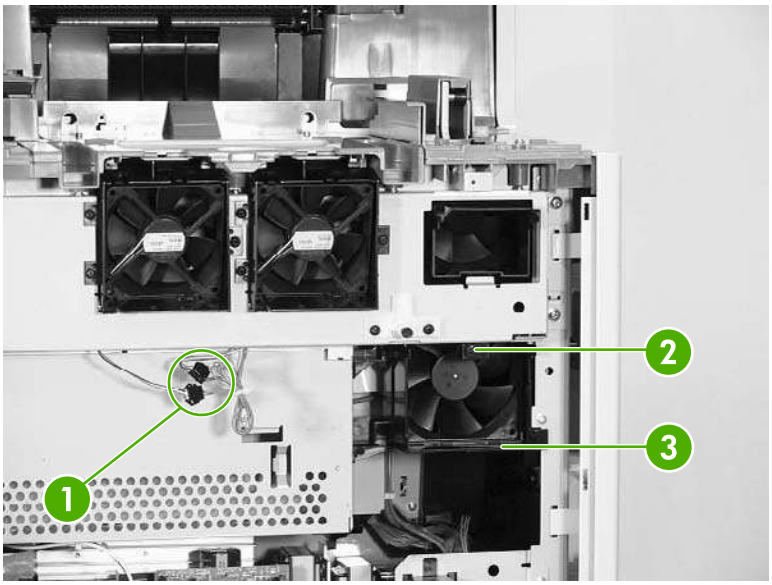


Figure 6-143 Remove the rail holder assembly (1 of 3)

5. Remove the five screws (callout 4).

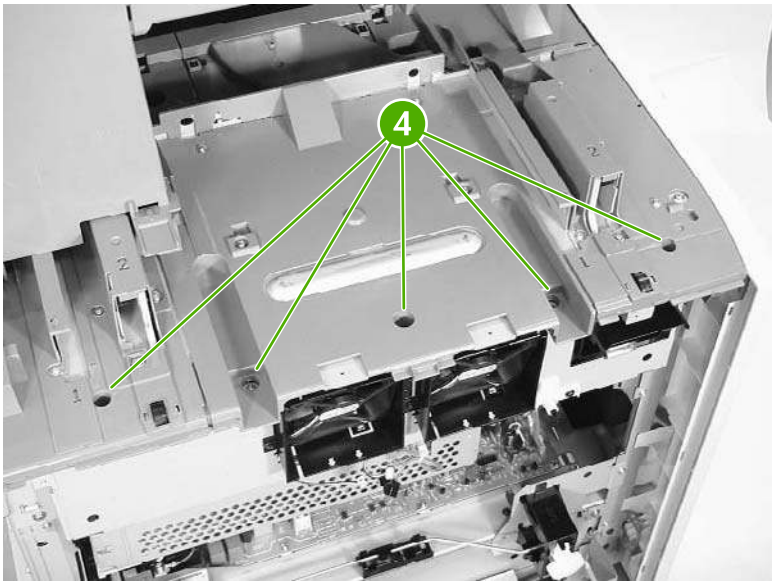


Figure 6-144 Remove the rail holder assembly (2 of 3)

6. Remove the four screws (callout 5) and the rail holder assembly (callout 6).

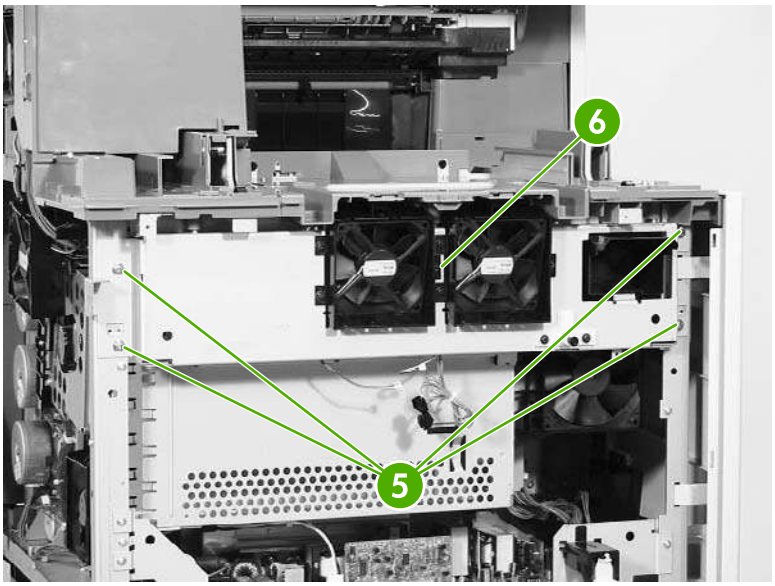


Figure 6-145 Remove the rail holder assembly (3 of 3)

Rail guide assembly

1. Remove the rail holder assembly. See Rail holder assembly on page 333.
2. Remove the two screws (callout 1), and then remove the front guide cover (callout 2).

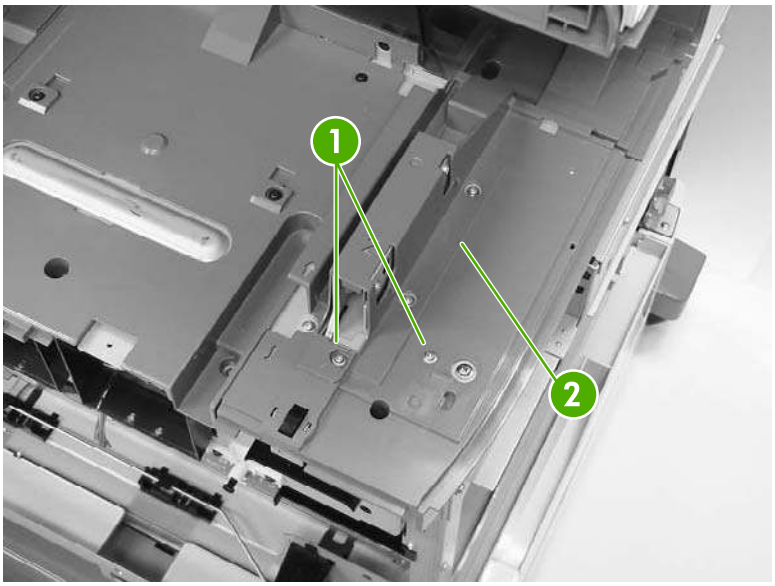


Figure 6-146 Remove the rail guide assembly (1 of 7)

3. Remove the left rear inner cover assembly. See Left rear inner cover assembly on page 307.

4. Remove the two screws (callout 3), and then remove the rear guide cover (callout 4).

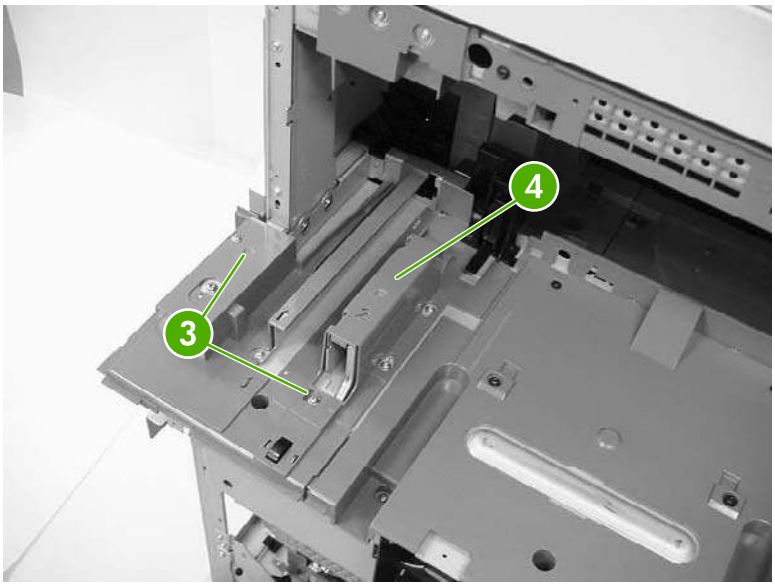


Figure 6-147 Remove the rail guide assembly (2 of 7)

5. Remove the four screws (callout 5), and then remove the center guide cover (callout 6).

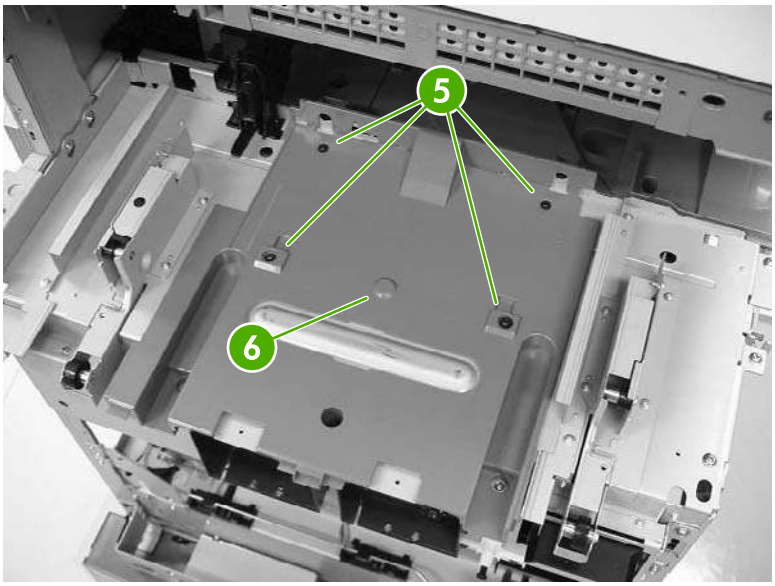


Figure 6-148 Remove the rail guide assembly (3 of 7)

6. Unhook the two claws (callout 7), and then remove the connector cover (callout 8).

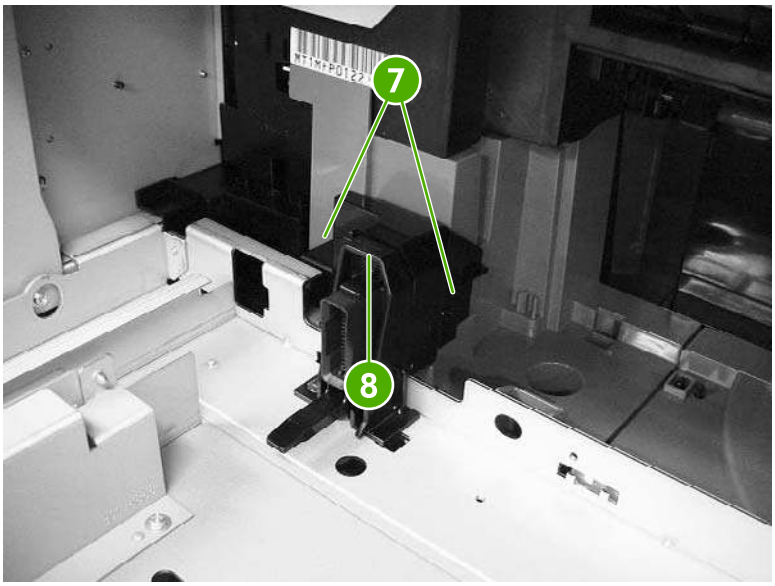


Figure 6-149 Remove the rail guide assembly (4 of 7)

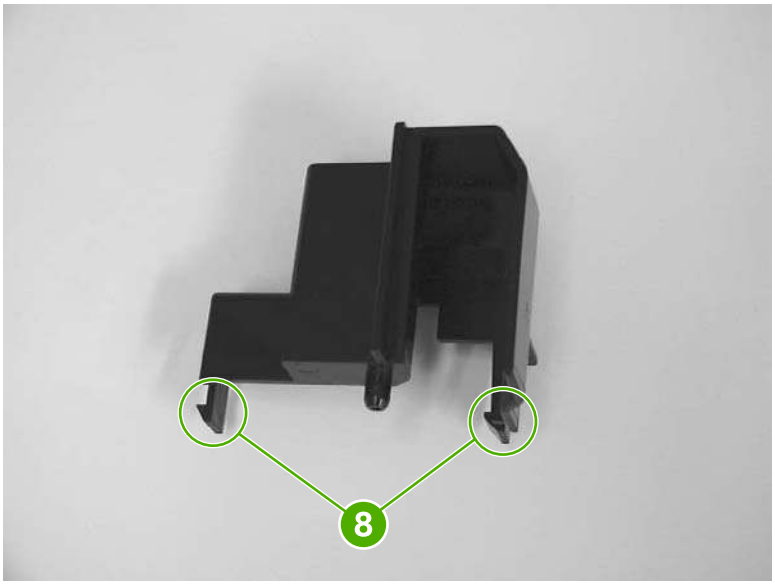


Figure 6-150 Remove the rail guide assembly, connector cover claw detail (5 of 7)

7. Disconnect the connector (callout 9).

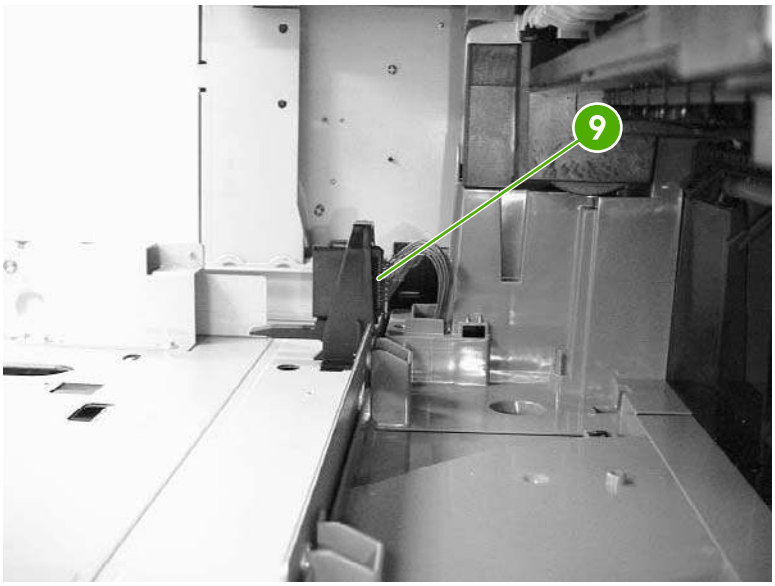


Figure 6-151 Remove the rail guide assembly (6 of 7)

8. Remove the four screws (callout 10), and then remove the rail guide assembly (callout 11).

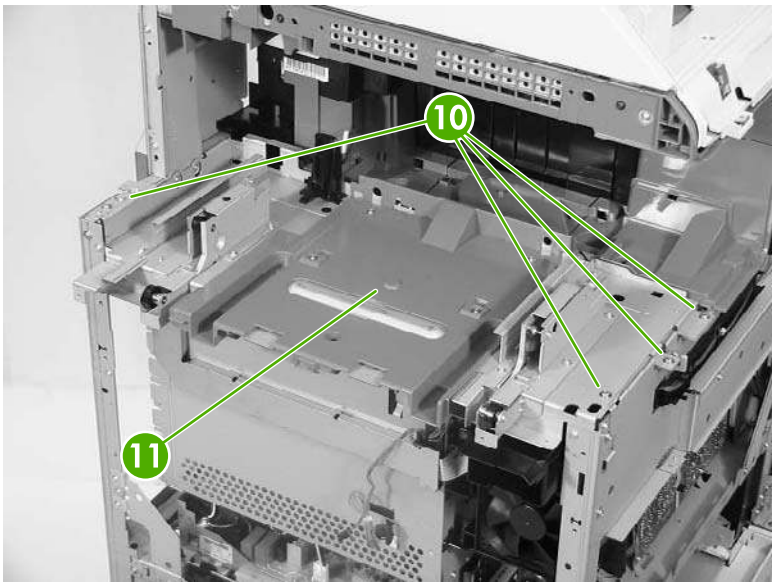


Figure 6-152 Remove the rail guide assembly (7 of 7)

Formatter case assembly

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the rail guide assembly. See Rail guide assembly on page 335.
5. Remove the low-voltage power supply PCB. See Low-voltage power supply PCB on page 395.

6. Remove the delivery fan. See Delivery fan on page 376.

7. Disconnect the purple connector (callout 3) from the fan, and remove the cable from the cable guide (callout 4).

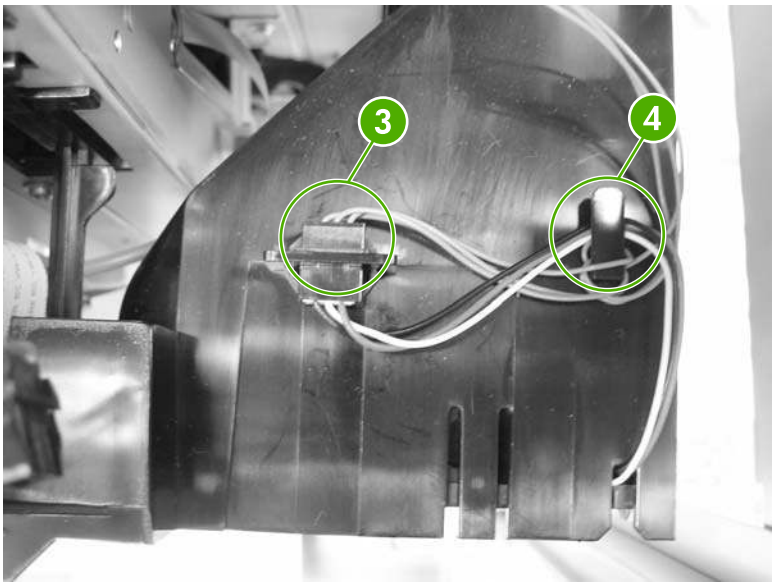


Figure 6-153 Remove the formatter case (2 of 10)

8. Remove the test print pin (callout 5) from the fan holder (callout 6) by pushing it to the left.

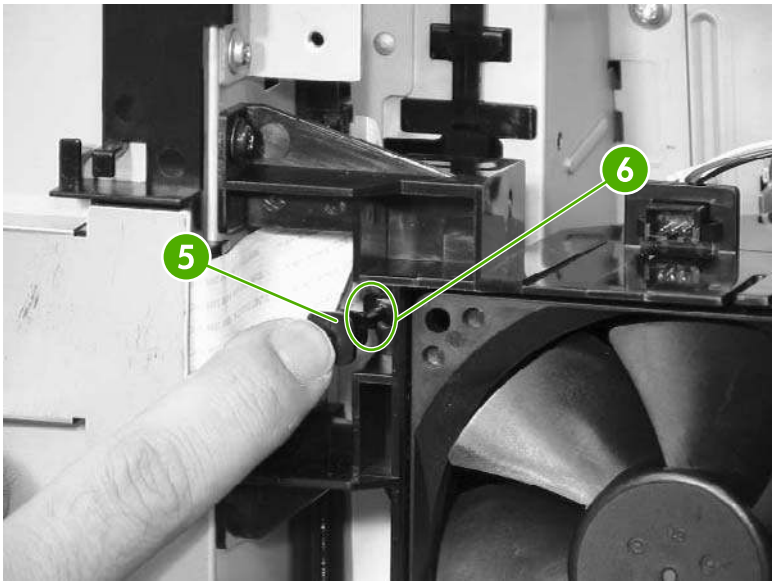


Figure 6-154 Remove the formatter case (3 of 10)

9. Remove the two screws (callout 7), and then remove the fan holder (callout 8) and the cartridge fan (callout 9) together.

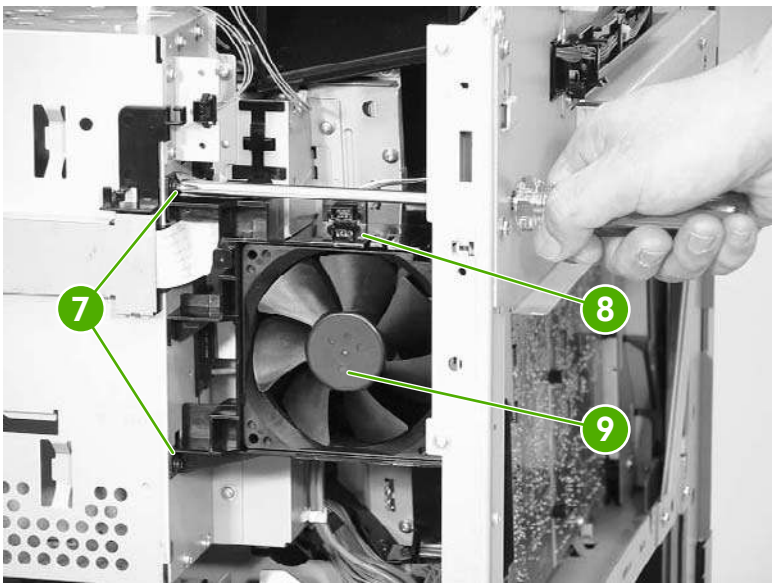


Figure 6-155 Remove the formatter case (4 of 10)

10. Disconnect the upper flat cable (callout 10) and remove one screw (callout 11).

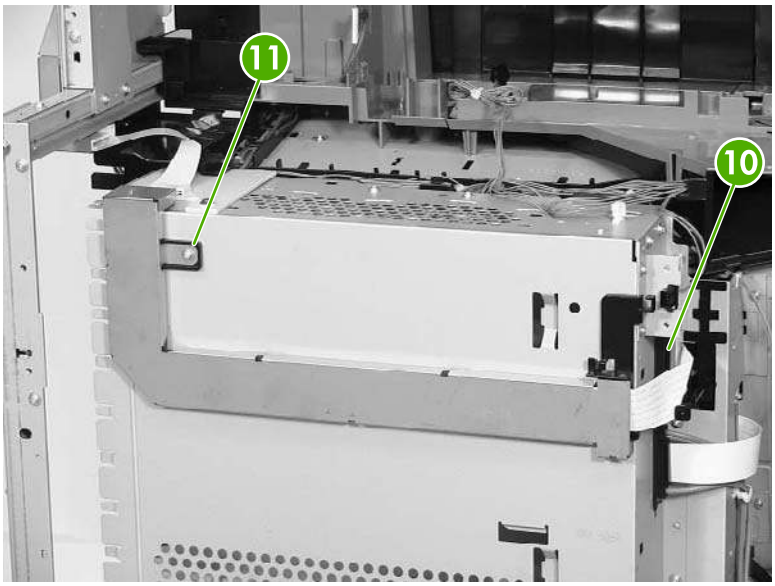


Figure 6-156 Remove the formatter case (5 of 10)

11. 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.

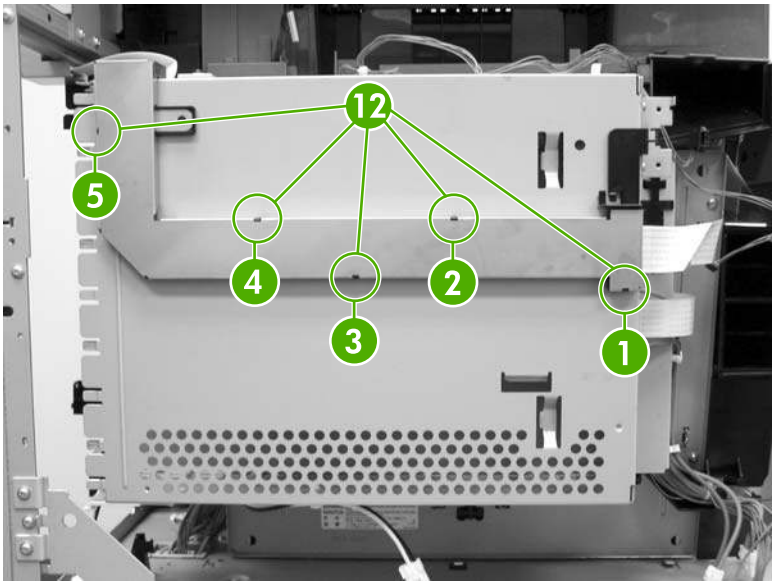


Figure 6-157 Remove the formatter case (6 of 10)

12. Remove the cable (callout 13) from the cable guide (callout 14).

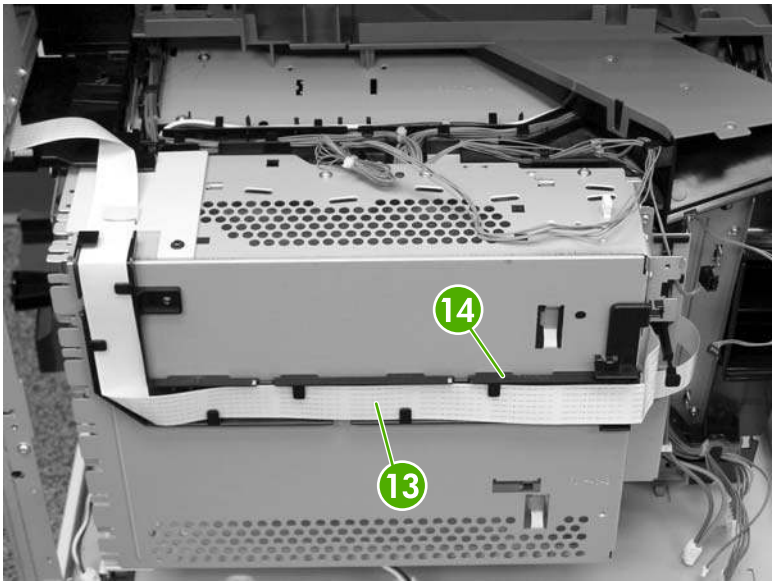


Figure 6-158 Remove the formatter case (7 of 10)

13. Remove the formatter. See Formatter board on page 280.

14. Remove the connector (callout 15) and then unhook the cables (callout 16) from the cable guides (callout 17).

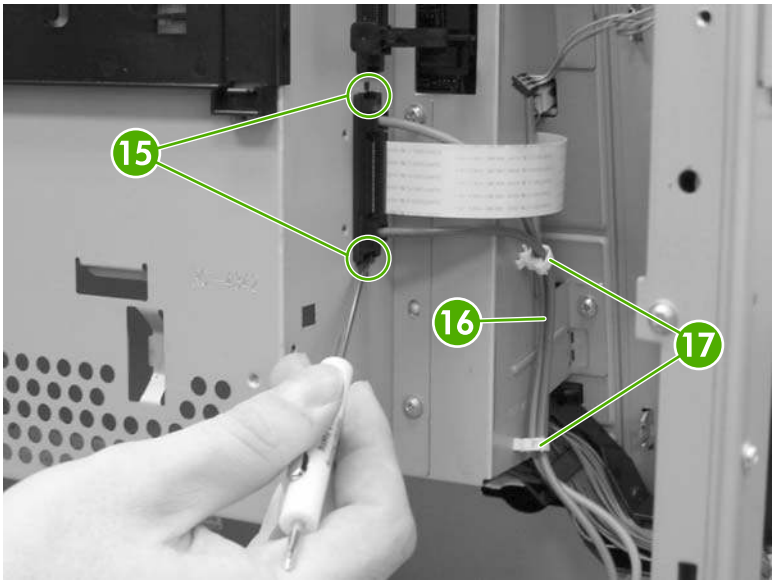


Figure 6-159 Remove the formatter case (8 of 10)

15. Remove the cables (callout 18) from the cable guide (callout 19). Remove the two screws (callout 20).

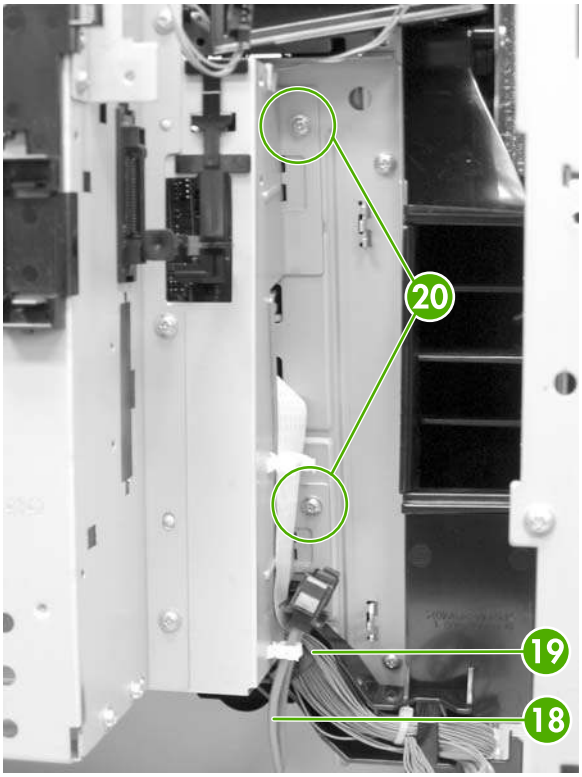


Figure 6-160 Remove the formatter case (9 of 10)

16. Remove the four screws (callout 21), and then remove the formatter case assembly (callout 22).

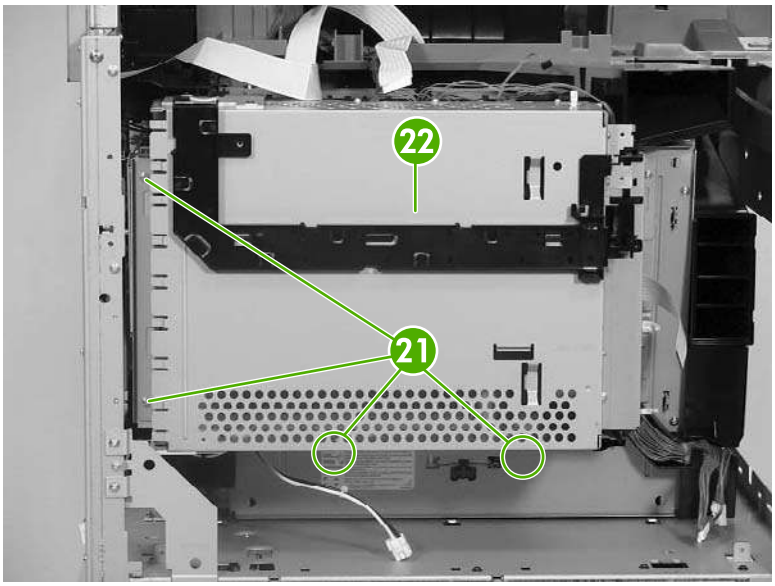


Figure 6-161 Remove the formatter case (10 of 10)

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.

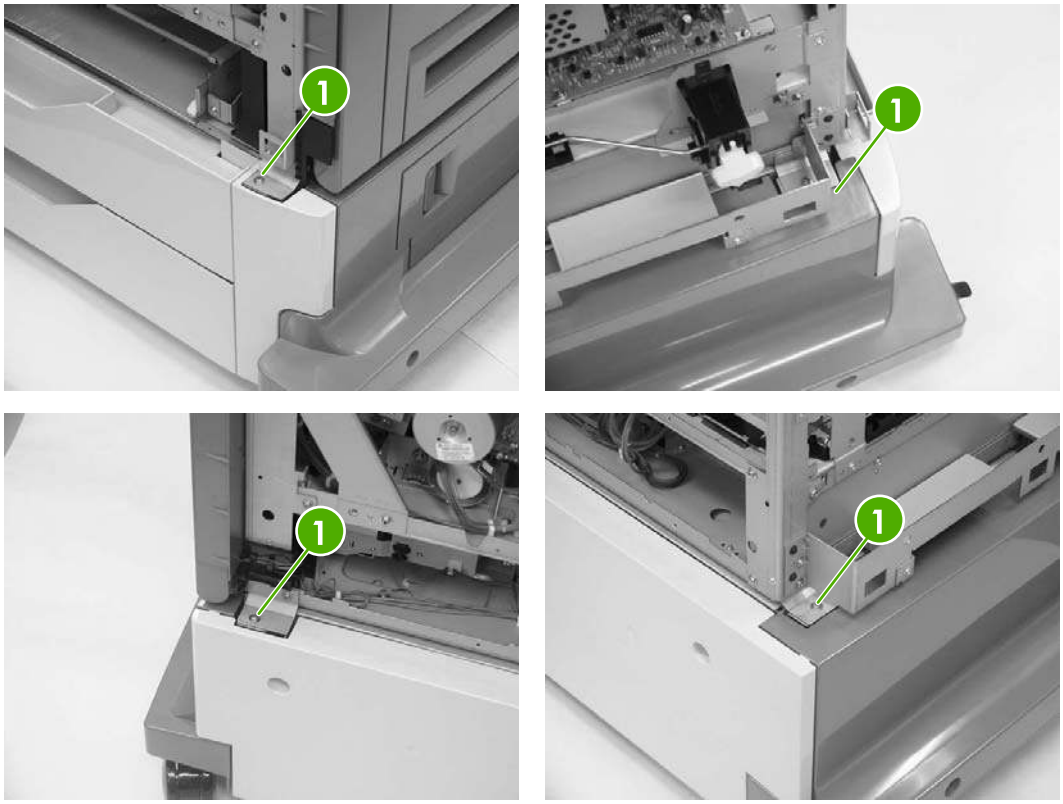


Figure 6-162 Remove screws at corners of MFP

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover. See Front cover assembly on page 297.
5. Remove the delivery fan. See Delivery fan on page 376.
6. Remove the cartridge fan. See Cartridge fan on page 373.
7. Remove the DC controller PCB. See DC controller PCB on page 384.

8. Remove all cables from the cable guides. Remove two screws (callout 2) and the formatter plate (callout 3).

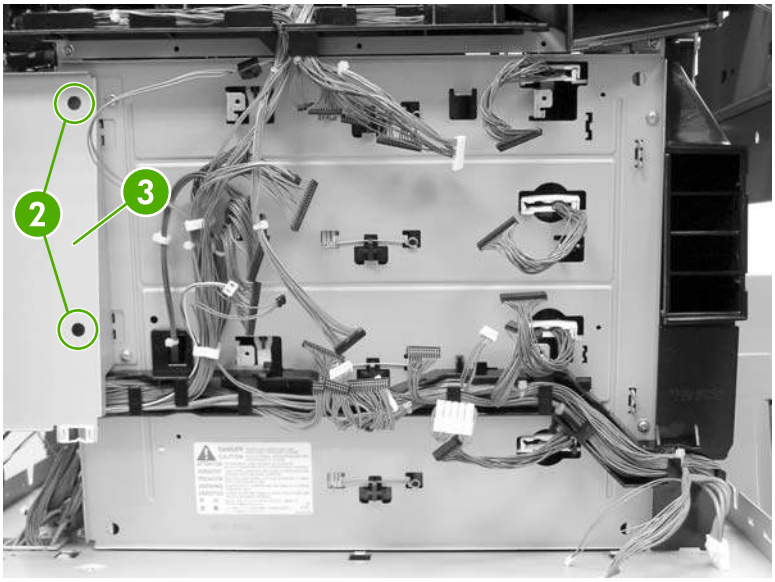


Figure 6-163 Remove laser/scanner components (1 of 12)

9. Remove the springs (callout 4).

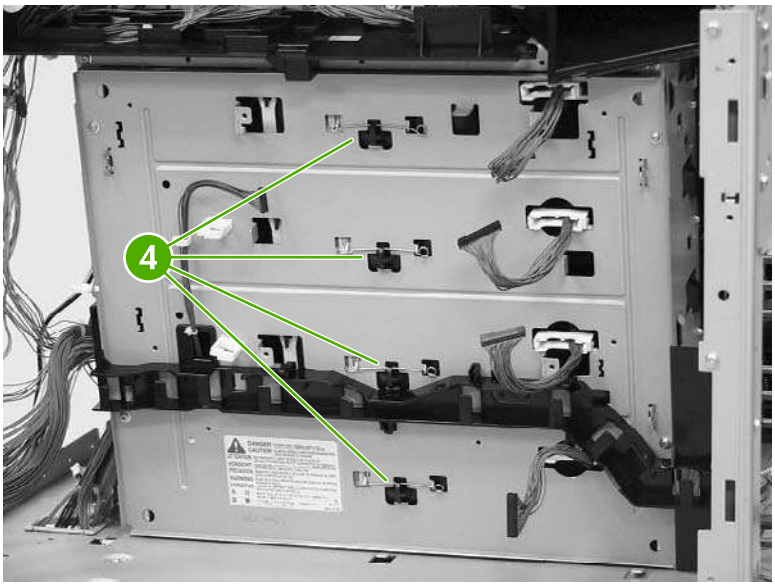


Figure 6-164 Remove the laser/scanner components (2 of 12)

10. Remove the four screws (callout 5), and then remove the rear plate assembly (callout 6).

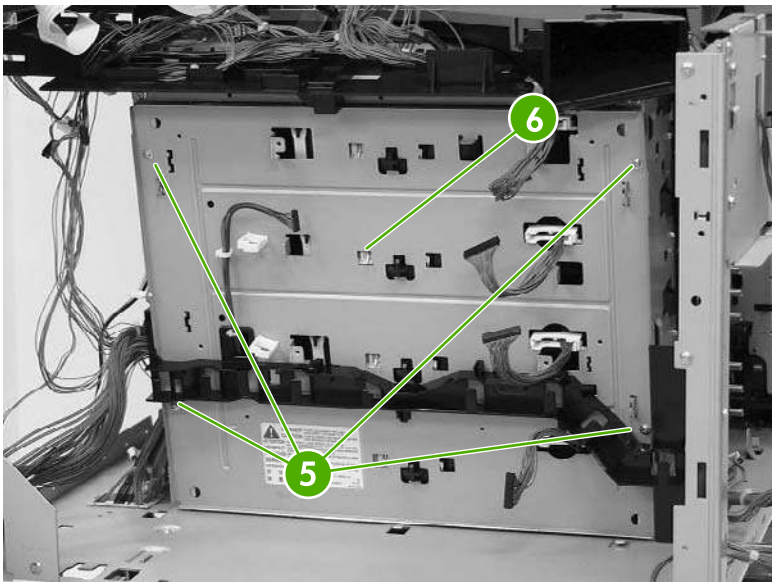


Figure 6-165 Remove the laser/scanner components (3 of 12)

11. Remove the cable (callout 7) from the cable guide (callout 8).

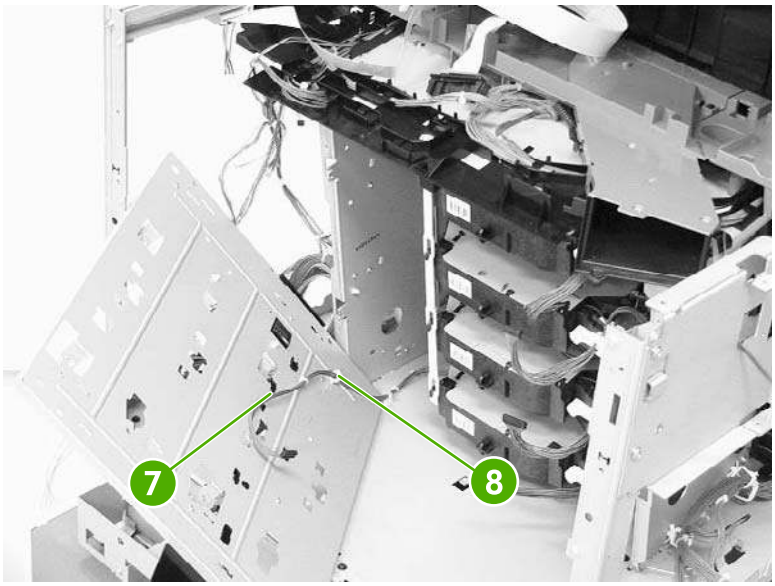


Figure 6-166 Remove the laser/scanner components (4 of 12)

12. Remove one screw (callout 9).

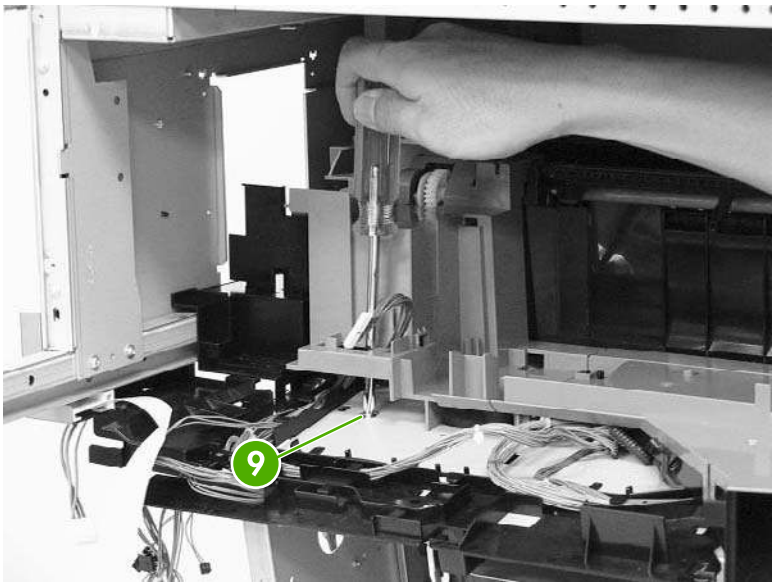


Figure 6-167 Remove the laser/scanner components (5 of 12)

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.

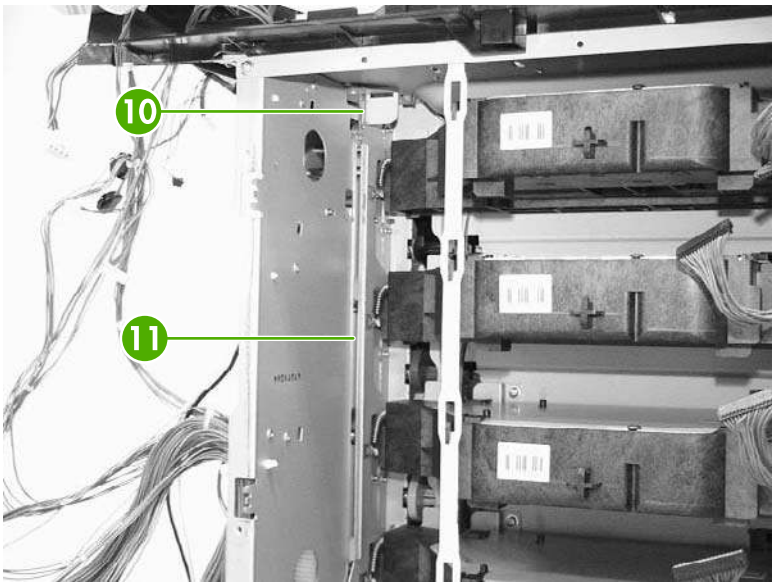


Figure 6-168 Remove the laser/scanner components (6 of 12)

14. Pull out the laser/scanner retaining arm (callout 12).

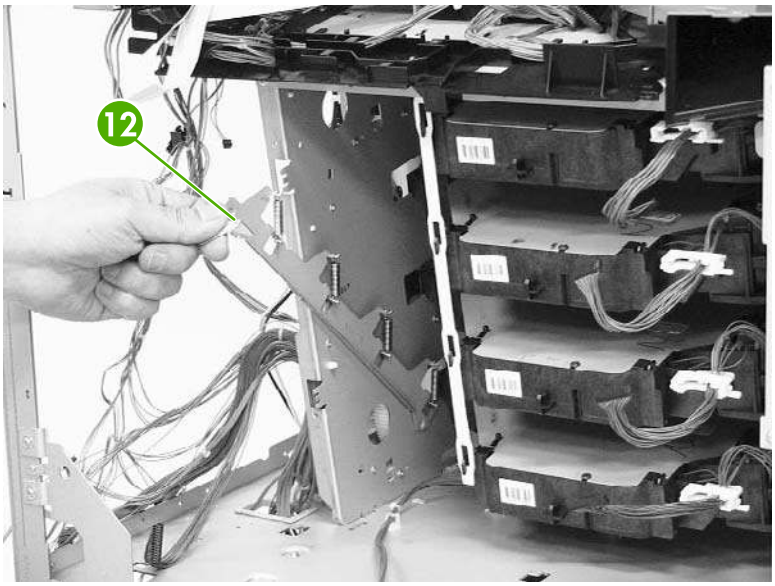


Figure 6-169 Remove the laser/scanner components (7 of 12)

15. Remove the recessed screw (callout 13).

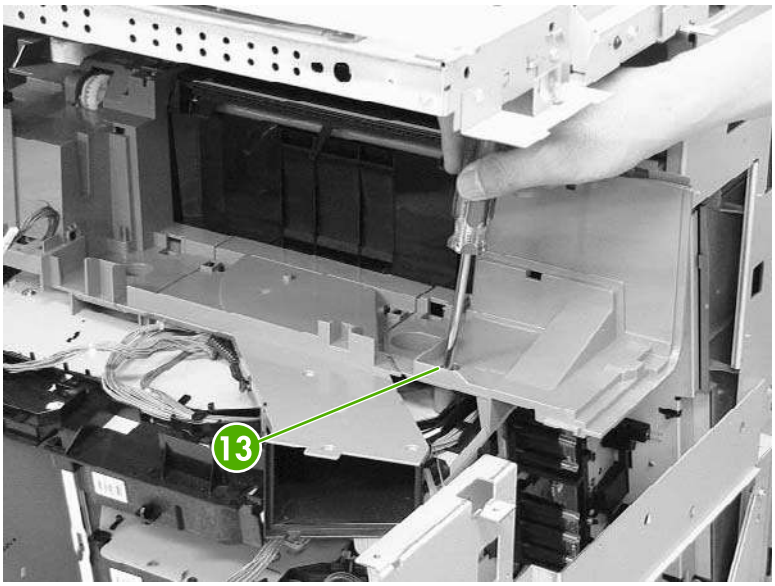


Figure 6-170 Remove the laser/scanner components (8 of 12)

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).

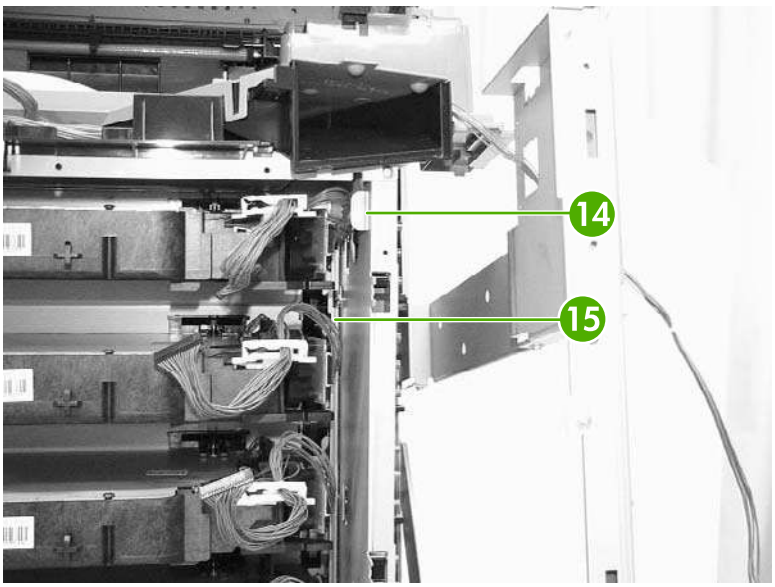


Figure 6-171 Remove the laser/scanner components (9 of 12)

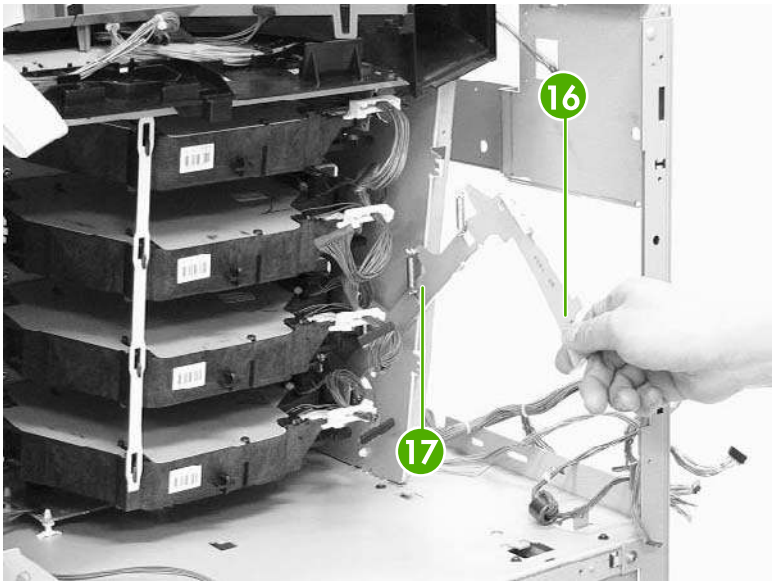


Figure 6-172 Remove the laser/scanner components (10 of 12)

17. Unhook the laser/scanner assemblies from the white retaining strip (callout 18).

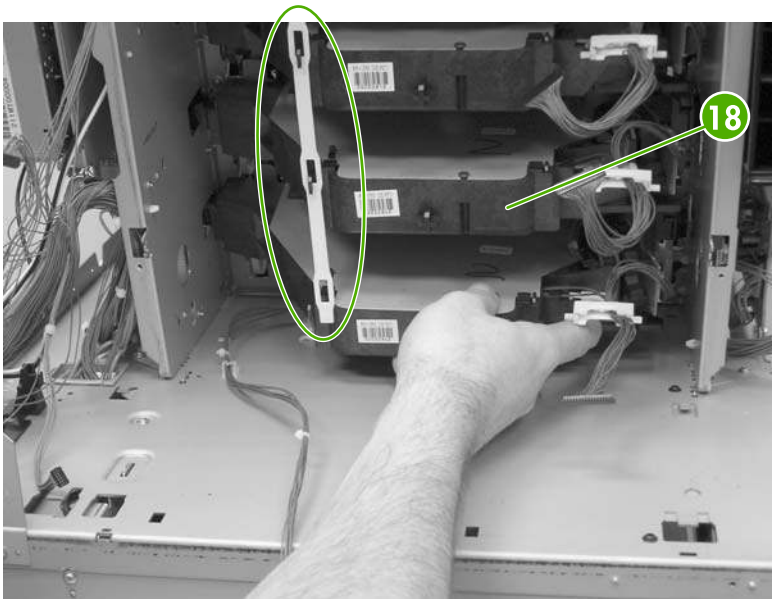


Figure 6-173 Remove the laser/scanner components (11 of 12)

18. Remove the laser/scanner assemblies (callout 19) by lifting and sliding them to the left and rotating them outward.

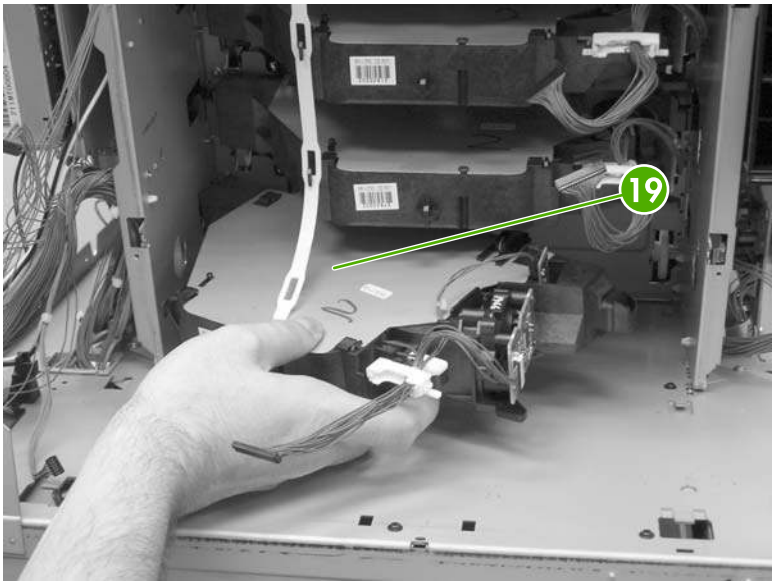


Figure 6-174 Remove laser/scanner components (12 of 12)

Duplexing assembly

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover. See Front cover assembly on page 297.
5. Remove the delivery upper cover. See Delivery upper cover assembly on page 306.
6. Remove the left rear inner cover. See Left rear inner cover assembly on page 307.
7. Open the duplexing door (callout 1).

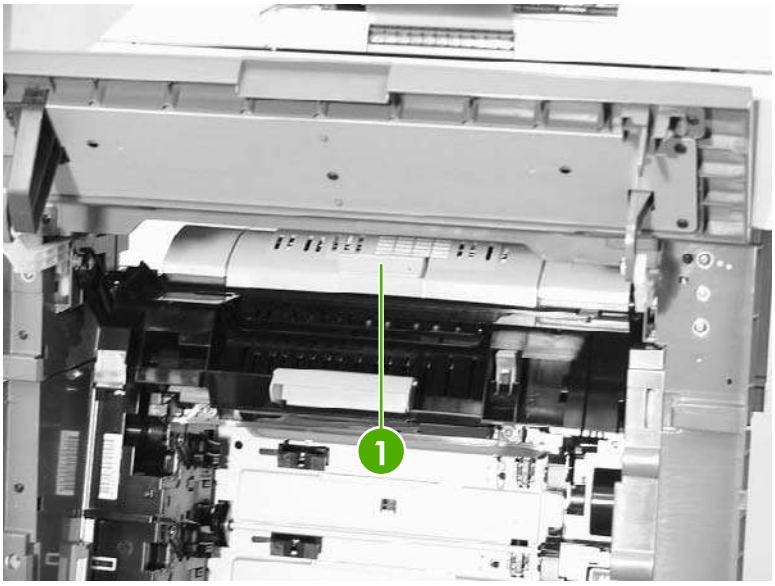


Figure 6-175 Remove the duplexing assembly (1 of 5)

8. Slide the right and left duplexing locks (callout 2) backward.

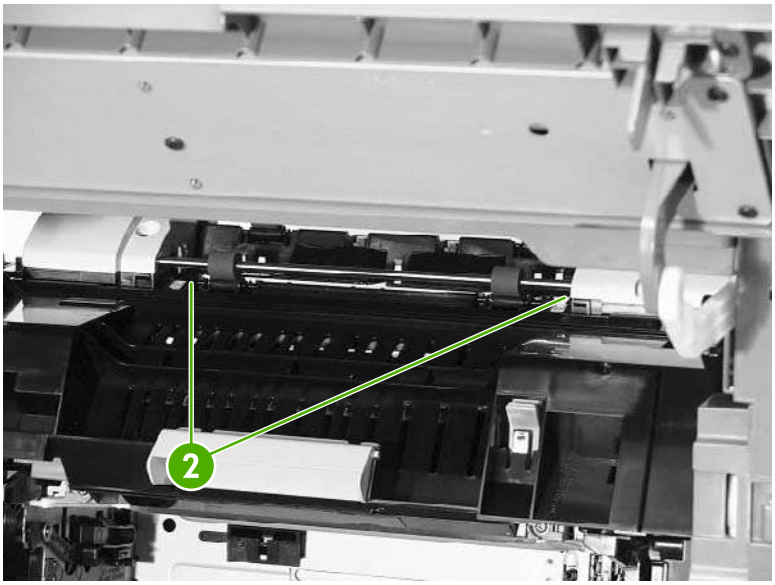


Figure 6-176 Remove the duplexing assembly (2 of 5)

9. Detail of left duplexing lock.

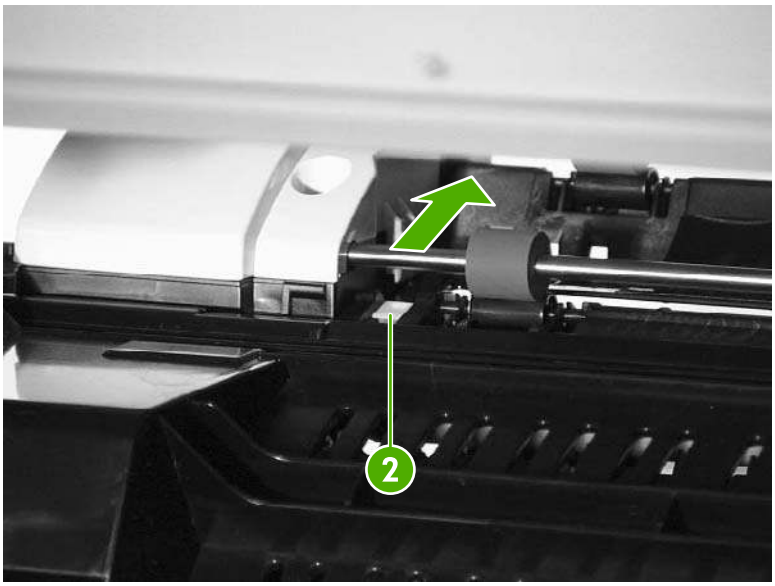


Figure 6-177 Remove the duplexing assembly (3 of 5)

10. Detail of right duplexing lock.

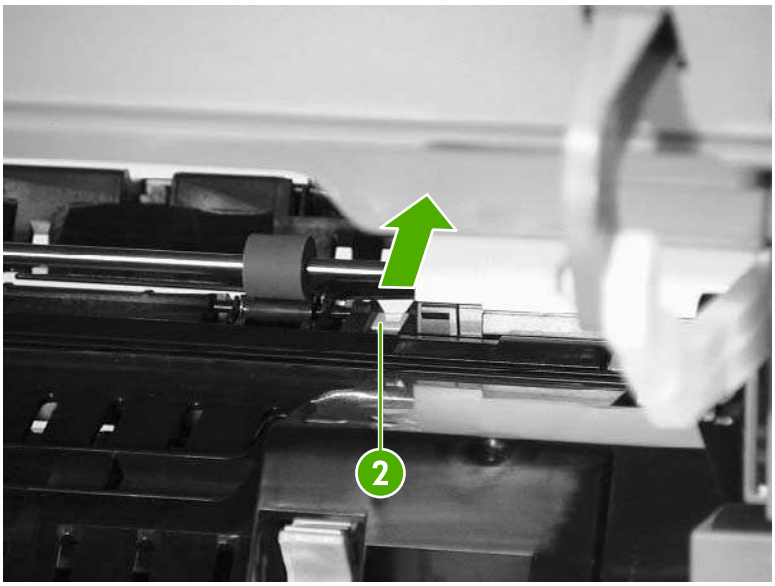


Figure 6-178 Remove the duplexing assembly (4 of 5)

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).

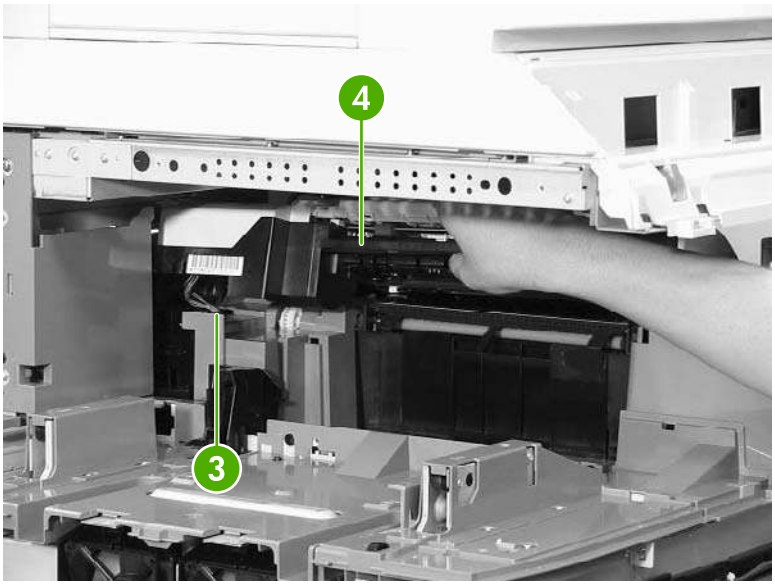


Figure 6-179 Remove the duplexing assembly (5 of 5)

Delivery assembly

1. Remove the rail guide assembly. See Rail guide assembly on page 335.

2. Remove the right front inner upper cover assembly. See Right front inner upper cover assembly on page 308.

3. Remove the right rear inner cover assembly. See Right rear inner cover assembly on page 310.

4. Remove the duplexing assembly. See Duplexing assembly on page 351.
5. Remove the sub power supply. See Sub power supply PCB on page 401.
6. Remove the rear exhaust fan. See Rear exhaust fan on page 379.
7. Remove the three screws (callout 1) and remove the metal side access cover plate.

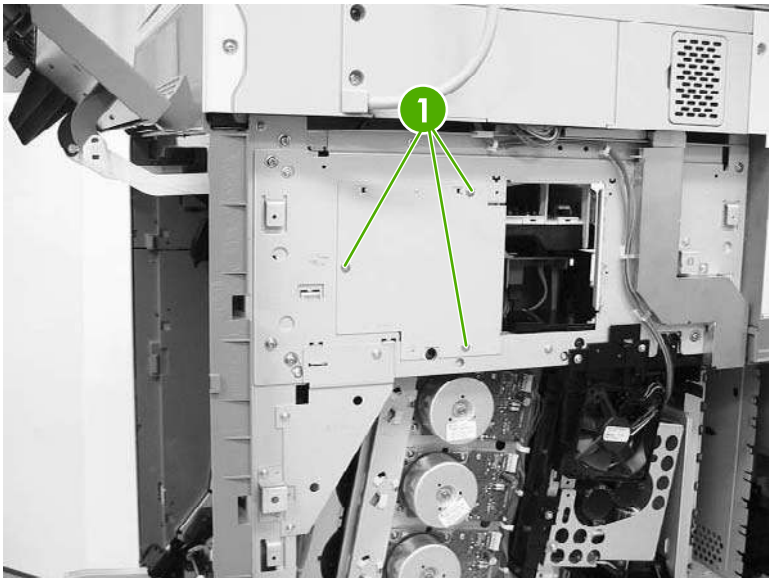


Figure 6-180 Remove the delivery assembly (1 of 15)

8. Remove the three connectors (callout 2).

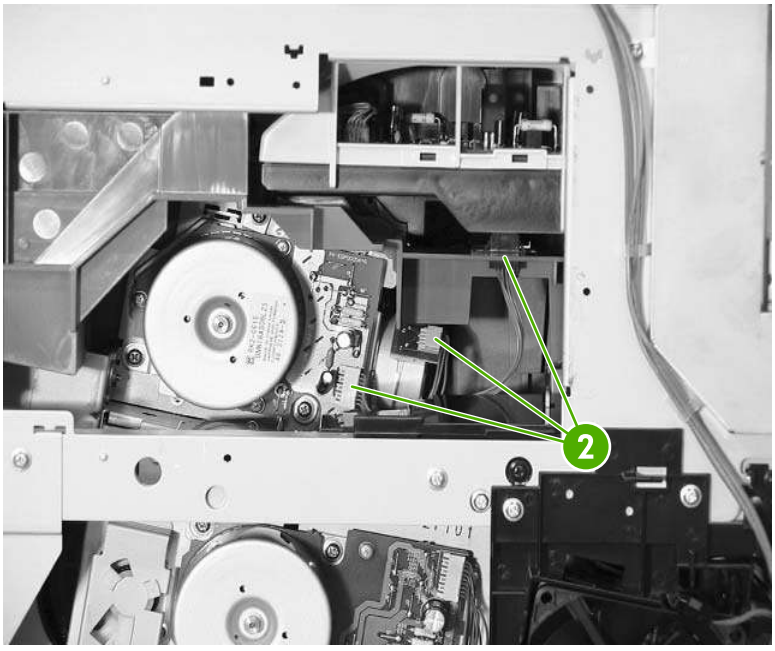


Figure 6-181 Remove the delivery assembly (2 of 15)

9. Remove the two screws (callout 3) at the front of the MFP.

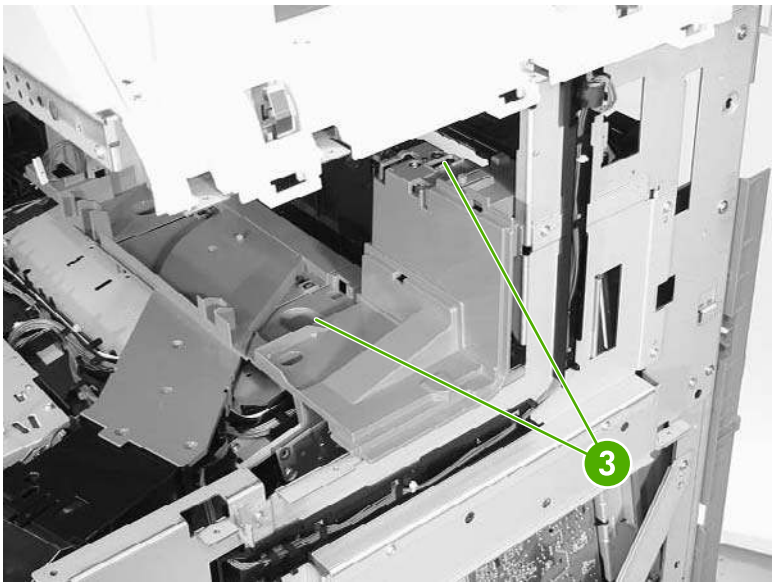


Figure 6-182 Remove the delivery assembly (3 of 15)

10. Remove the fuser door assembly (callout 4) and the front upper inner cover (callout 5).

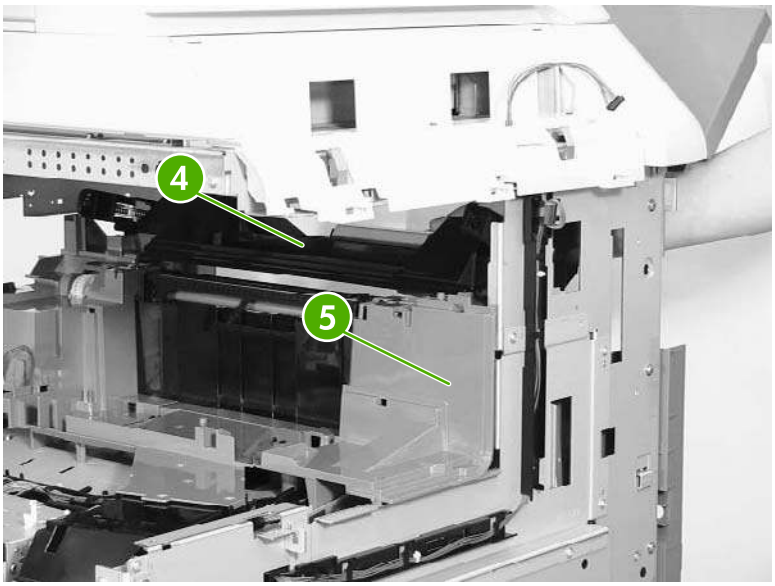


Figure 6-183 Remove the delivery assembly (4 of 15)

11. Remove the two screws (callout 6), and then remove the front upper inner cover (callout 7).

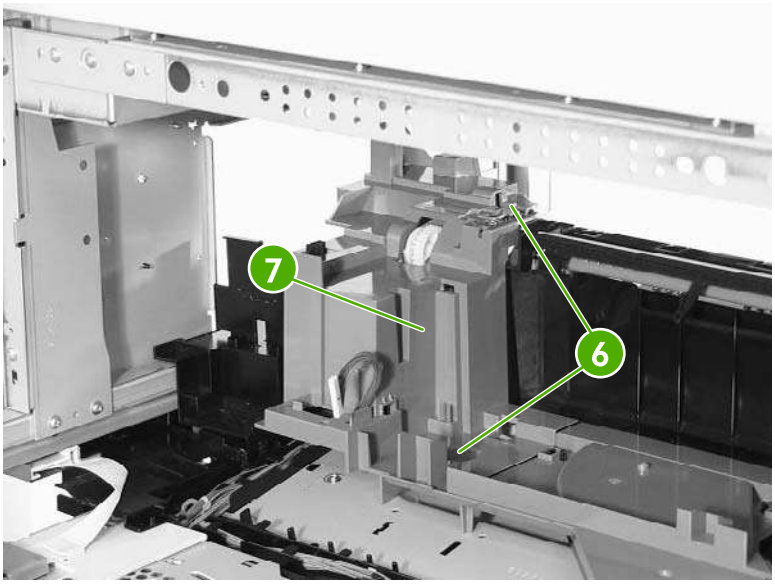


Figure 6-184 Remove the delivery assembly (5 of 15)

12. Unhook the four claws (callout 8) and then remove the fan duct (callout 9).

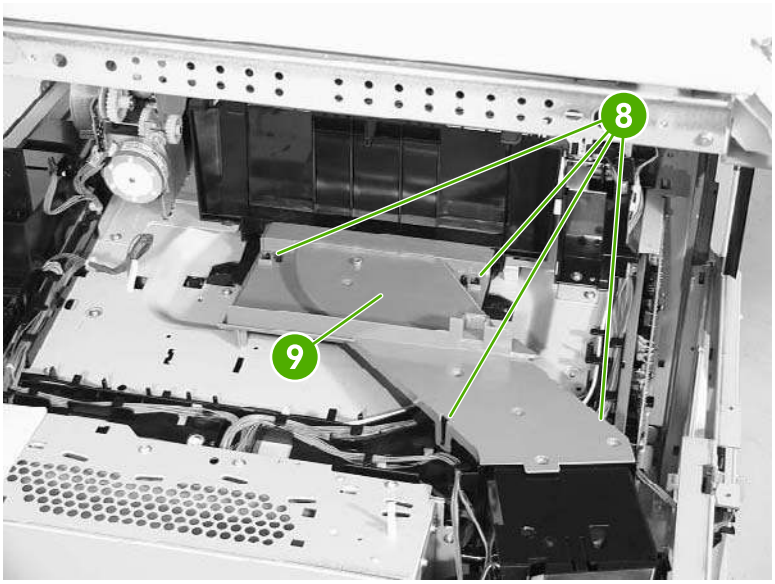


Figure 6-185 Remove the delivery assembly (6 of 15)

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).

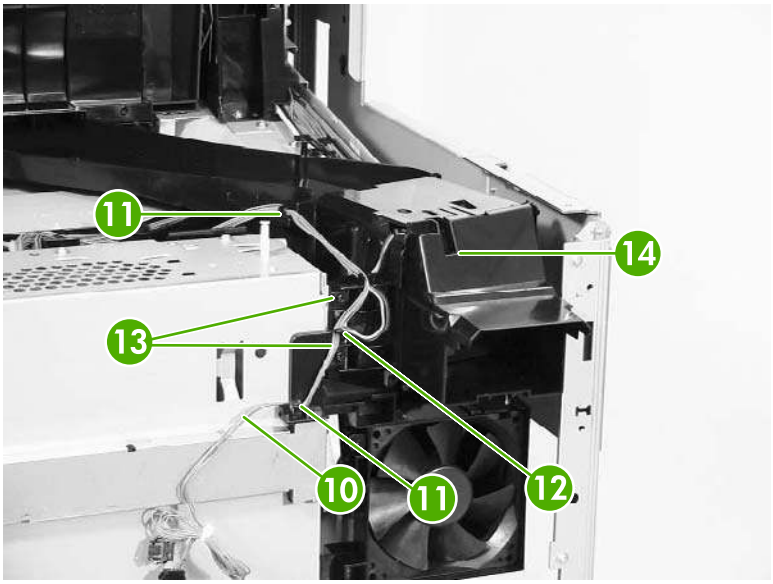


Figure 6-186 Remove the delivery assembly (7 of 15)

14. Remove the three screws (callout 15), remove the cable from the cable guides (callout 16), and then remove the fan duct (callout 17).

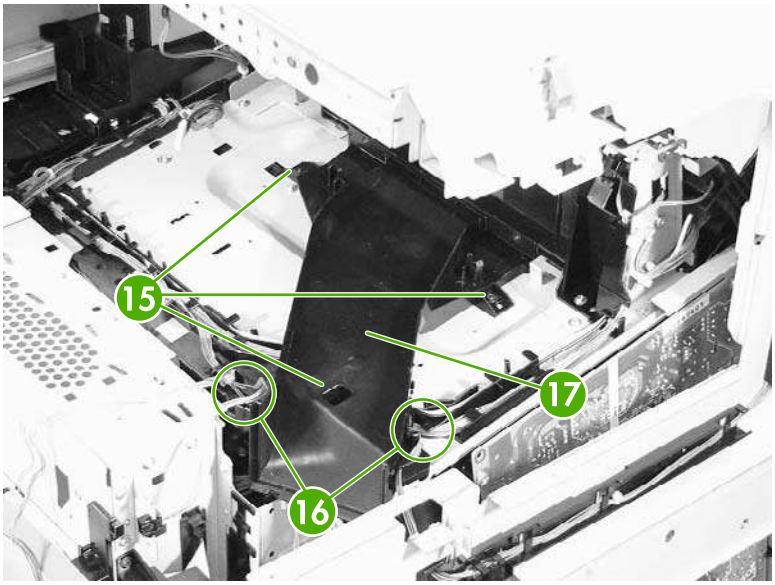


Figure 6-187 Remove the delivery assembly (8 of 15)

15. Disconnect the connector (callout 18). Remove the cable (callout 19) from the cable guide (callout 20).

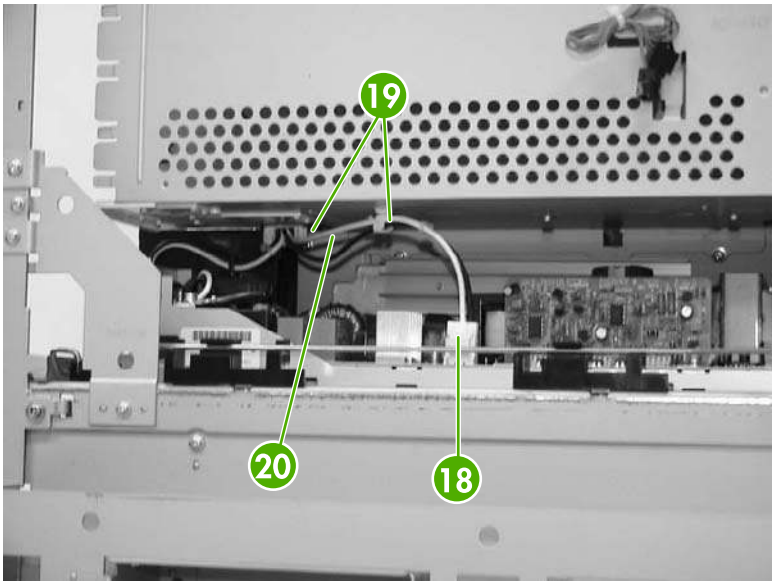


Figure 6-188 Remove the delivery assembly (9 of 15)

16. Remove the cable (callout 21) from the cable guide (callout 22).

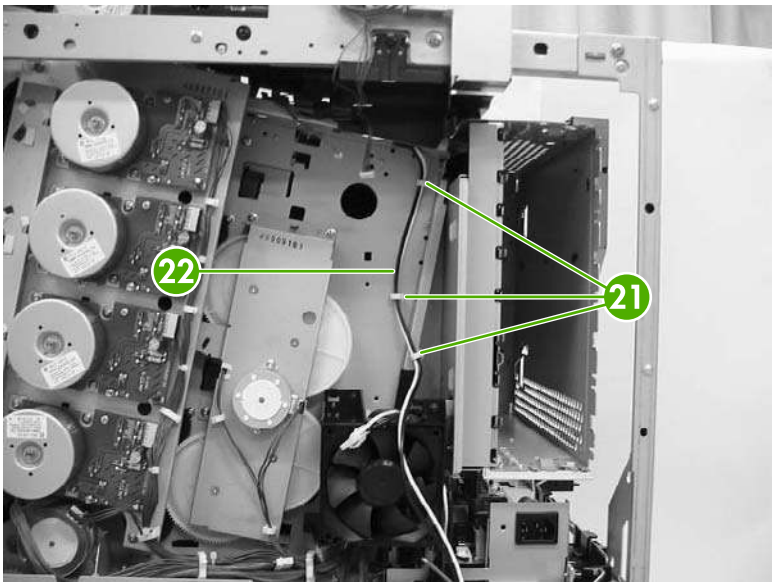


Figure 6-189 Remove the delivery assembly (10 of 15)

17. Remove the cable (callout 23) from the cable guides (callout 24).

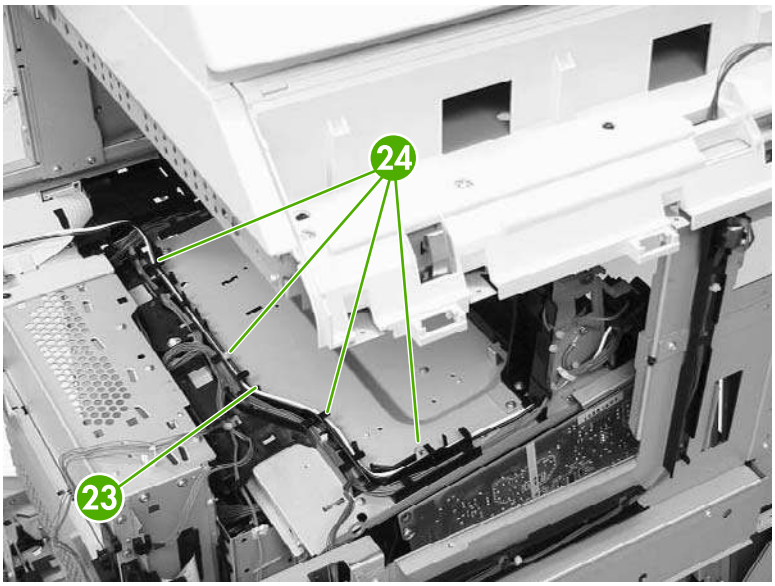


Figure 6-190 Remove the delivery assembly (11 of 15)

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.

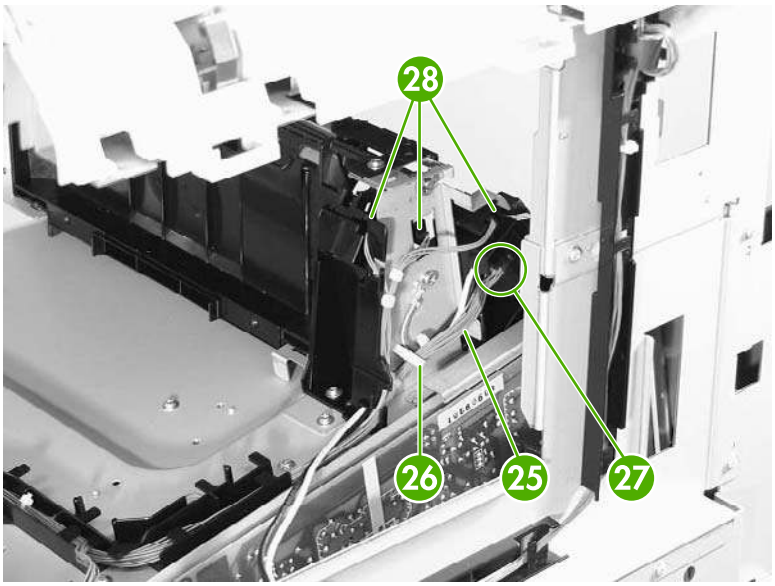


Figure 6-191 Remove the delivery assembly (12 of 15)

19. Remove one screw (callout 29).

Figure 6-192 Remove the delivery assembly (13 of 15)

20. Remove the two screws (callout 30).

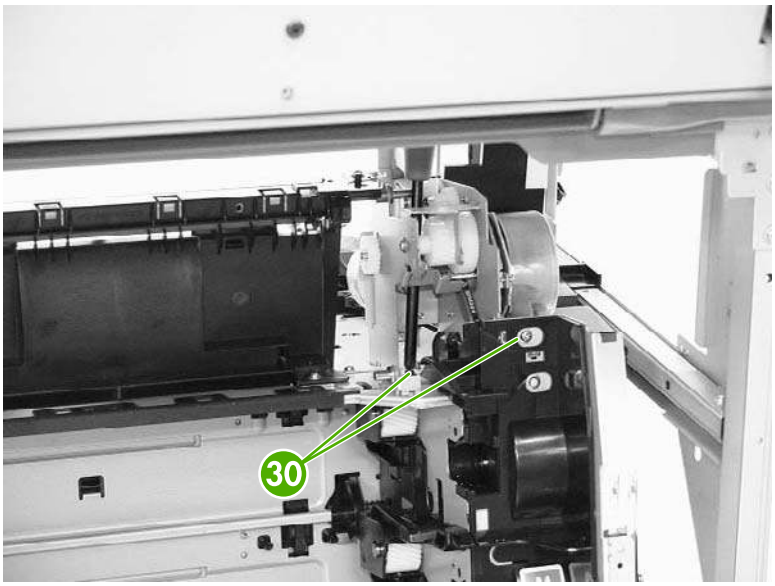


Figure 6-193 Remove the delivery assembly (14 of 15)

21. Remove the two screws (callout 31), and then remove the delivery assembly (callout 32).

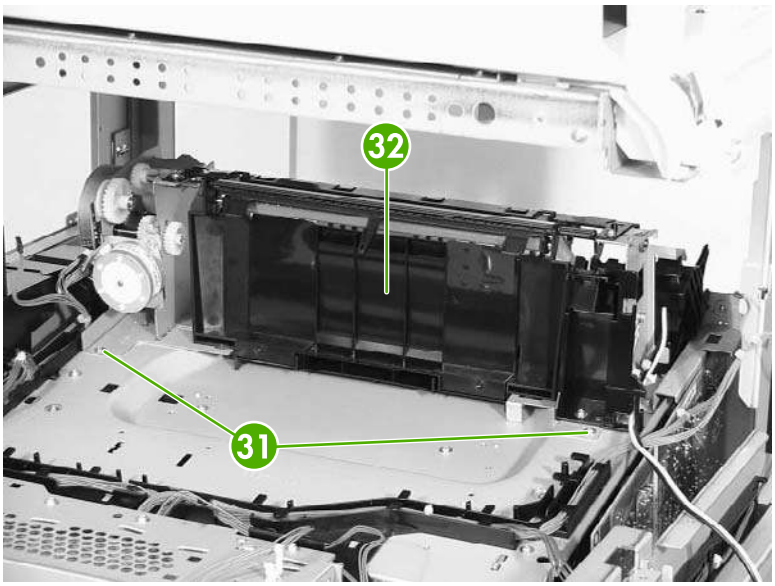


Figure 6-194 Remove the delivery assembly (15 of 15)

Fuser drive assembly

1. Remove the delivery assembly. See Delivery assembly on page 353.
2. Remove the E-ring (callout 1).

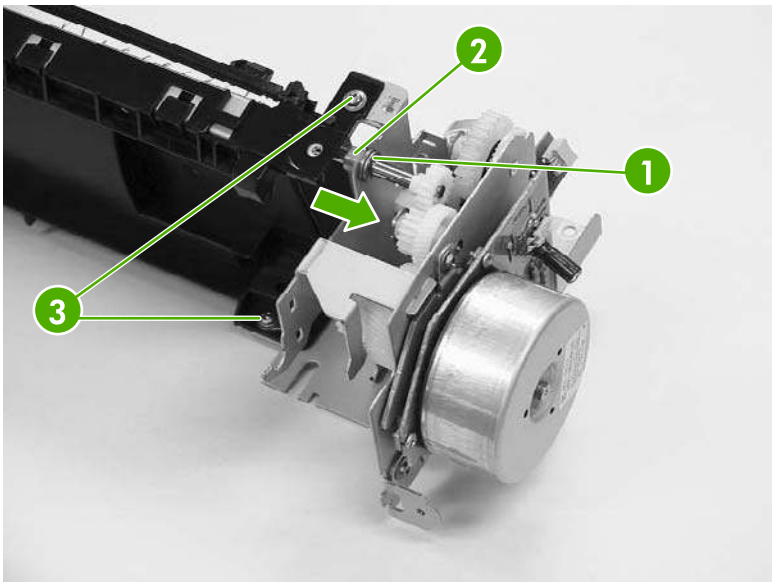


Figure 6-195 Remove the fuser drive assembly

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 294.
2. Disconnect the connector (callout 1). Remove the four screws (callout 2), and then remove the drum motor (callout 3).

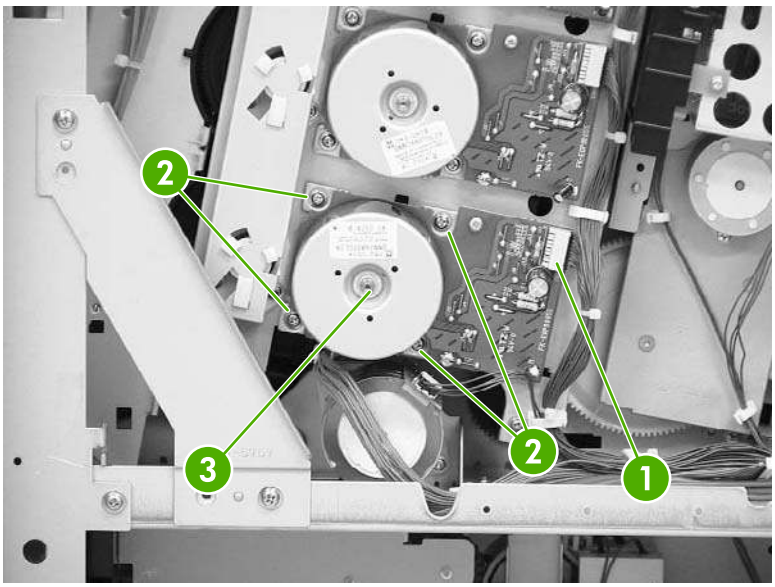


Figure 6-196 Remove drum motor

Fuser motor

1. Remove the rear cover assembly. See Rear cover assembly on page 294.
2. Remove the rear exhaust fan. See Rear exhaust fan on page 379.
3. Remove the three screws (callout 1) and the plate (callout 2).

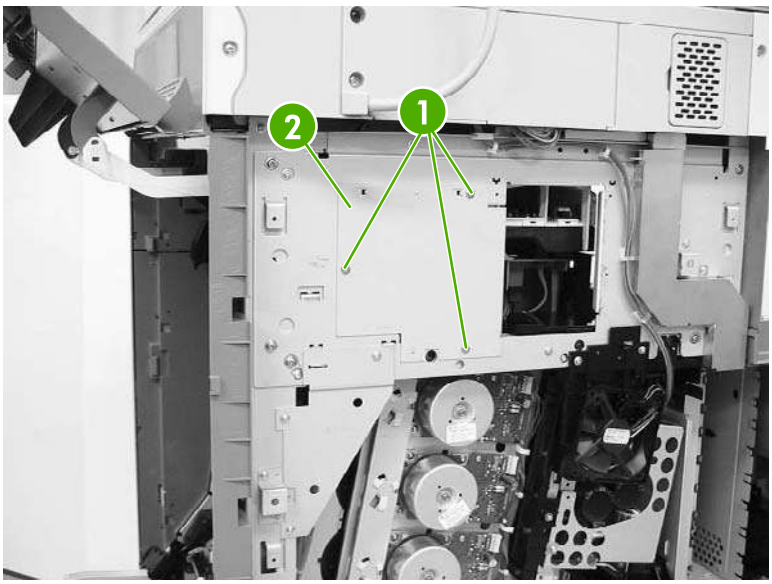


Figure 6-197 Remove the fuser motor (1 of 2)

4. Disconnect the connector (callout 3).
5. Remove the three screws (callout 4) and then remove the fuser motor (callout 5).

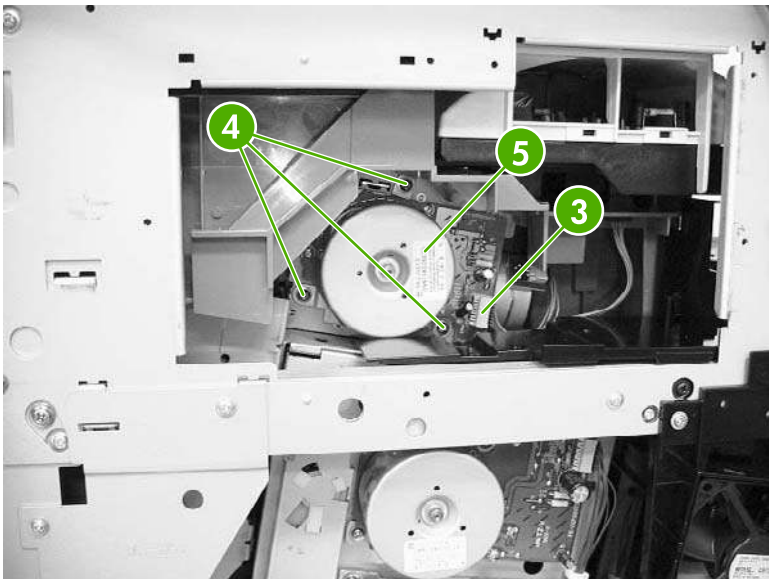


Figure 6-198 Remove the fuser motor (2 of 2)

Fuser pressure release motor

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover. See Front cover assembly on page 297.
5. Remove the delivery upper cover. See Delivery upper cover assembly on page 306.
6. Remove the left rear inner cover. See Left rear inner cover assembly on page 307.
7. Remove the duplexer. See Duplexing assembly on page 351.
8. Remove the right front and right rear inner upper covers. See Right front inner upper cover assembly on page 308 and Right rear inner cover assembly on page 310.
9. Remove the two screws (callout 1), and then remove the rear guide cover (callout 2).

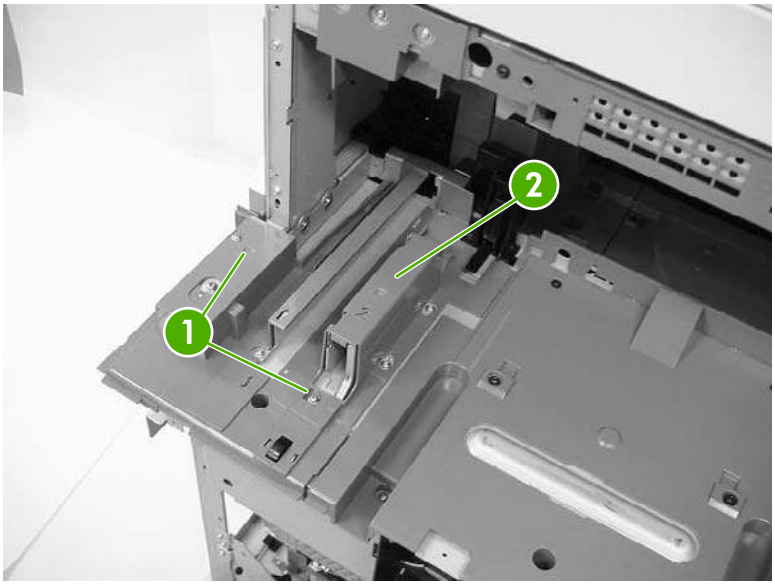


Figure 6-199 Remove the fuser pressure release motor (1 of 8)

10. Remove two screws (callout 3) and then remove the front guide cover (callout 4).

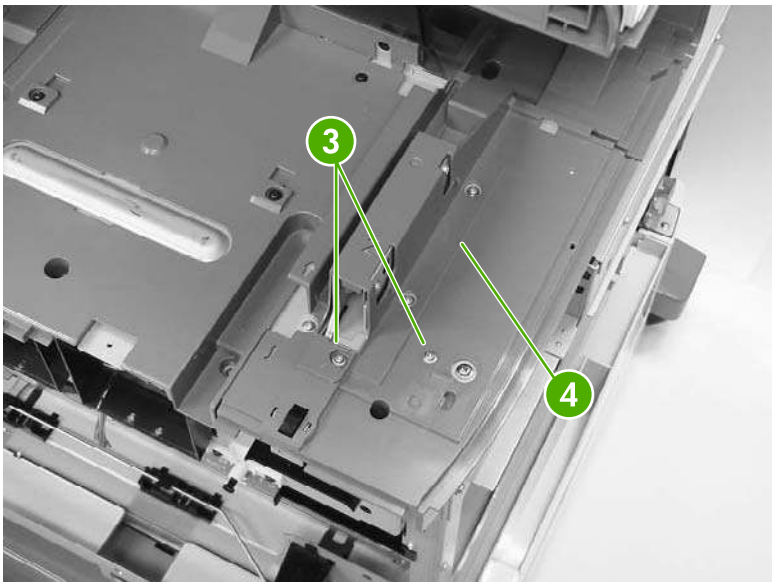


Figure 6-200 Remove the fuser pressure release motor (2 of 8)

11. Remove two screws (callout 5) at the front of the MFP and remove the cover.

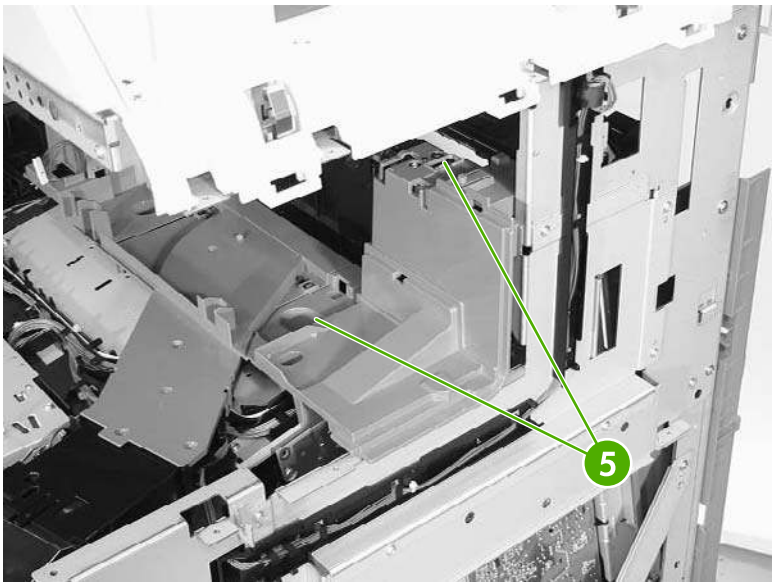


Figure 6-201 Remove the fuser pressure release motor (3 of 8)

12. Unhook the two claws (callout 6), and then remove the connector cover (callout 7).

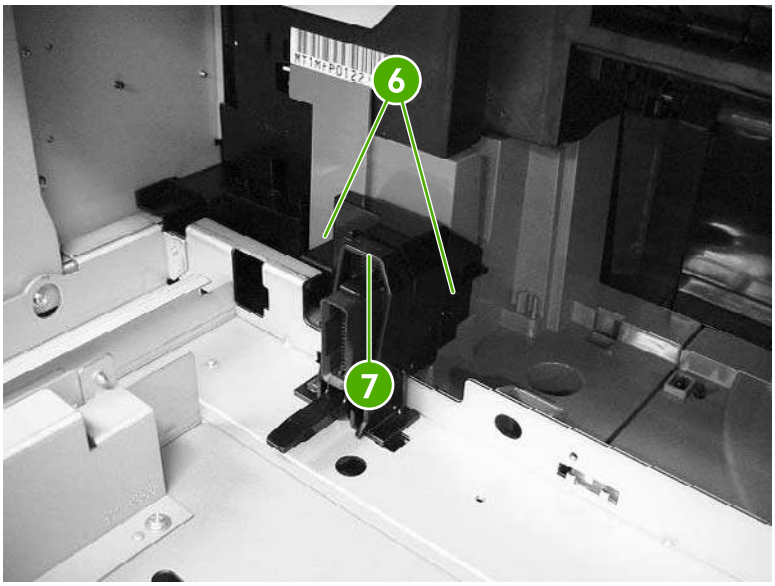


Figure 6-202 Remove the fuser pressure release motor (4 of 8)

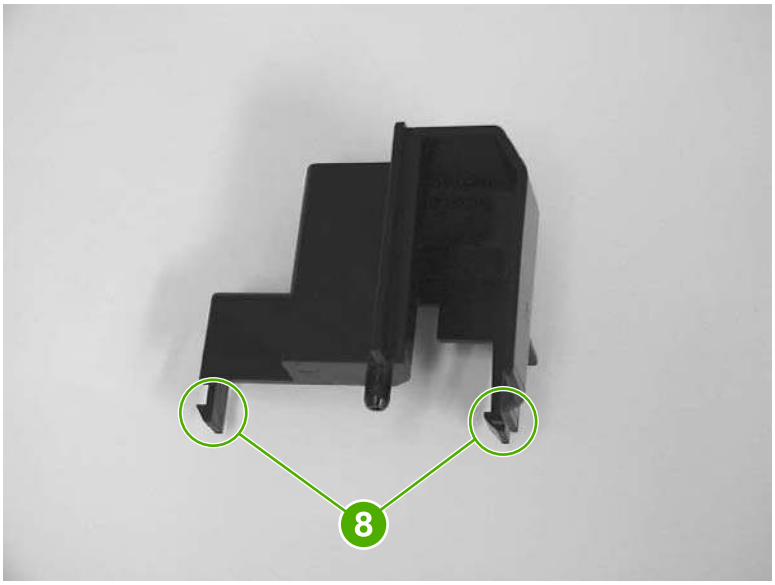


Figure 6-203 Remove the fuser pressure release motor, connector cover claw detail (5 of 8)

13. Disconnect the connector (callout 9).

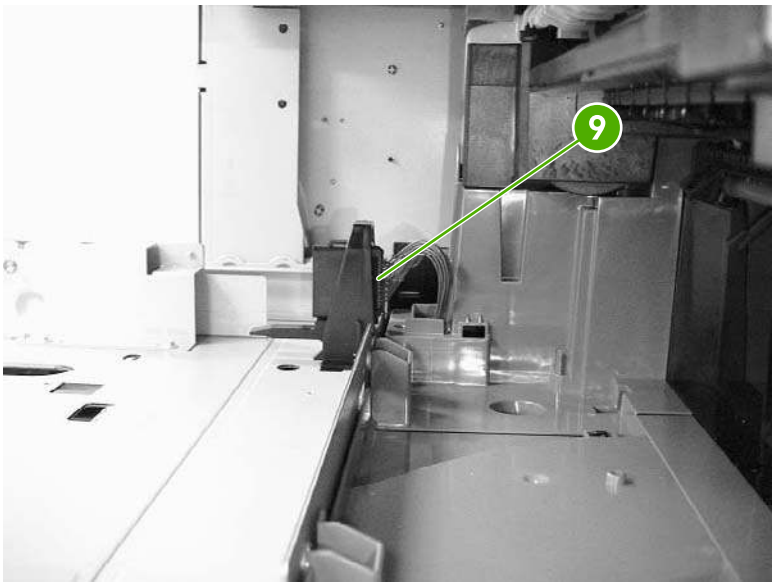


Figure 6-204 Remove the fuser pressure release motor (6 of 8)

14. Remove two screws (callout 10) and lift off the plastic fuser drive assembly cover (callout 11).

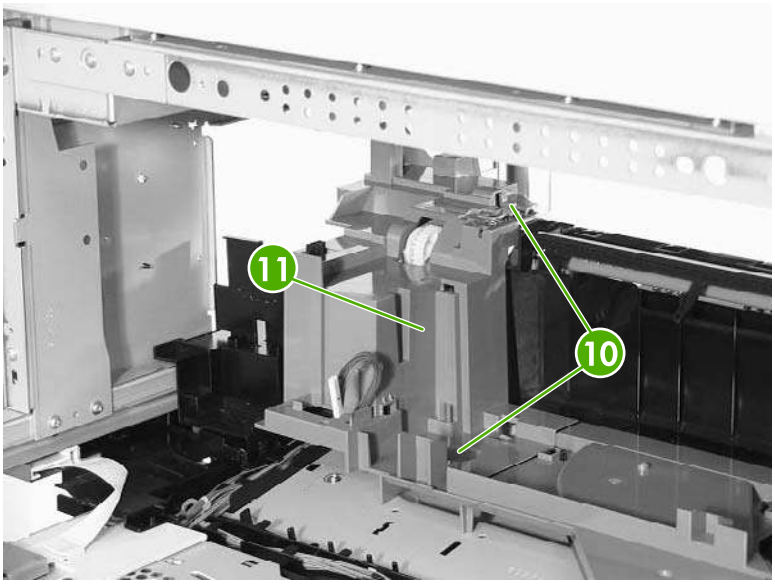


Figure 6-205 Remove the fuser pressure release motor (7 of 8)

15. Disconnect one connector (callout 12), remove the two screws (callout 13), and then remove the fuser pressure release motor (callout 14).

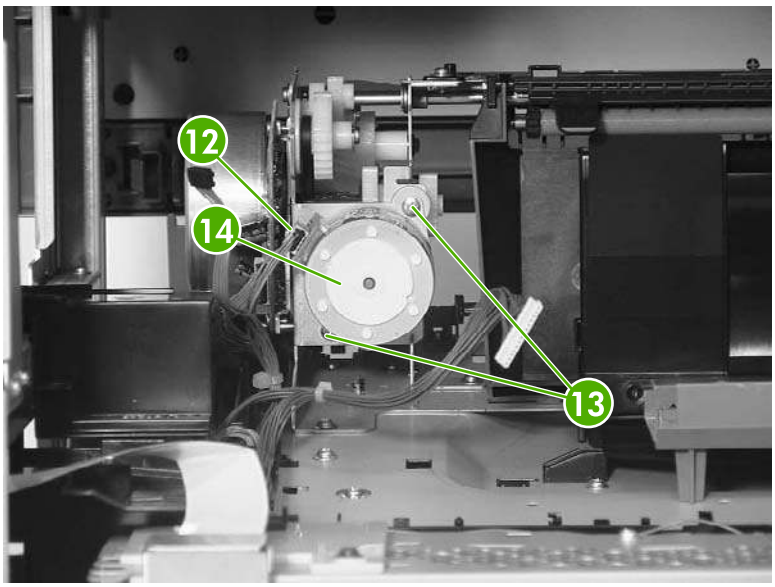


Figure 6-206 Remove the fuser pressure release motor (8 of 8)

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 294.
2. Remove the sub power supply PCB. See Sub power supply PCB on page 401.
3. Disconnect the connector (callout 1).
4. Remove the two screws (callout 2), and then remove the developing disengaging motor (callout 3).

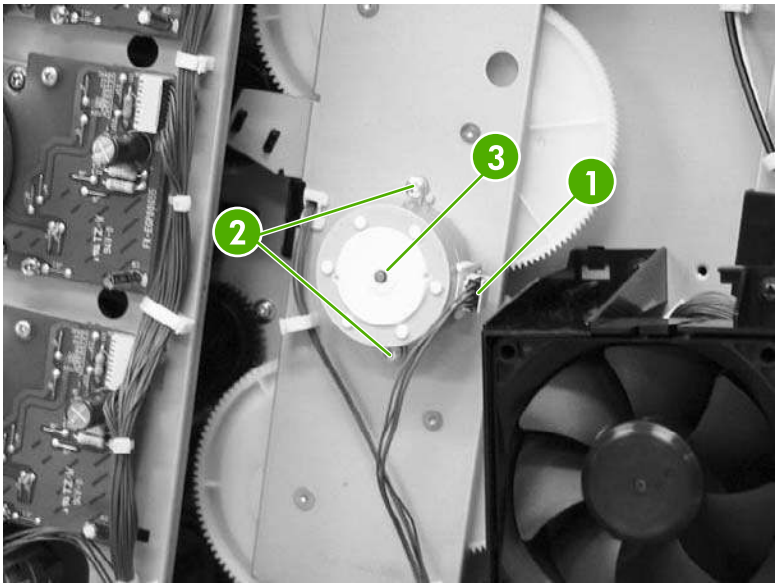


Figure 6-207 Remove the developing disengaging motor

Pickup motor assembly

1. Remove the paper feed assembly. See Paper feed assembly on page 316.
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.

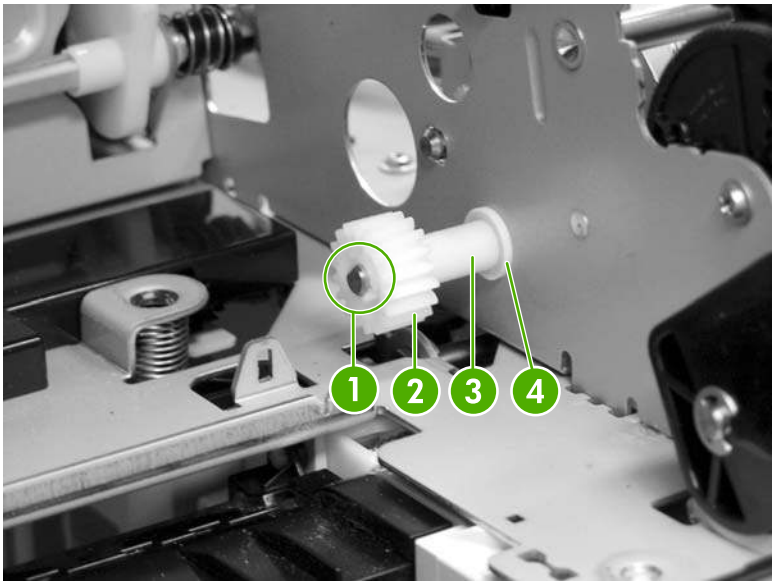


Figure 6-208 Remove the pickup motor assembly (1 of 3)

Gear removed.

Figure 6-209 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.

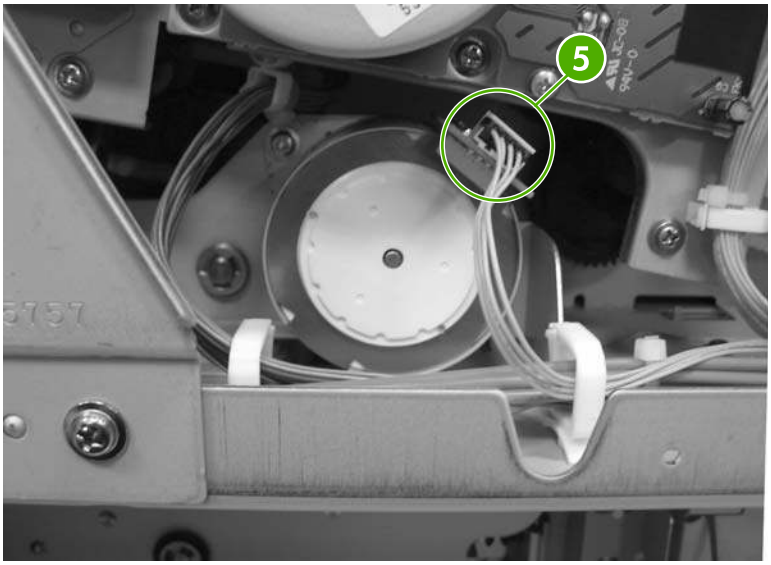


Figure 6-210 Remove the pickup motor assembly (3 of 3)

Power supply fan

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the three screws (callout 1) and remove the power supply fan (callout 2).

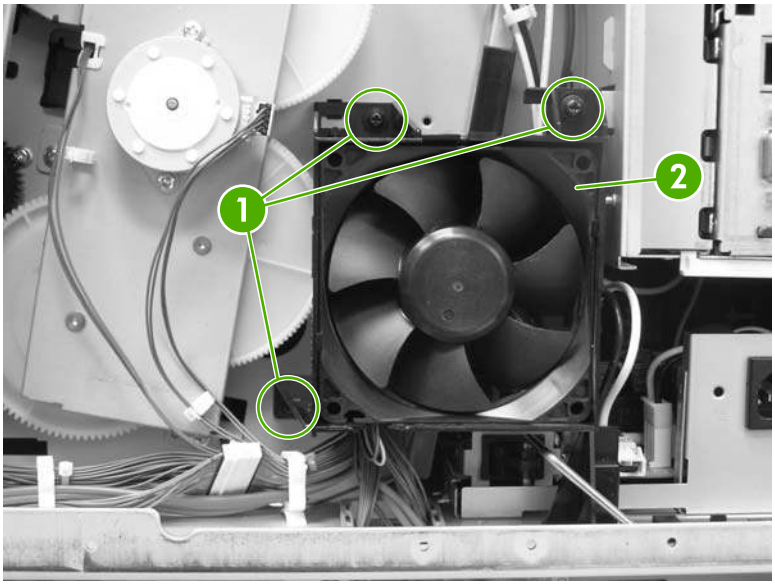


Figure 6-211 Remove the power supply fan (1 of 2)

3. Disconnect the connector. (Currently this disconnects at the DC controller. Changes will be implemented prior to product introduction.)

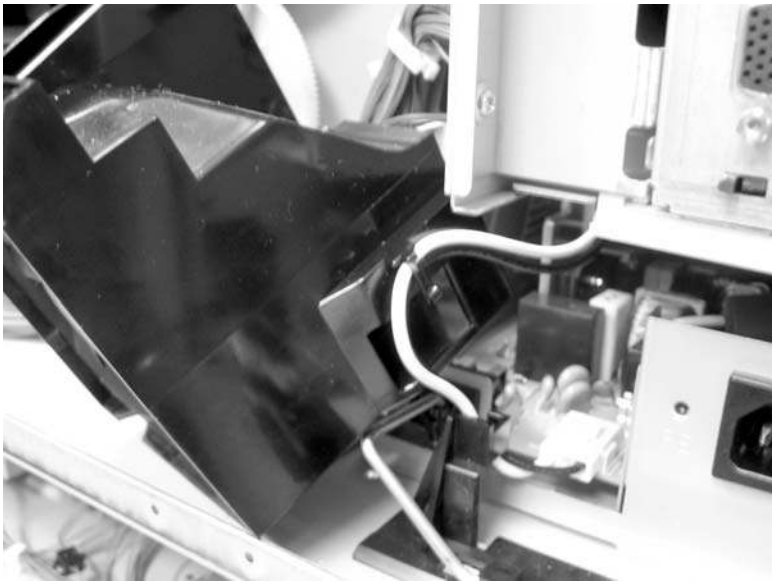


Figure 6-212 Remove the power supply fan (2 of 2)

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.

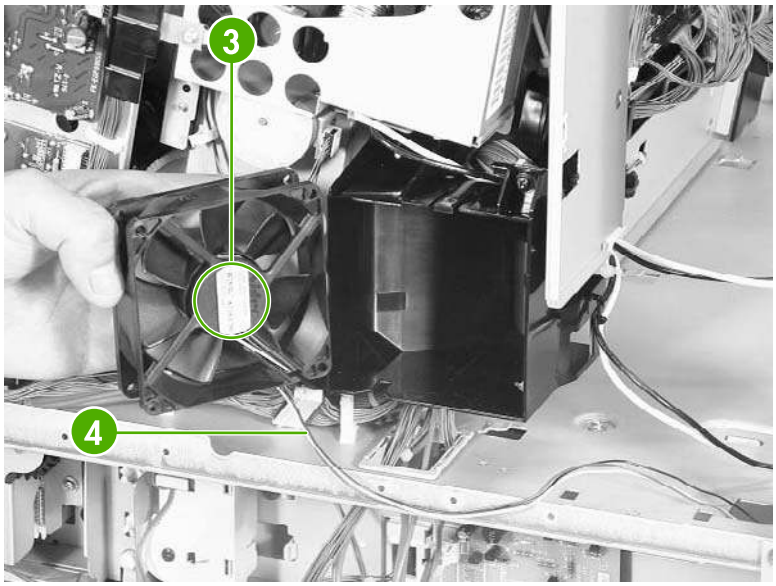


Figure 6-213 Reinstall the power supply fan

Cartridge fan

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover and the control panel. See Front cover assembly on page 297 and Control panel on page 250.
5. Remove the rail guide assembly. See Rail guide assembly on page 335.
6. Remove the delivery fan. See Delivery fan on page 376.
7. Disconnect the connector (callout 1).
8. Unhook the three claws (callout 2) and remove the cartridge fan (callout 3).

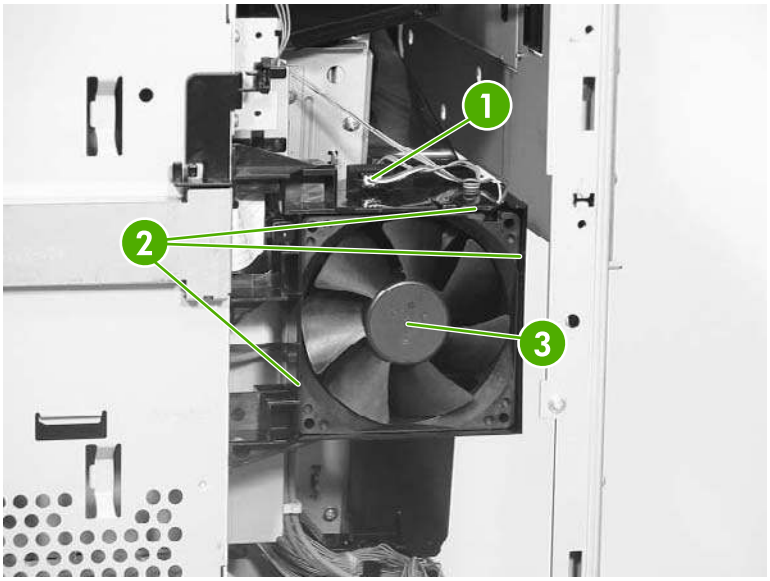


Figure 6-214 Remove the cartridge fan

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.

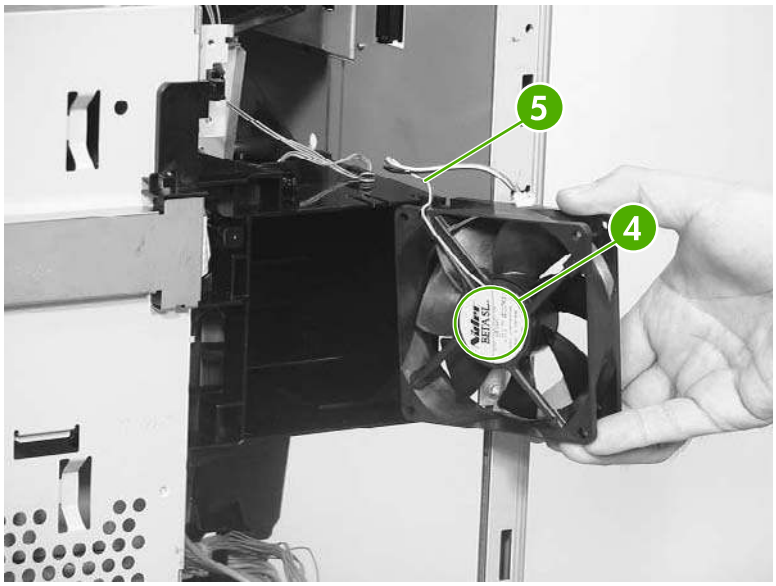


Figure 6-215 Installation guidelines

Sub power supply fan

1. Remove the rear cover assembly. See Rear cover assembly on page 294.
2. Unhook the cable from the cable guide (callout 1) and remove the three screws (callout 2).

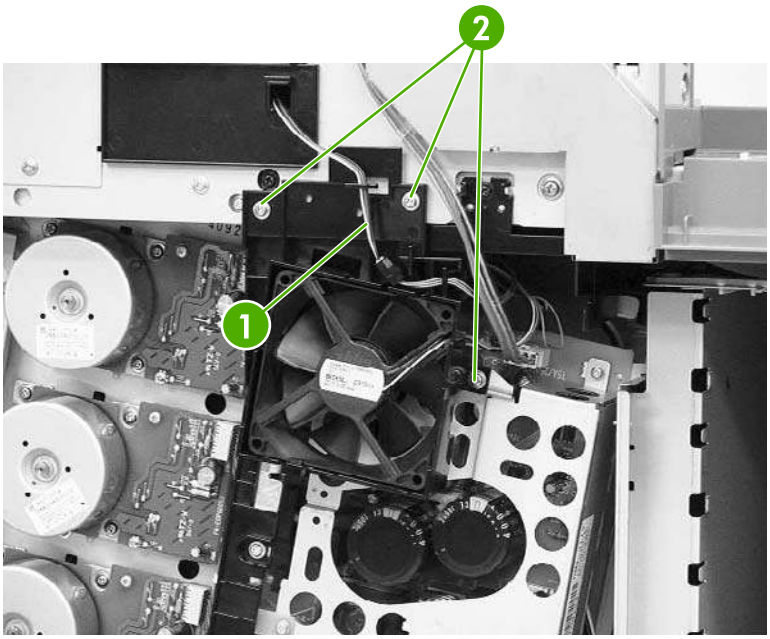


Figure 6-216 Remove the sub power supply fan (1 of 3)

3. Remove the fan holder (callout 3) and the sub power supply fan together. Disconnect the connector (callout 4).

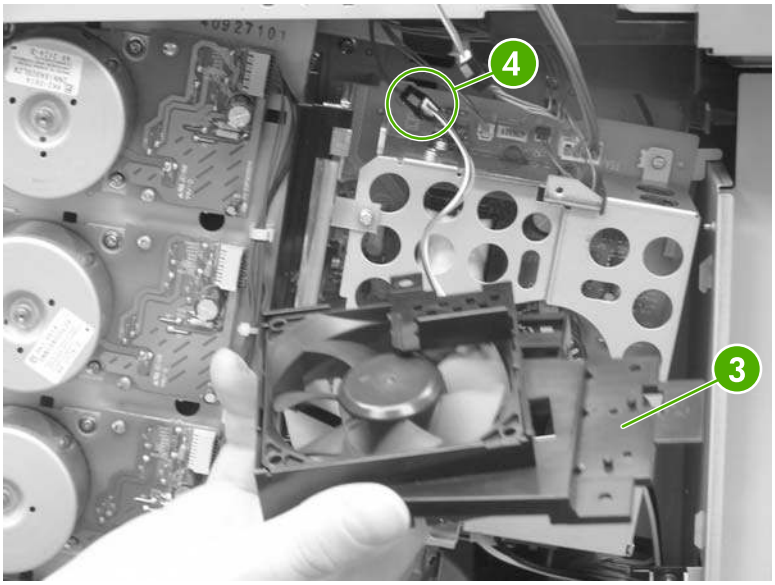


Figure 6-217 Remove the sub power supply fan (2 of 3)

4. Unhook the three claws (callout 5), and then remove the sub power supply fan (callout 6) from the fan holder (callout 7).

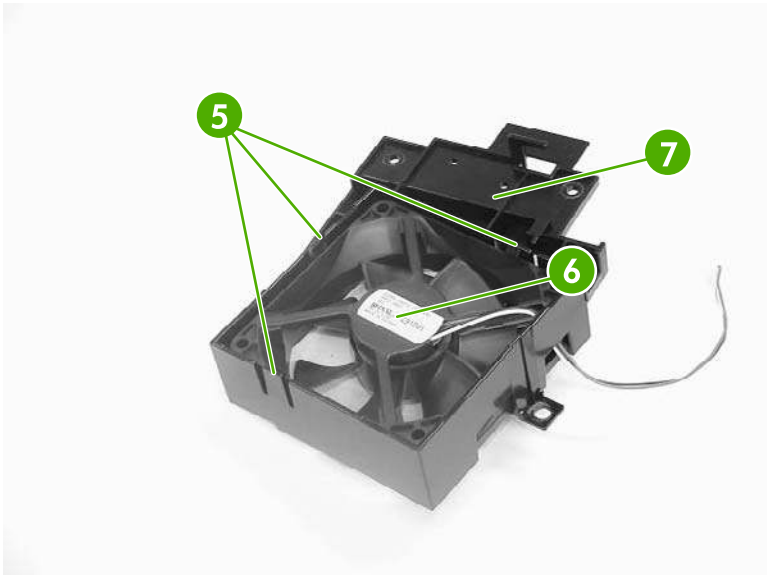


Figure 6-218 Remove the sub power supply fan (3 of 3)

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.

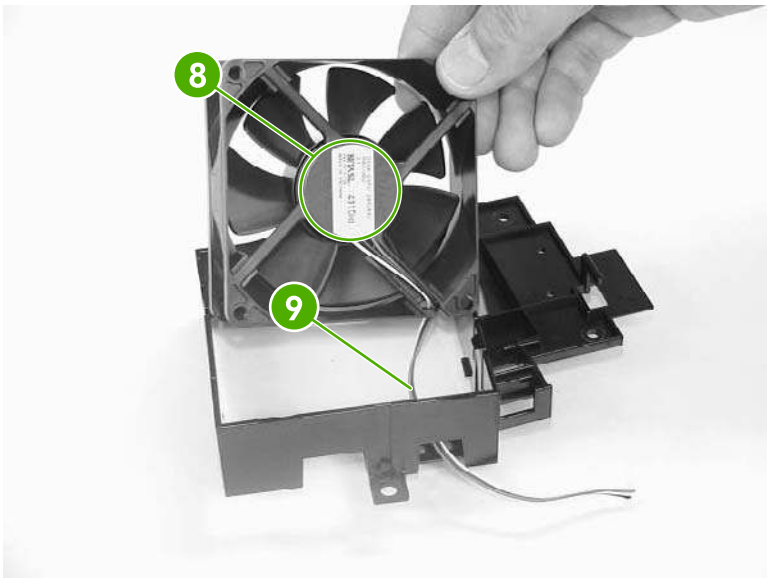


Figure 6-219 Installation guidelines

Delivery fan

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover and the control panel. See Front cover assembly on page 297 and Control panel on page 250.
5. Remove the rail guide assembly. See Rail guide assembly on page 335.
6. Remove the cable (callout 1) from the cable guides (callout 2).

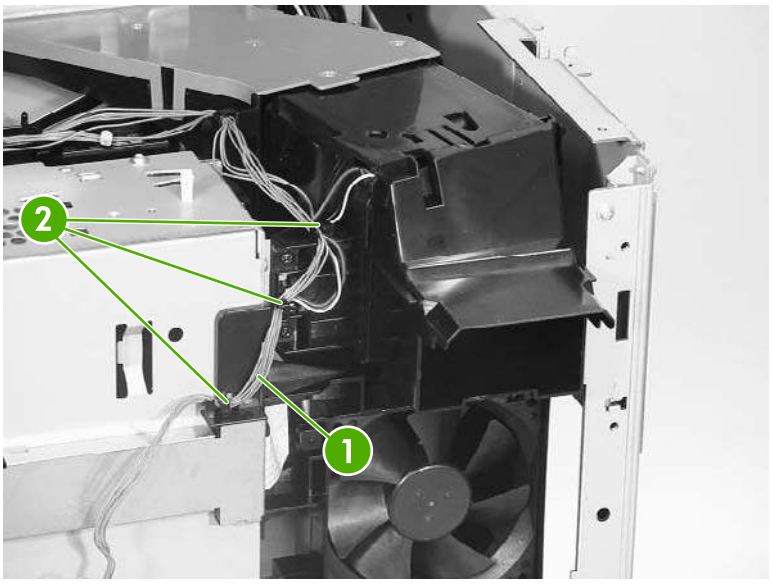


Figure 6-220 Remove the delivery fan (1 of 2)

7. Disconnect the connector (callout 3) and remove the two screws (callout 4). Then remove the delivery fan assembly (callout 5).

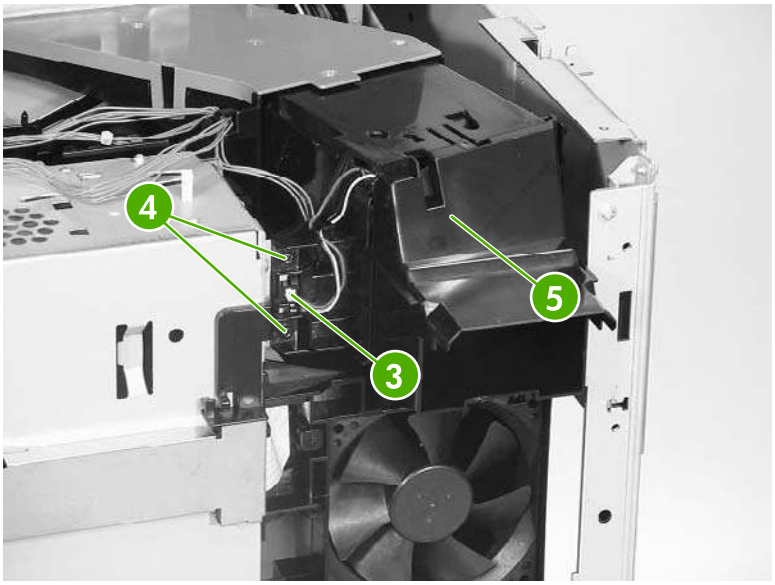


Figure 6-221 Remove the delivery fan (2 of 2)

Control fan 1

1. Remove the rear cover assembly. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover assembly. See Left cover assembly on page 296.
4. Disconnect the connector (callout 1). Unhook the three claws (callout 2) and remove control fan #1 (callout 3).

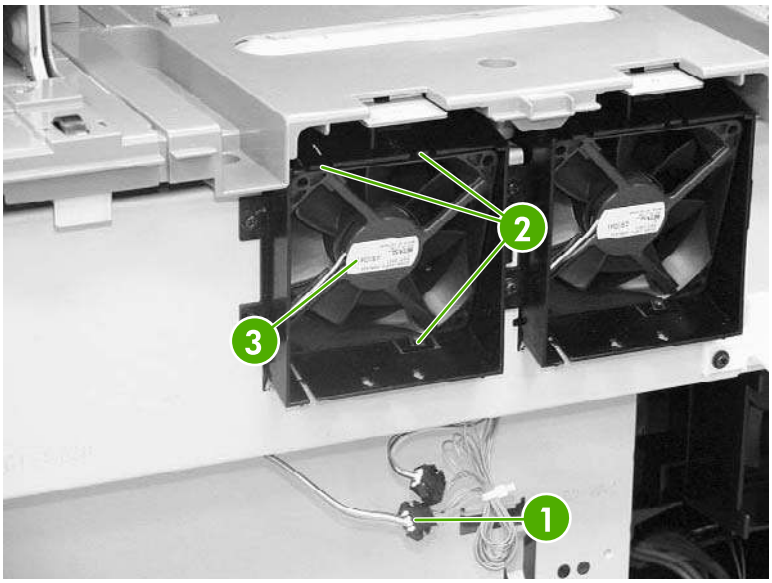


Figure 6-222 Remove control fan #1

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.

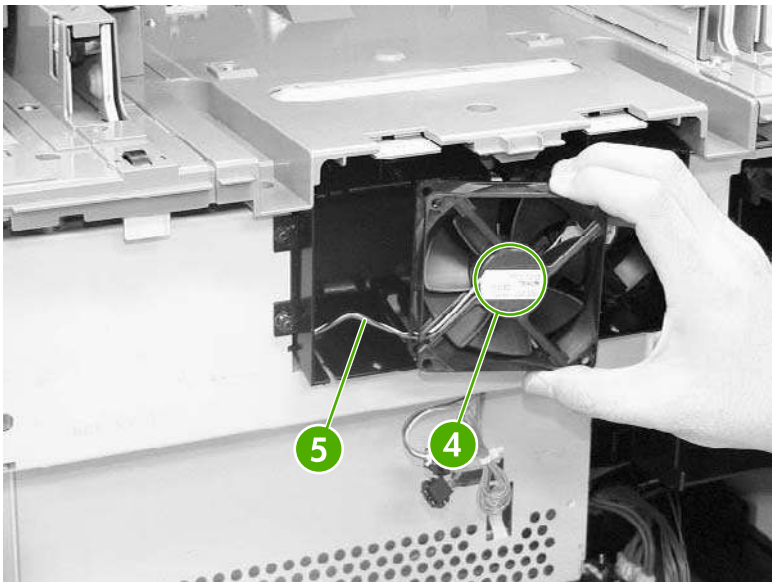


Figure 6-223 Installation guidelines

Control fan 2

1. Remove the rear cover assembly. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover assembly. See Left cover assembly on page 296.
4. Disconnect the connector (callout 1). Unhook the three claws (callout 2) and remove control fan #2 (callout 3).

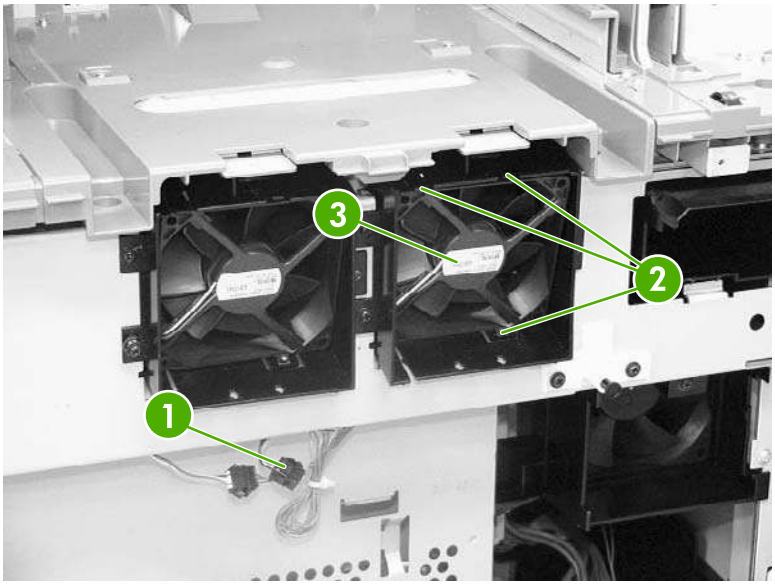


Figure 6-224 Remove control fan #2

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.

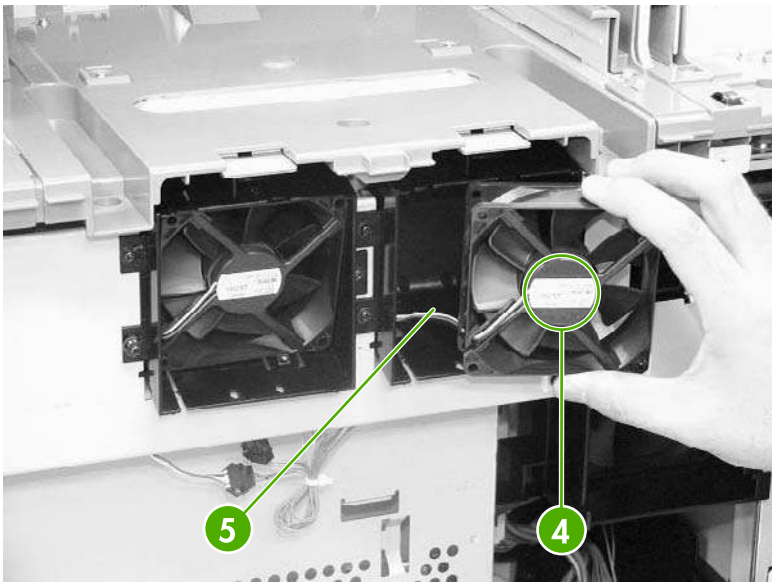


Figure 6-225 Installation guidelines

Rear exhaust fan

1. Remove the rear cover assembly. See Rear cover assembly on page 294.
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.

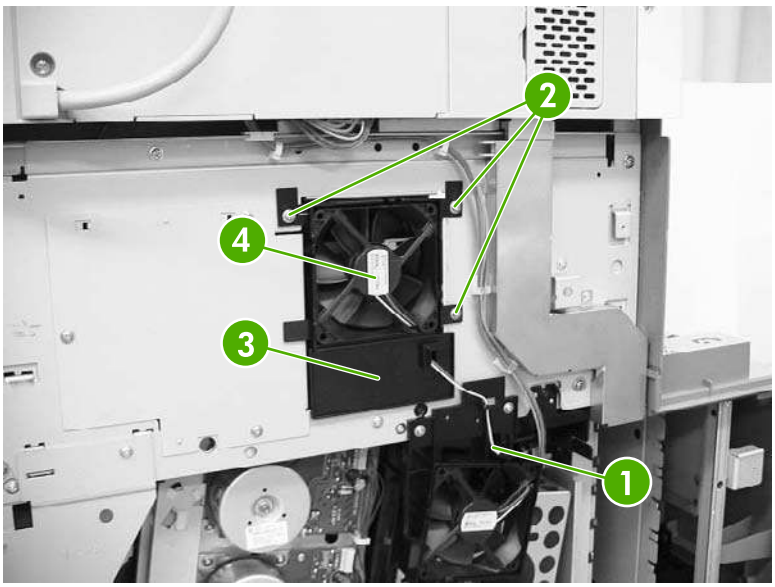


Figure 6-226 Remove the rear exhaust fan (1 of 2)

3. Unhook the three claws (callout 5) and remove the rear exhaust fan (callout 6) from the fan holder (callout 7).

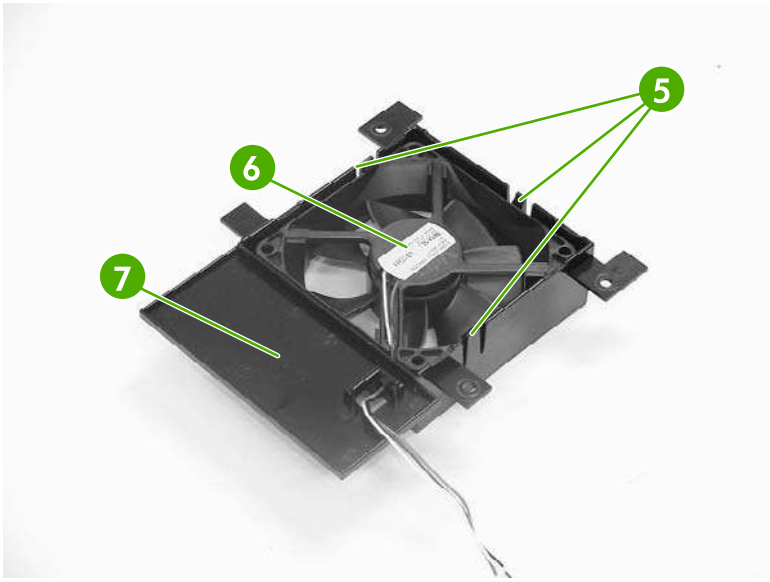


Figure 6-227 Remove the rear exhaust fan (2 of 2)

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.

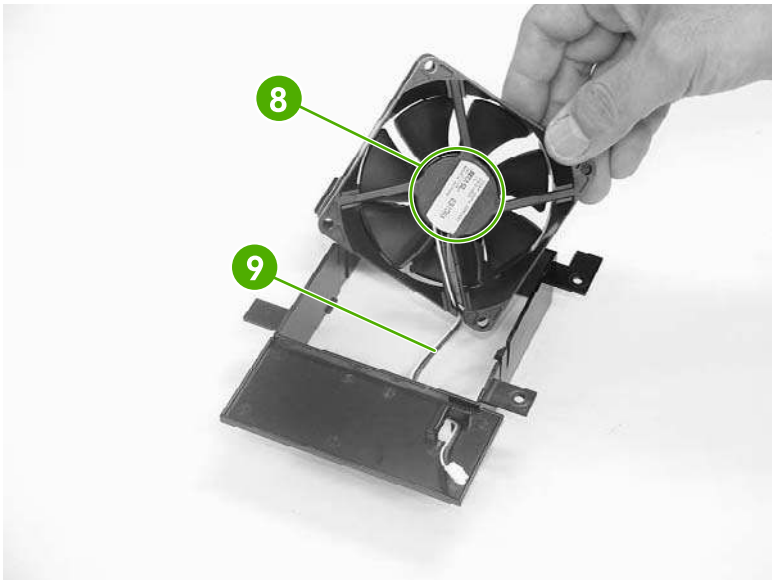


Figure 6-228 Installation guidelines

ETB fan

1. Open the right lower cover.

2. Unhook the three claws (callout 1) and remove the cable cover (callout 2).

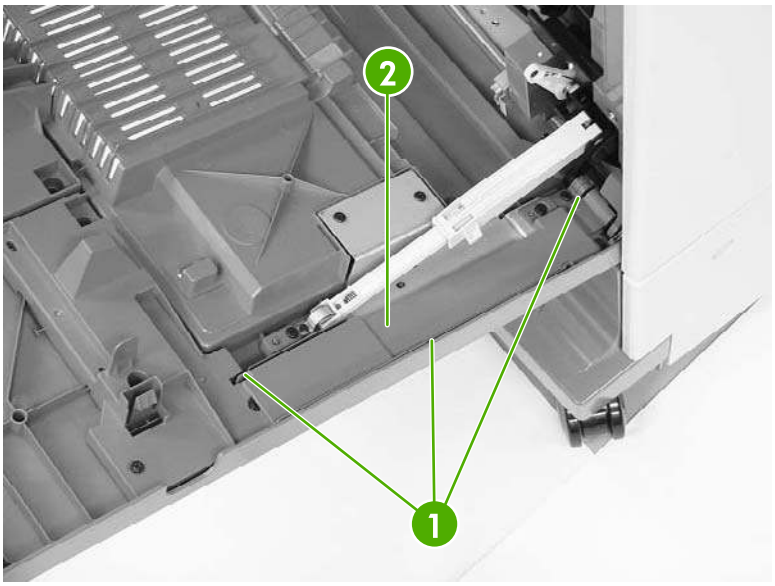


Figure 6-229 Remove the ETB fan (1 of 4)

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).

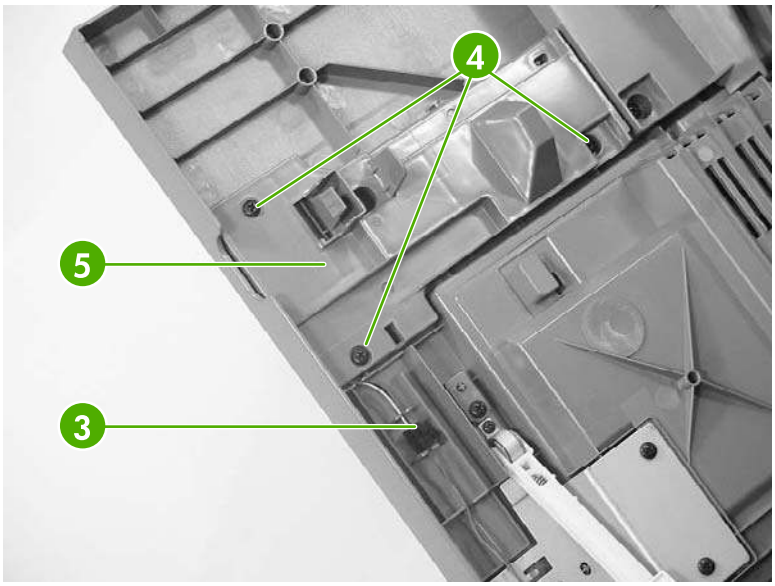


Figure 6-230 Remove the ETB fan (2 of 4)

4. Remove the four screws (callout 6) and the duplexing feed guide assembly (callout 7).

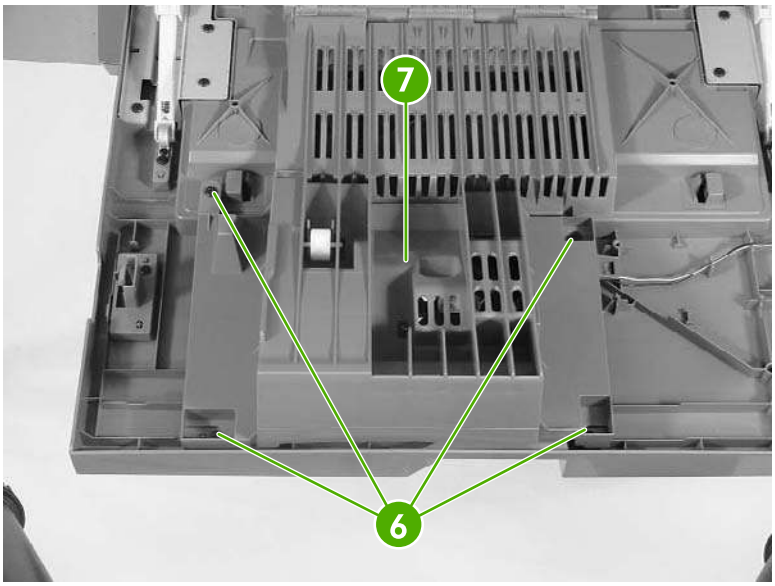


Figure 6-231 Remove the ETB fan (3 of 4)

5. Unhook the two claws (callout 8) and remove the ETB fan (callout 9).

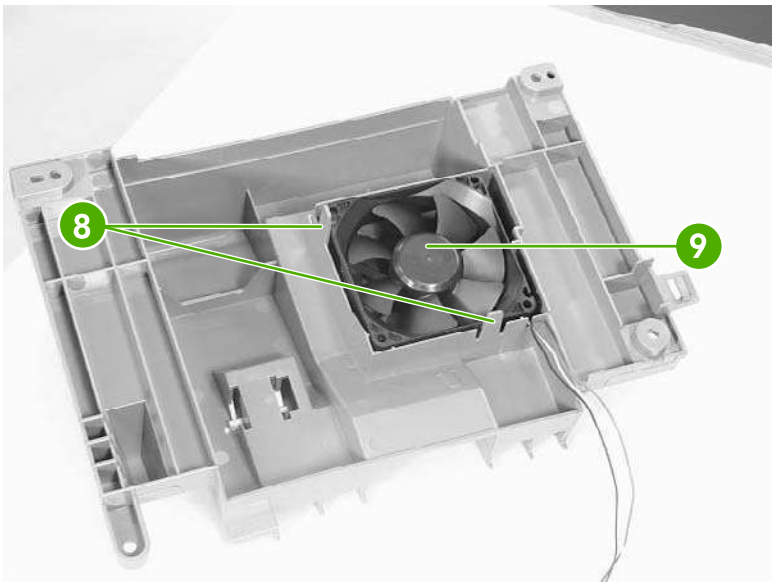


Figure 6-232 Remove the ETB fan (4 of 4)

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.

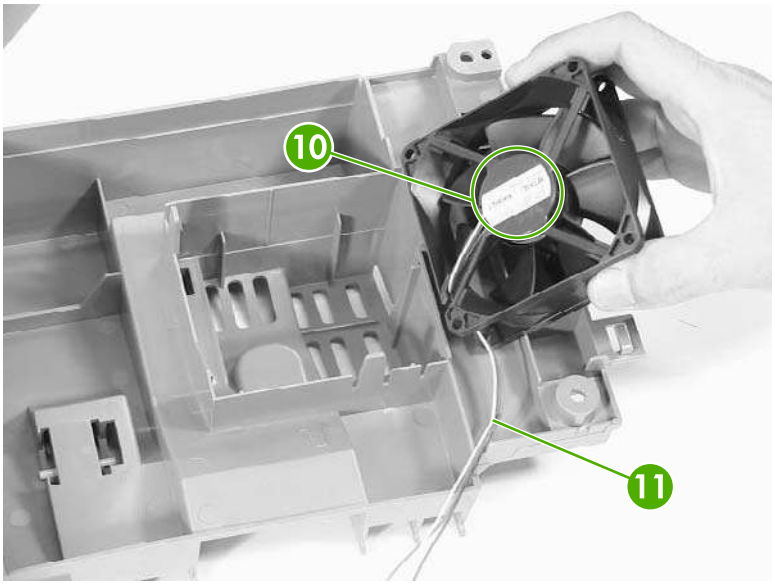


Figure 6-233 Installation guidelines

Hint 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 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover and the control panel. See Front cover assembly on page 297 and Control panel on page 250.
5. Remove the delivery fan. See Delivery fan on page 376.
6. Remove the cartridge fan. See Cartridge fan on page 373.
7. Remove the formatter case. See Formatter case assembly on page 338.

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).

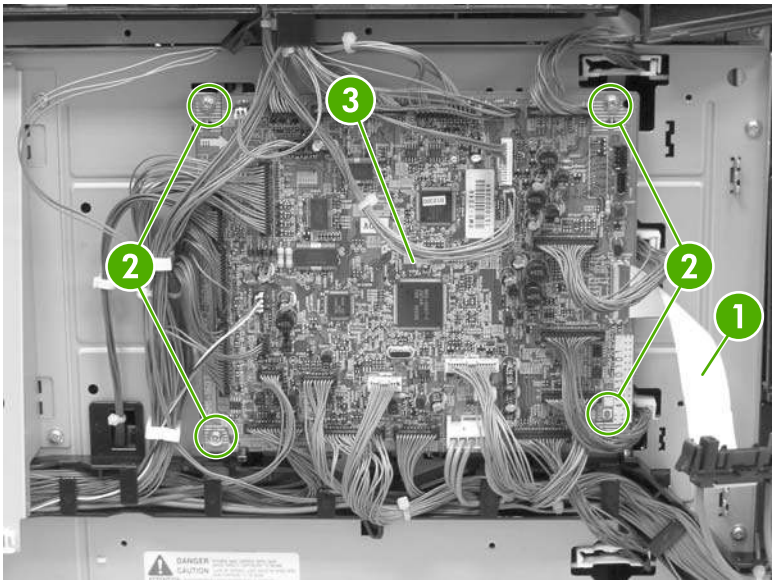


Figure 6-234 Remove the DC controller (1 of 2)

9. DC controller removed.

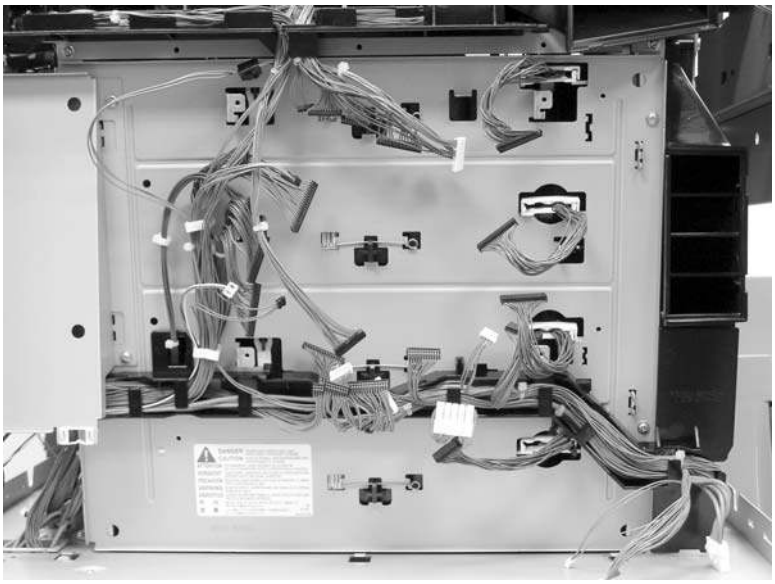


Figure 6-235 Remove the DC controller (2 of 2)

The locations of the DC controller connections are shown on the following figure.

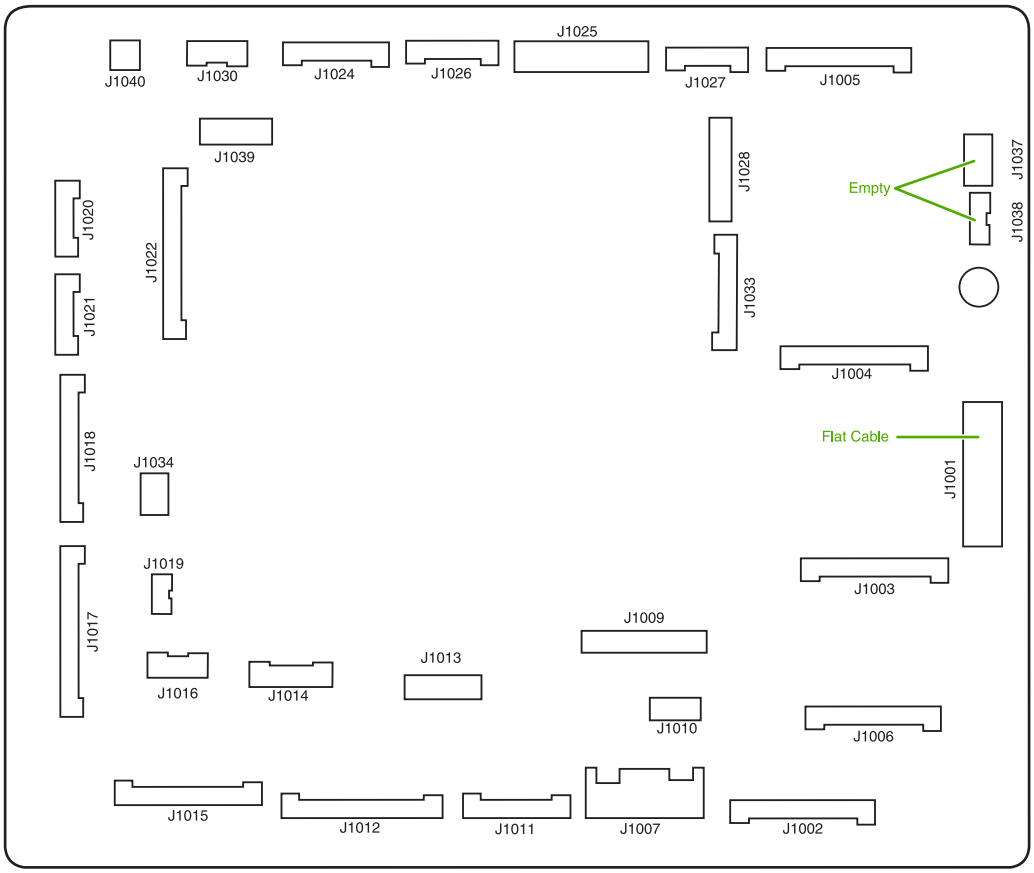


Figure 6-236 DC controller component connections

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 389.
2. Disconnect the connector (callout 1).
3. Remove the three screws (callout 2), and then remove the toner level PCB (callout 3).

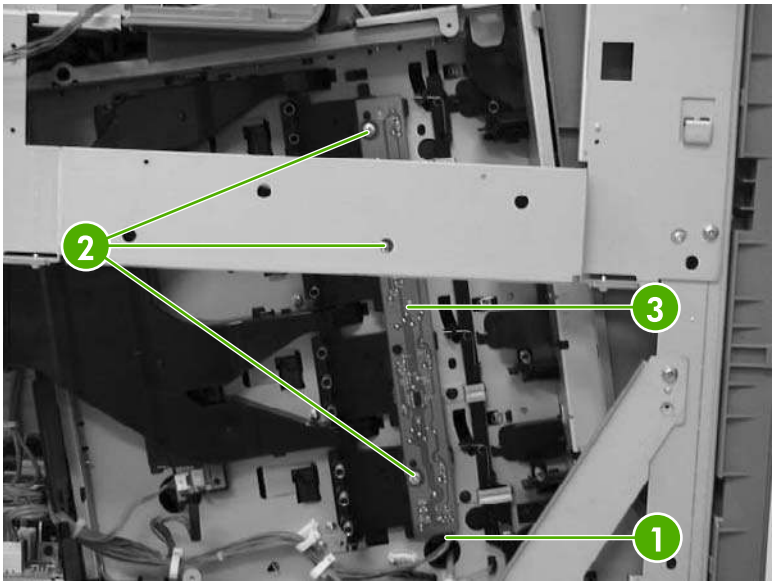


Figure 6-237 Remove the toner level PCB

High-voltage power supply PCB

1. Remove the following assemblies:
   - Rear cover. See Rear cover assembly on page 294.
   - Face-down tray assembly. See Face-down tray assembly on page 293.
   - Left cover assembly. See Left cover assembly on page 296.
   - Front cover assembly. See Front cover assembly on page 297.
   - Control panel. See Control panel on page 250.

2. Remove the control panel cover by prying up both sides of the cover.

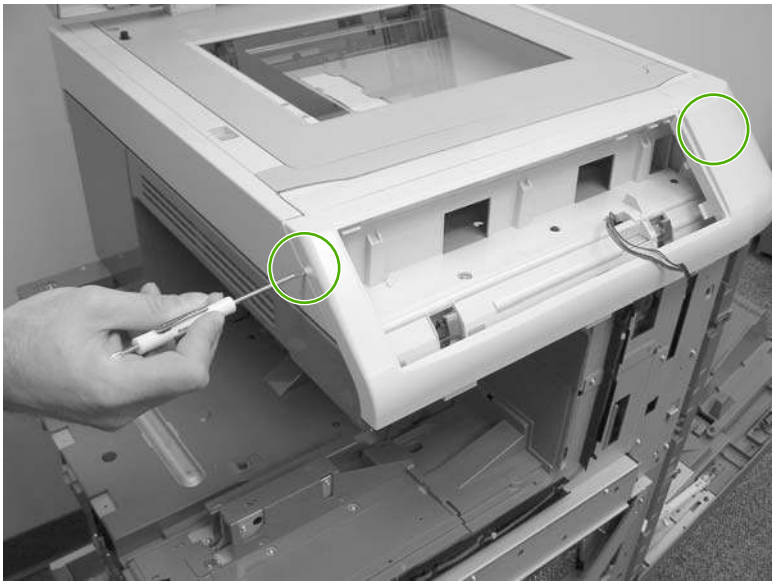


Figure 6-238 Remove the high-voltage power supply PCB (1 of 9)

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).

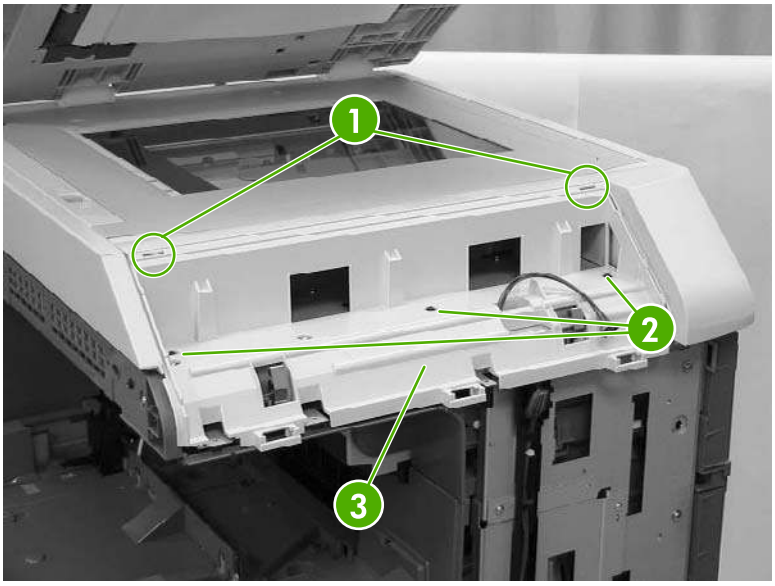


Figure 6-239 Remove the high-voltage power supply PCB (2 of 9)

5. Remove the cable (callout 4) from the cable guides (callout 5).

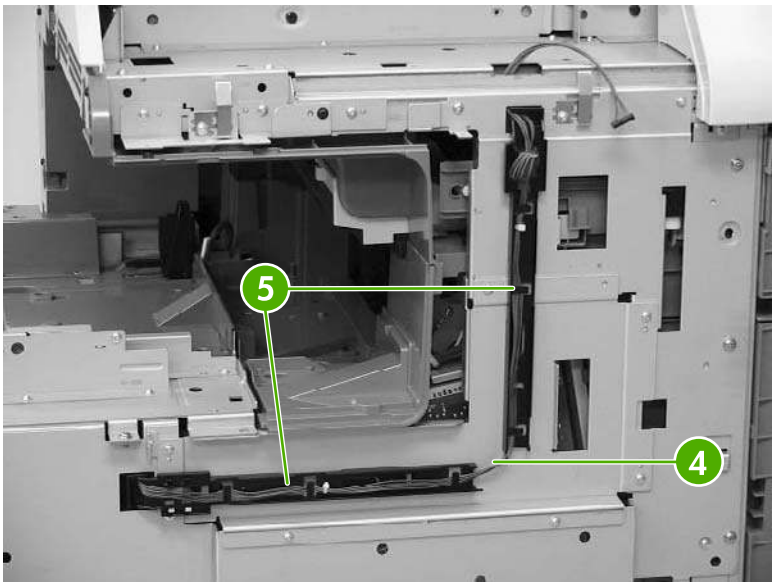


Figure 6-240 Remove the high-voltage power supply PCB (3 of 9)

6. Unhook the claw (callout 6) and slide the cable guide down to remove it (callout 7).

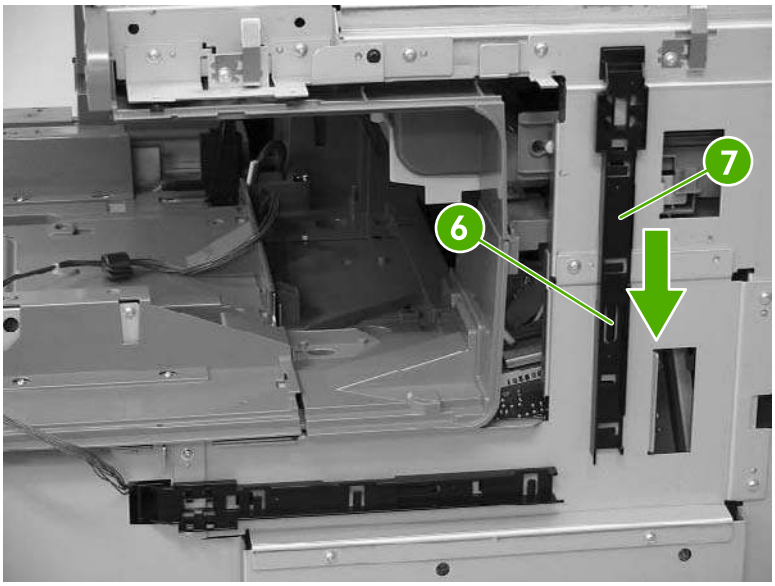


Figure 6-241 Remove the high-voltage power supply PCB (4 of 9)

7. Unhook the claw (callout 8) and slide the cable guide to the right to remove it (callout 9).

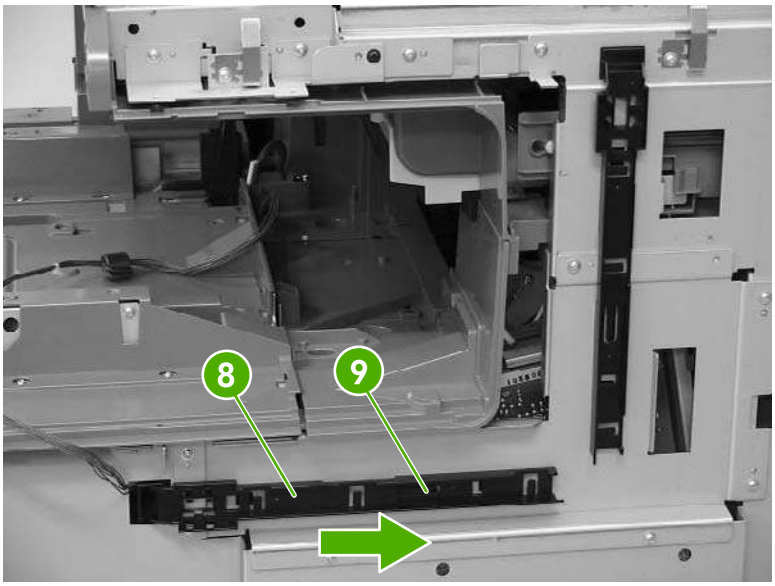


Figure 6-242 Remove the high-voltage power supply PCB (5 of 9)

8. Remove the two screws (callout 10), and then remove the front guide cover (callout 11).

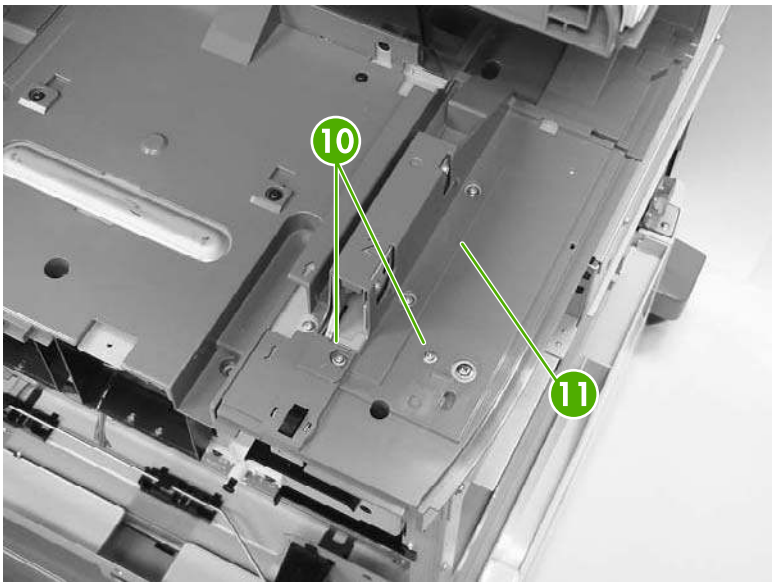


Figure 6-243 Remove the high-voltage power supply PCB (6 of 9)

9. Remove one M4 screw (callout 12) and the seven M3 screws (callout 13). Then remove the plate (callout 14).

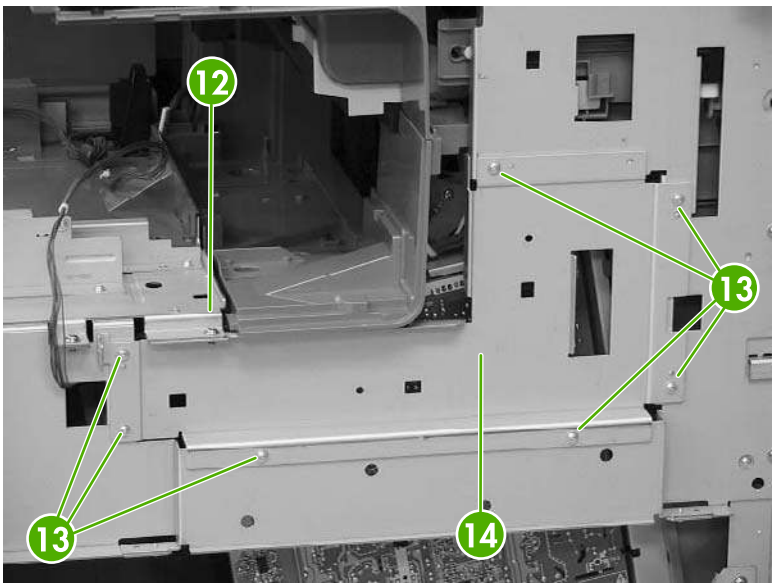


Figure 6-244 Remove the high-voltage power supply PCB (7 of 9)

Hint 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.

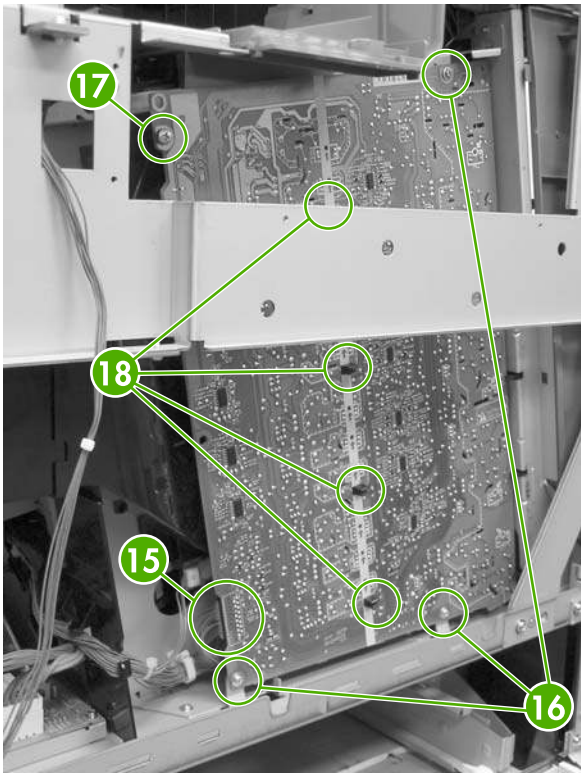


Figure 6-245 Remove the high-voltage power supply PCB (8 of 9)

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.

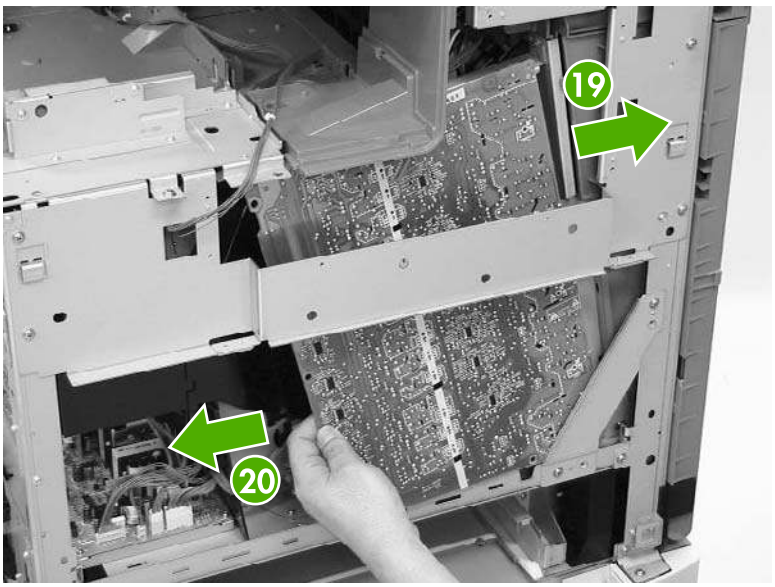


Figure 6-246 Remove the high-voltage power supply PCB (9 of 9)

Low-voltage power supply PCB

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the left cover. See Left cover assembly on page 296.
3. Remove the power supply fan. See Power supply fan on page 371.

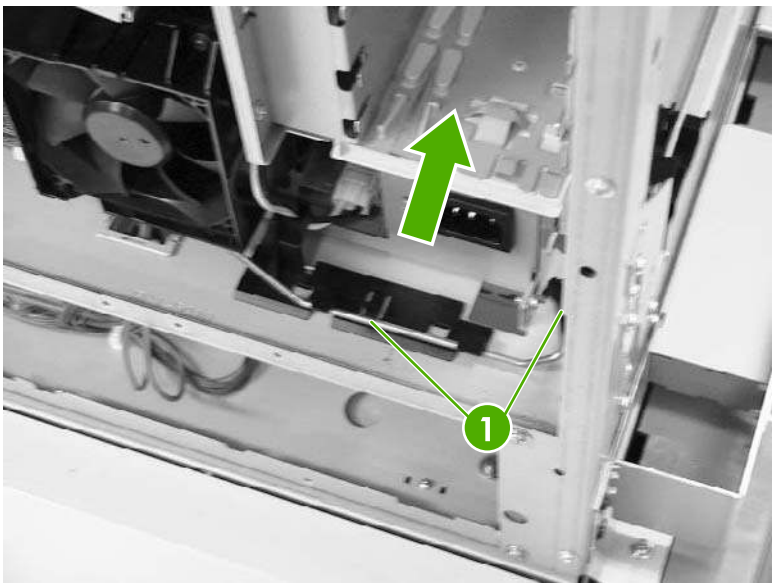


Figure 6-247 Remove the low-voltage power supply PCB (1 of 9)

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).

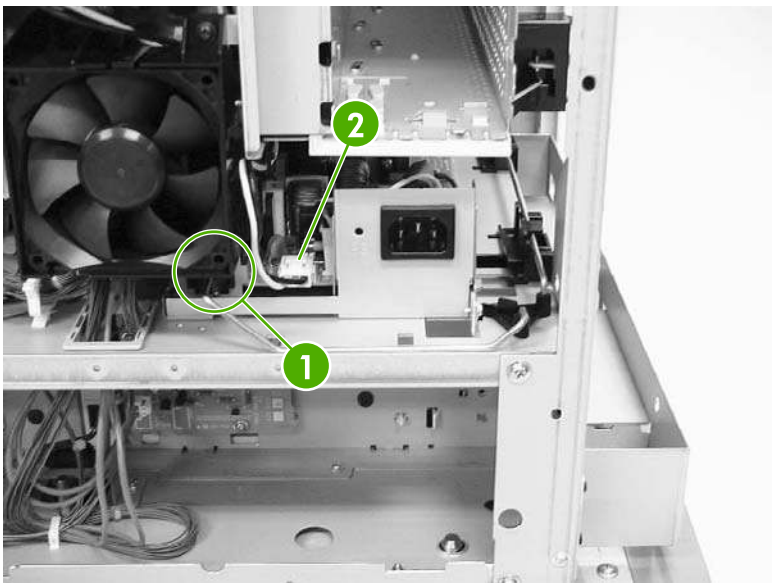


Figure 6-248 Remove the low-voltage power supply PCB (2 of 9)

5. Disconnect the connector (callout 3) at the left of the MFP.

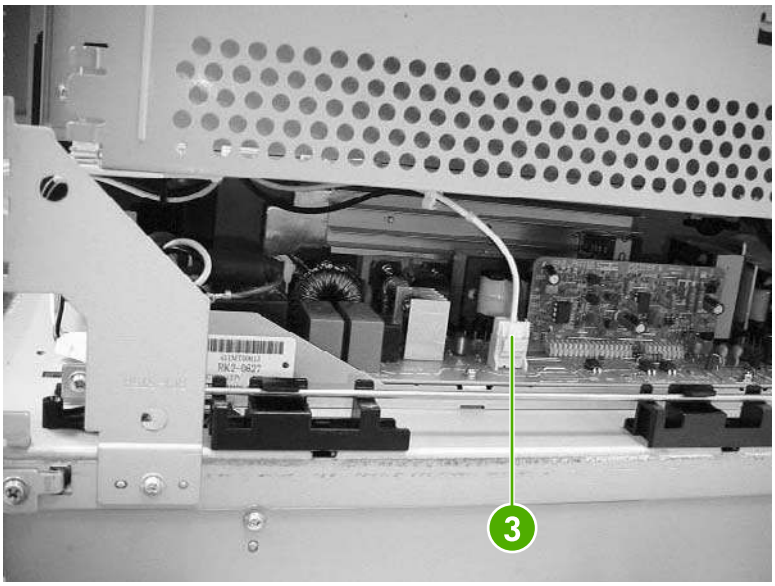


Figure 6-249 Remove the low-voltage power supply PCB (3 of 9)

6. Remove the two screws (callout 4). Then remove the power switch assembly (callout 5) and the rod arm (callout 6) together.

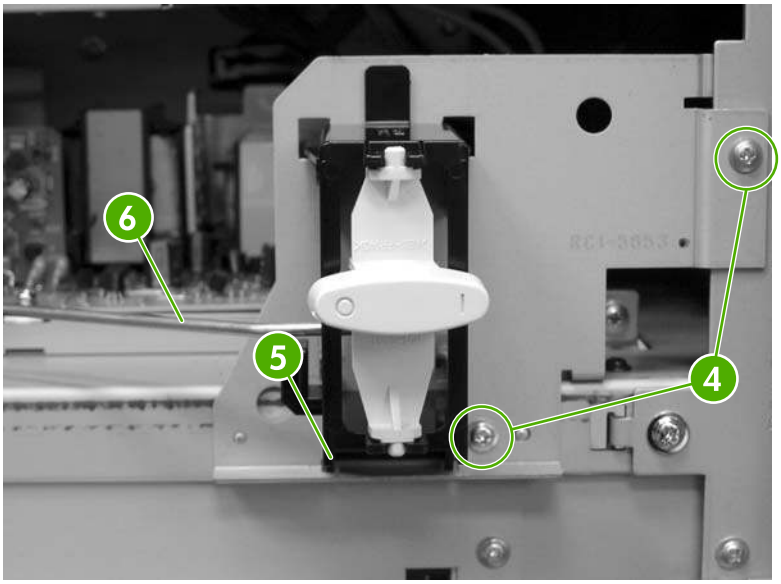


Figure 6-250 Remove the low-voltage power supply PCB (4 of 9)

7. Unhook the claws (callout 7), and remove the rod guides (callout 8).

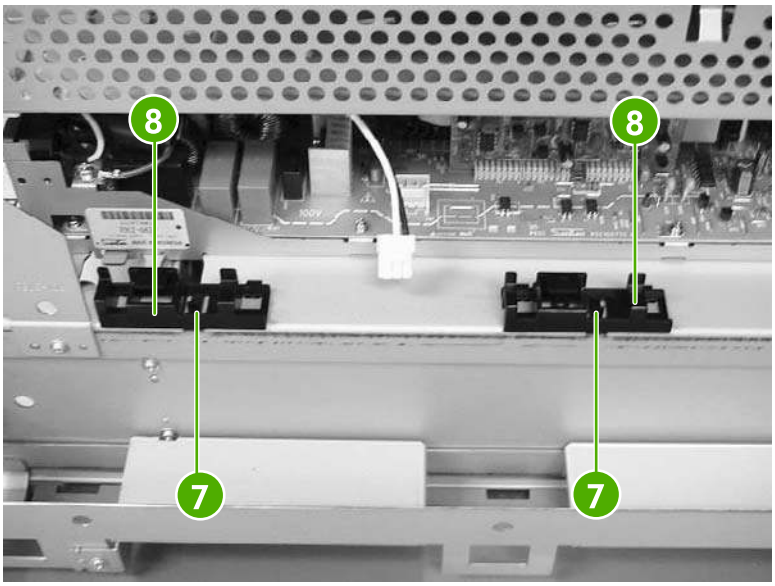


Figure 6-251 Remove the low-voltage power supply PCB (5 of 9)

8. Remove the link (callout 9) by turning it clockwise and lifting it up and out.

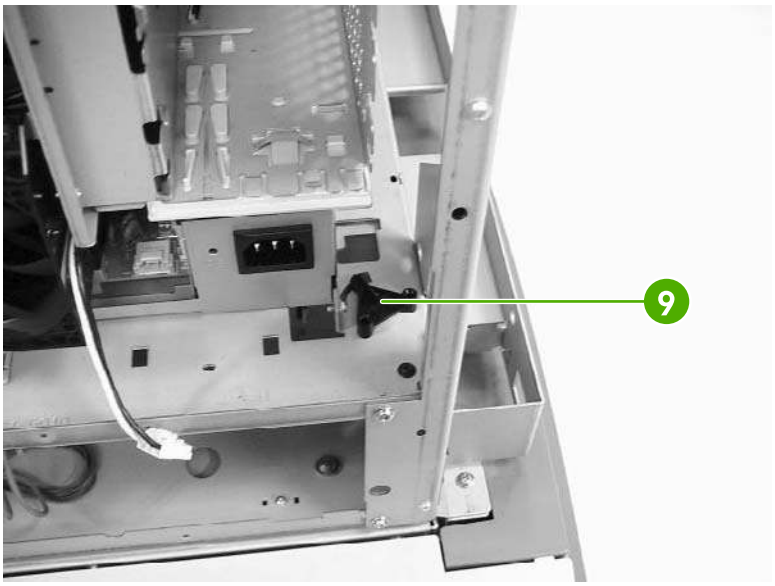


Figure 6-252 Remove the low-voltage power supply PCB (6 of 9)

9. Remove the rear link arm (callout 10), unhook the cable (callout 11), and remove the rod guide (callout 12).

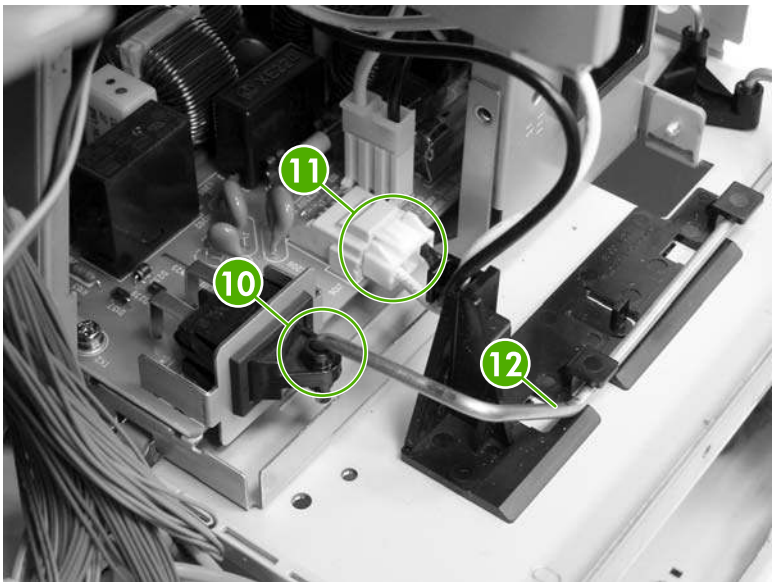


Figure 6-253 Remove the low-voltage power supply PCB (7 of 9)

10. Disconnect the four connectors (callout 13).

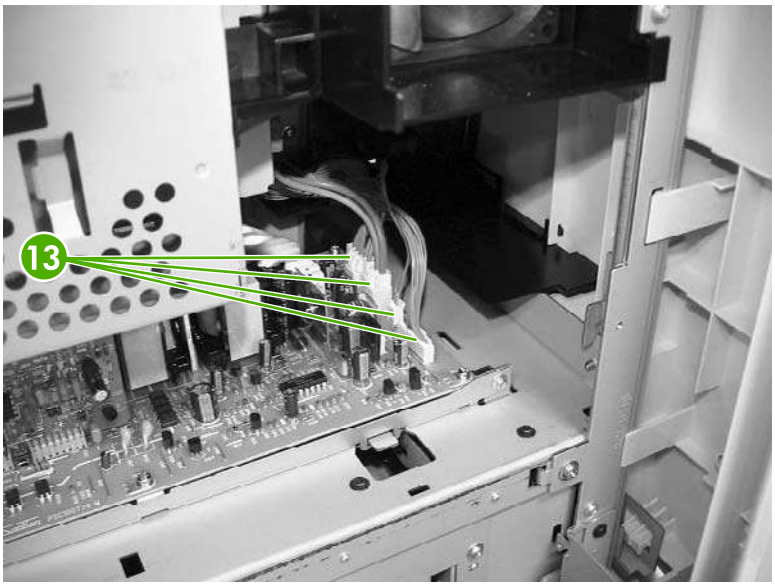


Figure 6-254 Remove the low-voltage power supply PCB (8 of 9)

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.

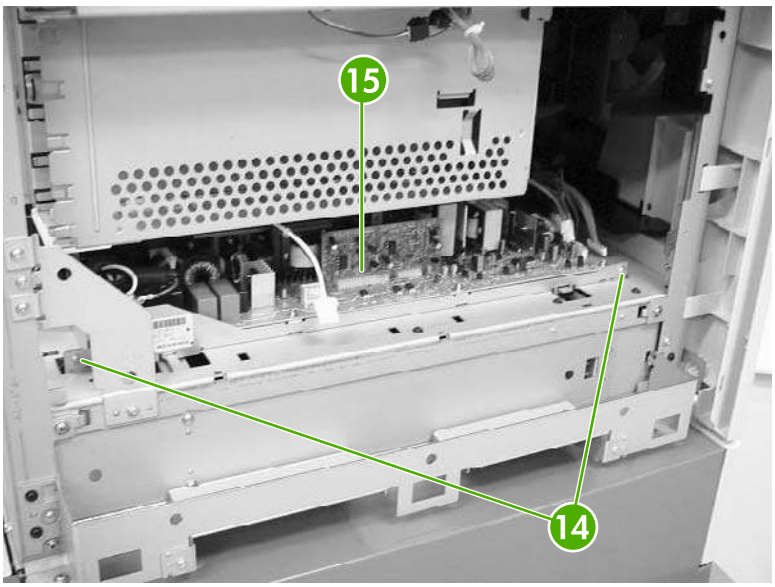


Figure 6-255 Remove the low-voltage power supply PCB (9 of 9)

Memory controller PCB

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 293.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover. See Front cover assembly on page 297.
5. Remove the delivery fan. See Delivery fan on page 376.
6. Remove the cartridge fan. See Cartridge fan on page 373.
7. Remove the DC controller PCB. See DC controller PCB on page 384.
8. Remove the laser scanner assembly. See Laser/scanner components on page 343.
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).

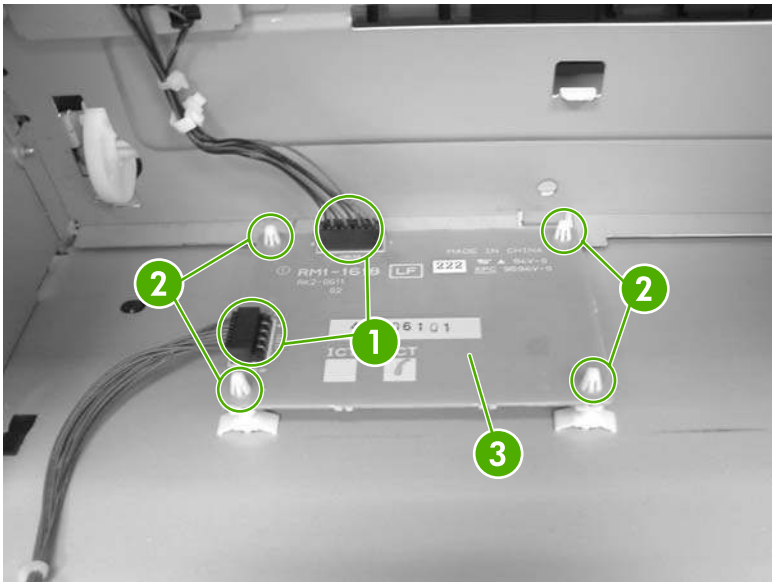


Figure 6-256 Remove the memory controller PCB

Sub power supply PCB

1. Remove the rear cover assembly. See Rear cover assembly on page 294.
2. Remove the sub power supply fan. See Sub power supply fan on page 374.
3. Disconnect the four connectors (callout 1).

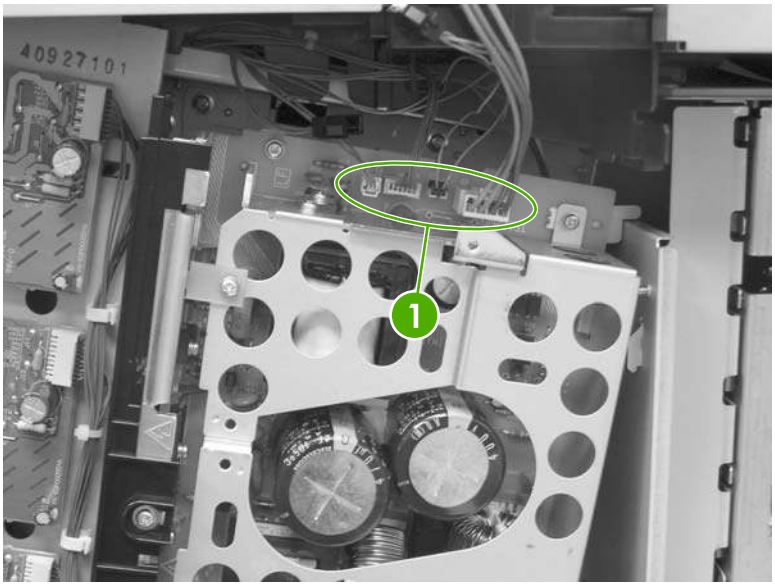


Figure 6-257 Remove the sub power supply PCB (1 of 4)

4. Disconnect the connector (callout 2).

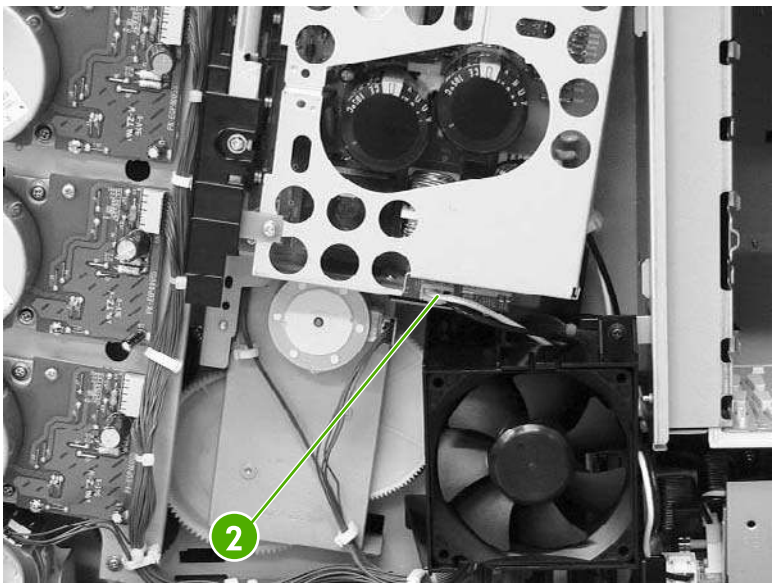


Figure 6-258 Remove the sub power supply PCB (2 of 4)

5. Remove the lower screw (callout 3). Note that this screw is recessed.

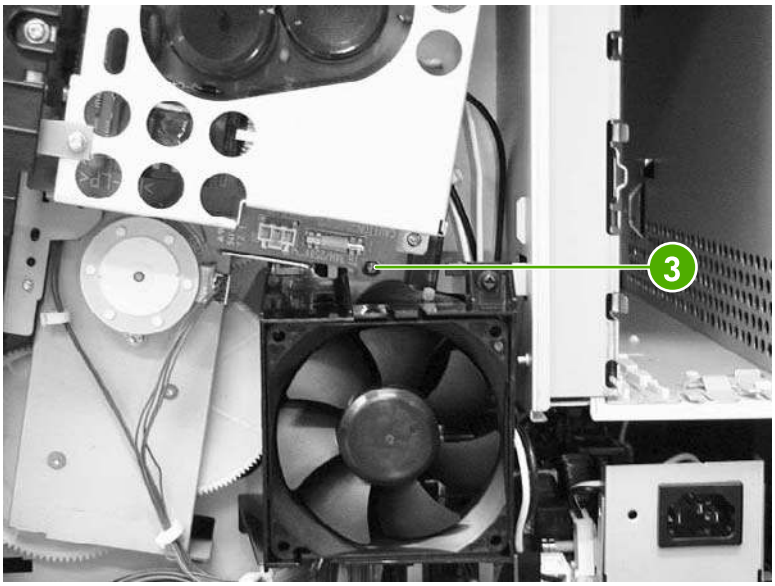


Figure 6-259 Remove the sub power supply PCB (3 of 4)

6. Remove the upper two screws (callout 4), and then remove the sub power supply PCB assembly (callout 5).

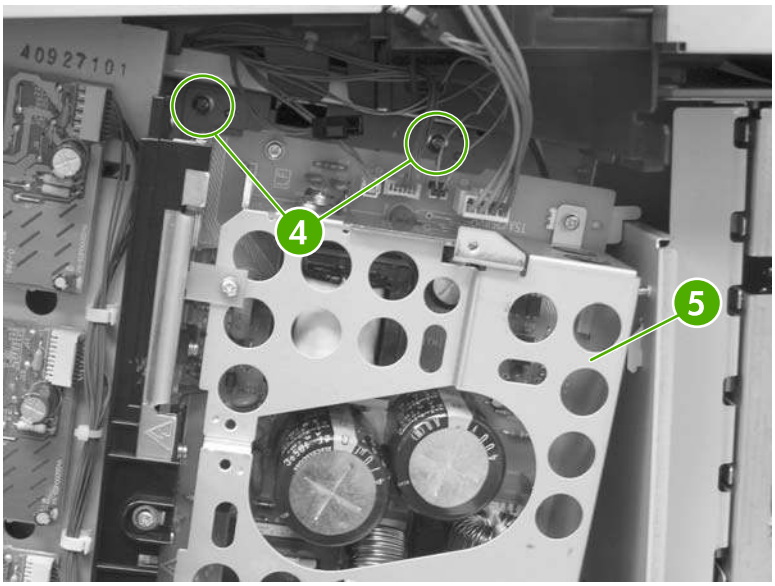


Figure 6-260 Remove the sub power supply PCB (4 of 4)

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 294.
2. Disconnect the four connectors (callout 1). Remove the three screws (callout 2), and then remove the fan drive PCB (callout 3).

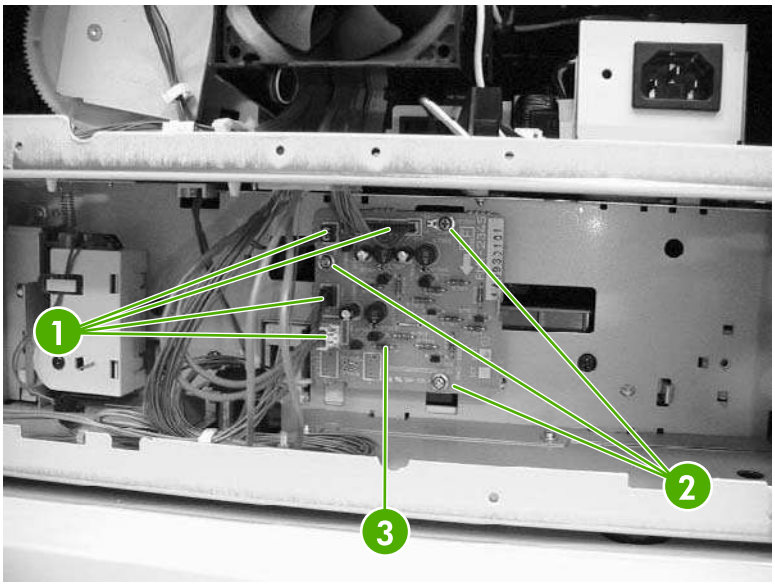


Figure 6-261 Remove the fan drive PCB

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 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 270.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover. See Front cover assembly on page 297.
5. Remove the high-voltage supply PCB. See High-voltage power supply PCB on page 389.
6. Remove the toner level PCB. See Toner level PCB on page 389.
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).

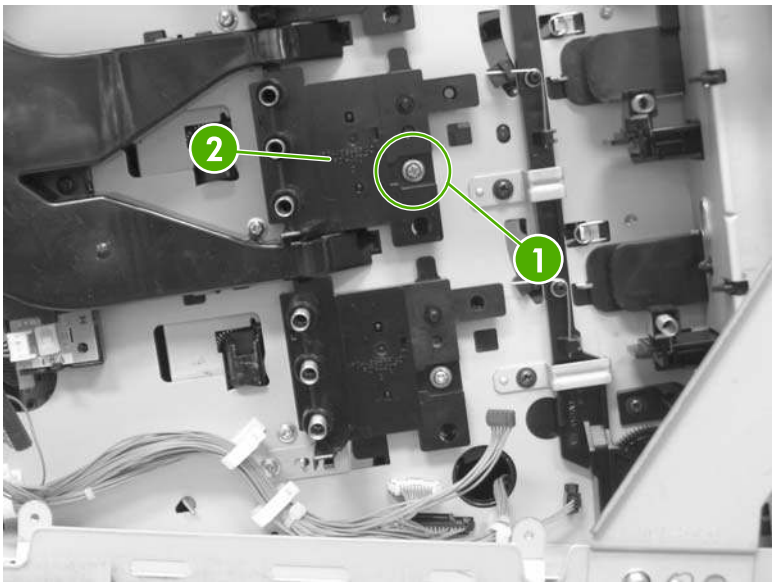


Figure 6-262 Remove the high-voltage contacts

E-label memory contacts and cable

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 270.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover. See Front cover assembly on page 297.
5. Remove the delivery fan. See Delivery fan on page 376.
6. Remove the cartridge fan. See Cartridge fan on page 373.
7. Remove the DC controller PCB. See DC controller PCB on page 384.
8. Remove the power supply fan. See Power supply fan on page 371.
9. Remove the low-voltage supply PCB. See Low-voltage power supply PCB on page 395.
10. Remove the laser/scanner assembly. See Laser/scanner components on page 343.
11. Disconnect the connectors (callout 1) and remove the eight screws (callout 2).

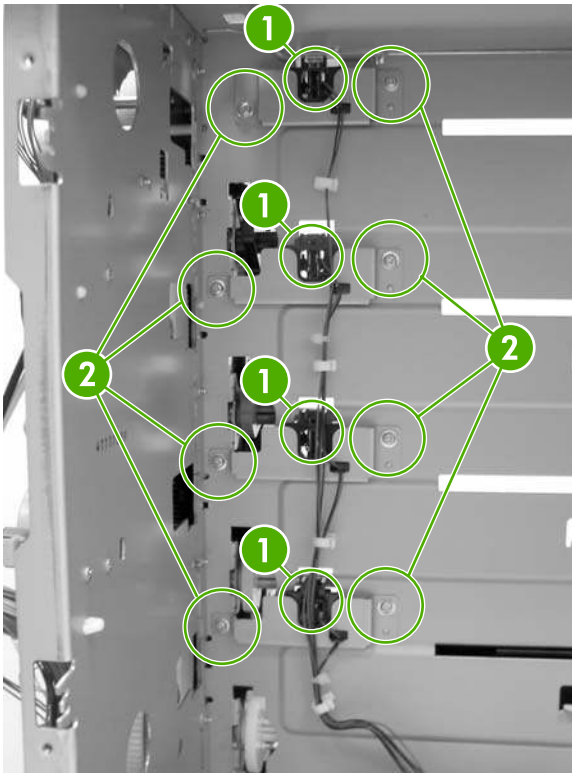


Figure 6-263 Remove the E-label contacts (1 of 2)

12. Lift the metal stay up and out (callout 3).

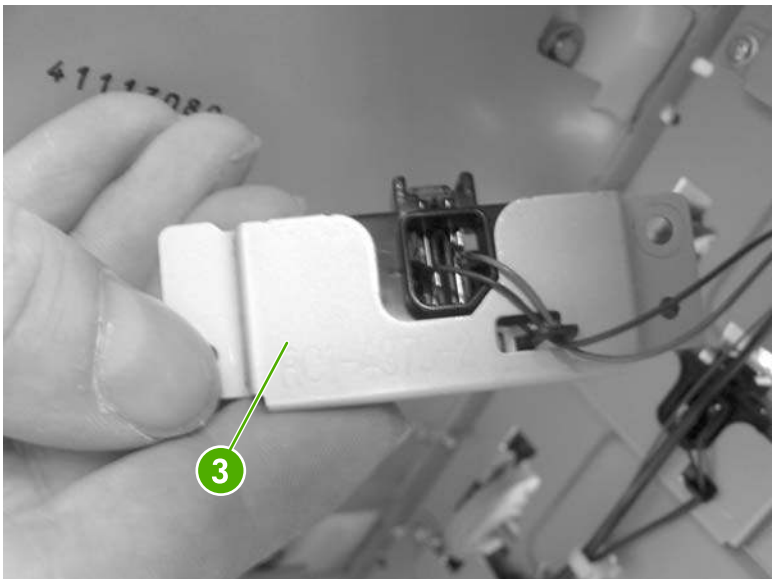


Figure 6-264 Remove the E-label contacts (2 of 2)

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 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 270.
3. Remove the left cover. See Left cover assembly on page 296.
4. Using a flat-blade screwdriver, pry the switch assembly loose as shown.

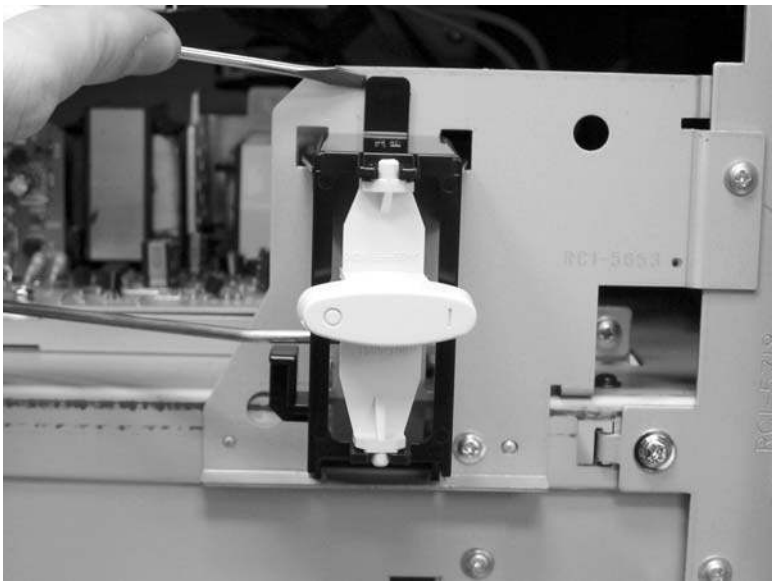


Figure 6-265 Remove the power switch (1 of 3)

5. Lift the power switch assembly up and rotate it outward.

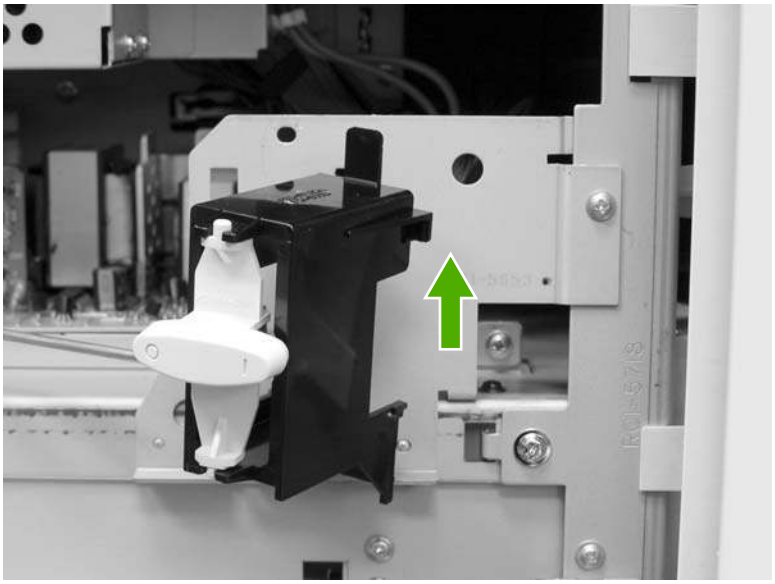


Figure 6-266 Remove the power switch (2 of 3)

6. Remove the rod from the switch assembly.

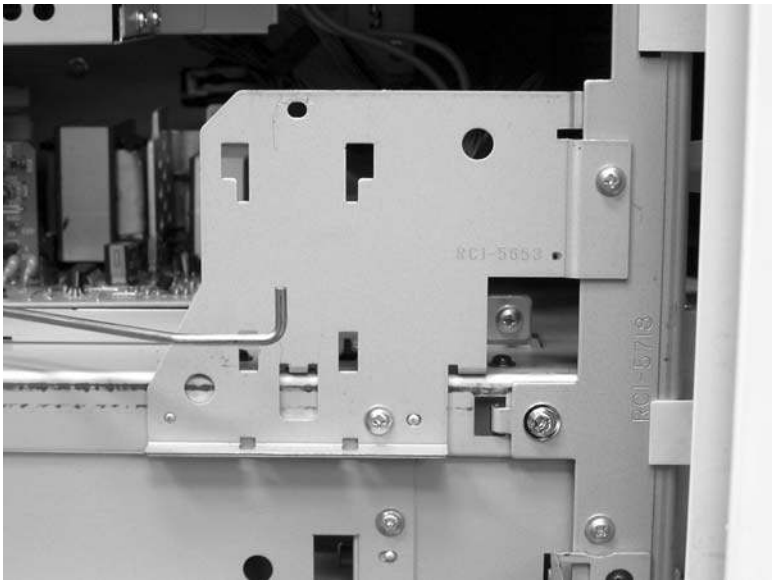


Figure 6-267 Remove the power switch (3 of 3)

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 294.
2. Remove three screws (callout 1) and remove the corner plate.

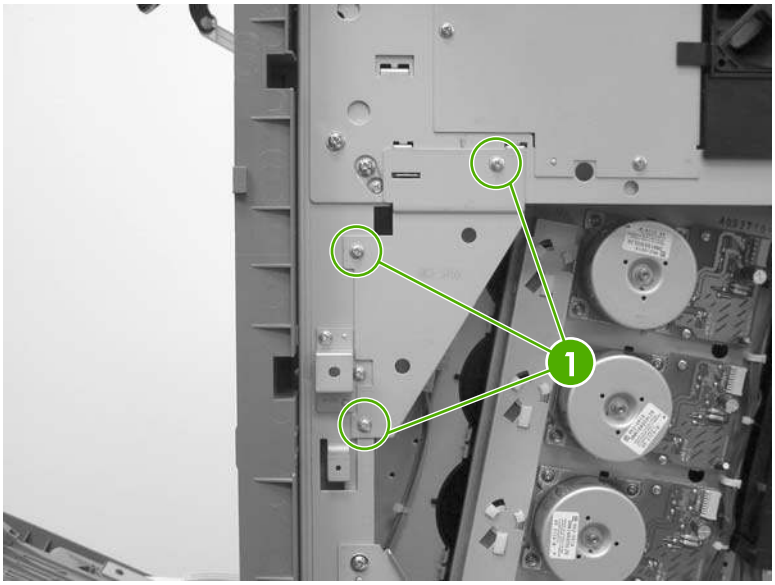


Figure 6-268 Remove the door-open switch assembly (1 of 3)

3. Remove two screws (callout 2) to release the door-open switch.

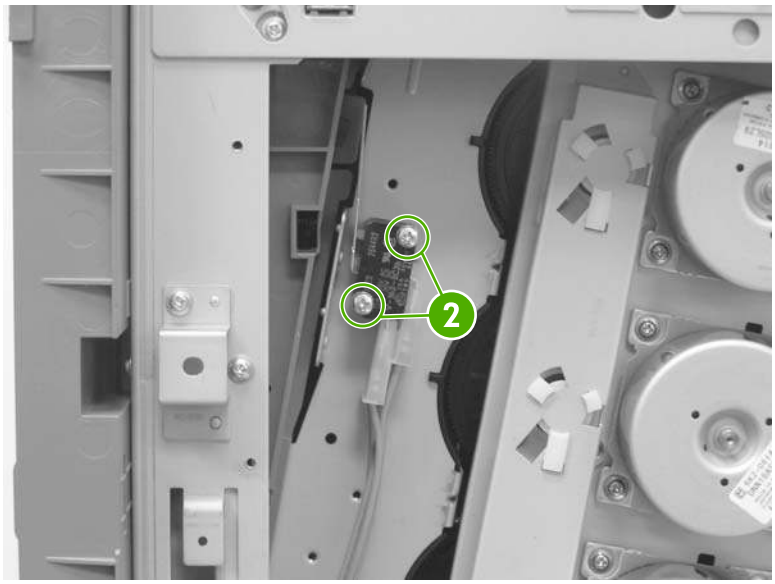


Figure 6-269 Remove the door-open switch assembly (2 of 3)

4. Disconnect four connectors callout 3).

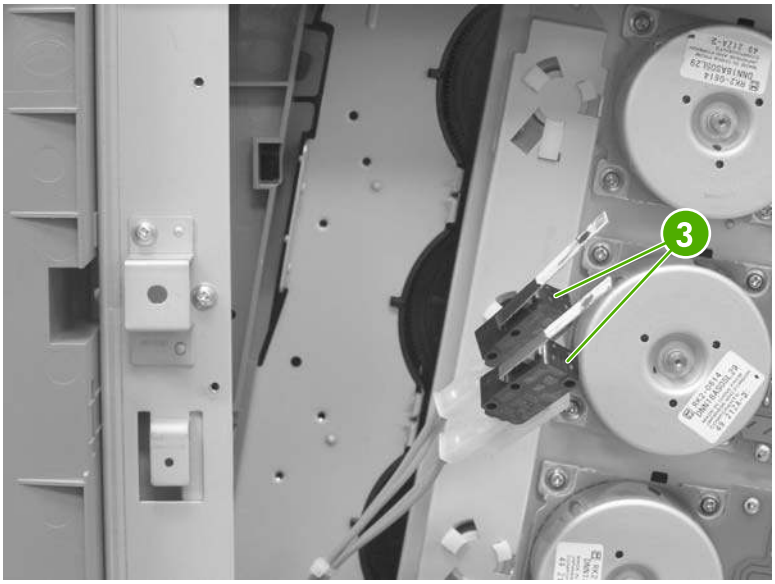


Figure 6-270 Remove the door-open switch assembly (3 of 3)

Environment sensor

1. Remove the rear cover. See Rear cover assembly on page 294.
2. Remove the face-down tray assembly. See Face-down tray assembly on page 270.
3. Remove the left cover. See Left cover assembly on page 296.
4. Remove the front cover. See Front cover assembly on page 297.
5. Remove the high-voltage supply PCB. See High-voltage power supply PCB on page 389.

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).

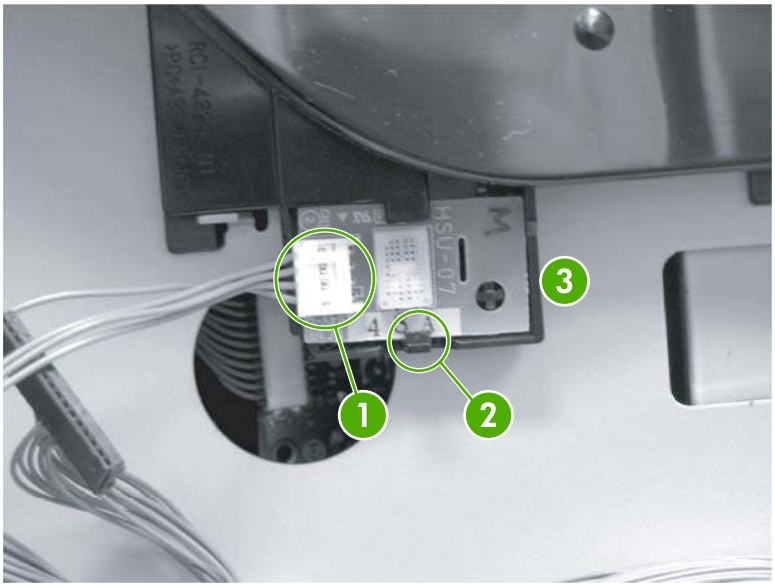


Figure 6-271 Remove the environment sensor

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 glass
- Optical assembly
- Scanner bulb
- Inverter PCB
- Scanner fan
- Scanner home position sensor
- 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).

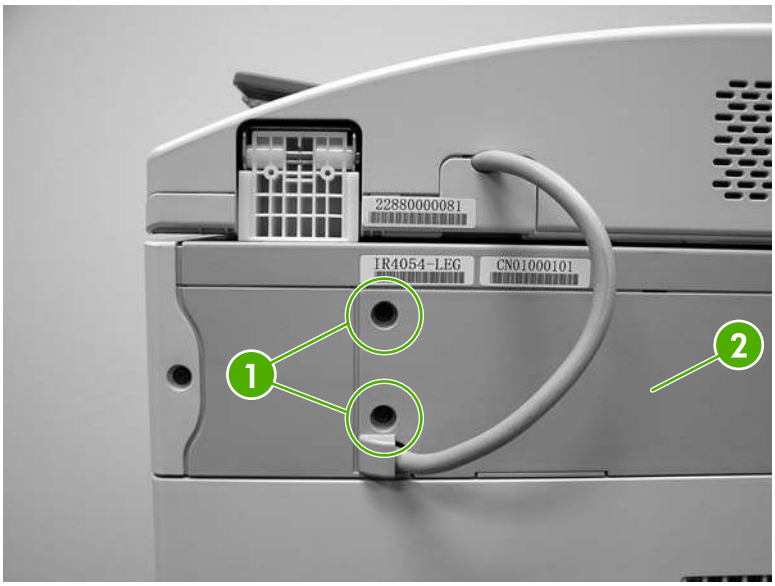


Figure 6-272 Remove the ADF assembly (1 of 3)

2. Remove one grounding screw (callout 3), disconnect two cables (callout 4), and remove the cable (callout 5) from the cable stays.

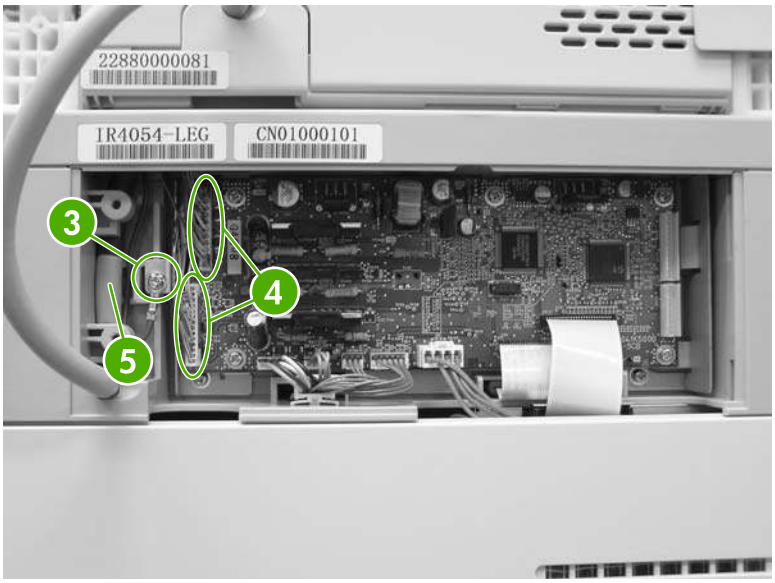


Figure 6-273 Remove the ADF assembly (2 of 3)

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 6-274 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. See Calibrating the scanner on page 106.

Top covers

1. Remove the ADF assembly. See ADF assembly on page 411.
2. Remove the control panel. See Control panel on page 250.
3. Use a flat-blade screwdriver to pry off the outer frame.

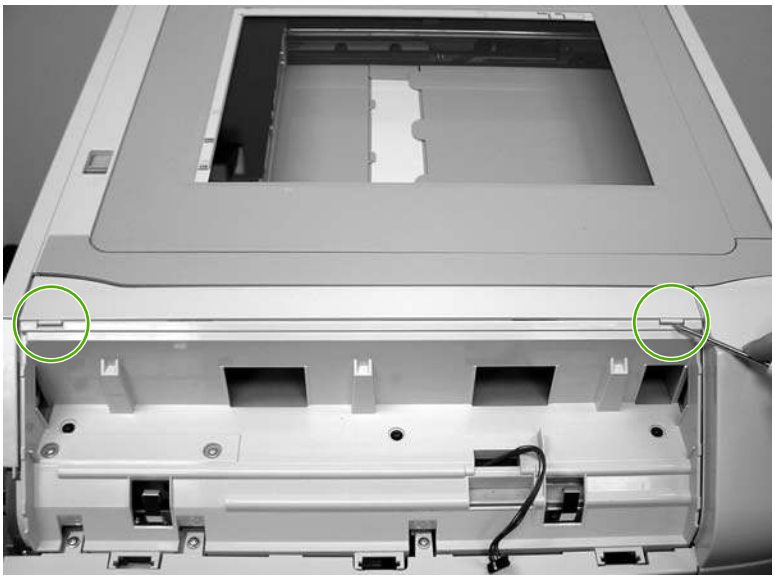


Figure 6-275 Remove the top covers (1 of 2)

4. Use a flat-blade screwdriver to pry off the inner frame.

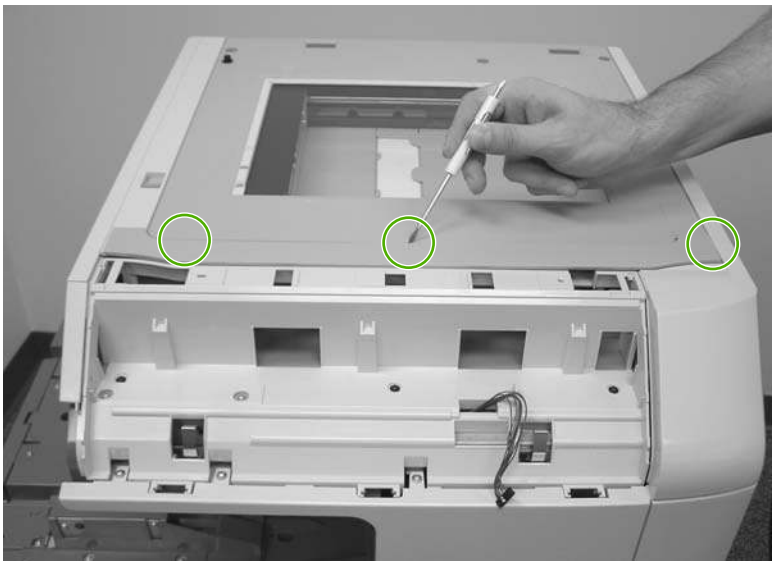


Figure 6-276 Remove the top covers (2 of 2)

Scanner assembly

1. Remove the ADF assembly. See ADF assembly on page 411.
2. Remove the control panel. See Control panel on page 250.
3. Remove one screw (callout 1), and remove the right scanner cover.

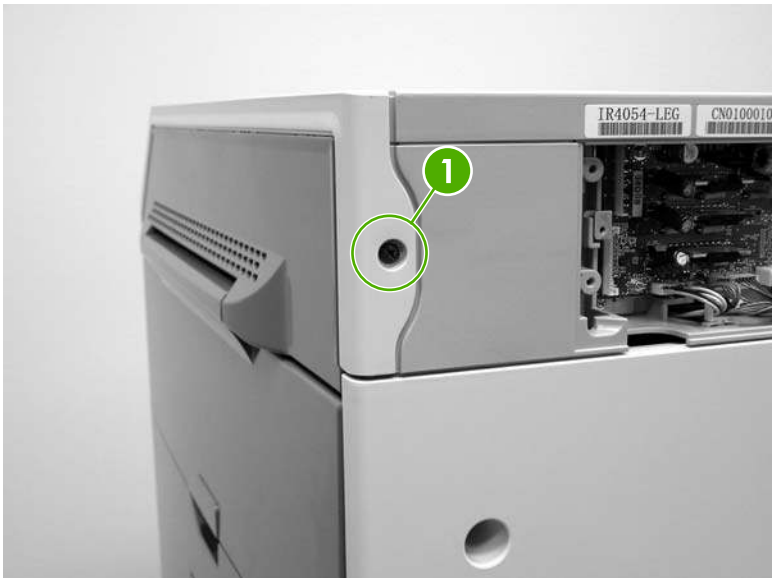


Figure 6-277 Remove the scanner assembly (1 of 5)

4. Remove two screws (callout 2) and remove the left scanner cover.

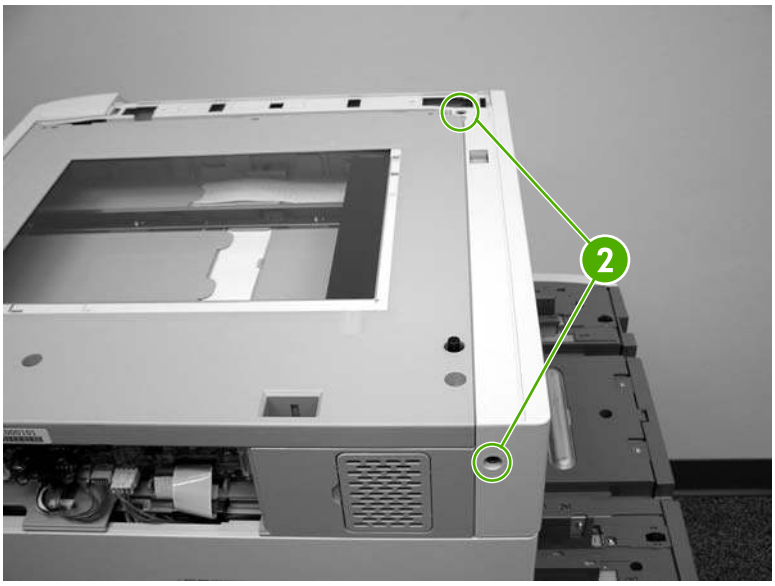


Figure 6-278 Remove the scanner assembly (2 of 5)

5. Disconnect one flat cable (callout 3) and one connector (callout 4).

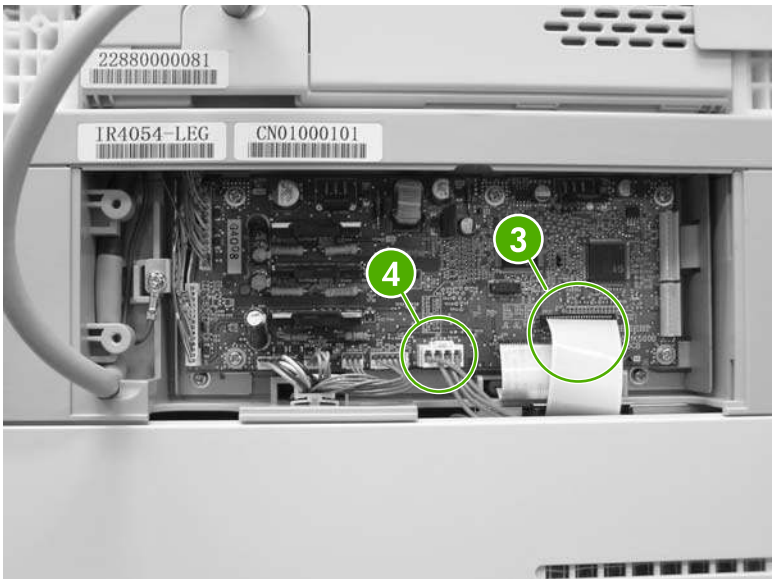


Figure 6-279 Remove the scanner assembly (3 of 5)

6. Remove three screws from the left side of the scanner (callout 5).

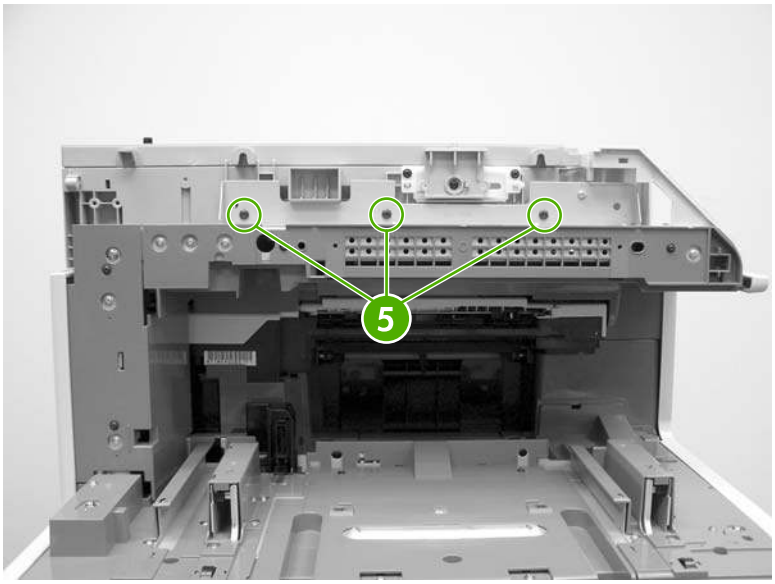


Figure 6-280 Remove the scanner assembly (4 of 5)

7. Slide the scanner to the right and lift it up and off the MFP.

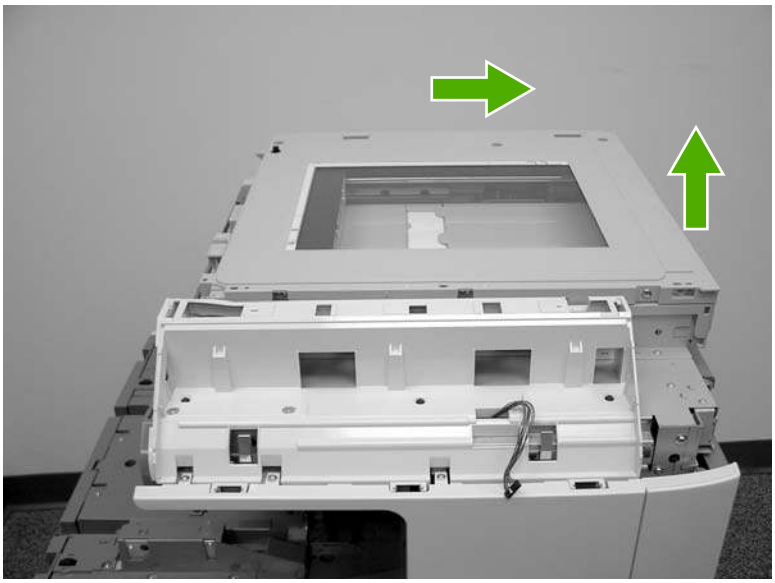


Figure 6-281 Remove the scanner assembly (5 of 5)

Scanner left cover

1. Remove the ADF assembly. See ADF assembly on page 411.
2. Remove the control panel and cover. See Control panel on page 250.
3. Remove the scanner top covers. See Top covers on page 413.
4. Move the scanner lock switch into the locked position.

Figure 6-282 Remove the scanner left cover (1 of 2)

5. Remove two screws.

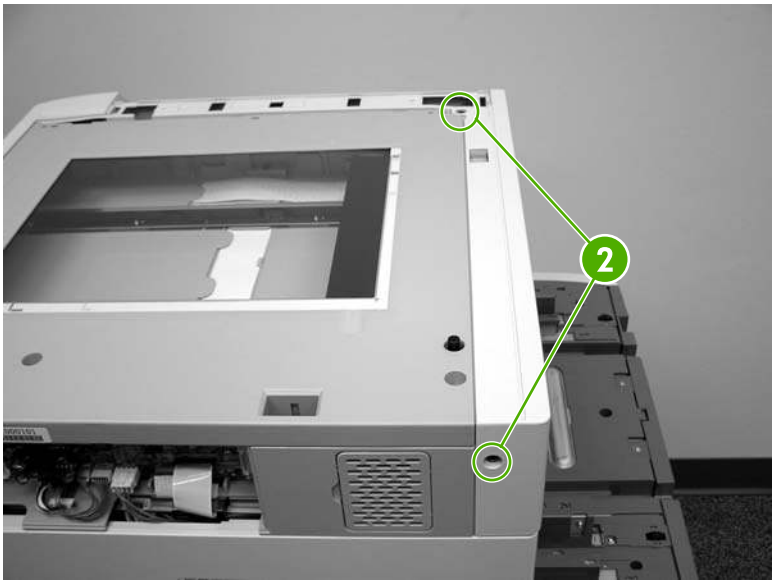


Figure 6-283 Remove the scanner left cover (2 of 2)

6. Lift off the ADF left top cover.

Scanner right cover

1. Remove the ADF assembly. See ADF assembly on page 411.
2. Remove the control panel and cover. See Control panel on page 250.
3. Remove the scanner frames. See Top covers on page 413.
4. Move the scanner lock switch into the locked position.

Figure 6-284 Remove the scanner right cover (1 of 2)

5. Remove one screw (callout 1).

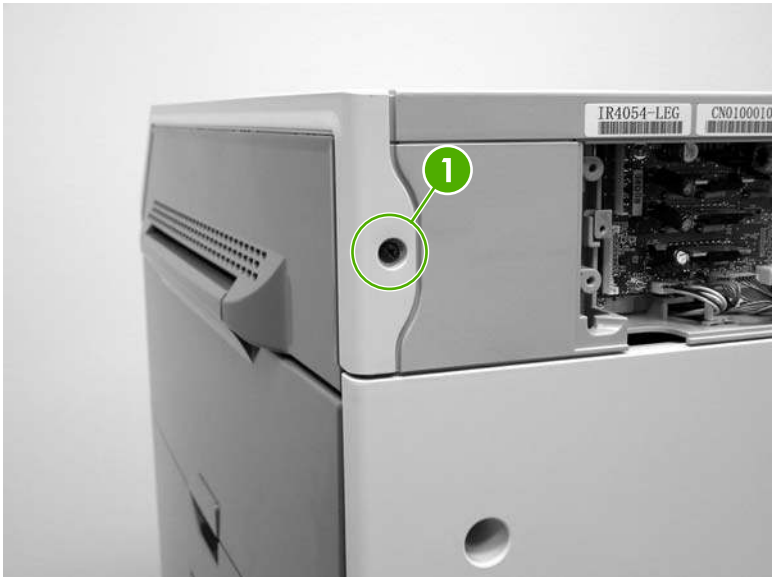


Figure 6-285 Remove the scanner right cover (2 of 2)

6. Pull toward the front of the MFP and lift off the scanner right cover.

Scanner glass

1. Remove the ADF assembly. See ADF assembly on page 411.
2. Remove the scanner left cover. See Scanner left cover on page 416.
3. Remove the scanner right cover. See Scanner right cover on page 417.
4. Remove three screws from the top of the scanner (callout 1) and three screws from the front of the scanner (callout 2). Lift the scanner glass frame up and off the MFP.

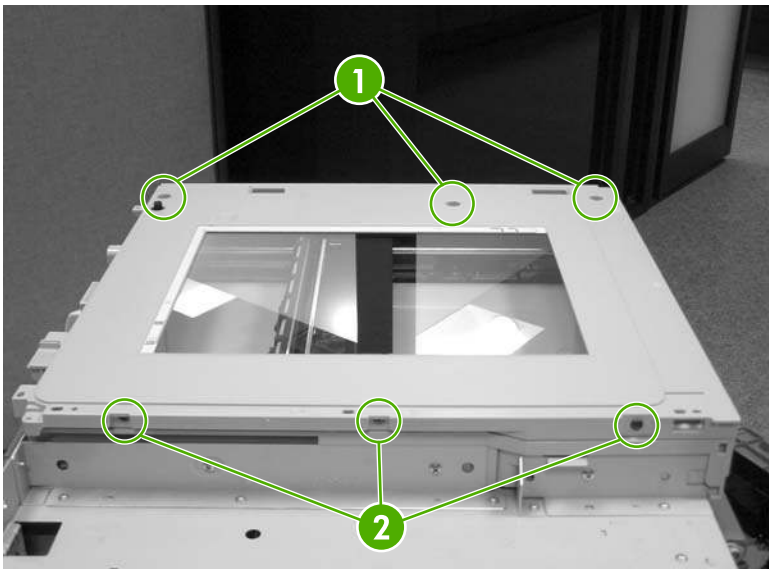


Figure 6-286 Remove the scanner glass (1 of 2)

Optical assembly

1. Remove the following assemblies:
   - ADF assembly. See ADF assembly on page 411.
   - Control panel. See Control panel on page 250.
   - Scanner glass. See Scanner glass on page 418.

   CAUTION Do not use lubricant on the optical assembly guide rod.

2. Remove one screw (callout 1) to release the FFC cable guide, and disconnect the FFC (callout 2).

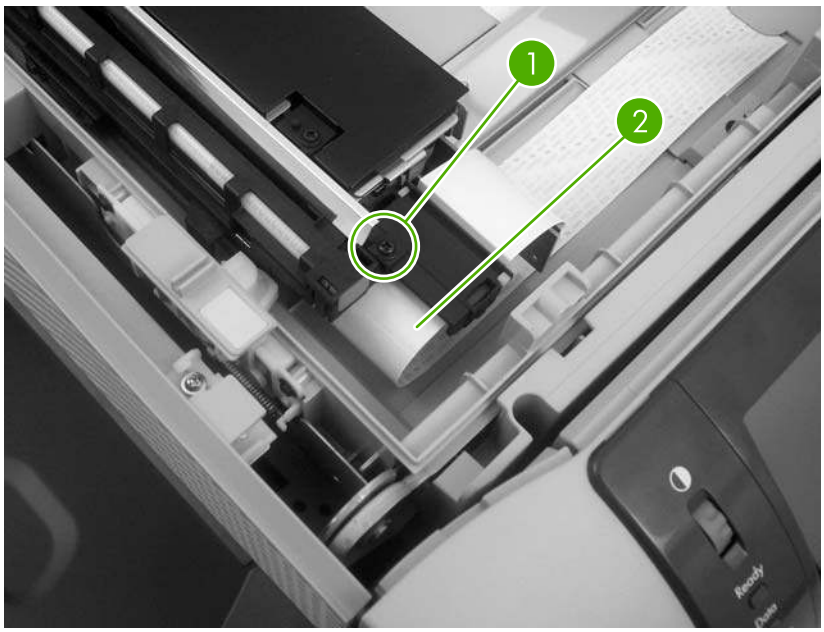


Figure 6-287 Remove the optical assembly (1 of 10)

3. Disconnect one scanner lamp connector (callout 3), and remove one grounding screw (callout 4). Remove the scanner lamp cable from the cable guide.

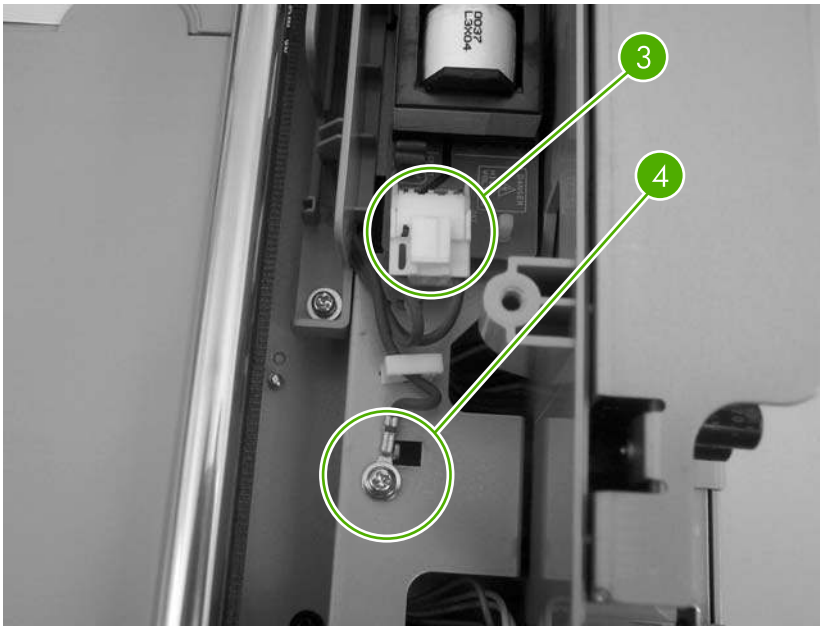


Figure 6-288 Remove the optical assembly (2 of 10)

CAUTION When reinstalling the optical assembly, make sure that the cable is correctly routed through the cable guide to ensure that the optical assembly can move freely in the scanner bed. Also note the location of the mark on the cable. When reinstalling the scanner bulb, align the mark with the grooves on the plastic frame. See Figure 6-296 Remove the optical assembly (10 of 10) on page 424.

4. Unlock the scanner.

5. Slide the optical assembly to the right and loosen one screw (callout 5) to release the tension on the drive belt.

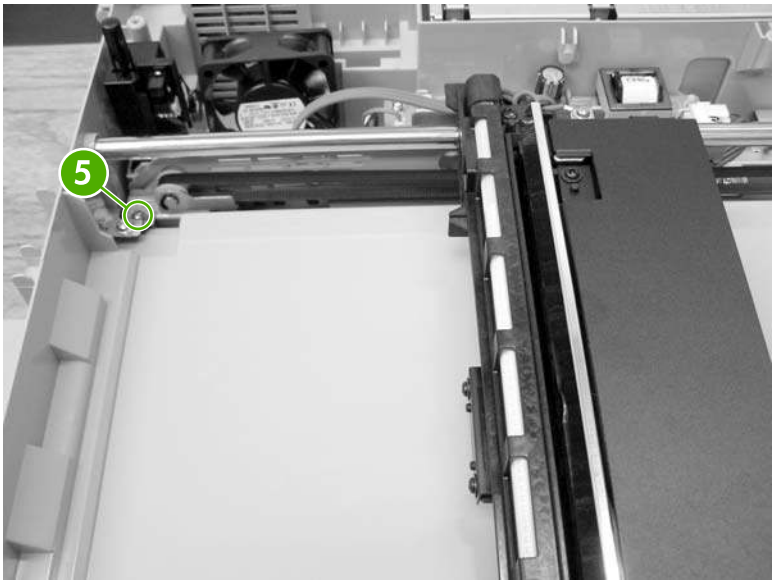


Figure 6-289 Remove the optical assembly (3 of 10)

6. Flex the side of the scanner chassis to release the optical assembly guide rod from the scanner chassis.

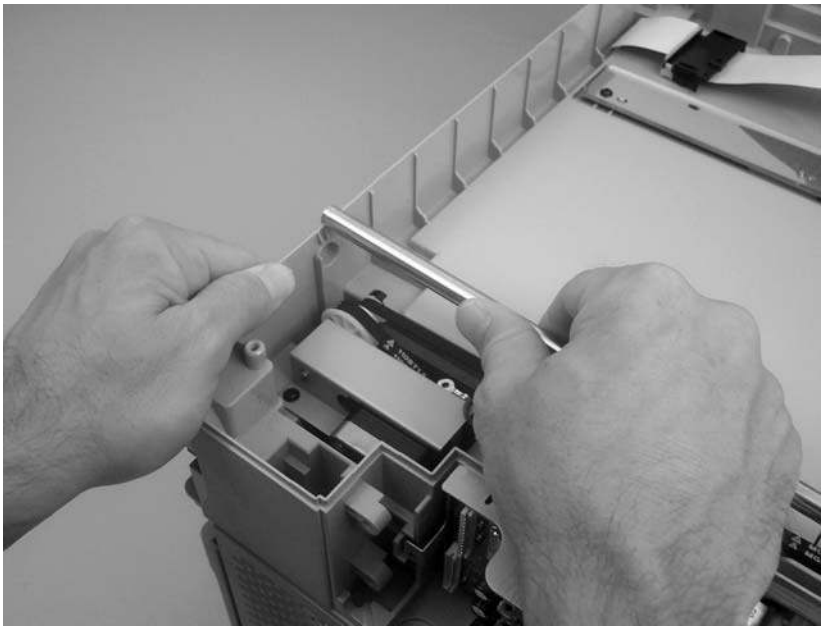


Figure 6-290 Remove the optical assembly (4 of 10)

7. Tilt the optical assembly up, and slide the guide rod out of the mounting hole in the chassis and through the optical assembly.

> **CAUTION** To avoid breaking the optical assembly sensor flag, slide the optical assembly towards the center of the guide rod before tilting the optical assembly up.
>
> Do not touch the lamp. Skin oils and fingerprints cause image-quality problems, and the lamp might burn and be damaged when the MFP power is turned on.

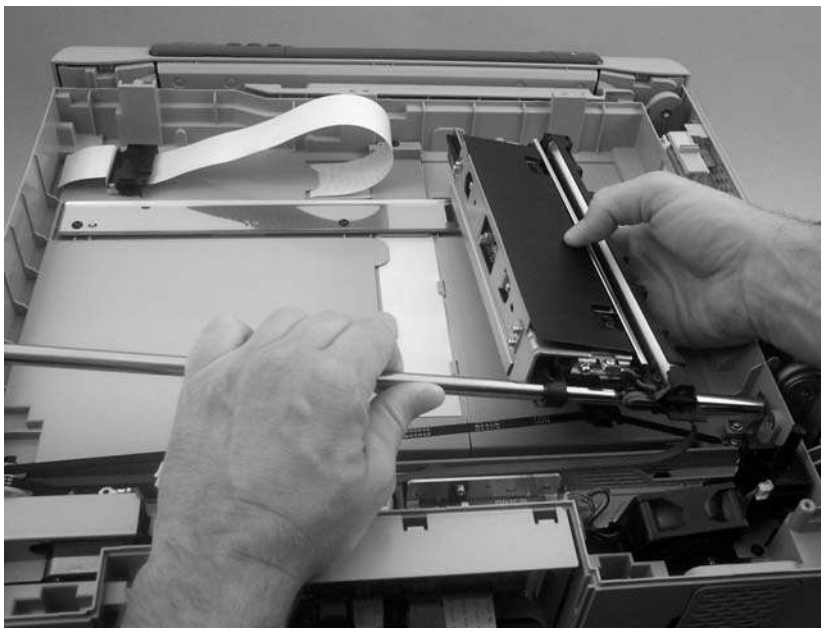


Figure 6-291 Remove the optical assembly (5 of 10)

8. Disengage and disconnect the drive belt, and then remove the optical assembly.

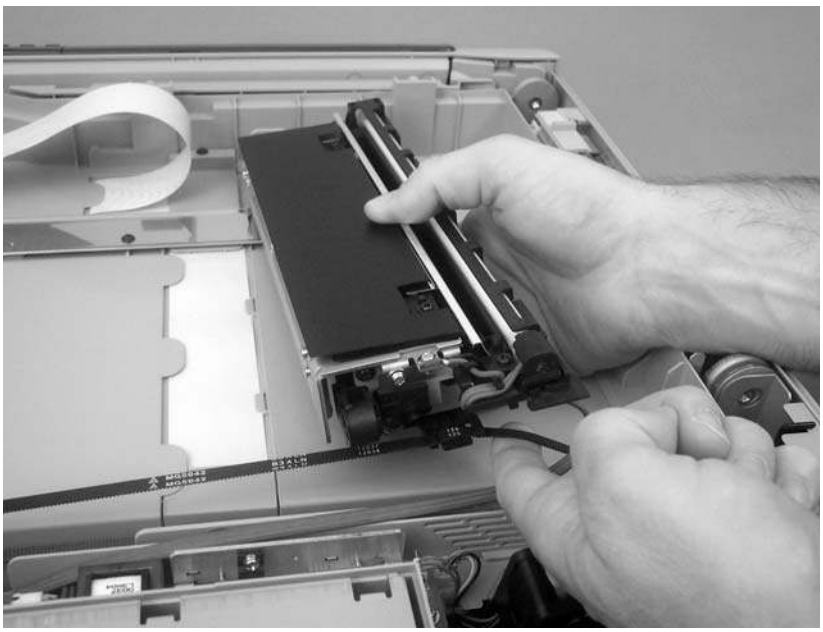


Figure 6-292 Remove the optical assembly (6 of 10)

9. When the FCC cable guide is reinstalled, make sure that the alignment hole on the guide is correctly positioned on the chassis locator pin.

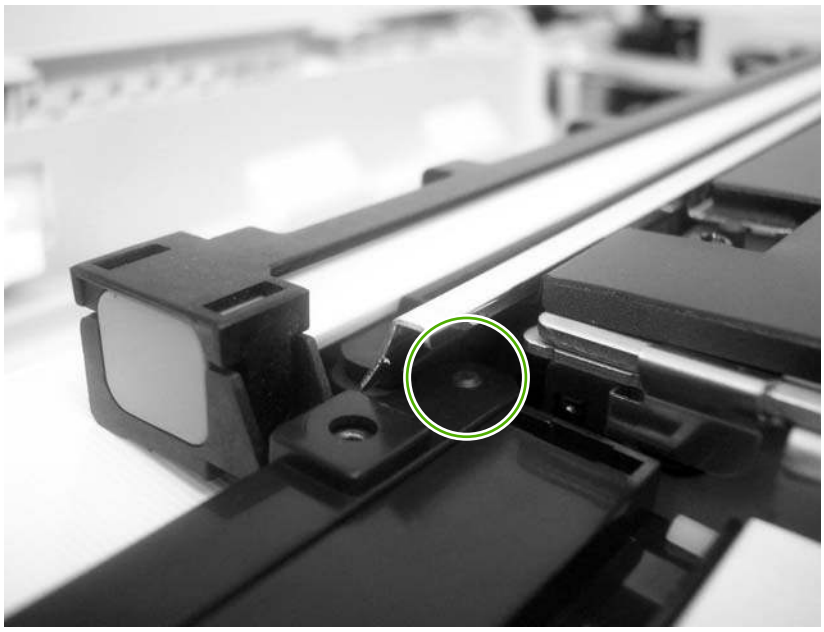


Figure 6-293 Remove the optical assembly (7 of 10)

10. To adjust the scanner belt tension, move the optical assembly to the center of the scanner assembly.

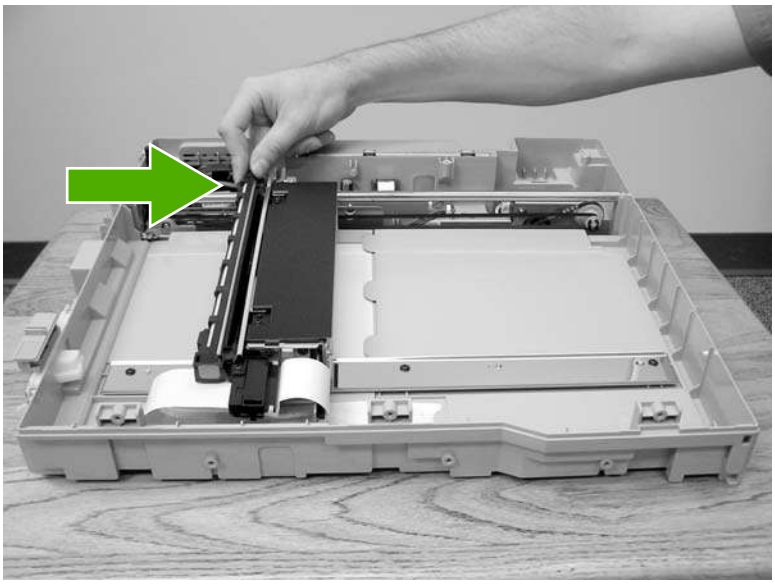


Figure 6-294 Remove the optical assembly (8 of 10)

11. Attach the belt to the carriage.

12. Loosen the screw situated below the rod (callout 6). To provide slack in the belt, push the belt tension assembly three times toward the opposing end of the bar. Push the belt tension assembly at the location shown in callout 7.

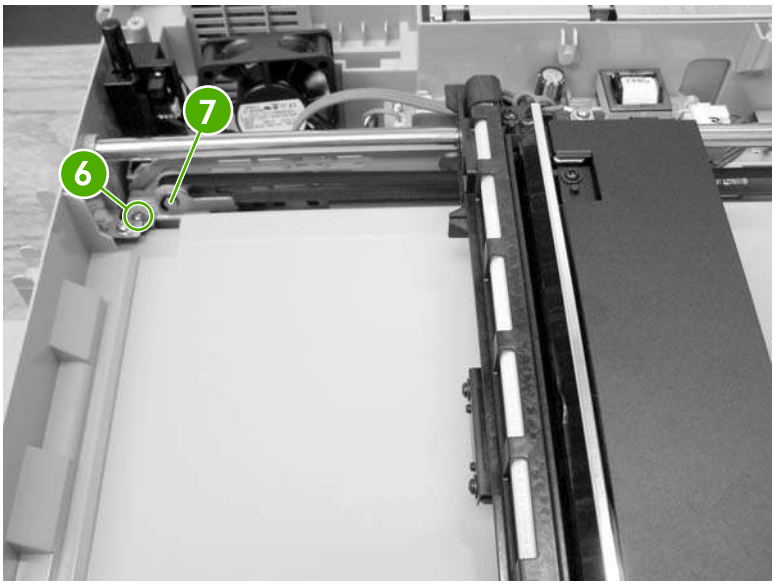


Figure 6-295 Remove the optical assembly (9 of 10)

13. Move the optical assembly to a point approximately 4 inches away from the home position sensor.

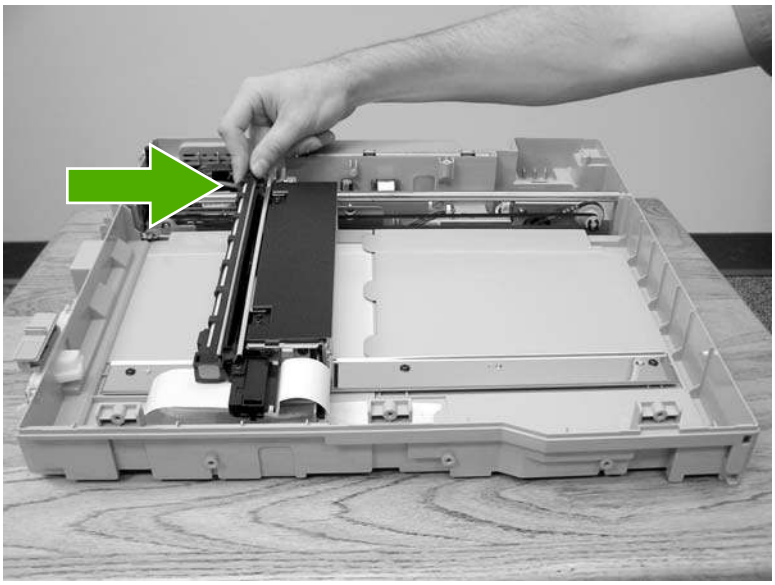


Figure 6-296 Remove the optical assembly (10 of 10)

14. To remove slack from the belt, push the belt tension assembly once in the direction of the pulley assembly. Tighten the screw.

Scanner bulb

1. Remove the following assemblies:
   - ADF assembly. See ADF assembly on page 411.
   - Control panel. See Control panel on page 250.
   - Scanner right cover. See Scanner right cover on page 417.
   - Scanner glass. See Scanner glass on page 418.
   - Optical assembly. See Optical assembly on page 419.
2. Remove the two screws (callout 1).

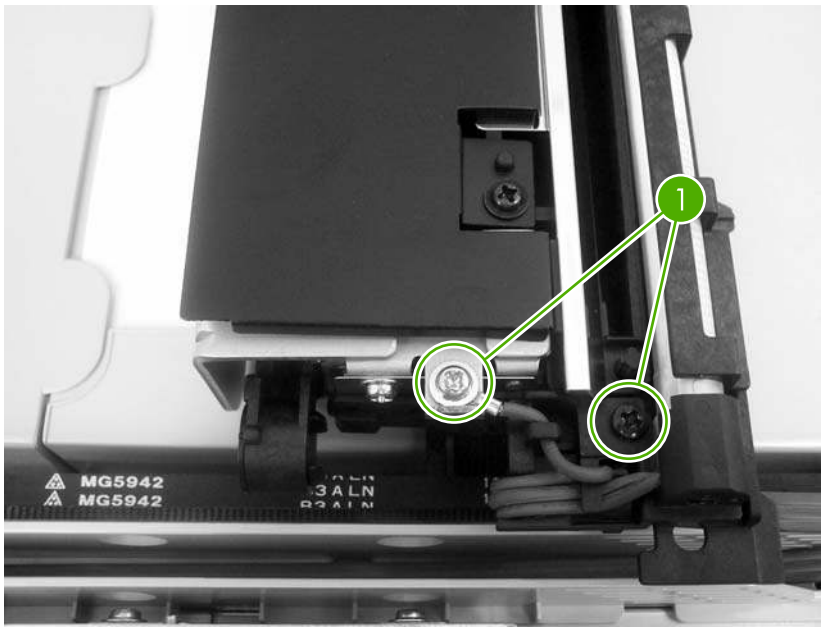


Figure 6-297 Remove the scanner bulb (1 of 3)

3. Grasp the scanner bulb, and carefully slide it out of the optical assembly (towards the cable end).

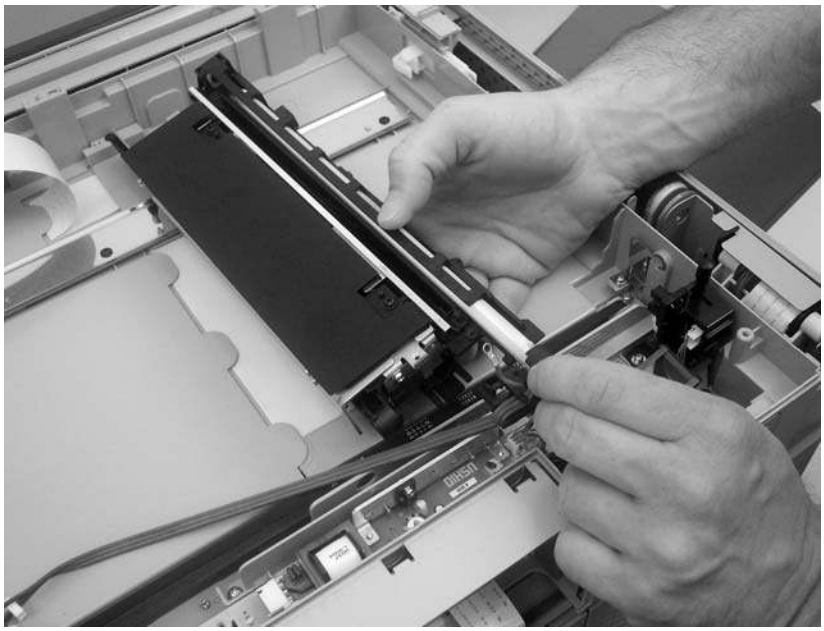


Figure 6-298 Remove the scanner bulb (2 of 3)

Hint When reinstalling the scanner bulb, align the mark on the cable with the grooves on the plastic frame.

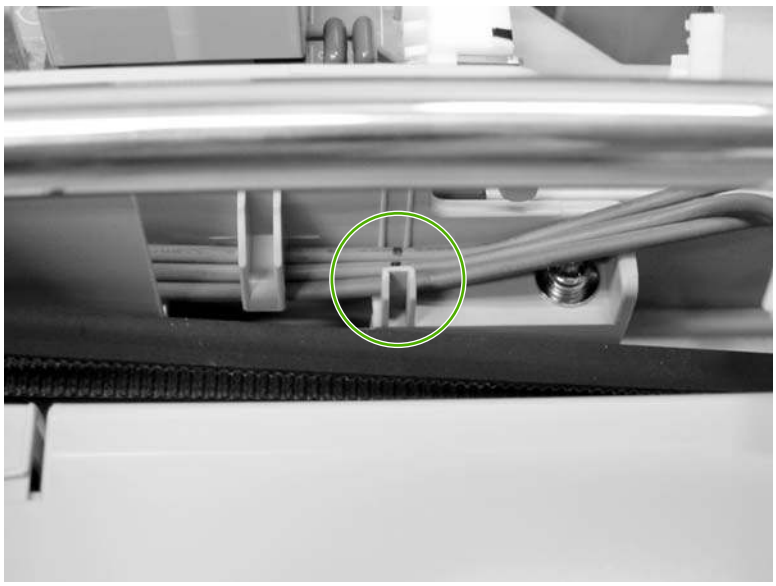


Figure 6-299 Remove the scanner bulb (3 of 3)

Inverter PCB

1. Remove the following assemblies:
   - ADF assembly. See ADF assembly on page 411.
   - Control panel. See Control panel on page 250.
   - Scanner right cover. See Scanner right cover on page 417.
   - Scanner glass. See Scanner glass on page 418.
2. Remove two connectors (callout 1) and three screws (callout 2). Use needle-nose pliers to squeeze the PCB retainer (callout 3), and remove the inverter PCB.

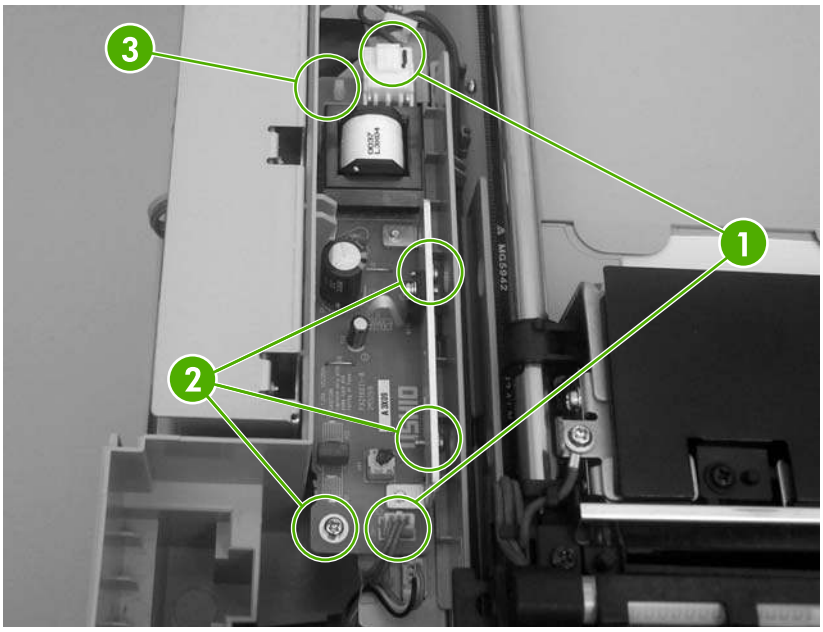


Figure 6-300 Remove the inverter PCB

Hint When reinstalling the inverter PCB, slide the assembly in until it engages the pins and then snap it downward into place.

Scanner fan

1. Remove the following assemblies:
   - ADF assembly. See ADF assembly on page 411.
   - Control panel. See Control panel on page 250.
   - Scanner glass. See Scanner glass on page 418.
2. Remove one screw (callout 1), and then remove one connector (callout 2). Remove the cable from the cable stay and remove the scanner fan.

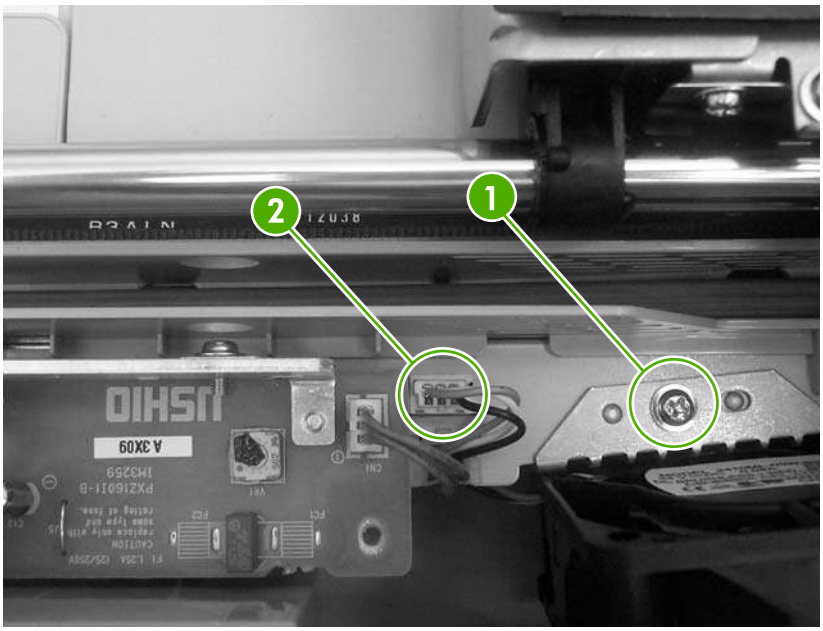


Figure 6-301 Remove the scanner fan

Scanner home position sensor

1. Remove the following assemblies:
   - ADF assembly. See ADF assembly on page 411.
   - Control panel. See Control panel on page 250.
   - Scanner glass. See Scanner glass on page 418.

2. Remove one screw (callout 1), and then disconnect two connectors (callout 2). Remove the scanner home position sensor.

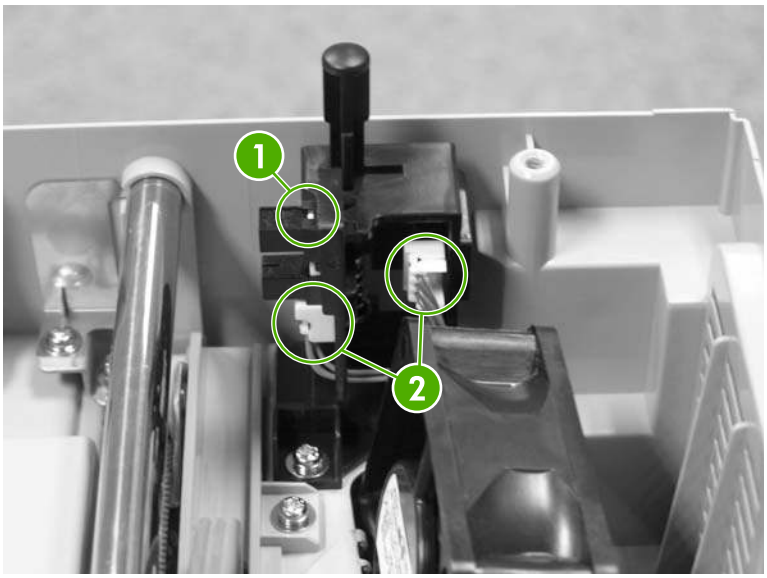


Figure 6-302 Remove the scanner home position sensor

Hint When reinstalling the scanner home position sensor, make sure that the tab at the bottom of the sensor bracket is correctly positioned in the slot in the chassis.

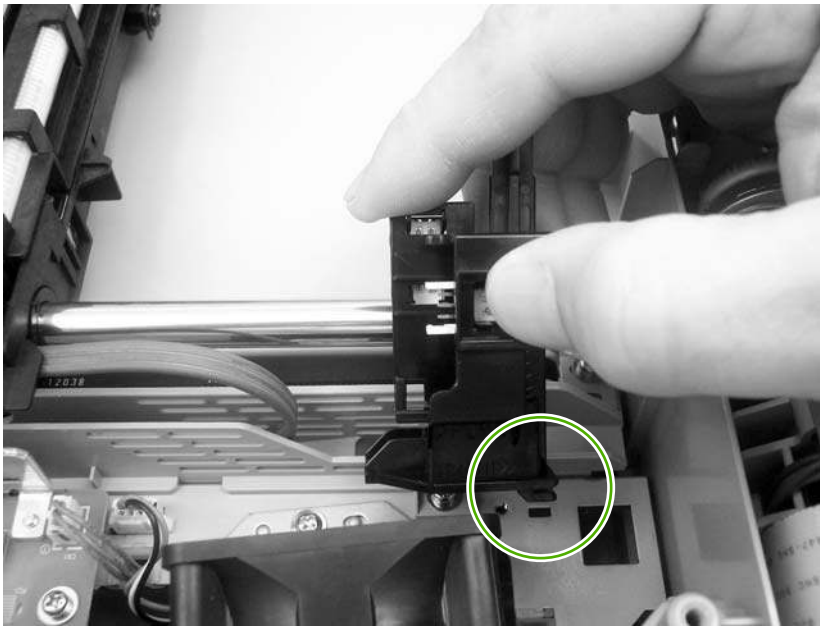


Figure 6-303 Reinstalling the scanner home position sensor

Scanner controller PCB

1. Remove two screws (callout 1), and then remove the scanner controller PCB cover.

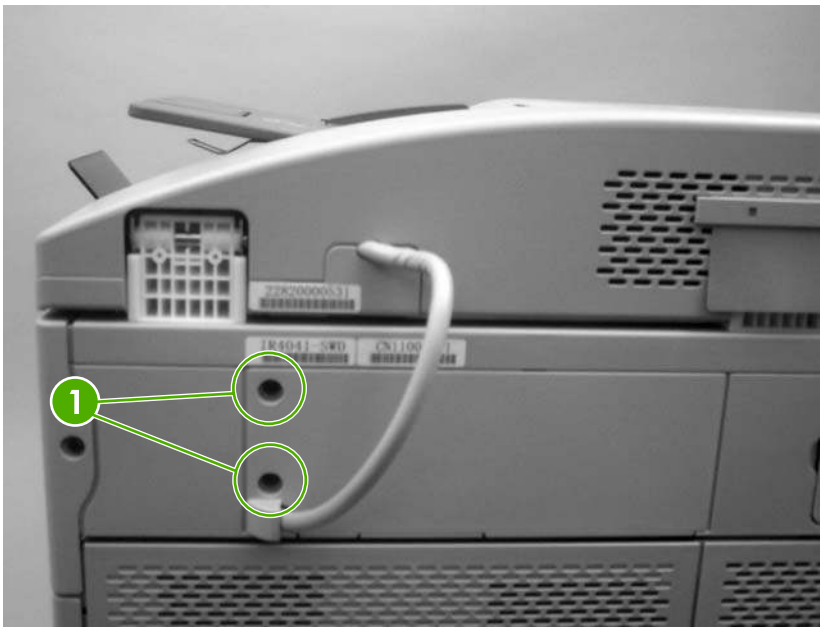


Figure 6-304 Remove the scanner controller PCB (1 of 2)

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.

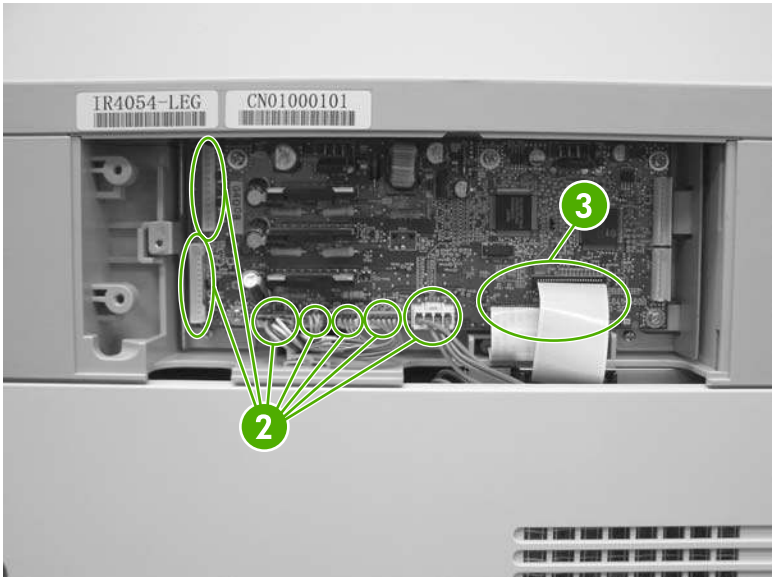


Figure 6-305 Remove the scanner controller PCB (2 of 2)

Hint 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 6-306 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.

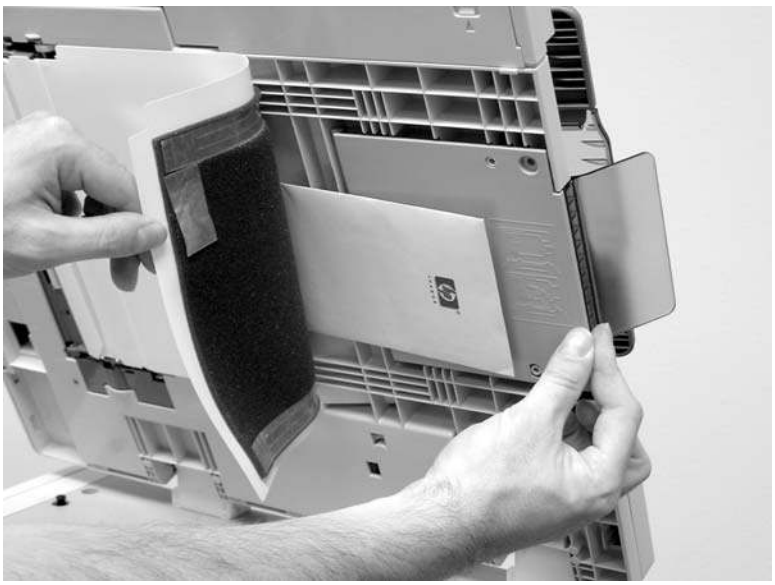


Figure 6-307 Remove the ADF output bin extension (2 of 2)

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.

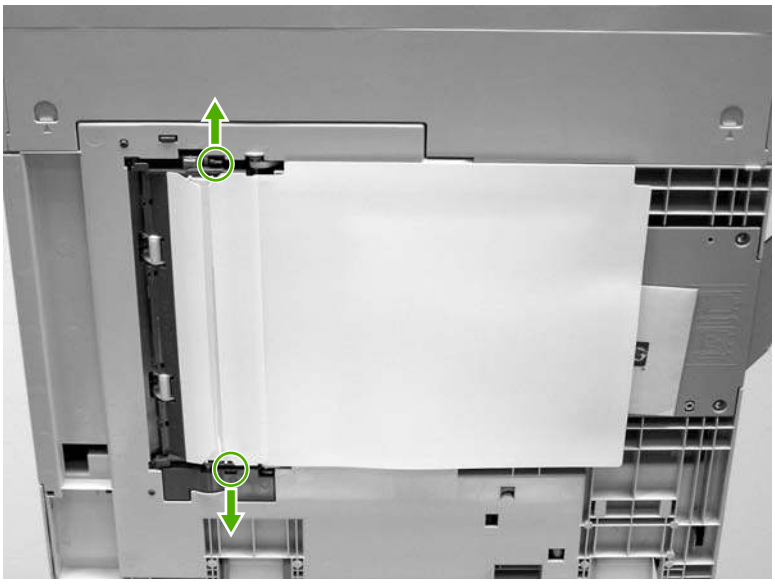


Figure 6-308 Remove the ADF white mylar backing (1 of 3)

2. Unsnap the mylar holder assembly hinges from the hinge pins.

Figure 6-309 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.

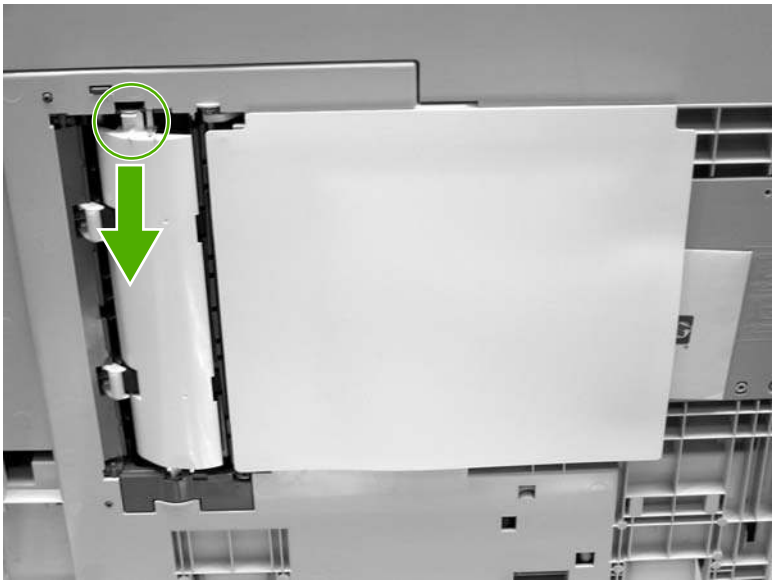


Figure 6-310 Remove the ADF white mylar backing (3 of 3)

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.

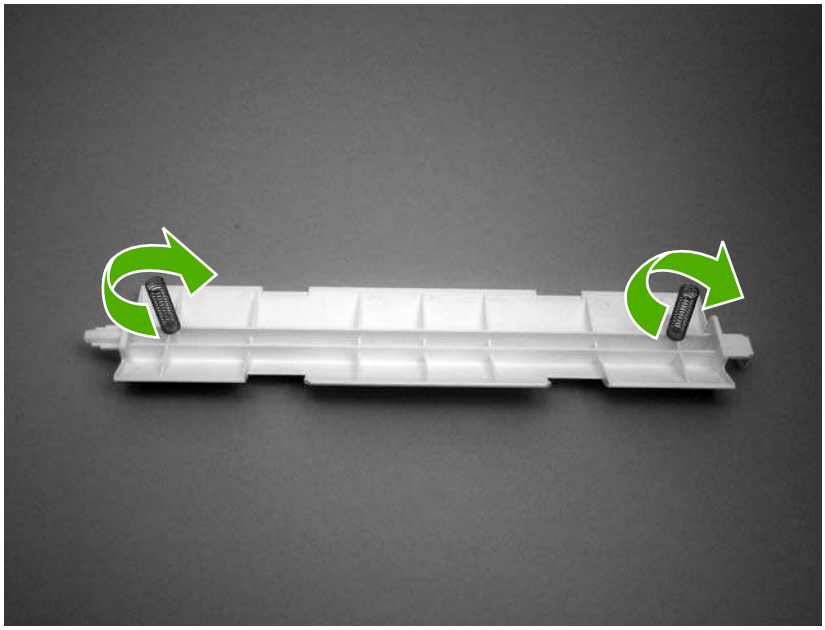


Figure 6-311 Reinstall the ADF white mylar backing springs (1 of 2)

5. **Reinstallation tip:** Place the springs over the pins when replacing the backing assembly.

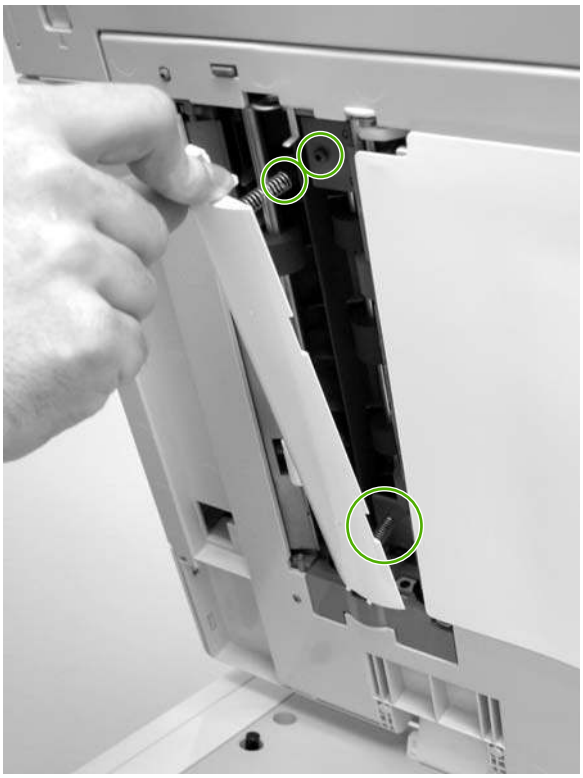


Figure 6-312 Reinstall the ADF white mylar backing springs (2 of 2)

ADF front cover

1. Remove the ADF input tray. See ADF input tray on page 262.
2. Open the ADF top cover and remove one screw.

Figure 6-313 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.

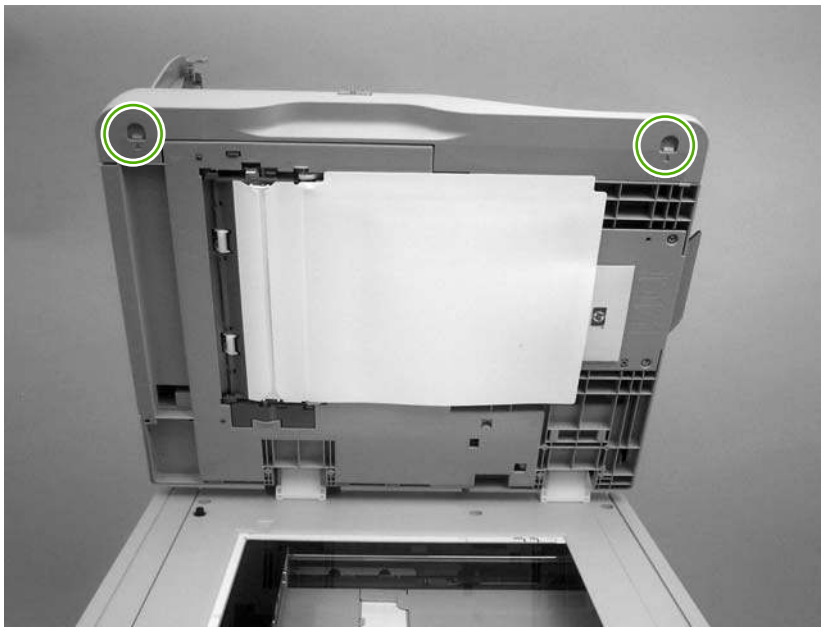


Figure 6-314 Remove the ADF front cover (2 of 2)

ADF rear cover

1. Open the ADF top cover.

Figure 6-315 Remove the ADF rear cover (1 of 3)

2. Remove one screw.

Figure 6-316 Remove the ADF rear cover (2 of 3)

3. Holding it by the front, lift the ADF rear cover off the ADF.

Figure 6-317 Remove the ADF rear cover (3 of 3)

Hint 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 437.
   - ADF rear cover. See ADF rear cover on page 438.
2. Release two springs.

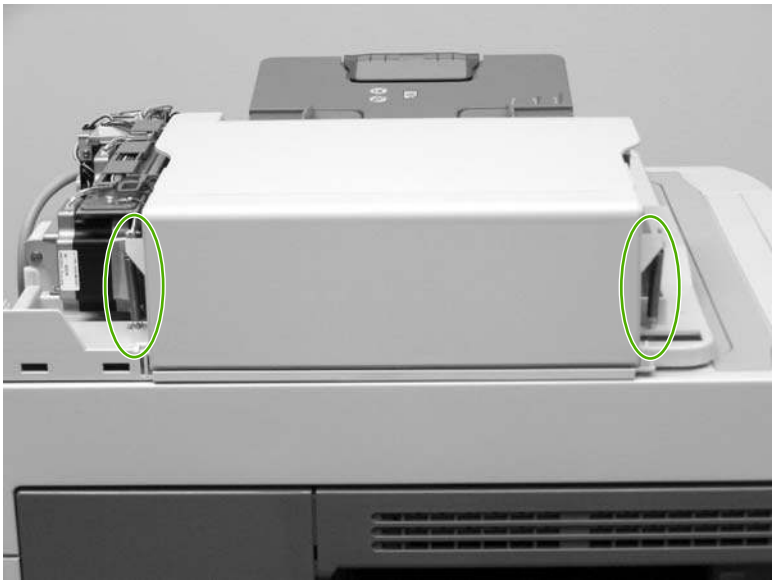


Figure 6-318 Remove the ADF left cover (1 of 2)

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 6-319 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 437.
   - ADF rear cover. See ADF rear cover on page 438.
   - ADF left side cover. See ADF left side cover on page 440.
2. Pull up on the left side of the cover to release it, and then remove the ADF jam access cover.

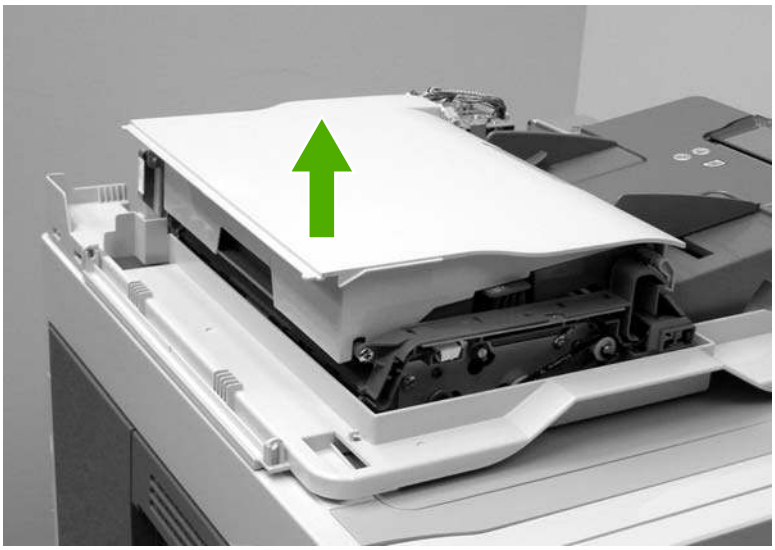


Figure 6-320 Remove the ADF jam access cover and latch (1 of 3)

3. To remove the latch, spread the two clips, and slide the latch rod toward the rear of the ADF.

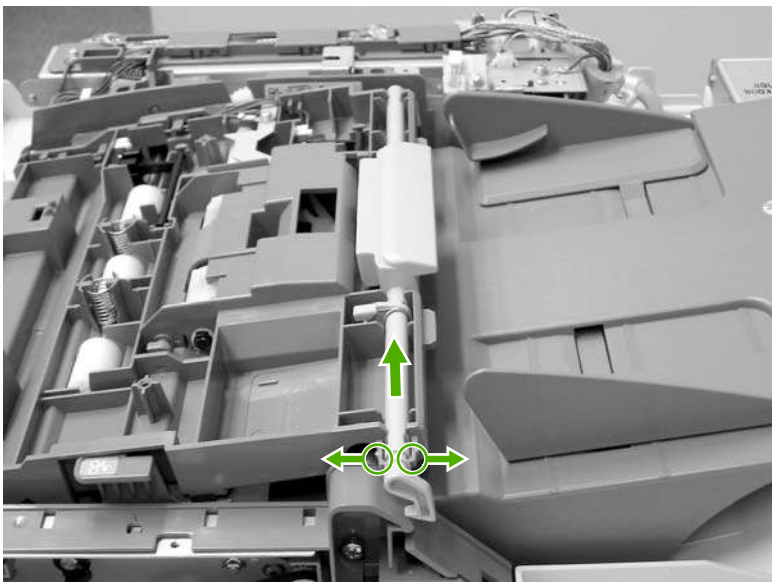


Figure 6-321 Remove the ADF jam access cover and latch (2 of 3)

4. Lift the rod out of the ADF assembly.

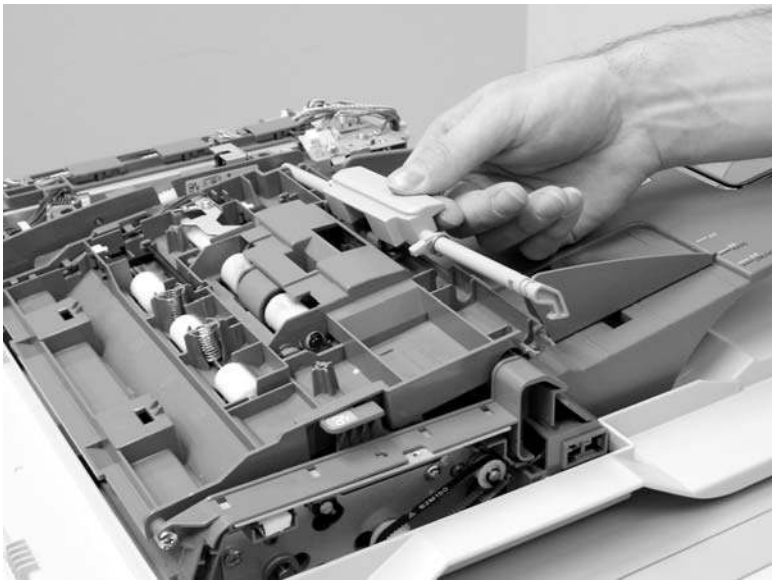
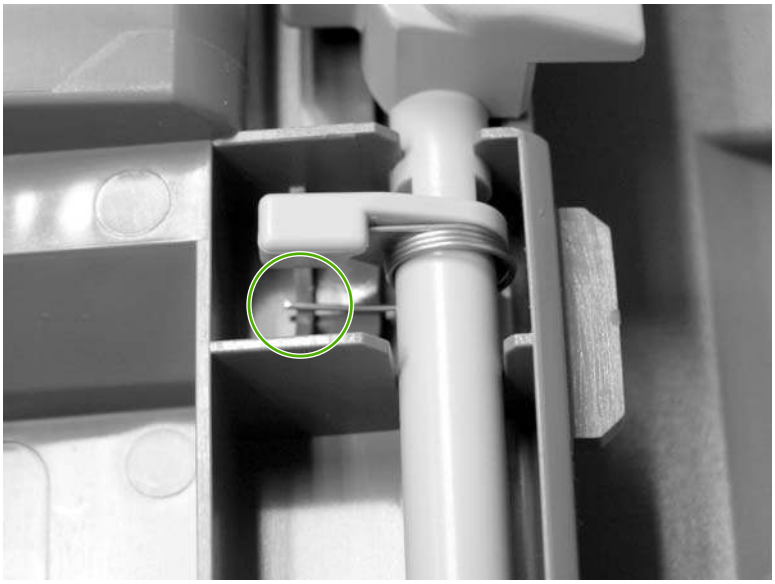


Figure 6-322 Remove the ADF jam access cover and latch (3 of 3)

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 437.
2. Remove the ADF rear cover. See ADF rear cover on page 438.
3. Remove the ADF left side cover. See ADF left side cover on page 440.
4. Remove the ADF jam access cover. See ADF jam access cover and latch on page 441.
5. Locate the ADF leading-edge sensor (callout 1) and the ADF paper-present sensor (callout 2).

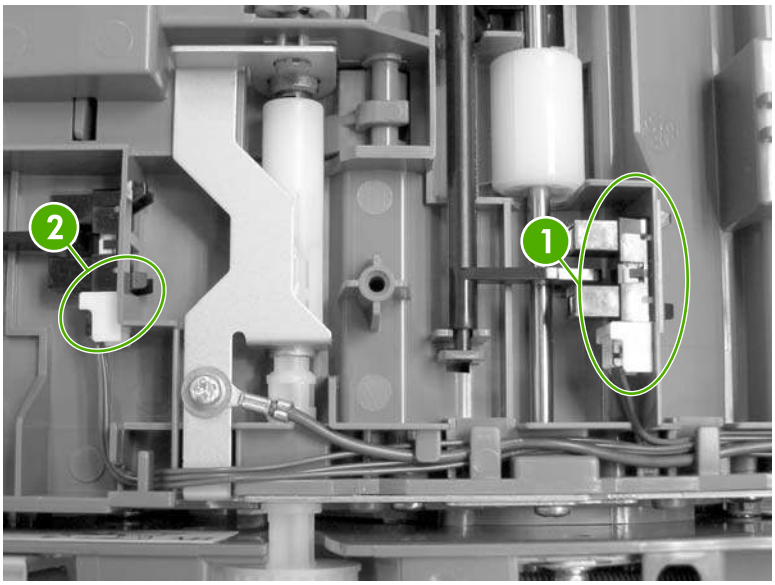


Figure 6-323 Remove the ADF leading-edge and paper-present sensors (1 of 2)

6. Squeeze the retainer tabs, and push the sensor out of the mounting frame. Disconnect the connector, and then remove the sensors.

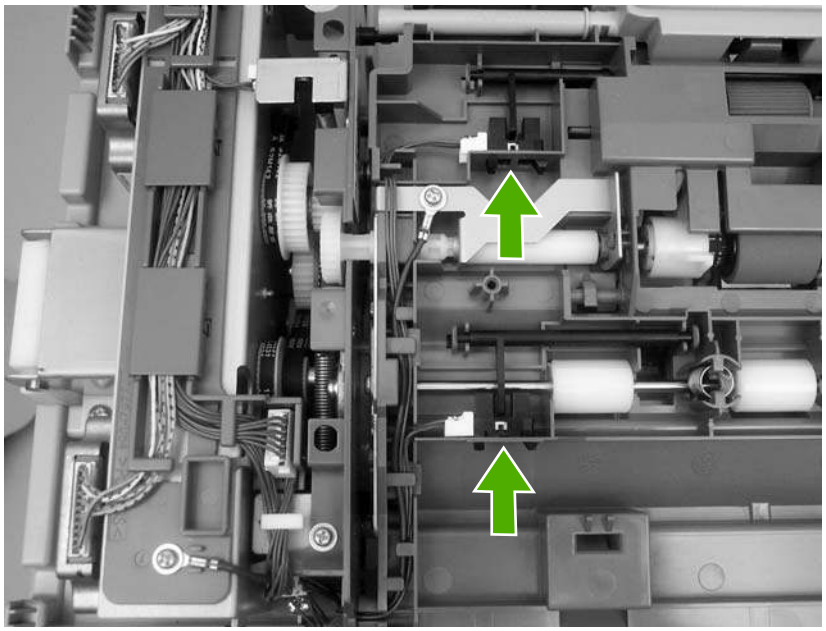


Figure 6-324 Remove the ADF leading-edge and paper-present sensors (2 of 2)

ADF hinges

1. Remove the following assemblies:
   - ADF front cover. See ADF front cover on page 437.
   - ADF rear cover. See ADF rear cover on page 438.
2. Lift the ADF assembly and unhook the hinges from the scanner assembly.

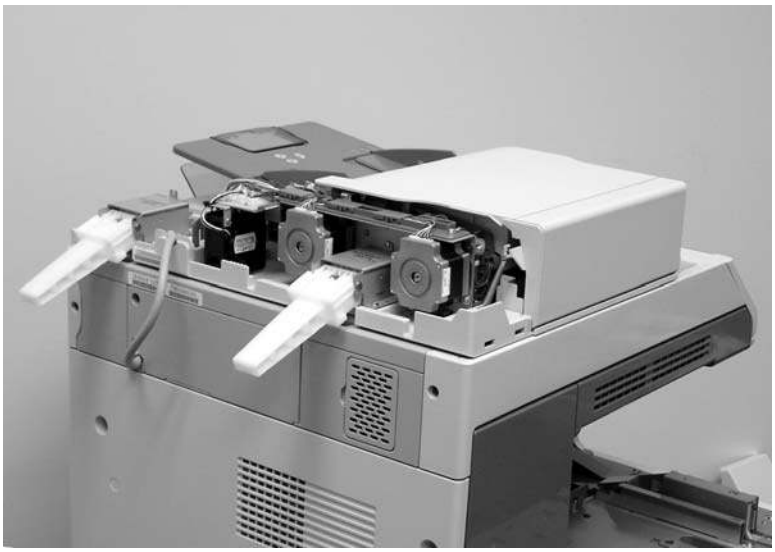


Figure 6-325 Remove the ADF hinges (1 of 3)

3. Remove two screws from the left-side hinge, and then remove the left-side hinge.

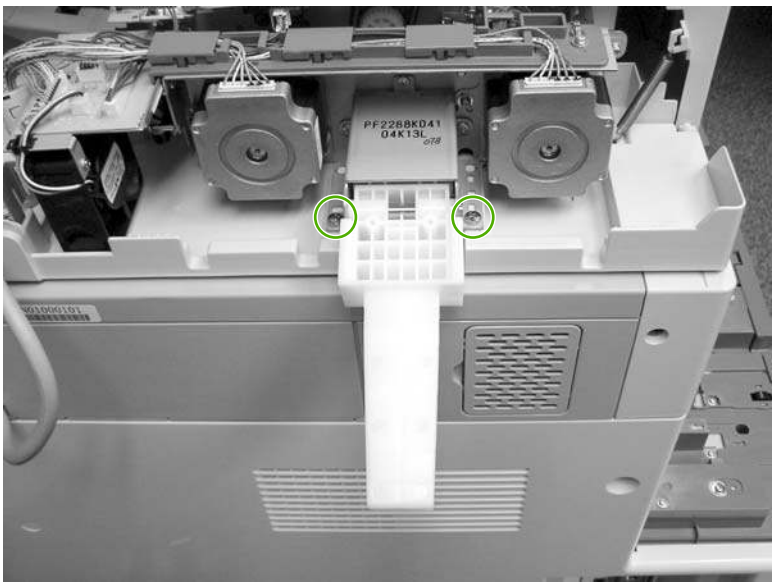


Figure 6-326 Remove the ADF hinges (2 of 3)

4. Remove four screws from the right-side hinge, and then remove the right-side hinge.

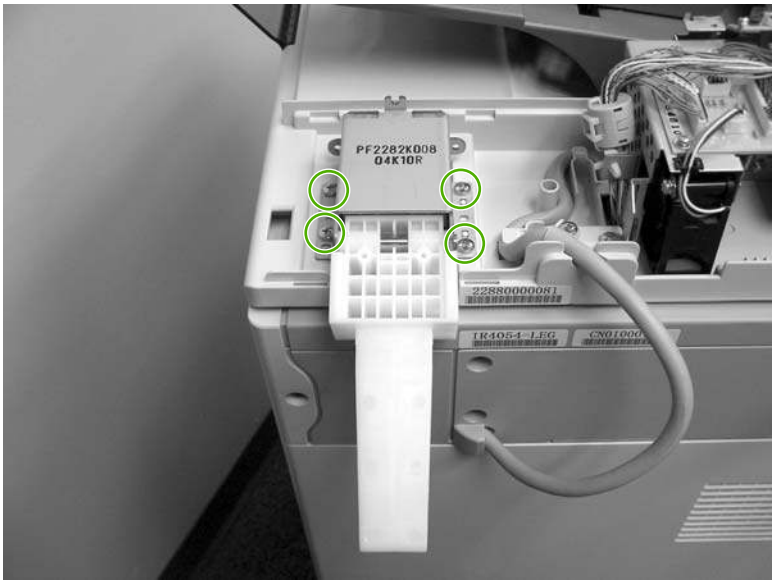


Figure 6-327 Remove the ADF hinges (3 of 3)

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).

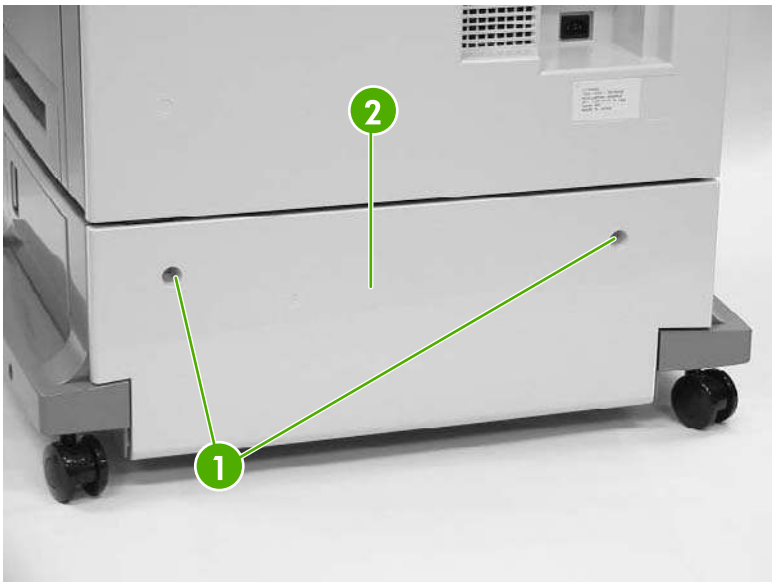


Figure 6-328 Remove the 2 X 500-sheet paper input assembly rear cover

Right front cover

1. Remove all paper trays.
2. Unhook the two claws (callout 1) and remove one screw (callout 2).

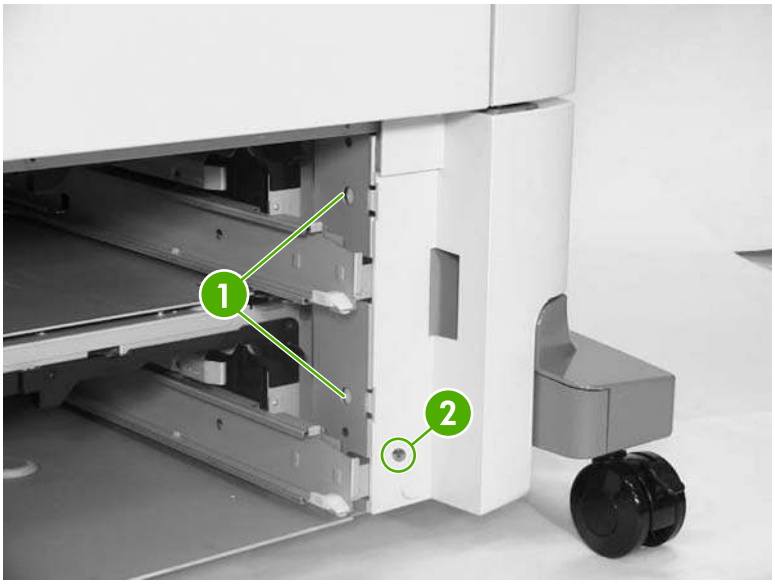


Figure 6-329 Remove the 500-sheet feeder rear cover (1 of 2)

3. Unhook the three claws (callout 3), and then remove the right front cover.

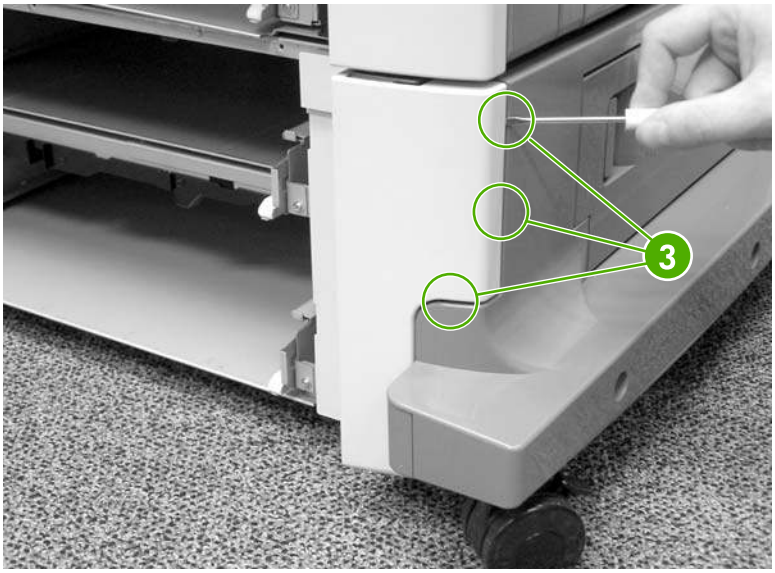


Figure 6-330 Remove the 500-sheet feeder rear cover (2 of 2)

Left front cover

1. Remove all paper trays.
2. Unhook the two claws (callout 1).

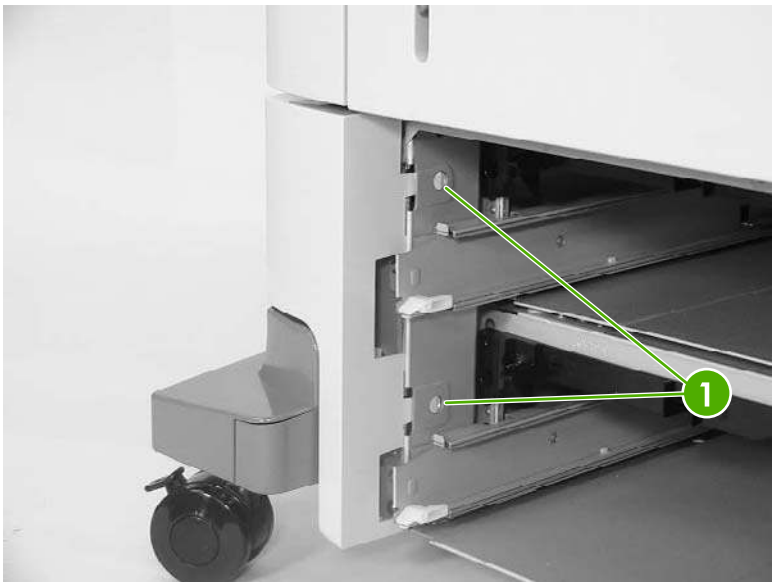


Figure 6-331 Remove the 500-sheet feeder left front cover (1 of 2)

3. Unhook the three claws (callout 2), and remove the left front cover.

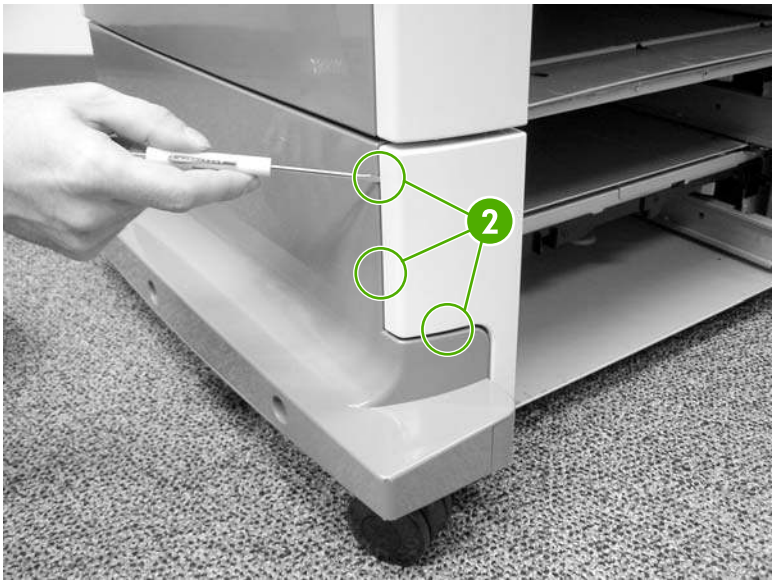


Figure 6-332 Remove the 500-sheet feeder left front cover (2 of 2)

Right cover

1. Remove all paper trays.
2. Remove the feeder rear cover. See Rear cover on page 447.
3. Remove the right front cover. See Right front cover on page 448.
4. Remove one screw (callout 1).

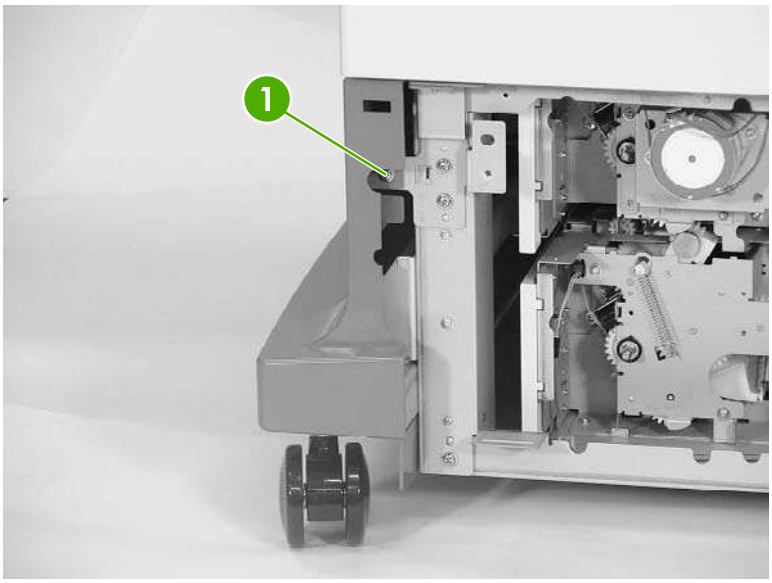


Figure 6-333 Remove the right cover (1 of 3)

5. Remove one screw (callout 2).

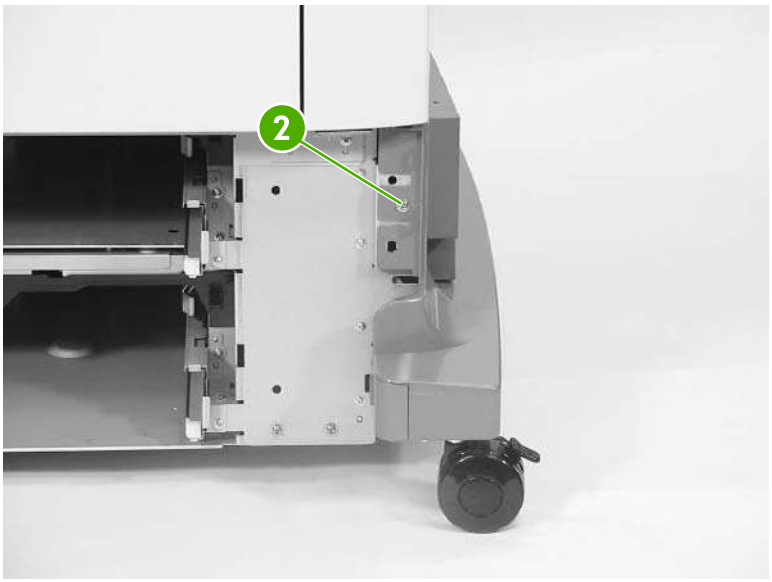


Figure 6-334 Remove the right cover (2 of 3)

6. Remove the three screws (callout 3) and the right cover (callout 4).

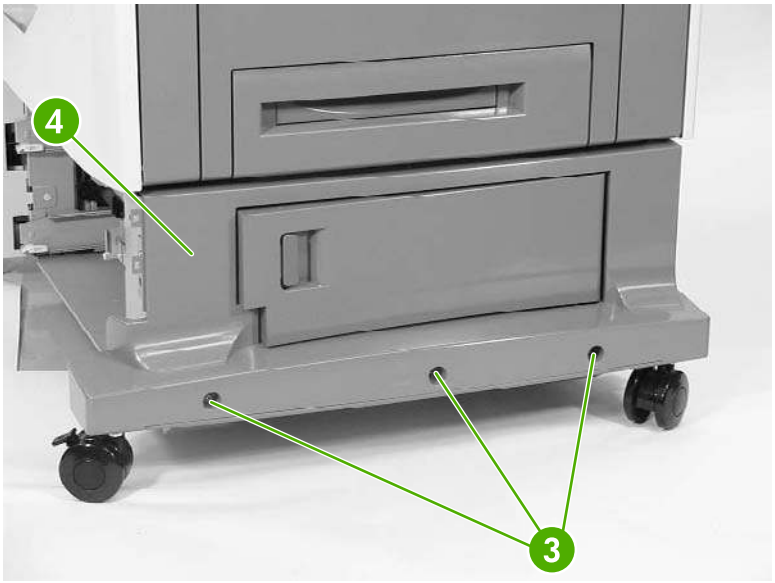


Figure 6-335 Remove the right cover (3 of 3)

Left cover

1. Remove all paper trays.
2. Remove the rear cover. See Rear cover on page 447.
3. Remove the left front cover. See Left front cover on page 449.
4. Remove one screw (callout 1).

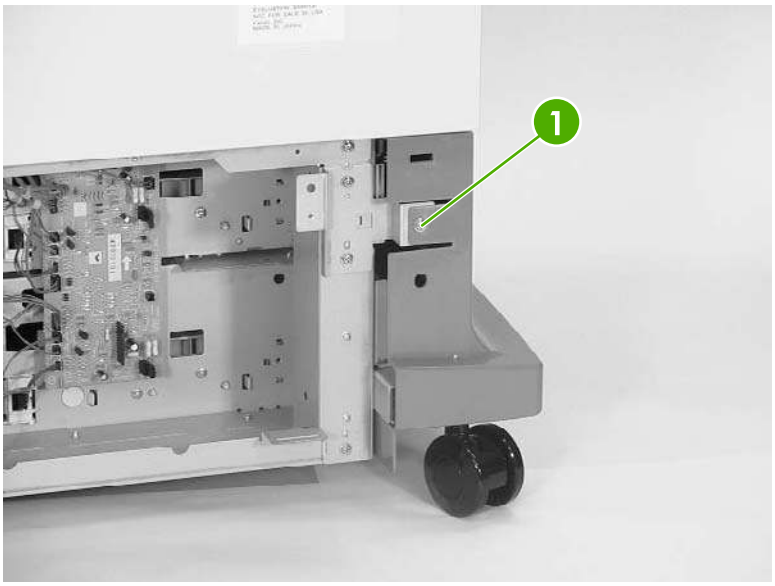


Figure 6-336 Remove the left cover (1 of 3)

5. Remove one screw (callout 2).

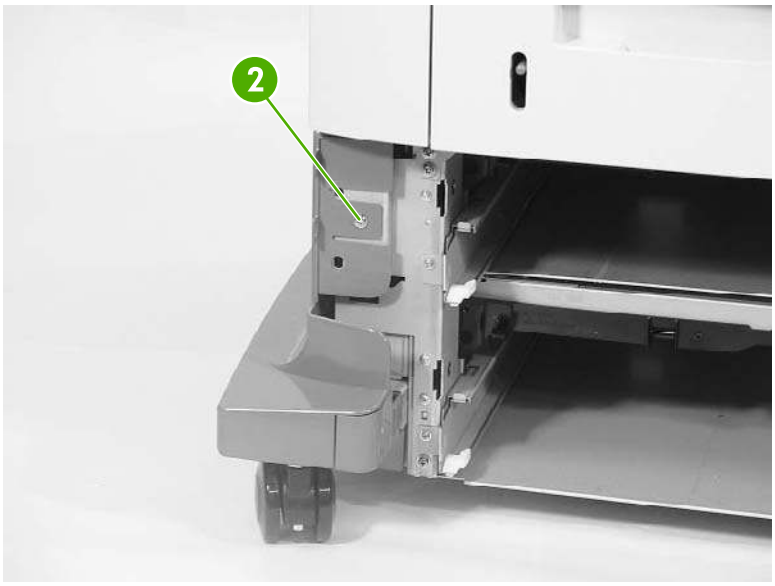


Figure 6-337 Remove the left cover (2 of 3)

6. Remove three screws (callout 3), and then remove the left cover (callout 4).

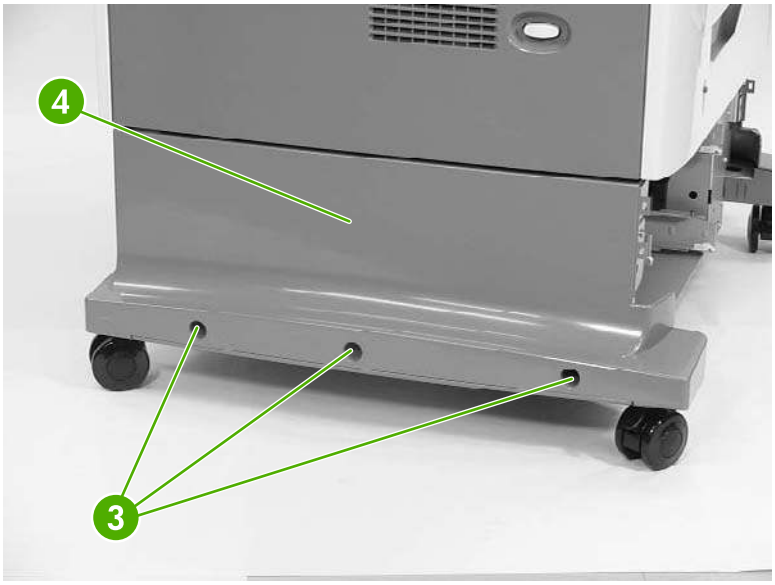


Figure 6-338 Remove the left cover (3 of 3)

Right lower cover assembly

1. Remove all paper trays.
2. Remove the following assemblies:
   - Rear cover. See Rear cover on page 447.
   - Right cover. See Right cover on page 450.
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.

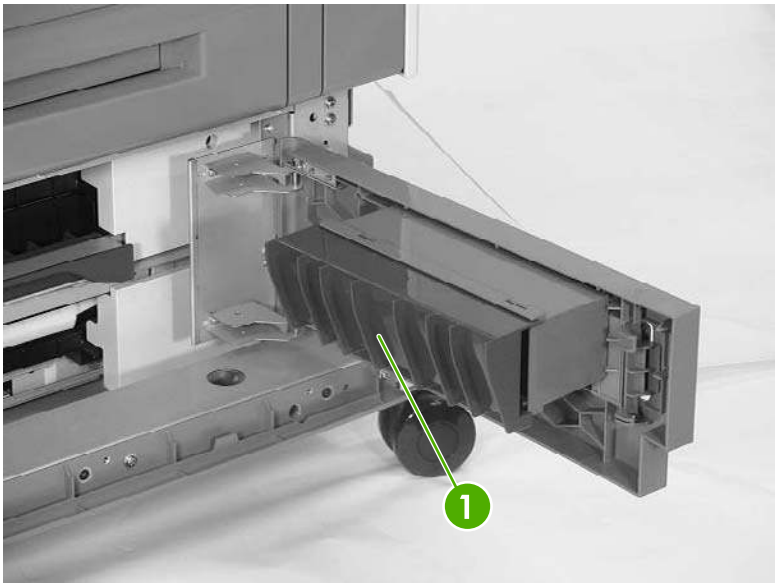


Figure 6-339 Remove the right lower cover assembly

Pickup motor assembly

1. Remove the 500-sheet feeder rear cover. See Rear cover on page 447.
2. Disconnect one connector (callout 1).
3. Remove three screws (callout 2), and then remove the pickup motor assembly (callout 3).

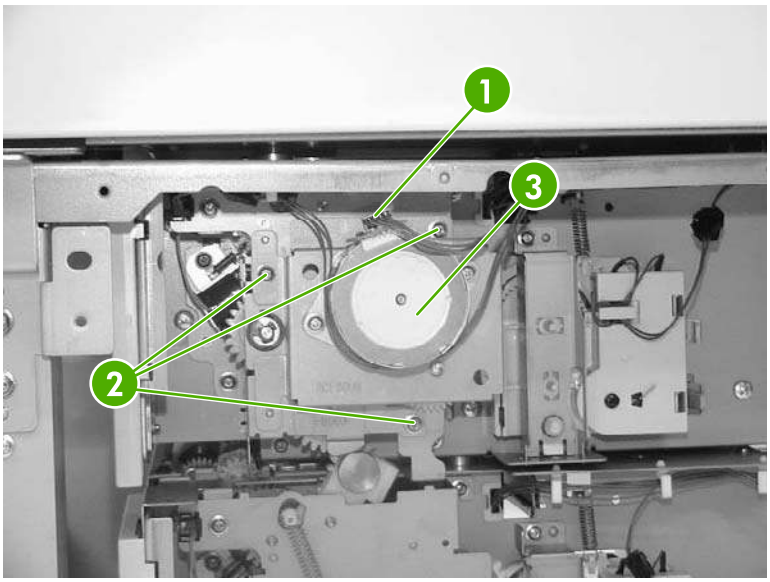


Figure 6-340 Remove the pickup motor assembly

Upper lifter drive assembly

1. Remove the 2 X 500-sheet feeder rear cover. See Rear cover on page 447.
2. Remove the spring (callout 1) and disconnect the connector (callout 2). Remove two screws (callout 3).

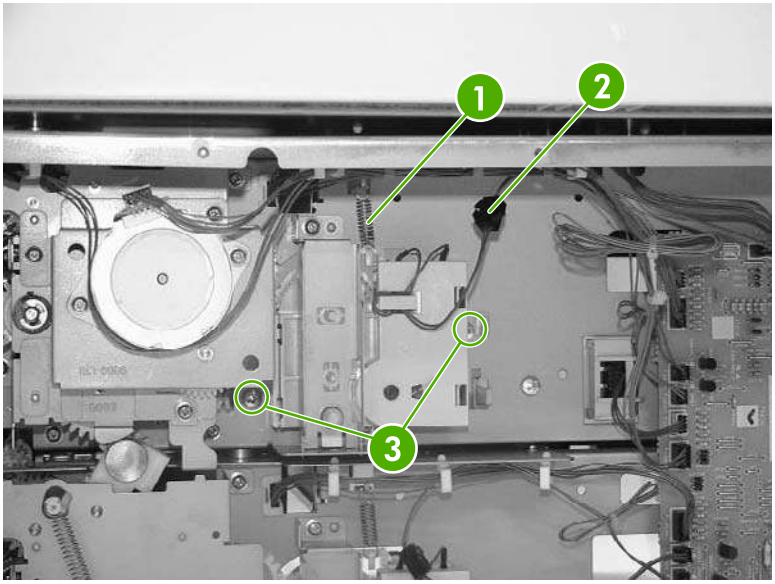


Figure 6-341 Remove the upper lifter drive assembly (1 of 3)

3. Remove the paper tray rear bracket, which is located inside the paper tray.

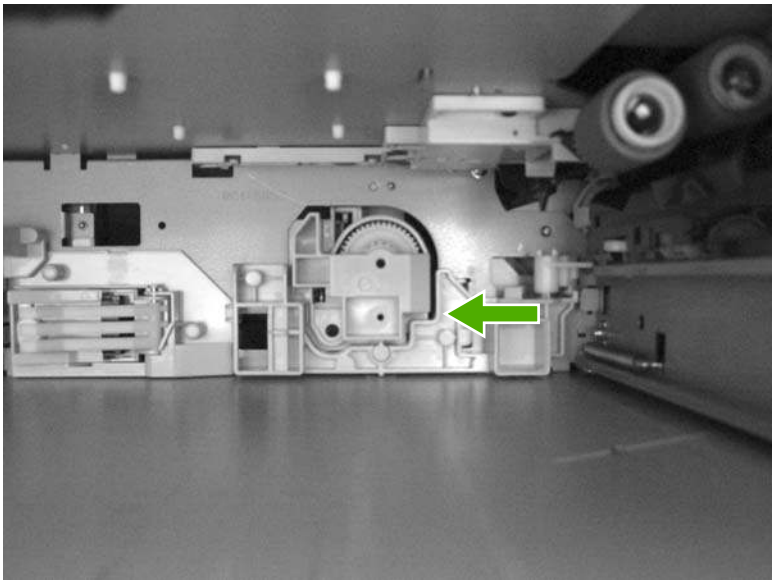


Figure 6-342 Remove the upper lifter drive assembly (2 of 3)

4. Remove one screw (callout 4) and then remove the upper lifter drive bracket (callout 5). Remove the upper lifter drive assembly (callout 6).

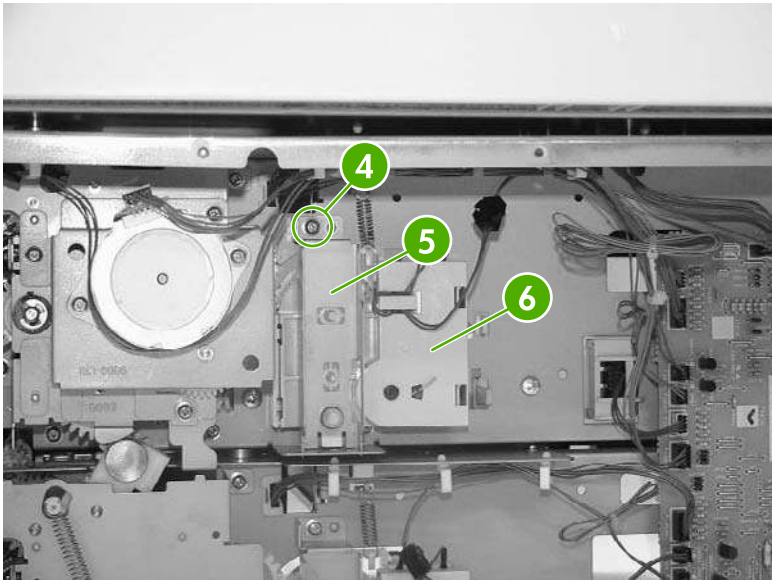


Figure 6-343 Remove the upper lifter drive assembly (3 of 3)

Lower lifter drive assembly

1. Remove the 500-sheet feeder rear cover. See Rear cover on page 447.
2. Remove two screws (callout 1). Remove the spring (callout 2) and disconnect one connector (callout 3).

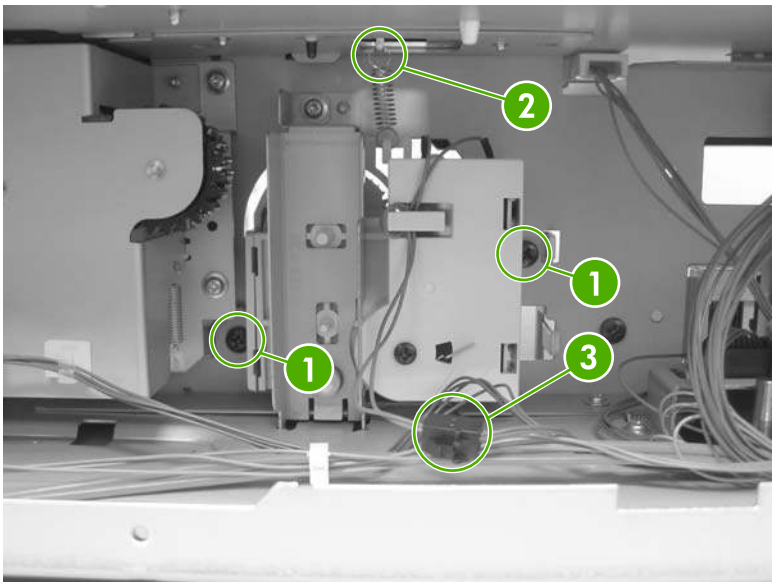


Figure 6-344 Remove the lower lifter drive assembly (1 of 3)

3. Remove the paper tray rear bracket, which is located inside the paper tray.

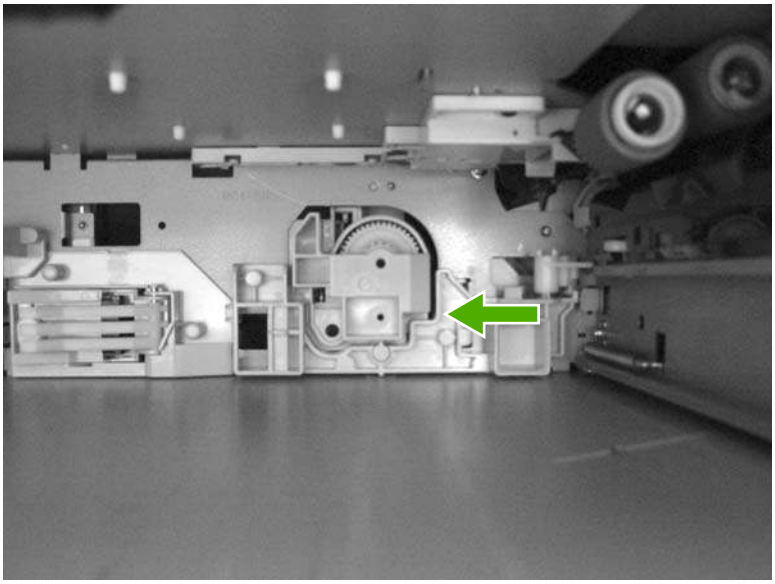


Figure 6-345 Remove the lower lifter drive assembly (2 of 3)

4. Remove one screw (callout 4. Remove the lower lifter drive bracket (callout 5) and the lower lifter drive assembly (callout 6).

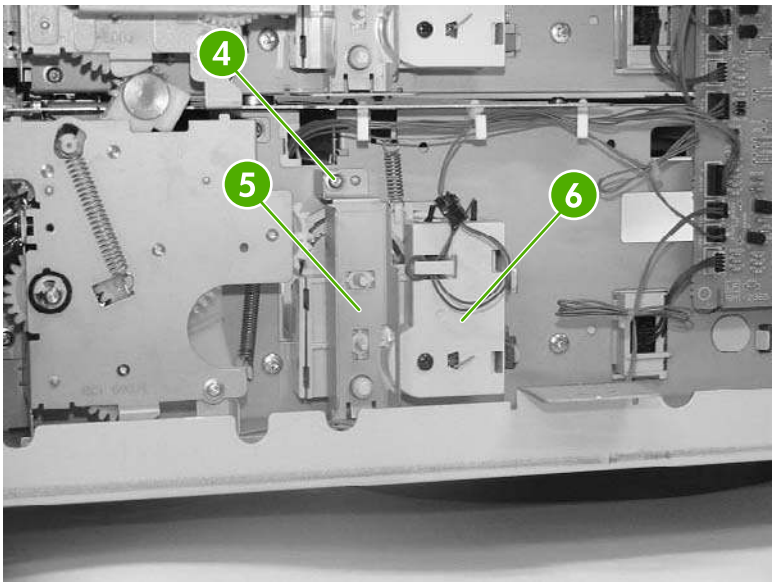


Figure 6-346 Remove the lower lifter drive assembly (3 of 3)

Upper pickup drive assembly

1. Remove the 2 X 500-sheet feeder rear cover. See Rear cover on page 447.
2. Remove the pickup motor assembly. See Pickup motor assembly on page 455.
3. Disconnect the connector (callout 1).
4. Remove four screws (callout 2), and then remove the upper pickup drive assembly (callout 3).

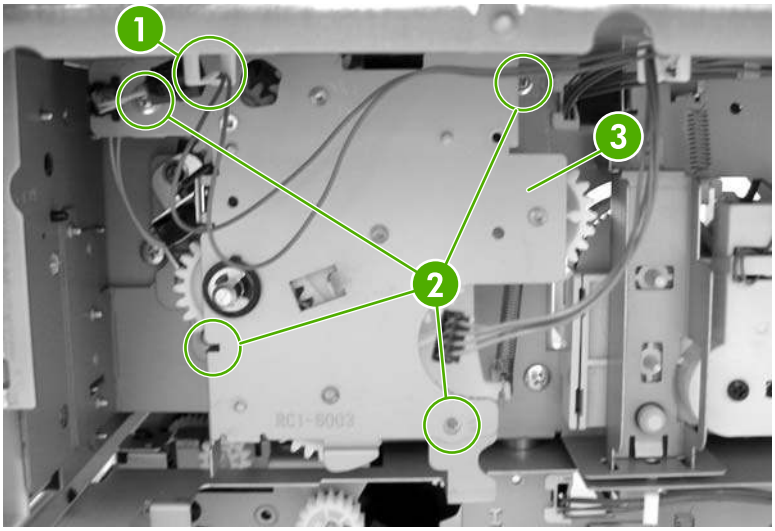


Figure 6-347 Remove the upper pickup drive assembly

Hint 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 447.
2. Disconnect one connector (callout 1).

3. Remove the five screws (callout 2), and then remove the lower pickup drive assembly (callout 3).

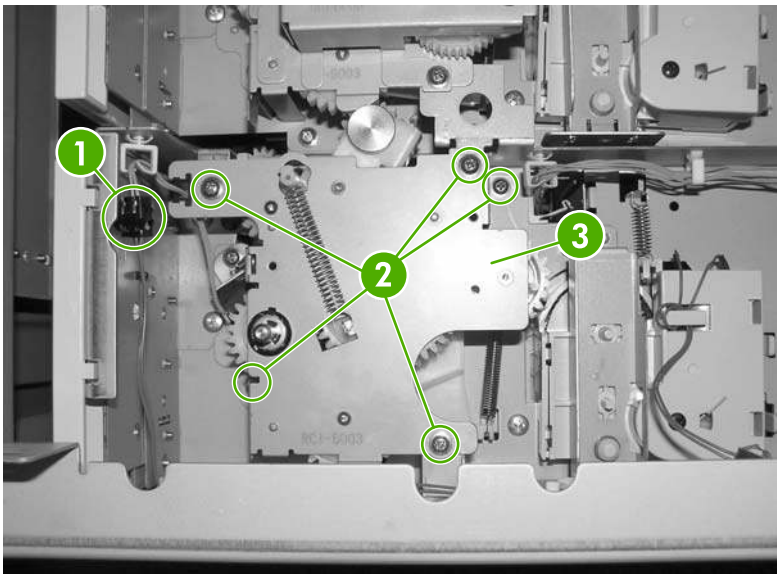


Figure 6-348 Remove the lower pickup drive assembly

Upper pickup assembly

1. Remove the 2 X 500-sheet feeder rear cover. See Rear cover on page 447.
2. Remove the pickup motor assembly. See Pickup motor assembly on page 455.
3. Remove the upper pickup drive assembly. See Upper pickup drive assembly on page 459.
4. Remove the door-open switch. See Paper feeder door-open switch on page 469.
5. Disconnect three connectors (callout 1).

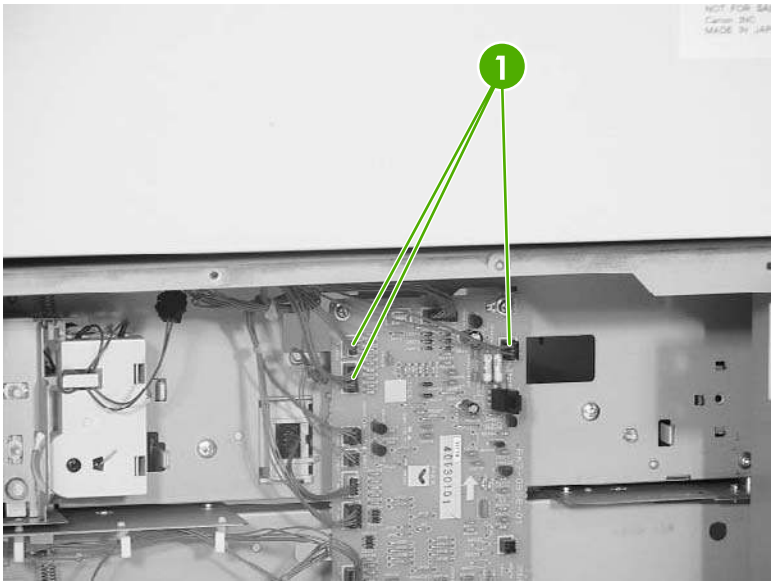


Figure 6-349 Remove the upper pickup assembly (1 of 10)

6. Remove one cable (callout 2) from the cable guides (callout 3).

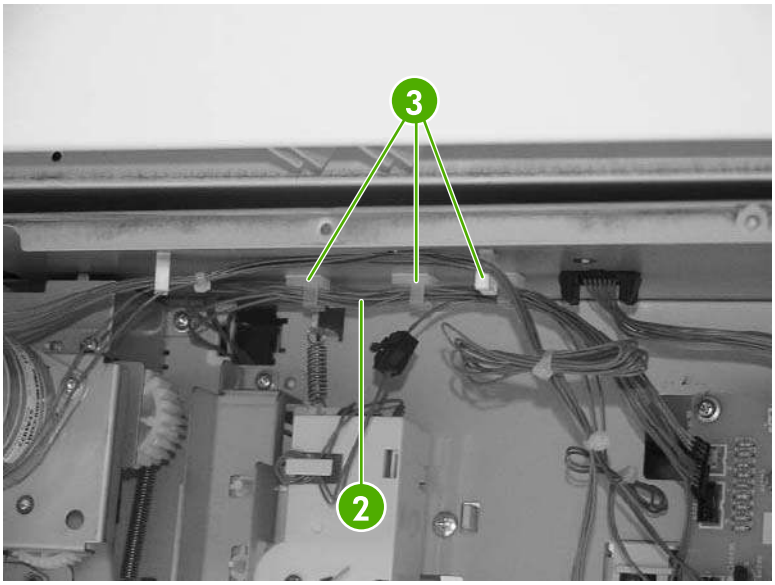


Figure 6-350 Remove the upper pickup assembly (2 of 10)

7. Remove two screws (callout 4) and the right cassette rail assembly (callout 5).

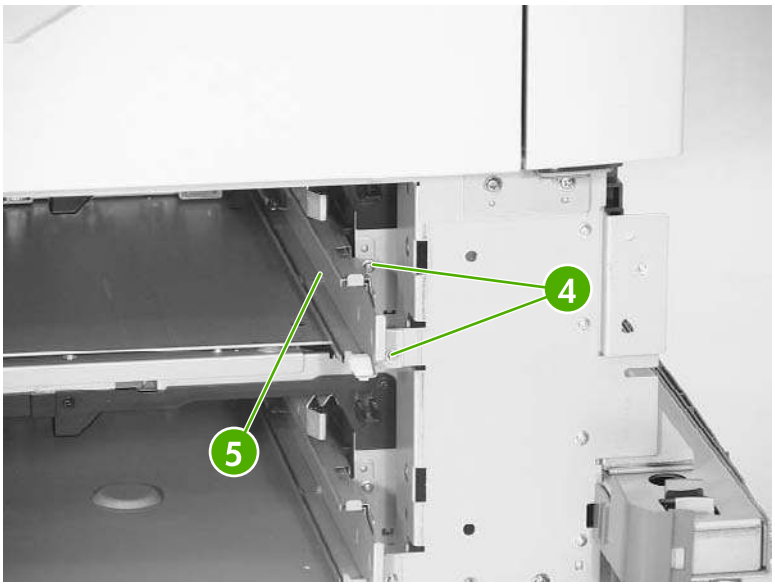


Figure 6-351 Remove the upper pickup assembly (3 of 10)

8. Remove the two screws (callout 6) and the hinge plate (callout 7).

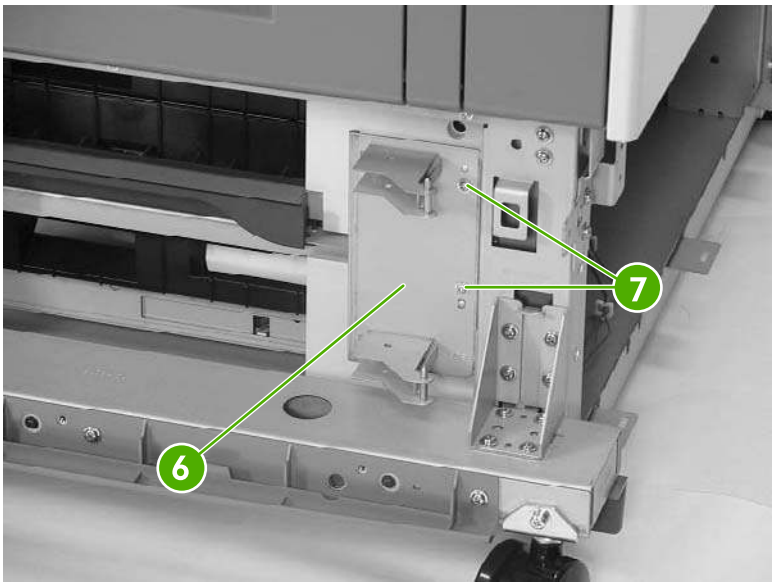


Figure 6-352 Remove the upper pickup assembly (4 of 10)

9. Remove three screws (callout 8) and remove the crossmember (callout 9).

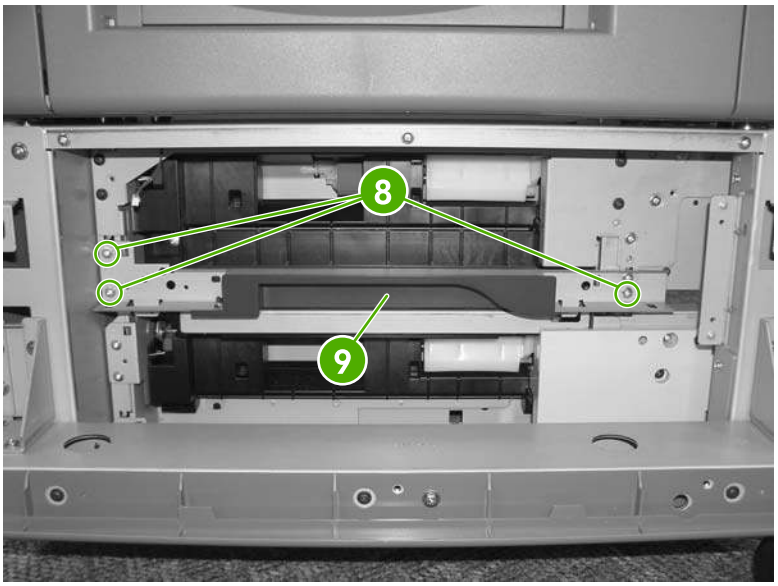


Figure 6-353 Remove the upper pickup assembly (5 of 109)

10. Loosen one screw situated behind the frame and inside the black foot.

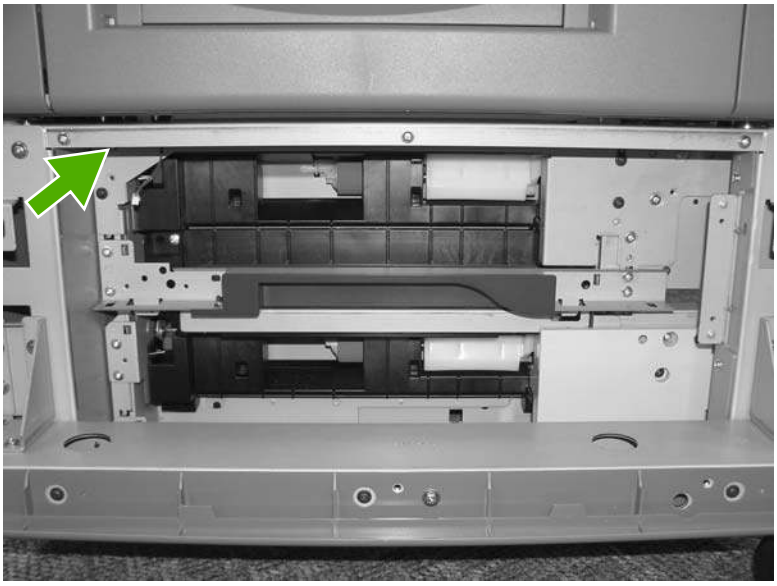


Figure 6-354 Remove the upper pickup assembly (6 of 10)

11. Remove eight screws (callout 10) and remove both metal brackets.

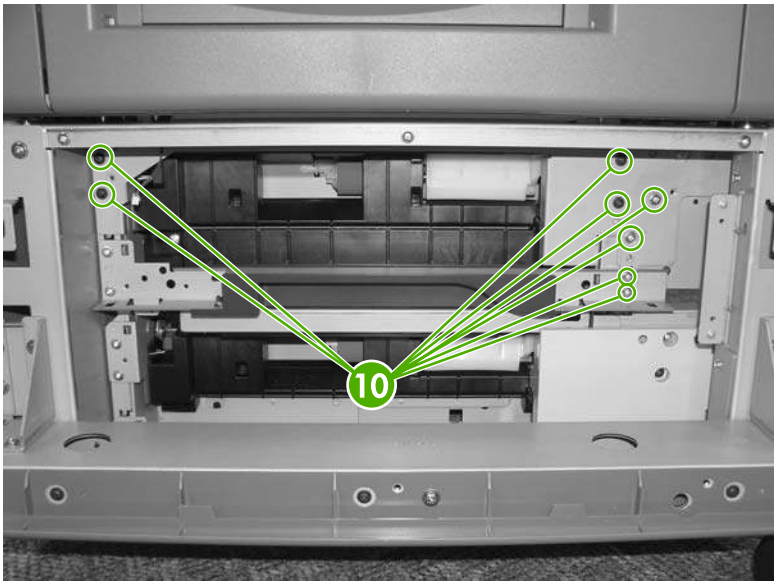


Figure 6-355 Remove the upper pickup assembly (7 of 10)

12. Remove two screws (callout 11) and the lower pickup guide (callout 12).

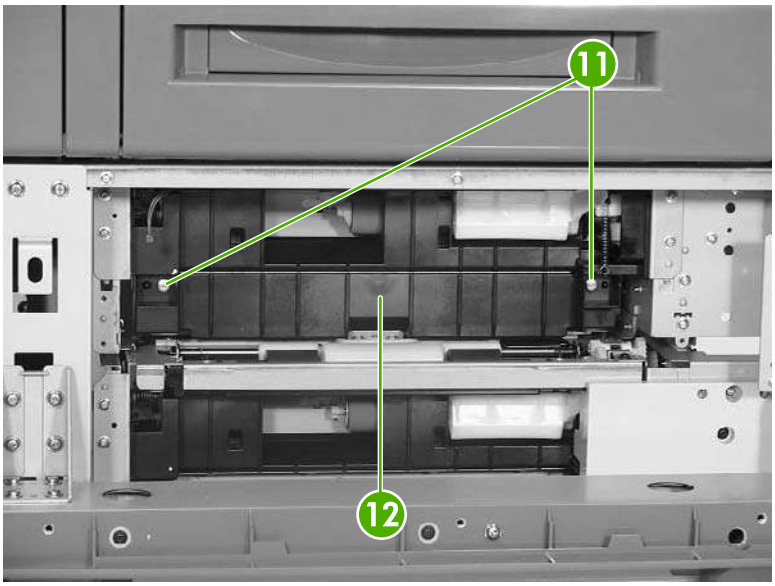


Figure 6-356 Remove the upper pickup assembly (8 of 10)

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 15). Before reinstalling the pickup assembly, be sure the gear is present.

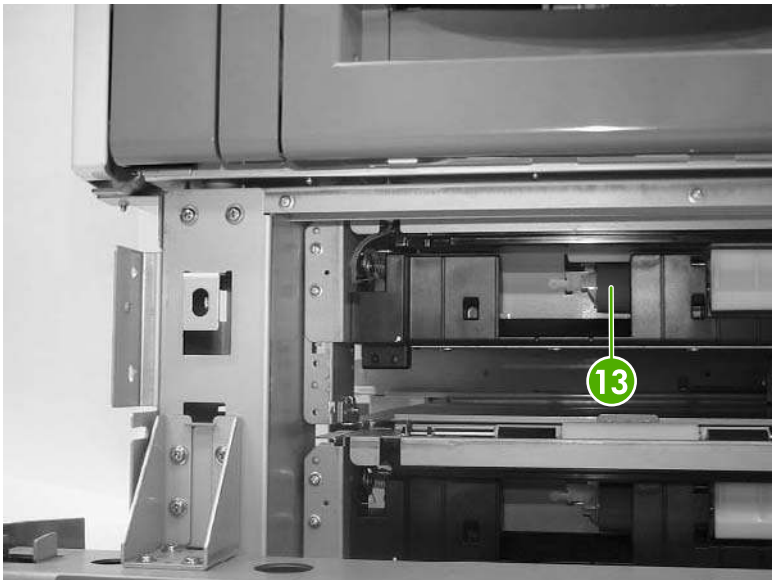


Figure 6-357 Remove the upper pickup assembly (9 of 10)

Hint 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.

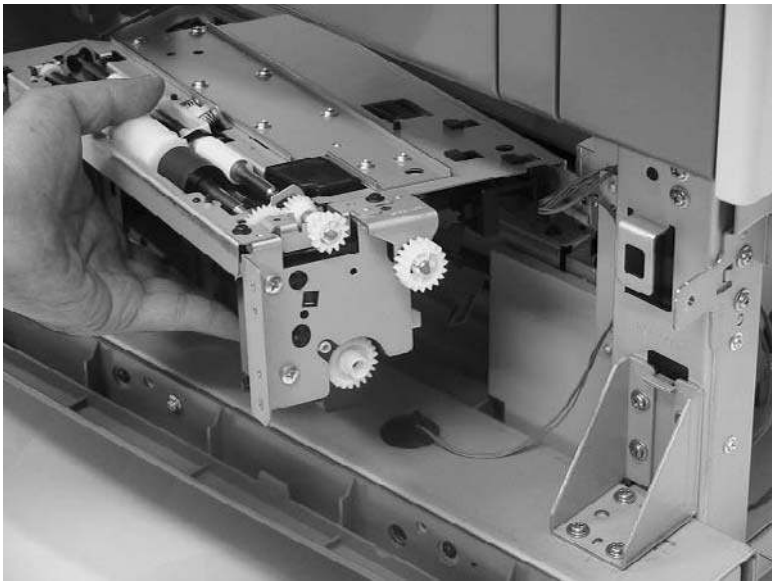


Figure 6-358 Remove the upper pickup assembly (10 of 10)

Lower pickup assembly

1. Remove the rear cover. See Rear cover on page 447.
2. Remove the upper pickup drive assembly. See Upper pickup drive assembly on page 459.
3. Remove the upper pickup assembly. See Upper pickup assembly on page 460.
4. Disconnect the connector (callout 1), and remove the cable (callout 3) from the cable guides (callout 2).

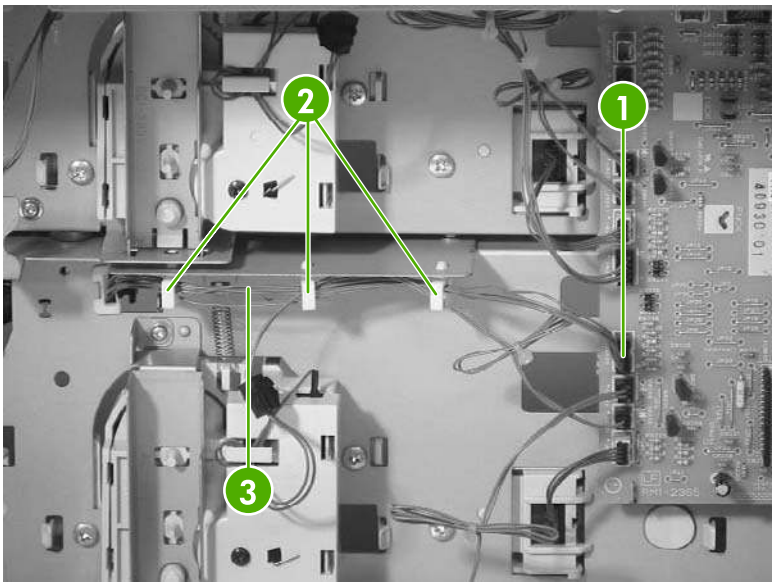


Figure 6-359 Remove the lower pickup assembly (1 of 7)

5. Remove the two screws (callout 4) and the right lower cassette rail assembly (callout 5).

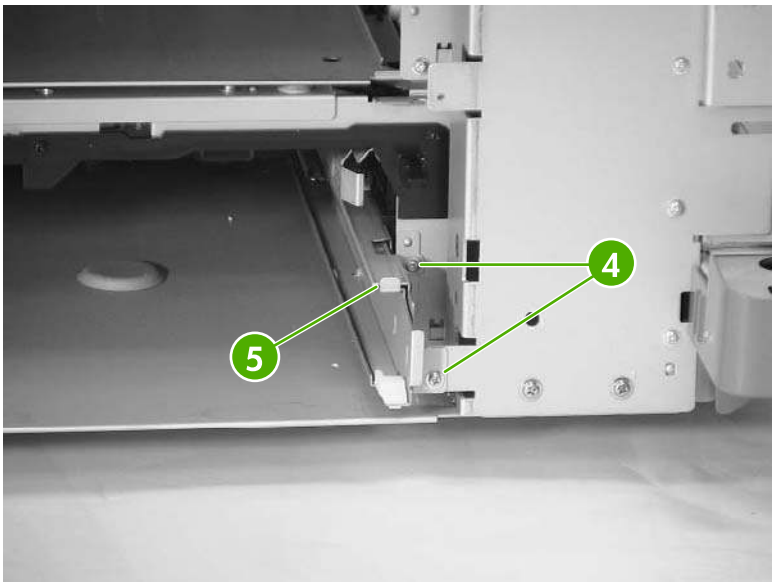


Figure 6-360 Remove the lower pickup assembly (2 of 7)

6. Remove one screw (callout 6) and the jam inner cover (callout 7).

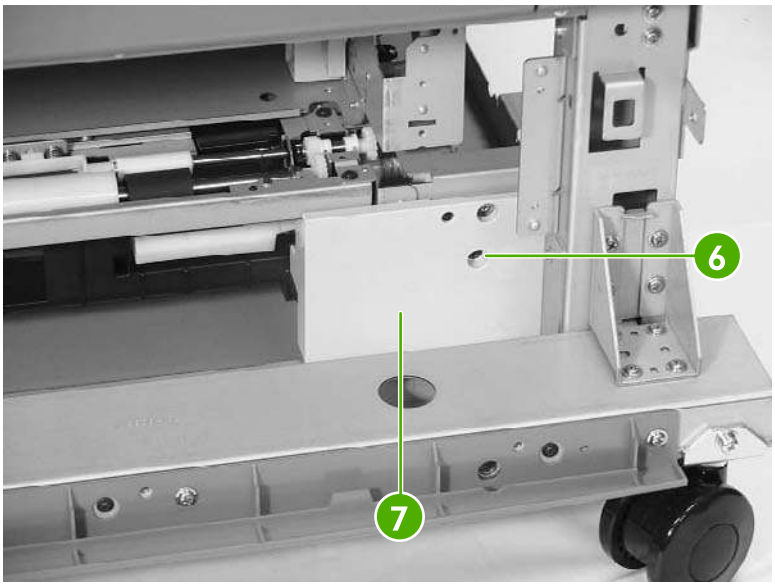


Figure 6-361 Remove the lower pickup assembly (3 of 7)

7. Remove the three screws (callout 8) and the right crossmember (callout 9).

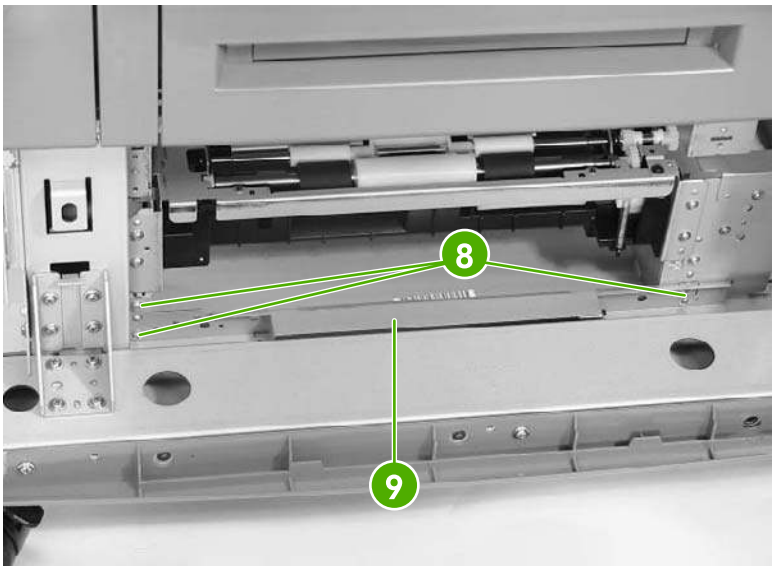


Figure 6-362 Remove the lower pickup assembly (4 of 7)

8. Remove the six screws (callout 10) and the plate (callout 11).

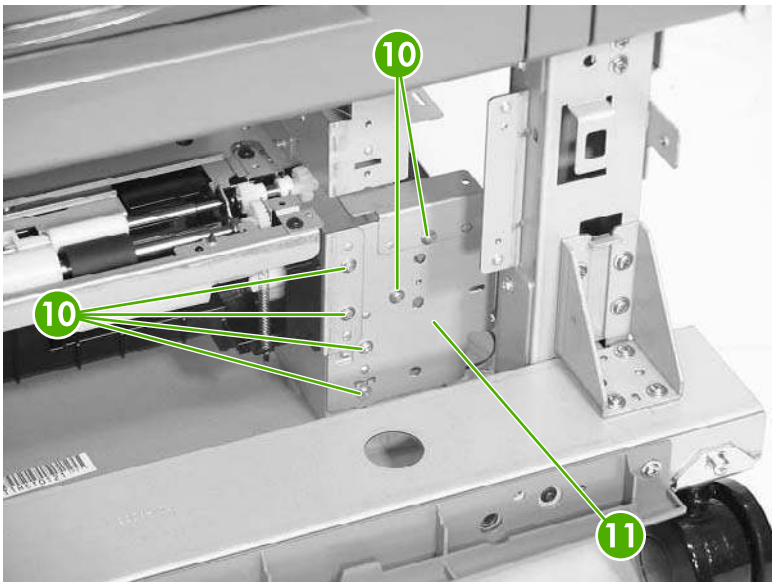


Figure 6-363 Remove the lower pickup assembly (5 of 7)

9. Remove the two screws (callout 12) and pull out the lower pickup assembly (callout 13).

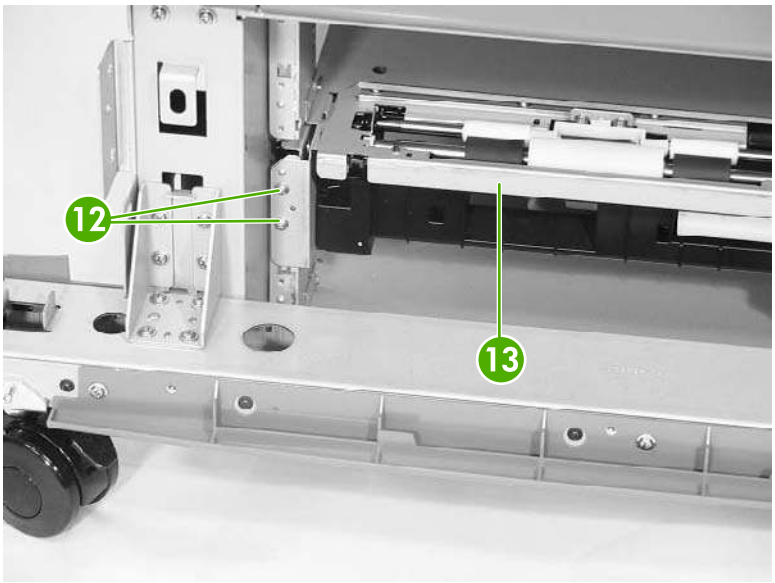


Figure 6-364 Remove the lower pickup assembly (6 of 7)

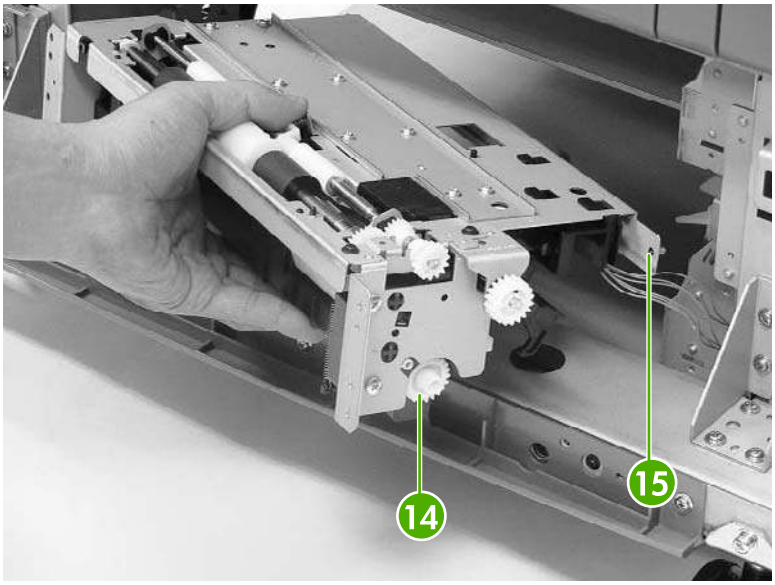


Figure 6-365 Remove the lower pickup assembly (7 of 7)

NOTE The gear (callout 14) can easily be removed from the pickup assembly. Before installing the pickup assembly, be sure the gear is present.

Hint 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 447.
2. Remove the right front cover. See Right front cover on page 448.
3. Remove the right cover. See Right cover on page 450.
4. Remove the right lower cover assembly. See Right lower cover assembly on page 454.

5. Remove three screws (callout 1) and lift out the door-open switch.

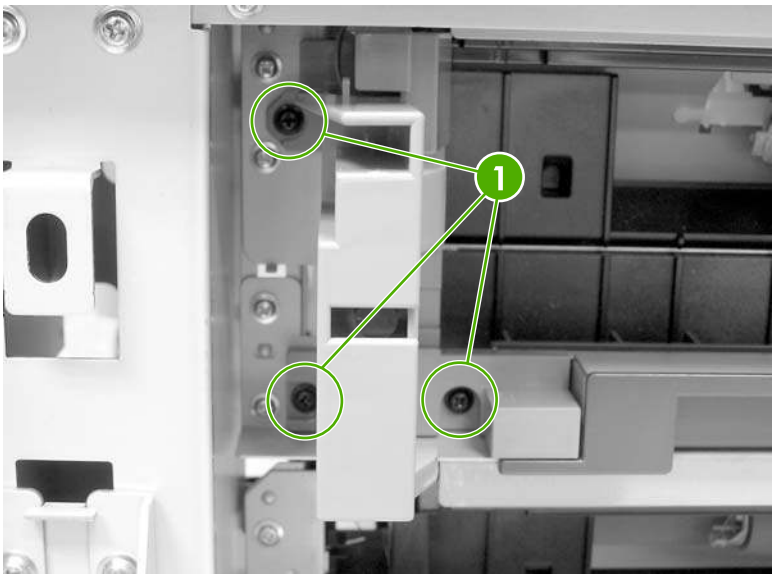


Figure 6-366 Remove the paper feeder door-open switch (1 of 2)

6. Disconnect the connector (callout 2) and remove the door-open switch.

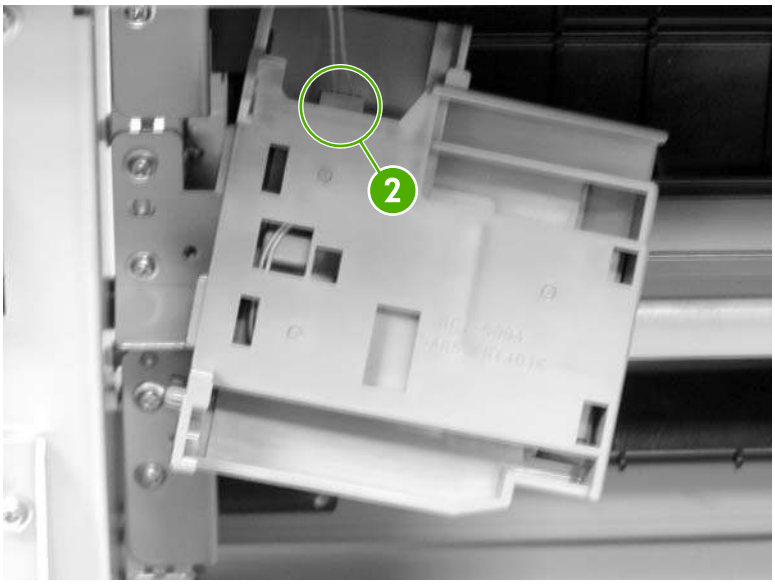


Figure 6-367 Remove the paper feeder door-open switch (2 of 2)

Paper feeder driver PCB

1. Remove the rear cover. See Rear cover on page 447.
2. Disconnect twelve connectors (callout 1). Remove two screws (callout 2) and lift out the 2 X 500-sheet feeder driver PCB (callout 3).

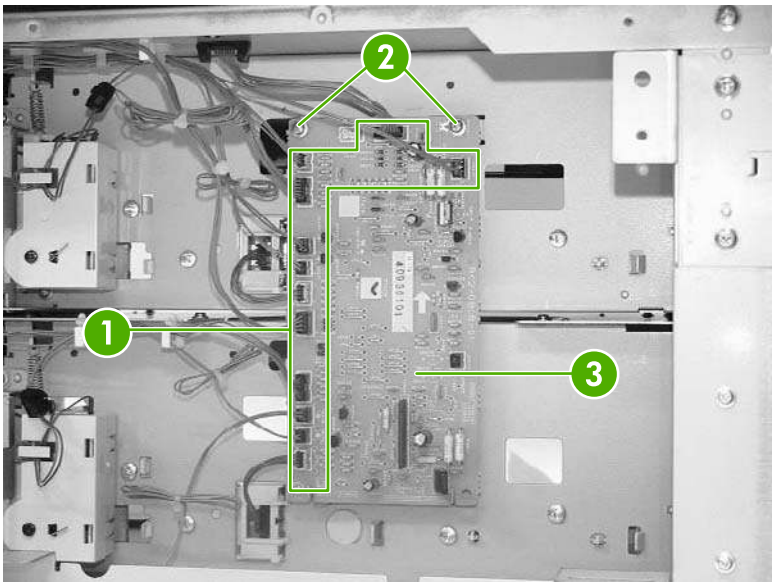


Figure 6-368 Remove the 2 X 500-sheet feeder driver PCB

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).

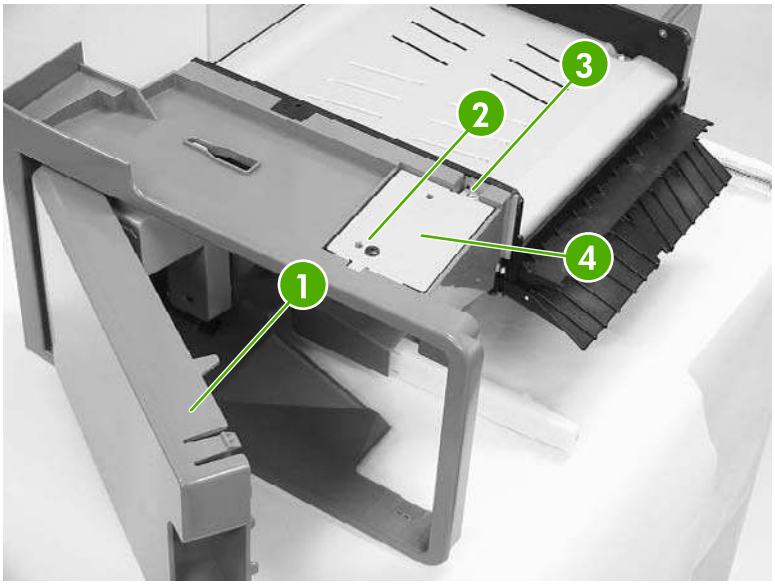


Figure 6-369 Remove the IPTU front cover and front door (1 of 6)

3. Disconnect the connector (callout 5).

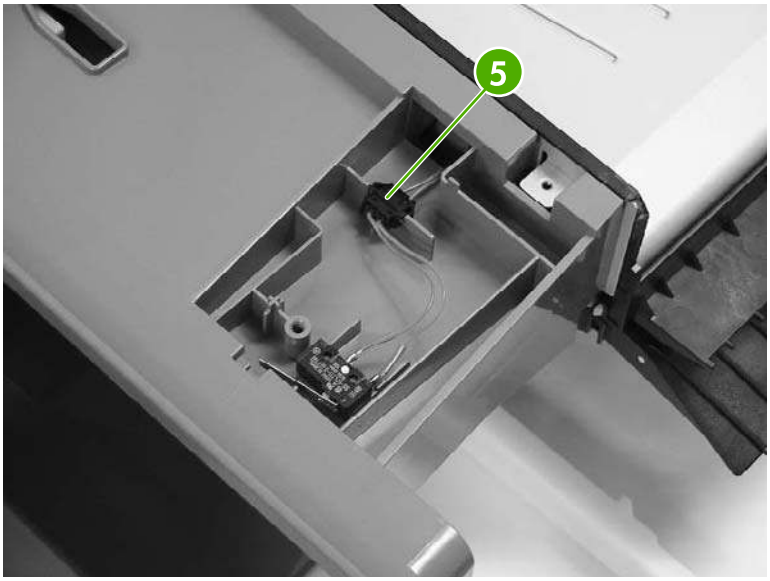


Figure 6-370 Remove the IPTU front cover and front door (2 of 6)

4. Remove one screw (callout 6).

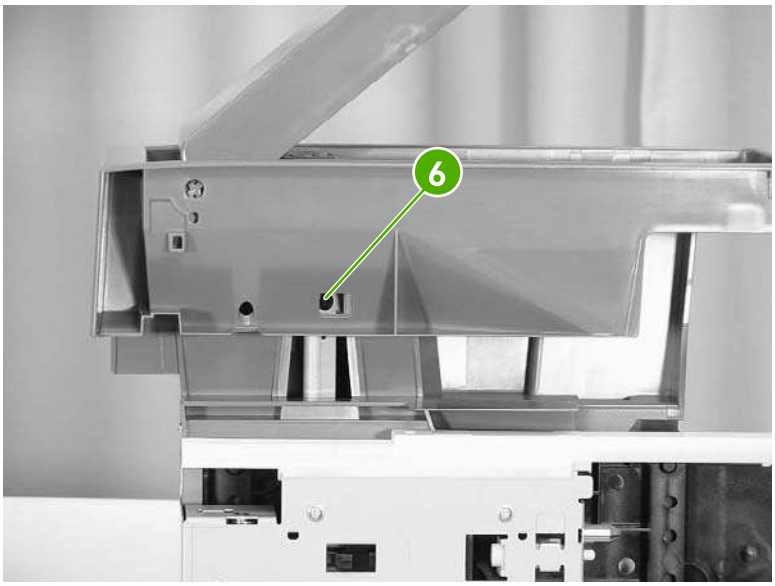


Figure 6-371 Remove the IPTU front cover and front door (3 of 6)

5. Unhook the claw (callout 7) and remove the jam lever (callout 8).

Figure 6-372 Remove the IPTU front cover and front door (4 of 6)

6. Remove the two screws (callout 9) inside the front door.

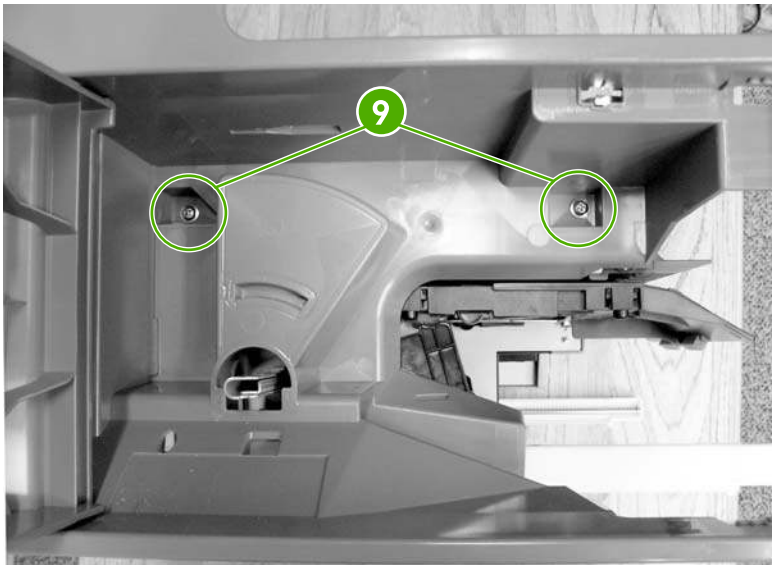


Figure 6-373 Remove the IPTU front cover and front door (5 of 6)

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.

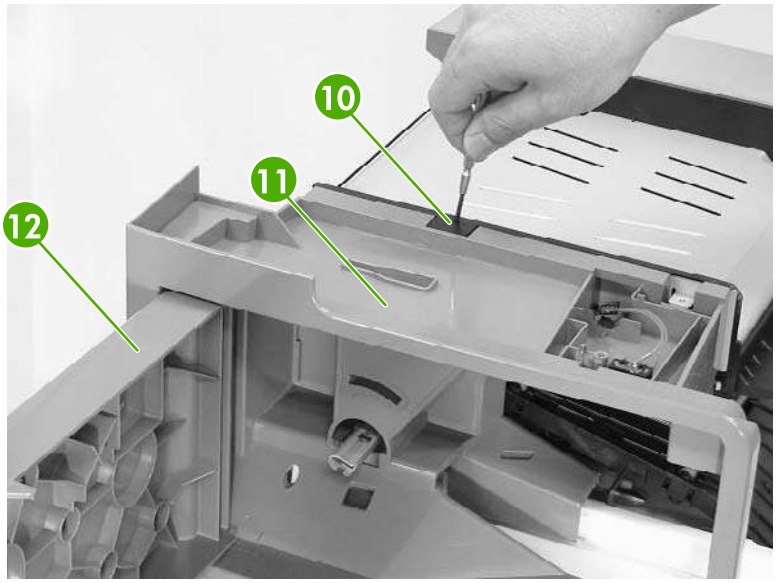


Figure 6-374 Remove the IPTU front cover and front door (6 of 6)

IPTU rear cover

☐ Remove the two screws (callout 1) and the rear cover (callout 2).

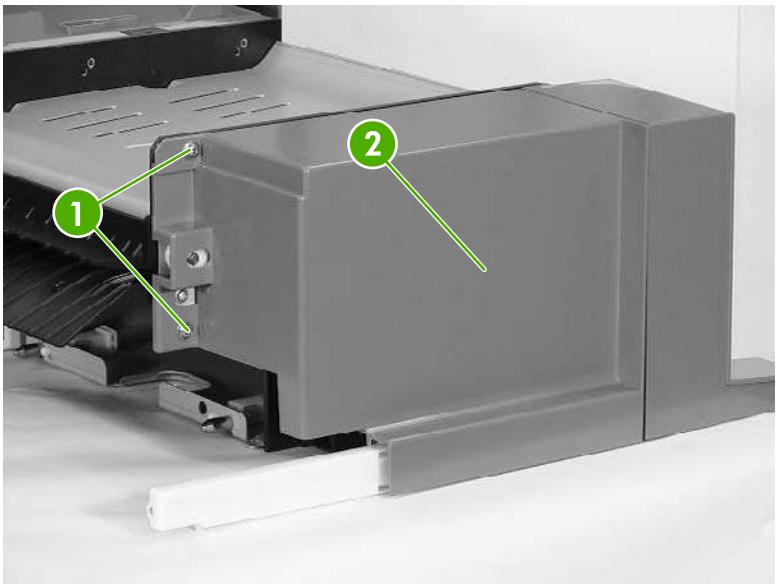


Figure 6-375 Remove the IPTU rear cover

Connector cover assembly

1. Remove the IPTU rear cover. See IPTU rear cover on page 475.
2. Remove the two screws (callout 1).

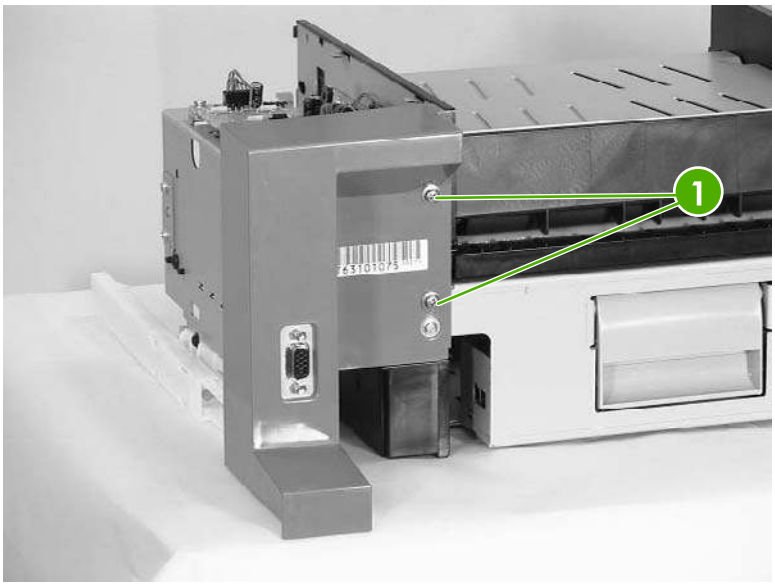


Figure 6-376 Remove the IPTU connector cover (1 of 3)

3. Remove one screw (callout 2).

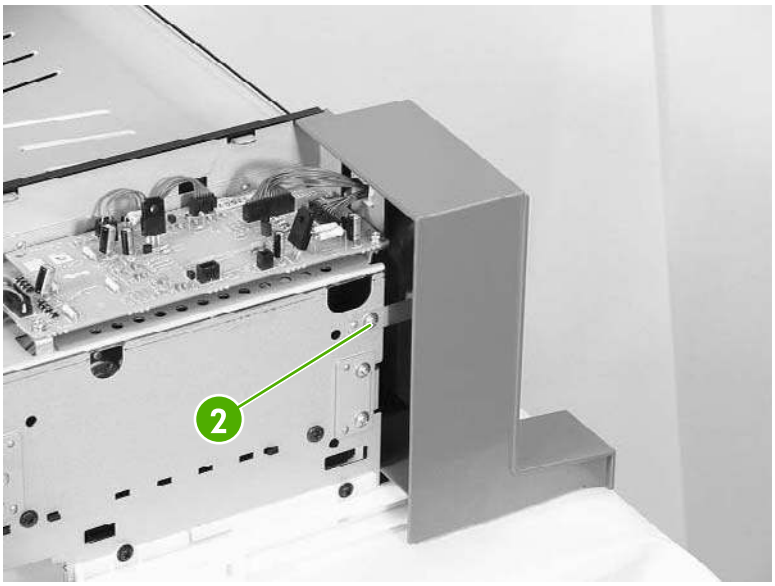


Figure 6-377 Remove the IPTU connector cover (2 of 3)

4. Disconnect the connector (callout 3).

5. Remove the connector cover assembly (callout 4).

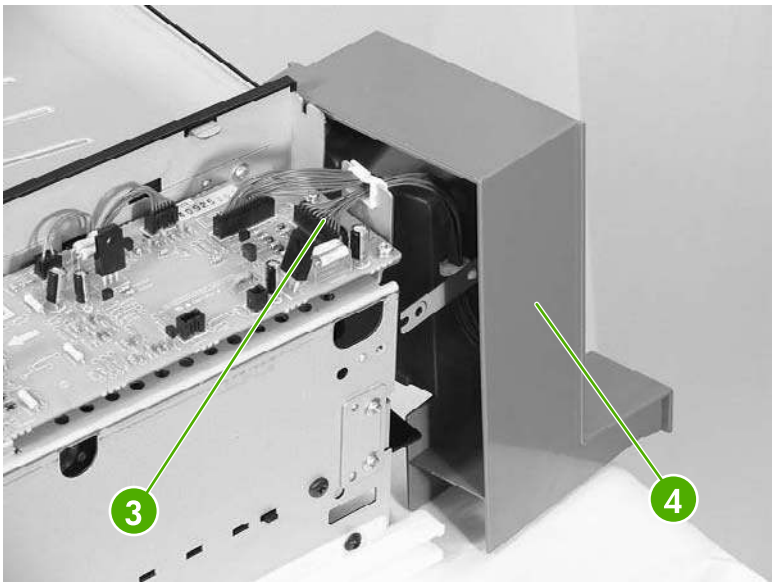


Figure 6-378 Remove the IPTU connector cover (3 of 3)

IPTU driver PCB

1. Remove the rear cover. See IPTU rear cover on page 475.
2. Remove the connector cover assembly. See Connector cover assembly on page 476.
3. Disconnect the four connectors (callout 1).
4. Remove the three screws (callout 2), and then remove the IPTU driver PCB (callout 3).

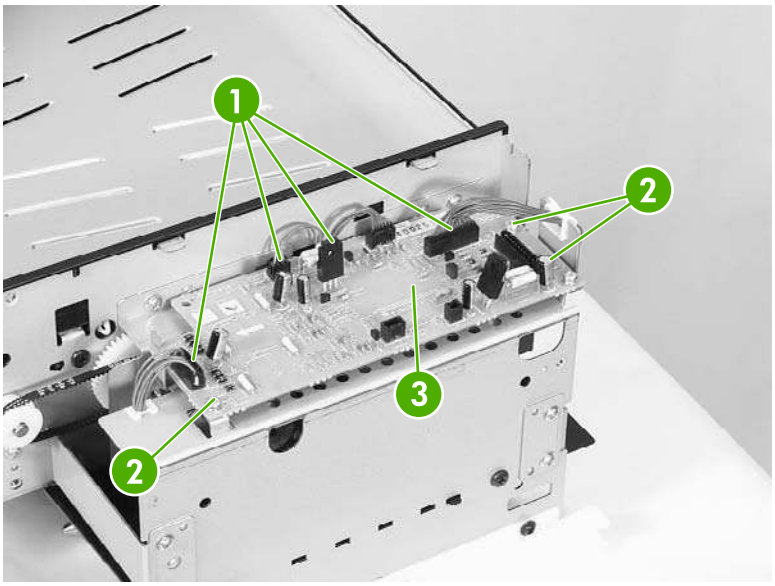


Figure 6-379 Remove the IPTU driver PCB

IPTU driver motors

1. Remove the IPTU. See Intermediate paper transfer unit (IPTU) on page 252.
2. Remove the rear cover. See IPTU rear cover on page 475.
3. Remove the connector cover assembly. See Connector cover assembly on page 476.
4. Remove the IPTU driver PCB. See IPTU driver PCB on page 477.
5. Remove the six screws (callout 1) and remove the cover.

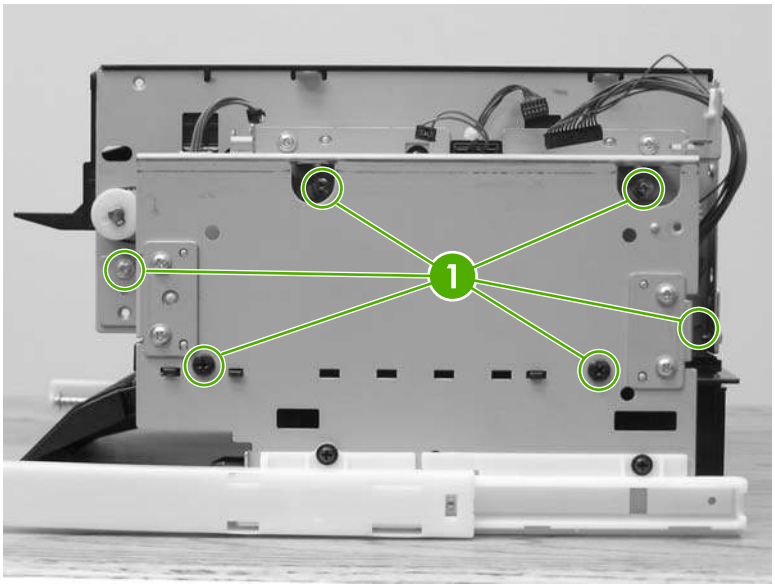


Figure 6-380 Remove the IPTU driver motors (1 of 3)

6. Remove the connectors (callout 2) from each motor.

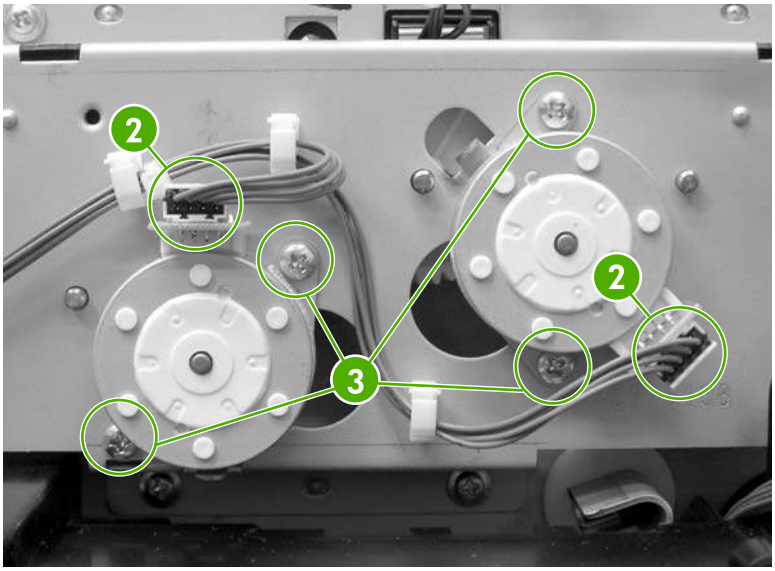


Figure 6-381 Remove the IPTU driver motors (2 of 3)

Hint To remove the right motor, remove two screws and loosen the cover.

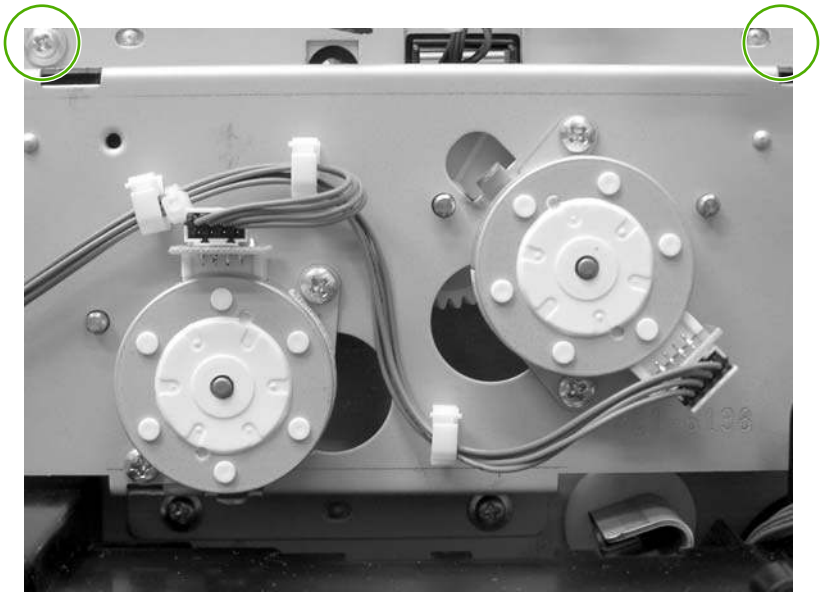


Figure 6-382 Remove the IPTU driver motors (3 of 3)

7. Remove two screws (callout 3) for each motor and remove the motors.

7 Troubleshooting

In order to use the information in this chapter, you should have a basic understanding of the HP LaserJet printing process. Explanations of each mechanical assembly, the MFP systems, and the basic theory of operation are contained in chapter 5 of this manual. Do not perform any of these troubleshooting processes unless you understand the function of each MFP component.

This chapter contains information about the following topics:

- Introduction
- Troubleshooting process
- Control panel messages
- Accessory lights for the 3-bin mailbox and stapler/stacker
- Formatter lights
- Replacement parts configuration
- Paper path troubleshooting
- Correcting print quality and copy quality problems
- Media transport problems
- E-mail problems
- Fax problems
- Network connectivity problems
- Functional checks
- MFP resets
- Control panel troubleshooting
- Tools for troubleshooting
- Diagrams for troubleshooting

Introduction

The information in this troubleshooting chapter is presented with the assumption that the reader has a basic understanding of the color laser-printing process. Explanations of each mechanical assembly, printer systems, and the basic theory of operation are provided in chapter 5. Do not perform any of these troubleshooting processes without fully understanding the function of each mechanism.

This chapter contains the following sections:

- **Troubleshooting process** includes a pre-troubleshooting checklist and a troubleshooting flowchart. These tools contain information about common printer errors that can inhibit proper operation or create print quality problems. These tools also include recommendations for solving the cause of the error.
- **Control panel messages** explains each control panel-display message and suggests recommendations for clearing the cause of each message. When the printer message indicates a failure for which the root cause is not obvious, use the printer error troubleshooting section and the troubleshooting tools section in this chapter to solve the problem.
- **Replacement parts configuration**
- **Paper path troubleshooting** provides techniques to solve feed problems. Explanations are provided about print media checks, troubleshooting jams, and the differences between jams caused by media and those caused by the MFP.
- **Paper path troubleshooting**
- **Output devices** provides troubleshooting information for the IPTU, stapler/stacker, and the 3-bin mailbox.
- **Image formation troubleshooting** suggests methods for solving print quality problems.
- **Interface troubleshooting** provides techniques for isolating communication problems to the MFP hardware, printer configuration, network configuration, or software program.
- **Control panel troubleshooting** provides procedures for printing a menu map from the MFP control panel. It also describes the control panel menus, the items within each menu, and the possible values for the menu items.
- **Fax, e-mail, and network connectivity problems**
- **Troubleshooting tools** help isolate the cause of MFP failures. This section includes explanations of the MFP configuration page and the event log.
- **Diagnostics** provides instructions about how to gain access to and use the diagnostic tools that are incorporated into the MFP.
- **Test pages** provides information on printing test pages to help diagnose problems.
- **MFP resets**
- **Service menu** provides procedures for opening the service menu and performing service-oriented tasks. These tasks include counts for entering the serial number, service ID, transfer unit maintenance, fuser maintenance, color page, and total page, and clearing the event log.
- **Diagrams** provides graphical locations and tables for the MFP's internal assemblies and sensors.

Troubleshooting 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? See Information pages on page 640.

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.

Initial troubleshooting 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.

Troubleshooting 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 487.
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 596.
3. Ensure that the print media that you are using meets specifications. See Media specifications on page 18.
4. Print a configuration page (see Information pages on page 640.) 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 536.

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 598.

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 572.
   - 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 4730mfp**.

   -or-

   Mac OS X: Open **Print Center** (or **Printer Setup Utility** for Mac OS X v.10.2), and double-click the line for the **HP Color LaserJet 4730mfp**.

8. Verify that you have installed the HP Color LaserJet 4730mfp series printer driver. Check the program to make sure that you are using an HP Color LaserJet 4730mfp 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.

Troubleshooting 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 7-1 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 487. 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 displays, see Resolving control panel messages on page 488. After the errors have been corrected, go to step 3.
	Yes ↓	No →	
3 **Event log**	Open the **DIAGNOSTICS** 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 598. If paper jams inside the MFP, see Paper path troubleshooting on page 536. If error messages appear on the control panel display when you try to print an event log, see Resolving control panel messages on page 488. 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 Accessory lights for the 3-bin mailbox and stapler/stacker on page 531. 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 536. If you cannot make a copy from the scanner glass, see Scanner tests on page 659. 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 586. After the print quality is acceptable, go to step 7.
	Yes ↓	No →	
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.
	Yes. This is the end of the troubleshooting process.	No →	

Table 7-1 Troubleshooting flowchart (continued)

			See Network connectivity problems on page 596. Also see Configuring and verifying an IP address on page 136 in chapter 3 of this manual. If error messages appear on the control panel display, see Resolving control panel messages on page 488. When the customer can print from the host computer, this is the end of the troubleshooting process.

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.

Power-on troubleshooting overview

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 598). 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 250.
6. Make sure that the firmware flash memory card and the formatter are seated and operating correctly. See Flash memory card (firmware) on page 287.
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 598.

Control panel messages

Messages that appear on the control panel display relay the normal status of the MFP (such as **Processing job.**), or an error condition (such as **CLOSE TOP COVER**) that needs attention. Resolving control panel messages on page 488 lists messages that require attention, or that might raise questions. Messages are listed in alphabetical order, with numeric messages at the end of the list. Not all messages are listed because some (such as **Ready**) are self-explanatory.

NOTE Some messages are affected by the **AUTO CONTINUE** and **CLEARABLE WARNINGS** settings on the **Configure Device** menu, **SYSTEM SETUP** submenu, on the control panel.

Using the MFP help system

This MFP features a help system on the control panel that provides instructions for resolving most MFP errors. Certain control panel messages alternate with instructions about using the help system.

Whenever a **?** appears in an error message or a message alternates with **FOR HELP TOUCH ?**, touch the ? (Help) button to view the help.

To exit the help system, touch the ? (Help) button.

Resolving control panel messages

Control panel message	Description	Recommended action
10.XX.YY SUPPLY **MEMORY ERROR** alternates with **For help press ?** The supplies gauge will display the consumption levels of print cartridges.	**NOTE** Where noted, the message appears only on the event log, not on the control panel. A 10.XX.YY error indicates either an error with a print cartridge or a notification of **OVERRIDE AT OUT** / **COLOR SUPPLY OUT** settings. The values of YY are: 00 = black print cartridge 01 = cyan print cartridge 02 = magenta print cartridge 03 = yellow print cartridge 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 For errors 70 through 92, the message appears only in the event log and is not	**10.00.YY, 10.10.YY, 10.30.YY, 10.32.YY procedure:** 1. Turn the MFP off then on. 2. Swap the cartridge for the color 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. Reseat the connectors between the memory PCB (J4001) and DC controller (J1021). 4. Replace the memory controller PCB. 5. Replace the DC controller PCB. Calibrate the printer after replacing the DC controller.

Control panel message	Description	Recommended action
	posted on the control panel. The control panel message is indicated in parentheses. 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 is out of toner (override not in use) 90 = Replace cartridge (Replace <color> cartridge) 92 = Cartridge not engaged	**10.70.YY, 10.80.YY, 10.88.YY, 10.89.YY procedure:** 1. 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. 2. When the print cartridge subsequently reaches one of the three thresholds set for Override, one of the following events is posted to the event log and the MFP will not continue to print. • 10.80.YY = user limit • 10.88.YY = HP pre-defined maximum use/wear • 10.89.YY = out of toner **10.71.YY, 10.81.YY procedure:** 1. 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. 2. When the black cartridge subsequently reaches Out, 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 procedure:** 1. Turn the MFP off then on. 2. Reseat the print cartridge. 3. Replace the indicated print cartridge.
11.X 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. XX=01 Dead clock battery XX=02 Dead real-time clock	Touch OK to continue. If this error occurs, the MFP will continue to track the time and date using the processor clock until the MFP is turned off. Unless the error is corrected, you will be prompted to reset the date and time whenever the MFP is turned off then on. If the error persists, the formatter might need to be replaced.

Control panel message	Description	Recommended action
13.01.00 JAM INSIDE DRAWER BELOW TRAY 1	Paper is jammed inside the drawer.	1. Follow the onscreen help to clear the jam. Touch OK to continue. 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.
13.12.00 JAM INSIDE **UPPER RIGHT DOOR**	Paper is jammed in the fuser.	1. Follow the onscreen help to clear the jam. Touch OK to continue. 2. Check for obstructions in the fuser. 3. Check for obstructions in the duplexer.
13.12.00 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. Touch OK to continue. 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.JJ.NT JAM IN **PAPER PATH**	Paper is jammed between the registration sensor and the yellow drum. The specific error could be either: • 13.20.00 • 13.21.00	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 the paper is loaded correctly in the paper tray and that it meets specifications. 4. Check for obstructions in the attachment roller on the ETB.

Control panel message	Description	Recommended action
		5. Replace the paper feed assembly after it has been checked for obstructions. 6. Replace the ETB.
13.JJ.NT JAM IN TRAY 1	The MP tray pickup solenoid might be defective.	Remove any jammed paper from tray 1. Follow the instructions on the control panel. See Jams in Tray 1 on page 557. If the message persists, open the **DIAGNOSTICS** menu and touch COMPONENT TEST. Run the test for **MP TRAY SOLENOID**. If the solenoid is defective, replace it. See Component tests on page 659. For more information, see Persistent jams on page 556.
13.JJ.NT JAM IN TRAY X	Paper is jammed in the specified tray.	Follow the instructions on the control panel. See Jams in tray 2 on page 558. If the message persists, see Persistent jams on page 556.
13.JJ.NT JAM INSIDE LOWER RIGHT DOOR	Paper is jammed inside the lower right door.	1. Follow the onscreen help to clear the jam. Touch OK to continue. 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.JJ.NT JAM INSIDE OUTPUT ACCESSORY BRIDGE	Paper is jammed inside the output accessory bridge.	1. Follow the onscreen help to clear the jam. Touch OK to continue. 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.
13.JJ.NT 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. Touch OK to continue. 2. Check for obstructions near the fuser inlet. 3. Ensure that paper is loaded correctly in the paper tray.

Control panel message	Description	Recommended action
		4. Try exchanging paper trays to isolate the problem. 5. Replace the fuser.
13.JJ.NT JAM INSIDE SMALL FRONT DOOR	Paper is jammed inside the small front door.	1. Follow the onscreen help to clear the jam. Touch OK to continue. 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.
13.JJ.NT JAM INSIDE TRAY 1	There is a jam inside tray 1.	1. Remove any jammed paper in tray 1. 2. Ensure that paper is loaded properly. 3. Inspect the pickup roller and separation pad. Replace if necessary.
13.XX.X JAM IN **LEFT ACCESSORY**	Paper is jammed in an external paper handling device.	Clear the jam and then touch OK.
13.XX.YY JAM IN **TOP OUTPUT BIN**	Paper is jammed in the output bin. Use this list to determine the exact location of the jam: • 13.12.07 = staple cartridge • 13.12.08 = output bin paper-present sensor (paper is stuck) • 13.12.09 = output bin inlet sensor (paper is stuck) • 13.12.10 = output bin inlet sensor (paper did not reach the sensor at the appropriate time) • 13.12.11 = paper present in the output bin when the MFP is turned on • 13.31.00 = paper jammed in the reversing assembly	1. Clear all jammed paper. 2. Verify that the connector J50 on the DC controller PCB is firmly seated. See Figure 6-234 Remove the DC controller (1 of 2) on page 385. 3. Verify that the two connectors on the rear of the reversing assembly are installed. See Figure 6-234 Remove the DC controller (1 of 2) on page 385. 4. Use the component diagnostics test to test three motors: switchback motor, intermediate switchback motor, and output motor. See Component tests on page 659. 5. Use the component diagnostics test to test two sensors: face-up/face-down solenoid and alienation solenoid. See Component tests on page 659. 6. Use the manual sensor test to test two sensors: paper delivery sensor and reversing-paper sensor. See Manual sensor test on page 657. 7. If any of these components fail, replace the reversing assembly.
13.XX.YY JAM IN STAPLER	Paper is jammed inside the stapler.	☐ See Staple jams on page 548.

Control panel message	Description	Recommended action
20 INSUFFICIENT MEMORY **For help press ?** alternates with **20 INSUFFICIENT MEMORY** **To continue touch OK**	The MFP has received more data from the computer than fits in available memory.	1. Touch OK to continue printing. **CAUTION** A loss of data will occur. 2. Reduce the complexity of the print job to avoid this error in the future. 3. Adding memory to the MFP may allow printing of more complex pages.
22 EIO X **BUFFER OVERFLOW** **To continue touch OK**	The EIO card in card slot X has overflowed its I/O buffer during a busy state.	1. Touch OK to continue printing. **CAUTION** A loss of data will occur. 2. Check the host configuration. If the message persists, replace the device in the EIO slot.
22 EMBEDDED I/O **BUFFER OVERFLOW** **To continue touch OK**	Too much data was sent to the embedded HP Jetdirect print server.	Touch OK to continue. When this error occurs, data might be lost. If necessary, resend the job to the MFP.
22 PARALLEL I/O **BUFFER OVERFLOW** **For help press ?** alternates with **22 PARALLEL I/O** **BUFFER OVERFLOW** **To continue touch OK**	The parallel buffer has overflowed during a busy state.	1. Touch OK to resume printing. **NOTE** A loss of data will occur. 2. If the message persists, disconnect the parallel cable at both ends and reconnect. 3. Ensure that a high-quality cable is being used. Some non-HP parallel cables might be missing pin connections or might not conform to the IEEE-1284 specification. 4. Replace the parallel cable. 5. Leave the PC connected and attempt to connect to another printer. If the connection fails, replace the formatter.
22 USB I/O **BUFFER OVERFLOW** **To continue touch OK**	The USB buffer has overflowed during a busy state.	1. Touch OK to continue printing. **NOTE** A loss of data will occur. 2. If the message persists, disconnect the USB cable at both ends and reconnect. 3. Ensure that a high-quality USB cable is being used.

Control panel message	Description	Recommended action
		4. Replace the USB cable. 5. Leave the PC connected and attempt to connect to another printer. If the connection fails, replace the formatter.
30.00.01 Check Cables Check Scanner Lock	The scanner cables might be loose, or the scanner lock might be incorrectly set.	1. To continue, turn the MFP off then on. 2. Check the cables and the scanner lock. 3. Check the scanner fan.
30.01.06 SCANNER FAILURE	This is a scanner fan error. This fan is located in the base of the scanner assembly. It operates whenever the scanner lamp is illuminated or whenever the scanner flatbed motor is rotating. This 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. See Scanner controller PCB connections on page 669. 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. See Scanner fan on page 428.
30.01.08 SCANNER FAILURE	This is a scanner calibration error. The scanner might be locked, or a cable might not be connected correctly. During the MFP initialization sequence, the scanner optical assembly moves from its home position to the calibration strip. If this movement does not occur, this error appears.	1. Raise the ADF and ensure that the scanner lock is in the unlocked position. 2. Turn on the MFP and watch to see if the optical assembly moves. If it does not move, remove the scanner glass to see if anything is hindering the optical assembly from moving. 3. Ensure that the optical assembly drive belt is installed correctly. 4. Verify that the connector CN106 on the scanner controller PCB is firmly seated. See Figure 7-20 Main assembly PCBs on page 678. Also see Scanner controller PCB connections on page 669. 5. Verify that the connector CN109 on the scanner controller PCB is firmly seated. Also verify that the connector for the scanner home position sensor is firmly seated. See Figure 7-15 Scanner controller PCB component connections on page 669.
30.01.10 SCANNER FAILURE	The ADF fan is not operating. The ADF fan operates only during the scan process.	1. Remove the ADF rear cover and watch the fan during a scan from the ADF. 2. Verify that the fan connection on the ADF intermediate PCB is firmly seated. 3. If the fan does not rotate, replace the ADF. See ADF assembly on page 411.

Control panel message	Description	Recommended action
30.01.YY SCANNER FAILURE	An error has occurred in the scanner. Use the following list to identify specific errors: • 30.01.01 = The scanner cover is open. • 30.01.02 = A jam has occurred in the ADF. • 30.01.03 = The ADF could not pick up the paper. • 30.01.06 = An error has occurred at the scanner fan. (See the separate entry for this error.) • 30.01.07 = A communication error has occurred in the scanner. • 30.01.08 = A scanner calibration error has occurred. (See the separate entry for this error.) • 30.01.10 = An error has occurred at the ADF fan. (See the separate entry for this error.) • 30.01.15 = Scanner initialization failed. • 30.01.17 = The scanner carriage is locked. • 30.01.18 = An error occurred on the scanner PCB. • 30.01.19 = An error occurred at the scanner lamp. • 30.01.22 = A fatal hardware error has occurred in the scanner. • 30.01.23 = A scanner calibration error has occurred. • 30.01.24 = The ADF jam access door is open. • 30.01.25 = A general error has occurred in the scanner or ADF. This error is most likely a memory corruption. • 30.01.29 = The ADF output bin is full. • 30.01.36 = The scanning firmware upgrade failed. The MFP automatically tries to upgrade the firmware again the next time the MFP is turned on.	1. Turn the MFP off and then on to try to clear the message. 2. If the message indicates that a jam has occurred, clear the jam. See Jams in the ADF on page 562. 3. Verify that the cable between the print engine and the scanner is securely connected. See Scanner controller PCB connections on page 669. 4. Upgrade the firmware. 5. If you are unable to resolve the problem, replace the scanner assembly. See Scanner assembly on page 414.
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 EIO X BAD	The connection between the MFP and the EIO card has been broken.	Touch OK to continue printing.

Control panel message	Description	Recommended action
TRANSMISSION **To continue touch OK**		
40 EMBEDDED I/O BAD **TRANSMISSION** **To continue touch OK**	A connection with the embedded Jetdirect print server has been broken.	Turn the MFP off then on. If the message persists, the embedded Jetdirect print server might be damaged. Replace the formatter. See Formatter board on page 280.
41.3 UNEXPECTED **SIZE IN TRAY X** **For help press ?** alternates with **LOAD TRAY XX** **[TYPE] [SIZE]** **To use another** **tray touch OK**	The paper that is loaded is longer or shorter in the feed direction than the size configured for the tray.	1. If the incorrect size was selected, cancel the job or press ? to access help. OR 2. Touch OK to select another tray. 3. Run paper path diagnostics to ensure that the sensors are functioning properly. 4. Replace the paper feed unit.
41.5 UNEXPECTED **TYPE IN TRAY X** **For help press ?** alternates with **LOAD TRAY XX** **[TYPE] [SIZE]** **To use another** **tray touch OK**	The MFP senses a different paper type in the paper path than configured in the tray.	1. If the incorrect type was selected, cancel the job or press ? to access help. OR 2. Touch OK to select another tray. 3. Run the paper path diagnostics to ensure that the sensors are functioning properly. 4. Replace the paper feed unit.
44.1 USB ACCESSORY **ERROR** **For help press ?**	This message appears when a connected USB accessory draws too much power. When this happens, the ACC port is disabled and printing stops.	• Use the scroll bar to step through the instructions. • Remove the USB accessory.
49.XX.XX PRINTER ERROR **PRINTER 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 homegrown programs. On rare occasions, the formatter is at fault, which is usually indicated by a **79 Service Error**.	1. Turn the MFP off then on. 2. Press Stop to clear the print job from memory. 3. Turn the MFP off 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.

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 MFP that connect it to the network or computer. 6. Turn the MFP off. 7. Remove all memory DIMMs or third-party DIMMs from the MFP. (Do not remove the firmware DIMM.) 8. Remove all EIO devices from the MFP. 9. Turn the MFP on. 10. If the error no longer exists, reinstall each DIMM and EIO device one at a time, making sure to turn the MFP off and on again as you install each device. 11. Replace a DIMM or EIO device if you determine that it causes the error. 12. Remember to reconnect all of the cables that connect the MFP to the network or computer. 13. If the error persists, upgrade the firmware before replacing the DC controller. 14. Replace the formatter and calibrate the MFP. See Calibrating the MFP on page 591.
50.X FUSER ERROR **For help press ?**	A fuser error has occurred. The error might be due to an inadequate power supply, inadequate line voltage, or a problem with the fuser. The following are specific fuser errors: 50.1: A low fuser temperature error has occurred in the main thermistor. 50.2: A fuser warm-up service error has occurred. 50.3: A high fuser temperature error has occurred in the main thermistor. 50.6: An open fuser error has occurred. 50.7: A fuser pressure release mechanism has failed. 50.8: A low fuser temperature error has occurred in the sub thermistor. 50.9: A high fuser temperature error has occurred in the sub thermistor.	1. Turn the MFP off then on. 2. Reinstall the fuser and check the fuser connection (J5001) with the DC controller. If the connector is damaged, replace it. 3. Replace the fuser. 4. Replace the low-voltage PCB. 5. Replace the DC controller.

Control panel message	Description	Recommended action
51.1Y PRINTER ERROR **PRINTER ERROR** **For help press ?** alternates with **51.1Y PRINTER ERROR** To continue **turn off then on**	A beam detect error has occurred. The values of Y are: **Y Description** 0 - Black 1 - Cyan 2 - Magenta 3 - Yellow	1. Turn the MFP off then on. 2. If possible, run the scanner test diagnostic for the laser scanner indicated. 3. Verify that the scanner is properly connected at the DC controller. 4. Replace the scanner.
51.2Y **PRINTER ERROR** **For help press ?** alternates with **51.2Y** **PRINTER ERROR** To continue **turn off then on**	A laser error has occurred. The values of Y are: **Y Description** 0 - Black 1 - Cyan 2 - Magenta 3 - Yellow	1. Turn the MFP off then on. 2. If possible, run the scanner test diagnostic for the laser scanner indicated. 3. Verify that the scanner is properly connected at the DC controller. 4. Replace the scanner.
52.XY PRINTER ERROR alternates with **To continue** **turn off then on**	A scanner error has occurred.	1. Restart the MFP. 2. Scan from the flatbed and from the ADF. 3. Reseat the formatter.
53.XY.ZZ CHECK RAM **DIMM SLOT X**	A memory error has occurred. **X DIMM type** 1 - **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, touch OK to continue. The MFP 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.

Control panel message	Description	Recommended action
MAY BE DELETE**54.X PRINTER ERROR** **To continue** **turn off then on**	Printing cannot continue. There is a sensor malfunction. Values of X are: 01 - Humidity/temperature sensor 15 - Yellow 16 - Magenta 17 - Cyan 18 - Black	1. Turn the MFP off then on. 2. Check connector J501 on the toner level PCB or J5201 on the environmental sensor. 3. Check connector J1014 or connector J1010 on the DC controller. 4. Replace the environmental sensor or the toner level PCB. 5. Replace the DC controller.
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. XX description: 01 = environmental temperature sensor output is abnormal (appears only in the event log) 05 = Media sensor failure (appears only in the event log) **NOTE** Errors 07 through 0F appear only in the event log and printing continues. 07 = yellow drum phase (home) position sensor 08 = magenta drum phase (home) position sensor 09 = cyan drum phase (home) position sensor 0A = black drum phase (home) position sensor 0B = Density Sensor Out of Range 0C = Halftone Calibration 0D = Halftone Calibration Diffusion 0F = CPR Out of Range	**54.01 procedure:** 1. Check that all of the environmental requirements are met. 2. Turn the MFP off 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. **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:**

Control panel message	Description	Recommended action
		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**	An printer command error has occurred. **XX Description** 01 = Memory error 02 = Memory error 03 = No engine response 04 = Communication error 05 = RFU error 55.04.55 = ADF fan error	1. Turn the MFP power off then on. 2. For 01 and 02 errors, replace the DC controller. 3. For 03 and 04 errors, check all connections with the DC controller. 4. Upgrade the DC controller firmware. 5. For 05 errors, upgrade the DC controller. 6. Replace the DC controller.
56.XX **PRINTER ERROR** **To continue** **turn off then on**	An MFP error has occurred. **XX Description** 01 - Input device 02 - Output device	1. Turn the MFP off then on. 2. Remove and reinstall all input and output devices. 3. Check all connectors to input and output devices. Replace any defective connectors.
57.0X **PRINTER ERROR** **To continue** **turn off then on**	An MFP fan error has occurred. **Description** 57.0A - Power supply fan 57.05A - Duplex fan 57.09 - Fuser fan (top back) 57.08 - ETB fan 57.03 - Sub power supply fan 57.07 - Control fan 1 (rearmost)	1. Turn the MFP off then on. 2. Check the fan for obstructions. 3. Ensure that the fan rotates. 4. Ensure that the fan connector is seated properly. 5. Replace the fan.

Control panel message	Description	Recommended action
	57.06 - Control fan 2 57.04 - Cartridge fan (bottom left) 57.01 - Delivery fan (top left)	
58.0X **PRINTER ERROR** **For help press ?** alternates with **58.0X** **PRINTER ERROR** **To continue** **turn off then on**	A memory tag error was detected. **Description** 03 - Memory controller PCB (CPU) 04 - Memory controller PCB (power)	1. Turn the MFP off then on. 2. Check the power supply. 3. Check connectors J4001 and J9630 on the memory controller PCB and J1021 on the DC controller PCB. 4. Replace the memory controller PCB. 5. Replace the e-label contacts. 6. Replace the DC controller.
59.XY **PRINTER ERROR** **For help press ?** alternates with **59.XY** **PRINTER ERROR** **To continue** **turn off then on**	An MFP 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 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	1. Turn the MFP off then on. **NOTE** Note: This message might also appear if the transfer unit is missing or incorrectly installed. 2. Ensure that the transfer unit is correctly installed. 1. Turn the printer off then on. 2. Note: This message might also appear 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. See Component tests on page 659. 2. Clean the ETB unit intermediate connector J4613. 3. Reconnect the connector J4613 between the ETB and the printer, and J1011 on the DC controller PCB. 4. Replace the ETB. 5. Replace the DC controller PCB. See DC controller PCB on page 384. Calibrate the printer after replacing the DC controller. See Calibrating the MFP on page 591.

Control panel message	Description	Recommended action
		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. See Component tests on page 659. 3. Replace the fuser motor. 4. Replace the DC controller PCB. See DC controller PCB on page 384. Calibrate the printer after replacing the DC controller. See Calibrating the MFP on page 591. **Print cartridge motor error** 1. Run the component test to verify that the print cartridge motor is working correctly. See Component tests on page 659. 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. 4. Replace the DC controller PCB. See DC controller PCB on page 384. Calibrate the printer after replacing the DC controller. See Calibrating the MFP on page 591. **Developing disengaging motor error** 1. Run the component test to verify that the print developing disengaging motor is working correctly. See Component tests on page 659. 2. Reconnect the connectors J468 and J1020 between the developing disengaging motor and the DC controller PCB. 3. Replace the developing disengaging motor. See Developing disengaging motor on page 369. 4. Replace the DC controller PCB. See DC controller PCB on page 384. Calibrate the printer after replacing the DC controller. See Calibrating the MFP on page 591.

Control panel message	Description	Recommended action
60.X **PRINTER ERROR** alternates with **To continue** **turn off then on**	A tray lifting error has occurred, where X is the number of the tray. 02 - tray 2 03 - tray 3 04 - tray 4	1. Turn the MFP off then on. 2. For tray 2, verify that connector J93 on the DC controller is firmly seated. This connector is for the lift motor. 3. Verify that connector J4618 is securely connected, and then check connector J1015 on the DC controller. 4. For trays 3 and 4, verify that connectors J8226 and 8211 on the paper deck driver PCB are securely connected. 5. 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. 6. Replace the DC controller.
62 NO SYSTEM **To continue** **turn off then on**	No system was found.	1. Turn the MFP off then on. 2. Reseat the firmware compact flash and ensure that it is the first slot (the slot is marked firmware). 3. Replace the firmware compact flash. 4. Replace the formatter.
65.X.X OUTPUT **DEVICE CONDITION**	An external output device has a condition that needs attention before printing can resume.	1. Turn the MFP off then on. If necessary, reseat the output device. Ensure that the output device is connected and the cable is tightened. 2. Ensure that no error lights are illuminated on the output device.
66.XX.YY OUTPUT **DEVICE FAILURE**	An error occurred in an external paper-handling accessory. • 66.00.15 = The output device was removed and then replaced while the MFP power was on. • 66.12.01 = Output-lift roller or paddle-motor error • 66.12.02 = Jogger-motor error • 66.12.03 = Stapler motor error	1. Turn the MFP power off. 2. Check that the accessory is properly seated on and connected to the MFP, without any gaps between the MFP and the accessory. If the accessory uses cables, disconnect and reconnect them. 3. Turn the MFP power on. 4. If this message persists, replace the output device.

Control panel message	Description	Recommended action
68.X PERMANENT **STORAGE FULL** **For help press ?** alternates with **68.X PERMANENT** **STORAGE FULL** **To continue** **turn off then on**	A non-volatile storage device is full. Touching OK should clear the message. Printing can continue, but there may be unexpected behavior. **X Description** 68.0 - Onboard NVRAM 68.1 - Removable disk or flash	1. Touch OK to continue. 2. For **68.0** errors, initialize the NVRAM. 3. For **68.1** errors: • Use HP Web Jetadmin to delete files from the hard disk or flash card. • Reinitialize the hard disk. See Hard-disk initialization on page 601. • Replace the hard disk. See Hard drive on page 282. • Replace the formatter. See Formatter board on page 280.
68.X PERMANENT **STORAGE WRITE FAIL** **To continue touch OK**	The MFP NVRAM is full. Some settings that are saved in the NVRAM might have been reset to the factory defaults. Printing can continue, but some unexpected functions might occur if an error occurred in permanent storage **X Description** 68.0 - Onboard NVRAM failure 68.1 - Memory DIMM or hard disk failure	1. Touch OK to continue. 2. For **68.0** errors, perform an NVRAM initialization. 3. For **68.1** errors: • Use HP Web Jetadmin to delete files from the hard disk or flash card. • Reinitialize the hard disk. See Hard-disk initialization on page 601. • Replace the hard disk. See Hard drive on page 282. • Replace the formatter. See Formatter board on page 280. 4. For **6810** errors that persist, reinitialize the hard disk or flash card.
68.X STORAGE ERROR **SETTINGS CHANGED** **For help press ?** alternates with **68.X STORAGE ERROR** **SETTINGS CHANGED** **To continue touch OK**	One or more MFP settings saved in the non-volatile storage device is invalid and has been reset to its factory default. Touching OK should clear the message. Printing can continue, but there may be unexpected behavior. 0 - NVRAM 1 - Disk or flash	1. Touch OK to continue. 2. If the message persists, turn the MFP off then on. 3. For **68.0** errors, reinitialize the NVRAM.
69.X PRINTER ERROR **For help press ?** alternates with **69.X PRINTER ERROR**	An MFP error has occurred. X - 0, 1 Duplex unit is not functioning.	1. Turn the MFP off then on. Press ? for more information. 2. Check the duplex connection to ensure that it is connected to the duplexer.

Control panel message	Description	Recommended action
To continue **turn off then on**		3. Ensure that connector J1030 is connected at the DC controller. 4. Upgrade the firmware. 5. Replace the duplexer. Replace the DC controller.
8X.YYYY **EIO X ERROR**	The I/O accessory card in slot X has encountered a critical error. **X Description** 1: error in slot 1	1. Turn the MFP off then on. 2. If the problem persists, reseat the EIO card. 3. Replace the EIO card.
8X.YYYY EMBEDDED **JET DIRECT ERROR**	This message is generated by a failure of the embedded Jetdirect print server.	Turn the MFP off then on. Press ? for more information. If the message persists, see Troubleshooting the embedded HP Jetdirect print server on page 665.
[Binname] FULL	The specified output bin is full. <Binname> = Unknown Standard output bin Left output bin Optional bin	Empty the bin to continue.
[FS] DEVICE **FAILURE** **To clear touch OK**	FS = ROM disk, RAM disk, card slot X, internal disk, EIO X disk, or USB.	1. To clear the message, touch OK. 2. Turn the MFP off then on. 3. If the message persists, remove and replace the affected component if possible.
[FS] FILE **OPERATION FAILED** **To clear touch OK** alternates with **Ready**	The MFP received a PJL file system command that attempted to perform an illogical operation (for example, to download a file to a non-existent directory).	1. To clear the message, touch OK. 2. If the message persists, turn the MFP off then on. 3. If the message reappears, there may be a problem with the software application.
[FS] FILE **SYSTEM IS FULL** **To clear touch OK**	The component is full.	1. Use HP Web Jetadmin to remove files from the affected component and try again. 2. If the error persists, turn the MFP off then on.
[FS] IS **WRITE PROTECTED** **To clear touch OK**	The component is write-protected.	1. To enable writing to the affected component, turn off write protection using HP Web Jetadmin. 2. Turn the MFP off then on.

Control panel message	Description	Recommended action
[FS] NOT **INITIALIZED** **To clear touch OK** alternates with Current status message	The Flash file system has not been initialized. It must be initialized before it can be used.	Touch OK to continue. Use HP Web Jetadmin to initialize the device or use **DISKINIT** from the control panel. **CAUTION** All data on all disk devices is lost when performing a **DISKINIT** from the control panel.
A0B1C1D0... alternates with **To exit press STOP**	This message is displayed when a paper path sensor test or a paper path test is run. The alphabetical value indicates which sensor is being checked. See Diagnostic tests on page 655.	No action necessary.
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 **Ready** state.	Use PJL commands or HP Web Jetadmin to unlock the control panel.
ADF Cover Open	The ADF cover is open.	The ADF cover-open sensor is located directly above the ADF feed motor. See ADF and scanner sensors on page 679. 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 **DIAGNOSTICS** 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.
ADF Output 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 **DIAGNOSTICS** menu to test this sensor. See Scanner tests on page 659. Lift up on the sensor to simulate the output bin being

Control panel message	Description	Recommended action
		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.
ADF Paper Jam	Paper is jammed in the ADF.	Clear the jam. For more information, see Paper path troubleshooting on page 536. Also see Persistent jams on page 556. 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 7-15 Scanner controller PCB component connections on page 669. You can use the **SCANNER TESTS** in the **DIAGNOSTICS** menu to test this motor. See Scanner tests on page 659. 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 411. The ADF paper-present sensor might be defective. See Figure 7-20 Main assembly PCBs on page 678. Make sure that the sensor flag can move freely. You can use the **SCANNER TESTS** in the **DIAGNOSTICS** menu to test this sensor. See Scanner tests on page 659. 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.
ADF Pick Error	The ADF experienced an error while picking paper.	Clear the jam. See Jams in the ADF on page 562. Also see Solving repeated jams on page 555. 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 7-23 ADF motors, fans, and solenoids on page 680. You can use the **SCANNER TESTS** in the **DIAGNOSTICS** menu to test this motor. See Scanner tests on page 659. Run the **ADF INPUT MOTOR** test and the **ADF INPUT MOTOR**

Control panel message	Description	Recommended action
		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 411.
ADF Skew Error	Paper is skewed in the ADF.	Make sure that the paper guides are aligned on the sides of the originals, and that all of the originals are the same size. Remove the remaining paper from the ADF and close the ADF cover. Follow the instructions in the onscreen dialog box.
Attachment Too Big	The scanned documents have exceeded the size limit of the server.	Send the job again using a lower resolution, smaller file size settings, or fewer pages. See Using the embedded Web server on page 633 to learn how to reduce the size of the attachment. Contact the network administrator to enable sending the scanned documents by using multiple e-mails.
BAD DUPLEXER **CONNECTION** alternates with **For help press ?**	The duplexer is not connected properly and must be reinserted before printing can continue.	1. Turn the MFP off then on. 2. Reconnect the duplexer and ensure that the connector is not damaged. If necessary, replace the duplexer.
Blown Lamp Fuser Error	The scanner lamp fuser has failed.	1. Turn the MFP off then on. 2. Replace the fuser.
Blown Motor Fuser Error	The scanner motor fuser has failed.	1. Turn the MFP off then on. 2. Replace the fuser.
Calibrating...	The MFP is calibrating.	No action necessary.
CALIBRATION FAILED	The scanner failed the calibration process.	1. Turn the MFP off then on. 2. Copy a document on the flatbed. 3. Perform the calibration again, following the instructions carefully.
Canceling.	The MFP is in the process of canceling a job. The message will continue to be displayed while the job is stopped, the paper path flushed, and any remaining incoming data on the active data channel is received and discarded.	No action necessary.
CARD SLOT X NOT **FUNCTIONAL**	The flash card in slot X is not working correctly.	1. Turn the MFP off then on. 2. Remove the card from the slot indicated and replace with a new card.

Control panel message	Description	Recommended action
Check Cables **Then turn off then on**	The cable that connects the scanner to the MFP is experiencing an error.	1. Lift up the ADF assembly and check the scanner lock to ensure that it is in the unlocked position. 2. Verify that the connector CN102 (DC power connection) on the scanner controller PCB is firmly seated. 3. Verify that the connector CN104 (optical head connection) on the scanner controller PCB is firmly seated. 4. Verify that the connector CN101 (formatter connection) on the scanner controller PCB is firmly seated. 5. Also see the entry in this table for **30.1.8 SCAN FAILURE**.
Check Cables Check Scanner Lock **To continue turn off then on**	The scanner might be locked or the interface cable might be seated incorrectly.	1. Lift up the ADF assembly and check the scanner lock to ensure that it is in the unlocked position. 2. Verify that the 256-MB memory board is installed on the back of the formatter. 3. Verify that the connector CN102 (DC power connection) on the scanner controller PCB is firmly seated. 4. Verify that the connector CN104 (optical head connection) on the scanner controller PCB is firmly seated. 5. Verify that the connector CN101 (formatter connection) on the scanner controller PCB is firmly seated. 6. Also see the entry in this table for **30.1.8 SCAN FAILURE**.
Check Output Device	An error has occurred with the output device.	Remove and reinstall the ouptut device. Observe the LED on the device. If it is flashing or is amber, see Accessory lights for the 3-bin mailbox and stapler/stacker on page 531.
Check the glass and remove any **paper 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.
Checking paper path	The engine is turning its rollers to check for possible paper jams.	No action necessary.
Checking printer	The engine is doing an internal test.	No action necessary.
CHOSEN PERSONALITY **NOT AVAILABLE** **To continue touch OK** alternates with	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. Press ? for detailed information. 2. Use the scroll bar to step through the instructions.

Control panel message	Description	Recommended action
CHOSEN PERSONALITY **NOT AVAILABLE** **For help press ?**		3. Reprint using the correct driver for the device. 4. 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.
CLEANING DISK X% COMPLETE	A storage device is being cleaned. Do not turn the MFP off. When the process is complete, the MFP will automatically restart.	No action necessary.
Cleaning...	A cleaning page is being processed.	No action necessary.
Clearing event log	This message is displayed while the event log is cleared. The MFP will exit the **MENUS** once the event log has been cleared.	No action necessary.
Clearing paper path	The MFP jammed or detected misplaced paper when turned on. The MFP is attempting to eject jammed pages automatically.	No action necessary.
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 LOWER RIGHT DOOR	This message is displayed when the lower right door is open.	1. Close the door. 2. Check the switch. Replace the switch if necessary.
CLOSE RIGHT DOORS	This message is displayed when the upper right or middle door is open.	1. Close the door. 2. Check the switch. Replace the switch if necessary.
CLOSE SMALL FRONT DOOR	This message is displayed when the small front door of the IPTU is open.	1. Close the door. 2. Check the switch. Replace the switch if necessary.
Creating... CLEANING PAGE	This message is displayed while a cleaning page is being generated. When the page is complete, the control panel display backs up one screen to the **PRINT QUALITY** menu.	No action necessary. When the page is printed, follow the instructions printed on the cleaning page to process the page.
DATA RECEIVED **To print last page touch OK** alternates with **Ready**	The MFP received data and is waiting for a form feed. When the MFP receives another file, the message should disappear.	Touch OK to continue printing.
DATE/TIME	Prompt for setting the MFP date and time. Default format is [YYYY]/[MMM]/[DD] [HH]-[MM].	To change, touch OK and follow the time and date prompts.

Control panel message	Description	Recommended action
DELETING PRIVATE JOBS	The MFP is deleting a private stored job. A PIN is required to delete a private job.	No action necessary.
Deleting... X	The MFP is currently deleting the stored job.	No action necessary.
Digital Send Communications Error	An error has occurred during a digital send task.	Contact the network administrator.
Digital Send Server Error	The MFP cannot communicate with the server.	Verify the network connection. Contact the network administrator.
DUPLEXER ERROR REMOVE DUPLEXER **Install duplexer with power off**	The duplexer has been removed.	1. Turn the MFP off then on. 2. Check the duplexer connection to ensure that it is connected properly to the duplexer. 3. Ensure that connector J1030 is connected at the DC controller. 4. Upgrade the firmware. 5. Replace the duplexer. 6. Replace the DC controller.
E-mail Gateway did not **respond. Job failed.**	A gateway has exceeded the time out value.	Validate the SMTP IP address. See E-mail problems on page 595.
EIO X DISK **NOT FUNCTIONAL** **For help press ?**	The EIO disk in slot X is not working correctly.	1. Turn the MFP off. 2. Remove the EIO disk from the slot indicated and replace with a new EIO disk drive.
EIO X disk **initializing**	The EIO disk device in slot X is initializing.	No action necessary.
EIO X disk **spinning up**	The EIO disk device in slot X is spinning up its platter.	No action necessary.
Error executing Digital Send job. Job failed.	A digital send job has failed and cannot be delivered.	Try to send the job again.
Event Log Empty	**SHOW EVENT LOG** was selected from the control panel, and the event log is empty.	No action necessary.
FLASH OR [FS] **DEVICE FAILURE** **To clear touch OK** alternates with **Ready**	A device failure has occurred on the specified drive. Printing can continue for jobs that do not require the Flash DIMM.	1. To clear the message, touch OK. 2. If the message persists, remove and re-install the EIO disk drive. 3. Turn the MFP back on. 4. If the message still persists, replace the Flash DIMM.

Control panel message	Description	Recommended action
FLASH OR [FS] **FILE SYSTEM IS FULL** **To clear touch OK** alternates with **Ready**	The MFP received a PJL file system command that attempted to store something on the file system but was unsuccessful because the file system is full.	1. Use HP Web Jetadmin software to delete files from the Flash Memory and try again. 2. To clear the message, touch OK. 3. If the message persists, turn the MFP off then on.
FLASH OR [FS] **IS WRITE PROTECTED** **To clear touch OK** alternates with **Ready**	The file system device is protected and no new files can be written to it.	1. To enable writing to the Flash Memory, turn off write protection, using HP Web Jetadmin. 2. To clear the message, touch OK. 3. If the message persists, turn the MFP off then on.
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
Front Side Optical System Error	The scanner has experienced an error.	1. Turn the MFP off then on. 2. To temporarily clear the message so you can send a fax or send to e-mail, touch Ignore.
Genuine HP supplies installed	A new HP cartridge has been installed. The MFP returns to the **Ready** state after approximately 10 seconds.	No action necessary.
HARD DISK NOT INSTALLED	The system hard disk is not installed.	1. Turn the MFP off then on. 2. Check the hard disk connection with the formatter. 3. Ensure that the formatter is properly connected to the engine. 4. Replace the hard disk. 5. Replace the formatter.
HP Digital Sending: Delivery Error	A digital send job has failed and cannot be delivered.	Try to send the job again.
INCORRECT [COLOR] **CARTRIDGE** alternates with **For help press ?** The supplies gauge will display the consumption levels of print cartridges.	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.

Control panel message	Description	Recommended action
Incorrect PIN	The wrong PIN was entered. After three incorrect PIN entries, the MFP will return to **Ready**.	Re-enter PIN correctly.
Incorrect supplies **For status touch OK** The supplies gauge will display the consumption levels of print cartridges.	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. 3. Press ? to view help for the supply. 4. Use the scroll bar to step through the instructions.
Initializing **permanent storage**	Displayed when the MFP is turned on to show that permanent storage is being initialized.	No action necessary.
Initializing...	This message is displayed when the MFP is turned on, as soon as the individual tasks begin initialization.	No action necessary.
INSERT OR CLOSE **TRAY X** **For help press ?**	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. 5. Replace the DC controller.
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. 7. Replace the DC controller.
INSTALL FUSER	The fuser is not installed or is not installed correctly.	1. Turn the MFP off 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.

Control panel message	Description	Recommended action
		5. Replace the fuser. 6. Replace the DC controller.
Install supplies **For status touch OK** The supplies gauge will display the consumption levels of print cartridges.	At least one supply item is missing or is not correctly seated in the MFP and another supply item is missing, incorrectly placed, out, or low. Insert the supply item or make sure the installed supply item is fully seated.	1. Press Menu to access the **SUPPLIES STATUS** menu. 2. Touch Information. 3. Use the scroll bar to highlight the specific supply that has a problem. 4. Press ? to view help for the supply. 5. For more information, see Install Fuser, Install Transfer Unit, and Install [Color] Cartridge messages.
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. Press ? to view help. 4. Use the scroll bar to step through the instructions. 5. Use the scroll bar to step through the instructions. 6. Replace the ETB. 7. Replace the DC controller.
INSUFFICIENT MEMORY **TO LOAD FONTS/DATA [DEVICE]** **For help press ?** alternates with **[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: 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	1. To use the device without the data, touch OK. 2. To solve the problem, add more memory to the device. DDR SDRAM memory: 128 MB (Q7721A), 256 MB (Q7722A), 512 MB (Q7723A).
Internal disk initializing	The internal disk device is initializing.	No action necessary.
INTERNAL DISK NOT FUNCTIONAL	The internal disk is not working correctly.	1. Turn the MFP off then on. 2. Ensure that the internal disk is seated properly. 3. Replace the internal disk. 4. Replace the formatter.

Control panel message	Description	Recommended action
Internal disk spinning up	The internal disk is spinning up. This message generally displays for approximately 15 seconds when the MFP emerges from Sleep mode. Jobs can still print, but jobs that require disk access, such as quick copy jobs, must wait until the disk is initialized.	No action necessary.
JAM IN DOCUMENT FEEDER	Paper is jammed in the ADF.	If any scanner components were replaced recently, ensure that they were installed correctly. If the message persists after all jams have been cleared, a sensor might be stuck or broken. Open the **DIAGNOSTICS** menu and touch SCANNER TESTS. Test all of the components to isolate the problem.
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. See E-mail problems on page 595. Contact the network administrator.
LOAD TRAY 1: **<TYPE> <SIZE>** **For help press ?**	This message appears when tray 1 is selected but is not loaded, and no other paper trays are available for use.	1. Load the correct paper in tray 1. 2. Confirm that the media guides are in the correct position. 3. If prompted, confirm the size and type of paper loaded.
LOAD TRAY 1: **<TYPE> <SIZE>** **To continue touch OK** alternates with **LOAD TRAY 1:** **<TYPE> <SIZE>** **For help press ?**	tray 1 is loaded and configured for a type and size other than the one specified in the job.	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.
LOAD TRAY 1: **<TYPE> <SIZE>** **To use another** **tray touch OK** Alternates with **LOAD TRAY 1:** **<TYPE> <SIZE>** **For help press ?**	This message appears when tray 1 is selected but is not loaded, and other paper trays are available for use.	1. Load the correct paper in tray 1. 2. Confirm that the media guides are in the correct position. 3. If prompted, confirm the size and type of paper loaded. 4. To use another tray, remove paper from tray 1 and then touch OK.

Control panel message	Description	Recommended action
LOAD TRAY XX **[TYPE] [SIZE]** **For help press ?**	This message appears when Tray XX is selected but is not loaded, and no other paper trays are available for use.	1. Load the correct paper in the tray and touch OK to continue. 2. Confirm that the media guides are in the correct position. 3. If prompted, confirm the size and type of paper loaded. 4. Check the paper size sensors. If they are damaged, replace them. 5. Swap trays to determine if the tray is the problem. Replace the tray if necessary.
LOAD TRAY XX **[TYPE] [SIZE]** **To use another** **tray touch OK** alternates with **LOAD TRAY XX** **[TYPE] [SIZE]** **For help press ?**	Tray XX is either empty or configured for a type and size other than specified in the job, and another tray is available.	1. Load the paper tray with the specified paper. 2. Confirm that the media guides are in the correct position. 3. If prompted, confirm the size and type of paper loaded. 4. To use another tray, touch OK. 5. Check the paper size sensors. If they are damaged, replace them. 6. Swap trays to determine if the tray is the problem. Replace the tray if necessary.
Loading **program X** **Do not power off**	Programs and fonts can be stored on the MFP's file system and are loaded into RAM when the MFP is turned on. The number XX specifies a sequence number indicating the current program being loaded.	No action necessary. Do not turn the MFP off.
MANUALLY FEED alternates with **MANUALLY FEED** **To use another** **tray touch OK**	The job specifies **MANUAL FEED**, but tray 1 is empty. Another tray is available.	Add paper to tray 1 or touch OK to select another tray.
MANUALLY FEED **To continue touch OK**	A job was sent specifying **MANUAL FEED** and tray 1 is empty. No other tray is available.	1. Load the correct paper in tray 1 and touch OK to continue. 2. If prompted, confirm size and type of paper loaded.
MANUALLY FEED **To continue touch OK**	The job specifies **MANUAL FEED**, but tray 1 is already loaded and configured for a type or size other than that specified in the job.	1. If the correct paper is loaded in tray 1, touch OK to print. 2. Otherwise, remove the incorrect paper and load tray 1 with the specified paper.

Control panel message	Description	Recommended action
alternates with **MANUALLY FEED** **For help press ?**		3. Confirm that the media guides are in the correct position. 4. To use another tray, remove paper from tray 1 and then touch OK.
MANUALLY FEED **To use another** **tray touch OK** alternates with **MANUALLY FEED** **For help press ?**	A job was sent that specified **MANUAL FEED** and tray 1 is empty. Another tray is available.	1. Load tray 1 with the specified paper. 2. If prompted, confirm size and type of paper loaded. 3. Otherwise, touch OK to select another tray.
MANUALLY FEED **OUTPUT STACK** alternates with **Then touch OK to** **print second sides**	The even-numbered pages of a manual two-sided document have been printed and the MFP is waiting for the output stack to be inserted for the odd-numbered pages to be printed.	Follow the instructions on the **Print on Both Sides** instruction dialog box at the computer. OR Press ? for help at the MFP.
Mechanical Error	The ADF has experienced a mechanical error.	Turn the MFP off then on. To temporarily clear this message, touch Ignore.
MIXED PAPER SIZES IN **JOB TO STAPLE** **To continue without stapling touch OK**	The job contains different paper sizes and cannot be stapled. The status light is solid green.	Use a uniform paper size when sending jobs to the stapler.
Moving solenoid **To exit press** Stop	The MFP is executing a component test and the component selected is a solenoid.	No action necessary.
Moving solenoid and motor **To exit press** Stop	The MFP is executing a component test and the components selected are the solenoid and the motor.	No action necessary.
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 Network connectivity problems on page 596. Contact the network administrator.
No job to cancel	There are no stored jobs that can be cancelled.	No action necessary.
No stored jobs	No jobs stored on the EIO disk. This message is displayed when the user enters the **RETRIEVE JOB** menu and there are no jobs to retrieve.	No action necessary.
NON HP SUPPLY **INSTALLED**	The MFP has detected that a non-HP print cartridge is currently installed.	If you believe you purchased an HP cartridge, please call the HP fraud

Control panel message	Description	Recommended action
alternates with **Ready** The supplies gauge will display the consumption levels of print cartridges, but the level of any refilled cartridge will not be shown.		hotline (1-877-219-3183, toll-free in North America). **CAUTION** Any MFP repair required as a result of using non-HP cartridges is not covered under HP warranty.
Novell Login Required	Novell authentication has been enabled for this location.	Enter Novell network credentials to access the copy and fax features.
ORDER [COLOR] **CARTRIDGE** The supplies gauge will display the consumption levels of print cartridges. alternates with **Ready** The supplies gauge will display the consumption levels of print cartridges.	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.	1. Press ? to view help for the message. 2. Print cartridge part numbers: • Black - Q6460A • Cyan - Q6461A • Yellow - Q6462A • Magenta - Q6463A 3. Order a print cartridge. **NOTE** Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
Order Document Feeder Kit	The document feeder kit (ADF maintenance kit) needs to be replaced. The MFP will continue to print for the estimated number of pages indicated. Printing will continue until a supply needs to be replaced.	1. Press ? to view help for the message. 2. Document feeder kit part number - Q5997A. 3. Order the document feeder kit. **NOTE** Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
ORDER FUSER KIT **LESS THAN X PAGES** **For help press ?** alternates with **Ready**	The fuser is near the end of its 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.	1. Press ? to view help for the message. 2. Fuser kit part numbers: • 110 volt - Q5702A • 220 volt - Q5703A 3. Order the fuser kit. **NOTE** Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.

Control panel message	Description	Recommended action
Order Supplies alternates with **Ready** **For help press ?** The supplies gauge will display the consumption levels of print cartridges.	More than one supply item is low. Printing will continue until a supply needs to be replaced.	1. Press Menu to access the menus. 2. Touch Information. 3. Touch SUPPLIES STATUS. 4. Touch the supply name that needs to be ordered. 5. Press ? to access help for the supply. 6. Obtain a part number for the supply. 7. Order the supply. 8. Repeat the previous steps as necessary for each supply that needs to be ordered. 9. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
ORDER TRANSFER KIT **LESS THAN X PAGES** **For help press ?** alternates with **Ready**	The transfer unit is near end of life. Printing can continue.	1. Press ? to view help for the message. 2. Obtain the transfer kit part number from help. 3. Order the transfer kit. **NOTE** Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
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.
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 PAPER PATH OPEN	The path between the MFP and the output device is open and must be closed before printing can continue.	1. If you have a 3-bin mailbox installed, make sure the jam access door is closed. 2. If you have a stapler/stacker installed, make sure the staple cartridge is snapped into position and that the staple cartridge door is closed. .

Control panel message	Description	Recommended action
Password or name is incorrect. Please enter correct login. **FAILURE**	The user name or password was typed incorrectly.	Retype the user name or password.
Paused **To return to Ready** **press RESUME key**	The MFP is paused, and there are no error messages pending at the display. The I/O continues receiving data until memory is full.	Press the Stop key.
Performing **PRINT/STOP TEST**	The MFP is performing a print/stop test.	No action necessary.
Performing **upgrade**	A firmware upgrade is in process.	Do not turn the MFP off until the MFP returns to **Ready**.
Performing... **PAPER PATH TEST**	The MFP is performing a paper path test.	No action necessary.
Phone Book is full. To add a phone number, you must first delete a phone number. **FAILURE**	The MFP limits the number of phone numbers that can be stored.	Delete an unused phone number to add a new one.
PIN is incorrect. Please re-enter PIN.	The PIN was typed incorrectly.	Retype the PIN.
PIN is invalid. Please enter a 4-digit number. **FAILURE**	The PIN format is incorrect.	Type the four-digit PIN.
Please wait	The MFP is in the process of clearing data.	No action necessary.
PRINTING STOPPED	A print/stop test was in process when time expired.	No action necessary.
PRINTING STOPPED **To continue touch OK**	This message is displayed when a Print/Stop Test is run and time expires.	Touch OK to continue printing.
Printing... **CMYK SAMPLES**	This message displays while the MFP CMYK samples page is being generated.	No action necessary.
Printing... **CONFIGURATION**	The MFP is generating the configuration page. The MFP will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **DEMO PAGE**	The MFP is generating the demo page. The MFP will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **DIAGNOSTICS PAGE**	The MFP is generating the diagnostics page. The MFP will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **ENGINE TEST**	The MFP is generating the engine test page. The MFP will return to the online **Ready** state when the page is completed.	No action necessary.

Control panel message	Description	Recommended action
Printing... **Event Log**	The MFP is generating the event log page. The MFP will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **FILE DIRECTORY**	The MFP is generating the mass storage directory page. The MFP will return to the **Ready** state when the page is completed.	No action necessary.
Printing... **FONT LIST**	The MFP is generating either the PCL or PS personality typeface list. The MFP will return to the **Ready** state when the page is completed.	No action necessary.
Printing... **MENU MAP**	The MFP is generating the MFP menu map. The MFP will return to the **Ready** state when the page is completed.	No action necessary.
Printing... **PQ TROUBLESHOOTING**	The MFP is generating the print quality troubleshooting pages. The MFP will return to the **Ready** state when the pages are printed.	Follow the instructions on the printed pages.
Printing... **REGISTRATION PAGE**	The MFP is generating the registration page. The MFP will return to the **SET REGISTRATION** menu when the page is completed.	Follow the instructions on the printed pages.
Printing... **RGB Samples**	This message displays while the MFP RGB samples page is being generated.	No action necessary.
Printing... **SUPPLIES STATUS**	The MFP is generating the supplies status page. The MFP will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **usage page**	The MFP is generating the usage page. The MFP will return to the online **Ready** state when the page is completed.	No action necessary.
Processing Digital Send Job	A send job is in process.	No action necessary.
Processing...	The MFP is currently processing a job but is not yet picking pages. When paper motion begins, this message will be replaced by a message that indicates which tray the job is being printed from.	No action necessary.
Processing... **copy <X> of <Y>**	The MFP is currently processing or printing collated copies. The message indicates that copy X of Y total copies is currently being processed.	No action necessary.
Processing... **from tray xx**	The MFP is actively processing a job from the designated tray.	No action necessary.
Processing... **INTERMITTENT MODE** **For help press ?**	This message might be displayed during periods of heavy usage if the MFP becomes overheated. If this occurs, the MFP enters a mode in which it prints for one minute and pauses for one minute. This cycle continues until the operating temperature stabilizes.	Use the scroll bar to step through the instructions.

Control panel message	Description	Recommended action
RAM DISK **SYSTEM IS FULL** **To continue touch OK** alternates with **Ready**	The MFP received a PJL file system command that attempted to store something on the file system but was unsuccessful because the file system is full.	• To clear the message, touch OK. • If the message persists, turn the MFP off then on. **NOTE** This will also delete any files saved in RAM.
RAM DISK DEVICE **FAILURE** **To continue touch OK** alternates with **Ready**	A device failure has occurred on the specified drive.	If prompted to do so, touch OK to continue. The MFP 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 appropriate DIMM card.
RAM DISK FILE **OPERATION FAILED** **To continue touch OK** alternates with **Ready**	The MFP received a PJL file system command that attempted to perform an illogical operation (for example, to download a file to a non-existent directory). Printing may continue.	If prompted to do so, touch OK to continue. The MFP 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 properly seated. 3. Turn the MFP on. 4. If the problem persists, replace the appropriate DIMM card.
RAM DISK IS **WRITE PROTECTED** **To continue touch OK** alternates with **Ready**	The file system device is protected and no new files can be written to it.	1. To enable writing to the RAM disk, turn off write protection, using HP Web Jetadmin software. 2. To clear the message, touch OK. 3. If the message persists, turn the MFP off then on.
Ready The supplies gauge will display the consumption levels of print cartridges.	The MFP is online and ready for data. No status or device attendance messages are pending at the display.	No action necessary.
Ready **Diagnostics mode** **To exit press** Stop	The MFP is in a special diagnostics mode.	Press the Stop key to exit the special diagnostics mode. OR No action is necessary.

Control panel message	Description	Recommended action
Ready **IP Address: X**	The MFP is online and ready.	No action necessary.
Ready **Replace pages in ADF and press Start**	A paper jam, pick error, or skew error might have occurred.	Correct the error. Replace the pages in the ADF and press Start.
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 Accessory lights for the 3-bin mailbox and stapler/stacker on page 531.
Receiving **upgrade**	A firmware upgrade is in progress.	Do not turn the MFP off until the MFP returns to **Ready**.
REINSTALL OUTPUT DEVICE	The output-bin-detection switch, SW103, has detected that no output device is installed. WRONG SWITCH	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 Accessory lights for the 3-bin mailbox and stapler/stacker on page 531.
REMOVE ALL **PRINT CARTRIDGES** **To exit press** Stop	The MFP is executing a component test and the component selected is Belt Only.	Remove all print cartridges.
Remove at least one **print cartridge.** **To exit press** Stop	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 supplies gauge will display the consumption levels of print cartridges.	The identified print cartridge has reached the end of life and the **COLOR SUPPLY OUT** setting in the **SYSTEM SETUP** menu is set to **STOP AT OUT**. Printing cannot continue until the print cartridge is replaced. To hide this message and continue to use fax and e-mail features, touch Ignore.	1. Order the appropriate print cartridge. 2. To continue, touch OK. 3. Open the right covers and then open the ETB. **CAUTION** The transfer belt can be easily damaged. 4. Remove the specified print cartridge. 5. Install a new print cartridge.

Control panel message	Description	Recommended action
		6. Close the ETB and then close the right covers. 7. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
REPLACE <COLOR> **CARTRIDGE** The supplies gauge will display the consumption levels of print cartridges. alternates with **To continue touch OK** The supplies gauge will display the consumption levels of print cartridges.	The identified print cartridge has reached the end of life and the **COLOR SUPPLY OUT** setting in the **SYSTEM SETUP** menu is set to **STOP AT LOW**. Printing can continue.	1. Order the appropriate print cartridge. 2. To continue, touch OK. 3. Open the right covers and then open the ETB. **CAUTION** The transfer belt can be easily damaged. 4. Remove the specified print cartridge. 5. Install a new print cartridge. 6. Close the ETB and then close the right covers. 7. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
REPLACE DOCUMENT FEEDER **KIT** alternates with Current status message	The document feeder kit needs to be replaced.	Replace the feeder kit.
REPLACE FUSER KIT **For help press ?**	The fuser kit has reached the end of its life. Replace the fuser kit. Printing can continue but print quality might be reduced.	1. Open the top cover. 2. Grasp the purple handles on the fuser unit. 3. Remove the old fuser unit from the MFP. 4. Install a new fuser unit and secure with thumb screws. 5. Close the top cover. 6. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.

Control panel message	Description	Recommended action
REPLACE FUSER KIT **For help press ?** alternates with **REPLACE FUSER KIT** **To continue touch OK**	The fuser is nearing the end of its useful life and the **REPLACE SUPPLIES** setting in the **SYSTEM SETUP** menu is set to **STOP AT LOW**. Printing can continue.	1. Order the fuser kit. 2. To continue printing, touch OK. 3. To replace the fuser kit, perform the following steps: • Open the top cover. • Grasp the purple handles on the fuser unit. • Remove the old fuser unit from the MFP. • Install the new fuser unit. • Close the top cover. • Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
REPLACE STAPLE CARTRIDGE	• The staple cartridge contains fewer than 30 staples and should not be used. The staple cartridge needs to be replaced. • There is no staple cartridge installed.	• Replace the staple cartridge. Part number - QQ8091A. • Install a staple cartridge.
REPLACE SUPPLIES **For status touch OK** The supplies gauge will display the consumption levels of print cartridges.	Multiple supplies are at the end of their useful life. If the supplies affected are cartridges only, printing has stopped because the **REPLACE SUPPLIES** setting in the **SYSTEM SETUP** menu is set to **STOP AT OUT**. If the affected supplies are cartridges only, printing cannot continue.	1. Touch SUPPLIES STATUS menu. 2. Scroll to the specific supply that has a problem. 3. Touch ? to view help for the supply. 4. Use the scroll bar to step through the instructions. 5. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
REPLACE SUPPLIES **To continue touch OK** The supplies gauge will display the consumption levels of print cartridges.	Multiple supplies are at the end of their useful life and the **REPLACE SUPPLIES** setting in the **SYSTEM SETUP** menu is set to **STOP AT LOW**.	1. Touch SUPPLIES STATUS menu. 2. Scroll to the specific supply that has a problem. 3. Touch ? to view help for the supply. 4. Use the scroll bar to step through the instructions. 5. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.

Control panel message	Description	Recommended action
REPLACE SUPPLIES - Override in use, press Status alternates with Current status message	The MFP is set to continue printing even though a print cartridge has reached end of life. **CAUTION** Using the Override mode compromises print quality. HP does not recommend use of the Override mode. Replace the print cartridge as soon as possible.	Use the scroll bar to step through the instructions.
REPLACE SUPPLIES - Using black, press Status **Using black only** alternates with Current status message	This message is generated when a print cartridge (or print cartridges) has reached the out condition and the MFP is set to **AUTOCONTINUE BLACK**.	Use the scroll bar to step through the instructions.
REPLACE TRANSFER KIT alternates with Current status message	The transfer unit is at end of life. Printing can continue but print quality might be reduced.	1. Open the top and side covers. 2. Lower the transfer unit by pulling the green handle at the top of the unit downward. 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 front and top covers. 6. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
REPLACE TRANSFER KIT **For help press ?** alternates with **REPLACE TRANSFER KIT** **To continue touch OK**	The transfer unit is nearing the end of its useful life and the **REPLACE SUPPLIES** setting in the **SYSTEM SETUP** menu is set to **STOP AT LOW**.	1. Order the transfer kit. Part number - Q7504A. 2. To continue printing, touch OK. 3. To replace the transfer kit, perform the following steps: • Open the top and side covers. • Lower the transfer unit by pulling the green handle at the top of the unit downward. • Depress the small blue latches located on either side of the bottom of the transfer unit and lift the unit out of the MFP. • Install the new transfer unit.

Control panel message	Description	Recommended action
		• Close the front and top covers. • Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 633 for more information.
Request accepted **please wait**	The MFP has accepted a request to print an internal page, but the current job must finish printing before the internal page will print.	No action necessary.
Resend **upgrade**	The firmware upgrade was not completed successfully.	Attempt upgrade again.
Restoring... [accessory #]	The MFP is restoring external accessory settings in response to a user request.	No action necessary.
Restoring...	The MFP is restoring settings. This message is displayed during the execution of a restore action, such as **RESTORE COLOR VALUES**.	No action necessary.
Restoring... **factory settings**	The MFP is restoring factory settings.	No action necessary.
Rotating <COLOR> **motor** **To exit press** Stop	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**	A storage device is being sanitized. Do not turn the MFP off. When the process is complete, the MFP will automatically restart.	No action necessary.
SCAN CARRIAGE LOCKED **Check lock switch, cycle power.**	The flatbed scanner carriage is locked for shipping.	Turn off the MFP, unlock the scanner carriage, and turn on the MFP.
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.
Scanning	This message appears while the MFP is performing a scan. However, if the message appears for a long time, the ADF fan might be broken or blocked.	1. Turn the MFP off and then on. Listen for the ADF fan to turn on briefly during the initialization sequence. 2. If the ADF fan does not turn on during the initialization sequence, replace the fan.
Scanning page from glass	This message appears while an image is being scanned.	No action necessary.
Scanning page X	This message appears while an image is being scanned.	No action necessary.

Control panel message	Description	Recommended action
Searching... Please wait	This message appears while the MFP is searching for SOMETHING.	No action necessary.
Setting saved	A menu selection has been saved.	No action necessary.
SIZE MISMATCH IN TRAY [XX] **For help press ?** alternates with **Ready**	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.
Sleep mode on	The MFP is in Sleep mode. A button press, receipt of printable data, or an error condition will clear this message.	No action necessary.
STACKER COVER OPEN	The top cover of the stacker unit is open. The unit cannot function.	Close the top cover and resend the job.
STAPLER DOOR OPEN	The stapler module door is open. The stapler/stacker cannot operate in this condition. The amber light on the stapler/stacker is blinking.	Close the stapler module door.
STAPLER DOOR OPEN	The top cover of the stapler unit is open. The unit cannot function.	Close the top cover and resend the job.
STAPLER LOW **ON STAPLES**	Fewer than 50 usable staples remain in the stapler cartridge. The status light is solid green.	Order and install a new stapler cartridge.
STAPLES OUT	The stapler in the stapler/stacker is out of staples. The MFP behavior depends on how **STAPLES OUT** is configured in the **STAPLER/STACKER**submenu.	• If STAPLES OUT=STOP, the MFP stops printing until you refill the stapler or touch OK. This is the default setting. • If STAPLES OUT=CONTINUE, the MFP continues, but the job is not stapled. Replace the stapler cartridge.
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.
TOO MANY PAGES **IN JOB TO STAPLE**	The maximum number of sheets that the stapler can staple is 30, regardless of paper type or weight. The print job finishes printing but is not stapled.	Manually staple print jobs that contain more than 30 sheets.

Control panel message	Description	Recommended action
TOP BIN	The output bin is full. The amber light on the stapler/stacker is blinking.	Remove paper from the output bin.
TOP DOOR OPEN	The jam access door is open. The stapler/stacker cannot operate in this condition. The amber light on the stapler/stacker is blinking.	Close the jam access door.
Transfer unit can **be easily damaged.** alternates with **For help press ?** The supplies gauge will display the consumption levels of print cartridges.	The cartridge is either not installed or not correctly installed in the MFP.	1. Open the top and side covers and then open the ETB. **CAUTION** The transfer belt can be easily damaged. 2. Insert the print cartridge and make sure that it is fully seated. 3. Close the ETB and then close the top and side covers.
TRAY X EMPTY **[TYPE] [SIZE]** alternates with **Ready**	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. 3. Replace the DC controller.
TRAY X OPEN **For help press ?** alternates with **Ready**	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. 5. Replace the DC controller.
TRAY XX SIZE= <SIZE> **Setting saved**	The size selected from the menu has been saved.	No action is necessary.
TYPE MISMATCH IN **TRAY X=[TYPE]** **For help press ?** alternates with **Ready**	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 414.

Control panel message	Description	Recommended action
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 414.
Unable To Mopy Job alternates with **Processing...**	The print job cannot be mopied because of a memory, disk, or configuration problem. Only one copy will be produced.	Install additional memory in the MFP or install a disk drive in the MFP.
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.	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.
Unable To Store Job **Job Name** alternates with **Processing...**	A job cannot be stored because of a memory, disk, or configuration problem.	Install additional memory in the MFP, or install a disk drive into the MFP. If a disk drive is installed, delete previously stored print jobs.
USE TRAY X **[TYPE] [SIZE]** **To change touch NEXT** **To use touch OK**	The MFP is offering a selection of alternate paper to use for the print job.	1. View tray configurations (type and size) using the scroll bar. 2. Touch OK to select a tray. 3. To return to the previous message, touch Back.
User name or password is incorrect. Please re-enter.	The user name or password was typed incorrectly.	Retype the user name or 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.
Wait for printer **to reinitialize**	RAM disk settings have been changed before the MFP automatically restarts, or external device modes have changed or the MFP is coming out of the diagnostics mode and will automatically restart.	No action necessary.
Waiting for **tray X to lift**	The MFP is waiting for tray 2 or an optional tray to lift.	No action necessary.
Warming up	The MFP is coming out of Sleep mode. Printing will continue as soon as warmup is completed.	No action necessary.

Accessory lights for the 3-bin mailbox and stapler/stacker

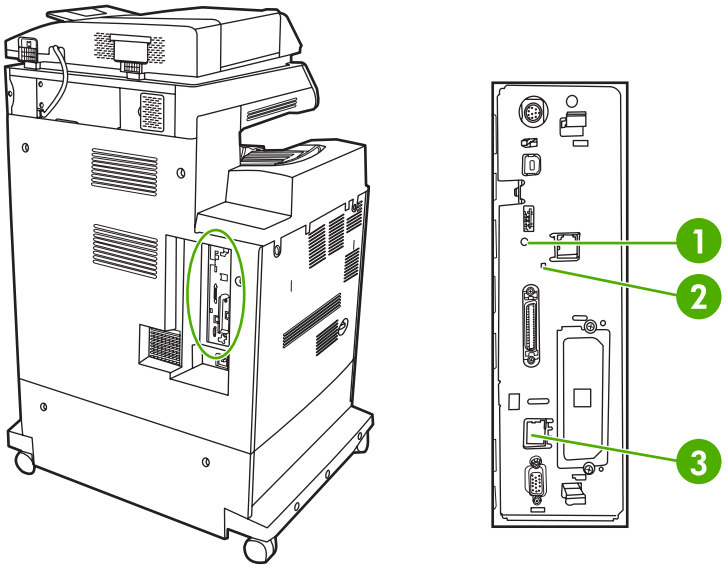
The following table lists errors that can occur in the 3-bin mailbox or stapler/stacker and that are reported by the accessory lights and on the control panel display.

Accessory lights

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.XX.YY OUTPUT DEVICE FAILURE** appears on the control panel display.
Blinking amber	• The accessory has a staple jam. **13.XX JAM IN STAPLER** 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 STAPLE 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 job.** appears on the control panel display. Turn the MFP power off and then on.

Formatter lights

Three LEDs on the formatter indicate that the MFP is functioning correctly.



1	Heartbeat LED
2	Fax LED
3	Embedded Jetdirect LED

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. Touch Menu.
2. Touch Configure Device.
3. Touch I/O.
4. Touch EMBEDDED JETDIRECT MENU.
5. Touch LINK SPEED. Select the appropriate link speed.

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. Replace the formatter. See Formatter board on page 280.

Fax LED

The LED on the fax accessory indicates that it is functioning correctly. If the LED is off, see the *HP LaserJet Analog Fax Accessory 300 User Guide* for information about solving the 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 4730mfp 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 4730mfp 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 Calibrating the MFP on page 591.

Formatter (new or previously installed in another MFP)

The HP Color LaserJet 4730mfp 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 Calibrating the MFP on page 591.

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 Calibrating the MFP on page 591.

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. The diagram Figure 5-35 Pickup/feed system (2 of 2) on page 201 shows the locations of all the sensors in the MFP.

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.

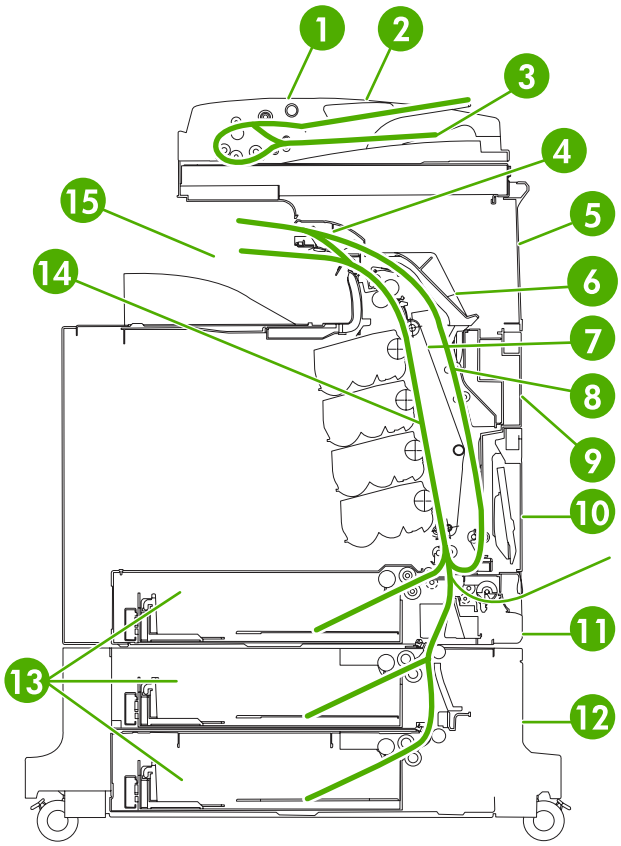


Figure 7-1 Paper jam locations

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

The following table lists the jam messages that might appear on the control panel display. For information about clearing the jam, see the section that is indicated. You might need to look for media in locations other than those that are indicated in the jam message. If the location of the jam is not obvious, look first in the area of the print cartridges.

Table 7-2 Error messages and associated jam locations

Error message	Procedure for clearing the jam	Action
13.01.00 JAM INSIDE DRAWER BELOW TRAY 1	See Jam in Tray 1 on page 544.	A 13.01.00 jam occurs when the paper is late in arriving at the paper leading-edge sensor (SR12) in the paper pickup assembly. This event could be a no pick resulting in the absence of media in the paper path, or could be a sheet that was delayed and jammed somewhere in the feed area between the specified tray and the paper pickup assembly. If the jam occurs during a multiple-page document, media might arrive in the fuser, but the jam is still a result of the media arriving late to the paper leading-edge sensor (SR12) from the specified tray. The MFP will not boot up if a 13.01.00 jam occurs.
13.02.00 JAM INSIDE RIGHT DOORS	See Clearing jams in the right covers on page 539.	A 13.02.00 jam occurs when the paper leading-edge sensor (SR12) has been triggered, but never clears. The media remains in the registration assembly. After opening and closing the front covers and ETB, the MFP can boot up when a 13.02.00 error exists, if the sensor is stuck or media remains in the sensor.
13.09.00 JAM INSIDE RIGHT UPPER DOOR	See Clearing jams in the right covers on page 539.	A 13.09.00 jam occurs when the media has successfully left the paper pick unit, cleared the paper leading-edge sensor (SR12), and arrived at the fuser, triggering the fuser paper sensor (SR1). If SR1 does not detect the end

Table 7-2 Error messages and associated jam locations (continued)

Error message	Procedure for clearing the jam	Action
		of page within a specified time, this will cause a 13.09.00 error message. **WARNING!** The fuser is hot, wait 10 minutes for it to cool down.
13.0A.00	See Clearing jams in the right covers on page 539.	A 13.0A.00 jam occurs when the MFP is trying to deliver sheets to the output bin for a simplex job or, for a duplex turnaround, when the paper was late leaving or never left the fuser delivery sensor (SR1). The media might have been incorrectly loaded in the paper trays, something in the fuser might be obstructing the media, or the sensor could be stuck or broken. **WARNING!** The fuser is hot, wait 10 minutes for it to cool down.
13.12.00 JAM INSIDE UPPER RIGHT DOOR	See Clearing jams in the right covers on page 539.	A 13.12.00 jam occurs when the MFP is trying to print a duplex print job after the media has entered the fuser and started back down the paper path, but has never arrived at or was late getting to the paper leading-edge sensor (PS12). The media might have been disturbed by an outside source, (for example, someone might have grabbed the media while it was turning around), or something might be in the fuser that is obstructing the media.

When clearing jams, be very careful not to tear jammed media. If a small piece of media is left in the MFP, it could cause additional jams. If jams are a recurring problem, see Solving repeated jams on page 555.

NOTE Loose toner might remain in the MFP after a jam and cause temporary print-quality problems. These problems should clear up within a few pages.

Paper jam recovery

This MFP automatically provides paper jam recovery, a feature that allows you to set whether the MFP should attempt to automatically reprint jammed pages. The options are:

- **AUTO**: MFP will attempt to reprint jammed pages.
- **OFF**: MFP will not attempt to reprint jammed pages.
- **ON**: MFP will 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.

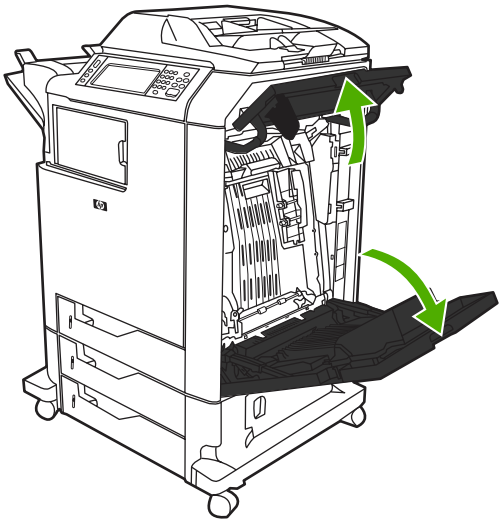
To disable paper jam recovery

1. Press Menu to enter the **MENUS**.
2. Touch Configure Device.
3. Touch SYSTEM SETUP.
4. Touch JAM RECOVERY.
5. Touch OFF.
6. Touch Exit.

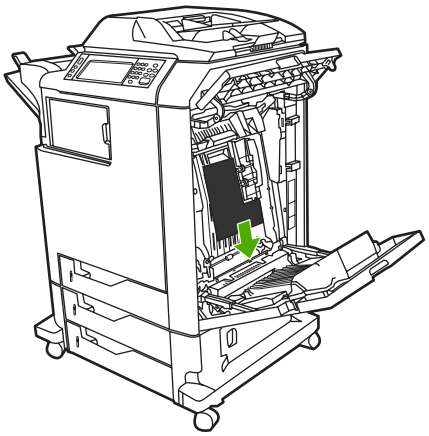
To improve print speed and increase memory resources, you might want to disable paper jam recovery. If paper jam recovery is disabled, the pages involved in a jam will not be reprinted.

Clearing jams in the right covers

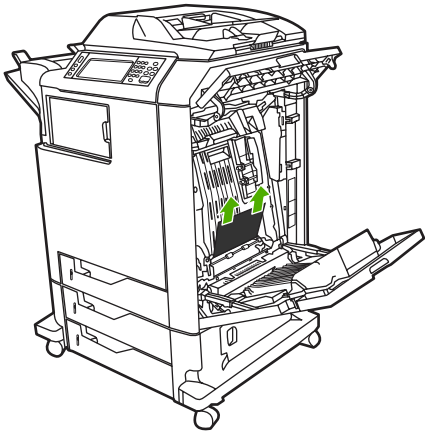
1. Using the handles, open the covers on the right side of the MFP.



2. If media is present in the upper area, grasp the media by both corners and pull down.

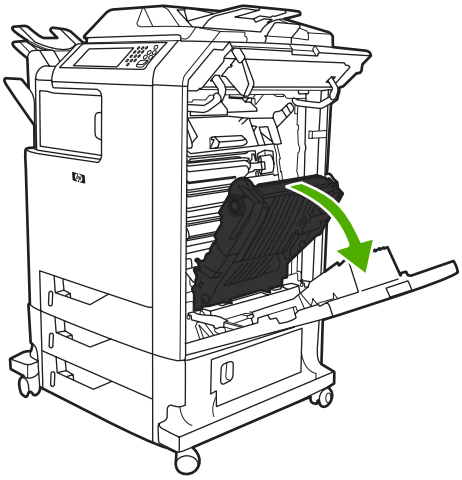


3. If media is present in the lower area, grasp the media by both corners and pull up.

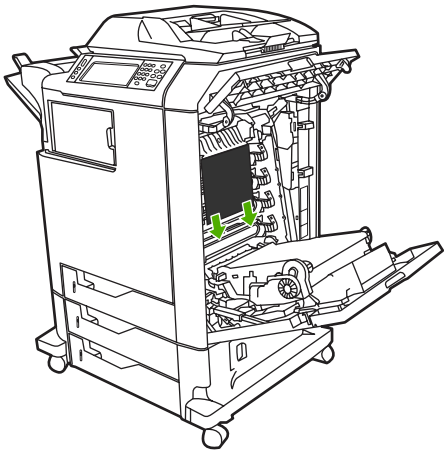


NOTE If no media is present at these locations, continue to the next step.

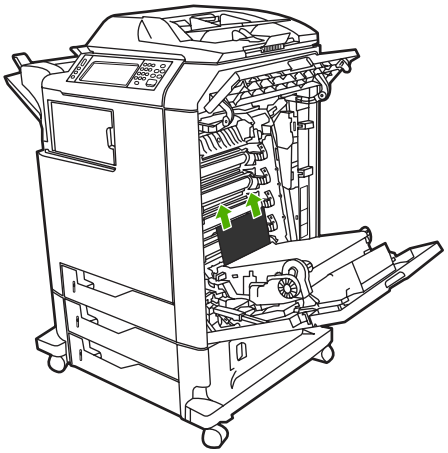
4. Grasp the green handle on the transfer unit and pull down to open it.



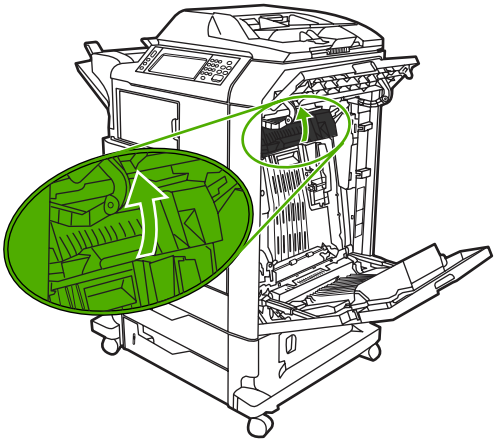
5. If media is present in the upper area, grasp the media by both corners and pull down.



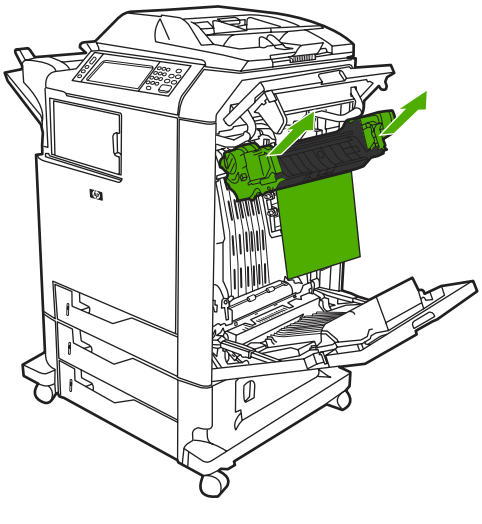
6. If media is present in the lower area, grasp the media by both corners and pull up.

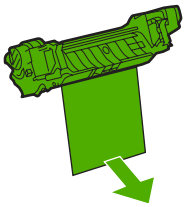


7. Lift the green handle on the fuser cover to open the cover.

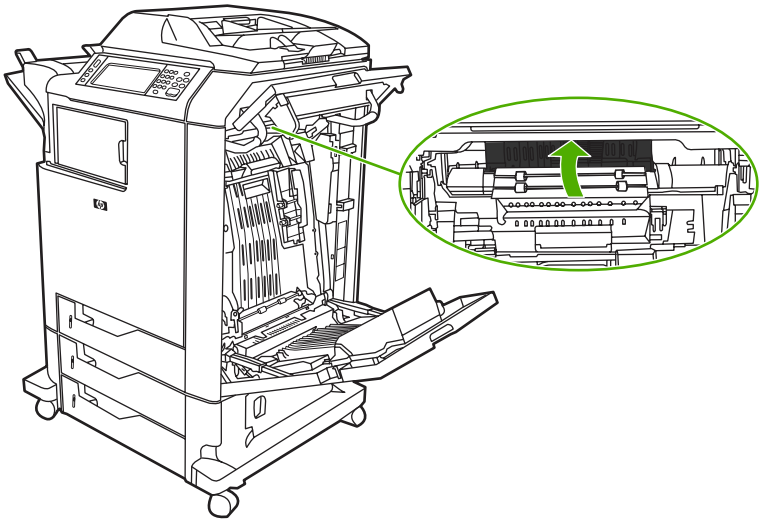


8. Pull the fuser upward to remove any paper.

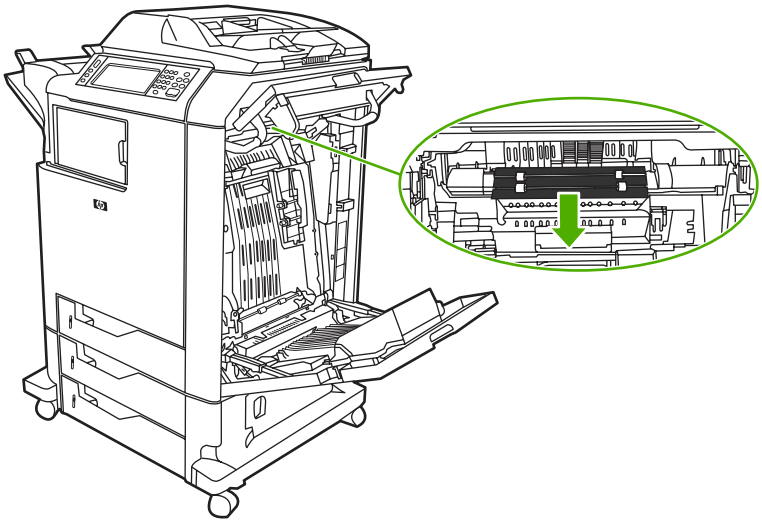




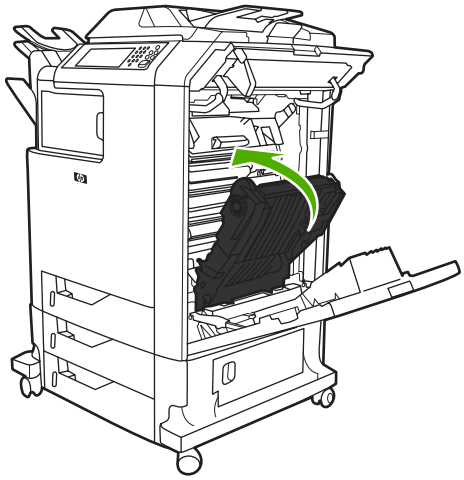
9. Lift the green handle on the duplexer cover to open it.



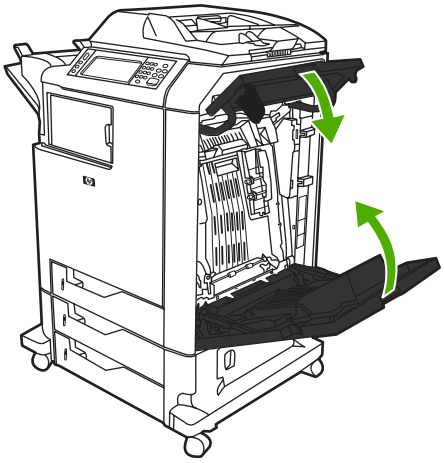
10. Remove any jammed paper.



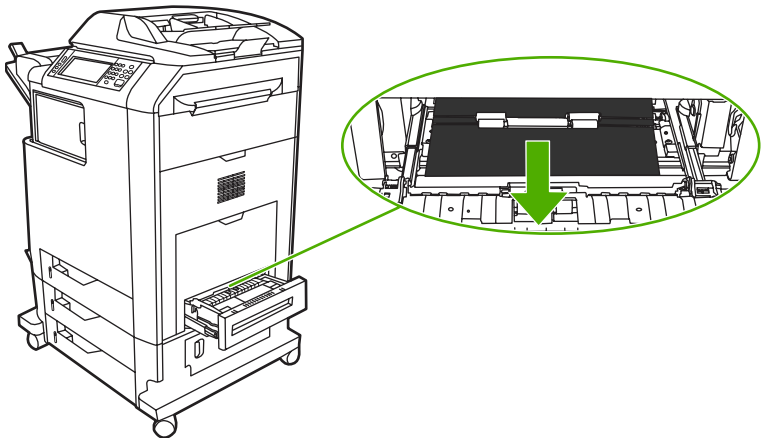
11. Close the transfer unit.



12. Close the covers on the right side of the MFP.

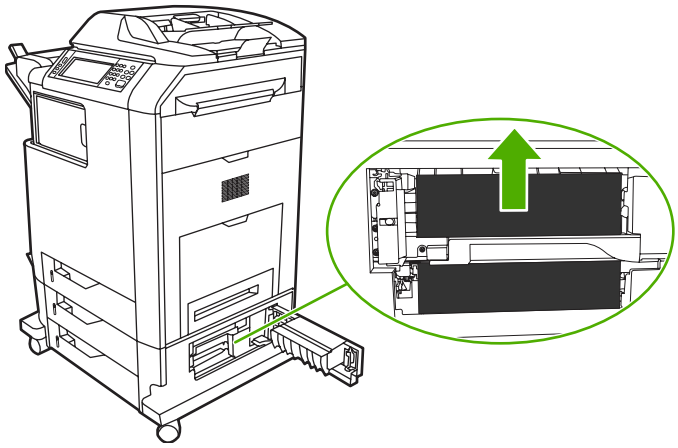


13. If the jam has not cleared, open the drawer below Tray 1 and remove any jammed paper.



14. Close the drawer.

15. If the jam still has not cleared, open the lower access door and remove any jammed paper.



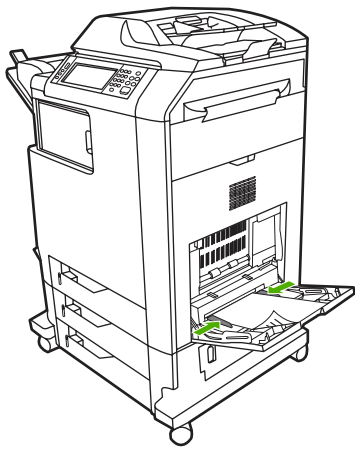
16. Close the lower access door. If the jam has cleared, the print job will continue.

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 545.

Jam in Tray 1

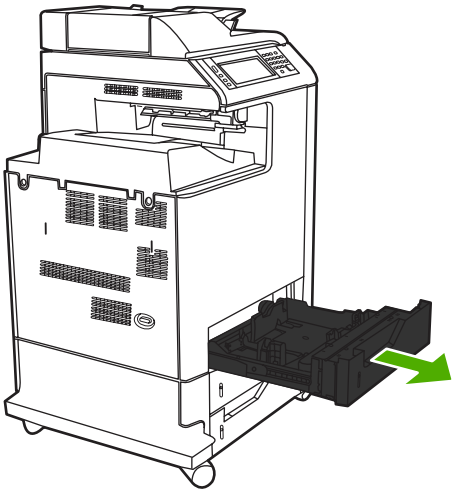
NOTE If the protective insert does not eject properly when the MFP is first installed, follow this procedure to clear the jam.

1. Perform the steps in Clearing jams in the right covers on page 539.
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.

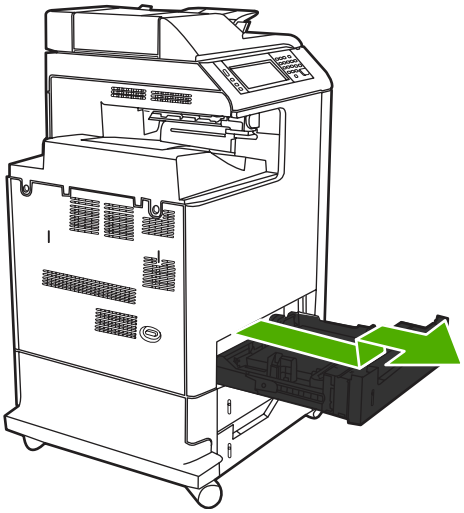


Jam in Tray 2, 3, or 4

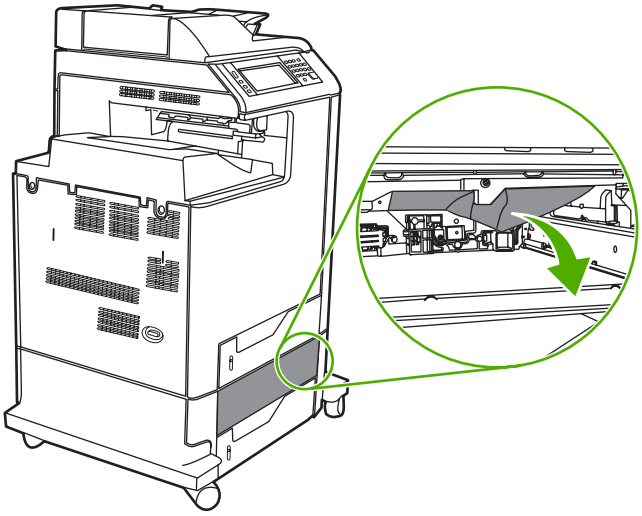
1. Perform the steps in Clearing jams in the right covers on page 539.
2. Slide the indicated tray out and remove any jammed paper.



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.



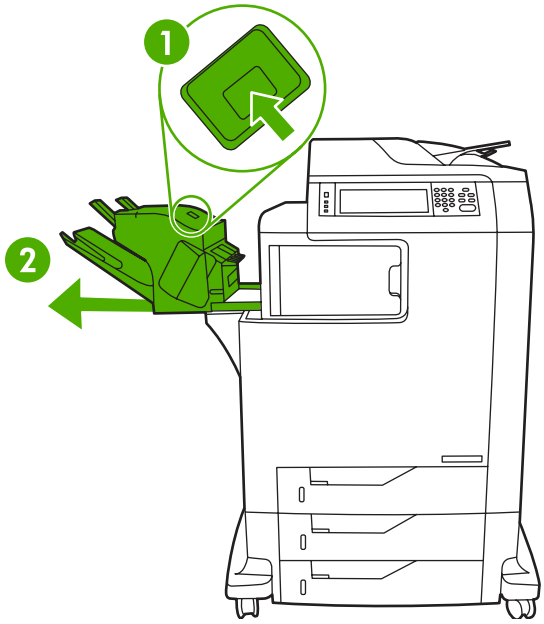
5. Remove any paper jam behind the tray. The following diagram shows a possible paper jam behind Tray 2. Remove jams in Trays 3 and 4 following the same procedure.



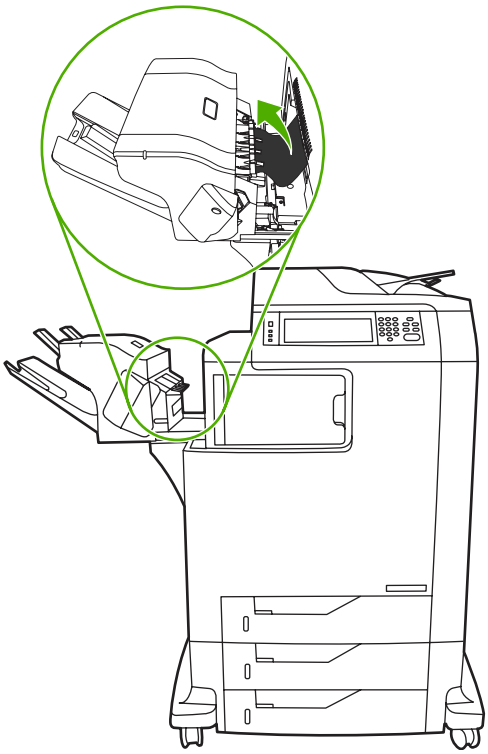
6. Insert the paper tray.

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.



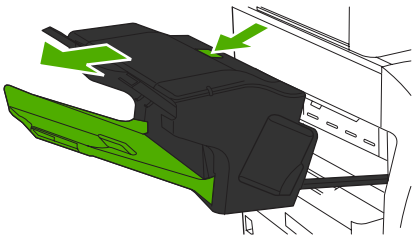
4. If the jam does not clear, see Other jams in the output accessory bridge on page 552.

To clear staple jams, see Staple jams on page 548.

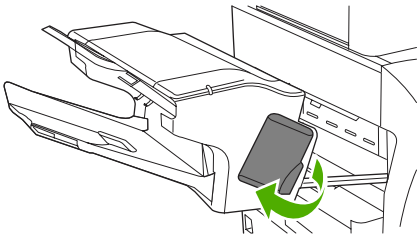
Staple jams

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.

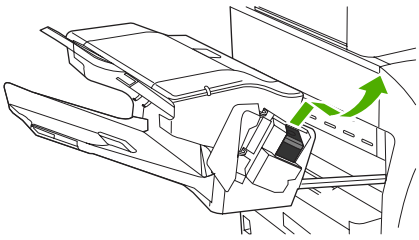
1. Turn off the MFP.
2. Press and hold the release button on the top of the stapler/stacker. Pull the stapler/stacker away from the MFP.



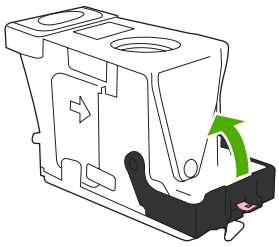
3. Open the staple cartridge cover.



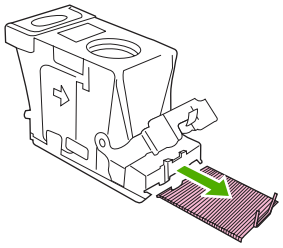
4. To remove the staple cartridge, pull up on the green handle and pull out the staple cartridge.



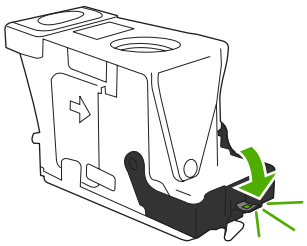
5. Lift up on the small lever at the back of the staple cartridge.



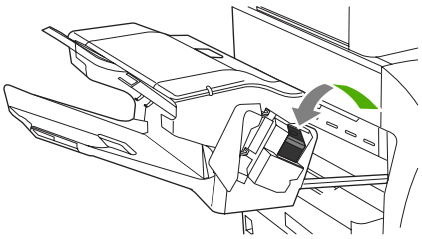
6. Remove the staples that protrude from the staple cartridge.



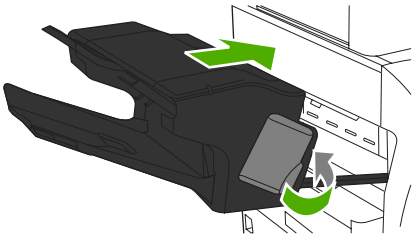
7. Close the lever at the back of the staple cartridge. Be sure that it snaps into place.



8. Reinsert the staple cartridge into the staple cartridge holder, and push down on the green handle until it snaps into place.

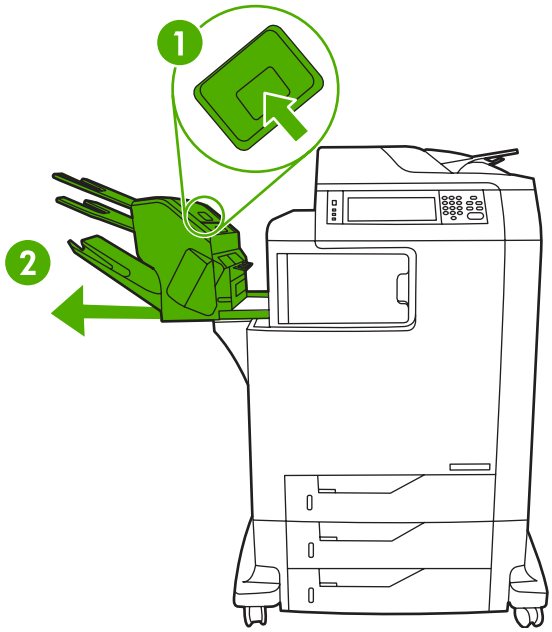


9. Close the staple cartridge cover, and slide the stapler/stacker into the MFP.

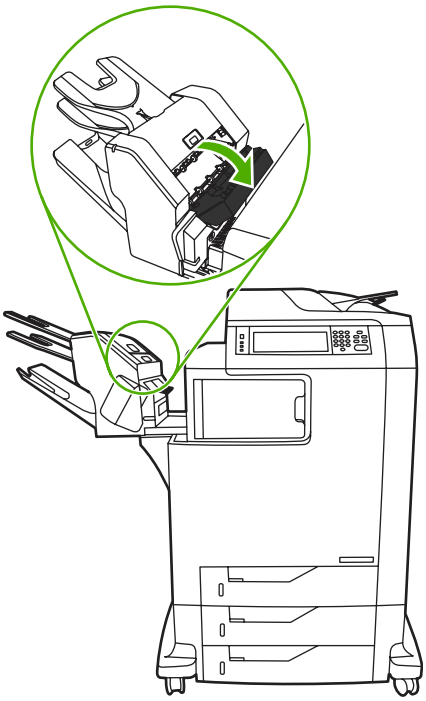


Jam in the 3-bin mailbox

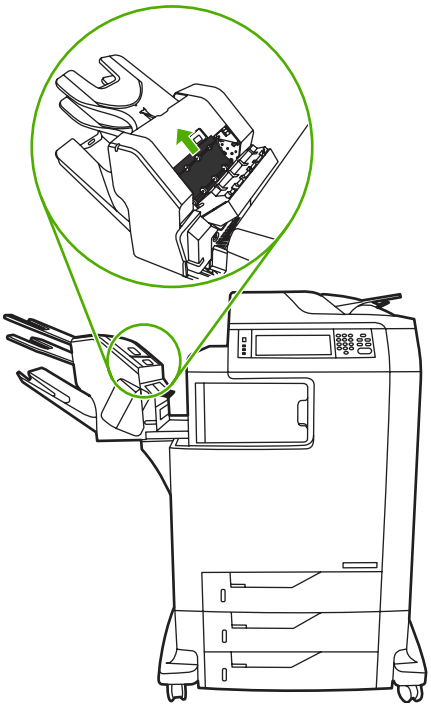
1. Push the release button on the top of the 3-bin mailbox.
2. Slide the 3-bin mailbox out from the MFP.



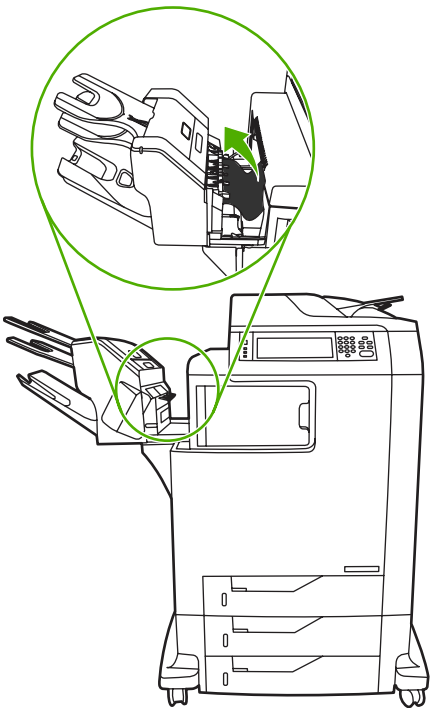
3. Open the cover on the top of the 3-bin mailbox.



4. Remove any media inside the cover.



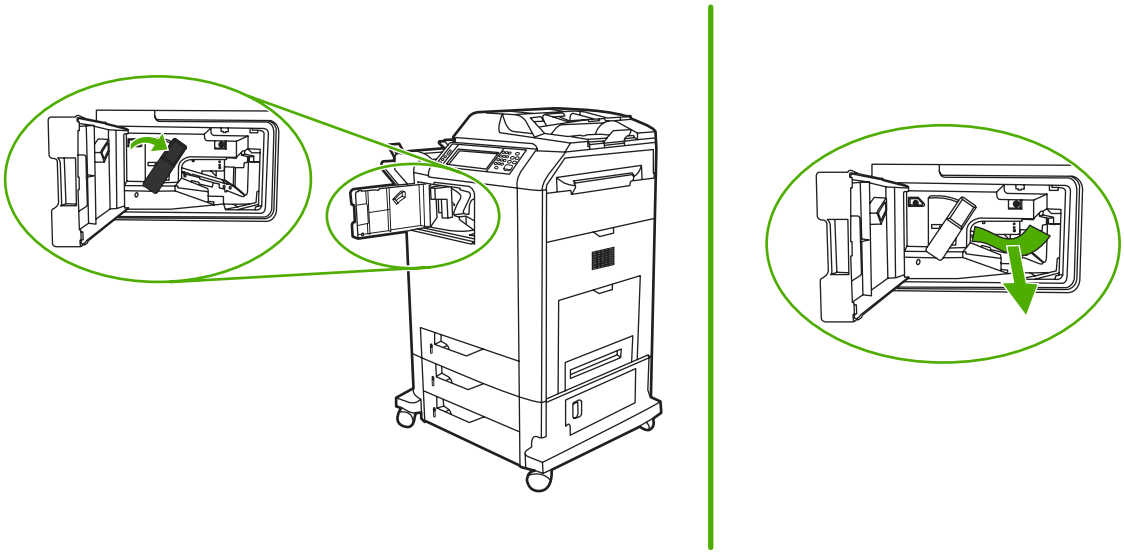
5. Close the door and remove any media between the MFP and the 3-bin mailbox.



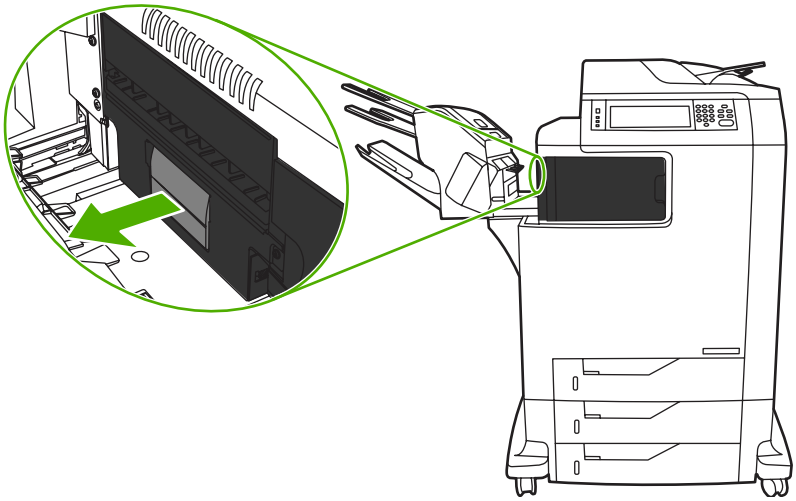
Other jams in the output accessory bridge

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.

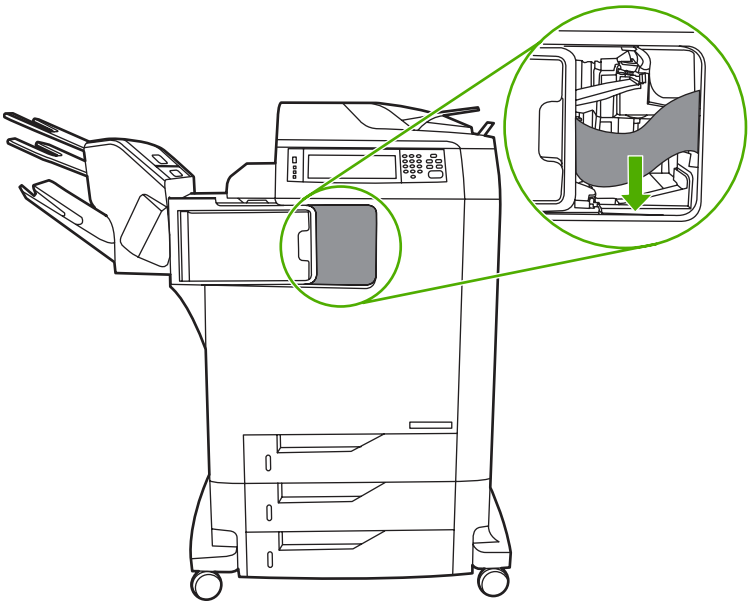
1. Open the cover to the output accessory bridge.
2. Push down on the green lever, remove any media inside the output accessory bridge, and push the green lever up.



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.



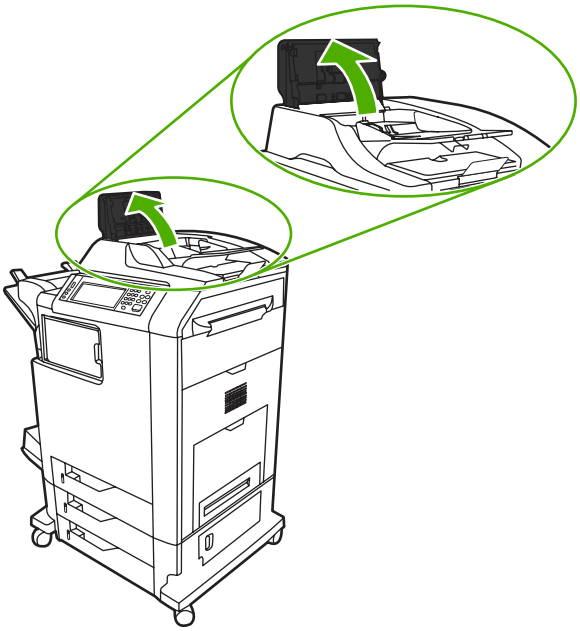
5. Look for paper on top of the output accessory bridge.



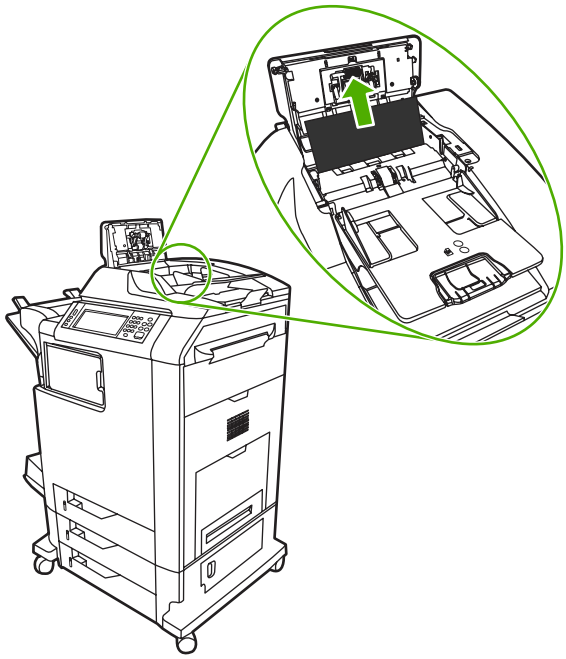
6. Slide the output accessory bridge back into the MFP.
7. Slide the 3-bin mailbox or stapler/stacker back into the MFP.

Jam in the ADF

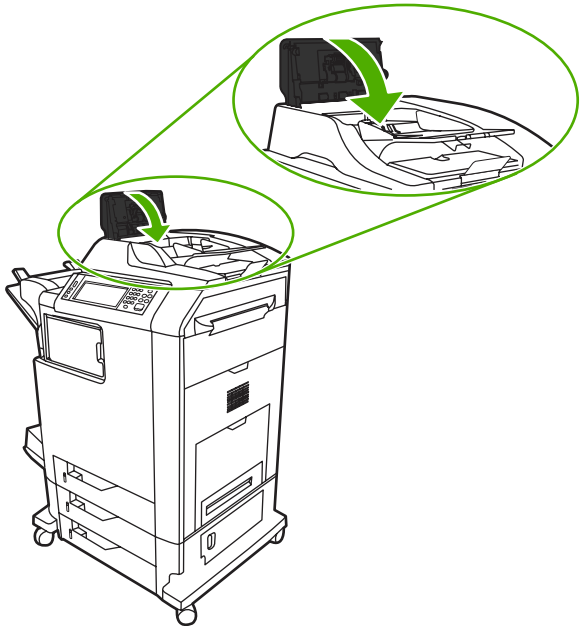
1. Open the ADF cover.



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 18. 5. Check the media specifications. (See Media specifications on page 18.) If media is outside of the recommended specifications, problems can occur. 6. The MFP might be dirty. Clean the MFP as described in Cleaning the MFP on page 99. 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 as described in Cleaning the ADF delivery system on page 99. 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 18.

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 **DIAGNOSTICS** 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 in the **DIAGNOSTICS** 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 7-3 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 7-3 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. See Component tests on page 659. 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 Calibrating the MFP on page 591.

Jams in tray 2

The following table describes the cause of and solutions for jams in tray 2, 3, or 4.

Table 7-4 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. See Component tests on page 659. 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.

Table 7-4 Causes for jams in Tray 2 (continued)

Cause	Solution
The pickup motor is defective.	Replace the paper pickup drive assembly.
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 Calibrating the MFP on page 591.

Jams in Tray 3

The following table describes the cause of and solutions for jams in Tray 3.

Table 7-5 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. See Component tests on page 659. If the solenoid does not activate during the test, replace it. 2. Disconnect the connector for the pickup solenoid (1015) 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 Calibrating the MFP on page 591.

Jams in Tray 4

The following table describes the cause of and solutions for jams in Tray 4.

Table 7-6 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. See Component tests on page 659. 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 Calibrating the MFP on page 591.

Jams in the paper path

The following table describes the cause of and solution for jams in the paper path.

Table 7-7 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.

Table 7-7 Causes for jams in the paper path (continued)

Cause	Solution
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 Calibrating the MFP on page 591.
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. See Component tests on page 659. 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 Calibrating the MFP on page 591.

Jams in the right upper cover

The following table describes the causes of and solutions for jams in the right upper cover.

Table 7-8 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. See Component tests on page 659. 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. See Component tests on page 659. 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. See Component tests on page 659. 3. Replace the sensor if it is defective.

Table 7-8 Causes for jams in the right upper cover (continued)

Cause	Solution
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.
The paper loop sensors (SR13 and SR14) might be defective.	1. Make sure that the sensor levers move smoothly. 2. Run the component test. See Component tests on page 659. 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 Calibrating the MFP on page 591.

Jams in the duplex path

The following table describes the causes of and solution for jams in the duplex path.

Table 7-9 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 Calibrating the MFP on page 591.
The duplex feed guide is damaged.	Replace the ETB. Calibrate the MFP after replacing the ETB. See Calibrating the MFP on page 591.
The reversing sensor (SR8001) or the sensor lever is defective.	1. Run the component test. See Component tests on page 659. 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 7-10 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 7-10 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 **DIAGNOSTICS** 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 411.

Jams in the IPTU

The following table describes the cause of and solutions for jams in the IPTU.

Table 7-11 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. See Component tests on page 659. 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. See Component tests on page 659. 3. Replace the IPTU sensor if it is defective.
One of the feed motors (M8301 and M8302) is defective.	1. Run the component test. See Component tests on page 659. 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 7-12 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 7-12 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. See Component tests on page 659. 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. See Component tests on page 659. 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 7-13 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. See Component tests on page 659. 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. See Component tests on page 659. 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.

To start the paper path test

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Scroll to and touch PAPER PATH TEST.
4. Select the input tray that you want to test, the output bin, the duplex printing accessory (if available), and number of copies, touching OK after you set the value for each. After selecting the last option, touch PRINT TEST PAGE.

Using the scanner tests

The scanner test can be used to verify that various scanner components are working correctly .

For more information about the scanner tests, see Scanner tests on page 659.

To start the scanner tests

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
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.

Correcting print quality and copy quality problems

This section helps to define print quality problems and how 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. See Media specifications on page 18.
- The surface of the media is too smooth. Use media that meets HP paper specifications. See Media specifications on page 18.
- 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. For more information, see Media specifications on page 18.
- 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. See Media specifications on page 18.
- The media sensing feature might not be selected. Select the feature at the control panel.

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. See Media specifications on page 18.
- 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 application or printer driver.
- If you are using a reflective overhead projector, use a standard overhead projector instead.
- The media sensing feature might not be selected. Select the feature at the control panel.

Print quality problems associated with the environment

The MFP is operating in excessively humid, dusty, or dry conditions. Verify that the printing environment is within specifications. See Environmental specifications on page 15.

Print quality problems associated with jams

- Make sure that all media is cleared from the paper path. See Paper jam recovery on page 538.
- 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. If the problem persists, see the next section.
- The media sensing feature might not be selected. Select the feature at the control panel.

Understanding 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.

Common causes of color variation

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.

Using 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 572.

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.

Restricting color printing

The HP Color LaserJet 4730mfp includes a **Restrict Color Use** setting for networked printers. A network administrator can use the setting to restrict user access to the color printing features in order to conserve color toner. If you are unable to print in color, see your network administrator.

1. Press Menu.
2. Scroll to and touch **PRINT QUALITY**.
3. Scroll to and touch **SYSTEM SETUP**.
4. Scroll to and touch **Restrict Color Use**.
5. Scroll to and select one of the following options:
    - **DISABLE COLOR**: This setting denies the printer color capabilities to all users.
    - **ENABLE COLOR**: This is the default setting, which allows all users to use the printer color capabilities.
    - **COLOR IF ALLOWED**: This setting allows the network administrator to allow color use for select users. Use the embedded Web server to designate users who can print in color.
6. Press OKto save the setting.

The network administrator can monitor color usage for a specific HP Color LaserJet 4730mfp by printing a color usage job log. See Testing the MFP operation on page 67.

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.

To adjust color balance

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch PRINT QUALITY.
4. Scroll to and touch ADJUST COLOR.
5. Touch HIGHLIGHTS MIDTONES, or SHADOWS.
6. Scroll to and touch the correct density setting.
7. Touch to adjust the density for the next color.
8. After setting the density for each color, touch Exit.

> **NOTE** Touch RESTORE COLOR VALUES to restore the factory defaults.

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.

Print quality troubleshooting pages

The print quality troubleshooting pages provide information on aspects of the MFP that affect print quality.

1. Press Menu to enter the **MENUS**.
2. Scroll to and touch DIAGNOSTICS.
3. Scroll to and touch PQ TROUBLESHOOTING.

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), a blank page, 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/clj4730mfp.

Print quality troubleshooting tool

The print quality troubleshooting tool helps you identify and troubleshoot print quality issues for the HP Color LaserJet 4730 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/clj4730mfp

Image defects

If specific defects occur repeatedly, print a Print Quality Troubleshooting page and follow the instructions on the page. If you are unable to resolve the problem, use the information in this section to identify the root cause of the problem.

Image defects fall into the categories that are listed in Table 7-14 Image defects on page 573. Possible causes and recommended solutions for each of these categories are listed in the tables that follow. In general, the items are listed in order from minor repairs to major repairs. Check the items in the order in which they appear.

Table 7-14 Image defects

Image defect	Description	More information
Light image	A very light image is printed.	See Light image on page 574.
Light color	One color is light in an image.	See Light color on page 575.
Dark image	A very dark image is printed.	See Dark image on page 575.
Dark color	One color is dark in an image.	See Dark color on page 576.
Completely blank	No image is printed.	See Completely blank image on page 576.
All black/solid color	An all black or solid colored image is printed.	See All black or solid color on page 576.
Dots in vertical lines	Vertical lines of white dots appear in the image.	See Dots in vertical lines on page 577.
Dirt on back of paper	The back (non-printed) side of the paper is dirty.	See Dirt on the back of the paper on page 577.
Dirt on front of paper	The front (printed) sided of the paper is dirty.	See Dirt on the front of the paper on page 578.
Vertical lines	Vertical lines are printed.	See Vertical lines on page 579.
White vertical lines	White vertical lines appear in the image.	See White vertical lines on page 579.
Horizontal lines	Horizontal lines are printed.	See Horizontal lines on page 580.
White horizontal lines	White horizontal lines appear in the image.	See White horizontal lines on page 580.
Missing color	One of the four toner colors is not printing.	See Missing color on page 580.
Blank spots	The image has blank spots.	See Blank spots on page 581.
Poor fusing	Toner is loose on the printed image.	See Poor fusing on page 582.

Table 7-14 Image defects (continued)

Image defect	Description	More information
Distortion or blurring	The image appears distorted, or colors seem out of alignment.	See Distortion or blurring on page 582.
Smearing	The image is smeared or dirty.	See Smearing on page 583.
Misplaced image	The image is placed incorrectly on the page.	See Misplaced image on page 584.

Light image

Figure 7-2 Light images

This table contains information about the causes of and solutions for light images.

Table 7-15 Causes for light images

Cause	Solution
The image density is not adjusted correctly.	Increase the density for the affected color.
A print cartridge may be low	Replace the print cartridge for the affected color.
A print cartridge may not be installed properly.	Ensure that the print cartridge is properly installed. Reinstall if necessary.
A poor contact in the attaching bias contacts between the ETB and the high-voltage PCB.	Clean the contacts. Replace them if they are still dirty or are damaged.
The media attaching roller is worn or damaged.	Replace the ETB. Calibrate the printer after replacing the ETB. See Calibrating the MFP on page 591.
The high-voltage PCB is defective or the connection is loose.	1. Check the connection. 2. Replace the high-voltage PCB.
The DC controller PCB is defective or the connection to the high-voltage power supply is loose.	1. Upgrade the firmware. 2. Check the connection on the DCC (J1006) 3. Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Light color

Figure 7-3 Light color

This table contains information about the causes of and solutions for light color.

Table 7-16 Causes for light color

Cause	Solution
A poor contact exists in the transfer bias contacts between the ETB and the MFP.	Clean the contacts for the affected color. If the contacts are still dirty after cleaning or if they are damaged, replace the contacts or the ETB. Calibrate the MFP after replacing the ETB. See Calibrating the MFP on page 591.
The transfer charging roller is worn or damaged.	Replace the ETB. Calibrate the MFP after replacing the ETB. See Calibrating the MFP on page 591.
The photosensitive drum is worn.	Replace the print cartridge for the affected color.
The high-voltage PCB is defective or the connection is loose.	Replace the high-voltage PCB.
The laser/scanner unit is defective.	Replace the laser/scanner for the affected color. See Calibrating the MFP on page 591.
The DC controller PCB is defective or the connection to the high-voltage power supply is loose.	Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.
The ETB alienation system is defective.	1. Run a component test (ETB Contact/Alienation Component Test). See Component tests on page 659. 2. Replace the ETB.

Dark image

This table contains information about the causes of and solutions for dark images.

Table 7-17 Causes for dark images

Cause	Solution
The image density is not adjusted correctly.	Decrease the density for the affected color.
The color misregistration detection unit is dirty.	Clean the lens on the color misregistration detection unit.

Table 7-17 Causes for dark images (continued)

Cause	Solution
The color misregistration detection unit is defective.	Replace the paper feed assembly.
The DC controller PCB is defective or the connection to the high-voltage power supply is loose.	1. Check the connector (J1012) on the DCC. 2. Upgrade the firmware using the RFU process. 3. Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Dark color

This table contains information about the causes of and solutions for dark color.

Table 7-18 Causes for dark colors

Cause	Solution
A poor contact exists in the drum ground, primary charging bias, and developing bias contacts of the high-voltage PCB and the print cartridge.	Clean the contacts on the cartridge for the affected color. If they are still dirty after cleaning, or if they are damaged, replace the affected cartridge.
The high-voltage contacts are damaged.	Replace the high-voltage contacts for the affected color.
The high-voltage PCB is defective.	Replace the high-voltage PCB.
The DC controller PCB is defective or the connection to the high-voltage power supply is loose.	Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Completely blank image

This table contains information about the causes of and solutions for completely blank pages.

Table 7-19 Causes for a completely blank image

Cause	Solution
The high-voltage PCB is defective or the connection is loose.	1. Reseat the connection. 2. Replace the high-voltage PCB.
The DC controller PCB is defective or the connection to the high-voltage power supply is loose.	Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

All black or solid color

This table contains information about the causes of and solutions for all black or solid color.

Table 7-20 Causes for an all black or solid colored image

Cause	Solution
A poor contact exists in the drum ground, primary charging bias, and developing bias contacts of the high-voltage PCB and the print cartridge.	Clean the contacts on the cartridge for the affected color. If they are still dirty after cleaning, or if they are damaged, replace the cartridge.
The high-voltage contacts are damaged.	Replace the high-voltage contacts for the affected color.
The primary charging roller is defective.	Replace the print cartridge for the affected color.
The high-voltage PCB is defective.	Replace the high-voltage PCB.
The DC controller PCB is defective or the connection to the high-voltage power supply is loose.	Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.
The Laser/scanner unit is defective.	Replace the affected laser/scanner.

Dots in vertical lines

Figure 7-4 Dots in vertical lines

This table contains information about the causes of and solutions for dots in vertical lines.

Table 7-21 Causes for vertical lines of white dots

Cause	Solution
The transfer charging roller is worn or damaged.	Replace the ETB. Calibrate the MFP after replacing the ETB. See Calibrating the MFP on page 591.
The charge roller in the cartridge is damaged or contaminated.	Replace the cartridge.

Dirt on the back of the paper

This table contains information about the causes of and solutions for dirt on the back of the paper.

Table 7-22 Causes for dirt on the back of the paper

Cause	Solution
One or more of the rollers are dirty.	See Repetitive defects troubleshooting on page 584 for information about identifying the roller that might be dirty. Clean the indicated roller. If the roller is still dirty after cleaning, replace the appropriate roller, cartridge, or assembly.
The pickup roller is dirty.	Clean the roller. If the roller is still dirty after cleaning, replace the pickup roller assembly.
A poor contact exists in the attaching bias contacts between the ETB and the high-voltage PCB.	Clean the contacts. Replace them if they are still dirty or are damaged.
The high-voltage PCB is defective or the connection is loose.	1. Check the connection. 2. Replace the high-voltage PCB.
The DC controller PCB is defective. defective or the connection to the high-voltage power supply is loose.	Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Dirt on the front of the paper

This table contains information about the causes of and solutions for dirt on the front of the paper.

Table 7-23 Causes for dirt on the front of the paper

Cause	Solution
One or more of the rollers are dirty.	See Repetitive defects troubleshooting on page 584 for information about identifying the roller that might be dirty. Clean the indicated roller. If the roller is still dirty after cleaning, replace the appropriate roller, cartridge, or assembly.
The pickup roller is dirty.	Clean the roller. If is still dirty after cleaning, replace the pickup roller assembly.
A poor contact exists in the attaching bias contacts between the ETB and the high-voltage PCB.	Clean the contacts. Replace them if they are still dirty or are damaged.
The high-voltage PCB is defective or the connection is loose.	1. Check the connection. 2. Replace the high-voltage PCB.
The DC controller PCB is defective. defective or the connection to the high-voltage power supply is loose.	Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Vertical lines

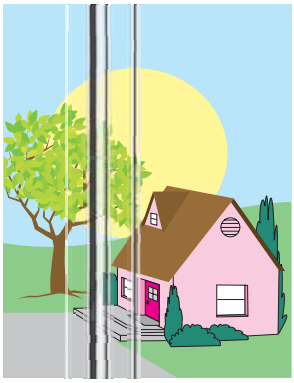


Figure 7-5 Vertical lines

This table contains information about the causes of and solutions for vertical lines.

Table 7-24 Causes for vertical lines

Cause	Solution
The photosensitive drum has grooves around the circumference.	Replace the cartridge that indicates the color of the vertical lines.
The fuser sleeve has grooves around the circumference.	Replace the fuser.

White vertical lines

This table contains information about the causes of and solutions for white vertical lines.

Table 7-25 Causes for white vertical lines

Cause	Solution
The developing cylinder has grooves around the circumference.	Replace the print cartridge for the color in which the white lines appear.
The photosensitive drum has grooves around the circumference.	Replace the print cartridge for the color in which the white lines appear.
The laser is blocked by a foreign substance.	Inspect the laser source and shutter for the affected color, and remove any debris that might be blocking it.
The cartridge has a foreign substance blocking the laser.	Check the rear of the affected cartridge and remove any foreign substance.
The lens in the laser/scanner unit is dirty.	Replace the laser/scanner for the color in which the white lines appear. Calibrate the MFP after replacing the laser/scanner. See Calibrating the MFP on page 591.
The fuser sleeve has grooves around the circumference. (All colors are affected.)	Replace the fuser.

Horizontal lines

Figure 7-6 Horizontal lines

This table contains information about the causes of and solutions for horizontal lines.

Table 7-26 Causes for horizontal lines

Cause	Solution
The photosensitive drum has scars that run from end to end.	Replace the print cartridge for the affected color.
The fuser sleeve has scars that run from end to end.	Replace the fuser.

White horizontal lines

This table contains information about the causes of and solutions for white horizontal lines.

Table 7-27 Causes for white horizontal lines

Cause	Solution
The photosensitive drum has scars that run from end to end.	Replace the print cartridge for the affected color.
The ETB belt has horizontal scars.	Replace the ETB. Calibrate the MFP after replacing the ETB. See Calibrating the MFP on page 591.

Missing color

This table contains information about the causes of and solutions for missing color.

Table 7-28 Causes for a missing color

Cause	Solution
The primary charging roller is defective.	Replace the print cartridge for the missing color.
A poor contact exists in the developing bias contacts of the high-voltage PCB and the print cartridge.	Clean the contacts. If they are still dirty after cleaning, or if they are damaged, replace the print cartridge or the high-voltage contacts. Replace the high-voltage PCB.
The laser/scanner unit is defective.	Replace the laser/scanner for the missing color. Calibrate the MFP after replacing the laser/scanner. See Calibrating the MFP on page 591.

Table 7-28 Causes for a missing color (continued)

Cause	Solution
The high-voltage PCB is defective or the connection is loose.	Replace the high-voltage PCB.
The DC controller PCB is defective or the connection to the high-voltage power supply is loose.	1. Check the connection. 2. Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Blank spots

Figure 7-7 Blank spots

This table contains information about the causes of and solutions for blank spots.

Table 7-29 Causes for blank spots

Cause	Solution
The high-voltage PCB is defective or the connection is loose.	1. Check the connection. 2. Replace the high-voltage PCB.
The DC controller PCB is defective or the connection to the high-voltage power supply is loose.	Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Poor fusing

Figure 7-8 Poor fusing

This table contains information about the causes of and solutions for poor fusing.

Table 7-30 Causes for poor fusing

Cause	Solution
The media is not within specifications. For example, media that is too thick causes poor fusing.	Use media that meets specifications. See chapter 1.
The fuser pressure roller is dirty.	Clean the dirty pressure roller. If the dirt cannot be removed, replace the fusing unit.
The fuser is not within nip-width specifications.	Replace the fuser.
The fuser sleeve is scarred or damaged.	Replace the fuser.
The pressure roller is scarred or damaged.	Replace the fuser.
The thermistor has deteriorated.	Replace the fuser.
The fuser pressure release motor is defective.	Check the connector and then replace if necessary.
The DC controller PCB is defective or the connection to the high-voltage power supply is loose.	1. Upgrade the firmware using the RFU process. 2. Check connectors J1024 and J1025 on the DCC. 3. Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Distortion or blurring

This table contains information about the causes of and solutions for distortion or blurring.

Table 7-31 Causes for distortion or blurring

Cause	Solution
The color-plane registration is out of specification.	Calibrate the MFP from the **PRINT QUALITY** menu. See Calibrating the MFP on page 591.
The ETB is defective.	If the ETB belt does not rotate smoothly, replace the ETB. Calibrate the MFP after replacing the ETB. See Calibrating the MFP on page 591.

Table 7-31 Causes for distortion or blurring (continued)

Cause	Solution
The ETB motor drive gear is worn or damaged.	Replace the ETB motor.
The drum motor drive gear is worn or damaged.	Replace the drum motor for the affected color.
The color-registration detection unit is defective.	Replace the color registration detection unit.
The laser/scanner unit is defective.	Replace the laser/scanner for the affected color. Calibrate the MFP after replacing the laser/scanner. See Calibrating the MFP on page 591.
The DC controller PCB is defective.	Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Smearing

Figure 7-9 Smearing

This table contains information about the causes of and solutions for smearing.

Table 7-32 Causes for smearing

Cause	Solution
A poor contact exists in the printer ground and cartridge ground contacts.	Clean each print-cartridge ground contact and the printer ground contact. If they are still dirty after cleaning, or if they are damaged, replace the cartridge, or replace the printer ground contact.
The fuser inlet guide is dirty or contains debris.	Clean the fuser inlet guide.
The cartridge shutters are not opening.	Make sure the cartridge shutter bar is operating correctly.

Misplaced image

Figure 7-10 Misplaced image

This table contains information about the causes of and solutions for misplaced images.

Table 7-33 Causes for misplaced image

Cause	Solution
The media is skewed.	See Table 7-35 Defects that can occur when using the ADF on page 590 to resolve the skew.
The color-plane registration is out of specification.	Calibrate the MFP from the **PRINT QUALITY** menu. See Calibrating the MFP on page 591.
The oblique rollers are worn (this issue applies to duplex printing only).	Replace the ETB.
The duplex feed roller may be worn (duplex pages only).	Replace the duplex unit.
The DC controller PCB is defective or the laser scanner connection is loose.	1. Upgrade the firmware using the RFU process. 2. Check connectors J1002 for yellow, J1003 for cyan, J1004 for magenta, and J1005 for black. 3. Replace the DC controller PCB. Calibrate the MFP after replacing the DC controller. See Calibrating the MFP on page 591.

Repetitive defects troubleshooting

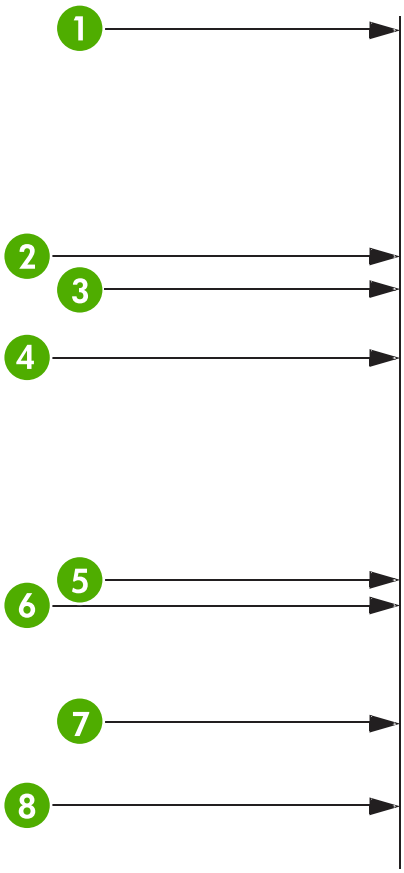
Defects on printer rollers can cause image defects to appear at regular intervals on the page. Use the repetitive defects ruler on the next page (Repetitive defect ruler on page 585) to measure the distance between defects that recur on a page. To resolve the problem, try cleaning the rollers first. If the rollers are still dirty after cleaning or are damaged, replace the defective roller.

CAUTION Do not use solvents or oils to clean rollers. Instead, rub the roller with lint-free paper. If dirt is difficult to remove, rub the roller with lint-free paper that has been dampened with rubbing alcohol.

NOTE Defects on the cassette or the MP tray pickup roller cause defects only on the leading edge of the image.

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	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	Print cartridge (42.7 mm (1.68 inches)
5	ETB (75 mm (2.95 inches)
6	Fuser (76.0 mm (2.99 inches)
7	Fuser (81.0 mm (3.19 inches)
8	Print cartridge (94.2 mm (3.71 inches)

To confirm that a print cartridge is the problem, insert a print cartridge from another HP Color LaserJet 4730mfp MFP, if one is available, before ordering a new print cartridge.

If the defect repeats at 94.0 mm (3.75 inches) intervals, try replacing the print cartridge before replacing the fuser.

Image defect examples

This section contains two tables: one table shows examples of common print quality problems, and the other table shows examples of common copy quality problems that can occur when using the ADF. These tables also contain remedies for correcting the problem.

Table 7-34 Defects that can occur during printing

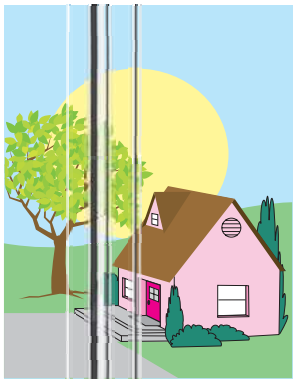
	Horizontal lines or streaks • Make sure that the operation and location requirements of the MFP are met. • Print the Print Quality Troubleshooting Pages (see Calibrating the MFP on page 591) and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.		**Misaligned colors** • Calibrate the MFP. See Calibrating the MFP on page 591 and follow the instructions.
	**Vertical lines** • Print the Print Quality Troubleshooting Pages (see Calibrating the MFP on page 591) and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.		**Repetitive defects** • Make sure that the operation and location requirements of the MFP are met. • Print the Print Quality Troubleshooting Pages (see Calibrating the MFP on page 591) and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.
	Color fade in all colors • Make sure that the operation and location requirements of the MFP are met. • Calibrate the MFP.		**Color fade in one color** • Make sure that the operation and location requirements of the MFP are met. • Calibrate the MFP. • Print the Print Quality Troubleshooting Pages (see Calibrating the MFP on page 591) and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.

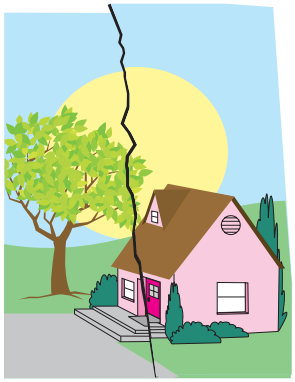
Table 7-34 Defects that can occur during printing (continued)

	Fingerprints and media dents • Make sure to use supported media. • 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. • Print the Print Quality Troubleshooting Pages (see Calibrating the MFP on page 591) and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.		**Loose toner** • Make sure that the operation and location requirements of the MFP are met. • Make sure to use supported media. • 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. • Make sure that the media is loaded correctly and that the size guides are touching the edges of the stack of media. 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 • Make sure to use supported media.		**White areas (dropouts) on page** • Make sure that the operation and location requirements of the MFP are met. • Make sure to use supported media. • 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. • 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.

Table 7-34 Defects that can occur during printing (continued)

	• Calibrate the MFP. • Print the Print Quality Troubleshooting Pages (see Calibrating the MFP on page 591) and follow the diagnostic procedure listed on the first page to help isolate the defect to a particular component.

Table 7-34 Defects that can occur during printing (continued)

	**Media damage (wrinkles, curl, creases, tears)**
	• Make sure that the operation and location requirements of the MFP are met.
	• Make sure to use supported media.
	• Make sure that the media is loaded correctly.
	• 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.
	• 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.
	• Make sure that the following supplies are seated correctly:
	  ◦ fuser
	  ◦ transfer belt
	• Inspect the jam areas and remove any undetected jammed or torn media.
			Specks or stray toner
			• Make sure that the operation and location requirements of the MFP are met.
			• Make sure to use supported media.
			• 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.
			• Calibrate the MFP.
			• Print the Print Quality Troubleshooting Pages (see Calibrating the MFP on page 591) 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 • Make sure that the operation and location requirements of the MFP are met. • Make sure to use supported media. • Make sure that the media is loaded correctly. • For problems with page skew, turn over the stack of media and		

Table 7-34 Defects that can occur during printing (continued)

	rotate the stack 180 degrees. • Make sure that the fuser and transfer belt are seated correctly. • Inspect the jam areas and remove any undetected jammed or torn media. • If printing from the multipurpose tray, make sure that the side guides are set correctly.

Table 7-35 Defects that can occur when using the ADF

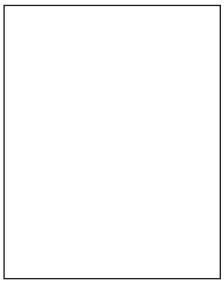
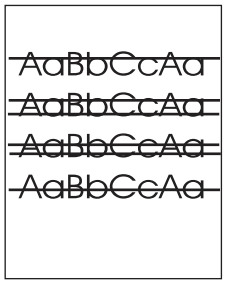
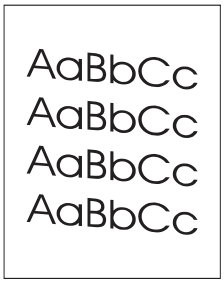
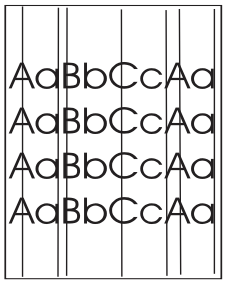
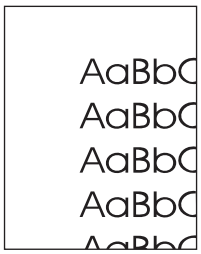
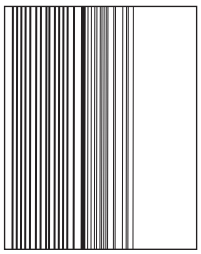
	**Blank page** 1. Remove and then reinsert the original page into the ADF, making sure it is placed face-up. 2. If several pages are feeding at the same time, check the ADF separation pad and rollers for damage. If the rollers are dirty, clean them. See Cleaning the ADF delivery system on page 99. If the ADF separation pad or rollers are worn, replace them.		**Horizontal lines** 1. Clean the ADF. See Cleaning the ADF delivery system on page 99. 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, clean or 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** 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.		**Vertical lines** 1. Clean the ADF. See Cleaning the ADF delivery system on page 99. 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, clean or replace it. Replacement mylar strips are stored in an envelope that is underneath the white vinyl ADF backing.

Table 7-35 Defects that can occur when using the ADF (continued)

	3. Clean the ADF rollers. See Cleaning the ADF delivery system on page 99. 4. If the problem persists, calibrate the scanner. See Calibrating the scanner on page 106.		Follow the instructions that are in the envelope.
	**Image shifted** An image that is shifted on the page horizontally, vertically, or both ways indicates that the scanner is incorrectly calibrated. See Calibrating the scanner on page 106.		**Unexpected image** If the copy does not look at all like the original document, make sure that no media is on the flatbed glass from a previous copy job.

Cleaning 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 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. Spray or pour the cleaner onto the cleaning cloth. Do not spray or pour the cleaner onto the scanner glass.

Calibrating 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 CALIBRATE NOW** or **FULL CALIBRATE NOW** located in the **CALIBRATION** and **PRINT QUALITY** menu. **QUICK CALIBRATE NOW** 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 CALIBRATE NOW** should be run.

The HP Color LaserJet 4730 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. Press Menu to enter the **MENUS**.
2. Scroll to and touch Configure Device.
3. Scroll to and touch PRINT QUALITY.
4. Scroll to and touch QUICK CALIBRATE NOW.

OR

To perform a full calibration, use **FULL CALIBRATE NOW** instead of **QUICK CALIBRATE NOW** in steps 3 and 4.

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 **DIAGNOSTICS** 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 598. 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.

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. See Information pages on page 640. Use the following procedures to check if the SMTP and LDAP gateway addresses are valid.

To 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.

To 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.

Fax problems

For complete information about troubleshooting fax problems, see the *HP LaserJet Analog Fax Accessory 300 User Guide*

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 Formatter lights on page 532.
3. Make sure that the I/O card is ready. Print a configuration page. See Information pages on page 640. 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 597.
6. Perform a ping test to verify that the MFP is communicating with other devices on the network. See Ping test on page 597.
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.
9. For advanced troubleshooting, see Troubleshooting the embedded HP Jetdirect print server on page 665.

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.

To perform the loopback test

1. Disconnect the network cable.
2. Press Menu.
3. Touch Configure Device.
4. Touch I/O, touch EMBEDDED JETDIRECT MENU, touch DIAGNOSTICS, and then touch LOOPBACK TEST.
5. Let the test run for several hours or overnight.
6. If the test fails, an error message appears on the control panel display. Replace the formatter. See Formatter board on page 280.
7. To stop the test, turn the MFP off and then on. 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.

To perform the ping test

1. Press Menu.
2. Touch Configure Device.
3. Touch I/O, touch EMBEDDED JETDIRECT MENU, touch DIAGNOSTICS, and then touch PING TEST.
4. Set the appropriate options for each of the menu items that follow:
   - **DESTINATION IP** = XXX.XXX.XXX.XXX
   - **PACKET SIZE** = 64
   - **Timeout** = 1 second
   - **Count** = 4
   - **PRINT RESULTS** = YES
   - **EXECUTE** = YES
5. After setting **EXECUTE=** 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.

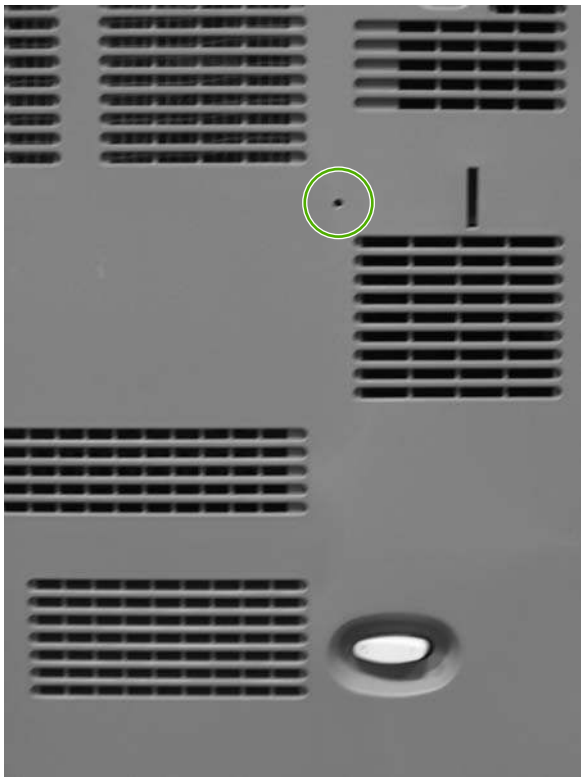


Figure 7-11 Engine test print switch

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. See Information pages on page 640. If the page prints, the formatter is functioning.

The heartbeat LED on the formatter also indicates whether the formatter is functioning. See Formatter lights on page 532.

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. See Information pages on page 640. 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. See Configuring and verifying an IP address on page 136.

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. See Information pages on page 640. 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. See Configuring and verifying an IP address on page 136.

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.
5. Press 6 one time, and wait while the MFP completes its initialization sequence.

Hard-disk initialization

A hard-disk initialization erases and reformats the hard disk. Perform a hard-disk initialization only if an error message on the control panel indicates a disk error. Always try initializing the hard disk before replacing it.

NOTE Before performing a hard-disk initialization, print a menu map and a configuration page. See Information pages on page 640. Use the information on these pages to reset any customer-specific settings.

CAUTION A hard-disk initialization deletes the following information: all stored copy jobs, the local address book (e-mail addresses), the speed-dial list (fax numbers), and the Java™ applet files.

To perform a hard-disk initialization

1. Turn the MFP off and then on.
2. When the memory count appears on the control panel display, press the *right-hand side* of the Start button until all three LEDs are lit. Release the Start button.
3. Press 5 one time. **INITIALIZE DISK** appears on the control panel display.
4. Press 6 one time. A series of asterisks appears on the control panel display. Wait for the MFP to complete its initialization sequence.

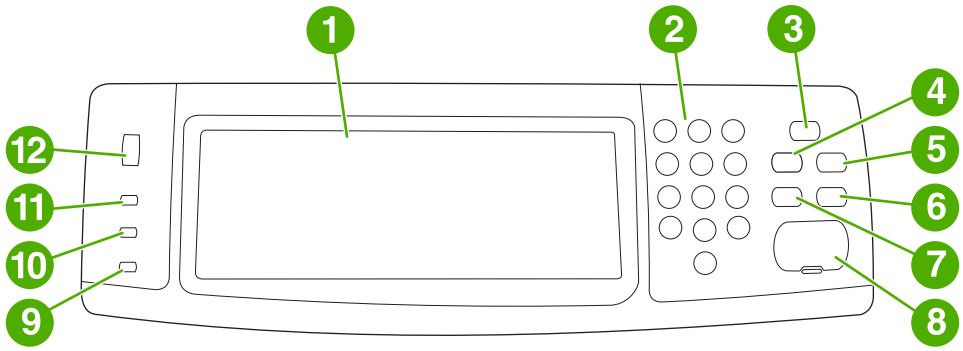
Control panel troubleshooting

When you press Menu to open the menus, the high-level menus appear in the following order:

- **PAUSE**
- **RETRIEVE JOB**
- **Information**
- **Fax** (if installed)
- **PAPER HANDLING**
- **Configure Device**
- **DIAGNOSTICS**
- **Service**

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	Touchscreen graphical display
2	Numeric keypad
3	Sleep button
4	Menu button
5	Status button
6	stop button
7	Reset button
8	Start button
9	**Attention!** light
10	**Data** light
11	**Ready** light
12	Display contrast adjustment

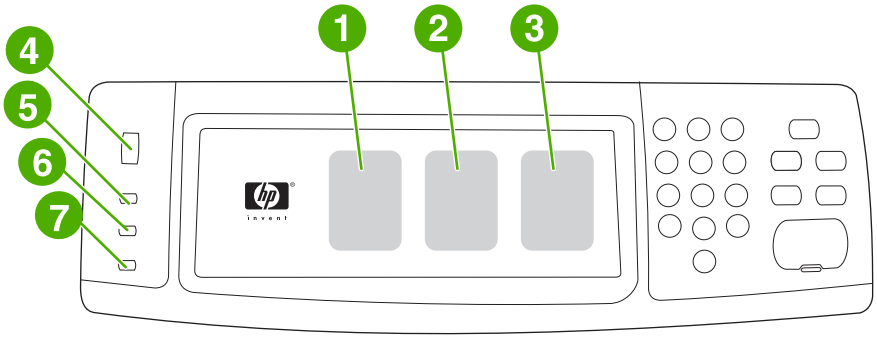
Control panel features

Features/buttons	Function
?	Provides access to **What is This?**, **Show Me How**, and **Help for Status** Help. This function is embedded in the touchscreen menus.
Reset	Resets the job settings to factory or user-defined default values.
STOP	Cancels the active job.
Start	Begins a copy job, starts digital sending, or continues a job that has been interrupted.
Numeric keypad	Allows you to type numeric values for number of copies required and other numeric values.
Sleep	If the MFP is inactive for a long period of time, it automatically enters a sleep mode. To place the MFP into sleep mode or to reactivate the MFP, press the Sleep button.

Features/buttons	Function
Status	Opens the **SUPPLIES STATUS** menu. From this menu, you can retrieve the status of the print cartridges, the fuser, and the transfer unit.
Menu	Opens the MFP menus.

Home-screen navigation

Use the following control panel elements in the graphical display to gain access to MFP features.



1	Touch this to use the Copy screen.
2	Touch this to use the E-mail screen.
3	Touch this to use the Fax screen. For more information, see the *HP LaserJet Analog Fax Accessory 300 User Guide*.
4	Rotate this dial to increase or decrease screen brightness.
5	The **Ready** light indicates that the MFP is ready.
6	The **Data** light indicates that the MFP is receiving data.
7	The **Attention!** light indicates that the MFP has a problem and requires user intervention.

NOTE If you install the optional HP Digital Sending Software (DSS), additional fields appear on the control panel display. You might need to scroll down to see all the fields.

Help system

At any time, you can gain access to the help system on the touchscreen of the graphical display by touching ?.

What is This? Help

The MFP provides information about any topic on the touchscreen of the graphical display.

On the top level screen, touch ? (Help button), and then touch What is This?. After touching an item, a pop-up dialog box opens and displays information about the item you touched. After reading the information, touch any other area on the screen to remove the **What is This?** pop-up dialog box.

On other levels of the touchscreen, you can gain access to the Help system by touching ? (Help button), which is located in the upper-left corner of each screen.

Show Me How Help

The **Show Me How** Help contains information about how to use the MFP features.

1. On the graphical touchscreen display on the control panel, touch ? (Help button).
2. Touch Show Me How. Choose a topic from the **What is This?** screen by touching an item. You can use the scroll bar to display more topics. After touching an item, an instruction sheet will print.
3. Touch OK to go back to the main window.

Show Me How also appears in a **What is This?** pop-up dialog box if the item that you select is a function that includes instructions. For example, if you touch What is This? Help, and then touch mopies, you see a Show Me How button in the pop-up dialog box. Touch the Show Me How button for information about how to enhance your copies.

Menu map

To see the current settings for the menus and items that are available in the control panel, print a control panel menu map:

1. Press Menu.
2. Touch Information.
3. Touch PRINT MENU MAP.

Many of these values can be overridden from the driver or program. You might want to store the menu map near the MFP for reference.

The content of the menu map varies, depending on the options currently installed in the MFP. For a complete list of control panel items and possible values, see the sections for each menu in this chapter.

Retrieve job menu

The Retrieve job menu contains options for retrieving proof and hold jobs, private jobs, quick copy job, and stored jobs, The following table displays the options available in the Retrieve job menu.

Item	Values	Explanation
USER	**JOB**	Allows you to select the job to be retrieved. After selecting the job, the Print and Delete X? options display. Select Print to enter the number of copies. Select Delete X? to delete the job. If you are retrieving a secured job, both the Print and Delete X? options contain a dialog box where you must enter the PIN number.

NOTE If no private, stored, quick copy, or proof-and-hold jobs are stored on the MFP hard disk or in RAM memory, the message **No stored jobs** appears when the menu is selected.

1. A list of user names appears on the control panel display.
2. Press Menu.
3. Touch RETRIEVE JOB.
4. Touch a user name, and then a list of stored jobs for that user appears.
5. Touch a job name, and then print or delete the job. If a job requires a PIN to print, (lock symbol) appears next to the **Print** command and a PIN must be provided. If a job requires a PIN to delete, appears next to the **Delete X?** command and a PIN must be provided.
6. If you touch Print, the MFP prompts for the number of copies to print (1 to 32,000).

Information menu

To print an information page, scroll to and touch the information page(s) that you want.

Item	Explanation
PRINT MENU MAP	Generates a menu map that shows layout and current settings of the control menu items. The MFP will return to the **Ready** state when the page is completed.
PRINT CONFIGURATION	Generates a page detailing the current configuration of the MFP. The MFP will return to the online **Ready** state when the page is completed.
PRINT SUPPLIES STATUS PAGE	Generates a page that shows the number of pages remaining for each supply in the MFP. The MFP will return to the online **Ready** state when the page is completed.
SUPPLIES STATUS	This page does not print. It displays status only.
PRINT USAGE PAGE	Generates a page that contains information that could be used for cost accounting. The MFP will return to the online **Ready** state when the page is completed.
PRINT DEMO	Generates a demonstration page. The MFP will return to the online **Ready** state when the page is completed.
PRINT RGB SAMPLES	Generates a page that displays RGB colors. The MFP will return to the online **Ready** state when the page is completed.
PRINT CMYK SAMPLES	Generates a page that displays CMYK colors.

Item	Explanation
	The MFP will return to the online **Ready** state when the page is completed.
PRINT FILE DIRECTORY	Generates a directory page containing information for all installed mass storage devices. The MFP will return to the online **Ready** state when the page is completed.
PRINT PCL FONT LIST	Generates a typeface list of all PCL fonts available on the MFP. The MFP will return to the online **Ready** state when the page is completed.
PRINT PS FONT LIST	Generates a typeface list of all PS fonts available on the MFP. The MFP will return to the online **Ready** state when the page is completed.

Fax menu

This menu will appear only if the HP LaserJet analog fax accessory 300 is installed. For information about the fax menu, see the *HP LaserJet Analog Fax Accessory 300 User Guide*. A printed copy of this guide is provided with the HP LaserJet 4730x MFP, HP LaserJet 4730xs MFP, and HP LaserJet 4730xm MFP.

Paper handling menu

When paper-handling settings are correctly configured through the control panel, you can print by selecting the type and size of paper from the driver or software application.

Some items in the paper handling menu (such as duplex and manual feed) are available from a software program, or from the printer driver (if the correct printer driver is installed). Printer-driver and software-program settings override control panel settings.

NOTE Items that have an asterisk (*) are the default values.

Item	Values	Explanation
TRAY 1 SIZE	**ANY SIZE***	Allows you to set the media size for tray 1.
	LETTER	
	LEGAL	
	EXECUTIVE	
	STATEMENT	
	8.5X13	
	A4	
	A5	

Item	Values	Explanation
	B5(JIS)	
	EXECUTIVE(JIS)	
	DPOSTCARD(JIS)	
	DPostcard (JIS)	
	16K	
	ENVELOPE #10	
	ENVELOPE MONARCH	
	ENVELOPE C5	
	ENVELOPE DL	
	ENVELOPE B5	
	CUSTOM	
TRAY 1 TYPE	**ANY TYPE***	Allows you to specify the type of media in tray 1.
	PLAIN	
	PREPRINTED	
	LETTERHEAD	
	TRANSPARENCY	
	PREPUNCHED	
	LABELS	
	BOND	
	RECYCLED	
	COLOR	
	LIGHT <75 G/M2	
	INTERMEDIATE90-104	
	HEAVY 105-120 G/M2	
	EXTRA HEAVY120-163	
	CARDSTOCK >163	
	ROUGH 90-105 G/M2	
	GLOSSY 75-105 G/M2	
	HEAVYGLOSSY120-160	
	EXTRA HEAVY GLOSSY	
	TOUGH PAPER	
	ENVELOPE	
TRAY <N> SIZE	**ANY SIZE**	Allows you to set the media size for tray 2, tray 3, and tray 4. Substitute the tray number for <N>.

Item	Values	Explanation
	LETTER*	
	LEGAL	
	EXECUTIVE	
	8.5X13	
	A4	
	A5	
	B5(JIS)	
	EXECUTIVE(JIS)	
	16K	
	CUSTOM	
	ANY CUSTOM	
TRAY <N> TYPE	**ANY TYPE**	Allows you to specify the type of media in each tray. Substitute the tray number for <N>.
	PLAIN*	
	PREPRINTED	
	LETTERHEAD	
	TRANSPARENCY	
	PREPUNCHED	
	LABELS	
	BOND	
	RECYCLED	
	COLOR	
	LIGHT <75 g/m2	
	INTERMEDIATE90-104	
	HEAVY 105-120 G/M2	
	ROUGH 90-105 G/M2	
	GLOSSY 75-105 G/M2	
	TOUGH PAPER	

Configure device menu

This menu contains all of the administrative functions.

NOTE Items that have an asterisk (*) are the default values.

Originals submenu

Although you can gain access to each item using the touchscreen graphical display, you can also select copying and sending items through the MFP menus. To gain access to this menu, touch Configure Device, and then touch ORIGINALS.

Item	Values	Explanation
PAPER SIZE	**EXECUTIVE** **LETTER*** **LEGAL** **A5** **A4** **B5(JIS)** **8.5X13** **STATEMENT** **MIXED LTR/LGL**	Sets the paper size of the original document.
NUMBER OF SIDES	**1*** **2**	Indicates whether one side or both sides of the original document are scanned. The MFP prompts you to turn the page over if **2** is selected and the original is placed on the flatbed.
ORIENTATION	**PORTRAIT*** **LANDSCAPE**	Indicates whether the orientation of the original is portrait (short-edge top) or landscape (long-edge top).
CONTENT	**TEXT** **PHOTO** **GLOSSY PHOTO** **MIXED***	Describes the type of image on the original. Select PHOTO if the original consists of graphic images, or TEXT if the image consists of text only. Select GLOSSY PHOTO for continuous tone originals. Select MIXED if the original contains graphics and text. Describe the **TEXT/ PHOTO MIX** with a value from 0 to 8, where **0** represents mostly text, and **8** represents mostly graphics. **NOTE** You can override any of these settings for a particular job by using the Copy screen.
DENSITY	**0** to **8** Default=4	Specifies the contrast and brightness of the image. You can choose from nine increments.

Item	Values	Explanation
		0=darkest **8**=lightest

Copying submenu

To gain access to this menu, touch Configure Device, and then touch Copying.

Item	Values	Explanation
COLOR MODE	**COLOR COPIES** **BLACK COPIES**	Indicates whether copies should be printed in color or black-and-white.
NUMBER OF SIDES	**1*** **2**	Indicates whether images should be printed on one side or both sides of the copy.
COLLATE	**OFF** **ON***	Indicates whether copies should be collated or not collated.
PAPER DESTINATION	**Output Bin 1*** **Output Bin 2*** **Output Bin 3***	Select the output bin on the optional 3-bin mailbox. Output Bin 1 is the default bin for copying. Output Bin 2 is the default bin for faxing. Output Bin 3 is the default bin for printing. **NOTE** This item appears only if an optional 3-bin mailbox is installed.
COPIES	**1–999**	Indicates the number of copies made when you press Start without selecting the number of copies by using the numeric keypad.
STAPLE	**NONE*** **1-EDGE**	To enable stapling, select **1-EDGE**. **NOTE** This item is available only if the stapler/stacker is installed.
FIRST COPY SPEED	**NO EARLY WARM UP*** **EARLY WARM UP**	Select NO EARLY WARM UP to disable the Fast First Copy feature. Using the Fast First Copy feature can cause excessive wear on the MFP. This is the default setting. Select EARLY WARM UP to enable the Fast First Copy feature, which decreases the time that the MFP requires to make a copy when it has been idle for awhile.

Enhancement submenu

To gain access to this menu, touch Configure Device, and then touch Enhancement.

Item	Values	Explanation
SHARPNESS	**0** to **4**	Specifies the sharpness setting. **0**=minimum sharpness **4**=maximum sharpness DEFAULT=2
BACKGROUND REMOVAL	**0** to **8**	Controls the amount of background material from the original that is eliminated on the copy. Background removal is useful when you copy both sides and do not want the material on the first side to be visible on the second side of the copy. **0**=minimum background removal (more background is visible) **8**=maximum background removal (less background is visible) DEFAULT=2

Sending submenu

To gain access to this menu, touch Configure Device, and then touch Sending.

Item	Values	Options	Explanation
E-MAIL	**SCAN PREFERENCE**	**BLACK AND WHITE** **COLOR***	Determines whether the document is scanned in color or black and white.
	FILE TYPE	**PDF*** **M-TIFF** **TIFF** **JPEG**	Specifies the file format of the e-mail attachment.
	FILE SIZE	**SMALL** **STANDARD*** **LARGE**	Specifies the compression of a file, which determines the file size.
	RESOLUTION	**75 DPI** **150 dpi*** **200 dpi** **300 dpi**	Specifies the resolution of a document or image; a lower DPI setting results in a smaller file size, but image quality might be affected.

Item	Values	Options	Explanation
	ADDRESS VALIDATION	**OFF** **ON***	Enables the MFP to check e-mail syntax. Valid e-mail addresses require the "@" sign and a ".".
	FIND GATEWAYS		The MFP searches the network for SMTP and LDAP gateways that the MFP can use to send e-mail.
	SMTP GATEWAY		The IP address of the SMTP server used to send e-mail.
	LDAP GATEWAY		The IP address of the LDAP gateway that the MFP uses to look up e-mail information.
	TEST SEND GATEWAYS		Tests the configured gateways to see if they are functional.
REPLICATE MFP			Copies the send settings from one MFP to another. **NOTE** This feature might not work with older MFPs.

Printing submenu

Some items in the Printing submenu are available in a software program, or in the printer driver (if the correct printer driver is installed). Driver and program settings override control panel settings.

To gain access to this menu, touch Configure Device, and then touch PRINTING.

Item	Values	Explanation
COPIES	**1** to **32,000**	Set the default number of copies by selecting any number from 1 to 32,000. Use the numeric keypad to select the number of copies. **NOTE** It is recommended that you set the number of copies in the printer driver or in the software program. (Printer driver settings and software program settings override control panel settings.)
DEFAULT PAPER SIZE	**LETTER*** **LEGAL** **EXECUTIVE**	Set the default image size for paper and envelopes. (The item name will change from **paper** to **ENVELOPE** as you scroll through the available sizes.)

Item	Values	Explanation
	STATEMENT **8.5X13** **A4** **A5** **B5(JIS)** **EXECUTIVE(JIS)** **16K** **ENVELOPE #10** **ENVELOPE MONARCH** **ENVELOPE C5** **ENVELOPE DL** **ENVELOPE B5** **CUSTOM**	
DEFAULT CUSTOM PAPER SIZE	**UNIT OF MEASURE** **X DIMENSION** **Y DIMENSION**	Allows you to set a custom paper size for any of the installed trays. Substitute the tray number for <N>. Select the X and Y dimensions of the custom paper size. The X dimensions are 76-216 mm (3-8.5 inches). The Y Dimensions are 127-356 mm (5-14 inches).
PAPER DESTINATION	**Output Bin 1*** **Output Bin 2** **Output Bin 3**	Select the output bin on the optional 3-bin mailbox. **NOTE** This item appears only if an optional 3-bin mailbox is installed, and if it is not configured for stacker mode.
DUPLEX	**OFF** **ON*** **DUPLEX BINDING**	Set the value to **ON** to print on both sides (duplex) or **OFF** to print on one side (simplex) of a sheet of paper. **DUPLEX BINDING** allows you to select LONG EDGE or SHORT EDGE*. This item displays only if **DUPLEX** is set to **ON**.
OVERRIDE A4/LETTER	**NO** **YES***	This command is used to print on Letter-size media when an A4 job is sent but no A4-size media is loaded in the MFP (or to print on A4-size media when a Letter job is sent, but no Letter-size media is loaded in the MFP).
MANUAL FEED	**OFF***	Feed the paper manually from tray 1, rather than automatically from a tray.

Item	Values	Explanation
	ON	When **MANUAL FEED=ON** and tray 1 is empty, the MFP goes offline when it receives a print job. It then displays **MANUALLY FEED <PAPER SIZE>**.
COURIER FONT	**REGULAR*** **DARK**	Select the version of Courier font to use: **REGULAR**: The internal Courier font available on the HP LaserJet 4 series printers. **DARK**: The internal Courier font available on the HP LaserJet III series printers. Both fonts are not available at the same time.
WIDE A4	**NO*** **YES**	The Wide A4 setting changes the number of characters that can be printed on a single line of A4 paper. **YES**: Up to 80 10-pitch characters can be printed on one line. **NO**: Up to 78 10-pitch characters can be printed on one line.
PRINT PS ERRORS	**OFF*** **ON**	Select ON to print the PS error page when PS errors occur.
PRINT PDF ERRORS	**OFF*** **ON**	Select ON to print the PDF error page when PDF errors occur.
PCL		For information about this option, see PCL submenu on page 616.

PCL submenu

To gain access to this menu, touch Configure Device, touch PRINTING, and then touch PCL submenu.

Item	Values	Explanation
FORM LENGTH	**5** to **128** Default=60	Sets vertical spacing from 5 to 128 lines for default paper size. Enter the value by using the numeric keypad.
ORIENTATION	**PORTRAIT*** **LANDSCAPE**	Select the default page orientation. **NOTE** It is recommended that you set the page orientation in the printer driver or in the software program. (Printer-driver settings and software-program settings override control panel settings.)
FONT SOURCE	**INTERNAL X*** **CARD SLOT X:**	**INTERNAL X**: Internal fonts. **CARD SLOT 1**, **CARD SLOT 2**, or **CARD SLOT 3**: Fonts stored in one of the three flash memory slots.
FONT NUMBER	**0** to **102**	The MFP assigns a number to each font and lists them on the PCL Font List (see Information pages on page 640). The font number appears in the **Font #** column of the printout.
FONT PITCH	**0.44** to **99.99**	Use the numeric keypad to enter a value. This item might not appear, depending on the font selected. Default=10.00
FONT POINT SIZE	**4.00** to **999.75**	Use the numeric keypad to enter a value. Default=12.00
SYMBOL SET	Variety of available symbol sets	Select any one of several available symbol sets at the MFP control panel. A symbol set is a unique grouping of all the characters in a font. **PC–8** or **PC–850** is recommended for line-draw characters.
APPEND CR TO LF	**NO*** **YES**	Select YES to append a carriage return to each line feed that is encountered in backward-compatible PCL jobs (pure text, no job control). Some environments, such as UNIX, indicate a new line by using only the line-feed control code. This option allows the user to append the required carriage return to each line feed.
SUPPRESS BLANK PAGES	**NO*** **YES**	When set to **YES**, form feeds are ignored if the page is blank.
MEDIA SOURCE MAPPING	**STANDARD*** **CLASSIC**	The PCL5 **MEDIA SOURCE MAPPING** command selects an input tray by a number that maps to the available trays and feeders.

Print quality submenu

You can gain access to some of the items in this menu in either a software program, or in the printer driver (if the correct printer driver is installed). Printer driver settings and software program settings override control panel settings.

To gain access to this menu, touch Configure Device, and then touch PRINT QUALITY.

Item	Values	Explanation
ADJUST COLOR	**HIGHLIGHTS** **MIDTONES** **SHADOWS** **RESTORE COLOR VALUES**	This item allows you to adjust the color from +5 to –5. Each value allows you to adjust **CYAN DENSITY**, **MAGENTA DENSITY**, **YELLOW DENSITY**, and **BLACK DENSITY** **RESTORE COLOR VALUES** removes any color adjustments and returns the color to the original value.
SET REGISTRATION	**PRINT TEST PAGE** **SOURCE** **ADJUST TRAY N**	Shift the margin alignment to center the image on the page from top to bottom, and left to right. You can also align the image on the front, with the image printed on the back.
AUTO SENSE MODE	**TRAY 1 SENSING** **TRAY 2-N SENSING**	Allows you to set trays to automatically sense the type of paper that is loaded.
PRINT MODES	**PLAIN** **PREPRINTED** **LETTERHEAD** **TRANSPARENCY** **PREPUNCHED** **LABELS** **BOND** **RECYCLED** **COLOR** **LIGHT <75 G/M2** **INTERMEDIATE90-104** **HEAVY 105-120 G/M2** **EXTRA HEAVY120-163** **CARDSTOCK >163** **ROUGH 90-105 G/M2** **GLOSSY 75-105 G/M2**	Allows you to associate each media type with a specific print mode.

Item	Values	Explanation
	HEAVYGLOSSY120-160	
	EXTRA HEAVY GLOSSY	
	TOUGH PAPER	
	ENVELOPE	
	RESTORE MODES	
OPTIMIZE	**EXTRA HEAVY120-163**	This item optimizes a number of MFP parameters for all jobs rather than by media type. The default setting for each value is **OFF**. **RESTORE OPTIMIZE** resets all of the optimize parameters to the default settings.
	HIGH GLOSS IMAGES	
	BACKGROUND 1	
	BACKGROUND 2	
	TRANSPARENCY	
	MEDIA TYPE	
	REGISTRATION	
	LONG PAPER	
	PRE-ROTATION	
	RE-TRANSFER	
	FUSER TEMP	
	TRAY1	
	RESTORE OPTIMIZE	
QUICK CALIBRATE NOW	N/A.	Performs partial printer calibrations.
FULL CALIBRATE NOW	N/A	Performs full printer calibrations.
COLOR RET	**OFF**	The **COLOR RET** menu item allows you to turn on or turn off the printer REt (Resolution Enhancement Technology) setting. The default is **ON**.
	ON*	

System setup submenu

Items in this menu affect the MFP function. Configure the MFP according to your printing needs.

To gain access to this menu, touch Configure Device, and then touch SYSTEM SETUP.

Item	Values	Explanation
DATE/TIME	**DATE**	Sets the start date and time for the MFP.
	DATE FORMAT	The **DATE** format is YEAR 2004–2087; JAN, FEB, MAR; DAY 1–31
	TIME	
	TIME FORMAT	The **DATE FORMAT** is YYYY/MMM/DD*; MMM/DD/YYYY; DD/MMM/YYYY

Item	Values	Explanation
		The **TIME** format is HOUR 1–12, MINUTE 0–59, AM, and PM The **TIME FORMAT** is 12 HR or 24 HR. This item defaults to 12 HR.
JOB STORAGE LIMIT	**1** to **100**	Specifies the number of QuickCopy and Proof-and-Hold jobs that can be stored on the MFP hard-disk accessory. Default=32
JOB HELD TIMEOUT	**OFF*** **1 HOUR** **4 HOURS** **1 DAY** **1 WEEK**	Sets the amount of time that QuickCopy and proof-and-hold jobs are kept before being automatically deleted from the queue. If you change the Job Held Timeout value, only jobs that are stored *after* this change are affected by the change. Any jobs that were stored before you changed the value will retain the original timeout setting.
SHOW ADDRESS	**AUTO** **OFF***	This item defines whether the IP address is shown on the control panel display next to the **Ready** message. The default setting is **OFF**.
COLOR/BLACK MIX	**AUTO*** **MOSTLY COLOR PAGES** **MOSTLY BLACK PAGES**	This menu item establishes how the printer switches from color to monochrome (black and white) mode for maximum performance and print cartridge life. **AUTO** resets the printer to the factory default settings. The default is **AUTO**. Select MOSTLY COLOR PAGES if nearly all of your print jobs are color with high page coverage. Select MOSTLY BLACK PAGES if you print mostly monochrome jobs, or a combination of color and monochrome jobs.
TRAY BEHAVIOR	**USE REQUESTED TRAY** **MANUALLY FEED PROMPT** **PS DEFER MEDIA** **SIZE/TYPE PROMPT** **USE ANOTHER TRAY** **DUPLEX BLANK PAGES** **IMAGE ROTATION**	Specifies the behavior of the tray by indicating which tray the MFP should print from. **USE REQUESTED TRAY** sets the tray that the MFP should print from for specified jobs. The values for this menu item are **EXCLUSIVELY** (default) or **FIRST**. **MANUALLY FEED PROMPT** determines whether or not the MFP prompts the user when a job does not

Item	Values	Explanation
		match a requested configured tray. The values for this menu item are **Always** (default) or **UNLESS LOADED**. **PS DEFER MEDIA** determines whether the paper-handling model is based on PostScript rules or HP rules. The values for this menu item are **ENABLED** (follows the HP rules) or **Disabled**. **SIZE/TYPE PROMPT** controls whether the tray configuration message and its prompts are shown whenever a tray is configured for a type or size other than the type or size that is loaded in the tray. **USE ANOTHER TRAY** determines whether the MFP uses paper from another tray of the designated tray is empty. **DUPLEX BLANK PAGES** determines whether blank pages are duplexed. **IMAGE ROTATION** determines if images are rotated. The default is **STANDARD**.
SLEEP DELAY	**1 MINUTE** **15 MINUTES** **30 MINUTES** **45 MINUTES** **60 MINUTES*** **90 MINUTES** **2 HOURS** **4 HOURS**	Sets how long the MFP remains idle before it enters sleep mode.Using sleep mode offers the following advantages: • Minimizes the amount of power that the MFP consumes when it is idle • Reduces wear on electronic components in the MFP **NOTE** Sleep mode turns off the backlight on the display, but the display is still readable. The MFP automatically exits sleep mode when you send a print job, open or close a paper tray, receive a fax, touch any button on the control panel, touch any part of the touchscreen, open the scanner lid, or load media into the ADF. To enable or disable sleep mode, see Resets submenu on page 628.
WAKE TIME	List of days of the week **OFF*** **CUSTOM**	Sets the time that the MFP automatically comes out of sleep mode. This feature can be set for a different time for each day of the week. Or, if you wish to apply the same

Item	Values	Explanation
		settings to each day, select APPLY TO ALL DAYS Each day displays the following values: Hour 1–12, Minute 0–59, AM, and PM.
COPY/SEND SETTINGS	For information about these settings, see the separate table Copy/send settings on page 622.	
PERSONALITY	**AUTO*** **PCL** **PDF** **PS**	Select the default MFP language (personality). Possible values are determined by which valid languages are installed in the MFP. Normally you should not change the product language (the default is **AUTO**). If you change the setting to a specific product language, the MFP does not automatically switch from one language to another unless specific software commands are sent to the MFP.
CLEARABLE WARNINGS	**JOB*** **ON**	Set the amount of time that a clearable warning appears on the MFP control panel. **JOB**: Warning messages appear on the control panel until the end of the job from which they were generated. **ON**: Warning messages appear on the control panel until they are cleared.
AUTO CONTINUE	**OFF** **ON***	This item determines how the MFP reacts to errors. **OFF**: If an error prevents printing, the message remains on the display, and the MFP does not print until you touch CONTINUE. **ON**: If an error prevents printing, the message is displayed, and the MFP goes offline for 10 seconds before returning online.
REPLACE SUPPLIES	**STOP AT OUT*** **&STOP AT LOW;** **OVERRIDE AT OUT**	Sets printer behavior when a cartridge is low. The default is **STOP AT OUT**. This option allows the printer to continue printing until a color supply is exhausted. When the printer is set to **STOP AT LOW**, printing pauses until the color supply is replaced. **OVERRIDE AT OUT** allows printing to continue when a color supply is out, but displays a warning the supply is out and must be replaced.
ORDER AT	**0–100**	Default=15

Item	Values	Explanation
COLOR SUPPLY OUT	**STOP*** **AUTOCONTINUE BLACK**	Determine how the MFP behaves when toner is out. **STOP**: The MFP goes offline and waits until the cartridge is replaced. **AUTOCONTINUE BLACK**: The MFP displays **REPLACE CARTRIDGE** until the cartridge is replaced. The MFP continues to print.
JAM RECOVERY	**AUTO*** **OFF** **ON**	Determine how the MFP functions when a jam occurs. **AUTO**: The MFP automatically selects the best mode for jam recovery (usually **ON**). This is the default setting. **OFF**: The MFP does not reprint pages following a jam. Printing performance might be increased with this setting. **ON**: The MFP automatically reprints pages after a jam is cleared.
LANGUAGE	List of available languages	Sets the language of the control panel.

Copy/send settings

This table lists the options that are available for the **COPY/SEND SETTINGS**, which are part of the **SYSTEM SETUP** submenu.

Item	Values	Explanation
INACTIVITY TIMEOUT	**10–300 SECONDS**	Defines the amount of time until the copy settings return to the default settings after any control panel activity is completed. If you reset the MFP, the value resets to the default. Default=60
AUTO SETTINGS RESET	**OFF*** **ON**	Allows automatic reset of copy/send settings after the defined timeout. When set to **OFF**, you are prompted to reset the settings or continue with the same settings. If this item is set to **ON**, the settings are automatically reset after each send job. The default is **OFF**.
TIMEOUT AFTER SEND	**10–300 SECOND**S	Defines the amount of time before the send settings return to the default settings after any control panel activity is completed. This item displays only when **AUTO SETTINGS RESET** is **OFF**. Default=20
HOLD OFF PRINT JOB	**OFF** **ON***	Prevents network print jobs from starting within a specified period after a copy is completed.
HOLD OFF TIME	**0–300 SECONDS**	Defines the amount of time that print jobs must wait if **HOLD OFF PRINT JOB** is set to **ON**.

Item	Values	Explanation
		Default=15
SCAN AHEAD	**OFF** **ON***	Allows a copy job to be scanned even if the MFP is printing another job. The job will be scanned and held until it can be printed. If this setting is set to **OFF**, the job is not scanned until the print job is completed.
AUTO JOB INTERRUPT	**OFF*** **ON**	Allows a copy job to automatically interrupt any currently printing network print job. The copy job is placed between full copies of the job that is currently printing. If this setting is set to **OFF**, the job is not printed until all copies of the print job are completed.
COPY JOB INTERRUPT	**OFF*** **ON**	Allows you to interrupt the current copy job to make a different copy. When you press the Start button, the MFP shows a message that asks if you want to interrupt the current copy job.
EDGE-TO-EDGE COPIES	**OFF*** **ON**	Indicates whether copies are printed edge-to-edge (within 2 mm (0.08 inches), of the edge of the paper) or whether they have the normal, unprintable border (6.35 mm (0.25 inches).
AUDIBLE FEEDBACK	**OFF** **ON***	Gives an audible indication when you press a button or when you touch an interactive area of the touchscreen.
COLOR COPY OPTION	**ENABLE*** **DISABLE**	Allows an administrator to set the color lockout feature.

MBM-3 Configuration submenu

Use the items in this menu to set up the output bins on the 3-bin mailbox.

To gain access to this menu, touch Configure Device, and then touch MBM3 CONFIGURATION.

NOTE This menu appears only when the 3-bin mailbox is installed.

Item	Values	Explanation
OPERATION MODE	**JOB SEPARATION MODE*** **MAILBOX MODE** **STACKER MODE**	Select the operation mode that you want to use. **NOTE** The MFP restarts automatically whenever the operation mode is changed.

Stapler/stacker submenu

Use the items in this menu to configure the stapling options.

To gain access to this menu, touch Configure Device, and then touch STAPLER/STACKER.

NOTE This menu appears only when the stapler/stacker is installed.

Item	Values	Explanation
STAPLES	**NONE*** **ONE**	To enable stapling, select ONE. **NOTE** Printer-driver settings override control panel settings.
STAPLES OUT	**STOP** **CONTINUE***	Use this item to configure the MFP to either stop or continue when the staple cartridge is empty. If you select **CONTINUE**, jobs are stacked in the output bin, but they are not stapled. Default=15

I/O submenu

Items in the I/O (input/output) submenu affect the communication between the MFP and the computer.

To gain access to this menu, touch Configure Device, and then touch I/O.

Item	Values	Explanation
I/O TIMEOUT	**5** to **300**	Use this to select the I/O timeout period in seconds. (I/O timeout refers to the time, measured in seconds, that the MFP waits before ending a print job.) Use this setting to adjust timeout for best performance. If data from other ports appear in the middle of your print job, increase the timeout value. Default = 15
PARALLEL INPUT	**HIGH SPEED** **ADVANCED FUNCTIONS**	**HIGH SPEED** accepts faster parallel communications used for connections with newer computers. This item contains NO and YES* options. **ADVANCED FUNCTIONS** turns the bidirectional parallel communication on or off. The default is set for a bidirectional parallel port (IEEE-1284). This setting allows the MFP to send status readback messages to the computer. (Turning the parallel advanced functions on might slow language switching.) This item contains OFF and ON* options.

Item	Values	Explanation
FIND GATEWAYS	No value to select	This item searches the network for both SMTP and LDAP gateways that can be used to send e-mail.
SMTP GATEWAY	No value to select	This is the IP address of the SMTP Gateway that is used for sending e-mail.
LDAP GATEWAY	No value to select	This is the IP address of the LDAP Gateway that is used for looking up e-mail address information.
JETDIRECT	See submenu below.	**JETDIRECT** allows you to configure network settings.
TEST SEND GATEWAYS	No value to select	Tests the configured gateways to ensure that they are functional.

Embedded Jetdirect submenu

To gain access to this menu, touch Configure Device, and then touch I/O and then touch JETDIRECT.

Item	Options	Values	Explanation
TCP/IP	**ENABLE**	**ON** **OFF**	**ON**: (default) Enable the TCP/IP protocol. **OFF**: Disable the TCP/IP protocol.
	HOST NAME		An alphanumeric string, up to 32 characters, that is used to identify the device. This name is listed on the Jetdirect configuration page. The default host name is NPIxxxxxx, where xxxxxx is the last six digits of the LAN hardware (MAC) address.
	CONFIG METHOD	**BOOTP** **DHCP*** **AUTO IP** **MANUAL**	Select BOOTP (Bootstrap Protocol) for automatic configuration from a BootP server. Select DHCP (Dynamic Host Configuration Protocol) for automatic configuration from a DHCP server. Select AUTO IP for automatic link-local IP addressing. An address in the form 169.254.x.x will be automatically assigned. Use the **MANUAL** settings menu to configure TCP/IP parameters.
	DHCP RELEASE	**YES** **NO***	If DHCP is used and a DHCP lease exists, selecting **NO** saves the current lease. Selecting **YES** releases the current DHCP lease and the leased IP address.

Item	Options	Values	Explanation
	DHCP RENEW	**YES** **NO***	This menu appears if **CONFIGURE 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 along with the leased IP address are released.
MANUAL SETTINGS			(Available only if **CONFIG METHOD** is set to **MANUAL**) Configure parameters directly from the printer control panel: **IP Address: X** (n.n.n.n.) The unique IP address of the printer, where n is a value from 0 to 255. **SUBNET MASK**m.m.m.m.: The subnet mask for the printer, where m is a value from 0 to 255. **SYSLOG SERVER**n.n.n.n.: The IP address of the syslog server used to receive and log syslog messages. **DEFAULT GATEWAY**n.n.n.n: 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).
DEFAULT IP (parameters are AUTO IP and LEGACY)			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 example, when manually configured to use BootP or DHCP). • **AUTO IP**: A link-local IP address 169.254.x.x will be set. • **LEGACY**: The address 192.0.0.192 will be set, consistent with older Jetdirect products.
PRIMARY DNS			Specify the IP address (n.n.n.n) of the Primary Domain Name System (DNS) Server.
SECONDARY DNS			Specify the IP address (n.n.n.n) of the Secondary Domain Name System (DNS) Server.

Item	Options	Values	Explanation
PROXY SERVER			Specifies the proxy server to be used by embedded applications in your printer/MFP. 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 IP address or fully-qualified domain name. The name can be up to 64 characters. For some networks, you may need to contact your Independent Service Provider (ISP) for the proxy server address.
PROXY PORT			Enter 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**	**ON***	**ON**: Enable the IPX/SPX protocol.
		OFF	**OFF**: Disable the IPX/SPX protocol.
	FRAME TYPE	**AUTO**	Select the frame-type setting for your network. **AUTO**: (default) 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.
		EN_8023	
		EN_II	
		EN_8022	
		EN_SNAP	
APPLETALK	**ENABLE**	**ON***	Enable or disable the AppleTalk protocol.
		OFF	
DLC/LLC	**ENABLE**	**ON***	Enable or disable the DLC/LLC protocol.
		OFF	
SECURE WEB	**HTTPS REQUIRED**		**SECURE WEB**: Specify whether the embedded Web server accepts communications by using only secure HTTP (HTTPS) or by using both HTTP and HTTPS.
	HTTPS OPTIONAL*		
DIAGNOSTICS			**DIAGNOSTICS**: Provides tests to help diagnose network hardware or TCP/IP network connection problems.

Item	Options	Values	Explanation
RESET SECURITY	**YES** **NO***		**RESET SECURITY**: Specifies whether the current security settings on the print server are saved or reset to factory defaults.
LINK SPEED	**AUTO** **10T HALF** **10T FULL** **100TX HALF** **100TX FULL**		The print server will automatically configure itself to match the network link speed and communication mode. If this process fails, either **100TX HALF** or **10T HALF** is set. **10T HALF**: 10 Mbps, half-duplex operation. **10T FULL**: 10 Mbps, full-duplex operation. **100TX HALF**: 100 Mbps, half-duplex operation. **100TX FULL**: 100 Mbps, full-duplex operation.

Resets submenu

To gain access to this menu, touch Configure Device, and then touch RESETS.

NOTE Use this menu with caution. You can lose buffered page data or MFP configuration settings when you select these items. Reset the MFP only under the following circumstances:

- You want to restore the MFP default settings.
- Communication between the MFP and computer has been interrupted, and you are not able to resolve the problem by any other method. See Network connectivity problems on page 596.
- You are having problems with a port.

The items in the Resets submenu will clear all memory in the MFP, while pressing the Reset button clears only the current job.

Item	Values	Explanation
RESTORE FACTORY SETTINGS	No value to select	This item restores all control panel settings to the original factory settings.
SLEEP MODE	**OFF** **ON***	Turns sleep mode on or off. Using sleep mode offers the following advantages: • Minimizes the amount of power that the MFP consumes when it is idle • Reduces wear on electronic components in the MFP The MFP automatically exits sleep mode when you send a print job, receive a fax,

Item	Values	Explanation
		touch any button on the control panel, touch any part of the touchscreen, open the scanner lid, or load media into the ADF. You can set how long the MFP remains idle before it enters sleep mode. See the **SLEEP DELAY** information in the System setup submenu on page 618.
LOCK CARRIAGE	No value to select	This item must be selected before engaging the Scanner Head Lock. It moves the carriage into a position where it can be locked.
CLEAR ADDRESS BOOK	No value to select	This item clears all addresses from the address book.

Diagnostics menu

Item	Options	Values	Explanation
PRINT EVENT LOG			Generates a localized list of the 50 most recent entries in the error log. For each entry, the printed event log shows the error number, page count, error code, and description or personality.
PQ TROUBLESHOOTING			This item prints a series of 8 pages that include instructions, pages for each color, demo page, and configuration page. These pages can help isolate print quality problems.
SHOW EVENT LOG			At the control panel, scroll through the contents of the event log, which lists the 50 most recent events.
CALIBRATE SCANNER			Use this item to calibrate the scanner. You might need to calibrate the scanner if it is not capturing the correct sections of scanned documents.
PRINT DIAGNOSTICS PAGE			Allows you to print a page that can assist in diagnosing printer problems.
DISABLE CARTRIDGE CHECK			Allows you to remove a print cartridge to help determine which print cartridge is the source of a problem.

Item	Options	Values	Explanation
PAPER PATH SENSORS			Initiates a paper path sensor test. You can then enter the menus to print internal pages (including the paper path test), set menu items, and send jobs from the computer. The sensors are updated as paper passes each sensor, but no messages are generated this state.
PAPER PATH TEST	**PRINT TEST PAGE**		Generates a test page that is useful for testing the paper handling features of the MFP. Specifies which paper paths are tested.
	SOURCE	**ALL TRAYS** **TRAY 1** **TRAY 2*** **TRAY3** **TRAY4**	Specifies to print a test page from a specific tray or from all trays.
	DESTINATION	**ALL BINS** **Output Bin 1*** **Output Bin 2** **Output Bin 3**	Specify which output bin to use during the paper path test. This menu displays only if the output bin is installed.
	DUPLEX	**OFF*** **ON**	Specifies if the duplexer is included when the test is performed.
	COPIES	**1*** **10** **50** **100** **500**	Specifies how many sheets of paper from the specified source are sent when the test is performed.
MANUAL SENSOR TEST			Tests the paper path sensors and switches for correct operation. During this test, the MFP is offline. On the control panel display, each sensor is represented by a string of alphabetic letters followed by a corresponding status for each sensor.

Item	Options	Values	Explanation
MANUAL SENSOR TEST 2			Performs tests to determine whether the paper path sensors are operating correctly.
COMPONENT TEST	**TRANSFER MODE** **BELT ONLY** **IMAGE DRUM MOTORS** **BLACK LASER SCANNER** **CYAN LASER SCANNER** **MAGENTA LASER SCANNER** **YELLOW LASER SCANNER** **FUSER MOTOR** **FUSER PRESSURE RELEASE MOTOR** **ALIENATION MOTOR** **ETB CONTACT / ALIENATION** **TRAY 1 PICKUP SOLENOID** **TRAY 1 PICKUP MOTOR** **TRAY 3 PICKUP SOLENOID** **TRAY 2 PICKUP MOTOR** **TRAY 3 PICKUP SOLENOID** **TRAY 3 PICKUP MOTOR** **TRAY 4 PICKUP SOLENOID** **TRAY 4 PICKUP MOTOR** **DUPLEXER PICKUP MOTOR** **REPEAT**		This menu item is used by a service technician to exercise individual parts of the MFP to isolate the source of any problems.
PRINT/STOP TEST	**STOP TIME**	**0** to **60000**	This menu item is used by a service technician to isolate the potential source of print-quality problems with the MFP. The time is expressed in milliseconds.

Item	Options	Values	Explanation
COLOR BAND TEST	**PRINT TEST PAGE** **COPIES**	**1–30**	**PRINT TEST PAGE** option generates a test page that is useful for testing the color band features of the MFP. The **COPIES** option allows you to select the number of test pages to be printed. Default = 1.
SCANNER TESTS	**LOWER LAMP** **ADF INPUT MOTOR** **ADF INPUT MOTOR REVERSE** **FLATBED MOTOR** **ADF READ MOTOR** **ADF READ MOTOR REVERSE** **ADF DUPLEX SOLENOID** **ADF LED INDICATOR**		This menu item is used by a service technician to diagnose potential problems with the MFP scanner.
CONTROL PANEL	**LEDs** **DISPLAY** **BUTTONS** **TOUCHSCREEN**		This menu item is used by a service technician to diagnose potential problems with the MFP control panel.

Tools for troubleshooting

The MFP has built-in tools that can help diagnose problems.

Using the 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.

The embedded Web server feature requires at least 48 MB of RAM and an HP Jetdirect print server in order to connect to your network.

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 4730mfp software CD-ROM.

Opening the embedded Web server

1. In a supported Web browser on your computer, type the IP address for the MFP. To find the IP address, print a configuration page.

   NOTE After you open the URL, you can bookmark it so that you can return to it quickly in the future.

2. The embedded Web server has four tabs that contain settings and information about the MFP: the **Information** tab, the **Settings** tab, the **Digital Sending** tab, and the **Networking** tab. Click the tab that you want to view.
3. See the following sections for more information about each tab.

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**, **Fax**, **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 MFP-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.
- **Restrict color**. Set user color print job restrictions.

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 you 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**. Click this link to connect to an ordering Web site and order genuine HP supplies, such as print cartridges and media.
- **Product Support**. Connects to the support site for the HP Color LaserJet 4730mfp. Then, you can search for help regarding general topics.

Using the HP Easy Printer Care Software

The HP Easy Printer Care Software is an application that you can use for the following tasks:

- View color usage information.
- 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. For more information, visit http://www.hp.com/go/easyprintercare.

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, Windows 2003, and Windows XP.

To use the HP Easy Printer Care Software

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

- On the **Start** menu, select **Programs**, select **HP**, and then select **HP Easy Printer Care Software**.
- In the Windows system tray (in the lower right-hand corner of the desktop), double-click the HP Easy Printer Care Software icon.
- Double-click the desktop icon.

HP Easy Printer Care Software sections

The HP Easy Printer Care Software contains the sections described in the table below.

Section	Description
Overview tab Contains basic status information for the printer.	• **Device** list: Shows the printers that you can select. • **Device Status** section: Shows printer status information. This section will indicate 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 **Refresh** to update the section. • **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.	• Printer usage reports — to track printer usage. • Software updates — automatic updates for the latest HP drivers. • Online diagnostics. • Online user documentation. • Online support. **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

Section	Description
	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.

Using 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.

Information pages

From the control panel, you can print pages that give details about the MFP and its current configuration. The following information pages are described here:

- **PRINT MENU MAP**
- **PRINT CONFIGURATION PAGE**
- **PRINT SUPPLIES STATUS PAGE**
- **SUPPLIES STATUS** (this page does not print)
- **PRINT USAGE PAGE**
- **PRINT DEMO**
- **PRINT RGB SAMPLES**
- **PRINT CMYK SAMPLES**
- **PRINT FILE DIRECTORY** (this page does not print)
- **PRINT PCL FONT LIST**
- **PRINT PS FONT LIST**

Use the following procedure to print these information pages. Then, see the following sections for more information about each page.

To print an information page

1. Press Menu.
2. Touch Information.
3. Scroll to the information page that you want, and touch the appropriate page. The page automatically prints.

Menu map

To see the current settings for the menus and items that are available in the control panel, print a control panel menu map.

Many of these values can be overridden from the driver or program. You might want to store the menu map near the MFP for reference.

The content of the menu map varies, depending on the options that are currently installed in the MFP.

Configuration pages

Depending on the model, up to four pages print when you select PRINT CONFIGURATION. In addition to the main configuration page, an embedded Jetdirect configuration page prints as well as a page for the fax accessory and a page for the optional paper-handling options.

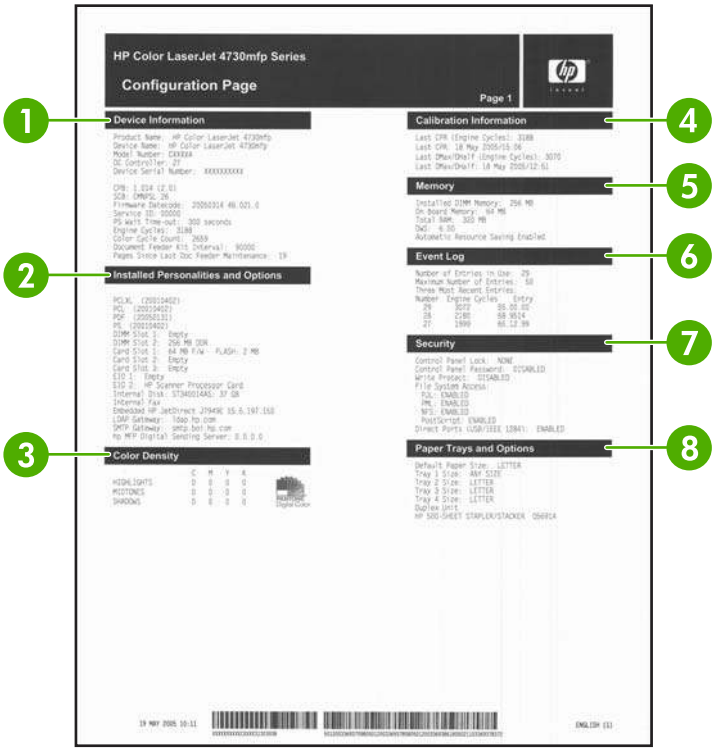
Configuration page

Use the configuration page to view current MFP settings, to help troubleshoot MFP problems, or to verify installation of optional accessories, such as memory (DIMMs), trays, and printer languages.

NOTE If an optional 3-bin mailbox or stapler/stacker is installed, a page also prints for that device.

NOTE If an analog fax accessory is installed, a fax accessory page also prints. See the *HP LaserJet Analog Fax Accessory 300 User Guide* for information about understanding the fax accessory page.

The MFP configuration page contains the following information:



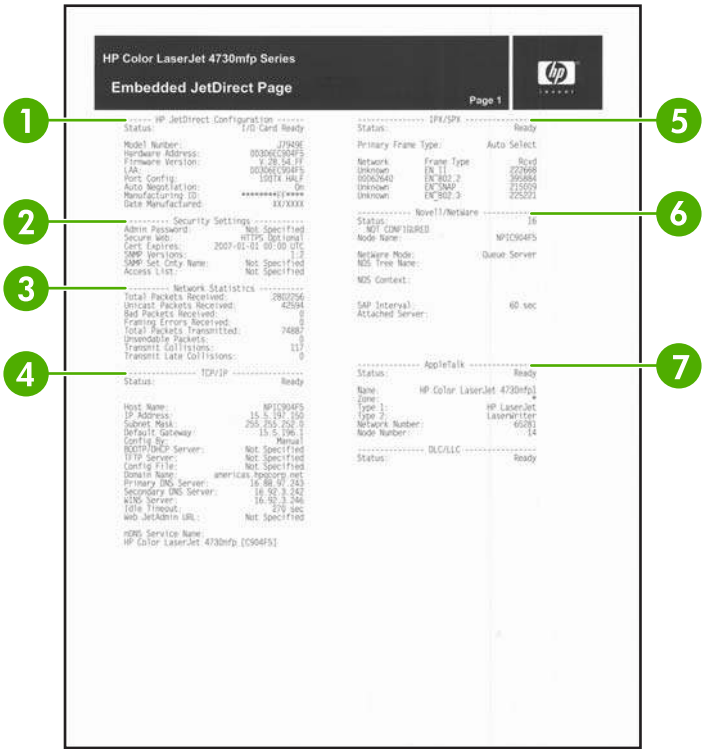
1	**Device Information** lists the model and serial number, engine cycles, firmware datecodes, maintenance kit counts, calibration information, color density, and other information for the MFP.
2	**Installed Personalities and Options** lists all MFP languages that are installed (such as PCL and PS), and lists options that are installed in each DIMM slot and EIO slot.
3	**Color Density** shows current settings for highlights, midtones, and shadows.
4	**Calibration Information** lists the last CPR and last DMax/DHalf calibrations.
5	**Memory** lists the MFP memory information, PCL Driver Work Space (DWS), and I/O buffering and Resource Saving information.

6	**Event Log** lists the number of entries in the log, the maximum number of entries viewable, and the last three entries. The second page of the event log is the manufacturer page. This page contains information that might assist HP Customer Care representatives in solving possible MFP problems.
7	**Security** lists the status of the control panel lock, control panel password, and disk drive.
8	**Paper Trays and Options** lists the size settings for all trays and lists paper-handling accessories that are installed.

NOTE The content of the configuration page varies, depending on the options that are currently installed in the MFP.

HP embedded Jetdirect page

The second configuration page is the HP embedded Jetdirect page, which contains the following information:



1	**HP Jetdirect Configuration** indicates the MFP status, model number, hardware firmware version, port select, port configuration, auto negotiation, manufacturing identification, and manufactured date.
2	**Security Settings** information
3	**Network Statistics** indicates the total packets received, unicast packets received, bad packets received, framing errors received, total packets transmitted, unsendable packets, transmit collisions, and transmit late collisions.
4	**TCP/IP** information, including the IP address
5	**IPX/SPX** information
6	**Novell/NetWare** information
7	**AppleTalk** information
8	**DLC/LLC** information

Always make sure the status line under the HP Jetdirect configuration lines indicates "I/O Card Ready".

Paper handling configuration page

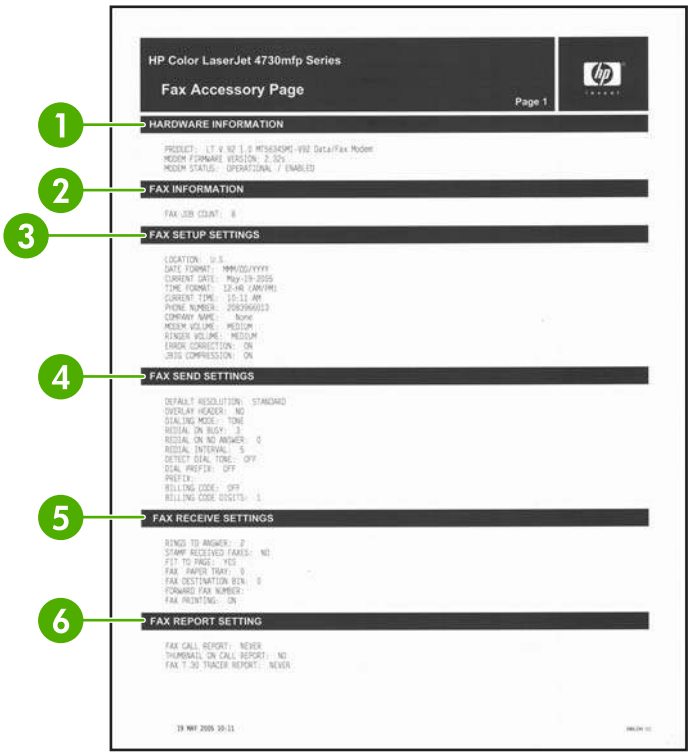
The paper handling configuration page contains the following information on any installed paper handing device:

Callout 1

- model number
- firmware datecode
- bins and trays

Fax accessory page

The fax accessory page contains the following information on the fax accessory, if installed:



1	**Hardware information** indicates the model, hardware firmware version, and modem status.
2	**Fax information** provides a fax job count.
3	**Fax setup settings** outlines the settings assigned to the fax accessory.
4	**Fax send settings** outlines the send settings assigned to the fax accessory.
5	**Fax receive settings** outlines the receive settings assigned to the fax accessory.
6	**Fax report setting** outlines the reporting settings assigned to the fax accessory.

Finding important information on the configuration pages

Certain information, such as the firmware date codes, the IP address, and the e-mail gateways, is especially helpful while servicing the MFP. This information is on the various configuration pages. Table 7-36 Important information on the configuration pages on page 646 describes where to look for this information.

Table 7-36 Important information on the configuration pages

Type of information	Specific information	Configuration page
Firmware date codes When you use the remote firmware upgrade procedure, all of these firmware components are upgraded. For more information see Upgrading the firmware on page 139.	DC controller	Look on the main configuration page, under “Device Information.”
	Copy board version (CPB)	Look on the main configuration page, under “Device Information.”
	Scan board version (SCB)	Look on the main configuration page, under “Device Information.”
	Firmware datecode	Look on the main configuration page, under “Device Information.”
	Stapler/stacker or 3-bin mailbox firmware datecode	Look on the paper-handling configuration page, under “Product Name.”
	Modem firmware version (when a fax accessory is installed)	Look on the fax accessory page, under “Hardware Information.”
	Embedded Jetdirect firmware version	Look on the embedded Jetdirect page, under “HP Jetdirect Configuration.”
E-mail gateway information E-mail gateway addresses appear only if the MFP is configured for sending to e-mail. If you are using the embedded e-mail function, addresses should be shown for the LDAP and SMTP gateways, and the digital sending server address should be blank. If you are using the optional HP Digital Sending Software, the LDAP and SMTP addresses should be blank, and an address for the digital sending software should be shown.	LDAP gateway	Look on the main configuration page, under “Installed Personalities and Options.”
	SMTP gateway	Look on the main configuration page, under “Installed Personalities and Options.”
	HP MFP digital-sending server	Look on the main configuration page, under “Installed Personalities and Options.”
Accessories and internal storage All optional devices that are installed on the MFP should be listed on the main configuration page. In addition, separate pages print for the optional paper-handling devices and the fax accessory. These pages list more-detailed information for those devices.	Internal disk	Look on the main configuration page, under “Installed Personalities and Options.” Shows model and capacity.
	Internal fax (presence)	Look on the main configuration page, under “Installed Personalities and Options.”
	Embedded HP Jetdirect	Look on the main configuration page, under “Installed Personalities and Options.” Shows model and ID.
	Total RAM	Look on the main configuration page, under “Memory.”

Table 7-36 Important information on the configuration pages (continued)

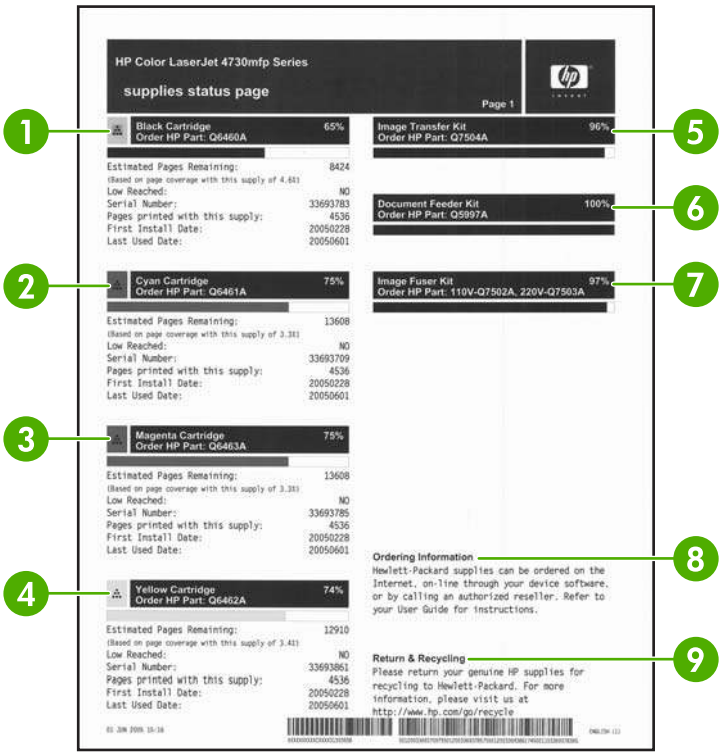
Type of information	Specific information	Configuration page
	Duplex unit	Look on the main configuration page, under “Paper Trays and Options.”
	Additional 500-sheet feeders and optional output devices	Look on the main configuration page, under “Paper Trays and Options.”
Engine cycles and event logs Total page counts and maintenance kit counts are important for ongoing MFP maintenance. The configuration page lists only the three most recent errors. To see a list of the 50 most recent errors, print an event log from the **DIAGNOSTICS** menu.	Engine cycles	Look on the main configuration page, under “Device Information.”
Pages since Last Doc Feeder Maintenance (ADF maintenance count)	Look on the main configuration page, under “Device Information.”	
Event-log information	Look on the main configuration page, under “Event log.”	

Supplies status page

Use the supplies status page to obtain information about the print cartridges that are installed in the MFP, the amount of toner that remains in the print cartridges, and the number of pages and jobs that have been processed. The page also lets you know when you should schedule the next preventive maintenance for each maintenance kit.

NOTE The MFP has two separate maintenance kits: one is for the print engine, and the other is for the ADF. For more information, see Performing preventive maintenance on page 107.

The supplies status page contains the following information:

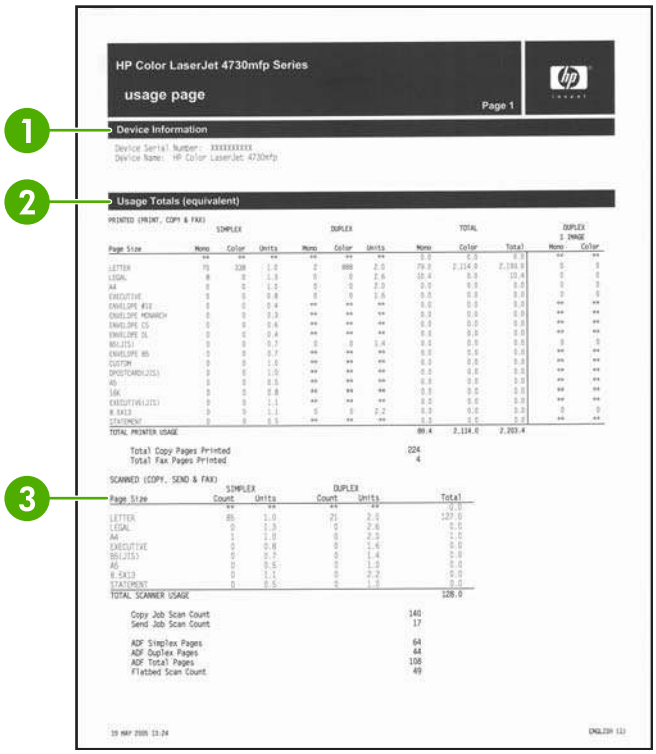


1	**Black Cartridge** indicates the part number, amount of toner remaining in the print cartridge, estimated pages remaining, total number of pages and jobs processed, print cartridge serial number, and date installed and last used.
2	**Cyan Cartridge** indicates the part number, amount of toner remaining in the print cartridge, estimated pages remaining, total number of pages and jobs processed, print cartridge serial number, and date installed and last used.
3	**Magenta Cartridge** indicates the part number, amount of toner remaining in the print cartridge, estimated pages remaining, total number of pages and jobs processed, print cartridge serial number, and date installed and last used.
4	**Yellow Cartridge** indicates the part number, amount of toner remaining in the print cartridge, estimated pages remaining, total number of pages and jobs processed, print cartridge serial number, and date installed and last used.
5	**Image Transfer Kit** indicates the part number and status.
6	**Document Feeder Kit** indicates the part number and status.
7	**Image Fuser Kit** indicates the part number and status.
8	**Ordering Information** provides information on ordering new HP MFP supplies.
9	**Return & Recycling** provides information on recycling HP MFP supplies.

Usage page

The usage page provides information about the page sizes and number of pages printed, copied, and sent.

The usage page contains the following information:



1	**Device Information** indicates the device name and serial number.
2	**Usage Totals: Printed (Print, Copy & Fax)** indicates types of pages that have been printed; the number of single-sided pages that have been printed; the number of duplexed pages that have been printed; the total number of copies made; and the total number of fax pages printed.
3	**Usage Totals: Printed and Scanned (Copy, Send & Fax)** indicates types of pages that have been scanned; the number of single-sided and duplexed pages that have been scanned; copy and send job counts; and pages scanned by scanner mode. • Units: equivalent number of letter or A4 pages • Total is calculated by multiplying the mono units and units from simplex, multiplying the mono units and units from duplex, and adding the results together. The same process is used for color. These totals are added to the totals of the other page sizes to provide the total printer usage.
4	**Print Modes** shows the number of pages that have been printed with each print mode.
5	**Paper Path Usage** shows the number of pages have been printed from each input tray and to each output bin.
6	**Historical Device Coverage** indicates the average percentage of toner used on all pages that have been printed.

PCL or PS font list

Use the font lists to see which fonts are currently installed in the MFP. (The font lists also show which fonts are resident on a hard disk or flash DIMM.)

The PS font list shows the PS fonts installed, and gives a sample of those fonts. The following describes the information that can be found on the PCL font list:

- Font gives the font names and samples.
- Pitch/Point indicates the pitch and point size of the font.
- Escape Sequence (a PCL 5e programming command) is used to select the designated font. (See the legend at the bottom of the font list page.)
- Font # is the number used to select fonts from the control panel (not the software application). Do not confuse the font # with the font ID (see the following information). The number indicates the DIMM slot where the font is stored.
    - Soft: Downloaded fonts that stay resident in the MFP until other fonts are downloaded to replace them or until the MFP is turned off.
    - Internal: Fonts that permanently reside in the MFP.
- Font ID is the number you assign to soft fonts when you download them through software.

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 **DIAGNOSTICS** 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 7-12 Formatter LED on page 654 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.

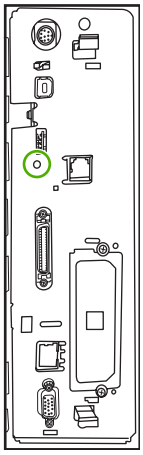


Figure 7-12 Formatter LED

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 **DIAGNOSTICS** 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 of this 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 **DIAGNOSTICS** 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 7-38 Manual sensor test letter designations on page 657 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.

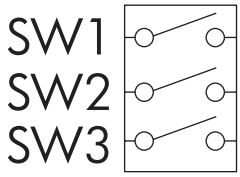


Figure 7-13 Tray 2 paper size switch arrangement

Table 7-37 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 7-38 Manual sensor test letter designations on page 657 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 7-38 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 657)	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, V, and W.

MANUAL SENSOR TEST 2 operates sensors P, Q, R, S, T, and U.

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. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Touch PRINT EVENT LOG.

View event log from control panel

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Touch SHOW EVENT LOG.

Print the print quality troubleshooting pages

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Touch PQ TROUBLESHOOTING.

Disable cartridge check

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Touch DISABLE CARTRIDGE CHECK.

Paper path sensors

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Touch PAPER PATH SENSORS.

Paper path test

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.

3. Touch PAPER PATH TEST.
4. Select **SOURCE**, **DUPLEX** (On or Off), and **COPIES**.
5. Touch PRINT TEST PAGE.

Finishing paper path test

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Touch Finishing Paper Path Test.
4. Select **Finishing Options**, **Media Size**, **MEDIA TYPE**, **COPIES**, and **DUPLEX**.
5. Touch PRINT TEST PAGE.

Manual sensor test

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Scroll to and touch MANUAL SENSOR TEST.

Manual sensor test 2

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Scroll to and touch MANUAL SENSOR TEST 2.

Component test

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
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. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Scroll to and touch PRINT/STOP TEST.
4. Select the appropriate number of milliseconds and then touch Ok.

Color band test

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Scroll to and touch COLOR BAND TEST.
4. Select the number of copies and touch PRINT TEST PAGE.

Scanner tests

1. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
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. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
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. Press Menu.
2. Scroll to and touch DIAGNOSTICS.
3. Scroll to and touch CONTROL PANEL.
4. Select the appropriate test (LEDs, display, buttons, and touchscreen).

Service menu

Authorized HP service technicians can use this menu to gain access to MFP settings that are reserved for service personnel. The service menu is protected by a personal identification number (PIN). When you select **Service** from the list of menus, you are prompted to type an eight-digit PIN code.

The PIN code for this MFP is 09473005.

NOTE The MFP automatically exits the service menu after about one minute if no menu items are selected or changed.

Table 7-39 Service menu

Item	Explanation
CLEAR EVENT LOG	Select this item to clear (reset to zero) the internal event log.
MONO CYCLE COUNT	Select this item to set the total number of monochrome pages that have been printed to date. Typically this is required only when the formatter is replaced.
COLOR CYCLE COUNT	Select this item to set the total number of color pages that have been printed to date. Typically this is required only when the formatter is replaced.
REFURBISH PAGE COUNT	Select this item to set the page count if you need to send the MFP for refurbishment. This page count is stored in memory so that the correct Service ID can be restored after the MFP is refurbished.
DOCUMENT FEEDER KIT COUNT	Select this item to set the number of pages that have been printed since the last document-feeder kit was installed or 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 225,000 pages).
Document Feeder Kit Interval: X	Select this item to specify the number of pages that can be printed before a **Replace Document Feeder Kit** message appears on the control panel display to indicate that a document-feeder kit is required.
TRANSFER KIT COUNT	This item allows the service technician to reset the page count if the value is lost. This is set initially at the factory to 0. A cleaning kit interval is set at the factory that cannot be set in any menu item. The interval for the transfer kit is 200000 (the expected transfer kit life). This value is reset to 0 if the user sets the menu item NEW TRANSFER KIT to YES in the RESETS menu
FUSER KIT COUNT	This item allows the service technician to reset the page count if the value is lost. This is set initially at the factory to 0. A cleaning kit interval is set at the factory that cannot be set in any menu item. The interval for the fuser is 100000 (the expected fuser life). Because color products stop when the kit count reaches the interval, the user can only enter a value that is less than the fuser kit interval. This value is reset to 0 if the user sets the menu item NEW FUSER KIT to YES in the RESETS menu.
ADF COUNT	Select this item to set the total number of pages that have been fed through the ADF.
FLATBED COUNT	Select this item to set 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 ADF.
ADF DUPLEX COUNT	Select this item to set the number of duplex pages that have been fed through the ADF.
COPY SCAN COUNT	Select this item to set the number of copy pages that have been scanned.

Table 7-39 Service menu (continued)

Item	Explanation
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 scanned pages that have been printed.
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. See Calibrating the scanner on page 106.
Cartridge Serial Number: X	Select this item to update the serial number if you replace the formatter.
Service ID	Service ID. Select this item to specify the date when the MFP was first used, rather than the date when a replacement formatter is installed. **NOTE** This should occur automatically if the formatter is replaced without also replacing the DC controller. If the DC controller is also replaced, ensure that the engine is rebooted between replacement of the formatter and the DC controller.
COLD RESET PAPER	Select this item to reset the default paper size when you replace the formatter or restore factory settings. 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.
RESTORE ACCESSORY DATA NOW	This item appears when only one external device is attached to the print engine. When selected, data is immediately restored. This option is used to restore external device settings following repair. The old accessory information must be restored before 10 pages have been printed with the new accessory, or the old data will be overwritten.
RESTORE DATA FOR ACCESSORY	This item appears when more than one external device is attached to the print engine. When selected, a list of devices for which data can be restored is displayed. This option is used to restore external device settings following repair. The old accessory information must be restored before 10 pages have been printed with the new accessory, or the old data will be overwritten.
MEDIA SENSOR VALUE	Set this value to the value shown on the replacement paper feed assembly label when the paper feed assembly is replaced.

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 6-234 Remove the DC controller (1 of 2) on page 385.

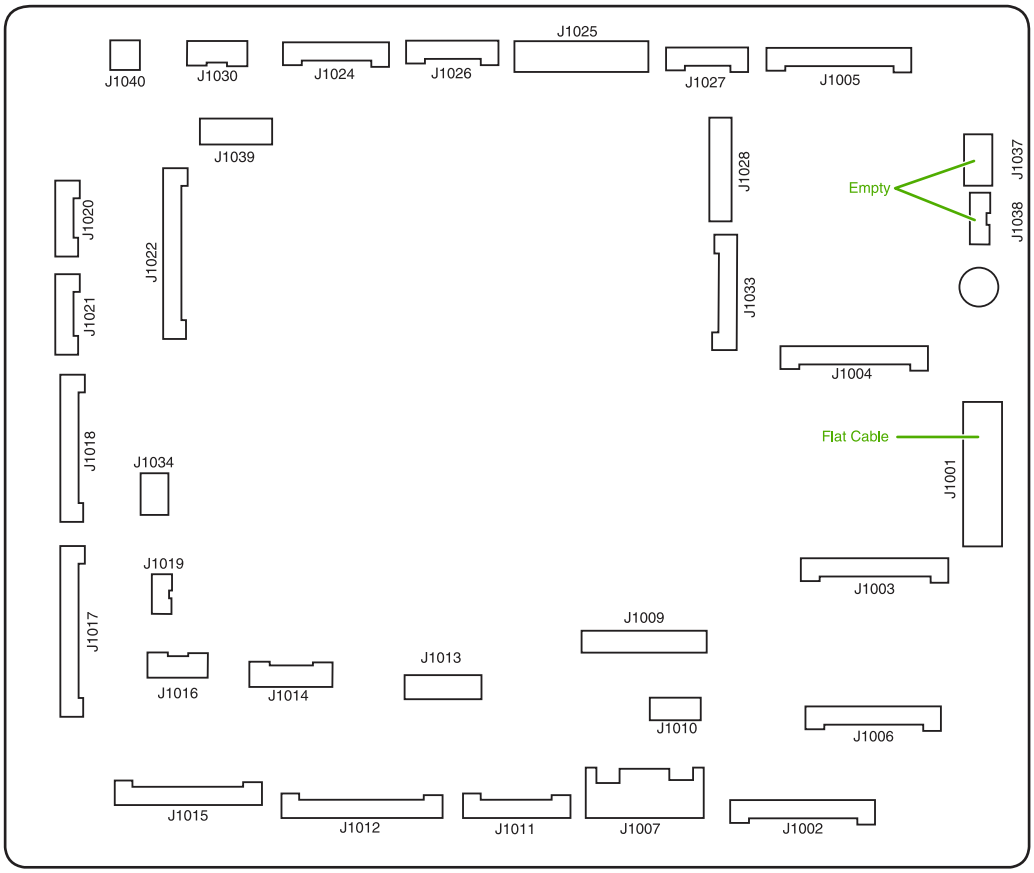


Figure 7-14 DC controller component connections

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

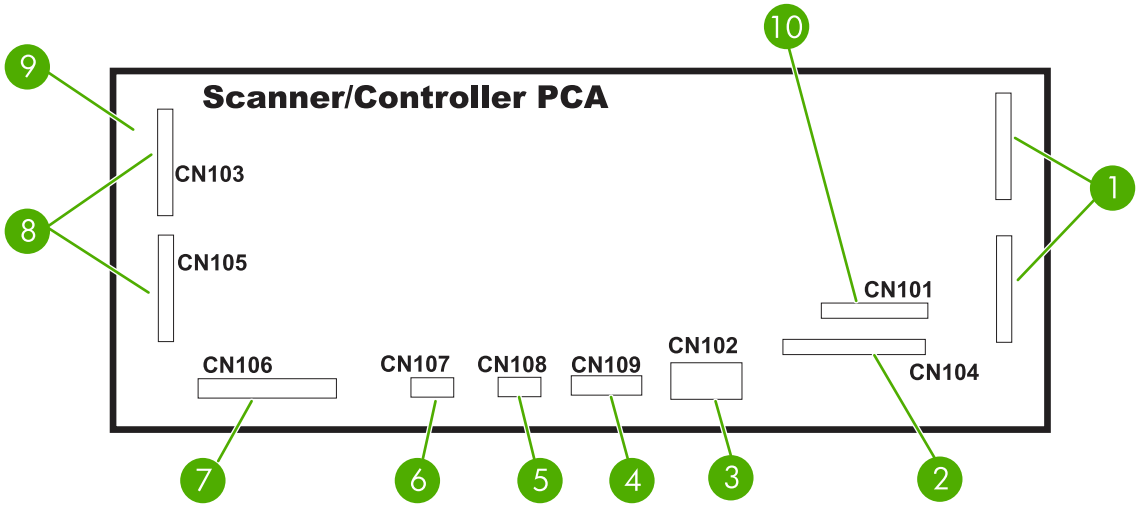


Figure 7-15 Scanner controller PCB component connections

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 7-16 Sensors and switches on page 672.
SR2 - delivery tray paper full sensor	See Figure 7-16 Sensors and switches on page 672.
SR3 - fuser pressure release sensor	See Figure 7-16 Sensors and switches on page 672.
SR4 - multipurpose tray paper sensor	See Figure 7-16 Sensors and switches on page 672.
SR9 - cassette paper sensor	See Figure 7-16 Sensors and switches on page 672.
SR10 - paper stack surface sensor	See Figure 7-16 Sensors and switches on page 672.
SR11 - developing disengaging sensor	See Figure 7-16 Sensors and switches on page 672.
SR12 - top of page sensor	See Figure 7-16 Sensors and switches on page 672.
SR13 - paper loop sensor 1	See Figure 7-16 Sensors and switches on page 672.
SR14 - paper loop sensor 2	See Figure 7-16 Sensors and switches on page 672.
Media sensor	See Figure 7-16 Sensors and switches on page 672.
SR8001 - paper reversing sensor	See Figure 7-16 Sensors and switches on page 672.
Environmental sensor	See Figure 7-16 Sensors and switches on page 672.
Drum home position sensor	See Figure 7-16 Sensors and switches on page 672.
CNT0 - cassette paper size detection switch	See Figure 7-16 Sensors and switches on page 672.
CNT1 - cassette paper size detection switch	See Figure 7-16 Sensors and switches on page 672.
CNT2 - cassette paper size detection switch	See Figure 7-16 Sensors and switches on page 672.
M1 - Yellow (Y) drum motor	See Figure 7-17 Motors on page 674.
M2 - Cyan (C) drum motor	See Figure 7-17 Motors on page 674.
M3 - Magenta (M) drum motor	See Figure 7-17 Motors on page 674.
M4 - Black (K) drum motor	See Figure 7-17 Motors on page 674.
M5 - Fuser motor	See Figure 7-17 Motors on page 674.
M6 - Fuser pressure release motor	See Figure 7-17 Motors on page 674.
M7 - ETB motor	See Figure 7-17 Motors on page 674.
M8 - Developing disengaging motor	See Figure 7-17 Motors on page 674.
M9 - Pickup motor	See Figure 7-17 Motors on page 674.
M10 -Lifter motor	See Figure 7-17 Motors on page 674.
M8001 - Reversing motor	See Figure 7-17 Motors on page 674.
SL1 - Multipurpose tray pickup solenoid	See Figure 7-18 Solenoids on page 676.
SL2 - Cassette pickup solenoid	See Figure 7-18 Solenoids on page 676.
SL3 - ETB separation solenoid	See Figure 7-18 Solenoids on page 676.

Component	Figure
SL8001 - Duplexing solenoid	See Figure 7-18 Solenoids on page 676.
FM 1 - Power supply fan	See Figure 7-19 Fans on page 677.
FM 2 - Cartridge fan	See Figure 7-19 Fans on page 677.
FM 4 - Delivery fan	See Figure 7-19 Fans on page 677.
FM 7 - Fuser fan/right exhaust fan	See Figure 7-19 Fans on page 677.
FM 3 - Sub power supply fan	See Figure 7-19 Fans on page 677.
FM 5 and FM 6 - Control fans 1 and 2	See Figure 7-19 Fans on page 677.
FM 8 - ETB fan	See Figure 7-19 Fans on page 677.
ADF bin-full flag	See Figure 7-21 ADF output bin-full sensor on page 679.
ADF pickup assembly	See Figure 7-22 ADF pickup sensors on page 680.
ADF paper-present sensor	See Figure 7-22 ADF pickup sensors on page 680.
ADF top-of-page sensor	See Figure 7-22 ADF pickup sensors on page 680.
ADF fan	See Figure 7-23 ADF motors, fans, and solenoids on page 680.
Scanner controller PCB	See Figure 7-23 ADF motors, fans, and solenoids on page 680.
ADF LED PCB	See Figure 7-23 ADF motors, fans, and solenoids on page 680.
ADF solenoid	See Figure 7-23 ADF motors, fans, and solenoids on page 680.
ADF motors	See Figure 7-23 ADF motors, fans, and solenoids on page 680.

Sensors and switches

The diagrams in this section show the locations of the sensors and switches in the MFP print engine.

Sensors and switches

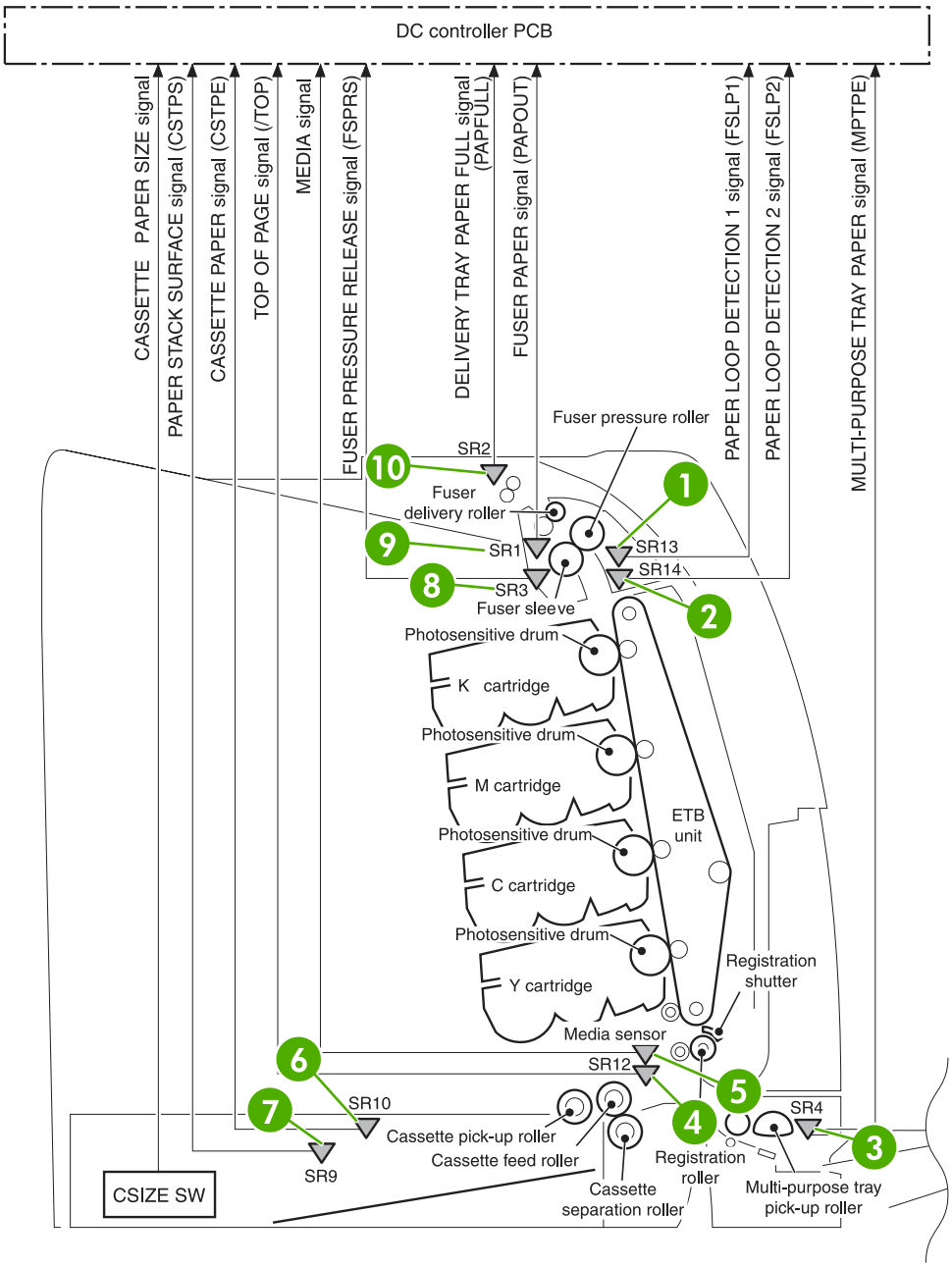


Figure 7-16 Sensors and switches

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

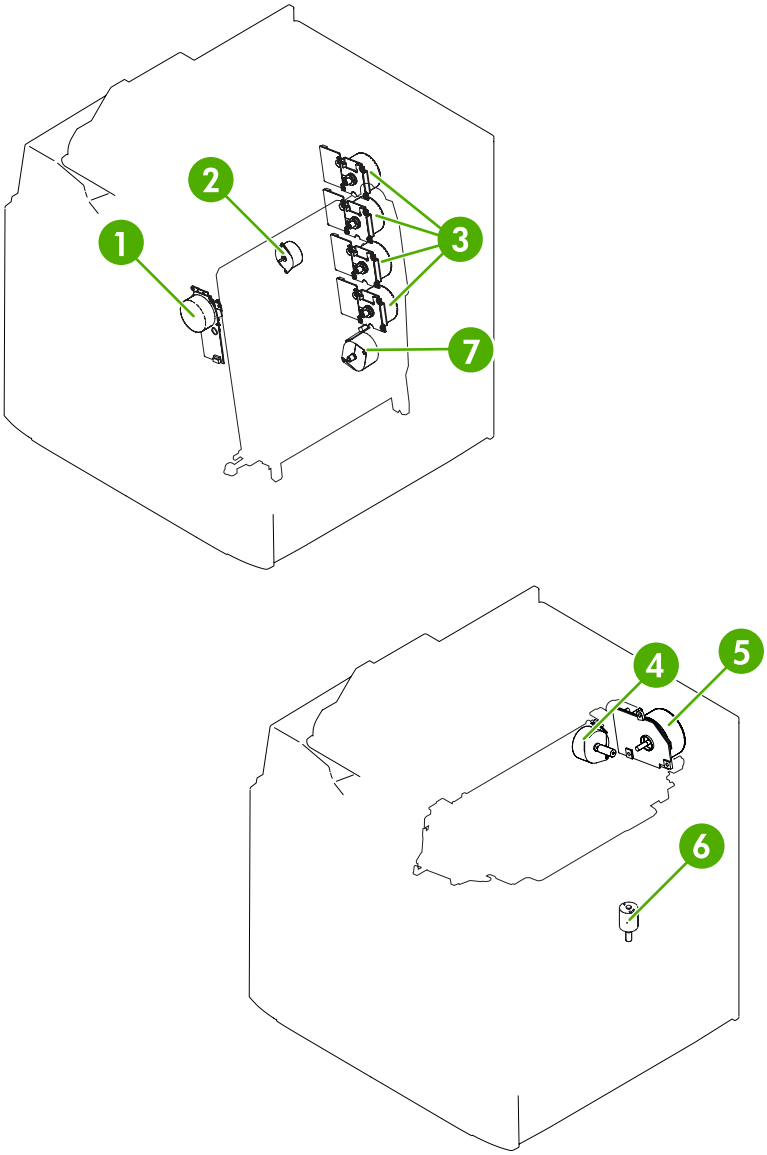


Figure 7-17 Motors

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

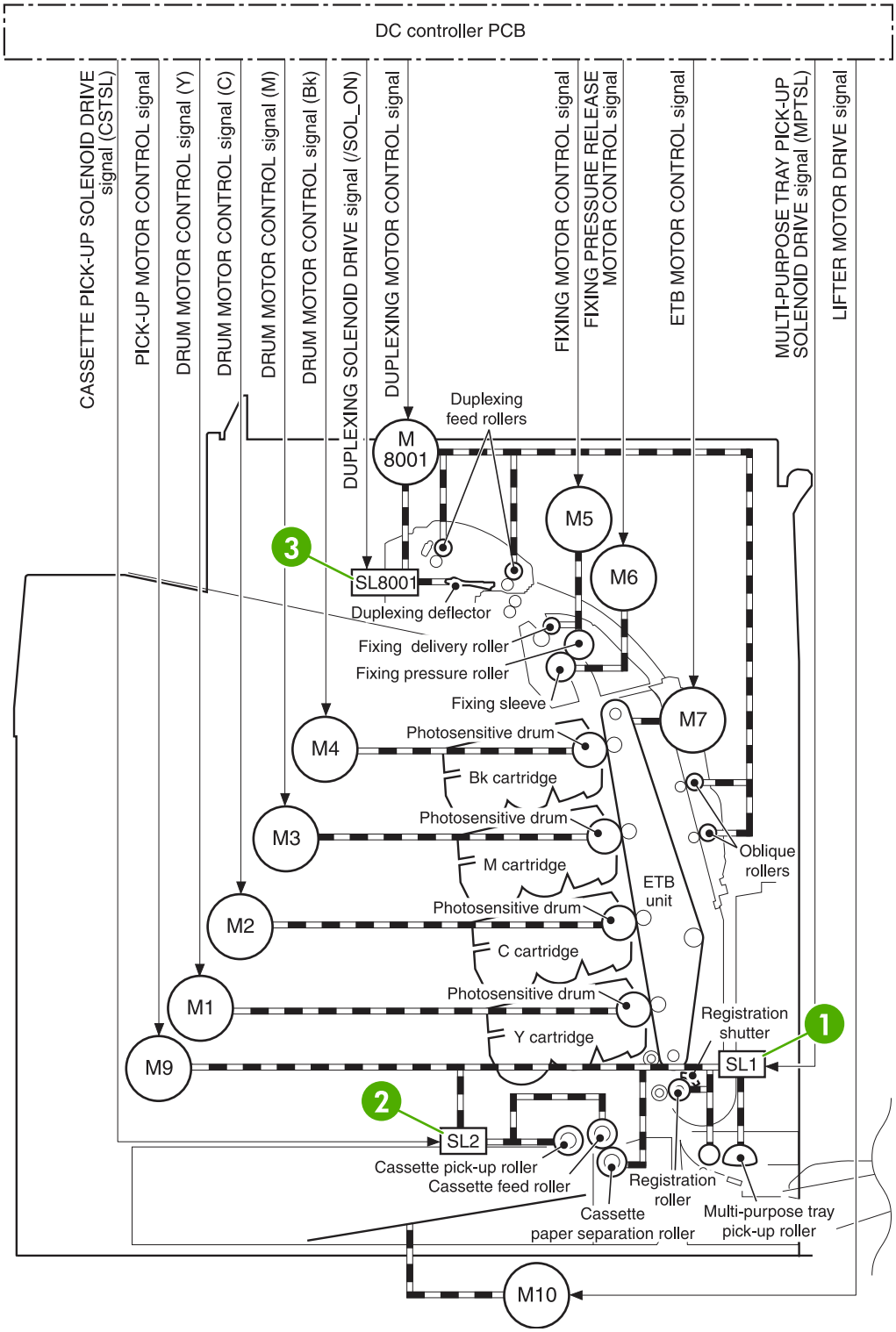


Figure 7-18 Solenoids

1	SL1 - Multipurpose tray pickup solenoid
2	SL2 - Cassette tray pickup solenoid
3	SL8001 - Duplexing solenoid

Fans

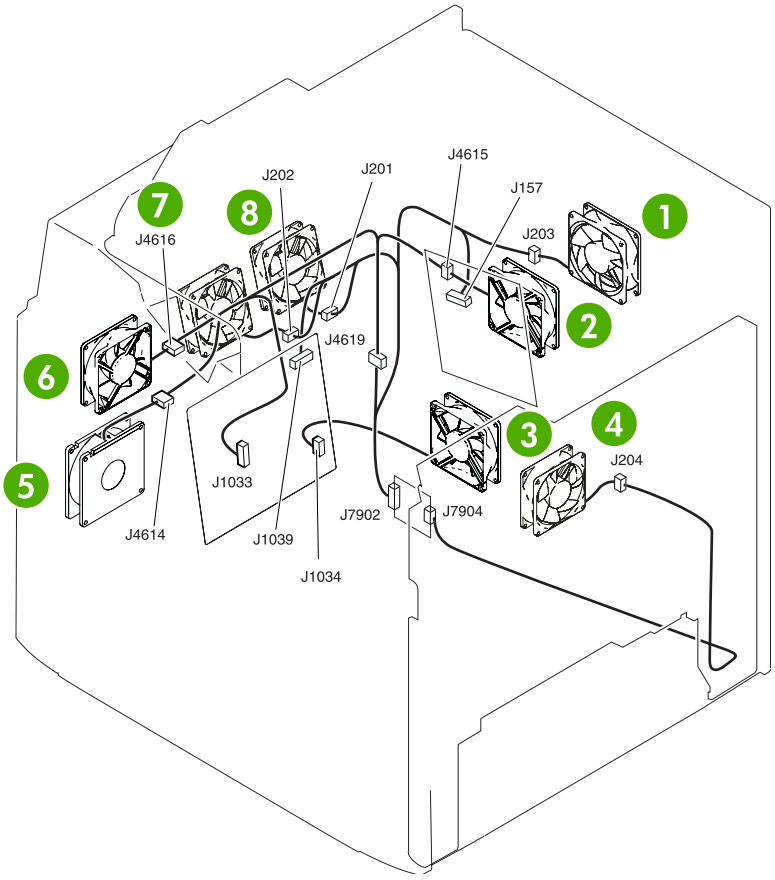


Figure 7-19 Fans

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.

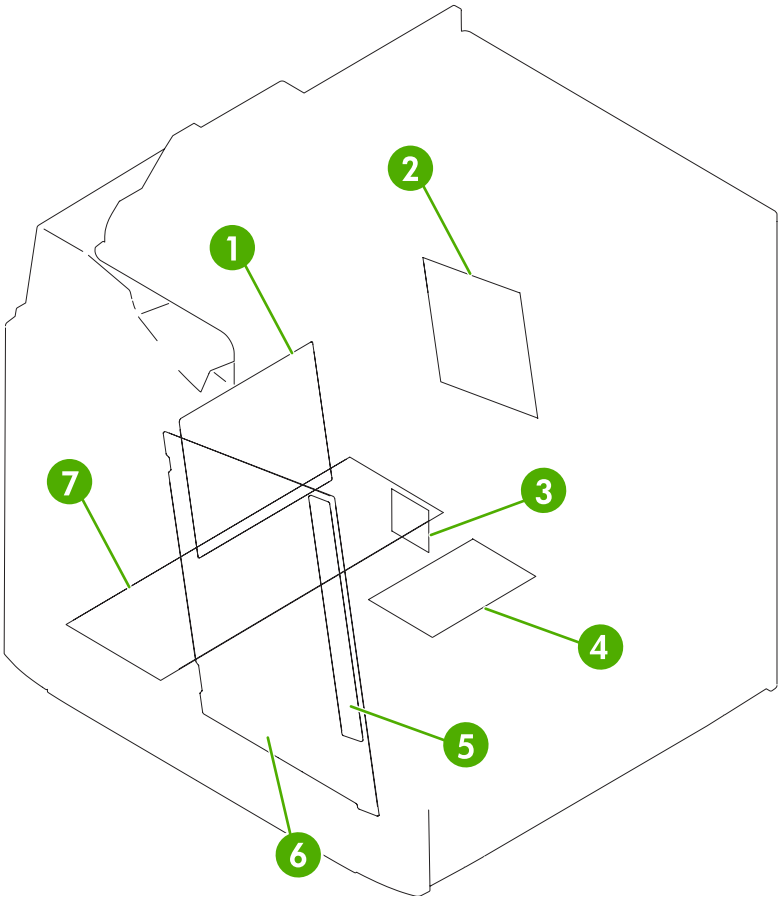


Figure 7-20 Main assembly PCBs

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

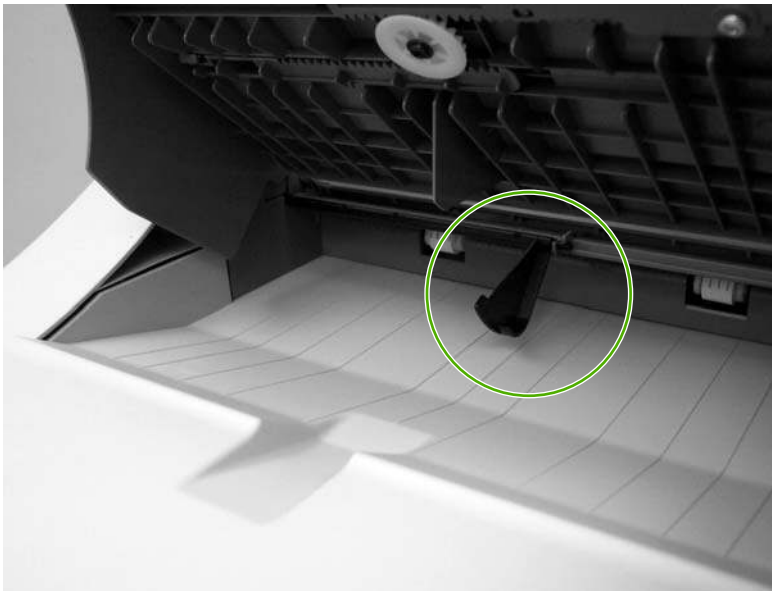


Figure 7-21 ADF output bin-full sensor

ADF pickup assembly sensors

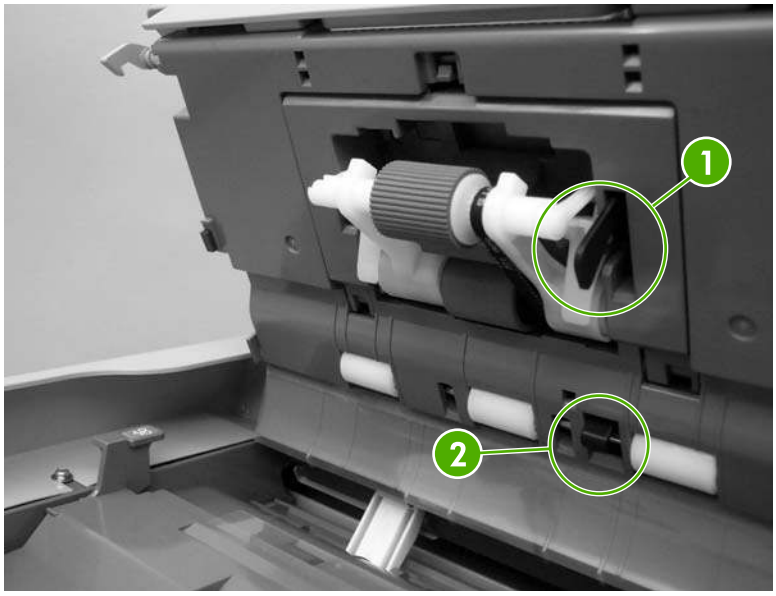


Figure 7-22 ADF pickup sensors

1	ADF paper-present sensor
2	ADF top-of-page sensor

ADF motors, fans, and solenoids

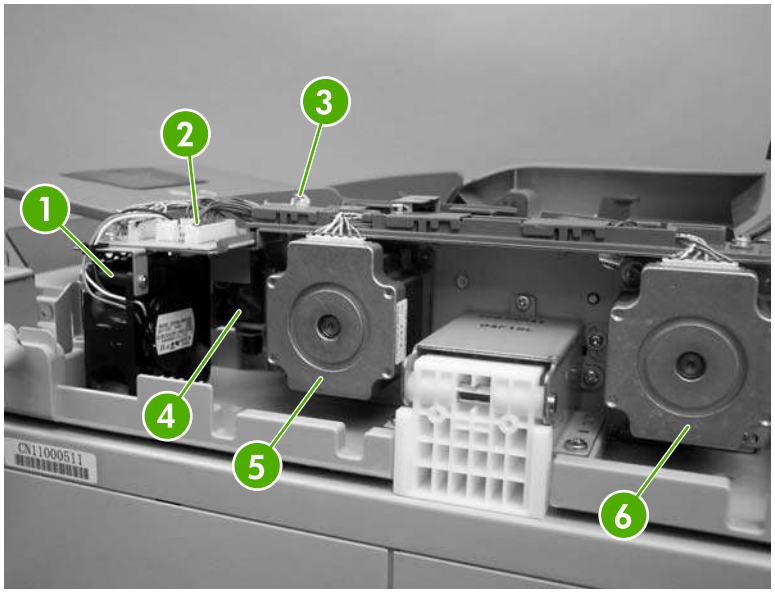


Figure 7-23 ADF motors, fans, and solenoids

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.

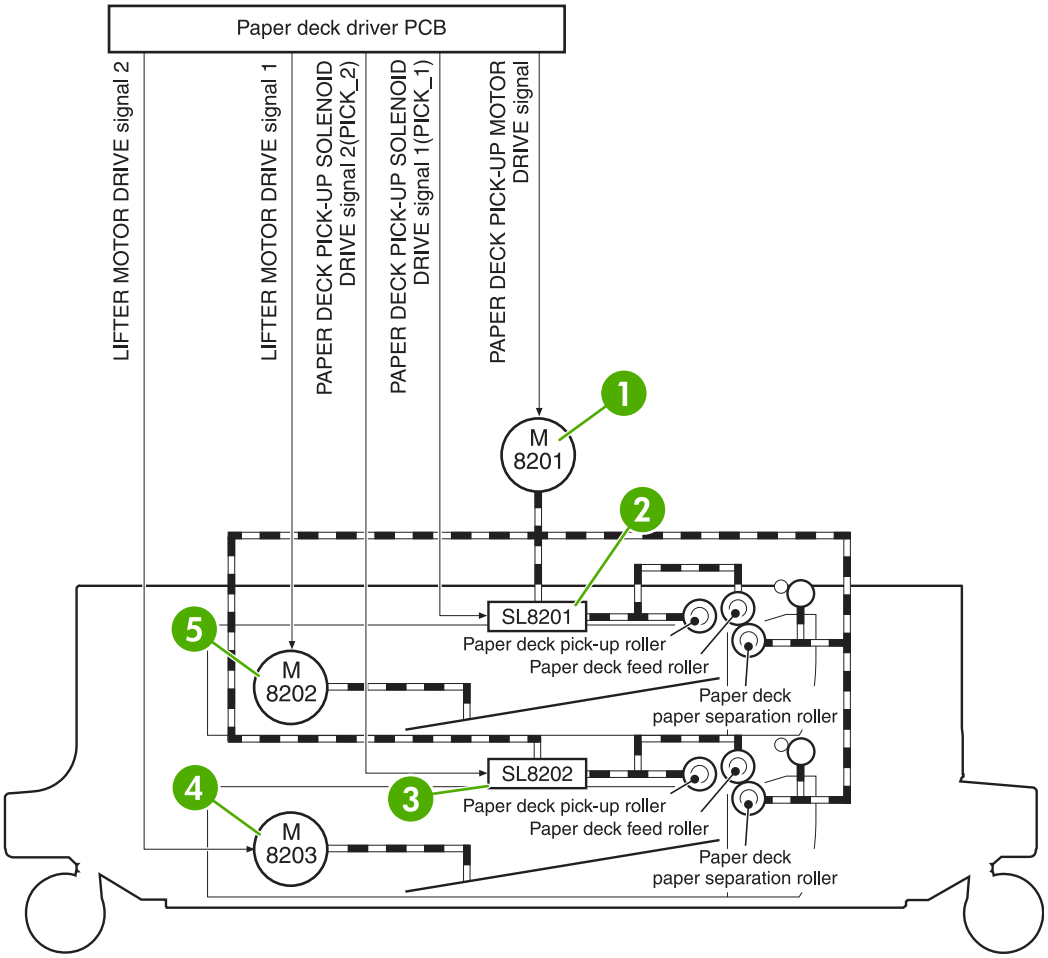


Figure 7-24 2 X 500-sheet feeder components

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.

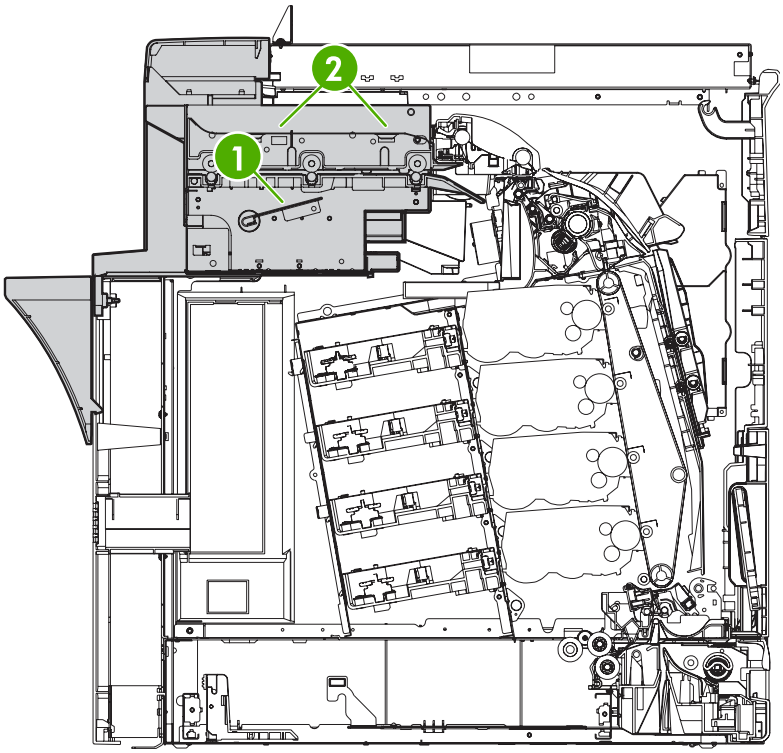


Figure 7-25 IPTU components

1	IPTU PCB
2	IPTU motors

General timing chart

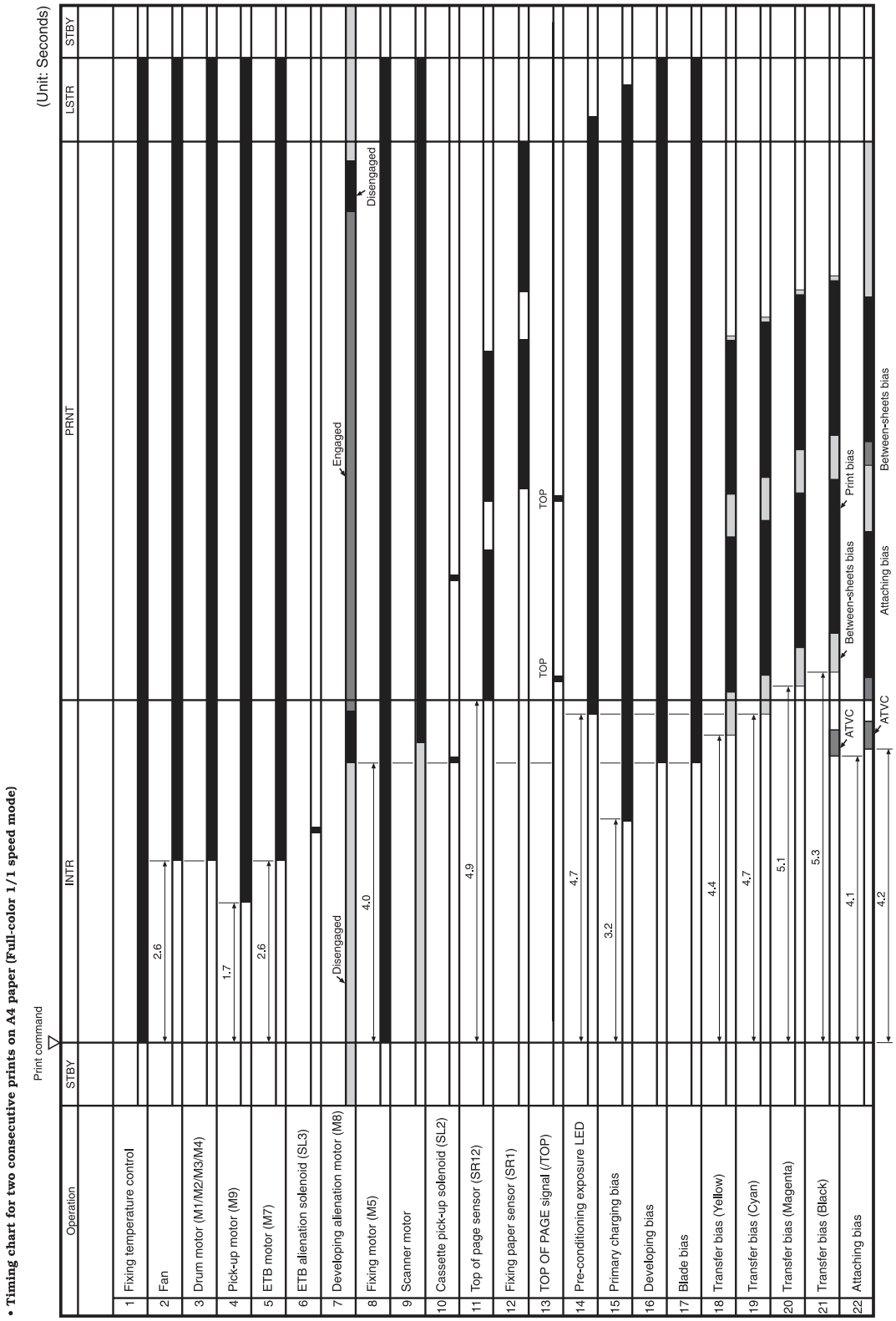


Figure 7-26 General timing chart

General circuit diagrams

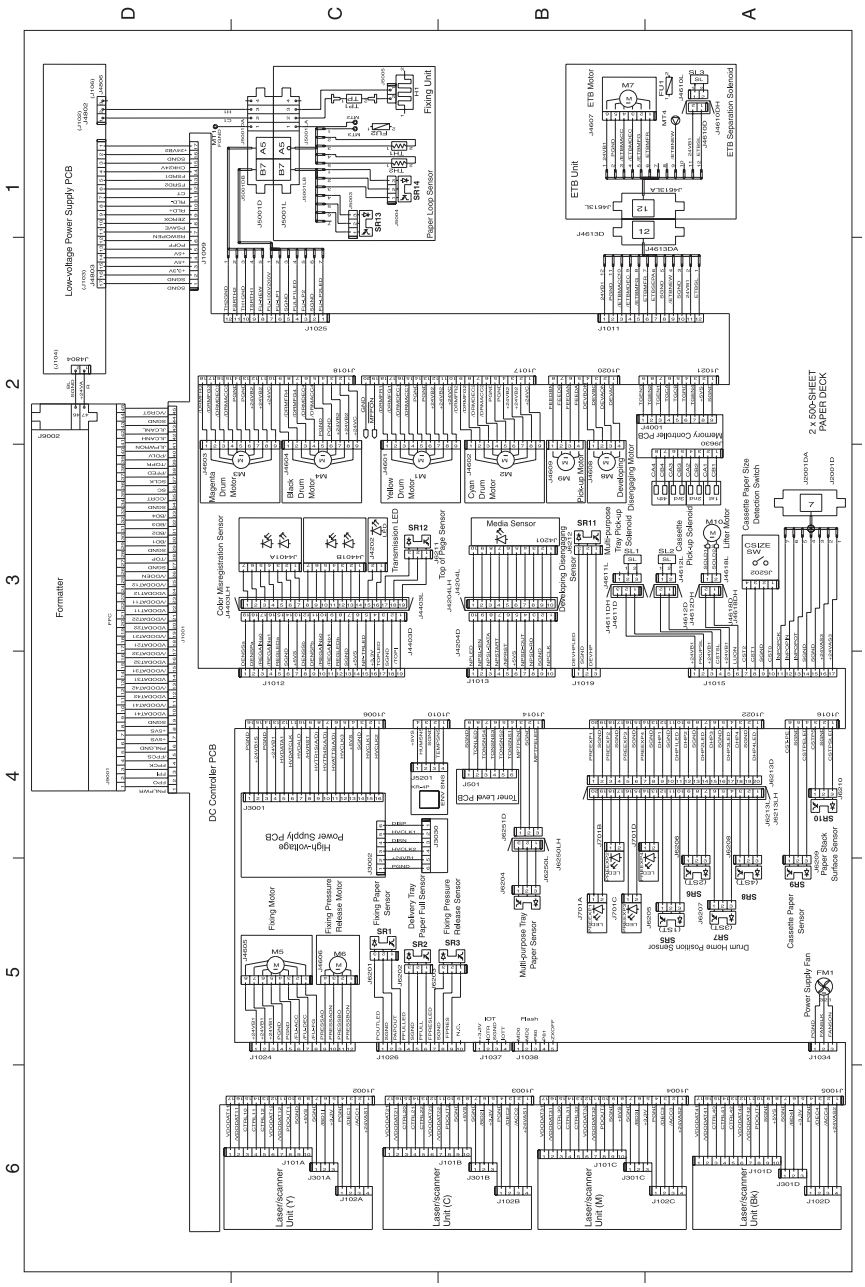


Figure 7-27 General circuit diagram (1 of 2)

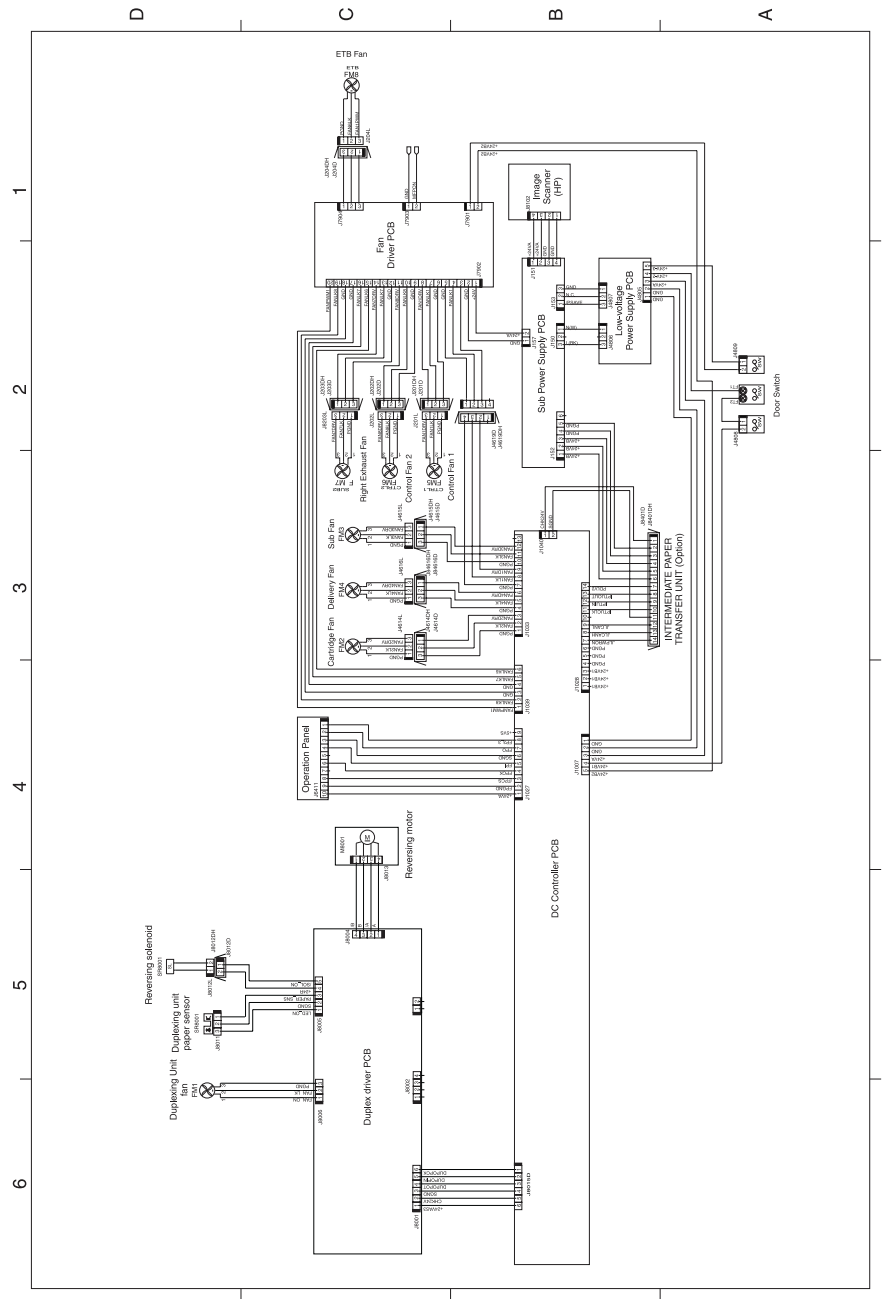


Figure 7-28 General circuit diagram (2 of 2)

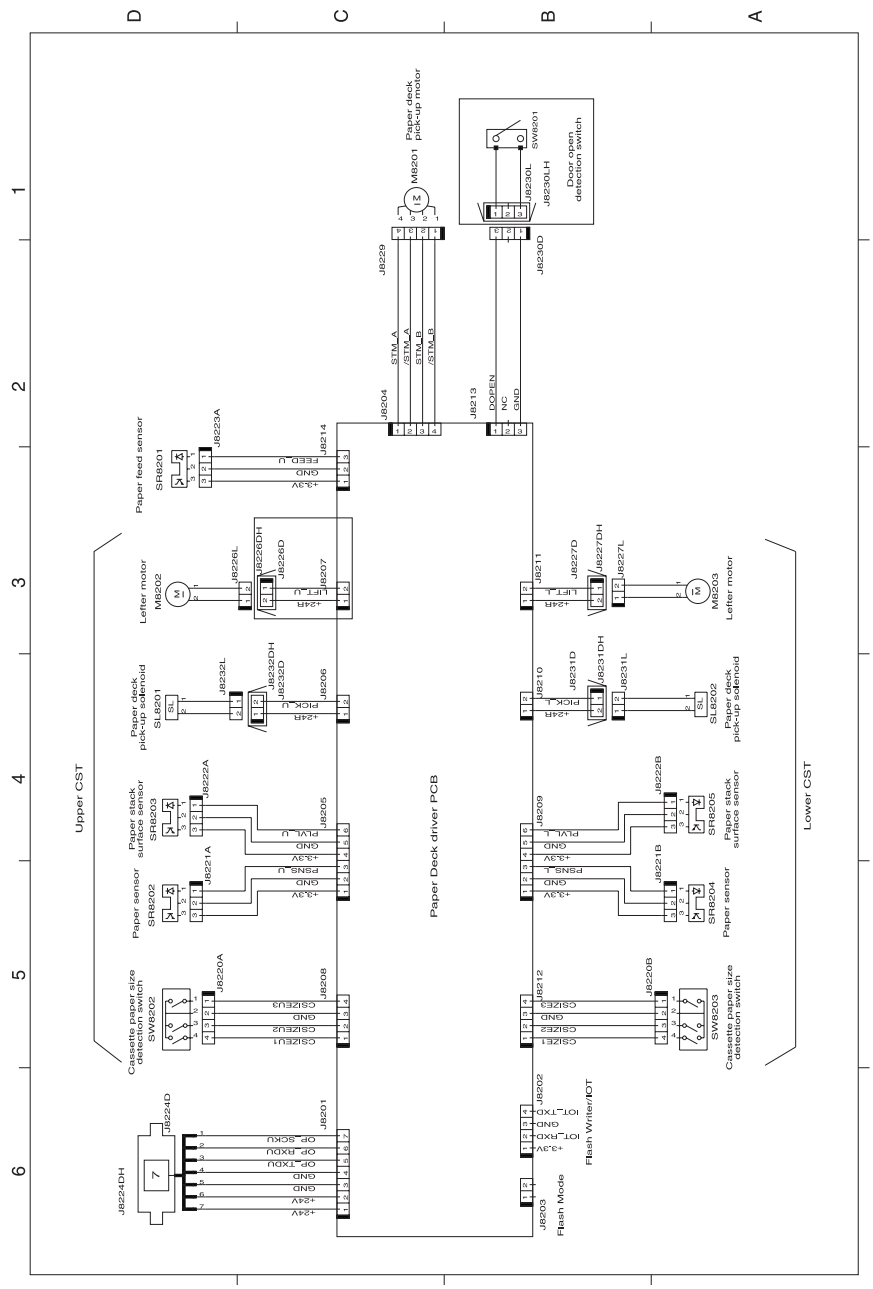


Figure 7-29 Circuit diagram for the 2 X 500-sheet feeder

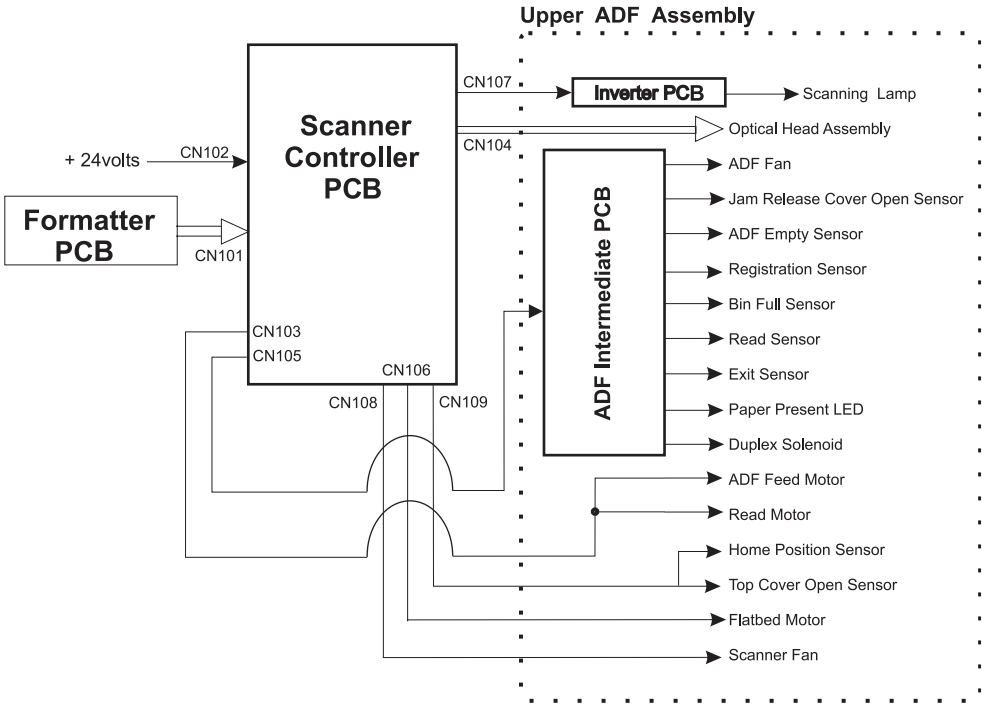


Figure 7-30 Circuit diagram for the scanner

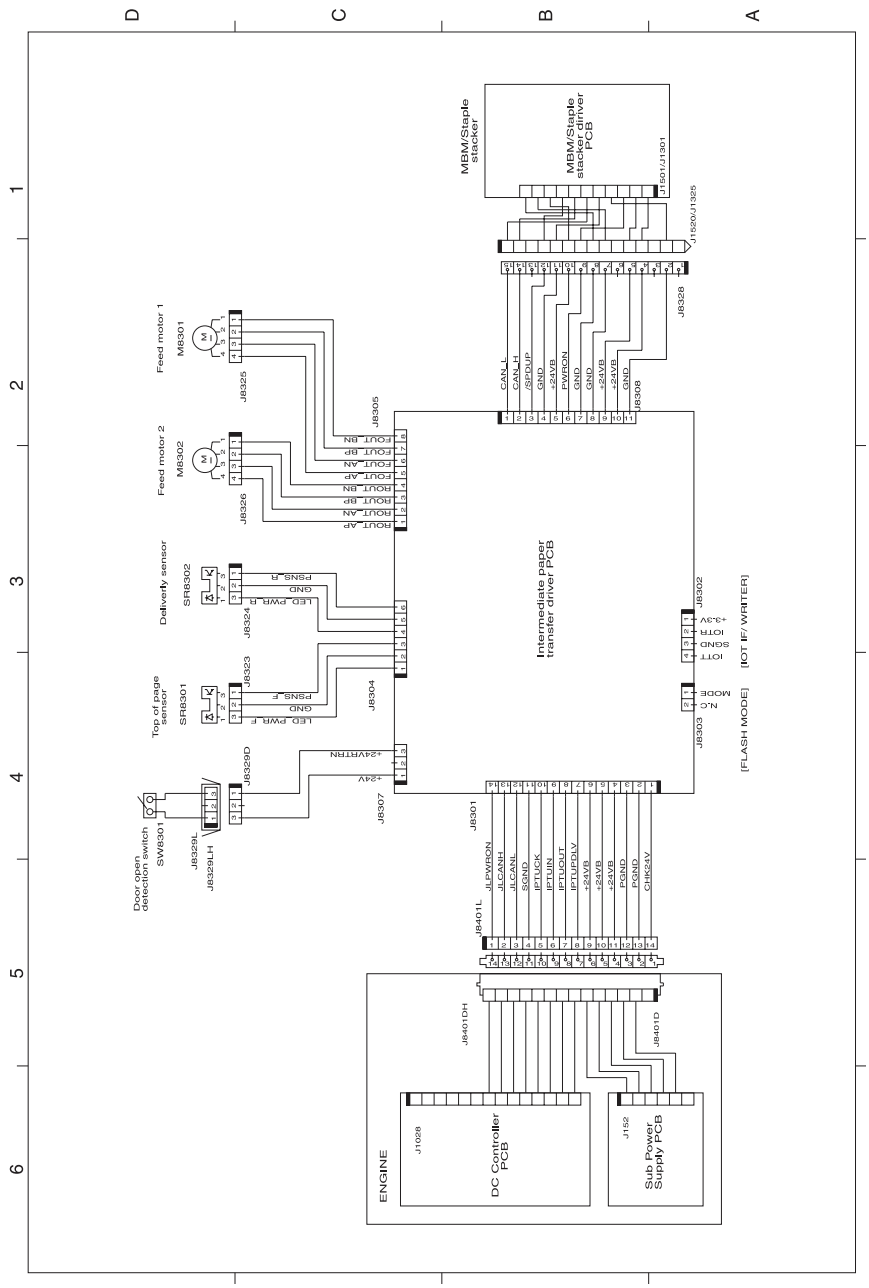


Figure 7-31 Circuit diagram for the IPTU

Connector	Pin	Abbreviation	I/O	Logic	Signal name
J1001	1	PNLPWR			Power supply for control panel
J1001	2	FPO	I		SERIAL DATA signal
J1001	3	FPI	O		SERIAL DATA signal
J1001	4	FPCK	I	Pulse	SERIAL CLOCK signal
J1001	5	/FPCS	I/O		SERIAL STATUS signal
J1001	6	PNLGND			GND for control panel
J1001	7	+5VS			
J1001	8	+5VS			
J1001	9	SGND			
J1001	10	VDODATA41	I	H	VIDEO signal (Black)
J1001	11	/VDODATA41	I	L	VIDEO signal (Black)
J1001	12	VDODATA42	I	H	VIDEO signal (Black)
J1001	13	/VDODATA42	I	L	VIDEO signal (Black)
J1001	14	VDODATA31	I	H	VIDEO signal (Magenta)
J1001	15	/VDODATA31	I	L	VIDEO signal (Magenta)
J1001	16	VDODATA32	I	H	VIDEO signal (Magenta)
J1001	17	/VDODATA32	I	L	VIDEO signal (Magenta)
J1001	18	VDODATA21	I	H	VIDEO signal (Cyan)
J1001	19	/VDODATA21	I	L	VIDEO signal (Cyan)
J1001	20	VDODATA22	I	H	VIDEO signal (Cyan)
J1001	21	/VDODATA22	I	L	VIDEO signal (Cyan)
J1001	22	VDODATA11	I	H	VIDEO signal (Yellow)
J1001	23	/VDODATA11	I	L	VIDEO signal (Yellow)
J1001	24	VDODATA12	I	H	VIDEO signal (Yellow)
J1001	25	/VDODATA12	I	L	VIDEO signal (Yellow)
J1001	26	/VDOEN			
J1001	27	SGND			
J1001	28	/TOP	O	L	VERTICAL SYNCHRONOUS signal
J1001	29	SGND			
J1001	30	/BD1	O	Pulse	BD signal (Yellow)
J1001	31	/BD2	O	Pulse	BD signal (Cyan)
J1001	32	/BD3	O	Pulse	BD signal (Magenta)
J1001	33	/BD4	O	Pulse	BD signal (Black)
J1001	34	SGND			
J1001	35	/CCRT	O	L	STATUS CHANGE NOTICE signal
J1001	36	SC	I/O	H	STATUS COMMAND signal
J1001	37	SCLK	I	Pulse	SERIAL CLOCK signal
J1001	38	/PFED	O	L	PAPER FEED signal
J1001	39				
J1001	40	/PDLV	O	L	PAPER DELIVERY signal
J1001	41	JLPWRON			
J1001	42	JLCANH			
J1001	43	JLCANL			
J1001	44	SGND			

Figure 7-32 List of signals for the DC controller (1 of 9)

Connector	Pin	Abbreviation	I/O	Logic	Signal name
J1001	45	/VCRST			
J1002	1	+24VAS1			
J1002	2	/ACC1	O	L	SCANNER MOTOR ACCELERATION signal (Yellow)
J1002	3	/DEC1	O	L	SCANNER MOTOR DECELERATION signal (Yellow)
J1002	4	PGND			
J1002	5	+3.3V			
J1002	6	/BD1I	I	Pulse	BD INPUT signal (Yellow)
J1002	7	SGND			
J1002	8	+5VS			
J1002	9	SGND			
J1002	10	PDOUT1	I	Analog	LASER CURRENT OUTPUT signal (Yellow)
J1002	11	/VDODAT12	O	L	VIDEO signal (Yellow)
J1002	12	VDODAT12	O	H	VIDEO signal (Yellow)
J1002	13	CTRL12	O	Code	LASER CONTROL signal (Yellow)
J1002	14	CTRL11	O	Code	LASER CONTROL signal (Yellow)
J1002	15	CTRL10	O	Code	LASER CONTROL signal (Yellow)
J1002	16	/VDODAT11	O	L	VIDEO signal (Yellow)
J1002	17	VDODAT11	O	H	VIDEO signal (Yellow)
J1003	1	+24VAS1			
J1003	2	/ACC2	O	L	SCANNER MOTOR ACCELERATION signal (Cyan)
J1003	3	/DEC2	O	L	SCANNER MOTOR DECELERATION signal (Cyan)
J1003	4	PGND			
J1003	5	+3.3V			
J1003	6	/BD2I	I	Pulse	BD INPUT signal (Cyan)
J1003	7	SGND			
J1003	8	+5VS			
J1003	9	SGND			
J1003	10	PDOUT2	I	Analog	LASER CURRENT OUTPUT signal (Cyan)
J1003	11	/VDODAT22	O	L	VIDEO signal (Cyan)
J1003	12	VDODAT22	O	H	VIDEO signal (Cyan)
J1003	13	CTRL22	O	Code	LASER CONTROL signal (Cyan)
J1003	14	CTRL21	O	Code	LASER CONTROL signal (Cyan)
J1003	15	CTRL20	O	Code	LASER CONTROL signal (Cyan)
J1003	16	/VDODAT21	O	L	VIDEO signal (Cyan)
J1003	17	VDODAT21	O	H	VIDEO signal (Cyan)
J1004	1	+24VAS1			
J1004	2	/ACC3	O	L	SCANNER MOTOR ACCELERATION signal (Magenta)
J1004	3	/DEC3	O	L	SCANNER MOTOR DECELERATION signal (Magenta)
J1004	4	PGND			
J1004	5	+3.3V			
J1004	6	/BD3I	I	Pulse	BD INPUT signal (Magenta)
J1004	7	SGND			
J1004	8	+5VS			
J1004	9	SGND			
J1004	10	PDOUT3	I	Analog	LASER CURRENT OUTPUT signal (Magenta)
J1004	11	/VDODAT32	O	L	VIDEO signal (Magenta)
J1004	12	VDODAT32	O	H	VIDEO signal (Magenta)
J1004	13	CTRL32	O	Code	LASER CONTROL signal (Magenta)

Figure 7-33 List of signals for the DC controller (2 of 9)

Connector	Pin	Abbreviation	I/O	Logic	Signal name
J1004	14	CTRL31	O	Code	LASER CONTROL signal (Magenta)
J1004	15	CTRL30	O	Code	LASER CONTROL signal (Magenta)
J1004	16	/VDODAT31	O	L	VIDEO signal (Magenta)
J1004	17	VDODAT31	O	H	VIDEO signal (Magenta)
J1005	1	+24VAS1			
J1005	2	/ACC4	O	L	SCANNER MOTOR ACCELERATION signal (Black)
J1005	3	/DEC4	O	L	SCANNER MOTOR DECELERATION signal (Black)
J1005	4	PGND			
J1005	5	+3.3V			
J1005	6	/BD4I	I	Pulse	BD INPUT signal (Black)
J1005	7	SGND			
J1005	8	+5VS			
J1005	9	SGND			
J1005	10	PDOUT4	I	Analog	LASER CURRENT OUTPUT signal (Black)
J1005	11	/VDODAT42	O	L	VIDEO signal (Black)
J1005	12	VDODAT42	O	H	VIDEO signal (Black)
J1005	13	CTRL42	O	Code	LASER CONTROL signal (Black)
J1005	14	CTRL41	O	Code	LASER CONTROL signal (Black)
J1005	15	CTRL40	O	Code	LASER CONTROL signal (Black)
J1005	16	/VDODAT41	O	L	VIDEO signal (Black)
J1005	17	VDODAT41	O	H	VIDEO signal (Black)
J1006	1	HVCLK2	O	Pulse	CLOCK signal
J1006	2	HVCLK1	O	Pulse	CLOCK signal
J1006	3	SGND			
J1006	4	+5VS			
J1006	5	HVCLK3	O	Pulse	CLOCK signal
J1006	6	HVATTS	I		ATTRACTION CURRENT VALUE RETURN signal
J1006	7	HVTR4S	I		TRANSFER CURRENT VALUE RETURN signal
J1006	8	HVTR1S	I		TRANSFER CURRENT VALUE RETURN signal
J1006	9	/HVRST	O	L	HIGH-VOLTAGE RESET signal
J1006	10	HVDALD	O		LOAD signal
J1006	11	HVDATCLK	O	Pulse	CLOCK signal
J1006	12	HVDATA1	O		DATA signal
J1006	13	+24VB1			
J1006	14	PGND			
J1006	15	+24VB1S			
J1006	16	PGND			
J1007	1	GND			
J1007	2	GND			
J1007	3	+24VA			
J1007	4	+24VB1			
J1007	5	+24VB2			
J1009	1	SGND			
J1009	2	SGND			
J1009	3	+3.3V			
J1009	4	+5V			
J1009	5	+5V			
J1009	6	POFF	O	H	POWER OFF CONTROL signal

Figure 7-34 List of signals for the DC controller (3 of 9)

Connector	Pin	Abbreviation	I/O	Logic	Signal name
J1009	7	RSWOPEN	I	H	POWER SWITCH MONITOR signal
J1009	8	PSAVE	O	H	POWER SAVE MODE signal
J1009	9	ZEROX	I	Pulse	ZERO CROSSING signal
J1009	10	RLD+	O	H	RELAY DRIVE signal +
J1009	11	RLD-	O	H	RELAY DRIVE signal -
J1009	12	CT			
J1009	13				
J1009	14	FSRD1	O	H	FIXING HEATER DRIVE signal
J1009	15	CHK24V			
J1009	16	SGND			
J1009	17	+24VB2			
J1010	1	TEMPSNS	I	Analog	TEMPERATURE signal
J1010	2	SGND			
J1010	3	HUMSNS	I	Analog	HUMIDITY signal
J1010	4	+5VS			
J1011	1	+24VB1			
J1011	2	PGND			
J1011	3	/ETBMACC	O	L	ETB MOTOR ACCELERATION signal
J1011	4	/ETBMDEC	O	L	ETB MOTOR DECELERATION signal
J1011	5	/ETBMFG	I	Pulse	ETB MOTOR SPEED DETECTION signal
J1011	6	ETBMFP			
J1011	7	ETBSEPA			
J1011	8	SGND			
J1011	9	/ETBNEW	I	L	NEW ETB DETECTION signal
J1011	10	SGND			
J1011	11	+24VB1			
J1011	12	ETBSL	O	L	ETB ALIENATION SOLENOID DRIVE signal
J1012	1	DENSSa	I	Analog	COLOR MISREGISTRATION /TONER DENSITY signal
J1012	2	DENSPa	I	Analog	COLOR MISREGISTRATION /TONER DENSITY signal
J1012	3	/REGAINa0	O	H	PHOTORECEPTION SENSITIVITY SWITCHING signal
J1012	4	/REGAINa1	O	H	PHOTORECEPTION SENSITIVITY SWITCHING signal
J1012	5	REGLEDa	O	H	LED DRIVE signal
J1012	6	SGND			
J1012	7	+5VS			
J1012	8	DENSSb	I	Analog	COLOR MISREGISTRATION /TONER DENSITY signal
J1012	9	DENSPb	I	Analog	COLOR MISREGISTRATION /TONER DENSITY signal
J1012	10	/REGAINb0	O	H	PHOTORECEPTION SENSITIVITY SWITCHING signal
J1012	11	/REGAINb1	O	H	PHOTORECEPTION SENSITIVITY SWITCHING signal
J1012	12	REGLEDb	O	H	LED DRIVE signal
J1012	13	SGND			
J1012	14	+5VS			
J1012	15	NP-TRLED			
J1012	16	+3.3V			
J1012	17	TOPLED			
J1012	18	SGND			
J1012	19	/TOPI	I	L	TOP OF PAGE signal
J1013	1	NPLED	O	H	LED DRIVE signal
J1013	2	NPSL-EN	O	H	CONTROL REGISTRATION ENABLE signal

Figure 7-35 List of signals for the DC controller (4 of 9)

Connector	Pin	Abbreviation	I/O	Logic	Signal name
J1013	3	NPSL-DATA	I		CONTROL REGISTRATION SERIAL signal
J1013	4	NPSTART	O	Pulse	MEDIA DETECTION START signal
J1013	5	/NPRST	O	L	RESET signal
J1013	6	+5VS			
J1013	7	NPSD-OUT	I		SERIAL IMAGE DATA signal
J1013	8	NPSD-RD	I		SERIAL IMAGE DATA READY signal
J1013	9	SGND			
J1013	10	NPCLK	O	Pulse	SYSTEM CLOCK signal
J1014	1	MPTPELED	O	H	LED DRIVE signal
J1014	2	SGND			
J1014	3	MPTPEND	I	L	MULTI-PURPOSE TRAY PAPER signal
J1014	4	TONSNS1	I	H	TONER LEVEL signal (Yellow)
J1014	5	TONSNS2	I	H	TONER LEVEL signal (Cyan)
J1014	6	TONSNS3	I	H	TONER LEVEL signal (Magenta)
J1014	7	TONSNS4	I	H	TONER LEVEL signal (Black)
J1014	8	TONLED	O	H	TONER LEVEL DETECTION LED DRIVE signal
J1014	9	SGND			
J1015	1	+24VB1			
J1015	2	PKUPSL	O	L	MULTI-PURPOSE TRAY PICK-UP SOLENOID DRIVE signal
J1015	3	+24VB1			
J1015	4	CSTSL	O	L	CASSETTE PICK-UP SOLENOID DRIVE signal
J1015	5	+24VB1			
J1015	6	LUON	O	Pulse	LIFTER MOTOR DRIVE signal
J1015	7	CST2	O	H	CASSETTE PAPER SIZE signal 2
J1015	8	CST1	O	H	CASSETTE PAPER SIZE signal 1
J1015	9	SGND			
J1015	10	CST0	O	H	CASSETTE PAPER SIZE signal 0
J1015	11	INPOPCK	O		SERIAL CLOCK signal
J1015	12	INPOPIN	I		SERIAL DATA signal
J1015	13	INPOPOT	O		SERIAL DATA signal
J1015	14	SGND			
J1015	15	SGND			
J1015	16	+24VAS3			
J1015	17	+24VAS3			
J1016	1	CSTPSLED			
J1016	2	SGND			
J1016	3	CSTPS	I	L	PAPER STACK SURFACE signal
J1016	4	CSTPELED			
J1016	5	SGND			
J1016	6	CST-PE	I	L	CASSETTE PAPER signal
J1017	1	+24VC			
J1017	2	+24VB2			
J1017	3	+24VB2			
J1017	4	PGND			
J1017	5	PGND			
J1017	6	/DRMACC2	O	L	DRUM MOTOR ACCELERATION signal (Cyan)
J1017	7	/DRMDEC2	O	L	DRUM MOTOR DECELERATION signal (Cyan)
J1017	8	/DRMFG2	I	Pulse	DRUM MOTOR SPEED DETECTION signal (Cyan)

Figure 7-36 List of signals for the DC controller (5 of 9)

Connector	Pin	Abbreviation	I/O	Logic	Signal name
J1017	9	/DRMFR2			
J1017	10	+24VC			
J1017	11	+24VB2			
J1017	12	+24VB2			
J1017	13	PGND			
J1017	14	PGND			
J1017	15	/DRMACC1	O	L	DRUM MOTOR ACCELERATION signal (Yellow)
J1017	16	/DRMDEC1	O	L	DRUM MOTOR DECELERATION signal (Yellow)
J1017	17	/DRMFG1	I	Pulse	DRUM MOTOR SPEED DETECTION signal (Yellow)
J1017	18	/DRMFR1			
J1017	19	MFPON			
J1017	20	GND			
J1018	1	+24VC			
J1018	2	+24VB2			
J1018	3	+24VB2			
J1018	4	PGND			
J1018	5	PGND			
J1018	6	/DRMACC4	O	L	DRUM MOTOR ACCELERATION signal (Black)
J1018	7	/DRMDEC4	O	L	DRUM MOTOR DECELERATION signal (Black)
J1018	8	/DRMFG4	I	Pulse	DRUM MOTOR SPEED DETECTION signal (Black)
J1018	9	/DRMFR4			
J1018	10	+24VC			
J1018	11	+24VB2			
J1018	12	+24VB2			
J1018	13	PGND			
J1018	14	PGND			
J1018	15	/DRMACC3	O	L	DRUM MOTOR ACCELERATION signal (Magenta)
J1018	16	/DRMDEC3	O	L	DRUM MOTOR DECELERATION signal (Magenta)
J1018	17	/DRMFG3	I	Pulse	DRUM MOTOR SPEED DETECTION signal (Magenta)
J1018	18	/DRMFR3			
J1019	1	DEVHPLED			
J1019	2	SGND			
J1019	3	DEVHP	I	H	DEVELOPING ALIENATION signal
J1020	1	DEVAO	O	Pulse	DEVELOPING ALIENATION MOTOR CONTROL signal
J1020	2	DEVANO	O	Pulse	DEVELOPING ALIENATION MOTOR CONTROL signal
J1020	3	DEVBO	O	Pulse	DEVELOPING ALIENATION MOTOR CONTROL signal
J1020	4	DEVBNO	O	Pulse	DEVELOPING ALIENATION MOTOR CONTROL signal
J1020	5	FEEDA	O	Pulse	PICK-UP MOTOR CONTROL signal
J1020	6	FEEDAN	O	Pulse	PICK-UP MOTOR CONTROL signal
J1020	7	FEEDB	O	Pulse	PICK-UP MOTOR CONTROL signal
J1020	8	FEEDBN	O	Pulse	PICK-UP MOTOR CONTROL signal
J1021	1	SGND			
J1021	2	+5VS			
J1021	3	TGEN4	I	Pulse	CLOCK signal (Black)
J1021	4	TGRD	I		Communication line (Input)
J1021	5	TGCB	O		Communication line (Output)
J1021	6	TGCA	O	H	MEMORY RESET signal
J1021	7	TGEN1	I	Pulse	CLOCK signal (Yellow)

Figure 7-37 List of signals for the DC controller (6 of 9)

Connector	Pin	Abbreviation	I/O	Logic	Signal name
J1021	8	TGEN2	I	Pulse	CLOCK signal (Cyan)
J1021	9	TGEN3	I	Pulse	CLOCK signal (Magenta)
J1022	1	DHP4LED			
J1022	2	SGND			
J1022	3	DHP4	I	H	DRUM HOME POSITION DETECTION signal (Black)
J1022	4	DHP3LED			
J1022	5	SGND			
J1022	6	DHP3	I	H	DRUM HOME POSITION DETECTION signal (Magenta)
J1022	7	DHP2LED			
J1022	8	SGND			
J1022	9	DHP2	I	H	DRUM HOME POSITION DETECTION signal (Cyan)
J1022	10	DHP1LED			
J1022	11	SGND			
J1022	12	DHP1	I	H	DRUM HOME POSITION DETECTION signal (Yellow)
J1022	13	SGND			
J1022	14	PREEXP4	O	H	PRIMARY EXPOSURE LED DRIVE signal (Black)
J1022	15	SGND			
J1022	16	PREEXP3	O	H	PRIMARY EXPOSURE LED DRIVE signal (Magenta)
J1022	17	SGND			
J1022	18	PREEXP2	O	H	PRIMARY EXPOSURE LED DRIVE signal (Yellow)
J1022	19	SGND			
J1022	20	PREEXP1	O	H	PRIMARY EXPOSURE LED DRIVE signal (Cyan)
J1024	1	+24VB1			
J1024	2	+24VB1			
J1024	3	+24VB1			
J1024	4	PGND			
J1024	5	PGND			
J1024	6	/FU-ACC	O	L	FIXING MOTOR ACCELERATION signal
J1024	7	/FU-DEC	O	L	FIXING MOTOR DECELERATION signal
J1024	8	/FU-FG	I	Pulse	FIXING MOTOR SPEED DETECTION signal
J1024	9	PRESSAO	O	Pulse	FIXING PRESSURE RELEASE MOTOR CONTROL signal
J1024	10	PRESSANO	O	Pulse	FIXING PRESSURE RELEASE MOTOR CONTROL signal
J1024	11	PRESSBO	O	Pulse	FIXING PRESSURE RELEASE MOTOR CONTROL signal
J1024	12	PRESSBNO	O	Pulse	FIXING PRESSURE RELEASE MOTOR CONTROL signal
J1025	1	FU-LP2LED			
J1025	2	SGND			
J1025	3	FU-LP2	I	H	PAPER LOOP DETECTION signal 2
J1025	4	FULP1LED			
J1025	5	SGND			
J1025	6	FU-LP1	I	H	PAPER LOOP DETECTION signal 1
J1025	7	FU-100V200V			
J1025	8	FU-NEW	I	H	NEW FIXING UNIT DETECTION signal
J1025	9	FSRTH1	I	Analog	MAIN THERMISTOR TEMPERATURE signal
J1025	10	TH1GND			
J1025	11	FSRTH2	I	Analog	SUB THERMISTOR TEMPERATURE signal
J1025	12	TH2GND			
J1026	1	POUTLED			
J1026	2	SGND			

Figure 7-38 List of signals for the DC controller (7 of 9)

Connector	Pin	Abbreviation	I/O	Logic	Signal name
J1026	3	PAPOUT	I	H	FIXING PAPER signal
J1026	4	PFULLED			
J1026	5	SGND			
J1026	6	PFULL	I	H	DELIVERY TRAY PAPER FULL signal
J1026	7	FPRSLED			
J1026	8	SGND			
J1026	9	FPRES	I	H	FIXING PRESSURE RELEASE signal
J1026	10	N.C.			
J1027	1	+24VA			
J1027	2	FPGND			
J1027	3	/FPCS	I/O		SERIAL STATUS signal
J1027	4	FPCK	O	Pulse	COMMAND CLOCK signal
J1027	5	FPI	O		SERIAL DATA signal
J1027	6	SGND			
J1027	7	FPO	I		SERIAL DATA signal
J1027	8	+3.3V			
J1027	9	+5VS			
J1028	1	+24VB1			
J1028	2	+24VB1			
J1028	3	+24VB1			
J1028	4	PGND			
J1028	5	PGND			
J1028	6	PGND			
J1028	7	JLPWRON			
J1028	8	JLCANH			
J1028	9	JLCANL			
J1028	10				
J1028	11	IPTUCLK			
J1028	12	IPTUIN			
J1028	13	IPTUOUT			
J1028	14	PDLV2			
J1030	1	DUPOPCK	O		SERIAL CLOCK signal
J1030	2	DUPOPIN	I		SERIAL DATA signal
J1030	3	DUPOPOT	O		SERIAL DATA signal
J1030	4	SGND			
J1030	5	CHK24V			
J1030	6	+24VAS3			
J1033	1	PGND			
J1033	2	FAN2LK	I	H	CARTRIDGE FAN LOCK DETECTION signal
J1033	3	FAN2DRV	O	H	CARTRIDGE FAN DRIVE signal
J1033	4	PGND			
J1033	5	FAN4LK	I	H	DELIVERY FAN LOCK DETECTION signal
J1033	6	FAN4DRV	O	H	DELIVERY FAN DRIVE signal
J1033	7	PGND			
J1033	8	FAN1LK	I	H	UPPER EXHAUST FAN LOCK DETECTION signal
J1033	9	FAN1DRV	O	H	UPPER EXHAUST FAN DRIVE signal
J1033	10	PGND			
J1033	11	FAN3LK	I	H	RIGHT EXHAUST FAN LOCK DETECTION signal

Figure 7-39 List of signals for the DC controller (8 of 9)

Connector	Pin	Abbreviation	I/O	Logic	Signal name
J1033	12	FAN3DRV	O	H	RIGHT EXHAUST FAN DRIVE signal
J1033	13				
J1034	1	PGND			
J1034	2	FAN5LK	I	H	POWER SUPPLY FAN LOCK DETECTION signal
J1034	3	FAN5ON	O	H	POWER SUPPLY FAN DRIVE signal
J1037	1	+3.3V			
J1037	2	IOTR			
J1037	3	SGND			
J1037	4	IOTT			
J1038	1	MD0			
J1038	2	MD2			
J1038	3	P80			
J1038	4	P81			
J1038	5	ZXOFF			
J1039	1	FANPWM1			
J1039	2	FANLK8			
J1039	3	GND			
J1039	4	GND			
J1039	5	FANLK7			
J1039	6	FANLK6			
J1040	1	CHK24V			
J1040	2	SGND			

Figure 7-40 List of signals for the DC controller (9 of 9)

8 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 114. 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.

Table 8-1 Technical support Web sites and related documentation

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 8-2 Supplies and accessories

Product number	Part number	Description
Accessories		
J7960A	?	HP Jetdirect 625n Gigabit Ethernet (10/100/1000Base-T) print server (EIO card)
Q5692A	Q5692–60503	3-bin mailbox

Table 8-2 Supplies and accessories (continued)

Product number	Part number	Description
Q5691A	Q5691–60501	Stapler/stacker
Q3701A	Q3701–67901 (new) Q3701–69001 (exchange)	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
Q2626A	Q2626–67951	100-pin DDR memory DIMM (dual inline memory module), 128 MB
Q2627A	Q2627–67961	100-pin DDR memory DIMM, 256 MB
Q2628A	Q2628–67951	100-pin DDR memory DIMM, 512 MB
Q7726A	Q7726–67901	Firmware Compact flash
Control panel and labels		
	Q7517–60101	Control panel
	Q7517–60103	English label
	Q7517-60104	French label
	Q7517–60106	German label
	Q7517–60105	Italian label

Table 8-2 Supplies and accessories (continued)

Product number	Part number	Description
	Q7517–60107	Spanish label
	Q7517–60113	Danish label
	Q7517–60108	Dutch label
	Q7517–60112	Finnish label
	Q7517–60110	Norwegian label
	Q7517–60109	Portuguese label
	Q7517–60111	Swedish label
	Q7517–60116	Czech label
	Q7517–60117	Hungarian label
	Q7517–60114	Polish label
	Q7517–60115	Russian label
	Q7517–60112	Turkish label
	Q7517–60125	Arabic label
	Q7517–60124	Greek label
	Q7517–60123	Hebrew label
	Q7517–60121	Japanese label
	Q7517–60120	Korean label
	Q7517–60126	Thai label
	Q7517–60119	Simplified Chinese label
	Q7517–60118	Traditional Chinese label
Reference materials		
	5963-7863	*HP LaserJet Printer Family Paper Specifications Guide*
	5021-0330	PCL/PJL Technical Reference Package
	Q7491-90932	HP Color LaserJet 4730 series printer service manual
	Q7517-60127	HP Color LaserJet 4730mfp series software CD, Americas
	Q7517-60128	HP Color LaserJet 4730mfp series software CD, Western Europe
	Q7517-60129	HP Color LaserJet 4730mfp series software CD, Northern Europe
	Q7517-60130	HP Color LaserJet 4730mfp series software CD, Eastern Europe
	Q7517-60131	HP Color LaserJet 4730mfp series software CD, Asia
	MKTNG-00473	Customer in-box training CD, English only

Table 8-2 Supplies and accessories (continued)

Product number	Part number	Description
	C3942–60133	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		
Q5704A	RM1-3161-000CN	Image transfer (ETB) kit
Q5702A	RM1-3131-000CN	Image fuser kit (110 volt)
Q5703A	RM1-3146-000CN	Image fuser kit (220 volt)
Q3999A	Q7517–69001 (exchange) Q7517–67901 (new)	Formatter
	Q7517–67904	MP pickup rollers
	RM1-2199-000CN	MP pickup unit replacement
Q5997A	Q5997–67901	ADF maintenance kit
	Q6496–67901	ADF mylar replacement kit
	Q7517–67905	Cassette pickup roller replacement kit
	Q7491-67905	Formatter pressure release tab kit
	Q7517–60101	Control panel replacement

Assembly locations

The following illustrations and parts tables list the field replaceable units (FRU) for the HP Color LaserJet 4730mfp series. The end of this chapter contains an alphabetical and numerical master parts list.

Major components

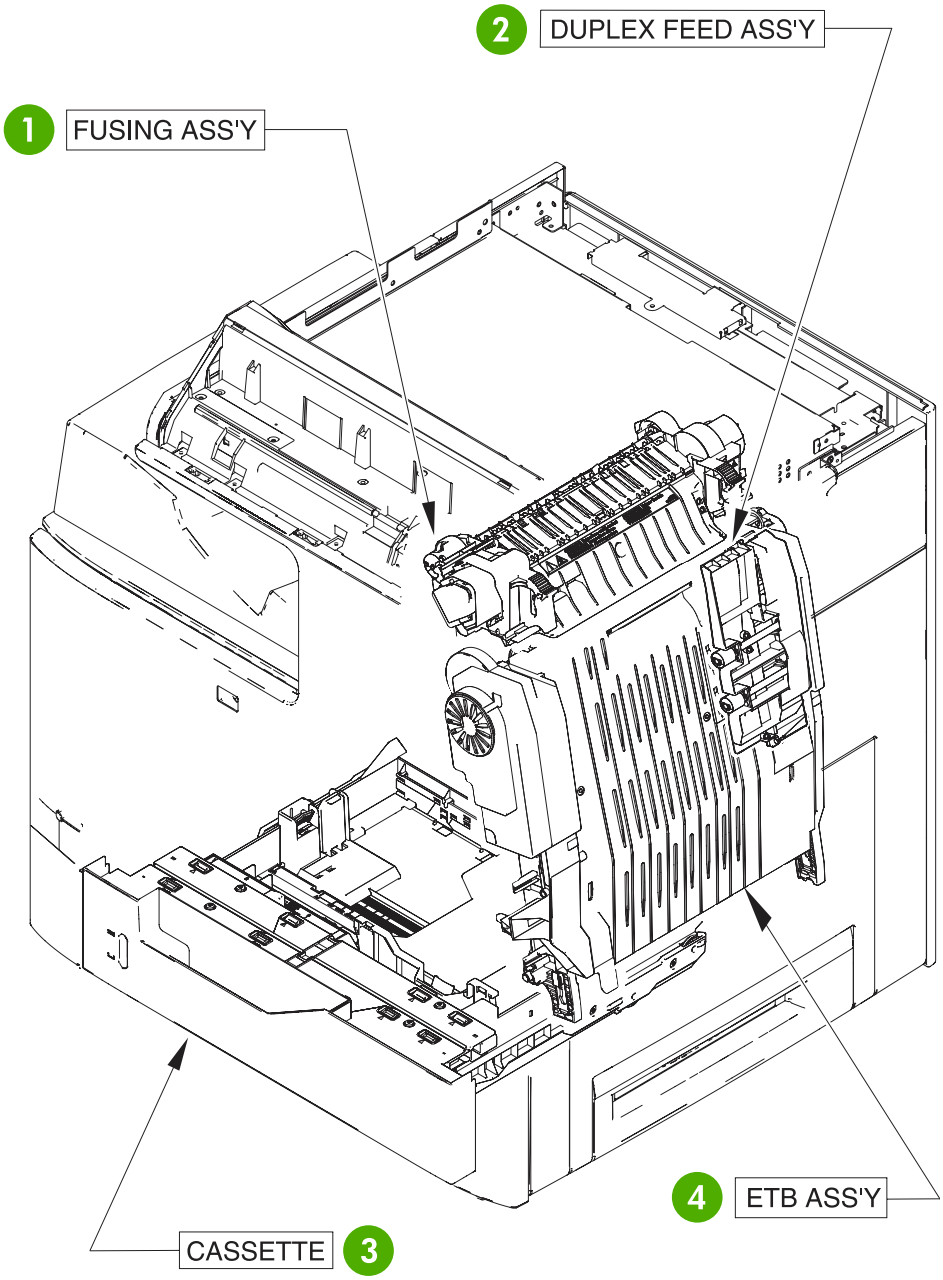


Figure 8-1 HP Color LaserJet 4730mfp major components (1 of 2)

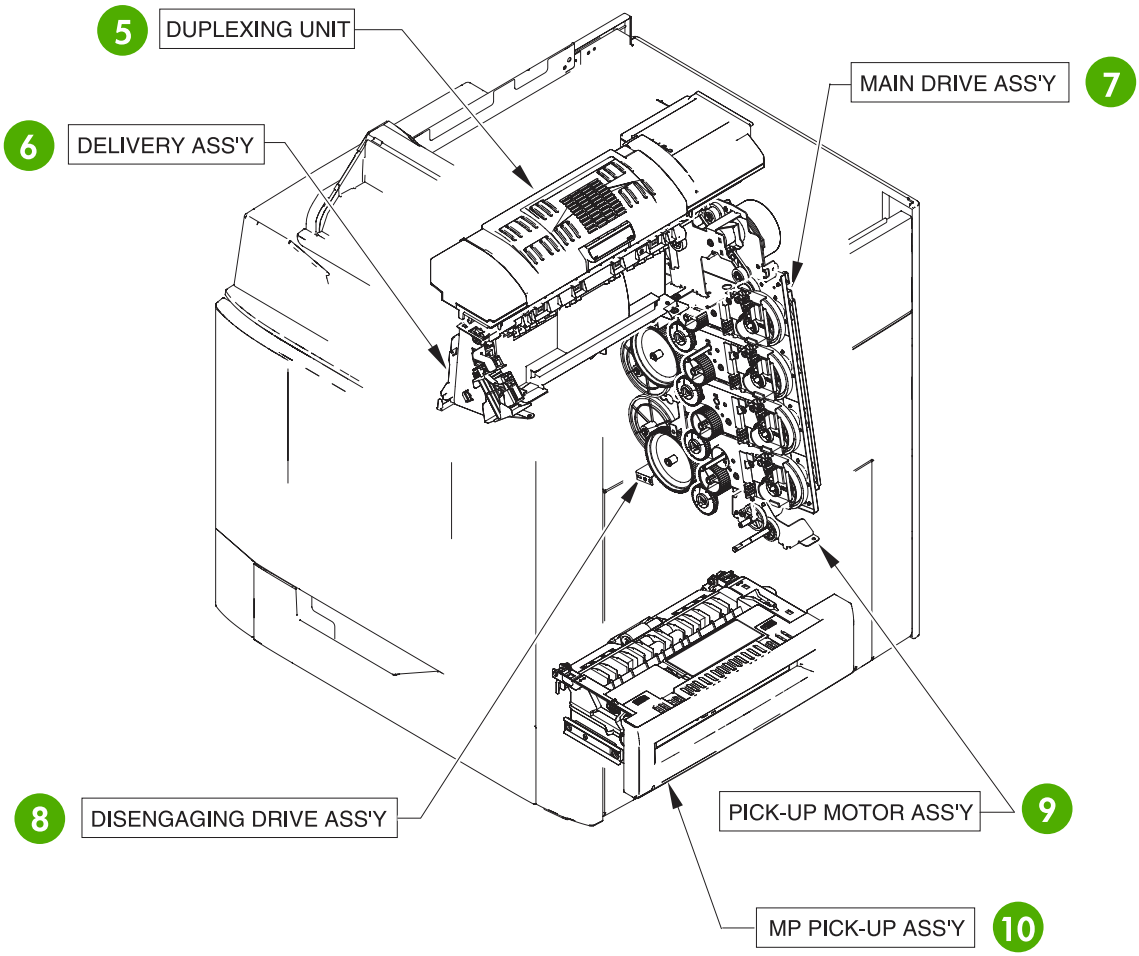


Figure 8-2 HP Color LaserJet 4730mfp major components (2 of 2)

Table 8-3 Major components

Reference number	Description	Details
1	Fuser assembly	See Figure 8-29 Fuser assembly on page 762.
2	Duplex feed assembly	See Figure 8-28 Duplex feed assembly on page 760.
3	Cassette	See Figure 8-21 Cassette on page 746.
4	ETB assembly	See Figure 8-23 ETB assembly on page 750.
5	Duplexing unit	See Figure 8-26 Duplexing unit (1 of 2) on page 756 and Figure 8-27 Duplexing unit (2 of 2) on page 758.
6	Delivery assembly	See Figure 8-24 Delivery assembly on page 752.
7	Main drive assembly	See Internal components on page 722.
8	Disengaging drive assembly	See Figure 8-19 Disengaging drive assembly on page 742.

Table 8-3 Major components (continued)

Reference number	Description	Details
9	pickup motor assembly	See Figure 8-18 Pickup motor assembly on page 740.
10	Multipurpose pickup assembly	See Figure 8-22 Multipurpose pickup assembly on page 748.

External covers and panels

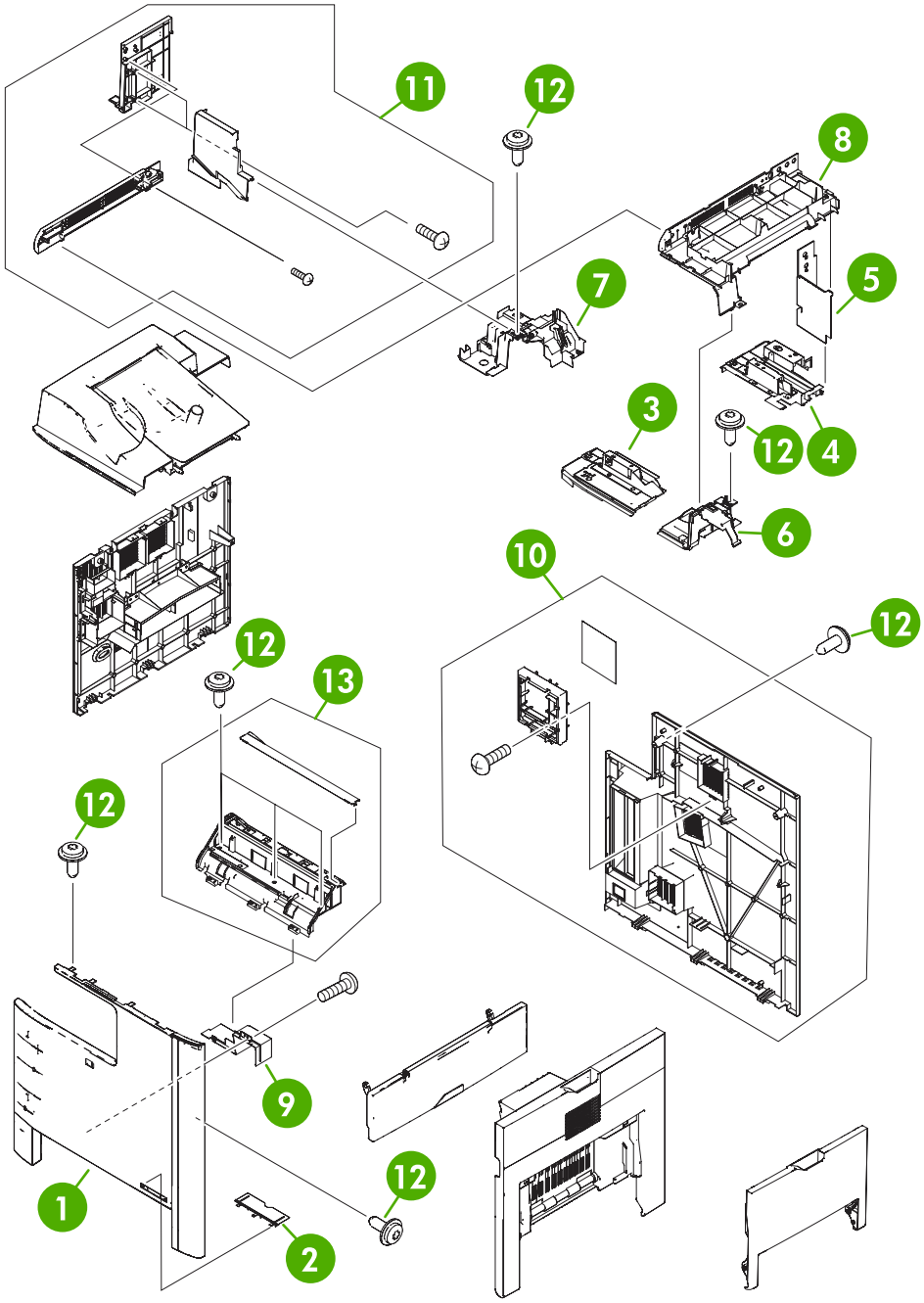


Figure 8-3 External covers and panels

Table 8-4 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

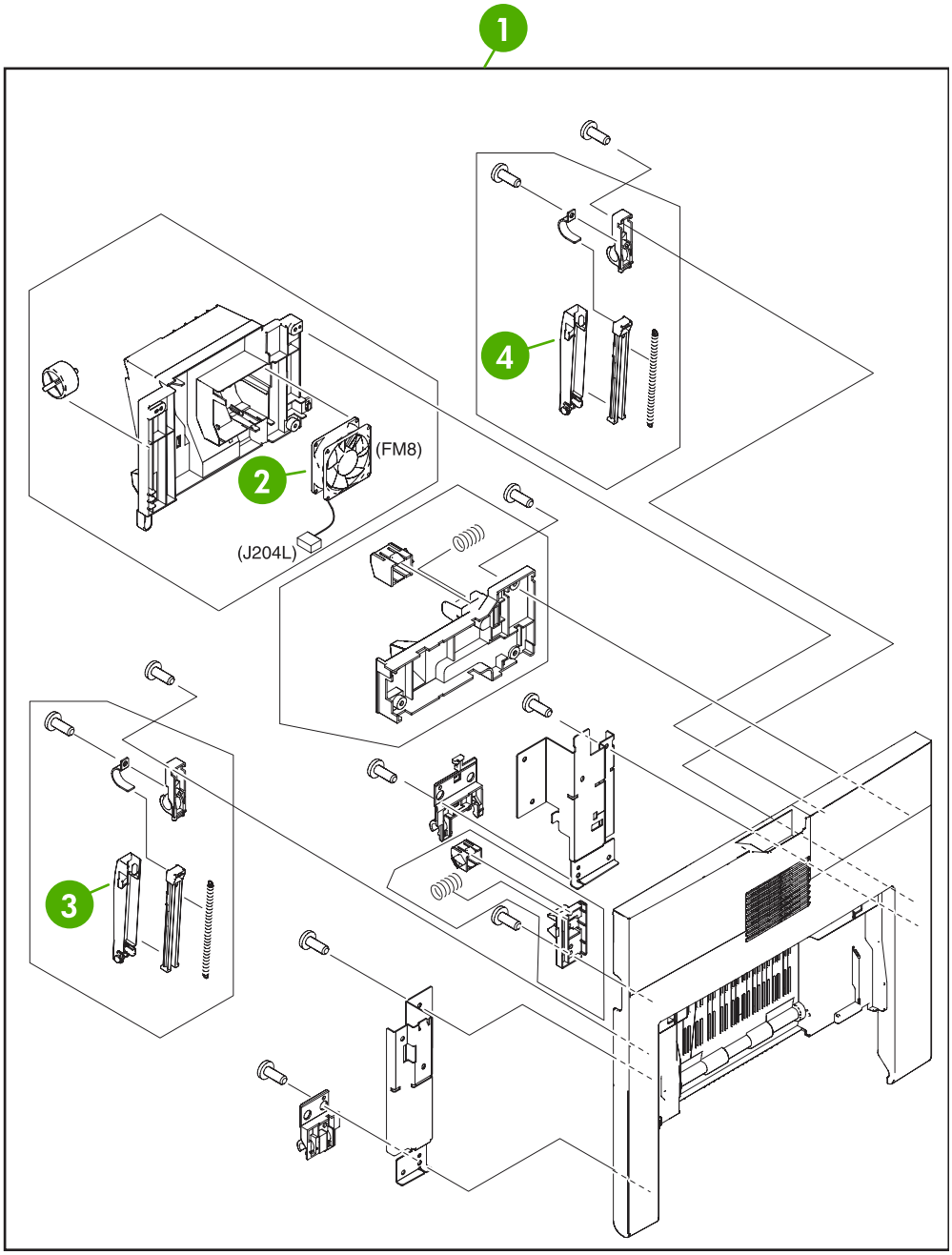


Figure 8-4 Right lower cover assembly

Table 8-5 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

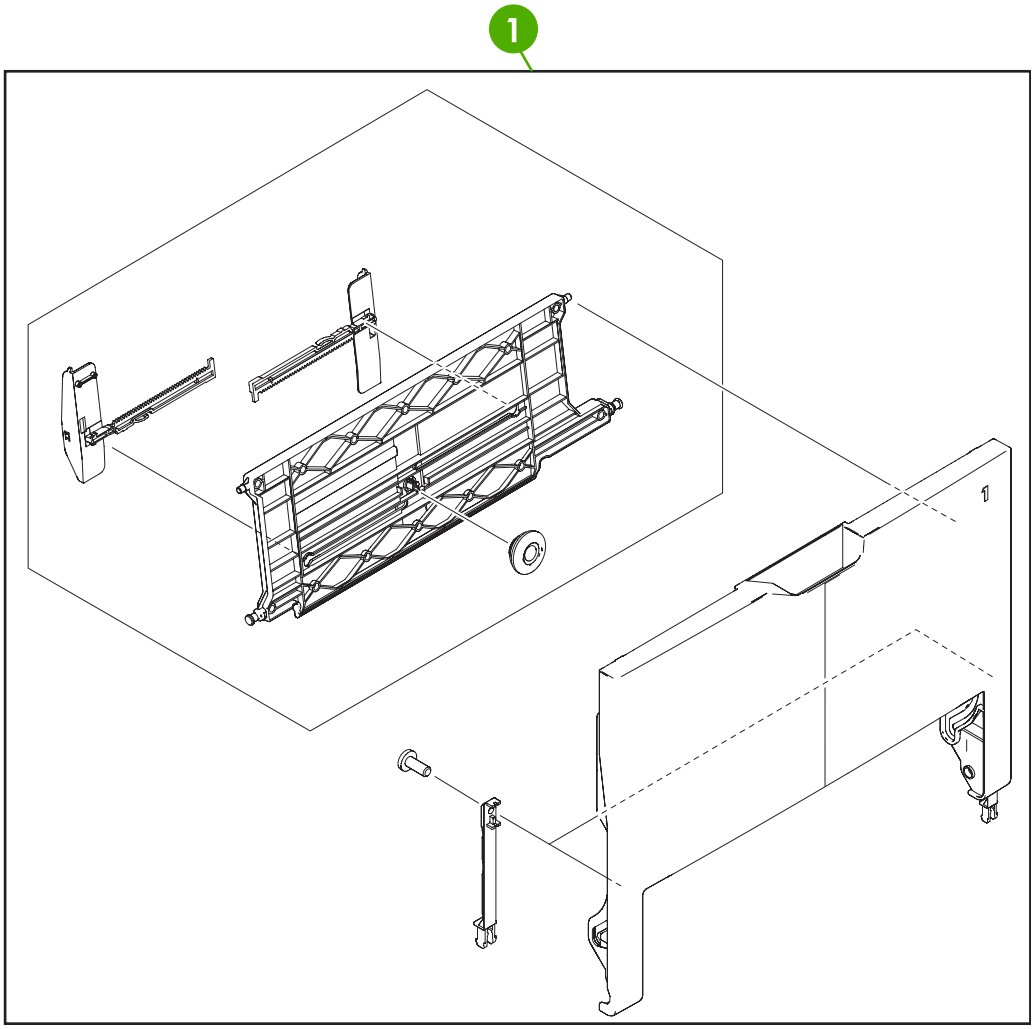


Figure 8-5 Multipurpose tray assembly

Table 8-6 Multipurpose tray assembly

Ref	Description	Part number	Qty
1	Multipurpose tray assembly	RM1-2109-000CN	1

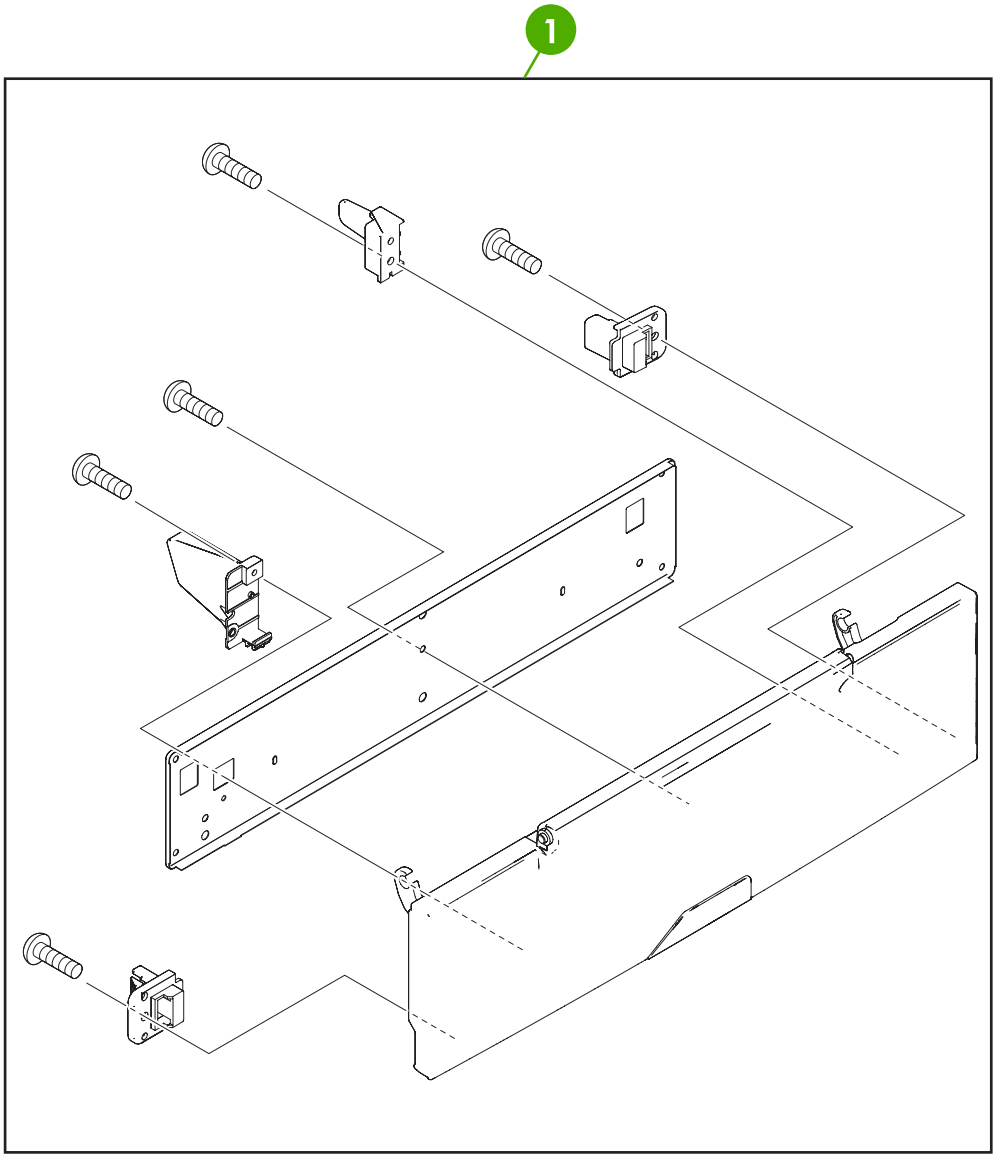


Figure 8-6 Right upper door assembly

Table 8-7 Right upper door assembly

Ref	Description	Part number	Qty
1	Right upper door assembly	RM1-2111-000CN	1

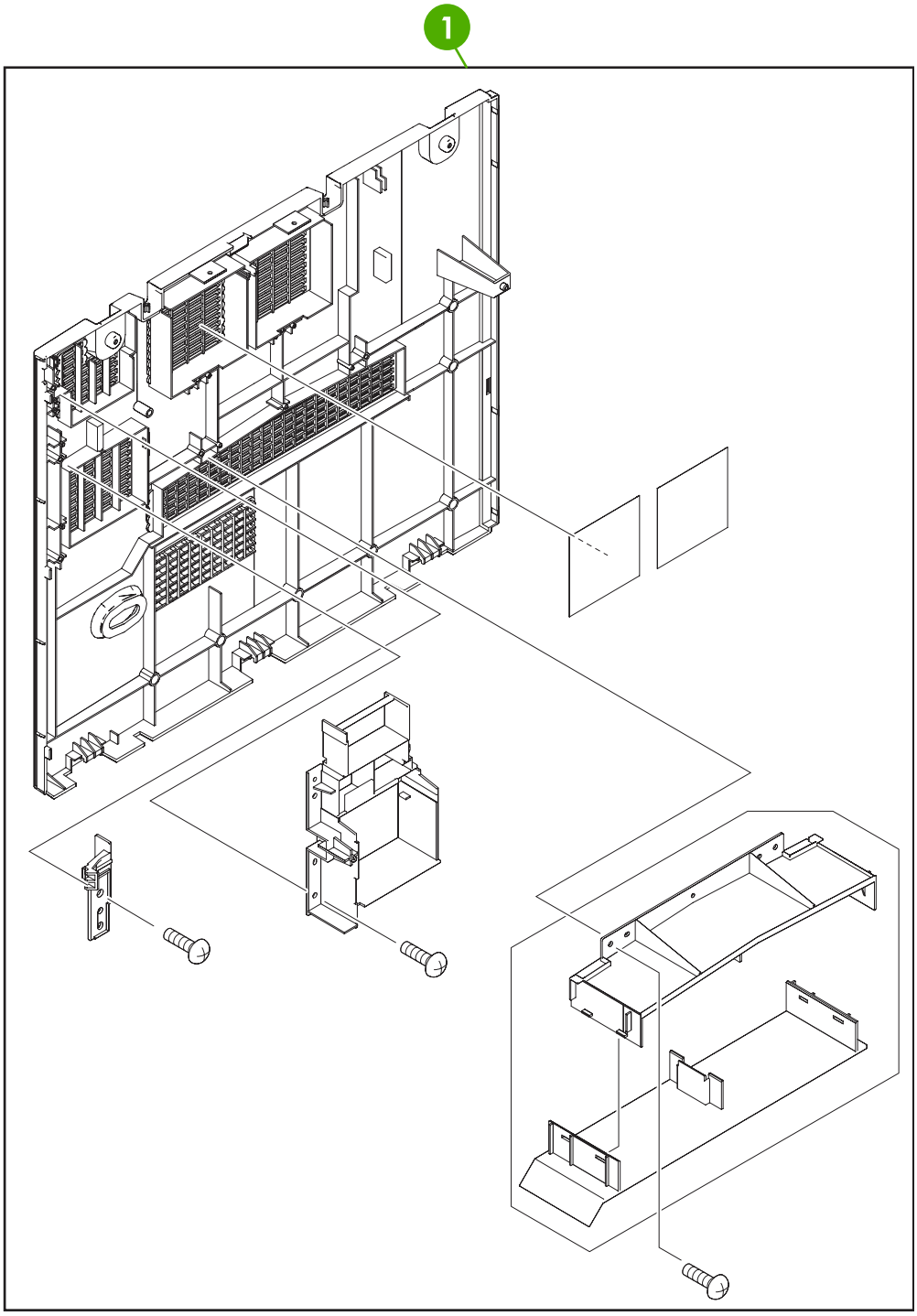


Figure 8-7 Left cover assembly

Table 8-8 Left cover assembly

Ref	Description	Part number	Qty
	Left cover assembly	RM1-2115-000CN	1

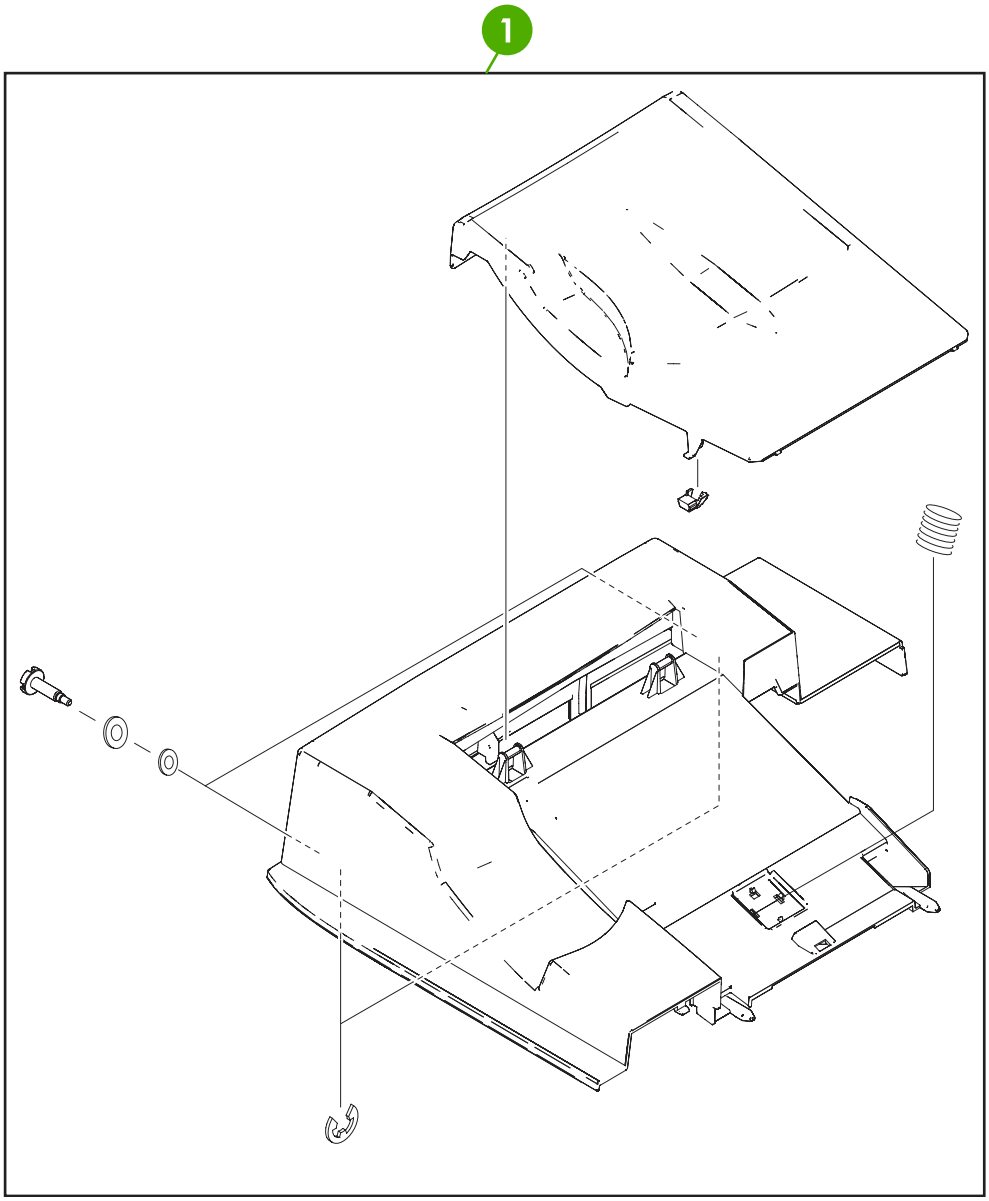


Figure 8-8 Face-down tray assembly

Table 8-9 Face-down tray assembly

Ref	Description	Part number	Qty
	Face-down tray assembly	RM1-2180-000CN	1

Internal components

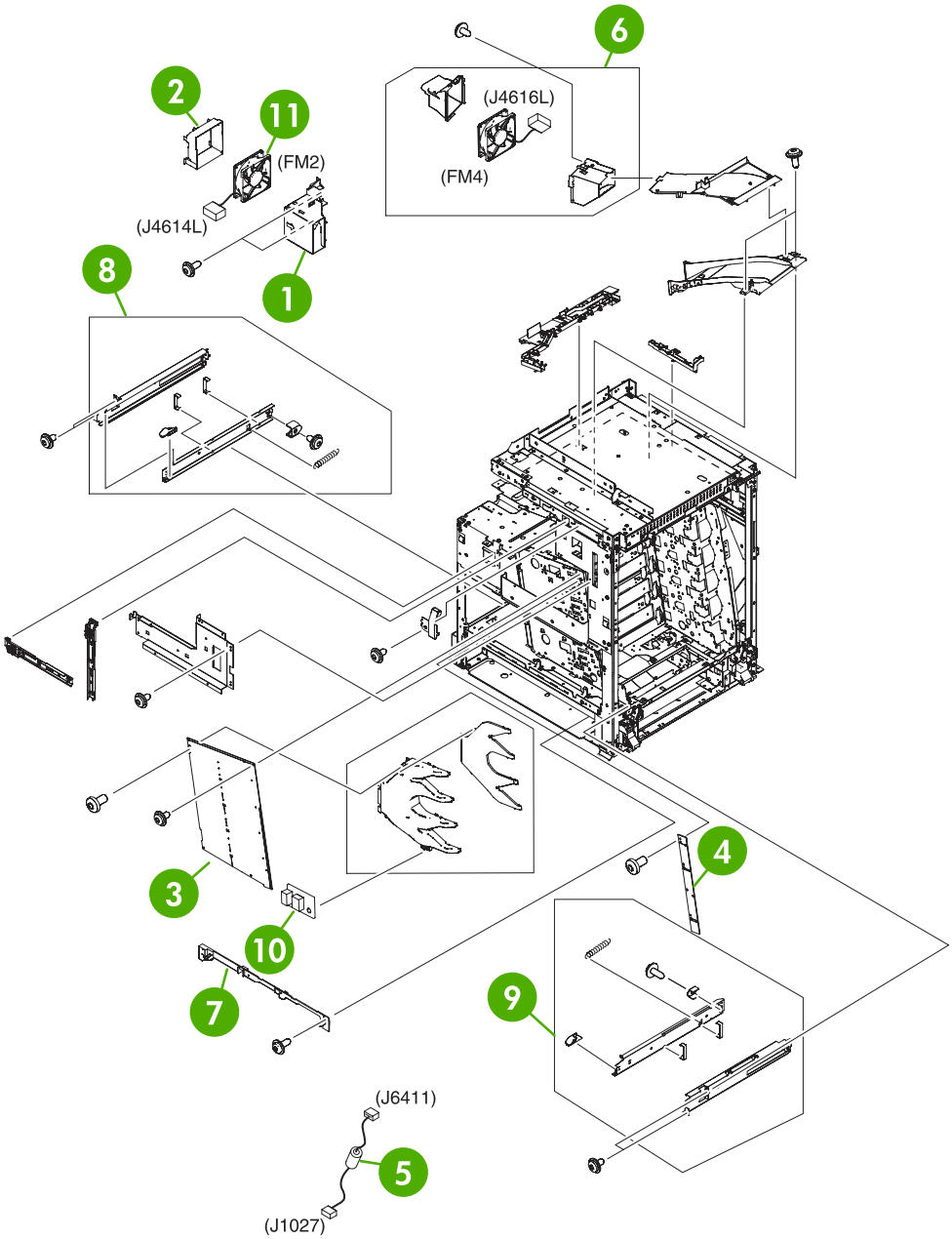


Figure 8-9 Internal components (1 of 8)

Table 8-10 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

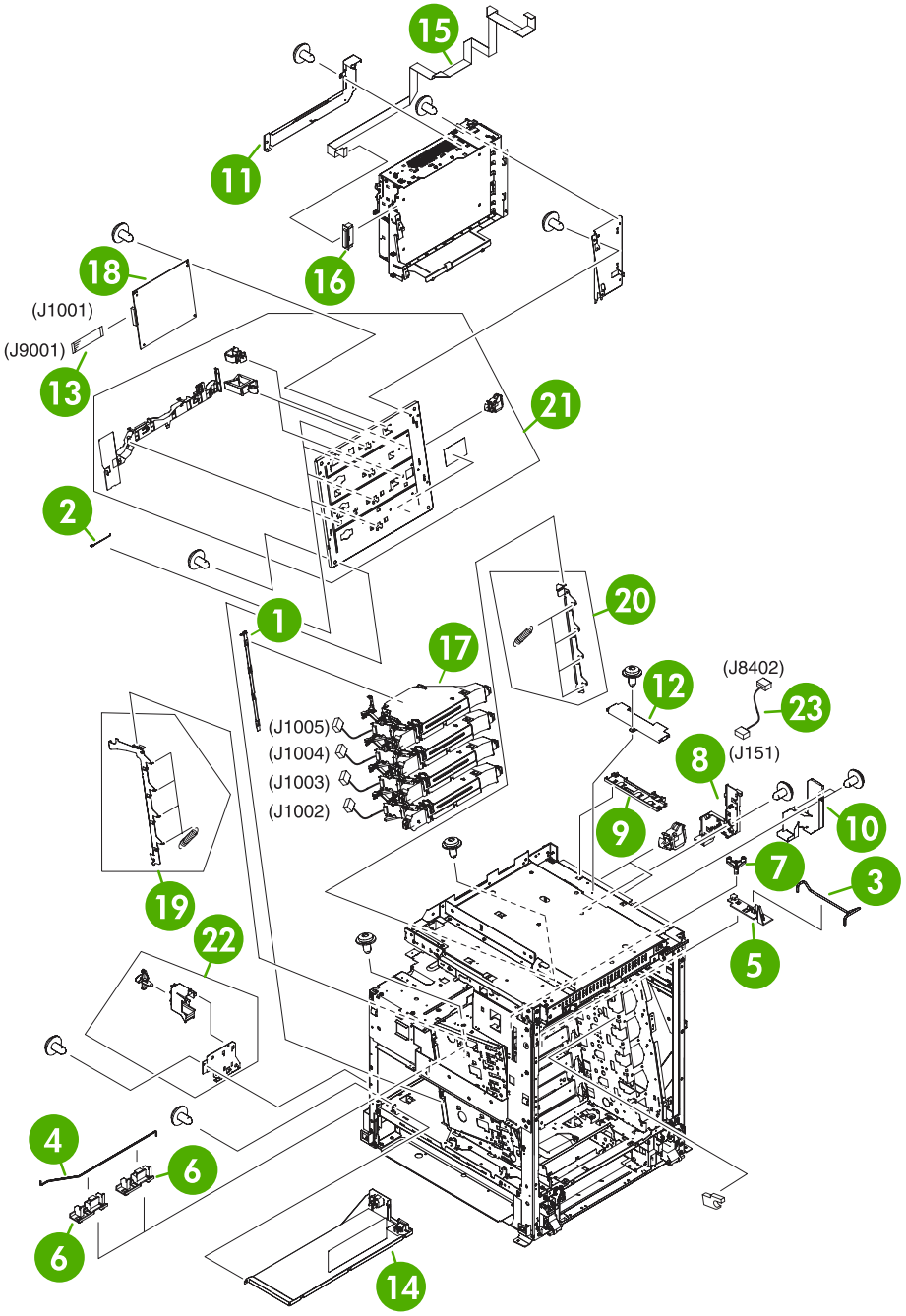


Figure 8-10 Internal components (2 of 8)

Table 8-11 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

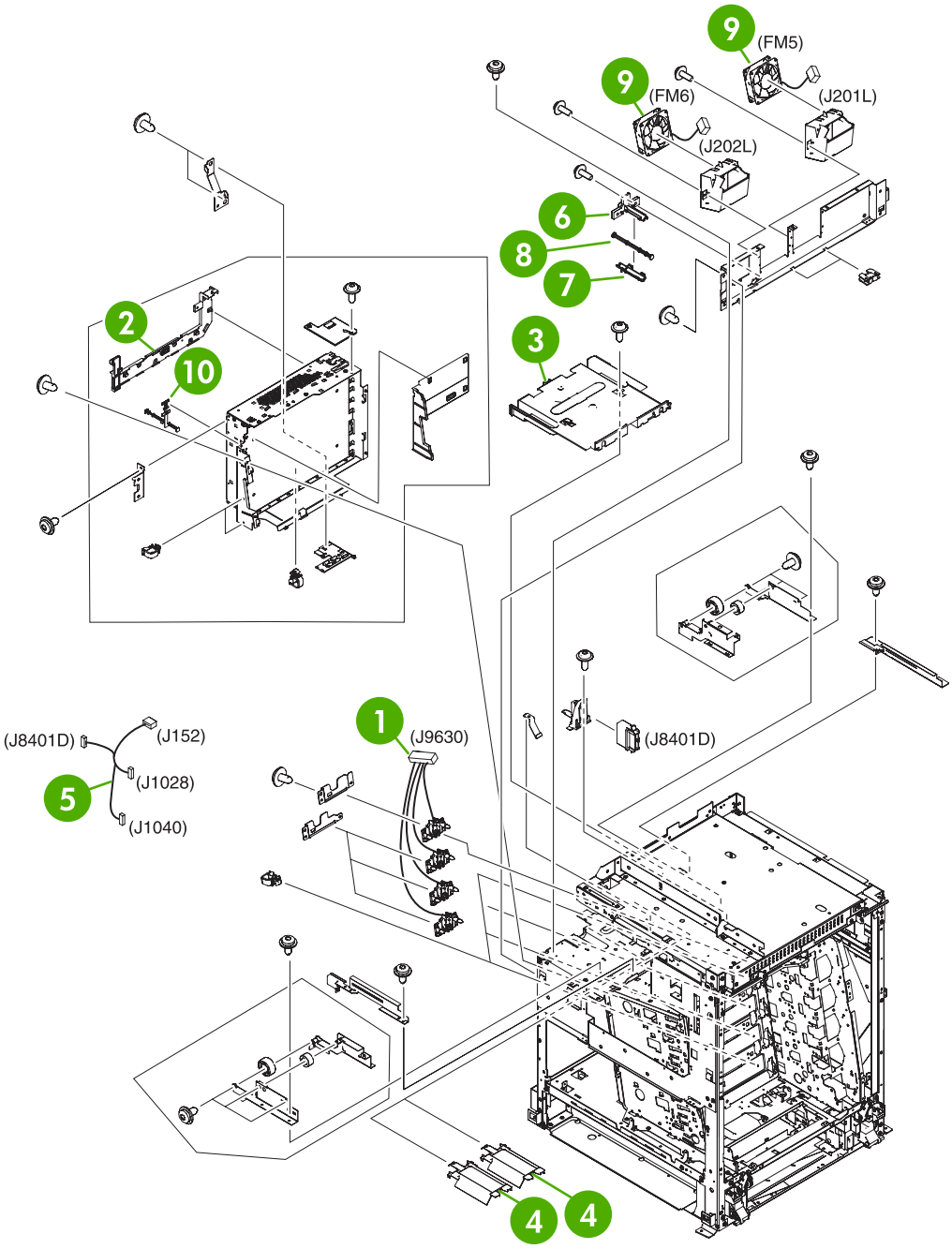


Figure 8-11 Internal components (3 of 8)

Table 8-12 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

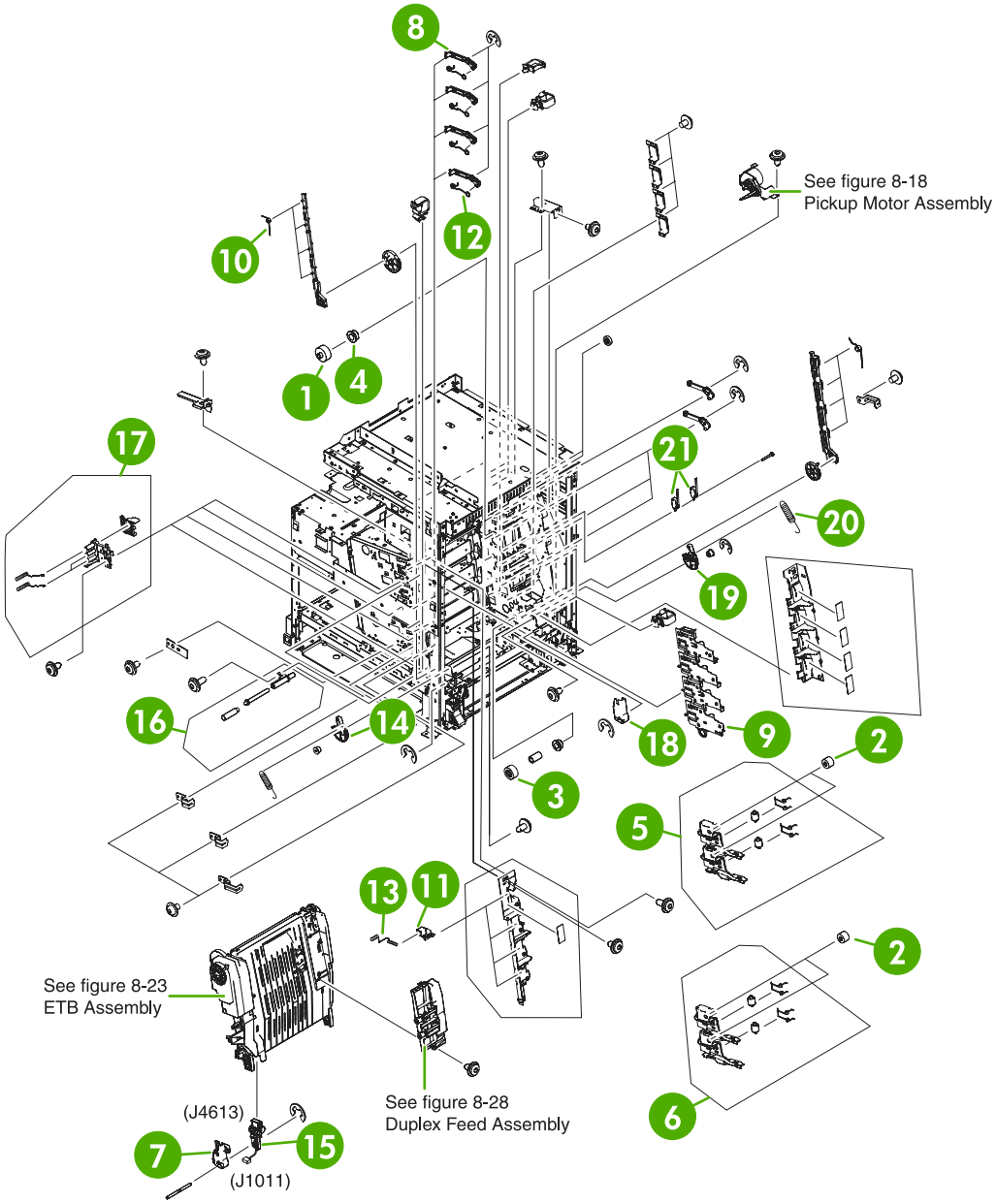


Figure 8-12 Internal components (4 of 8)

Table 8-13 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

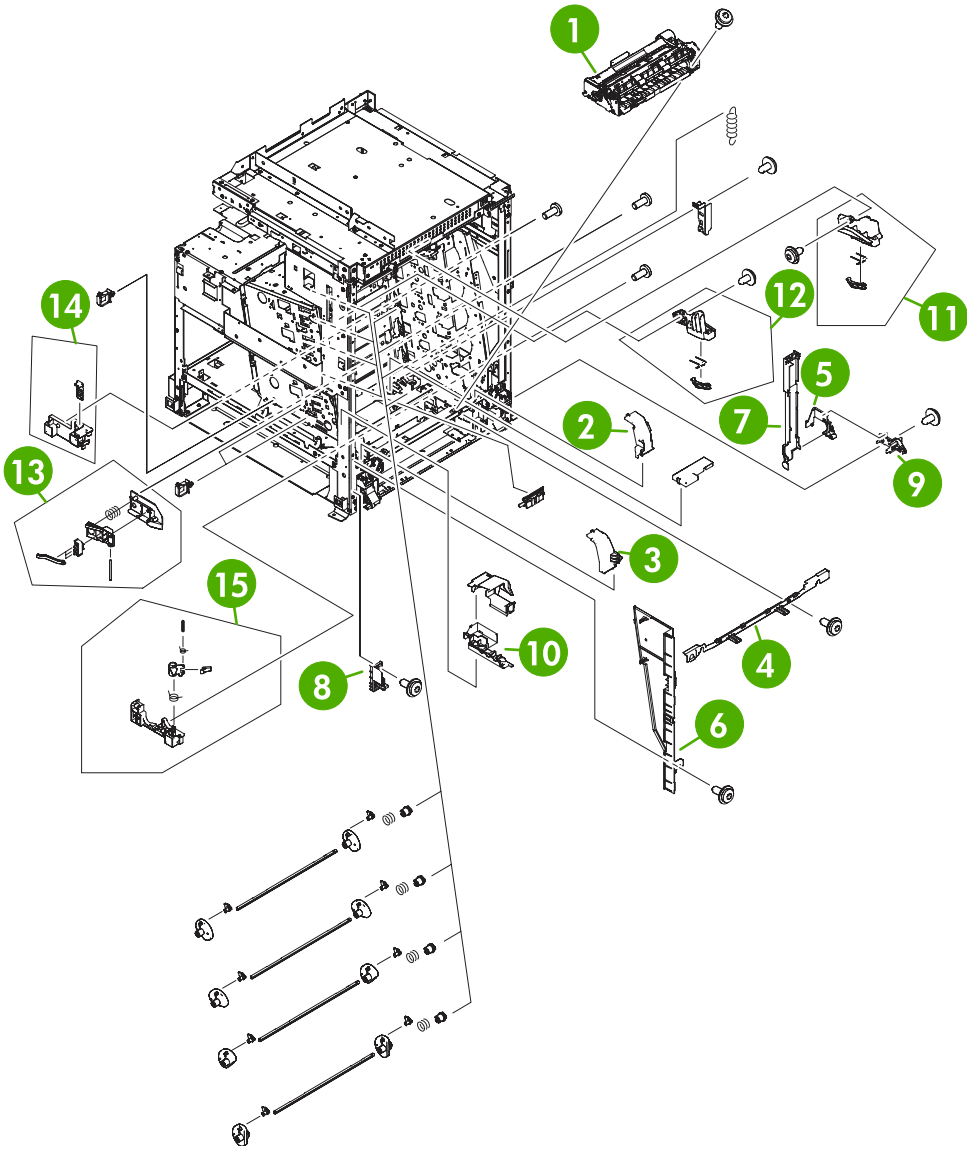


Figure 8-13 Internal components (5 of 8)

Table 8-14 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

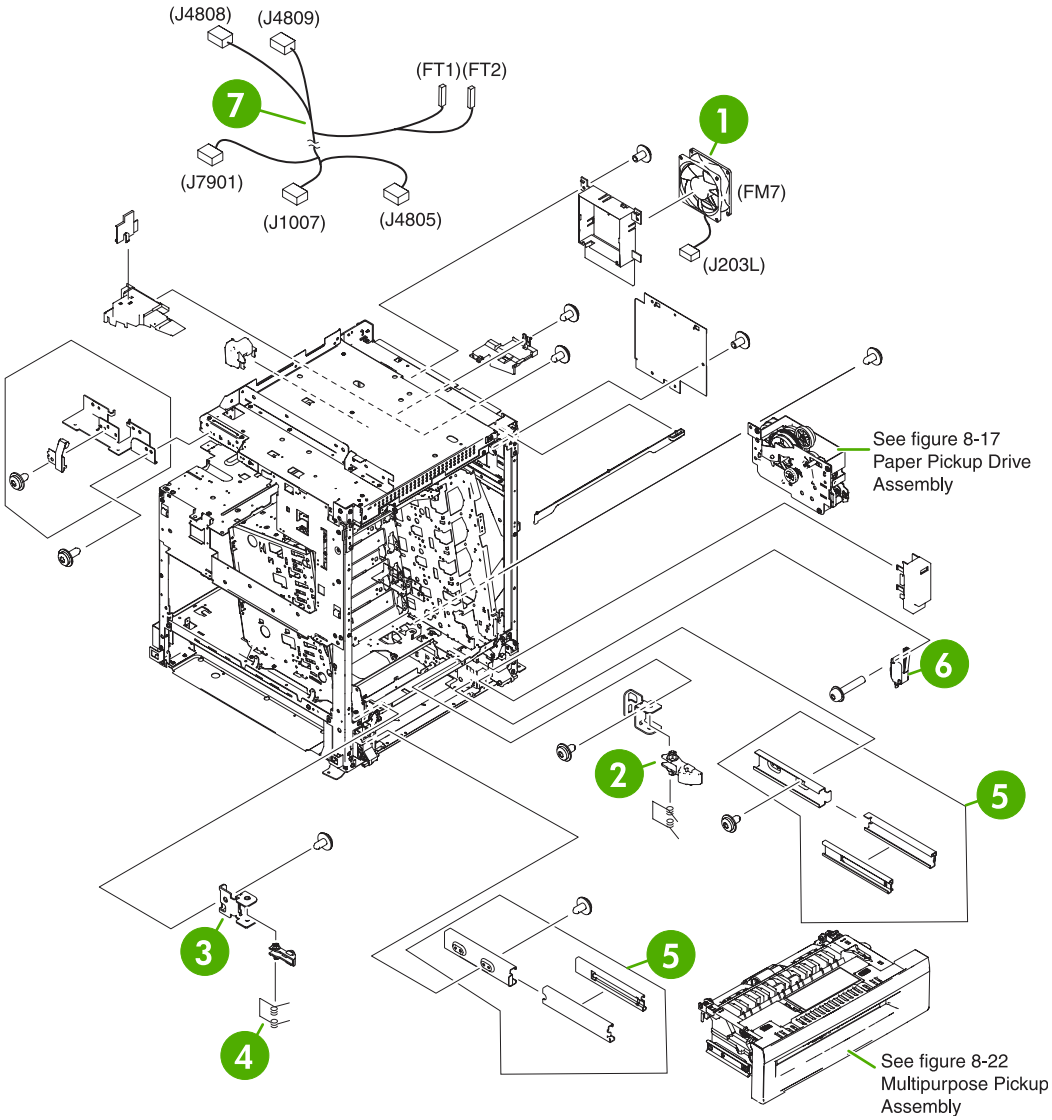


Figure 8-14 Internal components (6 of 8)

Table 8-15 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

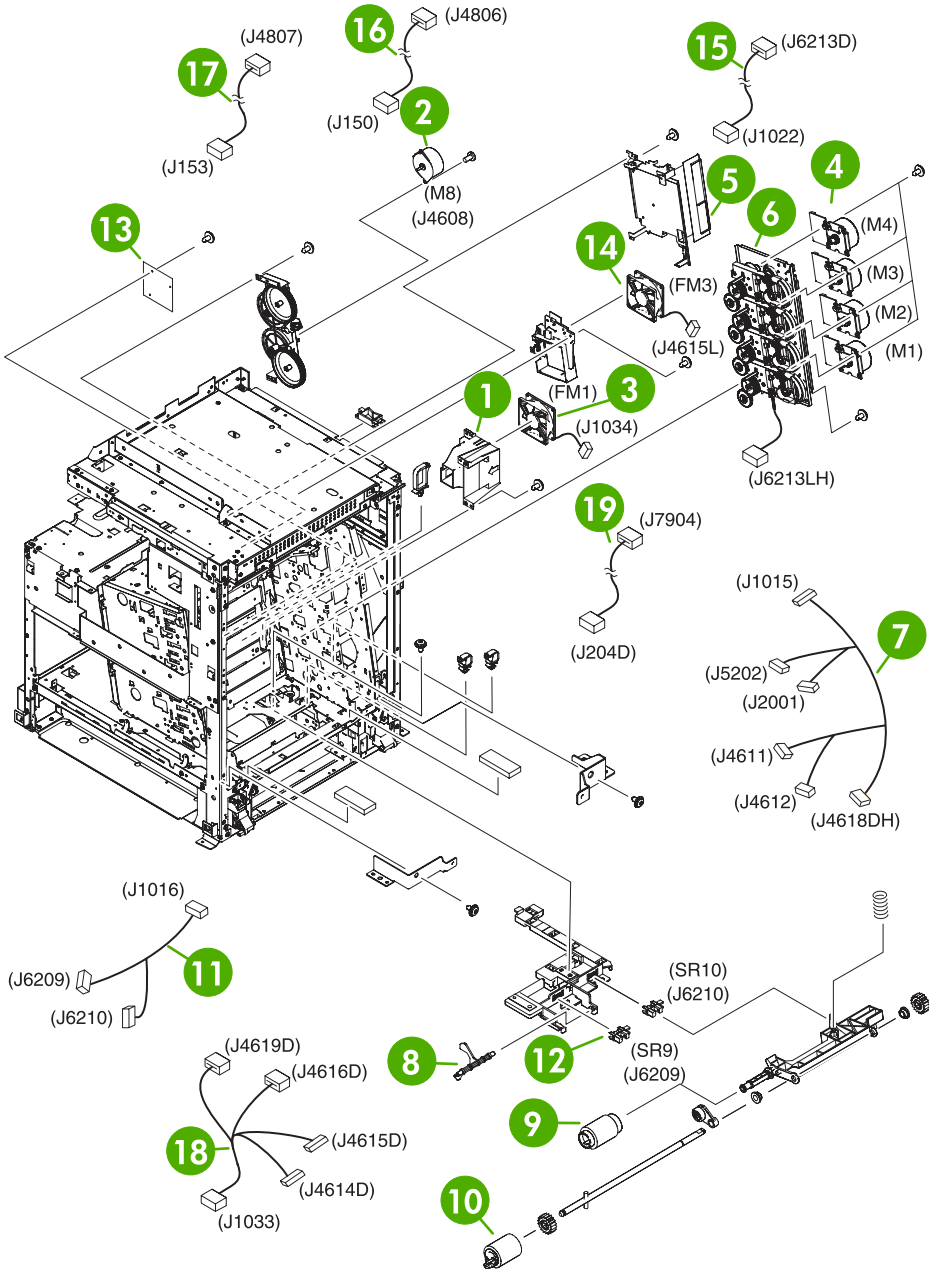


Figure 8-15 Internal components (7 of 8)

Table 8-16 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
7	Main drive assembly	RM1-2137-000CN	1
8	Pickup cable assembly	RM1-2361-000CN	1
9	Sensor lever	RC1-6013-000CN	1
10	Paper pickup roller assembly	RM1-0036-020CN	1
11	Paper feed roller assembly	RM1-0037-020CN	1
12	Paper sensor cable assembly	RM1-2350-000CN	1
13	Photo interrupter, TLP1243	WG8-5696-000CN	2
14	Fan driver PCB assembly	RM1-2345-000CN	1
15	Fan	RK2-0621-000CN	1
16	Drive sensor cable assembly	RM1-2349-000CN	1
17	MFP power cable assembly	RM1-2351-000CN	1
18	Power save cable assembly	RM1-2352-000CN	1
19	Fan connecting cable assembly	RM1-2357-000CN	1
20	Fan connecting cable assembly	RM1-2358-000CN	1

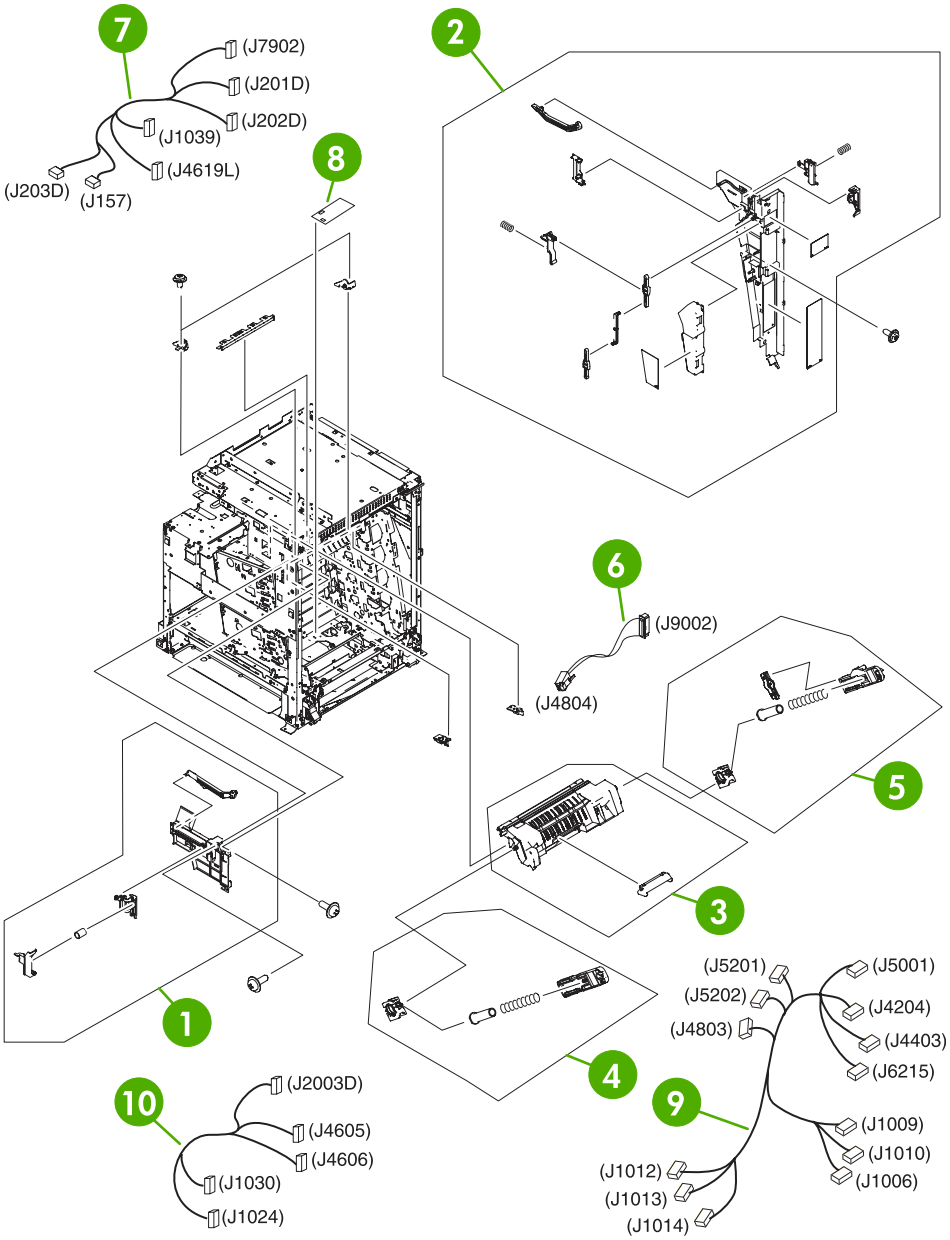


Figure 8-16 Internal components (8 of 8)

Table 8-17 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

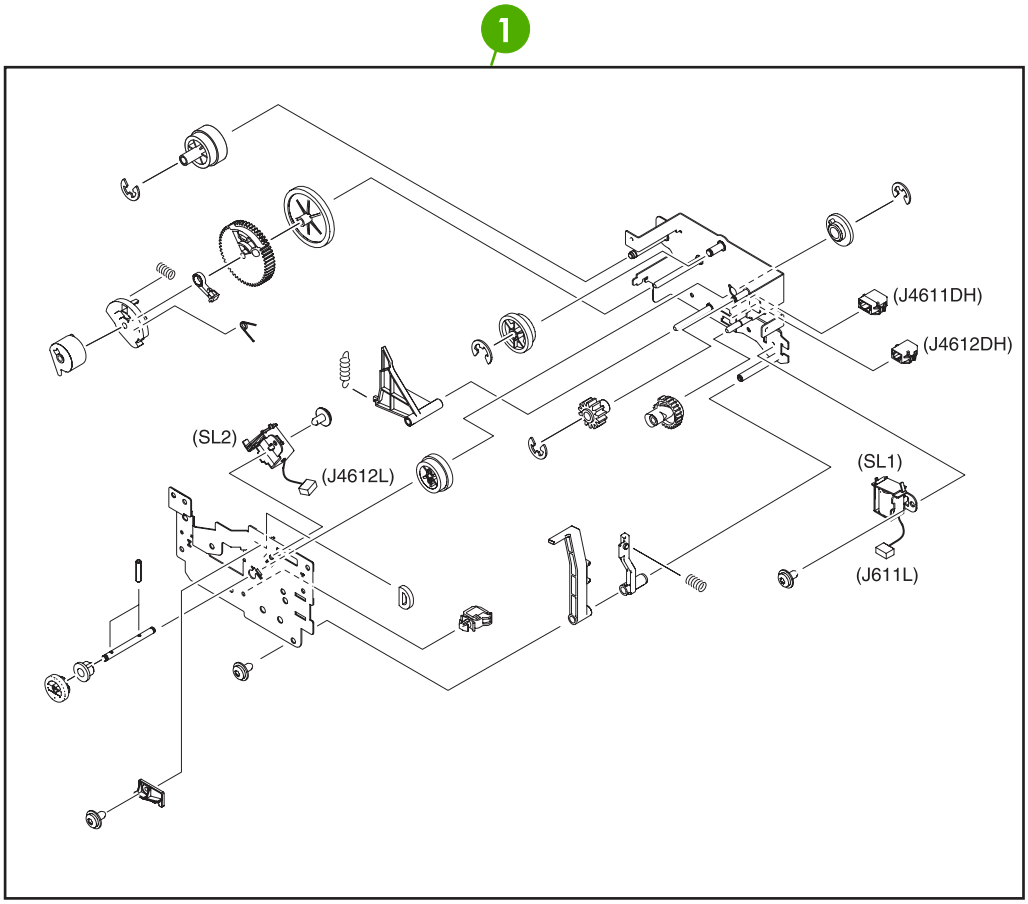


Figure 8-17 Paper pickup drive assembly

Table 8-18 Paper pickup drive assembly

Ref	Description	Part number	Qty
1	Paper pickup drive assembly	RM1-2198-000CN	1

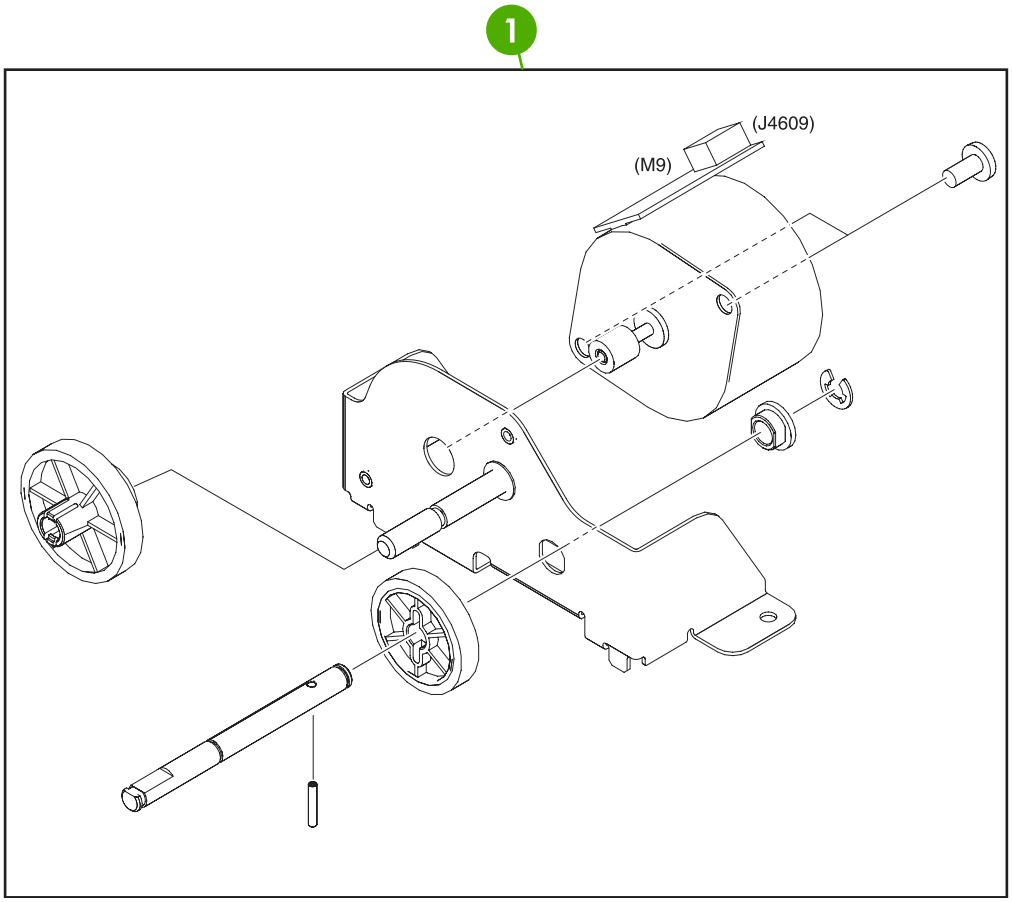


Figure 8-18 Pickup motor assembly

Table 8-19 Pickup motor assembly

Ref	Description	Part number	Qty
1	pickup motor assembly	RM1-2189-000CN	1

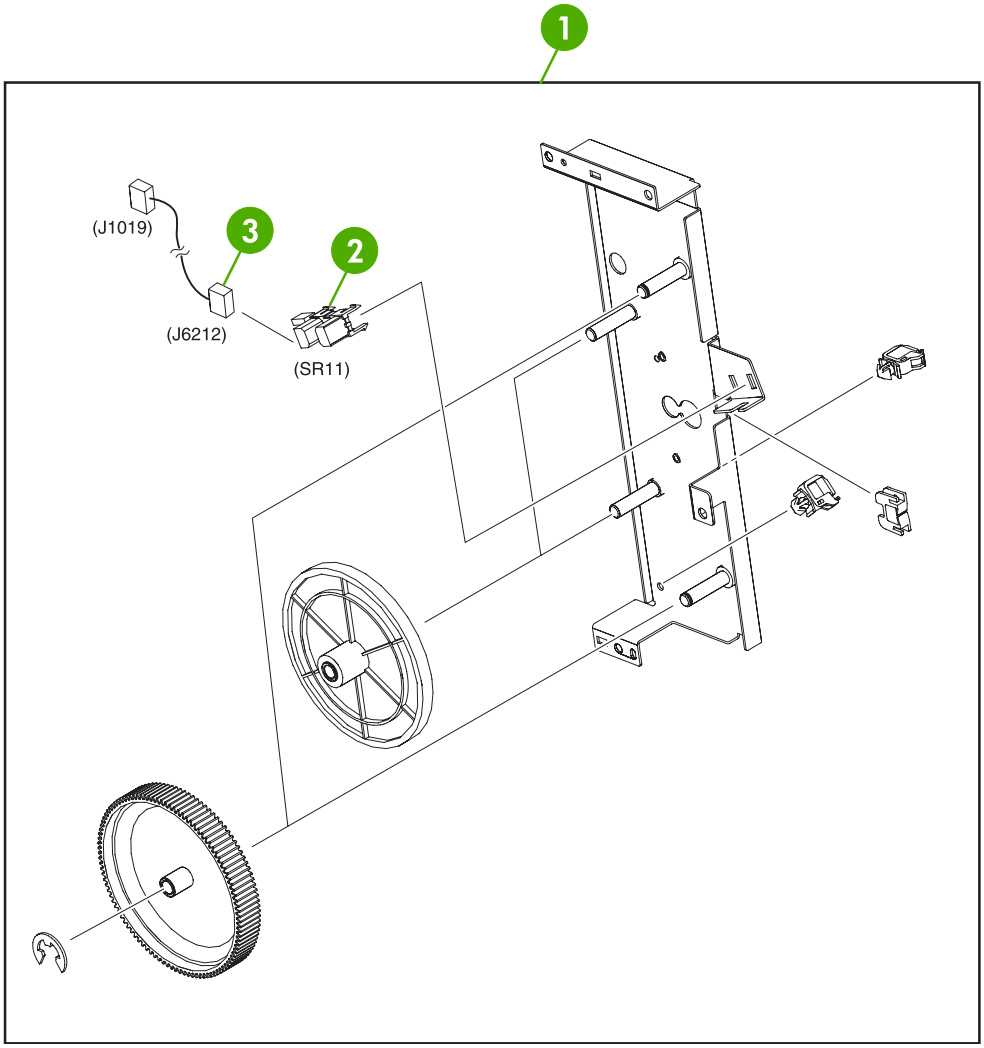


Figure 8-19 Disengaging drive assembly

Table 8-20 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

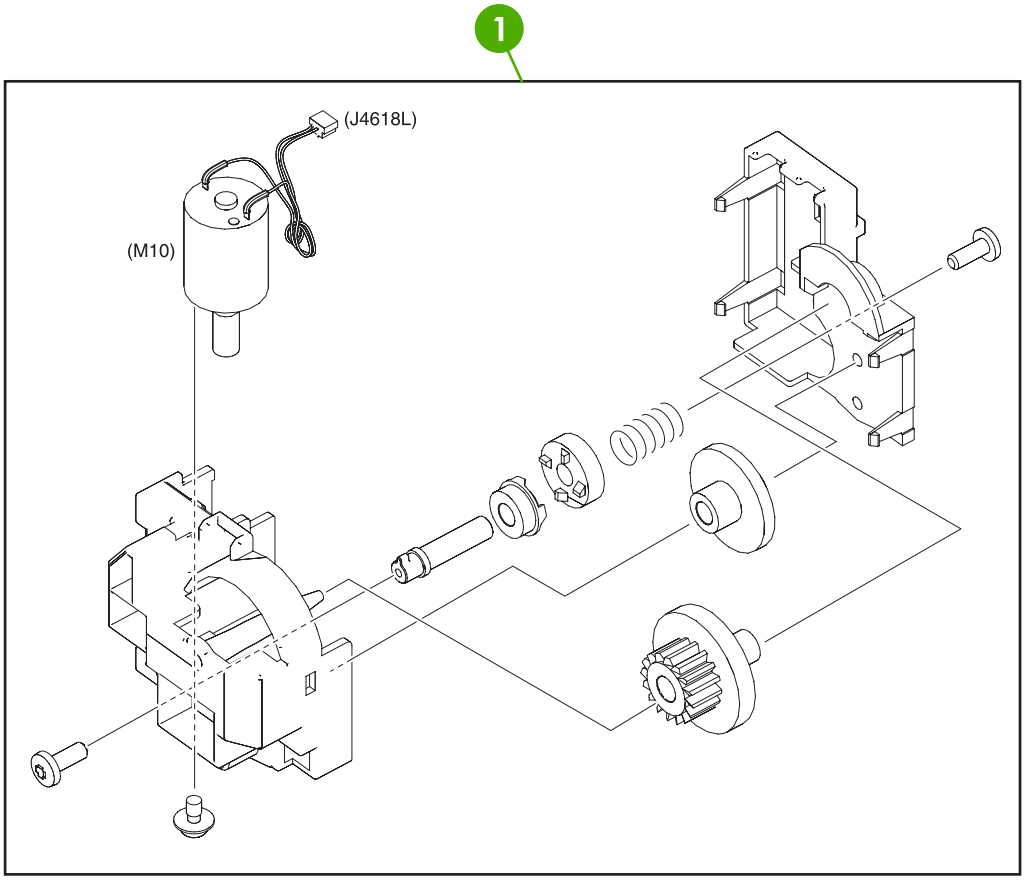


Figure 8-20 Lifter drive assembly

Table 8-21 Lifter drive assembly

Ref	Description	Part number	Qty
1	Lifter drive assembly	RM1-1750-000CN	1

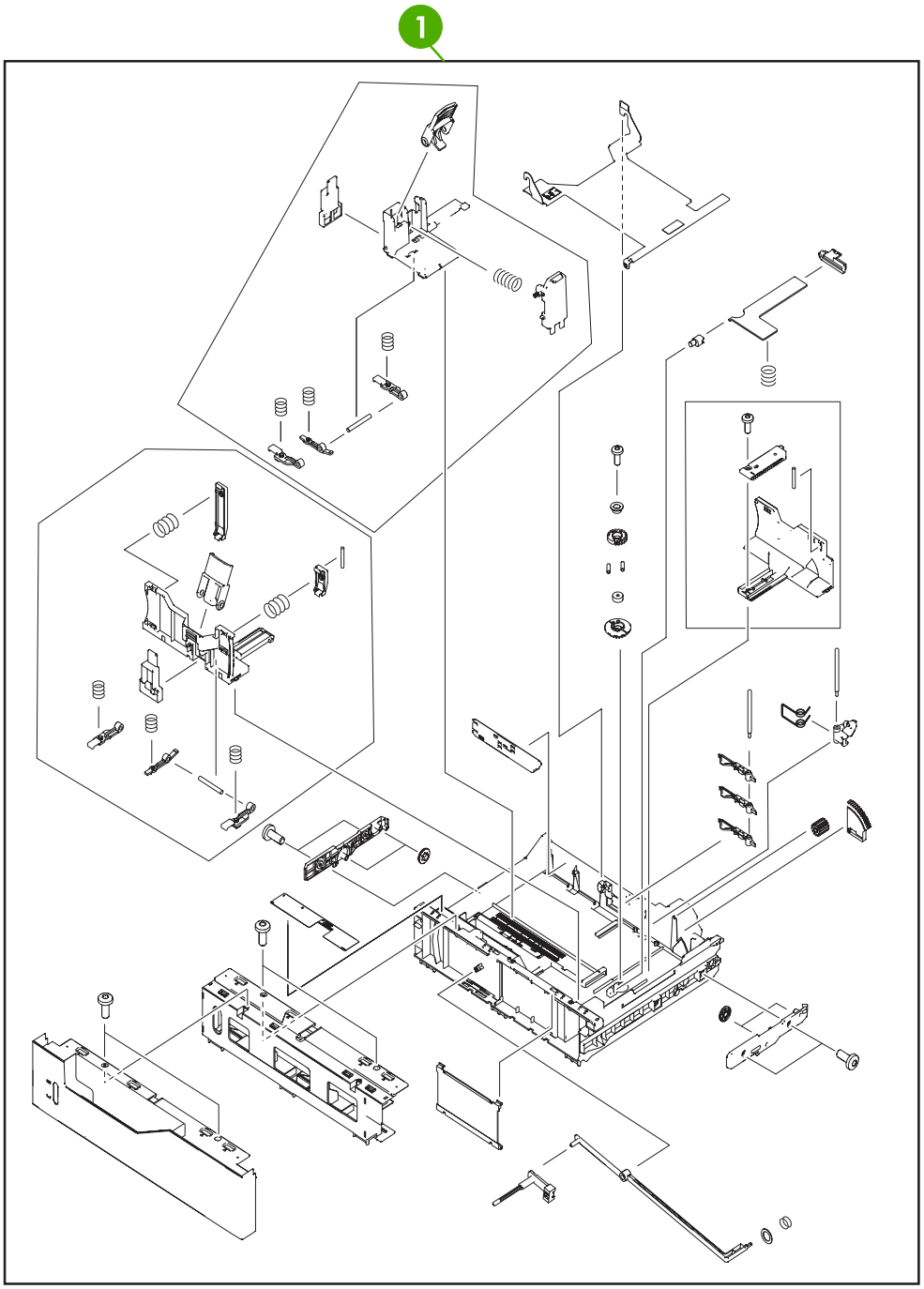


Figure 8-21 Cassette

Table 8-22 Cassette

Ref	Description	Part number	Qty
1	Cassette	RM1-2219-000CN	1

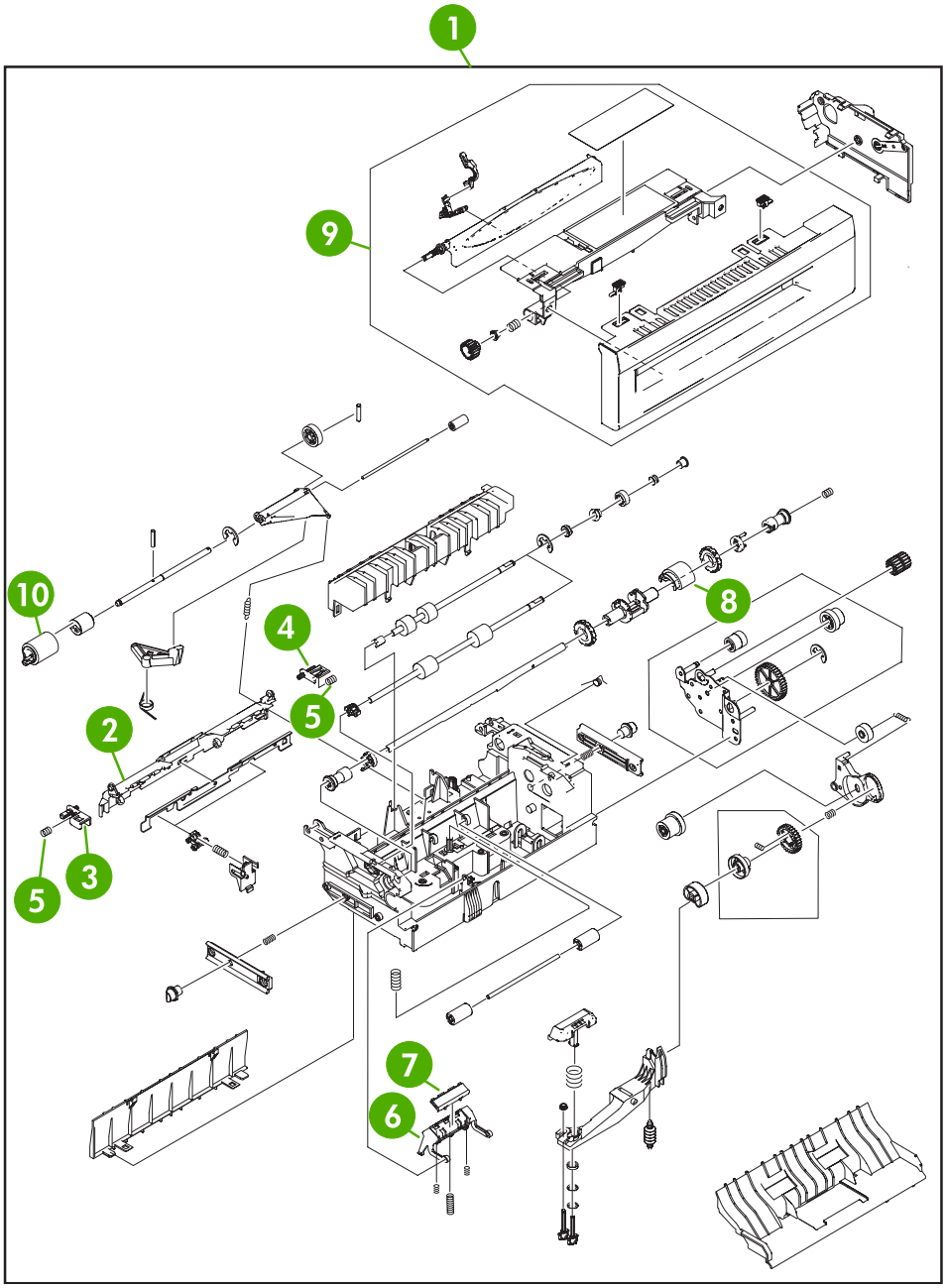


Figure 8-22 Multipurpose pickup assembly

Table 8-23 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

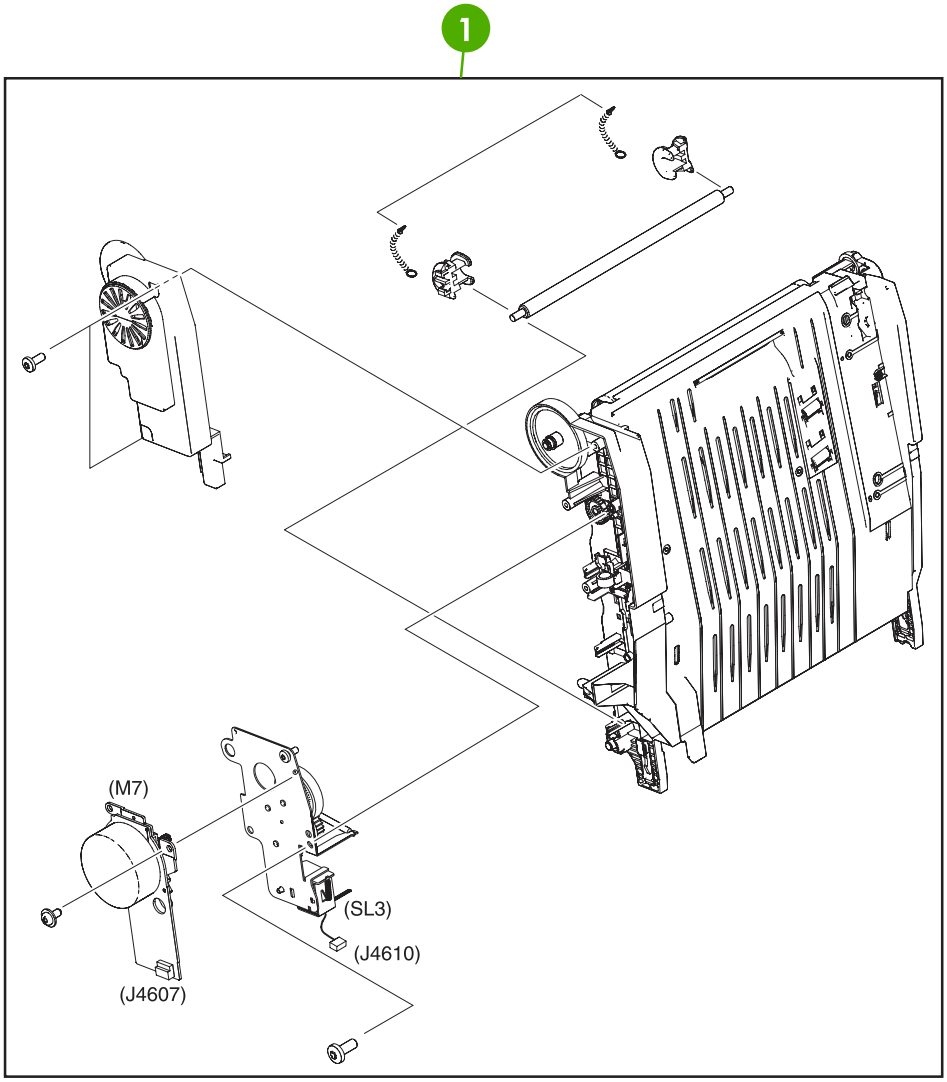


Figure 8-23 ETB assembly

Table 8-24 ETB assembly

Ref	Description	Part number	Qty
1	ETB assembly	RM1-3161-000CN	1

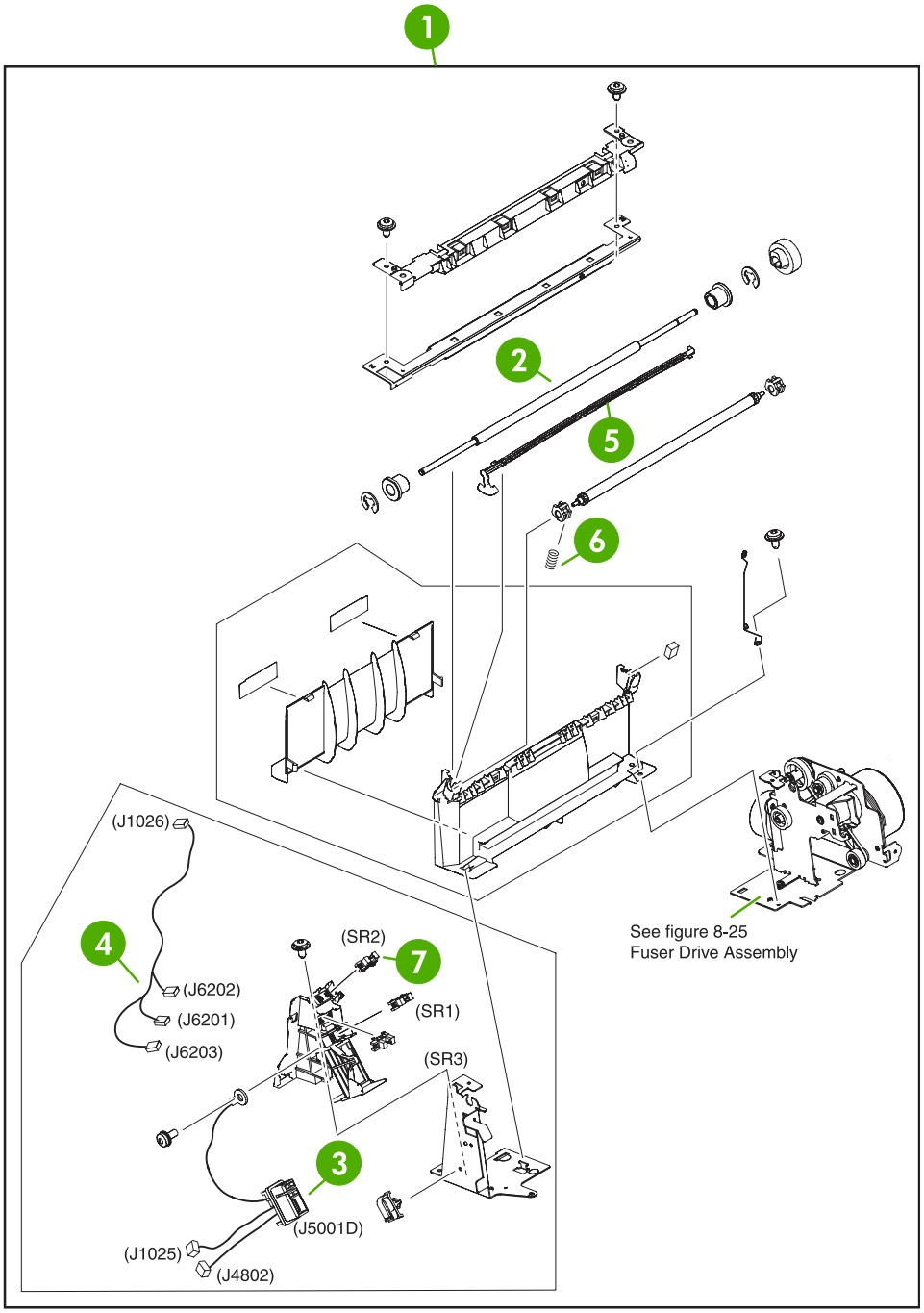


Figure 8-24 Delivery assembly

Table 8-25 Delivery assembly

Ref	Description	Part number	Qty
1	Delivery assembly 110-127V (new)	RM1-1730-000CN	1
1	Delivery assembly 220-240V (new)	RM1-1737-000CN	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

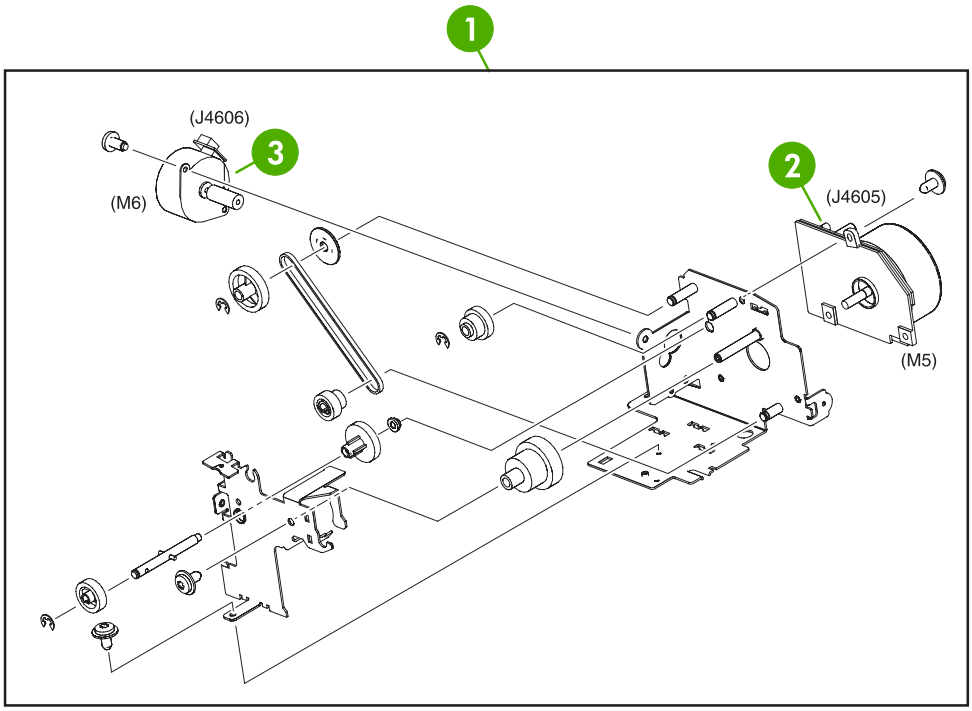


Figure 8-25 Fuser drive assembly

Table 8-26 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

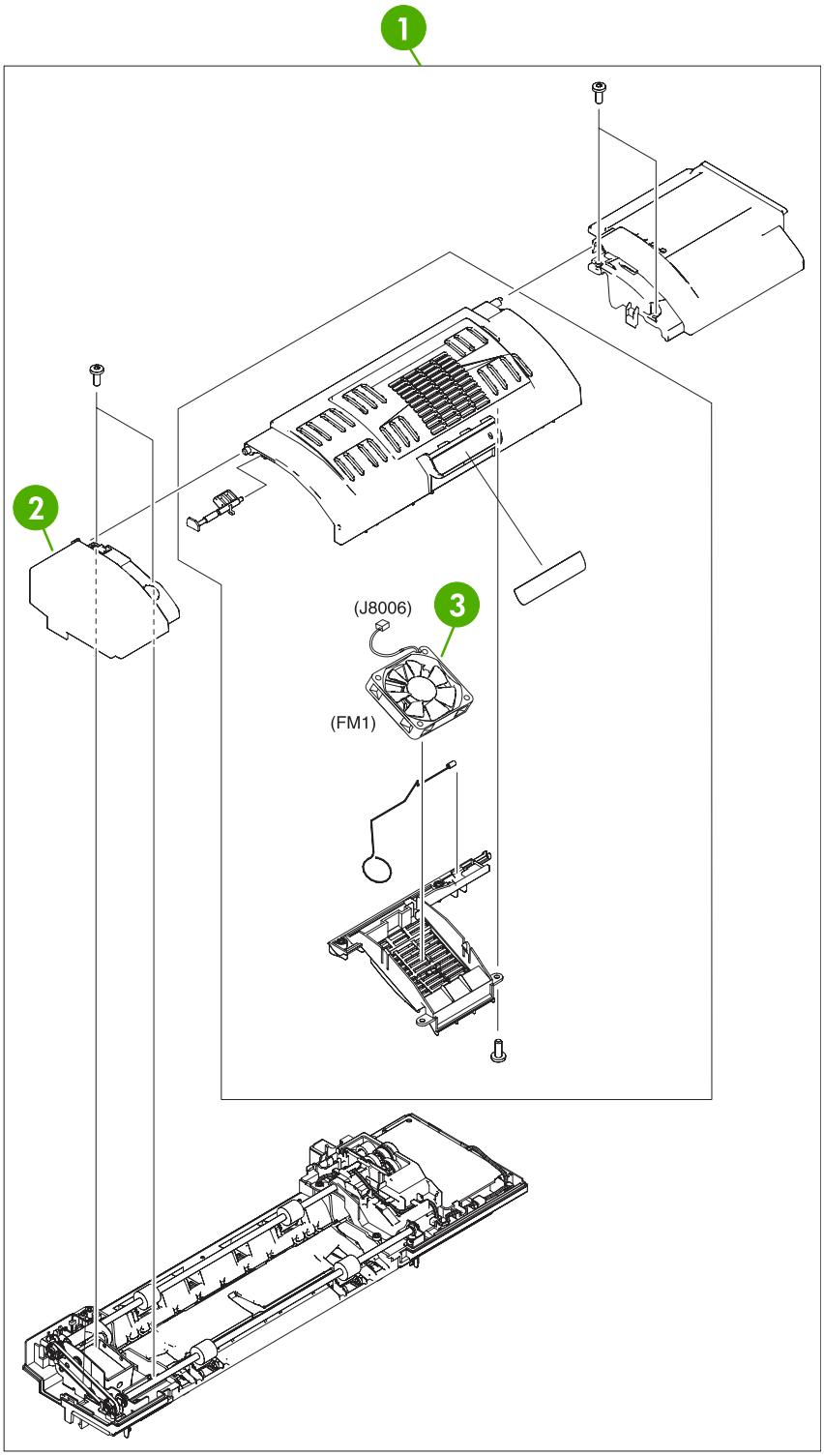


Figure 8-26 Duplexing unit (1 of 2)

Table 8-27 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

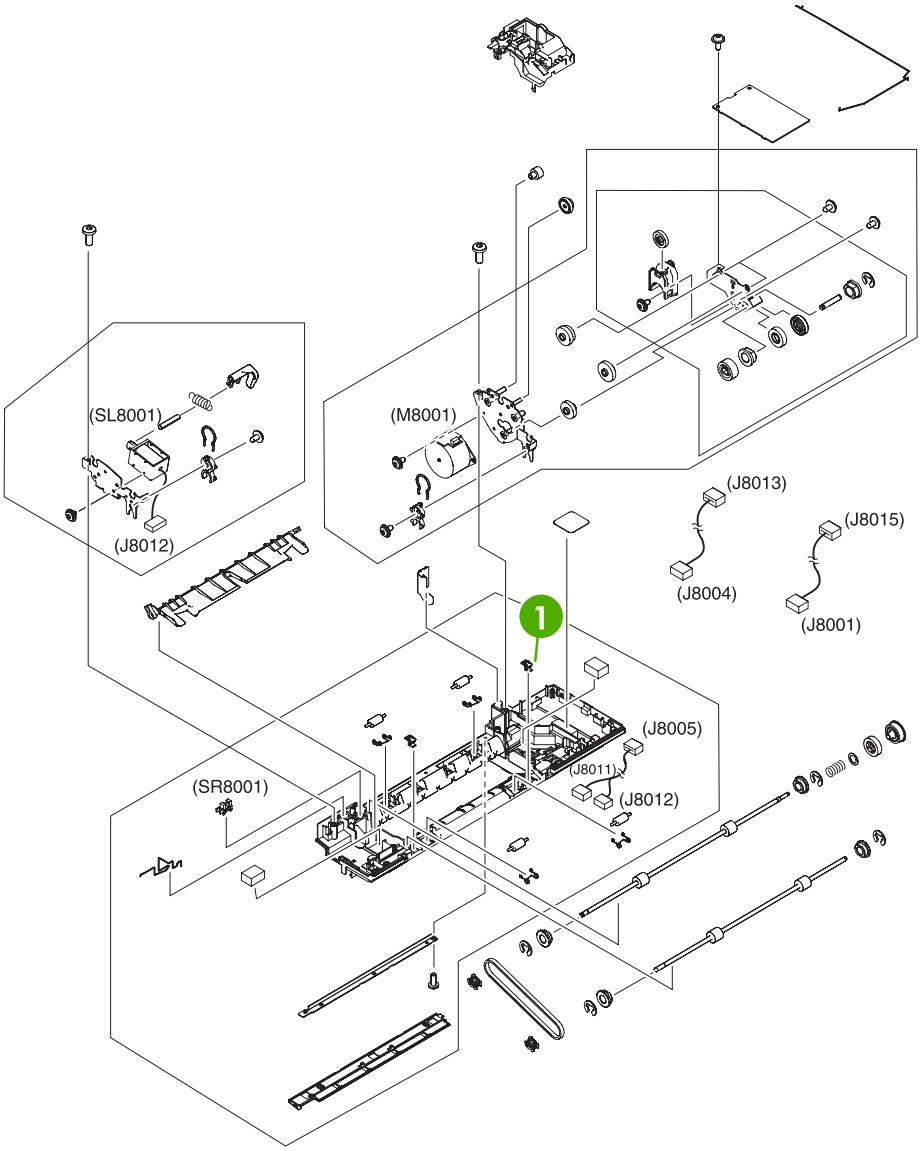


Figure 8-27 Duplexing unit (2 of 2)

Table 8-28 Duplexing unit (2 of 2)

Ref	Description	Part number	Qty
1	Duplex lock	RC1-5020-000CN	2

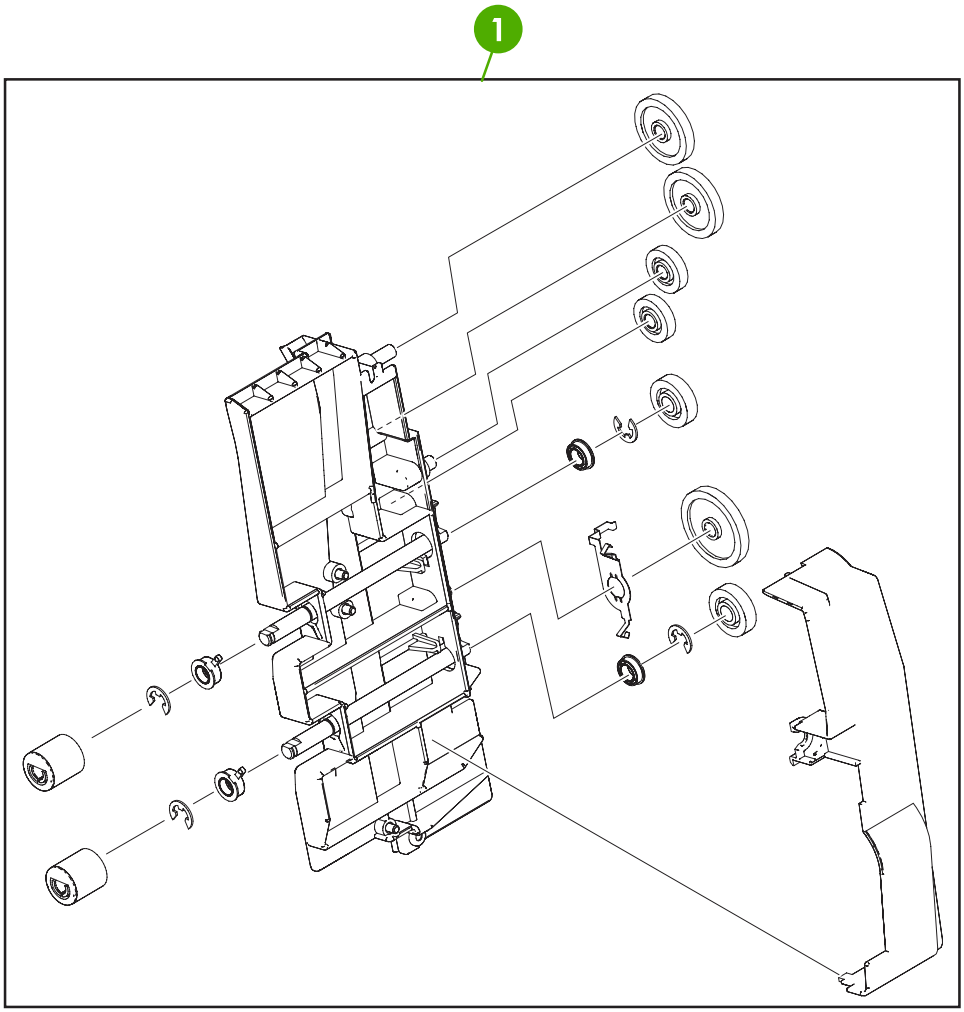


Figure 8-28 Duplex feed assembly

Table 8-29 Duplex feed assembly

Ref	Description	Part number	Qty
1	Duplex feed assembly	RM1-1785-000CN	1

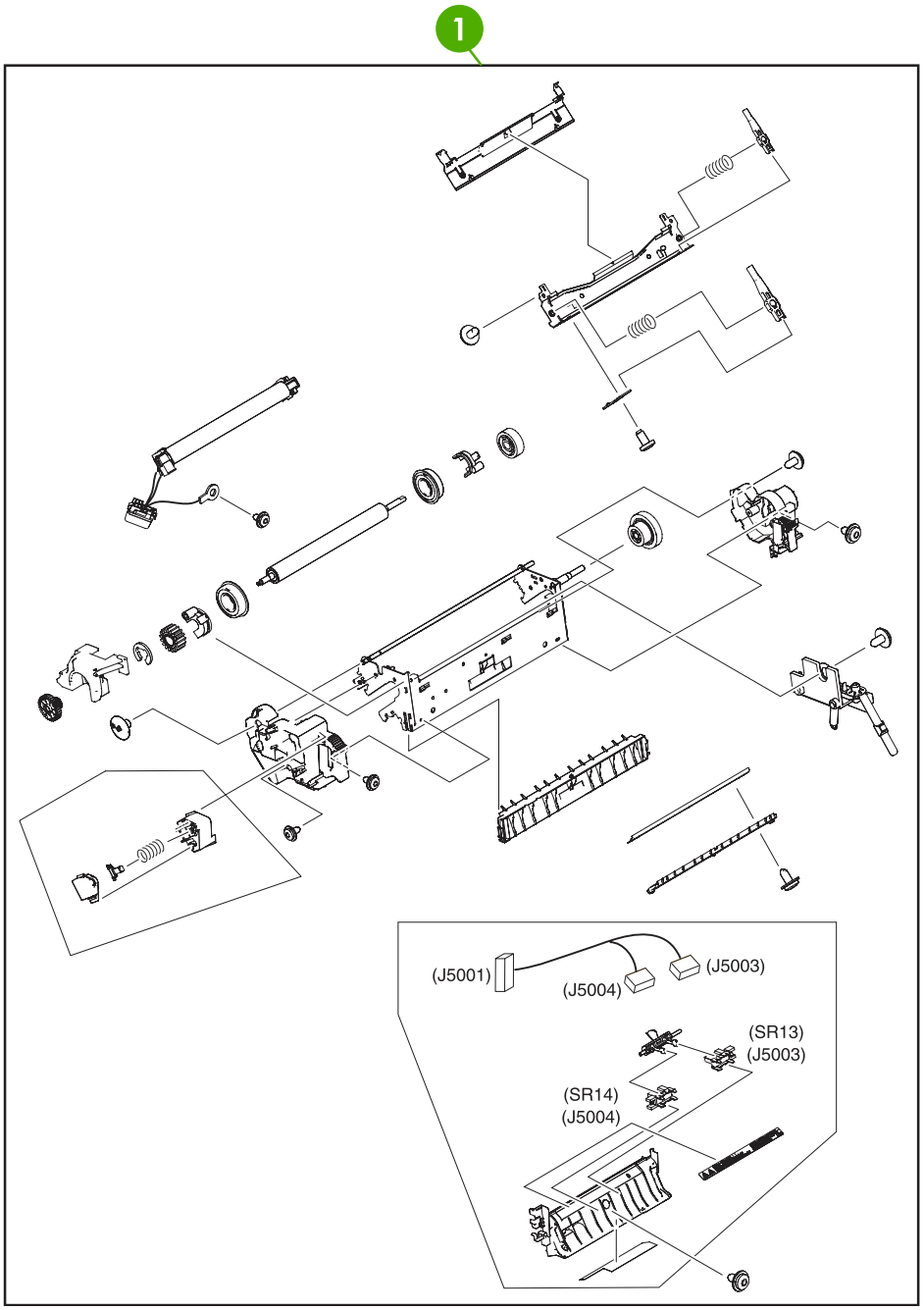


Figure 8-29 Fuser assembly

Table 8-30 Fuser assembly

Ref	Description	Part number	Qty
1	Fuser assembly (110-127V)	RM1-3131-000CN	1
1	Fuser assembly (220-240V)	RM1-3146-000CN	1

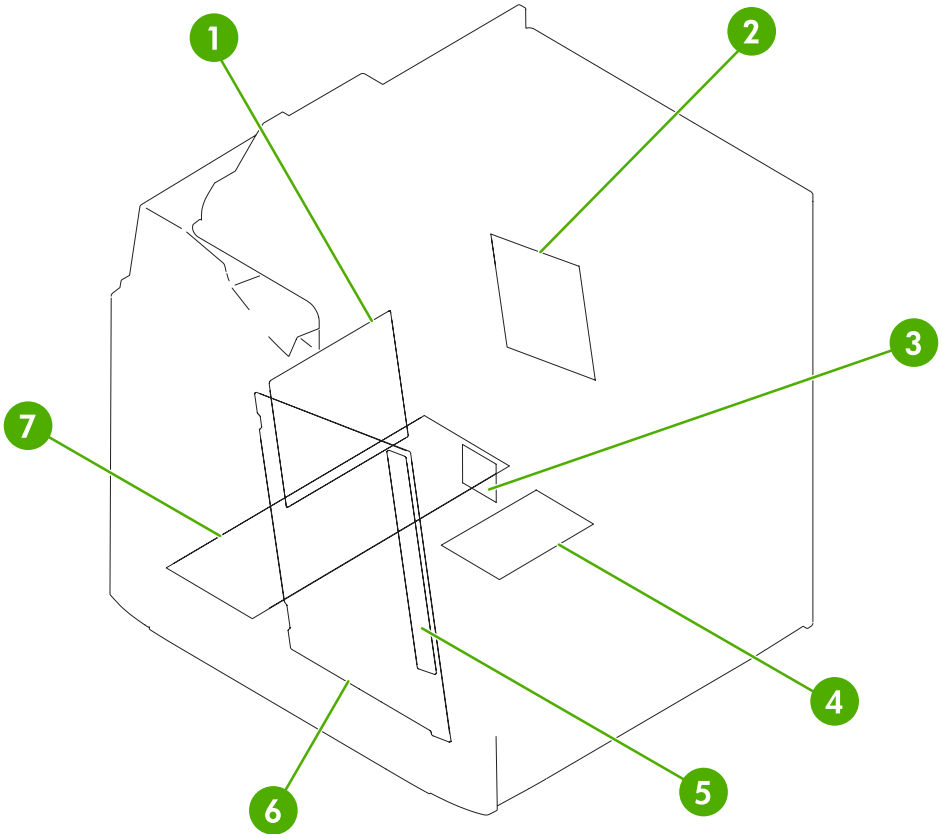


Figure 8-30 PCB assembly

Table 8-31 PCB assembly

Ref	Description	Part number	Qty
1	DC controller PCB assembly	RM1-2346-000CN	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

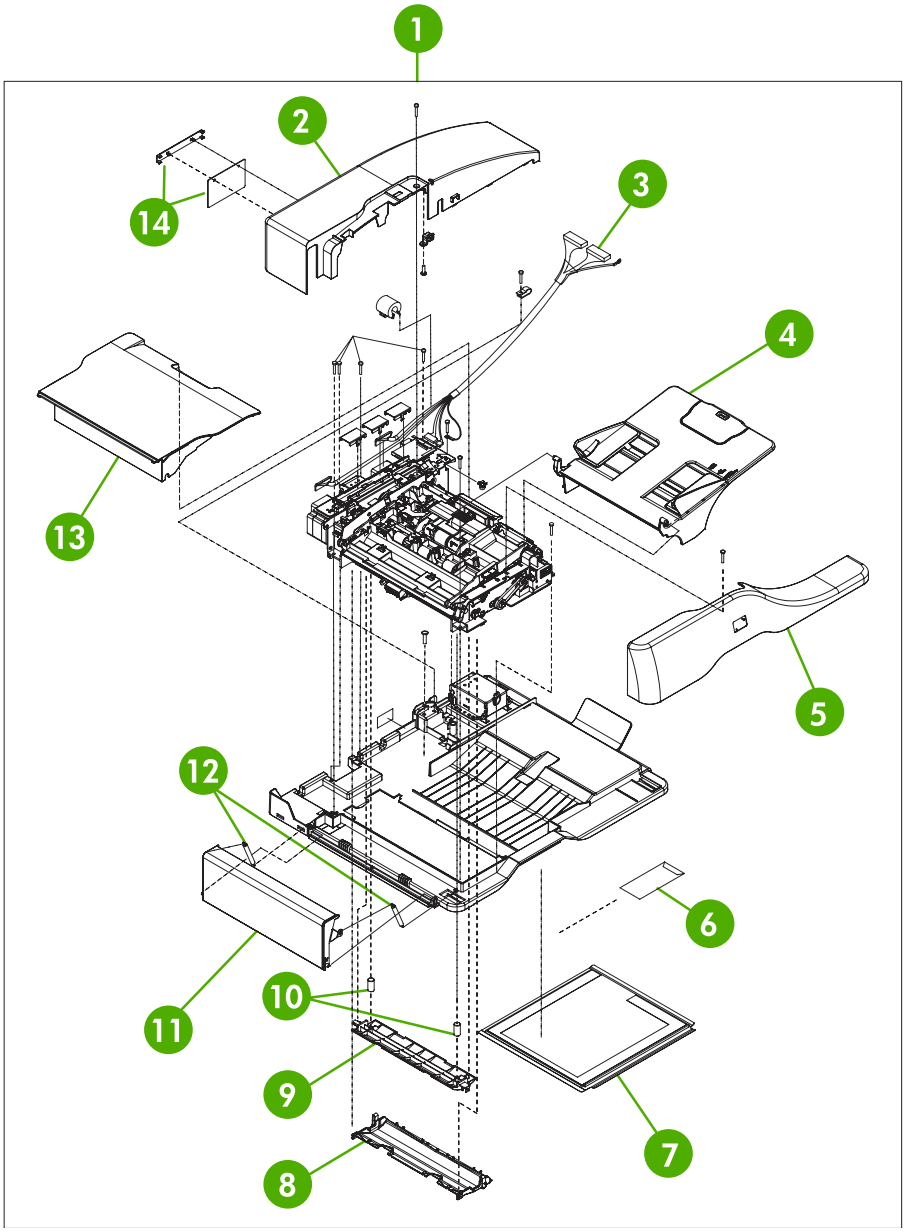


Figure 8-31 ADF assembly

Table 8-32 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

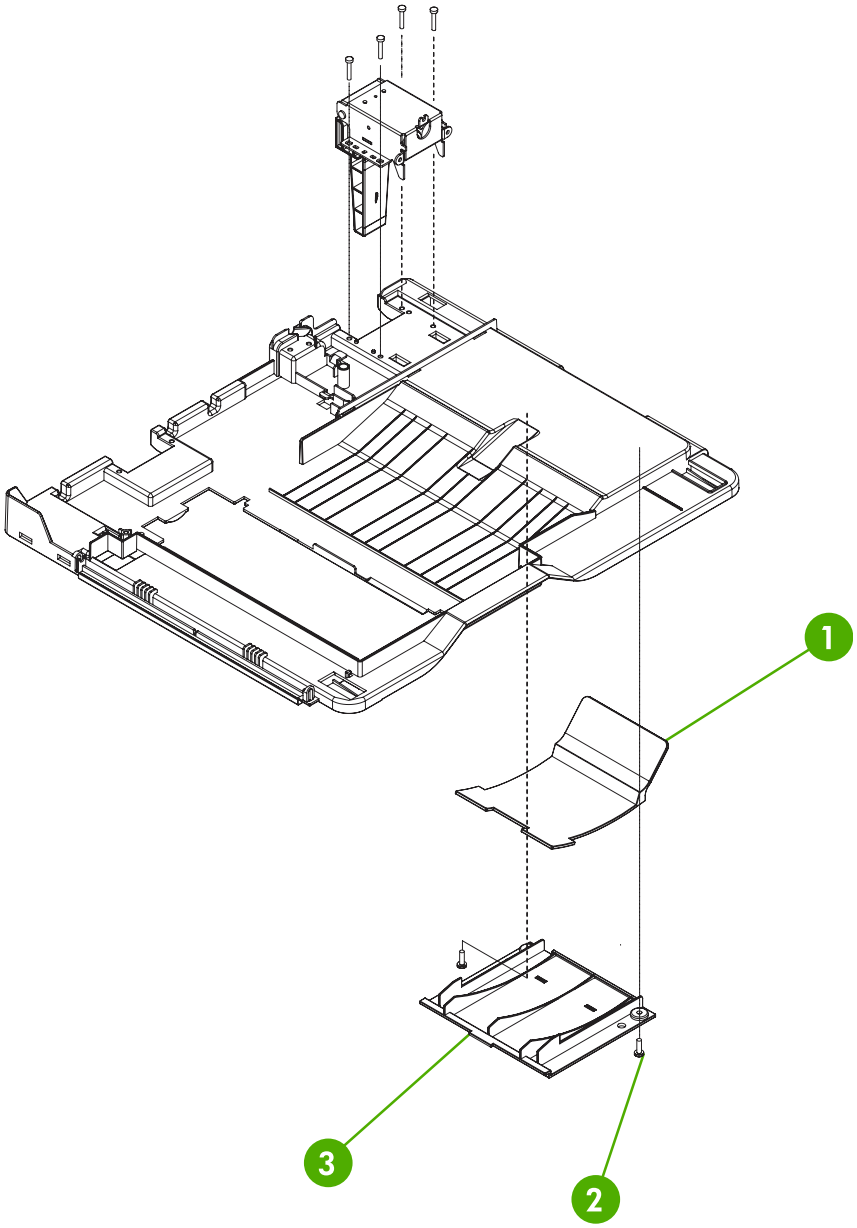


Figure 8-32 ADF internal components (1 of 3)

Table 8-33 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

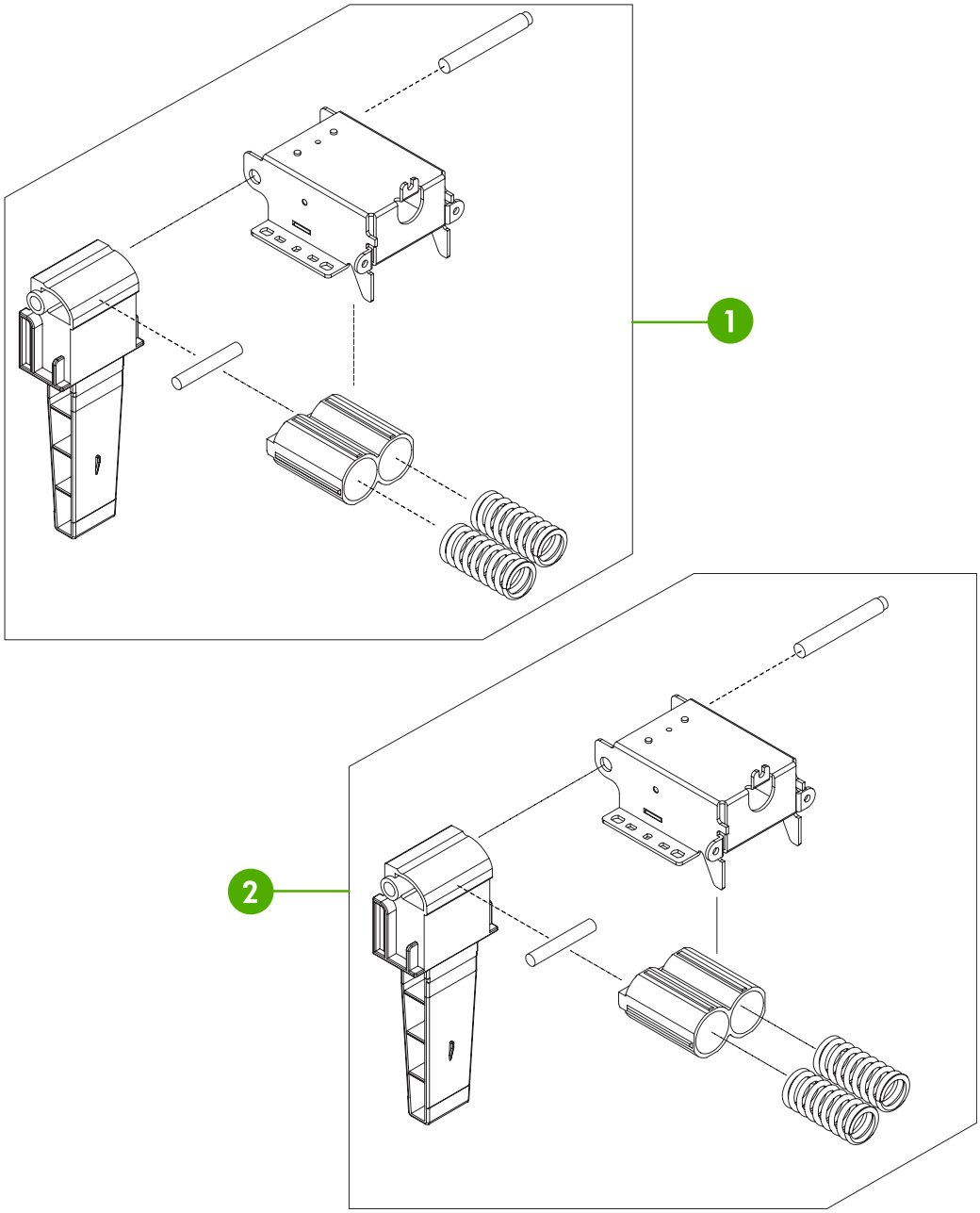


Figure 8-33 ADF internal components (2 of 3)

Table 8-34 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

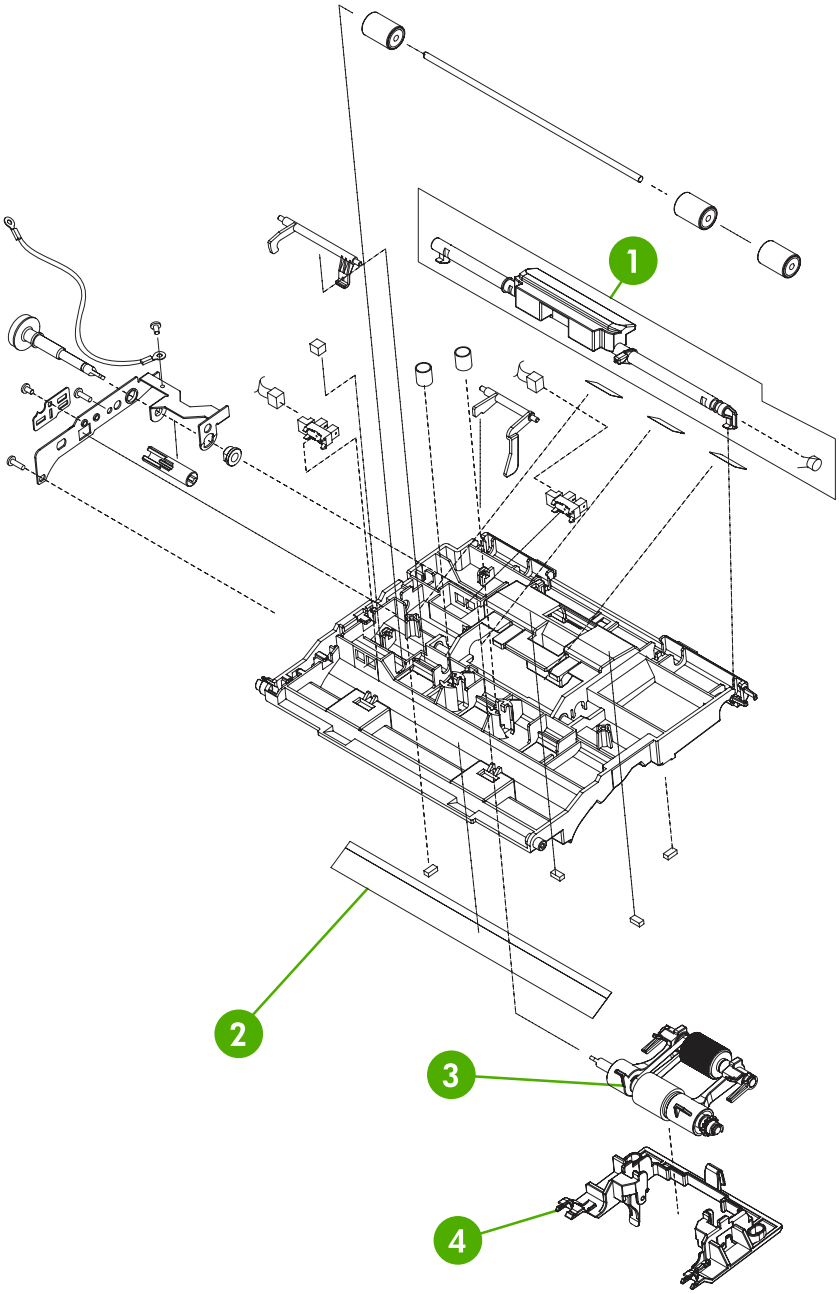


Figure 8-34 ADF internal components (3 of 3)

Table 8-35 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

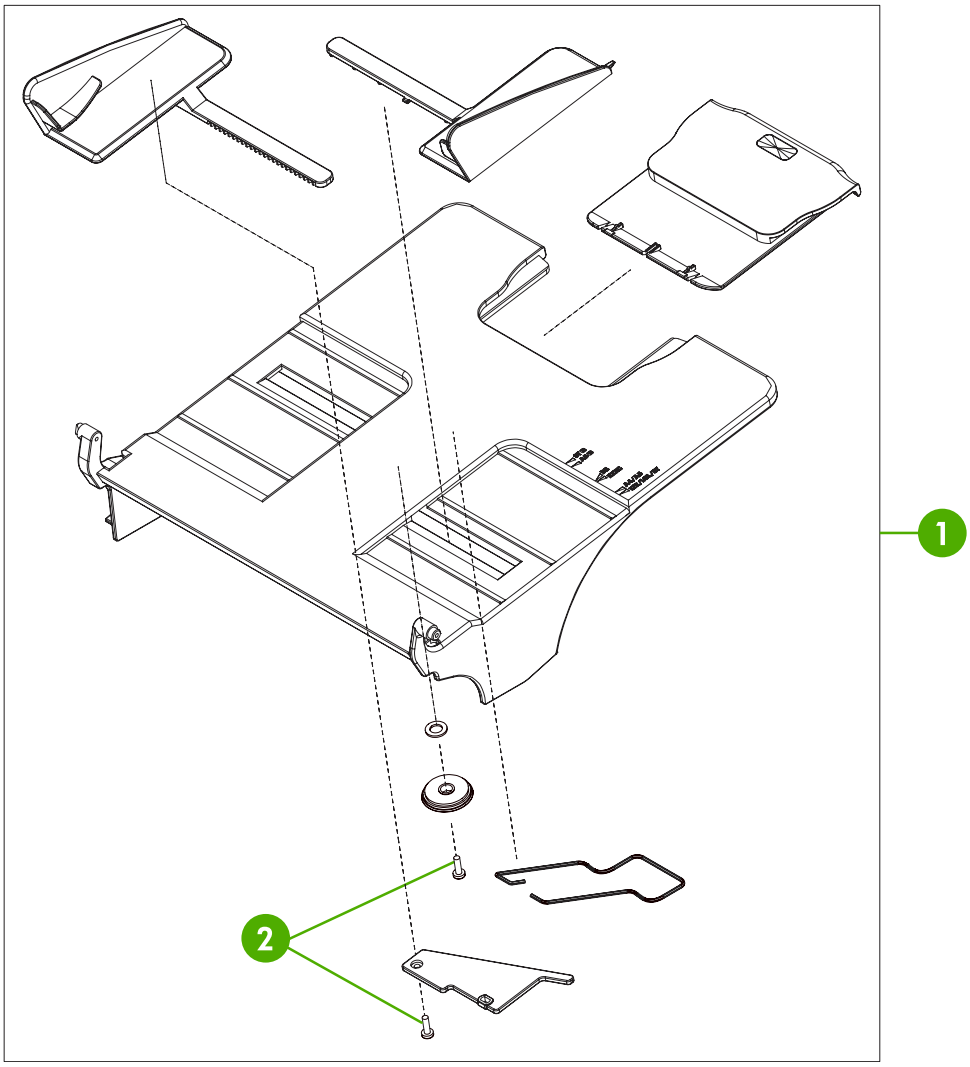


Figure 8-35 ADF input tray

Table 8-36 ADF input tray

Ref	Description	Part number	Qty
1	ADF input tray assembly	PF2282K042NI	1
2	ADF button screw M3x8	IR4041P021NI	2

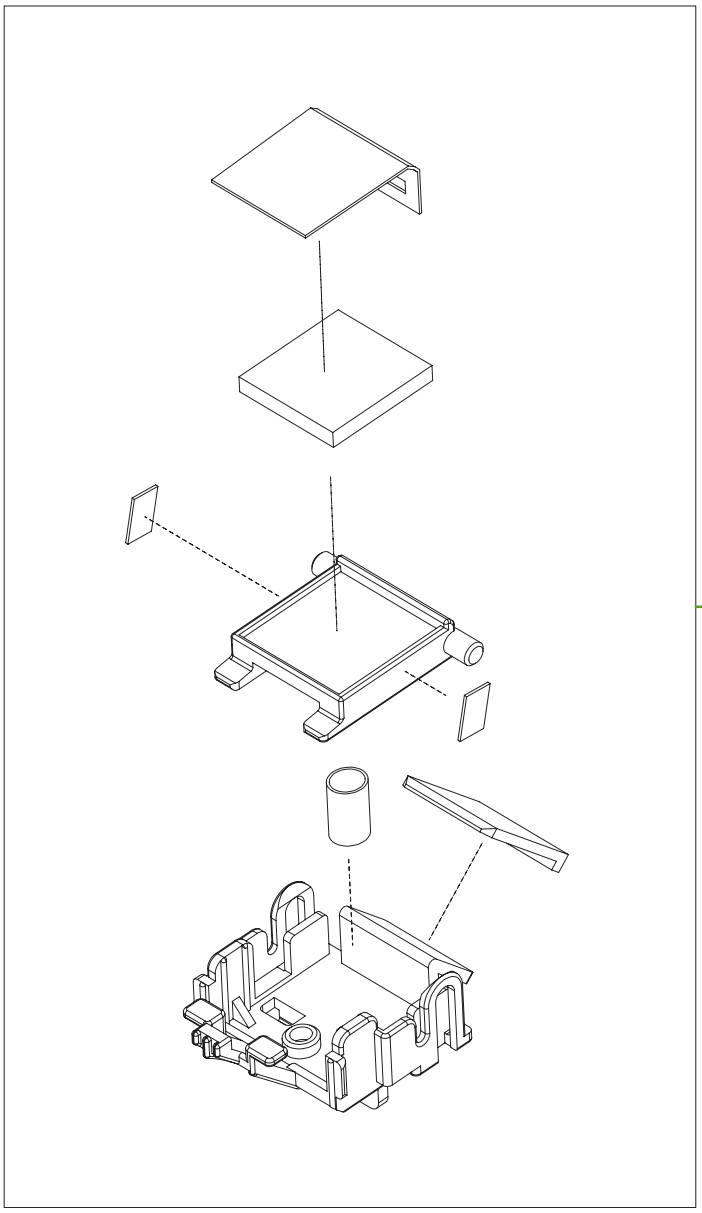


Figure 8-36 ADF separation pad

Table 8-37 ADF separation pad

Ref	Description	Part number	Qty
1	ADF separation pad assembly	PF2282K035NI	1

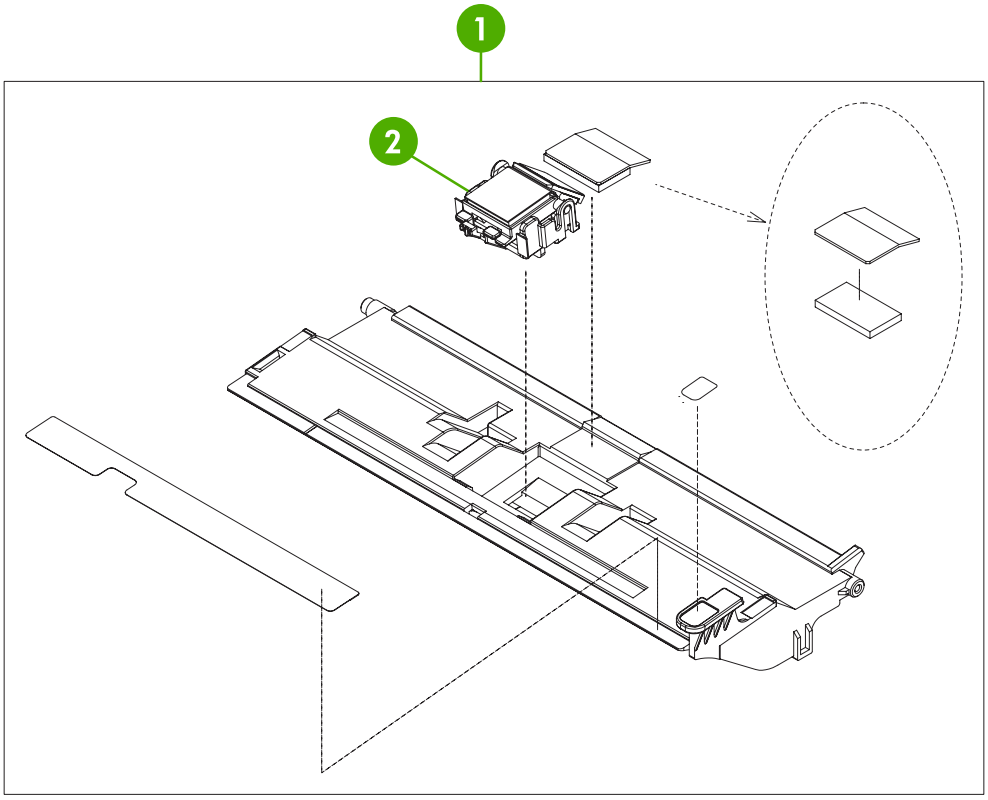


Figure 8-37 ADF separation pad case

Table 8-38 ADF separation pad case

Ref	Description	Part number	Qty
1	ADF upper paper path assembly	PF2282K034NI	1
2	ADF separation pad assembly	PF2282K035NI	1

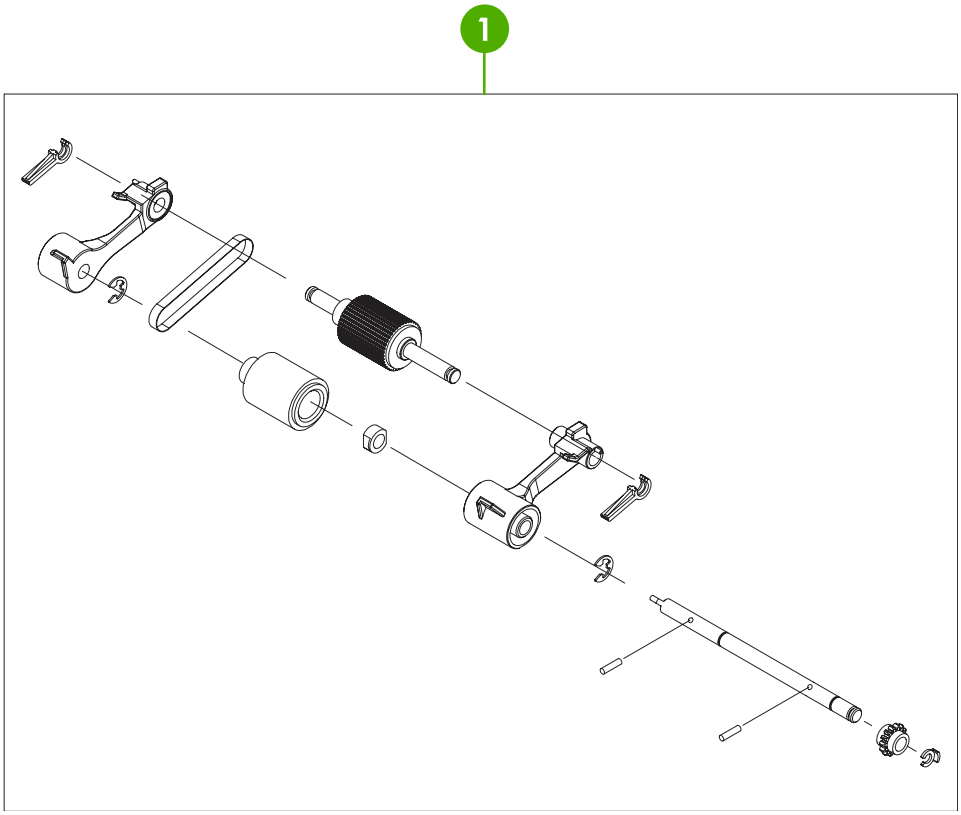


Figure 8-38 ADF pickup-roller assembly

Table 8-39 ADF pickup-roller assembly

Ref	Description	Part number	Qty
1	ADF pickup roller assembly	PF2282K039NI	1

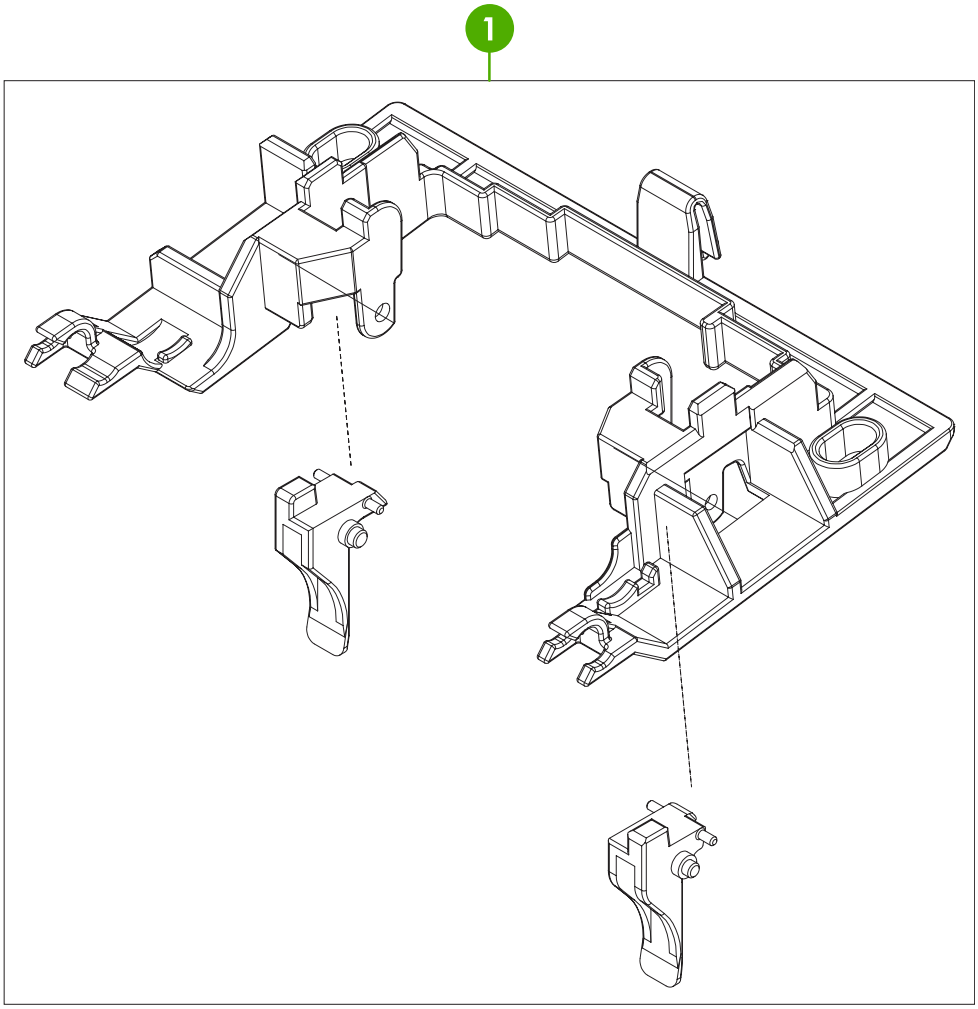


Figure 8-39 ADF pickup-roller cover

Table 8-40 ADF pickup-roller cover

Ref	Description	Part number	Qty
1	ADF pickup roller cover assembly	PF2282K040NI	1

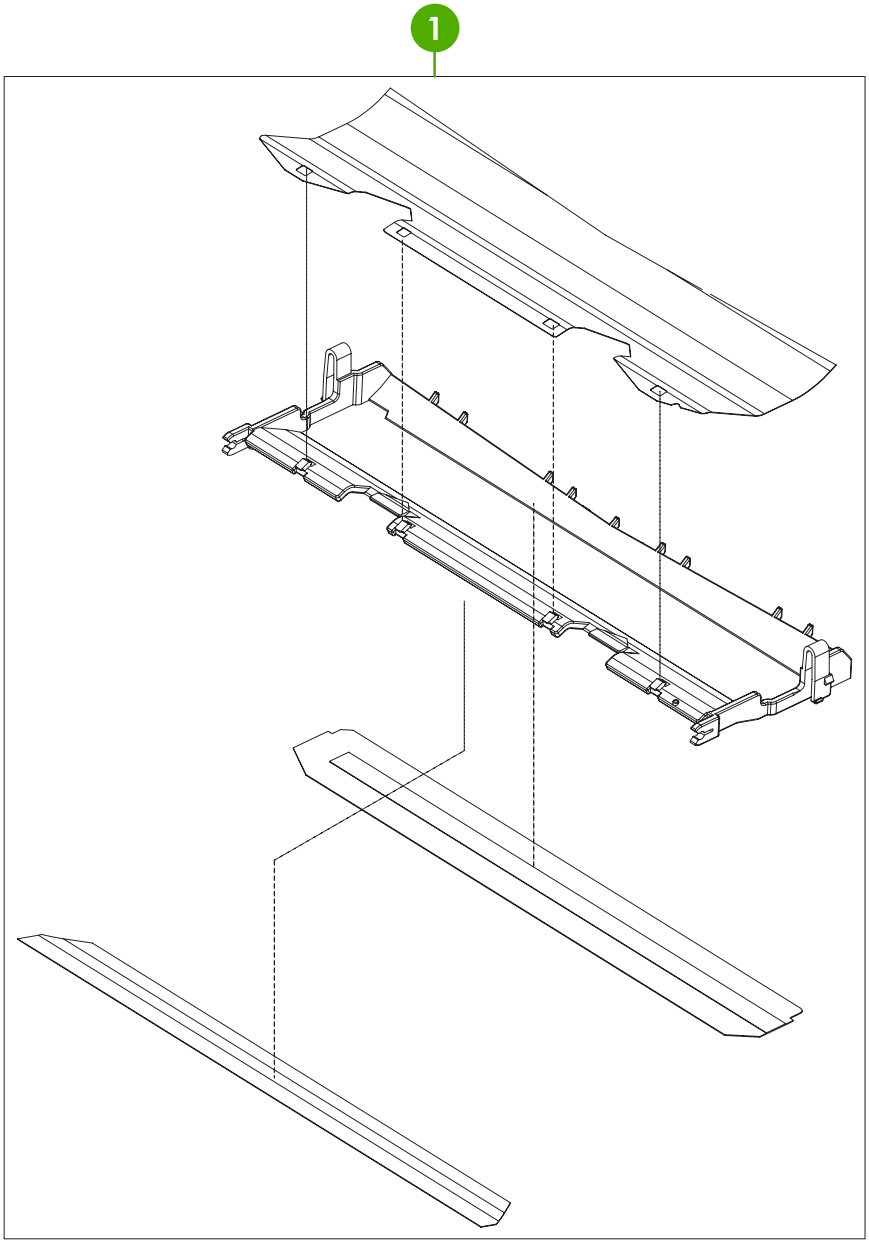


Figure 8-40 ADF mylar holder assembly

Table 8-41 ADF mylar holder assembly

Ref	Description	Part number	Qty
1	ADF mylar holder assembly	PF2282K043NI	1

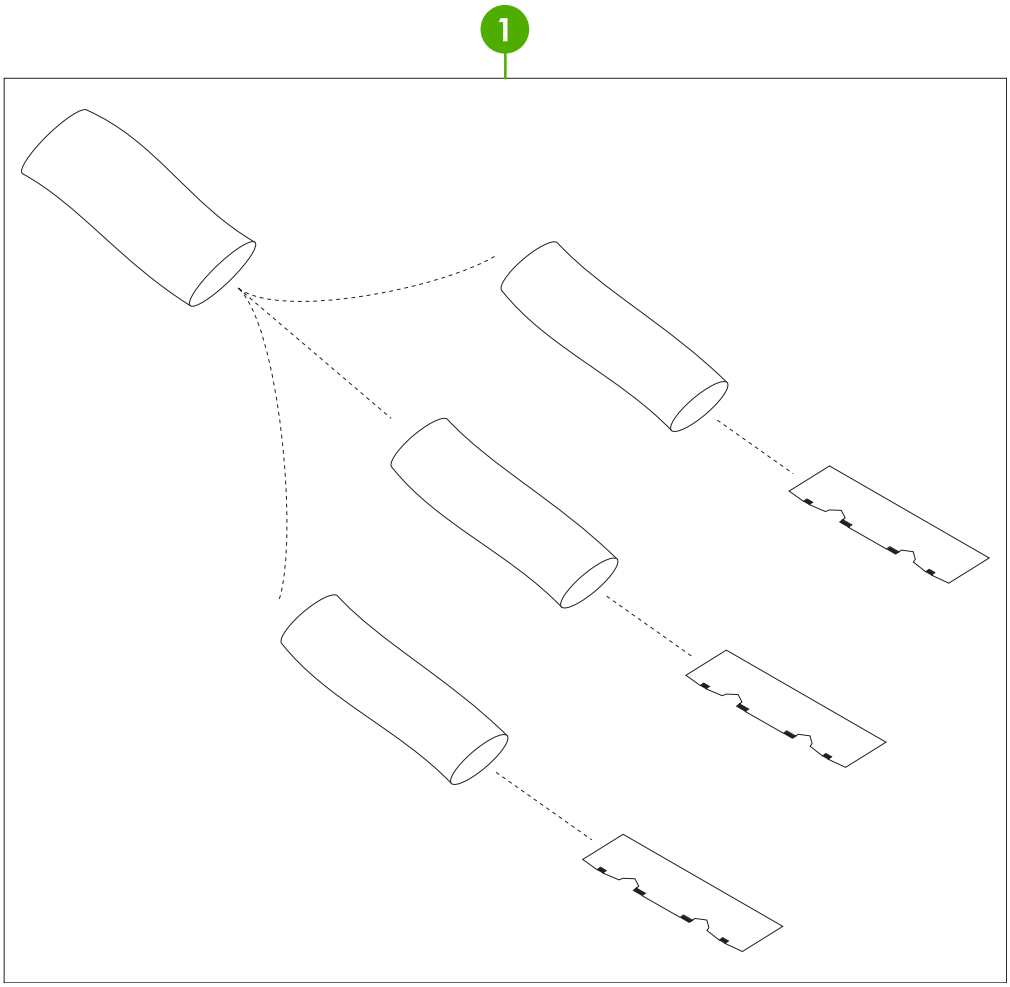


Figure 8-41 ADF mylar replacement kit

Table 8-42 ADF mylar replacement kit

Ref	Description	Part number	Qty
1	ADF mylar replacement kit	Q6496-67901	1

Scanner components

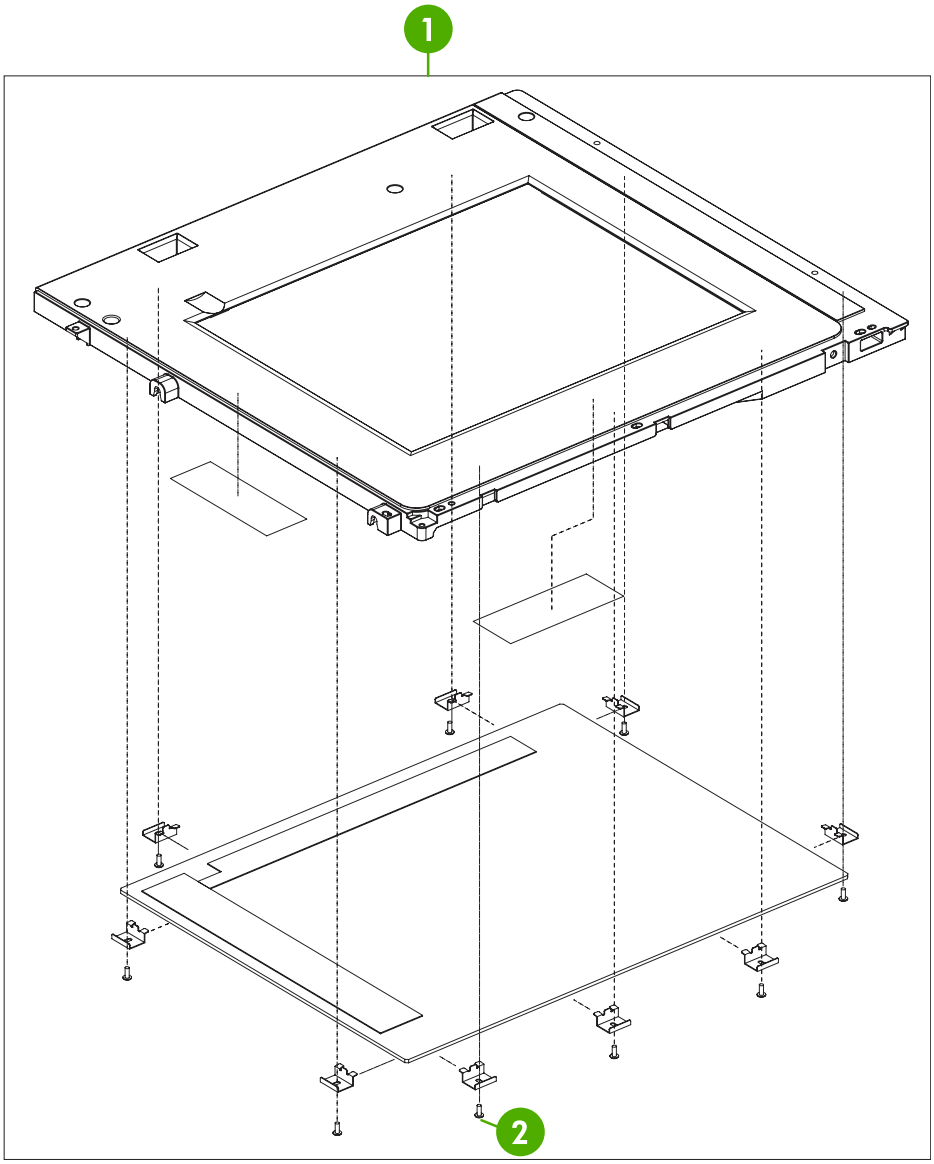


Figure 8-42 Scanner glass and cover

Table 8-43 Scanner glass and cover

Ref	Description	Part number	Qty
1	Scanner glass and cover	IR4054K111NI	1
2	Scanner screw M3x8	IR4041P021NI	9

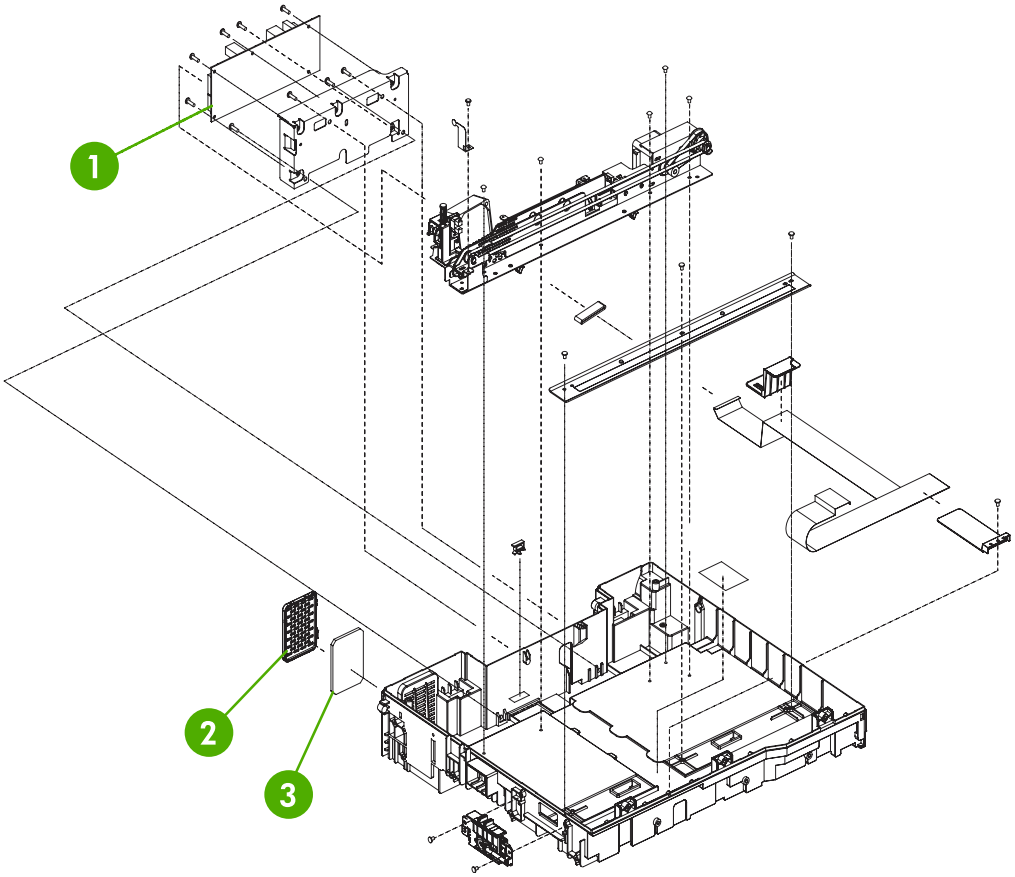


Figure 8-43 Scanner base components

Table 8-44 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

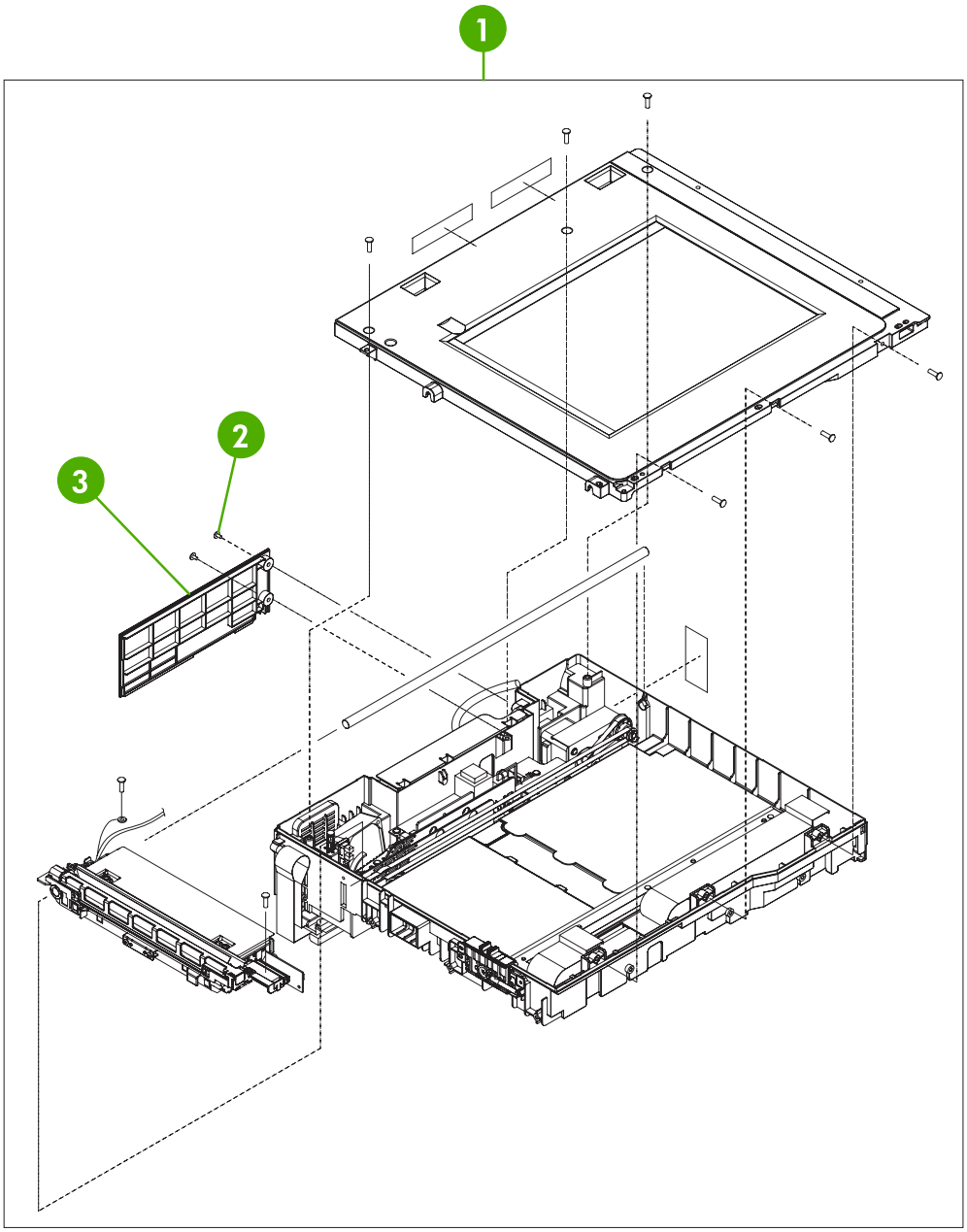


Figure 8-44 Scanner flatbed unit assembly

Table 8-45 Scanner flatbed unit assembly

Ref	Description	Part number	Qty
1	Scanner flatbed unit assembly	IR4054-SVPNI	1
2	Scanner screw flatbed	040100FNBBNI	?
3	Scanner rear cover	IR4054P216NI	1

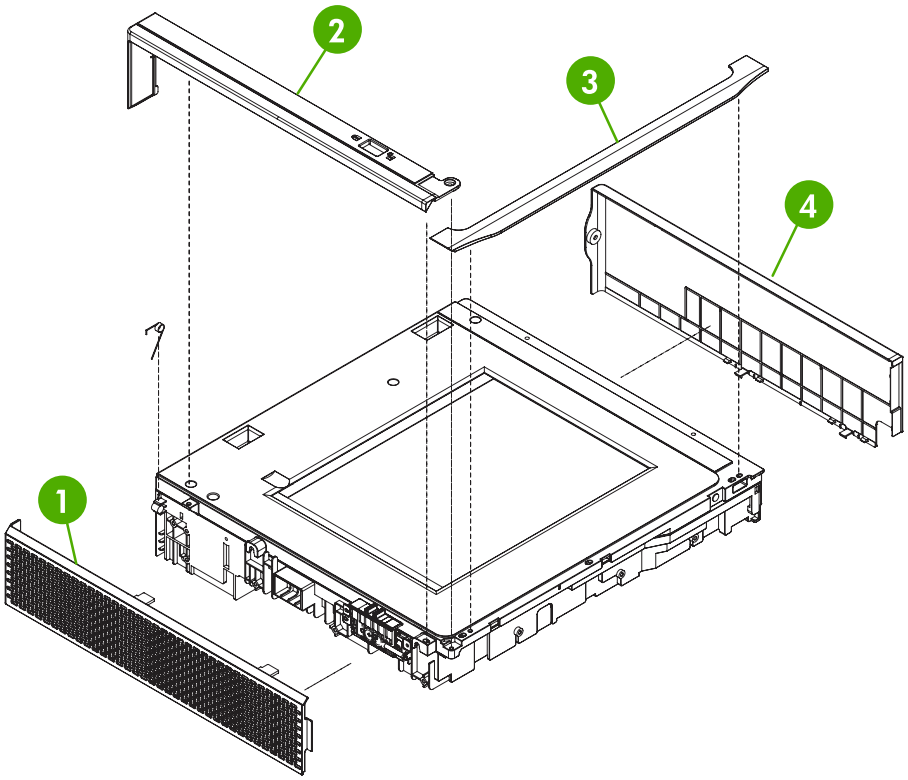


Figure 8-45 Scanner covers

Table 8-46 Scanner covers

Ref	Description	Part number	Qty
1	Scanner left cover	IR4054P226NI	1
2	Scanner cartridge lock cover	IR4041P214NI	1
3	Scanner top cover flatbed flange	IR4054P215NI	1
4	Scanner right cover assembly	IR4054K100NI	1

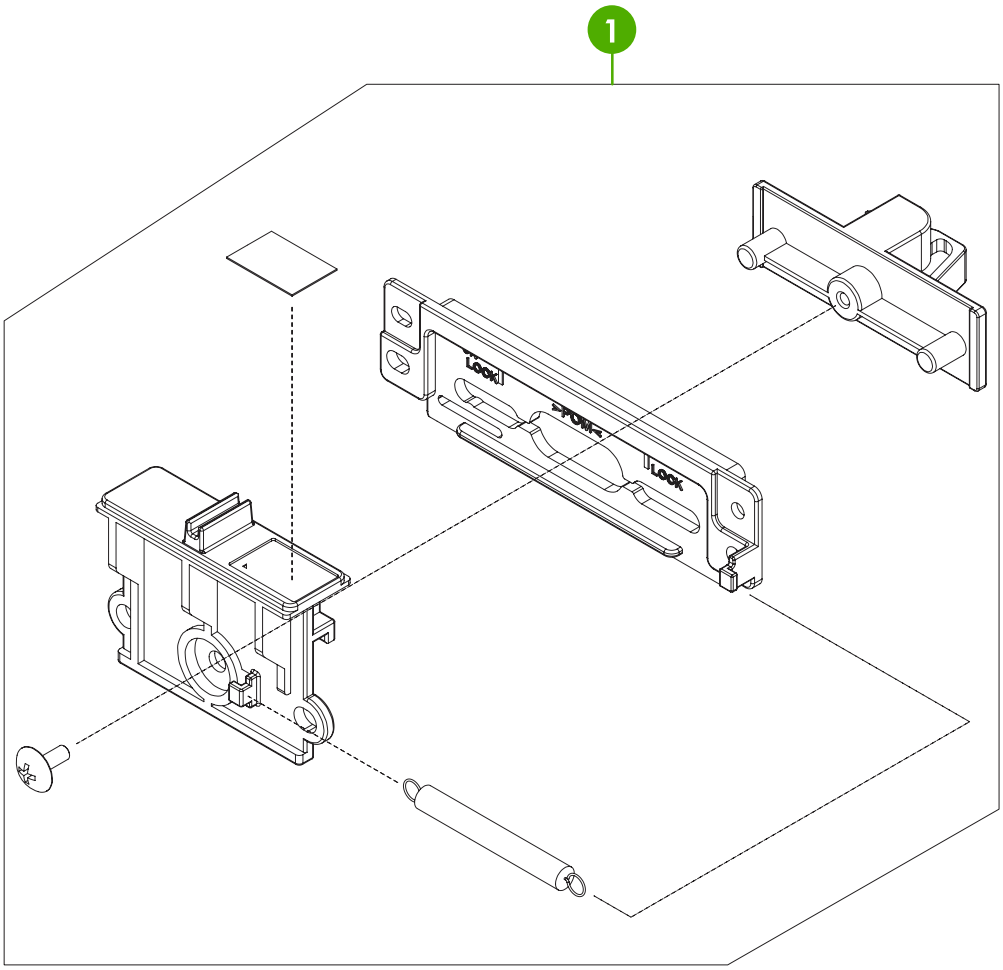


Figure 8-46 Scanner carriage lock assembly

Table 8-47 Scanner carriage lock assembly

Ref	Description	Part number	Qty
1	Scanner cartridge lock assembly	IR4041K102NI	1

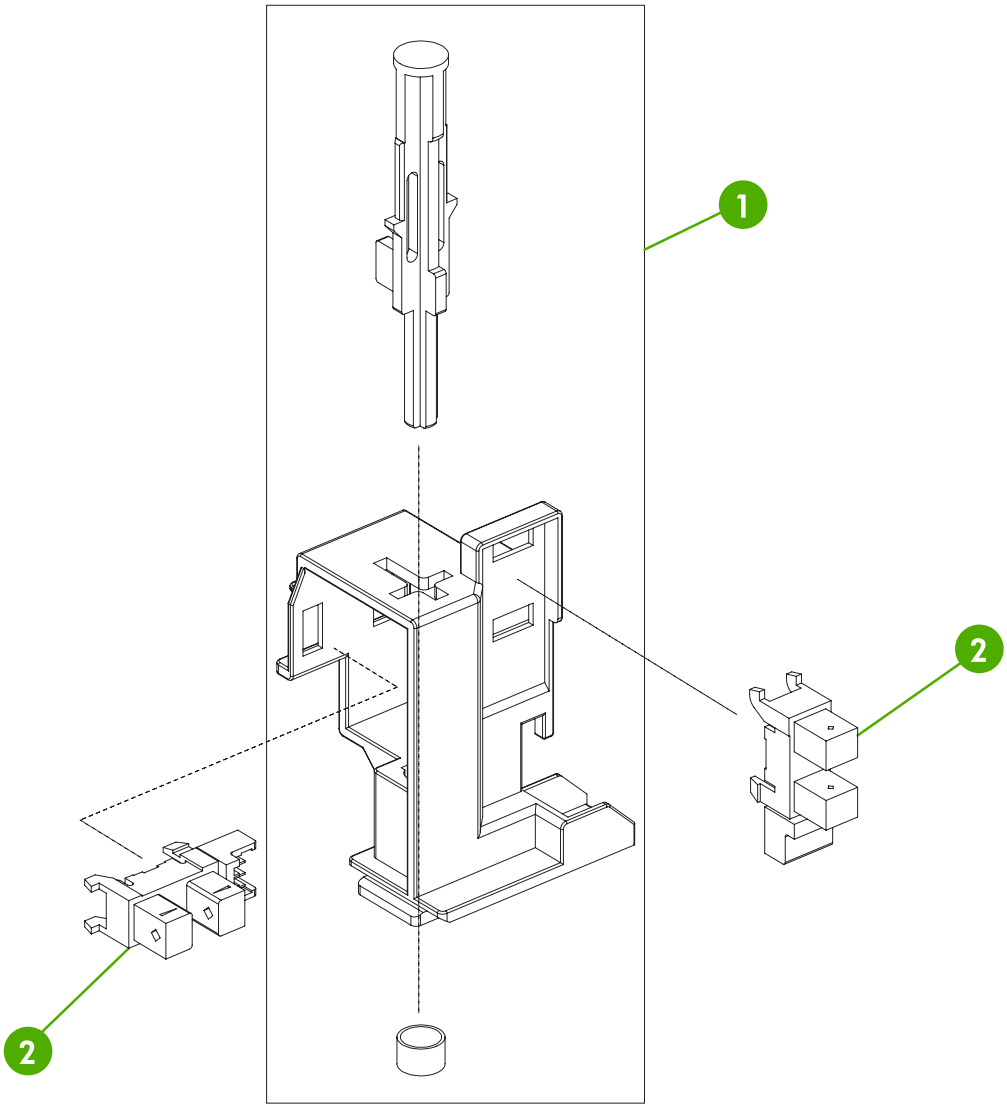


Figure 8-47 Scanner-open sensor assembly

Table 8-48 Scanner-open sensor assembly

Ref	Description	Part number	Qty
1	Scanner open sensor holder assembly	IR4041K105NI	1
2	Scanner open sensor	E314000619NI	2

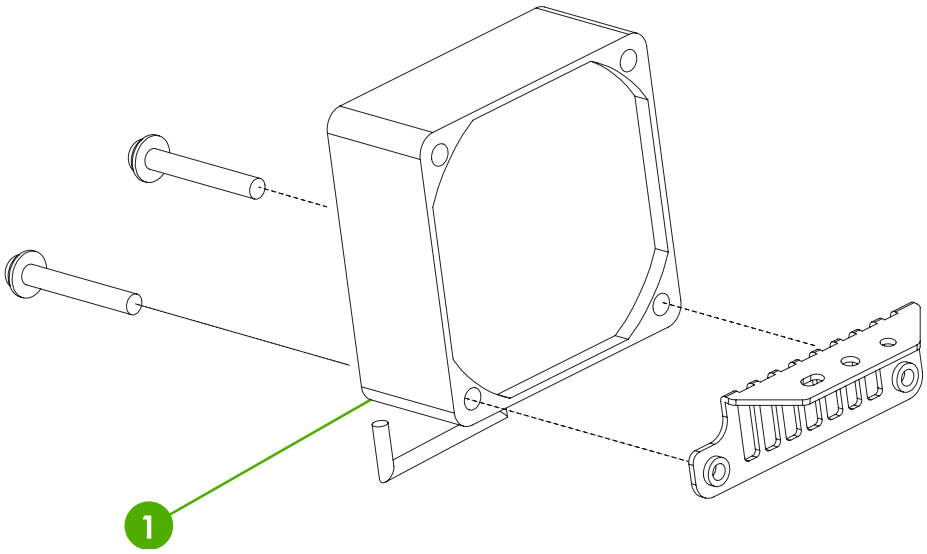


Figure 8-48 Scanner motor fan

Table 8-49 Scanner motor fan

Ref	Description	Part number	Qty
1	Scanner motor fan	IR4041P521NI	1

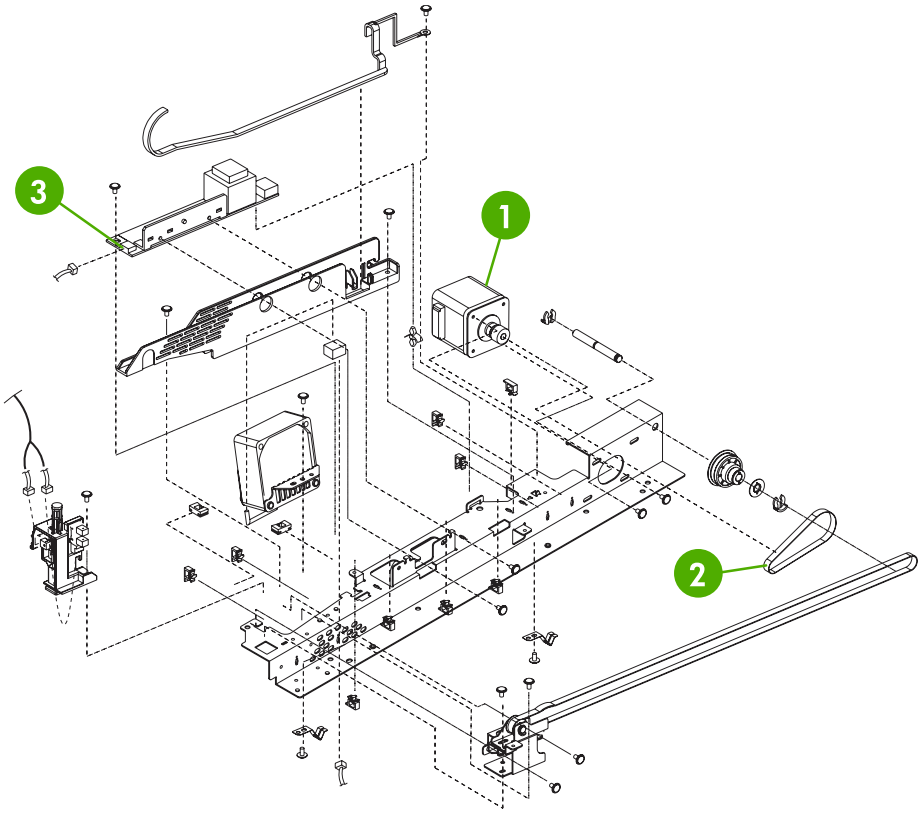


Figure 8-49 Scanner motor

Table 8-50 Scanner motor

Ref	Description	Part number	Qty
1	Scanner motor	IR4041K520NI	1
2	Scanner motor belt	INS-BLT00290NI	1
3	Scanner lamp inverter	IR4041P522NI	1

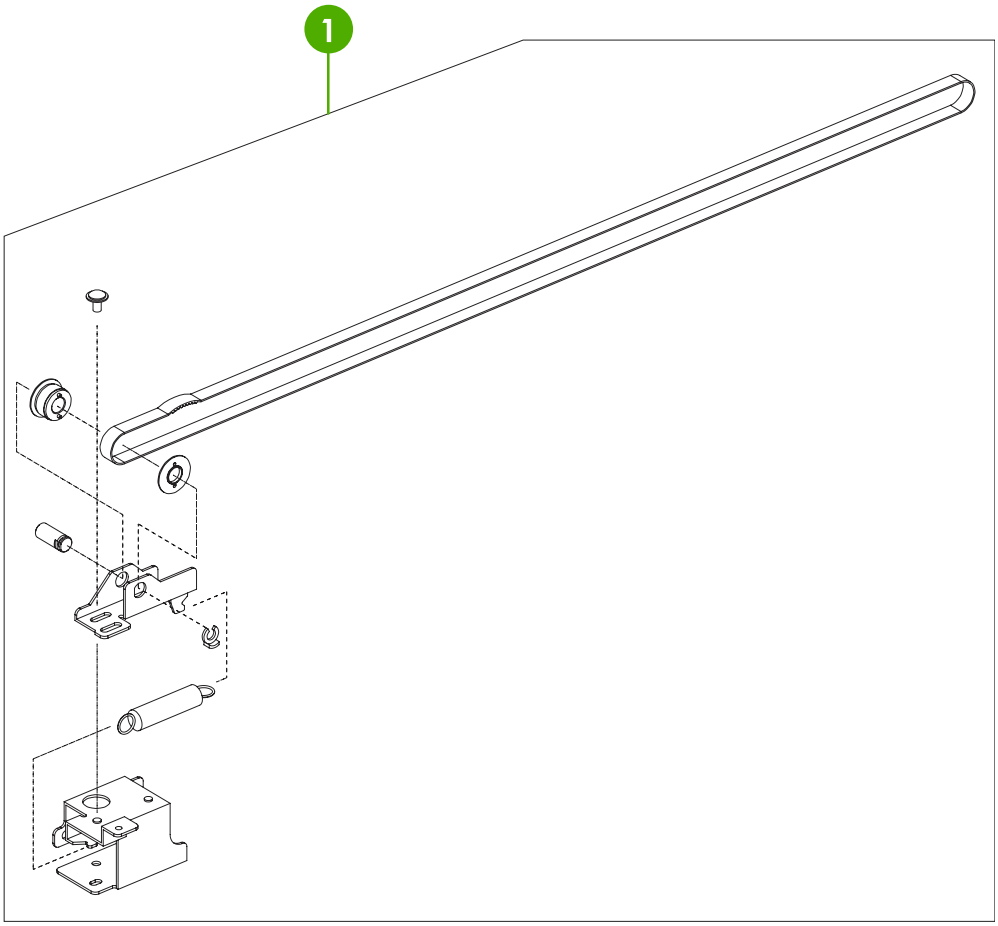


Figure 8-50 Scanner belt and pulley assembly

Table 8-51 Scanner belt and pulley assembly

Ref	Description	Part number	Qty
1	Scanner belt and pulley assembly	IR4041K107NI	1

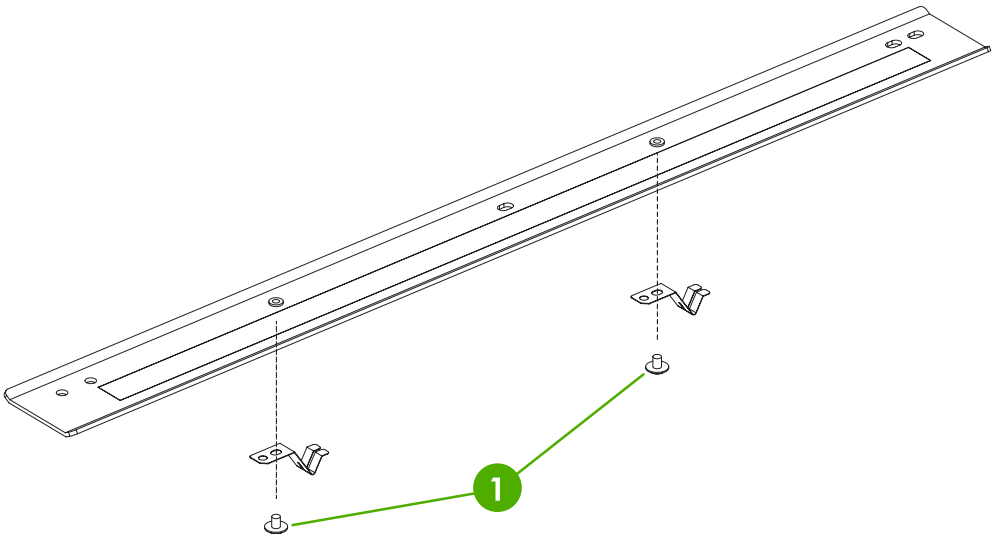


Figure 8-51 Scanner slide rail

Table 8-52 Scanner slide rail

Ref	Description	Part number	Qty
1	Scanner slide rail and screw	030040FNITNI	1

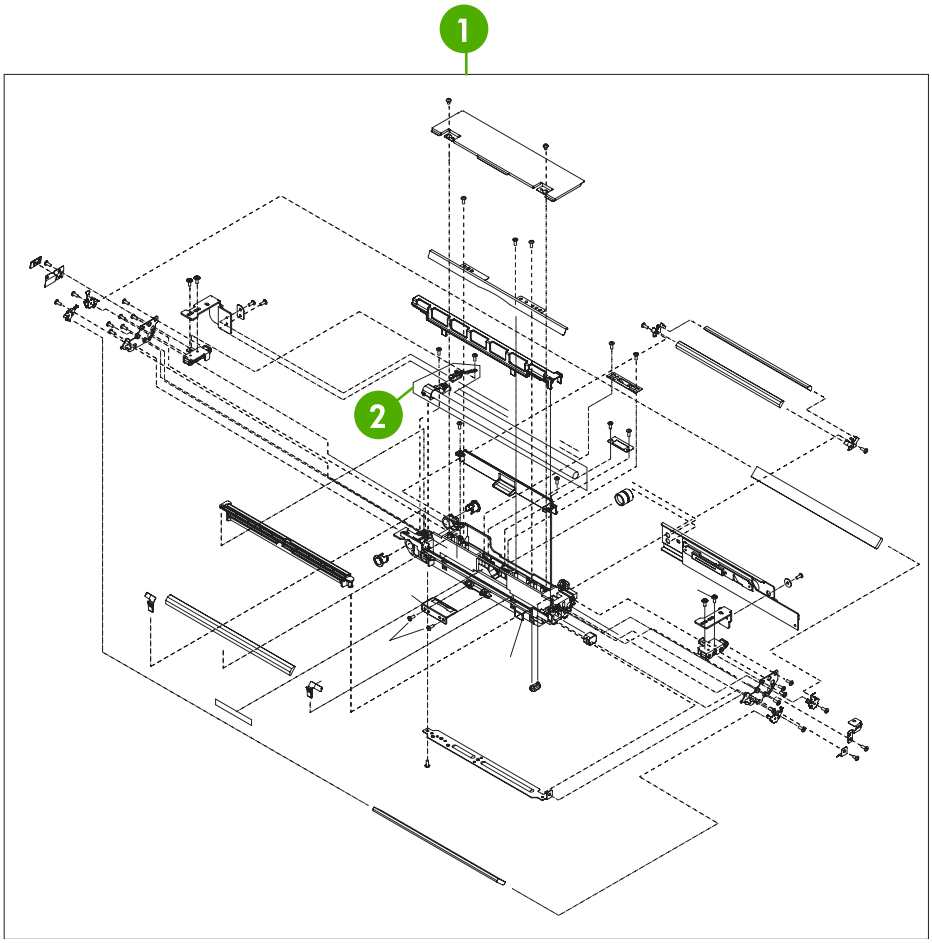


Figure 8-52 Scanner optical assembly

Table 8-53 Scanner optical assembly

Ref	Description	Part number	Qty
1	Scanner optical assembly	IR4041K121NI	1
2	Scanner lamp	IR4041K151NI	1

2 X 500-sheet feeder components

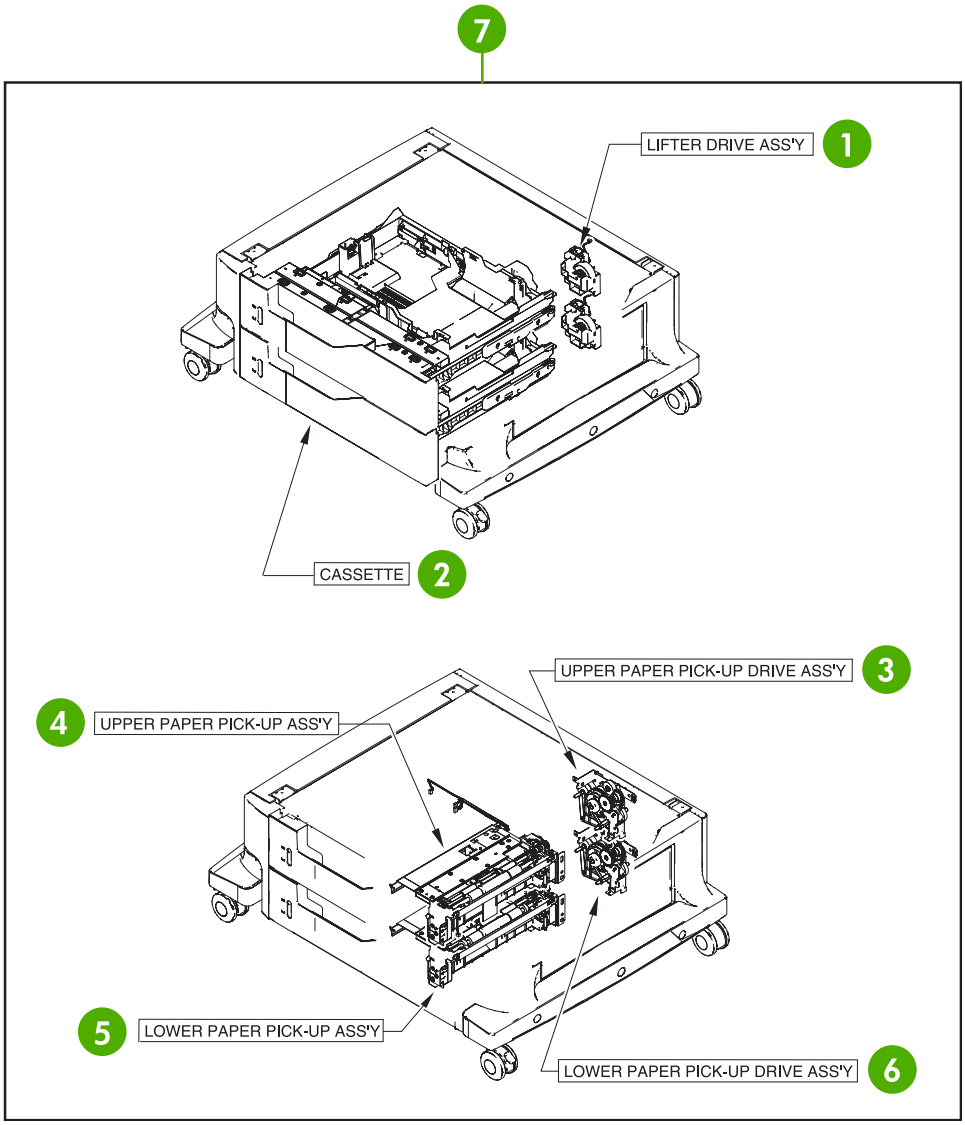


Figure 8-53 2 X 500-sheet paper feeder assembly locations

Item	Assembly name	Details	Part number
1	Lifter-drive assembly	See Figure 8-57 2 X 500-paper feeder lifter drive assembly on page 818.	RM1–1750–000CN
2	Cassette	See Figure 8-60 2 X 500-sheet paper feeder on page 824.	RM1–2219–000CN
3	Upper paper pickup assembly	See Figure 8-61 Upper paper pickup assembly on page 826.	RM1–2232–000CN
4	Upper paper pickup drive assembly	See Figure 8-58 Upper paper pickup drive assembly on page 820.	RM1–2229–000CN

Item	Assembly name	Details	Part number
5	Lower paper pickup assembly	See Figure 8-62 Lower paper pickup assembly on page 828.	RM1–2240–000CN
6	Lower paper pickup drive assembly	See Figure 8-59 Lower paper pickup drive assembly on page 822.	RM1–2238–000CN
7	2 X 500-sheet paper feeder assembly (complete assembly)	See Figure 8-53 2 X 500-sheet paper feeder assembly locations on page 810.	R96–5062–000CN

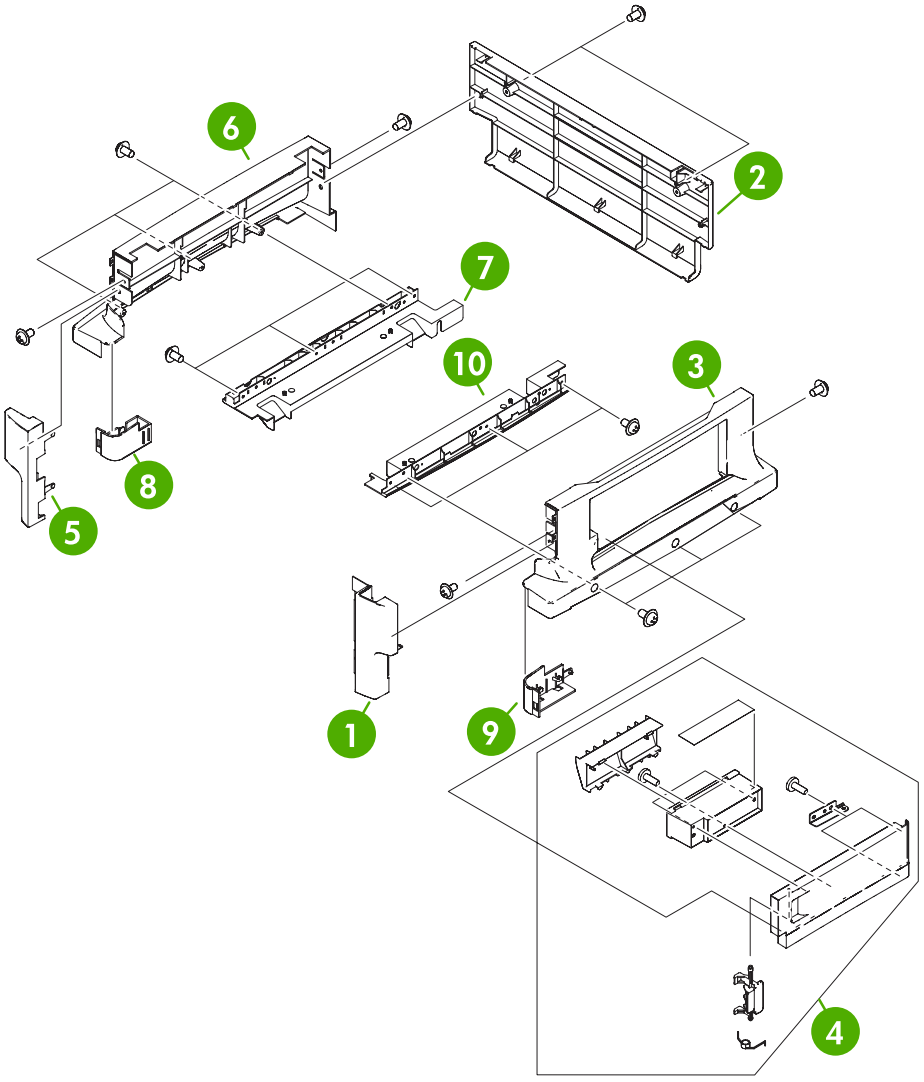


Figure 8-54 2 X 500-sheet feeder external components

Table 8-54 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

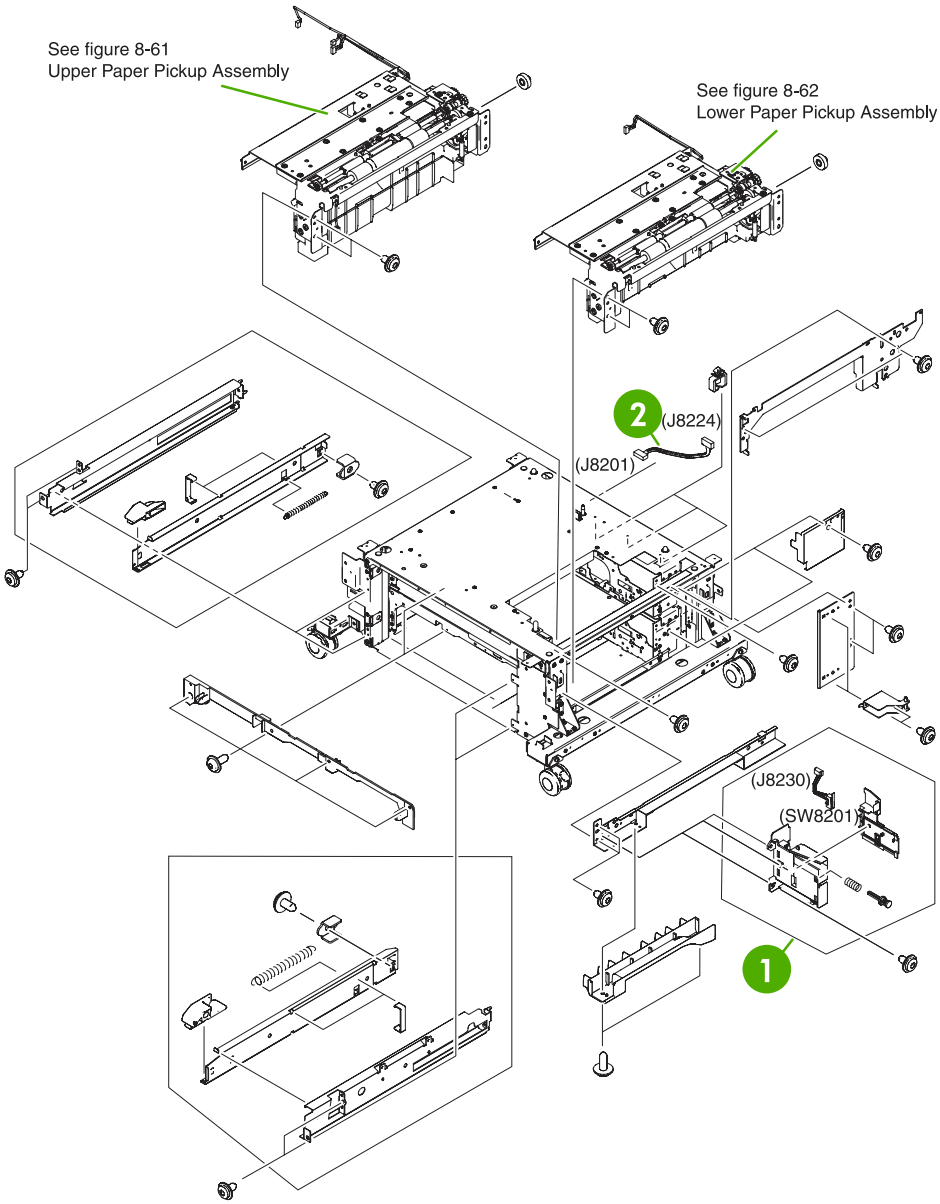


Figure 8-55 2 X 500-sheet paper feeder internal components (1 of 2)

Table 8-55 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

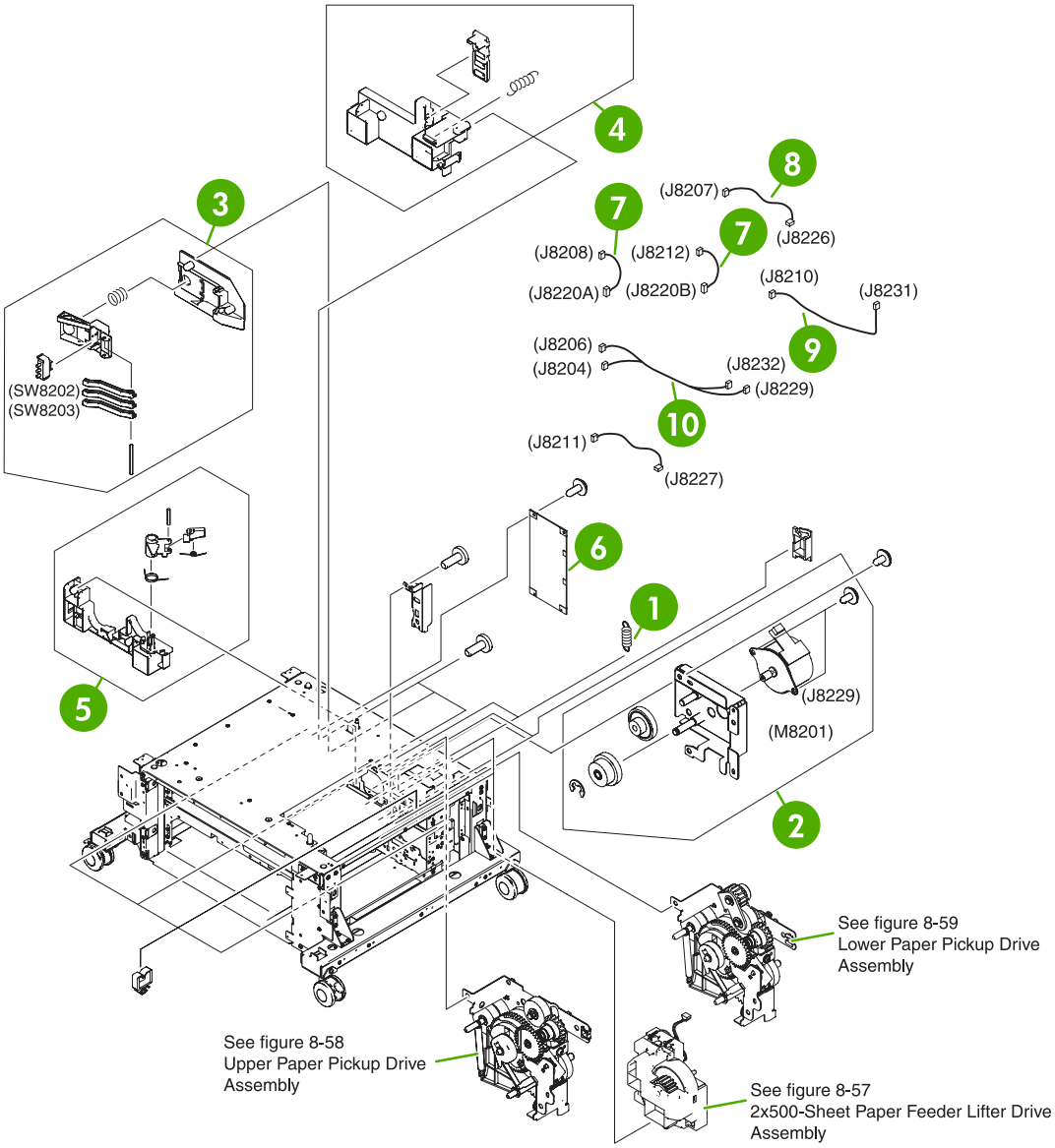


Figure 8-56 2 X 500-sheet paper feeder internal components (2 of 2)

Table 8-56 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

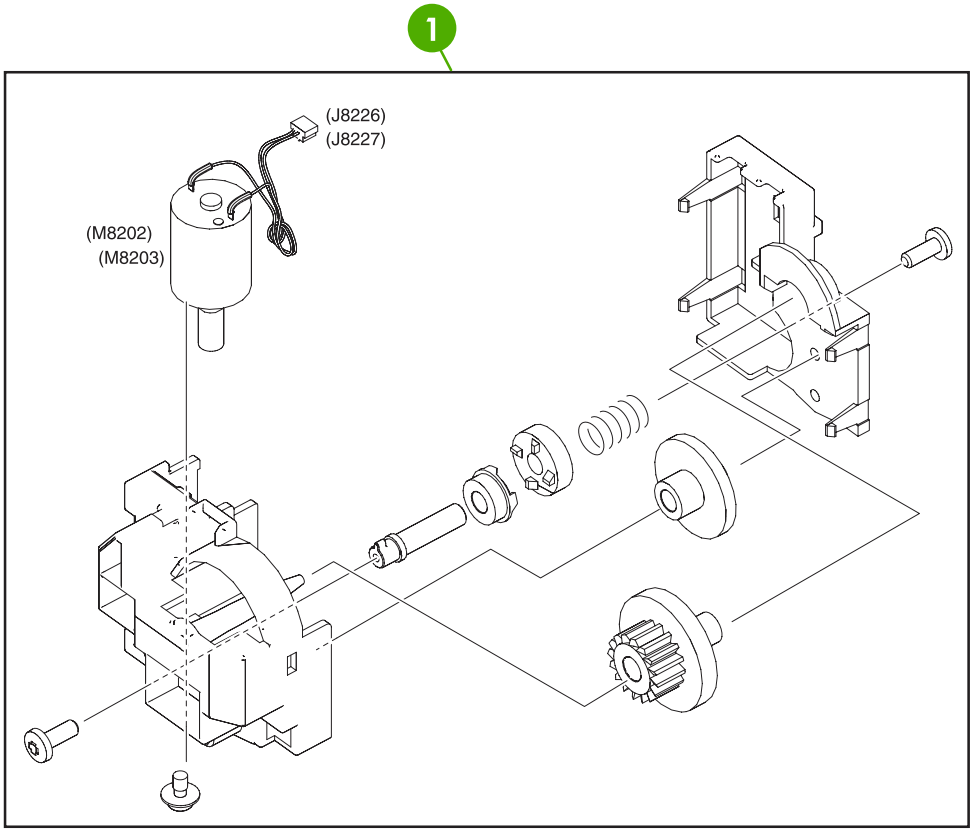


Figure 8-57 2 X 500-paper feeder lifter drive assembly

Table 8-57 500-sheet feeder lifter drive assembly

Ref	Description	Part number	Qty
1	Lifter-drive assembly	RM1-1750-000CN	2

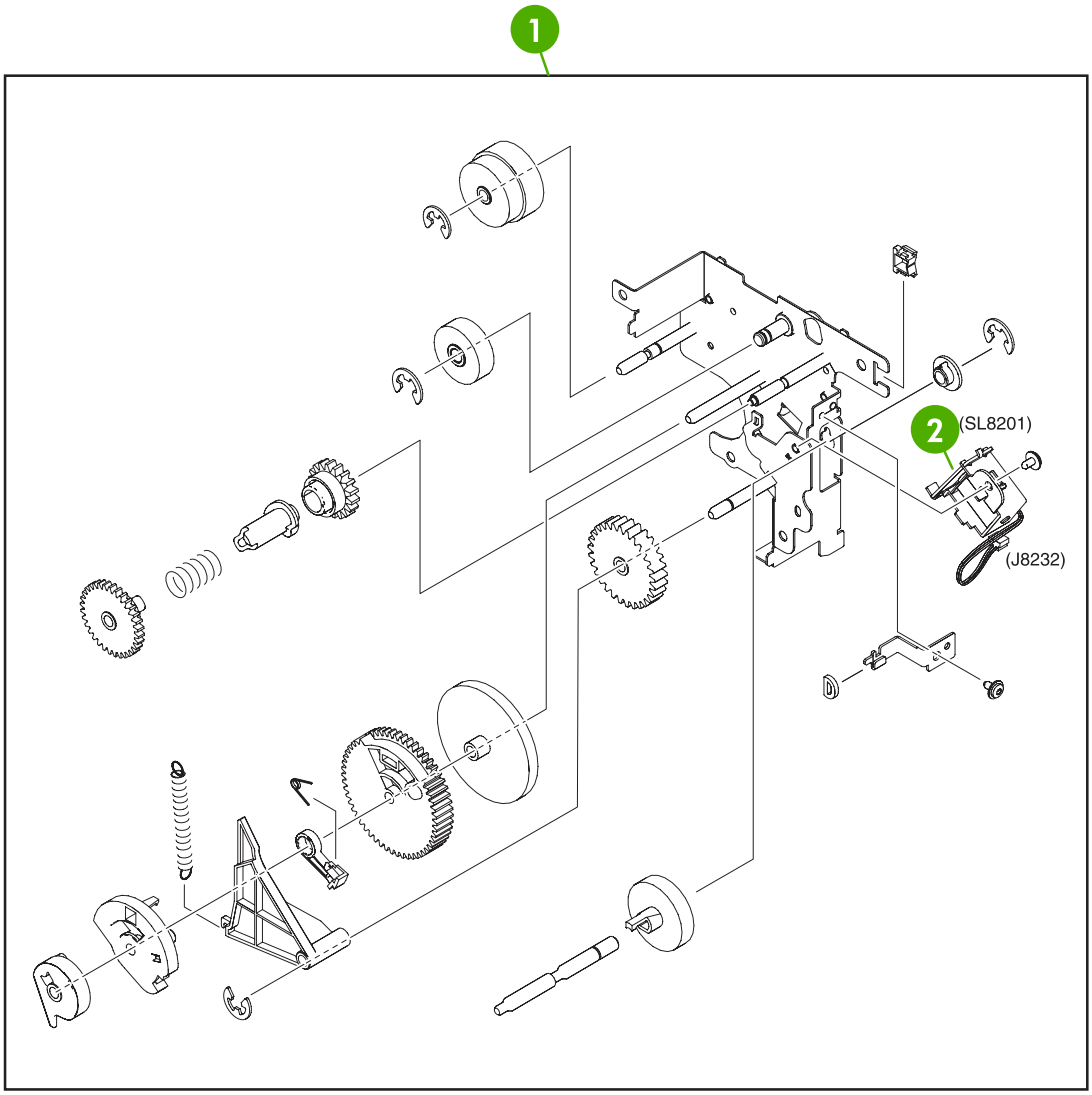


Figure 8-58 Upper paper pickup drive assembly

Table 8-58 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

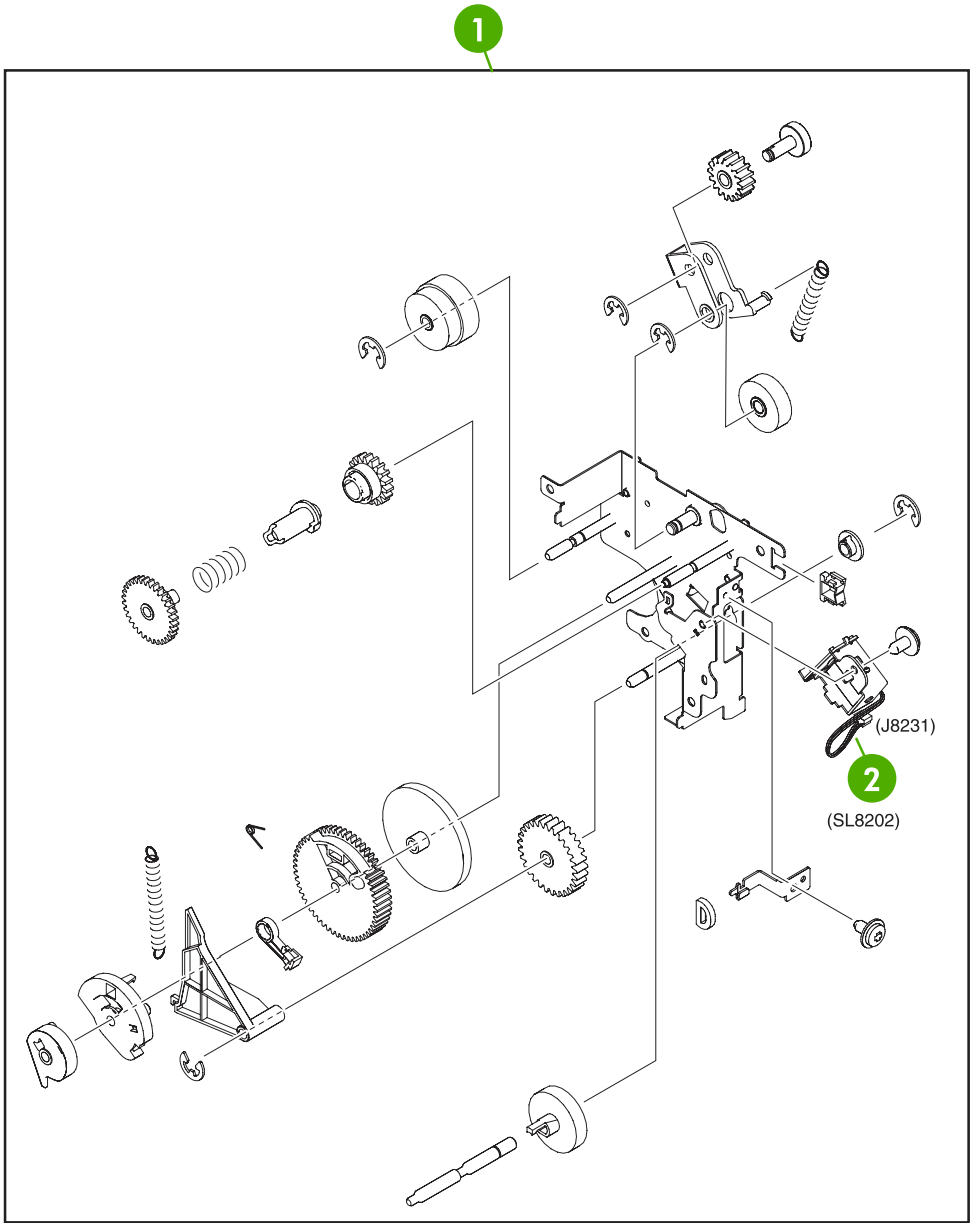


Figure 8-59 Lower paper pickup drive assembly

Table 8-59 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

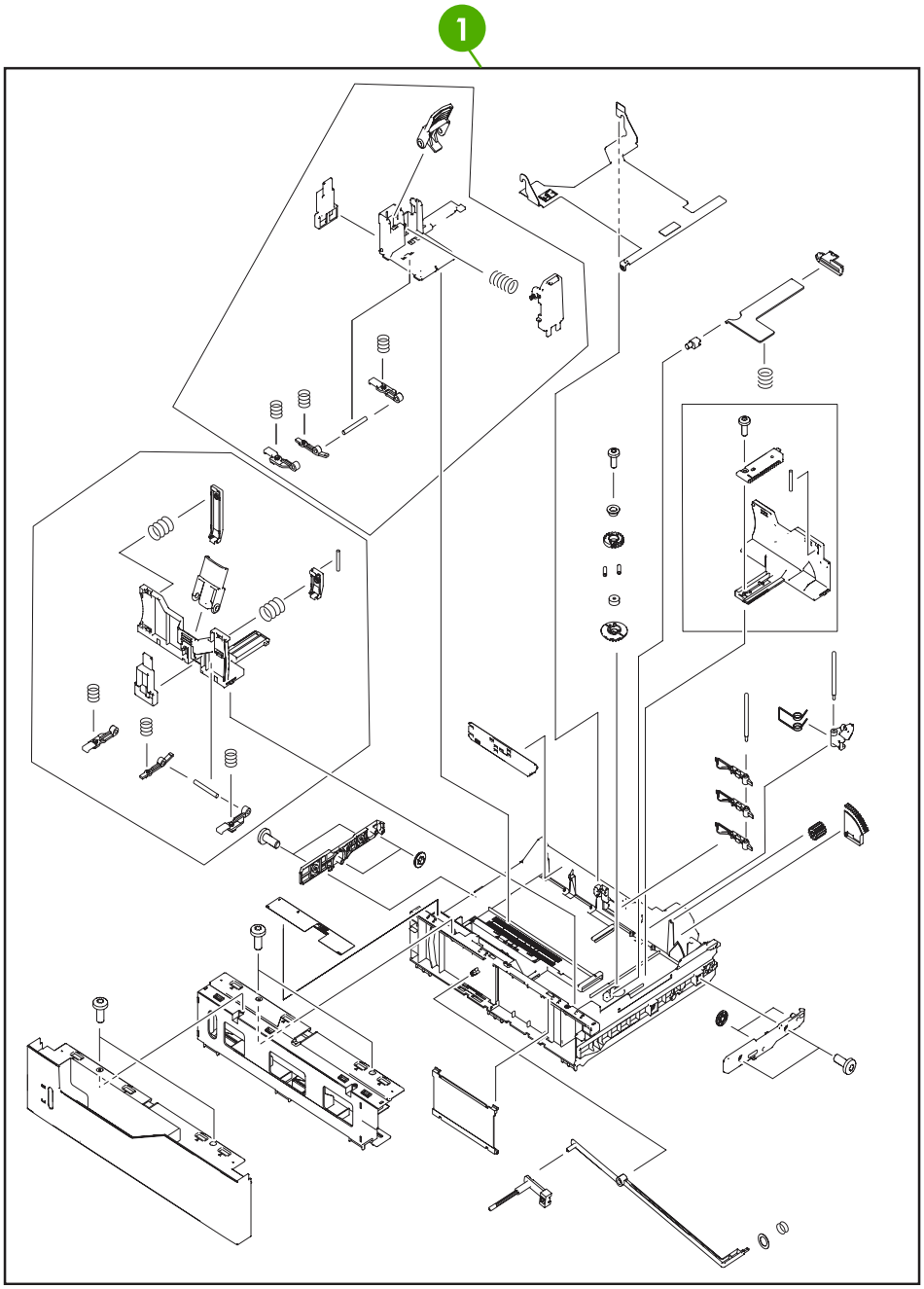


Figure 8-60 2 X 500-sheet paper feeder

Table 8-60 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

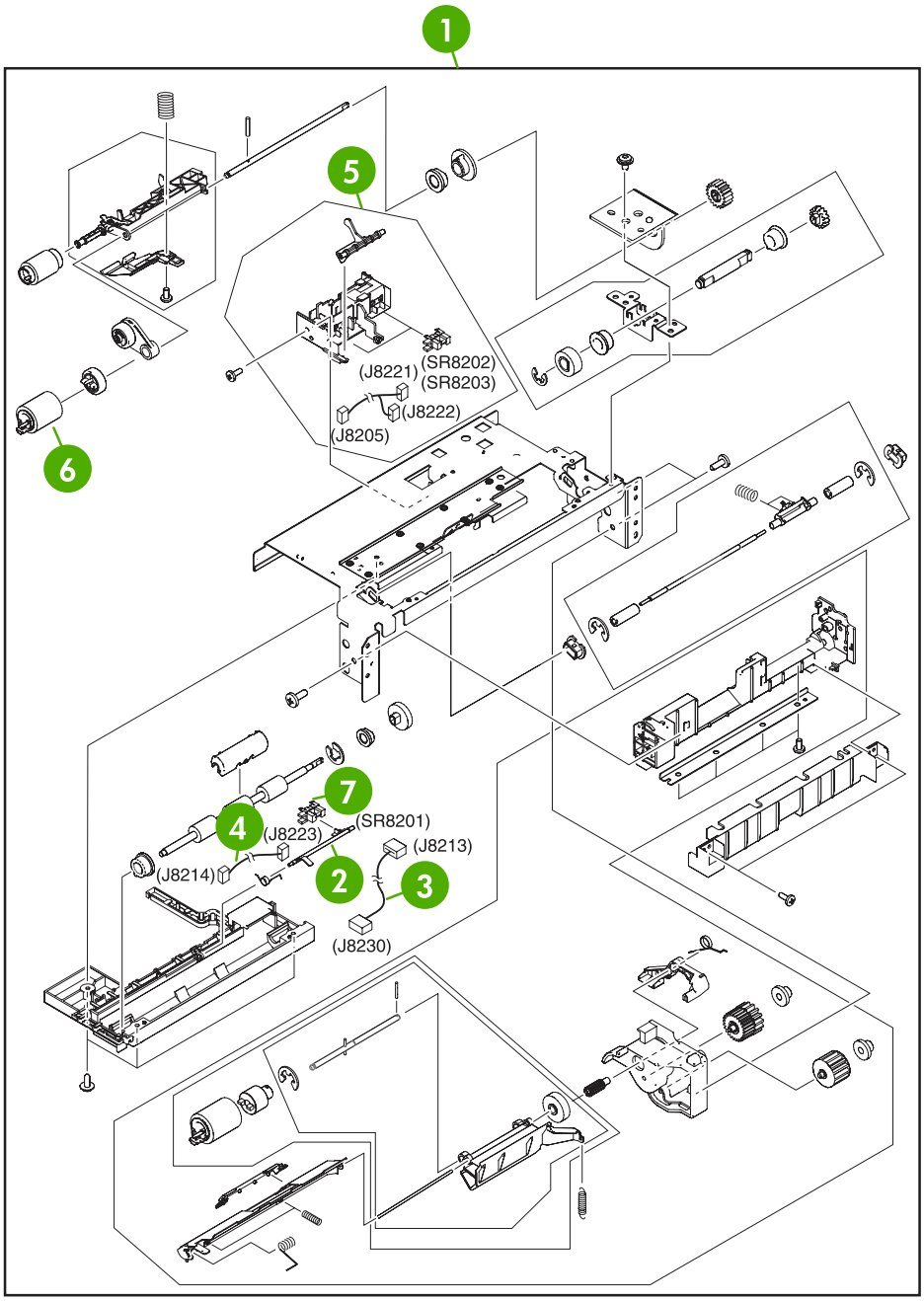


Figure 8-61 Upper paper pickup assembly

Table 8-61 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

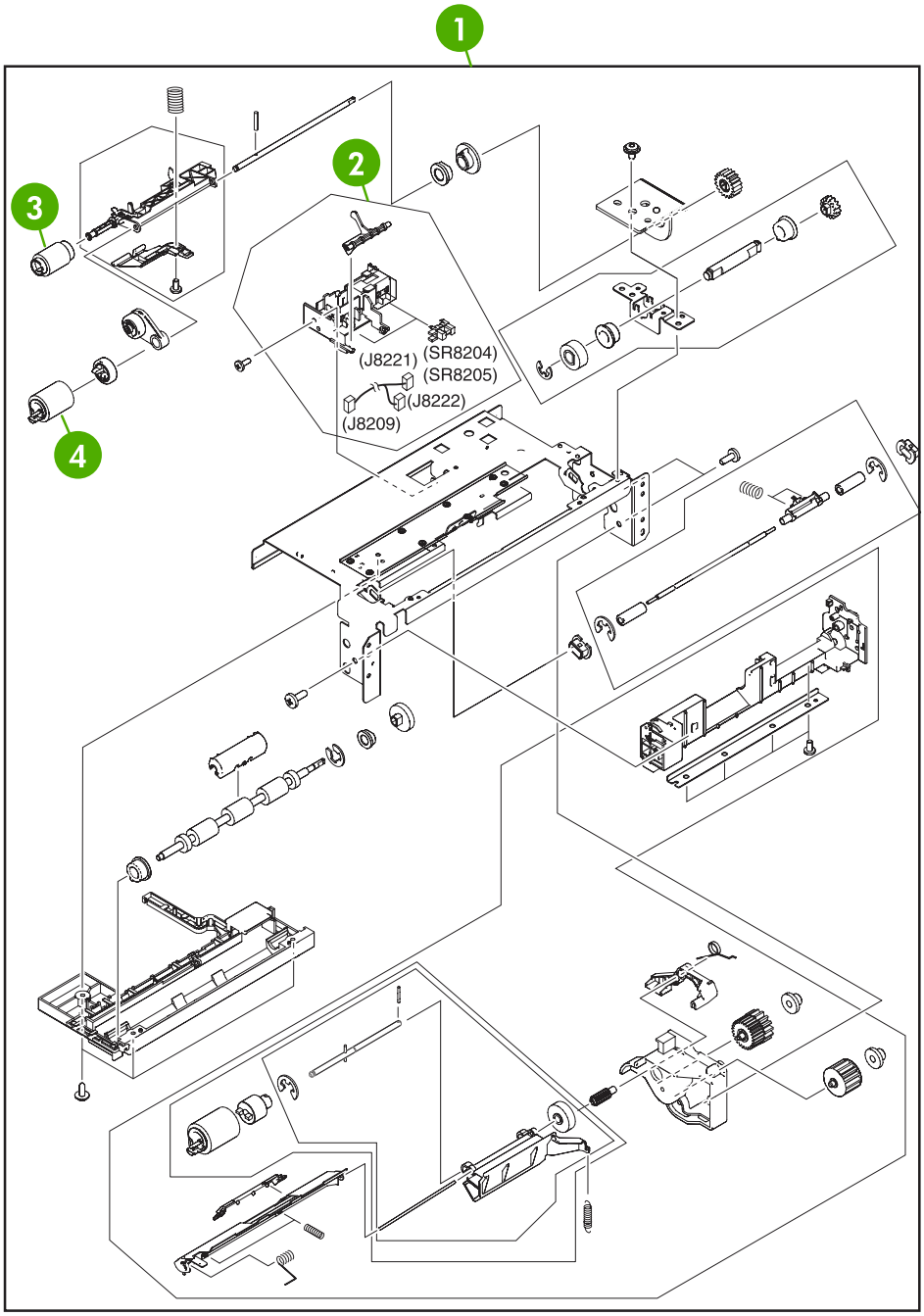


Figure 8-62 Lower paper pickup assembly

Table 8-62 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

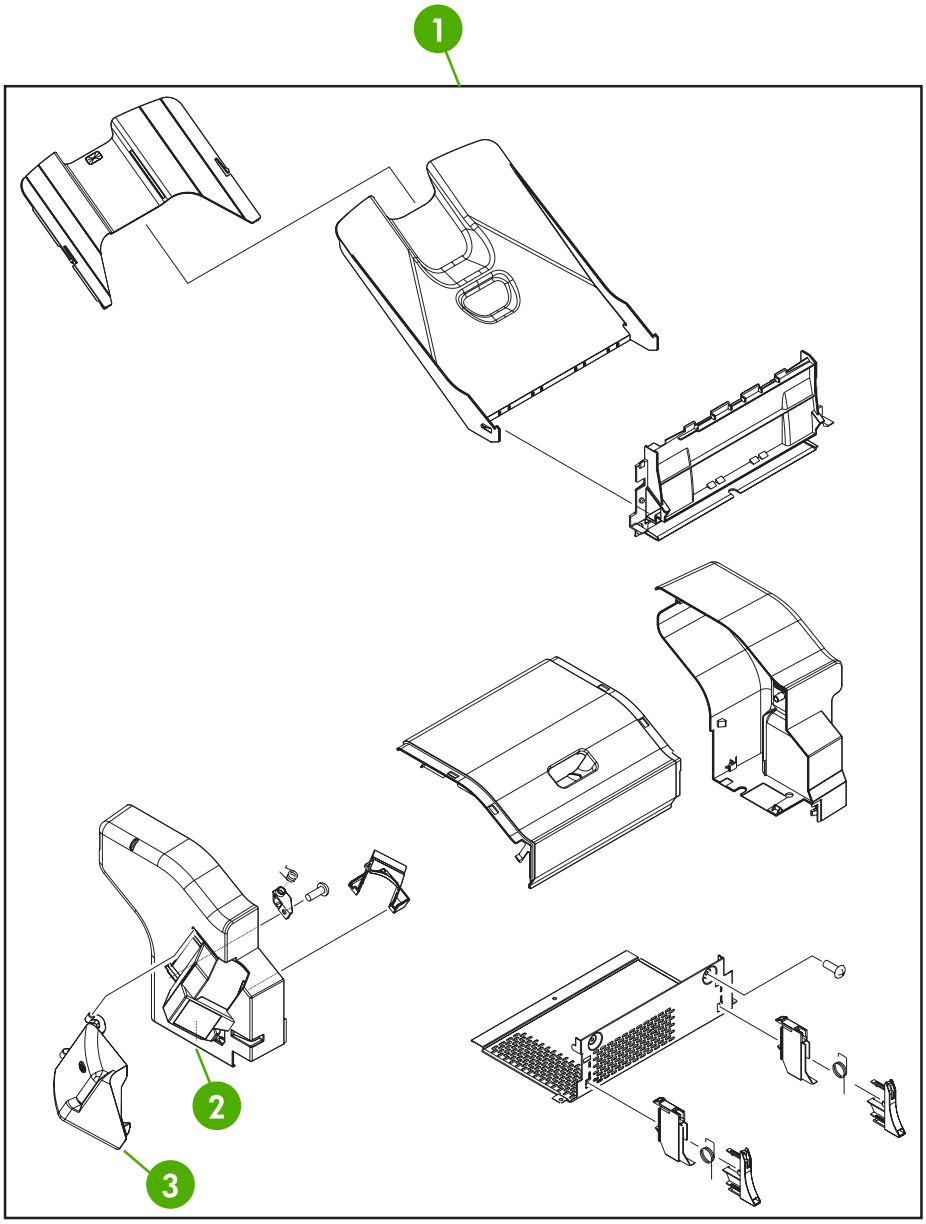


Figure 8-63 Stapler/stacker accessory

Table 8-63 Stapler/stacker accessory

Ref	Description	Part number	Qty
1	Stapler/stacker accessory	Q5691-60501	1
2	Staple cartridge	C8085-60541	1
3	Stapler/stacker jam access door	RC1-2597-000CN	1

3-bin mailbox

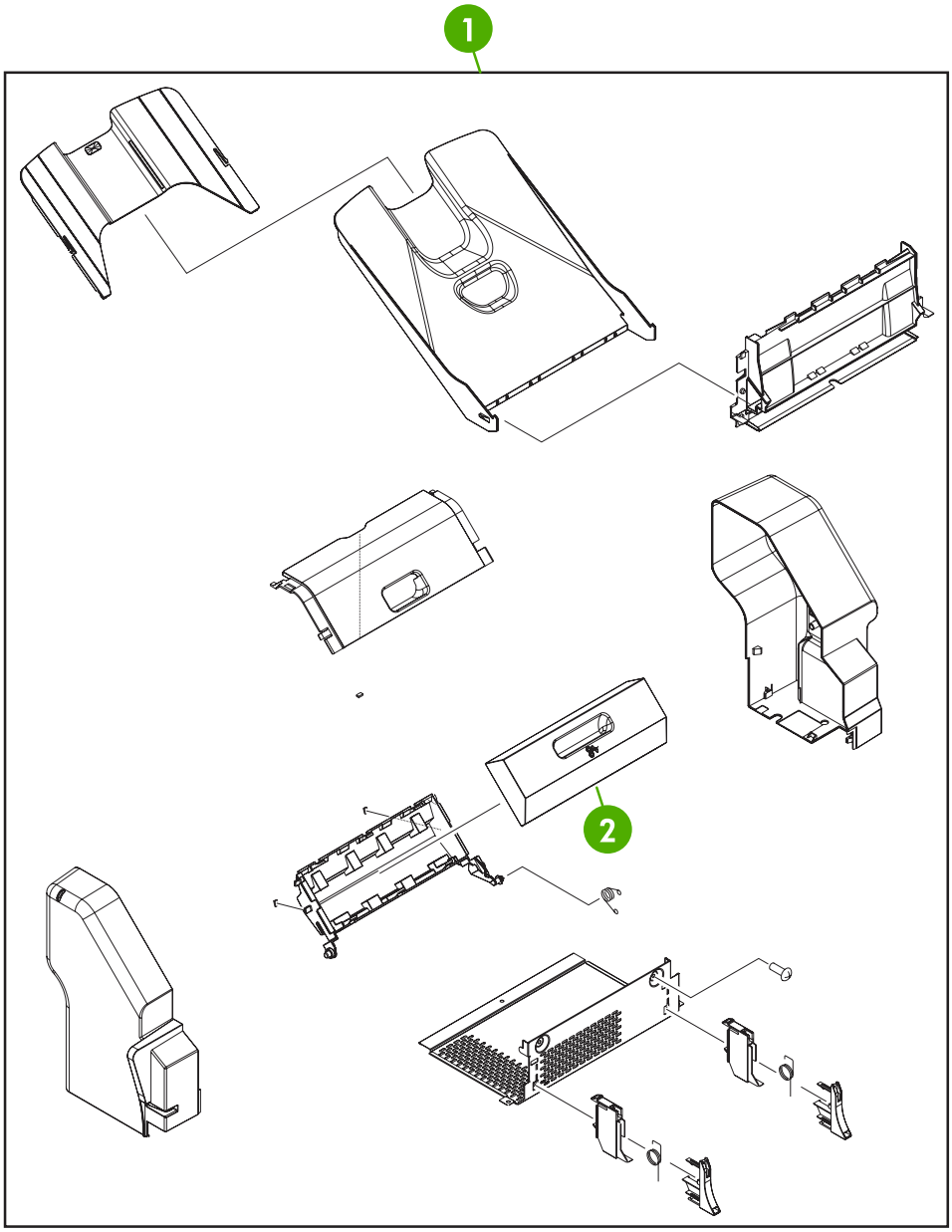


Figure 8-64 3-bin mailbox accessory

Table 8-64 3-bin mailbox accessory

Ref	Description	Part number	Qty
1	3-bin mailbox accessory	Q5692-60503	1
2	3-bin mailbox jam access door	RM1-0981-000CN	1

Intermediate paper transfer unit (IPTU)

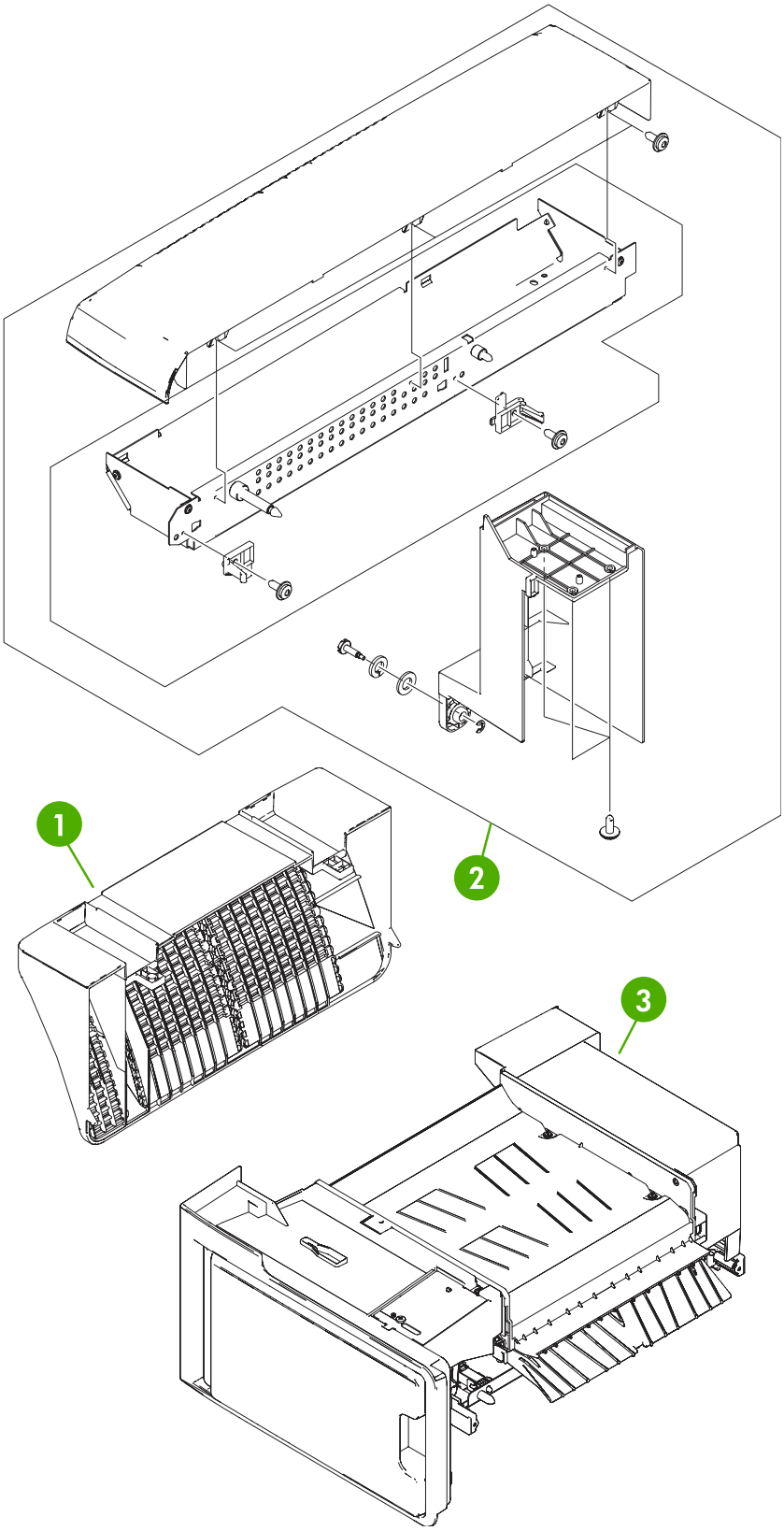


Figure 8-65 External covers and panels

Table 8-65 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

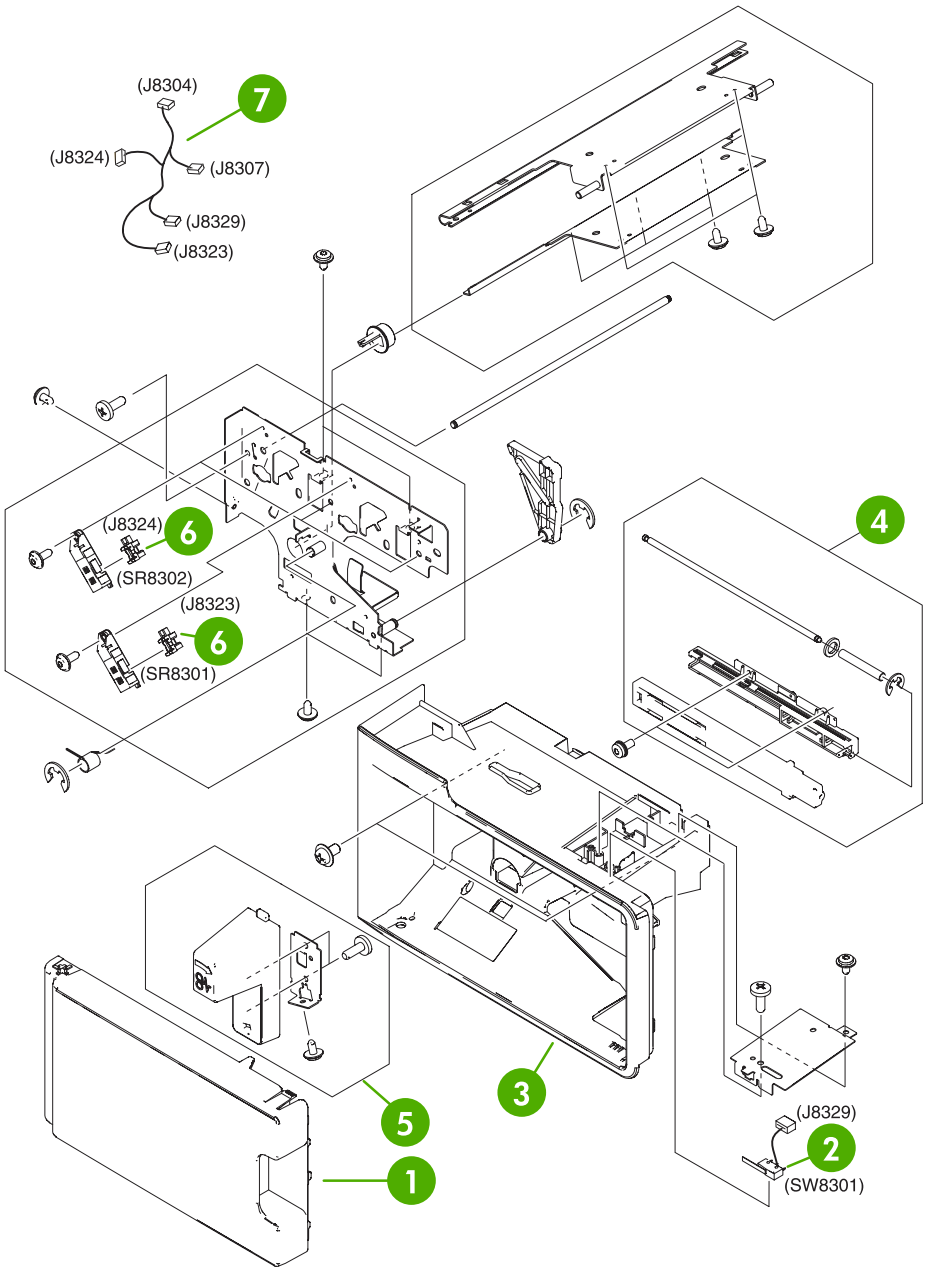


Figure 8-66 Internal components (1 of 2)

Table 8-66 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	RM1-2383-000CN	2

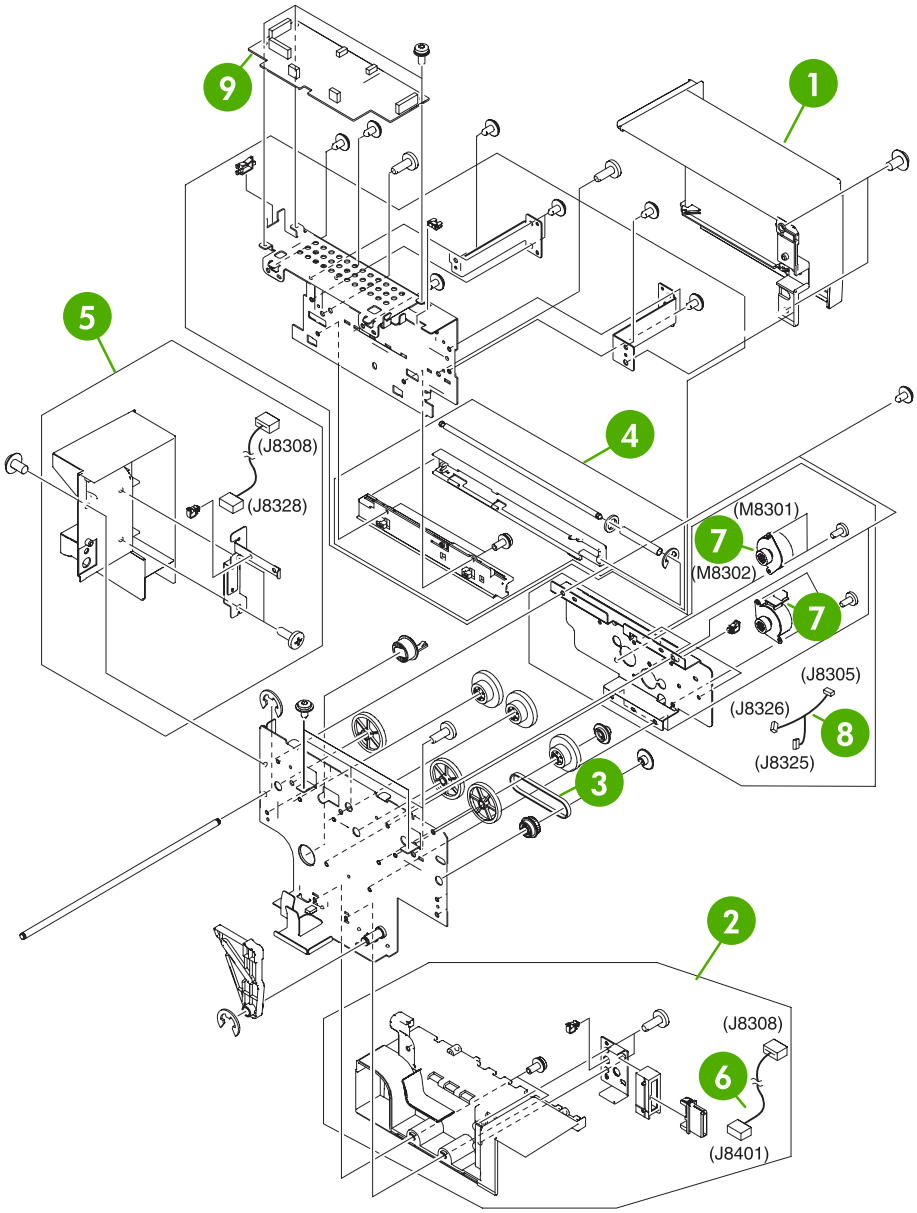


Figure 8-67 Internal components (2 of 2)

Table 8-67 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 8-68 Alphabetical parts list

Description	Part number	Table and page
18T gear	RC1-4324-000CN	Internal components (4 of 8) on page 729
29T gear	RC1-4310-000CN	Internal components (4 of 8) on page 729
2 X 500-sheet paper feeder cassette case unit	RM1-2219-000CN	2 X 500-sheet paper feeder cassette on page 825
3-bin mailbox accessory	Q5692-60503	3-bin mailbox accessory on page 833
3-bin mailbox jam access door	RM1-0981-000CN	3-bin mailbox accessory on page 833
30T gear	RC1-4309-000CN	Internal components (4 of 8) on page 729
ADF assembly (without skins)	PF2288-SVPNI	ADF assembly on page 767
ADF button screw M3x8	IR4041P021NI	ADF input tray on page 775
ADF duplex path mylar	PF2282P353NI	ADF internal components (3 of 3) on page 773
ADF front cover assembly	PF2288K001NI	ADF assembly on page 767
ADF input tray	PF2282K042NI	ADF assembly on page 767
ADF input tray assembly	PF2282K042NI	ADF input tray on page 775
ADF jam access latch	PF2282K164NI	ADF internal components (3 of 3) on page 773
ADF jam-access cover	PF2282P041NI	ADF assembly on page 767
ADF left cover	PF2288P058NI	ADF assembly on page 767
ADF left hinge assembly	PF2288K041NI	ADF internal components (2 of 3) on page 771
ADF mud flap assembly	PF2282K166NI	ADF assembly on page 767
ADF mylar holder assembly	PF2282K043NI	ADF assembly on page 767
ADF mylar holder assembly	PF2282K043NI	ADF mylar holder assembly on page 785
ADF mylar replacement kit	Q6496-67901	ADF assembly on page 767
ADF mylar replacement kit	Q6496-67901	ADF mylar replacement kit on page 787
ADF output bin base cover	PF2282P060NI	ADF internal components (1 of 3) on page 769
ADF output bin paper stop	PF2282P061NI	ADF internal components (1 of 3) on page 769
ADF pickup roller assembly	PF2282K039NI	ADF internal components (3 of 3) on page 773

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
ADF pickup roller assembly	PF2282K039NI	ADF pickup-roller assembly on page 781
ADF pickup roller cover assembly	PF2282K040NI	ADF pickup-roller cover on page 783
ADF pickup roller holder assembly	PF2282K040NI	ADF internal components (3 of 3) on page 773
ADF rear cover	PF2288P044NI	ADF assembly on page 767
ADF right hinge assembly	PF2282K008NI	ADF internal components (2 of 3) on page 771
ADF screw, M3X8	IR4041P021NI	ADF internal components (1 of 3) on page 769
ADF separation pad assembly	PF2282K035NI	ADF separation pad on page 777
ADF separation pad assembly	PF2282K035NI	ADF separation pad case on page 779
ADF spring for window background	PF2282P343NI	ADF assembly on page 767
ADF springs for left cover	PF2282P352NI	ADF assembly on page 767
ADF to SCB cable	PF2282K165NI	ADF assembly on page 767
ADF upper paper path assembly	PF2282K034NI	ADF separation pad case on page 779
ADF white scan background	PF2282P339NI	ADF assembly on page 767
ADF window background	PF2282P025NI	ADF assembly on page 767
Attraction contact assembly	RM1-1676-000CN	Internal components (4 of 8) on page 729
Base plate edge cover	RC1-5644-000CN	Internal components (5 of 8) on page 731
Base separation pad	RB2-8386-000CN	Multipurpose pickup assembly on page 749
Bushing	RC1-4325-000CN	Internal components (4 of 8) on page 729
Cable guide	RC1-5645-000CN	Internal components (5 of 8) on page 731
Cable guide	RC1-5904-000CN	Internal components (5 of 8) on page 731
Cable holder	RC1-5771-000CN	Internal components (2 of 8) on page 725
Cable holder	RC1-5773-000CN	Internal components (2 of 8) on page 725
Cable holder	RC1-5772-000CN	Internal components (3 of 8) on page 727
Cable interface	RM1-2373-000CN	2 X 500-sheet paper feeder internal components (1 of 2) on page 815

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Cartridge guide assembly, right lower	RM1-2143-000CN	Internal components (4 of 8) on page 729
Cartridge guide assembly, right upper	RM1-2142-000CN	Internal components (4 of 8) on page 729
Cartridge left guide	RC1-5766-000CN	Internal components (4 of 8) on page 729
Cartridge pressure left lever	RC1-4387-000CN	Internal components (4 of 8) on page 729
Cassette	RM1-2219-000CN	Cassette on page 747
Cassette size cable	RM1-2366-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
Compression spring	RC1-4396-000CN	Internal components (4 of 8) on page 729
Compression spring	RU5-2514-000CN	Multipurpose pickup assembly on page 749
Compression spring	RC1-4803-000CN	Delivery assembly on page 753
Connector cover assembly	RM1-2293-000CN	Internal components (2 of 2) on page 839
Connector guide assembly	RM1-1675-000CN	Internal components (4 of 8) on page 729
Control panel cable assembly	RM1-2354-000CN	Internal components (1 of 8) on page 723
Cover arm	RC1-4846-000CN	Right lower cover assembly on page 713
Cover arm	RC1-4864-000CN	Right lower cover assembly on page 713
Cst. Cover assembly, B	RM1-2200-000CN	Multipurpose pickup assembly on page 749
DC controller assembly	RM1-2346-000CN	Internal components (2 of 8) on page 725
DC controller PCB assembly	RM1-2346-000CN	PCB assembly on page 765
DC motor	RK2-0615-000CN	Fuser drive assembly on page 755
DC stepping motor	RK2-0618-000CN	Internal components (7 of 8) on page 735
DC stepping motor	RK2-0619-000CN	Fuser drive assembly on page 755
DC stepping motor	RK2-0812-000CN	Internal components (2 of 2) on page 839
Delivery assembly 110-127V (new)	RM1-1730-000CN	Delivery assembly on page 753
Delivery assembly 220-240V (new)	RM1-1737-000CN	Delivery assembly on page 753
Delivery roller 110-127V	RC1-4874-000CN	Delivery assembly on page 753

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Delivery roller 220-240V	RC1-4875-000CN	Delivery assembly on page 753
Developing disengaging sensor cable	RM1-1644-000CN	Disengaging drive assembly on page 743
Disengaging Drive Assembly	RM1-1717-000CN	Disengaging drive assembly on page 743
Door cable assembly	RM1-2356-000CN	Internal components (6 of 8) on page 733
Door cable cover	RC1-5677-000CN	Internal components (5 of 8) on page 731
Door switch	RK2-0807-000CN	Internal components (1 of 2) on page 837
Door switch cable	RM1-2370-000CN	Upper paper pickup assembly on page 827
Drawer connector assembly	RM1-2288-000CN	Internal components (2 of 2) on page 839
Drawer connector cable assembly	RM1-2384-000CN	Internal components (2 of 2) on page 839
Drive sensor cable assembly	RM1-2349-000CN	Internal components (7 of 8) on page 735
Drum motor assembly	RM1-1659-000CN	Internal components (7 of 8) on page 735
Duplex feed assembly	RM1-1785-000CN	Duplex feed assembly on page 761
Duplex lock	RC1-5020-000CN	Duplexing unit (2 of 2) on page 759
Duplexing unit	RM1-2112-000CN	Duplexing unit (1 of 2) on page 757
ETB assembly	RM1-3161-000CN	ETB assembly on page 751
Face down center guide	RC1-5864-000CN	Internal components (3 of 8) on page 727
Face-down front guide	RC1-5865-000CN	External covers and panels on page 711
Face-down rear guide	RC1-5866-000CN	External covers and panels on page 711
Face-down tray assembly	RM1-2180-000CN	Face-down tray assembly on page 721
Fan	RK2-0622-000CN	Right lower cover assembly on page 713
Fan	RK2-0623-000CN	Internal components (1 of 8) on page 723
Fan	RK2-0621-000CN	Internal components (3 of 8) on page 727
Fan	RK2-0621-000CN	Internal components (6 of 8) on page 733

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Fan	RK2-0622-000CN	Internal components (7 of 8) on page 735
Fan	RK2-0621-000CN	Internal components (7 of 8) on page 735
Fan	RK2-0648-000CN	Duplexing unit (1 of 2) on page 757
Fan assembly	RM1-2178-000CN	Internal components (1 of 8) on page 723
Fan connecting cable assembly	RM1-2357-000CN	Internal components (7 of 8) on page 735
Fan connecting cable assembly	RM1-2358-000CN	Internal components (7 of 8) on page 735
Fan connecting cable assembly	RM1-2360-000CN	Internal components (8 of 8) on page 737
Fan driver PCB assembly	RM1-2345-000CN	Internal components (7 of 8) on page 735
Fan driver PCB assembly	RM1-2345-000CN	PCB assembly on page 765
Fan duct	RC1-5711-000CN	Internal components (1 of 8) on page 723
Fan duct	RC1-5867-000CN	Internal components (3 of 8) on page 727
Fan holder	RC1-4314-000CN	Internal components (1 of 8) on page 723
Fan holder	RC1-4316-000CN	Internal components (7 of 8) on page 735
Feed unit connect cable assembly	RM1-2355-000CN	Internal components (3 of 8) on page 727
Flat cable	RK2-1171-000CN	Internal components (2 of 8) on page 725
Flat cable	RK2-0802-000CN	Internal components (2 of 8) on page 725
Flat cable connection 23P	RK2-0816-000CN	Internal components (2 of 8) on page 725
Formatter power cable assembly	RM1-1642-000CN	Internal components (8 of 8) on page 737
Front cover	RC1-5694-000CN	External covers and panels on page 711
Front cover	RL1-0892-000CN	Internal components (1 of 2) on page 837
Front cover plate	RC1-5695-000CN	External covers and panels on page 711
Front cover plate	RC1-5696-000CN	External covers and panels on page 711

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Front door	RC1-6158-000CN	Internal components (1 of 2) on page 837
Front door hinge shaft	RC1-5692-000CN	Internal components (5 of 8) on page 731
Front fuser door link assembly	RM1-2103-000CN	Internal components (8 of 8) on page 737
Front inner cover assembly	RM1-2100-000CN	Internal components (8 of 8) on page 737
Front rail assembly	RM1-2291-000CN	Internal components (1 of 2) on page 837
Full sensor flag	RL1-0612-000CN	Delivery assembly on page 753
Fuser assembly (110-127V)	RM1-3131-000CN	Fuser assembly on page 763
Fuser assembly (220-240V)	RM1-3146-000CN	Fuser assembly on page 763
Fuser door assembly	RM1-2102-000CN	Internal components (8 of 8) on page 737
Fuser drive assembly	RM1-1729-000CN	Fuser drive assembly on page 755
Fuser drive cable assembly	RM1-1634-000CN	Delivery assembly on page 753
Fuser drive cable assembly	RM1-1638-000CN	Delivery assembly on page 753
Fuser motor cable assembly	RM1-1631-000CN	Internal components (8 of 8) on page 737
High-voltage power PCB assembly	RM1-1608-000CN	PCB assembly on page 765
High-voltage power supply PCB	RM1-1608-000CN	Internal components (1 of 8) on page 723
Humidity sensor unit	WP2-5187-000CN	Internal components (1 of 8) on page 723
HV terminal block	RC1-4394-000CN	Internal components (4 of 8) on page 729
HV terminal mount assembly	RM1-2144-000CN	Internal components (4 of 8) on page 729
Inner cover	RC1-5658-000CN	Internal components (5 of 8) on page 731
Inner front cover	RC1-5988-000CN	Internal components (1 of 8) on page 723
Inner rear cover	RC1-5873-000CN	External covers and panels on page 711
Inner top cover	RC1-5877-000CN	External covers and panels on page 711
Inner top, rear cover	RC1-5878-000CN	External covers and panels on page 711
Intermediate feed assembly	RM1-2279-000CN	External covers and panels on page 835

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
IPTU driver PCB assembly	RM1-2380-000CN	Internal components (2 of 2) on page 839
Jam clearing lever assembly	RM1-2294-000CN	Internal components (1 of 2) on page 837
Jam sensor flag	RC1-6012-000CN	Upper paper pickup assembly on page 827
Kicker assembly	RM1-1008-000CN	Internal components (5 of 8) on page 731
Kicker assembly	RM1-1008-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
Laser/Scanner assembly	RM1-1591-000CN	Internal components (2 of 8) on page 725
Left cap	RC1-4386-000CN	Internal components (4 of 8) on page 729
Left caster cover	RC1-6067-000CN	2 X 500-sheet feeder external components on page 813
Left cover	RC1-6042-000CN	2 X 500-sheet feeder external components on page 813
Left cover assembly	RM1-2115-000CN	Left cover assembly on page 719
Left ETB lever assembly	RM1-1663-000CN	Internal components (5 of 8) on page 731
Left front cover	RC1-6046-000CN	2 X 500-sheet feeder external components on page 813
Left lower cover	RC1-6043-000CN	2 X 500-sheet feeder external components on page 813
Left rail assembly	RM1-2227-000CN	Internal components (1 of 8) on page 723
Left reg. adjustment assembly	RM1-1007-000CN	Internal components (5 of 8) on page 731
Left reg. adjustment assembly	RM1-1007-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
Left scanner retaining assembly	RM1-1664-000CN	Internal components (2 of 8) on page 725
Lifter drive assembly	RM1-1750-000CN	Lifter drive assembly on page 745
Lifter-drive assembly	RM1-1750-000CN	500-sheet feeder lifter drive assembly on page 819
Lock lever	RC1-5926-000CN	Internal components (6 of 8) on page 733
Lock plate	RC1-5927-000CN	Internal components (6 of 8) on page 733

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Low-voltage power PCB assembly 110-127V	RK2-0627-000CN	PCB assembly on page 765
Low-voltage power PCB assembly 220-240V	RK2-0628-000CN	PCB assembly on page 765
Lower cover	RL1-0891-000CN	External covers and panels on page 835
Lower left cover	RC1-4323-000CN	Internal components (5 of 8) on page 731
Lower paper pickup assembly	RM1-2240-000CN	Lower paper pickup assembly on page 829
Lower pickup drive assembly	RM1-2238-000CN	Lower paper pickup drive assembly on page 823
Lower right cover	RC1-4322-000CN	Internal components (5 of 8) on page 731
Low–voltage power PCB assembly 110V	RK2-0627-000CN	Internal components (2 of 8) on page 725
Low–voltage power PCB assembly 220V	RK2-0628-000CN	Internal components (2 of 8) on page 725
Main cable assembly	RM1-1627-000CN	Internal components (8 of 8) on page 737
Main drive assembly	RM1-2137-000CN	Internal components (7 of 8) on page 735
Memory contact cable	RM1-1653-000CN	Internal components (3 of 8) on page 727
Memory PCB assembly	RM1-1618-000CN	Internal components (8 of 8) on page 737
Memory PCB assembly	RM1-1618-000CN	PCB assembly on page 765
MFP power cable assembly	RM1-2351-000CN	Internal components (7 of 8) on page 735
Microswitch	RK2-0804-000CN	Internal components (6 of 8) on page 733
Motor assembly	RM1-2231-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
Motor cable	RM1-2369-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
Motor cable assembly	RM1-2381-000CN	Internal components (2 of 2) on page 839
MPU rail assembly	RM1-2203-000CN	Internal components (6 of 8) on page 733
Multipurpose pickup assembly	RM1-2199-000CN	Multipurpose pickup assembly on page 749
Multipurpose tray assembly	RM1-2109-000CN	Multipurpose tray assembly on page 715

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Operation panel holder assembly	RM1-2117-000CN	External covers and panels on page 711
Paper delivery cover assembly	RM1-2179-000CN	External covers and panels on page 711
Paper delivery upper cover	RC1-5880-000CN	External covers and panels on page 711
Paper feed assembly	RM1-1756-000CN	Internal components (5 of 8) on page 731
Paper feed roller assembly	RM1-0037-020CN	Internal components (7 of 8) on page 735
Paper feed roller assembly	RM1-0037-020CN	Multipurpose pickup assembly on page 749
Paper feed roller assembly	RM1-0037-020CN	Upper paper pickup assembly on page 827
Paper feed roller assembly	RM1-0037-020CN	Lower paper pickup assembly on page 829
Paper feed sensor cable	RM1-2372-000CN	Upper paper pickup assembly on page 827
Paper feeder driver PCB assembly	RM1-2365-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
Paper pickup drive assembly	RM1-2198-000CN	Paper pickup drive assembly on page 739
Paper pickup roller assembly	RM1-0036-020CN	Internal components (7 of 8) on page 735
Paper pickup roller assembly	RM1-0036-020CN	Lower paper pickup assembly on page 829
Paper sensor cable assembly	RM1-2350-000CN	Internal components (7 of 8) on page 735
Paper sensor cable assembly	RM1-2383-000CN	Internal components (1 of 2) on page 837
Paper sensor unit	RM1-2249-000CN	Upper paper pickup assembly on page 827
Paper sensor unit	RM1-2249-000CN	Lower paper pickup assembly on page 829
Photo interrupter	WG8-5696-000CN	Internal components (1 of 2) on page 837
Photo Interrupter TLP1243	WG8-5696-000CN	Disengaging drive assembly on page 743
Photo interrupter, TLP1243	WG8-5696-000CN	Internal components (7 of 8) on page 735
Photo interrupter, TLP1243	WG8-5696-000CN	Delivery assembly on page 753
Photo interrupter, TLP1243	WG8-5696-000CN	Upper paper pickup assembly on page 827

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Pickup cable assembly	RM1-2361-000CN	Internal components (7 of 8) on page 735
pickup motor assembly	RM1-2189-000CN	Pickup motor assembly on page 741
pickup roller	RL1-0019-000CN	Multipurpose pickup assembly on page 749
Power cable assembly	RM1-2353-000CN	Internal components (2 of 8) on page 725
Power save cable assembly	RM1-2352-000CN	Internal components (7 of 8) on page 735
Power supply switch assembly	RM1-2099-000CN	Internal components (2 of 8) on page 725
Pressure plate	RC1-4397-000CN	Internal components (4 of 8) on page 729
Pressure plate	RC1-4360-000CN	Internal components (4 of 8) on page 729
Rear cover	RC1-6048-000CN	2 X 500-sheet feeder external components on page 813
Rear cover	RC1-6154-000CN	Internal components (2 of 2) on page 839
Rear cover assembly	RM1-2118-000CN	External covers and panels on page 711
Rear door hinge shaft	RC1-5693-000CN	Internal components (5 of 8) on page 731
Rear fuser door link assembly	RM1-2104-000CN	Internal components (8 of 8) on page 737
Rear inner cover assembly	RM1-2101-000CN	Internal components (8 of 8) on page 737
Rear plate assembly	RM1-1679-000CN	Internal components (2 of 8) on page 725
Rear rail assembly	RM1-2290-000CN	Internal components (2 of 2) on page 839
Retard guide	RC1-5940-000CN	Multipurpose pickup assembly on page 749
Retard guide pin	RC1-5938-000CN	Multipurpose pickup assembly on page 749
Retard guide pin	RC1-5939-000CN	Multipurpose pickup assembly on page 749
Right cap	RC1-4352-000CN	Internal components (4 of 8) on page 729
Right caster cover	RC1-6068-000CN	2 X 500-sheet feeder external components on page 813
Right cover	RC1-6044-000CN	2 X 500-sheet feeder external components on page 813

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Right ETB lever assembly	RM1-1662-000CN	Internal components (5 of 8) on page 731
Right front cover	RC1-6047-000CN	2 X 500-sheet feeder external components on page 813
Right lower cover	RC1-6045-000CN	2 X 500-sheet feeder external components on page 813
Right lower cover assembly	RM1-2105-000CN	Right lower cover assembly on page 713
Right lower cover assembly	RM1-2241-000CN	2 X 500-sheet feeder external components on page 813
Right rail assembly	RM1-2228-000CN	Internal components (1 of 8) on page 723
Right scanner retaining assembly	RM1-1665-000CN	Internal components (2 of 8) on page 725
Right switch assembly	RM1-2226-000CN	2 X 500-sheet paper feeder internal components (1 of 2) on page 815
Right upper door assembly	RM1-2111-000CN	Right upper door assembly on page 717
Scanner belt and pulley assembly	IR4041K107NI	Scanner belt and pulley assembly on page 805
Scanner cartridge lock assembly	IR4041K102NI	Scanner carriage lock assembly on page 797
Scanner cartridge lock cover	IR4041P214NI	Scanner covers on page 795
Scanner controller PCB	IR4041K512NI	Scanner base components on page 791
Scanner fan filter	IR4041P007NI	Scanner base components on page 791
Scanner fan filter cover	IR4054P217NI	Scanner base components on page 791
Scanner flatbed unit assembly	IR4054-SVPNI	Scanner flatbed unit assembly on page 793
Scanner glass and cover	IR4054K111NI	Scanner glass and cover on page 789
Scanner lamp	IR4041K151NI	Scanner optical assembly on page 809
Scanner lamp inverter	IR4041P522NI	Scanner motor on page 803
Scanner left cover	IR4054P226NI	Scanner covers on page 795
Scanner motor	IR4041K520NI	Scanner motor on page 803
Scanner motor belt	INS-BLT00290NI	Scanner motor on page 803
Scanner motor fan	IR4041P521NI	Scanner motor fan on page 801

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Scanner open sensor	E314000619NI	Scanner-open sensor assembly on page 799
Scanner open sensor holder assembly	IR4041K105NI	Scanner-open sensor assembly on page 799
Scanner optical assembly	IR4041K121NI	Scanner optical assembly on page 809
Scanner rear cover	IR4054P216NI	Scanner flatbed unit assembly on page 793
Scanner right cover assembly	IR4054K100NI	Scanner covers on page 795
Scanner screw flatbed	040100FNBBNI	Scanner flatbed unit assembly on page 793
Scanner screw M3x8	IR4041P021NI	Scanner glass and cover on page 789
Scanner slide rail and screw	030040FNITNI	Scanner slide rail on page 807
Scanner support	RC1-4312-000CN	Internal components (2 of 8) on page 725
Scanner support spring	RC1-4313-000CN	Internal components (2 of 8) on page 725
Scanner top cover flatbed flange	IR4054P215NI	Scanner covers on page 795
Screw, RS M3X8	XA9-1504-000CN	External covers and panels on page 711
Sensor lever	RC1-6013-000CN	Internal components (7 of 8) on page 735
Separation pad	RF5-3750-020CN	Multipurpose pickup assembly on page 749
Shield cover	RC1-5776-000CN	Internal components (2 of 8) on page 725
Shield cover	RC1-5778-000CN	Internal components (2 of 8) on page 725
Shield cover	RC1-5779-000CN	Internal components (2 of 8) on page 725
Size sensing assembly	RM1-0041-020CN	Internal components (5 of 8) on page 731
Size sensing assembly	RM1-0041-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
Solenoid	RK2-0624-000CN	Upper paper pickup drive assembly on page 821
Solenoid	RK2-0624-000CN	Lower paper pickup drive assembly on page 823
Solenoid cable	RM1-2368-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Solenoid cable	RM1-2371-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
Solenoid cover	RL1-0654-000CN	Duplexing unit (1 of 2) on page 757
Spring tension	RC1-0198-000CN	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
Staple cartridge	C8085-60541	Stapler/stacker accessory on page 831
Stapler/stacker accessory	Q5691-60501	Stapler/stacker accessory on page 831
Stapler/stacker jam access door	RC1-2597-000CN	Stapler/stacker accessory on page 831
Sub power supply assembly	RM1-2119-000CN	Internal components (7 of 8) on page 735
Sub power supply assembly	RM1-2119-000CN	PCB assembly on page 765
Switch	WC4-5188-000CN	Internal components (4 of 8) on page 729
Switching arm	RC1-5646-000CN	Internal components (2 of 8) on page 725
Switching arm	RC1-5647-000CN	Internal components (2 of 8) on page 725
Switching arm guide	RC1-5648-000CN	Internal components (2 of 8) on page 725
Switching arm guide	RC1-5649-000CN	Internal components (2 of 8) on page 725
Switching arm link	RC1-5650-000CN	Internal components (2 of 8) on page 725
Tension spring	RC1-4393-000CN	Internal components (4 of 8) on page 729
Tension spring	RC1-4395-000CN	Internal components (4 of 8) on page 729
Tension spring	RC1-4423-000CN	Internal components (4 of 8) on page 729
Test print button	RC1-4345-000CN	Internal components (3 of 8) on page 727
Test print lower guide	RC1-5759-000CN	Internal components (3 of 8) on page 727
Test print rod	RC1-5760-000CN	Internal components (3 of 8) on page 727
Test print upper guide	RC1-5728-000CN	Internal components (3 of 8) on page 727

Table 8-68 Alphabetical parts list (continued)

Description	Part number	Table and page
Timing belt	XF2-1108-440CN	Internal components (2 of 2) on page 839
Toner sensor PCB assembly	RM1-1609-000CN	Internal components (1 of 8) on page 723
Toner sensor PCB assembly	RM1-1609-000CN	PCB assembly on page 765
Top cover assembly	RM1-2295-000CN	External covers and panels on page 835
Torsion spring	RC1-5953-000CN	Internal components (6 of 8) on page 733
Upper paper pickup assembly	RM1-2232-000CN	Upper paper pickup assembly on page 827
Upper paper pickup drive assembly	RM1-2229-000CN	Upper paper pickup drive assembly on page 821

Numerical parts list

Table 8-69 Numerical parts list

Part number	Description	Table and page
030040FNITNI	Scanner slide rail and screw	Scanner slide rail on page 807
040100FNBBNI	Scanner screw flatbed	Scanner flatbed unit assembly on page 793
C8085-60541	Staple cartridge	Stapler/stacker accessory on page 831
E314000619NI	Scanner open sensor	Scanner-open sensor assembly on page 799
INS-BLT00290NI	Scanner motor belt	Scanner motor on page 803
IR4041K102NI	Scanner cartridge lock assembly	Scanner carriage lock assembly on page 797
IR4041K105NI	Scanner open sensor holder assembly	Scanner-open sensor assembly on page 799
IR4041K107NI	Scanner belt and pulley assembly	Scanner belt and pulley assembly on page 805
IR4041K121NI	Scanner optical assembly	Scanner optical assembly on page 809
IR4041K151NI	Scanner lamp	Scanner optical assembly on page 809
IR4041K512NI	Scanner controller PCB	Scanner base components on page 791
IR4041K520NI	Scanner motor	Scanner motor on page 803
IR4041P007NI	Scanner fan filter	Scanner base components on page 791
IR4041P021NI	ADF screw, M3X8	ADF internal components (1 of 3) on page 769
IR4041P021NI	ADF button screw M3x8	ADF input tray on page 775
IR4041P021NI	Scanner screw M3x8	Scanner glass and cover on page 789
IR4041P214NI	Scanner cartridge lock cover	Scanner covers on page 795
IR4041P521NI	Scanner motor fan	Scanner motor fan on page 801
IR4041P522NI	Scanner lamp inverter	Scanner motor on page 803
IR4054-SVPNI	Scanner flatbed unit assembly	Scanner flatbed unit assembly on page 793
IR4054K100NI	Scanner right cover assembly	Scanner covers on page 795
IR4054K111NI	Scanner glass and cover	Scanner glass and cover on page 789
IR4054P215NI	Scanner top cover flatbed flange	Scanner covers on page 795

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
IR4054P216NI	Scanner rear cover	Scanner flatbed unit assembly on page 793
IR4054P217NI	Scanner fan filter cover	Scanner base components on page 791
IR4054P226NI	Scanner left cover	Scanner covers on page 795
PF2282K008NI	ADF right hinge assembly	ADF internal components (2 of 3) on page 771
PF2282K034NI	ADF upper paper path assembly	ADF separation pad case on page 779
PF2282K035NI	ADF separation pad assembly	ADF separation pad on page 777
PF2282K035NI	ADF separation pad assembly	ADF separation pad case on page 779
PF2282K039NI	ADF pickup roller assembly	ADF internal components (3 of 3) on page 773
PF2282K039NI	ADF pickup roller assembly	ADF pickup-roller assembly on page 781
PF2282K040NI	ADF pickup roller holder assembly	ADF internal components (3 of 3) on page 773
PF2282K040NI	ADF pickup roller cover assembly	ADF pickup-roller cover on page 783
PF2282K042NI	ADF input tray	ADF assembly on page 767
PF2282K042NI	ADF input tray assembly	ADF input tray on page 775
PF2282K043NI	ADF mylar holder assembly	ADF assembly on page 767
PF2282K043NI	ADF mylar holder assembly	ADF mylar holder assembly on page 785
PF2282K164NI	ADF jam access latch	ADF internal components (3 of 3) on page 773
PF2282K165NI	ADF to SCB cable	ADF assembly on page 767
PF2282K166NI	ADF mud flap assembly	ADF assembly on page 767
PF2282P025NI	ADF window background	ADF assembly on page 767
PF2282P041NI	ADF jam-access cover	ADF assembly on page 767
PF2282P060NI	ADF output bin base cover	ADF internal components (1 of 3) on page 769
PF2282P061NI	ADF output bin paper stop	ADF internal components (1 of 3) on page 769
PF2282P339NI	ADF white scan background	ADF assembly on page 767
PF2282P343NI	ADF spring for window background	ADF assembly on page 767
PF2282P352NI	ADF springs for left cover	ADF assembly on page 767
PF2282P353NI	ADF duplex path mylar	ADF internal components (3 of 3) on page 773

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
PF2288-SVPNI	ADF assembly (without skins)	ADF assembly on page 767
PF2288K001NI	ADF front cover assembly	ADF assembly on page 767
PF2288K041NI	ADF left hinge assembly	ADF internal components (2 of 3) on page 771
PF2288P044NI	ADF rear cover	ADF assembly on page 767
PF2288P058NI	ADF left cover	ADF assembly on page 767
Q5691-60501	Stapler/stacker accessory	Stapler/stacker accessory on page 831
Q5692-60503	3-bin mailbox accessory	3-bin mailbox accessory on page 833
Q6496-67901	ADF mylar replacement kit	ADF assembly on page 767
Q6496-67901	ADF mylar replacement kit	ADF mylar replacement kit on page 787
RB2-8386-000CN	Base separation pad	Multipurpose pickup assembly on page 749
RC1-0198-000CN	Spring tension	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
RC1-2597-000CN	Stapler/stacker jam access door	Stapler/stacker accessory on page 831
RC1-4309-000CN	30T gear	Internal components (4 of 8) on page 729
RC1-4310-000CN	29T gear	Internal components (4 of 8) on page 729
RC1-4312-000CN	Scanner support	Internal components (2 of 8) on page 725
RC1-4313-000CN	Scanner support spring	Internal components (2 of 8) on page 725
RC1-4314-000CN	Fan holder	Internal components (1 of 8) on page 723
RC1-4316-000CN	Fan holder	Internal components (7 of 8) on page 735
RC1-4322-000CN	Lower right cover	Internal components (5 of 8) on page 731
RC1-4323-000CN	Lower left cover	Internal components (5 of 8) on page 731
RC1-4324-000CN	18T gear	Internal components (4 of 8) on page 729
RC1-4325-000CN	Bushing	Internal components (4 of 8) on page 729
RC1-4345-000CN	Test print button	Internal components (3 of 8) on page 727

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RC1-4352-000CN	Right cap	Internal components (4 of 8) on page 729
RC1-4360-000CN	Pressure plate	Internal components (4 of 8) on page 729
RC1-4386-000CN	Left cap	Internal components (4 of 8) on page 729
RC1-4387-000CN	Cartridge pressure left lever	Internal components (4 of 8) on page 729
RC1-4393-000CN	Tension spring	Internal components (4 of 8) on page 729
RC1-4394-000CN	HV terminal block	Internal components (4 of 8) on page 729
RC1-4395-000CN	Tension spring	Internal components (4 of 8) on page 729
RC1-4396-000CN	Compression spring	Internal components (4 of 8) on page 729
RC1-4397-000CN	Pressure plate	Internal components (4 of 8) on page 729
RC1-4423-000CN	Tension spring	Internal components (4 of 8) on page 729
RC1-4803-000CN	Compression spring	Delivery assembly on page 753
RC1-4846-000CN	Cover arm	Right lower cover assembly on page 713
RC1-4864-000CN	Cover arm	Right lower cover assembly on page 713
RC1-4874-000CN	Delivery roller 110-127V	Delivery assembly on page 753
RC1-4875-000CN	Delivery roller 220-240V	Delivery assembly on page 753
RC1-5020-000CN	Duplex lock	Duplexing unit (2 of 2) on page 759
RC1-5644-000CN	Base plate edge cover	Internal components (5 of 8) on page 731
RC1-5645-000CN	Cable guide	Internal components (5 of 8) on page 731
RC1-5646-000CN	Switching arm	Internal components (2 of 8) on page 725
RC1-5647-000CN	Switching arm	Internal components (2 of 8) on page 725
RC1-5648-000CN	Switching arm guide	Internal components (2 of 8) on page 725
RC1-5649-000CN	Switching arm guide	Internal components (2 of 8) on page 725
RC1-5650-000CN	Switching arm link	Internal components (2 of 8) on page 725

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RC1-5658-000CN	Inner cover	Internal components (5 of 8) on page 731
RC1-5677-000CN	Door cable cover	Internal components (5 of 8) on page 731
RC1-5692-000CN	Front door hinge shaft	Internal components (5 of 8) on page 731
RC1-5693-000CN	Rear door hinge shaft	Internal components (5 of 8) on page 731
RC1-5694-000CN	Front cover	External covers and panels on page 711
RC1-5695-000CN	Front cover plate	External covers and panels on page 711
RC1-5696-000CN	Front cover plate	External covers and panels on page 711
RC1-5711-000CN	Fan duct	Internal components (1 of 8) on page 723
RC1-5728-000CN	Test print upper guide	Internal components (3 of 8) on page 727
RC1-5759-000CN	Test print lower guide	Internal components (3 of 8) on page 727
RC1-5760-000CN	Test print rod	Internal components (3 of 8) on page 727
RC1-5766-000CN	Cartridge left guide	Internal components (4 of 8) on page 729
RC1-5771-000CN	Cable holder	Internal components (2 of 8) on page 725
RC1-5772-000CN	Cable holder	Internal components (3 of 8) on page 727
RC1-5773-000CN	Cable holder	Internal components (2 of 8) on page 725
RC1-5776-000CN	Shield cover	Internal components (2 of 8) on page 725
RC1-5778-000CN	Shield cover	Internal components (2 of 8) on page 725
RC1-5779-000CN	Shield cover	Internal components (2 of 8) on page 725
RC1-5864-000CN	Face down center guide	Internal components (3 of 8) on page 727
RC1-5865-000CN	Face-down front guide	External covers and panels on page 711
RC1-5866-000CN	Face-down rear guide	External covers and panels on page 711
RC1-5867-000CN	Fan duct	Internal components (3 of 8) on page 727

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RC1-5873-000CN	Inner rear cover	External covers and panels on page 711
RC1-5877-000CN	Inner top cover	External covers and panels on page 711
RC1-5878-000CN	Inner top, rear cover	External covers and panels on page 711
RC1-5880-000CN	Paper delivery upper cover	External covers and panels on page 711
RC1-5904-000CN	Cable guide	Internal components (5 of 8) on page 731
RC1-5926-000CN	Lock lever	Internal components (6 of 8) on page 733
RC1-5927-000CN	Lock plate	Internal components (6 of 8) on page 733
RC1-5938-000CN	Retard guide pin	Multipurpose pickup assembly on page 749
RC1-5939-000CN	Retard guide pin	Multipurpose pickup assembly on page 749
RC1-5940-000CN	Retard guide	Multipurpose pickup assembly on page 749
RC1-5953-000CN	Torsion spring	Internal components (6 of 8) on page 733
RC1-5988-000CN	Inner front cover	Internal components (1 of 8) on page 723
RC1-6012-000CN	Jam sensor flag	Upper paper pickup assembly on page 827
RC1-6013-000CN	Sensor lever	Internal components (7 of 8) on page 735
RC1-6042-000CN	Left cover	2 X 500-sheet feeder external components on page 813
RC1-6043-000CN	Left lower cover	2 X 500-sheet feeder external components on page 813
RC1-6044-000CN	Right cover	2 X 500-sheet feeder external components on page 813
RC1-6045-000CN	Right lower cover	2 X 500-sheet feeder external components on page 813
RC1-6046-000CN	Left front cover	2 X 500-sheet feeder external components on page 813
RC1-6047-000CN	Right front cover	2 X 500-sheet feeder external components on page 813
RC1-6048-000CN	Rear cover	2 X 500-sheet feeder external components on page 813
RC1-6067-000CN	Left caster cover	2 X 500-sheet feeder external components on page 813

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RC1-6068-000CN	Right caster cover	2 X 500-sheet feeder external components on page 813
RC1-6154-000CN	Rear cover	Internal components (2 of 2) on page 839
RC1-6158-000CN	Front door	Internal components (1 of 2) on page 837
RF5-3750-020CN	Separation pad	Multipurpose pickup assembly on page 749
RK2-0615-000CN	DC motor	Fuser drive assembly on page 755
RK2-0618-000CN	DC stepping motor	Internal components (7 of 8) on page 735
RK2-0619-000CN	DC stepping motor	Fuser drive assembly on page 755
RK2-0621-000CN	Fan	Internal components (3 of 8) on page 727
RK2-0621-000CN	Fan	Internal components (6 of 8) on page 733
RK2-0621-000CN	Fan	Internal components (7 of 8) on page 735
RK2-0622-000CN	Fan	Right lower cover assembly on page 713
RK2-0622-000CN	Fan	Internal components (7 of 8) on page 735
RK2-0623-000CN	Fan	Internal components (1 of 8) on page 723
RK2-0624-000CN	Solenoid	Upper paper pickup drive assembly on page 821
RK2-0624-000CN	Solenoid	Lower paper pickup drive assembly on page 823
RK2-0627-000CN	Low–voltage power PCB assembly 110V	Internal components (2 of 8) on page 725
RK2-0627-000CN	Low-voltage power PCB assembly 110-127V	PCB assembly on page 765
RK2-0628-000CN	Low–voltage power PCB assembly 220V	Internal components (2 of 8) on page 725
RK2-0628-000CN	Low-voltage power PCB assembly 220-240V	PCB assembly on page 765
RK2-0648-000CN	Fan	Duplexing unit (1 of 2) on page 757
RK2-0802-000CN	Flat cable	Internal components (2 of 8) on page 725
RK2-0804-000CN	Microswitch	Internal components (6 of 8) on page 733
RK2-0807-000CN	Door switch	Internal components (1 of 2) on page 837

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RK2-0812-000CN	DC stepping motor	Internal components (2 of 2) on page 839
RK2-0816-000CN	Flat cable connection 23P	Internal components (2 of 8) on page 725
RK2-1171-000CN	Flat cable	Internal components (2 of 8) on page 725
RL1-0019-000CN	pickup roller	Multipurpose pickup assembly on page 749
RL1-0612-000CN	Full sensor flag	Delivery assembly on page 753
RL1-0654-000CN	Solenoid cover	Duplexing unit (1 of 2) on page 757
RL1-0891-000CN	Lower cover	External covers and panels on page 835
RL1-0892-000CN	Front cover	Internal components (1 of 2) on page 837
RM1-0036-020CN	Paper pickup roller assembly	Internal components (7 of 8) on page 735
RM1-0036-020CN	Paper pickup roller assembly	Lower paper pickup assembly on page 829
RM1-0037-020CN	Paper feed roller assembly	Internal components (7 of 8) on page 735
RM1-0037-020CN	Paper feed roller assembly	Multipurpose pickup assembly on page 749
RM1-0037-020CN	Paper feed roller assembly	Upper paper pickup assembly on page 827
RM1-0037-020CN	Paper feed roller assembly	Lower paper pickup assembly on page 829
RM1-0041-000CN	Size sensing assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
RM1-0041-020CN	Size sensing assembly	Internal components (5 of 8) on page 731
RM1-0981-000CN	3-bin mailbox jam access door	3-bin mailbox accessory on page 833
RM1-1007-000CN	Left reg. adjustment assembly	Internal components (5 of 8) on page 731
RM1-1007-000CN	Left reg. adjustment assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
RM1-1008-000CN	Kicker assembly	Internal components (5 of 8) on page 731
RM1-1008-000CN	Kicker assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 817

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RM1-1591-000CN	Laser/Scanner assembly	Internal components (2 of 8) on page 725
RM1-1608-000CN	High-voltage power supply PCB	Internal components (1 of 8) on page 723
RM1-1608-000CN	High-voltage power PCB assembly	PCB assembly on page 765
RM1-1609-000CN	Toner sensor PCB assembly	Internal components (1 of 8) on page 723
RM1-1609-000CN	Toner sensor PCB assembly	PCB assembly on page 765
RM1-1618-000CN	Memory PCB assembly	Internal components (8 of 8) on page 737
RM1-1618-000CN	Memory PCB assembly	PCB assembly on page 765
RM1-1627-000CN	Main cable assembly	Internal components (8 of 8) on page 737
RM1-1631-000CN	Fuser motor cable assembly	Internal components (8 of 8) on page 737
RM1-1634-000CN	Fuser drive cable assembly	Delivery assembly on page 753
RM1-1638-000CN	Fuser drive cable assembly	Delivery assembly on page 753
RM1-1642-000CN	Formatter power cable assembly	Internal components (8 of 8) on page 737
RM1-1644-000CN	Developing disengaging sensor cable	Disengaging drive assembly on page 743
RM1-1653-000CN	Memory contact cable	Internal components (3 of 8) on page 727
RM1-1659-000CN	Drum motor assembly	Internal components (7 of 8) on page 735
RM1-1662-000CN	Right ETB lever assembly	Internal components (5 of 8) on page 731
RM1-1663-000CN	Left ETB lever assembly	Internal components (5 of 8) on page 731
RM1-1664-000CN	Left scanner retaining assembly	Internal components (2 of 8) on page 725
RM1-1665-000CN	Right scanner retaining assembly	Internal components (2 of 8) on page 725
RM1-1675-000CN	Connector guide assembly	Internal components (4 of 8) on page 729
RM1-1676-000CN	Attraction contact assembly	Internal components (4 of 8) on page 729
RM1-1679-000CN	Rear plate assembly	Internal components (2 of 8) on page 725
RM1-1717-000CN	Disengaging Drive Assembly	Disengaging drive assembly on page 743
RM1-1729-000CN	Fuser drive assembly	Fuser drive assembly on page 755

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RM1-1730-000CN	Delivery assembly 110-127V (new)	Delivery assembly on page 753
RM1-1737-000CN	Delivery assembly 220-240V (new)	Delivery assembly on page 753
RM1-1750-000CN	Lifter drive assembly	Lifter drive assembly on page 745
RM1-1750-000CN	Lifter-drive assembly	500-sheet feeder lifter drive assembly on page 819
RM1-1756-000CN	Paper feed assembly	Internal components (5 of 8) on page 731
RM1-1785-000CN	Duplex feed assembly	Duplex feed assembly on page 761
RM1-2099-000CN	Power supply switch assembly	Internal components (2 of 8) on page 725
RM1-2100-000CN	Front inner cover assembly	Internal components (8 of 8) on page 737
RM1-2101-000CN	Rear inner cover assembly	Internal components (8 of 8) on page 737
RM1-2102-000CN	Fuser door assembly	Internal components (8 of 8) on page 737
RM1-2103-000CN	Front fuser door link assembly	Internal components (8 of 8) on page 737
RM1-2104-000CN	Rear fuser door link assembly	Internal components (8 of 8) on page 737
RM1-2105-000CN	Right lower cover assembly	Right lower cover assembly on page 713
RM1-2109-000CN	Multipurpose tray assembly	Multipurpose tray assembly on page 715
RM1-2111-000CN	Right upper door assembly	Right upper door assembly on page 717
RM1-2112-000CN	Duplexing unit	Duplexing unit (1 of 2) on page 757
RM1-2115-000CN	Left cover assembly	Left cover assembly on page 719
RM1-2117-000CN	Operation panel holder assembly	External covers and panels on page 711
RM1-2118-000CN	Rear cover assembly	External covers and panels on page 711
RM1-2119-000CN	Sub power supply assembly	Internal components (7 of 8) on page 735
RM1-2119-000CN	Sub power supply assembly	PCB assembly on page 765
RM1-2137-000CN	Main drive assembly	Internal components (7 of 8) on page 735
RM1-2142-000CN	Cartridge guide assembly, right upper	Internal components (4 of 8) on page 729

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RM1-2143-000CN	Cartridge guide assembly, right lower	Internal components (4 of 8) on page 729
RM1-2144-000CN	HV terminal mount assembly	Internal components (4 of 8) on page 729
RM1-2178-000CN	Fan assembly	Internal components (1 of 8) on page 723
RM1-2179-000CN	Paper delivery cover assembly	External covers and panels on page 711
RM1-2180-000CN	Face-down tray assembly	Face-down tray assembly on page 721
RM1-2189-000CN	pickup motor assembly	Pickup motor assembly on page 741
RM1-2198-000CN	Paper pickup drive assembly	Paper pickup drive assembly on page 739
RM1-2199-000CN	Multipurpose pickup assembly	Multipurpose pickup assembly on page 749
RM1-2200-000CN	Cst. Cover assembly, B	Multipurpose pickup assembly on page 749
RM1-2203-000CN	MPU rail assembly	Internal components (6 of 8) on page 733
RM1-2219-000CN	Cassette	Cassette on page 747
RM1-2219-000CN	2 X 500-sheet paper feeder cassette case unit	2 X 500-sheet paper feeder cassette on page 825
RM1-2226-000CN	Right switch assembly	2 X 500-sheet paper feeder internal components (1 of 2) on page 815
RM1-2227-000CN	Left rail assembly	Internal components (1 of 8) on page 723
RM1-2228-000CN	Right rail assembly	Internal components (1 of 8) on page 723
RM1-2229-000CN	Upper paper pickup drive assembly	Upper paper pickup drive assembly on page 821
RM1-2231-000CN	Motor assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
RM1-2232-000CN	Upper paper pickup assembly	Upper paper pickup assembly on page 827
RM1-2238-000CN	Lower pickup drive assembly	Lower paper pickup drive assembly on page 823
RM1-2240-000CN	Lower paper pickup assembly	Lower paper pickup assembly on page 829
RM1-2241-000CN	Right lower cover assembly	2 X 500-sheet feeder external components on page 813

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RM1-2249-000CN	Paper sensor unit	Upper paper pickup assembly on page 827
RM1-2249-000CN	Paper sensor unit	Lower paper pickup assembly on page 829
RM1-2279-000CN	Intermediate feed assembly	External covers and panels on page 835
RM1-2288-000CN	Drawer connector assembly	Internal components (2 of 2) on page 839
RM1-2290-000CN	Rear rail assembly	Internal components (2 of 2) on page 839
RM1-2291-000CN	Front rail assembly	Internal components (1 of 2) on page 837
RM1-2293-000CN	Connector cover assembly	Internal components (2 of 2) on page 839
RM1-2294-000CN	Jam clearing lever assembly	Internal components (1 of 2) on page 837
RM1-2295-000CN	Top cover assembly	External covers and panels on page 835
RM1-2345-000CN	Fan driver PCB assembly	Internal components (7 of 8) on page 735
RM1-2345-000CN	Fan driver PCB assembly	PCB assembly on page 765
RM1-2346-000CN	DC controller assembly	Internal components (2 of 8) on page 725
RM1-2346-000CN	DC controller PCB assembly	PCB assembly on page 765
RM1-2349-000CN	Drive sensor cable assembly	Internal components (7 of 8) on page 735
RM1-2350-000CN	Paper sensor cable assembly	Internal components (7 of 8) on page 735
RM1-2351-000CN	MFP power cable assembly	Internal components (7 of 8) on page 735
RM1-2352-000CN	Power save cable assembly	Internal components (7 of 8) on page 735
RM1-2353-000CN	Power cable assembly	Internal components (2 of 8) on page 725
RM1-2354-000CN	Control panel cable assembly	Internal components (1 of 8) on page 723
RM1-2355-000CN	Feed unit connect cable assembly	Internal components (3 of 8) on page 727
RM1-2356-000CN	Door cable assembly	Internal components (6 of 8) on page 733
RM1-2357-000CN	Fan connecting cable assembly	Internal components (7 of 8) on page 735
RM1-2358-000CN	Fan connecting cable assembly	Internal components (7 of 8) on page 735

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
RM1-2360-000CN	Fan connecting cable assembly	Internal components (8 of 8) on page 737
RM1-2361-000CN	Pickup cable assembly	Internal components (7 of 8) on page 735
RM1-2365-000CN	Paper feeder driver PCB assembly	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
RM1-2366-000CN	Cassette size cable	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
RM1-2368-000CN	Solenoid cable	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
RM1-2369-000CN	Motor cable	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
RM1-2370-000CN	Door switch cable	Upper paper pickup assembly on page 827
RM1-2371-000CN	Solenoid cable	2 X 500-sheet paper feeder internal components (2 of 2) on page 817
RM1-2372-000CN	Paper feed sensor cable	Upper paper pickup assembly on page 827
RM1-2373-000CN	Cable interface	2 X 500-sheet paper feeder internal components (1 of 2) on page 815
RM1-2380-000CN	IPTU driver PCB assembly	Internal components (2 of 2) on page 839
RM1-2381-000CN	Motor cable assembly	Internal components (2 of 2) on page 839
RM1-2383-000CN	Paper sensor cable assembly	Internal components (1 of 2) on page 837
RM1-2384-000CN	Drawer connector cable assembly	Internal components (2 of 2) on page 839
RM1-3131-000CN	Fuser assembly (110-127V)	Fuser assembly on page 763
RM1-3146-000CN	Fuser assembly (220-240V)	Fuser assembly on page 763
RM1-3161-000CN	ETB assembly	ETB assembly on page 751
RU5-2514-000CN	Compression spring	Multipurpose pickup assembly on page 749
WC4-5188-000CN	Switch	Internal components (4 of 8) on page 729
WG8-5696-000CN	Photo interrupter, TLP1243	Internal components (7 of 8) on page 735
WG8-5696-000CN	Photo Interrupter TLP1243	Disengaging drive assembly on page 743

Table 8-69 Numerical parts list (continued)

Part number	Description	Table and page
WG8-5696-000CN	Photo interrupter, TLP1243	Delivery assembly on page 753
WG8-5696-000CN	Photo interrupter, TLP1243	Upper paper pickup assembly on page 827
WG8-5696-000CN	Photo interrupter	Internal components (1 of 2) on page 837
WP2-5187-000CN	Humidity sensor unit	Internal components (1 of 8) on page 723
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