HP Color LaserJet 4700/CP4005 Series
Service Manual



HP Color LaserJet 4700/CP4005 Series printers

Service Manual



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CB503-90929

Edition 1, 10/2006

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Safety Information

WARNING!

Potential Shock Hazard

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

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1 Product information

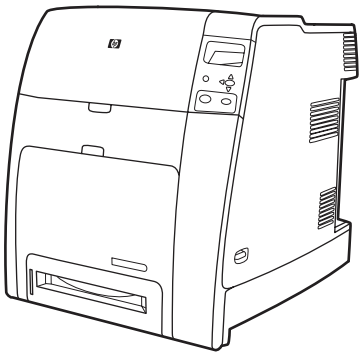
This chapter contains information about the following topics:

- Printer configurations
- Printer features
- Printer walkaround
- Identification, site requirements, and specifications
- Media specifications
- Printing on special media
- Environmental product stewardship program
- Hewlett-Packard Limited Warranty Statement
- Limited warranty for print cartridges and image drums
- Color LaserJet Image Fuser Kit and Image Transfer Kit Limited Warranty Statement
- Country/region-specific safety statements

Printer configurations

This manual describes the HP Color LaserJet 4700s and HP Color LaserJet CP4005 series printers. These printers are available in the following configurations.

HP Color LaserJet 4700 (Q7491A)



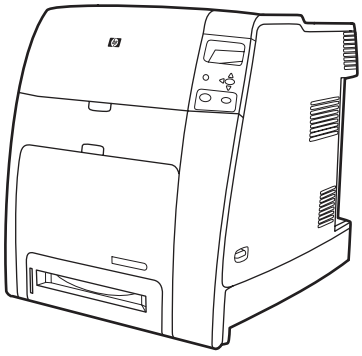
The HP Color LaserJet 4700 printer is a four-color laser printer that prints up to 31 pages per minute (ppm) for letter-sized paper and up to 30 ppm for A4-size paper.

- **Trays**. The printer comes with a multipurpose tray (Tray 1) that holds up to 100 sheets of various print media or 20 envelopes. A standard 500-sheet paper feeder (Tray 2) supports letter, legal, executive, 8.5 x 13, JIS B5, executive (JIS), 16K, A4, and A5, and custom media. The printer can support up to four optional 500-sheet paper feeders (Trays 3, 4, 5, and 6).
- **Connectivity**. The printer provides parallel and auxiliary ports for connectivity. Two enhanced input/output (EIO) slots, wireless connectivity capability with optional print server, auxiliary port, universal serial bus (USB) and accessory connections, and bidirectional parallel cable interface (IEEE-1284-C compliant) are standard.
- **Memory**. 160 megabytes (MB) of memory: 128 MB of dual data-rate (DDR) synchronous dynamic random access memory (SDRAM), 32 MB of memory on the formatter board, and one open dual inline memory module (DIMM) slot.



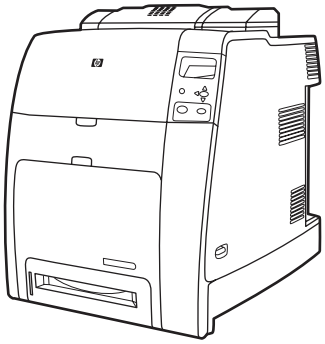
NOTE To allow memory expansion, the printer has an available 200-pin small outline dual inline memory module (SODIMM) slot that accepts 128 or 256 MB RAM. The printer can support up to 544 MB of memory: 512 MB of memory in SODIMMs, plus 32 MB additional memory on the formatter board. An optional hard drive is also available.

HP Color LaserJet 4700n (Q7492A)



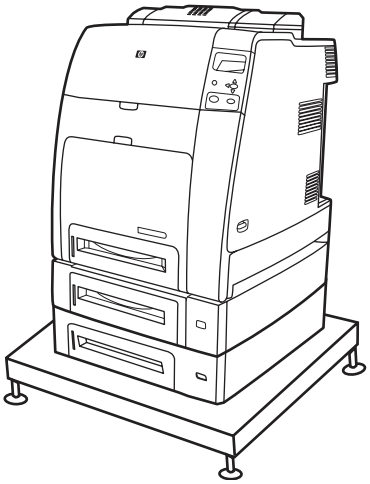
The HP Color LaserJet 4700n printer includes the features of the 4700, plus the HP Jetdirect embedded print server (RJ-45 port) for network connectivity.

HP Color LaserJet 4700dn (Q7493A)



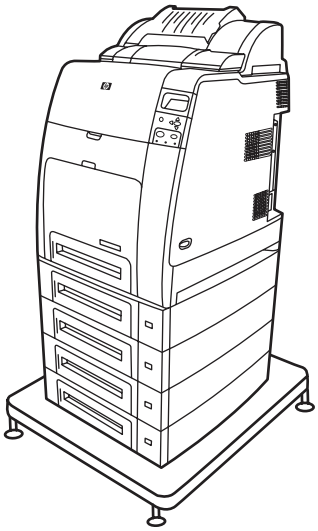
The HP Color LaserJet 4700dn printer includes the features of the 4700n, plus a duplexer for automatic two-sided printing, and an additional 128 MB of memory for a total of 288 MB of memory (256 MB of DDR SDRAM and 32 MB of memory on the formatter board).

HP Color LaserJet 4700dtn (Q7494A)



The HP Color LaserJet 4700dtn includes all the features of the 4700dn, two additional 500-sheet paper feeders (Trays 3 and 4), and a printer stand.

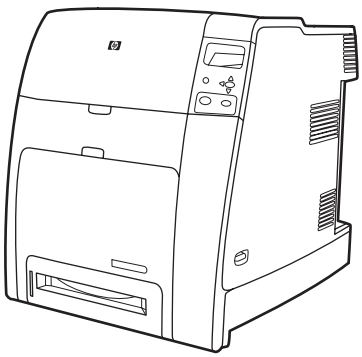
HP Color LaserJet 4700ph+ (Q7495A)



The HP Color LaserJet 4700ph+ includes the features of the 4700dtn, two additional 500-sheet paper feeders (Trays 5 and 6), a high-capacity stapler/stacker, a printer stand, a hard drive, and an additional 256 MB of memory for a total of 544 MB of memory.

NOTE 544 MB of SDRAM: 512 MB of DDR, plus 32 MB of additional memory on the formatter board and an additional DIMM slot. This printer has two 200-pin small outline dual inline memory module (SODIMM) slots that accept 128 or 256 MB of RAM each.

HP Color LaserJet CP4005n (CB503A)

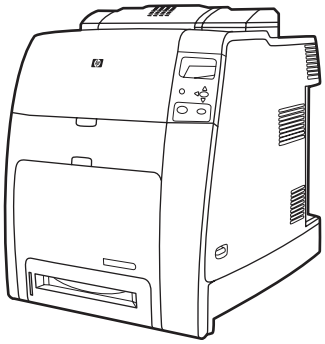


The HP Color LaserJet CP4005 printer is a four-color laser printer that prints up to 30 pages per minute (ppm) for black and 25 pages per minute (ppm) for color.

- **Trays**. The printer comes with a multipurpose tray (Tray 1) that holds up to 100 sheets of various print media or 20 envelopes. A standard 500-sheet paper feeder (Tray 2) supports letter, legal, executive, 8.5 X 13, JIS B5, executive (JIS), 16K, A4, and A5, and custom media. The printer also supports one optional 500-sheet paper feeder (Tray 3).
- **Connectivity**. The printer provides a network port (RJ-45 connector) and universal serial bus (USB).
- **Memory**. 128 MB of DDR SDRAM in a single DIMM slot that can be upgraded to a maximum of 512 MB.

NOTE To accommodate memory expansion, the available 200-pin small outline dual inline memory module (SODIMM) slot accepts 128, 256, or 512 MB RAM. The printer can support up to 512 MB of memory.

HP Color LaserJet CP4005dn (CB504A)



The HP Color LaserJet CP4005dn Series printer includes the features of the CP4005n, plus a duplexer for automatic two-sided printing, and an additional 128 MB of memory for a total of 258 MB of memory.

Printer features

These printers combine the quality and reliability of Hewlett-Packard printing with the following new features and standard capabilities. For more information, see the Hewlett-Packard Web site at http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljcp4005.

Table 1-1 Features

Performance	**HP Color LaserJet 4700 Series:** • Prints up to 31 pages per minute (ppm) for letter-size paper and up to 30 ppm for A4-size paper. • First page prints in 10 seconds or less. The printer can be set to wake from Sleep mode at a specific time each day. **HP Color LaserJet CP4005 Series:** • Prints up to 30 ppm in black & white and 25 ppm in color for letter-size (8.5"x11") and A4-size paper. • First page prints in 10 seconds or less for black and 12 seconds or less for color from the Ready prompt. This wait time is similar for first page out times from Powersave or Sleep mode.
Memory	**HP Color LaserJet 4700 Series:** • 160 MB of memory for the HP Color LaserJet 4700 and 4700n, 288 MB for the HP Color LaserJet 4700dn and HP Color LaserJet 4700dtn, and 544 MB for the HP Color LaserJet 4700ph+. **NOTE** Memory specification: HP Color LaserJet 4700 series printers use 200-pin small outline dual inline memory modules (SODIMM) that support 128 or 256 MB of RAM. • Two open EIO slots. • Can be expanded to 544 MB: 512 MB of DDR memory plus 32 MB of memory on the formatter board. • Optional hard drive can be added via an EIO slot (an internal hard drive is included with the HP Color LaserJet 4700ph+ printer). **HP Color LaserJet CP4005 Series:** • 128 MB of memory for the HP Color LaserJet CP4005n, 256 MB for the HP Color LaserJet CP4005dn. **NOTE** Memory specification: HP Color LaserJet CP4005 Series printers use 200-pin small outline dual inline memory modules that accepts 128, 256, or 512 MB RAM. The printer can support up to 512 MB of memory.
User interface	**HP Color LaserJet 4700 Series:** • Four-line graphic display on control panel. • Enhanced Help with animated graphics. • Embedded Web server to access support and order supplies (network-connected printers).

Table 1-1 Features (continued)

	HP Color LaserJet CP4005 Series: • Four-line graphic display on control panel. • Enhanced Help with animated graphics. • Embedded Web server to access support and order supplies (for network-connected printers). • HP Easy Printer Care Software (a Web-based status and troubleshooting tool).
Supported printer personalities	**HP Color LaserJet 4700 Series:** • HP PCL 6. • HP PCL 5c. • PostScript 3 emulation. • Portable document format (PDF). **HP Color LaserJet CP4005 Series:** • HP PCL 6. • HP PCL 5c. • PostScript 3 emulation. • Portable document format (PDF).
Job storage features	**HP Color LaserJet 4700 Series:** • Full job storage features. ◦ Proof and hold. ◦ Private jobs. ◦ Quick copy. ◦ Mopier mode. ◦ Job storage. • Fonts and forms. **HP Color LaserJet CP4005 Series:** • Full job storage features. • Personal identification number (PIN) printing. A user can send a print file to the printer with a PIN embedded in the job print it by typing in the PIN at the control panel. • Mopier mode. A print file is processed on the computer and sent one time only to the printer. It is then spooled at the printer, and the requested numbers of copies are printed. • Proof and hold. A multi-copy print file is sent to the printer, the first copy is printed for proofing, and the remainder of the job is held at the printer for printing or cancellation. • Fonts and forms.

Table 1-1 Features (continued)

Environmental features	**HP Color LaserJet 4700 Series:** • Sleep mode setting. • High content of recyclable components and materials. • Energy Star® compliant. **HP Color LaserJet CP4005 Series:** • Sleep mode setting. • High content of recyclable components and materials. • Energy Star® compliant.
Fonts	**HP Color LaserJet 4700 Series:** • 80 internal fonts available for both PCL and PostScript emulation. • Supports forms and fonts on the disk using HP Web Jetadmin. **HP Color LaserJet CP4005 Series:** • 80 internal fonts available for both PCL and PostScript emulation. • 80 printer-matching screen fonts in TrueType format available with the software solution.
Paper handling	**HP Color LaserJet 4700 Series:** • Prints on media from 77 x 127 mm (3 x 5 inches) up to 216 x 356 mm (8.5 x 14 inches) (legal size). • Tray 1 can process heavy media from 60 to 220 g/m^2 (16 to 60 lb), as well as standard 80 lb cover stock. • Tray 2 and optional trays can process media up to 120 g/m^2 (32 lb). • Prints on a wide range of media types, including HP laser photo media, glossy papers, and transparencies, as well as heavy stock, labels, and envelopes. • Standard 100-sheet multi-purpose paper tray (Tray 1) supports letter, legal, executive, 8.5 X 13, JIS B5, executive (JIS), 16K, A4, A5, and custom media. • Standard 500-sheet paper feeder (Tray 2) that supports letter, legal, executive, 8.5 X 13, JIS B5, executive (JIS), 16K, A4, A5, and custom media. • Up to four additional 500-sheet paper feeders (Trays 3, 4, 5, and 6) support letter, legal, executive, 8.5 X 13, JIS B5, executive (JIS), 16K, A4, A5, and custom media. • Standard 500-sheet face-down output bin. • Duplexer for automatic two-sided printing (duplexing) standard on the HP Color LaserJet 4700dn, HP Color LaserJet 4700dtn, and HP Color LaserJet 4700ph+printers. • Automatic duplexing of 120 g/m^2 (32 lb) paper at full speed - 30 sides (15 sheets) per minute. • Stapler/stacker prints up to 750 sheets with job offset and staples up to 30 sheets; standard on the HP Color LaserJet 4700ph+.

Table 1-1 Features (continued)

	HP Color LaserJet CP4005 Series: • Prints on media from 77 mm x 127 mm (3 inches x 5 inches) up to 216 mm x 356 mm (8.5 inches x 14 inches) (legal size). For ordering information, see Part numbers. • Tray 1 can process heavy media from 60 g/m^2 to 220 g/m^2 (16 lb to 60 lb), as well as standard 80 lb cover stock. For ordering information, see Part numbers. • Tray 2 and optional Tray 3 can process media from 60 g/m^2 to 120 g/m^2 (16 lb to 32 lb). • Prints on a wide range of media types, including HP laser photo media, glossy papers, and transparencies, as well as heavy stock, labels, and envelopes. • Prints multiple gloss levels. • Standard 100-sheet multi-purpose paper tray (Tray 1) supports letter, legal, executive, 8.5 X 13, JIS B5, executive (JIS), 16K, A4, A5, and custom media. • Standard 500-sheet paper feeder (Tray 2) that supports letter, legal, executive, 8.5 X 13, JIS B5, executive (JIS), 16K, A4, A5, and custom media. • One optional 500-sheet paper feeder (Tray 3) support letter, legal, executive, 8.5 X 13, JIS B5, executive (JIS), 16K, A4, A5, and custom media. • Standard 500-sheet face-down output bin. • Duplexer for automatic two-sided printing (duplexing) standard on the HP Color LaserJet CP4005dn Series printer. • Automatic duplexing of 120 g/m^2 (32 lb) paper at full speed - 30 sides (15 sheets) per minute.
Accessories	**HP Color LaserJet 4700 Series:** • Printer hard drive, which provides storage for fonts and macros as well as additional features for Job Storage; standard on HP Color LaserJet 4700ph+ printer. • Small outline dual inline memory modules (SODIMMs). • Flash memory slots for additional fonts and firmware upgrades. • Printer stand. • Stapler/stacker; standard on the HP Color LaserJet 4700ph+. **NOTE** The stapler/stacker is optional as an accessory for the HP Color LaserJet 4700dn and HP Color LaserJet 4700dtn. The stapler/stacker can be installed only on printers that are equipped with the automatic duplexer. • Up to four additional 500-sheet paper feeders (Trays 3, 4, 5, and 6). **HP Color LaserJet CP4005 Series:** • Small outline dual inline memory modules (SODIMMs). • Flash memory slot for firmware upgrades. • Printer stand. • One optional 500-sheet paper feeder (Tray 3).

Table 1-1 Features (continued)

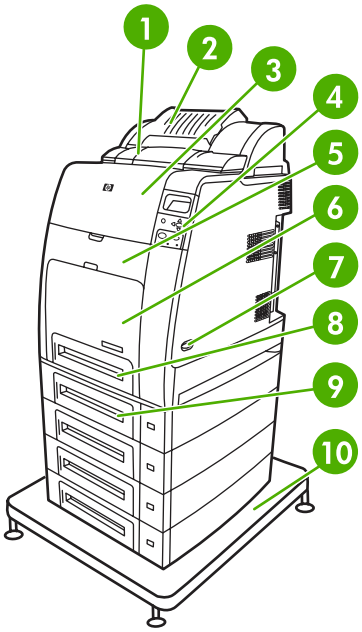
Connectivity	**HP Color LaserJet 4700 Series:** • Enhanced input/output (EIO) card slots for optional connectivity. (Network connection using an HP Jetdirect embedded print server is standard on HP Color LaserJet 4700n, HP Color LaserJet 4700dn, HP Color LaserJet 4700dtn, and HP Color LaserJet 4700ph+ printers.) • USB 2.0 connection. • HP Jetdirect embedded print server to enable network connectivity without requiring use of an EIO slot. • Standard bidirectional parallel cable interface (IEEE 1284-C compliant). • Auxiliary connector. • Both USB and parallel connections are supported, but cannot be used at the same time. **HP Color LaserJet CP4005 Series:** • USB 2.0 Hi-Speed Device port (Type B connector). • HP Jetdirect embedded print server to enable network connectivity. • Optional HP Jetdirect external print servers to enable alternative network connectivity through the USB port.
Supplies	**HP Color LaserJet 4700 Series:** • Supplies status page contains information on toner level, page count, and estimated pages remaining. • High-capacity no-shake cartridge with automatic toner seal removal feature. • Printer checks for authentic HP print cartridges at cartridge installation. • High-capacity (5,000) staple cartridge with staples-low and staples-out messaging capability. • Internet-enabled supply-ordering capabilities through the embedded Web server. **HP Color LaserJet CP4005 Series:** • Supplies status page contains information on toner level, page count, and estimated pages remaining. • High-capacity no-shake cartridge pre-installed in the printer automatic-toner seal removal feature. • Printer checks for authentic HP print cartridges at cartridge installation. • Internet-enabled supply-ordering capabilities through the embedded Web server, Web Jetadmin network printer software, and HP Easy Printer Care Software. For more information, see http://www.hp.com/go/easyprintercare.

Printer walkaround

HP Color LaserJet 4700 models

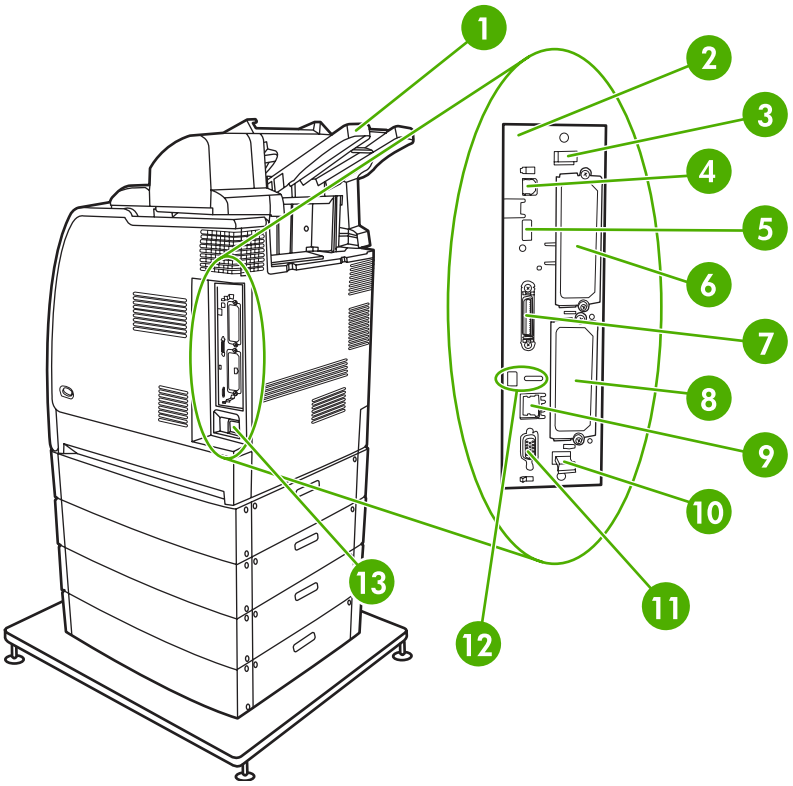
The following illustrations identify the locations and names of key components of the printers.

HP Color LaserJet 4700 Series



Front view (HP Color LaserJet 4700ph+ shown)

1	Duplexer
2	Stapler/stacker
3	Top cover (access to fuser)
4	Control panel
5	Front cover (access to print cartridges and ETB)
6	Tray 1
7	On/off switch
8	Tray 2
9	Optional paper tray (four optional paper trays are shown)
10	Printer stand



Back/side view (HP Color LaserJet 4700ph+ shown)

1	Stapler/stacker output tray
2	Formatter assembly
3	Upper formatter assembly tab
4	USB connection
5	ACC connection
6	EIO connection
7	Parallel port
8	EIO connection
9	Network port (RJ-45 connector)
10	Lower formatter assembly tab
11	Auxiliary port
12	Kensington lock
13	Power cord connection

HP Color LaserJet CP4005 models

The following illustrations identify the locations and names of key components of this printer.

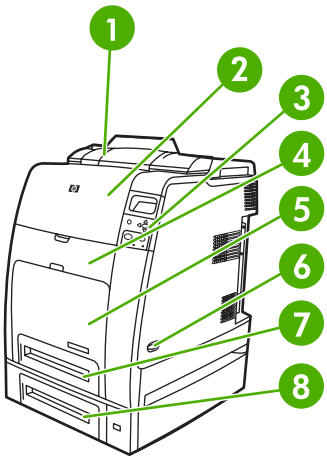


Figure 1-1 Front view (HP Color LaserJet CP4005dn with optional 500-sheet feeder shown)

1	Duplexer
2	Top cover
3	Control panel
4	Front cover (access to print cartridges, transfer unit, and fuser)
5	Tray 1
6	On/off switch
7	Tray 2
8	Optional Tray 3

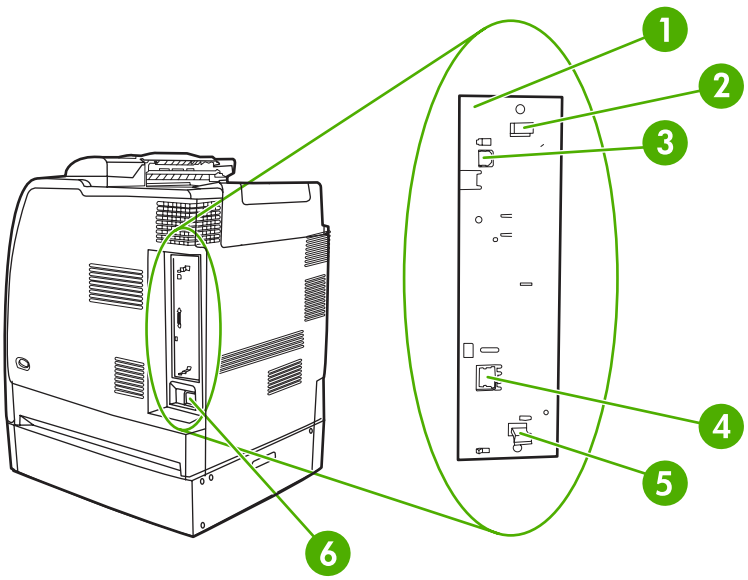


Figure 1-2 Back/side view (HP Color LaserJet CP4005dn with optional 500-sheet feeder shown)

1	Formatter board
2	Upper formatter board tab

3	USB 2.0 Hi-Speed Device port (Type B connector)
4	Ethernet Base 10/100T Networking port (RJ-45 connector)
5	Lower formatter board tab
6	Power cord connection

Identification, site requirements, and specifications

The following sections describe printer identification, site requirements, and specifications.

Model and serial numbers

The model number and serial numbers are listed on identification labels located on the rear of the printer. The model number is alphanumeric, such as Q7491A for an HP Color LaserJet 4700 Series printer or CB503A for an HP Color LaserJet CP4005 Series printer. The serial number contains information about the country/region of origin, the printer version, production code, and the production number of the printer.

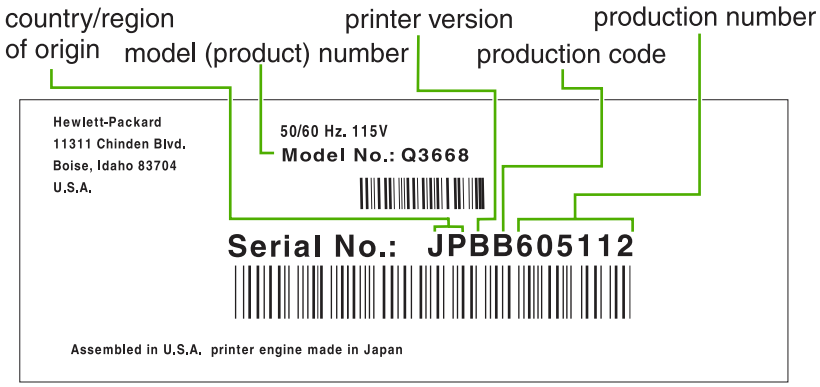


Figure 1-3 Model and serial number label

Model name	Model number
HP Color LaserJet 4700	Q7491A
HP Color LaserJet 4700n	Q7492A
HP Color LaserJet 4700dn	Q7493A
HP Color LaserJet 4700dtn	Q7494A
HP Color LaserJet 4700ph+	Q7495A
HP Color LaserJet CP4005n	CB503A
HP Color LaserJet CP4005dn	CB504A

Power and regulatory label

The identification labels on the rear of the printer also contain power-rating and regulatory information.

CAUTION Converting the voltage on the printer can damage the printer. Do not use any voltage other than the operating voltage. Any attempt to convert operating voltages will void the product warranty (for example, attempting to change a 110 V printer to a 220 V printer).



Figure 1-4 Power and regulatory label

Site requirements

The printer must be kept in an appropriate location to maintain the performance level that has been set at the factory. In particular, be sure that the environment adheres to the specifications listed in this chapter.

The following are recommendations for the printer installation, location, and placement.

- A well-ventilated, dust-free area
- A hard, level surface (with not more than a 2° angle)
    - For the HP Color LaserJet 4700 and 4700n, the surface must support at least 47.7 kg (105.1 lb)
    - For the HP Color LaserJet 4700dn, the surface must support at least 48.9 kg (107.8 lb)
    - For the HP Color LaserJet 4700dtn, the surface must support at least 104.3 kg (230 lb)
    - For the HP Color LaserJet 4700ph+, the surface must support at least 130.5 kg (287.7 lb)
    - For the HP Color LaserJet CP4005n, the surface must support at least 47.7 kg (105.1 lb)
    - For the HP Color LaserJet CP4005dn, the surface must support at least 48.9 kg (107.8 lb)

CAUTION The HP Color LaserJet 4700ph+ must *not* be installed on an elevated surface. Always install the HP Color LaserJet 4700ph+ printer on a hard, level floor.

Make sure to keep the printer away from the following:

- Direct sunlight, dust, open flames, or water
- The direct flow of exhaust from air ventilation systems
- Magnets and devices that emit a magnetic field
- Areas that experience vibration
- Walls or other objects

Space requirements

The printer must have sufficient space above and around it to allow proper access and ventilation.

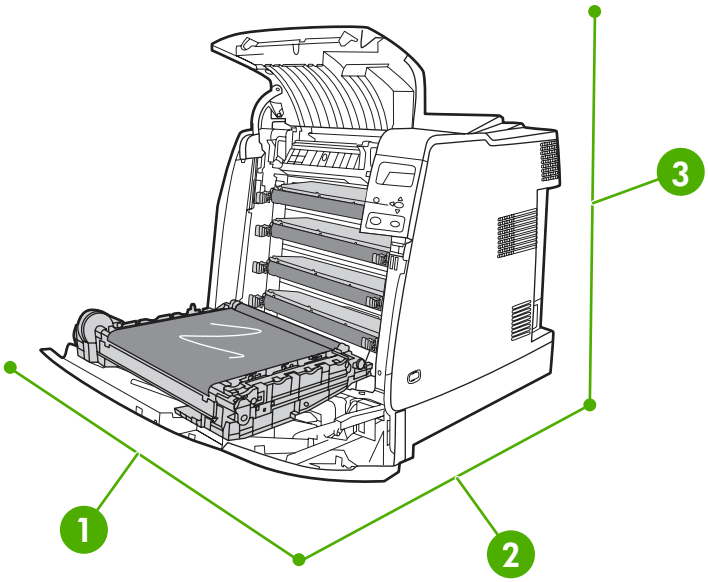


Figure 1-5 HP Color LaserJet 4700 and HP Color LaserJet CP4005 Series printer space requirements with doors open (except for the HP Color LaserJet 4700dtn and HP Color LaserJet 4700ph+ printer)

1	530 mm (20.9 inches) in width
2	940 mm (37 inches) in depth
3	804 mm (31.7 inches) in height

Other models have different space requirements. See the following table for additional space requirements for the given model.

Product	Height requirement	Width requirement
HP Color LaserJet 4700dtn	737 mm (29 inches)	904 mm (35.6 inches)
HP Color LaserJet 4700ph+	1102 mm (43.4 inches)	904 mm (35.6 inches)

Physical specifications

Table 1-2 Physical dimensions with doors closed

Product	Height	Depth	Width	Weight
HP Color LaserJet 4700, HP Color LaserJet 4700n, and HP Color LaserJet CP4005n	582 mm (22.9 inches)	598 mm (23.5 inches)	521 mm (20.5 inches)	47.7 kg (105.1 lb.)
HP Color LaserJet 4700dn and HP Color LaserJet CP4005dn with duplexer	628.6 mm (24.7 inches)	598 mm (23.5 inches)	521 mm (20.5 inches)	48.9 kg (107.8 lb.)
HP Color LaserJet 4700dtn with Trays 3 and 4, duplexer, and stand	1010.6 mm (39.8 inches)	715 mm (28.2 inches)	630 mm (24.8 inches)	104.3 kg (230 lb.)
HP Color LaserJet 4700ph+ with Trays 3, 4, 5, and 6, duplexer, stapler/stacker, and stand	1375.5 mm (54.2 inches)	715 mm (28.2 inches)	630 mm (24.8 inches)	130.5 kg (287.7 lb.)
HP Color LaserJet 4700 models: 750 sheet stapler/stacker	305 mm (12 inches)	476 mm (18.7 inches)	500 mm (19.7 inches)	8.4 kg (18.5 lb.)
Optional paper tray	117 mm (4.6 inches)	578 mm (22.8 inches)	514 mm (20.25 inches)	8.9 kg (19.6 lb.)
Printer stand	148 mm (5.8 inches)	715 mm (28.2 inches)	630 mm (24.8 inches)	37.6 kg (83 lb.)

Electrical specifications

	110-Volt models	220-Volt models
Power requirements	100-127V (+/- 10%) 50/60 Hz (+/- 2 Hz)	220-240V (+/- 10%) 50/60 Hz (+/- 2 Hz)
Rated current	8 Amps	4 Amps

Table 1-3 Power consumption (average, in watts)[1]

	Power consumption (average, in watts)			
Product model	Printing (up to 31 ppm letter)[2]	Ready[3, 4]	Sleep[5]	Off

Table 1-3 Power consumption (average, in watts)1 (continued)

HP Color LaserJet 4700	567	55	17	0.3
HP Color LaserJet 4700n, CP4005n	567	55	17	0.3
HP Color LaserJet 4700dn, CP4005dn	567	55	17	0.3
HP Color LaserJet 4700dtn	591	63	18	0.3
HP Color LaserJet 4700ph+	623	66	18	0.3

NOTE [1]Values are subject to change. See http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005 for current information.

[2]Power reported is the highest value measured using all standard voltages.

[3]Maximum heat dissipation for all models in Ready mode is 225 BTU/hour.

[4]Default time from Ready mode to Sleep mode is 30 minutes.

[5]Recovery time from Sleep mode to start of printing is less than 15 seconds.

Environmental specifications

Specification	Recommended	Allowed
Temperature	17 to 25°C (62.6 to 77°F)	15 to 30°C (59 to 86°F)
Humidity	30 to 70% relative humidity (RH)	10 to 80% RH
Altitude	N/A	0 to 2600 m (0 to 8530 ft)

Acoustic emissions

Sound Power Level	**Declared Per ISO 9296**
Printing (31 ppm letter)[1, 2, 3]	L_{WAd}=6.7 Bels (A) [67 dB (A)]
Ready	L_{WAd}=4.7 Bels (A) [47 dB (A)]
Sound Pressure Level - Bystander Position	**Declared Per ISO 9296**
Printing (31 ppm letter)[1, 2, 3]	L_{pAm}=50 dB (A)
Ready	L_{pAm}=31 dB (A)

NOTE [1]Values are subject to change. See http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005 for current information.

[2]Configuration tested: Base printer, simplex printing on A4 paper.

[3]HP Color LaserJet 4700 speed: up to 31 ppm letter and up to 30 ppm A4 paper; HP Color LaserJet CP4005 speed: 30 ppm black and 25 ppm color

Supply storage requirements

The life of supplies is greatly affected by their storage environment. Use storage requirements to determine the shelf life of stored supplies.

Table 1-4 Supply storage requirements

Item	Storage time	Storage condition
Temperature	Normal (maximum of 2.5 years)	0° to 35°C (32° to 95°F)
	Severe (maximum of 18 days)	High 35° to 40°C (95° to 104°F) Low 0° to -20°C (32° to -4°F)
	Maximum temperature change rate	40° to 15°C (104° to 59°F) within 3 minutes -20° to 25°C (-4° to 77°F) within 3 minutes
Humidity	Normal (maximum of 2.5 years)	35% to 85% RH
	Severe (maximum of 18 days)	High 85% to 95% RH Low 10% to 35% RH
	Atmospheric pressure	460 to 760 mm Hg (18.1 to 29.9 inches Hg)
	Storage time[1]	2.5 years

[1] The average storage time includes use time. Use cartridges within 2.5 years of the date code on the cartridge.

Skew specifications

The printer has the following skew specifications:

- **Print engine** (cut-sheet paper): less than 1.5 mm (0.06 inches) over a 260 mm (10.24 inch) length
- **Print engine** (envelopes): less than 3.3 mm (0.13 inches) over a 220 mm (8.66 inch) length

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 printer 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 printer 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:

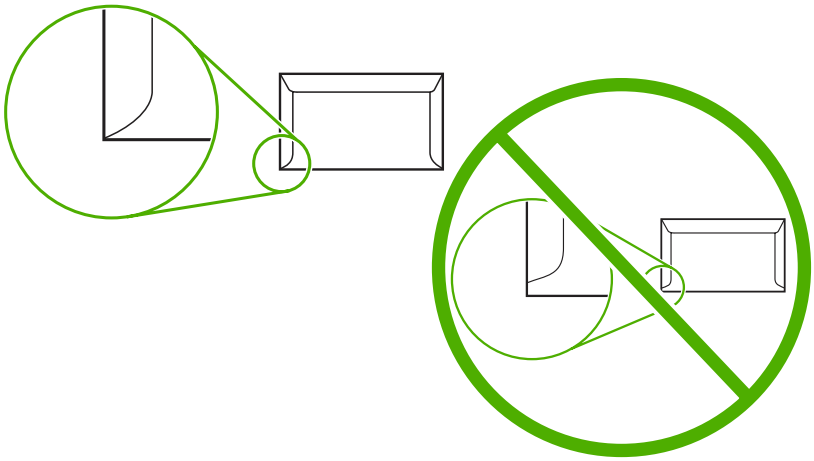
- **Weight**: The weight of the envelope paper should not exceed 105 g/m^2 (28 lb) or jamming might occur.
- **Construction**: Prior to printing, envelopes should lie flat with less than 6 mm (0.25 inch) curl, and should not contain air.
- **Condition**: Envelopes should not be wrinkled, nicked, or otherwise damaged.
- **Temperature**: Use envelopes that are compatible with the heat and pressure of the printer.
- **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 printer. 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 inch)	15 mm (0.6 inch)
Delivery address	51 mm (2 inches)	89 mm (3.5 inches)

NOTE For the best print quality, position margins no closer than 15 mm (0.6 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 printer, use only labels that are recommended for use in HP Color LaserJet 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 printer's fusing temperature.
- **Arrangement:** Only use labels that have no exposed backing between them. Labels can peel off sheets that have spaces between the labels, causing 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 printer must be able to withstand 200°C (392°F), the printer's fusing temperature.

CAUTION To avoid damaging the printer, use only transparencies recommended for use in HP Color 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 printer supports.

Table 1-5 Supported types of media

Type of media	Tray 1	Trays 2–6	Duplexer	Stapler/stacker
Plain	X	X	X	X
Preprinted	X	X	X	X
Letterhead	X	X	X	X
Transparency	X	X		
Prepunched	X	X	X	X
Labels	X	X		
Bond	X	X	X	X
Recycled	X	X	X	X
Color	X	X	X	X
Cardstock	X			
Rough	X	X	X	X
Envelope	X			

Table 1-6 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 inch) 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 printer.	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 inch)
Transparencies (letter/A4), suitable for use in color laserjet 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 inch) thick	Maximum stack height: 10 mm (0.6 inch)
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)	0.13 mm (0.005 inch) thick	Maximum stack height: 10 mm (0.6 inch)
HP Color Laser Glossy Photo Paper (letter/A4)	Letter: 216 x 279 mm (8.5 x 11 inches)	220 g/m^2 (60 lb) bond	Maximum stack height: 10 mm (0.6 inch)

Table 1-6 Tray 1 media sizes (continued)

Tray 1	Dimensions	Weight or thickness	Capacity
NOTE Do not use inkjet papers in this printer.	A4: 210 x 297 mm (8.27 x 11.7 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 laserjet 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 inch) thick	Maximum stack height: 10 mm (0.6 inch)

Table 1-7 Trays 2–6 media sizes[1] for HP Color LaserJet 4700. Trays 2–3 media sizes for HP Color LaserJet CP4005.

Trays 2–6	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 printer.	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 printer.	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 laserjet 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)
Labels (letter/A4 and custom sizes), suitable for use in color laserjet 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 inch) thick	Maximum stack height: 56 mm (2.2 inches)

[1] Trays 2–6 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 1-8 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)	Range: 60 g/m^2 (16 lb) bond to 120 g/m^2 (32 lb) bond

Table 1-8 Automatic duplex printing (two-sided printing) (continued)

Automatic duplex printing	Dimensions	Weight or thickness
	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)	
Glossy paper (A4/letter, 13 x 8.5 in, legal, executive, JIS B5) **NOTE** Do not use inkjet papers in this printer.	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 printer.	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 1-9 Optional stapler/stacker supported sizes (for HP Color LaserJet 4700 only)

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 thick media: 160 g/m^2 (42 lb) to 220 g/m^2 (58 lb)	500 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)		
8.5 x 13	216 x 330 mm (8.5 x 13 inches)		
Executive (JIS)	216 x 330 mm (8.5 x 13 inches)		

Table 1-9 Optional stapler/stacker supported sizes (for HP Color LaserJet 4700 only) (continued)

Size	Dimensions[1]	Weight	Capacity[2]
JIS B5	182 x 257 mm (7.17 x 10.12 inches)		
Envelope Monarch #7-3/4	98 x 191 mm (3.9 x 7.5 inches)		
Envelope C5 ISO	162 x 229 mm (6.4 x 9.0 inches)		
Envelope DL ISO	110 x 220 mm (4.3 x 8.7 inches)		
Envelope B5 ISO	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)		

1 The printer supports a wide range of sizes. Check the printer software for supported sizes.
2 Capacity can vary depending on paper weight and thickness, as well as environmental conditions.

Media to avoid

This printer can handle many types of media. Use of media outside the printer's specifications will cause a loss of print quality and increase the chance of paper jams.

- Do not use media that is too rough.
- Do not use media with cutouts or perforations other than standard 3-hole punched paper.
- Do not use multipart forms.
- Do not use media that has already been printed on or that has been fed through a photocopier.
- Do not use media with a watermark if you are printing solid patterns.

Media that can damage the printer

In rare circumstances, media can damage the printer. Avoid the following media to prevent possible damage to the printer:

- Do not use media with staples attached.
- Do not use transparencies designed for inkjet printers or other low-temperature printers, or transparencies designed for monochrome printing. Use only transparencies that are specified for use with HP Color LaserJet printers.
- Do not use glossy or photo media intended for inkjet printers.
- Do not use media that is embossed or coated and is not designed for the temperatures of the fuser. Select media that can tolerate temperatures of 195°C (383°F) for 0.1 second.

- Do not use letterhead media with low-temperature dyes or thermography. Preprinted forms or letterhead must use inks that can tolerate temperatures of 195°C (383°F) for 0.1 second.
- Do not use any media that produces undesirable emissions, or that melts, offsets, or discolors when exposed to 195°C (383°F) for 0.1 second.

To order HP Color LaserJet printing supplies, go to http://www.hp.com/go/ljsupplies in the United States or to http://www.hp.com/ghp/buyonline.html worldwide.

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 printer prompts you for the paper type, select the correct media type for the media loaded in the tray. For example, select **GLOSSY 75-105 G/M2** 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 printer 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 printer. 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 printer.

Glossy paper

- In either the software application or the driver, select **GLOSSY 75-105 G/M2**, **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 75-105 G/M2** for the input tray being used.
- Because this affects all print jobs, it is important to return the printer 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 printer's fusing temperature of 195°C (383°F) for 0.1 second without deterioration.
- The printer 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 printer 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 printer's fusing process.
- Envelopes should be loaded face-down and with the postage end feeding into the printer first.

Labels

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

- Verify that the labels' adhesive material can tolerate temperatures of 195°C (383°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 printer jams. Exposed adhesive can also cause damage to printer 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 4700 series printer.

Table 1-10 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 printer control panel to set the media type for the tray to the appropriate paper type listed in Table 1-10 Supported heavy paper types on page 33.
- 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 printer 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 printer. 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 printer. 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 printer's fusing temperature of approximately 195°C (383°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 printer 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 1-11 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 1-11 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

Environmental product stewardship program

Protecting the environment

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

Ozone production

This product generates no appreciable ozone gas (O_3).

Power consumption

Power usage drops significantly while in Ready/Sleep mode, which saves natural resources and saves money without affecting the high performance of this product. To determine the ENERGY STAR® qualification status for this product see the Product Data Sheet or Specifications Sheet. Qualified products are also listed at:

http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html

Toner consumption

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

Paper use

This product's manual/optional automatic duplex feature (two-sided printing) and N-up printing (multiple pages printed on one page) capability can reduce paper usage and the resulting demands on natural resources.

Plastics

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

HP LaserJet print supplies

It's easy to return and recycle your empty HP LaserJet print cartridges—free of charge—with HP Planet Partners. Multilingual program information and instructions are included in every new HP LaserJet print cartridge and supplies package. You help reduce the toll on the environment further when you return multiple cartridges together rather than separately.

HP is committed to providing inventive, high-quality products and services that are environmentally sound, from product design and manufacturing to distribution, customer use and recycling. When you participate in the HP Planet Partners program, we ensure your HP LaserJet print cartridges are recycled properly, processing them to recover plastics and metals for new products and diverting millions of tons of waste from landfills. Since this cartridge is being recycled and used in new materials, it will not be returned to you. Thank you for being environmentally responsible!

NOTE Use the return label to return original HP LaserJet print cartridges only. Please do not use this label for HP inkjet cartridges, non-HP cartridges, refilled or remanufactured cartridges or warranty returns. For information about recycling your HP inkjet cartridges please go to http://www.hp.com/recycle.

Return and recycling instructions

United States and Puerto Rico

The enclosed label in the HP LaserJet toner cartridge box is for the return and recycling of one or more HP LaserJet print cartridges after use. Please follow the applicable instructions below.

Multiple returns (two to eight cartridges)

1. Package each HP LaserJet print cartridge in its original box and bag.
2. Tape up to eight single boxes together using strapping or packaging tape (up to 70 lbs).
3. Use a single pre-paid shipping label.

OR

1. Use your own suitable box, or request a free bulk collection box from the http://www.hp.com/recycle or 1-800-340-2445 (holds up to eight HP LaserJet print cartridges).
2. Use a single pre-paid shipping label.

Single returns

1. Package the HP LaserJet print cartridge in its original bag and box.
2. Place the shipping label on the front of the box.

Shipping

For all HP LaserJet print cartridge recycling returns, give the package to UPS during your next delivery or pickup, or take it to an authorized UPS drop-off center. For the location of your local UPS drop-off center, call 1-800-PICKUPS or visit http://www.ups.com. If you are returning via USPS label, give the package to a U.S. Postal Service carrier or drop off at a U.S.Postal Service Office. For more information, or to order additional labels or boxes for bulk returns, visit http://www.hp.com/recycle or call 1-800-340-2445. Requested UPS pickup will be charged normal pickup rates. Information subject to change without notice.

Non-US returns

To participate in HP Planet Partners return and recycling program, just follow the simple directions in the recycling guide (found inside the packaging of your new printer supply item) or visit http://www.hp.com/recycle. Select your country/region for information on how to return your HP LaserJet printing supplies.

Paper

This product is capable of using recycled papers when the paper meets the guidelines outlined in the *HP LaserJet Printer Family Print Media Guide*. This product is suitable for the use of recycled paper according to EN12281:2002.

Material restrictions

This HP product does not contain added mercury.

This HP product contains a battery that might require special handling at end-of-life. The batteries contained in or supplied by Hewlett-Packard for this product include the following:

HP Color LaserJet CP4005 Series	
Type	Carbon monofluoride lithium battery
Weight	0.8 grams
Location	Formatter board
User-removable	No

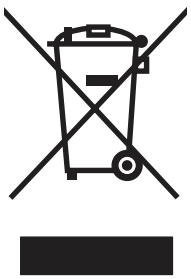




廢電池請回收

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

Disposal of waste equipment by users in private households in the European Union



This symbol on the product or on its packaging indicates that this product must not be disposed of with your other household waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

Material Safety Data Sheet (MSDS)

Material Safety Data Sheets (MSDS) for supplies containing chemical substances (for example, toner) can be obtained by contacting the HP Web site at www.hp.com/go/msds or www.hp.com/hpinfo/community/environment/productinfo/safety.

For more information

To obtain information about these environmental topics:

- Product environmental profile sheet for this and many related HP products
- HP's commitment to the environment
- HP's environmental management system
- HP's end-of-life product return and recycling program
- Material Safety Data Sheets

Visit http://www.hp.com/go/environment or http://www.hp.com/hpinfo/community/environment/productinfo/safety.

Hewlett-Packard Limited Warranty Statement

HP product	Duration of Limited Warranty
HP Color LaserJet 4700	1 year, on-site
HP Color LaserJet 4700n	
HP Color LaserJet 4700dn	
HP Color LaserJet 4700dtn	
HP Color LaserJet 4700ph+	
HP Color LaserJet CP4005n	
HP Color LaserJet CP4005dn	

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.

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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.

Limited warranty for print cartridges and image drums

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.

Color LaserJet Image Fuser Kit and Image Transfer Kit Limited Warranty Statement

This HP product is warranted to be free from defects in materials and workmanship until the printer provides a low-life indicator on the control panel.

This warranty does not apply to products that (a) have been 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) 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.

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Country/region-specific safety statements

Laser safety

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration has implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States. The device is certified as a “Class 1” laser product under the U.S. Department of Health and Human Services (DHHS) Radiation Performance Standard according to the Radiation Control for Health and Safety Act of 1968. Since radiation emitted inside the device is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

WARNING! Using controls, making adjustments, or performing procedures other than those specified in this user guide may result in exposure to hazardous radiation.

Canadian DOC regulations

Complies with Canadian EMC Class A requirements.

« Conforme à la classe A des normes canadiennes de compatibilité électromagnétiques. « CEM ». »

VCCI statement (Japan)

この装置は、情報処理装置等電波障害自主規制協議会（ＶＣＣＩ）の基準に基づくクラスＡ情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

Power cord statement (Japan)

製品には、同梱された電源コードをお使い下さい。
同梱された電源コードは、他の製品では使用出来ません。

EMI statement (Korea)

A급 기기 (업무용 정보통신기기)

이 기기는 업무용으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이 점을 주의하시기 바라며, 만약 잘못판매 또는 구입하였을 때에는 가정용으로 교환하시기 바랍니다.

EMI statement (Taiwan)

警告使用者：

這是甲類的資訊產品，在居住的環境中使用時，可能會造成射頻干擾，在這種情況下，使用者會被要求採取某些適當的對策。

Finnish laser statement

LASERTURVALLISUUS

LUOKAN 1 LASERLAITE

KLASS 1 LASER APPARAT

HP LaserJet 4700, HP LaserJet 4700n, HP Color LaserJet CP4005n,
HP LaserJet 4700dn, HP Color LaserJet CP4005dn, HP LaserJet 4700dtn,
HP LaserJet 4700ph+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 4700, HP LaserJet 4700n, HP Color LaserJet CP4005n,
HP LaserJet 4700dn, HP Color LaserJet CP4005dn, HP LaserJet 4700dtn,
HP LaserJet 4700ph+-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

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 4700/CP4005 Series
Accessories:	500 sheet paper feeder (Q7499A) Stapler/stacker (Q7003A)
Regulatory Model Number:[2)]	BOISB-0404-00
Product Options:	All
	Toner Cartridge: Q5950A, Q5951A, Q5952A, Q5953A, CB400A, CB401A, CB402A, CB403A

conforms to the following Product Specifications:

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

Supplementary Information:

The product herewith complies with the requirements of the EMC Directive 89/336/EEC, the Low Voltage Directive 73/23/EEC, and carries the CE-Marking accordingly.

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

1) The product was tested in a typical configuration with Hewlett-Packard Personal Computer Systems.

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

Boise, Idaho 83714-1021, USA

31 August, 2006

For regulatory topics only:

European Contact:	Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard Gmbh, Department HQ-TRE / Standards Europe, Herrenberger Strasse 140, D-71034 Böblingen, Germany, (FAX: +49-7031-14-3143)
USA Contact:	Product Regulations Manager, Hewlett-Packard Company, PO Box 15, Mail Stop 160, Boise, Idaho 83707-0015, USA, (Phone: 208-396-6000)

2 Service approach

This chapter provides information about the following topics:

- Service approach
- Parts and supplies
- HP available services
- Ordering related documentation and software

Service approach

Printer repair normally begins by using the printer's 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 printer system).
2. Determine if the problem is located in the accessories or in the printer engine.
3. Troubleshoot the problem by using the procedures in chapter 7.

After you locate a faulty part, the printer 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 printer 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 printer. 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 printers 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 printer. The printer status window displays. 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 printer to HP. You also have the option to order supplies without sending the printer 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/clj4700 and http://www.hp.com/support/ljcp4005

Printer drivers can be obtained from the following sites:

In China: ftp://www.hp.com.cn/support/clj4700

In Japan: ftp://www.jpn.hp.com/support/clj4700

In Korea: http://www.hp.co.kr/support/clj4700

In Taiwan: http://www.hp.com.tw/support/clj4700

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 4700 and CP4500 Series printers, updated HP printer software, product and support information, and printer drivers in several languages can be obtained from http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005. (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://www.hp.com. 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 located on the HP Web site.

Software utilities, drivers, and electronic information

Visit: http://www.hp.com/go/clj4700_software or http://www.hp.com/support/ljCP4005_software for the HP Color LaserJet 4700 and CP4500 Series printers. 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 printer.

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.

Call: 1-800-538-8787 (U.S.) or 1-800-387-3154 (Canada).

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 printer.

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.

Ordering related documentation and software

The following table lists part numbers for related documentation and software.

Description	Part Number
HP LaserJet Family Print Media Guide	5963-7863
HP Jetdirect Print Server Administrator's Guide	5971-3257
PCL/PJL Technical Reference Package	5021-0330
HP Color LaserJet 4700/HP Color LaserJet CP4005 Series Getting Started Guide	Q7491-90901
HP Color LaserJet CP4005 Series Getting Started Guide	CB503-90931
HP Color LaserJet 4700/HP Color LaserJet CP4005 Series Service Manual	CB503–90929
HP Color LaserJet 4700/ HP Color LaserJet CP4005 Series Printer Service and Support CD-ROM	CB503-60106
HP Color LaserJet 4700 User Guide	Q7491-90953
HP Color LaserJet CP4005 Series User Guide	CB503-90901
For downloadable versions, go to http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005. When connected, select **manuals**.	

3 Installation and configuration

This chapter contains information about the following topics:

- What ships in the box
- Unpacking the printer
- Loading detectable standard-sized media into Tray 2 and optional trays
- Connecting power
- Installing a new control panel label
- Testing the printer operation
- Sleep delay
- Connecting to a computer
- Printer software
- Printer drivers
- Printer drivers for Macintosh computers
- Software for Macintosh computers
- Network configuration
- Setting network security on the printer

What ships in the box

The following table describes the items that ship with the various printer models.

Item	HP Color LaserJet 4700	HP Color LaserJet 4700n	HP Color LaserJet 4700dn	HP Color LaserJet 4700dtn	HP Color LaserJet 4700ph+
HP Color LaserJet 4700 Series Getting Started Guide	X	X	X	X	X
Driver CD	X	X	X	X	X
Power cable	X	X	X	X	X
Parallel cable	X				
Network installation guide		X	X	X	X
Tray installation guide				X	X
Printer stand installation guide				X	X
Stapler/stacker installation guide					X

Item	HP Color LaserJet CP4005n	HP Color LaserJet CP4005dn
HP Color LaserJet 4700 Series Getting Started Guide	X	X
Driver CD	X	X
Power cable	X	X
Network installation guide	X	X

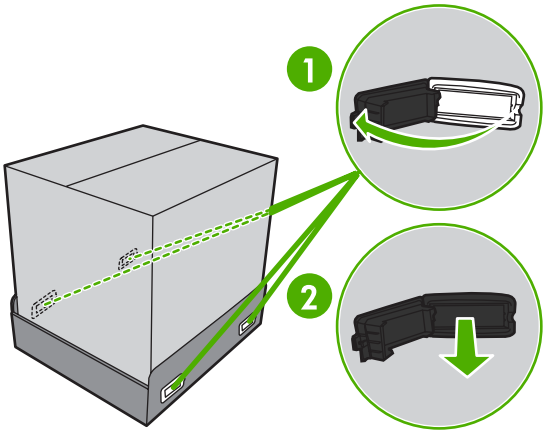
Unpacking the printer

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

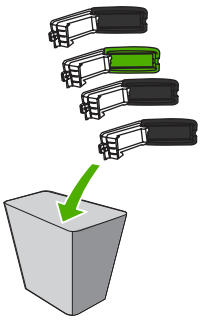
WARNING! The HP Color LaserJet 4700/CP4005 Series printer weighs approximately 45 kg (80 lb). HP recommends having two or more people lift or move the printer.

The following steps describe how to properly unpack the printer from the packing materials. The HP Color LaserJet 4700dn printer model is shown.

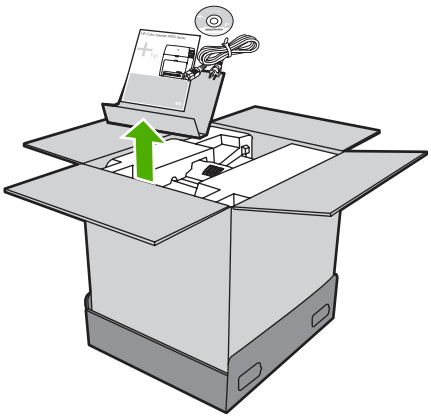
1. Open the brackets on the packing box. Detach the brackets from the packing box.



2. Discard the brackets.

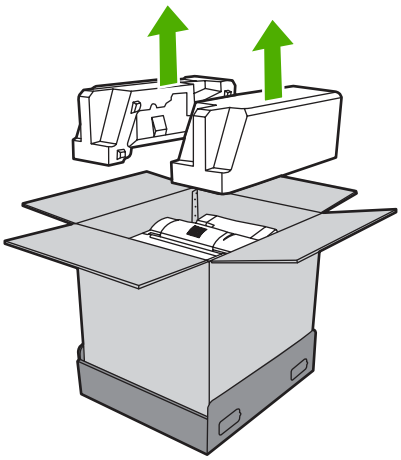


3. Remove the power supply cord, CD-ROM, and user documentation from the packing box.

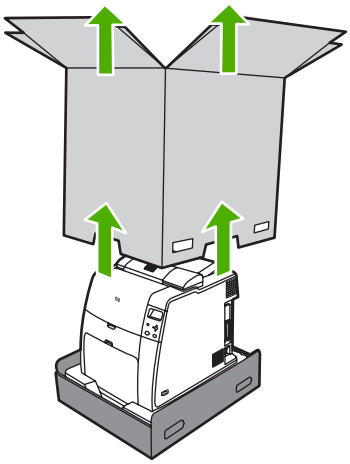


4. If the printer has an optional 500-sheet paper feeder, it is packaged on top of the printer. Lift the 500-sheet paper feeder from the package, and place it in the prepared location.

5. Remove the shipping blocks, accessory packs, and inner cardboard frame that surrounds the printer.

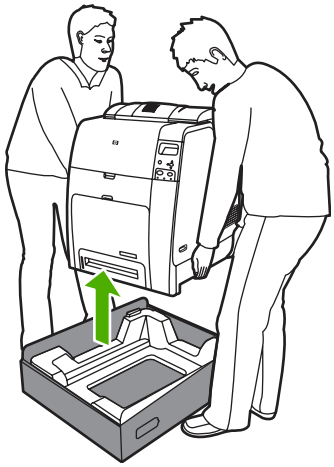


6. Lift the box frame up and off of the printer.



7. Lift the printer from the packaging pallet and place it in the prepared location.

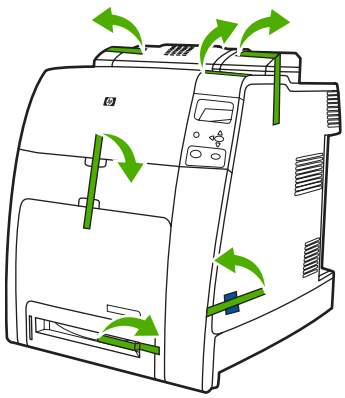
> **CAUTION** Do not attempt to lift the printer by yourself. At least two people must lift the printer and place it in the prepared location. While two people can lift the printer, using three or four people to lift the printer is a much easier and safer way to move the printer.



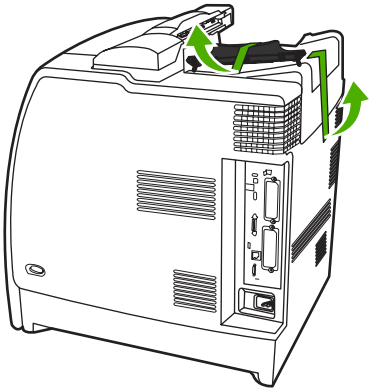
8. If you are using an optional 500-sheet paper feeder, align the printer with the guide pins on top of the paper feeder.

> **NOTE** While two people can lift the printer, at least one other person should be available to help position the printer on an optional paper feeder if one is installed.

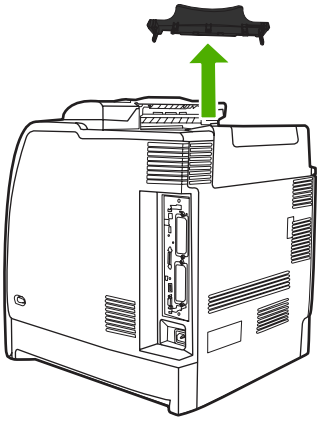
9. Remove the packing tape from the front of the printer.



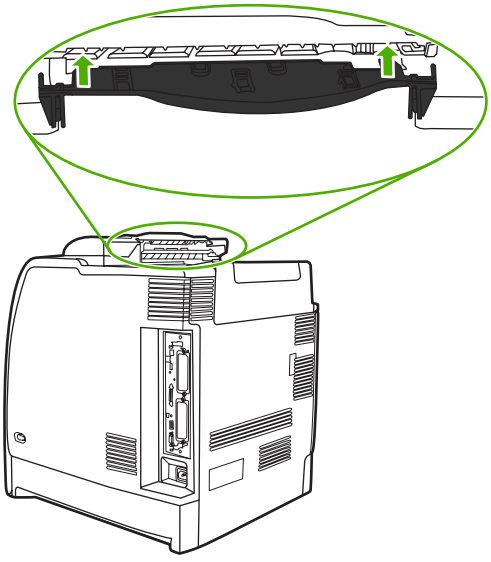
10. Remove the packing tape from the rear of the printer.



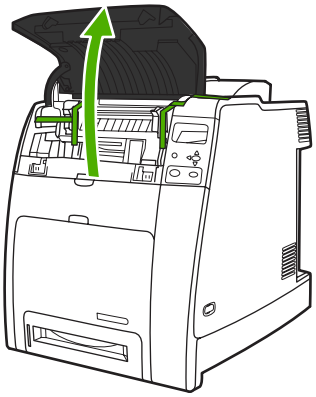
11. Lift the duplexer tray off of the printer.



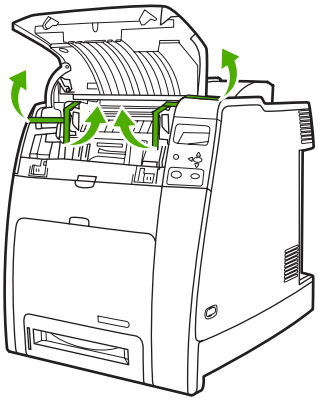
12. Install the duplexer tray.



13. Open the top cover.



14. Remove the packing tape from the fuser area. Close the top cover.



CAUTION Make sure that you remove all of the packing materials to avoid damage to the printer when the power is turned on.

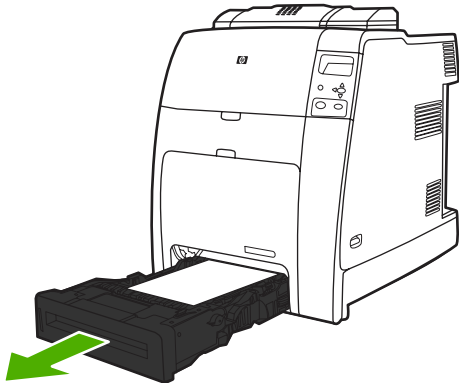
Loading detectable standard-sized media into Tray 2 and optional trays

CAUTION If paper is loaded in Trays 3 through 6 when the printer is in sleep mode, the new paper will not be sensed when the printer comes out of sleep mode. This could cause the wrong paper to be used for a print job. Be sure to wake the printer before loading paper in these trays by pressing any of the buttons on the control panel.

The following detectable standard-sized media is supported in Tray 2 and the optional trays: letter, legal, executive, A4, A5, and (JIS) B5.

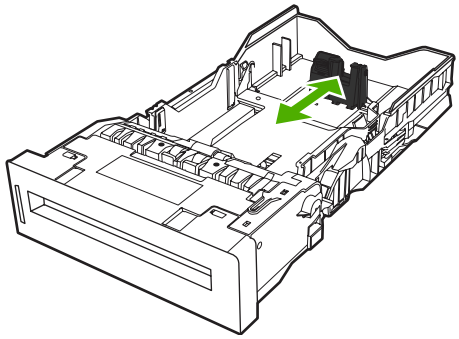
CAUTION Do not print cardstock, envelopes, heavy or extra heavy paper, or unsupported sizes of media from the 500-sheet trays. Print on these types of media only from Tray 1. Do not overfill the input tray or open it while it is in use. Doing so can cause jams in the printer.

1. Remove the tray from the printer.

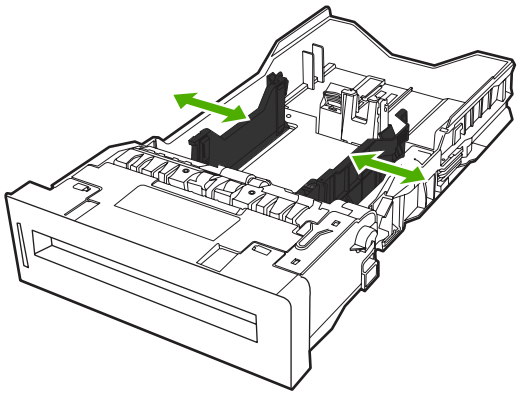


NOTE After sliding the tray out, lift the tray up slightly to remove it.

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.

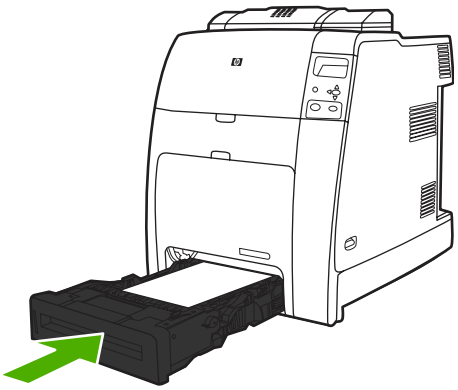


4. Load media into the tray face up.

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 you are 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 you must reduce the number of sheets accordingly. Do not overfill the tray because the printer might not pick up the paper.

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

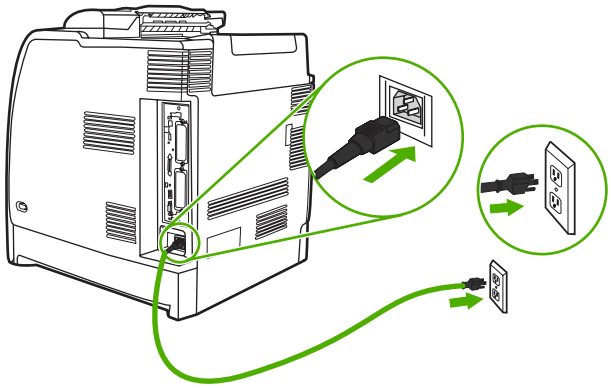
5. Insert the tray into the printer. The printer will display the tray's media type and size. If the configuration is not correct, make sure the guides are set correctly.



6. If the configuration is correct, press ⮌ to clear the message.

Connecting power

1. Plug the AC power cord into the printer and into the power outlet.



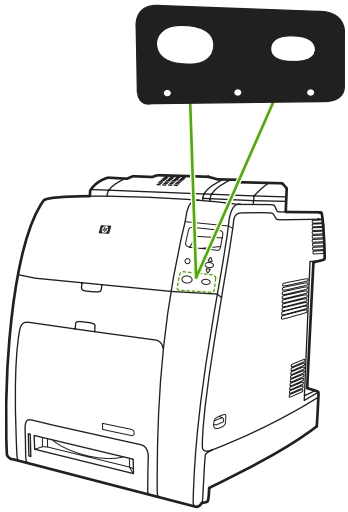
2. Turn the printer on.

NOTE For proper operation, it is recommended to plug the printer directly into the power outlet.

Installing a new control panel label

Some printer models are shipped without the control panel labels installed or you might prefer using a different label from the one that is installed. Labels are available for several languages. If you are setting up a printer 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 control panel.
3. Press the label firmly down onto the control panel.



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

4. Press Menu to enter the **MENUS**.
5. Press ▼ to highlight **CONFIGURE DEVICE**.
6. Press ✔ to select **CONFIGURE DEVICE**.
7. Press ▼ to highlight **SYSTEM SETUP**.
8. Press ✔ to select **SYSTEM SETUP**.
9. Press ✔ to select **LANGUAGE**.
10. Press ▲ or ▼ to select the appropriate language.
11. Press ✔ to set the selection.
12. Press Menu.

Testing the printer operation

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

1. Press Menu to enter the **MENUS**
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT CONFIGURATION**.
5. Press ✔ to select **PRINT CONFIGURATION**.

The message **Printing... CONFIGURATION** displays on the control panel until the printer finishes printing the configuration page. The printer returns to the **Ready** state after printing the configuration page.



NOTE If the printer is configured with an HP Jetdirect print server or a stapler/stacker, additional configuration pages will print that provide information about those devices.

Sleep delay

The adjustable sleep mode feature reduces power consumption when the printer has been inactive for an extended period. You can set the length of time before the printer enters sleep mode 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 printer display dims when the printer is in sleep mode. This mode does not affect printer warmup time.

Setting sleep delay

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✓ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✓ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **Sleep Delay**.
7. Press ✓ to select **Sleep Delay**.
8. Press ▲ or ▼ to select the appropriate time period.
9. Press ✓ to set the time period.
10. Press Menu.

CAUTION If paper is loaded in Trays 3 through 6 when the printer is in sleep mode, the new paper will not be sensed when the printer comes out of sleep mode. This could cause the wrong paper to be used for a print job. Be sure to wake the printer before loading paper in these trays.

Disabling/enabling sleep mode

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✓ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **RESETS**.
5. Press ✓ to select **RESETS**.
6. Press ▼ to highlight **SLEEP MODE**.
7. Press ✓ to select **SLEEP MODE**.
8. Press ▲ or ▼ to select **ON** or **OFF**.
9. Press ✓ to set the selection.
10. Press Menu.

Connecting to a computer

The HP Color LaserJet 4700 Series printer supports network and parallel connections at the same time. The HP Color LaserJet CP4005 printer supports network and USB connections.

Parallel configuration

For the HP Color LaserJet 4700 Series printer, a parallel connection is made by connecting the printer to the computer using a bidirectional parallel cable (IEEE-1284-C compliant) with a C-connector plugged into the printer parallel port. The cable can be a maximum of 10 meters (30 feet) long.

When used to describe a parallel interface, the term bidirectional indicates that the printer is able to both receive data from the computer and send data to the computer through the parallel port.

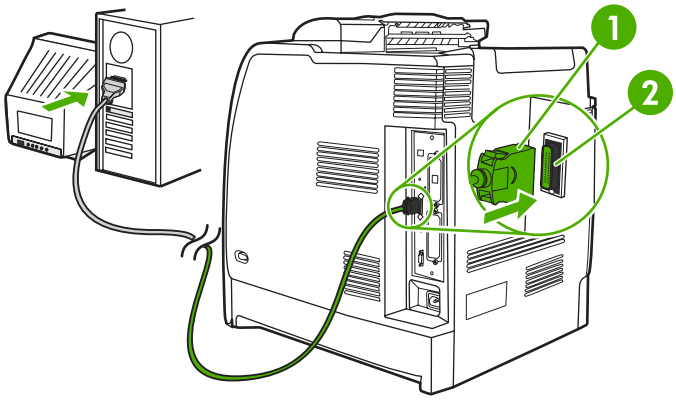


Figure 3-1 Parallel port configuration

1	C-connector
2	Parallel port

NOTE To use the enhanced capabilities of the bidirectional parallel interface such as bidirectional communication between the computer and printer, faster transfer of data, and automatic configuration of printer drivers, ensure that the most recent printer driver is installed. For more information, see Printer drivers on page 81 or Printer drivers for Macintosh computers on page 84.

NOTE Factory settings support automatic switching between the parallel port and one or more network connections on the printer. If you are experiencing problems, see Network configuration on page 89.

USB configuration

The HP Color LaserJet 4700 and HP Color LaserJet CP4005 Series printers supports a USB 2.0 connection. The USB port is located on the back of the printer, as shown in the figure below. You must use an A-to-B type USB cable.

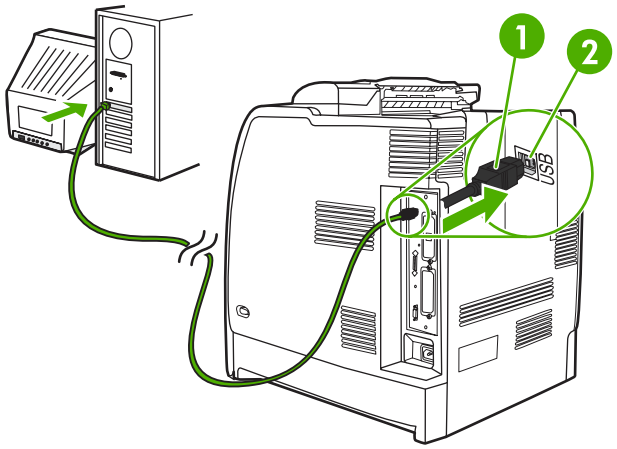


Figure 3-2 USB configuration

1	USB connector
2	USB port

The HP Color LaserJet 4700 Series printer also includes a third-party accessory (ACC) port that uses USB host protocol, shown in the following figure.

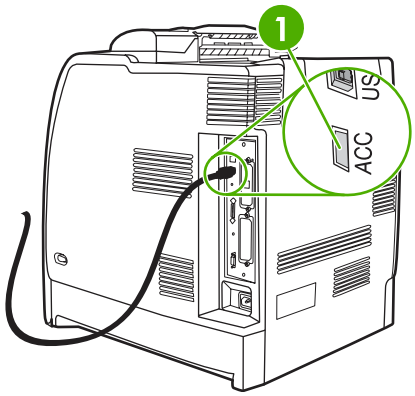


Figure 3-3 ACC accessory port

1	ACC accessory port

Auxiliary connection configuration

The HP Color LaserJet 4700 Series printer supports an auxiliary connection for paper handling devices. The port is located on the back of the printer, as shown in the following figure.

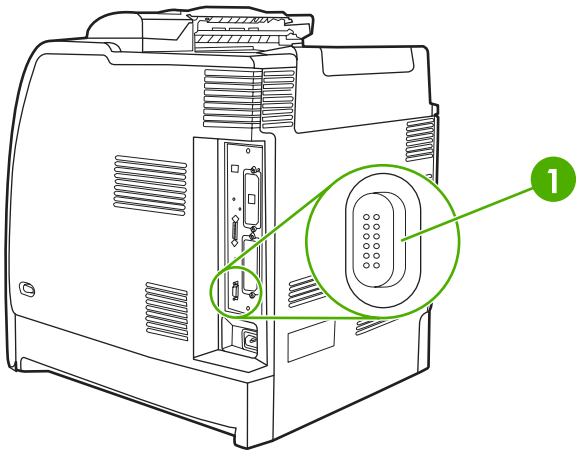


Figure 3-4 Auxiliary connection configuration

1	Auxiliary connector

HP Jetdirect print servers

The HP Jetdirect print servers facilitate network management by allowing you to connect a printer directly to your network at any location. They support multiple network protocols and operating systems. HP Jetdirect print servers also support the Simple Network Management Protocol (SNMP), which provides network managers with remote printer management and troubleshooting through HP Web Jetadmin software.

The HP Color LaserJet 4700n, 4700dn, 4700dtn, 4700ph+, CP4005n, and CP4005dn printers are equipped with embedded HP Jetdirect print servers. These servers support Ethernet 10/100T networking for peripherals. An HP Jetdirect EIO print server can also be installed in one of the HP Color LaserJet 4700 printer's EIO slots to allow network connection.

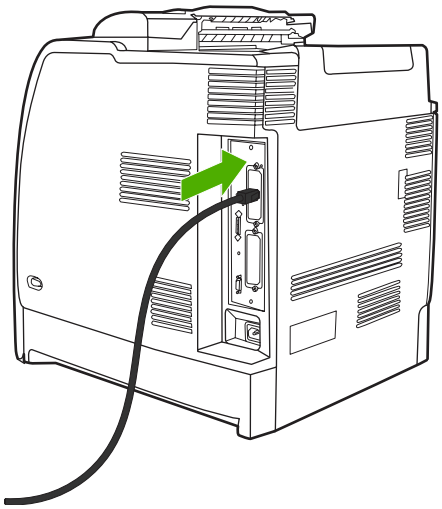


Figure 3-5 Jetdirect EIO slot (HP Color LaserJet 4700 shown)

NOTE Installation of an EIO print server and network configuration should be performed by a network administrator. Configure the card either through the control panel or with HP Web Jetadmin software.

Available software solutions

For a summary of available software solutions, see the *HP Jetdirect Print Server Administrator's Guide*, or visit http://www.hp.com/support/net_printing.

Wireless printing

Wireless networks offer a safe, secure, and cost-effective alternative to traditional wired network connections.

IEEE 802.11 standard

Optional HP Jetdirect wireless print servers support connection to an 802.11 network. This wireless technology provides a high-quality printing solution without the physical constraints of wiring.

Peripherals can be conveniently placed anywhere in an office or home and can be easily moved without changing network cables. Installation is easy with the HP Install Network Printer Wizard.



NOTE HP Jetdirect 802.11 print servers are available for USB connections.

Bluetooth

Bluetooth wireless technology is a low-power, short-range radio technology that can be used to wirelessly connect computers, printers, personal digital assistants (PDAs), cell phones, and other devices.

Unlike infrared technology, Bluetooth's reliance on radio signals means that devices do not have to be in the same room, office, or cubicle with an unobstructed line of sight in order to communicate. This wireless technology increases portability and efficiency within business network applications.

The HP Color LaserJet 4700 and HP Color LaserJet CP4005 Series printers use a Bluetooth adapter (HP bt1300) to incorporate Bluetooth wireless technology. The adapter is available for either USB or parallel connections. The adapter has a 10-meter line-of-sight operation range in the 2.5 GHz ISM band and can achieve data transfer rates up to 723 Kbps. The device supports the following Bluetooth profiles:

- Hardcopy Cable Replacement Profile (HCRP)
- Serial Port Profile (SPP)
- Object Push Profile (OPP)
- Basic Imaging Profile (BIP)
- Basic Printing Profile (BPP) with XHTML-Print

Printer software

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

NOTE For the latest information about the printing system software components, see the readme file at http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005. For information about installing the printer software, view the Install Notes on the CD-ROM included with the printer.

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 89.

NOTE For a list of printer drivers, updated HP printer software, and product support information, go to http://www.hp.com/support/clj4700or http://www.hp.com/support/ljCP4005.

Software

Software features

Automatic Configuration, Update Now, and Preconfiguration features are available with the HP Color LaserJet 4700 and HP Color LaserJet CP4005 Series printer.

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 printer 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 you have modified the configuration of the HP Color LaserJet 4700 or HP Color LaserJet CP4005 Series printer 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/clj4700 or http://www.hp.com/support/ljCP4005.

Installing the printing system software

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

The printer 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 printer features.

If you do not have access to a CD-ROM drive, you can download the printing system software from the Internet at http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005.



NOTE You can 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.

You can download the latest software free of charge at http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005.

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 77.

Either a parallel or USB cable can be used for the direct connection. However, you cannot connect parallel and USB cables 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 printer 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. You might need to restart the computer.
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 printer CD-ROM or the flyer that came in the printer box, or go to http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005 for help or more information.

Installing Windows printing system software for networks

The software on the printer CD-ROM supports network installation with a Microsoft network. For network installation on other operating systems, go to http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005.

The HP Jetdirect embedded print server in the HP Color LaserJet 4700n, HP Color LaserJet 4700dn printer, HP Color LaserJet 4700dtn printer, HP Color LaserJet 4005n, or HP Color LaserJet 4005dn includes a 10/100 Base-TX network port. For other available HP Jetdirect print servers, see Supplies and accessories on page 563 or go to http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005.

The installer does not support printer installation or printer object creation on Novell servers. It supports only direct-mode network installations between Windows computers and a printer. To install your printer 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 you are installing the software on Windows 2000 or Windows XP, make sure that you have administrator privileges.
2. Make sure that the HP Jetdirect print server and printer are properly connected to the network. Print a configuration page (see Testing the printer operation on page 68). On the second page of the configuration page, locate the IP address that is currently configured. You might need this address to initially identify the printer on your network and complete the installation.
3. Close all software programs that are open or running.
4. Insert the printer 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. You might need to restart the computer.
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 printer CD-ROM or the flyer that came in the printer box, or go to http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005 for help or more information.

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

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

See your Windows documentation to enable Windows-sharing. After the printer is shared, install the printer software on all computers that share the printer.

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 displays 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 printer CD-ROM or the flyer that came in the printer box, or go to http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005 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 printer CD-ROM or the flyer that came in the printer box, or go to http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005 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 4700/Tools or HP Color LaserJet CP4005/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 4700** and then click **Tools**.
3. Click **Uninstaller**.
4. Click **Next**.
5. Select the HP printing system components you want to uninstall.
6. Click **OK**.
7. 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 printer.

HP Web Jetadmin

HP Web Jetadmin allows you to manage HP Jetdirect-connected printers within your 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 printer 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 4700 series printer is equipped with several utilities, which make it easy to monitor and manage the printer on a network.

Embedded Web server

This printer is equipped with an embedded Web server, which allows access to information about printer 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 printer 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*. You can find this guide on the CD-ROM included with the printer.

Features

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

- View printer status information.
- Determine the remaining life on all supplies and order new ones.
- View and change tray configurations.
- View and change the printer control panel menu configuration.
- View and print internal pages.

- Receive notification of printer 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.

For a complete explanation of the features and functionality of the embedded Web server, see Using the embedded Web server on page 505.

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 printer driver that you want 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 you are using, 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.

Operating system[1]	PCL 6 printer driver	PCL 5 printer driver	PS printer driver	PPD[2] printer driver
Microsoft Windows 98 (HP LaserJet 4700 Series only)	X	X	X	
Windows Millennium (Me) (HP Color LaserJet 4700 Series only)	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 (HP Color LaserJet 4700 Series only)			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 drivers are available from IBM.

You can 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.

Select the correct printer driver

Select a printer driver based on the operating system that you are using and the way that you use the product. See the printer-driver Help for the features that are available. For information about gaining access to the printer driver-Help, see Printer-driver Help.

- The PCL 6 printer driver can provide the best overall performance and access to your printer features.
- The PCL 5 printer driver is recommended for general office monochrome and color printing.
- Use the PostScript (PS) driver if you are 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, checkboxes, 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 the printer drivers

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

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 4700, 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 4700 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 4700 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 4700, 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 4700 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 4700 icon, and then select **Properties**. 3. Click the **Device Settings** tab.

Printer drivers for Macintosh computers

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

Supported printer drivers

A Macintosh printer driver and the necessary PPD files are included with the printer. If the printer driver that you want is not on the printer 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 that you are using, and request a driver for the printer.



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

Gaining access to the printer drivers

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

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 any settings that you want to on the various pop-up menus.	1. On the **File** menu, click **Print**. 2. As you change settings on the pop-up menu, click **Save Settings**.	1. Click the desktop printer icon. 2. From the **Printing** menu, click **Change Setup**.

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 any settings that you want to on the various pop-up menus.	1. On the **File** menu, click **Print**. 2. Change the settings that you want on the various pop-up menus, 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, you must select the saved preset option every time you open a program and print.	1. In the Finder, on the **Go** menu, click **Applications**. 2. Open **Utilities**, and then open **Print Center**. 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 any settings that you want to on the various pop-up menus.	1. On the **File** menu, click **Print**. 2. Change the settings that you want on the various pop-up menus, 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, you must 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 printer and the Macintosh computer are connected to a network, use the printer embedded Web server (EWS) to configure the printer. For more information, see Using the embedded Web server on page 505.

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 printer features. An installation program for the PPDs and other software is provided on the compact disc (CD) that came with the printer. 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 printer features and complete the following tasks with the printer:

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

  You can use the HP Printer Utility when your printer 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.

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 printer, click **Auto Setup**, and then click **Create**.



NOTE The icon on the desktop looks generic. All of the print panels display 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 your printer 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 printer and the USB port on the computer. Use a standard 2-meter (6.56-foot) USB cable.
2. Insert the printer 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 printer, 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 printer 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 printer.
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 printer CD or the flyer that came in the printer box, or go to http://www.hp.com/support/clj4700 for help or more information.



NOTE The icon on the Mac OS v9.*x* desktop looks generic. All of the print panels display 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

You might need to configure certain network parameters on the printer. You can configure these parameters from installation software, the printer 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 Using the embedded Web server on page 505.

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

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

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

Configuring TCP/IP parameters

You can use the printer control panel to configure these TCP/IP parameters:

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

Manually configuring TCP/IP parameters from the printer 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. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **I/O**.
5. Press ✔ to select **I/O**.
6. Press ▼ to highlight the **EMBEDDED JETDIRECT MENU** menu.
7. Press ✔ to select the **EMBEDDED JETDIRECT MENU** menu.
8. Press ▼ to highlight **TCP/IP**.
9. Press ✔ to select **TCP/IP**.
10. Press ▼ to highlight **MANUAL SETTINGS**.
11. Press ✔ to select **MANUAL SETTINGS**.

12. Press ▼ to highlight **MANUAL**.
13. Press ▼ to highlight **IP Address:**.
14. Press ✓ to select **IP Address:**.



NOTE The first of four sets of numbers is highlighted. If a number is not highlighted, a highlighted empty underscore displays.

15. Press ▲ or ▼ to increase or decrease the number for configuring the IP address.
16. Press ✓ to move to the next set of numbers.
17. Repeat steps 15 and 16 until the correct IP address is entered.
18. Press the Menu button to return to the **Ready** state.

Setting the subnet mask

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✓ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **I/O**.
5. Press ✓ to select **I/O**.
6. Press ▼ to highlight the **EMBEDDED JETDIRECT MENU** menu.
7. Press ✓ to select the **EMBEDDED JETDIRECT MENU** menu.
8. Press ▼ to highlight the **TCP/IP** menu.
9. Press ✓ to select **TCP/IP**.
10. Press ▼ to highlight **MANUAL SETTINGS**.
11. Press ✓ to select **MANUAL SETTINGS**.
12. Press ▼ to highlight **SUBNET MASK**.
13. Press ✓ to select **SUBNET MASK**.



NOTE The first of four sets of numbers is highlighted.

14. Press ▲ or ▼ to increase or decrease the number for configuring the subnet mask.
15. Press ✓ to move to the next set of numbers.
16. Repeat steps 14 and 15 until the correct subnet mask is entered.
17. Press the Menu button to return to the **Ready** state.

Setting the default gateway

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **I/O**.
5. Press ✔ to select **I/O**.
6. Press ▼ to highlight the **EMBEDDED JETDIRECT MENU** menu.
7. Press ✔ to select the **EMBEDDED JETDIRECT MENU** menu.
8. Press ▼ to highlight **TCP/IP**.
9. Press ✔ to select **TCP/IP**.
10. Press ▼ to highlight **MANUAL SETTINGS**.
11. Press ✔ to select **MANUAL SETTINGS**.
12. Press ▼ to highlight **DEFAULT GATEWAY**.
13. Press ✔ to select **DEFAULT GATEWAY**.



NOTE The first set of the four sets of numbers shows the default settings. If there is not a number highlighted, a highlighted empty underscore displays.

14. Press ▲ or ▼ to increase or decrease the number for configuring **DEFAULT GATEWAY**.
15. Press ✔ to move to the next set of numbers.
16. Repeat steps 15 and 16 until the correct subnet mask is entered.
17. Press the Menu button to return to the **Ready** state.

Disabling network protocols (optional) (HP Color LaserJet 4700 Series only)

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

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



NOTE TCP/IP configuration cannot be disabled on the HP Color LaserJet 4700 series printer.

Disabling IPX/SPX



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

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **I/O**.
5. Press ✔ to select **I/O**.
6. Press ▼ to highlight the **EMBEDDED JETDIRECT MENU** menu.
7. Press ✔ to select the **EMBEDDED JETDIRECT MENU** menu.
8. Press ▼ to highlight **IPX/SPX**.
9. Press ✔ to select **IPX/SPX**.
10. Press ▼ to highlight **Enable**.
11. Press ✔ to select **Enable**.
12. Press ▼ to highlight **ON** or **OFF**.
13. Press ✔ to select **ON** or **OFF**.
14. Press the Menu button to return to the **Ready** state.

Disabling DLC/LLC

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **I/O**.
5. Press ✔ to select **I/O**.
6. Press ▼ to highlight the **EMBEDDED JETDIRECT MENU** menu.
7. Press ✔ to select the **EMBEDDED JETDIRECT MENU** menu.
8. Press ▼ to highlight **DLC/LLC**.
9. Press ✔ to select **DLC/LLC**.
10. Press ▼ to highlight **Enable**.
11. Press ✔ to select **Enable**.
12. Press ▼ to highlight **ON** or **OFF**.

13. Press ✔ to select **ON** or **OFF**.
14. Press the Menu button to return to the **Ready** state.

Disabling AppleTalk

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **I/O**.
5. Press ✔ to select **I/O**.
6. Press ▼ to highlight the **EMBEDDED JETDIRECT MENU** menu.
7. Press ✔ to select **EMBEDDED JETDIRECT MENU**.
8. Press ▼ to highlight **APPLETALK**.
9. Press ✔ to select **APPLETALK**.
10. Press ▼ to highlight **Enable**.
11. Press ✔ to select **Enable**.
12. Press ▼ to highlight **ON** or **OFF**.
13. Press ✔ to select **ON** or **OFF**.
14. Press the Menu button to return to the **Ready** state.

Setting network security on the printer

This printer features control panel locking, which allows network administrators to prevent users from changing certain printer control panel settings. When a menu is locked, unauthorized users trying to change settings at the printer control panel will see the following message:

Access Denied MENUS LOCKED

Administrators can use HP Web Jetadmin software, the HP LaserJet Utility for Macintosh, or an ASCII escape sequence to perform this procedure. For instructions to lock the printer control panel by using either the HP Web Jetadmin software or the HP LaserJet Utility for Macintosh, see the online Help.

Locking the control panel

Network administrators can prevent users from changing printer control panel settings by establishing a password and locking the printer control panel. Administrators can choose from multiple levels of security and can lock certain control panel menus, allowing users to change the rest of the menus, or lock all of the menus (including the Stop button).

Levels of security

Lock setting	Control panel items locked
Off	Service menu (locked with a factory-set PIN)
Low	I/O submenu
	System setup submenu
	Resets submenu
	Service menu (locked with a factory-set PIN)
Medium	Configure Device menu (including all submenus)
	Diagnostics menu
	Service menu (locked with a factory-set PIN)
High	Information menu
	Paper Handling menu
	Configure Device menu (including all submenus)
	Diagnostics menu
	Service menu (locked with a factory-set PIN)
	Stop button

Using an ASCII PJL escape sequence to set network security

If you decide to use the ASCII escape sequence, you must use an MS-DOS or Windows ASCII editor to create the commands. The commands must also be sent to the printer by using a DOS-COPY command or an ASCII file download utility. The *PJL Technical Reference Manual* is located on CD-ROM (part number 5961-0976). Order a copy of this manual from the HP Web site: http://www.hp.com.



NOTE In the following examples, EC represents the escape character. For more information about using escape characters, see the *PJL Technical Reference Manual*.

- To lock or unlock the printer control panel if a password has not been set, send the following ASCII sequence to the printer:

```
EC%-12345x@PJL JOB

@PJL DEFAULT CPLOCK=NONE (or MINIMUM, MODERATE, or MAXIMUM)

@PJL EOJ

EC%-12345x
```

- To set the password, send the following ASCII sequence to the printer:

```
EC%-12345x@PJL JOB

@PJL DEFAULT PASSWORD=[numeric password (0 to 65535)]

@PJL EOJ

EC%-12345x
```

- To lock or unlock the control panel if the password has been set, send the following ASCII sequence to the printer:

```
EC%-12345x@PJL JOB PASSWORD=(numeric password)

@PJL DEFAULT CPLOCK=NONE (or MINIMUM, MODERATE, or MAXIMUM)

@PJL EOJ

EC%-12345x
```

4 Maintenance

This chapter provides information about the following topics:

- Cleaning the printer and accessories
- Performing preventive maintenance
- Managing the print cartridge
- Approximate replacement intervals for supplies
- ETB life
- Changing print cartridges
- Replacing supplies
- Printer memory and fonts
- Installing a hard drive, memory, and fonts
- Installing an HP Jetdirect print server card (HP Color LaserJet 4700 Series only)
- Setting the real-time clock

Cleaning the printer and accessories

Clean the outside surfaces with a water-dampened cloth. Observe the warning and caution below.

WARNING! Before you begin these steps, turn the printer off and unplug all power cords to avoid shock hazard. Be careful when cleaning around the fuser area. It might be hot.

CAUTION To avoid permanent damage to the print cartridge, do not use ammonia-based cleaners on or around the printer. If toner gets on your clothes, wipe it off with a dry cloth and wash your clothes in cold water. Hot water sets toner into fabric.

Component	Cleaning Method
Outside covers	Use an HP Toner Cleaning Cloth (part number 5090-3379) or a water-dampened cloth. Do not use solvents or ammonia-based cleaners.
Inside general	With a dry lint-free cloth, wipe any dust, spilled toner, and paper particles from the paper path area, the registration roller, and the print cartridge cavity.
ETB attaching roller	Clean with lint-free paper. If dirt cannot be removed, dampen the paper with alcohol.
Paper pickup rollers	Clean with lint-free paper. If dirt cannot be removed, dampen the paper with alcohol.
Color registration detection unit	Clean with lint-free paper. If dirt cannot be removed, dampen the paper with alcohol.

Cleaning spilled toner

Defective print cartridges can develop leaks. Also, after a paper jam has occurred, some toner might remain on the rollers and guides inside the printer. The pages that print immediately after the jam can pick up this toner. Use a vacuum that is designed for picking up fine particles. See Vacuum specifications on page 98.

CAUTION When cleaning the printer, do not touch the ETB with the damp cloth or with your fingers.

Vacuum specifications

Do not vacuum the printer or any spilled toner using a conventional vacuum. Toner particles used in this product might be too fine for effective vacuuming and could result in damage to conventional vacuums.

A vacuum specifically designed for cleaning toner can be used if it is capable of filtering fine particles (5 microns in diameter).

Performing preventive maintenance

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



NOTE The printer maintenance kit is a consumable item and is not covered under the original printer warranty or under most extended warranties.

Managing the print cartridge

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

HP print cartridges

When you use a genuine HP print cartridge, you can obtain several types of information, such as the following:

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

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 printer warranty.

When you use a non-HP print cartridge, 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 printer will let you know if a print cartridge is not a genuine HP print cartridge when you insert it into the printer. If you believe that you purchased a genuine HP supply, go to 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° to 40°C (-4° 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 Color LaserJet 4700 Series print cartridge lasts an average of 10,000 pages (color) and 11,000 pages (mono). The HP Color LaserJet CP4005 Series print cartridges, both black and color, last 7,500 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

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

Using the control panel

1. Press Menu to enter the **Menu**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **SUPPLIES STATUS**.
5. Press ✔ to select **SUPPLIES STATUS**.

Using the embedded Web server

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

Using HP Web Jetadmin

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

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	Printer message	Page count	Approximate time period[2]
Black cartridges	**REPLACE BLACK CARTRIDGE**	HP Color LaserJet 4700: 11,000 pages[1]	HP Color LaserJet 4700: 3.6 months
		HP Color LaserJet CP4005: 7,500 pages[1]	HP Color LaserJet CP4005: 4 months
Color cartridges	**REPLACE [COLOR] CARTRIDGE**	HP Color LaserJet 4700: 10,000 pages[1]	HP Color LaserJet 4700: 3.3 months
		HP Color LaserJet CP4005: 7,500 pages[1]	HP Color LaserJet CP4005: 4 months
ETB	**REPLACE TRANSFER KIT**	HP Color LaserJet 4700: 120,000 pages	HP Color LaserJet 4700: 40 months
		HP Color LaserJet CP4005: 100,000 pages	HP Color LaserJet CP4005: 50 months
Fuser	**REPLACE FUSER KIT**	HP Color LaserJet 4700: 150,000 pages[3]	HP Color LaserJet 4700: 50 months
		HP Color LaserJet CP4005: 125,000 pages[3]	HP Color LaserJet CP4005: 62 months

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

2 Approximate life is based on 3,000 pages per month for the HP Color LaserJet 4700 models and 2,000 pages per month for the HP Color LaserJet CP4005 models.

3 Approximate life is estimated at 150,000 pages when printing in 4-page intermittent mode for the HP Color LaserJet 4700 models and 125,000 pages for the HP Color LaserJet CP4005 models.

You can use the embedded Web server to order supplies. For more information, see Using the embedded Web server on page 505.

ETB life

Depending on the printer workload, the customer will need to replace the ETB two or three times during the life of the printer. To help plan supplies purchases, the HP Color LaserJet 4700 and HP Color LaserJet CP4005 Series printers calculates an estimated remaining number of pages that can be printed with the ETB. The percentage remaining displays on the Supplies Status page under Transfer Kit: HP Part Number: HP Q7504A for the printers (for exchange part numbers, see chapter 8). You can view the Supplies Status page by printing it from the printer control panel. If the printer is connected to the network, you can also view the page in your Web browser or through the HP Web Jetadmin software.

The number of pages an ETB can print is a function of the number of pages that have been printed on the belt.

The ETB will come to the end of life when the actual number of pages fed reaches 120,000 pages, for the HP Color LaserJet 4700 Series, and 100,000 for the HP Color LaserJet CP4005 Series, regardless of intermittent/continuous printing or paper size.

Changing print cartridges

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

The printer 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 printer control panel displays a **REPLACE [COLOR] CARTRIDGE** message. The control panel display will also indicate the color that should be replaced (if a genuine HP cartridge is currently installed).

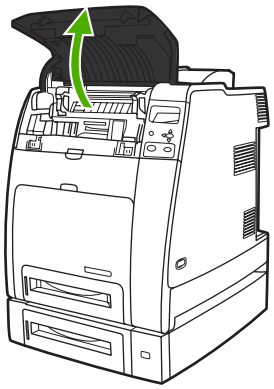
Replacing a print cartridge

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.

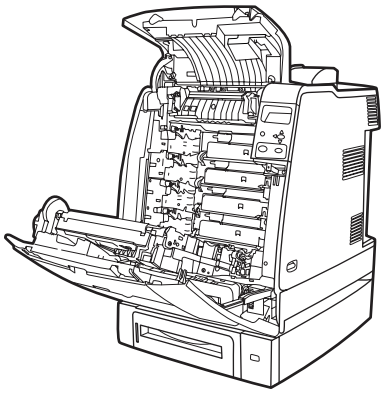
To replace the print cartridge

1. Lift the top cover of the printer.



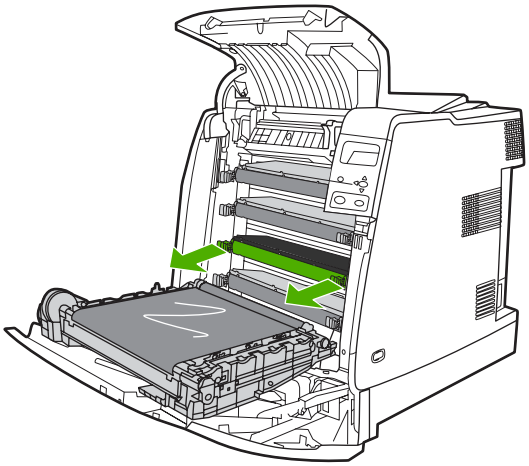
CAUTION The fuser might be hot.

2. Pull down the front cover and ETB.

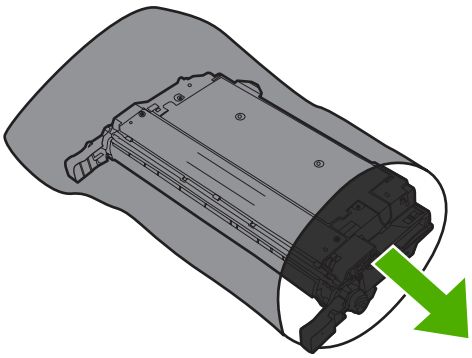


CAUTION Do not place any item on the ETB while it is open. If the ETB unit is punctured, print quality problems could result.

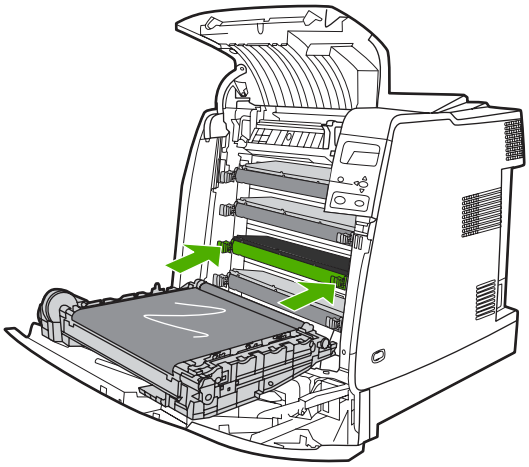
3. Remove the used print cartridge from the printer.



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 printer 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 printer.

NOTE If a cartridge is in the wrong slot, the 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 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 you are using a non-HP print cartridge, check the control panel for further instructions.

For additional help, go to http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljCP4005.

Replacing supplies

When you use genuine HP supplies, the printer 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.

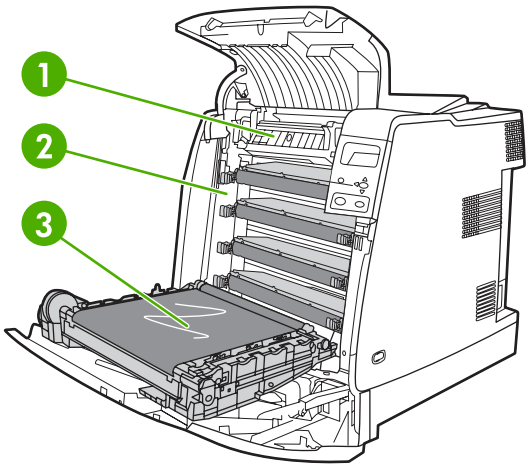


Figure 4-1 Supply item locations

1	Fuser
2	Print cartridges
3	ETB

Supply replacement guidelines

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

- Allow sufficient space above and in the front of the printer for removing supplies.
- The printer 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/clj4700 or http://www.hp.com/support/ljCP4005. When you connect, select **Solve a Problem**.

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

Making room around the printer for replacing supplies

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

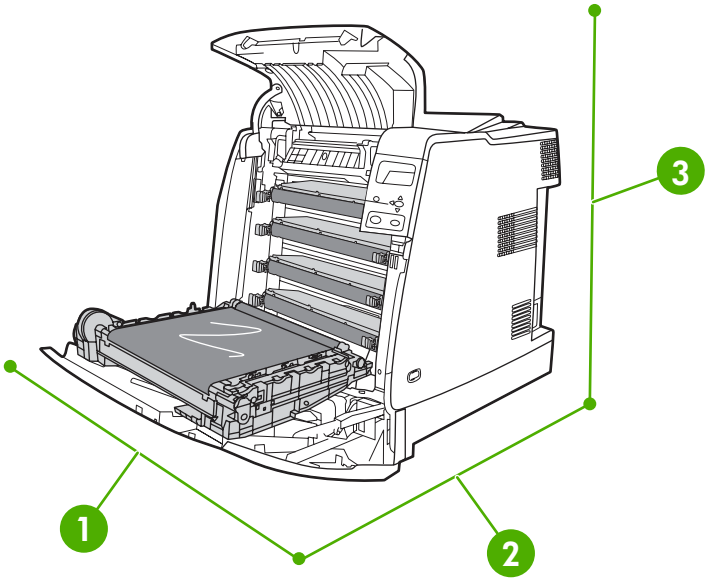


Figure 4-2 Supplies replacement clearance diagram

1	530 mm (20.9 inches) in width
2	940 mm (37 inches) in depth
3	804 mm (31.7 inches) in height

Replacing the stapler cartridge (HP Color LaserJet 4700 Series)

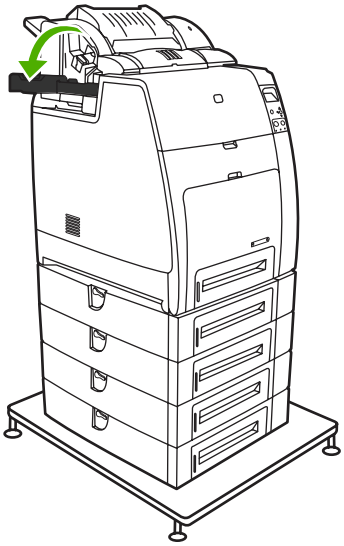
The stapler cartridge contains 5,000 staples. Replace the entire cartridge when it is empty.

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

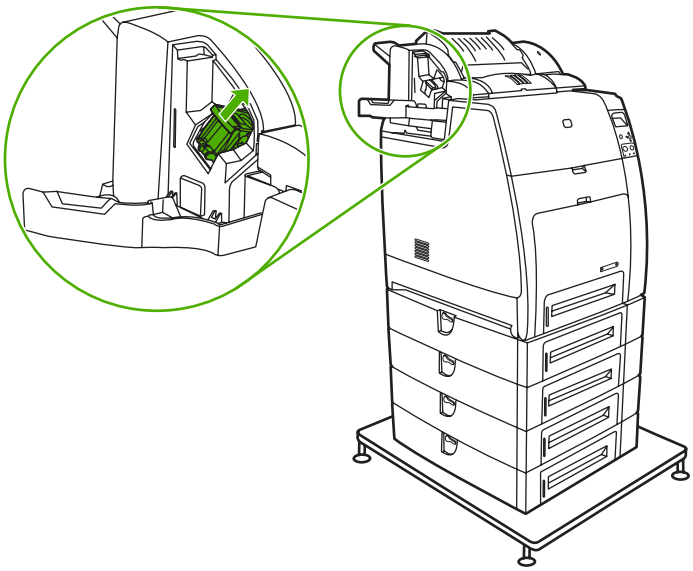
Loading a new stapler cartridge

1. On the left side of the stapler/stacker, open the stapler cartridge cover by gently pulling it.

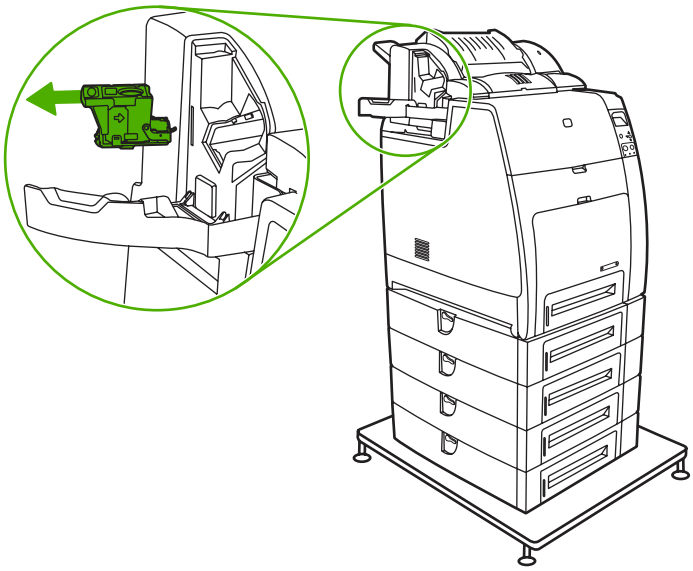


NOTE For information on ordering a new stapler cartridge (part number C8091A), see Supplies and accessories on page 563.

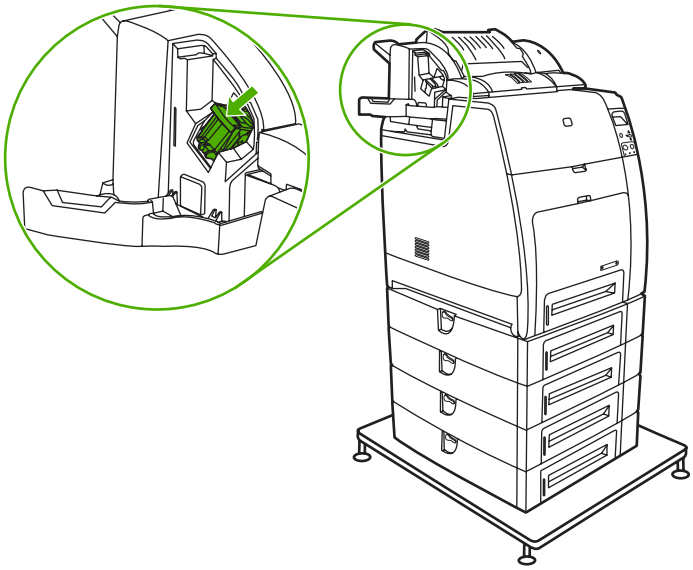
2. Grasp the stapler cartridge handle and pull up gently.



3. Twist the stapler cartridge gently in a counter-clockwise direction and pull it out.

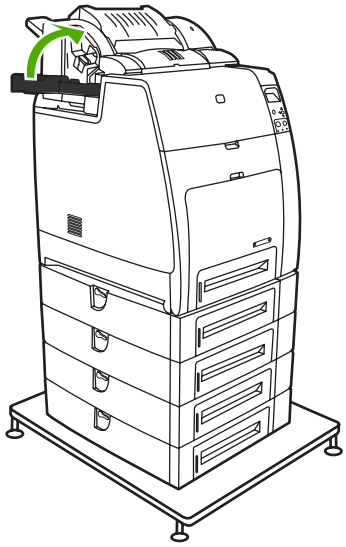


4. Insert the new stapler cartridge and push it down until it snaps into place.



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

5. Close the stapler cartridge door.



Replacing the ETB

Replace the ETB when a **REPLACE TRANSFER KIT** message displays on the control panel.

1. Turn the printer off.
2. Open the top and front cover.
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 printer.
5. Install the new ETB.
6. Close the front and top covers.
7. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 505 for more information.

Replacing the fuser

Replace the fuser when a **REPLACE IMAGE FUSING UNIT KIT** message displays on the control panel.

1. Turn the printer off.
2. Open the top cover.
3. Grasp the purple handles on the fuser.
4. Remove the old fuser from the printer.
5. Install the new fuser.

6. Close the top cover.
7. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 505 for more information.

Printer memory and fonts

The HP Color LaserJet 4700 Series printer has two 200-pin DDR SDRAM slots. The HP Color LaserJet CP4005 Series printer has one 200-pin DDR SDRAM slot. One slot is available for adding memory to the printer. DDR SDRAM memory is available in 128 MB, 256 MB, and 512 MB modules.

NOTE Memory specification: HP Color LaserJet 4700 series printers use 200-pin small outline dual inline memory modules (SODIMM) that support 128 or 256 MB of RAM.

The HP Color LaserJet 4700 Series printer also has three flash memory card slots for printer firmware, fonts, and other solutions.

- The first flash memory card is reserved for printer 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 printer. The printer does not support photo printing directly from a flash memory card. If you install a camera-type flash memory card, the control panel displays a message asking if you want to reformat the flash memory card. If you choose to reformat the card, all data on the card will be lost.

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

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

NOTE To order SODIMMs, see Supplies and accessories on page 563.

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. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT CONFIGURATION**.
5. Press ✔ to print the configuration page.

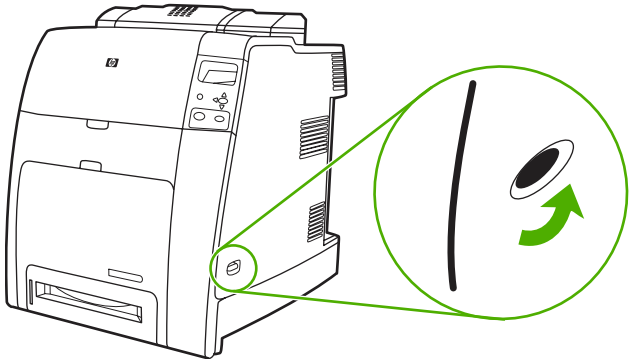
Installing a hard drive, memory, and fonts

You can install more memory for the printer, and on the HP Color LaserJet 4700 models you can also install a font card to allow the printer to print characters for languages such as Chinese or the Cyrillic alphabet.

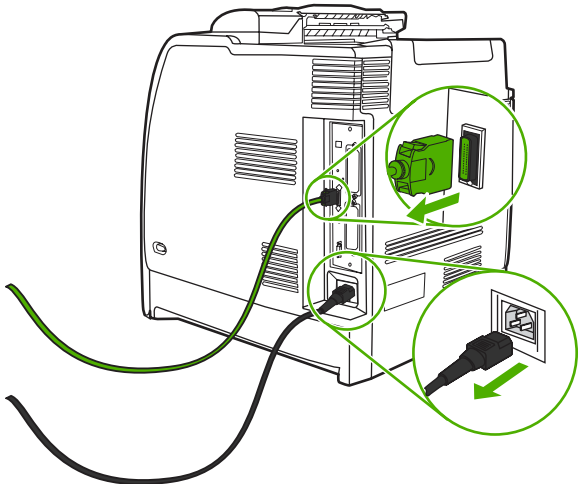
CAUTION Static electricity can damage DIMMs. When handling DIMMs, either wear an antistatic wrist strap, or frequently touch the surface of the DIMM antistatic package and then touch bare metal on the printer.

Installing a hard drive (HP Color LaserJet 4700 Series)

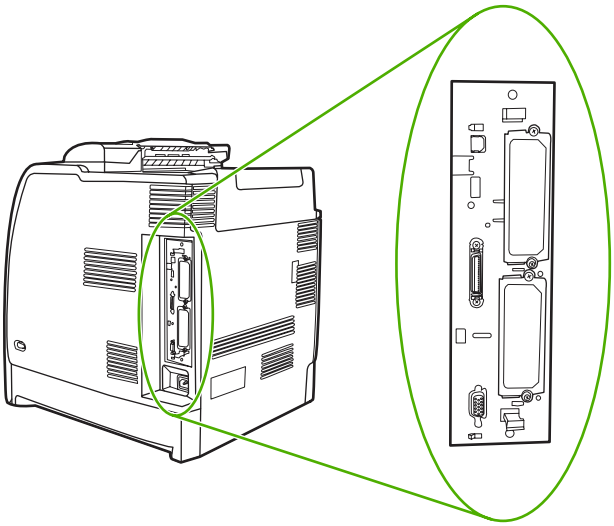
1. Turn the printer off.



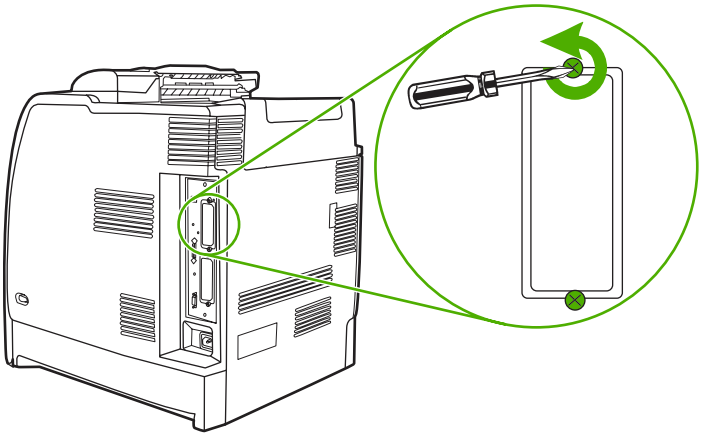
2. Disconnect all power and interface cables.



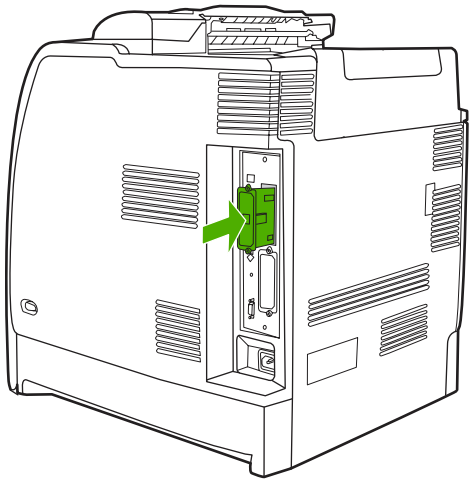
3. Locate the formatter board in the rear of the printer.



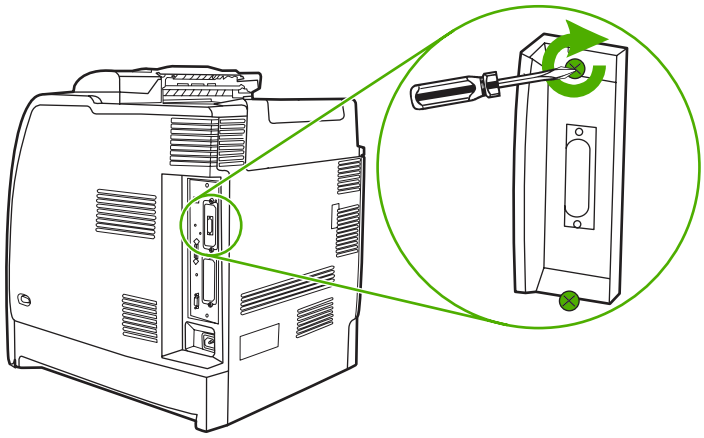
4. Locate an open EIO slot. Loosen and remove the two retaining screws holding the cover for the EIO slot, and then remove the cover. You will not need these screws and the cover again. They can be discarded.



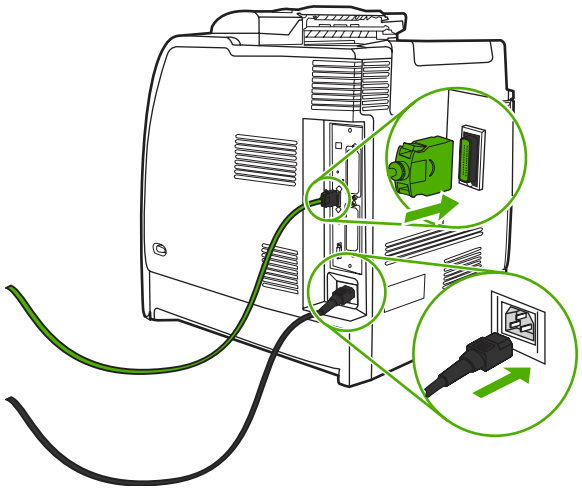
5. Firmly insert the hard drive into the EIO slot.



6. Insert and tighten the retaining screws that came with the hard drive.

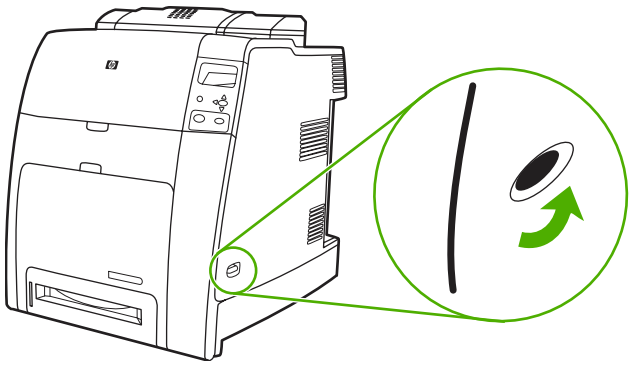


7. Connect the cables and power cord, and turn the printer on.

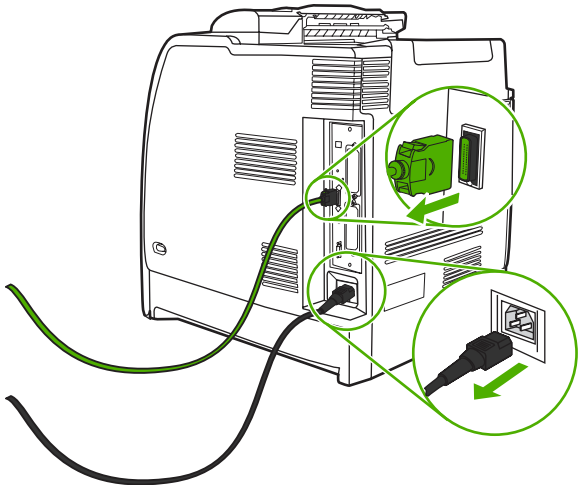


Installing DDR memory DIMMs

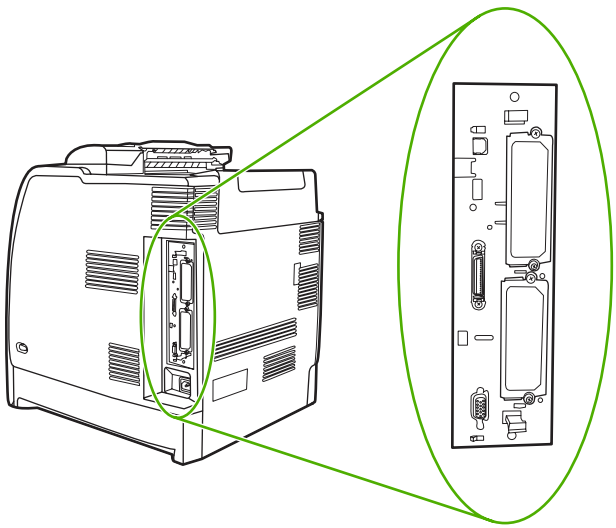
1. Turn the printer off.



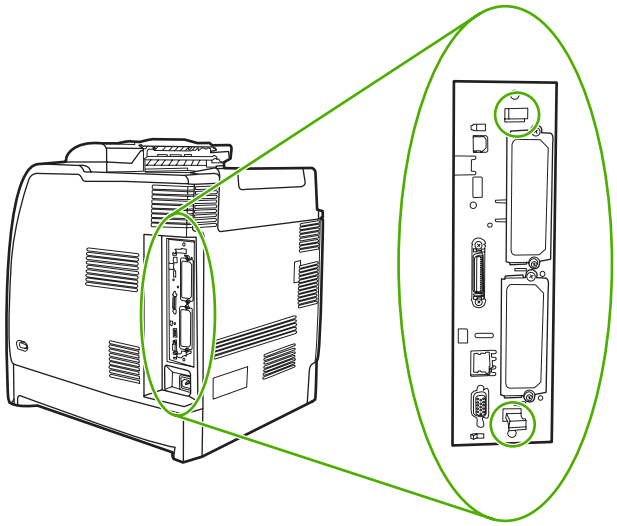
2. Disconnect all power and interface cables.



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

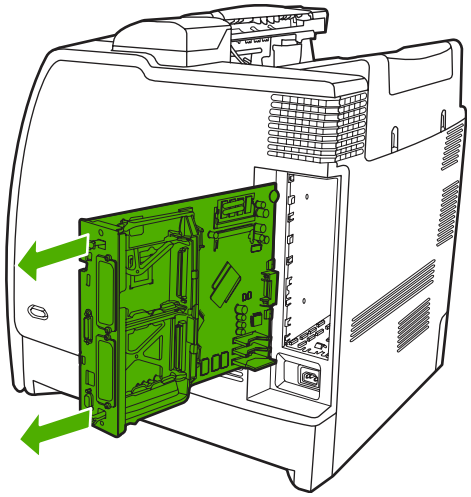


4. Grasp the black tabs situated near the top and bottom of the formatter board.

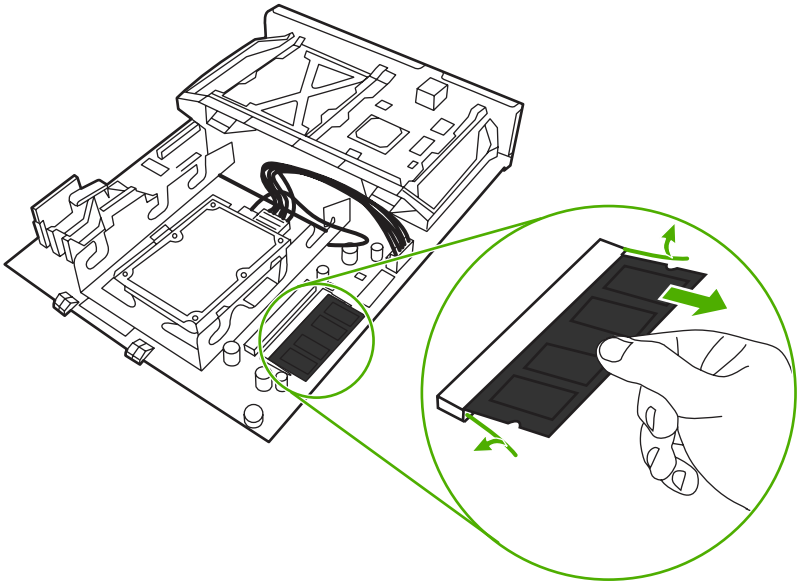


5. Gently pull on the black tabs to pull the formatter board from the printer. Place the formatter board on a clean, flat, grounded surface.

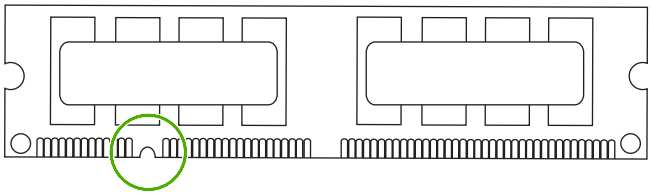
NOTE For the HP Color LaserJet 4700ph+, pivot up the bracket to access the second memory slot.



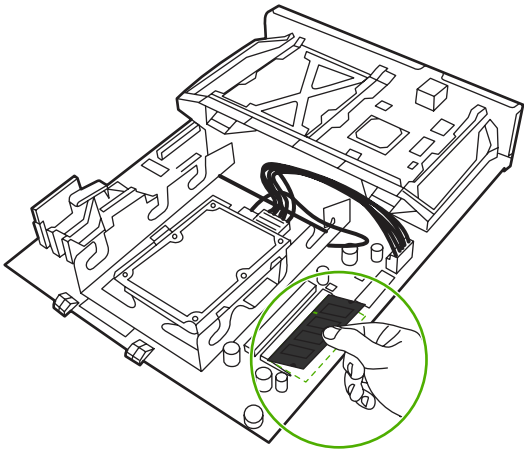
6. To replace a DDR DIMM that is currently installed, spread the latches apart on each side of the DIMM slot, lift the DDR DIMM up at an angle, and pull it out.



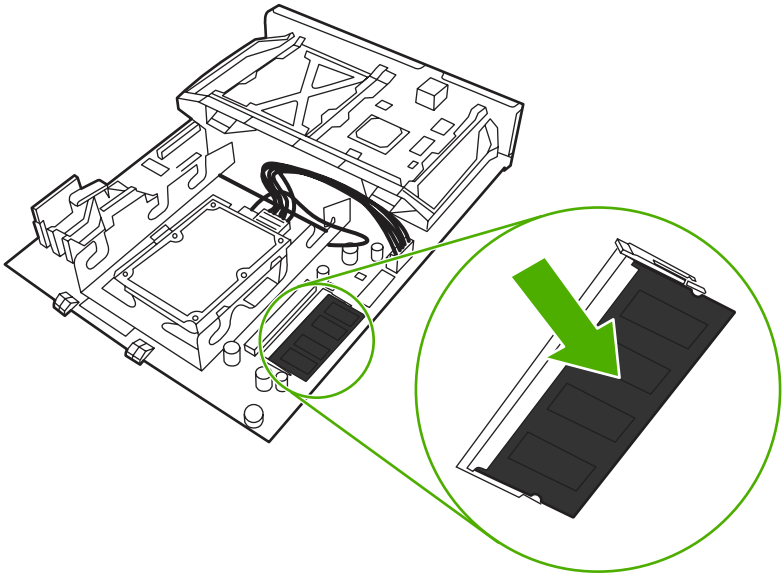
7. Remove the new DIMM from the antistatic package. Locate the alignment notch on the bottom edge of the DIMM.



8. 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.

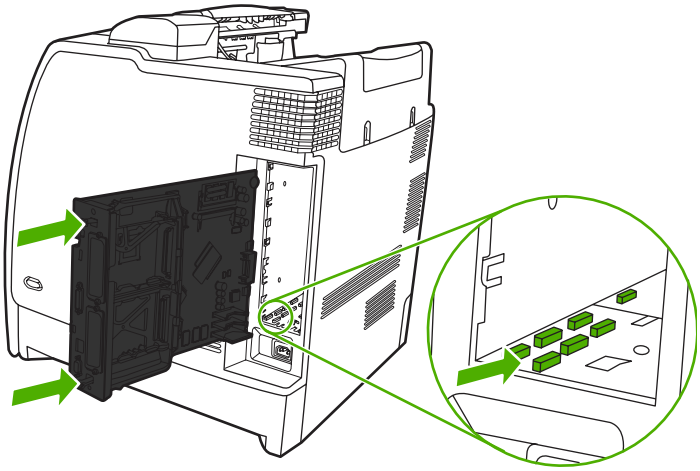


9. Push down on the DIMM until both latches engage the DIMM.

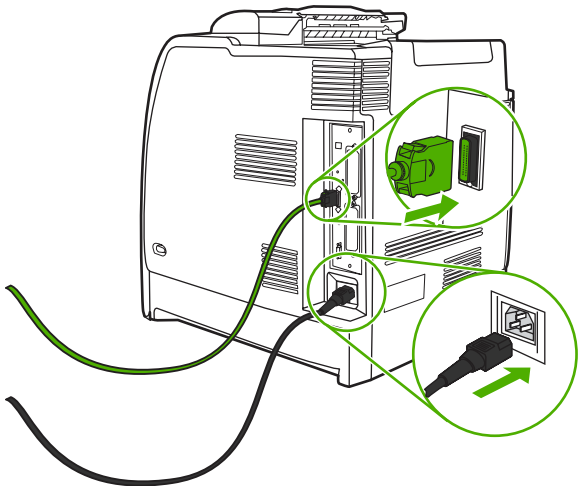


NOTE If you have difficulty inserting the DIMM, make sure the notch on the bottom of the DIMM is aligned with the bar in the slot. If the DIMM still does not go in, make sure you are using the correct type of DIMM.

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



11. Reconnect the power cable and interface cables, and turn the printer on.

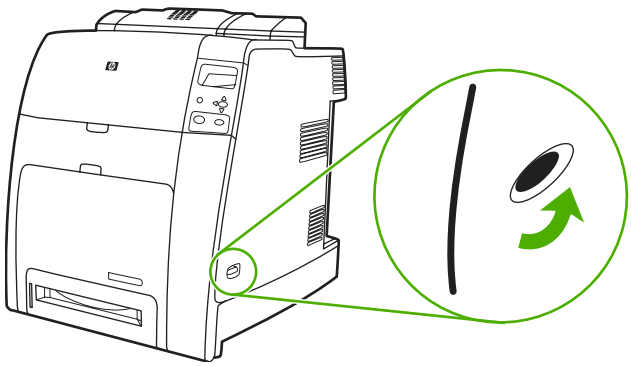


12. If you installed a memory DIMM, go to Enabling memory on page 125.

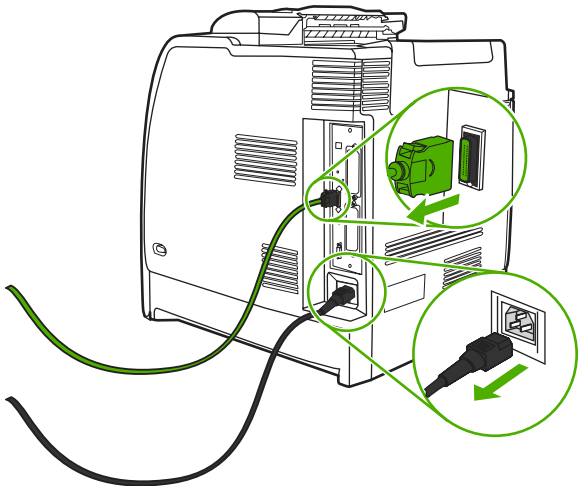
Installing a flash memory card (HP Color LaserJet 4700 Series only)

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

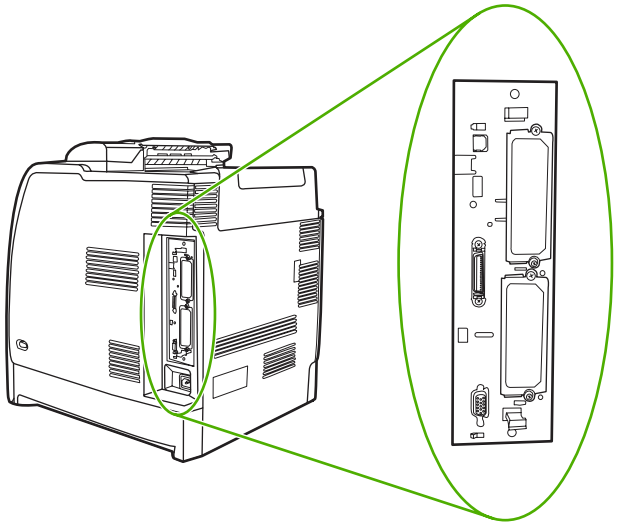
1. Turn the printer off.



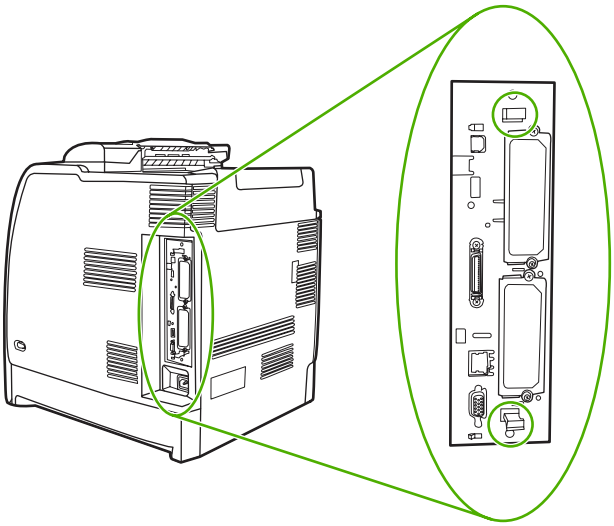
2. Disconnect all power and interface cables.



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

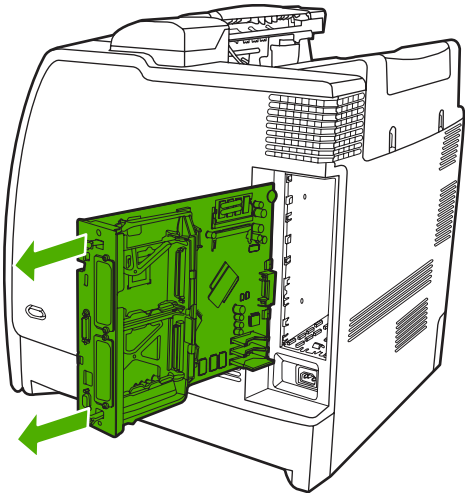


4. Grasp the black tabs situated near the top and bottom of the formatter board.

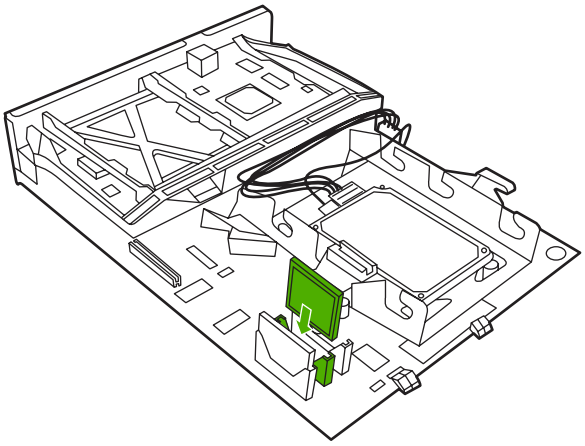


5. Gently pull on the black tabs to pull the formatter board from the printer. Place the formatter board on a clean, flat, grounded surface.

NOTE For the HP Color LaserJet 4700ph+, pivot up the bracket to access the second memory slot.



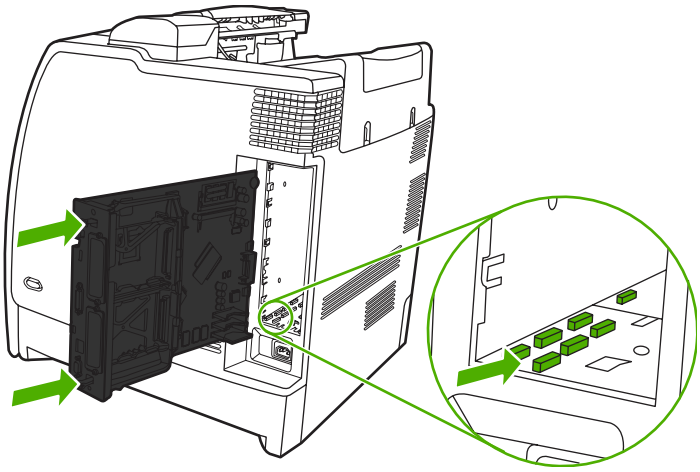
6. Align the groove on the side of the flash memory card with the notches in the connector and push it in the slot until it is fully seated.



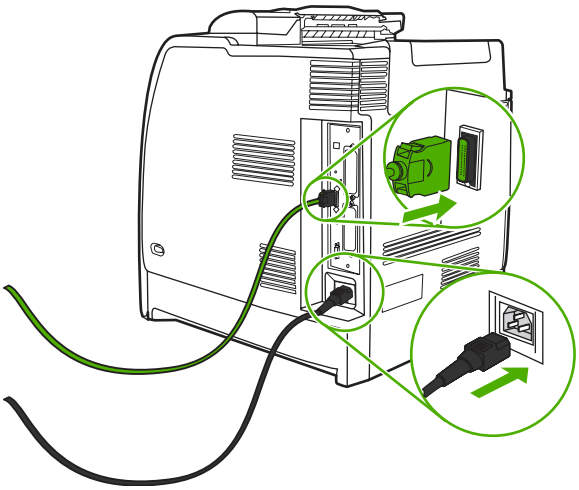
CAUTION Do not insert the flash memory card at an angle.

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.

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



8. Reconnect the power cable and interface cables, and turn the printer on.



Enabling memory

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

To enable memory for Windows 98 and Me

1. On the **Start** menu, point to **Settings**, and click **Printers**.
2. Right-click the printer 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 XP

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

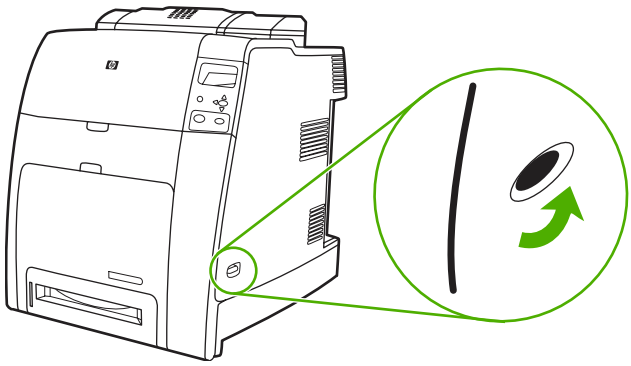
Installing an HP Jetdirect print server card (HP Color LaserJet 4700 Series only)

You can install an HP Jetdirect print server in an open EIO slot.

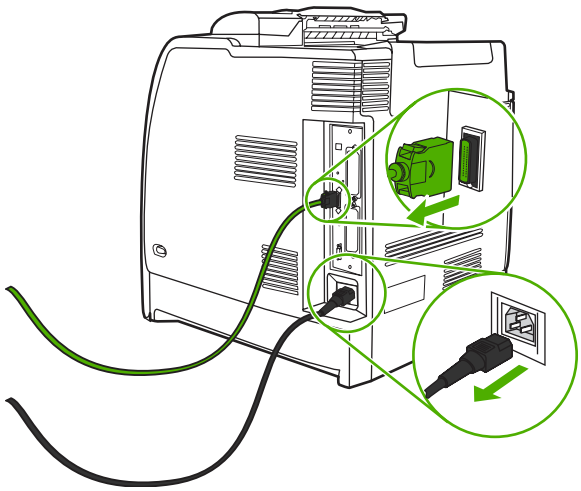
To install an HP Jetdirect print server card

1. Turn the printer off.

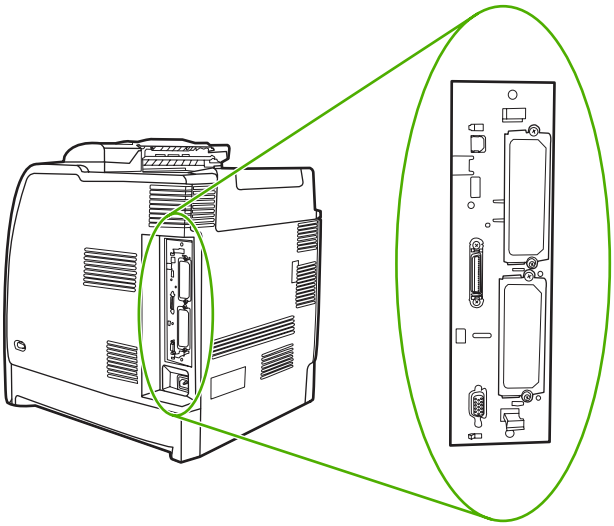
NOTE The HP Color LaserJet 4700n, 4700dn, 4700dtn, and 4700ph+ have an HP Jetdirect embedded print server already installed.



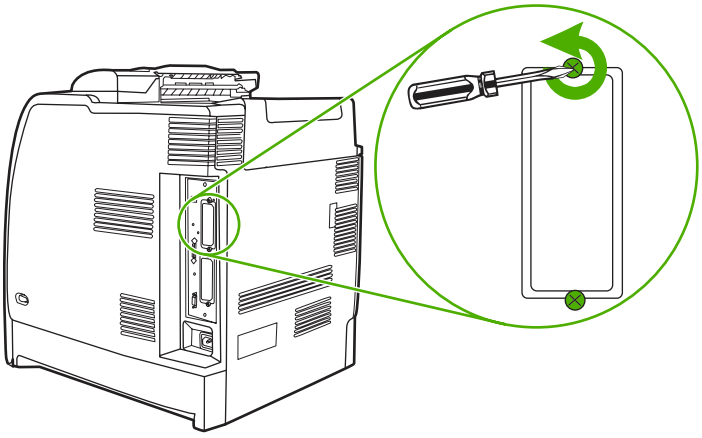
2. Disconnect all power and interface cables.



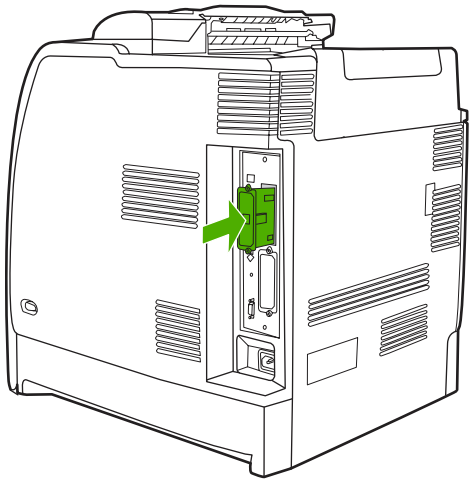
3. Locate the formatter board in the rear of the printer.



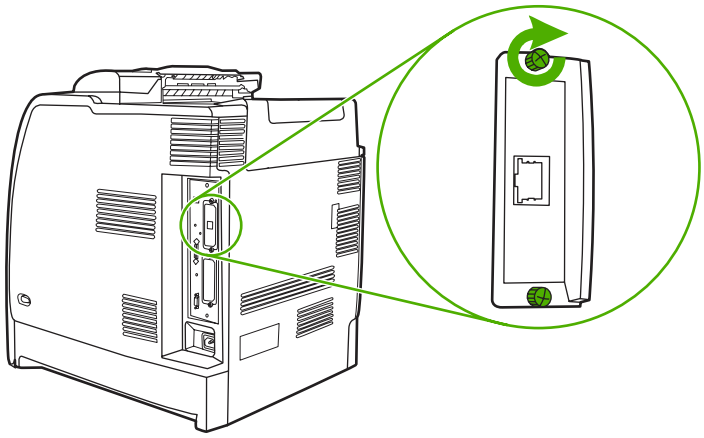
4. Locate an open EIO slot. Loosen and remove the two retaining screws holding the cover for the EIO slot, and then remove the cover. You will not need these screws and the cover again. They can be discarded.



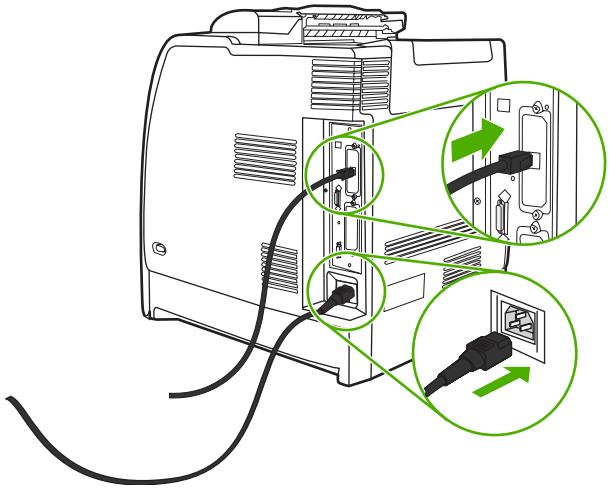
5. Firmly insert the HP Jetdirect print server card into the EIO slot.



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



7. Reconnect the network cable and power cable, and turn the printer on.



8. Print a configuration page (see Configuration page on page 507). In addition to a printer configuration page, an HP Jetdirect configuration page that contains network configuration and status information should also print.

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

9. Perform one of these steps:

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

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 jobs, so you can identify the most recent versions of stored print jobs. You can also set the printer to automatically warm up and prepare for use at a set 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 to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **Date/Time**.
7. Press ✔ to select **Date/Time**.
8. Press ▼ to highlight **Date Format**.
9. Press ✔ to select **Date Format**.
10. Press ▼ to highlight the appropriate format.
11. Press ✔ to select the appropriate format. The settings are saved and the control panel returns to the **Date/Time** submenu.
12. Press Menu to exit the **MENUS**.

To set the date

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **Date/Time**.
7. Press ✔ to select **Date/Time**.
8. Press ▼ to highlight **DATE**.
9. Press ✔ to select **DATE**.
10. Press ▼ or ▲ to select the correct month.



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

11. Press ✔.
12. Press ▼ or ▲ to select the correct day of the month.
13. Press ✔.
14. Press ▼ or ▲ to select the correct year.
15. Press ✔. The settings are saved and the control panel returns to the **Date/Time** submenu.
16. Press Menu to exit the **MENUS**.

To set the time format

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **Date/Time**.
7. Press ✔ to select **Date/Time**.
8. Press ▼ to highlight **Time Format**.
9. Press ✔ to select **Time Format**.
10. Press ▼ to highlight the appropriate format.
11. Press ✔ to select the appropriate format. The settings are saved and the control panel returns to the **Date/Time** submenu.
12. Press Menu to exit the **MENUS**.

To set the time

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **Date/Time**.
7. Press ✔ to select **Date/Time**.
8. Press ▼ to highlight **TIME**.

9. Press ✔ to select **TIME**.
10. Press ▼ or ▲ to select the correct hour.



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

11. Press ✔.
12. Press ▼ or ▲ to select the correct minute.
13. Press ✔.
14. Press ▼ or ▲ to select **AM** or **PM**.
15. Press ✔. The settings are saved and the control panel returns to the **Date/Time** submenu.
16. Press Menu to exit the **MENUS**.

Setting the wake time

Use the wake time feature to wake the printer 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 133.

To set the wake time

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **WAKE TIME**.
7. Press ✔ to select **WAKE TIME**.
8. Press ▼ to highlight the day of the week for which you want to set the wake time.
9. Press ✔ to select the day of the week for which you want to set the wake time.
10. Press ▼ to highlight **custom**.
11. Press ✔ to select **custom**.
12. Press ▼ or ▲ to select the desired hour.



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

13. Press ✔.
14. Press ▼ or ▲ to select the desired minute.
15. Press ✔.

16. Press ▼ or ▲ to select **AM** or **PM**.
17. Press ✔.
18. If you want to wake the printer at the same time each day, on the **APPLY TO ALL DAYS** screen, press ▼ to highlight **YES**.

    -or-

    If you want to set the time for individual days, press ▼ to highlight **NO**, and repeat the procedure for each day.
19. Press ✔. The settings are saved and the control panel returns to the **WAKE TIME** submenu.
20. Press Menu to exit the **MENUS**.

Setting the sleep delay

Use the sleep delay feature to set the period of time that the printer must be idle before it enters the sleep mode.



NOTE If the sleep delay feature is turned off in the **RESETS** menu, the printer 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 **30 MINUTES**.

To set the sleep delay

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **Sleep Delay**.
7. Press ✔ to select **Sleep Delay**.
8. Press ▼ to highlight the sleep delay setting that you want.
9. Press ✔ to select the highlighted sleep setting. The settings are saved and the control panel returns to the **SYSTEM SETUP** submenu.
10. Press Menu to exit the **MENUS**.

5 Theory of operation

This chapter provides information about the following topics:

- Basic operation
- Internal components
- Formatter system
- Engine control system
- Laser/scanner system
- Image formation system
- Pickup/feed system
- 500-sheet paper feeder
- Stapler/stacker (HP Color LaserJet 4700 Series only)

Basic operation

The HP Color LaserJet 4700 series printer functions are divided into four systems:

- Engine control system
- Laser/scanner system
- Image formation system
- Pickup/feed system

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 information from each system and sends necessary information back to the formatter.

This chapter describes each of these four systems thoroughly.

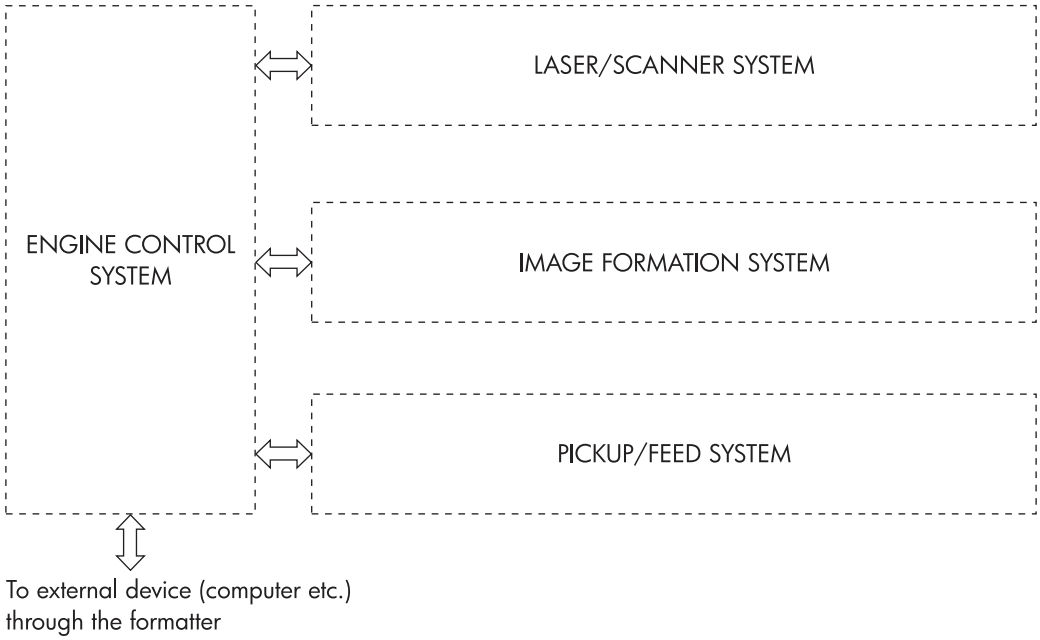


Figure 5-1 Basic system operation

Operation sequence

A microcomputer in the engine control system controls the operation sequence for the printer. The basic operation sequence (see Table 5-1 Basic operation sequence on page 137) describes the main operational periods from the point when the printer 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 printer checks the toner level and detects whether the cartridges are present. The printer 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 printer ready to print.	When the formatter sends a sleep command, the printer 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.	
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 printer 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.

Power on sequence

The power on sequence initializes the printer and checks for possible malfunctions or paper jams. Figure 5-2 Power on sequence on page 138 shows the printer status from power on to standby mode.

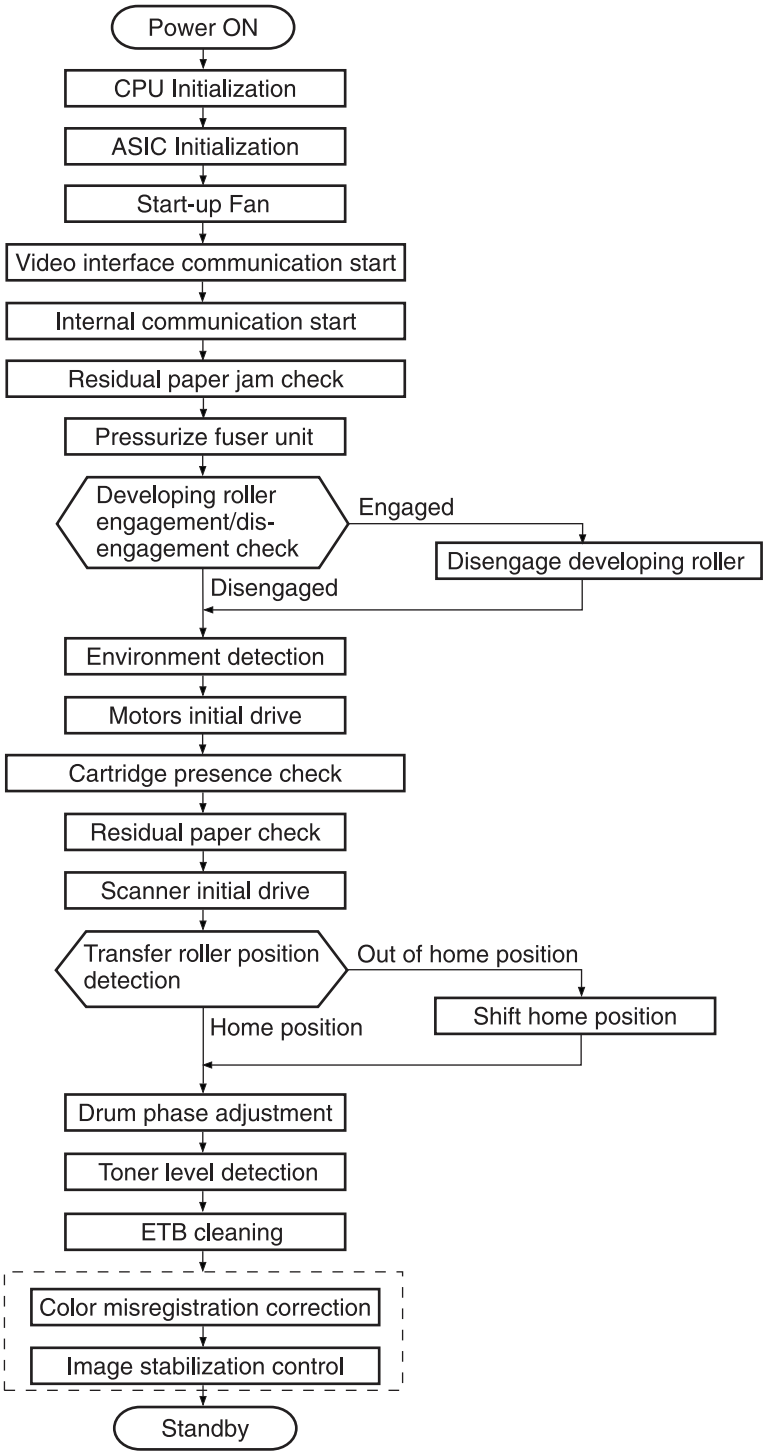


Figure 5-2 Power on sequence

Internal components

The following figure depicts the internal components of the printer.

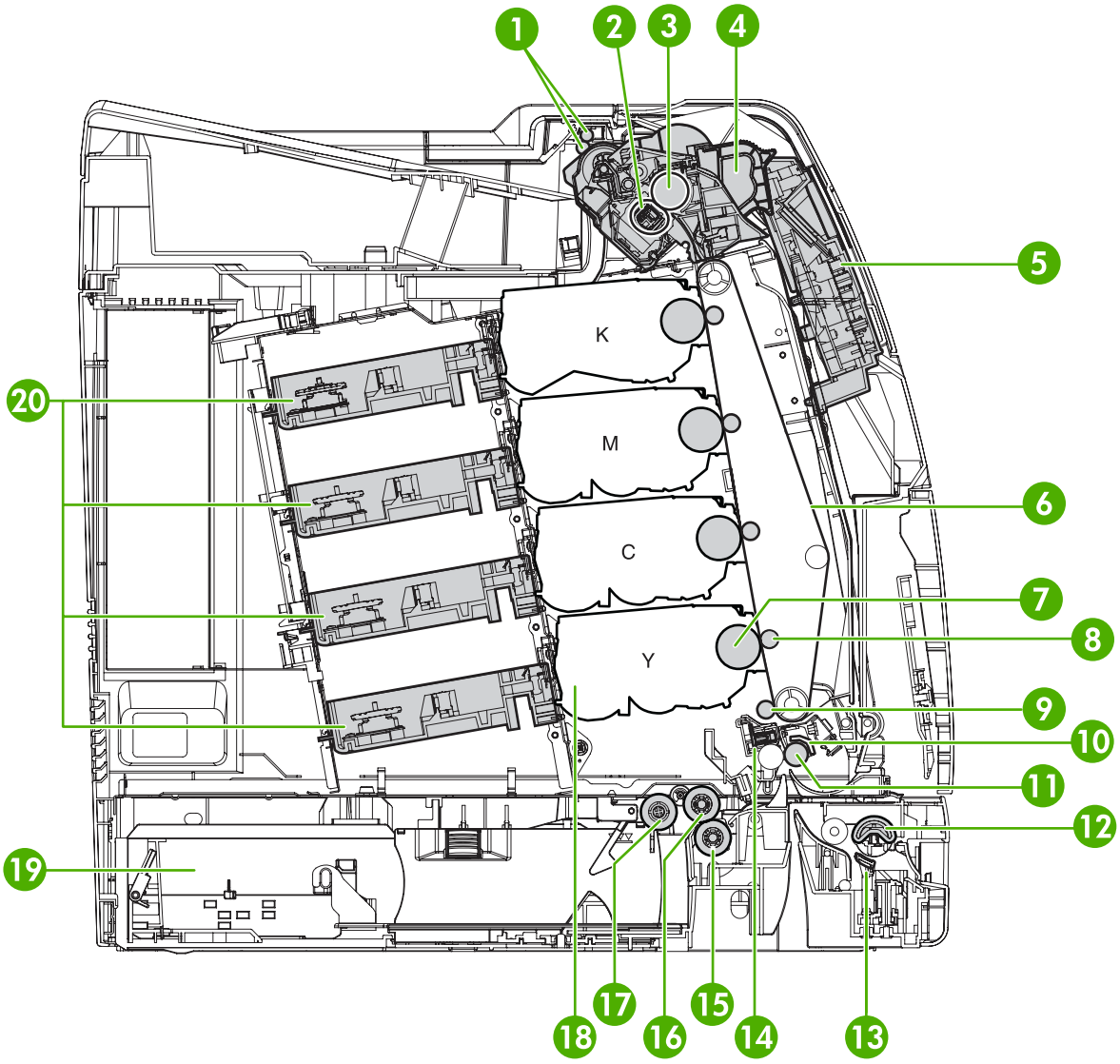


Figure 5-3 Internal components

1	Delivery rollers
2	Fuser sleeve unit
3	Fuser pressure roller
4	Fuser
5	Control panel
6	ETB
7	Photosensitive drum
8	Transfer roller

9	Attraction roller
10	Registration shutter
11	Registration roller
12	Multipurpose tray (Tray 1) pickup roller
13	Paper separation pad
14	Media sensor
15	Paper tray paper separation roller
16	Paper tray feed roller
17	Paper tray pickup roller
18	EP cartridge
19	Paper tray
20	Laser/scanner

Formatter system

The formatter PCB is responsible for the following actions:

- Receiving and processing print data from the various printer interfaces
- Monitoring control panel inputs and relaying printer status information (through the 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 printer continuously through the video interface. When the printer 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 5-4 Formatter system on page 141 shows the formatter system.

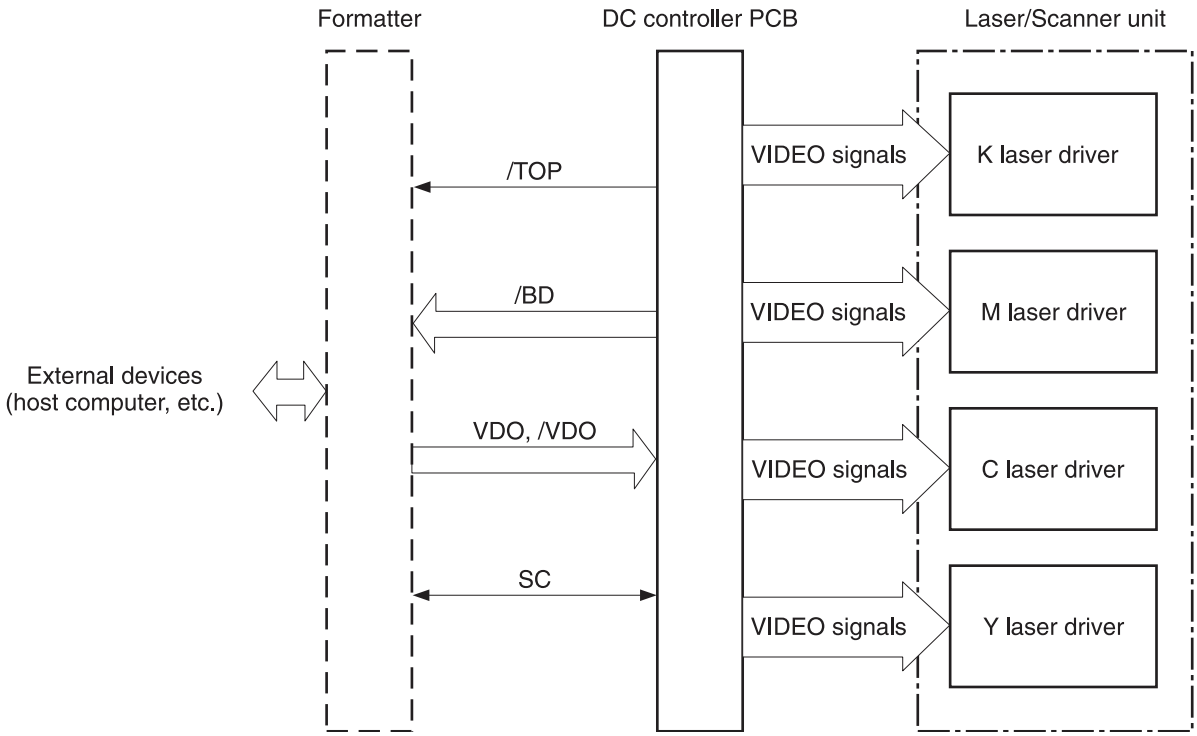


Figure 5-4 Formatter system

Sleep mode

This feature conserves power after the printer has been idle for an adjustable length of time. Set the time length in the **CONFIGURE DEVICE** menu, under **SYSTEM SETUP**. When the printer is in Sleep mode, the control panel backlight is turned off, but the printer 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 printer exits Sleep mode and enters the warmup 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 control panel button is pressed.
- The top cover is opened.
- Tray 2 is opened.
- The engine test button is pressed.



NOTE Printer error messages override the **Sleep mode on** message. The printer enters sleep mode at the appropriate time, but the error message continues to display.

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 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 printer input/output (I/O) capabilities.

Parallel interface (HP Color LaserJet 4700 Series only)

The formatter receives incoming data through its bidirectional interface (IEEE-1284). The I/O provides high-speed and two-way communication between the printer and the host, allowing the user to change printer settings and monitor printer status from the host computer. The user can configure the HIGH SPEED item on the control panel menu. (This item is found by navigating to the **CONFIGURE DEVICE** menu, in the **I/O** menu, and **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 4700 series printer supports a USB 2.0 connector on the back of the printer. You must use an A-to-B type USB cable.

ACC accessory port (HP Color LaserJet 4700 Series only)

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

Flash (HP Color LaserJet 4700 Series only)

Optional flash is available in various sizes of compact flash cards for storing forms, fonts, and signatures. See Table 8-2 Supplies and accessories on page 563 for specific part numbers.

Hard drive accessory (HP Color LaserJet 4700 Series only)

The optional hard drive accessory can be mounted in one of the EIO slots on the rear of the formatter. The optional EIO-based hard drive is used for creating multiple original prints (mopies) and storing forms, fonts, and signatures.

CPU

The HP LaserJet 4700 series formatter incorporates a 533 MHz RISC processor.

Printer memory

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

Some printer 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 control panel, warning messages display on the control panel until the end of the job from which they were generated. If **Clearable Warning = On** is set, warning messages display on the control panel until ✔ is pressed. If an error occurs that prevents printing and **Autocontinue = Off** is set, the message displays until ✔ is pressed.

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.

Flash memory

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

Nonvolatile memory

The printer uses nonvolatile memory (NVRAM) to store I/O and information about the print environment configuration. The contents of NVRAM are retained when the printer 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 printer to perform the following functions:

- Two-way communication with the host computer through a bidirectional parallel connection. The printer 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 printer to be configured with a host on each I/O. The printer can receive data from more than one I/O simultaneously, until the I/O buffer is full. This can occur even when the printer is offline.
- Context-sensitive switching allows the printer 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 printer 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 printer status and command data to and from a control panel board.

Engine control system

The engine control system is the brain of the HP Color LaserJet 4700 series printer. 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 unit
- Formatter

Each of these components is described in this chapter.

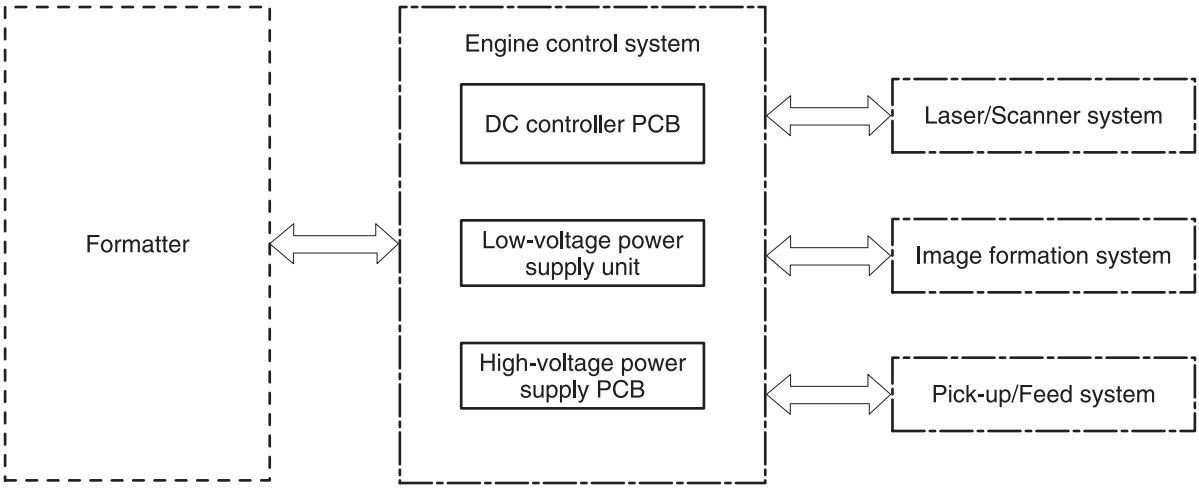


Figure 5-5 Engine control system

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 printer. The sequence of events is as follows:

1. Power is turned on.
2. The low-voltage power supply unit supplies DC power to the DC controller.
3. The CPU in the DC controller starts to control printer operations.
4. The printer 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 printer circuitry.

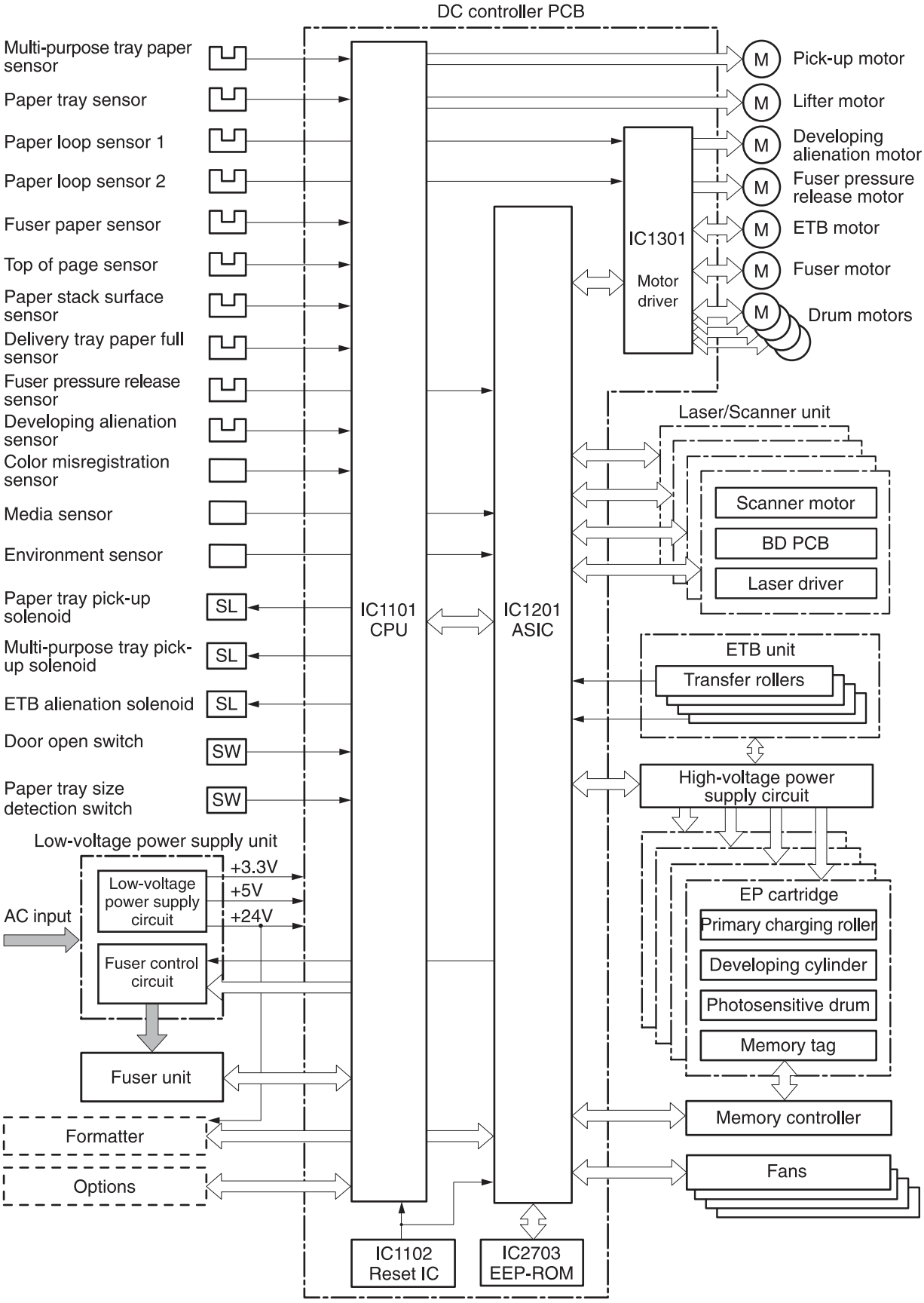


Figure 5-6 DC controller PCB

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 printer 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 printer has ten motors, four fans, and one environment sensor. Seven of the motors are DC motors; the other three are stepping motors. Figure 5-7 Motors and fans on page 148 shows the locations of the motors and fans. Table 5-2 Function of motors, fans, and environment sensor on page 148 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 printer 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.

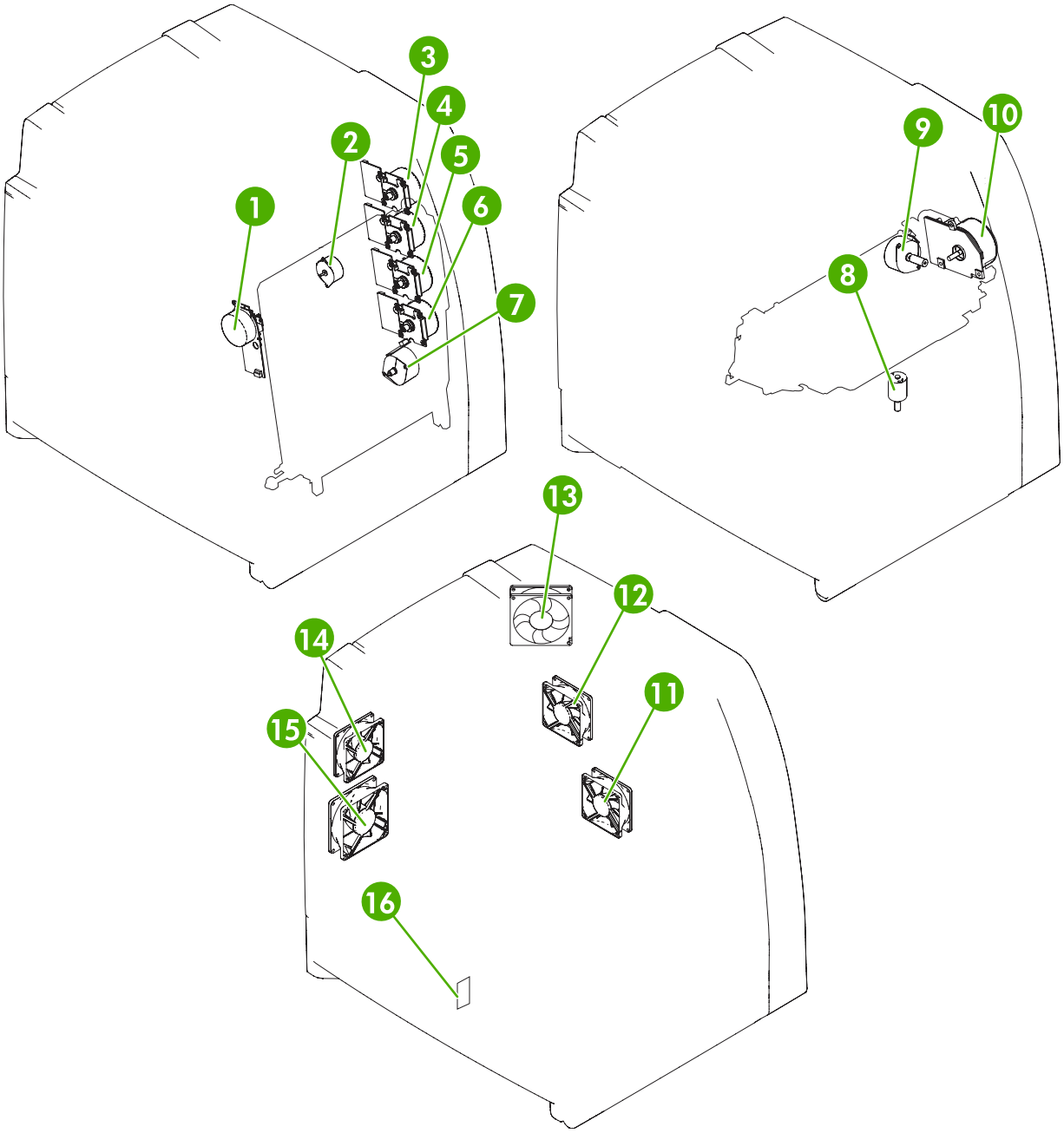


Figure 5-7 Motors and fans

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

Callout	Name	Function	Type	Failure detection
1	ETB motor (M7)	Drives the ETB	DC motor	Yes
2	Developing disengaging motor (M8)	Separates the photosensitive drums and the developing cylinders	Stepping motor	No

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

Callout	Name	Function	Type	Failure detection
3	Black cartridge motor (M4)	Drives the photosensitive drum	DC motor	Yes
4	Magenta cartridge motor (M3)			
5	Cyan cartridge motor (M2)			
6	Yellow cartridge motor (M1)			
7	Pickup motor (M9)	Drives the pickup roller and feed roller	Stepping motor	No
8	Lifter motor (M10)	Moves up lifter	DC motor	No
9	Fuser pressure release motor (M6)	Drives the fuser pressure release mechanism	Stepping motor	No
10	Fuser motor (M5)	Drives the pressure roller and delivery roller	DC motor	Yes
11	Power supply fan (Fan4)	Exhausts heat around the pickup motor and low-voltage power supply	DC motor	Yes
12	Duplexer fan	Exhausts heat around the duplexer	DC motor	Yes
13	Upper exhaust fan (Fan1)	Exhausts heat around the ETB, drum motors, and formatter	DC motor	Yes
14	Delivery fan (Fan3)	Exhausts heat around fuser and delivery unit	DC motor	Yes
15	Cartridge fan (Fan2)	Exhausts heat around the fuser and cartridges	DC motor	Yes
16	Environment sensor	Detects the temperature and humidity levels inside the printer	N/A	Yes

Failure detection

The DC controller can detect three motor and five 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 reaches 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 reaches 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 reaches the specified interval.

Upper exhaust fan failure detection

The DC controller detects an upper exhaust fan failure and notifies the formatter of an error status when the upper 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 determines the 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.

Duplexer fan failure detection

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

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 printer.

Figure 5-8 Low-voltage power supply circuits on page 151 shows each circuit of the low voltage power supply unit.

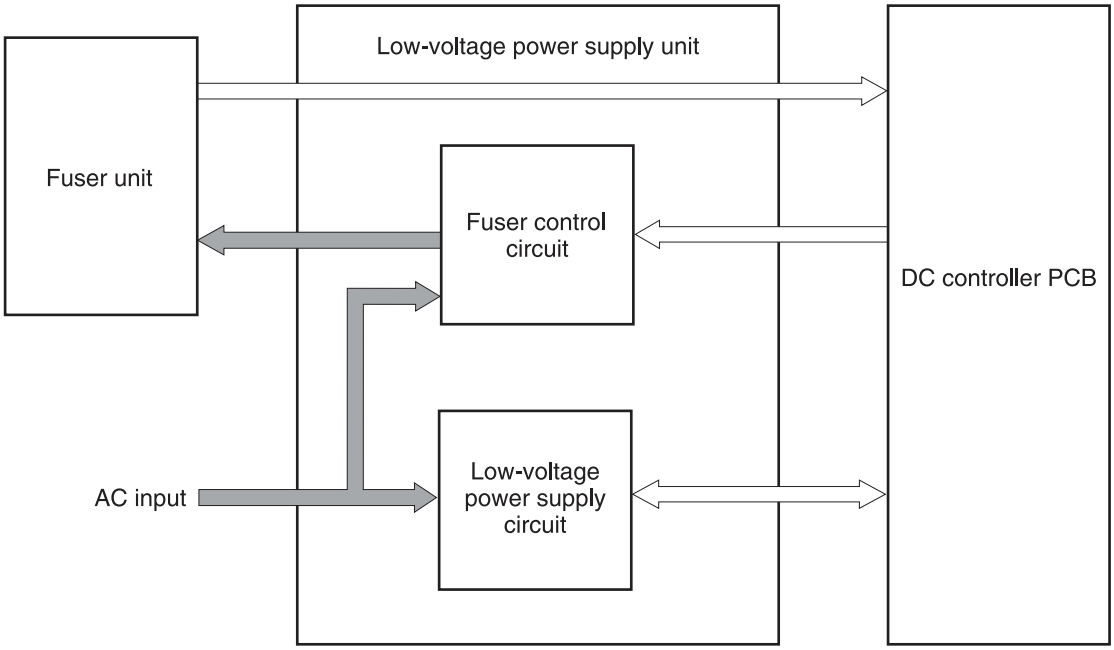


Figure 5-8 Low-voltage power supply circuits

Fuser control circuit

This printer uses a ceramic heating method to heat the fuser. Figure 5-9 Fuser power supply circuit on page 152 shows the configuration of the fuser power supply.

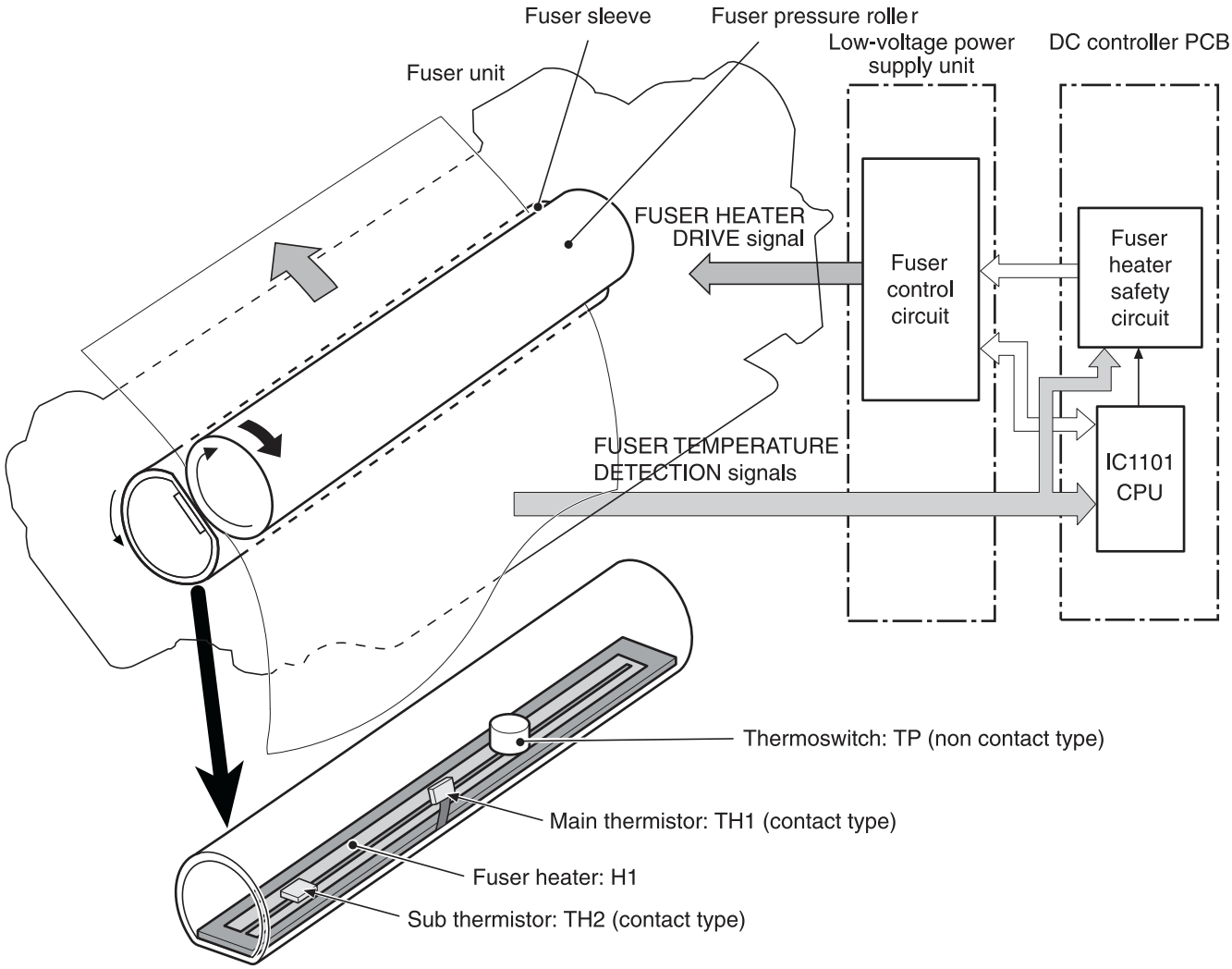


Figure 5-9 Fuser power supply circuit

The fuser power supply circuit has three main components:

- **Fuser heater.** A ceramic heater heats the fuser sleeve. The heater has one piece of U-shaped heating element on the 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 190°C (374°F)	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
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.

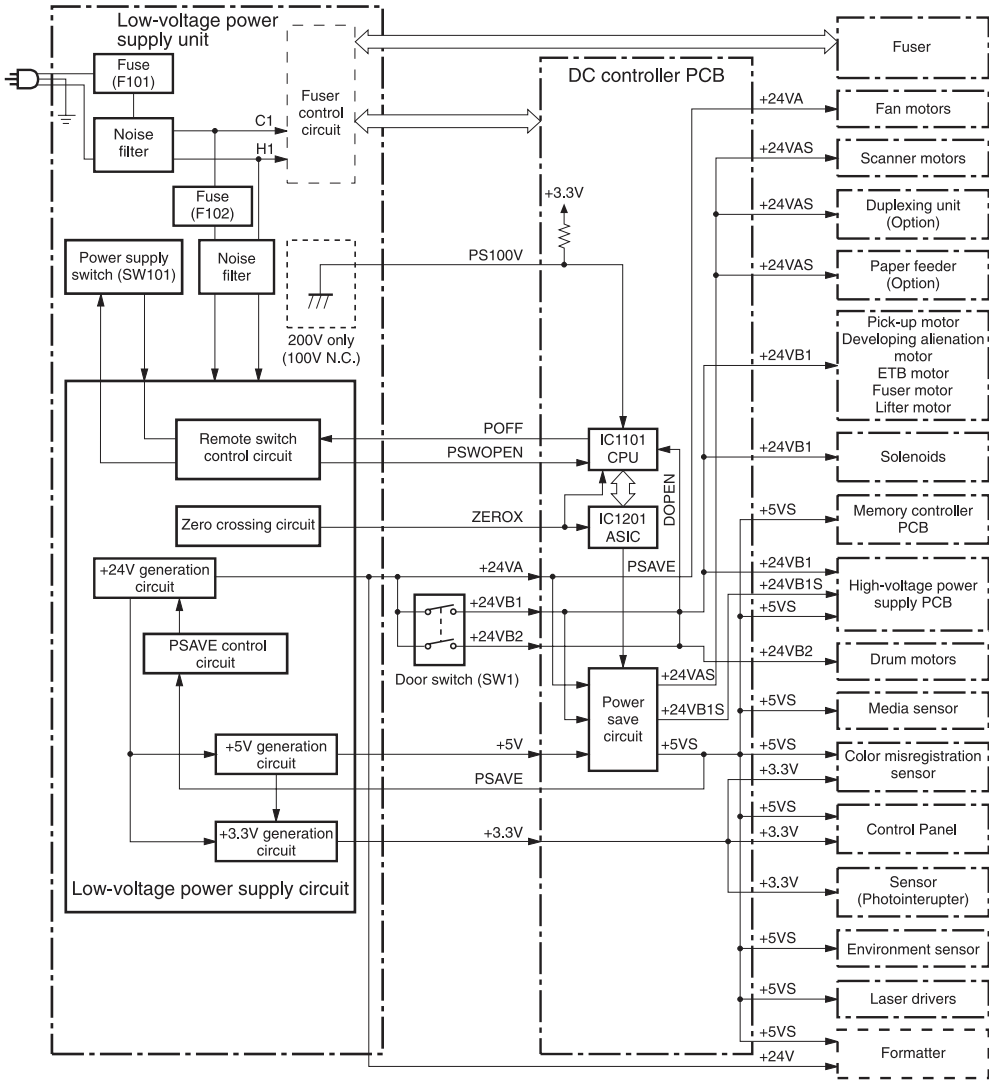


Figure 5-10 Low-voltage power supply circuit

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 printer) and leave the printer off for approximately three minutes. Then turn the printer 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 period 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 printer returns to the WAIT period once it receives a command from the formatter ending Sleep mode.

Power supply recognition

The low-voltage power supply tells the DC Controller whether the printer is 110V or 220V, and the DC Controller adjusts temperature control for the fuser accordingly. When the printer is a 110V unit, the DC Controller adjusts for a 100V fuser. Similarly, when the printer is a 220V unit, the DC Controller adjusts for a 220V fuser.

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 5-11 Heater temperature control circuit on page 156.

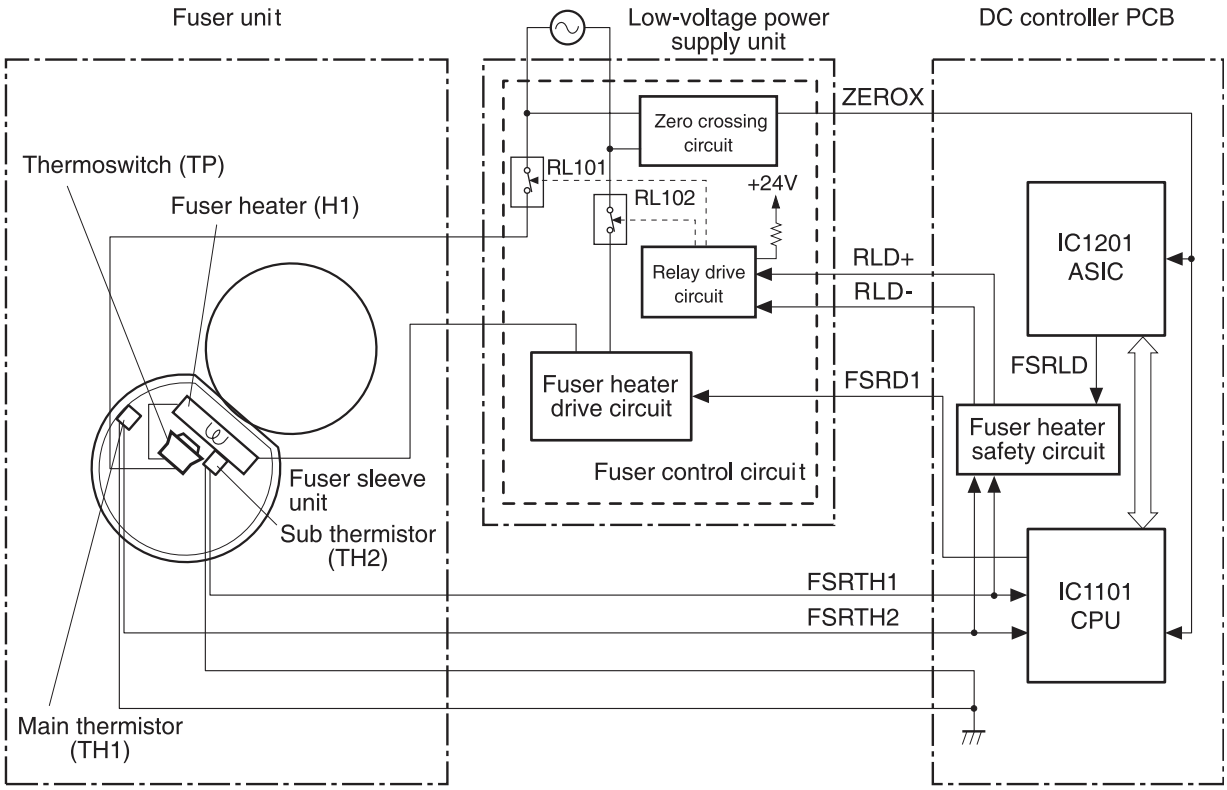


Figure 5-11 Heater temperature control circuit

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 detects the start-up power provided to the fuser heater according to the temperature detected by the sub thermistor. 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 the 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 always 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°C (86°F) 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 printer engine, and notifies the formatter of an fuser failure when it encounters the following conditions:

Start-up failure (warmup 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.

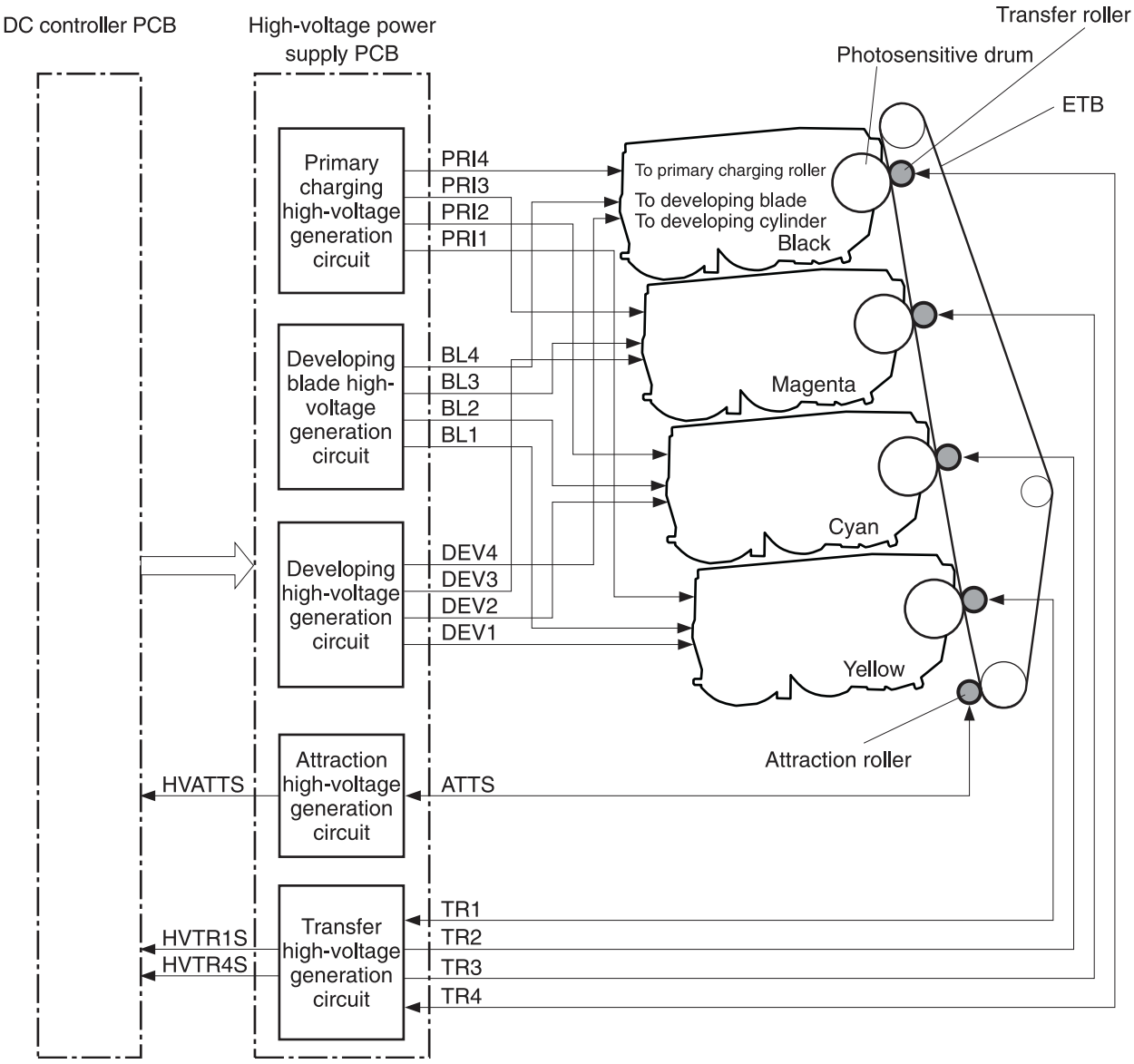


Figure 5-12 High-voltage power supply block diagram

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 bias 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 bias 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.

Video interface control

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

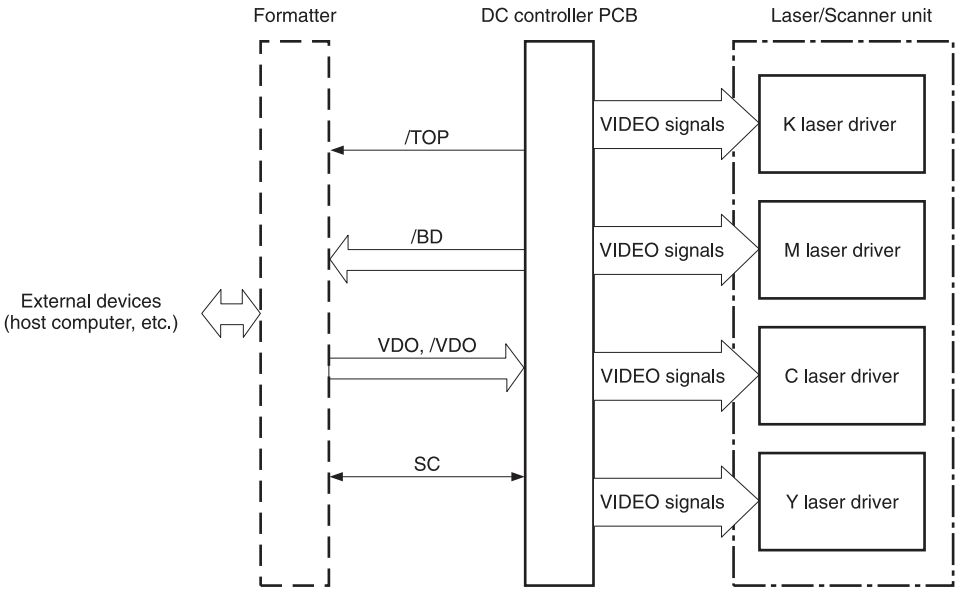


Figure 5-13 Video interface control

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

1. When the printer 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 printer 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.

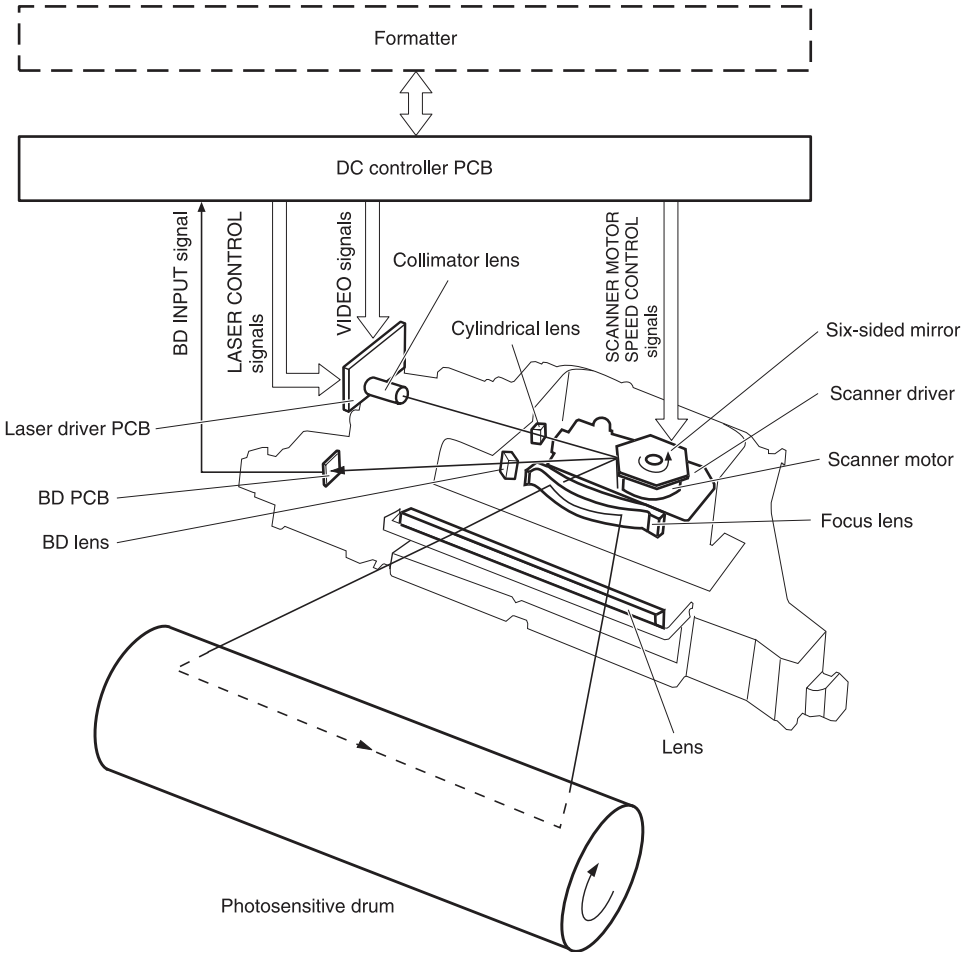


Figure 5-14 Laser/scanner assembly

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 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 on 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 on 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 5-15 Laser control circuit block diagram on page 164 illustrates the laser control system.

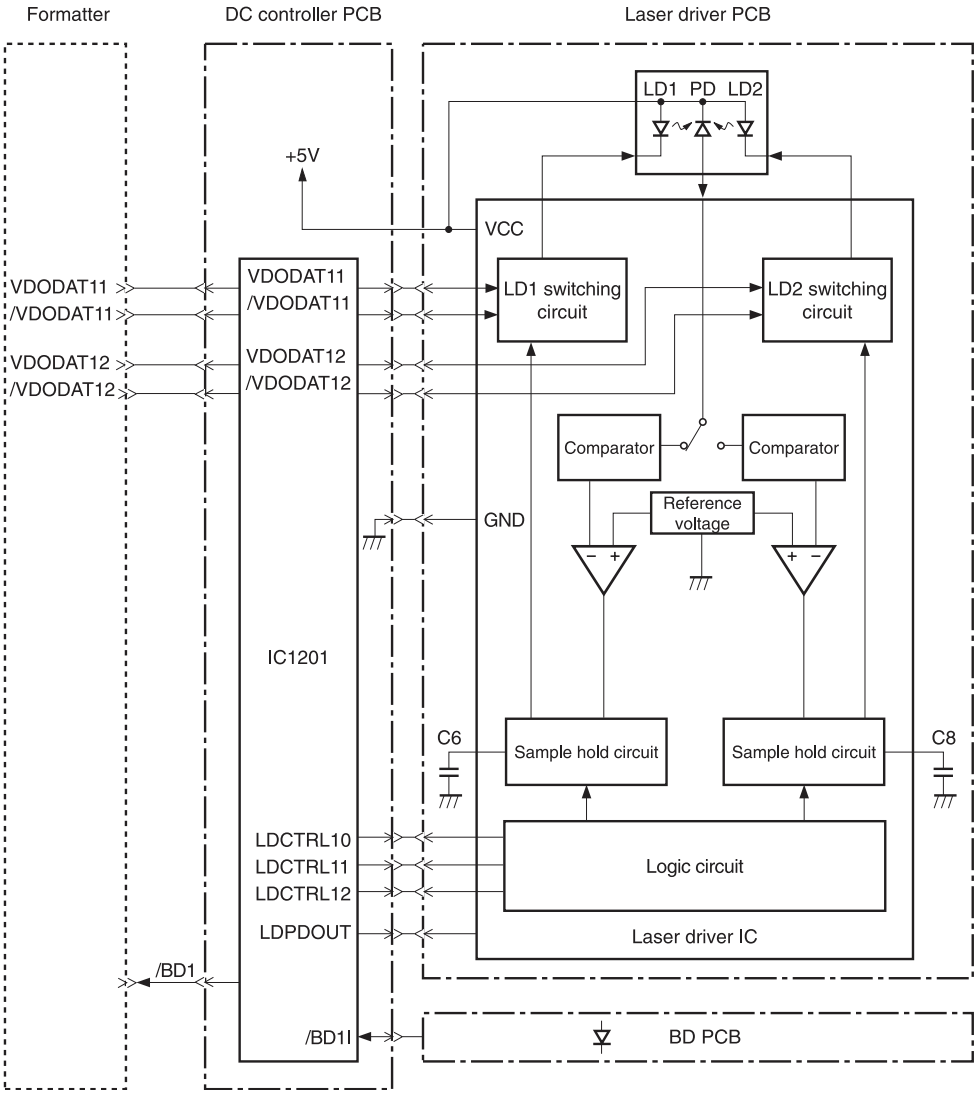


Figure 5-15 Laser control circuit block diagram

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 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 5-16 Scanner motor circuit diagram on page 165 illustrates the scanner motor control system.

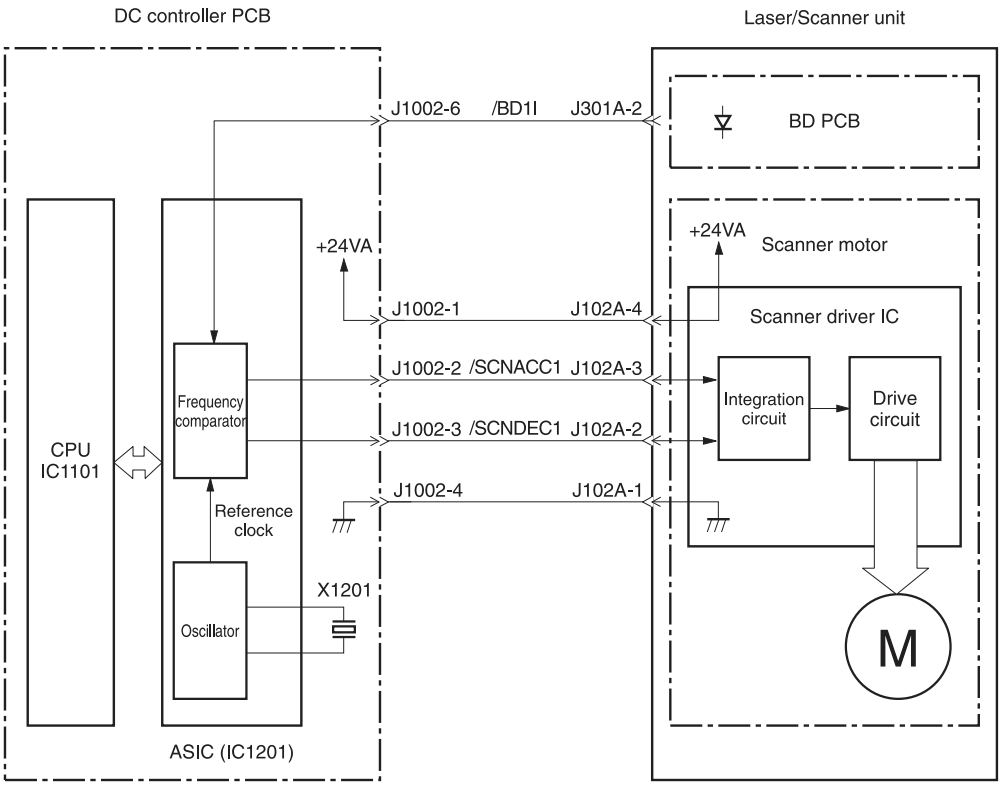


Figure 5-16 Scanner motor circuit diagram

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 printer. 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 5-17 Image formation system on page 168 shows the image formation system.

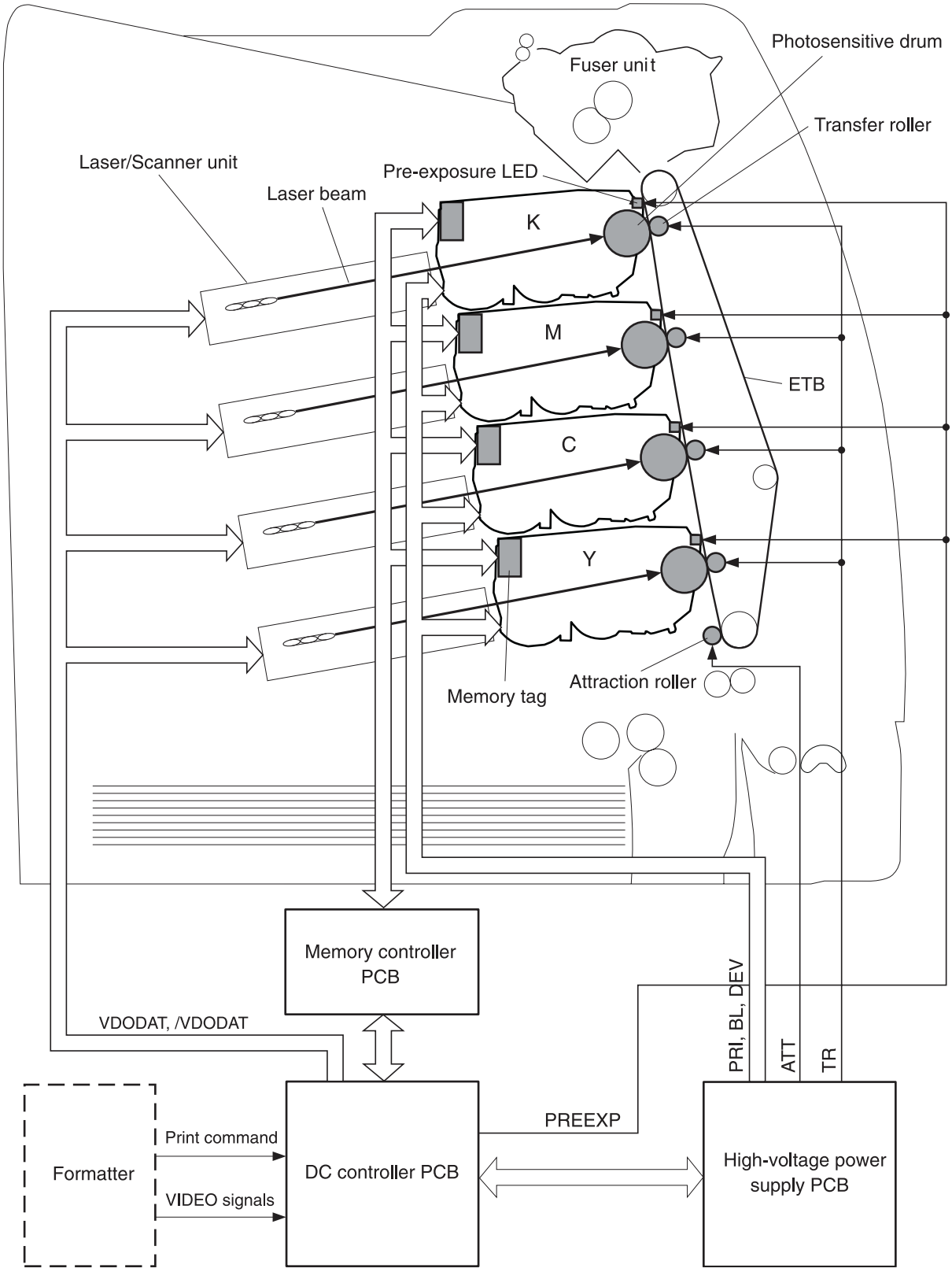


Figure 5-17 Image formation system

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

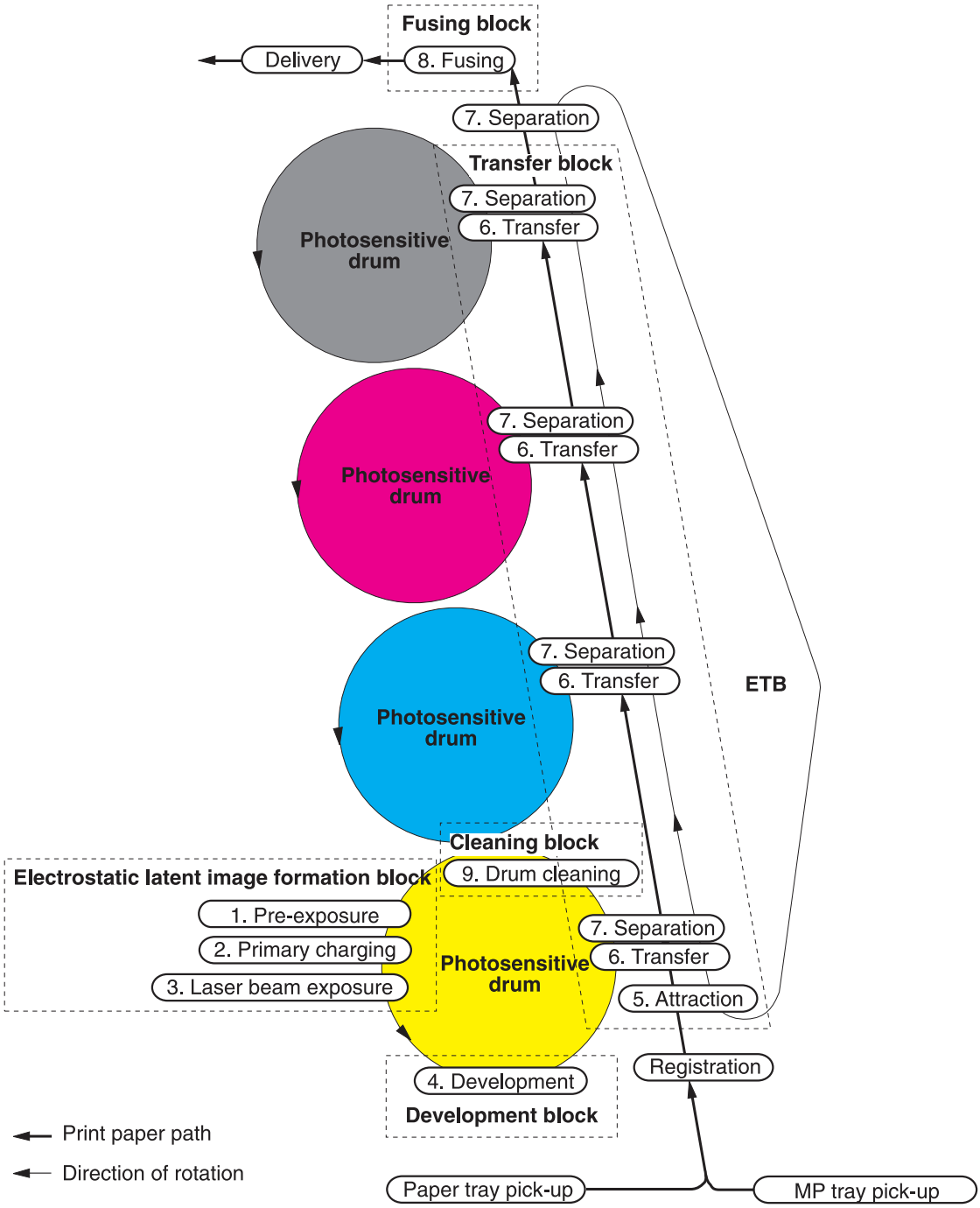


Figure 5-18 Image formation process

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.

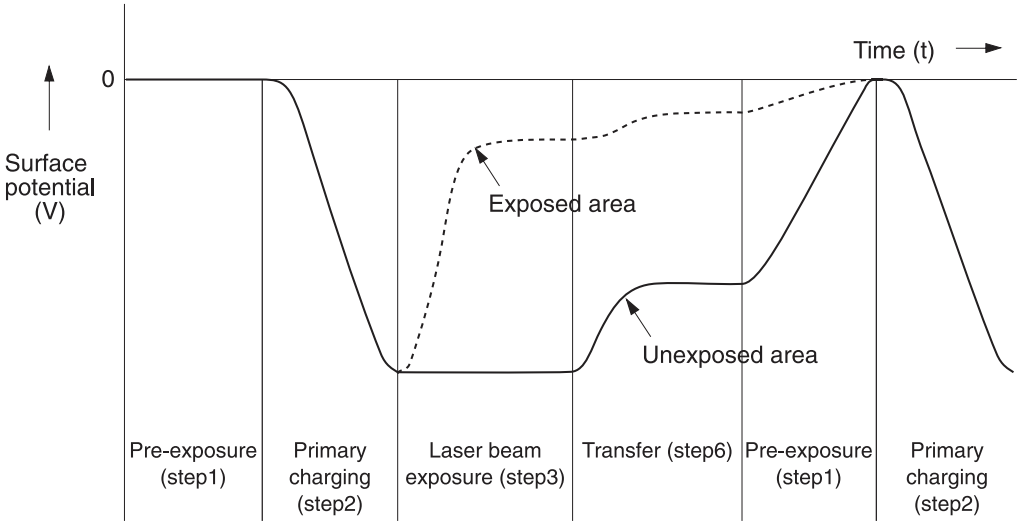


Figure 5-19 Electrostatic latent image formation block

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.

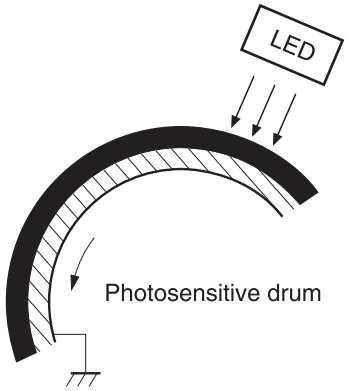


Figure 5-20 Pre-exposure

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 printer 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.

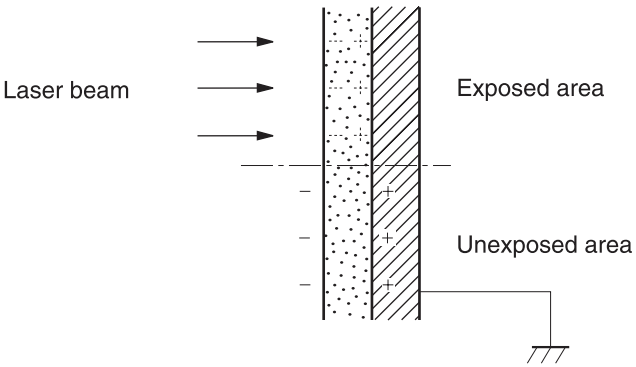


Figure 5-21 Laser beam exposure

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 printer 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.

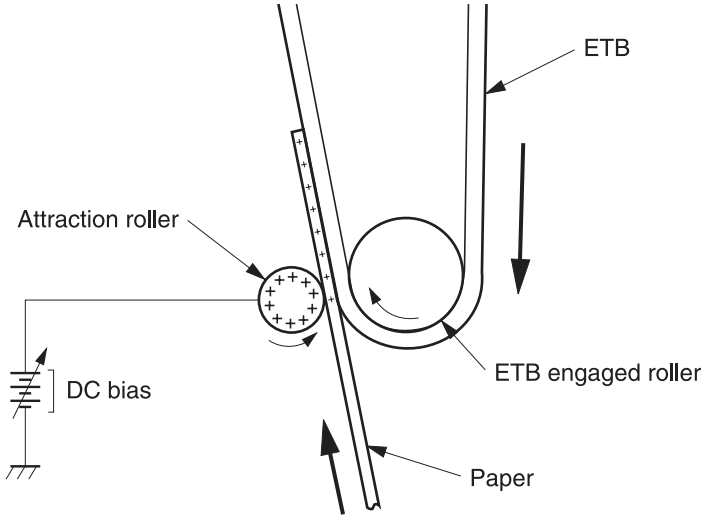


Figure 5-22 Attaching the media to the ETB

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 5-23 Toner transfer on page 174 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.

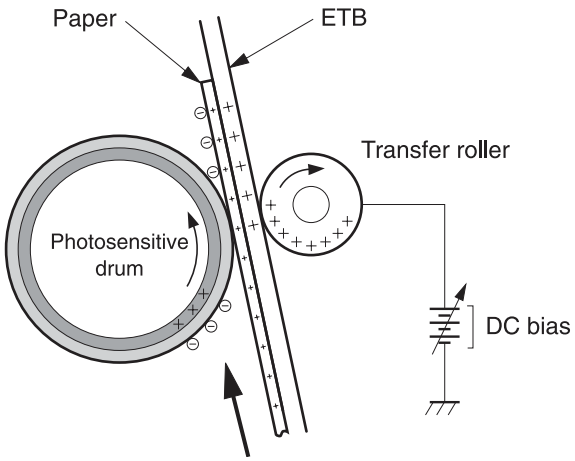


Figure 5-23 Toner transfer

Step 7: Separation

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

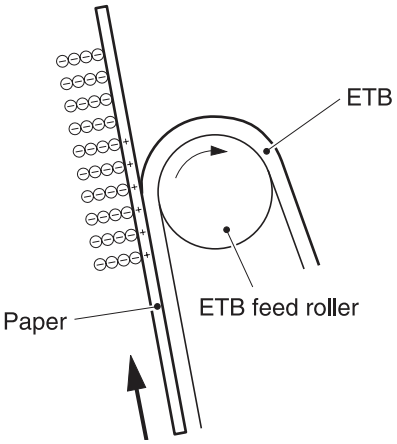


Figure 5-24 Separation

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 printer 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.

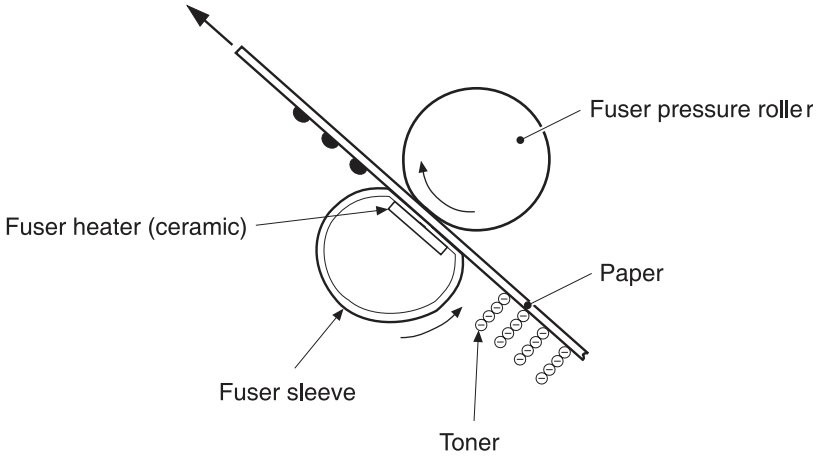


Figure 5-25 Fusing

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 printer has four different print cartridges, one for each color. However, they share the same structure, shown in Figure 5-26 Print cartridge on page 176.

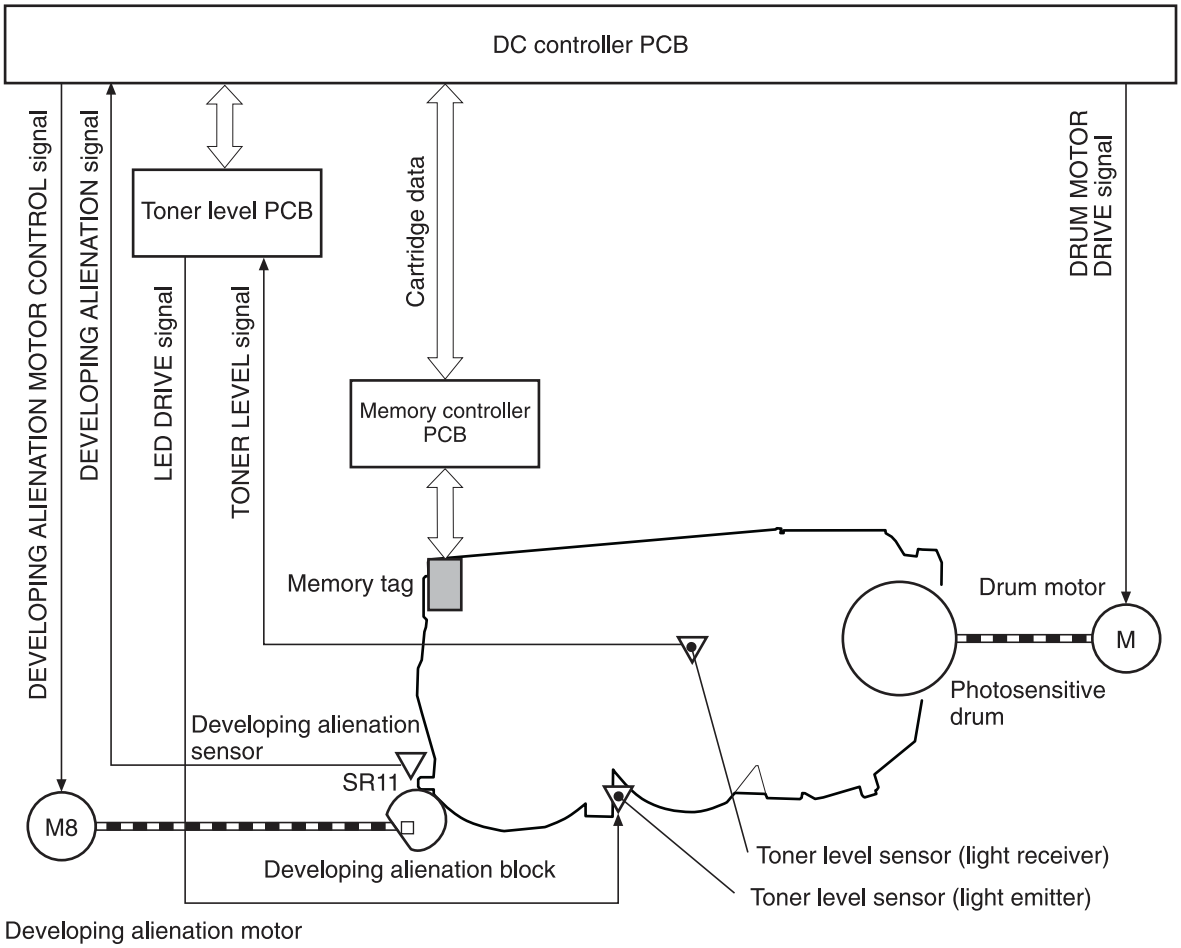


Figure 5-26 Print cartridge

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 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 5-27 Memory tag on page 177 illustrates how the memory tag operates.

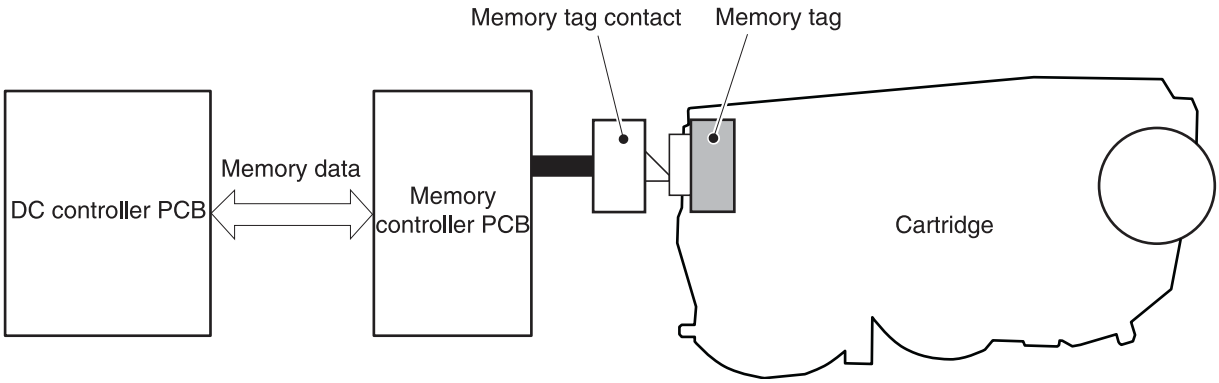


Figure 5-27 Memory tag

The DC controller reads information from the memory tag whenever the printer 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 printer 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 printer engine and notifies the formatter. Figure 5-28 Photosensitive drum detection on page 178 illustrates the drum detection procedure.

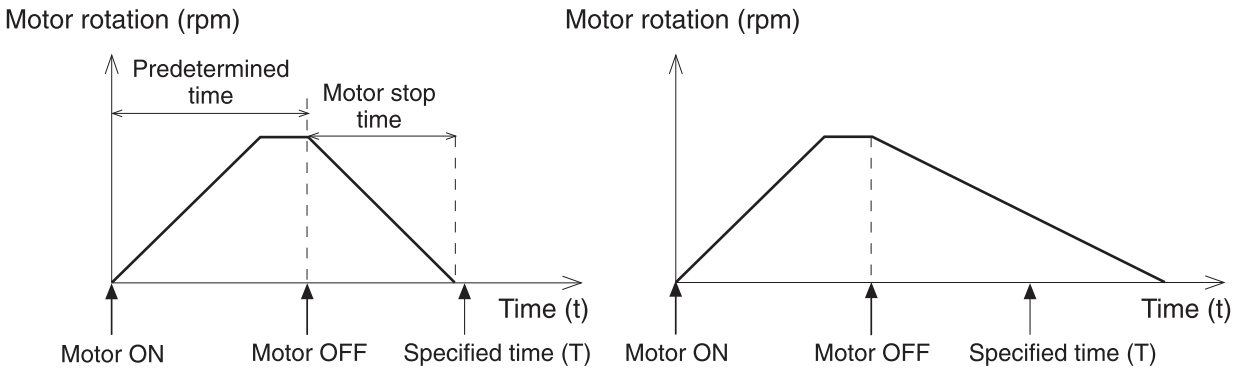


Figure 5-28 Photosensitive drum detection

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 a developing alienation motor abnormality. The DC controller 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 printer and helps transfer toner onto the media. Figure 5-29 ETB on page 179 illustrates the ETB.

NOTE The ETB contains a fusable link that is opened when a new ETB is first installed in the printer. This resets the page count of the ETB to zero.

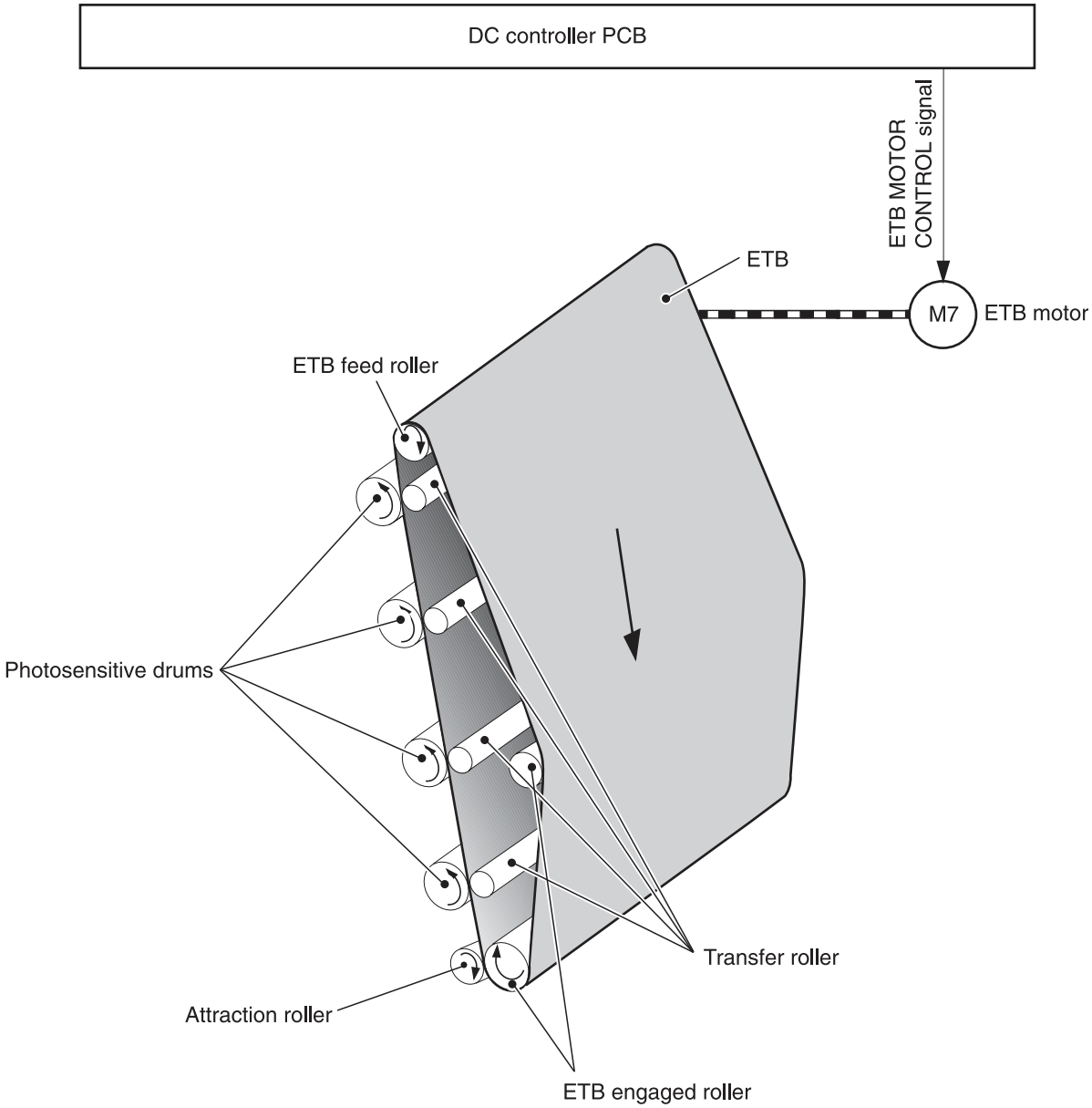


Figure 5-29 ETB

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 in 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.

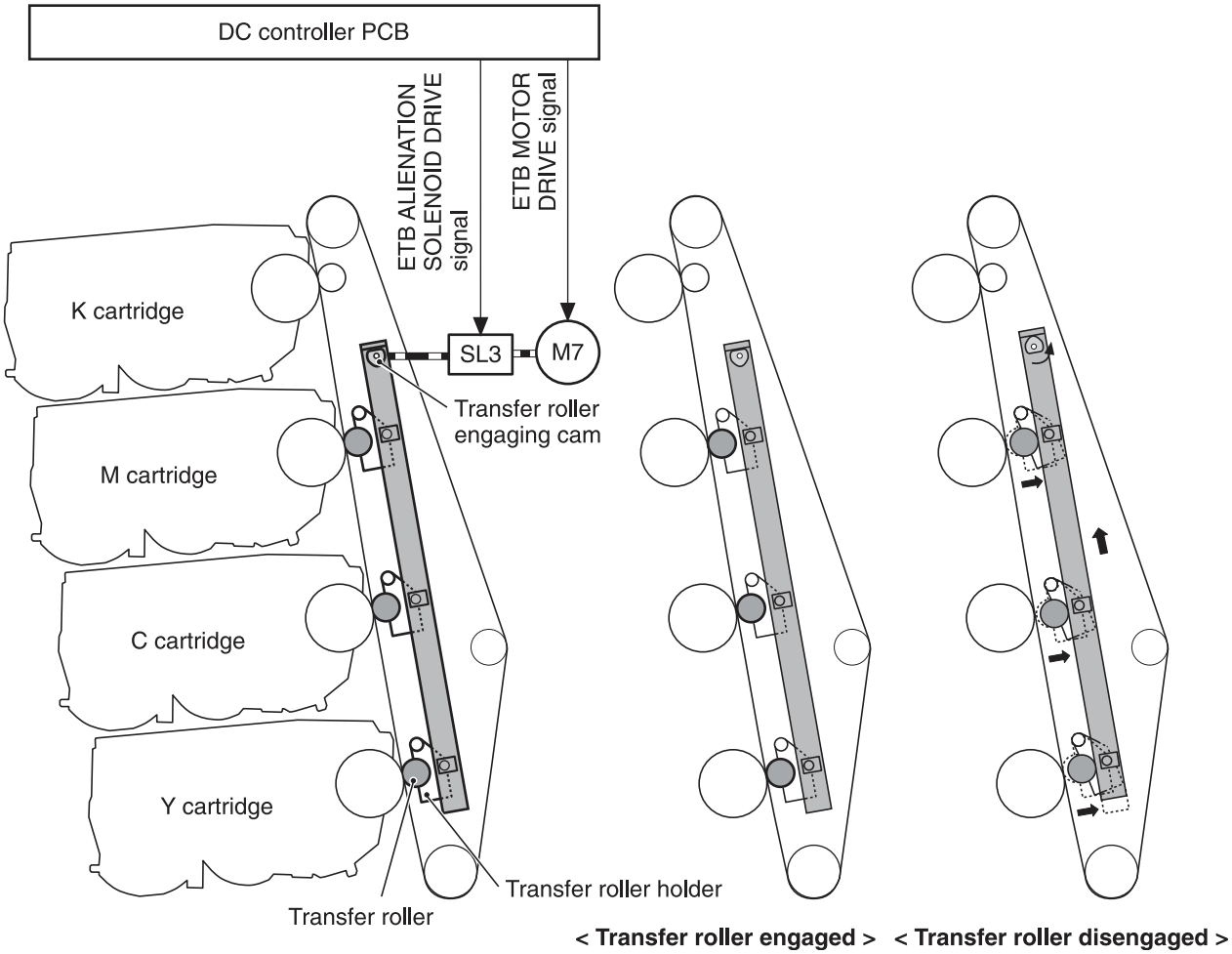


Figure 5-30 Transfer roller engagement/disengagement control

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

Calibration and cleaning

The printer automatically calibrates and cleans itself at various times to maintain the best print quality. You can also force the printer to calibrate by selecting **QUICK CALIBRATE NOW** or **FULL CALIBRATE NOW** from the **PRINT QUALITY** menu. For information about calibrating the printer, see Quick Calibrate Now on page 539 or Full Calibrate Now on page 539 for more information.

While the printer is calibrating or cleaning, it pauses printing. For most calibrations and cleaning, the printer 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 182 shows when the printer calibrates, the duration of the calibration, and the type of calibration that occurs. Table 5-5 Cleaning timing and duration on page 182 shows when the printer 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 printer on.	75 seconds for calibration, but because of other initialization activities, the printer takes a total of 2 minutes to be ready for printing	DHALF
When you install one or more print cartridges that have not previously been installed in the printer.	150 seconds (2 minutes, 30 seconds)	DHALF, color-plane registration (CPR)
After 80 pages have been printed following installation of new cartridge.	1 minute	DHALF
When 1,000 pages have printed since the last calibration. The printer will finish printing the current job before calibrating.	75 seconds	DHALF, CPR
When you request calibration from the control panel (**QUICK CALIBRATE NOW** and **FULL CALIBRATE NOW**).	55 seconds (4 minutes)	DHALF, CPR, drum phase[1]

[1] drum phase calibration and CPR is done only during a full calibration.

Table 5-5 Cleaning timing and duration

Cleaning occurrence	Duration	Type of cleaning
When the printer 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 printer 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 5-31 ETB cleaning on page 183 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

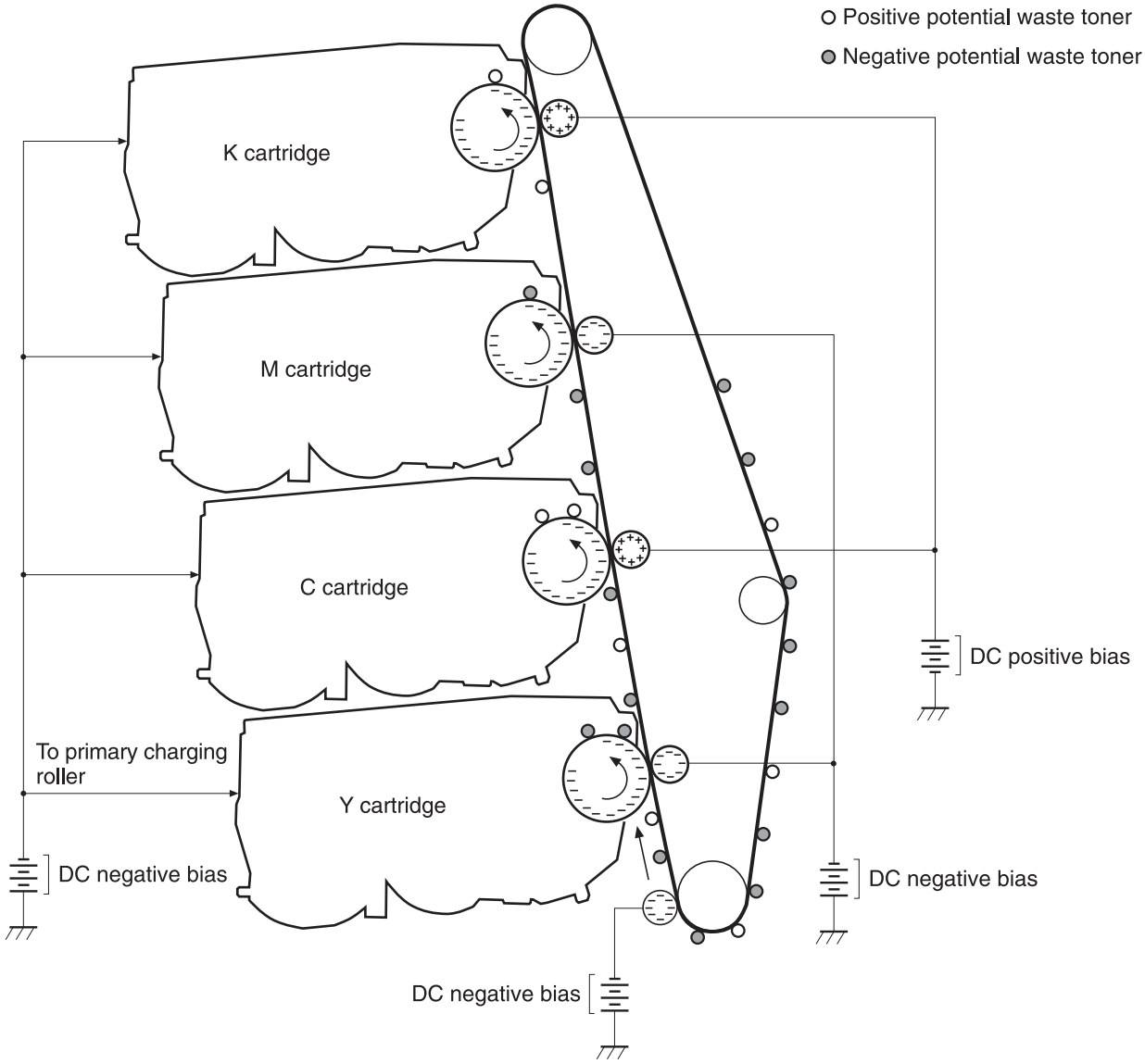


Figure 5-31 ETB cleaning

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 printer. 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 printer, 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 5-32 Color misregistration detection on page 185 illustrates this process.

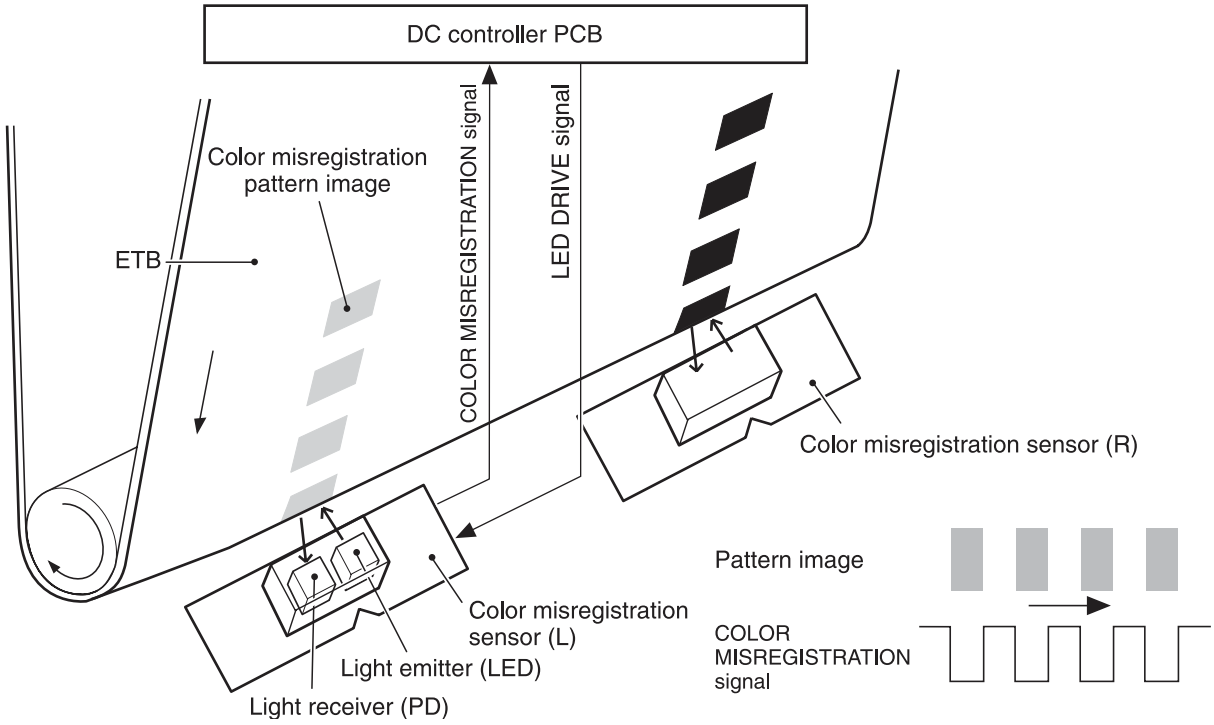


Figure 5-32 Color misregistration detection

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.
- **Turn on print control** is barely noticeable.
- **Image halftone control (D-half).** The color misregistration sensor (PS12) calibrates the halftone data in the formatter.

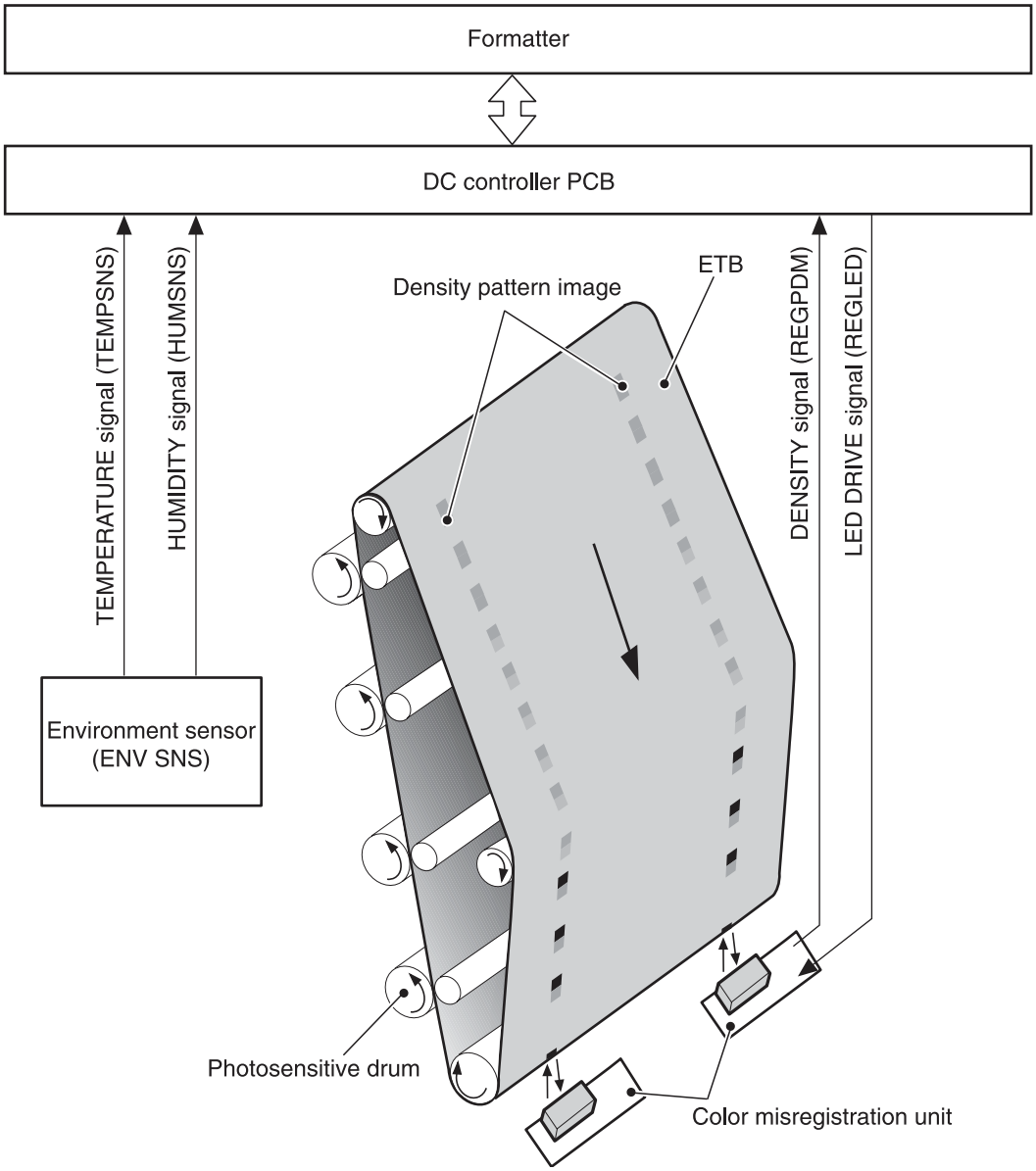


Figure 5-33 Image stabilization control

Environmental change control

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

The environment 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 printer 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.

Conditions leading up to DHALF

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 printer is turned on.
- The door is closed after a print cartridge or ETB is replaced.
- At every 1,000 pages after the replacement of a cartridge.
- The specified value of environmental conditions has changed since the last image density corrective control.
- Whenever any yellow, cyan, or magenta cartridge reaches its end of life.

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 DHALF 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 5-34 Image density detection on page 188 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.

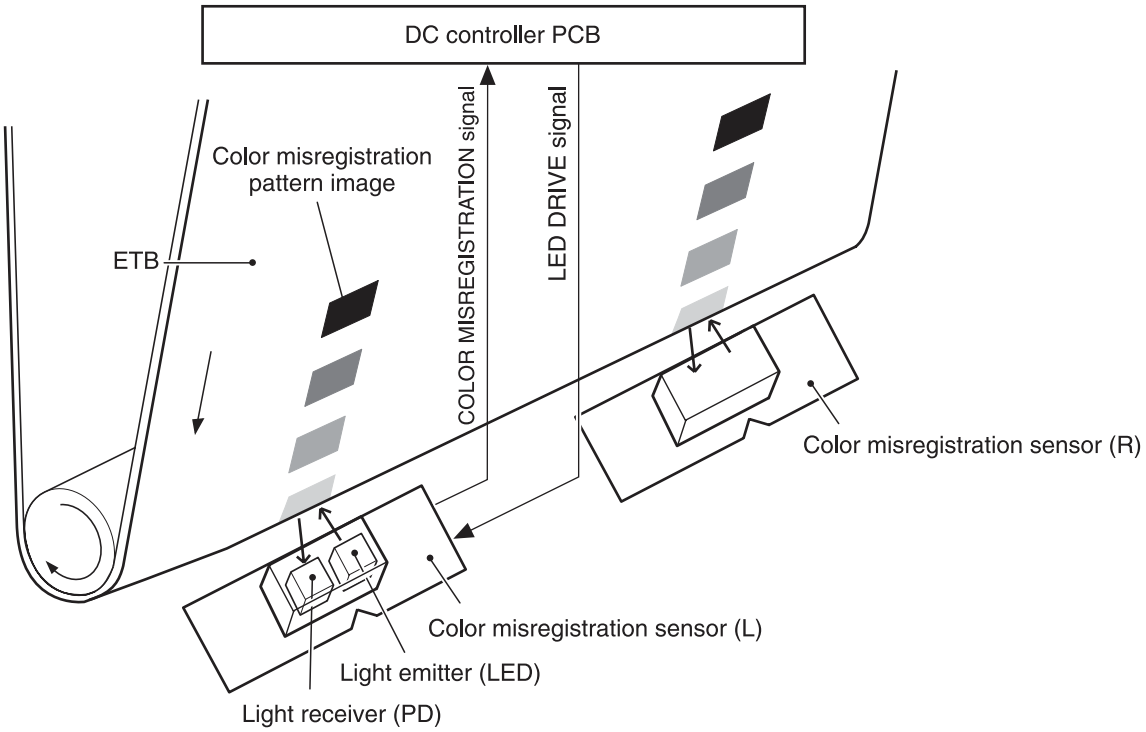


Figure 5-34 Image density detection

Pickup/feed system

The pickup/feed system consists of various feed rollers that pick up and feed media. This printer has two pickup sources: the paper tray and the multipurpose tray, and one delivery source: the face-down tray.

The multipurpose paper sensor (SR4) detects the media presence in the multipurpose tray, and the paper tray paper sensor (SR9) detects the media presence in the paper tray. The paper stack surface sensor (SR10) in the paper tray monitors the pickup position of the media stack surface. When the SR10 detects that the pickup position lowers to a certain volume, the DC controller lifts the lifting plate up to maintain the media stack surface at a specified height. Figure 5-35 Pickup/feed system (1 of 2) on page 190 illustrates this system.

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

The DC controller controls nine motors: pickup motor, ETB motor, four drum motors, fuser motor, fuser pressure release motor, and lifter motor, and two solenoids: paper tray pickup solenoid and multipurpose pickup solenoid, for the pickup operation of this printer.

There are four photo interrupters: top of page sensor, fuser paper sensor, paper loop sensor 1, and paper loop sensor 2, on the paper transport path to detect the arrival and passage of the media. 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 5-35 Pickup/feed system (1 of 2) on page 190 and Figure 5-36 Pickup/feed system (2 of 2) on page 192 illustrates this system.

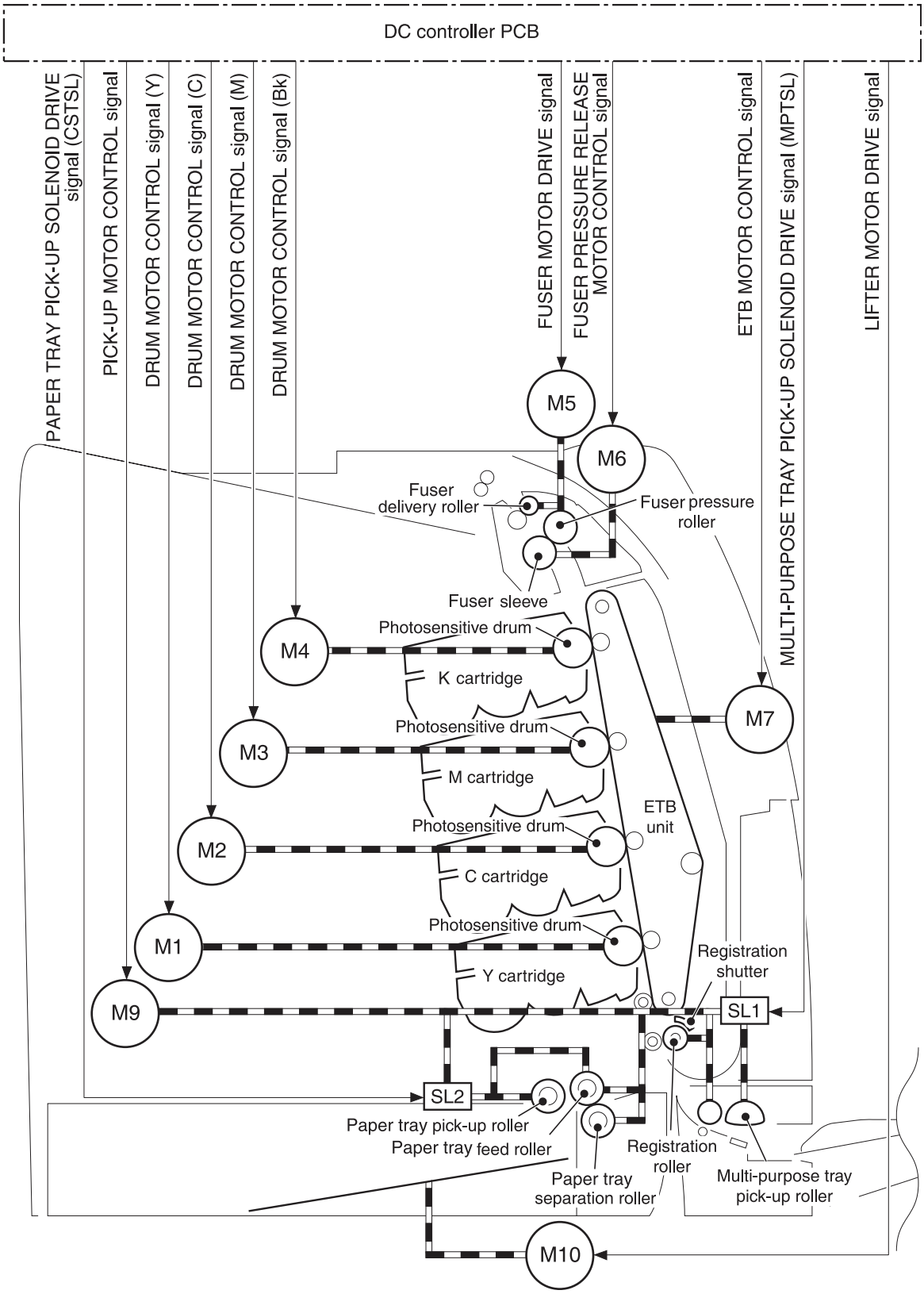


Figure 5-35 Pickup/feed system (1 of 2)

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
- SL1: Multipurpose pickup solenoid
- SL2: Paper tray pickup solenoid

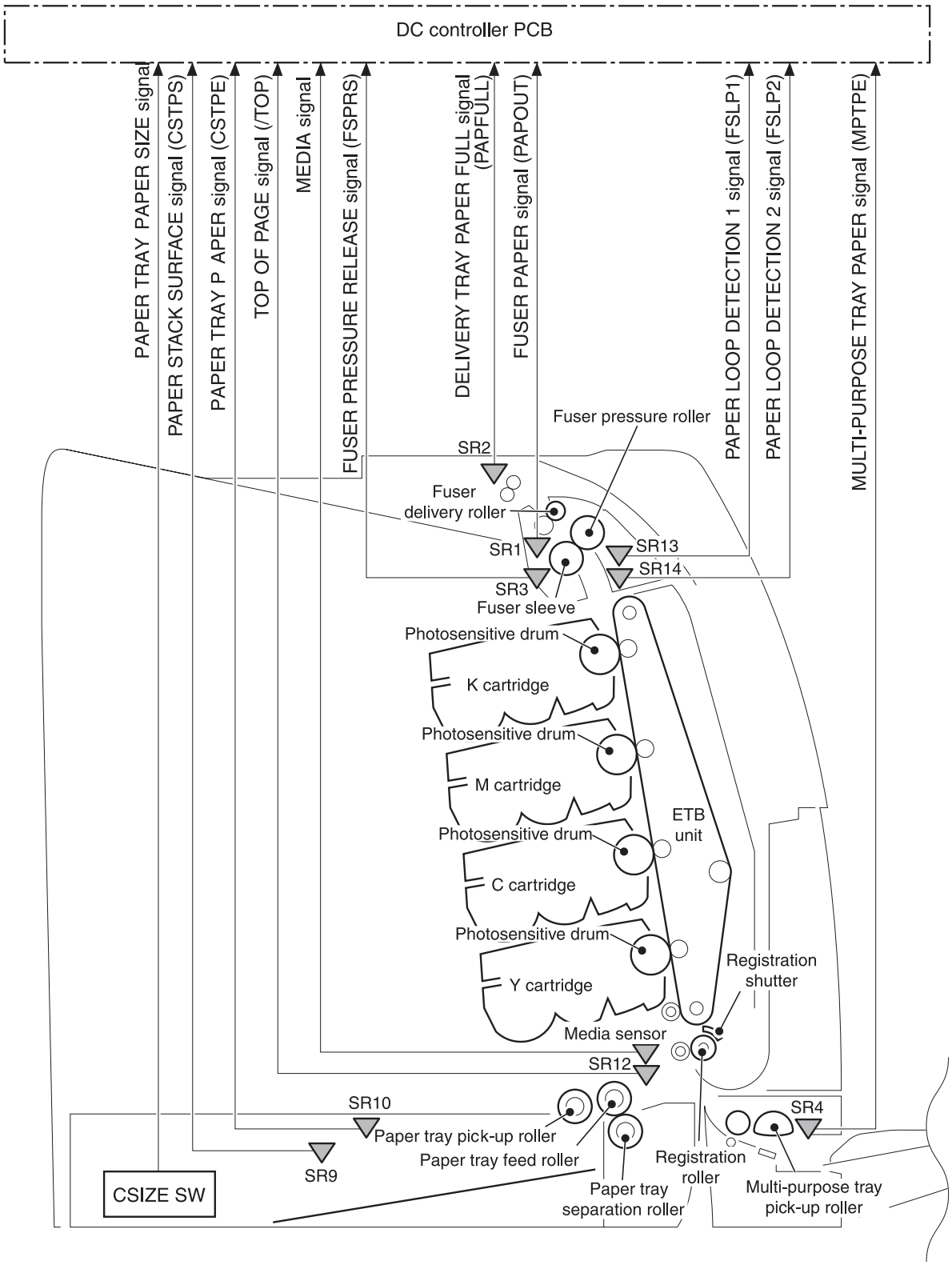


Figure 5-36 Pickup/feed system (2 of 2)

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: Paper tray paper sensor
- SR10: Paper stack surface sensor
- SR12: Top of page sensor
- SR13: Paper loop sensor 1
- SR14: Paper loop sensor 2
- Media sensor
- SW1: Paper tray paper size detection switch
- SW2: Paper tray paper size detection switch
- SW3: Paper tray paper size detection switch

Figure 5-37 Pickup/feed unit on page 194 illustrates the pickup/feed system, which can be divided into three units:

- **Pickup/feed unit**. From the point the media is picked from the until it reaches the fuser.
- **Fuser/delivery unit**. From the fuser to the output bin.
- **Duplex feed unit**. From the output bin to the registration shutter at the bottom of the ETB.

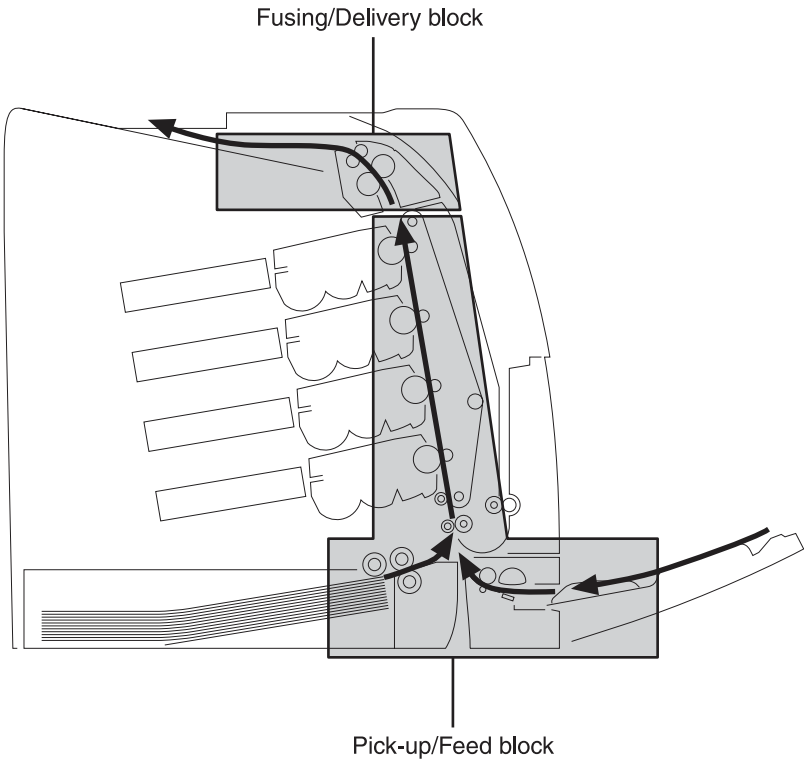


Figure 5-37 Pickup/feed unit

Pickup/feed unit

The pickup/feed block is structured with two blocks. One is the pickup block, which picks up media from the paper tray or the multipurpose tray into the printer 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 paper tray separation roller also begins to rotate. However, the separation roller does not rotate.
3. Media is picked from the paper tray or multipurpose tray. The paper tray pickup solenoid (SL2) or multipurpose tray pickup solenoid (SL1) is turned on after a specified time after "scanner ready". This rotates the paper tray pickup roller and paper tray feed roller, or the multipurpose tray pickup roller, to pick up media in the paper tray.
4. The multiple-fed media is removed by the paper tray paper separation roller (paper separation pad for the multipurpose tray) and a single sheet is fed to the registration roller.
5. The registration shutter corrects the skew of the media. Then the media is fed at its prescribed speed. The formatter specifies the feeding speed by the feeding speed control 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.

Paper tray detection and paper tray media size detection

The printer can sense whether a paper tray is installed correctly, and it can sense the size of the media in the paper tray. Paper-size detection switches at the back of the paper tray 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 195.

Table 5-6 Paper tray media size detection

Paper size	Paper-size detection switch		
	SW1	SW2	SW3
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 paper tray determines the media size by reading the switches, the user can 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 printer, and the printer stops.

Paper tray pickup operation

This printer 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 paper tray pickup mechanism.

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

Figure 5-38 Paper tray pickup on page 196 illustrates this process.

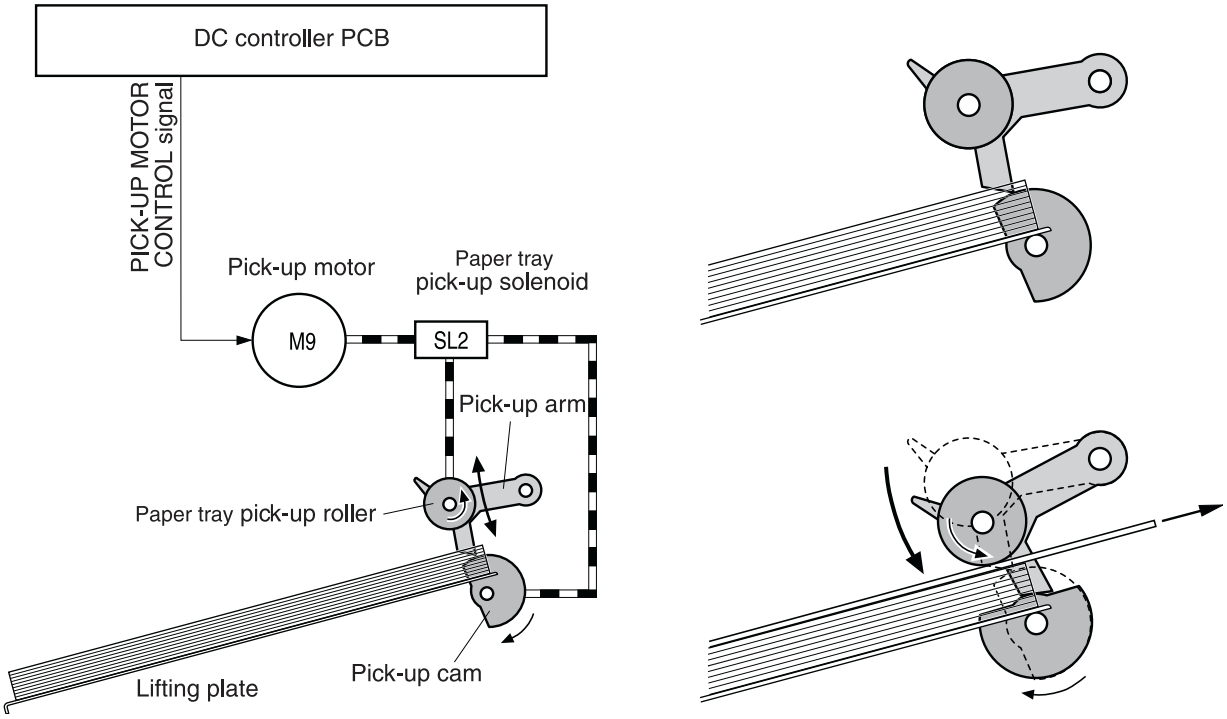


Figure 5-38 Paper tray pickup

Media lift-up 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 paper tray paper sensor (SR9) and the media stack surface sensor (SR10) when the printer is turned on, the paper tray is installed, and during the printing operation.

The media lift-up operation is divided into two procedures:

- Initial lift-up
- Lift-up during printing

Initial lift-up

The initial lift-up begins when the paper tray is installed in the printer and the lifting plate remains in the bottom. 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 paper tray is installed.

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

Lift-up during printing

The lift-up 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 5-39 Media lift-up on page 197 illustrates this process.

NOTE The paper lift-up operation is also available for the optional paper feeders. The initial lift-up for Tray 2 and the optional 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.

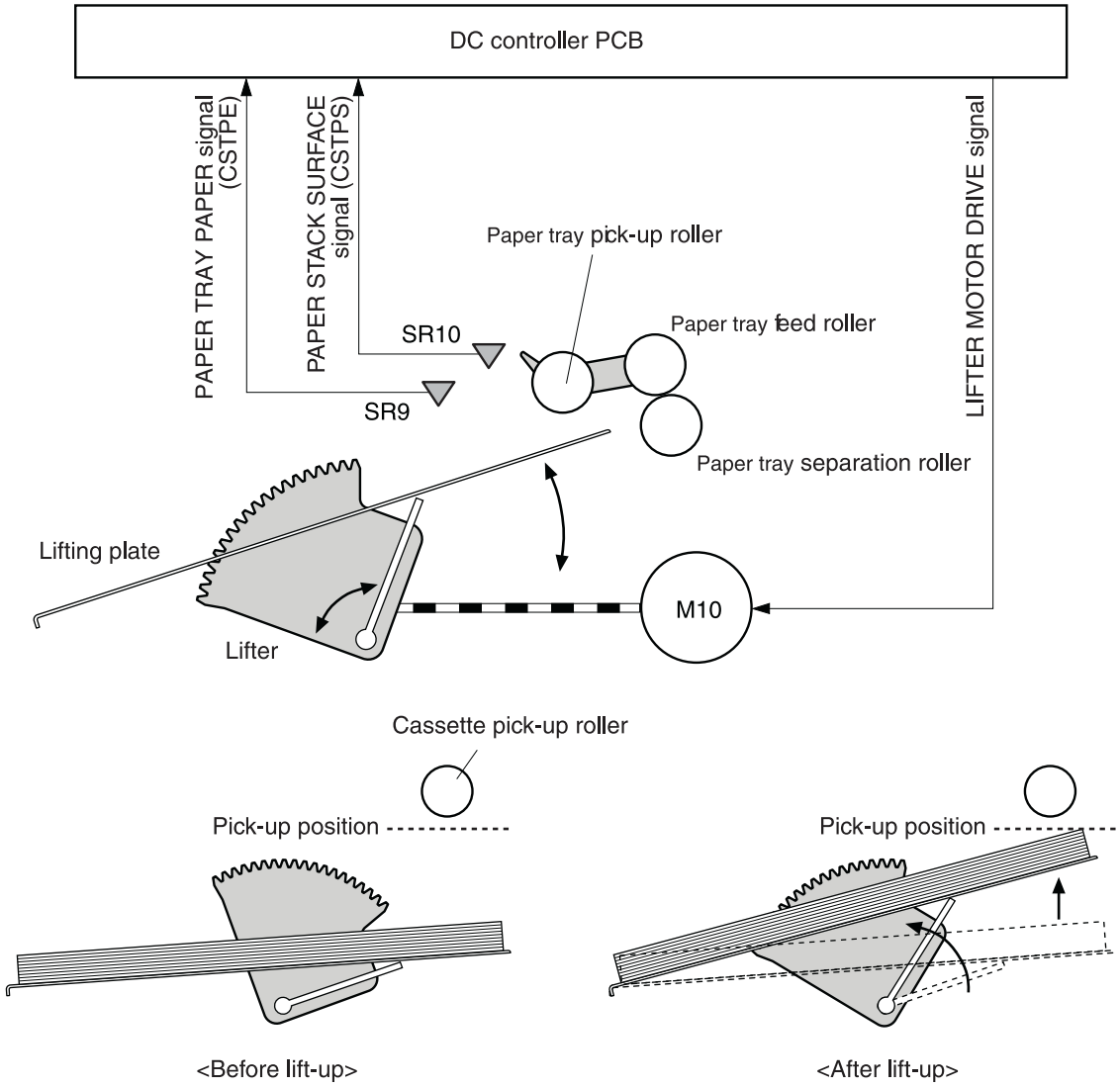


Figure 5-39 Media lift-up

Multiple-feed prevention

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

Normally, the paper tray paper separation roller is imparted with a rotational force in the same direction to the paper tray 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 paper tray feed roller transmitted to the paper tray 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 paper tray. Figure 5-40 Media lift-up on page 198 illustrates this process.

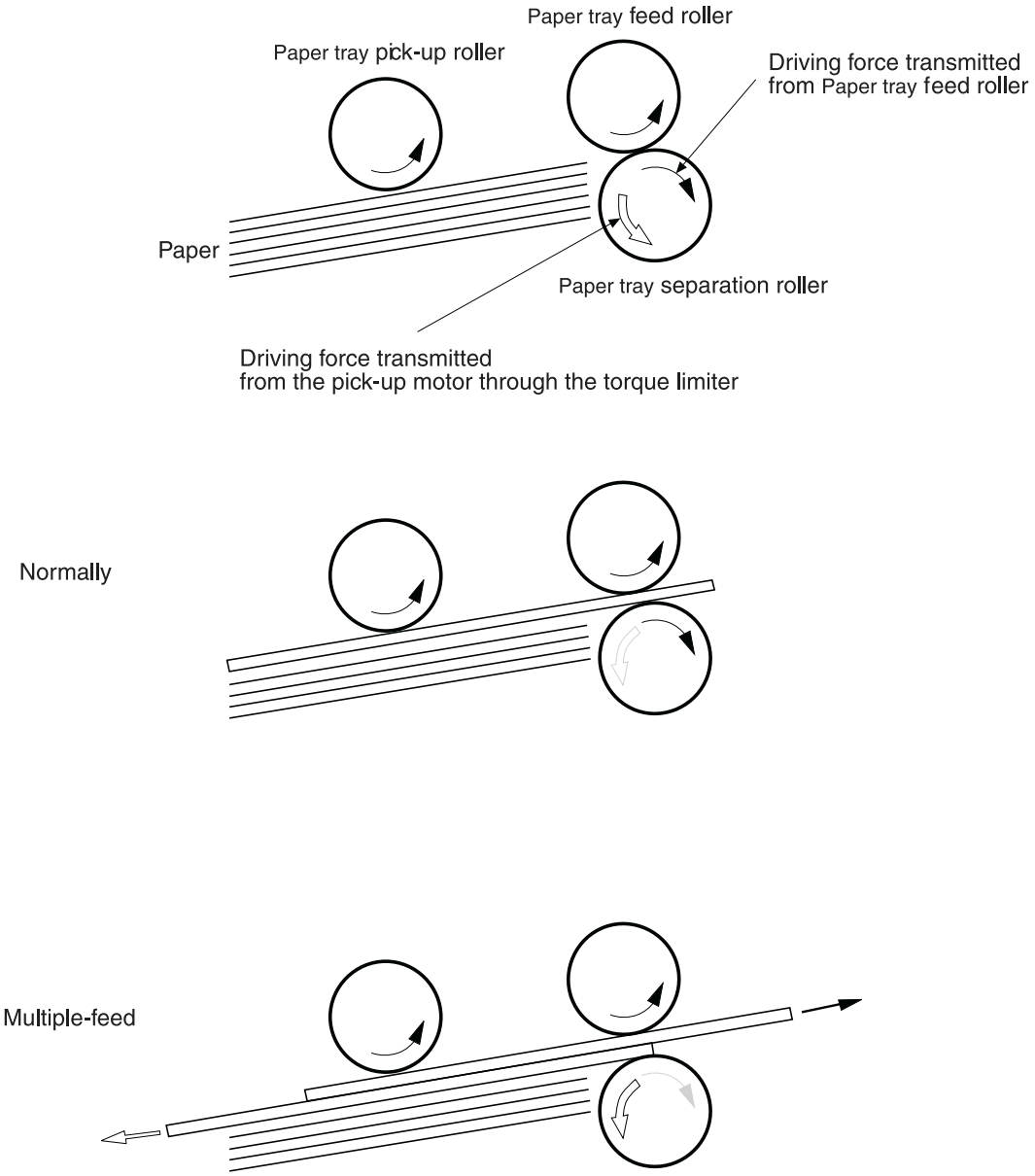


Figure 5-40 Media lift-up

Skew correction

The skew correction mechanism compensates for the skew of feeding media. This printer 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 warped media lifts up the registration shutter and the media goes through the shutter. The skew-feed is corrected without decreasing throughput.

Figure 5-41 Skew correction on page 199 illustrates this process.

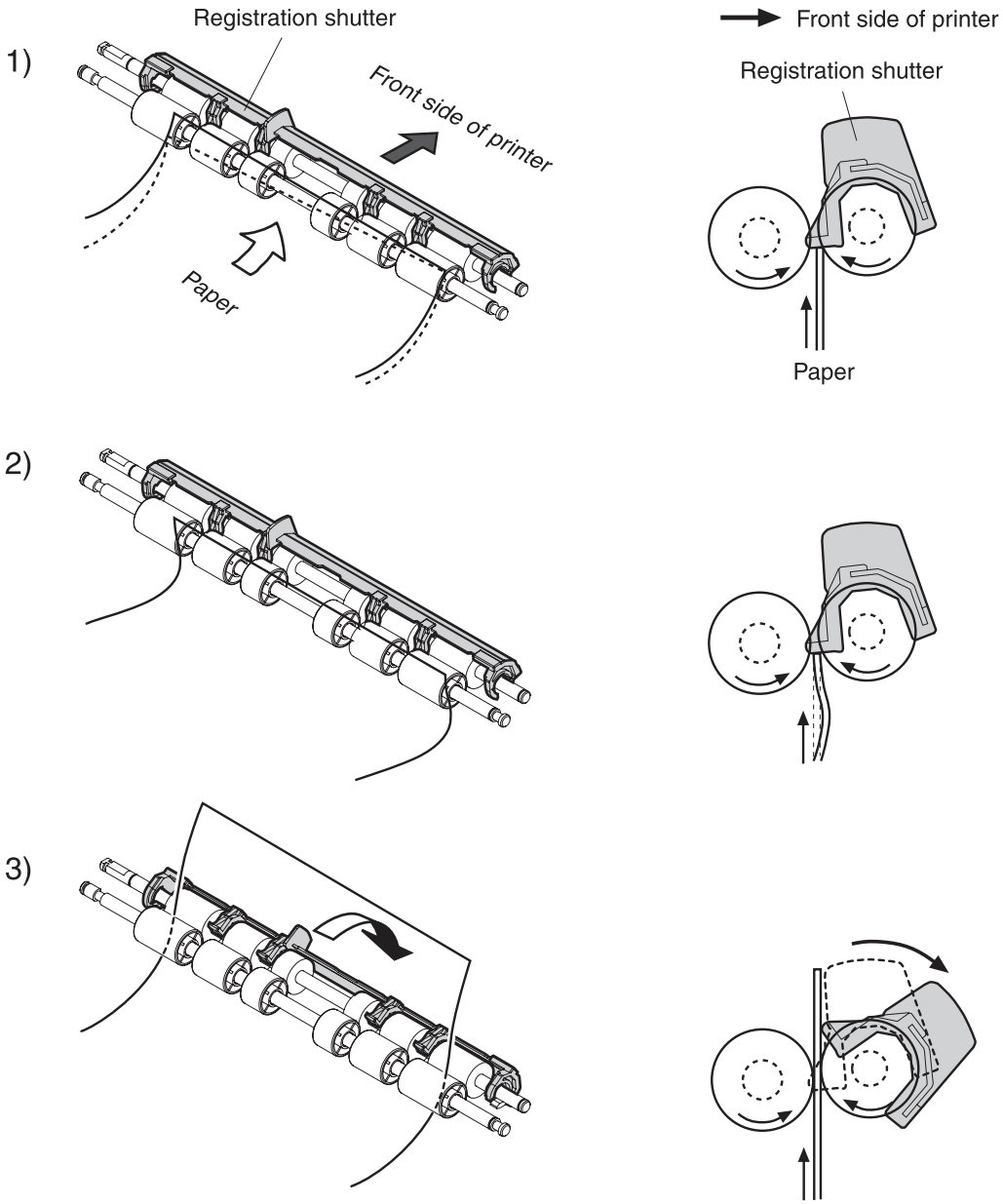


Figure 5-41 Skew correction

Media detection

This printer 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 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 5-42 Media detection on page 200 illustrates this process.

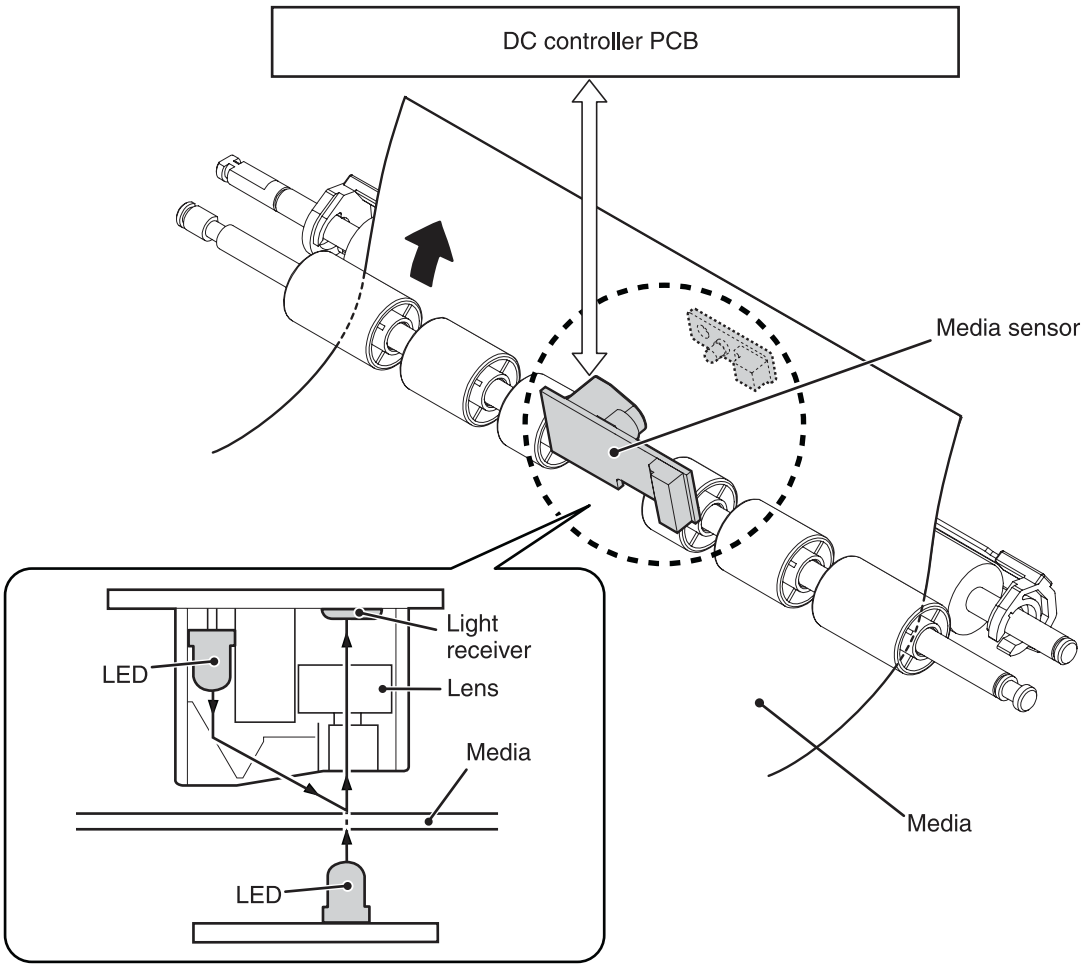


Figure 5-42 Media detection

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 201 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
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 printer 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. The following is the operational sequence of the fuser/delivery unit.

NOTE The fuser contains a fuseable link that is opened when a new fuser is first installed in the printer. This resets the page count of the fuser to zero.

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 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.

NOTE If the face-down tray is full of media, the delivery tray media 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 in the printing operation out of the printer, and stops the printer engine. If 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 keeping with specified warp depending on the media type to prevent an image defect and media transport defect.

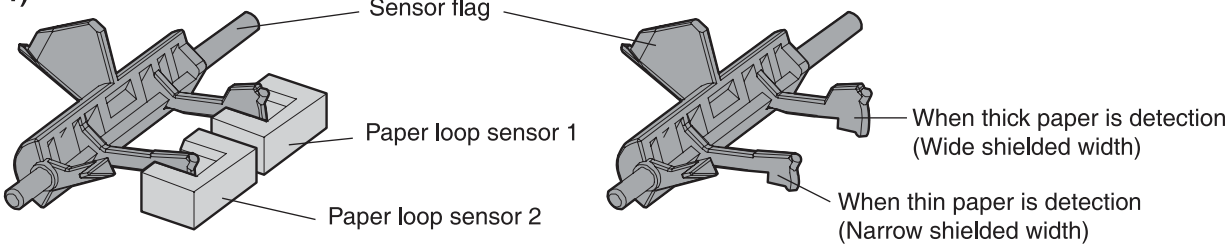
The feeding speed of the fusing pressure roller and the ETB are not exactly the same. The following problems might occur when the media is fed into the fuser.

- 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 5-43 Loop control on page 203 illustrates this process.

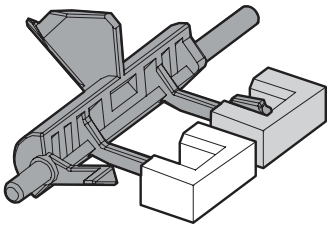
1)



Home position

Slow down the rotation of fuser pressure roller

2)



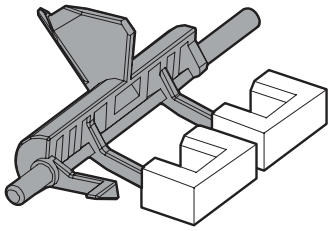
(At thick paper feeding)

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 5-43 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 5-44 Fusing pressure release on page 204 illustrates this process.

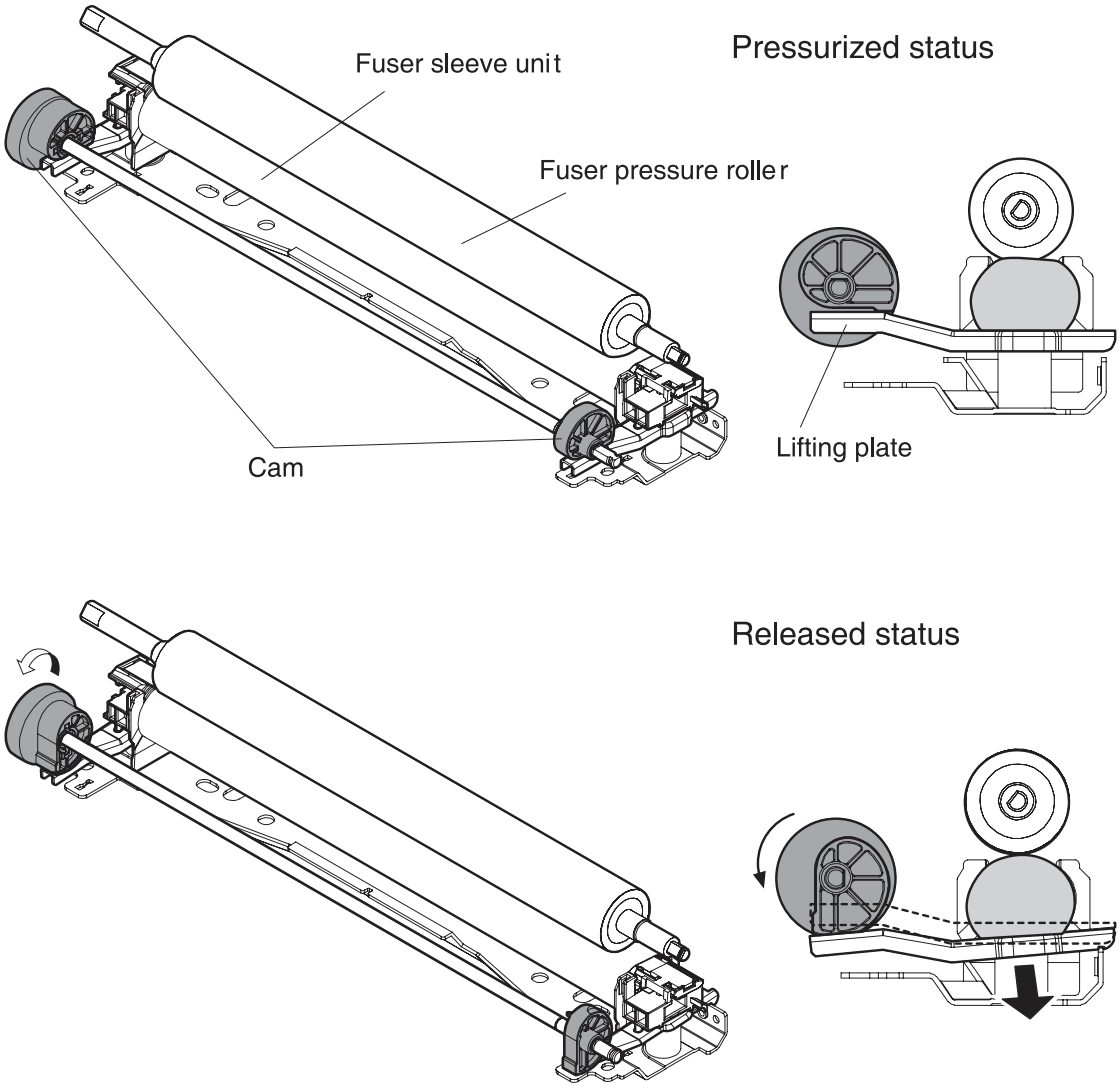


Figure 5-44 Fusing pressure release

Jam detection

The printer 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 control panel.

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 printer 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.XX.YY JAM** message displays on the control panel. For more information about jam messages, see Control panel messages on page 359.

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.XX.YY JAM** message displays on the control panel. For more information about jam messages, see Control panel messages on page 359.

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.XX.YY JAM** message displays on the control panel. For more information about jam messages, see Control panel messages on page 359.

Door open jam

If the front cover 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.XX.YY JAM** message displays on the control panel. For more information about jam messages, see Control panel messages on page 359.

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.XX.YY JAM** message displays on the control panel. For more information about jam messages, see Control panel messages on page 359.

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 printer, the microprocessor on the DC controller PCB determines that a reversing unit jam 1 has occurred.

The transport process stops and a **13.XX.YY JAM** message displays on the control panel. For more information about jam messages, see Control panel messages on page 359.

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.XX.YY JAM** message displays on the control panel. For more information about jam messages, see Control panel messages on page 359.

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 printer, the microprocessor on the DC controller PCB determines that a duplexing pickup unit jam 1 has occurred.

The transport process stops and a **13.XX.YY JAM** message displays on the control panel. For more information about jam messages, see Control panel messages on page 359.

Automatic delivery function

Any residual paper within the printer 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 determines that residual paper is present, notifies the formatter, and stops printing. The controller drives the motors and delivers the residual paper to the printer when it receives an automatic delivery command from the formatter.

Duplex feed unit

The duplexing unit is optionally installed on the top of the printer. It features paper reversing, skew feed correction, and leading side edge registration preparing for the other side printing. Figure 5-45 Duplex feed unit on page 206 illustrates the duplexing unit paper path.

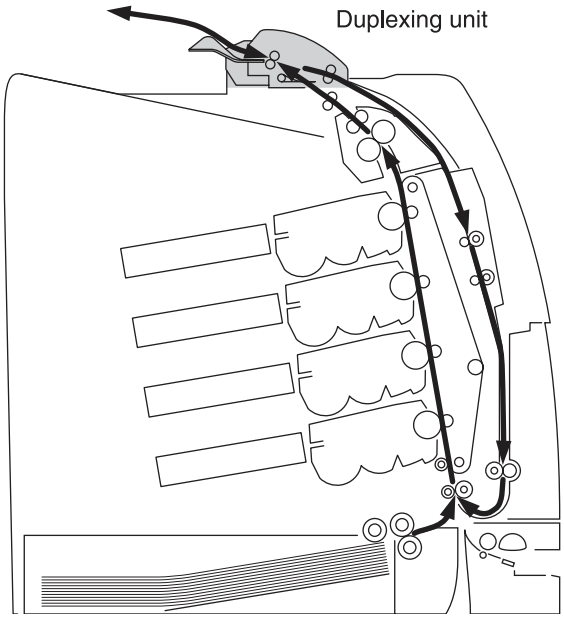


Figure 5-45 Duplex feed unit

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 the 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 printer 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 5-46 Duplexing driver PCB signal flow on page 207 shows the signal flow in the duplexing driver PCB.

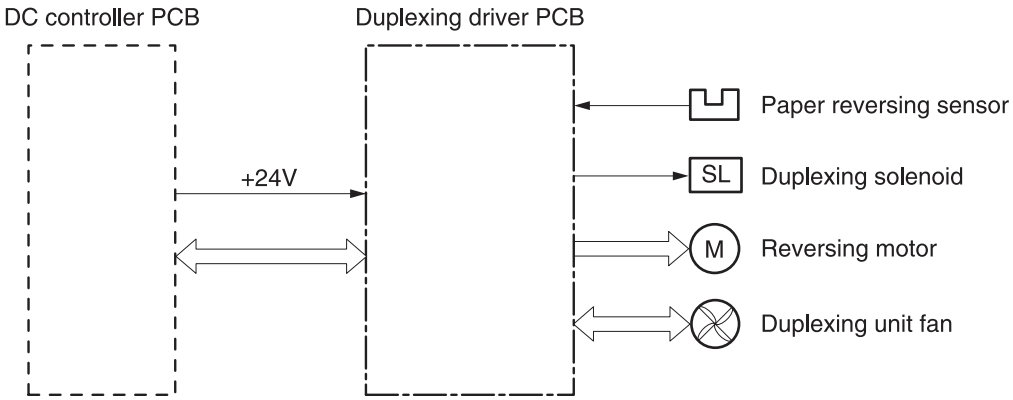


Figure 5-46 Duplexing driver PCB signal flow

Reversing/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 printer. The operational sequence of the duplexing feed is described in Figure 5-47 Duplexing feed on page 208.

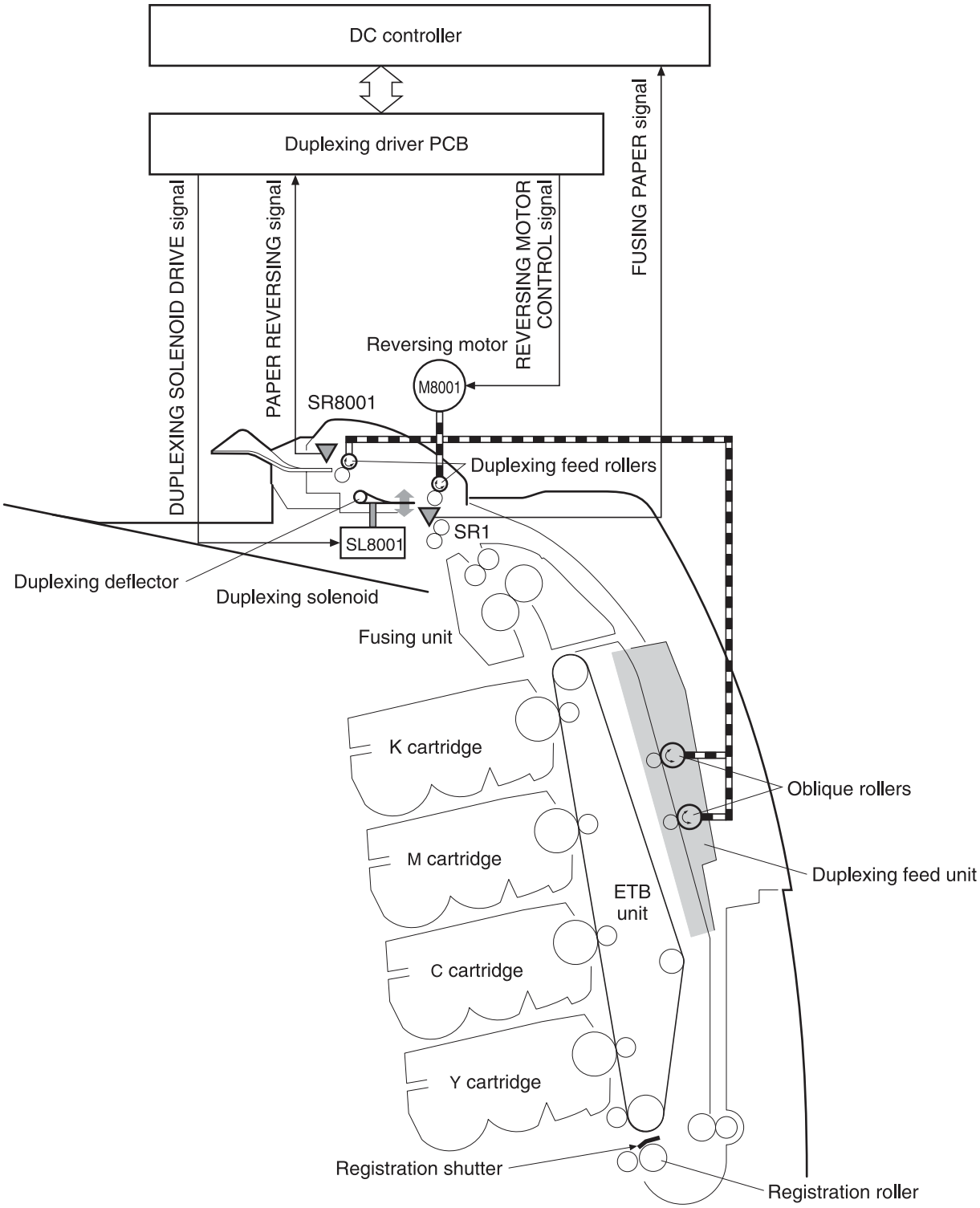


Figure 5-47 Duplexing feed

1. The media printed on one side passes through the fuser.
2. The DC controller sends the reversing command to the duplexing driver after the prescribed time from when the top of page sensor (SR12) detected 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.

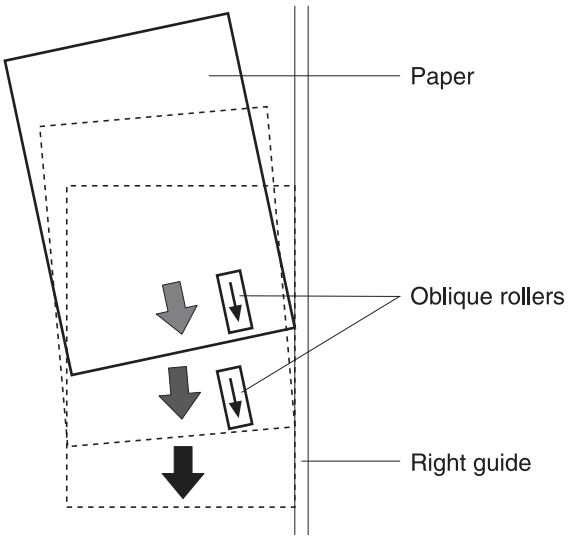


Figure 5-48 Paper skew correction

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.

This printer can operate the following three types of duplexing printings 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

This printer has a paper reversing sensor (SR8001) that detects the presence of media and whether the paper feed is operating normally or not. The microcomputer (CPU) detects a paper jam by checking whether media is present at the sensor or not at the checking timing. The checking timing is stored in the memory of the CPU.

If the CPU detects a jam, it stops the duplexing print operation and notifies the printer of the jam. The following is the detection timing of each jam. A time at normal speed (1/1) is used for the specified period of time.

Reversing unit jam 1

The CPU determines the reversing unit jam 1 when the reversing sensor (SR8001) does not detect the leading edge of media within the specified period of time (approximately 1.3 seconds) after the duplexing driver receives a switchback command.

Reversing unit jam 2

The CPU determines the reversing unit jam 2 when the reversing sensor (SR8001) keeps detecting media after the specified period of time (approximately 2.19 seconds) after the SR8001 first detected the leading edge of the media.

Duplexing pickup unit jam 1 (Duplexing unit stationary jam)

The CPU determines the duplexing pickup unit jam 1 when the top of page sensor (SR12) does not detect the leading edge of media within the specified period of time (approximately 1.38 seconds) after the duplexing driver receives a duplexing pickup command from the printer.

500-sheet paper feeder

The HP Color LaserJet 4700dtn comes standard with two additional 500-sheet paper feeders (Trays 3 and 4). The HP Color LaserJet 4700ph+ comes standard with four additional 500-sheet paper feeders (Trays 3, 4, 5, and 6). The paper feeder is an option for all other models. These additional trays operate in the same way as Tray 2. Figure 5-49 Additional 500-sheet paper feeder on page 211 shows the paper path with an additional 500-sheet paper feeder installed.

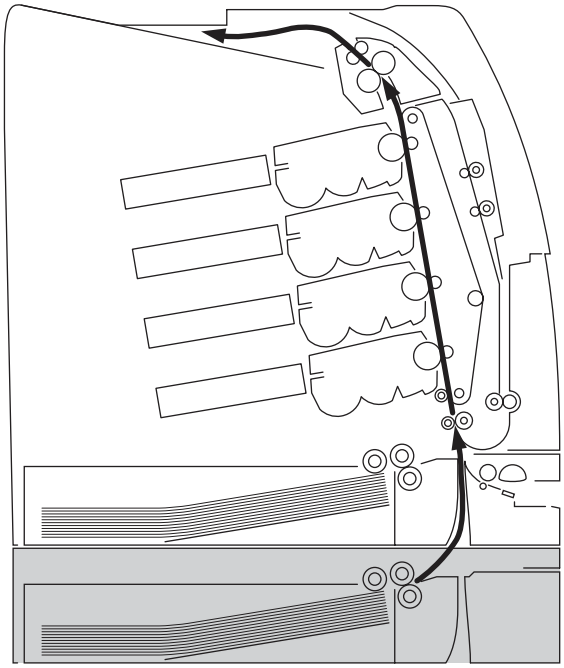


Figure 5-49 Additional 500-sheet paper feeder

The paper feeder is controlled by the paper feeder driver PCB. An 8-bit microcomputer is used in the paper feeder driver PCB, which controls the sequence of the paper feeder as well as the serial communication with the DC controller of the printer.

The DC controller commands to the paper feeder driver PCB at necessary timing. The paper feeder driver PCB drives each load, such as motors and solenoids, depending on these commands. The paper feeder driver PCB responds the status information of the paper feeder driver to the DC controller.

The printer supplies +24VDC to the paper feeder. The +3.3VDC is generated by +24VDC in the paper feeder PCB, which works for the component devices such as sensors and ICs. Figure 5-50 Paper feeder driver PCB on page 212 shows the signal flow in the paper feeder driver PCB.

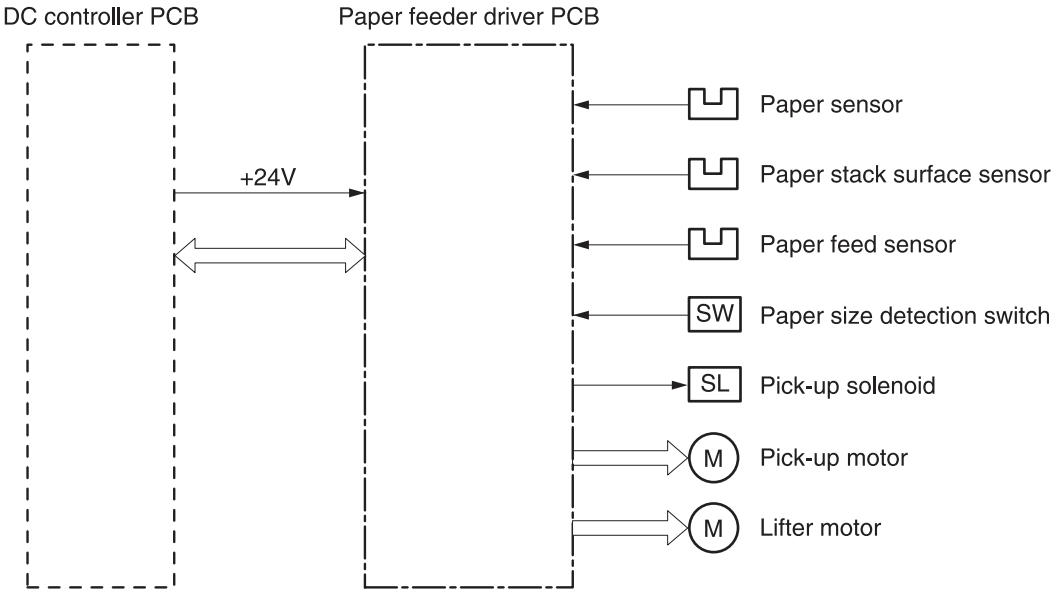


Figure 5-50 Paper feeder driver PCB

Pickup and feed operations

The following is the sequence of operations for the 500-sheet paper feeder. Figure 5-51 500-sheet paper feeder pickup and feed operation on page 213 illustrates this sequence.

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 feeder driver PCB after the scanner is ready.
4. The paper feeder driver PCB turns on the paper feeder pickup solenoid (SL8101) to rotate the paper feeder 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 makes contact with the media surface and media in the paper tray is fed into the printer.
5. Separation pads eliminate extra sheets, and a single piece of media enters the feed path.
6. If the paper stack level goes down to the specified level according to the pickup operation, the paper lift-up operation is performed.

NOTE Paper-size detection, multiple-feed prevention, and jam detection for the 500-sheet feeder function in the same manner as the rest of the printer.

NOTE Paper lift-up operation for the 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.

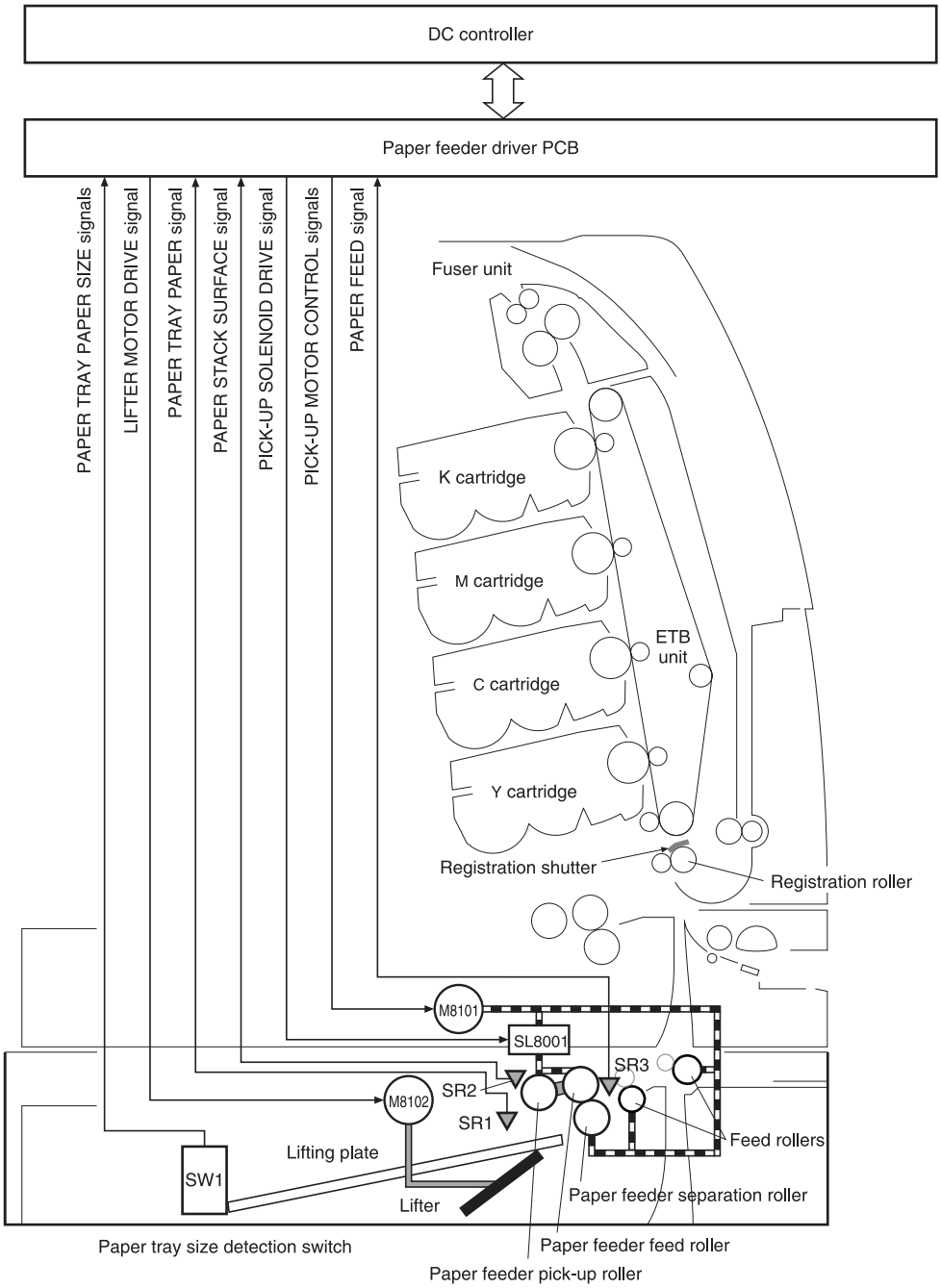


Figure 5-51 500-sheet paper feeder pickup and feed operation

Stapler/stacker (HP Color LaserJet 4700 Series only)

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 prints up to 750 sheets with job offset and staples up to 30 sheets. It comes standard on the HP Color LaserJet 4700ph+.

The stapler/stacker has the following components:

- Paper path
- Sensors
- Rollers
- Accumulator
- Jogger
- Stapler cartridge
- Output bin

The stapler/stacker has three operating modes: staple mode, stacker mode, and offset mode.

Staple mode

When the print job specifications require stapling, the output rollers lift and the input roller starts rotating. The paper is fed into the accumulator and the pressing shoe lifts. The paddles rotate a full cycle to align the paper to the registration wall, and the jogger moves to align against the stapler wall. The pressing shoe then lowers to hold the job in place and the jogger opens to receive the next page.

After all pages are received, the pressing shoe does not lower for the last time. The stapler activates and staples the job. The output rollers then lower and move the job to the output bin.

The pressing shoe returns to its normal position and the paper path motors stop unless another staple job is waiting.

Stacker mode

When the print job requires no stapling, the pages of the document are gathered inside the unit. The delivery and output rollers begin to turn and the paper coming from the printer activates the entry sensor. The delivery rollers then guide the paper to the accumulator, which activates the paper sensor. The output rollers then lower and deposit the paper in the output bin.

Offset mode

When the print job specifications require offsetting, the job is fed to the accumulator. The jogger registers the job to the left, and the next page is fed above the jogger while it is registering the previous page. When all of the job is registered and there is another job, the first page of the next job is accepted before ejecting the previous job. The next pages of the second job will not be registered, as in the stacker mode, and then the next job is registered. This process repeats for each offset print job.

Messages

The stapler/stacker displays several types of messages on the printer control panel.

- **Operator assistance:** bin full, staples low, staples out, too many pages to staple, different paper size in job, and door open
- **Jams:** initial paper jam, paper jam in entry sensor, and stapler jam
- **Malfunction conditions:** stapler, jogger, paddle, and output roller lifter
- **Disconnection:** device is disconnected

See Control panel messages on page 359 for a listing of all messages.

6 Removal and replacement

This chapter contains information about the following topics:

- Removal and replacement strategy
- User-replaceable parts
- Covers and external components
- Main assemblies
- Motors and fans
- Sensors and switches
- PCBs
- 500-sheet paper feeder
- Stapler/stacker (4700 models)
- Duplexer

Removal and replacement strategy

This chapter explains how to remove and replace major printer components. (HP does not support repairing individual subassemblies or troubleshooting to the component level.) This chapter includes illustrations of the printer and paper handling accessories. If an assembly or part is not listed in the parts list, it is not a field replaceable unit (FRU).

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

WARNING! The information in this section is intended for authorized service personnel only.

Repair notices

WARNING! Turn the printer off, wait five seconds, and then unplug the power cord before servicing the printer. Failure to completely disconnect the printer can result in severe injury.

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

Never operate the printer with any parts removed.

The sheet-metal parts can have sharp edges. Be careful not to cut yourself when handling sheet-metal parts.

Caution regarding electrostatic discharge (ESD)



The printer contains parts that are sensitive to electrostatic discharge (ESD). Watch for the ESD reminder when removing printer parts. Protect the PCB parts with protective ESD pouches.

Always use an ESD protected work station when servicing the printer or paper handling accessories. If an ESD work station is not available, ground yourself to discharge body static by touching the metal chassis of the printer or accessory.

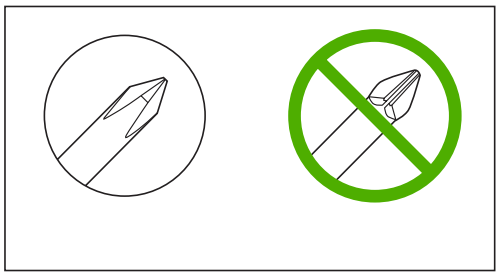
Required tools

Before servicing the printer, gather the following tools:

- Phillips #2 magnetized screwdriver (152-mm (6-inch) shaft)
- Small flat-blade screwdriver
- Small needle-nose pliers
- ESD strap
- Penlight (optional)

All components in the HP Color LaserJet 4700 and HP Color LaserJet CP4005 Series printers use Phillips-head screws that require a #2 Phillips screwdriver. Make sure that you have a Phillips

screwdriver and not a pozidrive screwdriver. Figure 6-1 Phillips and pozidrive screwdriver comparison on page 219 shows the difference between a Phillips and a pozidrive screwdriver. The surfaces on a Phillips tip are more beveled.



Phillips posidrive

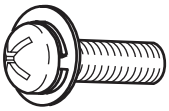
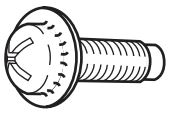
Figure 6-1 Phillips and pozidrive screwdriver comparison

Types of screws

Table 6-1 Types of screws on page 219 describes the screws used in the printer and provides guidelines to help determine where to use each type of screw. The screws vary in length depending on the thickness of the material being fastened.

Always note where each type of screw is located and replace each one into its original location.

Table 6-1 Types of screws

Illustration	Description	Uses
	Screw, machine with washer M3x6 part number XA9-1418-000CN	To hold plastic to metal. For example: printer covers
	Screw, self tapping	To hold plastic to plastic. For example: printer cover to a plastic hinge
	Screw, truss head M3x6	To hold sheet metal to sheet metal. For example: formatter cage
	Retaining ring (e-type)	To hold a shaft through a slot. For example: keep a gear on a shaft

Parts-removal tree

Use the following diagram to determine the order in which parts must be removed.

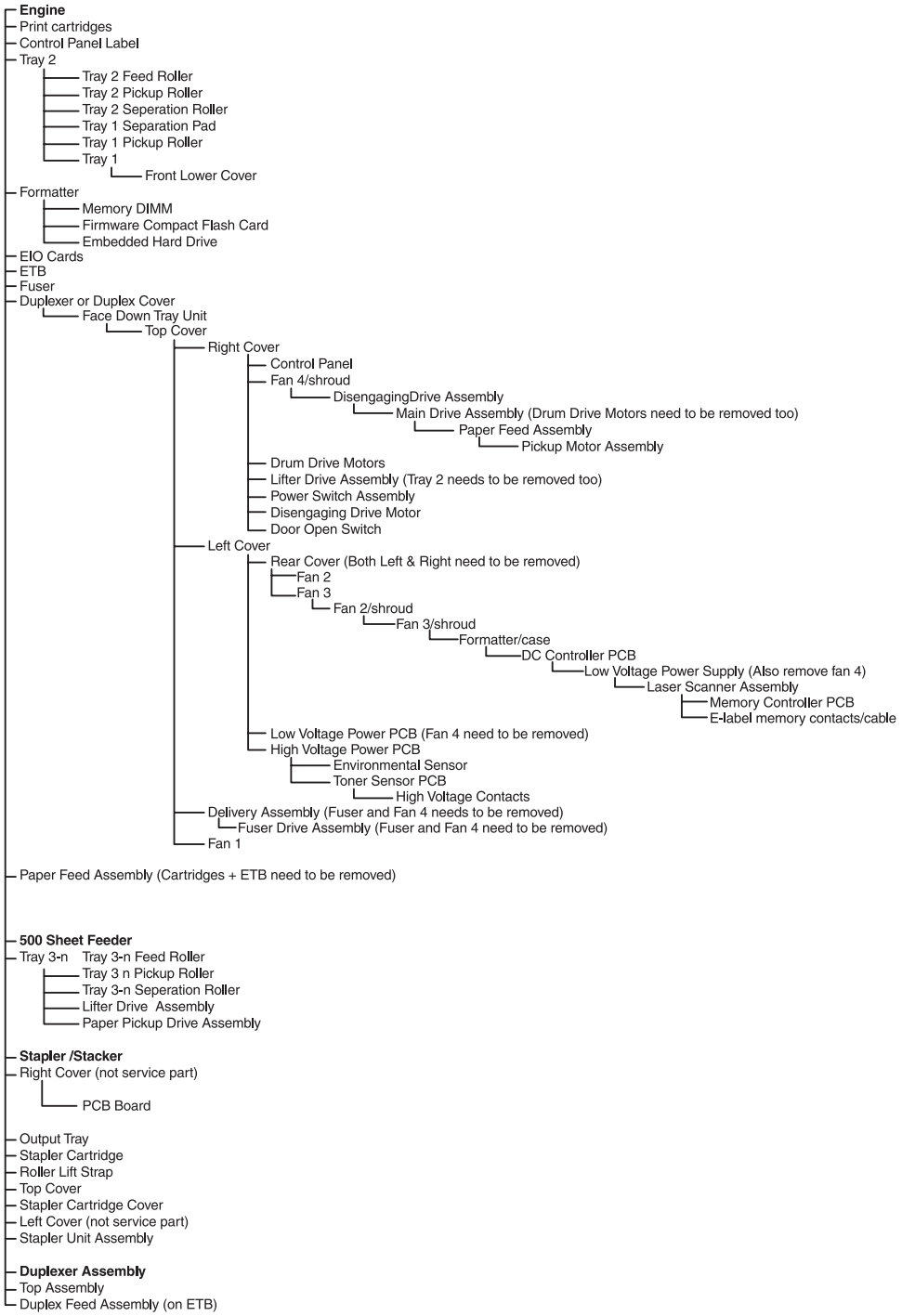


Figure 6-2 Parts-removal tree

User-replaceable parts

The user replaces print cartridges, the fuser, and the ETB as they are depleted. Additional instructions on other user-replaceable parts are provided in this section.

The printer tracks the amount of use on the customer-replaceable supplies by keeping a page count. Swapping supplies between printers might cause a misrepresentation of supply life values and is not recommended.

Table 6-2 Approximate replacement intervals for supply items

Supply item	Printer message	Page counts	Approximate replacement interval[1]	To install or order
Black (K) print cartridge	**REPLACE BLACK CARTRIDGE**	**4700:** 11,000 pages **CP4005:** 7,500 pages	3.3 months 4 months	Changing print cartridges on page 104. For part numbers, see Supplies and accessories on page 563.
Cyan (C) print cartridge	**REPLACE CYAN CARTRIDGE**	**4700:** 10,000 pages[2] **CP4005:** 7,500 pages	3.3 months 4 months	Changing print cartridges on page 104. For part numbers, see Supplies and accessories on page 563.
Magenta (M) print cartridge	**REPLACE MAGENTA CARTRIDGE**	**4700:** 10,000 pages[2] **CP4005:** 7,500 pages	3.3 months 4 months	Changing print cartridges on page 104. For part numbers, see Supplies and accessories on page 563.
Yellow (Y) print cartridge	**REPLACE YELLOW CARTRIDGE**	**4700:** 10,000 pages[2] **CP4005:** 7,500 pages	3.3 months 4 months	Changing print cartridges on page 104. For part numbers, see Supplies and accessories on page 563.
ETB	**REPLACE TRANSFER KIT**	**4700:** 120,000 pages[3] **CP4005:** 100,000 pages	40 months 50 months	Replacing the ETB on page 111. For part numbers, see Supplies and accessories on page 563.
Fuser	**REPLACE FUSER KIT**	**4700:** 150,000 pages [3]	50 months	Replacing the fuser on page 111. For part numbers, see Supplies and

Table 6-2 Approximate replacement intervals for supply items (continued)

Supply item	Printer message	Page counts	Approximate replacement interval[1]	To install or order
				accessories on page 563.
Fuser	**REPLACE FUSER KIT**	**CP4005:** 125,000 pages	62 months	Replacing the fuser on page 111. For part numbers, see Supplies and accessories on page 563.

[1] Approximate life expectancies based on 3,000 pages per month for the 4700; based on 2,000 pages per month for the CP 4005.
[2] The approximate average A4/Letter-size page count is based on 5% coverage of individual colors. Page counts are only estimations; usage conditions and print patterns cause results to vary.
[3] Page counts are only estimations; usage conditions and print patterns cause results to vary.

CAUTION The Hewlett-Packard Company recommends the use of HP products in this printer. Use of non-HP products can cause problems that require service that is not covered by the Hewlett-Packard Company warranty or service agreements.

Print cartridges and ETB

It is recommended that you remove the print cartridges and ETB when servicing internal printer components. Place the print cartridges and ETB in a safe place while they are out of the printer. To avoid damaging the print cartridges, do not expose them to direct bright light.

CAUTION Grasp the print cartridges by the blue handles to avoid accidentally touching the photosensitive drum inside each cartridge.

CAUTION Do not place any items on the ETB. If the belt is punctured or otherwise damaged, print quality problems will result. Avoid touching the belt surface. Skin oils can cause print quality problems.

For instructions about removing the print cartridges, see Changing print cartridges on page 104.

For instructions about removing the ETB, see Replacing the ETB on page 111.

Fuser

For instructions about removing the fuser, see Replacing the fuser on page 111.

Tray 1 pickup roller and separation pad

1. Remove the paper tray (Tray 2). See Paper tray (Tray 2) on page 231.

2. Slide the tabs inward (callout 1).

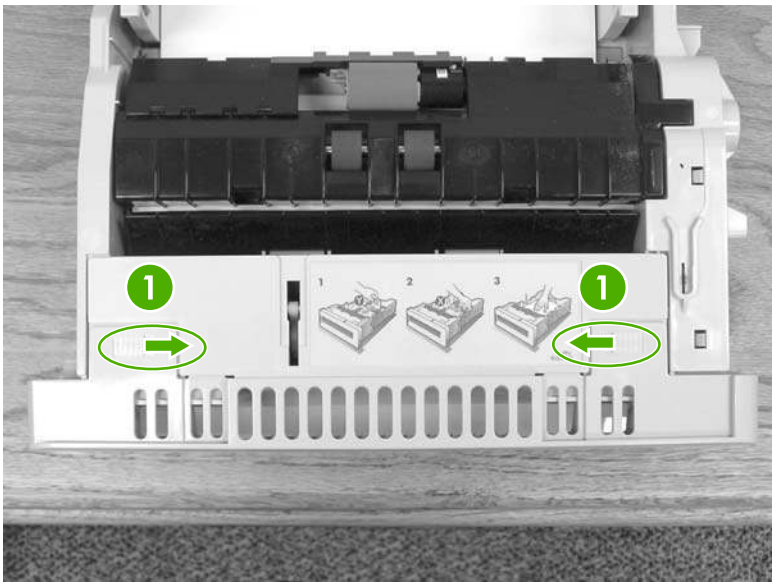


Figure 6-3 Tray 1 pickup roller and separation pad (1 of 6)

3. Pull the cover down and remove it.

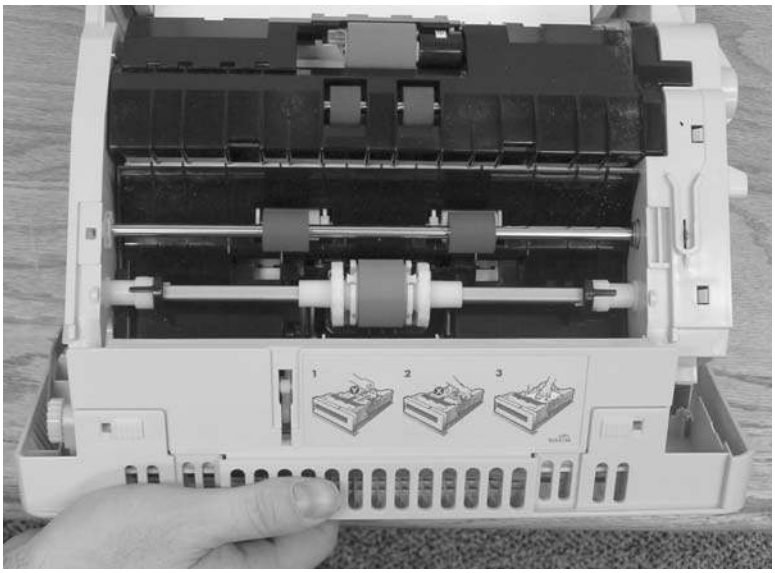


Figure 6-4 Tray 1 pickup roller and separation pad (2 of 6)

4. Pull the tabs on the roller outward (callout 2) and remove the roller.

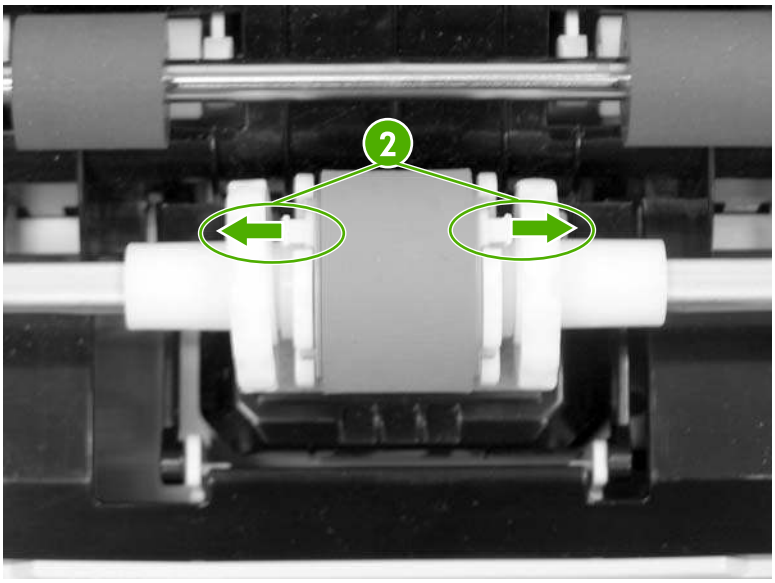


Figure 6-5 Tray 1 pickup roller and separation pad (3 of 6)

Reinstallation tip: Be sure that the fan is installed so that the label side faces the printer (callout 7). Align the cable as shown (callout 8). Ensure that the tabs on the roller (callout 3) are aligned and snap into place.

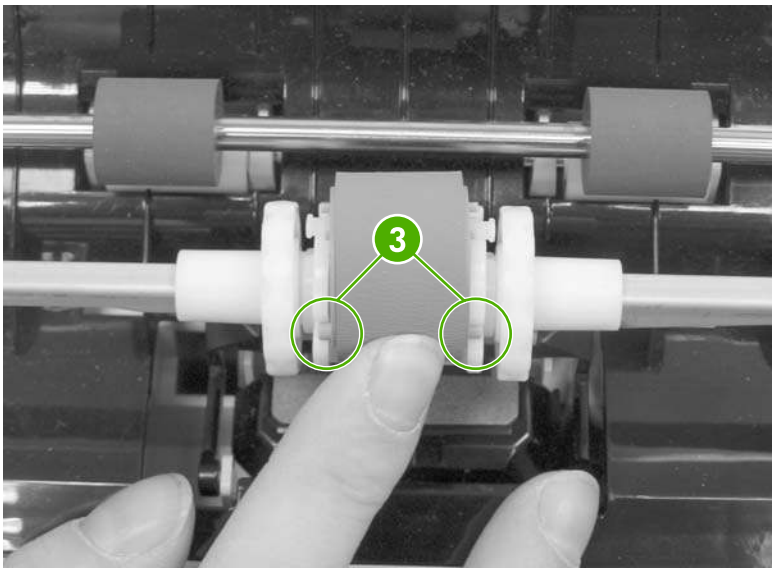


Figure 6-6 Tray 1 pickup roller and separation pad (4 of 6)

5. To replace the separation pad, push down on the pad (callout 4) and then release the tab (callout 5) with a flat-blade screwdriver. Remove the separation pad.

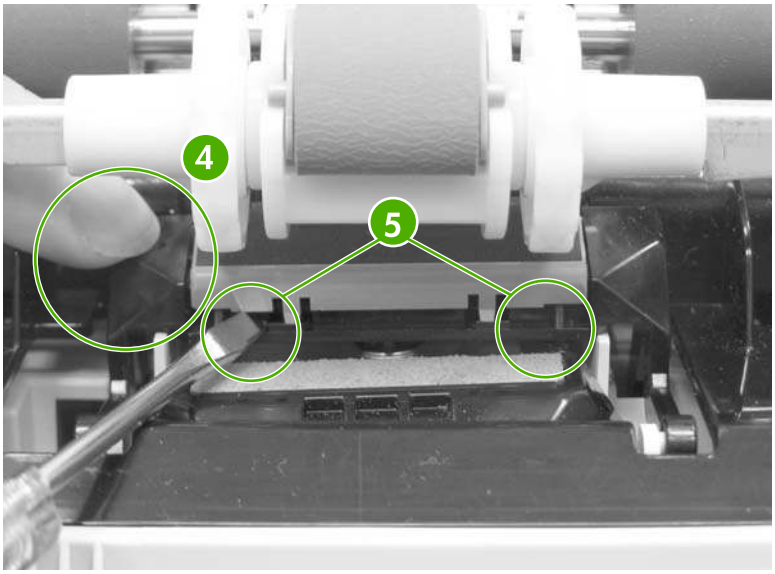


Figure 6-7 Tray 1 pickup roller and separation pad (5 of 6)

6. Install the new separation pad, ensuring that it snaps into place.

7. To reinstall the cover, make sure the tabs (callout 6) are aligned properly. Push upward to close the cover, and then slide the tabs (callout 7) outward to lock the cover.

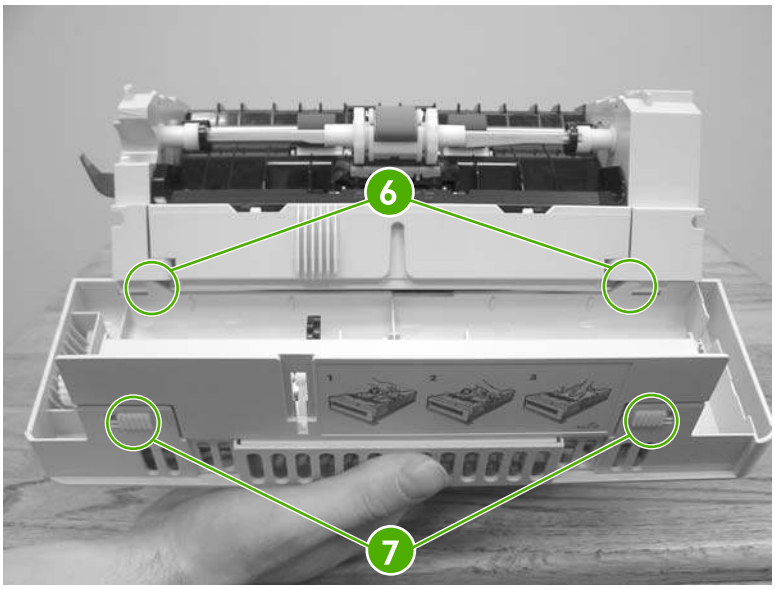


Figure 6-8 Tray 1 pickup roller and separation pad (6 of 6)

Tray 2-x separation roller

1. Remove Tray 2-x.

2. Flip the door open (callout 1) toward the back of the tray. While holding the door open, pinch the blue tab (callout 2) and remove the roller by sliding it to the left.

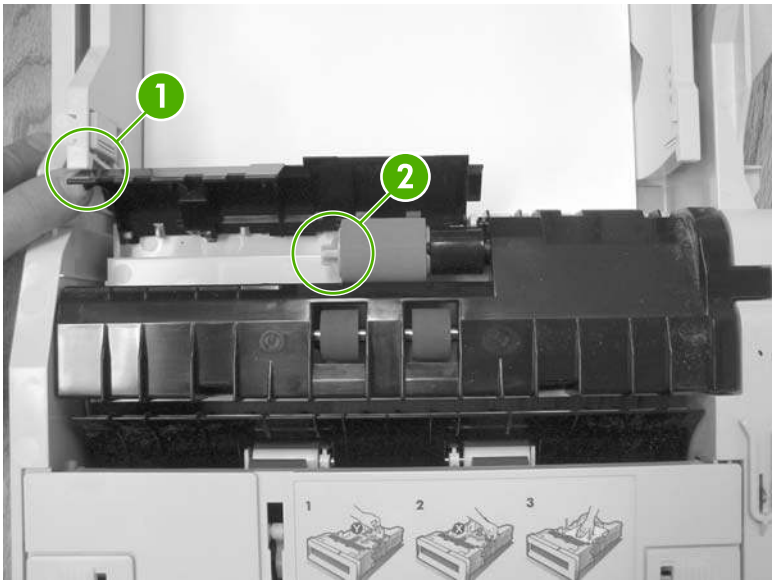


Figure 6-9 Tray 2-x separation roller

Tray 2-x feed and pickup rollers

1. Remove Tray 2-x.
2. Look inside the paper tray cavity and locate the front roller (feed roller) at the top. Pinch the blue tabs on the left side of the roller (callout 1) and release the roller to the left.

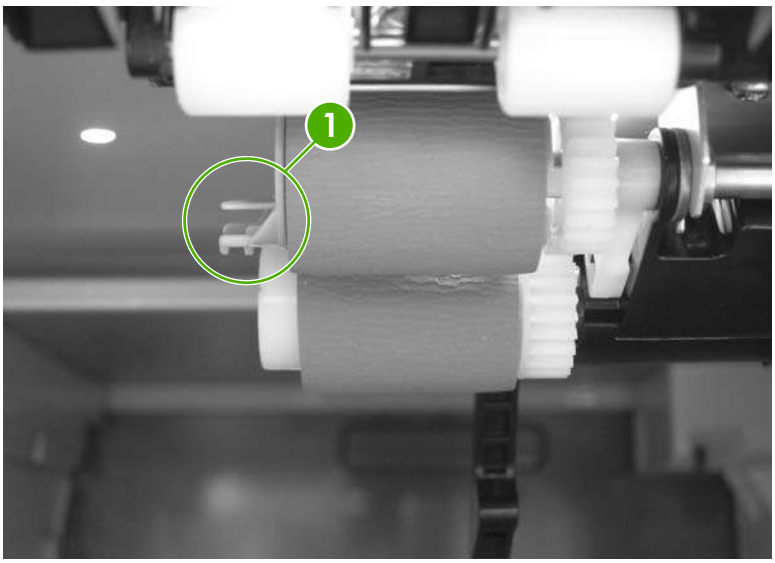


Figure 6-10 Tray 2-x feed and pickup rollers (1 of 2)

3. Locate the pickup roller behind the front feed roller. Pinch the white tab (callout 2) located on the inside of the white end cap. While pinching the tab, rotate the roller counterclockwise a quarter to a half turn and remove the roller by sliding it to the left.

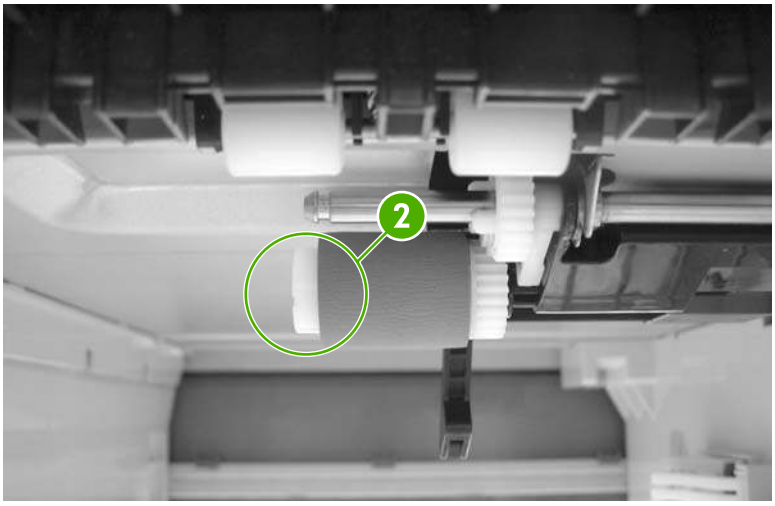


Figure 6-11 Tray 2-x feed and pickup rollers (2 of 2)

Formatter

1. Grasp the black tabs situated near the top and bottom of the formatter board.

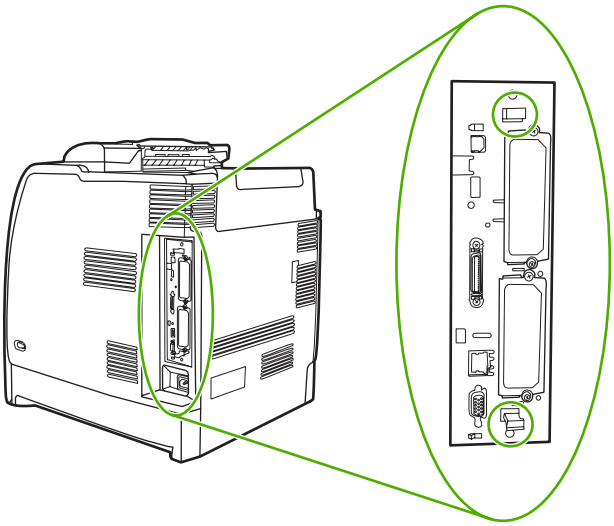


Figure 6-12 Formatter (1 of 2)

2. Move the black tabs toward each other and gently pull the formatter board from the printer. Place the formatter board on a clean, flat, grounded surface.

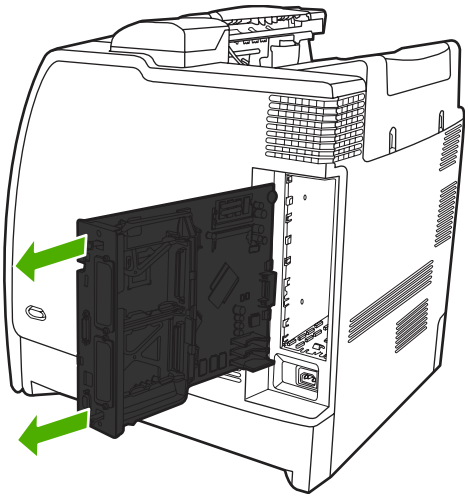


Figure 6-13 Formatter (2 of 2)

Compact flash

For instructions about removing and installing the compact flash memory card, see Installing a flash memory card (HP Color LaserJet 4700 Series only) on page 121.

HP Jetdirect print server card (4700 models)

For instructions about removing and installing an HP Jetdirect print server card, see Installing an HP Jetdirect print server card (HP Color LaserJet 4700 Series only) on page 126.

DDR memory DIMMs

For instructions about removing and installing DDR memory DIMMs, see Installing DDR memory DIMMs on page 117.

Hard drive (4700 models)

For instructions about removing and installing a hard drive, see Installing a hard drive, memory, and fonts on page 114.

Installing a new control panel label

Some printer models are shipped without the control panel labels installed or you might prefer using a different label from the one that is installed. Labels are available for several languages. If you are setting up a printer 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 control panel.

3. Press the label firmly down onto the control panel.

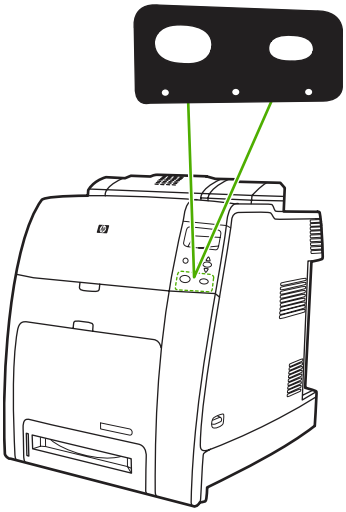


Figure 6-14 Control panel label

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

4. Press Menu to enter the **MENUS**.
5. Press ▼ to highlight **CONFIGURE DEVICE**.
6. Press ✔ to select **CONFIGURE DEVICE**.
7. Press ▼ to highlight **SYSTEM SETUP**.
8. Press ✔ to select **SYSTEM SETUP**.
9. Press ▼ to highlight **LANGUAGE**.
10. Press ✔ to select **LANGUAGE**.
11. Press ▲ or ▼ to select the appropriate language.
12. Press ✔ to set the selection.
13. Press Menu.

Covers and external components

The following procedures explain the removal and replacement of covers and external components.

NOTE For illustration purposes, the HP Color LaserJet 4700 printer with four optional trays and a stand is used in the following figures. Procedures are the same for the HP Color LaserJet CP4005, except where noted.

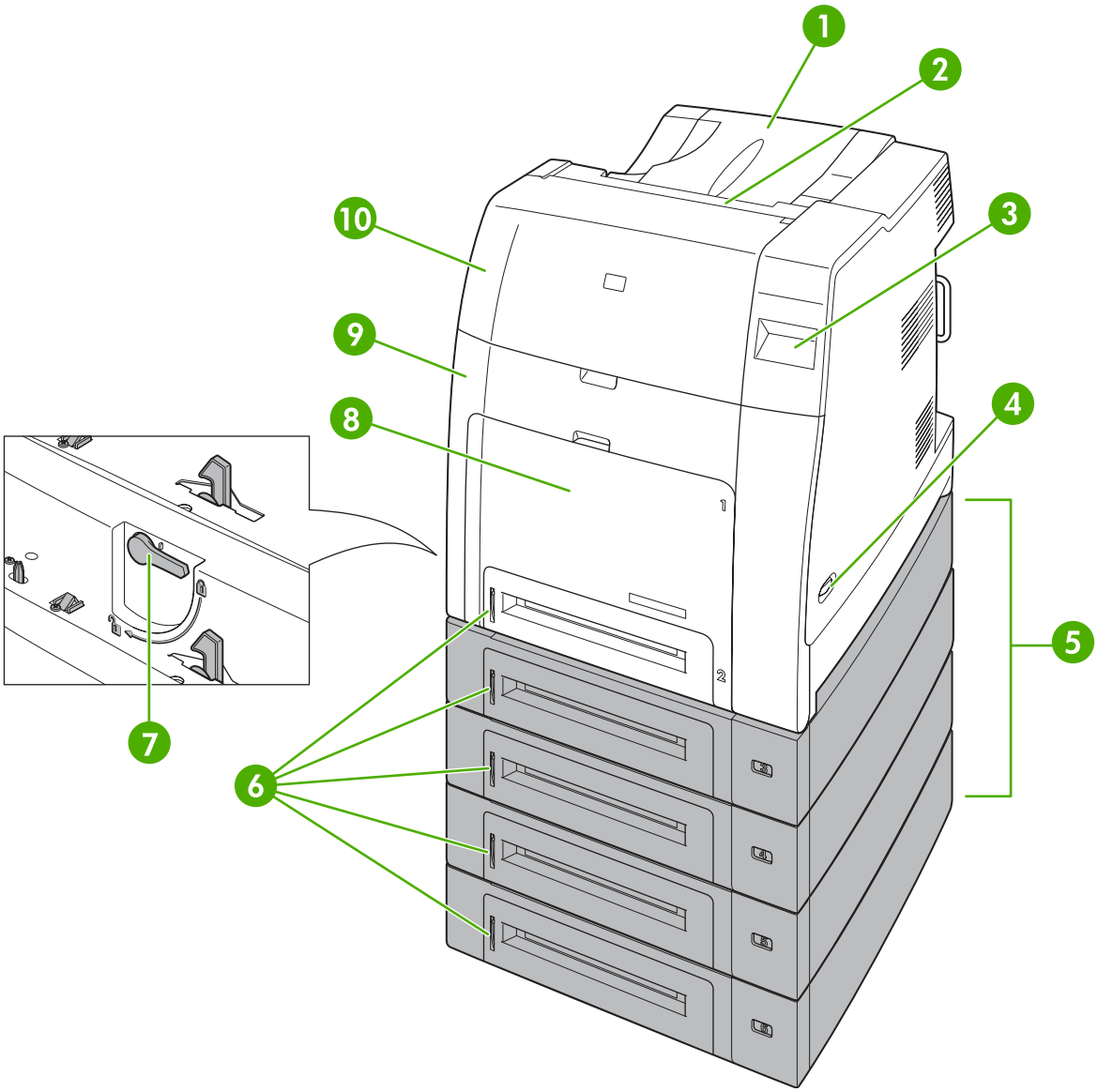


Figure 6-15 Covers and external components

1	Face down tray assembly
2	Duplex cover
3	Control panel
4	On/off switch
5	Optional tray assemblies

6	Paper trays (Tray 2 and optional trays)
7	Optional tray lock lever
8	Multipurpose tray (Tray 1)
9	Front cover
10	Top cover

Paper tray (Tray 2)

1. Pull Tray 2 partially out of the printer.



Figure 6-16 Remove the paper tray

2. Slightly raise the front of Tray 2 and pull it completely out of the printer.

Multipurpose tray (Tray 1)

1. Remove the paper tray (Tray 2) from the printer and set it aside. See Paper tray (Tray 2) on page 231.

2. Open the multipurpose tray.



Figure 6-17 Remove the multipurpose tray (1 of 7)

3. Pull outward on both the right and left sides of the tray guide (callout 1) to unhook the two bosses (callout 1).

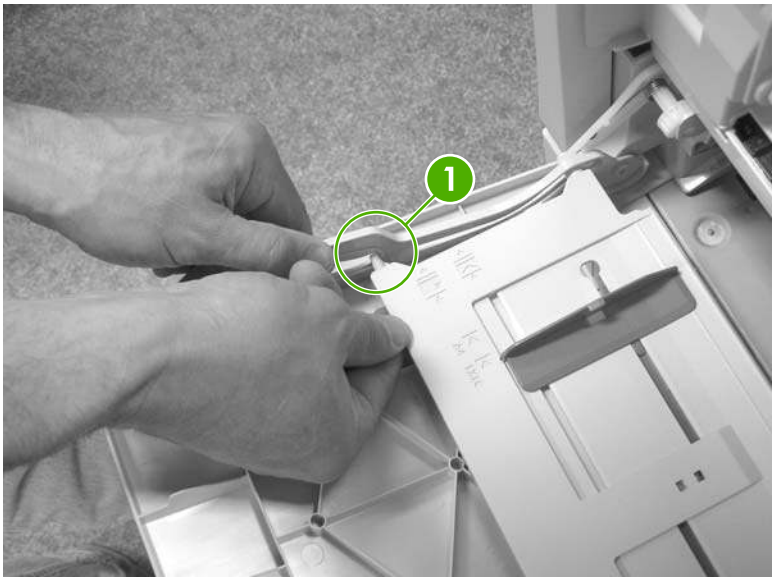


Figure 6-18 Remove the multipurpose tray (2 of 7)

4. Slightly raise up the multipurpose tray and slide the tray (callout 2) back to the end of the tray guide (callout 3) until it snaps into place.



Figure 6-19 Remove the multipurpose tray (3 of 7)

5. Slightly raise the multipurpose tray and push the left link arm (callout 4) outward to unhook the boss (callout 5).

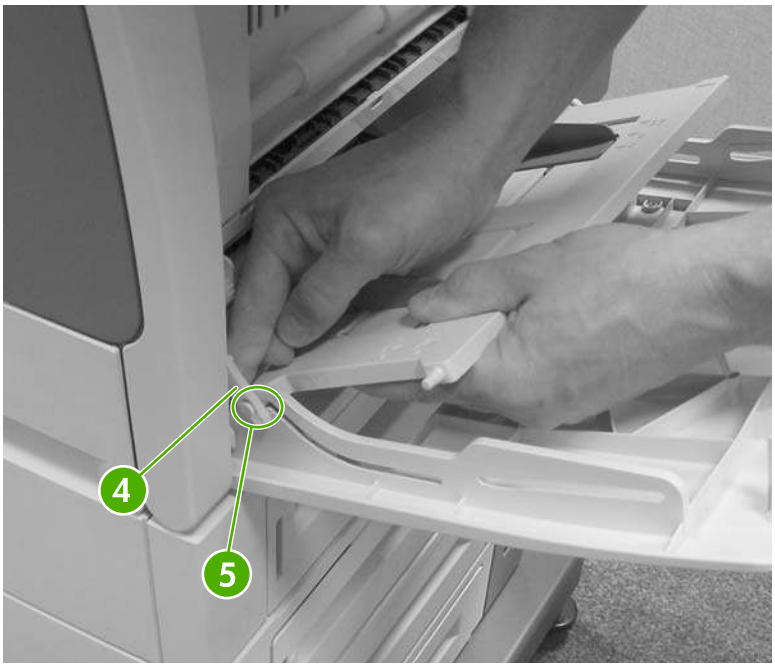


Figure 6-20 Remove the multipurpose tray (4 of 7)

6. Slightly raise up the multipurpose tray and push the tray (callout 6) back to the end of the tray guide (callout 7) until it snaps into place.

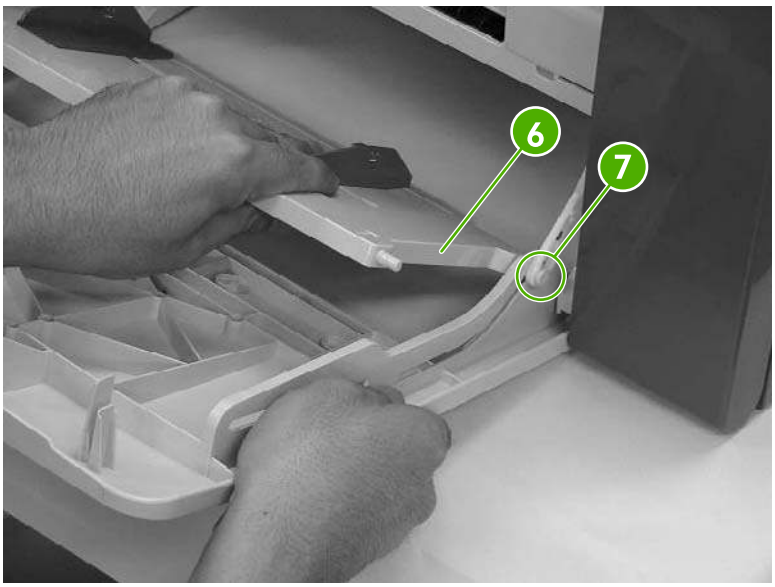


Figure 6-21 Remove the multipurpose tray (5 of 7)

7. Slightly raise the multipurpose tray and push the right link arm (callout 8) outward to unhook the boss (callout 9).

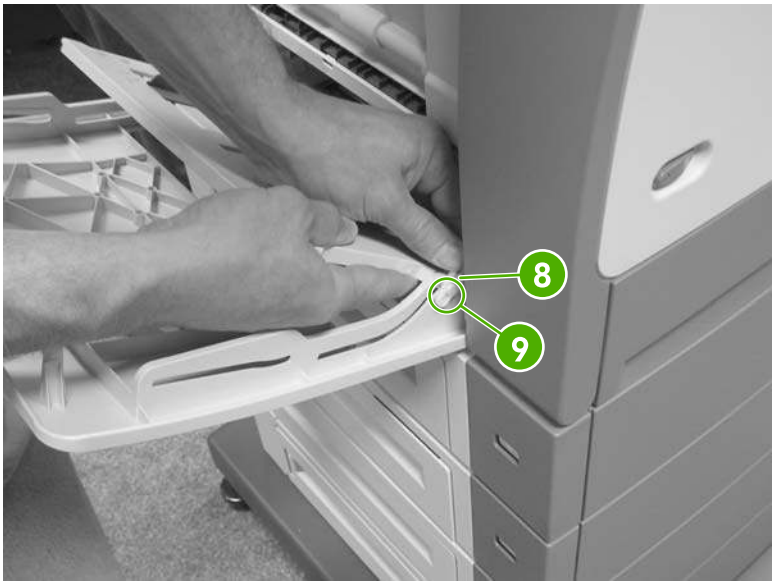


Figure 6-22 Remove the multipurpose tray (6 of 7)

8. Press the right and left sides inward (callout 10) to release the multipurpose tray from the shaft (callout 11) and remove the multipurpose tray (callout 12).

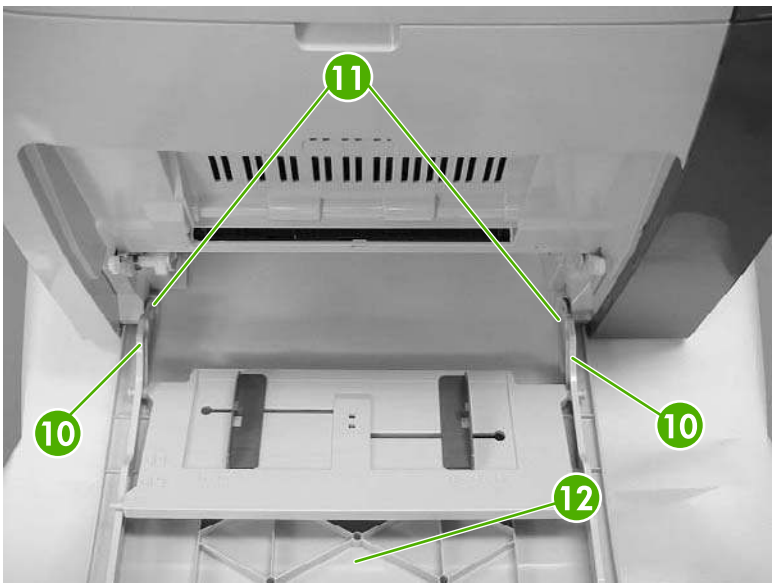


Figure 6-23 Remove the multipurpose tray (7 of 7)

Front cover

1. Remove the paper tray (Tray 2). See Paper tray (Tray 2) on page 231.
2. Remove the multipurpose tray. See Multipurpose tray (Tray 1) on page 231.

3. Open the front upper cover (callout 1) and front lower cover (callout 2).



Figure 6-24 Remove the front cover (1 of 6)

4. Insert the flat-blade screwdriver into the top right shaft holder on the inside of the arm and push outward.

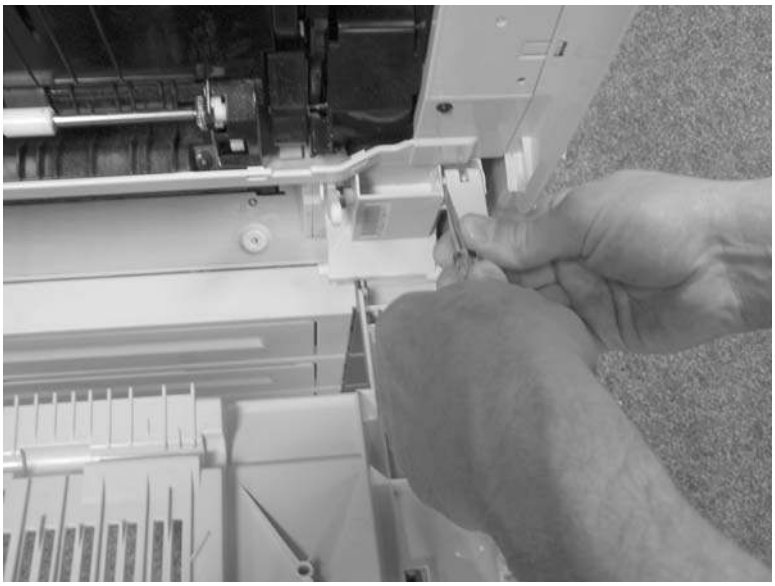


Figure 6-25 Remove the front cover (2 of 6)

5. Twist up to open the right shaft holder.

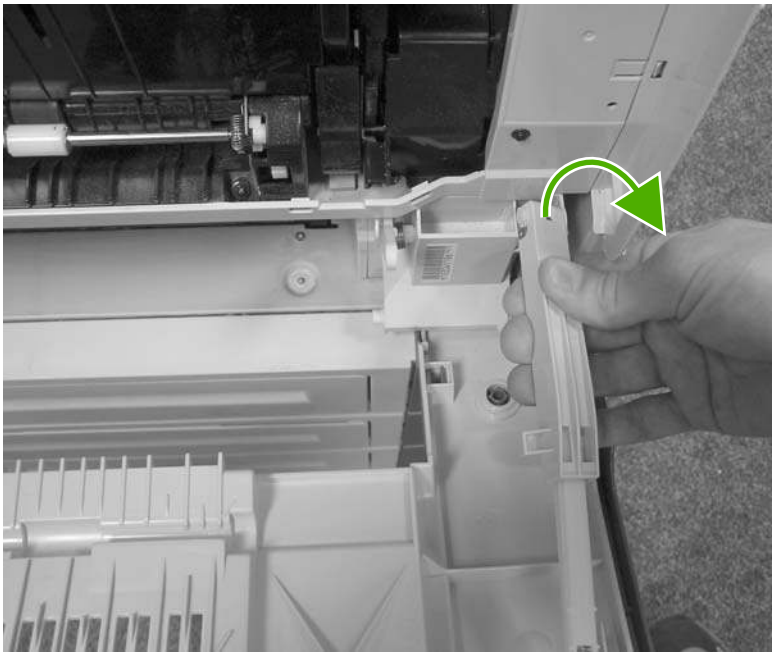


Figure 6-26 Remove the front cover (3 of 6)

6. Insert the flat-blade screwdriver into the top left shaft holder on the inside of the arm and push outward.

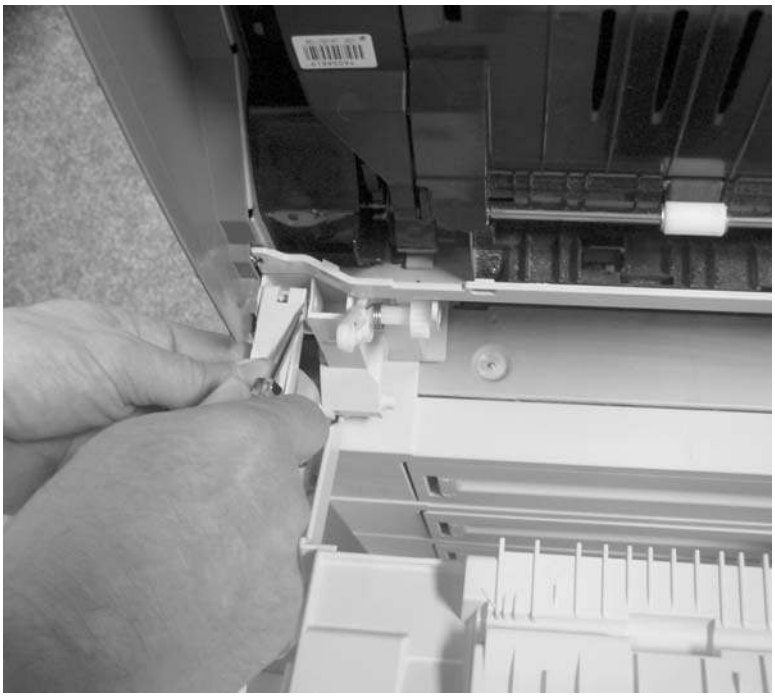


Figure 6-27 Remove the front cover (4 of 6)

7. Twist up to open the left shaft holder.

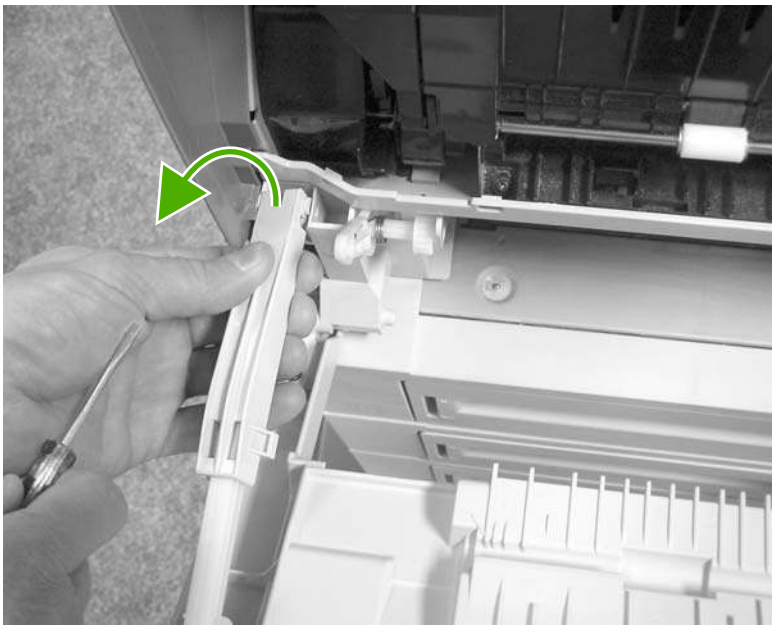


Figure 6-28 Remove the front cover (5 of 6)

8. Slightly lift up on the front cover and pull it towards you. Then take the front cover out.



Figure 6-29 Remove the front cover (6 of 6)

Duplex cover

NOTE For the HP Color LaserJet 4700 and HP Color LaserJet 4700n, remove the duplex cover.

For the HP Color LaserJet 4700dn and HP Color LaserJet 4700dtn, remove the duplexer. See Duplexer on page 349.

For the HP Color LaserJet 4700ph+, remove the duplexer and the stapler/stacker. See Duplexer on page 349 and Stapler/stacker (4700 models) on page 340.

1. To remove the duplex cover on the HP Color LaserJet 4700 and HP Color LaserJet 4700n, use a flat-blade screwdriver to release the tabs in callouts 1, 2, and 3 in the order presented.
2. Pull up on the duplex cover and remove it.

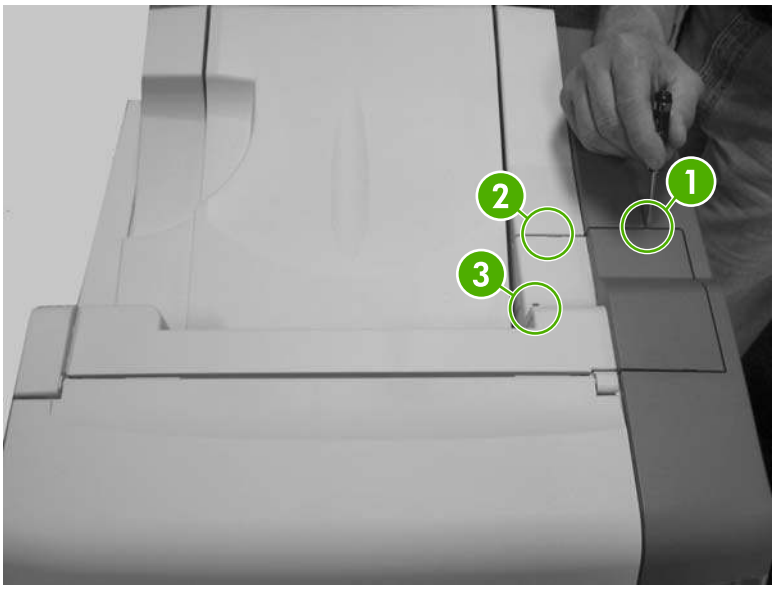


Figure 6-30 Remove the duplex cover

Face down tray assembly

1. Remove the duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.

2. Lift up the two tabs.

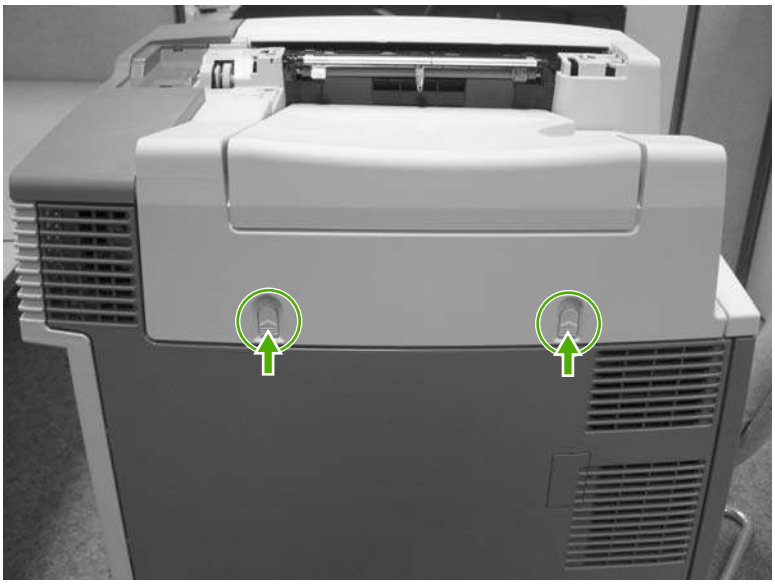


Figure 6-31 Remove the face down tray assembly (1 of 2)

3. Insert the flat-blade screwdriver to unhook the two tabs (callout 1). Lift the face down tray assembly straight up to remove.

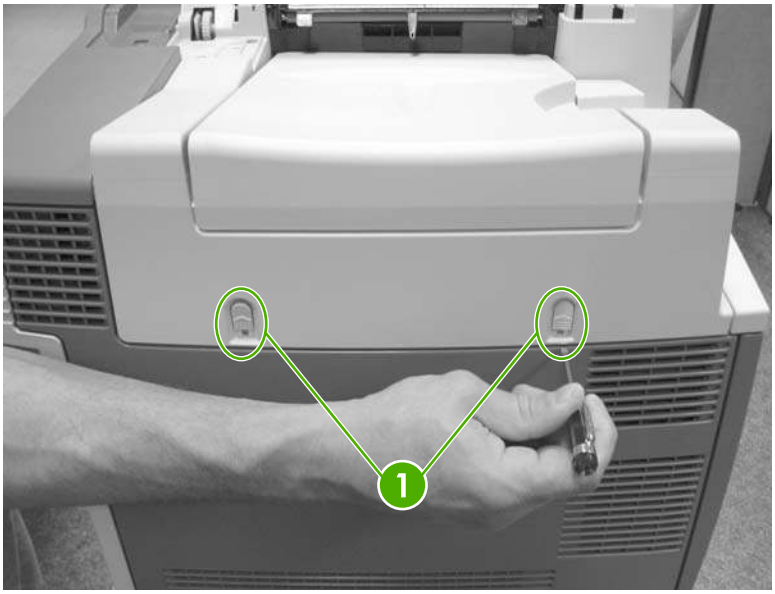


Figure 6-32 Remove the face down tray assembly (2 of 2)

Top cover

1. Remove the duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
2. Remove the face down tray assembly. See Face down tray assembly on page 239.

3. Remove the five screws (callout 1).

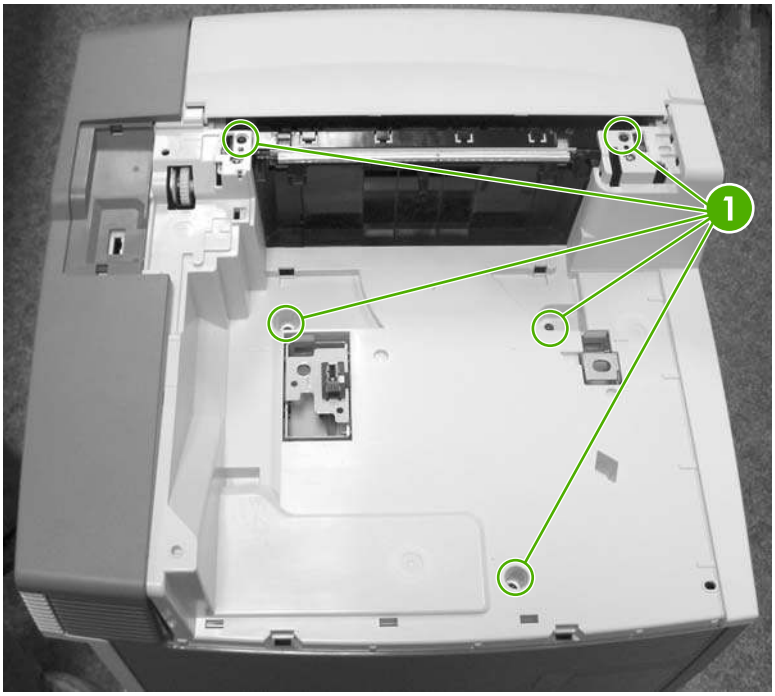


Figure 6-33 Remove the top cover (1 of 7)

4. Open the front upper cover.



Figure 6-34 Remove the top cover (2 of 7)

5. Unhook the tab (callout 2) by pressing a flat-blade screwdriver to the left of the tab and releasing the hinge (callout 3).

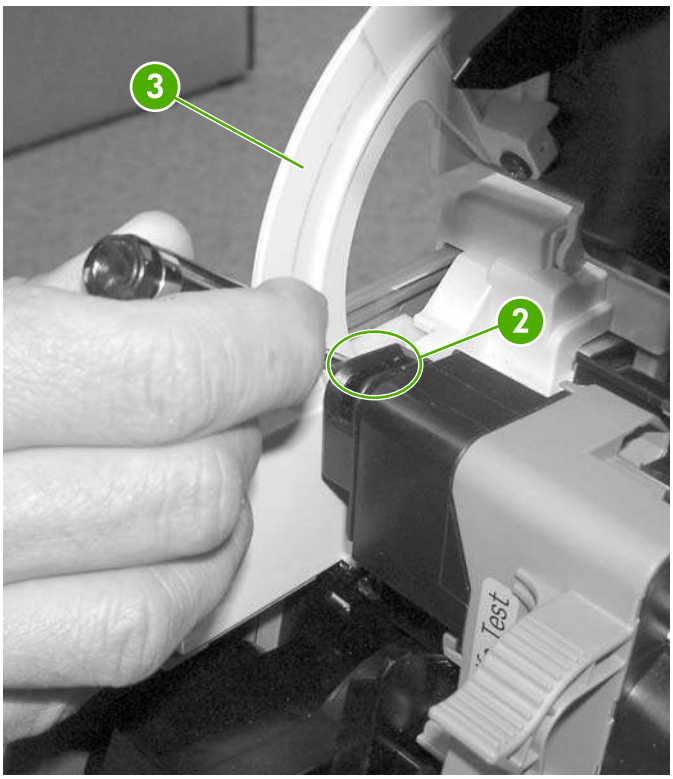


Figure 6-35 Remove the top cover (3 of 7)

NOTE The tab is located on the bottom of the back side of the hinge. You will need to reach all the way down and then push all the way to the left to release the tab.

6. Unhook the two tabs (callout 4) on the right side of the printer.

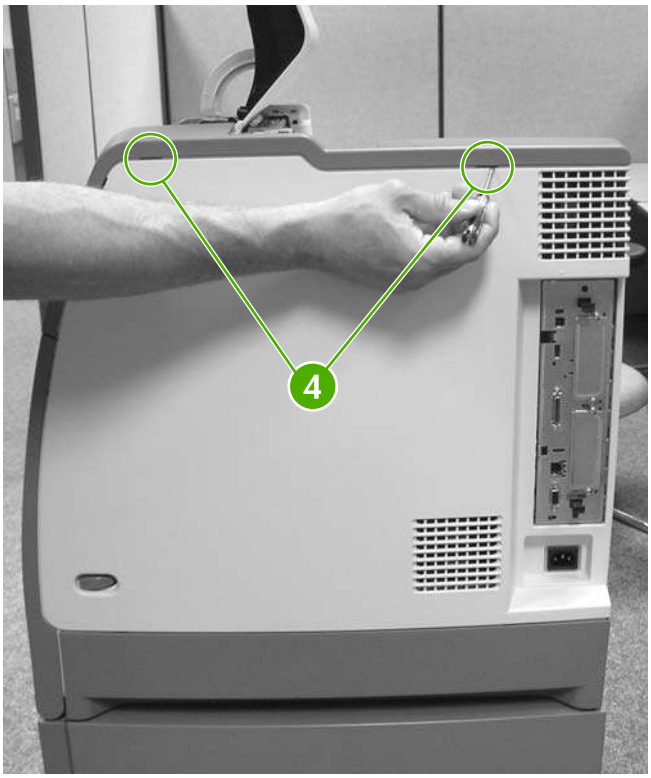


Figure 6-36 Remove the top cover (4 of 7)

7. Unhook the three tabs (callout 5) on the rear of the printer.

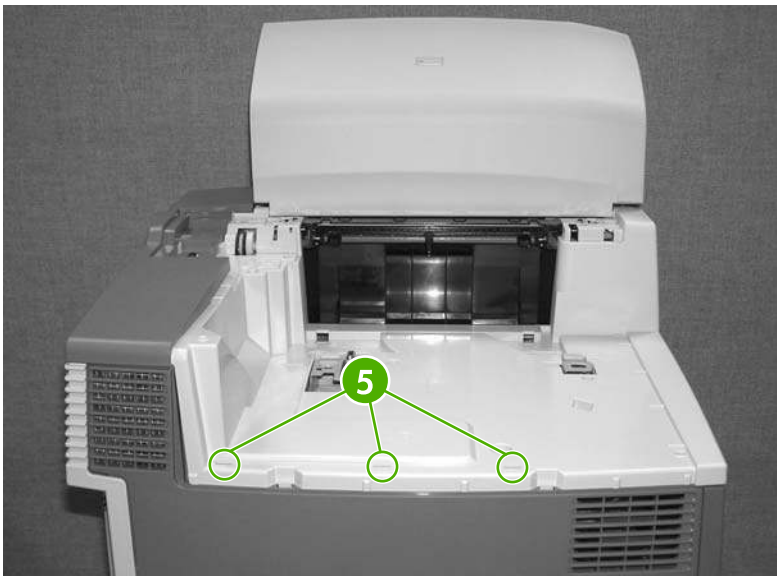


Figure 6-37 Remove the top cover (5 of 7)

8. Unhook the two tabs (callout 6) on the left side of the printer.

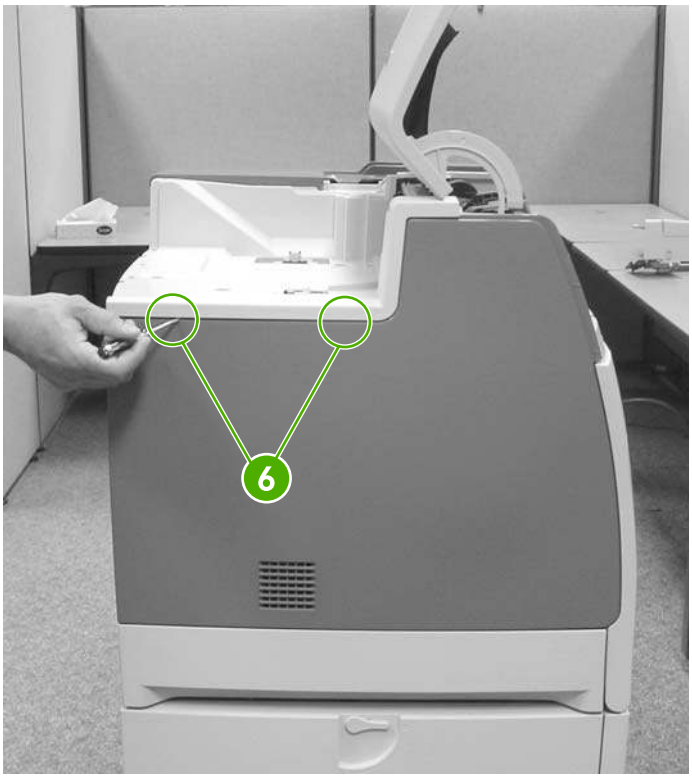


Figure 6-38 Remove the top cover (6 of 7)

9. Lift up to remove the front upper cover and the top cover together.



Figure 6-39 Remove the top cover (7 of 7)

Right cover

1. Open the front cover.
2. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
3. Unhook the connector (callout 1) by pressing the tab on the connector to release it.

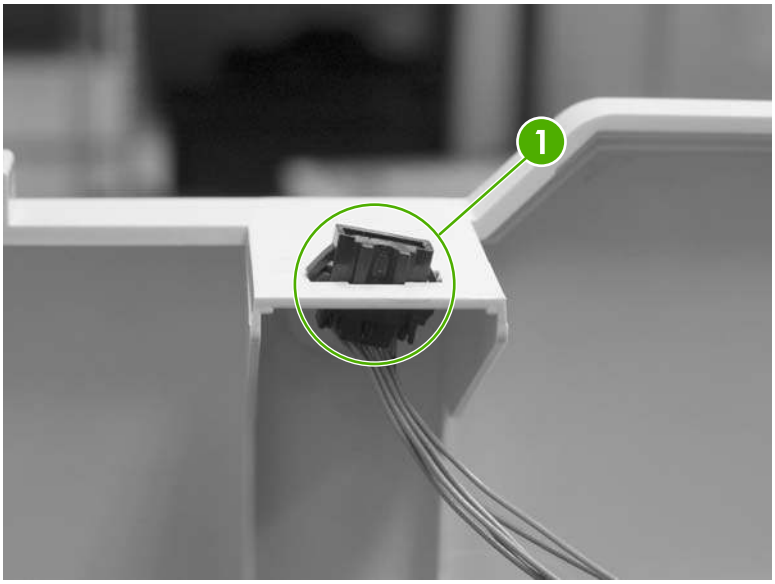


Figure 6-40 Remove the right cover (1 of 5)

4. Unhook the tab (callout 2) on the upper right side of the printer just behind the control panel.

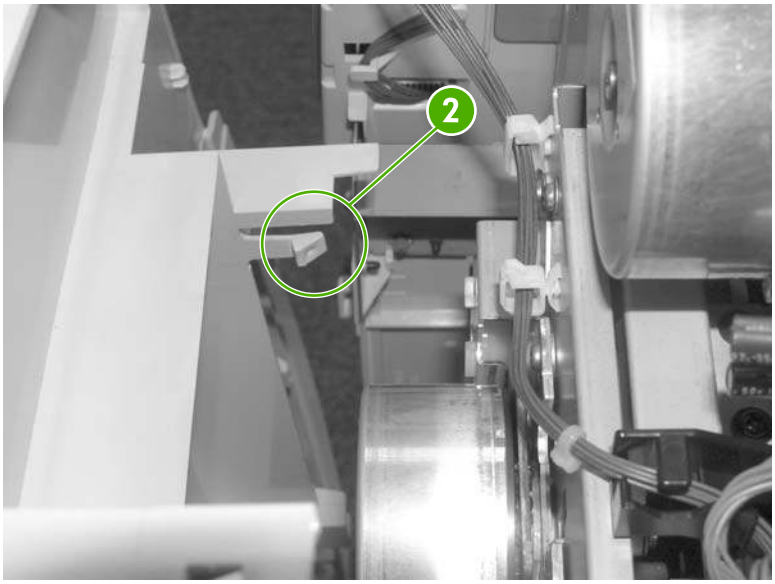


Figure 6-41 Remove the right cover (2 of 5)

5. Open the front cover and unhook the two tabs (callout 3) on the front of the printer.

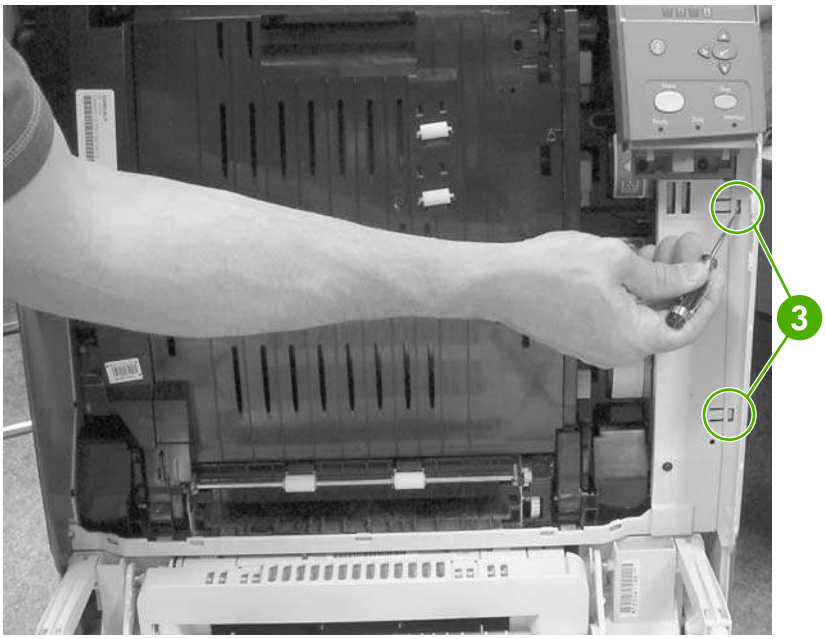


Figure 6-42 Remove the right cover (3 of 5)

6. Unhook the three tabs (callout 4) on the right rear side of the printer. You will need to pry the bottom tab.

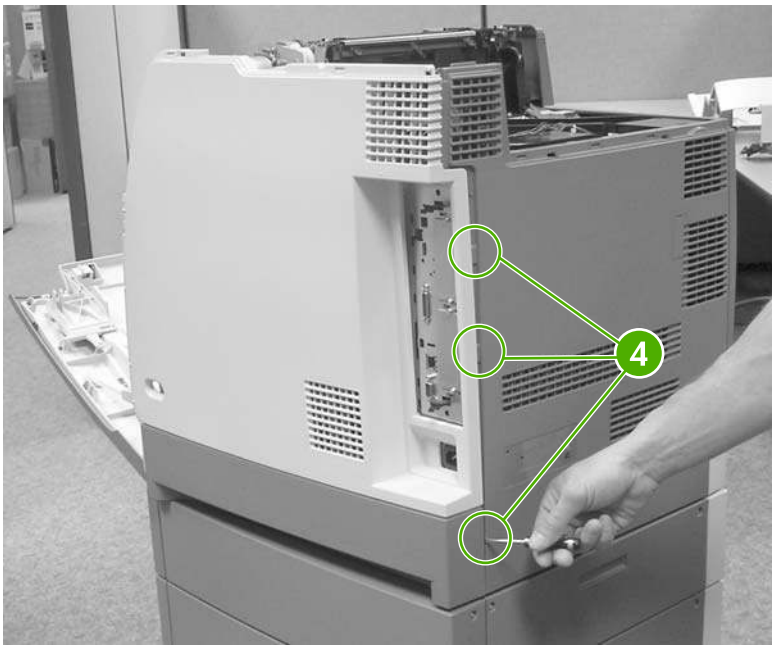


Figure 6-43 Remove the right cover (4 of 5)

7. Remove the right cover.

Reinstallation tip

CAUTION Do not pinch the control panel cable when reinstalling the right cover.

Make sure all four tabs (callout 5) are inserted properly when reinstalling the right cover.

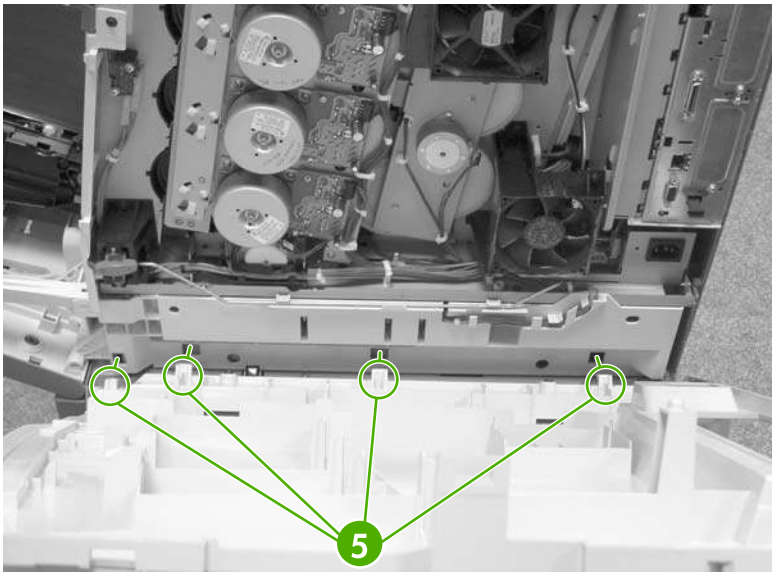


Figure 6-44 Remove the right cover (5 of 5)

Left cover

1. Open the front cover.
2. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.

3. Unhook the tab (callout 1).

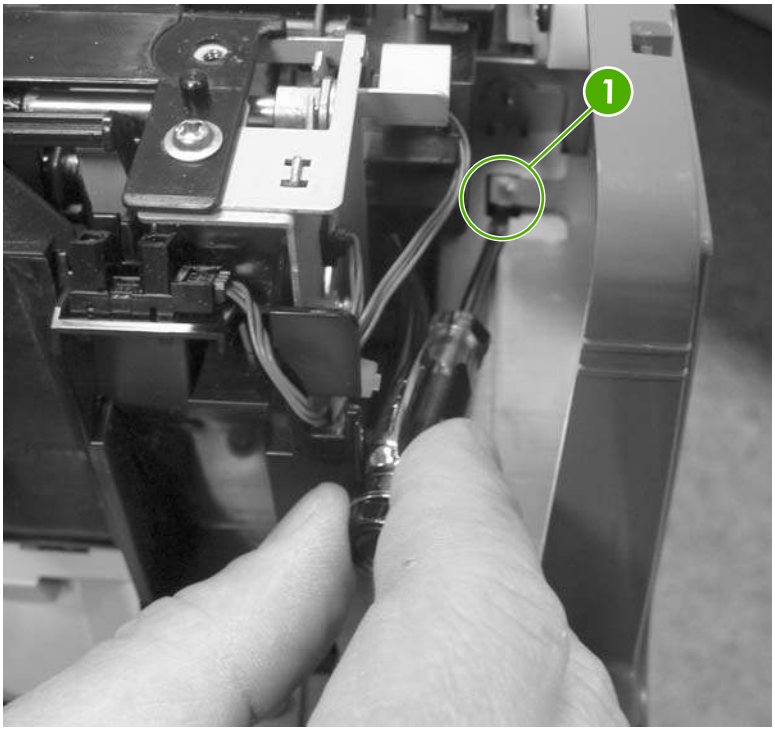


Figure 6-45 Remove the left cover (1 of 3)

4. Unhook the tab (callout 2).

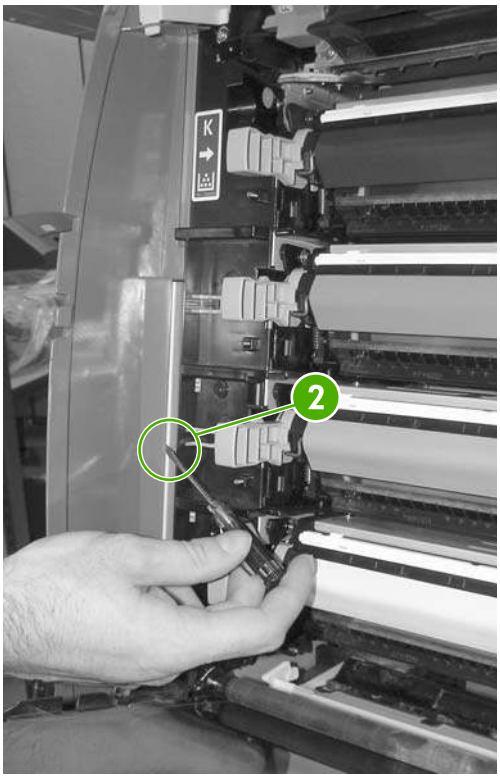


Figure 6-46 Remove the left cover (2 of 3)

5. Unhook the three tabs (callout 3) and lift up and out to remove the left cover.

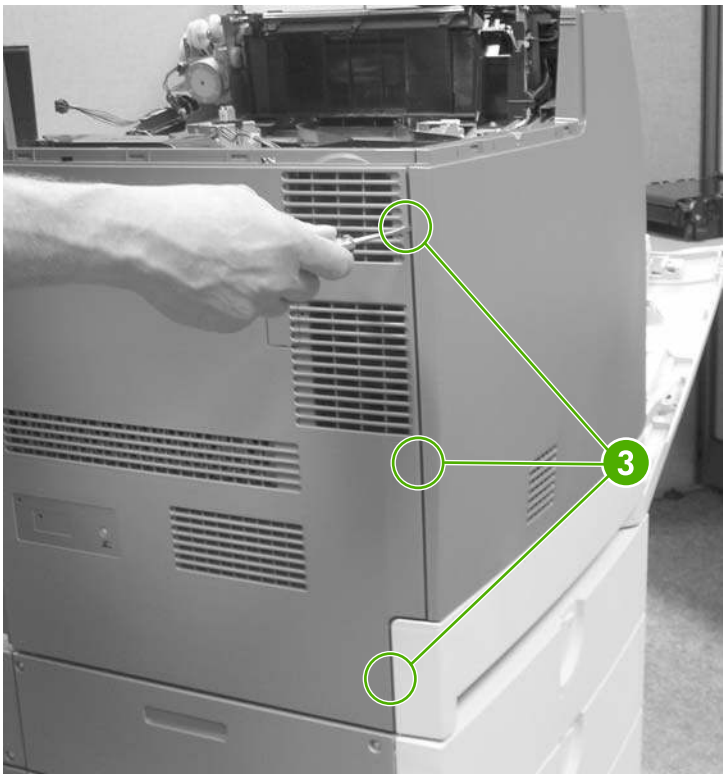


Figure 6-47 Remove the left cover (3 of 3)

Rear cover

1. Remove the following assemblies:
   - Paper tray (Tray 2). See Paper tray (Tray 2) on page 231.
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.
   - Left cover. See Left cover on page 247.

2. Lift up on the top of the rear cover and pull it toward you to remove it.



Figure 6-48 Remove the rear cover

Control panel

1. Remove the following assemblies:
   - Paper tray (Tray 2). See Paper tray (Tray 2) on page 231.
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.

2. Disconnect the connector (callout 1).

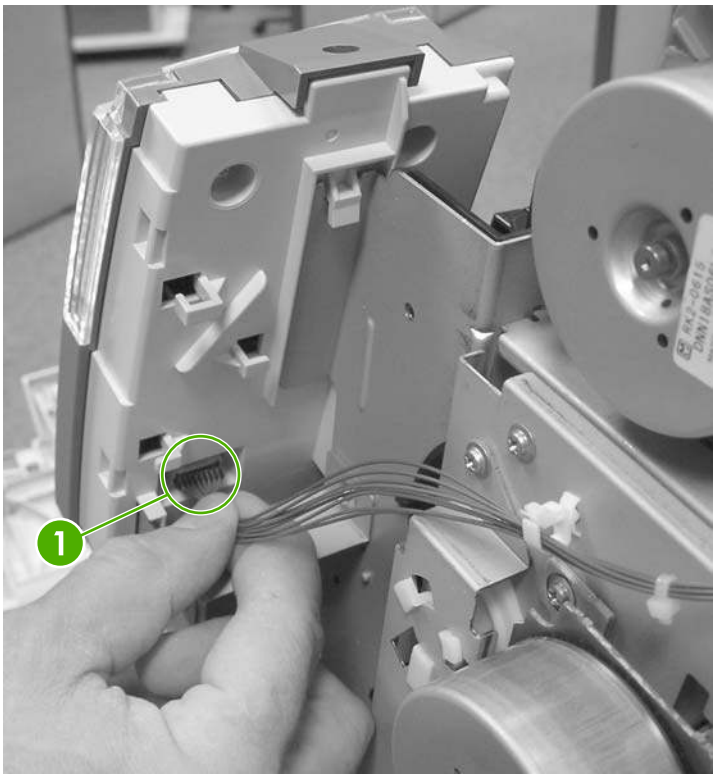


Figure 6-49 Remove the control panel (1 of 3)

3. Remove the two screws (callout 2).

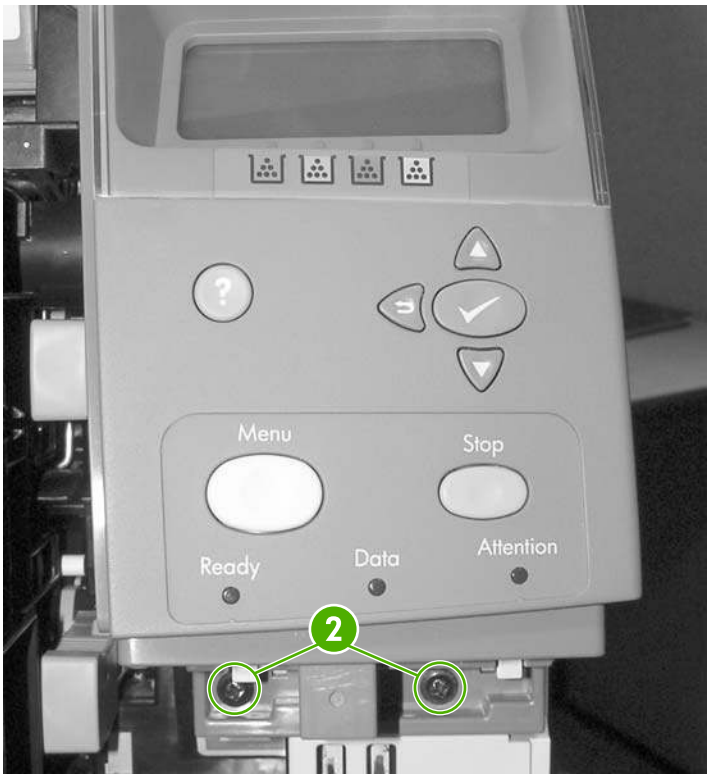


Figure 6-50 Remove the control panel (2 of 3)

4. Remove the screw (callout 3) and then remove the control panel.

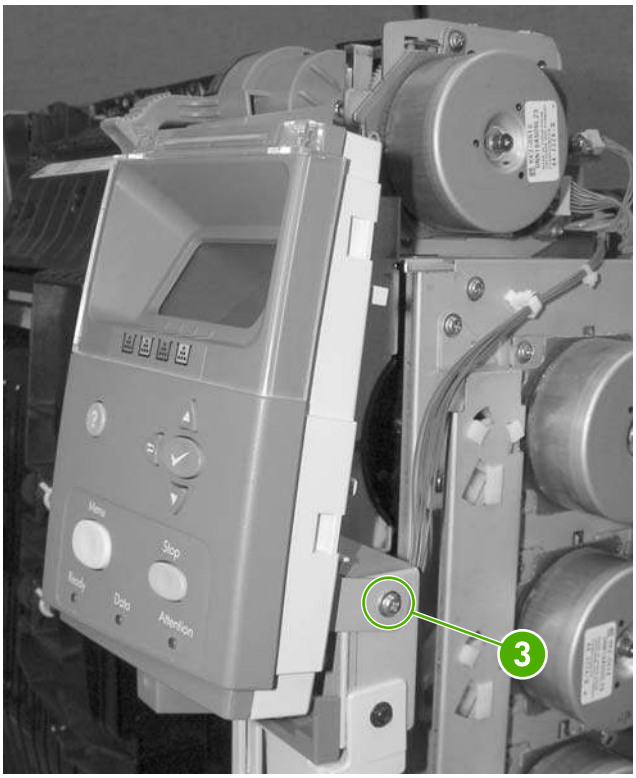
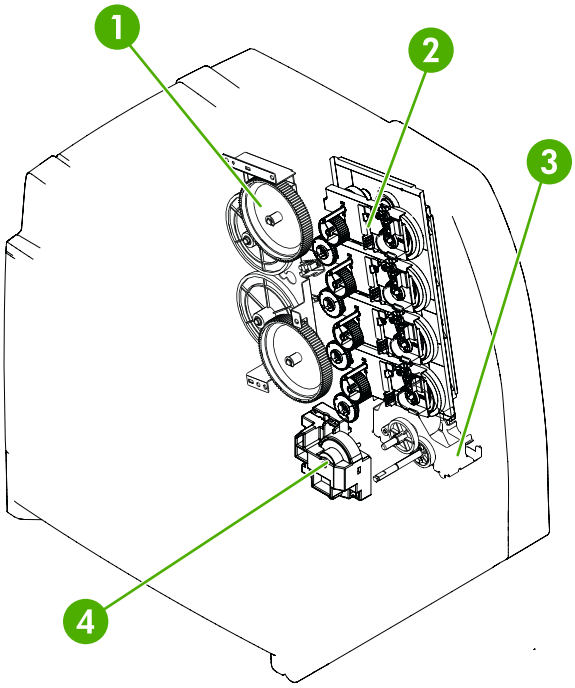
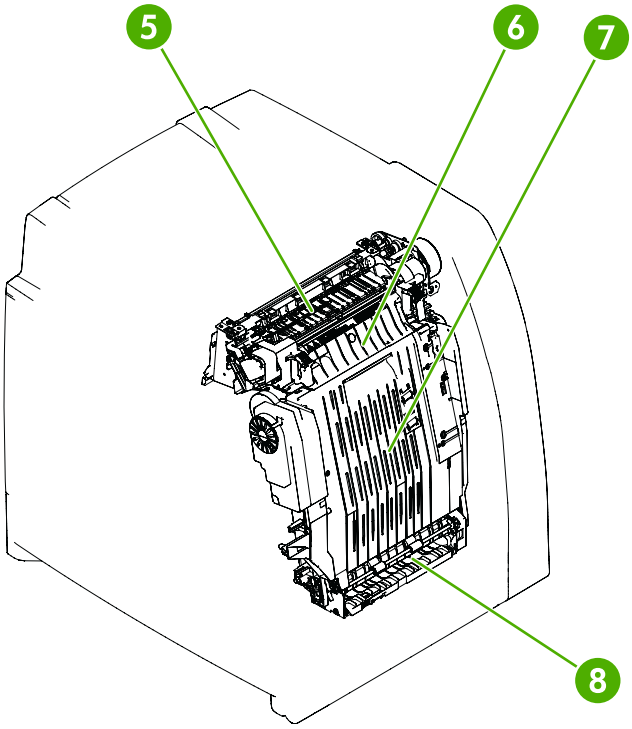


Figure 6-51 Remove the control panel (3 of 3)

Main assemblies

The following procedures explain the removal and replacement of the main assemblies.





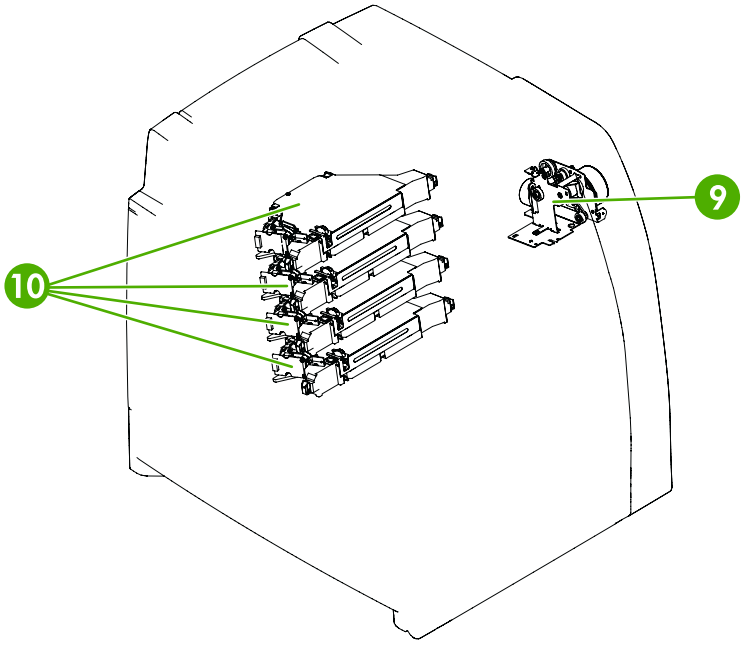


Figure 6-52 Main assemblies

1	Disengaging drive assembly
2	Main drive assembly
3	Pickup motor assembly
4	Lifter drive assembly
5	Delivery assembly
6	Fuser
7	ETB
8	Paper feed assembly
9	Fuser drive assembly
10	Laser/scanner assembly

Disengaging drive assembly

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.
   - Power supply fan (Fan 4). See Power supply fan/shroud (Fan 4) on page 299.
2. Remove the cable from the two cable guides (callout 1).

3. Disconnect the connector (callout 2).
4. Remove the four screws (callout 3).

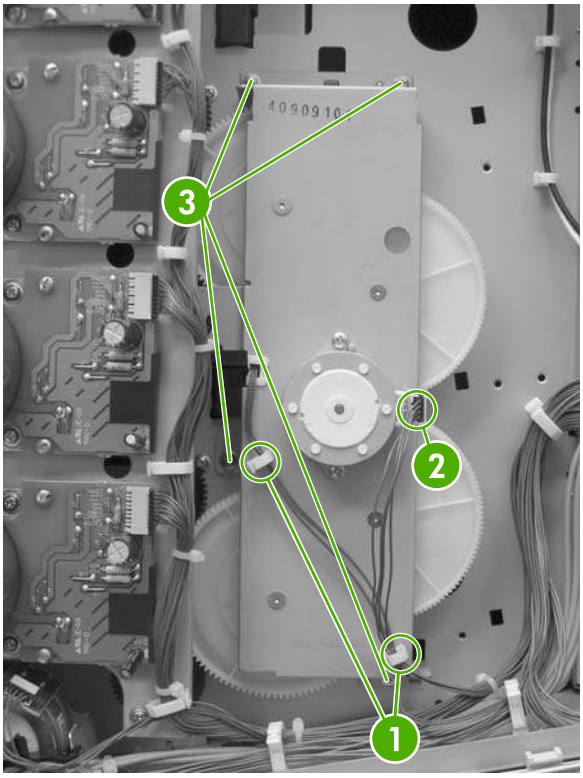


Figure 6-53 Remove the disengaging drive assembly (1 of 2)

5. Tilt the disengaging drive assembly and the cable down together. Unhook the cable from the cable guide (callout 4).

6. Disconnect the connector (callout 5).

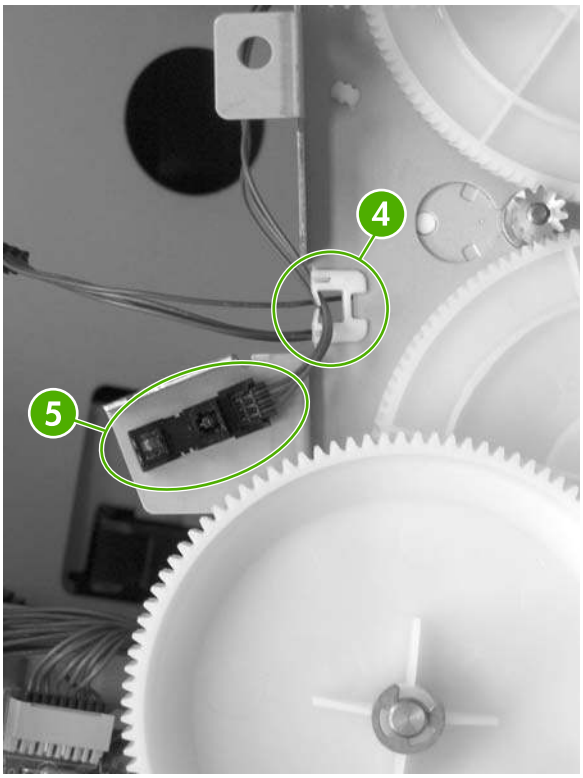


Figure 6-54 Remove the disengaging drive assembly (2 of 2)

Remove main drive assembly

1. Remove the following assemblies:
   - ETB. See Replacing the ETB on page 111.
   - All four print cartridges. See Changing print cartridges on page 104.
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.
   - Power supply fan (Fan 4). See Power supply fan/shroud (Fan 4) on page 299.
   - Disengaging drive assembly. See Disengaging drive assembly on page 254.
   - Drum drive motors. See Drum drive motors (Y/C/M/K) on page 298.

2. Grasp the middle of the cartridge upper guide unit (callout 2) while unhooking the two tabs (callout 1). Then slide the cartridge upper guide unit toward you to remove it from the printer.

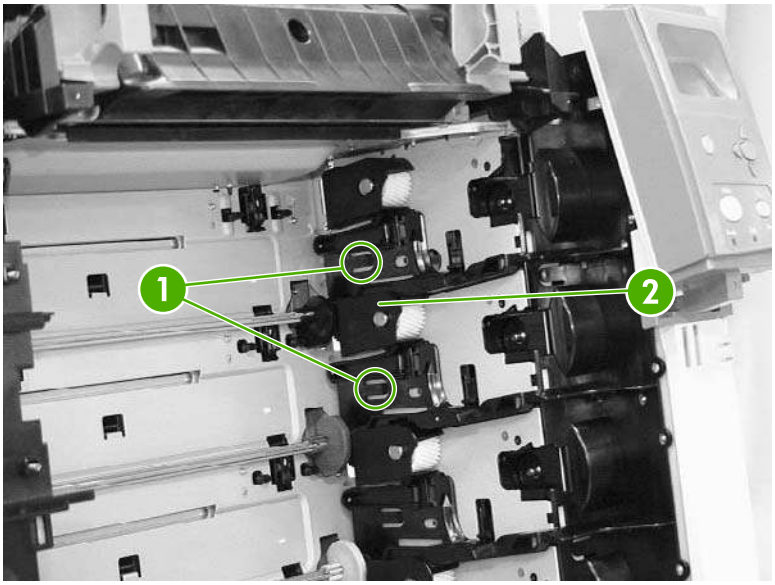


Figure 6-55 Remove the main drive assembly (1 of 14)

3. Grasp the middle of the cartridge lower guide unit (callout 4) while unhooking the two tabs (callout 3). Then slide the cartridge lower guide unit toward you to remove it from the printer.

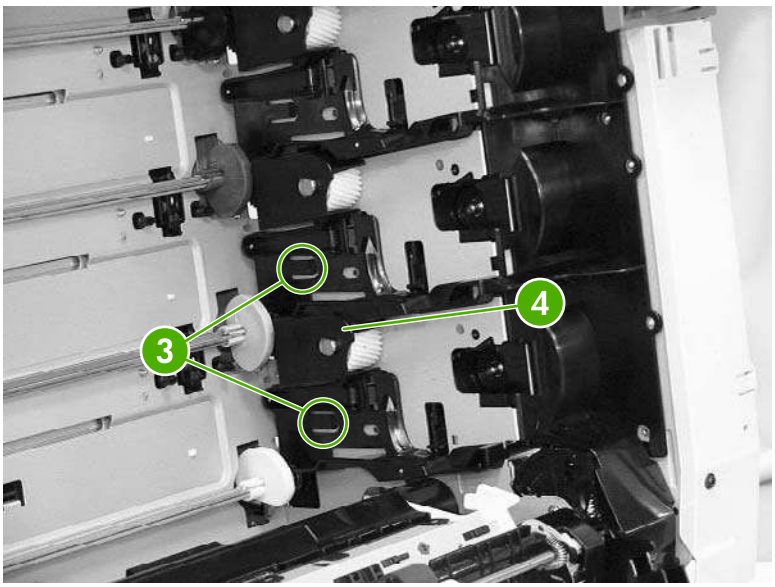


Figure 6-56 Remove the main drive assembly (2 of 14)

CAUTION Be careful reassembling the upper and lower cartridge guides. They are similar to each other and if assembled incorrectly, the ETB will not position correctly. The cartridge upper guide unit (callout 5) has two projections (callout 6). The cartridge lower guide unit (callout 7) has one projection (callout 8).

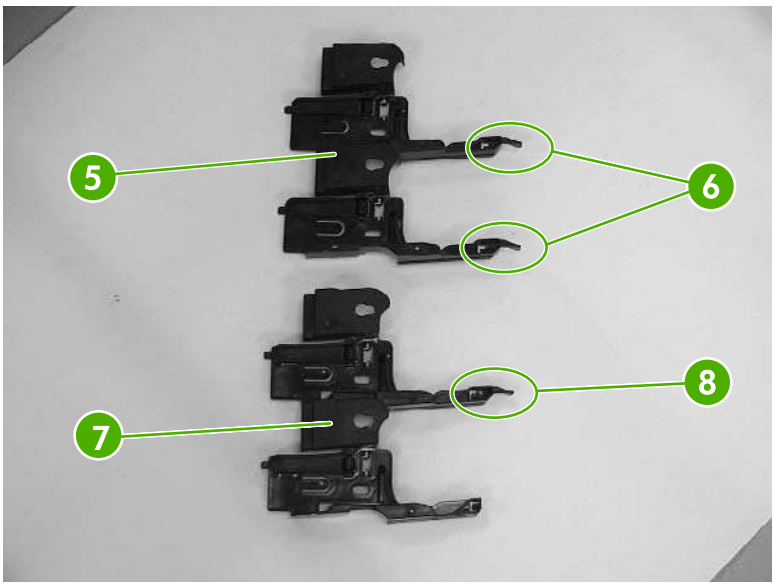


Figure 6-57 Remove the main drive assembly (3 of 14)

4. Remove the four front gears (callout 9). Then remove the four back gears (callout 10).

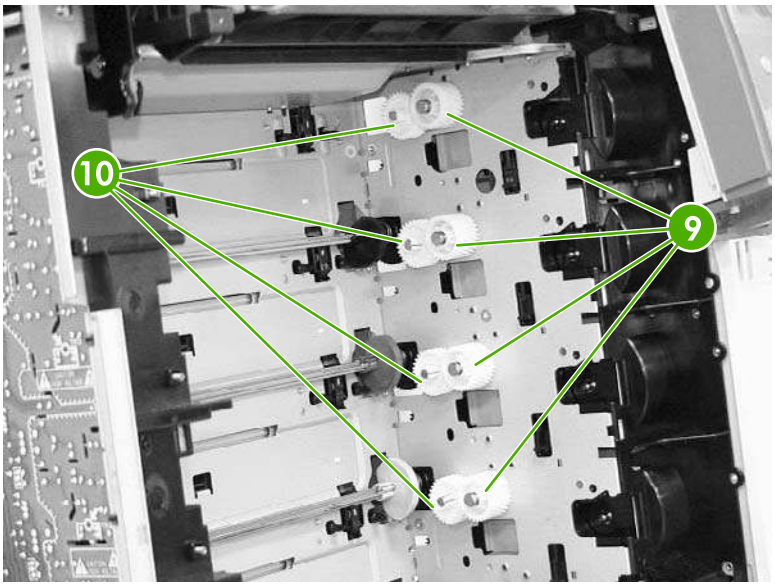


Figure 6-58 Remove the main drive assembly (4 of 14)

5. Remove the four bushings (callout 11).

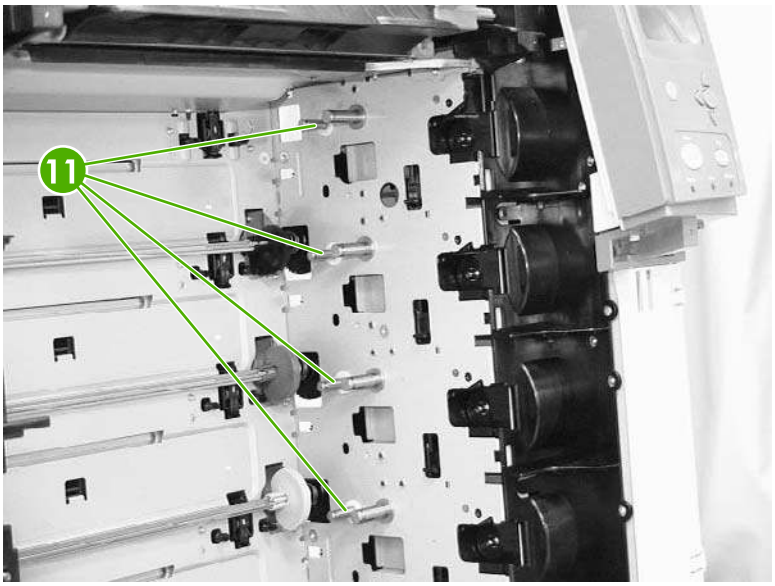


Figure 6-59 Remove the main drive assembly (5 of 14)

6. Unhook the cable (callout 12) from the cable guides (callout 13).

7. Remove the cable (callout 14) from the cable guide (callout 15).

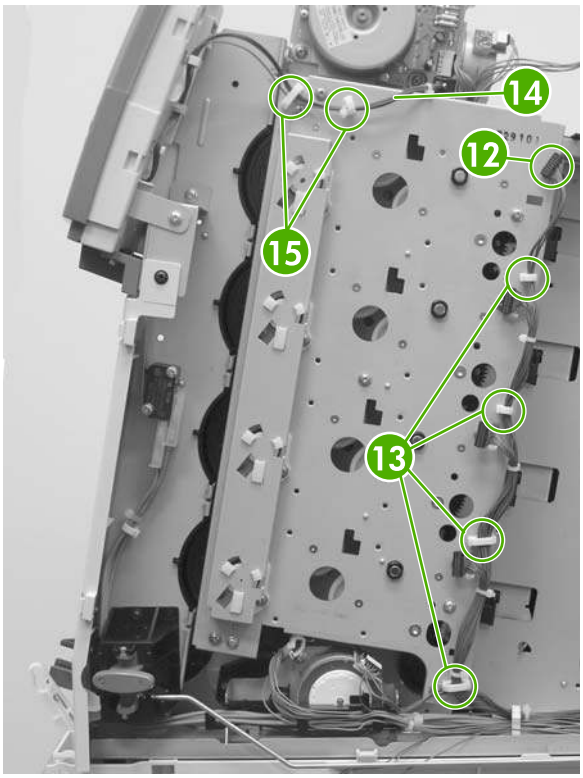


Figure 6-60 Remove the main drive assembly (6 of 14)

8. Remove the five screws (callout 16) and then remove the main drive assembly.

CAUTION Be careful to note the five screws that are called out and remove only those screws.

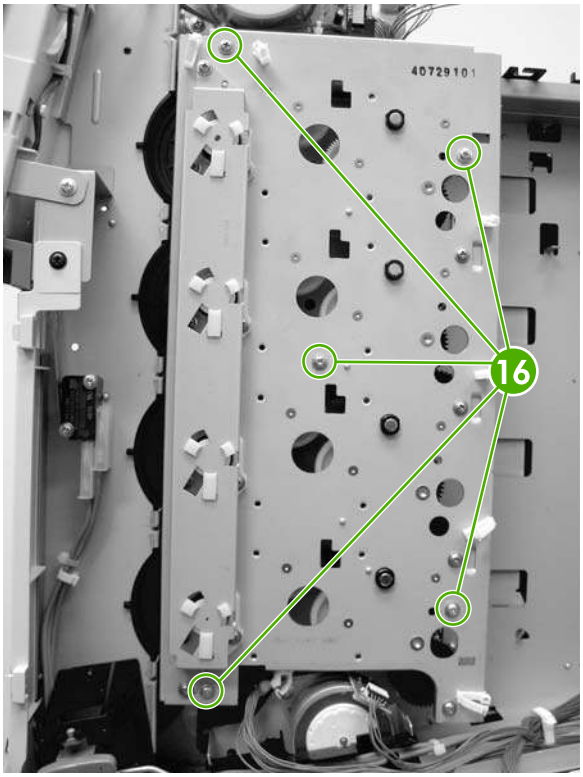


Figure 6-61 Remove the main drive assembly (7 of 14)

9. Disconnect the eight connectors (callout 17 and also shown in Figure 6-63 Remove the main drive assembly (9 of 14) on page 262) and unroute the cable (callout 18) from the cable guide (callout 19). Do not remove the black plastic covers under any circumstance. Then remove the main drive assembly.

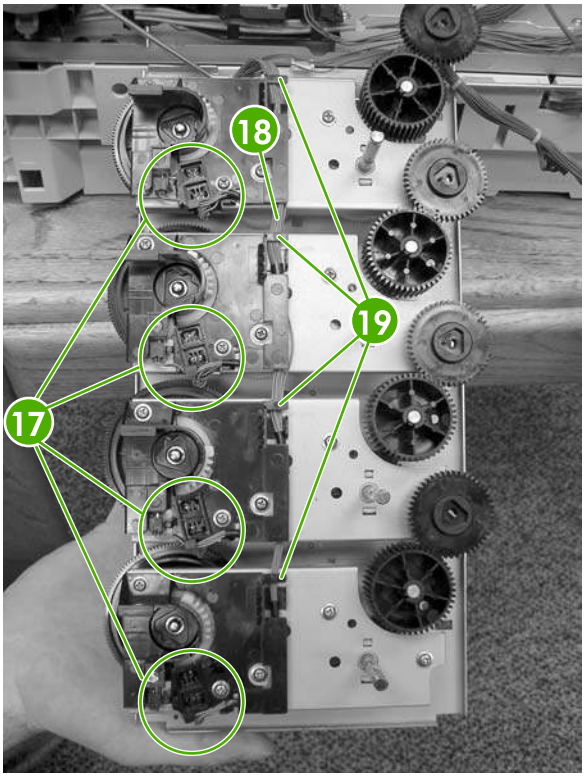


Figure 6-62 Remove the main drive assembly (8 of 14)

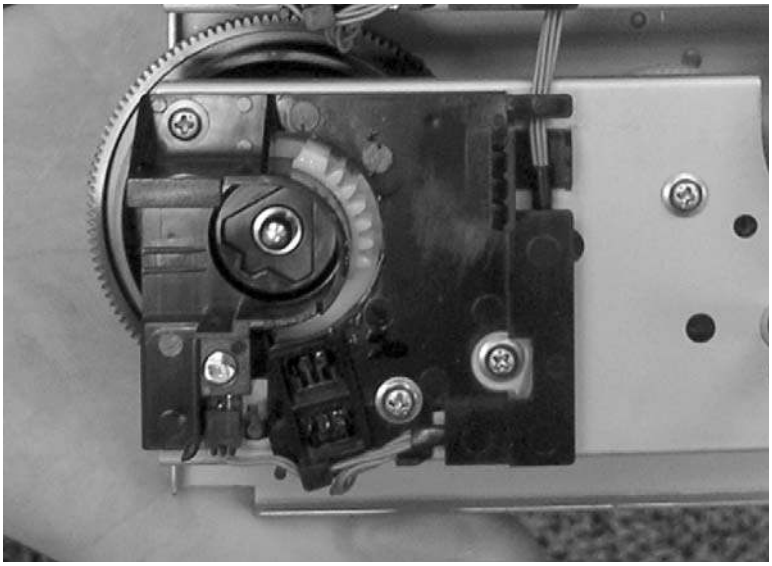


Figure 6-63 Remove the main drive assembly (9 of 14)

WARNING! Make sure to review the following reinstallation tips before continuing with the main drive assembly reinstallation procedure.

Reinstall main drive assembly

1. Re-route cable in cable guide.

NOTE When reconnecting the cable, start at the K (black) cartridge and route from there (callout 1).

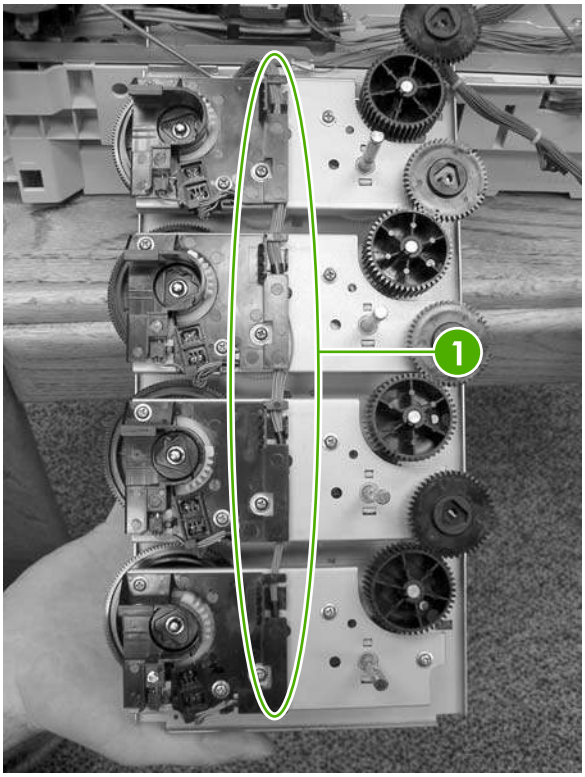


Figure 6-64 Reinstall the main drive assembly (1 of 16)

2. Re-connect the eight connectors. There are two connectors for each cartridge (callout 2). Begin with the black (K) connectors and then connect the magenta (M), Cyan (C), and Yellow (Y) connectors.

CAUTION Be very careful not to dislodge sensors when reconnecting cables.

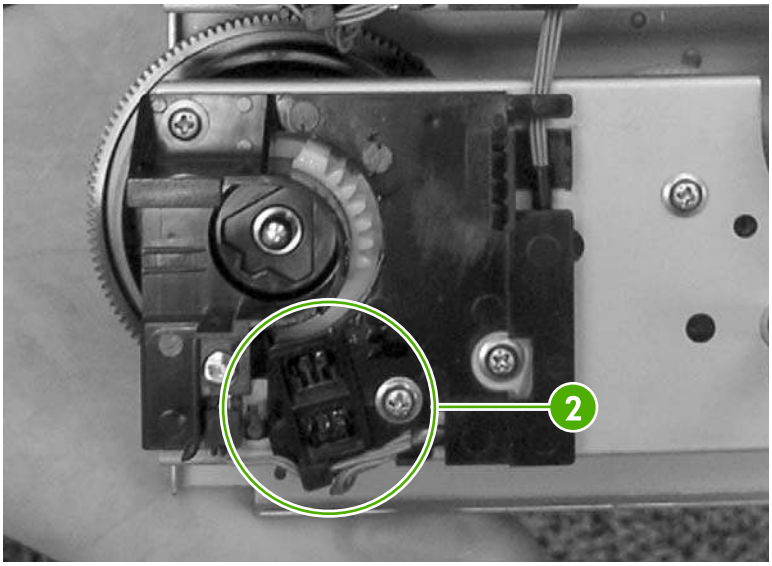


Figure 6-65 Reinstall the main drive assembly (2 of 16)

3. Rotate the four white gears as shown below.

NOTE IMPORTANT: The white gears should be rotated clockwise until they stop at 6 o'clock position, then rotated slightly counterclockwise about 2 mm until you feel resistance. If this is not done correctly, the cartridge couplings will not engage properly (won't extend into the cartridge atrium to connect with the cartridges) and will require removal and reinstallation of the main drive assembly.

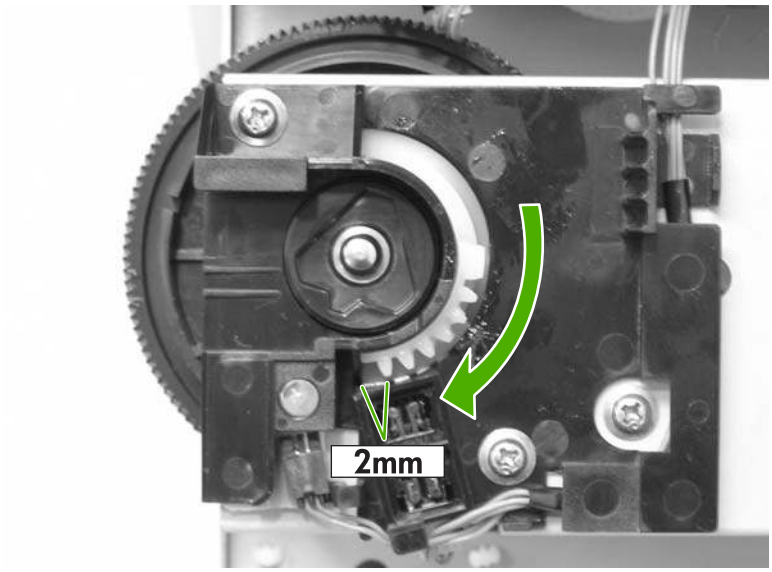


Figure 6-66 Reinstall the main drive assembly (3 of 16)

4. Align the four positioning dent marks (callout 3) of the developing clutch gears (callout 4) and the developing alienation gear (callout 5). Do this for all four gear pairs.

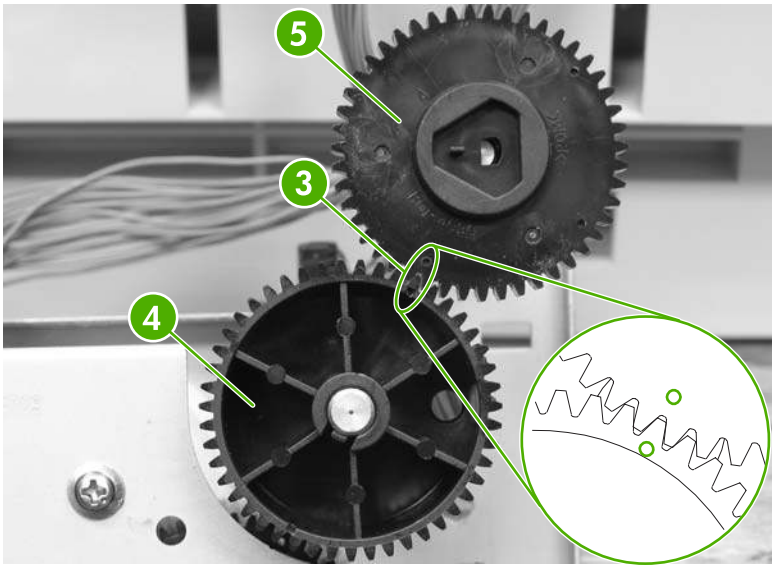


Figure 6-67 Reinstall the main drive assembly (4 of 16)

5. On the printer chassis, align all four developing clutch gears (callout 6) with the corresponding arrows stamped on the sheet metal.

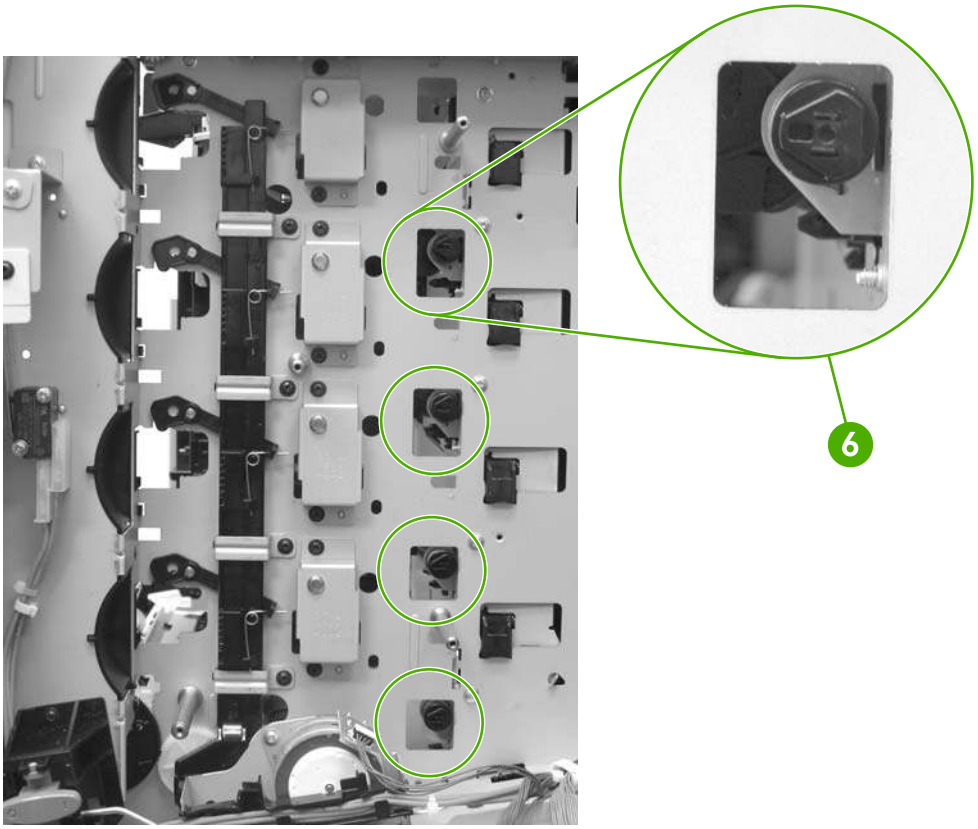


Figure 6-68 Reinstall the main drive assembly (5 of 16)

6. Make sure that the cartridge interlock rod is in the up position (callout 7). The guide is located just above and to the right of the ETB guide.

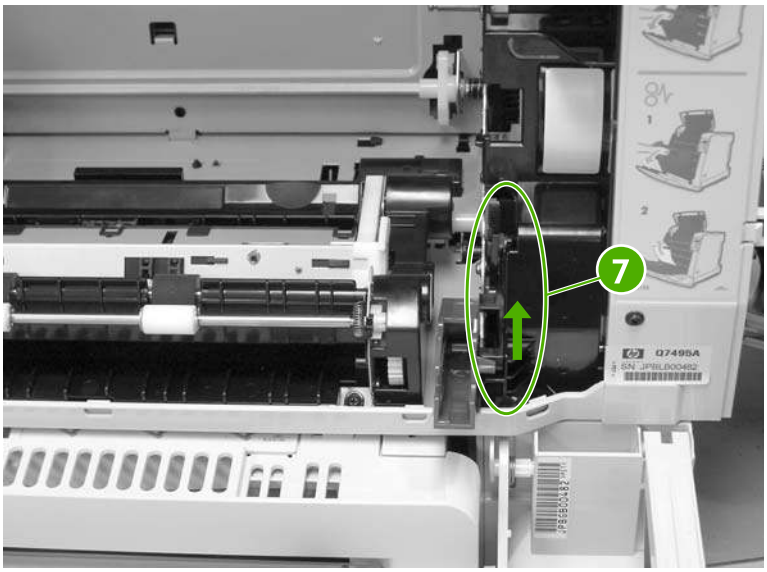


Figure 6-69 Reinstall the main drive assembly (6 of 16)

7. Mount the main drive assembly on the printer chassis

NOTE IMPORTANT: Before reinstalling five screws, verify that the metal shafts / posts are perfectly in line and seated with screw holes on main drive assembly sheet metal. The ends of each shaft have a “shoulder” on them that should be flush with the main drive assembly sheet metal before screwing.

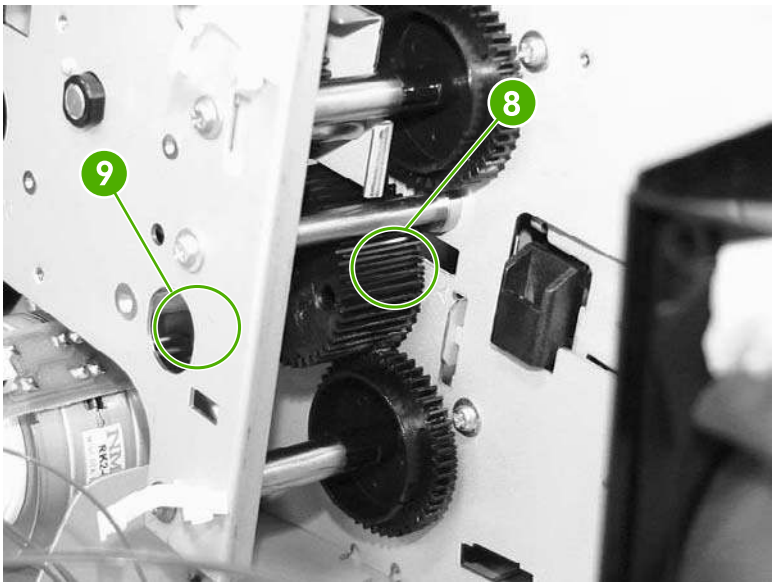


Figure 6-70 Reinstall the main drive assembly (7 of 16)

8. Reinstall five screws (callout 10) being careful to keep shafts seated properly on sheet metal

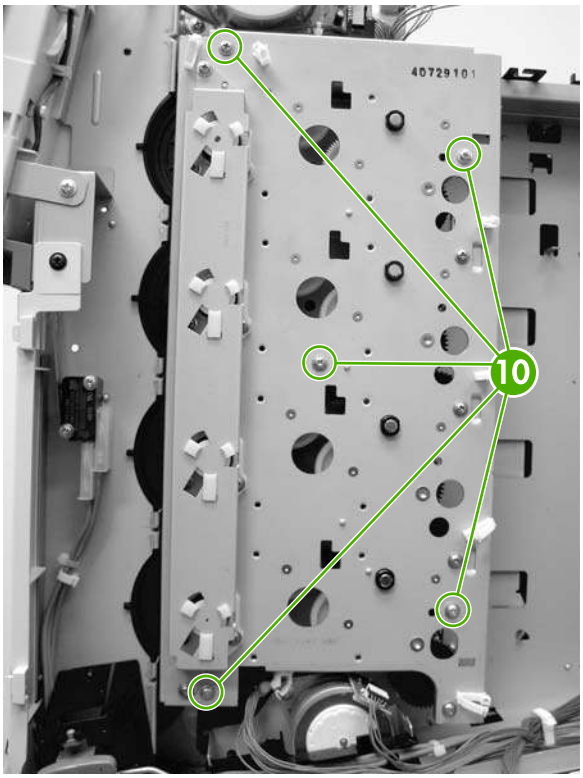


Figure 6-71 Reinstall the main drive assembly (8 of 16)

9. Reinstall disengaging drive assembly.

10. Verify the following before proceeding further:

    - Make sure the positioning marks (callout 11) of the developing alienation gears are aligned with the arrow marks (callout 12) stamped into the printer sheet metal. To do this, peer through the holes in the main drive assembly at the developing disengaging gears. There is a little dimple toward the outer edge of the gear which needs to be aligned with the arrow stamped in the sheet metal. Do this for all four gears.

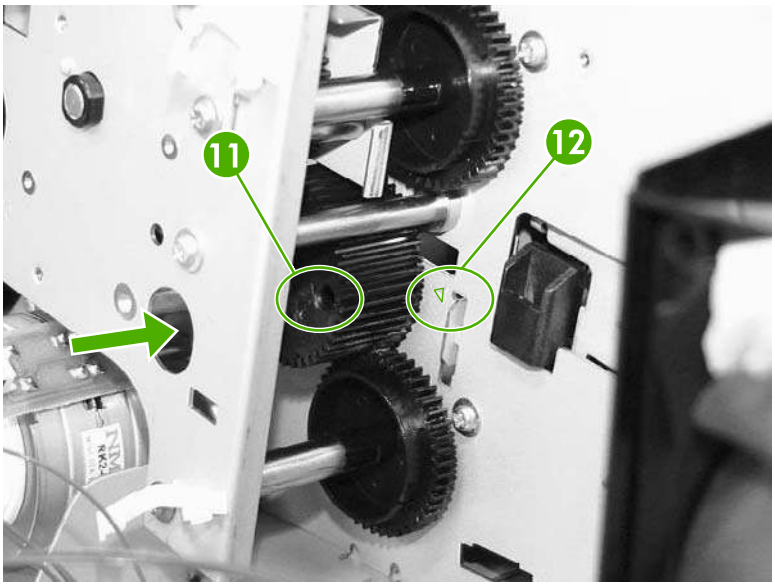


Figure 6-72 Reinstall the main drive assembly (9 of 16)

- Look inside the cartridge atrium and verify that all of the cartridge couplers are fully extended through from the main drive assembly into the cartridge atrium. If not all couplers are fully extended into the cartridge atrium, go back to step 3 of “reinstalling the main drive assembly” and try again.

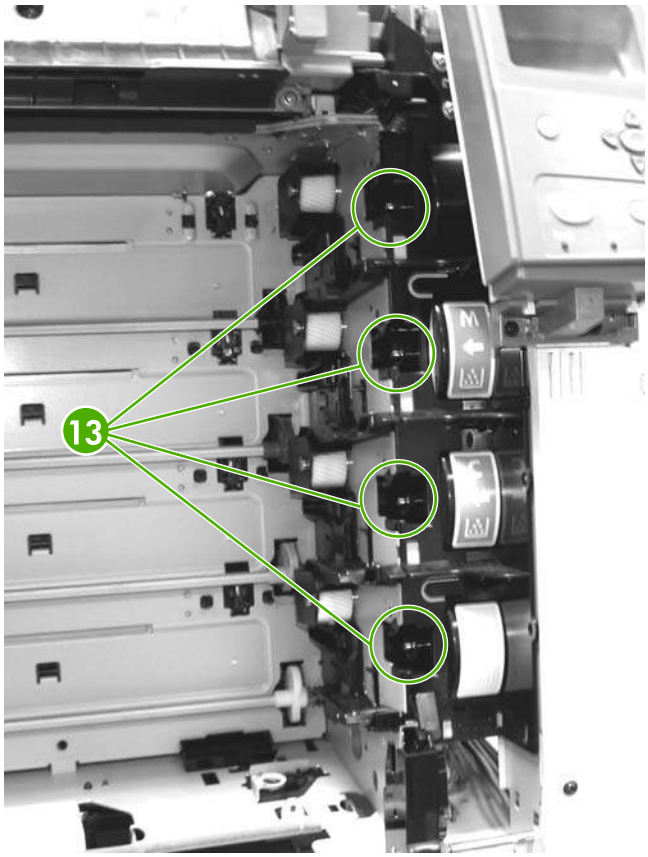


Figure 6-73 Reinstall the main drive assembly (10 of 16)

- Cycle the cartridge interlock lever down and up to verify that all four cartridge couplers move in/out (engage / disengage) properly. If not all couplers move in/out of the cartridge atrium when cycling the interlock lever, the white gear shown in step 3 is not properly aligned with corresponding gear. Go back to step 3 of the Reinstalling the main drive assembly section and try again.

NOTE The interlock lever is the black plastic piece to right of the right purple ETB guide, and looks like half a gear when flipped down and a lever when flipped up.

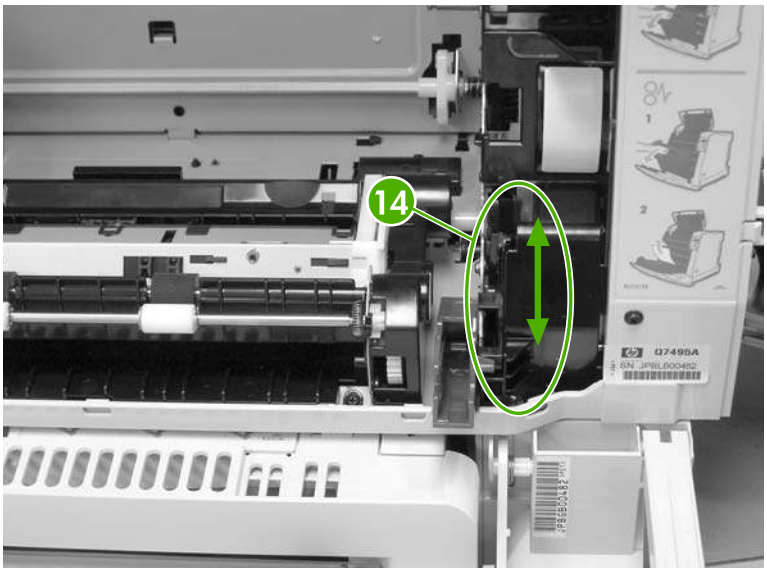


Figure 6-74 Reinstall the main drive assembly (11 of 16)

- Verify that the alienation bar couplers are meshed with corresponding gears on the main drive assembly.

11. Reinstall the bushings (callout 15).

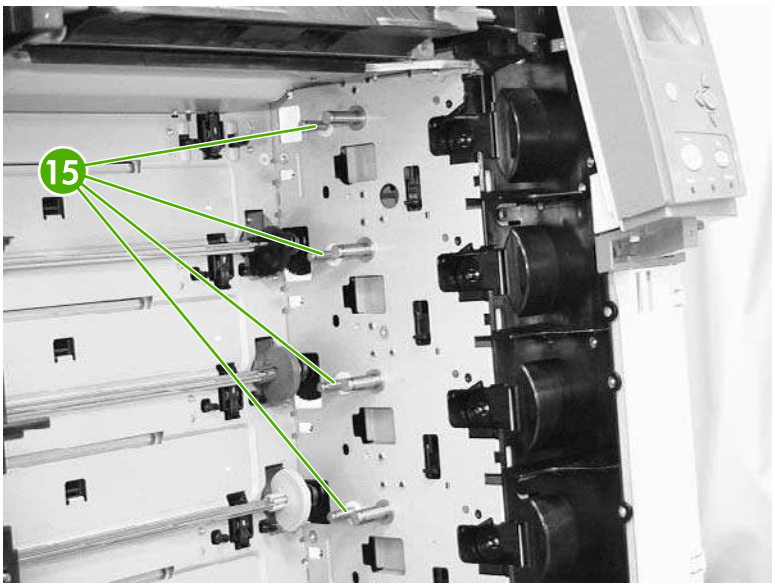


Figure 6-75 Reinstall the main drive assembly (12 of 16)

12. Install the four back gears (callout 16). Then install the four front gears (callout 17).

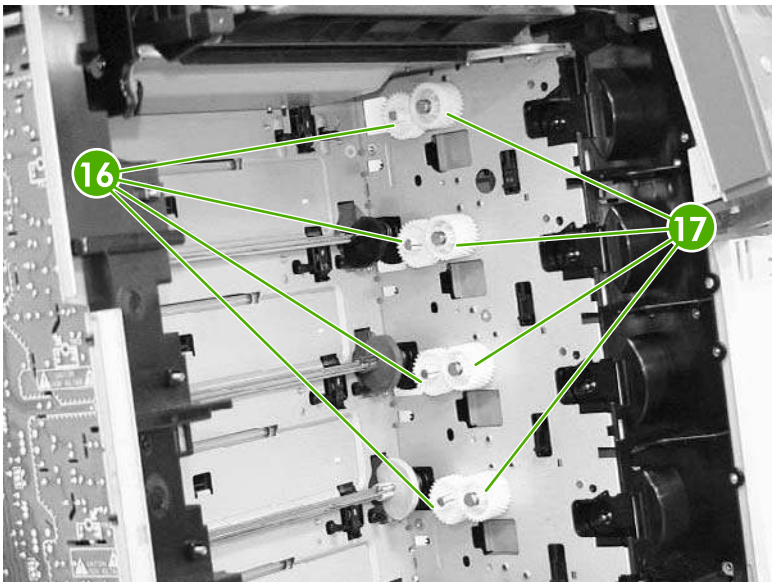


Figure 6-76 Reinstall the main drive assembly (13 of 16)

13. Reinstall the cartridge guides, beginning with the lower cartridge guide. The upper cartridge guide (callout 18) has two projections (callout 19) while the lower cartridge guide (callout 20) has only one projection (callout 21).

CAUTION Be careful reassembling the upper and lower cartridge guides. They are similar to each other and if assembled incorrectly, the ETB will not position correctly.

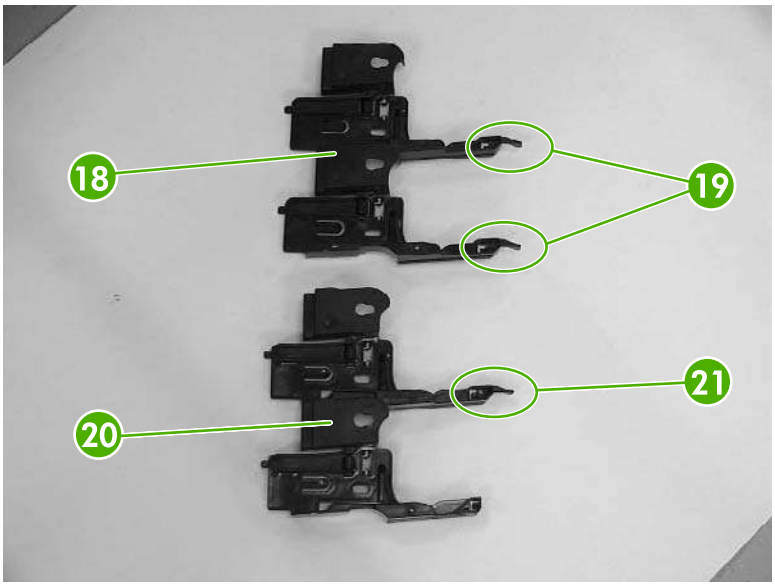


Figure 6-77 Reinstall the main drive assembly (14 of 16)

NOTE To align a cartridge guide, insert the rear tabs of the guide into the sheet metal followed by the front tabs. When the gear shafts feed through both of the horizontal slots on the guide, slide the cartridge guide towards the rear of the printer until the two retaining tabs click into position.

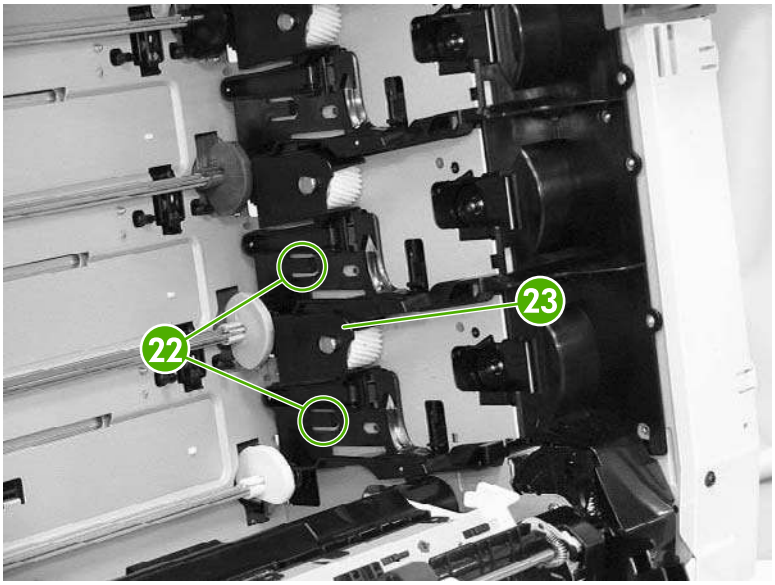


Figure 6-78 Reinstall the main drive assembly (15 of 16)

14. Reinstall drum drive motors.



NOTE When reinstalling drum drive motors, be certain to reinstall each drum drive motor with the corresponding color before removing. An easy way to guarantee this is to mark each motor's color with pen or marker on the sticker.

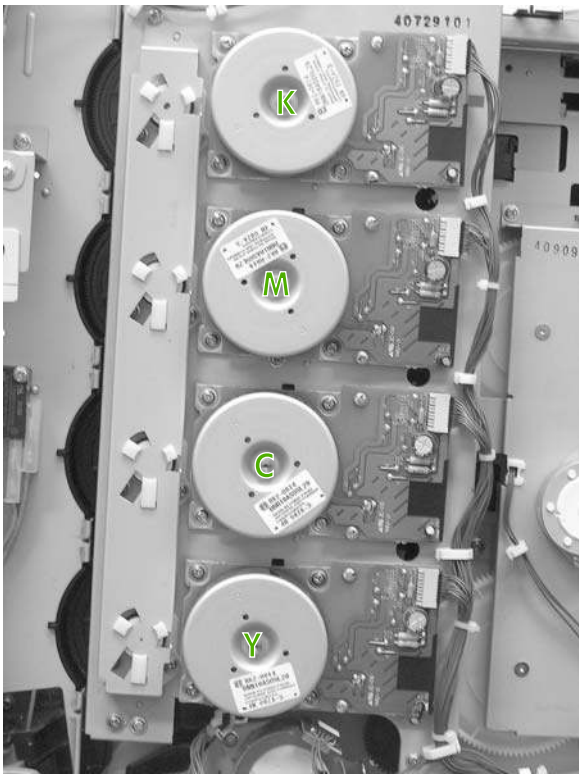


Figure 6-79 Reinstall the main drive assembly (16 of 16)

15. Install remaining components.

CAUTION Be sure to reinstall the disengaging drive assembly before putting the gears and the cartridge guides back together inside the printer.

Pickup motor assembly

1. Remove the following assemblies:
   - Paper tray (Tray 2). See Paper tray (Tray 2) on page 231.
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.
   - Power supply fan (Fan 4). See Power supply fan/shroud (Fan 4) on page 299.
   - Disengaging drive assembly. See Disengaging drive assembly on page 254.

- Main drive assembly. (Drum drive motors also need to be removed.) See Remove main drive assembly on page 256.
- Paper feed assembly. See Paper feed assembly on page 283.

2. Remove the gear and spacer (callout 1) and the bushing (callout 2).

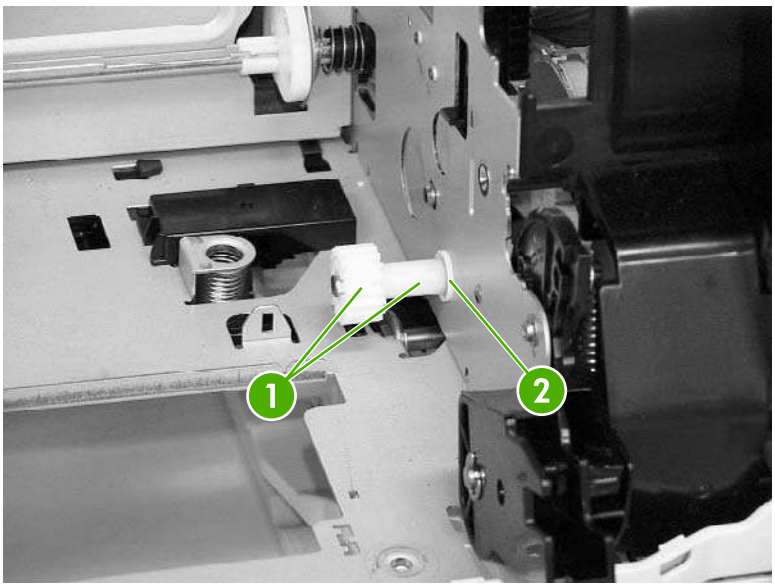


Figure 6-80 Remove the pickup motor assembly (1 of 3)

3. Disconnect the cable from the connector (callout 3).
4. Release the cable from the cable guide (callout 4).

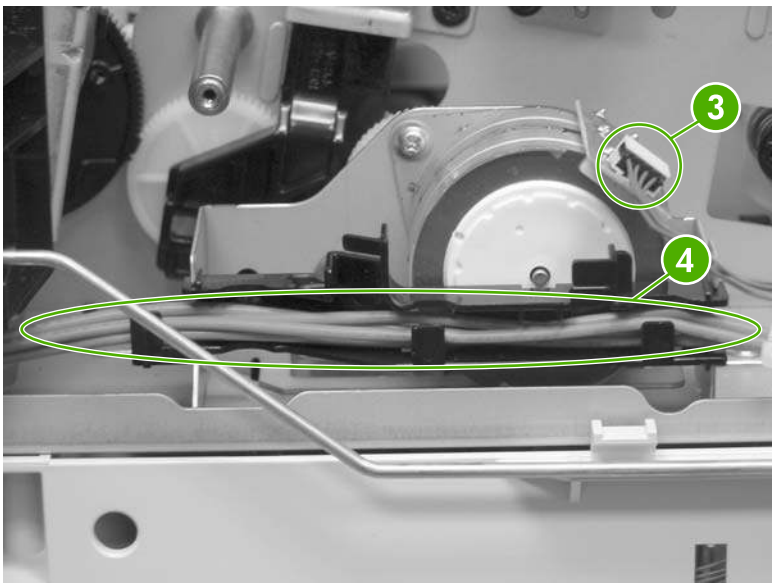


Figure 6-81 Remove the pickup motor assembly (2 of 3)

5. Remove the two screws (callout 5) and remove the paper pickup motor assembly.

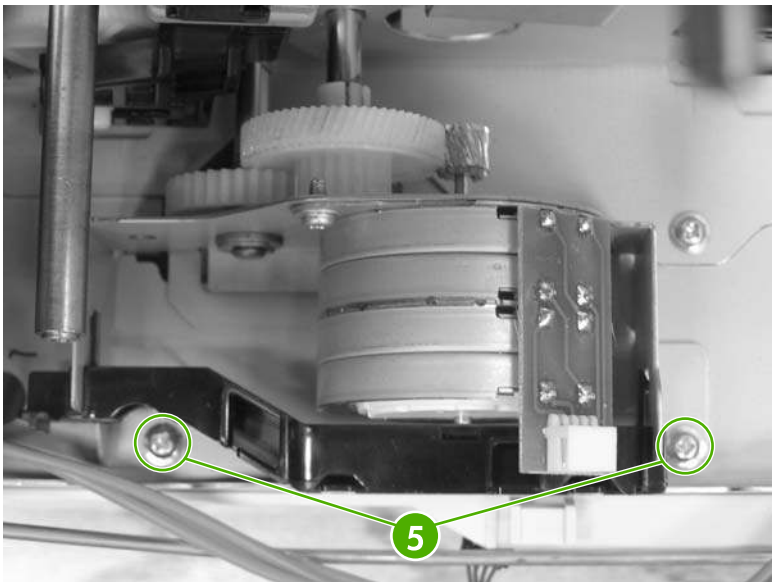


Figure 6-82 Remove the pickup motor assembly (3 of 3)

Lifter drive assembly

1. Remove the following assemblies:
   - Paper tray (Tray 2). See Paper tray (Tray 2) on page 231.
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.

2. Unhook the spring (callout 1) and gently release it.

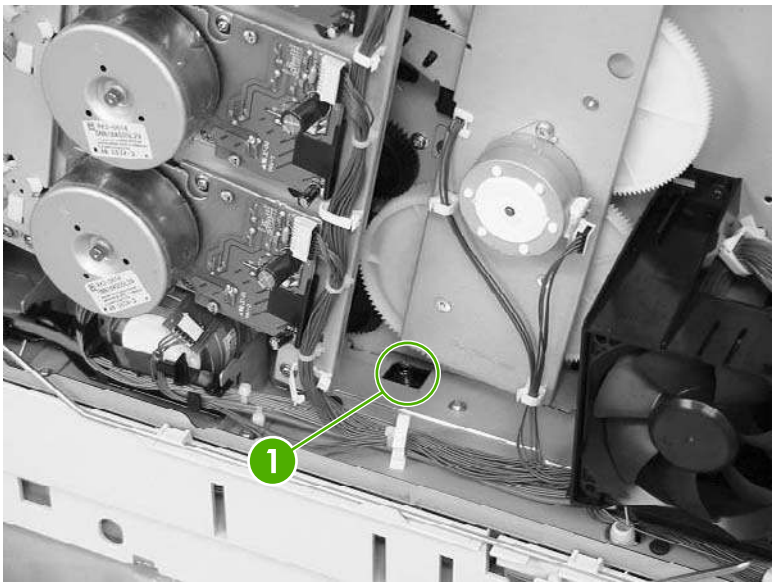


Figure 6-83 Remove the lifter drive assembly (1 of 4)

3. Close the front cover and the multipurpose tray.
4. Remove the three self-tapping screws (callout 2) and the two machine screws (callout 3).

> **CAUTION** Be cautious of the Tray 2 paper presence flag when removing the screws.

5. Remove the right paper tray guide (callout 4).

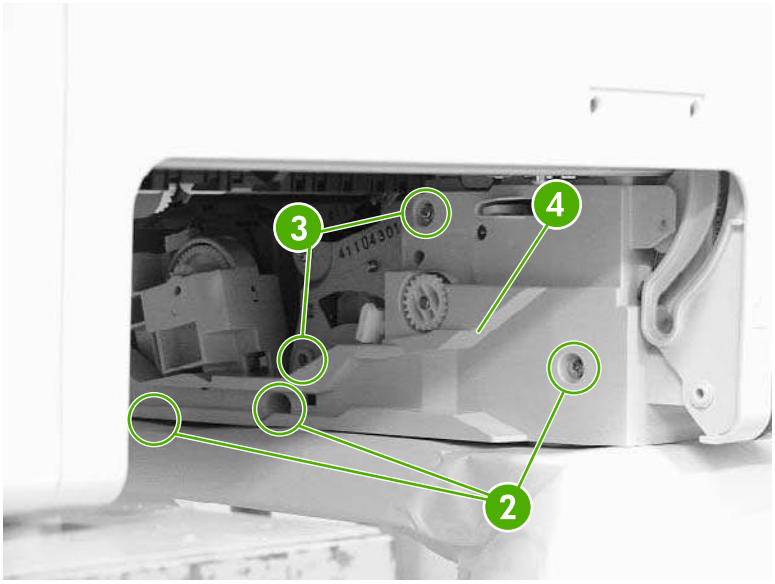


Figure 6-84 Remove the lifter drive assembly (2 of 4)

6. Slightly move the lifter drive assembly (callout 5) inward. Be cautious of the spring.

7. Remove the connector (callout 6) and remove the lifter drive assembly.

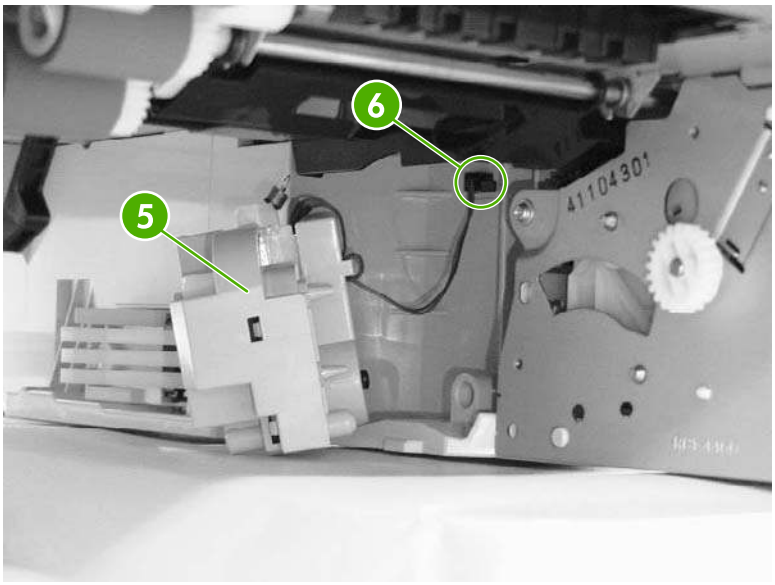


Figure 6-85 Remove the lifter drive assembly (3 of 4)

Reinstallation tip

When replacing the new assembly, place a piece of tape around the spring and the plastic retainer. This holds the spring in place when reconnecting. Make sure to put the lifter drive assembly back into place with the spring on before putting the cover back in place.

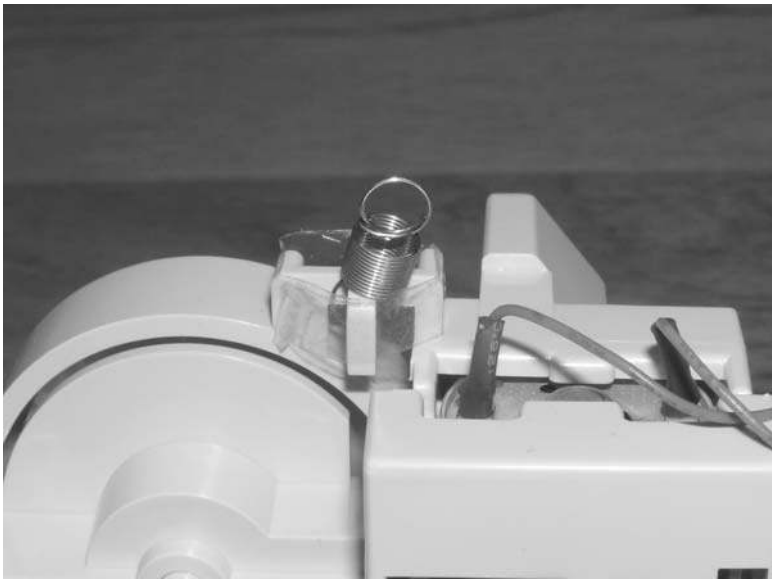


Figure 6-86 Remove the lifter drive assembly (4 of 4)

Delivery assembly

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Power supply fan (Fan 4). See Power supply fan/shroud (Fan 4) on page 299.
   - Delivery fan (Fan 3). See Delivery fan/shroud (Fan 3) on page 300.
   - Fuser. See Replacing the fuser on page 111.
   - Control panel. See Control panel on page 250.
2. Remove the three screws (callout 1).
3. Remove the fan duct (callout 2).

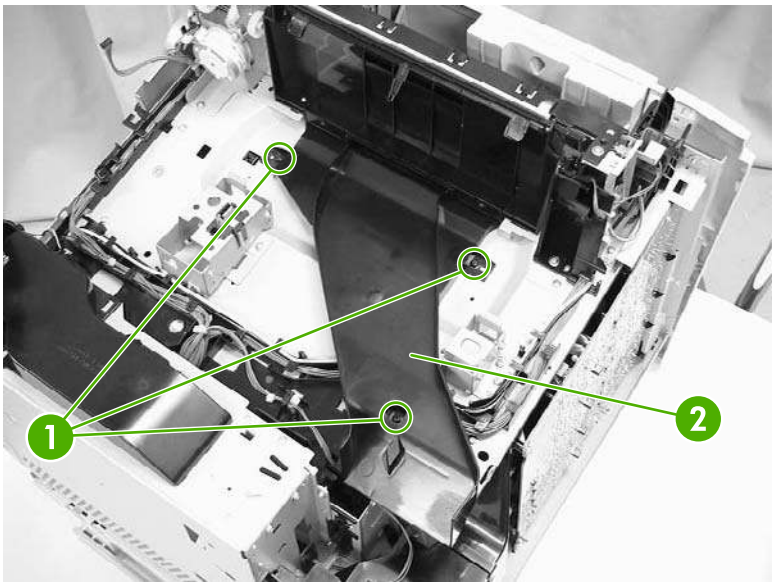


Figure 6-87 Remove the delivery assembly (1 of 9)

4. Disconnect the connector (callout 3).

5. Remove the cable (callout 4) from the cable guides (callout 5).

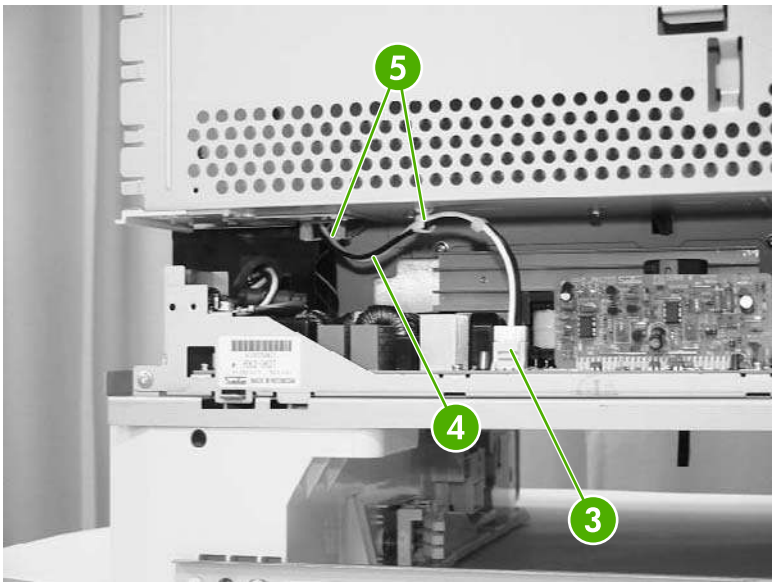


Figure 6-88 Remove the delivery assembly (2 of 9)

6. Remove the black and white cable (callout 6) from the cable guides (callout 7).

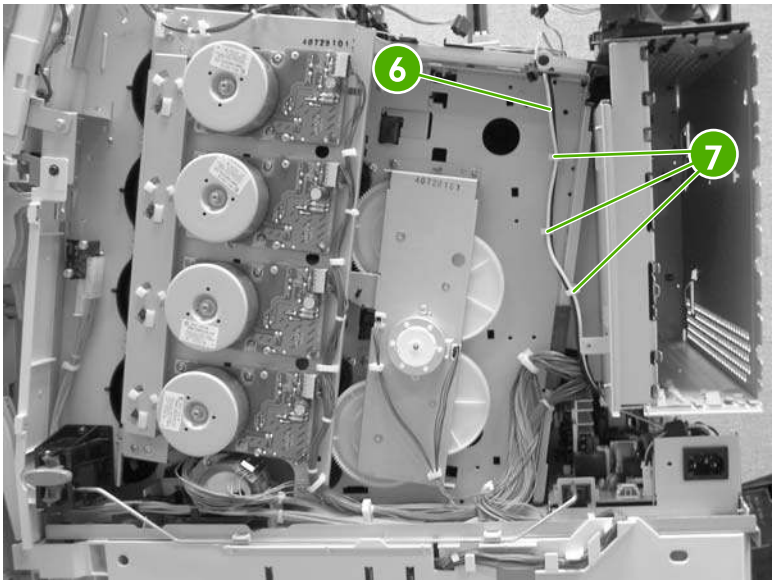


Figure 6-89 Remove the delivery assembly (3 of 9)

7. Remove the black and white cable (callout 8) from the cable guides (callout 9).

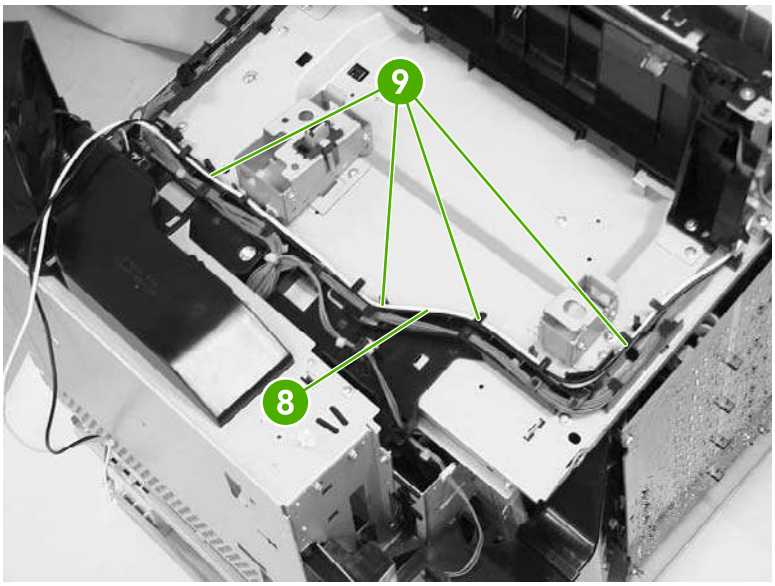


Figure 6-90 Remove the delivery assembly (4 of 9)

8. Remove the cable (callout 10) from the cable guide (callout 11), and disconnect the five connectors (callout 12).

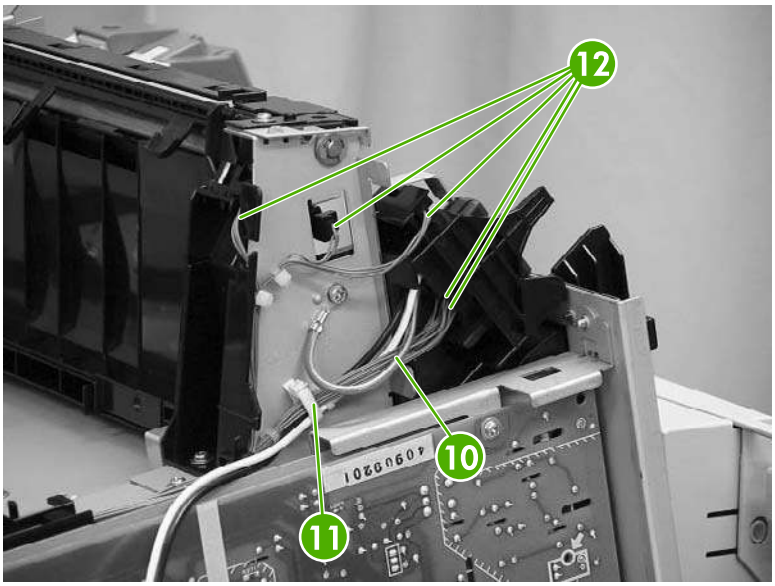


Figure 6-91 Remove the delivery assembly (5 of 9)

NOTE When reconnecting the three connectors that are tied together, make sure to connect the longest cable to the front connector and the shortest cable to the middle connector.

9. Disconnect the two connectors (callout 13) and remove the screw (callout 14).

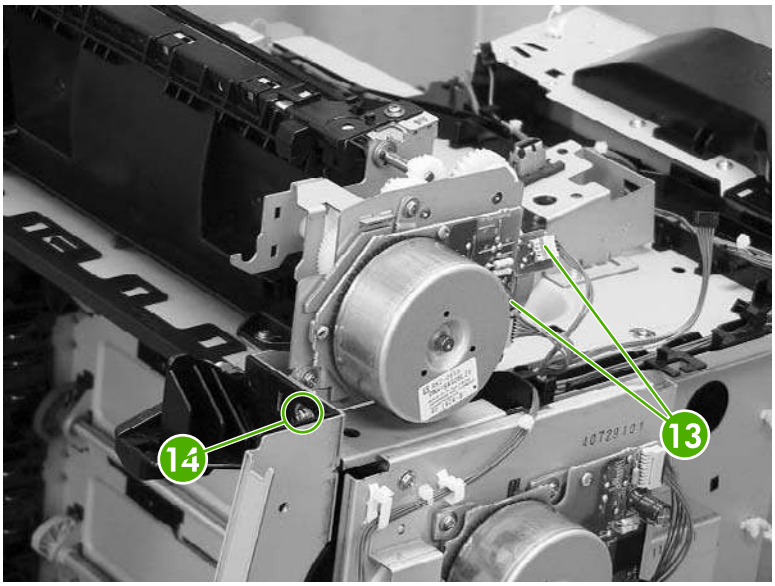


Figure 6-92 Remove the delivery assembly (6 of 9)

10. Remove the two screws (callout 15).

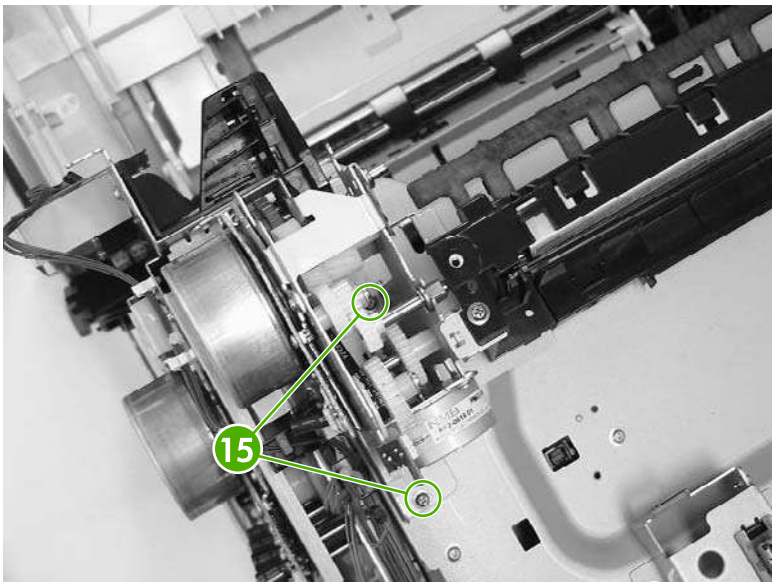


Figure 6-93 Remove the delivery assembly (7 of 9)

11. Remove the two screws (callout 16).

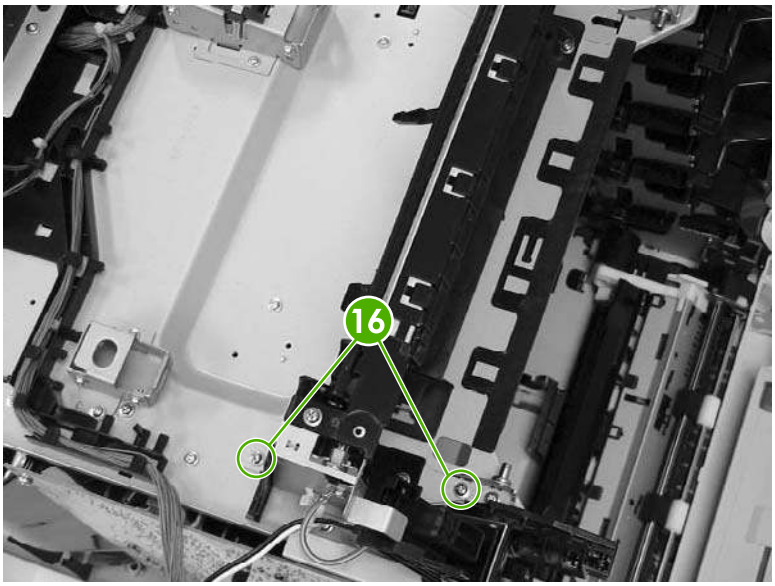


Figure 6-94 Remove the delivery assembly (8 of 9)

12. Remove the delivery assembly (callout 17) and the fuser drive assembly together. See Fuser drive assembly on page 286 to separate the two assemblies.

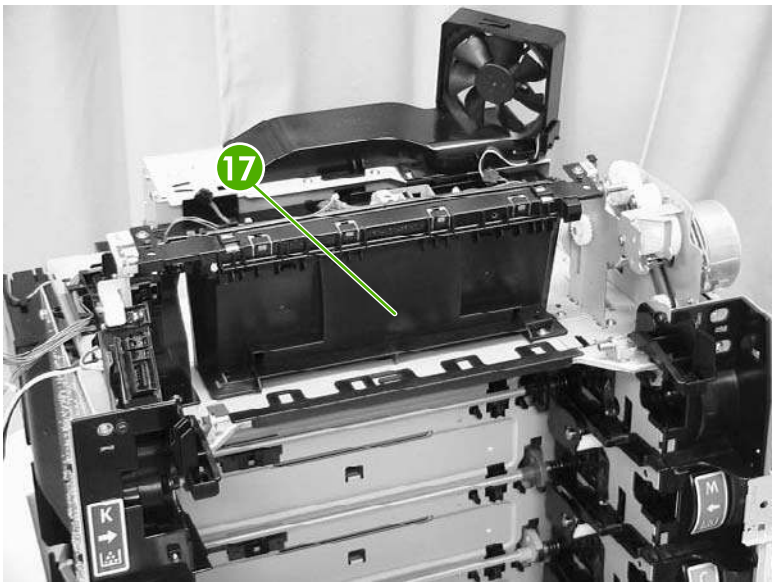


Figure 6-95 Remove the delivery assembly (9 of 9)

Paper feed assembly

CAUTION Do not disassemble the paper feed assembly under any circumstance. There is a media sensor built into the unit that is precisely adjusted at the factory. Field adjustment is not permitted. Replace the paper feed assembly only as an entire unit.

1. Open the top and front covers and remove the ETB and cartridges.

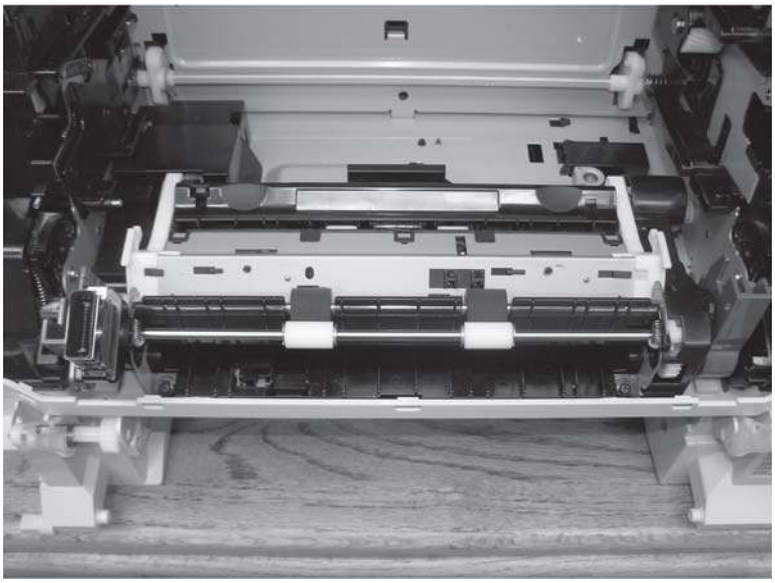


Figure 6-96 Remove the paper feed assembly (1 of 6)

2. Unhook the tab (callout 1) by pushing outward and remove the cable cover (callout 2). The cable cover is located on the inside left side of the printer.

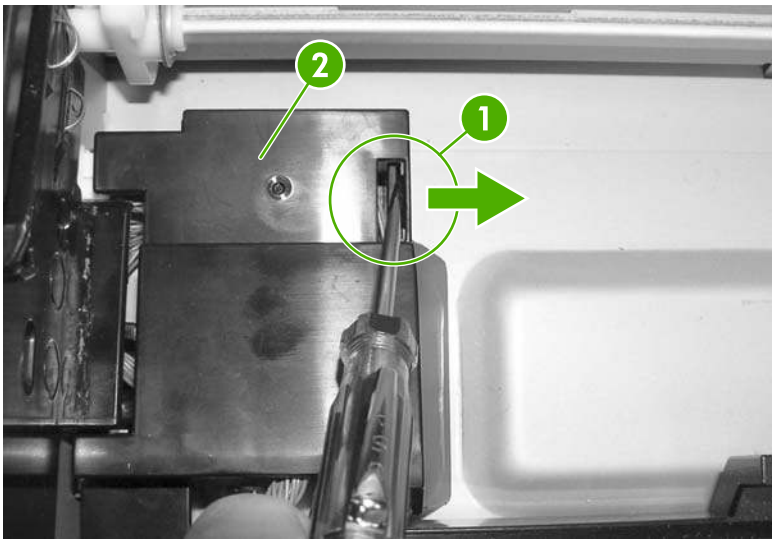


Figure 6-97 Remove the paper feed assembly (2 of 6)

3. Disconnect the three connectors (callout 3). Make sure to unhook the tabs prior to releasing the connectors.

> **CAUTION** When disconnecting the connectors, make sure not to dislodge the paper feed assembly in any way.

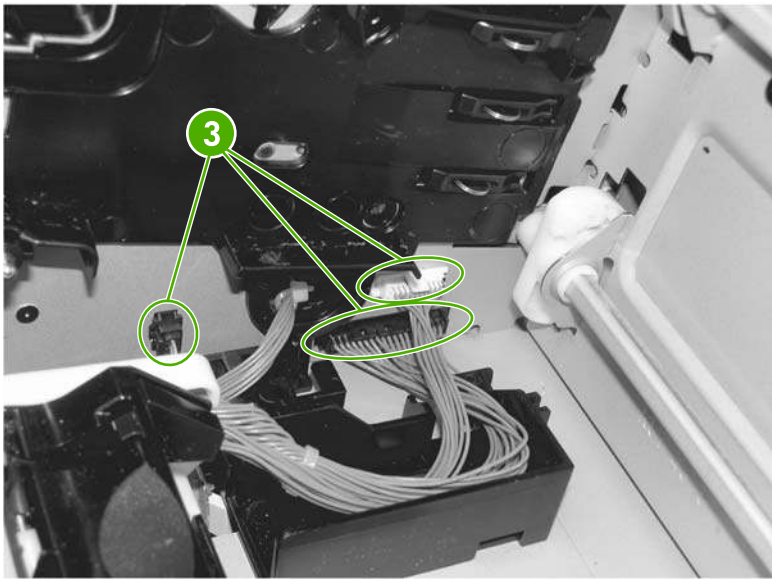


Figure 6-98 Remove the paper feed assembly (3 of 6)

4. Remove the two screws (callout 4) and lift the paper feed assembly up and out of the printer.

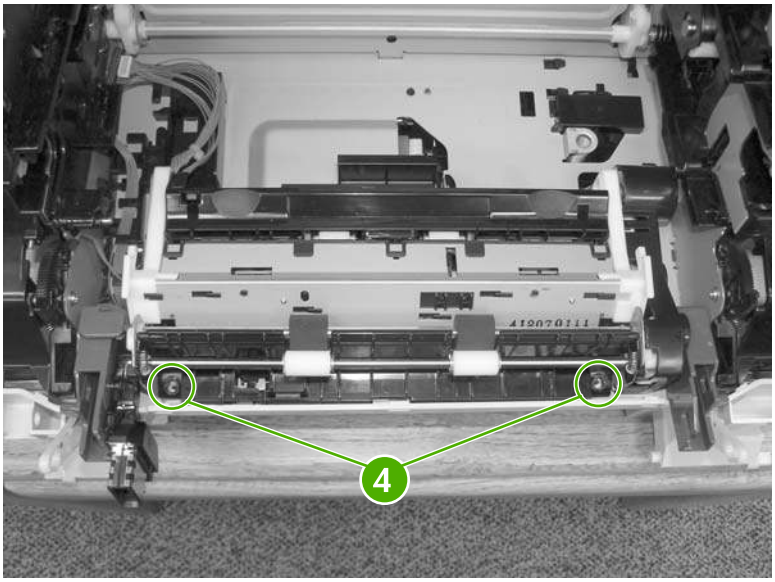


Figure 6-99 Remove the paper feed assembly (4 of 6)

Reinstallation tip

When reinstalling the paper feed assembly, make sure that the hooks are in the guides (callout 5).

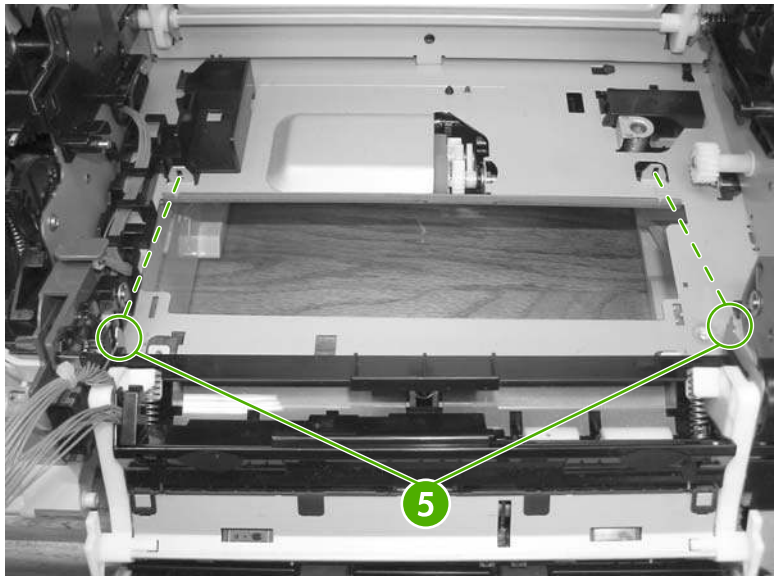


Figure 6-100 Remove the paper feed assembly (5 of 6)

CAUTION Do not replace the paper feed assembly without resetting the value for the media sensor. This value is on the sticker located on the new paper feed assembly. An example is shown in callout 6.

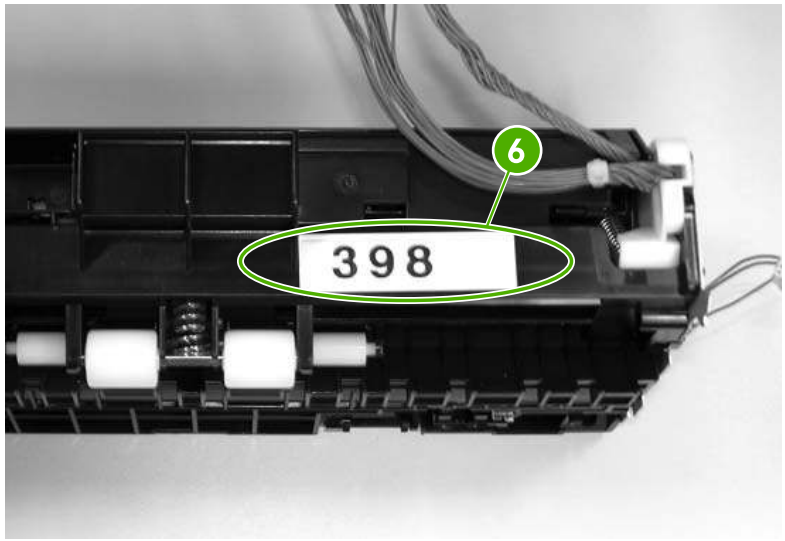


Figure 6-101 Remove the paper feed assembly (6 of 6)

Use the following steps to reset the media sensor value from the control panel.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **SERVICE**.
3. Press ✔ to select **SERVICE**.
4. Enter the service code.
5. Press ▼ to highlight **MEDIA SENSOR VALUE**.

6. Press ✔ to select **MEDIA SENSOR VALUE**.
7. Enter the new media sensor value.
8. Press ✔ to select the new value entered.

Fuser drive assembly

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Power supply fan (Fan 4). See Power supply fan/shroud (Fan 4) on page 299.
   - Fuser. See Replacing the fuser on page 111.
   - Delivery assembly. See Delivery assembly on page 278.
2. Remove the e-ring (callout 1).
3. Slide the bushing in the direction of the arrow (callout 2).
4. Remove the two screws (callout 3) and then remove the fuser drive assembly.

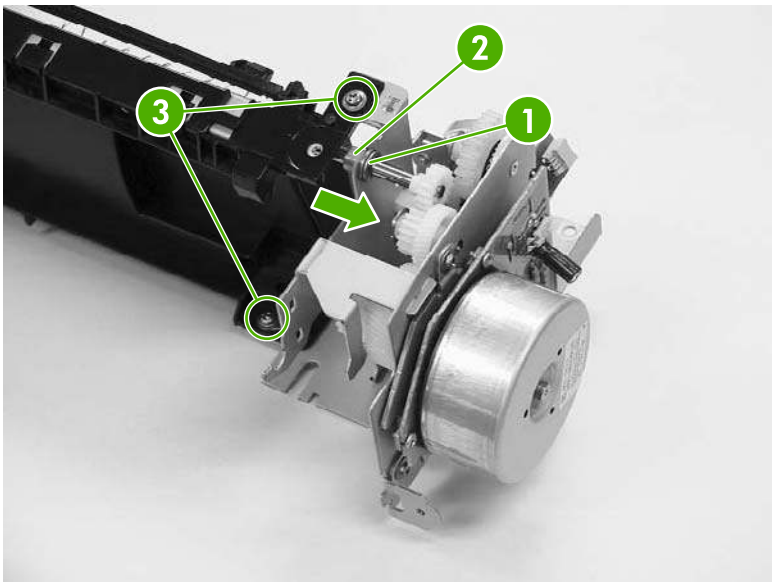


Figure 6-102 Remove the fuser drive assembly

Laser/scanner assembly

CAUTION The laser/scanner components cannot be adjusted in the field. Do not disassemble them.

1. Remove the following assemblies:
   - Paper tray (Tray 2). See Paper tray (Tray 2) on page 231.
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Left cover. See Left cover on page 247.
   - Right cover. See Right cover on page 245.
   - Rear cover. See Rear cover on page 249.
   - Delivery fan (Fan 3). See Delivery fan/shroud (Fan 3) on page 300.
   - Cartridge fan (Fan 2). See Cartridge fan/shroud (Fan 2) on page 302.
   - Power supply fan (Fan 4). See Power supply fan/shroud (Fan 4) on page 299.
   - Formatter. See Formatter on page 227.

     NOTE Make sure to take the printer off of all trays and place the printer on a level, sturdy surface before continuing.

   - Low-voltage power supply PCB. See Low-voltage power supply PCB on page 319.
   - DC controller PCB. See DC controller PCB on page 312.

2. Remove the two screws (callout 1) and then remove the metal plate (callout 2). Disconnect the cable from the two cable guides on the back of the metal plate.

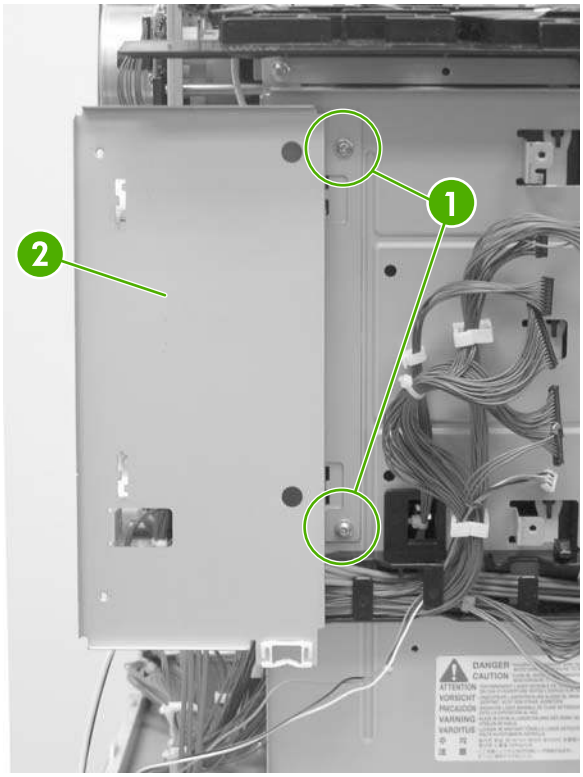


Figure 6-103 Remove the laser/scanner assembly (1 of 17)

3. Remove the two screws (callout 3) from the metal support bracket (callout 4), located on the middle left side of the top of the printer. Then remove the bracket.

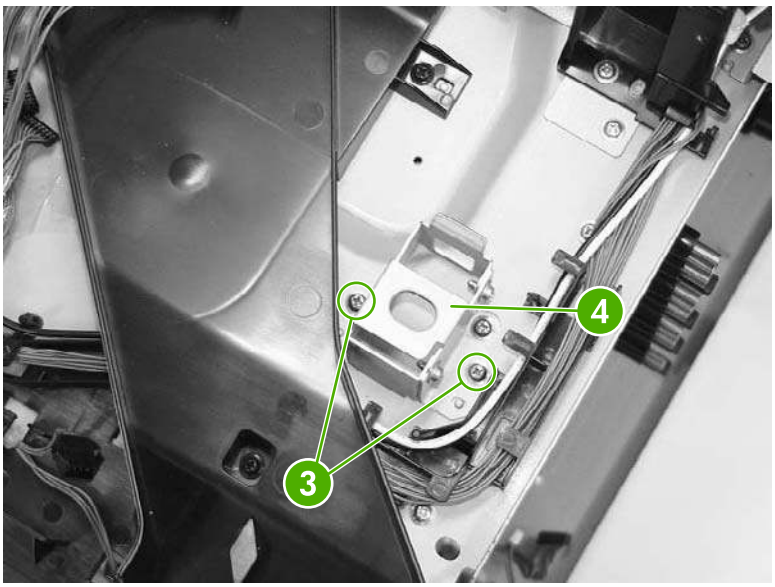


Figure 6-104 Remove the laser/scanner assembly (2 of 17)

4. Insert the metal support bracket (callout 5) vertically underneath where the triangle mark on the center of the rear frame as shown (callout 6).

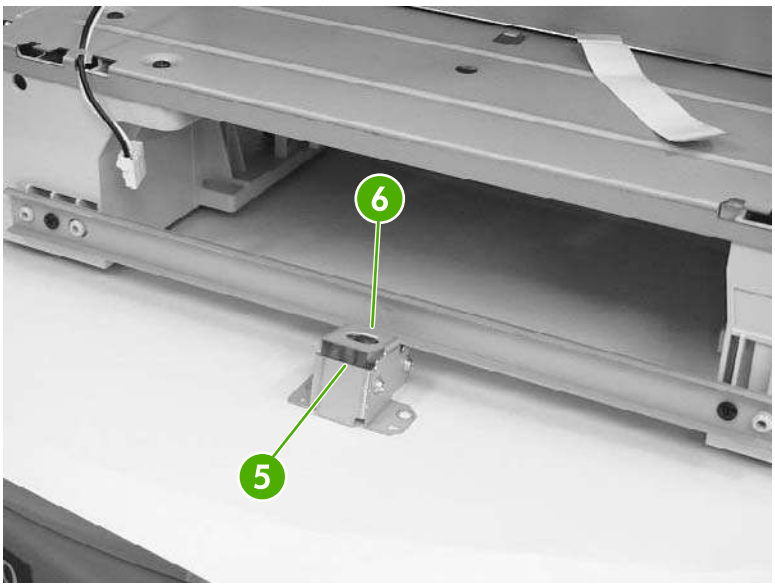


Figure 6-105 Remove the laser/scanner assembly (3 of 17)

NOTE Be sure to insert the metal support bracket at the bottom of the printer, otherwise the printer frame will be twisted, resulting in the loss of the flatness of the laser. Place the metal support bracket back to its original position after using.

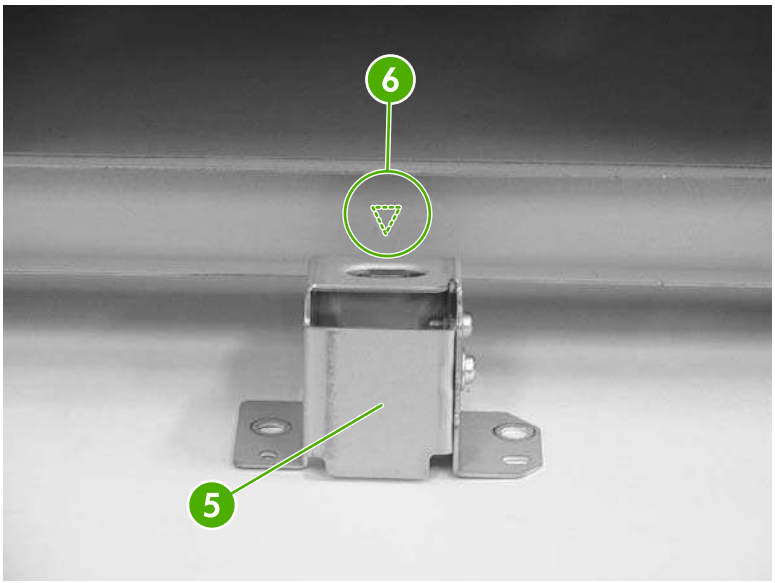


Figure 6-106 Remove the laser/scanner assembly (4 of 17)

5. Remove all cabling (callout 7) from the cable guides (callout 8).

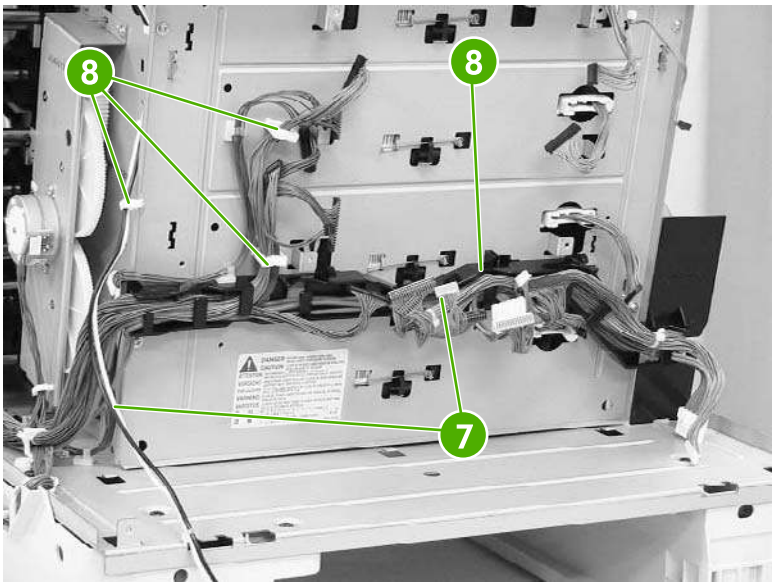


Figure 6-107 Remove the laser/scanner assembly (5 of 17)

6. Using needle-nose pliers, remove the four springs (callout 9).

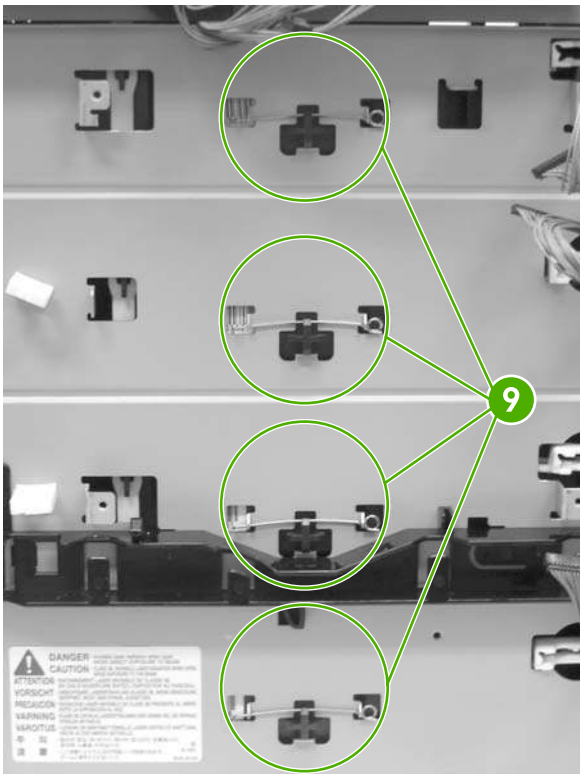


Figure 6-108 Remove the laser/scanner assembly (6 of 17)

7. Remove the four screws (callout 10) and remove the rear plate.

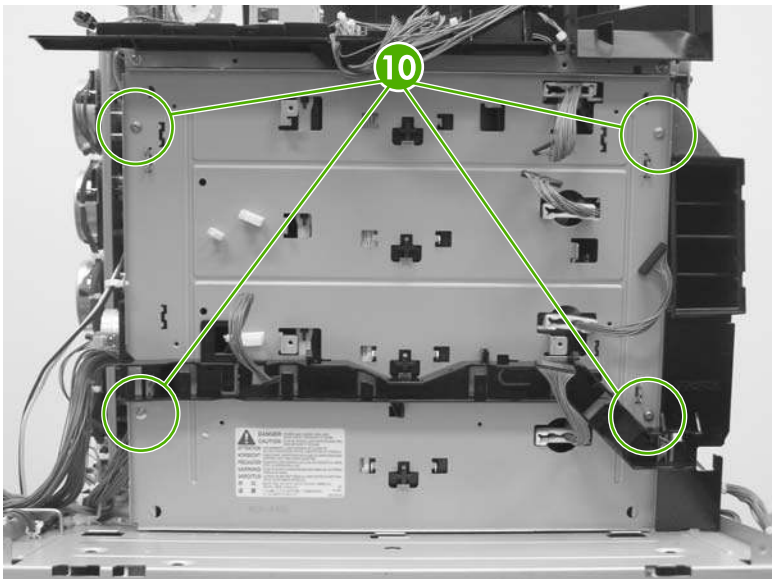


Figure 6-109 Remove the laser/scanner assembly (7 of 17)

8. Disconnect the cable from the cable guide (callout 11).

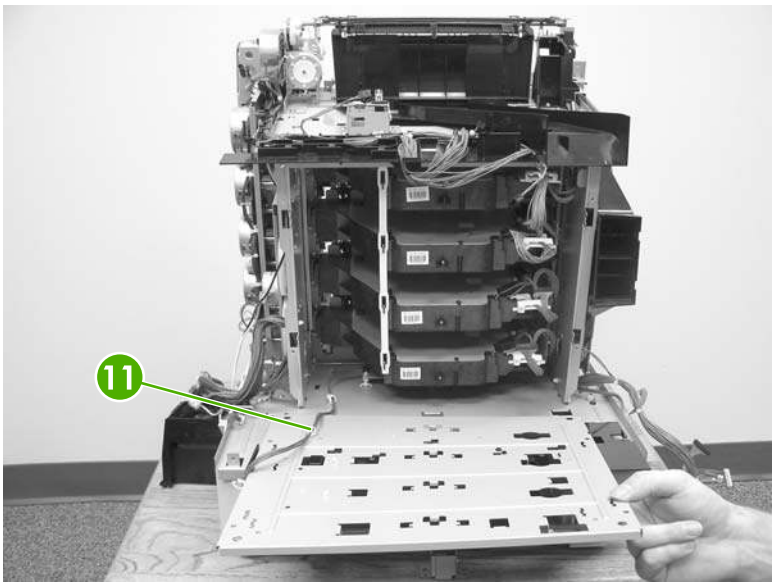


Figure 6-110 Remove the laser/scanner assembly (8 of 17)

NOTE When reconnecting, do not forget to reconnect the cable (as in callout 11) and route the laser/scanner cable through the rear plate.

9. Remove the two screws (callout 12).

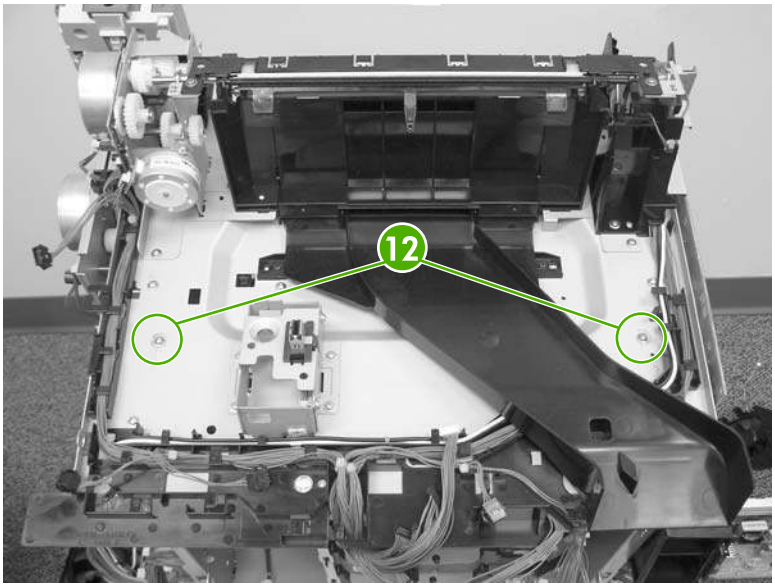


Figure 6-111 Remove the laser/scanner assembly (9 of 17)

10. Push the left laser scanner holder in toward the laser scanner.

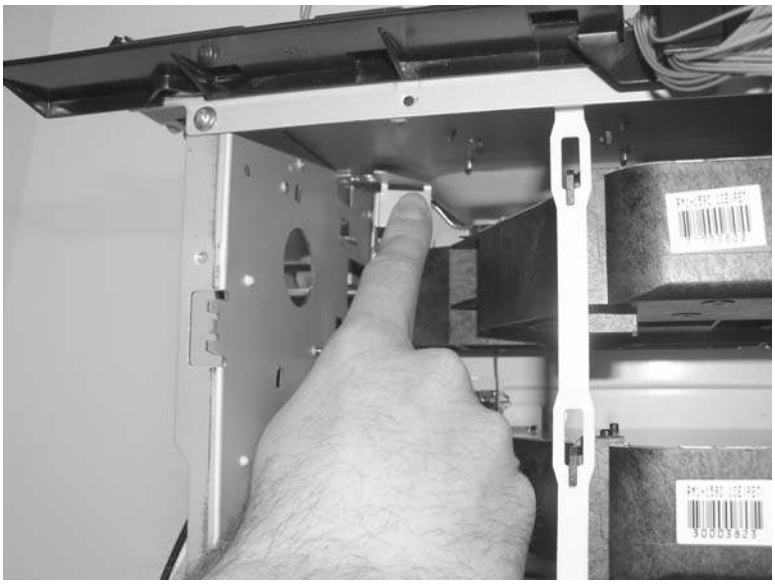


Figure 6-112 Remove the laser/scanner assembly (10 of 17)

11. Pull the left laser scanner holder down toward you and remove it.

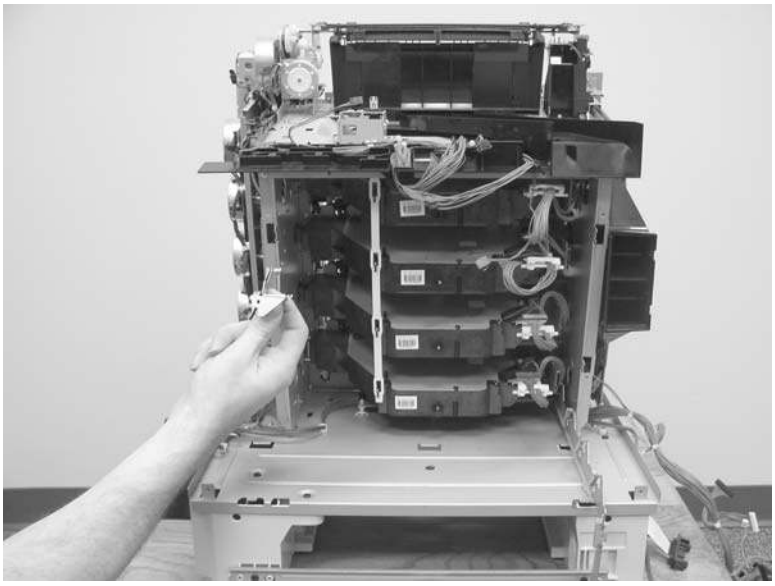


Figure 6-113 Remove the laser/scanner assembly (11 of 17)

12. Push the right laser scanner holder in toward the laser scanner.

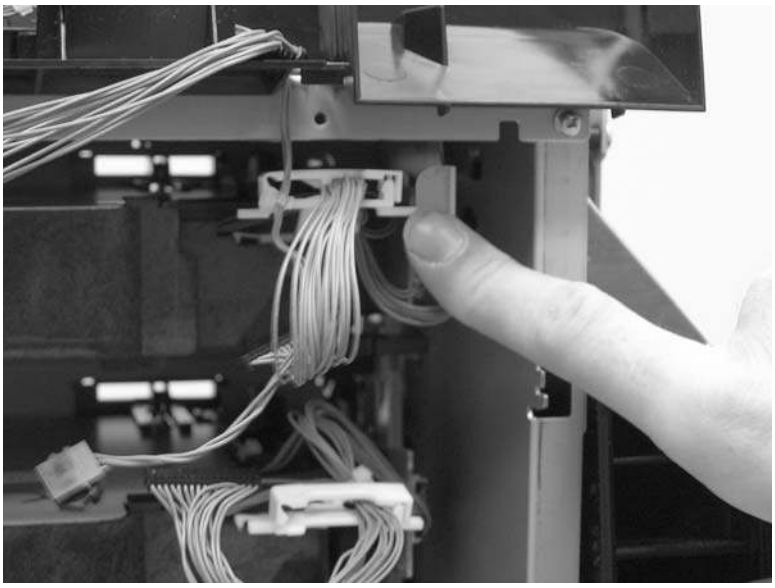


Figure 6-114 Remove the laser/scanner assembly (12 of 17)

13. Pull the right laser scanner holder down toward you and remove it.

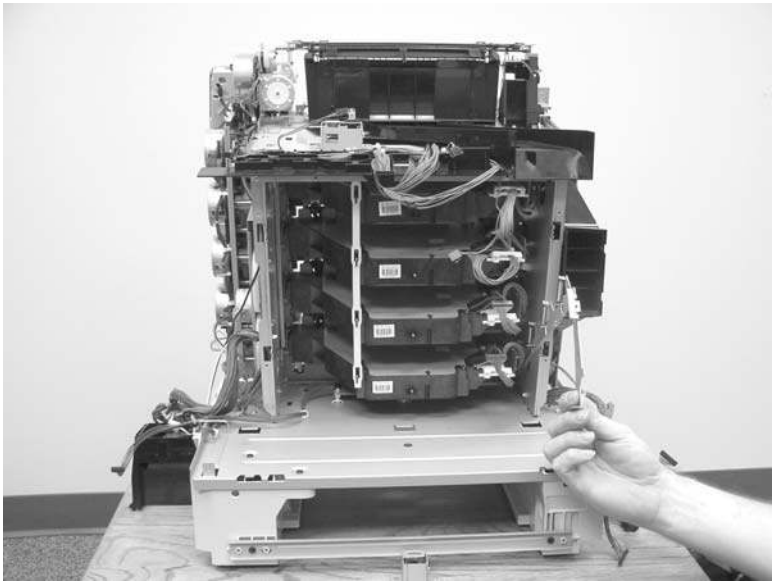


Figure 6-115 Remove the laser/scanner assembly (13 of 17)

14. Lift up slightly on the laser/scanner assembly to release it from the plastic strap (callout 13).

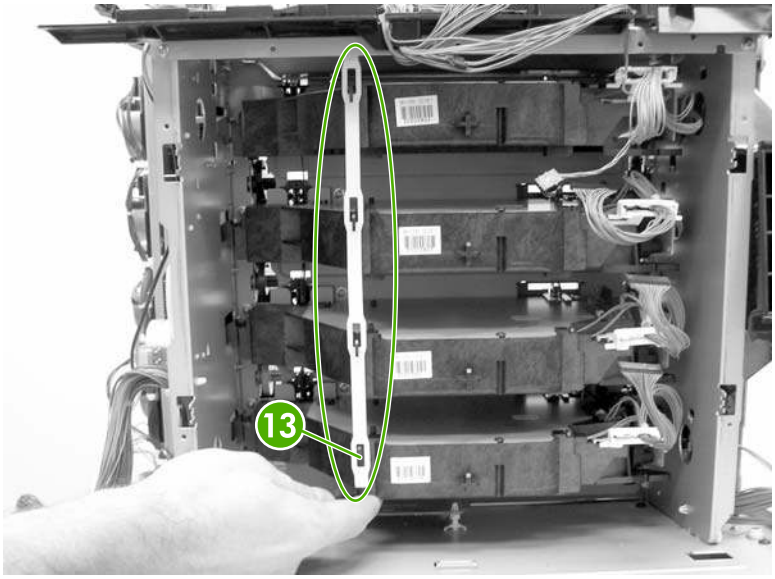


Figure 6-116 Remove the laser/scanner assembly (14 of 17)

15. Lift up slightly and push the laser/scanner assembly to the left to remove.

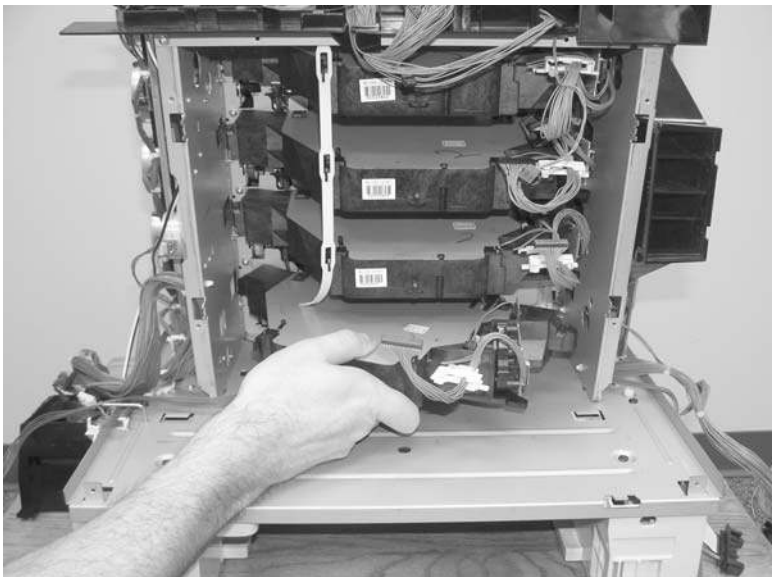


Figure 6-117 Remove the laser/scanner assembly (15 of 17)

16. Replace the defective laser/scanner.

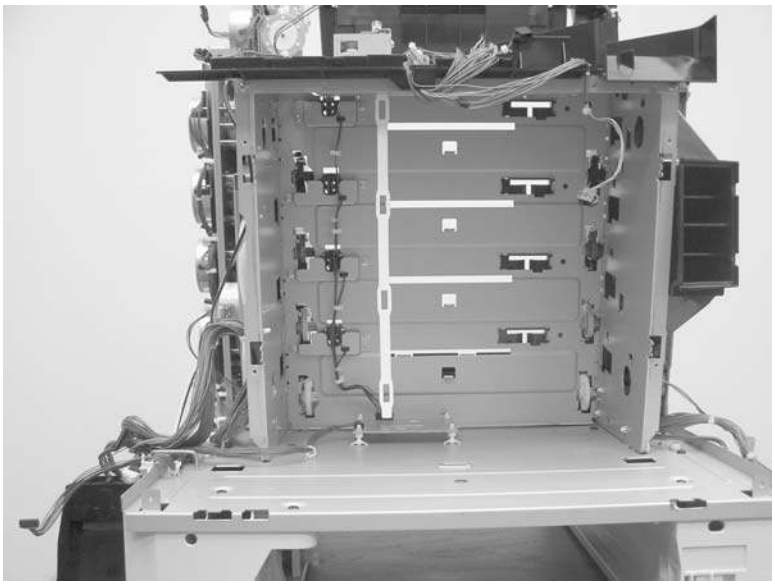


Figure 6-118 Remove the laser/scanner assembly (16 of 17)

17. Perform "Full Calibrate Now" through the control panel a minimum of three (3) times until CPR corners on Diagnostics page line up.

Reinstallation tip

Make sure to put all four springs back on the rear plate and route all of the cables through the rear plate.

Make sure that all laser/scanners are seated properly upon reinstallation. Figure 6-119 Remove the laser/scanner assembly (17 of 17) on page 296 shows the inside of the printer just behind where the

cartridges would be. The scanner in callout 14 *is* seated properly. The scanner in callout 15 *is not* seated properly.

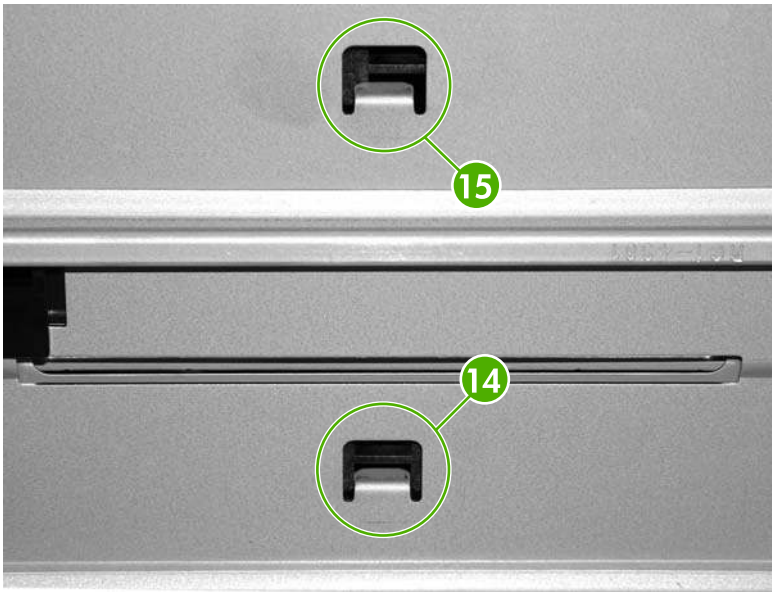


Figure 6-119 Remove the laser/scanner assembly (17 of 17)

Motors and fans

The following procedures explain the removal and replacement of internal motors and fans.

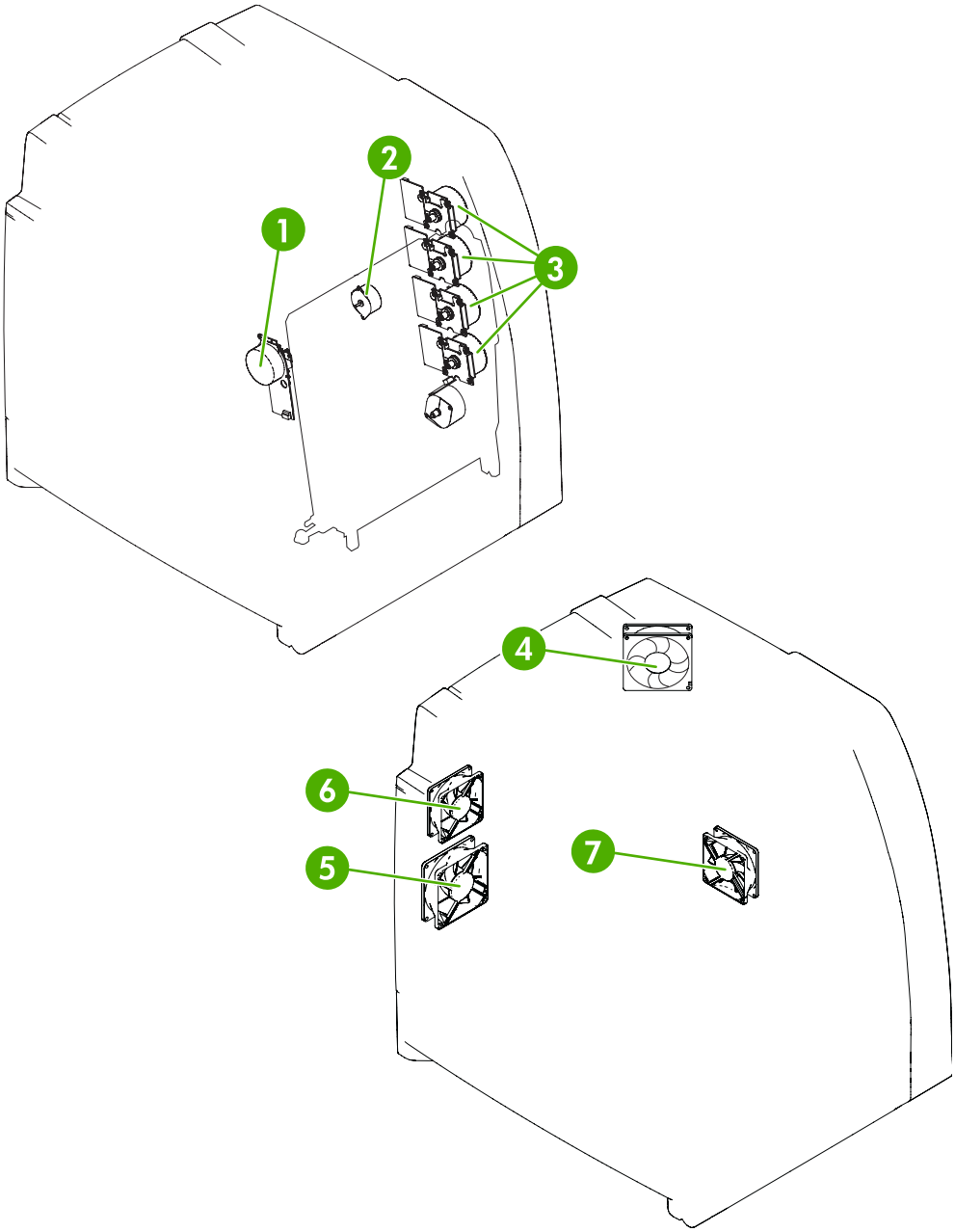


Figure 6-120 Motors and fans

1	ETB motor
2	Disengaging drive motor
3	Drum drive motors (Y/C/M/K)
4	Upper exhaust fan (Fan 1)
5	Cartridge fan (Fan 2)

6	Delivery fan (Fan 3)
7	Power supply fan (Fan 4)

Disengaging drive motor

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.
2. Disconnect the connector (callout 1).
3. Remove the two screws (callout 2), and remove the disengaging drive motor (callout 3).

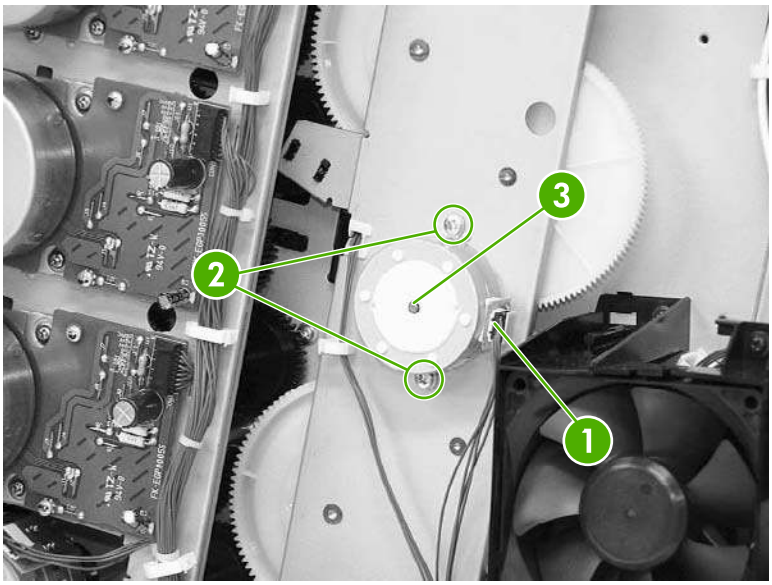


Figure 6-121 Remove the disengaging drive motor

Drum drive motors (Y/C/M/K)

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.

NOTE When removing the drum drive motors, always order the motors by color.

NOTE Always use the same screws for the motors. Do not exchange them with any other type of screw.

2. Disconnect the connector (callout 1) of the motor to be removed: Yellow (callout 2), Cyan (callout 3), Magenta (callout 4), or Black (callout 5).

3. Each motor has four screws (callout 6). Remove the four screws of the motor to be replaced.

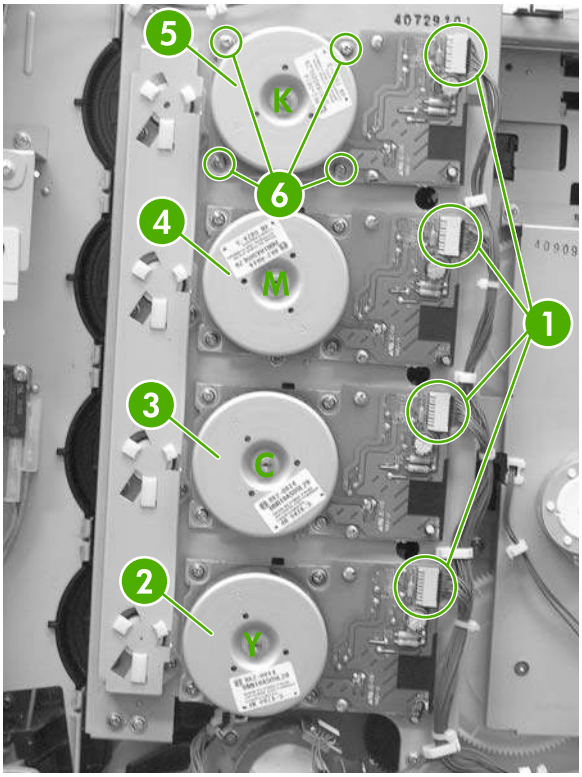


Figure 6-122 Remove the drum drive motors

Power supply fan/shroud (Fan 4)

1. Remove the following assemblies:

   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.

2. Remove the three screws (callout 1).

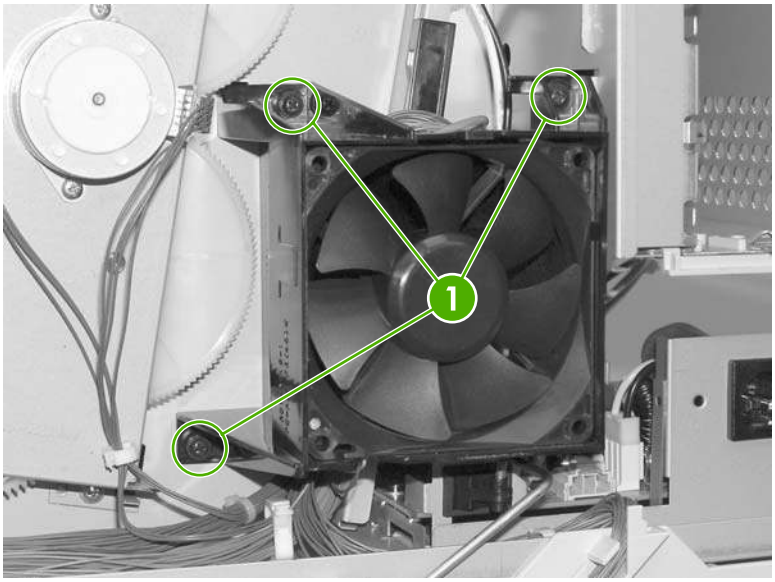


Figure 6-123 Remove the power supply fan (1 of 2)

3. Disconnect the connector (callout 2) and remove the fan and shroud (callout 3).

NOTE When replacing the fan only, release the three tabs on the shroud after disconnecting the connector as shown in callout 2.

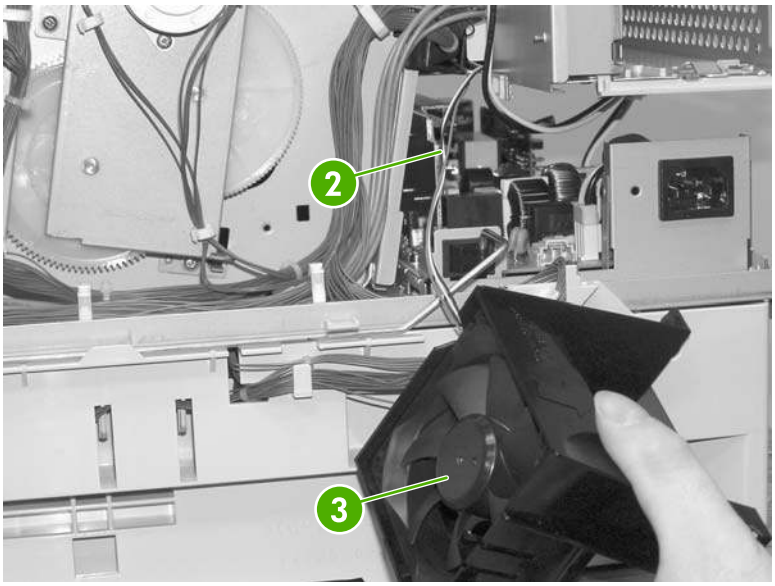


Figure 6-124 Remove the power supply fan (2 of 2)

Delivery fan/shroud (Fan 3)

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.

- Top cover. See Top cover on page 240.
- Right cover. See Right cover on page 245.
- Left cover. See Left cover on page 247.
- Rear cover. See Rear cover on page 249.

2. Disconnect the connector (callout 1).
3. Remove the cable (callout 3) from the cable guide (callout 2).
4. To remove the fan and shroud, remove the two screws (callout 6) and remove the fan and shroud.

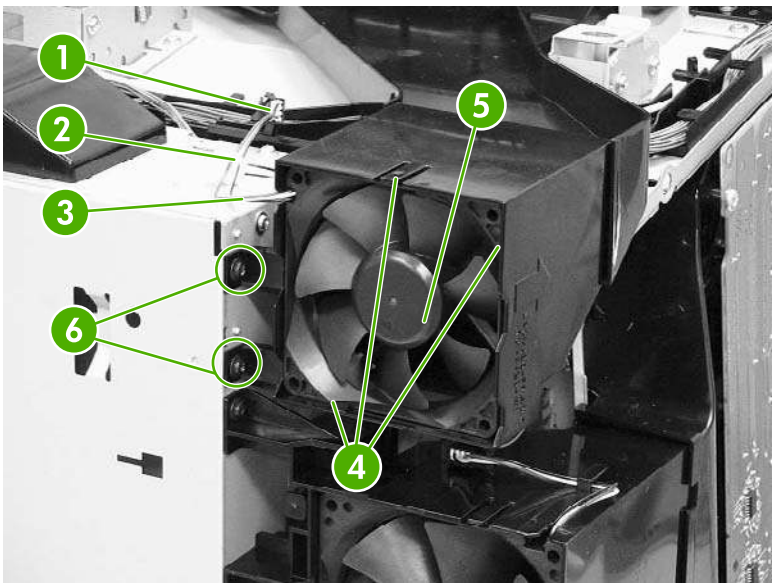


Figure 6-125 Remove the delivery fan (1 of 2)

Reinstallation tip

Be sure that the fan is installed so that the label side faces the printer (callout 7). Align the cable as shown (callout 8).

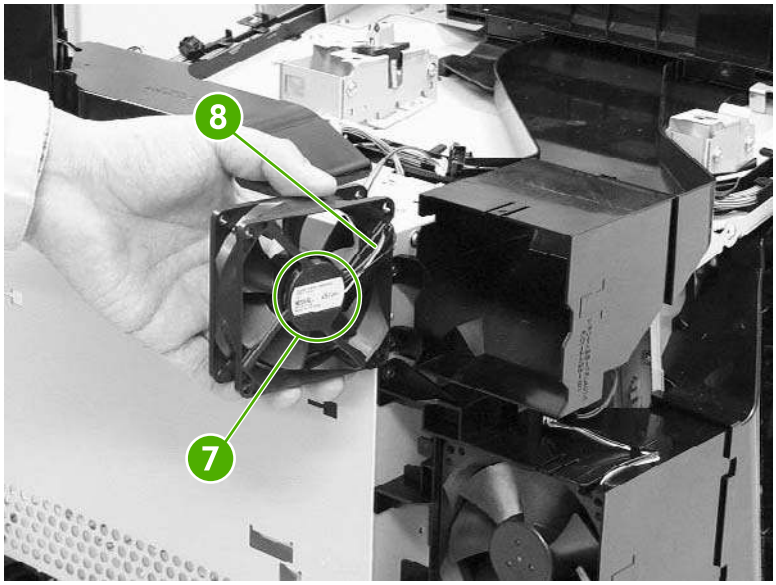


Figure 6-126 Remove the delivery fan (2 of 2)

Cartridge fan/shroud (Fan 2)

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.
   - Left cover. See Left cover on page 247.
   - Rear cover. See Rear cover on page 249.
2. Disconnect the connector (callout 1).

3. Remove the cable (callout 3) from the cable guide (callout 2).

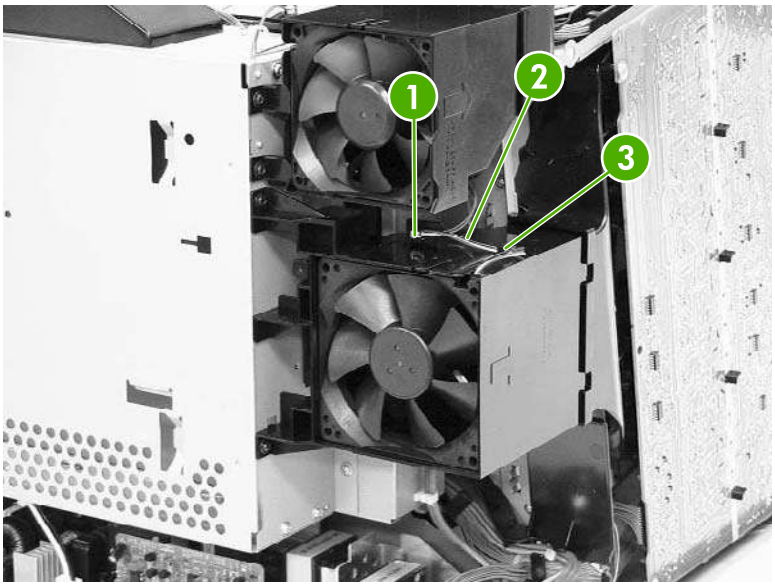


Figure 6-127 Remove the cartridge fan (1 of 4)

4. Unhook the three tabs (callout 4) and remove the fan (callout 5).

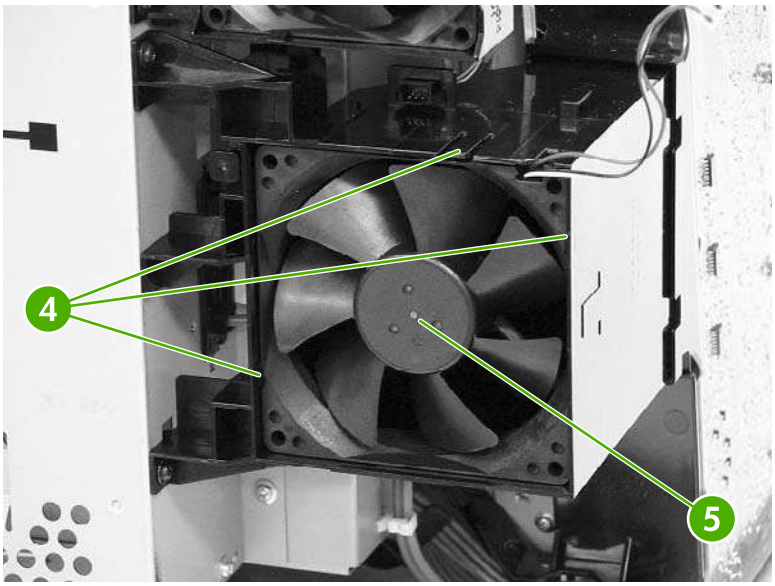


Figure 6-128 Remove the cartridge fan (2 of 4)

NOTE Install the fan so that the label side (callout 6) faces the printer (callout 7).

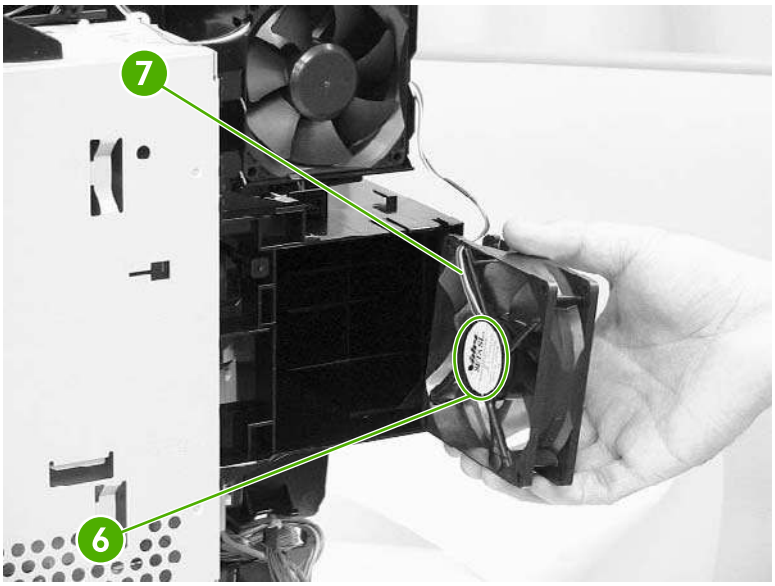


Figure 6-129 Remove the cartridge fan (3 of 4)

5. To remove both the fan and shroud, disconnect the connectors (callout 8) and remove the two screws (callout 9).

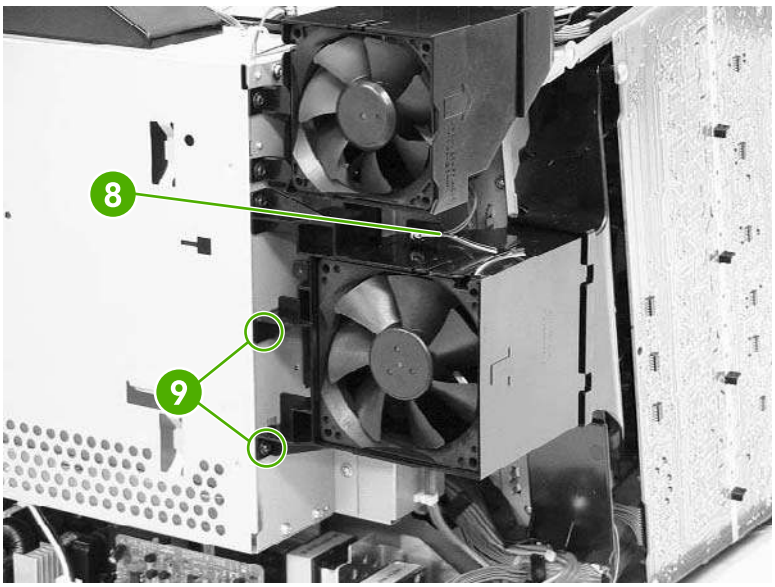


Figure 6-130 Remove the cartridge fan (4 of 4)

Upper exhaust fan (Fan 1)

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
2. Disconnect the connector (callout 1).
3. Remove the screw (callout 2).

4. Remove the shroud (callout 3) and the fan (callout 4) together.

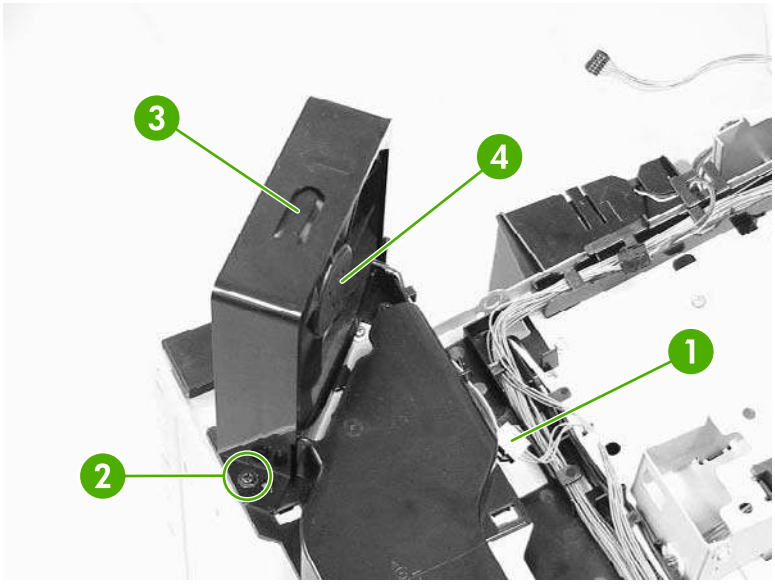


Figure 6-131 Remove the upper exhaust fan (1 of 3)

5. Remove the fan (callout 5) from the shroud (callout 6).



Figure 6-132 Remove the upper exhaust fan (2 of 3)

Reinstallation tip

Install the fan so that the label side faces the printer (callout 7). Align the cable as shown (callout 8).

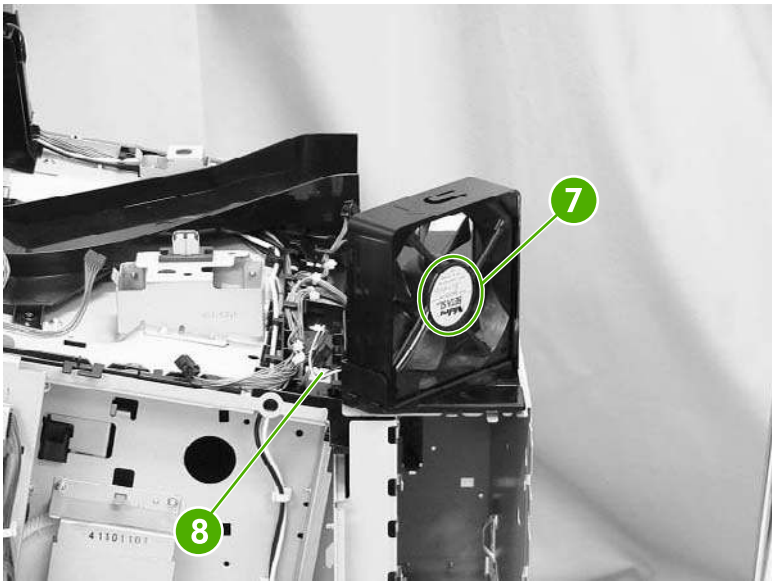


Figure 6-133 Remove the upper exhaust fan (3 of 3)

Sensors and switches

The following procedures explain the removal and replacement of sensors and switches.

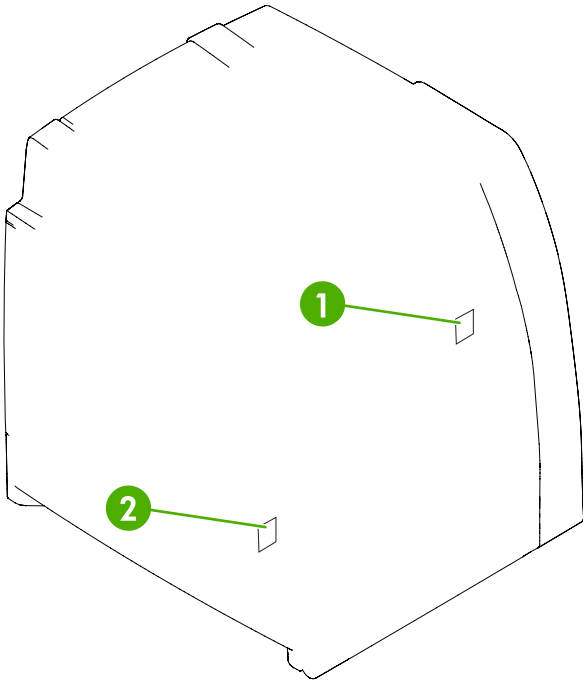


Figure 6-134 Location of sensors and switches

1	Power switch assembly
2	Environment sensor

Environment sensor

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.
   - Left cover. See Left cover on page 247.
   - Rear cover. See Rear cover on page 249.
   - High-voltage power supply PCB. See High-voltage power supply PCB on page 324.

NOTE The environment sensor is located under the fan duct on the left side of the printer. You will be able to locate the sensor after the high-voltage power supply PCB is removed.

2. Disconnect the connector (callout 1).

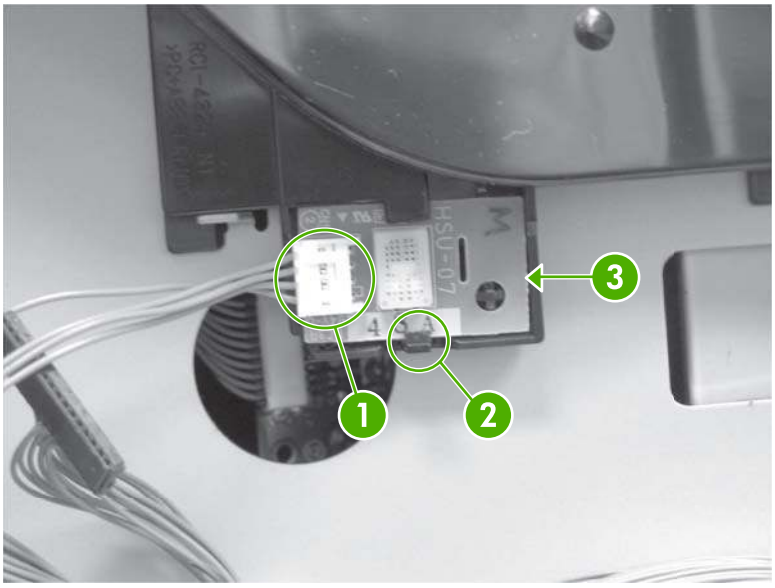


Figure 6-135 Remove the environment sensor

3. Push down on callout 2 with your finger while inserting a flat-blade screwdriver at the location of callout 3.

4. Lift out the environment sensor using the screwdriver.

Power switch assembly

1. Remove the following assemblies:

   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.

2. Remove the screw (callout 1).

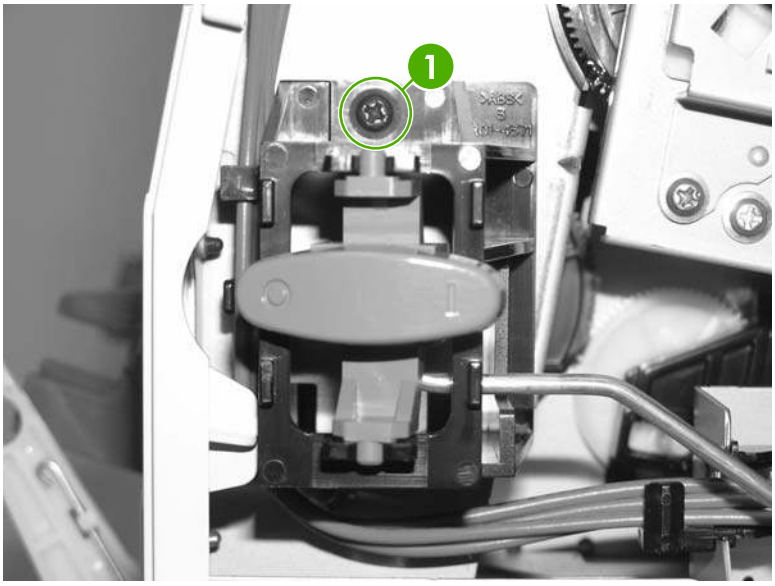


Figure 6-136 Remove the power switch assembly (1 of 3)

3. Unhook the cable from the cable guides (callout 2).

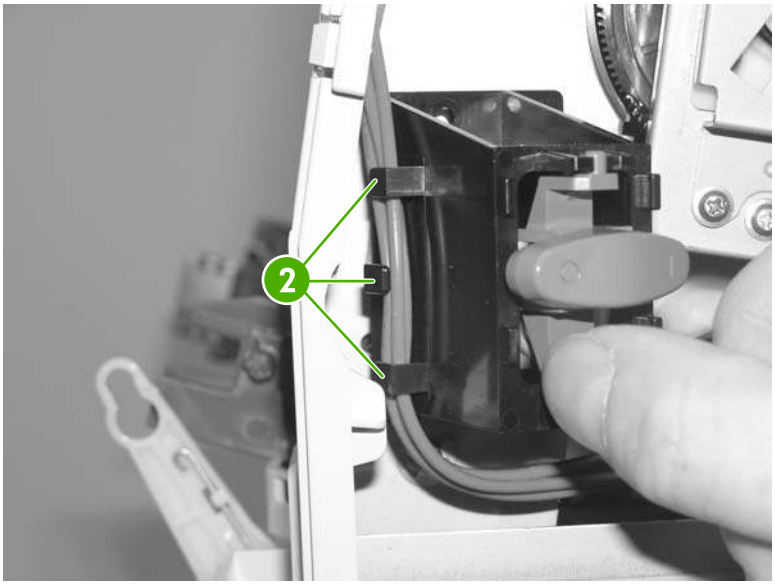


Figure 6-137 Remove the power switch assembly (2 of 3)

4. Lift up on the power switch assembly (callout 3) and rotate out. Remove the rod from the power switch assembly and remove the power switch assembly.

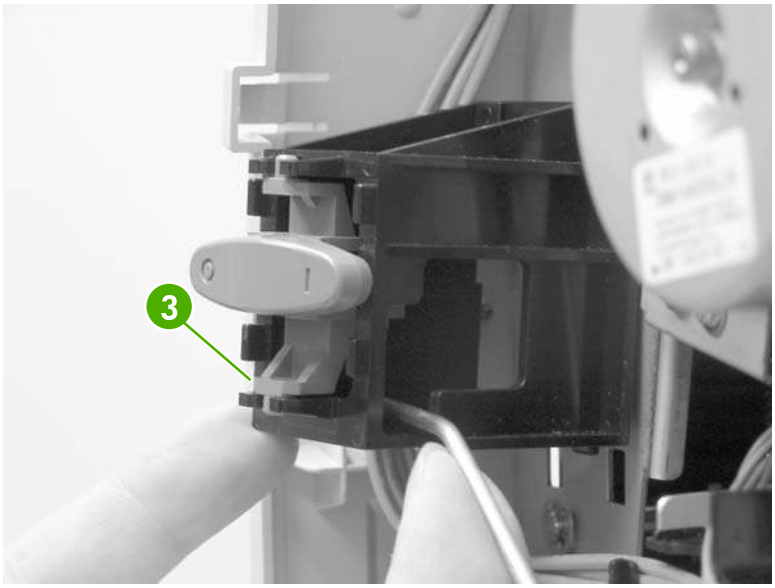


Figure 6-138 Remove the power switch assembly (3 of 3)

Reinstallation tip

Make sure to re-route the cable and the metal rod through the guides, and hook the two tabs on the assembly back onto the printer.

PCBs

The following procedures explain the removal and replacement of PCBs.

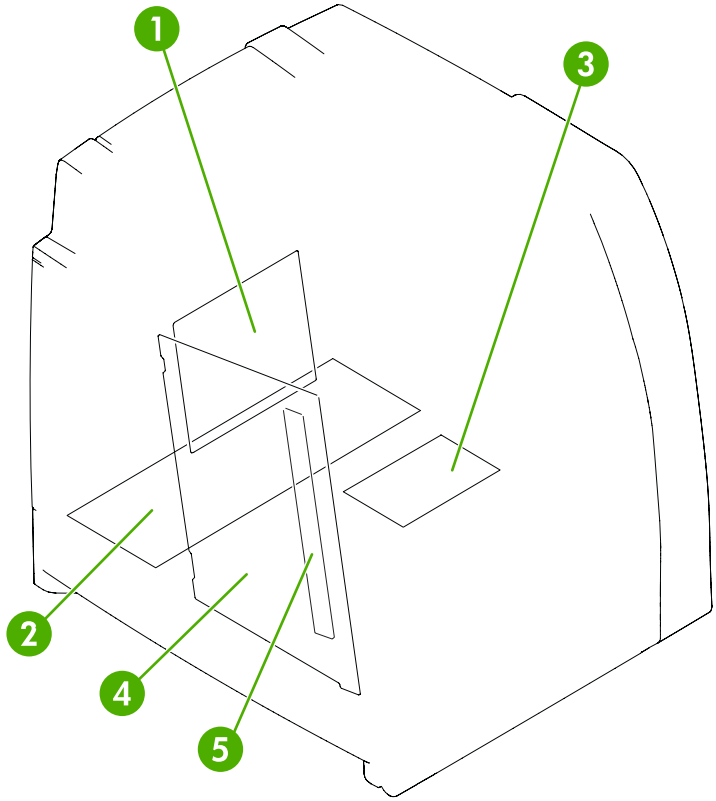


Figure 6-139 Location of PCBs

1	DC controller PCB
2	Low-voltage power supply PCB
3	Memory controller PCB
4	High-voltage power supply PCB
5	Toner sensor PCB

DC controller PCB

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.
   - Left cover. See Left cover on page 247.

- Rear cover. See Rear cover on page 249.
- Cartridge fan (Fan 2). See Cartridge fan/shroud (Fan 2) on page 302.
- Delivery fan (Fan 3). See Delivery fan/shroud (Fan 3) on page 300.
- Formatter. See Formatter on page 227.

2. Release the cable and the cable holder (callout 1) with a flat-blade screwdriver. Insert the screwdriver at the top of the cable holder (callout 2). Release the cable holder from the formatter case.
3. Remove the cables from the cable guides (callout 3).
4. Remove the two screws (callout 4).

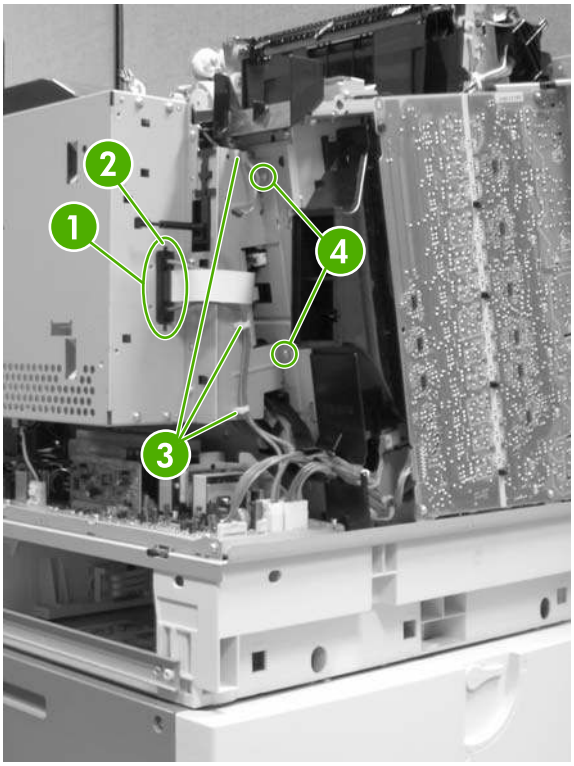


Figure 6-140 Remove the DC controller PCB (1 of 6)

5. Remove the screw (callout 5) from the formatter case at the top of the printer and disconnect the connector for the fan (callout 6).

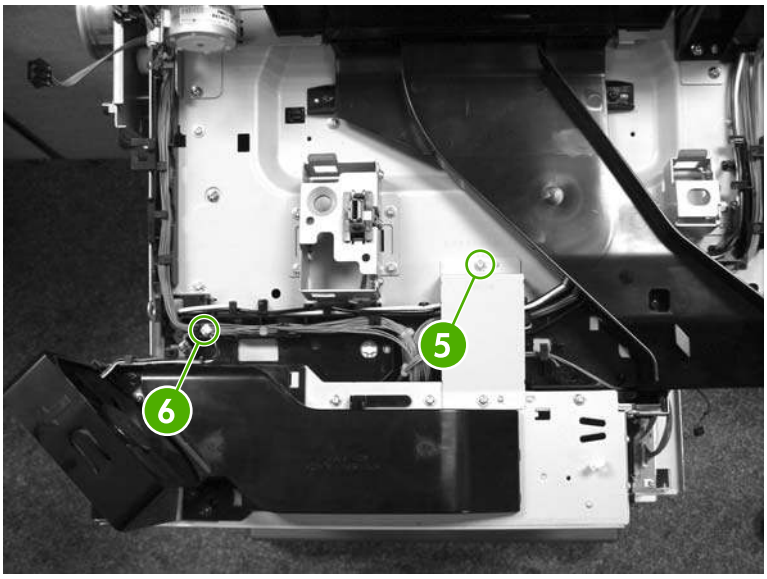


Figure 6-141 Remove the DC controller PCB (2 of 6)

6. Remove the two screws on the bottom of the formatter case (callout 7).
7. Disconnect the connector (callout 8).
8. Remove the cable from the cable guide on the bottom of the formatter case (callout 9).

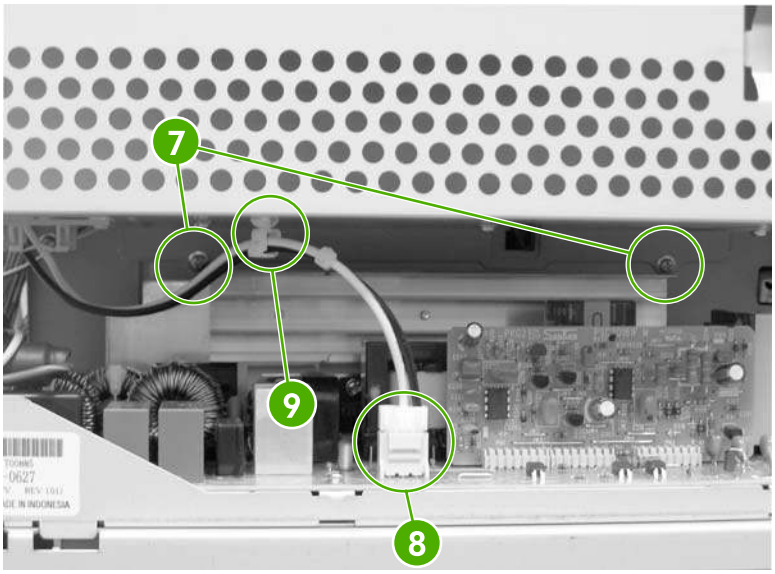


Figure 6-142 Remove the DC controller PCB (3 of 6)

9. Remove the three screws (callout 10).

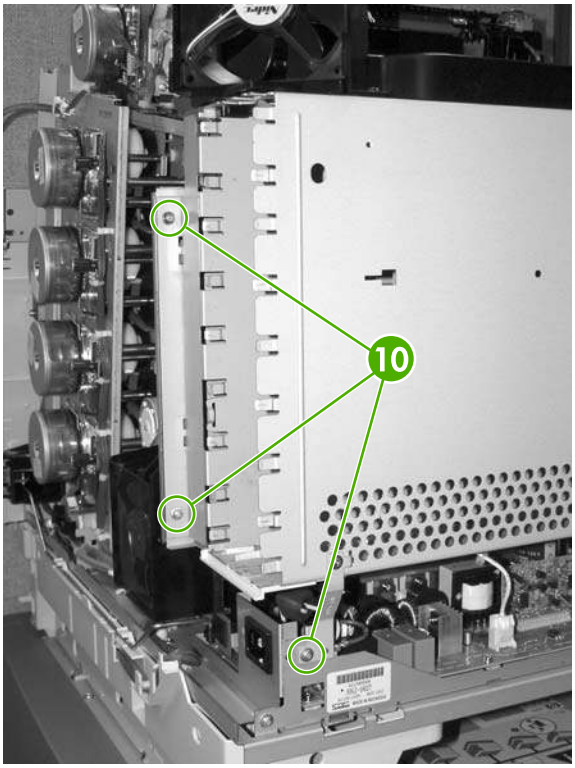


Figure 6-143 Remove the DC controller PCB (4 of 6)

10. Remove the formatter case.

11. Lift up on the brown tab to release the flat cable from the connector (callout 11).

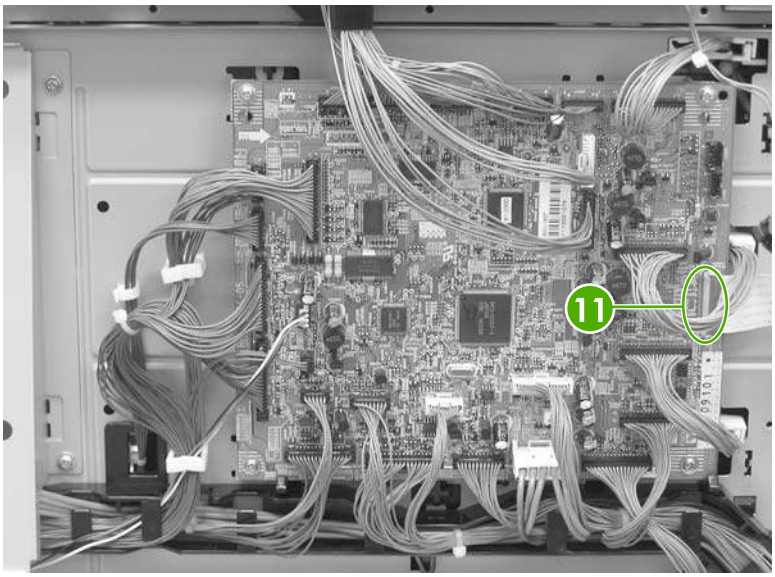


Figure 6-144 Remove the DC controller PCB (5 of 6)

12. Disconnect all connectors from the DC controller PCB.

NOTE When reinstalling the flat cable, make sure the contacts are secure.

13. Remove the four screws (callout 12) and remove the DC controller PCB.

NOTE The connector that goes into callout 13 does not have two open spaces on the connector. The connector that goes into callout 14 has two open spaces on the connector.

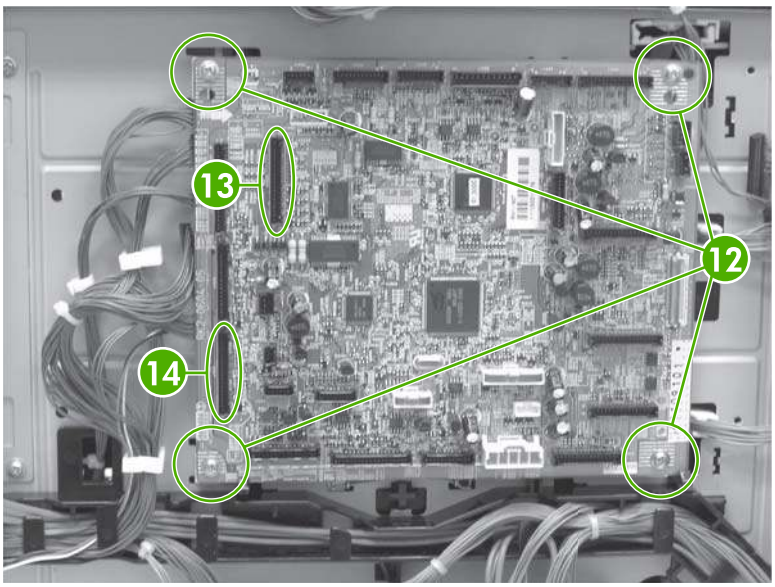


Figure 6-145 Remove the DC controller PCB (6 of 6)

Reinstallation tips

Make sure to connect the flat cable before reinstalling the formatter case.

Make sure that all connectors are reconnected to the DC controller PCB and seated properly.

DC controller connections

The following diagram shows the DC controller connections.

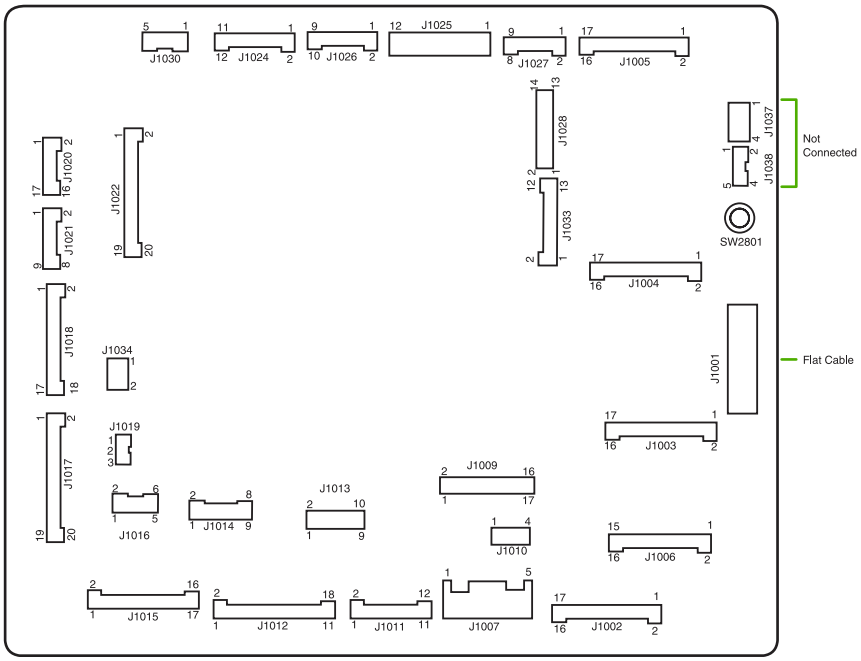


Figure 6-146 DC controller connections

Table 6-3 Description of connectors

Connector	Number of pins	Component
J1002	17	Laser/scanner Y
J1003	17	Laser/scanner C
J1004	17	Laser/scanner M
J1005	17	Laser/scanner K
J1024	12	Fusing motor (M5)
		Fuser pressure release motor (M6)
J1026	10	Fuser paper sensor (SR1)
		Deliver 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	Environment sensor
J1014	9	Toner level PCB
		Multipurpose tray paper sensor
J1022	20	Drum home position sensor
J1016	6	Paper tray paper sensor (SR9)

Table 6-3 Description of connectors (continued)

Connector	Number of pins	Component
		Paper stack surface sensor (SR10)
J1012	19	Color misregistration sensor
		Transmission LED
		Top of page sensor (SR12)
J1013	10	Media sensor
J1019	3	Developer disengaging sensor (SR11)
J1015	17	Multipurpose tray pickup solenoid (SL1)
		Paper tray pickup solenoid (SL2)
		Lifter motor (M10)
		Paper tray paper size detection switch
		Additional trays
J1018	18	M and K drum motors (M3 and M4)
J1017	20	Y and C drum 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
		ETB separation solenoid (SL3)
J1027	9	Control panel
J1033	13	Cartridge fan
		Delivery fan
		Upper exhaust fan
J1007	5	Door switch
		Low-voltage power supply PCB
J1028	14	Jet link (stapler/stacker)
J1030	6	Duplex unit

Low-voltage power supply PCB

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Left cover. See Left cover on page 247.
   - Right cover. See Right cover on page 245.
   - Rear cover. See Rear cover on page 249.
   - Power supply fan (Fan 4). See Power supply fan/shroud (Fan 4) on page 299.
2. Remove the rod arm from the rod guide (callout 1) and rest the rod arm in the guides to the left.

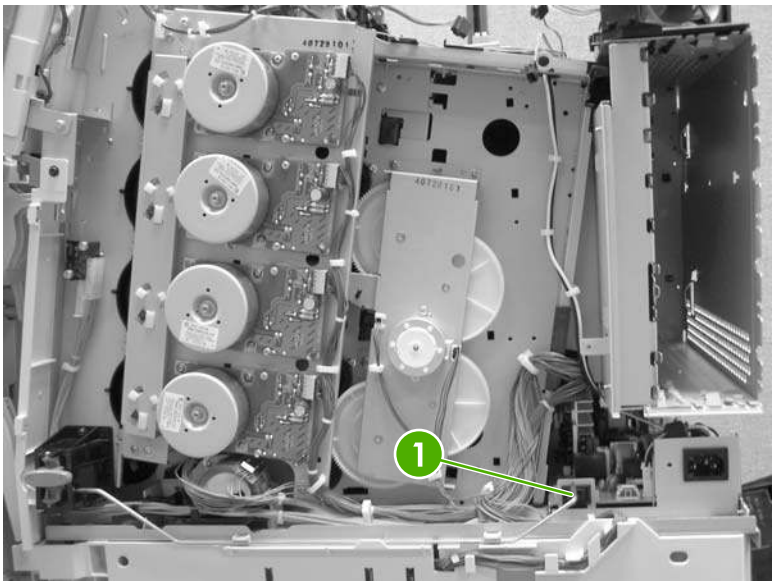


Figure 6-147 Remove the low-voltage power supply PCB (1 of 4)

3. Disconnect the connectors (callouts 2 and 3).

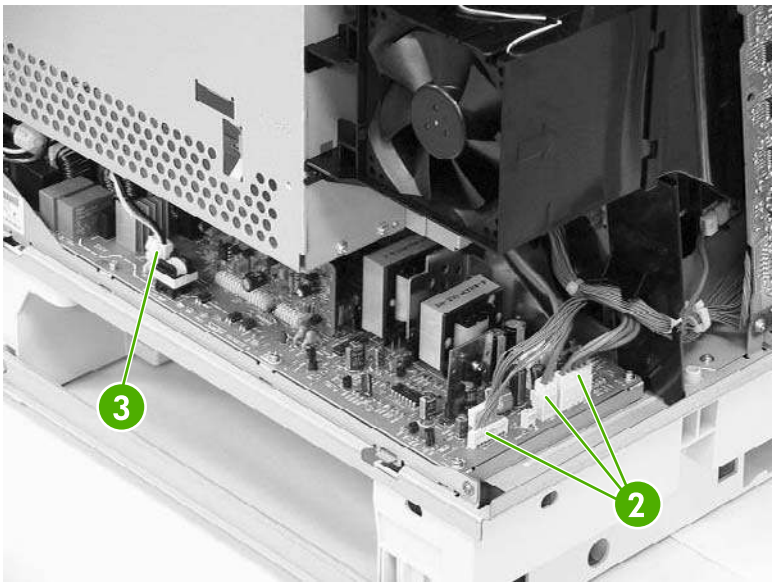


Figure 6-148 Remove the low-voltage power supply PCB (2 of 4)

4. Remove the two screws (callout 4) from the metal bracket (callout 5) and remove the metal bracket.

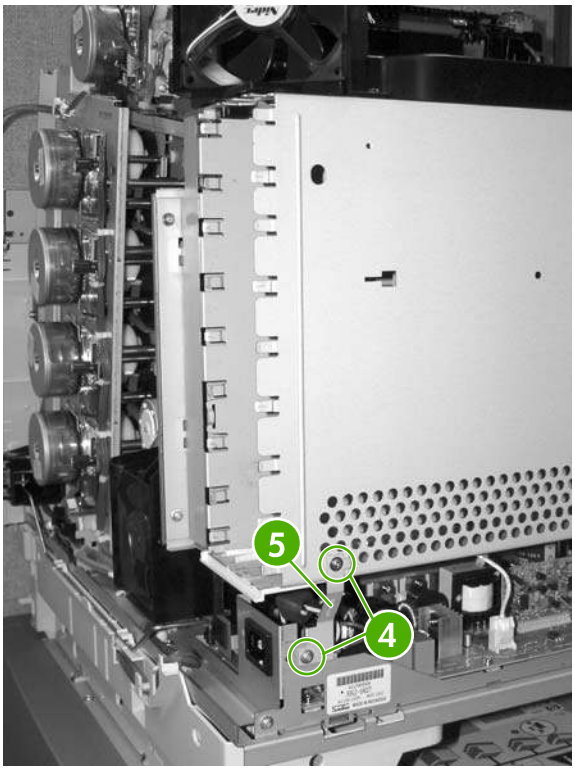


Figure 6-149 Remove the low-voltage power supply PCB (3 of 4)

5. Remove the two screws (callout 6) and slide the low-voltage power supply PCB (callout 7) toward you to remove.

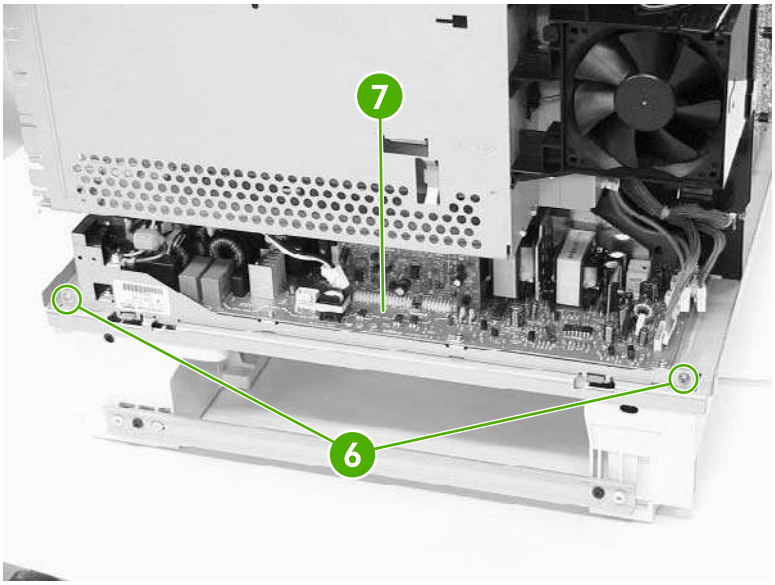


Figure 6-150 Remove the low-voltage power supply PCB (4 of 4)

Memory controller PCB

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Left cover. See Left cover on page 247.
   - Right cover. See Right cover on page 245.
   - Rear cover. See Rear cover on page 249.
   - Cartridge fan (Fan 2). See Cartridge fan/shroud (Fan 2) on page 302.
   - Delivery fan (Fan 3). See Delivery fan/shroud (Fan 3) on page 300.
   - Power supply fan (Fan 4). See Power supply fan/shroud (Fan 4) on page 299.
   - Formatter. See Formatter on page 227.
   - DC controller PCB. See DC controller PCB on page 312.
   - Low-voltage power supply PCB. See Low-voltage power supply PCB on page 319.
   - Laser/scanner assembly. See Laser/scanner assembly on page 287.
2. Disconnect the connectors (callout 1).

3. Remove the four PCB holding pins (callout 2) and remove the memory controller PCB.

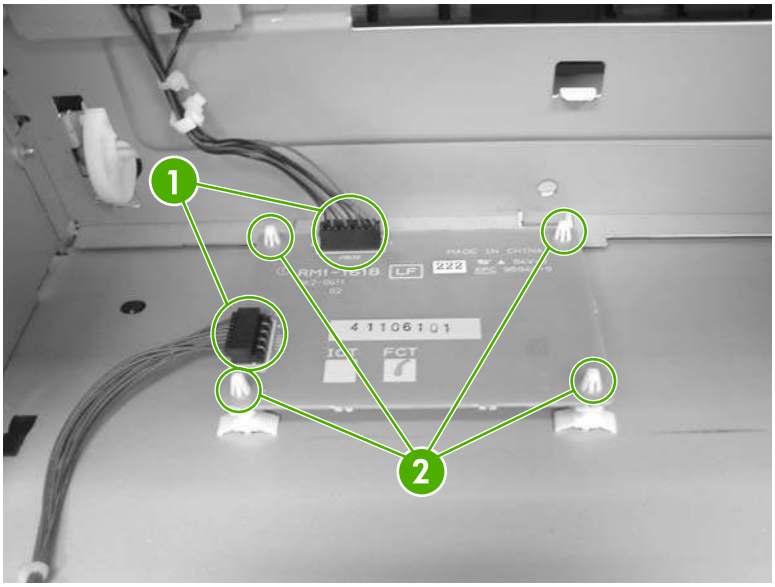


Figure 6-151 Remove the memory controller PCB

E label memory contacts and cable

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Right cover. See Right cover on page 245.
   - Left cover. See Left cover on page 247.
   - Rear cover. See Rear cover on page 249.
   - High-voltage power supply PCB. See High-voltage power supply PCB on page 324.
   - Cartridge fan (Fan 2). See Cartridge fan/shroud (Fan 2) on page 302.
   - Delivery fan (Fan 3). See Delivery fan/shroud (Fan 3) on page 300.
   - Power supply fan (Fan 4). See Power supply fan/shroud (Fan 4) on page 299.
   - Formatter. See Formatter on page 227.
   - DC controller PCB. See DC controller PCB on page 312.
   - Low-voltage power supply PCB. See Low-voltage power supply PCB on page 319.
   - Laser/scanner assembly. See Laser/scanner assembly on page 287.

2. Disconnect the connector (callout 1).

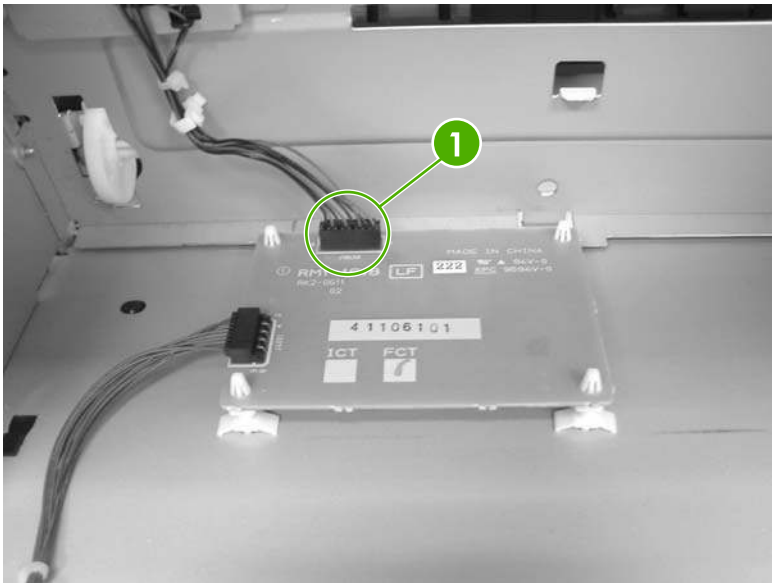


Figure 6-152 Remove the E label memory contacts/cable (1 of 3)

3. Remove the eight screws (callout 2).

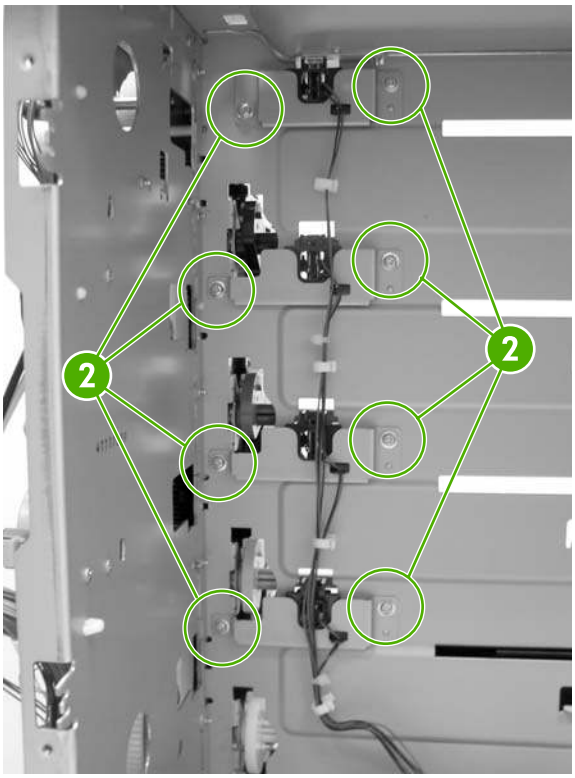


Figure 6-153 Remove the E label memory contacts/cable (2 of 3)

4. Lift up and out on the metal stay (callout 3).

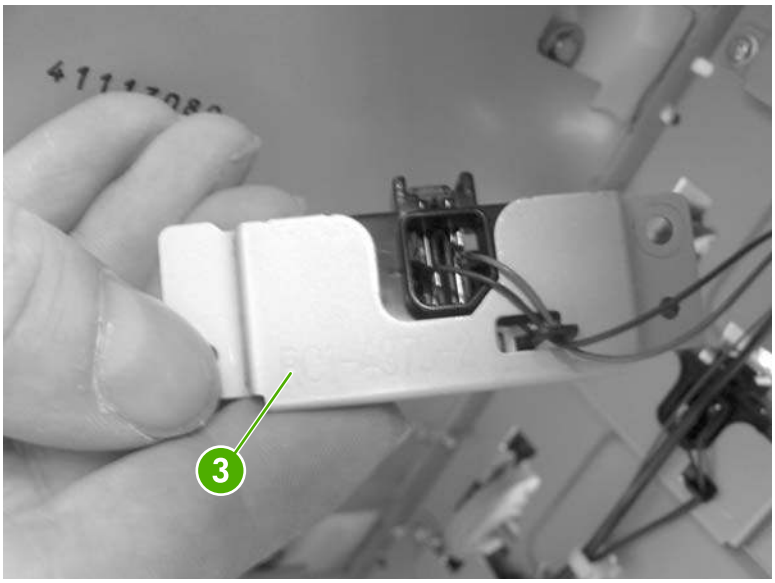


Figure 6-154 Remove the E label memory contacts/cable (3 of 3)

5. Remove the contact and cable from all four metal stays and cable guides.

High-voltage power supply PCB

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Left cover. See Left cover on page 247.
2. Disconnect the connector (callout 1).
3. Remove the four screws (callout 2).

NOTE The upper left screw is a self-tapping screw and is different from the other three screws. Make sure to put this self-tapping screw back in the correct hole when reinstalling.

4. Unhook the four tabs (callout 3) and remove the high-voltage power supply PCB.

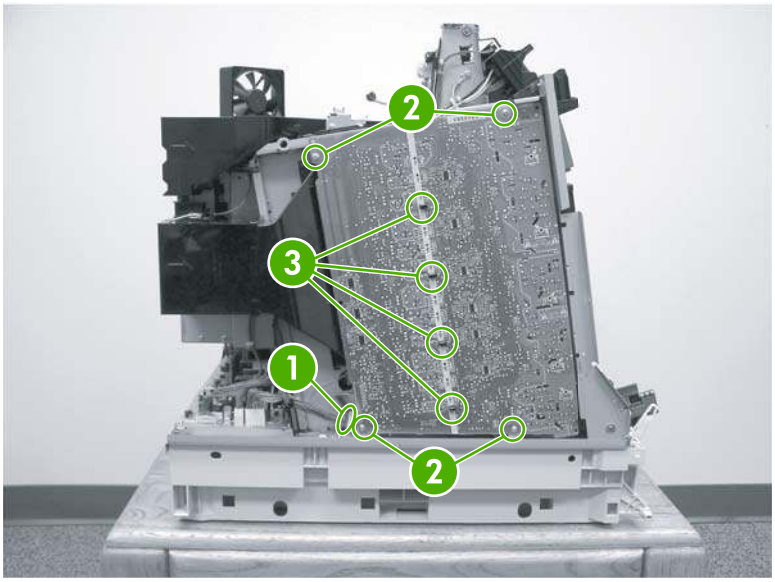


Figure 6-155 Remove the high-voltage power supply PCB (1 of 2)

Reinstallation tips

Ensure that the black tabs on the side (callout 4) and the tabs in the center (callout 5) are also snapped into place.

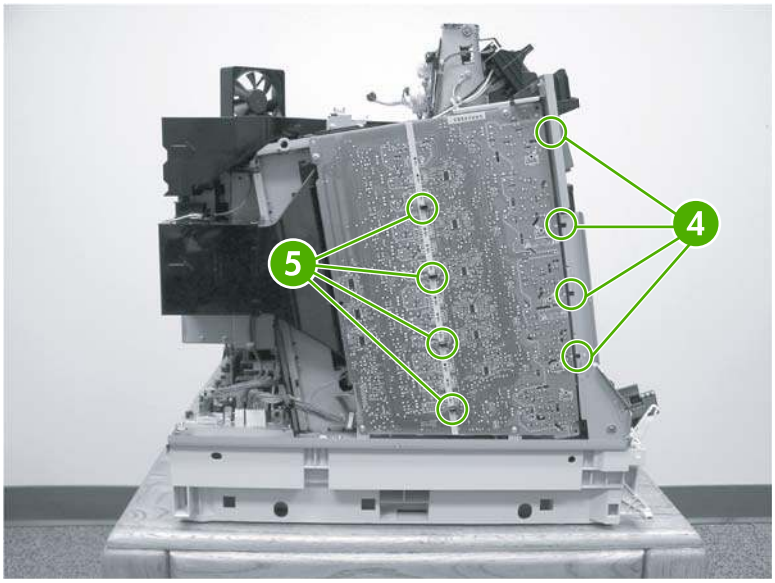


Figure 6-156 Remove the high-voltage power supply PCB (2 of 2)

Make sure that all springs are seated correctly.

Toner level detection PCB

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.
   - Left cover. See Left cover on page 247.
   - Right cover. See Right cover on page 245.
   - Rear cover. See Rear cover on page 249.
   - High-voltage power supply PCB. See High-voltage power supply PCB on page 324.
2. Disconnect the connector (callout 1).
3. Remove the three screws (callout 2) and remove the toner level detection PCB (callout 3).

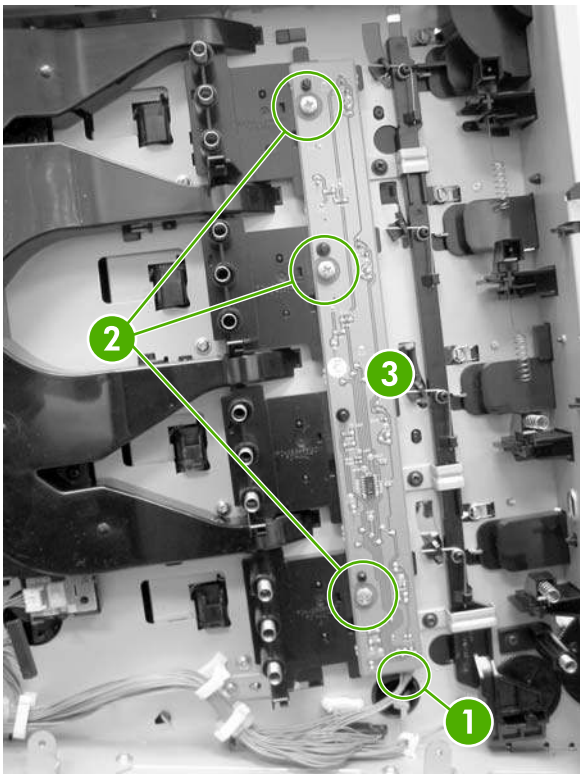


Figure 6-157 Remove the toner level detection PCB

High-voltage contacts

1. Remove the following assemblies:
   - Duplex cover or duplex unit. See Duplex cover on page 239 or Duplexer on page 349.
   - Face down tray assembly. See Face down tray assembly on page 239.
   - Top cover. See Top cover on page 240.

- Right cover. See Right cover on page 245.
- Left cover. See Left cover on page 247.
- Rear cover. See Rear cover on page 249.
- High-voltage power supply PCB. See High-voltage power supply PCB on page 324.
- Toner level detection PCB. See Toner level detection PCB on page 326.

2. Remove the appropriate screw (callout 1) for the defective high-voltage contact.

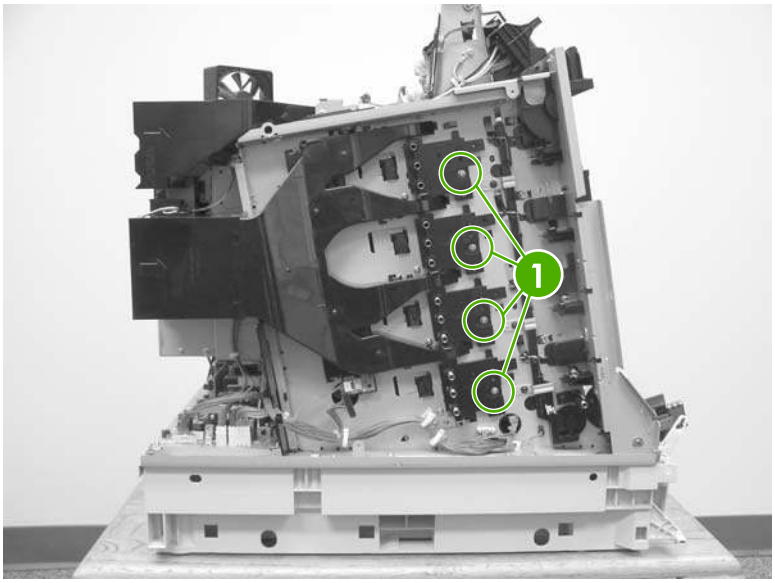


Figure 6-158 Remove the high-voltage contacts

500-sheet paper feeder

Use the following procedures to remove and replace components on the 500-sheet paper feeder.

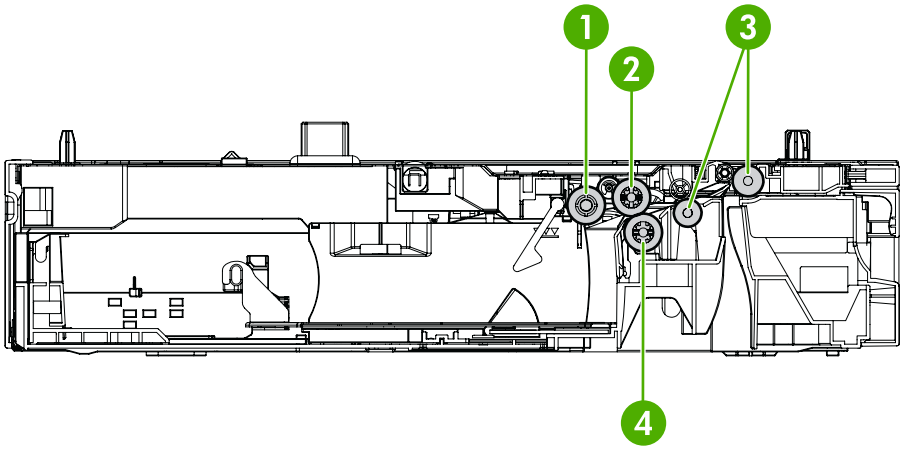


Figure 6-159 500-sheet paper feeder rollers

1	Paper tray pickup roller
2	Paper tray feed roller
3	Feed rollers
4	Paper tray paper separation roller

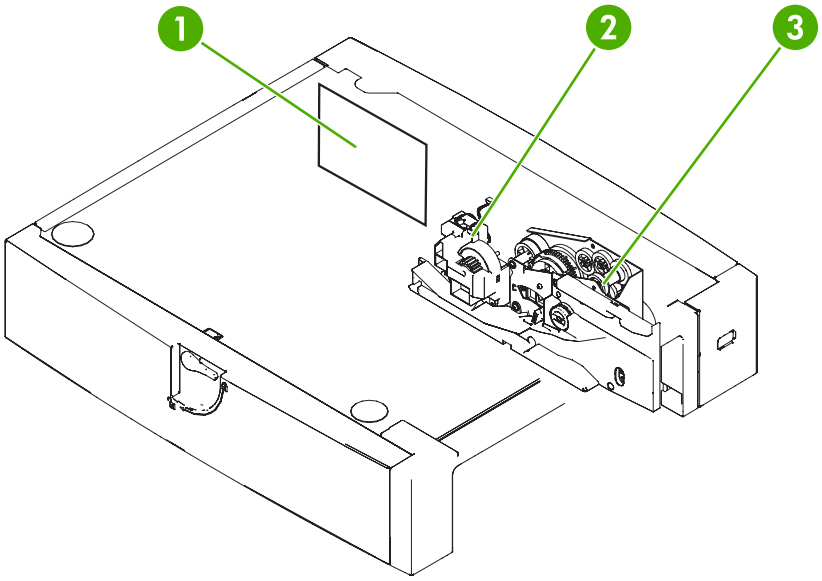


Figure 6-160 500-sheet paper feeder PCB and drive unit

1	Paper feeder PCB
2	Lifter drive unit
3	Paper pickup drive unit

500-sheet paper feeder right cover

1. Remove the two screws (callout 1).



Figure 6-161 Remove the right cover (1 of 2)

2. Remove the right cover by sliding the cover toward the back.

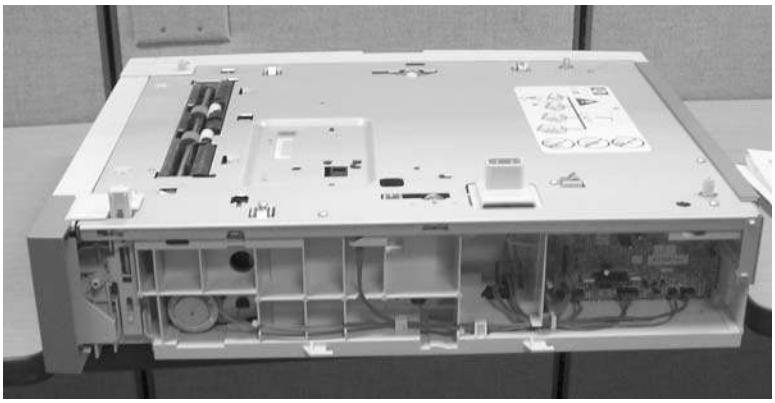


Figure 6-162 Remove the right cover (2 of 2)

NOTE The internal components of the 500-sheet paper feeder are mounted on the right side of the paper feeder.

500-sheet paper feeder rear cover

1. Remove the right cover. See 500-sheet paper feeder right cover on page 329.
2. Remove the two screws (callout 1).

3. Unhook the two tabs (callout 2) and remove the rear cover (callout 3) by lifting it up.

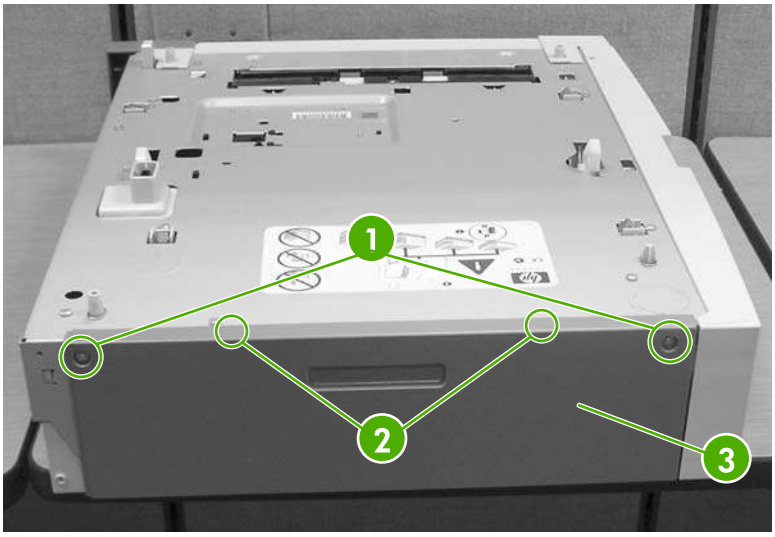


Figure 6-163 Remove the rear cover

500-sheet paper feeder left cover

1. Remove the following assemblies:
   - Right cover. See 500-sheet paper feeder right cover on page 329.
   - Rear cover. See 500-sheet paper feeder rear cover on page 329.
2. Remove the screw (callout 1).
3. Flip up the lock to remove the screw (callout 2).
4. Remove the lever (callout 3) by sliding it to the left. Then remove the left cover (callout 4) by pulling it to the left.

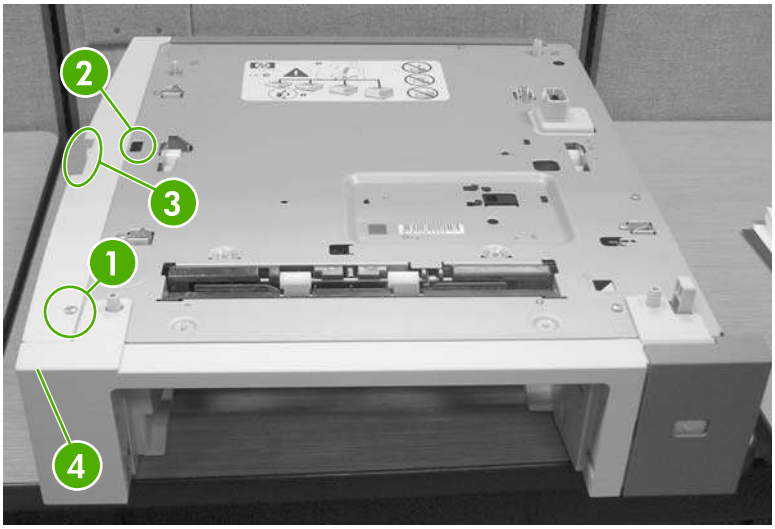


Figure 6-164 Remove the left cover

500-sheet paper feeder front cover

1. Remove the following assemblies:
   - Paper tray.
   - Right cover. See 500-sheet paper feeder right cover on page 329.
   - Rear cover. See 500-sheet paper feeder rear cover on page 329.
   - Left cover. See 500-sheet paper feeder left cover on page 330.
2. Remove the tab on the right side (callout 1).

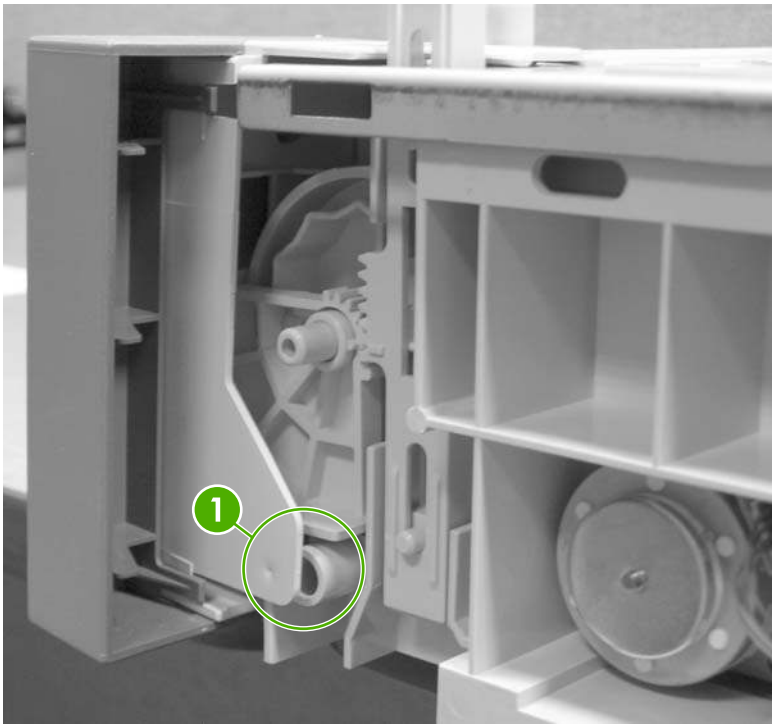


Figure 6-165 Remove the front cover (1 of 3)

3. Release the tab on the left side using a flat-blade screwdriver (callout 2).

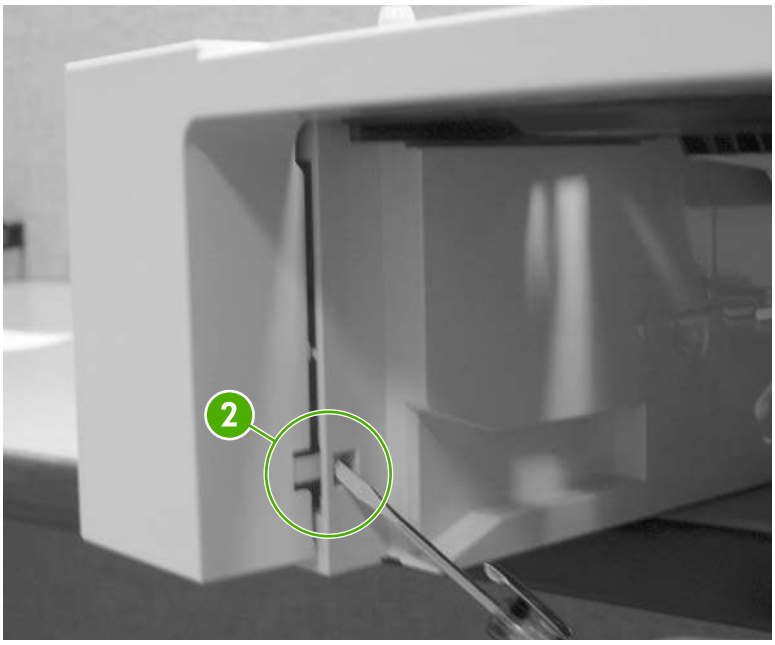


Figure 6-166 Remove the front cover (2 of 3)

4. Ensure that the tab on the left side is released (callout 3) and remove the front cover (callout 4) by lifting it up to clear the two locating pins.

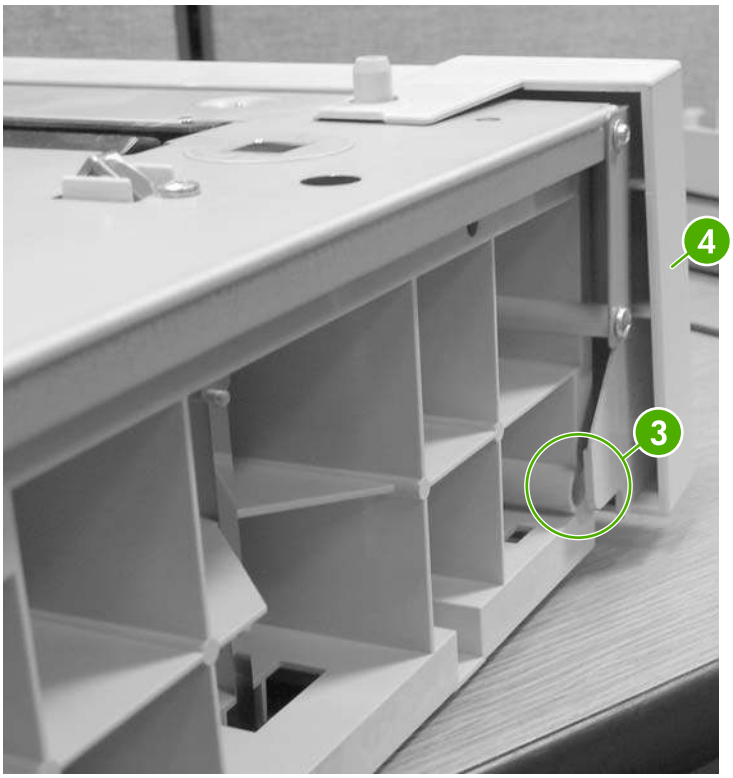


Figure 6-167 Remove the front cover (3 of 3)

Reinstallation tip

The three positioning pins of the front cover need to be aligned with the holes in the top frame.

500-sheet paper pickup drive assembly

1. Remove the following assemblies:
   - Paper tray.
   - Right cover. See 500-sheet paper feeder right cover on page 329.
   - Rear cover. See 500-sheet paper feeder rear cover on page 329.
   - Left cover. See 500-sheet paper feeder left cover on page 330.
   - Front cover. See 500-sheet paper feeder front cover on page 331.
2. Disconnect the two connectors (callout 1).
3. Release the cable (callout 2) from the cable guide (callout 3).

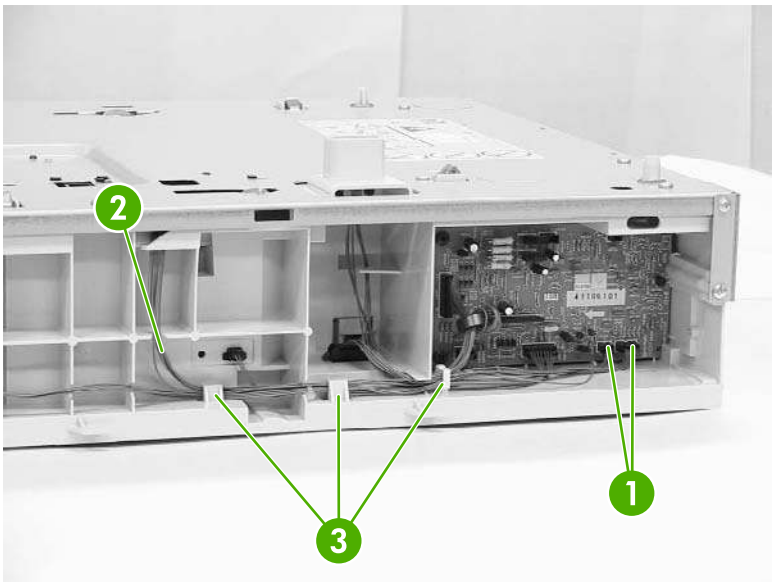


Figure 6-168 Remove the drive assembly (1 of 9)

4. Remove the screw (callout 4).

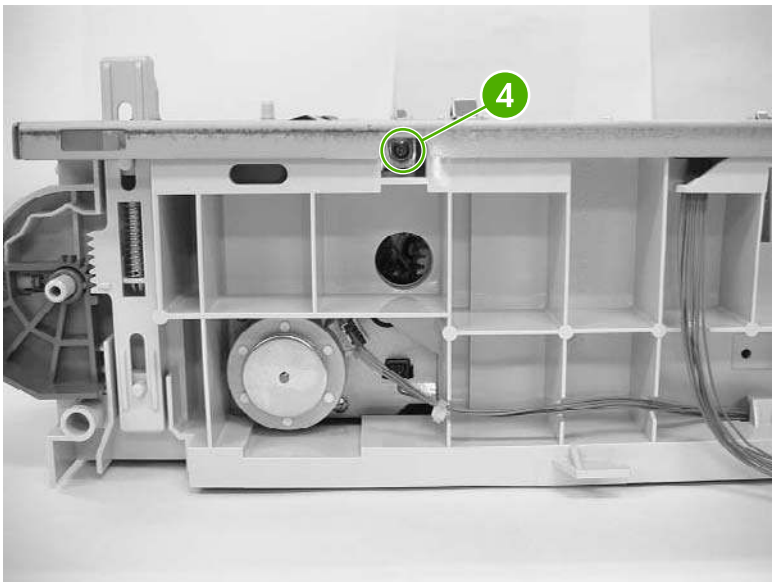


Figure 6-169 Remove the drive assembly (2 of 9)

5. Remove the four screws from the front right side (callout 5) and remove the plate (callout 6).

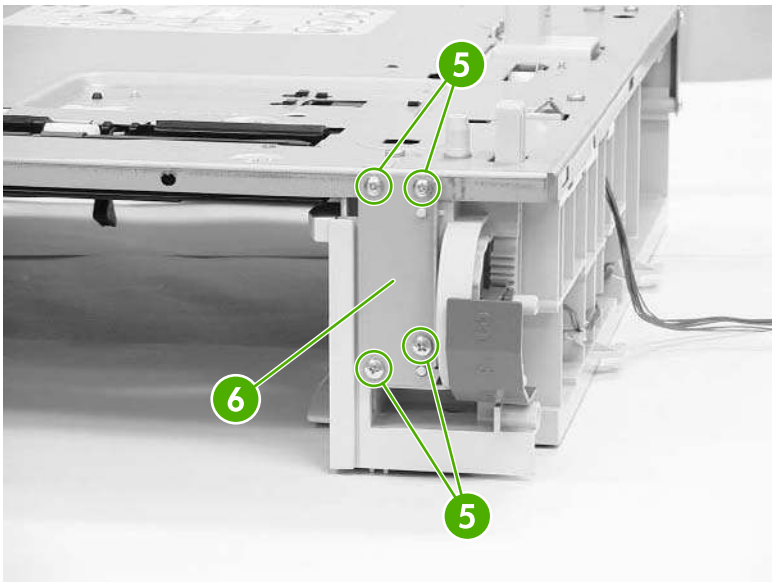


Figure 6-170 Remove the drive assembly (3 of 9)

6. Remove the two screws from the rear of the tray (callout 7) and the screw (callout 8), and then remove the plate (callout 9).

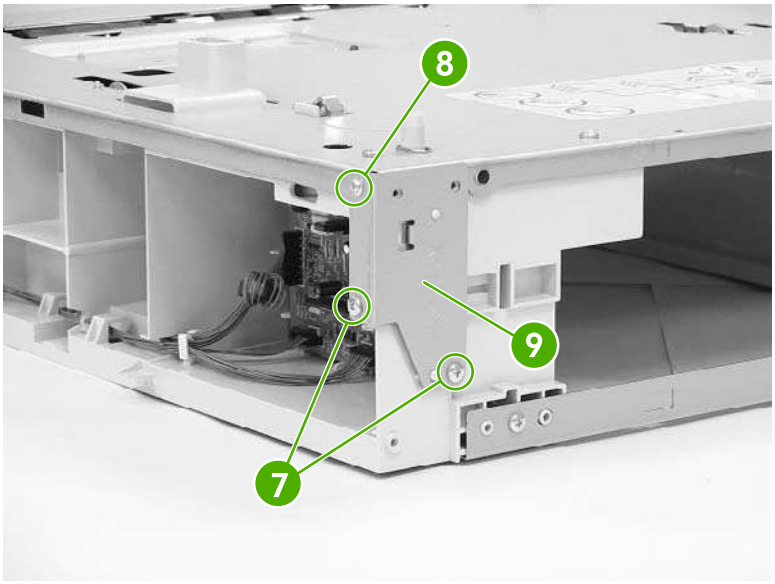


Figure 6-171 Remove the drive assembly (4 of 9)

7. Remove the two screws on the rear of the tray (callout 10) and remove the plate (callout 11).

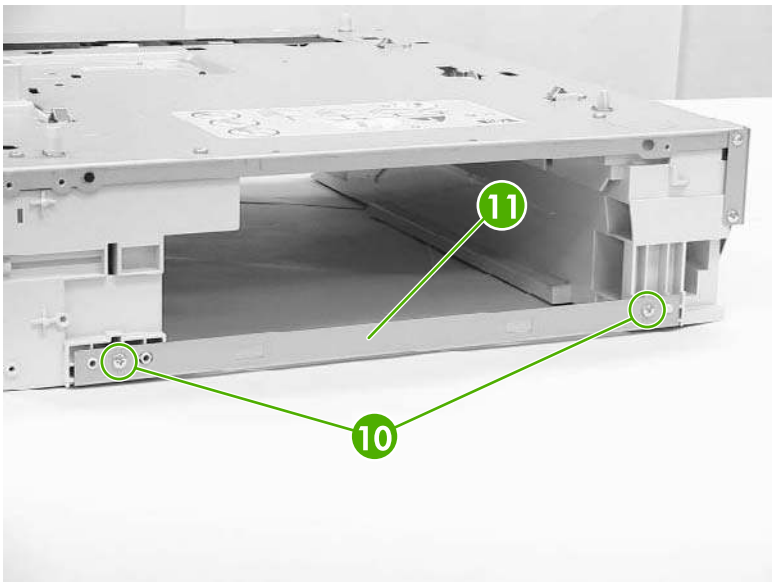


Figure 6-172 Remove the drive assembly (5 of 9)

8. Remove the seven screws (callout 12).

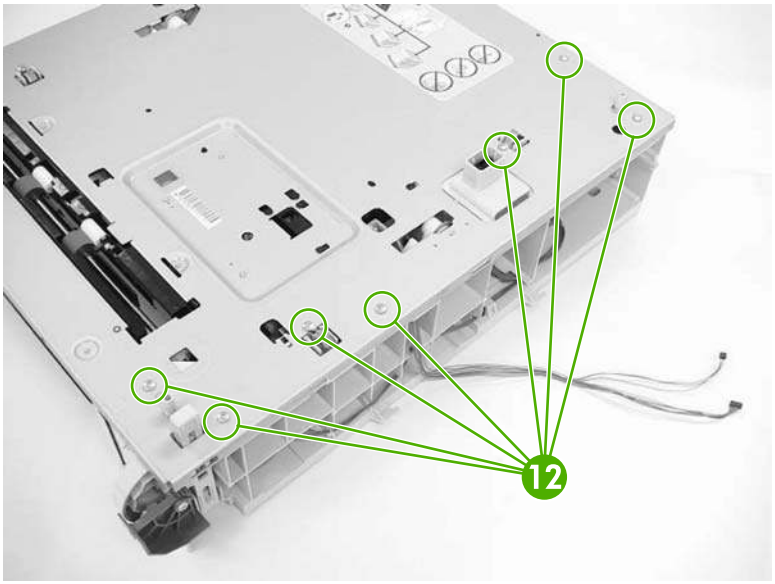


Figure 6-173 Remove the drive assembly (6 of 9)

9. Lift the upper plate (callout 13) and the left frame (callout 14) off of the right frame (callout 15).

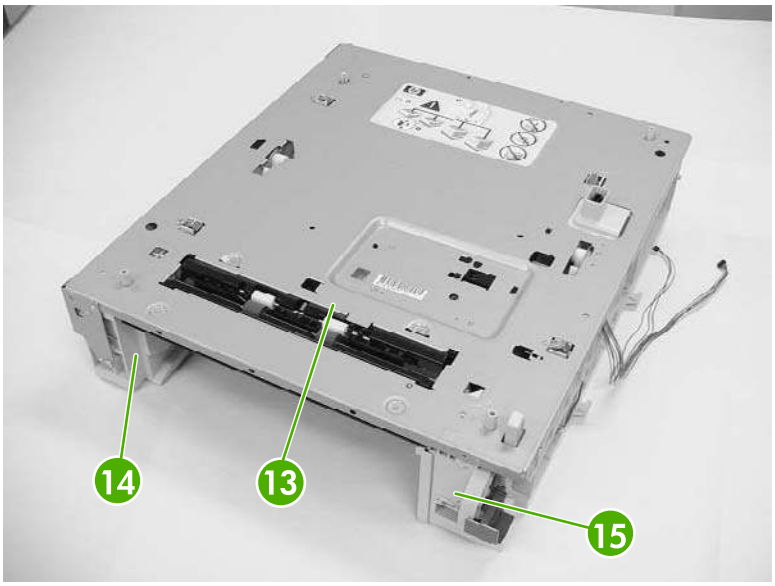


Figure 6-174 Remove the drive assembly (7 of 9)

10. Disconnect the two connectors (callout 16).

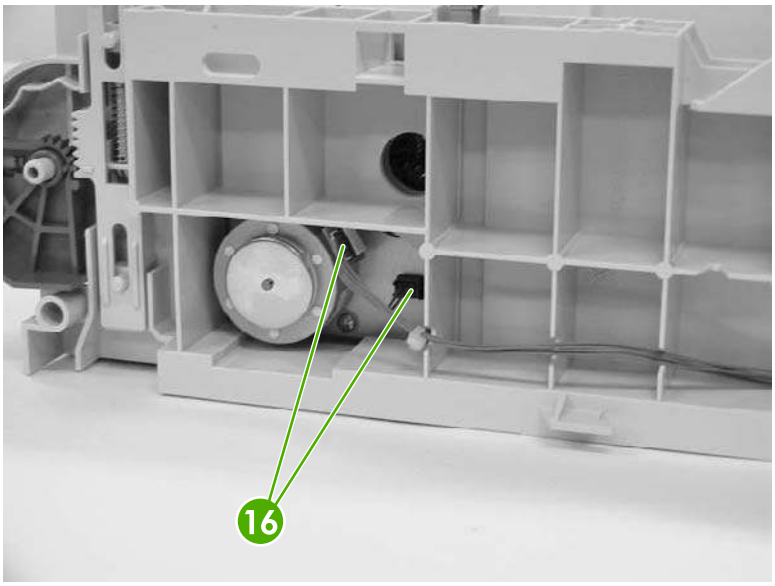


Figure 6-175 Remove the drive assembly (8 of 9)

11. Remove the four self-tapping screws (callout 17) and remove the paper pickup drive assembly.

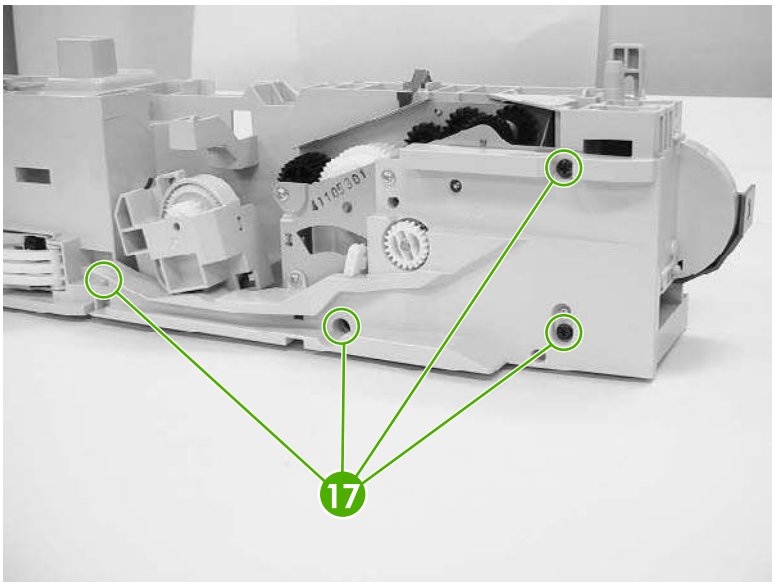


Figure 6-176 Remove the drive assembly (9 of 9)

Reinstallation tip

Ensure that the lifter drive assembly is seated on the pivot pins before replacing the paper pickup drive assembly.

500-sheet paper feeder lifter drive assembly

1. Remove the paper tray.

2. Remove the spring (callout 1).

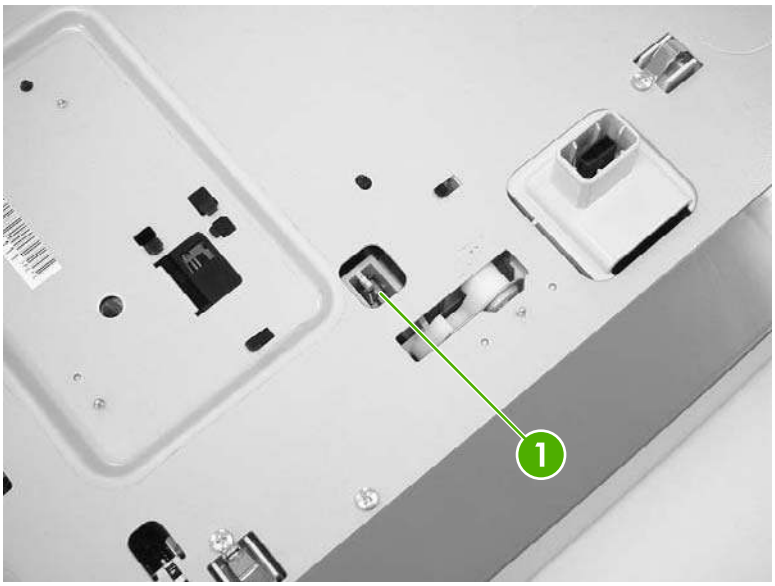


Figure 6-177 Remove the lifter drive assembly (1 of 4)

NOTE Place the feeder on the right hand side so you can see the bottom and right side of the feeder.

3. Remove the four black screws (callout 2).
4. Remove the three screws (callout 3).
5. Remove the plastic cover (callout 4).

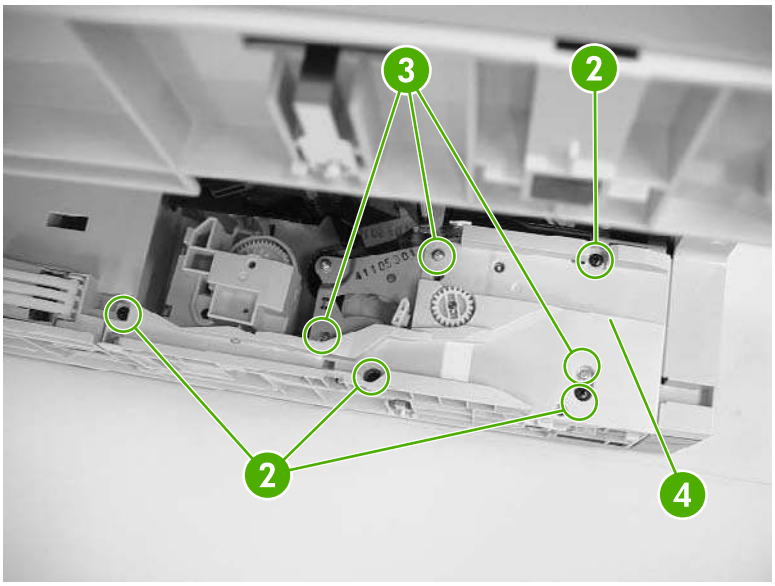


Figure 6-178 Remove the lifter drive assembly (2 of 4)

6. Lift the drive unit assembly up (callout 5), disconnect the connector (callout 6), and remove the lifter drive assembly.

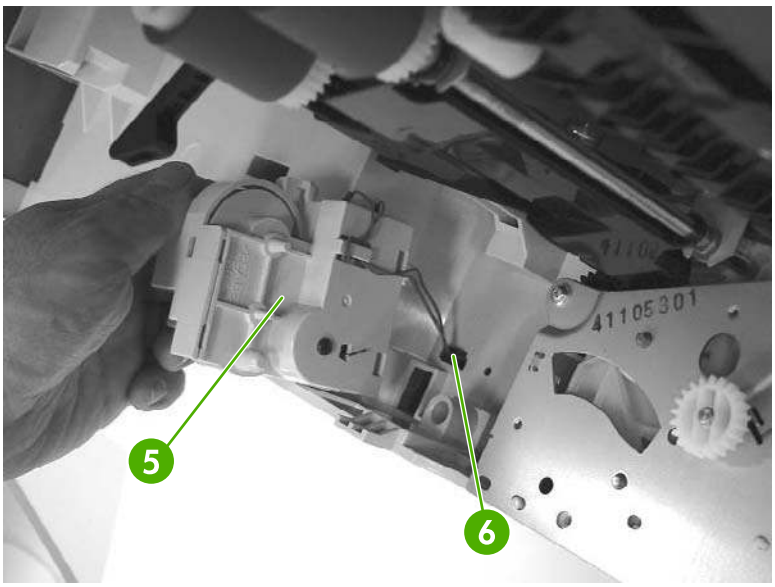


Figure 6-179 Remove the lifter drive assembly (3 of 4)

Reinstallation tip

When replacing the new assembly, place a piece of tape around the spring. This holds the spring in place when reconnecting.

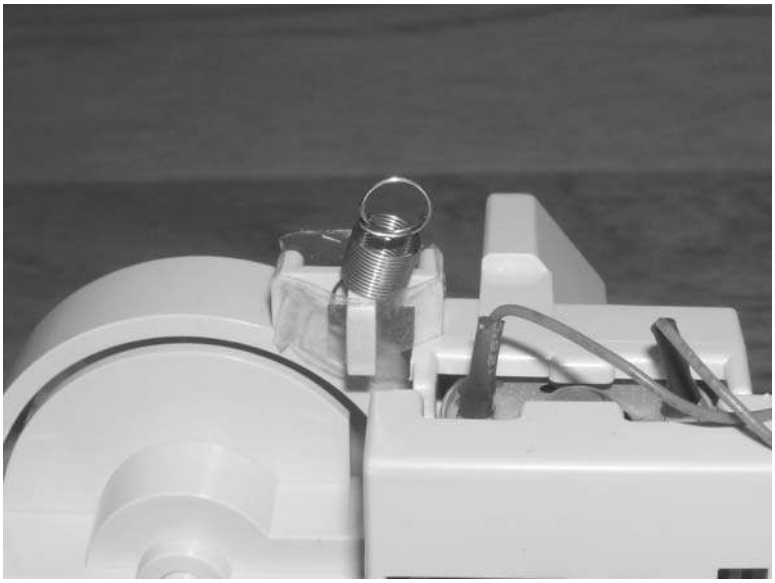


Figure 6-180 Remove the lifter drive assembly (4 of 4)

500-sheet paper feeder pickup rollers

The procedure for removing the 500-sheet paper feeder pickup rollers is essentially the same as for the Tray 2-x pickup rollers. See Tray 2-x feed and pickup rollers on page 226.

Stapler/stacker (4700 models)

Use the following procedures to remove and replace components of the stapler/stacker.

Remove the stapler/stacker from the printer

1. On the left side of the unit, lift the button up (callout 1).

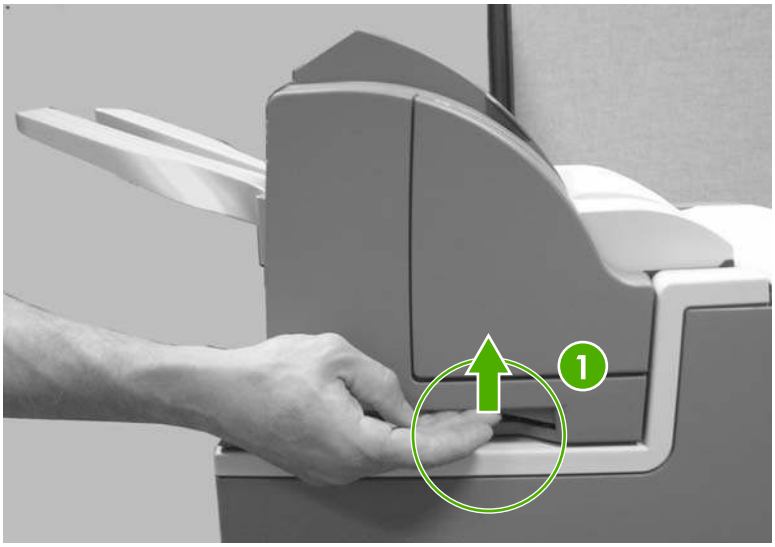


Figure 6-181 Remove the stapler/stacker from the printer (1 of 2)

2. Using two hands, lift the unit up (callout 2).



Figure 6-182 Remove the stapler/stacker from the printer (2 of 2)

Staple cartridge left cover

1. Grasp the door (callout 1) by the handle and pull down.
2. Release the latches (callout 2) by pulling outward (callout 3) and releasing them one at a time.

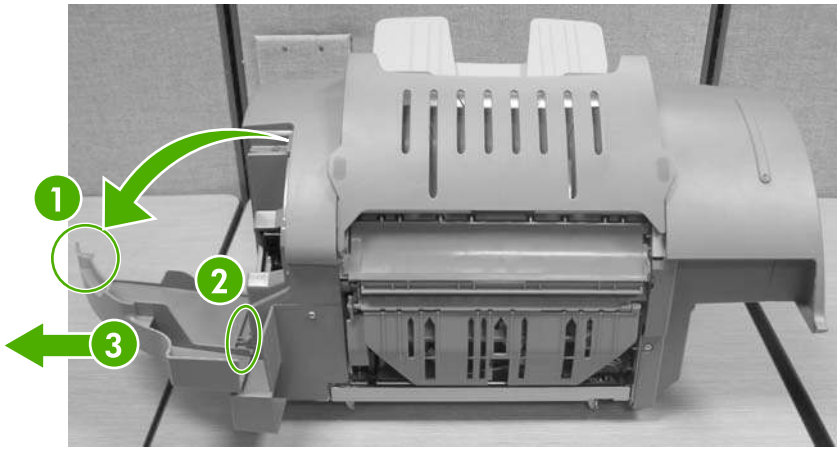


Figure 6-183 Remove the staple cartridge left cover

Output tray

1. Push in and lift up on the tabs (callout 1).

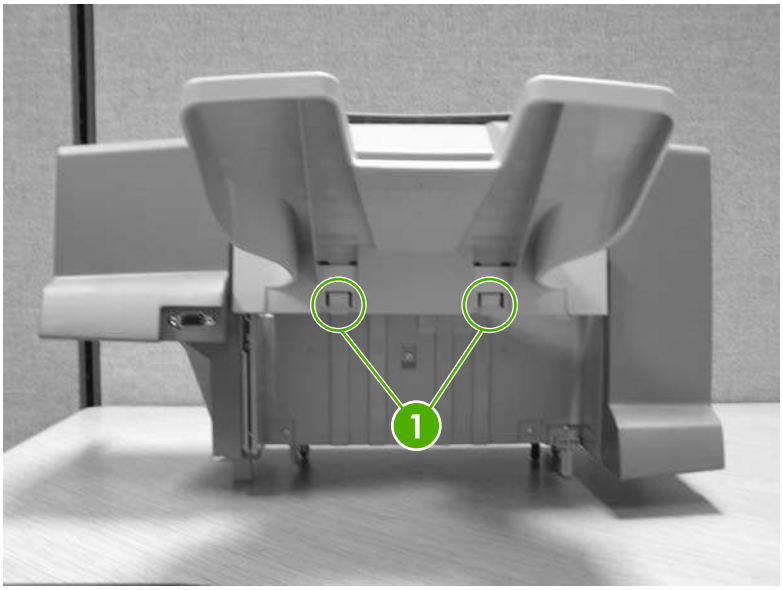


Figure 6-184 Remove the output tray

2. Remove the output tray.

Left cover

1. Remove the screw (callout 1).

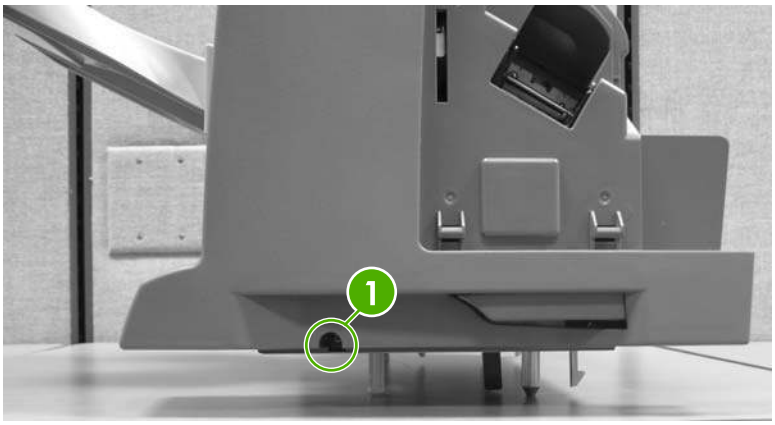


Figure 6-185 Remove the left cover (1 of 2)

2. Remove the screw (callout 2) and remove the left cover.

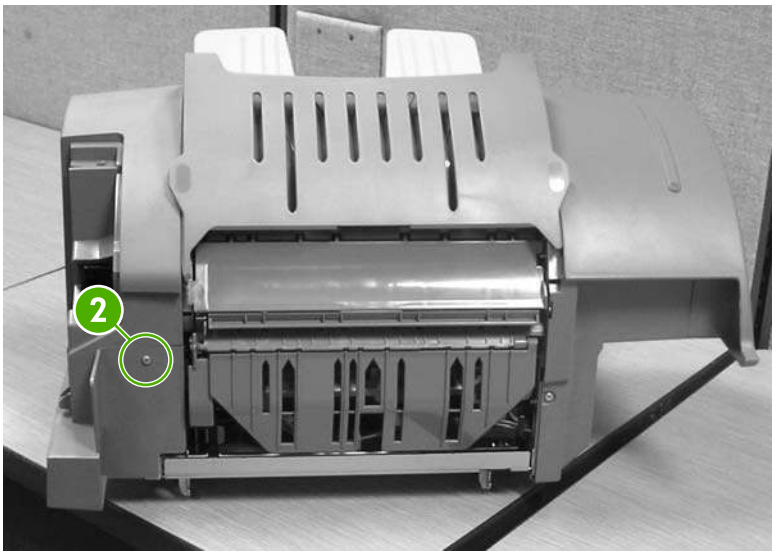


Figure 6-186 Remove the left cover (2 of 2)

Top cover

1. Remove the following assemblies:
   - Output tray. See Output tray on page 341.
   - Left cover. See Left cover on page 342.

2. Lift the top cover (callout 1).

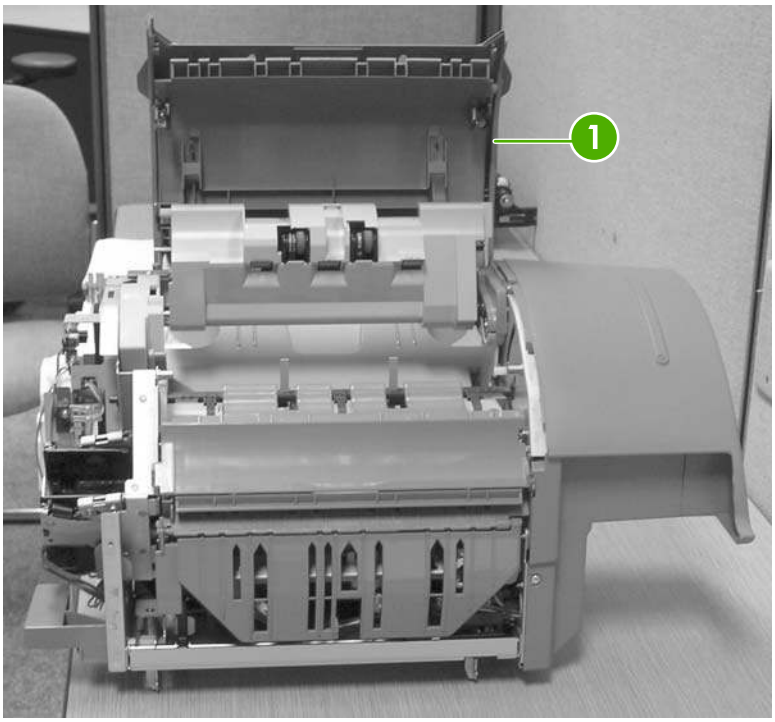


Figure 6-187 Remove the top cover (1 of 3)

3. Release the strap using a flat-blade screwdriver (callout 2).

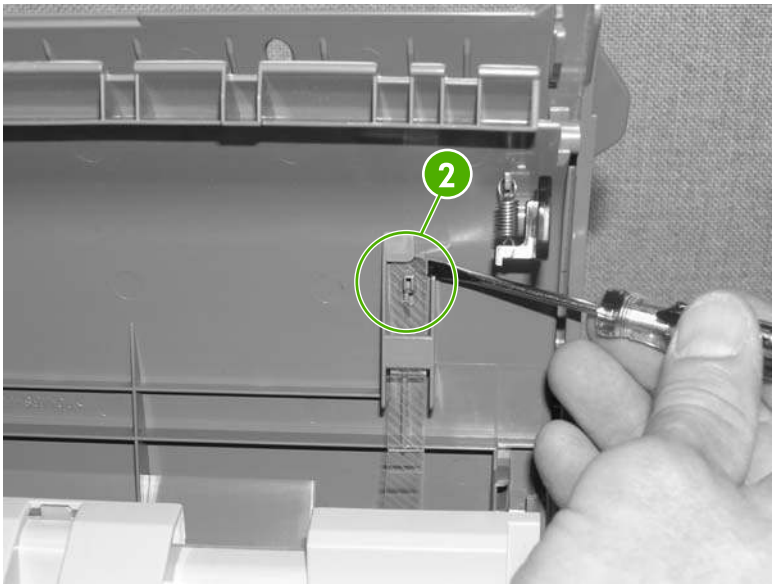


Figure 6-188 Remove the top cover (2 of 3)

4. Remove the screw (callout 3), and then lift up slightly and slide the top cover to the left to remove.

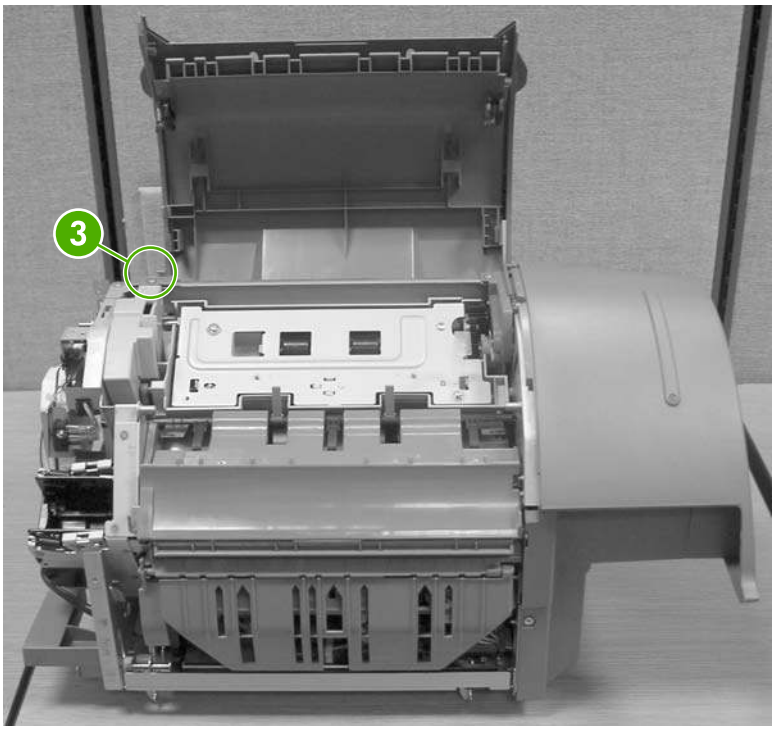


Figure 6-189 Remove the top cover (3 of 3)

Right cover

1. Remove the screw (callout 1).

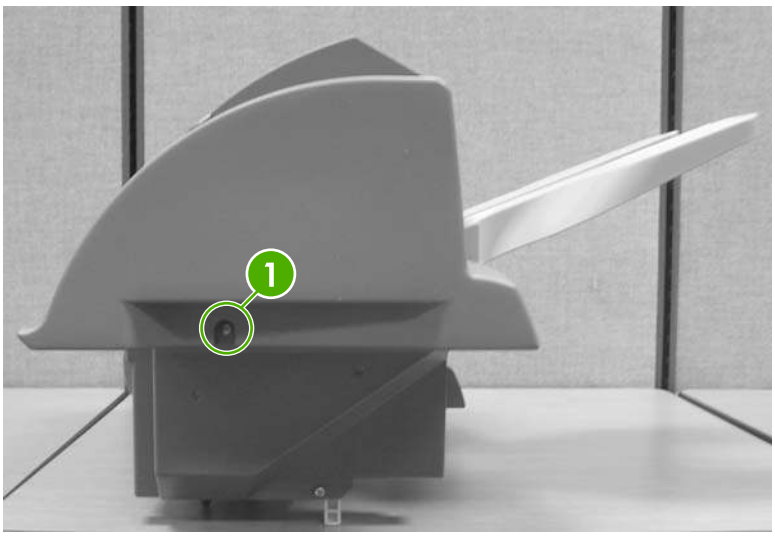


Figure 6-190 Remove the right cover (1 of 3)

2. Remove the screw (callout 2) and release the tab (callout 3).

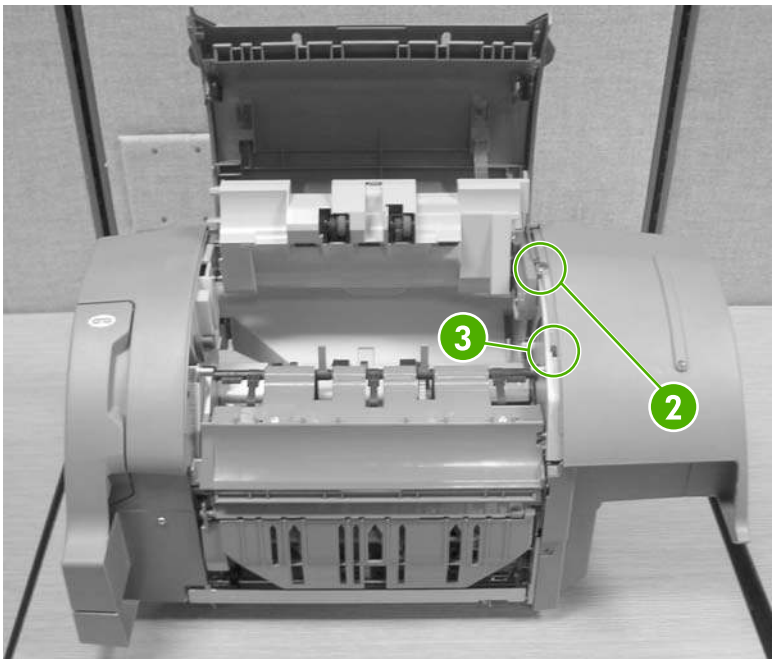


Figure 6-191 Remove the right cover (2 of 3)

3. Disconnect the connector (callout 4) and lift off the right cover.

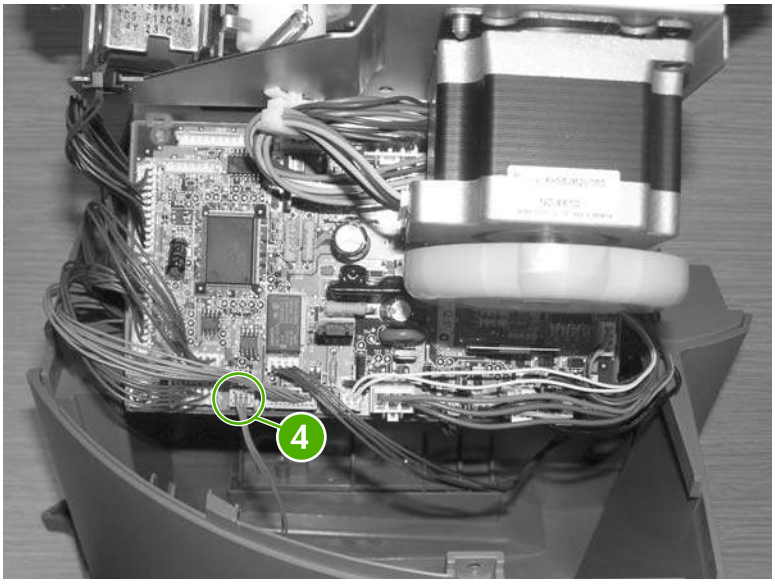


Figure 6-192 Remove the right cover (3 of 3)

Staple cartridge

1. Grasp the door by the handle and pull down (callout 1).



Figure 6-193 Remove the staple cartridge (1 of 2)

2. Pull up on the green handle to release the staple cartridge (callout 2) and lift it out.



Figure 6-194 Remove the staple cartridge (2 of 2)

Stapler/stacker PCB

1. Remove the right cover. See Right cover on page 344.
2. Remove the two screws (callout 1) and release the tabs (callout 2).

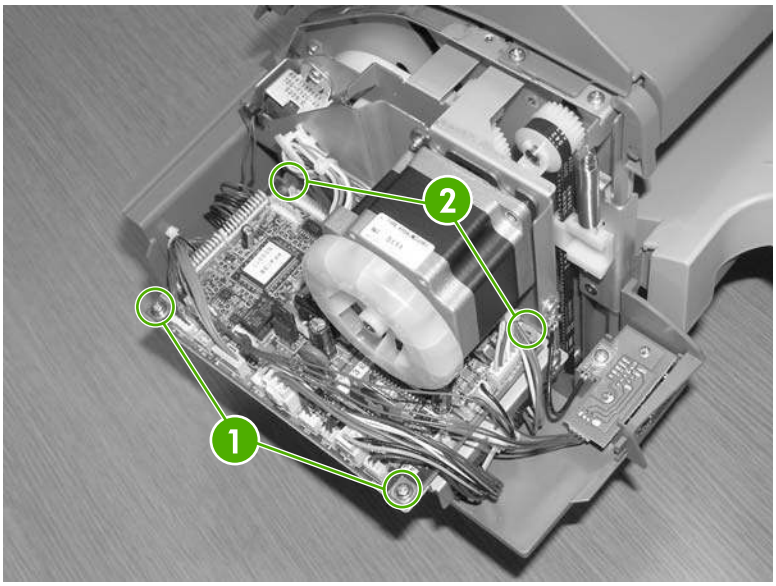


Figure 6-195 Remove the stapler/stacker PCB

3. Disconnect the remaining connectors on the PCB and then lift out the PCB.

Stapler/stacker unit assembly 24v 2.5 amp

1. Remove the staple cartridge.
2. Remove the left cover. See Left cover on page 342.
3. Disconnect the two connectors (callout 1).
4. Remove the two screws (callout 2).

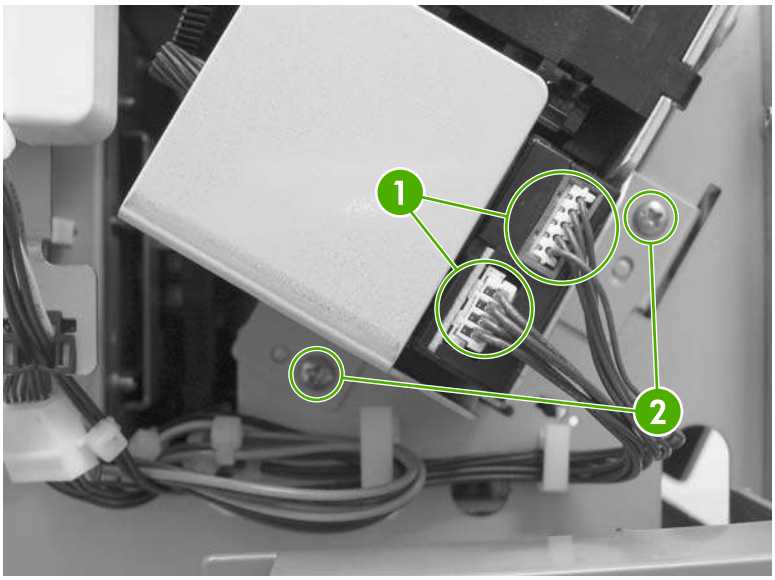


Figure 6-196 Remove the stapler/stacker unit assembly

5. Remove the stapler/stacker unit assembly.

Duplexer

CAUTION Before removing or replacing the duplexer, be sure to turn off the printer. Then remove or replace the duplexer before turning the printer back on.

Use the following procedures to remove and replace components of the duplexer.

Top duplexing assembly

1. Lift up on the cover of the duplexer and move the two tabs (callout 1) toward the rear of the printer.

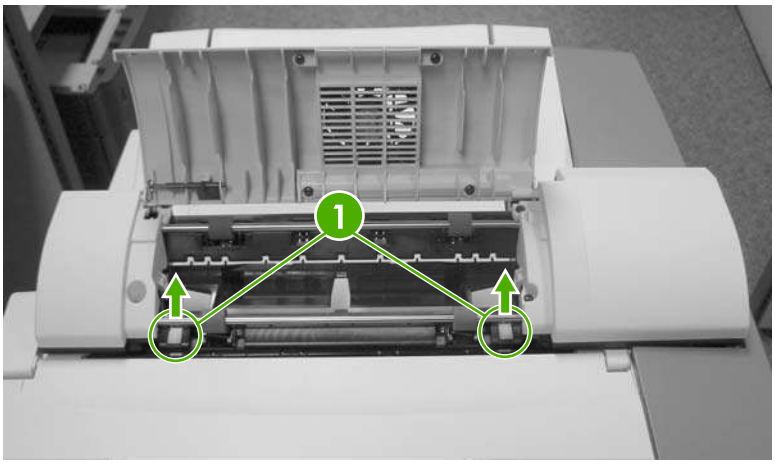


Figure 6-197 Remove the top duplexing assembly (1 of 2)

2. Lift up on the top duplexing assembly and disconnect the connector (callout 2). Then lift off the duplexer.

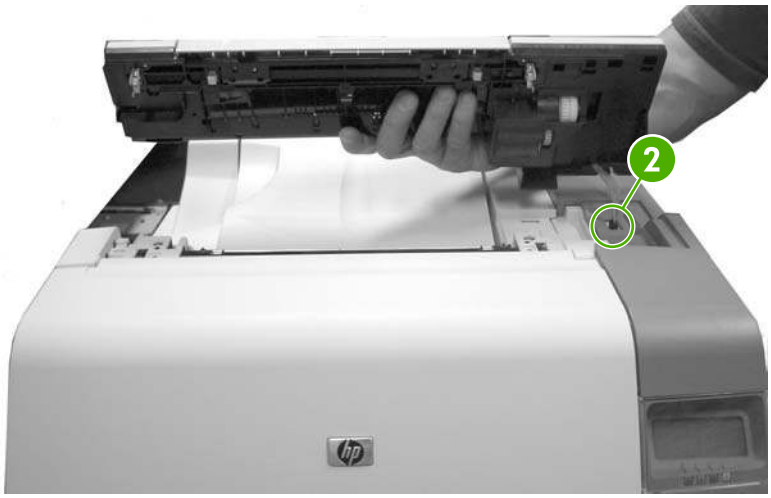


Figure 6-198 Remove the top duplexing assembly (2 of 2)

Duplex tray

1. Remove the duplexer.

2. Slightly lift up and pull the duplex tray (callout 1) off of the duplexer.

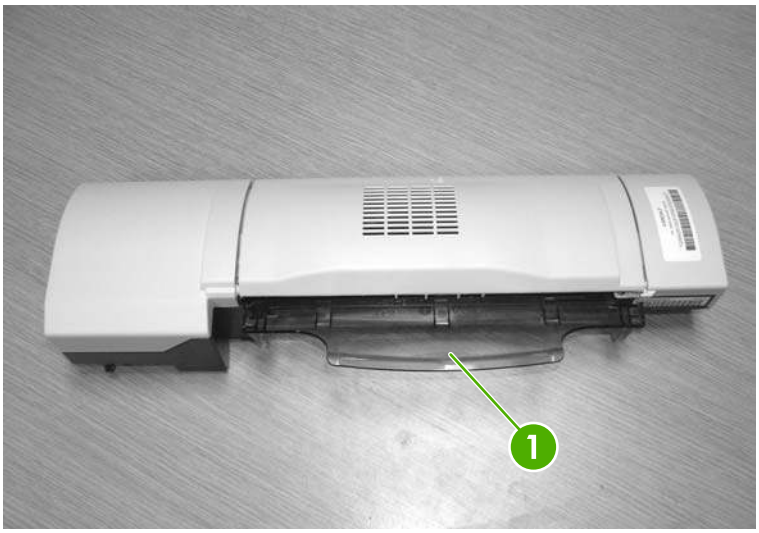


Figure 6-199 Remove the duplex tray

7 Troubleshooting

This chapter contains information about the following topics:

- Introduction
- Troubleshooting process
- Control panel messages
- Formatter lights
- Accessory lights (4700 models)
- Replacement parts configuration
- Paper path troubleshooting
- Paper transport troubleshooting
- Image formation troubleshooting
- Image defects
- Interface troubleshooting
- Changing printer control panel configuration settings
- Control panel troubleshooting
- Tools for troubleshooting
- Diagnostics
- Test pages
- Engine resets
- Service menu
- Diagrams

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. 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.
- **Formatter lights** provides information about the LEDs on the formatter.
- **Accessory lights** provides information about the LEDs on the stapler/stacker.
- **Replacement parts configuration** provides information about replacing the formatter, DC controller, and firmware compact flash.
- **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 printer.
- **Paper transport troubleshooting** provides information on how to troubleshoot problems with media feeding incorrectly.
- **Image formation troubleshooting** suggests methods for solving print quality problems.
- **Image defects** provides information on image defects and how to identify the root cause of the problem.
- **Interface troubleshooting** provides techniques for isolating communication problems to the printer hardware, printer configuration, network configuration, or software program.
- **Control panel troubleshooting** provides procedures for printing a menu map from the printer control panel. It also describes the control panel menus, the items within each menu, and the possible values for the menu items.
- **Troubleshooting tools** help isolate the cause of printer failures. This section includes explanations of the printer 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 printer.
- **Test pages** provides information on how to print test pages to determine if the engine and the formatter are functioning properly.
- **Engine resets** provides information on how to perform engine 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, ETB maintenance, fuser maintenance, color page, and total page, and clearing the event log.
- **Diagrams** provides graphical locations and tables for the printer's internal assemblies and sensors.

Troubleshooting process

When the printer malfunctions or encounters an unexpected situation, the printer control panel alerts you to the situation. This section contains a pre-troubleshooting checklist to filter out many possible causes of the problem. A troubleshooting flowchart helps you diagnose the root cause of the problem. The remainder of this chapter provides steps for correcting problems.

- Use the pre-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 root cause of hardware malfunctions. The flowchart guides you to the appropriate section of this chapter that provides steps for correcting the malfunction.

Before beginning any troubleshooting procedure, check the following conditions:

- Are supply items within their rated life?
- Does the configuration page reveal any configuration errors?



NOTE The customer is responsible for checking supplies and for using supplies that are in good condition.

Pre-troubleshooting checklist

The list below describes basic questions to ask the customer to help quickly define the problem(s).

Table 7-1 Pre-troubleshooting checklist

Environment	• Is the printer installed on a solid, level surface? • Is the printer exposed to particle matter or dust? • Is the power-supply voltage within ± 10 volts of the specified power source? • Is the power supply plug inserted in the printer and directly to the wall outlet (not a power strip)? • Is the operating environment within the specified parameters, as listed in chapter 1 of this manual? • Is the printer exposed to ammonia gas, such as that produced by diazo copiers or office cleaning materials? • Is the printer exposed to direct sunlight?
Media	• Does the customer use only supported media? • Is the media in good condition (contains no curls, folds, and so forth)? • Is the media stored correctly and within environmental limits?
Input trays	• Is the amount of media in the tray within specifications? • Is the media placed in the tray correctly?

Table 7-1 Pre-troubleshooting checklist (continued)

	• Are the paper guides aligned with the media? • Is the paper tray correctly installed in the printer?
Print cartridges	• Is each print cartridge correctly installed? • Are original HP print cartridges installed? • Are the cartridges damaged?
ETB and fuser	• Are the ETB and fuser correctly installed? • Is the ETB or fuser damaged?
Covers	• Are the top cover and front cover closed?
Condensation	• Does condensation occur following a temperature change (particularly in winter following cold storage)? If so, wipe the affected area dry or leave the printer on for 10 to 20 minutes. • Was a print cartridge installed soon after being moved from a cold to a warm room? If so, allow the printer to sit at room temperature for one to two hours.
Miscellaneous	• Check for and remove any non-HP components (print cartridges, memory modules, and EIO cards) from the printer. • If hardware or software configuration has not changed, or the problem is not associated with any specific software, contact the Customer Care Center (see chapter 1). • Remove the printer from the network, and ensure that the failure is associated with the printer before beginning troubleshooting. • For any print quality issues, calibrate the printer. See Full Calibrate Now on page 539.

Troubleshooting checklist

If the printer is not responding correctly, complete the steps in the following checklist, in order. If the printer does not pass a step, follow the corresponding troubleshooting suggestions. If a step resolves the problem, you can stop without performing the other steps on the checklist.

1. Make sure one of the following messages display on the control panel: **Ready**, **Paused**, or **Sleep mode on**. If no lights are on or the display does not say **Ready**, **Paused**, or **Sleep mode on**, see Power-on checks on page 357.
2. Check the cabling.
   a. Check the cable connection between the printer 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 Communications checks on page 457.
3. Ensure that the print media that you are using meets specifications. See Media specifications on page 21.

4. Print a configuration page (see Configuration page on page 507.) If the printer 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 printer, see Jams on page 402.

5. If the configuration page prints, check the following items.

   a. If the page prints correctly, then the printer 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 printer hardware. See Engine test page on page 537.

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 436 in this chapter.
   - 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 4700**.

   -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 4700**.

8. Verify that you have installed the HP Color LaserJet 4700 series printer driver. Check the program to make sure that you are using an HP Color LaserJet 4700 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 printer software installed.

   b. If you connected the printer to the network, connect the printer directly to a computer with a parallel cable. Redirect the printer 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 printer 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 7-2 Troubleshooting flowchart

1 **Power on**	Is the printer on and does a readable message display?		Follow the power-on troubleshooting checks. See Power-on checks on page 357. After the control panel display is functional, go to step 2.
	Yes ↓	No →	
2 **control panel messages**	Does the message **Ready** display on the control panel?		If an error message displays, see Control panel messages on page 359. 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 printer. Does the event log print?		If the event log does not print, see Engine test page on page 537. If paper jams inside the printer, see Jams on page 402. If error messages display on the control panel when you try to print an event log, see Control panel messages on page 359. 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 (4700 models) on page 397. After evaluating the configuration pages, go to step 5.
	Yes ↓	No →	
5 **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 defects on page 443. After the print quality is acceptable, go to step 6.
	Yes ↓	No →	
6 **Interface**	Can the customer print successfully from the host computer?		Verify that all I/O cables are connected correctly and that a valid IP address is listed on the Jetdirect configuration page. See Network configuration on page 89 and Setting an IP address on page 89. If error messages display on the control panel, see Control panel messages on page 359. When the customer can print from the host computer, this is the end of the troubleshooting process.
	Yes. This is the end of the troubleshooting process.	No →	

Power-on checks

The basic printer functions should start up as soon as the printer is plugged into an electrical outlet and the power switch is pushed to the *on* position. If the printer does not start, use the information in this section to isolate and solve the problem.

Power-on troubleshooting overview

Turn on the printer power. If the control panel display remains blank, random patterns display, or asterisks remain on the control panel 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 printer 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 air passing out of the printer. You can also lean close to the printer 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 page on page 537). 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 printer, check the following items.

1. Make sure that the printer is plugged directly into an active electrical outlet (not a power strip) 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 control panel display wire harness is connected. See Control panel on page 250.
5. Make sure that the firmware flash memory card and the formatter are seated and operating correctly. See Installing a flash memory card (HP Color LaserJet 4700 Series only) on page 121.
6. Remove any HP Jetdirect or other EIO cards, and then try to turn the printer on again.



NOTE If the control panel display is blank, but the main cooling fan runs briefly after the printer power is turned on, try printing an engine test page to determine whether the problem is with the control panel display, formatter, or other printer components. See Engine test page on page 537.

Control panel messages

Control panel messages are divided into three types, depending on their severity.

- Status messages
- Warning messages
- Error messages

Within the error message category, some messages are ranked as *Critical* error messages. This section explains the differences between the control panel message types.

Warning messages

Warning messages inform you of data and print errors. These messages typically alternate with the **Ready** or **Status** messages and remain displayed until the ✔ button is pressed. If **CLEARABLE WARNINGS** is set to **JOB** in the printer's configuration menu, these messages are cleared by the next print job.

Error messages

Error messages communicate that some action must be performed, such as adding paper or clearing a paper jam.

Some error messages are auto-continuable; if **AUTO CONTINUE=ON** the printer will continue normal operation after displaying an auto-continuable error message for 10 seconds.



NOTE Any button pressed during the 10-second display of an auto-continuable error message will override the auto-continue feature and the function of the button pressed will take precedence. For example, pressing the Menu button will display the main menu.

Critical error messages

Critical error messages inform you of a device failure. Some of these messages can be cleared by turning the printer off and then on. These messages are not affected by the **AUTO CONTINUE** setting. If a critical error persists, service is required.

The following table lists and describes control panel messages, in alphabetical order.

Message listing

Control panel message	Description	Recommended action
Control Panel display is blank	Possibly poor formatter, or Compact Flash Firmware card connection, or Control Panel display problem.	1. Reseat formatter 2. Reseat compact flash 3. Reseat memory DIMM(s) 4. Replace compact flash and firmware card 5. Replace memory DIMM

Control panel message	Description	Recommended action
		6. Replace formatter 7. Check flat ribbon cable connector from DC controller to formatter 8. Check formatter power connectors for LVPS 9. Check Control Panel display connectors to DC controller 10. Replace Control Panel display
10.90.X REPLACE **[COLOR] CARTRIDGE** alternates with **For help press ?**	A color cartridge is out of toner and needs to be replaced.	Replace the affected color cartridge.
10.XX.YY CARTRIDGES **NOT ENGAGED**	The print cartridge is not seated properly in the printer. 10.92.00 = black print cartridge 10.92.01 = cyan print cartridge 10.92.02 = magenta print cartridge 10.92.03 = yellow print cartridge	1. Make sure that the ETB is closed. 2. Remove and reinstall the affected print cartridge. 3. Make sure the cartridge guide for the affected print cartridge is installed correctly.
10.XX.YY SUPPLY **MEMORY ERROR** alternates with **For help press ?** The supplies gauge will display the consumption levels of print cartridges.	The printer cannot read or write to at least one print cartridge memory tag or at least one memory tag is missing. The following control panel messages correspond to the color of the print cartridge: 10.00.00 = black print cartridge 10.00.01 = cyan print cartridge 10.00.02 = magenta print cartridge 10.00.03 = yellow print cartridge	1. Turn the printer off then on. 2. Exchange the cartridge for the indicated color 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, continue with step 3. 3. Make sure that the E label memory contacts are not dirty or damaged. 4. Make sure the cartridge guide for the affected print cartridge is installed correctly. 5. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 6. Reseat the connectors between the memory PCB (J9630) and the E label memory contacts, the memory PCB (J4001), and the DC controller PCB (J1021). 7. Check all cable connections to/from DC controller.

Control panel message	Description	Recommended action
		8. Replace the E label memory contacts. See E label memory contacts and cable on page 322. 9. Replace the memory PCB.
11.X INTERNAL CLOCK ERROR **To continue press ✔**	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	Replace the formatter assembly.
13.XX.YY EXTERNAL OUTPUT **DEVICE PAPER JAM** (4700 models)	There is a jam in the stapler/stacker.	1. Press **?** for detailed information about clearing the jam. 2. Press ▲ and ▼ to step through the instructions. 3. For more information about clearing jams, see Clearing jams on page 415.
13.XX.YY JAM IN **DUPLEX PATH** **For help press ?**	There is a jam in the duplex path.	1. Remove the paper. 2. Run the paper path test to determine if one or more of the sensors are not working correctly. 3. Check the oblique rollers on the back side of the ETB to ensure they are not worn or dirty. 4. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 5. Replace the ETB. 6. Check all cable connections to/from DC controller.
13.XX.YY JAM IN **OUTPUT DEVICE** alternates with **For help press ?**	Paper is jammed in an external paper handling device. The amber light on the stacker/stapler is blinking. 13.12.01 = early reached 13.12.02 = entrance sensor not reached 13.12.03 = entrance sensor not escaped 13.12.04 = entrance sensor remaining 13.12.05 = exit sensor not reached 13.12.06 = exit sensor not escaped 13.12.07 = exit sensor remaining 13.12.08 = top cover open 13.12.09 = stapler cover open	Check the duplexer or the stapler/stacker for jammed paper. For more information, see Clearing jams on page 415.

Control panel message	Description	Recommended action
13.XX.YY JAM IN **PAPER PATH** **For help press ?**	There is a jam in the paper path. 13.12.00 = jam in paper path 13.20.00 = jam in paper path 13.21.00 = jam in paper path	1. Press **?** for detailed information about clearing the jam. 2. Press ▲ and ▼ to step through the instructions. 3. For more information, see Jams on page 402. 4. If paper is folding into an accordion shape, check whether the shutter on each print cartridge opens as you close the ETB and each cartridge is turning correctly. Replace defective print cartridges or drive motors. 5. Clean the attaching roller at the bottom of the ETB and make sure that the spring is holding it in place. 6. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 7. Replace the paper pickup PCB. 8. Check all cable connections to/from the DC Controller. 9. Replace the ETB if it is not moving paper correctly. Calibrate the printer.
13.XX.YY JAM IN **STAPLER** **For help press ?**	A staple is jammed in the stapler. Check the stapler/stacker for jammed staples.	Remove the defective staple in the cartridge.
13.XX.YY JAM IN **TRAY 1** **For help press ?**	Paper is jammed in Tray 1.	1. Press **?** for detailed information about clearing the jam. 2. Press ▼ to see step by step information. 3. For thorough troubleshooting, see Paper path troubleshooting on page 402 4. Clean the pickup roller. If it is worn or damaged, replace it. See Tray 1 pickup roller and separation pad on page 222. 5. Clean or replace the separation pad. See Tray 1 pickup roller and separation pad on page 222. 6. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/

Control panel message	Description	Recommended action
		support/clj4700 or http://www.hp.com/support/cp4005. 7. Check all cable connections to/from DC controller. 8. Replace the paper pickup drive assembly. 9. Replace the paper feed assembly. See Paper feed assembly on page 283.
13.XX.YY JAM IN **TRAY X** **For help press ?**	A page is jammed in Tray 2 or in one or more of the optional trays.	1. Press ? for detailed information about clearing the jam. 2. Press ▲ and ▼ to step through the instructions. 3. Clean the pickup roller. If it is worn or damaged, replace it. See Tray 2-x feed and pickup rollers on page 226. 4. Clean the feed roller. If it is worn or damaged, replace it. See Tray 2-x feed and pickup rollers on page 226. 5. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 6. Check all cable connection to/from DC controller. 7. Replace the tray X paper pickup drive assembly. 8. Replace the tray X lifter motor. 9. Replace the paper feed assembly. See Paper feed assembly on page 283.
13.XX.YY JAM IN TOP **COVER OR DUPLEX AREA** **For help press ?**	There is a jam in the top cover area.	1. Press ? for detailed information about clearing the jam. 2. Press ▲ and ▼ to step through the instructions. 3. Replace the fuser. 4. Check that the fuser paper sensor is in place. If it is defective, replace it.
13.XX.YY JAM INSIDE **DUPLEXER** **For help press ?**	Paper is jammed in the duplexer. Check the device for jammed paper.	1. Remove the jammed paper. 2. Make sure the paper meets the media specifications for the duplexer. 3. Make sure the duplexer is seated correctly.

Control panel message	Description	Recommended action
		4. Make sure the sensor (SR8001) in the duplexer is operating correctly by performing a paper path test. 5. Replace the duplexer if it is not working correctly. See Duplexer on page 349. 6. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 7. Check all cable connection to/from DC controller.
13.XX.YY JAM INSIDE **FRONT COVER** **For help press ?**	There is a jam in the front cover.	1. Remove the jammed paper. 2. Press **?** for detailed information about clearing the jam. 3. Press ▲ and ▼ to step through the instructions. 4. For more information, see Clearing jams on page 415.
13.XX.YY JAM INSIDE **TOP COVER** **For help press ?**	There is a jam in the top cover area.	1. Press **?** for detailed information about clearing the jam. 2. Press ▲ and ▼ to step through the instructions. 3. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 4. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 5. Replace the fuser. 6. Check all cable connection to/from DC controller. 7. Check that the fuser paper sensor is in place. If it is defective, replace it. 8. Check all cable connection to/from DC controller.
13.XX.YY MULTIPLE **JAMS IN DUPLEX PATH** **For help press ?**	There are multiple jams in the duplex path. This includes the top cover area.	See **13.XX.YY JAM INSIDE DUPLEXER** and **13.XX.YY JAM IN DUPLEX PATH** for recommended actions.

Control panel message	Description	Recommended action
13.XX.YY MULTIPLE **JAMS IN PAPER PATH** **For help press ?**	There are multiple jams in the paper path. This includes the top cover area.	1. Press **?** for detailed information about clearing the jam. 2. Press ▲ and ▼ to step through the instructions. 3. For more information, see Clearing jams on page 415.
20 Insufficient Memory **For help press ?** alternates with **20 Insufficient Memory** **To continue press ✔**	The printer has received more data from the computer than fits in available memory.	1. Press ✔ to continue printing. **NOTE** 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 printer may allow printing of more complex pages.
22 EIO X **BUFFER OVERFLOW** **To continue press ✔**	The EIO card in card slot X has overflowed its I/O buffer during a busy state.	1. Press ✔ to continue printing. 2. Power cycle the printer. 3. Resend the print job. 4. If the error still occurs, replace the EIO card in slot X. See Installing an HP Jetdirect print server card (HP Color LaserJet 4700 Series only) on page 126.
22 EMBEDDED I/O **BUFFER OVERFLOW** alternates with **To continue press ✔**	The embedded Jetdirect print server has overflowed.	1. Press ✔ to continue printing. 2. Power cycle the printer. 3. Resend the print job. 4. If the error still occurs, replace the EIO card in slot X. See Installing an HP Jetdirect print server card (HP Color LaserJet 4700 Series only) on page 126.
22 PARALLEL I/O **BUFFER OVERFLOW** **For help press ?** alternates with **22 PARALLEL I/O** **BUFFER OVERFLOW** **To continue press ✔**	The parallel buffer has overflowed during a busy state.	1. Press ✔ 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 otherwise conform to IEEE-1284 specifications.

Control panel message	Description	Recommended action
		4. Replace the cable. 5. Leave the computer connected and try to connect to a different printer. If this still fails, replace the formatter.
22 USB I/O **BUFFER OVERFLOW** **To continue press ✔**	The USB buffer has overflowed during a busy state.	1. Press ✔ 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 cable is being used. Some non-HP parallel cables might be missing pin connections. 4. Replace the cable. 5. Leave the computer connected and try to connect to a different printer. If this still fails, replace the formatter.
40 EIO X BAD **TRANSMISSION** **To continue press ✔**	A connection with the card in EIO slot X has been broken.	1. Press ✔ to continue printing. 2. Power cycle the printer. 3. Resend the print job. 4. If the error still occurs, replace the EIO card in slot X. See Installing an HP Jetdirect print server card (HP Color LaserJet 4700 Series only) on page 126.
40 EMBEDDED I/O BAD **TRANSMISSION** alternates with **To continue press ✔**	A connection with the embedded Jetdirect print server has been broken.	1. Press ✔ to continue printing. 2. Power cycle the printer. 3. Resent the print job. 4. If the error still occurs, replace the EIO card in slot X or the formatter. See Installing an HP Jetdirect print server card (HP Color LaserJet 4700 Series only) on page 126 and Formatter on page 227.
41.3 UNEXPECTED **SIZE IN TRAY X** **For help press ?** alternates with **LOAD TRAY X** **[TYPE] [SIZE]**	Media is loaded that is longer or shorter in the feed direction than the size configured for the tray.	1. Make sure the correct settings are set for the trays. 2. Run a paper path diagnostic test to determine if all sensors are working correctly. 3. Replace the paper feed assembly. See Paper feed assembly on page 283.

Control panel message	Description	Recommended action
To use another **tray press ✔ ✔**		
41.5 UNEXPECTED **TYPE IN TRAY X** **For help press ?** alternates with **LOAD TRAY X** **[TYPE] [SIZE]** **To use another** **tray press ✔ ✔**	The printer senses a different media type in the media path than configured in the tray.	1. Make sure the correct settings are set for the trays. 2. Run a paper path diagnostic test to determine if all sensors are working correctly. 3. Replace the paper feed assembly. See Paper feed assembly on page 283.
49.XXXX **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 home-grown programs. On rare occasions, the formatter is at fault, which is usually indicated by a **79 Service Error**.	1. Turn the printer off then on. 2. Press Stop to clear the print job from the printer memory. 3. Turn the printer 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 displays only with a certain software program or print job, contact the software vendor for assistance. 5. If the message persists with different software programs and print jobs, disconnect all of the cables to the printer that connect it to the network or computer. 6. Turn the printer off. 7. Remove all memory DIMMs or third-party DIMMs from the printer. (Do not remove the firmware DIMM.) 8. Remove all EIO devices from the printer. 9. Turn the printer on. 10. If the error no longer exists, install each DIMM and EIO device one at a time, making sure to turn the printer off and on again as you install each device. 11. Replace a DIMM or EIO device if you determine that it causes the error.

Control panel message	Description	Recommended action
		12. Remember to reconnect all of the cables that connect the printer to the network or computer. 13. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 14. If the error persists, upgrade the firmware compact flash card. See Installing a flash memory card (HP Color LaserJet 4700 Series only) on page 121. 15. Replace the formatter and calibrate the printer. See Full Calibrate Now on page 539.
50.X FUSER ERROR **For help press ?**	A fuser error has occurred. The following are specific fuser errors: 50.1: A low fuser temperature error has occurred in the main thermistor. 50.2: A fuser warmup service error has occurred. 50.3: A high fuser temperature error has occurred in the main thermistor. 50.6: An open fuser error has occurred. 50.7: A fuser pressure release mechanism failure has occurred. 50.8: Low fuser sub-thermistor temperature 50.9: High fuser sub-thermistor temperature The error might be due to an inadequate power supply, inadequate line voltage, or a problem with the fuser.	1. Turn the printer off and allow it to cool down. 2. Reinstall the fuser, and check the connector (J5001) that connects the fuser and the printer. Replace the connector if it is damaged. 3. Replace the fuser. 4. Check all cable connections to/from the DC controller. 5. Replace the low-voltage power supply PCB. See Low-voltage power supply PCB on page 319.
51.1Y **PRINTER ERROR** **For help press ?** alternates with **51.1Y** **PRINTER ERROR** To continue **turn off then on**	A laser error has occurred. **Y Description** 0 - Black 1 - Cyan 2 - Magenta 3 - Yellow	1. Turn the printer off then on. 2. Reseat the connectors (J1002 - Y, J1003 - C, J1004 - M, J1005 - K) between the laser/scanner and DC controller PCB. 3. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 4. Replace the defective laser/scanner assembly. See Laser/scanner assembly on page 287. Calibrate the printer after replacing the laser/scanner. See Full Calibrate Now on page 539.

Control panel message	Description	Recommended action
51.2Y **PRINTER ERROR** **For help press ?** alternates with **51.2Y** **PRINTER ERROR** To continue **turn off then on**	A laser beam error has occurred. **Y Description** 0 - Black 1 - Cyan 2 - Magenta 3 - Yellow	1. Turn the printer off then on. 2. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 3. Reseat the connectors (J1002 - Y, J1003 - C, J1004 - M, J1005 - K) between the laser/scanner and DC controller PCB. 4. Replace the defective laser/scanner assembly. See Laser/scanner assembly on page 287. Calibrate the printer after replacing the laser/scanner. See Full Calibrate Now on page 539.
52.X PRINTER ERROR alternates with **To continue** **turn off then on**	A printer error has occurred. **X Description** 00 - Scanner error 01 - Scanner startup error 02 - Scanner rotation error **Y Description** 0 - Black 1 - Cyan 2 - Magenta 3 - Yellow	1. Turn the printer off then on. 2. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 3. Reseat the connectors between the laser/scanner and DC controller PCB. 4. Replace the defective laser/scanner assembly. See Laser/scanner assembly on page 287. Calibrate the printer after replacing the laser/scanner. See Full Calibrate Now on page 539.
53.XX.X CHECK RAM **DIMM SLOT X**	A memory error has occurred. **X DIMM Type** 1 RAM **Y Device Location** 1 DIMM Slot 1 2 DIMM Slot 2 **ZZ Error Number** 00 Unsupported memory 01 Unrecognized memory 02 Unsupported memory size 03 Failed RAM test 04 Exceeded maximum RAM size 05 Invalid DIMM speed	If prompted to do so, press ✔ to continue. The printer should come to the **Ready** state, but will not make full use of all memory installed. Otherwise: 1. Turn the printer off. 2. Verify that all memory meets specifications and is correctly seated. 3. Turn the printer on. 4. If the problem persists, replace the DIMM card in the slot indicated. See Installing DDR memory DIMMs on page 117.

Control panel message	Description	Recommended action
54.XX **PRINTER ERROR** **To continue** **turn off then on**	Printing cannot continue. There is a sensor malfunction. Values of XX are: 01 - Temperature/humidity sensor (J1010 environment sensor) 15 - Yellow toner remaining sensor (J1014 toner level sensor) 16 - Magenta toner remaining sensor (J1014 toner level sensor) 17 - Cyan toner remaining sensor (J1014 toner level sensor) 18 - Black toner remaining sensor (J1014 toner level sensor)	1. Turn the printer off then on. 2. Check the connectors: J501 on the toner level PCB or J5201 on the environment sensor. 3. Check the connectors: J1014 (toner lever sensor) or J1010 (environment sensor) on the DC controller PCB. 4. Replace the environment sensor (see Environment sensor on page 308) or toner level detection PCB (see Toner level detection PCB on page 326).
55.X.X DC **CONTROLLER ERROR** **For help press ?** alternates with **55.X.X DC** **PRINTER ERROR** **To continue** **turn off then on**	A printer command error has occurred. Values of XX are: 01 - DC controller memory error 02 - DC controller memory error 03 - No engine response 04 - Communication error 05 - RFU error	**01 – 02 errors** Replace the DC controller. See DC controller PCB on page 312. **03 – 04 errors** 1. Reseat formatter 2. Check all connectors on the DC controller. 3. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 4. Replace the DC controller PCB. See DC controller PCB on page 312. **05 errors** 1. Upgrade the DC controller PCB firmware. 2. Replace the DC controller PCB firmware.
56.XX **PRINTER ERROR** **To continue** **turn off then on**	A printer error has occurred. **XX Description** 01 - Input device 02 - Output device	1. Turn the printer off then on. 2. Remove all input and output devices and reinstall them. 3. Check all connectors to the input/output devices that are installed. Replace any damaged connectors.

Control panel message	Description	Recommended action
57.0X **PRINTER ERROR** **To continue** **turn off then on**	A printer fan error has occurred. **XX Description** 01 - Delivery fan 04 - Cartridge fan 05 - Duplex fan 07 - Upper exhaust fan 0A - Power supply fan J1033 — Measure pins 1 and 3 for cartridge fan J1033 — Measure pins 4 and 6 for delivery fan J1033 — Measure pins 7 and 9 for upper exhaust fan J1034 — Measure pins 1 and 3 for power supply fan	1. Turn the printer off then on. 2. Reconnect the connector J1004 on the DC controller PCB. 3. Immediately after starting the print operation, measure the voltage between the appropriate pins on the connector. If the voltage changes from 0 V to 24 V, replace the affected fan.
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. **XX Description** 03 – Memory controller PCB 04 – Memory controller PCB power supply	1. Turn the printer off then on. 2. Check the connectors on the memory controller (J4001, J9630) and the DC controller PCB (J1021). 3. Replace the memory PCB. 4. Replace the E label contacts. See E label memory contacts and cable on page 322.
59.XY **PRINTER ERROR** **For help press ?** alternates with **59.XY** **PRINTER ERROR** **To continue** **turn off then on**	A printer motor error has occurred. **X Description** 0 Motor error 1 Motor startup error 2 Motor rotation error 3 Fuser motor startup error 4 Fuser motor rotation error 5 Image drum motor startup error 6 Image drum motor rotation error 9 ETB motor startup error A ETB motor rotation error	1. Turn the printer off then on. 2. Note: This message might also display if the transfer unit is missing or incorrectly installed. Ensure that the transfer unit is correctly installed. **ETB motor error** 1. Run the component test to verify that the ETB is working correctly. See Component test (special mode test) on page 532. 2. Clean the ETB unit intermediate connector J4613.

Control panel message	Description	Recommended action
	B Developing disengaging motor startup error C Developing disengaging motor rotation error **Y Description** 0 - Black or N/A 1 - Cyan 2 - Magenta 3 - Yellow	3. Reconnect the connector J4613 between the ETB and the printer, and J1011 on the DC controller PCB. 4. Replace the ETB. **Fuser motor error** 1. Reconnect the connectors J4605 for the fuser motor and J1024 on the DC controller PCB. 2. Run the component test to verify that the fuser motor is working correctly. See Component test (special mode test) on page 532. 3. Replace the fuser motor. **Print cartridge motor error** 1. Run the component test to verify that the print cartridge motor is working correctly. See Component test (special mode test) on page 532. 2. Reconnect the print cartridge connector on the DC controller PCB (J1018 for magenta and black, J1017 for cyan and yellow). On the motor itself, reconnect the connectors (J4603 for magenta, J4604 for black, J4601 for yellow, and J4602 for cyan). 3. Replace the drum drive assembly for the indicated print cartridge. **Developing disengaging motor error** 1. Run the component test to verify that the print developing disengaging motor is working correctly. See Component test (special mode test) on page 532. 2. Reconnect the connectors J468 and J1020 between the developing disengaging motor and the DC controller PCB. 3. Replace the developing disengaging motor. See Disengaging drive motor on page 298.
60.X **PRINTER ERROR** alternates with **To continue** **turn off then on**	A tray lifting error has occurred, where XX is the number of the tray.	1. Turn the printer off then on. 2. Install the tray and listen carefully. You should be able to hear the paper stack being lifted. You can also watch the paper level indicator on the front of the tray to see if it moves.

Control panel message	Description	Recommended action
		3. Check the following connectors: • Tray 2: J4618 on the lifter motor and J1015 on the DC controller • Trays 3–6: J8120 on the lifter motor and J8102 on the paper feeder PCB 4. Replace the lifter motor assembly.
62 NOT SYSTEM **To continue** **turn off then on**	No system was found.	1. Turn the printer off then on. 2. Reseat the firmware compact flash, making sure that it is in the first slot. 3. Replace the firmware compact flash (see Installing a flash memory card (HP Color LaserJet 4700 Series only) on page 121) and the formatter.
65.X.X OUTPUT **DEVICE CONDITION**	An external output device has a condition that needs attention before printing can resume. The amber light on the stapler/stacker is blinking. **XX Description** 10 - Jogger not detected, HP sensor off 11 - Jogger not detected, HP sensor on 12 - Eject lever not detected, HP sensor off 13 - Eject lever not detected, HP sensor on 14 - Paper hold lever not detected, HP sensor off 15 - Paper hold lever not detected, HP sensor on 16 - Paper hold lever over run	Remove any jammed paper and open and then close the top cover. If necessary, re-seat the output device.
65.X.X OUTPUT **DEVICE DISCONNECTED**	Communication between the printer and the device has been broken. The device could be disconnected.	Turn the printer off. Replace the stapler/stacker on the printer, making sure it is properly installed. Turn the printer on.
66.XX.X OUTPUT **DEVICE FAILURE**	The stapler/stacker has failed. The amber light on the stapler/stacker is solid. **XX Description** 18 - Stapler could not detect the HP sensor 19 - Stapler could not advance the staples 20 - Safe switch detect unsafe 21 - Tray move-up time out 22 - Tray move-down time out	1. Turn the printer off. 2. Check the staple cartridge for the staples jammed exiting the cartridge, and reseat staples in the cartridge if necessary. 3. Check the stapling bed for jammed paper or staples. Verify that the stapler cartridge is intact. 4. Check that nothing is obstructing the movement of the stapler/stacker.

Control panel message	Description	Recommended action
	23 - Tray detect upper limit 24 - Tray detect bottom limit	5. Check that the output tray is properly installed and output tray is in the down-most position. 6. Turn the printer on.
68.X PERMANENT **STORAGE FULL** **For help press ?** alternates with **68.X PERMANENT** **STORAGE FULL** **To continue press ✔**	A non-volatile storage device is full. Pressing the ✔ button should clear the message. Printing can continue, but there may be unexpected behavior. **X Description** 0 for onboard NVRAM 1 for removable disk (flash or hard)	1. Press ✔ to continue. 2. For **68.0** errors, turn the printer off then on. 3. If a **68.0** error persists, perform an NVRAM initialization. 4. For **68.1** errors, use the HP Web Jetadmin software to delete files from the disk drive or flash card. 5. For **68.1** errors that persist, reinitialize the hard disk or flash card.
68.X PERMANENT **STORAGE WRITE FAIL** **To continue press ✔**	A non-volatile storage device is full. Pressing the ✔ button should clear the message. Printing can continue, but there may be unexpected behavior. **X Description** 0 for onboard NVRAM 1 for removable disk (flash or hard)	1. Press ✔ to continue. 2. For a **68.0** error, turn the printer off then on. 3. If a **68.0** error persists, perform an NVRAM initialization. 4. For **68.1** errors, use the HP Web Jetadmin software to delete files from the disk drive or flash card. 5. For **68.1** errors that persist, reinitialize the hard disk or flash card.
68.X STORAGE ERROR **SETTINGS CHANGED** **For help press ?** alternates with **68.X STORAGE ERROR** **SETTINGS CHANGED** **To continue press ✔**	One or more printer settings saved in the non-volatile storage device is invalid and has been reset to its factory default. Pressing the ✔ button should clear the message. Printing can continue, but there may be unexpected behavior. 0 for onboard NVRAM 1 for removable disk (flash or hard)	1. Press ✔ to continue. 2. For a **68.0** error, turn the printer off then on. 3. If a **68.0** error persists, perform an NVRAM initialization. 4. For **68.1** errors, use the HP Web Jetadmin software to delete files from the disk drive or flash card. 5. For **68.1** errors that persist, reinitialize the hard disk or flash card.
69.X PRINTER ERROR **For help press ?** alternates with **69.X PRINTER ERROR** **To continue** **turn off then on**	A printer error has occurred. **X Description** 0 - duplexer not functioning 1 - duplexer not functioning	1. Check if the duplexer connector (J2003) is connected to the duplexer. 2. Check the connector (J1030) on the DC controller PCB. 3. Replace the duplexer. See Duplexer on page 349.

Control panel message	Description	Recommended action
79.XXXX **PRINTER ERROR** **To continue** **turn off then on**	A critical hardware error has occurred.	1. Turn the printer off then on. 2. If the problem persists, reseat the firmware compact flash. 3. Reseat the formatter. 4. Upgrade the firmware compact flash. 5. Replace the firmware compact flash. See Installing a flash memory card (HP Color LaserJet 4700 Series only) on page 121. 6. Replace the formatter. Calibrate the printer. See Full Calibrate Now on page 539.
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 2: error in slot 2	1. Turn the printer off then on. 2. If the problem persists, reseat the EIO card. 3. Replace the EIO card. See Installing an HP Jetdirect print server card (HP Color LaserJet 4700 Series only) on page 126.
[FS] DEVICE **FAILURE** **To clear press ✔✔** alternates with **Ready**	A device failure has occurred on the specified drive. Printing can continue for jobs that do not require the Flash DIMM. **[FS] Description** Rom disk Ram disk Card slot X Internal disk EIO X disk USB storage	1. To clear the message, press the ✔ key. 2. Turn the printer off then on. 3. If the message persists, remove and reinstall the affected components. 4. If the message still persists, replace the affected components.
[FS] DEVICE **WRITE PROTECTED** **To clear press ✔✔** alternates with **Ready**	The file system device is protected and no new files can be written to it. **[FS] Description** Rom disk Ram disk Card slot X Internal disk EIO X disk USB storage	1. To enable writing to the affected components, turn off write protection, using HP Web Jetadmin. 2. If the message persists, turn the printer off then on.

Control panel message	Description	Recommended action
[FS] FILE **SYSTEM IS FULL** **To clear press ✔✔** alternates with **Ready**	The printer received a PJL file system command that attempted to store something on the file system but was unsuccessful because the file system is full. **[FS] Description** Rom disk Ram disk Card slot X Internal disk EIO X disk USB storage	1. Use HP Web Jetadmin software to delete files from the affected components and try again. 2. If the message persists, turn the printer off then on.
[FS] NOT **[FS] NOT**	The device has not been initialized. **[FS] Description** Rom disk Ram disk Card slot X Internal disk EIO X disk USB storage	You can use HP Web Jetadmin to initialize the device or use the disk initialization procedure. See Hard disk initialization (4700 models) on page 539. **WARNING!** All data on all disk devices will be lost when performing the disk initialization procedure.
ABCDEFGHIJ **0110000000** 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.	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 printer administrator. The message will disappear shortly, and the printer will return to **Ready** state.	Use PJL commands or HP Web Jetadmin to unlock the control panel.
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 printer off then on. 2. Reconnect the duplexer and verify that the connector is not damaged. 3. Replace the duplex unit. See Duplexer on page 349.
Calibrating...	The printer is calibrating.	No action necessary.
Canceling... X	The printer is in the process of canceling a job. The message will continue to be displayed while the job is stopped, the	No action necessary.

Control panel message	Description	Recommended action
	paper path flushed, and any remaining incoming data on the active data channel is received and discarded.	
CARD SLOT X **NOT FUNCTIONAL**	The flash card in slot X is not working correctly.	1. Turn the printer off then on. 2. Remove the card from the slot indicated and replace with a new card. See Installing a flash memory card (HP Color LaserJet 4700 Series only) on page 121.
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 press ✔** alternates with **CHOSEN PERSONALITY** **NOT AVAILABLE** **For help press ?**	PJL encountered a request for a personality that did not exist in the printer. The job is aborted and no pages will be printed.	1. Press **?** for detailed information. 2. Press ▲ and ▼ to step through the instructions. 3. Reprint using the correct driver for the device. 4. Reprint using a printer driver for a different printer language, or add the requested language to the printer (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 printer off. When the process is complete, the printer 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 printer will exit the **MENUS** once the event log has been cleared.	No action necessary.
Clearing paper path	The printer jammed or detected misplaced paper when turned on. The printer is attempting to eject jammed pages automatically.	No action necessary.
CLOSE FRONT COVERS **For help press ?**	The top cover needs to be closed.	1. Close front covers. 2. Check the door open switches. 3. Replace the door open switches.
Close top cover.	The top cover of the printer is open.	1. Close the top cover. 2. Check the door open switches. 3. Replace the door open switches.
CORRUPT FIRMWARE IN **EXTERNAL ACCESSORY**	The external device needs a firmware upgrade. The amber light on the stapler/stacker is blinking.	Upgrade the firmware.

Control panel message	Description	Recommended action
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 press Go ✔** alternates with **Ready** **To print last page press Go ✔**	The printer received data and is waiting for a form feed. When the printer receives another file, the message should disappear.	Press ✔ to continue printing.
Date/Time	Prompt for setting the printer date and time. Default format is [YYYY]/[MMM]/[DD] [HH]-[MM].	To change, press ✔ and follow the time and date prompts.
DELETING PRIVATE JOBS	The printer is deleting a private stored job. A PIN is required to delete a private job.	No action necessary.
Deleting... X	The printer is currently deleting the stored job.	No action necessary.
DISK FILE **SYSTEM IS FULL** **To clear press ✔✔** alternates with **Ready**	The printer received a PJL file system command that attempted to store something on the file system but was unsuccessful because the file system is full.	If prompted to do so, press ✔ to continue. The printer should come to the **Ready** state, but will not make full use of all memory installed. Otherwise: 1. Turn the printer off. 2. Verify that all memory meets specifications and is correctly seated. 3. Turn the printer on. 4. If the problem persists, replace the DIMM card in the slot indicated. See Installing DDR memory DIMMs on page 117.
DISK IS **WRITE PROTECTED** **To clear press ✔✔** alternates with **Ready** (4700 models)	The file system device is protected and no new files can be written to it.	1. To enable writing to the disk, turn off write protection, using HP Web Jetadmin. 2. To clear the message, press the ✔ key. 3. If the message persists, turn the printer off and then on.
DUPLEXER ERROR **REMOVE DUPLEXER** alternates with **Install duplexer** (4700 models) **with power off**	A duplexer error has occurred.	1. Check if the duplexer connector (J2003) is connected to the duplexer. 2. Check the connector (J1030) on the DC controller PCB. 3. Replace the duplexer. See Duplexer on page 349.

Control panel message	Description	Recommended action
EIO X DISK **NOT FUNCTIONAL** **For help press ?** (4700 models)	The EIO disk in slot X is not working correctly.	1. Turn the printer off. 2. Remove the EIO disk from the slot indicated and replace with a new EIO disk drive. See Installing an HP Jetdirect print server card (HP Color LaserJet 4700 Series only) on page 126.
EIO X disk **initializing** (4700 models)	The EIO disk device in slot X is initializing.	No action necessary.
EIO X disk **spinning up** (4700 models)	The EIO disk device in slot X is spinning up its platter.	No action necessary.
Event Log Empty	**SHOW EVENT LOG** was selected from the control panel, and the event log is empty.	No action necessary.
FLASH FILE **OPERATION FAILED** **To clear press ✔** alternates with **Ready**	The printer received a PJL file system command that attempted to perform an illogical operation (for example, to download a file to a non-existent directory). **[FS] Description** Rom disk Ram disk Card slot X Internal disk EIO X disk USB storage	1. To clear the message, press the ✔ key. 2. If the message persists, turn the printer off then on. 3. If the message reappears, there may be a problem with the software application.
Genuine HP supplies installed	A new HP cartridge has been installed. The printer returns to the **Ready** state after approximately 10 seconds.	No action necessary.
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.
Incorrect PIN	The wrong PIN was entered. After three incorrect PIN entries, the printer will return to **Ready**.	Re-enter PIN correctly.

Control panel message	Description	Recommended action
INCORRECT SUPPLIES **For status press ✔ ✔** The supplies gauge will display the consumption levels of print cartridges.	At least one supply item is incorrectly positioned in the printer and another supply item is missing, incorrectly placed, out, or low.	1. Press ✔ to access the SUPPLIES STATUS menu. 2. Press ▲ and ▼ to highlight the specific supply that has a problem. 3. Press ? to view help for the supply. 4. Press ▲ and ▼ to step through the instructions.
Initializing **permanent storage**	Displayed when the printer is turned on to show that permanent storage is being initialized.	No action necessary.
Initializing...	This message is displayed when the printer 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. Check tray path for obstructions 3. Check the paper size detection sensors for the indicated tray. 4. Replace the paper size detection sensors.
INSTALL [COLOR] **CARTRIDGE** alternates with **For help press ?**	The cartridge is not installed or is not installed correctly.	1. Install the indicated cartridge. 2. Make sure that the cartridge guides are installed correctly. 3. Make sure that the E label makes contact with the cartridges. 4. Replace the indicated cartridge. 5. Replace the E label contacts. See E label memory contacts and cable on page 322. 6. Replace the memory controller PCB.
INSTALL FUSER alternates with **For help press ?**	The fuser is not installed or is not installed correctly.	1. Confirm that the fuser is installed in the printer and is fully seated. 2. Check the fuser connector (J5001). If it is broken or damaged, replace it. 3. Check the connector (J1025) on the DC controller PCB. 4. Replace the fuser.
INSTALL SUPPLIES **For status press ✔ ✔** 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 printer 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 ✔ to access the SUPPLIES STATUS menu. 2. Press ▲ and ▼ to highlight the specific supply that has a problem. 3. Press ? to view help for the supply.

Control panel message	Description	Recommended action
		4. Press ▲ and ▼ to step through the instructions. 5. See **INSTALL FUSER**, **INSTALL TRANSFER UNIT**, or **INSTALL [COLOR] CARTRIDGE** for more information.
INSTALL TRANSFER UNIT	The ETB is not installed or is not installed correctly.	1. Press ✔ to access the SUPPLIES STATUS menu. 2. Press ▼ to highlight the transfer unit. 3. Press **?** to view help. 4. Press ▲ and ▼ to step through the instructions. 5. If the error persists, verify that the ETB connectors on the ETB (J4613) and the DC controller PCB (J1021) are connected. Replace the connectors as necessary. 6. Replace the ETB.
INSUFFICIENT MEMORY **TO LOAD FONTS/DATA** **For help press ?** alternates with **[Device]** **To continue press ✔**	The device does not have enough memory to load the data, such as fonts or macros from the location specified. **[Device]** can be one of the following: INTERNAL = ROM directly on the formatter board CARD SLOT X = font card in slot X External source # INTERNAL DISK DIMMS USB device X EIO X DISK = removable hard disk installed in EIO slot X	1. To use the device without the data, press ✔. 2. To solve the problem, add more memory to the device. DDR SDRAM Memory: 128 MB (Q2630A) or 256 MB (Q2631A).
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 printer off then on. 2. Make sure the disk is plugged in correctly. 3. Replace the internal disk. 4. Replace the formatter.
Internal disk spinning up	The internal disk is spinning up. This message generally displays for approximately 15 seconds when the printer emerges from sleep mode. Jobs can still print, but jobs that require disk access, such as stored jobs, must wait until the disk is initialized.	No action necessary.

Control panel message	Description	Recommended action
LOAD TRAY 1: **[TYPE] [SIZE]** **For help press ?**	This message displays when Tray 1 is selected but is not loaded, and no other paper trays are available for use.	Load the correct paper in Tray 1 and press ✔ to continue. If prompted, confirm the size and type of paper loaded.
LOAD TRAY 1: **[TYPE] [SIZE]** **To continue press ✔** 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, press ✔. 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.
LOAD TRAY 1: **[TYPE] [SIZE]** **To use another** **tray press ✔ ✔** Alternates with **LOAD TRAY 1:** **[TYPE] [SIZE]** **For help press ?**	This message displays when Tray 1 is selected but is not loaded, and other paper trays are available for use.	1. Load the correct paper in the tray. 2. If prompted, confirm the size and type of paper loaded. 3. Otherwise, select another tray.
LOAD TRAY X **[TYPE] [SIZE]** **For help press ?**	This message displays when Tray XX is selected but is not loaded, and no other paper trays are available for use.	1. If the correct paper is loaded, press ✔. 2. Otherwise, remove the incorrect paper and load Tray XX 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. Check the paper size sensors. 6. Replace the paper size sensors. 7. Replace the paper tray.
LOAD TRAY X **[TYPE] [SIZE]** **To use another** **tray press ✔** alternates with	Tray XX is either empty or configured for a type and size other than specified in the job, and another paper tray is available.	1. If the correct paper is loaded, press ✔. 2. Otherwise, remove the incorrect paper and load Tray XX with the specified paper. 3. If prompted, confirm the size and type of paper loaded.

Control panel message	Description	Recommended action
LOAD TRAY X **[TYPE] [SIZE]** **For help press ?**		4. Confirm that the media guides are in the correct position. 5. Check the paper size sensors. 6. Replace the paper size sensors. 7. Replace the paper tray.
Loading **program X** **DO NOT POWER OFF**	Programs and fonts can be stored on the printer's file system and are loaded into RAM when the printer is turned on. The number XX specifies a sequence number indicating the current program being loaded.	No action necessary. Do not turn the printer off.
MANUALLY FEED **[TYPE] [SIZE]** alternates with **To use another tray press ✔ ✔**	The job specifies manual feed, but Tray 1 is empty. Another tray is available.	Add paper to Tray 1 or press ✔ to select another tray.
MANUALLY FEED **[TYPE] [SIZE]** **To continue press ✔**	A job was sent specifying **MANUAL FEED** and Tray 1 is empty. No other tray is available.	1. Load Tray 1 with the correct paper and press ✔ to continue. 2. If prompted, confirm the size and type paper loaded.
MANUALLY FEED **[TYPE] [SIZE]** **To continue press ✔** alternates with **MANUALLY FEED** **[TYPE] [SIZE]** **For help press ?**	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. Load the correct paper in Tray 1. 2. If prompted, confirm the size and type of paper loaded. 3. Otherwise, press ✔ to select another tray.
MANUALLY FEED **[TYPE] [SIZE]** **To use another** **tray press ✔ ✔** alternates with **MANUALLY FEED** **[TYPE] [SIZE]** **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 correct paper. 2. If prompted, confirm the size and type of paper loaded. 3. Otherwise, press ✔ to select another tray.
MANUALLY FEED **OUTPUT STACK** alternates with	The even-numbered pages of a manual two-sided document have been printed and the printer is waiting for the output stack to be	Follow the instructions on the **Print on Both Sides** instruction dialog box at the computer.

Control panel message	Description	Recommended action
Then press ✔ to **print second sides**	inserted for the odd-numbered pages to be printed.	or Press **?** for help at the printer.
MIXED PAPER SIZES IN **JOB TO STAPLE** alternates with **To continue without** **stapling press ✔**	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 printer is executing a component test and the component selected is a solenoid.	No action necessary.
Moving solenoid and motor **To exit press.** Stop	The printer is executing a component test and the components selected are the solenoid and the motor.	No action necessary.
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 **supplies installed** alternates with **For help press ?** The supplies gauge will display the consumption levels of print cartridges, but the level of any refilled cartridge will not be shown.	The printer has detected that a non-HP print cartridge is currently installed.	If you believe you purchased an HP cartridge, please call the HP fraud hotline (1-877-219-3183, toll-free in North America). **CAUTION** Any printer repair required as a result of using non-HP cartridges is not covered under HP warranty.
ORDER [COLOR] **CARTRIDGE** 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 printer is ready and will continue for the estimated number of pages indicated. Estimated pages remaining is based upon the historical page coverage of this printer. Printing will continue until a supply needs to be replaced.	1. Press **?** to view help for the message. 2. Obtain the part number for the print cartridge indicated. 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 505 for more information.
ORDER FUSER KIT **LESS THAN X PAGES** **For help press ?**	The fuser is near the end of its life. The printer 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. Obtain the part number for the fuser kit. 3. Order the fuser kit.

Control panel message	Description	Recommended action
alternates with **Ready**		**NOTE** Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 505 for more information.
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. Press ▲ or ▼ to highlight **INFORMATION**, and then press ✔. 3. Press ▲ or ▼ to highlight **SUPPLIES STATUS**, and then press ✔. 4. Press ▲ or ▼ to highlight a supply that needs to be ordered. 5. Press **?** to access help for the supply. 6. Obtain a part number from help. 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 505 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 505 for more information.
Paused **To return to Ready** **press STOP**	The printer 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 printer is performing a print/stop test.	No action necessary.
Performing **upgrade**	A firmware upgrade is in process.	Do not turn the printer off until the printer returns to **Ready**.
Performing... **PAPER PATH TEST**	The printer is performing a paper path test.	No action necessary.

Control panel message	Description	Recommended action
Please wait	The printer is in the process of clearing data.	No action necessary.
PRINTING STOPPED **To continue press ✔**	This message is displayed when a Print/ Stop Test is run and time expires.	Press ✔ to continue printing.
Printing... **CMYK SAMPLES**	This message displays while the printer CMYK samples page is being generated.	No action necessary.
Printing... **CONFIGURATION**	The printer is generating the configuration page. The printer will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **DEMO PAGE**	The printer is generating the demo page. The printer will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **DIAGNOSTICS PAGE**	The printer is generating the diagnostics page. The printer will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **ENGINE TEST**	The printer is generating the engine test page. The printer will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **Event Log**	The printer is generating the event log page. The printer will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **FILE DIRECTORY**	The printer is generating the mass storage directory page. The printer will return to the **Ready** state when the page is completed.	No action necessary.
Printing... **FONT LIST**	The printer is generating either the PCL or PS personality typeface list. The printer will return to the **Ready** state when the page is completed.	No action necessary.
Printing... **MENU MAP**	The printer is generating the printer menu map. The printer will return to the **Ready** state when the page is completed.	No action necessary.
Printing... **PQ TROUBLESHOOTING**	The printer is generating the print quality troubleshooting pages. The printer will return to the **Ready** state when the pages are printed.	Follow the instructions on the printed pages.
Printing... **REGISTRATION PAGE**	The printer is generating the registration page. The printer 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 printer RGB samples page is being generated.	No action necessary.
Printing... **SUPPLIES STATUS**	The printer is generating the supplies status page. The printer will return to the online **Ready** state when the page is completed.	No action necessary.
Printing... **Usage Page**	The printer is generating the usage page. The printer will return to the online **Ready** state when the page is completed.	No action necessary.

Control panel message	Description	Recommended action
Processing duplex **job** **Do not grab paper** **until job completes**	Paper temporarily comes into the output bin while printing a duplex job. Do not attempt to remove the pages until the job is complete.	Do not grab paper as it temporarily comes into the output bin. The message will disappear when the job is finished.
Processing...	The printer 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 printer 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 X**	The printer 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 printer becomes overheated. If this occurs, the printer enters a mode in which it prints for one minute and pauses for one minute. This cycle continues until the operating temperature stabilizes.	Press ▼ to see step by step information.
RAM DISK DEVICE **FAILURE** **To clear press ✔✔** alternates with **Ready**	A device failure has occurred on the specified drive.	If prompted to do so, press ✔ to continue. The printer should come to the **Ready** state, but will not make full use of all memory installed. Otherwise: 1. Turn the printer off. 2. Verify that all memory meets specifications and is correctly seated. 3. Turn the printer on. 4. If the problem persists, replace the DIMM card in the slot indicated. See Installing DDR memory DIMMs on page 117.
RAM DISK FILE **OPERATION FAILED** **To clear press ✔✔** alternates with **Ready**	The printer 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.	1. To clear the message, press the ✔ key. 2. If the message persists, turn the printer off then on. 3. If the message reappears, there may be a problem with the software application.

Control panel message	Description	Recommended action
RAM DISK IS **WRITE PROTECTED** **To clear press ✔✔** 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, press the ✔ key. 3. If the message persists, turn the printer off then on.
Ready The supplies gauge will display the consumption levels of print cartridges.	The printer 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 printer is in a special diagnostics mode.	Press the Stop key to exit the special diagnostics mode. or No action is necessary.
Ready **IP Address:**	The printer is online and ready.	No action necessary.
Receiving **upgrade**	A firmware upgrade is in progress.	Do not turn the printer off until the printer returns to **Ready**.
REINSERT DUPLEXER	The duplexer has been removed.	1. Check if the duplexer connector (J2003) is connected to the duplexer. 2. Check the connector (J1030) on the DC controller PCB. 3. Replace the duplexer. See Duplexer on page 349.
REMOVE ALL **PRINT CARTRIDGES** **To exit press.** Stop	The printer 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 printer is executing a disable cartridge check or component test where the component selected is the cartridge motor.	Remove one print cartridge.
REPLACE [COLOR] **CARTRIDGE** alternates with **For help press ?** The supplies gauge will display the consumption levels of print cartridges.	The identified print cartridge has reached the out threshold of life and the **COLOR SUPPLY OUT** setting in the **SYSTEM SETUP** menu is set to **STOP AT OUT**. Printing cannot continue.	1. Order the appropriate print cartridge. 2. Open the front and top covers and then open the ETB. **CAUTION** The ETB can be easily damaged. 3. Remove the identified print cartridge. 4. Install a new print cartridge.

Control panel message	Description	Recommended action
		5. Close the ETB and the top and front covers. 6. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 505 for more information.
REPLACE [COLOR] CARTRIDGE alternates with **To continue press ✔** The supplies gauge will display the consumption levels of print cartridges.	The identified print cartridge has reached the low threshold of life and the **COLOR SUPPLY OUT** setting in the **SYSTEM SETUP** menu is set to **STOP AT OUT**. Printing can continue.	1. Order the appropriate print cartridge. 2. To continue, press ✔. 3. Open the front and top covers and then open the ETB. **CAUTION** The ETB can be easily damaged. 4. Remove the identified print cartridge. 5. Install a new print cartridge. 6. Close the ETB and the top and front covers. 7. Supplies ordering information is also available from the embedded Web server. See Using the embedded Web server on page 505 for more information.
REPLACE FUSER KIT **For help press ?**	The fuser kit has reached the end of its life. Replace the fuser kit. Printing can continue although 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 printer. 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 505 for more information.
REPLACE FUSER KIT **For help press ?** alternates with **REPLACE FUSER KIT** **To continue press ✔**	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 OUT**. Printing can continue.	1. Order the fuser kit. 2. To continue printing, press ✔. 3. To replace the fuser kit, perform the following steps: • Open the top cover. • Grasp the purple handles on the fuser unit.

Control panel message	Description	Recommended action
		• Remove the old fuser unit from the printer. • 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 505 for more information.
REPLACE STAPLER **CARTRIDGE** (4700 models)	• The stapler cartridge contains fewer than 30 staples and should not be used. The stapler cartridge needs to be replaced. • There is no stapler cartridge installed.	• Replace the stapler cartridge. For more information, see Replacing the stapler cartridge (HP Color LaserJet 4700 Series) on page 108. • Install a stapler cartridge.
REPLACE SUPPLIES **For status press ✔ ✔** 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 LOW**. If the affected supplies are cartridges only, printing will not continue.	1. Press ✔ to access the **SUPPLIES STATUS** menu. 2. Press ▲ and ▼ to highlight the specific supply that has a problem. 3. Press ? to view help for the supply. 4. Press ▲ and ▼ 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 505 for more information.
REPLACE SUPPLIES **Override in use** alternates with <Current status message>	The printer is set to continue printing even though a print cartridge has reached end of life. △ **CAUTION** Using the Override mode may result in unsatisfactory print quality. HP recommends replacing the supply when the **REPLACE SUPPLIES** message is displayed. HP Supplies Premium Warranty coverage ends when a supply is used in Override mode.	Press ▼ to see step by step information.
REPLACE SUPPLIES **To continue press ✔** 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 OUT**.	1. Press ✔ to access the **SUPPLIES STATUS** menu. 2. Press ▲ and ▼ to highlight the specific supply that has a problem. 3. Press ? to view help for the supply.

Control panel message	Description	Recommended action
		4. Press ▲ and ▼ 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 505 for more information.
REPLACE SUPPLIES **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 printer is set to **AUTOCONTINUE BLACK**.	Press ▼ to see step by step information.
REPLACE TRANSFER KIT **For help press ?**	The transfer unit is at end of life. Printing can continue but print quality might be reduced.	1. Open the top and front cover. 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 printer. 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 505 for more information.
REPLACE TRANSFER KIT **For help press ?** alternates with **REPLACE TRANSFER KIT** **To continue press ✔**	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 OUT**.	1. Order the transfer kit. 2. To continue printing, press ✔. 3. To replace the transfer kit, perform the following steps: • Open the top and front cover. • 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 printer. • Install the new transfer unit. • 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 505 for more information.

Control panel message	Description	Recommended action
Request accepted **please wait**	The printer 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 printer is restoring external accessory settings in response to a user request.	No action necessary.
Restoring...	The printer 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 printer is restoring factory settings after a cold reset.	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 printer 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 printer off. When the process is complete, the printer will automatically restart.	No action necessary.
Setting saved	A menu selection has been saved.	No action necessary.
SIZE MISMATCH **TRAY X=[SIZE]** **For help press ?** alternates with **Ready**	The tray is loaded with media longer or shorter in the feed direction than the size configured for the tray. XX = 01 – 06	1. Adjust the side and rear media guides against the paper, and verify that the media loaded meets size specified by Tray guides. 2. Check the paper size sensors. 3. Replace the paper size sensors.
Sleep mode on	The printer 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 (4700 models)	The jam access door is open. The unit cannot function.	Close the jam access door.
STAPLER DOOR OPEN (4700 models)	The stapler cartridge door is open. The stapler/stacker cannot operate in this condition. The amber light on the stapler/stacker is blinking.	Close the stapler cartridge door.
STAPLER LOW **ON STAPLES** (4700 models)	Fewer than 50 usable staples remain in the stapler cartridge. The status light is solid green.	Order and install a new stapler cartridge. For information about replacing the stapler cartridge, see Replacing the stapler

Control panel message	Description	Recommended action
		cartridge (HP Color LaserJet 4700 Series) on page 108.
TOO MANY PAGES **IN JOB TO STAPLE** (4700 models)	The job contains more than the specified number of sheets for the media type being used, and cannot be stapled. When the maximum number of sheets for a specific media type is reached, the job is ejected and handled as a stacked job.	To ensure that documents are properly stapled, ensure that the job does not exceed the specified number of sheets for the selected media.
TOP BIN (4700 models)	The stapler/stacker output bin is full. The amber light on the stapler/stacker is blinking.	Remove paper from the stapler/stacker output bin.
TOP DOOR OPEN (4700 models)	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 printer.	1. Open the top and front covers. **CAUTION** The ETB can be easily damaged. 2. Open the ETB. 3. Insert the print cartridge and make sure that it is fully seated. 4. Close the ETB and then close the top and front 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. 3. Replace the paper stack sensor. 4. Check DC Controller connector.
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 detection switches. 3. Replace the switches. 4. Verify there are no obstructions in tray path.
TRAY X SIZE= [SIZE] **Setting saved**	The size selected from the menu has been saved.	No action is necessary.
TYPE MISMATCH IN **TRAY X** **For help press ?** alternates with **Ready**	The media type loaded in the tray does not match the media type configured for the tray. XX = 01 – 06	1. Open and close tray x. 2. If necessary, press ✔ after the tray is closed to change the paper type to match the paper loaded in the tray.

Control panel message	Description	Recommended action
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 printer or install a disk drive in the printer.
Unable to Store Job alternates with **Processing...**	A job cannot be stored because of a memory, disk, or configuration problem.	Install additional memory in the printer, or install a disk drive into the printer. If a disk drive is installed, delete previously stored print jobs.
USB ACCESSORY **ERROR** **For help press ?**	This message displays when a connected USB accessory draws too much power. When this happens, the ACC port is disabled and printing stops.	Press ▼ to see step by step information. Remove the USB accessory.
USE TRAY X **[TYPE] [SIZE]** **To change press ▲/▼** **To use press ✔**	The printer is offering a selection of alternate media to use for the print job.	1. View tray configurations (type and size) using ▲ and ▼. 2. Press ✔ to select a tray to use. 3. To return to the previous message, press Back.
Wait for printer **to reinitialize**	RAM disk settings have been changed before the printer automatically restarts, or external device modes have changed or the printer is coming out of the diagnostics mode and will automatically restart.	No action necessary.
Waiting for **tray X to lift**	The printer is waiting for Tray 2 or an optional tray to lift.	No action necessary.
Warming up	The printer is coming out of sleep mode. Printing will continue as soon as warmup is completed.	No action necessary.
X.X EMBEDDED **JET DIRECT ERROR**	This message is generated by a failure of the embedded Jetdirect print server.	Turn the printer off then on. If the message persists, see Network configuration on page 89.

Formatter lights

Two LEDs on the formatter indicate that the printer is functioning correctly.

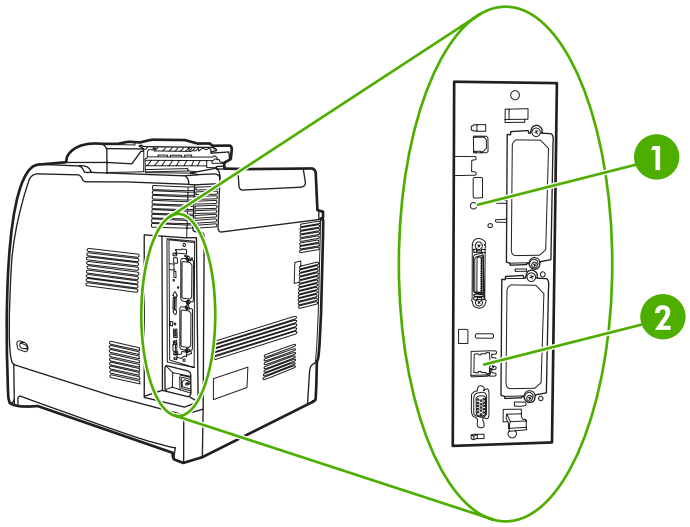


Figure 7-1 Formatter lights

1	Heartbeat LED
2	HP Jetdirect LEDs (if HP Jetdirect is installed)

Embedded 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 printer control panel menus.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **I/O**.
5. Press ✔ to select **I/O**.
6. Press ▼ to highlight **EMBEDDED JETDIRECT MENU**.
7. Press ✔ to select **EMBEDDED JETDIRECT MENU**.
8. Press ▼ to highlight **LINK SPEED**.
9. Press ✔ to select **LINK SPEED**.
10. Select the appropriate link speed.

Heartbeat LED

The heartbeat LED indicates that the formatter is functioning correctly. While the printer is initializing after you turn it on, the LED blinks rapidly, and then turns off. When the printer has finished the initialization sequence, the heartbeat LED pulses on and off.

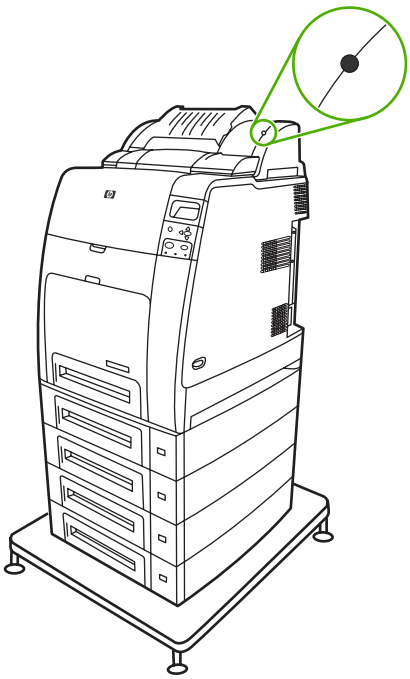
If the heartbeat LED is off, the formatter might have a problem. See LED diagnostics on page 520.

Accessory lights (4700 models)

The accessory lights and the control panel display indicate errors associated with the stapler/stacker.

Interpreting stapler/stacker indicator light codes

The following table lists errors that can occur in the stapler/stacker unit that are reported by the accessory light and on the printer control panel.



Indicator	Solid	Blinking	Off
Green **NOTE** The indicator light shows solid green during some continuable errors.	• The accessory is ready and is functioning properly. • Fewer than 20 staples remain in the stapler cartridge. **STAPLER LOW ON STAPLES** displays on the printer control panel. Order and replace the staple cartridge. See Staple cartridge on page 346. • The number of pages in the job exceeds the 30-page limit for stapling. **TOO MANY PAGES IN JOB TO STAPLE** displays on the printer control panel. For jobs larger	N/A	• The stapler/stacker is in sleep mode, the printer is turned off, or the stapler/stacker is not installed properly.

Indicator	Solid	Blinking	Off
	than 30 pages, staple the pages manually. • The job contains different paper sizes. The stapler cannot align the paper for stapling. If stapling is required, print the job on same-size paper, or staple the job manually. **MIXED PAPER SIZES IN JOB TO STAPLE** displays on the printer control panel.		
Amber	• The accessory is experiencing a hardware malfunction. For more information, see Control panel messages on page 359.	• The device requires user intervention. The bin could be full, there could be a stapler jam, or the stapler cartridge could require replacement. For more information, see Control panel messages on page 359. If the message **CORRUPT FIRMWARE IN EXTERNAL ACCESSORY** displays, download the firmware again. • There is a paper jam, or a sheet needs to be removed from the unit, even if the sheet is not jammed. For more information, see Jams in the stapler/stacker (4700 models) on page 423. • The bin is full. Empty the bin before continuing. • There are fewer than 30 staples remaining in the stapler cartridge. To avoid jams, these staples should not be used. Order and install a new stapler cartridge before continuing. • The bin is in the up position. Lower the bin before continuing.	N/A

Indicator	Solid	Blinking	Off
		• The jam access door is open. Close the door before continuing. • The stapler unit is open. Close the unit before continuing.	

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 printer)
- DC controller (new or previously installed in another printer)
- Formatter and firmware compact flash

NOTE The HP Color LaserJet 4700 and HP Color LaserJet CP4005 printers store printer configuration information in the compact flash memory. Always print a configuration page before and after (wait five minutes after the printer power is turned on) installing the parts in the above list to verify that the printer 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 printer power on.

If the formatter and DC controller need to be replaced, install a replacement formatter first. The HP Color LaserJet 4700 and HP Color LaserJet CP4005 printers store printer configuration information in the compact flash memory. The compact flash memory from the removed formatter *must* be installed on the replacement formatter, so that printer 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 printer power on. When the **Ready** message displays on the control panel, you *must* wait five minutes before using the printer so that the printer configuration information can be restored from the compact flash memory to the NVRAM.

Turn the printer power off, and replace the DC controller. Turn the printer power on. When the **Ready** message displays on the control panel, wait five minutes before using the printer so that the printer 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 Full Calibrate Now on page 539.

Formatter (new or previously installed in another printer)

The HP Color LaserJet 4700 and HP Color LaserJet CP4005 printers store printer configuration information in the compact flash memory. The compact flash memory from the removed formatter *must* be installed on the replacement formatter, so that printer 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 printer power on. When the **Ready** message displays on the control panel, you *must* wait five minutes before using the printer so that the printer 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 Full Calibrate Now on page 539.

DC controller (new or previously installed in another printer)

After replacing the DC controller, turn the printer power on. When the **Ready** message displays on the control panel, you *must* wait five minutes before using the printer so that the printer 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 full calibration procedure three times. See Full Calibrate Now on page 539.

Formatter and firmware compact flash

The HP Color LaserJet 4700 and HP Color LaserJet CP4005 printers store printer configuration information in the compact flash memory. The compact flash memory from the removed formatter *must* be installed on the replacement formatter, so that printer 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 old compact flash, turn the printer power on. When the **Ready** message displays on the control panel, you *must* wait five minutes before using the printer so that the printer configuration information can be restored from the compact flash memory to the NVRAM.

If the compact flash also needs to be replaced, remove the new formatter and old compact flash and place the new compact flash into the new formatter. After replacing the formatter and installing the new compact flash, turn the printer power on. When the **Ready** message displays on the control panel, you *must* wait five minutes before using the printer so that the printer configuration information can be restored from the NVRAM to the compact flash memory.

After installing the replacement formatter and/or compact flash, perform a full calibration procedure three times. See Full Calibrate Now on page 539.

Paper path troubleshooting

Use the information in this section to troubleshoot errors in the printer paper path.

Jams

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 displays for the sensor that detects the jam. Sensors on page 546 shows the locations of all the sensors in the printer.

Jam locations

Jams occur in the areas shown in Figure 7-2 Jam locations on page 403. Jam messages correlate with these areas. For instructions about clearing jams, see the sections later in this chapter.

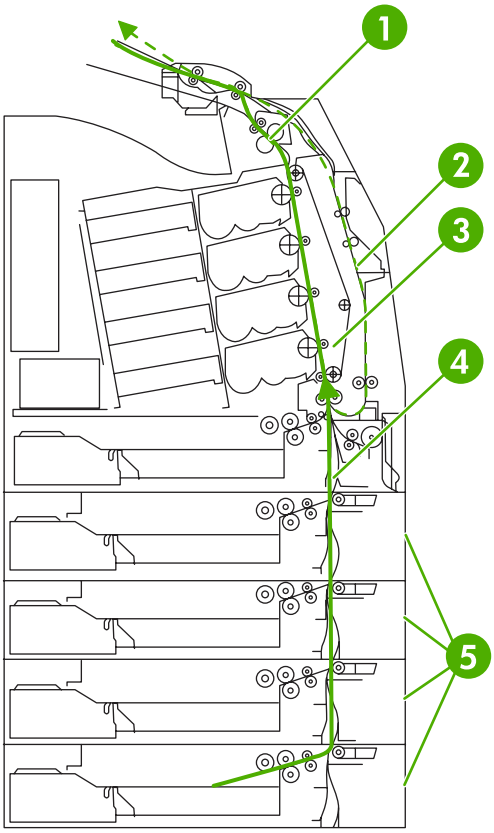


Figure 7-2 Jam locations

1	Top cover area
2	Duplex path
3	Paper path
4	Input path
5	Paper trays

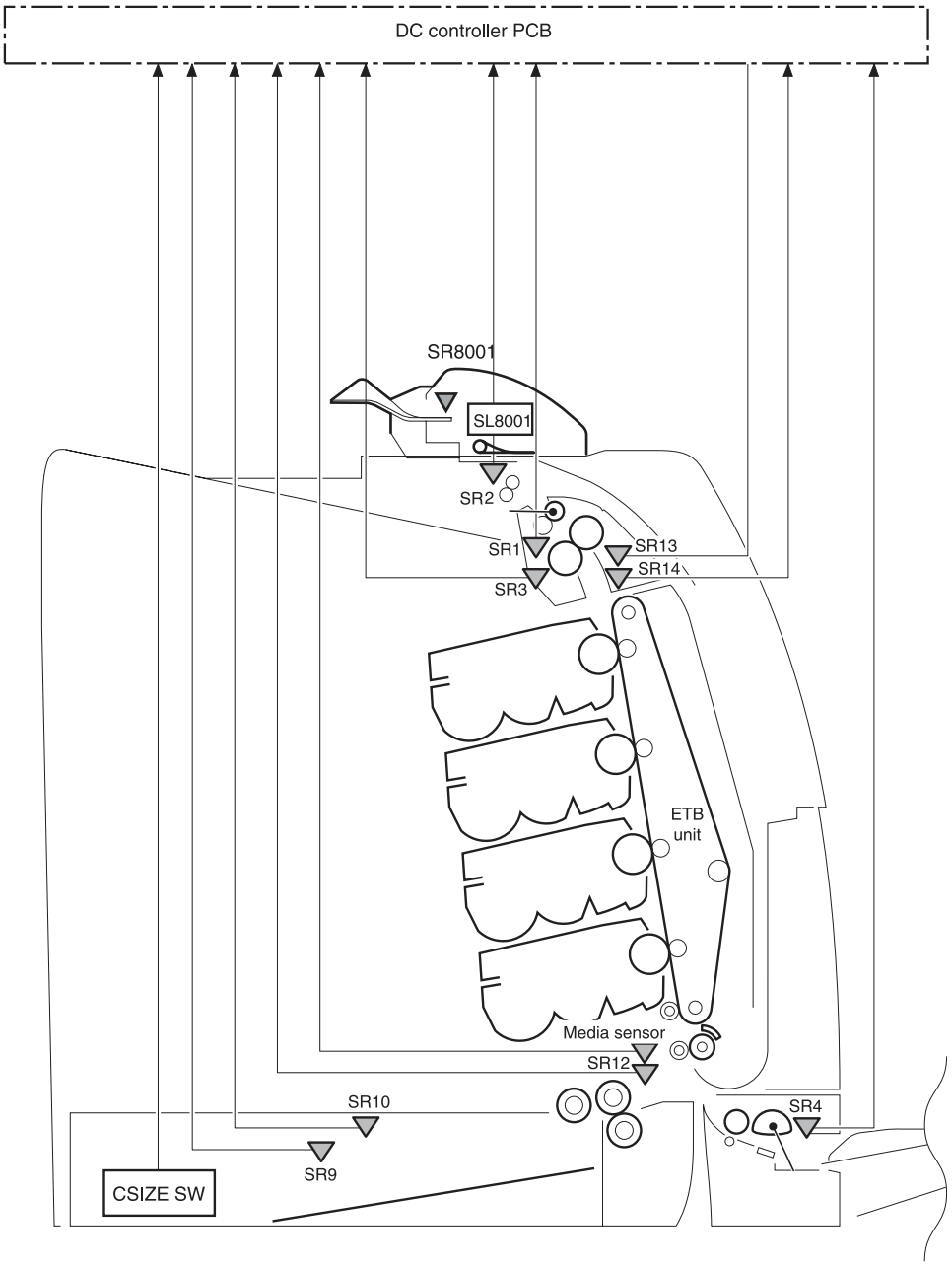


Figure 7-3 Jam locations (sensors)

SR1	Fusing paper sensor
SR2	Delivery tray paper full sensor
SR3	Fusing pressure release sensor
SR4	Multipurpose tray paper sensor
SR9	Paper tray 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
SL8001	Duplexing solenoid

Jam locations by error message

Use Table 7-3 Error messages and associated jam locations on page 405 table to identify jam locations and to help pinpoint and clear specific paper jams. See Figure 7-2 Jam locations on page 403 for jam locations.

Table 7-3 Error messages and associated jam locations

Error message	Jam location	Action
13.01.00 JAM IN TRAY X	5; printer	A 13.01.00 jam occurs when the paper is late in arriving at the paper leading-edge sensor (SR12) in the paper feed 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 feed 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 printer will not boot up if a 13.01.00 jam occurs.
13.02.00 JAM IN TRAY X	4 or 5; printer	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 printer 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 IN TOP COVER AREA	1; printer	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 the fuser paper sensor (SR1) does not detect the end of the page by 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 JAM IN TOP COVER AREA	1; printer	A 13.0A.00 jam occurs when the printer is trying to deliver sheets to the

Table 7-3 Error messages and associated jam locations (continued)

Error message	Jam location	Action
		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 IN DUPLEX PATH	1, 2, 3; printer	**Reversing unit jam 1 (reversing delay jam)**: The CPU determines the reversing unit jam 1 when the reversing sensor (SR8001) does not detect the leading edge of the paper within a specified period of time after the duplexing driver receives a switchback command from the printer. **Reversing unit jam 2 (reversing stationary jam)**: The CPU determines the reversing unit jam 2 when the reversing sensor (SR8001) keep detecting paper after a specified period of time after the reversing sensor (SR8001) detected the leading edge of the paper. **Duplexing pickup unit jam 1 (duplexing unit stationary jam)**: The CPU determines the duplexing pickup unit jam 1 when the top of page sensor (SR12) does not detect the leading edge of the paper within a specified period of time after the duplexing driver receives a duplexing pickup command from the printer.

Jam recovery

This printer automatically provides jam recovery, a feature that you can use to set whether the printer should attempt to automatically reprint jammed pages. Three options are:

- **AUTO**. The printer will attempt to reprint jammed pages.
- **OFF**. The printer will not attempt to reprint jammed pages.
- **On**. The printer will attempt to reprint jammed pages.



NOTE During the recovery process, the printer might reprint several pages that were printed correctly before the jam occurred. Be sure to remove any duplicated pages.

To disable paper jam recovery

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **JAM RECOVERY**.
7. Press ✔ to select **JAM RECOVERY**.
8. Press ▼ to highlight **OFF**.
9. Press ✔ to select **OFF**.
10. Press the Menu button to return to the **Ready** state.

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.

Avoiding jams

Table 7-4 Common causes of jams

Cause	Solution
The print media does not meet HP-recommended media specifications.	Use only media that meets HP specifications.
A supply item is installed incorrectly, causing repeated jams.	Verify that all print cartridges, the ETB, and the fuser are correctly installed.
You are reloading media that has already passed through a printer or copier.	Do not use media that has been previously printed on or copied.
An input tray is loaded incorrectly.	Remove any excess media from the input tray. Press the media down in the input tray so that it fits below the tabs and within the media width guides.
The printed pages are skewed.	The input-tray guides are not adjusted correctly. Adjust input tray guides so they hold media firmly in place without bending it. If media heavier than 120 g/m^2 (32 lb) is loaded into Tray 2 and optional trays, the media might skew.
The print media is binding or sticking together.	Remove the media, flex it, rotate it 180 degrees, or turn it over. Reload the media into the input tray. Do not fan the media.
The print media is removed before it settles into the output bin.	Reset the printer. Wait until the page completely settles in the output bin before removing it.
When duplexing, the print media is removed before the second side of the document is printed.	Reset the printer and print the document again. Wait until the page completely settles in the output bin before removing it.
The print media is in poor condition.	Replace the print media.

Table 7-4 Common causes of jams (continued)

Cause	Solution
Print media is not picked up by the internal rollers from tray 2 or an optional tray.	Remove the top sheet of media. If the media is heavier than 120 g/m^2 (32 lb), it might not be picked from the tray.
The print media has rough or jagged edges.	Replace the media.
The print media is perforated or embossed.	This media does not separate easily. You might need to feed single sheets from Tray 1.
One or more printer supply items have reached the end of their useful life.	Check the printer control panel for messages prompting you to replace supplies, or print a supplies status page to verify the remaining life of the supplies.
The print media was not stored correctly.	Replace the print media. Media should be stored in its original packaging in a controlled environment.

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 21. 5. Check the media specifications. (See Media specifications on page 21.) If media is outside of the recommended specifications, problems can occur. 6. The printer might be dirty. Clean the printer as described in Cleaning the printer and accessories on page 98. 7. Check that all damaged or jammed media is removed from the printer.

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 displays on the control panel
- 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 printer

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 printer 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 printer 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 printer. Toner and paper dust in the paper path can inhibit the free movement of media through the printer and can block the sensors.
- ❑ Use the paper path test in the **DIAGNOSTICS** menu to vary the input selections of the printer to determine if the problem is associated with a particular area of the printer.
- ❑ 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 printer 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 7-5 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. See Tray 1 pickup roller and separation pad on page 222.
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. See Tray 1 pickup roller and separation pad on page 222.
The multipurpose tray paper sensor (SR4) or the sensor lever is defective.	Replace Tray 2. See Paper tray (Tray 2) on page 231.
The multipurpose tray pickup solenoid (SL1) is defective.	1. Run the component test to verify that the solenoid is working properly. See Component test (special mode test) on page 532. 2. Disconnect the connector J1015 for the multipurpose tray pickup solenoid from the DC controller PCB.

Table 7-5 Causes for jams in Tray 1 (continued)

Cause	Solution
	3. Measure the resistance between the cable-side connectors J1015-1 and J1015-2. 4. If the measured resistance is *not* approximately 160 ohms, replace Tray 2. See Paper tray (Tray 2) on page 231.
The pickup motor is defective.	Replace the pickup motor assembly. See Pickup motor assembly on page 273.
The paper tray pickup assembly is defective.	Replace the multipurpose tray pickup assembly. See Multipurpose tray (Tray 1) on page 231.
The DC controller may require a firmware upgrade or a cable connector may be loose.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check all connections to/from the DC Controller.

Jams in Tray 2

The following table describes the cause of and solutions for jams in Tray 2 or optional trays.

Table 7-6 Causes for jams in Tray 2 or optional trays

Cause	Solution
The Tray 2 separation roller is worn or damaged.	Clean the separation roller. If it is still dirty after cleaning, or if it is worn or damaged, replace the separation roller. See Tray 1 pickup roller and separation pad on page 222.
The Tray 2 pickup roller is 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. See Tray 1 pickup roller and separation pad on page 222.
The Tray 2 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 Tray 2 lifter drive assembly is defective.	Replace the Tray 2 lifter drive assembly. See 500-sheet paper feeder lifter drive assembly on page 337.
The Tray 2 pickup solenoid is damaged.	1. Run the component test to verify that the solenoid is working correctly. See Component test (special mode test) on page 532. 2. Disconnect the connector for the Tray 2 pickup solenoid 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 Tray 2. See Paper tray (Tray 2) on page 231.
The Tray 2 pickup motor is defective.	Replace the Tray 2 pickup motor assembly. See Pickup motor assembly on page 273.

Table 7-6 Causes for jams in Tray 2 or optional trays (continued)

Cause	Solution
The paper feed assembly is defective.	Replace the paper feed assembly. See Paper feed assembly on page 283.
The DC controller may require a firmware upgrade or a cable connector may be loose.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check all cable connections to/from DC controller.

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 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. See Paper feed assembly on page 283.
The media attaching roller is dirty or damaged. (This applies to jams in which media is crumpled into an accordion when it enters the ETB.)	Check the media attaching roller to see if it is dirty or damaged. If it is dirty, clean it. If it is damaged, replace the ETB. Calibrate the printer after replacing the ETB. See Full Calibrate Now on page 539.
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 printer.
The drum drive motor assembly is damaged.	1. Run the component test to verify that all of the drum drive motors function properly. See Component test (special mode test) on page 532. If one does not function properly, replace it. See Drum drive motors (Y/C/M/K) on page 298. 2. Inspect the main drive assembly. If it is damaged, replace the main drive assembly. See Remove main drive assembly on page 256.
The top of page sensor (SR12) is defective.	Run the paper path test to verify that the top of page sensor is functioning properly. See Paper path test on page 527. If it is not functioning correctly, replace the paper feed assembly. See Paper feed assembly on page 283.
The DC controller may require a firmware upgrade or a cable connector may be loose.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check all connections to/from DC controller.

Jams in the top cover

The following table describes the causes of and solutions for jams in the top cover.

Table 7-8 Causes for jams in the top 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 set in place. 2. Run the component test to verify that all of the fuser paper sensor functions properly. See Component test (special mode test) on page 532. 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 defective.	Run the component test to verify that the fuser pressure release motor is functioning properly. See Component test (special mode test) on page 532. If it is not, replace it.
The delivery tray paper full sensor (SR2) or sensor lever is defective.	1. Make sure that the delivery tray paper full sensor lever moves smoothly and is set in place. 2. Run the paper path test to verify that the delivery tray paper full sensor functions properly. See Paper path test on page 527. 3. Replace the sensor if it is defective.
The fuser delivery roller is worn.	Replace the fuser.
The fuser delivery roller drive gears are worn or damaged.	Replace the fuser.
The face-down delivery roller is defective.	Replace the fuser.
The paper loop sensors (SR13 and SR14) or the sensor levers are defective.	1. Make sure that the paper loop sensor levers move smoothly and are set in place. 2. Run the paper path test to verify that the paper loop sensors function properly. See Paper path test on page 527. 3. Replace the fuser if the paper loop sensor are defective.
The DC controller may require a firmware upgrade or a cable connector may be loose.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check all cable connections to/from DC controller.

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 oblique rollers.

Table 7-9 Causes for jams in the duplex path (continued)

Cause	Solution
The oblique roller drive gears are worn or damaged.	Replace the ETB unit. Calibrate the printer after replacing the ETB unit. See Full Calibrate Now on page 539.
The duplex feed guide is damaged.	Replace the ETB unit. Calibrate the printer after replacing the ETB unit. See Full Calibrate Now on page 539.
The duplexer connector is unplugged or not seated properly.	Make sure that the connector is plugged in and seated properly.
The reversing sensor (SR8001) or the sensor lever in the duplexer is defective.	1. Run the paper path test to verify that the reversing sensor functions properly. See Paper path test on page 527. 2. If the reversing sensor is defective, replace the duplexer unit. See Duplexer on page 349.

Common causes of paper jams

The following table lists common causes of paper jams and suggested solutions for resolving them.

Paper jams

Cause and solution

Cause	Solution
When the printer is first installed, the protective insert does not eject properly.	See Jam in Tray 1 on page 415.
Print media does not meet HP-recommended media specifications.	Use only media that meets HP specifications. See Media specifications on page 21.
A supply item is installed incorrectly, causing repeated jams.	Verify that all print cartridges, the transfer unit, and the fuser are correctly installed.
You are reloading paper that has already passed through a printer or copier.	Do not use media that has been previously printed on or copied.
An input tray is loaded incorrectly.	Remove media from the input tray and replace the media within the tray. Adjust the media width guide to hold the media firmly in place without bending it.
Print media is skewed.	Input tray guides are not adjusted correctly. Adjust input tray guides so they hold media firmly in place without bending it. If media heavier than 105 g/m^2 (28 lb) is loaded into Tray 2 and optional trays, the media might skew.
Print media is binding or sticking together.	Remove media, flex it, rotate it 180 degrees, or flip it over. Reload media into the input tray. Do not fan media.
Print media is removed before it settles into the output bin.	Reset the printer. Wait until the page completely settles in the output bin before removing it.
When duplexing, the print media is removed before the second side of the document is printed.	Reset the printer and print the document again. Wait until the page completely settles in the output bin before removing it.
Print media is in poor condition.	Replace the print media.
Print media is not picked up by the internal rollers from Tray 2 or an optional tray.	Remove the top sheet of media. If the media is heavier than 105 g/m^2 (28 lb), it might not be picked from the tray.

Cause and solution

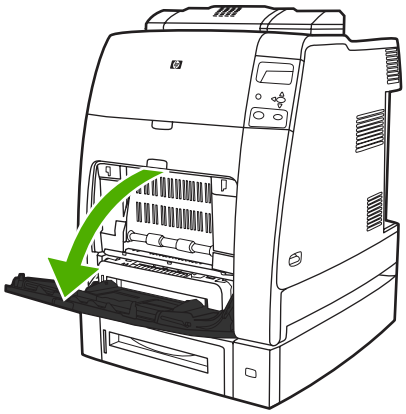
Cause	Solution
Print media has rough or jagged edges.	Replace the media.
Print media is perforated or embossed.	This media does not separate easily. You might need to feed single sheets from Tray 1.
Printer supply items have reached the end of their useful life.	Check the printer control panel for messages prompting you to replace supplies, or print a supplies status page to verify the remaining life of the supplies. See Replacing supplies on page 107 for more information.
Media was not stored correctly.	Replace the print media. Media should be stored in the original packaging in a controlled environment.

Clearing jams

Each section below corresponds with a jam message that might display on the control panel. Use these procedures to clear the jam.

Jam in Tray 1

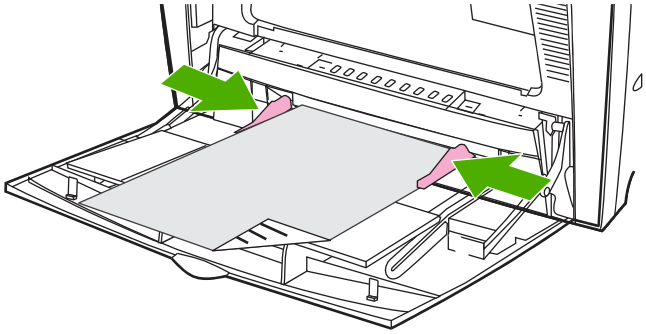
1. Open Tray 1.



2. Remove loaded paper from Tray 1.
3. Reload paper in Tray 1 and check to make sure the media is loaded correctly.

NOTE Do not load media above the fill tabs.

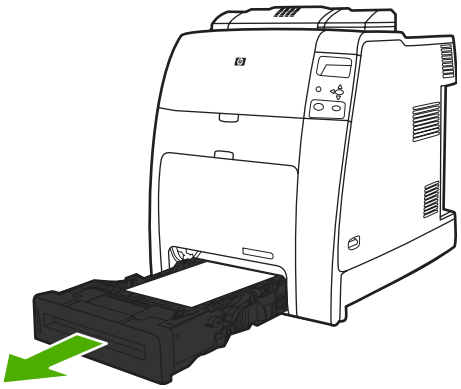
4. Confirm that the guides are in the correct position.



5. To continue printing, press **?**, and then press ✔.

Jam in Tray 2 or optional trays

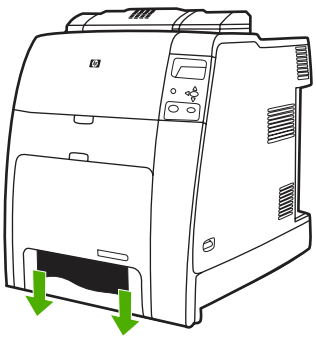
1. Pull out the tray indicated and place it on a flat surface. Make sure that the paper guides are in the correct position.



2. Remove any partially fed media. Grasp the media by both corners and pull down.

NOTE Use Tray 1 to avoid jams with heavier paper.

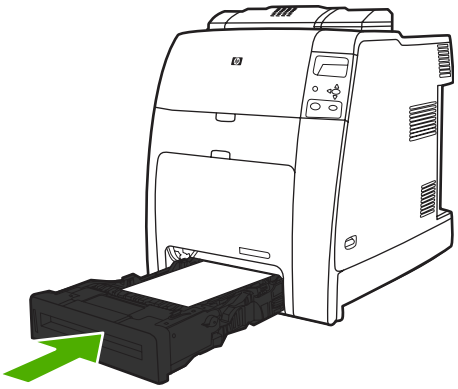
3. Inspect the media path to ensure that it is clear.



NOTE If the media tears, make sure that all media fragments are removed from the paper path before resuming printing.

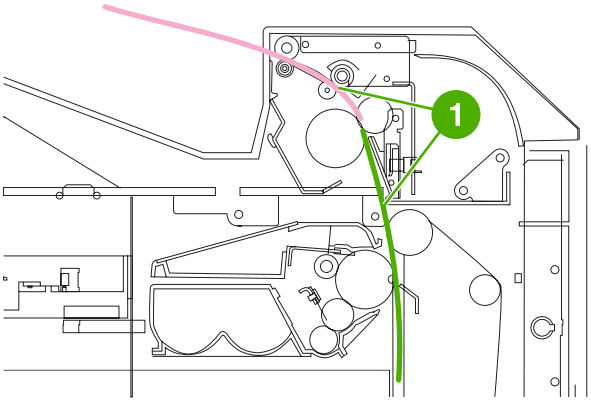
4. For jams that occur in an optional tray, check the trays above for jams as well. For example, if the jam occurs in Tray 4, also open Tray 2 and Tray 3 and remove any jammed paper.

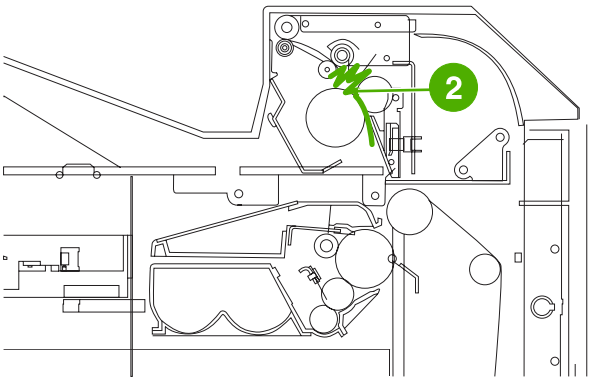
5. Check to make sure the media is loaded correctly. Insert the tray into the printer. Make sure all trays are completely closed.



Jams in top cover area

Jams in the top cover occur in of the areas indicated in the figures below. Use the procedures in this section to clear a jam in this area.



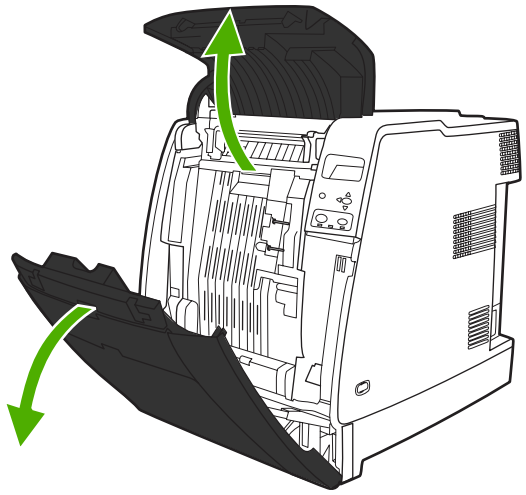


1	Jammed paper
2	Crumpled paper in the fuser

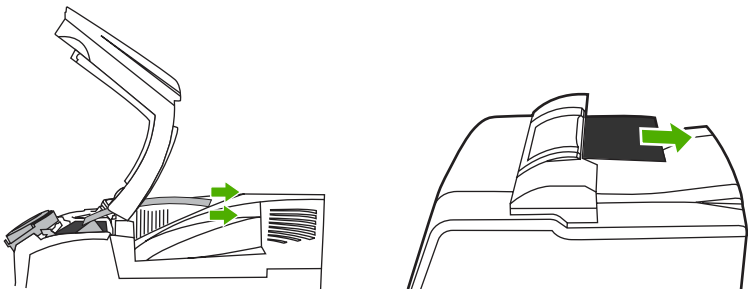
Clearing a jam in the top cover area

WARNING! Do not touch the fuser. It is hot and could cause burns! The fuser's operating temperature is 195°C (383°F). Wait ten minutes to allow the fuser to cool before touching the fuser.

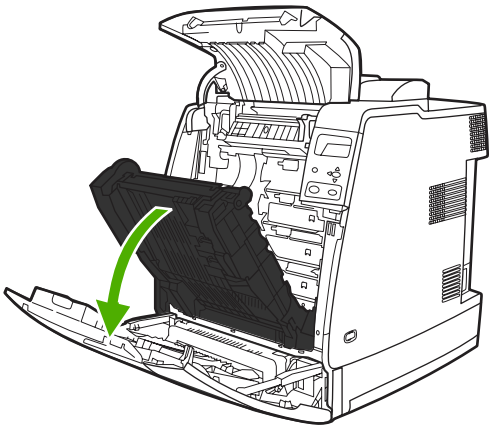
1. Open the top and front covers.



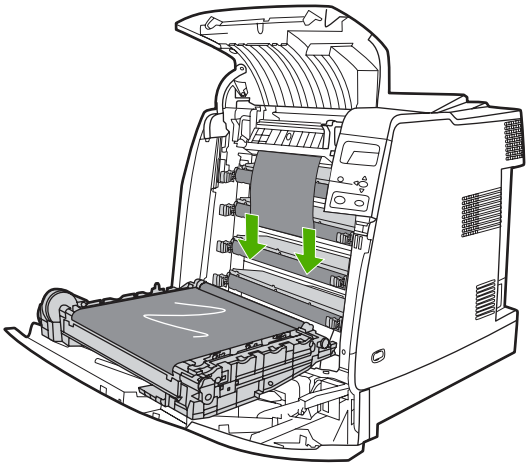
2. Grasp any visible media by both corners and pull to remove it.



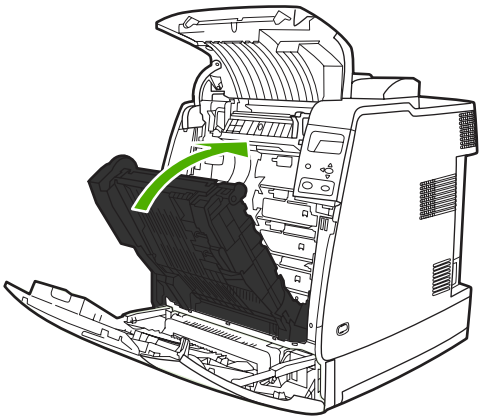
3. Grasp the green handle on the transfer unit and pull down.



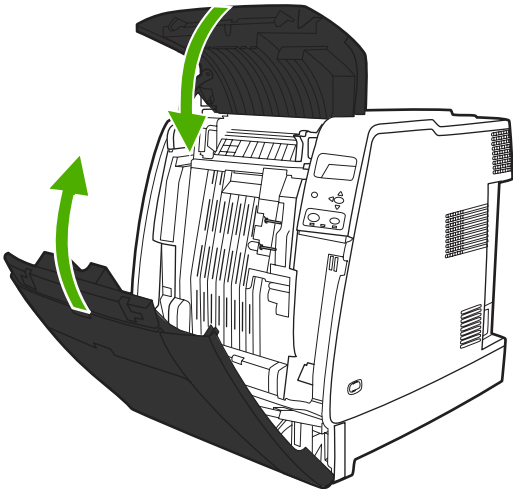
4. Grasp the media by both corners and pull down.



5. Close the transfer unit.

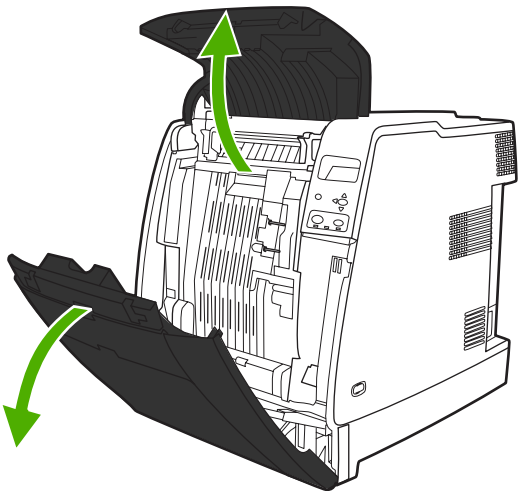


6. Close the top and front covers.

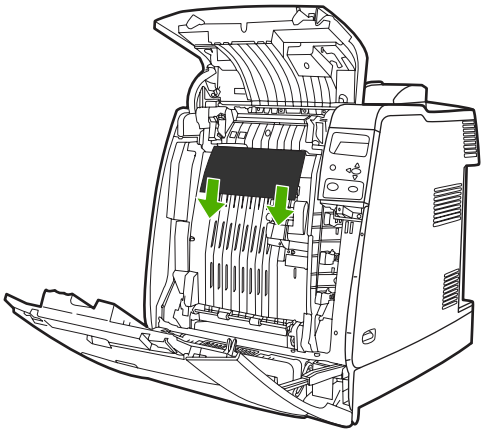


Clearing other jams

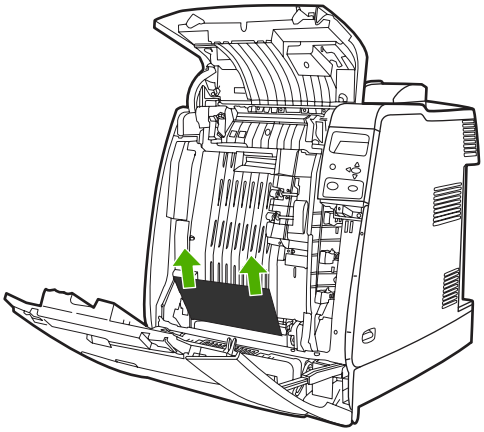
1. Using the handles, open the top and front covers.



2. If media is present, grasp the media by both corners and pull down.

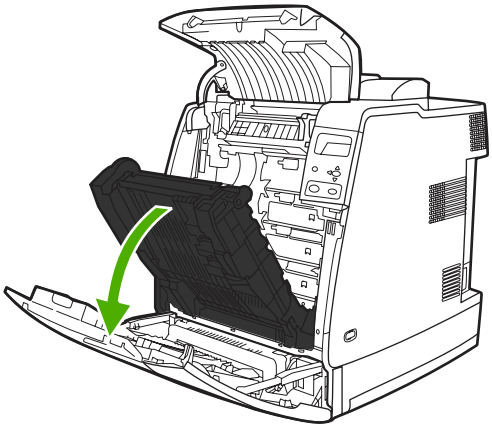


3. If media is present, grasp the media by both corners and pull up.

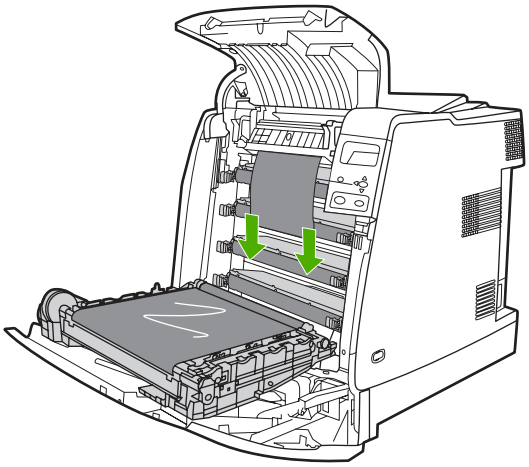


NOTE If no media is present at these locations, continue to the next step.

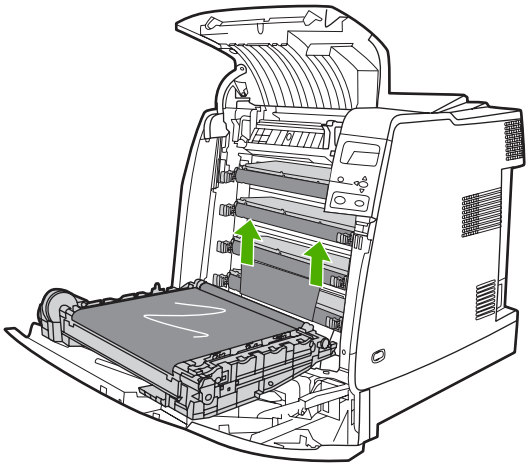
4. Grasp the green handle on the transfer unit and pull down.



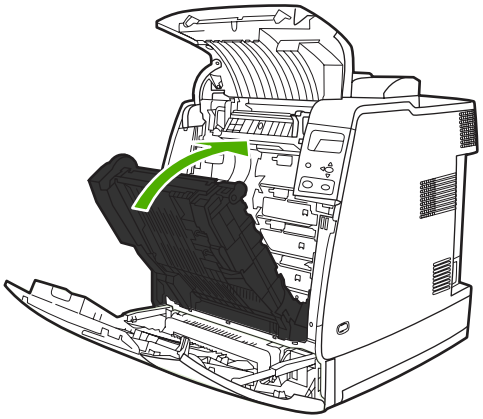
5. If media is present, grasp the media by both corners and pull down.



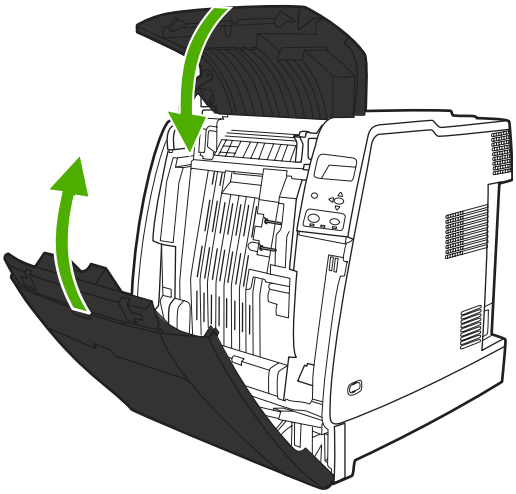
6. If media is present, grasp the media by both corners and pull up.



7. Close the transfer unit.



8. Close the top and front covers.

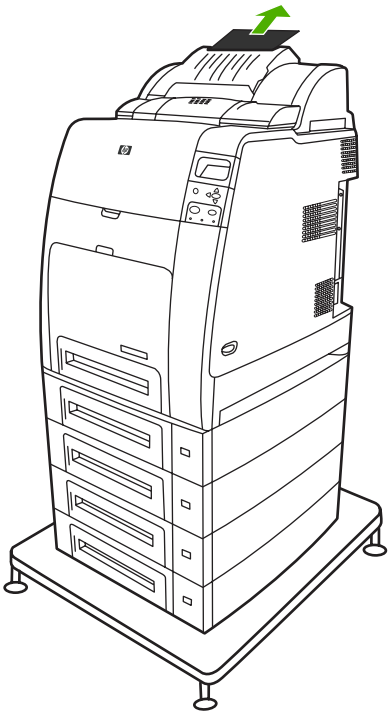


Jams in the stapler/stacker (4700 models)

NOTE After resolving any stapler/stacker jams, check that there are no jams in the printer itself. For more information, see Clearing jams on page 415.

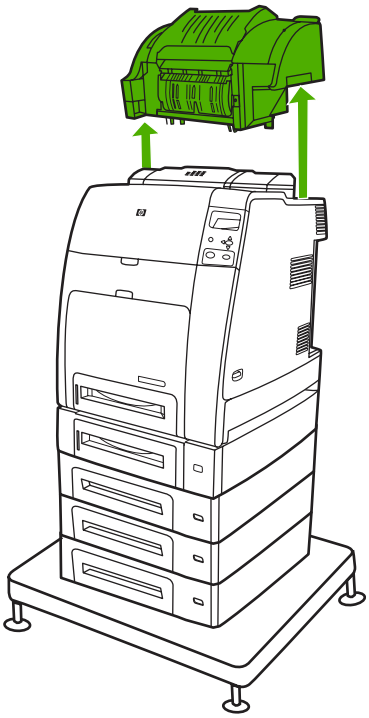
Clearing jams in the paper path

1. Remove any exposed jammed sheets.

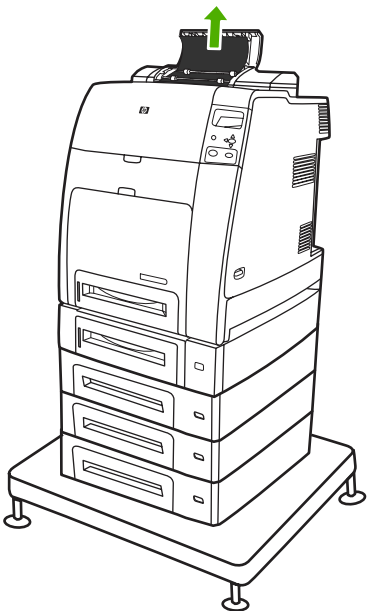


2. Grasp the stapler/stacker unit by its handles and lift it off the body of the printer.

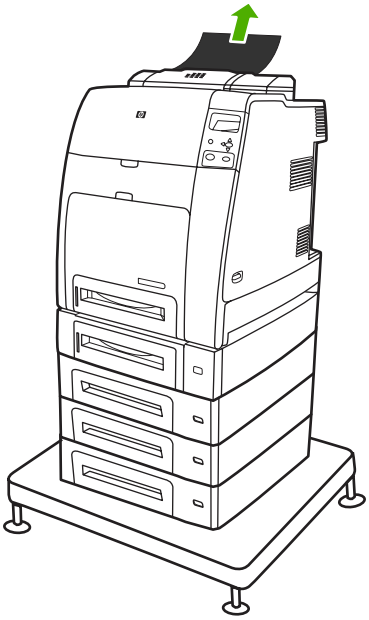
CAUTION The stapler/stacker unit weighs 9 kg (19.8 lb). For greater safety, you might wish to remove the stapler/stacker while standing at the rear of the printer.



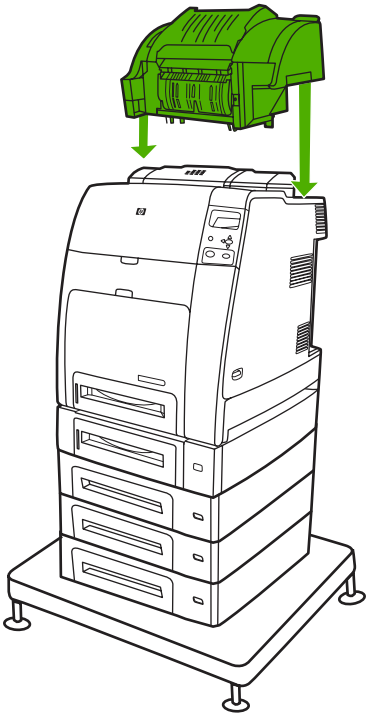
3. Set the stapler/stacker aside on a flat surface.
4. Remove any jammed sheets under the front cover of the duplexer.



5. Remove any jammed sheets from the rear of the duplexer.



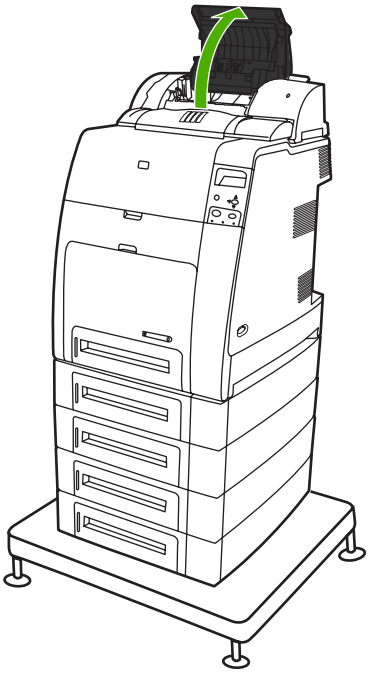
6. Place the stapler/stacker unit onto the printer.



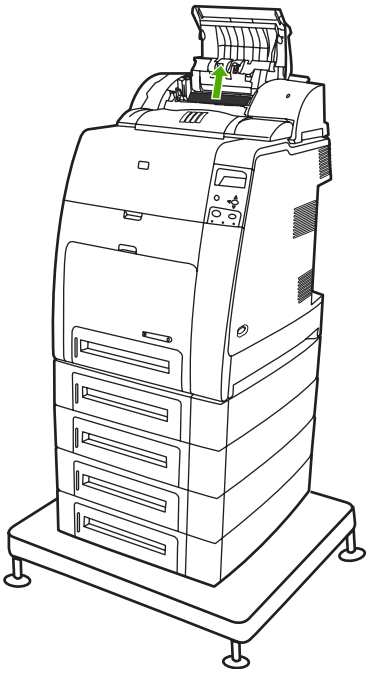
NOTE The output bin must be pushed down into the lowest position for printing to continue.

Clearing jams inside the stapler/stacker

1. Open the top cover of the stapler/stacker unit by the handles.

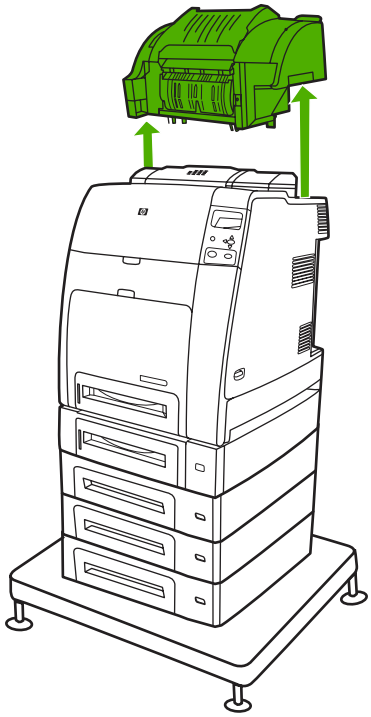


2. If jammed paper can be seen, pull it from the stapler/stacker. Close the stapler/stacker cover.

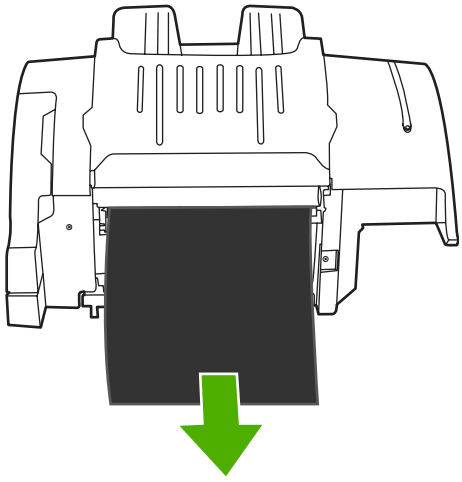


3. If a jammed page is only partially visible and cannot easily be removed, grasp the stapler/stacker unit by its handles and lift it off the body of the printer.

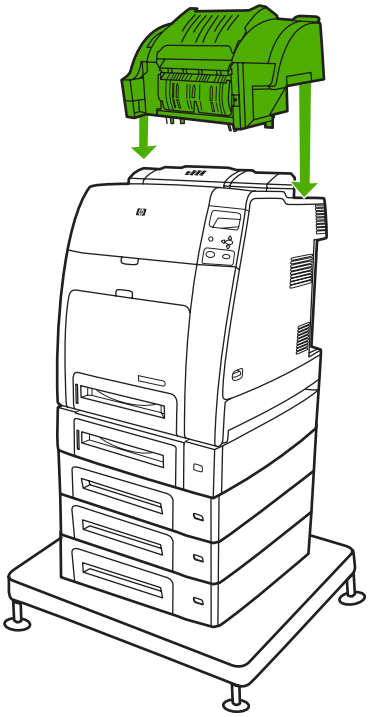
> **CAUTION** The stapler/stacker unit weighs 9 kg (19.8 lb). For greater safety, you might wish to remove the stapler/stacker from the rear of the printer.



4. Set the stapler/stacker aside on a flat surface.
5. Remove any visible paper from the stapler/stacker.

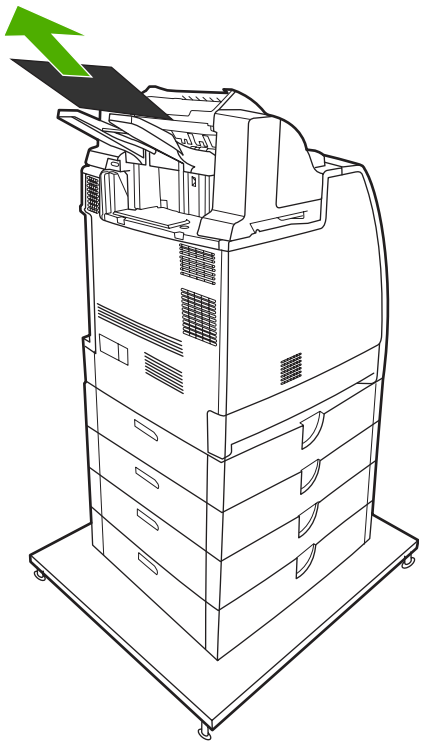


6. Place the stapler/stacker unit onto the printer.



Jams at the output bin

- Remove any jammed paper at the output bin.

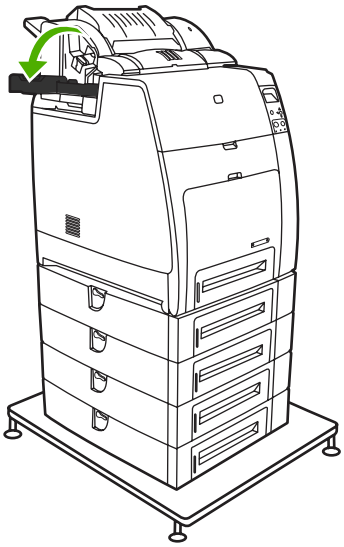


NOTE On all stapler/stacker jams, be sure that there is no jammed media in the duplexer path or inside the stapler/stacker or printer. See the other jam recovery procedures included in this section for assistance.

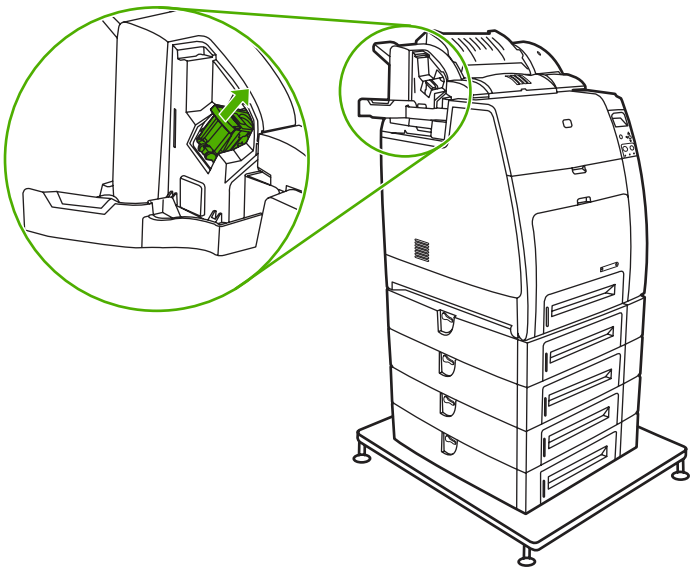
Staple jams

NOTE Clear staple jams when the message **13.XX.YY JAM IN STAPLER** displays on the control panel.

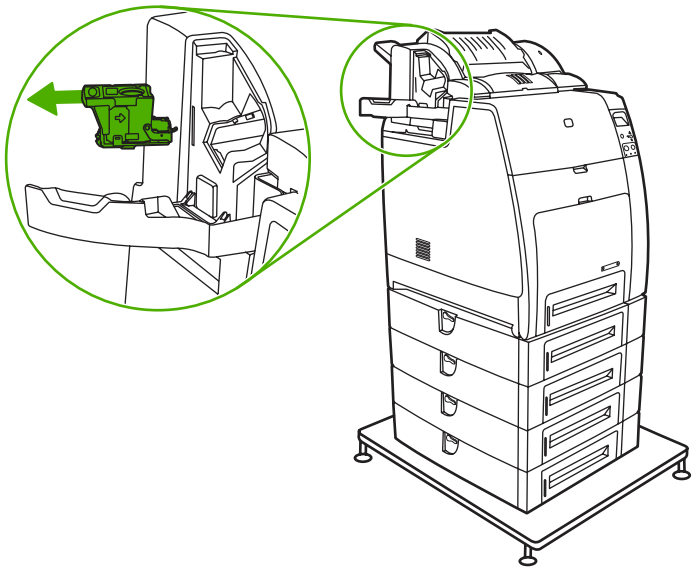
1. On the left side of the stapler/stacker, open the stapler cartridge cover by gently pulling it.



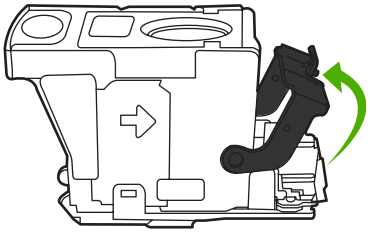
2. Grasp the stapler cartridge handle and pull up gently.



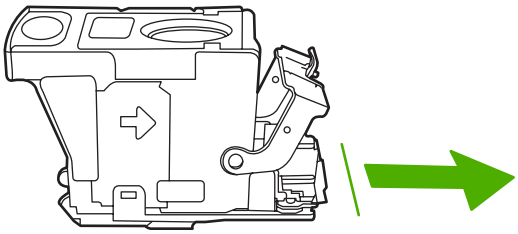
3. Twist the stapler cartridge gently in a counter-clockwise direction and pull it out.



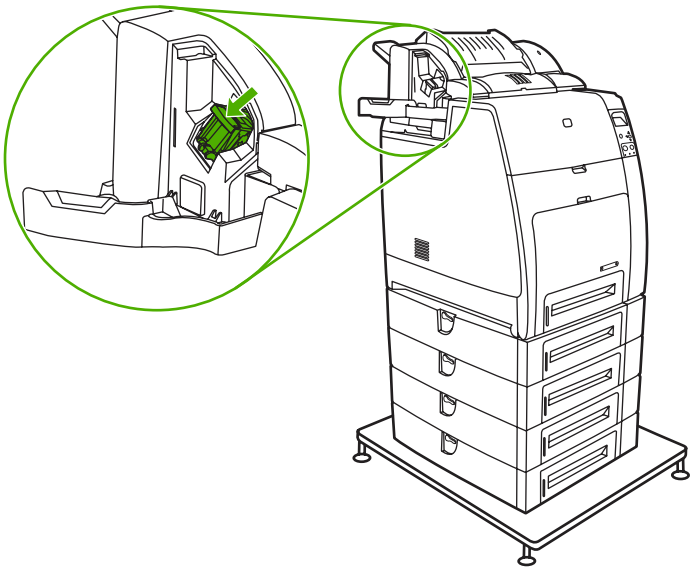
4. Lift the cover at the tip of the cartridge.



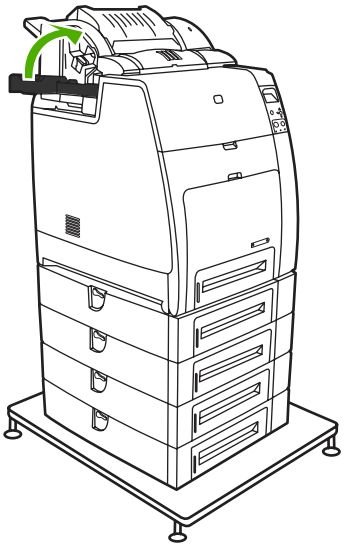
5. Remove the visible staple and close the cartridge cover.



6. Place the stapler cartridge in the stapler unit. Press it down until it snaps into place.



7. Close the stapler cartridge cover.



NOTE The stapler needs to reload after clearing a staple jam, so the first few documents (up to five) might not be stapled. The stapler/stacker might make a noise as the stapler reloads staples. The noise will stop after a few documents are stapled. If a print job is sent and the stapler is jammed or out of staples, the job will still print as long as the path to the stacker bin is not blocked.

Paper transport troubleshooting

If media is feeding incorrectly, use the information in this section to identify and resolve the problem.

Multiple pages are fed

The following table describes the causes of and solutions for multiple pages feeding.

Table 7-10 Causes for multiple pages feeding

Cause	Solution
The separation roller in the paper tray is dirty, worn, or damaged (Tray 2 or optional paper feeders).	Clean the separation roller if it is dirty. Replace the separation roller if it is worn or damaged. See Tray 1 pickup roller and separation pad on page 222.
The multipurpose tray separation pad is dirty, worn, or damaged.	Clean the separation pad assembly if it is dirty. Replace the separation pad assembly if it is worn or damaged. See Tray 1 pickup roller and separation pad on page 222.
The media edges are locked together.	Flex the media, do not fan it.
Too much media (particularly envelopes) is loaded in Tray 1.	Remove some of the media from Tray 1.

Media is wrinkled or folded

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. Open the ETB. If the media is wrinkled at this stage, use Table 7-12 Causes for wrinkled or folded paper (part two: paper path exit) on page 432 to diagnose the problem. If the media is *not* wrinkled at this stage, use Table 7-11 Causes for wrinkled or folded media (part one: paper path entrance) on page 432 to diagnose the problem.

Table 7-11 Causes for wrinkled or folded media (part one: paper path entrance)

Cause	Solution
The feed roller or registration roller is dirty or defective.	Clean the feed roller or registration roller if they are dirty. If the feed roller or registration roller are defective, replace the paper feed assembly. See Paper feed assembly on page 283.
The paper path has foreign substances or dirt.	Remove any foreign substances or dirt from the paper path. If the feed guide is damaged, replace the paper feed assembly. See Paper feed assembly on page 283.
The cartridge shutter open/close mechanism is damaged. (This applies to jams in which paper 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 printer.

Table 7-12 Causes for wrinkled or folded paper (part two: paper path exit)

Cause	Solution
The fuser inlet guide is dirty.	Clean the fuser inlet guide.
The fuser pressure roller is dirty or damaged.	Clean the pressure roller. If the pressure roller is damaged, replace the fuser.

Table 7-12 Causes for wrinkled or folded paper (part two: paper path exit) (continued)

Cause	Solution
The fuser sleeve is dirty or damaged.	Clean the fuser sleeve. If the fuser sleeve is damaged, replace the fuser.
The fuser delivery roller is dirty.	Clean the fuser delivery roller.

Paper is skewed

Table 7-13 Causes for skewed paper

Cause	Solution
The paper dust or dirt has accumulated in the paper tray feed roller or registration roller.	Clean the rollers.
The paper tray feed roller and registration roller are worn irregularly.	Replace the paper feed assembly. See Paper feed assembly on page 283.
The separation roller is worn or damaged (Tray 2 or optional trays).	Replace the separation roller. See Tray 1 pickup roller and separation pad on page 222.

Image formation troubleshooting

The image formation system is the central hub of the printer. During image formation, an image of colored toner is formed and then fused onto the paper. The image formation system consists of the following physical components:

- Four laser/scanners
- Four print cartridges
- ETB
- Fuser

Before beginning image formation troubleshooting, check that the media meets the specifications in the *HP LaserJet Printer Family Print Media Guide*.

Print quality troubleshooting tools

Go to http://www.hp.com/go/printquality/clj4700 or http://www.hp.com/go/printquality/ljcp4005 to identify and troubleshoot print quality issues for the HP Color LaserJet 4700 printers as well as to show customers and service personnel how to troubleshoot print quality issues. 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.

You can also visit the Web site from http://www.hp.com by using the following procedure.

Open the print-quality troubleshooting Web site

1. On the main http://www.hp.com page, click **Support & Drivers**.
2. Type `CLJ4700 or CLJCP4005` in the open text field, to correspond to the model you are working on, and then click the forward arrows.
3. Click the product name in the list that appears.
4. Click **print quality troubleshooting tool** under **Hot Topics** in the box to the right of the screen.



NOTE The customer can also go to http://www.hp.com/bizsupport to find the **print quality troubleshooting tool** under **Hot Topics**.

These Web sites provide intuitive, step-by-step directions for producing print quality troubleshooting pages that can be used to isolate issues and provide possible print quality solutions.

Print quality problems associated with media

Some print quality problems arise from use of inappropriate media.

- Use media that meets HP specifications.
- The surface of the media is too smooth. See Media specifications on page 21.
- The printer driver is set incorrectly. Change the paper-type setting to match the type of media that is being used.

- The media that you are using is too heavy for the printer, and the toner is not fusing to the media.
- Make sure that the media sensing configuration for the paper tray that is being printed from is set correctly.
- The transparencies that you are using are not designed for correct toner adhesion. Use only transparencies that are 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 that you are using is printed on rough paper. Use a smoother, xerographic paper. If this solves your problem, consult with the print supplier who produces your letterhead to verify that the paper used meets the specifications for this printer.
- The paper is excessively rough. Use a smoother, xerographic paper.
- Ensure that the correct print mode is set for the media type in the control panel. See Changing printer control panel configuration settings on page 460.

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 for at least 30 seconds before handling them.

- In the printer driver **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 printer. See Transparencies on page 24. For more information, see the *HP LaserJet Printer Family Print Media Guide*.
- 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 can be caused by transparencies sticking together in the output bin. Try printing the job in smaller batches.
- The printed colors are unacceptable. Select different colors in the software program or printer driver.
- If you are using a reflective overhead projector, use a standard overhead projector instead.
- Make sure that the media sensing configuration for the paper tray that is being printed from is set correctly.
- Ensure that the correct print mode is set for the media type in the control panel. See Changing printer control panel configuration settings on page 460.

Print quality problems that are associated with the environment

Print quality problems can occur if the printer is operating in excessively humid, dry, or dusty conditions. Verify that the printing environment is within specifications. See Environmental specifications on page 19.

Print quality problems that are associated with jams

Take the following actions to prevent problems that are associated with printer jams.

- To avoid problems after a jam, make sure that all media is cleared from the paper path.
- If the printer recently jammed, print two to three pages to clean the printer.
- If the media does not pass through the fuser, image defects might appear on subsequent documents. Print two to three pages to clean the printer. If the problem persists, see the next section to print a troubleshooting page.
- Make sure that the media sensing configuration for the paper tray that is being printed from is set correctly.
- Ensure that the correct print mode is set for the media type in the control panel. See Changing printer control panel configuration settings on page 460.

Print quality troubleshooting pages

Use the built-in print quality troubleshooting pages to help diagnose and solve print quality problems.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **PQ TROUBLESHOOTING**.
5. Press ✔ to select **PQ TROUBLESHOOTING**.

The message **Printing... PQ troubleshooting** displays on the control panel until the printer finishes printing the print quality troubleshooting information. The printer 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), one white page, and printer 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/clj4700.

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 printer 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.

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.

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, developed and implemented for the first time in the HP Color LaserJet 4700 printer. 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 printer menu or from the front 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 437.

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.

Adobe® RGB

Printers and computer monitors use different methods of producing color, and so matching printer output color to a computer screen can be quite complex. Monitors display colors with light pixels using a Red, Green, and Blue (RGB) color process, but printers print colors using a Cyan, Magenta, Yellow, and Black (CMYK) process. Adobe RGB (1998) color is a wide color space designed to make the most of CMYK color; it is a better choice for experienced users when color fidelity is of the utmost importance.

To provide the best color output across office applications, monitors, and cameras, the HP Color LaserJet 4700 series print driver defaults to sRGB color. For Adobe RGB (1998) color printing, click **Print**, **Properties**, and then select the **Color** tab. Select **Adobe RGB (1998) color** from the **RGB Color** drop-down list.

CMYK+

CMYK+ color provides color output that is more consistent with original RGB color images, even after images have been rendered for analog offset press printing. It delivers consistent and intelligent conversion from analog offset press colors to the richer and more vibrant colors available with digital printers. Skin tones and grayscale remain unchanged, but colors appear more vivid without being saturated.

Creative professionals are able to produce impressive portfolio prints and presentations from CMYK print files without clipped colors, using the full gamut of their printer, and without manual intervention.

CMYK+ color can be thought of as the sRGB of the four color world. It provides great results for CMYK print files regardless of the intended output destination. CMYK+ color is the default color selection, and there is no direct action required by the user. To ensure that you are using CMYK+, simply select it from the **Color** tab in the postscript level 3 emulation print driver.

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 printer's 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.

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 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 printer 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 printer by altering halftones, and affects all print jobs.

To adjust color density

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **PRINT QUALITY**.
5. Press ✔ to select **PRINT QUALITY**.
6. Press ▼ or ▲ to highlight **ADJUST COLOR**.
7. Press ✔ to select **ADJUST COLOR**.
8. Press ▼ or ▲ to select the desired color area.
9. Press ✔ to select the desired color area.
10. Press ▼ or ▲ to highlight the desired color.
11. Press ✔ to select the desired color.

12. Press ▼ or ▲ to highlight the correct density setting.
13. Press ✔ to select the density setting.
14. Press ⮌ to set the density for the next color.
15. Repeat steps 10 through 13 for each color.
16. Press ⮌ to select a different color area. Repeat steps 8 through 13 for each color area.
17. After setting the density for each color, press Menu.

Web-downloadable color tables

Through Web-downloadable color tables, the HP Color LaserJet 4700 and HP Color LaserJet CP4005 series printers let you emulate color printing for other HP Color LaserJet products. HP can also create custom color tables to meet the specific needs of businesses.

The HP Color LaserJet 4700 and HP Color LaserJet CP4005 series printers provide color consistency with other devices by allowing you to emulate color printing for past or future HP Color LaserJet products. HP can also work with businesses to customize the printer's color output according to their specific needs.

Through a process called Remote Firmware Update (RFU), the HP Color LaserJet 4700 and HP Color LaserJet CP4005 series printers support downloading and installing emulative or custom color tables directly to the printer firmware.

To take advantage of this feature, obtain the color table from http://www.hp.com/support/clj4700 or http://www.hp.com/support/ljcp4005. Use the RFU feature to install it at your printer, and then access the table from the driver. To use an installed table, click **Print**, **Properties**, and then select the **Color** tab. Select the color table from the **RGB Color** drop-down list.

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 443. 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 are listed.

Table 7-14 Image defects

Image defect	Description	More information
Light image	A very light image is printed.	See Light image on page 444.
Light color	One color is light in an image.	See Light color on page 445.
Dark image	A very dark image is printed.	See Dark image on page 445.
Dark color	One color is dark in an image.	See Dark color on page 446.
Completely blank	No image is printed.	See Completely blank image on page 446.
All black/solid color	An all black or solid colored image is printed.	See All black or solid color on page 447.
Dots in vertical lines	Vertical lines of white dots appear in the image.	See Dots in vertical lines on page 447.
Dirt on back of paper	The back (non-printed) side of the paper is dirty.	See Dirt on the front or back of the paper on page 448.
Dirt on front of paper	The front (printed) sided of the paper is dirty.	See Dirt on the front or back of the paper on page 448.
Vertical lines	Vertical lines are printed.	See Vertical lines on page 448.
White vertical lines	White vertical lines appear in the image.	See White vertical lines on page 449.
Horizontal lines	Horizontal lines are printed.	See Horizontal lines on page 449.
White horizontal lines	White horizontal lines appear in the image.	See White horizontal lines on page 450.
Missing color	One of the four toner colors is not printing.	See Missing color on page 450.
Blank spots	The image has blank spots.	See Blank spots on page 451.
Poor fusing	Toner is loose on the printed image.	See Poor fusing on page 451.
Distortion or blurring	The image appears distorted, or colors seem out of alignment.	See Distortion or blurring on page 452.
Smearing	The image is smeared or dirty.	See Smearing on page 453.
Misplaced image	The image is placed incorrectly on the page.	See Misplaced image on page 454.

Light image



This table contains information about the causes of and solutions for light images.

Table 7-15 Causes for light images

Cause	Solution
The toner cartridge might be low.	Replace the toner cartridge.
The toner cartridge might not be seated properly.	Make sure the toner cartridge is seated properly.
The image density is not adjusted correctly.	Increase the density for the affected color.
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 roller is worn or damaged.	Replace the ETB. Calibrate the printer after replacing the ETB. See Full Calibrate Now on page 539.
The high-voltage PCB is defective or one of the connections is loose.	1. Check the connections. 2. Replace the high-voltage PCB. See High-voltage power supply PCB on page 324.
The DC controller may require a firmware upgrade or the connector to the high-voltage PCB (J1006) is disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connector (J1006) on the DC controller PCB to make sure it is seated correctly.

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 printer.	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 printer after replacing the ETB. See Full Calibrate Now on page 539.
The transfer charging roller is worn or damaged.	Replace the ETB. Calibrate the printer after replacing the ETB. See Full Calibrate Now on page 539.
The photosensitive drum is worn.	Replace the print cartridge for the affected color.
The ETB alienation system is defective.	1. Run the component test to verify that the ETB alienation system is defective. See Component test (special mode test) on page 532. 2. Replace the ETB.
The high-voltage PCB is defective or one of the connections is loose.	1. Check the connections. 2. Replace the high-voltage PCB. See High-voltage power supply PCB on page 324.
The DC controller may require a firmware upgrade or the connector to the high-voltage PCB (J1006) is disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connector (J1006) on the DC controller PCB to make sure it is seated correctly.

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. See Paper feed assembly on page 283.
The DC controller may require a firmware upgrade or the connector to the high-voltage PCB (J1012) is disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connector (J1012) on the DC controller PCB to make sure it is seated correctly.

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 broken or damaged.	Replace the high-voltage contacts for the affected color.
The high-voltage PCB is defective.	Replace the high-voltage PCB. See High-voltage power supply PCB on page 324.
The DC controller may require a firmware upgrade or the connector to the high-voltage PCB (J1006) is disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connector (J1006) on the DC controller PCB to make sure it is seated correctly.

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 one of the connections is loose.	1. Check the connections. 2. Replace the high-voltage PCB. See High-voltage power supply PCB on page 324.
The DC controller may require a firmware upgrade or the connector to the high-voltage PCB (J1006) is disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connector (J1006) on the DC controller PCB to make sure it is seated correctly.

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 affected cartridge.
The primary charging roller is defective.	Replace the print cartridge for the affected color.
The high-voltage contacts are broken or damaged.	Replace the high-voltage contacts for the affected color.
The high-voltage PCB is defective.	Replace the high-voltage PCB. See High-voltage power supply PCB on page 324.
The laser/scanner unit is defective.	1. Run the component test to verify that the laser/scanner unit is defective. See Component test (special mode test) on page 532. 2. Replace the affected laser/scanner unit. See Laser/scanner assembly on page 287.
The DC controller may require a firmware upgrade or the connector to the high-voltage PCB (J1006) is disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connector (J1006) on the DC controller PCB to make sure it is seated correctly.

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 charge roller in the cartridge is damaged or contaminated.	Replace the affected cartridge.
The transfer charging roller is worn or damaged.	If dots occur in all colors, replace the ETB. Calibrate the printer after replacing the ETB. See Full Calibrate Now on page 539.

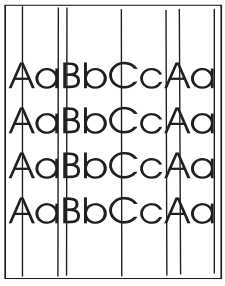
Dirt on the front or back of the paper

This table contains information about the causes of and solutions for dirt on the front or back of the paper.

Table 7-22 Causes for dirt on the front or back of the paper

Cause	Solution
One or more of the rollers are dirty.	See Repetitive defects troubleshooting on page 454 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 one of the connections is loose.	1. Check the connections. 2. Replace the high-voltage power supply PCB on page 324.
The DC controller may require a firmware upgrade or the connector to the high-voltage PCB (J1006) is disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connector (J1006) on the DC controller PCB to make sure it is seated correctly.

Vertical lines



This table contains information about the causes of and solutions for vertical lines.

Table 7-23 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.

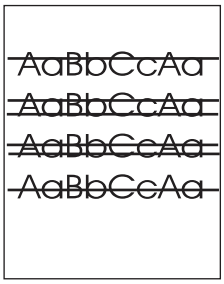
White vertical lines

This table contains information about the causes of and solutions for white vertical lines.

Table 7-24 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. Inspect the cartridge and remove any debris that might be blocking the laser from reaching the OPC.
The cartridge has a foreign substance blocking the laser.	Inspect the laser source and shutter for the affected color. Inspect the cartridge and remove any debris that might be blocking the laser from reaching the OPC.
The lens in the laser/scanner unit is dirty.	Replace the laser/scanner for the color in which the white lines appear. See Laser/scanner assembly on page 287. Calibrate the printer after replacing the laser/scanner. See Full Calibrate Now on page 539.
The fuser sleeve has grooves around the circumference.	Replace the fuser.

Horizontal lines



This table contains information about the causes of and solutions for horizontal lines.

Table 7-25 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 7-26 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 printer after replacing the ETB. See Full Calibrate Now on page 539.

Missing color

This table contains information about the causes of and solutions for missing color.

Table 7-27 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. See High-voltage power supply PCB on page 324.
The laser/scanner unit is defective.	Replace the laser/scanner for the missing color. See Laser/scanner assembly on page 287. Calibrate the printer after replacing the laser/scanner. See Full Calibrate Now on page 539.
The high-voltage PCB is defective or one of the connections is loose.	1. Check the connections. 2. Replace the high-voltage PCB. See High-voltage power supply PCB on page 324.
The DC controller may require a firmware upgrade or the connector to the high-voltage PCB (J1006) is disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connector (J1006) on the DC controller PCB to make sure it is seated correctly.

Blank spots



This table contains information about the causes of and solutions for blank spots.

Table 7-28 Causes for blank spots

Cause	Solution
The high-voltage PCB is defective or one of the connections is loose.	1. Check the connections. 2. Replace the high-voltage PCB. See High-voltage power supply PCB on page 324.
The DC controller may require a firmware upgrade or the connector to the high-voltage PCB (J1006) is disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connector (J1006) on the DC controller PCB to make sure it is seated correctly.

Poor fusing



This table contains information about the causes of and solutions for poor fusing.

Table 7-29 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 Media specifications on page 21.

Table 7-29 Causes for poor fusing (continued)

Cause	Solution
The fuser pressure roller is dirty.	1. Clean the fuser pressure roller. 2. Replace the fuser pressure roller.
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 or is not connecting.	1. Check the connections. 2. Replace the fuser pressure release motor.
The DC controller PCB may require a firmware upgrade or the connectors to the high-voltage PCB (J1024 and J1025) are disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connectors (J1024 and J1025) on the DC controller PCB to make sure they are seated correctly.

Distortion or blurring

This table contains information about the causes of and solutions for distortion or blurring.

Table 7-30 Causes for distortion or blurring

Cause	Solution
The color-plane registration is out of specification.	Calibrate the printer from the **PRINT QUALITY** menu. See Full Calibrate Now on page 539.
The cartridge OPC drum is slipping.	1. Set the pre-rotation optimize mode to on. 2. Replace the cartridge.
The ETB is defective.	If the ETB belt does not rotate smoothly, replace the ETB. Calibrate the printer after replacing the ETB. See Full Calibrate Now on page 539.
The ETB motor drive gear is worn or damaged.	Replace the ETB.
The drum motor drive gear is worn or damaged.	Replace the drum motor for the affected color. See Remove main drive assembly on page 256.
The color misregistration detection unit is defective.	Replace the paper feed assembly. See Paper feed assembly on page 283.
The laser/scanner unit is defective.	Replace the laser/scanner for the affected color. See Laser/scanner assembly on page 287. Calibrate the printer after replacing the laser/scanner. See Full Calibrate Now on page 539.
The DC controller PCB may require a firmware upgrade or the connectors to the high-voltage PCB (J1002 Yellow, J1003 Cyan, J1004 Magenta, and J1005 Black) are disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connectors (J1002 Yellow, J1003 Cyan, J1004 Magenta, and J1005 Black) on the DC controller PCB to make sure they are seated correctly.

Smearing



This table contains information about the causes of and solutions for smearing.

Table 7-31 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

Table 7-31 Causes for smearing (continued)

Cause	Solution
	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



This table contains information about the causes of and solutions for misplaced images.

Table 7-32 Causes for misplaced image

Cause	Solution
The media is skewed.	See Paper is skewed on page 433 to resolve the skew.
The color-plane registration is out of specification.	Calibrate the printer from the **PRINT QUALITY** menu. See Full Calibrate Now on page 539.
The duplex feed roller is worn.	Replace the duplexer. See Duplexer on page 349.
The oblique rollers are worn (this issue applies to duplex printing only).	Replace the ETB.
The DC controller PCB may require a firmware upgrade or the connectors to the high-voltage PCB (J1002 Yellow, J1003 Cyan, J1004 Magenta, and J1005 Black) are disconnected or not seated properly.	1. Upgrade formatter and DC Controller firmware, which can be found in a single .rfu file from http://www.hp.com/support/clj4700 or http://www.hp.com/support/cp4005. 2. Check the connectors (J1002 Yellow, J1003 Cyan, J1004 Magenta, and J1005 Black) on the DC controller PCB to make sure they are seated correctly.

Repetitive defects troubleshooting

Defects on printer rollers can cause image defects to appear at regular intervals on the page. Use Figure 7-4 Repetitive defects ruler on page 455 to measure the distance between defects that recur on a page. Use the repetitive defect spacing table to determine which roller is causing the defect. To resolve the problem, try cleaning the roller first. If the roller is still dirty after cleaning or if it is damaged, replace the indicated part.

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 paper tray or the multipurpose 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.

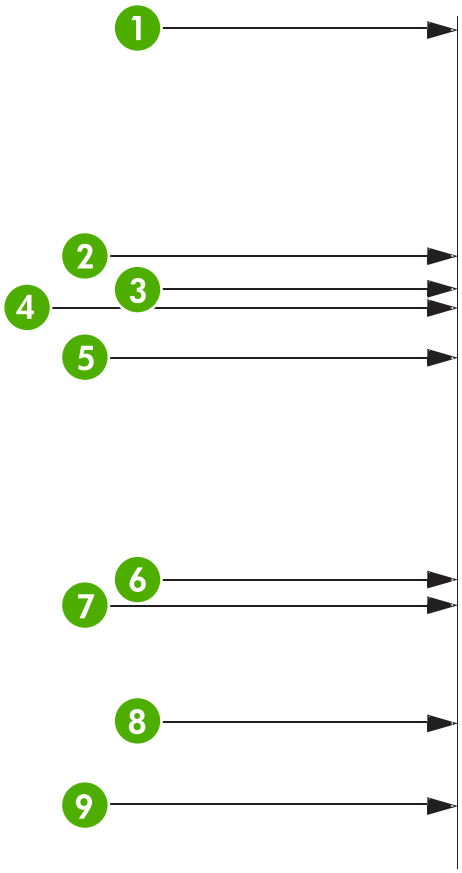


Figure 7-4 Repetitive defects ruler

Table 7-33 Repetitive defect spacing

Interval	Roller	Distance	Type of defect	Replacement part
1	First occurrence of the defect (the distance from the top of the page to the defect might vary.			
2	Black (K) developing cartridge roller cylinder	34.3 mm (1.35 inches)	Defect on front of paper	Print cartridge
3	Cartridge primary charging roller or ETB transfer roller	37.7 mm (1.48 inches)	Repetitive spots	Print cartridge

Table 7-33 Repetitive defect spacing (continued)

Interval	Roller	Distance	Type of defect	Replacement part
	(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)			
4	Color (CMY) developing roller cylinder.	38.5 mm (1.52 inches)	Defect on front of paper	Print cartridge
5	Toner feed roller	42.7 mm (1.68 inches)		Print cartridge (K)
6	Media attaching roller	75 mm (2.95 inches)	Defect on front of paper	ETB
7	Fuser sleeve	76.0 mm (2.99 inches)	Poor fusing	Fuser
8	Fuser pressure roller	81.0 mm (3.19 inches)	Poor fusing	Fuser
9	Photosensitive drum	94.2 mm (3.71 inches)	Defect on front of paper	Print cartridge

Table 7-34 Additional repetitive defects

Roller	Distance	Type of defect	Replacement part
Paper tray feed roller	77 mm (3.71 inches)	Defect on front of paper	Feed roller
Paper tray paper separation roller	77 mm (1.35 inches)	Defect on back of paper	Separation roller
Registration roller	55 mm (1.48 inches)	Defect on back of paper	Paper feed assembly
Registration sub roller	47 mm (1.68 inches)	Defect on front of paper	Paper feed assembly
Fuser delivery roller	37 mm (2.95 inches)	Defect on back of paper	Delivery assembly
Face-down delivery roller	25 mm (2.99 inches)	Defect on back of paper	Delivery assembly
Paper tray pickup roller	77 mm (3.19 inches)	Defect on front of paper	Paper pickup roller
Multipurpose tray pickup roller	See the note above Figure 7-4 Repetitive defects ruler on page 455.	Defect on back of paper	Multipurpose tray pickup roller assembly

To confirm that a print cartridge is the problem, insert a print cartridge from another HP Color LaserJet 4700 printer, if one is available, before ordering a new print cartridge.

If the defect repeats at 94.0 mm (3.75 inch) intervals, try replacing the print cartridge before replacing the fuser.

Interface troubleshooting

Communications checks

NOTE Communication problems are normally the customer's responsibility. Time spent attempting to resolve these problems might not be covered by the Hewlett-Packard Company warranty. Refer the customer to the network administrator for assistance in troubleshooting network problems.

If the printer is not connected to an MS-DOS-based host, proceed to Table 7-35 Communications check on page 457.

Table 7-35 Communications check

Check	Action
Is your computer configured to the parameters that are described in the configuration instructions?	These parameters are required in order to communicate with the printer. Verify that the configuration of the computer's communications port matches these parameters. **NOTE** If these parameters are not set correctly, an error message might display on the control panel.

AUTOEXEC.BAT standard configurations

Parallel MS-DOS commands

Ensure that the AUTOEXEC.BAT file contains the following statements for parallel interface communications:

MODE LPT1: ,,P

For MS-DOS version 4.0 and above:

MODE LPT1: ,,B

NOTE This example assumes that you are using parallel printer port LPT1. If you are using LPT2 or LPT3, replace LPT1 in the example with the appropriate printer port.

Printer Job Language (PJL) commands

See the *HP Printer Job Language Technical Reference Manual* for a complete description of PJL commands. This manual is available with the HP PCL/PJL reference set on CD-ROM (part number 5021-0337).

@PJL [Enter]

This command enables the specified printer language. If the printer does not receive this command, it enables the default language. This ensures the correct operation for programs that do not support PJL. The following is the command syntax:

@PJL [Enter] LANGUAGE = {PCL/PostScript} [<CR>] <LF>

UEL

This command (also referred to as the universal exit language command) terminates the current printer language and returns control to PJL. It performs the following actions:

- Prints all data that was received before this command.
- Performs a reset: <esc>E in PCL, <cntrl>D in PostScript.
- Turns control over to PJL.

This command is also a valid HP-GL/2 terminator.

The UEL command must be immediately followed by the "@PJL" command prefix. Characters or control codes other than @PJL (such as <CR>or <LF>) enable the default language and process the print job in that language. All jobs must begin and end with the UEL command. In addition to starting PJL, the UEL command creates the same effect as the <esc>E command. However, the <esc>E command should always be included to ensure backward compatibility.

@PJL COMMENT

This command designates the current line as a comment, which is ignored. The following is the command syntax:

@PJL COMMENT <words>[<CR>] <LF>

@PJL INFO CONFIG

This command solicits a response to describe the installed options and allows the printer to configure the installed options automatically to meet the program requirements.

@PJL INFO ID

This command identifies the printer type to the host for reference when selecting printer drivers for automatic installation. The following is the command syntax:

@PJL INFO ID <CR><LF>

@PJL INFO USTATUS

This command queries the state of unsolicited JOB status. PAGE and TIMED status are not supported. The following is the command syntax:

@PJL INFO USTATUS <CR><LF>

@PJL INFO PAGECOUNT

This command returns the number of pages that have been printed by the engine.

@PJL JOB

This command informs the printer of the start of a PJL job and synchronizes the job-status information. The printer counts print jobs, including nested jobs, incrementing the job counter for the @PJL JOB command and decrementing it for @PJL EOJ.

The printer accepts the NAME= parameter and returns the name string in the unsolicited JOB start status message (if the unsolicited job status is enabled). The printer transmits the unsolicited JOB

status message to every I/O channel that has enabled this function. The following is the message format:

@PJL USTATUS JOB <CR><LF>START<CR><LF>[NAME=<job name><CR><LF>]<FF>

The printer resets the nested job counter whenever it switches the source to a different I/O channel. This prevents a corrupt job on one channel from disrupting the activities on another channel.

@PJL EOJ

This command identifies the end of a print job and is a hint for the I/O switching algorithm. The printer counts nested jobs and recognizes job boundaries when the counter decrements to zero. The printer ignores isolated EOJ commands. Each EOJ must be preceded by a JOB command.

@PJL ECHO

This printer supports the ECHO command, which transmits its parameters over the I/O channel to the host that issued the command.

@PJL USTATUS JOB=ON/OFF

This command enables or disables the JOB status for the I/O channel that delivers the command.

@PJL USTATUSOFF

This command disables the unsolicited JOB status for the I/O channel that delivered the command. For this printer, it duplicates the function of @PJL USTATUS JOB=OFF, AND @PJL USTATUS DEVICE=OFF.

NOTE All commands that this printer's PJL command set does not support are returned with the message @PJL xxxx<CR><LF>?<CR><LF>.

Changing printer control panel configuration settings

By using the printer control panel, you can make changes to general printer configuration default settings such as tray size and type, sleep mode, printer personality (language), and jam recovery.

The printer control panel can also be accessed from a computer by using the Settings page of the embedded Web server. The computer shows the same information that the control panel shows. For more information, see Using the embedded Web server on page 505.

CAUTION Configuration settings seldom need to be changed. Hewlett-Packard recommends that only the system administrator change configuration settings.

Job storage limit (4700 models)

This option sets the limit for the maximum number of jobs stored on the hard disk at the printer. The maximum number allowed is 100, and the default value is 32.

Setting the job storage limit

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **JOB STORAGE LIMIT**.
7. Press ✔ to select **JOB STORAGE LIMIT**.
8. Press ▲ or ▼ to change the value.
9. Press ✔ to set the value.
10. Press Menu.

Job held timeout (4700 models)

This option sets the period of time that the system keeps files in job storage before deleting them from the queue. The default setting for this option is **OFF**; the other available settings are **1 HOUR**, **4 HOURS**, **1 DAY**, and **1 WEEK**.

Setting the job held timeout

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.

6. Press ▼ to highlight **JOB HELD TIMEOUT**.
7. Press ✔ to select **JOB HELD TIMEOUT**.
8. Press ▲ or ▼ to select the appropriate time period.
9. Press ✔ to set the time period.
10. Press Menu.

Show IP address

This item determines whether the printer IP address is shown on the display with the **Ready** message. Options are **AUTO** and **OFF**. The default setting for this option is **OFF**. If more than one EIO card is installed, the IP address of the card installed in the first slot displays.

Showing the IP address

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **SHOW ADDRESS**.
7. Press ✔ to select **SHOW ADDRESS**.
8. Press ▲ or ▼ to select the desired option.
9. Press ✔ to select the option.
10. Press Menu.

Color/black mix

This item allows you to configure printer settings to optimize printer and cartridge performance for the printing environment. If the printer is primarily used for black printing (over two-thirds of the pages are black only), change the printer settings to **MOSTLY BLACK PAGES**. If the printer is primarily used for color printing, change the printer settings to **MOSTLY COLOR PAGES**. If the printer is used for a mix of black-only and color print jobs, it is recommended that you use the printer default of **AUTO**. To determine the percentage of color pages, print a configuration page. See Testing the printer operation on page 68 to learn how to print a configuration page. The configuration page shows the total number of pages printed and the number of color pages printed. To determine the percentage of color pages printed, divide the color page count by the total page count.

Setting the color/black mix

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.

4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **COLOR/BLACK MIX**.
7. Press ✔ to select **COLOR/BLACK MIX**.
8. Press ▲ or ▼ to select the desired option.
9. Press ✔ to select the option.
10. Press Menu.

Tray behavior options

Tray behavior allows seven user-defined options:

- **USE REQUESTED TRAY**. Selecting **EXCLUSIVELY** ensures that the printer will not automatically select another tray when you indicate that a specific tray should be used. Selecting **FIRST** allows the printer to pull from a second tray if the specified tray is empty or does not match the settings specified for the print job. **EXCLUSIVELY** is the default setting.
- **MANUALLY FEED PROMPT**. If you select **ALWAYS** (the default value), the system always displays a prompt before pulling from Tray 1 (multipurpose tray). If you select **UNLESS LOADED**, the system will only display the prompt if Tray 1 is empty.
- **PS DEFER MEDIA**. This setting affects how non-HP PostScript drivers will behave with the device. There is no need to change this setting if using the drivers supplied by HP. If set to **ENABLED**, non-HP PostScript drivers will use the HP tray selection method as the HP drivers do. If set to **Disabled**, some non-HP PostScript drivers will use the PostScript tray selection method instead of the HP method.
- **SIZE/TYPE PROMPT**. This option allows you to control whether or not the tray configuration message, and corresponding prompt to change type or size is shown when a tray transitions from opened to closed. Values for this option are **Display** and **DO NOT DISPLAY**.
- **USE ANOTHER TRAY**. This menu item allows you to enable or disable the prompt to select another tray. Values for this option are **ENABLED** and **Disabled**. **ENABLED** is the default.
- **DUPLEX BLANK PAGES**. This item allows you to determine how a job is to be duplexed. The available values are **AUTO**, which is the default value, and **YES**. If **AUTO** is selected, blank pages within the print job are not duplexed. If **YES** is selected, any blank pages within the job are duplexed.
- **IMAGE ROTATION**. This menu item is available only if an output accessory, such as the stapler/stacker, is not installed. The printer applies a 180° rotation to all pages if this menu item is not available or if **Standard** is selected. This option lets you place paper in the input tray in the same orientation, regardless of the output accessory.

Setting the printer to use the requested tray

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.

4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **TRAY BEHAVIOR**.
7. Press ✔ to select **TRAY BEHAVIOR**.
8. Press ✔ to select **USE REQUESTED TRAY**.
9. Press ▲ or ▼ to select **EXCLUSIVELY** or **FIRST**.
10. Press ✔ to set the behavior.
11. Press Menu.

Setting manually feed prompt

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **TRAY BEHAVIOR**.
7. Press ✔ to select **TRAY BEHAVIOR**.
8. Press ▼ to highlight **MANUALLY FEED PROMPT**.
9. Press ✔ to select **MANUALLY FEED PROMPT**.
10. Press ▲ or ▼ to select **ALWAYS** or **UNLESS LOADED**.
11. Press ✔ to set the behavior.
12. Press Menu.

Setting the printer default for PS defer media

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **TRAY BEHAVIOR**.
7. Press ✔ to select **TRAY BEHAVIOR**.
8. Press ▼ to highlight **PS DEFER MEDIA**.

9. Press ✔ to select **PS DEFER MEDIA**.
10. Press ✔ to select **ENABLED** or **Disabled**.
11. Press ✔ to set the behavior.
12. Press Menu.

Setting the printer to use size/type prompt

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **TRAY BEHAVIOR**.
7. Press ✔ to select **TRAY BEHAVIOR**.
8. Press ▼ to highlight **SIZE/TYPE PROMPT**.
9. Press ▲ or ▼ to select **DISPLAY** or **DO NOT DISPLAY**.
10. Press ✔ to set the behavior.
11. Press Menu.

Setting the printer to use another tray

1. Press Menu to enter the **MENUS**
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **TRAY BEHAVIOR**.
7. Press ✔ to select **TRAY BEHAVIOR**.
8. Press ▼ to highlight **USE ANOTHER TRAY**.
9. Press ▲ or ▼ to select **ENABLED** or **Disabled**.
10. Press ✔ to set the behavior.
11. Press Menu.

Setting the printer to duplex blank pages

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **TRAY BEHAVIOR**.
7. Press ✔ to select **TRAY BEHAVIOR**.
8. Press ▼ to highlight **DUPLEX BLANK PAGES**.
9. Press ▲ or ▼ to select **AUTO** or **YES**.
10. Press ✔ to set the behavior.
11. Press Menu.

Setting the printer to rotate images

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **TRAY BEHAVIOR**.
7. Press ✔ to select **TRAY BEHAVIOR**.
8. Press ▼ to highlight **IMAGE ROTATION**.
9. Press ▲ or ▼ to select **STANDARD** or **ALTERNATE**.
10. Press ✔ to set the behavior.
11. Press Menu.

Sleep delay

The adjustable sleep mode feature reduces power consumption when the printer has been inactive for an extended period. You can set the length of time before the printer enters sleep mode 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 printer display dims when the printer is in sleep mode. This mode does not affect printer warmup time.

Setting sleep delay

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **Sleep Delay**.
7. Press ✔ to select **Sleep Delay**.
8. Press ▲ or ▼ to select the appropriate time period.
9. Press ✔ to set the time period.
10. Press Menu.

> **CAUTION** If paper is loaded in Trays 3 through 6 when the printer is in sleep mode, the new paper will not be sensed when the printer comes out of sleep mode. This could cause the wrong paper to be used for a print job. Be sure to wake the printer before loading paper in these trays.

Disabling/enabling sleep mode

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **RESETS**.
5. Press ✔ to select **RESETS**.
6. Press ▼ to highlight **SLEEP MODE**.
7. Press ✔ to select **SLEEP MODE**.
8. Press ▲ or ▼ to select **ON** or **OFF**.
9. Press ✔ to set the selection.
10. Press Menu.

Wake time

The wake time feature allows you to instruct the printer to wake at a certain time on selected days, to eliminate waiting for the warmup and calibration periods. You must have **SLEEP MODE** on to set the wake time.

To set or change the wake time, use the following steps:

Setting the wake time

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **WAKE TIME**.
7. Press ✔ to select **WAKE TIME**.
8. Press ▲ or ▼ to select the day of the week.
9. Press ✔ to accept the selection.
10. Press ▲ or ▼ to select **custom** or **Off**.
11. Press ✔ to accept the selection.
12. Press ▲ or ▼ to select the hour.
13. Press ✔ to accept the selection.
14. Press ▲ or ▼ to select the minutes.
15. Press ✔ to accept the selection.
16. Press ▲ or ▼ to select **AM** or **PM**.
17. Press ✔ to accept the selection.
18. Press ✔ to enter **APPLY TO ALL DAYS**.
19. Press ▲ or ▼ to select **YES** or **NO**.
20. Press ✔ to accept the selection.
21. Press ▲ or ▼ to select the days of the week to which **WAKE TIME** applies.
22. Press ✔ to accept each selection.
23. Press Menu.

Display brightness

The display brightness feature allows you to set the level of brightness for the control panel display. The allowable range of values is 1 through 10. The default for this feature is **5**.

To change or set the display brightness, use the following steps:

Setting the display brightness

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.

3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **DISPLAY BRIGHTNESS**.
7. Press ✔ to select **DISPLAY BRIGHTNESS**.
8. Press ▲ or ▼ to highlight the desired value.
9. Press ✔ to accept the selection.
10. Press Menu.

Personality

This printer features automatic personality (printer language) switching. **AUTO** is the default value.

- **AUTO** configures the printer to automatically detect the type of print job and configure its personality to accommodate that job.
- **PCL** configures the printer to use Printer Control Language.
- **PDF** configures the printer to print PDF files.
- **PS** configures the printer to use PostScript emulation.

Setting the personality

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **PERSONALITY**.
7. Press ✔ to select **PERSONALITY**.
8. Press ▲ or ▼ to select the appropriate personality (**AUTO**, **PCL**, **PDF**, or **PS**).
9. Press ✔ to set the personality.
10. Press Menu.

Clearable warnings

You can determine the display time of control panel clearable warnings with this option by selecting **ON** or **JOB**. The default value is **JOB**.

- **ON** displays clearable warnings until you press ✔.
- **JOB** displays clearable warnings until the end of the job in which it was generated.

Setting the clearable warnings

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **CLEARABLE WARNINGS**.
7. Press ✔ to select **CLEARABLE WARNINGS**.
8. Press ▲ or ▼ to select the appropriate setting.
9. Press ✔ to set the selection.
10. Press Menu.

Auto continue

You can determine printer behavior when the system generates an Auto Continuable error. **ON** is the default setting.

- **ON** displays an error message for ten seconds before automatically continuing to print.
- **OFF** pauses printing any time the printer displays an error message and until you press ✔.

Setting auto continue

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **AUTO CONTINUE**.
7. Press ✔ to select **AUTO CONTINUE**.
8. Press ▲ or ▼ to select the appropriate setting.
9. Press ✔ to set the selection.
10. Press Menu.

Replace supplies

The printer allows three options for handling the printer when a color cartridge is low and should be replaced. **STOP AT LOW** is the default value.

- **STOP AT OUT** pauses printing until the color supply is replaced. The control panel displays a warning that the supply is low and should be replaced.
- **STOP AT LOW** allows the printer to continue printing until the color supply is exhausted. The control panel displays a warning that the supply is out and should be replaced.
- **OVERRIDE AT OUT** allows printing to continue when a color supply is out, but displays a warning that override is in use and that the supply must be replaced.



NOTE Using the Override mode compromises print quality. HP does not recommend use of the Override mode. Replace the print cartridge as soon as possible.

Setting replace supplies response

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **REPLACE SUPPLIES**.
7. Press ✔ to select **REPLACE SUPPLIES**.
8. Press ▲ or ▼ to select the appropriate setting.
9. Press ✔ to set the selection.
10. Press Menu.

Order at

This menu option allows you to set the point at which you are reminded to order new supplies. The point is measured in terms of percent remaining. The allowable range is **0-100**. The default is **15**.

Setting order at response

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **ORDER AT**.

7. Press ✔ to select **ORDER AT**.
8. Press ▲ or ▼ to select the appropriate setting.
9. Press ✔ to set the selection.
10. Press Menu.

Color supply out

There are two options for this menu item. The default is **STOP**.

- **STOP** causes the printer to stop printing until the empty color supply is replaced.
- **AUTOCONTINUE BLACK** allows the printer to continue printing using black toner only when a color supply is empty. A warning message displays on the control panel when the printer is in this mode. Printing in this mode is allowed only for a specific number of pages. After that, the printer will pause printing until you replace the empty color supply.

Setting color supply out response

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **COLOR SUPPLY OUT**.
7. Press ✔ to select **COLOR SUPPLY OUT**.
8. Press ▲ or ▼ to select the appropriate setting.
9. Press ✔ to set the selection.
10. Press Menu.

Jam recovery

This option allows you to configure the printer response to paper jams, including how it handles the pages involved. **AUTO** is the default value.

- **AUTO** — the printer automatically turns jam recovery on when sufficient memory is available.
- **OFF** — the printer will not reprint any page that was involved in a paper jam. Since no memory is used to store the most recent pages, performance may be optimal.
- **ON** — the printer reprints any page involved in a paper jam. Additional memory is allocated to store the last few pages printed, and this might reduce overall printer performance.

Setting jam recovery response

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **JAM RECOVERY**.
7. Press ✔ to select **JAM RECOVERY**.
8. Press ▲ or ▼ to select the appropriate setting.
9. Press ✔ to set the selection.
10. Press Menu.

RAM disk

This option allows you to specify how the RAM disk is configured. Options are **AUTO** and **OFF**. When set to **AUTO**, the printer determines the optimal RAM size based on the amount of available memory. The message displays only in printer models that do not have a hard disk installed. The default is **AUTO**.

Changing RAM disk behavior

You can change this behavior at any time by following these steps:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **RAM DISK**.
7. Press ✔ to select **RAM DISK**.
8. Press ▲ or ▼ to select **AUTO** or **OFF**.
9. Press ✔ to set the selection.
10. Press Menu.

Language

On some products, the option to set the default language displays when the printer is first initialized. Use the ▲ or ▼ arrow to scroll through the available options. When the desired language is highlighted, press the ✔ to set the default language. The default language is **ENGLISH**.

You may also change the language at any time by following these steps:

Selecting the language

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.
6. Press ▼ to highlight **LANGUAGE**.
7. Press ✔ to select **LANGUAGE**.
8. Press ▲ or ▼ to select the appropriate language.
9. Press ✔ to set the selection.
10. Press Menu.

Selecting the language if the display is in a language you do not understand

1. Turn the printer power off.
2. Hold down the ✔ key while turning the printer power on until all three lights stay on.
3. Press ✔ again.
4. Press ▲ or ▼ to scroll through the available languages.
5. Press ✔ to save the desired language as the new default.

Using the printer control panel in shared environments

Because your printer is shared with other users, adhere to the following guidelines to ensure successful printer operation:

- Consult your system administrator before making changes to control panel settings. Changing control panel settings could affect other print jobs.
- Coordinate with other users before changing the default printer font or downloading soft fonts. Coordinating these operations conserves memory and avoids unexpected printer output.
- Be aware that switching printer personalities, such as Emulated PostScript or PCL, affects the printed output of other users.



NOTE Your network operating system may automatically protect each user's print job from the effects of other print jobs. Consult your system administrator for more information.

Control panel troubleshooting

When you press Menu to open the menus, the high-level menus display in the following order:

- **RETRIEVE JOB** (this menu displays only if a hard disk is installed)
- **INFORMATION**
- **PAPER HANDLING**
- **CONFIGURE DEVICE**
- **DIAGNOSTICS**
- **SERVICE**

A menu map shows how individual items are configured within each of these menus. Figure 7-5 Model menu map on page 474 shows a sample of one page of the menu map. The menu map prints on six pages. The final page gives instructions about how to use the control panel buttons.

Printing a menu map

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ✔ to select **PRINT MENU MAP**.



Figure 7-5 Model menu map

Information menu

Use the information menu to access and print specific printer information.

Item	Explanation
PRINT MENU MAP	Generates a menu map that shows layout and current settings of the control menu items. The printer will return to the **Ready** state when the page is completed.
PRINT CONFIGURATION	Generates a page detailing the current configuration of the printer. The printer 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 printer. The printer 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 printer will return to the online **Ready** state when the page is completed.
PRINT DEMO	Generates a demonstration page. The printer will return to the online **Ready** state when the page is completed.
PRINT RGB SAMPLES	Generates a page that displays RGB colors. The printer will return to the online **Ready** state when the page is completed.
PRINT CMYK SAMPLES	Generates a page that displays CMYK colors. The printer 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 printer 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 printer. The printer 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 printer. The printer will return to the online **Ready** state when the page is completed.

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 this 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	
	B5(JIS)	
	EXECUTIVE(JIS)	
	DPOSTCARD(JIS)	
	16K	
	ENVELOPE #10	
	ENVELOPE MONARCH	
	ENVELOPE C5	
	ENVELOPE DL	
	ENVELOPE B5	
	CUSTOM	
	ANY CUSTOM	
TRAY 1 TYPE	**ANY TYPE***	Allows you to specify the type of media in Tray 1.
	PLAIN	
	PREPRINTED	
	LETTERHEAD	
	TRANSPARENCY	
	PREPUNCHED	

Item	Values	Explanation
	LABELS	
	BOND	
	RECYCLED	
	COLOR	
	LIGHT <75 G/M2	
	INTERMEDIATE90-104	
	HEAVY 105-120 G/M2	
	EXTRA HEAVY120-163	
	CARDSTOCK >163 G/M2	
	ROUGH 90-105 G/M2	
	GLOSSY 75-120 G/M2	
	HEAVY GLOSSY120-160	
	EXTRA HEAVY GLOSSY	
	TOUGH PAPER	
	ENVELOPE	
TRAY X SIZE	**LETTER***	Allows you to set the media size for Trays 2–6. Substitute the tray number for <N>.
	LEGAL	
	EXECUTIVE	
	8.5X13	
	A4	
	A5	
	B5(JIS)	
	EXECUTIVE(JIS)	
	16K	
	CUSTOM	
	ANY CUSTOM	
TRAY X TYPE	**ANY TYPE**	Allows you to specify the type of media in each tray (Trays 2–6). Substitute the tray number for <N>.
	PLAIN*	
	PREPRINTED	
	LETTERHEAD	
	TRANSPARENCY	
	PREPUNCHED	

Item	Values	Explanation
	LABELS	
	BOND	
	RECYCLED	
	COLOR	
	LIGHT <75 G/M2	
	INTERMEDIATE90-104	
	HEAVY 105-120 G/M2	
	ROUGH 90-105 G/M2	
	GLOSSY 75-120 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.

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:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **PRINTING**.
5. Press ✔ to select **PRINTING**.

Item	Options	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.

Item	Options	Values	Explanation
			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** **STATEMENT** **8.5X13** **A4** **A5** **B5(JIS)** **EXECUTIVE(JIS)** **DPOSTCARD(JIS)** **16K** **ENVELOPE #10** **ENVELOPE MONARCH** **ENVELOPE C5** **ENVELOPE DL** **ENVELOPE B5** **CUSTOM**		Set the default image size for paper and envelopes. (The item name will change from **[SIZE]** to **ENVELOPE** as you scroll through the available sizes.)
DEFAULT CUSTOM PAPER SIZE	**UNIT OF MEASURE**	**"*** **MILLIMETERS**	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.
	X DIMENSION	76-216 mm (3-8.5 inches)	
	Y DIMENSION	127-356 mm (5-14 inches)	

Item	Options	Values	Explanation
DUPLEX	**Off**		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**.
	On*		
	DUPLEX BINDING	**SHORT EDGE***	
		LONG EDGE	
OVERRIDE A4/LETTER	**NO**		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 printer (or to print on A4-size media when a Letter job is sent, but no Letter-size media is loaded in the printer).
	YES*		
MANUAL FEED	**Off***		Feed the paper manually from Tray 1, rather than automatically from a tray. When **MANUAL FEED=ON** and Tray 1 is empty, the printer goes offline when it receives a print job. It then displays **MANUALLY FEED <PAPER SIZE>**.
	On		
COURIER FONT	**REGULAR***		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.
	DARK		
WIDE A4	**NO***		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.
	YES		
PRINT PS ERRORS	**Off***		Select **On** to print the PS error page when PS errors occur.

Item	Options	Values	Explanation
	On		
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 482.

PCL submenu

To gain access to this menu:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **PRINTING**.
5. Press ✔ to select **PRINTING**.
6. Press ▼ to highlight **PCL**.
7. Press ✔ to select **PCL**.

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*** **Card Slot X**	**Internal**: 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 printer assigns a number to each font and lists them on the PCL Font List (see Print the PCL font list page on page 515). The font number displays 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 printer 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***	Select **YES** to append a carriage return to each line feed that is encountered in backward-

Item	Values	Explanation
	YES	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:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **PRINT QUALITY**.
5. Press ✔ to select **PRINT QUALITY**.

Item	Options	Values	Explanation
ADJUST COLOR	**HIGHLIGHTS** **MIDTONES** **SHADOWS** **RESTORE COLOR VALUES**	**CYAN DENSITY** **MAGENTA DENSITY** **BLACK DENSITY** **YELLOW DENSITY**	This item allows you to adjust the color from +5 to –5. Density values can range from -5 to +5. The default is 0. **RESTORE COLOR VALUES** removes any color adjustments and returns the color to the original value.
SET REGISTRATION	**PRINT TEST PAGE**		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. **X1 SHIFT**, **X2 SHIFT**, and **Y SHIFT** can vary from -20 to +20. The default is 0.
	Source	Tray 1, 2, 3, 4, 5, 6	
	ADJUST TRAY N	**X1 SHIFT** **X2 SHIFT** **Y SHIFT**	

Item	Options	Values	Explanation
AUTO SENSE MODE	**TRAY 1 SENSING**	**FULL SENSING***	Allows you to set trays to automatically sense the type of paper that is loaded.
		EXPANDED SENSING	
		TRANSPARENCY ONLY	
	TRAY 2-N SENSING	**EXPANDED SENSING**	
		TRANSPARENCY ONLY*	
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 G/M2** **ROUGH 90-105 G/M2** **GLOSSY 75-120 G/M2** **HEAVY GLOSSY120-160** **EXTRA HEAVY GLOSSY** **TOUGH PAPER** **ENVELOPE** **RESTORE MODES**	For all values, the following fuser modes can be selected: **AUTO SENSE MODE** **NORMAL MODE** **X-RESISTIVE MODE** **LIGHT MODE** **INTRMEDIATE MODE** **HEAVY MODE** **EXTRA HEAVY MODE** **CARDSTOCK MODE** **GLOSSY MODE** **HEAVY GLOSSY MODE** **X-HVYGLOSSY MODE** **TRNSPARENCY MODE** **4MM TRNS MODE** **HUMID TRNS MODE** **ROUGH MODE** **LT ROUGH MODE 1** **LT ROUGH MODE 2** **ENVELOPE MODE** **LABEL MODE** **TOUGH PAPER MODE** **HUMID TOUGH MODE**	Allows you to associate each media type with a specific print mode.

Item	Options	Values	Explanation
OPTIMIZE	**CACO3 PAPER**	**Off*** **On**	Set this mode when paper being used contains a high percentage of talc or Calcium Carbonate (CaCo3), and the printer operates in a low-temperature and a low-humidity environment.
	BACKGROUND 1	**Off*** **On**	Use this mode if print jobs exhibit light, mottled toner throughout the background of the page.
	BACKGROUND 2	**Off*** **On**	Use this mode if print jobs exhibit vertical streaks in the background.
	REGISTRATION	**Off*** **On**	Use this mode when experiencing poor Color Plan Registration (CPR) with Glossy or Heavy Glossy Print Modes. This mode makes slight speed adjustments, which can improve CPR.
	LONG PAPER	**Off*** **On**	Use this mode if excessive curl occurs when printing on legal size paper. This mode decreases the print speed to 14 ppm (pages per minute). This mode applies only to Normal Print Mode and for legal size paper.
	PRE-ROTATION	**Off*** **On**	Use this mode if horizontal streaks or bands occur on the page, which may be caused by an Imaging Drum rotation cycle. This mode increases the number of initial cartridge Imaging Drum rotations prior to processing the print job, but also increases the First Page Out Time by approximately 20 seconds.  **NOTE** Horizontal streaks or bands may be caused by other phenomena. PRE-ROTATION affects primarily toner cartridge imaging drum-related horizontal streaks or bands.

Item	Options	Values	Explanation
OPTIMIZE	**RE-TRANSFER**	**Off*** **On**	Use this mode if green or cyan retransfer is seen on the page (appears very mottled or uneven in solid-fill areas).
	FUSER TEMP	**NORMAL*** **REDUCED**	Use this mode to prevent "hot offset." "Hot offset" is a fuser-related repetitive print defect which can occur when the fuser temperature is hot enough to pull some toner off the printed page and redeposit the toner on the next rotation of the fuser sleeve. Images and or text then appear like a "ghost" exactly 76mm from the original image. "FUSER TMP" Optimize mode reduces the temperature of the fuser to prevent this type of print defect from occurring.
	TRAY1	**NORMAL*** **ALTERNATE**	Use this mode if printing media from Tray 1 that is smaller than the image sent. For example, if printing on Executive media from Tray 1, but sending letter-sized jobs, resulting in portions of the letter-sized image being laid down on the ETB. This mode initiates a cleaning cycle after each job that prints using media pulled from Tray 1 to clean any remaining toner from the ETB. **NOTE** This mode creates additional wear for the cartridges.
OPTIMIZE	**BELT CONTACT**	**NORMAL*** **ALTERNATE**	Use this mode when experiencing poor print quality using heavier media (heavy glossy, cardstock, etc.) with print jobs in grayscale or black and white, where the printed page appears to be slipping on the ETB--showing either bunching together of text, image skew, or discontinuity between lines of text on the page. This mode prevents the printer from disengaging contact (thereby,

Item	Options	Values	Explanation
			maintaining contact) between the ETB and the color (C,M,Y) toner cartridges, resulting in decreased "slippage" of media on the ETB. **NOTE** Running the printer with BELT CONTACT set to ALTERNATE may decrease life of the color cartridges and should NOT be used when printing mostly monochrome pages.
RESTORE OPTIMIZE			
QUICK CALIBRATE NOW	N/A		Performs partial printer calibration including DHALF calibration.
FULL CALIBRATE NOW	N/A		Performs full printer calibration including DHALF and CPR calibration.
COLOR RET	**Off** **On***		The **COLOR RET** menu item allows you to turn on or turn off the printer REt (Resolution Enhancement Technology) setting. The default is **ON**.
AUTO CLEANING	**Off*** **On**		
CLEANING INTERVAL	1000 2000* 5000 10000 20000		This item only displays if **AUTO CLEANING** is set to **On**.
AUTO CLEANING SIZE	**Letter*** **A4**		This item only displays if **AUTO CLEANING** is set to **On**.
CREATE CLEANING PAGE			This item only displays when a duplexer is not installed.
PROCESS CLEANING PAGE			This item displays when the duplexer is installed or after the cleaning page has been executed.

System setup submenu

Items in this menu affect the printer function. Configure the printer according to your printing needs.

To gain access to this menu:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **SYSTEM SETUP**.
5. Press ✔ to select **SYSTEM SETUP**.

Item	Options	Values	Explanation
Date/Time	**DATE** **Date Format** **TIME** **Time Format**		Sets the start date and time for the printer. The **DATE** format is YEAR 2004–2087; MONTH JAN, FEB, MAR; DAY 1–31 The **Date Format** is YYYY/MMM/DD*; MMM/DD/YYYY; DD/MMM/YYYY 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 **500**		Specifies the number of QuickCopy and Proof-and-Hold jobs that can be stored on the printer 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

Item	Options	Values	Explanation
			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.

Item	Options	Values	Explanation
TRAY BEHAVIOR	**USE REQUESTED TRAY**	**EXCLUSIVELY***	Specifies the behavior of the tray by indicating which tray the printer should print from. **USE REQUESTED TRAY** sets the tray that the printer should print from for specified jobs. **MANUALLY FEED PROMPT** determines whether or not the printer prompts the user when a job does not match a requested configured tray. **PS DEFER MEDIA** determines whether the paper handling model is based on PostScript rules or HP rules. **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 printer 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**.
		FIRST	
	MANUALLY FEED PROMPT	**ALWAYS***	
		UNLESS LOADED	
	PS DEFER MEDIA	**ENABLED***	
		Disabled	
	SIZE/TYPE PROMPT	**Display***	
		DO NOT DISPLAY	
	USE ANOTHER TRAY	**ENABLED***	
		Disabled	
	DUPLEX BLANK PAGES	**AUTO***	
		YES	
	IMAGE ROTATION	**Standard***	
		ALTERNATE	
Sleep Delay	**1 MINUTE**		Sets how long the printer remains idle before it enters sleep mode. Using sleep mode offers the following advantages: • Minimizes the amount of power that the printer consumes when it is idle • Reduces wear on electronic components in the printer
	15 MINUTES		
	30 MINUTES		
	45 MINUTES		
	60 MINUTES*		
	90 MINUTES		
	2 HOURS		
	4 HOURS		

Item	Options	Values	Explanation
			NOTE Sleep mode turns off the backlight on the display, but the display is still readable. The printer automatically exits sleep mode when you send a print job, open or close a paper tray, or press any button on the control panel. To enable or disable sleep mode, see Resets submenu on page 499.
WAKE TIME	List of days of the week **Off*** **custom**		Sets the time that the printer 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 settings to each day, select **APPLY TO ALL DAYS**. Each day displays the following values: Hour 1–12, Minute 0–59, AM, and PM.
DISPLAY BRIGHTNESS	**1–10**		Set the brightness on the control panel. The default is 5.
PERSONALITY	**AUTO*** **PCL** **PDF** **PS**		Select the default printer language (personality). Possible values are determined by which valid languages are installed in the printer. Normally you should not change the product language (the default is **AUTO**). If you change the setting to a specific product language, the printer does not automatically switch from one language to another unless specific software commands are sent to the printer.
CLEARABLE WARNINGS	**Job*** **On**		Set the amount of time that a clearable warning displays on the printer control panel. **Job**: Warning messages appear on the control panel

Item	Options	Values	Explanation
			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 printer reacts to errors. **Off**: If an error prevents printing, the message remains on the display, and the printer does not print until you select **CONTINUE**. **On**: If an error prevents printing, the message displays, and the printer goes offline for 10 seconds before returning online.
REPLACE SUPPLIES	**STOP AT LOW** **STOP AT OUT*** **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
COLOR SUPPLY OUT	**STOP*** **AUTOCONTINUE BLACK**		Determines how the printer behaves when toner is out. **STOP**: The printer goes offline and waits until the cartridge is replaced. **AUTOCONTINUE BLACK**: The printer displays **REPLACE CARTRIDGE** until the cartridge is replaced. The printer continues to print.
JAM RECOVERY	**AUTO*** **Off** **On**		Determines how the printer functions when a jam occurs. **AUTO**: The printer automatically selects the best mode for jam recovery (usually **On**). This is the default setting.

Item	Options	Values	Explanation
			Off: The printer does not reprint pages following a jam. Printing performance might be increased with this setting. **On**: The printer automatically reprints pages after a jam is cleared.
DISK FILE	**AUTO*** **Off**		
LANGUAGE	List of available languages		Sets the language of the control panel.

Stapler/stacker submenu (4700 models)

Use the items in this menu to configure the stapling options.

To gain access to this menu:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **Stapler/Stacker**.
5. Press ✔ to select **Stapler/Stacker**.

NOTE This menu appears only when the stapler/stacker is installed.

Item	Values	Explanation
Staples	**None*** **1-EDGE**	To enable stapling, select **1-EDGE**. **NOTE** Printer driver settings override control panel settings.
Staples Out	**STOP** **CONTINUE***	Use this item to configure the printer 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.
Offset	**ENABLED*** **Disabled**	

I/O submenu

Items in the I/O (input/output) submenu affect the communication between the printer and the computer.

To gain access to this menu:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **I/O**.
5. Press ✔ to select **I/O**.

Item	Options	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 printer 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**	**NO** **YES***	**HIGH SPEED** accepts faster parallel communications used for connections with newer computers. **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 printer to send status readback messages to the computer. (Turning on the parallel advanced functions on might slow language switching.)
	ADVANCED FUNCTIONS	**Off** **On***	
EMBEDDED JETDIRECT MENU	See Embedded Jetdirect submenu on page 495.		**EMBEDDED JETDIRECT MENU** allows you to configure network settings.

Embedded Jetdirect submenu

To gain access to this menu:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **I/O**.
5. Press ✔ to select **I/O**.
6. Press ▼ to highlight **EMBEDDED JETDIRECT MENU**.
7. Press ✔ to select **EMBEDDED JETDIRECT MENU**.

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	**IP Address:** **SUBNET MASK** **DEFAULT GATEWAY** **SYSLOG SERVER**		(Available only if **CONFIG METHOD** is set to **MANUAL**) Configure parameters directly from the printer control panel: **IP Address:** (n.n.n.n.) The unique IP address of the printer, where n is a value from 0 to 255. **SUBNET MASK** m.m.m.m.: The subnet mask for the printer, where m is a value from 0 to 255. **DEFAULT GATEWAY** n.n.n.n: The IP address of the gateway or router used for communications with other networks. **SYSLOG SERVER** n.n.n.n.: The IP address of the syslog server used to receive and log syslog messages. **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).
	IDLE TIMEOUT	0–3600	
DEFAULT IP (parameters are AUTO IP and LEGACY)	**AUTO IP** **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,

Item	Options	Values	Explanation
			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.
PROXY SERVER			Specifies the proxy server to be used by embedded applications in your printer/ printer. 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(4700 models)	**Enable**	**On*** **Off**	**On**: Enable the IPX/SPX protocol. **Off**: Disable the IPX/SPX protocol.
	FRAME TYPE	**AUTO** **EN_8023** **EN_II** **EN_8022** **EN_SNAP**	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.
APPLETALK(4700 models)	**Enable**	**On*** **Off**	Enable or disable the AppleTalk protocol.

Item	Options	Values	Explanation
DLC/LLC	**Enable**	**On*** **Off**	Enable or disable the DLC/LLC protocol.
SECURE WEB	**HTTPS REQUIRED** **HTTPS OPTIONAL***		**SECURE WEB**: Specify whether the embedded Web server accepts communications by using only secure HTTP (HTTPS) or by using both HTTP and HTTPS.
DIAGNOSTICS	**LOOPBACK TEST**	**EXECUTE**	**DIAGNOSTICS**: Provides tests to help diagnose network hardware or TCP/IP network connection problems.
	PING TEST	**DEST IP** **PACKET SIZE** **Timeout** **Count** **PRINT RESULTS** **EXECUTE**	
	PING RESULTS	**PACKETS SENT** **PACKETS RECEIVED** **PERCENT LOST** **RTT MIN** **RTT MAX** **RTT AVERAGE** **PING IN PROGRESS** **Refresh**	
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.

Item	Options	Values	Explanation
			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:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **RESETS**.
5. Press ✔ to select **RESETS**.

NOTE Use this menu with caution. You can lose buffered page data or printer configuration settings when you select these items. Reset the printer only under the following circumstances:

- You want to restore the printer default settings.
- Communication between the printer and computer has been interrupted, and you are not able to resolve the problem by any other method. See Communications checks on page 457.
- You are having problems with a port.

The items in the Resets submenu will clear all memory in the printer, while selecting **Reset** 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 printer consumes when it is idle • Reduces wear on electronic components in the printer The printer automatically exits sleep mode when you send a print job or press any button on the control panel. You can set how long the printer remains idle before it enters sleep mode. See the **Sleep Delay** information in the System setup submenu on page 488.

Diagnostics menu

The diagnostics menu allows you to run tests that can help you identify and solve problems with the printer.

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.
SHOW EVENT LOG			At the control panel, scroll through the contents of the event log, which lists the 50 most recent events.
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.
PRINT DIAGNOSTICS PAGE			Allows you to print a page that can assist in diagnosing printer problems.
DISABLE CARTRIDGE CHECK			Allows you to swap print cartridges into different slots help determine which print cartridge or slot 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 printer. Specifies which paper paths are tested. See Paper path test on page 527
	Source	**ALL TRAYS** **TRAY 1** **TRAY 2*** **TRAY 3** **TRAY 4** **TRAY 5** **TRAY 6**	Specifies to print a test page from a specific tray or from all trays.
	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.

Item	Options	Values	Explanation
FINISHING PAPER PATH TEST(4700 models)	**FINISHING OPTIONS**	**1-EDGE***	See Finishing paper path test on page 528 for more information.
	MEDIA SIZE		
	MEDIA TYPE	**PLAIN**	
		PREPRINTED	
		LETTERHEAD	
		PREPUNCHED	
		BOND	
		RECYCLED	
		COLOR	
		CARDSTOCK >163 G/M2	
		ROUGH 90-105 G/M2	
		HEAVY 105-120 G/M2	
		LIGHT <75 G/M2	
		GLOSSY 75-120 G/M2	
	2-30 (2)		
	DUPLEX	**OFF***	
		On	
	PRINT TEST PAGE		
MANUAL SENSOR TEST			Tests the paper path sensors and switches for correct operation. During this test, the printer 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. See Manual sensor test (special mode test) on page 528 for more information.
MANUAL SENSOR TEST 2			Performs tests to determine whether the paper path sensors are operating correctly. See Manual sensor test (special mode test) on page 528for more information.

Item	Options	Values	Explanation
COMPONENT 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** **TRAY 1 PICKUP SOLENOID**		This menu item is used by a service technician to exercise individual parts of the printer to isolate the source of any problems. See Component test (special mode test) on page 532 for instructions on conducting tests using this menu.
	TRAY N PICKUP SOLENOID	**N = 2–6**	
	TRAY N PICKUP MOTOR	**N = 2–6**	
	DUPLEXER PICKUP MOTOR		
	REPEAT	**ONCE** **CONTINUOUS**	
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 printer. The time is expressed in milliseconds.
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 printer. The **COPIES** option allows you to select the number of test pages to be printed. Default = 1.

Service menu

See Service menu on page 541 for more information.

Item	Options	Values	Explanation
SERVICE	CLEAR EVENT LOG		
	TOTAL MONO PAGES	0–9999999	
	TOTAL COLOR PAGES	0–9999999	
	REFURBISH PAGE COUNT	0–9999999	
	SERIAL NUMBER	<serial number>	
	SERVICE ID	<service id>	
	COLD RESET PAPER	LETTER*	
		A4	
	MEDIA SENSOR VALUE	0–511	

Tools for troubleshooting

Using the embedded Web server

When the printer is directly connected to a computer, the embedded Web server is supported for Windows 98 and later.

When the printer is connected to the network, the embedded Web server is automatically available. You can access the embedded Web server from Windows 98 and later, or through the Apple Safari browser.

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

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

To use the embedded Web server, you must have Microsoft Internet Explorer 6.0 or later, or Netscape Navigator 6.2 or later. The embedded Web server works when the printer is connected to an IP-based network. The embedded Web server does not support IPX-based printer connections. You do not have to have Internet access to open and use the embedded Web server. For more information about the HP embedded Web server, see the *HP Embedded Web Server User Guide*. You can find this guide on the CD-ROM included with the printer.

Accessing the embedded Web server

In a supported Web browser on your computer, type the IP address for the printer. (To find the IP address, print a configuration page. For more information about printing a configuration page, see Testing the printer operation on page 68.)



NOTE Once you open the URL, you can bookmark it so that you can return to it quickly in the future.

1. The embedded Web server has three tabs that contain settings and information about the printer: the **Information** tab, the **Settings** tab, and the **Networking** tab. Click the tab that you want to view.
2. 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 displays the printer 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 found on the printer 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 on the left side of the window. To visit any Web site, you must have Internet access.
- **Event log**. This page shows a list of all printer events and errors.
- **Usage page**. This page shows a summary of the number of pages the printer has printed, grouped by size and type.
- **Device Information**. This page also shows the printer network name, address, and model information. To change these entries, click **Device Information** on the **Settings** tab.
- **Control panel**. This page shows an image of the text currently displaying on the printer's control panel display.

Settings tab

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

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

- **Configure Device**. Configure all printer settings from this page. This page contains the traditional menus found on printers using a control panel display. These menus include **Information**, **Paper Handling**, and **Configure Device**.
- **Alerts**. Network only. Set up to receive e-mail alerts for various printer and supplies events. Alerts may also be sent to a URL.
- **E-mail**. Network only. Used in conjunction with the Alerts page to set up incoming and outgoing e-mail, as well as to set e-mail alerts.
- **Security**. Set a password that must be entered to gain access to the **Settings** and **Networking** tabs. Enable and disable certain features of the embedded Web server.
- **Other Links**. Add or customize a link to another Web site. This link is displayed in the **Other Links** area on all embedded Web server pages. These permanent links always display in the **Other Links** area: **HP Instant Support™**, **Order Supplies**, and **Product Support**.
- **Device Information**. Name the printer and assign an asset number to it. Enter the name and e-mail address for the primary contact who will receive information about the printer.
- **Language**. Determine the language in which to display the embedded Web server information.
- **Time Services**. Configure the printer's time settings.

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 jobs, so that you can identify the most recent versions of stored print jobs.

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

Networking tab

This tab allows the network administrator to control network-related settings for the printer when it is connected to an IP-based network. This tab will not display if the printer is directly connected to a computer, or if the printer is connected to a network using anything other than an HP Jetdirect print server.

Click **Help** on the Networking tab pages for more information on network settings.

Other links

This section contains links that connect you to the Internet to order supplies or obtain product support. You must have Internet access 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 printer error log and configuration information to provide diagnostic and support information specific to your printer.
- **Order Supplies**. Click this link to connect to the HP Web site and order genuine HP supplies, such as print cartridges and paper.
- **Product Support**. Connects to the support site for the HP Color LaserJet 4700 printer. Then, you can search for help regarding general topics.

Configuration pages

Depending on the model, up to three 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 stapler/stacker.

Configuration page

Use the configuration page to view current printer settings, to help troubleshoot printer problems, or to verify installation of optional accessories, such as memory (DIMMs), paper trays, and printer languages.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT CONFIGURATION**.
5. Press ✔ to select **PRINT CONFIGURATION**.

The message **Printing... CONFIGURATION** displays on the control panel until the printer finishes printing the configuration page. The printer returns to the **Ready** state after printing the configuration page.

NOTE If the printer is configured with EIO cards (for example, an HP Jetdirect Print Server) or an optional hard-disk drive, an additional configuration page will print that provides information about those devices.

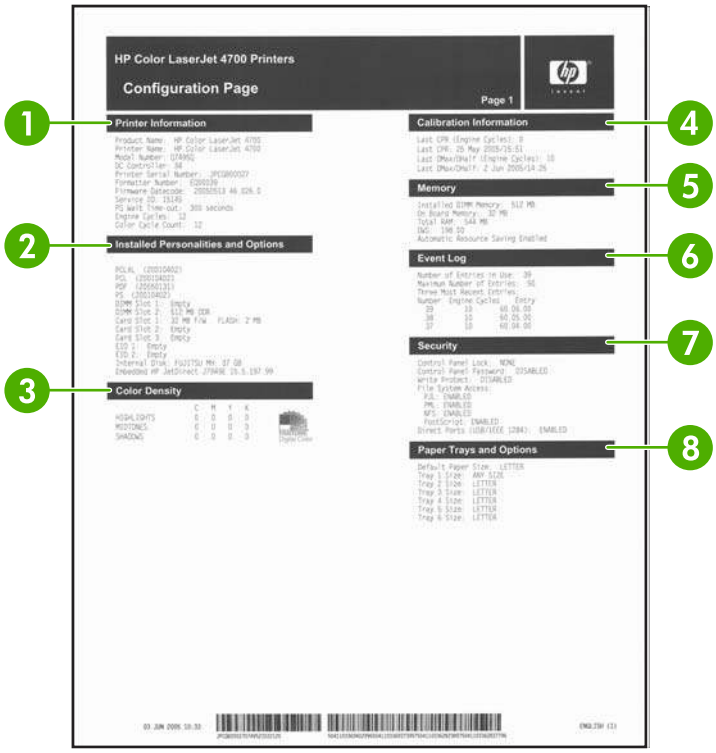


Figure 7-6 Model configuration page

1	Printer information
2	Installed personalities and options
3	Color density
4	Calibration information
5	Memory
6	Event log
7	Security
8	Paper trays and options

HP embedded Jetdirect page

The second configuration page is the HP embedded Jetdirect page, which contains the following information:

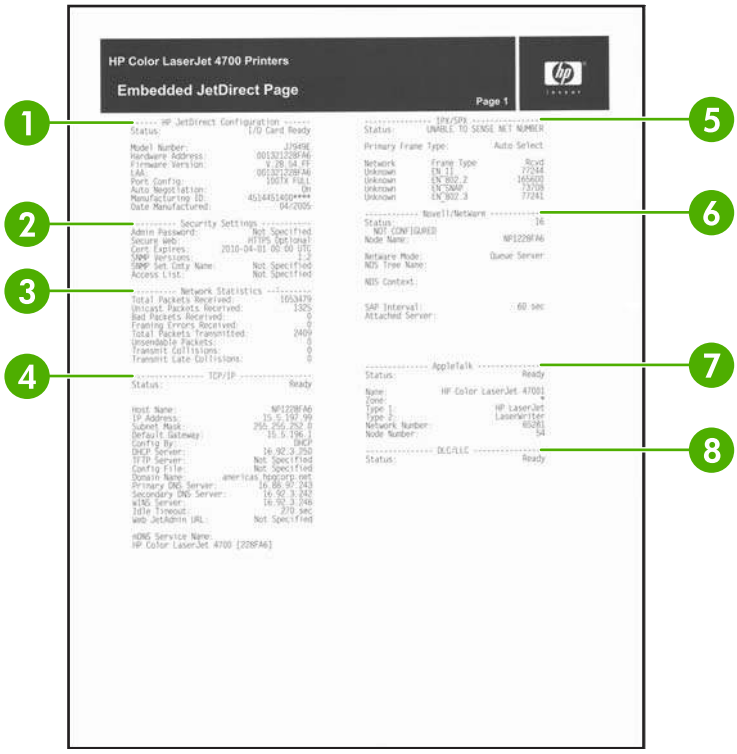


Figure 7-7 Model HP embedded Jetdirect page

1	**HP Jetdirect Configuration** indicates the printer 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 (4700 models)

The paper handling configuration page contains the following information on any installed paper handing device:

- Model number
- Firmware datecode
- Bins and trays

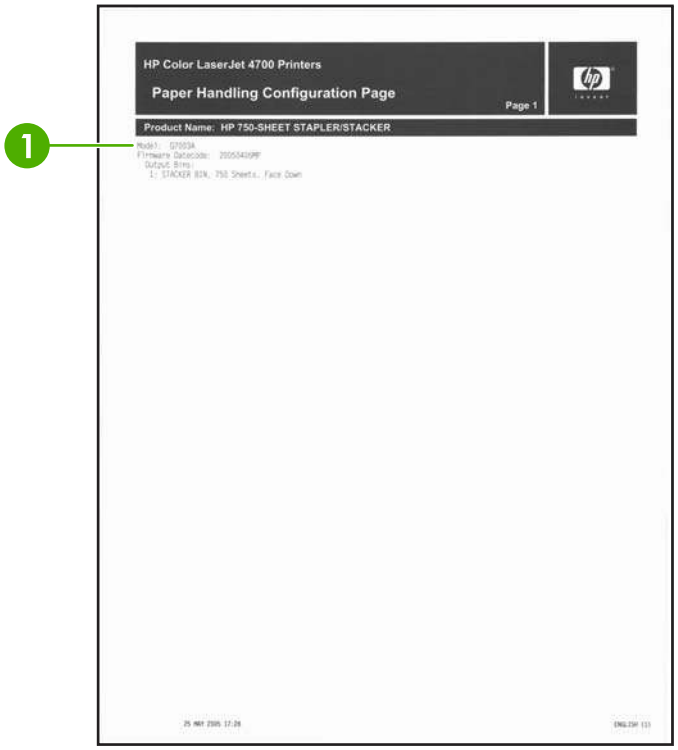


Figure 7-8 Model paper handling configuration page

1	Paper handling information

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 printer. This information is on the various configuration pages. Table 7-36 Important information on the configuration pages on page 511 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.	DC controller	Look on the main configuration page, under “Device Information.”
	Firmware datecode	Look on the main configuration page, under “Device Information.”
	Stapler/stacker firmware datecode	Look on the paper handling configuration page, under “Product Name.”
	Embedded Jetdirect firmware version	Look on the embedded Jetdirect page, under “HP Jetdirect Configuration.”
Accessories and internal storage All optional devices that are installed on the printer 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 (4700ph+ model only)	Look on the main configuration page, under “Installed Personalities and Options.” Shows model and capacity.
	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.”
	Duplex unit	Look on the main configuration page, under “Paper Trays and Options.”
Additional 500-sheet feeders and optional output devices	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 printer 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 maintenance (print engine maintenance count)	Pages since last maintenance (print engine maintenance count)	Look on the main configuration page, under “Device Information.”
Event-log information	Event-log information	Look on the main configuration page, under “Event log.”

Print the supplies status page

The supplies status page illustrates the remaining life for the following printer supplies:

- Print cartridges (all colors)
- ETB
- Fuser

To print the supplies status page:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT SUPPLIES STATUS PAGE**.
5. Press ✔ to select **PRINT SUPPLIES STATUS PAGE**.

The message **Printing... SUPPLIES STATUS** displays on the control panel until the printer finishes printing the supplies status page. The printer returns to the **Ready** state after printing the supplies status page.

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

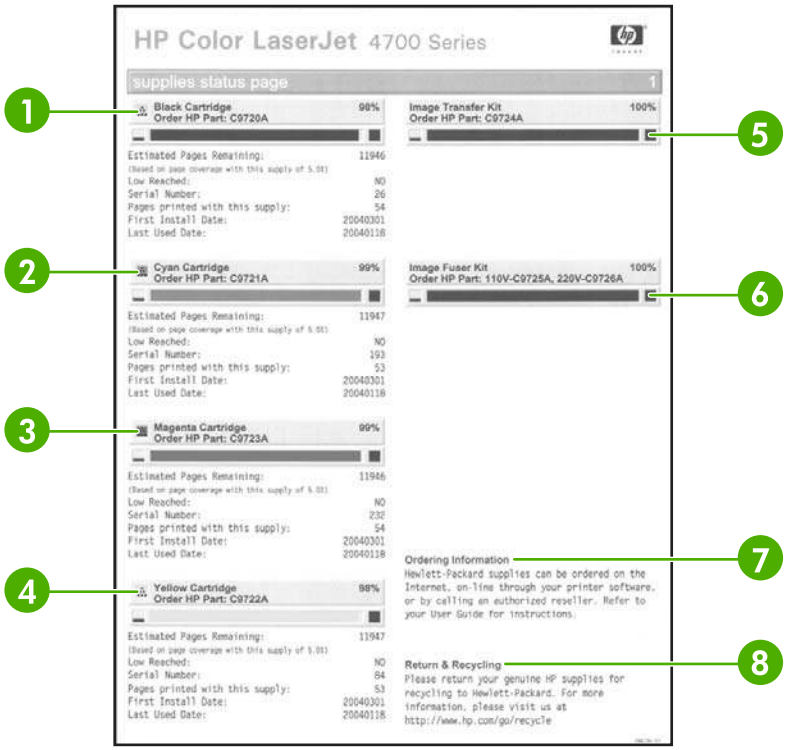


Figure 7-9 Supplies status page

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	**Image Fuser Kit** indicates the part number and status.
7	**Ordering Information** provides information on ordering new HP printer supplies.
8	**Return & Recycling** provides information on recycling HP printer supplies.

Print the usage page

The usage page lists a page count for each size of media that has passed through the printer. This page count includes the number of pages that were printed on one side, the number that were printed on two sides (duplexed), and totals of the two printing methods for each media size. It also lists the average percentage of page coverage for each color.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT USAGE PAGE**.
5. Press ✔ to select **PRINT USAGE PAGE**.

The message **Printing... USAGE PAGE** displays on the control panel until the printer finishes printing the usage page. The printer returns to the **Ready** state after printing the usage page.

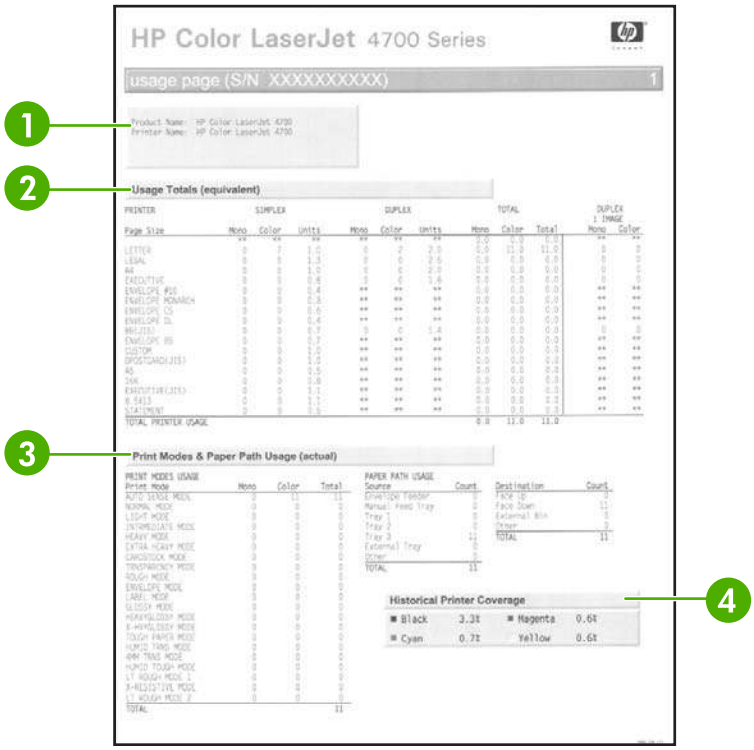


Figure 7-10 Usage page

1	**Device Information** indicates the device name and serial number.
2	**Usage Totals (equivalent)** 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.
3	**Print Modes and Paper Path Usage (actual)** shows the number of pages that have been printed with each printer mode and the number of pages that have been printed from each input tray and to each output bin.
4	**Historical Printer Coverage** indicates the average percentage of toner used on all pages that have been printed.

Print the demo page

The printer can produce a print quality demonstration page.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT DEMO**.
5. Press ✔ to select **PRINT DEMO**.

The message **Printing... DEMO PAGE** displays on the control panel until the printer finishes printing the demo page. The printer returns to the **Ready** state after printing the demo page.

Print the file directory page

The file directory page contains information for all installed mass storage devices. This option does not display if no mass storage devices are installed.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT FILE DIRECTORY**.
5. Press ✔ to select **PRINT FILE DIRECTORY**.

The message **Printing... FILE DIRECTORY** displays on the control panel until the printer finishes printing the file directory page. The printer returns to the **Ready** state after printing the file directory page.

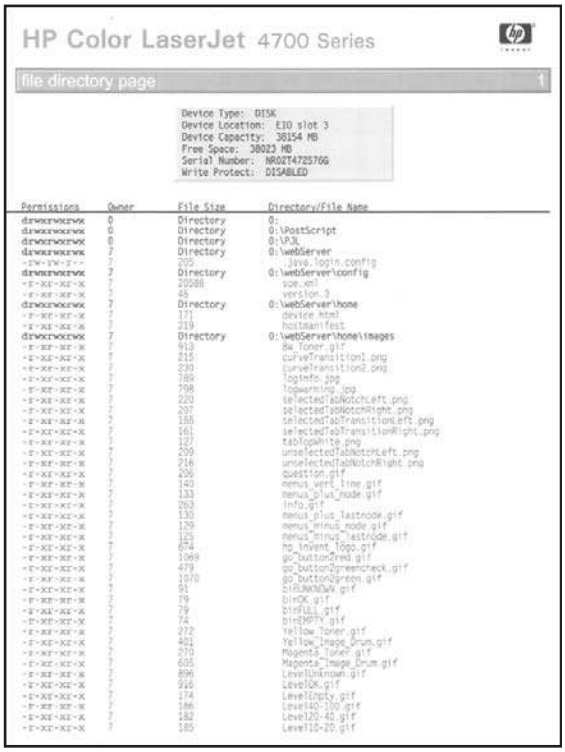


Figure 7-11 File directory page

Print the PCL font list page

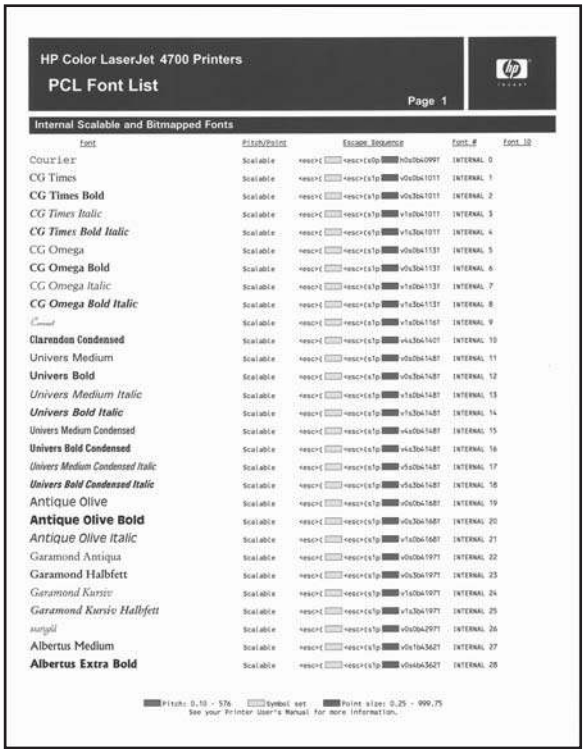
The PCL font list page lists the PCL fonts that are available on the printer.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.

4. Press ▼ to highlight **PRINT PCL FONT LIST**.

5. Press ✔ to select **PRINT PCL FONT LIST**.

The message **Printing... FONT LIST** displays on the control panel until the printer finishes printing the font list page. The printer returns to the **Ready** state after printing the font list page.


HP Color LaserJet 4700 Printers

PCL Font List

Page 1

Internal Scalable and Bitmapped Fonts

Font	Pitch/Point	Escape Sequence	Font #	Font ID
Courier	Scalable		INTERNAL 0	
CG Times	Scalable		INTERNAL 1	
CG Times Bold	Scalable		INTERNAL 2	
CG Times Italic	Scalable		INTERNAL 3	
CG Times Bold Italic	Scalable		INTERNAL 4	
CG Omega	Scalable		INTERNAL 5	
CG Omega Bold	Scalable		INTERNAL 6	
CG Omega Italic	Scalable		INTERNAL 7	
CG Omega Bold Italic	Scalable		INTERNAL 8	
Coronet	Scalable		INTERNAL 9	
Clarendon Condensed	Scalable		INTERNAL 10	
Univers Medium	Scalable		INTERNAL 11	
Univers Bold	Scalable		INTERNAL 12	
Univers Medium Italic	Scalable		INTERNAL 13	
Univers Bold Italic	Scalable		INTERNAL 14	
Univers Medium Condensed	Scalable		INTERNAL 15	
Univers Bold Condensed	Scalable		INTERNAL 16	
Univers Medium Condensed Italic	Scalable		INTERNAL 17	
Univers Bold Condensed Italic	Scalable		INTERNAL 18	
Antique Olive	Scalable		INTERNAL 19	
Antique Olive Bold	Scalable		INTERNAL 20	
Antique Olive Italic	Scalable		INTERNAL 21	
Garamond Antiqua	Scalable		INTERNAL 22	
Garamond Halbfett	Scalable		INTERNAL 23	
Garamond Kursiv	Scalable		INTERNAL 24	
Garamond Kursiv Halbfett	Scalable		INTERNAL 25	
Marigold	Scalable		INTERNAL 26	
Albertus Medium	Scalable		INTERNAL 27	
Albertus Extra Bold	Scalable		INTERNAL 28	

Pitch: 0.10 - 576 Symbol set Point size: 0.25 - 999.75

See your Printer User's Manual for more information.

Figure 7-12 PCL font list page

Print the PS font list page

The PS font list page list the PS fonts (emulated PostScript) that are available on the printer.

1. Press Menu to enter the **MENUS**.

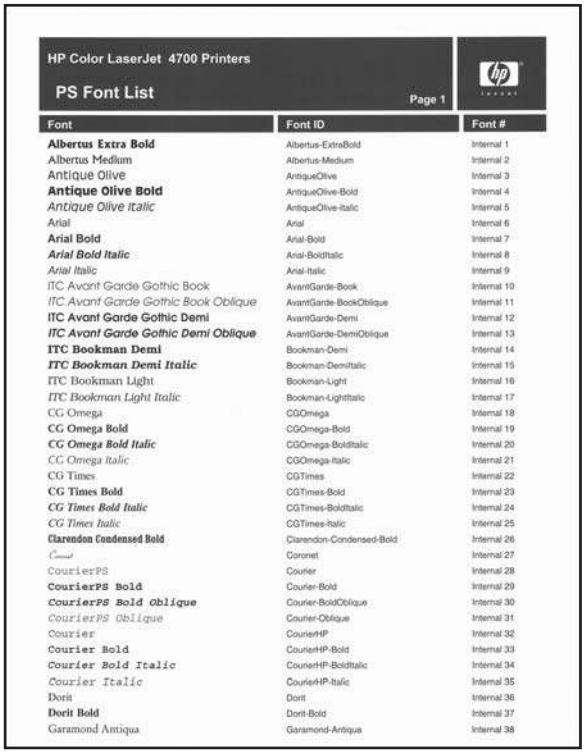
2. Press ▼ to highlight **INFORMATION**.

3. Press ✔ to select **INFORMATION**.

4. Press ▼ to highlight **PRINT PS FONT LIST**.

5. Press ✔ to select **PRINT PS FONT LIST**.

The message **Printing... FONT LIST** displays on the control panel until the printer finishes printing the font list page. The printer returns to the **Ready** state after printing the font list page.



HP Color LaserJet 4700 Printers

PS Font List

Page 1

Font	Font ID	Font #
Albertus Extra Bold	Albertus-ExtraBold	Internal 1
Albertus Medium	Albertus-Medium	Internal 2
Antique Olive	AntiqueOlive	Internal 3
Antique Olive Bold	AntiqueOlive-Bold	Internal 4
Antique Olive Italic	AntiqueOlive-Italic	Internal 5
Arial	Arial	Internal 6
Arial Bold	Arial-Bold	Internal 7
Arial Bold Italic	Arial-BoldItalic	Internal 8
Arial Italic	Arial-Italic	Internal 9
ITC Avant Garde Gothic Book	AvantGarde-Book	Internal 10
ITC Avant Garde Gothic Book Oblique	AvantGarde-BookOblique	Internal 11
ITC Avant Garde Gothic Demi	AvantGarde-Demi	Internal 12
ITC Avant Garde Gothic Demi Oblique	AvantGarde-DemiOblique	Internal 13
ITC Bookman Demi	Bookman-Demi	Internal 14
ITC Bookman Demi Italic	Bookman-DemiItalic	Internal 15
ITC Bookman Light	Bookman-Light	Internal 16
ITC Bookman Light Italic	Bookman-LightItalic	Internal 17
CG Omega	CGOmega	Internal 18
CG Omega Bold	CGOmega-Bold	Internal 19
CG Omega Bold Italic	CGOmega-BoldItalic	Internal 20
CG Omega Italic	CGOmega-Italic	Internal 21
CG Times	CGTimes	Internal 22
CG Times Bold	CGTimes-Bold	Internal 23
CG Times Bold Italic	CGTimes-BoldItalic	Internal 24
CG Times Italic	CGTimes-Italic	Internal 25
Clarendon Condensed Bold	Clarendon-Condensed-Bold	Internal 26
Coronet	Coronet	Internal 27
CourierPS	Courier	Internal 28
CourierPS Bold	Courier-Bold	Internal 29
CourierPS Bold Oblique	Courier-BoldOblique	Internal 30
CourierPS Oblique	Courier-Oblique	Internal 31
Courier	CourierHP	Internal 32
Courier Bold	CourierHP-Bold	Internal 33
Courier Bold Italic	CourierHP-BoldItalic	Internal 34
Courier Italic	CourierHP-Italic	Internal 35
Dorit	Dorit	Internal 36
Dorit Bold	Dorit-Bold	Internal 37
Garamond Antiqua	Garamond-Antiqua	Internal 38

Figure 7-13 PS font list page

Print the RGB samples page

Use the **PRINT RGB SAMPLES** page to print RGB color samples to match the color values in your application.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT RGB SAMPLES**.
5. Press ✔ to select **PRINT RGB SAMPLES**.

The message **Printing... RGB SAMPLES** displays on the control panel until the printer finishes printing the sample pages. The printer returns to the **Ready** state after printing the pages.

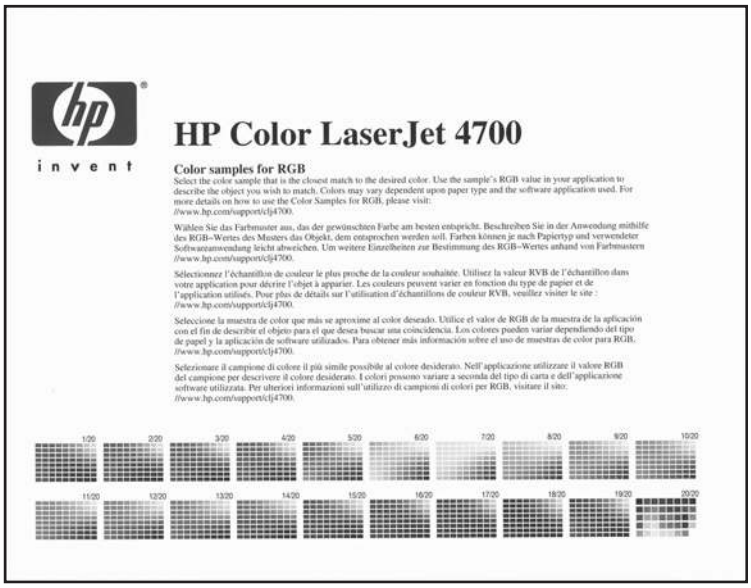


Figure 7-14 RGB samples page

Print the CMYK samples page

Use the **PRINT CMYK SAMPLES** page to print CMYK color samples to match the color values in your application.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT CMYK SAMPLES**.
5. Press ✔ to select **PRINT CMYK SAMPLES**.

The message **Printing... CMYK SAMPLES** displays on the control panel until the printer finishes printing the sample pages. The printer returns to the **Ready** state after printing the pages.

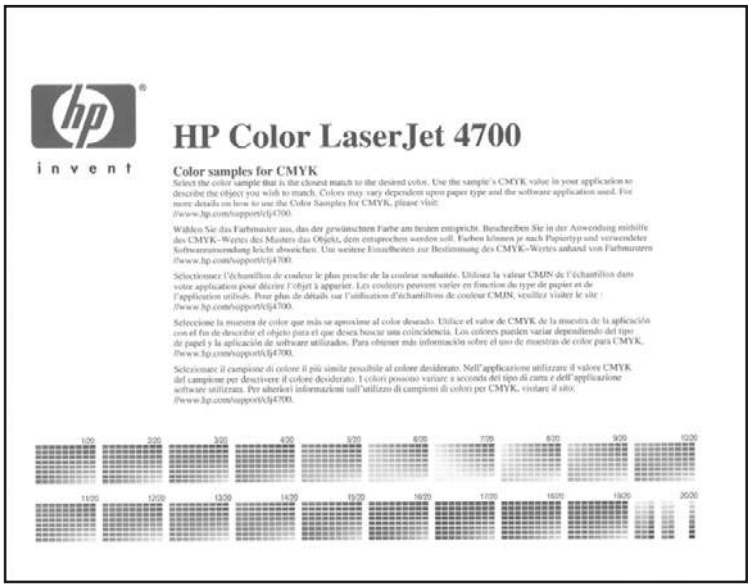


Figure 7-15 CMYK samples page

Diagnostics

LED, engine, and individual diagnostics can identify and troubleshoot printer problems.

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 7-16 Formatter LED on page 520 to locate the formatter LED.

The heartbeat LED will perform the following sequences:

1. The LED blinks with four fast bursts at power on.
2. The LED blinks at a fast, steady rate during memory testing (one blink per 8 MB).
3. The LED stays off for about eight seconds, while the boot code is decompressing, before the display turns on.
4. The LED blinks at a steady rate of two blinks per second for the remainder of the printer operation.
5. If these sequences are not performed, check the following:
    - Reseat the firmware compact flash.
    - Reseat the memory.
    - Replace the firmware compact flash. See Installing a flash memory card (HP Color LaserJet 4700 Series only) on page 121.
    - Replace the memory.
    - Replace the formatter.
6. 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.

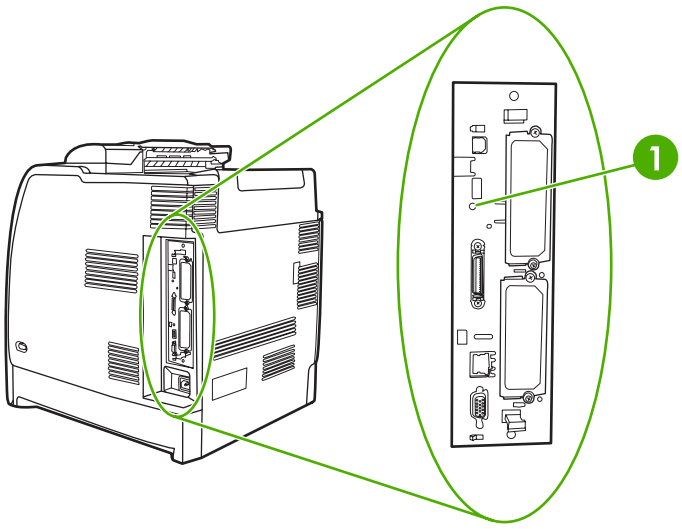


Figure 7-16 Formatter LED

Engine diagnostics

This section provides an overview of the engine diagnostics that are available in the HP Color LaserJet 4700 and HP Color LaserJet CP4005 series printers. These printer contains extensive internal diagnostics that help in troubleshooting print quality, paper paths, noise, component, and timing issues.

Diagnostics mode

Some of the diagnostic tests automatically put the printer into a special diagnostics mode. During the special diagnostics mode the printer can perform actions that would normally cause the printer 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 printer 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
- Paper path sensors
- Manual sensor test
- Manual sensor test 2
- Component test

While the printer is in the special diagnostics mode, the following message should appear:

Ready Diagnostics mode

To exit press STOP

When the printer is in the special diagnostics mode, these five tests display 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**. The printer will reset itself, and then return to the normal state.



NOTE You need to have a good understanding of how the printer operates in order to use the engine diagnostics successfully.

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 printer with the covers removed, the door switch levers (SW1, callout 1) must be depressed (this is the door-closed position) and you must depress the fuser interlock (callout 2).



WARNING! Be careful when performing printer 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 printer is turned on.

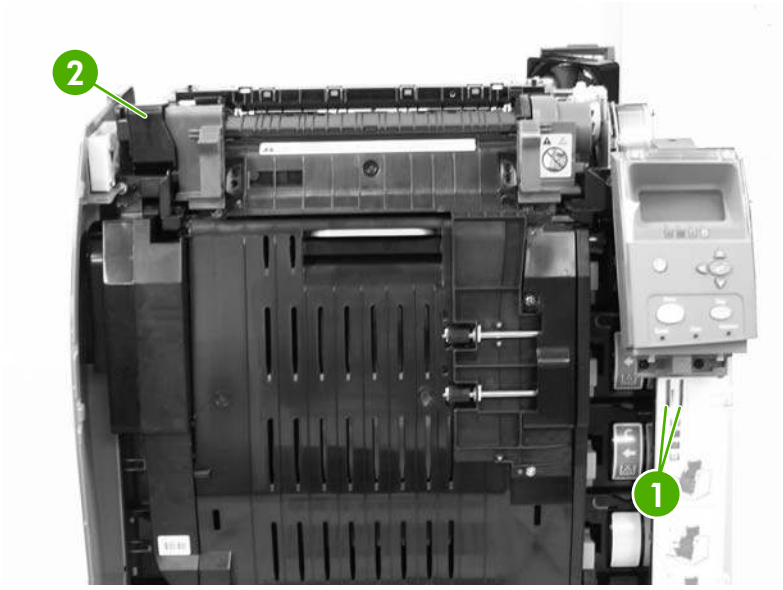


Figure 7-17 Door switch and fuser interlock

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. When the covers are installed, the door switch and fuser interlock are automatically operated. When the covers are removed, you must perform these steps manually.

Individual diagnostic tests

The following sections explain in more detail how to operate the various diagnostics correctly.

Print the event log page

The event log lists the printer events, including jams, service errors, and other printer conditions.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ✔ to select **PRINT EVENT LOG**.

The message **Printing... EVENT LOG** displays on the control panel until the printer finishes printing the event log. The printer returns to the **Ready** state after printing the event log.

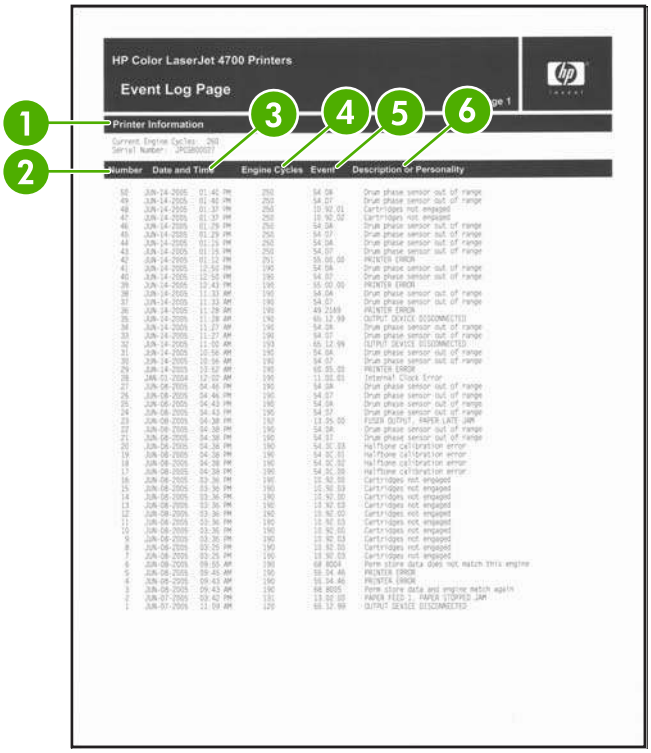


Figure 7-18 Model event log page

1	Printer information
2	Event number
3	Date and time
4	Engine cycles
5	Event log code
6	Description of personality

View the event log on the control panel display

The show event log lists the last 50 printer events on the control panel display. (The most recent event is listed first).

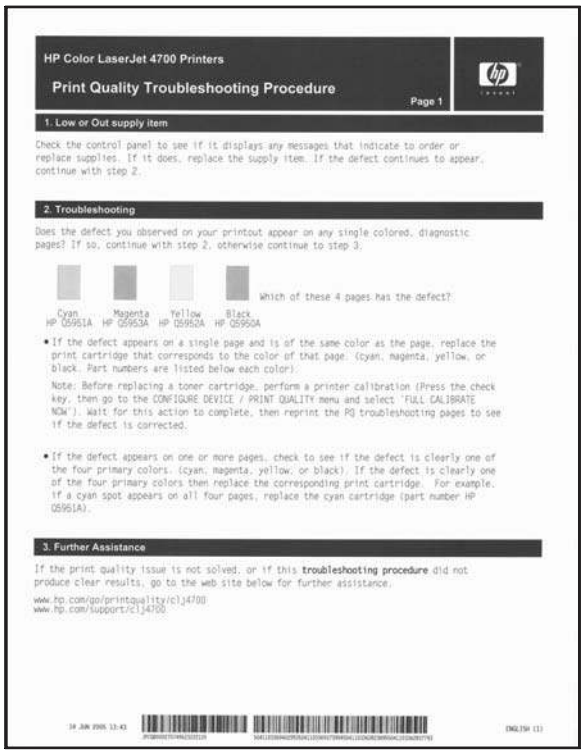
1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **SHOW EVENT LOG**.
5. Press ✔ to select **SHOW EVENT LOG**.

Print the PQ troubleshooting pages

The PQ troubleshooting pages are a series of print quality assessment pages that you can use to troubleshoot print quality problems. Follow the instructions on page one of the PQ troubleshooting pages to solve print quality problems.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **PQ TROUBLESHOOTING**.
5. Press ✔ to select **PQ TROUBLESHOOTING**.

The message **Printing... PQ troubleshooting** displays on the control panel until the printer finishes printing the PQ troubleshooting pages. The printer returns to the **Ready** state after printing the PQ troubleshooting pages.


HP Color LaserJet 4700 Printers

Print Quality Troubleshooting Procedure

Page 1

1. Low or Out supply item

Check the control panel to see if it displays any messages that indicate to order or replace supplies. If it does, replace the supply item. If the defect continues to appear, continue with step 2.

2. Troubleshooting

Does the defect you observed on your printout appear on any single colored, diagnostic pages? If so, continue with step 2, otherwise continue to step 3.

Which of these 4 pages has the defect?

Cyan HP Q5951A | Magenta HP Q5953A | Yellow HP Q5952A | Black HP Q5950A

- If the defect appears on a single page and is of the same color as the page, replace the print cartridge that corresponds to the color of that page. (cyan, magenta, yellow, or black. Part numbers are listed below each color).

  Note: Before replacing a toner cartridge, perform a printer calibration (Press the check key, then go to the CONFIGURE DEVICE / PRINT QUALITY menu and select "FULL CALIBRATE NOW"). Wait for this action to complete, then reprint the PQ troubleshooting pages to see if the defect is corrected.

- If the defect appears on one or more pages, check to see if the defect is clearly one of the four primary colors. (cyan, magenta, yellow, or black). If the defect is clearly one of the four primary colors then replace the corresponding print cartridge. For example, if a cyan spot appears on all four pages, replace the cyan cartridge (part number HP Q5961A).

3. Further Assistance

If the print quality issue is not solved, or if this **troubleshooting procedure** did not produce clear results, go to the web site below for further assistance.

www.hp.com/go/printquality/clj4700
www.hp.com/support/clj4700

Figure 7-19 Model PQ troubleshooting page (1 of 2)

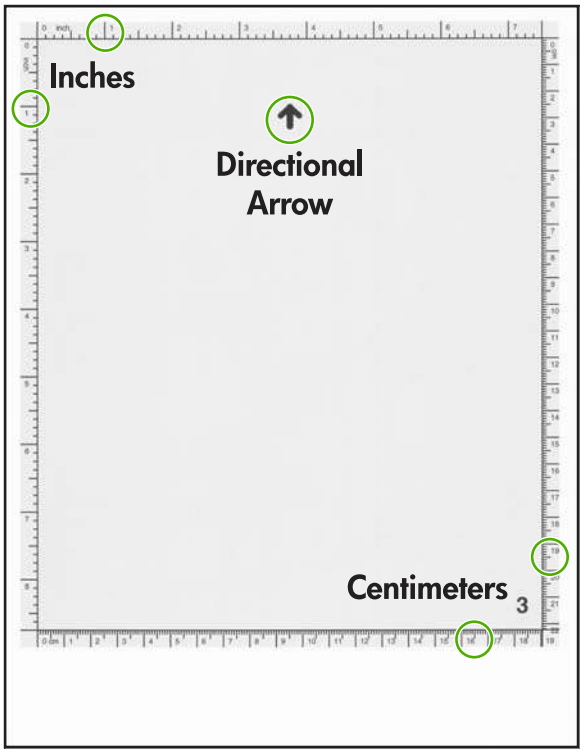


Figure 7-20 Model PQ troubleshooting page (2 of 2)

Diagnostics page

The diagnostics page can be used to evaluate multiple different printer problems, including color plane registration, EP parameters, and print quality.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **PRINT DIAGNOSTICS PAGE**.
5. Press ✔ to select **PRINT DIAGNOSTICS PAGE**.

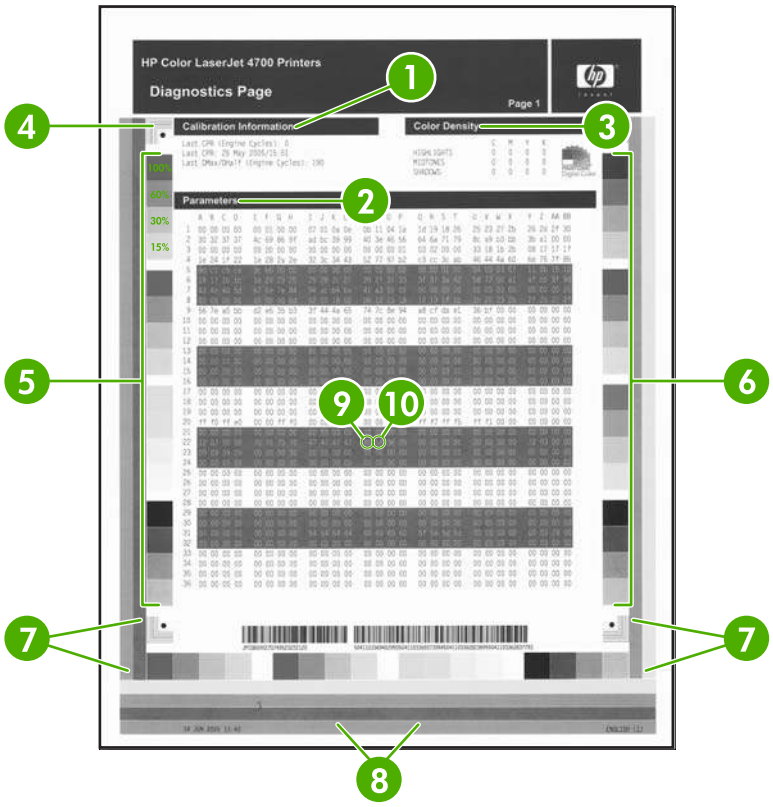


Figure 7-21 Model diagnostics page

1	Calibration information
2	Parameters
3	Color density
4	CPR (color plane registration)
5	Primary colors
6	Secondary colors
7	Horizontal banding
8	Identify ETB streaks (vertical streaks)
9	Temperature values (22M)
10	Humidity values (22N)

Disable cartridge check (special mode test)

Use this diagnostic test to print internal pages or send an external job to the printer when one or more print cartridges are removed or exchanged. Because the cartridges are not keyed, the diagnostic test can be run when one to four cartridges have been removed or moved to another location (exchanged). Consumable supply errors are ignored while the printer is in this mode. When the printer is in this mode, you can navigate the menus and print internal pages or send an external print job to the printer. This diagnostic test can be used to isolate print quality problems that are related to individual cartridges and to isolate individual cartridge problems, such as noise.



NOTE Do not remove or exchange cartridges before you start the disable cartridge check diagnostic. After starting the test, you can remove or exchange cartridges.

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. When the covers are installed, the door switch and fuser interlock are automatically operated. When the covers are removed, you must perform these steps manually.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **DISABLE CARTRIDGE CHECK**.
5. Press ✔ to select **DISABLE CARTRIDGE CHECK**.

To exit this diagnostic test, press Stop and then select **EXIT DIAGNOSTICS**.

Paper path sensors (special mode test)



NOTE To view the function of each sensor and how to toggle them manually, see Manual sensor test (special mode test) on page 528.

This test displays the status of each paper path sensor (sensors A–J) and allows viewing of sensor status while printing internal pages.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **PAPER PATH SENSORS**.
5. Press ✔ to select **PAPER PATH SENSORS**.
6. You can now navigate the menu and print internal pages to verify the toggling of each paper path sensor.

Paper path test

This diagnostic test generates one or more test pages that you can use to isolate the cause of jams.

To isolate a problem, you can specify which input tray to use, specify whether to use the duplex path, and specify the number of copies to print. Multiple copies can be printed to help isolate intermittent problems. The following options become available after you start the diagnostic feature:

- **PRINT TEST PAGE**. Run the paper path test from the default settings: Tray 2, no duplex, and one copy. To specify other settings, scroll down the menu and select the setting, and then scroll back up and select **PRINT TEST PAGE** to start the test.
- **Source**. Select Tray 1, Tray 2, or the optional trays.

- **DUPLEX**. Enable or disable 2-sided printing.
- **COPIES**. Set the numbers of copies to be printed; the choices are 1,10, 50, 100, or 500.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **PAPER PATH TEST**.
5. Press ✔ to select **PAPER PATH TEST**.
6. Select the paper path test options for the test you want to run.

NOTE Sensors I and J are the media and media type misprint sensors and can only be tested by running different types of media through the printer as outlined in Table 7-37 Media type value codes on page 528.

Table 7-37 Media type value codes

Media type	Value code
Normal or Plain	1
LBP Transparency	3
Glossy	4
Gloss film	5
Heavy	7
Light	8
Extra heavy glossy	A

Finishing paper path test

This test generates test pages that are useful for testing the paper handling features of the printer.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **FINISHING PAPER PATH TEST**.
5. Press ✔ to select **FINISHING PAPER PATH TEST**.

Manual sensor test (special mode test)

Use this diagnostic test to manually test the printer sensors and switches. Each sensor is represented by a letter and number on the control panel display. See Table 7-39 Sensor test letter codes on page 530 for a definition of the sensor letter codes. A 1 below the letter indicates that paper is present. For the paper size sensor, the range of values is from 0 to 7. Figure 7-22 Tray 2 paper size switch arrangement on page 529 indicates the switch state and paper size that are associated

with each of these values (the Tray 3, 4, 5, or 6 paper size switches for the single 500-sheet feeder are similar to the Tray 2 switch).

NOTE Sensors I and J cannot be tested manually. For these sensors, see Paper path sensors (special mode test) on page 527.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **MANUAL SENSOR TEST**.
5. Press ✔ to select **MANUAL SENSOR TEST**.

To exit this diagnostic, press the Stop key, and then select **EXIT DIAGNOSTICS**.

Menus cannot be opened during this test, so ✔ serves the same function as the Stop button.

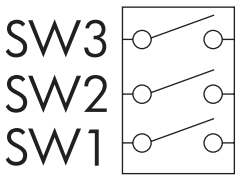


Figure 7-22 Tray 2 paper size switch arrangement

Table 7-38 Tray 2 paper size codes

Size code	Switch state			Paper size
	SW1	SW2	SW3	
0	On	On	On	Custom
1	Off	On	On	Legal
2	On	Off	On	Letter
3	Off	Off	On	Executive
4	On	On	Off	B5 (JIS)
5	Off	On	Off	A5
6	On	Off	Off	A4
7	Off	Off	Off	tray not installed

To toggle a sensor, find and move the sensor flags in the following locations. Table 7-39 Sensor test letter codes on page 530 describes how to find the following sensors.

- **A**. Remove Tray 2. The flag is located in the center paper inlet path of the paper feed assembly, directly in front of the right-side white roller. The flag is recessed above the registration shutter in the paper feed assembly. To trip the sensor manually, insert a piece of paper into the paper feed assembly inlet.

WARNING! The fuser might be hot; wait 10 minutes for it to cool down.

- **B, C**. Open the ETB and wait for the fuser to cool down. The fuser inlet flag is located at the front center of the fuser. Reach the flag from above the black print cartridge. These sensors function as paper path sensors and loop back sensors. Sensor C will trip before sensor B.
- **D**. The fuser delivery flag is located at the upper center of the fuser, behind the fuser Caution label. It is wrapped in a clear roller.
- **E**. The flag and sensor are located under the top cover on the top rear of the duplexer. To verify the operation, open the top cover of the duplexer.
- **F**. The output bin full sensor is located on the upper, rear edge of the fuser.
- **G**. The developing alienation sensor is located on the right side of the printer and is a part of the disengaging drive assembly. It can be tripped by rotating the white disengaging gear.
- **H**. The fuser pressure release sensor is located at the upper left rear of the delivery assembly. It can be accessed by removing the fuser and blocking the fuser manually.
- **I**. Cannot be tested manually.
- **J**. Cannot be tested manually.
- **K**. The door switch is located on the right, front of the printer frame (underneath the right cover).
- **L**. Remove Tray 2. The Tray 1 (multipurpose tray) paper-presence sensor flag is the black lever on the front left of the paper tray cavity.
- **M**. Remove Tray 2. The Tray 2 paper presence sensor flag is the black lever in the middle center of the paper tray cavity.
- **N**. Remove Tray 2. The Tray 2 paper stack surface sensor flag is the black flat plastic assembly to which the paper pickup roller attaches.
- **O**. Remove Tray 2. The paper size sensor switches are located on the right, rear side of the paper cavity.

NOTE Procedures on how to find the sensors P through a in Table 7-40 Sensor test letter codes P through a on page 531 will be the same as the Tray 2 procedures for M, N, and O above (and also for Trays 3–6, if installed).

Table 7-39 Sensor test letter codes

Letter	Sensor	Sensor/switch number	Idle value (doors closed, paper in Trays 1 and 2)
A	Top of page	SR12	0
B	Fuser inlet sensor 1	SR13	1
C	Fuser inlet sensor 2	SR14	1
D	Fuser delivery sensor	SR1	0
E	Duplexer switchback sensor	SR8001	0
F	Output bin full sensor	SR2	0

Table 7-39 Sensor test letter codes (continued)

Letter	Sensor	Sensor/switch number	Idle value (doors closed, paper in Trays 1 and 2)
G	Developing alienation sensor	SR1	0
H	Fuser pressure release sensor	SR3	1
I	Media sensor	N/A	N/A
J	Media type misprint	N/A	N/A
K	Door sensor	SW	0
L	Tray 1 paper sensor	SR4	0
M	Tray 2 paper sensor	SR9	1
N	Tray 2 paper stack surface sensor (SR10)	N/A	1
O	Tray 2 paper size sensor	C size switch	2

Manual sensor test 2 (special mode test)

Use this test to test paper path sensors and the door-open switch manually. The following illustrations and tables show the locations of these sensors.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **MANUAL SENSOR TEST 2**.
5. Press ✔ to select **MANUAL SENSOR TEST 2**.
6. Open and close paper trays or move sensor flags to see the sensor status change on the control panel display.

Table 7-40 Sensor test letter codes P through a

Letter	Sensor	Sensor/switch number	Idle value (doors closed, paper in Trays 1 and 2)
P	Tray 3 paper sensor	N/A	0
Q	Tray 3 paper stack surface sensor	N/A	1
R	Tray 3 paper size sensor	N/A	2
S	Tray 4 paper sensor	N/A	0
T	Tray 4 paper stack surface sensor	N/A	1
U	Tray 4 paper size sensor	N/A	2

Table 7-40 Sensor test letter codes P through a (continued)

Letter	Sensor	Sensor/switch number	Idle value (doors closed, paper in Trays 1 and 2)
V	Tray 5 paper sensor	N/A	0
W	Tray 5 paper stack surface sensor	N/A	1
X	Tray 5 paper size sensor	N/A	2
Y	Tray 6 paper sensor	N/A	0
Z	Tray 6 paper stack surface sensor	N/A	1
a	Tray 6 paper size sensor	N/A	2

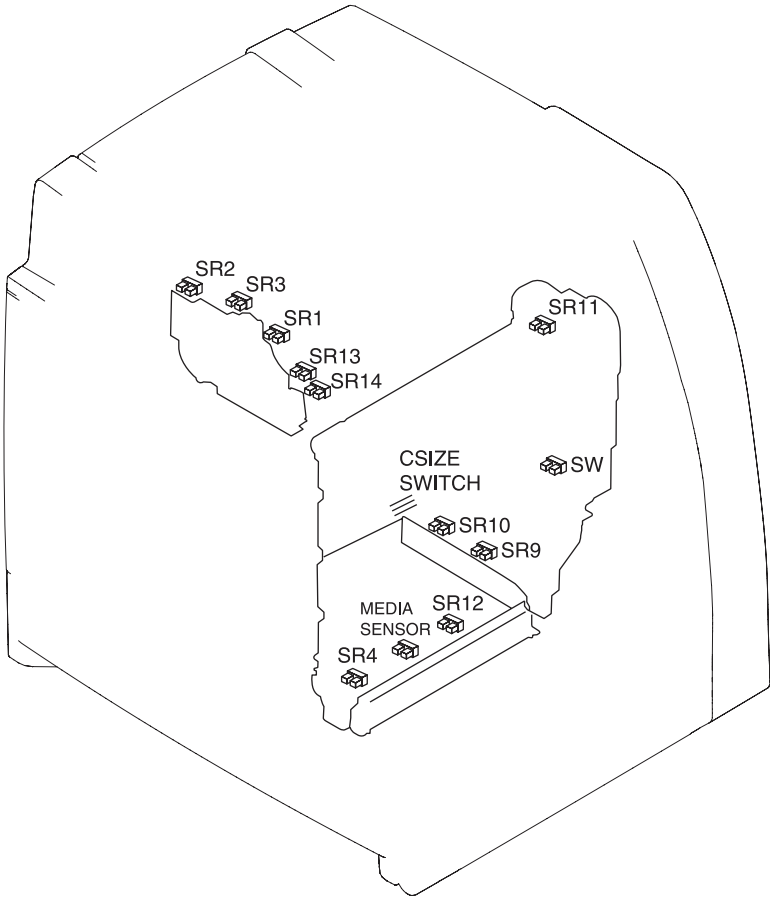


Figure 7-23 Location of sensors

Component test (special mode test)

Use the component test to exercise individual parts independently to isolate problems.

Each component test can be performed once or repeatedly. If **CONTINUOUS** is selected from the drop-down menu as the repeat option, the test will cycle the component on and off. This process continues for 2 minutes, and then the test terminates.



NOTE The door interlock switch must be defeated to run any of the component tests. If covers are removed, the door switch must be manually cycled during some tests in order for the engine to recognize a change. The ETB assembly can be open, closed, or removed while some of these tests are executing. Print cartridges can be installed or removed during certain tests. The control panel display prompts for removal of some or all cartridges during certain tests in order to rotate and isolate certain components, as well as to protect the cartridges and ETB.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **DIAGNOSTICS**.
3. Press ✔ to select **DIAGNOSTICS**.
4. Press ▼ to highlight **COMPONENT TEST**.
5. Press ✔ to select **COMPONENT TEST**.
6. Select the component test options when prompted by the printer.

Menus cannot be opened during component tests, so ✔ serves the same function as the Stop button.

The following component tests can be performed:

- **Transfer motors**. This test turns the components that are involved in the image transfer process: the cartridge motors, the ETB motor and belt, and the print cartridges (if the ETB is closed). You can remove or install print cartridges during this test.
- **Belt only**. This test turns only the ETB motor and belt. The control panel display prompts you to remove the cartridges because the ETB belt contacts the photosensitive drums and cannot turn without them rotating also. Rotating the photosensitive drums could damage the belt or photosensitive drums. If covers are removed, you must manually activate the door switch after removing the cartridges in order for the test run.
- **Cartridge motors**. This test rotates only the print-cartridge drive motors. The control panel display prompts you to remove at least one cartridge because the ETB belt contacts the photosensitive drums and cannot turn without them rotating also. The engine rotates the cartridge motor(s) for only the cartridges that are removed. To rotate all motors sequentially, remove all of the cartridges; to isolate one motor, remove only that cartridge. If covers are removed, you must manually activate the door switch after removing the cartridges in order to perform the test. Always start this test with all of the cartridges installed, and activate the door switch so that the printer recognizes the configuration. Then you can proceed with the test, by removing one or more cartridges.
- **Black, Cyan, Magenta, Yellow laser/scanners**. Use the following four tests to rotate each scanner motor individually.
- **Fuser motor**. Use this test to rotate the fuser motor and drive gears.
- **Fuser pressure release motor**. Use this test to rotate the fuser pressure release motor.
- **Alienation motor** (also called the developing disengaging motor). This test moves the developing disengaging motor, clutches and gears, and plates through their positions.
- **ETB contact/alienation**. This test activates the ETB motors and solenoid.
- **Tray 1 pickup solenoid**. This test activates and releases the Tray 1 pickup solenoid.

- **Tray 2 pickup motor**. This test activates and moves the Tray 2 pickup motor and gear train.
- **Tray 2 pickup solenoid**. This test activates and releases the Tray 2 pickup solenoid.
- **Trays 3–x pickup motors and solenoids**. These tests run the same way as the Tray 2 pickup motor and solenoid test.

  NOTE You must have the paper tray partially installed or manually lift the pickup roller assembly/lifter plate.

- **Duplexer pickup motor**. This test activates and moves the duplexer pickup motor.

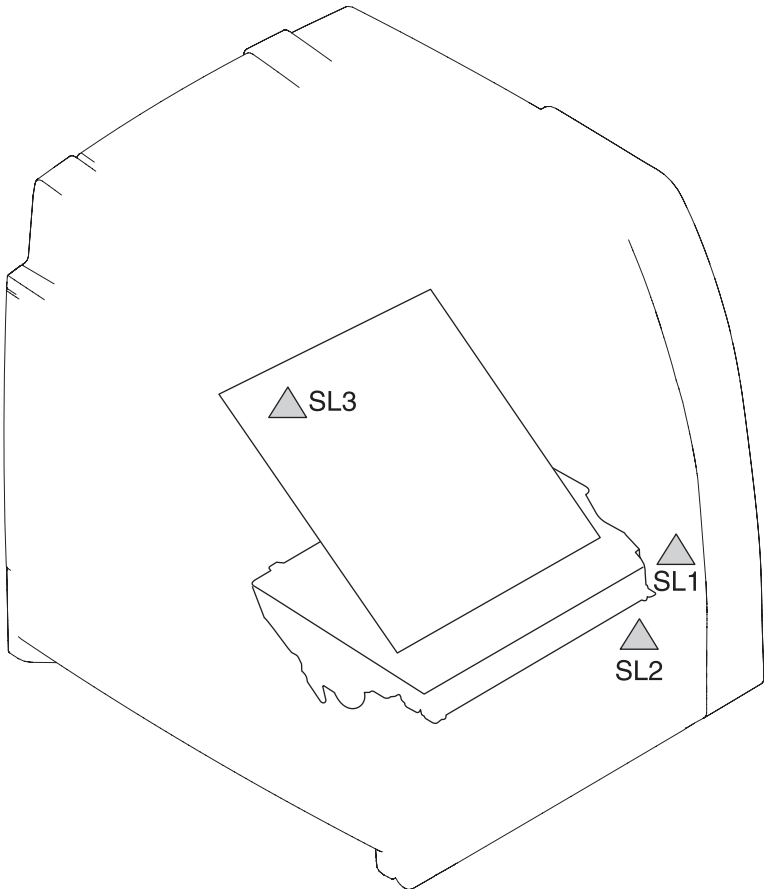


Figure 7-24 Location of solenoids

Table 7-41 Solenoids

Name	Function
SL1	Multipurpose tray pickup solenoid
SL2	Paper tray pickup solenoid
SL3	ETB contact/alienation solenoid

Print/Stop test

Use this diagnostic test to isolate the cause of problems such as image formation defects and jams within the engine. During this test you can stop the paper anywhere along the printer-paper path. The test can be programmed to stop printing internal pages or an external print job when the paper reaches a certain position. The test can also be programmed to stop from 0 to 60,000 mS. If the timer is set to a value that is greater than the job-print time, you can recover the printer in one of two ways.

- After the print job is completed press Stop to return to the **DIAGNOSTICS** menu before the timer times out.
- After the timer times out, press Stop. Activate the door switch to restart the engine and return it to a normal state.

When the timer trips, the control panel display shows the message **PRINTING STOPPED To continue press ✔**. Pressing Menu will print the previously selected job. If you do not want the previous job to print, press Stop first, and then press Menu.



NOTE Do not attempt to perform a Print/Stop test while the printer is calibrating, because you be required to power-cycle the printer. If a jam message displays on the control panel during testing, activate the door switch.

Colorband test

This test can be used for troubleshooting print quality issues.

Information menu

From the **INFORMATION** menu, the following pages can be printed.

PRINT MENU MAP. Use this item to print the control panel menu map, which shows the layout and current settings of the control panel menu items.

Print Configuration Page. Use this item to help troubleshoot printer problems or to verify installation of optional accessories (such as memory DIMMs and DDRs), trays, and printer languages.

PRINT SUPPLIES STATUS PAGE. Use this item to print a page that shows the remaining life of the supplies.

SUPPLIES STATUS. Use this item to view a page that shows the supplies status in a searchable list on the control panel display.

PRINT USAGE PAGE. Use this item to print a page that shows a count of all media sizes that have passed through the printer and lists whether they were simplex, duplex, monochrome, or color; and reports page count.

PRINT DEMO. Use this item to print a demonstration page.

PRINT RGB SAMPLES. Use this item to print color samples for different RGB values.

PRINT CMYK SAMPLES. Use this item to print color samples for different CMYK values.

PRINT FILE DIRECTORY. Use this item to print a page that shows the name and directory of files that are stored in the printer on an optional hard disk.

PRINT PCL FONT LIST. Use this item to print a page that shows the available PCL fonts.

PRINT PS FONT LIST. Use this item to print a page that shows the available PS (emulated PostScript) fonts.

Configure device menu/printing menu

PRINT PS ERRORS. Use this item to print PS error pages.

PRINT PDF ERRORS. Use this item to print PDF error pages.

Configure device menu/print quality menu

ADJUST COLOR. Use this item to modify halftone settings for each color.

SET REGISTRATION. Use this item to align simplex and duplex images.

PRINT MODES. Use this item to associate each media type with a specific print mode.

OPTIMIZE. Use this item to optimize certain parameters for all jobs rather than optimizing by media type.

QUICK CALIBRATE NOW. Use this item to partially calibrate the printer for optimum print quality.

FULL CALIBRATE NOW. Use this item to fully calibrate the printer for optimum print quality.

COLOR RET. Use this item to turn on or turn off a color printer Resolution Enhancement technology (REt) setting.

Configure device menu/resets menu

RESTORE FACTORY SETTINGS. Use this item to clear the page buffer, remove all perishable personality data, reset the printing environment, and return all default settings to factory defaults.

SLEEP MODE. Use this item to reset Sleep mode to the factory default 30-minute setting.

Test pages

Printing test pages helps you determine whether the printer engine and the formatter are functioning.

Engine test page

To verify that the printer engine is functioning, print an engine test page. Use a small pointed object to depress the test page switch located on the rear of the printer, as shown in Figure 7-25 Test page switch on page 537. The test page should have a series of horizontal lines. The test page can use only Tray 2 as the paper source, so make sure that paper is loaded in Tray 2.



Figure 7-25 Test page switch

Formatter test page

To verify that the formatter is functioning, print a configuration page as follows:

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **INFORMATION**.
3. Press ✔ to select **INFORMATION**.
4. Press ▼ to highlight **PRINT CONFIGURATION**.
5. Press ✔ to select **PRINT CONFIGURATION**.

Engine resets

Use the following procedures when you perform engine resets.

Cold reset

A cold reset unlocks menus that have been locked and resets control panel variables. However, it does not clear the values in the **SERVICE** menu (such as the serial number and page counts).

To perform a cold reset

> **WARNING!** Performing a cold reset erases all of the EIO card information.

1. Turn the printer on.
2. As the printer performs its power-on sequence, press and hold ✔ until all three lights on the control panel are lit.
3. When **SELECT LANGUAGE** displays on the control panel, press ▲ until **COLD RESET** displays on the control panel.
4. Press ✔. The printer performs a cold reset and then continues its power-on sequence.

NVRAM initialization

> **CAUTION** Initializing NVRAM resets the serial number, the event log, the page counts, the calibration settings, and the EIO card. Use the **SERVICE** menu to restore the serial number and page counts. You also need to reconfigure any computers that print to this printer to recognize the printer. Initialize NVRAM only when absolutely necessary. In most situations, use a cold reset to reset printer variables but still retain the needed values in the **SERVICE** menu.

Before initializing NVRAM, print a configuration page and a supplies status page to gather the following information:

- Total page count and color page count
- Serial number

To initialize NVRAM

1. Turn the printer on and watch the control panel display.
2. When the display shows the memory count, press and hold ▼ until all three lights on the control panel are lit.
3. Press ▲.
4. Press Menu. The message **SKIP DISK LOAD** displays on the control panel.
5. Press ▲ until **NVRAM INIT** is highlighted.
6. Press ✔. The printer initializes NVRAM and then continues its power-on sequence.

Hard disk initialization (4700 models)

A hard disk initialization will erase and reformat the printer's hard disk. Perform hard disk initialization only if an error code displays on the control panel indicating a disk error. Always try initializing the hard disk before replacing it.

To initialize the hard disk

1. Turn the printer on.
2. As the printer performs its power-on sequence, press and hold the Menu button until all three lights on the control panel are lit.
3. Press ⮌. The message **INITIALIZE DISK** displays on the control panel.
4. Press ▼. The printer initializes the hard disk and continues its power-on sequence.

Calibration bypass

During certain diagnostic procedures, you can bypass the automatic calibration.

To bypass calibration

1. Turn the printer on and watch the control panel display.
2. When the display shows the memory count, press and hold ▼ until all three lights on the control panel are lit.
3. Press ▲.
4. Press ✔. The message **SKIP DISK LOAD** displays on the control panel.
5. Press ▲ until **CANCEL CALIBRATION** is highlighted.
6. Press ✔. The printer skips calibration and then continues its power-on sequence.

Quick Calibrate Now

Quick Calibrate Now is used for color tone calibration (DHALF) and takes about 55 seconds.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **PRINT QUALITY**.
5. Press ✔ to select **PRINT QUALITY**.
6. Press ▼ to highlight **QUICK CALIBRATE NOW**.
7. Press ✔ to select **QUICK CALIBRATE NOW**. Wait for the printer to calibrate.

Full Calibrate Now

Use the following procedure to calibrate the printer whenever you replace the DC controller, the ETB, the drum drive motors, the drum drive gears, or a laser/scanner. Full Calibrate Now includes the

Quick Calibrate routines and adds Drum Phase Calibration and Color Plane Registration. Full Calibrate lasts for about four minutes.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **CONFIGURE DEVICE**.
3. Press ✔ to select **CONFIGURE DEVICE**.
4. Press ▼ to highlight **PRINT QUALITY**.
5. Press ✔ to select **PRINT QUALITY**.
6. Press ▼ to highlight **FULL CALIBRATE NOW**.
7. Press ✔ to select **FULL CALIBRATE NOW**. Wait for the printer to calibrate.

Service menu

The following sections describe the **SERVICE** menu.

Using the Service menu

The **SERVICE** menu is PIN protected for added security. Only authorized service people have access to the Service menu. When you select **SERVICE** from the list of menus, you are prompted to enter your 8-digit PIN number. The PIN for the HP Color LaserJet 4700 is 09470005.

1. Press Menu to enter the **MENUS**.
2. Press ▼ to highlight **SERVICE**.
3. Press ✔ to select **SERVICE**.
4. Press ▲ or ▼ until the first digit of the PIN displays.
5. Press ✔ to save the digit. The control panel display replaces the digit with an asterisk.

   Press ⮌ at any time to move to the previous digit.
6. Repeat steps 4 and 5 until all eight digits are typed.

Clear event log

Use this item to clear the printer internal event log.

Mono cycle count/Color cycle count

The page count that is stored in NVRAM and printed on the configuration page represents the number of pages that the formatter has formatted (not including engine-test prints). If you install a new formatter when repairing a printer, use this menu item to reset the page count to the previous value. In this way, the page count reflects the number of pages that the engine has printed rather than restarting the count for the new formatter. The page count is in two categories: total mono pages and total color pages.

Serial number

If you replace the formatter, use this item to reset the serial number of the printer.

Service ID

Use this item to show the date that the printer was first used on the control panel. This eliminating the need for users to keep paper receipts for proof of warranty.

Restoring the Service ID

If you replace the formatter, the date is lost. Use this menu item to reset the date to the original date that the printer was first used. The date format is YYDDD. Use the following formula to calculate the dates:

1. To calculate YY, subtract 1990 from the calendar year. For instance, if the printer was first used in 2002, calculate YY as follows: 2002 - 1990 = 12. YY = 12.
2. Subtract 1 from 10 (October is the tenth month of the year): 10 - 1 = 9.

Multiply 9 by 30: 9 x 30 = 270.

-or-

Add 17 to 270: 270 + 17 = 287. Thus, DDD = 287.

Converting the Service ID to an actual date

You can use the printer Service ID number to determine whether the printer is still under warranty. Use the following formula to convert the Service ID into the installation date as follows:

1. Add 1990 to YY to get the actual year that the printer was installed.
2. Divide DDD by 30. If there is a remainder, add 1 to the result. This is the month.
3. The remainder from the calculation in step 2 is the date.

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. Since there is a remainder, add 1 to 9 to get 10, which represents October.
3. The remainder in step 2 is 17, so that is the date.
4. The complete date is 17-October-2002.



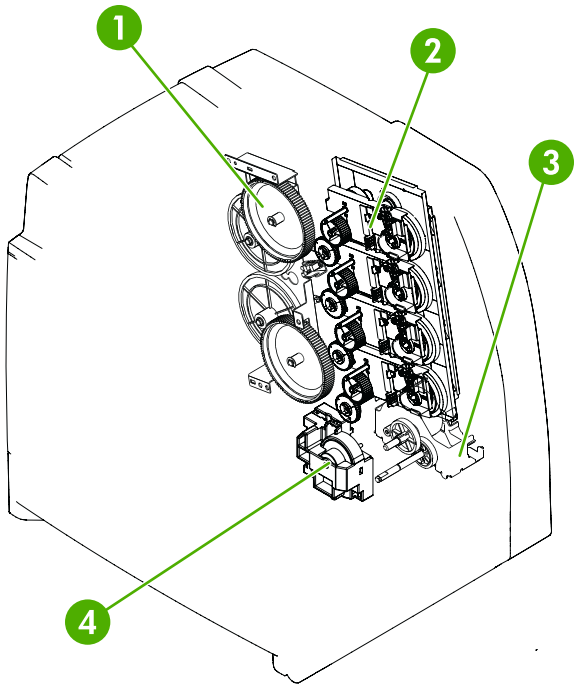
NOTE A 6-day grace period is built into the date system.

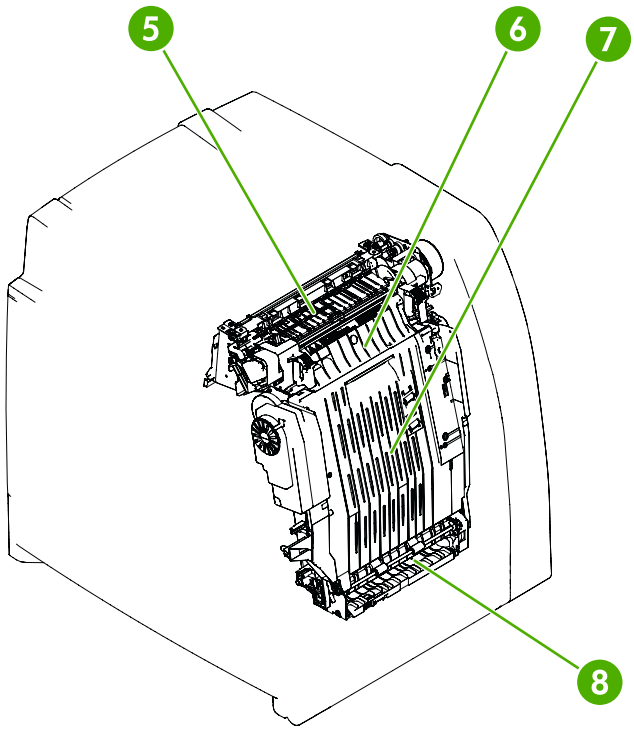
Cold reset paper

When you perform a cold reset, the paper size that is stored in NVRAM is reset to the default factory setting. If you replace a formatter board in a country/region that uses A4 as the standard paper size, use this menu to reset the default paper size to A4. LETTER and A4 are the only available values.

Diagrams

Main parts





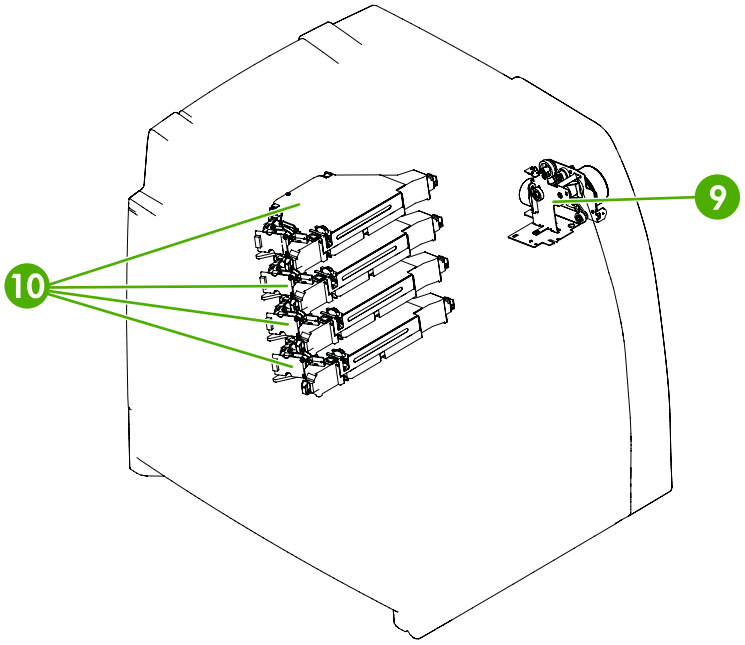


Figure 7-26 Location of main parts

1	Disengaging drive assembly
2	Main drive assembly
3	Pickup motor assembly
4	Lifter drive assembly
5	Delivery assembly
6	Fuser
7	ETB
8	Paper feed assembly
9	Fuser drive assembly
10	Laser/scanner assembly

Switches

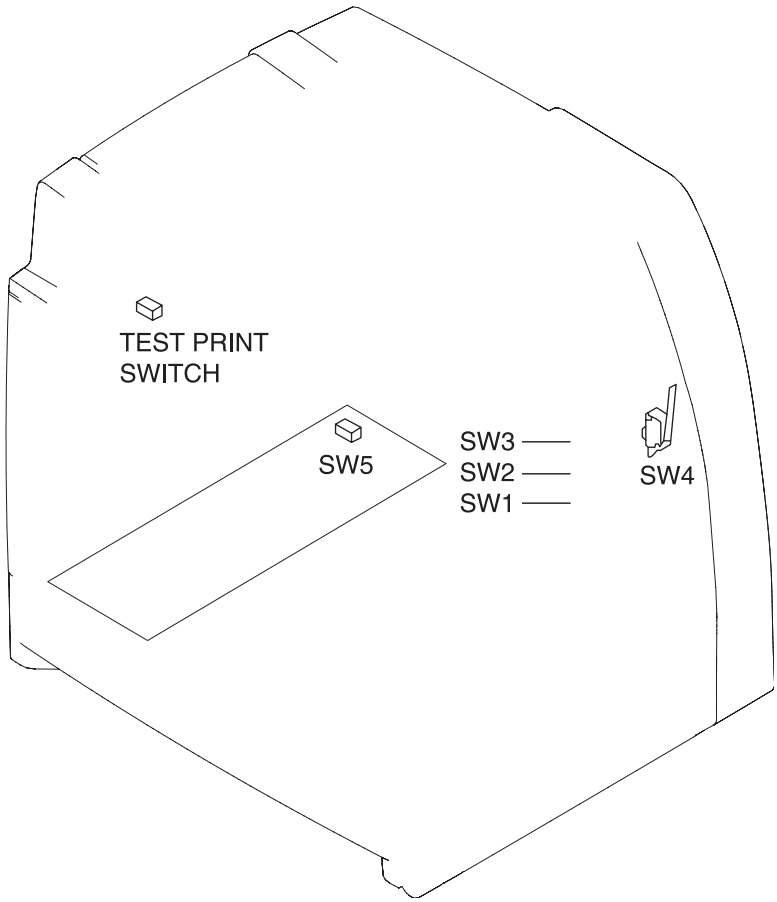


Figure 7-27 Location of switches

Table 7-42 Switches

Name	Function
SW1	Paper tray paper-size detection switch
SW2	Paper tray paper-size detection switch
SW3	Paper tray paper-size detection switch
SW4	Door switch
SW5	On/off switch
SW	Test print switch

Sensors

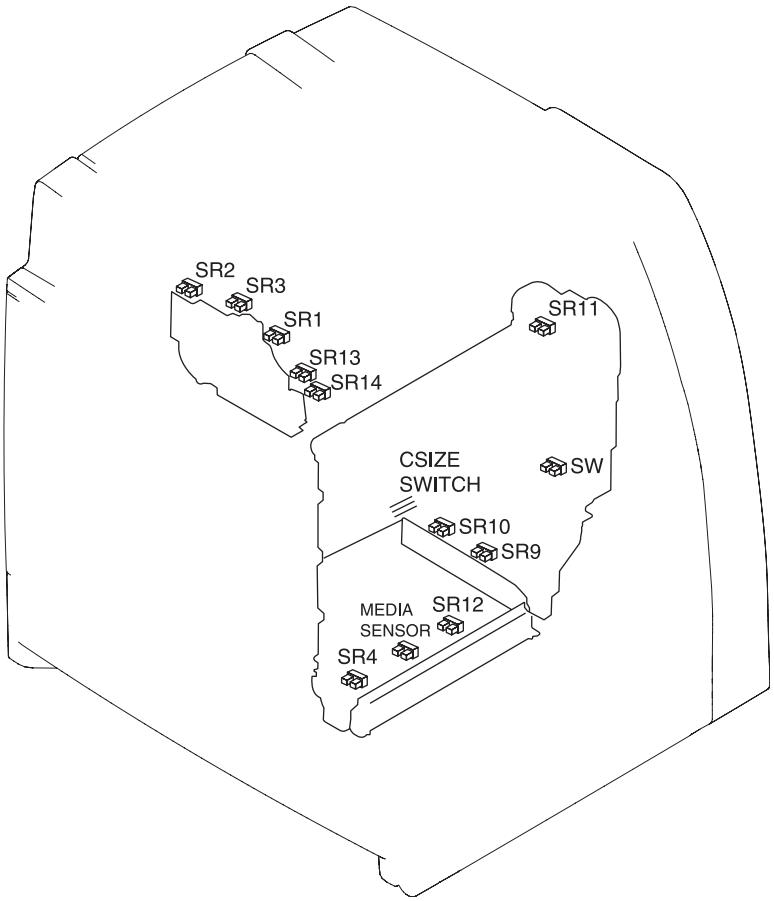


Figure 7-28 Location of sensors

Table 7-43 Sensors

Name	Function
SR1	Fuser delivery
SR2	Output bin full
SR3	Fuser pressure release
SR4	Tray 1 paper
SR9	Tray 2 paper
SR10	Tray 2 paper stack surface
SR11	Developing alienation
SR12	Top of page
SR13	Fuser inlet 1
SR14	Fuser inlet 2
SR8001	Duplexer switch back

Table 7-43 Sensors (continued)

Name	Function
SW	Door
C size switch	Tray 2 paper size

Solenoids

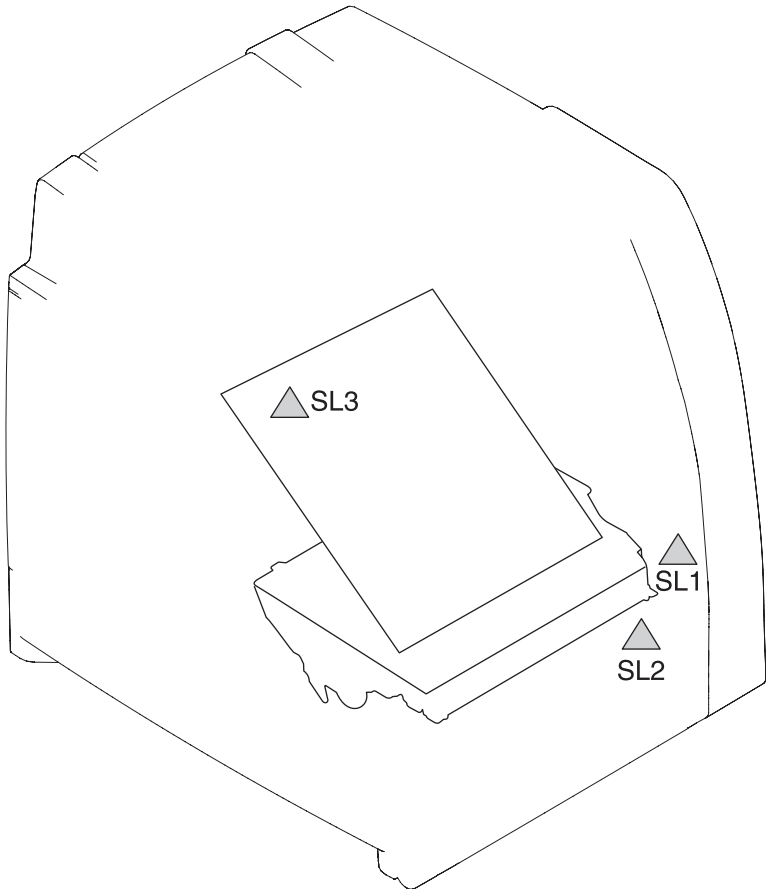


Figure 7-29 Location of solenoids

Table 7-44 Solenoids

Name	Function
SL1	Multipurpose tray pickup solenoid
SL2	Paper tray pickup solenoid
SL3	ETB alienation solenoid

Motors and fans

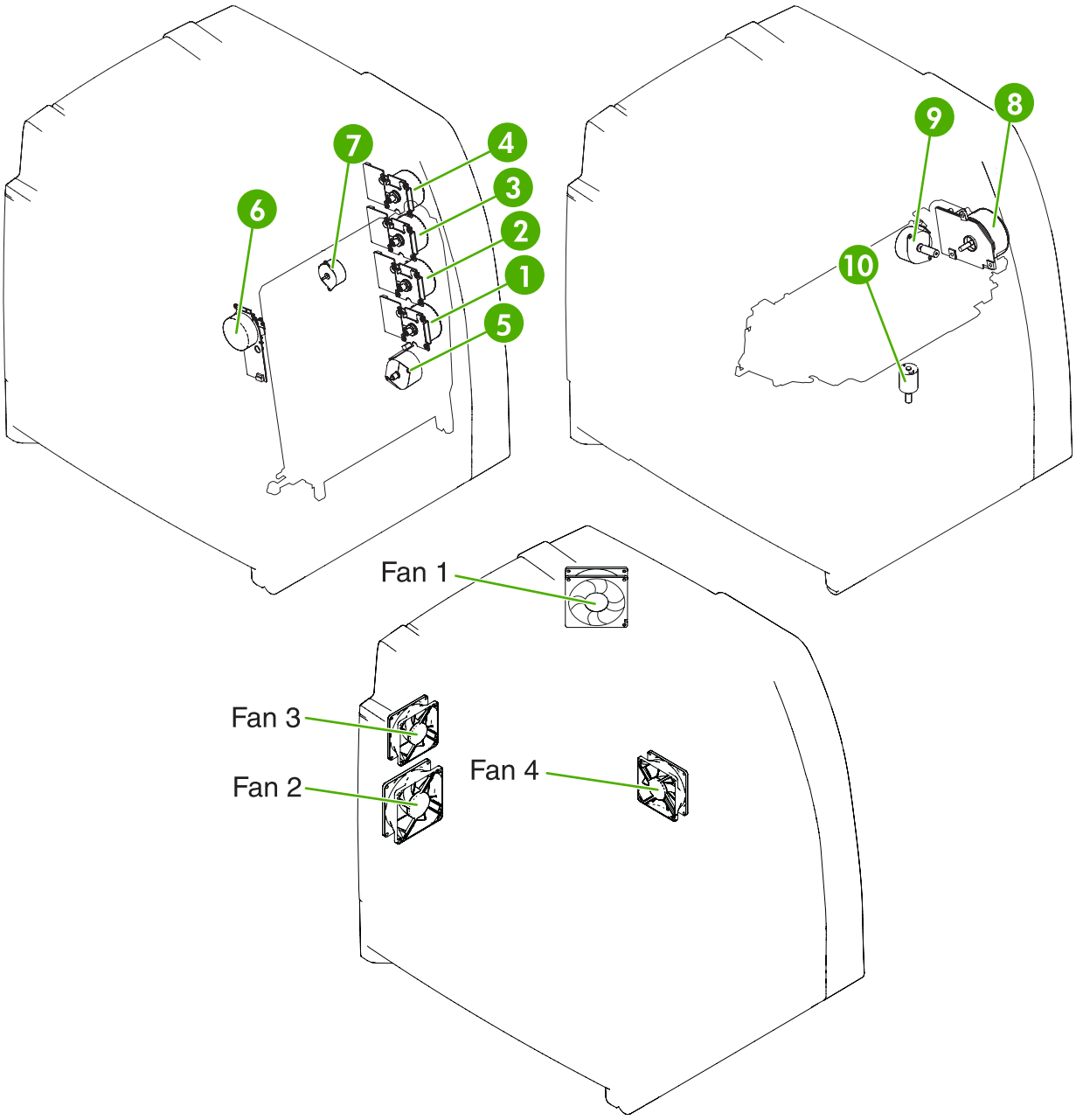


Figure 7-30 Location of motors and fans

Table 7-45 Motors and fans

Name	Function
1	Yellow drum motor
2	Cyan drum motor
3	Magenta drum motor
4	Black drum motor

Table 7-45 Motors and fans (continued)

Name	Function
5	Paper pickup motor
6	ETB motor
7	Developing disengaging motor
8	Fuser motor
9	Fuser pressure release motor
10	Lifter motor
Fan 1	Upper exhaust fan
Fan 2	Cartridge fan
Fan 3	Delivery fan
Fan 4	Power supply fan

PCBs

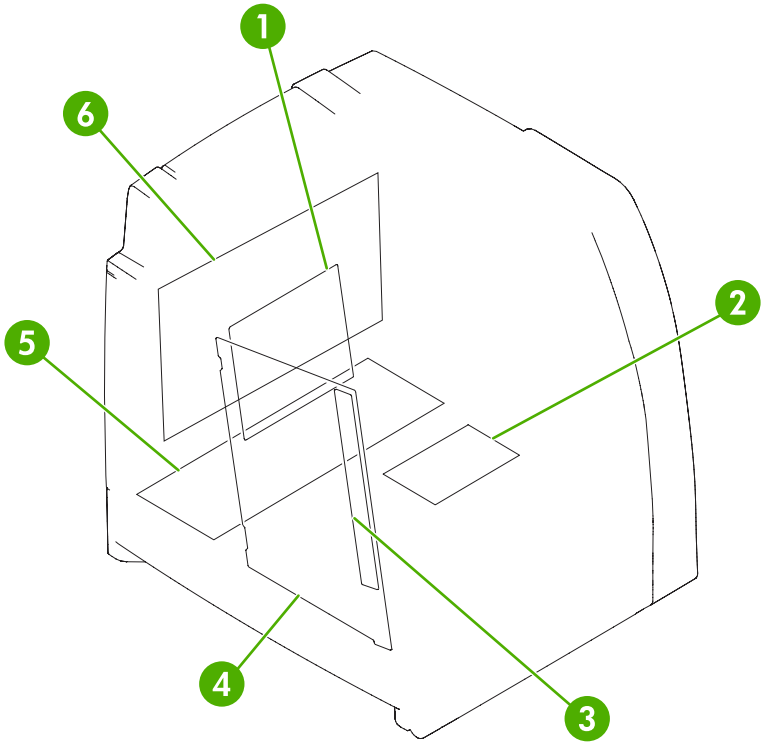


Figure 7-31 PCB locations

1	DC controller PCB
2	Memory controller PCB
3	Toner sensor PCB
4	High-voltage power supply PCB

5	Low-voltage power supply PCB
6	Formatter PCB

DC controller PCB

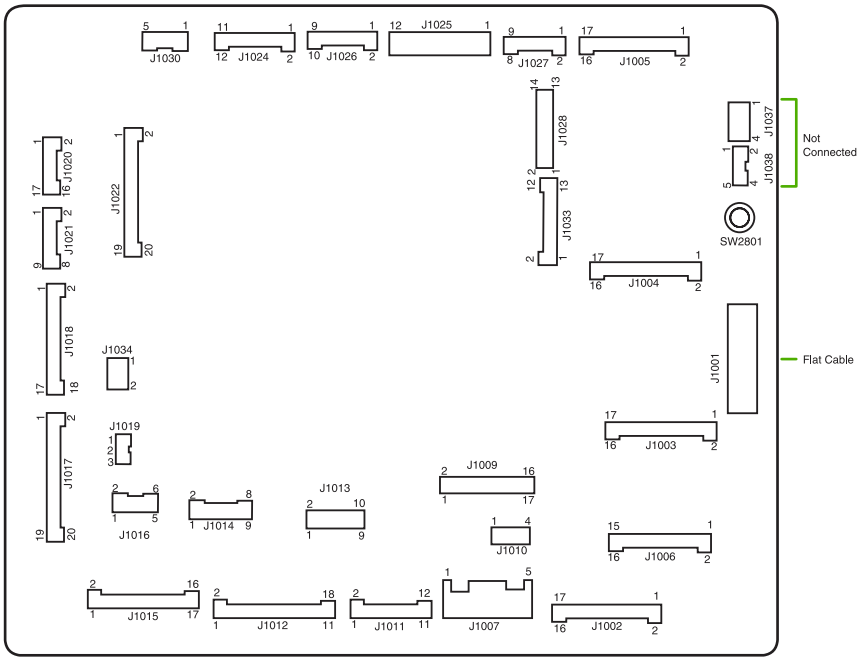


Figure 7-32 Location of DC controller PCB components

Connectors

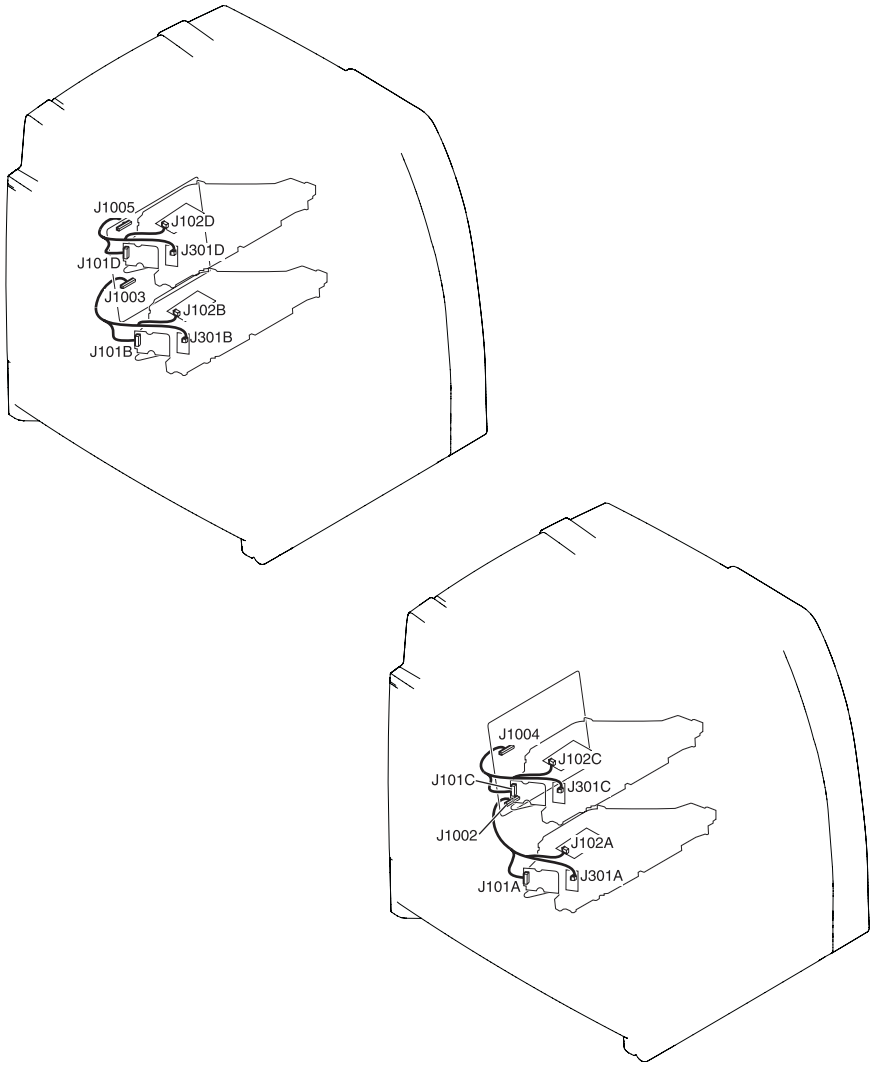


Figure 7-33 Location of connectors (1 of 7)

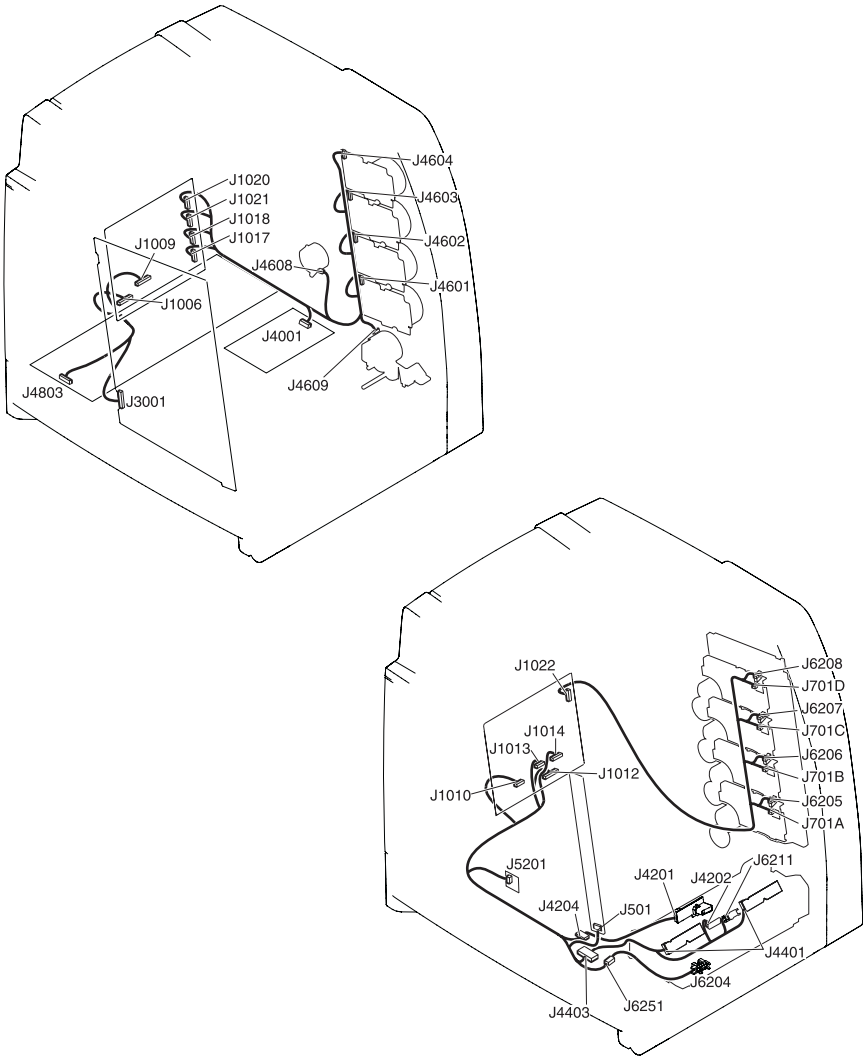


Figure 7-34 Location of connectors (2 of 7)

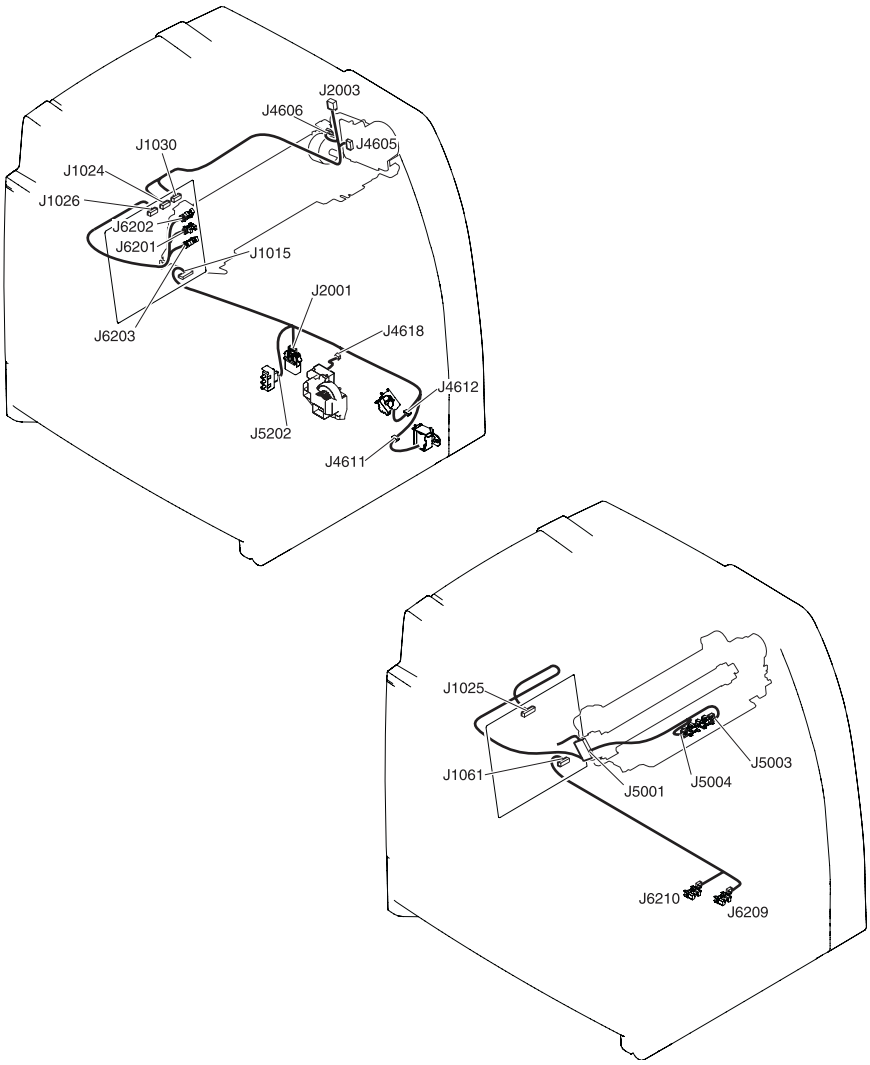


Figure 7-35 Location of connectors (3 of 7)

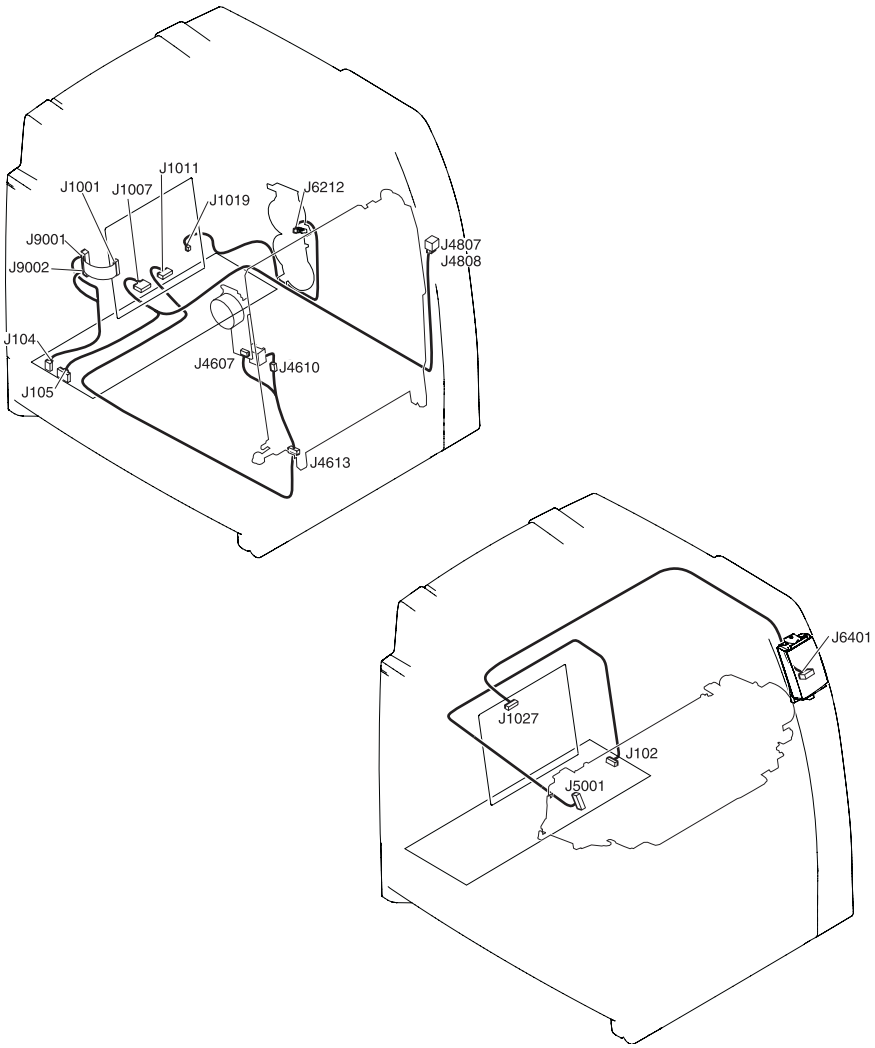


Figure 7-36 Location of connectors (4 of 7)

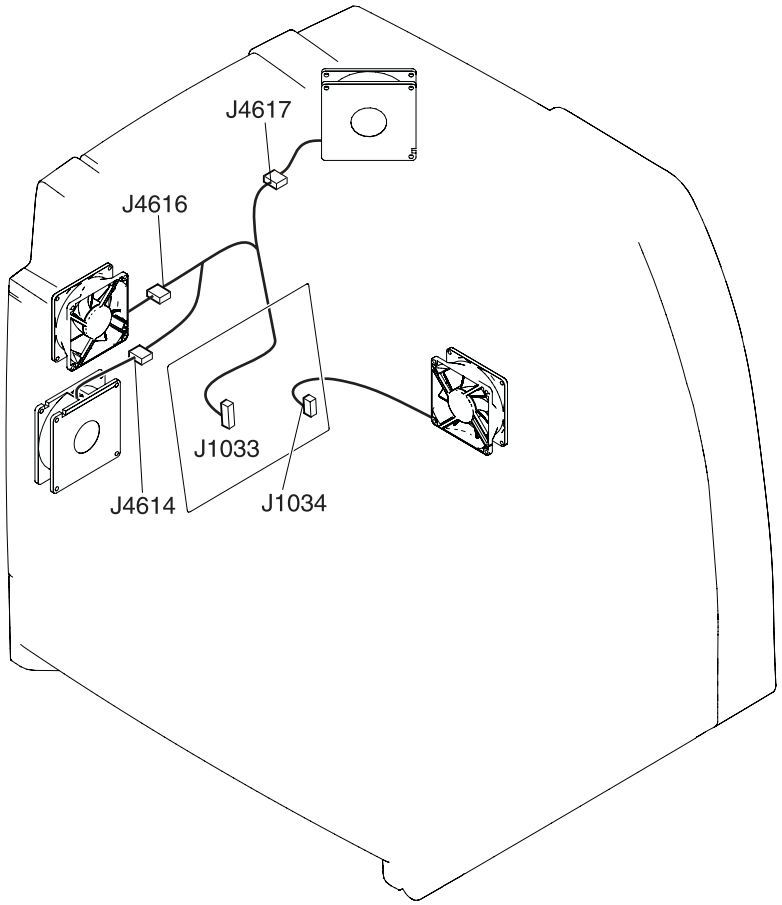


Figure 7-37 Location of connectors (5 of 7)

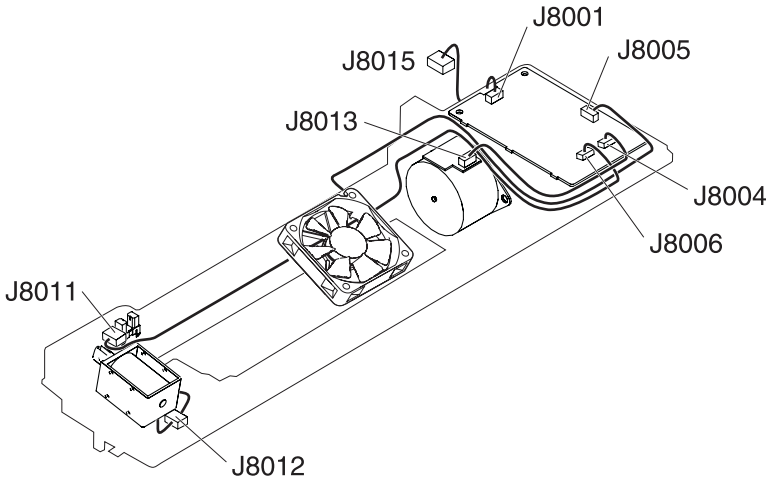


Figure 7-38 Location of connectors (6 of 7)

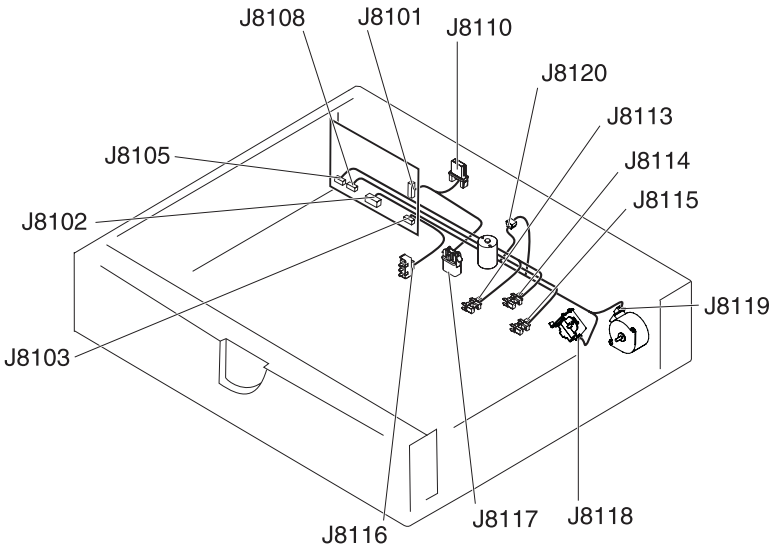


Figure 7-39 Location of connectors (7 of 7)

General timing chart

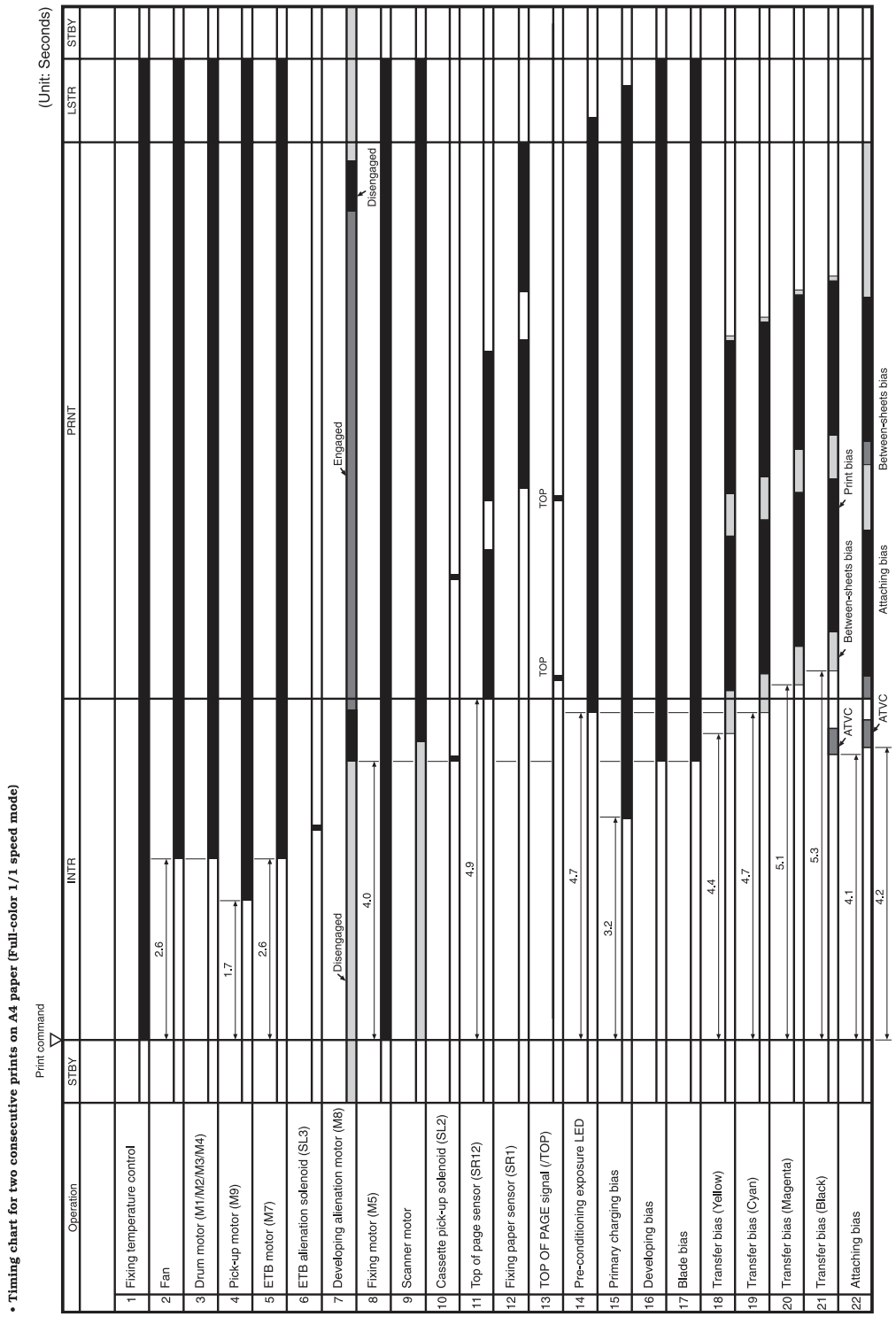


Figure 7-40 General timing chart

General circuit diagrams

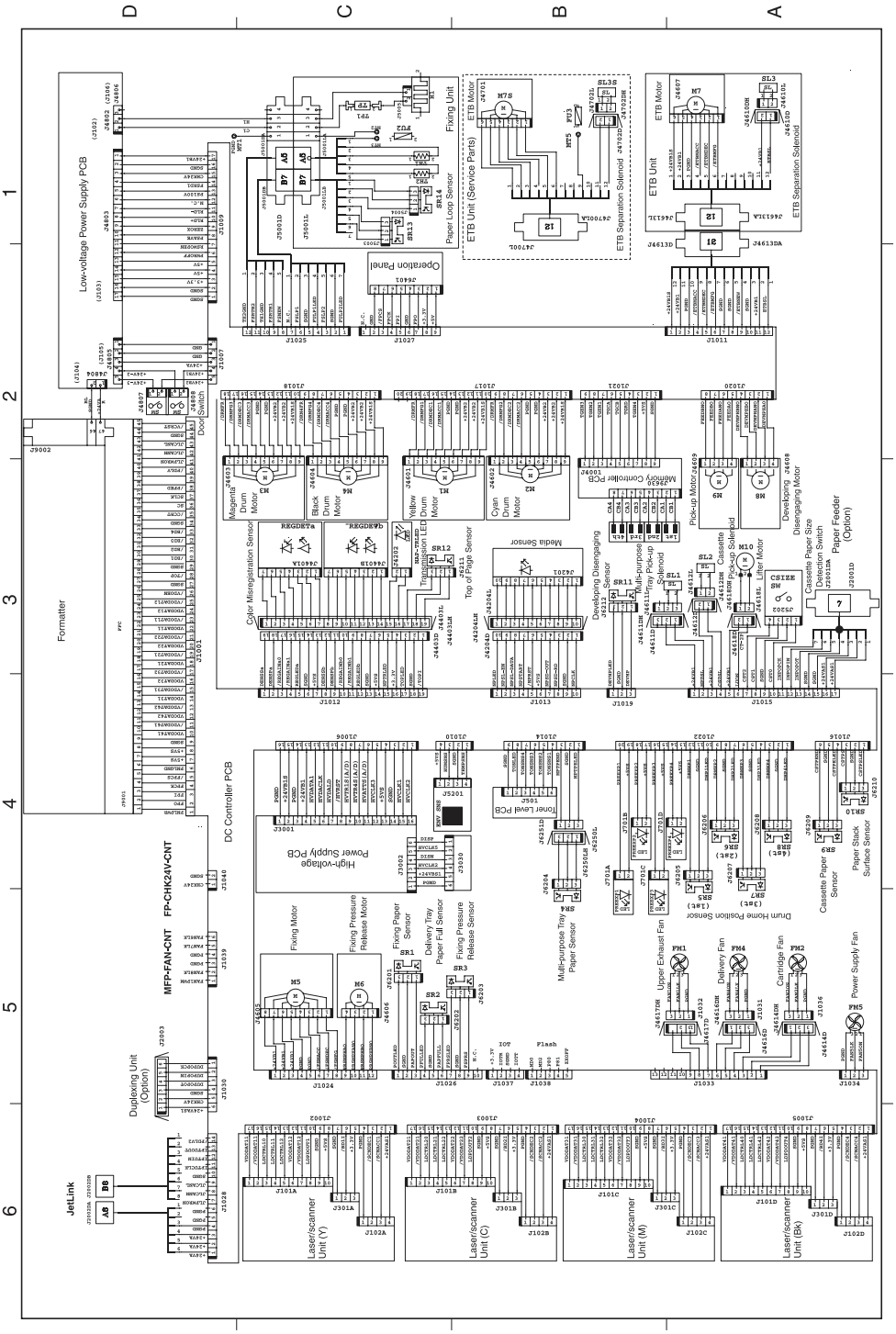


Figure 7-41 General circuit diagram

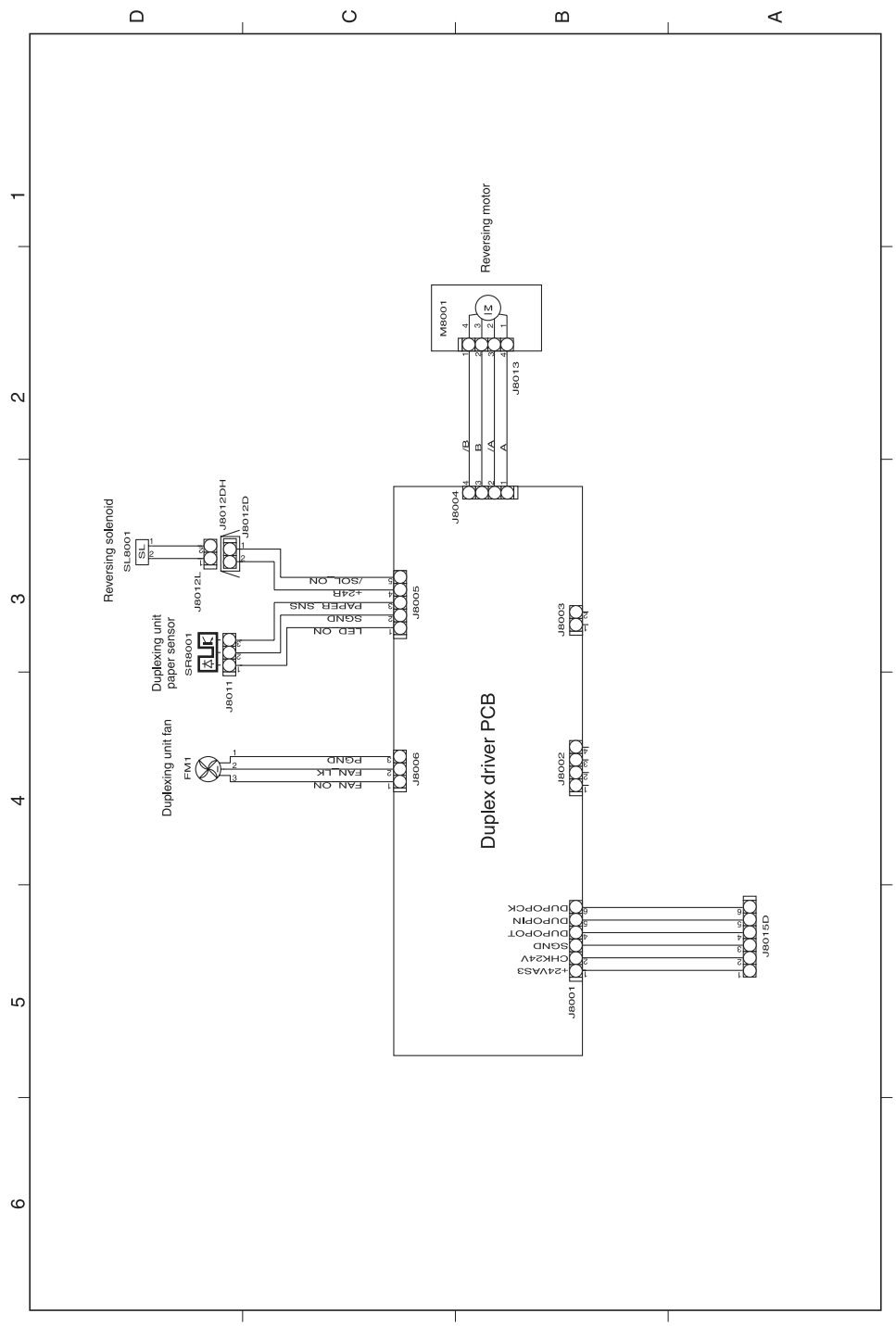


Figure 7-42 General circuit diagram (duplex)

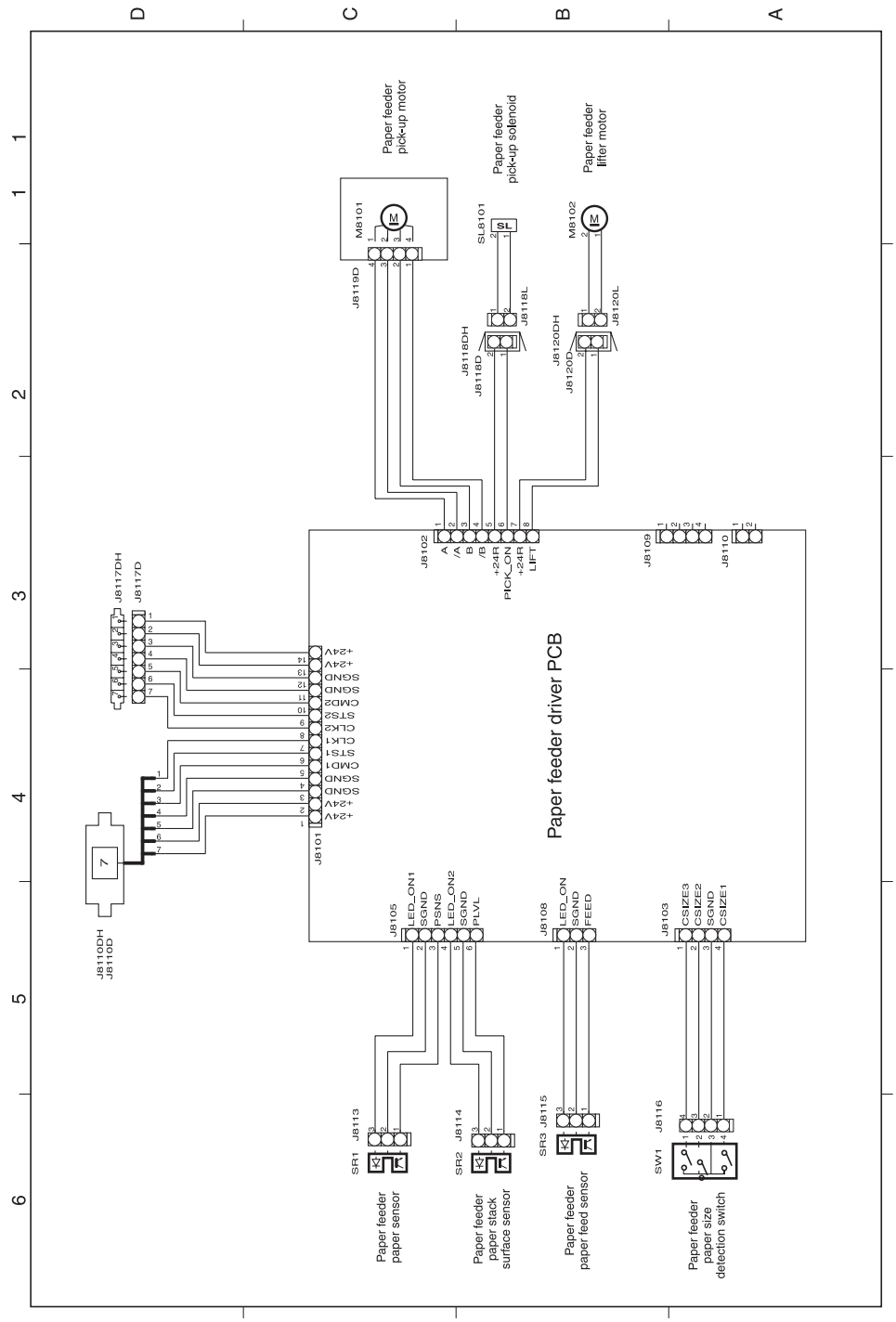


Figure 7-43 General circuit diagram (500-sheet feeder)

8 Parts and diagrams

This chapter contains information about the following topics:

- Introduction
- Ordering parts and supplies
- User-replaceable parts
- Assembly locations
- External covers and panels
- Internal components
- Accessories
- Alphabetical parts list
- Numerical parts list

Introduction

The figures in this chapter show the major subassemblies in the printer and their component parts. A parts list table follows each exploded assembly diagram. Each table lists the item number, the associated part number, and the description of each 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.

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 102. 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 Table 8-1 Technical support Web sites and related documentation on page 563.

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
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		
J7934A	J7934-61001	**4700 models:**HP Jetdirect 620n connectivity card
Q7501A		Printer cabinet/stand

Table 8-2 Supplies and accessories (continued)

Product number	Part number	Description
Q7003A	Q7003-67008	**4700 models:** Stapler/stacker
Q7499A	Q7499-67901	Optional 500-sheet paper feeder and tray assembly
Cables		
C2946A		**4700 models:** 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
C6518A		2-meter USB cable
C6520A		3-meter 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		
J6073A	J6073-69011	**4700 models:** EIO internal hard drive
	Q7495-67902	**4700 models:** Hard drive inside drive assembly
Q2630A	Q7721-67951	128 MB memory DDR
Q2631A	Q7722-67951	256 MB memory DDR
	Q7723-67951	512 MB memory DDR
	Q7725-67901	**4700 models:** Firmware Compact flash
	Q7725-67942	**CP4005 models:** Firmware Compact flash
Control panel labels		
	Q7491-00013	English label
	Q7491-00015	French label
	Q7491-00016	German label
	Q7491-00017	Italian label
	Q7491-00018	Spanish label

Table 8-2 Supplies and accessories (continued)

Product number	Part number	Description
	Q7491-00019	Danish label
	Q7491-00020	Dutch label
	Q7491-00021	Finnish label
	Q7491-00022	Norwegian label
	Q7491-00014	Portuguese label
	Q7491-00023	Swedish label
	Q7491-00024	Czech label
	Q7491-00025	Hungarian label
	Q7491-00026	Polish label
	Q7491-00027	Russian label
	Q7491-00028	Turkish label
	Q7491-00029	Arabic label
	Q7491-00030	Greek label
	Q7491-00031	Hebrew label
	Q7491-00032	Japanese label
	Q7491-00033	Korean label
	Q7491-00036	Thai label
	Q7491-00034	Simplified Chinese label
	Q7491-00035	Traditional Chinese label
Reference materials		
	5963-7863	*HP LaserJet Printer Family Paper Specifications Guide*
	5021-0330	PCL/PJL Technical Reference Package
	CB503-90929	HP Color LaserJet 4700/CP4005 series printer service manual (English)
Supplies		
Q5950A	Q5950-67901	**4700 models:** Black print cartridge
Q5951A	Q5951-67901	**4700 models:** Cyan print cartridge
Q5952A	Q5952-67901	**4700 models:** Yellow print cartridge
Q5953A	Q5953-67901	**4700 models:** Magenta print cartridge
CB400A	CB400-67901	**CP4005 models:** Black print cartridge
CB401A	CB401-67901	**CP4005 models:** Cyan print cartridge
CB402A	CB402-67901	**CP4005 models:** Yellow print cartridge
CB403A	CB403-67901	**CP4005 models:** Magenta print cartridge
Q7504A	RM1-3161-080CN	ETB kit

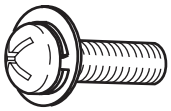
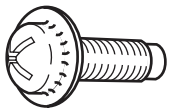
Table 8-2 Supplies and accessories (continued)

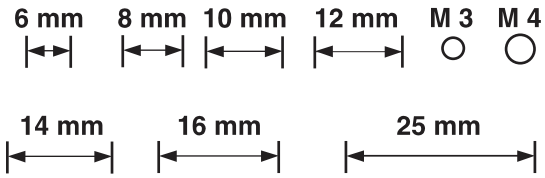
Product number	Part number	Description
Q7502A	RM1-3131-060CN	Image fuser kit (110 volt)
Q7503A	RM1-3146-060CN	Image fuser kit (220 volt)
C8091A	C8085-60541	**4700 models:** Staple cartridge
	Q7491-67903	3 roller kit (pickup roller, separation roller, feed roller)

NOTE The only difference between the print cartridges listed above is that the Europe-only print cartridges have different languages on the instruction sheet inside the box.

Common fasteners

Table 8-3 Common fasteners

Illustration	Description	Size	Part number	Uses
	Screw, machine with washer	M3x6	XA9-1418-000CN	To hold plastic to metal, (example: the skins)
	Screw, self tapping	M3x6		To hold plastic to plastic
	Screw, truss head	M3x6		Sheet metal to sheet metal, (example: formatter case)
	Retaining Ring (e-type)			To hold gears into place



User-replaceable parts

The following table lists user-replaceable parts for the HP Color LaserJet 4700 series printer.

Table 8-4 User-replaceable parts

Description	Part number
Formatter assembly base (exchange)	**4700 models:** Q7491-67908
Formatter assembly base (new)	**4700 models:** Q7491-67901
Formatter 4700n, 4700dn, 4700dtn (new)	**4700 models:** Q7492-67902
Formatter 4700n, 4700dn, 4700dtn (exchange)	**4700 models:** Q7492-69002
Formatter 4700ph+ (new)	**4700 models:** Q7495-67903
Formatter 4700ph+ (exchange)	**4700 models:** Q7495-69002
Formatter CP4005n (new)	**CP4005 models:** CB503-67901
Formatter CP4005n (exchange)	**CP4005 models:** CB503-69001
Firmware compact flash	**4700 models:** Q7725-67901
Firmware compact flash	**CP4005 models:** Q7725–67942
Hard drive inside drive assembly	**4700 models:** Q7495-67902
EIO disk drive	**4700 models:** J6073-69011
HP Jetdirect card	**4700 models:** J7934-61001
128 MB DDR memory	Q7721-67951
256 MB DDR memory	Q7722-67951
512 MB memory	Q7723-67951
Print cartridge (black)	**4700 models:** Q5950-67901
Print cartridge (magenta)	**4700 models:** Q5953-67901
Print cartridge (yellow)	**4700 models:** Q5952-67901
Print cartridge (cyan)	**4700 models:** Q5951-67901
Black print cartridge	**CP4005 models:** CB400-67901
Cyan print cartridge	**CP4005 models:**CB401-67901
Yellow print cartridge	**CP4005 models:**CB402-67901
Magenta print cartridge	**CP4005 models:**CB403-67901
English label	Q7491-00013
French label	Q7491-00015
German label	Q7491-00016
Italian label	Q7491-00017
Spanish label	Q7491-00018
Danish label	Q7491-00019

Table 8-4 User-replaceable parts (continued)

Description	Part number
Dutch label	Q7491-00020
Finnish label	Q7491-00021
Norwegian label	Q7491-00022
Portuguese label	Q7491-00014
Swedish label	Q7491-00023
Czech label	Q7491-00024
Hungarian label	Q7491-00025
Polish label	Q7491-00026
Russian label	Q7491-00027
Turkish label	Q7491-00028
Arabic label	Q7491-00029
Greek label	Q7491-00030
Hebrew label	Q7491-00031
Japanese label	Q7491-00032
Korean label	Q7491-00033
Thai label	Q7491-00036
Simplified Chinese label	Q7491-00034
Traditional Chinese label	Q7491-00035
Fuser unit 100 V	RM1-3131-060CN
Fuser unit 200 V	RM1-3146-060CN
Duplexing tray	RC1-5043-020CN
Paper feeder/Tray assembly	Q7499-67901
Paper pickup roller assembly	RM1-0036-020CN
Paper feed roller assembly (quantity 2)	RM1-0037-020CN
Roller kit (3)	Q7491-67903
Paper tray Tray 2	RM1-1693-000CN
Optional paper tray	RM1-1764-020CN
ETB assembly	RM1-3161-080CN
Limiter, torque	RC1-3293-000CN
Stapler/stacker assembly	**4700 models:** Q7003-67008
Staple cartridge	**4700 models:** C8085-60541
Staple cartridge cover, left	**4700 models:** Q7003-67005
Stapler output tray	**4700 models:** Q7003-67006

Assembly locations

The following illustrations and parts tables list the field replaceable units (FRU) for the HP Color LaserJet 4700 series printers. At the end of this chapter are alphabetical and numerical master parts lists.

Major components

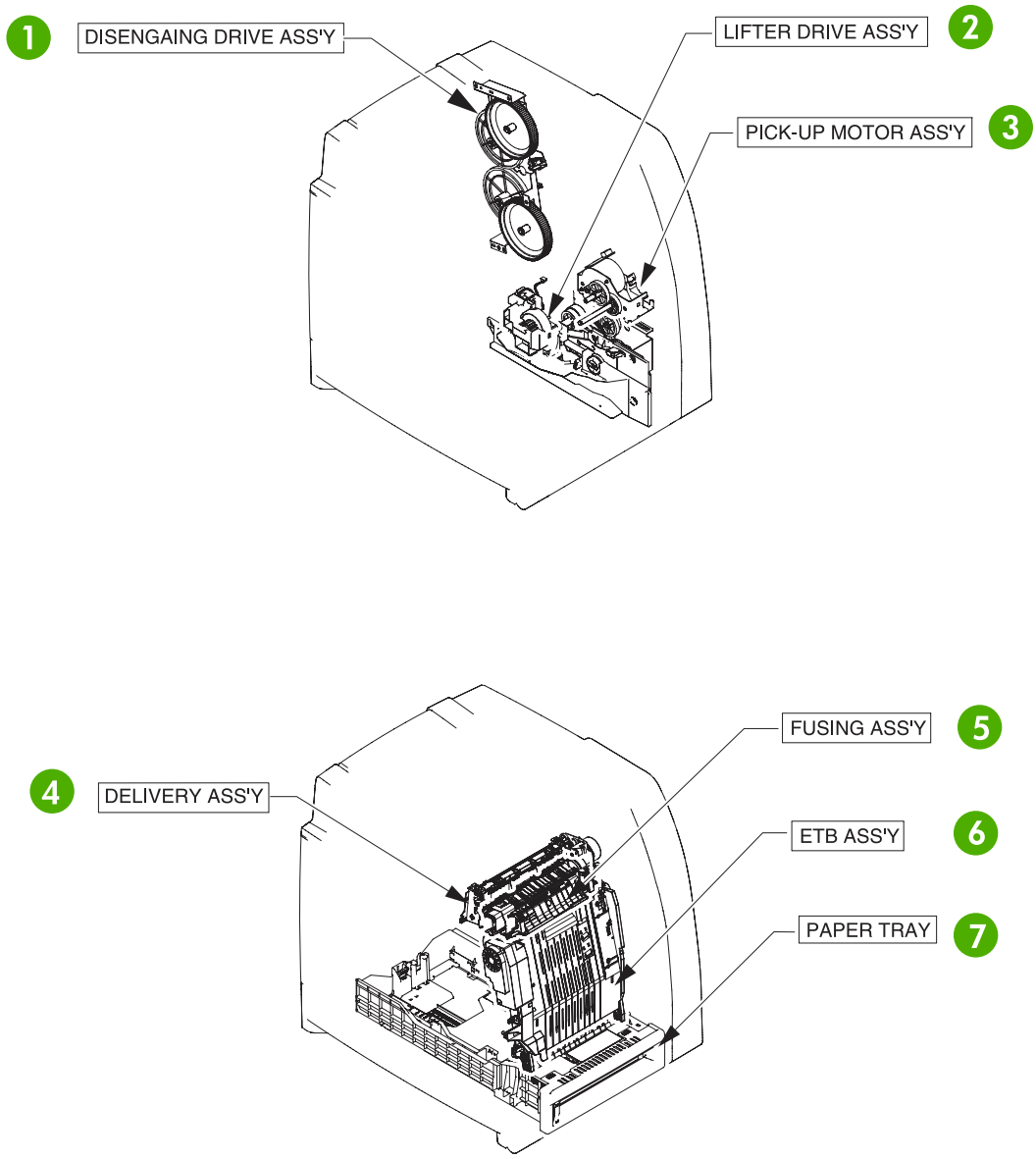


Figure 8-1 HP Color LaserJet 4700 series printer major components

Reference number	Description	Part number
1	Disengaging drive assembly	RM1-1717-000CN
2	Lifter drive assembly	RM1-1750-000CN
3	Pickup motor assembly	RM1-1666-000CN

Reference number	Description	Part number
4	Delivery assembly 220 V	RM1-1737-030CN
4	Delivery assembly 110 V	RM1-1730-000CN
5	Fuser assembly 110 V	RM1-3131-060CN
5	Fuser assembly 220 V	RM1-3146-060CN
6	ETB assembly	RM1-3161-080CN
7	Paper tray (Tray 2)	RM1-1693-000CN

External covers and panels

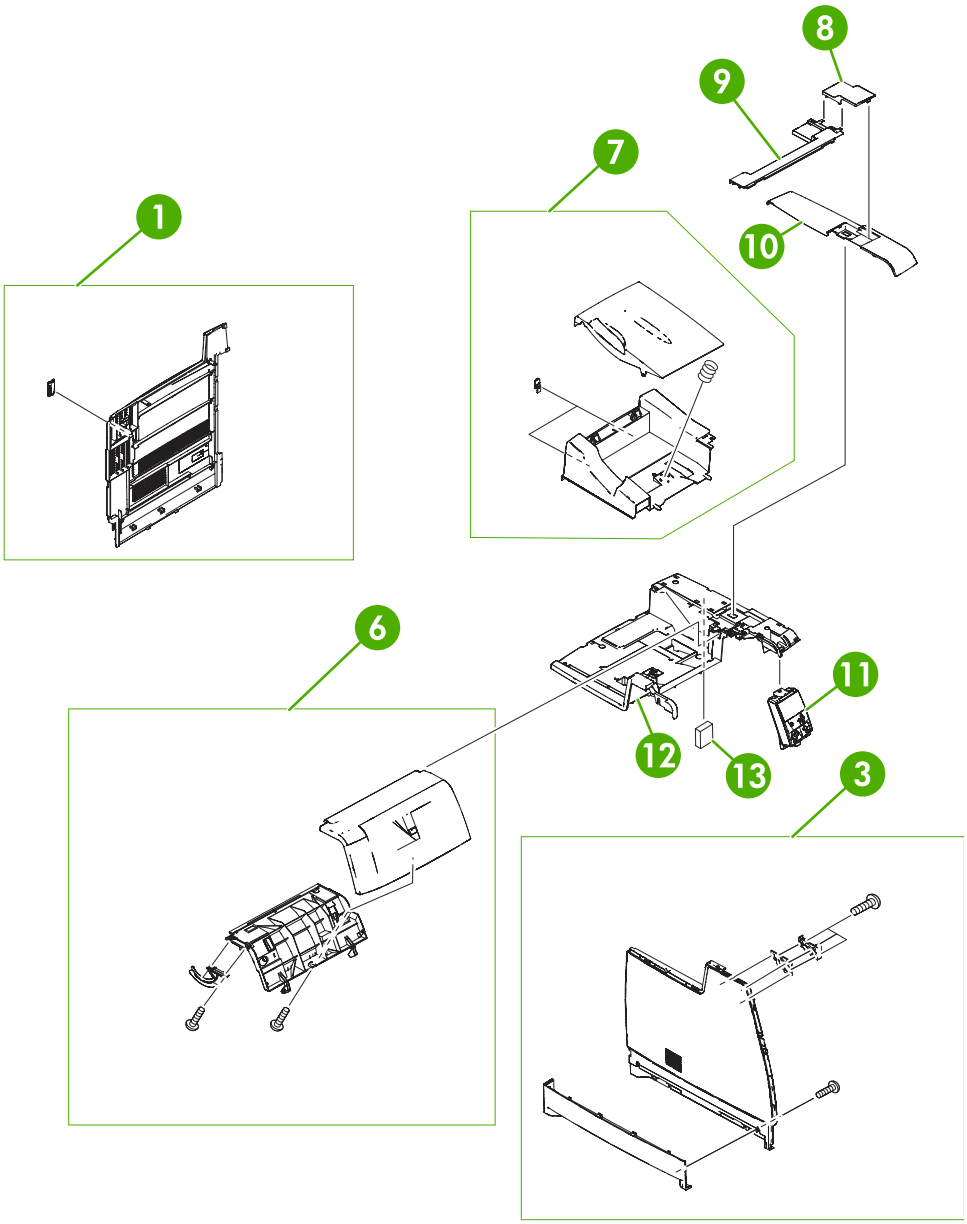


Figure 8-2 External covers and panels (1 of 2)

Table 8-5 External covers and panels (1 of 2)

Ref	Description	Part number	Qty
1	Rear cover assembly	RM1-1747-000CN	1
3	Left cover assembly	RM1-1739-000CN	1
6	Front top cover assembly	RM1-1745-000CN	1
7	Face-down tray assembly	RM1-1746-000CN	1
8	Duplex cover	RC1-4856-000CN	1
9	Duplex cover	RC1-4863-000CN	1
10	Right top cover	RC1-4855-020CN	1
11	Control panel assembly	RM1-1617-000CN	1
12	Top cover	RC1-4854-030CN	1
13	Air filter	RC1-4433-000CN	1

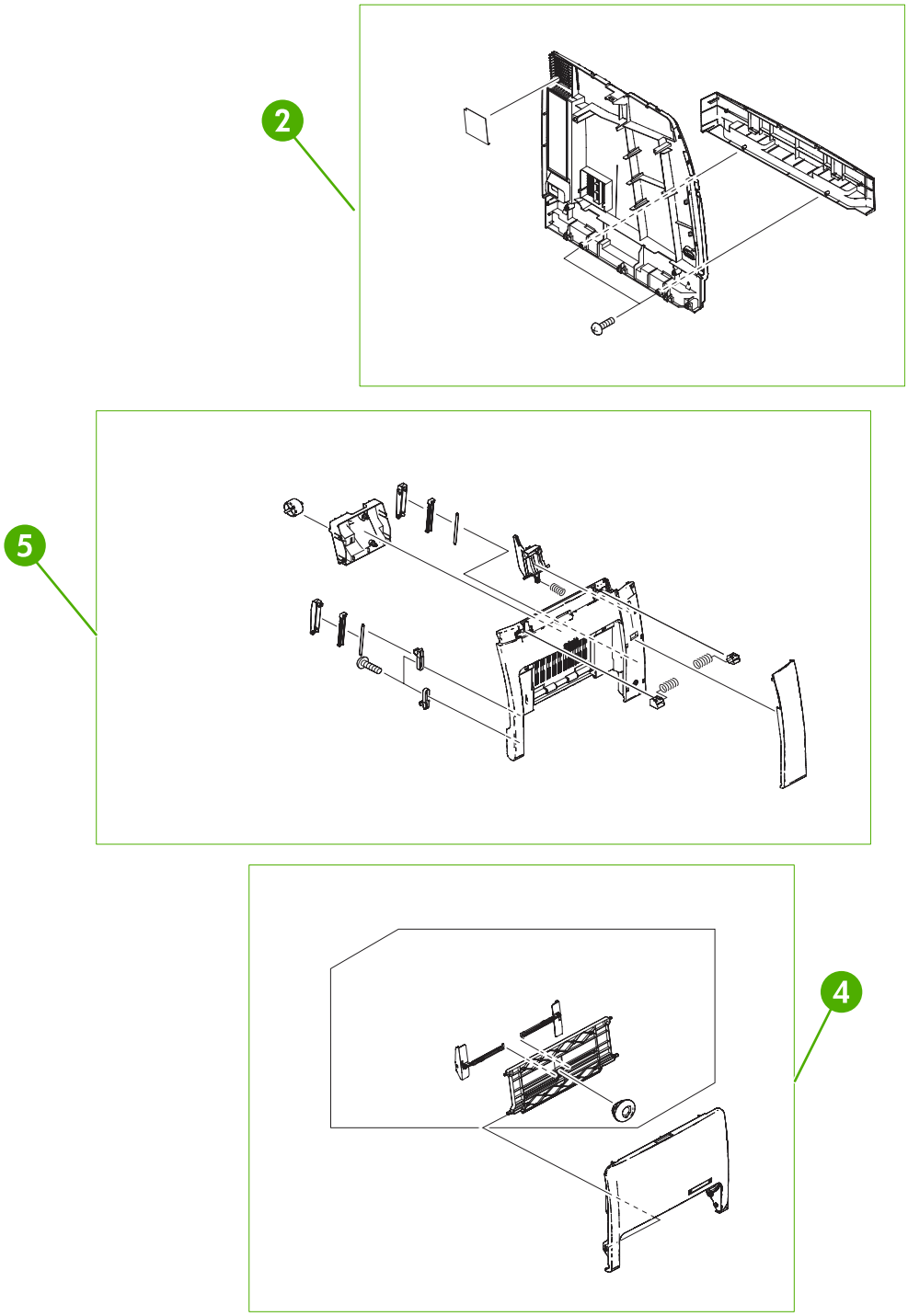


Figure 8-3 External covers and panels (2 of 2)

Table 8-6 External covers and panels (2 of 2)

Ref	Description	Part number	Qty
2	Right cover assembly	RM1-1738-020CN	1
4	Multipurpose tray (Tray 1) assembly	RM1-1740-020CN	1
5	Front lower cover assembly	RM1-1742-000CN	1

Internal components

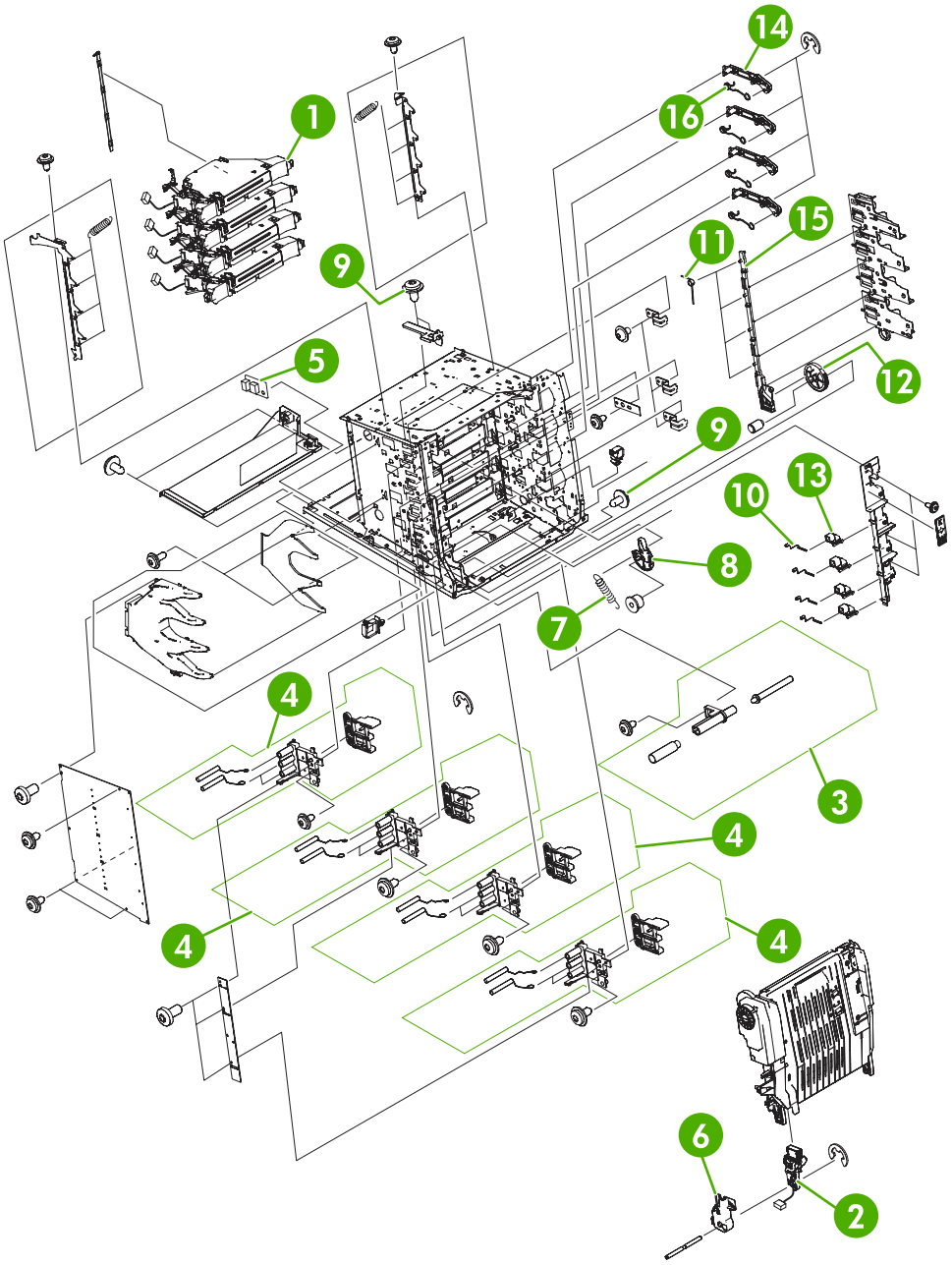


Figure 8-4 Internal components (1 of 6)

Table 8-7 Internal components (1 of 6)

Ref	Description	Part number	Qty
1	Laser/scanner assembly	RM1-1591-030CN	4
2	Connector guide assembly	RM1-1675-000CN	1
3	Attraction contact assembly	RM1-1676-000CN	1
4	H.V. terminal mount assembly	RM1-1677-000CN	4
5	Environment/humidity sensor unit	WP2-5187-000CN	1
6	Left ETB cap	RC1-4386-000CN	1
7	Tension spring	RC1-4423-000CN	1
8	Pressure plate	RC1-4397-000CN	1
9	Screw M3x6	XA9-1418-000CN	2
10	Compression spring	RC1-4396-000CN	4
11	Tension spring	RC1-4393-000CN	4
12	Gear, 70T	RC1-4392-000CN	1
13	High-voltage terminal block	RC1-4394-000CN	4
14	Cartridge pressure, left lever	RC1-4387-000CN	4
15	Cartridge interlock, left plate	RC1-4385-000CN	1
16	Tension spring	RC1-4395-000CN	4

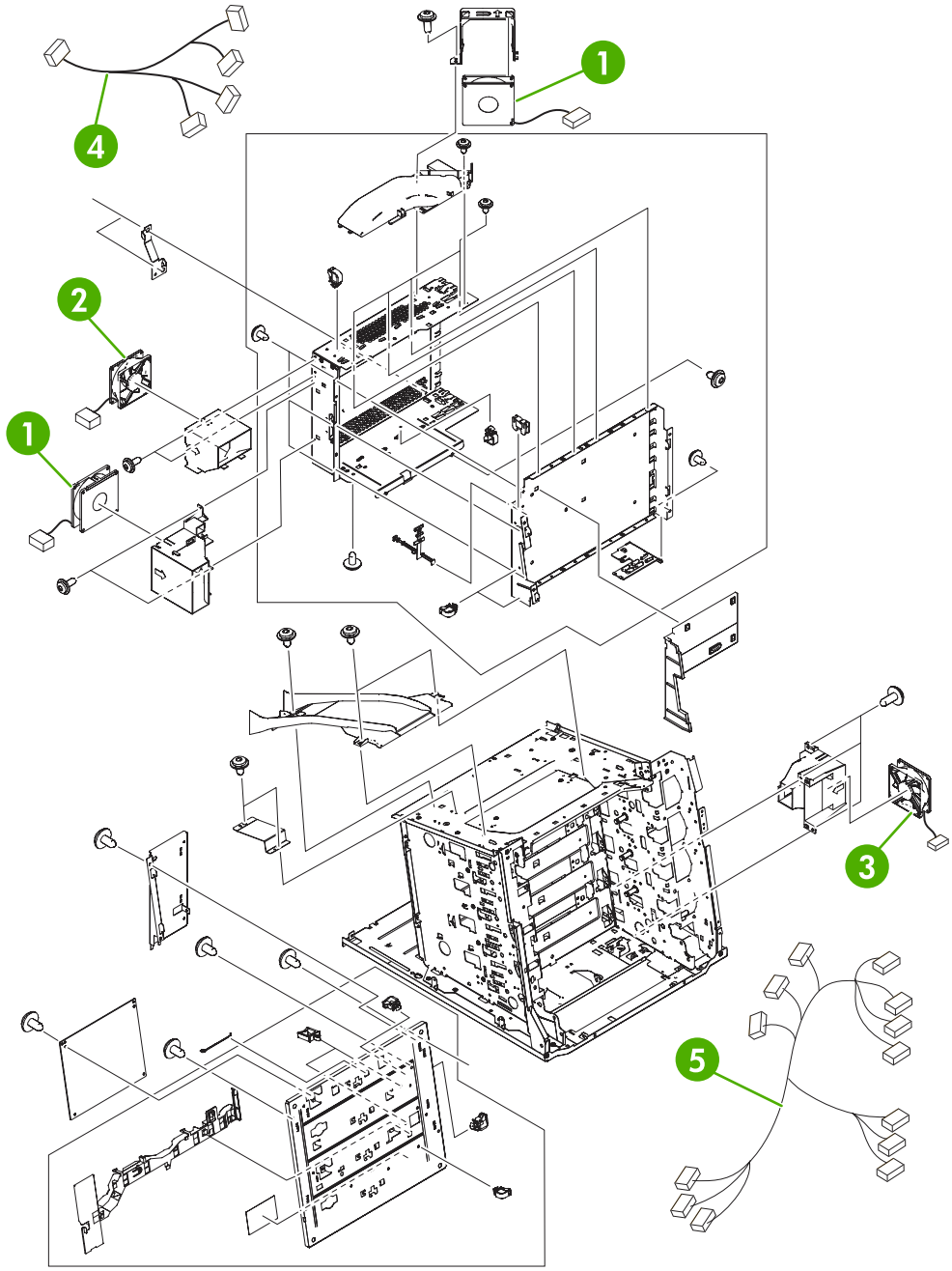


Figure 8-5 Internal components (2 of 6)

Table 8-8 Internal components (2 of 6)

Ref	Description	Part number	Qty
1	Upper exhaust fan/cartridge fan	RK2-0623-000CN	2
2	Delivery fan	RM1-1757-000CN	1
3	Power supply fan	RK2-0622-000CN	1
4	Fan cable assembly	RM1-1646-000CN	1
5	Misregistration sensor cable assembly	RM1-1629-000CN	1

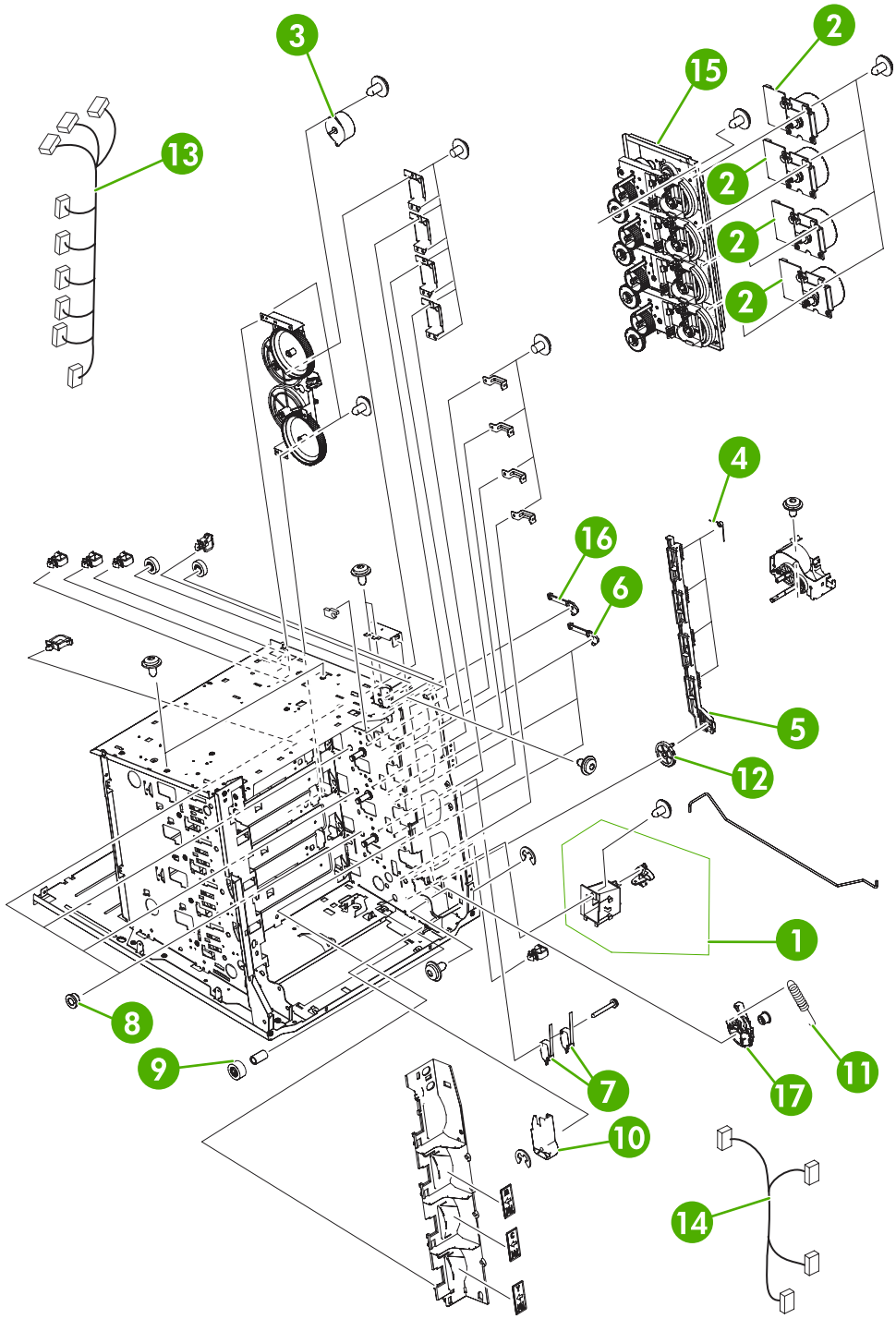


Figure 8-6 Internal components (3 of 6)

Table 8-9 Internal components (3 of 6)

Ref	Description	Part number	Qty
1	Power switch assembly	RM1-1671-000CN	1
2	Drum motor assembly	RM1-1659-000CN	4
3	DC stepping motor	RK2-0618-000CN	1
4	Tension spring	RC1-4357-000CN	4
5	Cartridge interlock, right plate	RC1-4354-000CN	1
6	Cartridge pressure, right lever	RC1-4353-000CN	3
7	Interlock switch	WC4-5242-000CN	2
8	Bushing	RC1-4325-000CN	4
9	Gear, 18T	RC1-4324-000CN	1
10	Right ETB cap	RC1-4352-000CN	1
11	Tension spring	RC1-4423-000CN	1
12	Gear, 70T	RC1-4356-000CN	1
13	Drum motor cable assembly	RM1-1628-000CN	1
14	Door switch cable assembly	RM1-1643-000CN	1
15	Main drive assembly	RM1-1716-000CN	1
16	Cartridge pressure, top right lever	RL1-0639-000CN	1
17	Pressure plate, right	RC1-4360-000CN	1

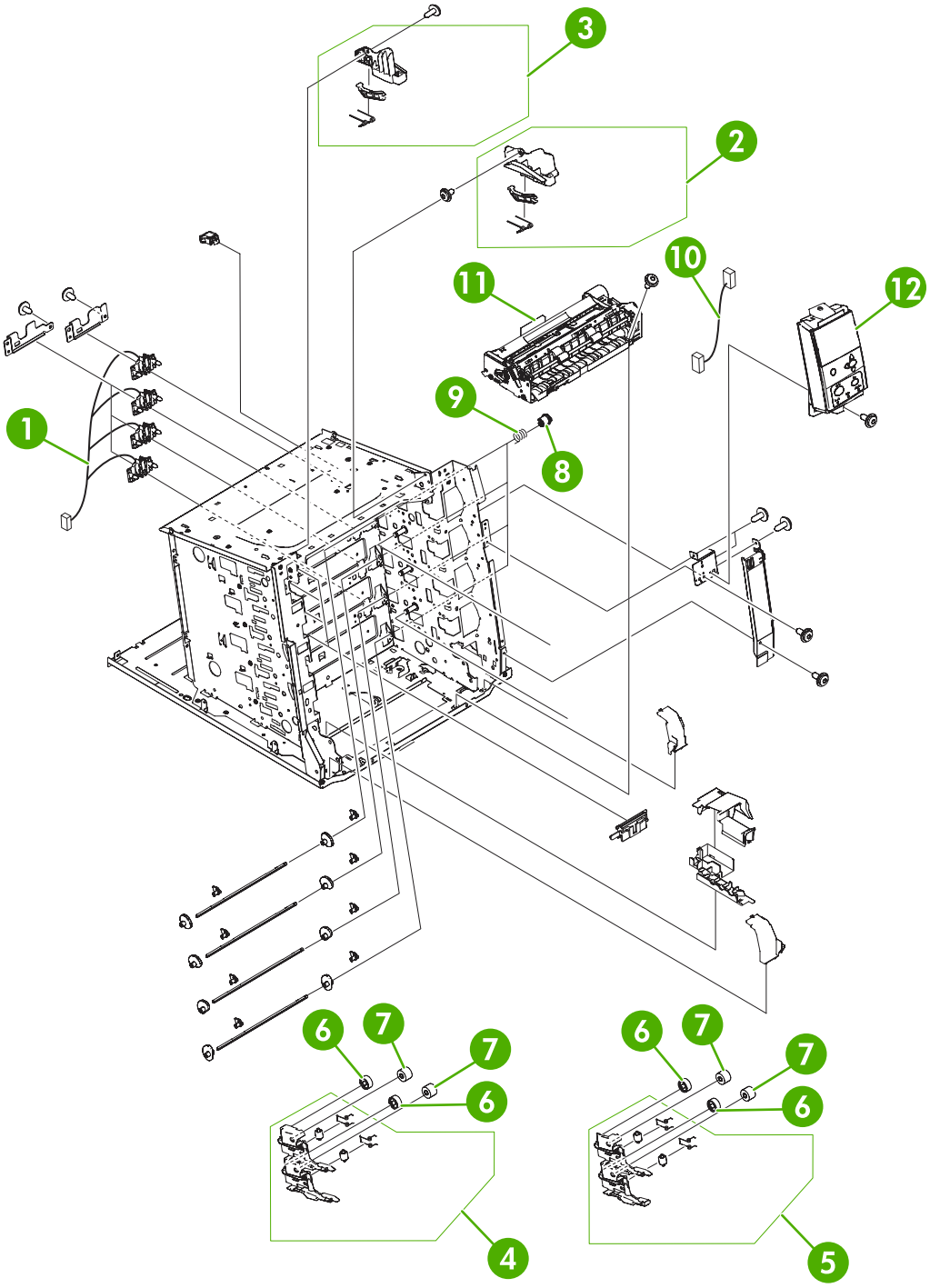


Figure 8-7 Internal components (4 of 6)

Table 8-10 Internal components (4 of 6)

Ref	Description	Part number	Qty
1	Memory contact cable	RM1-1653-000CN	1
2	Right ETB lever assembly	RM1-1662-000CN	1
3	Left ETB lever assembly	RM1-1663-000CN	1
4	Cartridge guide assembly, right upper	RM1-1668-000CN	1
5	Cartridge guide assembly, right lower	RM1-1669-000CN	1
6	Gear, 30T	RC1-4309-000CN	4
7	Gear, 29T	RC1-4310-000CN	4
8	Development estrangement coupling	RC1-4382-000CN	4
9	Compression spring	RC1-4383-000CN	4
10	Control panel cable	RM1-1640-000CN	1
11	Paper feed assembly	RM1-1756-000CN	1
12	Control panel assembly	RM1-1617-000CN	1

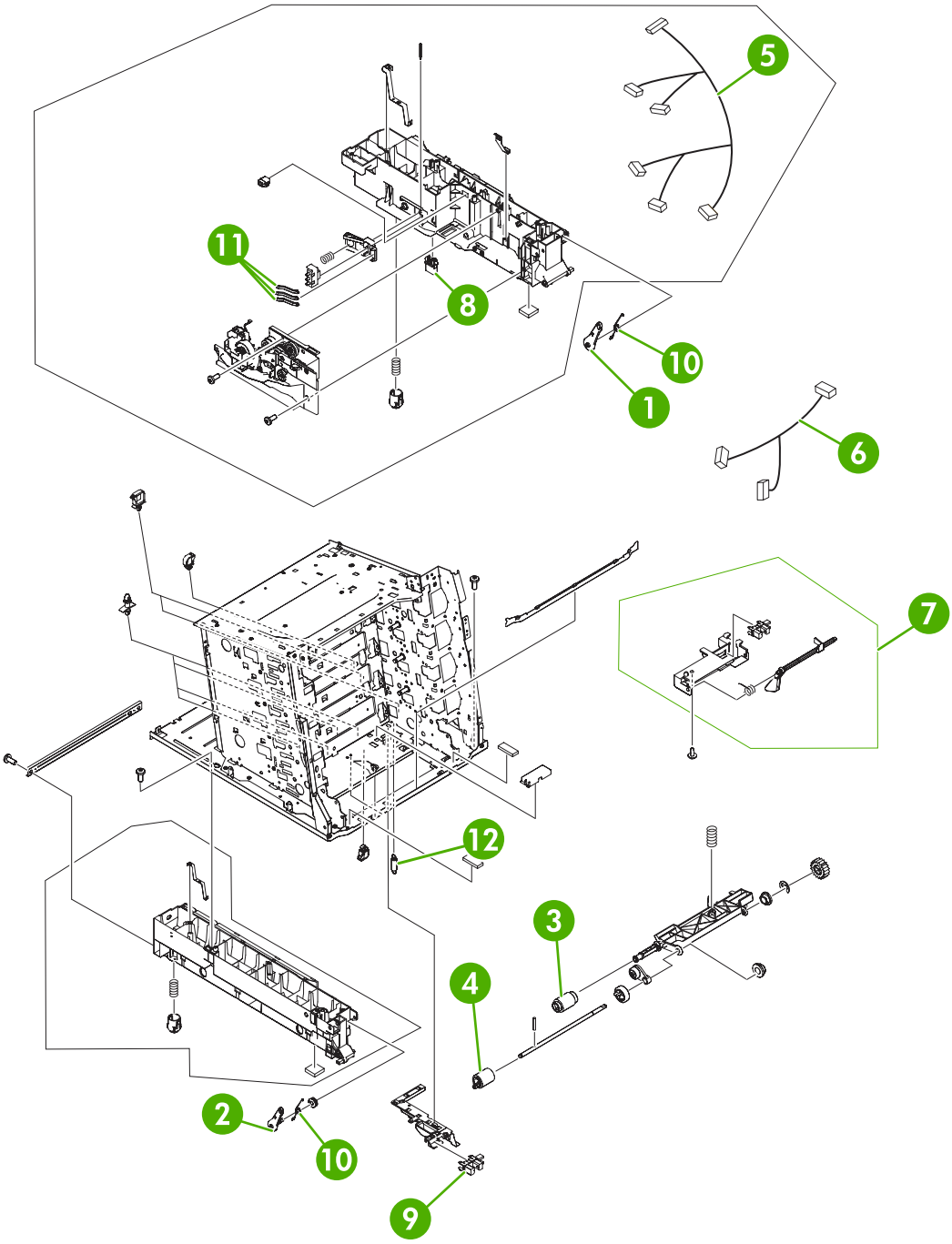


Figure 8-8 Internal components (5 of 6)

Table 8-11 Internal components (5 of 6)

Ref	Description	Part number	Qty
1	M.P. link, right arm	RC1-4439-000CN	1
2	M.P. link, left arm	RC1-4441-000CN	1
3	Paper pickup roller assembly	RM1-0036-020CN	1
4	Paper feed roller assembly	RM1-0037-020CN	1
5	Pickup cable assembly	RM1-1633-000CN	1
6	Paper sensor cable assembly	RM1-1641-000CN	1
7	Paper detection assembly	RM1-1692-000CN	1
8	Drawer connector	VS1-7258-007CN	1
9	Photo interrupter	WG8-5696-000CN	1
10	Torsion spring	RC1-4440-000CN	2
11	Size detect lever	RC1-0503-000CN	3
12	Lifter drive assembly tension spring	RC1-0198-000CN	3

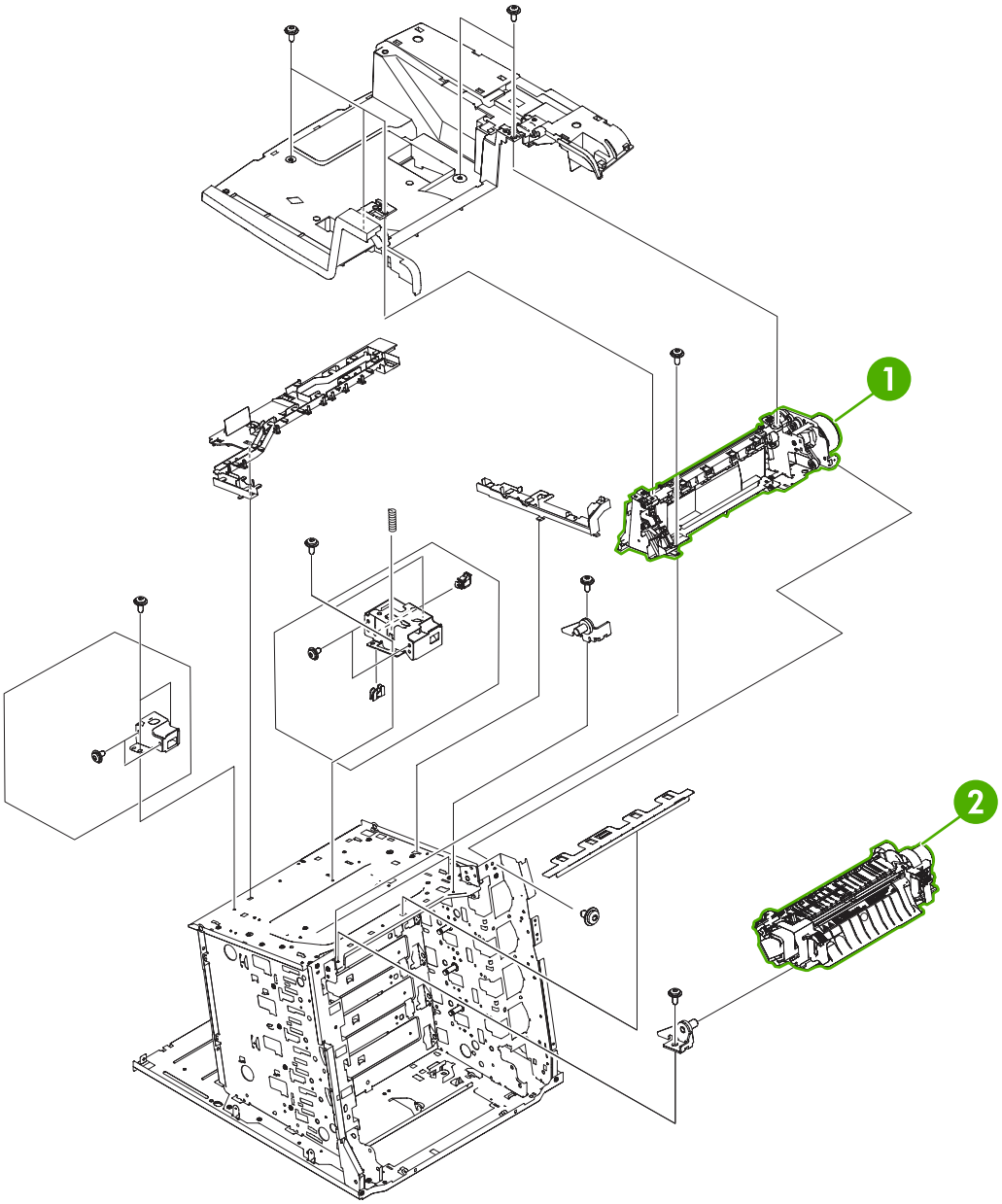


Figure 8-9 Internal components (6 of 6)

Table 8-12 Internal components (6 of 6)

Ref	Description	Part number	Qty
1	Delivery assembly 110 V	RM1-1730-030CN	1
1	Delivery assembly 220 V	RM1-1737-030CN	1
2	Fuser 110 V	RM1-3131-060CN	1
2	Fuser 220 V	RM1-3146-060CN	1

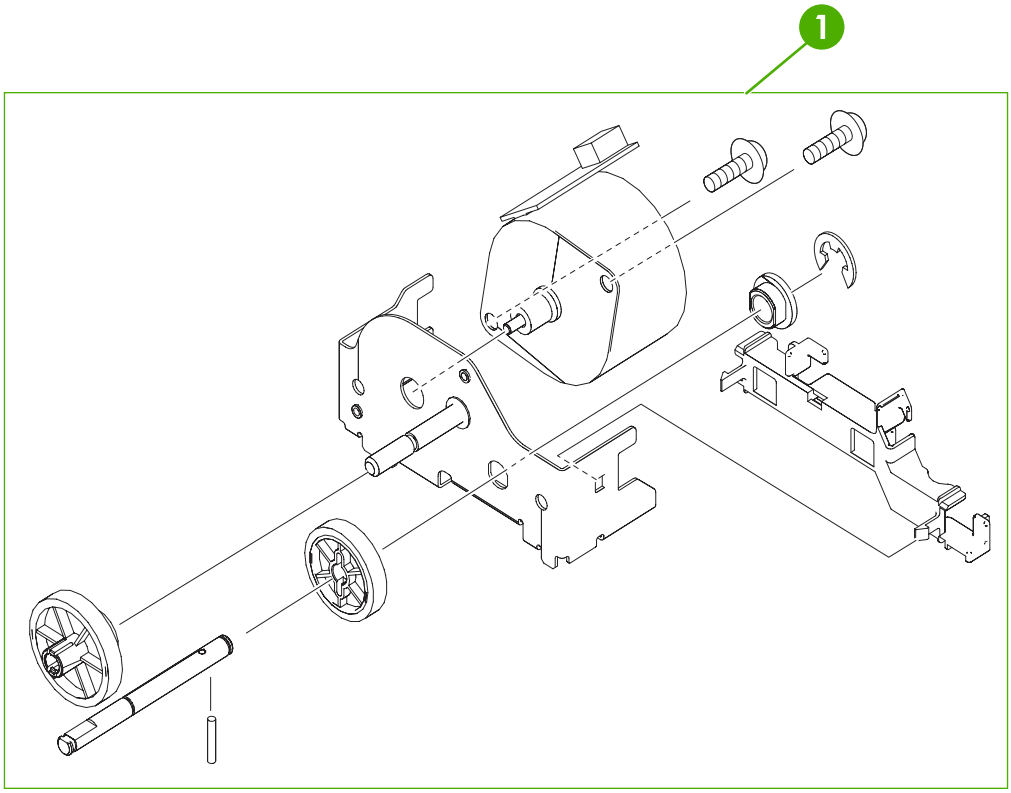


Figure 8-10 Pickup motor assembly

Table 8-13 Pickup motor assembly

Ref	Description	Part number	Qty
1	Pickup motor assembly	RM1-1666-000CN	1

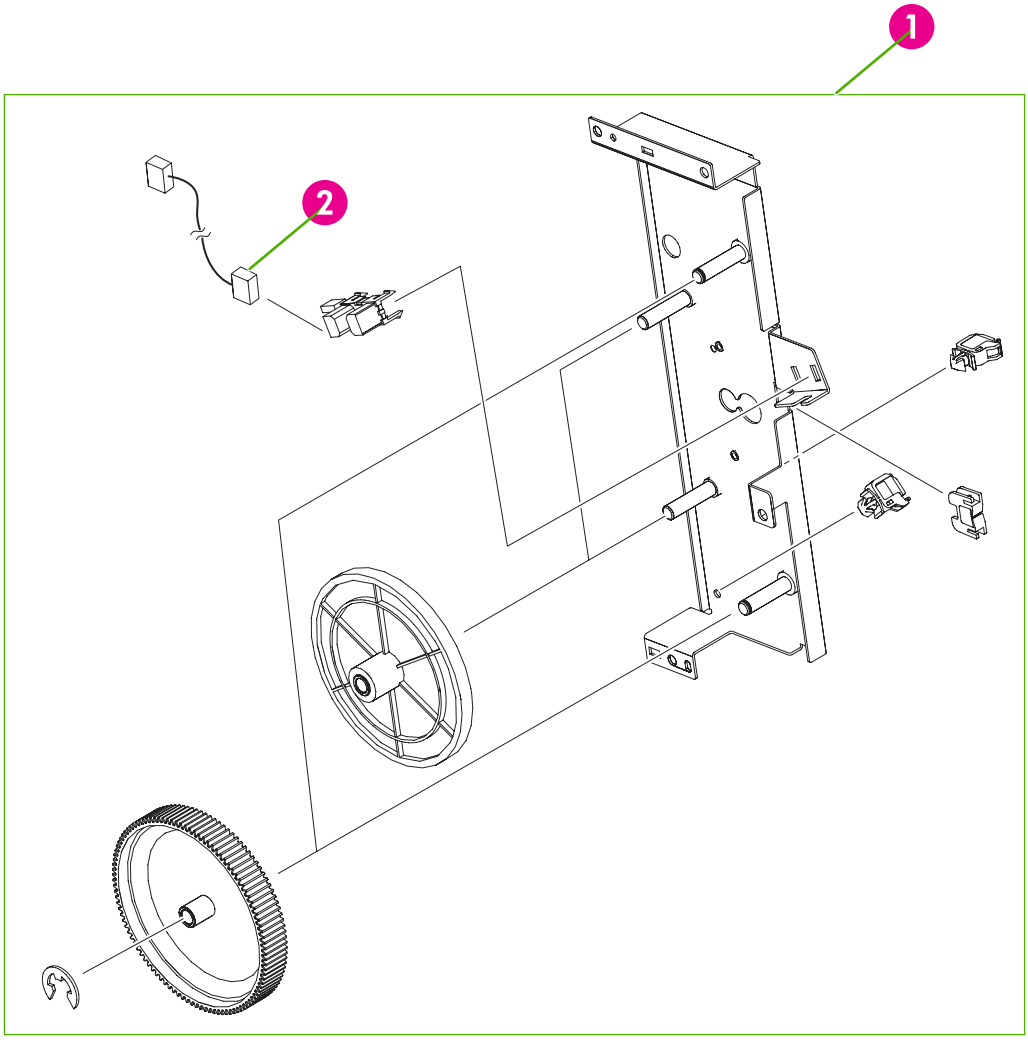


Figure 8-11 Disengaging drive assembly

Table 8-14 Disengaging drive assembly

Ref	Description	Part number	Qty
1	Disengaging drive assembly	RM1-1717-000CN	1
2	Developing disengaging sensor cable	RM1-1644-000CN	1

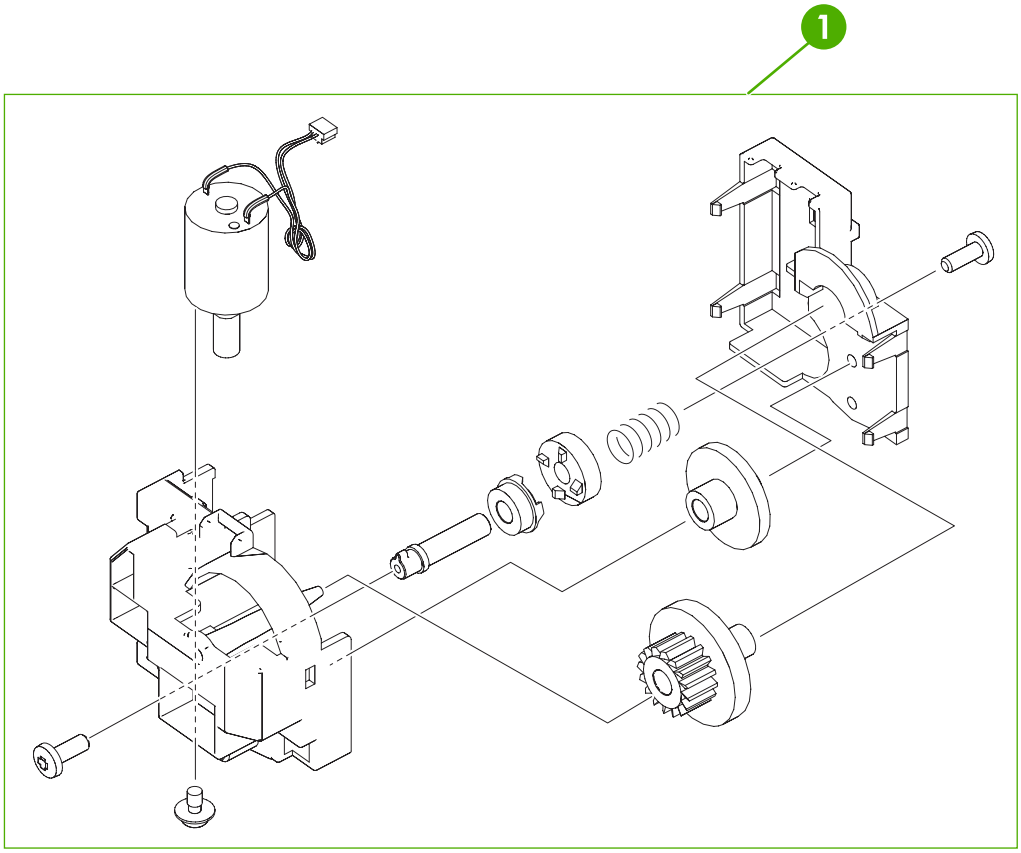


Figure 8-12 Lifter drive assembly

Table 8-15 Lifter drive assembly

Ref	Description	Part number	Qty
1	Lifter drive assembly	RM1-1750-000CN	1

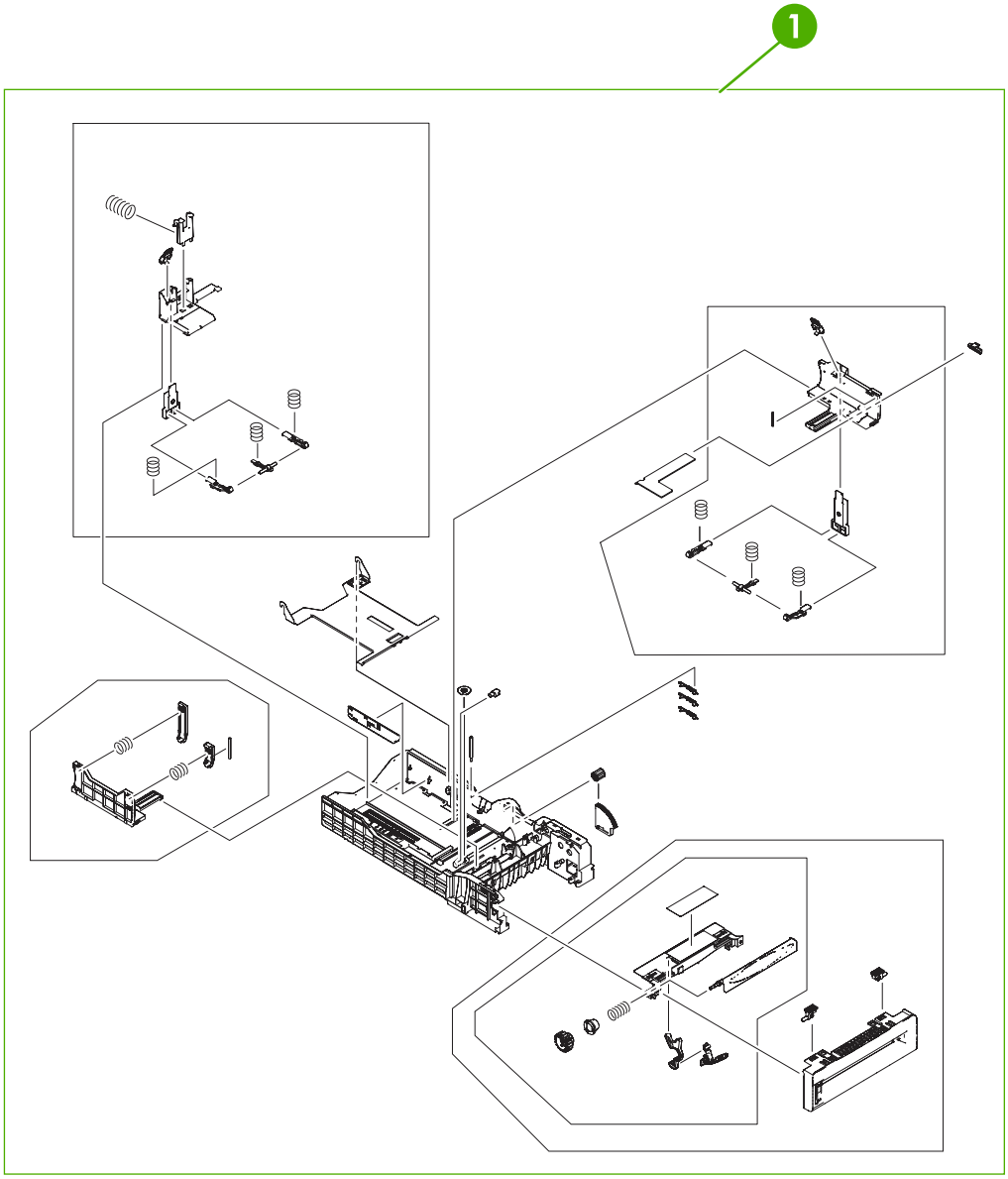


Figure 8-13 Paper tray (1 of 2)

Table 8-16 Paper tray (1 of 2)

Ref	Description	Part number	Qty
1	Paper tray (Tray 2)	RM1-1693-020CN	1

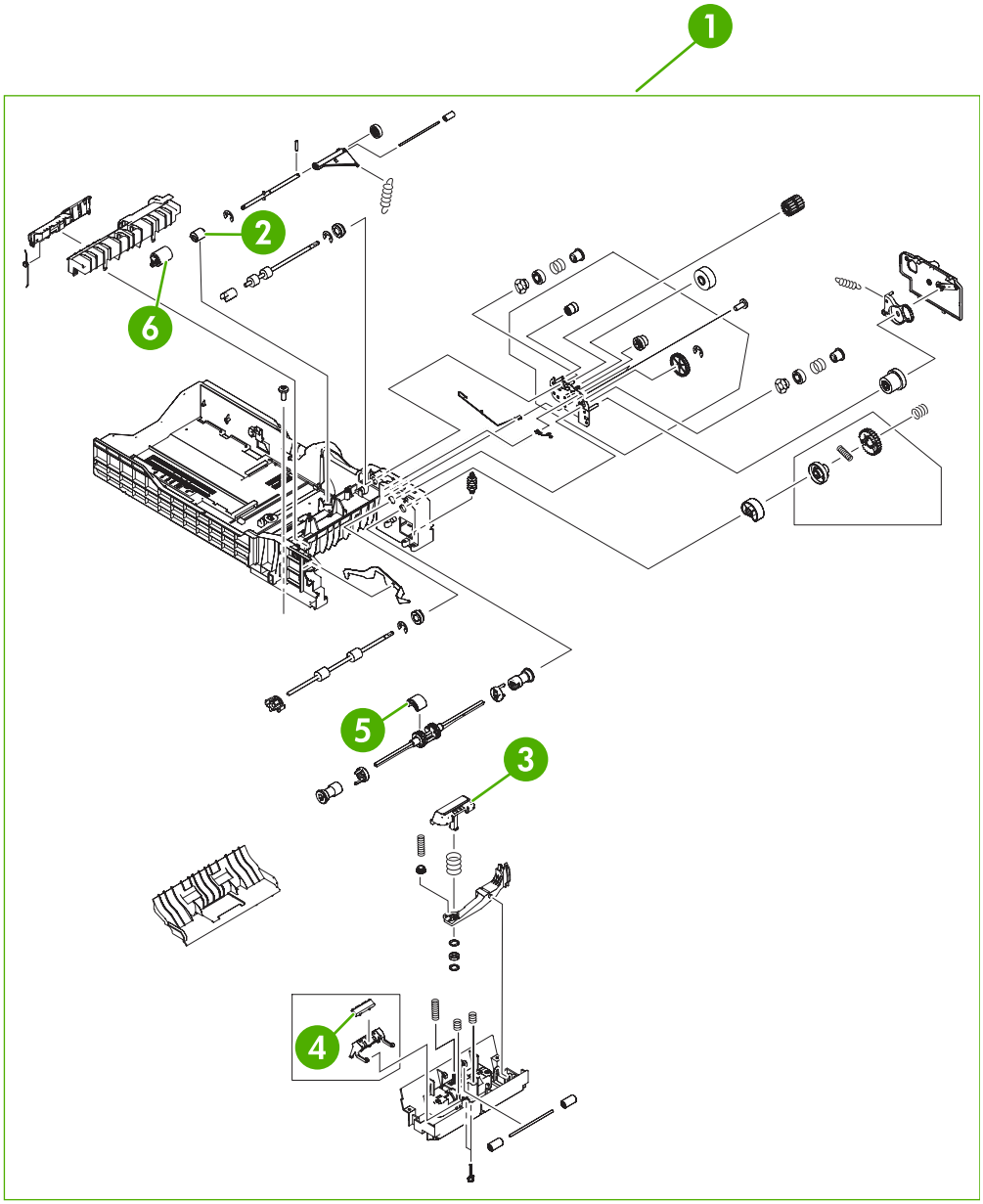


Figure 8-14 Paper tray (2 of 2)

Table 8-17 Paper tray (2 of 2)

Ref	Description	Part number	Qty
1	Paper tray (Tray 2)	RM1-1693-020CN	1
2	Torque limiter	RC1-3293-000CN	1
3	Paper pickup plate assembly	RF5-3749-000CN	1
4	Multipurpose separation pad assembly	RF5-3750-020CN	1
5	Pickup roller, Tray 1	RL1-0019-000CN	1
6	Paper feed roller assembly	RM1-0037-020CN	1

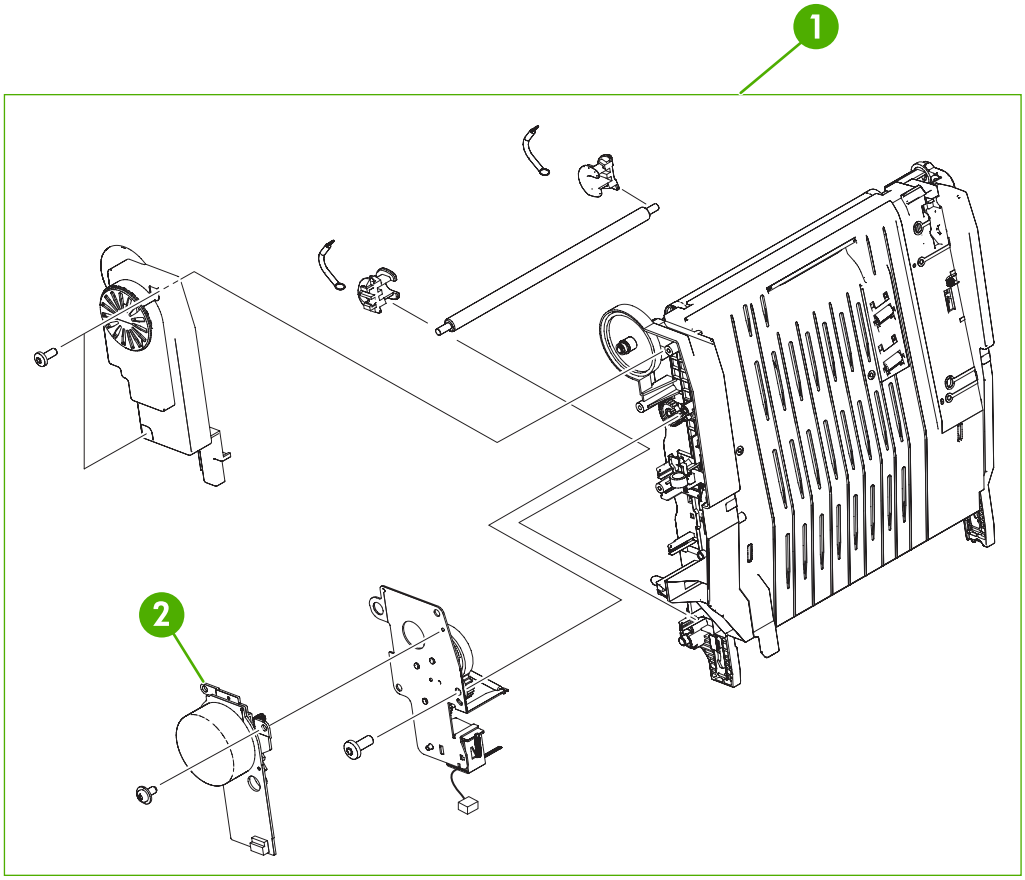


Figure 8-15 ETB assembly

Table 8-18 ETB assembly

Ref	Description	Part number	Qty
1	ETB assembly	RM1-3161-080CN	1
2	ETB motor	RK2-0616-000CN	1

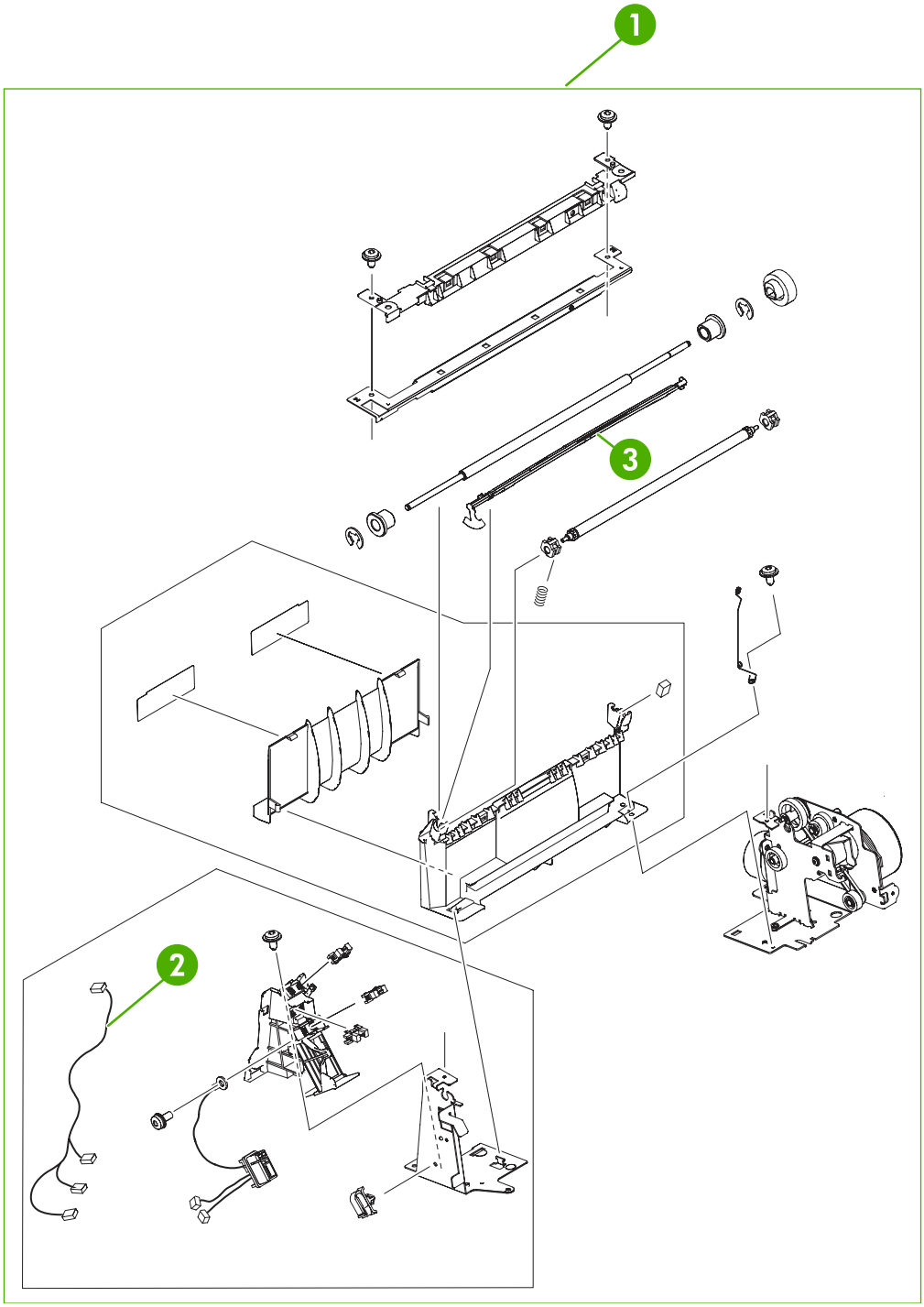


Figure 8-16 Delivery assembly

Table 8-19 Delivery assembly

Ref	Description	Part number	Qty
1	Delivery assembly 110 V	RM1-1730-030CN	1
1	Delivery assembly 220 V	RM1-1737-030CN	1
2	Bin full sensor flag	RL1-0612-000CN	1

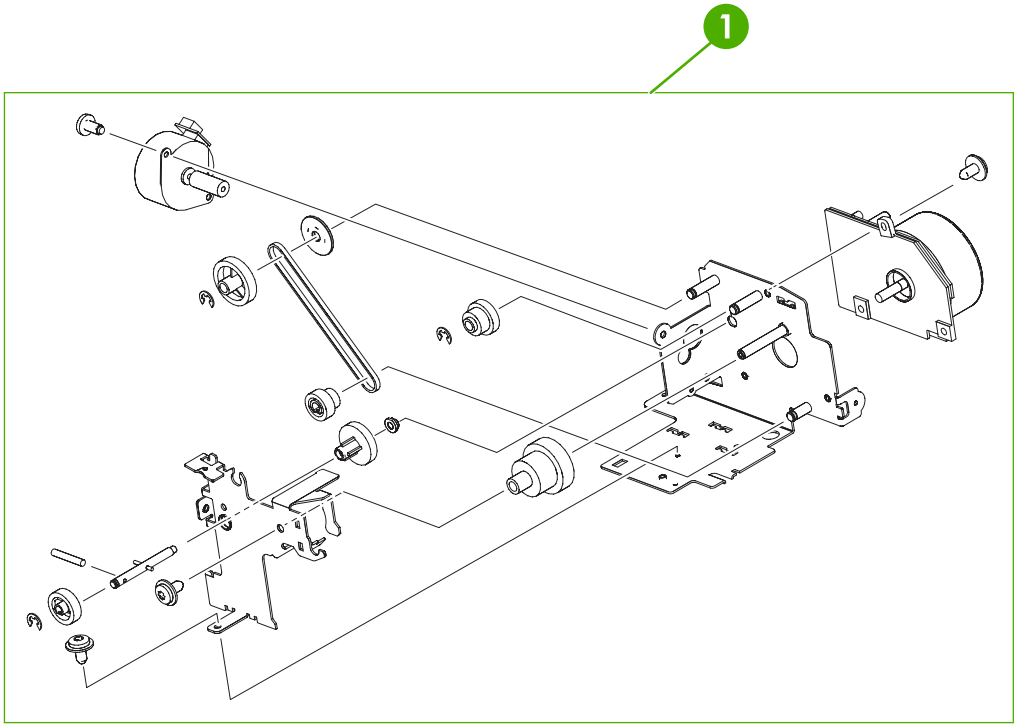


Figure 8-17 Fuser drive assembly

Table 8-20 Fuser drive assembly

Ref	Description	Part number	Qty
1	Fuser drive assembly	RM1-1729-000CN	1

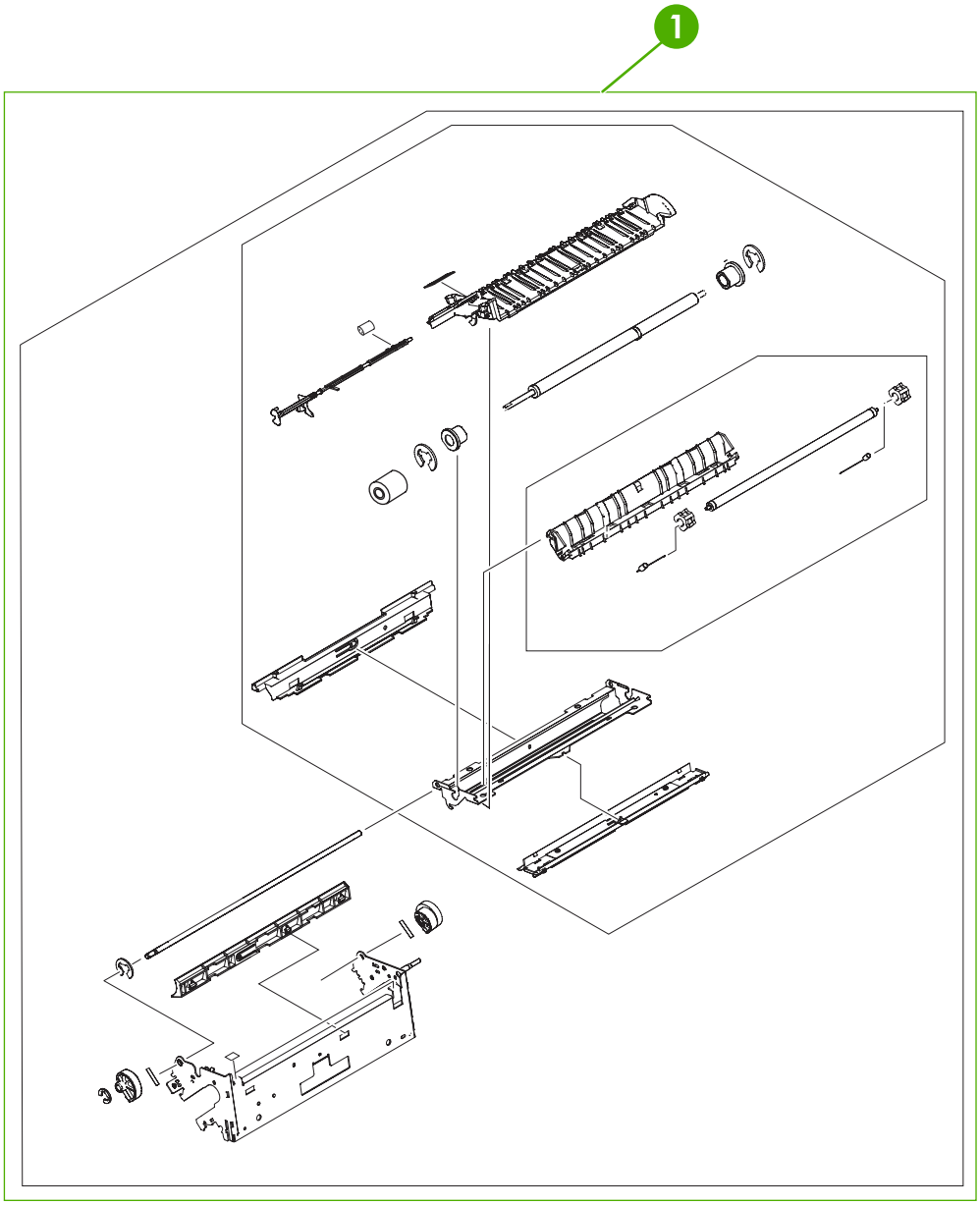


Figure 8-18 Fuser assembly (1 of 2)

Table 8-21 Fuser assembly

Ref	Description	Part number	Qty
1	Fuser 110 V	RM1-3131-060CN	1
1	Fuser 220 V	RM1-3146-060CN	1

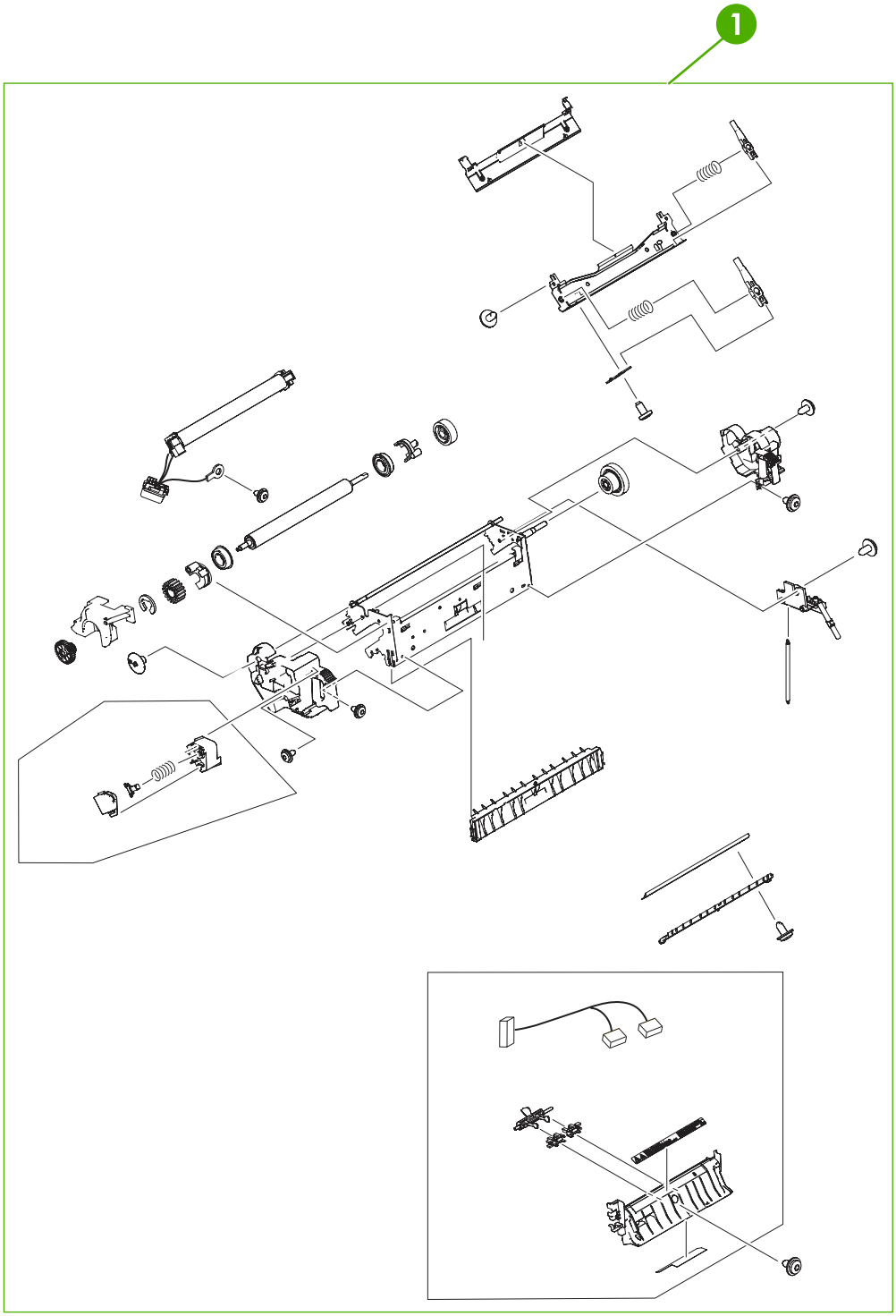


Figure 8-19 Fuser assembly (2 of 2)

Table 8-22 Fuser assembly

Ref	Description	Part number	Qty
1	Fuser 110 V	RM1-3131-060CN	1
1	Fuser 220 V	RM1-3146-060CN	1

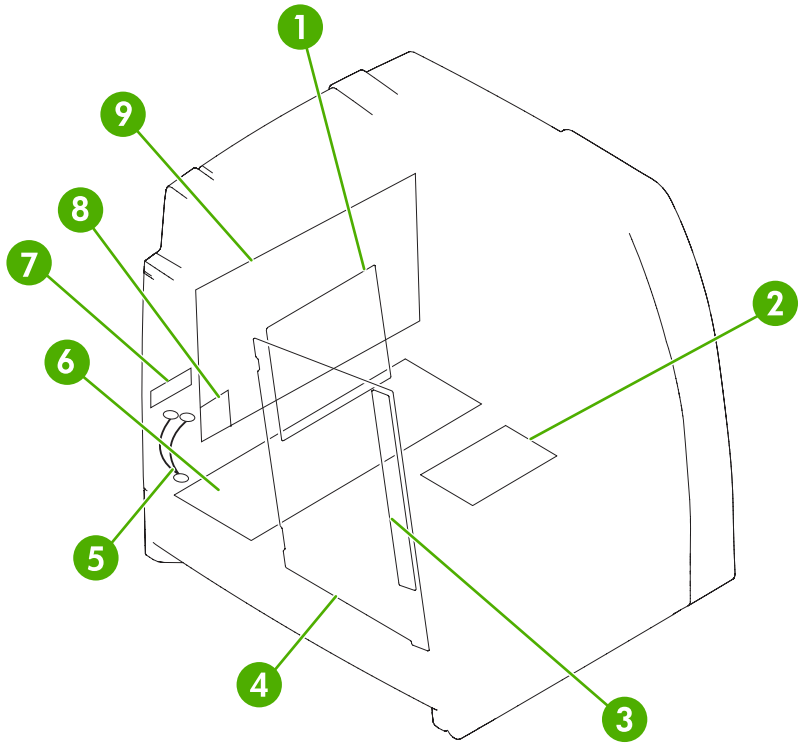


Figure 8-20 Printer PCBs

Table 8-23 Printer PCBs

Ref	Description	Part number	Qty
1	DC controller PCB	RM1-1607-060CN	1
2	Memory PCB	RM1-1618-000CN	1
3	Toner sensor PCB	RM1-1609-000CN	1
4	High-voltage power PCB	RM1-1608-000CN	1
5	Formatter power cable assembly	RM1-1642-000CN	1
6	Formatter to DC Controller flat ribbon cable	RK2-1171-000CN	1
7	Low-voltage PCB 110 V	RK2-0627-000CN	1
7	Low-voltage PCB 220 V	RK2-0628-000CN	1
8	Compact flash, 4700 models	Q7725-67926	1
8	Compact flash, CP4005 models	Q7725-67942	1
9	Formatter base, 4700 models (new)	Q7491-67904	1
9	Formatter base, 4700 models (exchange)	Q7491-69002	1
9	Formatter 4700n, 4700dn, 4700dtn (new)	Q7492-67902	1
9	Formatter 4700n, 4700dn, 4700dtn (exchange)	Q7492-69002	1
9	Formatter 4700ph+ (new)	Q7495-67903	1
9	Formatter 4700ph+ (exchange)	Q7495-69002	1
9	Formatter CP4005n, CP4005dn (new)	CB503-67901	1
9	Formatter CP4005n, CP4005dn (exchange)	CB503-69001	1

Accessories

The following diagrams and tables show the accessories and accessory parts for the HP Color LaserJet 4700 and HP Color LaserJet CP4005 series printers.

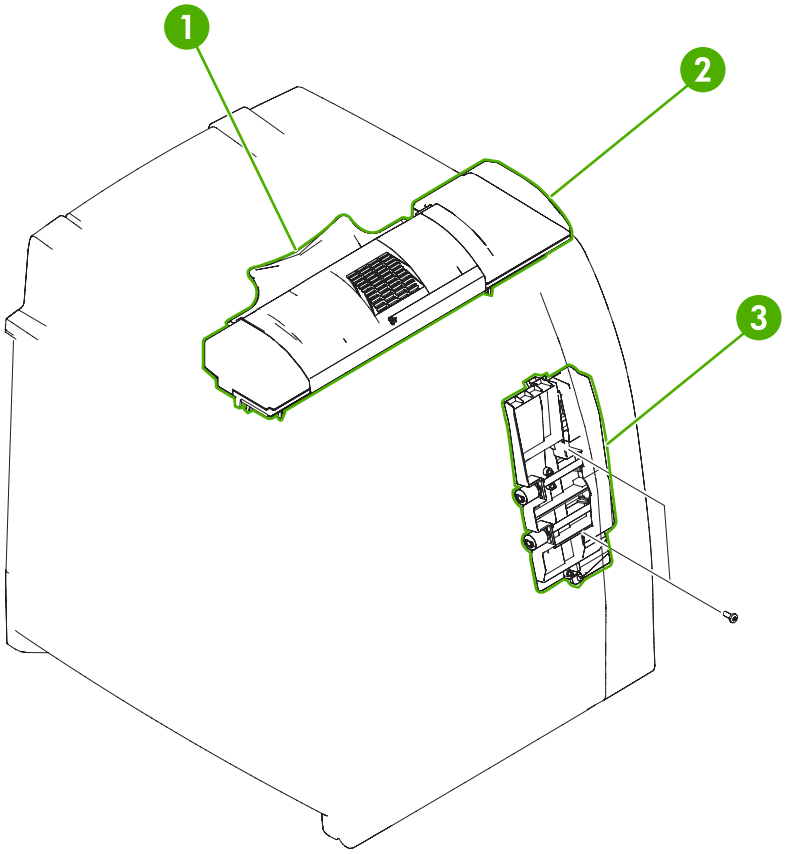


Figure 8-21 Duplexer

Table 8-24 Duplexer

Ref	Description	Part number	Qty
1	Duplexing tray	RC1-5043-020CN	1
2	Top duplexing assembly	RM1-1784-090CN	1
3	Duplexing feed assembly on ETB	RM1-1785-000CN	1

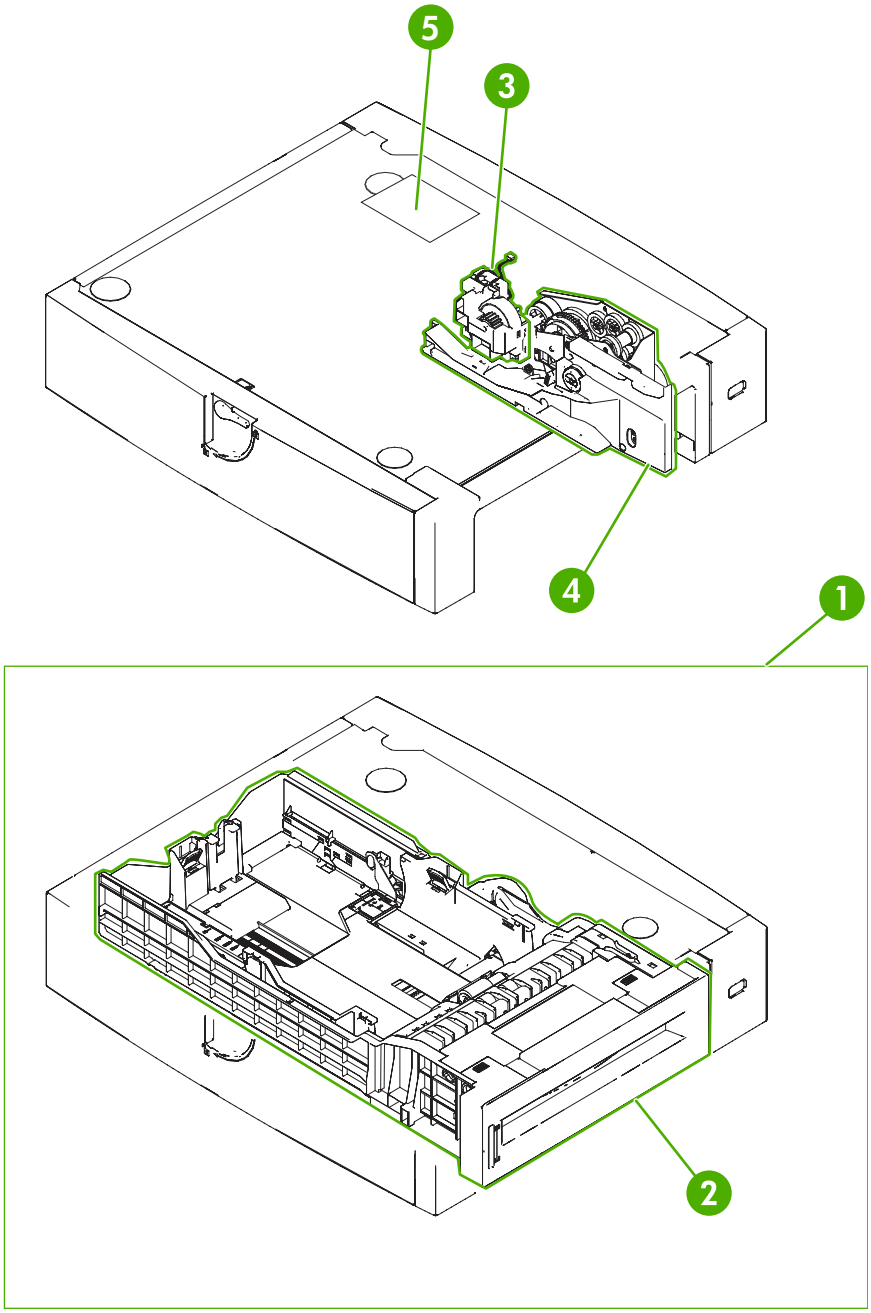


Figure 8-22 500-sheet paper feeder assembly

Table 8-25 500-sheet paper feeder assembly

Ref	Description	Part number	Qty
1	Paper feeder tray/assembly	Q7499-67901	1
2	Paper tray	RM1-1764-020CN	1
3	Lifter drive assembly	RM1-1750-000CN	1
4	Paper pickup drive assembly	RM1-1760-020CN	1
5	Paper feeder driver PCB	RM1-2365-020CN	1

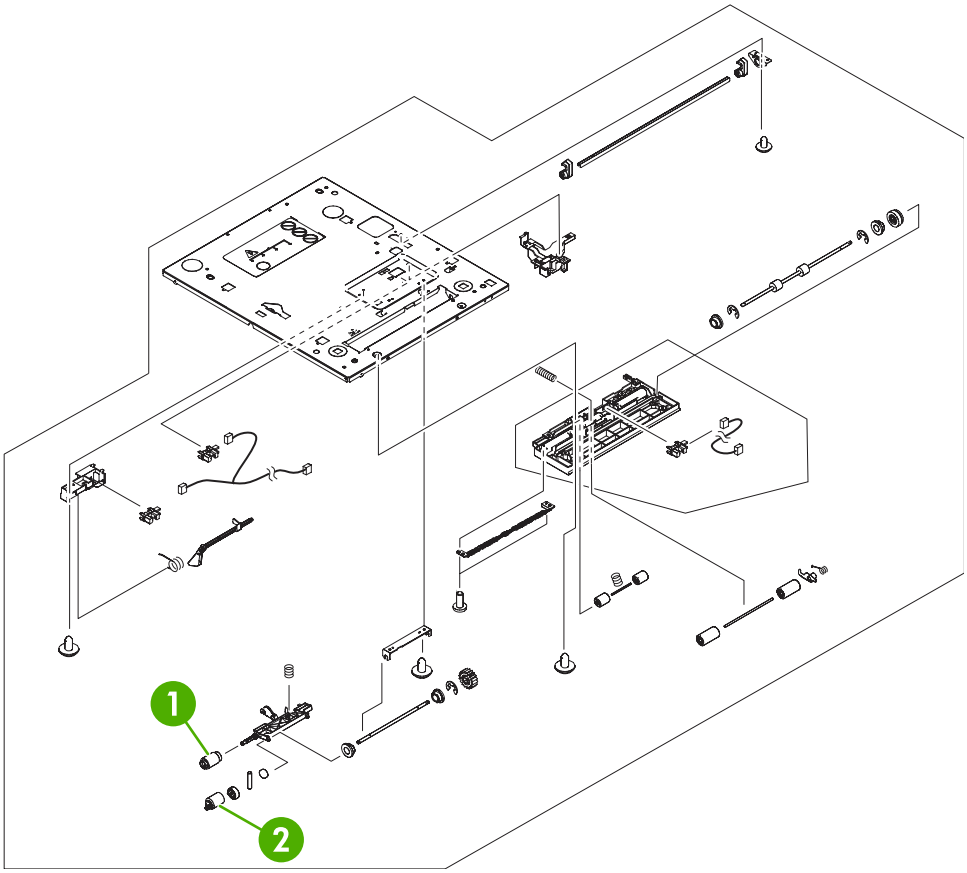


Figure 8-23 500-sheet paper feeder internal components

Table 8-26 500-sheet paper feeder internal components

Ref	Description	Part number	Qty
1	Paper pickup roller assembly	RM1-0036-020CN	1
2	Paper feed roller assembly	RM1-0037-020CN	1

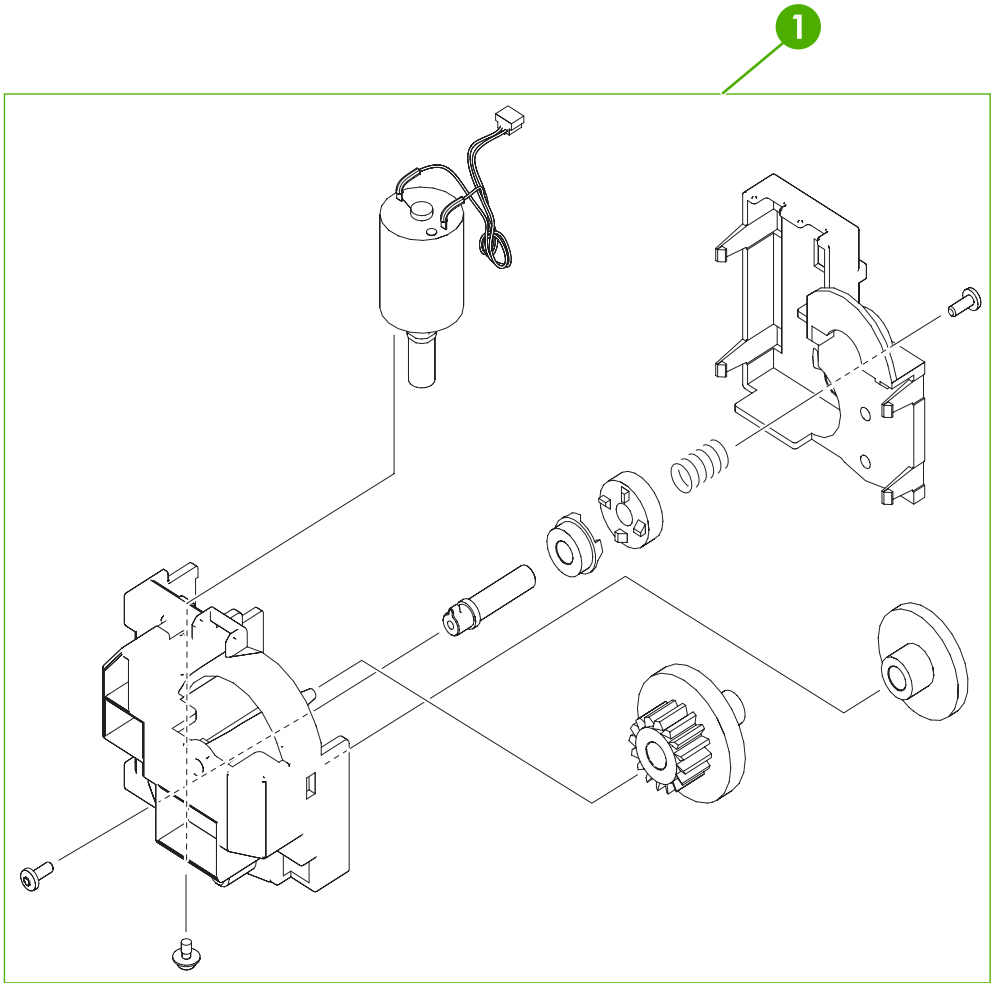


Figure 8-24 500-sheet paper feeder lifter drive assembly

Table 8-27 500-sheet paper feeder lifter drive assembly

Ref	Description	Part number	Qty
1	Lifter drive assembly	RM1-1750-000CN	1

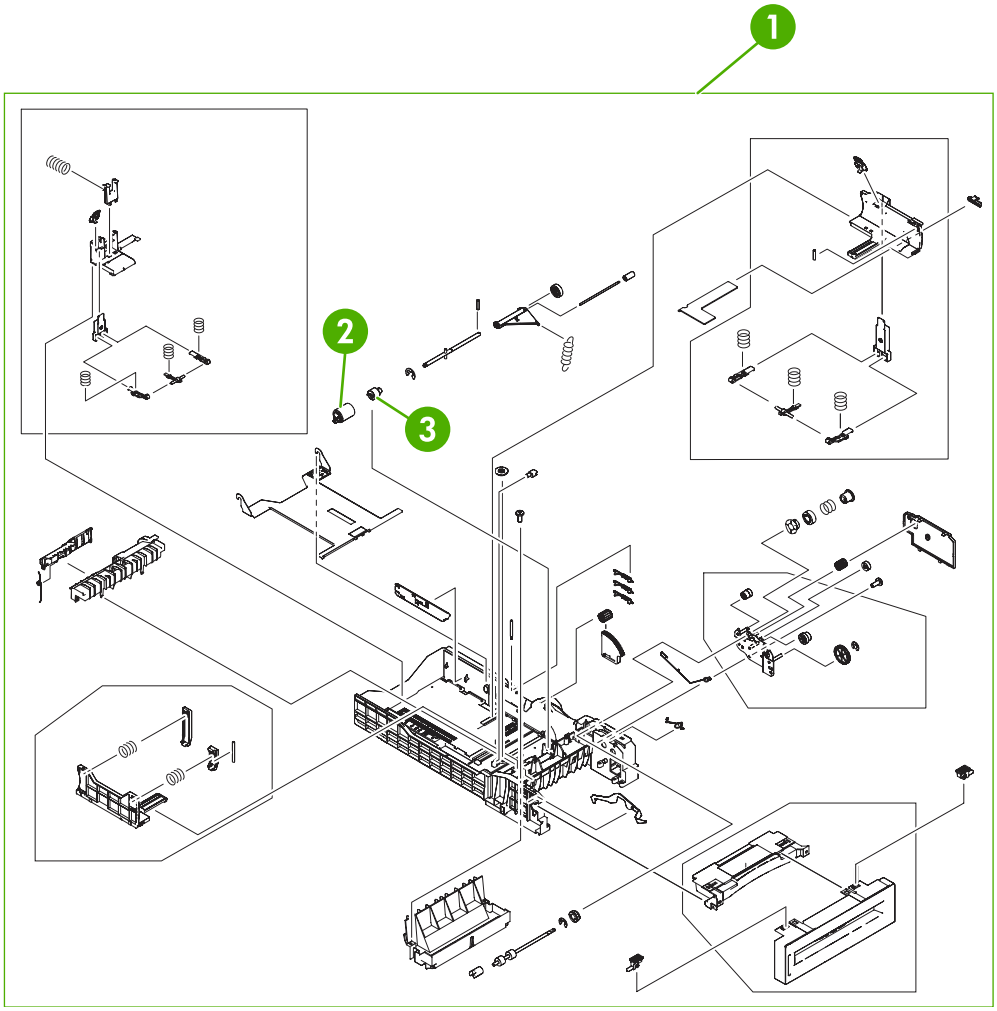


Figure 8-25 500-sheet paper feeder paper tray

Table 8-28 500-sheet paper feeder paper tray

Ref	Description	Part number	Qty
1	Paper tray	RM1-1764-020CN	1
2	Paper feed roller assembly	RM1-0037-020CN	1
3	Torque limiter	RC1-3293-000CN	1

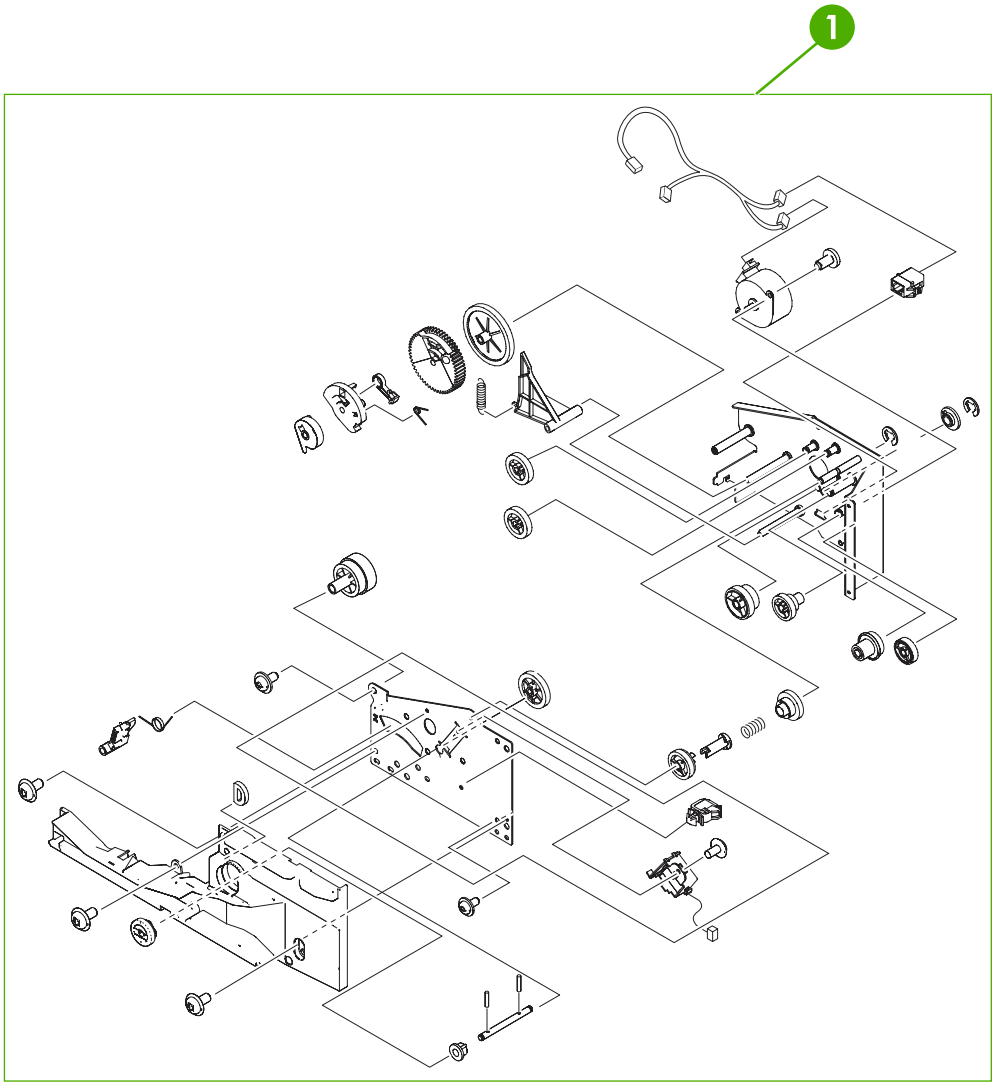


Figure 8-26 500-sheet paper feeder paper pickup drive assembly

Table 8-29 500-sheet paper feeder paper pickup drive assembly

Ref	Description	Part number	Qty
1	Paper pickup drive assembly	RM1-1760-020CN	1

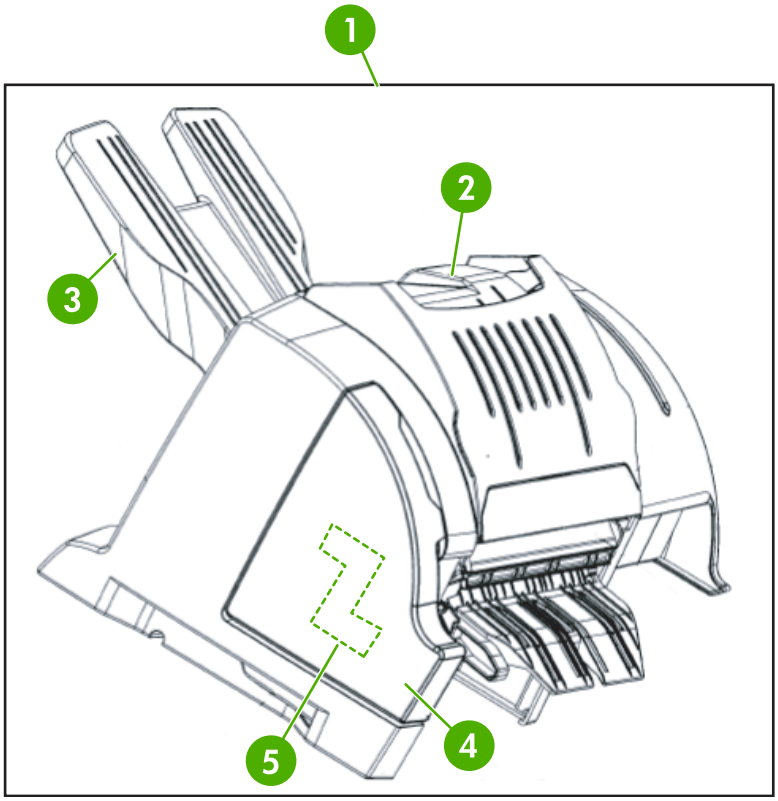


Figure 8-27 Stapler/stacker, 4700 models (1 of 2)

Table 8-30 Stapler/stacker, 4700 models (1 of 2)

Ref	Description	Part number	Qty
1	Stapler/stacker	Q7003-67908	1
2	Top cover	PF4138K066NI	1
3	Output tray	PF4138P231NI	1
4	Stapler cartridge cover, left	PF4138P309NI	1
5	Staple cartridge	C8085-60541	1

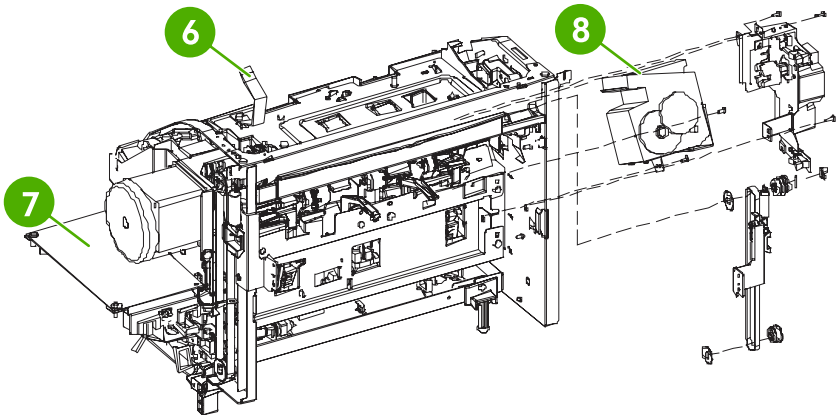


Figure 8-28 Stapler/stacker, 4700 models (2 of 2)

Table 8-31 Stapler/stacker, 4700 models (2 of 2)

Ref	Description	Part number	Qty
6	Roller lift strap	PF4138P563NI	1
7	PCB board	PF4138K203NI	1
8	Stapler unit assembly, 24V 2.5 Amp	PF4138K064NI	1

Alphabetical parts list

Table 8-32 Alphabetical parts list

Description	Part number	Table and page
Air filter	RC1-4433-000CN	External covers and panels (1 of 2) on page 573
Attraction contact assembly	RM1-1676-000CN	Internal components (1 of 6) on page 577
Bin full sensor flag	RL1-0612-000CN	Delivery assembly on page 601
Bushing	RC1-4325-000CN	Internal components (3 of 6) on page 581
Cartridge guide assembly, right lower	RM1-1669-000CN	Internal components (4 of 6) on page 583
Cartridge guide assembly, right upper	RM1-1668-000CN	Internal components (4 of 6) on page 583
Cartridge interlock, left plate	RC1-4385-000CN	Internal components (1 of 6) on page 577
Cartridge interlock, right plate	RC1-4354-000CN	Internal components (3 of 6) on page 581
Cartridge pressure, left lever	RC1-4387-000CN	Internal components (1 of 6) on page 577
Cartridge pressure, right lever	RC1-4353-000CN	Internal components (3 of 6) on page 581
Cartridge pressure, top right lever	RL1-0639-000CN	Internal components (3 of 6) on page 581
Compact flash, 4700 models	Q7725-67926	Printer PCBs on page 609
Compact flash, CP4005 models	Q7725-67942	Printer PCBs on page 609
Compression spring	RC1-4396-000CN	Internal components (1 of 6) on page 577
Compression spring	RC1-4383-000CN	Internal components (4 of 6) on page 583
Connector guide assembly	RM1-1675-000CN	Internal components (1 of 6) on page 577
Control panel assembly	RM1-1617-000CN	External covers and panels (1 of 2) on page 573
Control panel assembly	RM1-1617-000CN	Internal components (4 of 6) on page 583
Control panel cable	RM1-1640-000CN	Internal components (4 of 6) on page 583
DC controller PCB	RM1-1607-060CN	Printer PCBs on page 609
DC stepping motor	RK2-0618-000CN	Internal components (3 of 6) on page 581
Delivery assembly 110 V	RM1-1730-030CN	Internal components (6 of 6) on page 587

Table 8-32 Alphabetical parts list (continued)

Description	Part number	Table and page
Delivery assembly 110 V	RM1-1730-030CN	Delivery assembly on page 601
Delivery assembly 220 V	RM1-1737-030CN	Internal components (6 of 6) on page 587
Delivery assembly 220 V	RM1-1737-030CN	Delivery assembly on page 601
Delivery fan	RM1-1757-000CN	Internal components (2 of 6) on page 579
Developing disengaging sensor cable	RM1-1644-000CN	Disengaging drive assembly on page 591
Development estrangement coupling	RC1-4382-000CN	Internal components (4 of 6) on page 583
Disengaging drive assembly	RM1-1717-000CN	Disengaging drive assembly on page 591
Door switch cable assembly	RM1-1643-000CN	Internal components (3 of 6) on page 581
Drawer connector	VS1-7258-007CN	Internal components (5 of 6) on page 585
Drum motor assembly	RM1-1659-000CN	Internal components (3 of 6) on page 581
Drum motor cable assembly	RM1-1628-000CN	Internal components (3 of 6) on page 581
Duplex cover	RC1-4856-000CN	External covers and panels (1 of 2) on page 573
Duplex cover	RC1-4863-000CN	External covers and panels (1 of 2) on page 573
Duplexing feed assembly on ETB	RM1-1785-000CN	Duplexer on page 613
Duplexing tray	RC1-5043-020CN	Duplexer on page 613
Environment/humidity sensor unit	WP2-5187-000CN	Internal components (1 of 6) on page 577
ETB assembly	RM1-3161-080CN	ETB assembly on page 599
ETB motor	RK2-0616-000CN	ETB assembly on page 599
Face-down tray assembly	RM1-1746-000CN	External covers and panels (1 of 2) on page 573
Fan cable assembly	RM1-1646-000CN	Internal components (2 of 6) on page 579
Formatter 4700n, 4700dn, 4700dtn (exchange)	Q7492-69002	Printer PCBs on page 609
Formatter 4700n, 4700dn, 4700dtn (new)	Q7492-67902	Printer PCBs on page 609
Formatter 4700ph+ (exchange)	Q7495-69002	Printer PCBs on page 609
Formatter 4700ph+ (new)	Q7495-67903	Printer PCBs on page 609
Formatter base, 4700 models (exchange)	Q7491-69002	Printer PCBs on page 609
Formatter base, 4700 models (new)	Q7491-67904	Printer PCBs on page 609

Table 8-32 Alphabetical parts list (continued)

Description	Part number	Table and page
Formatter CP4005n, CP4005dn (exchange)	CB503-69001	Printer PCBs on page 609
Formatter CP4005n, CP4005dn (new)	CB503-67901	Printer PCBs on page 609
Formatter power cable assembly	RM1-1642-000CN	Printer PCBs on page 609
Formatter to DC Controller flat ribbon cable	RK2-1171-000CN	Printer PCBs on page 609
Front lower cover assembly	RM1-1742-000CN	External covers and panels (2 of 2) on page 575
Front top cover assembly	RM1-1745-000CN	External covers and panels (1 of 2) on page 573
Fuser 110 V	RM1-3131-060CN	Internal components (6 of 6) on page 587
Fuser 110 V	RM1-3131-060CN	Fuser assembly on page 605
Fuser 110 V	RM1-3131-060CN	Fuser assembly on page 607
Fuser 220 V	RM1-3146-060CN	Internal components (6 of 6) on page 587
Fuser 220 V	RM1-3146-060CN	Fuser assembly on page 605
Fuser 220 V	RM1-3146-060CN	Fuser assembly on page 607
Fuser drive assembly	RM1-1729-000CN	Fuser drive assembly on page 603
Gear, 18T	RC1-4324-000CN	Internal components (3 of 6) on page 581
Gear, 29T	RC1-4310-000CN	Internal components (4 of 6) on page 583
Gear, 30T	RC1-4309-000CN	Internal components (4 of 6) on page 583
Gear, 70T	RC1-4392-000CN	Internal components (1 of 6) on page 577
Gear, 70T	RC1-4356-000CN	Internal components (3 of 6) on page 581
H.V. terminal mount assembly	RM1-1677-000CN	Internal components (1 of 6) on page 577
High-voltage power PCB	RM1-1608-000CN	Printer PCBs on page 609
High-voltage terminal block	RC1-4394-000CN	Internal components (1 of 6) on page 577
Interlock switch	WC4-5242-000CN	Internal components (3 of 6) on page 581
Laser/scanner assembly	RM1-1591-030CN	Internal components (1 of 6) on page 577
Left cover assembly	RM1-1739-000CN	External covers and panels (1 of 2) on page 573
Left ETB cap	RC1-4386-000CN	Internal components (1 of 6) on page 577

Table 8-32 Alphabetical parts list (continued)

Description	Part number	Table and page
Left ETB lever assembly	RM1-1663-000CN	Internal components (4 of 6) on page 583
Lifter drive assembly	RM1-1750-000CN	Lifter drive assembly on page 593
Lifter drive assembly	RM1-1750-000CN	500-sheet paper feeder assembly on page 615
Lifter drive assembly	RM1-1750-000CN	500-sheet paper feeder lifter drive assembly on page 619
Lifter drive assembly tension spring	RC1-0198-000CN	Internal components (5 of 6) on page 585
Low-voltage PCB 110 V	RK2-0627-000CN	Printer PCBs on page 609
Low-voltage PCB 220 V	RK2-0628-000CN	Printer PCBs on page 609
M.P. link, left arm	RC1-4441-000CN	Internal components (5 of 6) on page 585
M.P. link, right arm	RC1-4439-000CN	Internal components (5 of 6) on page 585
Main drive assembly	RM1-1716-000CN	Internal components (3 of 6) on page 581
Memory contact cable	RM1-1653-000CN	Internal components (4 of 6) on page 583
Memory PCB	RM1-1618-000CN	Printer PCBs on page 609
Misregistration sensor cable assembly	RM1-1629-000CN	Internal components (2 of 6) on page 579
Multipurpose separation pad assembly	RF5-3750-020CN	Paper tray (2 of 2) on page 597
Multipurpose tray (Tray 1) assembly	RM1-1740-020CN	External covers and panels (2 of 2) on page 575
Output tray	PF4138P231NI	Stapler/stacker, 4700 models (1 of 2) on page 625
Paper detection assembly	RM1-1692-000CN	Internal components (5 of 6) on page 585
Paper feed assembly	RM1-1756-000CN	Internal components (4 of 6) on page 583
Paper feed roller assembly	RM1-0037-020CN	Internal components (5 of 6) on page 585
Paper feed roller assembly	RM1-0037-020CN	Paper tray (2 of 2) on page 597
Paper feed roller assembly	RM1-0037-020CN	500-sheet paper feeder internal components on page 617
Paper feed roller assembly	RM1-0037-020CN	500-sheet paper feeder paper tray on page 621
Paper feeder driver PCB	RM1-2365-020CN	500-sheet paper feeder assembly on page 615

Table 8-32 Alphabetical parts list (continued)

Description	Part number	Table and page
Paper feeder tray/assembly	Q7499-67901	500-sheet paper feeder assembly on page 615
Paper pickup drive assembly	RM1-1760-020CN	500-sheet paper feeder assembly on page 615
Paper pickup drive assembly	RM1-1760-020CN	500-sheet paper feeder paper pickup drive assembly on page 623
Paper pickup plate assembly	RF5-3749-000CN	Paper tray (2 of 2) on page 597
Paper pickup roller assembly	RM1-0036-020CN	Internal components (5 of 6) on page 585
Paper pickup roller assembly	RM1-0036-020CN	500-sheet paper feeder internal components on page 617
Paper sensor cable assembly	RM1-1641-000CN	Internal components (5 of 6) on page 585
Paper tray	RM1-1764-020CN	500-sheet paper feeder assembly on page 615
Paper tray	RM1-1764-020CN	500-sheet paper feeder paper tray on page 621
Paper tray (Tray 2)	RM1-1693-020CN	Paper tray (1 of 2) on page 595
Paper tray (Tray 2)	RM1-1693-020CN	Paper tray (2 of 2) on page 597
PCB board	PF4138K203NI	Stapler/stacker, 4700 models (2 of 2) on page 627
Photo interrupter	WG8-5696-000CN	Internal components (5 of 6) on page 585
Pickup cable assembly	RM1-1633-000CN	Internal components (5 of 6) on page 585
Pickup motor assembly	RM1-1666-000CN	Pickup motor assembly on page 589
Pickup roller, Tray 1	RL1-0019-000CN	Paper tray (2 of 2) on page 597
Power supply fan	RK2-0622-000CN	Internal components (2 of 6) on page 579
Power switch assembly	RM1-1671-000CN	Internal components (3 of 6) on page 581
Pressure plate	RC1-4397-000CN	Internal components (1 of 6) on page 577
Pressure plate, right	RC1-4360-000CN	Internal components (3 of 6) on page 581
Rear cover assembly	RM1-1747-000CN	External covers and panels (1 of 2) on page 573
Right cover assembly	RM1-1738-020CN	External covers and panels (2 of 2) on page 575
Right ETB cap	RC1-4352-000CN	Internal components (3 of 6) on page 581

Table 8-32 Alphabetical parts list (continued)

Description	Part number	Table and page
Right ETB lever assembly	RM1-1662-000CN	Internal components (4 of 6) on page 583
Right top cover	RC1-4855-020CN	External covers and panels (1 of 2) on page 573
Roller lift strap	PF4138P563NI	Stapler/stacker, 4700 models (2 of 2) on page 627
Screw M3x6	XA9-1418-000CN	Internal components (1 of 6) on page 577
Size detect lever	RC1-0503-000CN	Internal components (5 of 6) on page 585
Staple cartridge	C8085-60541	Stapler/stacker, 4700 models (1 of 2) on page 625
Stapler cartridge cover, left	PF4138P309NI	Stapler/stacker, 4700 models (1 of 2) on page 625
Stapler unit assembly, 24V 2.5 Amp	PF4138K064NI	Stapler/stacker, 4700 models (2 of 2) on page 627
Stapler/stacker	Q7003-67908	Stapler/stacker, 4700 models (1 of 2) on page 625
Tension spring	RC1-4423-000CN	Internal components (1 of 6) on page 577
Tension spring	RC1-4393-000CN	Internal components (1 of 6) on page 577
Tension spring	RC1-4395-000CN	Internal components (1 of 6) on page 577
Tension spring	RC1-4357-000CN	Internal components (3 of 6) on page 581
Tension spring	RC1-4423-000CN	Internal components (3 of 6) on page 581
Toner sensor PCB	RM1-1609-000CN	Printer PCBs on page 609
Top cover	RC1-4854-030CN	External covers and panels (1 of 2) on page 573
Top cover	PF4138K066NI	Stapler/stacker, 4700 models (1 of 2) on page 625
Top duplexing assembly	RM1-1784-090CN	Duplexer on page 613
Torque limiter	RC1-3293-000CN	Paper tray (2 of 2) on page 597
Torque limiter	RC1-3293-000CN	500-sheet paper feeder paper tray on page 621
Torsion spring	RC1-4440-000CN	Internal components (5 of 6) on page 585
Upper exhaust fan/cartridge fan	RK2-0623-000CN	Internal components (2 of 6) on page 579

Numerical parts list

Table 8-33 Numerical parts list

Part number	Description	Table and page
C8085-60541	Staple cartridge	Stapler/stacker, 4700 models (1 of 2) on page 625
CB503-67901	Formatter CP4005n, CP4005dn (new)	Printer PCBs on page 609
CB503-69001	Formatter CP4005n, CP4005dn (exchange)	Printer PCBs on page 609
PF4138K064NI	Stapler unit assembly, 24V 2.5 Amp	Stapler/stacker, 4700 models (2 of 2) on page 627
PF4138K066NI	Top cover	Stapler/stacker, 4700 models (1 of 2) on page 625
PF4138K203NI	PCB board	Stapler/stacker, 4700 models (2 of 2) on page 627
PF4138P231NI	Output tray	Stapler/stacker, 4700 models (1 of 2) on page 625
PF4138P309NI	Stapler cartridge cover, left	Stapler/stacker, 4700 models (1 of 2) on page 625
PF4138P563NI	Roller lift strap	Stapler/stacker, 4700 models (2 of 2) on page 627
Q7003-67908	Stapler/stacker	Stapler/stacker, 4700 models (1 of 2) on page 625
Q7491-67904	Formatter base, 4700 models (new)	Printer PCBs on page 609
Q7491-69002	Formatter base, 4700 models (exchange)	Printer PCBs on page 609
Q7492-67902	Formatter 4700n, 4700dn, 4700dtn (new)	Printer PCBs on page 609
Q7492-69002	Formatter 4700n, 4700dn, 4700dtn (exchange)	Printer PCBs on page 609
Q7495-67903	Formatter 4700ph+ (new)	Printer PCBs on page 609
Q7495-69002	Formatter 4700ph+ (exchange)	Printer PCBs on page 609
Q7499-67901	Paper feeder tray/assembly	500-sheet paper feeder assembly on page 615
Q7725-67926	Compact flash, 4700 models	Printer PCBs on page 609
Q7725-67942	Compact flash, CP4005 models	Printer PCBs on page 609
RC1-0198-000CN	Lifter drive assembly tension spring	Internal components (5 of 6) on page 585
RC1-0503-000CN	Size detect lever	Internal components (5 of 6) on page 585
RC1-3293-000CN	Torque limiter	Paper tray (2 of 2) on page 597
RC1-3293-000CN	Torque limiter	500-sheet paper feeder paper tray on page 621
RC1-4309-000CN	Gear, 30T	Internal components (4 of 6) on page 583

Table 8-33 Numerical parts list (continued)

Part number	Description	Table and page
RC1-4310-000CN	Gear, 29T	Internal components (4 of 6) on page 583
RC1-4324-000CN	Gear, 18T	Internal components (3 of 6) on page 581
RC1-4325-000CN	Bushing	Internal components (3 of 6) on page 581
RC1-4352-000CN	Right ETB cap	Internal components (3 of 6) on page 581
RC1-4353-000CN	Cartridge pressure, right lever	Internal components (3 of 6) on page 581
RC1-4354-000CN	Cartridge interlock, right plate	Internal components (3 of 6) on page 581
RC1-4356-000CN	Gear, 70T	Internal components (3 of 6) on page 581
RC1-4357-000CN	Tension spring	Internal components (3 of 6) on page 581
RC1-4360-000CN	Pressure plate, right	Internal components (3 of 6) on page 581
RC1-4382-000CN	Development estrangement coupling	Internal components (4 of 6) on page 583
RC1-4383-000CN	Compression spring	Internal components (4 of 6) on page 583
RC1-4385-000CN	Cartridge interlock, left plate	Internal components (1 of 6) on page 577
RC1-4386-000CN	Left ETB cap	Internal components (1 of 6) on page 577
RC1-4387-000CN	Cartridge pressure, left lever	Internal components (1 of 6) on page 577
RC1-4392-000CN	Gear, 70T	Internal components (1 of 6) on page 577
RC1-4393-000CN	Tension spring	Internal components (1 of 6) on page 577
RC1-4394-000CN	High-voltage terminal block	Internal components (1 of 6) on page 577
RC1-4395-000CN	Tension spring	Internal components (1 of 6) on page 577
RC1-4396-000CN	Compression spring	Internal components (1 of 6) on page 577
RC1-4397-000CN	Pressure plate	Internal components (1 of 6) on page 577
RC1-4423-000CN	Tension spring	Internal components (1 of 6) on page 577
RC1-4423-000CN	Tension spring	Internal components (3 of 6) on page 581

Table 8-33 Numerical parts list (continued)

Part number	Description	Table and page
RC1-4433-000CN	Air filter	External covers and panels (1 of 2) on page 573
RC1-4439-000CN	M.P. link, right arm	Internal components (5 of 6) on page 585
RC1-4440-000CN	Torsion spring	Internal components (5 of 6) on page 585
RC1-4441-000CN	M.P. link, left arm	Internal components (5 of 6) on page 585
RC1-4854-030CN	Top cover	External covers and panels (1 of 2) on page 573
RC1-4855-020CN	Right top cover	External covers and panels (1 of 2) on page 573
RC1-4856-000CN	Duplex cover	External covers and panels (1 of 2) on page 573
RC1-4863-000CN	Duplex cover	External covers and panels (1 of 2) on page 573
RC1-5043-020CN	Duplexing tray	Duplexer on page 613
RF5-3749-000CN	Paper pickup plate assembly	Paper tray (2 of 2) on page 597
RF5-3750-020CN	Multipurpose separation pad assembly	Paper tray (2 of 2) on page 597
RK2-0616-000CN	ETB motor	ETB assembly on page 599
RK2-0618-000CN	DC stepping motor	Internal components (3 of 6) on page 581
RK2-0622-000CN	Power supply fan	Internal components (2 of 6) on page 579
RK2-0623-000CN	Upper exhaust fan/cartridge fan	Internal components (2 of 6) on page 579
RK2-0627-000CN	Low-voltage PCB 110 V	Printer PCBs on page 609
RK2-0628-000CN	Low-voltage PCB 220 V	Printer PCBs on page 609
RK2-1171-000CN	Formatter to DC Controller flat ribbon cable	Printer PCBs on page 609
RL1-0019-000CN	Pickup roller, Tray 1	Paper tray (2 of 2) on page 597
RL1-0612-000CN	Bin full sensor flag	Delivery assembly on page 601
RL1-0639-000CN	Cartridge pressure, top right lever	Internal components (3 of 6) on page 581
RM1-0036-020CN	Paper pickup roller assembly	Internal components (5 of 6) on page 585
RM1-0036-020CN	Paper pickup roller assembly	500-sheet paper feeder internal components on page 617
RM1-0037-020CN	Paper feed roller assembly	Internal components (5 of 6) on page 585
RM1-0037-020CN	Paper feed roller assembly	Paper tray (2 of 2) on page 597

Table 8-33 Numerical parts list (continued)

Part number	Description	Table and page
RM1-0037-020CN	Paper feed roller assembly	500-sheet paper feeder internal components on page 617
RM1-0037-020CN	Paper feed roller assembly	500-sheet paper feeder paper tray on page 621
RM1-1591-030CN	Laser/scanner assembly	Internal components (1 of 6) on page 577
RM1-1607-060CN	DC controller PCB	Printer PCBs on page 609
RM1-1608-000CN	High-voltage power PCB	Printer PCBs on page 609
RM1-1609-000CN	Toner sensor PCB	Printer PCBs on page 609
RM1-1617-000CN	Control panel assembly	External covers and panels (1 of 2) on page 573
RM1-1617-000CN	Control panel assembly	Internal components (4 of 6) on page 583
RM1-1618-000CN	Memory PCB	Printer PCBs on page 609
RM1-1628-000CN	Drum motor cable assembly	Internal components (3 of 6) on page 581
RM1-1629-000CN	Misregistration sensor cable assembly	Internal components (2 of 6) on page 579
RM1-1633-000CN	Pickup cable assembly	Internal components (5 of 6) on page 585
RM1-1640-000CN	Control panel cable	Internal components (4 of 6) on page 583
RM1-1641-000CN	Paper sensor cable assembly	Internal components (5 of 6) on page 585
RM1-1642-000CN	Formatter power cable assembly	Printer PCBs on page 609
RM1-1643-000CN	Door switch cable assembly	Internal components (3 of 6) on page 581
RM1-1644-000CN	Developing disengaging sensor cable	Disengaging drive assembly on page 591
RM1-1646-000CN	Fan cable assembly	Internal components (2 of 6) on page 579
RM1-1653-000CN	Memory contact cable	Internal components (4 of 6) on page 583
RM1-1659-000CN	Drum motor assembly	Internal components (3 of 6) on page 581
RM1-1662-000CN	Right ETB lever assembly	Internal components (4 of 6) on page 583
RM1-1663-000CN	Left ETB lever assembly	Internal components (4 of 6) on page 583
RM1-1666-000CN	Pickup motor assembly	Pickup motor assembly on page 589

Table 8-33 Numerical parts list (continued)

Part number	Description	Table and page
RM1-1668-000CN	Cartridge guide assembly, right upper	Internal components (4 of 6) on page 583
RM1-1669-000CN	Cartridge guide assembly, right lower	Internal components (4 of 6) on page 583
RM1-1671-000CN	Power switch assembly	Internal components (3 of 6) on page 581
RM1-1675-000CN	Connector guide assembly	Internal components (1 of 6) on page 577
RM1-1676-000CN	Attraction contact assembly	Internal components (1 of 6) on page 577
RM1-1677-000CN	H.V. terminal mount assembly	Internal components (1 of 6) on page 577
RM1-1692-000CN	Paper detection assembly	Internal components (5 of 6) on page 585
RM1-1693-020CN	Paper tray (Tray 2)	Paper tray (1 of 2) on page 595
RM1-1693-020CN	Paper tray (Tray 2)	Paper tray (2 of 2) on page 597
RM1-1716-000CN	Main drive assembly	Internal components (3 of 6) on page 581
RM1-1717-000CN	Disengaging drive assembly	Disengaging drive assembly on page 591
RM1-1729-000CN	Fuser drive assembly	Fuser drive assembly on page 603
RM1-1730-030CN	Delivery assembly 110 V	Internal components (6 of 6) on page 587
RM1-1730-030CN	Delivery assembly 110 V	Delivery assembly on page 601
RM1-1737-030CN	Delivery assembly 220 V	Internal components (6 of 6) on page 587
RM1-1737-030CN	Delivery assembly 220 V	Delivery assembly on page 601
RM1-1738-020CN	Right cover assembly	External covers and panels (2 of 2) on page 575
RM1-1739-000CN	Left cover assembly	External covers and panels (1 of 2) on page 573
RM1-1740-020CN	Multipurpose tray (Tray 1) assembly	External covers and panels (2 of 2) on page 575
RM1-1742-000CN	Front lower cover assembly	External covers and panels (2 of 2) on page 575
RM1-1745-000CN	Front top cover assembly	External covers and panels (1 of 2) on page 573
RM1-1746-000CN	Face-down tray assembly	External covers and panels (1 of 2) on page 573
RM1-1747-000CN	Rear cover assembly	External covers and panels (1 of 2) on page 573

Table 8-33 Numerical parts list (continued)

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RM1-1750-000CN	Lifter drive assembly	500-sheet paper feeder assembly on page 615
RM1-1750-000CN	Lifter drive assembly	500-sheet paper feeder lifter drive assembly on page 619
RM1-1756-000CN	Paper feed assembly	Internal components (4 of 6) on page 583
RM1-1757-000CN	Delivery fan	Internal components (2 of 6) on page 579
RM1-1760-020CN	Paper pickup drive assembly	500-sheet paper feeder assembly on page 615
RM1-1760-020CN	Paper pickup drive assembly	500-sheet paper feeder paper pickup drive assembly on page 623
RM1-1764-020CN	Paper tray	500-sheet paper feeder assembly on page 615
RM1-1764-020CN	Paper tray	500-sheet paper feeder paper tray on page 621
RM1-1784-090CN	Top duplexing assembly	Duplexer on page 613
RM1-1785-000CN	Duplexing feed assembly on ETB	Duplexer on page 613
RM1-2365-020CN	Paper feeder driver PCB	500-sheet paper feeder assembly on page 615
RM1-3131-060CN	Fuser 110 V	Internal components (6 of 6) on page 587
RM1-3131-060CN	Fuser 110 V	Fuser assembly on page 605
RM1-3131-060CN	Fuser 110 V	Fuser assembly on page 607
RM1-3146-060CN	Fuser 220 V	Internal components (6 of 6) on page 587
RM1-3146-060CN	Fuser 220 V	Fuser assembly on page 605
RM1-3146-060CN	Fuser 220 V	Fuser assembly on page 607
RM1-3161-080CN	ETB assembly	ETB assembly on page 599
VS1-7258-007CN	Drawer connector	Internal components (5 of 6) on page 585
WC4-5242-000CN	Interlock switch	Internal components (3 of 6) on page 581
WG8-5696-000CN	Photo interrupter	Internal components (5 of 6) on page 585
WP2-5187-000CN	Environment/humidity sensor unit	Internal components (1 of 6) on page 577
XA9-1418-000CN	Screw M3x6	Internal components (1 of 6) on page 577

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CB503-90929