hp color LaserJet
3500 and 3700
series printer

service

hp

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i n v e n t

hp color LaserJet 3500 and 3700 series printer

service manual

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This manual uses the following conventions:

is used to emphasize items that are important to the material under discussion.

Bold is used for menu items to click and for emphasis, particularly in situations where *italic* type would be confusing.

Italic type is used to indicate related documents or emphasis.

DISPLAY type indicates text as seen on the printer control panel display.

Commands you use on a computer keyboard or on the printer control panel are shown in . Two examples are and .

COURIER type indicates text that you type on a computer keyboard exactly as shown.

Notes contain important information set off from the text.

Caution messages alert you to the possibility of damage to equipment or loss of data.

Warning messages alert you to the possibility of personal injury.

Table of Contents

Printer description

This chapter contains the following sections:

HP Color LaserJet 3500 printer

The HP Color LaserJet 3500 printer is a four-color, laser printer that prints 12 pages per minute (ppm) in both monochrome (black and white) and color.

Trays. The printer comes with a multipurpose tray (Tray 1) that holds up to 100 sheets of various paper types and sizes or 10 envelopes and a 250-sheet paper feeder (Tray 2) that supports various paper sizes. It supports an optional 500-sheet paper feeder (Tray 3). See for more information.

Connectivity. The printer provides a Hi-Speed Universal Serial Port (USB) 2.0 port for connectivity.

Memory. The printer contains 64 megabytes (MB) of synchronous dynamic random access memory (SDRAM).
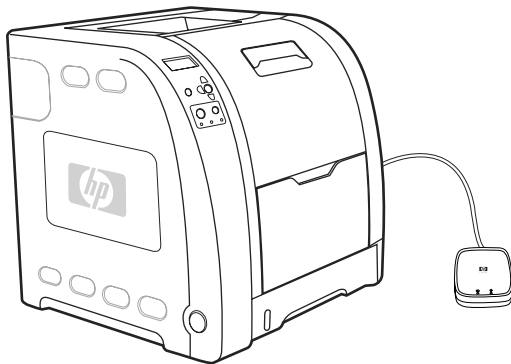
HP Color LaserJet 3500n printer

The HP Color LaserJet 3500n printer includes the features of the HP Color LaserJet 3500 printer, plus an HP Jetdirect en3700 external print server for easy connectivity to 10baseT/100base-T networks.
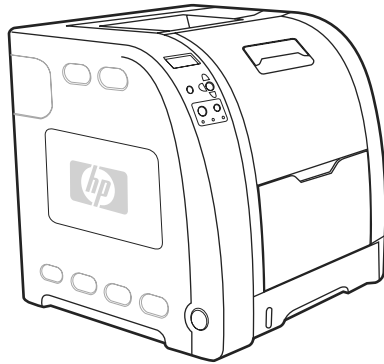
HP Color LaserJet 3700 printer

The HP Color LaserJet 3700 printer is a four-color, laser printer that prints 16 ppm in both monochrome (black and white) and color.

Trays. The printer comes with a multipurpose tray (Tray 1) that holds up to 100 sheets of various paper types and sizes or 10 envelopes and a 250-sheet paper feeder (Tray 2) that supports various paper sizes. It supports an optional 500-sheet paper feeder (Tray 3). See for more information.

Connectivity. The printer provides a USB port and a standard bidirectional parallel port (IEEE-1284 compliant) for connectivity.

Memory. The printer contains 64 MB of SDRAM. To allow for memory expansion, the printer has three dual inline memory module (DIMM) slots that accept 64, 128, or 256 MB RAM each. This printer can support up to 448 MB of memory.
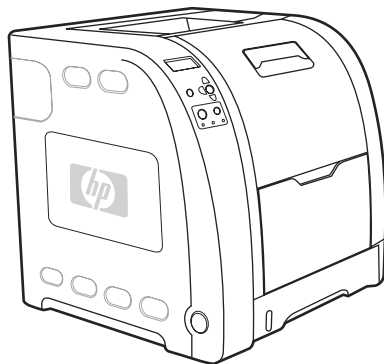
HP Color LaserJet 3700n printer

The HP Color LaserJet 3700n printer includes the features of the HP Color LaserJet 3700 printer, plus an HP Jetdirect 615n print server for easy connectivity to 10/100 base-T networks.
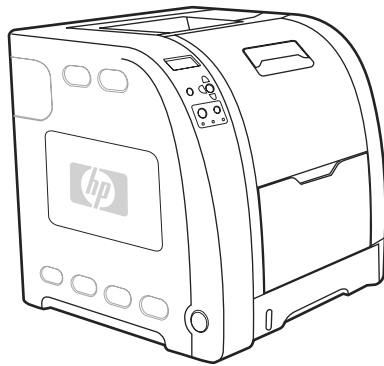
HP Color LaserJet 3700dn printer

The HP Color LaserJet 3700dn printer includes the features of the HP Color LaserJet 3700n printer, automatic 2-sided (duplex) printing, and a total of 128 MB of SDRAM.
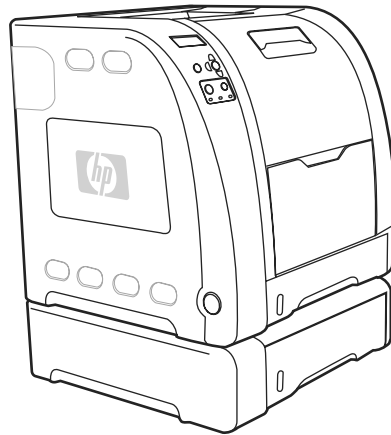
HP Color LaserJet 3700dtn printer

The HP Color LaserJet 3700dtn printer includes the features of the HP Color LaserJet 3700dn printer, plus an additional 500-sheet paper feeder (Tray 3).

Table 1-1 Features

Feature	HP Color LaserJet 3500 series printer	HP Color LaserJet 3700 series printer
	12 ppm (in both monochrome and color). If the performance of the printer is less than this, see the *HP Color LaserJet 3500 and 3700 series printer User Guide* for factors affecting printer performance. Prints on a variety of media. For more information see .	16 ppm (in both monochrome and color). If the performance of the printer is less than this, see the *HP Color LaserJet 3500 and 3700 series printer User Guide* for factors affecting printer performance. Prints on a variety of media. For more information see . MIPS RISC 350 MHz processor.
	64 MB of SDRAM.	64 MB of SDRAM. Can be expanded to 448 MB.
	Graphic display on control panel. Enhanced control panel help. HP toolbox (a web application for status and troubleshooting information). Windows® PC and Apple Macintosh print drivers.	Graphic display on control panel. Enhanced control panel help. HP toolbox (a web application for status and troubleshooting information). Windows PC and Apple Macintosh print drivers. Embedded Web server to access support and order supplies (administrator tool for network connected printers).
	Not applicable.	HP PCL 6. PostScript 3 emulation. Automatic language switching.
	Not applicable.	Fonts and forms.
	PowerSave setting. High content of recyclable components and materials.	PowerSave setting. High content of recyclable components and materials.
	Not applicable.	80 internal fonts available for both PCL and PostScript emulation. 80 printer-matching screen fonts in TrueType™ format available with the software solution.

Table 1-1 Features

Feature	HP Color LaserJet 3500 series printer	HP Color LaserJet 3700 series printer
	Prints on paper from 76 by 127 mm (3 by 5 inches) up to 215 by 355 mm (8.5 by 14 inches).	Prints on paper from 76 by 127 mm (3 by 5 inches) up to 215 by 355 mm (8.5 by 14 inches).
	Prints on paper with weights from 60 g/m2 to 163 g/m2 (16 to 43 lb bond).	Prints on paper with weights from 60 g/m2 to 163 g/m2 (16 to 43 lb bond).
	Prints on a wide range of media types including glossy, heavy, labels, film, overhead transparencies, and envelopes.	Prints on a wide range of media types including glossy, heavy, labels, film, overhead transparencies, and envelopes.
	Multiple gloss levels.	Multiple gloss levels.
	A 250-sheet paper feeder (Tray 2) that supports letter, legal, executive, executive (JIS), A4, A5, B5 (JIS), B5 (ISO), and 216 by 330 mm (8.5 by 13 inches) paper sizes.	A 250-sheet paper feeder (Tray 2) that supports letter, legal, executive, executive (JIS), A4, A5, B5 (JIS), B5 (ISO), and 216 by 330 mm (8.5 by 13 inches) paper sizes.
	Optional 500-sheet paper feeder that supports letter and A4 paper sizes (Tray 3). For more information see .	Optional 500-sheet paper feeder that supports letter and A4 paper sizes; standard on the HP Color LaserJet 3700dtn printer (Tray 3). For more information see .
	A 150-sheet, face-down, output bin (top) and a 25-sheet, face-up, output bin (rear).	A 150-sheet, face-down, output bin (top) and a 25-sheet, face-up, output bin (rear).
		Automatic 2-sided printing on HP Color LaserJet 3700dn and 3700dtn printers.
	Optional 500-sheet paper feeder that supports letter and A4 paper sizes (Tray 3).	Optional 500-sheet paper feeder (Tray 3) that supports letter and A4 paper sizes; standard on the HP Color LaserJet 3700dtn printer (Tray 3).
		DIMM.
		Optional flash DIMM.
	Hi-Speed Universal serial bus (USB) 2.0 cable interface.	Standard, bidirectional, parallel cable interface (IEEE-1284 compliant) for backward compatibility.
	HP Jetdirect en3700 external print server; standard on the HP Color LaserJet 3500n printer.	Universal serial bus (USB) cable interface.
	HP Web Jetadmin software.	Optional enhanced input/output (EIO) network card; standard on HP Color LaserJet 3700n, 3700dn, and 3700dtn printers.
		HP Embedded Web Server.
		HP Web Jetadmin software.

Table 1-1 Features

Feature	HP Color LaserJet 3500 series printer	HP Color LaserJet 3700 series printer
	Supplies status page contains information on toner level, page count, and estimated pages remaining.	Supplies status page contains information on toner level, page count, and estimated pages remaining.
	No-shake cartridge design.	No-shake cartridge design.
	Printer checks for authentic HP print cartridges at cartridge installation.	Printer checks for authentic HP print cartridges at cartridge installation.
	Internet-enabled supply ordering capabilities (using HP toolbox).	Internet-enabled supply ordering capabilities (using HP toolbox).

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 Q1319A for the HP Color LaserJet 3500 printer. The serial number contains information about the country/region of origin, the printer version, production code, and the production number of the printer (see Figure 1-7).

printer version

country/
region of
origin

production number
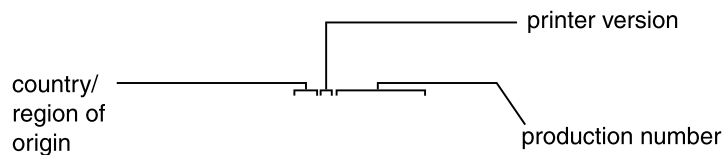
Serial number information

Table 1-2 Model names and numbers

Model name	Model number
HP Color LaserJet 3500	Q1319A
HP Color LaserJet 3500n	Q1320A
HP Color LaserJet 3700	Q1321A
HP Color LaserJet 3700n	Q1322A
HP Color LaserJet 3700dn	Q1323A
HP Color LaserJet 3700dtn	Q1324A

Power and regulatory information

The identification label on the rear of the printer also contains power rating and regulatory information as shown in Figure 1-8.

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 110V printer to a 220V printer).

Sample label

The printer must be kept in a proper 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.

Below are recommendations for the printer location and placement.

Make sure the printer has the following:

a well-ventilated, dust-free area

a hard, level surface (not more than a 2° angle) that can support approximately 43.4 kg (95.5 lbs)

a level surface that supports all four corners of the 500-sheet paper feeder

a constant temperature and humidity. (Do not install near water sources, humidifiers, air conditioners, refrigerators, or other major appliances)

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 subject to vibration

walls or other objects (There must be enough space around the printer for proper access and ventilation. See the figures and   , on the following pages.)

Space requirements

The printer must have the following amounts of space above and around it.
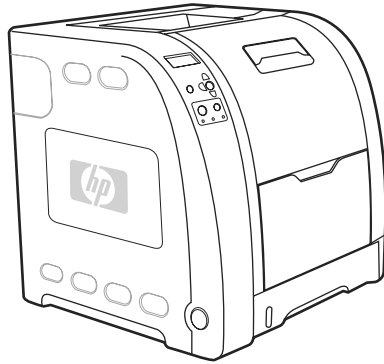
Space requirements for the HP Color LaserJet 3500 series printer

1   Height: 722 mm (28.4 in.)

2   Depth: 1480 mm (58.3 in.)

3   Width: 699.5 mm (27.6 in.)
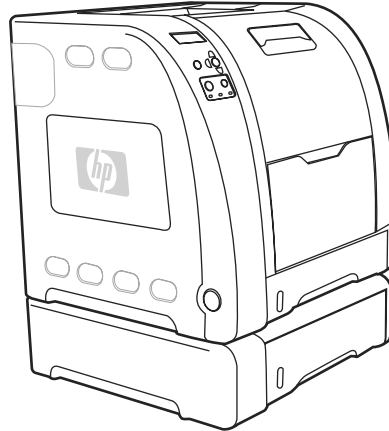
Space requirements for the HP Color LaserJet 3700 series printer with optional Tray 3

1   Height: 862 mm (34 in.)

2   Depth: 1480 mm (58.3 in.

3   Width: 699.5 mm (27.6 in.

Electrical specifications

Power requirements are based on the country/region where the printer is sold. Do not convert operating voltages. This may damage the printer and void the product warranty.

Table 1-3 lists the electrical specifications required to run the printer safely and Table 1-4 lists the power consumption.

Table 1-3   Electrical specifications

Item	110-volt models	220-volt models
	100 to 127 V (+/-10%) 50 to 60 Hz (+/- 2 Hz)	220 to 240 V (+/-10%) 50 to 60 Hz (+/- 2 Hz)
	5.3 A	3 A

Table 1-4   Power consumption for 110 and 220-volt (average, in watts)

Product	Active	Idle	Power Save	Off	Heat output-idle (BTU/hour)
	400	25	25	0.25	85
	400	26	26	0.25	89
	400	25	25	0.25	85
	400	26	26	0.25	89
	400	26	26	0.25	89
	400	26	26	0.25	89

These values are subject to change. For current information, see http://www.hp.com/support/clj3500 for the HP Color LaserJet 3500 series printer or http://www.hp.com/support/clj3700 for the HP Color LaserJet 3700 series printer.

PowerSave default activation time is 30 minutes.

Environmental specifications

Keep the printer within the environmental conditions shown in Table 1-5 for optimum performance.

Table 1-5   Environmental specifications

Environment	Recommended	Allowed
	17° to 25° C (62.6° to 77° F)	10° to 27° C (50° to 81° F)
	20% to 60% RH	10% to 70% RH
	Not applicable	0 to 2600 m (0 to 8530 ft)

Supply storage requirements

The life of supplies is greatly affected by their storage environment. Use Table 1-6 to determine the shelf life of stored supplies.

Table 1-6   Supply storage requirements

Item	Storage time	Storage condition
	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)
	40° to 15° C (104° to 59° F) within 3 minutes -20° to 25° C (-4° to 77° F) within 3 minutes	
	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
	460 to 760 mm Hg (18.1 to 29.9 in Hg)	
[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.

Table 1-7 provides the dimensions and weights of the printers.

Table 1-7   Physical dimensions

Product	Height	Depth	Width	Weight
	467 mm (18.4 in.)	447 mm (17.6 in.)	499.5 mm (19.67 in.)	36.6 kg (80.52 lbs)
	603 mm (23.8 in.)	447 mm (17.6 in.)	499.5 mm (19.67 in.)	42 kg (92.4 lbs)
	467 mm (18.4 in.)	447 mm (17.6 in.)	499.5 mm (19.67 in.)	37.8 kg (83.16 lbs)
	603 mm (23.8 in.)	447 mm (17.6 in.)	499.5 mm (19.67 in.)	43.4 kg (95.48 lbs)
	35 mm (1.4 in.)	131 mm (5.2 in.)	102 mm (4 in.)	0.159 kg (0.35 lbs)

Table 1-8 lists the acoustic emissions of the printer when it is printing and when in standby mode.

Table 1-8   Acoustic emissions

Activity level	Operator (<1m)	Bystander (1m)	Sound power
	L_{pAm}64 dB (A)	L_{pAm}49 dB (A)	L_{WAd}6.4 Bels (A) Idle
	L_{pAm}55 dB (A) (inaudible)	L_{pAm}40 dB (A) (inaudible)	L_{WAd}5.6 Bels (A) (inaudible)
	L_{pAm}N/A dB (A)	L_{pAm}N/A dB (A)	L_{WAd}N/A Bels (A)

These values are subject to change. For current information, see to http://www.hp.com/support/clj3500 for the HP Color LaserJet 3500 series printer or http://www.hp.com/support/clj3700 for the HP Color LaserJet 3700 series printer.

Duty cycle

The HP Color LaserJet 3500 series printer's maximum duty cycle is 45,000 pages per month. The HP Color LaserJet 3700 series printer's maximum duty cycle is 55,000 pages per month.

The two figures below show the location of each major assembly in the printer. These assemblies are described in the   chapter.
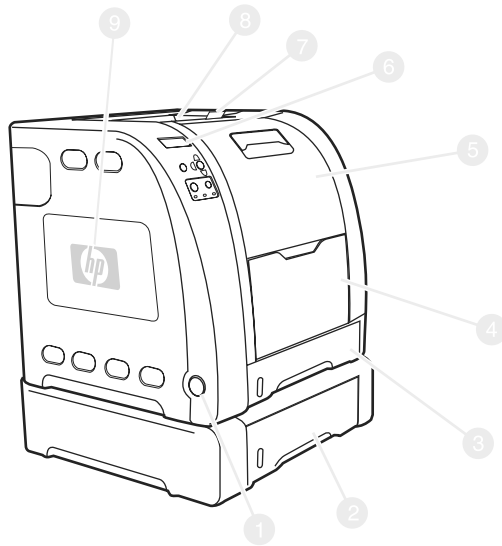
Front view, HP Color LaserJet 3500 and 3700 series printers (shown with additional 500-sheet paper feeder)

1   on/off switch

2   Tray 3 (optional; 500 sheets of standard paper)

3   Tray 2 (250 sheets of standard paper)

4   Tray 1 (100 sheets of standard paper)

5   front door

6   printer control panel

7   output bin extender (for use with all media types)

8   output bin (150 sheets of standard paper)

9   DIMM access door (available on the HP Color LaserJet 3700 series printer)
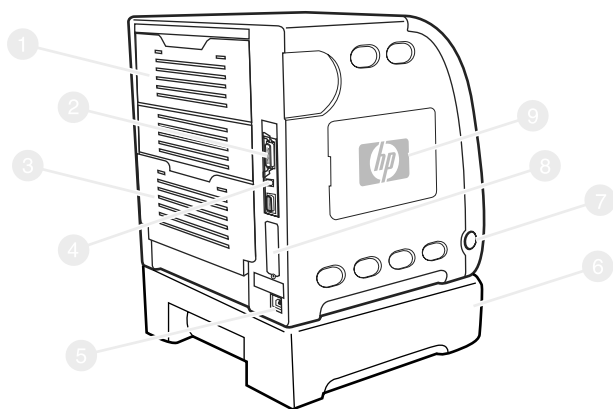
Rear view, HP Color LaserJet 3500 and 3700 series printers (shown with additional 500-sheet paper feeder)

1   upper rear door
2   parallel connection (available on the HP Color LaserJet 3700 series printer)
3   lower rear door (rear output bin) (25 sheets of standard paper)
4   USB connection
5   power connection
6   Tray 3 (optional)
7   on/off switch
8   EIO connection (available on the HP Color LaserJet 3700 series printer)
9   DIMM access door (available on the HP Color LaserJet 3700 series printer)

You can use many types of paper and other print media with this printer. This section provides guidelines and specifications for selecting and using different print media.

Before purchasing any paper or specialized forms in quantity, verify that your paper supplier obtains and understands the print media requirements specified in the *HP LaserJet Printer Family Print Media Specification Guide.*

See the *HP Color LaserJet 3500 and 3700 series printer User Guide* or *HP LaserJet Printer Family Print Media Specification Guide* for ordering information. To download a copy of the *HP LaserJet Printer Family Print Media Specification Guide* go to http://www.hp.com/support/clj3500 for the HP Color LaserJet 3500 series and to http://www.hp.com/support/clj3700 for the HP Color LaserJet 3700 series, and then select **manuals**.

It is possible that paper could meet all of the guidelines in this chapter or the *HP LaserJet Printer Family Print Media Specification Guide* and still not print satisfactorily. This may be due to abnormal characteristics of the printing environment or to other variables over which Hewlett-Packard has no control (for example, extremes in temperature and humidity).

Hewlett-Packard recommends testing any paper before buying it in large quantities.

Using paper that does not conform to the specifications listed here or in the print media guide can cause problems that require service. This service is not covered by the Hewlett-Packard warranty or service agreements.

Paper to avoid

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

Do not use paper that is too rough.

Do not use paper with cutouts or perforations, other than standard 3-hole punched paper.

Do not use multipart forms.

Do not use paper that has already been printed on, or that has been fed through a photocopier.

Do not use paper with a watermark if you are printing solid patterns.

Paper that can damage the printer

In rare circumstances, paper can damage the printer. The following paper must be avoided to prevent possible damage to the printer:

Do not use paper 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 photo paper intended for Inkjet printers.

Do not use paper that is embossed or coated, and is not designed for the temperatures of the HP Color LaserJet 3500 and 3700 series printer image fusers. Select paper that can tolerate temperatures of 190° C (374° F) for 0.1 second. HP produces a selection of paper that is designed for the HP Color LaserJet 3500 and 3700 series printer.

Do not use letterhead paper with low temperature dyes or thermography. Preprinted forms or letterhead must use inks that can tolerate temperatures of 190° C (374° F) for 0.1 second.

Do not use any media that produces hazardous emissions, or that melts, offsets, or discolors when exposed to 190° C (374° F) for 0.1 second.

For optimum results, use conventional 75 g/m² to 90 g/m² (20 to 24 lb) photocopy paper. Verify that the paper is of good quality and is free of cuts, nicks, tears, spots, loose particles, dust, wrinkles, curls, or bent edges.

Supported media weights and sizes

Table 1-9 shows the media types and sizes supported by the printer and the printer accessories

Table 1-9   Tray 1 paper sizes[1]

Tray 1	Dimensions	Weight or thickness	Capacity
	76 by 127 mm (3 by 5 in)	60 to 163 g/m² (16 to 43 lb bond)	100 sheets (75 g/m²; 20 lb bond)
	216 by 356 mm (8.5 by 14 in)	60 to 163 g/m² (16 to 43 lb bond)	100 sheets (75 g/m²; 20 lb bond)
	76 by 127 mm (3 by 5 in)	75 to 120 g/m² (20 to 32 lb bond)	Maximum stack paper height: 12 mm (0.47 in)

Table 1-9   Tray 1 paper sizes[1]

Tray 1	Dimensions	Weight or thickness	Capacity
	216 by 356 mm (8.5 by 14 in)	75 to 120 g/m² (20 to 32 lb bond)	Maximum stack height: 12 mm (0.47 in)
	76 by 127 mm (3 by 5 in)	0.12 to 0.13 mm thick (4.7 to 5 mils thick)	50 sheets
	216 by 356 mm (8.5 by 14 in)	0.12 to 0.13 mm thick (4.7 to 5 mils thick)	50 sheets
	76 by 127 mm (3 by 5 in)	60 to 90 g/m² (16 to 24 lb bond)	10 envelopes
	216 by 356 mm (8.5 by 14 in)	60 to 90 g/m² (16 to 24 lb bond)	10 envelopes
	76 by 127 mm (3 by 5 in)	75 to 163 g/m² (20 to 43 lb bond)	50 sheets
	216 by 356 mm (8.5 by 14 in)	75 to 163 g/m² (20 to 43 lb bond)	50 sheets
	76 by 127 mm (3 by 5 in)	135 to 216 g/m² (50 to 80 lb cover)	50 sheets
	216 by 356 mm (8.5 by 14 in)	135 to 216 g/m² (50 to 80 lb cover)	50 sheets

[1]The printer supports a wide range of standard and custom sizes of print media. Capacity can vary depending on media weight and thickness and environmental conditions. Smoothness—100 to 250 (Sheffield).

[2] Use only transparencies designed for use with HP Color LaserJet printers. This printer can detect transparencies that were not designed for use with HP Color LaserJet printers.

The following table lists the standard sizes of paper that the printer supports in Tray 2.

Table 1-10   Tray 2 paper sizes[1]

Tray 2	Dimensions	Weight or thickness	Capacity
	216 by 279 mm (8.5 by 11 in)	60 to 105 g/m² (16 to 28 lb bond)	250 sheets (75 g/m²; 20 lb bond)
	216 by 356 mm (8.5 by 14 in)	60 to 105 g/m² (16 to 28 lb bond)	250 sheets (75 g/m²; 20 lb bond)
	184 by 267 mm (7.3 by 10.5 in)	60 to 105 g/m² (16 to 28 lb bond)	250 sheets (75 g/m²; 20 lb bond)
	216 by 330 mm (8.5 by 13 in)	60 to 105 g/m² (16 to 28 lb bond)	250 sheets (75 g/m²; 20 lb bond)
	210 by 297 mm (8.3 by 11.7 in)	60 to 105 g/m² (16 to 28 lb bond)	250 sheets (75 g/m²; 20 lb bond)
	148 by 210 mm (5.8 by 8.3 in)	60 to 105 g/m² (16 to 28 lb bond)	250 sheets (75 g/m²; 20 lb bond)
	182 by 257 mm (7.2 by 10.1 in)	60 to 105 g/m² (16 to 28 lb bond)	250 sheets (75 g/m²; 20 lb bond)
	176 by 250 mm (6.9 by 9.8 in)	60 to 105 g/m² (16 to 28 lb bond)	250 sheets (75 g/m²; 20 lb bond)

[1] Capacity can vary depending on media weight and thickness, and environmental conditions.

The following table lists the standard sizes of paper that the printer supports in Tray 3.

Table 1-11   Tray 3 paper sizes[1]

Tray 3	Dimensions	Weight or thickness	Capacity
	215 by 279 mm (8.5 by 11 in)	60 to 105 g/m^2 (16 to 28 lb bond)	500 sheets (75 g/m^2; 20 lb bond)
	210 by 296 mm (8.3 by 11.7 in)	60 to 105 g/m^2 (16 to 28 lb bond)	500 sheets (75 g/m^2; 20 lb bond)

[1] Capacity can vary depending on media weight and thickness, and environmental conditions.

Table 1-12   Automatic 2-sided printing (available on some models of the HP Color LaserJet 3700 series printer)[1]

Automatic 2-sided printing	Dimensions	Weight or thickness	Capacity
	216 by 279 mm (8.5 by 11 in)	60 to 105 g/m^2 (16 to 28 lb bond)	unlimited sheets
	216 by 356 mm (8.5 by 14 in)	60 to 105 g/m^2 (16 to 28 lb bond)	unlimited sheets
	210 by 297 mm (8.3 by 11.7 in)	60 to 105 g/m^2 (16 to 28 lb bond)	unlimited sheets

[1] The printer automatically prints on paper weights up to 163 gm^2 (43 lb bond). However, automatic 2-sided printing on weights above the maximum value noted in this table can produce unexpected results.

Manual 2-sided printing. Any of the supported paper sizes and types listed for printing from Tray 1 can be manually duplexed. See the 2-sided (duplex) printing section in the *HP Color LaserJet 3500 and 3700 series printer User Guide* for more information.

Use these guidelines when printing on special types of media.

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 with this printer. HP products are designed to work together for optimum printing results.

In either the software application or the printer driver, select **TRANSPARENCY** as the media type, or print from a tray that is configured for transparencies.

Transparencies not designed for LaserJet printing will melt in the printer, causing damage to the printer. Do not use transparencies designed for monochrome printing.

Glossy paper

When printing on glossy paper, use the following guidelines:

In either the software application or the driver, select **Glossy** as the media type, or print from a tray that is configured for glossy paper.

Select **Glossy** for media weights up to 105 g/m^2 (28 lb bond). Select **Heavy Glossy** for media weights up to 120 g/m^2 (32 lb bond).

Because this affects all print jobs, it is important to return the printer to its original settings once the job has printed.

Hewlett-Packard recommends using HP Color LaserJet Soft Gloss paper with this printer. HP products are designed to work together for optimum printing results. If HP Color LaserJet Soft Gloss paper is not used with this printer, print quality may be compromised.

Colored paper

When printing on colored paper, use the following guidelines:

Colored paper should be of the same high quality as white xerographic paper.

Pigments used must be able to withstand the printer fusing temperature of 190° C (374° F) for 0.1 second without deterioration.

Do not use paper with a colored coating that was added after the paper was produced.

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

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

Adhere to the following guidelines to help ensure proper printing on envelopes and to help prevent printer jams:

Do not load more than 10 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 fusing process.

Envelopes should be loaded face-down with the top of the envelope to the left, and the short edge feeding into the printer first.

In high humidity environments, envelopes should be printed long-edge first to prevent them from sealing during printing. For long-edge printing, envelopes should be loaded long edge first, face down. See the Printing envelopes from Tray 1 section in the *HP Color LaserJet 3500 and 3700 series printer User Guide* to change the printer drivers envelope orientation.

Labels

In either the application or the printer driver, select **Labels** as the media type, or configure Tray 1 for labels.

When printing labels, use the following guidelines:

Verify that the label adhesive material can tolerate temperatures of 190° C (374° F) for 0.1 second.

Verify that there is no exposed adhesive material between the labels. Exposed areas can cause labels to peel off during printing, which can cause paper jams. Exposed adhesive can also cause damage to printer components.

Do not re-feed a sheet of labels.

Verify that labels lie flat.

Do not use labels that are wrinkled, bubbled, or otherwise damaged.

Heavy paper

When printing on heavy paper, use the following guidelines:

Any tray will print most heavy media that does not exceed 105 g/m^2 (28 lb bond).

Use cardstock only in Tray 1 (135 g/m^2 to 216 g/m^2; 50 to 80 lb cover).

In either the software application or the printer driver, select **HEAVY** (106 g/m^2 to 163 g/m^2; 28 to 43 lb bond) or **CARDSTOCK** (135 g/m^2 to 216 g/m^2; 50 to 80 lb cover) 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.

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 using 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 printer driver, select **TOUGH PAPER** as the media type, or print from a tray that is configured for HP LaserJet Tough paper.

Transparent media that are not designed for LaserJet printing will melt in the printer, causing damage to the printer.

Preprinted forms and letterhead

When printing on preprinted forms and letterhead, use the following guidelines:

Forms and letterhead must be printed with heat-resistant inks that will not melt, vaporize, or release hazardous emissions when subjected to the printer fusing temperature of approximately 190° C (374° F) for 0.1 second.

Inks must be non-flammable and should not adversely affect any printer rollers.

Forms and letterhead should be sealed in a moisture-proof wrapping to prevent changes during storage.

Before loading preprinted paper such as forms and letterhead, verify that the ink on the paper is dry. During the fusing process, wet ink can come off of preprinted paper.

When duplex printing on the HP Color LaserJet 3700 series printer, load preprinted forms and letterhead into Tray 2 and Tray 3 first side up, top edge toward the back of the tray. To load preprinted forms and letterhead into Tray 1, load them with the first side down, bottom edge in first.

When simplex (1-sided) printing, load preprinted forms and letterhead into Tray 2 and Tray 3 face-up with the top edge of the page to the left. To load preprinted forms and letterhead into Tray 1, place them in the tray with the side to be printed on facing up, and top, short edge in first.

Recycled paper

This printer supports the use of recycled paper. Recycled paper must meet the same specifications as standard paper. See the *HP LaserJet Printer Family Print Media Specification Guide*. Hewlett-Packard recommends that recycled paper contain no more than five percent ground wood.

Media weight

Table 1-13 shows equivalent weights for different grades of paper. A boldface type value indicates a commonly available standard weight for that grade.

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 1-13   Weight equivalence table

Bond weight (17 by 22 in.)	Text/ Book weight (25 by 38 in.)	Cover weight (20 by 26 in.)	Bristol weight (22.5 by 28.5 in.)	Index weight (25.5 by 30.5 in.)	Tag weight (24 by 36 in.)	Metric weight
16#	41#	22#	27#	33#	37#	60 g/m2
17#	43#	24#	29#	35#	39#	64 g/m2
20#	50# *	28#	34#	42#	46#	75 g/m2
21#	54#	30#	36#	44#	49#	80 g/m2
24#	60# *	33#	41#	50#	55#	90 g/m2
27#	68#	37#	45#	55#	61#	100 g/m2
28#	70# *	39#	49#	58#	65#	105 g/m2
29#	74#	41#	50#	61#	68#	110 g/m2
32#	80# *	44#	55#	67#	74#	120 g/m2
36#	90#	50#	62#	75#	83#	135 g/m2
39#	100#	55#	67#	82#	91#	148 g/m2
40#	101#	55#	68#	83#	92#	150 g/m2
43#	110#	60#	74#	90#	100#	163 g/m2
45#	115#	63#	77#	94#	104#	170 g/m2
47#	119#	65#	80#	97#	108#	176 g/m2
51#	128#	70#	86#	105#	117#	190 g/m2
53#	134#	74#	90#	110#	122#	199 g/m2
54#	137#	75#	93#	113#	125#	203 g/m2
58#	146#	80#	98#	120#	133#	216 g/m2
65#	165#	90#	111#	135#	150#	244 g/m2
66#	169#	92#	114#	138#	154#	250 g/m2
67#	171#	94#	115#	140#	155#	253 g/m2
70#	178#	98#	120#	146#	162#	264 g/m2
72#	183#	100#	123#	150#	166#	271 g/m2

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 the environment.

Ozone production

This product generates no appreciable ozone gas (O^3).

Paper use

This product's optional, automatic, 2-sided printing feature (duplex printing) can reduce paper usage and the resulting demands on natural resources.

Plastics

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

HP LaserJet Printing Supplies

In many countries/regions, this product's printing supplies (print cartridges, fuser, and transfer unit) can be returned to HP through the HP Printing Supplies Returns and Recycling Program. An easy-to-use and free takeback program is available in over 48 countries/regions. Multi-lingual program information and instructions are included in every new HP LaserJet print cartridge and supplies package.

HP Printing Supplies Returns and Recycling Program information

Since 1990, the HP Printing Supplies Returns and Recycling Program has collected millions of used LaserJet print cartridges that otherwise might have been discarded in the world's landfills. The HP LaserJet print cartridges and supplies are collected and bulk-shipped to our resource and recovery partners, who disassemble the cartridges. After a thorough quality inspection, selected parts are reclaimed for use in new cartridges. Remaining materials are separated and converted into raw materials for use by other industries to make a variety of useful products.

> **U.S. returns.** For a more environmentally responsible return of used cartridges and supplies, HP encourages the use of bulk returns. Simply bundle two or more cartridges together and use the single, pre-paid, and pre-addressed UPS label that is supplied in the package. For more information in the U.S., call 1-800-340-2445 or visit the HP LaserJet Supplies website at http://www.hp.com/recycle.

> **Non-U.S. recycling returns.** Non-U.S. customers should call the local HP Sales and Service Office or visit the http://www.hp.com/recycle website for further information regarding availability of the HP Supplies Returns and Recycling Program.

Recycled paper

This product is capable of using recycled papers when the paper meets the guidelines outlined in the *HP LaserJet Printer Family Print Media Specification Guide*. This product is suitable for the use of recycled paper according to DIN 19309.

Material restrictions

This product does not contain batteries.

This product does not contain added mercury.

This product contains lead in solder that could require special handling at end-of-life.

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

Material Safety Data Sheet (MSDS)

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

For more information

On HP environmental programs, including:

> 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

See http://www.hp.com/environment or http://www.hp.com/hpinfo/community/environment/.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If this equipment is not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase separation between equipment and receiver.

Connect equipment to an outlet on a circuit different from that to which the receiver is located.

Consult your dealer or an experienced radio/TV technician.

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

Use of a shielded interface cable is required to comply with the Class B limits of Part 15 of FCC rules.

Laser safety statement

The Center for Devices and Radiological Health (CDRH) of the U.S. Food and Drug Administration has implemented regulations for laser products manufactured since August 1, 1976. Compliance is mandatory for products marketed in the United States. The printer 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 printer is completely confined within protective housings and external covers, the laser beam cannot escape during any phase of normal user operation.

Using controls, making adjustments, or performing procedures other than those specified in this service manual may result in exposure to hazardous radiation.

Toner safety

Hewlett-Packard encourages responsible disposal of HP LaserJet printer supply items through its Environmental Collection Program. For details on this program, see the recycling instruction guide enclosed with each supply item.

In case of toner spills, skin and clothing are best cleaned by removing as much toner as possible with a dry tissue, then washing with cold water. Hot water causes toner to permanently set into clothing.

Canadian DOC regulations

Complies with Canadian EMC Class B requirements.

«Conforme â la classe B des normes canadiennes de compatibilitê êlectromagnêtiques.

«CEM».»

EMI statement (Korea)

EMI statement for Korea

VCCI statement (Japan)

VCCI statement for Japan

Laser statement for Finland

Luokan 1 laserlaite

HP Color LaserJet 3500, 3500n, 3700, 3700n, 3700dn, 3700dtn, laserkirjoitin on käyttäjän kannalta turvallinen luokan 1 laserlaite. Normaalissa käytössä kirjoittimen suojakotelointi estää lasersäteen pääsyn laitteen ulkopuolelle. Laitteen turvallisuusluokka on määritetty standardin EN 60825-1 (1994) mukaisesti.

VAROITUS !

Laitteen käyttäminen muulla kuin käyttöohjeessa mainitulla tavalla saattaa altistaa käyttäjän turvallisuusluokan 1 ylittävälle näkymättömälle lasersäteilylle.

VARNING !

Om apparaten används på annat sätt än i bruksanvisning specificerats, kan användaren utsättas för osynlig laserstrålning, som överskrider gränsen för laserklass 1.

HUOLTO

HP Color LaserJet 3500, 3500n, 3700, 3700n, 3700dn, 3700dtn -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 näkymättömällelasersäteilylle 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 775-795 nm Teho 5 m W Luokan 3B laser.

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 3500
Regulatory Model Number[3]	BOISB-0302-01

Product Options:	ALL

conforms to the following Product Specifications:

Safety:	IEC 60950:1999 / EN60950: 2000
	IEC 60825-1:1993 +A1 / EN 60825-1:1994 + A11 (Class 1 Laser/LED Product)
	GB4943-1995
EMC:	CISPR 22:1997 / EN 55022:1998 Class B[1]
	EN 61000-3-2:1995 / A14
	EN 61000-3-3:1995
	EN 55024:1998
	FCC Title 47 CFR, Part 15 Class B[2] / ICES-003, Issue 3 / GB9254-1998

Supplementary Information:

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

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

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

3) For regulatory purposes, this product is assigned a Regulatory model number. This number should not be confused with the marketing names (HP Color LaserJet 3500 series) or the product numbers (Q1319A, Q1320A).

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Boise, Idaho USA

12 August, 2003

For Regulatory Topics Only:

Australia Contact: Product Regulations Manager, Hewlett-Packard Australia Ltd., 31-41 Joseph Street, Blackburn, Victoria 3130, Australia.

European Contact: Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard Gmbh, Department HQ-TRE / Standards Europe, Herrenberger Straáe 140, D-71034 Böblingen (FAX: +49-7031-14-3143)

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

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 3700/3700n/3700dn/3700dtn
Regulatory Model Number[4]	BOISB-0302-00
Product Numbers:[5]	Q1321A, Q1322A, Q1323A, Q1324A
	Q2486A - Optional 500-Sheet Input Tray
Product Options:	ALL

conforms to the following Product Specifications:

Safety:	IEC 60950:1999 / EN60950: 2000
	IEC 60825-1:1993 +A1:1997 +A2:2001 / EN 60825-1:1994 + A11:1996 + A2:2001
	(Class 1 Laser/LED Product) / GB4943-1995
EMC:	CISPR 22:1997 / EN 55022:1998 Class B[1, 3]
	EN 61000-3-2:1995 / A14
	EN 61000-3-3:1995
	EN 55024:1998
	FCC Title 47 CFR, Part 15 Class B[2] / ICES-003, Issue 3 / GB9254-1998

Supplementary Information:

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

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

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

3) The product includes LAN (Local Area Network) options. When the interface cable is attached to LAN connectors, the product meets the requirements of EN55022 Class A in which case the following applies: "Warning - This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures".

4) For regulatory purposes, this product is assigned a Regulatory model number. This number should not be confused with the marketing names (HP Color LaserJet 3700 series) or the product numbers (Q1321A, Q1322A, Q1323A, Q1324A).

5) The suffix letter 'A' in the model number may be replaced by 'M', 'Q', 'V', or 'W' for early marketing or other prototype units. However, their construction is identical to units having a product number with suffix letter of 'A'. The product may include an additional suffix letter "R".

Boise, Idaho USA

12 August, 2003

For Regulatory Topics Only:

Australia Contact: Product Regulations Manager, Hewlett-Packard Australia Ltd., 31-41 Joseph Street, Blackburn, Victoria 3130, Australia.

European Contact: Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard Gmbh, Department HQ-TRE / Standards Europe, Herrenberger Straáe 140, D-71034 Böblingen (FAX: +49-7031-14-3143)

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

Declaration of Conformity

according to ISO/IEC Guide 22 and EN45014

Manufacturer's Name:	Hewlett-Packard Company
Manufacturer's Address:	8000 Foothills Blvd.
	Roseville, CA 95747-5677, U.S.A.

declares that the product

Product Name:	Jetdirect en3700 External Print Server
Regulatory Model Number[4]	J7942A

conforms to the following Product Specifications:

Safety:	EN60950 (1992) +A1,A2,A3,A4,AII / IEC 950 (1991) +A1,A2,A3,A4
	EN60825-1 (1994) / IEC 825-1 (1993), Class 1
	GB 4943 (1995)
EMC:	EN 55022 (1998) / CISPR-22 (1997) Class B
	GB 9254 (1988)
	EN 55024 (1998)
	IEC 61000-4-2 (1995); EN 61000-4-2 (1995)
	IEC 61000-4-3 (1995); EN 61000-4-3 (1996)
	IEC 61000-4-4 (1995); EN 61000-4-4 (1995)
	IEC 61000-4-5 (1995); EN 61000-4-5 (1995)
	IEC 61000-4-6 (1996); EN 61000-4-6 (1996)
	IEC 61000-4-8 (1993); EN 61000-4-8 (1993)
	IEC 61000-4-11 (1994); EN 61000-4-11 (1994)
	EN61000-3-2 (1995)
	EN61000-3-3 (1995)
	FCC Title 47 CFR, Part 15 Class B

Supplementary Information:

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

This product was tested in typical configurations with Hewlett-Packard Co. products.

Roseville, California 95747, USA

4 March 2003

For Regulatory Topics Only:

Australia Contact: Product Regulations Manager, Hewlett-Packard Australia Ltd., 31-41 Joseph Street, Blackburn, Victoria 3130, Australia.

European Contact: Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard Gmbh, Department HQ-TRE / Standards Europe, Herrenberger Straáe 140, D-71034 Böblingen (FAX: +49-7031-14-3143)

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

Service approach

This chapter contains the following sections.

Printer repair normally begins by using the printer internal diagnostics and the three-step process below.

Step 1   Isolate the problem to the major system (for example, the host computer, the network or server, or the printer system).

Step 2   Determine if the problem is located in the accessories or in the printer engine.

Step 3   Troubleshoot the problem.

Once a faulty part is located, 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.

Ordering parts

Field replaceable 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).

Use only accessories specifically designed for this printer. Accessories can be ordered from an authorized service or support provider. See   later in this chapter and   in chapter 8 for additional ordering information.

By phone:

Hewlett-Packard Customer Support-Americas (HPCS-A)
(800) 227-8164 (U.S. only)

Hewlett-Packard Customer Support-Europe (HPCS-E)
(49) (70) 311 4225 (3)

By Internet:

Hewlett-Packard Parts Direct
http://partsdirect.hp.com

By mail:

Hewlett-Packard Company	Hewlett-Packard Company
HPCS-A	HPCS-E
8050 Foothills Blvd.	Wolf-Hirth Straße 33
Roseville, CA 95678	D-7030 Böblingen, Germany

Ordering supplies

Order supplies directly from Hewlett-Packard. The phone numbers for ordering supplies are:

U.S. HP Shopping (home) 1-888-999-4747

U.S. Small/Medium Business store 1-800-888-0262

Canada (800) 387-3154; Toronto (416) 671-8383

United Kingdom (07) (34) 441 212

Other local phone numbers may also be available

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 website:

In the U.S.: http://www.hp.com/support/clj3500 or http://www.hp.com/support/clj3700

Printer drivers may be obtained from the following websites:

In China: http://www.hp.com.cn/support/clj3500 or ftp://www.hp.com.cn/support/clj3700
In Japan: ftp://www.jpn.hp.com/support/clj3500 or ftp://www.jpn.hp.com/support/clj3700
In Korea: http://www.hp.co.kr/support/clj3500 or http://www.hp.co.kr/support/clj3700
In Taiwan: http://www.hp.com.tw/support/clj3500 or http://www.hp.com.tw/support/clj3700
     or the local driver website: http://www.dds.com.tw

HP service parts information CD-ROM

This powerful, CD-ROM-based parts information tool is designed to give users fast, easy access to parts information such as pricing and recommended stocking lists for a wide range of HP products. To subscribe to this quarterly service in the U.S. or Canada, call (800) 336-5987. In Asia Pacific, call (65) 740-4484. Parts identification and pricing information can also be checked via the World Wide Web at http://www.hp.com/go/partsinfo.

HP support assistant CD-ROM

This support tool offers a comprehensive online information system designed to provide technical and product information about HP products. To subscribe to the quarterly service in the U.S. or Canada, call (800) 457-1762. In Hong Kong SAR, Indonesia, Malaysia, or Singapore, call Mentor Media at (65) 740-4477.

Customer care reseller sales and service support center

The Customer Care Reseller Sales and Support Center is available to assist resellers and service technicians. To reach this support center, call (1) (800) 544-9976.

HP authorized resellers and support

To locate authorized HP resellers and support, call (800) 243-9816 in the U.S. or (800) 387-3867 in Canada.

HP service agreements

Call (800) 743-8305 in the U.S. or (800) 268-1221 in Canada.

Other areas

Outside of North America and Europe, contact the local HP sales office for assistance in obtaining technical support for resellers and service technicians.

Ordering related documentation and software

Table 2-1 shows where to order related documentation and software. Telephone numbers for the various sources are:

Hewlett-Packard Customer Support-Americas (HPCS-A)
1-800-hpinvent (U.S. only)

Hewlett-Packard Customer Support-Europe (HPCS-E)
(49) (70) 311 4225 (3)

Table 2-1   Related documentation and software

Description	Part Number
HP LaserJet Family Print Media Guide	5851-1468
HP Color LaserJet 3500 Series Getting Started Guide	Q1319-90901
HP Color LaserJet 3700 Series Getting Started Guide	Q1321-90925
HP Color LaserJet 3500 and 3700 Series Printer User Guide	Q1321-90921
HP Color LaserJet 3500/3700 Series Printer Service and Support CD-ROM	Q1321-60115
HP Color LaserJet 3500/3700 Series Printer Service Training Kit	Q1321-60117

Hewlett-Packard limited warranty statement

HP PRODUCT	DURATION OF LIMITED WARRANTY
HP Color LaserJet 3500, 3500n, 3700, 3700n, 3700dn, and 3700dtn printers	One-year limited warranty

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

HP warrants to you that HP software will not fail to execute its programming instructions after the date of purchase, for the period specified above, due to defects in material and workmanship when properly installed and used. If HP receives notice of such defects during the warranty period, HP will replace software 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, you will be entitled to a refund of the purchase price upon prompt return of the product.

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

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

TO THE EXTENT ALLOWED BY LOCAL LAW, THE ABOVE WARRANTIES ARE EXCLUSIVE AND NO OTHER WARRANTY 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. Some countries/regions, states or provinces do not allow limitations on the duration of an implied warranty, so the above limitation or exclusion might not apply to you. This warranty gives you specific legal rights and you might also have other rights that vary from country/region to country/region, state to state, or province to province.

HP's limited warranty is valid in any country/region or locality where HP has a support presence for this product and where HP has marketed this product. The level of warranty service you receive may vary according to local standards. HP will not alter form, fit or function of the product to make it operate in a country/region for which it was never intended to function for legal or regulatory reasons.

TO THE EXTENT ALLOWED BY LOCAL LAW, THE REMEDIES IN THIS WARRANTY STATEMENT ARE YOUR 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. Some countries/regions, states or provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

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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.

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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.

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HP has several types of maintenance agreements that meet a wide range of support needs. Maintenance agreements are not part of the standard warranty. Support services may vary by area. Check with your local HP dealer to determine the services available to you.

On-site service agreements

To provide you with the level of support best suited to your needs, HP has on-site service agreements with a selection of response times.

Next-day on-site service

This agreement provides support by the next working day following a service request. Extended coverage hours and extended travel beyond HP's designated service zones are available on most on-site agreements (for additional charges).

Weekly (volume) on-site service

This agreement provides scheduled weekly on-site visits for organizations with many HP products. This agreement is designated for sites using 25 or more workstation products, including printers, plotters, computers, and disk drives.

Extended warranty

HP Carepak provides coverage for the HP hardware product and all HP-supplied internal components. The hardware maintenance covers a one- to three-year period from date of the HP product purchase. For more information, contact the HP Customer Care Service and Support group.

Installation and configuration

This chapter contains the following sections.

HP Color LaserJet 3500 printer package contents

1   HP Color LaserJet 3500

2   USB cable

3   Power cable

4   Four print cartridges

5   CD-ROM (the CD-ROM contains the user guide)

6   Control panel overlay

7   Getting started guide
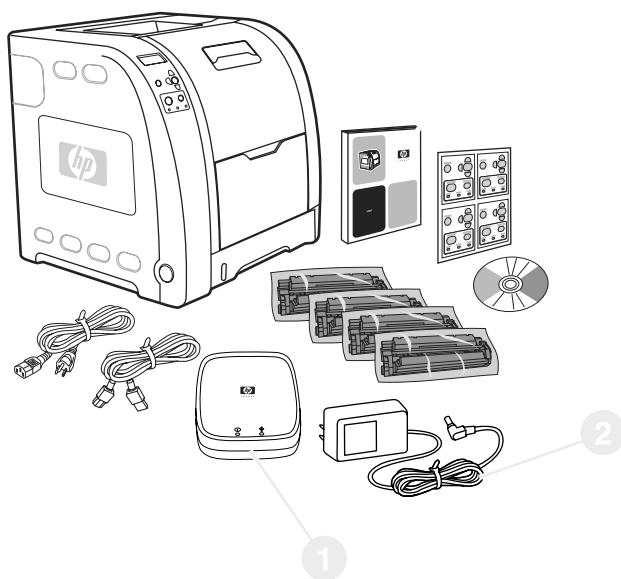
Additional contents shipped with the HP Color LaserJet 3500n printer

1   HP Jetdirect en3700 external print server (3500n only)

2   Power cable

The items listed here are for the external print server connection.
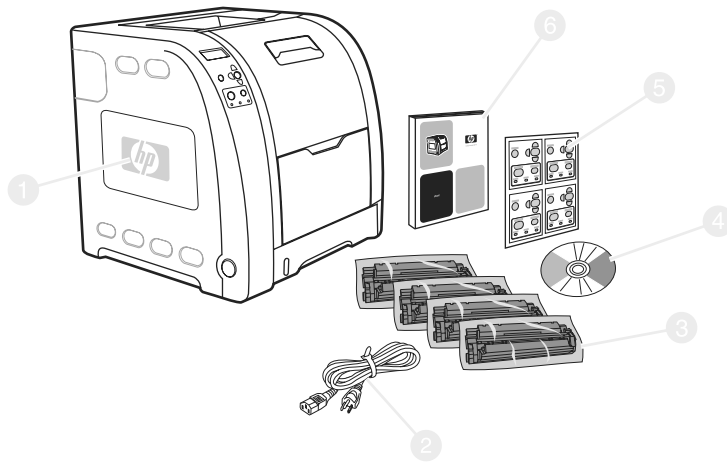
HP Color LaserJet 3700, 3700n, or 3700dn printers package contents

1   HP Color LaserJet 3700, 3700n, or 3700dn

2   Power cable

3   Four print cartridges

4   CD-ROM (the CD-ROM contains the user guide)

5   Control panel overlay

6   Getting started guide
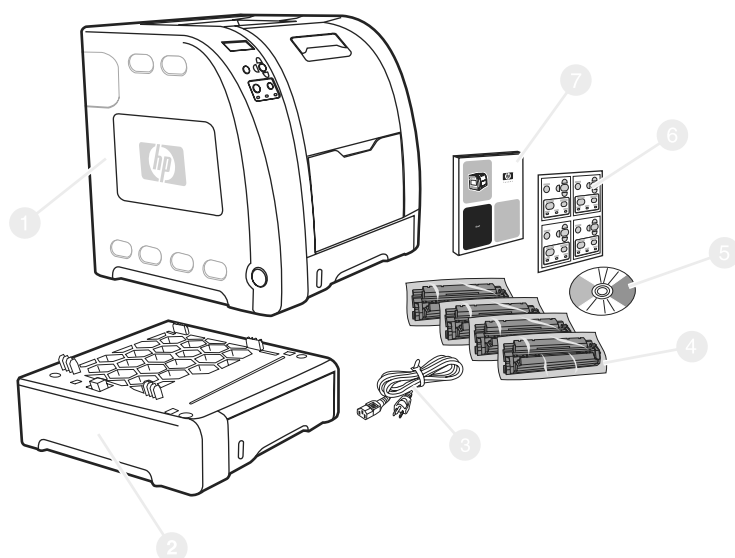
HP Color LaserJet 3700 dtn printer package contents

1   HP Color LaserJet 3700dtn

2   Tray 3 (500-sheet paper feeder tray)

3   Power cable

4   Four print cartridges

5   CD-ROM (the CD-ROM contains the user guide)

6   Control panel overlay

7   Getting started guide

Parallel and USB cables are not included with HP Color LaserJet 3700 series printers. Use an IEEE 1284-compliant, parallel cable or a standard, two-meter USB cable.

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

The printer weighs approximately 33.5 kg (73.3 lbs). HP recommends having two or more people lift or move the printer.

1   Prepare the location by selecting a sturdy, level surface in a well-ventilated, dust-free area. Make sure there is enough space around the printer so that the air vents on the left side and rear of the printer are not blocked.
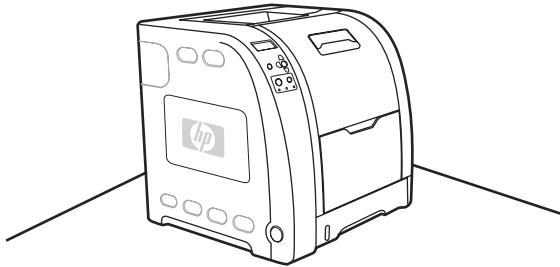
Do not place the printer in direct sunlight or in an area that has abrupt temperature and humidity changes.

Recommended ranges: 17° to 25° C (62.6° to 77° F) and 20 to 60 percent relative humidity.
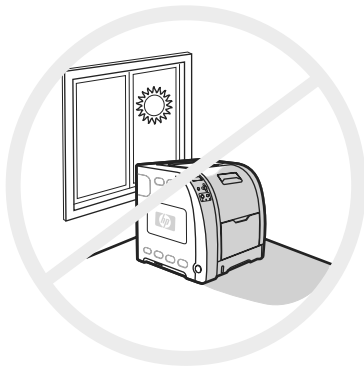
If the printer has an optional 500-sheet paper feeder, it is packaged on top of the printer. Lift the 500-sheet paper feeder from the package, and place it in the prepared location.

2   Lift the printer from the packing pallet and place it in the prepared location. Two people must lift and move the printer.

Do not lift the printer by the Tray 2 handle.
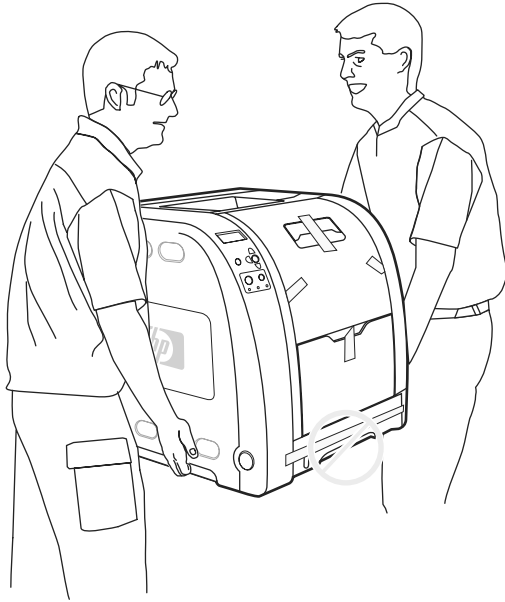
3 If you are using an optional 500-sheet paper feeder, lift the printer using the handles and align the pegs on Tray 3. Lower the printer onto the tray.

Only one Tray 3 (500-sheet input tray) can be installed.
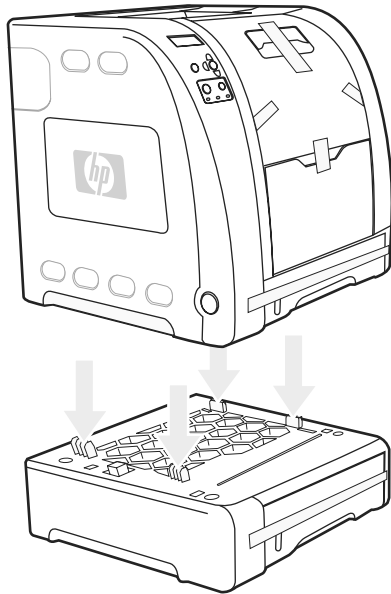
4 Remove all external orange tape, orange protectors, and other packaging material.
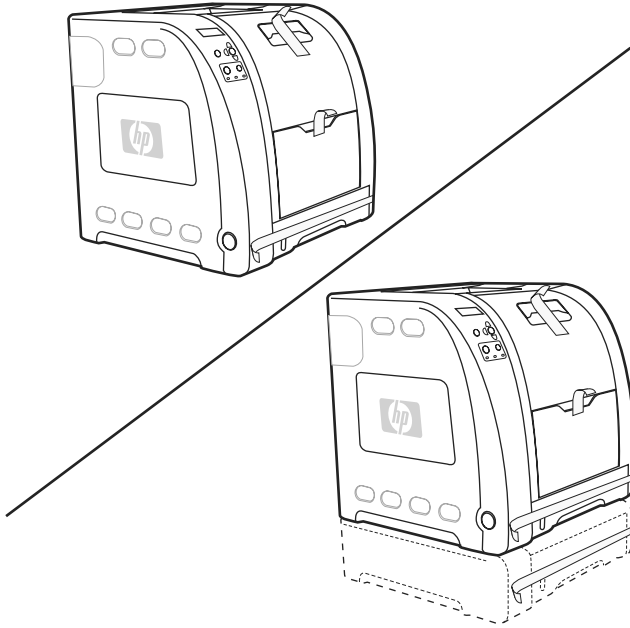
5 Open Tray 2 and Tray 3 (if necessary), and remove the orange shipping lock inside each tray.
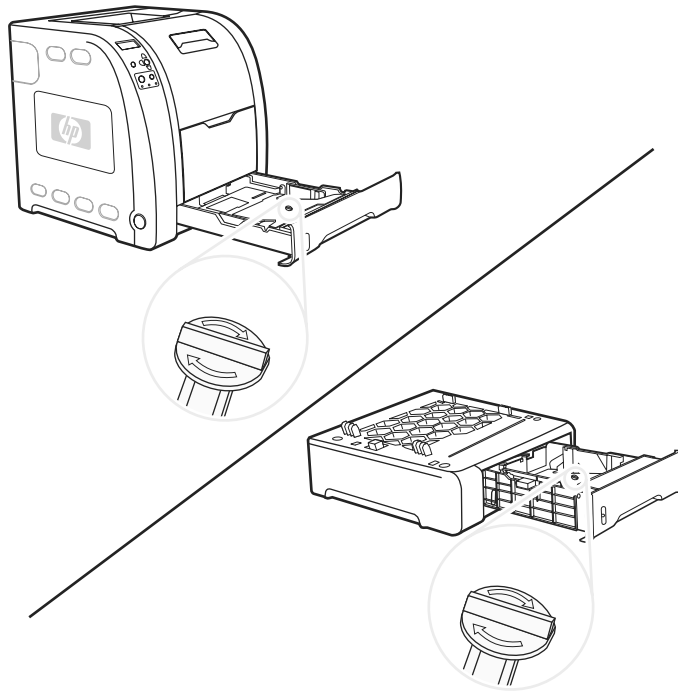
6 Open the lower rear door, and make sure that the two blue pressure release lever actuators are in the upright position. The two release levers are located on the left and right side of the lower rear door.
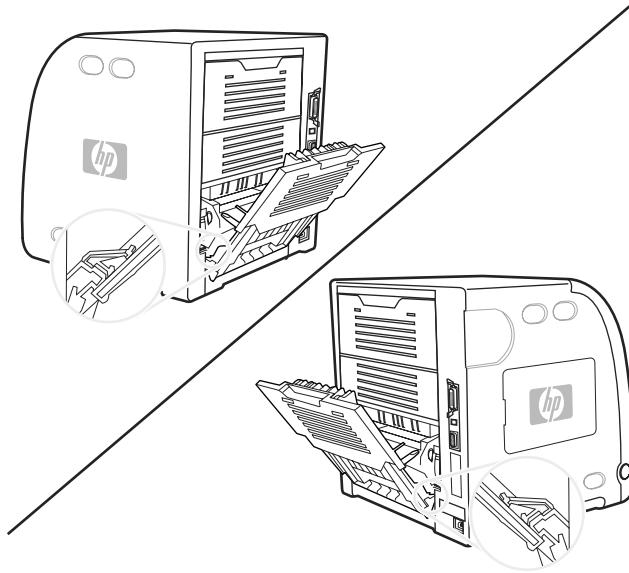
7 Close the lower rear door.

8 Lift the front door handle, and pull down the front door.

When you open the front door, you will hear components clicking.
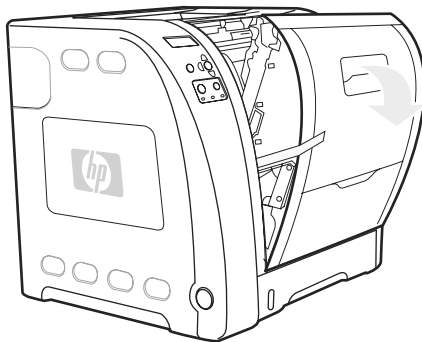
Do not place anything on the transfer unit. Do not touch the top of the transfer unit or the contacts on the left side of the transfer unit.
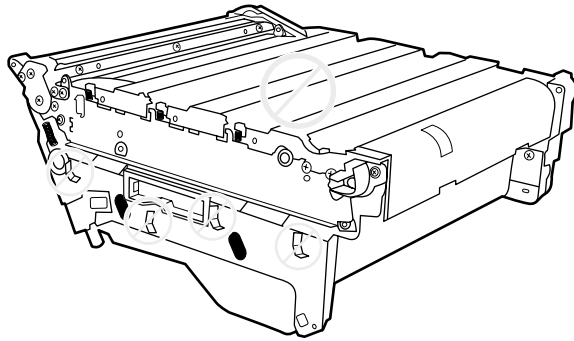
9 Remove the orange tape and orange shipping locks on the rear, left, and right sides of the transfer unit. Remove any remaining tape from the printer.
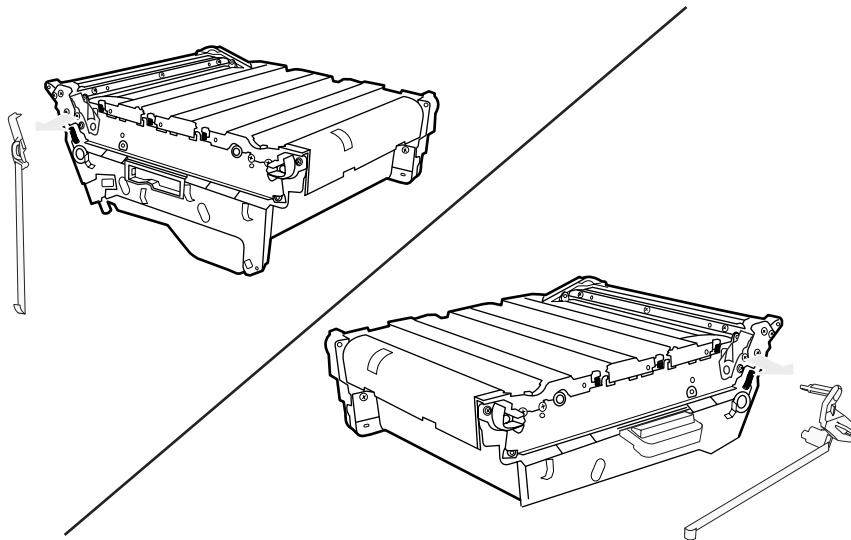
1   Remove a new print cartridge from the bag.
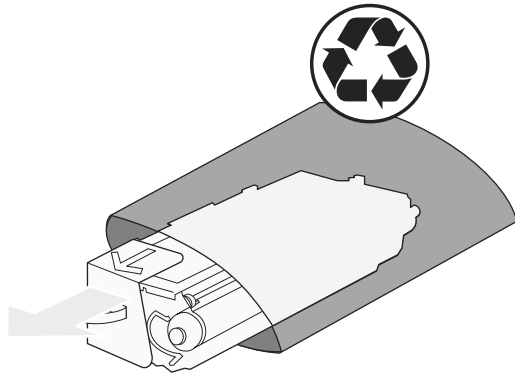
2   Grasp both sides of the print cartridge and distribute the toner by gently rocking the cartridge from side to side.
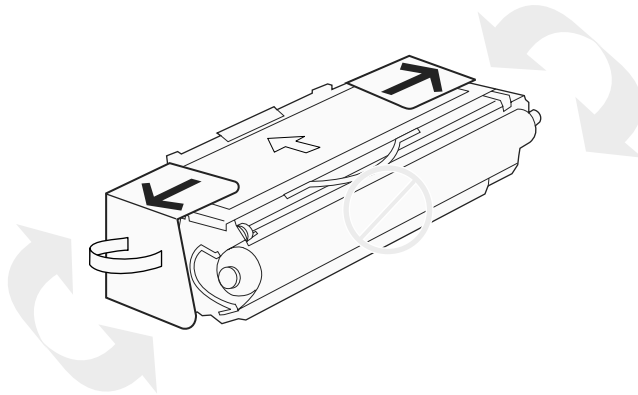
3   Remove and discard the orange shipping tape and the shipping locks from the new print cartridge.

Discard the shipping tape and the shipping locks according to local regulations.
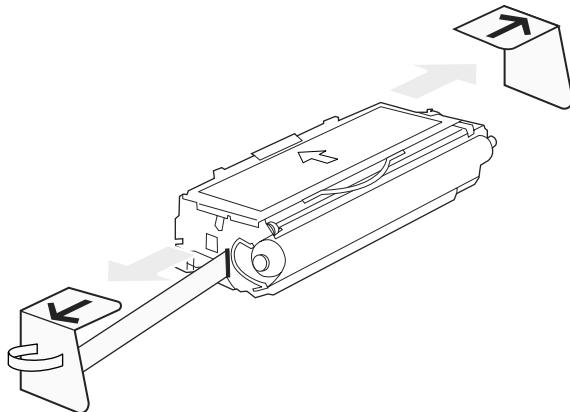
4   Locate the color slot for the print cartridge.
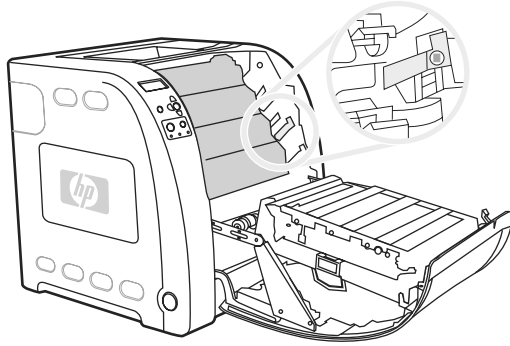
5   Align the print cartridge with the tracks inside the printer and, using the handle, insert the cartridge. Repeat this procedure for the remaining three cartridges.
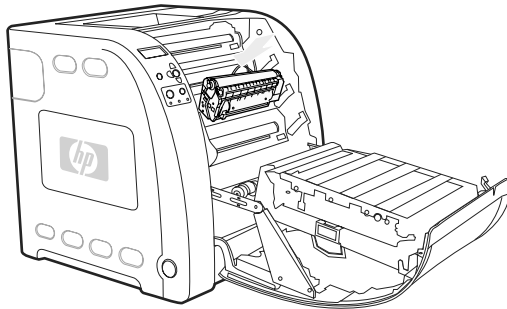
6   Firmly close the front door.
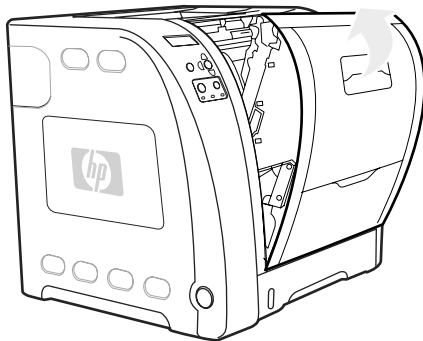
1 Pull the tray out of the printer.
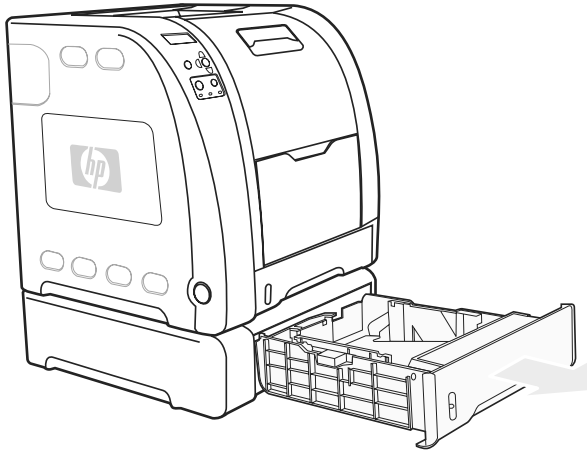
2 Adjust the length guides.

- Letter-size paper: Raise the blue rear stop.
- A4-size paper: Lower the blue rear stop.
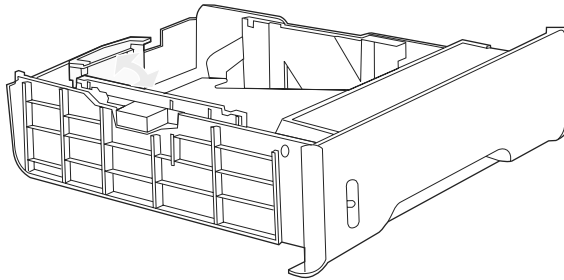
3 Adjust the width guides.

- Letter-size paper: Press the center of the side width guides outward as far as possible.
- A4-size paper: Press the blue ridges on the outside of the side width guides inward as far as possible.
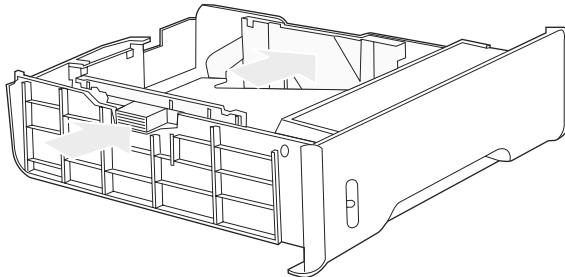
4   Load the paper into the tray. If this is special paper, such as letterhead, load it with the side to be printed down and the top edge toward the front of the tray.

Do not fan paper before loading.
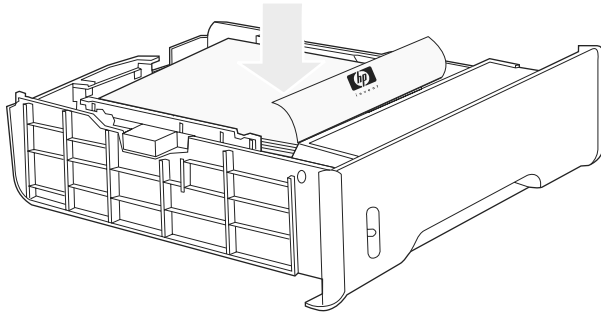
5   Make sure the stack of paper is flat in the tray at all four corners, and keep it below the height tabs.
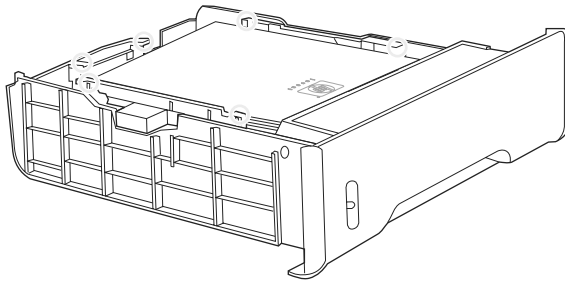
6   Slide the tray back into the printer.
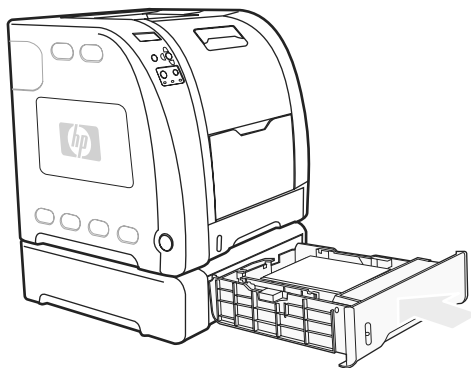
1 Pull Tray 2 out of the printer.
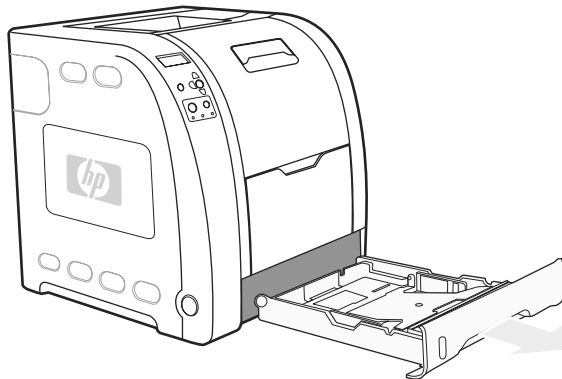
2 Move the side width guides until the blue arrows on the width guides point to the size of paper you are loading.
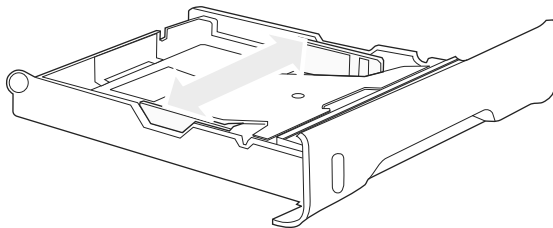
3 On the back of the tray, press the blue ridges and slide the length guides until the arrow symbol points to the paper size you are loading.
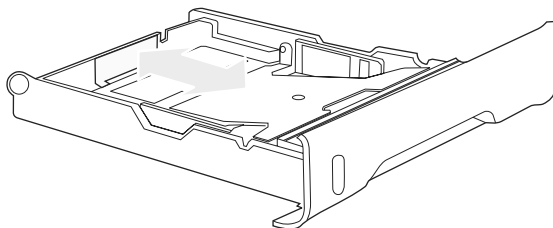
4 Load the paper into the tray. If this is special paper, such as letterhead, load it with the side to be printed down and the top edge toward the front of the tray.

Do not fan the paper before loading.
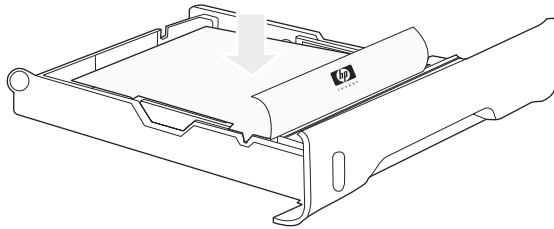
5 Push down on the stack of paper to lock the metal lift plate into place. Make sure that the stack of paper is flat and that the paper is below the height tabs.
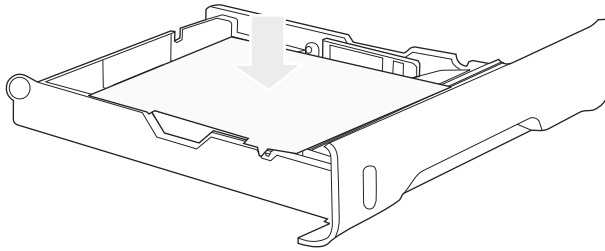
6 Slide the tray back into the printer. Raise the output bin extension.
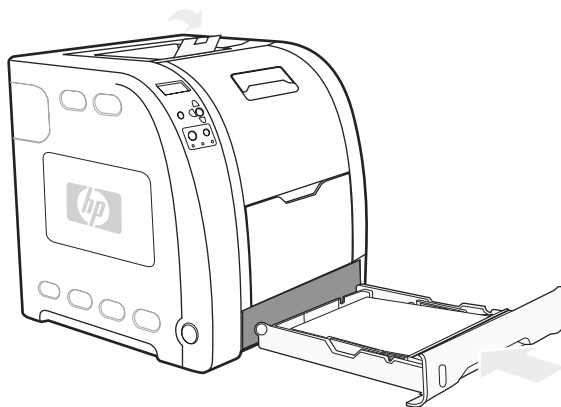
1 Open Tray 1, and raise the output bin extension.

If printing special media, such as envelopes, use Tray 1.
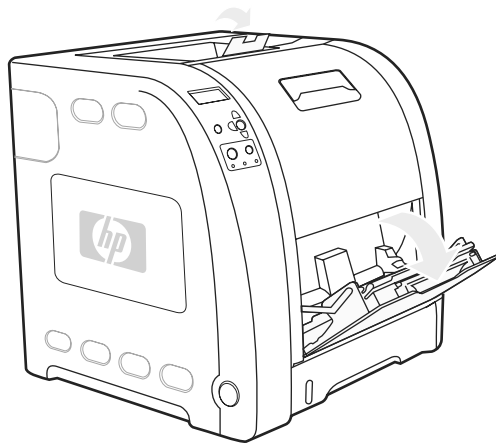
2 Slide out the tray extender and, if necessary, open the additional tray extender.
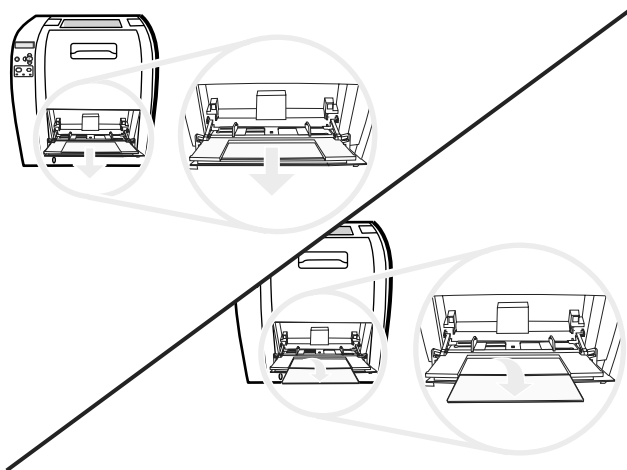
3 Slide the width guides slightly wider than the print media. Remove any unused print media, and close the tray when finished printing.
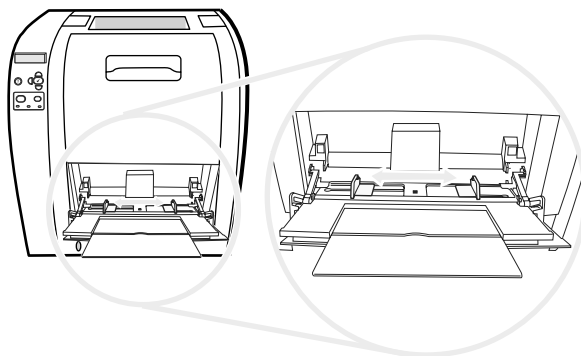
1 Connect the AC power cord to the printer and to a power outlet.

Do not connect the printer to the computer or to the network at this time.
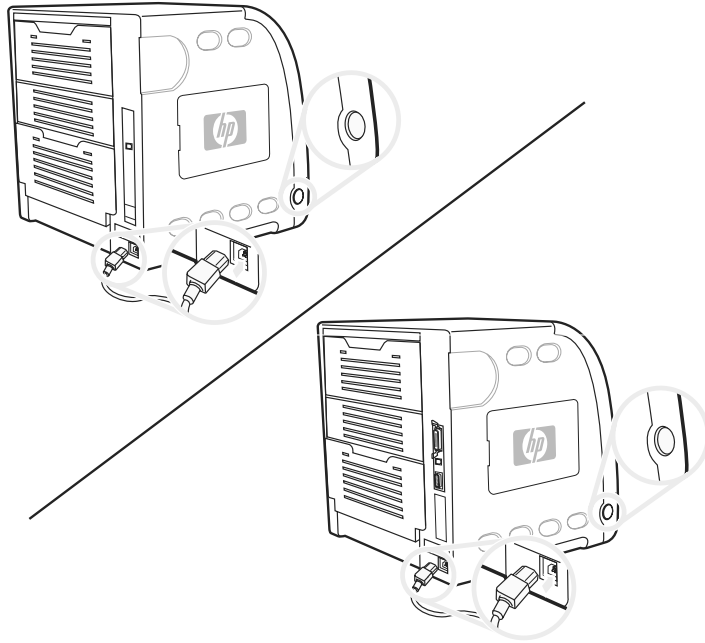
2 Turn the printer on. After a minimum of two minutes, the green ready light turns on.

Overlays are available for several languages and come shipped with the printer. If you are setting up a printer for a language other than English, complete the following procedure.

1   Select the language from the sheet of adhesive control panel overlays.

2   Position the new overlay over the top of the control panel. Set the overlay in place by pressing down on the overlay and smoothing it across its surface.
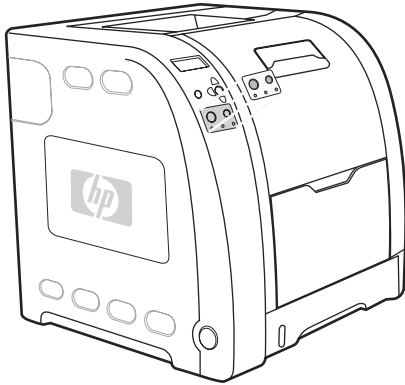
Print a demo page to ensure the printer is working properly.

1   Press   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 CONFIGURATION**.

After printing the demo page, the printer control panel displays the **READY** message.

The adjustable PowerSave Time feature reduces power consumption when the printer has been inactive for an extended period. You can set the length of time before the printer goes into PowerSave mode to **1 MINUTE**, **15 MINUTES**, **30 MINUTES**, or to **1 HOUR**, **1.5 HOURS**, **2 HOURS**, or **4 HOURS**. The default setting is **30 MINUTES**.

The printer display appears dimmed when the printer is in PowerSave mode. PowerSave mode does not affect printer warm-up time, unless the printer is in PowerSave mode for more than eight hours.

To set PowerSave Time

1 Press   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 **POWERSAVE TIME**.

7 Press ✔ to select **POWERSAVE TIME**.

8 Press ▼ or ▲ to select the appropriate time period.

9 Press ✔ to set the time period.

10 Press   .

To disable/enable PowerSave

1 Press   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 **POWERSAVE**.

7 Press ✔ to select **POWERSAVE**.

8 Press ▼ or ▲ to select **ON** or **OFF**.

9 Press ✔ to set the selection.

10 Press   .

All printer models support USB connections. The USB port is on the back of the printer.

Connecting the USB cable

Plug the USB cable into the printer. Plug the other end of the USB cable into the computer.
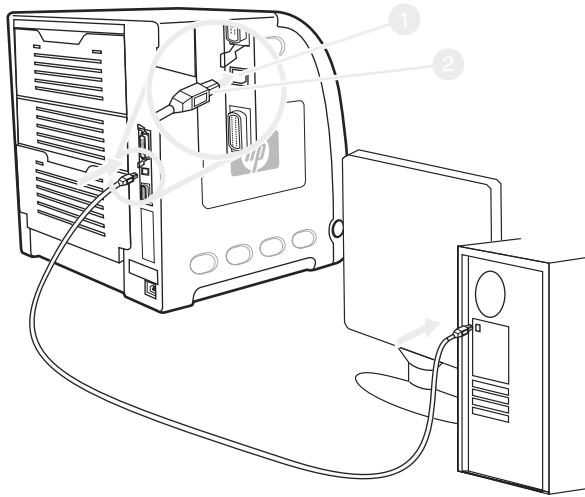
USB connection

1 USB port

2 USB connector

The HP Color LaserJet 3700 printer supports network and parallel connections at the same time. A parallel connection is made by connecting the printer to the computer using a bidirectional parallel cable (IEEE-1284 compliant) with a b-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. The parallel interface provides backwards compatibility; however, USB or network connection is recommended to optimize performance.
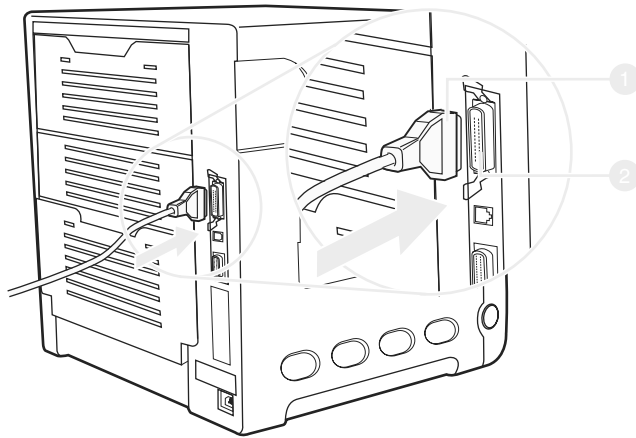
Parallel port connection

1 b-connector

2 parallel port

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   , later in this chapter.

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

If the parallel cable is plugged in, the USB port is disabled.

The network configuration feature is available for the HP Color LaserJet 3700 series printer when an EIO device is installed.

You might need to configure certain network parameters on the printer. You can configure these parameters from the printer control panel, the embedded Web server, or for most networks, from the HP Web Jetadmin software or the HP toolbox.

For more information about using the embedded Web server, see Using the embedded Web server in the user guide.

For a complete list of supported networks and for instructions on configuring network parameters from software, see the HP Jetdirect Print Server Administrator's Guide. The guide comes with printers in which an HP Jetdirect print server is installed.

This printer comes equipped with one enhanced input/output (EIO) slot. This slot holds compatible external devices, such as the HP Jetdirect print server network cards or other devices.

EIO network cards can maximize printer performance when printing from a network. In addition, they provide the ability to place the printer anywhere on a network. This eliminates the need to attach the printer directly to a server or to a workstation, and allows you to place the printer closer to the network users.

If the printer is configured through an EIO network card, configure that card through the control panel **Configure device** menu.

HP Jetdirect print servers

An HP Jetdirect print server (network card) can be installed in the printer EIO slot.These print server cards support multiple network protocols and operating systems. HP Jetdirect print servers facilitate network management allowing you to connect a printer directly to your network at any location. HP Jetdirect print servers also support Simple Network Management Protocol (SNMP), which provides network managers with remote printer management and troubleshooting through HP Web Jetadmin software.

Installation of these cards and network configuration should be performed by a network administrator. Configure the card either through the control panel, the printer installation software, or with HP Web Jetadmin software.

See to the HP Jetdirect print server documentation for information on which external devices or EIO network cards are supported.

Available enhanced I/O interfaces

HP Jetdirect print servers (network cards) provide software solutions for:

Novell NetWare Network

Microsoft Windows and Windows NT networks

Apple Mac OS (AppleTalk)

UNIX (HP-UX and Solaris)

Linux (Red Hat and SuSE)

Internet printing

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

NetWare networks

When using Novell NetWare products with an HP Jetdirect print server, Queue Server mode provides improved printing performance over Remote Printer mode. The HP Jetdirect print server supports Novell Directory Services (NDS), as well as bindery modes. For more information, see the *HP Jetdirect Print Server Administrator's Guide*.

For Windows 98, Me, NT 4.0, 2000, and XP systems, use the printer installation utility for printer setup on a NetWare network.

Windows and Windows NT networks

For Windows 98, Me, NT 4.0, 2000, and XP systems, use your printer installation utility for printer setup on a Microsoft Windows network. The utility supports printer setup for either peer-to-peer or client-server network operation.

AppleTalk networks

Use the HP toolbox to set up the printer on an EtherTalk or LocalTalk network. For more information, see the *HP Jetdirect Print Server Administrator's Guide* included with printers equipped with the HP Jetdirect print server.

UNIX/Linux networks

Use the HP Jetdirect printer installer for UNIX utility to set up the printer on HP-UX or Sun Solaris networks.

For setup and management on UNIX or Linux networks, use HP Web Jetadmin.

To obtain HP software for UNIX/Linux networks, visit HP Customer Care online at http://www.hp.com/support/net_printing. For other installation options supported by the HP Jetdirect print server, see the *HP Jetdirect Print Server Administrator's Guide* included with printers equipped with the HP Jetdirect print server.

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.

For the latest information about the printing system software components, view the ReadMe files on the CD-ROM.

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, Me, and NT 4.0

   Microsoft Windows 2000, and XP 32-bit, and XP 64-bit

   Apple Mac OS version 9.1 and later, and Mac OS X version 10.1 and later

For a list of the network environments supported by the network administrator software components, see   .

For a list of printer drivers, updated HP printer software, and product support information for the HP Color LaserJet 3500 series printer, go to http://www.hp.com/support/clj3500. For the HP Color LaserJet 3700 series printer, go to http://www.hp.com/support/clj3700.

Printer drivers

Printer drivers access the printer features and allow the computer to communicate with the printer. The following printer drivers are included with the printer on a CD-ROM.

Table 3-1   Printer drivers for the HP Color LaserJet 3500 series printer

Operating system[1]	JetReady 4.0
Windows 98, Me	✔
Windows NT 4.0 (Note: Windows NT does not support USB.)	✔
Windows 2000	✔
Windows XP (32-bit)	✔
Windows XP (64-bit)	✔
Windows Server 2003 (32-bit)	✔
Windows Server 2003 (64-bit)	✔
Macintosh OS	✔

[1] Not all printer features are available from all drivers or operating systems. See the online Help in your driver for availability of features.

Table 3-2   Printer drivers for the HP Color LaserJet 3700 series printer

Operating system[1]	PCL 6	PS Emulation
Windows 98, Me	✔	✔
Windows NT 4.0 Note: Windows NT does not support USB	✔	✔
Windows 2000[2]	✔	✔
Windows XP (32-bit)[2]	✔	✔
Windows XP (64-bit)[2,3]		✔
Windows Server 2003 (32-bit)	✔	✔
Windows Server 2003 (64-bit)	✔	✔
Macintosh OS		✔

[1]   Not all printer features are available from all drivers or operating systems. See the online Help in your driver for availability of features.

[2]   For Windows 2000 and Windows XP (32-bit and 64-bit), download the PCL 5 driver from http://www.hp.com/go/clj3700_software.

[3]   For Windows XP (64 bit), download the PCL 6 driver from http://www.hp.com/go/clj3700_software.

If your system did not automatically check the Internet for the latest drivers during software installation, download them for the HP Color LaserJet 3500 series printer from http://www.hp.com/go/clj3500_software. For the HP Color LaserJet 3700 series printer, go to http://www.hp.com/go/clj3700_software.

Additional drivers

The following drivers are not included on the CD-ROM, but are available from http://www.hp.com/go/clj3700_software. These drivers are for the HP Color LaserJet 3700 series printer only.

OS/2 PS and PCL printer driver

UNIX model scripts

Linux drivers

The OS/2 drivers are available from IBM and are packaged with OS/2. They are not available for Traditional Chinese, Simplified Chinese, Korean, and Japanese languages.

For more information about Windows 3.1x drivers, go to http://www.hp.com/support/clj3500 or http://www.hp.com/support/clj3700.

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 included with the printer.

HP Web Jetadmin

HP Web Jetadmin allows you to manage HP Jetdirect-connected printers within your intranet using a browser. HP Web Jetadmin is a browser-based management tool and should be installed only on the network administrator computer. It can be installed and run on a variety of systems.

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

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

HP Web Jetadmin 6.5 and above have 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 now route to different people.

Remote installation and management from anywhere using only a standard Web browser.

Advanced autodiscovery locates peripherals on the network, so the network administrator does not need to manually enter each printer into a database.

Simple integration into enterprise management packages.

Quickly find peripherals based on parameters such as IP address, color capability, and model name.

Easily organize peripherals into logical groups, with virtual office maps for easy navigation.

For the latest information about HP Web Jetadmin, go to http://www.hp.com/go/webjetadmin.

UNIX

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

Linux

For information about Linux support, go to http://www.hp.com/go/linux.

Utilities

The HP Color LaserJet 3500 series printer and the HP Color LaserJet 3700 series printer are equipped with several utilities that make it easy to monitor and manage the printer on a network.

HP toolbox

The HP toolbox is an application that you can use for the following tasks:

checking the printer status

configuring the printer settings

viewing troubleshooting information

viewing online documentation

printing internal printer pages

You can view the HP toolbox when the printer is directly connected to your computer or when it is connected to a network. You must have performed a complete software installation to use the HP toolbox.

Embedded Web server (available for the HP Color LaserJet 3700 series printer)

This printer is equipped with an embedded Web server that allows access to information about the 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 PC. The output from these programs can then be displayed by a Web browser, such as Microsoft Internet Explorer or Netscape Navigator.

An embedded Web server 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 with a network-connected PC and a standard Web browser can access. There is no special software to install or configure, but you must have a supported Web browser on your computer. To access the embedded Web server, type the IP address for the printer in the address line of the browser. (To find the IP address, print a configuration page. For more information about printing a configuration page, see the user guide.)

Features

The HP embedded Web server allows you to view printer and network card status and manage printing functions from your PC. 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

   view support content that is printer-specific and specific to the printer's current state

For a complete explanation of the features and functionality of the embedded Web server, see the user guide.

Other components and utilities

Several software applications are available for Windows and Macintosh OS users, as well as for network administrators. These programs are summarized below.

Table 3-3

Windows	Macintosh OS	Network administrator
Software installer — automates the printing system installation Online Web registration HP toolbox — a Web application for checking printer status and settings for Windows 98, 2000, Me, and XP users	PostScript Printer Description files (PPDs) — for use with the Apple PostScript drivers that come with the Mac OS HP toolbox — a Web application for checking printer status and settings for Mac OS X, v10.1, and v10.2 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

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 in the printer control panel will receive the following message:

ACCESS DENIED
MENUS LOCKED

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

Locking the control panel

You can prevent users from changing printer control panel settings by establishing a password and locking the printer control panel. You can choose from multiple levels of security. You can lock certain control panel menus, allowing users to change the rest of the menus, or you can lock all of the menus—and you can even lock the   button.

Levels of security

Table 3-4   Printer security levels

Lock setting	Control panel items locked
OFF	Service menu (locked with factory set PIN)
LOW	I/O submenu System setup submenu Resets submenu Service menu (locked with factory-set PIN)
MEDIUM	Configure Device menu (including all submenus) Diagnostics menu Service menu (locked with factory-set PIN)
HIGH	Information menu Paper Handling menu Configure Device menu (including all submenus) Diagnostics menu Service menu (locked with factory-set PIN) button

Use HP Web Jetadmin software, HP LaserJet Utility for Macintosh, or an ASCII escape sequence to set security. HP software, which comes on the software CD-ROM, is easier to use than an ASCII escape sequence. For instructions about locking the control panel by using either HP Web Jetadmin software or the HP LaserJet Utility for Macintosh, go to the online Help for that software.

Using an ASCII PJL escape sequence to set 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 website at http://www.hp.com.

In the following examples, "EC" represents the escape character. For more information on 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
```

The printer has three DIMM slots. The bottom slot is for the firmware DIMM.

For maximum flexibility in DIMM support, the formatter is designed with three 168-pin DIMM slots and a fourth 100-pin DIMM slot.

Use these DIMM slots to upgrade the printer with the following items:

more printer memory - DIMMs are available in 64, 128, and 256 MB

flash memory DIMMs - available in 4 MB; unlike standard printer memory, flash DIMMs can be used to permanently store downloaded items in the printer, even when the printer is off

DIMM-based accessory fonts, macros, and patterns

other DIMM-based printer languages and printer options

memory expansion, which can support up to 448 MB of memory

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

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

To order DIMMs, see   in chapter 8.

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

1   Press   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.

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

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.

1 Turn the printer off.
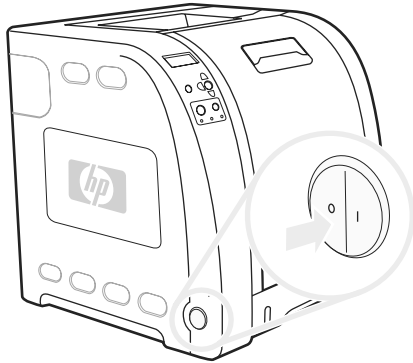
2 Disconnect all power and interface cables.
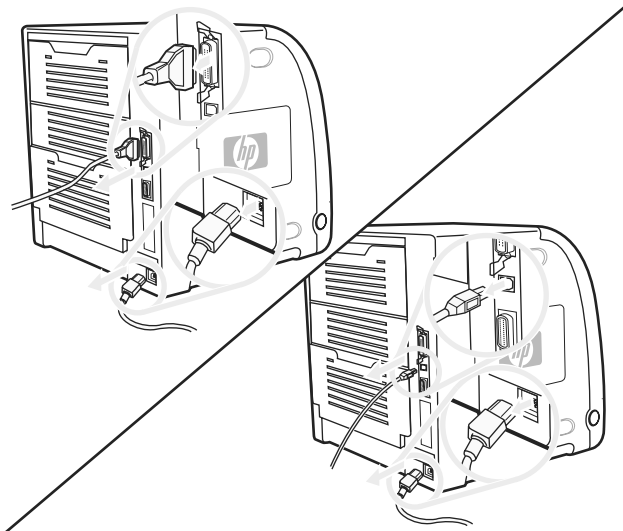
3 Open the DIMM access door by gently prying it with a flat-bladed screwdriver. Remove the door by pulling the door toward the back of the printer.
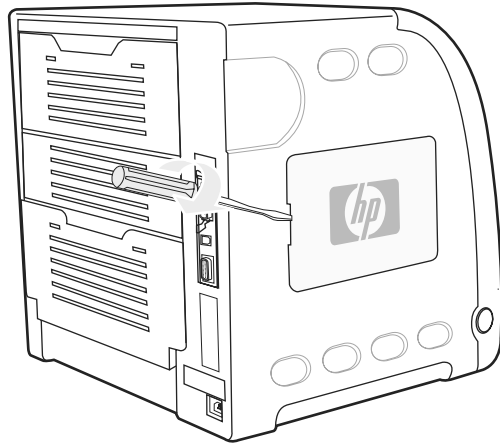
4 Loosen the screws that hold the formatter door to the printer and remove the formatter door.
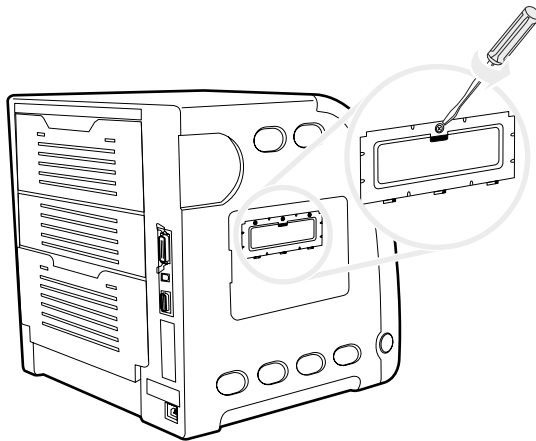
5 Remove the DIMM from the antistatic package. Locate the alignment notches on the bottom edge of the DIMM.
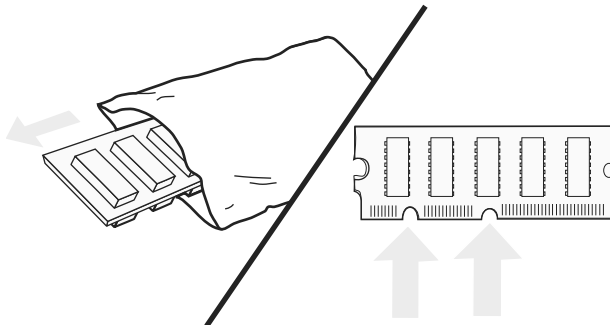
6   Holding the DIMM by the edges, align the notches on the DIMM with the bars in the DIMM slot.
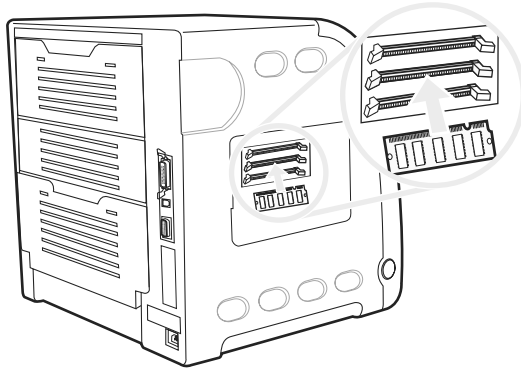
7   Firmly press the DIMM straight into the slot. Close the locks on each side of the DIMM until they snap into place.
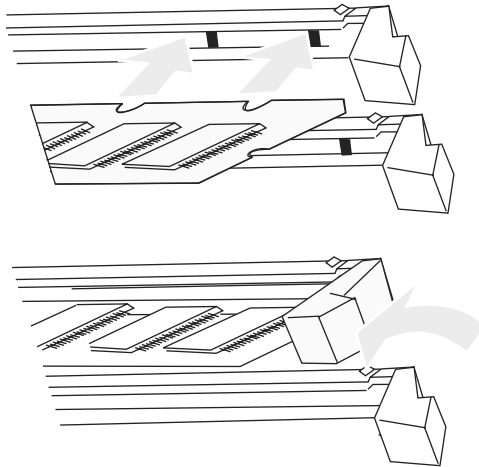
If you have difficulty inserting the DIMM or closing the latches, make sure the notches on the bottom of the DIMM are aligned with the bars in the slot. If the DIMM still does not go in, make sure you are using the correct type of DIMM.

8 Align the formatter door in the tracks at the bottom of the slot, and turn the screws to secure the formatter door to the printer.
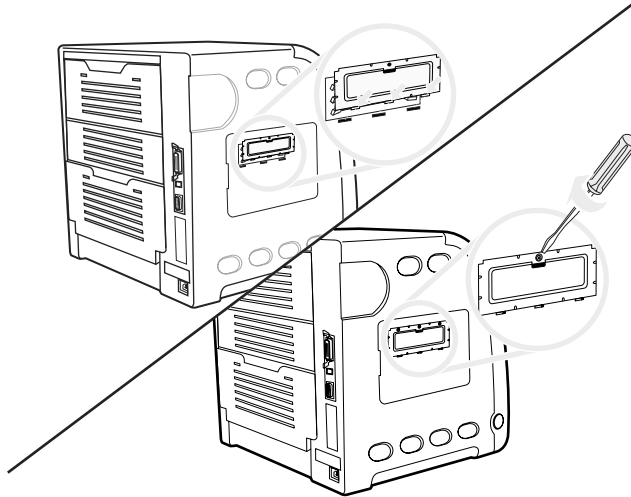
9 Replace the DIMM access door by inserting the tabs on the door into the slots on the printer. Swing the door shut.
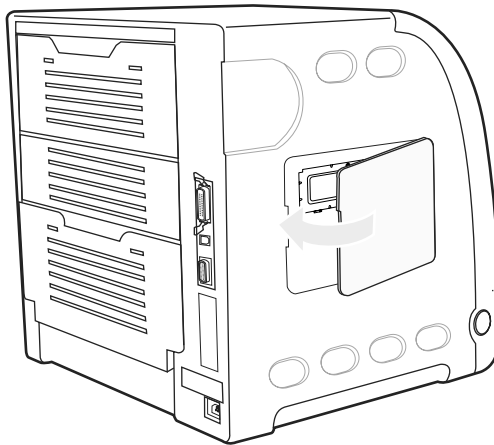
10 Reconnect the power cable and the USB/parallel cable.
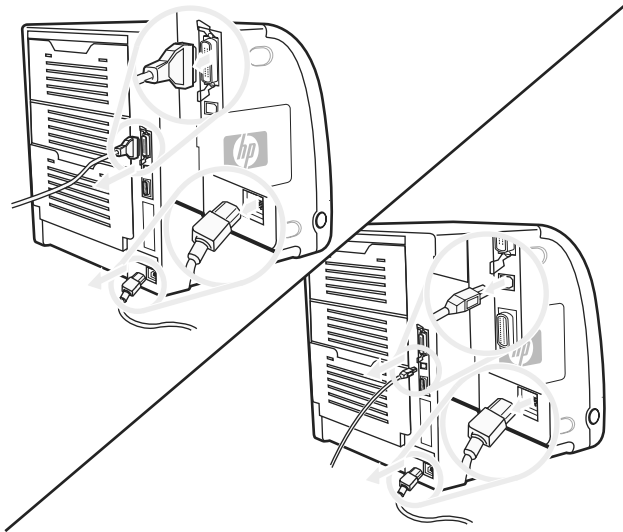
11 Turn the printer on.
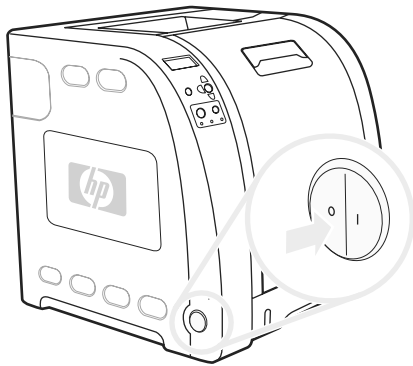
12 If you installed a memory DIMM, go to   . If you installed a language font
DIMM, go to   .

Enabling memory

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

To enable memory for Windows

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

2 Select this 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**.

6 Go to

Enabling the language font DIMM (hp color LaserJet 3700 only)

If you installed a language font DIMM in the printer, you must select the Font DIMM option in the printer driver for the font DIMM to work properly.

To enable fonts from the PCL 6 printer driver for Windows

1   On the **Start** menu, point to **Settings**, and click **Printers**.

2   Select this printer and select **Properties**.

3   On the **Configure** tab, click **More**.

4   Select the **Font DIMM** check box.

5   In the **Configure Font DIMMs** dialog box, click **Add** to add the font file.

6   In the **Add Font DIMM** dialog box, browse to the location of the font file, select the font file, and click **OK**.

7   In the **Configure Font DIMMs** dialog box, select the installed DIMM.

8   Click **OK**.

9   Print a configuration page.

Checking DIMM installation (hp color LaserJet 3700 only)

Check that the DIMMs are installed correctly and working.

To check DIMM installation

1   Turn the printer on. Check that the Ready light is on after the printer has gone through the startup sequence. If an error message appears, a DIMM may have been incorrectly installed.

2   Print a configuration page.

3   Check the Installed Personalities and Options section on the configuration page and compare it with the configuration page printed before the DIMM installation.

4   If the amount of recognized memory has not increased:
The DIMM may not be installed correctly. Repeat the installation procedure.
The DIMM may be defective. Try a new DIMM.

You can install an HP Jetdirect print server card in the base model printer, which comes with an open EIO slot.

To install the HP Jetdirect print server card

1 Turn the printer off.
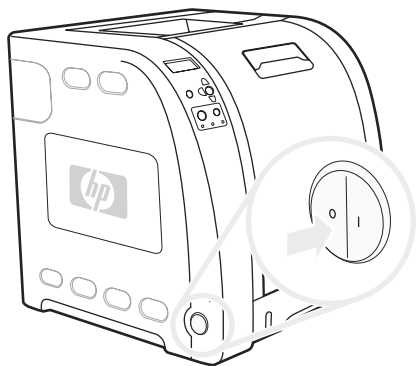
2 Disconnect all power and interface cables.
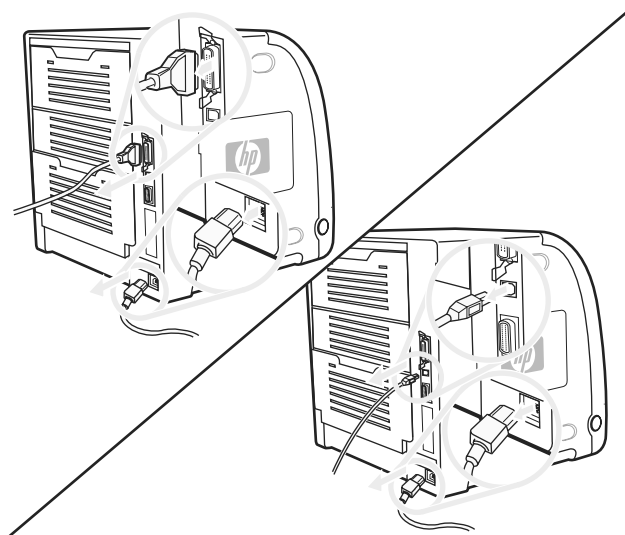
3 Locate the EIO slot. Loosen and remove the two retaining screws holding the EIO slot cover to the printer and remove the cover. You will not need these screws and cover again.
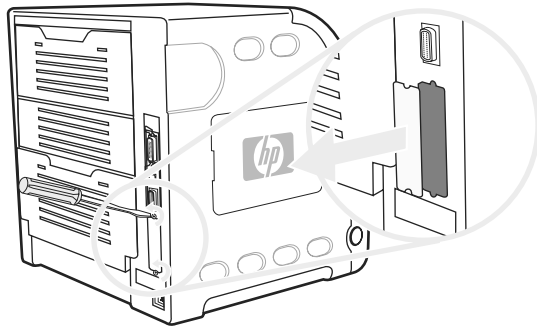
4 Firmly insert the HP Jetdirect print server card into the EIO slot. Insert and tighten the retaining screws that came with the print server card.
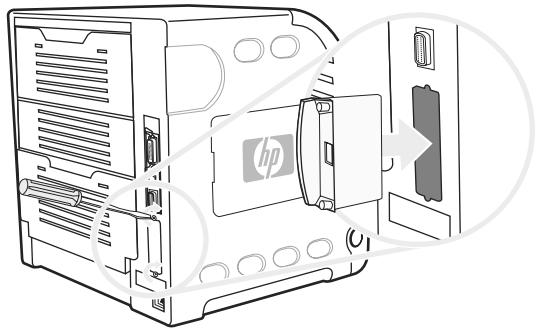
5 Connect the network cable.
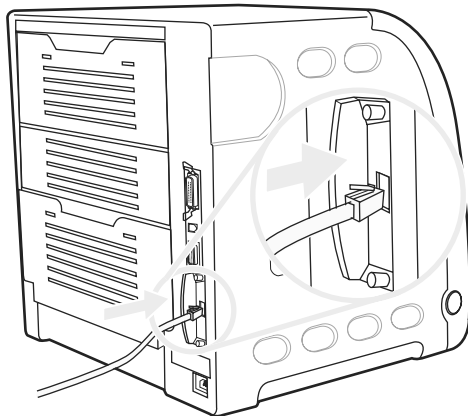
6 Reconnect the power cable and turn the printer on.
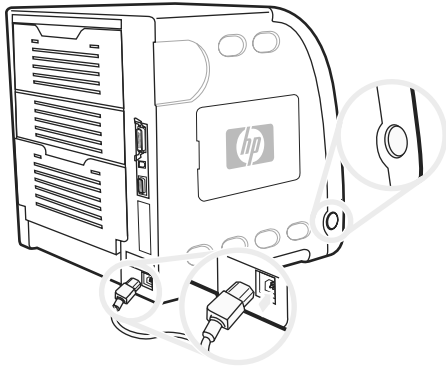
7 Print a configuration page. In addition to a printer configuration page and a Supplies Status page, an HP Jetdirect configuration page that contains network configuration and status information should also print.

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

8 Perform one of these steps:

Choose the correct port. See the computer or operating system documentation for instructions.

Reinstall the software, choosing the network installation this time.

1 Attach the HP Jetdirect en3700 external print server to a 10Base-T or to a 100Base-T local network by plugging the network cable into the network port on the rear panel.
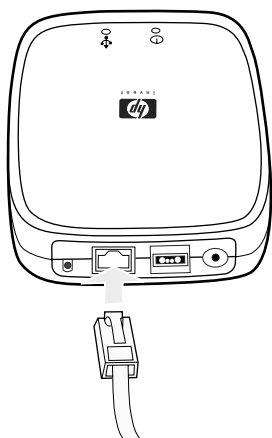
2 Attach the print server to the printer using the USB cable. Insert the DC power cord from the power module into the power connector on the rear panel, and then insert into a power outlet.
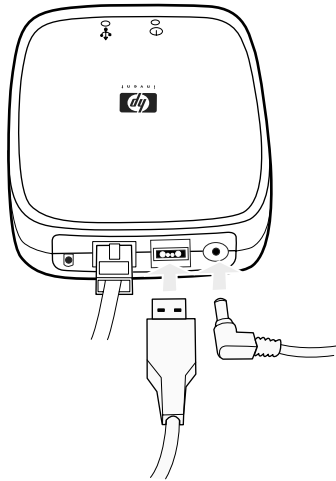
3 The 10 or the 100 LED turns on, indicating a network connection, and the power/status LED blinks. After 15 seconds, the power/status LED light and the USB printer LED light appear green. The power/status LED will blink if there is network activity.
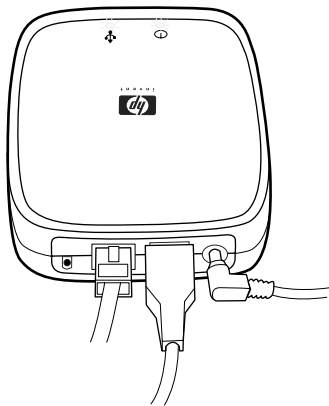
4 Press the test button on the back of the external print server to print an HP Jetdirect configuration page. Note the IP address for reference.
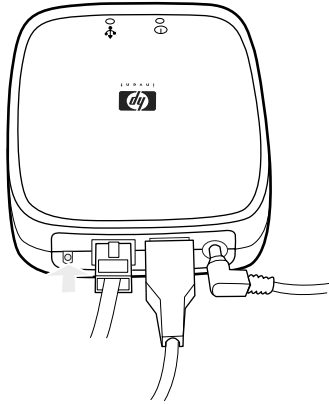
Printer maintenance

This chapter contains the following sections.

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

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.

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.

Table 4-1   Cleaning the printer

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.
Paper pickup rollers	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.

When cleaning the printer, do not touch the ITB (the black, intermediate transfer belt in the transfer unit) with the damp cloth or with your fingers. When cleaning inside the printer, the transfer unit should be removed.

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 (five microns in diameter).

Cleaning mode

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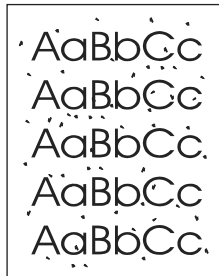
Toner specks
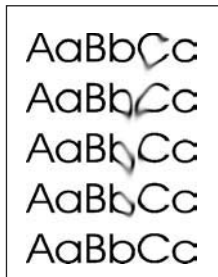
Toner smearing

To clean the printer using the printer control panel

1 Press   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 **CREATE CLEANING PAGE**.

7 Press ✔ to select **CREATE CLEANING PAGE**.
   A page with a pattern prints from the printer.

8 Remove all paper from Tray 1.

9 Remove the cleaning page and load it face-down in Tray 1.

If you are not still in the **MENUS**, navigate to **PRINT QUALITY** using the above instructions.

10 At the printer control panel, press ▾ to highlight **PROCESS CLEANING PAGE**.

11 Press ✔ to select **PROCESS CLEANING PAGE**.
   The printer control panel displays the message **CLEANING....** The cleaning process takes a few minutes.

Using, storing, and monitoring print cartridges can help ensure quality printer output.

Supplies life

The life of the print cartridge depends on usage patterns and the amount of toner that print jobs require. For example, when printing text at five percent coverage, an HP print cartridge lasts an average of 4,000 or 6,000 pages, depending on the printer model. (A typical business letter is about five percent coverage.)

Cartridge life expectancy is reduced by frequently printing many one- or two-page jobs, heavy coverage, and automatic duplexing. At any time, you can verify the life expectancy by checking the print cartridge life. For more information on how to check the life of the print cartridge, see the user guide.

Approximate replacement intervals for supplies for the hp color LaserJet 3500 series printer

The following table lists the estimated replacement intervals for supplies and the printer control panel messages that prompt when to replace each item.

Table 4-2   Approximate replacement intervals

Item	Printer message	Page count	Approximate time period[1]
	REPLACE <BLACK> CARTRIDGE	6,000 pages[2]	6 months
	REPLACE <COLOR> CARTRIDGE	4,000 pages[2]	4 months
	REPLACE TRANSFER KIT	60,000 pages[3]	60 months
	REPLACE FUSER KIT	60,000 pages[3]	60 months

[1]Approximate life is based on 1,000 pages per month.
[2]Approximate average A4-/letter-size page count based on approximately five percent coverage of individual colors.
[3]Usage conditions and print patterns may cause results to vary.

To order supplies online, go to http://www.hp.com/support/clj3500.

Approximate replacement intervals for supplies for the HP Color LaserJet 3700 series printer

The following table lists the estimated replacement intervals for supplies and the printer control panel messages that prompt when to replace each item.

Table 4-3   Approximate replacement intervals

Item	Printer message	Page count	Approximate time period[1]
	REPLACE <BLACK> CARTRIDGE REPLACE <COLOR> CARTRIDGE	6,000 pages[2]	4 months
	REPLACE <COLOR> CARTRIDGE	6,000 pages[2]	4 months
	REPLACE TRANSFER KIT	75,000 pages[3]	50 months
	REPLACE FUSER KIT	75,000 pages[3]	50 months

[5][1]Approximate life is based on 1,500 pages per month.
[2]Approximate average A4-/letter-size page count based on approximately five percent coverage of individual colors.
[3]Usage conditions and print patterns may cause results to vary.

To order supplies online, go to http://www.hp.com/support/clj3700 or http://www.hp.com/support/clj3500

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

Figure 4-3 illustrates the location of each supply item and part.
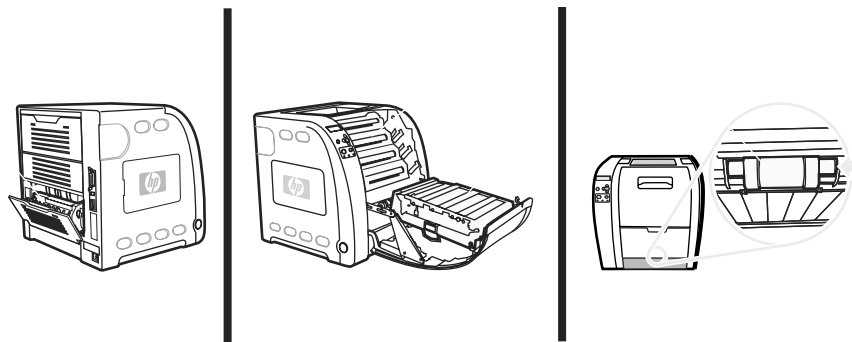
Supply item and part locations

1   fuser

2   print cartridges

3   transfer unit (ITB)

4   pickup roller

Carefully follow the guidelines in this section when replacing printer supplies or parts. Changing print cartridges

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 (unless a genuine HP print cartridge is not currently installed).

1   Lift the front door handle and pull down the front door.
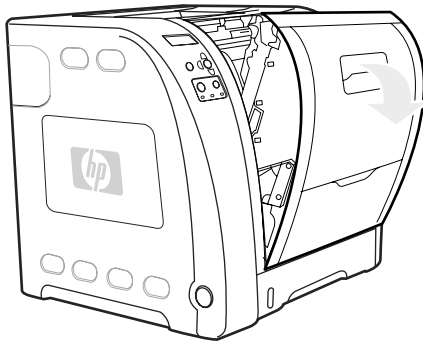
Do not place anything on the transfer unit and do not touch the transfer unit, which is located on the inside of the front door. If the ITB (intermediate transfer belt) on the transfer unit is punctured, print quality problems may result.

2   Remove the used print cartridge from the printer.
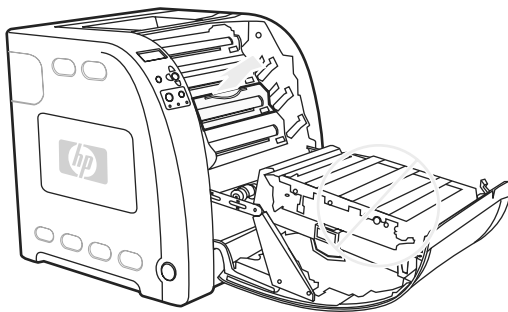
3 Remove the new print cartridge from the bag. Place the used print cartridge in the bag for recycling.
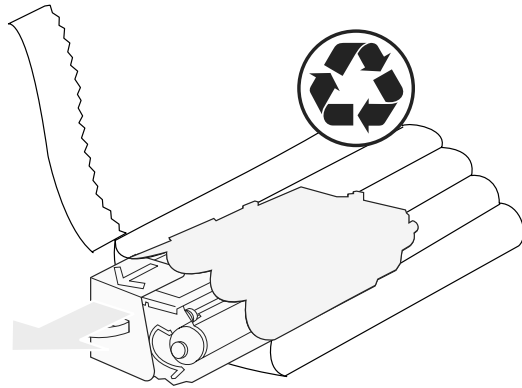
4 Grasp both sides of the cartridge and distribute the toner by gently rocking the cartridge from side to side.
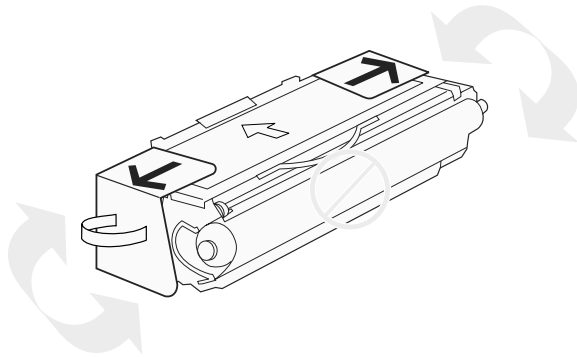
5 Remove the orange shipping locks and the orange shipping tape from the new print cartridge. Discard the shipping tape and shipping locks according to local regulations.
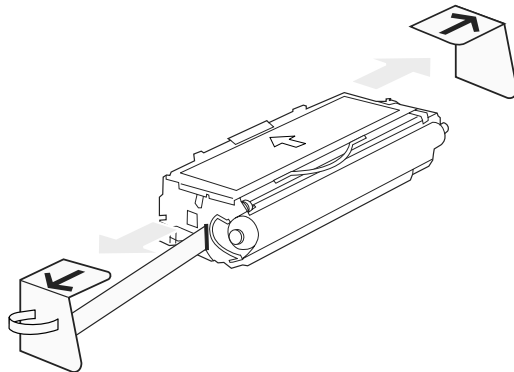
6 Align the print cartridge with the tracks inside the printer, and using the blue handle, insert the print cartridge until it is firmly seated.
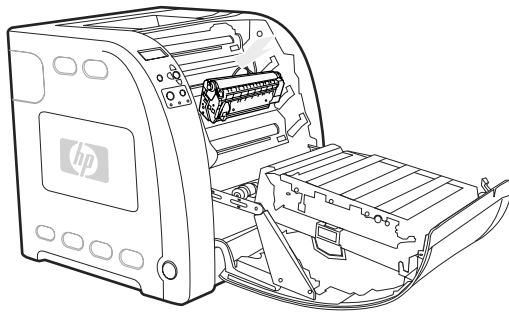
7 Firmly close the front door.
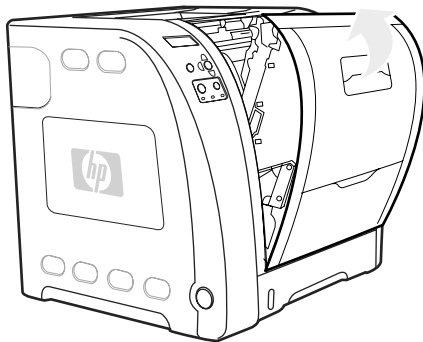
After a short calibration time, the control panel should display **READY**.

If a cartridge is in the wrong slot or the wrong type for the printer, the control panel will display the message, **INCORRECT <COLOR>** or **INCORRECT SUPPLIES**.

8 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.

9 If you are using a non-HP print cartridge, check the printer control panel for further instructions.

For additional help, go to http://www.hp.com/support/clj3500 for the HP Color LaserJet 3500 series printer or to http://www.hp.com/support/clj3700 for the HP Color LaserJet 3700 series printer.

Replacing the transfer unit

Replace the transfer unit when the printer control panel displays **REPLACE TRANSFER KIT**. The image transfer kit contains a replacement transfer unit for this printer.

Remove any jewelry or any other metal items from you body to avoid electric shock.

1 Lift the front door handle and pull down the front door.
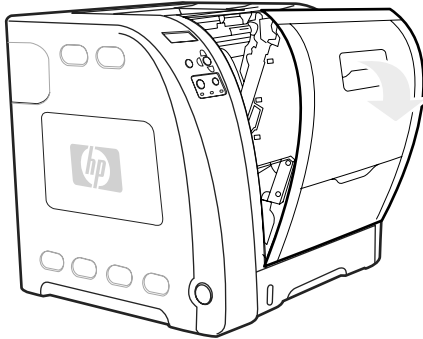
Do not place anything on the transfer unit. Do not touch the top of the transfer unit or the contacts on the left side of the transfer unit.
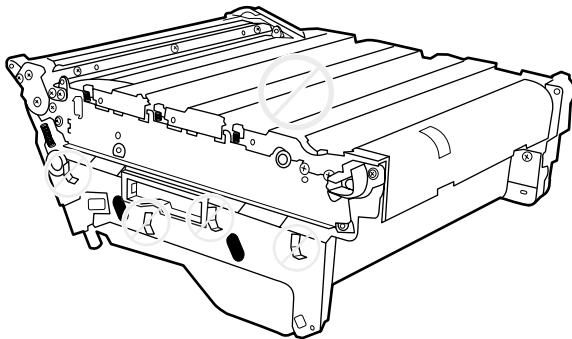
2 Grasp the right blue handle. Press and hold down the blue button. Slightly lift the right side of the transfer unit.
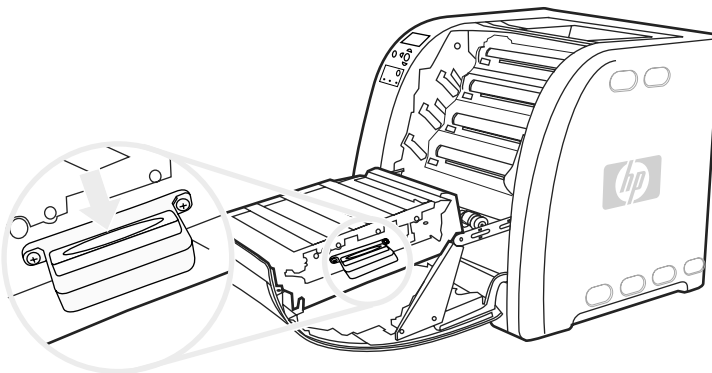
3 Grasp the left blue handle and lift to remove the transfer unit from the printer.

For information on how to properly dispose of the used transfer unit, go to http://www.hp.com/recycle.
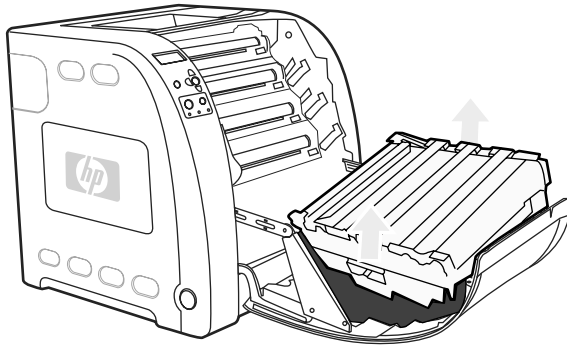
4 Using handles, remove the new transfer unit from the bag. Use the blue handles on both sides to hold the transfer unit.
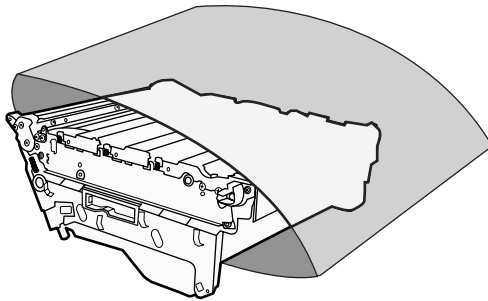
5 Place the new transfer unit on a flat surface. Remove the orange shipping locks.
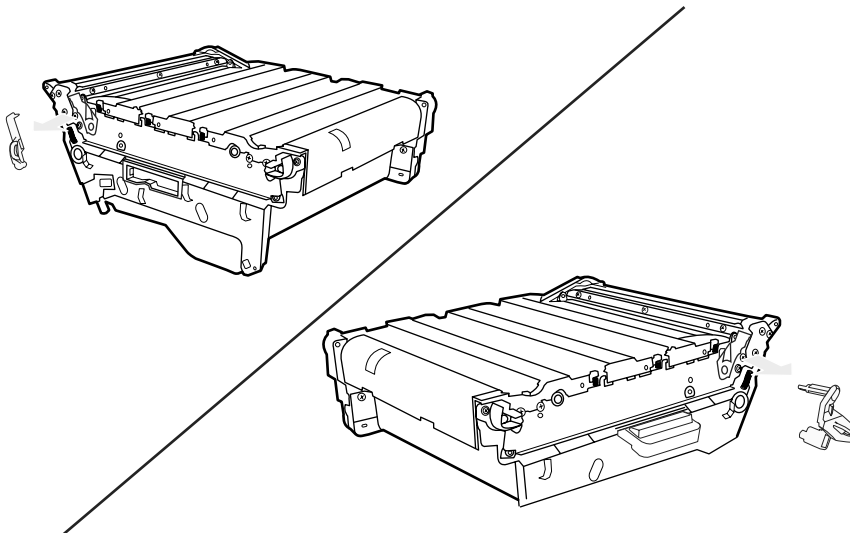
6 Guide the left side of the transfer unit into the front door of the printer. Insert the two pegs on the left side into the holes, and then lower the right side into the door.
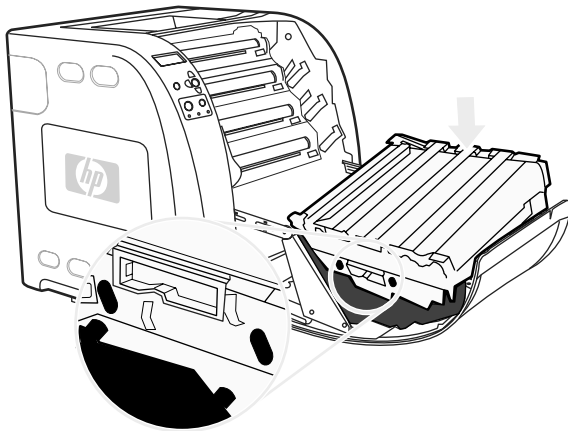
7 Make sure that the blue button on the right blue handle has released (popped up). If the button has not released, grasp the right blue handle and pull the transfer unit toward you.
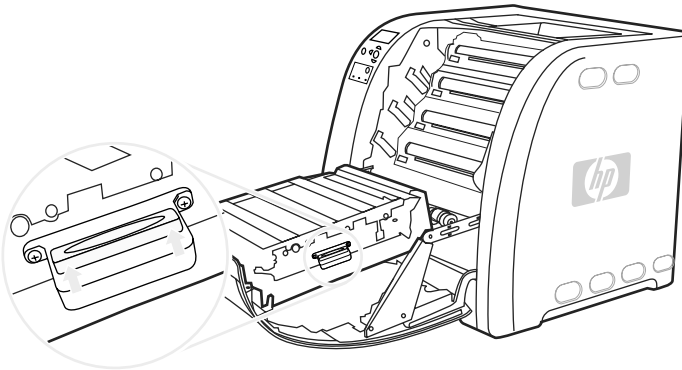
8 Firmly close the front door.
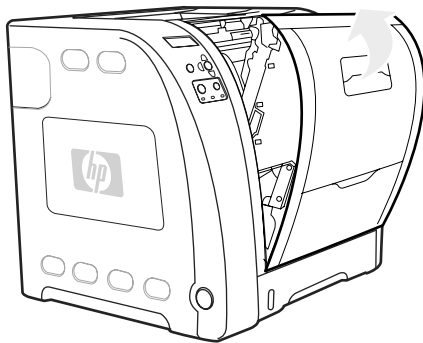
9 After the front door is closed, after a short time, the printer control panel displays the message **NEW TRANSFER KIT**.

10 If the message **NEW TRANSFER KIT** appears, go to step 12. If the message does not appear, you must reset the transfer unit count. To reset the transfer unit count, do the following.

11 On the printer control panel, press ▼ to highlight **YES**, and then press ✔ to select it. The transfer unit count is reset, the printer recalibrates, and then the printer is ready to use.

If the old transfer unit was not at end-of-life when it was replaced (for example, if it was damaged), the transfer unit count must be reset using the printer control panel.

Replacing the transfer unit when it is not at end of life

If you replace the transfer unit when it is not at the end of life, for instance if it is defective, you will need to reset the transfer unit count and then calibrate the printer, through the control panel.

To reset the transfer unit count, do the following:

1 Press   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 **RESET SUPPLIES**.

7 Press ✔ to select **RESET SUPPLIES**.

8 Press ▼ to highlight **NEW TRANSFER KIT**.

9 Press ✔ to select **NEW TRANSFER KIT**.

10 Press ▼ to highlight **YES**.

11 Press ✔ to select **YES**.

To calibrate the printer, do the following:

12 Press   to enter the **MENUS**.

13 Press ▼ to highlight **CONFIGURE DEVICE**.

14 Press ✔ to select **CONFIGURE DEVICE**.

15 Press ▼ to highlight **PRINT QUALITY**.

16 Press ✔ to select **PRINT QUALITY**.

17 Press ▼ to highlight **CALIBRATE NOW**.

18 Press ✔ to select **CALIBRATE NOW**.

19 Wait for the printer to calibrate.

The transfer unit count is reset and the printer is ready to use.

Replacing the fuser and pickup roller

Replace the fuser when the printer control panel displays **REPLACE FUSER KIT**. The image fuser kit contains a replacement fuser and a Tray 2 pickup roller for this printer. After replacing the fuser, you must also replace the pickup roller. Instructions for replacing the pickup roller follow the instructions for replacing the fuser.

To replace the fuser

1 Turn the printer off.
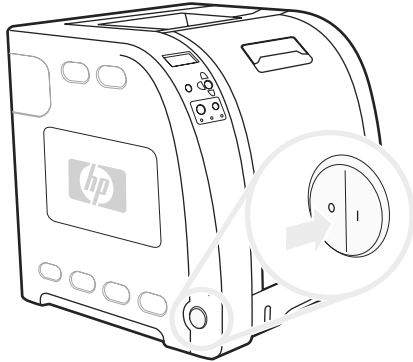
The fuser might be hot. Wait 10 minutes before proceeding.

2 Open the lower rear door (rear output bin).
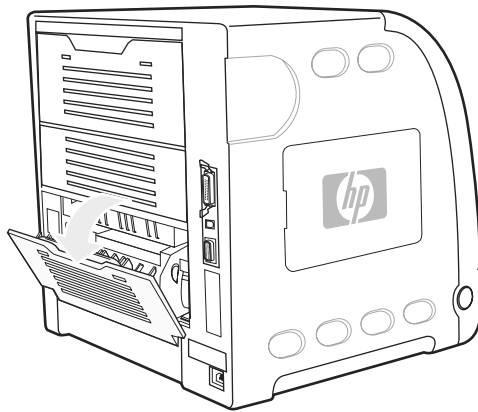
3 Slide out the lower rear door (rear output bin) tray extender.
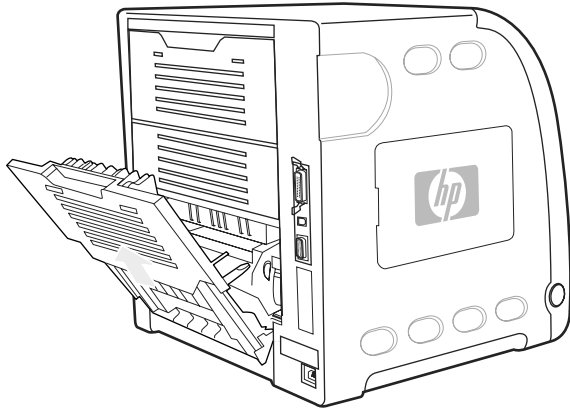
4 Lift and pull the lower rear door (rear output bin) while using your finger to press the tab with ridges on the left side of the door. Remove the lower rear door (rear output bin).
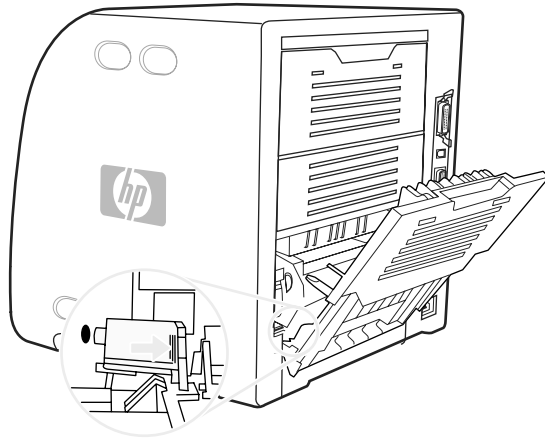
5 Place your thumbs on the blue ridges (near warning label) and, using fingers, pull up on the blue latches.
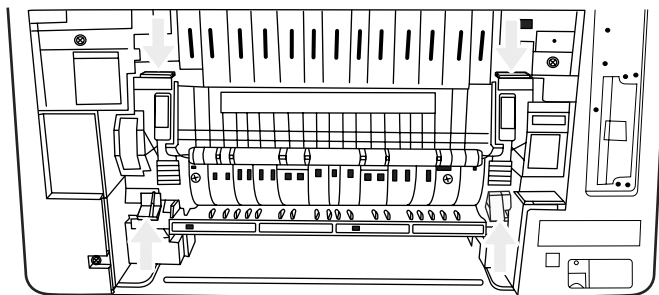
6 Pull the fuser out of the printer.

For information on how to properly dispose of the fuser, go to http://www.hp.com/recycle.
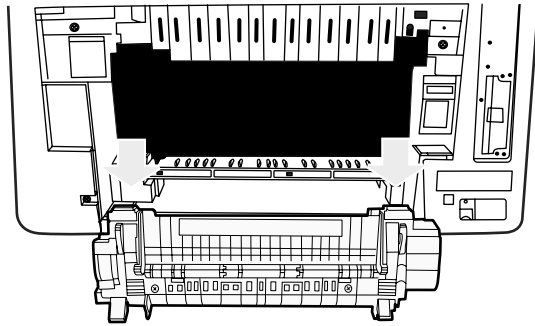
7   Remove the new fuser from the bag.
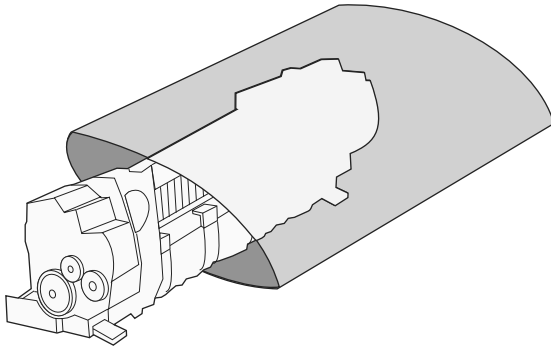
8   Hold the fuser with your thumbs on the blue ridges and fingers on the blue latches. Push both sides of the fuser into the printer.
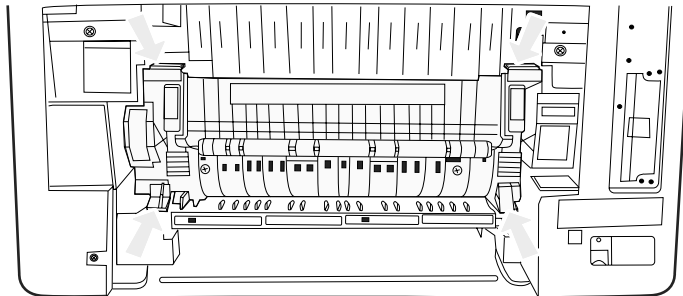
9 Press the black ridges on the front of the fuser until the fuser clicks into place.
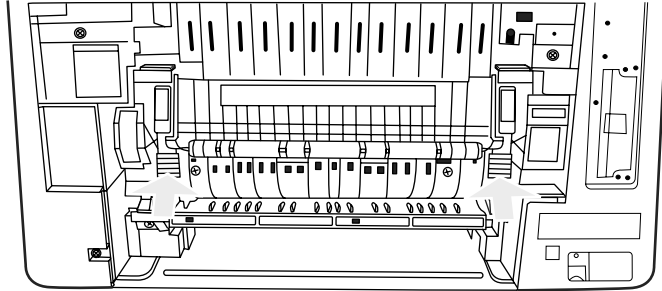
10 Rotate the green levers to the up position.
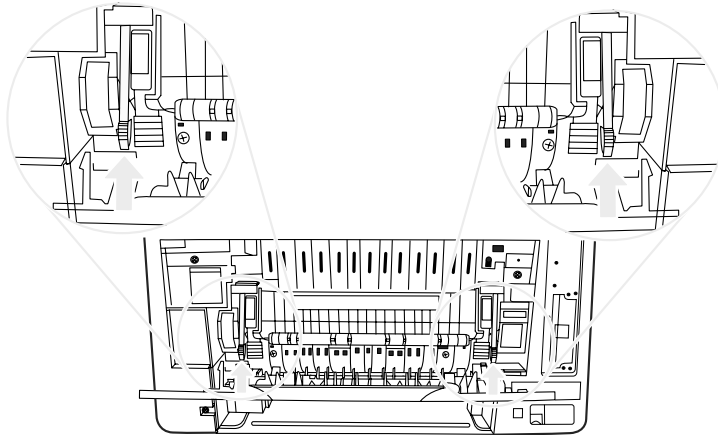
11 To reattach the lower rear door (rear output bin), hold the door at a 45° angle, and fit the peg into the round hole on the right side.
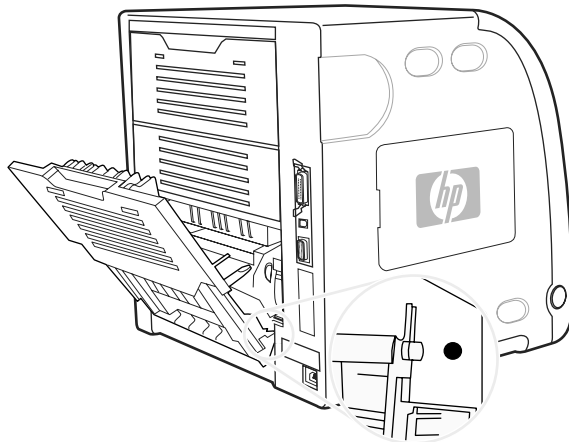
12 Press the ridges on the tab on the left side of the door, and fit the peg into the round hole.
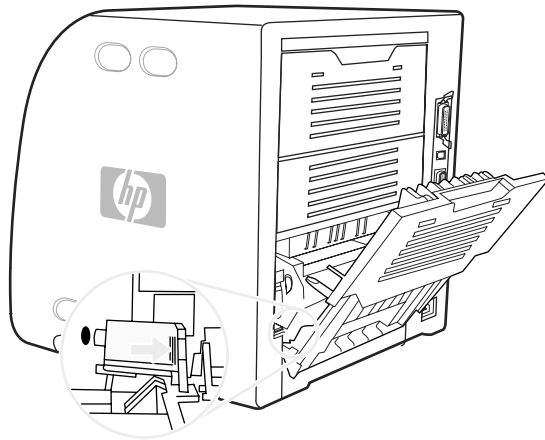
13 Close the lower rear door (rear output bin).
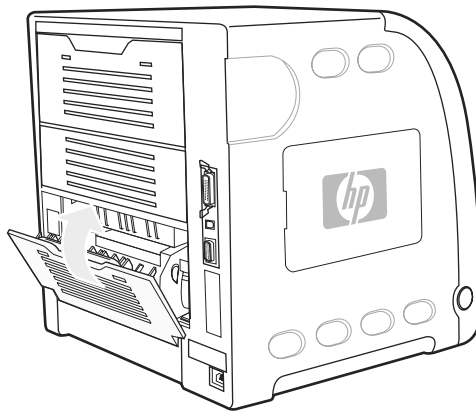
After replacing the fuser, you must also replace the pickup roller. See for instructions.

To replace the pickup roller

The printer should still be turned off.

1 Remove Tray 2 and place it on a flat surface.
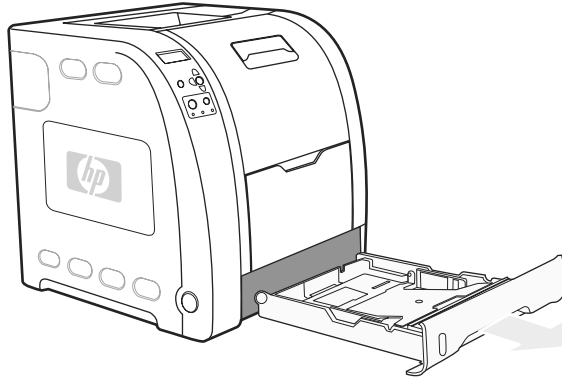
2 Use one finger to push on the blue side of the pickup roller until the peg comes out of the right hole.
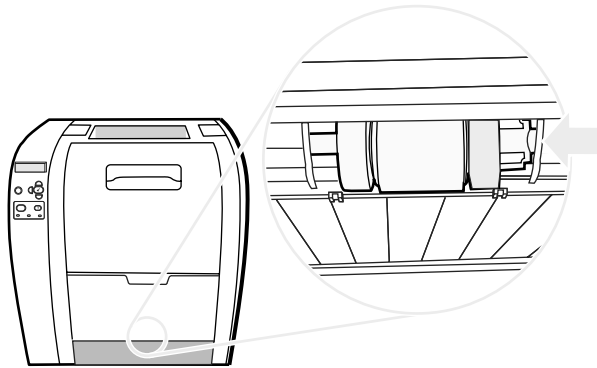
3 Pull down gently on the pickup roller to remove the left peg of the pickup roller from the printer.
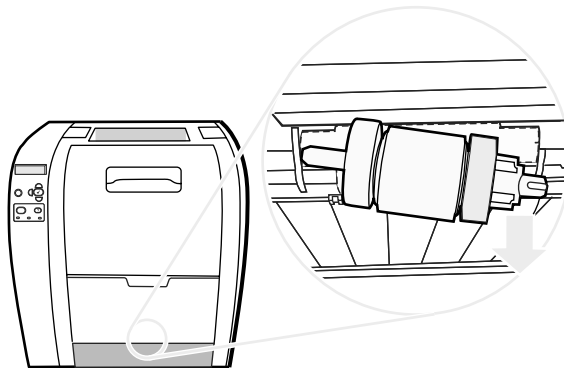
4 Remove the new pickup roller from the bag.
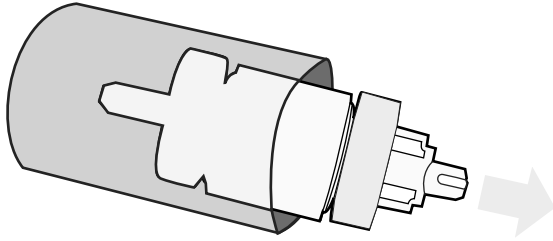
For information on how to properly dispose of the used pickup roller, go to http://www.hp.com/recycle.

5 Hold the blue side of the pickup roller, and insert the left peg into the round hole in the printer.
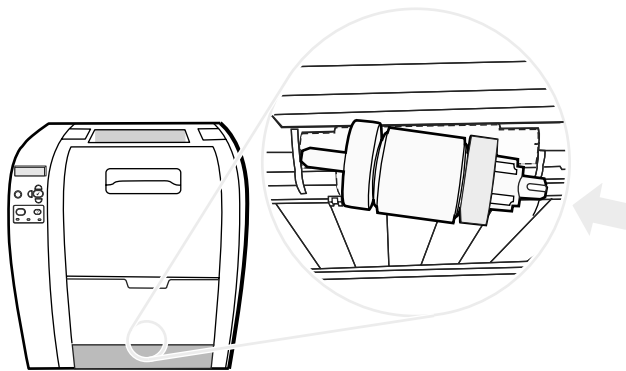
6 Push in on the pickup roller while lifting up on the right side of the pickup roller, so the pin goes into the hole.
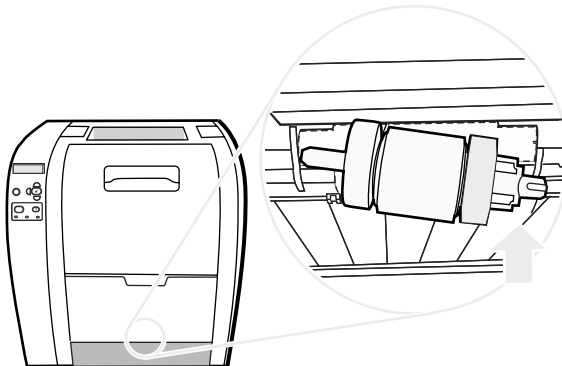
7 Rotate the blue side of the pickup roller until it clicks into place.
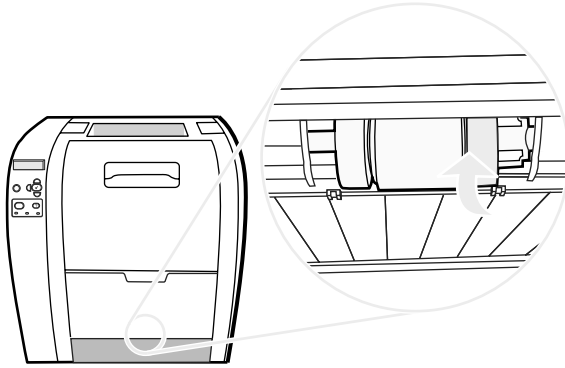
8 Replace Tray 2.

9 Turn the printer on. After a short time, the printer control panel might display the message **NEW FUSER KIT**.

10 If the message **NEW FUSER KIT** appears, go to step 11. If the message does not appear, you must reset the fuser count. See   .

11 On the printer control panel, press ▼ to highlight **YES**, and then press ✔ to select it. The fuser count is reset and the printer is ready to use.

To reset the fuser count

12 Press   to enter the **MENUS**.

13 Press ▼ to highlight **CONFIGURE DEVICE**.

14 Press ✔ to select **CONFIGURE DEVICE**.

15 Press ▼ to highlight **RESETS**.

16 Press ✔ to select **RESETS**.

17 Press ▼ to highlight **RESET SUPPLIES**.

18 Press ✔ to select **RESET SUPPLIES**.

19 Press ▼ to highlight **NEW FUSER KIT**.

20 Press ✔ to select **NEW FUSER KIT**.

21 Press ▼ to highlight **YES**.

22 Press ✔ to select **YES**.

The fuser count is reset and the printer is ready to use.

Theory of operation

This chapter contains the following sections.

The HP Color LaserJet 3500 and 3700 series printer functions are divided into four systems:

engine control system

laser/scanner system

image formation system

pickup/feed system

Upon receipt of printing commands from the external device via the formatter, the engine control system provides control for the laser/scanner system, the image formation system, and the pickup/feed system and performs print operations. The engine control system receives status from each system and sends the necessary information back to the formatter.

To external device (computer etc.)
through the video controller
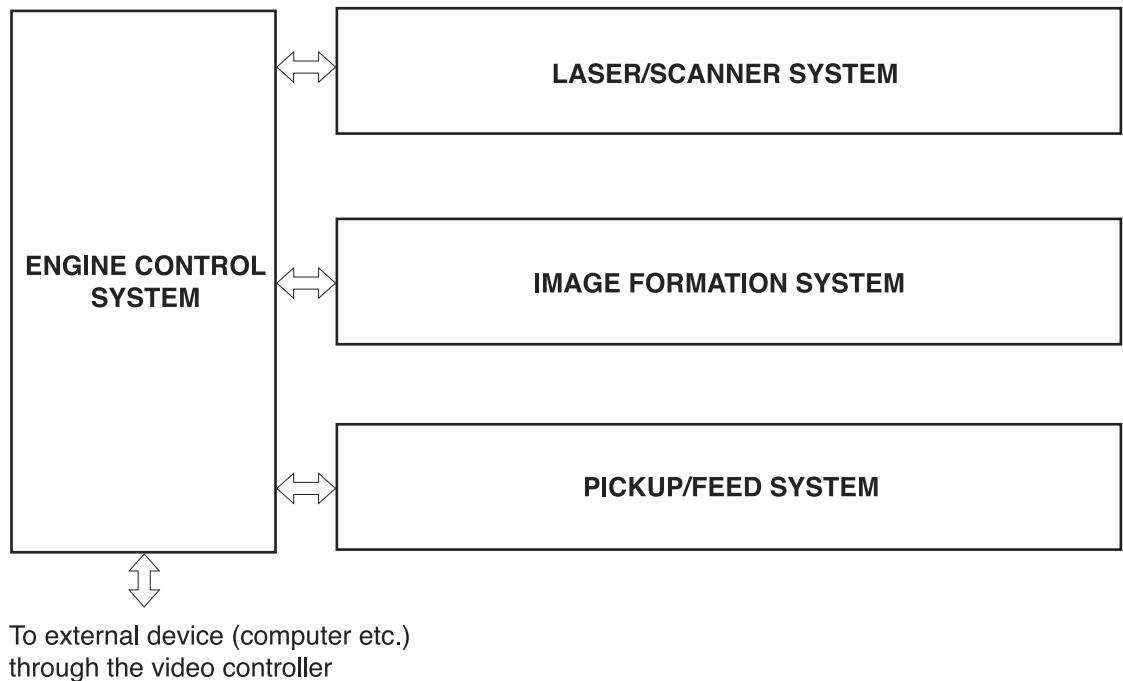
Basic system operation

The terms fixing and fuser refer to the same operation (or assembly) and are used interchangeably in this document. Also, ITB unit and transfer unit refer to the same assembly and are used interchangeably throughout this document.

Operation sequence

A microcomputer in the engine control system controls the operation sequence for the printer.
Table 5-1 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.

Table 5-1   Basic operation sequence

Period		Purpose	Remark
WAIT (wait period)	From the time the power switch is turned on until the ITB cleaning is completed.	Clear the charge from the drum surface and clean the ITB.	Detect the presence of the cartridge and the environmental conditions. Control the color misregistration and the image stability as required.
STBY (standby period)	From the end of the WAIT or LSTR period until either a print command is sent from the formatter or the power switch is turned off.	To keep the printer ready to print.	Go into "sleep" when a sleep command is sent from the formatter. Adjust the color misregistration and controls the image stability according to the executable command.
INTR (initial rotations period)	From the time the formatter sends a print command until the registration paper sensor detects the end of the paper.	Stabilize the sensitivity of the photosensitive drum to be ready for printing.	
PRINT (print period)	From the time the INTR period is completed and the /TOP signal is sent to the formatter until the fuser delivery paper sensor detects the paper.	Form the image on the photosensitive drum according to the VIDEO signal sent from the formatter and transfer the toner image to the paper via the ITB.	Carry out the image stabilization control every specified number of print or time after the power is turned on.
LSTR (last rotations period)	From the end of PRINT until the delivery motor stops.	Deliver the paper out of the printer.	Return to the INTR period as soon as another print command is sent from the formatter.

Power-on sequences

The figure below shows the sequence from the time the power is switched on until STBY period.

```
                    ┌──────────────┐
                    │   Power on   │
                    └──────┬───────┘
                    ┌──────▼────────┐
                    │CPU initialization│
                    └──────┬────────┘
                    ┌──────▼────────┐
                    │ASIC initialization│
                    └──────┬────────┘
                    ┌──────▼───────┐
                    │    Fan on    │
                    └──────┬───────┘
          ┌────────────────▼──────────────────┐
          │ Video interface communication ready│
          └────────────────┬──────────────────┘
          ┌────────────────▼──────────────────┐
          │ Video interface communication start│
          └────────────────┬──────────────────┘
                  ┌─────────▼─────────┐
                  │  Printer ID check  │
                  └─────────┬─────────┘
          ┌─────────────────▼─────────────────┐
          │ Initial drive                      │
          │ · Feed motor drive                 │
          │ · Drum motor drive                 │
          │ · Delivery motor drive             │
          │ · Developing motor drive           │
          └─────────────────┬─────────────────┘
      ┌───────────────────────────────────────────┐
      │ Developing engaging/disengaging control   │  Note:1
      └─────────────────┬─────────────────────────┘
              ┌─────────▼──────────┐ Engaging
              │Secondary transfer roller│────────┐
              │ engaging check     │       ┌─────▼──────────────┐
              └─────────┬──────────┘       │Secondary transfer roller│
                 Disengaging               │   disengaging      │ Note:2
                        │                  └─────────┬──────────┘
                        ▼                            │
          ┌─────────────────────┐        ┌──────────▼──────────┐
          │Environment detection │        │Check residual paper │
          └─────────┬───────────┘        │  in the printer     │
              ┌─────▼──────────┐          └──────────┬──────────┘  Note:6
              │Cartridge presence│
              │/ toner level check│
              └─────┬──────────┘
      ┌─ ─ ─ ─ ─ ─ ─│─ ─ ─ ─ ─ ─ ─ ─ ─┐  Note:3
      │   ┌─────────▼──────────┐        │
      │   │Scanner motor initial drive│  │
      │   └─────────┬──────────┘        │
      │   ┌─────────▼──────────────┐    │
      │   │Scanner motor initial drive check│
      │   └─────────┬──────────┘        │
      │   ┌─────────▼──────────┐        │
      │   │Color misregistration control│ Note:4
      │   └─────────┬──────────┘        │
      │   ┌─────────▼──────────┐        │
      │   │Image stabilization control│  Note:5
      │   └─────────┬──────────┘        │
      └─ ─ ─ ─ ─ ─ ─│─ ─ ─ ─ ─ ─ ─ ─ ─┘
                ┌───▼──────┐
                │ Standby  │
                └──────────┘
```

Power-on sequence

Figure notes

1 See   , later in this chapter.

2   See "Secondary transfer roller engaging/disengaging control" on page 5-166.

3   The sequences inside the dotted-line box are performed when required.

4   The color misregistration control controls the correction of both horizontal and vertical misregistration. See   , later in this chapter, for more information.

5   The image stabilization control controls the correction of the high-voltage bias output value and VIDEO signal PWM value for a stable image. See   , later in this chapter, for more information.

6   The automatic paper delivery system is activated if a residual paper is detected.

The engine control system functions as the brain of the printer. It controls the laser/scanner system, the image formation system, and the pickup/feed system according to the commands received from the formatter.

The engine control system consists of the following:

  DC controller printed circuit board (PCB) assembly

  high-voltage power supply PCB

  low-voltage power supply PCB

The block diagram below illustrates the engine control system. Each circuit is described in the following paragraphs.
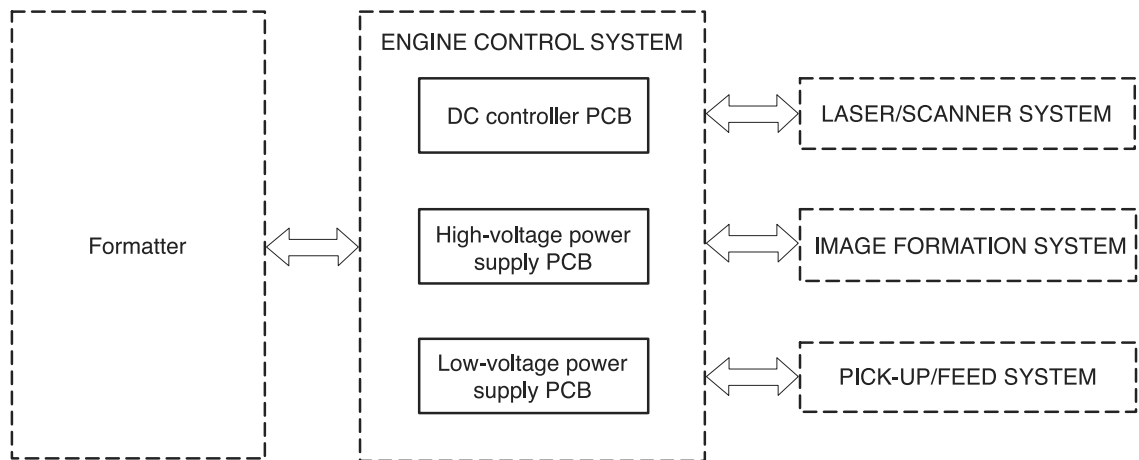
Engine control system

Components described as a PCB may consist of a single circuit board or a circuit board plus other parts, such as cables and sensors.

DC controller PCB

The DC controller PCB is controlled by the CPU on the DC controller. It controls the operation sequences of this printer.

The following is the sequence of the DC controller PCB:

1   The power switch is turned on, the DC controller is supplied with the DC power from the low-voltage power supply unit.

2   The CPU starts to control the operations of the printer.

3   When the printer enters the STBY period, the CPU sends signals to drive each load (such as the laser diode, the motors, and the solenoids) based on the print command and the image data received from the formatter.

The block diagram of this circuit is illustrated in Figure 5-4.

See the   in chapter 7, for detailed information on the printer circuitry.

DC controller circuit

The diagram shows the DC controller PCB with the following connections:

Left side sensors (connected to IC1001 CPU):
- Multi-purpose (Tray 1) paper sensor
- Cassette (Tray 2) paper sensor
- Registration paper sensor
- Media sensor
- Fuser front paper sensor
- Fuser delivery paper sensor
- Face down delivery paper sensor
- Reversed paper sensor
- Duplexing feed paper sensor
- Face up tray sensor
- Color misregistration sensor
- Waste toner full sensor
- Developing engaging sensor
- Environment sensor
- Secondary transfer roller engagement sensor

Solenoids and clutches:
- Cassette (Tray 2) pickup solenoid (SL)
- Multi-purpose (Tray 1) pickup solenoid (SL)
- Duplexing feed solenoid (SL)
- Secondary transfer roller engaging solenoid (SL)
- Registration clutch (CL)
- K cartridge drive clutch (CL)
- Developing cylinder engaging clutch (CL)

Power:
- AC input → Low-voltage power supply circuit (+3.3V, +5V, +24V) with Fuser drive circuit → Fuser

Bottom ICs:
- IC1003 Reset IC
- IC1010 EEP-ROM

Right side (connected via IC1002 ASIC):
- IC1011 → M Feed motor
- IC1014 → M Delivery motor, M Primary transfer engaging motor
- M Developing motor
- M Drum motor
- Laser/Scanner unit (Scanner motor, Laser driver)
- Secondary transfer roller
- (ITB) Transfer unit (Primary transfer roller)
- High-voltage power supply circuit
- EP cartridge (Primary charging roller, Developing cylinder, Photosensitive drum, Memory tag)
- Memory controller
- SW Door-open detection switch
- Formatter
- Option
- Fan

Legend: ▨ HP 3700 only.

Block functions

CPU (IC1001)

The 16-bit single-chip microcomputer that constitutes the CPU incorporates ROM and RAM and controls the following operations of the printer according to the control programs stored in the ROM:

1 printer engine sequence

2 fuser heater drive circuit/fuser safety monitor circuit

3 solenoids

4 clutches

5 sensors/switches

ASIC (IC1002)

The application specific IC (ASIC) is used to interface to the IC, the memory, the external devices, and so on. It controls the following operations of the printer according to the commands from the CPU:

1 laser/scanner

2 communication with the formatter

3 high-voltage power supply circuit

4 each motor's drive

5 fan motor's drive

6 writing and reading data to and from the EEP-ROM

7 memory tag

Reset IC (IC1003)

The IC1003 monitors +3.3V voltage and resets the CPU and ASIC when the power is turned on.

EEP-ROM (IC1010)

EEP-ROM stores various backup data.

Feeder motor driver IC (IC1011)

IC1011 controls the feed motor. (See   , below for details.)

Delivery motor driver IC (IC1014)

IC1014 controls the delivery motor and primary transfer engaging motor. (See
                  , below for details.)

Motors, solenoids, and clutches

This printer has seven motors, four solenoids (three for the HP Color LaserJet 3500 series printer), and three clutches for paper feed and image formation. The specifications of such motors, solenoids, and clutches are listed in the following tables.

The motors with failure detector are discussed in   .

Table 5-2   Motor Functions

Name	Function	Type	Direction of rotation	Speed switching	Failure detection
M1 Feed motor	Drives the pick-up roller, feed roller, duplexing feed roller, and fuser.	Stepping motor	Clockwise	4-speed (full, 1/2, 1/3, 1/4)	No
M2 Delivery motor	Drives the feed roller.	Stepping motor	Clockwise/ counter- clockwise	5-speed (full, 1/2, 1/3, 1/4, double)	No
M3 Drum motor	Drives four colors photosensitive drums, ITB, Black developing cylinder.	DC motor	Clockwise/ counter- clockwise	4-speed (full, 1/2, 1/3, 1/4)	Yes
M4 Developing motor	Drives the yellow (Y), magenta (M), and cyan (C), developing cylinders.	DC motor	Clockwise	4-speed (full, 1/2, 1/3, 1/4)	Yes
M5 Primary transfer roller engaging motor	Engages and disengages the primary transfer roller.	Stepping motor	Clockwise/ counter- clockwise	No	No
FAN1 Fan	Exhausts heat around the fuser, scanner assembly, and print cartridges.	DC motor		No	Yes
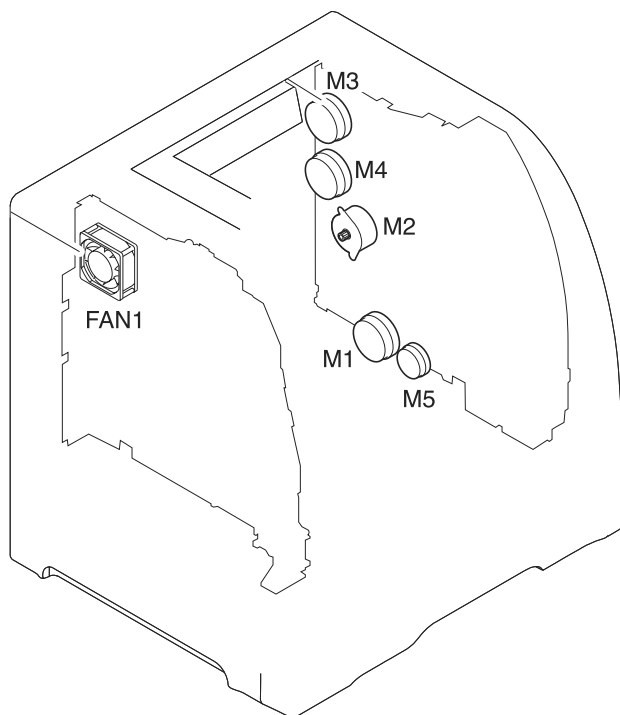
Motor locations

Table 5-3 Function of solenoids

Name	Function
SL1 Tray 2 (cassette) pick-up solenoid	Drives the Tray 2 (cassette) pick-up roller.
SL2 Tray 1 (multipurpose tray) pick-up solenoid	Drives the Tray 1 (multipurpose tray) pick-up roller.
SL4 Secondary transfer roller engaging solenoid	Engages and disengages the secondary transfer roller.
SL5 Duplexing feed solenoid (Not available for the HP 3500)	Drives the Tray 1 (multipurpose tray) pick-up roller.

Table 5-4 Function of clutches

Name	Function
CL1 Registration clutch	Drives the registration roller.
CL2 K (black) developing clutch	Drives the K cartridge.
CL3 Developing engaging clutch	Engages and disengages the developing cylinder.
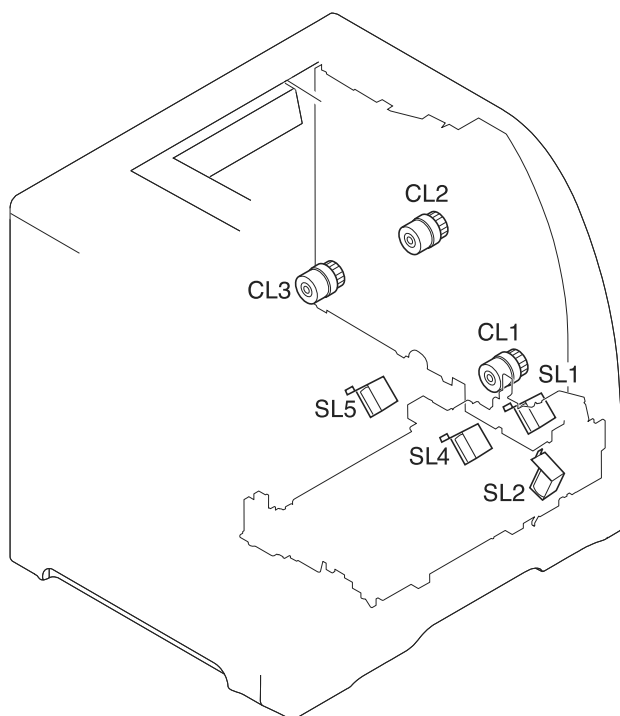
Solenoid and clutch locations

Drum motor control

The drum motor control controls the drive of the drum motor (M3).

The drum motor is a three-phase, eight-pole DC motor with a built-in drive circuit. The drum motor drives the four color photosensitive drums, the K (black) developing cylinder, and the ITB. The drum motor operates under the control of the DRUM MOTOR ACCELERATION signal (/ DRMITBACC) and the DRUM MOTOR DECELERATION signal (/DRMITBDEC) from the DC controller.
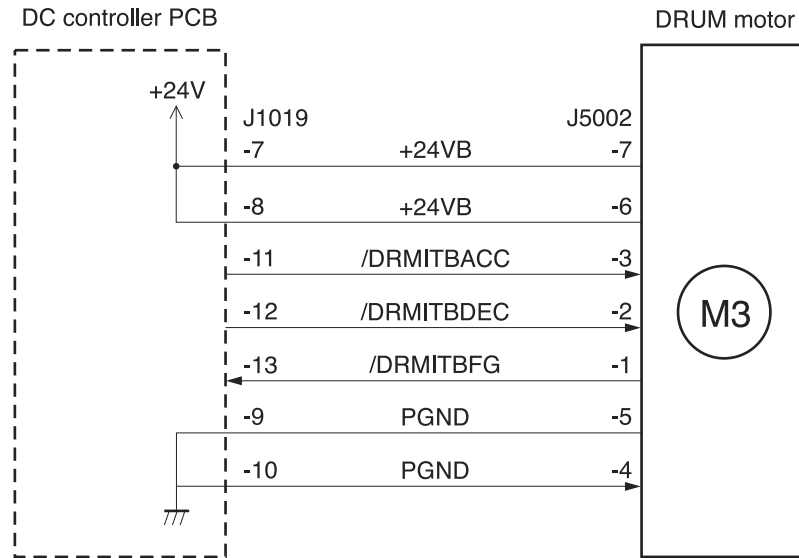
Drum motor control circuit

The DC controller monitors the DRUM MOTOR SPEED DETECTION signal (/DRMITBFG) to control the RPM of the drum motor.

Under the following conditions, the DC controller judges the drum motor faulty and sends an error message to the formatter:

  Drum motor start abnormality: The interval of the /DRMITBFG signals does not become regular in 1000 ms from the drum motor start.

  Drum motor rotation abnormality: The interval of the /DRMITBFG signal stays irregular for 100 ms or more after it has become regular.

Developing motor control

This developing motor control controls the drive of the developing motor (M4).

The developing motor, a three-phase eight-pole DC motor with a built-in drive circuit, drives the Y, M, and C cartridges. The developing motor is controlled by the DC controller, which sends the DEVELOPING MOTOR ACCELERATION signal (/YMCDEVACC) and the DEVELOPING MOTOR DECELERATION signal (/YMCDEVDEC) to drive the motor.
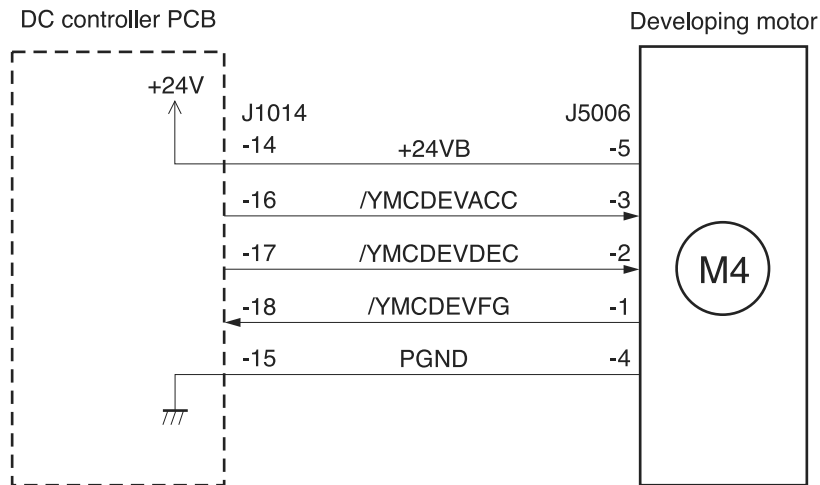
Developing motor control circuit

The DC controller judges the developing motor faulty under the following conditions and sends an error message to the formatter:

Developing motor start abnormality: The interval of the /DRMITBFG signals does not become regular in 1000 ms from the start of the developing motor.

Developing motor rotation abnormality: The interval of the /YMCDEVFG signal stays irregular for 100 ms or more after it has become regular.

Fan control

The fan control controls the drive of the fan.

The fan, a DC brushless motor with a built-in Hall effect device, exhausts air to prevent the temperature from rising around the fuser unit. The fan operates under the control of the FAN DRIVE signal (/FAND) the DC controller.
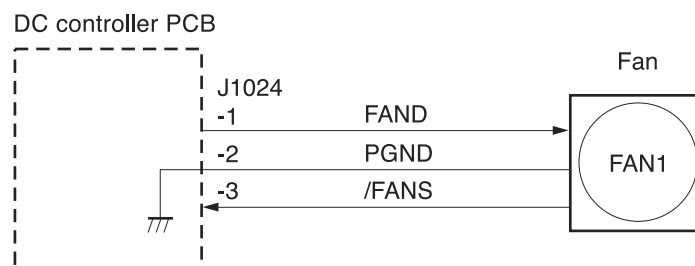
Fan control circuit

The DC controller monitors the FAN ROTATION DETECTION signal (/FANS) to control the RPM of the fan. The /FANS signal outputs (turn "L") when the fan rotates at the speed of the specified RPM: when the DC controller judges the fan normal. The DC controller judges the fan faulty and sends the error message to the formatter when the /FANS signal has not been input (turns "H") for 10 seconds or more.

Low-voltage power supply circuit

The low-voltage power supply circuit converts AC voltage from a power supply receptacle to DC power and supplies the fuser with the power to drive its heater.

The low-voltage power supply circuit has two components:

Fuser control circuit: controls the temperature of the fuser.

Low-voltage power supply circuit: generates the DC power required inside the printer and supplies the AC power to the fuser control circuit.
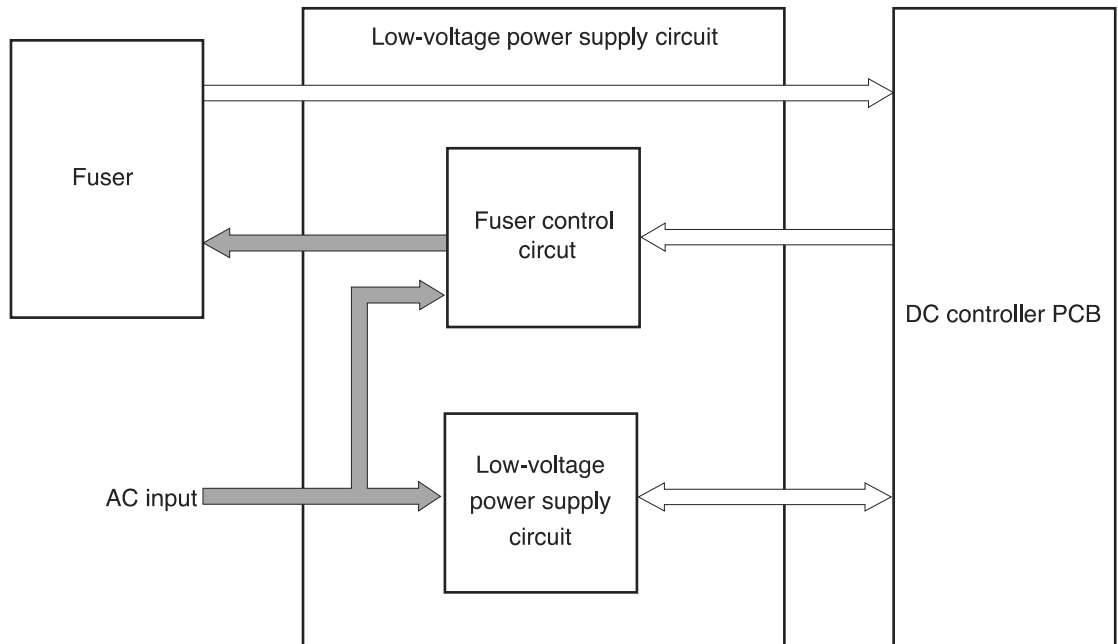
Low-voltage power supply circuit

The terms fixing and fuser refer to the same operation (or assembly) and are used interchangeably in this document. Also, ITB unit and transfer unit refer to the same assembly and are used interchangeably throughout this document.

Fuser control circuit

The fuser control circuit controls the temperature of the fuser. The following figure shows the ceramic heater fusing method used by this printer.
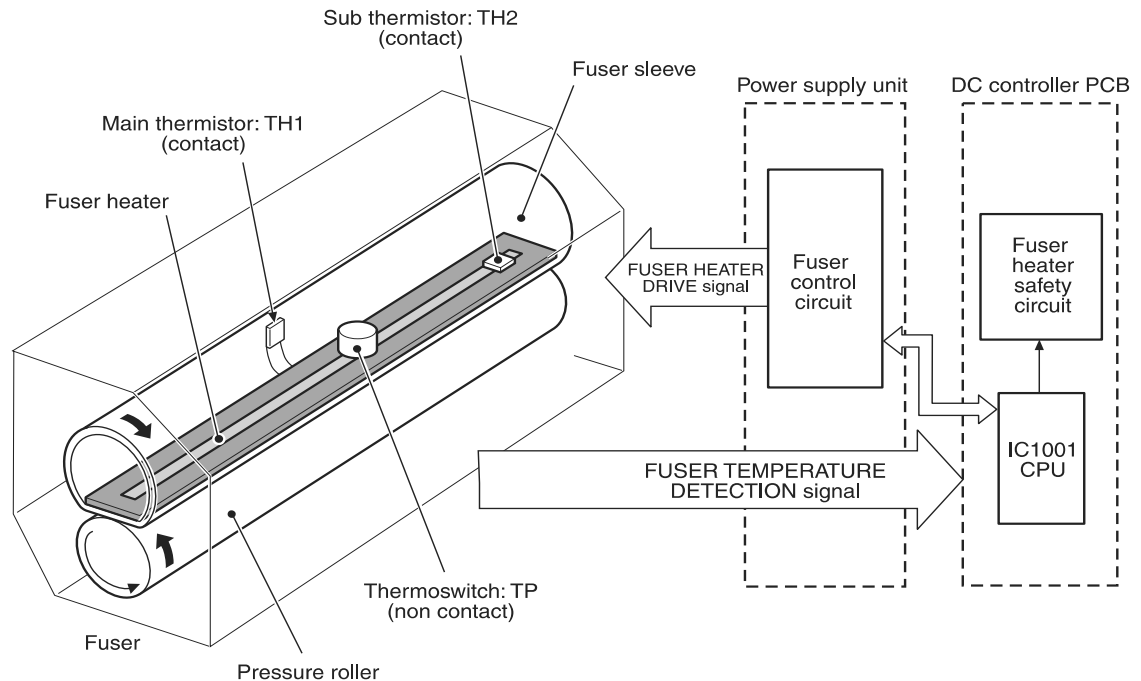
Ceramic heater fusing method

The fuser control circuit has three main components:

> **Fuser heater (H1)**: A ceramic heater that heats the fuser sleeve.

> **Thermistors (TH1, TH2)**: Two thermistors monitor temperature:

> • **Main thermistor (TH1)**: Monitors print temperature and between-sheets temperature (contact type).

> • **Sub thermistor (TH2)**: Monitors temperature rise at the end, the initial rotation temperature, and the start-up temperature (contact type).

> **Thermoswitch (TP)**: One thermoswitch is placed on top of the fuser heater (non-contact type). When the fuser heater is abnormally overheated, the switch opens and cuts off the power supply to the heater.

The temperatures in the fuser are controlled by the fuser control circuit and the fuser heater safety circuit according to the commands from the CPU (IC1001) on the DC controller.

Heater temperature control

The heater temperature control controls the drive signals of the fuser heater to monitor and maintain the surface temperatures of the fuser sleeve and the fuser heater at the target temperature.
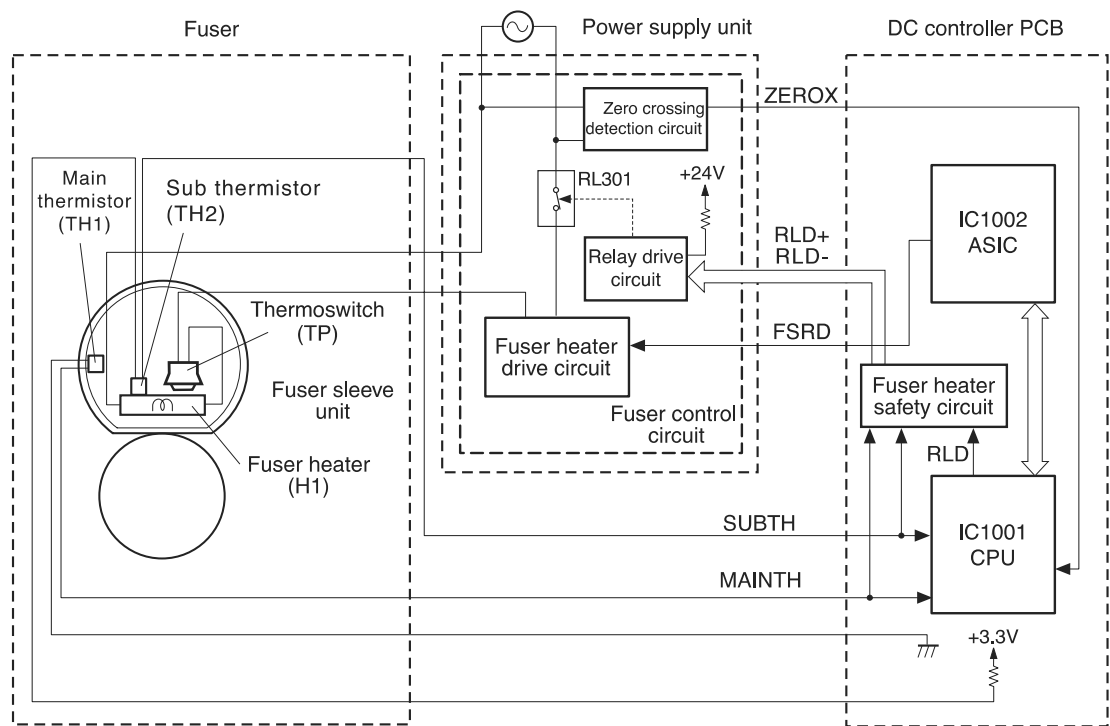
Heater temperature control circuit

Two thermistors monitor fuser (fixing) heater temperature:

Main thermistor (TH1): Monitors the print temperature and the between-sheets temperature. It is placed in contact with the inside surface of the fuser sleeve and monitors the sleeve temperature.

Sub thermistor (TH2): Monitors the temperature rise at the end, the initial rotation temperature, and the start-up temperature. It is placed in contact with the fuser heater.

As the surface temperature of the fuser heater rises, the resistances of both thermistors reduce and the voltage of the FUSER HEATER TEMPERATURE DETECTION signals (MAINTH, SUBTH) varies.

The CPU (IC1001) on the DC controller monitors the voltage of these two signals (MAINTH, SUBTH) and accordingly sends the FUSER HEATER DRIVE signal (FSRD) via the ASIC (C1002). Based on this signal, the fuser heater drive circuit controls and maintains the fuser heater at the specified temperature.

This control system is divided into the following five controls.

Initial rotation temperature control: Prevents damage to the fuser sleeve unit when the power switch is turned on. The CPU turns on the fuser heater before it drives the feed motor when the temperature of the heater is below 55° C (131° F) on switch-on (detected by TH2). It drives the motor after the fuser heater is left on for the prescribed time period.

Start-up temperature control: Determines the initial temperature of the fuser heater according to its temperature when energized (detected by TH2). When the heater is energized within 30 seconds after completion of a print, the previous printing temperature is the start-up temperature.

Print temperature control: Maintains the fuser heater in the printer at the target temperature. The CPU raises the target temperature in stages in one sprinting process to prevent the fuser sleeve temperature from falling as the paper goes through. During printing of multiple pages, the target temperature also varies in stages depending on the number of pages printed.

Between-sheets temperature control: Keeps the temperature of the fuser heater lower than the target temperature during continuous printing. This prevents the temperature rise of the fuser sleeve between sheets. The between-sheets temperature varies depending on the paper feed speed and the kind of paper being printed.

Throughput control: Prevents both ends of the fuser sleeve unit from overheating during continuous printing of narrow paper. For a continuous printing, this control decreases the throughput to slow down the paper pickup speed when the temperature of the sub thermistor reads over 260° C (500° F) and the paper width is narrower than 210 mm (8.27 inches).

Flicker prevention

The flicker prevention mechanism prevents flicker when the user's printer is connected to the same AC line as other lighting fixtures. Because the printer's heater drive circuit uses a triac for switching AC, flicker can occur when the voltage in the AC line falls due to a user connecting a printer to the same AC line as other lighting fixtures, increasing the amount of current passing through the heater.

To prevent flicker, this printer uses a zero crossing circuit to monitor the voltage of the AC line. The CPU monitors the ZERO CROSSING DETECTION signal (ZEROX) to optimize the timing of energizing the heater.

Protective function

The CPU, fuser heater safety circuit, and thermoswitch prevent overheating of the fuser by interrupting the current to the heater.

The abnormal temperature rise is prevented by the following parts:

1 CPU

2 Fuser heater safety circuit

3 Thermoswitch

The function of each part is described as follows:

CPU: The CPU monitors the output voltages of the main and sub thermistors (MAINTH, SUBTH). If the MAINTH voltage goes below approximately 0.92 V (230° C, 446° F) or the SUBTH voltage exceeds approximately 2.8 V (280° C, 536° F), the CPU judges the fuser faulty and initiates the following steps.

a. The CPU sets the FUSER HEATER DRIVE signal (FSRD) to stop "L" via ASIC and turns off the heater.

b. The CPU sets the RELAY DRIVE signal (RLD) to stop ("H").

c. The fuser heater safety circuit turns the RELAY DRIVE signal (RLD-) to stop ("H").

d. The relay drive circuit cuts the relay (RL301) OFF and interrupts the current to the fuser heater.

Fuser heater safety circuit: The CPU monitors the output voltages of the main and sub thermistors (MAINTH and SUBTH). It cuts the relay (RL301) off and interrupts the current to the fuser heater when the MAINTH voltage is under approximately 1.0 V (240° C, 464° F) or the SUBTH voltage exceeds approximately 3.0 V (290° C, 554° F).

Thermoswitch: When the thermoswitch reads a temperature exceeding 250° C (482° F), it is disconnected, interrupting the current to the fuser heater.

The thermoswitch is some distance away from the fuser heater. The actual temperature of the fuser heater is about 50° C (122° F) higher than the temperature read by the thermoswitch.

Failure detection

If the CPU judges the fuser faulty, it performs the following tasks:

1 It stops the output of the FUSER DRIVE signal (FSRD) (turn "L").

2 It sets the RELAY DRIVE signal (RLD) to stop (turn "H").

3 It sends an error message to the formatter.

The following conditions cause the CPU to judge the fuser to be faulty.

Set-up failure: The temperature of the main thermistor does reach 40° C (104°), 0° C (32° F) when power is turned on, within 1.7 seconds from when the heater energizes, or the temperature of the main thermistor never becomes 5° C (41° F) lower than the target temperature during the paper passing.

Abnormally low temperature of the main thermistor (Break in the main thermistor): The temperature of the main thermistor stays at approximately 70° C (158° F), equivalent to approximately 3.17 V, or lower for 4.0 seconds or longer.

Abnormally high temperature of the main thermistor: The temperature of the main thermistor stays at 230° C (446° F), equivalent to approximately 0.92 V, or higher for 1.0 second or longer.

Abnormally low temperature of the sub thermistor: The temperature of the sub thermistor stays lower than 90° C (194° F) for 2.5 seconds or longer.

Abnormally high temperature of the sub thermistor: The temperature of the sub thermistor stays at 280° C (536° F), equivalent to approximately 2.8 V, or higher for 0.1 second or longer.

Fuser detection

The printer detects the presence of the fuser.

The fuser is detected by the DC controller during the WAIT period. The DC controller determines that the fuser unit is not installed if it detects the following 2 conditions and then sends an error message to the formatter.

1 The FUSER DELIVERY PAPER DETECTION signal (/AFFPSSNS) indicates the presence of paper ("L").

2 The temperature at the sub thermistor does not exceed 40° C (104° F) after 500 ms of fuser temperature control.

Low-voltage power supply circuit

This circuit converts AC voltage from the power supply receptacle to DC power and supply each load.
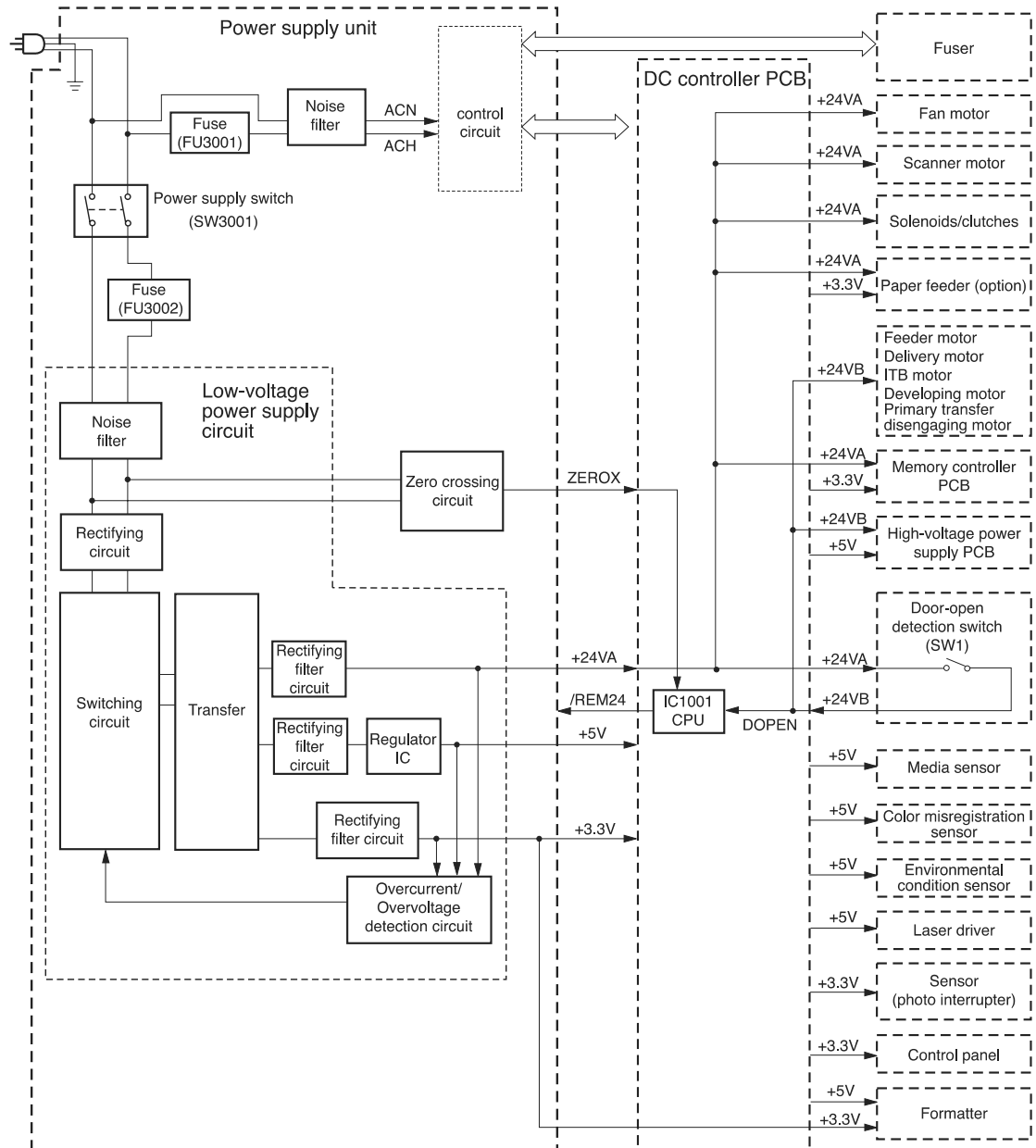
Low-voltage power supply circuit

When the power switch (SW3001) is turned on, the AC power is supplied to the low-voltage power supply circuit, where it is converted to +24 V, +5 V, and +3.3 V DC power required inside the printer.

The major recipients of the +24 V, +5 V, and +3.3 V DC power are listed below.

+24 V: motors, solenoids, clutches, high-voltage power supply PCB, memory controller PCB, and optional parts

+5 V: laser driver PCB, high-voltage power supply PCB, formatter, and sensors (except for the photo interrupter)

+3.3 V: formatter, sensor (photo interrupter), ICs inside the control panel, DC controller, and the memory controller

Protective function

The low-voltage power supply circuit has a protective function against overcurrent and overvoltage to prevent failure in the power supply circuit. It automatically breaks the output voltage when overcurrent or overvoltage occurs due to an issue, such as a short at the load side.

Turn off the power switch (SW3001) to repair the load side, then turn the power back on after the repair is complete, since the DC voltage from the low-voltage power supply circuit may be stopped by this function.

There are two power supply fuses (FU3001, FU3002) in the circuit which have a protective function. The power supply fuse opens and interrupts the current when an overcurrent occurs in the AC line.

To recover the low-voltage power supply after it has been broken for protection, turn the power off (by switching off or unplugging) and leave the printer off for three minutes or longer before turning the power back on.

Safety

For the safety of users and service technicians, the +24 V is divided into two: +24 VA and +24 VB. The +24 VA is supplied from the DC controller all the time, whereas the power supply of the +24 VB stops when the door-open detection switch (SW1) is cut off. The high-voltage power supply circuit, motors, and solenoids are supplied with the +24 VB. They stop when the front cover is opened. This is to protect the users and the service technicians from an electric shock or injury to their hands.

The +24 VB also functions as a DOOR-OPEN DETECTION signal (DOPEN). The CPU judges the door open when the +24 VB supply stops.

Sleep mode

This function saves the power consumption of the printer. It is controlled by the DC controller and goes through the following sequence:

1   The DC controller receives a sleep command from the formatter.

2   The DC controller then sends the SLEEP signal (/REM24) to the low-voltage power supply circuit within the specified time from receipt of such command. ("L" to "H").

3   When /REM24 signal ("H") is sent, the low-voltage power supply circuit stops the power supply of 24V to each load and puts the fuser temperature control, fans, and motors into the STOP state.

The printer returns to the WAIT period when it receives the command to release the sleep mode from the formatter.

High-voltage power supply circuit

This circuit applies a bias to the primary charging roller, the developing cylinder, the developing blade, the primary and secondary transfer charging rollers, and the pressure roller.

The DC controller controls the high-voltage power supply circuit and generates the high-voltage bias. See,   for the details on image formation.
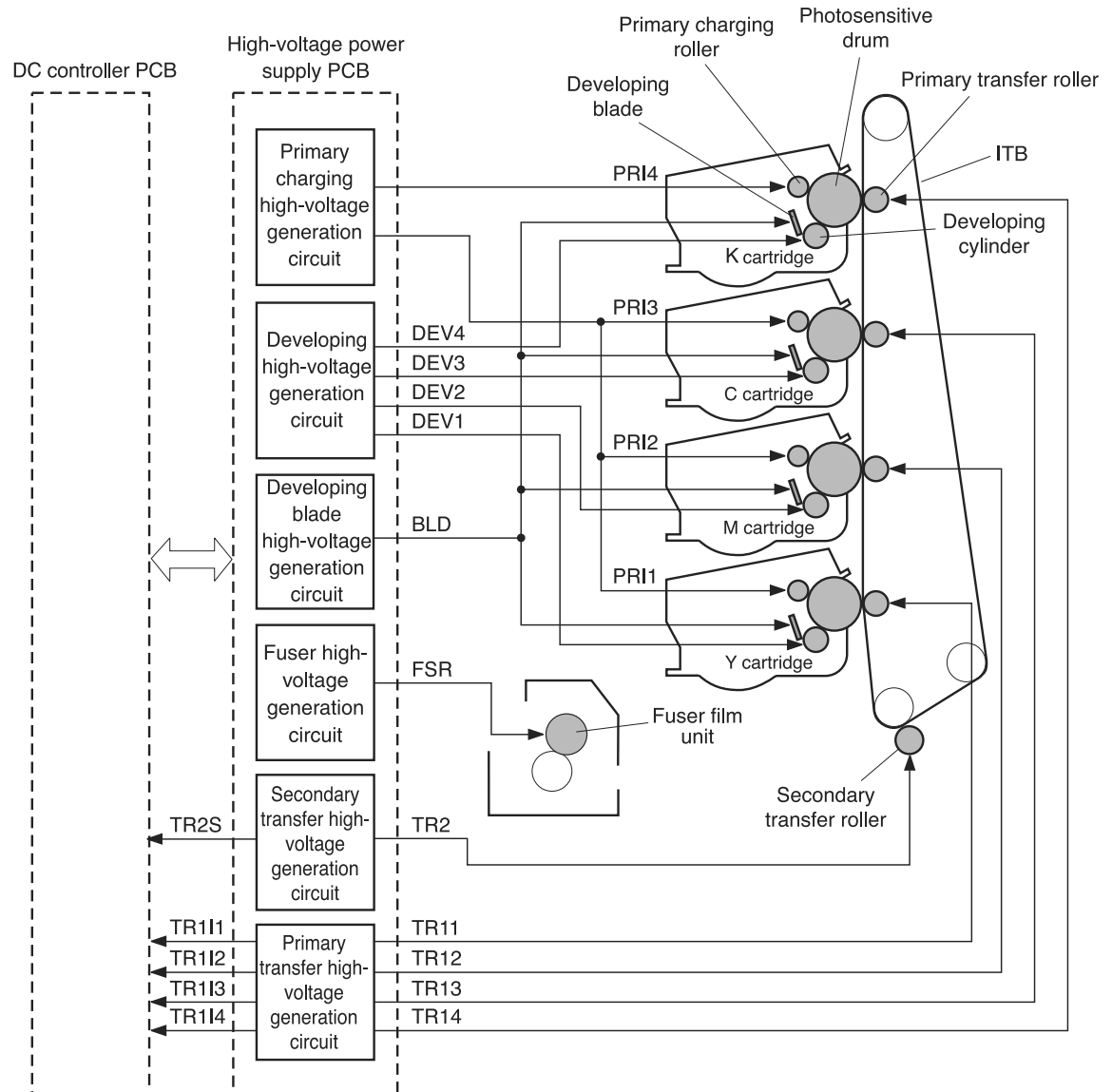
High-voltage power supply circuit

Primary charging bias generation

The primary charging biases (PR11, PR12, PR13, PR14) are used to charge the photosensitive drum surface with negative potential to prepare for image formation.

They are the DC negative biases, PR14 for K (black) and the rest for colors (Y, M, C), generated in the primary charging high-voltage generation circuit in the high-voltage power supply circuit. The high-voltage power supply circuit applies these biases to the primary charging rollers in each cartridge at the specified time.

The values of these biases vary according to the commands from the DC controller.

Developing bias generation

The developing biases (DEV1, DEV2, DEV3, DEV4) are used to adhere the toner to an electrostatic latent image formed on the photosensitive drum. They are the DC negative biases, one for each color (C, Y, M, K), generated in the developing high-voltage generation circuit in the high-voltage power supply circuit. The high-voltage power supply circuit applies these biases to the developing cylinders in each cartridge at the specified time.

The values of these biases vary according to the commands from the DC controller.

Developing blade bias generation

The developing blade bias (BLD) is output to charge the toner uniformly.

It is the DC bias. It is generated in the developing blade high-voltage generation circuit in the high-voltage power supply circuit and shared by all colors (C, Y, M, K). The high-voltage power supply circuit applies this bias to the developing blades in the cartridges at the specified time.

Primary transfer bias generation

The primary transfer biases (TR11, TR12, TR13, TR14) are output to transfer the toner on the photosensitive drum to the ITB. They are the DC positive biases, one for each color (C, Y, M, K), generated in the primary transfer high-voltage generation circuit in the high-voltage power supply circuit. The high-voltage power supply circuit applies them to the primary transfer charging rollers in each cartridge at the specified time.

The values of these biases vary according to the commands from the DC controller.

Secondary transfer bias generation

The secondary transfer bias TR2 is output to transfer the toner on the ITB to paper.

There are two kinds of biases, one DC positive, and the other DC negative. They are generated in the secondary transfer high-voltage generation circuit in the high-voltage power supply. The high-voltage power supply circuit applies them to the secondary transfer charging roller according to the following print sequences.

Print bias (DC positive): The bias to transfer the toner on the ITB to paper during the printing process.

Between-sheets bias (DC positive): The bias to prevent the residual toner on the ITB from adhering to the secondary transfer roller during continuous printing.

Cleaning bias (DC positive/negative): The bias to put the toner adhered to the secondary transfer roller back to the ITB.

The values of these biases vary according to the commands from the DC controller.

The DC controller adjusts the voltage of the transfer bias constant according to the TRANSFER CURRENT FEED BACK signal (TR2S) sent from the secondary transfer high-voltage generation circuit. The DC controller also controls the rated current.

Fuser bias generation

The fuser bias (FSR) is output to prevent the toner on the paper from adhering to the fuser sleeve before fuser process.

It is the DC positive bias generated in the fuser high-voltage generation circuit in the high-voltage power supply circuit. The high-voltage power supply circuit applies this bias to the pressure roller of the fuser unit at the specified time.

Video interface control

The video interface enables communication between the formatter and the DC controller. The formatter uses the video interface to monitor the printer status continuously. It sends the VIDEO signal via the video interface when the printer is ready for printing. The DC controller turns the laser on/off according to the VIDEO signal.
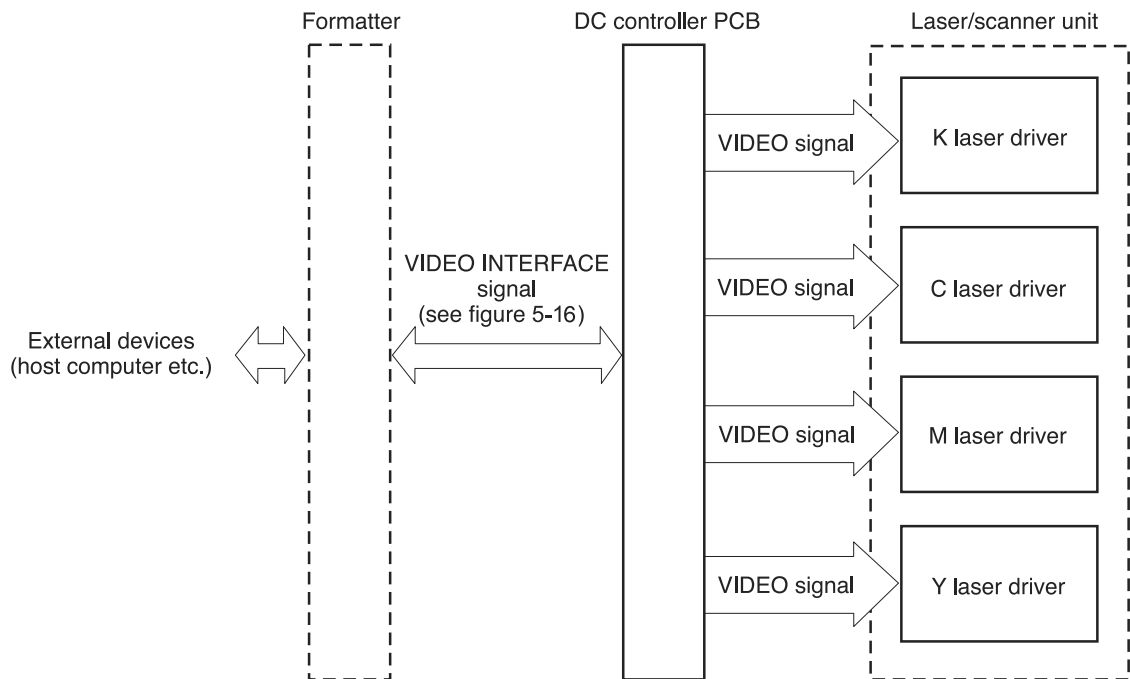
Video interface

Operational description

The VIDEO INTERFACE signal is exchanged as follows during print:

1   When the printer engine is ready for printing, the DC controller notifies the formatter of it using a status command (SC) signal.

2   The formatter sends a print command in the form of an SC signal to the DC controller when both the printer engine and the data for one page are ready.

3   The DC controller that drives the scanner motor sends the HORIZONTAL SYNCHRONOUS signals (/BD1, /BD2, /BD3, /BD4) to the formatter upon receipt of print command.

4   The printer engine picks up paper. It stops the paper at the registration paper sensor (PS4) and sends the VERTICAL SYNCHRONOUS signal (/TOP) to the formatter.

5   The formatter sends the VIDEO signals (VDO1, /VDO1, VDO2, /VDO2, VDO3, /VDO3, VDO4, /VDO4) to the DC controller in synchronization with the /BD1~4 signals upon receipt of the /TOP signal.

6   The DC controller controls each color's laser driver circuits and turns on/off the laser according to the VDO11~41 signals. This forms a electrostatic latent image on each color's photosensitive drums.

7   The latent images are developed by toner and transferred onto the ITB in the order of Y (yellow), M (magenta), C (cyan), and K (black).

8 The DC controller re-feeds the paper after a specified time from /TOP signal output and transfers the toner image from the ITB onto the paper. This aligns the leading edge of the paper and the top of the image.

9 The paper, having had the toner image fixed on it, is delivered to the delivery tray when the print is completed.

Printing continues when the DC controller receives another print command from the formatter during the first print.

See   and   .

Video interface signals

Formatter — /TOP, /BD1, /BD2, /BD3, /BD4, VDO1, /VDO1, VDO2, /VDO2, VDO3, /VDO3, VDO4, /VDO4, SCLK, SC, /CCRT, /PFED, /PDLV, /TOPR — DC controller
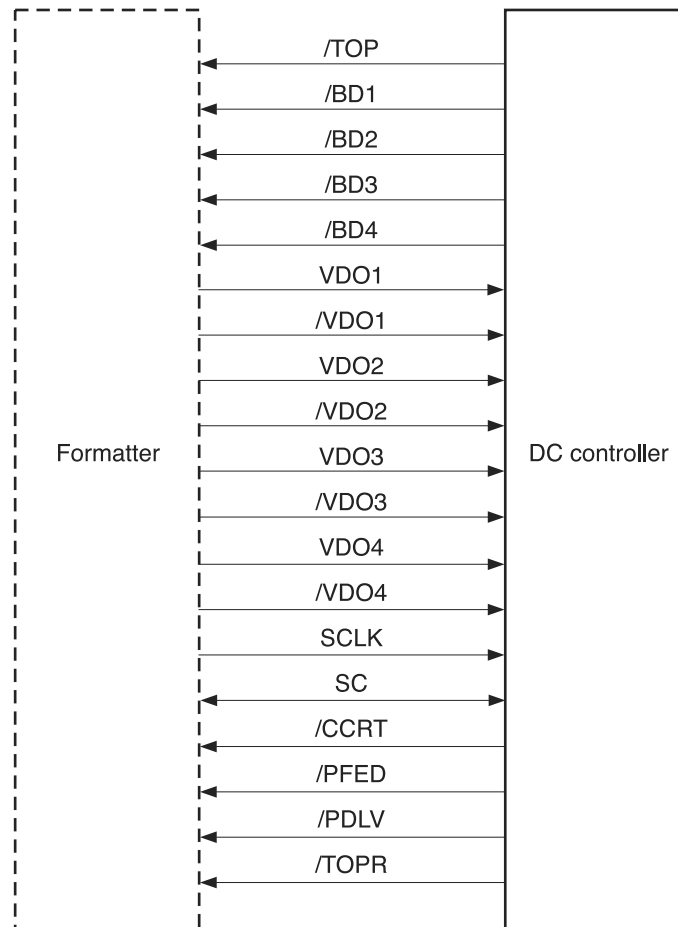
Video interface signals

The types and purposes of the VIDEO INTERFACE signals are described below.

VDO1, /VDO1, VDO2, /VDO2, VDO3, /VDO3, VDO4, /VDO4, (VIDEO) signals (formatter output): These signals are the information of the image the printer engine is going to print. The laser drivers turn the laser diode on or off based on these signals. This printer has four laser units, one for each color. The formatter sends each color's VIDEO signal (Y=VDO1, /VDO1 M=VDO2, /VDO2 C=VDO3, /VDO3 Bk=VDO4, /VDO4) to the DC controller. The VIDEO signal is a differential signal. The laser diode emits light when the VDO signal is "H", and the /VDO signal is "L".

The abbreviations Bk and K are used interchangeably and refer to the black toner developing operations.

/TOP (VERTICAL SYNCHRONOUS) signal (formatter input): This signal synchronizes the vertical (sub) scanning line of the image: the reference signal in the vertical direction of the laser beam. This printer has four drums. When the /TOP signal is received, the formatter counts the /BD signals of each color and sends each color's VIDEO signals corresponding to the specific number of scanning in sequence to the DC controller. This synchronizes the leading edge of each color's image on the drum with the leading edge of the paper. The figure below illustrates the output timing of the VIDEO signals in response to the /TOP signal.
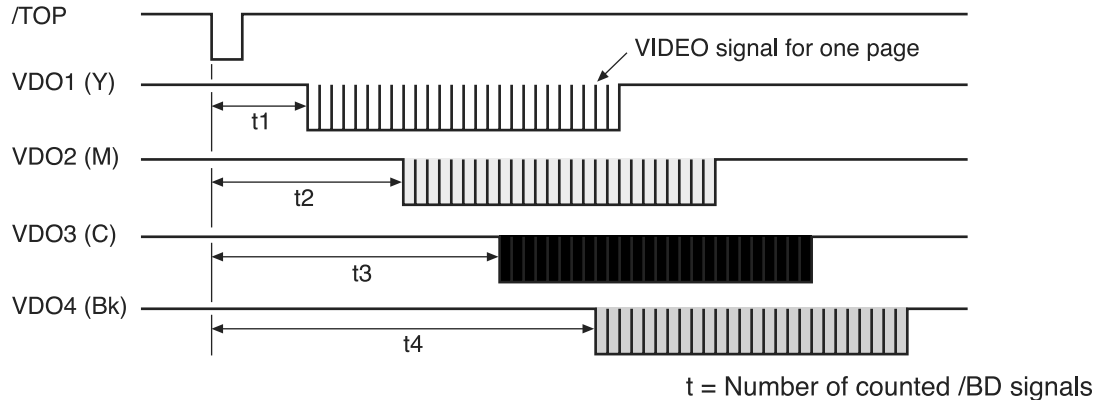
Output timing of the VIDEO signal in response to the /TOP signal

/BD1, /BD2, /BD3, /BD4 (HORIZONTAL SYNCHRONOUS) signals (formatter input): This signal synchronizes the horizontal (main) scanning line: the reference signal in the horizontal direction of the laser beam. When the /TOP signal is received, the formatter counts the /BD signals of each color and sends each color's VIDEO signal synchronized with each /BD signal corresponding to the specific number of scanning in sequence to the DC controller. This justifies the writing position of the image. The figure below illustrates the output timing of the VIDEO signal synchronized with the /BD signal.

"t" time varies according to the paper size
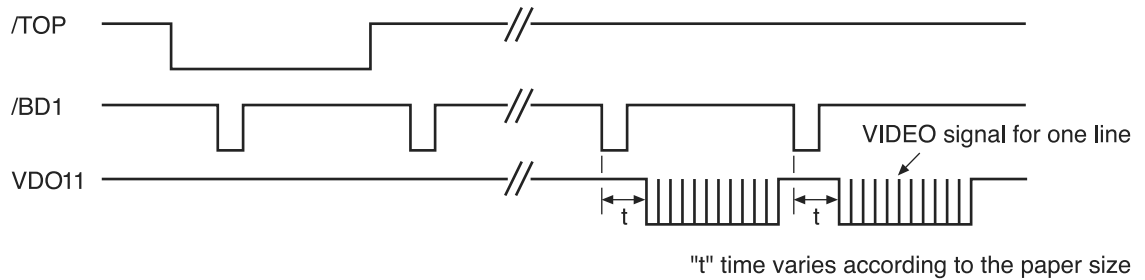
Output timing of the VIDEO signal synchronized with the /BD signal

SERIAL CLOCK (SCLK) signal (formatter output): The formatter outputs this synchronizing clock signal when it sends or receives a status or command to or from the DC controller. The formatter sends a command in synchronization with the falling edge of the SCLK signal, and receives a status in synchronization with the start-up of the SCLK signal.

STATUS COMMAND (SC) signal (formatter input and output): This is a bi-directional signal to send and receive a serial data between the formatter and the DC controller. The formatter and the DC controller send and receive a status or command with this signal.

STATUS CHANGE NOTIFY (/CCRT) signal (formatter input): This signal notifies the formatter of any specific status changes to the printer. The formatter refers to the DC controller through SC line to find out which status has changed upon receipt of a CCRT signal.

PAPER FEED (/PFED) signal (formatter input): This signal indicates that the printer engine is ready to pick up paper. When a /PFED signal is received (becomes "L"), the formatter sends a pickup command for the optional feeder to the DC controller.

PAPER DELIVERY (/PDLV) signal (formatter input): This signal indicates the delivery timing from the printer to the optional feeder. When a /PDLV signal is received (becomes "L"), the formatter sends a delivery command to the DC controller.

PAPER RE-FEED (/TOPR) signal (formatter input): This signal notifies the formatter that the printer is ready to pick-up paper for duplex printing. When a /TOPR signal is received (becomes "L"), the formatter sends a duplexing pick-up command to the DC controller.

The laser/scanner system forms latent images on the photosensitive drum according to the VIDEO signals sent from the formatter. The laser/scanner unit is illustrated below.
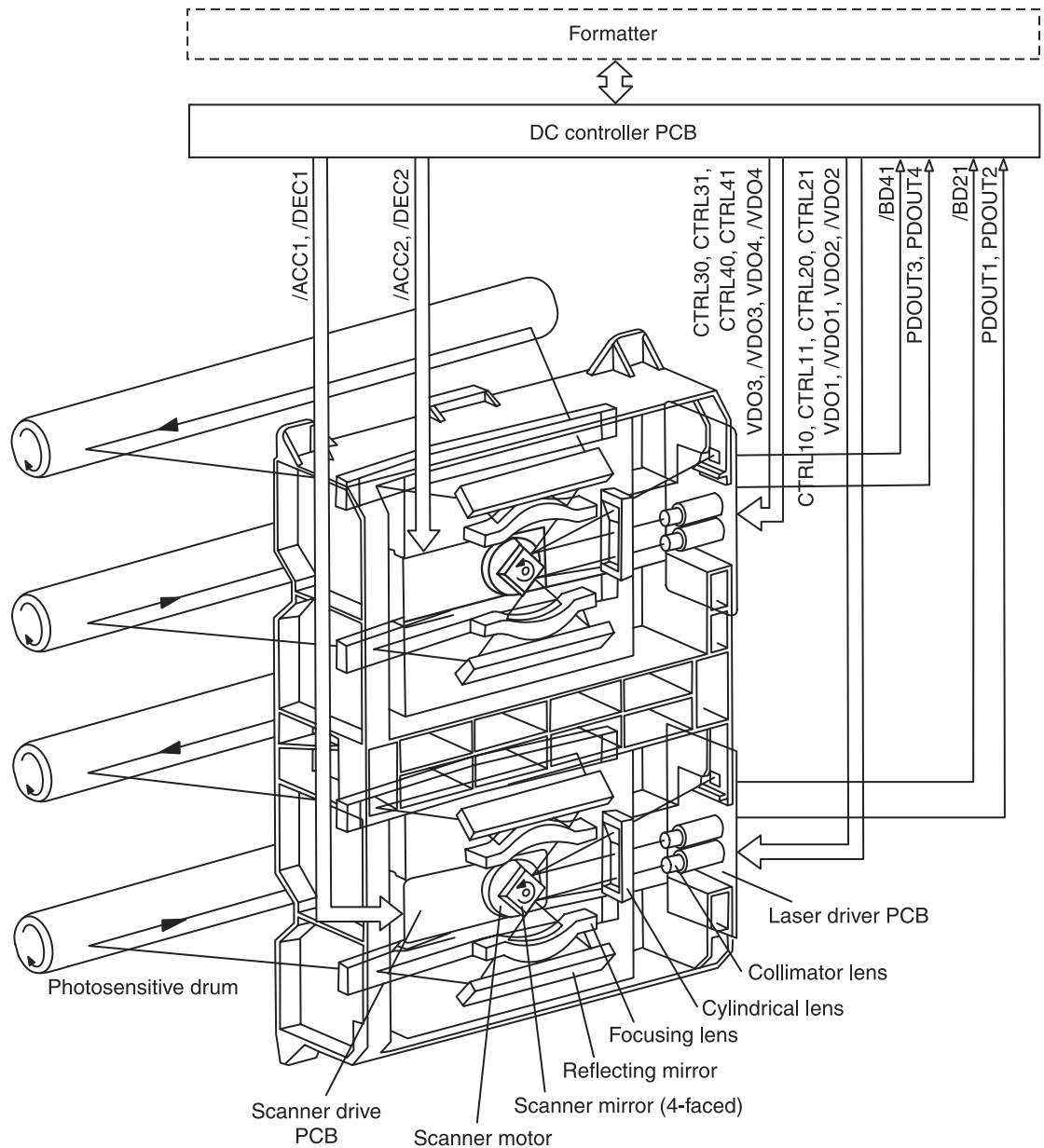
Laser/scanner unit

The laser/scanner unit is controlled by the DC controller and consists of four laser units and two laser driver PCBs (two each of the units sitting on one laser driver), and two scanner motors (one scanner mirror reflects two colors' laser beams).

The following is the sequence of the printing process:

1 Upon receiving a print command from the formatter, the DC controller outputs the SCANNER MOTOR SPEED CONTROL signals (Y/M: /ACC1, /DEC1 C/Bk: /ACC2, /DEC2) and rotates the scanner motor to rotate two four-faced mirrors.

The abbreviations Bk and K are used interchangeably and refer to the black developing operation.

2 When the scanner motor starts rotating, the DC controller outputs LASER CONTROL signals (CTRL10~40, CTRL11~41) and emits a laser beam to input BD INPUT signals (/BD21, /BD41).

The DC controller monitors and controls the rotation speed of the scanner motor according to the timing the /BDI signals are input to be the specified speed.

3 When the scanner motor rotates at the specified speed, the DC controller passes on the VIDEO signals from the formatter to the laser driver circuit. The laser driver circuit emits the laser diode according to the VIDEO signals (/VDO1~4, VDO1~4).

4 The laser beam strikes the four-face mirror rotating at a constant speed through the collimator lens and the cylindrical lens.

5 The laser beam reflected off the four-face mirror passes through the focus lens and scans on the photosensitive drum at a constant speed.

6 When the photosensitive drum rotates and the laser beam scans on it, both at a constant speed, a latent image is formed on the photosensitive drum.

This printer has two scanner motors and generates two /BDI signals. The /BDI signal for Y and M's scanner motor is generated by the M laser's reflected light, and the BDI signal for C and K's scanner motor, by the K (black) laser's reflected light.

This printer scans two lines with one scanner mirror. The scanning direction depends on the color. (Y and C: left to right, M and K: right to left)

Laser control

The laser control instructs the laser driver to turn on/off the laser diode according to the LASER CONTROL signal sent from the DC controller.

The laser driver PCB is divided into two. One is for Y/M, and the other for C/K. The Y/M laser driver PCB only is described here, as both are identical.
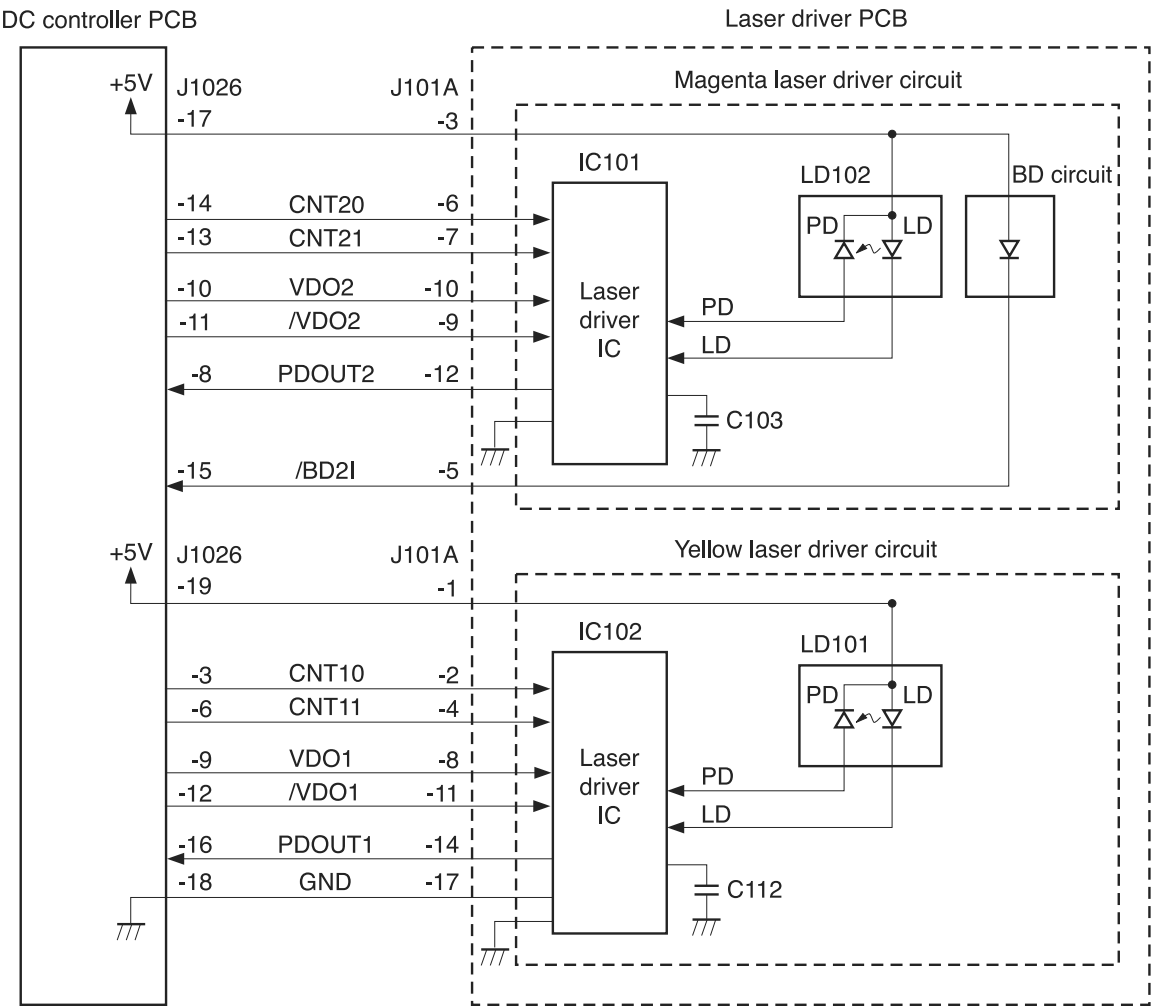
Laser control block diagram

The DC controller sends the VIDEO signals (VDO, /VDO) for forming images and the LASER CONTROL signals (CTRL0, CTRL1) for switching the operation modes of the laser driver circuit to each laser driver IC (IC101, IC102). The laser driver IC controls the laser according to the combination of the LASER CONTROL signals.

The following table shows the combination of the LASER CONTROL signals for yellow.

Table 5-5 LASER CONTROL signal combinations for yellow

Operation mode	CTRL0	CTRL1	Description
Standby	L	L	Laser control OFF
Print	H	L	Ready to emit laser by VIDEO signals
Force LD ON	L	H	Force the laser ON
Force LD OFF	H	H	Force the laser OFF

The LASER CONTROL signal is used for the following controls:

- Laser emission control
- Automatic photocurrent control
- Horizontal synchronization control
- Image masking control

The LASER CURRENT OUTPUT signal (PDOUT) is an analog signal generated by transforming the amount of laser to a current value. The DC controller obtains each laser's light amount based on the PDOUT signal and passes such information on to the formatter, while the formatter adjusts the PWM (adjusts the laser emission timing according to the halftone).

Laser emission control

The laser emission control controls on/off of the laser diode (LD) according to the VIDEO signals. When the DC controller puts the laser driver circuit into print mode, the laser driver circuit turns on/off the LD at a specified light amount according to the VIDEO signals (VDO, /VDO) received from the formatter.

Automatic photocurrent control (APC)

This control ensures that the amount of light emitted by the LD remains constant. There are two APCs, both of which are controlled by the laser driver circuit in the same way.

Initial APC: Performed at the scanner motor startup; adjusts the amount of laser light.

Between-lines APC: Performed during the print process; adjusts the amount of laser light for the next one line before it is written.

The following is the sequence of APC control.

1   When the DC controller puts it into Force LD ON mode, the laser driver circuit forces the LD to emit light.

2   The light amount of the LD is detected by the photo diode (PD) and is converted to voltage level. Then it is compared with the reference voltage (voltage equivalent to the target laser light amount) inside the laser driver IC.

3   The laser driver circuit controls the laser current until the voltage level of the laser light amount reaches the reference voltage.

4   The laser driver circuit is put to Force LD OFF mode to turn the LD OFF and it stores the adjusted laser light amount in the capacitors (IC103, IC112).

Horizontal synchronous control

The horizontal synchronous control horizontally aligns the scanning starting position of the image. This control performs the following steps.

1 The DC controller puts the laser driver circuit into Force LD ON mode during the unblanking interval to force the LD to emit light. (The unblanking interval is the interval when a LD emits light in the non-image area.)

2 The laser beam is reflected from the BD mirror, fixed at the scanning starting position in the optical path of the laser beam, and sent to the BD circuit in the laser/scanner unit.

3 The BD circuit detects the laser beam, generates a BD INPUT signal (/BD2I), and sends the signal to the DC controller.

4 The DC controller generates the HORIZONTAL SYNCHRONOUS signal (Y:/BD1, M:/BD2) based on the /BD2I signal and sends it to the formatter. (The signal /BD21 is generated fresh based on the signal BD1, although both signals are output at the same time.)

5 Upon receipt of /BD1 and /BD2 signals, the formatter sends the VIDEO signals (VDO1, /VDO1, VDO2, /VDO2) to the DC controller to align the scanning starting position of the image horizontally.

Image mask control

This control prevents laser beam emission in a non-image area except during the unblanking interval.

The DC controller puts the laser driver circuit to Force LD OFF mode to force the LD OFF while the laser beam scans a non-image area except during the unblanking interval. This is called the image-masked status, during which the LD does not emit light even when VIDEO signals (VDO, /VDO) are sent. The timing to start the image mask control depends on the paper size information sent from the formatter. (This printer cannot detect the Tray 2 (cassette) paper size.)

If the paper size measured by the registration paper sensor (PS4) is smaller than the paper size information, the CPU masks the image forcefully to keep the secondary transfer roller from being soiled.

< M, K image masking >   **<   Y, C image masking >**
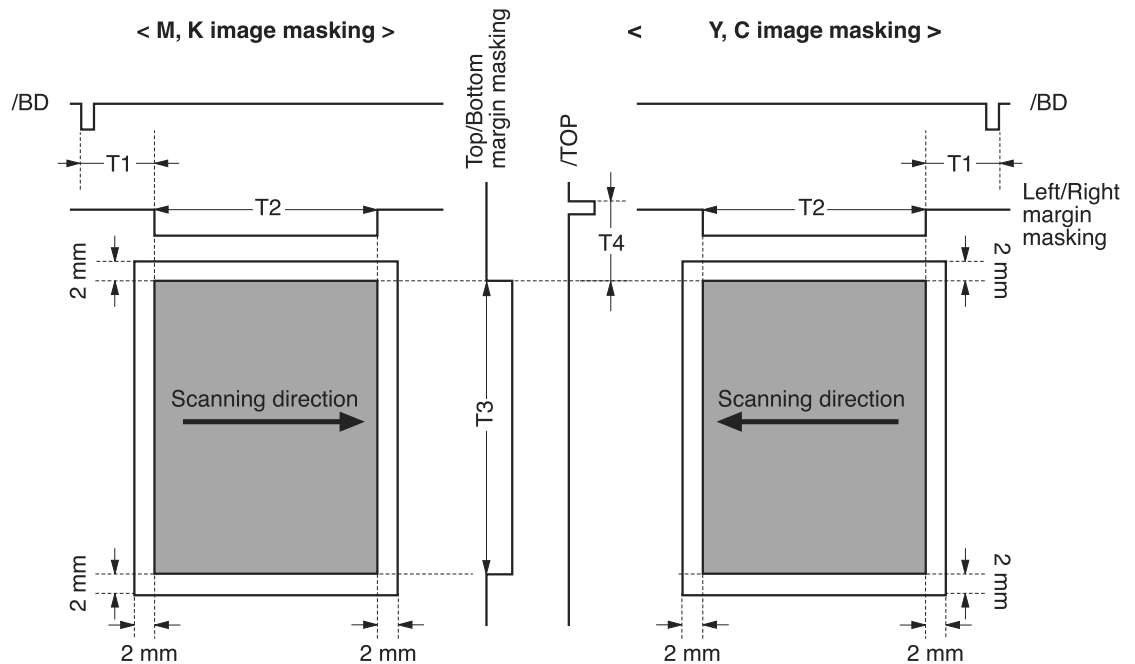
Image mask control

Notes on the figure

- The shaded area indicates the area where an image can be written by the laser beam.
- The times T1, T2, and T3 depend on the paper size.
- Time T4 depends on the color.
- The formatter may not send a command to specify the paper size when paper is fed from the manual feed tray. In such cases, the T1 and T2 are set for letter size, and the T3 is set for the size detected by the registration paper sensor (PS4), as the printer cannot detect the paper width.

Failure detection

This control monitors any failure of the laser diode.

The laser IC converts the laser current of the LD to voltage during initial APC and sends the PDOUT signal to the CPU. When the voltage of the PDOUT signal is below a specified value, the CPU judges the laser faulty and informs the formatter.

Scanner motor control

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

The scanner motor, which is integral with this drive circuit, is a three-phase, eight-pole DC brushless motor with a built-in Hall device.
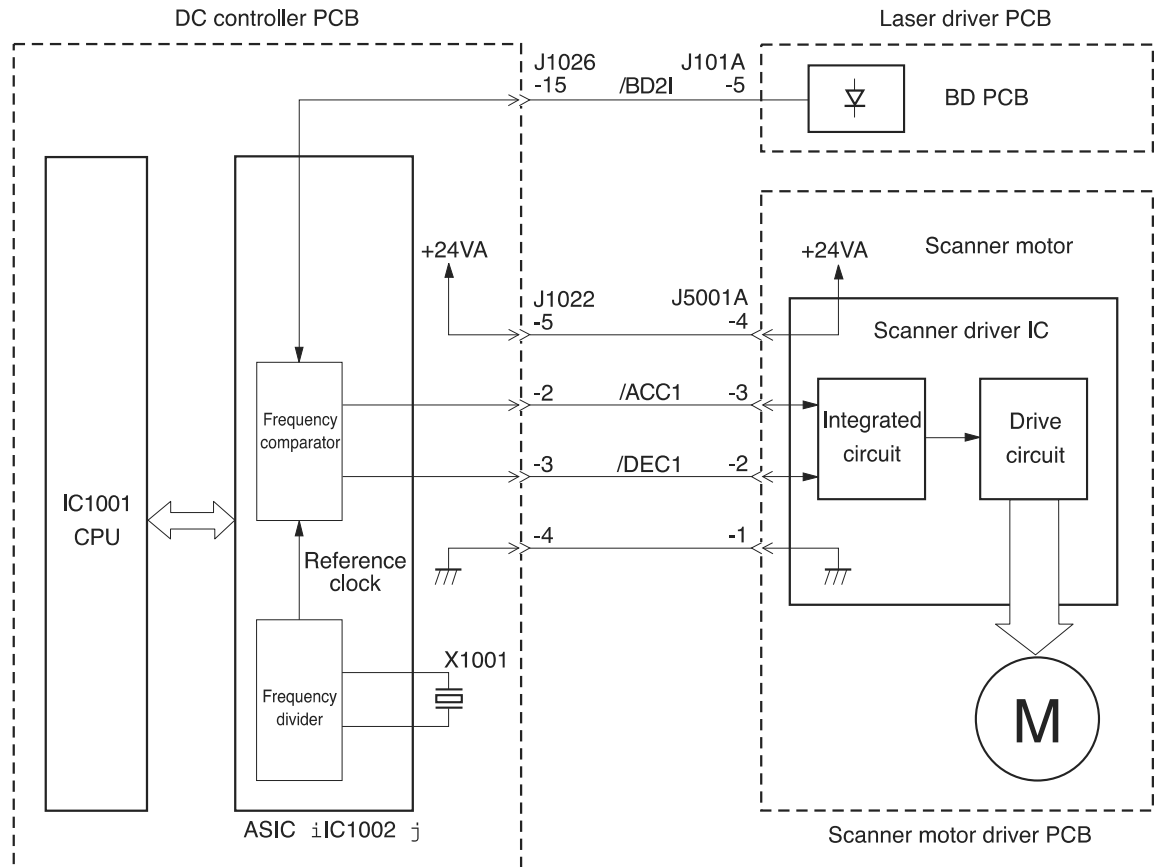
Scanner motor control

The DC controller performs this control. The DC controller generates the reference clock based on the oscillation frequency of the oscillator (X1001). It compares the intervals between the reference clock and the BD INPUT signal (/BD2I) in the frequency comparator and monitors the RPM of the scanner motor. The DC controller sends the SCANNER MOTOR ACCELERATION signal (/ACC1) or the SCANNER MOTOR DECELERATION signal (/DEC1) to the scanner motor driver according to the monitored speed to control the rotation speed of the motor.

The following sections describe each control performed by the scanner motor control.

Speed control

The speed control maintains the scanner motor rotation at a specified speed.

The following is the sequence of steps performed by the speed control.

1   The DC controller sends the /ACC1 signal to the scanner driver IC at the scanner motor startup to rotate the motor.

2   The DC controller forces the laser on and monitors the revolutions of the scanner motor by comparing the intervals between the BD INPUT signal (/BD2I) and the reference clock.

3   When the revolution reaches a specified number of revolutions, the DC controller sends the /DEC1 signal and decelerates the scanner motor. The DC controller controls the speed of the scanner motor by sending the /ACC1 or /DEC1 signal afterwards.

Phase control

This control prevents vertical color misregistration. It maintains the scanner motor's rotation at a constant speed to eliminate the rotational variations between the lines. This is achieved by maintaining the phase difference between the two scanner mirrors.

The phase control performs the following steps:

1   When the scanner motor rotates at a constant speed and a specified number of revolutions under the speed control, the DC controller generates a phase reference clock based on the reference clock.

2   The DC controller compares the intervals between the phase reference clock and the BD INPUT signal (/BD2I) with the frequency comparator to detect rotational variations between the lines.

3   The DC controller controls the rotational variations by sending the /ACC1 signal when the interval of the /BD2I is slower than the phase reference clock, and sending the /DEC1 when it is faster than the clock.

Failure detection

The CPU monitors the frequency comparator in the ASIC to check that the scanner motor rotates at the specified number of revolutions.

Under the following conditions, the CPU judges the optical unit faulty. It stops the printer engine and notifies the formatter of the failure.

Abnormal startup: The scanner motor does not enter SCANNER READY period within five seconds from the start.

Abnormal rotation: The interval of the /BDI signals goes out of the tolerance while the scanner motor rotates steadily and it continues until the accumulative length of time equals approximately 10 mm (0.4 inch) of print distance.

It is a BD error when an abnormal rotation occurs when the image masking control is released. (The BD error will result when the interval of the /BDI signals goes out of tolerance even once while the scanner motor rotates steadily and the image masking control is off.)

The image formation system, which serves as the nerve center of the printer, forms a toner image on paper.

The DC controller controls the image formation system, which consists of units such as the developing section (four cartridges and the developing disengaging unit), the transfer section (transfer unit and secondary transfer roller), and the fuser. The DC controller controls the laser/scanner unit and the high-voltage power supply circuit to form an image on paper according to the VIDEO signals (VDO, /VDO) upon receipt of a print command from the formatter.

Figure 5-23 and Figure 5-24 illustrate the image formation system.

The terms fixing and fuser refer to the same operation (or assembly) and are be used interchangeably in this document. Also, ITB unit and transfer unit refer to the same assembly and are used interchangeably throughout this document.
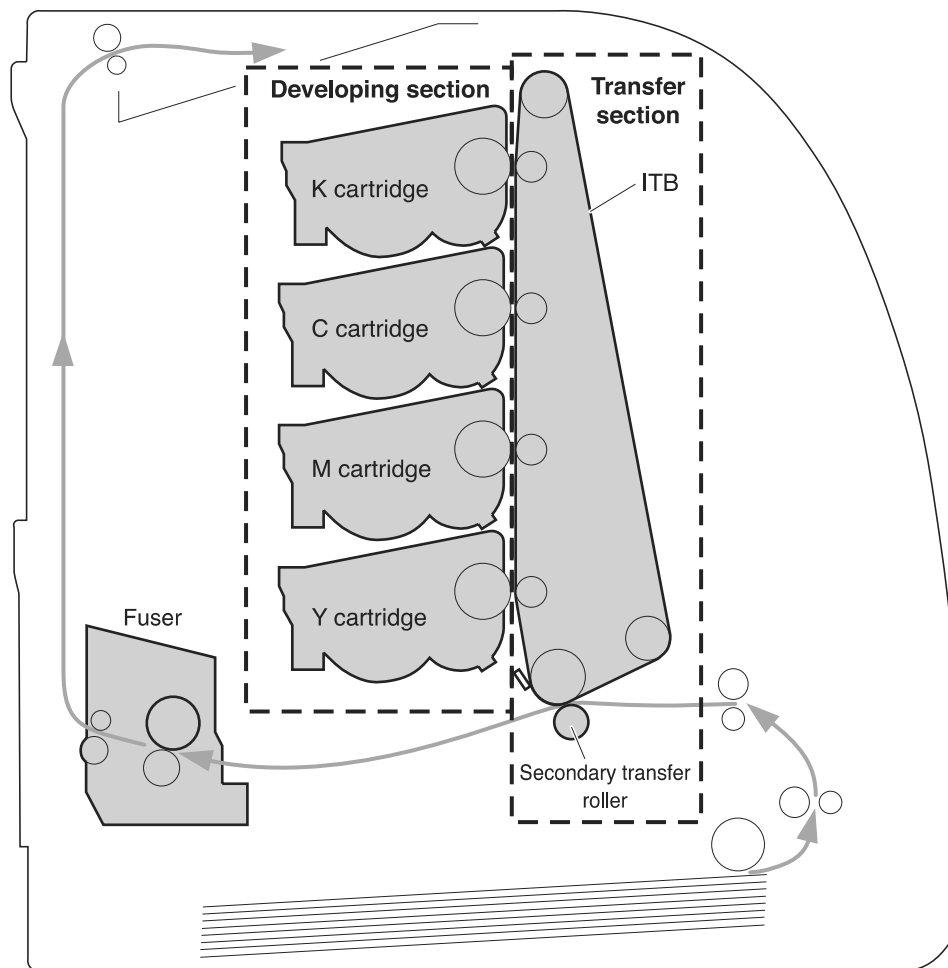
Image formation system
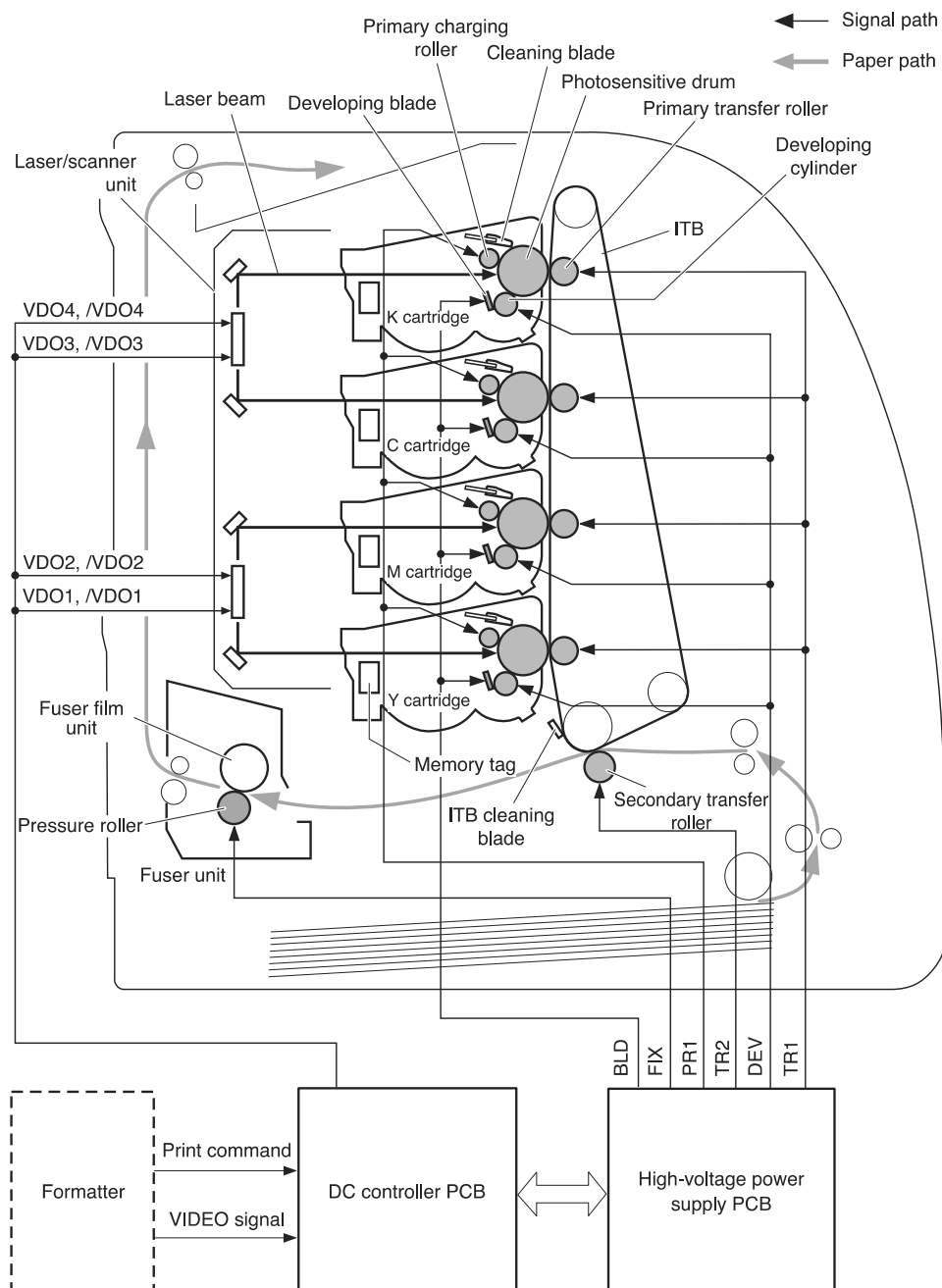
Image formation system (signal paths)

Print process

The print process can be divided into nine steps, which are executed in five blocks. A toner image is formed on paper as it goes through each process.

The print process blocks and the steps performed in them are listed below. Refer to Figure 5-25 to see the placement of the blocks.

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

Step 1   Primary charging

Step 2   Laser beam exposure

Developing block: Makes the electrostatic latent image on the photosensitive drum visible by applying the toner on top of the image using the contact development method.

Step 3   Development

Transfer block: Transfers a toner image on the photosensitive drum onto paper.

Step 4   Primary transfer (The toner images are transferred onto paper in the order yellow (Y), magenta (M), cyan (C), and black (K) in one rotation of the ITB.)

Step 5   Secondary transfer

Step 6   Separation

Fuser block: Fixes or fuses a toner image on paper.

Step 7   Fuser

Cleaning block: Clears the residual toner on the photosensitive drum and the ITB.

Step 8   ITB cleaning

Step 9   Drum cleaning
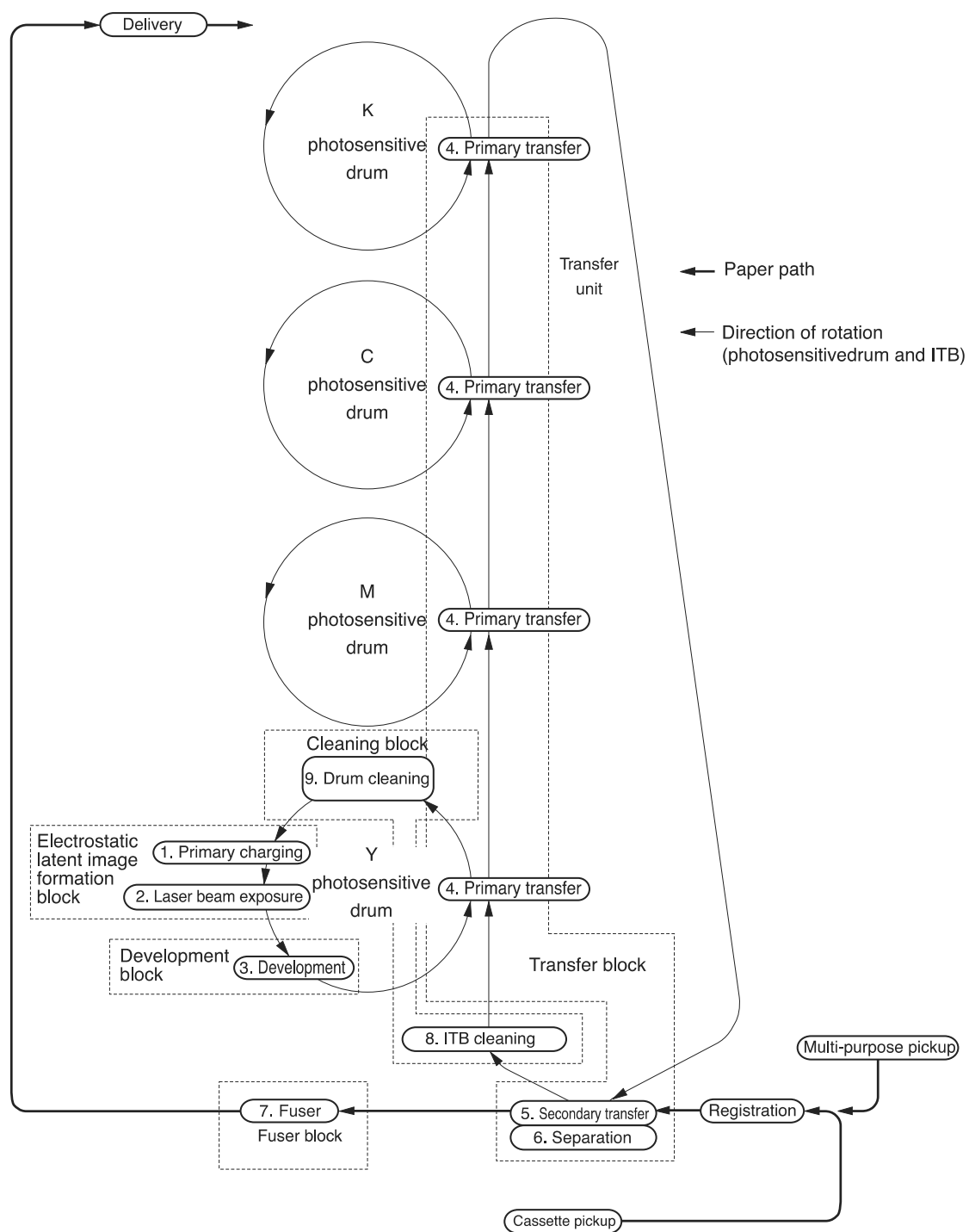
Print process diagram

Electrostatic latent image formation block

This block consists of two steps, where an electrostatic latent image is formed on the photosensitive drums.

The drum surface carries negative electrical charges in areas that are not exposed to the laser beam through the steps in this block. The image with negative charges on the drum is called an electrostatic latent image, as it is invisible to the human eyes.
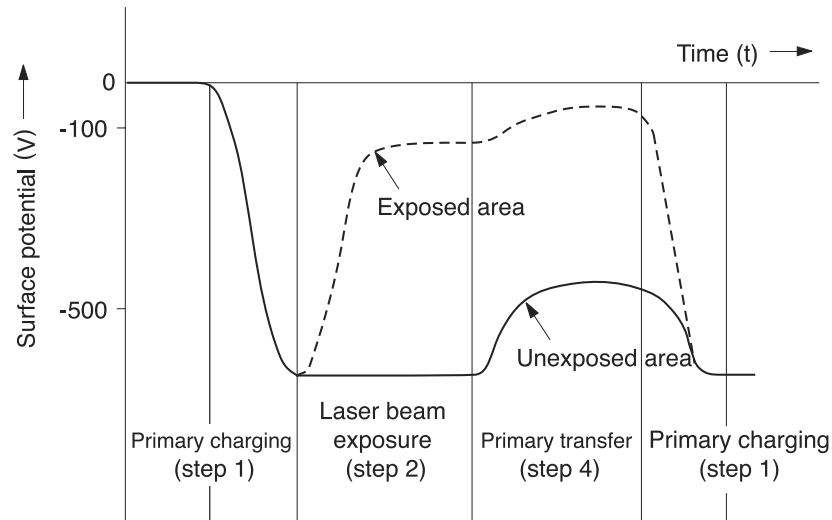
Electrostatic latent image formation

Step 1: Primary charging

As a preparation to forming a latent image, a uniform negative potential is applied to the photosensitive drum surface in this step.

The primary charging roller, interlocked to the photosensitive drum, directly charges the drum. This roller is made of a conductive rubber. The DC bias is placed on the roller to enable it to charge a negative potential on the drum surface.
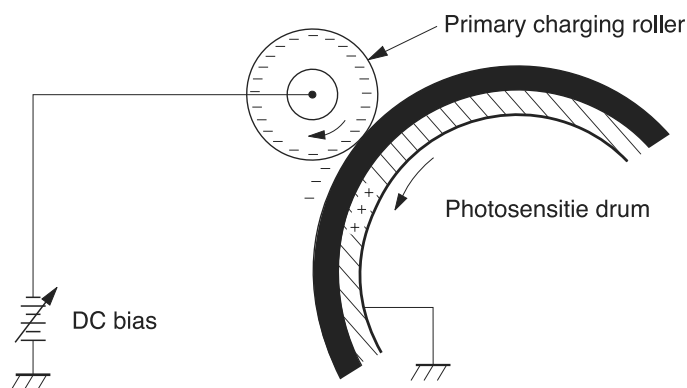
Primary charging

Step 2: Laser beam exposure

An electrostatic latent image is formed on the photosensitive drum in this step. As the laser beam scans the negatively charged drum surface, the negative potential on the exposed area gets neutralized and forms an electrostatic latent image.
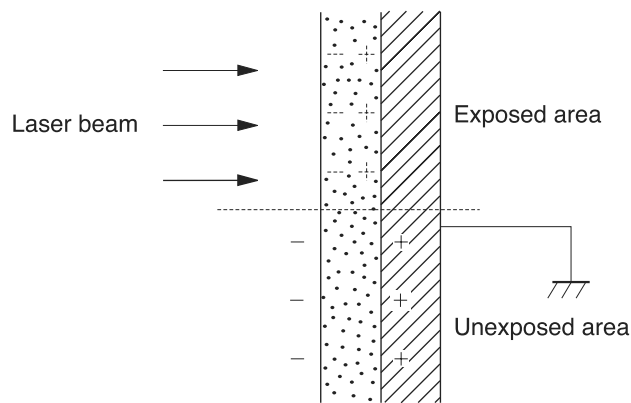
Laser beam exposure

Development block

The electrostatic latent image on the photosensitive drum surface is made visible by applying the toner using the contact development method in this process. The contact development is the method to press the toner onto the drum surface to develop an image by bringing the developing cylinder and the drum in absolute contact.

This printer uses a non-magnetic, single-component toner (development agent) made from resins, and other materials.

Step 3: Development

The toner is applied onto the electrostatic latent image on the photosensitive drum surface in this step.

The toner has an insulating property and gets charged to bear a negative potential, being rubbed against the rotating developing cylinder and the blade surface.

Contacting the photosensitive drum, the negatively charged toner sticks to the area exposed to the laser beam. This is because the exposed area has higher (less negative) potential than the developing cylinder, while the toner has almost the same potential as the cylinder. This is called the phenomenon of contact, which makes visible the electrostatic latent image on the drum.
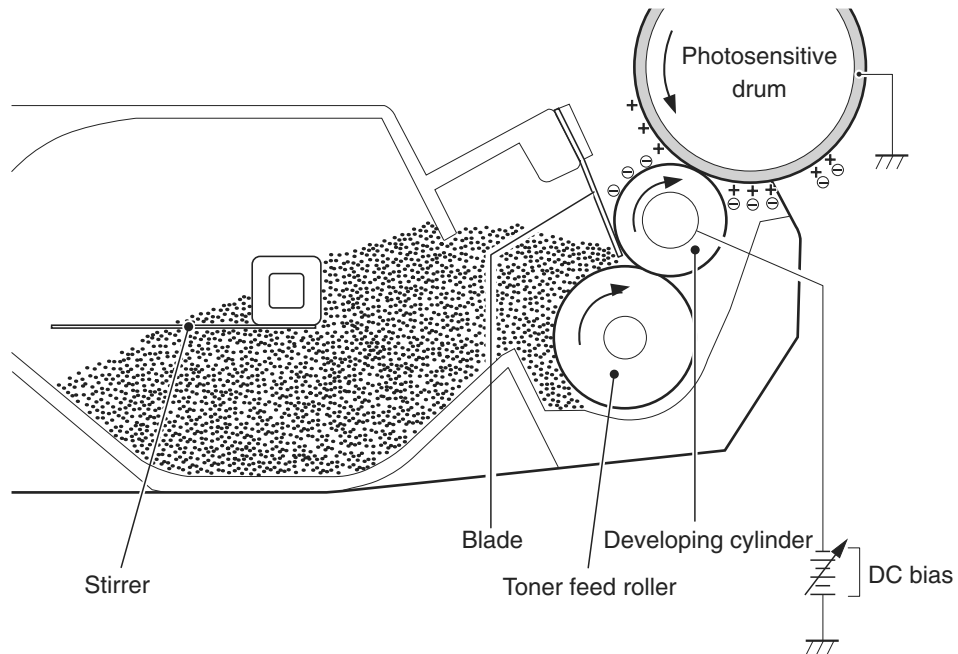
Image development

The exposed area on the photosensitive drum is indicated positive in Figure 5-29 even though the actual potential on the drum is negative. This is to express the potential difference between the developing cylinder and the exposed area.
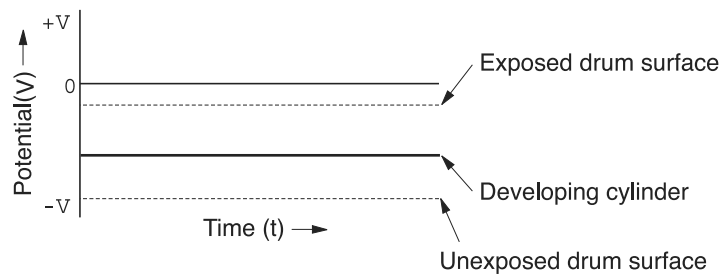
Potential difference between the developing cylinder and the exposed area

Transfer block

This block consists of three steps, where a toner image on a photosensitive drum is transferred onto paper.

Step 4: Primary transfer

The toner image on the photosensitive drum is transferred onto the ITB in this step. (The ITB is a thin seamless belt made of resins. It is of low resistance and eliminates the applied bias by itself.)

As a positive DC bias is applied to the transfer roller opposite the drum to charge the ITB positive, a negatively charged toner on the drum is transferred onto the ITB. Each color's toner image is transferred in order of Y, M, C, and K and forms one toner image, overlaying one color's image on another.
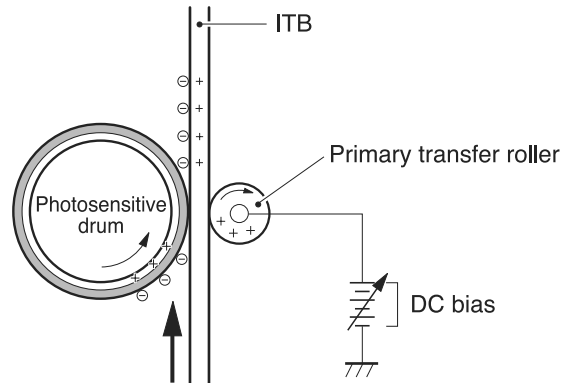
Primary transfer

Step 5: Secondary transfer

A toner image on the ITB is transferred onto paper in this step.

After the paper is fed into the primary transfer, the secondary transfer roller is raised to press the paper onto the ITB. A positive DC bias is then applied to the secondary transfer roller to charge the paper positive so that the negatively charged toner image formed on the ITB is transferred onto the paper.
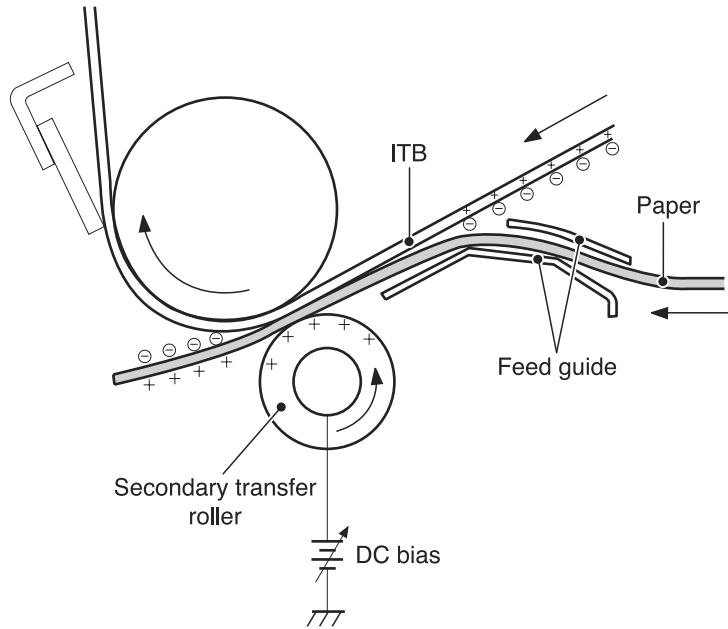
Secondary transfer

Step 6: Separation

Paper is separated from the ITB by the elasticity of paper.

The static charge on the back of the paper is decreased with the static charge eliminator to reduce static cling and make it easy to separate the paper.
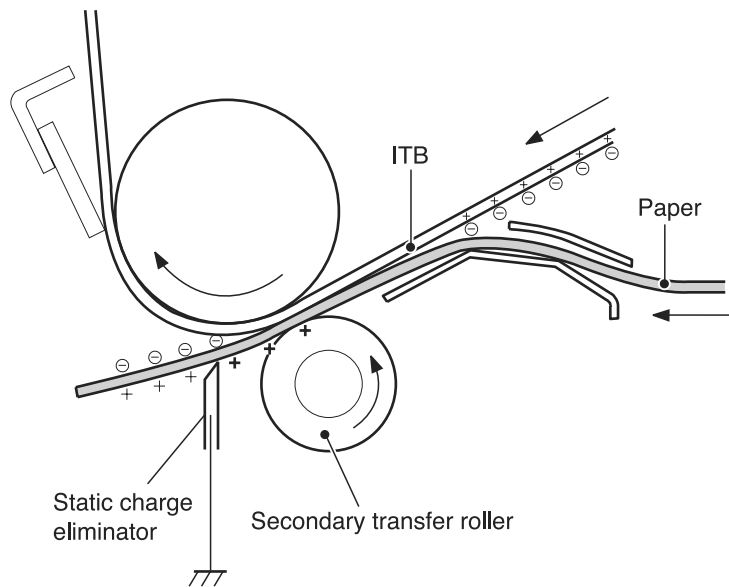
Separation

Fuser block

A toner image is fixed, or fused, onto paper in this block.

The toner image transferred on top of the paper through the transfer block can be smeared easily by hands since it is only attracted to paper by static electricity.

The toner image on paper is fused by pressure and heat to permanently print it on paper here.

Step 7: Fusing

A toner image on the paper is fixed onto paper with on-demand fusing method in this step.

This printer has a low heat-capacity ceramic heater, which warms up quickly and does not require power during standby. This allows for a short wait period and thus energy-saving.

A positive DC bias is applied to the pressure roller to enhance the power to hold the toner on paper and prevent the toner from being attracted to the fuser sleeve (offset).
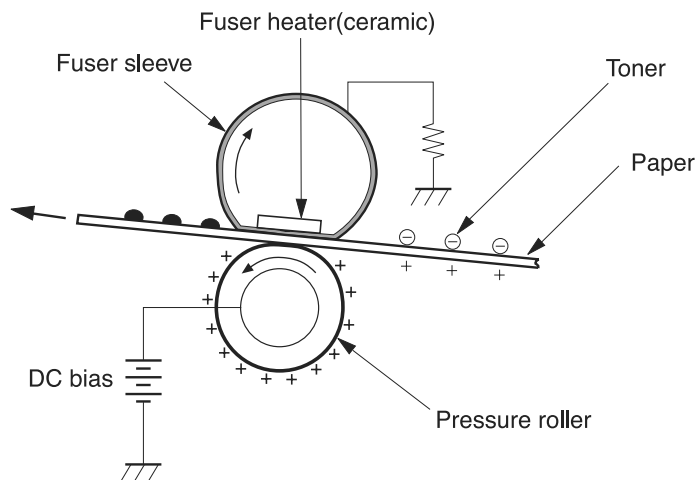
Fusing

Cleaning block

This block consists of two steps and clears the residual toner from the ITB, photosensitive drum, and the primary charging roller.

During the transfer step, not all toner is transferred from the ITB and the drums onto the paper but some remains on top of them. This remaining toner is called residual toner (waste toner). In this block, residual toner is cleared from the ITB and photosensitive drums to keep a clear image in the following prints.

Step 8: ITB cleaning

The residual toner on the ITB is scraped away with a cleaning blade and falls into the cleaner cover. The residual toner in the cleaner cover is collected in the waste toner container adjacent to the ITB afterwards.
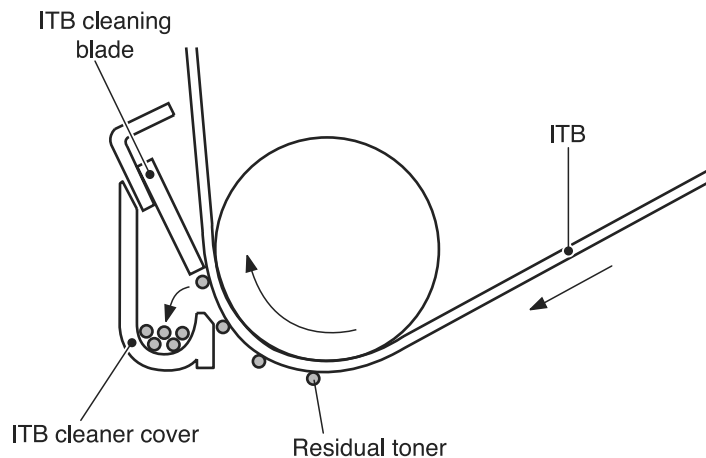
ITB cleaning

Step 9: Drum cleaning

The residual toner on the drum is scraped away with a cleaning blade and delivered to the waste toner container inside the cartridge afterwards. This cleans the surface of the photosensitive drum.
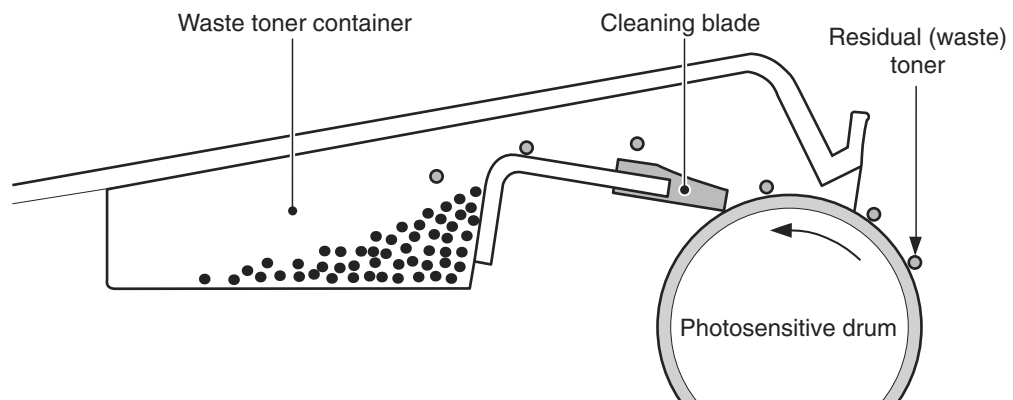
Drum cleaning

Developing section

The developing section consists of four cartridges and the developing engaging unit.The cartridges form a visible toner image on the photosensitive drum, and the developing engaging unit disengages the developing cylinder from the photosensitive drum.

Below are descriptions of the cartridges and the developing engaging unit.

Cartridges

Each cartridge, like a monochrome cartridge, consists of a photosensitive drum, primary charging roller, developing cylinder, stirrer, etc. They are driven by two motors: the drum motor (M3) for the K cartridge, and the developing motor (M4) for the Y, M, and C cartridges.

The cartridges in this printer are driven by two motors so that the K cartridge can be driven independently for monochrome prints, preventing the wear of the photosensitive drum. The DC controller PCB signals the K developing clutch (CL2) to perform monochrome printing.

The abbreviations Bk and K are used interchangeably and refer to the black developing operations.

Each cartridge has a built-in memory tag, into which the memory controller PCB reads/writes data.
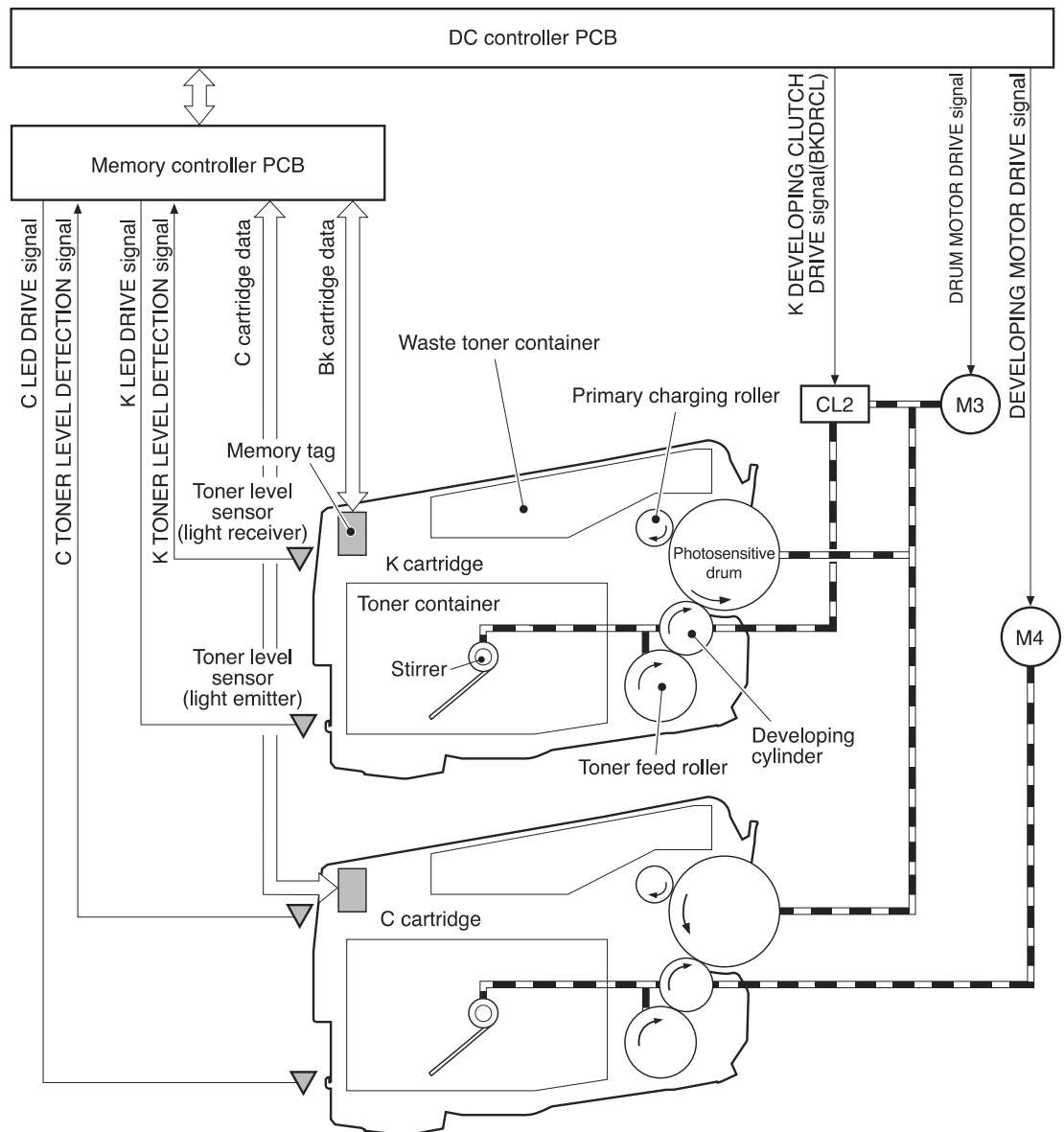
Cartridge diagram

Figure notes:

- M3: Drum motor
- M4: Developing motor
- CL2: K developing clutch

Developing engaging/disengaging unit

The developing engaging unit has a developing engaging lever which shifts up and down as the developing engaging clutch is engaged or disengaged, being driven by the delivery motor (M2). This engages or disengages the developing cylinder from the photosensitive drum.

The developing section performs the following:

1 Memory tag control

2 Cartridge presence detection

3 Cartridge life detection

4 Developing cylinder engaging/disengaging control

5 Developing cylinder engaging/disengaging detection

6 The above operations are detailed in the following sections.

The cartridges are driven by two motors so the K cartridge can be driven independently for monochrome operations thus preventing wear of the other cartridges (photosensitive drums).
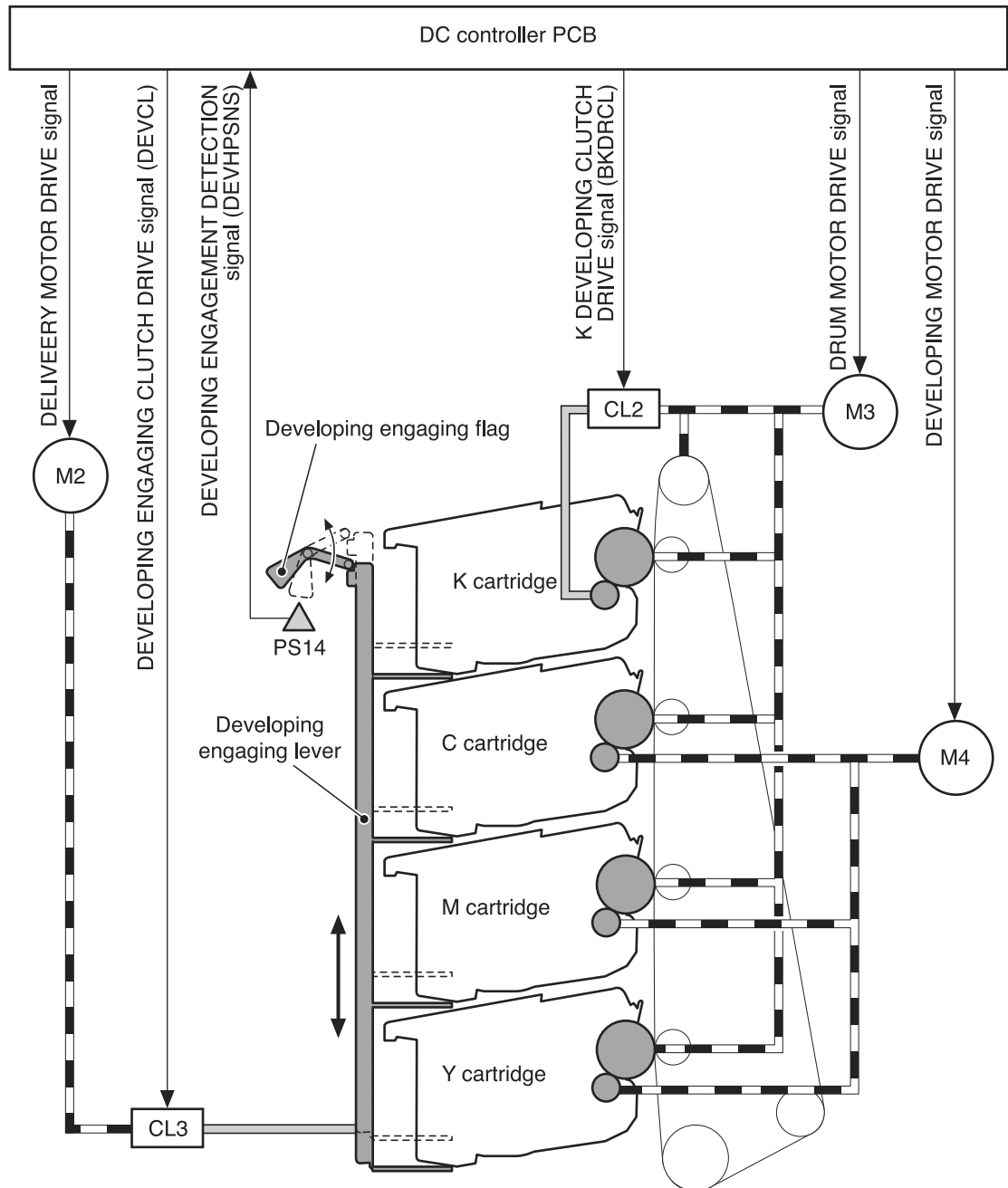
Developing engaging/disengaging unit

- M2: Delivery motor
- M3: Drum motor
- M4: Developing motor
- CL2: K developing clutch
- Developing engaging clutch

Memory tag control

The memory tag is a nonvolatile memory built in the print cartridge.

The cartridge usage condition is monitored by reading/writing the data stored in the memory tag.

The cartridge usage condition is stored in the memory tag as a memory data. The memory controller reads/writes a memory data into the tag at the specified timing upon receipt of a command from the DC controller. The DC controller updates a memory data sent from the memory controller and sends it back to write into the memory tag at a specified timing.

When the following status is received, the DC controller judges a memory tag abnormal and sends a "cartridge memory abnormality warning" to the formatter.

Access abnormality: reading/writing failed

Data abnormality: wrong data is read/written
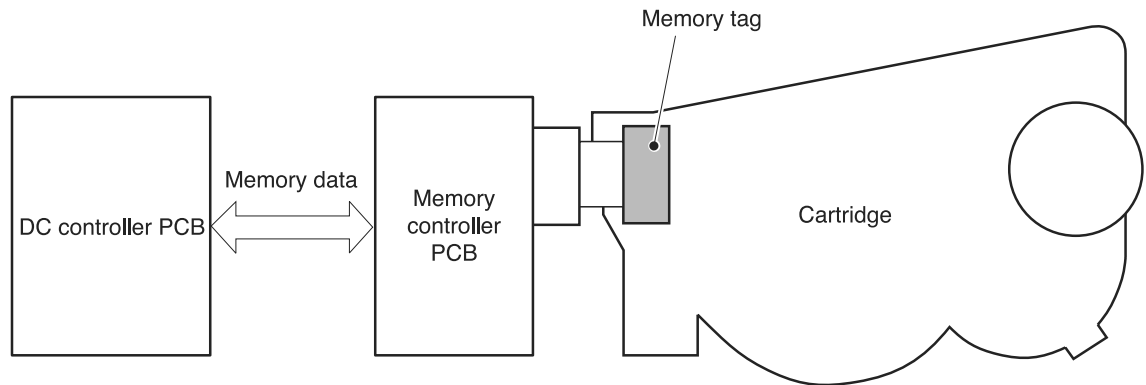
Memory tag control

Cartridge presence detection

The DC controller judges the cartridge presence based on the primary transfer current. The DC controller measures the primary transfer current when the power is turned on or a door is closed. When the measurement is over the specified value, the DC controller judges it "no cartridge" and sends the error message to the formatter.
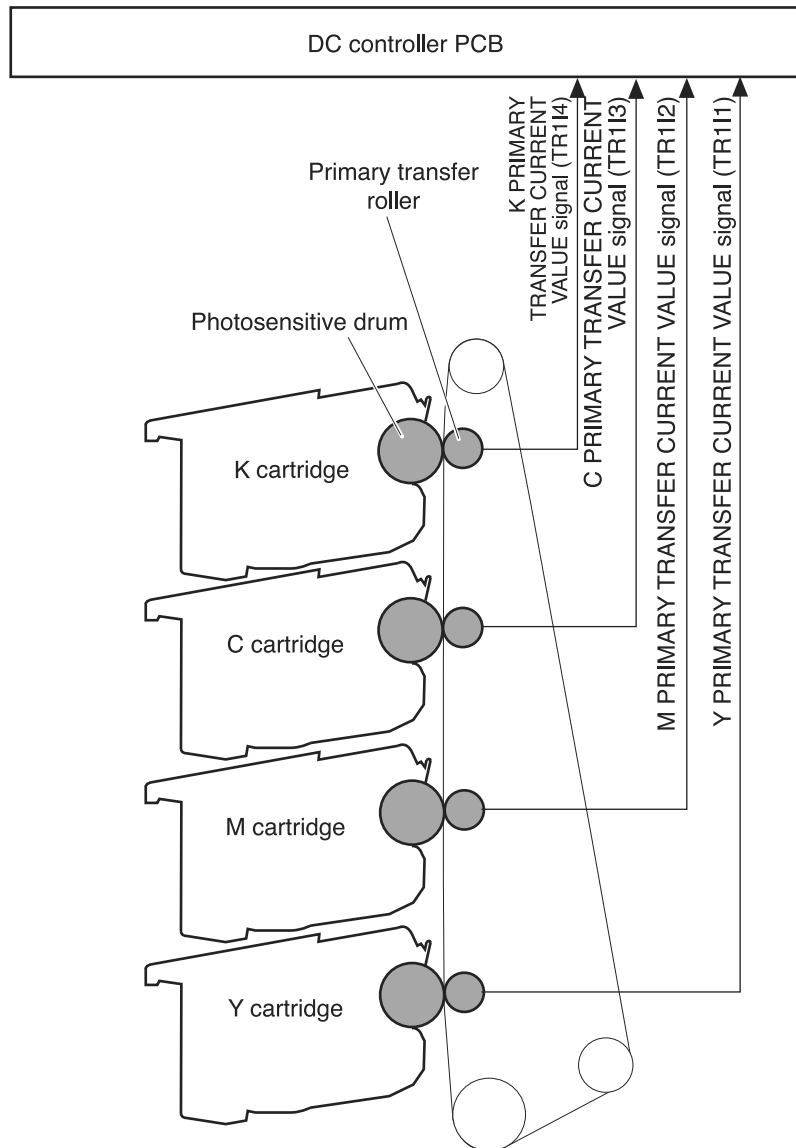
Cartridge presence detection

Cartridge life detection

The DC controller detects cartridge life data and passes information about the following aspects of the cartridge to the formatter:

toner level

photosensitive drum

developing unit

When any of the data exceeds a specified value, the DC controller judges the cartridge end of life and sends an error message to the formatter, indicating either that the cartridge is nearing end of life ("Warning"), or that the cartridge has reached end of life ("End"), depending on the readings of the above data.

Toner level detection

The DC controller detects the end of toner by monitoring the time light passes through the cartridge during printing.

There is a memory controller PCB with light emitter (LED) and light receiver (PD) on the back of the cartridge. When a print operation starts, the DC controller emits light from the LED with TONER LEVEL DETECTION LED DRIVE signal (TONLED). The light is let in to the toner container through the light guide attached to the cartridge. It passes through the container and goes back through the light guide, when the light receiver detects the light. Upon detection of light, the receiver sends the TONER LEVEL DETECTION signal (TONSNS) to the DC controller.
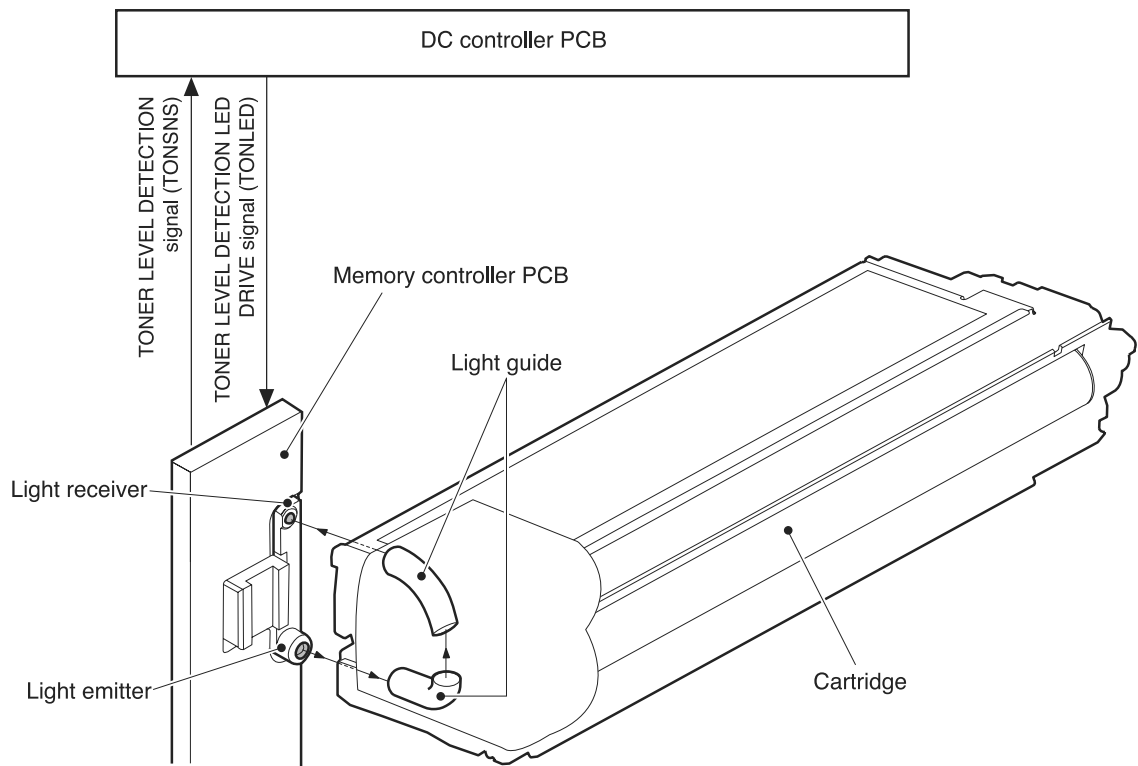
Toner level detection

When the toner level is high, the light is interrupted by the toner so it does not reach the light receiver, and vice versa when the toner level is low. The DC controller detects the toner level based on the light amount and notifies formatter of the detected toner level.

If no light is detected by the light receiver within a specified time during toner level detection, the DC controller judges the "toner level sensor abnormal" and sends an error message to the formatter.

All color toner level is detected in full color print, and only K (BK) toner lever, in monochrome print.

Developing cylinder engaging/disengaging control

This controls the disengagement of the developing cylinder from the photosensitive drum to prevent toner from being developed on the drum during non-transferring time.

The developing cylinder is engaged/disengaged when the DC controller drives the developing engaging clutch (CL3) under a specified condition such as when one print is completed. (See Figure 5-38.)

The following is the disengaging sequence.

1 The DC controller turns ON the developing engaging clutch (CL3).

2 When the CL3 stays engaged for specified time, the drive of delivery motor (M2) raises the developing engaging lever up.

3 The developing engaging lever then raises the bottom of the cartridge in the back and disengages the developing cylinder from the photosensitive drum.

The developing cylinder will engage back with the drum when the DC controller turns ON the CL3 for a specified time to put the developing engaging lever back to its original position.

The developing cylinder disengages under the following conditions.

- Power is turned ON
- Print operation is complete
- During cartridge cleaning (described on the following page)
- During ITB cleaning

Developing cylinder engaging/disengaging detection

It is detected whether or not the developing cylinder is engaged with the photosensitive drum. The DC controller monitors the developing engaging sensor (PS14) during the developing cylinder engagement/disengagement operation. (See   .) The developing engaging lever has a projection on the top that pushes the developing engaging flag up and shields the PS14 when the developing engaging lever stays lifted up. When the developing cylinders are engaged, the PS14 is not shielded by the flag, so it does not output DEVELOPING ENGAGING DETECTION signal (DEVHPSNS) (Condition "L"). When the lever is lifted up, the PS14 is shielded by the flag and outputs DEVELOPING ENGAGING DETECTION signal (DEVHPSNS) (Condition "H").

The DC controller judges the "disengagement mechanism faulty" and sends the error message to the formatter when the DEVHPSNS signal is not input/output within a specified time during engagement/disengagement operation.

Cartridge cleaning control

This control is for the primary charging roller cleaning.

As the printer prints pages, toner gets attracted to the primary charging rollers. Accumulated toner on the roller can cause some image defects, therefore it needs to be cleared away.

The DC controller sends a command for this control every specified number of pages.

The DC controller disengages the developing cylinder to start this control and apply two negative biases alternately to the primary charging roller. This attracts the toner away from the primary charging roller to the photosensitive drum. The toner on the photosensitive drum is then scraped off the drum by the cleaning blade to be delivered to the waste toner container.
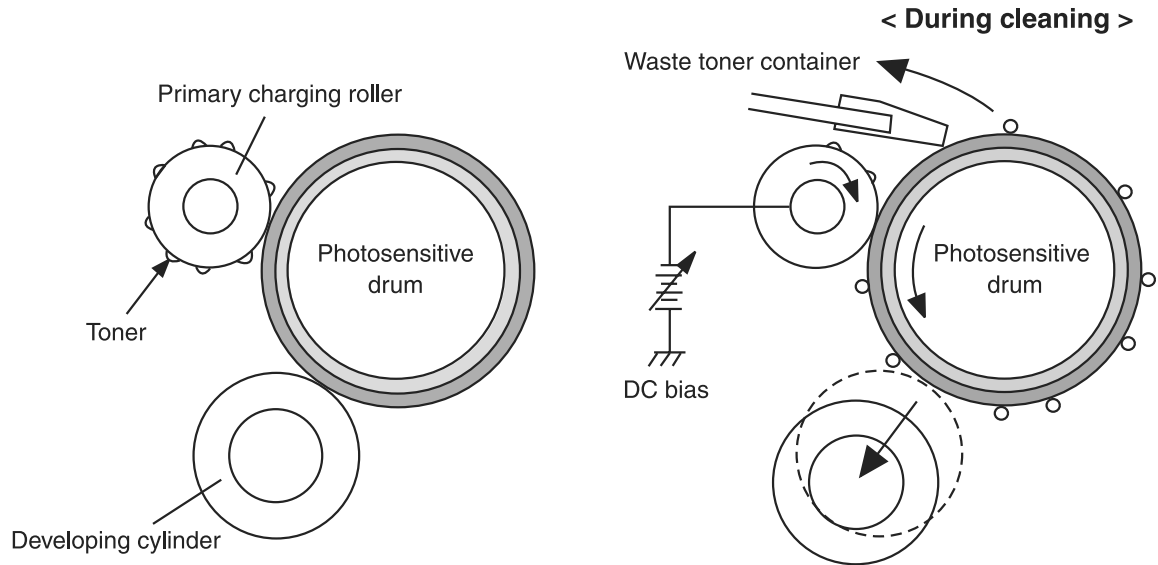
Transfer section diagram

Transfer section

The transfer section, see the figure on the following page, consists of the transfer unit and the secondary transfer unit. The transfer unit transfers the toner on the photosensitive drum to the ITB. The secondary transfer unit then transfers the toner on the ITB to the paper.

ITB (transfer) unit

The ITB unit consists of components such as ITB, primary transfer roller, ITB feed roller, and waste toner full sensor.

As the drum motor (M3) rotates the ITB feed roller, the ITB feed roller rotates the ITB, and the ITB rotates the primary transfer roller.

The primary transfer roller engaging cam is to engage or disengage the Y, M, and C cartridge's primary transfer rollers from the ITB. It is rotated by the primary transfer roller engaging motor (M5).

The waste toner full sensor detects whether the toner piled up in the waste toner container if full after the ITB cleaning.

Secondary transfer unit

The secondary transfer unit consists of components, such as the secondary transfer roller, secondary transfer roller engaging cam, and secondary transfer engaging sensor.

The secondary transfer roller transfers the toner on the ITB to the paper. It is interlocked with the ITB. The secondary transfer roller engaging cam is to engage or disengage the secondary transfer roller from the ITB. It is rotated by the delivery motor (M1) as the secondary transfer roller engaging solenoid (SL4) opens or closes.

The secondary transfer roller engaging sensor monitors whether or not the roller is engaged with the ITB.

The transfer section performs the following:

1 ITB cleaning control

2 Waste toner level monitor

3 Primary transfer roller engaging/disengaging control

4 Secondary transfer roller engaging/disengaging control

5 Secondary transfer roller engaging/disengaging detection

The above operations are discussed in the following sections.
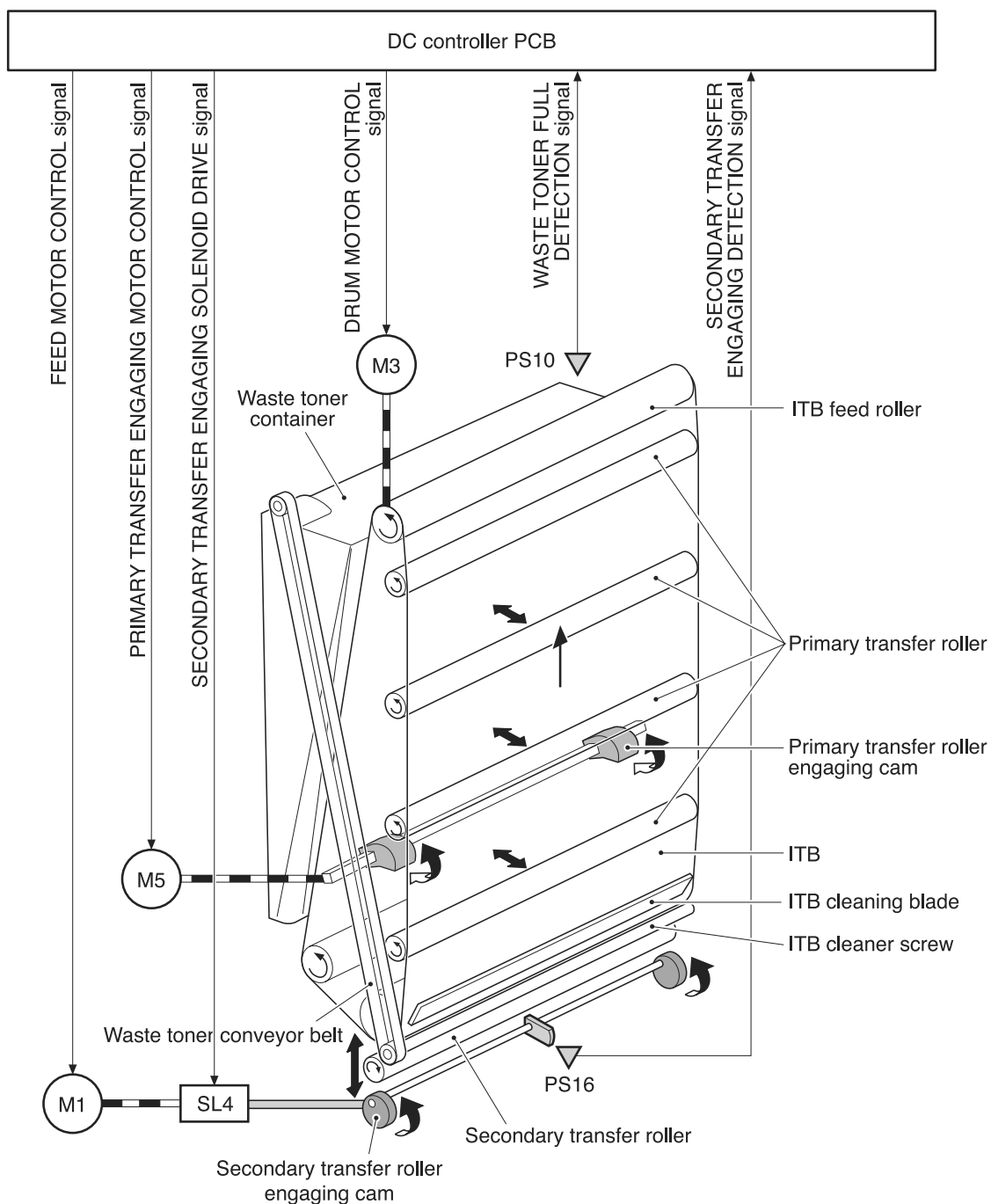
M1: Feed motor	SL4: Secondary transfer engaging solenoid
M3: Drum motor	PS10: Waste toner full sensor
M5: Primary transfer engaging motor	PS16: Secondary transfer roller engaging sensor

Transfer section

ITB cleaning control

This controls the removal of the residual toner from the ITB to prevent an image defect.

The following is the sequence of this control.

1 The cleaning blade on the ITB is always in contact with the ITB and scraping the residual toner off the ITB. (See callout A in figure _____, below.)

2 The toner scraped off the ITB is transferred onto the waste toner conveyor belt by the ITB cleaning screw.

3 The waste toner is delivered to the waste toner container, sitting inside the ribs of the conveyor during transfer. (See callouts B and C in figure _____, below.)
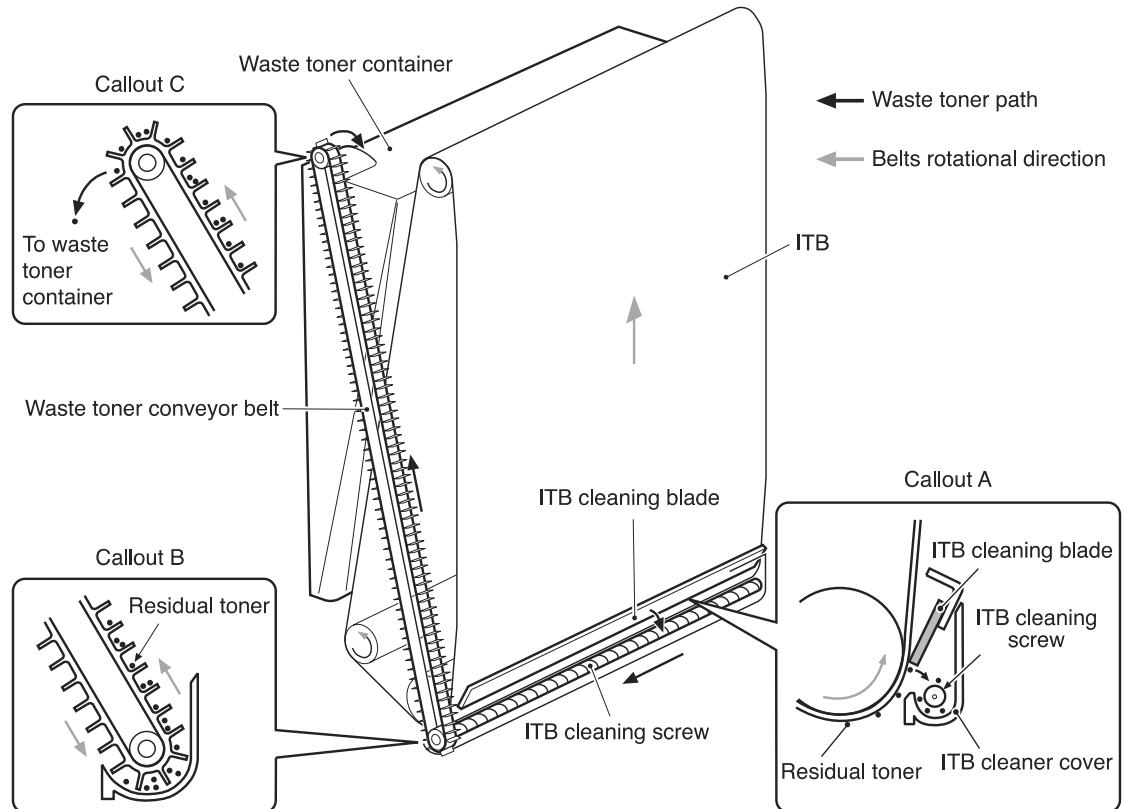
ITB cleaning control

No bias is applied during the ITB cleaning control.

Waste toner full detection

The DC controller monitors the waste toner full sensor (PS13) when the power is turned on, a door is closed, and a print is completed.

The waste toner container has a light guide and a waste toner level sensor (PS13) on the top. The light from the light emitter on the PS13 is let in to the waste toner container through the light guide attached to the cartridge. It passes through the container and goes back through the light guide when the light receiver on the PS13 detects the light. Upon detection of light, the receiver sends a WASTE TONER FULL DETECTION signal (/WTNSNS) to the DC controller. When the toner level is low, the light will not be interrupted by the toner so it reaches the light receiver, and vice versa when the toner level is high.

The DC controller judges the waste toner full and sends a "Waste toner full warning 1" to the formatter when the light does not reach the receiver on the PS13 (that is, when the /WTNSNS signal is not output). The DC controller then counts the number of prints upon receipt of warning 1. It sends a "Waste toner full warning 2" after the specified number of print, determine it full.
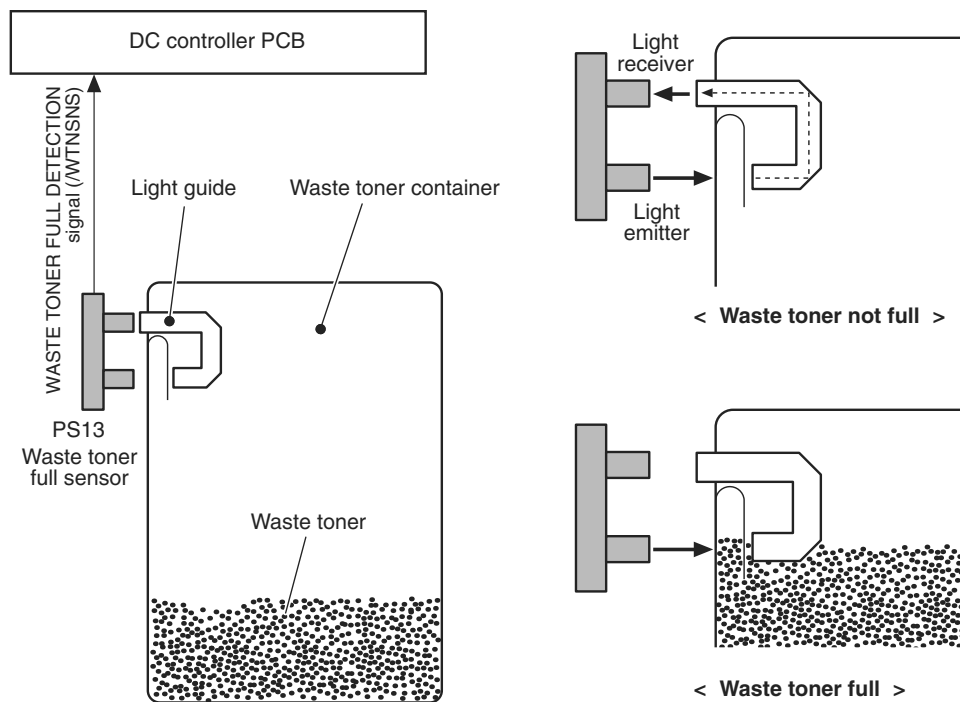
Waste toner full detection

Transfer (ITB) unit detection

The printer detects the presence of the transfer unit.

The DC controller monitors the waste toner full sensor (PS13) and color misregistration sensor (PS12) during initial rotation for detection of the ITB unit.

At the start of a print operation, the DC controller lets the PS12 and PS13 emit light. If the transfer unit is present, the LED light is received at the light receivers on the sensors, and vice versa.

If neither the PS12 or the PS13 receives light, the DC controller judges that the "transfer unit is not present, OUT" and sends an error message to the formatter.

Transfer unit in   Transfer unit out

Waste toner full sensor
PS13

ITB

Waste toner container

PS12
Color misregistration sensor
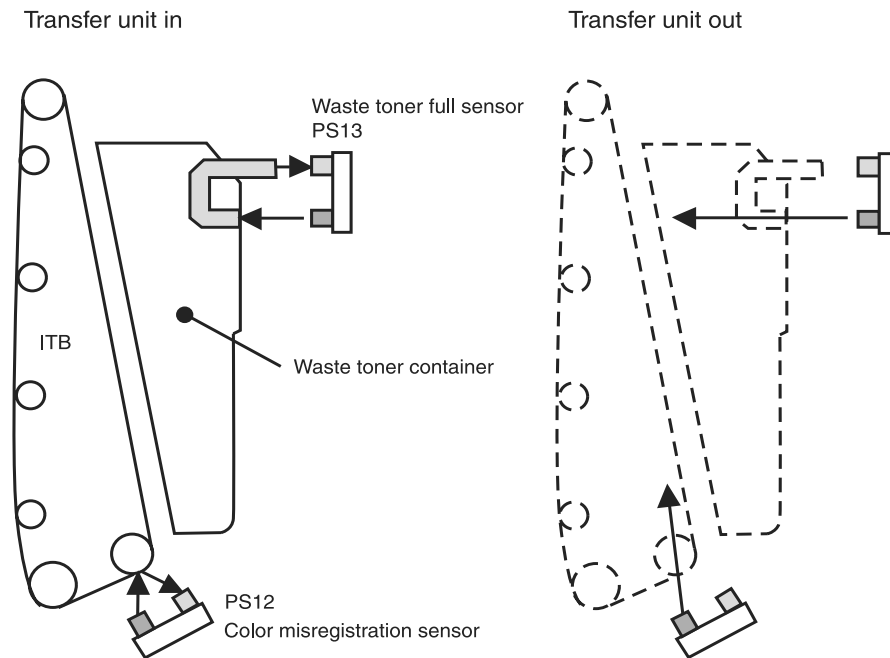
Transfer unit detection

If light is received only at one of the light receivers on the PS12 or P13, it will not be judged as ITB unit OUT, but will be judged as the following errors.
Error in the PS12 only: Color misregistration sensor abnormality or,
Error in the PS13 only: Waste toner full warning

Transfer unit life detection

The printer detects whether the transfer unit is coming to the end of its life.

The DC controller monitors the accumulated rotation time of the drum motor (M3) for detection of transfer unit life.

The DC controller writes the drum motor rotation time into the EEPROM in the DC controller every specified time when the drum motor rotates. The EEPROM, that stores the accumulated rotation time of the drum motor, judges that the transfer unit is at the end of its life when the accumulated time exceeds a specified time and sends an error message to the formatter.
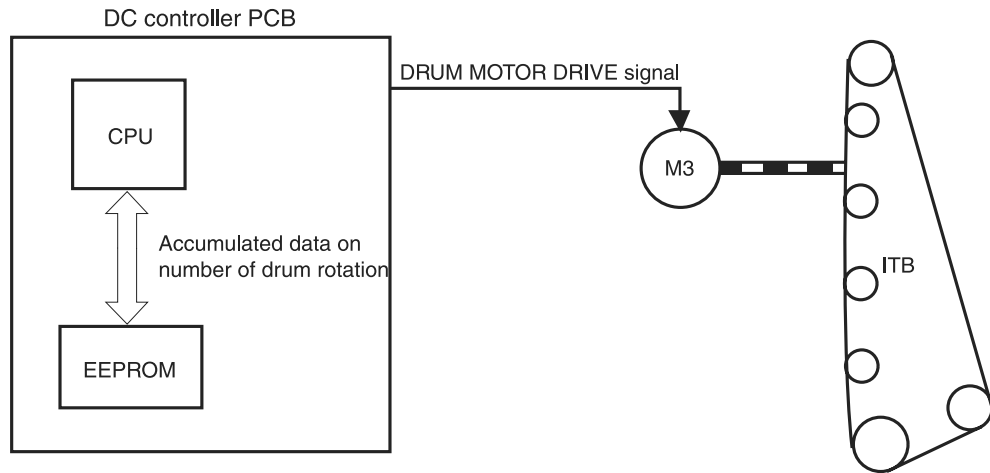
Transfer unit life detection control

The accumulated rotation time of the drum motor can be cleared by the formatter. Remember to reset the transfer unit life expectancy value (accumulated rotation time of the drum motor) using the control panel when replacing the ITB unit.

ITB self-aligning mechanism

This printer automatically aligns the position of the ITB to prevent tearing of the belt due to its misalignment.

The alignment rollers, alignment gear, and alignment arm inside the ITB unit move the ITB feed roller back and forth to align the belt (see the figure below) as described by the following steps.

1   The ITB has a rib on the back along the left edge of the belt. Inside the ITB unit, two alignment rollers are positioned at both sides of the rib so that the rib (ITB) will rotate the roller if it is in contact with one of the rollers. If the ITB is drawn leftward or rightward during rotation, the rib will touch one of the alignment rollers and turns the roller. (If the ITB is drawn rightward, the right roller turns, and if it is drawn leftward, the left roller turns.)

2   The rotation of the alignment roller turns the alignment gear.

3   The rotation of the alignment gear moves the alignment arm.

4   Being interlocked with the arm, the ITB feed roller moves frontward or backward as the alignment arm moves.

5   The force to feed ITB on each side varies as the ITB feed roller moves back and forth. This brings the ITB back to the original position before it has been drawn left or right and the misalignment of the ITB is corrected.

This mechanism functions whenever the ITB rotates to prevent misalignment of the ITB.
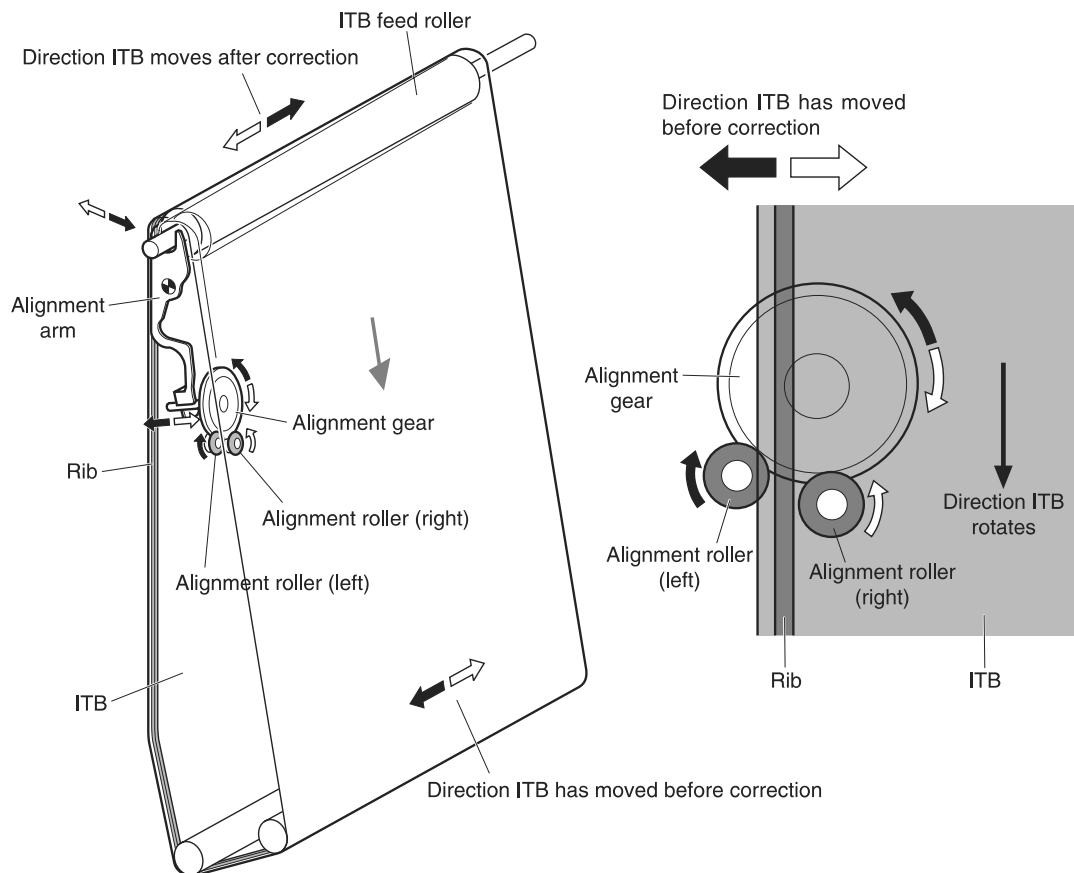
ITB self-aligning mechanism

Primary transfer roller engaging/disengaging control

This controls the disengagement of the primary transfer roller from the photosensitive drum to transfer only K (black) toner onto ITB for monochrome print.

The DC controller sends a control command and drives the primary transfer roller engaging motor (M5).

The following is the sequence of this control.

1   The primary transfer engaging cam inside the ITB unit is holding the primary transfer rollers for Y, M, and C, with the primary transfer roller holder, keeping the ITB in contact with the photosensitive drums.

2   When a monochrome print starts, the DC controller rotates the primary transfer roller disengaging motor (M5) clockwise for a specified time.

3   When the M5 rotates for the specified time, the primary transfer disengaging cam turns one-quarter of a revolution.

4   As it turns, the cam pushes the primary transfer roller holder down and disengages the Y, M, and C rollers from the photosensitive drum.

The primary transfer rollers engage back with the drums when the M5 is turned counterclockwise and the cam pushes the holder up.
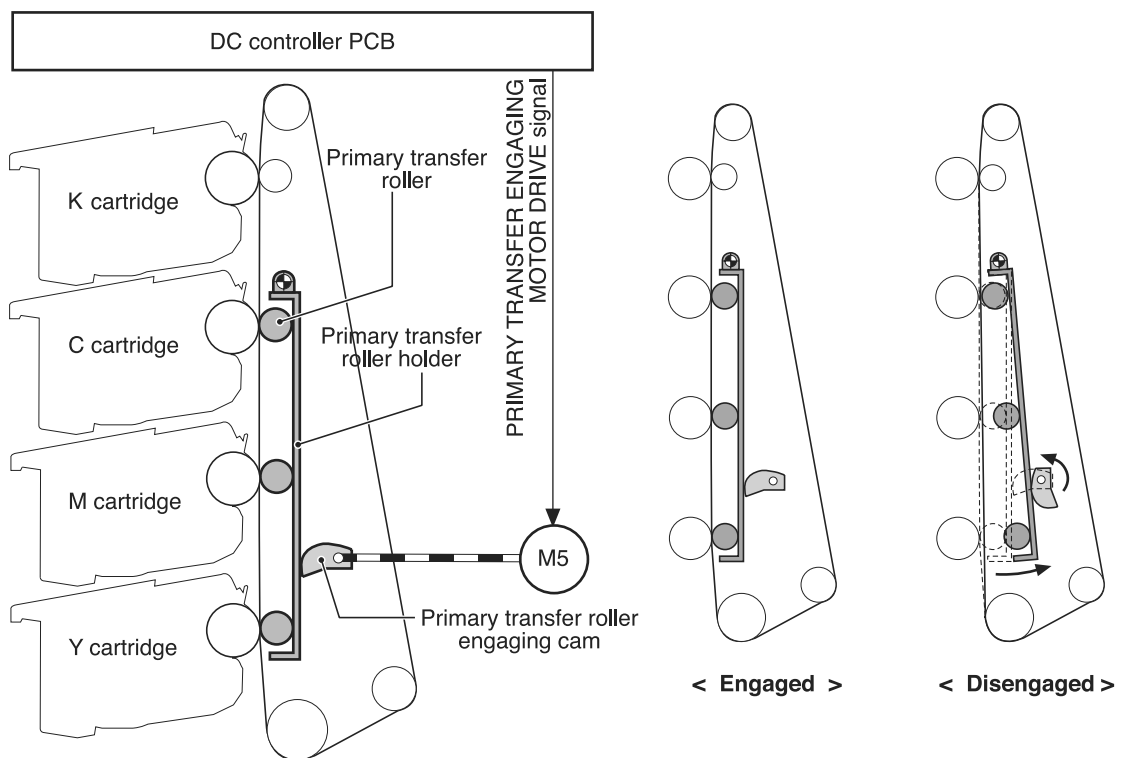
Primary transfer roller engaging/disengaging control

The opposite photosensitive drums (Y, M, and C) stop when the primary transfer rollers are disengaged.

Secondary transfer roller engaging/disengaging control

This controls the engagement of the secondary transfer roller with the ITB to transfer toner on the ITB to the paper.

The DC controller drives the secondary transfer roller engaging solenoid (SL4) when the power is turned on, a door is closed, and a print is completed.

The following is the sequence of this control.

1   The secondary transfer roller is disengaged from the ITB since the engaging cam is pressing the engaging arm down.

2   The DC controller sends a SECONDARY TRANSFER ENGAGING SOLENOID DRIVE signal and turns on the secondary transfer roller solenoid (SL4) for 0.5 second.

3   As the SL4 is turned on, the feeder motor (M1) drives the secondary transfer roller engaging cam and rotates it.

4   As the cam rotates, the secondary transfer roller engaging arm goes up and pushes the secondary transfer roller up.

The secondary transfer roller disengages from the ITB when the DC controller turns the SL4 again for 0.5 second and rotates the cam a half turn.
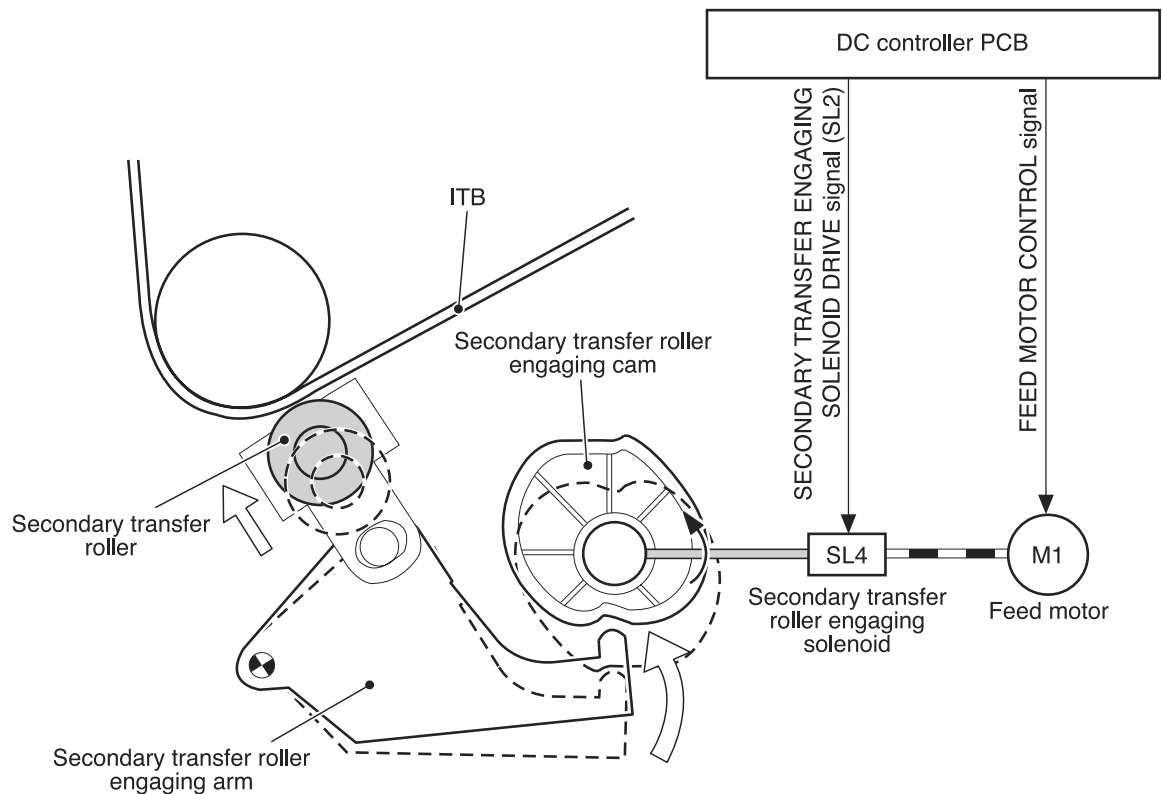
Secondary transfer roller engaging/disengaging control

Secondary transfer roller engaging/disengaging detection

The DC controller monitors the secondary transfer roller engaging sensor (PS16) when the secondary transfer is completed.

The secondary transfer roller engaging cam has the secondary transfer roller engaging flag on its shaft. When the secondary transfer roller is engaged with the ITB, this flag shields the PS16 and the SECONDARY TRANSFER ENGAGING DETECTION signal (T2SNS) is output (condition "H"), and vice versa when the roller is disengaged (condition "L"). The DC controller monitors the position (engagement) of the roller based on this signal.

The DC controller judges the engagement/disengagement mechanism faulty and sends the error message to the formatter when the T2SNS signal is not input/output within a specified time during the engagement/disengagement operation.

Secondary transfer roller engaging/disengaging detection

Color misregistration control

This controls the correction of color misregistration caused by the variation of cartridges and the laser/scanner unit. In particular, this control corrects the following:

Horizontal scan starting position

Horizontal scanning scale

Vertical scan starting position

The DC controller operates this control after a door is closed after replacement of a cartridge, or a specified number of pages are printed after replacement of a cartridge, or a command is received from the formatter.

The following is the sequence of this control.

1   The DC controller writes four colors' misregistration detection patterns, the reference pattern (right) and the pattern to be measured (left), onto the ITB.

2   The DC controller measures each color's misregistration based on the positions of the patterns detected by the misregistration detection (See   ).

3   The measured information is then sent to the formatter.

4   The formatter controls each color's VIDEO signals according to such information, making an adjustment to the horizontal scan starting position, horizontal scanning scale, or scan starting position.

A vertical color misregistration is also corrected by the DC controller, without communicating with the formatter, through the speed control over the scanner motor in this printer. (See
                        .)

In principle, the DC controller automatically sends a command to the formatter when the printer meets the above conditions. However, when the above conditions are not met, the formatter can send a command to the DC controller to execute this control.

Horizontal scanning scale: the size of the image in horizontal scanning. 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; that is, the horizontal scanning area depends on the color. This can cause a color misregistration at the edge of the image.

Color misregistration control

Color misregistration detection

This printer detects the positions of each color's misregistration detection patterns formed on the ITB to measure the misregistration.

The DC controller monitors the color misregistration sensors (PS12) during the foregoing color misregistration control. There are two units of PS12 on the ITB, each having one light emitter (LED) and one light receiver (PD).

The following is the sequence of this control.

1   The DC controller sends LED DRIVE signal (REGLED) and lets the LED emit light.

2   The light of the LED is reflected off the ITB and received by the PD on the sensor. The light amounts received at the PD differ depending on whether or not the light is reflected from the area the toner is on.

3   The light receiver converts the received light amount to voltage and sends it to the DC controller in the form of the COLOR MISREGISTRATION DETECTION signal (REGPDM).

4   The DC controller detects the positions of the detection patterns according to the time the REGPDM signals vary.
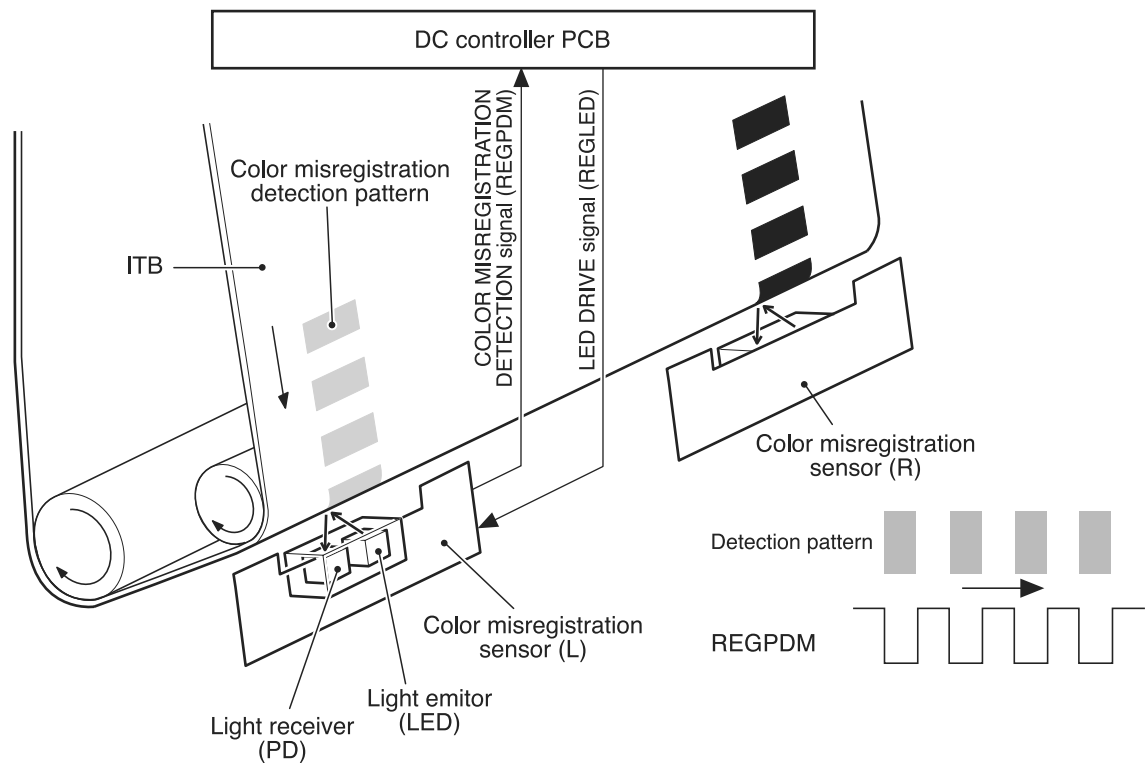
Color misregistration detection

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

Color misregistration sensor abnormality warning: No light is received at the light receivers.

Color misregistration measurement out of range warning: The measurement is found to be 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 kinds of controls executed as necessary.

Environmental change control: The environmental condition sensor (PS15) controls the bias according to the environmental conditions.

Image density control (D-max): The color misregistration sensor (PS12) calibrates the bias value when the image density is at max.

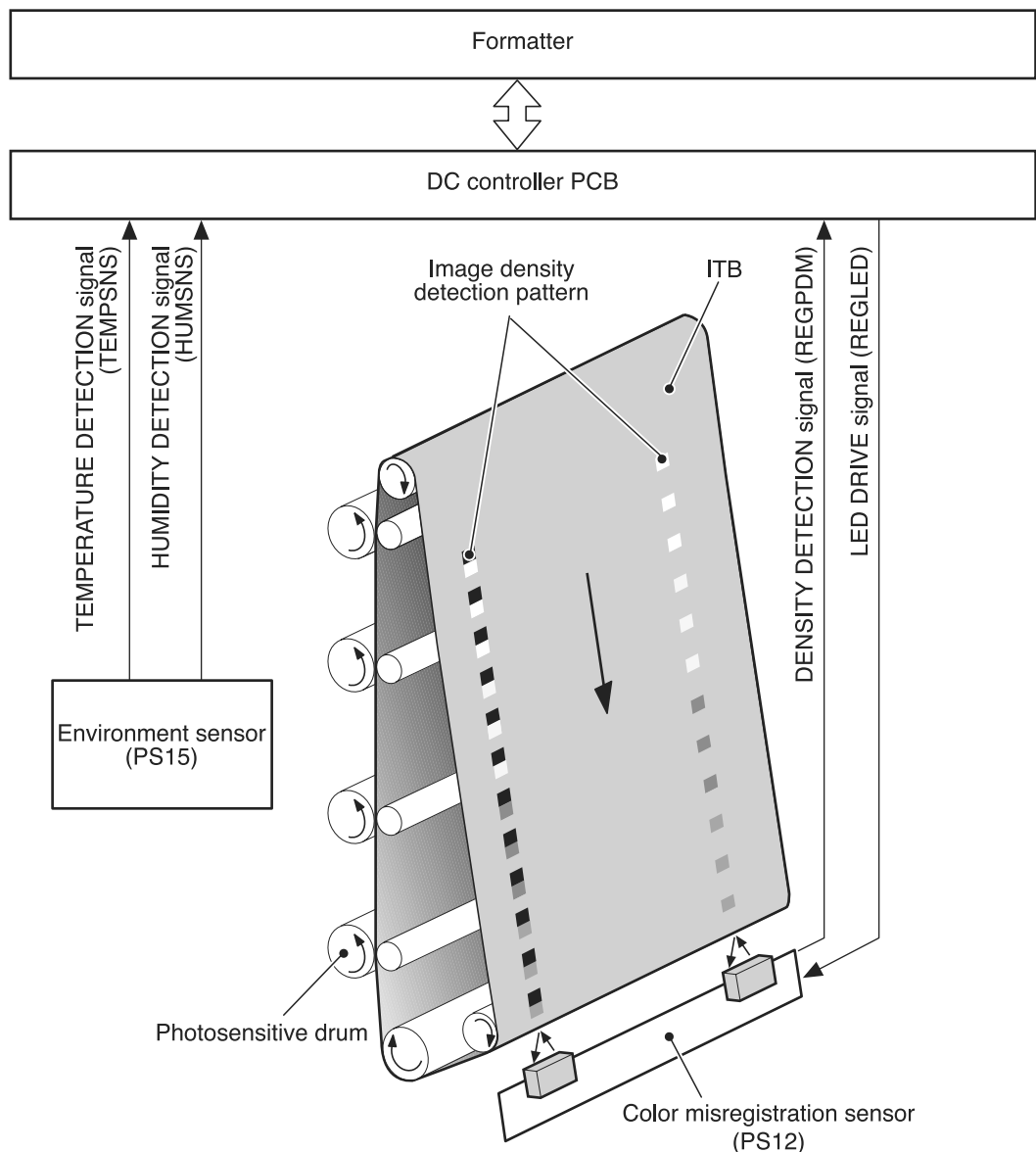**Image halftone control (D-half)**: The color misregistration sensor (PS12) calibrates the halftone data in the formatter.

Image stabilization control

Environmental change control

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

The environmental conditions sensor (PS15) on top of the fan detects the temperature and the humidity. The PS15 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 upon receipt of these two signals.

developing bias

primary transfer bias

secondary transfer bias

If the environment sensor detects a temperature below -30 degrees C or over 80 degrees C, the DC controller determines this an "environment sensor abnormality" and sends an error message to the formatter.

Image density control (D-max)

This control calibrates the value of the developing bias to stabilize the image density.

The DC controller runs the D-max control under the following conditions:

- Power on
- A door is closed after replacement of cartridge
- A specified time has elapsed since the last rotation of the developing cylinder
- A specified amount of environmental conditions has changed since the last image density control
- A command is received from the formatter

The following is the sequence of this control. (See   on the following page.)

1   The DC controller forms 2 lines of density detection patterns (1 line each of the identical patterns at both sides) in each color on the ITB.

2   The DC controller measures the density of each detection pattern by controlling the color misregistration sensor. (See   , on the following page)

3   The DC controller adjusts the developing bias according to the density of the detection patterns to obtain the correct density.

Image halftone control (D-half)

The control is to measure the halftone density sent from the formatter and send the measurement back to the formatter so that the formatter can perform an ideal halftone calibration.

The DC controller controls the D-half, following the sequence below, upon receipt of a command from the formatter.

The following is the sequence of this control.

1   The DC controller forms each color's density detection patterns on the ITB according to the image data received from the formatter, at the best developing bias value adjusted under the D-max control.

2   The DC controller detects the density of the density detection patterns on the ITB by the image density detection and sends the data back to the formatter.(See   , below)

3   The formatter calibrates the halftone based on such data to obtain an ideal halftone image.

Image density detection

The density of all four colors' image density detection patterns formed on the ITB is detected to adjust the image density.

The DC controller controls the color misregistration sensor (PS5) during the foregoing D-max and D-half controls for this detection. PS5 consists of two detection sensors, which are used in conjunction with the images on the ITB, each having one light emitter (LED) and one light receiver (PD).

The following is the sequence of this control.

1   The DC controller sends LED DRIVE signal (REGLED) and lets the LED emit light.

2   The light of the LED is reflected off the density detection patterns on the ITB and received by the PD on the sensor. The light amount received at the PD differs depending on the toner density where the light is reflected off.

3   The light receiver converts the received light amount to voltage and sends it to the DC controller in the form of the IMAGE DENSITY DETECTION signal (REGPDD).

4   The DC controller converts the REGPDD signals to density value (digital) and stores them.
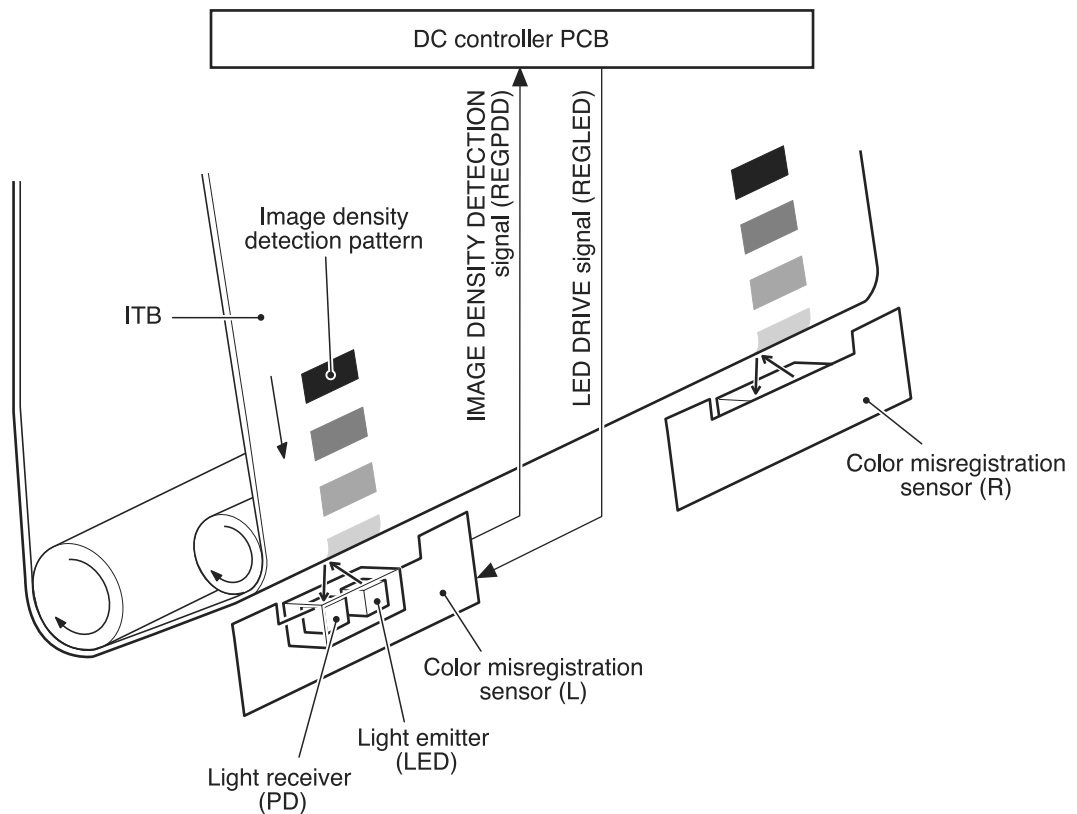

Image density detection

The DC controller notifies the formatter of each error when the following errors are found during image density detection. The initial value is reset to the new image density adjustment value when an error occurs.

Image density sensor abnormality warning: No light is received at the light receivers.

Image density out of guaranteed range warning: The measurement is found to be out of specified range.

The pickup/feed system, being comprised of various feed rollers, picks up and feeds a sheet of paper.

This printer has two pickup trays (the Tray 2 (cassette) and the Tray 1 (multipurpose), and two delivery trays (the face-down tray and the face-up tray).

The Tray 1 (multipurpose tray) paper sensor (PS1) detects the presence of paper on the Tray 1 (multipurpose tray) and the Tray 2 (cassette) paper sensor (PS2), and detects the presence of paper in Tray 2.

The DC controller controls three motors (feed motor: M1, delivery motor: M2, drum motor: M3) and four solenoids (SL1, SL2, SL4, SL5) to drive each feed motor. (SL5 is only for the 3700 printer.)

There are 6 photo interrupters (PS4, PS6, PS7, PS8, PS9, PS10) along the paper path to monitor the arrival or passing of papers. (SL9 and PS10 are only for the 3700 printer.)

Duplex printing is available only on the 3700 printer.

Figure 5-56 illustrates the motors, solenoids, switches, and sensors.

The terms fixing and fuser refer to the same operation (or assembly) and are be used interchangeably in this document. Also, ITB unit and transfer unit refer to the same assembly and are used interchangeably throughout this document.
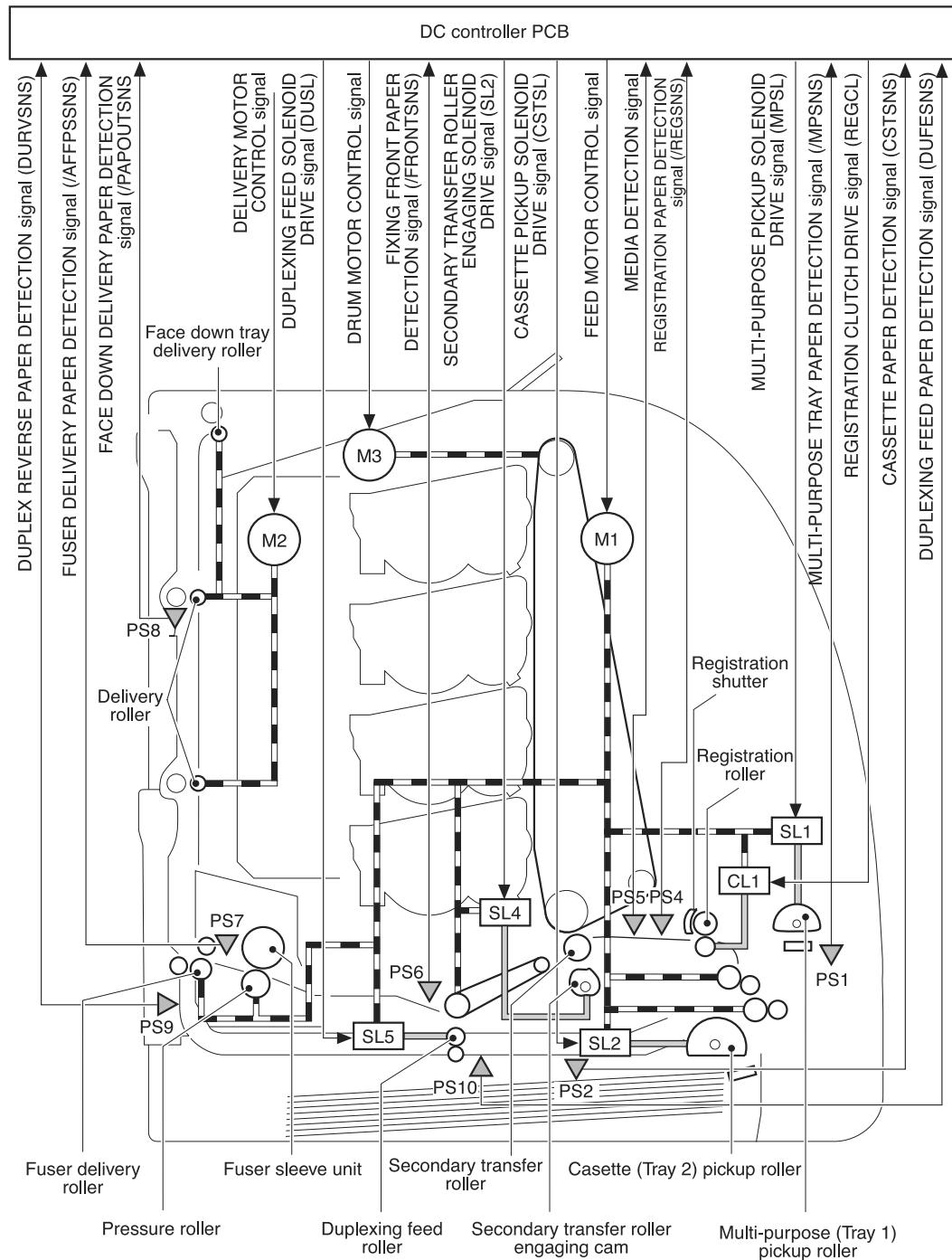
Pickup/feed system

Figure notes:

- PS1: Tray 1 (multipurpose tray) paper sensor
- PS2: Tray 2 (cassette) paper sensor
- PS4: Registration paper sensor
- PS5: Media sensor
- PS6: Fuser front paper sensor

- PS7: Fuser delivery paper sensor
- PS8: Face-down delivery unit paper sensor
- PS9: Reversed paper sensor (P850HP only)
- PS10: Duplexing feed delivery paper sensor (P850HP only)
- M1: Feed motor
- M2: Delivery motor
- M3: Drum motor
- SL1: Tray 1 (multipurpose tray) pickup solenoid
- SL2: Tray 2 (cassette) pickup solenoid
- SL4: Secondary transfer roller engaging solenoid
- SL5: Duplexing feed solenoid (3700 printer only)
- CL1: Registration clutch

The pickup/feed system can be divided into the following three blocks.

1 **Pickup/feed unit**: each pickup source to fuser inlet

2 **Fuser/delivery unit**: fuser to delivery source

3 **Duplexing feed unit (3700 printer only)**: fuser delivery source to registration roller inlet
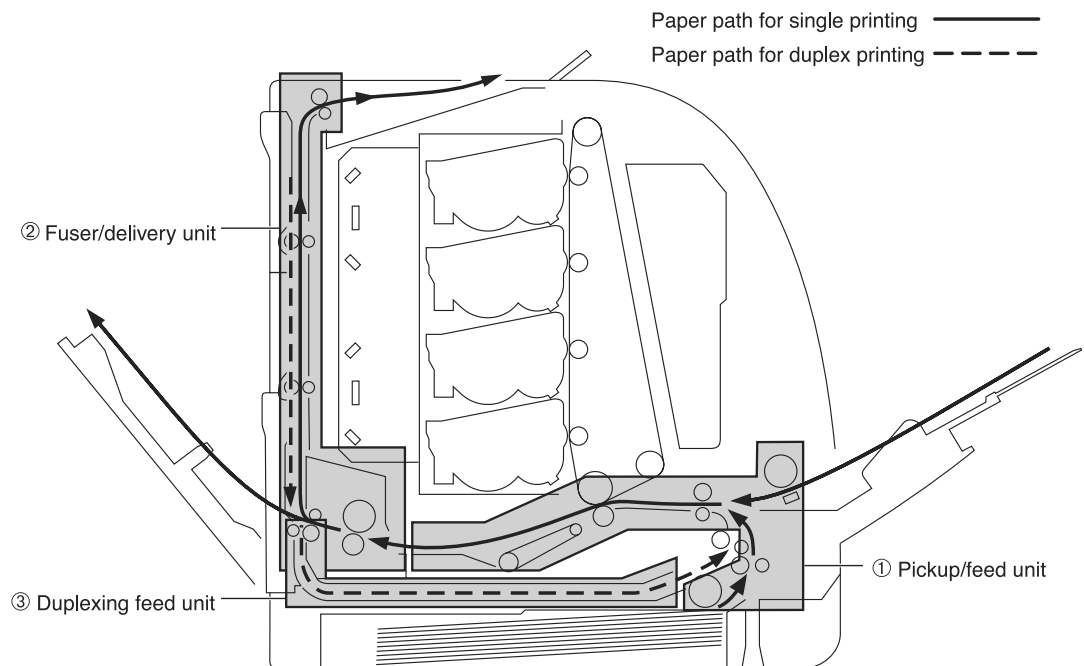
Pickup/feed system blocks

Pickup/feed unit

The pickup/feed unit, being comprised of the pickup unit and feed unit, picks up paper from the Tray 2 (cassette) or Tray 1 (multipurpose tray) pickup tray one-by-one and feeds it into the printer until it reaches the fuser.

Figure 5-58 diagrams the pickup/feed unit.

The following is the pickup/feed sequence of operation.

1   The printer controls the fuser heater temperature and drives the scanner motor upon receipt of a print command from the formatter.

2   When the fuser heater reaches a specified temperature, it drives the feed motor (M1).

3   The solenoid at each paper pickup source is turned on after a specified period from the scanner motor drive start.

   • Tray 1 (multipurpose tray): Tray 1 solenoid (SL1)

   • Tray 2 (cassette): Tray 2 pickup solenoid (SL2)

   As each pickup solenoid is turned on, each pick up roller rotates and picks up paper. The separation pad prevents the double feeding of paper.

   As the registration clutch (CL1) is turned on at the same time as solenoids, both the registration roller and the feed roller rotate the paper is fed to the registration roller.

4   When the scanner is ready, the drum motor (M3) drives and rotates the ITB.

5   After a specified period since the drum motor (M3) drive start, the secondary transfer roller engaging solenoid (SL4) is turned on and pushes the secondary transfer roller against the ITB to rotate the roller. (See "Secondary transfer roller engaging/disengaging control" on page 5-166 for details)

6   The registration shutter corrects the skew of the paper at the registration roller.

7   When the paper is detected by the registration paper sensor (PS4) after passing the registration roller, the registration clutch (CL1) is turned off and stops the paper.

8   When the paper end reaches the edge of the image on the ITB, the registration clutch (CL1) is turned on. This allows the paper to be fed.

   The feeding speed changes based on the media specified by the formatter. (See for details)

9   The toner is transferred onto the paper on the ITB and the paper is then fed to the fuser/delivery unit.
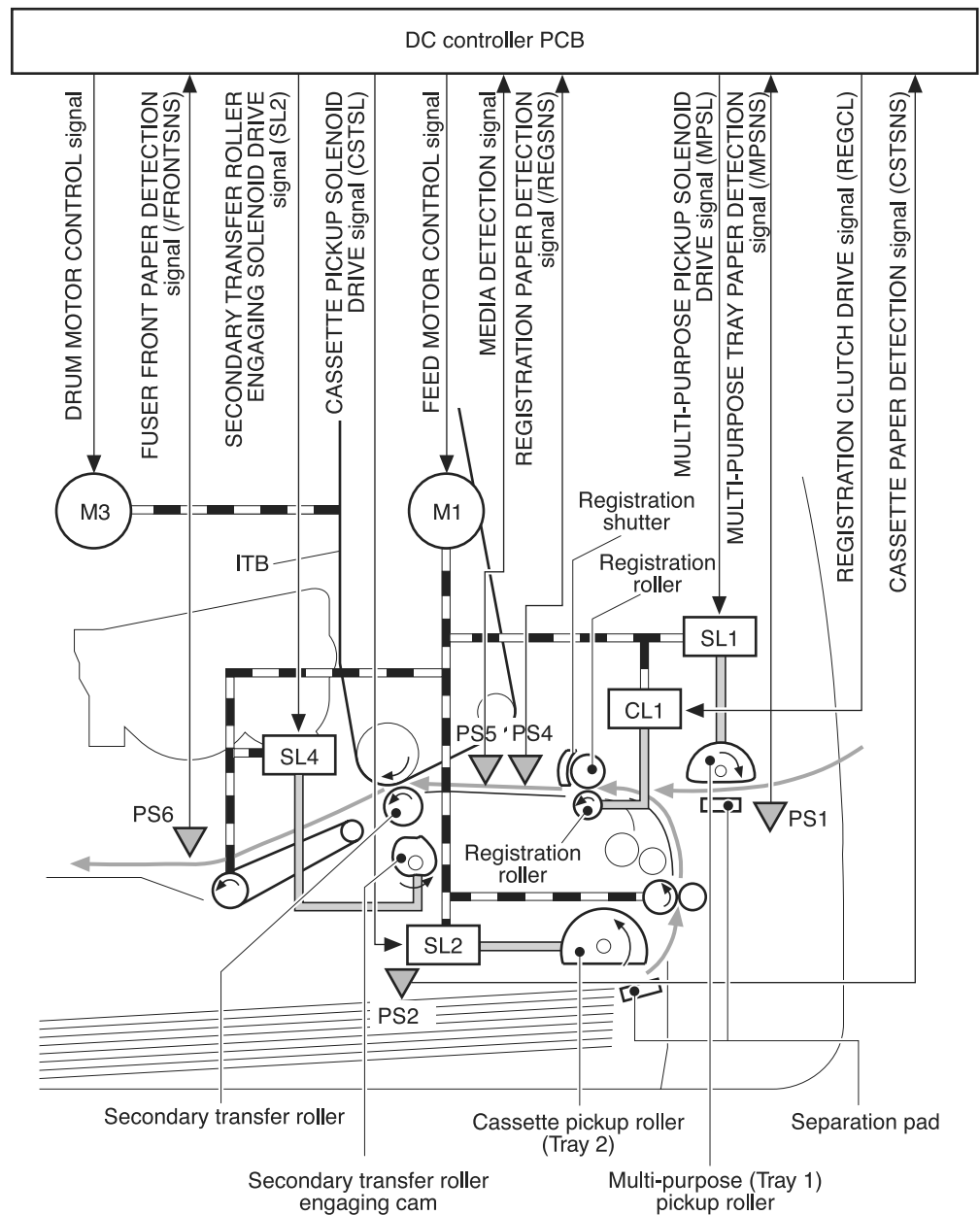
Pickup/delivery unit block

Figure notes:

- PS1: Tray 1 (multipurpose tray) paper sensor
- PS2: Tray 2 (cassette) paper sensor
- PS4: Registration paper sensor
- PS5: Media sensor
- PS6: Fuser front paper sensor
- M1: Feed motor

- M3: Drum motor
- SL1: Tray 1 (multipurpose tray) pickup solenoid
- SL2: Tray 2 (cassette) pickup solenoid
- SL4: Secondary transfer roller engaging solenoid
- CL1: Registration clutch

Feed speed control

The feed speed control changes the feed speed based on the media to prevent a fuser defect.

There are four speed settings (normal, half-speed, one-third speed and one-quarter speed). The DC controller changes the speed according to the print mode sent from the formatter.

Table 5-6 provides types of media and the feed speeds.

Table 5-6   Print media and feed speeds

Print mode	Medium type	Feed speed
Normal	Plain paper	Normal
OHT	OHT	one-quarter speed
Thick 1	Thick paper	half-speed
Thick 2	Thick paper	half-speed
Gloss 1	Gloss paper	half-speed
Gloss 2	Gloss paper	one-third speed
Gloss film	Gloss film	one-third speed
Envelope	Envelope	Normal
Thin paper	Thin paper	Normal
Label	Label	half-speed
Auto	Plain paper/OHT	---

The printer can detect the type of media (see   on the following page).

The DC controller controls the print mode as follows according to the selected print mode, if the selected print mode does not agree with the detected media. The types of media that the printer can detect are plain paper, gloss paper, gloss film, and OHT (overhead transparency). The printer can not identify envelope, thick paper, thin paper, or label. They are judged as normal paper.

- •When the selected print mode is either normal paper, envelope, thick paper, label, or auto, the mode remains unchanged.

When in OHT print mode: If plain paper, gloss paper, or gloss film is detected; the DC controller judges it media mismatch. When judged as a mismatch, the DC controller sends the error message to the formatter, cuts off the secondary transfer bias, delivers the paper, and stops the printer engine. The DC controller lets printing process continue under the OHT mode only when an OHT is detected. The same applies to the following pages in continuous printing.

When in AUTO print mode: If a plain paper, gloss paper, gloss film or OHT is detected; the DC controller selects and switches the print mode to the appropriate one (gloss paper, gloss film, or OHT mode) and continues printing. When auto mode is selected, the printer starts at a

normal mode. In continuous printing, the print mode remains unchanged from the one selected for the first page, unless it detects a media different from the first page, when it judges it media discrepancy.

When in OTHER print modes than the above two: If a plain paper, gloss paper, or gloss film is detected; the DC controller lets the printing process continue without changing the selected print mode. If an OHT is detected, the DC controller judges it media discrepancy. The same applies to the following pages in continuous printing.

Skew control mechanism

The skew control, which corrects the position of paper fed askew, is controlled by the registration shutter.

The skew control performs the following sequence of tasks. (See Figure 5-59.)

1 The registration shutter stops the fed paper and evens up the edge of the paper along the shutter.

2 As the feed roller continues rotating, the paper is pushed against the shutter and gets warped.

3 The force of paper being warped lifts up the shutter and the paper goes through the shutter. This corrects the position of skewed paper.

Registration shutter

Paper
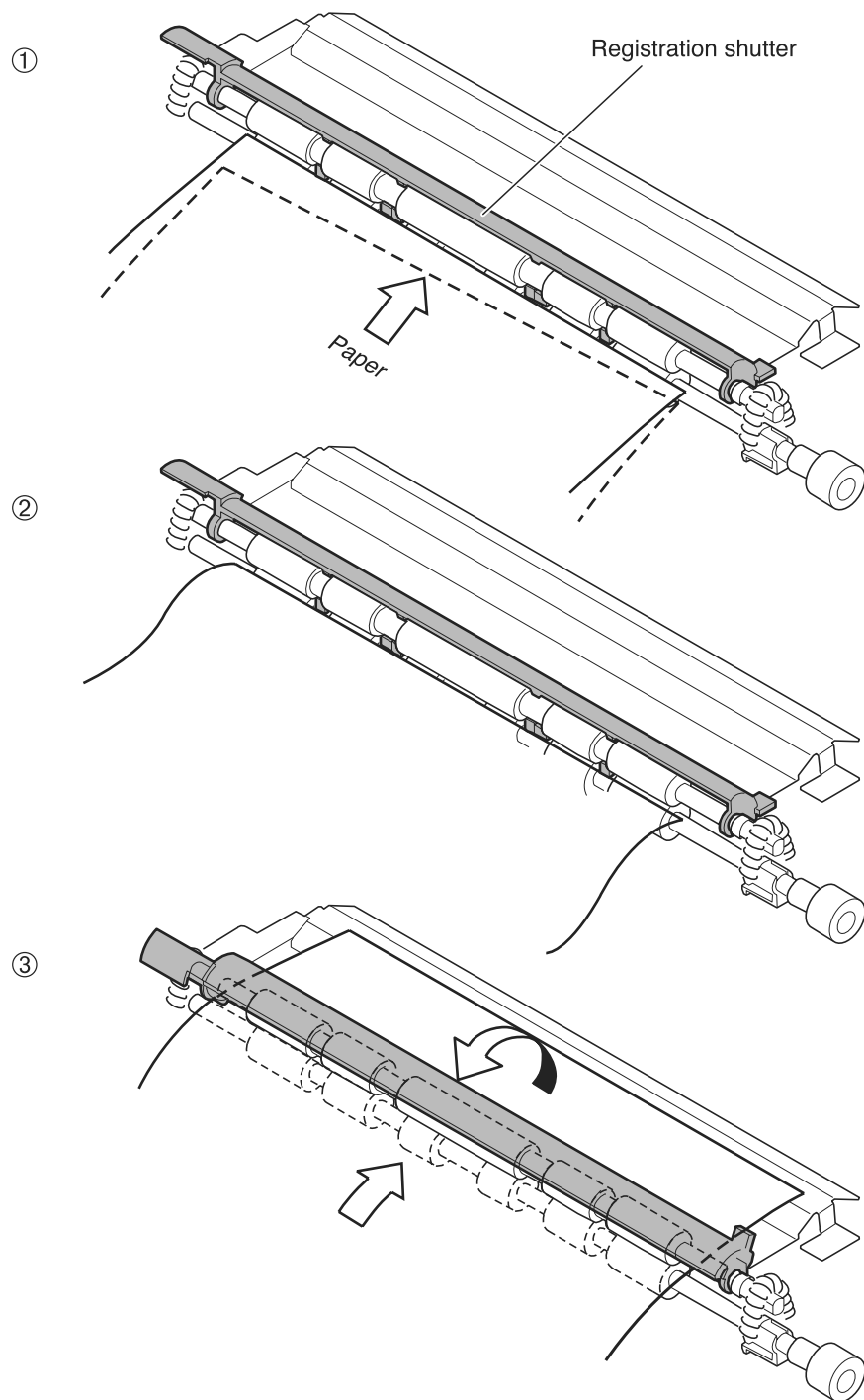
Skew control mechanism
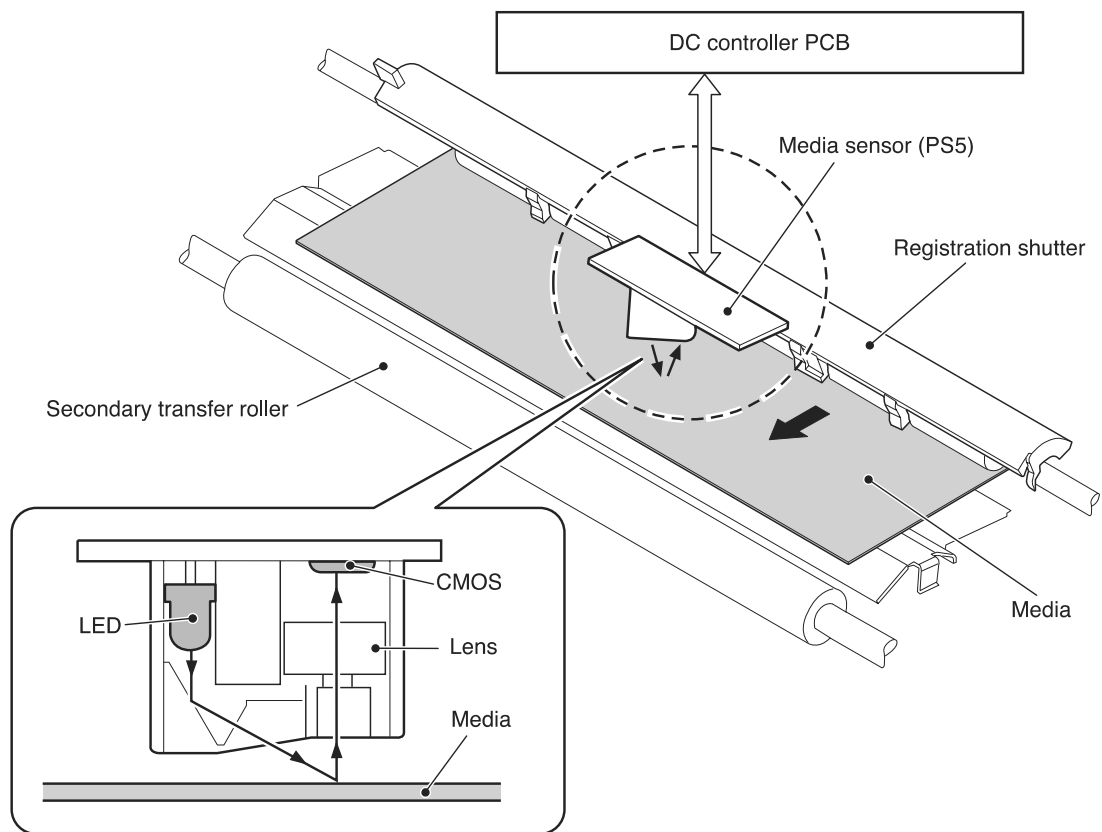
Media detection

This printer detects the media type to prevent a fuser defect.

The DC controller controls the media sensor (PS5) for this detection.

The PS5 has a light emitter (LED) and a light receiver (CMOS sensor). The light from the emitter is reflected off the media surface and received at the receiver.

The DC controller turns on the PS5 when a fed sheet passes through the registration roller, then detects the roughness of media surface according to the patterns (luminance distribution within a specified area) of the detected light by the CMOS sensor. Based on the detected roughness, the DC controller identifies the media type (normal paper, gloss paper, gloss film, or OHT) and sends the media type to the formatter.

The DC controller changes the paper feed speed according to the detected media type, when the detected media does not match the selected print mode. (See   , earlier in this chapter, for feed speed change.)

Media detection
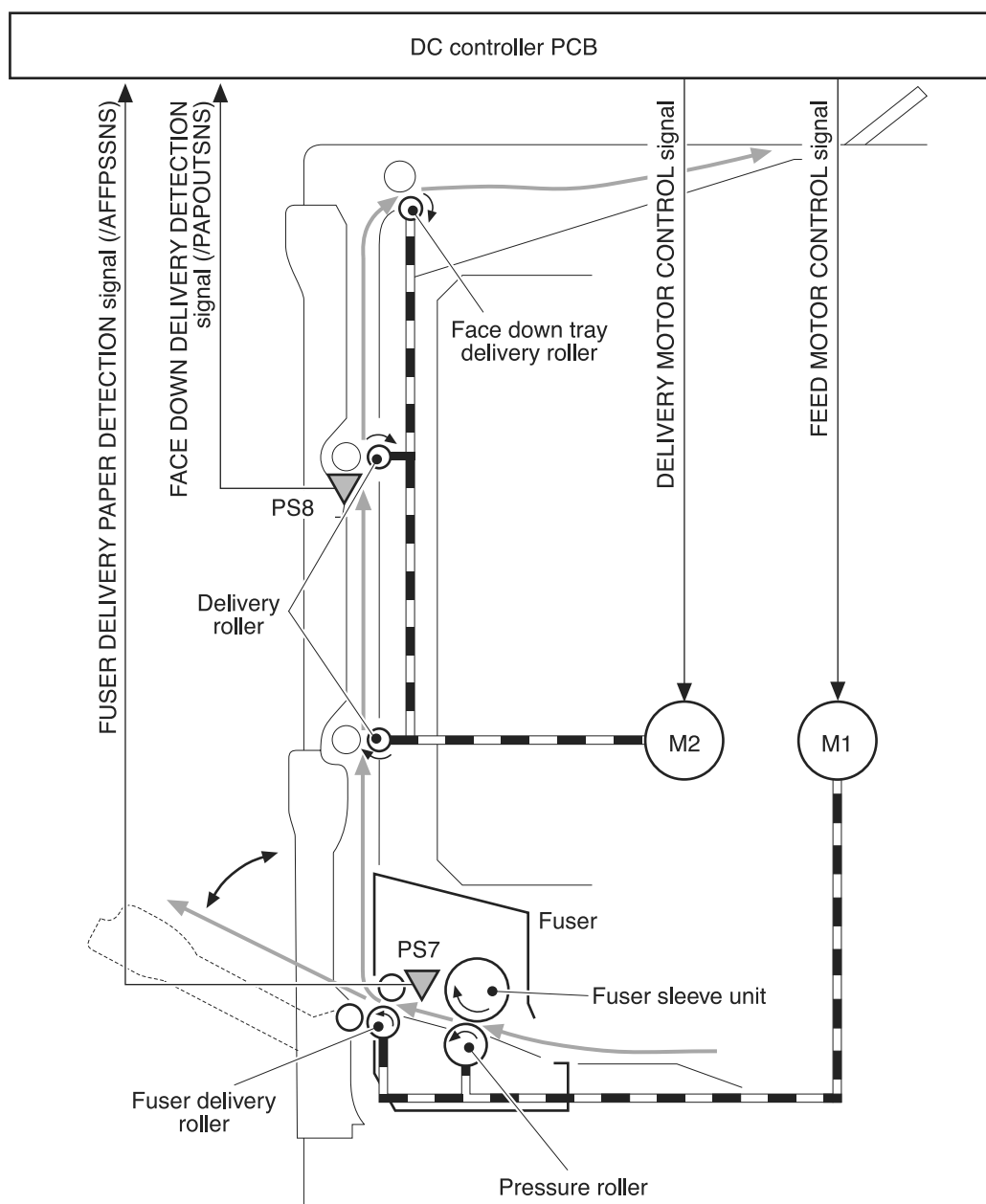
Fuser/delivery unit

The fuser/delivery unit, being comprised of the fuser and the delivery unit, feeds paper from the fuser to a delivery tray (either the face-up tray or the face-down tray).

The available tray is switched as the face-up tray opens and closes. Open the face-up tray for face-up delivery, and close the tray for face-down delivery.

The following is the sequence of paper feed at the fuser/delivery unit.

1   The paper after the secondary transfer is fed into the fuser.

2   The paper is pressed between the fuser sleeve and the pressure roller to fuse the toner on top and then delivered out of the fuser.

3   When the leading edge of the paper is detected by the fuser delivery paper sensor (PS7), the delivery motor (M2) drives and rotates the delivery roller.

4   When the paper end is detected by the fuser delivery paper sensor (PS7), the M2 rotates at double-speed and delivers the paper out to the face-down tray at high speed.

The feed speed is accelerated after paper passes away from the fuser when delivering from the face-down tray because the fuser is far from the tray.

Fuser/delivery unit

Figure notes:

- PS7: fuser delivery paper sensor
- PS8: Face-down delivery sensor
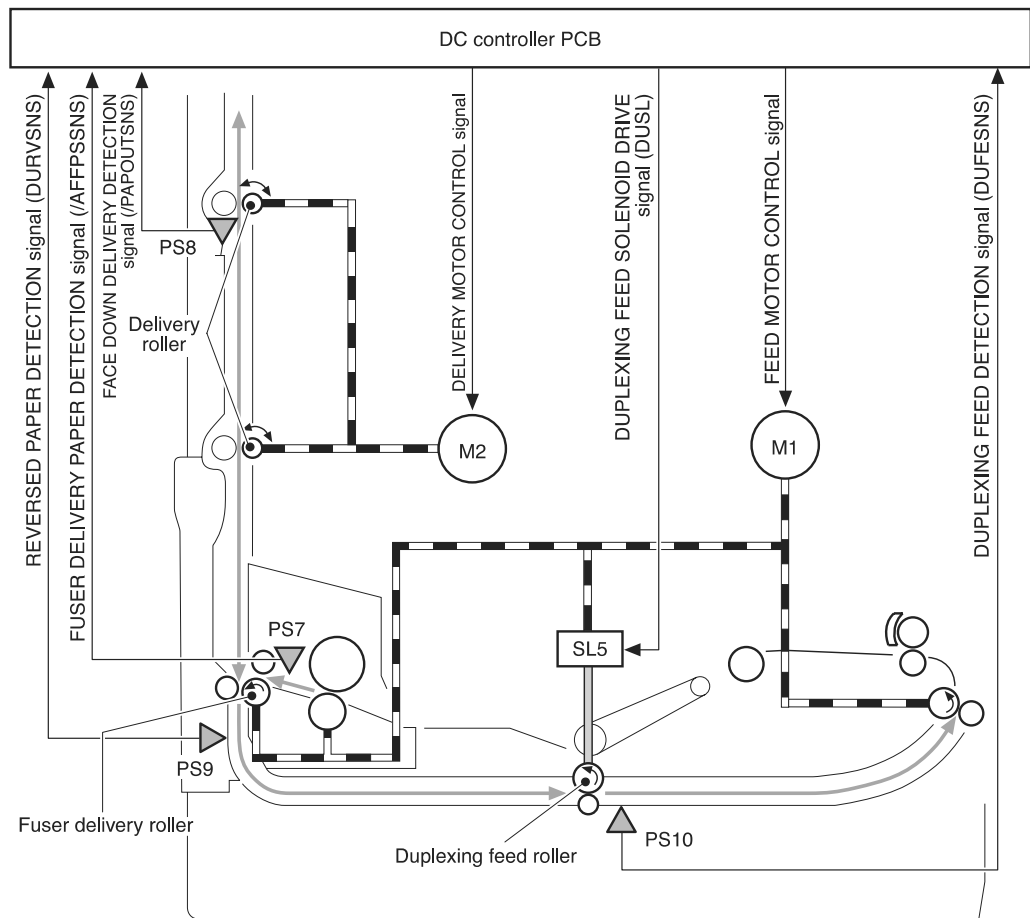- M1: Feed motor
- M2: Delivery motor

Duplexing feed unit (HP 3700 printer only)

The duplexing feed unit reverses the paper after one side is printed and re-feeds it to the pickup/feed unit for printing the other side.

The following is the sequence of paper feed at the duplexing feed unit.

1   The paper passes through the fuser after the front side is printed.

2   The delivery motor (M2) rotates counterclockwise after a specified period of time from when the paper has passed the fuser and delivers the paper to the duplexing feed unit. The paper is reversed here.

3   When the reversed paper sensor (PS9) detects the edge of the reversed paper, the duplexing feed solenoid (SL5) is turned on to rotate the duplexing feed roller.

4   The paper is fed to the duplexing feed unit by the roller, being positioned in line by the oblique roller and the delivery guide.

5   The paper stops at the duplex pickup position, as the edge of the paper reaches the PS10, and the SL5 is turned off.

6   When the duplex pickup is ready, the SL5 is turned on and it feeds the paper into the printer.

7   The paper, after re-correction of skew by the registration roller, is fed to the delivery tray for printing the other side.

Two stationary A4 or letter size papers may be inside the printer during duplex printing; only one legal size paper may be inside the printer during duplex printing.

Duplexing unit

Figure notes:

- PS7: fuser delivery paper sensor
- PS8: Face-down delivery sensor
- PS9: Reversed paper sensor
- PS10: Duplexing feed paper sensor
- M1: Feed motor
- M2: Delivery motor
- SL5: Duplexing feed solenoid

Reverse control

This control reverses a printed sheet of paper for printing on the second side.

The DC controller monitors the fuser delivery paper sensor (PS7) and controls the delivery motor (M2). The following is the sequence of reversing paper.

1 For duplex printing, the paper is fed to the face-down tray after one side is printed.

2 When the end of the paper is detected by the fuser delivery paper sensor (PS7), the delivery motor (M2) rotates counterclockwise after a specified period.

3 As it rotates counterclockwise by the M2, the delivery roller turns the paper around. The reversed paper is fed to the duplex delivery unit by the guide at the reverse unit.
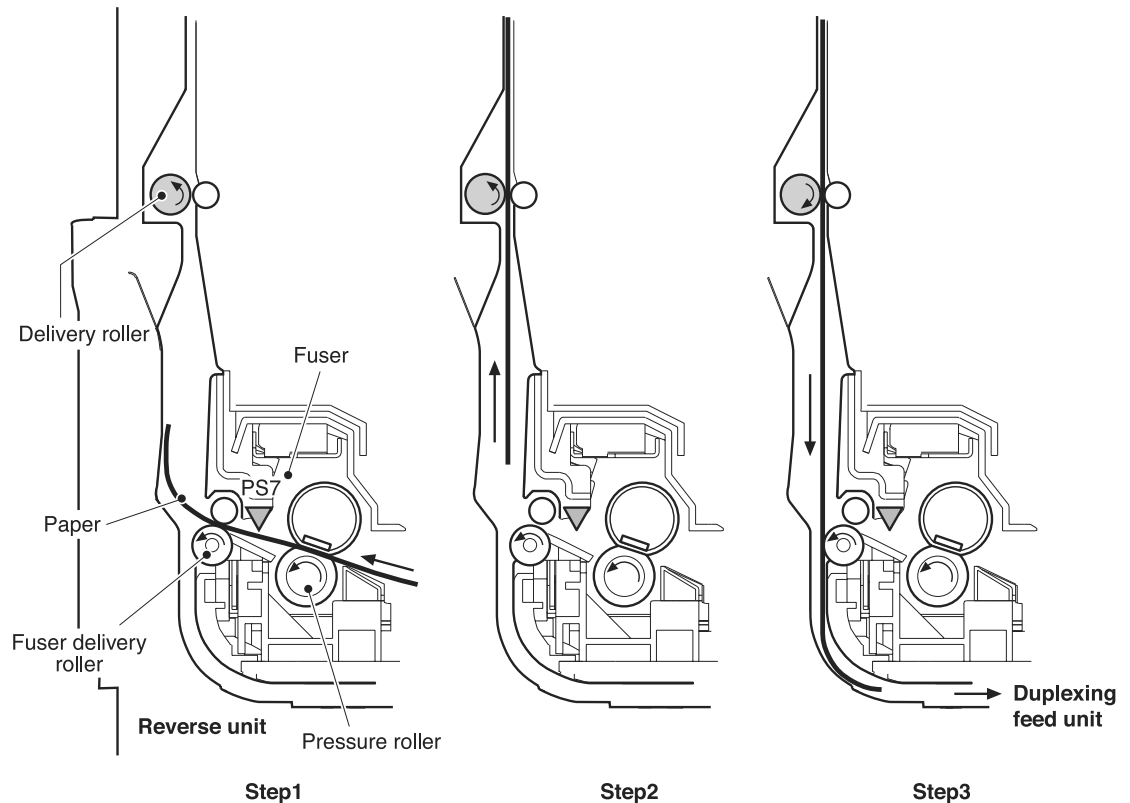
Reverse control

Duplex feed mode

The printer has the following 3 different feed modes for duplex printing. The possible feed modes depend on the print mode and paper size.

1 **1 sheet feed:** Print 1 sheet two-sided page in 1 duplex print operation.

2 **2 sheets feed:** Print 2 sheets two-sided page in 1 duplex print operation.

3 **Alternate feed:** Print two-sided sheets while retaining 3 sheets in process inside the printer during duplex print operation.

The table below shows the conditions of available duplex feed.

Table 5-7   Conditions of available duplex feed

Paper size	Print mode	Duplex feed mode
	Plain paper Gloss paper Gloss film	1 sheet feed
	Plain paper Thin paper	2 sheets feed
		Alternate feed
	Plain paper, Thin paper	1 sheet feed

The duplex feed mode can be selected by command from the formatter. Please note that the duplex print is available only for the media in the print mode (plain, thin, gloss paper, gloss film) shown in the table.

Jam detection

This printer has the following sensors to detect the presence and positions of papers:

registration paper sensor (PS4)

fuser front paper sensor (PS6)

fuser delivery paper sensor (PS7)

face-down delivery paper sensor (PS8)

reversed paper sensor (PS9)

duplexing feed paper sensor (PS10)

The microcomputer (CPU) in the DC controller identifies a paper jam by checking whether the paper is present at the sensor at the checking time. The checking time is stored in its memory. When it judges so, the CPU stops the printer and sends a paper jam notice to the formatter.

The following is the timing of the paper jam detection. The specified time (T) is based on the normal feed speed (1/1).

1 **Pickup delay jam**: This printer checks the paper movement at all pickup sources twice, if necessary, as the paper pickup can be delayed due to a pickup error.

When paper does not reach the registration paper sensor (PS4) within the allotted time after paper pickup, the CPU judges it a pickup delay jam.

2 **Pickup stationary jam**: When the paper does not pass the registration paper sensor (PS4) within the allotted amount of time after paper is fed from the registration roller, the CPU judges it a pickup stationary jam.

3   **Fuser delay jam**: When the paper does not reach the fuser delivery paper sensor (PS7) within the allotted amount of time after paper is fed from the registration roller, the CPU judges it a fuser delay jam.

4   **Fuser stationary jam**: When the paper does not pass the fuser delivery paper sensor (PS7) within the allotted amount of time after paper has reached the fuser delivery paper sensor (PS7), the CPU judges it a fuser stationary jam.

5   **Delivery delay jam**: When the paper does not pass the sensor through within the allotted amount of time after paper has reached the fuser delivery paper sensor (PS7), the CPU judges it a delivery delay jam.

6   **Delivery stationary jam**: When the paper does not reach the face-down paper sensor (PS8) within the allotted amount of time after paper has reached the fuser delivery paper sensor (PS7), the CPU judges it a delivery stationary jam.

7   **Duplexing feed delay jam (3700 printer only)**: When the paper does not reach the reversed paper sensor (PS9) within the allotted amount of time after the delivery motor has started rotating counter-clockwise, the CPU judges it a duplexing feed delay jam.

8   **Duplexing feed stationary jam (3700 printer only)**: When the paper does not pass the sensor within the allotted amount of time since paper has reached the reversed paper sensor (PS9), the CPU judges it a duplexing feed stationary jam.

9   **Duplexing pickup delay jam (3700 printer only)**: When the paper does not reach the duplexing feed paper sensor (PS10) within the allotted amount of time after paper has reached the reversed paper sensor, the CPU judges it a duplexing pickup delay jam.

10 **Duplexing pickup stationary jam (3700 printer only)**: When the paper does not pass the sensor within the allotted amount of time since paper reached the duplexing feed paper sensor (PS10), the CPU judges it a duplexing pickup stationary jam.

11 **Door open jam**: When the front cover is opened during printing operation, the CPU judges it a door open jam.

12. **Residual paper jam**: The CPU judges a residual paper jam for two conditions:

   - When paper is detected by the registration paper sensor (PS4), the fuser front paper sensor (PS6), or the fuser delivery paper sensor (PS7), the CPU judges it the residual paper jam.
   - When paper is detected by the fuser front paper sensor (PS6) or the fuser delivery paper sensor (PS7), the CPU judges it the residual paper jam.

   If paper is detected by sensors other than the PS6 and PS7, the DC controller delivers the paper automatically.

The automatic paper delivery system delivers a residual paper automatically, if possible, when the power is turned on or the printer starts printing. The CPU sends an automatic paper delivery request to the formatter when it detects a residual paper that can be possibly delivered automatically. Upon receipt of a command for an automatic delivery from the formatter, the CPU drives each motor and delivers such paper out of the printer.

The paper feeder is an optional unit that is installed at the bottom of the printer. It picks up and delivers a sheet of paper to the printer. Figure 5-64 illustrates the paper path.
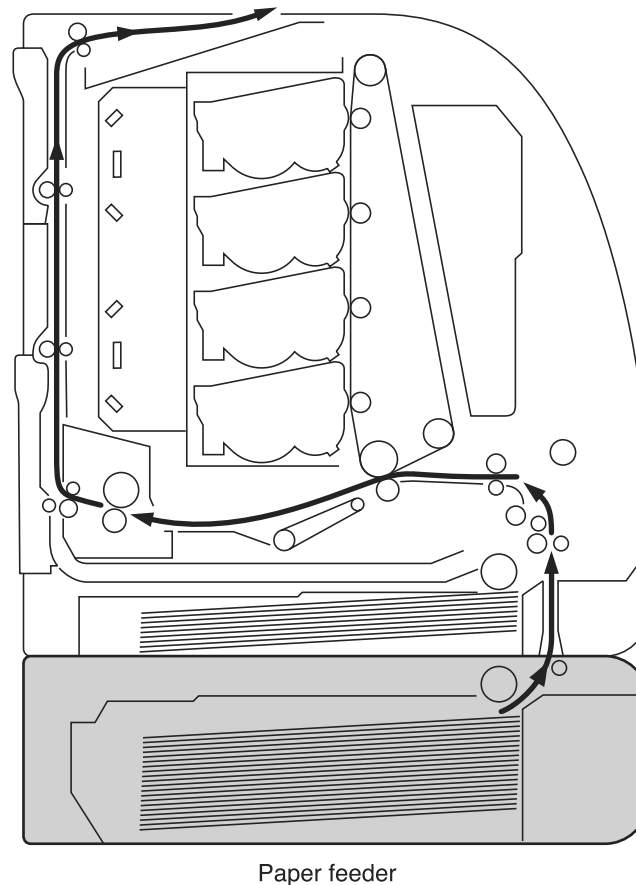
Paper feeder

Paper feeder

The paper feeder is controlled by the DC controller. The DC controller drives each load (solenoids, clutches) at the required timing via the paper feeder PCB. The paper sensor detects the presence of paper. The paper feeder is supplied with +24V (for solenoids and clutches) and +3.3V (for sensors) of power.

Figure 5-65 illustrates the flow of signals to and from the paper feeder PCB.
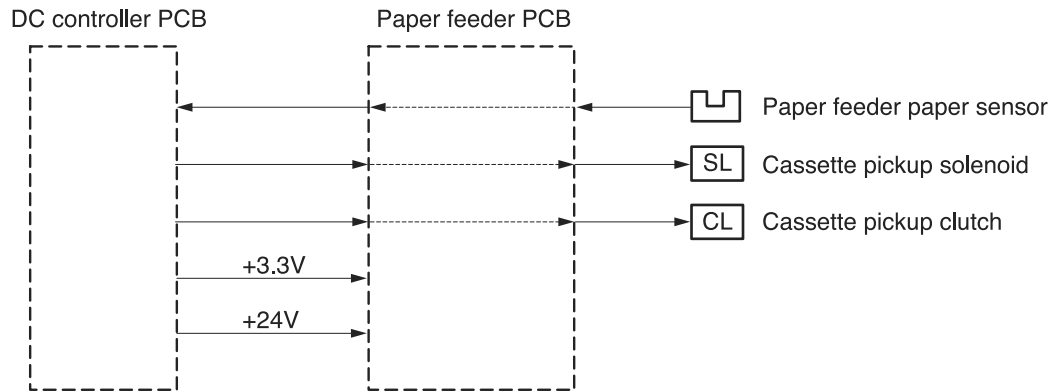
Paper feeder PCB signal flow

Pickup/delivery sequence

The paper feeder is driven by the feed motor (M1) via a gear.

The following is the sequence of paper pickup at the paper feeder.

1   The printer controls the fuser heater temperature and drives the scanner motor upon receipt of a print command from the formatter.

2   The feed motor (M1) drives when the fuser heater temperature reaches the specified temperature.

3   After the specified period after the scanner motor drive has started, the paper feeder pickup solenoid (SL3) is turned on. The pickup roller rotates and picks paper up. The double feeding of paper is prevented by the separation pad.

   As the paper feeder pickup clutch (CL4) is engaged, the feed roller rotates and feeds the paper to the registration roller.

4   When the paper is detected by the registration paper sensor (PS4) after passing through the roller, the paper feeder pickup clutch (CL4) is disengaged and the paper stops.

5   At the specific timing when the leading edge of paper should match the edge of the image on the ITB, the paper feeder pickup clutch (CL4) is engaged again to re-feed the paper.

6   The paper, having had the image on the ITB transferred on it, is fed to the fuser/delivery unit.
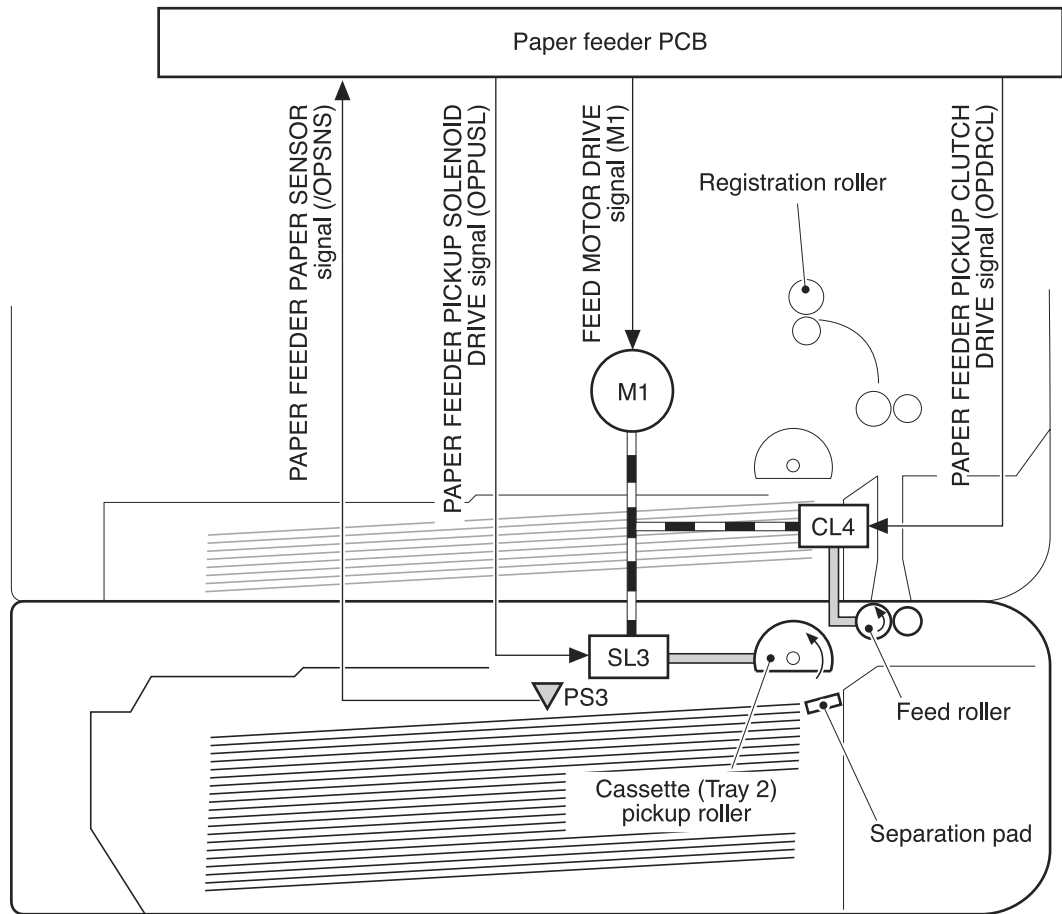
Pickup/delivery sequence

Paper jam detection

A paper jam at the paper feeder during pickup/delivery is detected in the same way as a paper jam at the printer. See the _____ section for details.

Removal and replacement

This chapter contains the following sections.

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.)

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

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

Repair notices

Turn the printer off, wait five seconds, then unplug the power cord before servicing the printer. Failure to completely disconnect the printer could 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 shown at the left when removing printer parts. Protect the parts that are sensitive to ESD with protective ESD pouches.

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 3500 and 3700 series printers use Phillips-head screws that require a #2 Phillips screwdriver. Ensure that you have a Phillips screwdriver and not a Posidriv screwdriver. Figure 6-1 (below) shows the difference between a Phillips and a Posidriv screwdriver. Note that the Phillips tip has more beveled surfaces.
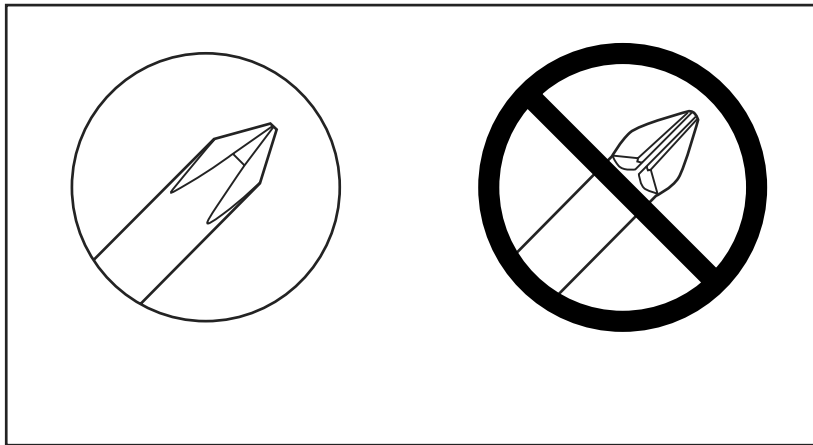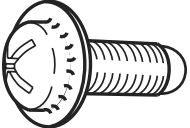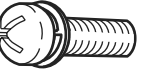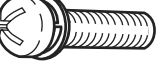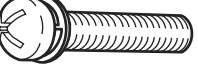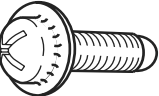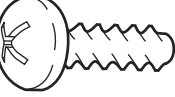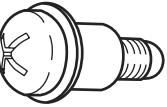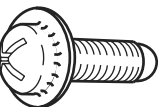
Phillips and Posidrive screwdriver comparison

Types of screws

Table 6-1, below, describes the screws used in the printer and provides guidelines to help determine where to use each type of screw. The screws can 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   Common fasteners

Illustration	Description	Size	Part number	Use
	SCREW, TP	M4X6	XA9-1450-000CN	Secures metal frame panels to metal frame panels.
	SCREW, W/ WASHER	M3X6	XA9-1477-000CN	Secures the drawer, cross member, to the frame (see figure 8-8).
	SCREW, W/ WASHER, RS	M3X6	XA9-1461-000CN	Secures motor (M2) to the frame.
	SCREW W/ WASHER	M3X8	XA9-1420-000CN	Secures metal to metal (ground wire, feed guide rear two screws)
	SCREW, W/ WASHER	M3X12	XA9-1452-000CN	Secures laser/scanner assembly to the metal frame.
	SCREW, RS	M3X6	XA9-1499-000CN	Secures metal to metal.
	SCREW, RS	M3X8	XA9-1445-000CN	Secures any material (except metal) to metal
	SCREW, TP		XB4-7300-805CN	Secures sensor PCB to plastic (environmental, toner full, color misregistration, and media).
	SCREW,TAPPING, TRUSS HEAD	M4X10	XB4-7401-005CN	Secures anything to plastic
	SCREW, STEPPED	M4X4.5	RC1-1624000CN	Secures the right side of the pick-up/feed assembly to the frame.
	SCREW, S	M3X8	XA9-1500-000CN	Secures plastic to metal: front door components, rear swing guide rail, components to center frame (see figure 8-12)

6 mm   8 mm 10 mm   12 mm   M 3   M 4

14 mm   16 mm   25 mm

The customer replaces print cartridges, the fuser, and the transfer unit as they are depleted. Chapter 4 explains when to replace supplies and provides instructions on replacing them.

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.

1   If you replace either the fuser or the transfer unit when servicing the printer, and these supplies have not yet reached the end of their estimated life, you must reset the page count for these supplies through the CONFIGURE DEVICE menu on the control panel. See
                                  and   for
instructions on resetting the transfer unit and fuser counts.

Table 6-2   Approximate replacement intervals for supply items

Supply item	Printer message	HP 3500 Page counts	HP 3700 Page counts	Approximate time period[1]	To install
Black (K) print cartridge	REPLACE BLACK CARTRIDGE	6,000 pages[2]	6,000 pages[2]	HP 3500 = 6 months HP 3700 = 4 months	See .
Cyan (C) print cartridge	REPLACE CYAN CARTRIDGE	4,000 pages[2]	6,000 pages[2]	4 months	See .
Magenta (M) print cartridge	REPLACE MAGENTA CARTRIDGE	4,000 pages[2]	6,000 pages[2]	4 months	See .
Yellow (Y) print cartridge	REPLACE YELLOW CARTRIDGE	4,000 pages[2]	6,000 pages[2]	4 months	See .
Image transfer kit (transfer unit)	REPLACE TRANSFER KIT	60,000 pages[3]	75,000 pages[3]	HP 3500 = 60 months HP 3700 = 50 months	See .
Image fuser kit	REPLACE FUSER KIT	60,000 pages[3]	75,000 pages[3]	HP 3500 = 60 months HP 3700 = 50 months	See .

1 - Approximate life is based on: 1,000 pages per month for the HP Color LaserJet 3500 series printer and 1500 pages per month for the HP Color LaserJet 3700 series printer.
2 - Approximate average A4-/letter-size page count based on approximately 5 percent coverage of individual colors.
3 - Usage conditions and print patterns cause results to vary.

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

Print cartridges and transfer unit

It is recommended that you remove the print cartridges and transfer unit when servicing internal printer components. Place the print cartridges and transfer unit in a safe place while they are out of the printer.

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

Do not place any items on the transfer unit or touch the transfer belt. If the belt is punctured or otherwise damaged, print quality problems will result.

For instructions on removing the transfer unit, see   and for instructions on removing the print cartridges, see   .

The following procedures describe removal of the printers external covers.
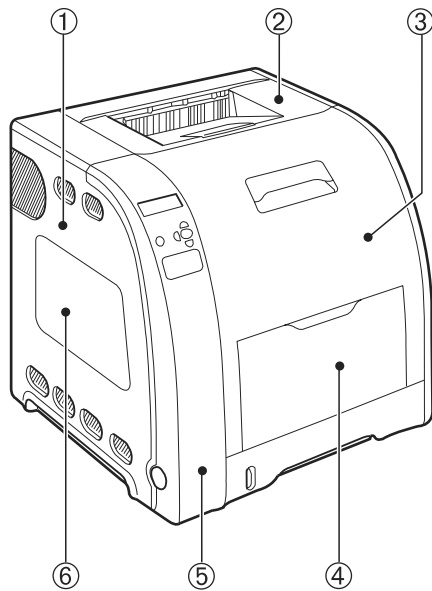
1. Left cover
2. Top cover
3. Front door
4. Tray 1 (multipurpose tray)
5. Left front door (includes control panel)
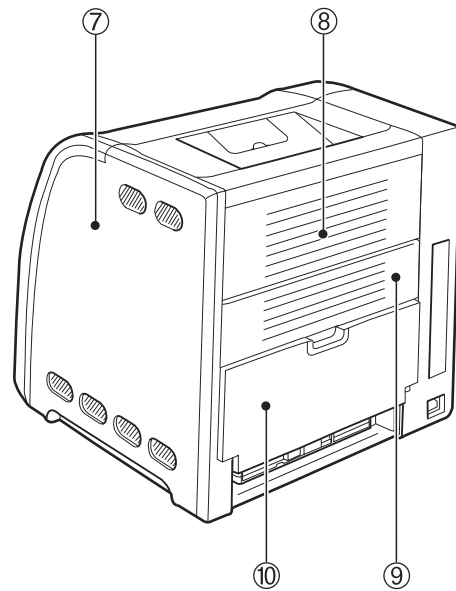
6. DIMM cover (HP3700 only)
7. Right cover
8. Upper rear door
9. Rear cover
10. Lower rear door (rear output bin)

Cover locations

Front door removal

1   Open the front door.

2   Remove the transfer unit and the print cartridges. See   and
.

3   Remove the right cover, see   .

4   Remove the left cover, see   .

5   Remove two e-clips (1) from the front door rod bracket.

6   Remove two screws (2) from the right hinge (3).

Front door removal (1 of 2)

7   Remove two screws (1) from the left hinge (2).
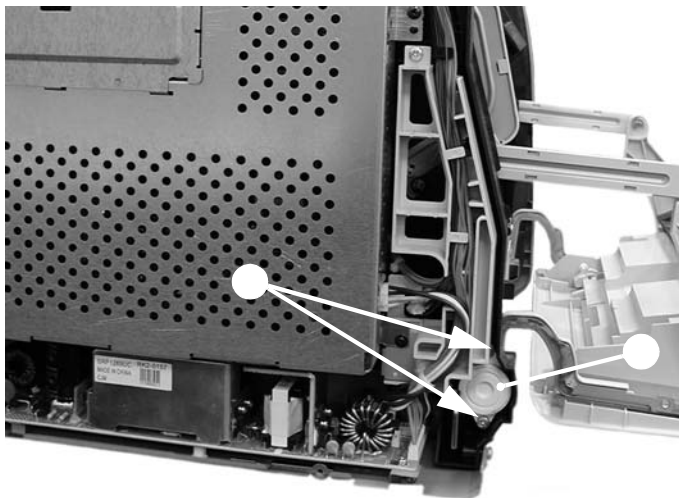
Front door removal (2 of 2)

8 Lifting up slightly on the front door to relieve the pressure on the hinges, pull the hinges out and then remove the front door.

Left cover removal

1 Remove three screws (1).

2 Slide the cover back in the direction of the arrow (2) about one inch, and then pull it out away from the printer to remove it.
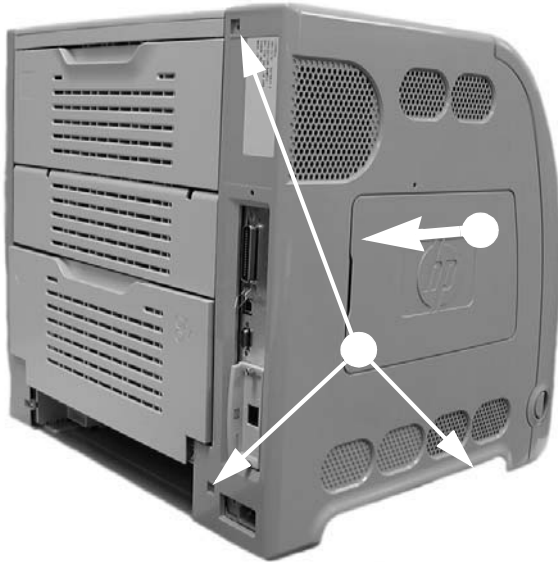
Left cover removal

Left front cover removal

1 Remove left cover. See .

2 Open the front door and remove the transfer unit. See .

3 Disconnect the control panel connector (1) and remove one screw (2). Cut the cable tie that is connected around the cable's ferrite bead (3) and the cable harness (4).

Left front cover removal (1 of 3)

4 Remove the power switch rod (1) from the power switch button (2).

5 If necessary to better access the area, remove the torroid from the cable. To remove the torroid, lift up on the strip (1) and swing the top cover (2) open and then remove the torroid from the wires.

Left front cover removal (2 of 4)

6 Unhook one claw (3) from the bottom of the cover and pull out the bottom of the cover to loosen it.
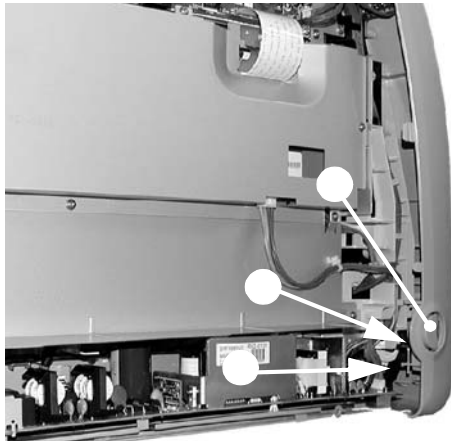
Left front cover removal (2 of 3)

7 Unhook three more claws by pressing in or squeezing, at the indicated locations (1), working up from the bottom, to remove the cover (2) from the printer.
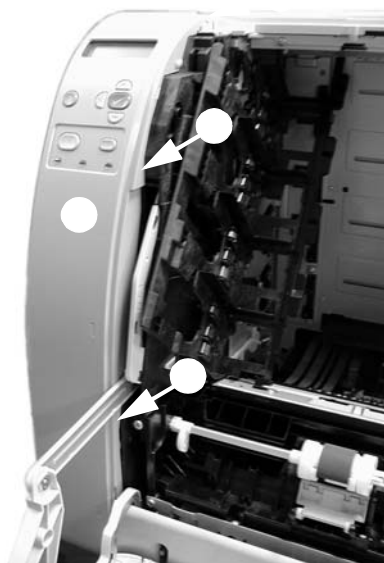
Left front cover removal (3 of 3)

Right cover removal

1   Open the rear output bin and the upper rear door.

2   Remove three screws (1).

3   Pull down and out on the bottom edge of the cover (2) to release two claws, then pull out on the front edge (3) to release the additional claws and remove the cover (4).
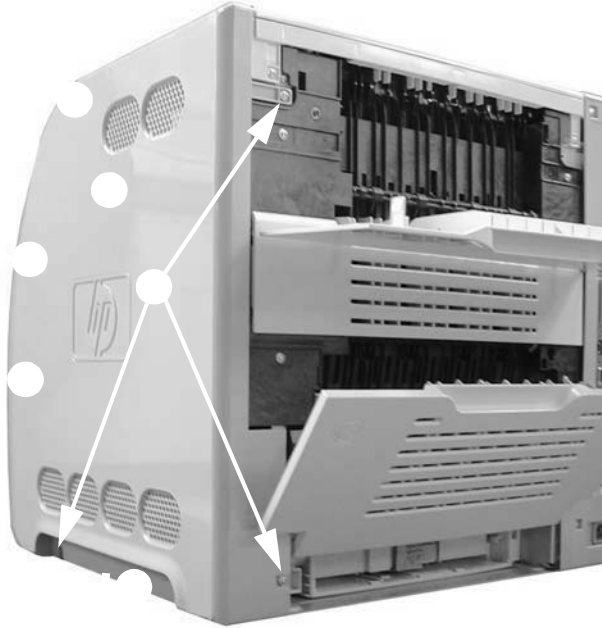
Right cover removal

Top cover removal

1   Open the printer front door and remove the transfer unit. See   .

2   Remove the right cover. See   .

3   Remove the left cover. See   .

4   Remove four screws (1), unhook one claw (2), and lift the cover off the printer.
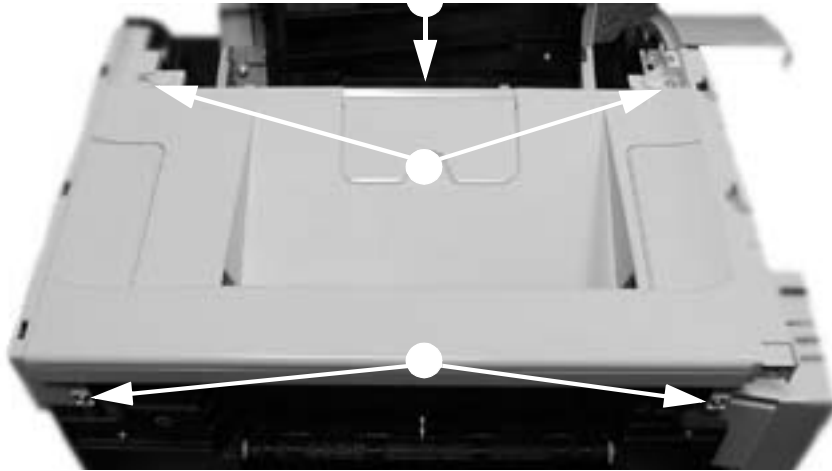
Top cover removal

Upper rear door removal

1   Open the upper rear door.

2   Press in on the left hinge (1), pushing towards the right to release the hinge pin, then pull the left side out and to the left (2) to remove the cover.
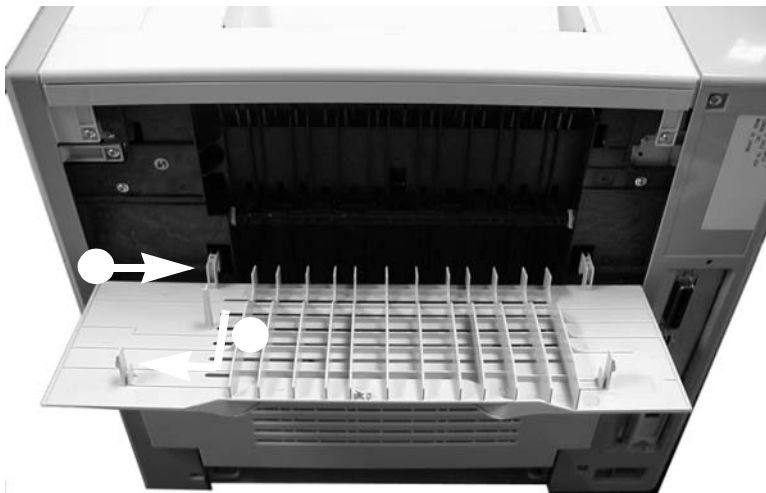
Upper rear door removal

Rear cover removal

1   Release two claws on the right side of the rear cover by inserting a flat-blade screwdriver into each claw location (1) and twist the screwdriver to release each claw, then pull the cover out and to the right (2) to remove it.

Rear cover removal

Lower rear door (rear output bin) removal

1   Open the lower rear door.

2   Press in on the left hinge (1) pushing towards the right to release the pin, then pull the left side of the tray out and to the left (2) to remove it.

Lower rear door removal

Tray 1 (multipurpose) removal

1   Open the Tray 1.

2   Remove two pins (1) by flexing the slotted rail (2) to release the pin.

3   Press in on the left hinge at the base as shown by the arrow, then pull the left side of the tray out and to the right to remove the tray (3).
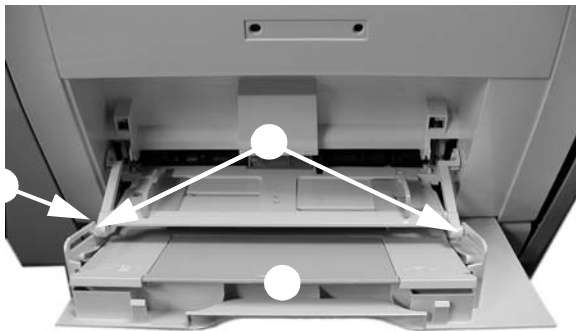
Tray 1 removal

The following procedures describe removal of the printer's major internal mechanical assemblies.
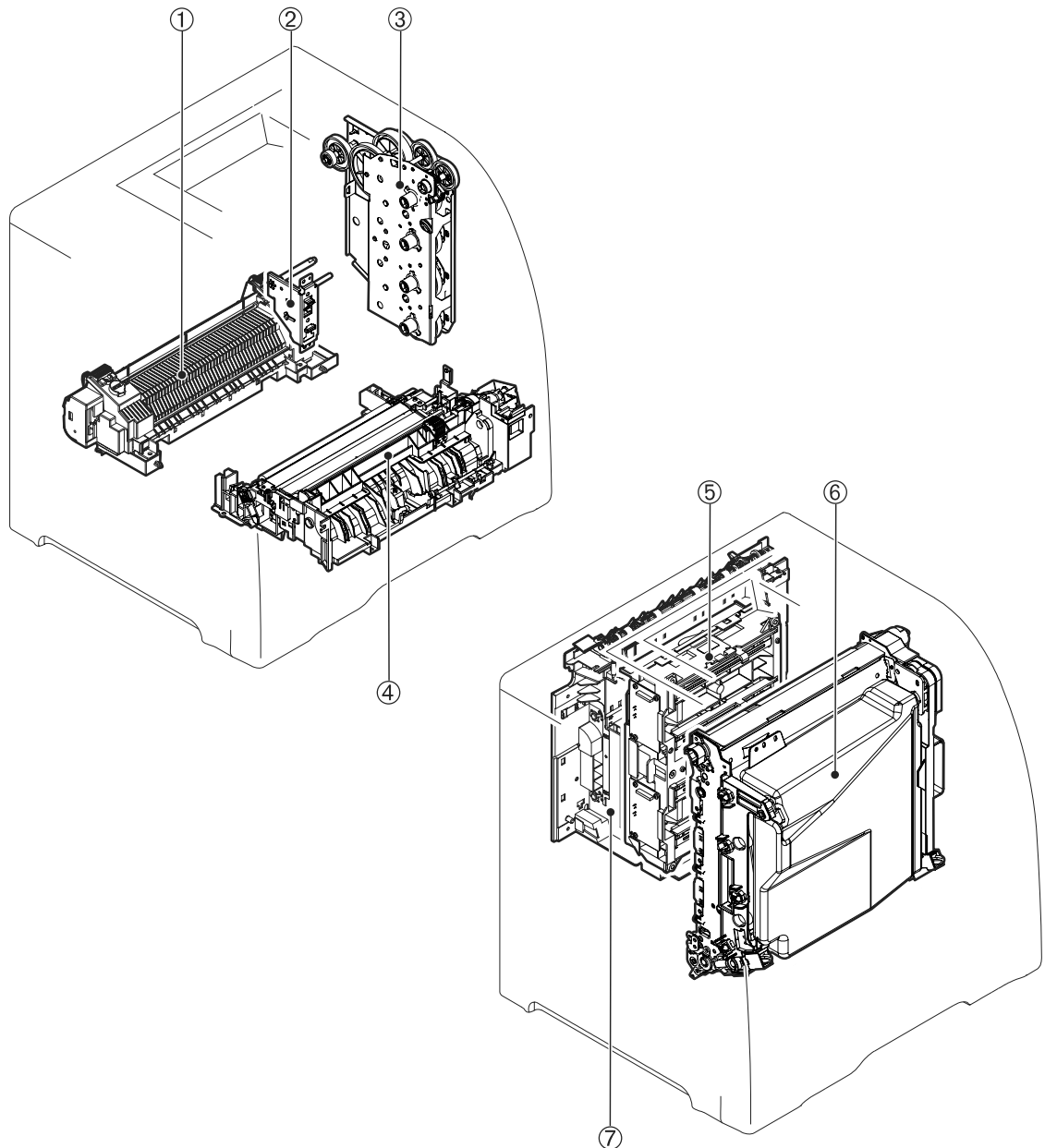
1. Fuser
2. Developing engaging drive assembly
3. Image drive assembly
4. Pick-up/feed assembly

5. Laser/scanner assembly
6. Transfer unit
7. Face-down delivery assembly

Main internal assemblies

Transfer unit removal

Do not touch the surface (5), shown in the figure below, of the image transfer belt (ITB) since it can cause an image defect.

If the transfer unit failed or has been replace for some reason other than reaching its end-of-life (end-of-life is indicated by a control panel message stating that the transfer unit requires replacement) then, in addition to replacing the unit, a configuration procedure must be performed. For information on this configuration, refer to Chapter 8,   .

1   Open the front door.

2   Hold the blue handles (1) on both sides of the transfer unit. With your right thumb, press and hold the lever (2) on the right side handle then lift the handle up (3), followed by the left side (4) to remove the unit.
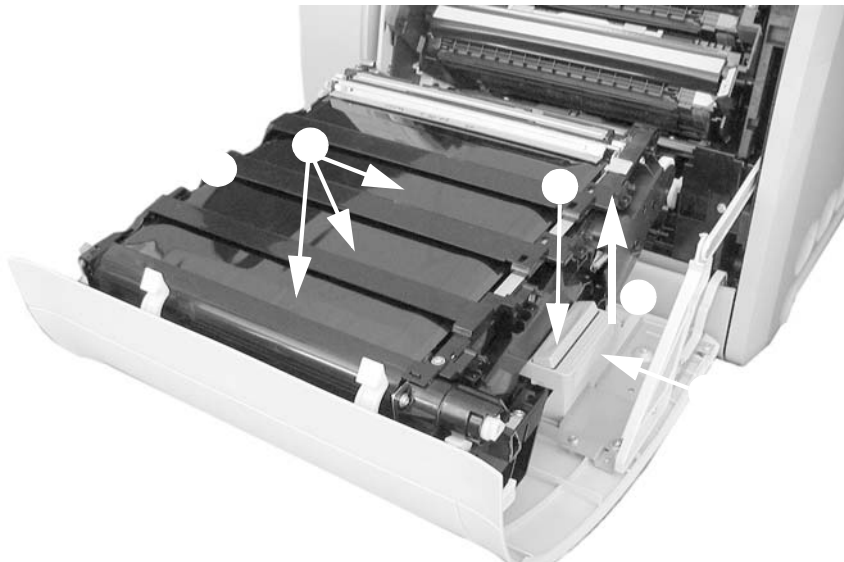
Transfer unit removal
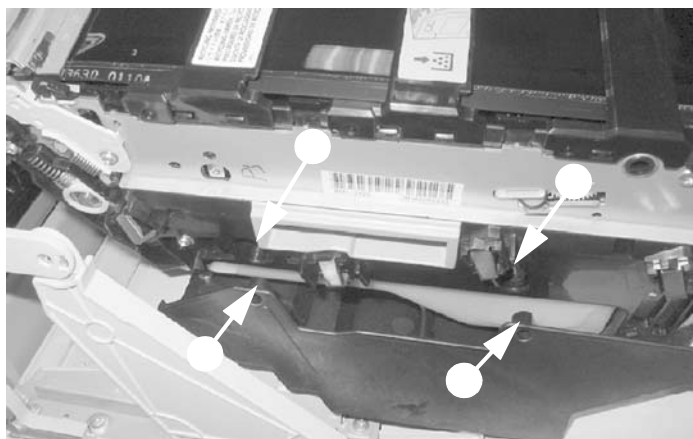
Transfer unit installation

Print cartridge removal

3 Open the front door.

4 Grasp the blue handle (1) of a cartridge and pull it slightly upward and out to remove it.

When performing any servicing inside the printer, all four print cartridges should be removed.

Do not touch the surface of the print cartridge drum (2). The cartridges have flaps that close when the front door is opened to protect the print drum. However, if the flaps do not close, flip them down to cover the exposed area of the print drum.
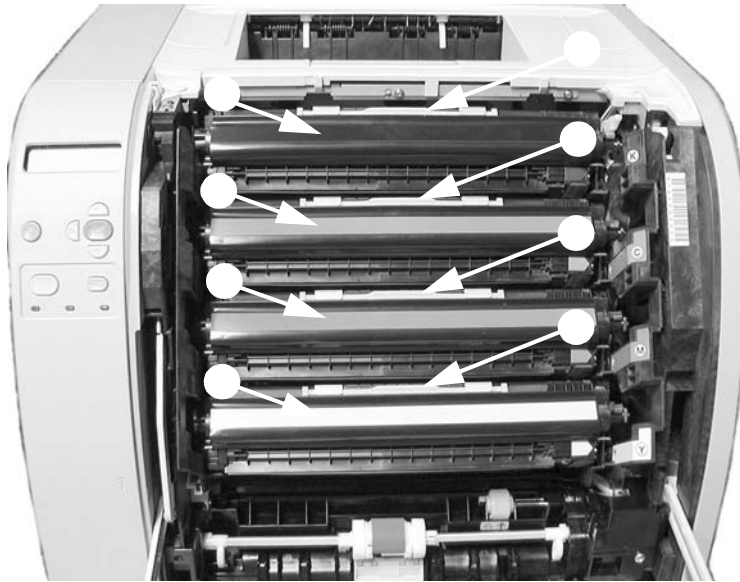
Print cartridge removal

Fuser removal

Be sure to turn the power off and unplug the power cord before removing the fuser.

When removing the fuser, wait ten minutes to allow it to cool before removing it.

If the fuser failed or has been replace for some reason other than reaching its end-of-life (end-of-life is indicated by a control panel message stating that the fuser requires replacement) then, in addition to replacing it, a configuration procedure must be performed. For information on this configuration, refer to Chapter 8,   .

1   Remove the lower rear door. See   .

2   Hold the release tabs on each side of the fuser by placing your thumbs on the top tabs (1) and your forefingers on the lower tabs (2). Press up on the bottom tabs (2) to release the assembly and pull it toward you to remove it.
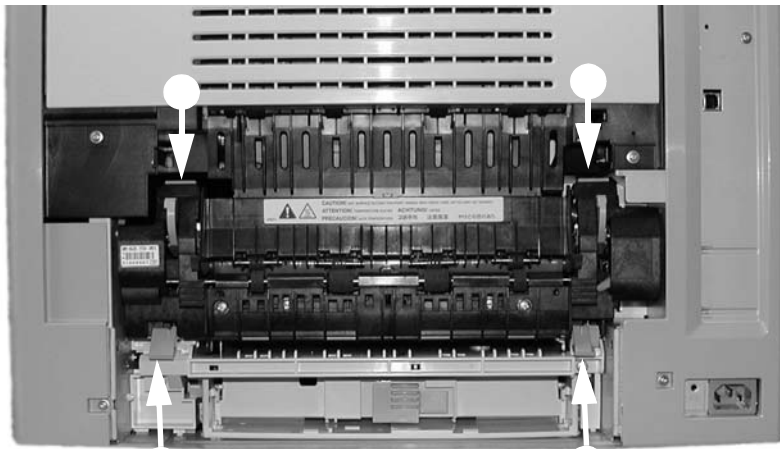
Fuser removal

Face-down delivery assembly removal

1 Remove the following covers:

    a. Upper rear door, see   .

    b. Rear cover, see   .

    c. Lower rear door, see   .

    d. Right cover, see   .

    e. Left cover, see   .

    f. Left front cover, see   .

    g. Top cover, see   .

2 Remove six screws (1).

3 Pull the face-down assembly out slightly, disconnect one connector (2) from the back, and
then remove the assembly (3).
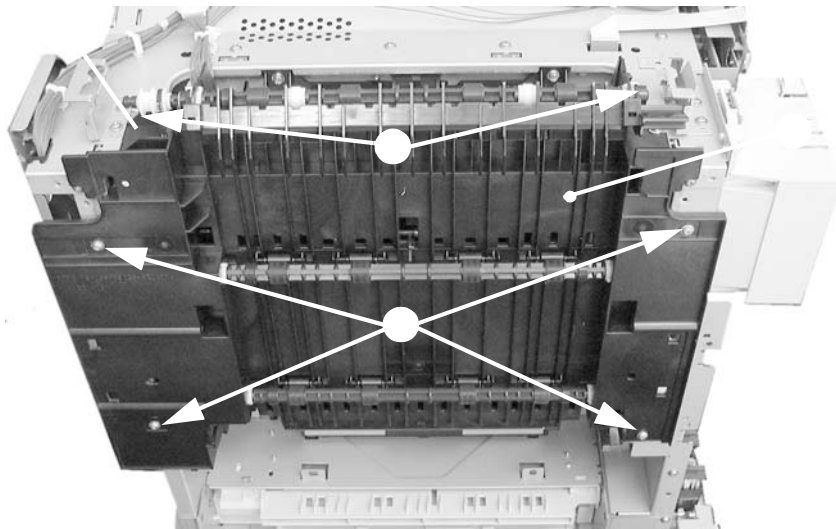
Face-down delivery assembly removal

Laser/scanner assembly removal

Do not disassemble the laser/scanner assembly. It is not adjustable.

Do not touch the lens on the front of the laser/scanner assembly when holding it.

1   Remove the face-down delivery assembly. See   .

2   Remove the exhaust fan (FAN1) assembly. See   ,
    step 9.

3   Remove one connector (1) from the left side of the laser/scanner assembly.

4   Remove six screws (2) and pull the laser/scanner assembly out slightly, disconnect two flat
    cables (3), and remove the assembly.
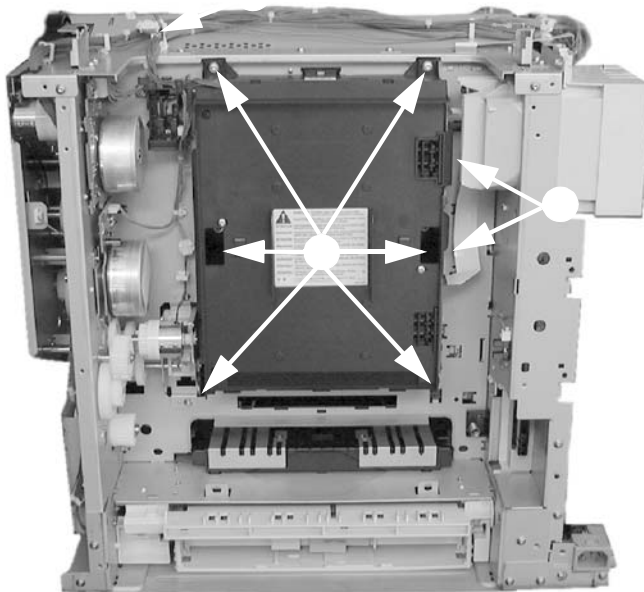
Laser/scanner assembly removal

Image drive assembly removal

Do not disassemble the image drive assembly.

1   Remove the right cover. See   .

2   Push the engaging rack (1) all the way back to the right until it stops. Refer to
                          procedure, step 7, for additional information.

Incorrect installation can result in damage to the print cartridge drive pins, the image drive assembly drive pins, and the swing guide mechanism.

3   Disconnect one connector (2).

4   Remove five screws (3) and remove the image drive assembly (4).
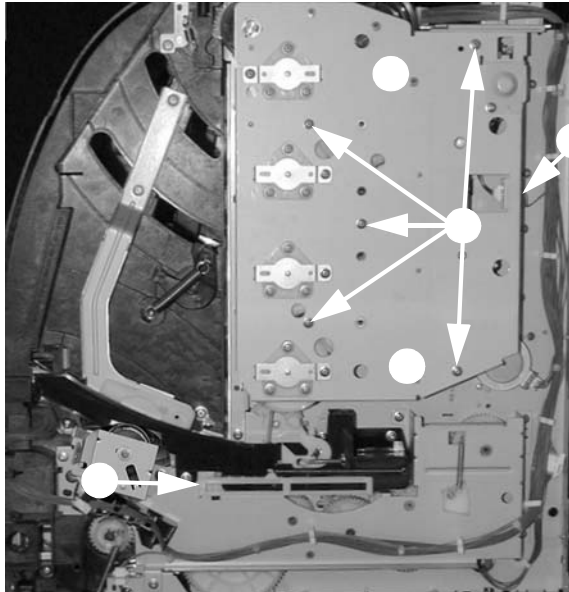
Image drive assembly removal
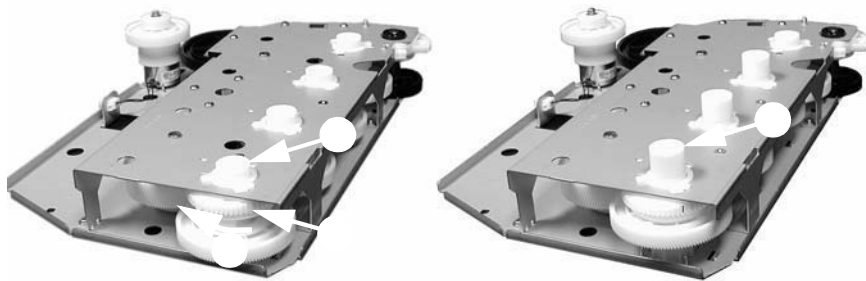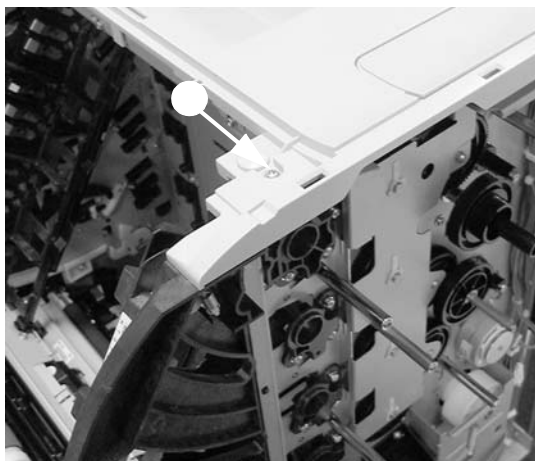
Developing engaging drive assembly removal

1 Remove the laser/scanner assembly. See   .

2 Disconnect one connector (1).

3 Remove two screws (2) and remove the developing engaging drive assembly (3).
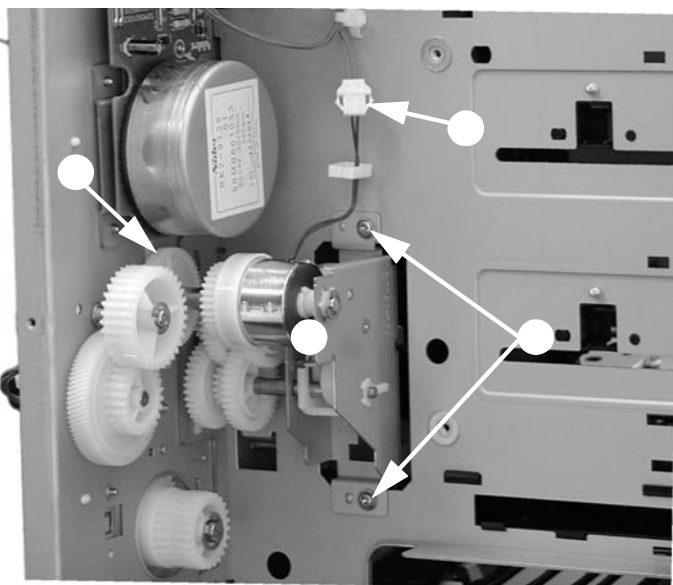
Developing engaging drive assembly removal

Pick-up/feed assembly removal

1   Remove the right cover. See   .

2   Open the front door and remove the transfer unit. See   .

3   Remove the print cartridges. See   .

4   Remove two screws (1) and disconnect the right rod bracket (2) from the front door.
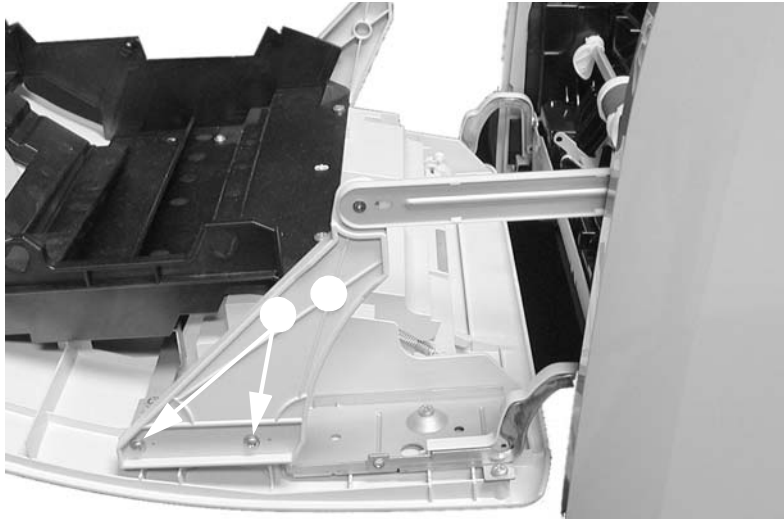
Pick-up/feed assembly removal (1 of 13)

5   Remove two screws (1) and disconnect the left rod bracket (2) from the front door.

Pick-up/feed assembly removal (2 of 13)

6 Remove two screws (1) and remove the right swing rod arm (2).
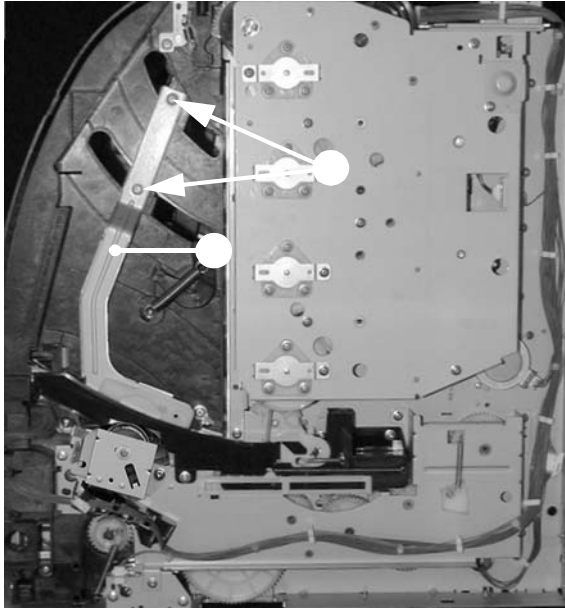
Pick-up/feed assembly removal (3 of 13)
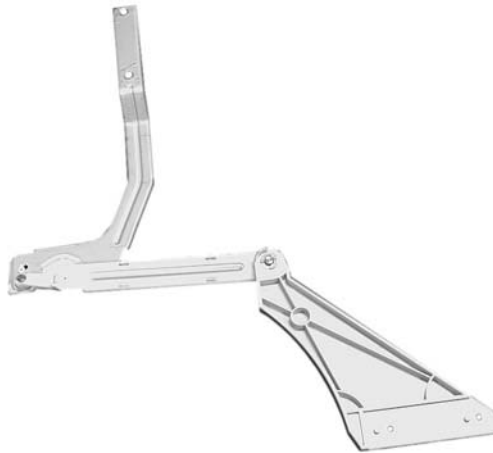
Right swing rod arm reassembly

7 Push the engaging rack (1) all the way back, as shown by the arrow (2), until it stops.

8 Remove two screws (3) and remove the swing rod/lock guide (4).
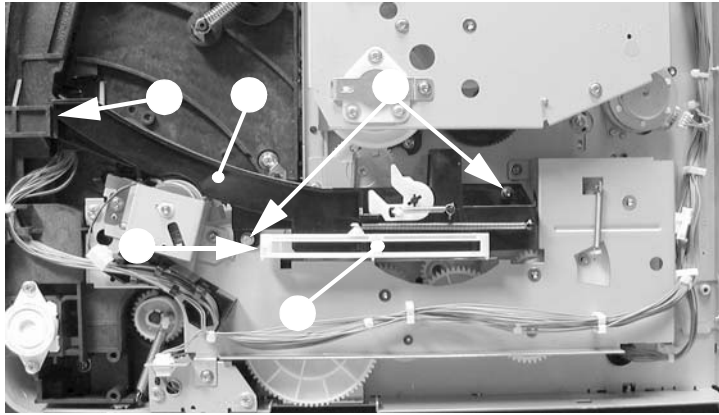
Pick-up/feed assembly removal (4 of 13)
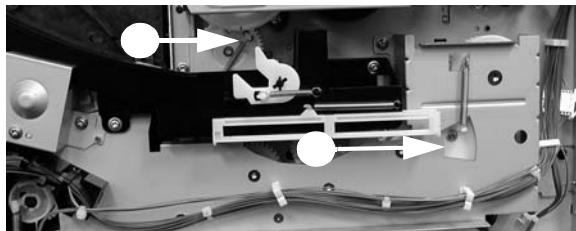
Pick-up/feed engaging rack assembly replacement (1 of 2)
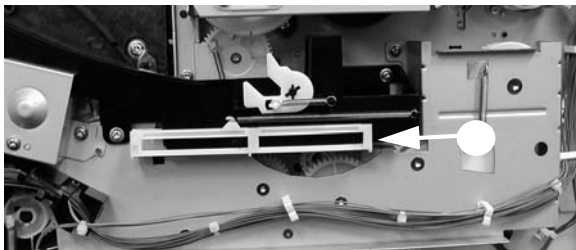
Pick-up/feed engaging rack assembly replacement (2 of 2)
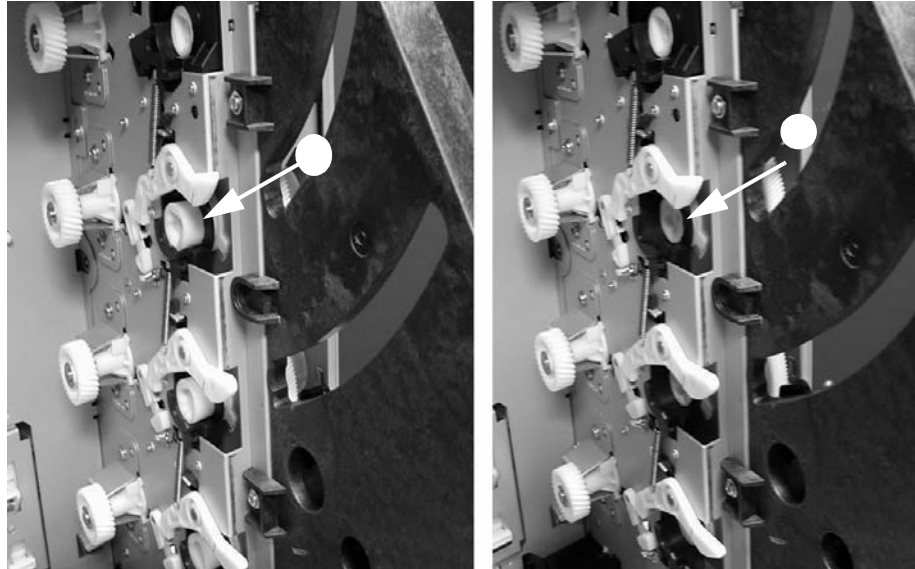
Print cartridge engaging pins replacement

9 Disconnect one connector (1), remove two screws (2), remove the clutch plate (3), and remove the clutch (4).
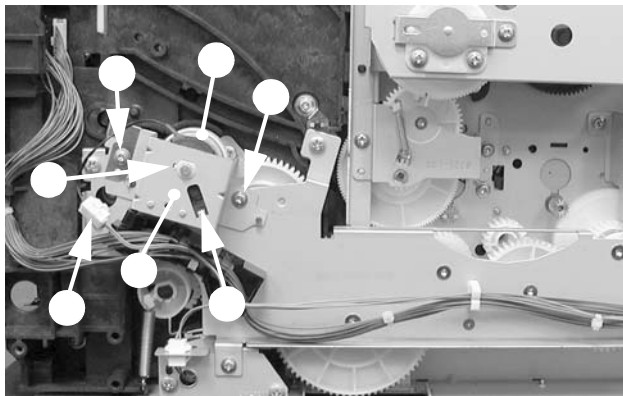
Pick-up/feed assembly removal (5 of 13)

10 Disconnect three connectors (1).

11 Remove the cable (2) from the cable holders (3).

12 Remove six screws (4) and remove the main gear plate (5).
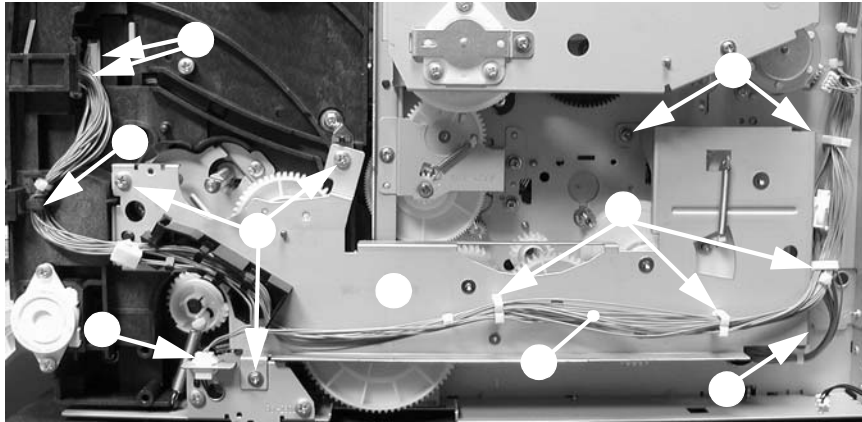
Pick-up/feed assembly removal (6 of 13)
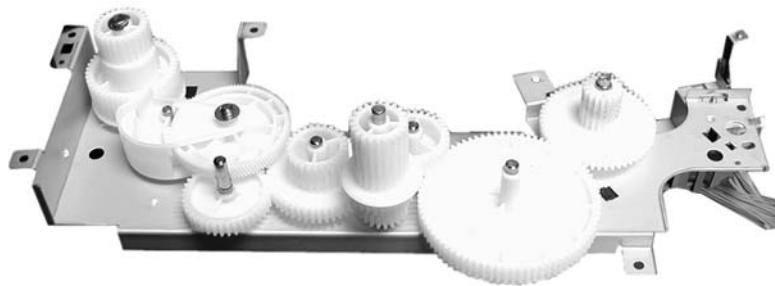
Gear plate gear locations replacement

13 Remove gear (1) (this gear might have come off when the gear plate was removed in the previous step). (Gear (4) might also have come off during removal of the gear plate but, should be reinstalled as shown below).

14 Remove two screws (2) and lay the solenoid cover plate (3) down (it will still be connected to the solenoid).
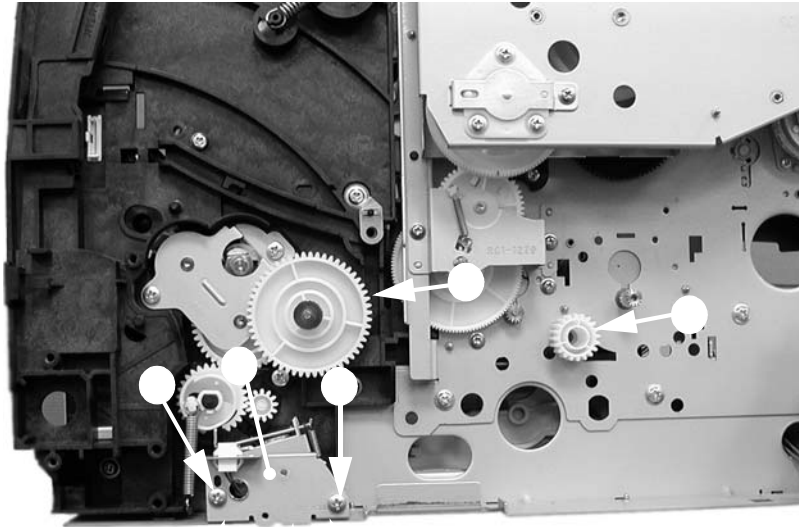
Pick-up/feed assembly removal (7 of 13)

15 Disconnect one spring (1).

16 Remove two screws (2) and remove the gear unit (3).
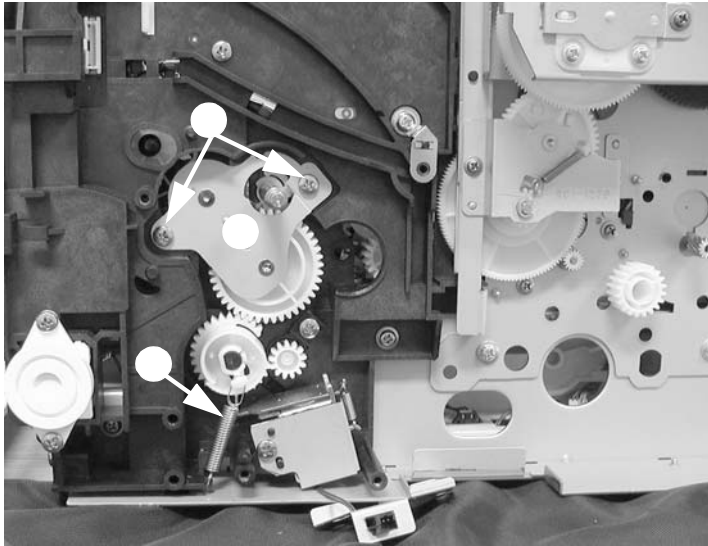
Pick-up/feed assembly removal (8 of 13)

17 Remove two screws (1).

18 Unhook one claw (2) and pull the Tray 2 pick-up gear (3) off the shaft.

19 Remove one screw (4) and remove the solenoid cover and solenoid (5).
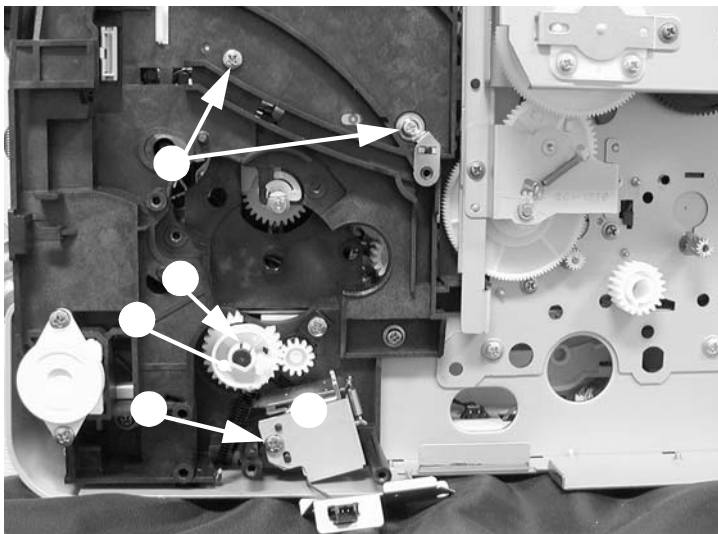
Pick-up/feed assembly removal (9 of 13)

20 Lift the bushing tab (1) up slightly, rotate it in the direction of the arrow (2), and then pull both the bushing and the Tray 2 pick-up roller shaft (3) out of the printer.

21 Lift the bushing tab (4) up slightly, rotate it in the direction of the arrow (5), and then pull both the bushing and the metal shaft (6) out of the printer. The shaft has a pin through the end that requires you rotate the shaft while pulling on it to release it.
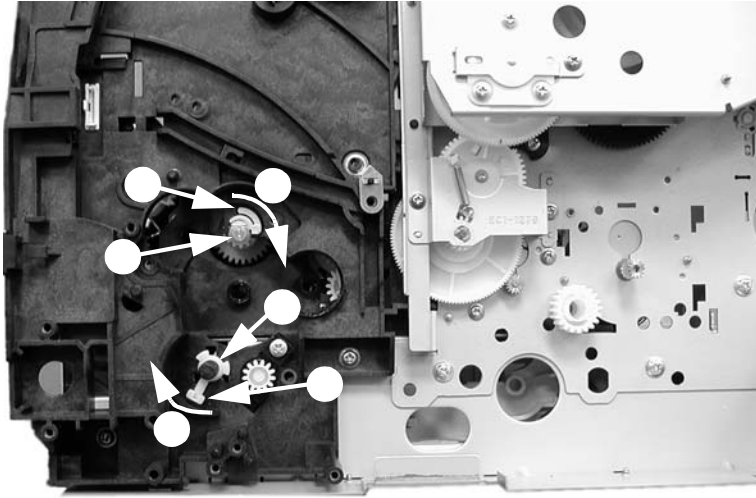
Pick-up/feed assembly removal (10 of 13)

22 Push the right swing guide (1) all the way back.

23 Unhook two claws (2) and remove the connector cover (3). (It may be easier to unhook the upper claw from the other side of the printer frame.)

24 Release one claw (4) and remove the right swing guide rail (5). (It may be easier to unhook the claw from the other side of the frame.)
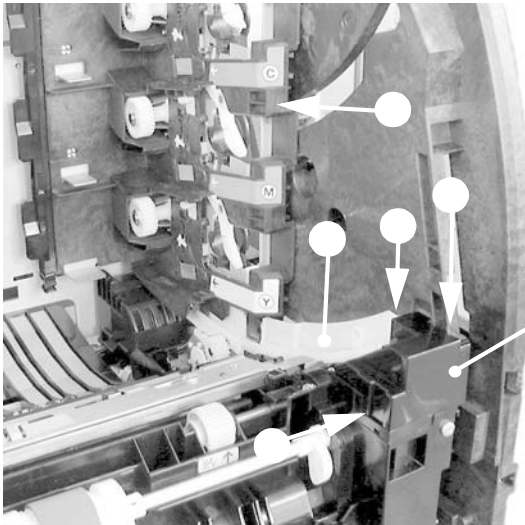
Pick-up/feed assembly removal (11 of 13)

25 Release one pin (1) and remove the front left swing guide rail (2). In addition to the pin at the back of the rail, the front is secured with sticky tape. Apply steady pressure to release it.
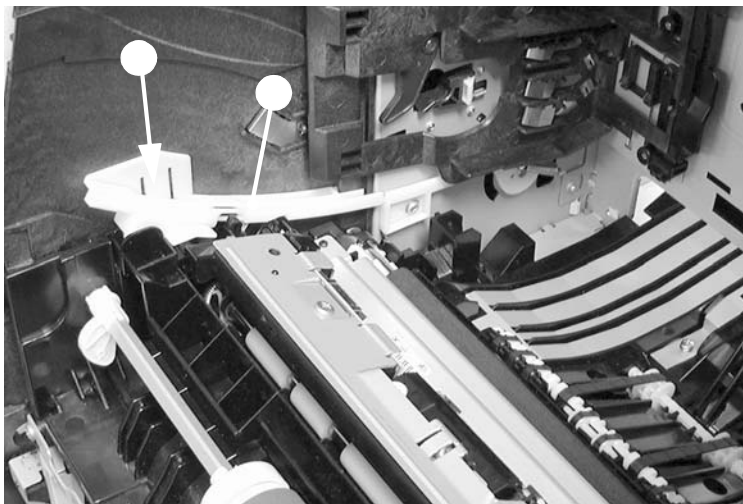
Pick-up/feed assembly removal (12 of 13)

26 Disconnect three connectors (1).

27 Remove eight screws (2) and unroute the cable (3).

28 For the HP Color LaserJet 3500 series printers, remove the pick-up/feed assembly (5); for the HP Color LaserJet 3700 series printers, release the duplex pan by pulling out on the green button (4), and then remove the pick-up/feed assembly (5).
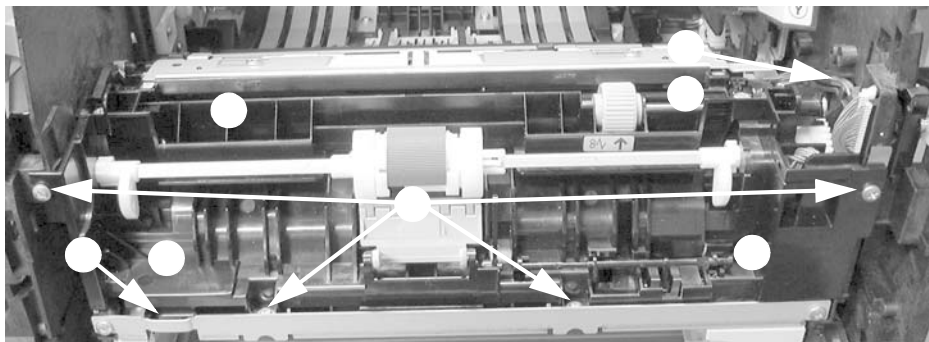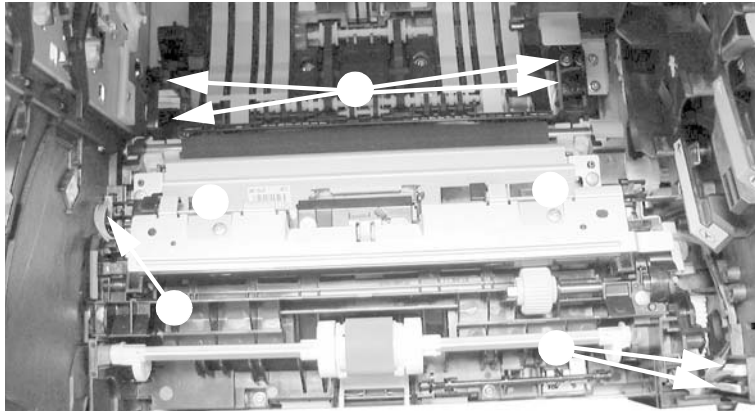
Pick-up/feed assembly removal (13 of 13)

The following procedures describe removal of parts located on or around the major internal mechanical assemblies.
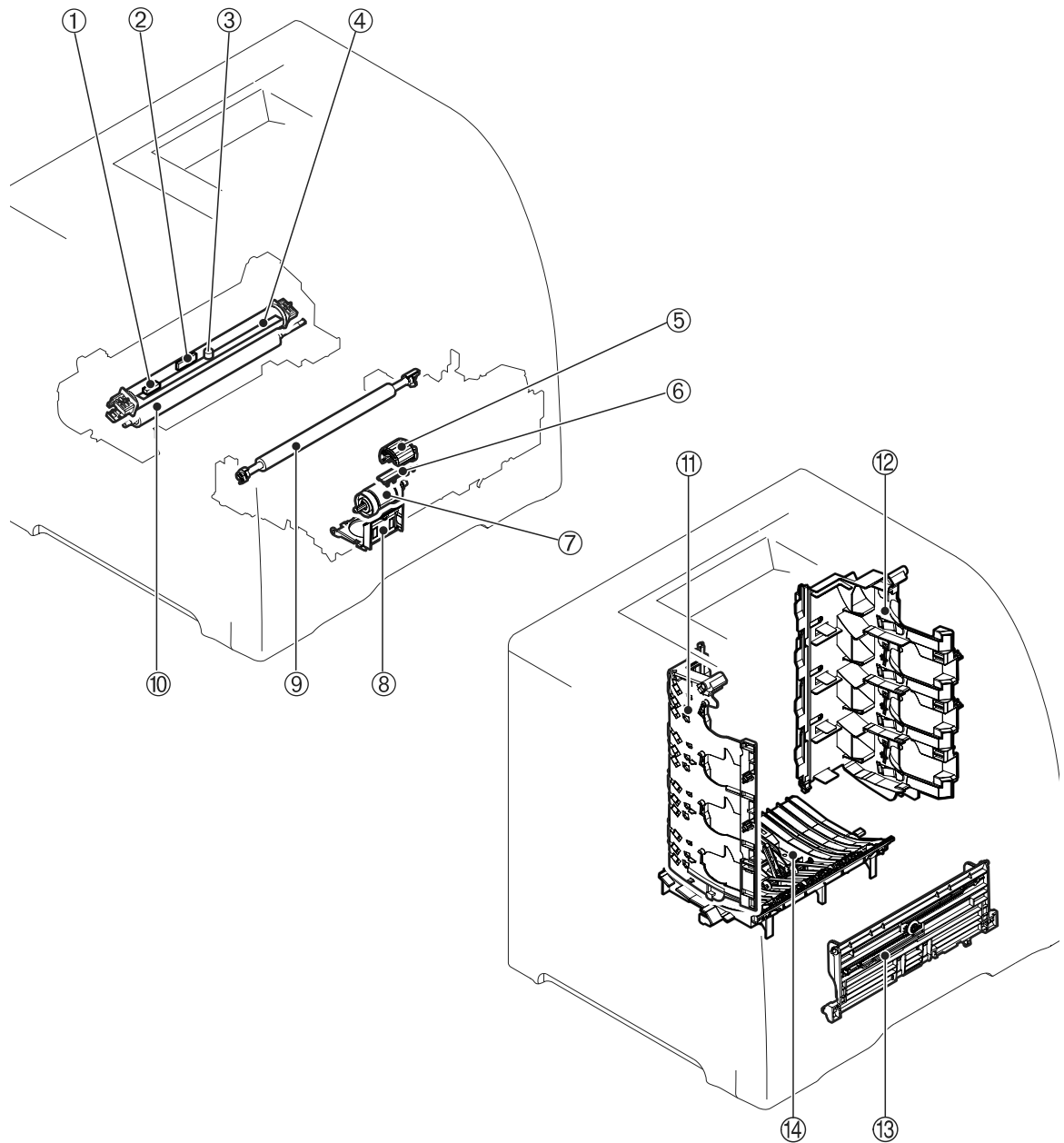
1. Sub thermistor (TH2)
2. Main thermistor (TH1)
3. Thermoswitch (TP)
4. Fuser sleeve unit
5. Tray 1 (multipurpose) pick-up roller
6. Tray 1 separation pad
7. Tray 2 pick-up roller

8. Tray 2 separation pad
9. Secondary transfer charging roller
10. Pressure roller
11. Left swing guide
12. Right swing guide
13. Tray 1 guide unit
14. Feed guide unit

Main assemblies parts location

Tray 1 pick-up roller removal

1   Remove the transfer unit. See   .

2   Unhook one claw (1) and slide the idler roller (2) in the direction of the arrow.

3   Rotate the Tray 1 pick-up roller (3) upwards to release it from the shaft and lift the roller out.
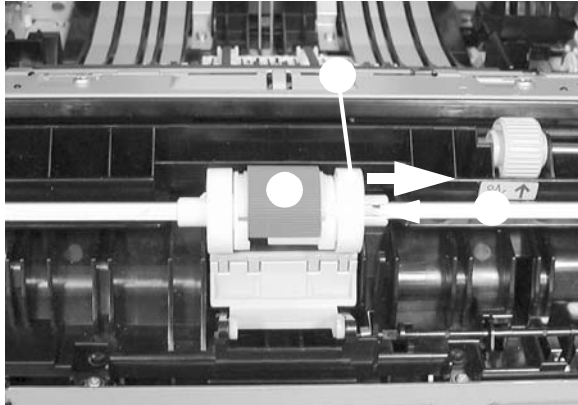
Tray 1 pick-up roller removal

Replace the separation pad whenever you replace the pick-up roller.

Tray 1 separation pad removal

1   Remove the Tray 1 pick-up roller. See   , above.

2   Slide the left idler roller (1) in the direction of the arrow (2).

3   Place a flat-blade screwdriver under each slot (3) and twist the screwdriver to pry the pad loose to remove it.
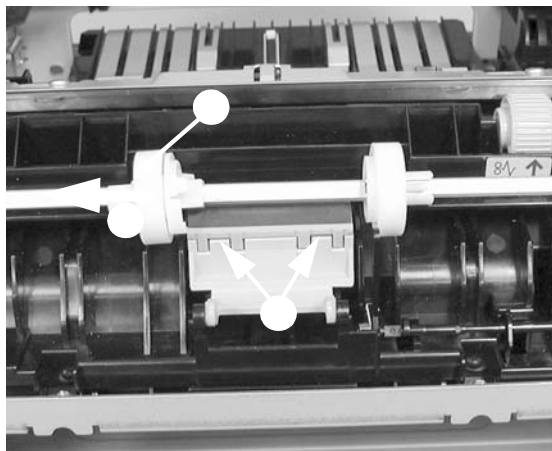
Tray 1 separation pad removal

Replace the pick-up roller whenever you replace the separation pad.

Tray 2 pick-up roller removal

1 Remove Tray 2.

2 Push the roller (1) in the direction of the arrow, then remove it by pulling the right side out (2) first.
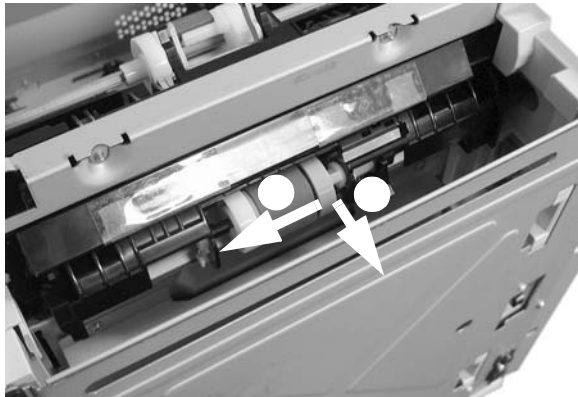
Tray 2 pick-up roller removal

Tray 2 separation pad removal

1 Remove Tray 2.

2 Remove any paper from the tray.

3 Push the lifting plate (1) down.

4 Unhook two claws (2) by pressing in on them, then lift up on the separation pad (3) to remove it.
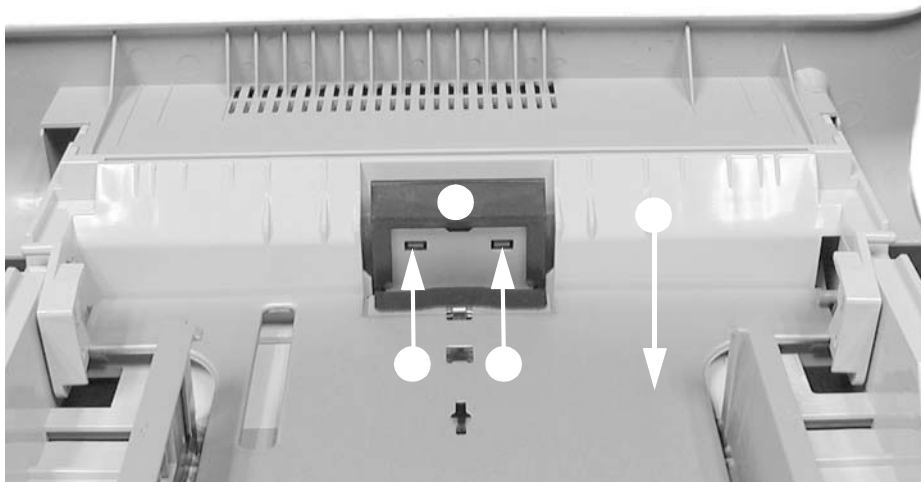
Tray 2 separation pad removal

Secondary transfer charging roller removal

1 Remove the transfer unit and the print cartridges. See   and
.

When handling the secondary transfer charging roller, hold the shaft and bushing; do not hold the sponge part of the roller.

2 Lift the blue handle (1) straight up, once the right side is out, continue lifting to release the left side and remove the roller (2).
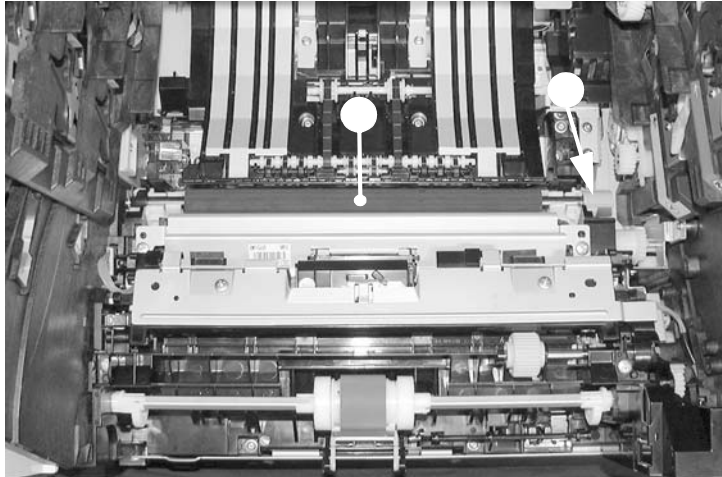
Secondary transfer charging roller removal

Fuser sleeve unit removal

Replacement of the fuser sleeve unit requires replacement of the entire fuser. See   .

Pressure roller removal

Replacement of the pressure roller requires replacement of the entire fuser. See   .

Main thermistor/sub-thermistor removal

Replacement of the main thermistor and the sub thermistor requires replacement of the entire fuser. See   .

Thermoswitch removal

Replacement of the thermoswitch requires replacement of the entire fuser. See   .

Feed guide unit removal

1 Release the right and left rod brackets from the front door. See removal procedure, steps 1 through 5.

2 Push the swing guides all the way back.

3 Remove the secondary transfer charging roller. See .

4 Remove the fuser. See .

5 Using both hands, grasp the air duct (2) and apply pressure (by pinching the top and bottom of the duct at the locations indicated by callouts (1)) to release two claws (1) located on the bottom rear of the duct. Swing the front of the air duct upwards to remove it.
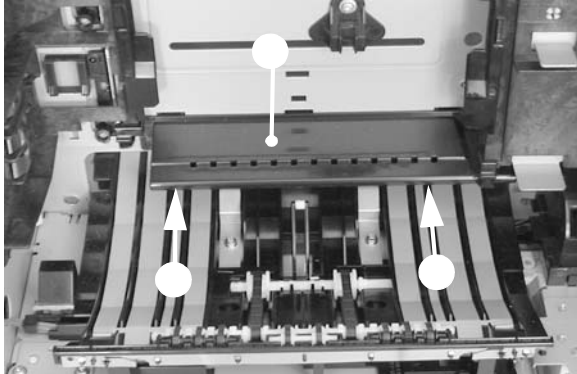
Feed guide unit removal (1 of 2)

6 Push both swing guides all the way back (1), remove four screws (2), and remove the feed guide (3).
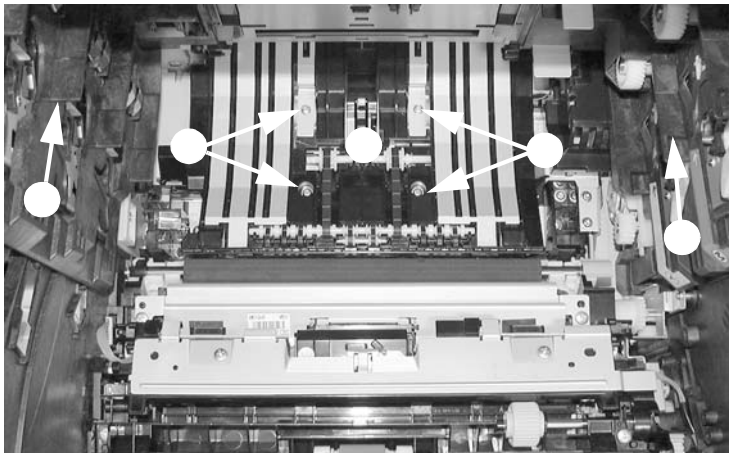
Feed guide removal (2 of 2)
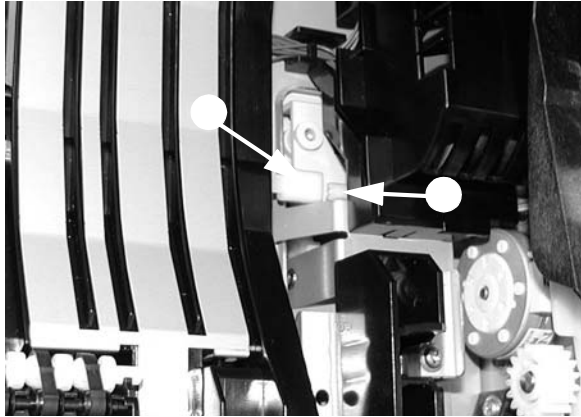
Feed guide/printer drive shaft connection
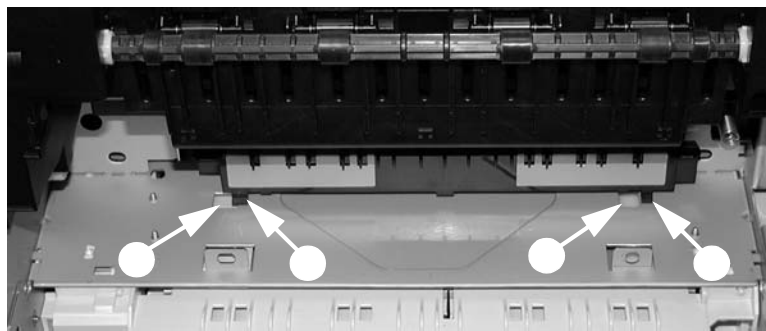
Feed guide unit tab locations

Swing guide removal, right

1 Open the front door and remove the transfer unit and the print cartridges. See
    and   .

2 Remove the top cover. See   .

3 Remove the print cartridges. See   .

4 Remove two screws (1) from the right rod bracket (2) to release the bracket from the door.

Right swing guide removal (1 of 4)

5 Remove two screws (1) and remove the swing rod arm (2).
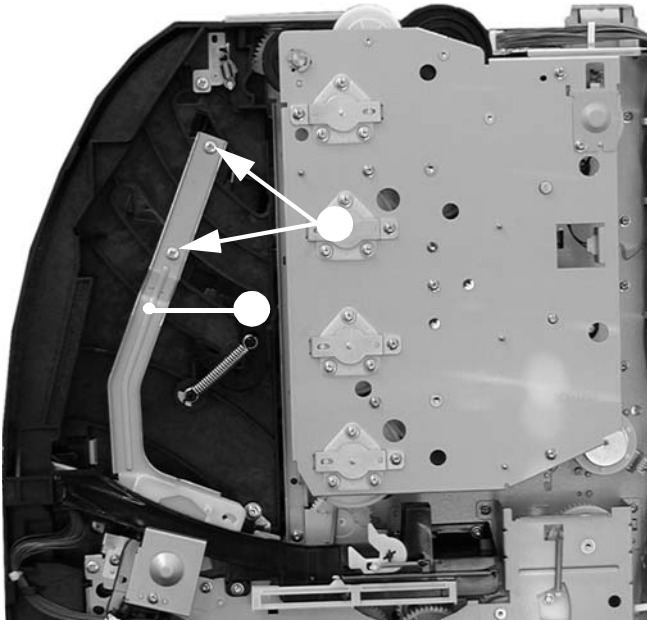
Right swing guide removal (2 of 4)

6 Push the swing guide (1) in as far as it will go.

Right swing guide removal (3 of 4)

7 Remove one spring (1) and then pull the developing (drum) lock arm (2) off its shaft.

Right swing guide removal (4 of 4)

8 Remove the right, front swing guide rail, see   , step 24. Make
sure to remove the screw that secures the rail (screw (1) mentioned in step 19 of the Pick-up/
feed assembly removal procedure).

1   Pull the swing guide (1) toward you as far as it will go, move it slightly to the left (this allows it to be pulled forward a little more), and pull it forward until it stops. Now, pull the swing guide to the left to remove it. The swing guide should pull out easily; do not force it, it is easy to break.

The swing guide has a retainer (1) that holds the swing guide shaft (2) in place. This retainer prevents the swing guide from being removed until the guide is all the way forward as show in the figure below. (This view is hidden by the image drive assembly and cannot be seen unless that assembly has been removed.)
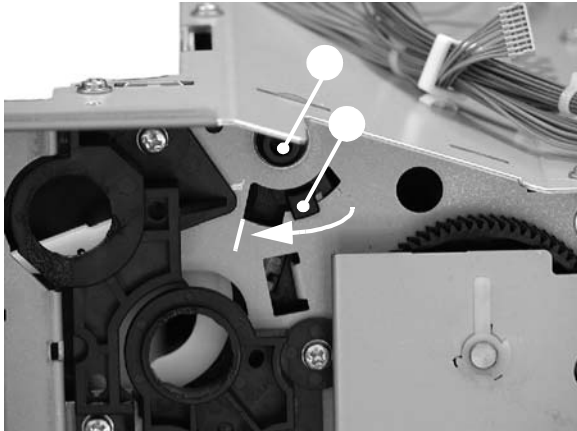
Swing guide shaft removal
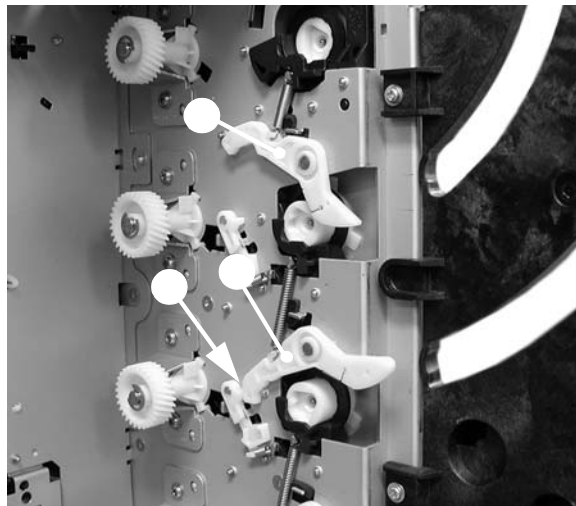
Developing (drum) lock arm position for swing guide installation

Swing guide removal, left

1 Remove the high-voltage power supply PCB. See   .

2 Remove the cables (1) from the cable harness (2).

3 Remove the screw (4) from the bracket (3), and remove the metal bracket.
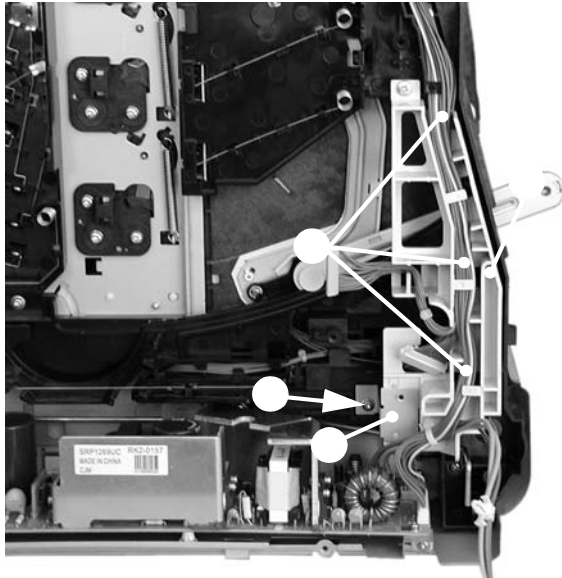
Left swing guide removal (1 of 6)

4   Remove three screws (1) and swing the cable harness (2) to the right. The cable harness does not need to be completely removed to remove the transfer contact assembly. However, if the cable harness needs to be removed, disconnect the cable connector (3) from the back of the harness to remove the harness.
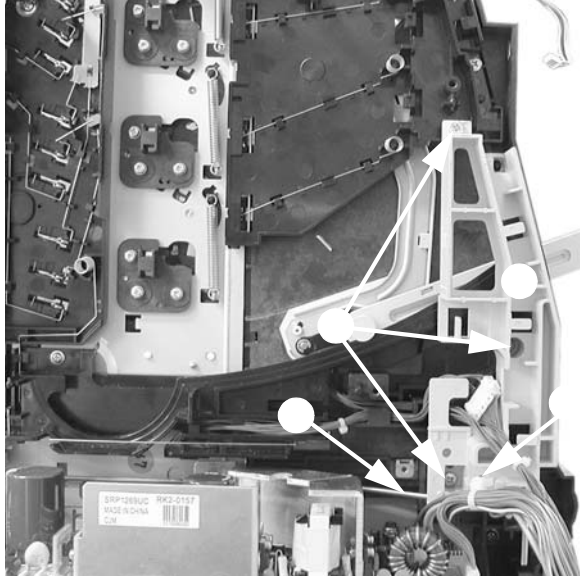
Left swing guide removal (2 of 6)

5   Remove one screw (1) and unhook three claws (2) to remove the transfer contact assembly (3).
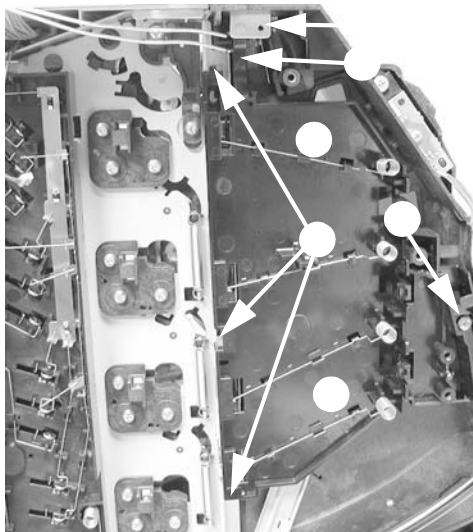
Left swing guide removal (3 of 6)

6 Remove two screws (1) and remove the left swing rod arm (2).
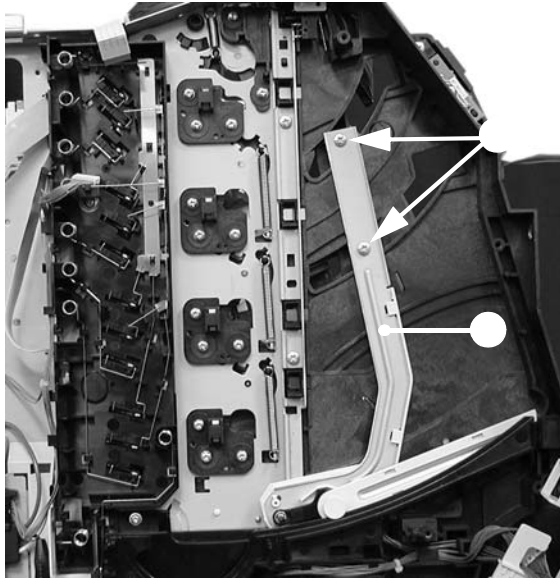
Left swing guide removal (4 of 6)

7 Push the left swing guide (1) in, as far as it will go (2).
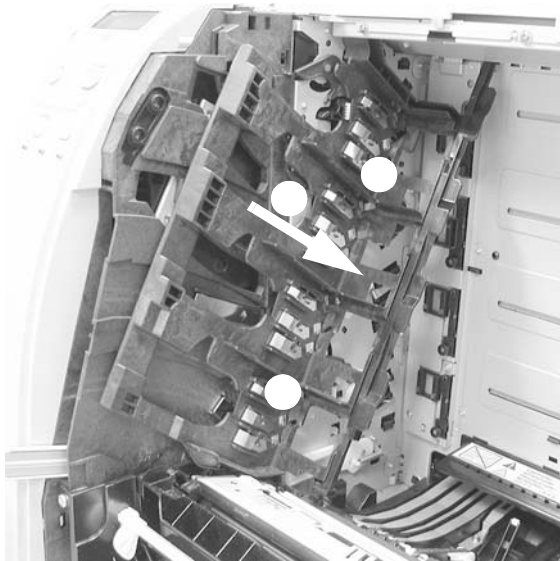
Left swing guide removal (5 of 6)

8   Remove one spring (1) and remove the developing (drum) lock arm (2).
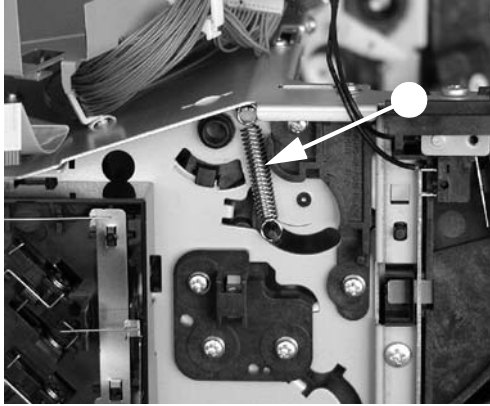
Left swing guide removal (6 of 6)

9   Remove the white left swing guide rail. See   , step 25.

10 Pull the left swing guide (1) toward the front of the printer.

11 Remove the swing guide by pulling it to the right, being careful not to force it. The guide must be positioned all the way forward to release the catch on the shaft, which will allow the swing guide to be removed.

Left swing guide replacement
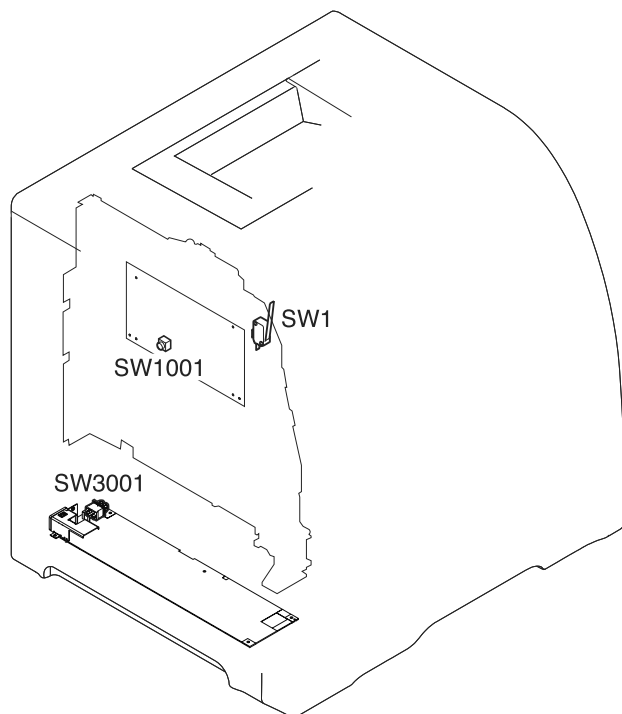
SW1:   Door switch
SW1001:   Test print switch
SW3001:   Power switch

Switch locations

Door Switch (SW1) removal

1   Refer to the left swing guide removal procedure, steps 1 through 5, and remove the transfer contact assembly. See   .

2   Remove the door switch (1) by sliding it out.
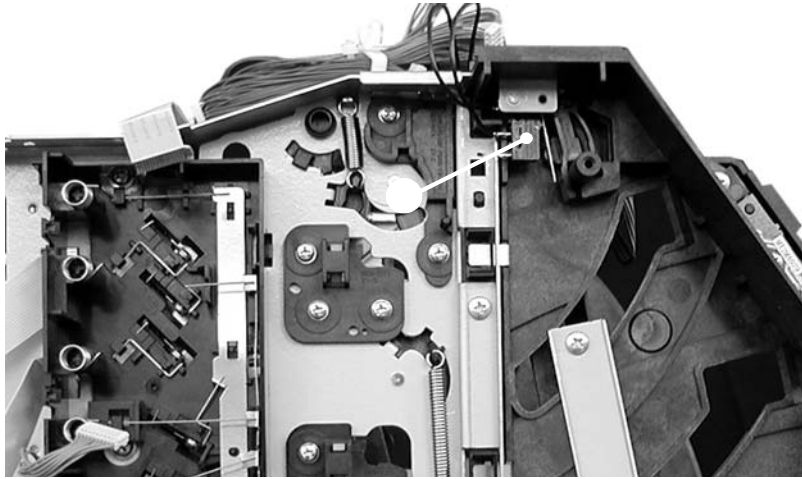
Door switch removal

Test print switch (SW1001) removal

Replacing the test print switch requires the replacement of the DC controller PCB. See
.

Power switch (SW3001) removal

Replacing the power switch requires replacement of the low-voltage power supply PCB. See
.

PS1:	Tray 1 (multipurpose) paper sensor	PS10:	Duplexing feed delivery paper sensor
PS2:	Tray 2 (cassette) paper sensor	PS11:	Face-up tray sensor
PS4:	Registration paper sensor	PS12:	Color misregistration sensor
PS5:	Media sensor	PS13:	Waste toner level sensor
PS6:	Fuser front paper sensor	PS14:	Developing engaging sensor
PS7:	Fuser delivery paper sensor	PS15:	Environment sensor
PS8:	Face-down delivery paper sensor	PS16:	Secondary transfer roller engaging sensor
PS9:	Reversed paper sensor		

Sensor locations

Tray 1 (multipurpose tray) paper sensor (PS1) removal

Replacement of the Tray 1 paper sensor requires replacement of the entire pick-up/feed assembly. See   .

Tray 2 (cassette) paper sensor (PS2) removal

1   Remove the pick-up/feed assembly. See   .

2   Turn the pick-up/feed assembly over.

3   Remove the Tray 2 pick-up roller (1) by pushing in on the right side (2) of the roller unit and then pull it out and to the right (3) to remove it.
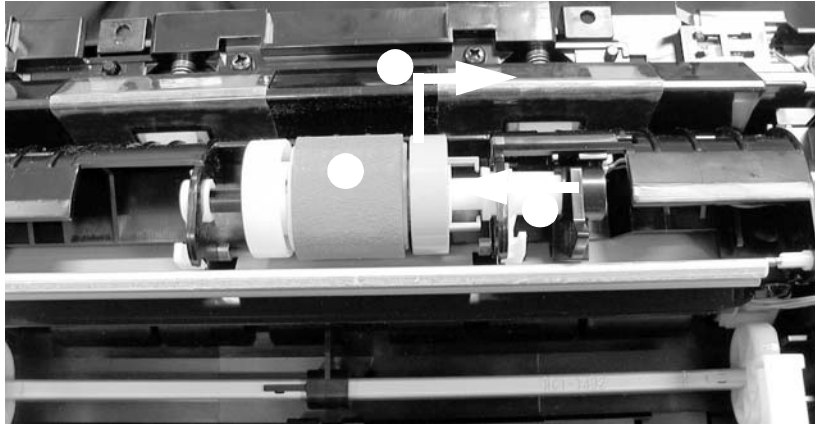
Tray 2 paper sensor removal (1 of 3)

4 Unhook the bushing claw (1) by pushing it in, then rotate it in the direction of the arrow (2), and remove both the bushing (3) and black sensor arm (4).
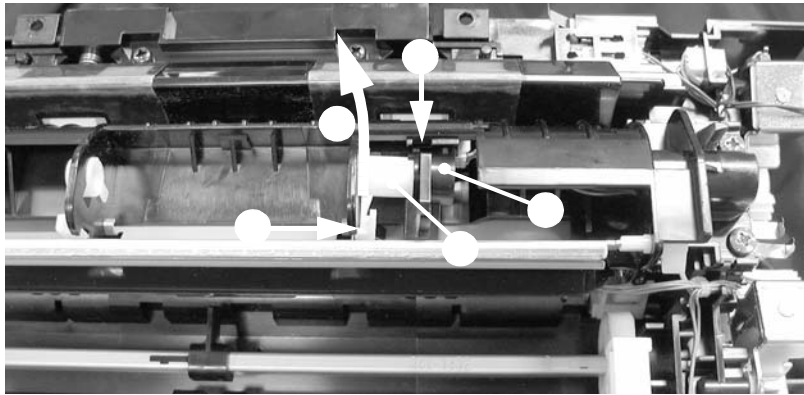
Tray 2 paper sensor removal (2 of 3)

5 Unhook two claws (1) and pull the paper sensor (2) out, disconnecting the connector (3) once the sensor is pulled away from the assembly.
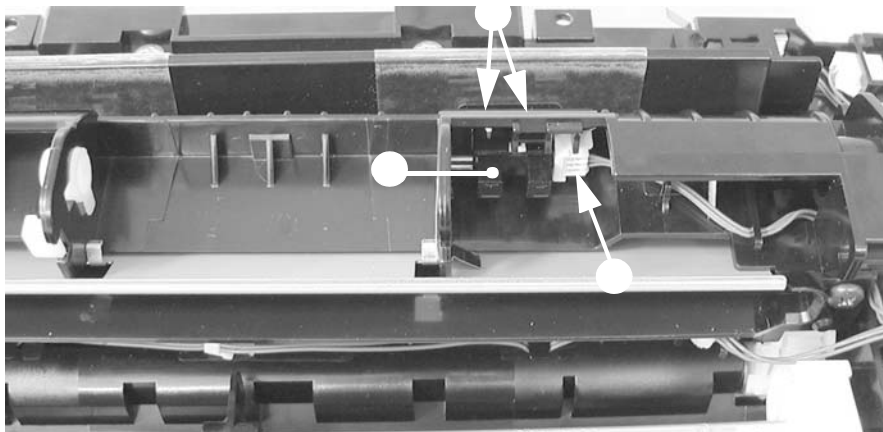
Tray paper sensor removal (3 of 3)

Registration paper sensor (PS4) removal

1   Remove the pick-up/feed assembly. See   .

2   Remove one screw (1) and remove the registration paper sensor holder (2).
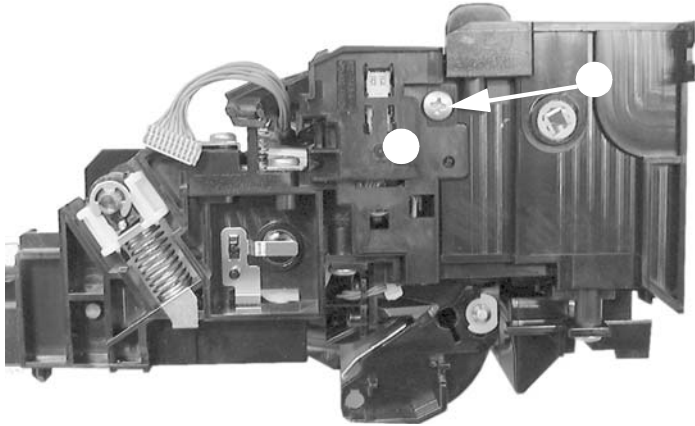
Registration paper sensor removal (1 of 2)

3   Unhook two claws (1), disconnect one connector (2), and remove the registration paper sensor (3) from the sensor holder.
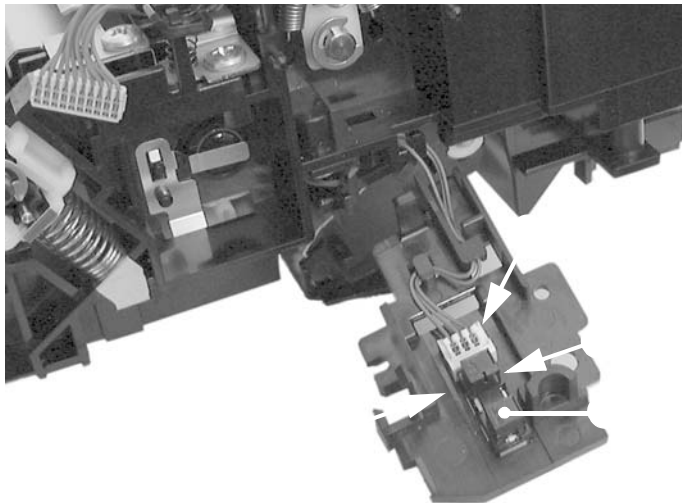
Registration paper sensor removal (2 of 2)

Media sensor (PS5) removal

When the media sensor is replaced, in addition to replacing the sensor, a configuration procedure must be performed. For information on this configuration, refer to Chapter 8,
.

1 Remove the color misregistration sensor. See   .

2 Disconnect one connector (1).

3 Swing the front side of the media sensor upward (2), then lift the sensor (4) up, removing it from the two shafts (3).
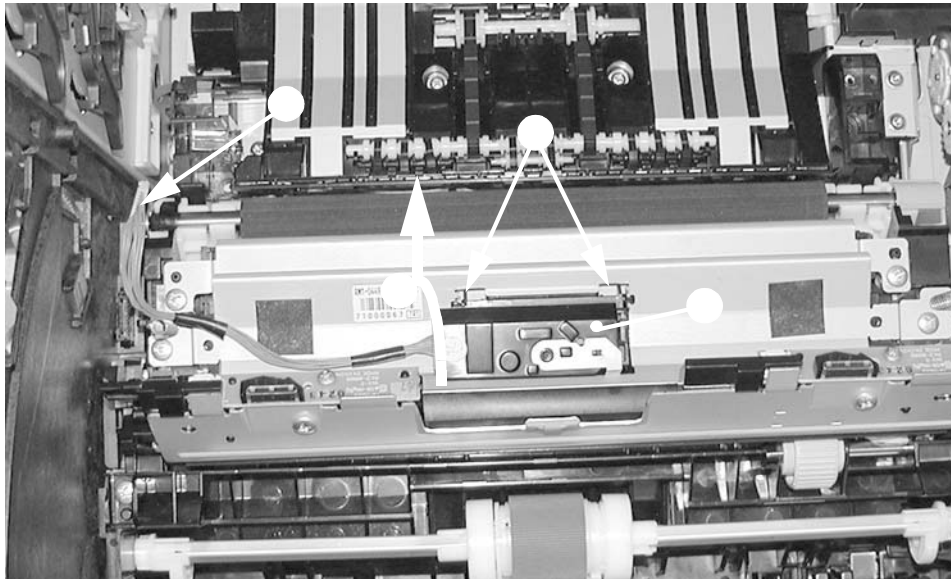
Media sensor removal

Fuser front paper sensor (PS6) removal

1 Remove the feed guide unit. See   .

2 Disconnect one connector (1), unhook two claws (2), and remove the sensor (3).
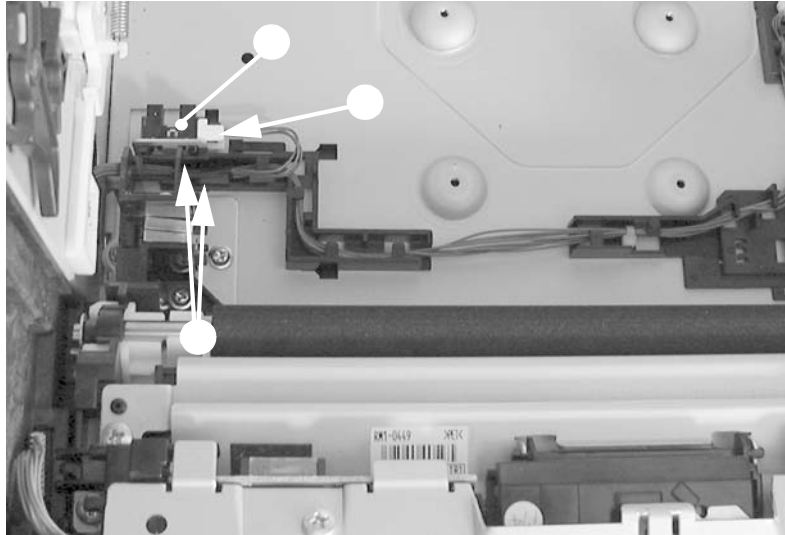
Fuser front paper sensor (PS6) removal

Fuser delivery paper sensor (PS7) removal

1 Remove the fuser. See   .

2 Move the two green levers down (1).

3 Remove two screws (2) and remove the lower fuser cover (3).
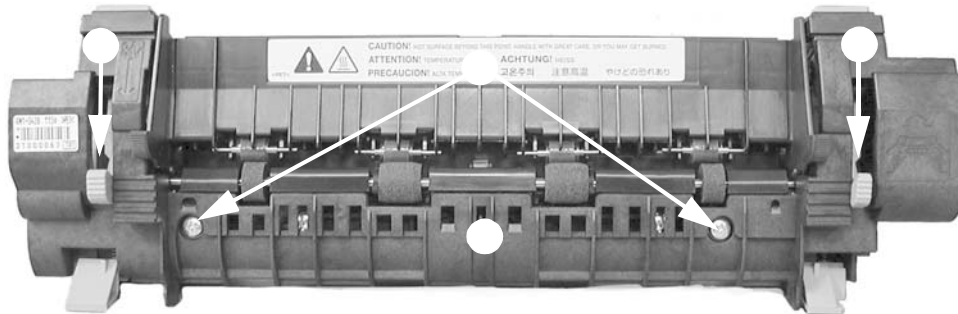
Fuser delivery paper sensor removal (1 of 2)

4 Disconnect one connector (1), unhook two claws (2), and remove the fuser delivery paper sensor (3).

Fuser delivery paper sensor removal (2 of 2)

Face-down delivery paper sensor (PS8) removal

1 Remove the face-down (output bin) delivery assembly. See
.

2 Unhook two claws (1) and remove the face-down delivery paper sensor (2).

Face-down (output bin) delivery paper sensor removal
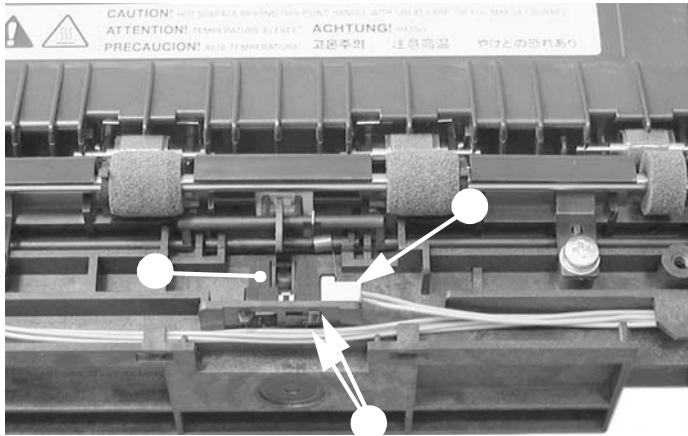
Reversed paper sensor (PS9) removal (HP3700 only)

1 Remove the fuser. See   .

2 Remove two screws (1) and remove the reverse guide unit (2).

3 Loosen the right printer Tray 2 guide. See   .
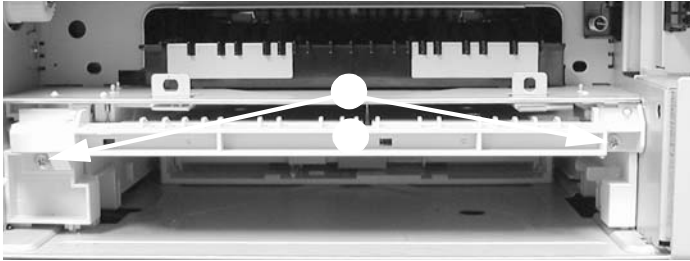
Reversed paper sensor removal (1 of 2)

4   Remove one connector (1), unhook two claws (2), and remove the sensor (3). In this illustration below the Tray 2 right rail guide is shown attached but is loose, allowing you to remove it to access the back side of the sensor to release the two claws from behind.
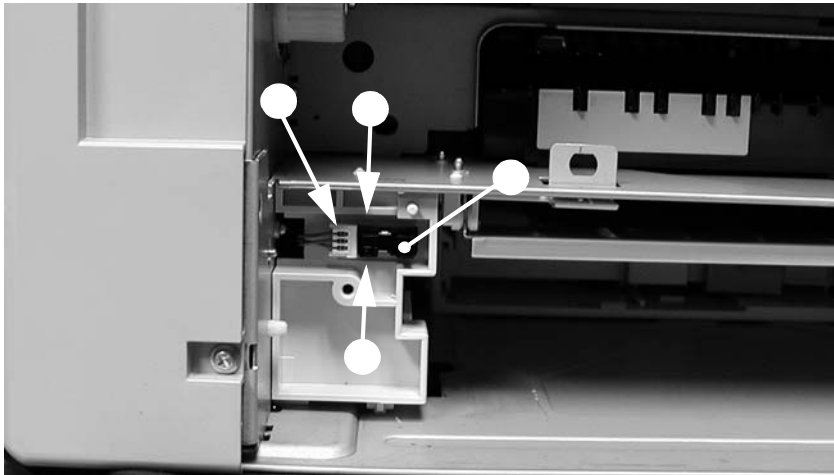
Reversed paper sensor removal (2 of 2)

Duplex feed delivery paper sensor (PS10) removal (HP 3700 only)

1 Remove the feed guide. See   .

2 Disconnect one connector (1) and remove the cables from the cable guide. Lift up on the claw (2), slide the cable guide/sensor holder assembly back (3), then lift it up to release it.

3 Unhook two claws from the back and remove the sensor (4).
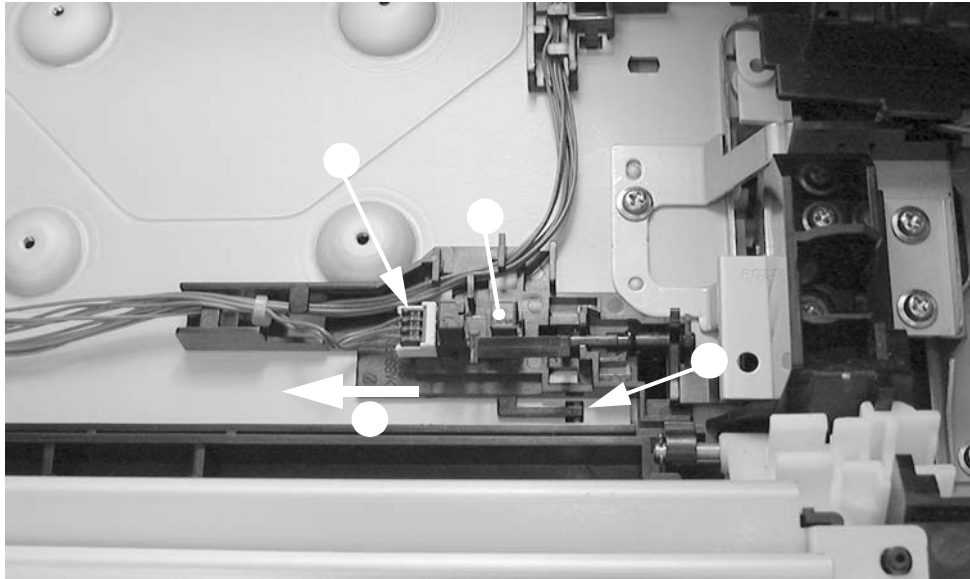
Duplex feed delivery paper sensor removal

Rear output bin paper sensor (PS11) removal

1 Remove the face-down delivery assembly. See   .

2 Disconnect one connector (1) and unhook two claws (2). To unhook the claws, insert a pointed object into the two claw locations (2), (under the sensor at the connector side of the sensor), to release the claws, then lift up on the connector side of the sensor (3) to remove it.
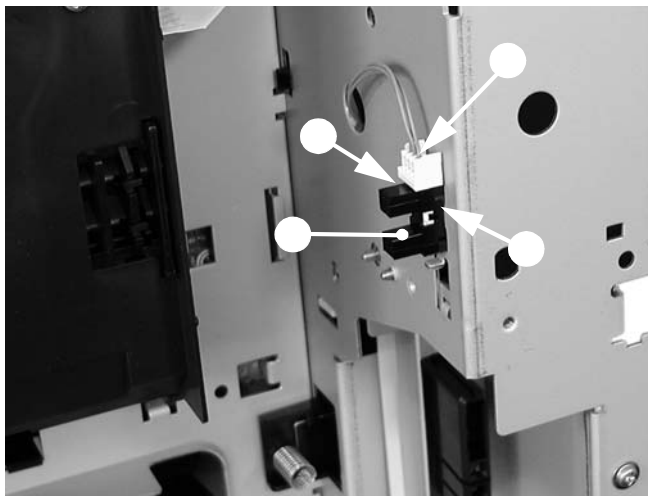
Rear output bin paper sensor removal

Color misregistration sensor (PS12) removal

When the color misregistration sensor is replaced, in addition to replacing the sensor, a configuration procedure must be performed. For information on this configuration, refer to Chapter 8,
.

1   Refer to the pick-up/feed unit removal procedure, steps 1 through 5, and release the right and left slide rods from the front door. See   .

2   Push the swing guides in as far as they will go.

3   Refer to the pick-up/feed unit removal procedure, steps 22 through 25, and remove the connector cover and the right and left swing guide rails. See   .

4   Disconnect one connector (1).

5   Remove one screw (2), the shaft holder (3), and the spring under the shaft holder located directly under the screw (2).

6   Unhook two claws (4) and lift the color misregistration sensor (5) up to remove it.
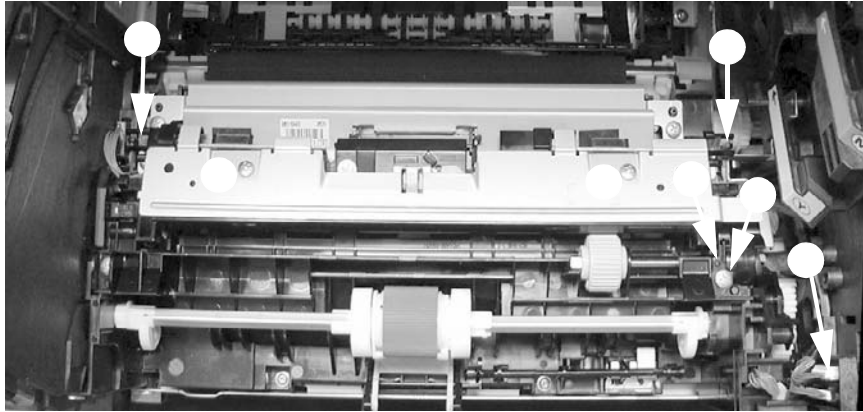
Color misregistration sensor removal

Waste toner level sensor (PS13) removal

1 Remove the front left cover. See   .

2 Remove one connector (1) from the DC controller PCB and unroute the cable.

3 Remove one screw (2) and remove the waste toner level sensor (3).
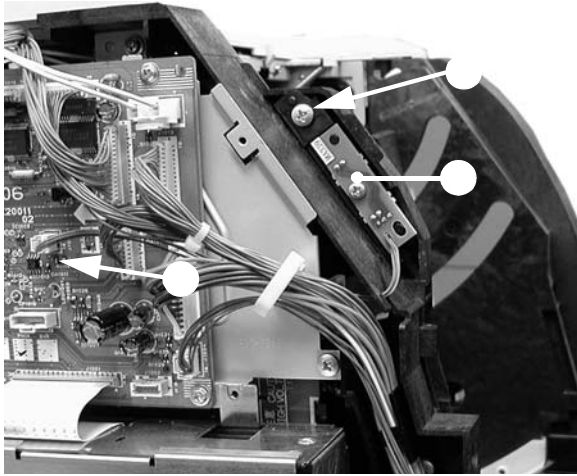
Waste toner level sensor removal

Developing engaging sensor (PS14) removal

1 Remove the laser/scanner assembly. See   .

2 Disconnect one connector (1), unhook two claws (2), and remove the developing engaging sensor (3).
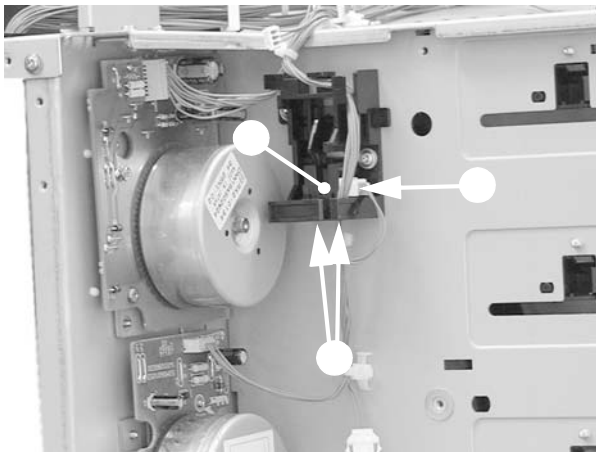
Developing engaging sensor removal

Environment sensor (PS15) removal

1 Remove the left cover. See   .

2 Remove one (1) screw and remove the sensor (2). Disconnect the connector (3) while removing the sensor.
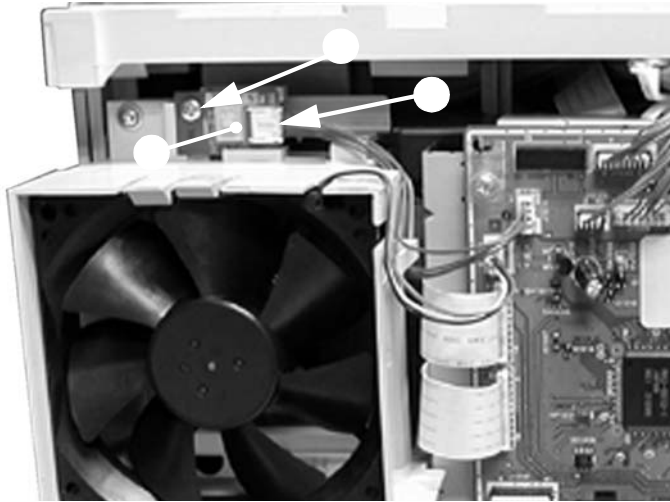
Environmental sensor removal

Secondary transfer roller engaging sensor (PS16) removal

1 Remove the pick-up/feed assembly. See   .

2 Turn the assembly upside down.

3 Remove the cable (1) from the cable guides. Using one hand, gently push two claws (2) apart. With your other hand, pull the sensor (3) out by holding the cable connector (4). Disconnect the connector to remove the sensor.
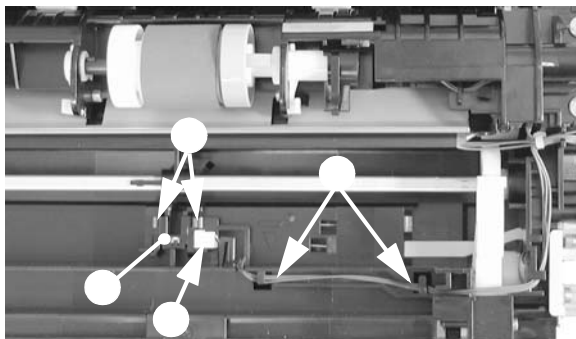
Secondary transfer roller engaging sensor removal
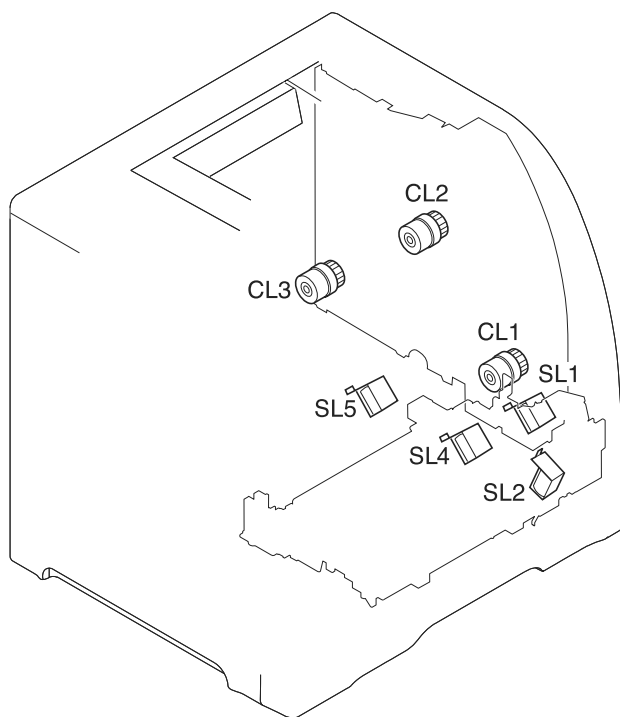
SL1: Tray 1 pick-up solenoid
SL2: Tray 2 pick-up solenoid (pick-up/feed assembly)
SL3: Tray 3 pick-up solenoid (not shown; see 500-sheet paper feeder)
SL4: Secondary transfer roller engaging solenoid
SL5: Duplex feed solenoid
CL1: Registration clutch
CL2: K development clutch (image drive unit)
CL3: Developing engaging clutch (developing engaging drive unit)
CL4: Tray 3 pick-up clutch (not shown; see 500-sheet paper feeder)

Solenoid and clutch locations

Tray 1 (multipurpose tray) pick-up solenoid (SL1) removal

1   Remove the pick-up/feed assembly. See   .

2   Remove one screw (1), disconnect one connector (2), and remove the Tray 1 pick-up solenoid
    (3).
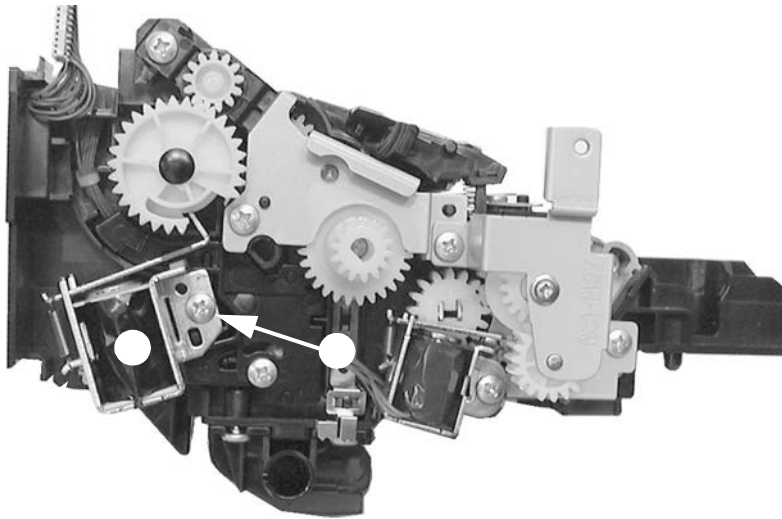
Tray 1 pick-up solenoid removal

Tray 2 pick-up solenoid (SL2) removal

1   Remove the right cover. See   .

2   Refer to the   procedure, steps 4 and 6 through 10, and remove
    the paper drive gear plate.

3   Remove two screws (1), disconnect one connector (2), and remove the cover plate (3).
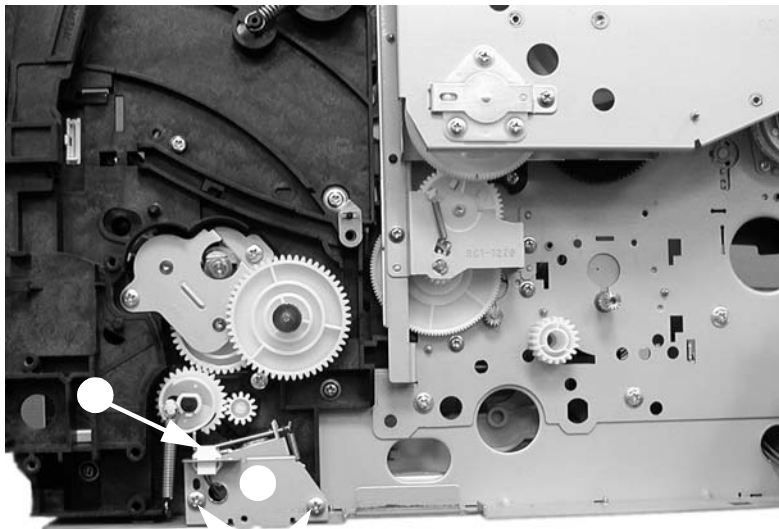
Tray 2 pick-up solenoid removal (1 of 2)

4 Remove one screw (1) and remove the solenoid (2).
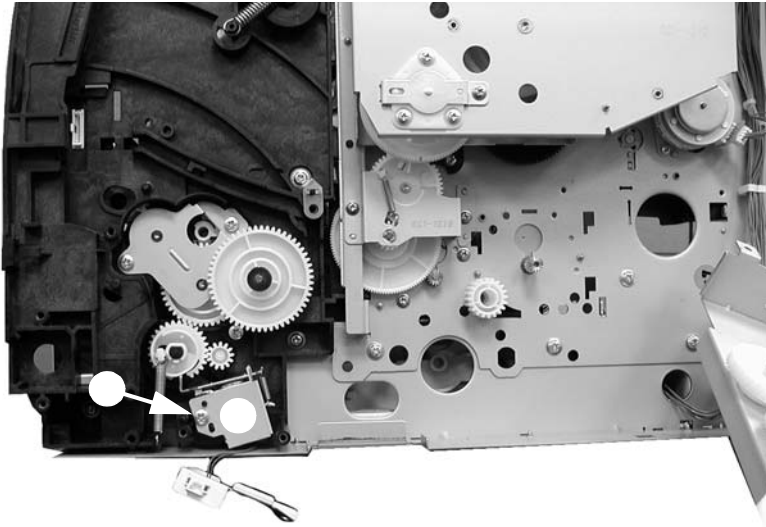
Tray 2 pick-up solenoid removal (2 of 2)

Secondary transfer roller engaging solenoid (SL4) removal

1 Remove the pick-up/feed assembly. See   .

2 Remove five screws (1), the gear side plate (2), plate (3), solenoid (4), and the connector cover (5).
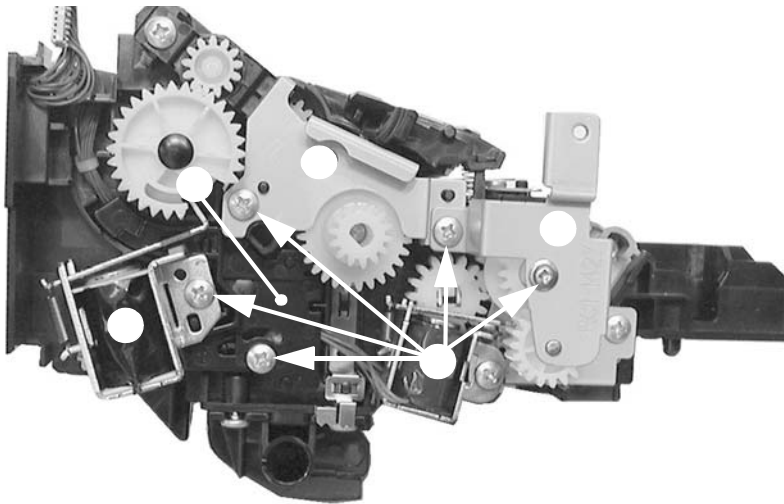
Secondary transfer roller engaging solenoid removal (1 of 2)

3 Disconnect one connector (1), remove one screw (2), and remove the secondary transfer roller engaging solenoid (3).
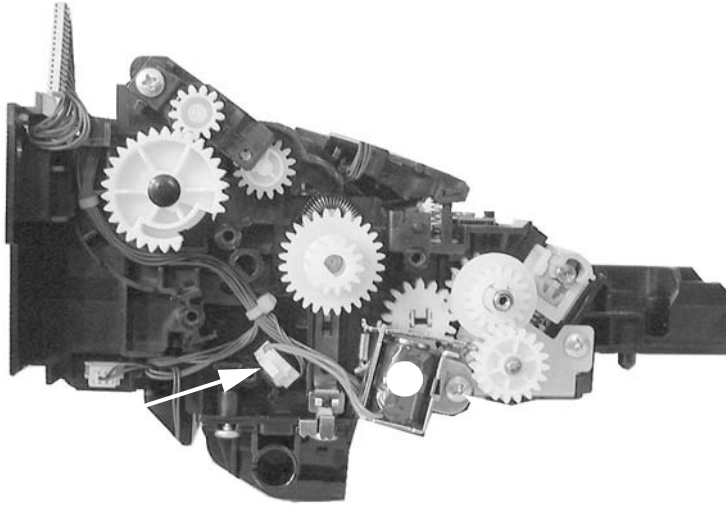
Secondary transfer roller engaging solenoid removal (2 of 2)

Duplex feed solenoid (SL5) removal (HP3700 only)

1 Remove the right 250-sheet tray guide. See   .

2 Disconnect one connector (1), remove one screw (2), and remove the duplex feed solenoid (3).
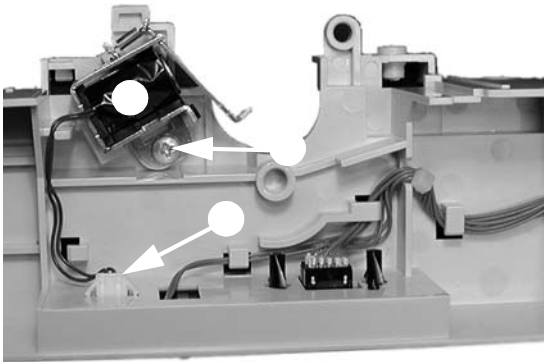
Duplex feed solenoid removal

Registration clutch (CL1) removal

1 Remove the right cover. See   .

2 Disconnect one connector (1), remove two screws (2), and remove the plate (3).
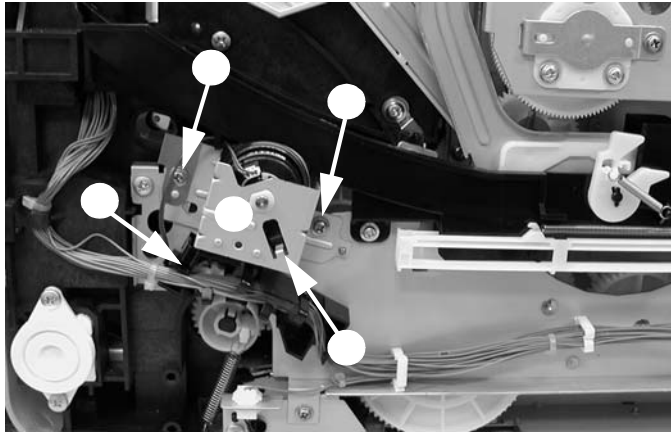
Registration clutch removal (1 of 2)

3 Remove the bushing (1) and remove the registration clutch (2). The bushing needs to be used for the replacement clutch.
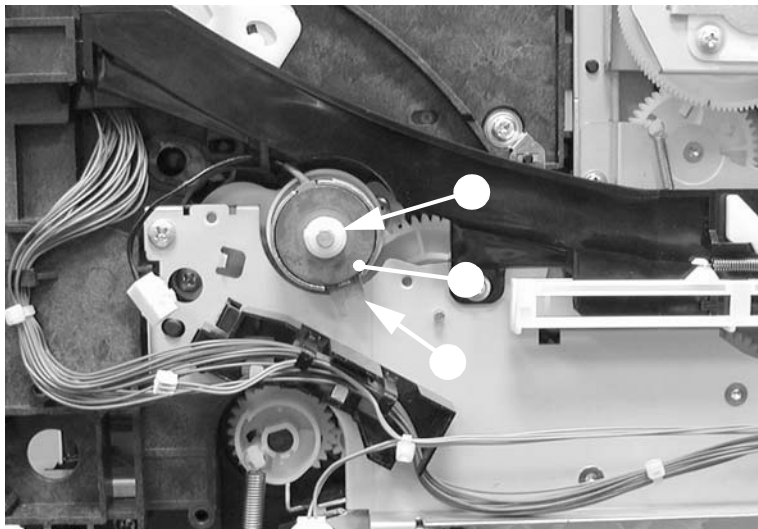
Registration clutch removal (2 of 2)

Black (K) development clutch (CL2 - image drive) removal

1   Remove the image drive unit. See   .

2   Disconnect one connector (1), remove the e-clip (2), and remove the black development clutch (3).
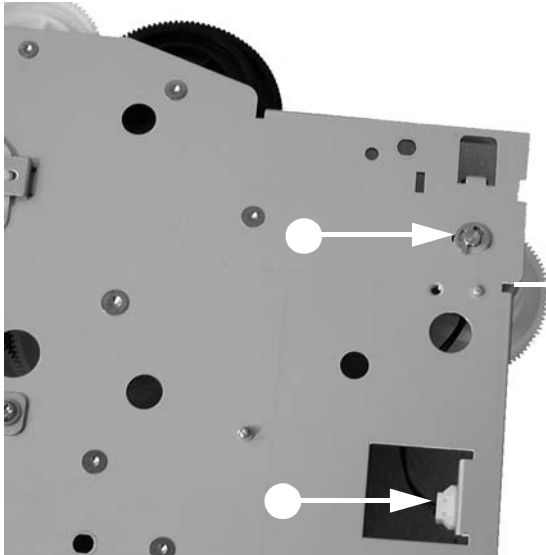
Black development clutch removal (2 of 2)

Developing engaging drive clutch (CL3) removal

1   Remove the developing engaging drive assembly. See
.

2   Remove the e-ring (1) and remove the developing engaging drive clutch (2).
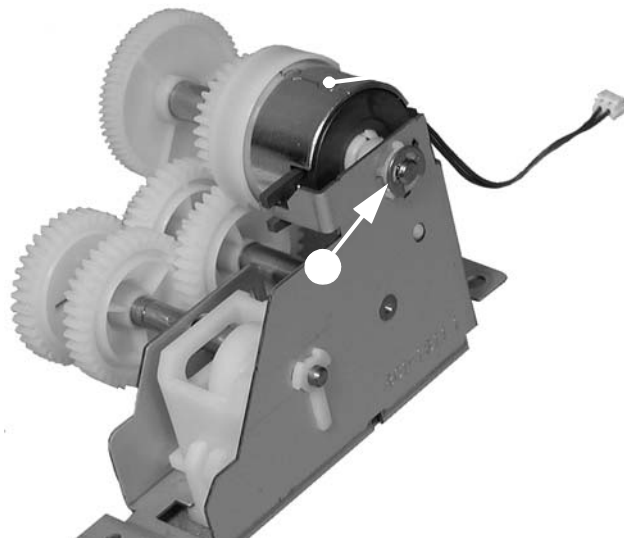
Developing engaging drive clutch removal
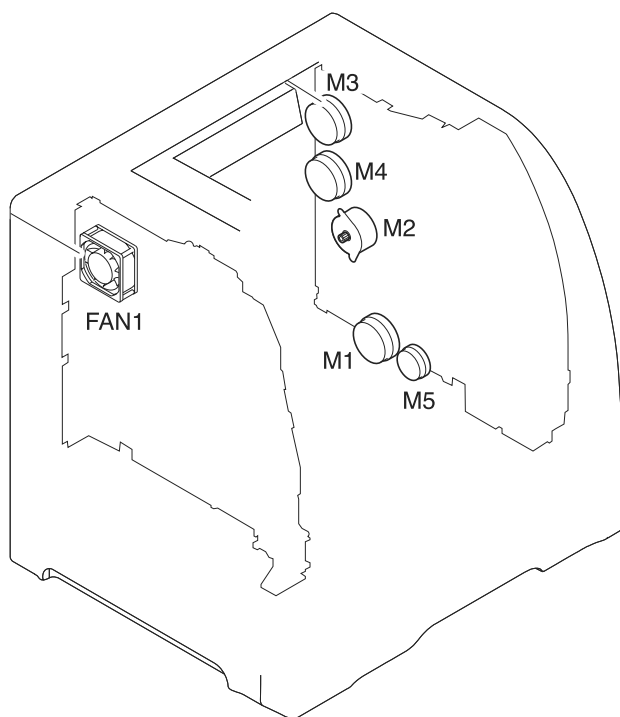
M1:   Feed motor
M2:   Delivery motor
M3:   Drum motor
M4:   Developing motor
M5:   Primary transfer roller engaging motor
FAN1: Exhaust fan

Motor and fan locations

Feed motor (M1) removal

1 Remove the right swing guide. See   .

2 Remove the feed guide. See   .

3 Press down on the motor cover claw (1) and lift up on the cover (2) to remove it. If possible, release the cover claw (1) from the other side of the frame.
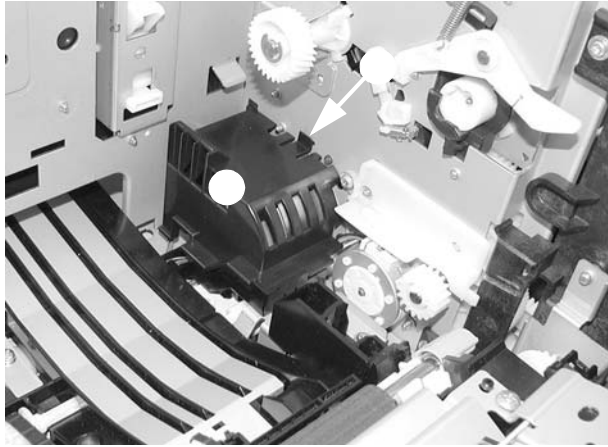
Feed motor removal (1 of 3)

4 Disconnect one connector (1) and release the cable guide (2) by pressing in on the claw (3). Move the guide to the side (the cables can remain in the guide).
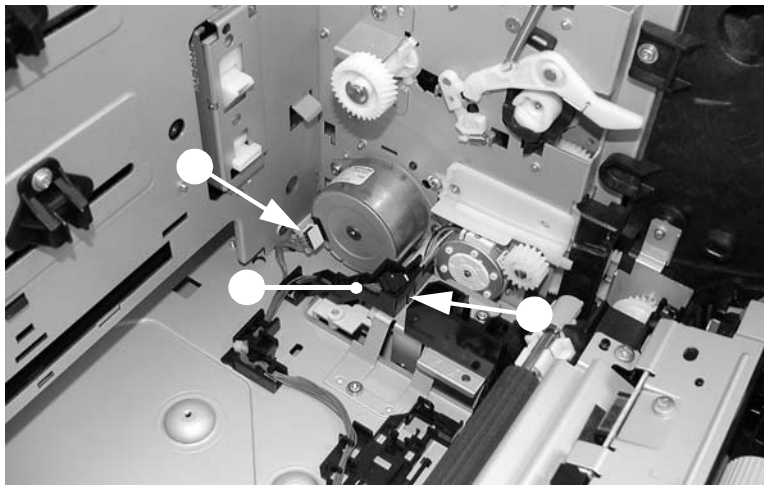
Feed motor removal (2 of 3)

5 Remove two screws (1) and remove the feed motor (2).

Feed motor removal (3 of 3)

Delivery motor (M2) removal

1 Remove the right cover. See   .

2 Remove one connector (1).

3 Remove two screws (2) and remove the delivery motor (3).
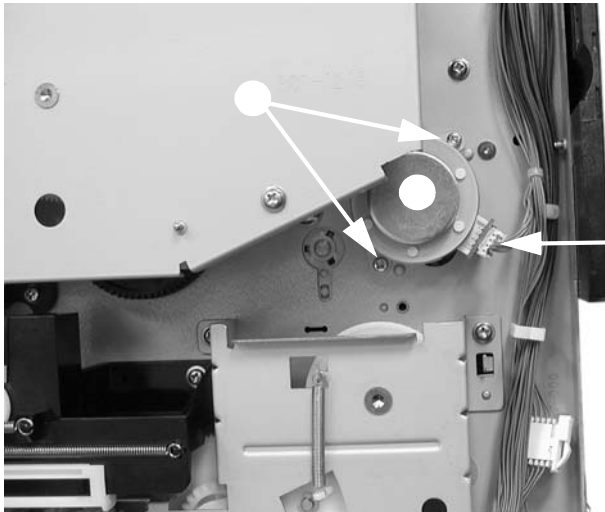
Delivery motor removal

Drum motor (M3) removal

1 Remove the image drive assembly. See   .

2 Remove five screws (1), remove the gear plate (2), and remove two gears (3).
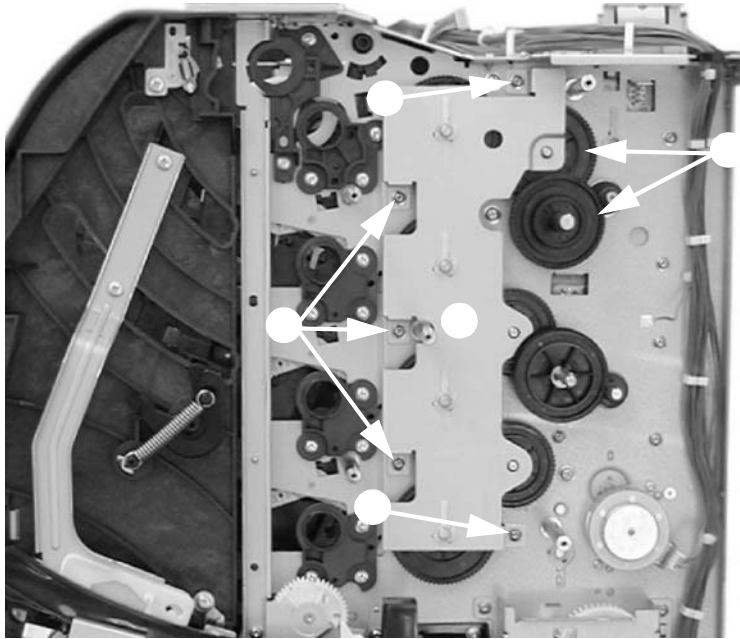
Drum motor removal (1 of 3)

3 Remove the face-down delivery assembly. See   .

4 Remove the laser/scanner assembly. See   .

5 Disconnect two connectors (1), remove two screws (2), and remove the developing engaging
sensor unit (3) located next to the drum motor (4).
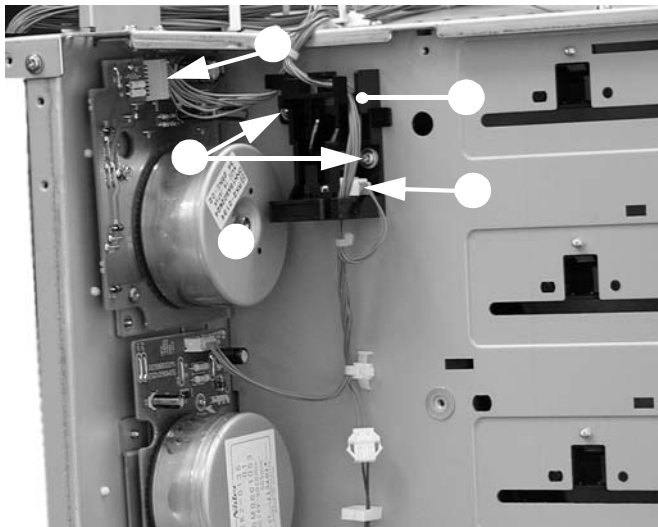
Drum motor removal (2 of 3)

6 Remove four screws (1) and remove the drum motor (see callout (4) in the previous figure).
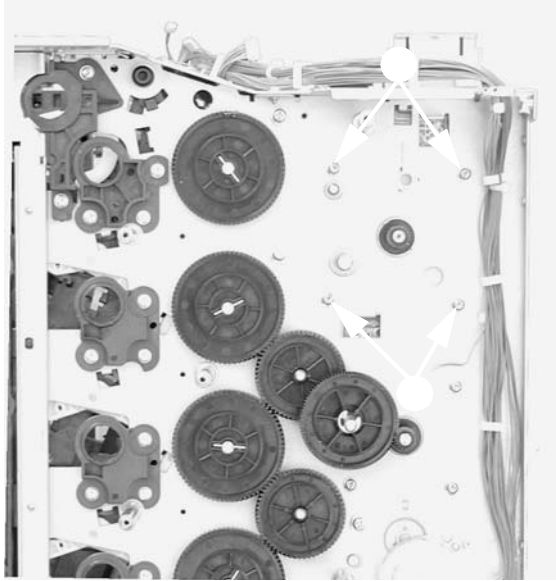
Drum motor removal (3 of 3)

Developing motor (M4) removal

1 Remove the image drive assembly. See   .

2 Remove the face-down delivery assembly. See   .

3 Remove the laser/scanner assembly. See   .

4 Remove the e-ring (1) and one gear (2).
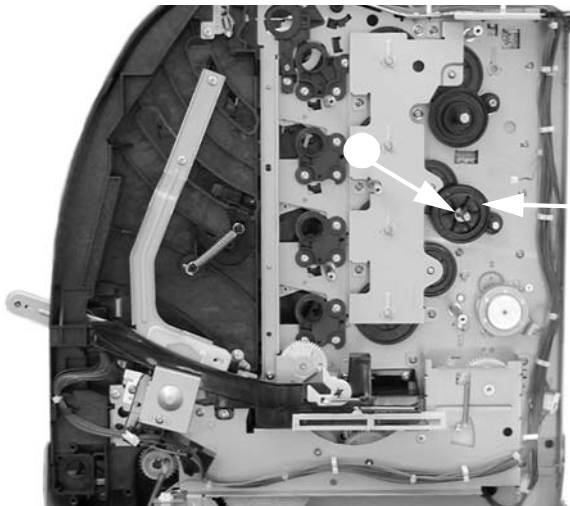
Developing motor removal (1 of 3)

5 Remove four screws (1).
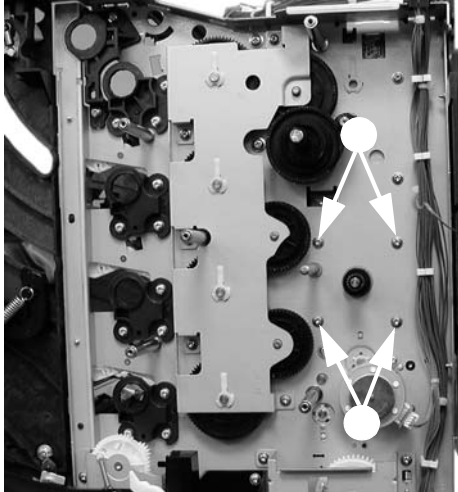
Developing motor removal (2 of 3)

6 Disconnect one connector (1) and remove the developing motor (2).

Developing motor removal (3 of 3)

Primary transfer roller engaging motor (M5) removal

1 Remove the image drive assembly. See   .

It is important to refer to the image driver assembly removal procedure's "Reinstallation notes" to ensure correct installation of this assembly. If reassembly is not performed correctly, it can result in damage to the print cartridge drive pins, the image drive assembly drive pins, and the swing guide mechanism.

2 Remove the right swing guide. See   .

3 Refer to the pick-up/feed guide assembly removal procedure, steps 1 through 12, and remove the right side gear plate. See   .

It is important to refer to the pick-up/feed assembly removal procedure's "Reinstallation notes" to ensure correct installation of this assembly. If reassembly is not performed correctly, it can result in damage to the print cartridge drive pins, the image drive assembly drive pins, and the swing guide mechanism.

4 Remove the e-clip (1), remove two screws (2), and then remove the gear plate (3).
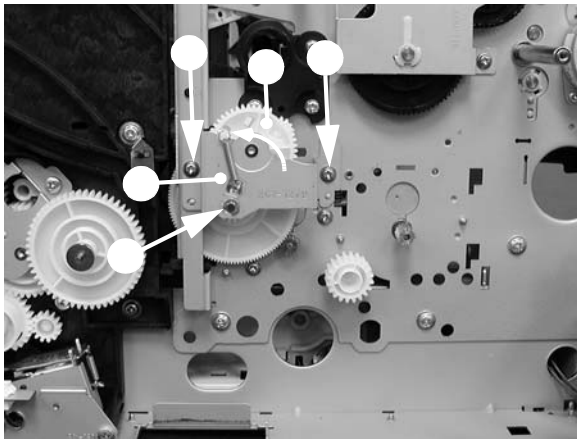
Primary transfer roller engaging motor removal (1 of 4)

5 Remove the one screw (1) from the rear swing guide rail (2) and remove the rail.

6 Pull gear (3) and its shaft out to the left.

7 Remove the motor cover (4) by pressing down on the tab (5) while pulling the cover slightly to the left and up, then pull it and out to remove it.
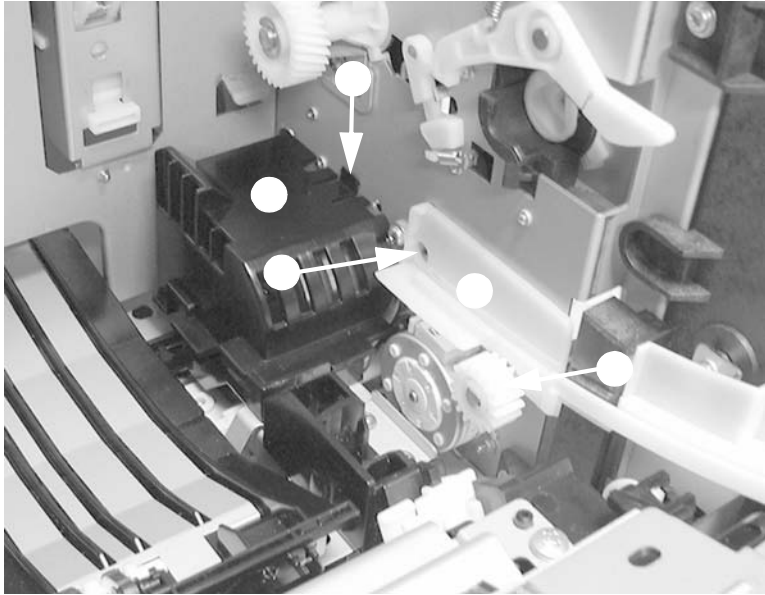
Primary transfer roller engaging motor removal (2 of 4)

8 Remove the gear (1) and then remove two screws that secure the motor.
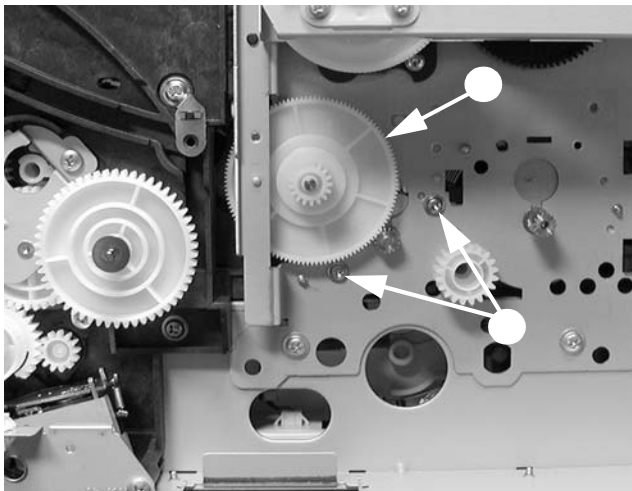
Transfer roller engaging motor removal (3 of 4)

9 Disconnect one connector (1) and lift the primary transfer roller engaging motor (2) up slightly, and then pull it to the left to remove it.
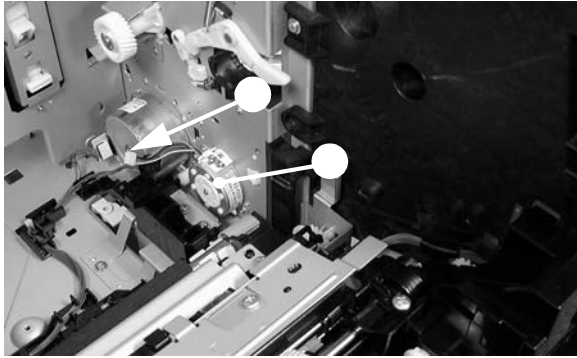
Transfer roller engaging motor (4 of 4)

Exhaust fan (FAN1) removal

1 Remove the left cover. See   .

2 Remove two connectors (1) from the DC controller PCB.

3 Unhook four claws (2) and pull the fan motor (3) out to remove it.
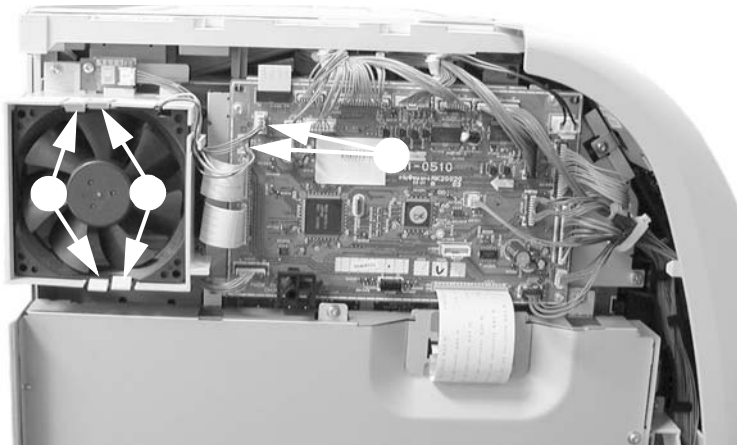
Fan removal
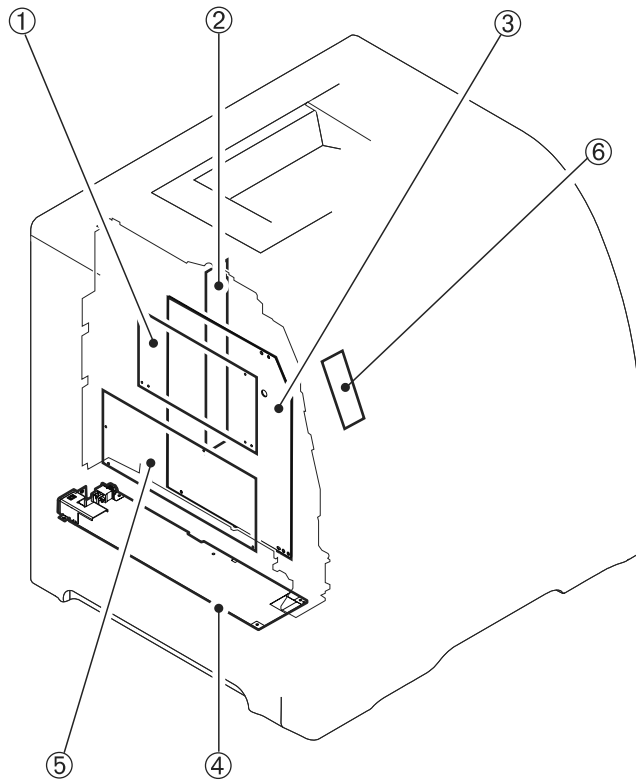
1. DC controller PCB
2. Memory controller PCB
3. High-voltage power supply PCBs

4. Low-voltage power supply PCB
5. Formatter PCB
6. Control panel PCB

Circuit board locations

DC controller PCB removal

When the DC controller PCB is replaced, in addition to replacing the PCB, a configuration procedure must be performed. For information on this configuration, refer to Chapter 8,
.

1   Remove the left cover. See   .

2   Disconnect all cable connections (19 connectors for the HP Color LaserJet 3500 series printer and 20 connectors for the HP Color LaserJet 3700 series printer).

3   Remove four screws (1) and remove the PCB (2).
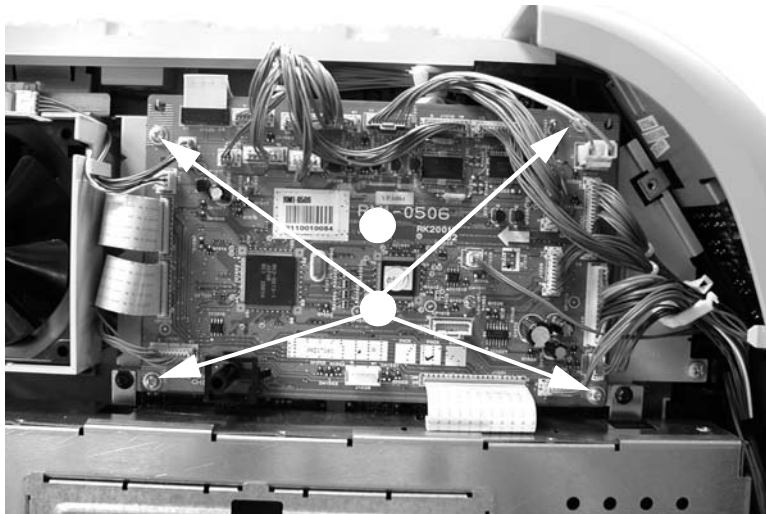
DC controller PCB removal

Formatter PCB removal

The HP Color LaserJet 3500 series printer and the HP Color LaserJet 3700 series printer have different formatter PCBs and formatter enclosures. The removal procedure for the PCB is different as described below.

When the formatter PCB is replaced, in addition to replacing the PCB, a configuration procedure must be performed. For information on this configuration, refer to Chapter 8, .

1 Remove the left front cover. See .

2 For the HP Color LaserJet 3500 series printer, perform steps "a" and "b", below; for the HP Color LaserJet 3700 series printer, perform steps "c" and "d", below:

  a. Disconnect two connectors (1), remove five screws (2), and remove the formatter enclosure cover (3).
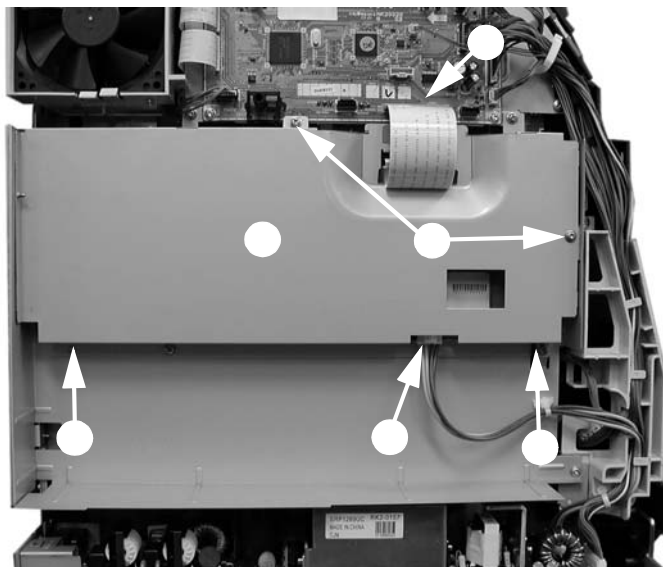
Formatter PCB (HP3500) removal (1 of 2)

b. Remove seven screws (1) and remove the formatter PCB (2).
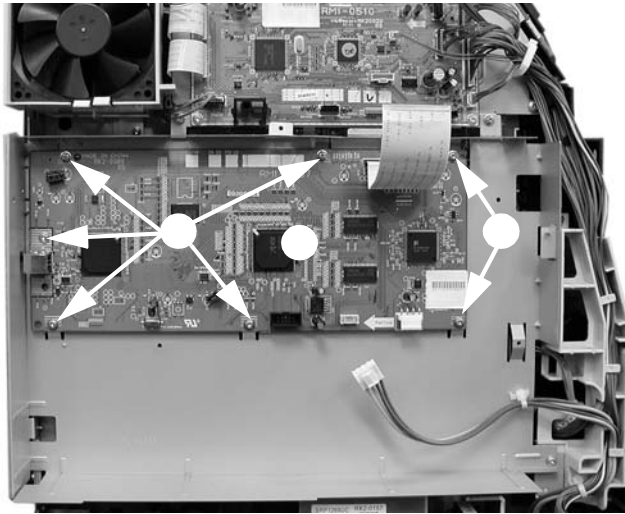
Formatter PCB (HP3500) removal (2 of 2)

    c. Remove the network interface card (if installed).

    d. Disconnect one connector (1), remove two screws (2), and remove the formatter cover (3).
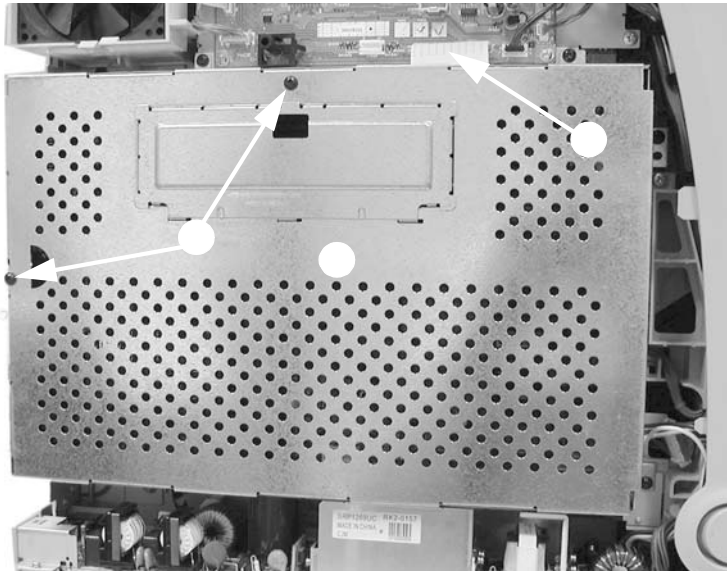
Formatter PCB (HP3700) removal (1 of 2)

e. Disconnect one connector (1), remove six screws (2), and remove the formatter PCB (3).
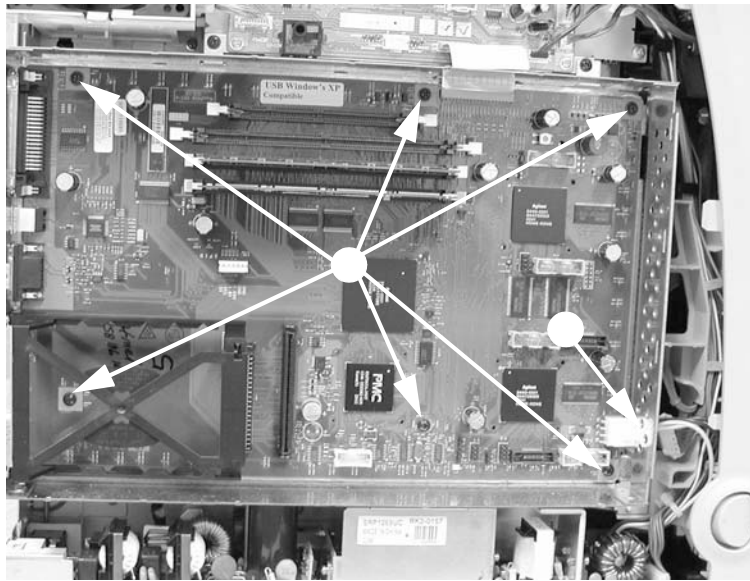
Formatter PCB (HP 3700) removal (2 of 2)

High-voltage power supply PCB removal

1   Remove the top cover. See   .

2   Remove the upper rear door. See   .

3   Remove the rear cover. See   .

4   Remove the lower rear door. See   .

5   Disconnect two cables (1). (The formatter cage removal for the HP Color LaserJet 3500 and 3700 series printers is slightly different. (Refer to the figure below, either **HP 3500** or the **HP 3700** for the specific printer formatter cage being removed.)

6   Remove four screws (2) from the side of the cage.

HP 3500
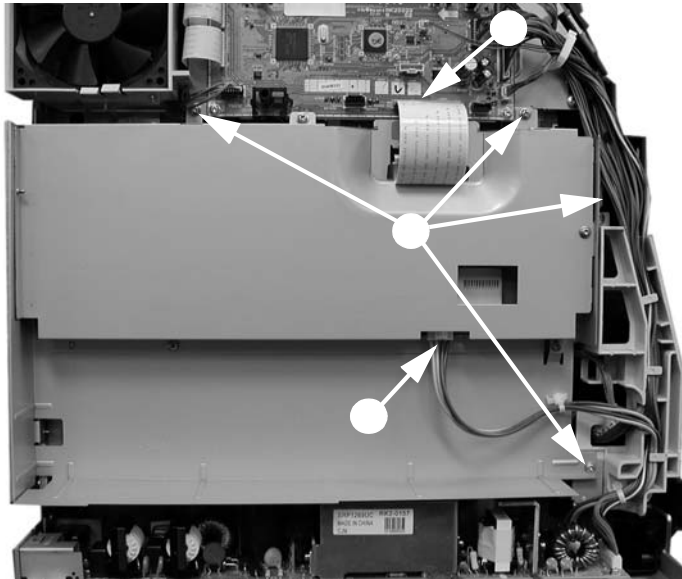
HP 3700
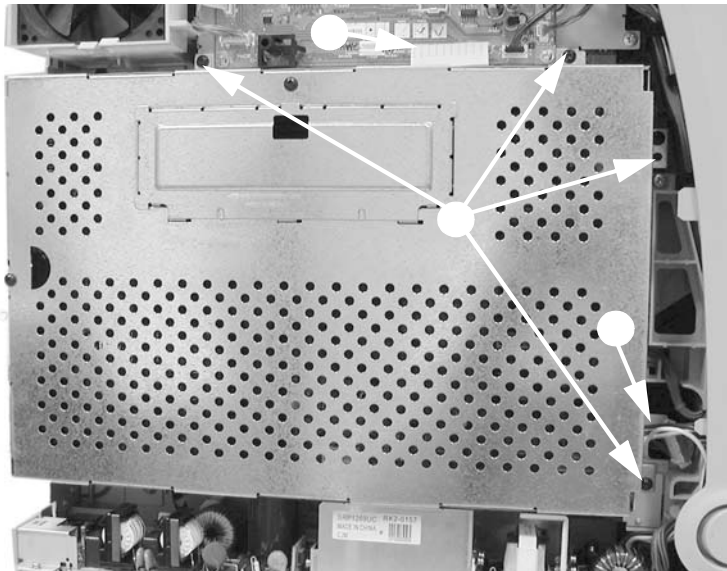
High-voltage power supply PCB removal (1 of 5)

7 Remove the screws from the back of the formatter cage (the HP 3500 is shown for both the HP 3500 and HP 3700; remove two screws (1) for the HP 3500; remove three screws, (1) and (2), for the HP3700).

8 Remove the formatter cage (3) (while removing the cage for the HP 3500, release the cable tie (4)).
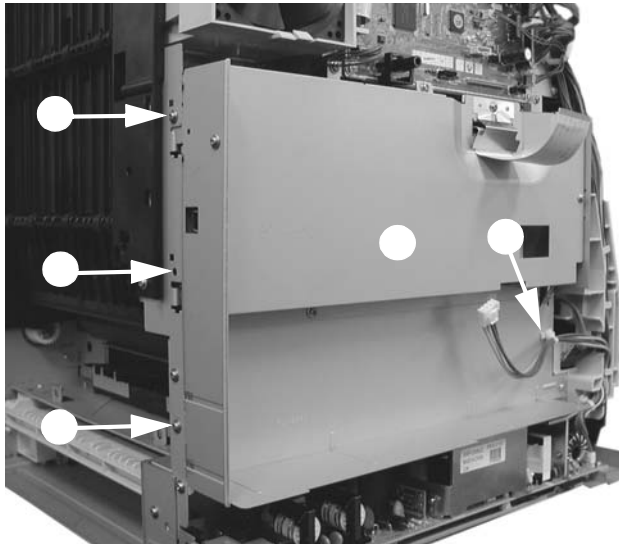
High-voltage power supply PCB removal (2 of 5)

9 Disconnect two connectors (1), remove two screws (2), press down on the claw (3), and pull the fan assembly (4) out from the printer.
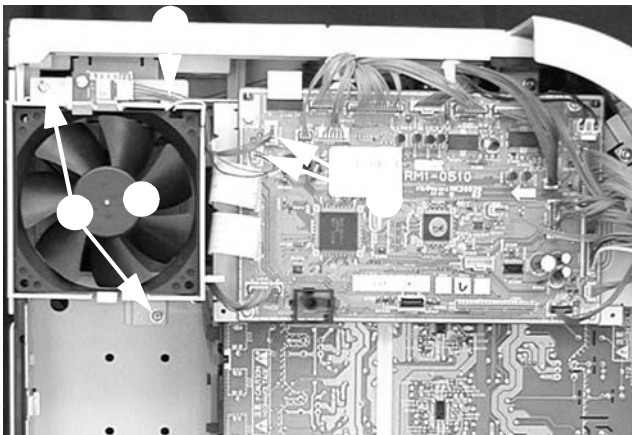
High-voltage power supply PCB removal (3 or 5)

10 Disconnect the remaining cable connectors from the PCB (19 connectors for the HP 3500 and 20 for the HP 3700) and remove the cables from three cable clamps (1).

11 Remove four screws (2) and remove the DC controller PCB/plate (3) from the printer. While removing the controller PCB/plate, remove the cables from the remaining harness clamps.
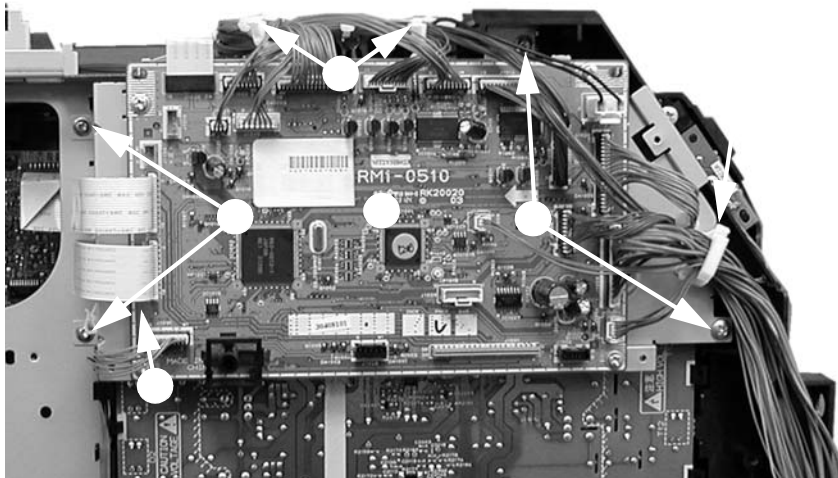
High-voltage power supply PCB removal (4 of 5)

12 Remove three screws (1), unhook eight claws (2) (working from the top down), pull out on the bottom sides of the PCB to release two pins (3), and then lift up to release it from the lower support (4). Once the PCB is released from the printer, disconnect the connector (5) as you pull the PCB away from the printer.
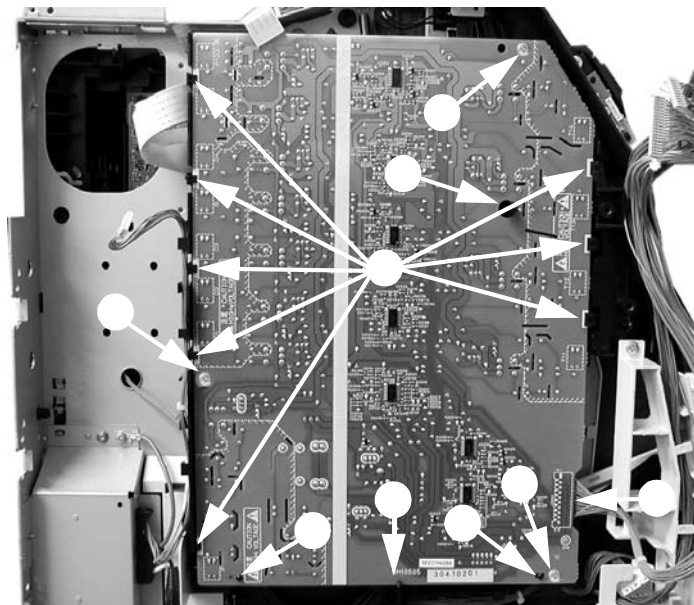
High-voltage power supply PCB removal (5 of 5)

Low-voltage power supply PCB removal

1 Remove the formatter. See   .

2 Remove two screws (1).

3 Pull the low-voltage power supply PCB toward you about two inches. Disconnect the switch rod (2) from the power switch on the PCB as you pull it out.
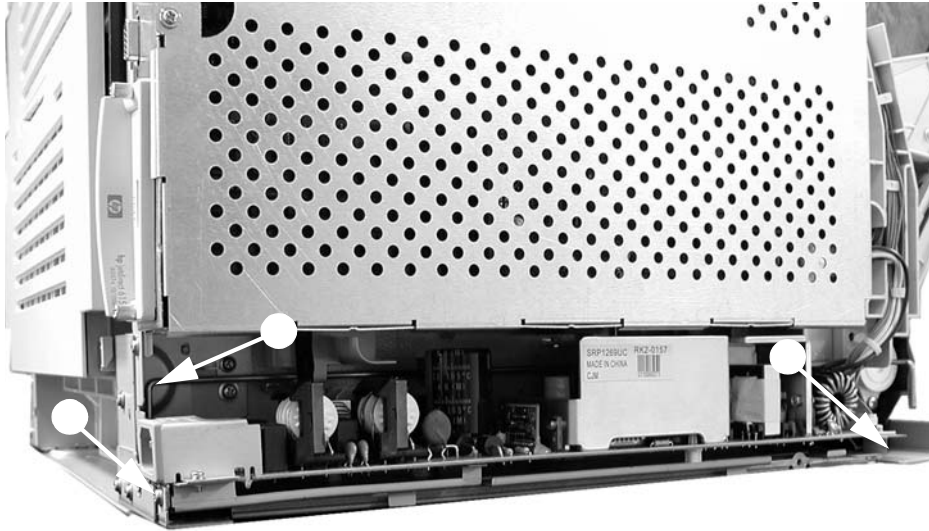
Low voltage power supply PCB removal (1 of 2)

If necessary, you may need to remove the torroid from the cable to allow better access to the area at the front of the PCB. To remove the torroid, lift up on the strip (1) and swing the top (2) open and then remove the torroid from the wires.

Left front cover removal (2 of 4)

4 Disconnect four connectors (1) and remove the power supply (2).

Low voltage power supply PCB removal (2 of 2)

Memory controller PCB removal

1 Open the front door, remove the transfer unit, and the print cartridges. See
_____ and _____ .

2 Disconnect the left rod bracket from the front door by removing two screws from the bracket.
See _____ , step 4.

3 Remove two screws (1) and pull the shield plate (2) out. Adjust the position of the swing guide,
as required to access the screws. (The left swing guide has been removed for clarity in
illustrating this removal procedure. It is not necessary to remove the swing guide to remove
this PCB.)
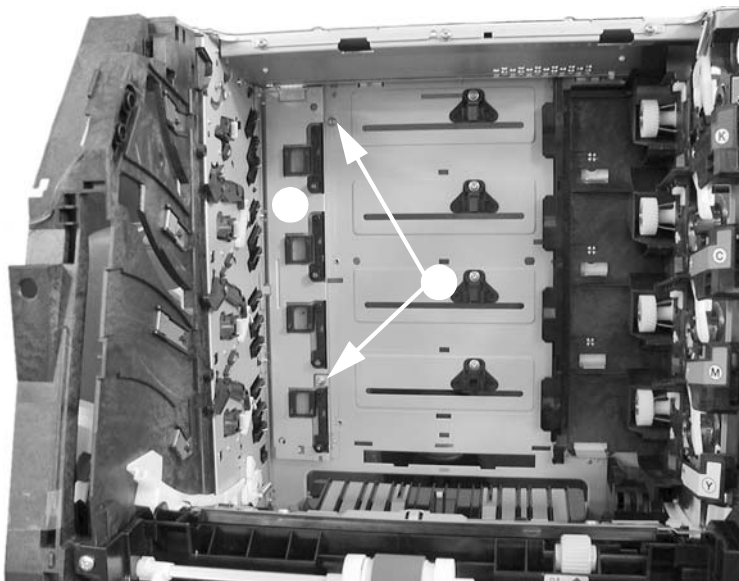
Memory controller PCB removal (1 of 2)

4 Release one claw (1) at the top of the PCB (2) and swing the right side of the PCB out (3) then pull it to the right to free it from the retainer tab (4) and support tab (5). Disconnect the cable (6) at the top as you remove the PCB.
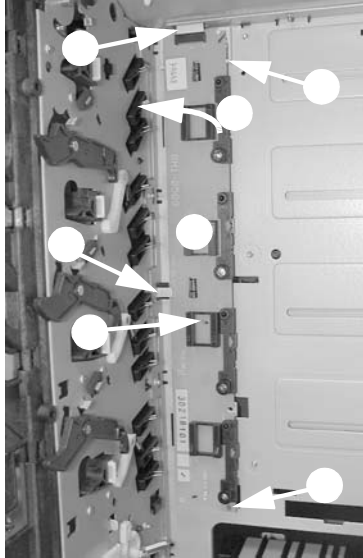
Memory controller PCB removal (2 of 2)

Control Panel PCB removal

1 Remove the left front cover. See   .

2 Remove three screws (1) and remove the control panel PCB assembly (2).
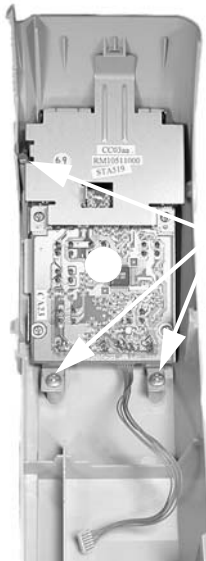
Control panel PCB removal

Swing rod guide, left removal

1   Remove the left swing guide. See   .

2   Remove the ground (1) wire from the guide. Use needle-nose pliers to pull the ground wire out of the contact (2).

3   Remove the cables (3) from the guide.

4   Remove one screw (4) and pull the back end of the swing guide (5) out slightly. Then pull it to the left to remove the front tab (6) from the slot in the front.

Swing rod/lock guide, right removal

To remove the right swing rod guide, refer to the   , steps 1 through 8.

Transfer contact assembly removal

To remove the transfer contact assembly, refer to   , steps 1 through 5.

Developing contact assembly

1 Remove the high-voltage power supply PCB. See   .

2 Remove three springs (1) from inside, located under the left swing guide. (The left swing guide is not shown for illustration purposes only.) Remove these springs carefully; they are delicate and can be easily damaged.
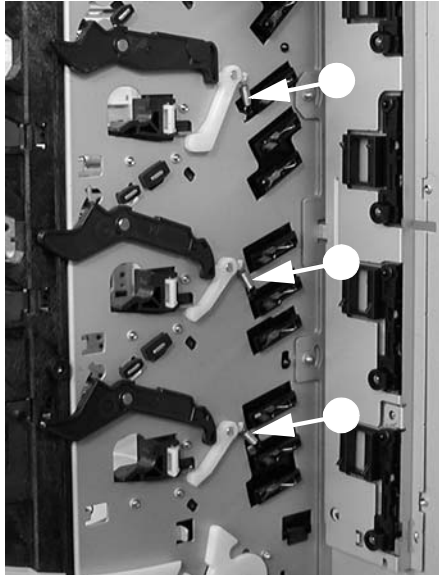
Developing contact assembly removal (1 of 3)

3 Remove the plastic cover (1) by pressing in on two tabs (2) and pulling the cover out of the printer.
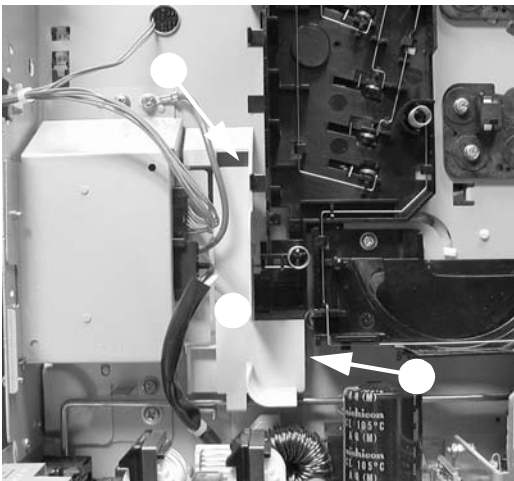
Developing contact assembly removal (2 of 3)

4 Unhook the cables from the left side cable guides (1) on the contact assembly.

5 Pull out on the top of the assembly while pressing in on two tabs (2). Once the top is released, pull up slightly and outward to remove the developing contact assembly (3). As you remove the assembly, unroute the grounding wire (4).
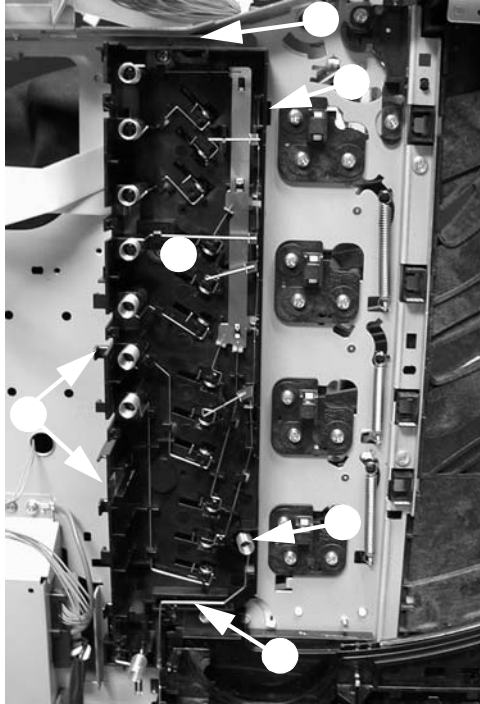
Developing contact assembly removal (3 of 3)

The following section describes the removal procedures for Tray 2 and associated parts, including the right guide in the printer.

Tray 2 (cassette)

The separation pad and the end plate are the only replaceable components on the tray. Replacement of any other component requires replacement of the entire tray. For replacement of the separation pad, see   ; for replacement of the tray or the end plate, refer to Chapter 8, parts, for the location of the end plate.

Cassette (Tray 2) guide, right, removal

The removal of the right guide is different for the HP Color LaserJet 3500 and 3700 series printers. These procedures are provided below.

Cassette (Tray 2) guide, right, removal (HP3700)

1   Remove the transfer unit and the print cartridges. See   and
    .

2   Remove the lower rear door. See   .

3   Remove the fuser. See   .

4   Remove the paper drive gear plate and the paper drive gear and shaft. See
            , steps 1 through 12.

5   Remove the left cover. See   .

6   Remove two screws (1) and remove the duplex guide (2) from the back of the printer.
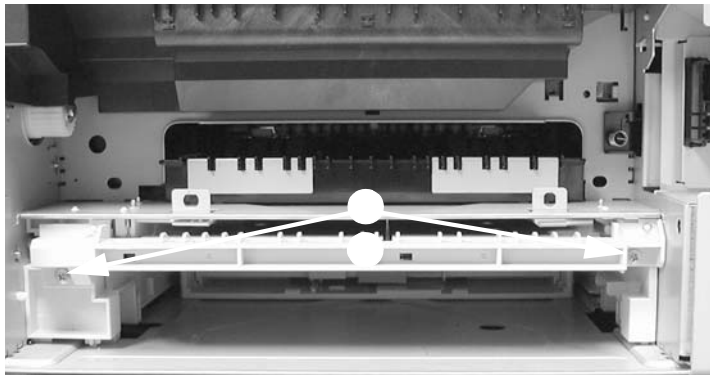
Right Tray 2 guide removal (1 of 6)

7   Turn the printer on its back side, carefully.

8 Remove eight screws (1) from the printer's bottom plate (2) and remove the plate.
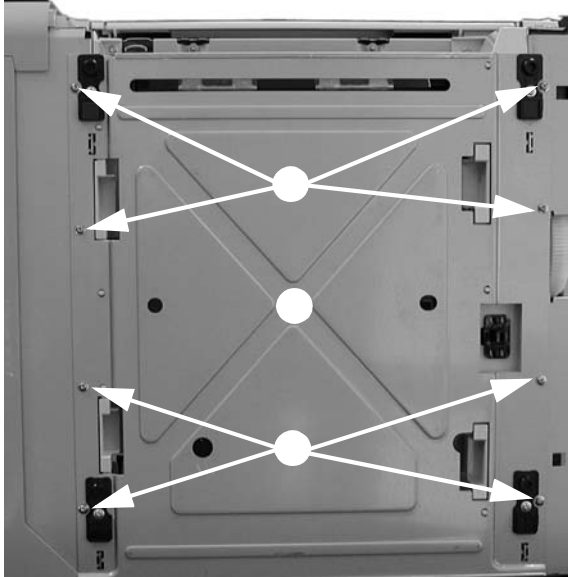
Right Tray 2 guide removal (2 of 6)

9 Release the duplex guide pan by lifting up on the release lever (1), then swing the pan (2) down. Observe the grounding spring (3) while swinging the pan down. The spring should slide out of the slot (4).
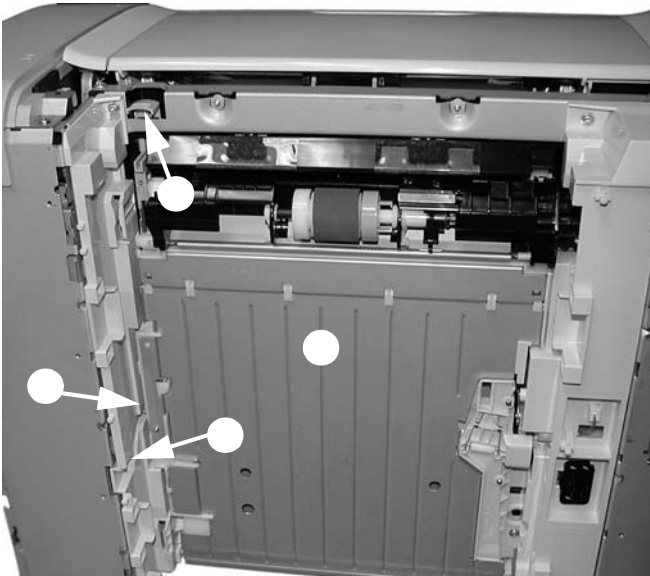
Right Tray 2 guide removal (3 of 6)

10 Lower the duplex guide pan (1) until it is perpendicular with the base of the printer and pull it straight out (2) to remove it.
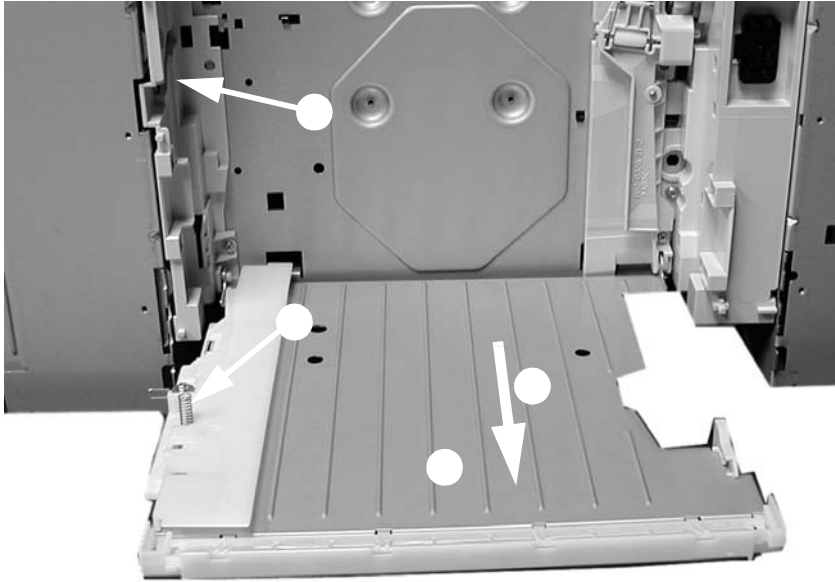
Right Tray 2 guide removal (4 of 6)

11 Remove two screws (1) from the duplex position guide assembly (2) and remove it.
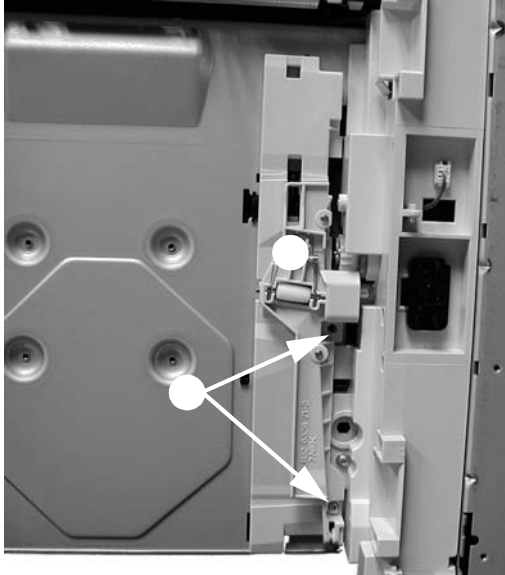
Right Tray 2 guide removal (5 of 6)

12 Remove two screws (1) and remove the tray guide (2).
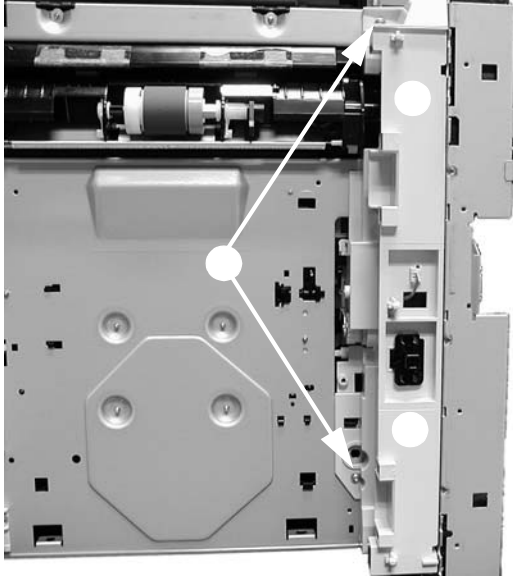
Right tray guide removal (6 of 6)

Cassette (Tray 2) guide, right, removal (HP3500)

1 Remove Tray 2.

2 Remove two screws (1) and remove the duplex guide (2) from the back of the printer.
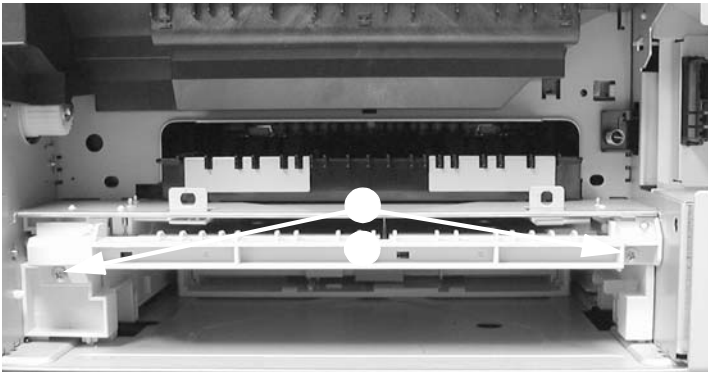
Right Tray 2 guide removal (1 of 3)

3 Turn the printer on its back.

4 Remove eight screws (1) from the bottom plate (2) and remove the plate.
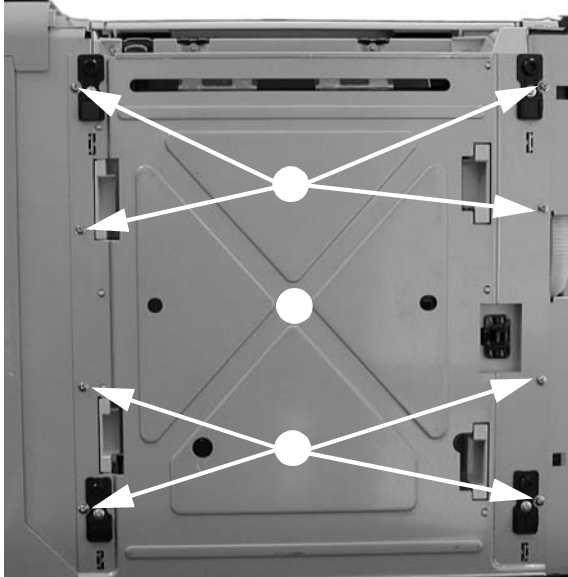
Right Tray 2 guide removal (2 of 3)

5 Remove two screws (1) from the right tray guide and remove the guide (2).
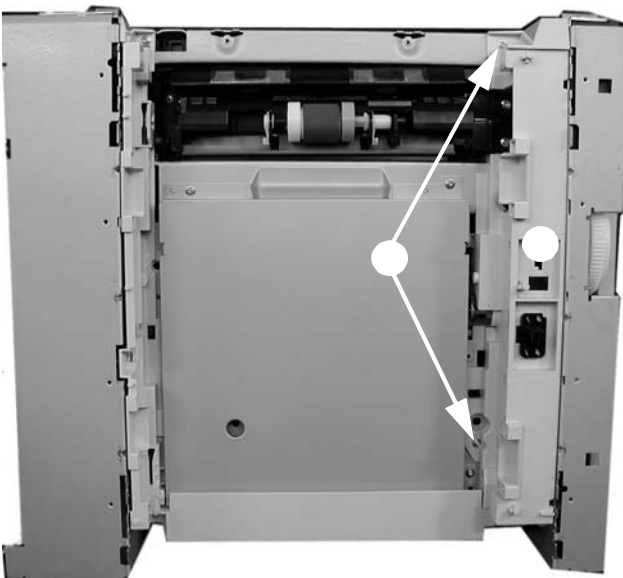
Right Tray 2 guide removal (3 of 3)

This section describes the removal and replacement procedures for the 500-sheet paper feeder covers.
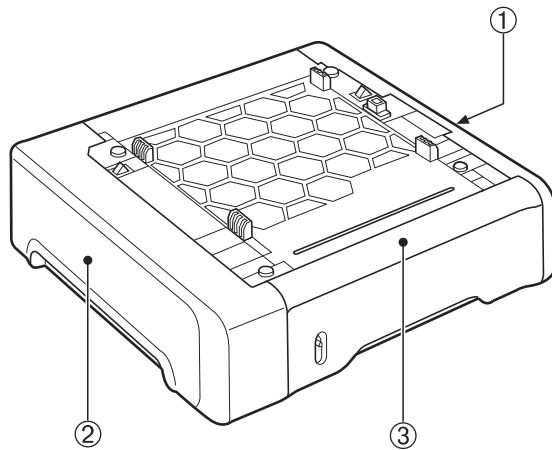
1. Right cover
2. Left cover
3. Front cover

500-Sheet feeder cover locations

Front cover removal - 500-sheet paper feeder

1 Remove Tray 3.

2 Remove the 500-sheet paper feeder right and left covers. See
                         and   .

3 Lift up on the top edge of the front cover to release two pins (1), then swing the top out and down (2) to release the bottom hooks and remove the cover (3).
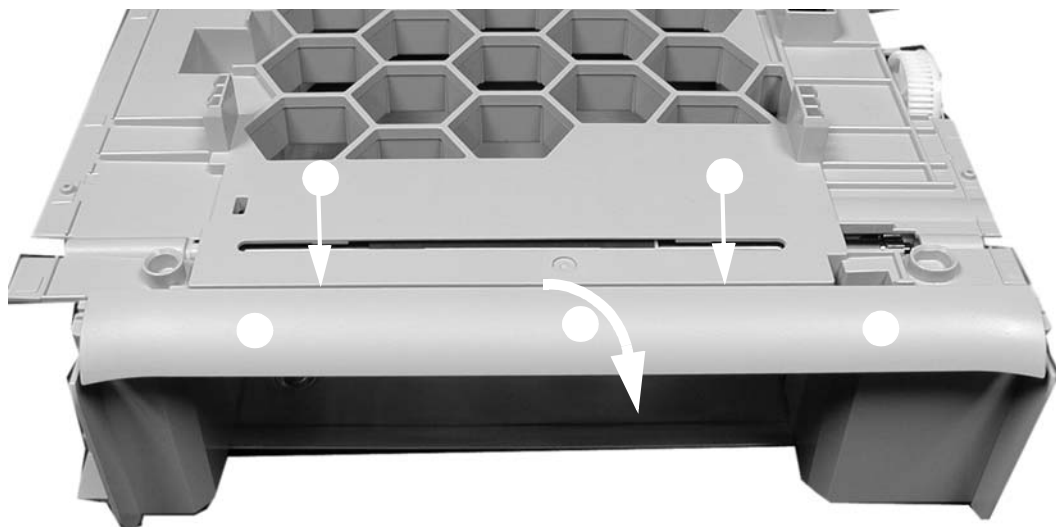
500-Sheet paper feeder front cover removal

Right cover removal - 500-sheet paper feeder

1 Remove Tray 3.

2 Lift up to release two pins (1) and pull the top edge of the cover (2) in the direction of the arrow to remove the cover (3).
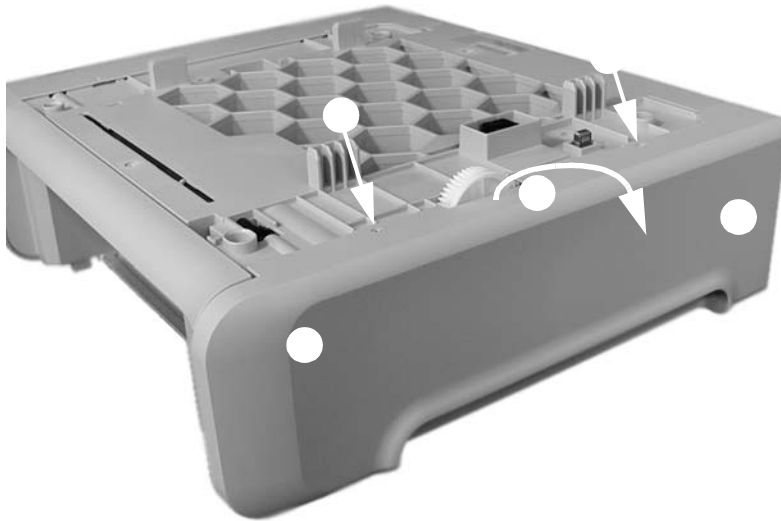
500-sheet paper feeder right cover removal

Left cover removal - 500-sheet paper feeder

1 Remove Tray 3.

2 Lift up on the top edge of the cover to release two pins (1) and pull the edge in the direction of the arrow (2) to remove the cover (3).
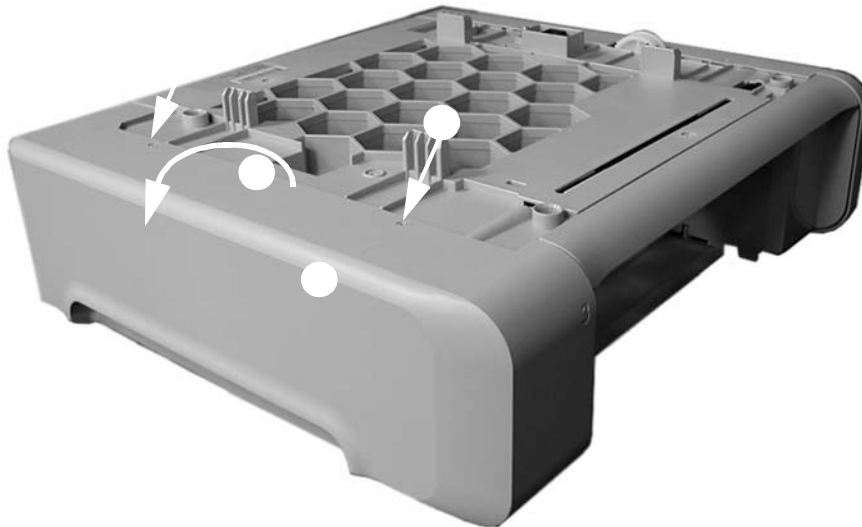
500-sheet paper feeder left cover removal
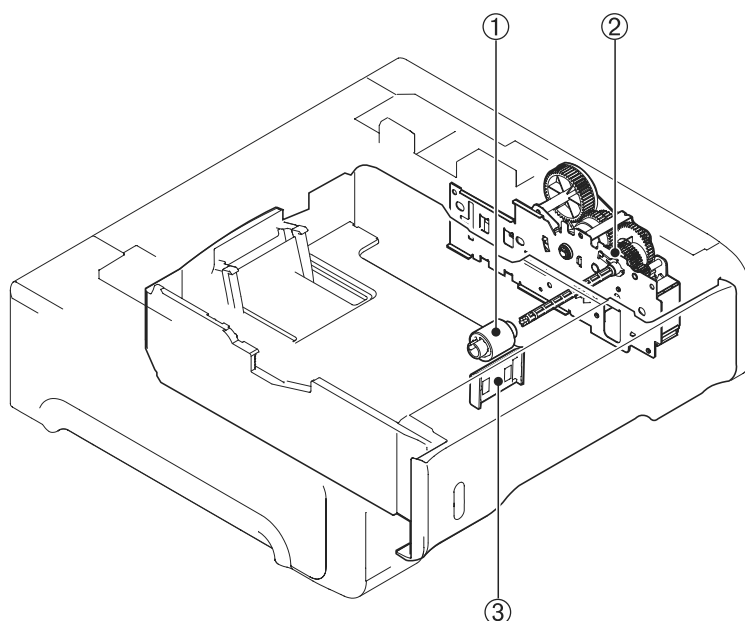
1. 500-Sheet paper feeder pick-up roller
2. 500-Sheet paper feeder pick-up drive unit
3. 500-Sheet paper feeder separation pad

Pick-up roller removal - 500-sheet paper feeder

1 Remove Tray 3.

2 Turn the 500-sheet paper feeder over.

3 Move the left side of the roller unit (1) to the left (2), then pull it out and to the right (3).
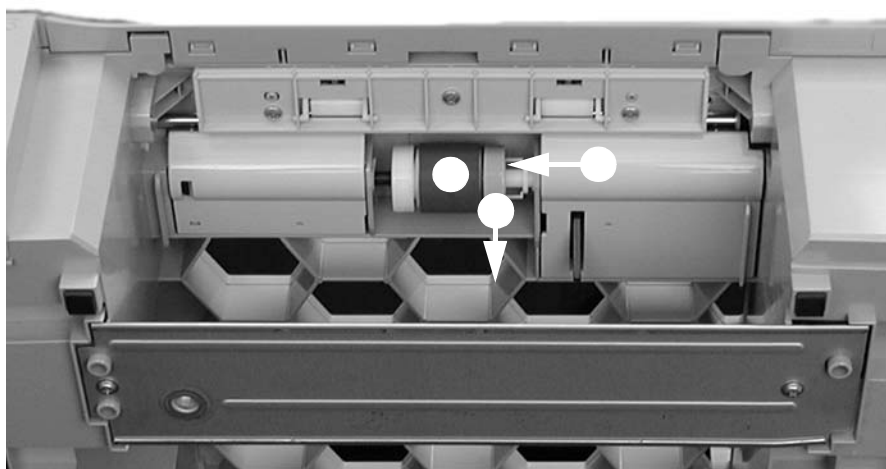
500-Sheet paper feeder pick-up roller removal

Separation pad removal - 500-sheet paper feeder

1 Remove Tray 3.

2 Push the lifting plate (1) down.

3 Unhook the two claws (2) and remove the separation pad (3).
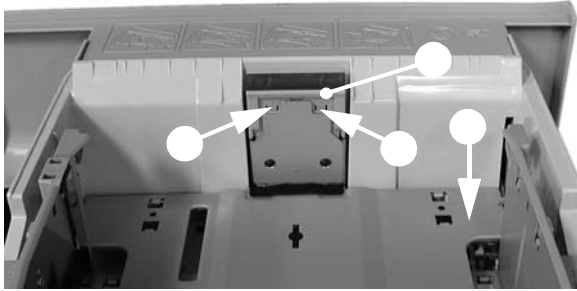
500-sheet paper feeder separation pad removal

Pick-up drive unit removal - 500-sheet paper feeder

1 Remove the right cover. See   .

2 Disconnect two connectors (1).

3 Release the cables from the cable guide (2).

4 Remove four screws (3) and remove the pick-up drive unit (4).
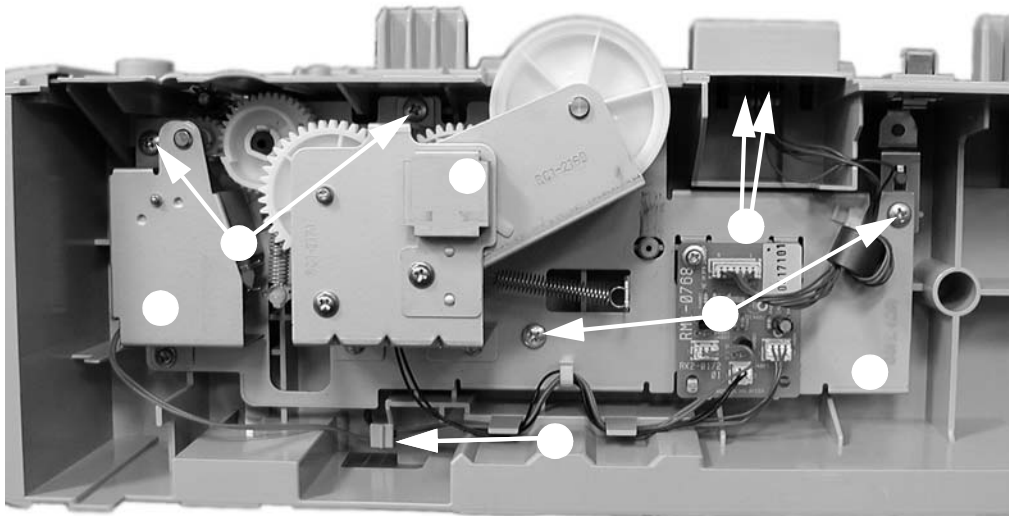
500-Sheet paper feeder pick-up drive unit removal
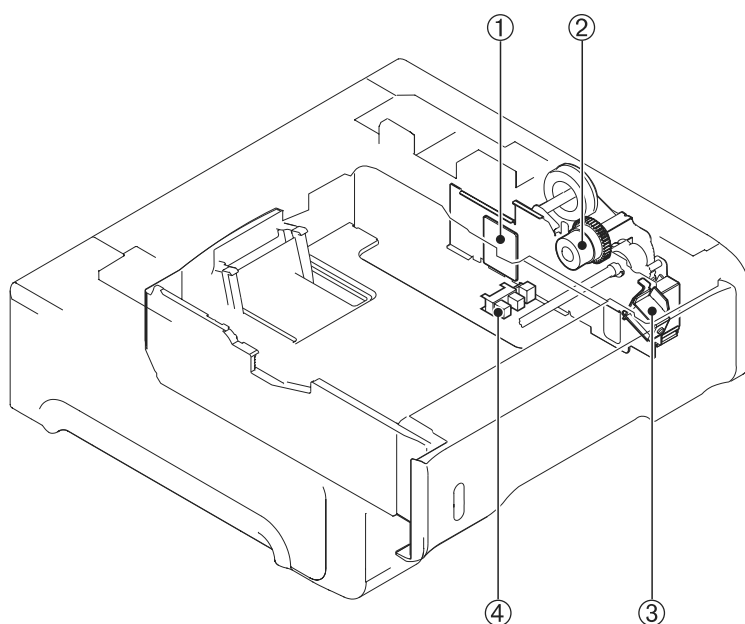
1   500-Sheet paper feeder PCB
2   500-Sheet paper feeder pick-up clutch (CL4)
3   500-Sheet paper feeder pick-up solenoid (SL3)
4   500-Sheet paper sensor (PS3)

500-Sheet paper feeder sensor/solenoid/motor/PCB locations

500-Sheet paper feeder PCB removal - 500-sheet feeder

1 Remove the right cover. See

2 Disconnect four connectors (1), remove one screw (2), and remove the 500-sheet feeder PCB (3).
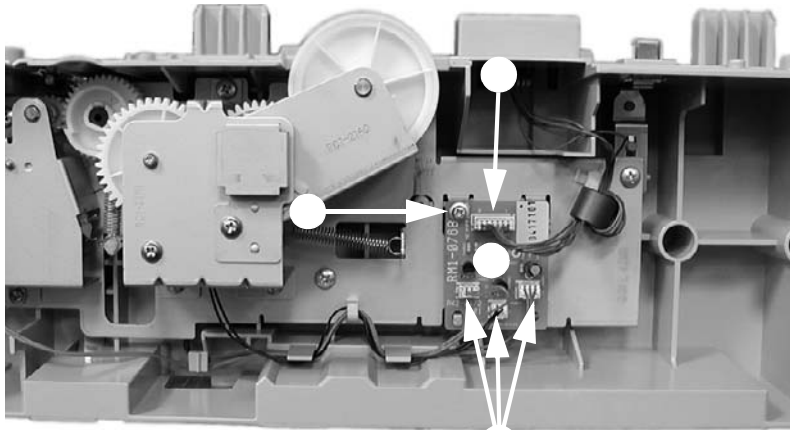
500-Sheet paper feeder PCB removal

Pick-up clutch (CL4) removal - 500-sheet feeder

1 Remove the right cover. See   .

2 Disconnect one connector (1) and one spring (2).

3 Remove three screws (3) (look under the metal bracket for two of the three screws), and remove the sheet metal bracket (4).

4 Remove the swing unit (5).
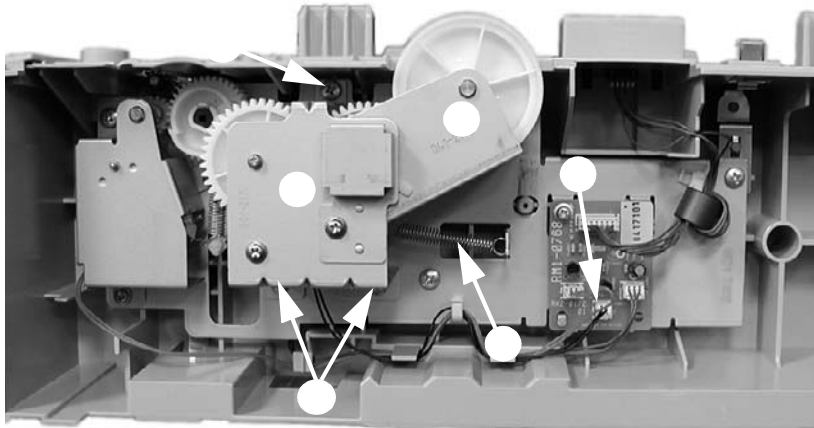
500-Sheet paper feeder pick-up clutch removal

The entire unit needs to be replaced for replacement of the pick-up clutch.

Pick-up solenoid (SL3) removal - 500-sheet feeder

1 Remove Tray 3.

2 Remove the right cover. See   .

3 Disconnect one connector (1), remove two screws (2), and remove the solenoid plate (3).
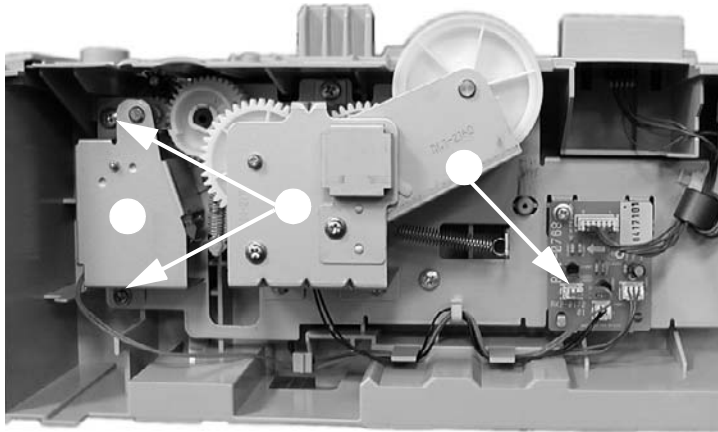
500-Sheet paper feeder pick-up solenoid removal

4 Remove the one screw to remove the pick-up solenoid from the plate.

Paper sensor (PS3) removal - 500-sheet feeder

1 Remove Tray 3.

2 Turn the 500-sheet paper feeder over.

3 Remove two screws (1) and remove the lower front frame (2).
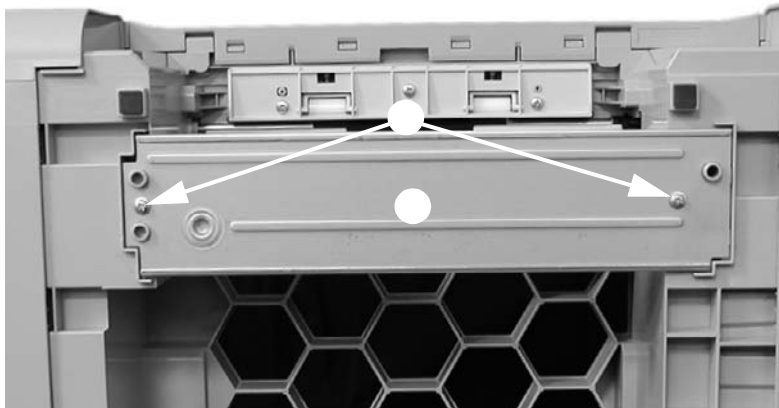
500-Sheet paper feeder front frame removal (1 of 3)

4 Press in on one claw by inserting a flat-blade screwdriver into the slot (1), at the same time, pry up at slot (2) to release the cover (3), then swing the left side of the cover out to remove it.
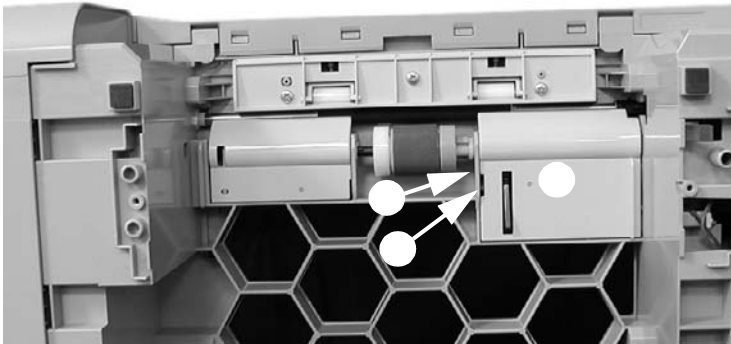
500-Sheet feeder paper sensor removal (2 of 3)

5 Disconnect one connector (1), unhook two claws (2), and remove the paper sensor (3).
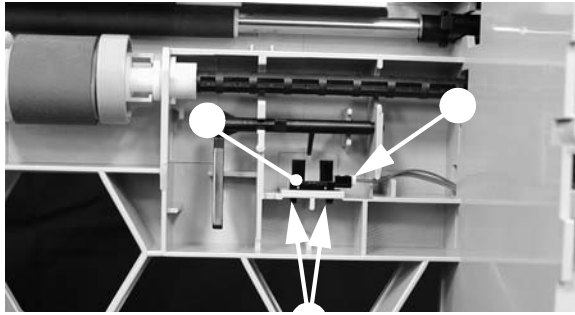
500-Sheet feeder paper sensor removal (3 of 3)

Troubleshooting

This chapter contains the following sections.

This troubleshooting chapter assumes the reader has a basic understanding of the color laser printing process. Explanations of each mechanical assembly, printer system, and the basic theory of operation are found in Chapter 5. Do not perform any of these troubleshooting processes without fully understanding the function of each mechanism.

This chapter contains the following sections:

Troubleshooting process includes a pre-troubleshooting checklist and a troubleshooting flowchart. These tools contain information about common printer errors that can inhibit proper operation or create print quality problems. These tools also include recommendations for solving the cause of the error.

Printer error troubleshooting 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 found later in this chapter to solve the problem.

Paper path troubleshooting provides techniques to solve feed problems. Explanations regarding print media checks, troubleshooting jams, and the differences between jams caused by media and those caused by the printer are discussed.

Image formation troubleshooting suggests methods for solving print quality problems.

Interface troubleshooting provides techniques for isolating communication problems to the printer hardware, printer configuration, network configuration, or software application.

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 on how to access and use the diagnostic tools incorporated into the printer.

Service menu provides procedures for entering the service menu and performing service-oriented tasks. These tasks include counts for entering the serial number, service ID, transfer unit maintenance, fuser maintenance, color page, total page, and clearing the event log.

Diagrams provides graphical locations and tables for the printer's internal assemblies and sensors.

When the printer malfunctions or encounters an unexpected situation, the printer control panel alerts you of 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 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:

Are supply items within their rated life?

Does the configuration page reveal any configuration errors?

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 +/- 1 degree?
	Is the power supply voltage within ± 10 volts of the specified power source?
	Is the power supply plug inserted in the printer and the outlet?
	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 (no curls, folds, etc.)?
	Is the media stored correctly and within environmental limits?
Input trays	Is the amount of media in the tray within specifications?
	Is the media set into the tray correctly?
	Are the paper guides aligned with the paper?
	Is the cassette properly installed in the printer?
Print cartridges	Is each print cartridge properly installed?
Transfer unit and fuser	Are the transfer unit and fuser properly installed?
Covers	Is the front door closed?
Condensation	Does condensation occur following a temperature change (particularly in winter following cold storage)? If so, wipe affected parts dry or leave the printer on for 10 to 20 minutes.
	Was a print cartridge opened soon after being moved from a cold to a warm room? If so, allow the print cartridge 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 for instructions.

Troubleshooting flowchart

The flowchart on these two pages highlights the general processes to quickly isolate and solve printer hardware problems.

Each heading depicts a major troubleshooting step. A "yes" answer to the questions allows you to proceed to the next major step.

A "no" answer indicates that additional testing is needed. Proceed to the referenced section in this chapter, and follow the instructions. After completing this additional testing, proceed to the next major step in the troubleshooting flowchart.

1

Power On

Is the printer on and displaying a readable message?

YES

NO

A.
Perform power-on checks

See note below

B.
After control panel display becomes functional, go to Step 2.

2

Display

Does the display indicate any of the following?
READY
OFFLINE
POWERSAVE ON

YES

NO

A.
Show Event Log to display information on current error and correct it.

B.
After correcting all messages and errors, go to Step 3.

3

Event Log

Have you evaluated the Event Log?

YES

NO

A.
For paper jams encountered during attempts to print Event Log, see "Paper path troubleshooting."

B.
Print and evaluate the Event Log.

C.
After evaluating the Event Log, go to Step 4.

If the printer's display is blank, but the power-on checks pass, try printing an engine test page to determine whether the problem is with the engine/display or with the formatter. See for instructions.

Troubleshooting flowchart (continued)

4 **5** **6**

Information Pages	Image Quality	Interface
Will it print a Configuration Page?	Does the print quality meet customer requirements?	Can the customer print successfully from the host system?

YES → YES →

NO ↓   NO ↓   NO ↓

A. Show Event Log to display information on the current error and correct it.	A. **Print the PQ troubleshooting pages to identify the problem**	A. Run a print job from the host system.

B. Print Configuration Page and verifiy information.	B. Perform corrective actions.	B. Perform corrective actions.

C. After verifying Configuration Page, go to Step 5.	C. After meeting print quality requirements, go to Step 6.	END

Troubleshooting power-on

When you turn on the printer, if it does not make any sound or if the control panel display is blank, check the following items:

1   Verify that the printer is plugged into an active electrical outlet with the correct voltage and not plugged into a surge protector or power strip.

2   Verify that the on/off switch is in the ON position.

3   Make sure the fan is running, indicating the system is operational.

4   Verify that the firmware DIMM (HP 3700 only) and the formatter are seated and operating properly.

5   Remove any HP Jetdirect or other devices, then try to turn the printer on again.

6   Make sure the control panel display is connected.

7   Check the two fuses on the power supply.

8   If necessary, replace the power supply.

9   If necessary, replace the DC controller.

The following tables explain messages that might appear on the printer control panel. Alphabetical printer messages and their meanings are listed in the   table, and numerical printer messages are listed in the   table.

Not all messages are described in the tables; those messages that are not listed are self-explanatory.

Status messages

Status messages reflect the current state of the printer. They inform you of normal printer operation and require no interaction to clear them. They change as the state of the printer changes. Whenever the printer is ready, not busy, and has no pending warning messages, the status message **Ready** is displayed if the printer is online.

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** is set in the menus, the printer will continue normal operation after displaying an auto-continuable error message for 10 seconds.

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   button will cancel the job.

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.

Alphabetical printer messages

The following table lists the alphabetical control panel messages. The numerical messages are listed in the following table.

Table 7-2 Alphabetical printer messages

Message	Description	Action
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 the **Ready** or **BUSY** state.	Contact the printer administrator to change settings. Perform a cold reset to clear passwords.
Calibrating...<TEST>	The printer is calibrating.	No action necessary.
Calibrating... Media sensor	The printer is calibrating the media sensor.	No action necessary.
Canceling... <JOB NAME>	The printer is in the process of canceling a job. The message will continue to be displayed while the job is stopped, the paper path flushed, and any remaining incoming data on the active data channel is received and discarded.	No action necessary.
CANNOT DUPLEX CHECK REAR BIN alternates with CANNOT DUPLEX CHECK PAPER	HP 3700 only. The lower rear door (rear output bin) was opened during the automatic duplex job or the printer detected a paper size that could not go through the auto-duplexer.	Close the lower rear door (rear output bin) or load paper that is supported for autoduplexing. See , in chapter 1.
CANNOT DUPLEX CLOSE REAR BIN	HP 3700dn and 3700dtn only. A 2-sided print job has been sent to the printer while the lower rear door (rear output bin) is open, or the face-up tray sensor is damaged.	1. Close the lower rear door (rear output bin). 2. Replace the face-up tray sensor lever. 3. Reseat the face-up tray sensor connector J711 or the sensor connection on the DC controller PCB. 4. Replace the face-up tray sensor (PS11) 5. Replace the DC controller PCB
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 alternates with To continue press ✔	The printer 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 ✔ to continue. 2. Try a different driver.
CLOSE UPPER REAR DOOR	The upper rear door is open.	Close the upper rear door.
Cleaning...	The printer is in the process of cleaning.	No action necessary.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
Clearing event log	This message is displayed while the event log is cleared. The printer will back up one screen to Service Menu upon completion of printing the page.	No action necessary.
Clearing paper path	HP 3700 only. The printer detected jammed or misplaced paper when turned on and is attempting to eject jammed pages.	No action necessary.
CLOSE FRONT DOOR	The front door needs to be closed. Damaged door open detection switch actuator. The connector in the +24VB line is not properly connected. Defective front door detection switch. Defective DC controller PCB.	1. Close the front door. 2. Replace the door open detection switch actuator (the switch arm for the front cover and right frame). 3. Reseat the DC controller PCB connector J1010. 4. Replace the door open switch. 5. Replace the DC controller PCB.
Creating... CLEANING PAGE	The printer is generating a cleaning page. The printer returns to the **Ready** state when the cleaning page is finished printing.	1. Press to enter the menus. 2. Load the cleaning page into Tray 1. 3. Select **PROCESS CLEANING PAGE**.
DATA RECEIVED alternates with Ready	The printer received data and is waiting for a form feed. When the printer receives another file, the message should disappear.	Press ✔ to continue.
Event Log Empty	**SHOW EVENT LOG** was selected from the control panel, and the event log is empty.	No action necessary.
FLASH DEVICE FAILURE alternates with Ready To clear press ✔	HP 3700 only. A device failure has occurred on the specified storage device.	1. Printing may continue for jobs that do not require the Flash DIMM. 2. To remove this message from the display, press ✔. 3. If the message persists, remove and re-install the Flash DIMM. 4. If the message persists, replace the Flash DIMM.
Flash disk X initializing alternates with DO NOT POWER OFF	HP 3700 only. The new flash DIMM installed in slot X is initializing.	No action necessary.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
FLASH FILE OPERATION FAILED alternates with Ready To clear press ✔	HP 3700 only. 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).	1. Printing may continue. 2. To remove this message from the display, press ✔. 3. If the message reappears, there might be a problem with the software application.
FLASH FILE SYSTEM IS FULL alternates with Ready To clear press ✔	HP 3700 only. 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.	1. Use HP Web Jetadmin software to delete files from the Flash Memory and try again. 2. To remove this message from the display, press ✔. See in chapter 3.
FLASH IS WRITE PROTECTED alternates with Ready To clear press ✔	HP 3700 only. The file system is protected and no new files can be written to it.	1. To enable writing to the Flash Memory, turn off write protection using HP Web Jetadmin. 2. To remove this message from the display, turn the printer off and then back on. See in chapter 3.
[FS] DEVICE FAILURE alternates with To clear press ✔	HP 3700 only. Device failure [FS] DEVICE can be either: [FS FLASH] DEVICE or [FS RAM DISK] DEVICE	1. To remove this message from the display, press ✔.
[FS] FILE OPERATION FAILED alternates with To clear press ✔	HP 3700 only. This message indicates a PJL file system command was received that attempted to perform an illogical operation (that is, download a file to a non-existent directory). [FS] DEVICE can be either: [FS FLASH] DEVICE or [FS RAM DISK] DEVICE	1. To remove this message from the display, press ✔.
[FS] FILE SYSEM IS FULL alternates with To clear press ✔	HP 3700 only. This message indicates a PJL file system command was received that attempted to store something on a file system but was unsuccessful due to the file system being full. [FS] DEVICE can be either: [FS FLASH] DEVICE or [FS RAM DISK] DEVICE	1. To remove this message from the display, press ✔.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
[FS] IS WRITE PROTECTED alternates with To clear press ✔.	HP 3700 only. The device is write protected and no new files can be written to it. [FS] DEVICE can be either: [FS FLASH] DEVICE or [FS RAM DISK] DEVICE	1. To remove this message from the display, press ✔.
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.
GENUINE HP SUPPLIES DESIGNED FOR <PROD>	This genuine HP supply was not designed for this printer and is not supported. Print quality might be affected.	Replace this supply with a genuine HP supply designed for this printer.
Incorrect	Access to the menu is restricted.	Contact the network administrator.
INCORRECT <COLOR> CARTRIDGE alternates with For help press ?	A color cartridge is installed in an incorrect slot or the cartridge is the wrong type, and the cover is closed, or either the memory controller PCB or the DC controller PCB are defective.	1. Press ? for help. or Verify that the cartridge is installed into the correct slot (slots are color coded for each cartridge) and that it is properly seated. 2. Replace the memory controller PCB. 3. Replace the DC controller PCB.
INCORRECT SUPPLIES For status press ✔	At least one supply item is incorrectly positioned in the printer and another supply item is missing, incorrectly placed, out, or low.	Press ✔ and then press ? for help. or See , in chapter 8, for more information.
Initializing	This message is displayed when the printer is turned on, as soon as the individual tasks begin initialization.	No action necessary.
Initializing permanent storage	This message is displayed when the printer is turned on to show that permanent storage is being made ready for use.	No action necessary.

Table 7-2   Alphabetical printer messages (continued)

Message	Description	Action
INSTALL <COLOR> CARTRIDGE alternates with For help press ?	The cartridge is not installed or not correctly installed in the printer, there is poor coupling to the cartridge poor, primary transfer bias contacts, or the high-voltage power supply PCB or the DC controller PCB are defective.	1. Press ? for help. 2. Verify that the cartridge is installed into the correct slot (slots are color coded for each cartridge) and that it is properly seated. 3. Reseat the cartridge, making sure that the drum drive gears on the cartridge and printer are correctly coupled. 4. Check the printer primary transfer bias contacts to the transfer unit. Clean if dirty. If the dirt does not come off or the contacts are damaged, replace the unit. 5. Replace the high-voltage power supply PCB. 6. Replace the DC controller PCB.
INSTALL FUSER For help press ?	The fuser is either not installed or not correctly installed in the printer, the connector between the fuser and the printer is not connected properly, there is a break in either the main thermistor or the fuser heater, or the DC controller PCB is faulty.	1. Press ? for help. 2. Make sure the fuser is correctly seated in its slot. See (in chapter 6) for more information. 3. Reseat the fuser. Check the connector J5013 between the fuser and the printer. Replace it if damaged. 4. Turn the printer off and remove the fuser. Measure the resistance between the fuser connectors J5013LA-2 (MAINTH) and J5013LA-1 (GND). If it is not within the range of 330k to 50k ohms (at ambient temperature), replace the fuser. 5. Measure the resistance between the fuser connectors J5013L-2 (FSRH) and J5013L-1 (FSRN) with the fuser removed. If it is not within the range of 12 to 52 ohms (at ambient temperature), replace the fuser. 6. Replace the DC controller PCB.
INSTALL SUPPLIES For status press ✔	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.	Press ✔ and then press ? for help. or Refer to http://www.hp.com/support/clj3500 or http://www.hp.com/support/clj3700.

Table 7-2   Alphabetical printer messages (continued)

Message	Description	Action
INSTALL TRANSFER UNIT alternates with For help press ?	The transfer unit is either not installed or not correctly installed in the printer, is defective, the high-voltage power supply connection to the transfer unit is defective, or the DC controller PCB is defective.	1. Press **?** for help. 2. Ensure the transfer unit is fully seated, that the contracts are not damaged. See (in chapter 6) for more information. 3. Replace the transfer unit. 4. Replace the high-voltage power supply PCB. 5. Replace the DC controller PCB.
LOAD TRAY X <TYPE> <SIZE> alternates with To use another tray press ✔	Tray X is either empty or configured for a type and size other than what is specified in the job.	Press **?** for help. or Press ✔ to print from another tray.
LOAD TRAY X <TYPE> <SIZE> alternates with For help press ?	Tray X is either empty or configured for a type and size other than specified in the job. No other tray is available.	Press **?** for help.
Loading program X alternates with DO NOT POWER OFF	HP 3700 only. Programs and fonts can be stored on the printer file system and are loaded into RAM when the printer is turned on. The number X specifies a sequence number indicating the current program being loaded.	No action necessary.
MANUALLY FEED OUTPUT STACK alternates with Then press ✔ to print second sides	The first side of a manual 2-sided print job has been printed and the printer is waiting for the output stack to be inserted for the second side to be printed.	Take the output stack out of the output bin and reinsert it in Tray 1 to print the second side of the 2-sided print job.
If no paper is in the manual feed tray: MANUALLY FEED <TYPE> <SIZE> alternates with To continue press ✔	A job sent requires a specific paper type and size that is not currently available.	Press ✔ to print from the tray. or Press **?** for help.
MANUALLY FEED <TYPE> <SIZE> alternates with For help press ?	Tray 1 is empty and no other tray is available.MANUAL FEED was set to ON in the control panel.	Press **?** for help. Turn MANUAL FEED Off in the control panel.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
MANUALLY FEED <TYPE> <SIZE> alternates with To use another tray press ✔.	There is no paper in the tray and a print job sent requires a specific paper type and size that is not currently available through Tray 1.	Press ✔ to print from another tray. or Press **?** for help.
Moving solenoid alternates with To exit press ✔ key	The printer is executing a Component Test and the component selected is Solenoid.	No action necessary.
Moving solenoid and motor alternates with To exit press ✔ key	The printer is executing a Component Test and the components selected are Solenoid and Motor.	No action necessary.
NO JOB TO CANCEL	This message is displayed when the user presses the key but there is no active job or buffered data to cancel. This message is displayed for two seconds before the printer is returned to the READY state.	No action necessary.
NON HP SUPPLY DETECTED alternates with For help press **?**	Not made by HP. This message is displayed until an HP supply is installed or ✔ is pressed.	If you believe you purchased an HP supply, please call the HP fraud hotline at 1-877-219-3183. Service or repairs required as a result of using non-HP supplies is not covered under HP warranty. To continue printing, press ✔. The first pending job will be cancelled.
NON HP SUPPLY IN USE alternates with Ready	The printer has detected that a non-HP supply is currently installed and ✔ (override) was pressed.	If you believe you purchased an HP supply, please call the HP fraud hotline at 1-877-219-3183. Service or repairs required as a result of using non-HP supplies is not covered under HP warranty.

Table 7-2   Alphabetical printer messages (continued)

Message	Description	Action
ORDER <COLOR> CARTRIDGE alternates with LESS THAN XXXX PAGES alternates with Ready	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.	Order the identified print cartridge. Printing will continue until **REPLACE <COLOR> CARTRIDGE** is shown. Estimated pages remaining is based upon historical page coverage with this supply. See (in chapter 8) for more information.
ORDER FUSER KIT alternates with LESS THAN XXXX PAGES alternates with Ready For help press **?**	The fuser is near end of life. The printer is ready and will continue for the estimated number of pages indicated.	Order the fuser kit. Printing can continue until **REPLACE FUSER KIT** is shown. or Press **?** for help. See (in chapter 8) for more information.
ORDER SUPPLIES alternates with Ready	More than one supply item is low.	1. Press **✔** to identify which supplies should be ordered or print a supplies status page. 2. Order the identified supplies. Printing can continue until **REPLACE SUPPLIES** is reached. or Press **?** for help. See (in chapter 8) for more information.
ORDER TRANSFER KIT alternates with LESS THAN XXXX PAGES alternates with Ready For help press **?**	The number of pages remaining for the transfer unit has reached the low threshold, and the SUPPLIES LOW setting in SYSTEM SETUP is set to STOP.	Order the transfer kit. Printing can continue until **REPLACE TRANSFER KIT** is reached. Press **?** for help. See (in chapter 8) for more information.
Paused alternates with To return to Ready press the key	The printer has paused.	Press the key to resume printing.
Performing... PAPER PATH TEST	The printer is performing a Paper Path Test.	No action necessary.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
Performing upgrade	A firmware upgrade is in process.	No action necessary. Do not turn off the printer.
please wait	The printer is in the process of clearing data.	No action necessary.
Powersave on	The printer is in the Powersave mode. Any button pressed or the receipt of data will clear PowerSave and execute the action.	Press any control panel button or the receipt of data will clear PowerSave.
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.	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... ENGINE TEST	This message is displayed while the engine test page is being printed, initiated by pressing the engine test button on the DC controller PCB.	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	HP 3700 only. 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	HP 3700 only. 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 STOPPED To continue press ✔	This message is displayed when a Print/Stop Test is run and the time expires.	Press ✔ to continue printing.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
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	HP 3700 only. The printer is generating the usage page. The printer will return to the online **Ready** state when the page is completed.	No action necessary.
Processing...	This message precedes all other processing tasks, or appears when the printer receives non-printable data.	No action necessary.
Processing... INTERMITTENT MODE alternates with For help press ?	The printer has experienced a period of heavy use. To maintain a supported operating temperature, the printer will print and pause in one-minute intervals.	No action necessary. To avoid intermittent mode in the future, reduce the amount of heavy use.
Processing... <JOB NAME>	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... <JOB NAME> alternates with from tray X	The printer is actively processing a job from the designated tray.	No action necessary.
RAM DISK DEVICE FAILURE alternates with Ready To clear press ✔	HP 3700 only. A device failure has occurred on the specified storage device.	1. Printing may continue for jobs that do not require the RAM disk. 2. To remove this message from the display, press ✔.
RAM DISK X Initializing alternates with DO NOT POWER OFF	HP 3700 only. The new RAM disk installed in slot X is initializing.	No action necessary.
RAM DISK FILE OPERATION FAILED alternates with Ready To clear press ✔	HP 3700 only. 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).	1. Printing may continue. 2. To remove this message from the display, press ✔. 3. If the message reappears, there might be a problem with the software application.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
RAM DISK FILE SYSTEM IS FULL alternates with Ready To clear press ✔	HP 3700 only. 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.	1. Use HP Web Jetadmin software to delete files from the RAM disk memory and try again. 2. To remove this message from the display, press ✔. See (in chapter 3) for more information.
RAM DISK IS WRITE PROTECTED alternates with Ready To clear press ✔	HP 3700 only. The file system is protected and no new files can be written to it.	1. To enable writing to the RAM disk memory, turn off write protection using HP Web Jetadmin. 2. To remove this message from the display, press ✔. See (in chapter 3) for more information.
Ready Diagnostics mode alternates with To exit press ✔ Stop key	The printer is online and ready for data. No status or device attendance messages are pending at the display.	No action necessary.
Ready	The printer is online and ready for data. No status or device attendance messages are pending at the display.	No action necessary.
Receiving upgrade	A firmware upgrade is in progress.	Do not turn the printer off until the printer returns to **Ready**.
RELOAD TRAY X TRNSPRNCY <SIZE> alternates with Verify transparency meets specification	The transparency currently loaded might not be supported.	CAUTION: Use only transparencies specified for use with HP Color LaserJet printers. Noncompatible transparencies can damage the printer. See the *HP LaserJet Printer Family Print Media Specification Guide*. 1. Remove all non-compatible transparencies from Tray 1. 2. Load compatible transparencies in Tray 1.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
REPLACE <COLOR> CARTRIDGE alternates with For help press **?**	The identified print cartridge has reached the end of life. Printing will not continue until the cartridge is replaced.	Press **?** for help. or See (in chapter 6) and (in chapter 8) for more information. Or, if the cartridge is new: 1. Replace the memory controller PCB 2. Replace the DC controller PCB.

REPLACE <COLOR> CARTRIDGE
 	
alternates with
 	
To continue press ✔.
	The identified print cartridge is nearing the end of its useful life and the **SUPPLIES LOW** setting in **SYSTEM SETUP** is set to **STOP**. To override, press ✔. Or, if the cartridge is new, the new cartridge is defective, the memory controller PCB or the DC controller PCB is defective	1. Order the identified print cartridge.
		
		2. Press ✔ to continue.
		         or
		   Press **?** for help.
		
		See (in chapter 8) for more information.

REPLACE FUSER KIT For help press **?**	The fuser kit is at end of life.	Press **?** for help. or See (in chapter 6) and (in chapter 8) for more information.
REPLACE FUSER KIT alternates with To continue press ✔	The fuser is near end of life and the **SUPPLIES LOW** setting in **SYSTEM SETUP** is set to **STOP**.	1. Order the fuser kit. 2. Press ✔ to continue printing. Printing can continue until **REPLACE FUSER KIT** is reached. or Press for help. See (in chapter 8) for more information.
REPLACE SUPPLIES alternates with For status press ✔	At least one supply item is out and needs to be replaced and another supply item is either out or low.	1. Press ✔ to identify which supplies should be replaced. 2. Press **?** for help. or Refer to the appropriate section in chapter 6 (Removal and replacement) or (in chapter 8) for more information.
REPLACE SUPPLIES alternates with To continue press ✔	More than one supply item is low, and the **SUPPLIES LOW** setting in **SYSTEM SETUP** is set to **STOP**.	1. Press ✔ to identify which supplies should be ordered. 2. Order the identified supplies. 3. Press ✔ to continue printing. See (in chapter 8) for more information.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
REPLACE TRANSFER KIT For help press **?**	The transfer unit is at end of life.	Press **?** for help. See and (in chapter 8) for more information. Or, if transfer unit is new: 1.Reset the transfer kit page count in the CONFIGURE DEVICE/ RESETS menu 2. Defective waste toner full detection lens. Check the waste toner full detection lens. Clean if dirty. Replace the lens if damaged. 3. The connectors in the waste toner full detection signal line are not properly connected. Reseat the waste toner full sensor connector J801 and DC controller PCB connector J1009. 4. Defective waste toner full sensor. Replace the waste toner full sensor. 5. Defective DC controller PCB. Replace the DC controller PCB.
REPLACE TRANSFER KIT alternates with To continue press ✔	The transfer unit is near end of life and the **SUPPLIES LOW** setting in **SYSTEM SETUP** is set to **STOP**.	1. Order the transfer kit. 2. Press ✔ to continue printing. See , in chapter 8, for more information.
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. For the HP 3700 printer, you might need to use the parallel port to send the upgrade file.
Restoring factory settings	The printer is restoring factory settings.	No action necessary.
Restoring...	The printer is restoring settings.	No action necessary.
Resetting Kit Count	**YES** was selected in the **RESET SUPPLIES** menu to reset the counts for any of the supplies that cannot be detected as new.	No action necessary.
Rotating <COLOR> motor alternates with To exit press ✔ key	A component test is in progress; the component selected is **<color> Cartridge motor**.	Press when ready to stop this test.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
Rotating motor alternates with To exit press ✔ key	The printer is executing a Component Test and the component selected is **Rotating <COLOR>**.	Press when ready to stop this test.
Setting saved	A menu selection has been saved.	No action necessary.
Tray X <TYPE> <SIZE> alternates with To change size or type press ✔	The printer is reporting the current configuration of tray X.	Press ✔ to change size or type.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
TRAY X OPEN OR EMPTY	The specified tray is open or is empty and needs to be filled. If the tray is not open or has paper installed, a problem may exist with the sensor, sensor connections, or the DC controller PCB.	1. If the tray has paper or is closed and the paper guides are in the correct position, perform the following action for the specified tray: **Tray 1** (multipurpose tray) 1. Damaged Tray 1 paper sensor lever, replace the lever. 2. The connectors in the Tray 1 paper detection signal line are not connected properly. Reseat the paper sensor connector J701, relay connector J5028, and DC controller PCB connector J1006. 3. Defective Tray 1 paper sensor. Replace the Tray 1 paper sensor. 4. Defective DC controller PCB. Replace the DC controller PCB. **Tray 2** (cassette tray) 1. Damaged Tray 2 paper sensor lever, replace the lever. 2. The connectors in the Tray 2 paper detection signal line are not connected properly. Reseat the Tray 2 paper sensor connector J702, relay connector J5028, and DC controller PCB connector J1006. 3. Defective Tray 2 paper sensor. Replace the paper pickup sensor. 4. Defective DC controller PCB. Replace the DC controller PCB. **Tray 3** (500-sheet feeder) 1. Damaged paper 500-sheet feeder paper sensor lever. Replace the paper feeder paper sensor lever. 2. The connectors in the 500-sheet paper feeder paper detection signal line are not connected properly. Reseat the paper feeder paper sensor connector J703 and paper feeder PCB connector J4004. 3. Defective 500-sheet paper feeder paper sensor. Replace the paper feeder paper sensor. 4. Defective 500-sheet paper feeder PCB. Action: Replace the paper feeder PCB. 5. Defective DC controller PCB. Replace the DC controller PCB.

Table 7-2 Alphabetical printer messages (continued)

Message	Description	Action
UNAUTHORIZED SUPPLY IN USE alternates with Ready	The printer has detected that a non-HP supply is currently installed and press ✔ (override) was pressed.	If you believe you purchased an HP supply, please call the HP fraud hotline at 1-877-219-3183. Service or repairs required as a result of using non-HP supplies are not covered under HP warranty.
UNSUPPORTED DATA ON <FS> DIMM IN SLOT X alternates with To clear press ✔	HP 3700 only. The data on the DIMM is not supported (although the DIMM itself may be supported).	Press ✔ to clear this message. or Press to continue printing.
USE TRAY X <TYPE> <SIZE>	The printer is offering a selection of alternate paper to use for the print job.	1. If desired, use ▼ and ▲ to highlight a different size or type, and then press ✔ to select the size or type. 2. Press ↰ to return to the previous size or type.
Wait for printer to reinitialize	Settings have been changed before the printer automatically restarts, or external device modes have changed.	No action necessary.

Not all messages are described in the tables; those messages that are not listed are self-explanatory.

Numerical printer messages

The following table lists the numerical control panel messages. The alphabetical messages are listed in the previous table.

Table 7-3   Numerical printer messages

Message	Description	Action
10.XX.YY SUPPLY MEMORY ERROR alternates with For help press **?** the printer cannot always determine whether the error is the cartridge or the printer reader/writer	The printer cannot read or write to at least one print cartridge memory tag, or at least one memory tag is missing. **XX Description:** 00 - Memory error on supply 10 - Missing memory on supply **YY Description:** 00 - Black print cartridge 01 - Cyan print cartridge 02 - Magenta print cartridge 03 - Yellow print cartridge	1. Open and close the front door. 2. Ensure the cartridges are fully seated. 3. Swap the cartridge for the color indicated with a cartridge in another slot to determine whether the error follows the cartridge or stays with the slot. If the error follows the cartridge, replace that cartridge, otherwise, continue with step 4. 4. Check the memory controller PCB contacts to the memory tag. Clean if dirty. 5. Reseat the memory controller PCB connector J201 and DC controller PCB connector J1025. 6. Defective memory controller PCB, replace the memory controller PCB. 7. Defective DC controller PCB, replace the DC controller PCB
10.32.00 UNAUTHORIZED SUPPLY alternates with For help press **?**	A new supply has been installed that is not made by HP. This message is displayed until an HP supply is installed or ✔ is pressed.	If you believe you purchased an HP supply, please call the HP fraud hotline at 1-877-219-3183. Service or repairs required as a result of using non-HP supplies are not covered under HP warranty. To continue printing, press ✔. The first pending print job will be cancelled.
10.92.YY CARTRIDGES NOT ENGAGED alternates with Open and close front door.	The cartridges are not engaged., poor primary transfer bias contacts, defective high-voltage supply, or control signal errors. **YY Description:** 00 - Black print cartridge 01 - Cyan print cartridge 02 - Magenta print cartridge 03 - Yellow print cartridge	1. Open and close the front door to fully engage the cartridges. 2. Reseat the print cartridges. 3. Check the printer primary transfer bias contacts to the transfer unit. Clean if dirty. If the contracts cannot be cleaned or they are damaged, replace the transfer unit. 4. Replace the high-voltage power supply PCB. 5. Replace the DC controller PCB.

Table 7-3   Numerical printer messages (continued)

Message	Description	Action
13.XX.YY FUSER JAM LOWER REAR DOOR alternates with For help press **?**	There is a jam inside the lower rear door (rear output bin) behind the fuser.	If the printer is unable to clear the jam automatically, see See , later in this chapter. or Press **?** for help. See later in this chapter for more paper jam troubleshooting.
13.XX.YY JAM INSIDE FRONT DOOR alternates with For help press **?**	There is a jam inside the front door.	Press **?** for help. or See later in this chapter. If **Jam Recovery: OFF** some pages will not be reprinted. Re-send the missing pages.
13.90.00 JAM INSIDE FRONT DOOR alternates with REMOVE INCOMPATIBLE TRANSPARENCIES	There is a jam inside the front door caused by incompatible transparencies.	Press **?** for help. or See , later in this chapter for more information. CAUTION: Use only transparencies specified for use with HP Color LaserJet printers. Noncompatible transparencies can damage the printer. See the *HP LaserJet Printer Family Print Media Specification Guide*. 1. Remove all non-compatible transparencies from Tray 1. 2. Load compatible transparencies in Tray 1.

13.XX.YY JAM REMOVE TRAY 2
 	
alternates with
 	
For help press **?**
	HP 3700 only.
	
	There is a jam in the duplex path or the paper access plate in the duplex area needs to be closed.
		Press **?** for help.
		or
		Remove Tray 2 then clear the paper jam in the duplex path or close the paper access plate in the duplex area.See
		                                  , later in this chapter.
		
		       If **Jam Recovery** is set to **OFF** some pages will not be reprinted. Re-send the missing pages.

13.XX.YY JAM INSIDE LOWER REAR DOOR alternates with Clear jam then press ✔	A page is jammed in the lower rear door (rear output bin).	Press **?** for help. or See , later in this chapter.
13.XX.YY JAM INSIDE UPPER REAR DOOR alternates with Clear jam then press ✔	There is a jam inside the upper rear door, the upper rear door was opened during printing, or the door has been left open and a print job was sent to the printer.	Close the upper rear door. Press **?** for help. or See , later in this chapter.

Table 7-3   Numerical printer messages (continued)

Message	Description	Action
13.XX.YY JAM IN TRAY 1 alternates with For help press **?** Clear jam then press ✔	A page is jammed in the multipurpose tray.	Press **?** for help. or See , later in this chapter. If **Jam Recovery: OFF** some pages will not be reprinted. Re-send the missing pages.
13.XX.YY JAM IN TRAY X alternates with For help press **?** Clear jam then press ✔	A page is jammed in tray X.	Press **?** for help. or See , later in this chapter. If **Jam Recovery** is set to **OFF** some pages will not be reprinted. Re-send the missing pages.
20 INSUFFICIENT MEMORY alternates with For help press **?** 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. 3. HP 3700 only - Add additional memory to allow printing of more complex pages. 4. HP 3500 only - on the printer driver, set **Raster Compression** on the **Advanced** tab to **Maximum**.
22 EIO X BUFFER OVERFLOW alternates with To continue press ✔	HP 3700 only when an EIO device is installed. The printer EIO card in slot X has overflowed its I/O buffer during a busy state.	1. Press ✔ to continue printing. A loss of data will occur.
22 PARALLEL I/O BUFFER OVERFLOW alternates with To continue press ✔	HP 3700 only. The printer's parallel buffer has overflowed during a busy state.	Press ✔ to continue printing. A loss of data will occur.
22 SERIAL I/O BUFFER OVERFLOW alternates with To continue press ✔	HP 3700 only when an EIO device is installed. The printer serial buffer has overflowed during a busy state.	Press ✔ to continue printing. A loss of data will occur.
22 USB I/O BUFFER OVERFLOW alternates with To continue press ✔	The printer's USB buffer has overflowed during a busy state.	Press ✔ to continue printing. A loss of data will occur.

Table 7-3 Numerical printer messages (continued)

Message	Description	Action
40 BAD SERIAL TRANSMISSION alternates with To continue press ✔	HP 3700 only. A serial data error (parity, framing, or line overrun) has occurred while the printer was receiving data.	Press ✔ to continue printing. A loss of data will occur.
40 EIO X BAD TRANSMISSION alternates with To continue press ✔	HP 3700 only when an EIO device is installed. A connection with the card in the EIO slot has been abnormally broken.	Press ✔ to continue printing. A loss of data will occur.
41.3 UNEXPECTED SIZE IN TRAY X alternates with LOAD TRAY X <TYPE> <SIZE>	Paper is loaded that is longer or shorter in the feed direction than the size configured for the tray.	1. Load the paper as instructed. 2. Press ✔ to print. 3. If the incorrect size was selected, press to cancel the job or press ? for help. 4. If the incorrect tray was selected, press to cancel the job. 5. Configure the trays correctly and resend the job. Ensure all trays are configured correctly.
41.5 UNEXPECTED TYPE IN TRAY X alternates with LOAD TRAY X <TYPE> <SIZE>	The printer senses a different paper type in the paper path than what is configured in the tray.	1. Load the paper as instructed. 2. Press ✔ to print. 3. If the incorrect type was selected, press to cancel the job or press ? for help. 4. Configure the trays correctly and resend the job. Ensure all trays are configured correctly.

Table 7-3 Numerical printer messages (continued)

Message	Description	Action
41.X PRINTER ERROR alternates with To continue press ✔	A printer error has occurred. **X Description:** 2 - Beam detect misprint error. 3 - Media feed error (size) 5 - Media feed error (type) 7 - Feed delay error	1. Press ✔ to continue or press **?** for more information. 2. If the message persists after exiting help, turn the printer off and then back on. 3. Perform the following actions for the indicated errors: **41.2 error** - laser/scanner error, perform the following steps: 1. Connectors in laser/scanner control line are not connected properly. Reseat the DC controller PCB connectors: J1022, J1026, J1027 and the laser/scanner unit connectors: J101A, J101B, J5001A, J5001B, J5020). 2. Bad laser/scanner unit: replace the laser/scanner. 3. Bad DC controller PCB; replace the DC controller PCB. **41.3 error** - occurs when the correct media size is loaded in the designated paper tray, but the printer mis-reads it as the incorrect size, perform the following steps: 1. Registration shutter does not move smoothly and should be reseated; or, shutter is damaged and should be replaced. 2. The DC controller PCB is defective. Replace the DC controller PCB. **41.5 error** - occurs when the correct media type is loaded in the designated tray but the printer mis-reads it as the incorrect type, perform the following steps: 1. Defective media sensor, replace the sensor. 2. Defective DC controller PCB, replace the PCB. **41.7 error** - occurs when a page is jammed in the paper path. See , later in this chapter.

Table 7-3 Numerical printer messages (continued)

Message	Description	Action
49.XXXX PRINTER ERROR alternates with 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 applications. On rare occasions, the formatter is at fault, which is usually indicated by a 79 Service Error.	1. Press to clear the print job from the printer memory. 2. Turn the printer off and then back on. 3. Try printing a job from a different software application. If the job prints, go back to the first application and try printing a different file. If the message appears only with a certain software application or print job, contact the software vendor for assistance. 4. HP 3700 only - Try a different driver 5. If the message persists with different software applications and print jobs, disconnect all cables to the printer that connect it to the network or PC. 6. Turn the printer off. 7. HP 3700 only - Remove all memory DIMMs or third-party DIMMs from the printer. (Do not remove the firmware DIMM in the lower slot J1.) 8. For the HP 3700, remove the EIO card from the printer. 9. Turn the printer on. 10. HP 3700 only - If the error no longer exists, install each DIMM and EIO device one at a time, making sure to turn the printer off and back on as you install each device. 11. HP 3700 only - Replace a DIMM or EIO device if you determine that it causes the error. 12. HP 3700 only - Remember to reconnect all cables that connect the printer to the network or computer. 13. HP 3700 only - If the error persists, replace the firmware DIMM. 14. Replace the formatter and calibrate the printer.

Table 7-3   Numerical printer messages (continued)

Message	Description	Action

50.X FUSER ERROR
 	
alternates with
 	
For help press **?**
	A fuser error has occurred.
	
	X Description
	1 - low fuser temperature
	2 - fuser warmup service
	3 - high fuser temperature
	4 - faulty fuser
	8 - low fuser temperature
	    (subthermistor
	9 - high fuser temperature
	    (subthermistor)
		The fuser is HOT. Turn the printer off and allow it to cool for approximately 10 minutes before removing the fuser.
		
		50.1 error - Fuser failure (Abnormally Low Temperature Main Thermistor), perform the following steps:
		
		1. The connector between the fuser and the printer is not connected properly. Reseat the fuser. Check the connector J5013 between the fuser and the printer. Replace it if damaged.
		
		2. Break in the main thermistor. Turn the printer off and remove the fuser. Measure the resistance between the fuser connectors J5013LA-2 (MAINTH) and J5013LA-1 (GND). If it is not within the rage of 330k ohms to 50k ohms (at ambient temperature), replace the fuser.
		
		3. Faulty DC controller PCB. Replace the DC controller PCB.
		
		50.2 error - Fuser Failure (Abnormal Warm-up)
		
		1. The connector between the fuser and the printer is not connected properly. Reseat the fuser. Check the connector J5013 between the fuser and the printer. Replace it if damaged.
		
		2. Break in the main thermistor. Turn the printer off and remove the fuser. Measure the resistance between the fuser connectors J5013LA-2 (MAINTH) and J5013LA-1 (GND). If it is not within the rage of 330k ohms to 50k ohms (at ambient temperature), replace the fuser.
		
		3. Break in the fuser heater. Measure the resistance between the fuser connectors J5013L-2 (FSRH) and J5013L-1 (FSRN) with the fuser removed. If it is not within the rage of 12 ohms to 52 ohms (at ambient temperature), replace the fuser film unit.
		
		4. Faulty DC controller. PCB Replace the DC controller PCB

Table 7-3 Numerical printer messages (continued)

Message	Description	Action
50.X FUSER ERROR *Continued*		**50.3 error** - Fuser Failure (Abnormally High Temperature Main Thermistor) 1. The connector between the fuser and the printer is not connected properly. Reseat the fuser. Check the connector J5013 between the fuser and the printer. Replace it if damaged. 2. Short in the main thermistor. Turn the printer off and remove the fuser. Measure the resistance between the fuser connectors J5013LA-2 (MAINTH) and J5013LA-1 (GND). If it is in the rage of 330k ohms to 50k ohms (at ambient temperature), replace the fuser. 3. Faulty DC controller PCB. Replace the DC controller PCB. **50.4 error** - 1. Faulty fuser power supply PCB, replace the low-voltage power supply PCB. 2. Faulty DC controller PCB, replace the DC controller PCB. 3. For the following errors, perform the indicated action. **50.8 error** - Fuser Failure (Abnormally Low Temperature Sub Thermistor) 1. The connector between the fuser and the printer is not connected properly. Reseat the fuser. Check the connector J5013 between the fuser and the printer. Replace it if damaged. 2. Break in the sub thermistor. Turn the printer off and remove the fuser. Measure the resistance between the fuser connectors J5013LA-4 (SUBTH) and J5013LA-3 (+3.3V). If it reads 600 ohms or below (at ambient temperature), replace the fuser. 3. Faulty DC controller PCB, replace the DC controller PCB. **50.9 error** - Fuser Failure (Abnormally High Temperature Sub Thermistor) 1. The connector between the fuser and the printer is not connected properly. Reseat the fuser. Check the connector J5013 between the fuser and the printer. Replace it if damaged.

Table 7-3   Numerical printer messages (continued)

Message	Description	Action
50.X FUSER ERROR *Continued*		2. Short in the sub thermistor. Turn the printer off and remove the fuser. Measure the resistance between the fuser connectors J5013LA-4 (SUBTH) and J5013LA-3 (+3.3V). If it reads 600 ohms or below (at ambient temperature), replace the fuser. 3. Faulty DC controller PCB, replace the DC controller PCB.
51.XY. PRINTER ERROR alternates with To continue turn off then on	A laser/scanner error has occurred **X Description:** 1 - beam detect error 2 - laser error **Y Description:** 0 - no color K - black C - cyan M - magenta Y - yellow	1. Press ✔ to continue. 2. If the message persists, turn the printer off and then back on. 3. The connectors in the laser/scanner control line are not connected properly. Reseat the DC controller PCB connectors (J1022, J1026, J1027) and the laser/scanner unit connectors (J101A, J101B, J5001A, J5001B, J5020). 4. Faulty laser/scanner unit, replace the laser/scanner unit. 5. Faulty DC controller PCB, replace the DC controller PCB.
52.XY PRINTER ERROR alternates with To continue turn off then on	A laser/scanner motor failure has occurred **X Description:** 1 - scanner error 2 - scanner startup error 3 - scanner rotation error **Y Description:** 0 - no color K - black C - cyan M - magenta Y - yellow	1. Press ✔ to continue. 2. If the message persists, turn the printer off and then back on. 3. The connectors in the laser/scanner control line are not connected properly. Reseat the DC controller PCB connectors (J1022, J1026, J1027) and the laser/scanner connectors (J101A, J101B, J5001A, J5001B, J5020). 4. Faulty laser/scanner, replace the laser/scanner. 5. Faulty DC controller PCB, replace the DC controller PCB.

Table 7-3 Numerical printer messages (continued)

Message	Description	Action

53.XY.ZZ CHECK
DIMM A Bank B
 	
alternates with
 	
Press STOP to continue
	HP 3700 only
	An error occurred in printer memory.
	Values of A, and ZZ are:
	
	A Device Location:
	1 - DIMM Slot 1 (bottom slot)
	2 - DIMM Slot 2
	3 - DIMM Slot 3
	4 - DIMM Slot 4
	ZZ Error Number:
	00 - DIMM unsupported
	01 - DIMM SPD failure (unrecognized
	    memory)
	03 - DIMM error
	
	HP 3500 & HP 3700
	53.10.03 Memory error
		1. Press .
		
		See in
		chapter 3 for DIMM installation information.
		
		2. Check the ZZ error number for the specific
		DIMM, then:
		  - Reseat the DIMM.
		  - Try the DIMM in another slot (except for
		    the firmware DIMM in slot 1).
		  - Make sure there are DIMMS installed.
		  - Make sure the DIMMs are supported.
		  - Try the DIMM in another printer.
		
		53.10.03
		HP 3500 - Replace the formatter.
		HP 3700 - Perform the following steps:
		1. Try the firmware DIMM in slot 1 in another
		printer.
		2. Replace the formatter PCB.

Table 7-3 Numerical printer messages (continued)

Message	Description	Action

54.XX PRINTER ERROR	A printer command error has occurred.
	
	Note: Some messages are displayed in the event log and some are displayed on both the control panel and in the event log, as identified below.
	
	XX Description:
	
	(Event log only messages)
	01 - humidity environmental
	    sensor error
	05 - media sensor error
	06 - Dmax density sensor out of range
	11 - yellow density sensor error
	12 - magenta density sensor error
	13 - cyan density sensor error
	14 - black density sensor error
	15 - yellow CPR sensor error
	16 - magenta CPR sensor error
	17 - cyan CPR sensor error
	18 - black CPR sensor error
	20 - CPR sensor error
	
	(Control panel and event log message)
	21 - yellow toner remaining
	    sensor error
	22 - magenta toner remaining
	    sensor error
	23 - cyan toner remaining
	    sensor error
	24 - black toner remaining
	    sensor error
	31 - Media sensor calibration failure
	
	(Event log only message)
	32 - Media sensor is not calibrated
	    (event log only)
	
	33.0X Scanner Beam Detect
	adjustment abnormality warning X is the scanner number:
	1 = yellow/magenta scanner
	2 = cyan/black scanner
		1. Turn the printer off and then back on.
		
		2. For the specific error messages, perform the indicated action:
		
		54.01 - Environment Sensor Abnormality
		
		1. The connector in the environment detection signal line is not properly connected. Reseat the DC controller PCB connector J1015.
		
		2. Defective environment sensor, replace the environment sensor.
		
		3. Defective DC controller PCB, replace the DC controller PCB.
		
		54.05 - Media sensor error
		
		1. Perform the steps for error 54.32, below.
		
		2. Replace the media sensor.
		
		3. Replace the DC controller.
		
		54.06
		54.11
		54.12
		54.13
		54.14
		1. Perform a Calibrate Now procedure.
		
		2. The DC controller is defective, replace the DC controller PCB.
		
		54.15
		54.16
		54.17
		54.18
		54.20
		Color misregistration sensor abnormality
		1. The connectors between the color misregistration sensor (CPR) and the DC controller PCB are not connected properly. Reseat the color misregistration sensor (CPR) connectors (J505A, J505B) and the DC controller PCB connector J1012.
		
		2. Faulty color misregistration sensor (CPR). Replace the color misregistration sensor (CPR).
		
		3. Faulty DC controller PCB. Replace the DC controller PCB.

Table 7-3   Numerical printer messages (continued)

Message	Description	Action
54.XX PRINTER ERROR *continued*		**54.21** - **54.22** - **54.23** - **54.24** - Toner (Y/M/C/K) level sensor abnormality 1. The connectors in the toner level sensor control line are not connected properly. Reseat the memory controller PCB connector J201 and the DC controller PCB connector J1025. 2. Faulty memory controller PCB. Replace the memory controller PCB. 3. Faulty DC controller PCB. Replace the DC controller PCB.
	54.30.XX (event log only) HP3700 only Halftone calibration error. XX Description: 06 - magenta data out of range. 07 - yellow data out of range. 08 - black data out of range. 09 - cyan data out of range.	**54.30.XX** Perform a **CALIBRATE NOW** in the CONFIGURE DEVICE / PRINT QUALITY menu on the printer control panel.
		54.31 - Media Sensor Abnormality/ After-adjustment Value Out of Spec 1. Try to calibrate the media sensor again. 2. Dirty media sensor. Clean the media sensor. 3. The connectors in the media detection signal line are not properly connected. Reseat the media sensor connector J601, relay connector J5026, and DC controller PCB connector J1008. 4. Defective media sensor. Replace the media sensor. 5. Defective DC controller PCB. Replace the DC controller PCB.

Table 7-3 Numerical printer messages (continued)

Message	Description	Action
54.XX PRINTER *continued* ERROR	for 54.32 error: The image density adjustment value, color misregistration adjustment value, and PWM adjustment value (see note below) are stored in the EEPROM (NVRAM) of the formatter. Whenever a formatter or laser/scanner unit is replaced, you must calibrate the printer to update the values. 　a. Image density adjustment (on formatter replacement) 　b. Color misregistration adjustment (on formatter replacement) 　c. PWM adjustment (on both formatter and laser/scanner unit replacement) Note: The PWM adjustment value enables reproduction of an image in the best tone. The formatter determines the value based on the amount of laser light received from the printer engine.	**54.32** - Electrical Adjustment When the media sensor is replaced, the light intensity of the sensor must be adjusted. Follow the procedure below to adjust the light intensity. 1. Turn the printer OFF. 2. Open the front door. 3. While pressing down the engine test print switch, turn the printer ON. 4. Close the front door. 5. Load paper into Tray 1 (use plain white paper for test printing). 6. As the printer goes into READY period, press the engine test print switch and test print. 7. One sheet of paper will be fed into the printer from Tray 1 and will be delivered to the face-down delivery tray. **54.33** - 1. Defective laser/scanner. Replace the laser/scanner unit. 2. Defective DC controller PCB. Replace the DC controller PCB.
55.X PRINTER ERROR alternates with To continue turn off then on	The DC controller is not communicating with the formatter. The problem could be caused by a timing error or an intermittent connection. (Event log only) 55.01.00 - DC controller memory error. 55.5 - HP 3700 only - A job was sent while Resend Upgrade is on the display.	1. Press ✔ to continue. 2. If the message persists, turn the printer off and then back on. 3. Reseat or replace the connectors between the DC controller and the formatter. 4. If the problem persists, replace the DC controller PCB. 5. Replace the formatter. For the following specific error, perform indicated action. **55.01.00** - Replace the DC controller PCB. **55.5** - Do not replace the DC controller PCB or formatter PCB. Resend the firmware upgrade before sending any more print jobs.
57.4 PRINTER ERROR alternates with To continue turn off then on	A printer fan error has occurred as a result of a faulty fan connection, fan or DC controller.	1. Turn the printer off and then back on. 2. Reseat the DC controller PCB connector J1024. 3. Replace the fan. 4. Replace the DC controller PCB.

Table 7-3   Numerical printer messages (continued)

Message	Description	Action
59.XY *continued* PRINTER ERROR alternates with To continue turn off then on	A printer motor error has occurred. X and Y are detailed below. **X Description:** 5 - Primary transfer roller engaging motor (M5) startup error. 6 - Primary transfer roller engaging motor (M5) rotation error. 7 - Developer motor (M4) startup error. 8 - Developer motor (M4) rotation error. 9 - Drum motor (M3) startup error. 9 - (when Y is also 9) - Secondary transfer engaging mechanism error. A - Drum motor (M3) rotation error C - Delivery motor (M2) rotation error **Y Description:** 0 - No color K - Black C - Cyan M - Magenta Y - Yellow	Turn the printer off and then back on. For the following errors perform the indicated action: **59.7Y** and **59.8Y** Error on control panel Error occurred when the developing motor started or while the developing motor was rotating. For all the following errors perform the actions listed below **59.5Y** and **59.6Y** - Error on control panel. **59.05.00** and **59.06.00** - Event log only. An error occurred when the primary transfer roller engaging motor started or while the motor is rotating. 1. The connectors in the primary transfer roller engaging motor drive signal line are not connected properly. Reseat the motor connector J5005 and the DC controller PCB connector J1014. 2. Faulty primary transfer roller engaging motor. Replace the motor. 3. Faulty DC controller PCB. Replace the DC controller PCB. **59.7Y** Control Panel Message **59.07.00** - (HP 3700 only; event log only) **59.07.ZZ** - (HP 3500 only; event log only) **ZZ is color:** 00 - Black 01 - Cyan 02 - Magenta 03 - Yellow **59.8Y** Control Panel Message **59.08.00** - (HP 3700 only; event log only) **59.08.ZZ** - (HP 3500 only; event log only) **ZZ is color:** 00 - Black 01 - Cyan 02 - Magenta 03 - Yellow 1. The connectors in the developing motor drive signal line are not connected properly. Reseat the developing motor connector J5006 and the DC controller PCB connector J1019. 2. Faulty developing motor. Replace the developing motor. 3. Faulty DC controller PCB. Replace the DC controller PCB.

Table 7-3 Numerical printer messages (continued)

Message	Description	Action
59.XY *continued* PRINTER ERROR alternates with To continue turn off then on		**59.90** and **59.A0** Errors on control panel **59.09.00** (event log only) **59.10.00** (event log only) An error occurred when the drum motor started or while the drum motor was rotating. 1. The connectors in the drum motor drive signal line are not connected properly. Reseat the drum motor connector J5002 and the DC controller PCB connector J1019. 2. Faulty drum motor. Replace the drum motor. 3. Faulty DC controller PCB. Replace the DC controller PCB. **59.99.00** - (event log only) An error occurred in the secondary transfer engaging mechanism. 1. Faulty secondary transfer engagement sensor. Replace the secondary transfer engagement sensor. 2. Faulty secondary transfer engaging solenoid. Replace the secondary transfer engaging solenoid. 3. Faulty feed motor. Replace the feed motor. 4. Faulty DC controller PCB Action: Replace the DC controller PCB. **59.C0** Error on control panel **59.12.00** (event log only) An error occurred in the developing engaging mechanism. 1. The movement of the developing engaging lever is not smooth. Make the movement of the lever smooth. Replace the gear for the lever, if damaged. 2. Damage on the drive gears. Check each drive gear between the delivery motor and the developing engaging clutch. Replace any, if damaged.

Table 7-3 Numerical printer messages (continued)

Message	Description	Action
59.XY continued PRINTER ERROR alternates with To continue turn off then on		3. Faulty developing engaging sensor lever Reseat the developing engaging sensor lever to the correct position if its movement is not smooth or it is out of position. Replace the lever if it is damaged or deformed. 4. Faulty developing engaging sensor. Replace the developing engaging sensor. 5. The connectors in the developing engaging clutch drive signal line are not connected properly. Reseat the connectors J5014 and J1019 between the developing engaging clutch and the DC controller PCB. 6. The connectors in the delivery motor drive signal line are not connected properly. Reseat the connectors J5004 and J1016 between the delivery motor and the DC controller PCB. 7. Faulty developing engaging clutch. Replace the developing engaging clutch. 8. Faulty delivery motor. Replace the delivery motor 9. Faulty DC controller PCB. Replace the DC controller PCB.
62 NO SYSTEM	No system was found.	1. Turn the printer off and then back on. 2. HP 3700 only - reseat the firmware DIMM. Make sure it is in slot 1 (the bottom slot). 3. Download new firmware (HP 3700 - try downloading through the parallel port). 4. Replace the firmware DIMM.
64 PRINTER ERROR For help press **?** alternates with To continue turn off then on	Scan buffer error.	1. Turn the printer off and then back on. 2. Perform a cold reset. 3. HP 3700 only - replace the firmware DIMM. 4. Replace the formatter PCB.

Table 7-3 Numerical printer messages (continued)

Message	Description	Action
68.X PERMANENT STORAGE FULL alternates with To continue press ✔	A non-volatile storage device is full. Press ✔ to clear the message. Printing can continue, but there could be unexpected behavior. **X Description:** 0 - for onboard NVRAM 1 - for removable flash disk	1. Press ✔ to continue. 2. For the following errors, perform the indicated action. **68.0** - turn the printer off and then back on. If the error persists, execute an NVRAM initialization. **68.1** - use the HP Web Jetadmin software to delete files from the flash disk.
68.X PERMANENT STORAGE WRITE FAIL alternates with To continue press ✔	A non-volatile storage device is failing to write. Press ✔ to clear the message. Printing can continue, but there could be unexpected behavior. **X Description:** 0 - for onboard NVRAM. 1 - for removable flash disk.	Press ✔ to continue. 2. For the following errors, perform the indicated action. **68.0** - turn the printer off and then back on. If the error persists, execute an NVRAM initialization. **68.1** - use the HP Web Jetadmin software to delete files from the flash disk.
68.X STORAGE ERROR SETTINGS CHANGED alternates with 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. Press ✔ to clear the message. Printing can continue, but there could be unexpected behavior. **X Description:** 0 - for onboard NVRAM. 1 - for removable flash disk.	1. Press ✔ to continue. 2. Turn the printer off and then back on. 3. Check the printer settings to determine which settings have been changed.
79.XXXX PRINTER ERROR alternates with To continue turn off then on	HP Color LaserJet 3700 series printer only. A critical hardware error has occurred.	1. Turn the printer off and then back on. 2. Reseat the firmware DIMM. 3. Reseat the formatter PCB. 4. Replace the firmware DIMM. 5. Replace the formatter PCB.
8X.YYYY EIO ERROR	HP Color LaserJet 3700 series printer only. The EIO accessory card in slot X has encountered a critical error.	1. Turn the printer off and then back on. 2. Reseat the EIO card. 3. Replace the EIO card.
99 ERROR	(Event log only) RFU (remote firmware upgrade) failed.	Resend firmware upgrade.

When the parts in the list below are replaced, specific tasks need to be performed. These parts include:

- Formatter and DC Controller replaced at the same time
- Formatter (new and previously installed in another printer)
- DC Controller (new and previously installed in another printer)
- Media sensor (PS5)
- Color Misregistration Sensor (PS12)
- Laser Scanner Assembly
- Fuser
- Transfer unit (ITB assembly)

Configuration procedures for these parts are described in the following sections.

Formatter and DC Controller replaced at the same time

Do not replace both the formatter and the DC Controller at the same time. Replace one at a time. If the formatter and DC Controller are replaced at the same time in an HP Color LaserJet 3700 series printer that has the ability to perform duplex printing, this functionality will be lost. To determine if the printer can duplex, print a configuration page from the INFORMATION menu and reference Paper Trays and Options. If Duplex Unit is listed, the printer is able to duplex and the formatter and DC Controller should be replaced one at a time.

If the DC Controller and Formatter are replaced one at a time, then the duplex printing capability will be transferred to the new DC controller or Formatter.

A printer specific PJL file will be needed to re-enable duplexing in the current printer (will not work on any other printer), if both the formatter and DC Controller are replaced at the same time. This file will only work in the current printer. Call for assistance from HP Support to obtain the PJL file. Also, perform the Formatter and DC Controller replacement steps as required below.

Formatter (New) replacement configuration

The values for Total Mono Pages, Total Color Pages, Serial Number, Service ID, Cold Reset Paper (if needed), and the Fuser Kit Count will need to be reset using the service menu.

The Transfer Kit count will be unaffected by the replacement of a formatter.

Print a configuration page and a supplies status page in the INFORMATION menu to obtain the page counts, counts for any of the supplies, serial number, and the born-on date. If a configuration page and a supplies status page cannot be printed, this information can be obtained from the Service menu prior to replacing the formatter.

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

Formatter (previously installed in another printer) replacement configuration

When the formatter PCB is being replaced with one that was installed in another printer, an NVRAM initialization will need to be performed. Before doing an NVRAM INIT, print a configuration page and a supplies status page in the INFORMATION menu to obtain the page counts, counts for any of the supplies, serial number, and the born-on date. If a configuration page and a supplies status page cannot be printed, this information can be obtained from the Service menu prior to replacing the formatter or performing this action.

1   To perform an NVRAM initialization follow the procedure below.

2   Press and hold the ▼ button after powering up until all LEDs are on, then release the ▼ button.

3   Press the ▲ button once and release.

4   Press   once and release. The list of choices will be displayed.

5   Press ▼ or ▲ until NVRAM INIT is highlighted.

6   Press ✔ to invoke an NVRAM INIT.

In addition, the Total Mono Pages, Total Color Pages, Serial Number, Service ID, Cold Reset Paper (if needed), and the Fuser Kit Count will need to be reset using the service menu. The Transfer Kit count will be unaffected by the replacement of a formatter.

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

DC Controller (New) replacement configuration

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

Light intensity of the media sensor must be adjusted. Follow the procedure below to adjust the light intensity.

1   Turn the printer OFF.

2   Open the front cover.

3   While pressing the engine test print switch on the left side of the printer (see   ), turn the printer ON.

4   Close the front cover.

5   Load plain white paper in the multipurpose tray.

6   As the printer goes into READY period, press the engine test print switch and test print.

7   One sheet of paper will be fed into the printer from the multipurpose tray and will be delivered to the face-down delivery tray.

## DC Controller (previously installed in another printer) replacement configuration

To ensure optimum print quality, the printer needs to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW, see   .

Light intensity of the media sensor must be adjusted. Follow the procedure below to adjust the light intensity.

1   Turn the printer OFF.

2   Open the front cover.

3   While pressing the engine test print switch on the left side of the printer (see   ), turn the printer ON.

4   Close the front cover.

5   Load plain white paper in the multi-purpose tray.

6   As the printer goes into READY period, press the engine test print switch and test print.

7   One sheet of paper will be fed into the printer from the multipurpose tray and will be delivered to the face-down delivery tray.

The Transfer Kit count is set when it is first placed in a printer by a back up value contained on the formatter. If using a DC Controller that was previously installed in another printer, the Transfer Kit count will be set to the count of the first printer the DC Controller was installed in. The Transfer Kit count cannot be reset in the Service Menu. The Transfer Kit count can be reset to zero by setting CONFIGURE DEVICE / RESETS / RESET SUPPLIES / NEW TRANSFER KIT = YES. (Resetting the Transfer Kit count to zero after it has been used will result in using the Transfer Kit past it's specified life which may result in a failure before low is reached.)

For the HP Color LaserJet 3700 series printer, a non-duplexing printer can obtain the ability to duplex if the DC Controller was previously installed in a 3700 printer that had duplexing.

Media sensor (PS5) replacement configuration

Light intensity of the media sensor must be adjusted. Follow the procedure below to adjust the light intensity.

1   Turn the printer OFF.

2   Open the front cover.

3   While pressing down the engine test print switch on the left side of the printer, turn the printer ON.

4   Close the front cover.

5   Load plain white paper in the multi-purpose tray.

6   As the printer goes into READY period, press the engine test print switch and test print.

7   One piece of paper will be fed into the printer from the multipurpose tray and will be delivered to the face down delivery tray.

Color Misregistration Sensor (PS12) replacement configuration

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

Laser/scanner Assembly replacement configuration

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

Fuser replacement configuration

Under normal circumstances, the printer will prompt you to order a new fuser when the control panel reads ORDER FUSER KIT. This message indicates the fuser is nearing its end of life. When you replace a fuser under these circumstances, the control panel will not automatically prompt you to reset the fuser count. If you continue printing with the ORDER FUSER KIT message it will eventually covert to the REPLACE FUSER KIT message. At that time printing is stopped and a new fuser must be installed. When you replace a fuser under these circumstances, the control panel automatically prompts you to reset the fuser count after you have installed the new fuser.

If you replace the fuser for any reason before the control panel reads REPLACE FUSER KIT, for instance if the fuser is defective, you will need to reset the fuser count manually through the control panel.

The Fuser Kit count can be reset to zero by setting CONFIGURE DEVICE / RESETS / RESET SUPPLIES / NEW FUSER KIT = YES.

Transfer unit (ITB assembly) replacement configuration

Under normal circumstances, the printer will prompt you to order a new transfer unit when the control panel reads ORDER TRANSFER KIT. This message indicates the transfer unit is nearing its end of life. When you replace a transfer unit under these circumstances, the control panel will not automatically prompt you to reset the transfer unit count. If you continue printing with the ORDER TRASFER KIT message it will eventually covert to the REPLACE TRANSFER KIT message. At that time printing is stopped and a new transfer unit must be installed. When you replace a transfer unit under these circumstances, the control panel automatically prompts you to reset the transfer unit count after you have installed the new transfer unit.

If you replace the transfer unit for any reason before the control panel reads REPLACE TRANSFER KIT, for instance if the transfer unit is defective, you will need to calibrate the printer and reset the transfer unit count manually through the control panel.

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

The Transfer Kit count can be reset to zero by setting CONFIGURE DEVICE / RESETS / RESET SUPPLIES / NEW TRANSFER KIT = YES.

Jam error messages occur if paper fails to arrive at or clear the paper path sensors in the allowed time. Dedicated paper sensors detect whether paper is present in the sensor and if paper is fed normally. When the DC controller detects a jam, it immediately stops the printing process and displays the appropriate jam message for the sensor that detects the jam. The location of all paper path sensors is shown in the figure below.

Paper path jam areas

Jams occur in the areas shown in the figure below. Jam messages on the control panel correlate with these areas. For instructions on clearing jams, see the following sections in this chapter.
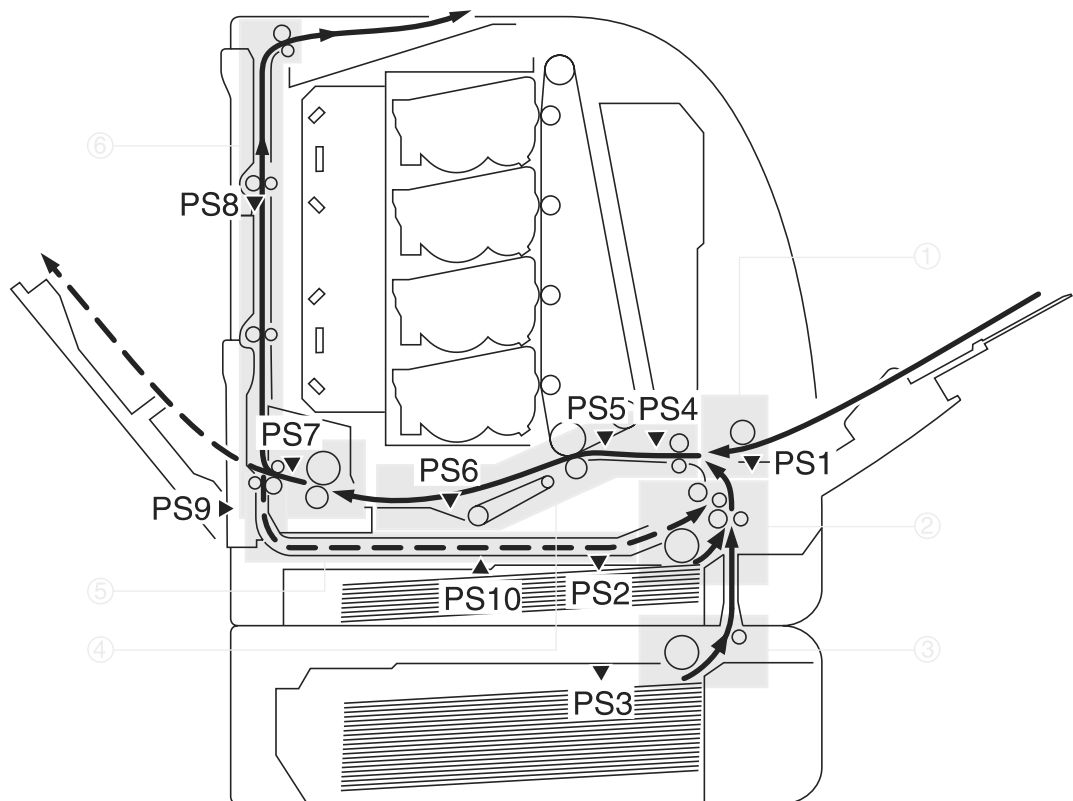
Area 1: Tray 1 pick-up area
Area 2: Tray 2 pick-up/feed area
Area 3: Tray 3 pick-up area

Area 4: transfer/feed area
Area 5: duplex feed area (HP 3700 only)
Area 6: fuser/face-down delivery area

PS1:	Tray 1 (multipurpose) paper sensor	PS6:	Fuser front paper sensor
PS2:	Tray 2 (cassette) paper sensor	PS7:	Fuser delivery paper sensor
PS3:	Tray 3 paper sensor (500-sheet feeder)	PS8:	Face-down delivery paper sensor
PS4:	Registration paper sensor	PS9:	Reversed paper sensor (HP 3700 only)
PS5:	Media sensor	PS10:	Duplexing feed delivery paper sensor (HP 3700 only)

Jam area locations and sensor positions

Paper jam error message

Use the following table to help pinpoint and clear specific paper jams and refer to Figure 7-1, "Jam area locations and sensor positions," for jam location areas in the printer. To identify the specific Jam location code for the HP Color LaserJet 3700 series printer, display the event log entries on the control panel.

Table 7-4   Error messages and associated jam locations

Error message	Event log code	Action	Location/Action Go to jam Location areas:
13.01.00 (HP 3500) 13.20.00 (HP 3700) Pick-up delay jam	13.01.00	This printer checks the paper movement at all pickup sources twice, if necessary, since the paper pickup can be delayed due to a pickup error. When paper does not reach the registration paper sensor (PS4) within time T after paper pickup, the CPU judges it the pickup delay jam.	1 - Tray 1 pick-up area 2 - Tray 2 pick-up/feed area 3 - Tray 3 pick-up area
13.02.00 (HP 3500) 13.20.00 (HP 3700) Pick-up stationary jam	13.02.00	When the paper does not pass the registration paper sensor (PS4) within time T after a paper is fed from the registration roller, the CPU judges it a pickup stationary jam.	1 - Tray 1 pick-up area 2 - Tray 2 pick-up/feed area 3 - Tray 3 pick-up area
13.05.00 (HP 3500) 13.20.00 (HP 3700) Fuser delay jam	13.05.00	When the paper does not reach the fuser delivery paper sensor (PS7) within time T after a paper is fed from the registration roller, the CPU judges it a fuser delay jam.	4 - transfer/feed area 6 - fuser/face-down delivery area
13.06.00 (HP 3500) 13.20.00 (HP 3700) Fuser stationary jam	13.06.00	When the paper does not pass the fuser delivery paper sensor (PS7) within time T after paper has reached the fuser delivery paper sensor (PS7), the CPU judges it a fuser stationary jam.	6 - fuser/face-down delivery area
13.09.00 (HP 3500) 13.20.00 (HP 3700) Delivery delay jam	13.09.00	When the paper does not reach the face-down paper sensor (PS8) within time T after paper has reached the fuser delivery paper sensor (PS7), the CPU judges it a delivery stationary jam.	6 - fuser/face-down deliver area
13.0A.00 (HP 3500) 13.20.00 (HP 3700) Delivery stationary jam	13.0A.00	When the paper does not pass the face down paper sensor (PS8) within time T after paper has reached the fuser delivery paper sensor (PS7), the CPU judges it a delivery stationary jam.	6 - fuser/face-down delivery area
13.20.00 (HP 3700 only) Duplexing feed delay jam	13.10.00	When the paper does not reach the reversed paper sensor (PS9) within time T after the delivery motor has started rotating counterclockwise, the CPU judges it a Duplexing feed delay jam.	5 - duplex feed area

Table 7-4 Error messages and associated jam locations

Error message	Event log code	Action	Location/Action Go to jam Location areas:
13.20.00 (HP 3700 only) Duplexing feed stationary jam	13.11.00	When the paper does not pass through the sensor t within time T since a paper has reached the reversed paper sensor (PS9), the CPU judges it a duplexing feed stationary jam.	5- duplex feed area 6- fuser/face-down delivery area
13.20.00 (HP 3700 only) Duplexing pick-up delay jam	13.12.00	When the paper does not reach the duplexing feed paper sensor (PS10) within time T after paper has reached the reversed paper sensor.	5- duplex feed area
13.20.00 (HP 3700 only) Duplexing pick-up stationary jam	13.13.00	When the paper does not pass the sensor through within time T since a paper has reached the duplexing feed paper sensor (PS10), the CPU judges it the duplexing pickup stationary jam.	5- duplex feed area
13.20.00 (HP3500 only) Printer could not automatically eject paper	13.20.00	Check all areas of the printer for a residual paper jam.	4- transfer/feed area 5- duplex feed area 6 -Fuser/facedown delivery area
13.21.00 (HP 3500) 13.20.00 (HP 3700) Open door jam	13.21.00	When the front door is open during printing, the CPU judges it the door open jam.	check all jam locations
13.90.00 Incompatible transparencies jam	13.90.00	There is a jam inside the front door caused by incompatible transparencies.	4- transfer/feed area
Note: Residual paper jam	n/a	If paper is detected by sensors other than PS6 and PS7, the DC controller delivers the paper automatically.	check all jam locations

Paper path areas jam troubleshooting

Paper jam troubleshooting information is provided in this section for the six paper areas identified in Figure 7-1, "Jam area locations and sensor positions,"in this chapter.

Multiple pages are fed

Table 7-5   Causes for multiple pages feeding

Cause	Solution
Tray 1 (multipurpose tray) separation pad is worn.	Replace the separation pad assembly.
Tray 1 (multipurpose tray) separation pad has a defective spring.	Make sure the spring is set in place. If the spring is damaged, replace the separation pad assembly.
Tray 2 separation pad is worn.	Replace the separation pad assembly.
Tray 2 separation pad has a defective spring.	Make sure the spring is set in place. If the spring is damaged, replace the separation pad spring.

Area 1: Tray 1 pick-up jam troubleshooting

Removing paper jams located in the Tray 1 (multipurpose) area requires removing all paper from the tray including pulling any jammed paper.

Table 7-6   Causes for jams in the Tray 1 pick-up area

Cause	Solution
Dirty, worn, or deformed multi-purpose tray pickup roller.	If dirty, clean the roller. If worn or deformed, replace the roller.
Defective separation pad.	If dirty, clean the pad. If worn or deformed, replace the pad.
Damaged drive gears.	Check the drive gears in the pickup/feed area. If damaged, replace the gear.
Defective multi-purpose tray pickup solenoid.	Disconnect the multi-purpose tray pickup solenoid connector J1006 from the DC controller PCB. Measure the resistance between the connector J1006-14 (MPSL) and J1006-13 (+24VA). If it is not approx. 160 ohms, replace the multi-purpose tray pickup solenoid.
Defective feed motor	Replace the feed motor.
Defective DC controller PCB.	Replace the DC controller PCB.

Area 2: Tray 2 jam troubleshooting

Removing paper jams located in the Tray 2 (cassette) area requires removing the paper tray then removing any paper stuck in the tray input area. Check the area inside the tray opening to ensure that all paper has been removed.

Table 7-7   Causes for jams in the Tray 2 area

Cause	Solution
Worn/Deformed cassette pickup roller.	If worn or deformed, replace the roller.
Defective separation pad.	If dirty, clean the pad. If worn or deformed, replace the pad.
Dirty/Worn/Deformed feed roller.	If dirty, clean the roller. If worn or deformed, replace the roller.
Damaged drive gears.	Check the drive gears in the pickup/feed block. If damaged, replace the gears.
Defective cassette pickup solenoid.	Disconnect the cassette pickup solenoid connector J1016 from the DC controller PCB. Measure the resistance between the connector J1016-6 (CSTSL) and J1016-5 (+24VA). If it is not approx. 160 ohms, replace the cassette pickup solenoid.
Defective feed motor	Replace the feed motor.
Defective DC controller PCB.	Replace the DC controller PCB.

Area 3: Tray 3 (500-sheet feeder) area jam troubleshooting

Removing paper jams located in the Tray 3 (optional 500-sheet feeder) area requires removing the paper tray then removing any paper stuck in the tray input area. Check the area inside the tray opening to ensure that all paper has been removed.

Table 7-8   Causes for jams in the fuser/face-down delivery area

Cause	Solution
Worn or deformed paper feeder pickup roller.	If worn or deformed, replace the paper feeder pickup roller.
Dirty, worn, or deformed feed roller.	If dirty, clean the feed roller. If worn or deformed, replace the roller.
Damaged drive gears.	Check the drive gears in the pickup block. If damaged, replace the gears.
Defective paper feeder pickup solenoid.	Disconnect the paper feeder pickup solenoid connector J4002 from the paper feeder. PCB. Measure the resistance between the connector J4002-1 (SL) and J4002-2 (+24VA). If it is not approx. 160 ohms, replace the paper feeder pickup solenoid.
Defective paper feeder pickup clutch.	Disconnect the paper feeder pickup clutch connector J4003 from the paper feeder PCB. Measure the resistance between the connector J4003-1 (CL) and J4003-2 (+24VA). If it is not approx. 160 ohms, replace the paper feeder pickup clutch.
Defective paper feeder PCB.	Replace the 500-sheet paper feeder PCB.
Defective DC controller PCB.	Replace the DC controller PCB.

Area 4: transfer/feed area jam troubleshooting

Table 7-9   Transfer/feed area

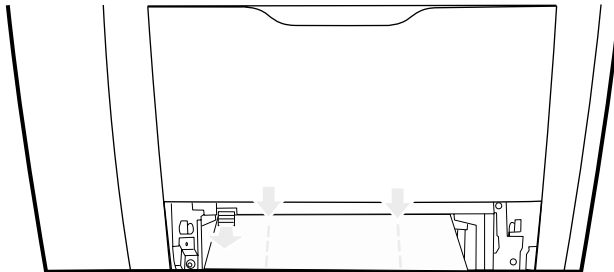| Cause	Solution
If the jam has occurred around a feed roller indicates a dirty, worn, deformed registration roller or registration sub roller.	If dirty, clean the rollers. If worn or deformed, replace the pick-up/feed assembly
If around a registration roller, indicates defective registration shutter.	If the movement of the registration shutter is not smooth, make it smooth. If its springs are out of positions, reseat them. Clean the shutter if dirty. Replace the pick-up feed assembly if deformed.
Dirty/Worn/Deformed registration roller or registration sub roller.	If dirty, clean the rollers. If worn or deformed, replace the pick-up feed assembly.
Defective registration shutter.	If the movement of the registration shutter is not smooth, make it smooth. If its springs are out of positions, reseat them. Clean the shutter if dirty. Replace the pick-up feed assembly if deformed.
Damaged drive gears.	Check the drive gears in the pickup block. If damaged, replace the gears.
Defective registration clutch.	Disconnect the registration clutch connector J1016 from the DC controller PCB. Measure the resistance between the connector J1016-8 (REGCL) and J1016-7 (+24VA). If it is not approx. 160 ohms, replace the registration clutch.
Defective DC controller PCB.	Replace the DC controller PCB.

Front door area jams (area 4)

1   Open the front door.

Do not place anything on the transfer unit. Do not touch the top of the transfer unit or the contacts on the left side of the transfer unit.
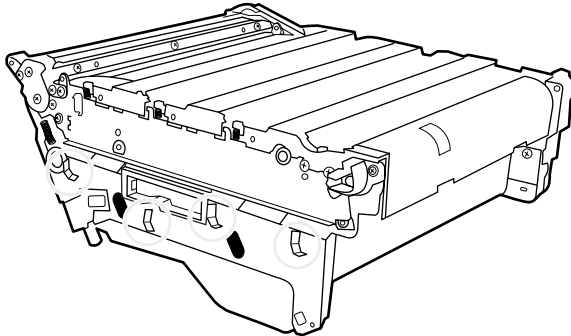
2   Remove the magenta and yellow print cartridges.
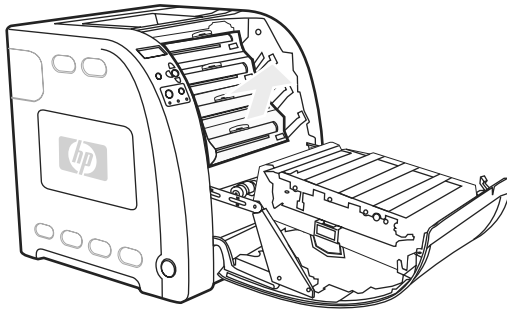
3   If necessary, turn the green roller wheel toward the rear of the printer to advance the paper. Remove any paper.
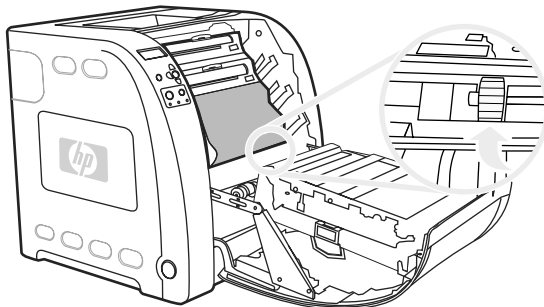
If the paper tears, make sure that all paper fragments are removed from the paper path before resuming printing.

4   Replace the magenta and yellow print cartridges.

5   Close the door.

Registration/transfer area jams (area 4)

1   Lift the latch (1) on the printer front door and open the door (2).

Printer front door

Do not place anything on the surface of the transfer unit.

Also, do not touch the transfer unit contacts located on the left side of the unit.

2   Remove the transfer unit (1) by grabbing the blue handles (2) on both sides of the transfer unit. With your right thumb press and hold the lever (3) on the right side handle then lift the handle up (4), followed by lifting the left side (5). Set the unit aside on a flat surface. Be careful not to touch the black upper surface (transfer belt) of the unit.

3 Remove the yellow and magenta cartridges (1) from the printer by grabbing the blue handle (2) on the cartridge and pulling it upward and out.
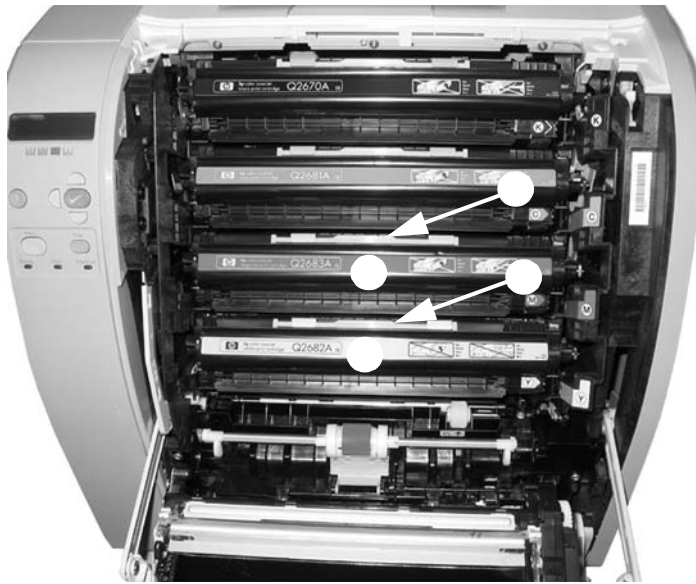
4 Close the front door approximately half-way, matching the arrow on the right door bracket (1) with the arrow on the inside of the printer (2).
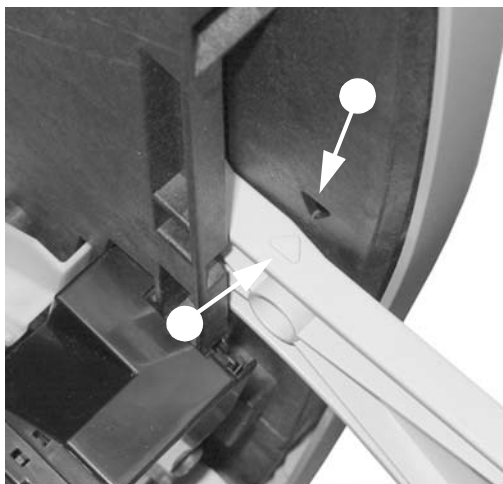
5   Remove any visible paper from inside the printer's transfer area.

6   Locate the top flat bar (1) and pull up on the white tab marked with black dots (2) to raise the bar to a vertical position (3). The bar will remain vertical. **Note:** Do not touch the registration sensor lenses (4).
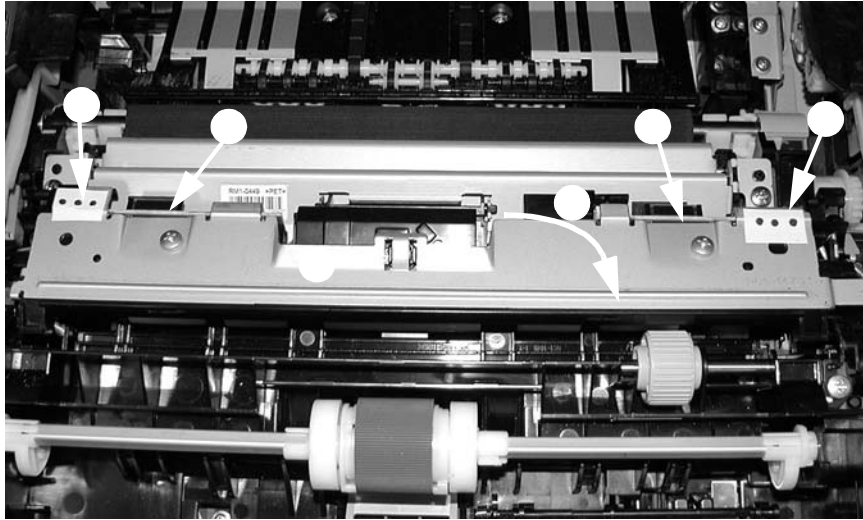
7   Raise the bottom media sensor bar (1) by pulling on the white tabs marked with the black dots (2), located on either side of the sensor. **Note:** do not touch the registration sensor lenses (3) or the media sensor (1).
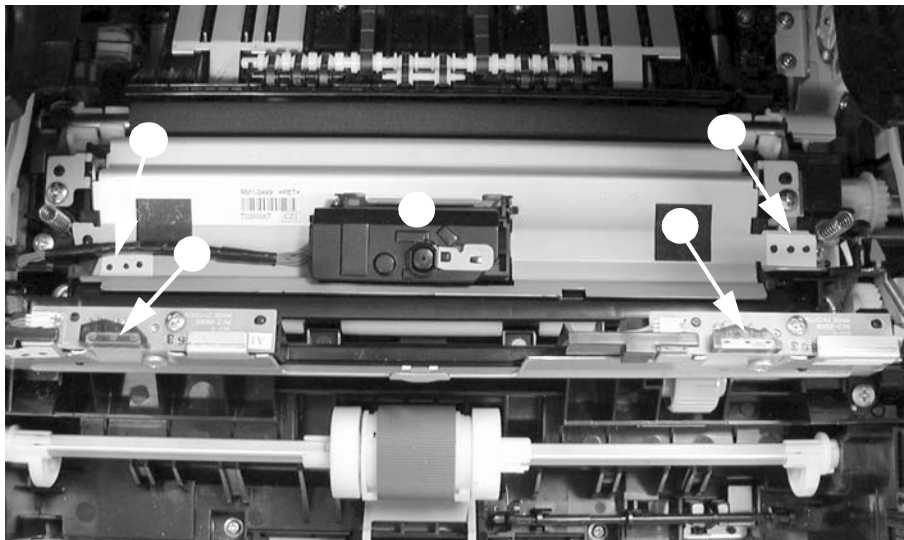
8 While holding the media sensor bar upright, remove any visible pieces of paper (1).
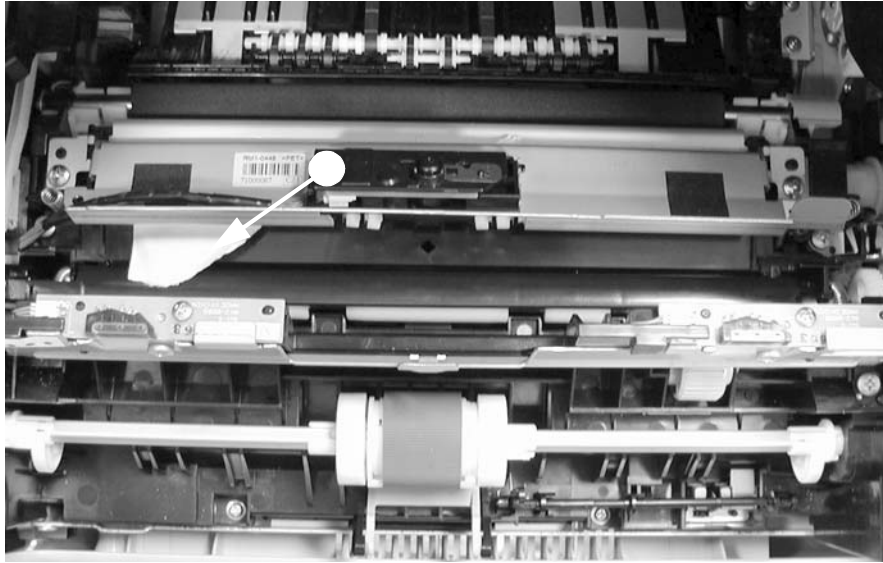
9 When the paper is removed, lower the bottom media sensor bar back down into place.

10 Swing the top flat bar down into place over the bottom media sensor bar.

11 Open the front door to its fully open position and reinstall the yellow and magenta cartridges.

12 Reseat the transfer unit by holding the blue handles and inserting the left side first. Align the two holes (2) in the transfer unit with the pegs (1) on the printer door and lower the unit into place. **Do not touch** the black surface (transfer belt) or the contacts on the left side of the transfer unit.

Left side of front door
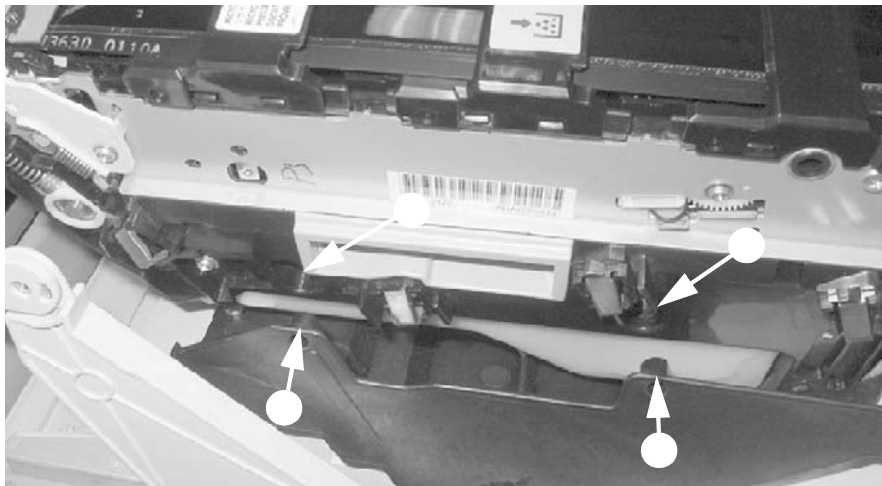
13 Close the front door.

Paper is wrinkled or folded

To diagnose the cause of wrinkled or folded paper, use the   in the Diagnostics test menu. Adjust the stop time so the paper stops before it enters the fuser. Open the front door. If paper is wrinkled at this stage, use   ,
          , to diagnose the problem. If paper is *not* wrinkled at this stage, use   ,
                  , to diagnose the problem.

Table 7-10   Causes for wrinkled or folded paper (paper path entrance)

Cause	Solution
Registration shutter is defective.	Make sure the registration shutter is clean and moves smoothly. If the registration shutter is worn or damaged, replace the paper pickup/feed assembly.
Feed roller or registration roller is dirty or defective.	Clean the rollers or replace the paper pickup/feed assembly as required.
Paper path has foreign substances or dirt.	Remove any foreign substances or dirt from the paper path. If the paper pickup/feed assembly is damaged, replace the paper pickup/feed assembly.

Table 7-11   Causes for wrinkled or folded paper (paper path exit)

Cause	Solution
Fuser inlet guide is dirty.	Clean the fuser inlet guide.
Fuser pressure roller is dirty or damaged.	Clean the pressure roller. If the pressure roller is damaged, replace the fuser.
Fuser sleeve is dirty or damaged.	Clean the fuser sleeve. If the fuser sleeve is damaged, replace the fuser.
Fuser delivery roller is dirty.	Clean the fuser delivery roller.

Paper is skewed

Table 7-12   Causes for skewed paper

Cause	Solution
Paper dust or dirt has accumulated in the Tray 2 feed roller or registration roller.	Clean the rollers.
Cassette feed roller and registration roller are worn irregularly.	Replace the feed roller or the pickup/feed assembly.
Registration shutter is defective.	Make sure the registration shutter moves smoothly, its springs are in place, and it is clean. If the registration shutter is damaged, replace the pickup/feed assembly.

Area 5: Duplex jam troubleshooting

Table 7-13   Causes for jams in the duplex area (HP 3700 only)

Cause	Solution
Scratched/Dented duplex feed guide.	If damaged or dented, replace the duplex feed guide.
Worn/Deformed oblique roller.	If worn or deformed, replace the oblique roller.
Damaged oblique roller drive gears	Check the oblique roller drive gears in the transfer unit block. Replace the gear if damaged or worn.
Defective duplex feed paper sensor lever.	Reseat the duplex feed paper sensor lever if it does not move smoothly or it is out of position. Replace the lever if damaged or deformed.
Defective duplex feed solenoid.	Disconnect the duplex feed solenoid connector J1013 from the DC controller PCB. Measure the resistance between the connector J1013-5 (DUSL) and J1013-4 (+24VA). If it is not approximately 160 ohms, replace the duplex feed solenoid.
Defective DC controller PCB.	Replace the DC controller PCB.

Duplex jam area removal (area 5)

This message appears for HP Color LaserJet 3700dn and 3700dtn printer models only. The printer control panel displays the message **13.XX.YY JAM REMOVE TRAY 2**.

1   Remove Tray 2.

2   Remove any paper in the top of the tray opening.
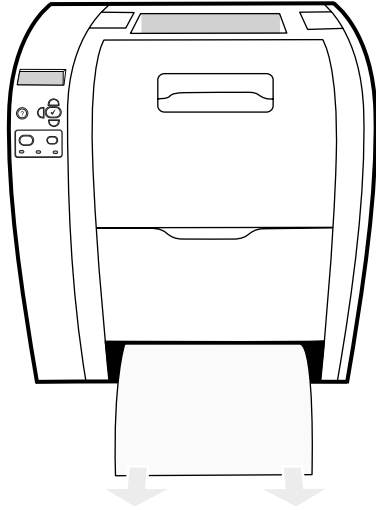
3   On the left side of the tray opening, pull the green lever straight forward until the metal paper-access plate (duplex pan) drops.

4   Remove any jammed paper.
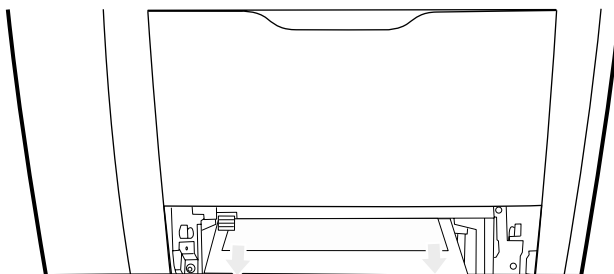
5 Press the metal access plate (duplex pan) up until it locks in place.
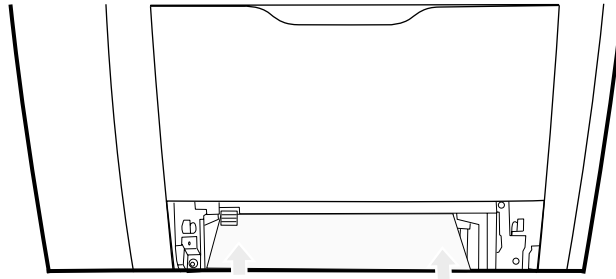
6 Replace Tray 2.

7 Press ✔ to resume printing

Area 6: Fuser/face-down delivery jam troubleshooting

Table 7-14 Fuser/face-down delivery area

Cause	Solution
If the jam has occurred around the fuser area, a defective fuser delivery sensor is likely.	Reseat the fuser delivery sensor lever if it does not move smoothly or it is out of position. Replace the lever if damaged or deformed.
Defective face down delivery sensor lever.	Reseat the face-down delivery sensor lever if it does not move smoothly or it is out of position. Replace the lever if damaged or deformed.
Defective fuser delivery sensor lever.	Reseat the fuser delivery sensor lever if it does not move smoothly or it is out of position. Replace the lever if damaged or deformed.
The rotation of the fuser sleeve or pressure roller is not smooth.	Replace the fuser if worn or chipped.
Bumps on the fuser inlet guide due to dirt/scratches/adhered toner.	Clean the guide.
Dirty/Worn/Deformed fuser sleeve or pressure roller.	Clean the fuser sleeve and pressure roller if there are any bumps of dirt or toner.Replace the fuser if deformed or scratched.
Worn face down delivery roller.	Replace the face down delivery roller.
Damaged face down delivery roller drive gears.	If damaged or worn, replace the face down delivery roller drive gear. If the delivery belt is damaged, replace the belt.
Defective DC controller PCB.	Replace the DC controller PCB.

Upper rear door area jams (area 6)

The message **13.XX.YY JAM INSIDE UPPER REAR DOOR** can appear on the printer control panel if the upper rear door is open. Make sure the upper rear door is closed when printing.

1 Remove any paper visible in the top output bin.
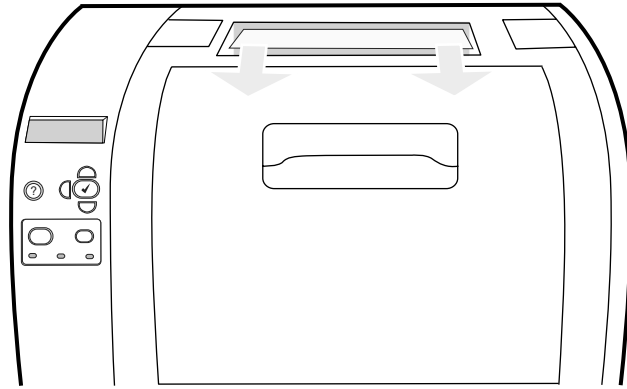
2 Open the upper rear door.
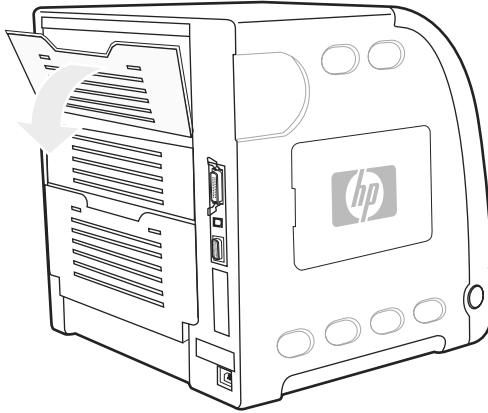
3 Remove any paper.
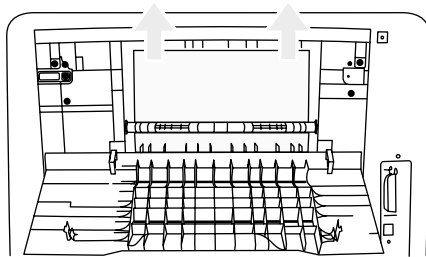
4 Close the rear door.

5 If no paper is visible, open the lower rear door (rear output bin).
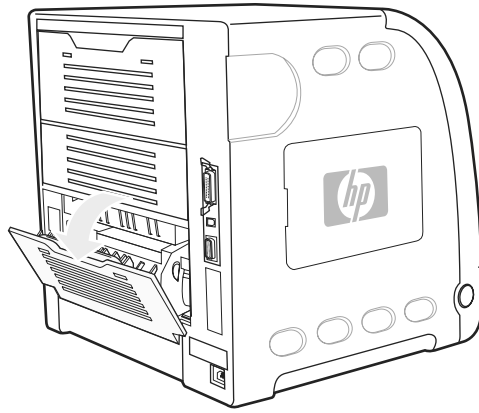
6 Press down on the green levers and remove any paper. Return the green levers to the up position after removing the page.
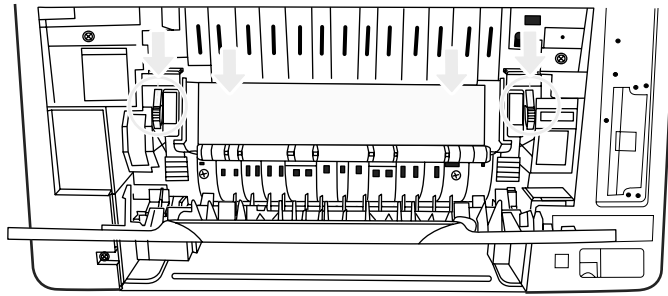
7 Close the lower rear door.

Fuser area jams (area 6)

1 Open the lower rear door (rear output bin).
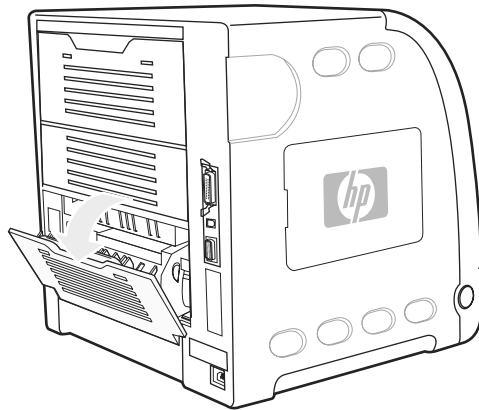
Make sure the green pressure levers are not in the down position. If the green pressure levers are down, they can cause a jam message to display on the printer control panel.

2   If the paper is visible, press down on the green levers and remove the paper. Return the green levers to the up position after removing the paper, and close the lower rear door (rear output bin).
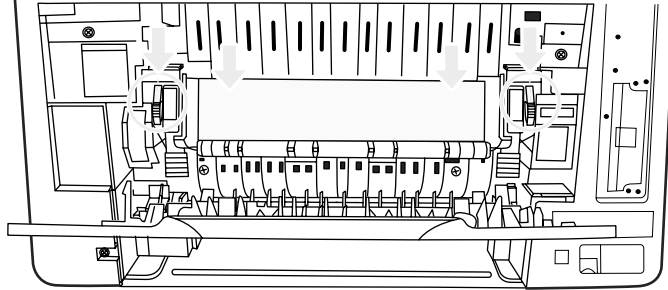
3   If the paper is not visible, turn the printer off.

4   Slide out the lower rear door (rear output bin) tray extender.
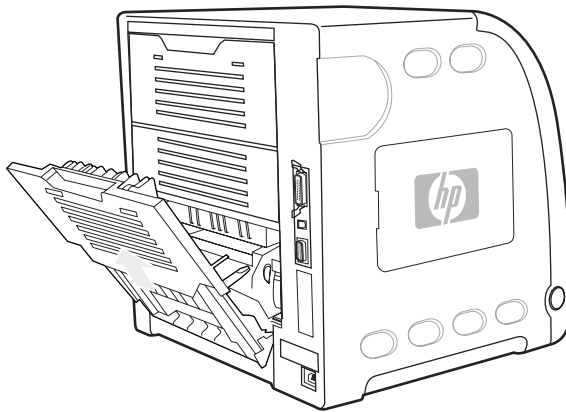
5   Remove the lower rear door (rear output bin) by lifting and pulling the right side of the door while pressing the tab with the ridges on the left side of the door.
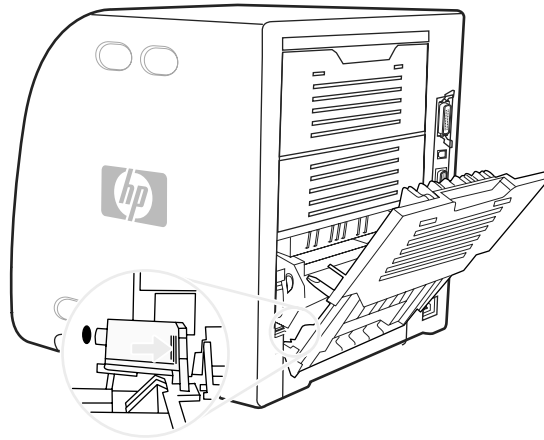
The fuser is   Wait ten minutes after turning the printer off before removing the fuser.

6   Place your thumbs on the blue ridges (near the warning label), and using your fingers, pull up on the blue latches.
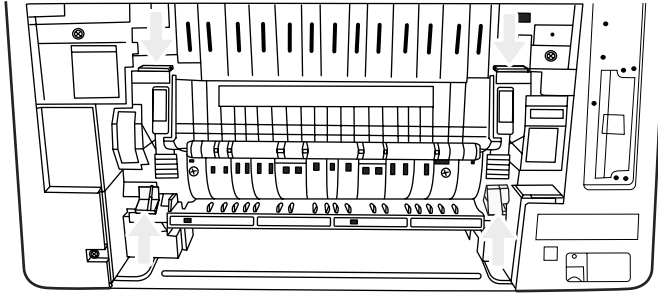
7   Pull the fuser out of the printer.
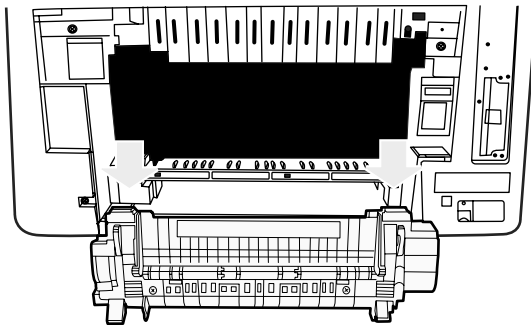
8   On the fuser, squeeze and lift the black tabs to open the shutter door.

Do not open the fuser shutter door while the fuser is in the printer.
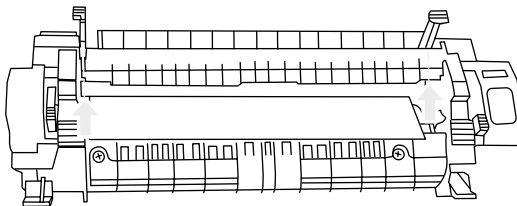
9   Remove any jammed paper

If the paper tears, make sure that all paper fragments are removed from the paper path before you resume printing.

10 Hold the fuser with your thumbs on the blue ridges and your fingers on the blue latches. Push both sides of the fuser into the printer.
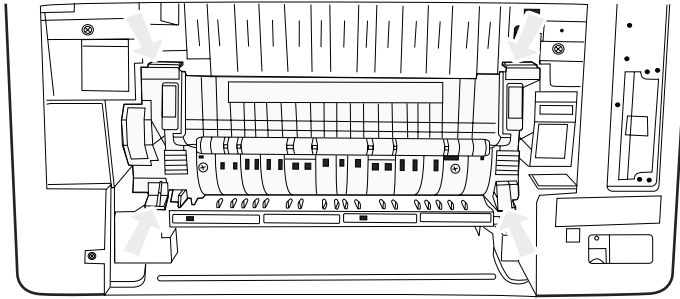
11 Press the black ridges on the front of the fuser until the fuser clicks into place.
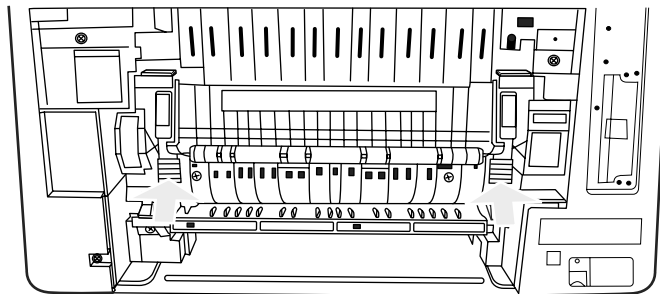
12 To reattach the lower rear door (rear output bin), hold the door at a 45º angle, and fit the peg into the round hole on the right side.
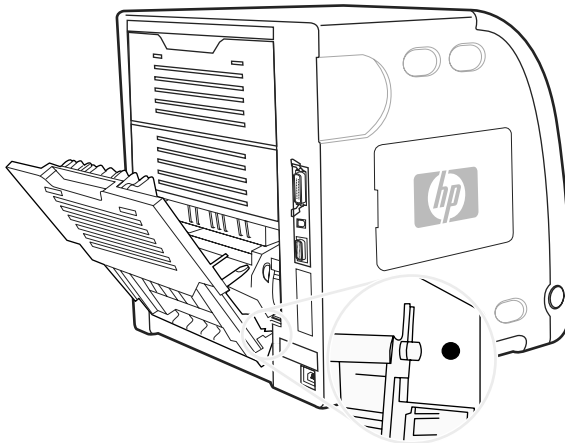
13 Press the ridges on the tab on the left side of the door, and fit the peg into the round hole.

14 Close the lower rear door (rear output bin). Turn the printer on.

Lower rear door area jams (area 6)

1   Open the lower rear door (rear output bin).
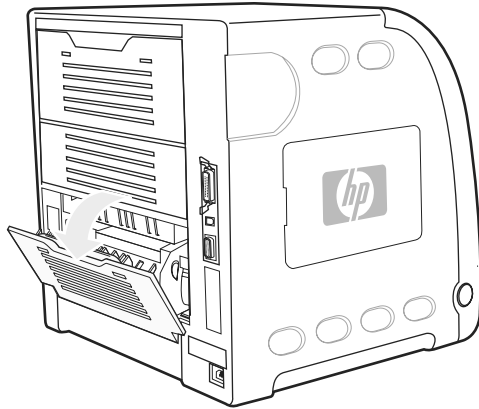
2   Press down on the green levers and remove any paper.
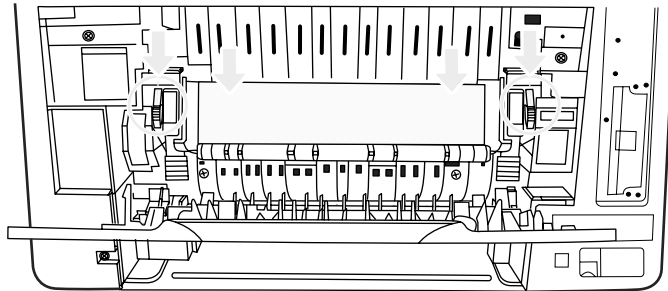
3   Lift the green levers and close the lower rear door.

4   If printing does not resume, press ✔.

Paper jam recovery feature

This printer automatically provides paper jam recovery, a feature that allows you to set whether the printer should attempt to automatically reprint jammed pages. The options are:

AUTO   Printer will attempt to reprint jammed pages.

OFF   Printer will not attempt to reprint jammed pages.

During the recovery process, the printer may reprint several good pages that were printed before the paper jam occurred. Be sure to remove any duplicated pages.

To disable paper jam recovery

1   Press ✔ 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   button to return to the **Ready** state.

To improve print speed and increase memory resources, you may want to disable paper jam recovery. If paper jam recovery is disabled, the pages involved in a jam will not be reprinted.

Avoiding paper jams

The table below lists common causes of paper jams and suggests solutions for resolving them.

Table 7-15 Common causes of paper jams

Issue	Cause	Solution
Common causes of paper jams	Paper does not meet HP-recommended paper specifications.	Use only paper that meets HP specifications. See .
	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 paper that has been previously printed on or copied.
	An input tray is loaded incorrectly.	Remove any excess paper from the input tray. Be sure that the paper does not exceed the maximum stack height mark in the input tray.
	Paper is skewed.	Input tray guides are not adjusted correctly. Adjust input tray guides so they hold paper firmly in place without bending it.
	Paper is binding or sticking together.	Remove paper and flex it, rotate it 180 degrees, or flip it over. Reload paper into the input tray. Note: Do not fan paper. Fanning can create static electricity which can cause paper to stick together.
	Paper 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 paper 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.
	Paper is in poor condition.	Replace the paper.
	Paper is not picked up by the internal rollers from Tray 2 or Tray 3.	Remove the top sheet of paper. If the paper is heavier than 163 g/m2 (43 lb), it may not be picked from the tray.
	Paper has rough or jagged edges.	Replace the paper.
	Paper is perforated or embossed.	This paper 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 for more information.
	Paper was not stored correctly.	Replace the print paper. Paper should be stored in the original packaging in a controlled environment.

General paper path troubleshooting

Use the following suggestions to isolate the cause of the problem. Once you have identified the cause, use the tables that follow to find a recommended solution.

Use the paper path test in the Diagnostics menu to print pages while troubleshooting. See section later in this chapter for information about the paper path test.

View or print the event log and determine if a particular jam error occurs more often than others. Try to identify a pattern.

From the event log, determine the frequency of a particular jam. If a jam occurs repeatedly around the same page count, consider this 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 if the problem occurs only in one mode or the other.

Try printing on paper 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 paper. Also check for broken sensors or flags, and check for loose or defective connections.

If the paper is torn, folded, or wrinkled (typically along the leading edge), inspect the paper path for items that could be causing the damage.

If the customer is using non-HP supplies, try replacing those supplies with genuine HP supplies to see if the problem goes away.

If necessary, instruct the customer on proper media storage, correct loading technique, and printer operation. Make sure the customer 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 free movement of media through the printer and can block the sensors.

Use the paper path test in the Diagnostic 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.

Defective paper sensors along the paper path might signal a false jam.

Scraps of media left 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 jam debris.

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 you should investigate. In general, items at the beginning of the list are relatively minor repairs. Items at the end of the list are more significant repairs.

Basic troubleshooting for paper jams

The basic troubleshooting process for paper jams consists of the following:

1 Gather data.

2 Identify the cause of the problem.

3 Fix the problem.

Data collection

To troubleshoot paper jams, gather the following information:

   the exact paper jam error code displayed on the control panel

   the location of the leading edge of the paper in the paper path

   whether paper is in the paper path when the jam occurs, or if paper is stuck in the input tray

   whether the jam occurs at power-up or while paper is moving

   whether the paper is damaged, and if it is, where the damage occurs on the paper and where in the paper path the paper stops

   whether the jam occurs when feeding from one particular tray

   whether the jam occurs only when duplex printing

   whether a particular type of paper is jamming or not jamming

   whether any of the supplies are non-HP (non-HP supplies are known to cause paper jams)

   whether the customer is storing the paper correctly, overloading the trays, damaging the edge of the paper during loading, or using paper that has already been fed through the printer

The section identifies some things that can result in poor print quality. For additional information, refer to the *HP LaserJet Printer Family Print Media Guide.*

Print quality problems associated with media

Some print quality problems arise from use of inappropriate paper.

Use paper that meets HP paper specifications. See   .

The surface of the paper is too smooth. Use paper that meets HP paper specifications. See
.

The driver setting is incorrect. To change the paper type setting, see   .

The paper you are using is too heavy for the paper type setting you selected, and the toner is not fusing to the paper.

The moisture content of the paper is uneven, too high, or too low. Use paper from a different source, from an unopened ream of paper, or dry out the paper (100° C for 24 hours).

Some areas of the paper reject toner. Use paper from a different source or from an unopened ream of paper.

The letterhead you are using is printed on rough paper. Use a smoother, xerographic paper. If this solves your problem, consult with the supplier of your letterhead to verify that the paper used meets the specifications for this printer. See   , in chapter 1.

The paper is excessively rough. Use a smoother, xerographic paper.

Overhead transparency defect

Overhead transparencies can display any of the image quality problems that any other type of paper will cause, as well as defects specific to printing on transparencies. In addition, because transparencies are pliable while in the print path, they are subject to being marked by the paper-handling components.

Allow transparencies to cool for at least 30 seconds before handling them.

Change the pre-rotation setting in the CONFIGURE DEVICE/PRINT QUALITY/OPTIMIZE/ PRE-ROTATION=ON. This will enhance transparency print quality by reducing what looks like "fire marks" by heating up the fuser pressure roller closer to the temperature of the sleeve.

Change the transparency mode in the CONFIGURE DEVICE/PRINT QUALITY/PRINT MODES/TRANSPARENCY to B TRNSPRNCY (Best Transparency) mode. This change will optimize transparency print quality and minimize transparency curl.

If the printer's media sensor rejects a supported Color LaserJet transparency, make sure the transparencies are not from an old box. Try transparencies from a new box.

In the printer driver **Paper** tab, select **Transparency** as the paper type. Also, make sure that the tray is correctly configured for transparencies.

Check that the transparencies meet the specifications for this printer. See
, in chapter 1. For more information on media specifications and ordering information, consult the *HP LaserJet Printer Family Print Media Specification Guide*. For the

HP Color LaserJet 3500 series printer, go to http://www.hp.com/support/clj3500. For the HP Color LaserJet 3700 series printer, go to http://www.hp.com/support/clj3700. For downloadable manuals, select **Manuals**.

The transparencies you are using are not designed for proper toner adhesion. Use only transparencies designed for HP Color LaserJet printers.

Handle transparencies by the edges. Oil from fingers can cause spots and smudges on the transparencies.

Small, random, dark areas on the trailing edge of solid fill pages may be caused by transparencies sticking together in the output bin. Try printing the job in smaller batches.

The selected colors are undesirable when printed. Select different colors in the software application or printer driver.

If you are using a reflective overhead projector, use a standard overhead projector instead.

Print quality problems associated with the environment

If the printer is operating in excessively humid or dry conditions, verify that the printing environment is within specifications. See the getting started guide for this printer for information on operating environment specifications.

Print quality problems associated with paper jams

Make sure that all paper is cleared from the paper path.

If the printer recently jammed, print two to three pages to clean the printer.

If the paper does not pass through the fuser, which causes image defects to appear on subsequent documents, print two to three pages to clean the printer. However, if the problem persists, see   .

Print quality problems associated with toner buildup

Over time, toner and other particles can build up inside the printer. This buildup can cause the following print quality problems:

marks at even intervals on the printed side of the page

toner that smears easily

toner specs on the page

vertical streaks or bands on the page

To correct these types of problems, clean the printer. See   , in chapter 4.

Print quality troubleshooting pages

Use the built-in print quality troubleshooting pages to help diagnose and solve print quality problems.

1   Press   to enter the **MENUS**.

2   Press ▾ to highlight **DIAGNOSTICS**.

3   Press ✔ to select **DIAGNOSTICS**.

4   Press ▾ to highlight **PQ TROUBLESHOOTING**.

5   Press ✔ to print the pages.

The printer returns to the **Ready** state after printing the print quality troubleshooting pages. If the print quality defects are found when you review the print quality troubleshooting pages, perform a printer calibration. See   .

Calibrating the printer

Calibration is a printer function that optimizes print quality. If you experience any print quality problems, calibrate the printer.

1   Press   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 **CALIBRATE NOW**.

7   Press ✔ to select **CALIBRATE NOW**.

The HP Color LaserJet 3500 series printer and the HP Color LaserJet 3700 series printer offer great color printing as soon as you set up the printer. They provide a combination of automatic color features to generate excellent color results for the general office user. Also, the HP Color LaserJet 3700 series printer provides sophisticated tools for the professional who is experienced with using color.

The HP Color LaserJet 3500 series printer and HP Color LaserJet 3700 series printer provide carefully designed and tested color tables to provide smooth, accurate color rendition of all printable colors.

HP ImageREt 2400

HP ImageREt 2400 is a technology that provides the best color print quality without having to change printer driver settings or make trade-offs between print quality, performance, and memory.

HP ImageREt 2400 has been improved for this printer. The improvements offer trapping technologies, even greater control over dot placement, and more precise control of toner quality in a dot. These new technologies, coupled with HP's multilevel printing process, result in a 600-by-600 dpi printer that provides 2400 dpi color laser-class quality with millions of smooth colors.

Paper selection

For the best color and image quality it is important to select the appropriate paper type from the software printer menu or from the printer control panel. See   , in chapter 1.

Color options (available for the hp color LaserJet 3700 series printer)

Color options automatically enable optimal color output 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.

Standard red-green-blue (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 and digital cameras), and output devices (printers and plotters). It is the default color space used for HP products, Microsoft operating systems, the World Wide Web, and most office software sold today. The sRGB standard is representative of the typical Windows PC monitor today and the convergence standard for high-definition television.

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.

The latest versions of Adobe PhotoShop®, CorelDRAW, Microsoft Office, and many other applications 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 applications and devices using a common definition that ensures typical users will experience greatly improved color matching. The sRGB standard improves your ability to match colors between the printer, the PC monitor, and other input devices (scanners and digital cameras) automatically, without the need to become a color expert.

Printing in four-colors [CMYK (available for the hp color LaserJet 3700 series printer)

Cyan, magenta, yellow, and black (CMYK) are the inks used by a printing press. The process is often called four-color printing. CMYK data files are typically used by and originate from graphic arts (printing and publishing) environments. The printer will accept CMYK colors through the PS printer driver. The printer color-rendering of CMYK is designed to provide rich, saturated colors for text and graphics.

CMYK ink set emulation (PostScript only)

The printer's color rendering of CMYK can be made to emulate several standard Offset Press ink sets.

Default. This selection is good for general purpose rendering of CMYK data. It is designed to render photographs well, while at the same time providing rich saturated colors for text and graphics.

Specifications for Web Offset Publications (SWOP). Common ink standard in the U.S. and other locations.

Euroscale. Common ink standard in Europe and other locations.

Dainippon Ink and Chemical (DIC). Common ink standard in Japan and other locations.

Device. Emulation is turned off. To render photographs properly with this selection, images require color management in the application or operating system.

Use the SWOP or EURO emulation of CMYK inks to achieve the best match of PANTONE® four-color (4C) process colors from PANTONE® certified applications, depending on the swatch book used.

Setting color options to **Automatic** will typically produce the best possible print quality for color documents. However, there may be cases when you want to print a color document in grayscale (black and white) or wish to change one of the printer's color options.

Using Windows, print in grayscale or change the color options using settings found on the **Color** tab in the printer driver.

Using a Macintosh computer, print in grayscale or change the color options 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 in black and white. This option is useful for printing color documents that will be photocopied or faxed. When **Print in Grayscale** is selected, the printer goes into monochrome mode (regardless of what the **COLOR/BLACK MIX** setting is). This mode will reduce wear on the color cartridges.

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.

Automatic is the default setting and is recommended for printing all color documents.

The **Manual** color adjustment option allows you to adjust the neutral gray color treatment, halftones, and edge enhancements for text, graphics, and photographs. To access the Manual color options, from the **Color** tab, select **Manual**, and then **Settings**.

Manual color options

Manual color adjustment allows you to adjust the **Color** (or **Color Map**) and **Halftoning** options individually for text, graphics, and photographs.

Some applications convert text or graphics to raster images. In these cases, the **Photographs** settings will also control text and graphics.

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**.

For the HP Color LaserJet 3700 series printer, the following options are available for the **Halftone** setting:

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.

The **Neutral Grays** setting determines the method used for creating gray colors used in text, graphics, and photographs.

For the HP Color LaserJet 3700 series printer, the following options 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.

The **Edge Control** (for the HP Color LaserJet 3500 series printer) 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 color plane misregistration by overlapping the edges of adjacent objects slightly. (Note: selecting this setting may significantly slow down the HP Color LaserJet 3500 series printer's speed.)

For the HP Color LaserJet 3700 series printer, the following 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.

For the HP Color LaserJet 3500 series printer, the following levels are available:

Maximum is the most aggressive trapping setting.

Normal sets the trapping at a medium level.

Light sets trapping at a minimal level.

Off is the default trapping setting. Trapping is turned off.

For the HP Color LaserJet 3700 series printer, the following values are available for the **RGB Color** settings:

Default instructs the printer to interpret RGB color as sRGB. The sRGB standard is the accepted standard of Microsoft and the World Wide Web Consortium (http://www.w3.org).

Vivid instructs the printer to increase the color saturation in the midtones. Less colorful objects are rendered more colorfully. This value is recommended for 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 application or operating system.

The process of matching printer output color to your computer screen is quite complex because printers and computer monitors use different methods of producing color. Monitors *display* colors by light pixels using an RGB (red, green, blue) color process, but printers *print* colors using a CMYK (cyan, magenta, yellow, and black) process.

Several factors can influence your ability to match printed colors to those on your monitor. These factors include:

- print media
- printer colorants (inks or toners for example)
- printing process (inkjet, press, or laser technology for example)
- overhead lighting
- personal differences in perception of color
- software applications
- printer drivers
- PC operating system
- monitors
- video cards and drivers
- operating environment (humidity for example)

Keep the above factors in mind when colors on your screen do not perfectly match your printed colors.

For most users, the best method for matching colors on your screen to your printer is to print sRGB colors.

Swatch book color matching (HP Color LaserJet 3700 series printer only)

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 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 (color range) 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 will have a note on 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.

For best matching of PANTONE® four-color (4C) process colors, use the SWOP or EURO emulation for CMYK inks in the HP Color LaserJet 3700 PostScript emulation driver when printing from PANTONE®-certified applications.

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 printer's four toner colors. The available range for each color is from -5 to +5. The default value is 0.

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 ✔ to enter the **MENUS**.

2   Press ▼ to highlight **CONFIGURE DEVICE MENU**.

3   Press ✔ to select **CONFIGURE DEVICE MENU**.

4   Press ▼ to highlight **PRINT QUALITY**.

5   Press ✔ to select **PRINT QUALITY**.

6   Press ▼ or ▲ to highlight **ADJUST COLOR**.

7   Press ▼ or ▲ to highlight the desired color.

8   Press ▼ or ▲ to highlight the correct density setting.

9   Press ✔ to select the density setting.

10 Press ⇆ to set the density for the next color.

11 After setting the density for each color, press   .

If specific defects occur repeatedly, print a Print Quality Troubleshooting page (see , in this chapter) and follow the instructions on the first 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 listed in Table 7-16. Possible causes and recommended solutions for each of these categories are listed in the tables that follow. In general, the items are listed in order from minor repairs to major repairs. Check the items in the order in which they appear.

Table 7-16   Image defects

Image defect	Description	More information
Light image	Image light in all colors.	See Table 7-17
Light color	Image light in a particular color.	See Table 7-18
Dark image	Image dark in all colors.	See Table 7-19
Dark color	Image dark in a particular color.	See Table 7-20
Completely blank	No image is printed.	See Table 7-21
All black/solid color	Image is all black or solid color.	See Table 7-22
Dots in vertical lines	White dots appear in image.	See Table 7-23
Dirt on back of paper	Dirt on the back of the page.	See Table 7-24
Dirt on front of paper	Dirt on the front of the page.	See Table 7-25
Vertical lines	Vertical line appears in image.	See Table 7-26
White vertical lines	White vertical line appears in image.	See Table 7-27
Horizontal lines	Horizontal line appears in image.	See Table 7-28
White horizontal lines	White horizontal line appears in image.	See Table 7-29
Missing color	Image in a particular color does not come out in color	See Table 7-30
Blank spots	Blank spots appear in image.	See Table 7-31
Poor fusing	Toner image is not fully fixed on paper.	See Table 7-32
Distorted Image	Image is distorted.	See Table 7-32
Color misregistration	Some color is misregistered.	See Table 7-34
Smearing	Image smeared in whole or in part.	See Table 7-35
Misplaced image	Whole image is incorrectly placed.	See Table 7-36
Reversed color	White in image is output in color, and color is output in white.	See Table 7-37
Snail tracks	Streaks in the page that look like snail tracks. Eventually, the paper may wrinkle.	See Figure 7-38

Light image

Table 7-17   Causes for light images

Cause	Solution
Image density is not adjusted correctly.	Calibrate the printer. See _____, later in this chapter.
The image density is not properly adjusted.	Calibrate the printer. See _____, later in this chapter.
Deteriorated transfer unit.	If the transfer unit is at the end of its life or its surface is deteriorated, replace the transfer unit.
Poor secondary transfer bias contacts.	On the secondary transfer roller, check the bias contacts to the high-voltage PCB. Clean contacts, if dirty. Replace defective parts with deformed/ damaged contacts.
Deformed/Deteriorated secondary transfer charging roller.	Replace the secondary transfer charging roller.
Defective high-voltage PCB.	Replace the high-voltage PCB.
Defective DC controller PCB.	Replace the DC controller PCB.

Light color

Print out a solid filled image of the problem (light) color using an external device. In the course of printing, turn the printer off and take the problem color's cartridge out. Manually open the cartridge shutter. If the toner image on the photosensitive drum is not fully transferred to the transfer unit, go to step B in the table below. If the toner image on the drum before transfer is light, go to step A.

Table 7-18   Causes for one color printing light

	Cause	Solution
A	Poor developing bias contacts.	Check the developing bias contacts to the high-voltage PCB. Clean contacts, if dirty. Replace defective parts if contacts are deformed or damaged.
	Deteriorated cartridge (photosensitive drum).	Replace the cartridge of the problem (light) color.
	Defective high-voltage PCB.	Replace the high-voltage PCB.
	Defective DC controller PCB.	Replace the DC controller PCB.
B	Poor primary transfer bias contacts.	On the transfer unit, check the primary transfer bias contacts with the high-voltage PCB. Clean contacts, if dirty. Replace defective parts if contacts are deformed or damaged.
	Deformed/Deteriorated primary transfer charging roller.	Replace the transfer unit.
	Defective high-voltage PCB.	Replace the high-voltage PCB.
	Defective laser/scanner unit	Replace the laser/scanner unit.
	Defective DC controller PCB.	Replace the DC controller PCB.

Dark image

Table 7-19   Causes for dark images

Cause	Solution
Image density is not adjusted correctly.	Calibrate the printer. See , later in this chapter.
Dirty color misregistration sensor lens.	Clean the color misregistration sensor lens.
Defective color misregistration sensor.	Replace the color misregistration sensor.
Defective environmental sensor.	Replace the environmental sensor.
Defective DC controller PCB.	Replace the DC controller PCB.

Dark color

Table 7-20   Causes for one color printing dark

Cause	Solution
Poor contacts with the primary charging bias, developing bias, or drum grounding.	On the problem (dark) color's cartridge, check the primary charging bias and developing bias contacts to the high-voltage PCB, or the drum grounding contacts. Clean contacts, if dirty. Replace defective parts if contacts are deformed or damaged.
Defective high-voltage PCB.	Replace the high-voltage PCB.
Defective DC controller PCB.	Replace the DC controller PCB.

Completely blank image

Table 7-21   Causes for a completely blank image

Cause	Solution
High-voltage PCB is defective (no developing bias output).	Replace the high-voltage PCB.
DC controller PCB is defective.	Replace the DC controller PCB. Calibrate the printer after replacing the DC controller. See , later in this chapter.

All black or solid color

Table 7-22   Causes for an all black or solid colored image

Cause	Solution
Poor contacts with the primary charging bias, developing bias, or drum grounding.	On the problem (solid) color's cartridge, check the primary charging bias and developing bias contacts to the high-voltage PCB, or the drum grounding contacts. Clean contacts if dirty. Replace defective parts if contacts are deformed or damaged.
Defective cartridge (primary charging roller).	Replace the problem (solid) color's cartridge.
High-voltage PCB is defective.	Replace the high-voltage PCB.
DC controller PCB is defective.	Replace the DC controller PCB. Calibrate the printer after replacing the DC controller. See , later in this chapter.

Dots in vertical lines

Table 7-23   Causes for vertical lines of white dots

Cause	Solution
Deformed/Deteriorated transfer unit or primary transfer charging roller.	Replace the transfer unit.
Deformed/Deteriorated secondary transfer charging roller.	Replace the secondary transfer charging roller.
High-voltage PCB is defective.	Replace the high-voltage PCB.
DC controller PCB is defective.	Replace the DC controller PCB. Calibrate the printer after replacing the DC controller. See , later in this chapter.

Dirt on back of paper

If defect is repetitive dirt, go to step A; if not, go to step B.

Table 7-24   Causes for dirt on the back of the paper

	Cause	Solution
A	Repetitive dirt (dirty registration roller, pressure roller, feed roller, fuser delivery roller, or face down delivery sub roller).	Refer to the table, later in this chapter, to identify the roller with which the problem is associated. Clean the dirty roller. Replace the roller if the dirt does not come off.
B	Dirty cassette pickup roller, feed guide, fuser inlet guide, and fuser delivery guide.	Clean any dirty places on the rollers. Replace the roller if the dirt does not come off.

Dirt on front of paper

If the defect appears in a particular color, go to step A. if it does not appear in a particular color and it is repetitive, go to step B or if it is not repetitive, go to step C.

Table 7-25   Causes for dirt on the front of the paper

	Cause	Solution
A	Defective cartridge (deteriorated toner or scratches on the developing cylinder, photosensitive drum, or primary charging roller).	Replace the cartridge of the color that matches the defect.
B	Repetitive dirt (dirty registration sub roller, fuser sleeve, feed sub roller, or face down delivery roller).	Refer to the table, later in this chapter, identify the roller with which the problem is associated. Clean the dirty roller. Replace the roller if the dirt does not come off.
C	Dirty multi-purpose tray pickup roller.	Clean dirty places on the roller. Replace the roller if the dirt does not come off.
	Defective transfer unit.	Check the transfer unit surface. If scratched or dented, replace the transfer unit.
	Defective transfer unit cleaning blade	Replace the transfer unit.

Vertical lines

Table 7-26 Causes for vertical lines

Cause	Solution
Photosensitive drum has grooves going around the circumference.	Replace the cartridge for the color of the vertical lines.
Fuser sleeve has grooves around the circumference.	Replace the fuser.

White vertical lines

If the lines appear in a particular color, go to step A. If they appear in full-color print, go to step B.

Table 7-27 Causes for white vertical line

	Cause	Solution
A	Circumferential scratches on the developing cylinder (print cartridge).	Replace the print cartridge.
	Circumferential scratches on the photosensitive drum.	Replace the print cartridge.
B	Vertical scratches on the transfer unit.	Replace the transfer unit.
	Vertical scratches on the fuser sleeve.	Replace the fuser.

Horizontal line

If the line appears in a particular color, go to step A. If it appears in full-color print, go to step B.

Table 7-28 Causes for horizontal line

	Cause	Solution
A	The developing cylinder is deformed by being left engaged with the photosensitive drum for a long time.	Refer to the table, later in this chapter, to find out if the interval of line agrees with that of a developing cylinder. If so, output about 20 pages of print to solve the problem. If the problem is not resolved, replace the cartridge.
	Horizontal scratches on the photosensitive drum (cartridge).	Refer to the table, later in this chapter, to find out if the interval of line agrees with that of a photosensitive drum. If so, replace the cartridge.
	Print cartridge cleaning blade leaves a line of toner on the drum (C-blade blur). This error is similar to using a dust pan and broom. The line repeats every 77mm.	At the printer control panel, set CONFIGURE DEVICE/PRINT QUALITY/OPTIMIZE/ PRE-ROTATION=ON
B	Horizontal scratches on the fuser sleeve.	Refer to the table, later in this chapter, to find out if the interval of line agrees with that of a fuser sleeve. If so, replace the fuser.

White horizontal line

If the line appears in a particular color, go to A. If it appears in full color, go to B.

Table 7-29   Causes for white horizontal line

	Cause	Solution
A	Horizontal scratches on the photosensitive drum (cartridge).	Refer to the table, later in this chapter, to find out if the interval of line agrees with that of a photosensitive drum. If so, replace the print cartridge.
B	Horizontal scratches on the transfer unit.	Check the transfer unit surface for horizontal scratches. If any, replace the transfer unit.
	The fuser sleeve is deformed by being left engaged with the pressure roller for a long time.	Refer to the table, later in this chapter, to find out if the interval of line agrees with that of a fuser sleeve. If so, replace the fuser.

Color missing

Table 7-30   Causes for a missing color

Cause	Solution
Defective laser shutter.	Check the problem color laser shutter. Clean the shutter if dirty. Replace the shutter if deformed or damaged.
Poor developing bias contacts.	For the cartridge with the color problem (color missing) color's cartridge, check the developing bias contacts to the high-voltage PCB. Clean contacts, if dirty. Replace defective parts if the contacts are deformed or damaged.
Defective cartridge (primary charging roller).	Replace the problem (color missing) color cartridge.
Laser/scanner unit is defective.	Replace the laser/scanner for any missing color. Calibrate the printer after replacing the laser/scanner. See , later in this chapter.
High-voltage PCB is defective.	Replace the high-voltage PCB.
DC controller PCB is defective.	Replace the DC controller PCB. Calibrate the printer after replacing the DC controller. See , later in this chapter.

Blank spots

Table 7-31   Causes for blank spots

Cause	Solution
Poor secondary transfer bias contacts.	On the secondary transfer roller, check the bias contacts to the high-voltage PCB. Clean contacts, if dirty. Replace defective parts if the contacts are deformed or damaged.
High-voltage PCB is defective.	Replace the high-voltage PCB.
DC controller PCB is defective.	Replace the DC controller PCB. Calibrate the printer after replacing the DC controller. See , later in this chapter.

Poor fusing

Table 7-32 Causes for poor fusing

Cause	Solution
Media is not within specifications. For example, media that is too thick causes poor fusing.	Use media that meets specifications. See F, in chapter 1.
Fuser is not within nip width specifications.	Refer to the table, later in this chapter, to find out if the interval of the poorly fixed places agrees with that of a fuser sleeve. If so, replace the fuser sleeve unit. Replace the fuser.
Fuser sleeve is scarred or damaged.	Replace the fuser.
Pressure roller is scarred or damaged.	Refer to the table, later in this chapter, to find out if the interval of the poorly fixed places agrees with that of a pressure roller. If so, replace the fuser.
Thermistor is deteriorated.	Replace the fuser.
DC controller PCB is defective.	Replace the DC controller PCB. Calibrate the printer after replacing the DC controller. See , later in this chapter.

Image distortion

Table 7-33 Causes for distortion or blurring

Cause	Solution
Transfer unit is defective.	Replace the transfer unit. Calibrate the printer after replacing the transfer unit. See , later in this chapter.
Defective secondary transfer roller	If it does not rotate smoothly or it is deformed, replace the secondary transfer roller.
DC controller PCB is defective.	Replace the DC controller PCB. Calibrate the printer after replacing the DC controller. See , later in this chapter.

Color misregistration

If the misregistration occurs in a particular color, go to A. If it occurs in all colors, go to step B; otherwise, perform the steps in order, from the top down.

Table 7-34   Causes for smearing

	Cause	Solution
	The color misregistration is not properly adjusted.	Calibrate the printer. See , later in this chapter.
A	Defective cartridge.	Check if the photosensitive drum in the problem (misregistered) color's cartridge rotates smoothly. If not, replace the cartridge.
	Worn/Chipped cartridge drive gears.	Check drive gears connected into the problem (misregistered) color's cartridge. If worn or chipped, replace the gear.
B	Dirty color misregistration sensor.	Clean the lens of the color misregistration sensor.
	Defective color misregistration sensor.	Replace the color misregistration sensor.
	Defective transfer unit.	If the transfer unit does not rotate smoothly, replace the transfer unit.
	Worn/Chipped drive gears.	Check drive gears between the image drive unit and the drum motor. If worn or chipped, replace the gear.
	Defective image drive unit.	Replace the image drive unit.
	Defective laser/scanner unit.	Replace the laser/scanner unit.
	Defective DC controller PCB.	Replace the DC controller PCB.

Smearing

Table 7-35   Causes for smearing

Cause	Solution
Poor contacts to each cartridge and printer grounding.	Clean the grounding contacts on each cartridge and the printer. If the problem remains after cleaning, check contacts for deformation or damage. Replace parts, if deformed or damaged. Make sure all contacts are connected correctly.
The movement of the fuser front paper sensor lever is not smooth.	Reseat the lever to make the movement smooth.
Foreign substances/dirt on the fuser inlet guide.	Clean the fuser inlet guide.

Misplaced image

Table 7-36   Causes for a misplaced image

Cause	Solution
Paper is skewed.	See Table 7-12 on page 7-358 to resolve the reason for the skew.
Oblique rollers are worn. (If problem only occurs on the back side of duplex printing only.)	Replace the oblique rollers.
DC controller PCB is defective.	Replace the DC controller PCB. Calibrate the printer after replacing the DC controller. See , later in this chapter.

Reversed color

Table 7-37   Causes for reversed color

Cause	Solution
The FFC (flat cable) that connects the DC controller to the formatter is not correctly connected.	Reseat the FFC to the DC controller PCB J1001.
Defective DC controller PCB.	Replace the DC controller PCB.

Snail tracks

Table 7-38   Causes for reversed color

Cause	Solution
Occurs in high temperature, high humidity environments on the 2nd side printed when duplexing. Cased by the fuser pressure roller being bent in or out.	Replace the fuser.

See the print modes in CONFIGURE DEVICE/ PRINT QUALITY/ PRINT MODES to associate each paper type with a specific print mode. For example, there are several "BEST" print modes that can be set for a specific media type that will enhance print quality. Results will vary, depending on the media being used.

Also see the OPTIMIZE setting in the   , later in this chapter, for further print quality adjustments.

Defects on printer rollers can cause image defects to appear at regular intervals on the page. Use the repetitive defects ruler, see the figure   following the table on the next page, to measure the distance between defects that recur on a page. Use
table, below, 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 it.

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 dampened with rubbing alcohol.

Defects on the Tray 2 pickup roller or the multipurpose tray pickup roller do not cause a repetitive defect. Defects on these rollers cause a defect to appear only on the leading edge of the image.

Table 7-39   Repetitive defect cause

Problem Area	Period of defect (mm)	Problem			
		Dirt on front	Blank spots	Dirt on back	Poor fuser
Tray 2 feed roller	About 42	X			
Tray 2 feed sub roller	About 41			X	
Registration roller	About 44			X	
Registration sub roller	About 41	X			
Primary charging roller	About 26		X		
Photosensitive drum	About 77	X	X		
Developing cylinder	About 38	X			
fuser sleeve	About 75	X			X
Pressure roller	About 41			X	X
fuser delivery roller	About 46			X	
Face-down delivery roller	About 41	X			
Face-down delivery sub roller	About 28			X	
Cassette pick-up roller	Note			X	
Multi-purpose tray pick-up roller	Note	X			

Note: A problem that appears only at the leading edge of image with no repetition.

First occurrence of print defect ──────────────────────────────────▶

26 mm (1.0 inches) ─────────────────────────────────▶
28 mm (1.1 inches) ─────────────────────────────────▶

38 mm (1.5 inches) ─────────────────────────────────▶
41 mm (1.6 inches) ─────────────────────────────────▶
42 mm (1.65 inches) ────────────────────────────────▶
44 mm (1.73 inches) ────────────────────────────────▶
46 mm (1.8 inches) ─────────────────────────────────▶

75 mm (2.95 inches) ────────────────────────────────▶
77 mm (3.0 inches) ─────────────────────────────────▶
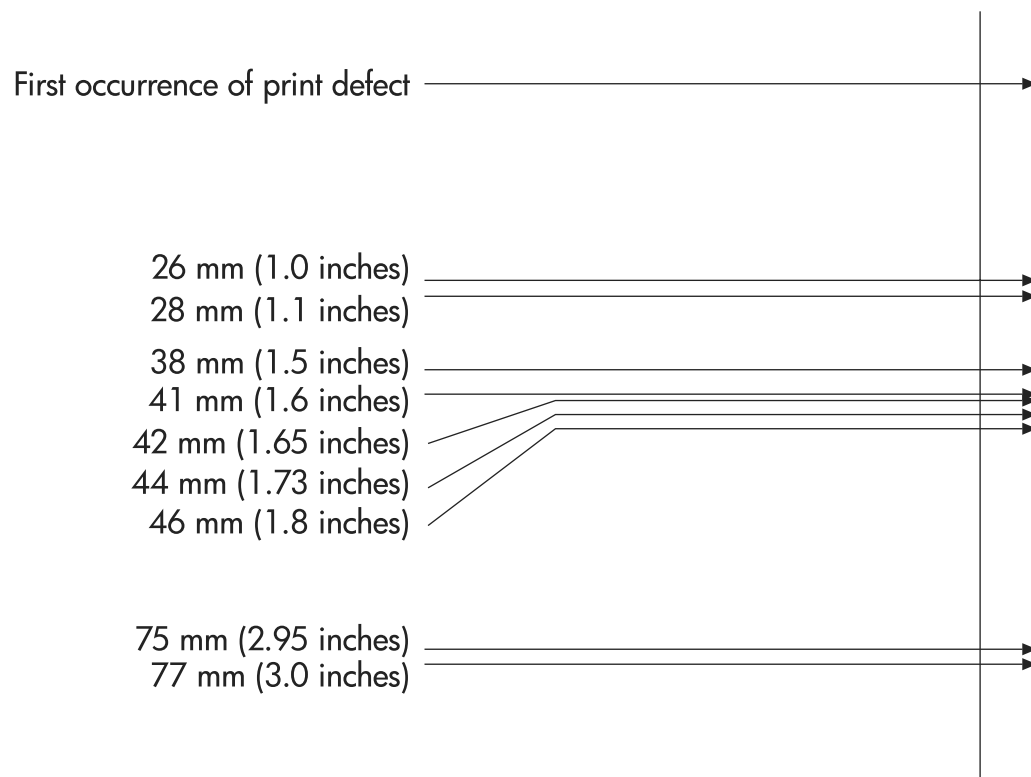
Repetitive defects ruler

Repetitive defects for the transfer unit normally will appear every other page since the transfer belt is longer that a page. However, the distance of the repetitive can vary depending on the type of paper fed. It is possible to see a repetitive defect more than once on the same page.

Communications checks

Communication problems are normally the customer's responsibility. Time spent attempting to resolve these problems might not be covered by the product's Hewlett-Packard 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 7-40, Communications check.

Table 7-40   Communications check

Check	Action
Is your computer configured to the parameters described in the configuration instructions?	These parameters are required 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 properly, an error might display on the control panel.

EIO troubleshooting

If the printer contains an optional HP Jetdirect print server, and you cannot communicate with the printer over the network, verify the operation of the print server. Print a configuration page. If the Jetdirect card does not appear under "Installed personalities and options" on the configuration page (indicated by the arrow in Figure 7-4), see the troubleshooting section of the *HP Jetdirect Print Server Software Installation Guide*.

If the host system and printer are still not communicating, replace the formatter PCB and the EIO card and reconfigure the printer. If the problem persists, a protocol analyzer might be needed to find the source of the problem.

HP LaserJet printers are not designed to work with mechanical switch-box products without proper surge protection. These devices generate high transient voltages that cause permanent damage to the formatter PCB. This circumstance is not covered by the Hewlett-Packard warranty.

Configuration page

AUTOEXEC.BAT standard configurations

Parallel 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
```

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 applications that do not support PJL. The command syntax is:

```
@PJL [Enter] LANGUAGE = {PCL/PostScript} [<CR>] <LF>
```

UEL (universal exit language)

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 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. Besides entering PJL, the UEL command has 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 syntax is:

```
@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 as the applications require.

@PJL INFO ID

This command identifies the printer type to the host for reference when selecting printer drivers for automatic installation. The command syntax is:

```
@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 syntax is:

```
@PJL INFO USTATUS <CR> <LF>
```

@PJL INFO PAGECOUNT

This command returns the number of pages 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 unsolicited job status is enabled). The printer transmits the unsolicited JOB status message to every I/O channel that has enabled this function. This message's format is:

```
@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`.

All commands not supported by this printer's PJL command set are returned with the message `@PJL XXXX<CR><LF>?<CR><LF>`.

When you press ✔ to enter the menus, the high-level menus are displayed in the following order:

INFORMATION
PAPER HANDLING
CONFIGURE DEVICE
DIAGNOSTICS
SERVICE

A menu map shows how individual items are configured within each of these menus. Figure 7-5 shows a sample of one page of the menu map. The menu map prints on three pages.

Printing a menu map

1 Press   to enter the **MENUS**.

2 Press ▾ to highlight **INFORMATION**.

3 Press ✔ to select **INFORMATION**.

4 Press ▾ to highlight **PRINT MENU MAP**.

5 Press ✔ to select **PRINT MENU MAP**.

Printer menu map (HP 3700 shown)

Information menu

Use the Information menu to access and print specific printer information.

Table 7-41   Information menu

Menu item	Description
PRINT MENU MAP	Prints the control panel menu map, which shows the layout and current settings of the control panel menu items.
PRINT CONFIGURATION	Prints the printer configuration page.
PRINT SUPPLIES AND STATUS PAGE	Prints the estimated remaining life for the supplies; reports statistics on total number of pages and jobs processed, print cartridge manufacture date, serial number, page counts, and maintenance information.
SUPPLIES STATUS	Displays the supplies status in a scrollable list.
PRINT USAGE PAGE	HP 3700 only Prints a count of all media sizes that have passed through the printer; lists whether they were simplex, duplex, monochrome, or color; and reports the page count.
PRINT DEMO	Prints a demonstration page.
PRINT FILE DIRECTORY	HP 3700 only Prints the name and directory of files stored in the printer.
PRINT PCL FONT LIST	HP 3700 only Prints the available PCL fonts.
PRINT PS FONT LIST	HP 3700 only Prints the available PS (emulated PostScript) fonts.

Paper handling menu

The Paper handling menu allows you to configure input trays by size and type. It is important to configure the trays with this menu before you print for the first time.

If you have used previous HP LaserJet printers, you might be accustomed to configuring Tray 1 to first mode or cassette mode. To mimic the settings for first mode, configure Tray 1 for size = ANY SIZE and type = ANY TYPE. To mimic the settings for cassette mode, set either the size or type for Tray 1 to a setting other than ANY SIZE or ANY TYPE.

Table 7-42   Paper handling menu

Menu item	Value	Description
TRAY 1 SIZE	A list of available sizes appears.	Allows you to configure the paper size for Tray 1. The default value is ANY SIZE. See for a complete list of available sizes.
TRAY 1 TYPE	A list of available types appears.	Allows you to configure the media type for Tray 1. The default value is ANY SIZE. See for a complete list of available types.
TRAY 2 SIZE **TRAY 3 SIZE**	A list of available sizes appears.	Allows you to configure the paper size for Tray 2 or Tray 3. The default size is Letter or A4 depending on the country/region. See for a complete list of available sizes.
TRAY 2 TYPE **TRAY 3 TYPE**	A list of available types appears.	Allows you to configure the paper type for Tray 2 or Tray 3. The default is **PLAIN**. See for a complete list of available types.

Configure device menu

The configure device menu allows you to change or reset the default print settings, to adjust the print quality, and to change the system configuration and I/O options.

Printing menu

These settings affect only jobs without identified properties. Most jobs identify all of the properties and override the values set from this menu. This menu can also be used to set default paper size and type.

Table 7-43   Printing menu

Menu item	Values	Description
COPIES	1 - 32000	Allows you to set the default number of copies. The default number of copies is 1.
DEFAULT PAPER SIZE	A list of available sizes appears.	Allows you to set the default paper size.
DEFAULT CUSTOM PAPER SIZE	UNIT OF MEASURE X DIMENSION Y DIMENSION	Allows you to set the default size for any custom job without dimensions. Available for Tray 1.
DUPLEX	OFF ON	HP 3700dn and 3700dtn only Allows you to enable or disable the duplex function (automatic 2-sided printing). The default is **OFF**. You can override this setting in the printer driver.
DUPLEX BINDING	LONG EDGE SHORT EDGE	Allows you to choose whether a duplex job will be flipped on the long edge or the short edge.
OVERRIDE A4/ LETTER	NO YES	Allows you to set the printer to print an A4 job on letter-size paper when no A4 paper is loaded, or to print a letter-size job on A4 when no letter-size paper is loaded. The default is **NO**.
MANUAL FEED	ON OFF	The default is **OFF**. Setting it to **ON** makes **MANUAL FEED** the default for jobs that do not select a tray. You can override this setting in the printer driver.
COURIER FONT	REGULAR DARK	HP 3700 only. Allows you to select a version of the Courier font. The default is **REGULAR**.
WIDE A4	NO YES	HP 3700 only. Allows you to change the printable area of A4 paper so that eighty 10-pitch characters may be printed on a single line. The default is **NO**.
PRINT PS ERRORS	OFF ON	HP 3700 only. Allows you to select to print PS (emulated PostScript) error pages. The default is OFF.

Table 7-43 Printing menu (continued)

Menu item	Values	Description
PCL	FORM LENGTH ORIENTATION FONT SOURCE FONT NUMBER FONT PITCH SYMBOL SET APPEND CR TO LF SUPPRESS BLANK PAGES	Allows you to configure settings for the printer control language. **FORM LENGTH** sets the number of lines per page. The default is **0**. **ORIENTATION** determines long-edge versus short-edge page layout. The default is **PORTRAIT** (HP Color LaserJet 3700 series printer only). **FONT SOURCE** selects the source of the font used on the printer control panel. The default is **INTERNAL.** **FONT NUMBER** is the number of the font you select. If this font is a contour font, use **FONT PITCH** to set the pitch of a fixed-space font. The default is **10.00** (HP Color LaserJet 3700 series printer only). **SYMBOL SET** sets the symbol set used by the printer control panel. The default is **PC-8**. **APPEND CR TO LF** sets whether a carriage return is appended to each line feed in a backward-compatible PCL job. The default is **NO**. **SUPPRESS BLANK PAGES** sets whether jobs using PCL that include blank form feeds will automatically suppress the blank pages. **YES** indicates that form feeds will be ignored if the page is blank (HP Color LaserJet 3700 series printer only.

Print quality menu

The Print quality menu allows you to adjust all aspects of print quality, including calibration, registration, and color halftone settings.

Table 7-44   Print quality menu

Menu item	Values	Description
ADJUST COLOR	CYAN DENSITY MAGENTA DENSITY YELLOW DENSITY BLACK DENSITY RESTORE COLOR VALUES	Allows you to modify the halftone settings for each color. The default for each color is **0**.
SET REGISTRATION	PRINT TEST PAGE SOURCE ADJUST TRAY 1 ADJUST TRAY 2 ADJUST TRAY 3	Allows 1-sided and 2-sided image alignment. The default for **SOURCE** is **TRAY 2**. The default for the sub-items **ADJUST TRAY 1**, **ADJUST TRAY 2**, and **ADJUST TRAY 3** is 0**.**
AUTO SENSE MODE	EXPANDED SENSING TRANSPARENCY ONLY	If a tray is configured to **PLAIN** or **ANY SIZE**, and the print job does not specify the media type, the printer will adjust the print quality for the type of print media it senses. The default is **EXPANDED SENSING**, which senses transparencies, glossy paper, and tough paper.
INK TRANSPARENCY	REJECT-GUARD FUSER ACCEPT-NOT ADVISED	REJECT-GUARD FUSER stops the print job when a noncompatible transparency is detected. This option protects the printer fuser from damage. **ACCEPTED-NOT ADVISED** allows the job to print normally even though a non-compatible transparency is being used. The default value is **REJECT-GUARD FUSER**.
PRINT M0DES	A list of available modes appears	Allows you to associate each paper type with a specific print mode

Table 7-44 Print quality menu (continued)

Menu item	Values	Description
OPTIMIZE	T1 UP T1 DOWN T2 UP 1 T2 UP 2 T2 DOWN 1 T2 DOWN 2 LEADING EDGE UP LEADING EDGE DOWN REDUCE BKGROUND 1 REDUCE BKGROUND 2 FUSER DOWN 1 FUSER DOWN 2 FILM OFFSET GHOST PREVENTION PRE-ROTATION RESTORE OPTIMIZE	Allows you to optimize certain parameters for all jobs rather than (or in addition to) optimizing by paper type. The default for each item is **OFF**. **RESTORE OPTIMIZE** resets all of the values to **OFF**. T1 UP - Use when toner does not adequately transfer from the print cartridge drum to the ITB. T1 DOWN - Use when toner transfers unevenly from the print cartridge drum to the ITB. T2 UP 1 - Use when poor transfer occurs on the entire surface of the media from the ITB to the paper at the secondary transfer roller. T2 UP 2 - Use when T2 UP 1 did not completely solve the problem. T2 DOWN 1 - Use when poor transfer in black or freckles appear on the entire surface of the media, especially in purple. T2 DOWN 2 - Use when T2 DOWN 1 did not completely solve the problem. LEADING EDGE UP - Unassigned. LEADING EDGE DOWN - Unassigned. REDUCE BKGROUND 1 - Unassigned. REDUCE BKGROUND 2 - Unassigned. FUSER DOWN 1 - Use when hot offset occurs (the image repeats because toner sticks to the fuser film instead of the paper; toner gets transferred to the paper later, in the wrong place). FUSER DOWN 2 - Use when FUSER DOWN 1 did not completely solve the problem. FILM OFFSET - Use when fuser electrostatic offset occurs (like fuser hot offset but is caused by an electrostatic charge on the fuser film). GHOST PREVENTION - Use when positive ghost appears.

Table 7-44 Print quality menu (continued)

Menu item	Values	Description
OPTIMIZE *continued*		PRE-ROTATION - Use when a repetitive horizontal line occurs every 77 mm due to a print cartridge drum stoppage; or, use to reduce non-uniform color areas in overhead transparencies. RESTORE OPTIMIZE - Restores default values
CALIBRATE NOW	n/a	Performs all printer calibrations to optimize print quality.
CREATE CLEANING PAGE	n/a	Prints a cleaning page to be used for cleaning the fuser roller. This page contains instructions for processing the cleaning page. See for more information.
PROCESS CLEANING PAGE	n/a	After the cleaning page is loaded in Tray 1, this menu item allows the printer to process the cleaning page. The cleaning process takes a few moments. See for more information.

System setup menu

The system setup menu allows you to make changes to default settings for general printer configuration, such as PowerSave Time, printer personality (language), and jam recovery.

Table 7-45   System setup submenu

Menu item	Values	Description
SHOW ADDRESS	AUTO OFF	**AUTO** allows the printer's IP address to be shown on the printer control panel, alternating with the **Ready** message. The default is **OFF**. This menu item is displayed only if the printer is connected to a network (available for the HP Color LaserJet 3700n, 3700dn, and 3700dtn printer models).
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** will reset the printer to the factory default setting. 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 print jobs, or a combination of color and monochrome print jobs.
TRAY BEHAVIOR	USE REQUESTED TRAY MANUALLY FEED PROMPT PS DEFER MEDIA	Allows you to specify settings for the tray selection behavior. (This setting allows you to configure the trays to behave like trays in some previous HP printers.) The default for **USE REQUESTED TRAY** is **EXCLUSIVELY**. The default for **MANUALLY FEED PROMPT** is **ALWAYS**. **PS DEFER MEDIA** affects how paper is handled when printing from an Adobe PS print driver. **ENABLED** uses HP's paper handling. **Disabled** uses the Adobe PS paper handling. The default is **ENABLED**.
POWERSAVE TIME	2 MINUTE 15 MINUTES 30 MINUTES 1 HOUR 4 HOURS 15 HOURS	Reduces power consumption when the printer has been inactive for an extended period. Allows you to set the length of time the printer remains inactive before going into PowerSave mode. The default is **30 MINUTES**.

Table 7-45 System setup submenu (continued)

Menu item	Values	Description
DISPLAY BRIGHENESS	1 - 10	Allows you to adjust the brightness of the printer's control panel. The default is 5.
PERSONALITY	AUTO PCL PS	Sets the default personality to automatic switching, PCL, or PostScript emulation. The default is **AUTO**.
CLEARABLE WARNINGS	ON JOB	Allows you to set the amount of time that a clearable warning is displayed on the printer control panel. The default is **JOB**, which is displayed until ✔ is pressed. **ON** is displayed until the end of the job that generated the warning.
AUTO CONTINUE	ON OFF	Determines printer behavior when the system generates an Auto Continuable error. The default is **ON**. **ON** automatically continues printing after 10 seconds. **OFF** pauses printing. Press ✔ to continue printing.
SUPPLIES LOW	CONTINUE STOP	Sets low supplies reporting options. The default is **CONTINUE**. **STOP** pauses printing when a low supply is reported. Press ✔ to continue printing.
JAM RECOVERY	AUTO ON OFF	Sets whether the printer will attempt to reprint pages after a jam. The default is **AUTO**.
RAM DISK	AUTO OFF	Determines how the RAM disk feature is configured. **AUTO** allows the printer to determine the optimal RAM disk size based on the amount of available memory. **OFF** disables the RAM disk, but a minimal RAM disk is still available. The default is **AUTO**. HP Color LaserJet 3700 series printer only.
LANGUAGE	A list of available languages appears.	Sets the default control panel language.

I/O menu

The I/O menu allows you to configure the printer's I/O options.

Table 7-46   I/O submenu

Menu item	Values	Description
I/O TIMEOUT	5 - 300	Allows you to select the I/O timeout in seconds.
PAGE BUFFERING	OFF ON	Sets whether the printer should maximize performance or minimize engine wear while waiting for information to be transferred. Select **ON** if the printer uses USB 1.1 or Ethernet 10 base T. The default is **OFF** (available for the HP Color LaserJet 3500 series printer).
PARALLEL INPUT	HIGH SPEED ADVANCED FUNCTIONS	Allows you to select the speed at which the parallel port communicates with the host and to enable or disable the bidirectional parallel communication. The default for **HIGH SPEED** is **YES**. The default for **ADVANCED FUNCTIONS** is **ON**. HP Color LaserJet 3700 series printer only.
EIO 1	Possible values are: TCP/IP IPX/SPX APPLETALK DLC/LLC SECURE WEB RESET SECURITY LINK SPEED	HP 3700 only Allows you to configure EIO devices installed in the EIO slot. See , in chapter 3 for more information.

Resets menu

The Resets menu allows you to reset factory settings to, disable and enable PowerSave, and update the printer after new supplies are installed.

Table 7-47   Resets submenu

Menu item	Values	Description
RESTORE FACTORY SETTINGS	None.	Allows you to clear the page buffer, remove all perishable personality data, reset the printing environment, and return all default settings to factory defaults. However, this menu does not restore HP Jetdirect network settings to factory default values.
POWERSAVE	ON OFF	Allows you to enable and disable PowerSave. The default is ON.
RESET SUPPLIES	NEW TRANSFER KIT NEW FUSER KIT	Allows you to inform the printer that a new transfer kit or new fuser kit has been installed. The page count for the new supply will be set to 0.

Diagnostics menu

The Diagnostics menu allows you to run tests that can help you identify and solve problems with the printer.

Table 7-48   Diagnostics menu

Menu item	Description
PRINT EVENT LOG	Prints an event log that displays the last 50 entries in the printer's event log, starting with the most recent.
SHOW EVENT LOG	Displays the last 50 events on the control panel display, starting with the most recent.
PQ TROUBLESHOOTING	Prints a series of print quality assessment pages that help troubleshoot any print quality problems.
DISABLE CARTRIDGE CHECK	Allows you to print with one or more print cartridges removed to help troubleshoot many print problems.
PAPER PATH SENSORS	Shows the values of the sensors. Values are updated as paper passes each sensor. Jobs can be initiated from the control panel or sent from the computer
PAPER PATH TEST	Used to isolate the cause of paper jams.
MANUAL SENSOR TEST	Allows you to test the paper path sensors and switches for correct operation.
COMPONENT TEST	Activates individual parts independently to isolate noise, leaking, and other hardware issues.
PRINT/STOP TEST	Isolates print quality faults more accurately by stopping the printer in mid print cycle. This allows you to see where the image begins to degrade. Note, this causes a jam that may need to be removed.

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 3500 printer is 10350003 and for the HP Color LaserJet 3700 printer is 10370003.

1   Press ▼ or ▲ until the first digit of the PIN is displayed.

2   Press ✔ to save the digit. The display will replace the digit with an asterisk.

3   Repeat steps 1 and 2 until all eight digits are entered.

4   Press ⇆ at any time to move to the previous digit.

Use the Service menu to reset counts, clear the event log, enter the serial number, enter the date the printer was first used, and reset the default paper size.

Table 7-49   Service menu

Menu item	Values	Description
CLEAR EVENT LOG		Allows you to clear the printer's internal event log
TOTAL MONO PAGES	Range: 0 - 9999999	Allows you to reset the page count after replacing the formatter. The page count should reflect the number of pages printed on the print engine rather than the formatter.
TOTAL COLOR PAGES	Range: 0 - 9999999	Allows you to reset the page count after replacing the formatter. The page count should reflect the number of pages printed on the print engine rather than the formatter.
REFURBISH PAGE COUNT	Range: 0 - 9999999	Allows the page count to be reset to the original refurbished page count when the printer is repaired.
TRANSFER KIT COUNT	Range, for the: HP 3500: 0 - 60000 HP 3700: 0 - 75,000	This item automatically resets to zero when the transfer unit is replaced and the user selects the choice to reset the transfer count. Note: this value is now stored on the DC controller instead of the formatter. The transfer kit count will not change the actual page count of the transfer kit. The transfer kit count can only be reset to zero in the resets menu.
FUSER KIT COUNT	Range, for the: HP 3500: 0 - 60,000 HP 3700: 0 - 75,000	Allows you to reset the page count of the current fuser if the value is lost. This item automatically resets to zero when the fuser is replaced and the user selects the choice to reset the fuser count.
SERIAL NUMBER	XXXXXXXXXX	Allows you to update the serial number if you replace the formatter.
SERVICE ID	YYDDD	If you replace the formatter, this item allows you to set the date to the date the printer was first used, rather than the date the new formatter was installed. See , in this chapter for information on the date format.
COLD RESET PAPER	LETTER A4	If the customer uses default paper size of A4 (used in Europe), this item allows you to reset the default if you replace the formatter.

Embedded Web server
(HP Color LaserJet 3700 series printer only)

Using the embedded Web server (HP Color LaserJet 3700 series printer only)

When the printer is directly connected to a computer, use the HP toolbox to view web pages for the printer status.

When the printer is connected to the network, the embedded Web server is automatically available. You may access the embedded Web server from Windows 95 and later. 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   view support content that is specific to the current state of the printer To use the embedded Web server, you must have Microsoft Internet Explorer 4 and later or Netscape Navigator 4 and 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 or AppleTalk printer connections. You do not have to have Internet access to open and use the embedded Web server.

Embedded Web server access
through a network connection

In a supported Web browser on your computer, type the IP address for the printer in the address/ URL field. (To find the IP address, print a configuration page. For more information about printing a configuration page, see   .)

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 Network tab. Click the tab that you want to view.

2   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 percent indicating that a supply is empty. The page also shows the type and size of print paper 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 percent indicating 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 website, 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. Displays messages from the printers control panel, for example Ready or **PowerSave**.

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**, **Configure Device**, and **Diagnostics**.

Alerts. Network only. Set up to receive e-mail alerts for various printer and supplies events.

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 website. This link is displayed in the **Other Links** area on all embedded Web server pages. These permanent links always appear in the **Other Links** area: **HP Instant Support**™, **Order Supplies**, and **Product Support**.

Device Information. Name the 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. Allows time synchronization with a network time server.

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 appear 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 card.

Other links

This section contains links that connect you to the Internet. You must have Internet access in order to use any of these links. If you use a dial-up connection and did not connect when you first opened the embedded Web server, you must connect before you can visit these web sites. Connecting might require that you close the embedded Web server and reopen it.

HP Instant Support™. Connects you to the HP website 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 website and order genuine HP supplies, such as print cartridges and paper.

Product Support. Connects to the support site for the HP Color LaserJet 3500 series printer and the HP Color LaserJet 3700 series printer. Then, you can search for help regarding general topics.

HP toolbox

The HP toolbox is a Web application that you can use for the following tasks:

Check the printer status.

Configure the printer settings.

View troubleshooting information.

View online documentation.

Set up pop-up alerts (Windows only).

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

You do not have to have Internet access to open and use the HP toolbox. However, if you click a link in the Other Links area, you must have Internet access to go to the site associated with the link. See Other links for more information.

Supported operating systems

The HP toolbox is supported for the following operating systems:

Windows 98, 2000, Me, and XP

Mac OS 10.2 or later

Supported browsers

To use the HP toolbox, you must have one of the following browsers:

For Windows

Microsoft Internet Explorer 5.2 or later

Netscape Navigator 6 or later

Opera Software ASA Opera™

For Macintosh

Microsoft Internet Explorer 5.2 or later

Netscape Navigator 6 or later

All pages can be printed from the browser.

To view hp toolbox

On the   menu, select **Programs**, and then **HP toolbox**. Double-click the Status Client icon.

The HP toolbox opens in a Web browser.

Once you open the URL, you can bookmark it so that you can return to it quickly in the future.

HP toolbox sections

The HP toolbox software contains the following sections:

Status tab

Troubleshooting tab

Alerts tab

Documentation tab

Advanced Printer Settings window

Each page in HP toolbox contains links to the HP website for product registration, product support, and for ordering supplies. 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 HP toolbox, you must connect before you can visit these web sites.

Status tab

The Status tab has links to the following main pages:

Device Status. View printer status information. This page will indicate printer conditions, such as a paper jam or an empty tray. After you correct a problem with the printer, click the **Refresh** button to update the device status.

Supplies Status. View detailed supplies status, such as the percentage of toner remaining in the print cartridge and the number of pages printed with the current print cartridge. This page also has links to order supplies and to find recycling information.

Print Info. Print the configuration page and various other information pages that are available for the printer, such as the supplies status page and the demo page.

Troubleshooting tab

The Troubleshooting tab provides links to various printer troubleshooting information, such as how to clear a paper jam, how to resolve print quality problems, and how to resolve other problems with the printer.

Alerts tab

The Alerts tab allows you to configure the printer to automatically notify you of printer alerts. The Alerts tab has links to the following main pages:

Set up status alerts

Set up e-mail alerts (available for the HP Color LaserJet 3500 series printer only)

Administrative settings

- Set up status alerts page

On the Set up status alerts page, you can choose to turn alerts on or off, specify when the printer should send an alert, and choose from two different types of alerts:

a pop-up message

a task bar icon

Click **Apply** to activate the settings.

- Set up e-mail alerts page

On the Set up e-mail alerts page, you can set the e-mail addresses you want to have alerts sent to and specify what kind of alerts should go to which e-mail address. You can have up to four e-mail destinations concerning the following alerts:

Supplies

Service

Paper path

Advisory

You must set up an SMTP server to send e-mail alerts.

- Administrative settings page

On the Administrative settings page, you can set the frequency of how often the HP toolbox checks for printer alerts. Three settings are available:

once per minute (every 60 seconds)

twice per minute (every 30 seconds)

twenty times per minute (every 3 seconds)

If you want to reduce network I/O traffic, reduce the frequency that the printer checks for alerts.

Documentation tab

The Documentation tab contains links to these information sources:

User Guide. Contains the information about the printer usage, warranty, specifications, and support that you are currently reading. The user guide is available in both HTML and PDF format.

Install Notes. Contains late-breaking information about the printer.

Advanced Printer Settings window

When you click the **Advanced Printer Settings** link, a new window opens. The Advanced Printer Settings window has the following tabs:

Information tab

Settings tab

Network tab

Information tab

The Information tab provides quick links to the following information:

Device status

Configuration

Supplies status

Device information

Event log

Usage page (HP Color LaserJet 3700 series printer only)

Print Info pages

Settings tab

The **Settings** tab has links to several pages that allow you to view and change the printer's configuration.

Software settings can override settings made in HP toolbox.

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, Configure Device, and Diagnostics.

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.

Network tab

The Network 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 appear 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.

HP toolbox links

The HP toolbox links at the left of the screen provide links to the following options:

Select a device. Select from all HP toolbox-enabled devices.

View current alerts. View the current alerts for all set up printers. (You must be printing to view current alerts.)

Text only page. View HP toolbox as a site map linking to text-only pages.

Printer 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 ✔ to enter the **MENUS**.

2 Press ▼ to highlight **INFORMATION**.

3 Press ✔ to select **INFORMATION**.

4 Press ▼ to highlight **PRINT CONFIGURATION PAGE**.

5 Press ✔ to select **PRINT CONFIGURATION PAGE**.

The message **PRINTING... CONFIGURATION** appears on the display until the printer finishes printing the configuration page. The printer returns to the **READY** state after printing the configuration page.

If the printer is configured with EIO cards (for example, an HP Jetdirect Print Server) an additional configuration page (shown below) will print for the HP Color LaserJet 3700 series printer only that provides EOI network information.
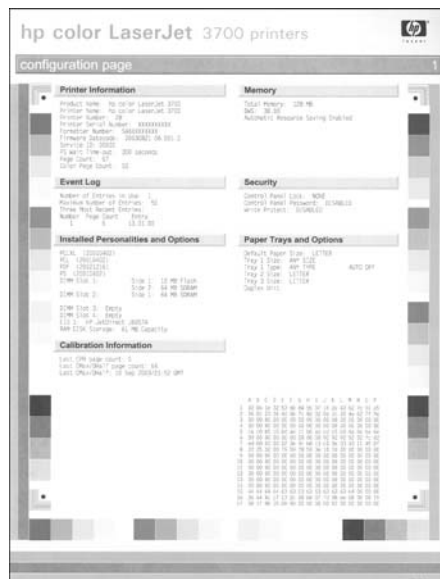
Printer configuration page

1 Printer information

2 Event log

3 Installed personalities and options

4 Memory

5 Security

6 Paper trays and options
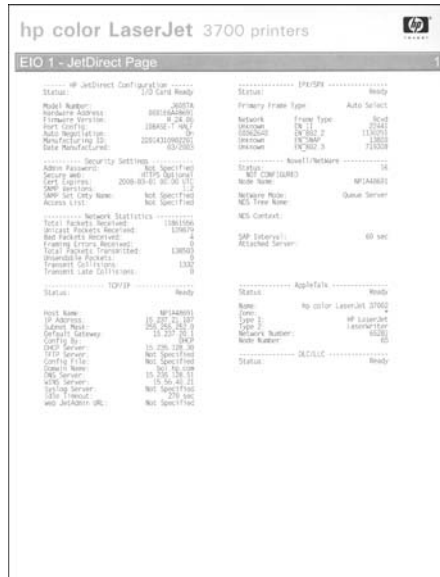
EIO page

1 HP JetDirect configuration

2 Security settings

3 Network statistics

4 TCP/IP settings

5 IPX/SPX settings

6 Novell/Netware settings

7 AppleTalk settings

8 DLC/LLC settings

Supplies status page

The supplies status page illustrates the remaining life for the following printer supplies:

Print cartridges (all colors)

Transfer unit

Fuser

To print the supplies status page:

1   Press ✔ to enter the **MENUS**.

2   Press ▼ to highlight **INFORMATION**.

3   Press ✔ to select **INFORMATION**.

4   Press ▼ to highlight **PRINT SUPPLIES STATUS**.

5   Press ✔ to select **PRINT SUPPLIES STATUS**.

The message **PRINTING... SUPPLIES STATUS** appears on the display until the printer finishes printing the supplies status page. The printer returns to the Ready state after printing the supplies status page.

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

Supplies status page

1   Black print cartridge information

2   Cyan print cartridge information

3   Magenta print cartridge information

4   Yellow print cartridge information

5   Transfer unit kit information

6   Image fuser kit information

Usage page (HP 3700 only)

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 ✔ to enter the **MENUS**.

2 Press ▾ to highlight **INFORMATION**.

3 Press ✔ to select **INFORMATION**.

4 Press ▾ to highlight **PRINT USAGE**.

5 Press ✔ to select **PRINT USAGE**.

The message **PRINTING... USAGE** appears on the display until the printer finishes printing the usage page. The printer returns to the Ready state after printing the usage page.

Usage page

1 Printer identification information

2 Usage totals

3 Percent of coverage broken down by color

Event log

The event log lists the printer events, including printer jams, service errors, and other printer conditions.

1   Press ✔ to enter the **MENUS**.

2   Press ▼ to highlight **DIAGNOSTICS**.

3   Press ✔ to select **DIAGNOSTICS**.

4   Press ▼ to highlight **PRINT EVENT LOG**.

5   Press ✔ to select **PRINT EVENT LOG**.

The message **PRINTING... EVENT LOG** appears on the display until the printer finishes printing the event log. The printer returns to the Ready state after printing the event log.

Event log

1   Current page count and printer serial number

2   Event number (the most recent is at the top of the list)

3   Error code

4   Page count at which the event occurred

5   Description of the event

Diagnostics flowchart

Use this flowchart 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 flowchart refers to is on the formatter. Figure 7-12 on the next page indicates where this LED is located. This is a "heartbeat" LED that blinks on and off when the formatter is operating properly.

```
┌──────────────────────────────┐          ┌──────────────────────────────┐
│              A.              │   NO     │    Check the firmware.       │
│  Does the LED blink with 4   │ ───────► │                              │
│      fast bursts             │          │    Check the memory.         │
│      at power on?            │          │                              │
│                              │          │    Check the formatter.      │
└──────────────────────────────┘          └──────────────────────────────┘
            YES │
                ▼
┌──────────────────────────────┐          ┌──────────────────────────────┐
│              B.              │   NO     │ Check display for an error code. │
│  Does the LED blink at a     │ ───────► │                              │
│  fast, steady rate           │          │    Check the memory.         │
│  during memory testing?      │          │                              │
│  (1 blink per 8 MB)          │          │    Check the formatter.      │
└──────────────────────────────┘          └──────────────────────────────┘
            YES │
                ▼
┌──────────────────────────────┐          ┌──────────────────────────────┐
│              C.              │   NO     │    Check the firmware.       │
│ Is the LED off for about 8   │ ───────► │ Check the display for proper │
│ seconds while the boot code  │          │   connection and operation.  │
│ is decompressing, then the   │          │ Check the display for an error code. │
│ display activates?           │          │                              │
└──────────────────────────────┘          └──────────────────────────────┘
            YES │
                ▼
┌──────────────────────────────┐          ┌──────────────────────────────┐
│              D.              │   NO     │    Check the firmware.       │
│  Does the LED blink at a     │ ───────► │                              │
│  steady rate                 │          │    Check the formatter.      │
│  of 1 blink per second?      │          │ Check the display for an error code. │
└──────────────────────────────┘          └──────────────────────────────┘

┌────────────────────────────────────────────────────────────────────────┐
│                                  E.                                      │
│ If the printer display does not light, perform an engine test to check   │
│ the engine. You must have paper loaded in Tray 2 for the engine test.    │
└────────────────────────────────────────────────────────────────────────┘
```

Diagnostics flowchart

Formatter LED

Engine diagnostics

This section provides an overview of the engine diagnostics incorporated into the HP Color LaserJet 3500 and 3700 series printer. The printer contains extensive internal diagnostics that help in troubleshooting print quality issues, paper path issues, noise issues, component issues, and timing issues.

Diagnostics mode

Some of the diagnostic tests automatically put the printer into a special diagnostics mode. The special diagnostics mode allows the printer to perform actions that it normally could not because the printer would enter an error state. Always follow the control panel directions in the Diagnostic menu to properly exit the special diagnostics mode and return the printer to a normal state.

Diagnostics that put the printer into special diagnostics mode

There are four diagnostic tests that put the printer into a special state:

Disable cartridge check

Paper path sensor test

Manual sensor test

Component test

While the printer is in the special diagnostics mode, the display should read:

READY DIAGNOSTICS MODE

TO EXIT PRESS STOP KEY

When the printer is in the special diagnostics mode, the four tests listed above appear in the menu and are available to be run. To access other diagnostic tests or to leave the special state, press the ____ button, and then select **EXIT DIAGNOSTICS**. The printer will reset itself, and then return to the normal state.

A good understanding of how the printer operates is required to use the engine diagnostics successfully. Before proceeding with these diagnostic tests, be sure you understand the information in Chapter 5 of this manual.

Diagnostics tests

Different tests can be used to isolate different types of issues. For component or noise isolation, you can run the diagnostics with the left, right, and rear covers removed. Do not operate the printer with the front door open. Operating the printer with the front door open will cause the gears on the right side of the printer to become out of sync with the front door. Upon closing the front door, the gears on the right side and print cartridges can be damaged.

Take caution when performing printer diagnostics to avoid risk of injury. Only trained service personnel should access and run the diagnostics with the covers removed. Never touch any of the power supplies with the printer turned on.

Printer display menu

Control Panel Fuel Gauges – used to determine if cyan, magenta, yellow, or the black print cartridge is in a low or out condition.

Diagnostics test menu

Print Event Log

This item prints an event log that displays the last 50 entries in the printer's event log, starting with the most recent.

Show Event Log

This item displays on the control panel the last 50 events in the event log, starting with the most recent.

PQ Troubleshooting

This item prints a series of print quality assessment pages that help troubleshoot print quality problems.

Disable Cartridge Check – special mode test

This diagnostic test allows you to print internal pages or sends an external job to the printer with one or more print cartridges removed or swapped. Because the cartridges are not keyed, the diagnostic test can be run with one to four cartridges removed or swapped to another location. Consumable supply errors are ignored while in this mode. Once 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 related to individual cartridges and to isolate individual cartridge problems such as noise.

Do not remove or swap cartridges before entering the disable cartridge check diagnostic. After entering the test, you can remove or swap cartridges.

While performing the disable cartridge check, you can navigate the menus and print internal pages as desired from the control panel. Use the button to access the menus as you normally would. You can also send external print jobs to the printer.

To exit this diagnostic, press the   button and then select **EXIT** diagnostics.

Paper Path Sensors – special mode test

This test allows you to test the printer's sensors for proper operation. Each sensor is represented by a letter, as indicated in the table below. A one below the letter on the display indicates paper is present. This test allows you to print internal pages or send an external job to the printer. This test will also test the new Media sensor (PS5) which senses OHT, Gloss, Gloss Film, and Plain paper.

Manual Sensor Test – special mode test

This test allows you to *manually* test paper path sensors and the door open switch. Each sensor is represented by a letter, as indicated in the tables below.

The reversed paper sensor (PS9) and duplexing feed delivery paper sensor (PS10) are for the HP Color LaserJet 3700series printer only
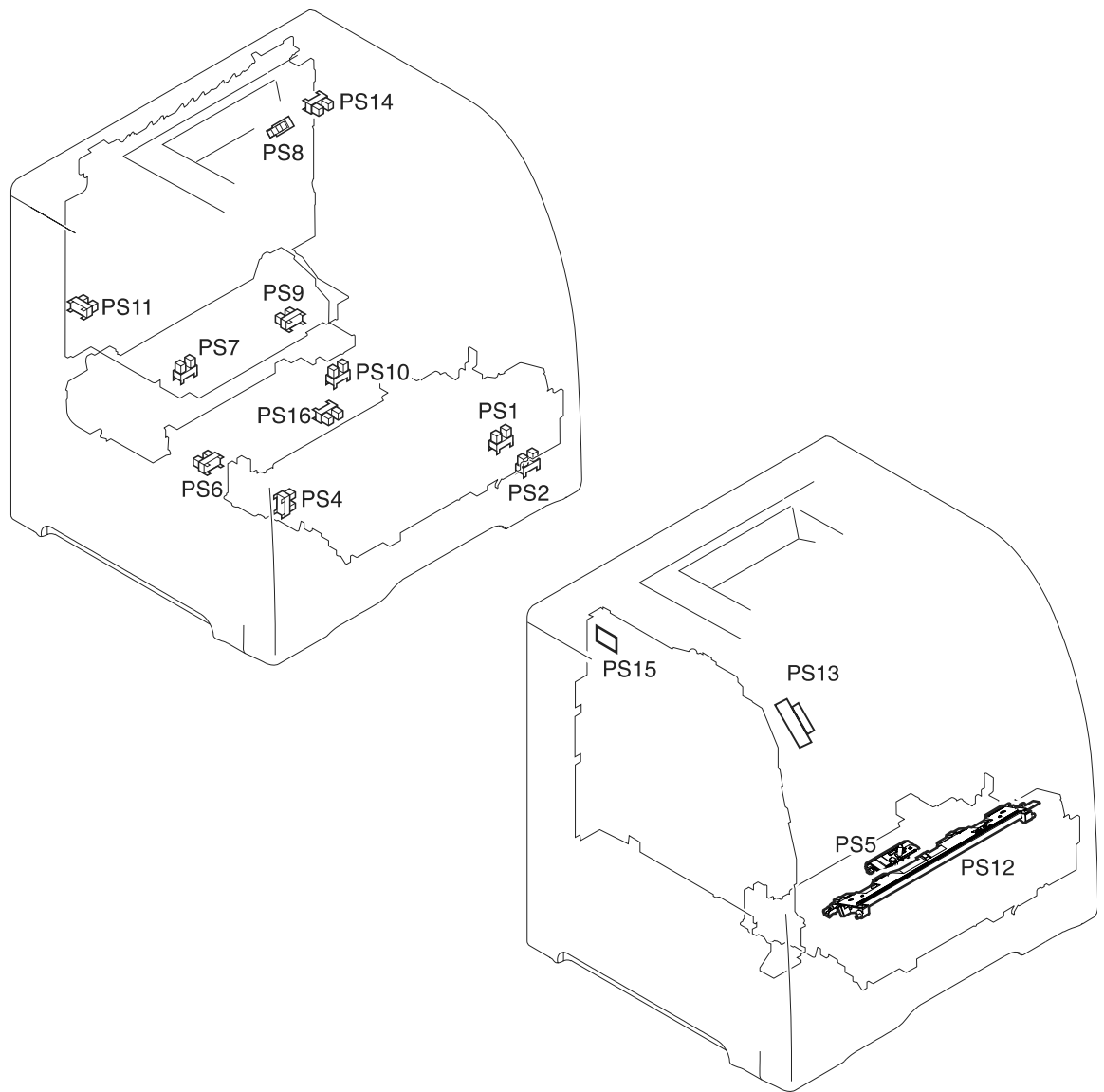
PS1:	Tray 1 paper sensor	PS 9	Reversed paper sensor (HP 3700 only)
PS2:	Tray 2 (cassette) paper sensor	PS10:	Duplexing feed delivery paper sensor
PS3	Tray 3 paper sensor (see 500-sheet paper feeder)	PS11:	Face-up tray sensor
PS4:	Registration paper sensor	PS12:	Color misregistration sensor
PS5:	Media sensor	PS13:	Waste toner level sensor
PS6:	Fuser front paper sensor	PS14:	Developing engaging sensor
PS7:	Fuser delivery paper sensor	PS15:	Environmental conditions sensor
PS8:	Face-down delivery paper sensor	PS16:	Secondary transfer roller engaging sensor

Location of sensors

Table 7-50   Paper path and manual sensor test control panel information

Name	Symbol	PAPER PATH SENSORS	MANUAL SENSOR TEST
HP 3700 only Reversed paper sensor	PS9	0 or 1	0 or 1
HP 3700 only Duplexing feed paper sensor	PS10	0 or 1	0 or 1
Multi-purpose tray paper sensor	PS1	0 or 1	0 or 1
Cassette paper sensor	PS2	0 or 1	0 or 1
Paper feeder (Tray 3) paper sensor	PS3	0 or 1	0 or 1
Registration paper sensor	PS4	0 or 1	0 or 1
Fixing front paper sensor	PS6	0 or 1	0 or 1
Fixing delivery paper sensor	PS7	0 or 1	0 or 1
Face-down delivery paper sensor	PS8	0 or 1	0 or 1
Developing engaging sensor	PS14	0 or 1	0 or 1
Media sensor	PS5	0, 1, 3, 4, 5, or 6*	X
Misprint		0 or 1	X
Face-up tray sensor	PS11	HP 3500 - 0 or 1 HP 3700 - X	0 or 1
Waste toner full sensor	PS13	HP 3500 - 0 or 1 HP 3700 - X	0 or 1
Door-open detection switch	SW1	HP 3500 - 0 or 1 HP 3700 - X	0 or 1

* - Media sensor: 0- unknown, 1- normal, 3- OHT, 4- glossy, 5-gloss film, 6- non-assured OHT
X - indicates a blank; no value is displayed.

N: this sensor can be tested by shining a light into the lower sensor hole.

O: only toggle this switch by opening and closing the front door. Do not toggle this switch with the door open using a screw driver. You can damage the gears on the right side and the print cartridges when closing the front door after the switch has been defeated. If the front door switch is toggled with the front door open, you will not be able to close the front door. If this happens, to close the door you must perform the following steps:

1   Remove the right cover. See   , in chapter 6.

2   Align the engaging rack to the CORRECT position (1) as shown by the figure below.
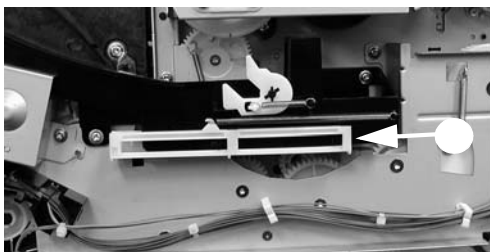
CORRECT   **INCORRECT**
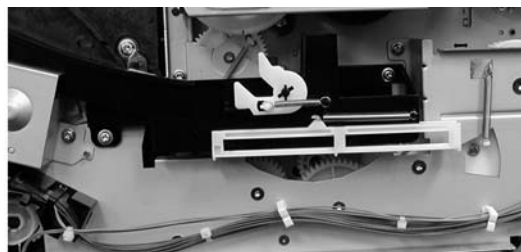
3 Close the front door.

PS16, the secondary transfer roller engaging sensor, is not included in the sensor tests. A 59.99 on the control panel indicates an error occurred in the secondary transfer roller engaging mechanism. PS16 may be the cause of the error.-

Paper Path Test

This diagnostic will generate one or more test pages that you can use to isolate the cause of paper 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 enter the diagnostic:

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, then scroll back up and select PRINT TEST PAGE to execute the test.

Source - Select Tray 1, Tray 2, or Tray 3 (if the optional 500-sheet paper feeder is installed).

Duplex - Enable or disable 2-sided printing. (for the 3700 only)

Copies - Set the numbers of copies to be printed; the choices are 1,10, 50, 100, or 500.

Component Test – special mode test

The component test allows you to exercise individual parts independently to isolate problems. Each component test can be exercised once or repeatedly. If CONTINUOUS is selected as the repeat option, the test will cycle the component on and off. This process will repeat for 2 minutes, and then the test will terminate.

Menus cannot be accessed during component tests, so the button serves the same function as the button. There are 18 component tests.
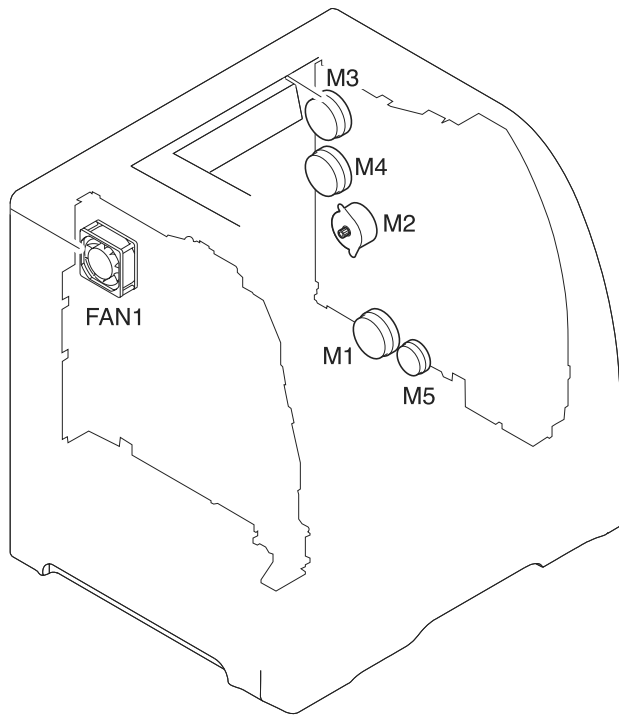
M1:   Feed motor
M2:   Delivery motor
M3:   Drum motor
M4:   Developing motor
M5:   Primary transfer roller engaging motor
FAN1: Exhaust fan

Location of motors and fans
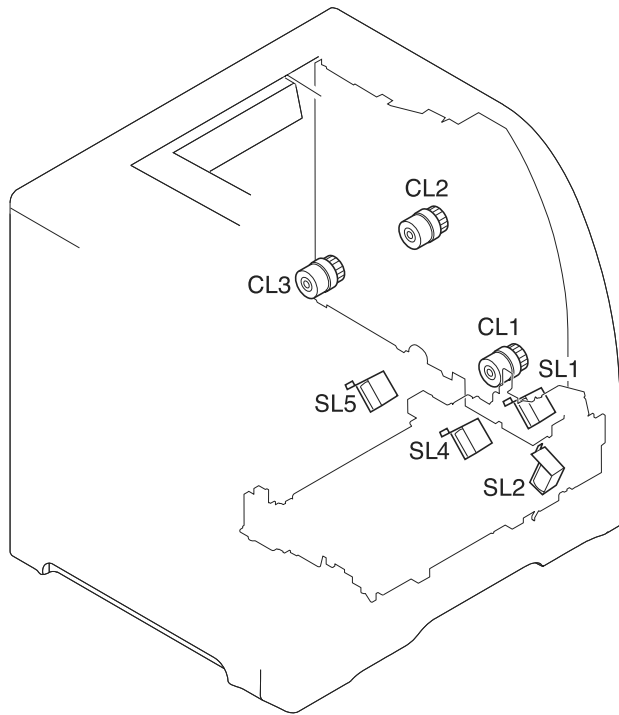
SL1: Tray 1 pick-up solenoid
SL2: Tray 2 pick-up solenoid (pick-up/feed assembly)
SL4: Secondary transfer roller engaging solenoid
SL5: Duplex feed solenoid
CL1: Registration clutch
CL2: K development clutch (image drive unit)
CL3: Developing engaging clutch (developing engaging drive unit)

Location of solenoids and clutches

The following 18 tests are available in the component test menu:

1. TRANSFER MOTORS

Drives the drum motor (M3) and developing motor (M4) for 10 seconds which rotates the ITB belt, CMYK print cartridge OPC drums, and CMY developers.

2. DRUM AND DRUM MOTOR

Drives the drum motor (M3) for 10 seconds which rotates the ITB belt and the CMYK print cartridge OPC drums.

3. BLACK LASER SCANNER

Drives the scanner motor (cyan/black) for 10 seconds.

6. CYAN LASER SCANNER

Drives the scanner motor (cyan/black) for 10 seconds.

5. MAGENTA LASER SCANNER

Drives the scanner motor (magenta/yellow) for 10 seconds.

6. YELLOW LASER SCANNER

Drives the scanner motor (magenta/yellow) for 10 seconds.

7. DEVELOPER MOTORS

Drives the developer motor (M4) which rotates the C,M,Y print cartridge developers.

8. ALIENATION MOTOR

Drives the delivery motor (M2) and the developing engaging clutch (CL3) which rotates the rear output paper path rollers and engages / disengages the CMYK print cartridge developer rollers. This test does not rotate the print cartridge developer rollers.

9. TRANSFER 1 MOTOR

Drives the primary transfer roller engaging motor (M5) which engages / disengages the CMYK ITB primary charging rollers.

10. MP TRAY SOLENOID

Drives the feed motor (M1) and the multi purpose pickup solenoid (SL1) which picks paper from the tray 1.

11. TRAY 2 SOLENOID

Drives the feed motor (M1) and the cassette Tray 2 pickup solenoid (SL2) which picks paper from Tray 2.

12. FUSER MOTOR

Drives the delivery motor (M2) and registration clutch (CL1) for 10 seconds which rotates the fuser, paper path rollers, and Tray 3 drive rollers.

13. DUPLEX MOTOR (3700 only)

Drives the delivery motor (M2) which rotates the rear output paper path rollers.

14. TRANSFER 2 SOLENOID

Drives the feed motor (M1) and the secondary transfer roller engaging solenoid (SL4) which rotates the fuser, paper path rollers, Tray 3 drive rollers, and engages the secondary transfer roller which raises it about ½ inch.

15. DUPLEX SOLENOID

Drives the feed motor (M1) and the duplexing feed solenoid drive (SL5) which rotates the fuser, paper path rollers, and duplexing feed roller. Remove Tray 2 to see the gear turning on the right side of the duplex area inside Tray 2.

16. BLACK DEVELOPER DRIVE

Drives the drum motor (M3) and black print cartridge drive clutch (CL2) for 10 seconds which rotates the ITB belt, CMYK print cartridge OPC drums, and black developer.

17. TRAY 3 DRIVE

Drives the feed motor (M1) and paper feeder pick-up clutch (CL4) for 10 seconds which rotates the fuser, paper path rollers, and Tray 3 drive rollers.

18. TRAY 3 SOLENOID

Drives the feed motor (M1) and paper feeder pickup solenoid (SL3) which picks paper from Tray 3.

Print/Stop Test

This diagnostic test can be used to isolate the cause of problems, such as image formation defects and jams, within the engine. This test allows you to stop the paper anywhere along the printer's 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 it takes to print the job, there are two ways to recover the printer.

After the print job completes, press   to return to the diagnostic menu before the timer times out.

After the timer times out, press   . You will have to cycle the door switch by opening and closing the front door to restart the engine and return it to a normal state. When the timer trips, the display shows the message PRINTING STOPPED, PRESS   TO CONTINUE. Pressing ✔ will print the previously selected job. If you do not want the previous job to print, press   first, and then press the ✔ button.

Do not attempt to execute a Print/Stop test while the printer is calibrating; a power cycle will be required. If you encounter a jam message during testing, cycle the door switch.

Information menu

From the information menu, the following pages can be printed.

Print Menu Map – prints the control panel menu map, which shows the layout and current settings of the control panel menu items.

Print Configuration – used to help troubleshoot printer problems or to verify installation of optional accessories such as memory (DIMMs), paper trays, and printer languages.

Print Supplies Status Page – prints a page that indicates remaining life of supplies.

Supplies Status – displays on the control panel the remaining life of supplies.

Print Usage Page – hp 3700 only. Indicates page count for each tray and the size and type of media printed.

Print Demo – used to test print quality by printing a demo page.

Print File Directory – hp 3700 only. Prints the name and directory of files stored in the printer such as a RAM disk.

Print PCL Font test page – hp 3700 only. Prints available PCL fonts.

Print PS Font List – hp 3700 only. Prints the available PS (emulated PostScript) fonts.

Configure device menu/printing menu

Print PS Errors – hp 3700 only. Allows you to print the PS error pages.

Configure device menu/resets menu

Restore Factory Settings – allows you to clear the page buffer, remove all perishable personality data, reset the printing environment, and return all default settings to factory defaults.

Reset Supplies – New Transfer Kit or New Fuser Kit – Allows you to inform the printer that a new transfer kit or new fuser kit has been installed which will reset the page count of that supply to zero.

Configure device menu/print quality menu

Calibrate Now – used to calibrate the printer to maintain optimum print quality. It executes all printer calibrations: DMAX, DHALF, color plane registration, and drum phase adjustment.

Adjust Color, Print Modes, and Optimize – These can be used to optimize print quality.

Set Registration – Allows 1 sided and 2 sided image alignment.

Create Cleaning Page – used to generate a cleaning page to clean spots off the fuser rollers.

Process Cleaning Page – used to feed a cleaning page to clean spots off the fuser rollers.

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 left side of the printer, as shown in Figure 7-16. The test page should have a series of horizontal lines. The test page can use only Tray 2 as the paper source, so ensure paper is loaded in Tray 2.
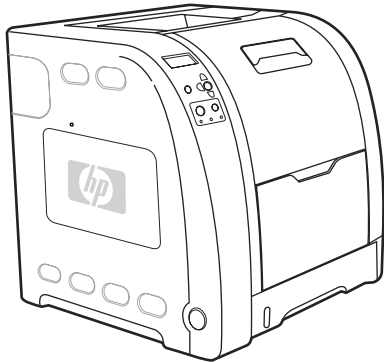
Test page switch

Formatter test page

To verify that the formatter is functioning, print a configuration page as follows:

1   Press ✔ 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**.

Cold reset

A cold reset unlocks menus that have been locked and resets variables in the control panel. However, it does not clear the values in the Service menu (such as the serial number and page counts).

To perform a cold reset

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** appears on the display, press ▲ until **COLD RESET** appears on the display.

4 Press ✔. The printer will perform a cold reset and then continue its power-on sequence.

NVRAM initialization

Initializing NVRAM will reset the serial number, the event log, the page counts, the calibration settings, and the EIO card (HP 3700 only). Use the Service menu to restore the serial number and page counts. You will 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 or go to the service menu to gather the following information:

   total page count and color page count

   fuser kit count

   serial number

To initialize NVRAM

1 Turn the printer on and watch the control panel display.

2 When the display begins showing the memory count, press and hold ▼ until all three lights on the control panel are lit.

3 Press ▲.

4 Press   . The display should show **SKIP DISK LOAD**.

5 Press ▼ until **NVRAM INIT** is highlighted.

6 Press ✔. The printer will initialize NVRAM and then continue its power-on sequence.

Calibration bypass

During certain diagnostic procedures, you will need to bypass the automatic calibration that is performed whenever the printer is turned on.

To bypass calibration

1 Turn the printer on and watch the control panel display.

2 When the display begins showing the memory count, press and hold ▼ until all three lights on the control panel are lit.

3 Press ▲.

4 Press   . The display should show **SKIP DISK LOAD**.

5 Press ▲ until **SKIP CALIBRATION** is highlighted.

6 Press ✔. The printer will skip calibration and then continue its power-on sequence.

Calibrate Now

Use the following procedure to calibrate the printer whenever you replace the DC controller, the formatter, the color misregistration sensor (PS12), the transfer unit, or the laser/scanner.

1 Press ✔ 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 **CALIBRATE NOW**.

7 Press ✔ to select **CALIBRATE NOW**.

8 Wait for the printer to calibrate.

Accessing 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 3500 series printer is 10350003 and for the HP Color LaserJet 3700 series printer is 10370003.

1. Press ▲ or ▼ until the first digit of the PIN is displayed.

2. Press ✔ to save the digit. The display will replace the digit with an asterisk.

3. Repeat steps 1 and 2 until all eight digits are entered.

4. Press ⇆ at any time to move to the previous digit.

Clear event log

This item allows you to clear the printer's internal event log.

Total page count

The page count 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 printed by the engine rather than starting over for the new formatter. The page count is broken into two categories: total mono pages and total color pages.

Transfer kit count

This value can be changed in the service menu but it will not change the value of the transfer kit. This value is initially set to zero at the factory. This value is automatically reset to zero when a customer installs a new transfer kit and sets **NEW TRANSFER KIT** to **YES** in the Resets menu.

If only the formatter is replaced, the transfer kit page count will not be lost.

Fuser kit count

This item allows you to reset the fuser count if the value is lost, such as when you replace the formatter. This value is initially set to zero at the factory. Enter a value up to 60,000 for the hp 3500 and 75,000 for the HP 3700. This value is automatically reset to zero when a customer installs a new transfer kit and sets **NEW FUSER KIT** to **YES** in the Resets menu.

Serial number

If you replace the formatter, use this item to reset the serial number of the printer.

Service ID

This item allows the date that the printer was first used to be shown through the control panel, eliminating the need for customers to keep paper receipts for proof of warranty. Because the printer does not have an internal clock, the service ID date's availability is dependent on the printer being connected to a source that can provide the date, such as the installer, the driver, or the embedded Web server. In cases where the printer is not connected to a date source, the service ID will not be available, and the control panel will display **000000**.

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 the printer was first used. The date format is YYDDD. Calculate the date as follows:

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 To calculate DDD, use the following formula:
   30(calendar month – 1) + calendar day = DDD. If the calendar day is 31, use 30 instead. For instance, if the printer was first used on October 17, calculate DDD as follows:

   a. Subtract 1 from 10 (October is the tenth month of the year): 10 – 1 = 9.

   b. Multiply 9 by 30: 9 x 30 = 270.

   c. Add 17 to 270: 270 + 17 = 287. Thus, DDD = 287.

Converting the Service ID to an actual date

You can use the printer's Service ID number to determine whether the printer is still under warranty. 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.

A 6-day grace period is built into the date system.

Cold reset paper

When you perform a cold reset, the paper size stored in NVRAM is reset to the default factory setting. If you replace a formatter board in a country/region such as Europe 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.

Main parts
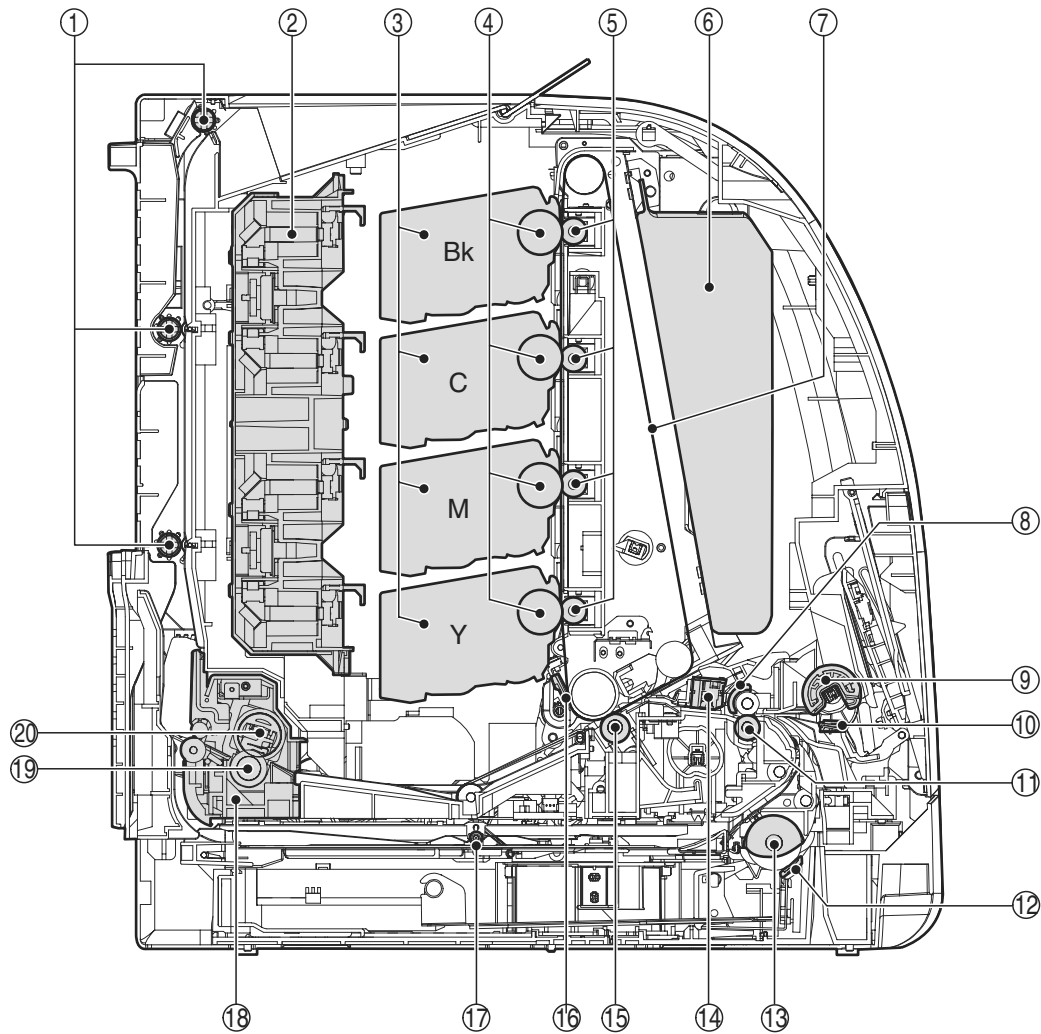
1. Face-down delivery roller
2. Laser/scanner assembly
3. Print (toner) cartridge
4. Photosensitive drum
5. Primary transfer charging roller
6. Toner collection unit
7. Transfer unit
8. Registration shutter
9. Tray 1 (multipurpose) pickup roller
10. Tray 1 (multipurpose tray) separation roller

11. Registration roller
12. Tray 2 (cassette) separation roller
13. Tray 2 (cassette) pickup roller
14. Media sensor
15. Secondary transfer charging roller
16. ITB (transfer unit) cleaning blade
17. Duplex feed roller
18. Fuser
19. Pressure roller
20. Fuser (fixing) sleeve unit

Location of main parts

Switches
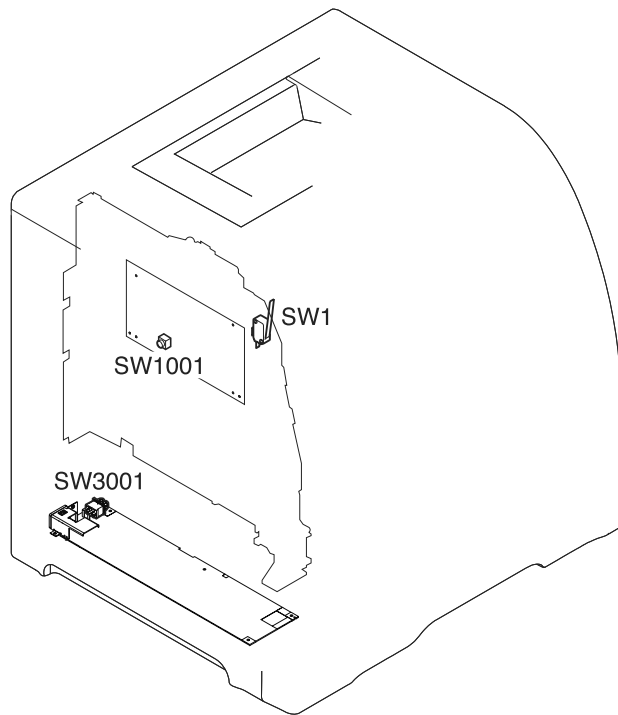
SW1:   Door switch
SW1001: Test print switch
SW3001: Power switch

Location of switches

Sensors
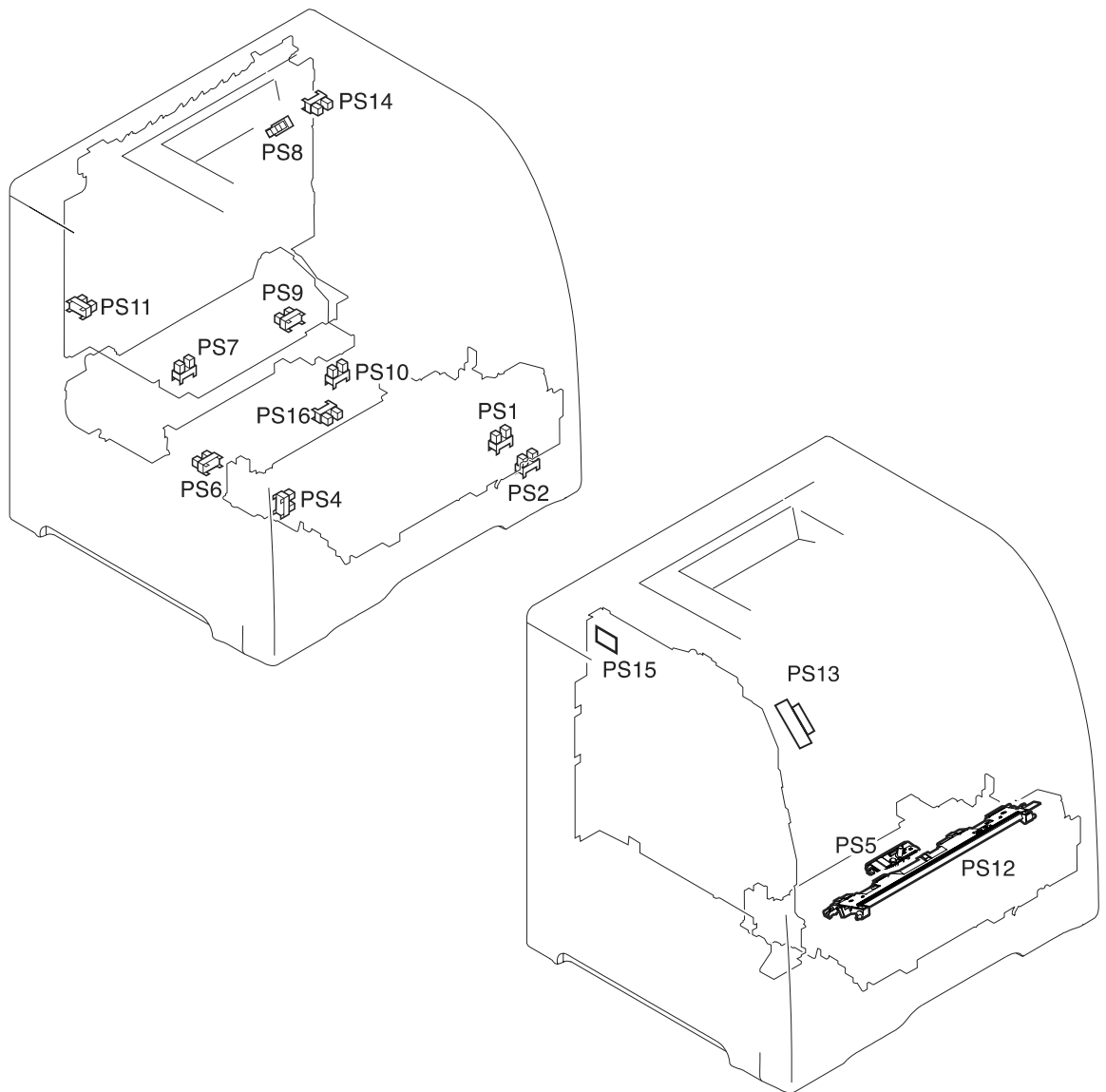
PS1:	Tray 1 paper sensor
PS2:	Cassette paper sensor
PS4:	Registration paper sensor
PS5:	Media sensor
PS6:	Fuser front paper sensor
PS7:	Fuser delivery paper sensor
PS8:	Face-down delivery paper sensor
PS9:	Reversed paper sensor

PS10:	Duplexing feed delivery paper sensor
PS11:	Face-up tray sensor
PS12:	Color misregistration sensor
PS13:	Waste toner level sensor
PS14:	Developing engaging sensor
PS15:	Environmental conditions sensor
PS16:	Secondary transfer roller engaging sensor
:	

Location of sensors

Solenoids and clutches
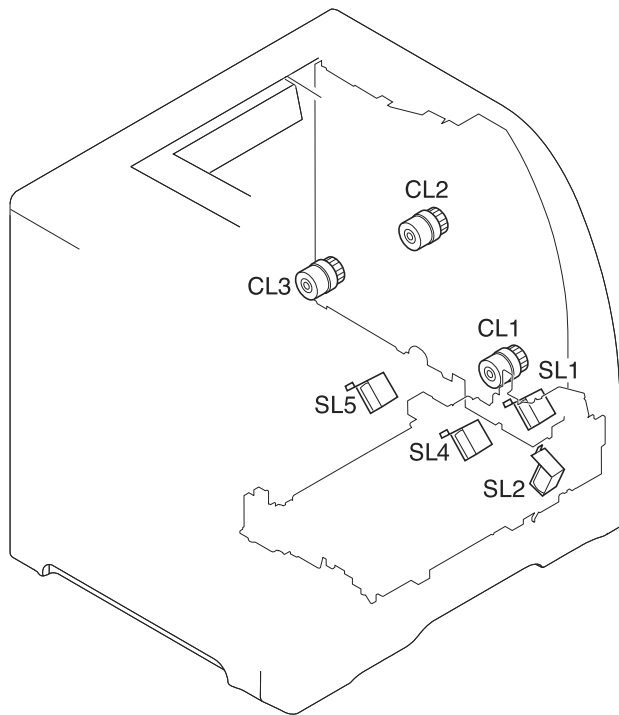
SL1: Tray 1 pick-up solenoid
SL2: Tray 2 pick-up solenoid (pick-up/feed assembly)
SL4: Secondary transfer roller engaging solenoid
SL5: Duplex feed solenoid
CL1: Registration clutch
CL2: K development clutch (image drive unit)
CL3: Developing engaging clutch (developing engaging drive unit)

Location of solenoids and clutches

Motors and fans
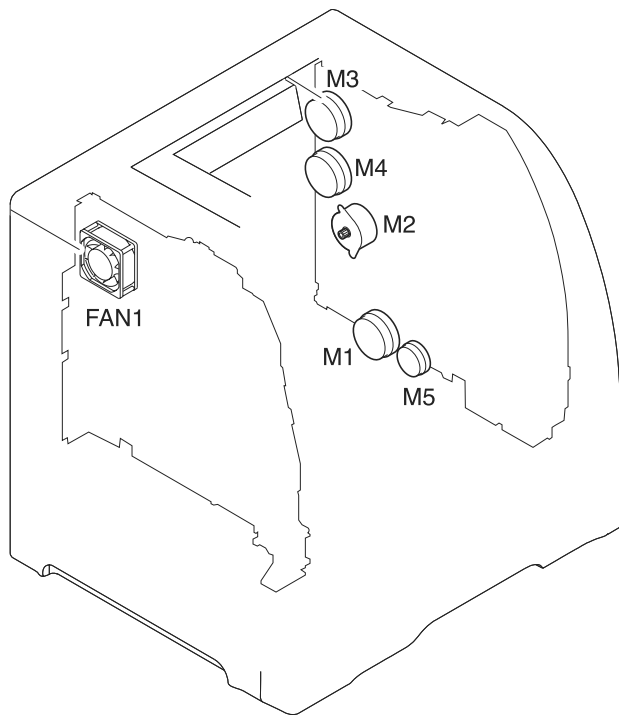
M1:   Feed motor
M2:   Delivery motor
M3:   Drum motor
M4:   Developing motor
M5:   Primary transfer roller engaging motor
FAN1:   Exhaust fan

Location of motors and fans

PCBs
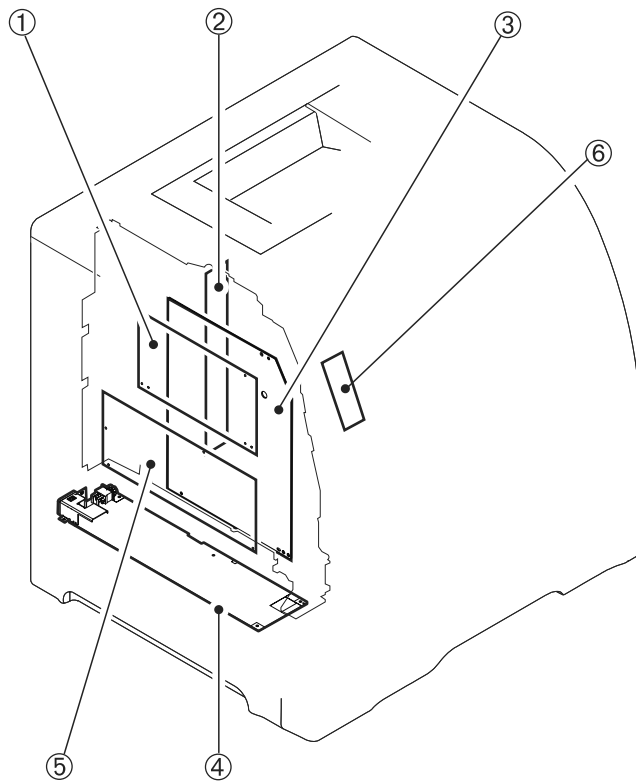
1. DC controller PCB
2. Memory controller PCB
3. High-voltage power supply PCBs
4. Low-voltage power supply PCB
5. Formatter PCB
6. Control panel PCB

PCB locations
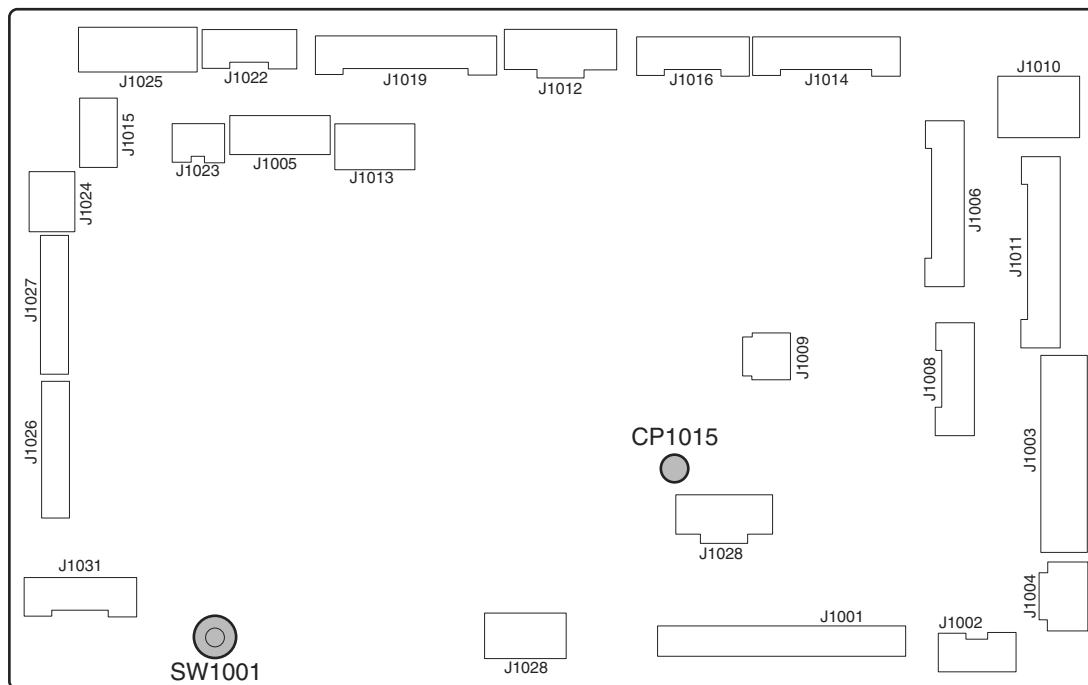
Location of DC controller PCB connectors (HP 3700)
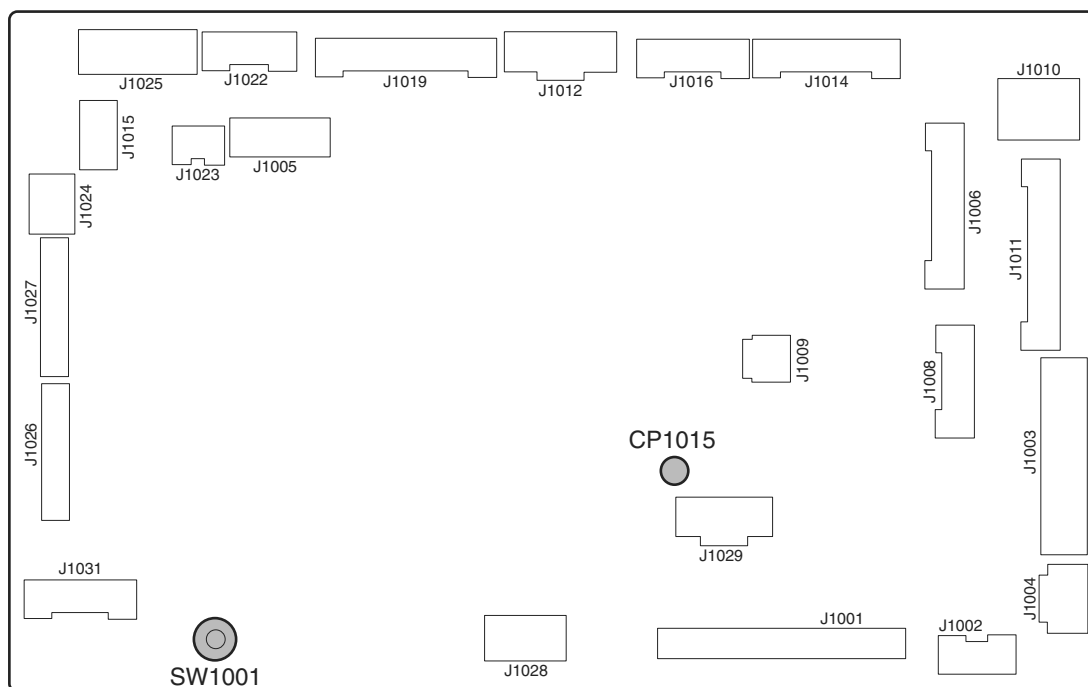
Location of DC controller PCB connectors (HP 3500)

Connector locations
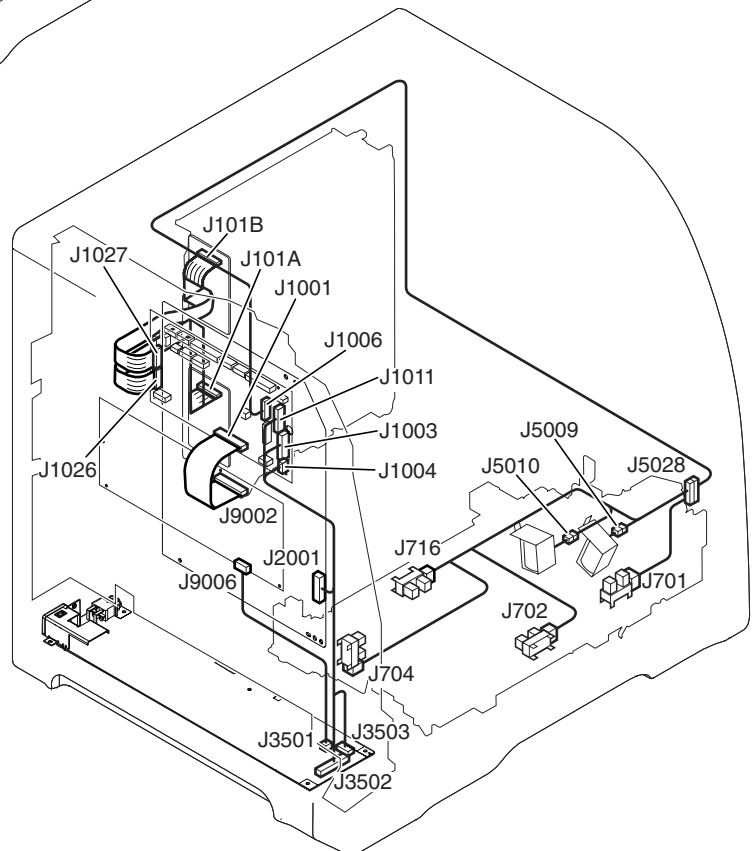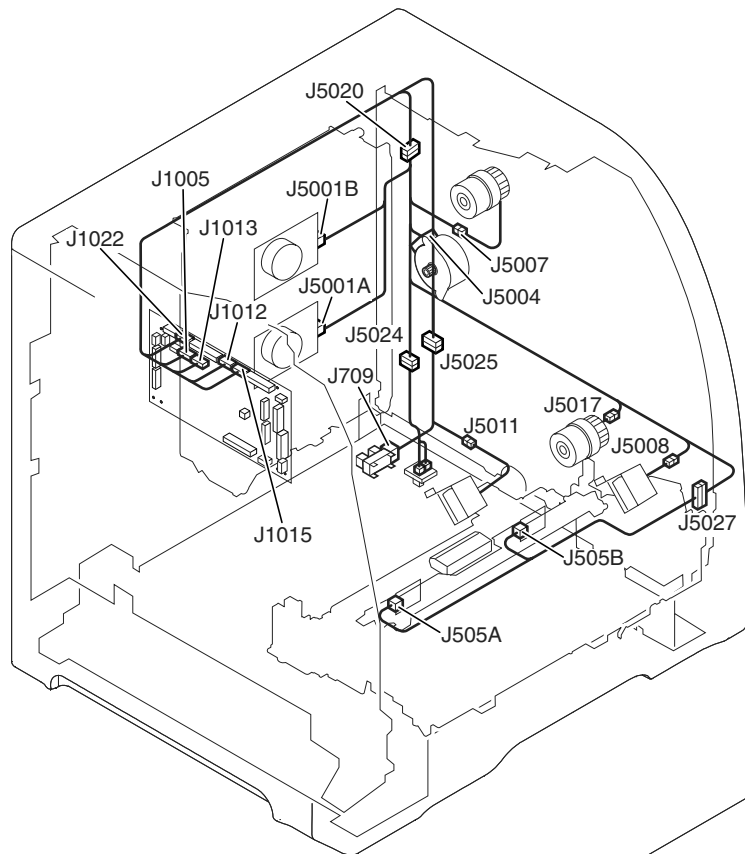
Connector locations for the HP Color LaserJet 3700 printer (1 of 2)
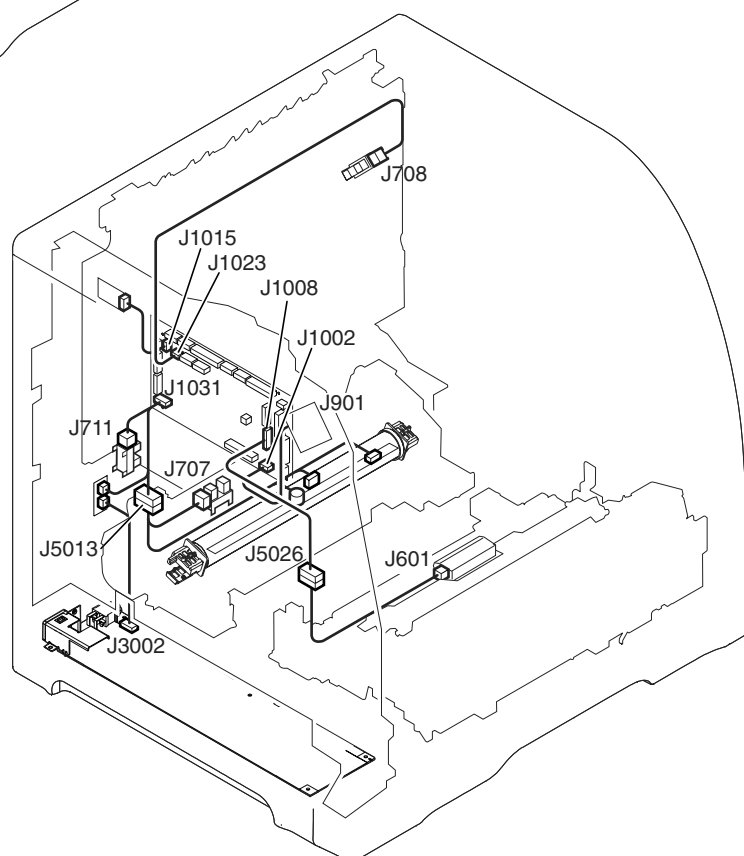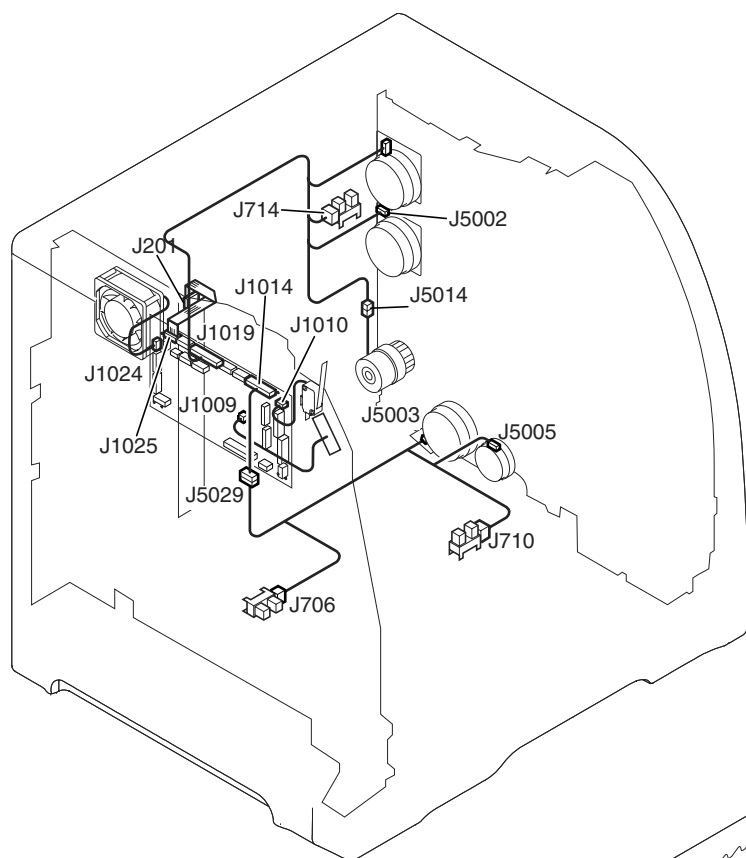
Connector locations for the HP Color LaserJet 3700 printer (2 of 2)
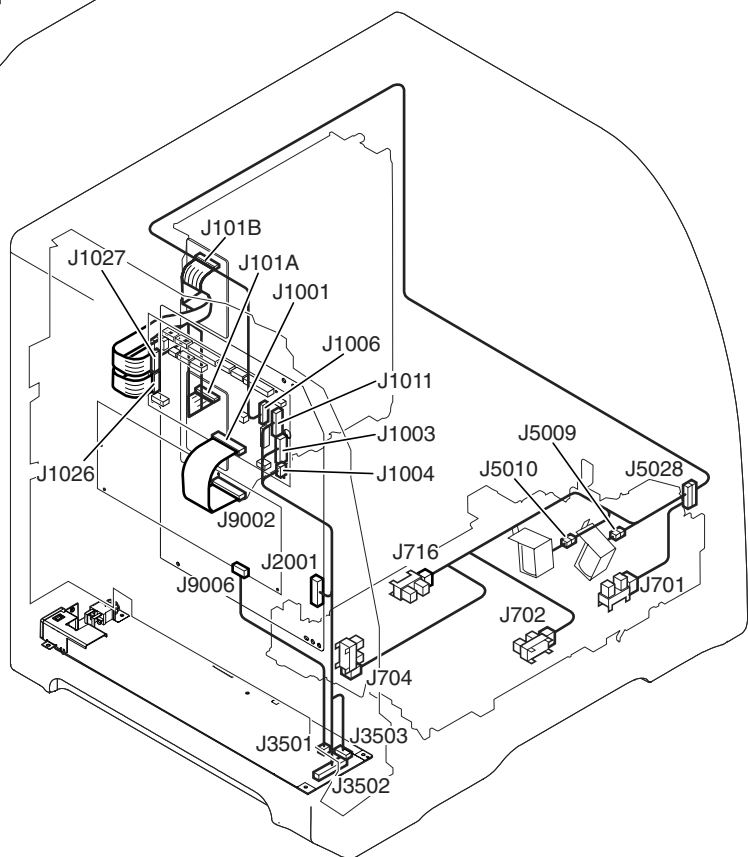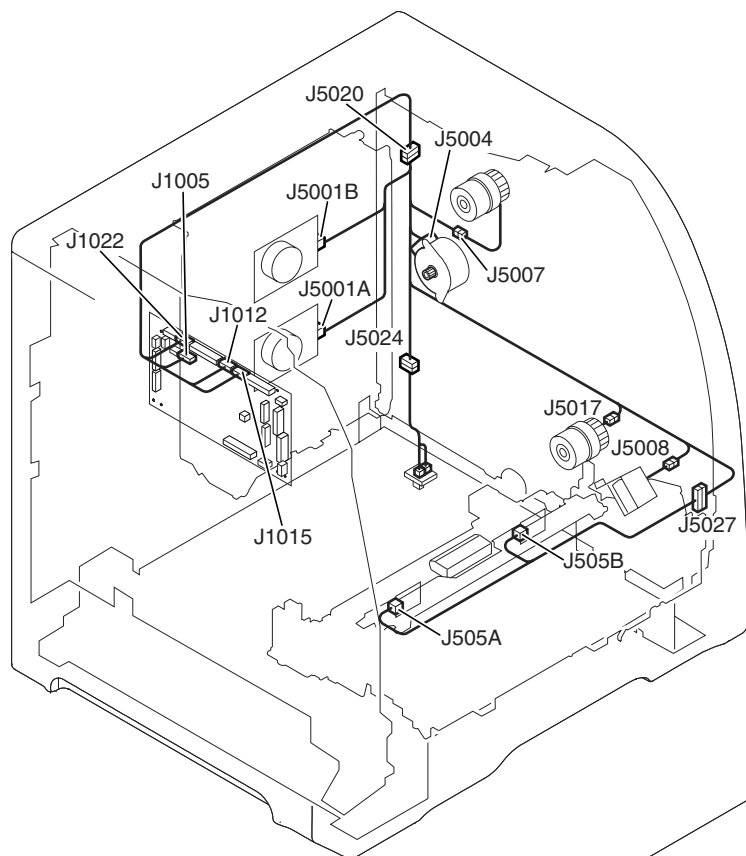
Connector locations for the HP Color LaserJet 3500 printer (1 of 2)
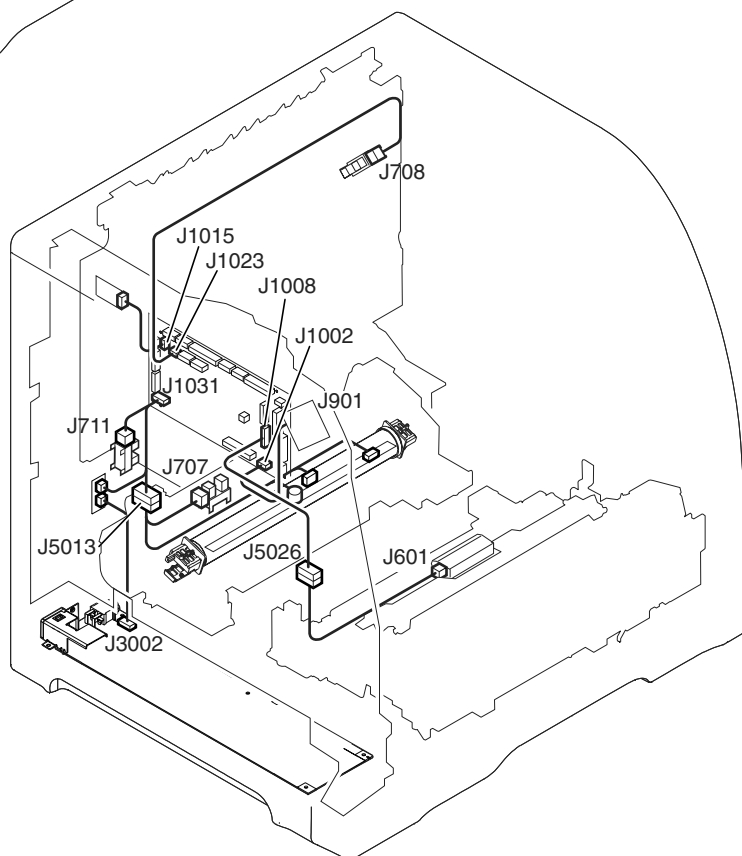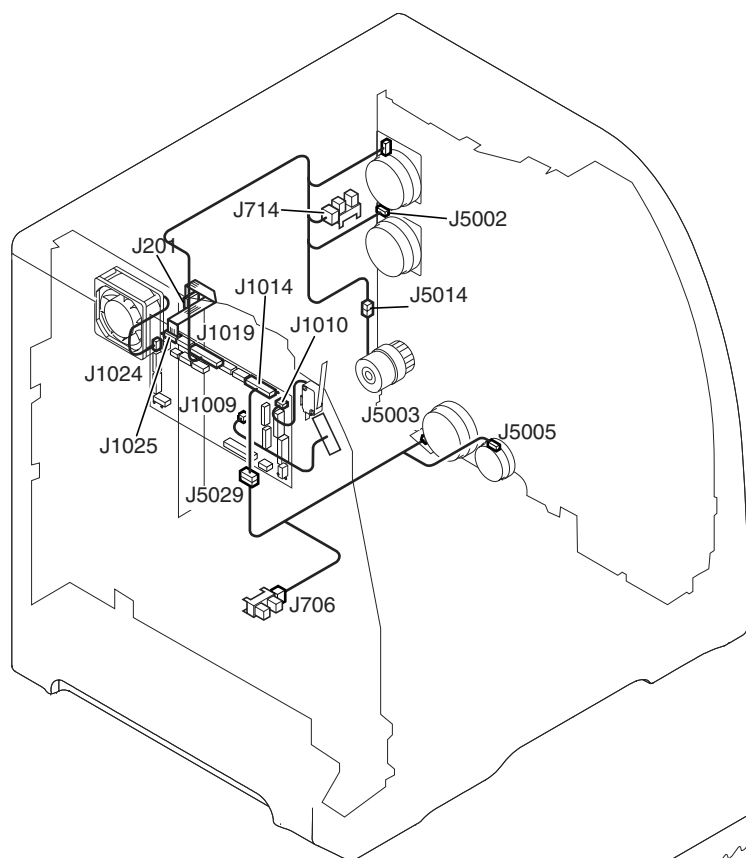
Connector locations for the HP Color LaserJet 3500 printer (2 of 2)

500-sheet paper feeder connectors
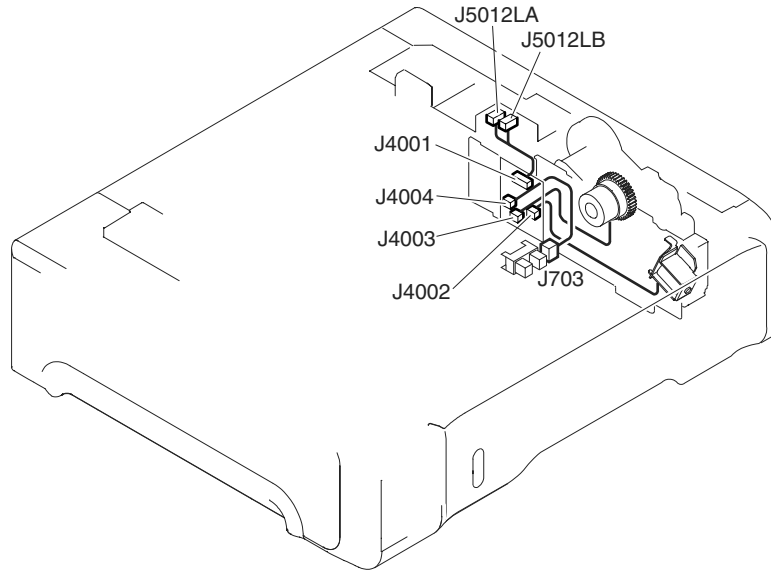
Connector locations for the 500-sheet paper feeder

General circuit diagram

The circuit diagram for the printer is provided in the following two figures. In addition, the 500-sheet feeder is also provided following the general circuit diagrams.

General circuit diagram (1 of 2)
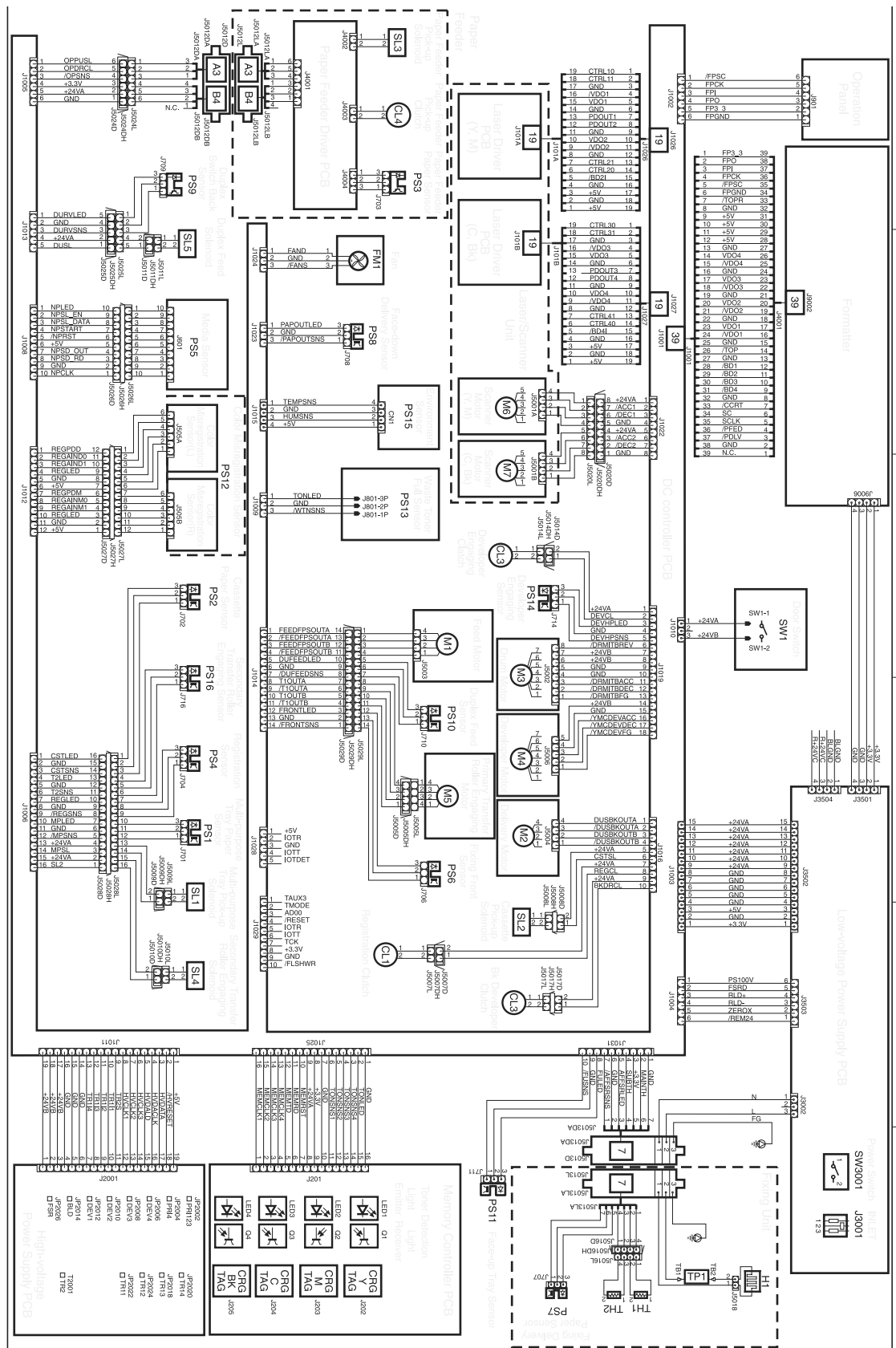
General circuit diagram (2 of 2)

Parts and diagrams

This chapter contains the following sections.

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

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

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

All standard part numbers are stocked and can be ordered from Hewlett-Packard Customer Support-Americas (HPCS-A) or Hewlett-Packard Customer Support-Europe (HPCS-E). For information about contacting HPCS-A or HPCS-E, see   , in chapter 2.

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

Supplies and accessories

The items listed in Table 8-1 are available through your local authorized HP dealer. To find a dealer near you, or if your local dealer is temporarily out of stock, call the HP Customer Information Center at (800) 752-0900.

See   , in chapter 2, for documentation part numbers.

Supplies and accessories are available directly from Hewlett-Packard at the following numbers:

  U.S.: (800) 538-8787

  Canada: (800) 387-3154, (Toronto) (416) 671-8383

  United Kingdom: 0734-441212

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

Any item or part description followed by (HP3500) or (HP3700) indicates that the item or part is for use for the HP Color LaserJet 3500 series printer or the HP Color LaserJet 3700 series printer only.

Table 8-1 Supplies and accessories

Part	Product number	Part number	Description
Firmware DIMMs		C9719-67901	16/64 programmed firmware DIMM
		Q3992-67901	16/128 programmed firmware DIMM for the HP 3700dn and HP 3700dtn bundles only
Flash Memory (DIMMs)	C4287A	C9665-67951	4 MB Flash DIMM
Memory upgrades (DIMMs)	C7848A	C7848-67901	Synchronous 64 MB DIMM (SDRAM)
	C7850A	C7850-67901	Synchronous 128 MB DIMM (SDRAM)
	C9653A	C9653-67901	Synchronous 256 MB DIMM (SDRAM)
Accessories	Q2486A	Q2486-67901	Optional 500-sheet paper feeder (Tray 3) Internal (EIO) connectivity for the HP Color LaserJet 3700series printer
Internal (EIO) I/O PCB (Exchange part) Connectivity for the HP Color LaserJet 3700 series printer	J6057A	J6057-69001	HP Jetdirect 615n internal print server (10/100-TX, Ethernet, HI-Speed USB 2.0)
	J4167A		HP Jetdirect 610n print server (Token Ring)
	J6058A		HP Jetdirect 680n 802.11b wireless print server
	J4135A		HP Jetdirect connectivity card (USB, serial, and LocalTalk)
External (EX) I/O PCB Exchange Connectivity for the HP Color LaserJet 3500 series printer	J7942A	J7942-69001	HP Jetdirect en3700 external print server (10/100base Tx, USB 2.0 HI-speed) exchange
	J6061A		HP Jetdirect 380x 802.11b wireless print server (USB 1.1)
	J6035B		HP Jetdirect 175x print server (fast Ethernet, 10/100base Tx, USB 1.1)
	J6072A		HP bt1300 Bluetooth wireless printer adapter (for USB or parallel)
External (EX) connectivity for the HP Color LaserJet 3700 series printer	J3264A	J7942-69001	HP Jetdirect 500x print server (Token Ring)

Table 8-1 Supplies and accessories (continued)

Part	Product number	Part number	Description
	J3265A		HP Jetdirect 500x print server (fast Ethernet)
	J3258B		HP Jetdirect 170x print server (Ethernet)
	J7942A		HP Jetdirect en3700 external print server (10/100base Tx, Hi-Speed USB 2.0)
	J6061A		HP Jetdirect 380x 802.11b wireless print server (USB 1.1)
	J6035B		HP Jetdirect 175x print server (fast Ethernet 10/100base Tx, USB 1.1)
	J6072A		HP bt1300 Bluetooth wireless printer adapter (for USB or parallel)
Supplies for the HP Color LaserJet 3500 series printer	Q2670A		Black print cartridge for the HP Color LaserJet 3500 series printer
	Q2671A		Cyan print cartridge for the HP Color LaserJet 3500 series printer
	Q2672A		Yellow print cartridge for the HP Color LaserJet 3500 series printer
	Q2773A		Magenta print cartridge for the HP Color LaserJet 3500 series printer
	Q3658A	Q3658-69001	Image transfer kit
	Q3655A	Q3655-69001	Image fuser kit (110-127V)
	Q3656A	Q3656-69001	Image fuser kit (220-240V)
Supplies for the 3700 series printer	Q2670A		Black print cartridge for the HP Color LaserJet 3700 series printer
	Q2681A		Cyan print cartridge for the HP Color LaserJet 3700 series printer
	Q2682A		Yellow print cartridge for the HP Color LaserJet 3700 series printer
	Q2683A		Magenta print cartridge for the HP Color LaserJet 3700 series printer
	Q3658A	Q3658-69001	Image transfer kit
	Q3655A	Q3655-69001	Image fuser kit (110-127V)
	Q3656A	Q3656-69001	Image fuser kit (220-240V)
Cables	C2946A		IEEE-1284 compliant parallel cable, 3 m (approximately 10 feet) long, with 25-pin male/ micro 36-pin male ("C" size) connector
	C6518A		USB (2-meter standard)
	C6520A		USB 2.0 printer cable (3-meter)

Table 8-1 Supplies and accessories (continued)
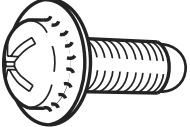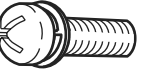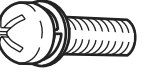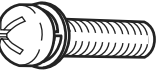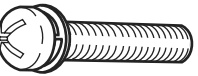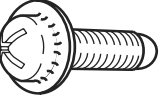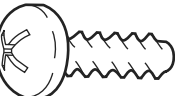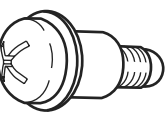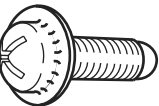
Part	Product number	Part number	Description
Paper	C2934A		50 sheets HP Color LaserJet Transparencies (letter)
	C2936A		50 sheets HP Color LaserJet Transparencies (A4)
	Q2419A		HP LaserJet High Gloss paper (letter)
	C4179A		200 sheets HP LaserJet Soft Gloss paper (letter)
	C4179B		200 sheets HP LaserJet Soft Gloss paper (A4)
	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)
Reference materials		5851-1468	HP LaserJet Printer Family Print Media Specification Guide
		5021-0337	PCL/PJL Technical Reference Package For downloadable versions, go to http:// www.hp.com/support/ clj3500 or http://www.hp.com/ support/ clj3700. When connected, select Manuals.
		Q1321-60117	Service training kit
		Q1321-60115	Service support CD
Ferrite Cores		5851-1782	Power supply cable
		5851-1781	Formatter cable
Panel overlays		Q1321-67901	French overlay
		Q1321-67902	German overlay
		Q1321-67903	Italian overlay
		Q1321-67904	Spanish overlay
		Q1321-67905	Danish overlay
		Q1321-67906	Dutch overlay
		Q1321-67907	Finnish overlay
		Q1321-67908	Norwegian overlay
		Q1321-67909	Portuguese overlay
		Q1321-67910	Swedish overlay

Table 8-1 Supplies and accessories (continued)

Part	Product number	Part number	Description
		Q1321-67911	Czech overlay
		Q1321-67912	Hungarian overlay
		Q1321-67913	Polish overlay
		Q1321-67914	Russian overlay
		Q1321-67915	Turkish overlay
		Q1321-67916	Arabic overlay
		Q1321-67917	Greek overlay
		Q1321-67918	Hebrew overlay
		Q1321-67919	Japanese overlay
		Q1321-67920	Korean overlay
		Q1321-67921	Simplified Chinese overlay
		Q1321-67922	Traditional Chinese overlay
Reference materials		5963-7863	*HP LaserJet Printer Family Paper Specifications Guide*
		5021-0337	PCL/PJL Technical Reference Package CD-ROM
Supplies		Q2670-67901	Black Print Cartridge-CLJ 3500/3700
		Q2670-67902	Black Print Cartridge-CLJ 3500/3700 (Europe)
		Q2671-67901	Cyan Print Cartridge-CLJ 3500
		Q2671-67902	Cyan Print Cartridge-CLJ 3500 (Europe)
		Q2681-67901	Cyan Print Cartridge-CLJ 3700
		Q2681-67902	Cyan Print Cartridge-CLJ 3700 (Europe)
		Q2672-67901	Yellow Print Cartridge-CLJ 3500
		Q2672-67902	Yellow Print Cartridge-CLJ 3500 (Europe)
		Q2682-67901	Yellow Print Cartridge-CLJ 3700
		Q2682-67901	Yellow Print Cartridge-CLJ 3700 (Europe)
		Q2673-67901	Magenta Print Cartridge-CLJ 3500
		Q2673-67902	Magenta Print Cartridge-CLJ 3500 (Europe)
		Q2683-67901	Magenta Print Cartridge-CLJ 3700
		Q2683-67902	Magenta Print Cartridge-CLJ 3700 (Europe)
		5090-3379	Toner cleaning cloth

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.8Common fasteners

Table 8-2   Common fasteners

Illustration	Description	Size	Part number	Use
	SCREW, TP	M4X6	XA9-1450-000CN	Secures metal frame panels to metal frame panels.
	SCREW, W/ WASHER	M3X6	XA9-1477-000CN	Secures the drawer, cross member, to the frame (see figure 8-8).
	SCREW, W/ WASHER, RS	M3X6	XA9-1461-000CN	Secures motor (M2) to the frame.
	SCREW W/ WASHER	M3X8	XA9-1420-000CN	Secures metal to metal (ground wire, feed guide rear two screws)
	SCREW, W/ WASHER	M3X12	XA9-1452-000CN	Secures laser/scanner assembly to the metal frame.
	SCREW, RS	M3X6	XA9-1499-000CN	Secures metal to metal.
	SCREW, RS	M3X8	XA9-1445-000CN	secures any material (except metal) to metal
	SCREW, TP		XB4-7300-805CN	Secures sensor PCB to plastic (environmental, toner full, color misregistration, and media).
	SCREW,TAPPING, TRUSS HEAD	M4X10	XB4-7401-005CN	secures anything to plastic
	SCREW, STEPPED	M4X4.5	RC1-1624000CN	Secures the right side of the pick-up/feed assembly to the frame.
	SCREW, S	M3X8	XA9-1500-000CN	Secures plastic to metal: front door components, rear swing guide rail, components to center frame (see figure 8-12)

6 mm |←→| **8 mm** |←→| **10 mm** |←→| **12 mm** |←——→| **M 3** ○ **M 4** ◯

14 mm |←——→| **16 mm** |←——→| **25 mm** |←————→|

When the parts in the list below are replaced, specific tasks need to be performed. These parts include:

- Formatter and DC Controller replaced at the same time
- Formatter (new and previously installed in another printer)
- DC Controller (new and previously installed in another printer)
- Media sensor (PS5)
- Color Misregistration Sensor (PS12)
- Laser Scanner Assembly
- Fuser
- Transfer unit (ITB assembly)

Configuration procedures for these parts are described in the following sections.

Formatter and DC Controller replaced at the same time

Do not replace both the formatter and the DC Controller at the same time. Replace one at a time. If the formatter and DC Controller are replaced at the same time in an HP Color LaserJet 3700 series printer that has the ability to perform duplex printing, this functionality will be lost. To determine if the printer can duplex, print a configuration page from the INFORMATION menu and reference Paper Trays and Options. If Duplex Unit is listed, the printer is able to duplex and the formatter and DC Controller should be replaced one at a time.

If the DC Controller and Formatter are replaced one at a time, then the duplex printing capability will be transferred to the new DC controller or Formatter.

A printer specific PJL file will be needed to re-enable duplexing in the current printer (will not work on any other printer), if both the formatter and DC Controller are replaced at the same time. This file will only work in the current printer. Call for assistance from HP Support to obtain the PJL file. Also, perform the Formatter and DC Controller replacement steps as required below.

Formatter (New) replacement configuration

The values for Total Mono Pages, Total Color Pages, Serial Number, Service ID, Cold Reset Paper (if needed), and the Fuser Kit Count will need to be reset using the service menu.

The Transfer Kit count will be unaffected by the replacement of a formatter.

Print a configuration page and a supplies status page in the INFORMATION menu to obtain the page counts, counts for any of the supplies, serial number, and the born-on date. If a configuration page and a supplies status page cannot be printed, this information can be obtained from the Service menu prior to replacing the formatter.

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

Formatter (previously installed in another printer) replacement configuration

When the formatter PCB is being replaced with one that was installed in another printer, an NVRAM initialization will need to be performed. Before doing an NVRAM INIT, print a configuration page and a supplies status page in the INFORMATION menu to obtain the page counts, counts for any of the supplies, serial number, and the born-on date. If a configuration page and a supplies status page cannot be printed, this information can be obtained from the Service menu prior to replacing the formatter or performing this action.

1   To perform an NVRAM initialization follow the procedure below.

2   Press and hold the ▾ button after powering up until all LEDs are on, then release the ▾ button.

3   Press the ▴ button once and release.

4   Press   once and release. The list of choices will be displayed.

5   Press ▾ or ▴ until NVRAM INIT is highlighted.

6   Press ✔ to invoke an NVRAM INIT.

In addition, the Total Mono Pages, Total Color Pages, Serial Number, Service ID, Cold Reset Paper (if needed), and the Fuser Kit Count will need to be reset using the service menu. The Transfer Kit count will be unaffected by the replacement of a formatter.

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

DC Controller (New) replacement configuration

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

Light intensity of the media sensor must be adjusted. Follow the procedure below to adjust the light intensity.

1   Turn the printer OFF.

2   Open the front cover.

3   While pressing the engine test print switch on the left side of the printer (see   ), turn the printer ON.

4   Close the front cover.

5   Load plain white paper in the Tray 1.

6   As the printer goes into READY period, press the engine test print switch and test print.

7   One sheet of paper will be fed into the printer from the Tray 1 and will be delivered to the face-down delivery tray.

DC Controller (previously installed in another printer) replacement configuration

To ensure optimum print quality, the printer needs to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW, see   , in chapter 7.

Light intensity of the media sensor must be adjusted. Follow the procedure below to adjust the light intensity.

1   Turn the printer OFF.

2   Open the front cover.

3   While pressing the engine test print switch on the left side of the printer (see   ), turn the printer ON.

4   Close the front cover.

5   Load plain white paper in the Tray 1.

6   As the printer goes into READY period, press the engine test print switch and test print.

7   One sheet of paper will be fed into the printer from the Tray 1 and will be delivered to the face-down delivery tray.

The Transfer Kit count is set when it is first placed in a printer by a back up value contained on the formatter. If using a DC Controller that was previously installed in another printer, the Transfer Kit count will be set to the count of the first printer the DC Controller was installed in. The Transfer Kit count cannot be reset in the Service Menu. The Transfer Kit count can be reset to zero by setting CONFIGURE DEVICE / RESETS / RESET SUPPLIES / NEW TRANSFER KIT = YES. (Resetting the Transfer Kit count to zero after it has been used will result in using the Transfer Kit past it's specified life which may result in a failure before low is reached.)

For the HP Color LaserJet 3700 series printer, a non-duplexing printer can obtain the ability to duplex if the DC Controller was previously installed in an HP Color LaserJet 3700 series printer that had duplexing.

Media sensor (PS5) replacement configuration

Light intensity of the media sensor must be adjusted. Follow the procedure below to adjust the light intensity.

1   Turn the printer OFF.

2   Open the front cover.

3   While pressing down the engine test print switch on the left side of the printer, turn the printer ON.

4   Close the front cover.

5   Load plain white paper in the Tray 1.

6   As the printer goes into READY period, press the engine test print switch and test print.

7   One piece of paper will be fed into the printer from the Tray 1 and will be delivered to the face down delivery tray.

Color Misregistration Sensor (PS12) replacement configuration

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

Laser/scanner Assembly replacement configuration

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

Fuser replacement configuration

Under normal circumstances, the printer will prompt you to order a new fuser when the control panel reads ORDER FUSER KIT. This message indicates the fuser is nearing its end of life. When you replace a fuser under these circumstances, the control panel will not automatically prompt you to reset the fuser count. If you continue printing with the ORDER FUSER KIT message it will eventually covert to the REPLACE FUSER KIT message. At that time printing is stopped and a new fuser must be installed. When you replace a fuser under these circumstances, the control panel automatically prompts you to reset the fuser count after you have installed the new fuser.

If you replace the fuser for any reason before the control panel reads REPLACE FUSER KIT, for instance if the fuser is defective, you will need to reset the fuser count manually through the control panel.

The Fuser Kit count can be reset to zero by setting CONFIGURE DEVICE / RESETS / RESET SUPPLIES / NEW FUSER KIT = YES.

Transfer unit (ITB assembly) replacement configuration

Under normal circumstances, the printer will prompt you to order a new transfer unit when the control panel reads ORDER TRANSFER KIT. This message indicates the transfer unit is nearing its end of life. When you replace a transfer unit under these circumstances, the control panel will not automatically prompt you to reset the transfer unit count. If you continue printing with the ORDER TRASFER KIT message it will eventually covert to the REPLACE TRANSFER KIT message. At that time printing is stopped and a new transfer unit must be installed. When you replace a transfer unit under these circumstances, the control panel automatically prompts you to reset the transfer unit count after you have installed the new transfer unit.

If you replace the transfer unit for any reason before the control panel reads REPLACE TRANSFER KIT, for instance if the transfer unit is defective, you will need to calibrate the printer and reset the transfer unit count manually through the control panel.

To ensure optimum print quality, the printer will need to be calibrated by performing 3 Calibrate Now's using the printer control panel by selecting CONFIGURE DEVICE / PRINT QUALITY / CALIBRATE NOW.

The Transfer Kit count can be reset to zero by setting CONFIGURE DEVICE / RESETS / RESET SUPPLIES / NEW TRANSFER KIT = YES.

The following illustrations and parts tables list the field replaceable units (FRUs) for this printer. At the end of this chapter are two tables listing all of the parts shown in this chapter. Table 8-28, "Alphabetical parts list," lists the parts in alphabetical order, and Table , "Numerical parts list," lists the parts in numerical order by part number. Both tables list the appropriate figure in this chapter where the part can be found.

COVERS, LEFT, RIGHT, REAR
Figure 8-6

CENTER FRAME ASS'Y
Figure 8-12

FRONT COVER ASS'Y
Figure 8-7

FUSER
Figure 8-27

TRAY 2 (Cassette)
Figure 8-19

FACE-DOWN DELIVERY ASS'Y
Figure 8-23

RIGHT SWING FRAME ASS'Y
Figure 8-25

LOWER FRAME ASS'Y
Figure 8-15,16

LEFT SWING FRAME ASS'Y
Figure 8-26

TRANSFER UNIT
Figure 8-24

Main parts (1 of 3)

IMAGE DRIVE ASS'Y
Figure 8-17

MAIN RIGHT SIDE PLATE ASS'Y
Figure 8-13

DEVELOPING DISENGAGING ASS'Y
Figure 8-18

PRINTED CIRCUIT BOARD ASS'Y
(Not Shown)
Figure 8-4

MAIN LEFT SIDE PLATE ASS'Y
Figure 8-14

PICK-UP/ FEED ASS'Y
Figure 8-20, 21

CASSETTE PICK-UP ASS'Y
Figure 8-22

Main parts (2 of 3)

PAPER PICK-UP DRIVE ASS'Y
Figure 8-29

CASSETTE
Figure 8-30

Main parts (3 of 3) 500-sheet paper feeder
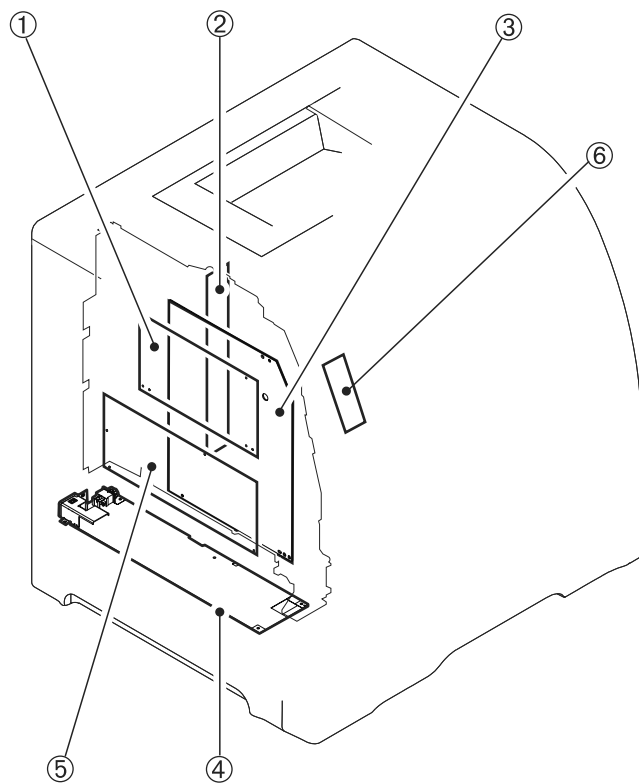
PCB locations (1 of 2)

Table 8-3   PCB locations

Ref	Description	Quantity	Part number
1	DC controller PCB (HP3500) DC controller PCB (HP3700)	1	RM1-0510-000CN RM1-0506-000CN
2	Memory controller PCB	1	RM1-0508-000CN
3	High-voltage power supply PCBs	1	RM1-0505-000CN
4	Low-voltage power supply PCB (110-127V) Low-voltage power supply PCB (220-240V)	1	RK2-0157-000CN RK2-0158-000CN
5	Formatter PCB (HP3500) Formatter PCB (HP3700)	1	Q1319-69001 Q1321-69001
6	Control panel PCB	1	RM1-0511-000CN
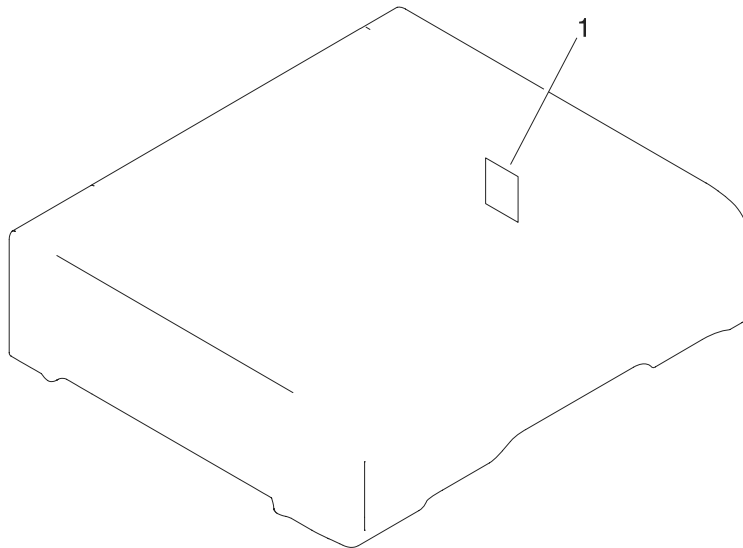
Paper Feeder PCB Assembly Location Diagram (2 of 2) R90 - 1

Table 8-4   Paper feeder PCB assembly location diagram

Ref	Description	Quantity	Part number
1	Paper feeder PCB	1	RM1-0768-000

9

8

6

3

14

7

10

16 (HP3500)

4

15

2

5

12

(J901)

13

(J1002)

1

11
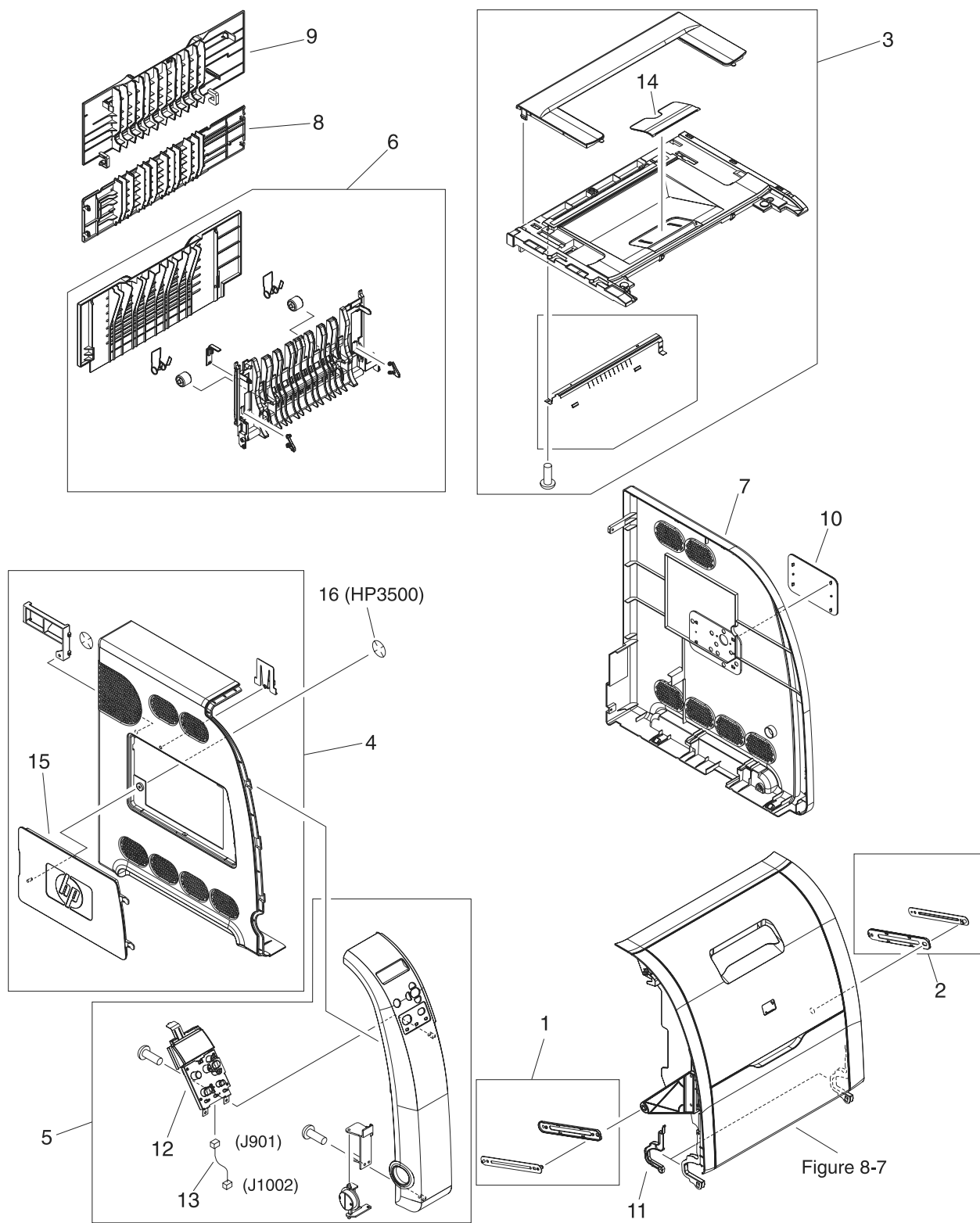
Figure 8-7

External covers and panels

Table 8-5   External covers and panels

Ref	Part number	Quantity	Description
1	RM1-0443-000CN	1	FRONT ROD LEFT ASS'Y
2	RM1-0444-000CN	1	FRONT ROD RIGHT ASS'Y
3	RM1-0465-000CN	1	TOP COVER ASS'Y
4	RM1-0466-000CN	1	LEFT COVER ASS'Y
5	RM1-0467-000CN	1	LEFT FRONT COVER ASS'Y
6	RM1-0468-000CN	1	FACE-UP TRAY ASS'Y
7	RC1-1563-000CN	1	COVER, RIGHT
8	RC1-1565-000CN	1	COVER, REAR
9	RC1-1566-000CN	1	COVER, JAM CLEARING
10	RC1-1600-000CN	1	PLATE, LOGO, RIGHT
11	RC1-2296-000CN	2	COVER, HINGE
12	RM1-0511-000CN	1	OPERATION PANEL ASS'Y.
13	RM1-0489-000CN	1	CABLE, OPERATION PANEL
14	RC1-1555-000CN	1	TRAY, AUXILIARY
15	RC1-1562-000CN	1	COVER, DIMM
16	XD2-2300-402CN	1	SE RING (HP3500)
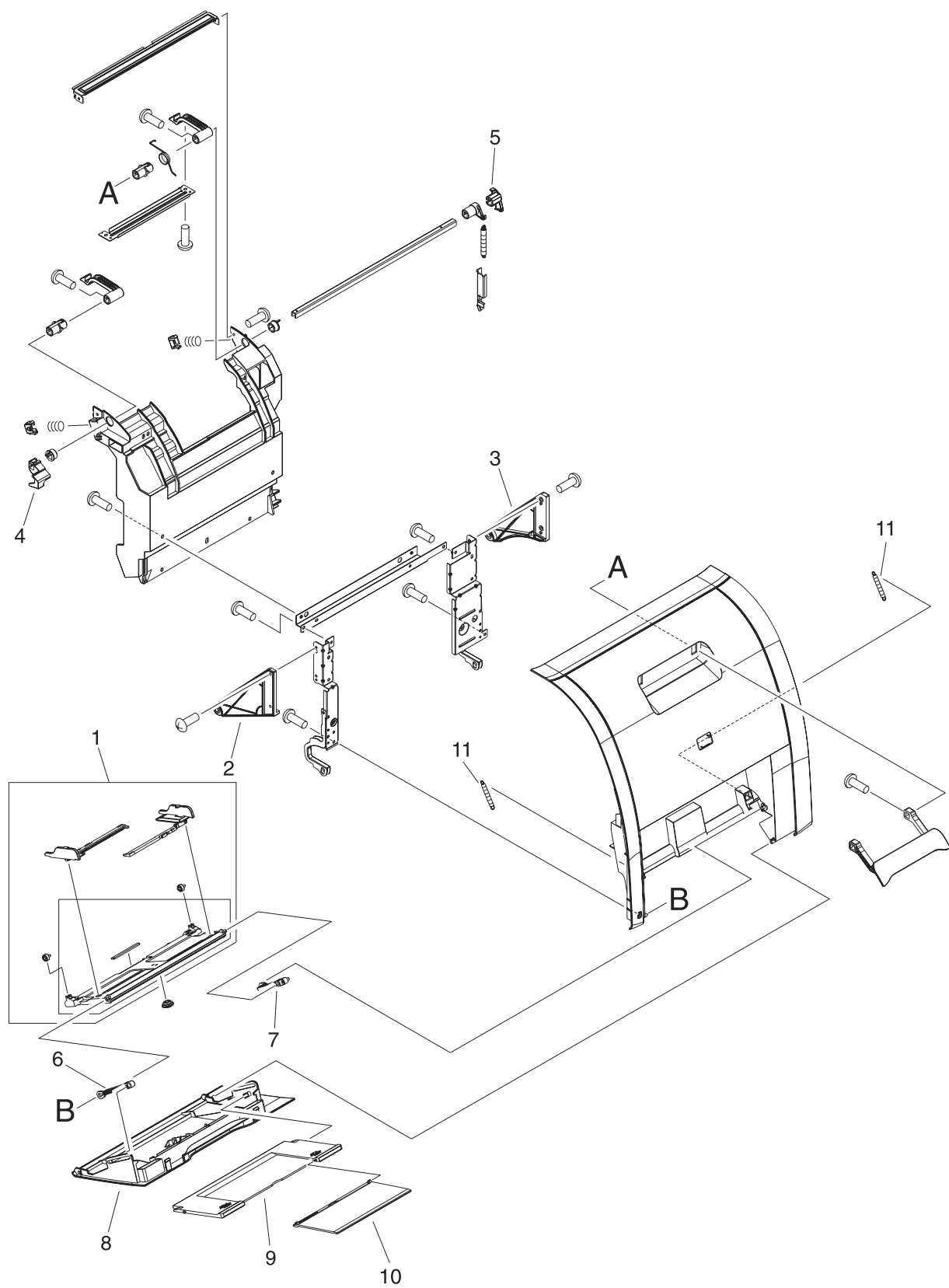
Front door assembly

Table 8-6 Front door assembly

Ref	Part number	Quantity	Description
	RM1-0463-000CN	**1**	**FRONT DOOR ASSEMBLY**
1	RM1-0464-000CN	1	MULTI-PURPOSE TRAY ASS'Y
2	RC1-1158-000CN	1	ROD, FRONT COVER, LEFT
3	RC1-1159-000CN	1	ROD, FRONT COVER, RIGHT
4	RC1-1176-000CN	1	LEVER, INTERLOCK SWITCH
5	RC1-1247-000CN	1	LEVER, ITB COUPLIN, 1
6	RC1-1575-000CN	1	LINK, MP HINGE, LEFT
7	RC1-1576-000CN	1	LINK, MP HINGE, RIGHT
8	RC1-1574-000CN	1	COVER, MP TRAY
9	RC1-2318-000CN	1	TRAY, EXPANSION, 1
10	RC1-2319-000CN	1	TRAY, EXPANSION, 2
11	RC1-1407-000CN	2	SPRING, TENSION
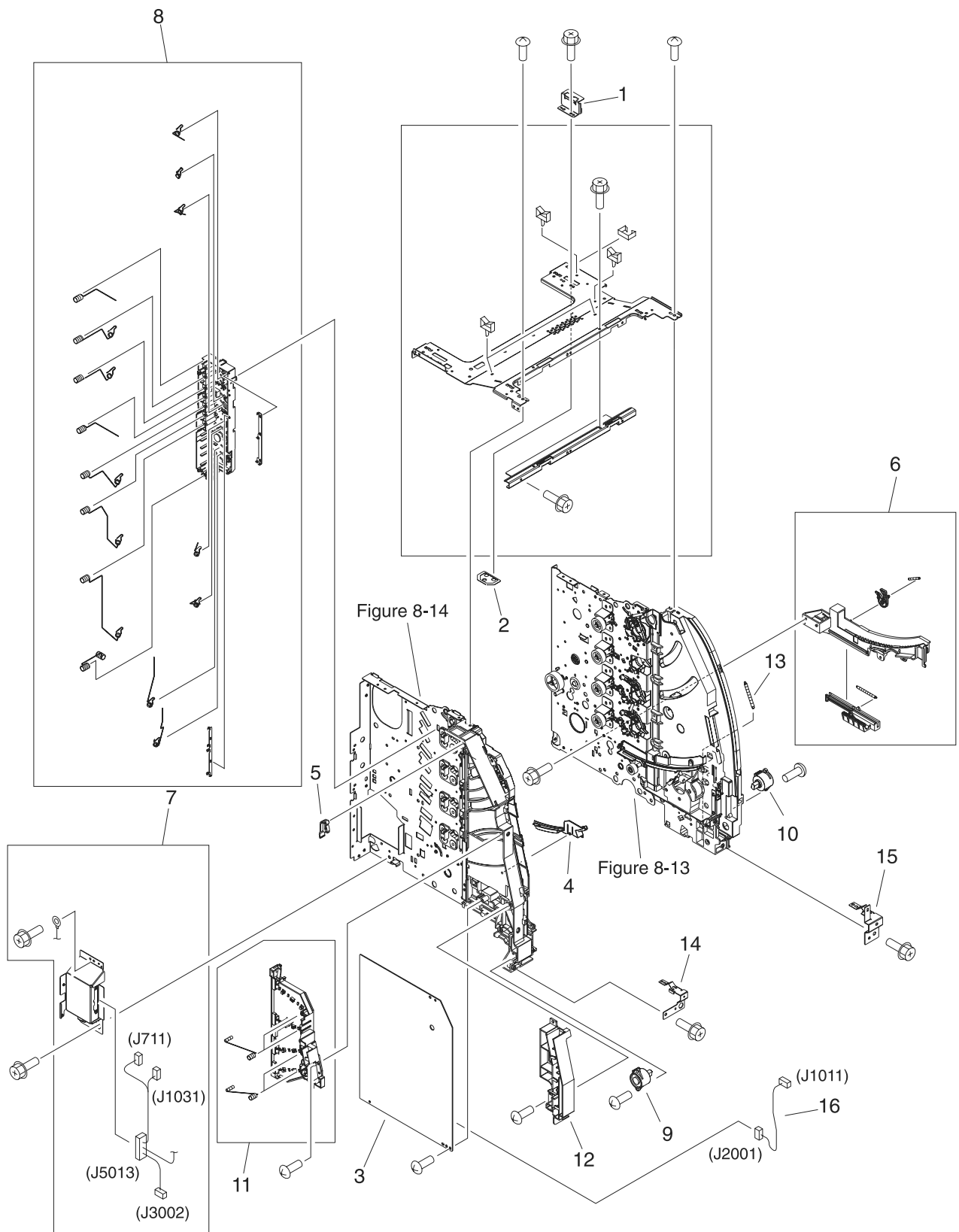
Internal components (1 of 4)

Table 8-7   Internal components (1 of 4)

Ref	Part number	Quantity	Description
1	RC1-1603-000CN	1	PLATE, JOINT, RIGHT
2	RC1-1605-000CN	1	COVER, SCREW
3	RM1-0505-000CN	1	HIGH-VOLTAGE PCB ASS'Y
4	RC1-1642-000CN	1	RAIL, SWING, LEFT FRONT
5	RC1-1175-000CN	1	ARM, INTERLOCK SWITCH
6	RM1-0438-000CN	1	LOCK GUIDE RIGHT ASS'Y
7	RM1-0440-000CN	1	DRAWER CROSSMEMBER ASS'Y
8	RM1-0446-000CN	1	DEVELOPING CONTACT ASS'Y
9	RC1-1572-000CN	1	DAMPER UNIT, HINGE, LEFT
10	RC1-1573-000CN	1	DAMPER UNIT, HINGE, RIGHT
11	RM1-0445-000CN	1	TRANSFER CONTACT ASS'Y
12	RC1-1342-000CN	1	GUIDE, HARNESS
13	RC1-1515-000CN	1	SPRING, TENSION
14	RL1-0215-000CN	1	STOPPER, FRONT HINGE, LEFT
15	RL1-0216-000CN	1	STOPPER, HINGE, RIGHT
16	RM1-0485-000CN	1	CABLE, HIGH VOLTAGE
17	RC1-1661-000CN	1	RAIL, SWING, RIGHT FRONT

Internal components (2 of 4)

Table 8-8 Internal components (2 of 4)

Ref	Part number	Quantity	Description
1	RC1-1284-000CN	1	GEAR, 31T/19T
2	RC1-1300-000CN	1	GEAR, 54T/17T
3	RC1-1302-000CN	1	GEAR, 79T
4	RC1-1270-000CN	1	BUSHING
5	RC1-1353-000CN	1	COVER, MOTOR
6	RC1-1488-000CN	1	COVER, CONNECTOR
7	RC1-1497-000CN	1	GEAR, 25T
8	RC1-1500-000CN	1	SHAFT, DRIVE
9	RC1-1355-000CN	1	PLATE, MOUNTING
10	XD9-0136-000CN	2	RING, E
11	RC1-1630-000CN	1	BUSHING
12	RC1-1649-000CN	1	PLATE, GROUNDING
13	RC1-2385-000CN	1	PLATE, CLUTCH SHIELD
14	RC1-1186-000CN	1	MOUNT, REGISTRATION CLUTCH
15	RM1-0731-000CN	1	CASSETTE PICK-UP ROLLER ASS'Y
16	XD9-0134-000CN	1	RING, E
17	RC1-1294-000CN	1	GEAR, 43T
18	RC1-1295-000CN	1	GEAR, 27T
19	RC1-1224-000CN	1	GEAR, 50T/90T
20	RK2-0157-000CN	1	LOW-VOLTAGE PCB ASS'Y (110-127V)
20	RK2-0158-000CN	1	LOW-VOLTAGE PCB ASS'Y(220-240V)
21	RL1-0193-000CN	1	PLATE, PAPER FEEDER DRIVE
22	RC1-2334-000CN	1	GUIDE, CABLE
23	RC1-1281-000CN	1	GEAR, 39T
24	RC1-1283-000CN	1	GEAR, 26T/47T
25	RC1-1286-000CN	1	GEAR, 45T/25T
26	RC1-1287-000CN	1	HOLDER, GEAR
27	RC1-1288-000CN	1	GEAR, 38T
28	RC1-1291-000CN	1	GEAR, 104T/25T
29	RC1-1292-000CN	1	SPRING, TENSION
30	RC1-1493-000CN	1	GEAR, 20T
31	RC1-1298-000CN	1	GEAR, 26T/22T/20T
32	RC1-1665-000CN	1	COVER, CASSETTE
33	RC1-2379-000CN	1	PLATE, REGIST. CLUTCH SHIELD
34	RL1-0217-000CN	1	SUPPORT, PICK-UP GEAR
35	XD9-0137-000CN	1	RING, E

Table 8-8   Internal components (2 of 4) (continued)

Ref	Part number	Quantity	Description
36	RM1-0482-000CN	1	CABLE, CPR CONNECTING
37	RM1-0483-000CN	1	CABLE, FORMATTER POWER SUPPLY (HP3700)
37	RM1-0498-000CN	1	CABLE, FORMATTER POWER SUPPLY (HP3500)
38	RM1-0488-000CN	1	CABLE, LEFT FRONT
39	RK2-0247-000CN	1	CLUTCH, ELECTROMAGNETIC
40	WT2-5841-000CN	9	CLAMP, CABLE
41	VS1-5057-002CN	1	CONNECTOR, 2P
42	RK2-0141-000CN	1	SOLENOID
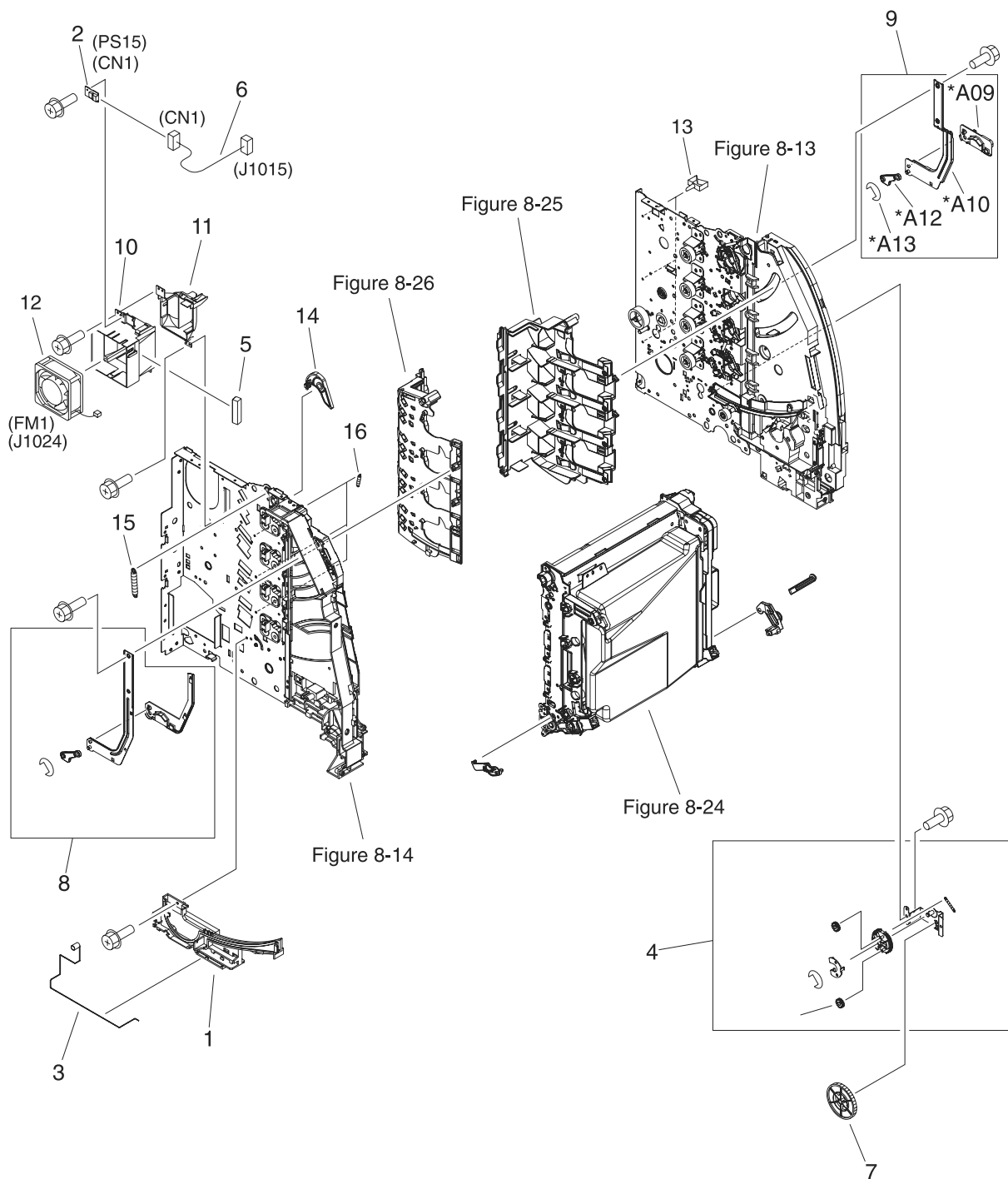
Internal components (3 of 4)

Table 8-9 Internal components (3 of 4)

Ref	Part number	Quantity	Description
1	RC1-1156-000CN	1	GUIDE, ROD, LEFT
2	WP2-5156-000CN	1	SENSOR UNIT, HUMIDITY
3	RC1-1177-000CN	1	SPRING, GROUNDING
4	RM1-0419-000CN	1	DEV. DISENGAGING DRIVE ASS'Y
5	RC1-2437-000CN	1	SHEET, CABLE RETAINING
6	RM1-0493-000CN	1	CABLE, ENVIRONMENT SENSOR
7	RC1-1252-000CN	1	GEAR, 120T/17T
8	RM1-0441-000CN	1	SWING ROD LEFT ASS'Y
9	RM1-0442-000CN	1	SWING ROD RIGHT ASS'Y
10	RC1-1345-000CN	1	DUCT, FAN
11	RC1-1350-000CN	1	DUCT, AIR, FRONT
12	RK2-0017-000CN	1	FAN (HP3700)
12	RK2-0153-000CN	1	FAN (HP3500)
13	WT2-5841-000CN	4	CLAMP, CABLE
14	RC1-1170-000CN	1	ARM, DRUM LOCK, LEFT
15	RC1-1184-000CN	1	SPRING, TENSION
16	RC1-1628-000CN	3	SPRING, TENSION

Figure 8-23

(J708)

17

(J1023)

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(J201)

(J1025)

Figure 8-27

11

3

Figure 8-13

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(J101)

(J101)

22

(J101)

23

21

14

(J1027)

4

Figure 8-12

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12

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(J1026)

18

Figure 8-14

1

(SW1)
(J1010)

16

13

6

10

(J5020)

24

(J1022)

(J5002)

(J5017)

(J714)

(J5006)

(J5004)

(J1005)

(J5014)

5

(J1019)

(J1016)

(J5024)

(J1013)

(J5025)

HP3700

(J5008)

(J5007)

HP3500

(J1001)

HP3700

19

(J9002)

7

Internal components (4 of 4)

Table 8-10 Internal components (4 of 4)

Ref	Part number	Quantity	Description
1	RC1-1181-000CN	1	GUIDE, CABLE
2	RC1-1213-000CN	1	GEAR, 86T/23T
3	RC1-1602-000CN	1	PLATE, JOINT, LEFT
4	RM1-0506-000CN	1	DC CONTROLLER PCB (HP3700)
4	RM1-0510-000CN	1	DC CONTROLLER PCB (HP3500)
5	Q1321-69001		FORMATTER PCB (HP3700) includes cage
5	Q1319-69001	1	FORMATTER PCB (HP3500) includes cage
6	RC1-2236-000CN	1	COVER, CONTROLLER (HP3500)
7	RC1-2235-000CN	1	BASE, CONTROLLER (HP3500)
8	RC1-1354-000CN	1	DUCT, AIR
9	RC1-1348-000CN	1	PLATE, DC CONTROLLER SUPPORT
10	RC1-1347-000CN	1	ROD, POWER SWITCH
11	RM1-1142-000CN	1	LASER SCANNER ASS'Y
12	RC1-1593-000CN	1	BLOCK, TEST PRINT CONNECTING
13	RC1-2364-000CN	1	COVER, FMTR CABLE (HP3500)
14	RC1-2422-000CN	1	LABEL, HIGH TEMP. CAUTION
15	WT2-0507-000CN	1	CLAMP, CABLE
16	RK2-0150-000CN	1	MICROSWITCH
17	RM1-0477-000CN	1	CABLE, FD DELIVERY SENSOR
18	WT2-5738-000CN	1	CLAMP,CABLE
19	RK2-0162-000CN	1	CABLE, FFC (HP3700)
19	RK2-0179-000CN	1	CABLE, FFC(HP3500)
20	RK2-0163-000CN	1	CABLE, TM FFC
21	WT2-5754-000CN	2	CLAMP, CABLE
22	RK2-0165-000CN	1	CABLE, LASER FFC, 2
23	RK2-0164-000CN	1	CABLE, LASER FFC, 1
24	RM1-0475-000CN	1	CABLE, MAIN (HP3700)
24	RM1-0495-000CN	1	CABLE, MAIN (HP3500)
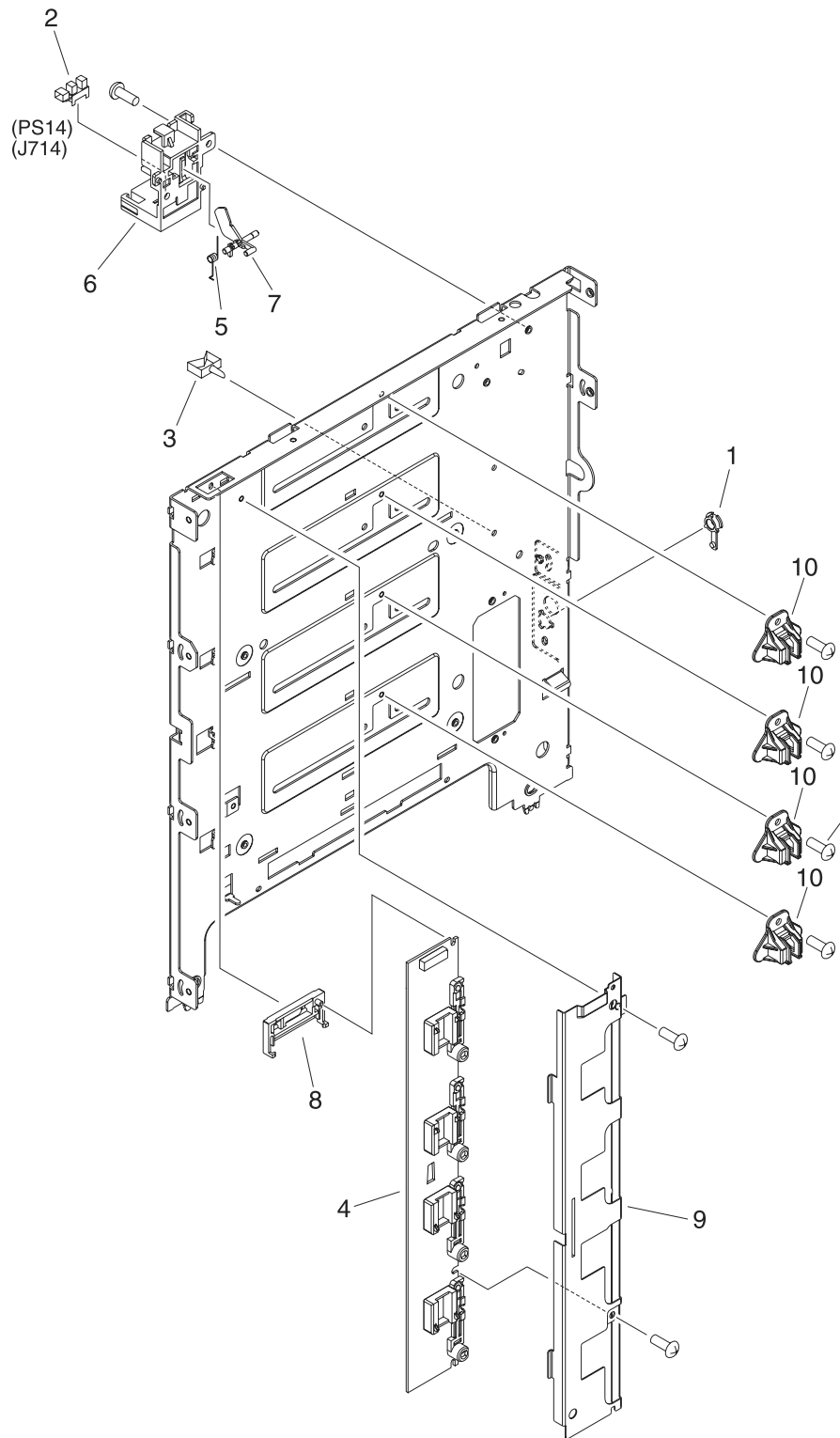
Center Frame Assembly

Table 8-11   Center frame assembly

Ref	Part number	Quantity	Description
1	RC1-1243-000CN	1	BUSHING
2	WG8-5362-000CN	1	PHOTO-INTERRUPTER, TLP1241
3	WT2-5841-000CN	1	CLAMP, CABLE
4	RM1-0508-000CN	1	MEMORY CONTROLLER PCB ASS'Y
5	RC1-1328-000CN	1	SPRING, TORSION
6	RC1-1329-000CN	1	HOLDER, SENSOR
7	RC1-1330-000CN	1	FLAG, SENSOR
8	RC1-1343-000CN	1	HOLDER, MEMORY CONTROLLER PCB
9	RC1-1349-000CN	1	PLATE, SHIELD
10	RC1-1640-000CN	4	COVER, LASER SHUTTER
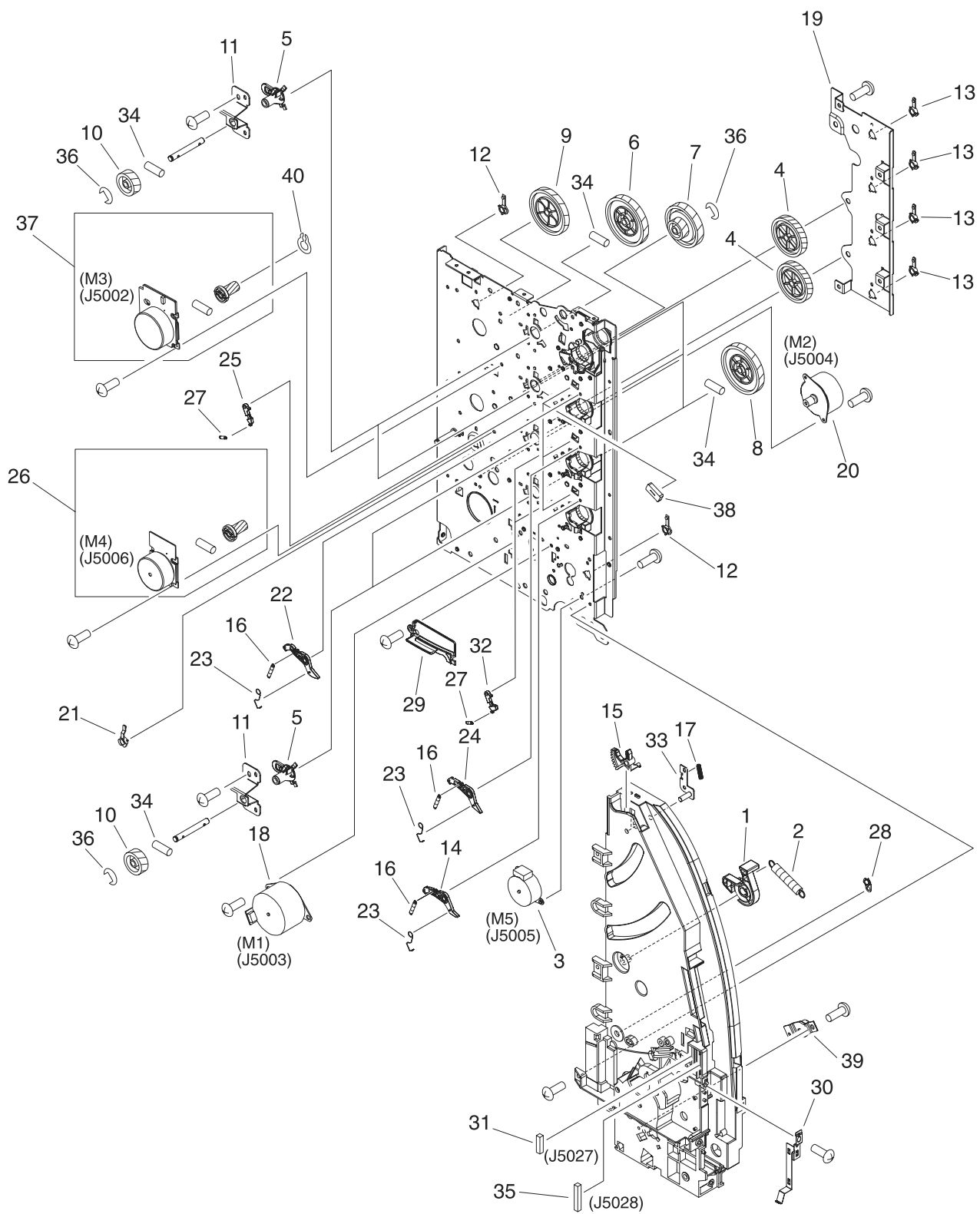
Main Right Side Plate Assembly / Motors

Table 8-12   Main right side plate assembly / Motors

Ref	Part number	Quantity	Description
1	RC1-1148-000CN	1	LEVER, SWING LOCK, RIGHT
2	RC1-1149-000CN	1	SPRING, TENSION
3	RK2-0139-000CN	1	MOTOR (M5)
4	RC1-1231-000CN	2	GEAR, 59T
5	RC1-1218-000CN	4	BUSHING
6	RC1-3240-000CN	1	GEAR, 74T
7	RC1-1229-000CN	1	GEAR, 90T/28T
8	RC1-1230-000CN	4	GEAR, 74T
9	RC1-1233-000CN	1	GEAR, 69T
10	RC1-1234-000CN	4	GEAR, 29T
11	RC1-1242-000CN	4	PLATE, REINFORCEMENT
12	RC1-1243-000CN	2	BUSHING
13	RC1-1244-000CN	4	BUSHING
14	RC1-1246-000CN	1	ARM, DRUM LOCK, RIGHT
15	RC1-1248-000CN	1	LEVER, I.T.B. COUPLING
16	RC1-1259-000CN	4	SPRING, TENSION
17	RC1-1260-000CN	1	SPRING, TENSION
18	RK2-0137-000CN	1	MOTOR (M1)
19	RC1-1277-000CN	1	PLATE, DRIVE
20	RK2-0138-000CN	1	MOTOR (M2)
21	RC1-1310-000CN	1	BUSHING
22	RC1-1362-000CN	1	ARM, DRUM LOCK, RIGHT
23	RC1-1537-000CN	3	SPRING, GROUNDING
24	RC1-1545-000CN	1	ARM, DRUM LOCK, RIGHT
25	RC1-1546-000CN	1	STOPPER, ARM, RIGHT
26	RM1-0737-000CN	1	DEVELOPING MOTOR ASS'Y (M4)
27	RC1-1548-000CN	3	SPRING, TENSION
28	RC1-1629-000CN	1	PLATE, GROUNDING
29	RC1-1662-000CN	1	RAIL, SWING, RIGHT REAR
30	RC1-2294-000CN	1	PLATE, GROUNDING
31	VS1-6910-012CN	1	CONNECTOR, SNAP TIGHT
32	RC1-2339-000CN	2	STOPPER, ARM, RIGHT
33	RL1-0189-000CN	1	PLATE
34	XD9-0120-000CN	8	PIN, DOWEL
35	VS1-6492-016CN	1	CONNECTOR, 16P
36	XD9-0136-000CN	3	RING, E

Table 8-12 Main right side plate assembly / Motors (continued)

Ref	Part number	Quantity	Description
37	RM1-0733-000CN	1	DRUM MOTOR ASS'Y(M3)
38	RC1-2330-000CN	3	PAD, CUSHION
39	RC1-1038-000CN	1	DAMPER UNIT, MP PICK-UP
40	XD2-2100-602CN	1	RING, GRIP
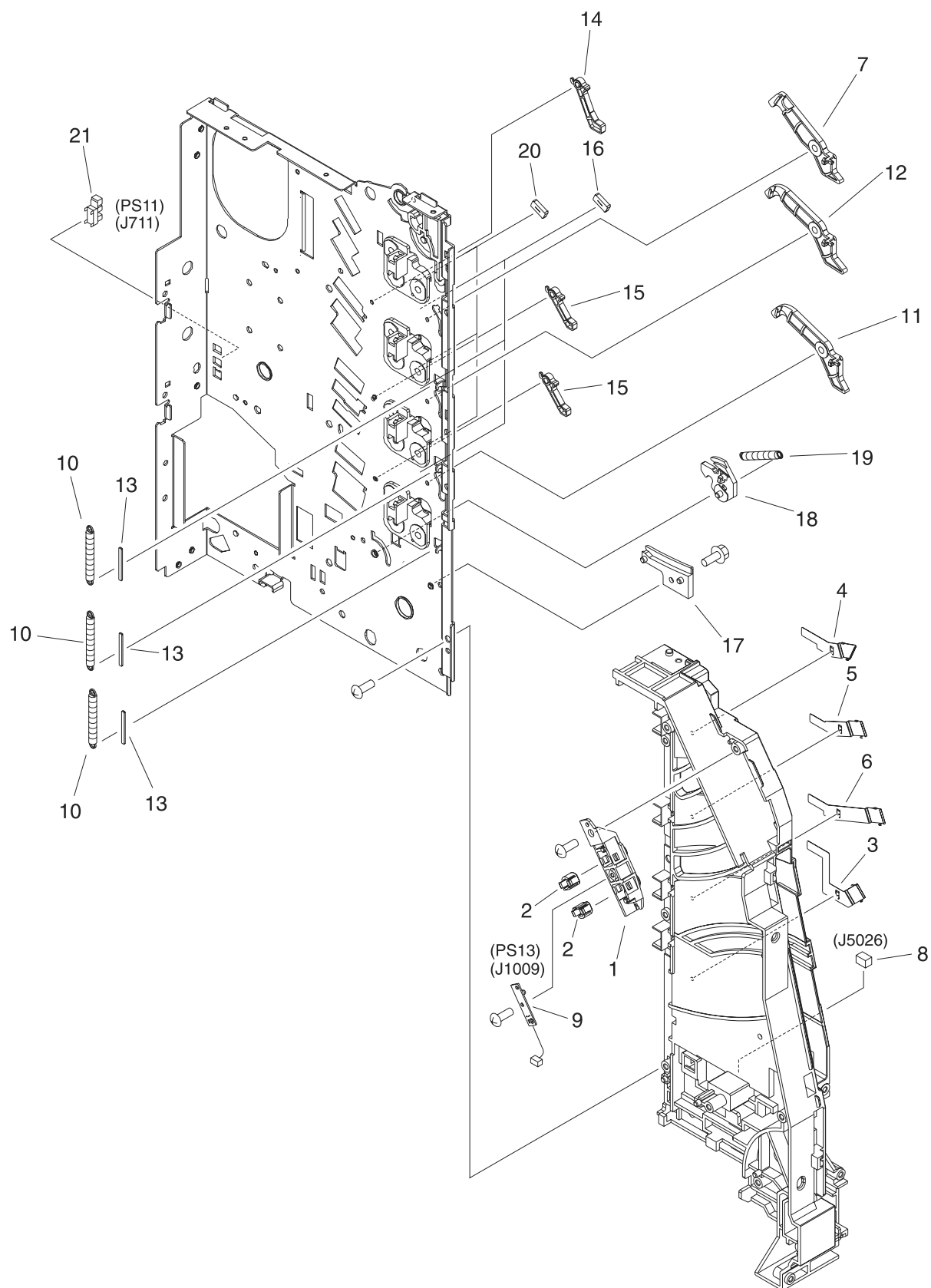
Main Left Side Plate Assembly

Table 8-13 Main left side plate assembly

Ref	Part number	Quantity	Description
1	RC1-1049-000CN	1	HOLDER, SENSOR
2	RC1-1050-000CN	2	LENS
3	RC1-1151-000CN	1	PLATE, CONTACT
4	RC1-1152-000CN	1	PLATE, CONTACT
5	RC1-1153-000CN	1	PLATE, CONTACT
6	RC1-1155-000CN	1	PLATE, CONTACT
7	RC1-1169-000CN	1	ARM, DRUM LOCK, LEFT
8	VS1-6492-010CN	1	CONNECTOR, SNAP TIGHT, W
9	RM1-0509-000CN	1	SENSOR UNIT, TCU FULL DETECT
10	RC1-1185-000CN	3	SPRING, TENSION
11	RC1-1622-000CN	1	ARM, DRUM LOCK, LEFT
12	RC1-1623-000CN	1	ARM, DRUM LOCK, LEFT
13	RC1-1625-000CN	3	STRAP, DAMPER
14	RC1-1626-000CN	1	STOPPER, ARM, LEFT
15	RC1-1627-000CN	2	STOPPER, ARM, LEFT
16	RC1-2330-000CN	3	PAD, CUSHION
17	RC1-1641-000CN	1	RAIL, SWING, LEFT REAR
18	RC1-1647-000CN	1	LEVER, SWING LOCK, LEFT
19	RC1-1648-000CN	1	SPRING, TENSION
20	RC1-2331-000CN	3	PAD, CUSHION
21	WG8-5362-000CN	1	PHOTO-INTERRUPTER, TLP1241
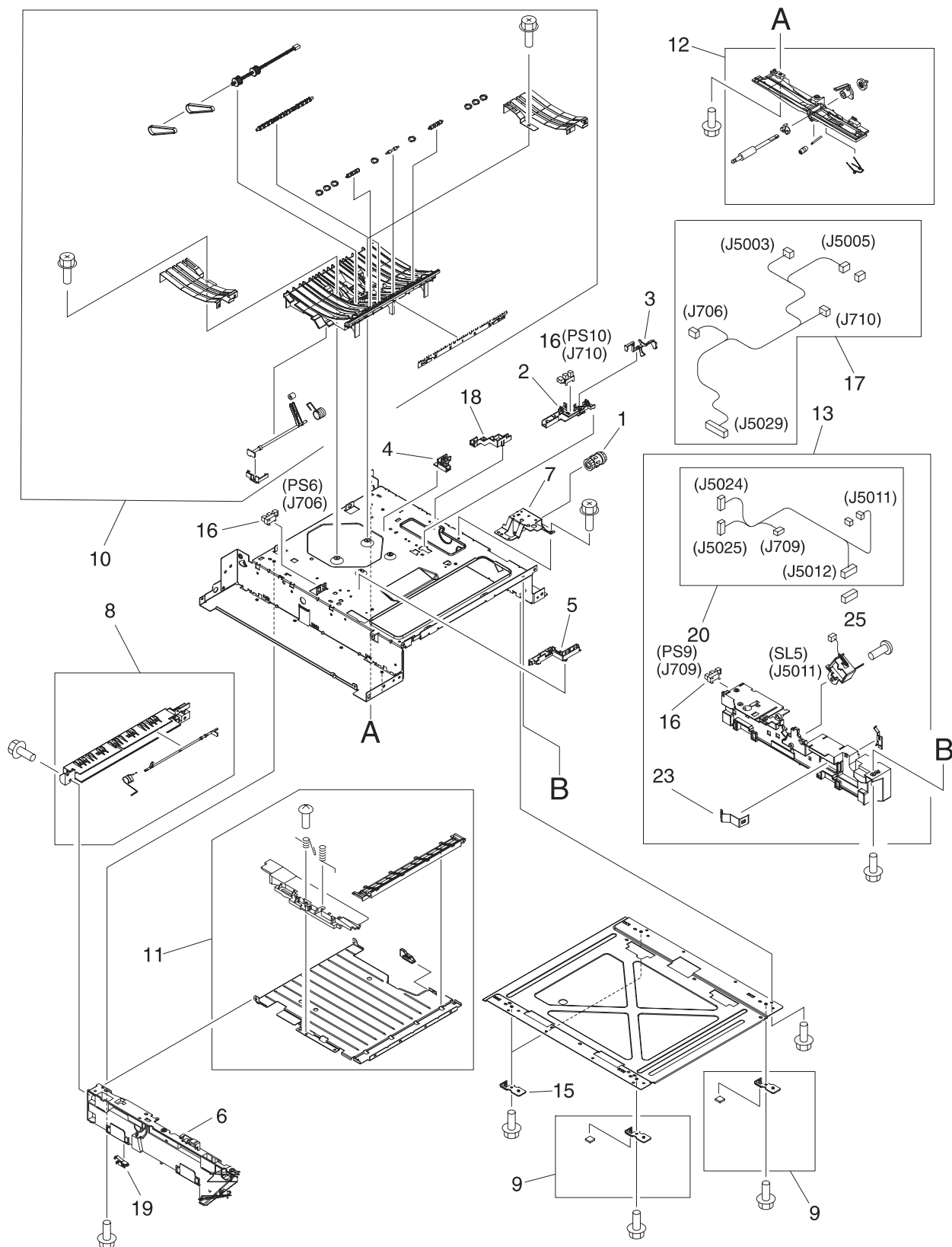
Lower Frame Assembly - HP3700 (1 of 2)
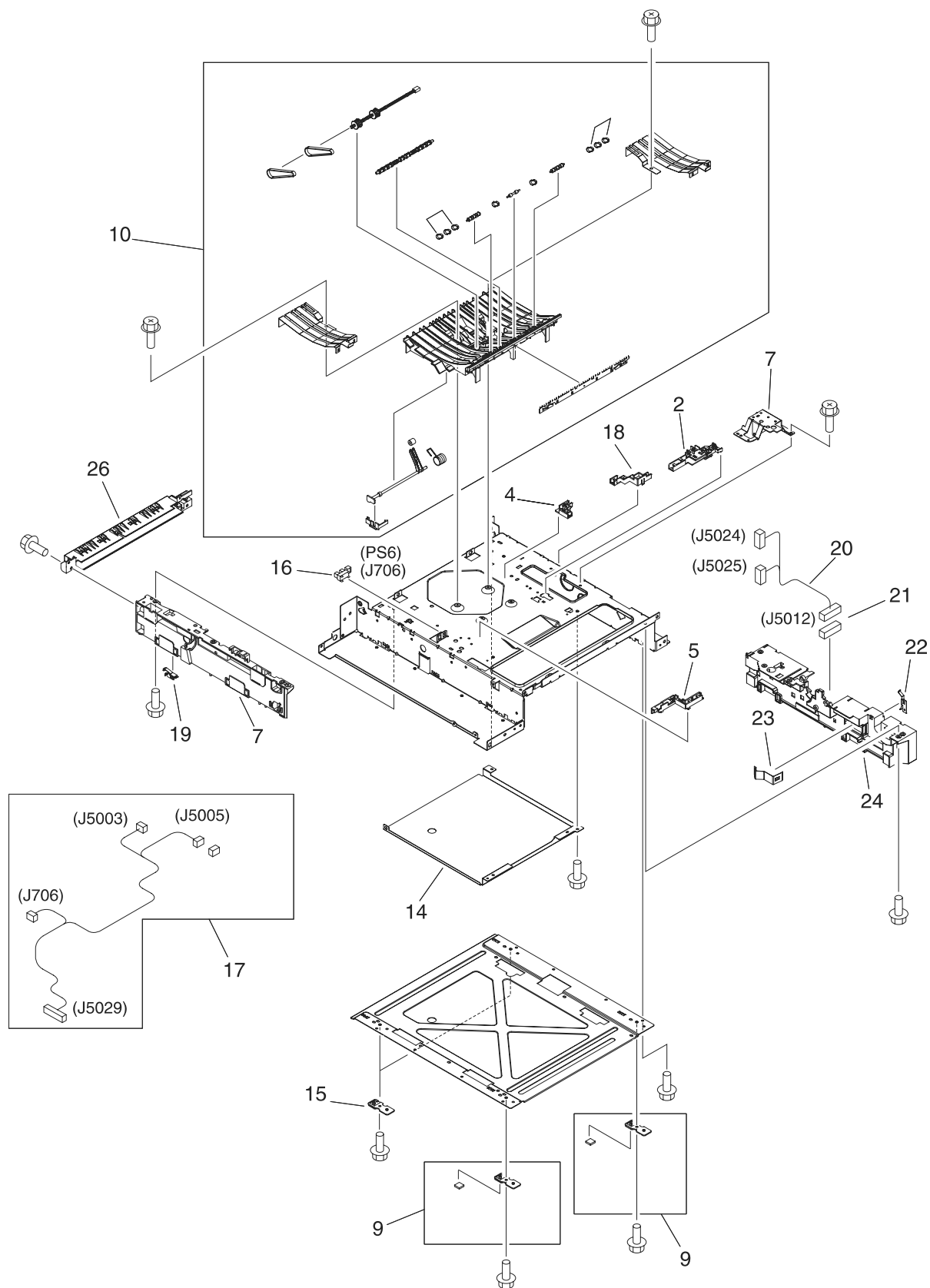
Lower Frame Assembly - HP3500 (2 of 2)

Table 8-14   Lower frame assembly - HP3500 and HP3700

Ref	Part number	Quantity	Description
1	RB2-6324-000CN	1	CLUTCH, MECHANICAL
2	RC1-1496-000CN	1	HOLDER, SENSOR
3	RC1-1514-000CN	1	LEVER, SENSOR
4	RC1-2322-000CN	1	GUIDE, CABLE
5	RC1-2323-000CN	1	GUIDE, CABLE
6	RC1-1491-000CN	1	GUIDE, CASSETTE, LEFT
7	RL1-0203-000CN	1	MOUNT, SOLENOID (HP3700)
7	RC1-1511-000CN	1	MOUNT, SOLENOID (HP3500)
8	RM1-0458-000CN	1	DUPLEX GUIDE ASS'Y (HP3700)
9	RM1-0459-000CN	2	FOOT ASS'Y
10	RM1-0460-000CN	1	PAPER FEED ASS'Y
11	RM1-0461-000CN	1	DUPLEX FEED GUIDE ASS'Y (HP3700)
12	RM1-0462-000CN	1	POSITION GUIDE ASS'Y (HP3700)
13	RM1-0736-000CN	1	CASSETTE GUIDE RIGHT ASS'Y
14	RC1-2237-000CN	1	COVER, LOWER FRAME (HP3500)
15	RC1-2428-000CN	2	SUPPORT, FOOT, REAR
16	WG8-5362-000CN	3	PHOTO-INTERRUPTER, TLP1241 (HP3700)
16	WG8-5362-000CN	1	PHOTO-INTERRUPTER, TLP1241 (HP3500)
17	RM1-0478-000CN	1	CABLE, FRAME, LOWER (HP3700)
17	RM1-0497-000CN	1	CABLE, FRAME, LOWER (HP3500)
18	RC1-1306-000CN	1	GUIDE, CABLE
19	RC1-1637-000CN	1	PLATE, CONNECTING
20	RM1-0476-000CN	1	CABLE, OPTION CONNECTING (HP3700)
20	RM1-0496-000CN	1	CABLE, OPTION CONNECTING (HP3500)
21	VS1-6176-006CN	1	CONNECTOR, 6P (HP3500)
22	RC1-1509-000CN	1	PLATE, GROUNDING (HP3500)
23	RC1-1508-000CN	1	SPRING, LEAF (HP3500)
24	RC1-1492-000CN	1	GUIDE, CASSETTE, RIGHT (HP3500)
25	RK2-0143-000CN	1	SOLENOID (HP3500)
26	RC1-1613-000CN	1	GUIDE, DUPLEXING (HP3500)
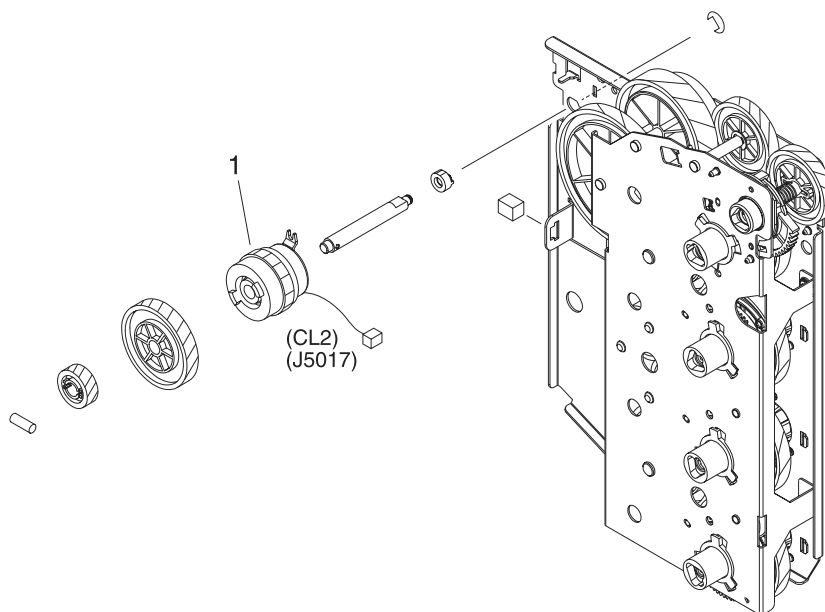
Image Drive Assembly

Table 8-15   Image drive assembly

Ref	Part number	Quantity	Description
	RM1-0415-000CN	**1**	**IMAGE DRIVE ASSEMBLY**
1	RK2-0248-000CN	1	CLUTCH, ELECTROMAGNETIC
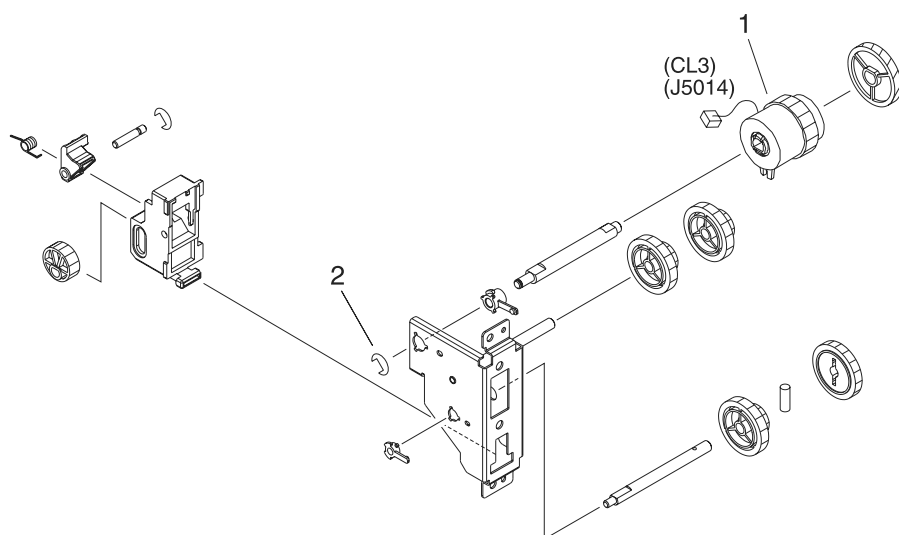
Developing Disengaging Assembly

Table 8-16   Developing disengaging assembly

Ref	Part number	Quantity	Description
	RM1-0434-000CN	**1**	**DEVELOPING DISENGAGING ASSENBLY**
1	RK2-0176-000CN	1	CLUTCH, ELECTROMAGNETIC
2	XD9-0135-000CN	1	RING, E
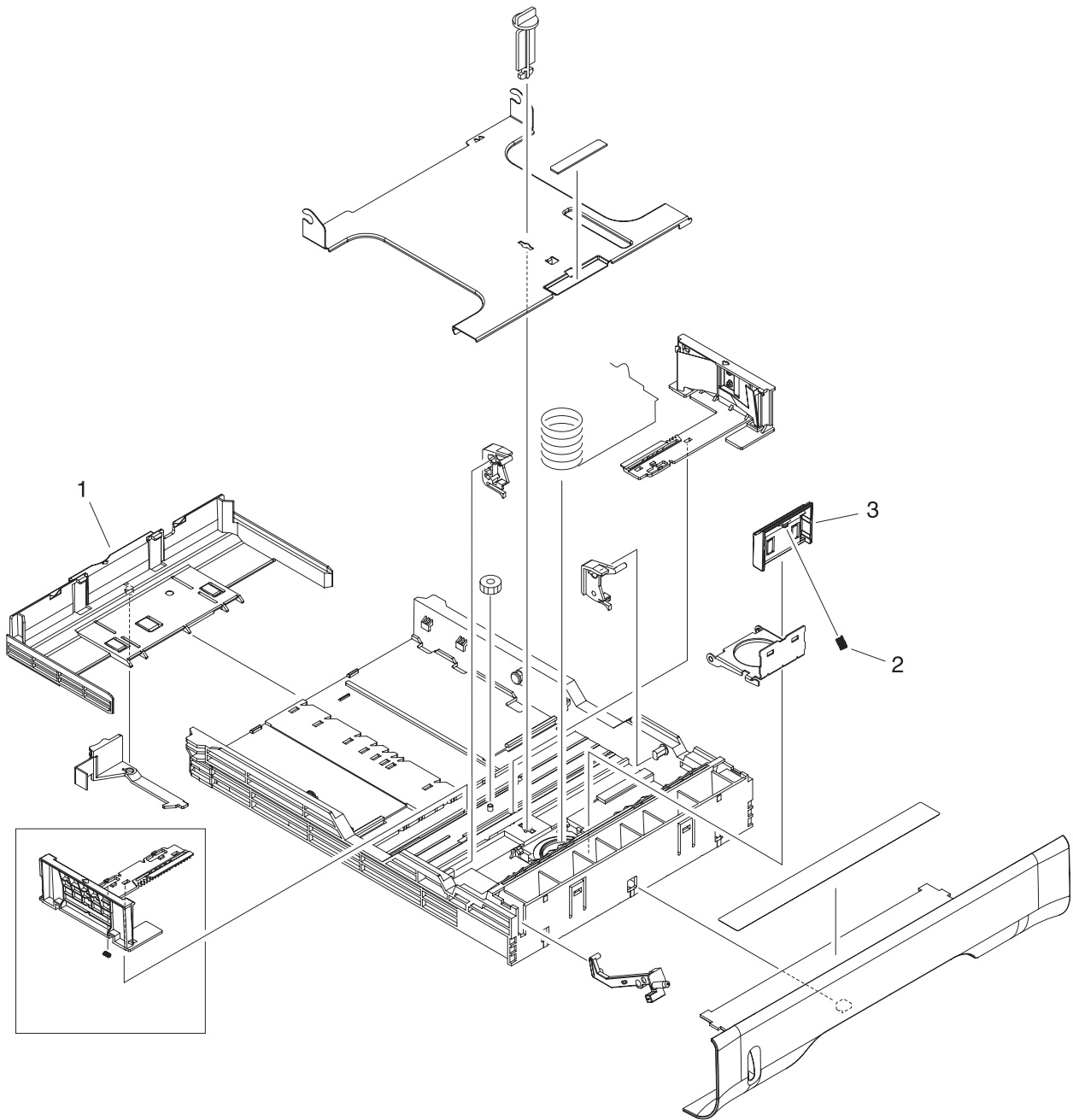
Tray 2 (cassette)

Table 8-17   Tray 2 (cassette)

Ref	Part number	Quantity	Description
	RM1-0470-000CN	**1**	**TRAY 2 (CASSETTE)**
1	RB2-3003-040CN	1	PLATE, END
2	RS6-2021-000CN	1	SPRING, COMPRESSION
3	RC1-0954-000CN	1	PAD, SEPARATION
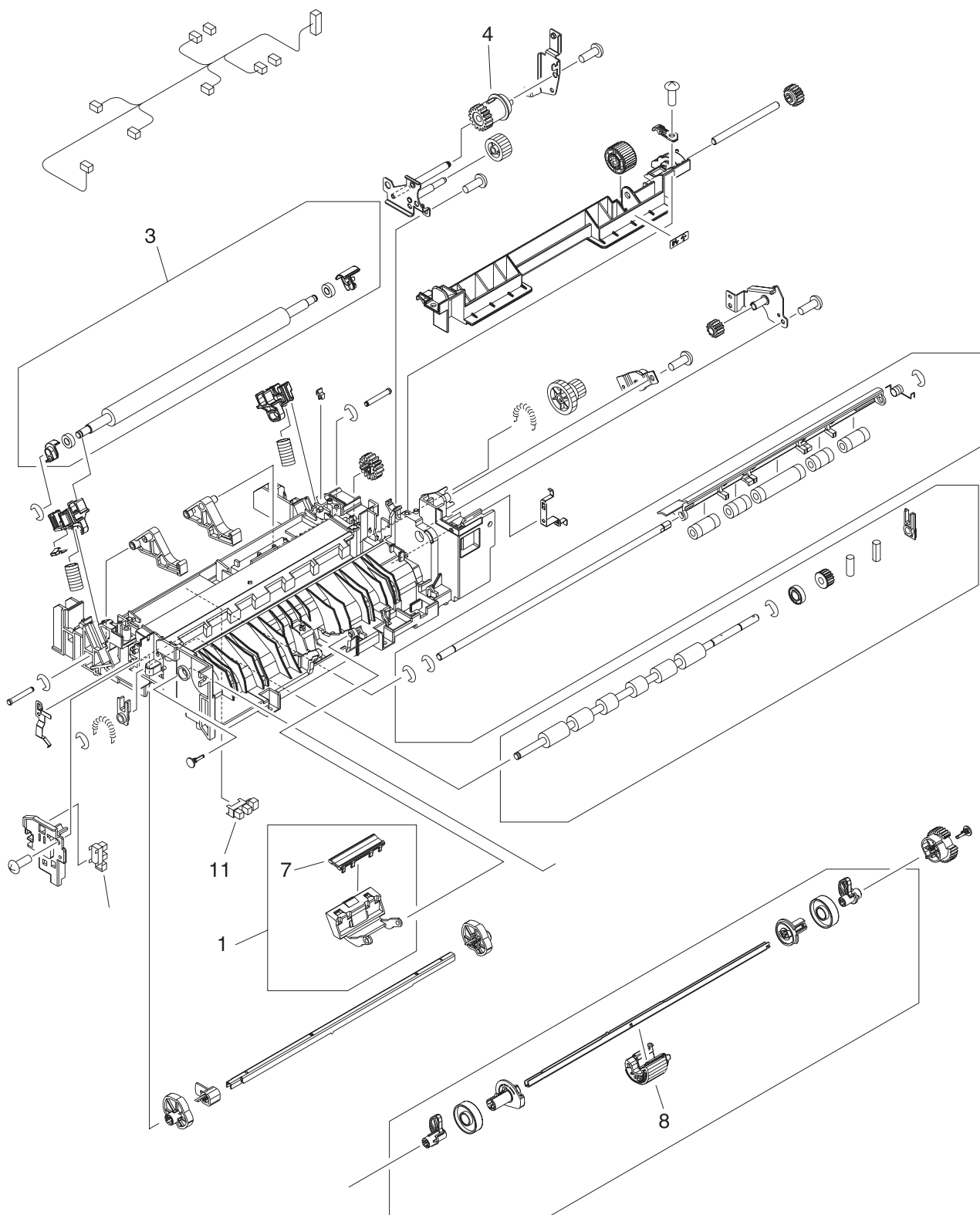
Pick-up/Feed assembly (1 of 2)
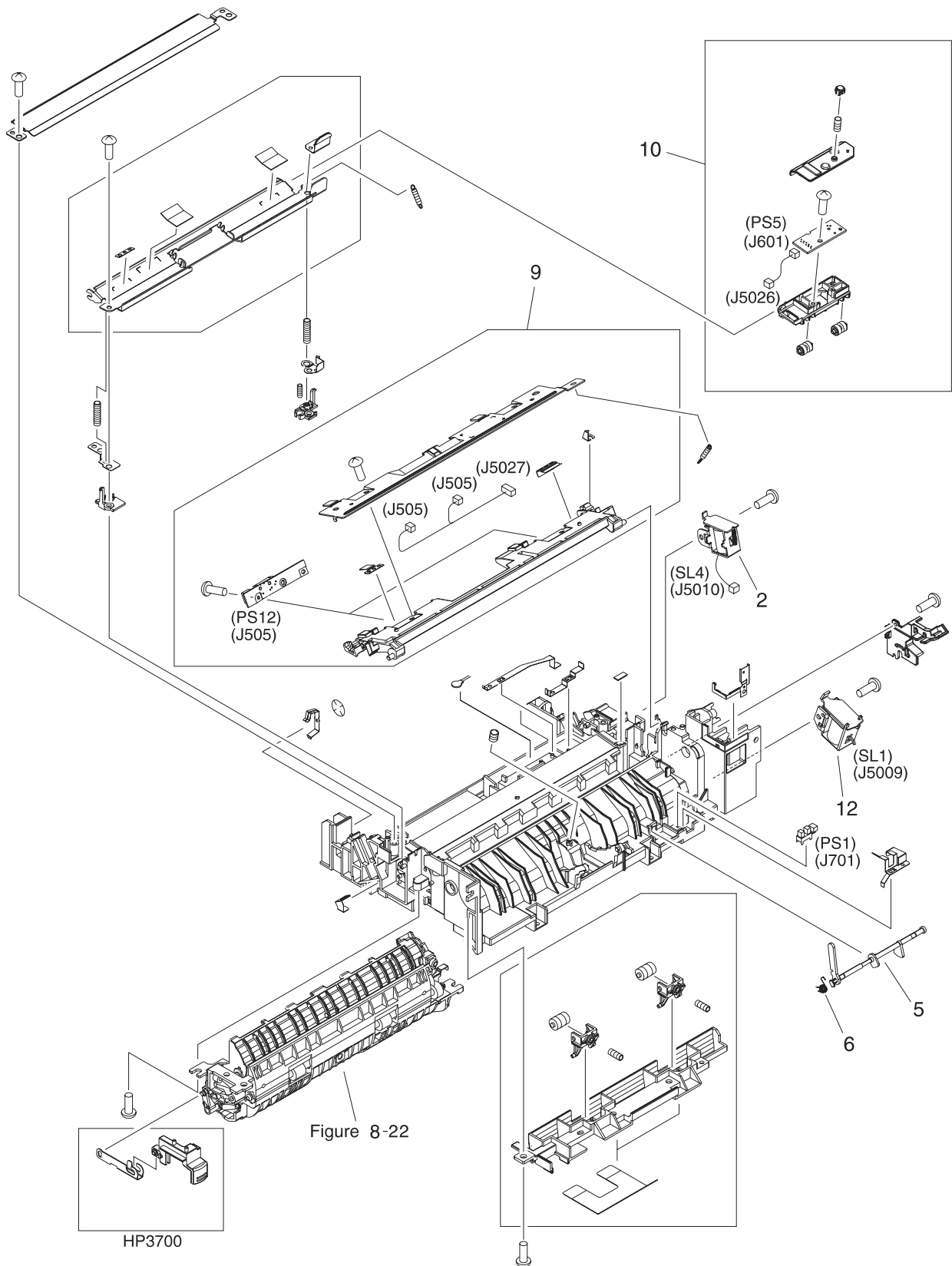
Pick-up/Feed assembly (2 of 2)

Table 8-18   Pick-up/feed assembly

Ref	Part number	Quantity	Description
	RM1-0449-000CN	**1**	**PICK-UP/FEED ASS'Y (HP3700)**
	RM1-0760-000CN	**1**	**PICK-UP/FEED ASS'Y (HP3500)**
1	RM1-0739-000CN	1	SEPARATION PAD ASS'Y
2	RK2-0145-000CN	1	SOLENOID
3	RM1-0740-000CN	1	TRANSFER ROLLER ASS'Y
4	RC1-1433-000CN	1	CLUTCH, MECHANICAL
5	RC1-1456-000CN	1	LEVER, SENSOR
6	RC1-1464-000CN	1	SPRING, TORSION
7	RC1-0939-000	1	PAD, SEPARATION
8	RC1-1535-000CN	1	ROLLER, PICK-UP
9	RM1-0451-000CN	1	COLOR MIS-REG. SENSOR ASS'Y
10	RM1-0452-000CN	1	MEDIA SENSOR ASS'Y
11	WG8-5362-000CN	3	PHOTO-INTERRUPTER, TLP1241
12	RK2-0141-000CN	1	SOLENOID

Tray 2 (cassette) pick-up assembly

Table 8-19   Tray 2 (cassette) pick-up assembly

Ref	Part number	Quantity	Description
1	WG8-5362-000CN	1	PHOTO-INTERRUPTER, TLP1241
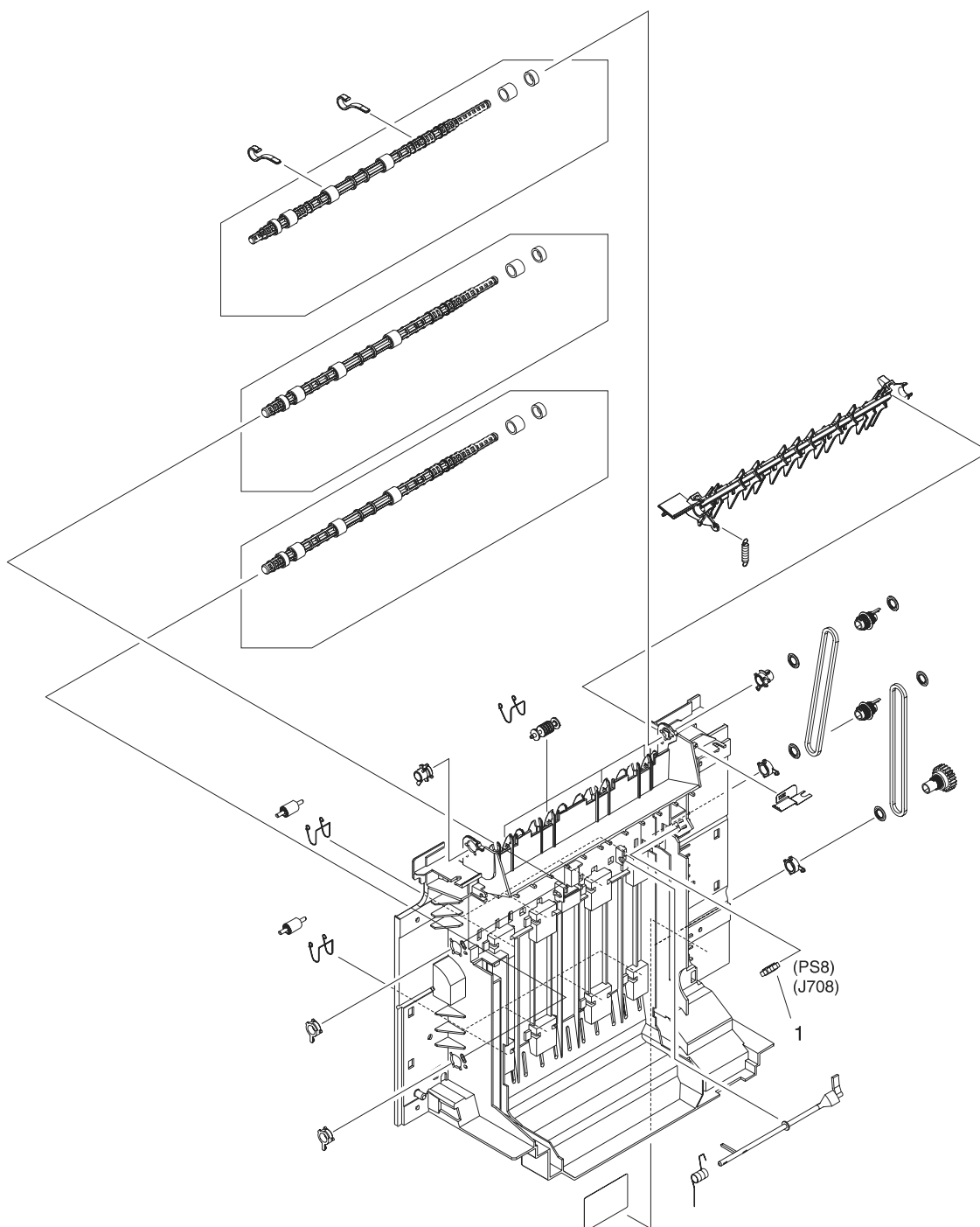
Face-down delivery assembly

Table 8-20 Face-down delivery assembly

Ref	Part number	Quantity	Description
	RM1-0469-000CN	**1**	**FACE-DOWN DELIVERY ASSEMBLY**
1	WG8-5362-000CN	1	PHOTO-INTERRUPTER, TLP1241
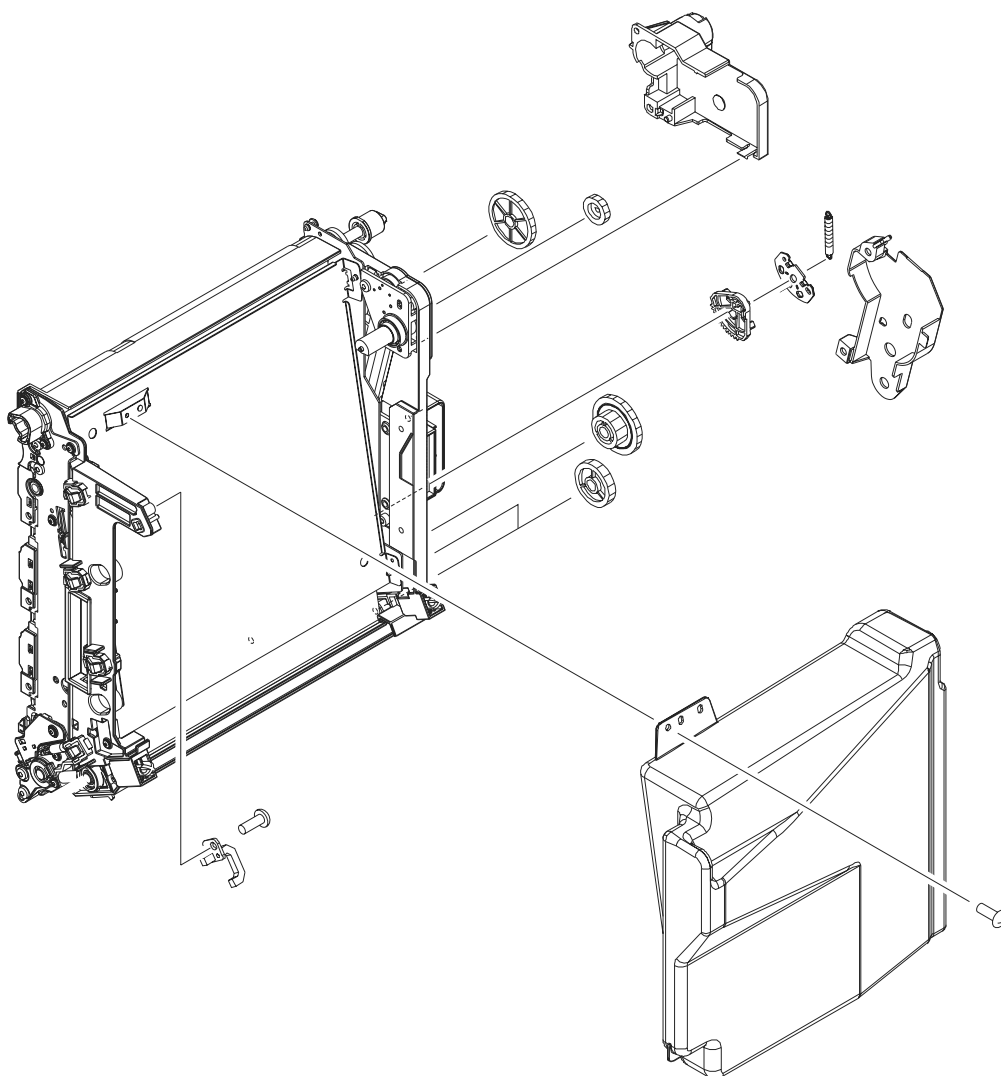
Transfer Unit

Table 8-21   Transfer unit

Ref	Part number	Quantity	Description
	Q3658-69001	1	TRANSFER UNIT
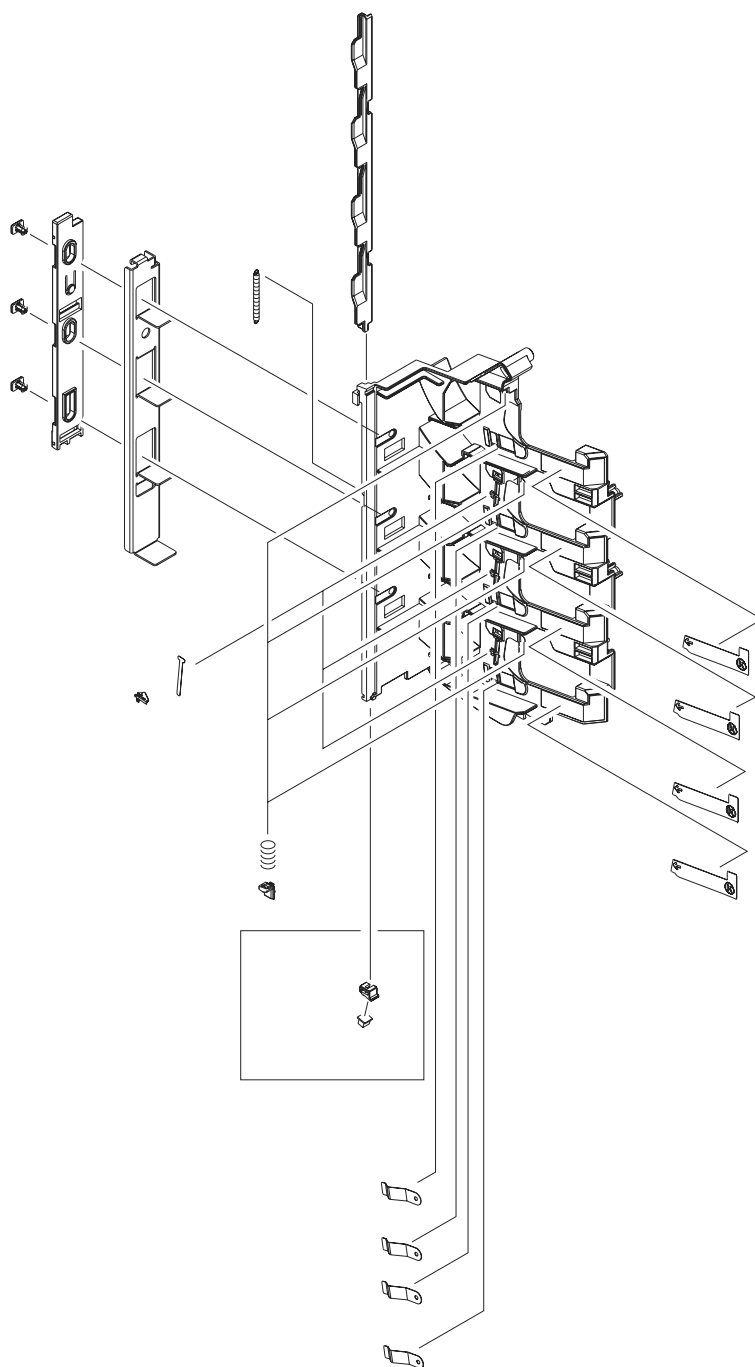
Right Swing Frame Assembly

Table 8-22 Right swing frame assembly

Ref	Part number	Quantity	Description
	RM1-0437-000CN	1	RIGHT SWING FRAME ASS'Y
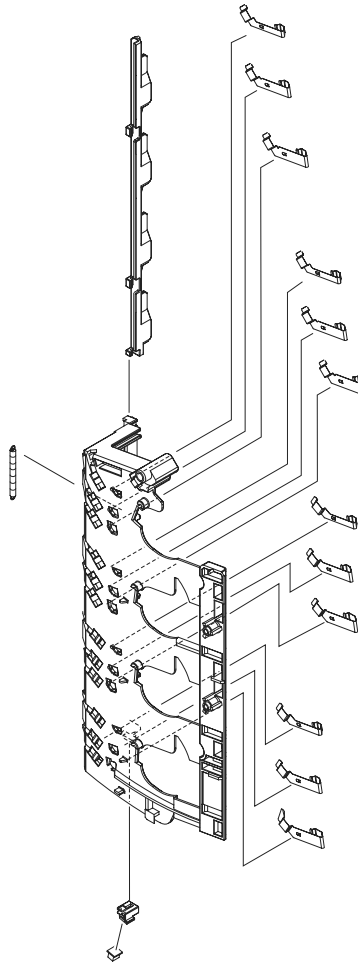
Left Swing Frame Assembly

Table 8-23   Left swing frame assembly

Ref	Part number	Quantity	Description
	RM1-0439-000CN	1	LEFT SWING FRAME ASS'Y

(J5018)

(J5013)

(PS7)
(J707)

(J5013) (J707)

(J5016)
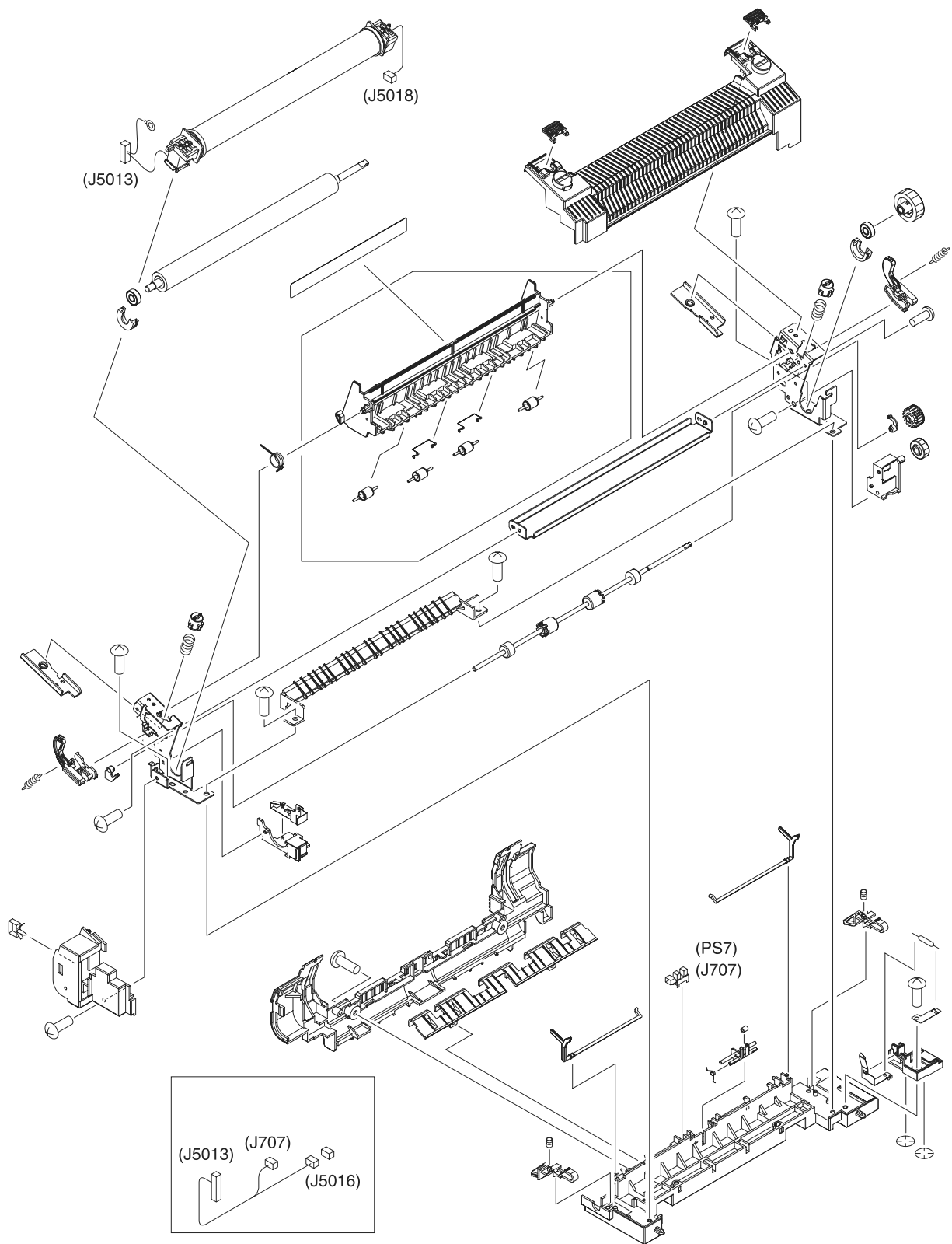
Fuser

Table 8-24 Fuser assembly

Ref	Part number	Quantity	Description
	Q3655-69001	1	Fuser (110-127V)
	Q3656-69001	1	Fuser (220-240V)
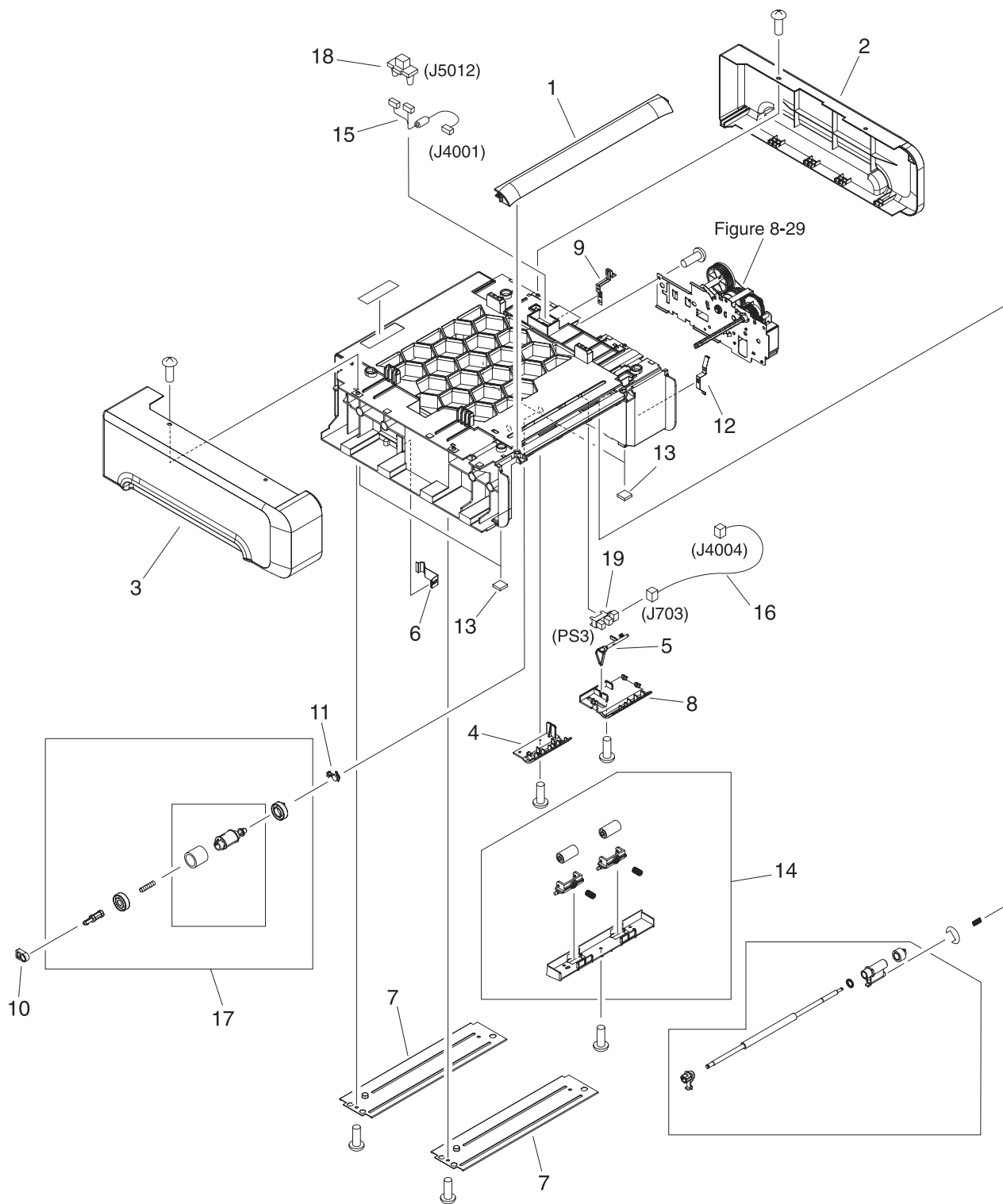
500-Sheet paper feeder main body

Table 8-25   500-Sheet paper feeder main body

Ref	Part number	Quantity	Description
1	RC1-2178-000CN	1	COVER, FRONT
2	RC1-2179-000CN	1	COVER, REAR
3	RC1-2180-000CN	1	COVER, LEFT
4	RB2-3489-000CN	1	COVER, LOWER, LEFT
5	RB2-6448-000CN	1	ARM, SENSOR
6	RB2-6450-000CN	1	SPRING, LEAF
7	RB2-6452-000CN	2	CROSSMEMBER
8	RB2-6453-000CN	1	COVER, SENSOR
9	RC1-2175-000CN	1	PLATE, GROUNDING
10	RC1-2182-000CN	1	BUSHING
11	RC1-2192-000CN	1	BUSHING
12	RC1-2280-000CN	1	PLATE, GROUNDING
13	RC1-2165-000CN	4	FOOT
14	RM1-0709-000CN	1	SUB ROLLER ASS'Y
15	RM1-0769-000CN	1	CABLE, DRAWER
16	RM1-0770-000CN	1	CABLE, SENSOR
17	RM1-0731-000CN	1	CASSETTE PICK-UP ROLLER ASS'Y
18	VS1-6175-006CN	1	CONNECTOR, 6P
19	WG8-5571-000CN	1	PHOTO-INTERRUPTER
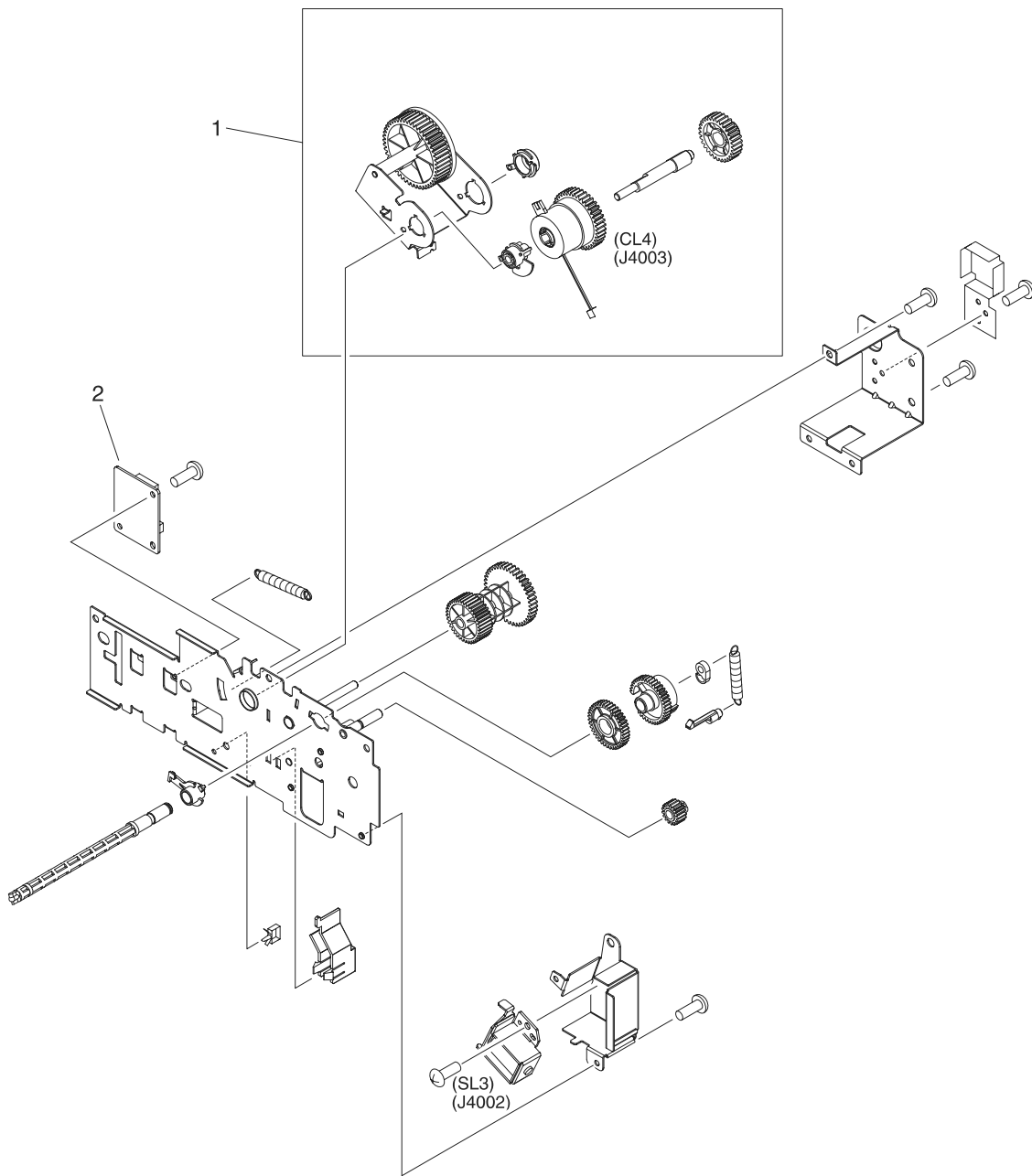
500-Sheet paper feeder paper pick-up drive assembly

Table 8-26 500-Sheet paper feeder paper pick-up drive assembly

Ref	Part number	Quantity	Description
	RM1-0701-000CN	**1**	**PAPER PICK-UP DRIVE ASS'Y**
1	RM1-0707-000CN	1	SWING ASS'Y
2	RM1-0768-000CN	1	PAPER FEEDER DRIVER PCB ASS'Y
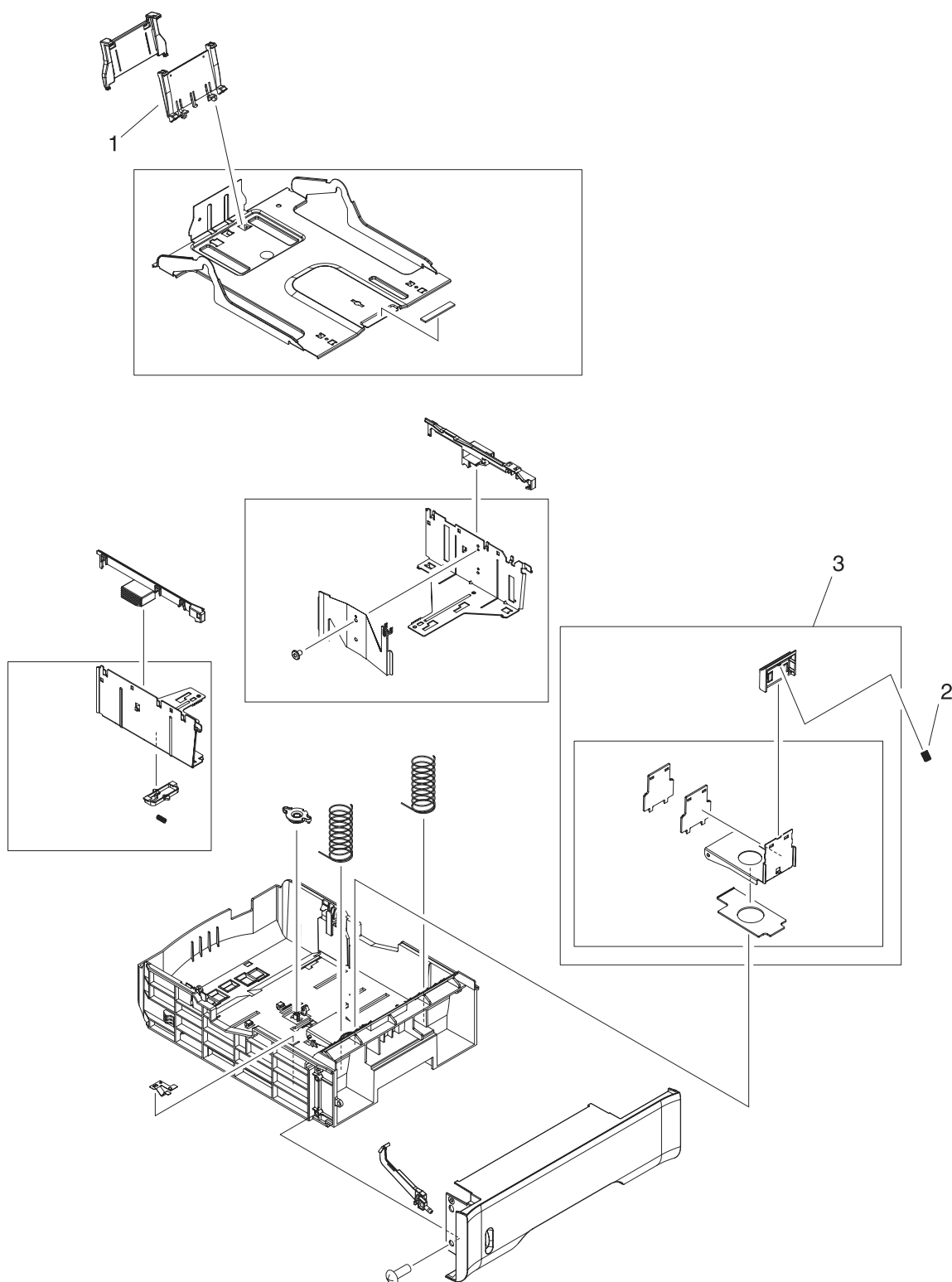
500-Sheet paper feeder tray (Tray 3)

Table 8-27   500-Sheet paper feeder paper tray (Tray 3)

Ref	Part number	Quantity	Description
	RM1-0705-000CN	**1**	**PAPER TRAY 3, 500-SHEET FEEDER**
1	RB2-6469-000CN	1	PLATE, END
2	RC1-2191-000CN	1	SPRING, COMPRESSION
3	RM1-0827-000CN	1	PAPER SEPARATION PAD ASS'Y

Table 8-28   Alphabetical parts list

Description	Part number	Figure	Ref
ARM, DRUM LOCK, LEFT	RC1-1170-000CN	8 - 10	14
ARM, DRUM LOCK, LEFT	RC1-1169-000CN	8 - 14	7
ARM, DRUM LOCK, LEFT	RC1-1622-000CN	8 - 14	11
ARM, DRUM LOCK, LEFT	RC1-1623-000CN	8 - 14	12
ARM, DRUM LOCK, RIGHT	RC1-1246-000CN	8 - 13	14
ARM, DRUM LOCK, RIGHT	RC1-1362-000CN	8 - 13	22
ARM, DRUM LOCK, RIGHT	RC1-1545-000CN	8 - 13	24
ARM, INTERLOCK SWITCH	RC1-1175-000CN	8 - 8	5
ARM, SENSOR	RB2-6448-000CN	8 - 28	5
BASE, CONTROLLER (HP3500)	RC1-2235-000CN	8 - 11	7
BLOCK, TEST PRINT BUTTON	RC1-1593-000CN	8 - 11	12
BUSHING	RC1-1270-000CN	8 - 9	4
BUSHING	RC1-1630-000CN	8 - 9	11
BUSHING	RC1-1243-000CN	8 - 12	1
BUSHING	RC1-1218-000CN	8 - 13	5
BUSHING	RC1-1243-000CN	8 - 13	12
BUSHING	RC1-1244-000CN	8 - 13	13
BUSHING	RC1-1310-000CN	8 - 13	21
BUSHING	RC1-2182-000CN	8 - 28	10
BUSHING	RC1-2192-000CN	8 - 28	11
CABLE, CPR CONNECTING	RM1-0482-000CN	8 - 9	36
CABLE, DRAWER	RM1-0769-000CN	8 - 28	15
CABLE, ENVIRONMENT SENSOR	RM1-0493-000CN	8 - 10	6
CABLE, FD DELIVERY SENSOR	RM1-0477-000CN	8 - 11	17
CABLE, FFC (HP3700)	RK2-0162-000CN	8 - 11	19
CABLE, FFC(HP3500)	RK2-0179-000CN	8 - 11	19
CABLE, FORMATTER POWER SUPPLY (HP3500)	RM1-0498-000CN	8 - 9	37
CABLE, FORMATTER POWER SUPPLY (HP3700)	RM1-0483-000CN	8 - 9	37
CABLE, FRAME, LOWER (HP3500)	RM1-0497-000CN	8 - 15 & 16	17
CABLE, FRAME, LOWER (HP3700)	RM1-0478-000CN	8 - 15 & 16	17
CABLE, HIGH VOLTAGE	RM1-0485-000CN	8 - 8	16
CABLE, LASER FFC, 1	RK2-0164-000CN	8 - 11	23
CABLE, LASER FFC, 2	RK2-0165-000CN	8 - 11	22

Table 8-28 Alphabetical parts list (continued)

Description	Part number	Figure	Ref
CABLE, LEFT FRONT	RM1-0488-000CN	8 - 9	38
CABLE, MAIN (HP3500)	RM1-0495-000CN	8 - 11	24
CABLE, MAIN (HP3700)	RM1-0475-000CN	8 - 11	24
CABLE, OPERATION PANEL	RM1-0489-000CN	8 - 6	13
CABLE, OPTION CONNECTING (HP3500)	RM1-0496-000CN	8 - 15 & 16	20
CABLE, OPTION CONNECTING (HP3700)	RM1-0476-000CN	8 - 15 & 16	20
CABLE, SENSOR	RM1-0770-000CN	8 - 28	16
CABLE, TM FFC	RK2-0163-000CN	8 - 11	20
CASSETTE	RM1-0470-000CN	8 - 19	n/a
CASSETTE	RM1-0705-000CN	8 - 30	n/a
CASSETTE GUIDE RIGHT ASS'Y	RM1-0736-000CN	8 - 15 & 16	13
CASSETTE PICK-UP ROLLER ASS'Y	RM1-0731-000CN	8 - 9	15
CLAMP, CABLE	WT2-5841-000CN	8 - 9	40
CLAMP, CABLE	WT2-5841-000CN	8 - 10	13
CLAMP, CABLE	WT2-0507-000CN	8 - 11	15
CLAMP, CABLE	WT2-5754-000CN	8 - 11	21
CLAMP, CABLE	WT2-5841-000CN	8 - 12	3
CLAMP,CABLE	WT2-5738-000CN	8 - 11	18
CLUTCH, ELECTROMAGNETIC	RK2-0247-000CN	8 - 9	39
CLUTCH, ELECTROMAGNETIC	RK2-0248-000CN	8 - 17	1
CLUTCH, ELECTROMAGNETIC	RK2-0176-000CN	8 - 18	1
CLUTCH, MECHANICAL	RB2-6324-000CN	8 - 15 & 16	1
CLUTCH, MECHANICAL	RC1-1433-000CN	8 - 20 & 21	4
COLOR MIS-REG. SENSOR ASS'Y	RM1-0451-000CN	8 - 20 & 21	9
CONNECTOR, 16P	VS1-6492-016CN	8 - 13	35
CONNECTOR, 2P	VS1-5057-002CN	8 - 9	41
CONNECTOR, 6P	VS1-6175-006CN	8 - 28	18
CONNECTOR, 6P (HP3500)	VS1-6176-006CN	8 - 15 & 16	21
CONNECTOR, SNAP TIGHT	VS1-6910-012CN	8 - 13	31
CONNECTOR, SNAP TIGHT, W	VS1-6492-010CN	8 - 14	8
CONTROL PANEL PCB	RM1-0511-000NC	8 - 4	6
COVER, CASSETTE	RC1-1665-000CN	8 - 9	32
COVER, CONNECTOR	RC1-1488-000CN	8 - 9	6
COVER, CONTROLLER (HP3500)	RC1-2236-000CN	8 - 11	6
COVER, DIMM	RC1-1562-000CN	8 - 6	15
COVER, FMTR CABLE (HP3500)	RC1-2364-000CN	8 - 11	13
COVER, FRONT	RC1-2178-000CN	8 - 28	1

Table 8-28 Alphabetical parts list (continued)

Description	Part number	Figure	Ref
COVER, HINGE	RC1-2296-000CN	8 - 6	11
COVER, JAM CLEARING	RC1-1566-000CN	8 - 6	9
COVER, LASER SHUTTER	RC1-1640-000CN	8 - 12	10
COVER, LEFT	RC1-2180-000CN	8 - 28	3
COVER, LOWER FRAME (HP3500)	RC1-2237-000CN	8 - 15 & 16	14
COVER, LOWER, LEFT	RB2-3489-000CN	8 - 28	4
COVER, MOTOR	RC1-1353-000CN	8 - 9	5
COVER, MP TRAY	RC1-1574-000CN	8 - 7	8
COVER, REAR	RC1-1565-000CN	8 - 6	8
COVER, REAR	RC1-2179-000CN	8 - 28	2
COVER, RIGHT	RC1-1563-000CN	8 - 6	7
COVER, SCREW	RC1-1605-000CN	8 - 8	2
COVER, SENSOR	RB2-6453-000CN	8 - 28	8
CROSSMEMBER	RB2-6452-000CN	8 - 28	7
DAMPER UNIT, HINGE, LEFT	RC1-1572-000CN	8 - 8	9
DAMPER UNIT, HINGE, RIGHT	RC1-1573-000CN	8 - 8	10
DAMPER UNIT, MP PICK-UP	RC1-1038-000CN	8 - 13	39
DC CONTROLLER PCB ASS'Y (HP3500)	RM1-0510-000CN	8 - 11	4
DC CONTROLLER PCB ASS'Y (HP3700)	RM1-0506-000CN	8 - 11	4
DC CONTROLLER PCB HP3500	RM1-0510-000CN	8 - 2	1
DC CONTROLLER PCB HP3700	RM1-0506-000CN	8 - 4	1
DEV. DISENGAGING DRIVE ASS'Y	RM1-0419-000CN	8 - 10	4
DEVELOPING CONTACT ASS'Y	RM1-0446-000CN	8 - 8	8
DEVELOPING DISENGAGING ASS'Y	RM1-0434-000CN	8 - 18	n/a
DEVELOPING MOTOR ASS'Y	RM1-0737-000CN	8 - 13	26
DRAWER CROSSMEMBER ASS'Y	RM1-0440-000CN	8 - 8	7
DRUM MOTOR ASS'Y	RM1-0733-000CN	8 - 13	37
DUCT, AIR	RC1-1354-000CN	8 - 11	8
DUCT, AIR, FRONT	RC1-1350-000CN	8 - 10	11
DUCT, FAN	RC1-1345-000CN	8 - 10	10
DUPLEX FEED GUIDE ASS'Y (HP3700)	RM1-0461-000CN	8 - 15 & 16	11
DUPLEX GUIDE ASS'Y (HP3700)	RM1-0458-000CN	8 - 15 & 16	18
E-RING	XD9-0136-000CN	8 - 9	10
E-RING	XD9-0134-000CN	8 - 9	16
E-RING	XD9-0137-000CN	8 - 9	35
FACE-DOWN DELIVERY ASS"Y	RM1-0469-000CN	8 - 23	n/a
FACE-UP TRAY ASS'Y	RM1-0468-000CN	8 - 6	6

Table 8-28 Alphabetical parts list (continued)

Description	Part number	Figure	Ref
FAN (HP3500)	RK2-0153-000CN	8 - 10	12
FAN (HP3700)	RK2-0017-000CN	8 - 10	12
FLAG, SENSOR	RC1-1330-000CN	8 - 12	7
FOOT	RC1-2165-000CN	8 - 28	13
FOOT ASS'Y	RM1-0459-000CN	8 - 15 & 16	9
FORMATTER PCB ASS'Y (HP3500)	Q1319-69001	8 - 11	5
FORMATTER PCB ASS'Y (HP3700)	Q1321-69001	8 - 11	5
FORMATTER PCB HP3500	Q1319-69001	8 - 4	5
FORMATTER PCB HP3700	Q1321-69001	8 - 4	5
FRONT COVER ASS'Y	RM1-0463-000CN	8 - 7	n/a
FRONT ROD LEFT ASS'Y	RM1-0443-000CN	8 - 6	1
FRONT ROD RIGHT ASS'Y	RM1-0444-000CN	8 - 6	2
FUSER (110-127V)	Q3655-69001	8 - 27	n/a
FUSER (220-240V)	Q3656-69001	8 - 27	n/a
GEAR, 104T/25T	RC1-1291-000CN	8 - 9	28
GEAR, 120T/17T	RC1-1252-000CN	8 - 10	7
GEAR, 20T	RC1-1493-000CN	8 - 9	30
GEAR, 25T	RC1-1497-000CN	8 - 9	7
GEAR, 26T/22T/20T	RC1-1298-000CN	8 - 9	31
GEAR, 26T/47T	RC1-1283-000CN	8 - 9	24
GEAR, 27T	RC1-1295-000CN	8 - 9	18
GEAR, 29T	RC1-1234-000CN	8 - 13	10
GEAR, 31T/19T	RC1-1284-000CN	8 - 9	1
GEAR, 38T	RC1-1288-000CN	8 - 9	27
GEAR, 39T	RC1-1281-000CN	8 - 9	23
GEAR, 43T	RC1-1294-000CN	8 - 9	17
GEAR, 45T/25T	RC1-1286-000CN	8 - 9	25
GEAR, 50T/90T	RC1-1224-000CN	8 - 9	19
GEAR, 54T/17T	RC1-1300-000CN	8 - 9	2
GEAR, 59T	RC1-1231-000CN	8 - 13	4
GEAR, 69T	RC1-1233-000CN	8 - 13	9
GEAR, 74T	RC1-3240-000CN	8 - 13	6
GEAR, 74T	RC1-1230-000CN	8 - 13	8
GEAR, 79T	RC1-1302-000CN	8 - 9	3
GEAR, 86T/23T	RC1-1213-000CN	8 - 11	2
GEAR, 90T/28T	RC1-1229-000CN	8 - 13	7
GUIDE, CABLE	RC1-2334-000CN	8 - 9	22

Table 8-28 Alphabetical parts list (continued)

Description	Part number	Figure	Ref
GUIDE, CABLE	RC1-1181-000CN	8 - 11	1
GUIDE, CABLE	RC1-2322-000CN	8 - 15 & 16	4
GUIDE, CABLE	RC1-2323-000CN	8 - 15 & 16	5
GUIDE, CABLE	RC1-1306-000CN	8 - 15 & 16	18
GUIDE, CASSETTE, LEFT	RC1-1491-000CN	8 - 15 & 16	6
GUIDE, CASSETTE, RIGHT (HP3500)	RC1-1492-000CN	8 - 15 & 16	24
GUIDE, DUPLEXING (HP3500)	RC1-1613-000CN	8 - 15 & 16	26
GUIDE, HARNESS	RC1-1342-000CN	8 - 8	12
GUIDE, ROD, LEFT	RC1-1156-000CN	8 - 10	1
HIGH-VOLTAGE PCB ASS'Y	RM1-0505-000CN	8 - 8	3
HIGH-VOLTAGE POWER SUPPLY PCBs	RM1-0505-000CN	8 - 4	3
HOLDER, GEAR	RC1-1287-000CN	8 - 9	26
HOLDER, MEMORY CONTROLLER PCB	RC1-1343-000CN	8 - 12	8
HOLDER, SENSOR	RC1-1329-000CN	8 - 12	6
HOLDER, SENSOR	RC1-1049-000CN	8 - 14	1
HOLDER, SENSOR	RC1-1496-000CN	8 - 15 & 16	2
IMAGE DRIVE ASS'Y	RM1-0415-000CN	8 - 17	n/a
LABEL, HIGH TEMP. CAUTION	RC1-2422-000CN	8 - 11	14
LASER SCANNER ASS'Y	RM1-1142-000CN	8 - 11	11
LEFT COVER ASS'Y	RM1-0466-000CN	8 - 6	4
LEFT FRONT COVER ASS'Y	RM1-0467-000CN	8 - 6	5
LEFT SWING FRAME ASS'Y	RM1-0439-000CN	8 - 26	n/a
LENS	RC1-1050-000CN	8 - 14	2
LEVER, I.T.B. COUPLING	RC1-1248-000CN	8 - 13	15
LEVER, INTERLOCK SWITCH	RC1-1176-000CN	8 - 7	4
LEVER, ITB COUPLIN, 1	RC1-1247-000CN	8 - 7	5
LEVER, SENSOR	RC1-1514-000CN	8 - 15 & 16	3
LEVER, SENSOR	RC1-1456-000CN	8 - 20 & 21	5
LEVER, SWING LOCK, LEFT	RC1-1647-000CN	8 - 14	18
LEVER, SWING LOCK, RIGHT	RC1-1148-000CN	8 - 13	1
LINK, MP HINGE, LEFT	RC1-1575-000CN	8 - 7	6
LINK, MP HINGE, RIGHT	RC1-1576-000CN	8 - 7	7
LOCK GUIDE RIGHT ASS'Y	RM1-0438-000CN	8 - 8	6
LOW-VOLTAGE PCB ASS'Y (110-127V)	RK2-1057-000CN	8 - 9	20
LOW-VOLTAGE PCB ASS'Y(220-240V)	RK2-1058-000CN	8 - 9	20
LOW-VOLTAGE POWER SUPPLY PCB 110-127V	RK2-0157-000CN	8 - 4	4
LOW-VOLTAGE POWER SUPPLY PCB 220-240V	RK2-0158-000CN	8 - 4	4

Table 8-28 Alphabetical parts list (continued)

Description	Part number	Figure	Ref
MEDIA SENSOR ASS'Y	RM1-0452-000CN	8 - 20 & 21	10
MEMORY CONTROLLER PCB	RM1-0508-000CN	8 - 4	2
MEMORY CONTROLLER PCB ASS'Y	RM1-0508-000CN	8 - 12	4
MICROSWITCH	RK2-0150-000CN	8 - 11	16
MOTOR	RK2-0139-000CN	8 - 13	3
MOTOR	RK2-0137-000CN	8 - 13	18
MOTOR	RK2-0138-000CN	8 - 13	20
MOUNT, REGISTRATION CLUTCH	RC1-1186-000CN	8 - 9	14
MOUNT, SOLENOID (HP3500)	RC1-1511-000CN	8 - 15 & 16	7
MOUNT, SOLENOID (HP3700)	RL1-0203-000CN	8 - 15 & 16	7
MULTI-PURPOSE TRAY ASS'Y	RM1-0464-000CN	8 - 7	1
OPERATION PANEL ASSY.	RM1-0511-000CN	8 - 6	12
PAD, CUSHION	RC1-2330-000CN	8 - 13	38
PAD, CUSHION	RC1-2330-000CN	8 - 14	16
PAD, CUSHION	RC1-2331-000CN	8 - 14	20
PAD, SEPARATION	RC1-0954-000CN	8 - 19	3
PAD, SEPARATION	RC1-0939-000	8 - 20 & 21	7
PAPER FEED ASS'Y	RM1-0460-000CN	8 - 15 & 16	10
PAPER FEEDER DRIVER PCB ASS'Y	RM1-0768-000CN	8 - 29	2
PAPER FEEDER,500-SHEET, PCG	RM1-0768-000	8 - 4	1
PAPER PICK-UP DRIVE ASS'Y	RM1-0701-000CN	8 - 29	n/a
PHOTO-INTERRUPTER	WG8-5571-000CN	8 - 28	19
PHOTO-INTERRUPTER, TLP1241	WG8-5362-000CN	8 - 12	2
PHOTO-INTERRUPTER, TLP1241	WG8-5362-000CN	8 - 14	21
PHOTO-INTERRUPTER, TLP1241	WG8-5362-000CN	8 - 20 & 21	1
PHOTO-INTERRUPTER, TLP1241	WG8-5362-000CN	8 - 22	1
PHOTO-INTERRUPTER, TLP1241	WG8-5362-000CN	8 - 23	1
PHOTO-INTERRUPTER, TLP1241 (HP3500)	WG8-5362-000CN	8 - 15 & 16	16
PHOTO-INTERRUPTER, TLP1241 (HP3700)	WG8-5362-000CN	8 - 15 & 16	16
PICK-UP/FEED ASS'Y (HP3500)	RM1-0760-000CN	8 - 20 & 21	n/a
PICK-UP/FEED ASS'Y (HP3700)	RM1-0449-000CN	8 - 20 & 21	n/a
PIN, DOWEL	XD9-0120-000CN	8 - 13	34
PLATE	RL1-0189-000CN	8 - 13	33
PLATE, CLUTCH SHIELD	RC1-2385-000CN	8 - 9	13
PLATE, CONNECTING	RC1-1637-000CN	8 - 15 & 16	19
PLATE, CONTACT	RC1-1151-000CN	8 - 14	3
PLATE, CONTACT	RC1-1152-000CN	8 - 14	4

Table 8-28 Alphabetical parts list (continued)

Description	Part number	Figure	Ref
PLATE, CONTACT	RC1-1153-000CN	8 - 14	5
PLATE, CONTACT	RC1-1155-000CN	8 - 14	6
PLATE, DC CONTROLLER SUPPORT	RC1-1348-000CN	8 - 11	9
PLATE, DRIVE	RC1-1277-000CN	8 - 13	19
PLATE, END	RB2-3003-040CN	8 - 19	1
PLATE, END	RB2-6469-000CN	8 - 30	1
PLATE, GROUNDING	RC1-1649-000CN	8 - 9	12
PLATE, GROUNDING	RC1-1629-000CN	8 - 13	28
PLATE, GROUNDING	RC1-2294-000CN	8 - 13	30
PLATE, GROUNDING	RC1-2175-000CN	8 - 28	9
PLATE, GROUNDING	RC1-2280-000CN	8 - 28	12
PLATE, GROUNDING (HP3500)	RC1-1509-000CN	8 - 15 & 16	22
PLATE, JOINT, LEFT	RC1-1602-000CN	8 - 11	3
PLATE, JOINT, RIGHT	RC1-1603-000CN	8 - 8	1
PLATE, LOGO, RIGHT	RC1-1600-000CN	8 - 6	10
PLATE, MOUNTING	RC1-1355-000CN	8 - 9	9
PLATE, PAPER FEEDER DRIVE	RL1-0193-000CN	8 - 9	21
PLATE, REGIST. CLUTCH SHIELD	RC1-2379-000CN	8 - 9	33
PLATE, REINFORCEMENT	RC1-1242-000CN	8 - 13	11
PLATE, SHIELD	RC1-1349-000CN	8 - 12	9
POSITION GUIDE ASS'Y (HP3700)	RM1-0462-000CN	8 - 15 & 16	12
RAIL, SWING, LEFT FRONT	RC1-1642-000CN	8 - 8	4
RAIL, SWING, LEFT REAR	RC1-1641-000CN	8 - 14	17
RAIL, SWING, RIGHT REAR	RC1-1662-000CN	8 - 13	29
RIGHT SWING FRAME ASS'Y	RM1-0437-000CN	8 - 25	n/a
RING, E	XD9-0136-000CN	8 - 13	36
RING, E	XD9-0135-000CN	8 - 18	2
RING, GRIP	XD2-2100-602CN	8 - 13	40
ROD, FRONT COVER, LEFT	RC1-1158-000CN	8 - 7	2
ROD, FRONT COVER, RIGHT	RC1-1159-000CN	8 - 7	3
ROD, POWER SWITCH	RC1-1347-000CN	8 - 11	10
ROLLER, PICK-UP	RC1-1535-000CN	8 - 20 & 21	8
SCREW W/WASHER, M3X8	XA9-1461-000CN	n/a	n/a
SCREW, P, M4 (500 sheet feeder)	XA9-1500-000CN	n/a	n/a
SCREW, RS, M3X6	XA9-1452-000CN	n/a	n/a
SCREW, RS, M3X8	XA9-1499-000CN	n/a	n/a
SCREW, S, M3X8	RC1-1624-000CN	n/a	n/a

Table 8-28 Alphabetical parts list (continued)

Description	Part number	Figure	Ref
SCREW, STEPPED, M4X4.5	XB4-7401-005CN	n/a	n/a
SCREW, TP	XA9-1445-000CN	n/a	n/a
SCREW, TP, M4X6	XA9-1450-000NC	n/a	n/a
SCREW, W/WASHER, M3X12	XA9-1420-000CN	n/a	n/a
SCREW, W/WASHER, RS, M3X6	XA9-1477-000CN	n/a	n/a
SCREW, W/WASHER,M3X6	XA9-1450-000CN	n/a	n/a
SCREW,TAPPING,TRUSS HEAD,M4X10	XB4-7300-805CN	n/a	n/a
SE RING (HP3500)	XD2-2300-402CN	8 - 6	16
SENSOR UNIT, HUMIDITY	WP2-5156-000CN	8 - 10	2
SENSOR UNIT, TCU FULL DETECT	RM1-0509-000CN	8 - 14	9
SEPARATION PAD ASS'Y	RM1-0739-000CN	8 - 20 & 21	1
SEPARATION PAD ASS'Y	RM1-0827-000CN	8 - 30	3
SHAFT, DRIVE	RC1-1500-000CN	8 - 9	8
SHEET, CABLE RETAINING	RC1-2437-000CN	8 - 10	5
SOLENOID	RK2-0145-000CN	8 - 20 & 21	2
SOLENOID	RK2-0141-000CN	8 - 20 & 21	12
SOLENOID (HP3500)	RK2-0143-000CN	8 - 15 & 16	25
SPRING, COMPRESSION	RS6-2021-000CN	8 - 19	2
SPRING, COMPRESSION	RC1-2191-000CN	8 - 30	2
SPRING, GROUNDING	RC1-1177-000CN	8 - 10	3
SPRING, GROUNDING	RC1-1537-000CN	8 - 13	23
SPRING, LEAF	RB2-6450-000CN	8 - 28	6
SPRING, LEAF (HP3500)	RC1-1508-000CN	8 - 15 & 16	23
SPRING, TENSION	RC1-1407-000CN	8 - 7	11
SPRING, TENSION	RC1-1515-000CN	8 - 8	13
SPRING, TENSION	RC1-1292-000CN	8 - 9	29
SPRING, TENSION	RC1-1184-000CN	8 - 10	15
SPRING, TENSION	RC1-1628-000CN	8 - 10	16
SPRING, TENSION	RC1-1149-000CN	8 - 13	2
SPRING, TENSION	RC1-1259-000CN	8 - 13	16
SPRING, TENSION	RC1-1260-000CN	8 - 13	17
SPRING, TENSION	RC1-1548-000CN	8 - 13	27
SPRING, TENSION	RC1-1185-000CN	8 - 14	10
SPRING, TENSION	RC1-1648-000CN	8 - 14	19
SPRING, TORSION	RC1-1328-000CN	8 - 12	5
SPRING, TORSION	RC1-1464-000CN	8 - 20 & 21	6
STOPPER, ARM, LEFT	RC1-1626-000CN	8 - 14	14

Table 8-28 Alphabetical parts list (continued)

Description	Part number	Figure	Ref
STOPPER, ARM, LEFT	RC1-1627-000CN	8 - 14	15
STOPPER, ARM, RIGHT	RC1-1546-000CN	8 - 13	25
STOPPER, ARM, RIGHT	RC1-2339-000CN	8 - 13	32
STOPPER, FRONT HINGE, LEFT	RL1-0215-000CN	8 - 8	14
STOPPER, HINGE, RIGHT	RC1-1607-000CN	8 - 8	15
STRAP, DAMPER	RC1-1625-000CN	8 - 14	13
SUB ROLLER ASS'Y	RM1-0709-000CN	8 - 28	14
SUPPORT, FOOT, REAR	RC1-2428-000CN	8 - 15 & 16	15
SUPPORT, PICK-UP GEAR	RL1-0217-000CN	8 - 9	34
SWING GUIDE ASS'Y	RM1-0707-000CN	8 - 29	1
SWING ROD LEFT ASS'Y	RM1-0441-000CN	8 - 10	8
SWING ROD RIGHT ASS'Y	RM1-0442-000CN	8 - 10	9
TOP COVER ASS'Y	RM1-0465-000CN	8 - 6	3
TRANSFER (ITB) ASS"Y	Q3658-69001	8 - 24	n/a
TRANSFER CONTACT ASS'Y	RM1-0445CN	8 - 8	11
TRANSFER ROLLER ASS'Y	RM1-0740-000CN	8 - 20 & 21	3
TRAY 2 PICK-UP ROLLER ASS'Y	RM1-0731-000CN	8 - 28	17
TRAY, AUXILIARY	RC1-1555-000CN	8 - 6	14
TRAY, EXPANSION, 1	RC1-2318-000CN	8 - 7	9
TRAY, EXPANSION, 2	RC1-2319-000CN	8 - 7	10

Table 8-29 Numerical parts list

Part number	Description	Figure	Ref
Q1319-69001	FORMATTER PCB HP3500	8 - 4	5
Q1319-69001	FORMATTER PCB ASS'Y (HP3500)	8 - 11	5
Q1321-69001	FORMATTER PCB HP3700	8 - 4	5
Q1321-69001	FORMATTER PCB ASS'Y (HP3700)	8 - 11	5
Q3655-69001	FUSER (110-127V)	8 - 27	n/a
Q3656-69001	FUSER (220-240V)	8 - 27	n/a
Q3658-69001	TRANSFER (ITB) ASS"Y	8 - 24	n/a
RB2-3003-040CN	PLATE, END	8 - 19	1
RB2-3489-000CN	COVER, LOWER, LEFT	8 - 28	4
RB2-6324-000CN	CLUTCH, MECHANICAL	8 - 15 & 16	1
RB2-6448-000CN	ARM, SENSOR	8 - 28	5
RB2-6450-000CN	SPRING, LEAF	8 - 28	6
RB2-6452-000CN	CROSSMEMBER	8 - 28	7
RB2-6453-000CN	COVER, SENSOR	8 - 28	8
RB2-6469-000CN	PLATE, END	8 - 30	1
RC1-0939-000	PAD, SEPARATION	8 - 20 & 21	7
RC1-0954-000CN	PAD, SEPARATION	8 - 19	3
RC1-1038-000CN	DAMPER UNIT, MP PICK-UP	8 - 13	39
RC1-1049-000CN	HOLDER, SENSOR	8 - 14	1
RC1-1050-000CN	LENS	8 - 14	2
RC1-1148-000CN	LEVER, SWING LOCK, RIGHT	8 - 13	1
RC1-1149-000CN	SPRING, TENSION	8 - 13	2
RC1-1151-000CN	PLATE, CONTACT	8 - 14	3
RC1-1152-000CN	PLATE, CONTACT	8 - 14	4
RC1-1153-000CN	PLATE, CONTACT	8 - 14	5
RC1-1155-000CN	PLATE, CONTACT	8 - 14	6
RC1-1156-000CN	GUIDE, ROD, LEFT	8 - 10	1
RC1-1158-000CN	ROD, FRONT COVER, LEFT	8 - 7	2
RC1-1159-000CN	ROD, FRONT COVER, RIGHT	8 - 7	3
RC1-1169-000CN	ARM, DRUM LOCK, LEFT	8 - 14	7
RC1-1170-000CN	ARM, DRUM LOCK, LEFT	8 - 10	14
RC1-1175-000CN	ARM, INTERLOCK SWITCH	8 - 8	5
RC1-1176-000CN	LEVER, INTERLOCK SWITCH	8 - 7	4

Table 8-29 Numerical parts list (continued)

Part number	Description	Figure	Ref
RC1-1177-000CN	SPRING, GROUNDING	8 - 10	3
RC1-1181-000CN	GUIDE, CABLE	8 - 11	1
RC1-1184-000CN	SPRING, TENSION	8 - 10	15
RC1-1185-000CN	SPRING, TENSION	8 - 14	10
RC1-1186-000CN	MOUNT, REGISTRATION CLUTCH	8 - 9	14
RC1-1213-000CN	GEAR, 86T/23T	8 - 11	2
RC1-1218-000CN	BUSHING	8 - 13	5
RC1-1224-000CN	GEAR, 50T/90T	8 - 9	19
RC1-1229-000CN	GEAR, 90T/28T	8 - 13	7
RC1-1230-000CN	GEAR, 74T	8 - 13	8
RC1-1231-000CN	GEAR, 59T	8 - 13	4
RC1-1233-000CN	GEAR, 69T	8 - 13	9
RC1-1234-000CN	GEAR, 29T	8 - 13	10
RC1-1242-000CN	PLATE, REINFORCEMENT	8 - 13	11
RC1-1243-000CN	BUSHING	8 - 12	1
RC1-1243-000CN	BUSHING	8 - 13	12
RC1-1244-000CN	BUSHING	8 - 13	13
RC1-1246-000CN	ARM, DRUM LOCK, RIGHT	8 - 13	14
RC1-1247-000CN	LEVER, ITB COUPLIN, 1	8 - 7	5
RC1-1248-000CN	LEVER, I.T.B. COUPLING	8 - 13	15
RC1-1252-000CN	GEAR, 120T/17T	8 - 10	7
RC1-1259-000CN	SPRING, TENSION	8 - 13	16
RC1-1260-000CN	SPRING, TENSION	8 - 13	17
RC1-1270-000CN	BUSHING	8 - 9	4
RC1-1277-000CN	PLATE, DRIVE	8 - 13	19
RC1-1281-000CN	GEAR, 39T	8 - 9	23
RC1-1283-000CN	GEAR, 26T/47T	8 - 9	24
RC1-1284-000CN	GEAR, 31T/19T	8 - 9	1
RC1-1286-000CN	GEAR, 45T/25T	8 - 9	25
RC1-1287-000CN	HOLDER, GEAR	8 - 9	26
RC1-1288-000CN	GEAR, 38T	8 - 9	27
RC1-1291-000CN	GEAR, 104T/25T	8 - 9	28
RC1-1292-000CN	SPRING, TENSION	8 - 9	29
RC1-1294-000CN	GEAR, 43T	8 - 9	17
RC1-1295-000CN	GEAR, 27T	8 - 9	18
RC1-1298-000CN	GEAR, 26T/22T/20T	8 - 9	31
RC1-1300-000CN	GEAR, 54T/17T	8 - 9	2

Table 8-29   Numerical parts list (continued)

Part number	Description	Figure	Ref
RC1-1302-000CN	GEAR, 79T	8 - 9	3
RC1-1306-000CN	GUIDE, CABLE	8 - 15 & 16	18
RC1-1310-000CN	BUSHING	8 - 13	21
RC1-1328-000CN	SPRING, TORSION	8 - 12	5
RC1-1329-000CN	HOLDER, SENSOR	8 - 12	6
RC1-1330-000CN	FLAG, SENSOR	8 - 12	7
RC1-1342-000CN	GUIDE, HARNESS	8 - 8	12
RC1-1343-000CN	HOLDER, MEMORY CONTROLLER PCB	8 - 12	8
RC1-1345-000CN	DUCT, FAN	8 - 10	10
RC1-1347-000CN	ROD, POWER SWITCH	8 - 11	10
RC1-1348-000CN	PLATE, DC CONTROLLER SUPPORT	8 - 11	9
RC1-1349-000CN	PLATE, SHIELD	8 - 12	9
RC1-1350-000CN	DUCT, AIR, FRONT	8 - 10	11
RC1-1353-000CN	COVER, MOTOR	8 - 9	5
RC1-1354-000CN	DUCT, AIR	8 - 11	8
RC1-1355-000CN	PLATE, MOUNTING	8 - 9	9
RC1-1362-000CN	ARM, DRUM LOCK, RIGHT	8 - 13	22
RC1-1407-000CN	SPRING, TENSION	8 - 7	11
RC1-1433-000CN	CLUTCH, MECHANICAL	8 - 20 & 21	4
RC1-1456-000CN	LEVER, SENSOR	8 - 20 & 21	5
RC1-1464-000CN	SPRING, TORSION	8 - 20 & 21	6
RC1-1488-000CN	COVER, CONNECTOR	8 - 9	6
RC1-1491-000CN	GUIDE, CASSETTE, LEFT	8 - 15 & 16	6
RC1-1492-000CN	GUIDE, CASSETTE, RIGHT (HP3500)	8 - 15 & 16	24
RC1-1493-000CN	GEAR, 20T	8 - 9	30
RC1-1496-000CN	HOLDER, SENSOR	8 - 15 & 16	2
RC1-1497-000CN	GEAR, 25T	8 - 9	7
RC1-1500-000CN	SHAFT, DRIVE	8 - 9	8
RC1-1508-000CN	SPRING, LEAF (HP3500)	8 - 15 & 16	23
RC1-1509-000CN	PLATE, GROUNDING (HP3500)	8 - 15 & 16	22
RC1-1511-000CN	MOUNT, SOLENOID (HP3500)	8 - 15 & 16	7
RC1-1514-000CN	LEVER, SENSOR	8 - 15 & 16	3
RC1-1515-000CN	SPRING, TENSION	8 - 8	13
RC1-1535-000CN	ROLLER, PICK-UP	8 - 20 & 21	8
RC1-1537-000CN	SPRING, GROUNDING	8 - 13	23
RC1-1545-000CN	ARM, DRUM LOCK, RIGHT	8 - 13	24
RC1-1546-000CN	STOPPER, ARM, RIGHT	8 - 13	25

Table 8-29 Numerical parts list (continued)

Part number	Description	Figure	Ref
RC1-1548-000CN	SPRING, TENSION	8 - 13	27
RC1-1555-000CN	TRAY, AUXILIARY	8 - 6	14
RC1-1562-000CN	COVER, DIMM	8 - 6	15
RC1-1563-000CN	COVER, RIGHT	8 - 6	7
RC1-1565-000CN	COVER, REAR	8 - 6	8
RC1-1566-000CN	COVER, JAM CLEARING	8 - 6	9
RC1-1572-000CN	DAMPER UNIT, HINGE, LEFT	8 - 8	9
RC1-1573-000CN	DAMPER UNIT, HINGE, RIGHT	8 - 8	10
RC1-1574-000CN	COVER, MP TRAY	8 - 7	8
RC1-1575-000CN	LINK, MP HINGE, LEFT	8 - 7	6
RC1-1576-000CN	LINK, MP HINGE, RIGHT	8 - 7	7
RC1-1593-000CN	BLOCK, TEST PRINT BUTTON	8 - 11	12
RC1-1600-000CN	PLATE, LOGO, RIGHT	8 - 6	10
RC1-1602-000CN	PLATE, JOINT, LEFT	8 - 11	3
RC1-1603-000CN	PLATE, JOINT, RIGHT	8 - 8	1
RC1-1605-000CN	COVER, SCREW	8 - 8	2
RC1-1607-000CN	STOPPER, HINGE, RIGHT	8 - 8	15
RC1-1613-000CN	GUIDE, DUPLEXING (HP3500)	8 - 15 & 16	26
RC1-1622-000CN	ARM, DRUM LOCK, LEFT	8 - 14	11
RC1-1623-000CN	ARM, DRUM LOCK, LEFT	8 - 14	12
RC1-1624-000CN	SCREW, S, M3X8	n/a	n/a
RC1-1625-000CN	STRAP, DAMPER	8 - 14	13
RC1-1626-000CN	STOPPER, ARM, LEFT	8 - 14	14
RC1-1627-000CN	STOPPER, ARM, LEFT	8 - 14	15
RC1-1628-000CN	SPRING, TENSION	8 - 10	16
RC1-1629-000CN	PLATE, GROUNDING	8 - 13	28
RC1-1630-000CN	BUSHING	8 - 9	11
RC1-1637-000CN	PLATE, CONNECTING	8 - 15 & 16	19
RC1-1640-000CN	COVER, LASER SHUTTER	8 - 12	10
RC1-1641-000CN	RAIL, SWING, LEFT REAR	8 - 14	17
RC1-1642-000CN	RAIL, SWING, LEFT FRONT	8 - 8	4
RC1-1647-000CN	LEVER, SWING LOCK, LEFT	8 - 14	18
RC1-1648-000CN	SPRING, TENSION	8 - 14	19
RC1-1649-000CN	PLATE, GROUNDING	8 - 9	12
RC1-1662-000CN	RAIL, SWING, RIGHT REAR	8 - 13	29
RC1-1665-000CN	COVER, CASSETTE	8 - 9	32
RC1-2165-000CN	FOOT	8 - 28	13

Table 8-29 Numerical parts list (continued)

Part number	Description	Figure	Ref
RC1-2175-000CN	PLATE, GROUNDING	8 - 28	9
RC1-2178-000CN	COVER, FRONT	8 - 28	1
RC1-2179-000CN	COVER, REAR	8 - 28	2
RC1-2180-000CN	COVER, LEFT	8 - 28	3
RC1-2182-000CN	BUSHING	8 - 28	10
RC1-2191-000CN	SPRING, COMPRESSION	8 - 30	2
RC1-2192-000CN	BUSHING	8 - 28	11
RC1-2235-000CN	BASE, CONTROLLER (HP3500)	8 - 11	7
RC1-2236-000CN	COVER, CONTROLLER (HP3500)	8 - 11	6
RC1-2237-000CN	COVER, LOWER FRAME (HP3500)	8 - 15 & 16	14
RC1-2280-000CN	PLATE, GROUNDING	8 - 28	12
RC1-2294-000CN	PLATE, GROUNDING	8 - 13	30
RC1-2296-000CN	COVER, HINGE	8 - 6	11
RC1-2318-000CN	TRAY, EXPANSION, 1	8 - 7	9
RC1-2319-000CN	TRAY, EXPANSION, 2	8 - 7	10
RC1-2322-000CN	GUIDE, CABLE	8 - 15 & 16	4
RC1-2323-000CN	GUIDE, CABLE	8 - 15 & 16	5
RC1-2330-000CN	PAD, CUSHION	8 - 13	38
RC1-2330-000CN	PAD, CUSHION	8 - 14	16
RC1-2331-000CN	PAD, CUSHION	8 - 14	20
RC1-2334-000CN	GUIDE, CABLE	8 - 9	22
RC1-2339-000CN	STOPPER, ARM, RIGHT	8 - 13	32
RC1-2364-000CN	COVER, FMTR CABLE (HP3500)	8 - 11	13
RC1-2379-000CN	PLATE, REGIST. CLUTCH SHIELD	8 - 9	33
RC1-2385-000CN	PLATE, CLUTCH SHIELD	8 - 9	13
RC1-2422-000CN	LABEL, HIGH TEMP. CAUTION	8 - 11	14
RC1-2428-000CN	SUPPORT, FOOT, REAR	8 - 15 & 16	15
RC1-2437-000CN	SHEET, CABLE RETAINING	8 - 10	5
RC1-3240-000CN	GEAR, 74T	8 - 13	6
RK2-0017-000CN	FAN (HP3700)	8 - 10	12
RK2-0137-000CN	MOTOR	8 - 13	18
RK2-0138-000CN	MOTOR	8 - 13	20
RK2-0139-000CN	MOTOR	8 - 13	3
RK2-0141-000CN	SOLENOID	8 - 20 & 21	12
RK2-0143-000CN	SOLENOID (HP3500)	8 - 15 & 16	25
RK2-0145-000CN	SOLENOID	8 - 20 & 21	2
RK2-0150-000CN	MICROSWITCH	8 - 11	16

Table 8-29 Numerical parts list (continued)

Part number	Description	Figure	Ref
RK2-0153-000CN	FAN (HP3500)	8 - 10	12
RK2-0157-000CN	LOW-VOLTAGE POWER SUPPLY PCB 110-127V	8 - 4	4
RK2-0158-000CN	LOW-VOLTAGE POWER SUPPLY PCB 220-240V	8 - 4	4
RK2-0162-000CN	CABLE, FFC (HP3700)	8 - 11	19
RK2-0163-000CN	CABLE, TM FFC	8 - 11	20
RK2-0164-000CN	CABLE, LASER FFC, 1	8 - 11	23
RK2-0165-000CN	CABLE, LASER FFC, 2	8 - 11	22
RK2-0176-000CN	CLUTCH, ELECTROMAGNETIC	8 - 18	1
RK2-0179-000CN	CABLE, FFC(HP3500)	8 - 11	19
RK2-0247-000CN	CLUTCH, ELECTROMAGNETIC	8 - 9	39
RK2-0248-000CN	CLUTCH, ELECTROMAGNETIC	8 - 17	1
RK2-1057-000CN	LOW-VOLTAGE PCB ASS'Y (110-127V)	8 - 9	20
RK2-1058-000CN	LOW-VOLTAGE PCB ASS'Y(220-240V)	8 - 9	20
RL1-0189-000CN	PLATE	8 - 13	33
RL1-0193-000CN	PLATE, PAPER FEEDER DRIVE	8 - 9	21
RL1-0203-000CN	MOUNT, SOLENOID (HP3700)	8 - 15 & 16	7
RL1-0215-000CN	STOPPER, FRONT HINGE, LEFT	8 - 8	14
RL1-0217-000CN	SUPPORT, PICK-UP GEAR	8 - 9	34
RM1-0415-000CN	IMAGE DRIVE ASS'Y	8 - 17	n/a
RM1-0419-000CN	DEV. DISENGAGING DRIVE ASS'Y	8 - 10	4
RM1-0434-000CN	DEVELOPING DISENGAGING ASS'Y	8 - 18	n/a
RM1-0437-000CN	RIGHT SWING FRAME ASS'Y	8 - 25	n/a
RM1-0438-000CN	LOCK GUIDE RIGHT ASS'Y	8 - 8	6
RM1-0439-000CN	LEFT SWING FRAME ASS'Y	8 - 26	n/a
RM1-0440-000CN	DRAWER CROSSMEMBER ASS'Y	8 - 8	7
RM1-0441-000CN	SWING ROD LEFT ASS'Y	8 - 10	8
RM1-0442-000CN	SWING ROD RIGHT ASS'Y	8 - 10	9
RM1-0443-000CN	FRONT ROD LEFT ASS'Y	8 - 6	1
RM1-0444-000CN	FRONT ROD RIGHT ASS'Y	8 - 6	2
RM1-0445CN	TRANSFER CONTACT ASS'Y	8 - 8	11
RM1-0446-000CN	DEVELOPING CONTACT ASS'Y	8 - 8	8
RM1-0449-000CN	PICK-UP/FEED ASS'Y (HP3700)	8 - 20 & 21	n/a
RM1-0451-000CN	COLOR MIS-REG. SENSOR ASS'Y	8 - 20 & 21	9
RM1-0452-000CN	MEDIA SENSOR ASS'Y	8 - 20 & 21	10
RM1-0458-000CN	DUPLEX GUIDE ASS'Y (HP3700)	8 - 15 & 16	18
RM1-0459-000CN	FOOT ASS'Y	8 - 15 & 16	9
RM1-0460-000CN	PAPER FEED ASS'Y	8 - 15 & 16	10

Table 8-29 Numerical parts list (continued)

Part number	Description	Figure	Ref
RM1-0461-000CN	DUPLEX FEED GUIDE ASS'Y (HP3700)	8 - 15 & 16	11
RM1-0462-000CN	POSITION GUIDE ASS'Y (HP3700)	8 - 15 & 16	12
RM1-0463-000CN	FRONT COVER ASS'Y	8 - 7	n/a
RM1-0464-000CN	MULTI-PURPOSE TRAY ASS'Y	8 - 7	1
RM1-0465-000CN	TOP COVER ASS'Y	8 - 6	3
RM1-0466-000CN	LEFT COVER ASS'Y	8 - 6	4
RM1-0467-000CN	LEFT FRONT COVER ASS'Y	8 - 6	5
RM1-0468-000CN	FACE-UP TRAY ASS'Y	8 - 6	6
RM1-0469-000CN	FACE-DOWN DELIVERY ASS"Y	8 - 23	n/a
RM1-0470-000CN	CASSETTE	8 - 19	n/a
RM1-0475-000CN	CABLE, MAIN (HP3700)	8 - 11	24
RM1-0476-000CN	CABLE, OPTION CONNECTING (HP3700)	8 - 15 & 16	20
RM1-0477-000CN	CABLE, FD DELIVERY SENSOR	8 - 11	17
RM1-0478-000CN	CABLE, FRAME, LOWER (HP3700)	8 - 15 & 16	17
RM1-0482-000CN	CABLE, CPR CONNECTING	8 - 9	36
RM1-0483-000CN	CABLE, FORMATTER POWER SUPPLY (HP3700)	8 - 9	37
RM1-0485-000CN	CABLE, HIGH VOLTAGE	8 - 8	16
RM1-0488-000CN	CABLE, LEFT FRONT	8 - 9	38
RM1-0489-000CN	CABLE, OPERATION PANEL	8 - 6	13
RM1-0493-000CN	CABLE, ENVIRONMENT SENSOR	8 - 10	6
RM1-0495-000CN	CABLE, MAIN (HP3500)	8 - 11	24
RM1-0496-000CN	CABLE, OPTION CONNECTING (HP3500)	8 - 15 & 16	20
RM1-0497-000CN	CABLE, FRAME, LOWER (HP3500)	8 - 15 & 16	17
RM1-0498-000CN	CABLE, FORMATTER POWER SUPPLY (HP3500)	8 - 9	37
RM1-0505-000CN	HIGH-VOLTAGE PCB ASS'Y	8 - 8	3
RM1-0505-000CN	HIGH-VOLTAGE POWER SUPPLY PCBs	8 - 4	3
RM1-0506-000CN	DC CONTROLLER PCB ASS'Y (HP3700)	8 - 11	4
RM1-0506-000CN	DC CONTROLLER PCB HP3700	8 - 4	1
RM1-0508-000CN	MEMORY CONTROLLER PCB	8 - 4	2
RM1-0508-000CN	MEMORY CONTROLLER PCB ASS'Y	8 - 12	4
RM1-0509-000CN	SENSOR UNIT, TCU FULL DETECT	8 - 14	9
RM1-0510-000CN	DC CONTROLLER PCB ASS'Y (HP3500)	8 - 11	4
RM1-0510-000CN	DC CONTROLLER PCB HP3500	8 - 2	1
RM1-0511-000CN	OPERATION PANEL ASSY.	8 - 6	12
RM1-0511-000NC	CONTROL PANEL PCB	8 - 4	6
RM1-0701-000CN	PAPER PICK-UP DRIVE ASS'Y	8 - 29	n/a
RM1-0705-000CN	CASSETTE	8 - 30	n/a

Table 8-29 Numerical parts list (continued)

Part number	Description	Figure	Ref
RM1-0707-000CN	SWING GUIDE ASS'Y	8 - 29	1
RM1-0709-000CN	SUB ROLLER ASS'Y	8 - 28	14
RM1-0731-000CN	CASSETTE PICK-UP ROLLER ASS'Y	8 - 9	15
RM1-0731-000CN	TRAY 2 PICK-UP ROLLER ASS'Y	8 - 28	17
RM1-0733-000CN	DRUM MOTOR ASS'Y	8 - 13	37
RM1-0736-000CN	CASSETTE GUIDE RIGHT ASS'Y	8 - 15 & 16	13
RM1-0737-000CN	DEVELOPING MOTOR ASS'Y	8 - 13	26
RM1-0739-000CN	SEPARATION PAD ASS'Y	8 - 20 & 21	1
RM1-0740-000CN	TRANSFER ROLLER ASS'Y	8 - 20 & 21	3
RM1-0760-000CN	PICK-UP/FEED ASS'Y (HP3500)	8 - 20 & 21	n/a
RM1-0768-000	PAPER FEEDER,500-SHEET, PCG	8 - 4	1
RM1-0768-000CN	PAPER FEEDER DRIVER PCB ASS'Y	8 - 29	2
RM1-0769-000CN	CABLE, DRAWER	8 - 28	15
RM1-0770-000CN	CABLE, SENSOR	8 - 28	16
RM1-0827-000CN	SEPARATION PAD ASS'Y	8 - 30	3
RM1-1142-000CN	LASER SCANNER ASS'Y	8 - 11	11
RS6-2021-000CN	SPRING, COMPRESSION	8 - 19	2
VS1-5057-002CN	CONNECTOR, 2P	8 - 9	41
VS1-6175-006CN	CONNECTOR, 6P	8 - 28	18
VS1-6176-006CN	CONNECTOR, 6P (HP3500)	8 - 15 & 16	21
VS1-6492-010CN	CONNECTOR, SNAP TIGHT, W	8 - 14	8
VS1-6492-016CN	CONNECTOR, 16P	8 - 13	35
VS1-6910-012CN	CONNECTOR, SNAP TIGHT	8 - 13	31
WG8-5362-000CN	PHOTO-INTERRUPTER, TLP1241	8 - 12	2
WG8-5362-000CN	PHOTO-INTERRUPTER, TLP1241	8 - 14	21
WG8-5362-000CN	PHOTO-INTERRUPTER, TLP1241	8 - 20 & 21	1
WG8-5362-000CN	PHOTO-INTERRUPTER, TLP1241	8 - 22	1
WG8-5362-000CN	PHOTO-INTERRUPTER, TLP1241	8 - 23	1
WG8-5362-000CN	PHOTO-INTERRUPTER, TLP1241 (HP3500)	8 - 15 & 16	16
WG8-5362-000CN	PHOTO-INTERRUPTER, TLP1241 (HP3700)	8 - 15 & 16	16
WG8-5571-000CN	PHOTO-INTERRUPTER	8 - 28	19
WP2-5156-000CN	SENSOR UNIT, HUMIDITY	8 - 10	2
WT2-0507-000CN	CLAMP, CABLE	8 - 11	15
WT2-5738-000CN	CLAMP,CABLE	8 - 11	18
WT2-5754-000CN	CLAMP, CABLE	8 - 11	21
WT2-5841-000CN	CLAMP, CABLE	8 - 9	40
WT2-5841-000CN	CLAMP, CABLE	8 - 10	13

Table 8-29 Numerical parts list (continued)

Part number	Description	Figure	Ref
WT2-5841-000CN	CLAMP, CABLE	8 - 12	3
XA9-1420-000CN	SCREW, W/WASHER, M3X12	n/a	n/a
XA9-1445-000CN	SCREW, TP	n/a	n/a
XA9-1450-000CN	SCREW, W/WASHER,M3X6	n/a	n/a
XA9-1450-000NC	SCREW, TP, M4X6	n/a	n/a
XA9-1452-000CN	SCREW, RS, M3X6	n/a	n/a
XA9-1461-000CN	SCREW W/WASHER, M3X8	n/a	n/a
XA9-1477-000CN	SCREW, W/WASHER, RS, M3X6	n/a	n/a
XA9-1499-000CN	SCREW, RS, M3X8	n/a	n/a
XA9-1500-000CN	SCREW, P, M4 (500 sheet feeder)	n/a	n/a
XB4-7300-805CN	SCREW,TAPPING,TRUSS HEAD,M4X10	n/a	n/a
XB4-7401-005CN	SCREW, STEPPED, M4X4.5	n/a	n/a
XD2-2100-602CN	RING, GRIP	8 - 13	40
XD2-2300-402CN	SE RING (HP3500)	8 - 6	16
XD9-0120-000CN	PIN, DOWEL	8 - 13	34
XD9-0134-000CN	E-RING	8 - 9	16
XD9-0135-000CN	RING, E	8 - 18	2
XD9-0136-000CN	E-RING	8 - 9	10
XD9-0136-000CN	RING, E	8 - 13	36
XD9-0137-000CN	E-RING	8 - 9	35

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