LASERJET PRO 500 COLOR MFP

Troubleshooting Manual

M570

HP LaserJet Enterprise 500 color MFP M575 Printers

Troubleshooting Manual

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Conventions used in this guide

TIP: Tips provide helpful hints or shortcuts.

NOTE: Notes provide important information to explain a concept or to complete a task.

CAUTION: Cautions indicate procedures that you should follow to avoid losing data or damaging the product.

WARNING! Warnings alert you to specific procedures that you should follow to avoid personal injury, catastrophic loss of data, or extensive damage to the product.

Table of contents

List of tables

List of figures

1 Theory of operation

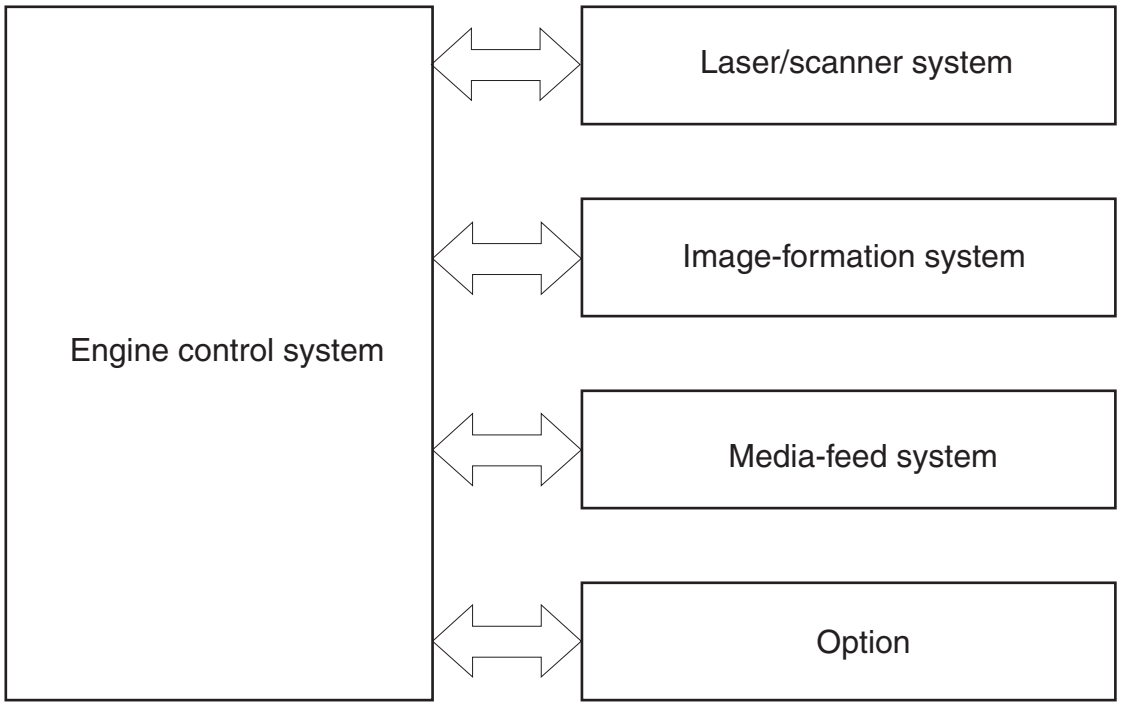
Basic operation

The product routes all high-level processes through the formatter, which stores font information, processes the print image, and communicates with the host computer.

The basic product operation comprises the following systems:

- The engine-control system, which includes the power supply and the DC controller printed circuit assembly (PCA)
- The laser/scanner system, which forms the latent image on the photosensitive drum
- The image-formation system, which transfers a toner image onto the paper
- The media feed system, which uses a system of rollers and belts to transport the paper through the product
- Option (optional paper feeder)

Figure 1-1 Relationship between the main product systems



Sequence of operation

The DC controller PCA controls the operating sequence, as described in the following table.

NOTE: The terms fusing and fixing are synonymous.

Table 1-1 Sequence of operation

Period	Duration	Description
Waiting	From the time the power is turned on, the door is closed, or when the product exits Sleep mode until the product has fully initialized and is ready for printing	• Heats the fuser sleeve • Pressurizes the fuser pressure roller • Detects the toner cartridges • Detects the home position for the primary transfer roller and the developing unit • Cleans the secondary transfer roller
Standby	From the end of the waiting sequence or the last rotation until the formatter receives a print command or until the product is turned off	• Is fully initialized and is ready to print. • Enters Sleep mode after the specified length of time • Calibrates if it is time for an automatic calibration
Initial rotation	From the time the formatter receives a print command until the paper enters the paper path	• Activates the high-voltage power supply • Prepares each laser/scanner unit • Warms the fuser to the correct temperature
Printing	From the time the first sheet of paper enters the paper path until the last sheet has passed through the fuser	• Forms the image on the photosensitive drums • Transfers the toner to the paper • Fuses the toner image onto the paper • Performs calibration after a specified number of pages
Last rotation	From the time the last sheet of paper exits the fuser until the motors stop rotating	• Moves the last printed sheet into the output bin • Stops each laser/scanner unit • Discharges the bias from the high-voltage power supply

Formatter-control system

The formatter is responsible for the following procedures:

- Controlling sleep mode
- Receiving and processing print data from the various product interfaces
- Monitoring control panel functions and relaying product-status information (through the control panel and the network or bidirectional interface)
- Developing and coordinating data placement and timing with the DC controller PCA
- Storing font information
- Communicating with the host computer through the network or the bidirectional interface

The formatter receives a print job from the network or bidirectional interface and separates it into image information and instructions that control the printing process. The DC controller PCA synchronizes the image-formation system with the paper-input and -output systems, and then signals the formatter to send the print-image data.

The formatter also provides the electrical interface and mounting locations for an additional DIMM.

Sleep delay

This feature conserves power after the product has been idle for an adjustable period of time. When the product is in Sleep Delay, the control panel backlight is turned off, but the product retains all settings, downloaded fonts, and macros. The default setting is for Sleep Delay to be enabled, and the product enters Sleep Delay after a 15-minute idle time.

The product exits Sleep Delay and enters the warm-up cycle when any of the following events occur:

- A print job, valid data, or a PML or PJL command is received
- A control panel button is pressed
- A cover is opened
- A paper tray is opened

NOTE: Product error messages override the sleep function. The product enters Sleep Delay at the appropriate time, but the error message continues to appear.

Input/output

The product has three I/O interfaces:

- Hi-Speed USB 2.0
- 10/100/1000 Ethernet LAN connection
- Easy-access USB printing (no computer required)

CPU

The formatter incorporates an 800 MHz processor.

Memory

The random access memory (RAM) on the formatter printed circuit assembly (PCA) contains the page, I/O buffers, and the font storage area. It stores printing and font information received from the host system, and can also serve to temporarily store a full page of print-image data before the data is sent to the print engine.

NOTE: If the product encounters a problem when managing available memory, a clearable warning message appears on the control panel display.

Firmware

The firmware is contained on the formatter. A remote firmware upgrade process is used to overwrite and upgrade the firmware on the formatter.

Nonvolatile memory

The product uses nonvolatile random access memory (NVRAM) to store device and user configuration settings. The contents of NVRAM are retained when the product is turned off or disconnected.

PJL overview

The printer job language (PJL) is an integral part of configuration, in addition to the standard printer command language (PCL). With standard cabling, the product can use PJL to perform a variety of functions.

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

PML

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

Control panel

The control panel is a capacitive touchscreen and adjustable viewing angle.

The control panel has a diagnostic mode to allow testing of the touchscreen. The control panel does not require calibration.

USB flash drive

The product features printing from a USB flash drive. The product prints the following file types from the USB flash drive.

- PDF
- RGB JPEG

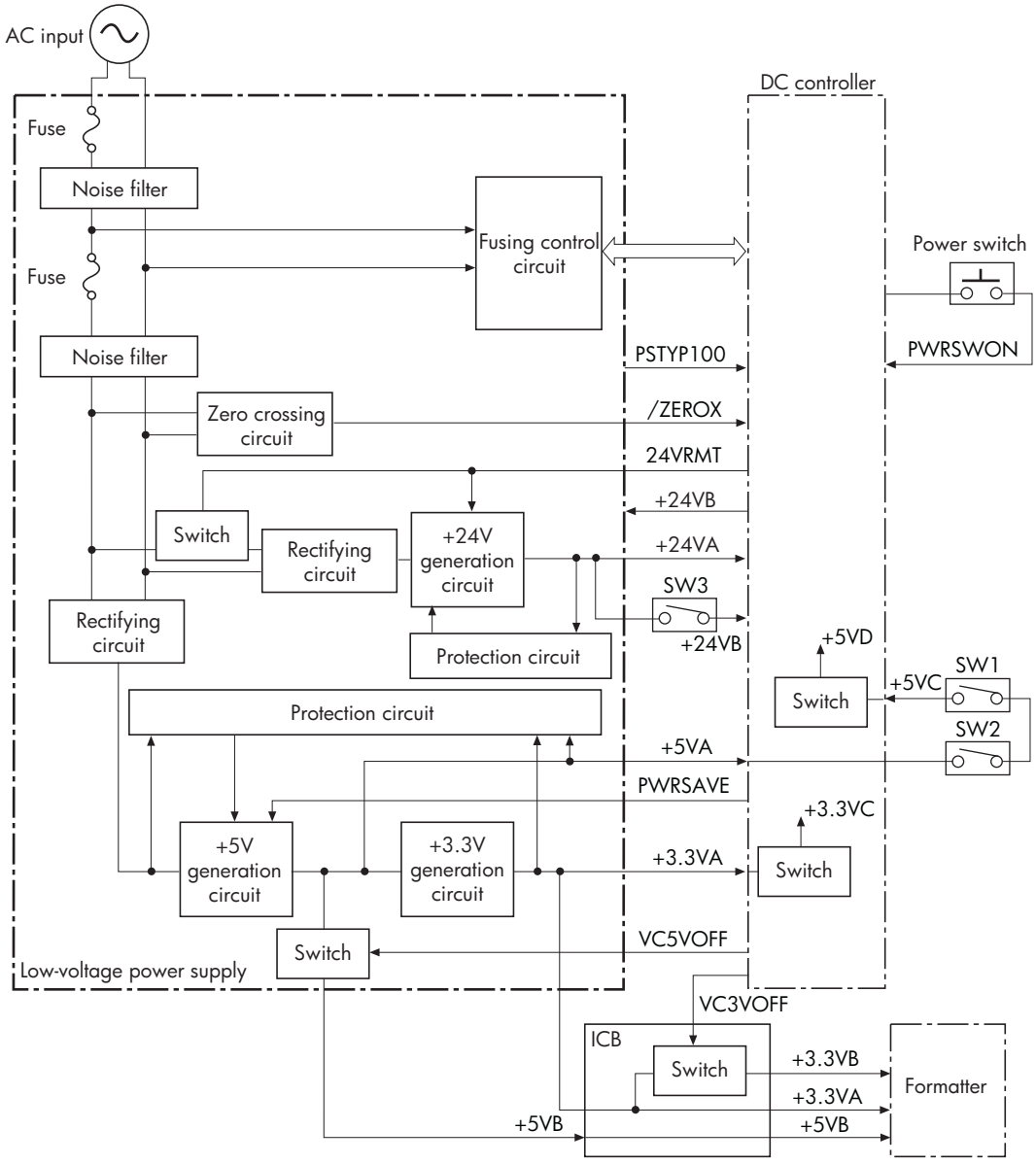
When a USB flash drive is inserted into the front of the product, the control panel will display the USB Flash Drive menu. The files on the USB flash drive can be accessed from the control panel using the touchscreen. Any RGB JPEG or PDF files on the USB flash drive can be printed directly from the product control panel.

Engine-control system

The engine-control system receives commands from the formatter and interacts with the other main systems to coordinate all product functions. The engine-control system consists of the following components:

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

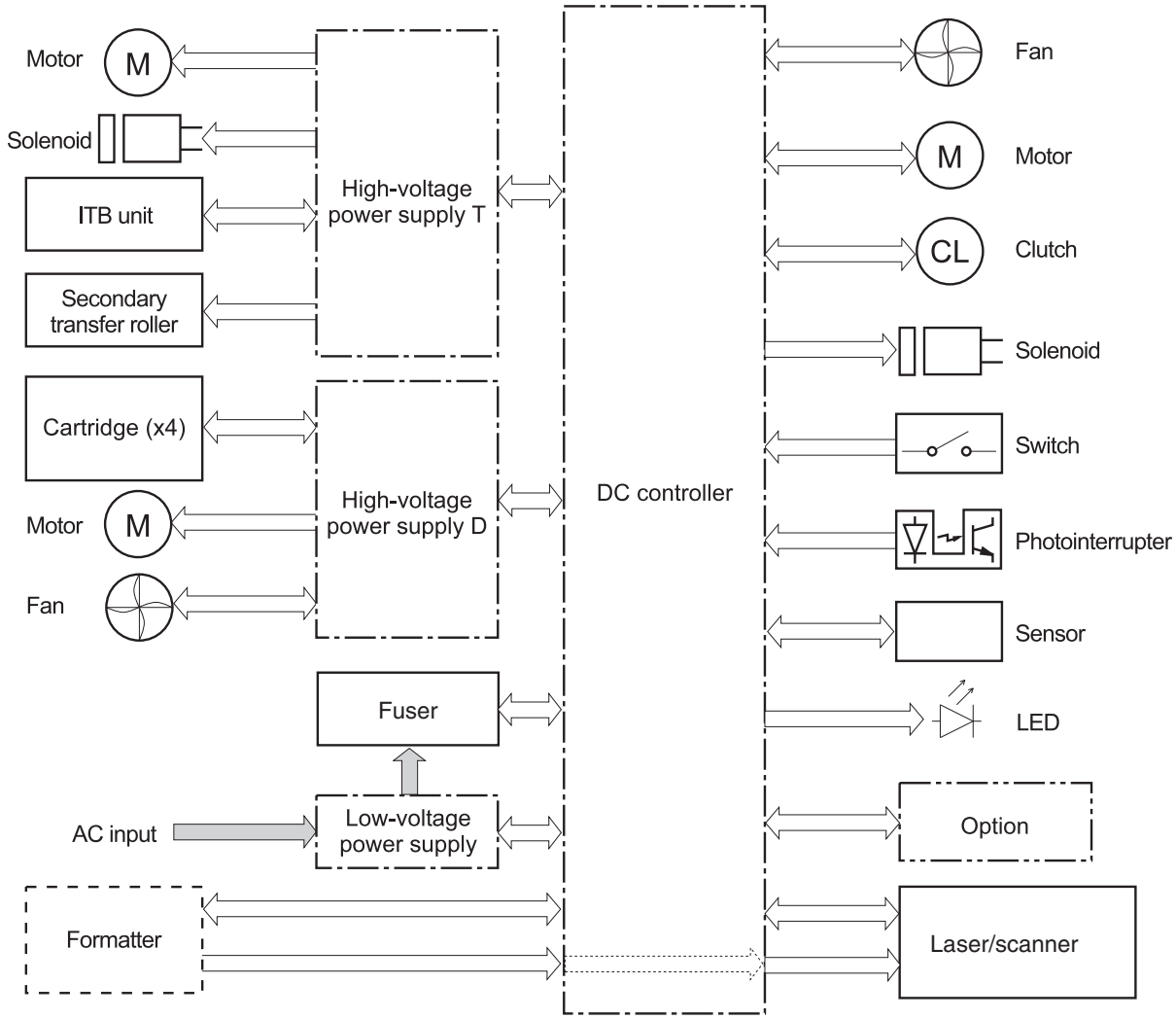
Figure 1-2 Engine-control system



DC controller

The DC controller controls the operational sequence of the printer.

Figure 1-3 DC controller block diagram



Solenoids

Table 1-2 Solenoids

Component abbreviation	Component name
SL1	Primary transfer roller disengagement solenoid
SL2	Duplex reverse solenoid
SL3	Multipurpose-tray pickup solenoid
SL4	Tray pickup solenoid

Clutches

Component abbreviation	Component name
CL1	Duplex re-pickup clutch

Switches

Table 1-3 Switches

Component abbreviation	Component name
SW1, SW2	5V interlock switch
SW3	24V interlock switch
SW4	Power switch
SW100	Test print switch

Sensors

Table 1-4 Sensors

Component abbreviation	Component name
SR1	Drum home position sensor 1
SR2	Drum home position sensor 2
SR3	Drum home position sensor 3
SR5	Fuser (fixing) delivery sensor
SR6	Delivery tray media full sensor
SR7	Fuser (fixing) pressure release sensor
SR8	TOP (top of page) sensor
SR9	Tray-media-stack surface sensor
SR11	Developing home position sensor
SR13	Tray presence sensor
SR14	Loop sensor 1
SR15	Loop sensor 2
SR17	Primary-transfer-roller disengagement sensor
SR20	Tray-media presence sensor
SR21	MP-tray-media-presence sensor
SR22	Duplex re-pickup sensor
	OHT sensor (in)
	OHT sensor (out)
	RD sensor (front)
	RD sensor (rear)
	Environmental sensor (temperature and humidity)
	Yellow toner-level sensor
	Magenta toner-level sensor
	Cyan toner-level sensor
	Black toner-level sensor
	Toner collection-box-full sensor
	Fuser (fixing) home-position sensor

Motors and fans

The product has 11 motors and three fans. The motors drive the components in the paper-feed and image-formation systems. The fan motors cool the inside of the product.

Table 1-5 Motors

Abbreviation	Name	Purpose	Type	Failure detection
M2	Fuser (fixing) motor	Drives the fuser (fixing) roller, the delivery roller, and the fuser (fixing) pressure roller	DC motor	Yes
M3	Drum motor 1	Drives the photosensitive drum (yellow/magenta), developing unit (yellow), and primary charging roller (yellow/magenta)	DC motor	Yes
M4	Drum motor 2	Drives the photosensitive drum (cyan), developing unit (magenta/cyan), and primary charging roller (cyan)	DC motor	Yes
M5	Drum motor 3	Drives the photosensitive drum (black), developing unit (black), and ITB drive roller, and secondary transfer roller	DC motor	Yes
M7	Lifter motor	Drives the lifter for the tray	DC motor	Yes
M8	Cyan/black scanner motor	Drives the scanner mirror in the cyan/ black laser scanner	DC motor	Yes
M9	Yellow/magenta scanner motor	Drives the scanner mirror in the yellow/ magenta laser scanner	DC motor	Yes
M10	Developing disengagement motor	Drives the developing unit disengagement	Stepping motor	No
M11	Duplex reverse motor	Drives the duplex reverse roller and duplex feed roller	Stepping motor	No

Table 1-5 Motors (continued)

Abbreviation	Name	Purpose	Type	Failure detection
M12	Residual toner-feed motor	Drives the residual toner feed screw	DC motor	Yes
M13	Pickup motor	Drives the tray pickup roller, MP tray pickup roller, feed roller, registration roller, and re-pickup roller	Stepping motor	No

Table 1-6 Fans

Abbreviation	Name	Cooling area	Type	Speed
FM1	Power supply fan	Around the power supply unit	Intake	Full/half
FM2	Cartridge fan	Around the cartridges	Intake	Full/half
FM3	Delivery fan	Around the delivery unit	Intake	Full/half

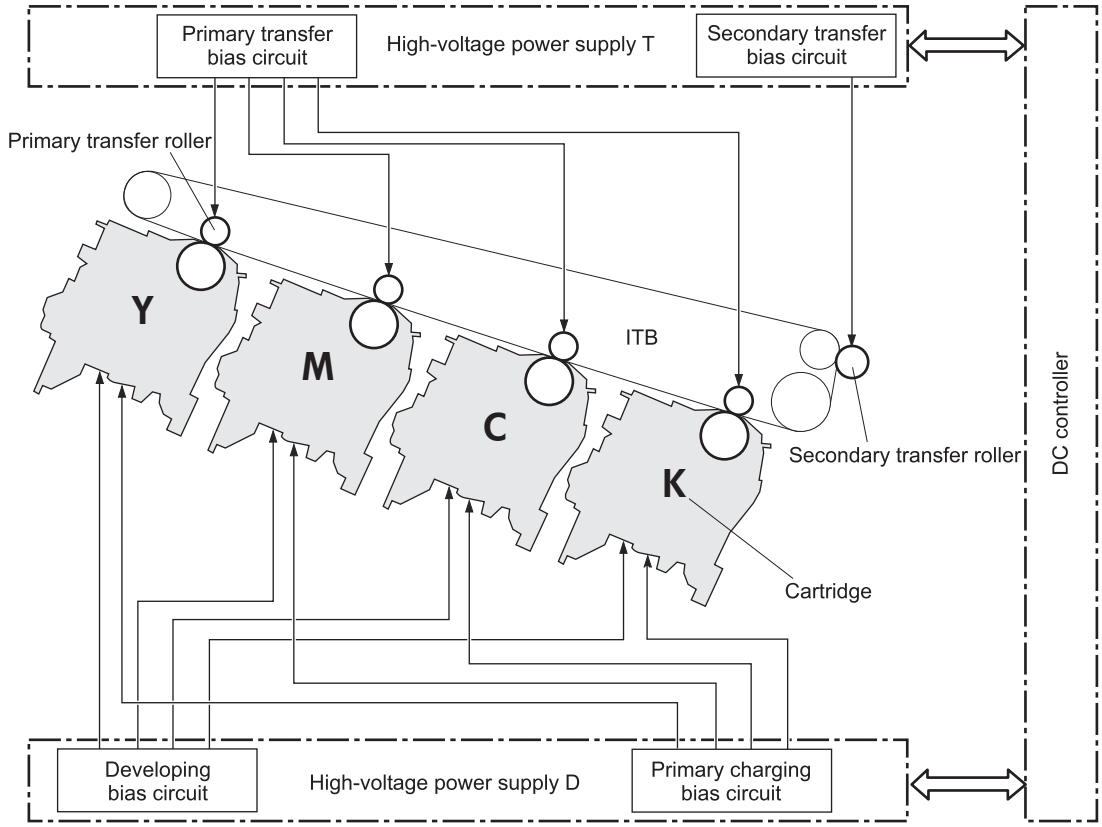
High-voltage power supply

The high-voltage power supply delivers the high-voltage biases to the following components used to transfer toner during the image-formation process:

- Primary-charging roller (in the cartridge)
- Developing roller (in the cartridge)

- Primary-transfer roller
- Secondary-transfer roller

Figure 1-4 High-voltage power supply circuits



The high-voltage power supply contains several separate circuits.

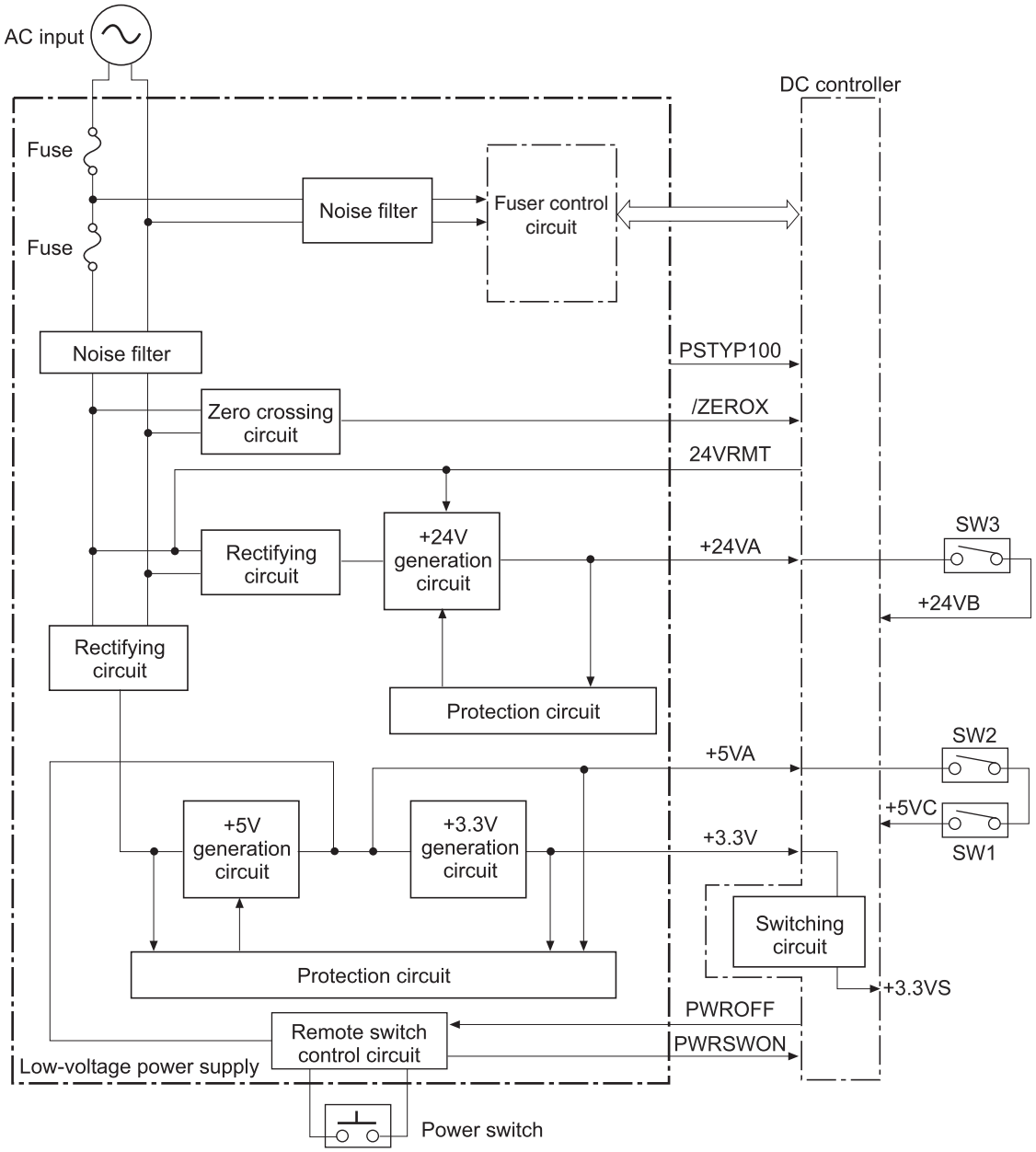
Table 1-7 High-voltage power supply circuits

Circuit	Description
Primary-charging-bias generation	DC negative bias is applied to the surface of the photosensitive drum to prepare it for image formation.
Developing-bias generation	DC negative bias adheres the toner to each photosensitive drum during the image-formation process.
Primary-transfer-bias generation	DC positive bias transfers the latent toner image from each photosensitive drum onto the ITB.
Secondary-transfer-bias generation	Two DC biases, one positive and one negative, transfer the toner from the ITB onto the paper.

Low-voltage power supply

The low-voltage power-supply circuit converts the AC power from the wall receptacle into the DC voltage that the product components use. The product has two low-voltage power-supplies for 110 Volt or 220 Volt input.

Figure 1-5 Low-voltage power-supply circuit



The low-voltage power supply converts the AC power into three DC voltages, which it then subdivides, as described in the following table.

Table 1-8 Converted DC voltages

Main DC voltage	Sub-voltage	Behavior
+24V	+24VA	Stopped during Sleep (powersave) mode
	+24VB	Interrupted when the front door or right door open Stopped during Sleep (powersave) mode
+5V	+5VA	Constantly supplied 3.3V is supplied during Sleep mode 2 or Sleep mode 3
	+5VB	3.3V is supplied during Sleep mode 2 Stopped during Sleep mode 3 Power for the formatter
	+5VC	3.3V is supplied during Sleep mode 2 or Sleep mode 3 Interrupted when the front door or right door open (SW1/SW2)
	+5VD	Stopped during Sleep mode Interrupted when the front door or right door open (SW1/SW2)
+3.3 V	3.3VA	Constantly supplied
	3.3VB	Stopped only when the power is off Power for the formatter
	3.3VC	Stopped during Sleep mode 2 or Sleep mode 3

- 24V Power Supply (24VRMT) signal: Controls supply or interruption of +24VA
- 5V Power supply (VC5VOFF) signal: Controls supply or interruption of +5VB
- 3V Power supply (VC3VOFF) signal: Controls supply or interruption of +3.3VB
- Voltage conversion (PWRSAVE) signal: Converts output voltage of +5VA, +5VB and +5VC into +3.3V

Overcurrent/overvoltage protection

The low-voltage power supply stops supplying the DC voltage to the product components whenever it detects excessive current or abnormal voltage from the power source.

The low voltage power supply has a protective circuit against overcurrent and overvoltage to prevent failures in the power supply circuit. If DC voltage is not being supplied from the low voltage power supply, the protective function might be running. In this case, turn the power off and disconnect the power cable. Do not connect and turn on the product until the root cause is found and corrected. In additon, the low voltage power supply has two fuses (FU100/FU101) to protect against overcurrent. If overcurrent flows into the AC line, the fuse blows to stop AC power.

Safety

For personal safety, the low-voltage power supply interrupts power to the fuser, the high-voltage power supply, and the motors when the front door or right door open.

The product has AC power even when the power switch is turned off because the product uses a soft power switch. Be sure to disconnect the power cable before disassembling the product.

Voltage detection

The printer detects the power supply voltage that is connected to the printer. The DC controller monitors the input voltage from the power source so it can control the voltage to the fuser.

Sleep (powersave) mode

Sleep mode reduces the power consumption of the product. There are three sleep modes depending on the power consumption. The DC controller stops or converts each power supply according to the sleep mode:

- Sleep mode 1: stops +24VA and +24VB
- Sleep mode 2: stops +24VA, +24VB and +5VD. Converts +5VA and +5VC into +3.3V
- Sleep mode 3: stops +24VA, +24VB, +5VB and +5VD. Converts +5VA and +5VC into +3.3V.

	Power consumption	**Status of power button light**	**How to enable mode**	**How to disable mode (put in fully initialized and ready to print state)**	**Relative time to fully initialized and ready to print state**
Off	Less than 0.5W	Off	Manually: press the power button Automatically: sleep timer expires	Press the power button	Longest
Auto off	Less than 1W	Blinks at 3 second intervals	Sleep timer expires	Printing or network maintenance tasks	Longer than Sleep mode
Sleep	Approximately 6W	Blinks at 3 second intervals	Sleep timer expires	Printing or network maintenance tasks	Shortest

Power supply voltage detection

The product detects the power supply voltage that is connected to the product. The DC controller monitors the POWER SUPPLY VOLTAGE (PSTYP100) signal and detects power supply voltage, whether 100V or 200V, to control the fusing operation properly.

Low-voltage power supply failure

The DC controller determines a low-voltage power supply failure and notifies the formatter when the low-voltage power supply does not supply +24V.

Power Off condition

The DC controller brings the product to a power off condition by 24V POWER SUPPLY (24VRMT) signal, 5V POWER SUPPLY (VC5VOFF) signal, 3V POWER SUPPLY (VC3VOFF) signal, and VOLTAGE CONVERSION (PWRSAVE) signal.

The +5VA and +5VC signals which are converted into +3.3V and +3.3VA, are supplied under the power off condition.

Auto on/Auto off mode

This feature conserves power after the product has been idle for an adjustable period of time. When the product is in this mode, the control panel backlight is turned off, but the product retains all settings, downloaded fonts, and macros. The setting is disabled by default. The product enters this mode after a 60-minute idle time or by touching the sleep button.

	Power consumption	**Status of power button light**	**How to enable mode**	**How to disable mode (put in fully initialized and ready to print state)**	**Relative time to fully initialized and ready to print state**	**control panel term**
Off	Less than 0.5W	Off	Manually: press the power button Automatically: sleep timer expires	Press the power button	Longest	

	Power consumption	Status of power button light	How to enable mode	How to disable mode (put in fully initialized and ready to print state)	Relative time to fully initialized and ready to print state	control panel term
Auto off	Less than 1W	Blinks at 3 second intervals	Sleep timer expires	Printing or network maintenance tasks Insert or remove paper from the ADF Open or close the scanner Open the cartridge door Touch the control panel touchscreen Press the power button	Longer than Sleep mode	Network port
Sleep (A1W)	Approximately 6W	Blinks at 3 second intervals	Sleep timer expires	Printing or network maintenance tasks Insert or remove paper from the ADF Open or close the scanner Open the cartridge door Touch the control panel touchscreen Press the power button	Shortest	All events

NOTE: Product error messages override the Sleep message. The product enters sleep mode at the appropriate time, but the error message continues to appear.

Fuser (fixing) control

The fuser-control circuit controls the fuser temperature. The product uses an on-demand fusing method.

Figure 1-6 Fuser (fixing) components

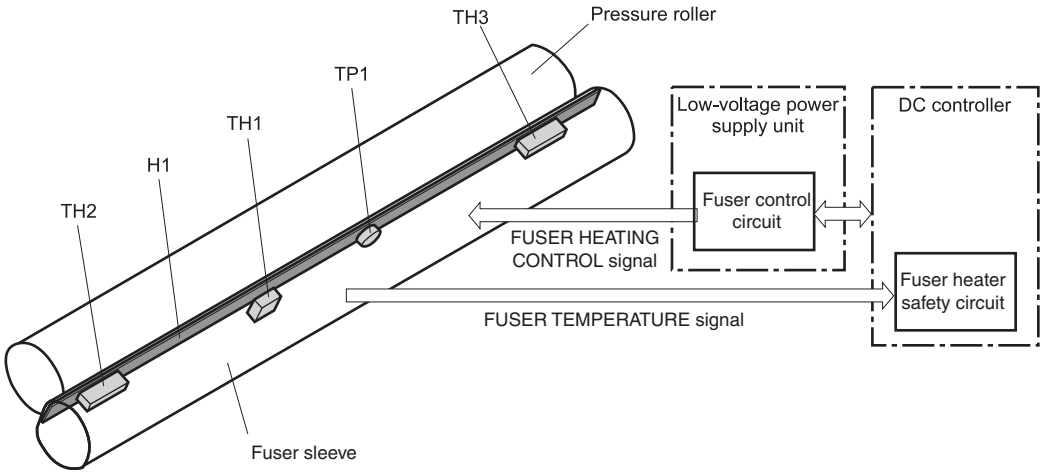


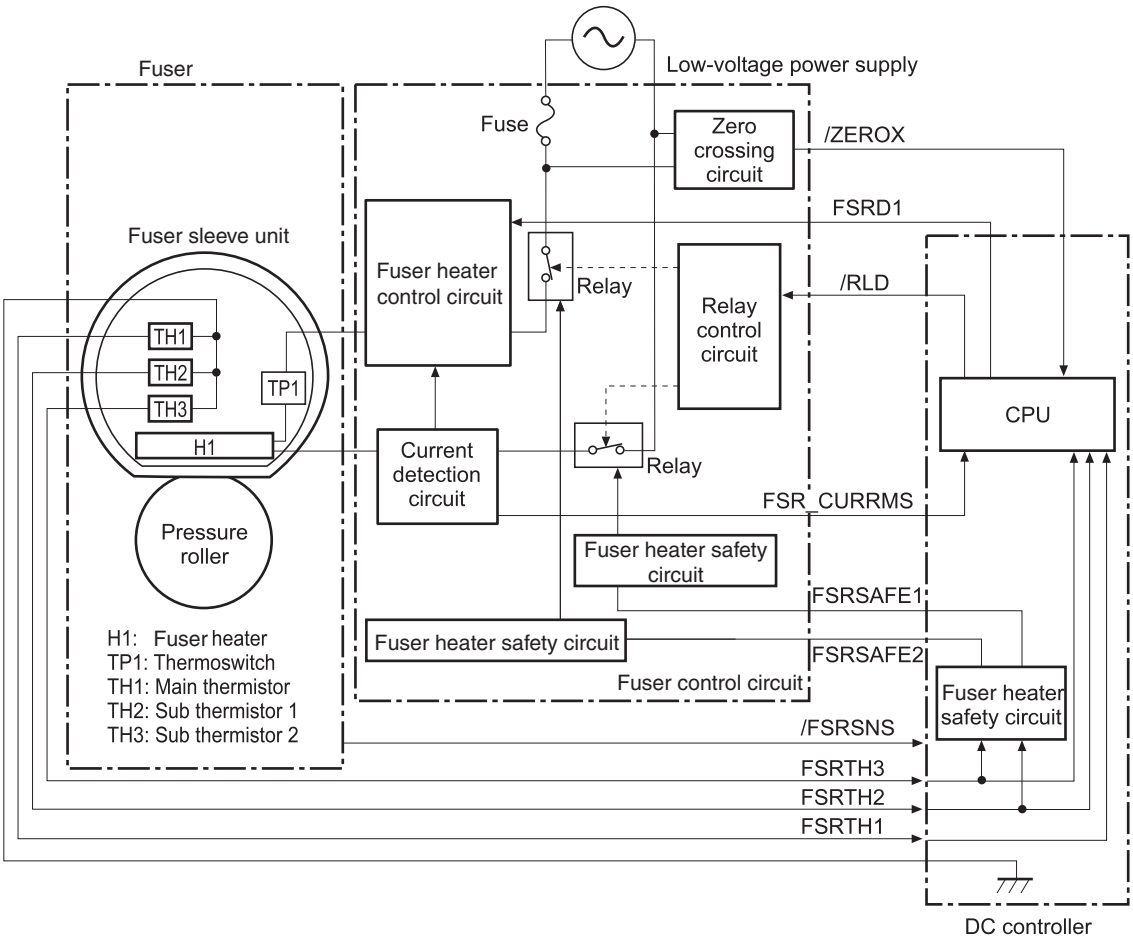
Table 1-9 Fuser (fixing) components

Type of component	Abbreviation	Name	Function
Heaters	H1	Fuser heater	Heats the fuser sleeve.
Thermistors (Contact type)	TH1	Main thermistor	The thermistor detects the center temperature of the fuser sleeve.
	TH2 TH3	Sub thermistor	Each thermistor detects the side temperature of the fuser heater.
Thermoswitches (Non-contact type)	TP1	For the fuser heater	Controls the fuser-roller main heater

Fuser (fixing) temperature-control circuit

The temperatures of the two rollers in the fuser fluctuate according to the stage of the printing process. The DC controller sends commands to the fuser-control circuit to adjust temperatures.

Figure 1-7 Fuser temperature-control circuit



Fuser (fixing) over-temperature protection

To protect the fuser from excessive temperatures, the product has four layers of protective functions. If one function fails, the subsequent functions should detect the problem.

- **DC controller**: When a thermistor or thermopile detects a temperature above a certain threshold, the DC controller interrupts power to the specific heater. Following are the thresholds for each component:
  - TH1: 230° C (446° F) or higher
  - TH2: 285° C (545° F) or higher
  - TH3: 285° C (545° F) or higher
- **Fuser (fixing)-heater safety circuit**: If the DC controller fails to interrupt the power to the heaters at the prescribed temperatures, the fuser-heater safety circuit deactivates the triac-drive

circuit and releases the relay, which causes the heaters to stop at slightly higher temperature thresholds.

  - TH2: 290° C (554° F) or higher
  - TH3: 290° C (554° F) or higher

- **Current-detection protection circuit**: If current flowing in each triac exceeds a specific value, the current-detection protection circuit deactivates the triac-drive circuit and releases the relay, which interrupts the power supply to the heaters.
- **Thermoswitch**: If the temperature in the heaters is abnormally high, and the temperature in the thermoswitches exceeds a specified value, the contact to the thermoswitch breaks. Breaking this contact deactivates the triac-drive circuit and releases the relay, which interrupts the power supply to the heaters. Following are the thresholds for each thermoswitch:

  - TP1: 270° C (518° F) or higher

NOTE: When the thermoswitches reach this temperature, the temperature on the fuser rollers is about 320° C (608° F).

Fuser (fixing)-failure detection

When the DC controller detects any of the following conditions, it determines that the fuser has failed. The DC controller then interrupts power to the fuser heaters and notifies the formatter.

- **Abnormally high temperatures**: Temperatures are too high for any of the following components, at any time:

  - TH1: 230° C (446° F) or higher
  - TH2: 285° C (545° F) or higher
  - TH3: 285° C (545° F) or higher

- **Abnormally low temperatures**: Temperatures are too low at any of the following components after the product has initialized.

  - TH1: 120° C (248° F) or lower
  - TP2 or TP3: 100° C (212° F) or lower

  Or, the temperature drops in either of the thermopiles (TP2 and TP3) by 30° C (86° F) or more within a specified length of time.

- **Abnormal temperature rise**: The DC controller determines an abnormal temperature rise if the detected temperature of TH1 does not rise 2° C within a specified time period after the fuser (fixing) motor is turned on, or if the detected temperature of the thermistors does not rise to a specified temperature for a specified time after the fuser (fixing) motor is turned on.

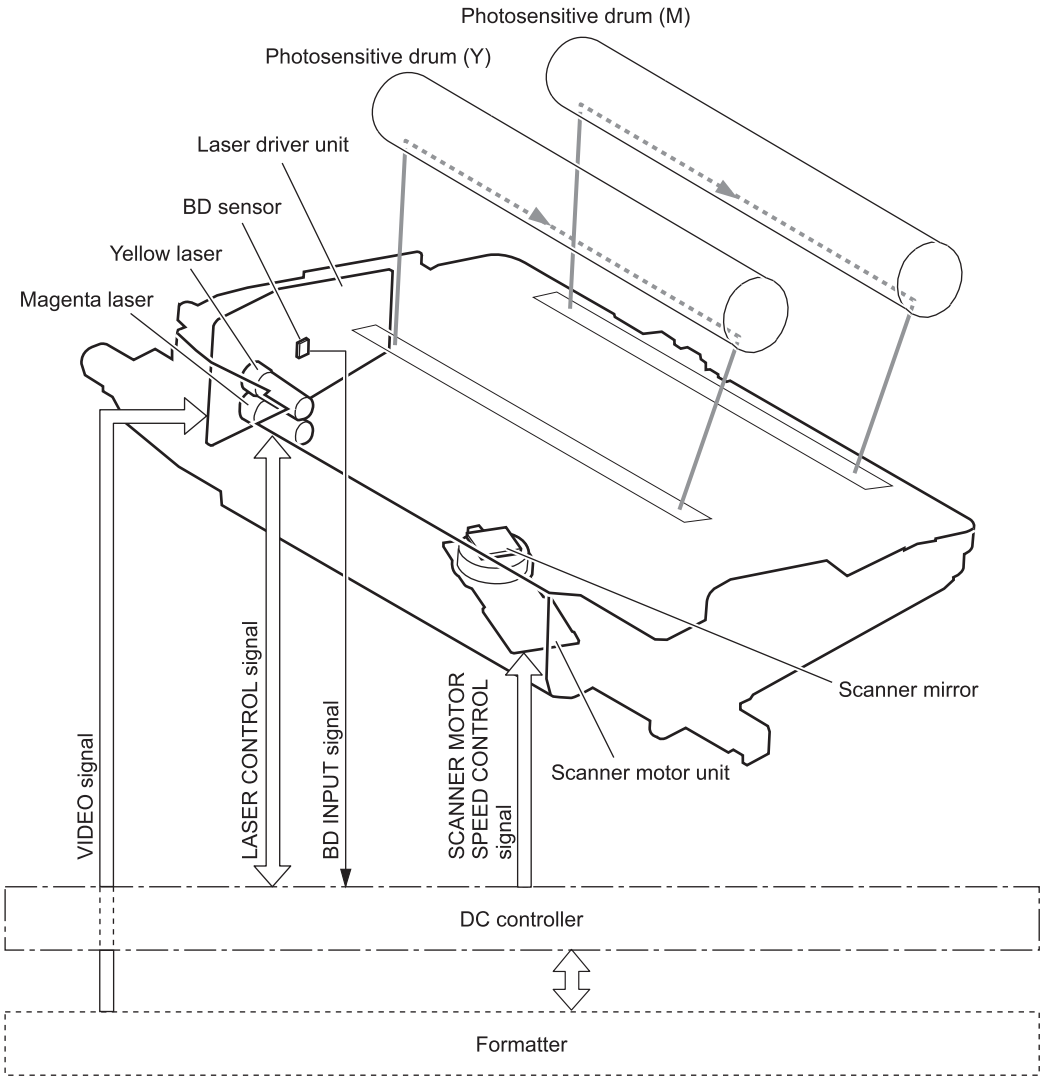
- **Thermistor open**: The DC controller determines a thermistor open if:
    - The detected temperature of TH1 is kept at 12° C (53° F) or lower for a specified time after the fuser (fixing) motor is turned on.
    - The detected temperature of TH2 is kept at 4° C (39° F) or lower for a specified time.
    - The detected temperature of TH3 is kept at 4° C (39° F) or lower for a specified time.
- **Drive-circuit failure**: The DC controller determines a drive-circuit failure:
    - If the detected power supply frequency is out of a specified range when the printer is turned on or during the standby period
    - If the current detection circuit detects an out of specified current value
- **Fuser (fixing) discrepancy**: The DC controller determines a fuser type mismatch when it detects an unexpected fuser (fixing) unit presence signal. The product has two fusers for 110 V or 220 V input power.

Laser/scanner system

The laser/scanner system forms the latent electrostatic image on the photosensitive drums according to the VIDEO signals sent from the formatter. The product has two laser/scanners: one for yellow and magenta and the other for cyan and black.

The formatter sends the DC controller instructions for the image of the page to be printed. The DC controller signals the lasers to emit light, and the laser beams pass through lenses and onto the scanner mirror, which rotates at a constant speed. The mirror reflects the beam onto the photosensitive drum in the pattern necessary for the image, exposing the surface of the drum so it can receive toner.

Figure 1-8 Laser/scanner system



The DC controller determines that a laser/scanner has failed when any of the following conditions occurs:

- **Laser failure**: The detected laser intensity does not match a specified value when the product initializes.
- **Beam-detect (BD) failure**: The BD interval is outside a specified range during printing.
- **Scanner-motor failure**: The scanner motor does not reach a specified rotation speed within a certain time after it begins rotating.

Image formation system

The image-formation system creates the printed image on the paper. The system consists of the laser/scanners, toner cartridges, imaging drums, ITB, and fuser.

Figure 1-9 Image formation system

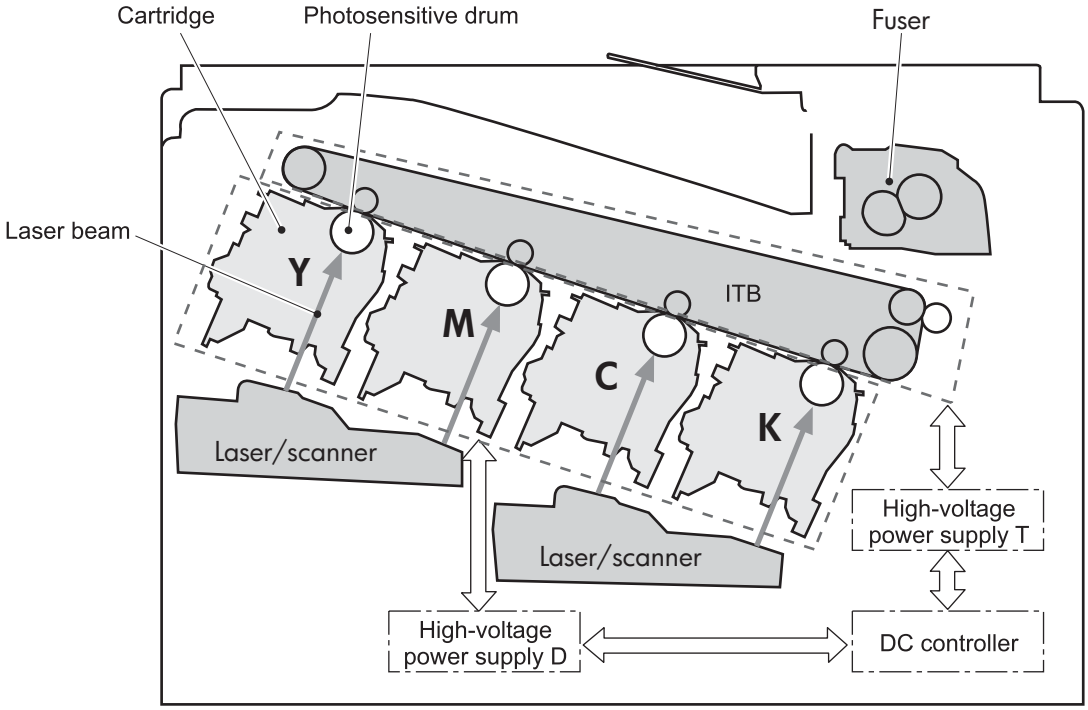


Image formation process

The image-formation system consists of ten steps divided into six functional blocks.

Figure 1-10 Image formation process

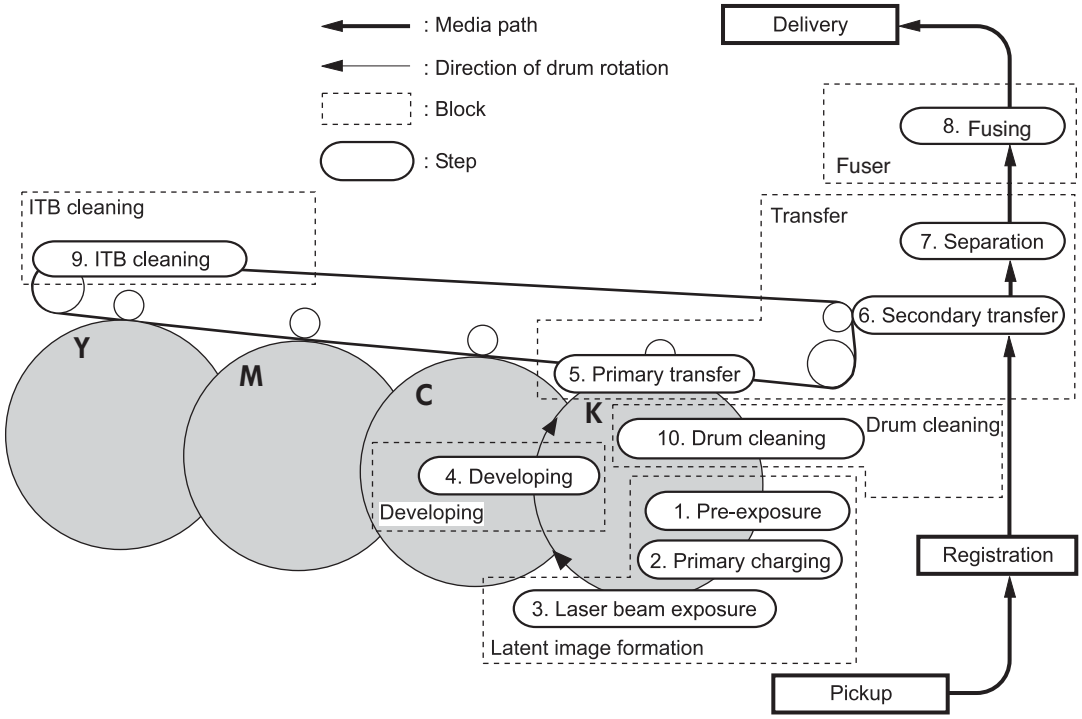


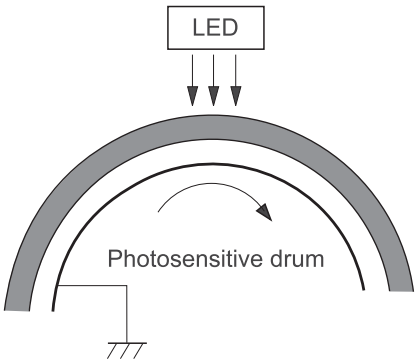
Table 1-10 Image formation process

Functional block	Steps	Description
Latent image formation	1. Pre-exposure 2. Primary charging 3. Laser-beam exposure	An invisible latent image forms on the surface of the photosensitive drums.
Development	4. Development	Toner adheres to the electrostatic latent image on the photosensitive drums.
Transfer	5. Primary transfer 6. Secondary transfer 7. Separation	The toner image transfers to the ITB and subsequently to the paper.
Fusing	8. Fusing	The toner fuses to the paper to make a permanent image.
ITB cleaning	9. ITB cleaning	Residual toner is removed from the ITB.
Drum cleaning	10. Drum cleaning	Residual toner is removed from the photosensitive drums.

Step 1: Pre-exposure

Light from the pre-exposure LED strikes the surface of the photosensitive drum to remove any residual electrical charges from the drum surface.

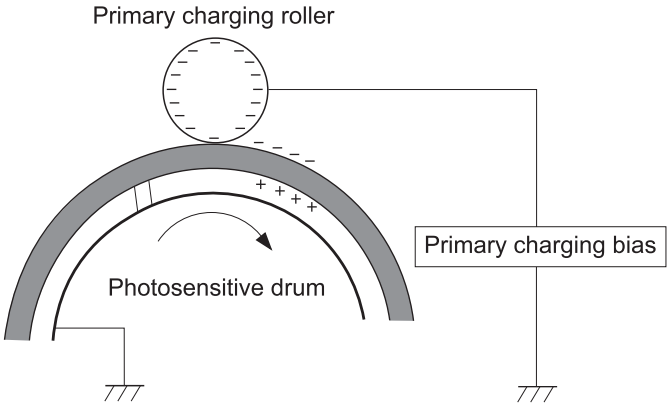
Figure 1-11 Pre-exposure



Step 2: Primary charging

The primary-charging roller contacts the photosensitive drum and charges the drum with negative potential.

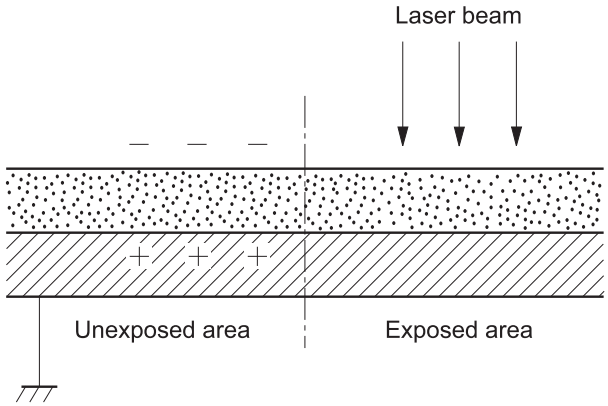
Figure 1-12 Primary charging



Step 3: Laser-beam exposure

The laser beam strikes the surface of the photosensitive drum in the areas where the image will form. The negative charge neutralizes in those areas, which are then ready to accept toner.

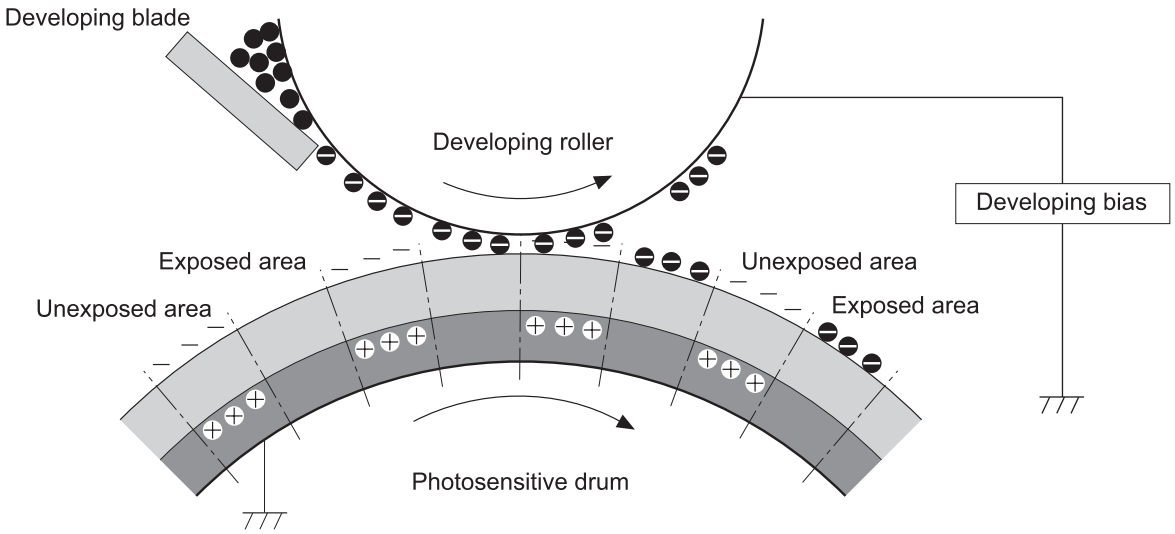
Figure 1-13 Laser-beam exposure



Step 4: Development

Toner acquires a negative charge as the developing cylinder contacts the developing blade. Because the negatively charged surface of the photosensitive drums have been neutralized where they have been struck by the laser beam, the toner adheres to those areas on the drums. The latent image becomes visible on the surface of each drum.

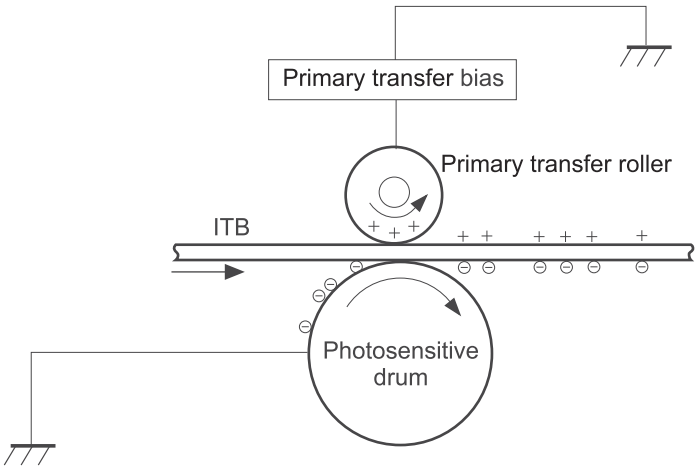
Figure 1-14 Development



Step 5: Primary transfer

The positively charged primary-transfer rollers contact the ITB, giving the ITB a positive charge. The ITB attracts the negatively charged toner from the surface of each photosensitive drum, and the complete toner image transfers onto the ITB, beginning with yellow, followed by magenta, cyan, and black.

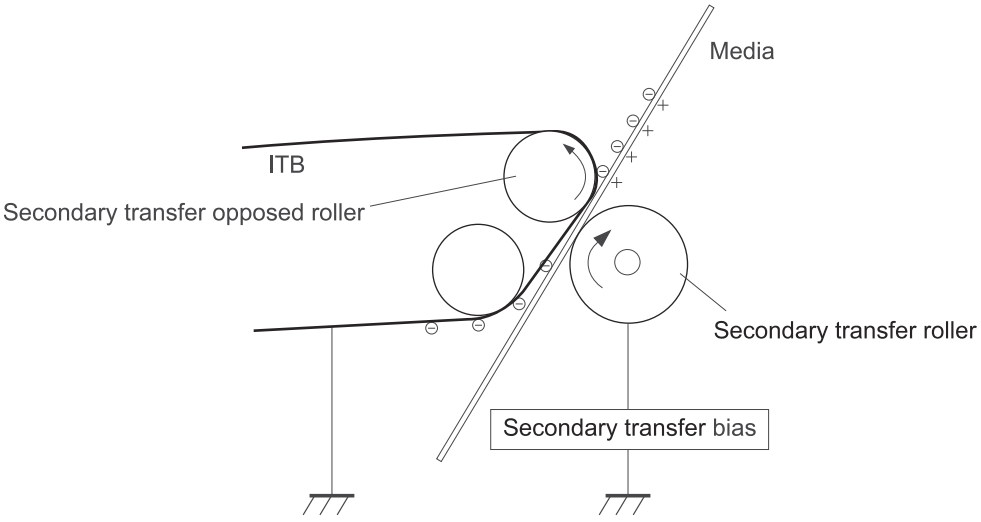
Figure 1-15 Primary transfer



Step 6: Secondary transfer

The paper acquires a positive charge from the secondary-transfer roller, and so it attracts the negatively charged toner from the surface of the ITB. The complete toner image transfers onto the paper.

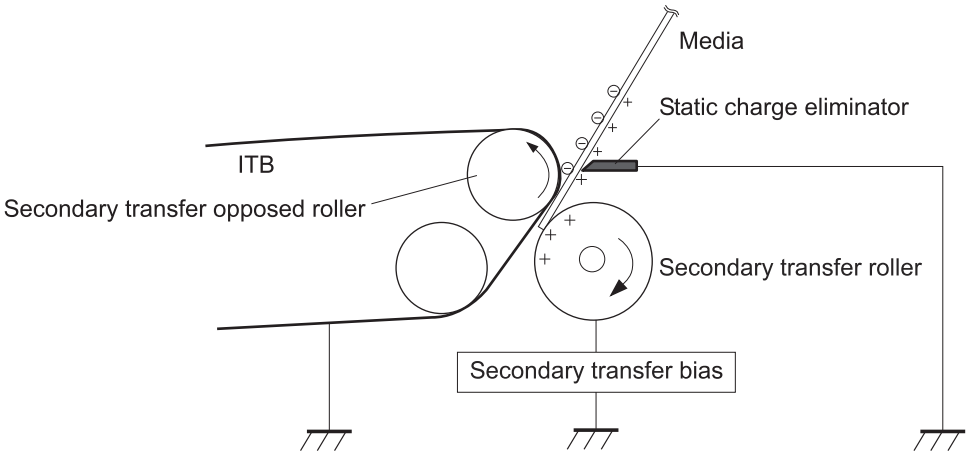
Figure 1-16 Secondary transfer



Step 7: Separation

The stiffness of the paper causes it to separate from the ITB as the ITB bends. The static-charge eliminator removes excess charge from the paper to ensure that the toner fuses correctly.

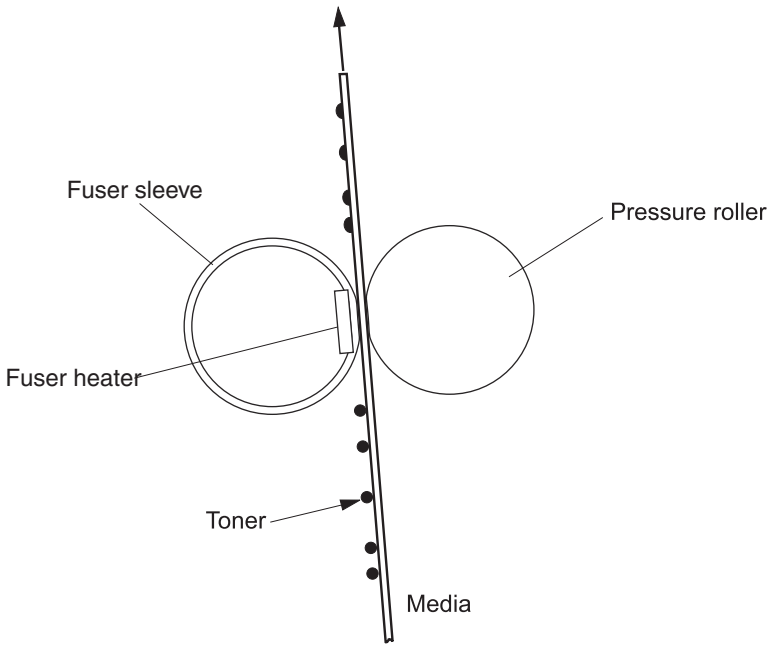
Figure 1-17 Separation



Step 8: Fusing

To create the permanent image, the paper passes through heated, pressurized rollers to melt the toner onto the page.

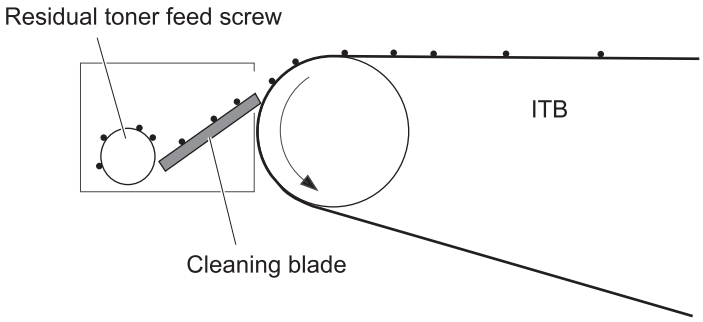
Figure 1-18 Fusing



Step 9: ITB cleaning

The cleaning blade scrapes the residual toner off the surface of the ITB. The residual-toner-feed screw deposits residual toner in the toner collection box.

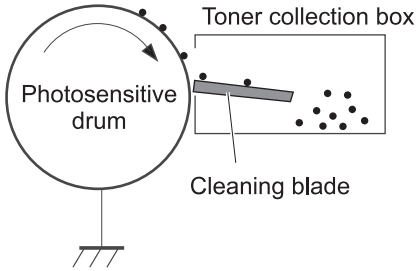
Figure 1-19 ITB cleaning



Step 10: Drum cleaning

Inside the toner cartridge, the cleaning blade removes residual toner from the surface of the drum to prepare it for the next image. The waste toner falls into the hopper in the print cartridge.

Figure 1-20 Drum cleaning



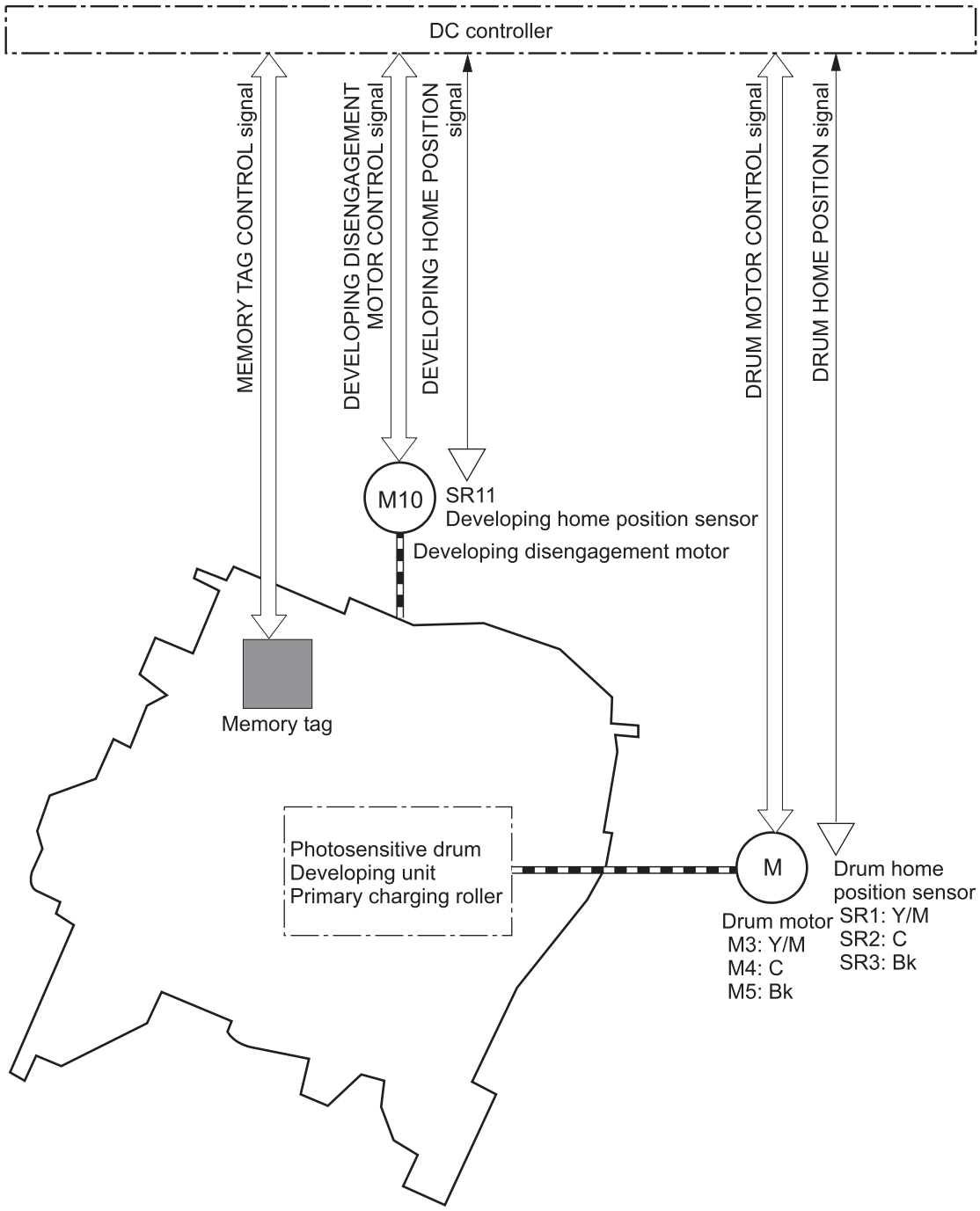
Toner cartridge

The product has four toner cartridges, one for each color. Each toner cartridge contains a reservoir of toner and the following components:

- Photosensitive drum
- Developing roller
- Primary-charging roller

The DC controller rotates the drum motor to drive the photosensitive drum, developing roller, and the primary-charging roller.

Figure 1-21 Toner-cartridge system



The DC controller rotates the drum motor to drive the photosensitive drum, developing unit, and primary charging roller.

The memory tag is a non-volatile memory chip that stores information about the usage for the toner cartridge.

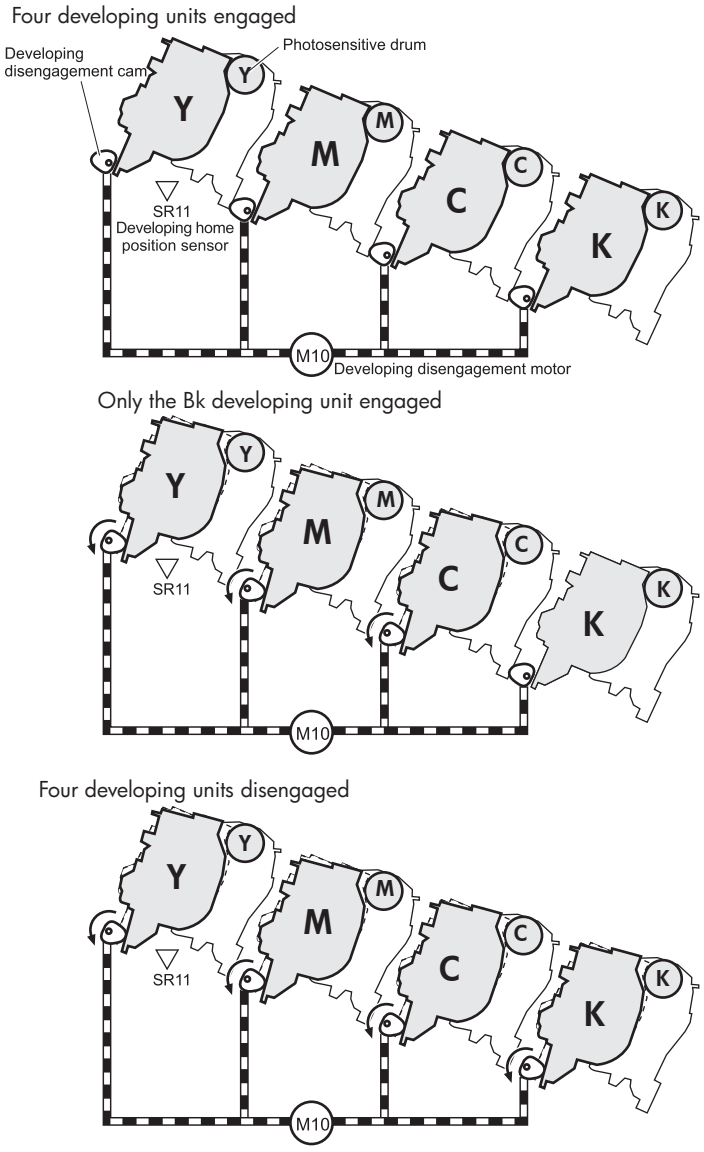
The DC controller notifies the formatter of an error if any of the following conditions exist:

- The memory tag fails to either read to or write from the DC controller.
- The RD sensors detect a missing or incorrectly installed toner cartridge.
- The accumulated print time reaches a specified time period or the cartridge runs out of toner.
- The toner level in any of the toner cartridges drops below a certain level.

Developing roller engagement and disengagement

The product can print in full-color mode or in black-only mode. To print in black-only mode, the product disengages the developing rollers in the cyan, magenta, and yellow toner cartridges. This maximizes the life of the cartridges.

Figure 1-22 Developing-roller engagement and disengagement control



The DC controller rotates the developing disengagement motor and changes the direction of the cam according to the instructions from the formatter for each print job.

When the product is turned on and at the end of each print job, all four of the developing rollers disengage from the photosensitive drums. If the next print job is full-color mode, each of the developing rollers engage. If the next print job is black-only mode, only the black developing roller engages.

If the DC controller does not detect any output from the developing home-position sensor, it determines that the developing-disengagement motor has failed.

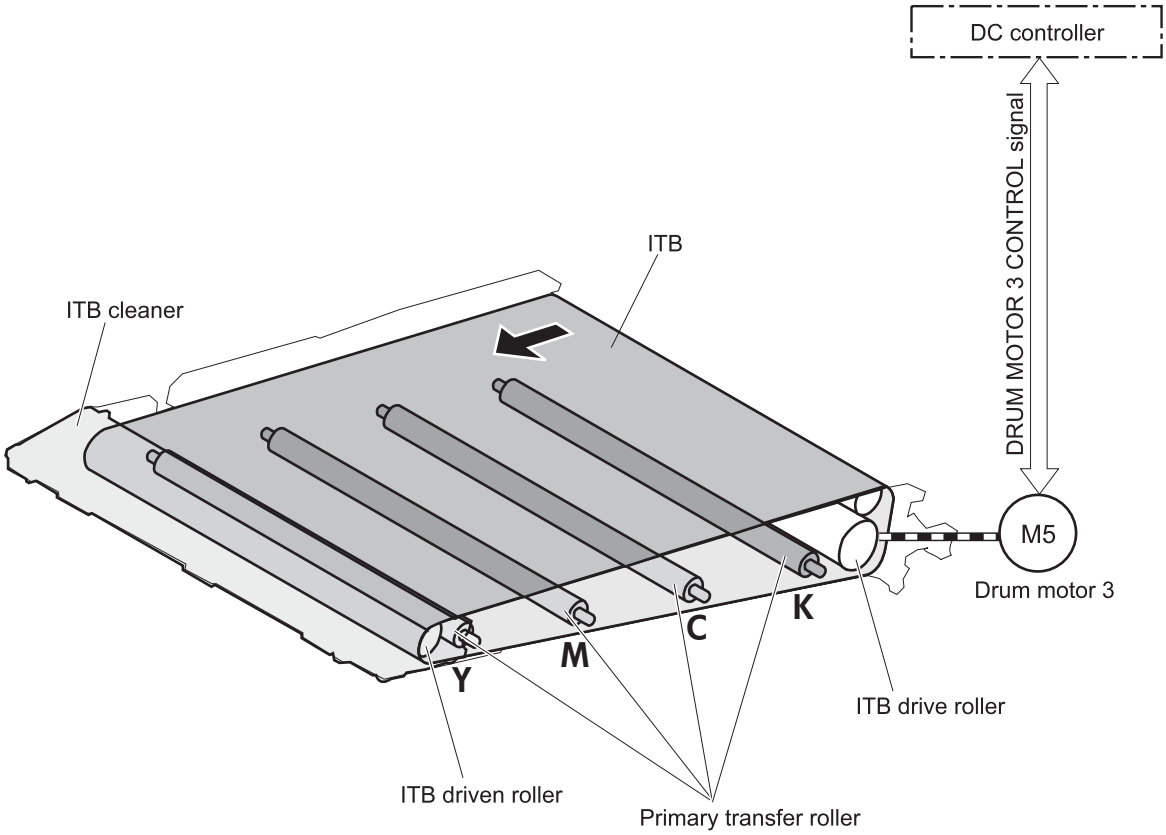
Intermediate transfer belt (ITB) unit

The ITB unit accepts the toner images from the photosensitive drums and transfers the completed image to the paper. The ITB unit has these main components:

- ITB
- ITB drive roller
- ITB-driven roller
- Primary-transfer rollers
- ITB cleaner

The ITB motor drives the ITB drive roller, which rotates the ITB. The motion of the ITB causes the primary transfer rollers to rotate. The ITB cleaner cleans the ITB surface.

Figure 1-23 ITB unit



Primary-transfer-roller engagement and disengagement

Depending on the requirements of the print job, the primary-transfer rollers engage with the ITB so it can receive toner from the photosensitive drums.

Figure 1-24 Three states of primary-transfer-roller engagement and disengagement

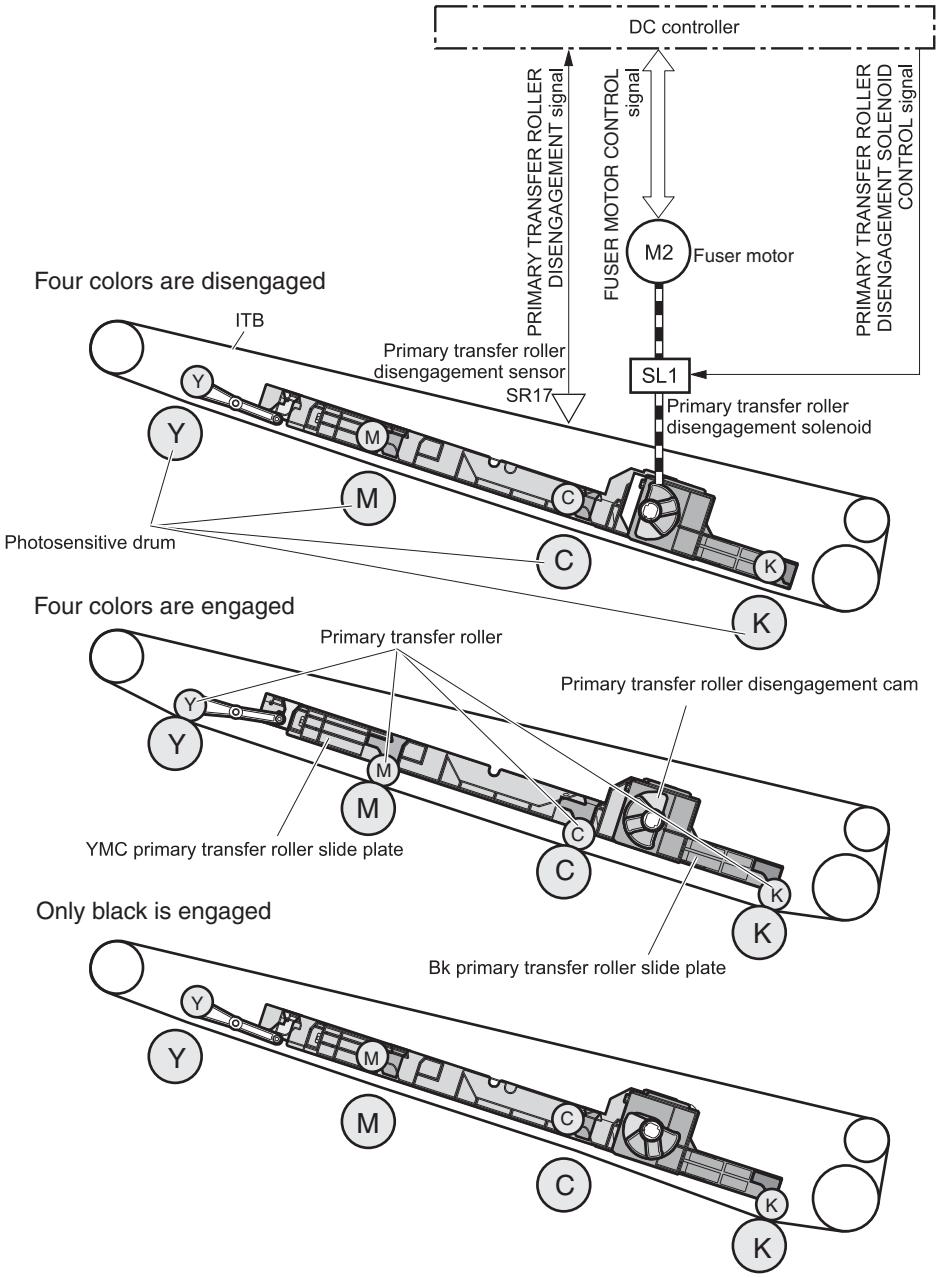


Table 1-11 Primary-transfer-roller engagement states

Roller state	Product state
All rollers disengaged	The home position for the ITB unit
All rollers engaged	The state for a full-color print job
Black roller engaged	The state for a black-only print job

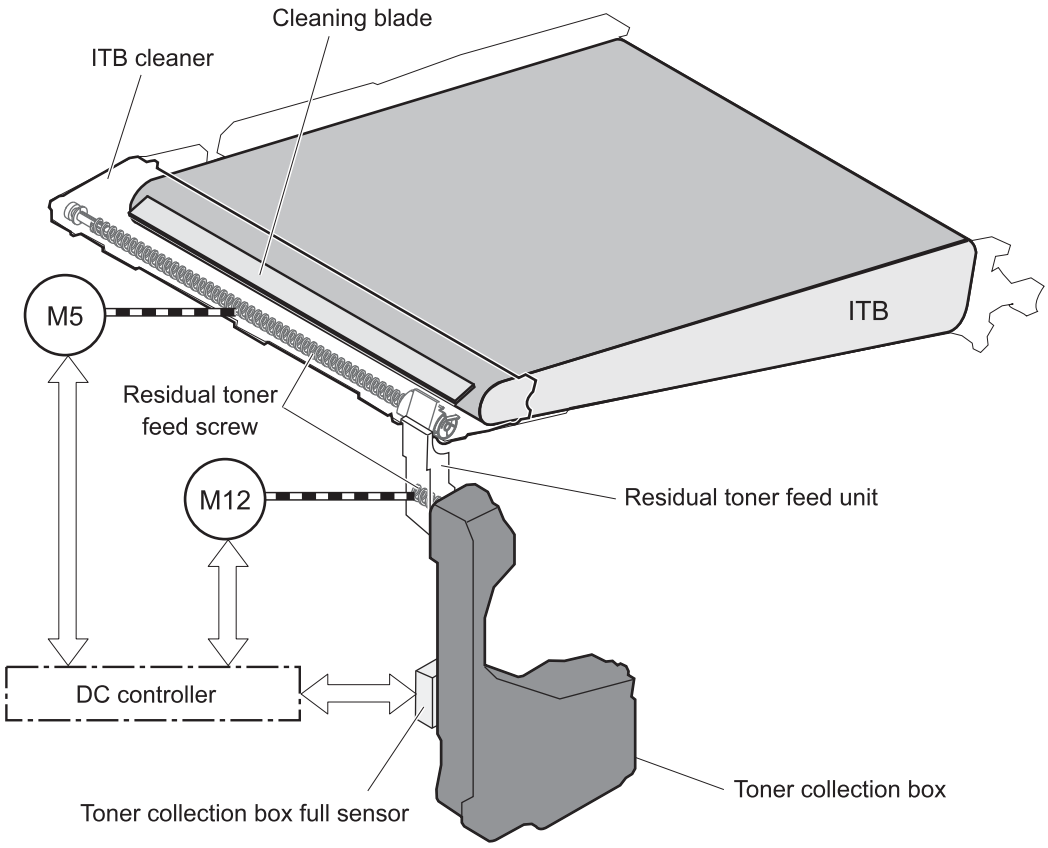
The primary-transfer-roller disengagement motor rotates or reverses to place the primary-transfer-roller disengagement cam into one of three positions. The cam causes the transfer-roller slide plate to move to the right or left. This movement causes the primary-transfer rollers to move up to engage the ITB with the photosensitive drum or down to disengage it.

If the DC controller does not receive the expected signal from the ITB home-position sensor when the primary-transfer-roller engages or disengages, but the primary-transfer-roller disengagement motor is rotating, the DC controller determines that the primary-transfer-disengagement mechanism has failed, and notifies the formatter.

ITB cleaning

The cleaning blade in the ITB cleaner scrapes the residual toner off the ITB surface. The drum motor (M5) drives the residual toner feed screw. The screw feeds the residual toner to the residual toner feed unit. The residual toner feed motor (M12) drives the residual toner feed screw. The residual toner feed screw deposits the residual toner in the toner collection box. The DC control detects whether the toner collection box is full, using the toner collection-box-full sensor, and then notifies the formatter.

Figure 1-25 ITB cleaning process

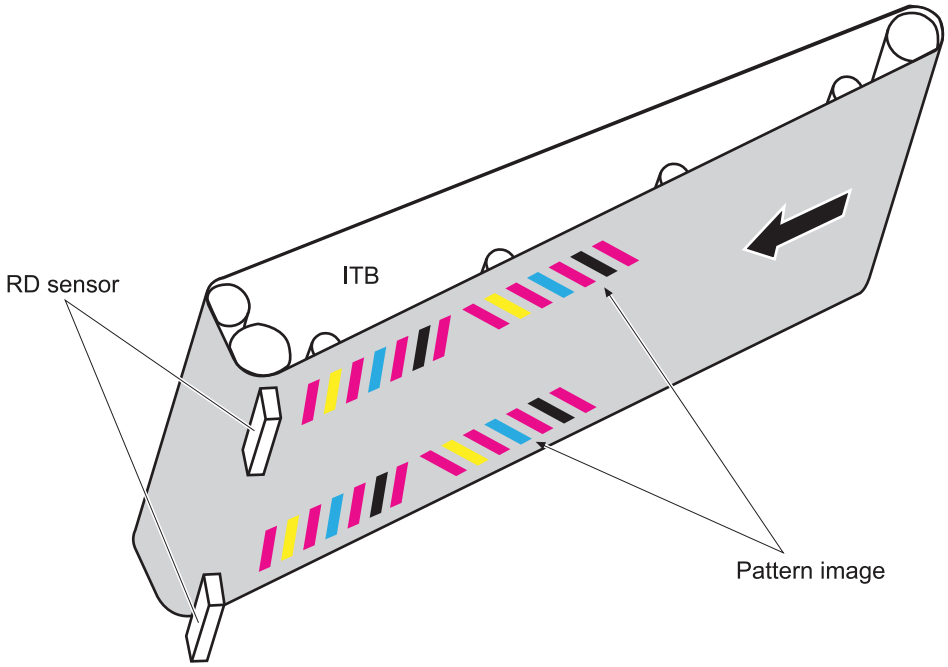


Calibration

The product calibrates itself to maintain excellent print quality. Calibration corrects color-misregistration and color-density variation.

During calibration, the product places a specific pattern of toner on the surface of the ITB. Sensors at the end of the ITB read the toner pattern to determine if adjustments are necessary.

Figure 1-26 Toner patterns for calibration



Color misregistration control

Internal variations in the laser/scanners can cause the toner images to become misaligned. The color-misregistration control corrects the following problems:

- Horizontal scanning start position
- Horizontal scanning magnification
- Vertical scanning start position

The calibration occurs when any of the following occurs:

- A cartridge is replaced.
- The temperature of the sub thermistor is 50 C (122 F) or lower when the product recovers from sleep mode after a specific number of pages print.
- A specified number of pages have printed.
- The formatter sends a command.
- The user requests a calibration by using the control panel menus.

If data from the color-misregistration and image-density sensors is outside a specified range when the product is turned on or when it is beginning the calibration sequence, the DC controller determines that these sensors have failed, and it notifies the formatter.

Image stabilization control

Environmental changes or deterioration of the photosensitive drums and toner can cause variations in the image density. The image-stabilization control reduces these fluctuations. There are three kinds of image stabilization controls.

The formatter control is performed by the formatter.

Table 1-12 Image-stabilization controls

Image stabilization control	Description
Environment change control	The environment change control calibrates each high-voltage bias to obtain an appropriate image according to the environment changes. The DC controller determines the environment where the product is installed based on the surrounding temperature and humidity data from the environment sensor, controls, and related biases. This control occurs under the following circumstances: • The toner cartridge is replaced. The DC controller notifies the formatter when it encounters a communication error with the environmental sensor.
Image density control (DMAX)	This control corrects variations in image density related to deterioration of the photosensitive drum or the toner. The DC controller adjusts the high-voltage biases to correct the problem under the following conditions: • The sub thermistor detects a temperature that is too low when the product is turned on. • After the print operation is completed for a specific period of the time. • A toner cartridge is replaced. • The ITB is replaced. • A specified number of pages have printed. • The formatter sends a command. • The environment is relatively charged.
Image halftone control (DHALF)	The image halftone control is performed by the formatter. The DC controller measures the halftone pattern according to the command from the formatter. The formatter performs this control to calibrate the halftone, based on the halftone-density measurements, under the following conditions: • The formatter sends a command. • The DMAX is completed.

The DC controller determines an RD sensor failure and notifies the formatter if it detects an out-of-specified-data value from the RD sensor when the product is turned on or when the color misregistration control starts.

Pickup, feed, and delivery system

The pickup, feed, and delivery system uses a series of rollers to move the paper through the product.

Figure 1-27 Switches and sensors for the pickup, feed, and delivery system

: Duplex model only

: Duplex media path

: Simplex media path

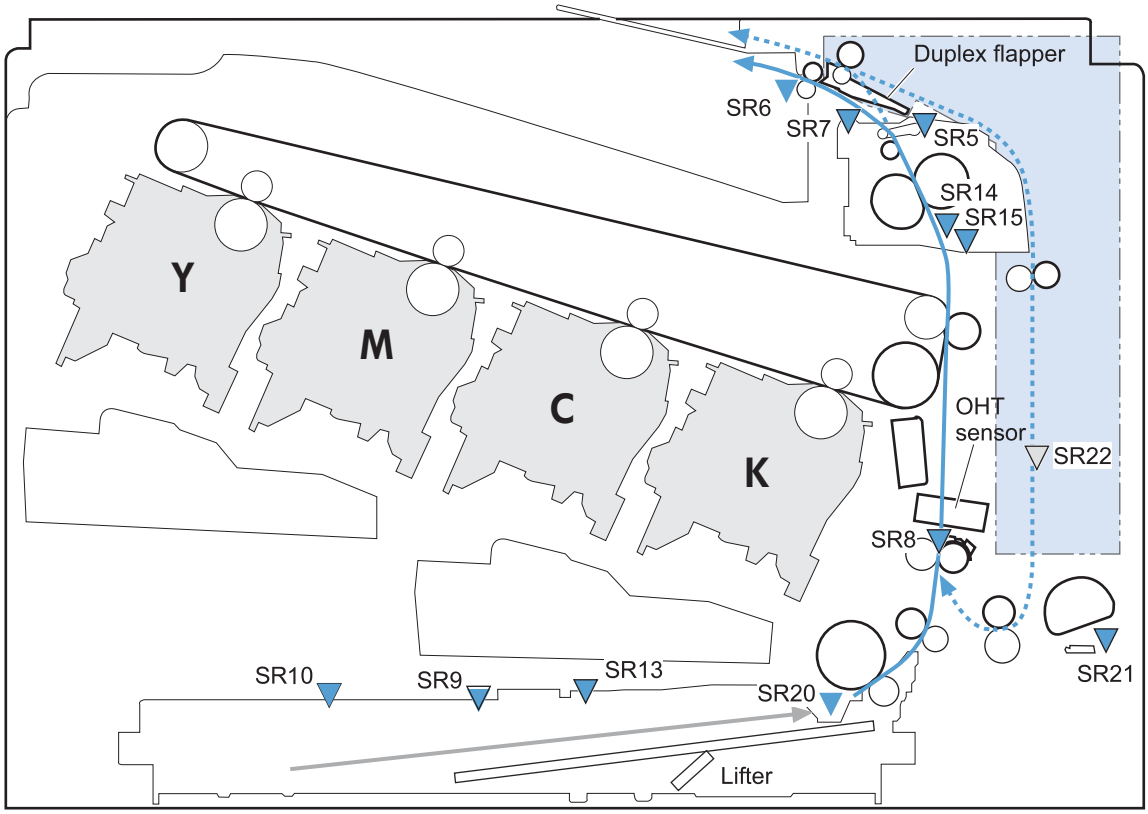


Table 1-13 Switches and sensors for the pickup, feed, and delivery system

Abbreviation	Component
SR5	Fuser (fixing) delivery sensor
SR6	Delivery tray media full sensor
SR7	Fuser (fixing) pressure release sensor
SR8	TOP (top of page) sensor
SR9	Tray-media stack-surface sensor
SR13	Tray presence sensor
SR14	Loop sensor 1
SR15	Loop sensor 2
SR20	Tray media-presence sensor

Table 1-13 Switches and sensors for the pickup, feed, and delivery system (continued)

Abbreviation	Component
SR21	MP tray media-presence sensor
SR22	Duplex re-pickup sensor (duplex models only)

Figure 1-28 Motors and solenoids for the pickup, feed, and delivery system

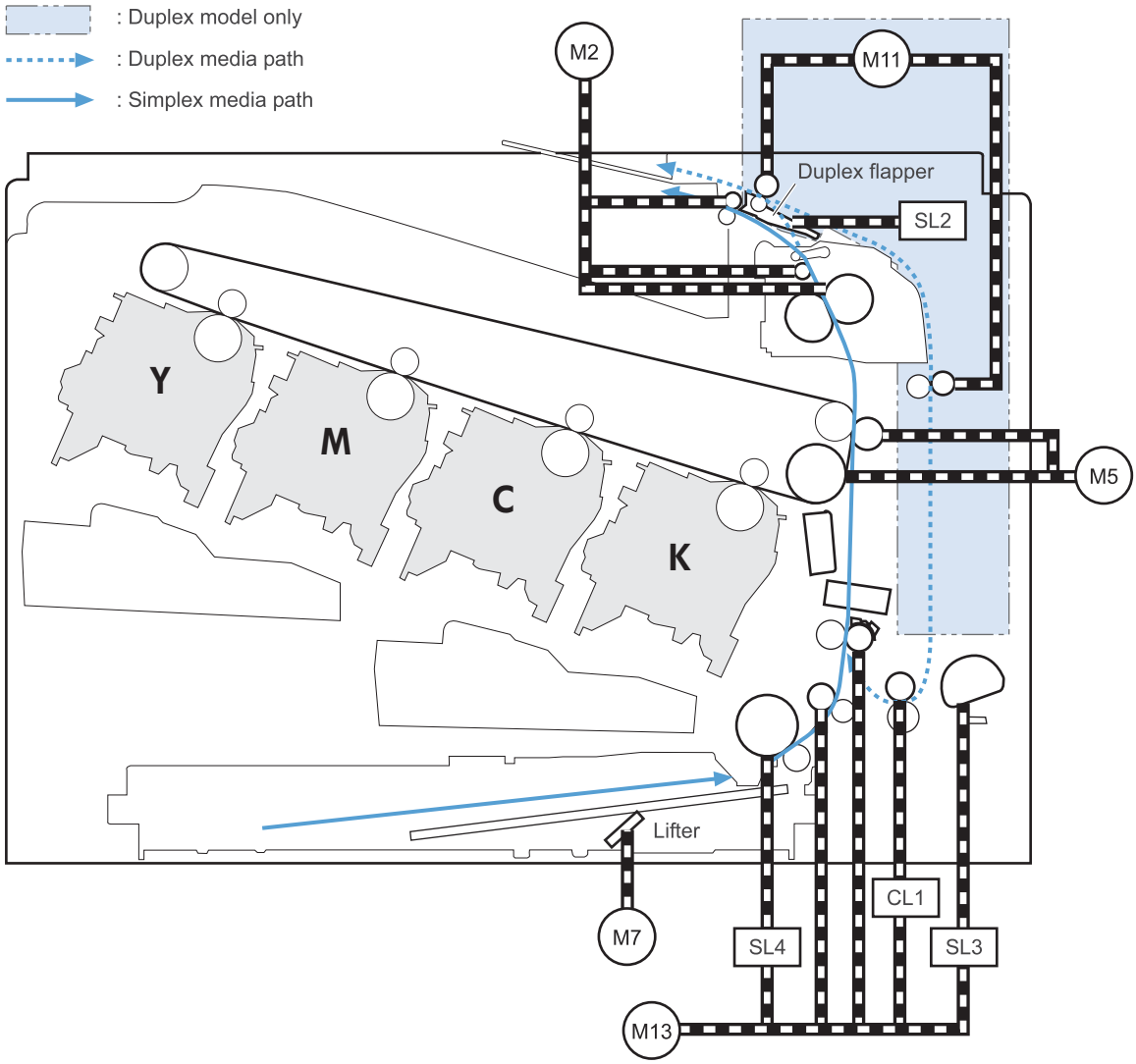


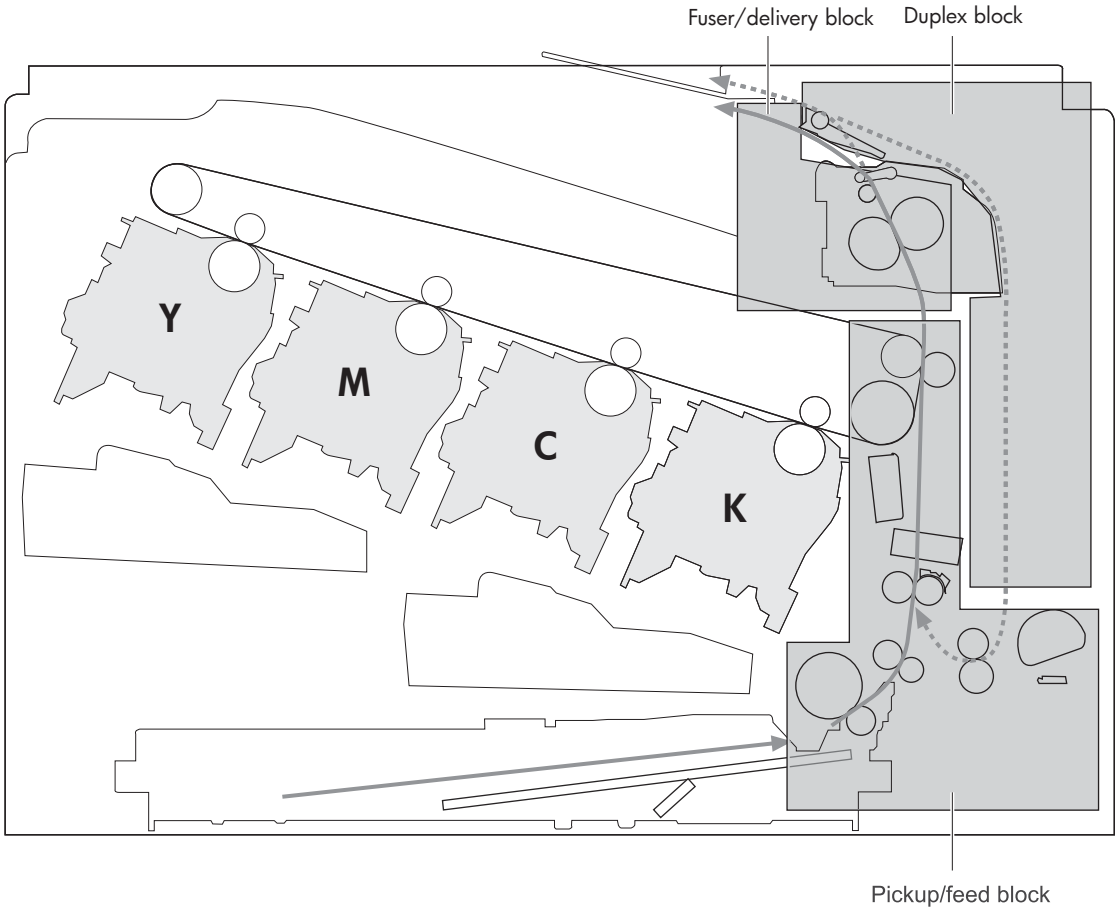
Table 1-14 Motors and solenoids for the pickup, feed, and delivery system

Abbreviation	Component
M2	Fuser (fixing) motor
M5	Drum motor 3
M7	Lifter motor
M11	Duplex reverse motor (duplex models only)

Table 1-14 Motors and solenoids for the pickup, feed, and delivery system (continued)

Abbreviation	Component
M13	Pickup motor
CL1	Duplex re-pickup clutch (duplex models only)
SL2	Duplex reverse solenoid (duplex models only)
SL3	Multipurpose tray pickup solenoid
SL4	Tray pickup solenoid

Figure 1-29 Three main units of the pickup, feed, and delivery system



Pickup-and-feed unit

The pickup-and-feed unit picks an individual sheet of paper from the multipurpose tray or the cassettes, carries it through the secondary-transfer unit, and feeds it into the fuser.

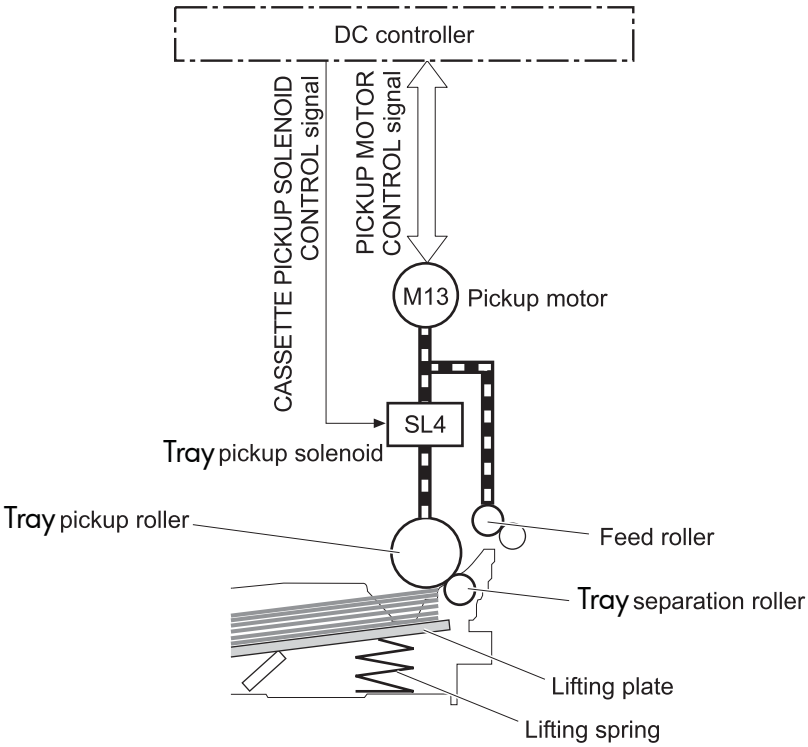
Figure 1-30 Pickup-and-feed unit

Tray pickup

The sequence of steps for the tray pickup operation is the following:

1. When the product starts or the tray closes, the lifting mechanism lifts the paper stack so it is ready.
2. After receiving a print command from the formatter, the DC controller rotates the pickup motor, which causes the tray pickup roller, tray feed roller, and tray separation roller to rotate.
3. The DC controller drives the tray pickup solenoid, which rotates the tray pickup cam. As the pickup cam rotates, the pickup arm moves down, and the tray pickup roller touches the surface of the paper stack. The tray pickup roller then picks up one sheet of paper.

Figure 1-31 Tray-pickup mechanism

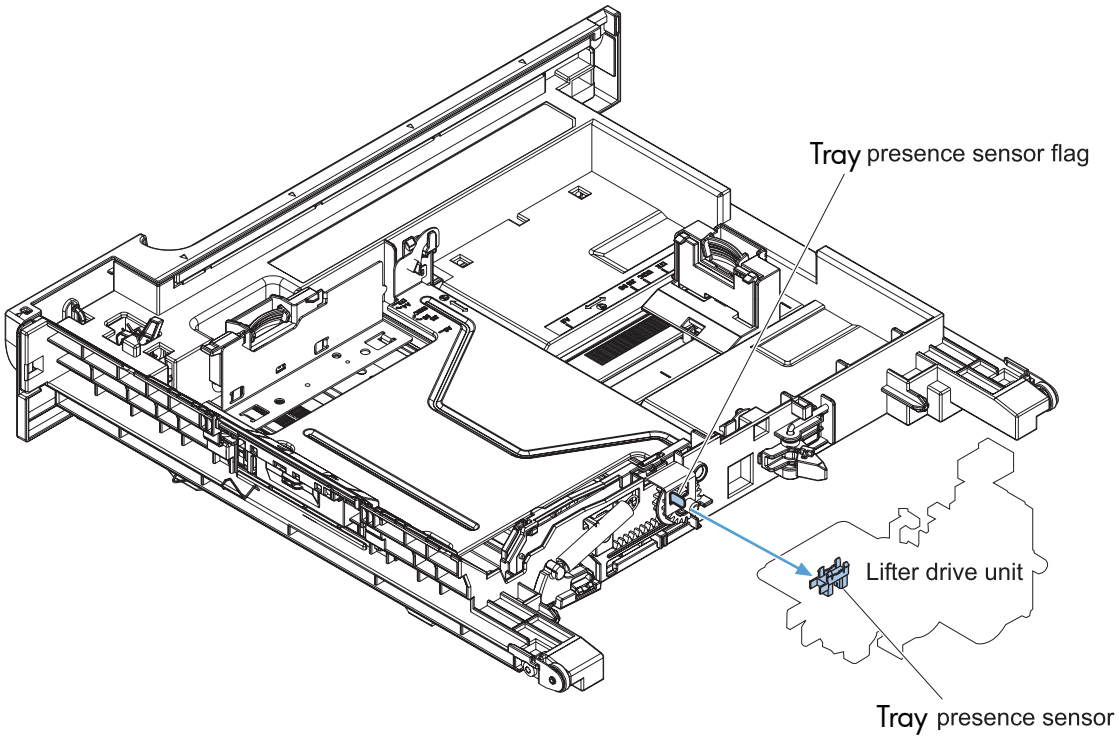


NOTE: The lift-up operation lifts the lifting plate to keep the stack surface of the media at a pickup position. The lifting spring helps support the lifting plate depending on the media size and amount.

Tray-presence detection

The tray presence sensor is in the lifter drive unit. The sensor detects the tray-presence sensor flag and determines whether the tray is installed correctly.

Figure 1-32 Tray presence sensor



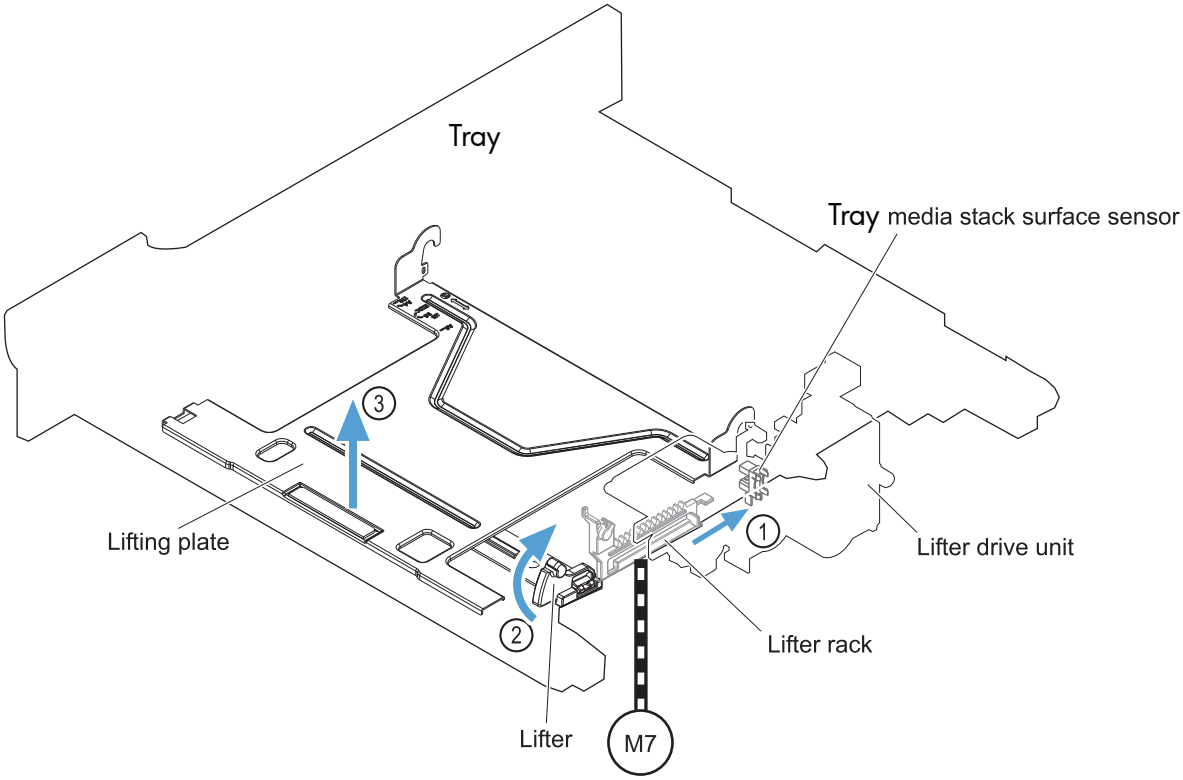
Tray lift operation

The DC controller rotates the lifter motor (M7) and moves the lifter rack until the tray media stack surface sensor (SR9) detects it. The lifter lifts, and the lifting plate moves up to the position where the media can be picked up. The lift operation is performed by monitoring the media stack surface sensor when the printer is turned on, when the tray is installed, or as needed during a print operation.

If the paper-stack surface sensor does not detect the paper within a specified time after the lifter motor begins rotating, the DC controller notifies the formatter that the lifter motor has failed.

The DC controller lowers the lifting plate when no printing occurs to prevent media damage and pickup failure. If a print operation does not occur for a specified time, the DC controller reverses the lifter motor and moves the lifter rack until the tray media-stack surface sensor stops detecting it.

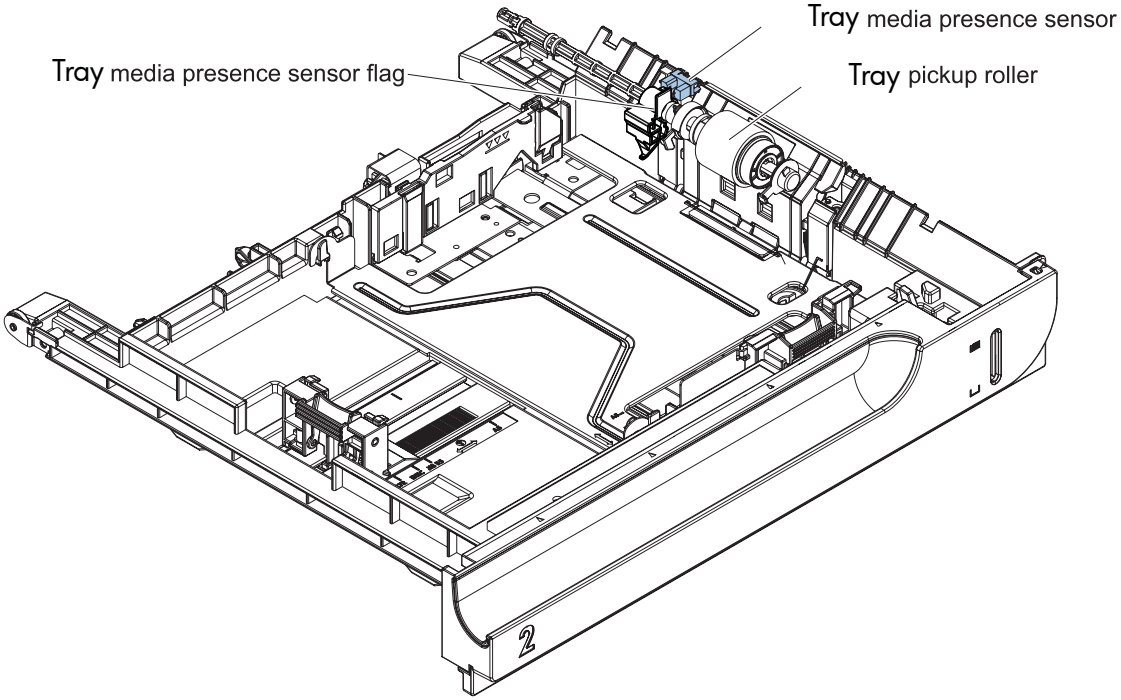
Figure 1-33 Tray lift mechanism



paper-presence detection

The media presence sensor detects whether paper is in the .

Figure 1-34 Paper-level-detection mechanism

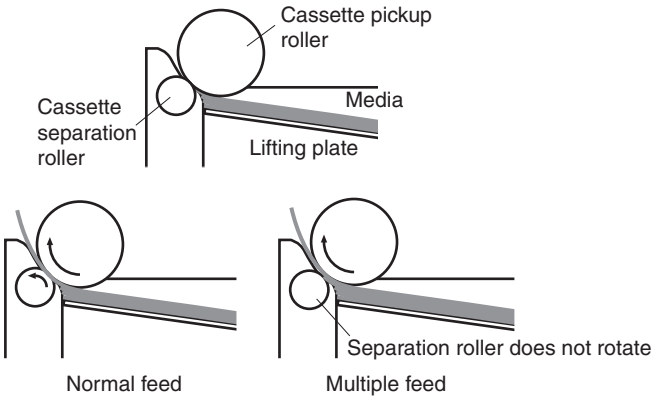


Multifeed prevention

In the , a separation roller prevents multiple sheets of paper from entering the paper path. The pickup roller drives the separation roller through a sheet of paper.

The low friction force between the sheets weakens the driving force from the pickup roller. Because some braking force is applied to the separation roller, the weak rotational force of the pickup roller is not enough to rotate the separation roller. Therefore, the separation roller holds back any multiple-fed sheets, and one sheet of media is fed into the printer.

Figure 1-35 Multifeed prevention



Multipurpose tray pickup

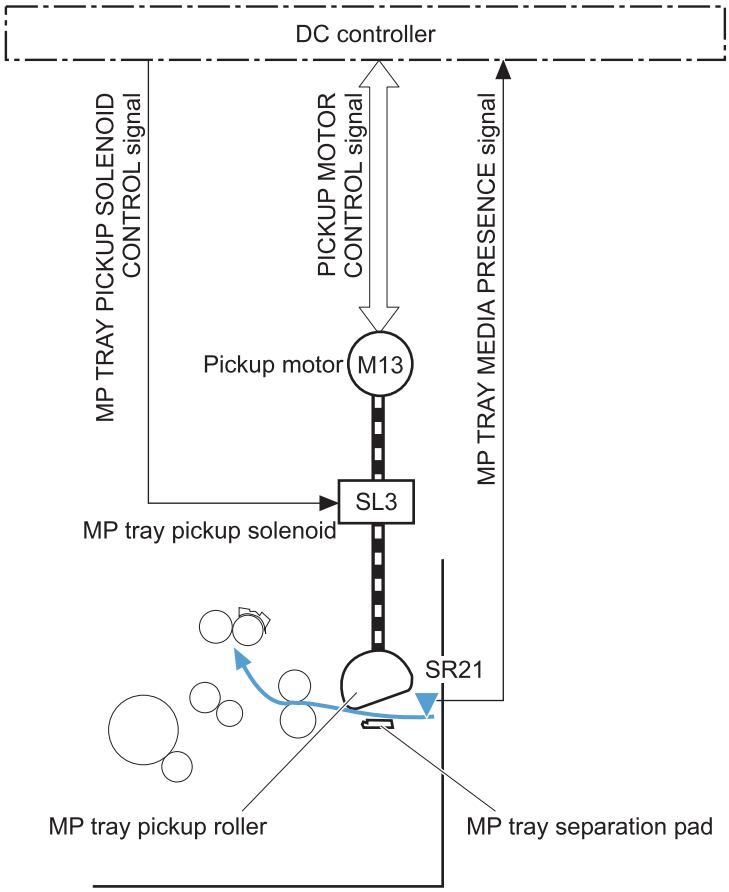
The multipurpose tray (MP) paper-presence sensor detects whether paper is in the tray. If no paper is present, the DC controller notifies the formatter. Printing does not occur until paper is in the tray.

The sequence of steps for the multipurpose tray pickup operation as follows:

1. After receiving a print command from the formatter, the DC controller reverses the pickup motor, which causes the multipurpose tray separation roller to rotate.
2. The DC controller turns on the multipurpose tray pickup solenoid (SL3), causing the multipurpose tray pickup roller to rotate.
3. The multipurpose tray separation roller isolates a single sheet of paper in case more than one sheet was picked. The single sheet of paper feeds into the product.

The MP-tray media-presence sensor (SR21) detects whether the media is present in the MP tray. No printing occurs if no media is loaded.

Figure 1-36 Multipurpose tray pickup mechanism

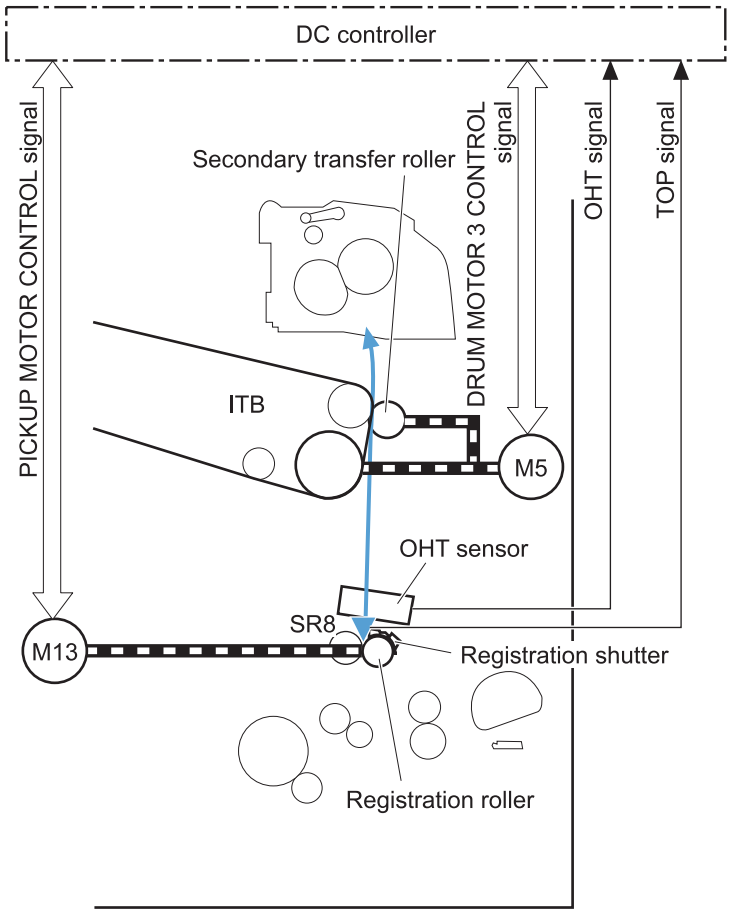


Paper feed

After the pickup operation, the paper feeds through the product and into the fuser.

1. The paper passes through the feed rollers. The registration shutter aligns the paper correctly to prevent skewed printing.
2. The DC controller detects the leading edge of paper by the Top sensor (SR8) and controls the rotational speed of the pickup motor to align with the leading edge of image on the ITB.
3. The DC controller detects whether or not the media is overhead transparency, using the OHT sensor.
4. The toner image on the ITB transfers onto the media, which feeds to the fuser.

Figure 1-37 Paper-feed mechanism

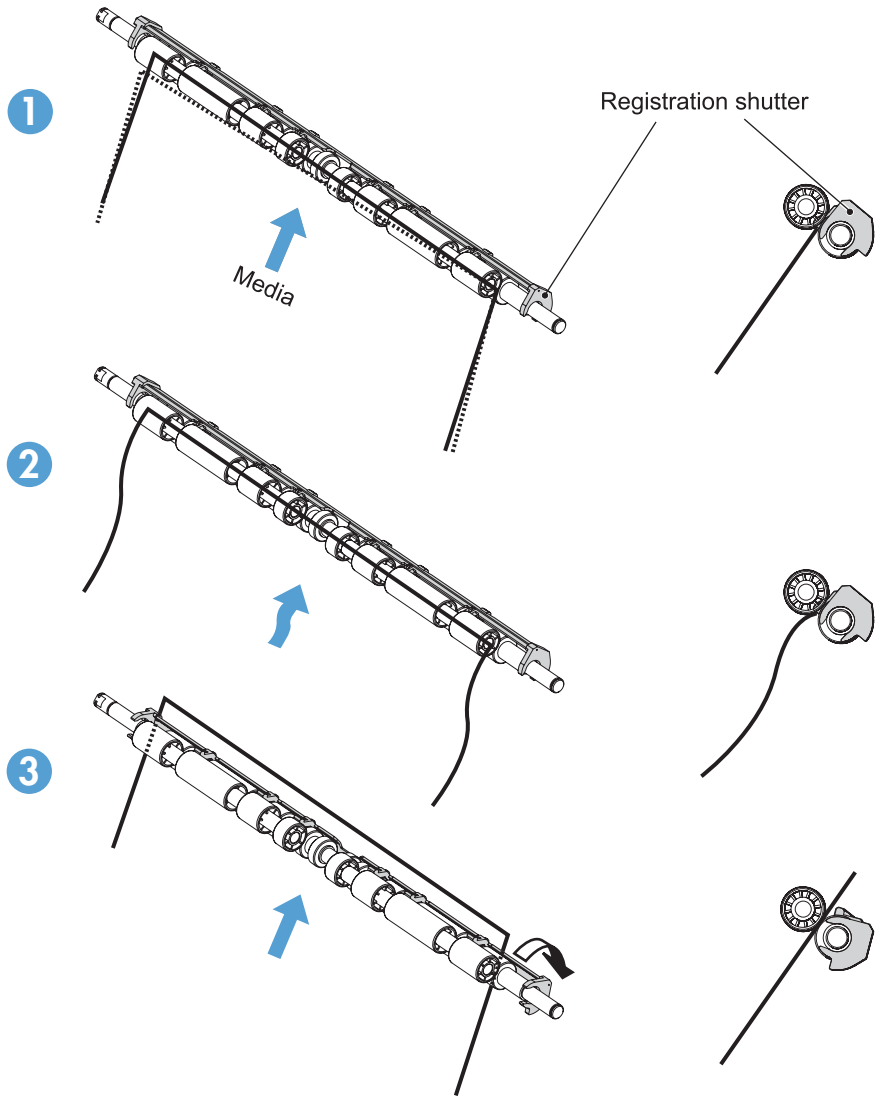


Skew-feed prevention

The product can straighten the paper without slowing the feed operation.

1. As the paper enters the paper path, the leading edge strikes the registration shutter, which straightens the paper. The paper does not pass through the shutter.
2. The feed rollers keep pushing the paper, which creates a force on the leading edge against the registration shutter.
3. When the force is great enough, the registration shutter opens and the paper passes through.

Figure 1-38 Skew-feed prevention



OHT detection

The OHT sensor detects overhead transparencies. The OHT sensor is a transmission sensor that uses an LED. The DC controller determines a media mismatch and notifies the formatter when the media type differs from the media type detected by the OHT sensor. The DC controller turns the LED in the OHT

sensor on and off during the wait or initial rotation period. If the intensity of the light does not match the specified value, the DC controller determines that the OHT sensor has failed.

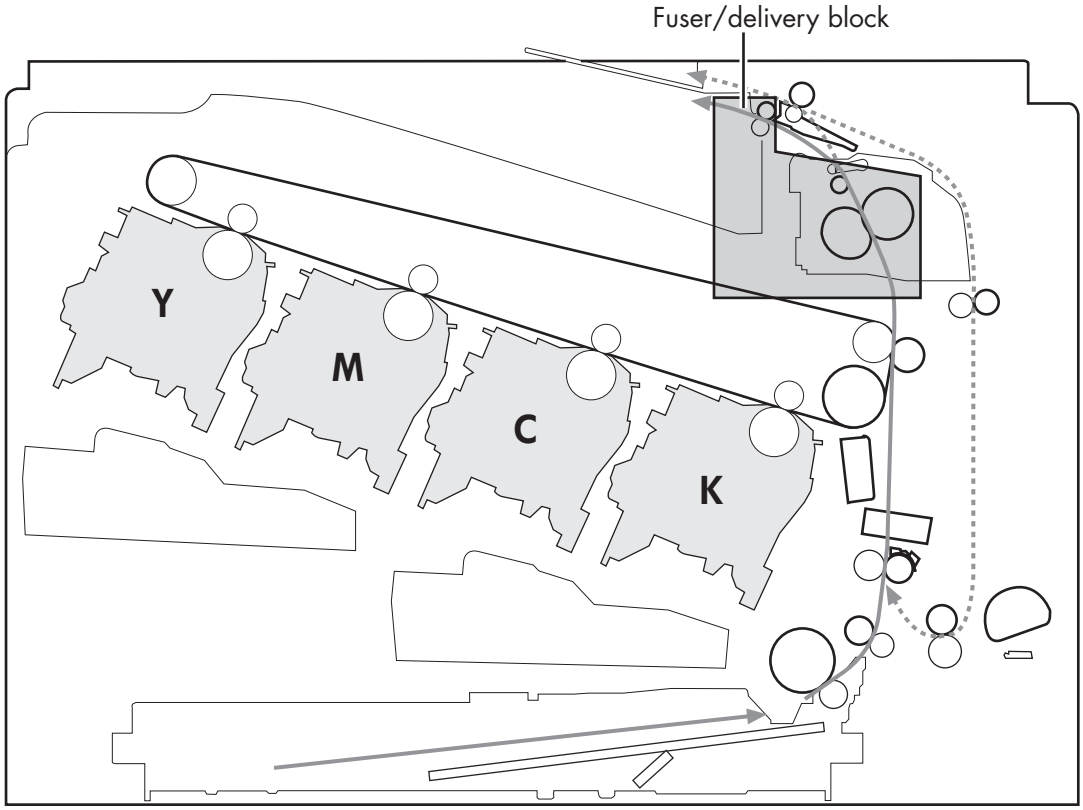
Fusing and delivery unit

The fusing and delivery unit fuses the toner onto the paper and delivers the printed page into the output bin. The following controls ensure optimum print quality:

- Loop control
- Pressure roller pressurization/depressurization control

A sensor detects when the output bin is full, and the DC controller notifies the formatter.

Figure 1-39 Fuser and delivery unit



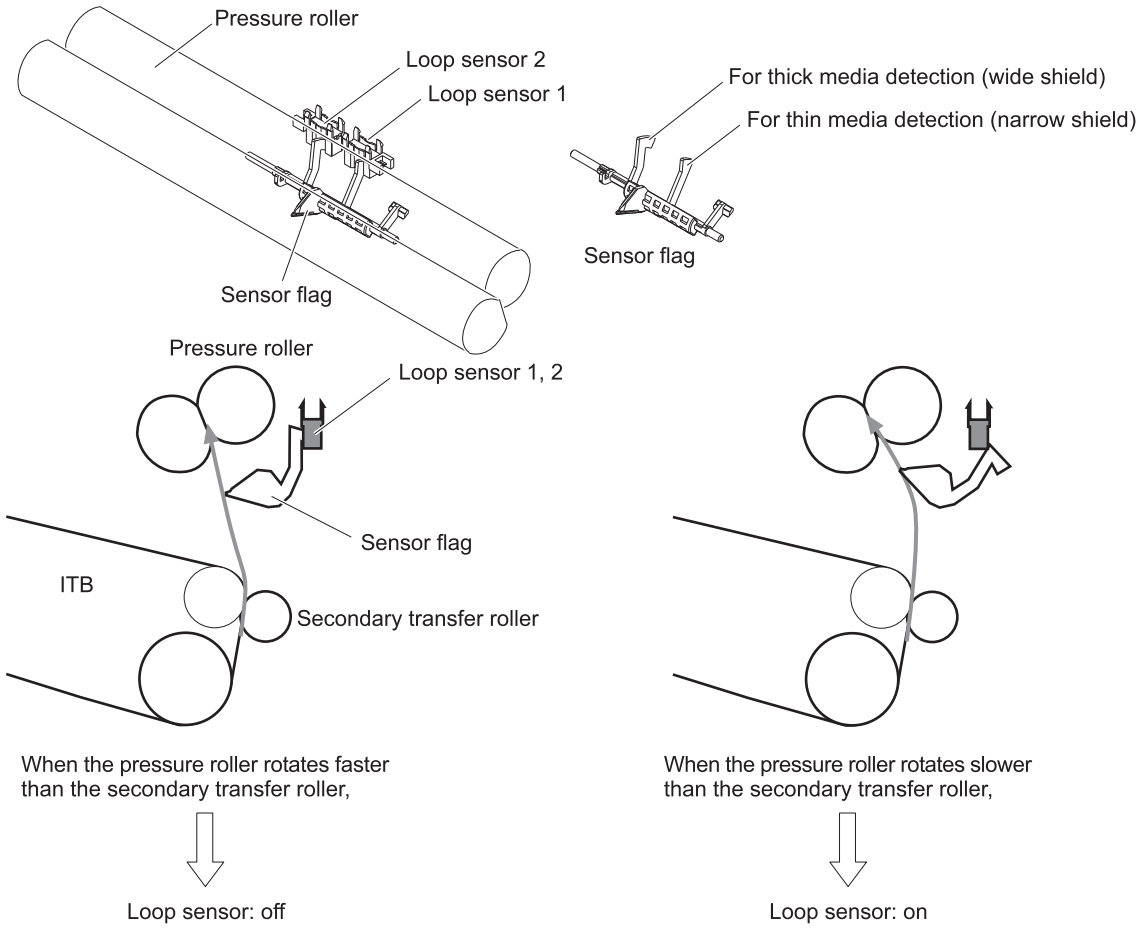
Loop control

The loop control monitors the tension of the paper between the secondary-transfer roller and the fuser.

- If the fuser rollers rotate more slowly than the secondary transfer rollers, the paper warp increases and an image defect or paper crease occurs.
- If the fuser rollers rotate faster than the secondary transfer rollers, the paper warp decreases and the toner image fails to transfer to the paper correctly, causing color misregistration.

To prevent these problems, the loop sensors, which are located between the secondary transfer rollers and the fuser rollers, detect whether the paper is sagging or is too taut. The DC controller adjusts the speed of the fuser motor.

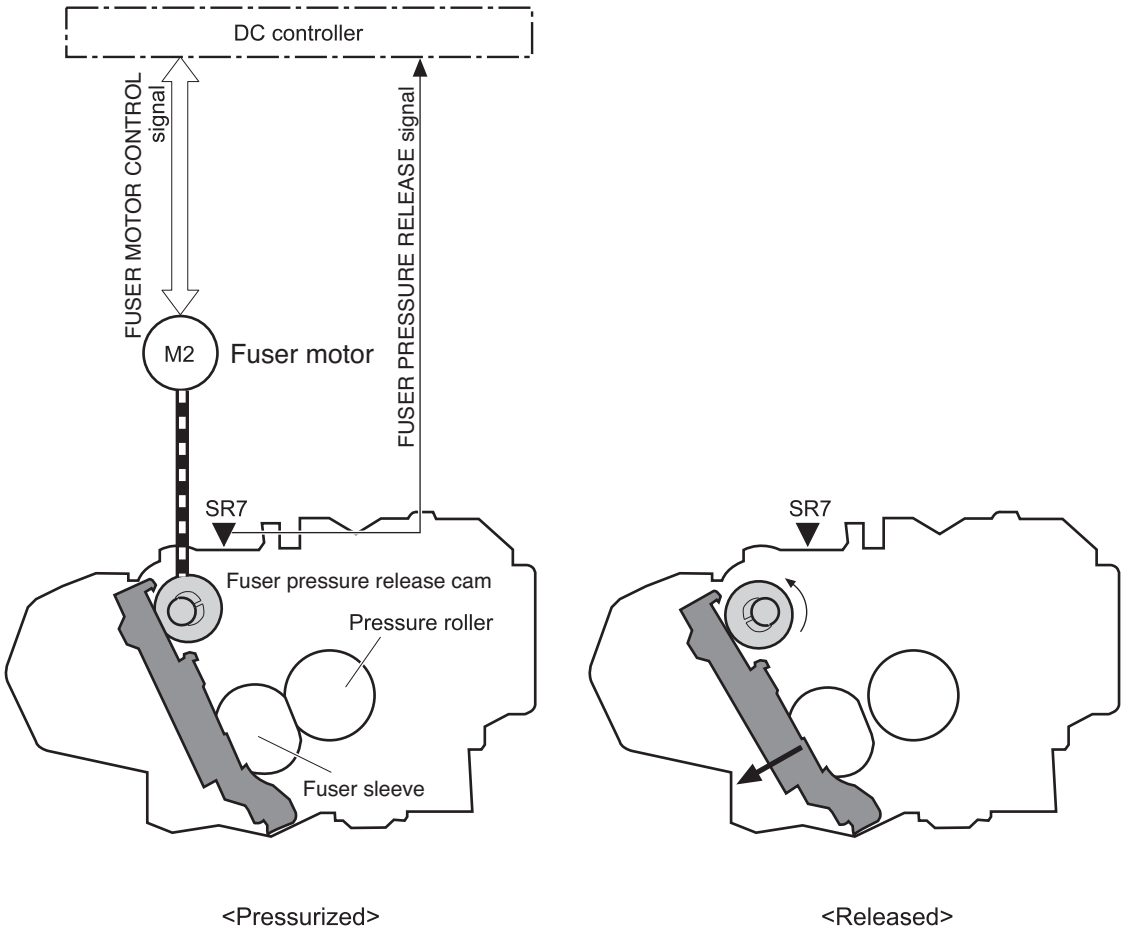
Figure 1-40 Loop-control mechanism



Pressure-roller pressurization control

To prevent excessive wear on the pressure roller and help with jam-clearing procedures, the pressure roller pressurizes only during printing and standby. The DC controller reverses the fuser motor. The fuser motor rotates the fuser pressure-release cam.

Figure 1-41 Pressure-roller pressurization control



The pressure roller depressurizes under the following conditions:

- The product is turned off with the on/off switch
- Any failure occurs other than a fuser pressure-release mechanism failure
- During powersave mode
- When a paper jam is detected

If the DC controller does not sense the fuser pressure-release sensor for a specified period after it reverses the fuser motor, it notifies the formatter that a fuser pressure-release mechanism failure has occurred.

NOTE: The fuser remains pressurized if the power is interrupted when the power cord is removed or the surge protector is turned off, or if the fuser is removed without turning off the product.

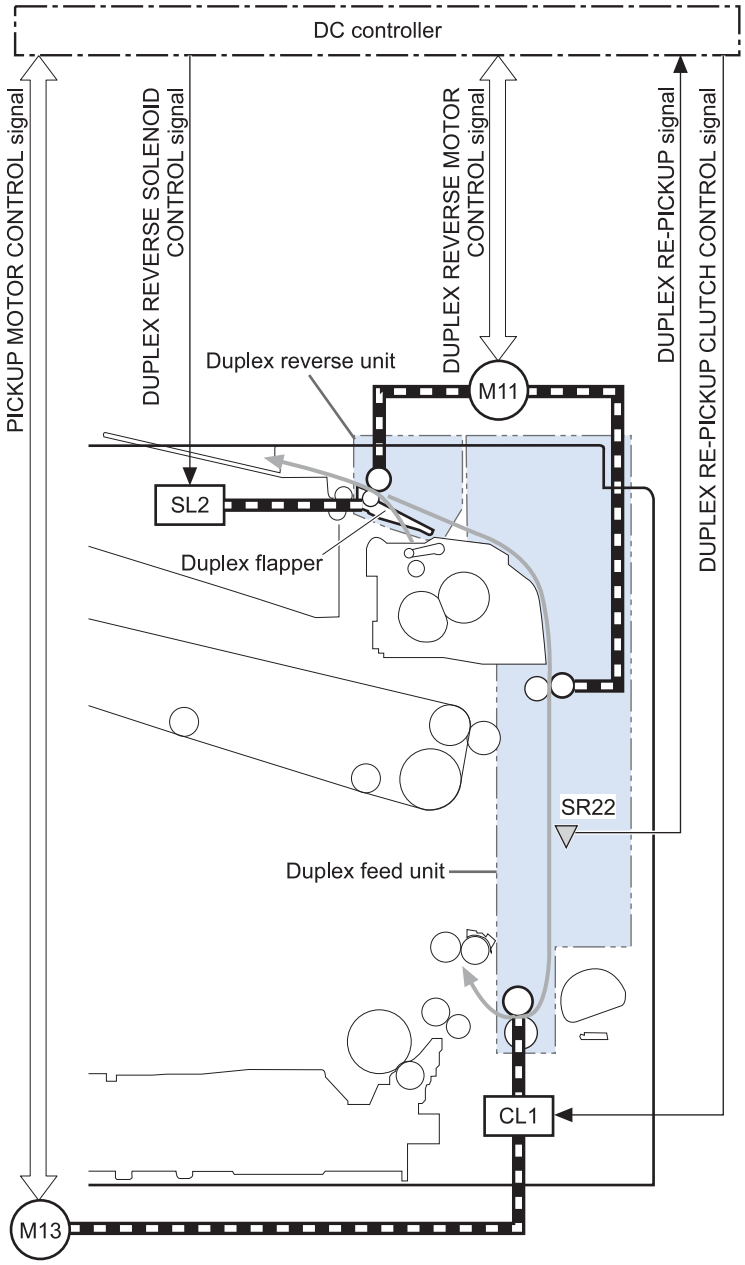
Duplexing unit

The duplexing unit reverses the paper and feeds it through the paper path to print the second side. The duplexing unit consists of the following components:

- **Duplexing-reverse unit**: Installed on top of the product
- **Duplexing-feed unit**: Along the right side

The DC controller controls the operational sequence of the duplex block. The DC controller drives each load, such as motors, solenoid, and clutch, depending on the duplex-reverse unit and duplex-feed unit controls.

Figure 1-42 Duplexing unit



Duplexing reverse and feed control

The duplexing reverse procedure pulls the paper into the duplexing unit after it exits the fuser. The duplexing feed procedure moves the paper through the duplexer so it can enter the product paper path to print the second side of the page.

1. After the first side has printed, the duplexing flapper solenoid opens, which creates a paper path into the duplexing-reverse unit.
2. After the paper has fully entered the duplexing-reverse unit, the duplexing-reverse motor reverses and directs the paper into the duplexing-feed unit.
3. The duplexing re-pickup motor and duplexing feed motor move the paper into the duplexing re-pickup unit.
4. To align the paper with the toner image on the ITB, the duplexing re-pickup motor stops and the paper pauses.
5. The paper re-enters the paper path, and the second side prints.

Duplex pickup operation

The product has the following two duplex-media-feed modes depending on the media sizes:

- One-sheet mode: Prints one sheet that is printed on two sides in one duplex print operation
- Two-sheet mode: Prints two sheets that are printed on two-sides in one duplex print operation (maximum paper size is A4)

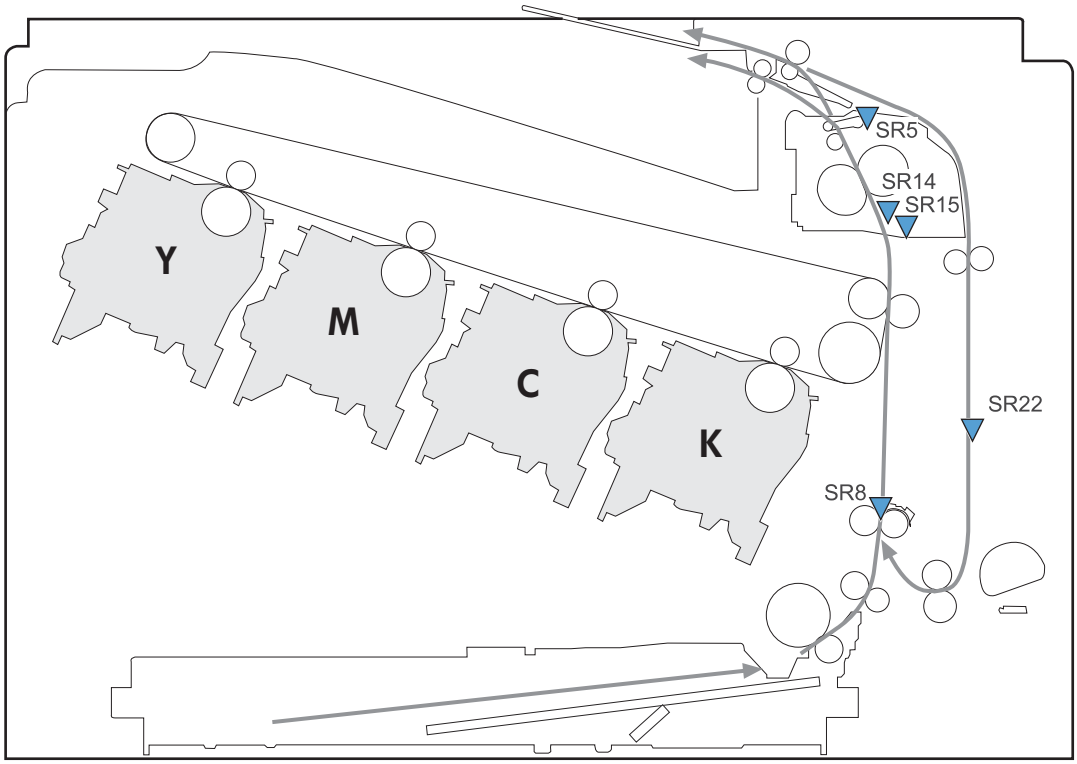
The formatter specifies the duplex-media-feed mode.

Jam detection

The product uses the following sensors to detect the paper as it moves through the paper path and to report to the DC controller if the paper has jammed.

- Fuser output sensor (SR5)
- Registration sensor (SR8)
- Fuser loop 1 (SR14)
- Fuser loop 2 (SR15)
- Duplexer refeed (SR22)

Figure 1-43 Jam detection sensors



The product determines that a jam has occurred if one of these sensors detects paper at an inappropriate time. The DC controller stops the print operation and notifies the formatter.

Table 1-15 Jams that the product detects

Jam	Description
Pickup delay jam 1	**pickup**: The TOP sensor does not detect the leading edge of the paper within a specified period after the pickup solenoid has turned on.
	Multipurpose tray pickup: The TOP sensor does not detect the leading edge of the paper within a specified period after the multipurpose tray solenoid has turned on.
Pickup stationary jam	The TOP sensor does not detect the trailing edge of the paper within a specified time from when it detects the leading edge.

Table 1-15 Jams that the product detects (continued)

Jam	Description
Fuser delivery delay jam	The fuser delivery paper-feed sensor does not detect the leading edge of the paper within a specified period after the TOP sensor detects the leading edge.
Fuser delivery stationary jam	The fuser delivery paper-feed sensor does not detect the trailing edge of the paper within a specified period after it detects the leading edge.
Wrapping jam	After detecting the leading edge of the paper, the fuser delivery paper-feed sensor detects the absence of paper, and it has not yet detected the trailing edge.
Residual paper jam	One of the following sensors detects paper presence during the initialization sequence: • Fuser delivery paper-feed sensor • TOP sensor • Loop sensor 1 • Loop sensor 2 • Duplex re-feed
Door open jam	A door is opened while paper is moving through the product.
Duplexing re-pickup jam 1	The duplex re-pickup sensor does not detect the leading edge of the paper within a specified period after the media reverse operation starts in the duplex-reverse unit.
Duplexing re-pickup jam 2	The TOP sensor does not detect the leading edge of the paper within a specified period after the paper is re-picked.

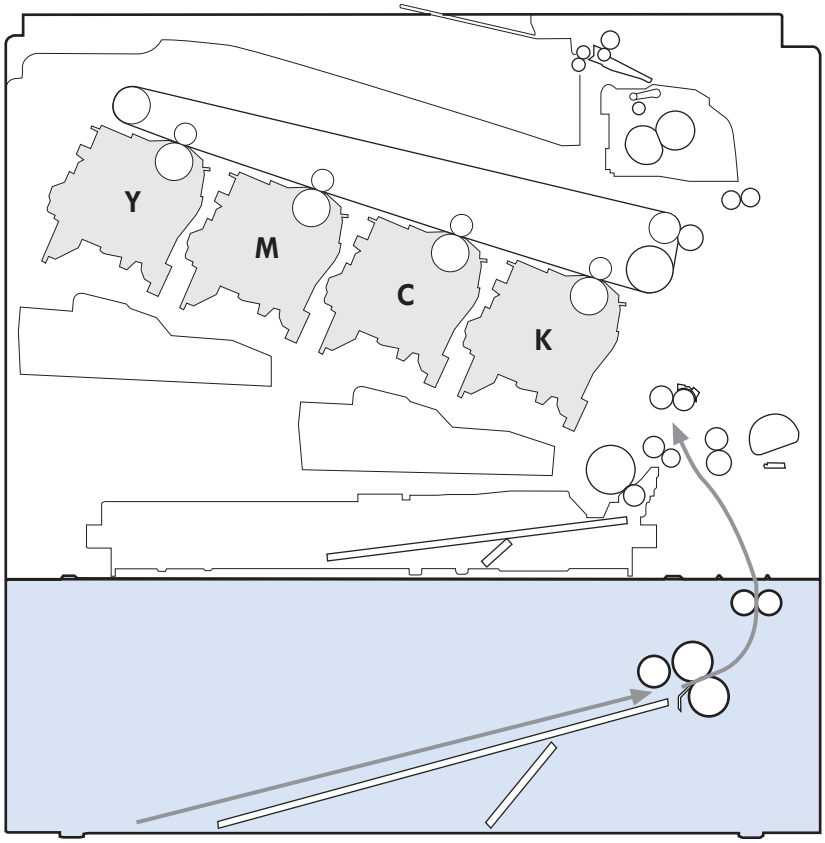
After a jam, some sheets of paper might remain inside the product. If the DC controller detects residual paper after a door closes or after the product is turned on, the product automatically clears itself of those residual sheets.

Optional paper feeder

The 1x500-sheet paper feeder is optionally installed underneath the product. The paper feeder picks up the print media and feeds it to the printer.

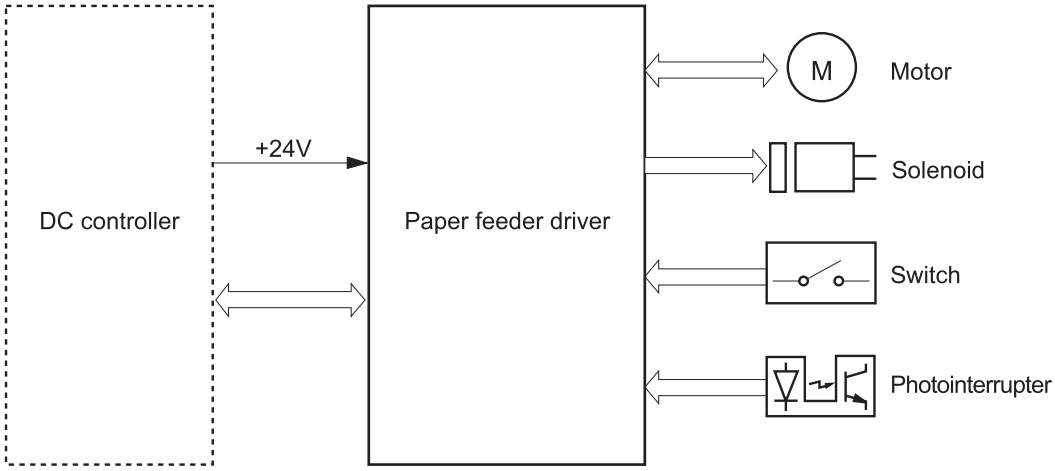
NOTE: These optional trays are *not* identical to the main (Tray 2).

Figure 1-44 Optional paper feeder



The paper-deck drivers contain a microcomputer and control the paper feeder. The paper-deck drivers receive commands from the DC controller. If the DC controller is unable to communicate with a paper-deck driver, it notifies the formatter that the optional paper feeders are not connected correctly.

Figure 1-45 Signals for the paper feeder



The input trays contain several motors, solenoids, sensors, and switches, as described in the following table.

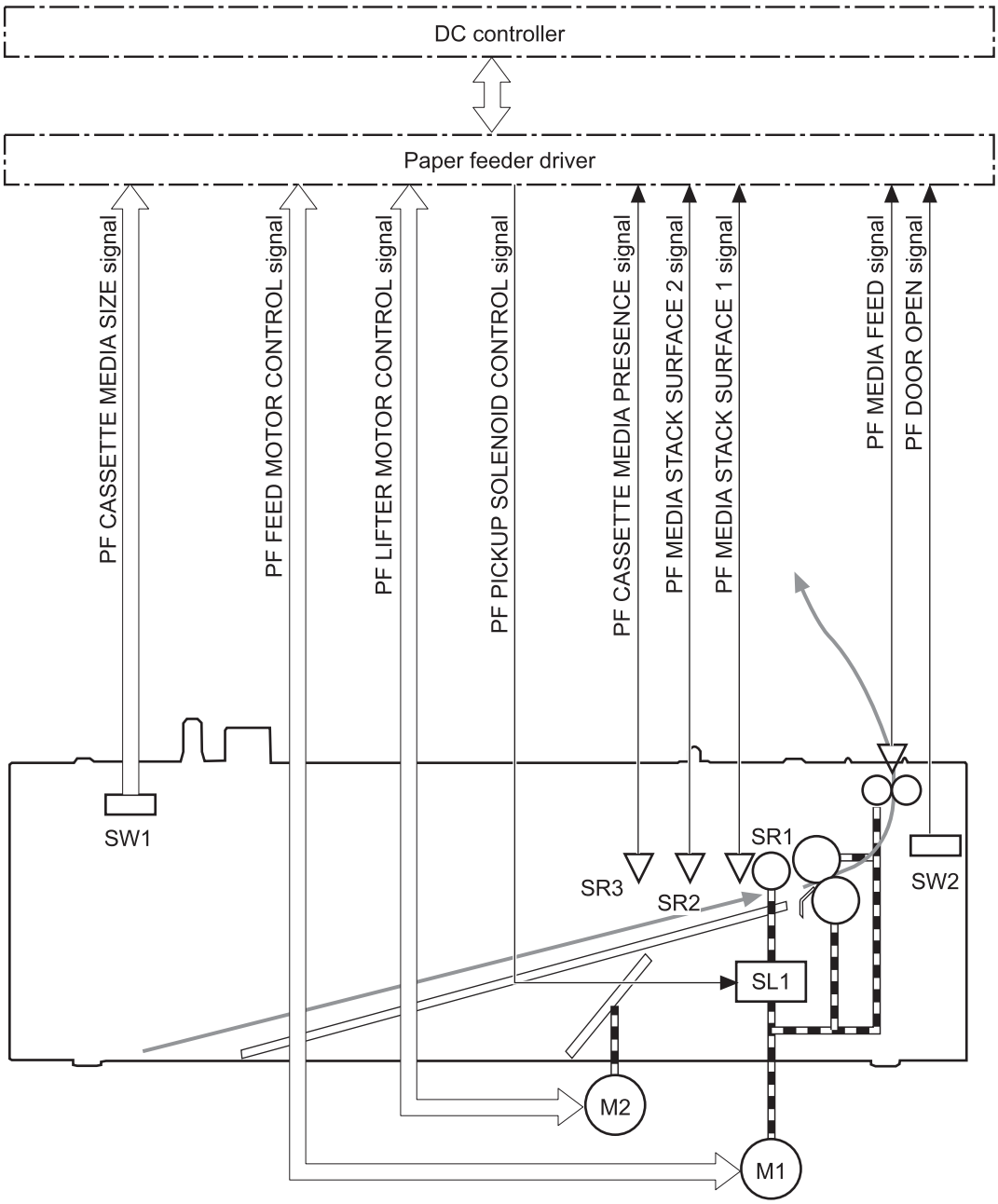
Table 1-16 Electrical components for the paper feeder

Component type	Abbreviation	Component name
Motors	M1	Paper feeder motor
	M2	Paper feeder lift motor
Solenoids	SL1	Paper feeder pickup solenoid
Sensors	SR1	Tray 3 installed sensor
	SR2	Tray 3 stack surface sensor 2
	SR3	Tray 3 paper present sensor
	SR4	Tray 3 feed sensor
Switches	SW1	Paper feeder media-size switch
	SW2	Paper-feeder door switch

Paper-feeder pickup and feed operation

The paper feeder picks up one sheet from the paper-feeder and feeds it to the product.

Figure 1-46 Paper-feeder pickup and feed operation



Paper size detection and presence detection

The paper-feeder media-size switch (SW1) detects the size of paper loaded in the paper-feeder . The paper-feeder driver determines the media size by monitoring the combination of the switches.

Figure 1-47 Paper size detection

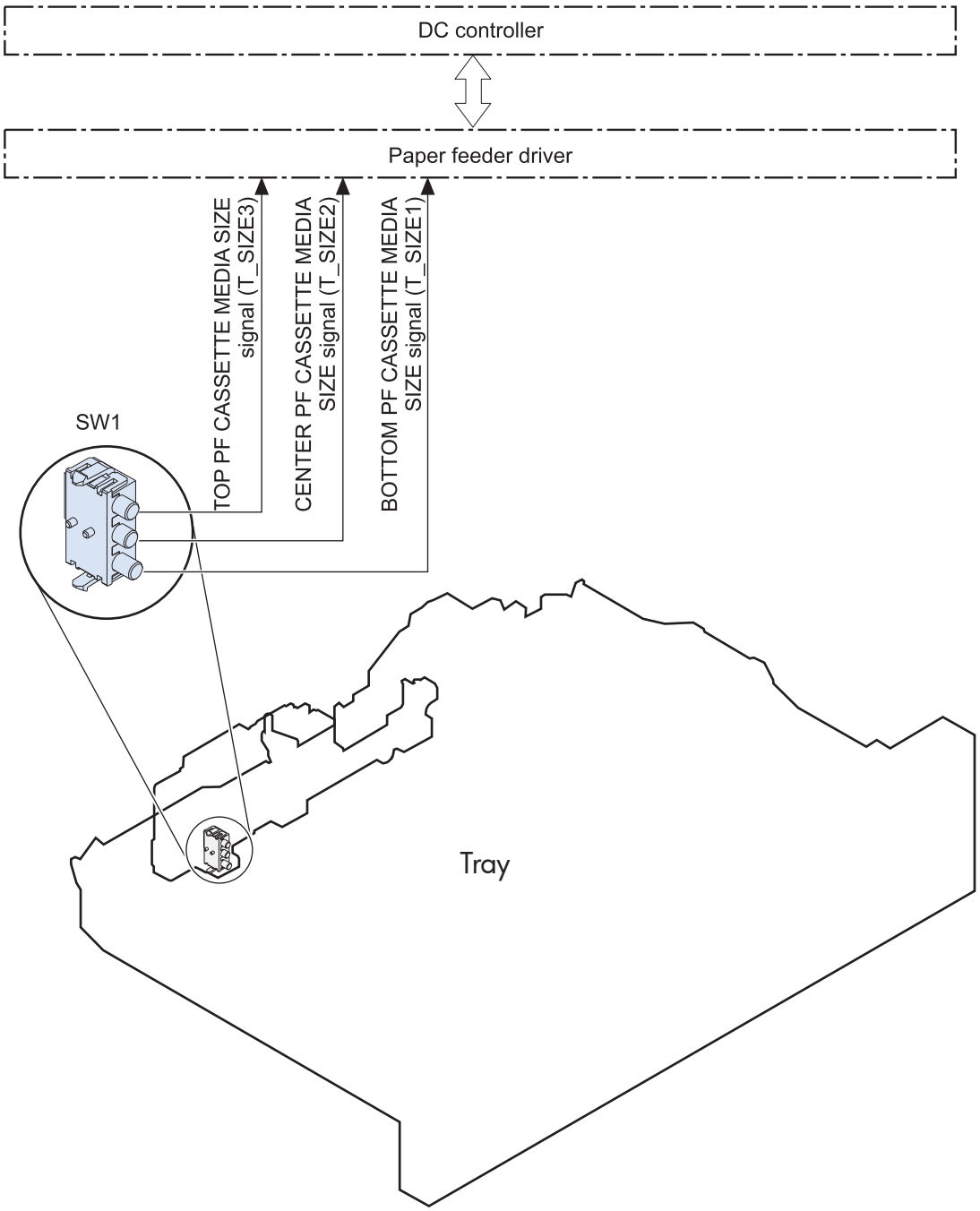


Table 1-17 Paper size detection

Paper size	Paper-feeder media-size switch settings		
	Top switch	Center switch	Bottom switch
Universal	On	On	On
A5	On	Off	Off
B5	Off	On	On
Executive	On	Off	On
Letter	Off	On	Off
A4	Off	Off	On
Legal	On	On	Off
No	Off	Off	Off

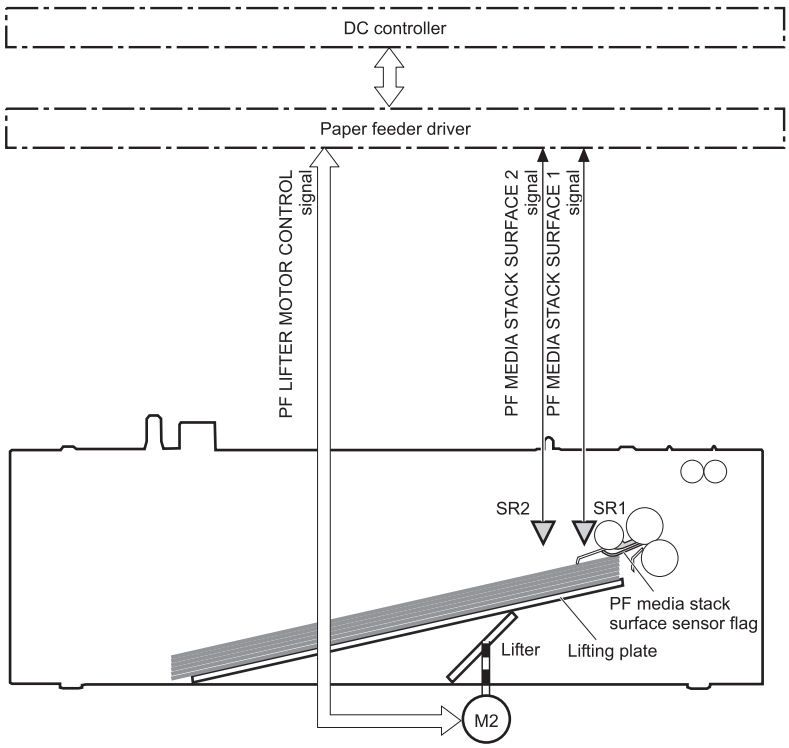
The paper-feeder media size switch (SW1) detects whether the paper-feeder is installed correctly. The paper-feeder driver determines if a is absent when all three switches are turned off. The paper-feeder driver determines a presence when one of the switches is turned on.

Paper feeder lift operation

The lift operation keeps the stack surface of paper at a specified height to maintain stable media feeding. The paper-feeder driver controls the paper-feeder lifter motor (M2) and monitors the paper-feeder media stack surface sensors (SR1, SR2) to adjust the stack height when the printer is turned on, when the printer recovers from sleep mode, when the paper-feeder is installed or as needed during a print operation. The paper feeder has two paper-feeder media-stack surface sensors. The paper-feeder media stack surface sensor 1 detects the stack height during a print operation. The paper-feeder media-stack surface sensor 2 detects the stack height when the printer is turned on, when the printer recovers from sleep mode and when the paper-feeder is installed. The operational sequence of the lift operation is as follows:

1. The paper-feeder driver rotates the paper-feeder lifter motor to lift the lifting plate.
2. The paper-feeder driver stops the paper-feeder lifter motor when the paper-feeder media-stack surface sensor 2 detects the stack surface.
3. The paper-feeder driver rotates the lifter motor again when paper-feeder media stack surface 1 detects that the media surface is lowered during a print operation.

Figure 1-48 Paper-feeder lift



The paper-feeder driver notifies the formatter if either of the paper-feeder media-stack surface sensors fails to detect the stack surface within a specified period from when a lift-up operation starts.

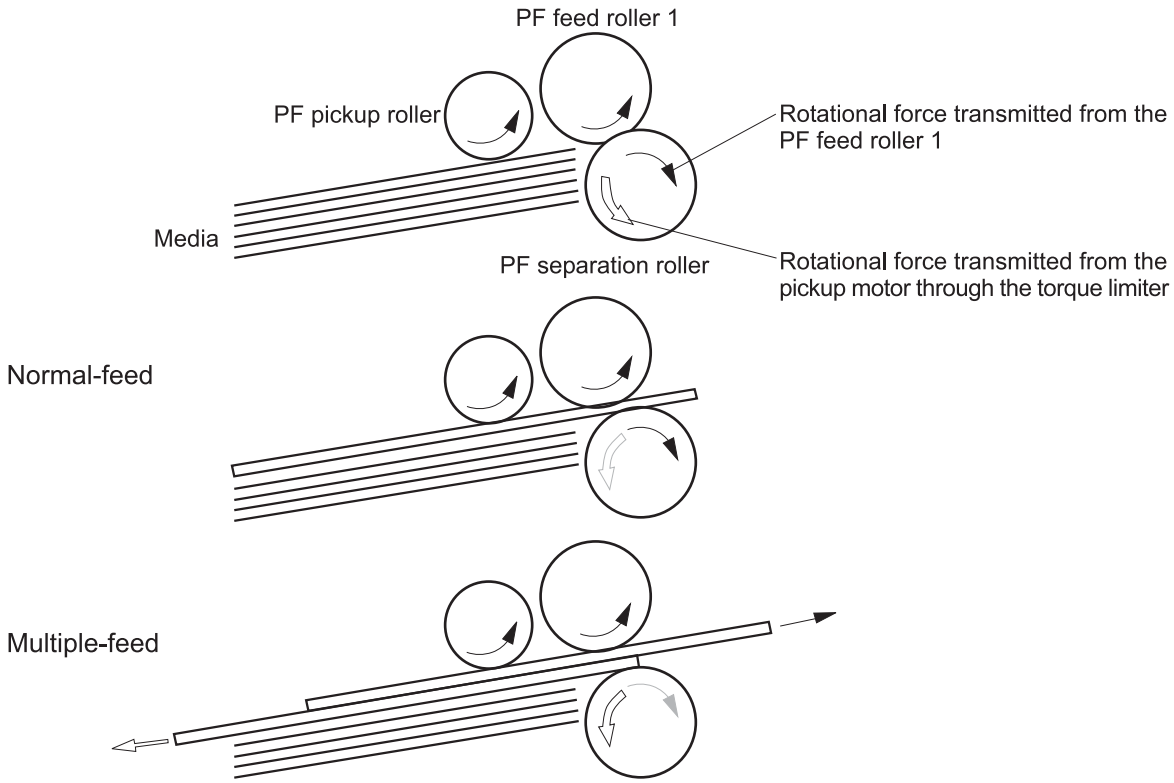
Paper feeder presence detection

The Tray 3 paper present (SR3) detects whether the paper is present in the paper-feeder .

Paper-feeder multiple feed prevention

The paper-feeder uses a separation roller to prevent multiple sheets of paper from entering the printer. The separation roller prevents multiple feeds of paper by allowing the paper-feeder separation roller to rotate in the same direction as the paper-feeder feed roller 1. The paper-feeder separation roller is equipped with the torque limiter. If multiple sheets of paper are picked up, the torque limiter takes control of the paper-feeder separation roller, and pushes the extra sheets back to the paper-feeder . That way, only the top sheet is fed to the printer.

Figure 1-49 Paper-feeder multiple feed prevention



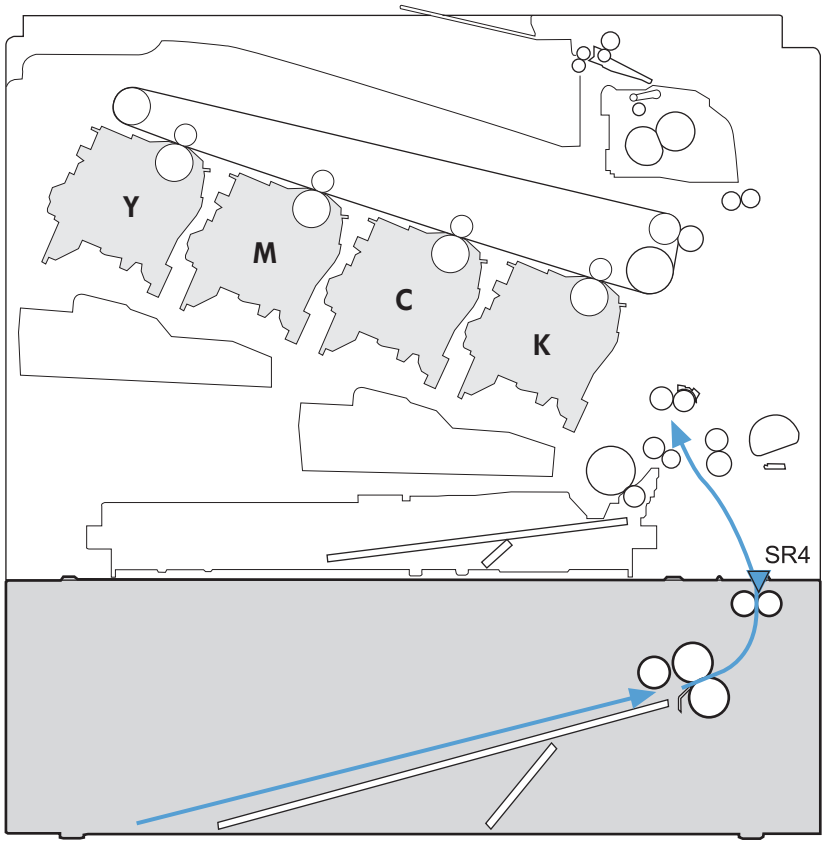
No-load	Rotational force for paper-feeder separation roller: Pushes back the media into the paper-feeder Rotational force for paper-feeder feed roller 1: Feeds media into the printer

Normal feed	Rotational force for paper-feeder separation roller: Pushes back the media into the paper-feeder Rotational force for paper-feeder feed roller 1: Feeds media into the printer
Multiple-feed	The low friction force between the sheets weakens the rotational force from the paper-feeder feed roller 1. The paper-feeder separation roller rotates by its own rotational force and removes the extra sheet.

Paper feeder jam detection

The paper feeder uses the Tray 3 feed (SR4) to detect the presence of paper and to check whether paper has jammed.

Figure 1-50 Jam detection



The paper-feeder driver identifies a jam if the sensor detects paper at a specified timing stored in the paper-feeder driver. The paper-feeder driver stops printing and notifies the formatter through the DC controller of the jam. The paper feeder detects the following jams:

- Pickup delay jam: The paper-feeder media-feed sensor does not detect the leading edge of media within a specified period from when the paper-feeder pickup solenoid is turned on.
- Pickup stationary jam: The paper-feeder media-feed sensor does not detect the trailing edge of media within a specified time period from when the sensor detects the leading edge.

Scanning/image capture system

The flatbed image scanner captures an electronic image of the document on the glass. The scanner does this by illuminating the document with LEDs (red, green, and blue) and capturing the image in the image sensor to create an electronic format of the document. The flatbed scanner consists of three main elements.

- **CIS scanner**. The CIS (contact image sensor) scanner captures an image using the product's optical path. Red, green, and blue LEDs sequentially illuminate a small strip of the document (often called a raster line), and the optical system captures each color in a single row of CCD sensors that cover the entire page width. Because only one color is captured for each line per exposure, the three colors are recombined electronically to create the full color image. For monochromatic scans or copies, all three LEDs are illuminated to create a white light for the scan so the raster line can be captured in one exposure.
- **Mechanical carriage drive**. The carriage drive moves the CIS scan head along the document length to create the image. In this product, a small DC motor with an optical encoder creates this motion. The speed of the carriage drive is proportional to the scan resolution (300 ppi is much faster than 1200 ppi) and also proportional to the type of scan (color scans are three-times slower than monochromatic scans). A 1200 ppi color scan moves so slowly that the product may appear to not be working, whereas a monochromatic copy scan moves at 50 times that speed and will be a little noisy.
- **Image processing system (formatter)**. The formatter processes the scanner data into either a copy or a scan to the computer. For copies, the image data is sent directly to the product without being transmitted to the computer. Depending on user selections for the copy settings, the formatter enhances the scanner data significantly before sending it to the product. Image data is captured at 300 ppi for copies and is user selectable for scans to the computer. Each pixel is represented by 8 bits for each of the three colors (256 levels for each color), for a total of 24 bits per pixel (24-bit color).

Scanner power-on sequence of events

When the product is turned on, it performs the following tests:

- **Motor test**. The product moves the motor left and right to confirm operation. It reports a scanner error 12 if no motion is detected in the motor encoder system.
- **Wall find**. The scan carriage moves slowly to the left while watching an encoder on the carriage motor to determine when the carriage has found the side wall or stop. This enables the product to identify the document origin (position of the original). If the document origin cannot be located, a default position is used instead.
- **LED check**. The product moves the carriage to the white calibration label under the left side of the flatbed image scanner, and it verifies that the minimum and maximum response is acceptable. It reports a scanner error 14 if the response is unacceptable.
- **Home find**. The scan carriage uses the optical scanner to find physical reference features that relate to the document origin at the left side of the image glass. This process ensures accurate location of the first document pixels so that the user documents will have an accurate placement of

the image on scans and copies. It reports a scanner error 6 message if the reference features are not found.

- **Calibration**. This test, also known as scanner color calibration, enables the product to identify the black and white on every pixel in the CCD. Calibration occurs in two major processes: a broad (analog) adjustment of all pixels to bring them into the target output range, and a pixel-by-pixel adjustment (digital) to fine tune the actual black and white response. The calibration process occurs under the left side of flatbed image scanner where there is a special white calibration label.

  Calibration is the most important step in creating a high quality image. Calibration problems can include color inaccuracies, brightness inaccuracies, and vertical streaks through the image. The calibration process identifies any bad pixels and enables the image formatter to recreate the lost information from adjacent pixels. Extreme cases of this problem can appear as large vertical streaks or image smears. The user has no control over the calibration process itself or this pixel-replacement process.

Copy or scan sequence of events

To create an accurate rendition of a document, the scanner must be calibrated for the requested operation. If the user selects a scan at 600 ppi color, the flatbed image scanner calibrates for that specific operational mode. Subsequently, the flatbed image scanner automatically re-calibrates for the next requested operation. Calibration does not occur for every new copy request.

Normal sequence of operation for a flatbed copy or scan job includes the following.

1. LEDs illuminate.
2. Carriage motion begins moving the CIS scanner toward the right.
3. Image capture continues for the entire page or length requested in a scan operation.
4. Carriage returns to the home position on the left.

Fax functions and operation

Computer and network security features

The product can send and receive fax data over telephone lines that conform to public switch telephone network (PSTN) standards. The secure fax protocols make it impossible for computer viruses to be transferred from the telephone line to a computer or network.

The following product features prevent virus transmission:

- No direct connection exists between the fax line and any devices that are connected to the USB or Ethernet ports.
- The internal firmware cannot be modified through the fax connection.
- All fax communications go through the fax subsystem, which does not use Internet data-exchange protocols.

PSTN operation

The PSTN operates through a central office (CO) that generates a constant voltage on the TIP and RING wires (48 V, usually). A device goes on-hook by connecting impedance (such as 600 ohms for the U.S.) across the TIP and RING so that a line current can flow. The CO can detect this current and can send impulses like dial tones. The product generates more signaling tones, such as dialing digits, to tell the CO how to connect the call. The product can also detect tones, such as a busy tone from the CO, that tell it how to behave.

When the call is finally connected, the CO behaves like a piece of wire connecting the sender and receiver. This is the period during which all of the fax signaling and data transfer occurs. When a call is completed, the circuit opens again and the line-current flow ceases, removing the CO connection from both the sender and the receiver.

On most phone systems, the TIP and RING wires appear on pins 3 and 4 of the RJ-11 modular jack (the one on the fax card). These two wires do not have to be polarized because all the equipment works with either TIP or RING on pin 3 and the other wire on pin 4. This means that cables of either polarity can interconnect and will still work.

These basic functions of PSTN operation are assumed in the design of the fax subsystem. The product generates and detects the signaling tones, currents, and data signals that are required to transmit and receive faxes on the PSTN.

Receive faxes when you hear fax tones

In general, incoming faxes to the product are automatically received. However, if other devices are connected to the same phone line, the product might not be set to answer automatically.

If the product is connected to a phone line that receives both fax and phone calls, and you hear fax tones when you answer the extension phone, receive the fax in one of two ways:

- If you are near the product, touch the Start Fax button on the control panel.
- Press 1-2-3 in sequence on the extension phone keypad, listen for fax transmission sounds, and then hang up.

NOTE: In order for the 1-2-3 sequence to work, the Extension Phone setting must be set to On in the Fax Setup menu.

Distinctive ring function

The distinctive ring feature is a service that a telephone company provides. The distinctive ring service allows three phone numbers to be assigned to one phone line. Each phone number has a distinctive ring. The first phone number has a single ring, the second phone number has a double ring, and the third phone number has a triple ring.

NOTE: The product has not been tested with all of the distinctive-ring services that telephone companies provide in all countries/regions. HP does not guarantee that the distinctive-ring function will operate correctly in all countries/regions. Contact the local telephone service provider for assistance.

Set up the distinctive ring function

1. From the Home screen on the product control panel, touch the Setup button.
2. Open the following menus:
   - Fax Setup
   - Basic Setup
   - Distinctive Ring
3. Use the arrow buttons to select one of the following options:
   - All Rings (default setting)
   - Single
   - Double
   - Triple
   - Double and Triple

Use fax with voice over IP services

Voice over IP (VoIP) services provide normal telephone service, including long distance service through a broadband Internet connection. These services use packets to break up the voice signal on a telephone line and transmit it digitally to the receiver, where the packets are reassembled. The VoIP services are often not compatible with fax machines. The VoIP provider must state the service supports fax over IP services.

Because the installation process varies, the VoIP service provider will have to assist in installing the product fax component.

Although a fax might work on a VoIP network, it can fail when the following events occur:

- Internet traffic becomes heavy and packets are lost.
- Latency (the time it takes for a packet to travel from its point of origin to its point of destination) becomes excessive.

If you experience problems using the fax feature on a VoIP network, ensure that all of the product cables and settings are correct. Configuring the Fax Speed setting to Medium(V.17) or Slow(V.29) can also improve your ability to send a fax over a VoIP network.

If you continue to have problems faxing, contact your VoIP provider.

The fax subsystem

The formatter, fax card, firmware, and software all contribute to the fax functionality. The designs of the formatter and fax card, along with parameters in the firmware, determine the majority of the regulatory requirements for telephony on the product.

The fax subsystem is designed to support V.34 fax transmission, lower speeds (such as V.17 fax), and older fax machines.

Fax card in the fax subsystem

Two versions of the fax card are used in the product. One is used in the North American, South American, and Asian countries/regions. The other is used primarily in European countries/regions.

The fax card contains the modem chipset (DSP and CODEC) that controls the basic fax functions of tone generation and detection, along with channel control for fax transmissions. The CODEC and its associated circuitry act as the third-generation silicon data access arrangement (DAA) to comply with worldwide regulatory requirements.

The only difference between the two versions is that each version is compliant with the 2/4-wire phone jack system from the respective country/region.

Safety isolation

The most important function of the fax card is the safety isolation between the high-voltage, transient-prone environment of the telephone network (TNV [telephone network voltage]) and the low-voltage analog and digital circuitry of the formatter (SELV [secondary extra-low voltage]). This safety isolation provides both customer safety and product reliability in the telecom environment.

Any signals that cross the isolation barrier do so magnetically. The breakdown voltage rating of barrier-critical components is greater than 5 kV.

Safety-protection circuitry

In addition to the safety barrier, the fax card protects against overvoltage and overcurrent events.

Telephone overvoltage events can be either differential mode or common mode. The event can be transient in nature (a lightning-induced surge or ESD) or continuous (a power line crossed with a phone line). The fax card protection circuitry provides margin against combinations of overvoltage and overcurrent events.

Common mode protection is provided by the selection of high-voltage-barrier critical components (transformer and relay). The safety barrier of the fax card printed circuit board traces and the clearance between the fax card and surrounding components also contribute to common mode protection.

A voltage suppressor (a crowbar-type SIDACTOR) provides differential protection. This product becomes low impedance at approximately 300 V differential, and crowbars to a low voltage. A series thermal switch works in conjunction with the crowbar for continuous telephone line events, such as crossed power lines.

All communications cross the isolation barrier magnetically. The breakdown voltage rating of barrier-critical components is greater than 5 kV.

Data path

TIP and RING are the two-wire paths for all signals from the telephone network. All signaling and data information comes across them, including fax tones and fax data.

The telephone network uses DC current to determine the hook state of the telephone, so line current must be present during a call. The silicon DAA provides a DC holding circuit to keep the line current constant during a fax call.

The silicon DAA converts the analog signal to a digital signal for DSP processing, and also converts the digital signal to an analog signal for transmitting data through a telephone line.

The magnetically coupled signals that cross the isolation barrier go either through a transformer or a relay.

The DSP in the fax card communicates with the ASIC in the formatter using the high-speed serial interface.

Hook state

Another magnetically coupled signal is the control signal that disconnects the downstream devices (such as a telephone or answering machine). A control signal originating on the DSP can change the relay state, causing the auxiliary jack (downstream jack) to be disconnected from the telephone circuit.

The product takes control of calls that it recognizes as fax calls. If the product does not directly pick up the call, it monitors incoming calls for the fax tone or for the user to direct it to receive a fax. This idle mode is also called eavesdropping. This mode is active when the product is on-hook but current exists in the downstream phone line because another device is off-hook. During eavesdropping, the receive circuit is enabled but has a different gain from the current that is generated during normal fax transmissions.

The product does not take control of the line unless it detects a fax tone or the user causes it to connect manually. This feature allows the user to make voice calls from a phone that is connected to the product without being cut off if a fax is not being received.

Downstream device detection

The line voltage monitoring module of the silicon DAA can detect the line state as well as the downstream device. It tells DSP via DIB that an active device (telephone, modem, or answering machine) is connected to the auxiliary port on the product (the right side of the RJ-11 jack). The DSP uses the signal to ensure that the product does not go off-hook (and disconnect a downstream call) until it has been authorized to do so (by a manual fax start or the detection of the appropriate tones).

Hook switch control

In the silicon DAA, the CODEC controls the hook switch directly. The CODEC is activated when it receives commands from the DSP. When the circuit is drawing DC current from the central office, it is considered off-hook. When no DC current flows, the state is considered on-hook.

Ring detect

Ring detect is performed by the line voltage monitoring module of the silicon DAA, and is a combination of voltage levels and cadence (time on and time off). Both must be present to detect a valid ring. The CODEC works with DSP as well as the firmware to determine if an incoming signal is an answerable ring.

Line current control

The DC current from the CO needs to have a path to flow from TIP to RING. The DC impedance emulation line modulator and DC terminations modules in the silicon DAA act as a DC holding circuit, and works with the firmware to achieve the voltage-current characteristic between TIP and RING. The impedance (the current-voltage characteristic) changes depending on certain special events, such as pulse dialing or when the product goes on-hook.

Billing- (metering-) tone filters

Switzerland and Germany provide high-frequency AC signals on the telephone line in order to bill customers.

A filter in a special fax cable (for certain countries/regions), can filter these signals. Because these billing signals are not used in the U.S., these filters are not present in the U.S. fax cable.

To obtain a special fax cable, contact your local telephone service provider.

Fax page storage in flash memory

Fax pages are the electronic images of the document page. They can be created in any of three ways: scanned to be sent to another fax machine, generated to be sent by the computer, or received from a fax machine to be printed.

The product stores all fax pages in flash memory automatically. After these pages are written into flash memory, they are stored until the pages are sent to another fax machine, printed on the product, transmitted to a computer, or erased by the user.

These pages are stored in flash memory, which is the nonvolatile memory that can be repeatedly read from, written to, and erased. The product has 8 MB of flash memory, of which 7.5 MB is available for

fax storage. The remaining 0.5 MB is used for the file system and reclamation. Adding RAM does not affect the fax page storage because the product does not use RAM for storing fax pages.

Stored fax pages

The user can reprint stored fax receive pages in case of errors. For a fax send, the product will resend the fax in case of errors. The product will resend stored fax pages after a busy signal, communication error, no answer, or power failure. Other fax devices store fax pages in either normal RAM or short-term RAM. Normal RAM immediately loses its data when power is lost, while short-term RAM loses its data about 60 minutes after power failure. Flash memory maintains its data for years without any applied power.

Advantages of flash memory storage

Fax pages that are stored in flash memory are persistent. They are not lost as a result of a power failure, no matter how long the power is off. Users can reprint faxes in case the print cartridge runs out of toner or the product experiences other errors while printing faxes.

The product also has scan-ahead functionality that makes use of flash memory. Scan-ahead automatically scans pages into flash memory before a fax job is sent. This allows the sender to pick up the original document immediately after it is scanned, eliminating the need to wait until the fax is transmission is complete.

Because fax pages are stored in flash memory rather than RAM, more RAM is available to handle larger and more complicated copy and print jobs.

2 Solve problems

Solve problems checklist

1. Ensure that the product is set up correctly.
   a. Press the power button to turn on the product or to deactivate the Auto-Off mode.
   b. Check the power-cable connections.
   c. Ensure that the line voltage is correct for the product power configuration. (See the label that is on the back of the product for voltage requirements.) If you are using a power strip and its voltage is not within specifications, plug the product directly into the wall. If it is already plugged into the wall, try a different outlet.
2. Check the cable connections.
   a. Check the cable connection between the product and the computer. Ensure that the connection is secure.
   b. Ensure that the cable itself is not faulty, by using a different cable if possible.
   c. Check the network connection: Ensure the network light is lit. The network light is next to the network port on the back of the product.

      If the product remains unable to connect to the network, uninstall and then reinstall the product. If the error persists, contact a network administrator.
3. Check to see if any messages appear on the control panel.
4. Ensure that the paper you are using meets specifications.
5. Ensure that the paper is loaded correctly in the input tray.
6. Ensure that the product software is installed correctly.
7. Verify that you have installed the printer driver for this product, and that you are selecting this product from the list of available printers.
8. Print a configuration page.
   a. If the page does not print, verify that the input tray contains paper and that the paper is properly loaded.
   b. Ensure that the toner cartridge is installed correctly.

c. If the page jams in the product, clear the jam.

d. If the print quality is unacceptable, complete the following steps:

- Verify that the print settings are correct for the paper you are using.
- Solve print-quality problems.

9. Print a small document from a different program that has printed in the past. If this solution works, then the problem is with the program you are using. If this solution does not work (the document does not print), complete these steps:

a. Try printing the job from another computer that has the product software installed.

b. Check the cable connection. Direct the product to the correct port, or reinstall the software, selecting the connection type you are using.

Menu map

Use the following procedure to print a control panel menu layout map.

1. From the Home screen, touch the Setup button.
2. Touch the Reports button.
3. Touch the Menu Structure button.

Troubleshooting process

When the product malfunctions or encounters an unexpected situation, the product control panel alerts you to the situation. This chapter contains information to help diagnose and solve problems.

- Use the pre-troubleshooting checklist to evaluate the source of the problem and to reduce the number of steps that are required to fix the problem.
- Use the troubleshooting flowchart to pinpoint the root cause of hardware malfunctions. The flowchart guides you to the section of this chapter that contains steps for correcting the malfunction.

Before beginning any troubleshooting procedure, check the following issues:

- Are supply items within their rated life?
- Does the configuration page reveal any configuration errors?

NOTE: The customer is responsible for checking supplies and for using supplies that are in good condition.

Pre-troubleshooting checklist

The following table includes basic questions to ask the customer to quickly help define the problem(s).

General topic	Questions
Environment	• Is the product installed on a solid, level surface (+/- 1°)? • Is the power-supply voltage within ± 10 volts of the specified power source? • Is the power-supply plug inserted in the product and the outlet? • Is the operating environment within the specified parameters? • Is the product exposed to ammonia gas, such as that produced by diazo copiers or office cleaning materials? **NOTE:** Diazo copiers produce ammonia gas as part of the copying processes. Ammonia gas (from cleaning supplies or a diazo copier) can have an adverse effect on some product components (for example, the toner cartridge OPC). • Is the product exposed to direct sunlight?
Media	• Does the customer use only supported media? • Is the media in good condition (no curls, folds, or distortion)? • Is the media stored correctly and within environmental limits?
Input trays	• Is the amount of media in the tray within specifications? • Is the media correctly placed in the tray? • Are the paper guides aligned with the stack? • Is the tray correctly installed in the product?

General topic	Questions
Toner cartridge	• Is the toner cartridge installed correctly?
Transfer unit and fuser	• Are the transfer unit and fuser installed correctly?
Covers	• Is the front cover closed?
Condensation	• Does condensation occur following a temperature change (particularly in winter following cold storage)? If so, wipe affected parts dry or leave the product on for 10 to 20 minutes. • Was a toner cartridge opened soon after being moved from a cold to a warm room? If so, allow the toner cartridge to sit at room temperature for 1 to 2 hours.
Miscellaneous	• Check for and remove any non-HP components (toner cartridges, memory modules, and EIO cards) from the product. • If the hardware or software configuration has not changed or the problem is not associated with any specific software, see the complete service manual for this product. • Remove the product from the network and ensure that the failure is associated with the product before beginning troubleshooting. • For any print-quality issues, calibrate the product.

Determine the problem source

The following table includes basic questions to ask the customer to quickly help define the problem or problems.

General topic	Questions
Environment	• Is the product installed on a solid, level surface (± 1°)? • Is the power-supply voltage within ± 10 volts of the specified power source? • Is the power-supply plug inserted in the product and the outlet? • Is the operating environment within the specified parameters? • Is the product exposed to ammonia gas, such as that produced by diazo copiers or office cleaning materials? **NOTE:** Diazo copiers produce ammonia gas as part of the coping processes. Ammonia gas (from cleaning supplies or a diazo copier) can have an adverse affect on some product components (for example, the toner cartridge imaging drum). • Is the product exposed to direct sunlight?
Paper	• Does the customer use only supported paper? • Is the paper in good condition (no curls, folds, or distortion)? • Is the paper stored correctly and within environmental limits?
Input tray	• Is the amount of paper in the tray within specifications? • Is the paper correctly placed in the tray? • Are the paper guides aligned with the stack?
Supplies	• Is the toner cartridge installed correctly and firmly seated? • Has the sealing tape been removed from the toner cartridge? • Is the toner cartridge within its estimated life? (Check the supplies status page.)
Transfer roller and fuser	• Are the transfer roller and fuser installed correctly?
Covers	• Are the front and rear doors firmly closed?
Condensation	• Does condensation occur following a temperature change (particularly in winter following cold storage)? If so, wipe affected parts dry or leave the product on for 90 to 120 minutes. • Was a toner cartridge opened soon after being moved from a cold to a warm room? If so, allow the toner cartridge to sit at room temperature for 1 to 2 hours.
Miscellaneous	• Check for and remove any non-HP components (for example, a toner cartridge) from the product. • Remove the product from the network and make sure that the failure is with the product before beginning troubleshooting.

Power subsystem

Power-on checks

When you turn on the product, if it does not make any sound or if the control-panel display is blank, check the following items:

- Verify that the product is plugged directly into an active electrical outlet that has the correct voltage. Do not plug the product into a surge protector or power strip.
- Verify that the on/off switch is in the on position.
- Verify that the formatter is seated and operating correctly.
- Remove any HP Jetdirect accessories or other devices, and then try to turn the product on again.
- Make sure that the control-panel display is connected.
- Check the two fuses on the power supply.
- If necessary, replace the power supply.
- If necessary, replace the DC controller.

Control-panel checks

Use the product control panel to conduct tests on the control panel LEDs, display, or buttons.

NOTE: When the menus are accessed, some of the touchscreen buttons located along the sides of the control-panel display are not illuminated. Use the figure below to locate the Cancel ✕ button and the left arrow button to access the control-panel tests.

Figure 2-1 Control-panel 2ndary Service test access buttons

Table 2-1 Control-panel 2ndary Service test access buttons

Item	Description
1	Left arrow button
2	Cancel ✕ button

1. From the Home screen on the product control panel, touch the Setup button.
2. Touch the left arrow button, and then quickly touch the Cancel ✕ button. The display should return to Ready status.
3. Press the Setup button again to open the menus. The first menu should be the 2ndary Service menu.
4. Touch the 2ndary Service menu, and then scroll to one of the following menu items.
   - LED Test
   - Display Test
   - Button Test
5. Touch the menu item to begin the test.
6. After completing the test, return the product to the Ready state, and then touch the Cancel ✕ button to remove the 2ndary Service menu from the menu list.

Tools for troubleshooting

Component diagnostics

LED diagnostics

Network LEDs

The onboard network solution has two network port LEDs. When the product is connected to a properly working network through a network cable, the yellow LED indicates network activity, and the green LED indicates the link status. A blinking yellow LED indicates network traffic. If the green LED is off, a link has failed.

For link failures, check all of the network cable connections. In addition, you can try to manually configure the network card link speed setting by using the product control-panel.

Change the Link Speed setting

1. From the Home screen on the product control panel, touch the Setup button.
2. Scroll to, and then touch the Network Setup menu.
3. Scroll to, and then touch Link Speed item.
4. Touch the appropriate link speed.

Control panel LEDs

The state of the Ready light and Attention light on the product signal the product status. The following table outlines the possible control-panel light states.

Product state	Ready light state	Attention light state
Initializing	Blinking	Blinking
Ready	On	Off
Receiving data/processing job or cancelling job	Blinking	Off
Error message	Off	Blinking
Fatal error (49 or 79 error)[1]	On	On

[1] The product will power off and then power on after one of these errors occurs.

Engine diagnostics

Engine test

The engine test produces a single-sided sheet with horizontal lines when you perform the engine test.

To perform the test, use a small-pointed object, for example a straightened paper clip, to push the engine test button (accessed through a small hole in the rear cover). If the engine is functioning properly, the product will initialize and then print the test page.

Figure 2-2 Engine test button access

Diagrams

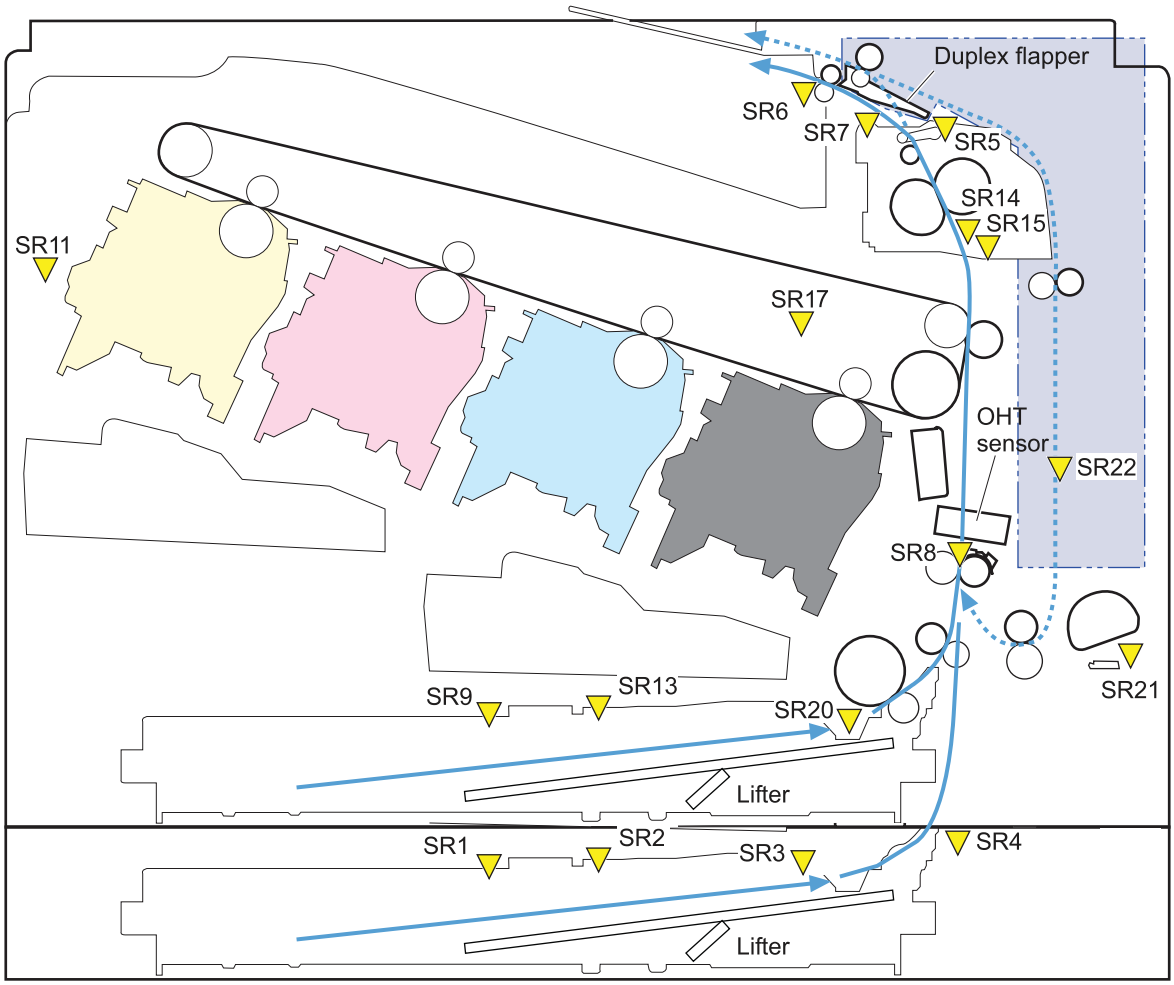
Block diagrams

Figure 2-3 Block diagram (product base)

: Duplex model only

: Duplex media path

: Simplex media path



Item	Description
SR1	Tray 3 paper surface sensor 1
SR2	Tray 3 paper surface sensor 2
SR3	Tray 3 paper sensor
SR4	Tray 3 feed sensor
SR5	Fuser output
SR6	Output bin full

Item	Description
SR7	Fuser pressure release
SR8	Registration
SR9	Tray 2 lifter
SR10	Paper width 1
SR11	Developer alienation
SR13	Tray 2 sensor
SR14	Fuser loop 1
SR15	Fuser loop 2
SR17	ITB alienation
SR20	Tray 2 paper
SR21	Tray 1 paper
SR22	Duplexer refeed

Plug/jack locations

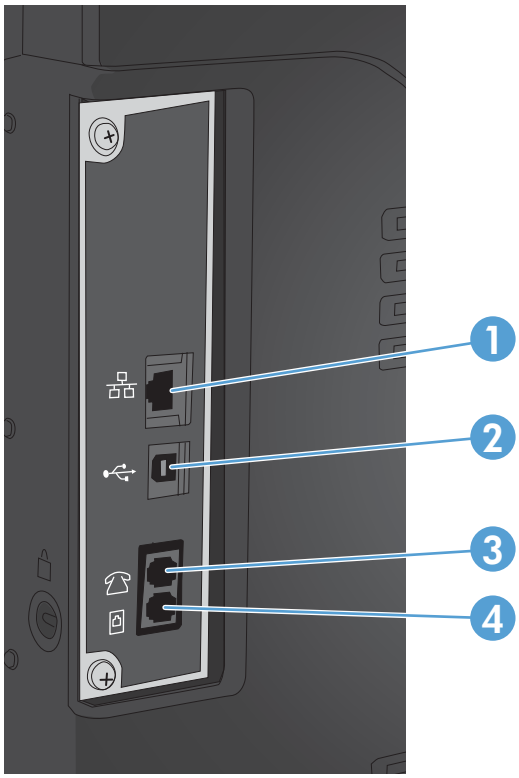


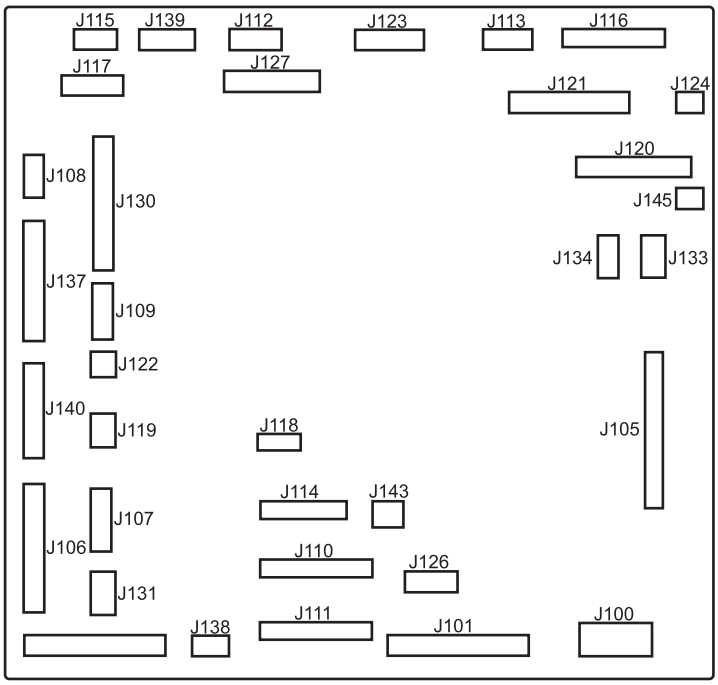
Table 2-2 Plug/jack locations

Item	Description
1	Local area network (LAN) Ethernet (RJ-45) network port
2	Hi-Speed USB 2.0 printing port
3	Telephone “line out” port for attaching an extension phone, answering machine, or other device
4	Fax “line in” port for attaching the fax phone line to the product

Location of connectors

DC controller PCA

Figure 2-4 DC controller PCA



J100: 24 v from low-voltage power supply (LVPS) and interlock	**J114**: HVPS lower	**J126**: memory tag connector
J101: LVPS	**J115**: fuser sensors	**J127**: pre-exposure LEDs (rear), SR17, SL1
J105: interconnect board (ICB)	**J116**: HVPS upper	**J130**: registration density (RD) sensors (front and rear)
J106: 500-sheet feeder, developing home position, laser motors	**J117**: fuser motor	**J131**: pickup motor
J107: duplex sensor, tray 1 solenoid, paper present sensor	**J118**: 5 v interlock	**J133**: not used
J108: environmental sensor	**J119**: LVPS fan	**J134**: not used
J109: duplex clutch, overhead transparency (OHT) in, top-of-page sensor	**J120**: drum motor 1 and drum motor 2	**J137**: toner collection unit (TCU) full, TCU motor, toner level detection
J110: YM laser	**J121**: drum motor 3, drum position 1,2,3	**J138**: 24 v to HVPS lower
J111: CK laser	**J122**: OHT out	**J139**: fuser sensors
J112: pre-exposure LEDs (front)	**J123**: pressure release, bin full, fuser delivery	**J140**: lift motor, tray present, stack surface

J113: 24 v to high-voltage power supply (HVPS) upper	**J124**: 24 v to scanner	**J143**: 24 v present from LVPS
J145 :not used		

Locations of major components

Use the diagrams to locate components. For a list of components, see Table 2-4 Component locations on page 97.

Base product

Figure 2-5 Component locations (1 of 5)

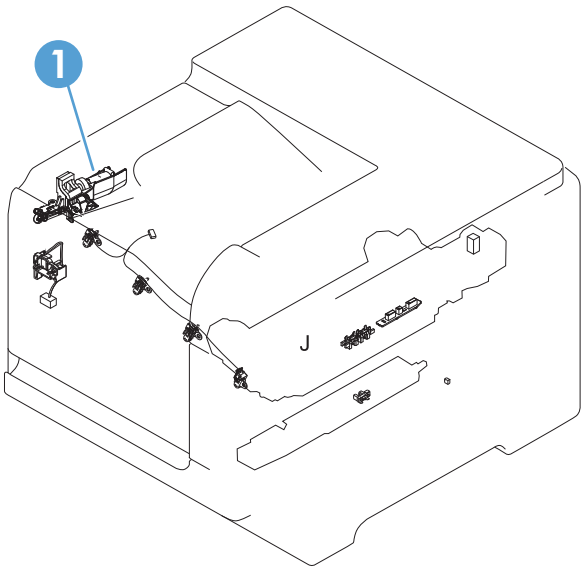


Figure 2-6 Component locations (2 of 5)

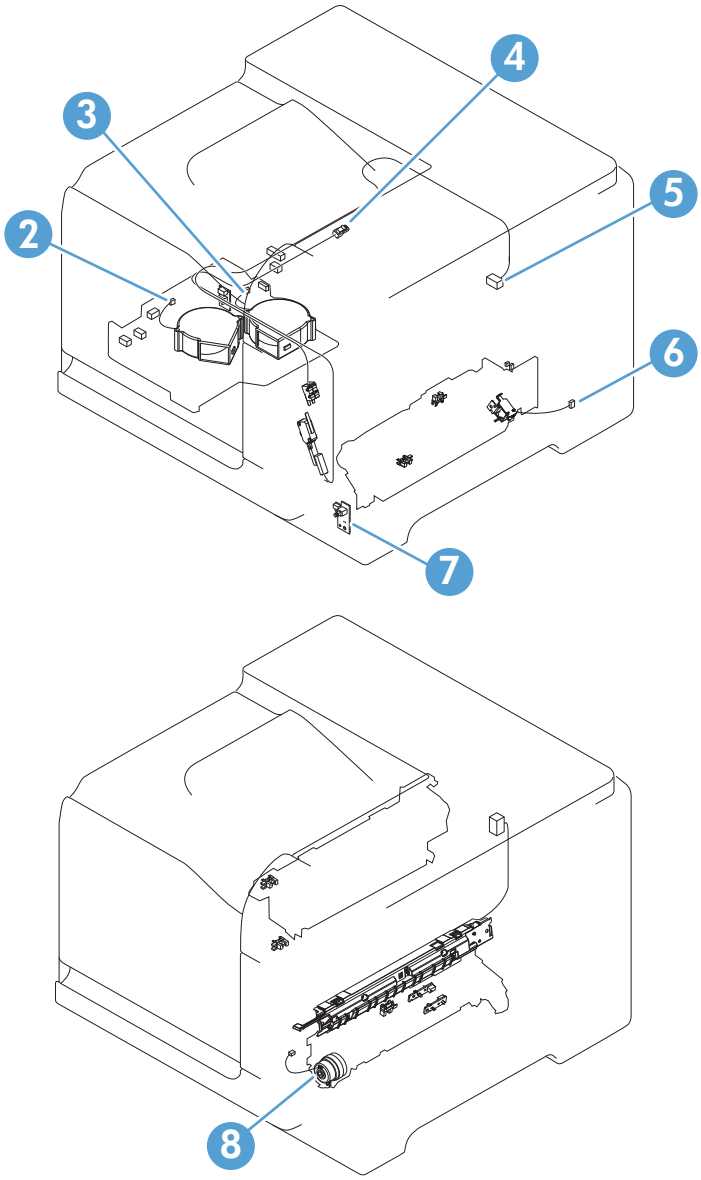


Figure 2-7 Component locations (3 of 5)

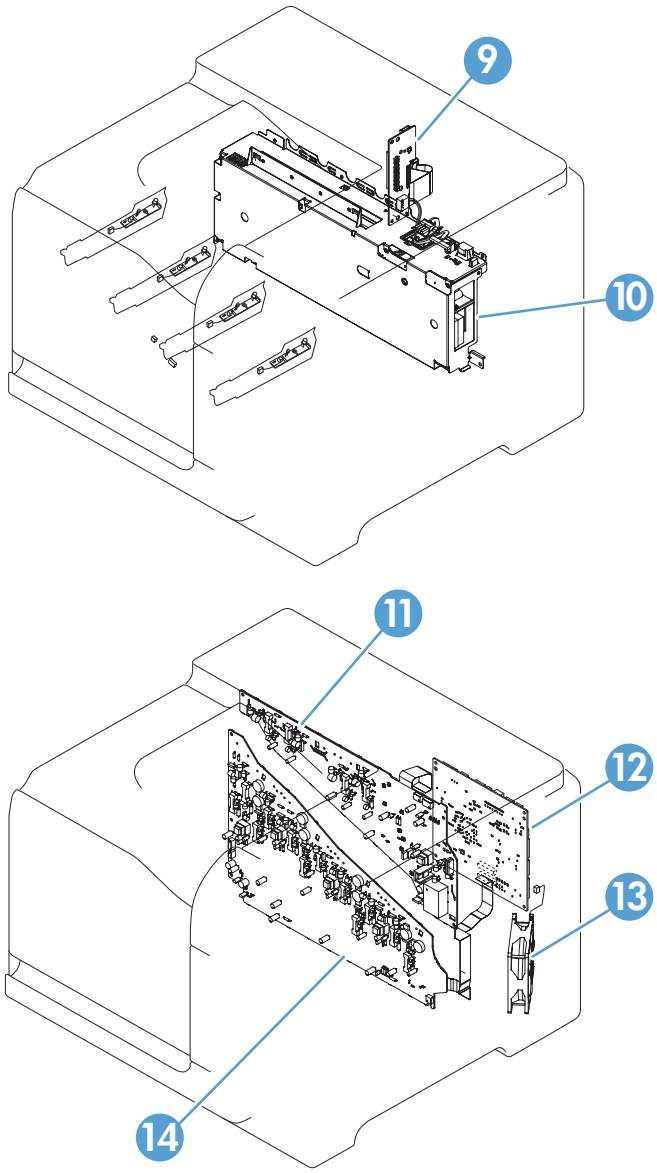


Figure 2-8 Component locations (4 of 5)

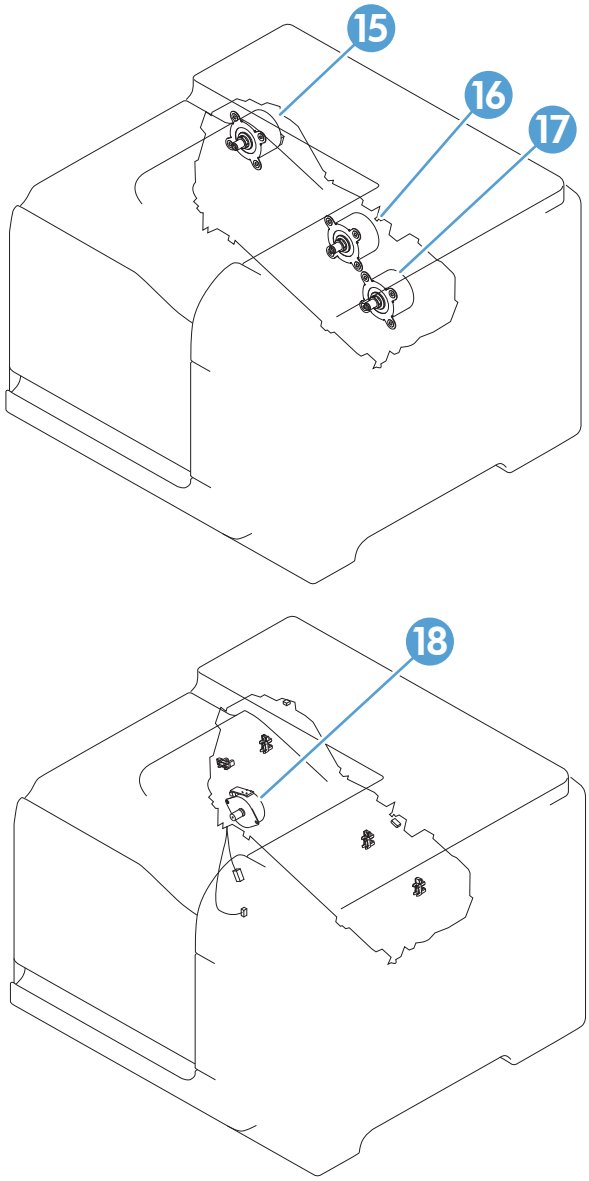


Figure 2-9 Component locations (5 of 5)

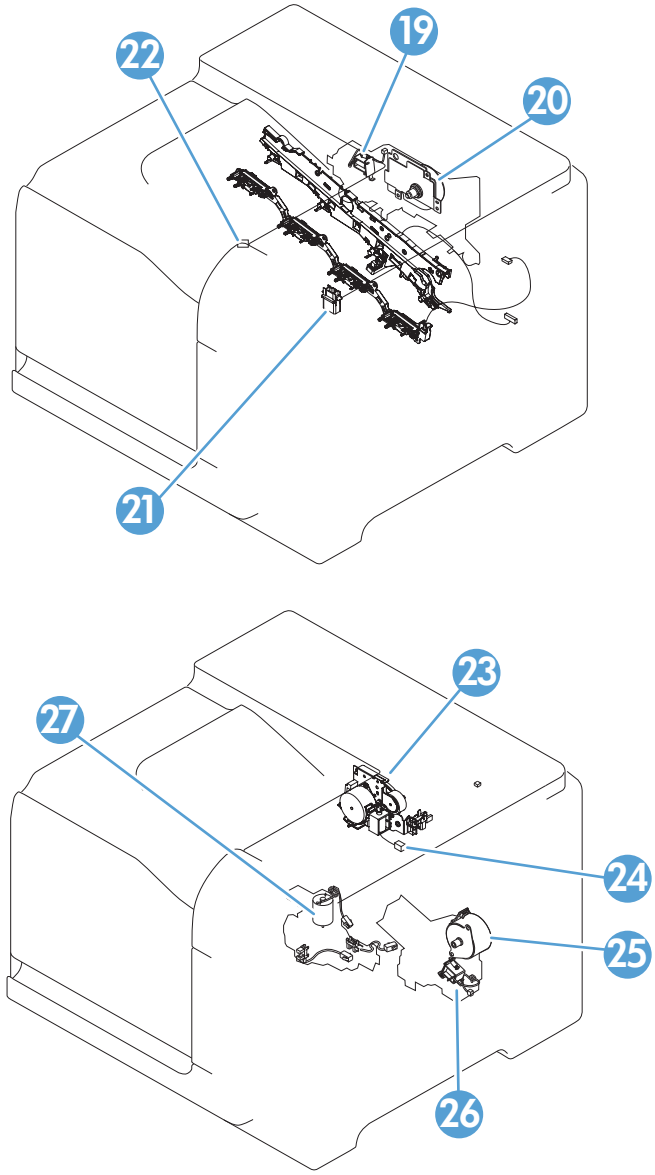


Table 2-4 Component locations

Location	Connector	Component abbreviation	Component name
1	J89	M12	Residual toner-feed motor
2	J26	FM2	Cartridge fan
3	J27	FM3	Delivery fan
4	J62	SW3	24V interlock switch
5	J118	SW1, SW2	5V interlock switch
6	J84	SL3	Multipurpose-tray pickup solenoid
7	J780	SW4	Power switch

Table 2-4 Component locations (continued)

Location	Connector	Component abbreviation	Component name
8	J86	CL1	Duplex re-pick clutch
9		ICB	Interconnect board (ICB)
10		LVPS	Low-voltage power supply
11		HVPS (t)	HVPS-T upper
12		DCC	DC Controller
13	J119	FM1	Power-supply fan
14		HVPS (d)	HVPS-D (lower)
15	J41	M3	Drum motor 1
16	J40	M4	Drum motor 2
17	J42	M5	Drum motor 3
18	J25	M10	Development-disengagement motor
19	J8	SL1	Primary transfer roller disengagement solenoid
20	J15	M2	Fuser motor
21	J55	M9	Yellow/magenta scanner motor
22	J56	M8	Cyan/black scanner motor
23	J20	M11	Duplex reverse motor (duplex models only)
24	J21	SL2	Duplex reverse solenoid (duplex models only)
25	J6	M13	Pickup motor
26	J83	SL4	Tray-pickup solenoid
27	J78	M7	Tray 2 lifter motor

1 x 500 paper feeder

Figure 2-10 1 x 500-sheet paper feeder

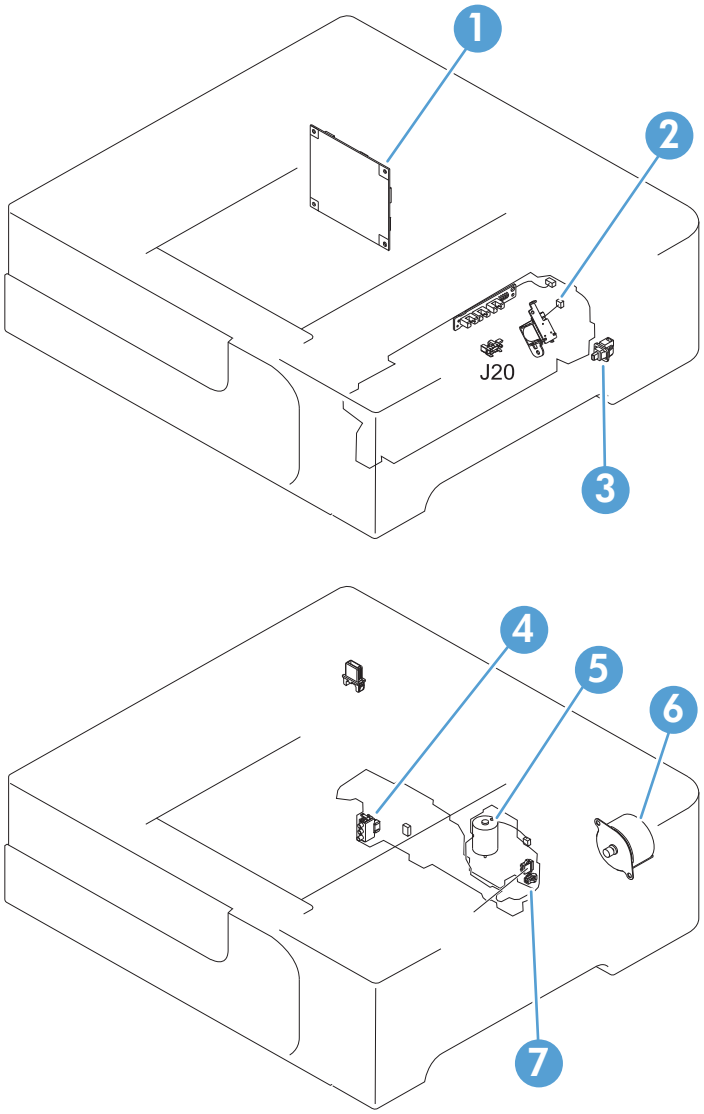


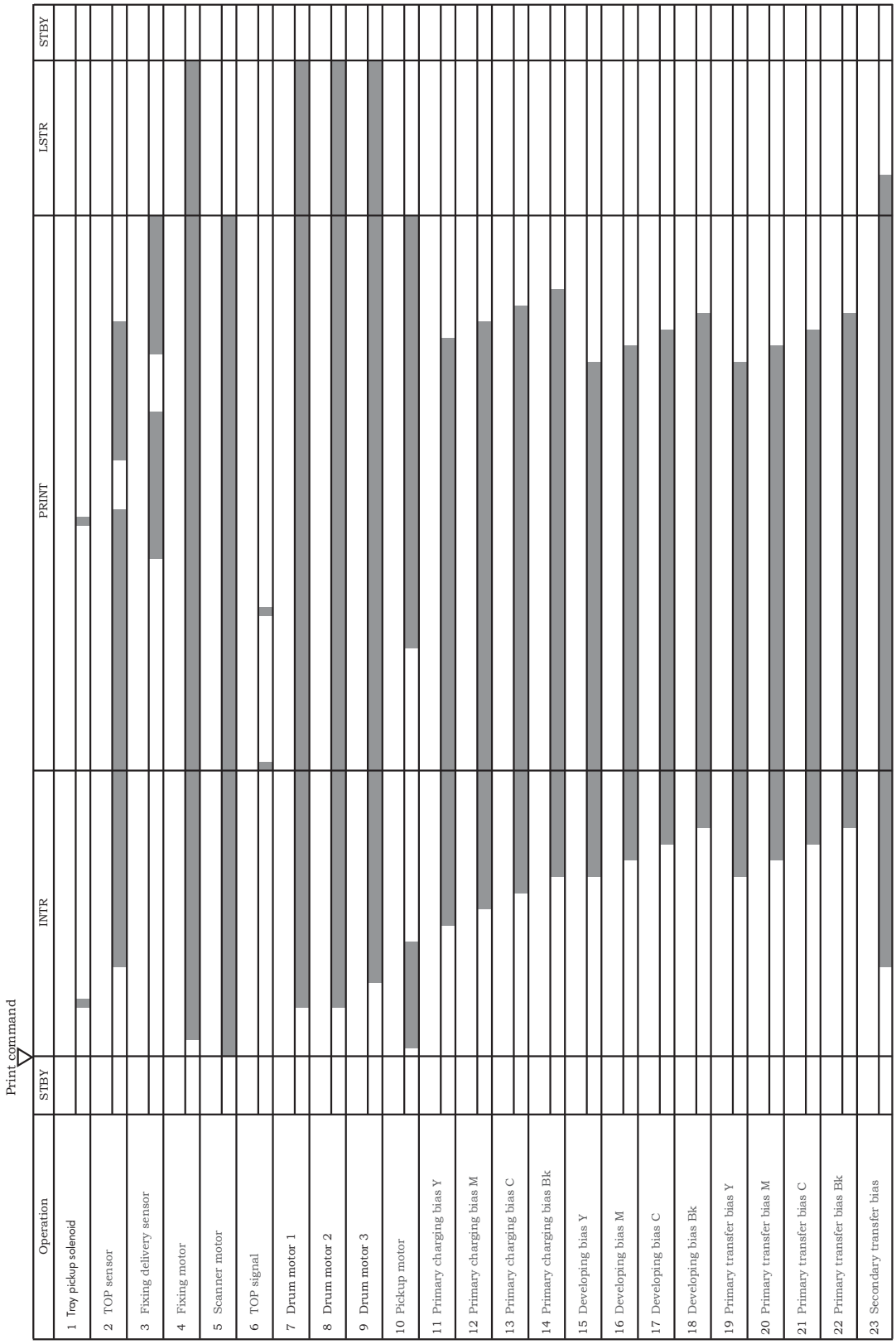
Table 2-5 Component locations (1 x 500-sheet paper feeder)

Location	Connector	Component abbreviation	Component name
1		PF PCA	Paper-feeder driver PCA
2/7	J18	SL1	Paper-feeder pickup solenoid
3	J21	SW2	Paper-feeder door switch
4	J16	SW1	Paper feeder tray media size switch
5	J15	M2	Paper-feeder lifter motor
6	J14	M1	Paper-feeder motor

General timing chart

The following charts lists the approximate timing for this product, specified in seconds.

Figure 2-11 Timing diagram



Timing chart is two consecutive print jobs on letter-size paper (full color using one-to-one speed mode)

General circuit diagrams

Figure 2-12 Circuit diagram — product base (1 of 2)

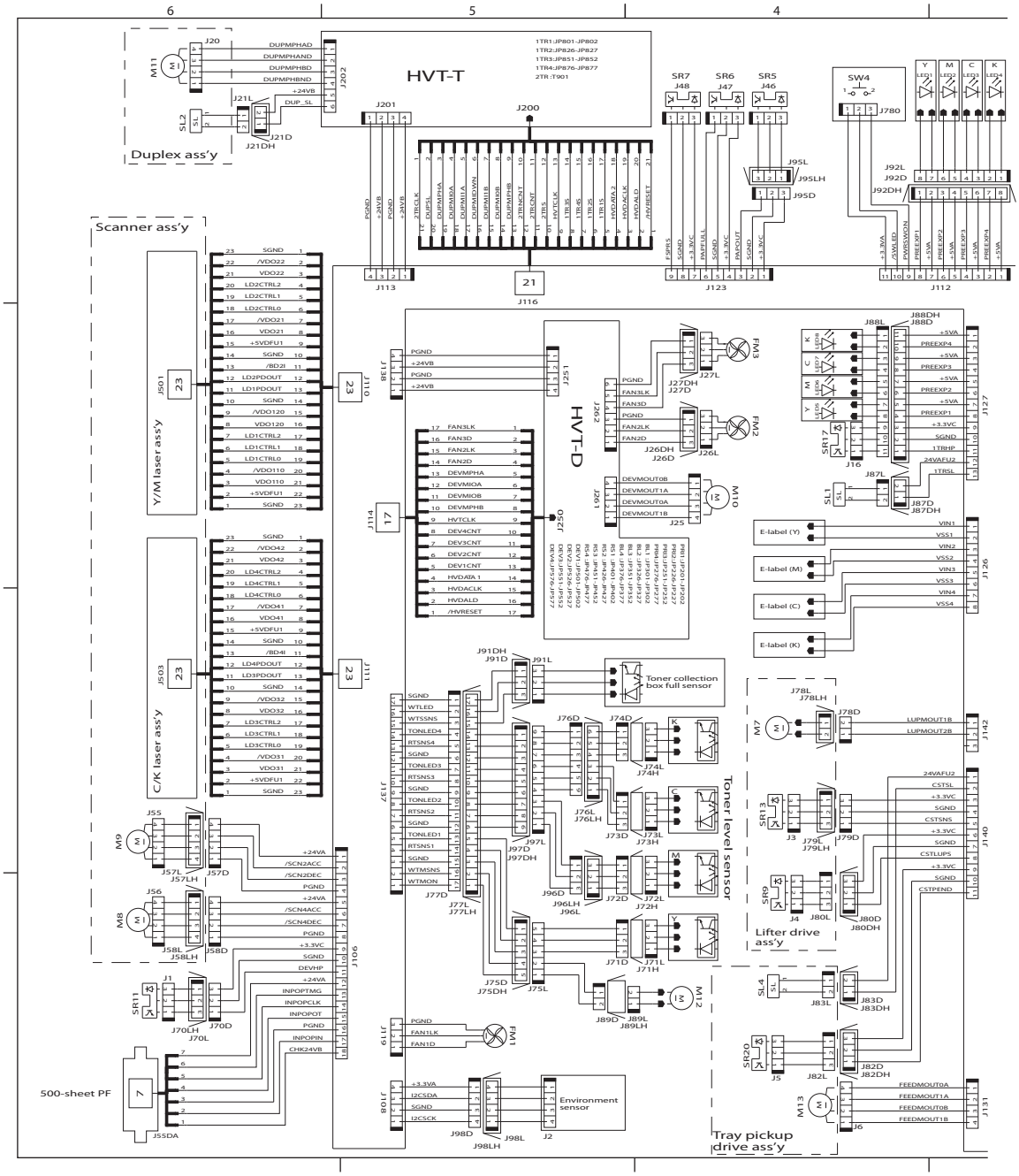
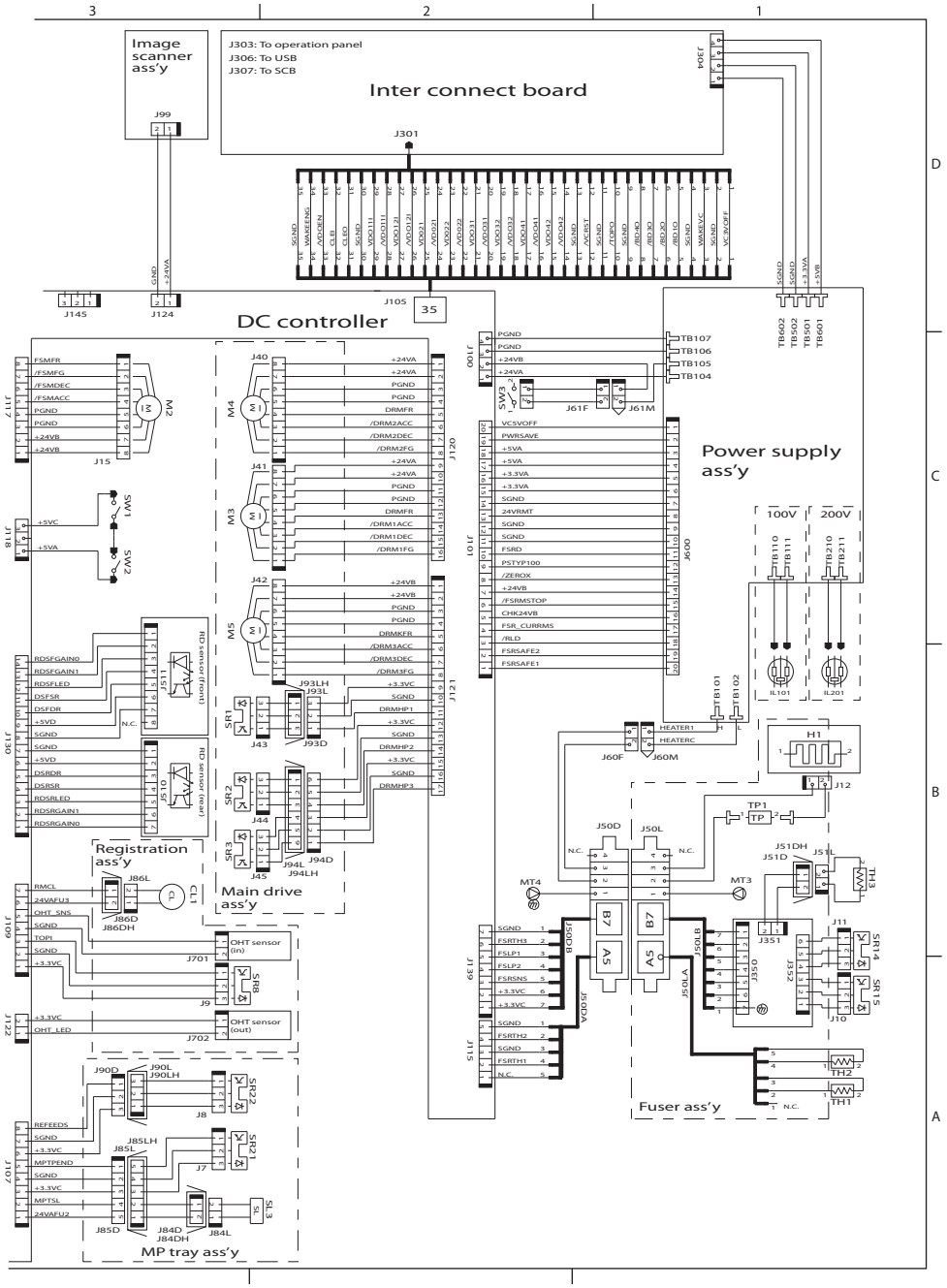


Figure 2-13 Circuit diagram — product base (2 of 2)



Use HP Device Toolbox (Windows)

Use the **HP Device Toolbox** for Windows to view or change product settings from your computer. This tool opens the HP Embedded Web Server for the product.

NOTE: This tool is available only if you performed a full installation when you installed the product. The HP Embedded Web Server, however, is still available by opening a Web browser and entering the product IP address in the browser address box.

1. Click the **Start** button, and then click the **Programs** item.
2. Click your HP product group, and then click the **HP Device Toolbox** item.

Tab or section	Description
Home tab Provides product, status, and configuration information.	• **Device Status**: Shows the product status and shows the approximate percent life remaining of HP supplies. • **Supplies Status**: Shows the approximate percent life remaining of HP supplies. Actual supply life remaining can vary. Consider having a replacement supply available to install when print quality is no longer acceptable. The supply does not need to be replaced unless the print quality is no longer acceptable. • **Device Configuration**: Shows the information found on the product configuration page. • **Network Summary**: Shows the information found on the product network configuration page. • **Reports**: Allows you to print the configuration and supplies status pages that the product generates. • **Event Log**: Shows a list of all product events and errors.
System tab Provides the ability to configure the product from your computer.	• **Device Information**: Provides basic product and company information. • **Paper Setup**: Allows you to change the paper-handling defaults for the product. • **Print Quality**: Allows you to change the print quality defaults for the product, including calibration settings. • **Paper Types**: Allows you to configure print modes that correspond to the paper types that the product accepts. • **System Setup**: Allows you to change the system defaults for the product. • **Service**: Allows you to start the cleaning procedure on the product. • **Product Security**: Allows you to set or change the product password. • **Save and Restore**: Save the current settings for the product to a file on the computer. Use this file to load the same settings onto another product or to restore these settings to this product at a later time. **NOTE:** The **System** tab can be password-protected. If this product is on a network, always consult with the administrator before changing settings on this tab.

Tab or section	Description
Print tab Provides the ability to change default print settings from your computer.	• **Printing**: Change the default product print settings, such as number of copies and paper orientation. These are the same options that are available on the control panel. • **PCL5c**: View and change the PCL5c settings. • **PostScript**: Turn off or on the **Print PS Errors** feature.
Networking tab Provides the ability to change network settings from your computer.	Network administrators can use this tab to control network-related settings for the product when it is connected to an IP-based network. It also allows the network administrator to set up wireless direct functionality. This tab does not appear if the product is directly connected to a computer.
HP Web Services tab	Use this tab to set up and use various Web tools with the product.
HP Smart Install tab	Use this tab to download and install the print driver.

Internal print-quality test pages

Clean the paper path

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

1. From the Home screen on the product control panel, touch the Setup button.
2. Touch the Service menu.
3. Touch the Cleaning Page button.
4. Load plain letter or A4 paper when you are prompted.
5. Touch the OK button to begin the cleaning process.

   Wait until the process is complete. Discard the page that prints.

Print the configuration page

1. From the Home screen on the product control panel, touch the Setup button.
2. Touch the Reports menu.
3. Touch the Configuration Report button to print the report.

Print-quality troubleshooting tools

Repetitive image defect ruler

Defects on product rollers can cause image defects to appear at regular intervals on the page, corresponding to the circumference of the roller that is causing the defect. Measure the distance

between defects that recur on a page. Use the following table or the repetitive-defect ruler to determine which roller is causing the defect. To resolve the problem, try cleaning the roller first. If the roller remains dirty after cleaning or if it is damaged, replace the part that is indicated in Table 2-6 Repetitive defects on page 105.

CAUTION: Do not use solvents or oils to clean rollers. Instead, rub the roller with lint-free paper. If dirt is difficult to remove, rub the roller with lint-free paper that has been dampened with water.

NOTE: The following table replaces the graphical repetitive defect ruler. You can make your own ruler by using these measurements. For the most accurate results, use a metric ruler.

Table 2-6 Repetitive defects

Component	Distance between defects
Primary charging roller	38 mm (1.5 in)
Transfer roller	39 mm (1.54 in)
Developer roller	42 mm (1.65 in)
Registration roller	43 mm (1.69 in)
Fuser film	57 mm (2.24 in)
Pressure roller	63 mm (2.48 in)
Photosensitive drum	75 mm (2.95 in)

Control panel menus

Setup Menu

To open this menu, touch the Setup button. The following sub menus are available:

- HP Web Services
- Reports
- Self Diagnostics
- Fax Setup
- System Setup
- Service
- Network Setup

HP Web Services

Menu item	Description
Enable Web Services	Use Enable Web Services to set up Web Services on the product. **NOTE:** You must be connected to a network to enable HP Web Services.
Proxy Settings	The Proxy Settings sub-menu includes the following: • Proxy Server • Proxy Port • Username • Password

Reports menu

Menu item	Description
Demo Page	Prints a page that demonstrates print quality
Menu Structure	Prints a control-panel menu layout map.
Configuration Report	Prints a list of the product settings
Supplies Status	Prints the toner cartridge status. Includes the following information: • Approximate pages remaining • Supply level • Serial number • Number of pages printed • First install date • Last used date
Network Summary	Displays status for: • Network hardware configuration • Enabled features • TCP/IP and SNMP information • Network statistics • Wireless network configuration (wireless models only)
Usage Page	Displays the number of pages printed, faxed, copied, and scanned by the product
PCL Font List	Prints a list of all installed PCL 5 fonts
PS Font List	Prints a list of all installed PS fonts
PCL6 Font List	Prints a list of all installed PCL 6 fonts
Color Usage Log	Prints information about the color supply usage
Service Page	Prints the service page The service page includes information about supported paper types, copy settings, and other settings that are not included on the configuration page.
Diagnostics Page	Prints diagnostic information about calibration and color quality
Print Quality Page	Prints a page that helps solve problems with print quality

Self Diagnostics menu

Menu item	Description
Run Network Test	The network test provides information on the following: • Diagnostics summary • Troubleshooting • Configuration summary
Run Fax Test	Test the product's fax capabilities

Fax Setup menu

In the following table, items that have an asterisk (*) indicate the factory default setting.

Menu item	Sub-menu item	Sub-menu item	Description
Fax Set-Up Utility			This is a tool for configuring the fax settings. Follow the on-screen prompts and select the appropriate response for each question.
Basic Setup	Time/Date	(Settings for time format, current time, date format, and current date.)	Sets the time and date setting for the product.
	Fax Header	Enter your fax number.	Sets the identifying information that is sent to the receiving product.
		Enter company name.	Identifies the fax sender (optional)
	Answer Mode	Automatic* Manual TAM Fax/Tel	Sets the type of answer mode. The following options are available: • Automatic: The product automatically answers an incoming call on the configured number of rings. • Manual: The user must touch the Start Fax button or use an extension phone number to make the product answer the incoming call. • TAM: A telephone answering machine (TAM) is attached to the Auxilary phone port of the product. The product will not pick up any incoming call, but will listen for fax tones after the answering machine has picked up the call. • Fax/Tel: The product must automatically pick up the call and determine if the call is a voice or fax call. If the call is a fax call, the product handles the call as usual. If the call is a voice call, an audible synthesized ring is generated to alert the user of an incoming voice call.

Menu item	Sub-menu item	Sub-menu item	Description
	Rings to Answer		Sets the number of rings that must occur before the fax modem answers. The default setting is 5.
	Distinctive Ring	All Rings* Single Double Triple Double and Triple	If you have distinctive ring phone service, use this item to configure how the product responds to incoming calls. • All Rings: The product answers any calls that come through the telephone line. • Single: The product answers any calls that produce a single-ring pattern. • Double: The product answers any calls that produce a double-ring pattern. • Triple: The product answers any calls that produce a triple-ring pattern. • Double and Triple: The product answers any calls that produce a double-ring or triple-ring pattern.
	Dial Prefix	On Off*	Specifies a prefix number that must be dialed when sending faxes from the product. If this feature is turned on, the product prompts you for the number and then it automatically includes that number every time a fax is sent.
Advanced Setup	Fax Resolution	Standard Fine* Superfine Photo	Sets the resolution for sent documents. Higher resolution images have more dots per inch (dpi), so they show more detail. Lower resolution images have fewer dots per inch and show less detail, but the file size is smaller and the fax takes less time to transmit.
	Lighter/Darker		Sets the darkness for outgoing faxes.
	Fit to Page	On* Off	Shrinks incoming faxes that are larger than the paper size set for the tray.
	Glass Size	Letter A4	Sets the default paper size for documents being scanned from the flatbed scanner. **NOTE:** The default setting is determined by the choice of location during the initial product setup.
	Dialing Mode	Tone* Pulse	Sets whether the product should use tone or pulse dialing.
	Redial if Busy	On* Off	Sets whether the product should attempt to redial if the line is busy.
	Redial if No Answer	On Off*	Sets whether the product should attempt to redial if the recipient fax number does not answer.
	Redial if Comm. Error	On* Off	Sets whether the product should attempt to redial the recipient fax number if a communication error occurs.

Menu item	Sub-menu item	Sub-menu item	Description
	Detect Dial Tone	On Off*	Sets whether the product should check for a dial tone before sending a fax.
	Billing Codes	On Off*	Enables the use of billing codes when set to **On**. A prompt appears for the billing code for an outgoing fax.
	Extension Phone	On* Off	When this feature is enabled, the **1-2-3** buttons on the extension phone may be pressed to cause the product to answer an incoming fax call.
	Stamp Faxes	On Off*	Sets the product to print the date, time, sender's phone number, and page number on each page of incoming faxes.
	Private Receive	On Off*	Setting **Private Receive** to **On** requires you to set a product password. After setting the password, the following options are set: • Private Receive is turned on. • All old faxes are deleted from memory. • Fax forwarding is set to Off and is not allowed to be changed. • All incoming faxes are stored in memory.
	Confirm Fax Number	On Off*	Confirm a fax number by entering it a second time.
	Allow Fax Reprint	On* Off	Sets whether incoming faxes are stored in memory for reprinting later.
	Fax/Tel Ring Time	20 30 40 70	Sets the time, in seconds, after which the product should stop sounding the Fax/Tel audible ring to notify the user of an incoming voice call.
	Fax Speed	Fast(V.34)* Medium(V.17) Slow(V.29)	Sets the allowed fax communication speed.

System Setup menu

In the following table, items that have an asterisk (*) indicate the factory default setting.

Menu item	Sub-menu item	Sub-menu item	Description
Language	(List of available control-panel display languages.)		Sets the language in which the control panel displays messages and product reports.
Paper Setup	Default Paper Size	Letter A4 Legal	Sets the size for printing internal reports, faxes, or any print job that does not specify a size. **NOTE:** The default setting is determined by the choice of location during the initial product setup.
	Default Paper Type	Lists available paper types.	Sets the type for printing internal reports, faxes, or any print job that does not specify a type.
	Tray 1	Paper Type Paper Size	Configures the size and type for the tray.
	Paper Out Action	Wait forever* Cancel Override	Determines how the product reacts when a print job requires a paper size or type that is unavailable or when the tray is empty. • Wait forever: The product waits until you load the correct paper. • Override: Print on a different size paper after a specified delay. • Cancel: Automatically cancel the print job after a specified delay. • If you select either the Override or Cancel item, the control panel prompts you for the number of seconds to delay.
Print Quality	Color Calibration	Calibrate Now Power-On Calibration	Performs a full calibration. • Calibrate Now: Performs an immediate calibration. • Power-On Calibration: Specify the length of time the product should wait after you turn it on before it calibrates.

Menu item	Sub-menu item	Sub-menu item	Description
Energy Settings	Sleep Delay	Off 1 Minute 15 Minutes* 30 Minutes 1 Hour 2 Hours	Specifies the amount of idle time before the product enters sleep mode.
	Auto Power Down	Power Down Delay	Set the amount of elapsed time before the product turns itself off. The options are: • Never • 30 Minutes • 1 Hour • 2 Hours • 4 Hours • 8 Hours • 24 Hours
		Wake Events	Select the events that bring the product out of sleep mode. The following events are available for selection: • USB Job • LAN Job • Wireless Job • Control Panel Touch • Fax Ring • Paper in ADF • USB Drive Insert

Menu item	Sub-menu item	Sub-menu item	Description
Supply Settings	Black Cartridge	Very Low Setting	Stop: The product stops printing until you replace the print cartridge. Prompt*: The product stops printing and prompts you to replace the print cartridge. You can acknowledge the prompt and continue printing. Continue: The product alerts you that the print cartridge is very low, but it continues printing.
		Low Threshold	Enter a percentage for the low threshold setting.
	Color Cartridges	Very Low Setting	Stop: The product stops printing until you replace the print cartridge. Prompt*: The product stops printing and prompts you to replace the print cartridge. You can acknowledge the prompt and continue printing. Continue: The product alerts you that the print cartridge is very low, but it continues printing. Print Black: When a color print cartridge becomes very low, the product prints in black only to prevent fax interruptions. When you choose to replace the very low print cartridge, color printing resumes automatically. To configure the product to print in color and use the remaining toner in the print cartridge past very low, follow these steps: **NOTE:** Prompt is the default setting, but if you install the fax wizard on your first incoming fax, the setting switches automatically to Print Black. 1. On the product control panel, touch the Setup button, and then touch the System Setup button. 2. Touch the **At very low** button, and then touch the Color Cartridges button. Touch the Continue button.
		Low Threshold	Set a low threshold percentage setting for the following colors: • Cyan • Magenta • Yellow
	Store Usage Data		Select where to store the product's usage data, either on the supplies or not on the supplies.
Volume Settings	Alarm Volume Ring Volume Key-Press Volume Phone Line Volume		Set the volume levels for the product. The following options are available for each volume setting: • Off • Soft • Medium* • Loud

Menu item	Sub-menu item	Sub-menu item	Description
Time/Date	12 Hour		Sets the time and date setting for the product.
	24 Hour		
Administration	Product Security	On	Sets the product-security feature. If you select the On setting, you must set a password.
		Off	
	USB Flash Drive	On*	Enables or disables the USB flash drive.
		Off	
	Disable Fax	Yes	Enable, or disable, faxing to and from the product.
		No*	
	Scan to Network Folder	On*	Enable, or disable, the product's scan to folder capability.
		Off	
	Scan to E-mail	On*	Enable, or disable, the product's scan to email feature.
		Off	
	Color Copy	On*	Enable, or disable, the product's color copying feature.
		Off	
Courier Font	Regular*		Sets Courier font values.
	Dark		

Service menu

In the following table, items that have an asterisk (*) indicate the factory default setting.

Menu item	Sub-menu item	Sub-menu item	Description
Fax Service	Clear Saved Faxes		Clears all faxes in memory.
	Run Fax Test		Performs a fax test to verify that the phone cord is plugged in the correct outlet and that there is a signal on the phone line. A fax test report is printed indicating the results.
	Print T.30 Trace	Now Never* If Error At End of Call	Prints or schedules a report that is used to troubleshoot fax transmission issues.
	Error Correction	On* Off	The error correction mode allows the sending device to re-transmit data if it detects an error signal.
	Fax Service Log		The fax service log prints out the last 40 entries in the fax log.
Cleaning Page			Cleans the product when specks or other marks appear on printed output. The cleaning process removes dust and excess toner from the paper path. When selected, the product prompts you to load plain Letter or A4 paper in Tray 1. Touch the OK button to begin the cleaning process. Wait until the process completes. Discard the page that prints.
USB Speed	High* Full		Sets the USB speed for the USB connection to the computer. For the product to actually operate at high speed, it must have high speed enabled and be connected to an EHCI host controller that is also operating at high speed. This menu item does not reflect the current operating speed of the product.

Menu item	Sub-menu item	Sub-menu item	Description
Less Paper Curl	On Off*		When printed pages are consistently curled, this option sets the product to a mode that reduces curl.
Archive Print	On Off*		When printing pages that will be stored for a long time, this option sets the product to a mode that reduces toner smearing and dusting.
Firmware Datecode			Displays the current firmware datecode
Restore Defaults			Sets all settings to the factory default values
Signature Check	Cancel if Invalid* Prompt if Invalid		Validates HP firmware downloads.
HP Smart Install	On* Off		Enable, or disable, the HP Smart Install feature on the product.
LaserJet Update	Check for Updates Now	Install Now Remind Me Later Skip this Update	
	Manage Updates	Allow Downgrade Check Automatically Prompt Before Install Allow Updates	
SMTP Comm. Report			The SMTP Communication Report contains the SMTP communication to and from the device from the last Scan to E-mail job.

Network Setup menu

In the following table, items that have an asterisk (*) indicate the factory default setting.

Menu item	Sub-menu item	Description
Wireless Menu (wireless models only)	Wireless Direct Settings	Manage the product's wireless direct settings.
	Wireless Setup Wizard	Guides you through the steps to set up the product on a wireless network
	Wi-Fi Protected Setup	If your wireless router supports this feature, use this method to set up the product on a wireless network. This is the simplest method.
	Run Network Test	Tests the wireless network and prints a report with the results.
	Turn Wireless On/Off	Enables or disables the wireless network feature.
TCP/IP Config	Automatic* Manual	Automatic: The product automatically configures all the TCP/IP settings via DHCP, BootP or AutoIP. Manual: You can manually configure the IP address, subnet mask, and default gateway. The control panel prompts you to specify values for each address section. As each address is completed, the product prompts for address confirmation before moving to the next one. After all three addresses are set, the network reinitializes.
Network Services	IPv4 IPv6	Enable or disable the IPv4 and IPv6 protocols. By default, each protocol is enabled.
Link Speed	Automatic* 10T Full 10T Half 100TX Full 100TX Half	Sets the link speed manually if needed. After setting the link speed, the product automatically restarts.
HTTPS Enforcement	Yes *No	An encrypted communication and secure identification of a network web server. Only enabled if printer is password protected.
Restore Defaults		Resets all network configurations to their factory defaults.

Quick Forms menu

Menu item	Sub-menu item	Description
Notebook Paper	Narrow Rule	Prints pages that have preprinted lines
	Wide Rule	
	Child Rule	
Graph Paper	1/8 inch	Prints pages that have preprinted graph lines
	5 mm	
Checklist	1-Column	Prints pages that have preprinted lines with check boxes
	2-Column	
Music Paper	Portrait	Prints pages that have preprinted lines for writing music
	Landscape	

Function specific menus

The product features function-specific menus for copying, faxing, scanning, and using a USB flash drive. To open these menus, touch the button for that function on the control panel.

USB Flash Drive

The following types are supported:

- .PDF
- .JPG

Menu item	Description
Print Documents	Prints documents stored on the USB flash drive. Use the arrow buttons to scroll through the documents. Touch the names of documents to print. Touch the summary screen to change settings such as the number of copies, the paper size, or the paper type. Touch the Print button to print the documents.
View and Print Photos	Previews photos on the USB flash drive. Use the arrow buttons to scroll through the photos. Touch the preview image for each photo to print. Adjust the settings and save the changes as the new default settings. To print the photos, touch the Print button.
Scan to USB Drive	Scans a document and stores it as a .PDF file or .JPEG image on the USB flash drive.

Fax Menu

To open this menu, touch the Fax button, and then touch the Fax Menu button.

Menu item	Sub-menu item	Sub-menu item	Description
Fax Reports	Fax Confirmation	On Every Fax On Send Fax Only On Receive Fax Only Never*	Sets whether the product prints a confirmation report after a successful fax job.
	Include First Page	On* Off	Sets whether the product includes a thumbnail image of the first page of the fax on the report.

Menu item	Sub-menu item	Sub-menu item	Description
	Fax Error Report	On Every Error* On Send Error On Receive Error Never	Sets whether the product prints a report after a failed fax job.
	Print Last Call Report		Prints a detailed report of the last fax operation, either sent or received.
	Fax Activity Log	Print Log Now Auto Log Print	Print Log Now: Prints a list of the faxes that have been sent from or received by this product. Auto Log Print: Automatically prints a report after every fax job.
	Print Phone Book		Prints a list of the speed dials that have been set up for this product.
	Print Junk Fax list		Prints a list of phone numbers that are blocked from sending faxes to this product.
	Print Billing Report		Prints a list of billing codes that have been used for outgoing faxes. This report shows how many sent faxes were billed to each code. This menu item appears only when the billing codes feature is turned on.
	Print All fax Reports		Prints all fax-related reports.
Send Options	Send Fax Later		Allows a fax to be sent at a later time and date.
	Broadcast Fax		Sends a fax to multiple recipients.
	Fax Job Status		Displays pending fax jobs, and allows you to cancel pending fax jobs.
	Fax Resolution	Standard Fine* Superfine Photo	Sets the resolution for sent documents. Higher resolution images have more dots per inch (dpi), so they show more detail. Lower resolution images have fewer dots per inch and show less detail, but the file size is smaller.

Menu item	Sub-menu item	Sub-menu item	Description
Receive Options	Print Private Faxes		Prints stored faxes when the private-receive feature is turned on. The product prompts you for the system password.
	Block Junk Faxes	Add Number Delete Number Delete All Numbers Print Junk Fax list	Modifies the junk fax list. The junk fax list can contain up to 30 numbers. When the product receives a call from one of the junk fax numbers, it deletes the incoming fax. It also logs the junk fax in the activity log along with job-accounting information.
	Reprint Faxes		Prints the received faxes stored in available memory. This item is available only if you have turned on the Allow Fax Reprint feature in the Fax Setup menu.
	Forward Fax	On Off*	Sets product to send all received faxes to another fax machine.
	Polling Receive		Allows the product to call another fax machine that has polling send enabled.
Phone Book Setup	Individual Setup		Edits the fax phone book speed dials and group-dial entries. The product supports up to 120 phone book entries, which can be either individual or group entries.
	Group Setup		
	Delete Entry	Deletes a specific phone book entry	
	Delete All Entries	Deletes all entries in the phone book	
	Print Report Now	Prints a list of all the individual and group dial entries in the phone book	
Change Defaults			Opens the Fax Setup menu.

Copy Menu

To open this menu, touch the Copy button, and then touch the Settings button.

NOTE: Settings that you change with this menu expire 2 minutes after the last copy completes.

Menu item	Sub-menu item	Sub-menu item	Description
ID Copy **NOTE:** This item is available from the main Copy screen. You do not need to touch the Settings button to access it.			Copies both sides of identification cards, or other small-size documents, onto the same side of one sheet of paper.
Number of Copies	(1–99)		Specifies the number of copies
Reduce/Enlarge	Original=100% Legal to Letter=78% Legal to A4=83% A4 to Letter=94% Letter to A4=97% Full Page=91% Fit to Page 2 Pages per Sheet 4 Pages per Sheet Custom: 25 to 400%		Specifies the size of the copy.
Lighter/Darker			Specifies the contrast of the copy.
Optimize	Describe Original	Auto Select* Mixed Text Picture	Specifies the type of content in the original document, so the copy is the best match for the original.
Paper	Letter* Legal A4		Specifies the paper size. **NOTE:** The default paper size setting is determined by the choice of location during the initial product setup.
Multi-Page Copy	Off* On		When this feature is on, the product prompts you to load another page onto the scanner glass or to indicate that the job is complete.

Menu item	Sub-menu item	Sub-menu item	Description
Collation	On* Off		Specifies whether to collate copy jobs.
Draft Mode	Off* On		Specifies whether to use draft-quality printing for copies
Image Adjustment	Lightness Contrast Sharpen Background Removal Color Balance Grayness		Adjusts the image quality settings for copies
Set as New Defaults			Saves any changes you have made to this menu as the new defaults
Restore Defaults			Restores the factory defaults for this menu

Scan Menu

Menu item	Description
Scan to USB Drive	Scans a document and stores it as a .PDF file or .JPEG image on the USB flash drive.
Scan to Network Folder	Scans a document to a network folder.
Scan to E-mail	Scans a document and sends as an email attachment.

Apps

Use the Apps menu to install HP Web Services applications.

Interpret control-panel messages

Control panel message types

Alert and warning messages appear temporarily and might require you to acknowledge the message by touching the OK button to resume or by touching the Cancel ✕ button to cancel the job. With certain warnings, the job might not complete or the print quality might be affected. If the alert or warning message is related to printing and the auto-continue feature is on, the product will attempt to resume the printing job after the warning has appeared for 10 seconds without acknowledgement.

Critical error messages can indicate some kind of failure. Turning off and then turning on the power might fix the problem. If a critical error persists, the product might require service.

Control panel messages

49 Error, Turn off then on

Description

The product experienced an internal error.

Recommended action

Turn the product off, wait at least 30 seconds, and then turn the product on and wait for it to initialize.

If you are using a surge protector, remove it. Plug the product directly into the wall socket. Turn the product power on.

If the message persists, contact HP support.

50.x Fuser Error

Description

The product has experienced an error with the fuser.

Recommended action

Turn the product power off, wait at least 30 seconds, and then turn the product power on and wait for it to initialize.

Turn off the product, wait at least 25 minutes, and then turn on the product.

If you are using a surge protector, remove it. Plug the product directly into the wall socket. Turn the product power on.

If the message persists, contact HP support.

51.XX Error

Description

The product has experienced an internal hardware error.

Recommended action

Turn the product power off, wait at least 30 seconds, and then turn the product power on and wait for it to initialize.

If you are using a surge protector, remove it. Plug the product directly into the wall socket. Turn the product on.

If the message persists, contact HP support.

54.XX Error

Description

The product has experienced an error with one of the internal sensors.

Recommended action

Turn the product power off, wait at least 30 seconds, and then turn the product power on and wait for it to initialize.

If you are using a surge protector, remove it. Plug the product directly into the wall socket. Turn the product power on.

If the message persists, contact HP support.

55.X Error

Description

The product has experienced an internal error.

Recommended action

Turn the product power off, wait at least 30 seconds, and then turn the product power on and wait for it to initialize.

If you are using a surge protector, remove it. Plug the product directly into the wall socket. Turn the product power on.

If the message persists, contact HP support.

57 Fan Error, Turn off then on

Description

The product has experienced a problem with its internal fan.

Recommended action

Turn the product power off, wait at least 30 seconds, and then turn the product power on and wait for it to initialize.

If you are using a surge protector, remove it. Plug the product directly into the wall socket. Turn the product power on.

If the message persists, contact HP support.

59.X Error

Description

The product has experienced a problem with one of the motors.

Recommended action

Turn the product power off, wait at least 30 seconds, and then turn the product power on and wait for it to initialize.

If you are using a surge protector, remove it. Plug the product directly into the wall socket. Turn the product power on.

If the message persists, contact HP support.

79 Error Turn off then on

Description

The product has experienced an internal firmware error.

Recommended action

Turn the product power off, wait at least 30 seconds, and then turn the product power on and wait for it to initialize.

If you are using a surge protector, remove it. Plug the product directly into the wall socket. Turn the product power on.

If the message persists, contact HP support.

Black Cartridge Low

Description

The toner cartridge is nearing the end of its useful life.

Recommended action

Printing can continue, but consider having a replacement toner cartridge on hand.

Black Very Low

Description

The toner cartridge is at the end of its useful life. A customer configurable option on this product is "Prompt to Remind Me in 100 pages, 200 pages, 300 pages, 400 pages, or never." This option is provided as a customer convenience and is not an indication these pages will have acceptable print quality.

Recommended action

To ensure optimal print quality, HP recommends replacing the toner cartridge at this point. You can continue printing until you notice a decrease in print quality. Actual cartridge life may vary.

Once an HP toner cartridge has reached very low, HP's Premium Protection Warranty on that toner cartridge has ended. All print defects or cartridge failures incurred when an HP toner cartridge is used in continue at very low mode will not be considered to be defects in materials or workmanship in the toner cartridge under the HP Print Cartridge Warranty Statement.

Cleaning

Description

The product periodically performs a cleaning procedure to maintain the best print quality.

Recommended action

Wait for the cleaning process to finish.

Communication error.

Description

A fax communication error occurred between the product and the sender or receiver.

Recommended action

Allow the product to retry sending the fax. Unplug the product telephone cord from the wall, plug in a telephone, and try making a call. Connect the product phone cord into a jack for another phone line.

Try a different phone cord.

Set the Fax Speed option to the Slow(V.29) setting or disable the Fast(V.34) setting.

Turn off the Error Correction feature to prevent automatic error correction.

NOTE: Turning off the Error Correction feature can reduce image quality.

Print the Fax Activity Log report from the control panel to determine if the error occurs with a specific fax number.

If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

Device error, press OK

Description

An internal error occurred.

Recommended action

Press the OK button to resume the job.

Document feeder door is open. Canceled fax.

Description

The cover at the top of the document feeder is open, and the product cannot send the fax.

Recommended action

Close the cover, and send the fax again.

Door open

Description

The product front door is open.

Recommended action

Close the door.

Fax is busy. Canceled send.

Description

The fax line to which you were sending a fax was busy. The product has canceled sending the fax.

Recommended action

Call the recipient to ensure that the fax machine is on and ready.

Check that you are dialing the correct fax number.

Check that the Redial if Busy option is enabled.

Open the Service menu, and touch the Fax Service button. Touch the Run Fax Test button. This test verifies that the phone cord is connected to the correct port and that the phone line has a signal. The product prints a report with the results.

If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

Fax is busy. Redial pending.

Description

The fax line to which you were sending a fax was busy. The product automatically redials the busy number.

Recommended action

Allow the product to retry sending the fax.

Call the recipient to ensure that the fax machine is on and ready.

Check that you are dialing the correct fax number.

Open the Service menu, and touch the Fax Service button. Touch the Run Fax Test button. This test verifies that the phone cord is connected to the correct port and that the phone line has a signal. The product prints a report with the results.

If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

Fax receive error.

Description

An error occurred while trying to receive a fax.

Recommended action

Ask the sender to resend the fax.

Try faxing back to the sender or another fax machine.

Check for a dial tone on the phone line by touching the Start Fax button.

Check that the telephone cord is securely connected by unplugging and replugging the cord.

Make sure that you are using the telephone cord that came with the product.

Open the Service menu, and touch the Fax Service button. Touch the Run Fax Test button. This test verifies that the phone cord is connected to the correct port and that the phone line has a signal. The product prints a report with the results.

Decrease the fax speed. Ask the sender to resend the fax.

Turn off error-correction mode. Ask the sender to resend the fax.

NOTE: Turning off error-correction mode can reduce the quality of the fax image.

Connect the product to a different phone line.

If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

Fax Send error.

Description

An error occurred while trying to send a fax.

Recommended action

Try resending the fax.

Try faxing to another fax number.

Check for a dial tone on the phone line by touching the Start Fax button.

Check that the telephone cord is securely connected by unplugging and replugging the cord.

Make sure that you are using the telephone cord that came with the product.

Make sure that the phone is working by disconnecting the product, plugging in a telephone to the phone line, and making a voice call.

Connect the product to a different phone line.

Set the fax resolution to Standard instead of the default of Fine.

If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

Fax storage is full. Canceling the fax receive.

Description

During the fax transmission, the product ran out of memory. Only the pages that fit into memory will be printed.

Recommended action

Print all of the faxes, and then have the sender resend the fax. Have the sender divide the fax job into multiple jobs before resending. Cancel all fax jobs or clear the faxes from memory.

Fax storage is full. Canceling the fax receive.

Description

The amount of available memory for storing faxes is insufficient to store an incoming fax.

Recommended action

If you are using the Private Receive feature, print all received faxes to regain some memory.

If you still need more memory, clear faxes from memory. Open the Service menu. In the Fax Service menu, select the Clear Saved Faxes option.

Fax storage is full. Canceling the fax send.

Description

During the fax job, the memory filled. All pages of the fax have to be in memory for a fax job to work correctly. Only the pages that fit into memory were sent.

Recommended action

Cancel the current job. Turn the product off, and then turn it on again. Try sending the job again.

If the error reoccurs, cancel the job and turn the product off and then on a second time. The product might not have enough memory for some jobs.

Genuine HP supply installed

Description

A genuine HP toner cartridge was installed.

Recommended action

No action necessary.

Incompatible <color>

Description

You have installed a toner cartridge that is intended for use in a different HP product model. The product might not function correctly with this toner cartridge installed.

Recommended action

Install the correct toner cartridge for this product.

Install <color> cartridge

Description

The toner cartridge is either not installed or not correctly installed in the product.

Recommended action

Install the toner cartridge.

Invalid driver Press [OK]

Description

You are using an incorrect print driver.

Recommended action

Select the correct print driver.

Jam in Tray 1, Clear jam and then press OK

Description

The product has detected a jam.

Recommended action

Clear the jam from the tray, and then press OK.

If the message persists, contact HP support.

Load tray 1 Press [OK] for available media

Description

The tray is empty.

Recommended action

Load paper into the tray to continue printing. Press the OK button to select a different tray.

Load Tray 1 <TYPE> <SIZE>, Press OK to use available media

Description

The tray is not configured for the paper type and size that the print job is requesting.

Recommended action

Load the correct paper into Tray 1. Or press the OK button to use the paper currently in the tray.

Load Tray 1, <PLAIN> <SIZE> / Cleaning mode, OK to start

Description

The product is ready to process the cleaning operation.

Recommended action

Load Tray 1 with plain paper in the size indicated, and then press the OK button.

Load Tray <X>: [Type], [Size]

Description

A tray is configured for the paper type and size that the print job is requesting, but that tray is empty.

Recommended action

Load the correct paper into the tray, or press the OK button to use paper in a different tray.

Manual Duplex Load Tray 1, Press OK

Description

The first side of a manual duplex job has printed, and the page needs to be loaded to process the second side.

Recommended action

Load the page in the indicated tray with the side to be printed face up, and the top of the page away from you and then press the OK button.

Manual feed <SIZE> <TYPE>, Press OK to use available media

Description

The product is set for manual feed mode.

Recommended action

Press the OK button to clear the message *or* load the correct paper into Tray 1.

Memory is low. Press OK.

Description

The product memory is almost full.

Recommended action

Press the OK button to finish the job, or press the Cancel button to cancel the job.

Break the job into smaller jobs that contain fewer pages.

Misprint, Press OK

Description

Paper has been delayed as it moves through the product.

Recommended action

Press the OK button to clear the message.

To avoid this problem, try the following solutions:

1. Adjust the paper guides in the tray. Make sure the front paper guide is pushing the paper against the back edge of the tray.
2. Use paper that meets HP specifications. Store paper unopened in its original packaging.
3. Use the product in an area that meets the environmental specifications for this product.

No dial tone.

Description

The product could not detect a dial tone.

Recommended action

Check for a dial tone on the phone line by touching the Start Fax button.

Unplug the telephone cord from both the product and the wall and replug the cord.

Make sure that you are using the telephone cord that came with the product.

Unplug the product telephone cord from the wall, connect a telephone, and try making a voice call.

Make sure that the phone cord from the wall telephone jack is plugged into the line port.

Connect the product phone cord into a jack for another phone line.

Check the phone line by using the Run Fax Test option from the Service menu on the control panel.

If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

No fax answer. Canceled send.

Description

Attempts to redial a fax number failed, or the Redial if No Answer option was turned off.

Recommended action

Call the recipient to ensure that the fax machine is on and ready.

Check that you are dialing the correct fax number.

Check that the redial option is enabled.

Unplug the telephone cord from both the product and the wall and replug the cord.

Unplug the product telephone cord from the wall, connect a telephone, and try making a voice call.

Make sure that the phone cord from the wall telephone jack is plugged into the line  port.

Connect the product phone cord into a jack for another phone line.

If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

No fax answer. Redial pending.

Description

The receiving fax line did not answer. The product attempts to redial after a few minutes.

Recommended action

Allow the product to retry sending the fax.

Call the recipient to ensure that the fax machine is on and ready.

Check that you are dialing the correct fax number.

If the product continues to redial, unplug the product telephone cord from the wall, connect a telephone, and try making a voice call.

Make sure that the phone cord from the wall telephone jack is plugged into the line  port.

Connect the product phone cord into a jack for another phone line.

Try a different phone cord.

If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

No fax detected.

Description

The product answered the incoming call but did not detect that a fax machine was calling.

Recommended action

Allow the product to retry receiving the fax.

Try a different phone cord.

Connect the product phone cord into a jack for another phone line.

If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

Print failure, press OK. If error repeats, turn off then on.

Description

The product cannot process the page.

Recommended action

Press the OK button to continue printing the job, but output might be affected.

If the error persists, turn the power off and then on. Resend the print job.

Remove shipping lock from <color> cartridge

Description

A toner cartridge shipping lock is installed.

Recommended action

Pull the orange tab to remove the shipping lock from the cartridge.

Replace [color]

Description

The toner cartridge is at the end of its useful life, and the product is customer-configured to stop printing when it reaches the very low state.

Recommended action

To ensure optimal print quality, HP recommends replacing the toner cartridge at this point. You can continue printing until you notice a decrease in print quality. Actual cartridge life may vary. Once an HP toner cartridge has reached very low, HP's Premium Protection Warranty on that toner cartridge has ended. All print defects or cartridge failures incurred when an HP toner cartridge is used in Continue at Very Low mode will not be considered to be defects in materials or workmanship in the toner cartridge under the HP Print Cartridge Warranty Statement.

Unexpected size in tray 1 Load <size> Press [OK]

Description

The product has detected paper in the tray that does not match the configuration for the tray.

Recommended action

Load the correct paper into the tray, or configure the tray for the size that you have loaded.

Unsupported <color> Press [OK] to continue

Description

The product has detected an installed toner cartridge that was not made by HP.

Recommended action

Press the OK button to continue printing.

If you believe you purchased an HP supply, go to www.hp.com/go/anticounterfeit. Service or repairs that are required as a result of using unsupported supplies are not covered under HP warranty.

Used <color> cartridge is installed Press [OK] to continue

Description

You are using a toner cartridge that reached the default low threshold while it was installed in a product.

Recommended action

Prining can continue, but consider having a replacement toner cartridge on hand.

Event-log messages

Print the event log

1. Make sure the product is in the ready state.
2. From the Home screen on the product control panel, touch the Setup button.
3. Touch the left arrow button, and then quickly touch the Cancel button.
4. The product returns to the Ready state. touch the Setup button to reopen the menus.
5. Touch the 2ndary Service menu.
6. Touch the Service Reports menu.
7. Touch the Error Report item.

Show an event log

You can use **HP Device Toolbox** to view the event log from a computer.

NOTE: This tool is available only if you performed a full installation when you installed the product.

1. Click the **Start** button, and then click the **Programs** item.
2. Click your HP product group, and then click the **HP Device Toolbox** item.
3. Click the **Home** tab, and then click the **Event Log** item. The event log shows a list of all product events and errors.

Event log messages

The following table contains any event log codes for this product that correspond to a control-panel error message. To resolve these events, consult the control panel error message.

Table 2-7 Event-log messages

Event code	Description
13.0000	Paper jam
20.0000	Memory out
21.0000	Page misfeed or mispick
41.2000	Beam detect malfunction
41.3000	Unexpected size
50.0000	Fuser error
50.1000	Low fuser temperature error
50.3000	High fuser temperature error
50.4000	Fuser drive circuit error

Table 2-7 Event-log messages (continued)

Event code	Description
51.0000	Beam detect or laser error
52.0000	Engine laser scanner error
55.3000	Engine-formatter communication error
55.4000	Engine communication timeout error
57.0000	Fan motor error
57.0600	Fan motor error

Some product events do not produce a message that displays on the control panel. Instead, they are only recorded in the event log.

Table 2-8 Event-log-only messages

Event code	Description	Solution
50.2000	Slow fuser error	
50.7000	Fuser open error	
	Low subthermistor fuser error	
	High subthermistor fuser error	
51.2000	Black scanner laser error (inline devices only)	
54.0100	Environmental sensor error	Verify that the DC controller connectors are firmly connected. If the error persists, replace the temperature/humidity sensor. If the error persists, replace the DC controller.
54.0600	Density sensor error	Verify that the cables between the DC controller is firmly connected. If the error persists, replace the color misregistration sensor. If the error persists, replace the DC controller.
54.1100	Black density out of range	
54.1200	Black density measurement abnormality	
54.1400	Color plane registration sensor error (inline devices only)	1. Turn off the power by using the power switch, and then wait at least 30 seconds. 2. Turn on the power and wait for the product to initialize. If the error persists, verify that the cables between the color misregistration sensor and the DC controller are firmly connected. If the error persists, replace the color misregistration sensor. If the error persists, replace the toner cartridge tray. If the error persists, replace the DC controller.

Table 2-8 Event-log-only messages (continued)

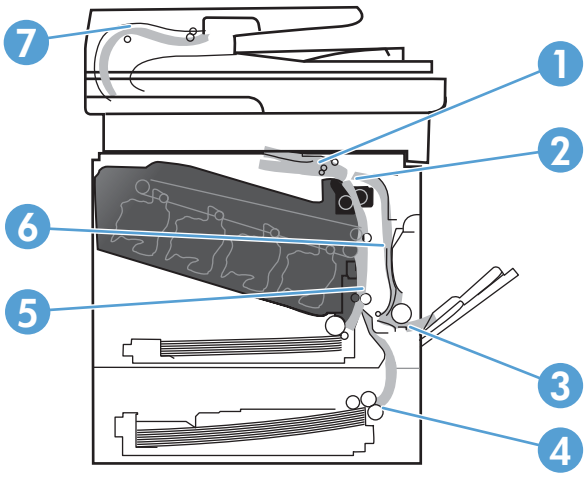
Event code	Description	Solution
54.1501	Cyan CPR pattern cannot be read	1. Turn off the power by using the power switch, and then wait at least 30 seconds. 2. Turn on the power and wait for the product to initialize. If the error persists, verify that the cables between the color misregistration sensor and the DC controller are firmly connected. If the error persists, replace the color misregistration sensor. If the error persists, replace the toner cartridge tray. If the error persists, replace the DC controller.
54.1502	Magenta CPR pattern cannot be read	
54.1503	Yellow CPR pattern cannot be read	
54.1599	Black CPR pattern cannot be read	
54.1800	Black toner level sensor error	1. Turn off the power by using the power switch, and then wait at least 30 seconds. 2. Turn on the power and wait for the product to initialize. If the error persists, replace the DC controller.
54.2100	Beam detect (BD) error	If the error persists, replace the DC controller. If the error persists, replace the product.
54.2500	Top-of-page sensor error	Verify that the DC controller connectors are firmly connected. If the error persists, replace the DC controller.

Clear jams

Jam locations

Use this illustration to identify locations of jams. In addition, instructions display on the control panel to direct you to the location of jammed paper and how to clear it.

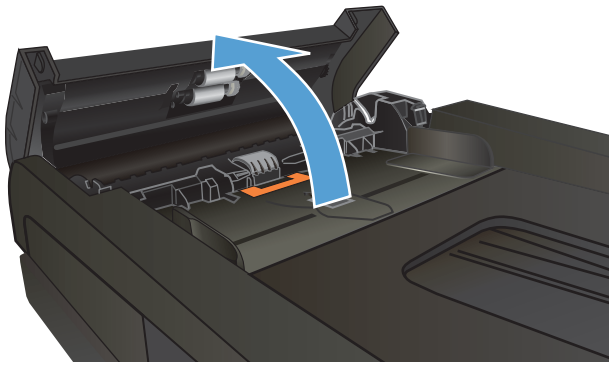
NOTE: Internal areas of the product that might need to be opened to clear jams have green handles or green labels.



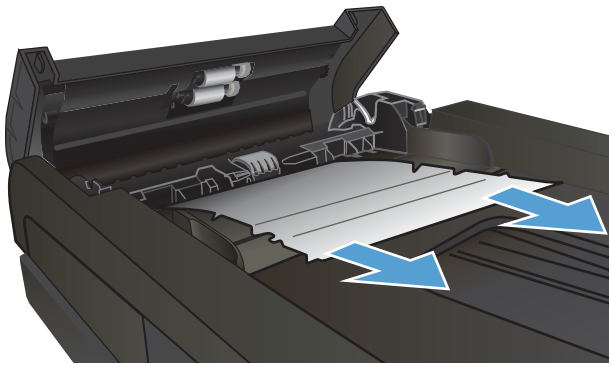
1	Output-bin area
2	Duplexing area
3	Tray 1 area
4	Optional Tray 3
5	Tray 2 pickup area
6	Fuser area
7	Document-feeder area

Clear jams in the document feeder

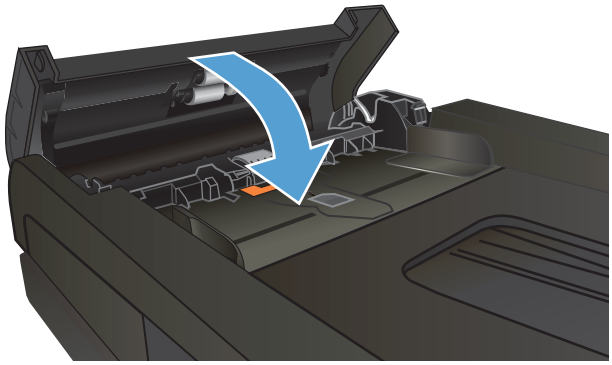
1. Open the document-feeder cover.



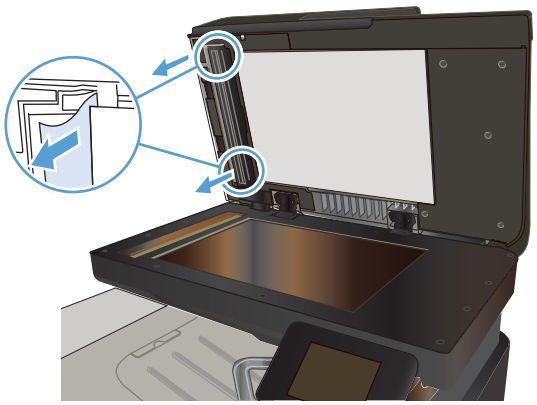
2. Gently pull the jammed paper out.



3. Close the document-feeder cover.



4. Open the scanner lid. If paper is jammed in the scanner lid, gently pull it out.

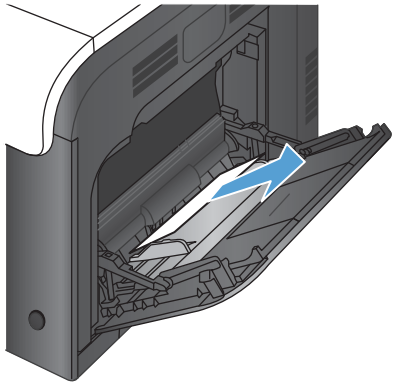


Clear jams in the output bin area

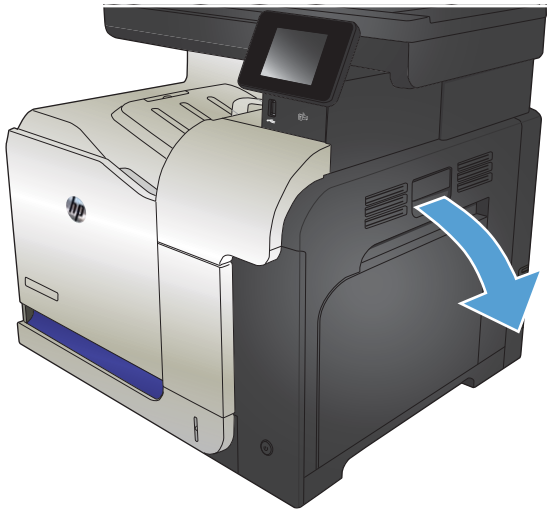
1. If paper is visible from the output bin, grasp the leading edge and remove it.

Clear jams in Tray 1

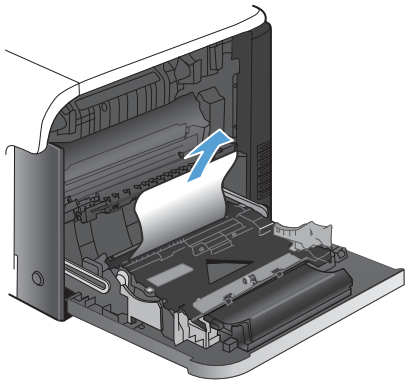
1. If jammed paper is visible in Tray 1, clear the jam by gently pulling the paper straight out.



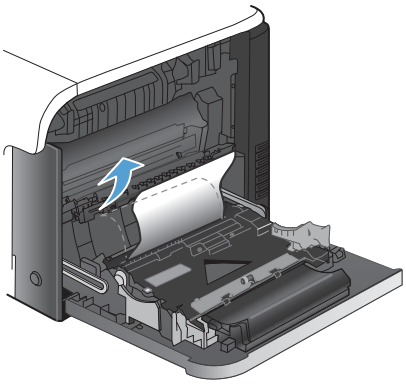
2. If you cannot remove the paper, or if no jammed paper is visible in Tray 1, close Tray 1 and open the right door.



3. If paper is visible inside the right door, gently pull the trailing edge to remove it.



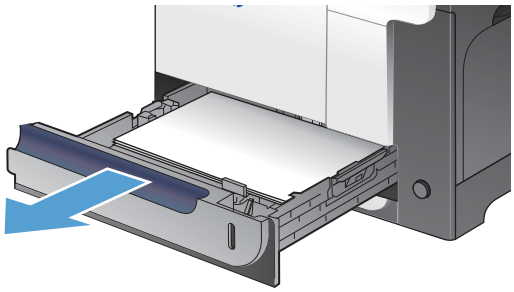
4. Gently pull the paper out of the pick up area.



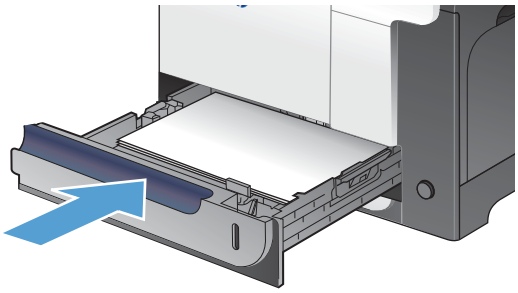
5. Close the right door.

Clear jams in Tray 2

1. Open Tray 2 and make sure that the paper is stacked correctly. Remove any jammed or damaged sheets of paper.



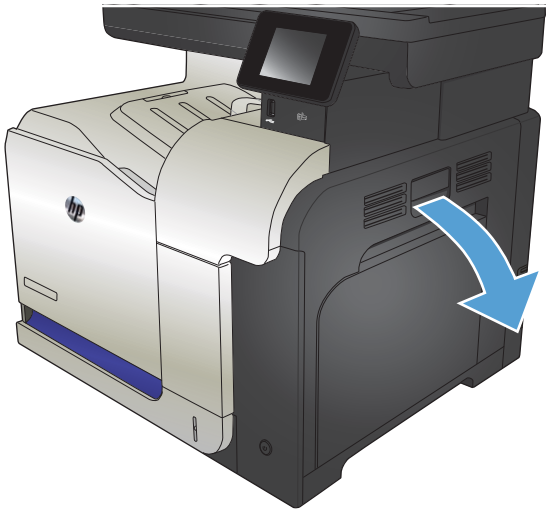
2. Close the tray.



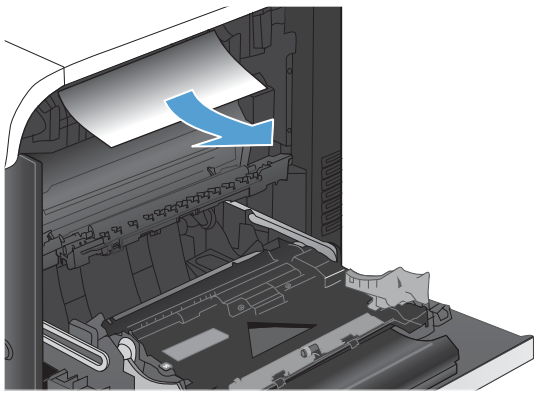
Clear jams in the right door

CAUTION: The fuser can be hot while the product is in use. Wait for the fuser to cool before clearing jams.

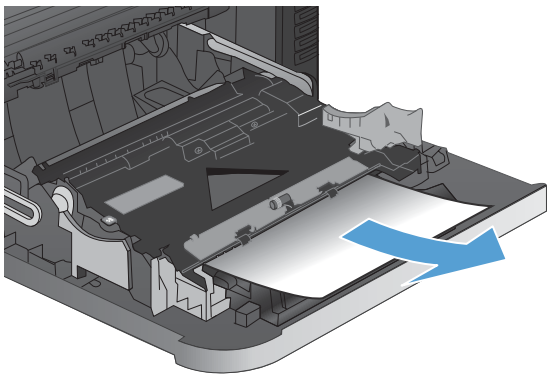
1. Open the right door.



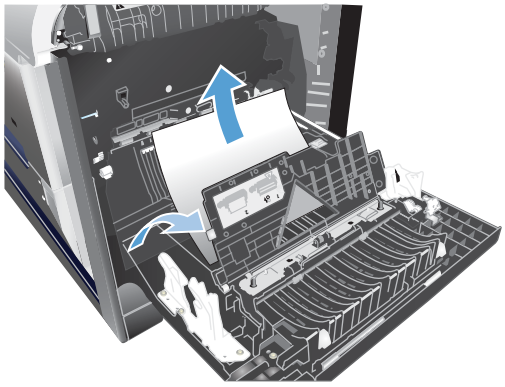
2. If paper is jammed as it enters the output bin, gently pull the paper downward to remove it.



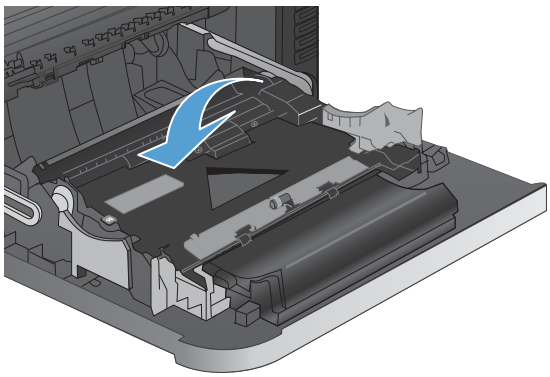
3. If paper is jammed inside the right door, gently pull the paper to remove it.



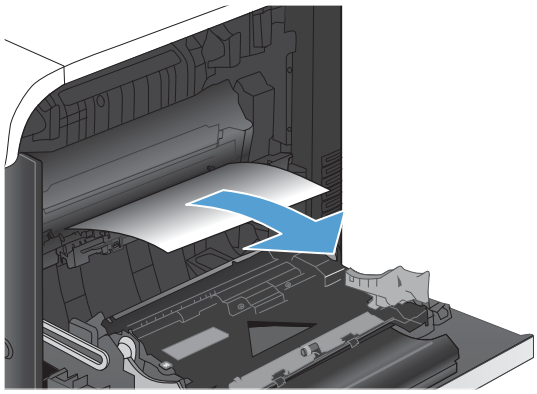
4. Lift the paper-feed cover on the inside of the right door. If jammed paper is present, gently pull the paper straight out to remove it.



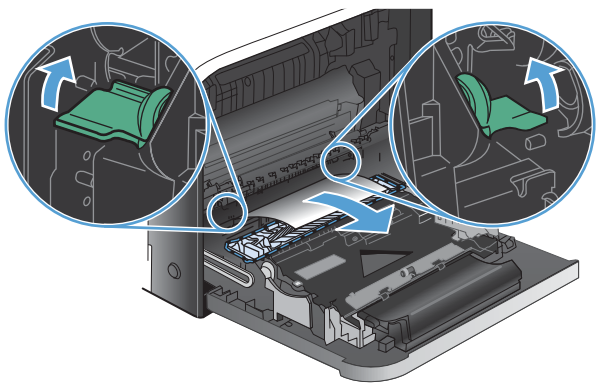
5. Close the paper-feed cover.



6. Gently pull the paper out of the pickup area.

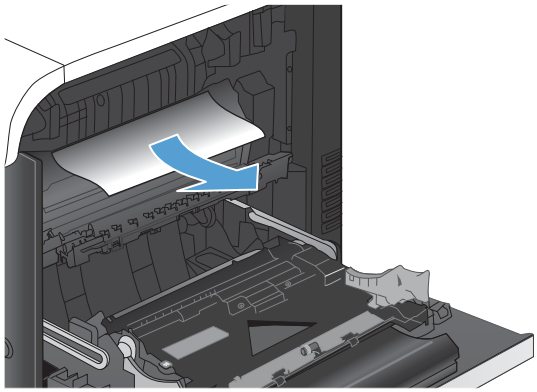


7. Look for paper in the Tray 2 roller area. Push up on the two green tabs to release the jam-access door. Remove any jammed paper, and close the door.



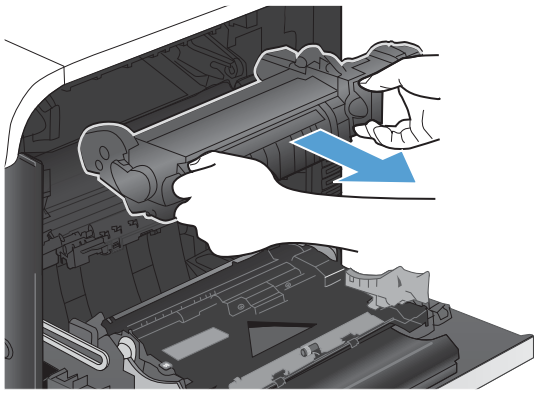
8. If paper is visible entering the bottom of the fuser, gently pull downward to remove it.

   CAUTION: Do not touch the rollers on the transfer roller. Contaminants can affect print quality.



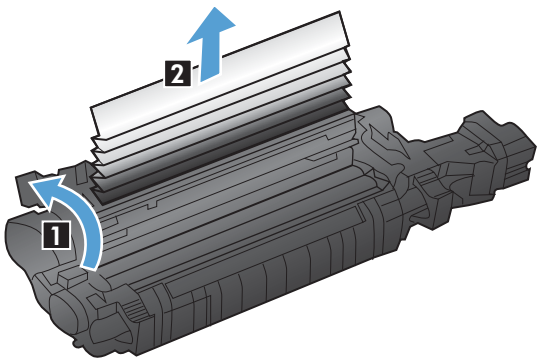
9. Paper could be jammed inside the fuser where it would not be visible. Grasp the fuser handles, lift up slightly, and pull straight out to remove the fuser.

   CAUTION: The fuser can be hot while the product is in use.

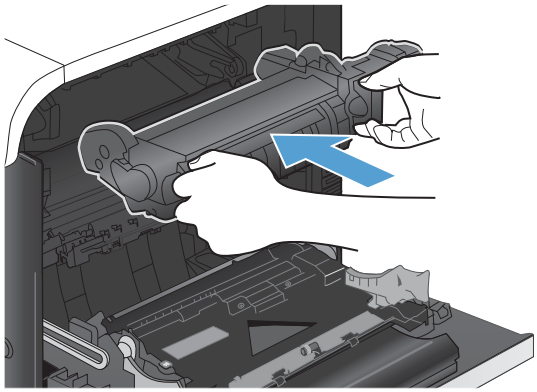


10. Open the jam-access door (callout 1). If paper is jammed inside the fuser, gently pull it straight up to remove it (callout 2). If the paper tears, remove all paper fragments.

    CAUTION: Even if the body of the fuser has cooled, the rollers that are inside could still be hot. Do not touch the fuser rollers until they have cooled.



11. Close the jam-access door, and push the fuser completely into the product.

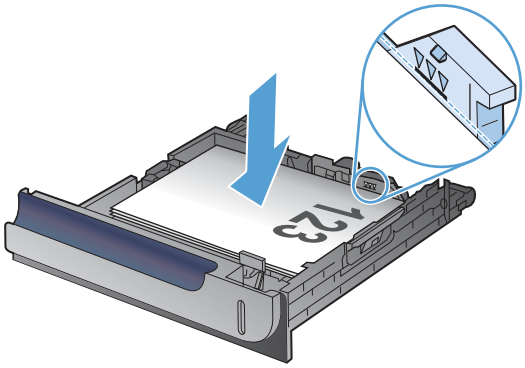


12. Close the right door.

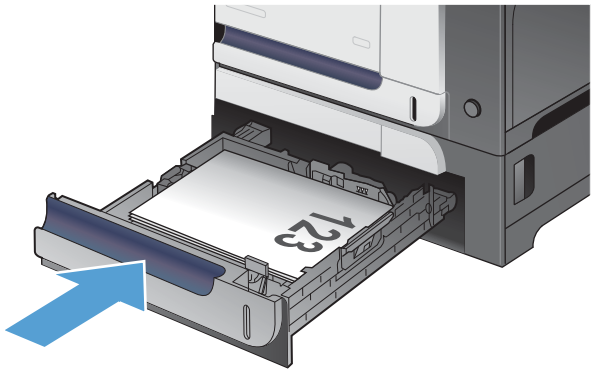
Clear jams in optional Tray 3

1. Open Tray 3 and make sure that the paper is stacked correctly. Remove any damaged or jammed sheets of paper.

   NOTE: To prevent jams, do not overfill the tray. Be sure the top of the stack is below the tray-full indicator.

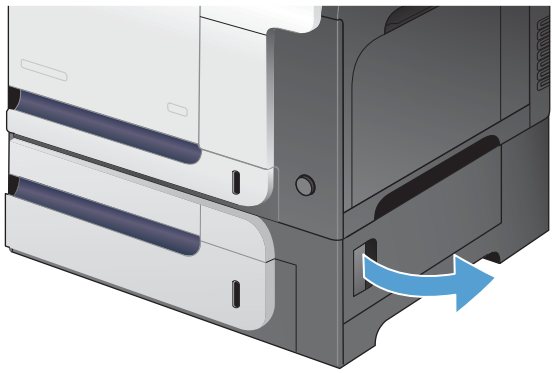


2. Close Tray 3.

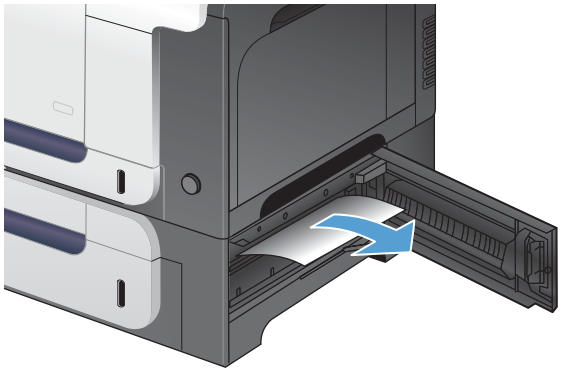


Clear jams in the lower right door (Tray 3)

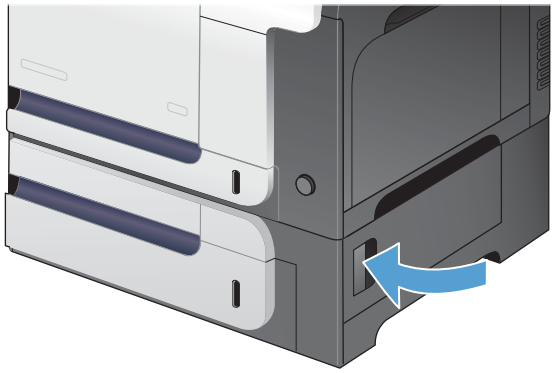
1. Open the lower right door.



2. If paper is visible, gently pull the jammed paper up or down to remove it.



3. Close the lower right door.



Paper feeds incorrectly or becomes jammed

This section will discuss the following:

- The product does not pick up paper
- The product picks up multiple sheets of paper
- The document feeder jams, skews, or picks up multiple sheets of paper
- Prevent paper jams from the paper trays

The product does not pick up paper

If the product does not pick up paper from the tray, try these solutions.

1. Open the product and remove any jammed sheets of paper.
2. Load the tray with the correct size of paper for your job.
3. Make sure the paper size and type are set correctly on the product control panel.
4. Make sure the paper guides in the tray are adjusted correctly for the size of paper. Adjust the guides to the appropriate indentation in the tray.
5. Check the product control panel to see if the product is waiting for you to acknowledge a prompt to feed the paper manually. Load paper, and continue.
6. The rollers above the tray might be contaminated. Clean the rollers with a lint-free cloth dampened with warm water.

The product picks up multiple sheets of paper

If the product picks up multiple sheets of paper from the tray, try these solutions.

1. Remove the stack of paper from the tray and flex it, rotate it 180 degrees, and flip it over. *Do not fan the paper.* Return the stack of paper to the tray.
2. Use only paper that meets HP specifications for this product.
3. Use paper that is not wrinkled, folded, or damaged. If necessary, use paper from a different package.
4. Make sure the tray is not overfilled. If it is, remove the entire stack of paper from the tray, straighten the stack, and then return some of the paper to the tray.
5. Make sure the paper guides in the tray are adjusted correctly for the size of paper. Adjust the guides to the appropriate indentation in the tray.
6. Make sure the printing environment is within recommended specifications.

The document feeder jams, skews, or picks up multiple sheets of paper

- The original might have something on it, such as staples or self-adhesive notes, that must be removed.
- Make sure that the document-feeder cover is closed.
- The pages might not be placed correctly. Straighten the pages and adjust the paper guides to center the stack.
- The paper guides must be touching the sides of the paper stack to work correctly. Make sure that the paper stack is straight and the guides are against the paper stack.
- Verify that there are no pieces of paper, staples, paper clips, or other debris in the paper path.
- Clean the document-feeder rollers and the separation pad. Use compressed air or a clean, lint-free cloth moistened with warm water.

Prevent paper jams from the paper trays

To reduce the number of paper jams, try these solutions.

1. Use only paper that meets HP specifications for this product.
2. Use paper that is not wrinkled, folded, or damaged. If necessary, use paper from a different package.
3. Use paper that has not previously been printed or copied on.
4. Make sure the tray is not overfilled. If it is, remove the entire stack of paper from the tray, straighten the stack, and then return some of the paper to the tray.
5. Make sure the paper guides in the tray are adjusted correctly for the size of paper. Adjust the guides so they are touching the paper stack without bending it.
6. Make sure that the tray is fully inserted in the product.
7. If you are printing on heavy, embossed, or perforated paper, use the manual feed feature and feed sheets one at a time.
8. Verify that the tray is configured correctly for the paper type and size.
9. Make sure the printing environment is within recommended specifications.

Solve image quality problems

Often print-quality problems can be resolved easily by making sure that the product is maintained, using paper that meets HP specifications, or running a cleaning page.

Image defects table

The following examples depict letter-size paper that has passed through the product short-edge first. These examples illustrate problems that would affect all the pages that you print, whether you print in color or in black only.

Table 2-9 Image defects table

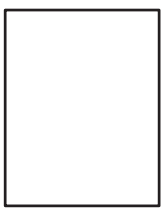
Problem	Sample	Cause	Solution
Print is light or faded on entire page.		Poor contacts exist on the ITB unit and the product grounding unit.	Clean the grounding contacts. If the problem remains after cleaning, check the contacts for damage. Replace any deformed or damaged parts.
		Poor secondary transfer contacts exist on the secondary transfer roller and the ITB.	Clean the contacts. If the problem remains after cleaning, check the contacts for damage. Replace any deformed or damaged parts.
Print is light or faded in a particular color.		Poor primary transfer bias contacts on the ITB unit and product.	Clean the contacts of the color that produces the light print. If the problem remains after cleaning, check the contacts for damage. Replace any deformed or damaged parts.
		Poor primary charging bias contacts with the toner cartridge and product.	
		Poor developing bias contacts with the toner cartridge and product.	
Image is too dark.		The RD sensor is defective.	Replace the RD sensor.
Page is blank.		The high-voltage power-supply lower is defective (no developing bias output).	Replace the high-voltage power-supply lower.

Table 2-9 Image defects table (continued)

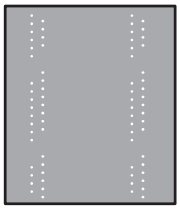
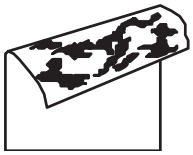
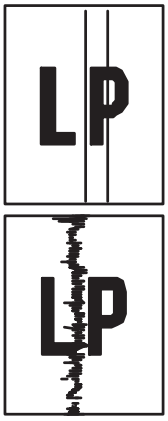
Problem	Sample	Cause	Solution
The page is all black or a solid color.		Poor contact exists in the primary charging bias or developing bias contacts between the toner cartridge and the product.	Clean each contact of the color that produces the all black or solid color. If the problem remains after cleaning, check the contacts for damage. Replace any deformed or damaged parts. Replace the affected toner cartridge.
White spots appear in an image		The primary transfer roller is deformed or has deteriorated.	Replace the ITB.
		The secondary transfer roller is deformed or has deteriorated.	Replace the secondary-transfer-roller.
The back of the page is dirty.		The secondary transfer roller is dirty.	Replace the secondary transfer roller.
		The fuser inlet guide or separation guide is dirty.	Clean the dirty parts. If the dirt does not come off, replace the guide.
		The pressure roller is dirty.	Run the cleaning page several times. If the issue persists, replace the fuser.
Vertical streaks or bands appear on the page.		Scratches are present on the circumference of the photosensitive drum.	Replace the toner cartridge of the color that matches the defect.
		Scratches are present on the circumference of the fuser roller.	Replace the fuser.
		Scratches are present on the circumference of the ITB.	Replace the ITB.
		The ITB drive roller is deformed or has deteriorated.	
		The ITB cleaning mechanism is malfunctioning.	

Table 2-9 Image defects table (continued)

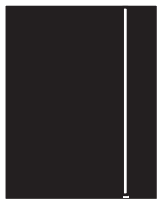
Problem	Sample	Cause	Solution
Vertical white lines appear in a particular color.		The laser beam window is dirty.	Clean the window and remove any foreign substances.
		Scratches are present on the circumference of the developing cylinder or photosensitive drum. White scratch down the page could mean the scanner glass needs to be cleaned.	Remove the affected toner cartridge and re-install it. The PGCs will clean the glass. If the problem persists, replace the affected toner cartridge.
		The laser/scanner-unit mirror is dirty.	Replace the laser/scanner assembly.
Vertical white lines appear in all colors.		Horizontal scratches on the fuser roller.	Replace the fuser.
		Scratches are present on the circumference of the ITB. White scratch down the page could mean the scanner glass needs to be cleaned.	Remove the affected toner cartridge and re-install it. The PGCs will clean the glass. Replace the ITB.
Horizontal lines appear on the page.		Repetitive horizontal lines appear.	Use the repetitive defects ruler to identify the dirty roller. Clean the roller. If the roller cannot be cleaned, replace the fuser.
		Horizontal scratches are present on the photosensitive drum.	Replace the toner cartridge of the color that matches the defect.
		Horizontal scratches are present on the fuser roller.	Replace the fuser.
A horizontal white line displays on the page.		Repetitive horizontal white lines appear.	Use the repetitive defects ruler to identify the dirty roller. Clean the roller. If the roller cannot be cleaned, replace the roller.
		Horizontal scratches are present on the photosensitive drum.	Replace the toner cartridge of the color that matches the defect.
		Scratches are present on the circumference of the ITB.	Replace the ITB.

Table 2-9 Image defects table (continued)

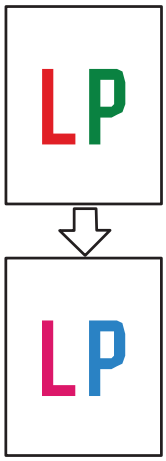
Problem	Sample	Cause	Solution
Image in a particular color does not print in the correct color.		Poor contact exists in the primary charging bias or developing bias contacts between the toner cartridge and the product.	Clean each contact of the color that produces the missing color. If the problem remains after cleaning, check the contacts for damage. Replace any deformed or damaged parts.
		The toner cartridge (primary charging roller, developing roller, or photosensitive drum) is defective.	Replace the toner cartridge of the color that matches the defect.
		The high-voltage power-supply lower is defective (no primary charging bias or developing bias output).	Replace the high-voltage power-supply lower.
		The laser/scanner unit is defective.	Replace the laser/scanner assembly.
Dropouts appear.		The secondary transfer roller is deformed or has deteriorated.	Replace the secondary-transfer-roller.
		The primary charging roller, developing roller, or photosensitive drum is deformed or has deteriorated.	Replace the toner cartridge of the color that matches the defect.
		The fuser roller is deformed or has deteriorated.	Replace the fuser.
		The high-voltage power-supply T PCA is defective (no transfer bias output).	Replace the high-voltage power-supply upper.
The toner is not fully fused to the paper.		The fuser roller or pressure roller is scarred or deformed.	Replace the fuser.
		The thermistor is defective.	Replace the fuser.
		The fuser heater is defective.	

Table 2-9 Image defects table (continued)

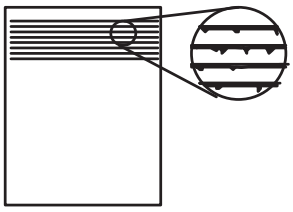
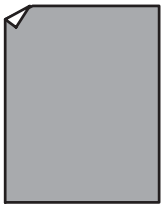
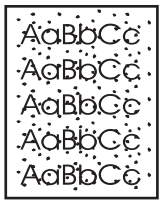
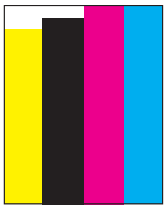
Problem	Sample	Cause	Solution
Some color is misregistered.		The product is incorrectly calibrated.	Calibrate the product.
		The ITB unit is defective.	If the ITB does not rotate smoothly or a cleaning malfunction occurs (ITB is dirty), replace the ITB.
		The drive gear of the ITB motor is worn or chipped.	Check each drive gear between the ITB drive roller and the ITB motor. If the gear is worn or chipped, replace the drive unit.
		The RD sensor is defective.	Open and close the front door several times to clean the RD sensor. If the problem persists, replace the RD sensor.
		The laser/scanner unit is defective.	Replace the laser/scanner assembly.
		The toner cartridge is defective.	Replace the toner cartridge of the affected color.
Toner smears appear on the paper.		The product has residual paper.	Remove the residual paper.
		The fuser inlet guide is dirty.	Clean the fuser inlet guide.
The printed page contains misformed characters.		The product is experiencing page skew.	See the “Text or graphics are skewed on the printed page” row in this table.
		The laser/scanner unit is defective.	Replace the laser/scanner assembly.
Text or graphics are skewed on the printed page.		The registration shutter spring is unhooked.	Check the spring and place it in the correct position.
		The registration shutter spring is deformed.	Replace the secondary transfer assembly.
The printed page contains wrinkles or creases.		The roller or paper feed guide is dirty.	Clean any dirty components.
		A feed roller is deformed or has deteriorated.	Replace any deformed or deteriorated rollers.
		The paper feed guide is damaged.	Replace the paper-feed-guide unit.

Table 2-9 Image defects table (continued)

Problem	Sample	Cause	Solution
The front of the page is dirty.		The photosensitive drum is dirty.	Replace the toner cartridge.
		The fuser roller or pressure roller is dirty.	Execute a **Pressure roller clean mode** procedure. If the dirt does not come off, replace the fuser. **NOTE:** Cleaning the fuser with HP tough paper provides better results than with plain paper. You might need to execute the cleaning process several times to remove all contaminants on the fuser.
Repetitive horizontal lines			See repetitive image defect ruler. Clean the indicated roller. If the contaminant does not come off, replace appropriate roller or assembly.
Pages have flecks of toner			Execute a cleaning page to clean the contaminant off the fuser. The cleaning page might need to be run several time to clean the fuser. Do not replace the fuser. **NOTE:** Cleaning the fuser with HP tough paper provides better results than with plain paper. You might need to execute the cleaning process several times to remove all contaminants on the fuser.
Pages have one or more skewed color planes (can appear on the right or left side of the page)			Remove, and then reinstall the toner cartridge associated with the defect.

Clean the product

Clean the pickup and separation rollers

1. Turn off the product, unplug the power cable from the product, and then remove the rollers.
2. Dab a lint-free cloth in isopropyl alcohol, and then scrub the roller.

WARNING! Alcohol is flammable. Keep the alcohol and cloth away from an open flame. Before you close the product and connect the power cable, allow the alcohol to dry completely.

NOTE: In certain areas of California (USA), air pollution control regulations restrict the use of liquid isopropyl alcohol (IPA) as a cleaning agent. In those areas of California, please disregard the previous recommendations and use a dry, lint free cloth, moistened with water, to clean the pickup roller.

3. Use a dry, lint free cloth, to wipe the rollers and remove loose dirt.

Clean the paper path

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

1. From the Home screen on the product control panel, touch the Setup button.
2. Touch the Service menu.
3. Touch the Cleaning Page button.
4. Load plain letter or A4 paper when you are prompted.
5. Touch the OK button to begin the cleaning process.

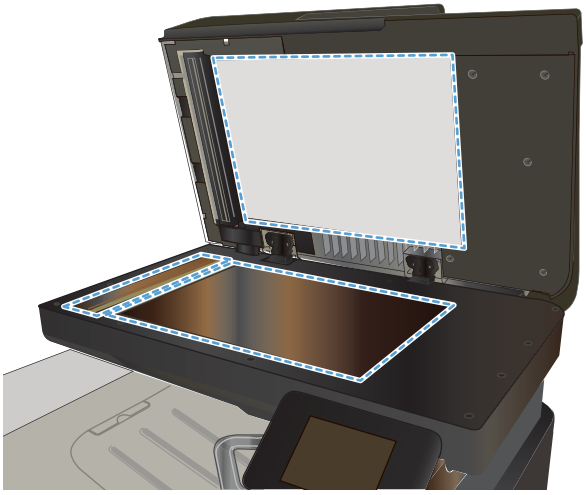
   Wait until the process is complete. Discard the page that prints.

Clean the scanner glass strip and platen

Over time, specks of debris might collect on the scanner glass and white plastic backing, which can affect performance. Use the following procedure to clean the scanner glass and white plastic backing.

1. Use the power switch to turn off the product, and then unplug the power cable from the electrical socket.
2. Open the scanner lid.

3. Clean the scanner glass and the white plastic backing with a soft cloth or sponge that has been moistened with nonabrasive glass cleaner.



CAUTION: Do not use abrasives, acetone, benzene, ammonia, ethyl alcohol, or carbon tetrachloride on any part of the product; these can damage the product. Do not place liquids directly on the glass or platen. They might seep and damage the product.

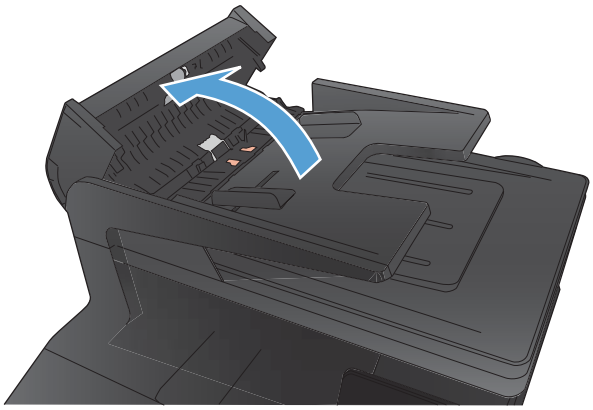
4. Dry the glass and white plastic backing with a chamois or a cellulose sponge to prevent spotting.

5. Connect the product, and then use the power switch to turn on the product.

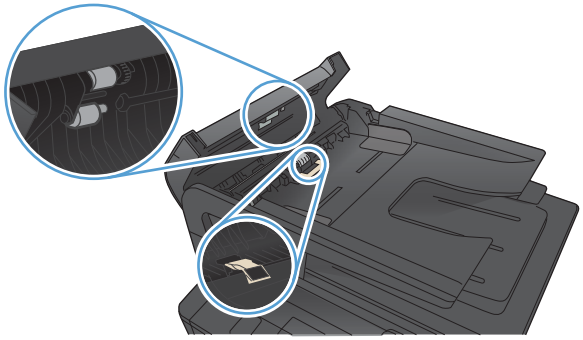
Clean the document feeder pickup rollers and separation pad

If the product document feeder experiences paper-handling problems, such as jams or multiple-page feeds, clean the document feeder rollers and separation pad.

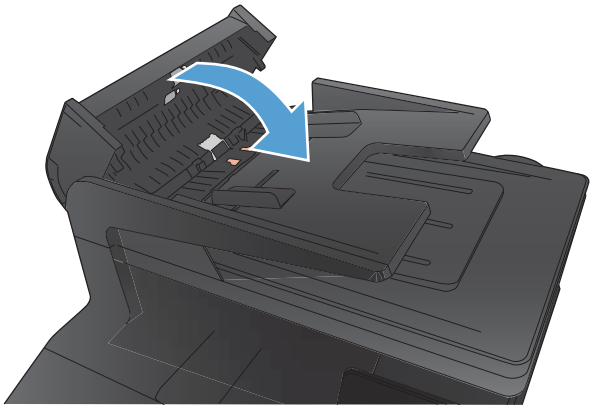
1. Open the document feeder cover.



2. Use a moist, lint-free cloth to wipe both pickup rollers and the separation pad to remove dirt.



3. Close the document feeder cover.



Clean the touchscreen

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

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

Solve performance problems

Factors affecting print performance

Problem	Cause	Solution
Pages print but, are totally blank.	The sealing tape might still be in the toner cartridges.	Verify that the sealing tape has been completely removed from the toner cartridges.
	The document might contain blank pages.	Check the document that you are printing to see if content appears on all of the pages.
	The product might be malfunctioning.	To check the product, print a Configuration page.
Pages print very slowly. **NOTE:** The product print speed is effected by various factors (for example, media size or page complexity).	Heavier media types can slow the print job.	Print on a different type of media.
	Complex pages can print slowly.	Proper fusing might require a slower print speed to ensure the best print quality.
	Paper type not set correctly.	Select the type to match the paper.
Pages did not print.	The product might not be pulling media correctly.	Ensure paper is loaded in the tray correctly. If the problem persists, you might need to replace the pickup rollers and the separation pad.
	The media is jamming in the product.	Clear the jam.
	The USB cable might be defective or incorrectly connected.	• Disconnect the USB cable at both ends and reconnect it. • Try printing a job that has printed in the past. • Try using a different USB cable.
	Other devices are running on your computer.	The product might not share a USB port. If you have an external hard drive or network switchbox that is connected to the same port as the product, the other device might be interfering. To connect and use the product, you must disconnect the other device or you must use two USB ports on the computer.

Print speeds

Print speed is the number of pages that print in one minute. Print speed depends on different engine-process speeds or operational pauses between printed pages during normal product operation. Factors that determine the print speed of the product include the following:

- Page formatting time

  The product must pause for each page to be formatted before it prints. Complex pages take more time to format, resulting in reduced print speed. However, most jobs print at full engine speed (35 ppm on Letter-size media or 33 ppm on A4-size media).

- Media size

  Legal-size media reduces print speed because it is longer than the standard Letter- or A4–size media. A reduce print speed is used when printing on narrow media to prevent the edges of the fuser from overheating.

- Media mode

  Some media types require a reduced print speed to achieve maximum print quality on that media. For example, glossy, heavy, and specialty media (for example, envelopes or photos) require a reduced print speed. To maximize the print speed for special media types, ensure that you select the correct media type in the print driver.

- Product temperature

  To prevent product damage, print speed is reduced if the product reaches a specific internal temperature (thermal slow down). The starting temperature of the product, ambient environment temperature, and the print job size effect the number of pages that can be printed before the product reduces the print speed. Thermal slow down reduces print speed by printing four pages and then pausing for an amount of time before printing continues.

- Other print speed reduction factors

  Other factors (especially during large print jobs) that can cause reduced print speeds include:

  - Density control sequence; occurs every 150 pages and takes about 120 seconds.

The product does not print or it prints slowly

The product does not print

If the product does not print at all, try the following solutions.

1. Make sure the product is turned on and that the control panel indicates it is ready.
   - If the control panel does not indicate the product is ready, turn the product off and then on again.
   - If the control panel indicates the product is ready, try sending the job again.
2. If the control panel indicates the product has an error, resolve the error and then try sending the job again.

3. Make sure the cables are all connected correctly. If the product is connected to a network, check the following items:
    - Check the light next to the network connection on the product. If the network is active, the light is green.
    - Make sure that you are using a network cable and not a phone cord to connect to the network.
    - Make sure the network router, hub, or switch is turned on and that it is working correctly.
4. Install the HP software from the CD that came with the product. Using generic printer drivers can cause delays clearing jobs from the print queue.
5. From the list of printers on your computer, right-click the name of this product, click **Properties**, and open the **Ports** tab.
    - If you are using a network cable to connect to the network, make sure the printer name listed on the **Ports** tab matches the product name on the product configuration page.
    - If you are using a USB cable and are connecting to a wireless network, make sure the box is checked next to **Virtual printer port for USB**.
6. If you are using a personal firewall system on the computer, it might be blocking communication with the product. Try temporarily disabling the firewall to see if it is the source of the problem.
7. If your computer or the product is connected to a wireless network, low signal quality or interference might be delaying print jobs.

The product prints slowly

If the product prints, but it seems slow, try the following solutions.

1. Make sure the computer meets the minimum specifications for this product. For a list of specifications, go to this Web site: www.hp.com/support/lj500colorMFPM575.
2. When you configure the product to print on some paper types, such as heavy paper, the product prints more slowly so it can correctly fuse the toner to the paper. If the paper type setting is not correct for the type of paper you are using, change the setting to the correct paper type.
3. If your computer or the product is connected to a wireless network, low signal quality or interference might be delaying print jobs.

Solve connectivity problems

Solve direct-connect problems

If you have connected the product directly to a computer, check the cable.

- Verify that the cable is connected to the computer and to the product.
- Verify that the cable is not longer than 5 m (16.4 ft). Try using a shorter cable.
- Verify that the cable is working correctly by connecting it to another product. Replace the cable if necessary.

Solve network problems

Check the following items to verify that the product is communicating with the network. Before beginning, print a configuration page from the product control panel and locate the product IP address that is listed on this page.

- Poor physical connection
- The computer is using the incorrect IP address for the product
- The computer is unable to communicate with the product
- The product is using incorrect link and duplex settings for the network
- New software programs might be causing compatibility problems
- The computer or workstation might be set up incorrectly
- The product is disabled, or other network settings are incorrect

Poor physical connection

1. Verify that the product is attached to the correct network port using a cable of the correct length.
2. Verify that cable connections are secure.
3. Look at the network port connection on the back of the product, and verify that the amber activity light and the green link-status light are lit.
4. If the problem continues, try a different cable or port on the hub.

The computer is using the incorrect IP address for the product

1. Open the printer properties and click the **Ports** tab. Verify that the current IP address for the product is selected. The product IP address is listed on the product configuration page.
2. If you installed the product using the HP standard TCP/IP port, select the box labeled **Always print to this printer, even if its IP address changes.**

3. If you installed the product using a Microsoft standard TCP/IP port, use the hostname instead of the IP address.
4. If the IP address is correct, delete the port, and then create a new one.
5. If the error persists, delete the product and then add it again.

The computer is unable to communicate with the product

1. Test network communication by pinging the network.
   a. Open a command-line prompt on your computer. For Windows, click **Start**, click **Run**, and then type `cmd`.
   b. Type `ping` followed by the IP address for your product.
   c. If the window displays round-trip times, the network is working.
2. If the ping command failed, verify that the network hubs are on, and then verify that the network settings, the product, and the computer are all configured for the same network.

The product is using incorrect link and duplex settings for the network

Hewlett-Packard recommends leaving this setting in automatic mode (the default setting). If you change these settings, you must also change them for your network.

New software programs might be causing compatibility problems

Verify that any new software programs are correctly installed and that they use the correct printer driver.

The computer or workstation might be set up incorrectly

1. Check the network drivers, printer drivers, and the network redirection.
2. Verify that the operating system is configured correctly.

The product is disabled, or other network settings are incorrect

1. Review the configuration page to check the status of the network protocol. Enable it if necessary.
2. Reconfigure the network settings if necessary.

Solve wireless network problems

Wireless connectivity checklist

- The product and the wireless router are turned on and have power. Also make sure the wireless radio in the product is turned on.
- The service set identifier (SSID) is correct. Print a configuration page to determine the SSID. If you are not sure the SSID is correct, run the wireless setup again.
- With secured networks, make sure the security information is correct. If the security information is incorrect, run the wireless setup again.
- If the wireless network is working correctly, try accessing other computers on the wireless network. If the network has Internet access, try connecting to the Internet over a wireless connection.
- The encryption method (AES or TKIP) is the same for the product as it is for the wireless access point (on networks using WPA security).
- The product is within the range of the wireless network. For most networks, the product must be within 30 m (100 ft) of the wireless access point (wireless router).
- Obstacles do not block the wireless signal. Remove any large metal objects between the access point and the product. Make sure poles, walls, or support columns containing metal or concrete do not separate the product and wireless access point.
- The product is located away from electronic devices that might interfere with the wireless signal. Many devices can interfere with the wireless signal including motors, cordless phones, security system cameras, other wireless networks, and some Bluetooth devices.
- The printer driver is installed on the computer.
- You have selected the correct printer port.
- The computer and product connect to the same wireless network.

The control panel displays the message: The wireless feature on this product has been turned off

- Press the wireless button on the product to open the Wireless menu, and then turn the wireless radio on.

The product does not print after the wireless configuration completes

1. Make sure the product is turned on and in the ready state.
2. Make sure you are connecting to the correct wireless network.
3. Make sure that the wireless network is working correctly.
   a. Open the Network Setup menu, and then open the Wireless Menu item.
   b. Select the Run Network Test item to test the wireless network. The product prints a report with the results.
4. Make sure that your computer is working correctly. If necessary, restart your computer.

The product does not print, and the computer has a third-party firewall installed

1. Update the firewall with the most recent update available from the manufacturer.
2. If programs request firewall access when you install the product or try to print, make sure you allow the programs to run.
3. Temporarily turn off the firewall, and then install the wireless product on the computer. Enable the firewall when you have completed the wireless installation.

The wireless connection does not work after moving the wireless router or product

Make sure that the router or product connects to the same network that your computer connects to.

1. Open the Reports menu, and select the Configuration Report item to print the report.
2. Compare the service set identifier (SSID) on the configuration report to the SSID in the printer configuration for your computer.
3. If the SSIDs are not the same, the devices are not connecting to the same network. Reconfigure the wireless setup for your product.

Cannot connect more computers to the wireless product

1. Make sure that the other computers are within the wireless range and that no obstacles block the signal. For most networks, the wireless range is within 30 m (100 ft) of the wireless access point.
2. Make sure the product is turned on and in the ready state.
3. Turn off any third-party firewalls on your computer.

4. Make sure that the wireless network is working correctly.

   a. On the product control panel, and then open the Wireless Menu item.

   b. Select the Run Network Test item to test the wireless network. The product prints a report with the results.

5. Make sure that your computer is working correctly. If necessary, restart your computer.

6. If the product is in Wireless Direct mode, make sure that the computer connection is pointing to the correct IP address. In Wireless Direct mode, the product has two IP addresses: one assigned by the router, and the other set by the Wireless Direct function. Use the printer address to connect other computers.

The wireless product loses communication when connected to a VPN

- Typically, you cannot connect to a VPN and other networks at the same time.

The network does not appear in the wireless networks list

- Make sure the wireless router is turned on and has power.
- The network might be hidden. However, you can still connect to a hidden network. You need to know the network name and the network security settings.

The wireless network is not functioning

1. Verify that the network is communicating. Find the product IP address on the configuration page, and then open a Web browser and enter the IP address to see if the HP Embedded Web Server will open.

2. Test network communication by pinging the network.

   a. Open a command-line prompt on your computer. For Windows, click **Start**, click **Run**, and then type `cmd`.

   b. Type `ping` followed by the service set identifier (SSID) for your network.

   c. If the window displays round-trip times, the network is working.

3. Make sure that the router or product connects to the same network that your computer connects to.

   a. Open the Reports menu, and select the Configuration Report item to print the report.

   b. Compare the service set identifier (SSID) on the configuration report to the SSID in the printer configuration for your computer.

   c. If the SSIDs are not the same, the devices are not connecting to the same network. Reconfigure the wireless setup for your product.

Service mode functions

Service menu

Use the control-panel Service menu to troubleshoot product problems.

Service menu settings

The Service menu is used to adjust print settings, restore factory default settings, and clean the print paper path.

The following Service menu items are available:

- Fax Service—used to configure the product fax functionality.
- Cleaning Page—used to remove dust and toner from the print paper path.
- USB Speed—used to set the USB speed to high or full.
- Less Paper Curl—used to put the product into a mode that reduces paper curl.
- Archive Print—used to put the product into a mode that produces output less susceptible to toner smearing and dusting for preservation and archival.
- Firmware Date—used to display the product's firmware date code.
- Restore Defaults—used to reset all customer-accessible menu settings back to the factory default settings (except language) via the control panel or software.

NOTE: This Service menu item does not reset factory-settable settings, including formatter number, page counts, factory paper settings, language, and so on.

- Signature Check—used to configure how the product proceeds when a firmware upgrade file does not have a valid signature.
- HP Smart Install—used to enable or disable the HP Smart Install functionality.
- LaserJet Update—used to manually update the firmware or to set up automatic firmware updates.
- SMTP Comm. Report—used to print a Standard Message Transfer protocol (SMTP) error report.

Restore the factory-set defaults

1. From the Home screen on the product control panel, touch the Setup button.
2. Scroll to and touch the Service menu.
3. Scroll to and touch the Restore Defaults button, and then touch the OK button.

   The product automatically restarts.

Secondary service menu

Use the secondary service menu to print service-related reports and to run special tests. Customers do not have access to this menu.

Open the secondary service menu

NOTE: When the menus are accessed, some of the touchscreen buttons located along the sides of the control-panel display are not illuminated. Use the figure below to locate the Cancel ✕ button and the left arrow button to access the control-panel tests.

Figure 2-14 Control-panel 2ndary Service test access buttons

Table 2-10 Control-panel 2ndary Service test access buttons

Item	Description
1	Left arrow button
2	Cancel ✕ button

1. Make sure the product is in the Ready state.
2. From the Home screen on the product control panel, touch the Setup button.
3. Touch the left arrow button, and then quickly touch the Cancel ✕ button.
4. The product returns to the Ready state. touch the Setup button to reopen the menus.
5. Touch the 2ndary Service menu.
6. Use the scrollbar to navigate the 2ndary Service menu.

Secondary service menu structure

Table 2-11 Secondary Service menu

Menu item	Sub-menu item	Description
Service Reports	Cont Self Test	Print a continuous configuration page.
	Error Report	Print an error report.

Table 2-11 Secondary Service menu (continued)

Menu item	Sub-menu item	Description
Location	A list of available locations appears	This item sets certain product parameters that are dependent on the location, such as the default paper size and the symbol set. Scroll to the appropriate location and select Yes to set the location. The product automatically restarts after you change the location.
Line Frequency		This item allows the refresh rate of the touchscreen control panel to be changed between 50 and 60 Hz.
Display Test		Use this test to verify that the LEDs and characters on the control-panel display function correctly. At the beginning of the test, each of the LEDs is turned on one-at-time. Press the OK button to continue to the next LED. After the LED test is complete, the character test begins by testing the pixels on each line. Then, each of the 255 characters is displayed in groups of 16. Press the OK button to continue to the next group of 16 characters. You can cancel the test at any time by pressing the Cancel ✕.
Button Test		Use this test to verify that the control-panel buttons function correctly. The display prompts you to press each button.
Calibrate Touch Screen		Use this item to adjust the touchscreen control panel.
CP FW Version		This item shows the current date codFe of the firmware.
802.11n		Enable or disable the wireless 802.11n functionality.
LED Test		This item allows the testing of the different LED Displays
NAND Reset		This item allows the NAND to be reset.
eDuplex Calibration		This item allows two pieces of white paper to be loaded in the document feeder.
PPX Ring		Use this item to toggle between On and Off.

Product resets

NVRAM initialization

⚠ **CAUTION:** All HP Jetdirect settings are also reset. Be sure to print a configuration page before performing an NVRAM initialization. Make note of the IP address that is listed on the Jetdirect configuration page. You need to restore the IP address after performing an NVRAM initialization.

An NVRAM initialization erases all data stored in the unprotected NVRAM sections. Performing an NVRAM initialization resets the following settings and information:

- All menu settings are reset to factory default values.
- All localization settings, including language and country/region, are reset.

After performing an NVRAM initialization, reconfigure any computers that print to this product so that the computers can recognize the product.

1. Turn the product off.
2. **Touchscreen control panel models**: Press and hold the lower right quadrant of the touchscreen. Keep the quadrant depressed as you turn the product on.
3. When the **Permanent Storage Init.** message appears on the display, release the buttons.
4. When the product has finished the NVRAM initialization, it returns to the Ready state.

Super NVRAM initialization

A super NVRAM initialization restores the product to the "generic product mode" in which it arrived from the factory. This means that you will have to reset the language and country/region settings when the product starts after the initialization. A super NVRAM initialization erases all data stored in the protected and unprotected NVRAM sections.

1. Turn the product off.
2. Press and hold the lower left quadrant of the touchscreen. Keep the quadrant depressed as you turn the product on.
3. When the **Permanent Storage Init.** message appears on the display, release the buttons.
4. When the super NVRAM initialization has been completed, the product enters the generic product mode.

Solve fax problems

This section will discuss the following:

- The product does not pick up paper
- The product picks up multiple sheets of paper
- The document feeder jams, skews, or picks up multiple sheets of paper
- Prevent paper jams from the paper trays

Checklist for solving fax problems

- Several possible fixes are available. After each recommended action, retry faxing to see if the problem is resolved.
- For best results during fax problem solving, make sure the line from the product is connected directly to the wall phone port. Disconnect all other devices that are connected to the product.

1. Verify that the telephone cord is connected to the correct port on the back of the product.
2. Check the phone line by using the fax test:
   a. From the Home screen on the product control panel, touch the Setup button, and then touch the Service menu.
   b. Select the Self Diagnostics menu.
   c. Select the Run Fax Test option. The product prints a fax test report.

      The report contains the following possible results:

      - **Pass**: The report contains all of the current fax settings for review.
      - **Fail**: The report indicates the nature of the error and contains suggestions for how to resolve the issue.
3. Verify that the product firmware is current:
   a. Print a configuration page from the control panel Reports menu to obtain the current firmware date code.
   b. Go to www.hp.com.
      1. Click the **Support & Drivers** link.
      2. Click the **Download drivers and software (and firmware)** link option.
      3. In the **For product** box, enter the product model number, and then click the **Go** button.

4. Click the link for your operating system.
5. Scroll to the Firmware section of the table.
    - If the listed version matches the version on the configuration page, you have the most current version.
    - If the versions are different, download the firmware upgrade file and upgrade the firmware on the product following the on-screen instructions.

      NOTE: The product must be connected to a computer with internet access to upgrade firmware.

    - Resend the fax.

4. Verify that the fax was set up when the product software was installed.

   From the computer, in the HP program folder, run the Fax Setup Utility.

5. Verify that the telephone service supports analog fax.
    - If using ISDN or digital PBX, contact your service provider for information about configuring to an analog fax line.
    - If using a VoIP service, change the Fax Speed setting to Slow(V.29) from the control panel. Ask if your service provider supports fax and for the recommended fax modem speed. Some companies might require an adapter.
    - If you are using a DSL service, make sure that a filter is included on the phone-line connection to the product. Contact the DSL service provider, or purchase a DSL filter if you do not have one. If a DSL filter is installed, try another filter because filters can be defective.

6. If the error persists, find more detailed problem-solving solutions in the sections that follow this one.

Perform a fax diagnostic test

From the product control panel, you can run a diagnostic test that provides information about the product fax settings.

1. From the Home screen on the product control panel, touch the Setup button.
2. Open the following menus:
    - Service
    - Fax Service
3. Touch the Run Fax Test button to start the test. The product prints a test page that shows test results.

Fax trace report

A fax T.30 trace report has information that can help resolve fax transmission problems. If you call HP for help in resolving these problems, print a T.30 trace report before you call.

1. From the Home screen on the product control panel, touch the Setup button.
2. Touch the Service menu.
3. Touch the Fax Service menu.
4. Touch the Print T.30 Trace button, and then touch the Now button.

NOTE: This procedure prints a report for the last fax job, successful or not. To generate a report for each unsuccessful fax job, select the If Error setting. To generate a report for each fax job, select the At End of Call setting.

Fax error report printing

Use the following instructions to print fax logs and reports:

Print all fax reports

Use this procedure to print all of the following reports at one time:

- Last Call Report
- Fax Activity Log
- Phone Book Report
- Junk Fax List
- Billing Report (when Billing Codes are turned on)
- Configuration Report
- Usage Page

1. From the Home screen on the product control panel, touch the Fax button.
2. Touch the Fax Menu button.
3. Touch the Fax Reports button.
4. Touch the Print All fax Reports button.

Print individual fax reports

1. From the Home screen on the product control panel, touch the Fax button.
2. Touch the Fax Menu button.

3. Touch the Fax Reports button.
4. Touch the name of the report that you want to print.

Set the fax error report

A fax error report is a brief report that indicates the product experienced a fax job error. You can set it to print after the following events:

- Every fax error (the factory-set default)
- Send fax error
- Receive fax error
- Never

NOTE: With this option, you will have no indication that a fax failed to be transmitted unless you print a fax activity log.

1. From the Home screen on the product control panel, touch the Fax button.
2. Touch the Fax Menu button.
3. Touch the Fax Reports button.
4. Touch the Fax Error Report button, and then touch the printing option that you want to use.

Set the fax-error-correction mode

Usually, the product monitors the signals on the telephone line while it is sending or receiving a fax. If the product detects an error during the transmission and the error-correction setting is On, the product can request that the portion of the fax be resent. The factory-set default for error correction is On.

You should turn off error correction only if you are having trouble sending or receiving a fax, and you are willing to accept the errors in the transmission. Turning off the setting might be useful when you are trying to send a fax overseas or receive one from overseas, or if you are using a satellite telephone connection.

1. From the Home screen on the product control panel, touch the Setup button.
2. Touch the Service menu.
3. Touch the Fax Service menu.
4. Touch the Error Correction button, and then touch the On button.

Change the fax speed

The fax-speed setting is the modem protocol that the product uses to send faxes. It is the worldwide standard for full-duplex modems that send and receive data across telephone lines at up to 33,600 bits per second (bps). The factory-set default for the fax-speed setting is Fast(V.34).

You should change the setting only if you are having trouble sending a fax to or receiving a fax from a particular device. Decreasing the fax speed might be useful when you are trying to send a fax overseas, or receive one from overseas, or if you are using a satellite telephone connection.

1. From the Home screen on the product control panel, touch the Setup button.
2. Touch the Fax Setup menu.
3. Touch the Advanced Setup menu.
4. Scroll to and touch the Fax Speed button, and then touch the speed setting that you want to use.

Solve problems sending faxes

This section will discuss the following:

- An error message displays on the control panel
- The control panel displays a Ready message with no attempt to send the fax
- The control panel displays the message "Storing page 1" and does not progress beyond that message
- Faxes can be received, but not sent
- Product is password protected
- Unable to use fax functions from the control panel
- Unable to use speed dials
- Unable to use group dials
- Receive a recorded error message from the phone company when trying to send a fax
- Unable to send a fax when a phone is connected to the product

An error message displays on the control panel

The Communication error. message appears

- Allow the product to retry sending the fax. Re-sending temporarily reduces the fax speed.
- Disconnect the product telephone cord from the wall, connect a telephone to the phone jack on the wall, and try making a call. Connect the product phone cord to a jack for another phone line.
- Try a different phone cord.
- From the control panel, change the Fax Speed option to the Medium(V.17) setting or Slow(V.29) setting.
    a. From the Home screen on the product control panel, touch the Setup button.
    b. Open the Fax Setup menu.
    c. Open the Advanced Setup menu.

d. Open the Fax Speed menu.

e. Select the correct setting.

- Turn off the Error Correction option.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Service menu.

  c. Open the Fax Service menu.

  d. Open the Error Correction menu.

  e. Select the Off setting.

NOTE: Turning off the Error Correction option can reduce image quality.

- If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

No dial tone.

- Make sure that the telephone cord is connected to the correct port on the product.
- Make sure that the telephone cord from the product is connected directly to the wall telephone jack.
- Check for a dial tone on the phone line by using the Start Fax button.
- Disconnect the product telephone cord from the wall, connect a telephone to the phone jack on the wall, and try making a voice call.
- Disconnect the telephone cord from both the product and the wall and reconnect the cord.
- Make sure that you are using the telephone cord that came with the product.
- Connect the product phone cord to a jack for another phone line.
- Check the phone line by using the Run Fax Test option from the Service menu on the control panel.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Service menu.

  c. Open the Fax Service menu.

  d. Select the Run Fax Test item.

The Fax is busy. message appears

- Try sending the fax again.
- Call the recipient to ensure that the fax machine is on and ready.
- Check that you are dialing the correct fax number.

- Check for a dial tone on the phone line by using the Start Fax button.
- Make sure that the phone line is working by disconnecting the product, connecting a telephone to the phone line, and making a voice call.
- Connect the product phone cord to a jack for another phone line, and try sending the fax again.
- Try a different phone cord.
- Send the fax at a later time.
- If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

The No fax answer. message appears

- Try to resend the fax.
- Call the recipient to ensure that the fax machine is on and ready.
- Check that you are dialing the correct fax number.
- Disconnect the product telephone cord from the wall, connect a telephone to the phone jack on the wall, and try making a voice call.
- Connect the product phone cord to a jack for another phone line.
- Try a different phone cord.
- Make sure that the phone cord from the wall telephone jack is connected to the line port.
- Check the phone line by using the Run Fax Test option from the Service menu on the control panel.
  a. From the Home screen on the product control panel, touch the Setup button.
  b. Open the Service menu.
  c. Open the Fax Service menu.
  d. Select the Run Fax Test item.
- If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

Document feeder paper jam

- Verify that the paper meets product size requirements. The product does not support pages longer than 381 mm (15 in) for faxing.
- Copy or print the original to letter, A4, or legal size paper, and then resend the fax.

The Fax storage is full. message appears

- Turn the product off then on.
- Print stored faxes that have not been printed.
  a. Touch the Fax button, and then touch the Fax Menu button.
  b. Open the Receive Options menu.
  c. Select the Print Private Faxes item.
  d. Provide the password when the product prompts you.
- Delete stored faxes from memory.
  a. From the Home screen on the product control panel, touch the Setup button.
  b. Open the Service menu.
  c. Open the Fax Service menu.
  d. Select the Clear Saved Faxes item.
- Divide the large fax job into smaller sections, and then fax them individually.

Scanner error

- Verify that the paper meets product size requirements. The product does not support pages longer than 381 mm (15 in) for faxing.
- Copy or print the original onto letter, A4, or legal size paper and then resend the fax.

The control panel displays a Ready message with no attempt to send the fax

- Check the fax activity log for errors.
  a. Touch the Fax button, and then touch the Fax Menu button.
  b. Open the Fax Reports menu.
  c. Open the Fax Activity Log menu.
  d. Select the Print Log Now option.
- If a phone is connected to the product, make sure that the phone is hung up.
- Disconnect all other lines between the fax and the product.
- Connect the product directly into the wall telephone jack and resend the fax.

The control panel displays the message "Storing page 1" and does not progress beyond that message

- Delete stored faxes from memory.
  a. From the Home screen on the product control panel, touch the Setup button.
  b. Open the Service menu.
  c. Open the Fax Service menu.
  d. Select the Clear Saved Faxes item.

Faxes can be received, but not sent

Send fax and nothing happens.

1. Check for a dial tone on the phone line by using the Start Fax button.
2. Turn the product off then on.
3. Use the control panel or the HP Fax Setup Wizard to configure the fax time, date, and fax header information.
   a. From the Home screen on the product control panel, touch the Setup button.
   b. Open the Fax Setup menu.
   c. Open the Basic Setup menu.
   d. Open the Fax Header menu.
   e. Enter the correct settings.
4. Verify that any extension phones on the line are hung up.
5. If using a DSL service, make sure that the phone line connection to the product includes a high-pass filter.

Product is password protected

If a network administrator has set a product password, then you must obtain the password in order to use the product fax features.

Unable to use fax functions from the control panel

- The product might be password protected. Use the HP Embedded Web Server, HP Toolbox software, or the control panel to set a password.
- If you do not know the password for the product, contact your system administrator.
- Verify with the system administrator that the fax functionality has not been disabled.

Unable to use speed dials

- Make sure that the fax number is valid.
- If an outside line requires a prefix, turn on the Dial Prefix option or include the prefix in the speed dial number.
  a. From the Home screen on the product control panel, touch the Setup button.
  b. Open the Fax Setup menu.
  c. Open the Basic Setup menu.
  d. Open the Dial Prefix menu.
  e. Select the On setting.

Unable to use group dials

- Make sure that the fax number is valid.
- If an outside line requires a prefix, turn on the Dial Prefix option or include the prefix in the speed dial number.
  a. From the Home screen on the product control panel, touch the Setup button.
  b. Open the Fax Setup menu.
  c. Open the Basic Setup menu.
  d. Open the Dial Prefix menu.
  e. Select the On setting.
- Set up all entries in the group with speed dial entries.
  a. Open an unused speed dial entry.
  b. Enter the fax number for the speed dial.
  c. Touch the OK button to save the speed dial.

Receive a recorded error message from the phone company when trying to send a fax

- Make sure you dial the fax number correctly, and make sure that the phone service is not blocked. For example, some phone services might prevent long distance calling.
- If an outside line requires a prefix, turn on the Dial Prefix option or include the prefix in the speed dial number.
  a. From the Home screen on the product control panel, touch the Setup button.
  b. Open the Fax Setup menu.
  c. Open the Basic Setup menu.

d. Open the Dial Prefix menu.

e. Select the On setting.

NOTE: To send a fax without a prefix, when the Dial Prefix option is turned on, send the fax manually.

- Send a fax to an international number

  a. If a prefix is required, manually dial the telephone number with the prefix.

  b. Enter the country/region code before dialing the phone number.

  c. Wait for pauses as you hear the tones on the phone.

  d. Send the fax manually from the control panel.

Unable to send a fax when a phone is connected to the product

- Make sure that the telephone is hung up.
- Make sure that the telephone is not being used for a voice call when faxing.
- Disconnect the phone from the line, and then try sending the fax.

Solve problems receiving faxes

- The fax does not respond
- An error message displays on the control panel
- A fax is received but does not print
- Sender receives a busy signal
- No dial tone
- Cannot send or receive a fax on a PBX line

The fax does not respond

The fax has a dedicated phone line

- Set the Answer Mode option to the Automatic setting from the control panel.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Fax Setup menu.

  c. Open the Basic Setup menu.

  d. Open the Answer Mode menu.

  e. Select the Automatic setting.

An answering machine is connected to the product

- Set the Answer Mode option to the TAM setting and connect the answering machine to the "telephone" port.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Fax Setup menu.

  c. Open the Basic Setup menu.

  d. Open the Answer Mode menu.

  e. Select the TAM setting.

  If the TAM setting is unavailable, set the Answer Mode option to the Automatic setting.

- Set the Rings to Answer setting to at least one ring more than the number of rings for which the answering machine is set.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Fax Setup menu.

  c. Open the Basic Setup menu.

  d. Open the Rings to Answer menu.

  e. Select the correct setting.

- Connect the answering machine to the "telephone" port.

- If the product has a telephone handset connected, set the Answer Mode option to the Fax/Tel setting to route calls to the correct device. When detecting a voice call, the product generates a ring tone that alerts you to pick up the telephone handset.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Fax Setup menu.

  c. Open the Basic Setup menu.

  d. Open the Answer Mode menu.

  e. Select the Fax/Tel setting.

The Answer Mode setting is set to the Manual setting

- Touch the Start Fax button on the product control panel.

Voice mail is available on the fax line

- Add a distinctive ring service to your telephone line and change the Distinctive Ring setting on the product to match the ring pattern supplied by the telephone company. Contact your telephone company for information.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Fax Setup menu.

  c. Open the Basic Setup menu.

  d. Open the Distinctive Ring menu.

  e. Select the correct setting.

- Buy a dedicated line for faxing.
- Set the Answer Mode option to the Manual setting.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Fax Setup menu.

  c. Open the Basic Setup menu.

  d. Open the Answer Mode menu.

  e. Select the Manual setting.

NOTE: You must be present to receive faxes.

The product is connected to a DSL phone service

- Check the installation and features. A DSL modem requires a high-pass filter on the phone line connection to the product. Contact your DSL service provider for a filter or buy a filter.
- Verify that the filter is connected.
- Replace the existing filter to make sure that it is not defective.

The product uses a fax over IP or VoIP phone service

- Set the Fax Speed option to the Slow(V.29) or Medium(V.17) setting.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Fax Setup menu.

  c. Open the Advanced Setup menu.

  d. Open the Fax Speed menu.

  e. Select the correct setting.

- Contact your service provider to make sure that fax is supported and for a recommended fax speed settings. Some companies might require an adapter.

An error message displays on the control panel

The No fax detected. message displays

NOTE: This error does not always refer to a missed fax. If a voice call is made to a fax number by mistake and the caller hangs up, the **No fax detected.** message displays on the control panel.

- Ask the sender to resend the fax.
- Make sure that the telephone cord from the product is connected to the wall telephone jack.
- Try a different phone cord.
- Connect the product phone cord to a jack for another phone line.
- Make sure the telephone line and phone wall jack are active by connecting a telephone and checking for a dial tone.
- Make sure that the telephone cord is connected to the "line" port on the product.
- Check the phone line by running a fax test from the control panel.
- If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

The Communication error. message appears

- Ask the sender to send the fax again or send at a later time when line conditions have improved.
- Disconnect the product telephone cord from the wall, connect a telephone to the phone jack on the wall, and try making a call. Plug the product phone cord into a jack for another phone line.
- Try a different phone cord.
- Set the Fax Speed option to the Slow(V.29) or Medium(V.17) setting.
  a. From the Home screen on the product control panel, touch the Setup button.
  b. Open the Fax Setup menu.
  c. Open the Advanced Setup menu.
  d. Open the Fax Speed menu.
  e. Select the correct setting.
- Turn off the Error Correction feature to prevent automatic error correction.

  NOTE: Turning off the Error Correction feature can reduce image quality.

  a. From the Home screen on the product control panel, touch the Setup button.
  b. Open the Service menu.
  c. Open the Fax Service menu.

d. Open the Error Correction menu.

e. Select the Off setting.

- Print the Fax Activity Log report from the control panel to determine if the error occurs with a specific fax number.

  a. Touch the Fax button, and then touch the Fax Menu button.

  b. Open the Fax Reports menu.

  c. Open the Fax Activity Log menu.

  d. Select the Print Log Now option.

- If the error persists, contact HP. See www.hp.com/support/lj500colorMFPM575 or the support flyer that came in the product box.

The Fax storage is full. message appears

- Turn the product off then on.
- Print all of the faxes, and then have the sender resend the fax.
- Ask the sender to divide a large fax job into smaller sections, and then fax them individually.
- Make sure that the resolution of the sending fax machine is not set to the Photo setting or the Superfine setting.

  a. From the Home screen on the product control panel, touch the Setup button.

  b. Open the Fax Setup menu.

  c. Open the Advanced Setup menu.

  d. Open the Fax Resolution menu.

  e. Select the correct setting.

- Cancel all fax jobs or clear the faxes from memory.

The Fax is busy. message appears

- The product cannot receive a fax while attempting to send one. Cancel the fax send and try sending at a later time.
- Allow the product to try sending the fax again.

A fax is received but does not print

The Private Receive feature is on

- When the Private Receive feature is activated, received faxes are stored in memory. A password is required to print the stored faxes.
- Enter the password to print the fax. If you do not know the password, contact the product administrator.

NOTE: Memory errors might occur if the faxes are not printed. The product will not answer if the memory is full.

Sender receives a busy signal

A handset is connected to the product

- Make sure the phone is hung up.
- Change the Answer Mode option to match the product setup.
  a. From the Home screen on the product control panel, touch the Setup button.
  b. Open the Fax Setup menu.
  c. Open the Basic Setup menu.
  d. Open the Answer Mode menu.
  e. Select the setting that matches the product setup.

     Set the Answer Mode option to the Fax/Tel setting to automatically receive faxes. The Fax/Tel setting automatically detects whether the incoming transmission is a fax or a voice call and routes the call to the appropriate device.

A phone line splitter is being used

- If you are using a phone line splitter, remove the splitter and set up the phone as a downstream phone.
- Make sure the phone is hung up.
- Make sure the phone is not being used for a voice call when faxing.

No dial tone

- If using a phone line splitter, remove the phone line splitter and set up the phone as a downstream phone.

Cannot send or receive a fax on a PBX line

- If you are using a PBX phone line, contact your PBX administrator to configure an analog fax line for your product.

Solve general fax problems

This section will discuss the following:

- Faxes are sending slowly
- Fax quality is poor
- Fax cuts off or prints on two pages

Faxes are sending slowly

The product is experiencing poor phone line quality.

- Retry sending the fax when the line conditions have improved.
- Check with the phone service provider that the line supports fax.
- Turn off the Error Correction setting.
  a. Open the Setup Menu menu.
  b. Open the Service menu.
  c. Open the Fax Service menu.
  d. Open the Error Correction menu.
  e. Select the Off setting.

NOTE: This can reduce image quality.

- Use white paper for the original. Do not use colors such as gray, yellow, or pink.
- Increase the Fax Speed setting.
  a. Open the Setup Menu menu.
  b. Open the Fax Setup menu.
  c. Open the Advanced Setup menu.
  d. Open the Fax Speed menu.
  e. Select the correct setting.
- Divide large fax jobs into smaller sections, and then fax them individually.
- Change the fax settings on the control panel to a lower resolution.
  a. Open the Setup Menu menu.
  b. Open the Fax Setup menu.
  c. Open the Advanced Setup menu.

d. Open the Fax Resolution menu.

e. Select the correct setting.

Fax quality is poor

Fax is blurry or light.

- Increase fax resolution when sending faxes. Resolution does not affect received faxes.

  a. Open the Setup Menu menu.

  b. Open the Fax Setup menu.

  c. Open the Advanced Setup menu.

  d. Open the Fax Resolution menu.

  e. Select the correct setting.

  NOTE: Increasing resolution slows transmission speed.

- Turn on the Error Correction setting from the control panel.

  a. Open the Setup Menu menu.

  b. Open the Service menu.

  c. Open the Fax Service menu.

  d. Open the Error Correction menu.

  e. Select the On setting.

- Check the toner cartridges and replace if necessary.
- Ask the sender to darken the contrast setting on the sending fax machine, and then resend the fax.

Fax cuts off or prints on two pages

- Set the Default Paper Size setting. Faxes print on a single size of paper based on the Default Paper Size settings.

  a. Open the Setup Menu menu.

  b. Open the System Setup menu.

  c. Open the Paper Setup menu.

d. Open the Default Paper Size menu.

e. Select the correct setting.

- Set the paper type and size for the tray used for faxes.
- Turn on the Fit to Page setting to print longer length faxes on letter or A4 size paper.

a. Open the Setup Menu menu.

b. Open the Fax Setup menu.

c. Open the Advanced Setup menu.

d. Open the Fit to Page menu.

e. Select the On setting.

NOTE: If the Fit to Page setting is off and the Default Paper Size setting is set to letter, a legal size original prints on two pages.

Solve email problems

If Scan to E-mail problems occur, try these solutions:

- Make sure this feature has been set up. If this feature has not been set up, use the setup wizard in the HP Device Toolbox (Windows) or HP Utility for Mac OS X software to set it up.
- Make sure the Scan to Email feature is enabled. If it has been disabled, enable the feature through the HP Device Toolbox (Windows) or HP Utility for Mac OS X software.
- Make sure the product is connected to a computer or to a network.

Cannot connect to the email server

- Make sure the SMTP server name is correct. Check this setting with your system administrator or Internet Service Provider.
- If the product cannot establish a secure connection to the SMTP server, try without the secure connection or try a different server or port. Check this setting with your system administrator or Internet Service Provider.
- If the SMTP server requires authentication, make sure a valid user name and password are used.
- If the SMTP server uses an authentication method that is not supported, try a different server. Check this setting with your system administrator or Internet Service Provider.

The email failed

- Verify that email addresses entered are correct.
- If the size of the email was too large, send fewer pages or reduce the scan resolution.

Unable to scan

- If you are prompted for a PIN, enter the correct PIN for the outgoing profile.
- Make sure at least one email address is selected in the To field.

Product upgrades

HP offers periodic upgrades to the product firmware. You can load the firmware upgrades manually, or you can set the product to automatically load firmware upgrades.

Manually upgrade the firmware

1. From the Home screen on the product control panel, touch the Setup button.
2. Open the following menus:
   - Service
   - LaserJet Update
   - Check For Updates Now
3. Touch the Yes button to prompt the product to search for firmware upgrades. If the product detects an upgrade, it will begin the upgrade process.

Set the product to automatically upgrade the firmware

1. From the Home screen on the product control panel, touch the Setup button.
2. Open the following menus:
   - Service
   - LaserJet Update
   - Manage Updates
   - Prompt Before Install
3. Touch the Install automatically option.

A Service and support

Hewlett-Packard limited warranty statement

HP PRODUCT	DURATION OF LIMITED WARRANTY
HP LaserJet Enterprise 500 color MFP M575dn, M575f	One-year on-site 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.

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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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HP's Premium Protection Warranty: LaserJet toner cartridge limited warranty statement

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

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

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

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

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

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

HP policy on non-HP supplies

Hewlett-Packard Company cannot recommend the use of non-HP toner cartridges, either new or remanufactured.

NOTE: For HP printer products, the use of a non-HP toner cartridge or a refilled toner cartridge does not affect either the warranty to the customer or any HP support contract with the customer. However, if product failure or damage is attributable to the use of a non-HP toner cartridge or refilled toner cartridge, HP will charge its standard time and materials charges to service the product for the particular failure or damage.

HP anticounterfeit Web site

Go to www.hp.com/go/anticounterfeit when you install an HP toner cartridge and the control-panel message says the cartridge is non-HP. HP will help determine if the cartridge is genuine and take steps to resolve the problem.

Your toner cartridge might not be a genuine HP toner cartridge if you notice the following:

- The supplies status page indicates that a non-HP supply is installed.
- You are experiencing a high number of problems with the cartridge.
- The cartridge does not look like it usually does (for example, the packaging differs from HP packaging).

Data stored on the toner cartridge

The HP toner cartridges used with this product contain a memory chip that assists in the operation of the product.

In addition, this memory chip collects a limited set of information about the usage of the product, which might include the following: the date when the toner cartridge was first installed, the date when the toner cartridge was last used, the number of pages printed using the toner cartridge, the page coverage, the printing modes used, any printing errors that might have occurred, and the product model. This information helps HP design future products to meet our customers' printing needs.

The data collected from the toner cartridge memory chip does not contain information that can be used to identify a customer or user of the toner cartridge or their product.

HP collects a sampling of the memory chips from toner cartridges returned to HP's free return and recycling program (HP Planet Partners: www.hp.com/recycle). The memory chips from this sampling are read and studied in order to improve future HP products. HP partners who assist in recycling this toner cartridge might have access to this data, as well.

Any third party possessing the toner cartridge might have access to the anonymous information on the memory chip.

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OpenSSL

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/)

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This product includes cryptographic software written by Eric Young (eay@cryptsoft.com). This product includes software written by Tim Hudson (tjh@cryptsoft.com).

Customer self-repair warranty service

HP products are designed with many Customer Self Repair (CSR) parts to minimize repair time and allow for greater flexibility in performing defective parts replacement. If during the diagnosis period, HP identifies that the repair can be accomplished by the use of a CSR part, HP will ship that part directly to you for replacement. There are two categories of CSR parts: 1) Parts for which customer self repair is mandatory. If you request HP to replace these parts, you will be charged for the travel and labor costs of this service. 2) Parts for which customer self repair is optional. These parts are also designed for Customer Self Repair. If, however, you require that HP replace them for you, this may be done at no additional charge under the type of warranty service designated for your product.

Based on availability and where geography permits, CSR parts will be shipped for next business day delivery. Same-day or four-hour delivery may be offered at an additional charge where geography permits. If assistance is required, you can call the HP Technical Support Center and a technician will help you over the phone. HP specifies in the materials shipped with a replacement CSR part whether a defective part must be returned to HP. In cases where it is required to return the defective part to HP, you must ship the defective part back to HP within a defined period of time, normally five (5) business days. The defective part must be returned with the associated documentation in the provided shipping material. Failure to return the defective part may result in HP billing you for the replacement. With a customer self repair, HP will pay all shipping and part return costs and determine the courier/carrier to be used.

Customer support

Get telephone support for your country/region Have the product name, serial number, date of purchase, and problem description ready.	Country/region phone numbers are on the flyer that was in the box with your product or at www.hp.com/support/.
Get 24-hour Internet support	www.hp.com/support/lj500colorMFPM575
Download software utilities, drivers, and electronic information	www.hp.com/go/lj500colorMFPM575_software
Order additional HP service or maintenance agreements	www.hp.com/go/carepack
Register your product	www.register.hp.com

Repack the product

If HP Customer Care determines that your product needs to be returned to HP for repair, follow these steps to repack the product before shipping it:

- Prepare the product for shipping. See Prepare the product for shipping on page 210.
- Package the product for shipping. See Repack the product on page 214.

NOTE: Your product might not appear exactly as the one shown in the photos in the following sections. However, the procedures in these sections are appropriate for your product.

Prepare the product for shipping

IMPORTANT: Before preparing the product to be shipped, you must order a replacement toner collection unit (TCU)—part number CE254A. Do not install the replacement TCU until instructed in the procedure below.

1. Turn the product power on.
2. Open the front door, and then remove the toner cartridges (leave the front door in the open position).

   CAUTION: Do not touch the green rollers on the toner cartridges. Doing so can damage the cartridges. Do not expose the cartridges to strong light. Cover the cartridges with a sheet of lint-free paper to protect them from light.

3. Repeat the following steps (3a through 3d) three times.

   a. Open the right door, use the blue lever to lower the secondary transfer assembly, and then remove the intermediate transfer belt (ITB).

      CAUTION: The ITB is a sensitive component. Be careful when handling the ITB so that it is not damaged.

      TIP: For instructions about how to remove the ITB, see your product repair manual.

b. Grasp the ITB by the blue handles, and then gently set the ITB, blue-handles end up, on a table.

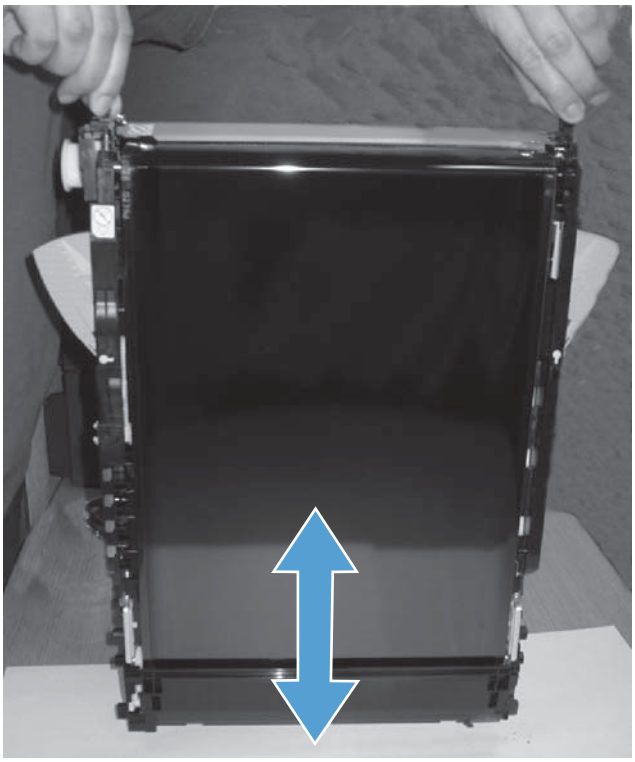
TIP: Spread out a few sheets of paper on the table to catch loose toner.

Figure A-1 Prepare the product for shipping (1 of 3)

c. Gently tap the ITB on the table ten times.

NOTE: This causes waste toner in the ITB to collect around the auger in the cleaning section. This waste toner is removed when the ITB is reinstalled.

Figure A-2 Prepare the product for shipping (2 of 3)



d. Reinstall the ITB, and then close the right and front doors to initialize the product. After about 35 seconds, the message **Install supplies** will appear on the control-panel display.

Perform the following steps two times.

1. Open and then close the front door.
2. The product initializes. Wait about 35 seconds until the message **Install supplies** will appear on the control-panel display.

4. Turn the product power off.
5. Wait for 30 seconds after the control-panel display is blank (no longer illuminated), and then unplug the power cord from the wall receptacle.

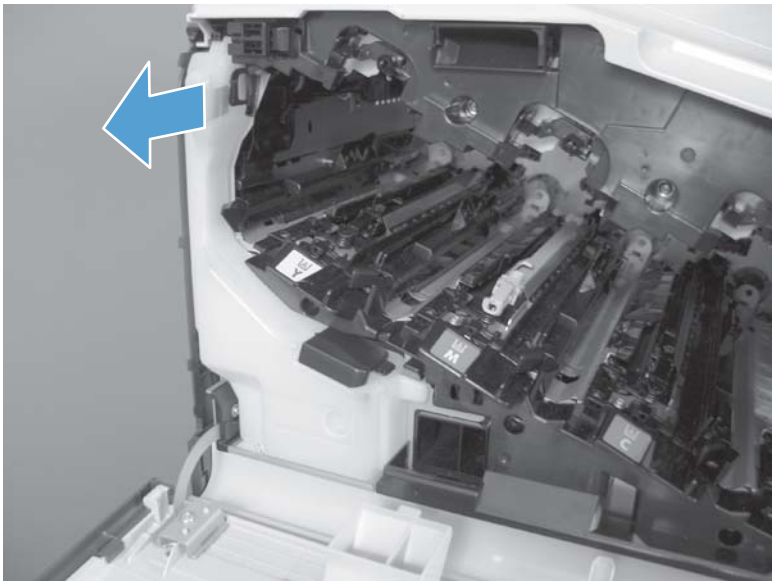
CAUTION: Failure to follow this step can result in damage to the fuser or the ITB.

6. Disconnect the interface cables and power cord from the product.

7. Open the front door, and then grasp the blue label at the top of the TCU and remove it from the product.

NOTE: To prevent toner spills, place the blue cap (fastened to the TCU body) over the blue opening at the top of the TCU.

Figure A-3 Prepare the product for shipping (3 of 3)



8. Install the replacement TCU obtained prior to beginning the repack the product process.

WARNING! Do not attempt to empty and then reuse the original TCU. Toner poses an inhalation hazard and should be disposed of properly. Follow the recycle instructions that are included in the box with the replacement TCU.

9. Reinstall the toner cartridges, and then remove all paper from the product input trays.

Repack the product

CAUTION: Shipping damage as a result of inadequate packing is the customer's responsibility.

1. Using at least two people, lift the device off any optional input accessories, if installed.
2. If available, package the product in its original packaging and box.
3. If the original packaging and box are not available, do the following.
   a. Obtain a sturdy box that is about 15 cm (6 in) larger than the product on all sides.
   b. Place bubble wrap (do not use packing peanuts) in the bottom of the box, and then place the product on top of the bubble wrap.

      CAUTION: Make sure that the bottom of the product is facing the bottom of the box.

   c. Push bubble wrap into all the spaces between the product and the box. Make sure to surround the product on all sides and the top of the product with bubble wrap.
   d. Secure the box flaps closed with a good quality packing tape.
4. Repeat these steps, if necessary, to repack any optional accessories.

B Product specifications

Physical specifications

Table B-1 Physical specifications

Product	Height	Depth	Width	Weight
M570dn	538 mm (21.2 in)	500 mm (19.7 in)	515 mm (20.3 in)	40.8 kg (89.9 lb)
M570dw	538 mm (21.2 in)	500 mm (19.7 in)	515 mm (20.3 in)	40.8 kg (89.9 lb)

Power consumption, electrical specifications, and acoustic emissions

See www.hp.com/go/lj500colorMFPM575_regulatory for current information.

⚠ **CAUTION:** Power requirements are based on the country/region where the product is sold. Do not convert operating voltages. This will damage the product and void the product warranty.

Environmental specifications

Table B-2 Operating-environment specifications

Environment	Recommended	Allowed
Temperature	17° to 25°C (62.6° to 77°F)	15° to 30°C (59° to 86°F)
Relative humidity	30% to 70% relative humidity (RH)	10% to 80% RH
Altitude	Not applicable	0 to 3048 m (0 to 10,000 ft)

C Regulatory information

FCC regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

NOTE: 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 A limits of Part 15 of FCC rules.

Environmental product stewardship program

Protecting the environment

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

Ozone production

This product generates no appreciable ozone gas (O_3).

Power consumption

Power usage drops significantly while in Ready or Sleep mode, which saves natural resources and saves money without affecting the high performance of this product. Hewlett-Packard printing and imaging equipment marked with the ENERGY STAR® logo is qualified to the U.S. Environmental Protection Agency's ENERGY STAR specifications for imaging equipment. The following mark will appear on ENERGY STAR qualified imaging products:

Additional ENERGY STAR qualified imaging product model information is listed at:

www.hp.com/go/energystar

Toner consumption

EconoMode uses less toner, which might extend the life of the toner cartridge. HP does not recommend the full-time use of EconoMode. If EconoMode is used full-time, the toner supply might outlast the mechanical parts in the toner cartridge. If print quality begins to degrade and is no longer acceptable, consider replacing the toner cartridge.

Paper use

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

Plastics

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

HP LaserJet print supplies

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

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

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

Return and recycling instructions

United States and Puerto Rico

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

Multiple returns (more than one cartridge)

1. Package each HP LaserJet toner cartridge in its original box and bag.
2. Tape the boxes together using strapping or packaging tape. The package can weigh up to 31 kg (70 lb).
3. Use a single pre-paid shipping label.

OR

1. Use your own suitable box, or request a free bulk collection box from www.hp.com/recycle or 1-800-340-2445 (holds up to 31 kg (70 lb) of HP LaserJet toner cartridges).
2. Use a single pre-paid shipping label.

Single returns

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

Shipping

For US and Puerto Rico HP LaserJet toner cartridge recycling returns, use the pre-paid, pre-addressed shipping label contained in the box. To use the UPS label, give the package to the UPS driver during

your next delivery or pick-up, or take it to an authorized UPS drop-off center. (Requested UPS Ground pickup will be charged normal pick-up rates) For the location of your local UPS drop-off center, call 1-800-PICKUPS or visit www.ups.com.

If you are returning the package with the FedEx label, give the package to either the U.S. Postal Service carrier or FedEx driver during your next pick-up or delivery. (Requested FedEx Ground pickup will be charged normal pick-up rates). Or, you can drop off your packaged toner cartridge(s) at any U.S. Post Office or any FedEx shipping center or store. For the location of your nearest U.S. Post Office, please call 1-800-ASK-USPS or visit www.usps.com. For the location of your nearest FedEx shipping center/ store, please call 1-800-GOFEDEX or visit www.fedex.com.

For more information, or to order additional labels or boxes for bulk returns, visit www.hp.com/recycle or call 1-800-340-2445. Information subject to change without notice.

Residents of Alaska and Hawaii

Do not use the UPS label. Call 1-800-340-2445 for information and instructions. The U.S. Postal Service provides no-cost cartridge return transportation services under an arrangement with HP for Alaska and Hawaii.

Non-U.S. returns

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

Paper

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

Material restrictions

This HP product does not contain added mercury.

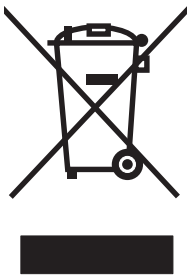
This HP product contains a battery that might require special handling at end-of-life. The batteries contained in or supplied by Hewlett-Packard for this product include the following:

HP LaserJet Enterprise 500 color MFP M575	
Type	Carbon monofluoride lithium
Weight	0.8 g
Location	On formatter board
User-removable	No

廢電池請回收

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

Disposal of waste equipment by users



This symbol means do not dispose of your product with your other household waste. Instead, you should protect human health and the environment by handing over your waste equipment to a designated collection point for the recycling of waste electrical and electronic equipment. For more information, please contact your household waste disposal service, or go to: www.hp.com/recycle.

Electronic hardware recycling

HP encourages customers to recycle used electronic hardware. For more information about recycling programs go to: www.hp.com/recycle.

Chemical substances

HP is committed to providing our customers with information about the chemical substances in our products as needed to comply with legal requirements such as REACH (Regulation EC No 1907/2006 of the European Parliament and the Council). A chemical information report for this product can be found at: www.hp.com/go/reach.

Material Safety Data Sheet (MSDS)

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

For more information

To obtain information about these environmental topics:

- Product environmental profile sheet for this and many related HP products
- HP's commitment to the environment

- HP's environmental management system
- HP's end-of-life product return and recycling program
- Material Safety Data Sheets

Visit www.hp.com/go/environment or www.hp.com/hpinfo/globalcitizenship/environment.

Declaration of conformity

Declaration of Conformity

according to ISO/IEC 17050-1 and EN 17050-1

Manufacturer's Name:	Hewlett-Packard Company	DoC#: BOISB-1200-00-rel.1.0
Manufacturer's Address:	11311 Chinden Boulevard	
	Boise, Idaho 83714-1021, USA	
declares, that the product		
Product Name:	HP LaserJet Pro 500 color MFP M570dn	
Regulatory Model:[2)]	BOISB-1200-02	
	Including:	
	BOISB-1102-00 – US Fax Module LIU	
	BOISB-1102-01 – EURO Fax Module LIU	
Product Options:	All	
Toner Cartridges:	CE400A, CE400X, CE401A, CE402A, CE403A	
conforms to the following Product Specifications:		
SAFETY:	IEC 60950-1:2005 +A1 / EN60950-1: 2006 +A11:2009 +A1:2010 +A12:2011	
	IEC 60825-1:2007 / EN 60825-1:2007 (Class 1 Laser/LED Product)	
	IEC 62479-2010/EN 62479-2010	
	GB4943-2001	
EMC:	CISPR22:2008 / EN55022:2010 - Class A[1),3)]	
	EN 61000-3-2:2006+A1:2009+A2:2009	
	EN 61000-3-3:2008	
	EN 55024:1998 +A1 +A2	
	FCC Title 47 CFR, Part 15 Class A / ICES-003, Issue 4	
	GB9254-2008, GB17625.1-2003	
TELECOM:[5)]	ES 203 021; FCC Title 47 CFR, Part 68[4)]	

Supplementary Information:

The product herewith complies with the requirements of the EMC Directive 2004/108/EC, the Low Voltage Directive 2006/95/EC, R&TTE Directive 1999/5/EC, and carries the CE-Marking CE accordingly.

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

1. The product was tested in a typical configuration with Hewlett-Packard Personal Computer Systems.
2. For regulatory purposes, this product is assigned a Regulatory model number. This number should not be confused with the product name or the product number(s).
3. The product meets the requirements of EN55022 & CNS13438 Class A in which case the following applies: "Warning — This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures."
4. Telecom approvals and standards appropriate for the target countries/regions have been applied to this product, in addition to those listed above.
5. This product uses an analog fax accessory module which Regulatory Model numbers are: BOISB-1102-00 (US LIU) or BOISB-1102-01 (EURO LIU), as needed to meet technical regulatory requirements for the countries/regions this product will be sold.

Boise, Idaho USA

November 2012

For Regulatory Topics only, contact:

European Contact:	Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, HQ-TRE, Herrenberger Straße 140, 71034 Böblingen, Germany www.hp.eu/certificates
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 (wireless models)

Declaration of Conformity

according to ISO/IEC 17050-1 and EN 17050-1

Manufacturer's Name:	Hewlett-Packard Company	DoC#: BOISB-1200-01-rel.1.0
Manufacturer's Address:	11311 Chinden Boulevard	
	Boise, Idaho 83714-1021, USA	
declares, that the product		
Product Name:	HP LaserJet Pro 500 color MFP M570dw	
Regulatory Model:[2)]	BOISB-1200-01	
	Including:	
	BOISB-1102-00 – (US-Fax Module LIU)	
	BOISB-1102-01 – (EURO-Fax Module LIU)	
	SDGOB-1191 – (Radio Module)	
Product Options:	All	
Toner Cartridges:	CE400A, CE400X, CE401A, CE402A, CE403A	
conforms to the following Product Specifications:		
SAFETY:	IEC 60950-1:2005 +A1/ EN60950-1: 2006 +A11:2009 +A1:2010 +A12:2011	
	IEC 60825-1:2007 / EN 60825-1:2007 (Class 1 Laser/LED Product)	
	IEC 62479:2010/EN 62479:2010	
	GB4943-2001	
EMC:	CISPR22:2005 +A1/ EN55022:2006 +A1 - Class A[1), 3)]	
	EN 61000-3-2:2006 +A1:2009 +A2:2009	
	EN 61000-3-3:2008	
	EN 55024:1998 +A1 +A2	
	FCC Title 47 CFR, Part 15 Class A / ICES-003, Issue 4	
	GB9254-2008, GB17625.1-2003	
TELECOM:[5)]	ES 203 021; FCC Title 47 CFR, Part 68[4)]	
Radio:[6)]	EN 301 489-1:V1.8.1 (2008-04)/ EN 301 489-17:V2.1.1 (2009-05)	
	EN 300 328: V1.7.1 (2006-10)	
	FCC Title 47 CFR, Part 15 Subpart C (Section 15.247) / IC: RSS-210	
	IEC 62311: 2007/ EN62311: 2008	
Supplementary Information:		

The product herewith complies with the requirements of the R&TTE Directive 1999/5/EC, EMC Directive 2004/108/EC, the Low Voltage Directive 2006/95/EC and carries the CE-Marking CE ① accordingly.

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

1. The product was tested in a typical configuration with Hewlett-Packard Personal Computer Systems.
2. For regulatory purposes, this product is assigned a Regulatory model number. This number should not be confused with the marketing names or the product number(s).
3. The product meets the requirements of EN55022 & CNS13438 Class A in which case the following applies: "Warning — This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures."
4. Telecom approvals and standards appropriate for the target countries/regions have been applied to this product, in addition to those listed above.
5. This product uses an analog fax accessory module which Regulatory Model numbers are: BOISB-1102-00 (US-LIU) or BOISB-1102-01 (EURO LIU), as needed to meet technical regulatory requirements for the countries/regions this product will be sold.
6. This product uses a radio module device which Regulatory Model number is SDGOB-1191 as needed to meet technical regulatory requirements for the countries/regions this product will be sold.

Boise, Idaho USA

November 2012

For Regulatory Topics only, contact:

European Contact:	Your Local Hewlett-Packard Sales and Service Office or Hewlett-Packard GmbH, HQ-TRE, Herrenberger Straße 140, 71034 Böblingen, Germany www.hp.eu/certificates
USA Contact:	Product Regulations Manager, Hewlett-Packard Company, PO Box 15, Mail Stop 160, Boise, Idaho 83707-0015 (Phone: 208-396-6000)

Certificate of Volatility

Figure C-1 Certificate of Volatility (1 of 2)

Hewlett-Packard Certificate of Volatility		
Model: HP LaserJet Enterprise 500 MFP M575 Series	Part Number: M575dn=CD644A,fw=CD645A, cw=CD646A	Address: Hewlett Packard Company 11311 Chinden Blvd Boise, ID 83714

Volatile Memory

Does the device contain volatile memory (Memory whose contents are lost when power is removed)?
☒ Yes ☐ No If Yes please describe the type, size, function, and steps to clear the memory below

Type (SRAM, DRAM, etc):	Size:	User Modifiable:	Function:	Steps to clear memory:
DDR2 - DRAM	1.5 GB	☐ Yes ☒ No	Used for temporary storage during the process of jobs, and for applications that are running on the OS.	When the printer is powered off, the memory is erased.
Type (SRAM, DRAM, etc):	Size:	User Modifiable: ☐ Yes ☐ No	Function:	Steps to clear memory:
Type (SRAM, DRAM, etc):	Size:	User Modifiable: ☐ Yes ☐ No	Function:	Steps to clear memory:

Non-Volatile Memory

Does the device contain non-volatile memory (Memory whose contents are retained when power is removed)?
☒ Yes ☐ No If Yes please describe the type, size, function, and steps to clear the memory below

Type (Flash, EEPROM, etc):	Size:	User Modifiable:	Function:	Steps to clear memory:
SPI Flash	4 MB	☒ Yes ☐ No	Contains the boot code and factory product configuration data required for the device to function. User modifications are limited to downloading digitally signed HP firmware images.	There are no steps to clear this data.
Type (Flash, EEPROM, etc):	Size:	User Modifiable:	Function:	Steps to clear memory:
ICB EEPROM	32KB	☐ Yes ☒ No	Backup device for critical system counters and product configuration information.	There are no steps to clear this data.
Type (Flash, EEPROM, etc):	Size:	User Modifiable:	Function:	Steps to clear memory:
None		☐ Yes ☒ No		

Mass Storage

Does the device contain mass storage memory (Hard Disk Drive, Tape Backup)?
☒ Yes ☐ No If Yes please describe the type, size, function, and steps to clear the memory below

Type (HDD, Tape, etc):	Size:	User Modifiable:	Function:	Steps to clear memory:
Self Encrypting Hard Disk, SATA 1 and SATA 2	250 GB	☒ Yes ☐ No	Stores customer data, OS, applications, digitally signed firmware images, persistent data, and temporary data used for processing and system functions.	There are several ways to erase this: 1. Erase and Unlock Encrypted Disk - This changes the encryption keys rendering all data unreadable. 2. Secure Storage Erase - Erases temporary files and job data by overwriting information one or three times 3. Secure Disk Erase - Industry standard ATA Secure Erase. Overwrites all data on the hard drive. 4. Secure File Erase - Erases files when jobs finish processing by overwriting them one or three times.

Figure C-2 Certificate of Volatility (2 of 2)

USB
Does the item accept USB input and if so, for what purpose (i.e Print Jobs, device firmware updates, scan upload)? ☒ Yes ☐ No If Yes please describe below
Print jobs, HP digitally signed firmware upgrades, 3rd party application loading. USB ports can be disabled.
Can any data other than scan upload be sent to the USB device)? ☒ Yes ☐ No If Yes please describe below
Diagnostic service logs can be uploaded. Print files can be printed via a USB thumb drive.

RF/RFID	
Does the item use RF or RFID for receive or transmit of any data including remote diagnostics. (e.g. Cellular phone, Bluetooth) ☐ Yes ☒ No If Yes please describe below	
Purpose:	
Frequency:	Bandwidth:
Modulation:	Effective Radiate Power (ERP):
Specifications:	

Other Transmission Capabilities	
Does the device employ any other methods of non-wired access to transmit or receive any data whatsoever (e.g. anything other than standard hard wired TCP/IP, direct USB, or parallel connections)? ☐ Yes ☒ No If Yes please describe below:	
Purpose:	
Frequency:	Bandwidth:
Modulation:	Effective Radiate Power (ERP):
Specifications:	

Other Capabilities
Does the device employ any other method of communications such as a Modem to transmit or receive any data whatsoever? ☐ Yes ☒ No If Yes please describe below:
Purpose:
Specifications:

Author Information			
Name:	Title: Security Technical Marketing Engineer	Email:	Business Unit: IPG
			Date Prepared: 04/24/12

Safety statements

Laser safety

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

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

Canadian DOC regulations

Complies with Canadian EMC Class A requirements.

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

VCCI statement (Japan)

この装置は、クラスA情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者は適切な対策を講ずるよう要求されることがあります。

VCCI-A

Power cord instructions

Make sure your power source is adequate for the product voltage rating. The voltage rating is on the product label. The product uses either 100-127 Vac or 220-240 Vac and 50/60 Hz.

Connect the power cord between the product and a grounded AC outlet.

⚠ **CAUTION:** To prevent damage to the product, use only the power cord that is provided with the product.

Power cord statement (Japan)

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

EMC statement (China)

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

EMC statement (Korea)

A급 기기 (업무용 방송통신기기)	이 기기는 업무용(A급)으로 전자파적합등록을 한 기기이오니 판매자 또는 사용자는 이점을 주의하시기 바라며, 가정 외의 지역에서 사용하는 것을 목적으로 합니다.

EMI statement (Taiwan)

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

Laser statement for Finland

Luokan 1 laserlaite

Klass 1 Laser Apparat

HP LaserJet Enterprise 500 color MFP M575dn, M575f, 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 (2007) mukaisesti.

VAROITUS !

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

VARNING !

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

HUOLTO

HP LaserJet Enterprise 500 color MFP M575dn, M575f - 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.

GS statement (Germany)

Das Gerät ist nicht für die Benutzung im unmittelbaren Gesichtsfeld am Bildschirmarbeitsplatz vorgesehen. Um störende Reflexionen am Bildschirmarbeitsplatz zu vermeiden, darf dieses Produkt nicht im unmittelbaren Gesichtsfeld platziert warden.

Das Gerät ist kein Bildschirmarbeitsplatz gemäß BildscharbV. Bei ungünstigen Lichtverhältnissen (z. B. direkte Sonneneinstrahlung) kann es zu Reflexionen auf dem Display und damit zu Einschränkungen der Lesbarkeit der dargestellten Zeichen kommen.

Substances Table (China)

有毒有害物质表

根据中国电子信息产品污染控制管理办法的要求而出台

部件名称	有毒有害物质和元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
打印引擎	X	0	0	0	0	0
复印机组件	X	0	0	0	0	0
控制面板	0	0	0	0	0	0
塑料外壳	0	0	0	0	0	0
格式化板组件	X	0	0	0	0	0
碳粉盒	X	0	0	0	0	0

0614

0：表示在此部件所用的所有同类材料中，所含的此有毒或有害物质均低于 SJ/T11363-2006 的限制要求。
X：表示在此部件所用的所有同类材料中，至少一种所含的此有毒或有害物质高于 SJ/T11363-2006 的限制要求。

注：引用的“环保使用期限”是根据在正常温度和湿度条件下操作使用产品而确定的。

Restriction on Hazardous Substances statement (Turkey)

Türkiye Cumhuriyeti: EEE Yönetmeliğine Uygundur

Restriction on Hazardous Substances statement (Ukraine)

Обладнання відповідає вимогам Технічного регламенту щодо обмеження використання деяких небезпечних речовин в електричному та електронному обладнанні, затвердженого постановою Кабінету Міністрів України від 3 грудня 2008 № 1057

Additional statements for telecom (fax) products

EU Statement for Telecom Operation

This product is intended to be connected to the analog Public Switched Telecommunication Networks (PSTN) of European Economic Area (EEA) countries/regions.

It meets requirements of EU R&TTE Directive 1999/5/EC (Annex II) and carries appropriate CE conformity marking.

For more details see Declaration of Conformity issued by the manufacturer in another section of this manual.

However due to differences between individual national PSTNs the product may not guarantee unconditional assurance of successful operation on every PSTN termination point. Network compatibility depends on the correct setting being selected by the customer in preparation of its connection to the PSTN. Please follow the instructions provided in the user manual.

If you experience network compatibility issues, please contact your equipment supplier or Hewlett-Packard help desk in the country/region of operation.

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

New Zealand Telecom Statements

The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom's network services.

This equipment may not provide for the effective hand-over of a call to another device connected to the same line.

This equipment shall not be set up to make automatic calls to the Telecom "111" Emergency Service.

This product has not been tested to ensure compatibility with the FaxAbility distinctive ring service for New Zealand.

Additional FCC statement for telecom products (US)

This equipment complies with Part 68 of the FCC rules and the requirements adopted by the ACTA. On the back of this equipment is a label that contains, among other information, a product identifier in the format US:AAAEQ##TXXXX. If requested, this number must be provided to the telephone company.

The REN is used to determine the quantity of devices, which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all, areas, the sum of the RENs should not exceed five (5.0). To be certain of the

number of devices that may be connected to the line, as determined by the total RENs, contact the telephone company to determine the maximum REN for the calling area.

This equipment uses the following USOC jacks: RJ11C.

An FCC-compliant telephone cord and modular plug is provided with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible modular jack, which is Part 68 compliant. This equipment cannot be used on telephone company-provided coin service. Connection to Party Line Service is subject to state tariffs.

If this equipment causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. If advance notice is not practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

The telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the operation of the equipment. If this happens, the telephone company will provide advance notice in order for you to make the necessary modifications in order to maintain uninterrupted service.

If trouble is experienced with this equipment, please see the numbers in this manual for repair and (or) warranty information. If the trouble is causing harm to the telephone network, the telephone company may request you remove the equipment from the network until the problem is resolved.

The customer can do the following repairs: Replace any original equipment that came with the device. This includes the toner cartridge, the supports for trays and bins, the power cord, and the telephone cord. It is recommended that the customer install an AC surge arrestor in the AC outlet to which this device is connected. This is to avoid damage to the equipment caused by local lightning strikes and other electrical surges.

Telephone Consumer Protection Act (US)

The Telephone Consumer Protection Act of 1991 makes it unlawful for any person to use a computer or other electronic device, including fax machines, to send any message unless such message clearly contains, in a margin at the top or bottom of each transmitted page or on the first page of the transmission, the date and time it is sent and an identification of the business, other entity, or individual sending the message and the telephone number of the sending machine or such business, or other entity, or individual. (The telephone number provided cannot be a 900 number or any other number for which charges exceed local or long distance transmission charges).

Industry Canada CS-03 requirements

Notice: The Industry Canada label identifies certified equipment. This certification means the equipment meets certain telecommunications network protective, operational, and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirement document(s). The Department does not guarantee the equipment will operate to the user's satisfaction. Before installing this equipment, users should ensure that it is permissible for the equipment to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations. Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company

cause to request the user to disconnect the equipment. Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution can be particularly important in rural areas.

CAUTION: Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate. The Ringer Equivalence Number (REN) of this device is 0.0B.

This product meets the applicable Industry Canada technical specifications. / Le présent matériel est conforme aux specifications techniques applicables d'Industrie Canada.

Notice: The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Number of all the devices does not exceed five (5.0). / L'indice d'équivalence de la sonnerie (IES) sert à indiquer le nombre maximal de terminaux qui peuvent être raccordés à une interface téléphonique. La terminaison d'une interface peut consister en une combinaison quelconque de dispositifs, à la seule condition que la somme d'indices d'équivalence de la sonnerie de tous les dispositifs n'excède pas cinq.

The standard connecting arrangement code (telephone jack type) for equipment with direct connections to the telephone network is CA11A.

Vietnam Telecom wired/wireless marking for ICTQC Type approved products

Additional statements for wireless products

FCC compliance statement—United States

Exposure to radio frequency radiation

⚠ **CAUTION:** The radiated output power of this device is far below the FCC radio frequency exposure limits. Nevertheless, the device shall be used in such a manner that the potential for human contact during normal operation is minimized.

In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20 cm (8 in) during normal operation.

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

⚠ **CAUTION:** Based on Section 15.21 of the FCC rules, changes of modifications to the operation of this product without the express approval by Hewlett-Packard Company may invalidate its authorized use.

Australia statement

This device incorporates a radio-transmitting (wireless) device. For protection against radio transmission exposure, it is recommended that this device be operated no less than 20 cm from the head, neck, or body.

Brazil ANATEL statement

Este equipamento opera em caráter secundário, isto é, não tem direito à proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário.

Canadian statements

For Indoor Use. This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications. The internal wireless radio complies with RSS 210 of Industry Canada.

Pour l´usage d´intérieur. Le présent appareil numérique n´émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de Classe B prescribes dans le règlement sur le brouillage radioélectrique édicté par le Ministère des Communications du Canada. Le composant RF interne est conforme à la norme CNR-210 d´Industrie Canada.

Products with 5 GHz Operation Industry of Canada

⚠ **CAUTION:** When using IEEE 802.11a wireless LAN, this product is restricted to indoor use, due to its operation in the 5.15- to 5.25-GHz frequency range. Industry Canada requires this product to be used indoors for the frequency range of 5.15 GHz to 5.25 GHz to reduce the potential for harmful interference to co-channel mobile satellite systems. High-power radar is allocated as the primary user of the 5.25- to 5.35-GHz and 5.65- to 5.85-GHz bands. These radar stations can cause interference with and/or damage to this device.

Exposure to Radio Frequency Radiation (Canada)

⚠ **WARNING!** Exposure to Radio Frequency Radiation. The radiated output power of this device is below the Industry Canada radio frequency exposure limits. Nevertheless, the device should be used in such a manner that the potential for human contact is minimized during normal operation.

To avoid the possibility of exceeding the Industry Canada radio frequency exposure limits, human proximity to the antennas should not be less than 20 cm (8 inches).

European Union regulatory notice

The telecommunications functionality of this product may be used in the following EU and EFTA countries/regions:

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, and United Kingdom.

Notice for use in France

For 2.4 GHz Wireless LAN operation of this product certain restrictions apply: This equipment may be used indoor for the entire 2400-2483.5 MHz frequency band (channels 1-13). For outdoor use, only 2400-2454 MHz frequency band (channels 1-9) may be used. For the latest requirements, see www.arcep.fr.

L'utilisation de cet equipement (2.4 GHz Wireless LAN) est soumise à certaines restrictions : Cet équipement peut être utilisé à l'intérieur d'un bâtiment en utilisant toutes les fréquences de 2400-2483.5 MHz (Chaine 1-13). Pour une utilisation en environnement extérieur, vous devez utiliser les fréquences comprises entre 2400-2454 MHz (Chaine 1-9). Pour les dernières restrictions, voir, www.arcep.fr.

Notice for use in Russia

Существуют определенные ограничения по использованию беспроводных сетей (стандарта 802.11 b/g) с рабочей частотой 2,4 ГГц: Данное оборудование может использоваться внутри помещений с использованием диапазона частот 2400-2483,5 МГц (каналы 1-13). При использовании внутри помещений максимальная эффективная изотропно–излучаемая мощность (ЭИИМ) должна составлять не более 100мВт.

Mexico statement

Aviso para los usuarios de México

"La operación de este equipo está sujeta a las siguientes dos condiciones: (1) es posible que este equipo o dispositivo no cause interferencia perjudicial y (2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada."

Para saber el modelo de la tarjeta inalámbrica utilizada, revise la etiqueta regulatoria de la impresora.

Taiwan statement

低功率電波輻射性電機管理辦法

第十二條　經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條　低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。
前項合法通信，指依電信法規定作業之無線電通信。
低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

Korean statement

당해 무선설비는 운용 중 전파혼선 가능성이 있음

Vietnam Telecom wired/wireless marking for ICTQC Type approved products

Index

S

T

U

V

W